ROSCO

A LeeBoy Company

OPERATIONS, SERVICE AND PARTS MANUAL



Rosco Maximizer 3B Asphalt Distributor

Manual No. 1005234-01

Introduction 1
Safety 2
General Information 3
Specifications 4
Component Location 5
Operation 6
Maintenance 7
Troubleshooting 8
Schematics 9
Illustrated Parts List (IPL) 10

DISCLAIMER AND COPYRIGHT

Disclaimer:

All information, illustrations and specifications in this manual are based on the latest information available at the time of publishing. The illustrations used in this manual are intended as representative reference views only. Moreover, because of our continuous product improvement policy, we may modify information, illustrations and/or specifications to explain and/or exemplify a product, service or maintenance improvement. We reserve the right to make any change at any time without notice. VT LeeBoy, Inc., VT LeeBoy, LeeBoy, and Rosco are all the same entity and are used interchangeably.

©2010 VT LeeBoy, Inc.

LeeBoy reserves all copyright and other rights in this manual and the manual's content. No part of this manual may be reproduced or used in any way without the written permission of LeeBoy, except as necessary to operate LeeBoy equipment.

This manual has been most recently updated 01/11 to apply to serial number and above:

46266

PDF file last modified on: 01/25/11

ROSCO

A LeeBoy Company

TABLE OF CONTENTS

Page

Table Of Contents v

Introduction **1-1**

Safety **2-1**

Safety Precautions 2-2

Safety Label Locations 2-6

General Information **3-1**

Limited Warranty Policy 3-2

Warranty 3-2

Limitations 3-2

Items Not Covered 3-3

Other Limitations 3-3

Contact Information 3-4

Record of Ownership 3-4

Nameplate 3-4

Specifications **4-1**

General Information 4-2

General 4-2

System Overview 4-2

Circulating System 4-2

Burner System 4-3

Plus One Controller 4-3

In-Cab Operator System 4-3

Material Considerations 4-4

Specification Tables 4-6

Torque Specs 4-10

Metric Fasteners 4-10

Table Of Contents

Inch Fasteners 4-11
Hydraulic Fittings 4-12
Full Torque Nut Coupling Installation 4-12
Component Location 5-1
Outside Overview 5-2
Main In-Cab Control Box 5-6
Rear Controller. 5-10
Run Screen 5-12
LPG Burner System 5-14
Operation 6-1
Operator Safety Considerations 6-3
Regeneration 6-3
Machine Break-In 6-4
Before Starting 6-4
After 2 Hours Of Operation. 6-4
After 8 & 20 Hours Of Operation 6-4
Pre-Operating Check List 6-4
Visual Inspection. 6-4
Service And Maintenance 6-4
Spraybar Inspection 6-4
Functional Check 6-5
Hydraulic Circuit 6-5
Hydrostatic Circuit 6-5
Automatic Valve System 6-6
Asphalt Spraybar. 6-7
Preventing Spraybar Failure 6-8
Valves And Nozzles 6-9
Adjustment. 6-9
Nozzle Selection. 6-10
Burners & Torch Operation. 6-10
Diesel Burners. 6-10
Portable LPG Torch 6-15
Plus One Controller 6-16
Distributor Operation 6-16
In-Cab Controller Screens 6-17
Flow/Distance Calibration 6-19

Plus One Controller Error Messages 6-20
Electro Motive Radiation Interference 6-20
Modes Of Operation 6-21
Load Mode 6-21
Tank Circulate Mode 6-25
Spray / Bar Circulate Mode (Bar Circulate) 6-27
Spray / Bar Circulate Mode (Spray) 6-29
Handspraying 6-31
Handspray / Unload Mode 6-33
Handspray Mode (Spray / Bar Circulate) 6-35
Reverse Suction Mode 6-37
Automated Clean-out Mode 6-39
Clean-out Mode 6-43
Transfer Mode 6-45
Unloading Mode 6-47
Washdown 6-48
Combating Poor Visibility 6-48
Manual Operation 6-49
Calculations 6-49
Run Simulation Example 6-50
Trial Run 6-51
Maintenance 7-1
General Information 7-4
Routine Maintenance 7-4
General Information 7-4
Fluids And Lubricants 7-5
Asphalt Pump Lubrication 7-5
Grease For Other Components 7-5
Hydraulic Oil 7-5
Clean-out Solvent 7-5
Truck Systems 7-6
Tank Components 7-6
Tank Sump 7-6
Top Opening 7-6
Capacity Indicator Gauge 7-7
Mounting Hardware 7-7

Table Of Contents

Asphalt Pump System 7-8
Asphalt Pump 7-8
Relief Valve 7-8
Discharge Screen 7-9
Load Line Screen 7-10
Pump Drive 7-10
Automatic Valves. 7-10
Spraybar 7-12
Hydraulic System 7-13
Burner System 7-14
Diesel Burners. 7-14
LPG Burners (Option) 7-14
GPS Ground Speed Sensor 7-15
Radar Horn (Option) 7-15
Daily Exterior Maintenance 7-16
Storage 7-16
Hydraulic Fluids 7-17
Hydraulic Oil Requirements 7-17
Safety Label Installation 7-18
Troubleshooting 8-1
General 8-2
Troubleshooting Charts 8-2
Schematics 9-1
Electrical Schematic - Plus One Overview 9-3
Electrical Schematic - Plus One 1 of 5 9-5
Electrical Schematic - Plus One 2 of 5 9-7
Electrical Schematic - Plus One 3 of 5 9-9
Electrical Schematic - Plus One 4 of 5 9-11
Electrical Schematic - Plus One 5 of 5 9-13
Pneumatic Schematic - Control, Air 1 of 1 9-15
Electrical Schematic - Control, Front Machine 1 of 1 9-17
Electrical Schematic - Control, Rear Machine 1 of 1 9-19
Electrical Schematic - Control, LH Spraybar 1 of 1 9-21
Electrical Schematic - Control, RH Spraybar 1 of 1 9-23
Electrical Schematic - Can Bus Kit 1 of 4 9-25
Electrical Schematic - Can Bus Kit 2 of 4 9-27

Electrical Schematic - Can Bus Kit 3 of 4 9-29
Electrical Schematic - Can Bus Kit 4 of 4 9-31
Illustrated Parts List (IPL) 10-1
Platform Installation, w/o Handrail 10-4
Rear Platform and Piping Assembly 10-6
Asphalt Pump 10-10
Asphalt Pump Relief Valve 10-12
Transfer Line, Ground Level 10-14
Automatic Valve, Cab Control 10-16
Tank Valve Assembly 10-18
Flex Hose Assembly 10-20
Handspray Wand Assembly 10-22
Hydraulic, Front Live 10-26
Hydraulic, PTO 10-34
Hydraulic Reservoir 10-40
Drive Shaft Group 10-42
Control Box, Plus One, 16 Ft Spraybar 10-44
Ground Speed Sensor 10-46
Spraybar Assembly, 16 Foot 10-48
Potentiometer 10-54
Spray Valve Assembly 10-56
Air Reservoir Group 10-58
Valve Box, Subassembly 10-60
Solenoid Valve, 8 Valve 10-62
Diesel Burner, Double Flue, No Outfire I 10-64
Diesel Burner, Double Flue, No Outfire II 10-66
Control Box, Diesel Burner 10-68
Burner Covers & Flue Liners 10-70
Light & Reflector Group 10-72
Decal Group 10-74
Ladder & Platform Group 10-76
Tank Top Opening 10-78
Fender Group, Single Axle 10-80
Mud Flap Installation 10-82
Sampling Valve, Front Head 10-84
Overflow Attachment Group 10-86

Table Of Contents

Thermometers 10-88
Enviroflush System. 10-90
Insulated Tank & Tank Components 10-92
Spraybar Assembly, 18 FT 10-96
Potentiometer 10-102
Spray Valve Assembly 10-104
Spray Valve Assembly, 20 FT. 10-106
Spray Valve Assembly 10-110
Solenoid Valve, 10/12 Valve (For 18 FT Spraybar) 10-112
Solenoid Valve, 12 Valve (For 20 FT Spraybar) 10-114
Diesel Burner, Double Flue, Outfire, No Thermostat I 10-116
Diesel Burner, Double Flue, Outfire, No Thermostat II 10-118
LPG Burners, Double Flue, Auto Ignition 10-120
LPG Burners, Double Flue, Manual Ignition 10-124
LPG Tank, 52 Gallon 10-126
Portable Torch Holder Assembly, LPG 10-128
Fender Group, Tandem Axle 10-130
Fender Group, Triple Axle 10-132
Mud Flap Group, Full Width. 10-134
Washdown System 10-136
Return Line Valve 10-140
Tank & Ladder Group, 1000 Gallon Tank 10-142
Tank & Ladder Group, 1500 Gallon Tank 10-144
Tank & Ladder Group, 3000 Gallon Tank. 10-146
Tank & Ladder Group, 3500 Gallon Tank. 10-148
Tank & Ladder Group, 4000 Gallon Tank. 10-150
Alphabetical Parts Index 10-152

ROSCO

A LeeBoy Company

Section 1
INTRODUCTION

Thank you for purchasing the Rosco Maximizer 3B Asphalt Distributor. We wish you many years of safe and efficient operation of your machine.

READ THIS MANUAL PRIOR TO OPERATING the unit. This manual is an important part of the machine and should be kept with the machine at all times in the dedicated storage container on the machine. Even though you may be familiar with similar equipment, you MUST read and understand this manual before operating this machine. Reading the manual will help you and others avoid injury and help prevent any damage to the machine. If this manual becomes lost or damaged, contact your authorized LeeBoy Dealer immediately to order a replacement (see *Contact Information* Section 3).

This manual is intended as a guide for the safe and efficient use of the machine. This manual covers the procedures for proper operation and maintenance of the machine. This manual contains information that was available at the time of printing and is subject to change without notice.

This manual should be used with all related supplemental books, engine and transmission manuals, and parts books. Related Service Bulletins should be reviewed to provide information regarding some of the recent changes.

If any questions arise concerning this publication or others, contact your local LeeBoy Dealer for the latest available information.

This manual provides information for use by the equipment operator under the following headings:

Safety—See Section 2 for important safety guidelines information.

General Information—See Section 3 for important warranty, contact, and nameplate information.

Specifications—See Section 4 for all major system specifications and typical torque value tables.

Component Location—See Section 5 for general overview of controls and major components.

Operation—See Section 6 for control functionality and normal equipment operation.

Maintenance—See Section 7 for basic preventive maintenance and repair procedures.

Troubleshooting—See Section 8 for problem descriptions and recommended solution tables.

Schematics—See Section 9 for schematic diagrams of electrical wiring.

Illustrated Parts List (IPL)—See Section 10 for illustrations, descriptions and part numbers of available service parts.

NOTES

ROSCO

A LeeBoy Company

Section 2
SAFETY

Page

Safety 2-1

Safety Precautions 2-2

Safety Label Locations 2-6

This manual provides important information to familiarize you with safe operating and maintenance procedures. Even though you may be familiar with similar equipment, you MUST read and understand this manual before operating the Rosco Maximizer 3B Asphalt Distributor and follow its instructions when operating the machine.

Safety is everyone's business and is our top concern. Knowing the guidelines covered in this section and in Section 1 will help ensure your safety, the safety of those around you and the machine's proper operation.

LOOK FOR THESE SYMBOLS WHICH POINT OUT ITEMS OF EXTREME IMPORTANCE TO THE SAFETY OF YOU AND YOUR COWORKERS. READ AND UNDERSTAND THOROUGHLY. HEED THE WARNING AND FOLLOW THE INSTRUCTIONS.

Keep safety labels in good condition. If safety labels become missing or damaged, replacement safety labels are available from your LeeBoy Dealer (see ***Safety Label Locations*** in Section 2).

⚠ DANGER

Indicates a hazardous situation which, if not avoided, *will* result in death or serious injury.

⚠ WARNING

Indicates a hazardous situation which, if not avoided, *could* result in death or serious injury.

⚠ CAUTION

Indicates a hazardous situation which, if not avoided, *could* result in minor or moderate injury.

NOTICE

Indicates a situation which can cause damage to the equipment, personal property and/or the environment, or cause the Rosco Maximizer 3B Asphalt Distributor to operate improperly.

NOTE: Indicates a procedure, practice, or condition that should be followed in order for the machine or component to function in the manner intended.

SAFETY PRECAUTIONS

General Safety

- Have a first-aid kit available and know how to use it.
- Keep a "charged" fire extinguisher within reach whenever you work in an area where fire may occur. Have the correct type of extinguisher for your situation and know how to use it:

  Type A: Wood, paper, textile and rubbish

  Type B: Flammable liquids

  Type C: Electrical equipment
- Do not hurry. Use recommended hand holds and steps with at least three points of support when getting on and off the Maximizer 3B. Keep steps, floor, hand holds and controls clean and free from grease. Face the machine when climbing up and down and never jump off or dismount while the machine is in motion. Falling from the machine can cause serious injury.
- Do not permit riders on the Maximizer 3B. Death or serious injury can occur if riders fall off or under the machine while it is in motion.
- Do not go into the tank! Death can occur due to lack of oxygen, breathing poisonous fumes or explosion. Keep others out!
- Do not smoke near the machine. Fuel, emulsion and fumes can explode when exposed to flames or heat from smoking or other sources.

⚠ CAUTION

The safety messages that follow have CAUTION level hazards.

Pre-Operation Hazard



Read and understand this Operation Manual before operating or servicing the engine to ensure that safe operating practices and maintenance procedures are followed.

- Never permit anyone to service or operate the Rosco Maximizer 3B Asphalt Distributor without proper training.
- Contact LeeBoy or an authorized LeeBoy Dealer for additional training.

- Safety signs and labels are additional reminders for safe operating and maintenance techniques.
- Make sure you are aware of all laws and regulations that are in effect where the machine is operated. Ensure you have all necessary licenses to operate the machine.
- Before starting or operating the machine, ensure all controls are OFF or in neutral position.
- Know and understand the jobsite traffic flow patterns and obey flagmen, road signs and signals.

Starting and Stopping

- Walk around the machine and warn all personnel in the area before starting the machine. Be sure the area is clear before starting. Death or serious injury can occur to bystanders from being crushed under a moving machine or being hit by material.
- Always park the machine on level ground whenever possible. Apply the parking brake. On grades, park the Distributor with the wheels securely blocked.
- Stopping distances must be anticipated for all conditions. If stopping on a grade, the distance needed to come to a stop will be longer. Familiarize yourself with these variables so you can anticipate when a longer stopping distance is required.

⚠ DANGER

The safety messages that follow have WARNING level hazards.

Burner Operation

- Never operate burner equipment when the vehicle is being loaded or in transit. The flue tubes can become exposed, causing an explosion inside the tank, or ignite material being sprayed.
- Never operate the burners if the flue tubes are not covered with at least 8 inches (20.32 cm) of material. The flue tubes can become red hot and ignite the vapors causing an explosion.
- Always park the truck so that the burners are up wind. Some asphalt materials emit flammable vapors from the vent that can be ignited by the burner flame and cause an explosion.
- Never operate the burners in a confined area such as a building or shed. Vapor build-up could cause an explosion.
- Do not operate the burners if the tank is leaking or a spill has occurred. Fire and explosion can occur.
- Keep the tank vents clear to avoid a buildup of pressure in the tank when heating. Check the vents before starting the burners.
- Never use gasoline, alcohol or any other unapproved fuel in a diesel burner. Fire and explosion can occur.
- Do not operate the burners while the wash down system is operating or has recently been used. Fire and explosion can occur.
- Do not operate the burners with top tank cover open. Fire and explosion can occur.
- Be sure to read, understand and follow all precautions for the type of cleaning material you are using.

⚠ WARNING

The safety messages that follow have WARNING level hazards.

Crush Hazard

Keep bystanders away from work area before and during operation.

Modification Hazard

Never modify the Rosco Maximizer 3B Asphalt Distributor without written consent of LeeBoy. Any modification can affect the safe operation of the machine and may cause personal injury or death.

Exposure Hazard



Always wear personal protective equipment, including appropriate clothing, gloves, work shoes, and eye and hearing protection, as required by the task at hand.

Explosion Hazard



While the engine is running or the battery is charging, hydrogen gas is being produced and can be easily ignited. Keep the area around the battery well-ventilated and keep sparks, open flame and any other form of ignition out of the area.

- Always disconnect the negative (-) battery cable before servicing the machine.
- Do not start the engine by shorting the starter circuit or by using any other starting method not stated in this manual. Only use the starting procedure as described in this manual to start the engine.
- Never charge a frozen battery. Always slowly warm the battery to room temperature before charging.

Fire and Explosion Hazard

- Diesel fuel is flammable and explosive under certain conditions.
- Never use a shop rag to catch the fuel.
- Wipe up all spills immediately.
- Never refuel with the engine running.
- Store any containers containing fuel in a well-ventilated area, away from any combustibles or sources of ignition.

Fire Hazard



Have appropriate safety equipment available. Have all fire extinguishers checked periodically for proper operation and/or readiness.

- Always read and follow safety-related precautions found on containers of hazardous substances like parts cleaners, primers, sealants and sealant removers.
- Undersized wiring systems can cause an electrical fire.
- No not leave the machine unattended. Never allow anyone to reach into the machine while it is operating.

Exhaust Hazard



All internal combustion engines create carbon monoxide gas during operation and special precautions are required to avoid carbon monoxide poisoning:

- Never block windows, vents or other means of ventilation if the Rosco Maximizer 3B Asphalt Distributor is operating in an enclosed area.
- Always ensure that all connections are tightened to specifications after repair is made to the exhaust system.

Entanglement/Sever Hazard



Verify there are no people, obstacles or other equipment near the Rosco Maximizer 3B Asphalt Distributor before starting the engine. Sound the horn as a warning before starting the engine.



If the engine must be serviced while it is operating, remove all jewelry, tie back long hair and keep hands, other body parts and clothing away from moving/rotating parts.

- Always stop the engine before beginning service.
- Verify that all machine guards and covers are attached properly to the machine before starting the engine. Do not start the engine if any guards or covers are not properly installed on the machine.
- If you must run the engine during maintenance procedures, make sure you have a helper to keep bystanders clear of the machine and make observations of moving parts as requested by the operator.
- Always turn the start switch to the OFF position after operation is complete and remove the key from the switch. Keep the key in your possession when the machine is not operating.
- Attach a “Do Not Operate” tag near the key switch while performing maintenance on the equipment.
- Never operate the engine while wearing a headset to listen to music or radio because it will be difficult to hear the warning signals.
- Always start the engine or operate the controls while you are seated in the operators seat.

Alcohol and Drug Hazard



Never operate the engine while under the influence of alcohol or drugs, or when ill.

Piercing Hazard



Avoid skin contact with high-pressure hydraulic fluid or diesel fuel spray caused by a hydraulic or fuel system leak. A broken hydraulic hose or fuel injection line can cause injury. High-pressure hydraulic fluid or fuel can penetrate your skin and result in serious injury. If you are exposed to high-pressure hydraulic fluid or fuel spray, obtain prompt medical treatment.

- Never check for a hydraulic fluid or fuel leak with your hands. Always use a piece of wood or cardboard. Have your authorized LeeBoy Dealer or distributor repair the damage.

Flying Object Hazard



Always wear eye protection when cleaning the Rosco Maximizer 3B Asphalt Distributor with compressed air or high-pressure water. Dust, flying debris, compressed air, pressurized water or steam may injure your eyes.

Coolant Hazard



Wear eye protection and rubber gloves when handling engine coolant. If contact with the eyes or skin should occur, flush eyes and wash immediately with clean water.

Burn Hazard



Some of the machine surfaces become very hot during operation and shortly after shutdown.

- Keep hands and other body parts away from hot machine surfaces.
- Handle hot components with heat-resistant gloves.

⚠ CAUTION

The safety messages that follow have CAUTION level hazards.

Poor Lighting Hazard

Ensure that the work area is adequately illuminated. Always install wire cages on portable safety lights.

Tool Hazard

Always use tools appropriate for the task at hand and use the correct size tool for loosening or tightening Rosco Maximizer 3B Asphalt Distributor parts.

NOTICE

The safety messages that follow have NOTICE level hazards.

Any part which is found defective as a result of inspection or any part whose measured value does not satisfy the standard or limit must be replaced.

Always tighten components to the specified torque. Loose parts can cause Rosco Maximizer 3B Asphalt Distributor damage or cause it to operate improperly.

Only use replacement parts approved by LeeBoy. Other replacement parts may affect warranty coverage.



Follow the guidelines of the EPA or other governmental agencies for the proper disposal of hazardous materials such as engine oil, diesel fuel and engine coolant. Consult local authorities or reclamation facility.

- Clean all accumulated dirt and debris away from the body of the machine and its components before you inspect the machine or perform preventive maintenance procedures or repairs. Operating a machine with accumulated dirt and debris will cause premature wear of machine components. Accumulated dirt and debris also hinders effective machine inspection.
- Retrieve any tools or parts that may have dropped inside of the machine to avoid improper machine operation.
- Dispose of hazardous materials in accordance with all applicable laws and regulations. Never dispose of hazardous materials by dumping them into a sewer, on the ground, or into groundwater or waterways.
- If any alert indicator illuminates during machine operation, stop the engine immediately. Determine the cause and repair the problem before continuing to operate the machine.

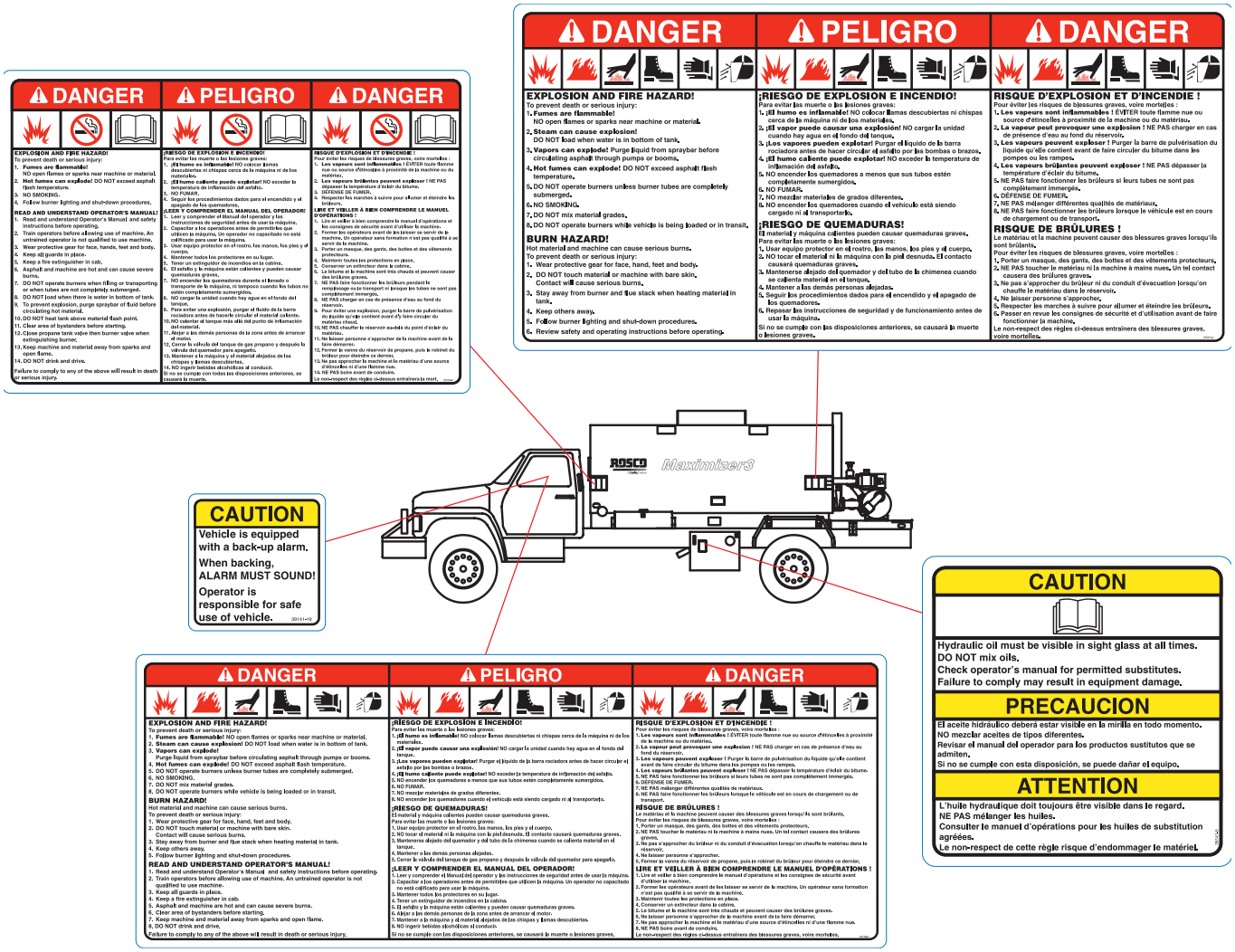
SAFETY LABEL LOCATIONS

Safety Precautions

If your machine has been repainted, it is extremely important that all the decals referring to CAUTION, WARNING, and DANGER be replaced in their proper locations. The illustrations on this page will aid you in determining the proper locations. For additional help, you should refer to the parts listing in the parts section of this manual and note the description column.

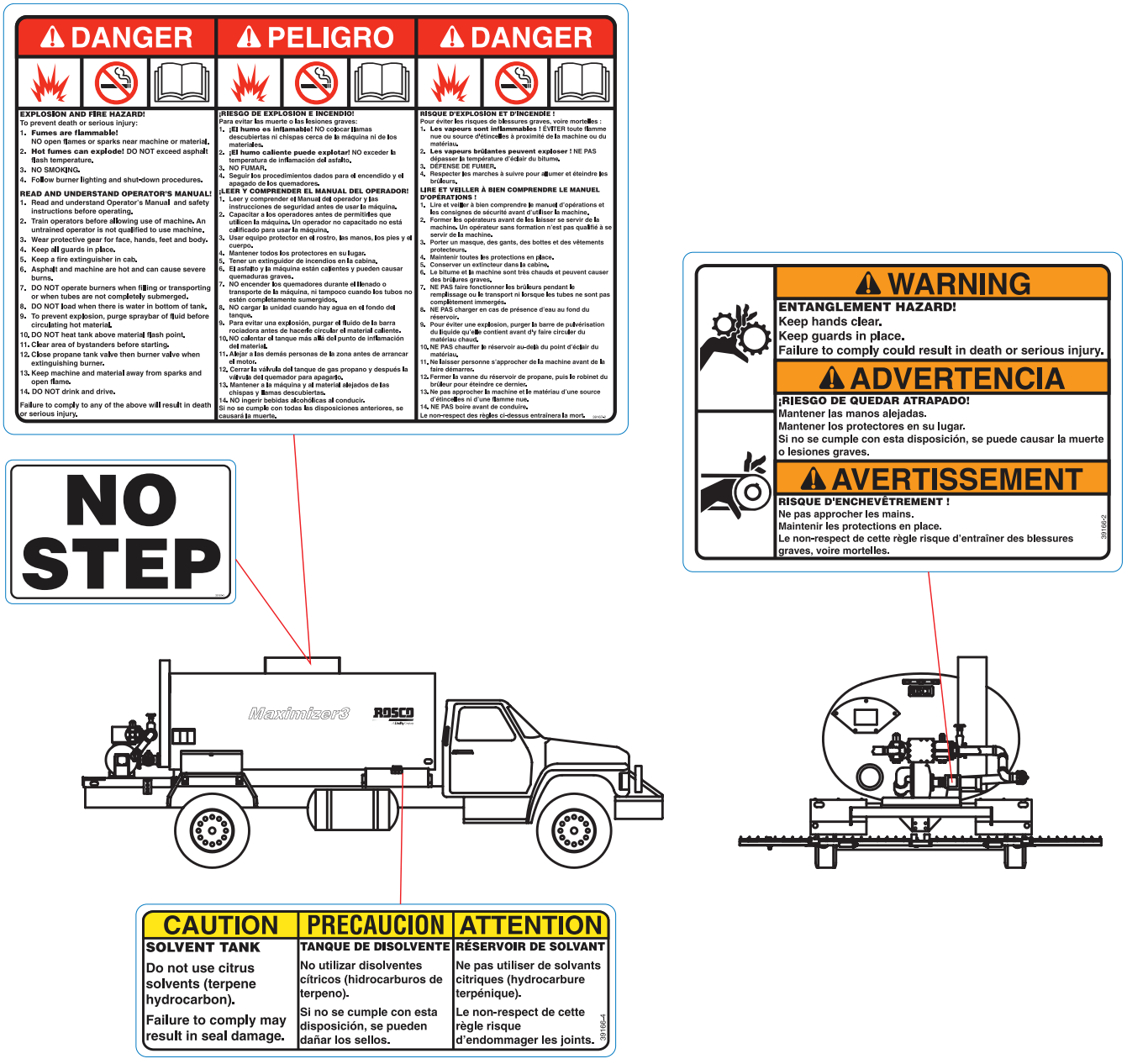
A description of location is provided below for each safety label. For additional instructions, contact your dealer (see ***Safety Label Installation*** in Section 7).

NOTE: It is the responsibility of the owner and operator to make sure that all safety labels are readable and located on machine as designated by LeeBoy.



Safety Labels and Safety Label Locations

Figure 2-1



Safety Labels and Safety Label Locations

Figure 2-2

NOTES

ROSCO

A LeeBoy Company

Section 3
GENERAL INFORMATION

Page

General Information 3-1

Limited Warranty Policy 3-2

Warranty. 3-2

Limitations 3-2

Items Not Covered 3-3

Other Limitations. 3-3

Contact Information 3-4

Record of Ownership 3-4

Nameplate 3-4

LIMITED WARRANTY POLICY

Warranty

1. Subject to the limitations, exclusions, and claims procedures set forth herein, LeeBoy warrants [to the first retail purchaser] that this product will be free from [substantial] defects in materials and workmanship during the warranty period.
2. If a defect in material or workmanship is found, your authorized LeeBoy Dealer is to be notified during the warranty period. LeeBoy and its authorized Dealer will repair or replace any part or component of the unit or part that fails to conform to the warranty during the warranty period.
3. The warranty period will begin on the initial start-up, training and delivery of the unit by the Dealer to the customer, and will expire after twelve (12) months following the delivery of the machine to the first retail purchaser. (See Dealer for additional warranty.)
4. Manufacturers' Warranties: Engines are warranted by their manufacturers and may have warranty coverage that differs from that of LeeBoy. LeeBoy does not warrant any engine.
5. Replacement parts furnished by LeeBoy are covered for the remainder of the warranty period applicable to the unit or component in which such parts are installed.
6. LeeBoy has the right to repair any component or part before replacing it with a new one.
7. All new replacement parts purchased by a LeeBoy Dealer will carry a six-month warranty.
8. This Limited Warranty is governed by the laws of the State of North Carolina.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESSED, STATUTORY AND IMPLIED WARRANTIES APPLICABLE TO UNITS, ENGINES, OR PARTS INCLUDING WITHOUT LIMITATION, ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE OR PURPOSE OR AGAINST INFRINGEMENT.

Limitations

LeeBoy has no obligation for:

1. Any defects caused by misuse, misapplication, negligence, accident or failure to maintain or use in accordance with the most current operating instructions.
2. Unauthorized alterations.
3. Defects or failures caused by any replacement parts or attachments not manufactured by or approved by LeeBoy.
4. Failure to conduct normal maintenance and operating service including, without limitation, providing lubricants, coolant, fuel, tune-ups, inspections or adjustments.
5. Unreasonable delay, as established by LeeBoy, in making the applicable units or parts available upon notification of a service notice ordered by same.
6. Warranty Responsibility: The warranty responsibility on all engines rests with the manufacturer of the engine.
7. Warranty and Parts Support: LeeBoy may have support agreements with some engine manufacturers for warranty and parts support. However, LeeBoy does not warrant the engine.
8. This Limited Warranty sets forth your sole remedy in connection with the sale or use of the LeeBoy product covered by this Limited Warranty.
9. This Limited Warranty extends only to the first retail purchaser, and is not transferable.
10. In the event any portion of this Limited Warranty shall be determined to be invalid under any applicable law, such provision shall be deemed null and void and the remainder of the Limited Warranty shall continue in full force and effect.

Items Not Covered

LeeBoy is not responsible for the following:

1. All used units or used parts of any kind.
2. Repairs due to normal wear and tear or brought about by abuse or lack of maintenance of the Machine.
3. Attachments not manufactured or installed by LeeBoy.
4. Liability for incidental or consequential damages of any type including, but not limited to, lost profits or expenses of acquiring replacement equipment.

Other Limitations

IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT OR WARRANTY OR ALLEGED NEGLIGENCE OR LIABILITY WITHOUT FAULT, SHALL LEEBOY BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING, WITHOUT LIMITATION, LOSS OF PROFIT OR REVENUE, COST OF CAPITAL, COST OF SUBSTITUTED EQUIPMENT, FACILITIES OR SERVICES, DOWNTIME COSTS, LABOR COSTS OR CLAIMS OF CUSTOMERS, PURCHASERS OR LESSEES FOR SUCH DAMAGES. IN NO EVENT WILL WARRANTY COMPENSATION, OR OTHER DAMAGES AVAILABLE FROM LEEBOY, EXCEED THE PURCHASE PRICE OF THE PRODUCT.

CONTACT INFORMATION

For information regarding parts and repairs about your LeeBoy product, first contact the dealer you purchased your product from.

If you have a persistent problem your dealer is unable to resolve, contact LeeBoy directly.

Record dealer information in the space provided. For additional information about LeeBoy, please visit: www.leeboy.com.

Sales Representative: _____

Dealership Name: _____

Dealership Address: _____

Dealership Phone: _____

RECORD OF OWNERSHIP

Please fill out the following information and use it when you need to contact LeeBoy for service, parts or literature.

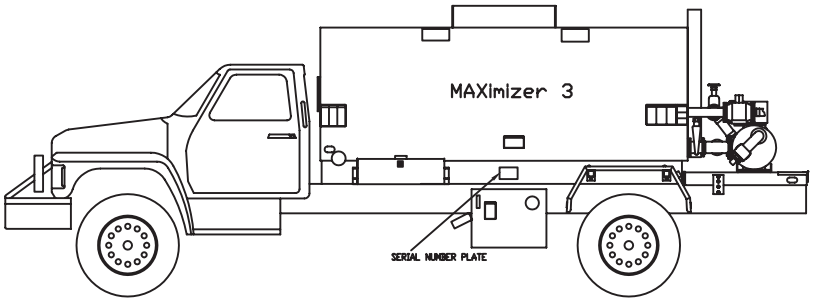
Machine Model Number: _____

Machine Serial Number: _____

Date of Purchase: _____

NAMEPLATE

Nameplate **(Figure 3-1)** contains the specific model number and serial number used to identify the components for any parts or service information.



Nameplate Location

Figure 3-1

ROSCO

A LeeBoy Company

Section 4
SPECIFICATIONS

Page

Specifications 4-1

General Information 4-2

General 4-2

System Overview 4-2

Circulating System 4-2

Burner System 4-3

Plus One Controller 4-3

In-Cab Operator System 4-3

Material Considerations 4-4

Specification Tables 4-6

Torque Specs 4-10

Metric Fasteners 4-10

Inch Fasteners 4-11

Hydraulic Fittings 4-12

Full Torque Nut Coupling Installation 4-12

GENERAL INFORMATION

The descriptions and specifications provided in this section are applicable to the Rosco Maximizer 3B Asphalt Distributor.

This section contains a description of how the major components operate. It also includes specifications for the major system components. Included in this section are machine weights, dimensions, performance, and major system specifications for the machine.

General

The Rosco Maximizer 3B Asphalt Distributor is used for the transportation and distribution of asphalt-based products for road maintenance and repair. The machine can spray asphalt emulsions, asphalt cements and cutback asphalts. LeeBoy strongly recommends the use of asphalt emulsions. Water based emulsions reduce the risk of fire and explosion.

NOTICE **The Maximizer 3B should not be used to distribute water, calcium chloride or other de-icing liquids. These materials can corrode the pump and valves and dangerously contaminate the tank. If these materials are used in a Maximizer 3B, the warranty is voided on those components affected by the material.**

System Overview

The Maximizer 3B consists of a truck-mounted insulated tank ranging in capacity from 1,000 to 4,000 gal. (3,785 to 15,142 liters). ROSCO Distributors are equipped with a heating system that will maintain the asphalt at the proper spray temperature.

The Distributor has a power driven asphalt pump capable of handling products ranging from light applications of emulsified asphalt to heavy asphalt cements heated to spraying viscosity. At the back of the tank is a system of spraybars with nozzles through which asphalt is forced under pressure and applied to the road surface. The spraybars cover widths ranging from 4 in. to 20 ft. (10 cm to 6.1 m) in one pass.

The circulating system and the burner system are the main systems on the Maximizer 3B. Read these sections so you are aware of the functions and capabilities of the unit and its systems.

Circulating System

The circulating system has an engine driven hydraulic pump which drives the hydraulic motor. The hydraulic motor powers the asphalt pump, allowing the pump to:

- fill the distributor tank
- circulate material through the bar and tank
- spray material through the bar or hand spray
- draw material back to the tank from the bar or hand spray
- pump material from the tank to outside storage
- transfer material from one storage tank to another

The spraybar must have a constant and uniform pressure along the entire length of the bar for uniform output at each nozzle.

The Rosco Maximizer 3B Asphalt Distributor delivers a volume of asphalt to the spraybar which is regulated by a number of variables, including:

- asphalt pump speed
- application rate setting
- truck speed
- spraybar width

The on-board computer senses the different values and controls the asphalt pump speed to deliver the precise amount of asphalt to the spraybar.

Both the application rate and spray pattern are influenced by factors such as the selected application rate, the truck speed and nozzle size.

If the nozzles are too small for the application rate and truck speed, the liquid will atomize, the spray pattern will distort and the result will be excessive over-spray or inconsistent application rate. If the nozzles are too large, the result will be streaking caused by low spraybar pressure (see ***Valves And Nozzles*** in Section 6).

Burner System

USE BURNERS PROPERLY! Burners are used to increase the temperature of liquid asphalt material to the correct spraying temperatures. The burners should only be used while the liquid asphalt material is being circulated in the tank.

NOTICE **If the material has cooled to the point that it will not flow easily and will not circulate, the operator must use extra care. Improper heating will cause damage to the equipment and the material being heated.**

The burners in the Maximizer 3B have a very high heat output which must be dissipated through the asphalt. Asphalt is an excellent insulator and resists the conduction of heat through the material.

If the material is heated too hot or too quickly without the proper circulation, hot spots will be created near the rear of the tank at the flue tubes. This will damage the flue tubes and cause a break down of the material.

⚠WARNING **Operating the burners without circulating the product can create explosive fumes. If the product can not be circulated after 15 minutes of heating, the fuel to the burners must be turned off, while leaving the blowers running. Do not try to heat material again for 30 minutes.**

If it is necessary to heat asphalt that has cooled more than 20 to 30 degrees below the optimum spraying temperature, the operator must use extreme care in reheating the material.

NOTICE **Run the burners for short periods of time (15 minutes ON, 15 minutes OFF) to allow the heat to dissipate through the material. This will prevent damage to the flue liner.**

The amount of time necessary to heat the asphalt material to allow proper circulation and heating will vary depending on the type of material, the type of burners, the tank size and the amount of material in the tank. If you have any doubts about the proper way to heat cooled asphalt, contact your asphalt supplier or equipment manufacturer.

The Burners are located at the left rear of the Maximizer 3B. The flame from the burner is directed through the fire tubes along the bottom of the tank. Diesel or propane can be used as fuel, depending on the burner option specified.

Never operate the burners without first reviewing the instructions.

Plus One Controller

The Plus One system is used to automatically control the application rate of the asphalt distributor truck. It is capable of automatically maintaining constant asphalt application rates regardless of changes in distributor speed and spraybar width. The controller has on/off toggle switches to provide spray nozzle control along the spraybar in 1 foot (.3 m) increments.

Distributor functions are set by selecting one of eight modes of operation. Each mode of operation defines the behavior of the automatic asphalt valves and the spraybar valves for the distributor function selected. A software memory feature is included to store up to 12 user defined presets of operating parameters for quick setup of application rates and speed calibrations.

Selectable readouts on the in-cab control panel display the following in real time; distributor ground speed (fpm), asphalt spray rate (gpm), total distance sprayed (ft), total gallons sprayed (gal), total area sprayed (sq.yd.), flow & speed calibration application rate (gal/sq.yd.), tank temperature (degree F), hour meter (hr), and spraybar length (ft).

The controller uses either a GPS Speed Sensor or an (optional) Radar Horn Speed Sensor to measure distributor ground speed necessary for application rate calculations and real time display of distributor metrics.

Rear controls are located in the tool box on the right hand side rear fender and are used to control asphalt pump speed, asphalt pump direction, spraybar hydraulic functions and the optional washdown pump when rear control priority is selected.

In-Cab Operator System

The main console located in the truck cab contains a DP610 color display and utilizes a toggle switch system for Maximizer 3B spraybar control. Truck control parameters and modes of operation are selected through the DP610 display using programmable soft keys. Setup functions and real time monitoring functions are stored and processed in the DP610.

In addition, the console includes a Master Power ON/OFF toggle switch, Burner switch, and potentiometer for the control of asphalt pump speed and direction when in MANUAL mode and front control priority. Parameters are used to configure options installed on specific trucks as well as increase memory and data storage capacity.

A CAN signal allows communication between the In-Cab Controller and the control modules located in the valve box at the rear of the truck.

Material Considerations

NOTE: All information in the Material Considerations section was obtained from publications of the Asphalt Institute.

This section will help the operator better understand the properties of the asphalt product being used (see **Table 4-4. Guideline Temperatures For Liquid Asphalts**).

The selection of the right product is generally dependent on the following considerations:

1. Availability of various types of aggregate.
2. Availability of various liquid asphalt grades.
3. Climate conditions during applications.
4. Traffic conditions during application.
5. Contract specifications.

NOTE: The information given in the charts in this section is based on industry standards. It is important to note that some asphalt product manufacturers have grades or mixtures which do not conform to industry standards. These materials are often tailored to local conditions and may provide superior performance to standard grades.

There are many types and grades of asphalt products. The best results can be obtained through the trial of several different types of asphalt and aggregates. The following classifications and grades of asphalts are provided to help in the selection.

Asphalt Cement (AC):

- Asphalt that is refined to meet specifications for paving, industrial, and special purposes.

Cutback Asphalt:

- An asphalt cement which has been liquefied by blending with petroleum solvents. Upon exposure to the air, the solvents evaporate, leaving the asphalt cement to perform its function of cementing and waterproofing.

⚠WARNING **When using cutback asphalts, extreme caution must be used to prevent fire or explosion. Do not use open flames or sparks near these materials. Use controlled heat only. Never use open flames to examine tanks in which these materials have been used or stored. Be sure all vehicles transporting these materials are properly vented. Allow only experienced personnel to handle these materials. Be sure all applicable interstate and intrastate commerce requirements are met.**

Cutback asphalts are divided into three main grades.

1. Rapid Curing (RC) Asphalt: A cutback asphalt of high volatility composed of asphalt cement using naphtha or gasoline-type dilutant.
2. Medium Curing (MC) Asphalt: Cutback asphalt of medium volatility composed of asphalt cement and kerosene-type dilutant.
3. Slow Curing (SC) Asphalt: A cutback asphalt of low volatility composed of asphalt cement and oils.

⚠CAUTION **It is important to remember that cutback asphalts are often used at temperatures above their flash points. Serious injury can occur from burns.**

Emulsified Asphalt:

- An emulsion of asphalt cement and water with a small amount of an emulsifying agent. The emulsifying agent determines the charge of the asphalt particles. It may have a negative (-) charge called anionic, or a positive (+) charge called cationic.

NOTE: An anionic type of emulsion will work best with aggregates having positive (+) surface charges such as limestone and dolomite.

A cationic type of emulsion will work best with aggregates having negative (-) surface charges such as siliceous or granitic aggregates.

NOTICE **DO NOT mix emulsion types, especially anionic with cationic.**

Standard grades of Emulsified Asphalt are:

Anionic (- charge)**:**

- RS-1, RS-2, MS-1, MS-2, MS-2h, HFMS-1, HFMS-2, HFMS-2h, HFMS-2s, SS-1, SS-1h.

Cationic (+ charge)**:**

- CRS-1, CRS-2, CMS-2, CMS-2h, CSS-1, CSS-1h.
- RS, MS, SS: Indicate the emulsion setting rate. (Rapid Set, Medium Set, Slow Set)
- h, s: Indicate if a hard or soft base asphalt is used in the mix.
- HF: Indicates High-Float which means chemicals have been added to permit a thicker film of asphalt on the aggregate particles to prevent drain off of asphalt from the aggregate.
- C: Indicates a cationic asphalt. The absence of the letter “C” means it is anionic asphalt.

Viscosity

Viscosity is a fluid’s resistance to flow (how thick and gluey a fluid is). The recommended viscosity for spraying with a distributor is 25 to 50 Saybolt Furol seconds (45 - 100 Centistokes Kinematic Viscosity).

The recommended viscosity for loading or pumping is a maximum of 400 Saybolt Furol seconds (800 Centistokes Kinematic Viscosity).

Viscosities above these ranges will limit the performance of the machine. Your asphalt provider will be able to tell you the viscosity of your product.

Contamination

It is very important to remember that when you are loading a new material into the Maximizer, you must be sure that the new material is compatible with the residual material in the tank. The safest thing to do is to completely clean out the tank and the entire system. Total clean out is essential if you are not sure of the last material that was used in the unit.

However, some materials can be loaded with a small residual amount (0.5 % of capacity or less) of the previous material remaining in the tank, (see ***Guide For Loading Asphalt Products*** in Section 4).

To reduce the risks of fire or explosion, follow **Table 4-5. Guide For Loading Asphalt Products** to eliminate contamination.

When incompatible materials are mixed, it can increase the possibility that the material will not meet the job specifications. More importantly, mixing materials can increase the risk of fire or explosion. For example, light hydrocarbons may be present in a tank from previous loads or from diesel oil or solvents used in cleaning the tank.

⚠WARNING **Be sure the tank has no water in it before loading. Hot material will turn water into steam and can cause an explosion.**

SPECIFICATION TABLES

The specifications provided in this section are applicable to the Rosco Maximizer 3B Asphalt Distributor. Included in this section are dimensions, performance, and torque values for both metric and standard inch fasteners.

⚠CAUTION **Replace original equipment only with LeeBoy approved components.**

Table 4-1. Tank Specification Table

ITEM	SPECIFICATION
Tank Capacity	1000 U.S. gallons (3,785 L) to 4000 U.S. gallons (15,142 L) with overage for expansion.
Tank	Meets all applicable Federal DOT tank regulations. Elliptical shape. 10 gauge (3 mm) shell and 7 gauge (4.5 mm) flat heads, flanged reinforced and welded to shell inside & and outside of tank. All seams electrically welded.
Shell	10 GA, elliptical shape shell. 7 GA flat heads, flange reinforced and electrically welded to shell inside and outside of tank.
Thermometers	Armored pencil inspector's type 50° F to 500° F (10° C to 260° C) and 5 inch (127 mm) dial type 50° F to 500° F (10° C to 260° C) mounted on front left side of tank in pipe well. Tank temperature sensor, located at rear of tank, displayed on color display of in-cab controller.
Full Surge Plates	10 gauge (3 mm) steel with staggered openings.
Insulation	2 inch (51 mm) rock wool with spacers to prevent compression, and clips to secure position of insulation. Weatherproof aluminum jacket.
Top Opening	22 inch (558 mm) diameter with weather tight and safety relieving cover. Inside splash guards, 3 inch (76 mm) diameter, steel measuring stick, basket type strainer, overflow pipe, and tank vent.
Sump	8 inch (203 mm) diameter at rear of tank with 4 inch (102 mm) clean-cut plug. Suction line from pump includes tank cut-off valve.
Heating System	Double flue with 8 inch (203 mm) inside diameter tubing.
Exhaust Stack	Stainless steel with rain cover.
Burners	Dual diesel fired burner with electronic ignition and heat limit controls. Dual, U-type high-temperature flue pipe running the length of the tank.
Asphalt Pump	Viking 400 GPM (1514 LPM) capacity, rotary gear pump with built in relief valve for safety. Located at rear of unit with suction piping to tank sump. Driven by low-speed, high-torque, fixed displacement hydraulic motor.
Distributing Lines	High-temperature, flexible metal hoses.
Clean Out	Connection to asphalt pump for clean-out of pump and piping. 25 gallon (94.6 L) flush tank.

Table 4-1. Tank Specification Table *(continued)*

ITEM	SPECIFICATION
Spray System	16 foot (4.9 m) full circulating, extendable spraybar, comprised of two 8 foot (2.4 m) independently controlled spraybar sections. When in spray mode and if corresponding nozzle enable switches are enacted each nozzle turns on when the spraybar is extended and turns off when retracted. All functions operated by the Plus One Controller in the cab.
Nozzles and Valves	Brass, slotted nozzles. Non-clogging system. Manual valve actuators allow the operator to control spray in 4 inch (10.16 cm) increments as the spraybar extends and retracts.

Table 4-2. Controller Specification Table

ITEM	SPECIFICATION
Controller	Plus One Controller works with electronic pump speed control to govern the application rate according to the distributor speed and spraybar width. Provides On/Off control of spray nozzles in 1 foot (.3 m) increments. 4 inch (10.16 cm) nozzle control is possible with spraybar extension and retraction. Memory feature capable of storing 12 preset application rates included. Provides readouts for speed (FPM), pump flow (GPM), total asphalt sprayed (gallons), total area covered (square yards), tank temperature, total run time meter (hours), spraybar width (feet and inches). System includes GPS speed sensor and rear mounted controls for manual control of asphalt pump speed and direction as well as hydraulic spraybar functions.

Table 4-3. Additional Standard and Optional Equipment Specification Table

STANDARD	OPTIONAL
Handspray gun with 25 foot (7.6 m) hose	PTO driven hydraulic pump from truck transmission
Front and rear dial contents gauge	Outfire protection on diesel burner
Sampling valve	LPG burner in lieu of diesel burner
ICC clearance lights and reflectors	Portable LP torch with pressure regulators and connections to frame mounted 52 gallon (197 L) tank
Back up alarm	Low density electric heat
Rear bumper and a 4-way mirror	Washdown system with pump and hose for cleaning the spraybar
Mud flaps	Hose reel for the washdown hose
Ladder and platform assembly	Loading hose 3 inch by 15 foot (7.6 cm X 4.6 m) flexible steel with quick couplers
Grease gun	Loading hose 3 inch by 15 foot (7.6 cm X 4.6 m) rubber with quick couplers
Enviro-Flush recirculating clean-out system	18 foot (5.5 m) spraybar system
	20 foot (6.1 m) spraybar system
	Radar Horn Speed Sensor (option in lieu of GPS)

Table 4-4. Guideline Temperatures For Liquid Asphalts

TYPE & GRADE	SPRAY TEMP		STORE TEMP		MIN FLASH POINT	
Asphalt Cements	°C	°F	°C	°F	°C	°F
AC -2.5	130+	270+	160	320	163	325
AC-5	140+	280+	166	330	177	350
AC-10	140+	280+	174	345	219	425
AC-20	145+	295+	177	350	232	450
AC-40	150+	300+	177	350	232	450
AR-1000	135+	275+	163	325	205	400
AR-2000	140+	285+	168	325	219	425
AR-4000	145+	290+	177	350	227	440
AR-8000	145+	290+	177	350	232	450
PEN 40-50	150+	300+	177	350	232	450
PEN 60-70	145+	295+	177	350	232	450
PEN 85-100	140+	280+	177	350	232	450
PEN 120-150	130+	270+	177	350	219	425
PEN 200-300	130+	270+	168	335	177	350

Table 4-4. Guideline Temperatures For Liquid Asphalts *(continued)*

TYPE & GRADE	SPRAY TEMP		STORE TEMP		MIN FLASH POINT	
Emulsified Asphalts	°C	°F	°C	°F	°C	°F
MC-30	30+	80+	54	130	38	100
MC-70	50+	120+	71	160	38	150
MC-250	75+	165+	91	195	66	150
MC-800	95+	200+	99	210	66	150
MC-3000	110+	230+	99	210	66	150
RC-70	50+	120+	71	160	-	-
RC-250	75+	165+	91	195	27	80
RC-800	95+	200+	99	210	27	80
RC-3000	110+	230+	99	210	27	80
SC-70	50+	120+	71	160	66	150
SC-250	75+	165+	91	195	79	175
SC-800	95+	200+	99	210	93	200
SC-3000	110+	230+	99	210	107	225
RS-1	20 - 60	70 - 140	20 - 60	70 - 140		
RS-2	50 - 85	125 - 185	50 - 85	125 - 185		
HFRS-2	50 - 85	125 - 185	50 - 85	125 - 185		
MS-1	20 - 70	70 - 160	10 - 60	50 - 140		
MS-2	20 - 70	70 - 160	50 - 85	125 - 185		
MS-2h	20 - 70	70 - 160	50 - 85	125 - 185		
HFMS-1	20 - 70	70 - 160	10 - 60	50 - 140		
HFMS-2	20 - 70	70 - 160	50 - 85	125 - 185		
HFMS-2h	20 - 70	70 - 160	50 - 85	125 - 185		
HFMS-2s	20 - 70	70 - 160	50 - 85	125 - 185		
SS-1	20 - 70	70 - 160	10 - 60	50 - 140		
SS-1h	20 - 70	70 - 160	10 - 60	50 - 140		
CRS-1	50 - 85	125 - 185	50 - 85	125 - 185		
CRS-2	50 - 85	125 - 185	50 - 85	125 - 185		
CMS-2	20 - 70	70 - 160	50 - 85	125 - 185		
CMS-2h	20 - 70	70 - 160	50 - 85	125 - 185		
CSS-1	20 - 70	70 - 160	10 - 60	50 - 140		
CSS-1h	20 - 70	70 - 160	10 - 60	50 - 140		

Table 4-5. Guide For Loading Asphalt Products

	PRODUCT TO BE LOADED			
LAST PRODUCT IN TANK	ASPHALT CEMENT	CUTBACK ASPHALT	CATIONIC EMULSION	ANIONIC EMULSION
Asphalt Cement	OK to load	Ok to load	Empty to no measurable quantity	Empty to no measurable quantity
Cutaback Cement	* Empty Tank	Ok to load	Empty to no measurable quantity	Empty to no measurable quantity
Cationic Emulsion	* Empty Tank	Empty to no measurable quantity	Ok to load	Empty to no measurable quantity
Anionic Emulsion	* Empty Tank	Empty to no measurable quantity	Empty to no measurable quantity	Ok to load
Crude Petroleum and Residual Fuel Oils	* Empty Tank	Empty to no measurable quantity	Empty to no measurable quantity	Empty to no measurable quantity
Any Product not listed above	Tank must be cleaned	Tank must be cleaned	Tank must be cleaned	Tank must be cleaned
* ⚠WARNING **Any material remaining in tank will produce dangerous conditions.**				

TORQUE SPECS

Metric Fasteners

⚠WARNING **The following Table lists torque values for standard hardware and are intended as a guide for average application involving typical stresses and machined surfaces. Values are based on physical limitations of clean, plated and lubricated hardware. In all cases, when an individual torque value is specified, it should be followed instead of values given in this table.**

⚠CAUTION **Replace original equipment with hardware of equal grade.**

Table 4-6. Torque Specifications For Metric Fasteners

	CLASS 8.8 [GRADE 5 EQUIVALENT]				CLASS 10.9 [GRADE 8 EQUIVALENT]			
NOMINAL SIZE & PITCH	TORQUE FT. LBS.		TORQUE N•m		TORQUE FT. LBS.		TORQUE N•m	
	Dry	Lubed	Dry	Lubed	Dry	Lubed	Dry	Lubed
M4 x 0.7	2.27	1.70	3.07	2.30	2.27	2.31	4.17	3.13
M5 x 0.8	4.58	3.43	6.20	4.65	6.22	4.67	8.43	6.33
M6 x 1	7.75	5.83	10.5	7.90	10.60	7.97	14.3	10.8
M8 x 1.25	18.89	14.17	25.6	19.2	18.95	19.26	34.8	26.1
M10 x 1.25	39.11	29.52	53.0	40.1	53.87	40.59	73.0	55.0
M12 x 1.75	64.94	48.71	88.0	66.0	88.56	66.42	120.0	90.0
M14 x 2	103.32	77.49	140.0	105.0	140.22	107.01	190.0	145.0
M16 x 2	162.36	121.77	220.0	165.0	221.40	166.05	300.0	225.0
M20 x 2.5	317.34	236.16	430.0	320.0	428.04	321.03	580.0	435.0
M24 x 3	516.12	409.59	740.0	555.0	754.38	557.19	1010.0	755.0
M27 x 3	797.04	597.78	1080.0	810.0	1084.86	811.80	1470.0	1100.0
M30 x 3.5	1084.86	811.80	1470.0	1100.0	1476.00	1107.00	2000.0	1500.0

Inch Fasteners

⚠WARNING **The following Table lists torque values for standard hardware and are intended as a guide for average application involving typical stresses and machined surfaces. Values are based on physical limitations of clean, plated and lubricated hardware. In all cases, when an individual torque value is specified, it should be followed instead of values given in this table.**

⚠CAUTION **Replace original equipment with hardware of equal grade.**

Table 4-7. Torque Specifications For Standard Inch Fasteners

		CAPSCREWS: SAE GRADE 5				CAPSCREWS: SAE GRADE 8			
SIZE	THREAD	TORQUE FT. LBS.		TORQUE N•m		TORQUE FT. LBS.		TORQUE N•m	
		Dry	Lubed	Dry	Lubed	Dry	Lubed	Dry	Lubed
1/4	20 UNC	8	6	11	9	12	9	16	12
	28 UNF	10	7	13	10	14	10	19	14
5/16	18 UNC	17	13	24	18	25	18	33	25
	24 UNF	19	14	26	20	27	20	37	28
3/8	16 UNC	31	23	42	31	44	33	59	44
	24 UNF	35	26	47	36	49	37	67	50
7/16	14 UNC	49	37	67	50	70	52	95	71
	20 UNF	55	41	75	56	78	58	105	79
1/2	13 UNC	75	57	100	77	105	80	145	110
	20 UNF	85	64	115	86	120	90	165	120
9/16	12 UNC	110	82	145	110	155	115	210	155
	18 UNF	120	91	165	125	170	130	230	175
5/8	11 UNC	150	115	205	155	210	160	285	215
	18 UNF	170	130	230	175	240	180	325	245
3/4	10 UNC	265	200	360	270	375	280	510	380
	16 UNF	295	225	405	300	420	315	570	425
7/8	9 UNC	430	320	580	435	605	455	820	615
	14 UNF	475	355	640	480	670	500	905	680
1	8 UNC	645	485	875	655	910	680	1230	925
	14 UNF	720	540	980	735	1020	765	1380	1040
1-1/8	7 UNC	795	595	1080	805	1290	965	1750	1310
	12 UNF	890	670	1210	905	1440	1080	1960	1470
1-1/4	7 UNC	1120	840	1520	1140	1820	1360	2460	1850
	12 UNF	1240	930	1680	1260	2010	1500	2730	2050
1-3/8	6 UNC	1470	1100	1990	1490	2380	1780	3230	2420
	12 UNF	1670	1250	2270	1700	2710	2040	3680	2760
1-1/2	6 UNC	1950	1460	2640	1980	3160	2370	4290	3210
	12 UNF	2190	1650	2970	2230	3560	2670	4820	3620

Hydraulic Fittings

Tightening Flare Type Tube Fittings

1. Check the flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second, tighten the swivel nut to the torque shown in **Table 4-8. Torque Specifications For Flare Type Tube Fittings**.

NOTE: The torque values shown are based on lubricated connections as in assembly.

Table 4-8. Torque Specifications For Flare Type Tube Fittings

TUBE SIZE OD	NUT SIZE (ACROSS FLATS)	TORQUE VALUE		RECOMMENDED TURNS TO TIGHTEN (AFTER FINGER TIGHTENING)	
(in)	(in)	(N•m)	(lb-ft)	(N•m)	(lb-ft)
3/16	7/16	8	6	1	1/6
1/4	9/16	12	9	1	1/6
5/16	5/8	16	12	1	1/6
3/8	11/16	24	15	1	1/6
1/2	7/8	46	34	1	1/6
5/8	1	62	46	1	1/6
3/4	1 1/4	102	75	3/4	1/8
7/8	1 3/8	122	90	3/4	1/8

Full Torque Nut Coupling Installation

The only completely reliable method of creating a consistent leak free, long lasting connection is to ensure that the coupling is brought to the proper torque.

The best method of ensuring a coupling is brought to the proper torque is to use a torque wrench with crowfoot. To ensure the proper torque is met, use the flats method of torque verification. Flats method may be used alone in situations where a torque wrench is inaccessible or unavailable.

There are 7 steps involved in proper coupling installation:

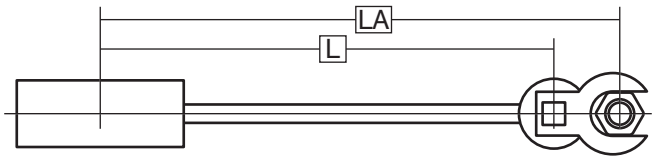
1. Determine the correct torque value for your coupling.

NOTE: Only use the torque values specified from the manufacturer, do not use SAE torque recommendations.

The minimum torque values are adequate for sealing in most applications, and the maximum torque values should never be exceeded.

2. Calculate the correct torque wrench setting using (see ***Equations*** in Section 4).

NOTE: The most straight forward method of determining the correct torque setting is to multiply the desired torque by the length of the wrench from the center of the handle to the center of the drive (L) divided by the length of the wrench from the center of the handle to the crowfoot center (LA), (**Figure 4-1**).



Torque Wrench - Crowfoot

Figure 4-1

NOTE: Torque Wrench Setting = Desired Torque * L / LA

3. Ensure that the seal face and threads are clean and in good condition. Do not lubricate coupling threads.

NOTE: O-Rings should be lubricated with light oil, but threads should be completely dry unless making pipe thread connections (interference seal).

Attach the male end of the hose onto the equipment first, since it may be necessary to rotate the entire hose assembly to tighten the male threads. Then route the hose into position while avoiding twisting the hose.

4. Hand tighten the connection by bringing seal face in contact and rotating the nut by hand until it stops.

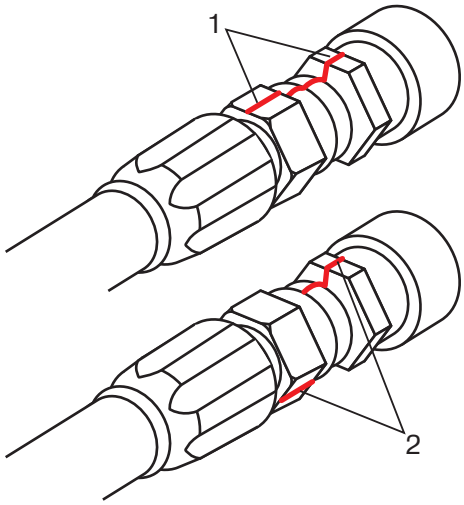
NOTE: By definition hand tight is 0.3-1 ft-lb or when the seal faces are touching and with the threads engaged the hex can no longer be rotated by hand.

5. Mark a line across the coupling nut and backup hex for flats method verification of coupling torque (**Figure 4-2**).

6. Apply a wrench to the backup hex to prevent the coupling and hose from moving while tightening the nut with a torque wrench.

NOTICE **Failure to retain the backup hex during installation will also result in additional clamp load force that could cause damage to the seal face.**

NOTE: The coupling nut must be in motion for an accurate torque reading. If the nut is stopped before final torque value is achieved, it must be loosened and retightened until the torque is attained while the nut is in motion.



Flats Method Tightening

Figure 4-2

1 - Mark Line on Nut

2 - Example 2 Flats difference

7. If a torque wrench cannot fit into the coupling area or if it is unavailable, flats method may be used to ensure that the coupling is properly tightened, as shown in **Figure 4-2**.

NOTE: The mark placed on the nut and backup hex after hand tightening should have rotated 1 to 1.5 flats during final tightening. At this point in time, if desired, the nut and backup hex may be marked to indicate if the coupling loosens over time.

Table 4-9. Torque Specifications For US Style Coupling Terminations

JIC, SAE 45°, ORFS, O-Ring Boss, Gates Adapterless and MegaSeal										
Dash Size	JIC 37°, SAE 45° & MegaSeal (steel)		JIC 37°, SAE 45° & Mega-Seal (steel)		Flat Face O-Ring Seal (Steel)		SAE O-Ring Boss (Steel) & Gates Adapterless ≤ 4000 PSI		SAE O-Ring Boss (Steel) & Gates Adapterless > 4000 PSI	
1/16 Inch	ft-Lb		ft-Lb		ft-Lb		ft-Lb		ft-Lb	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
-3									8	10
-4	10	11	5	6	10	12	14	16	14	16
-5	13	15	7	9					18	20
-6	17	19	12	15	18	20	24	26	24	26
-8	34	38	20	24	32	40	37	44	50	60
-10	50	56	34	40	46	56	50	60	72	80
-12	70	78	53	60	65	80	75	83	125	135
-14					65	80			160	180
-16	94	104	74	82	92	105	111	125	200	220
-20	124	138	75	83	125	140	133	152	210	280
-24	156	173	79	87	150	180	156	184	270	360
-32	219	243	158	175						

Table 4-10. Torque Specifications For DIN 24, DIN 60, and Inverted Cone Style Coupling Terminations

DIN 24, DIN 60, and Inverted Cone			
Size		Torque	
mm		ft-Lb	
Light Series Tube OD	Heavy Series Tube OD	Min	Max
6		7	15
8		15	26
10	8	18	30
12	10	22	33
14	12	26	37
15	14	30	52
	16	30	52
18	20	44	74
22	25	59	89
28	30	74	111
	38	74	162
35		133	184
42		148	221

Table 4-11. Torque Specifications For 4-Bolt Flange Connections

4-Bolt Flanges		
Dash Size	Bolt Size	Torque
1/16 Inch	Inch	ft-Lb
-8	0.31	17
-12	0.38	26
-16	0.44	43
-20	0.50	65
-24	0.63	130
-32	0.75	220

1. Alight faces and finger tighten bolts before applying final torque in a pattern. The seal faces must be parallel with even bolt tension to seal properly.
2. Torque values apply to bolts which are plated or coated in light engine oil.
3. Before assembly lubricate O-Ring with light oil (SAE 10W or 20W).

Table 4-12. Torque Specifications For SAE Male Flareless Assembly (MFA)

SAE Male Flareless Assembly (MFA)
After hand tight rotate nut one full turn (8 flats)

Table 4-13. Torque Specifications For NPTF Dry Seal Pipe Threads

NPTF	
Dash Size	Max Torque
1/16 Inch	ft-Lb
-2	20
-4	25
-6	35
-8	45
-12	55
-16	65
-20	80
-24	95
-32	120

1. The torque values obtained from tightening pipe threads can vary considerably depending on thread condition. Adequate sealing can occur at values much lower than the maximum values listed above. Only enough torque to achieve adequate sealing should be used.
2. When using a male tapered pipe thread with a female straight or parallel pipe thread, maximum values are 50% of those listed in the table.
3. If thread sealant is used, maximum values shown should be decreased by 25%.

Table 4-14. Torque Specifications For BSP 30° Inverted Cone and JIS Coupling Terminations

BSP 30° Inverted Cone and JIS		
Dash Size	Torque	
mm	ft-Lb	
1/16 Inch	Min	Max
-2	7	9
-4	11	18
-6	19	28
-8	30	36
-10	37	44
-12	50	60
-16	79	95
-20	127	152
-24	167	190
-32	262	314

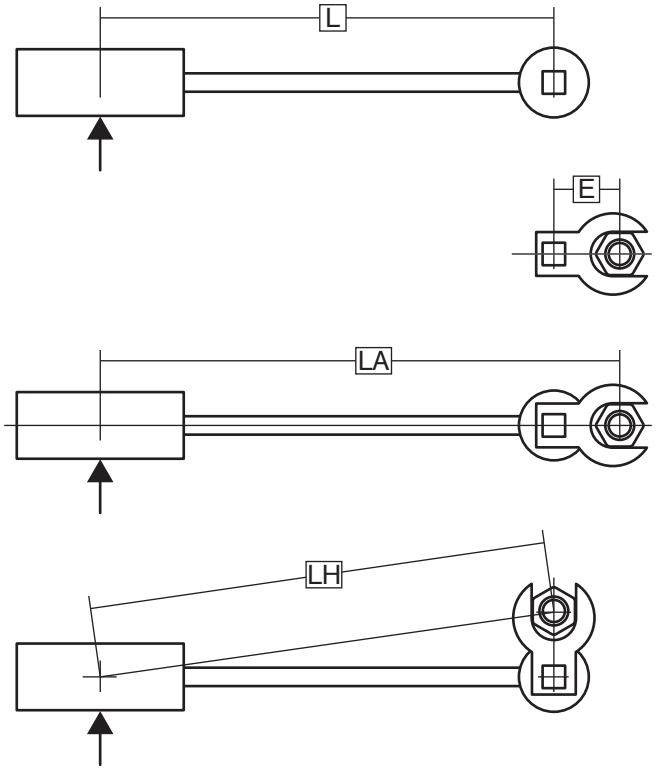
Table 4-15. Flats Method Values For Selected Terminations

Flats Method Values		
Termination Type	Dash Size	Flats
	1/16 Inch	
JIC	4	1.5 - 1.75
JIC	6	1.0 - 1.5
JIC	8	1.5 - 1.75
JIC	10	1.0 - 1.5
JIC	12	1.0 - 1.5
JIC	16	.75 - 1.0
JIC	20	.75 - 1.0
JIC	24	.75 - 1.0
JIC	32	.75 - 1.0
JIS	4	.5 - 1.5

1. Seal faces must be in contact and the fitting fully hand tightened before marking flats.
2. Flats method is most accurate for the first assembly cycle, for multiple disassembly/ assembly cycles torque values are more reliable.
3. Tightening 2 flats or more is analogous to sever over torque and may damage seal faces.

Determining Torque Setting

There are several methods of determining the correct setting on the torque wrench when using a crowfoot. All of the methods involve making the setting proportional to the effective change in length of the wrench multiplied by the desired final torque.



Measurements Needed

Figure 4-3

L = Distance from center of torque wrench handle to the center of socket drive

E = Distance from center of socket drive to the center of crowfoot

LA = Distance from center of torque wrench handle to the center of crowfoot

LH = Distance from center of torque wrench handle to the center of crowfoot, when mounted at 90°

TD = Desired torque at the fitting

TS = Torque setting indicated on wrench

Equations

Equation 1

Torque setting if the crowfoot is placed in line with respect to the wrench:

$$TS = TD * L / LA$$

or

$$TS = TD * L / (L+E)$$

Equation 2

Torque setting if the crowfoot is placed at 90° with respect to the wrench

$$TS = TD * L / LH$$

or

$$TS = TD * L / \sqrt{(L^2 + E^2)}$$

Equation 3

To estimate the crowfoot size (E)

E = Drive Size * 0.5 + Distance between Drive & Open End + Wrench Size * 0.5774

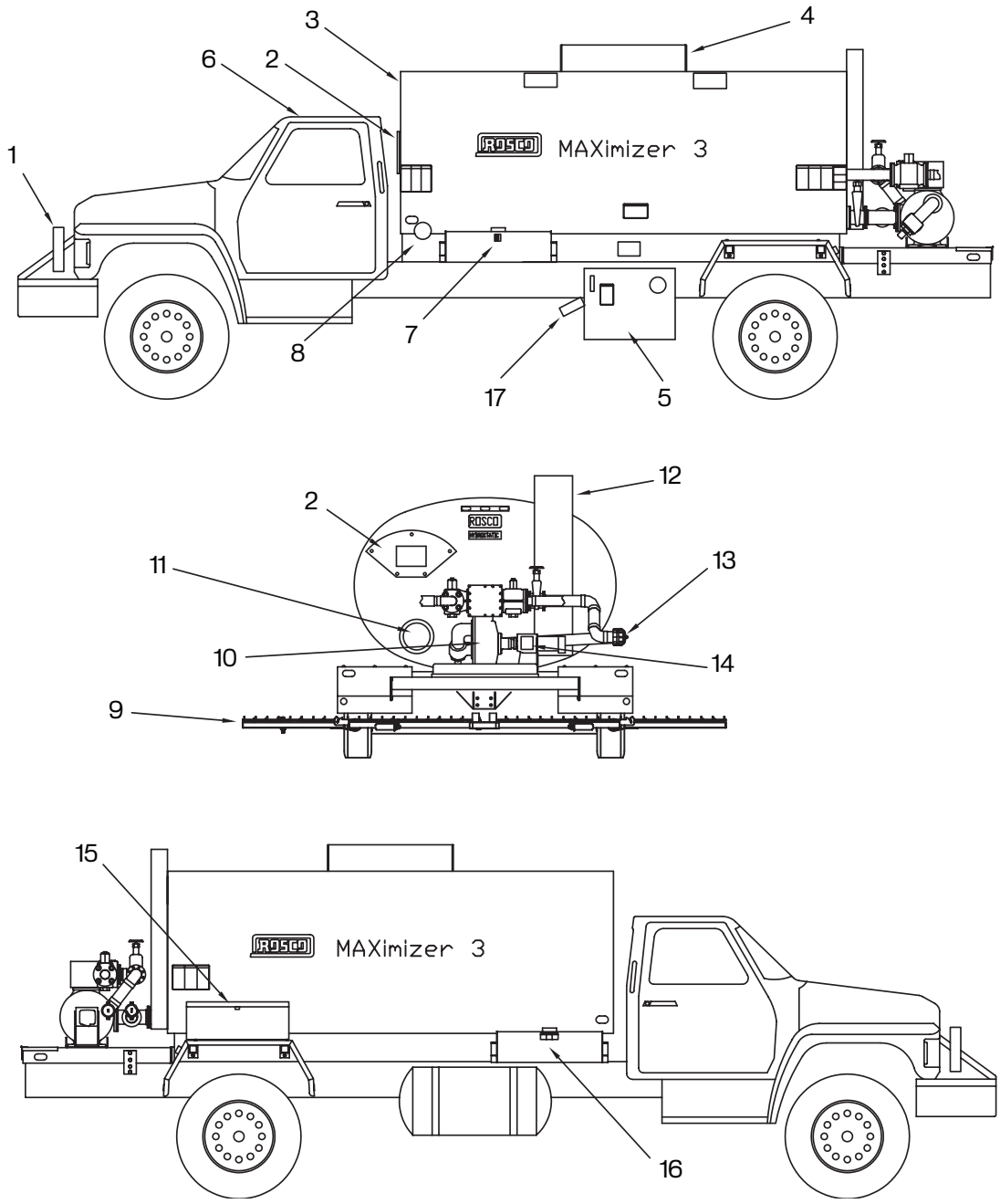
ROSCO

A LeeBoy Company

Section 5
COMPONENT LOCATION

	Page
Component Location	**5-1**
Outside Overview	5-2
Main In-Cab Control Box	5-6
Rear Controller	5-10
Run Screen	5-12
LPG Burner System	5-14

OUTSIDE OVERVIEW



Main Dash Panel

Figure 5-1

1 - Hydraulic Pump

2 - Tank Capacity Indicator

3 - Asphalt Tank

4 - Top Opening

5 - Hydraulic Tank

6 - GPS Speed Sensor

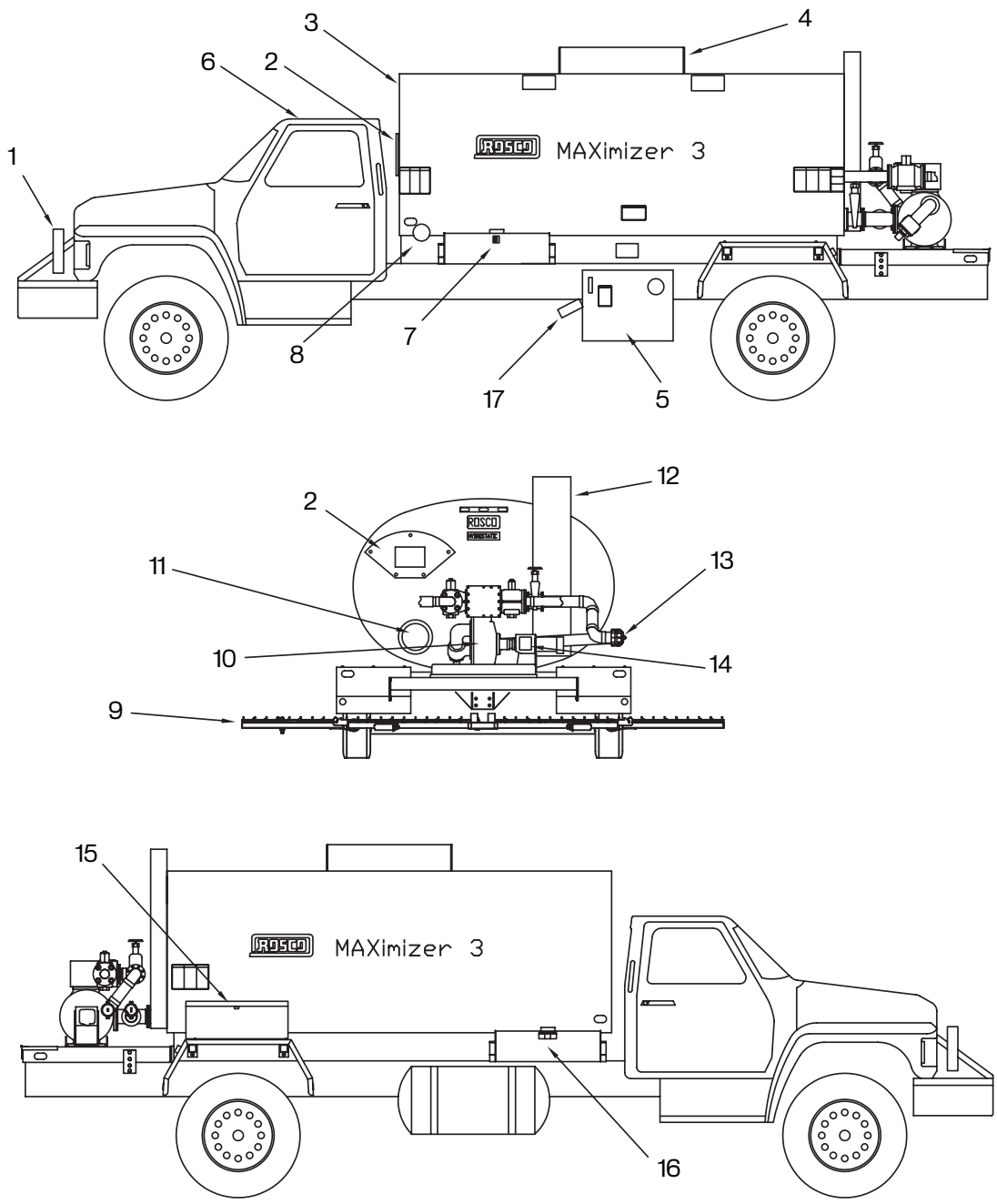
7 - Diesel Fuel Tank

8 - Thermometers

Table 5-1. Outside Overview

ITEM NO.	CONTROL NAME	FUNCTION
1	Hydraulic Pump	Mounted on the front of truck. It is a variable displacement pump that provides power to the hydraulic motor that turns the asphalt pump.
2	Tank Capacity Indicator	Located on the front and the rear of the tank. Measures the quantity of material in the tank.
3	Asphalt Tank	An insulated tank for holding the hot bituminous asphalt material
	Ladder	Provides access to top of tank and opening
4	Top Opening	Located at top of tank. Provides an opening for filling the tank. Has a dipstick for measuring tank quantity, a loading screen, overflow pipe, and tank vent.
5	Hydraulic Tank	Mounted on the left or right side of truck. Supplies hydraulic fluid to the hydrostatic system.
6	GPS Speed Sensor	Monitors the speed and distance traveled by the distributor and reports the information to the Plus One Controller in-cab. Mounted on truck cab roof.
7	Diesel Fuel Tank	Mounted on the left or right side of tank. Diesel fuel is used for the diesel burners (when equipped). Tank may contain diesel fuel or solvent for internal clean-out and external cleaning.
8	Thermometers	Located on the front, lower left side of the tank. Indicates the temperature of material in the tank. Pencil thermometer and dial thermometers are standard, with in-cab monitor of tank temperature displayed on Plus One Controller.

Outside Overview (Continued)



Main Dash Panel

Figure 5-1

9 - Spraybar

10 - Asphalt Pump

11 - Burner

12 - Exhaust Stack

13 - Load and Transfer Lines

14 - Hydraulic Motor

15 - Rear Controller and Tool Box

16 - Enviroflush Solvent Tank

17 - Radar Horn (option)

Table 5-1. Outside Overview (continued)

ITEM NO.	CONTROL NAME	FUNCTION
9	Spraybar	Located at the rear of the Maximizer 3B. Distributes material from the tank to road surface. The standard spraybar is extendable up to 4 feet on each side of the Distributor as an option.
	Hand Spray Wand	A hand held spray gun on the end of a hose that is used by the operator to cover surfaces not reached by the spraybar
10	Asphalt Pump	Used to load, unload, circulate, spray the asphalt, transfer, reverse suction and clean-out
11	Burner	Located at rear of Maximizer 3B. Used to heat the material in the tank.
12	Exhaust Stack	Directs the burner exhaust up the rear of the tank and away from the operating area
13	Load and Transfer Lines	Used to load and unload asphalt into or out of tank and to transfer asphalt from one tank to another container.
14	Hydraulic Motor	Located on right side of Asphalt Pump. It is a fixed displacement motor used to turn the Asphalt Pump.
15	Rear Controller and Tool Box	The Pump Speed knob adjusts pump speed and direction. The spraybar controls adjust the extension and lift of the spraybar. Located in rear tool box.
16	Enviroflush Solvent Tank	Tank holds and recycles the solvent used to clean out the spraybar. Located on right side of truck.
17	Radar Horn (option)	Monitors the speed and distance traveled by the distributor and reports the information to the Plus One Controller in-cab. Can be mounted on left or right side of truck frame.
	Load Hose (option)	The steel or rubber hose used to load or unload material
	Washdown (option)	Used to wash the machine with solvent or diesel fuel to keep it clean. A valve is located on the washdown wand. Open the valve when starting to wash the machine and close it when the washdown is complete. Use the button in the Rear Pump Control Box to turn on the pump. A buzzer will sound when the washdown pump is running. NOTE: System Power must be ON in order to provide power to the washdown pump.
	PTO Control (option)	PTO attached to the transmission provides power to the hydraulic pump which powers the Asphalt Pump and Spraybar.

MAIN IN-CAB CONTROL BOX



Main In-Cab Control Panel

Figure 5-2

1 - Master Control Switch

2 - Burner Control Switch

3 - Manual Pump Speed Control

4 - Spraybar Master

5 - 1 ft. Spray Nozzle Activation - Left Bar

6 - 1 ft. Spray Nozzle Activation - Right Bar

7 - Left Spraybar Extend / Retract

8 - Right Spraybar Extend / Retract

9 - Left 4 ft. Spray Nozzle Activation Switch

10 - Right 4 ft. Spray Nozzle Activation Switch

11 - Spraybar Raise / Lower Switch

12 - Soft Keys

13 - ESC Button

14 - OK Button

15 - Navigation Buttons (Left / Right)

16 - Navigation Buttons (Up / Down)

Table 5-2. Main In-Cab Control Panel

ITEM NO.	CONTROL NAME	FUNCTION
1	Master Control	Master On/Off switch for the control panel. The panel must be turned on before the distributor can operate.
2	Burner Control Switch	The master On/Off control for the burners. Burners will only operate if the distributor is travelling less than 5 mph and the burner temperature is less than the high temperature limit set point. NOTE: Burner Control switch is a momentary switch and will return to the OFF position automatically. Once the switch is pressed to the ON position, the Rear Burner Controls (Figure 6-7) will activate for a set period of time.
3	Manual Pump Speed Control	Controls the GPM and direction of the asphalt pump when the Auto/Manual operation mode is set to MANUAL and the Front/Rear Priority Pump Control is set to FRONT, (Figure 5-4,2,3).
4	Spraybar Master	This is the master control switch for all of the nozzles on the spraybar. When turned ON, all individual Spraybar Segments will spray asphalt unless the individual spraybar switches (Figure 5-2,5,6,9,10) are turned OFF or the individual valve actuators on the spraybar are mechanically disengaged. This switch has three positions: 1. BAR CRCLT (Up): Used in conjunction with the AUTO setting and the Mode Selection (Spray or Bar Circulate) to allow the controller to circulate asphalt in the bar. Flow rate is defined in the Flow Calibration screen during setup. 2. OFF (Center): Can be used to build pressure in the bar for starting or when spraying a heavy application. NOTE: If the switch is left in the OFF position, excessive pressure (70 psi) can build in the spraybar resulting it too much asphalt being applied at the start of the spray run. For the most positive results when starting to spray, leave the switch in the BAR CRCLT position before switching to ON. 3. SPRAY (Down): With all other settings as indicated for Spraybar Circulate, this is the normal operating position for spraying. The SPRAY position opens all spraybar valves that are mechanically engaged and activated.
5	1 ft. Spray Nozzle Activation - Left Bar	There are four 1 ft. spray nozzle activation switches on the control panel corresponding to the nozzles on the outside left 4 ft. of spraybar. These switches are positioned on the In-Cab Control Box in relationship to the 1 foot sections along that 4 ft. length of the spraybar. Once activated (switch down); the nozzles will spray asphalt when the Spraybar Master Switch (Figure 5-2,4) is moved to the SPRAY position.
6	1 ft. Spray Nozzle Activation - Right Bar	There are four 1 ft. spray nozzle activation switches on the control panel corresponding to the nozzles on the outside right 4 ft. of spraybar. These switches are positioned on the In-Cab Control Box in relationship to the 1 foot sections along that 4 ft. length of the spraybar. Once activated (switch down); the nozzles will spray asphalt when the Spraybar Master Switch (Figure 5-2,4) is moved to the SPRAY position.

Main In-Cab Control Panel (Continued)



Main In-Cab Control Panel

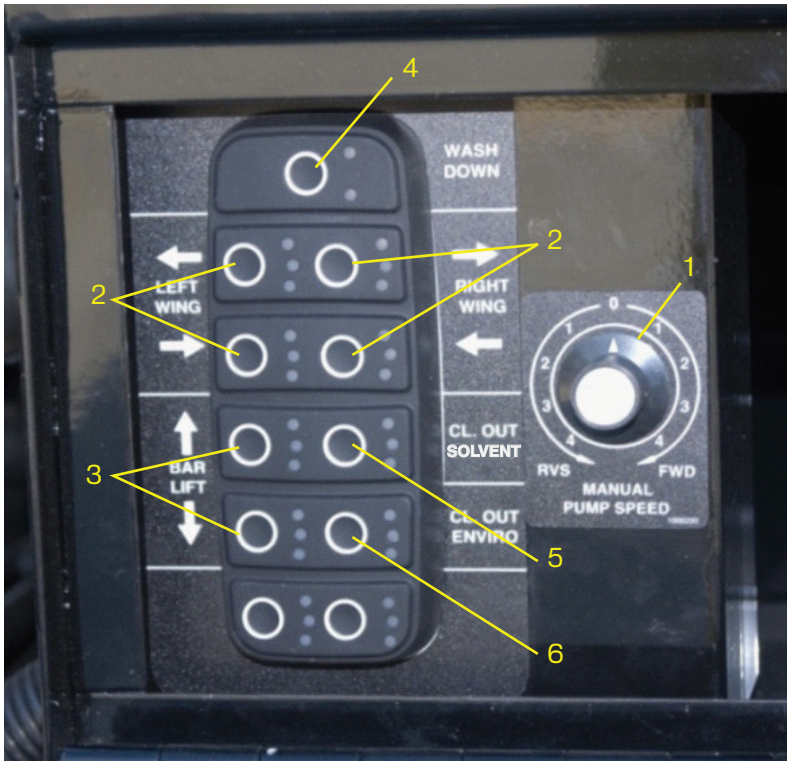
Figure 5-2

1 - Master Control
2 - Burner Control
3 - Manual Pump Speed Control
4 - Spraybar Master Switch
5 - 1 ft. Spray Nozzle Activation - Left Bar
6 - 1 ft. Spray Nozzle Activation - Right Bar
7 - Left Spraybar Extend / Retract
8 - Right Spraybar Extend / Retract
9 - Left 4 ft. Spray Nozzle Activation Switch
10 - Right 4 ft. Spray Nozzle Activation Switch
11 - Spraybar Raise / Lower Switch
12 - Soft Keys
13 - ESC Button
14 - OK Button
15 - Navigation Buttons (Left / Right)
16 - Navigation Buttons (Up / Down)

Table 5-2. Main In-Cab Control Panel *(continued)*

ITEM NO.	CONTROL NAME	FUNCTION
7	Left Spraybar Extend / Retract	This switch is a momentary switch which allows the operator to extend (switch left) and retract (switch right) the left spraybar assembly in 4 inch increments for the precise alignment of asphalt spray. The left spray bar assembly moves in the direction of the switch as the operator holds it in place. Once released the switch springs to the center position and spraybar movement stops at the nearest 4 inch increment.
8	Right Spraybar Extend / Retract	This switch is a momentary switch which allows the operator to extend (switch right) and retract (switch left) the right spraybar assembly in 4 inch increments for the precise alignment of asphalt spray. The spray bar assembly moves in the direction of the switch as the operator holds it in place. Once released the switch springs to the center position and spraybar movement stops at the nearest 4 inch increment.
9	Left 4 ft. Spray Nozzle Activation Switch	This switch corresponds to the 4 ft. section on the center left of the spraybar. Placing the switch in the down position activates the 12 spray valves for this 4 ft. section of spraybar. As the spraybar is extended, a mechanical finger engages the actuator of each valve to the open position. Placing the Spraybar Master Switch (Figure 5-2,4) in the SPRAY position then allows asphalt to spray from the activated nozzles.
10	Right 4 ft. Spray Nozzle Activation Switch	This switch corresponds to the 4 ft. section on the center right of the spraybar. Placing the switch in the down position activates the 12 spray valves for this 4 ft. section of spraybar. As the spraybar is extended, a mechanical finger engages the actuator of each valve to the open position. Placing the Spraybar Master Switch (Figure 5-2,4) in the SPRAY position then allows asphalt to spray from the activated nozzles.
11	Spraybar Raise / Lower Switch	This switch is a momentary switch which hydraulically moves the spraybar up (switch up) and down (switch down) to adjust spray height. Movement continues as long as the switch is held in position or until the limits of travel are reached. Once released the switch springs to the center position and spraybar movement stops.
12	Soft Keys	The color display on the In-Cab Controller is surrounded by 8 buttons labeled 1 thru 8. These buttons are soft keys meaning they function according to the labels next to them on the color display. The screen will indicate the function of each button depending on the screen displayed at the time.
13	ESC Button	Use this button to cancel a function or escape from a screen.
14	OK Button	Use this button to accept a change or to acknowledge a selection on the color display.
15	Navigation Buttons (Left / Right)	These buttons are used to navigate the curser in the color display. Pressing the LEFT button moves the curser or selection to the left. Pressing the RIGHT button moves the curser of selection to the right.
16	Navigation Buttons (Up / Down)	These buttons are used to navigate the curser in the color display. Pressing the UP button moves the curser or selection up. Pressing the DOWN button moves the curser or selection down.

REAR CONTROLLER



Rear Controller

Figure 5-3

1 - Manual Pump Speed Control Dial

2 - Spraybar Extend / Retract Buttons

3 - Spraybar Lift/Lower Button

4 - Washdown Button (option)

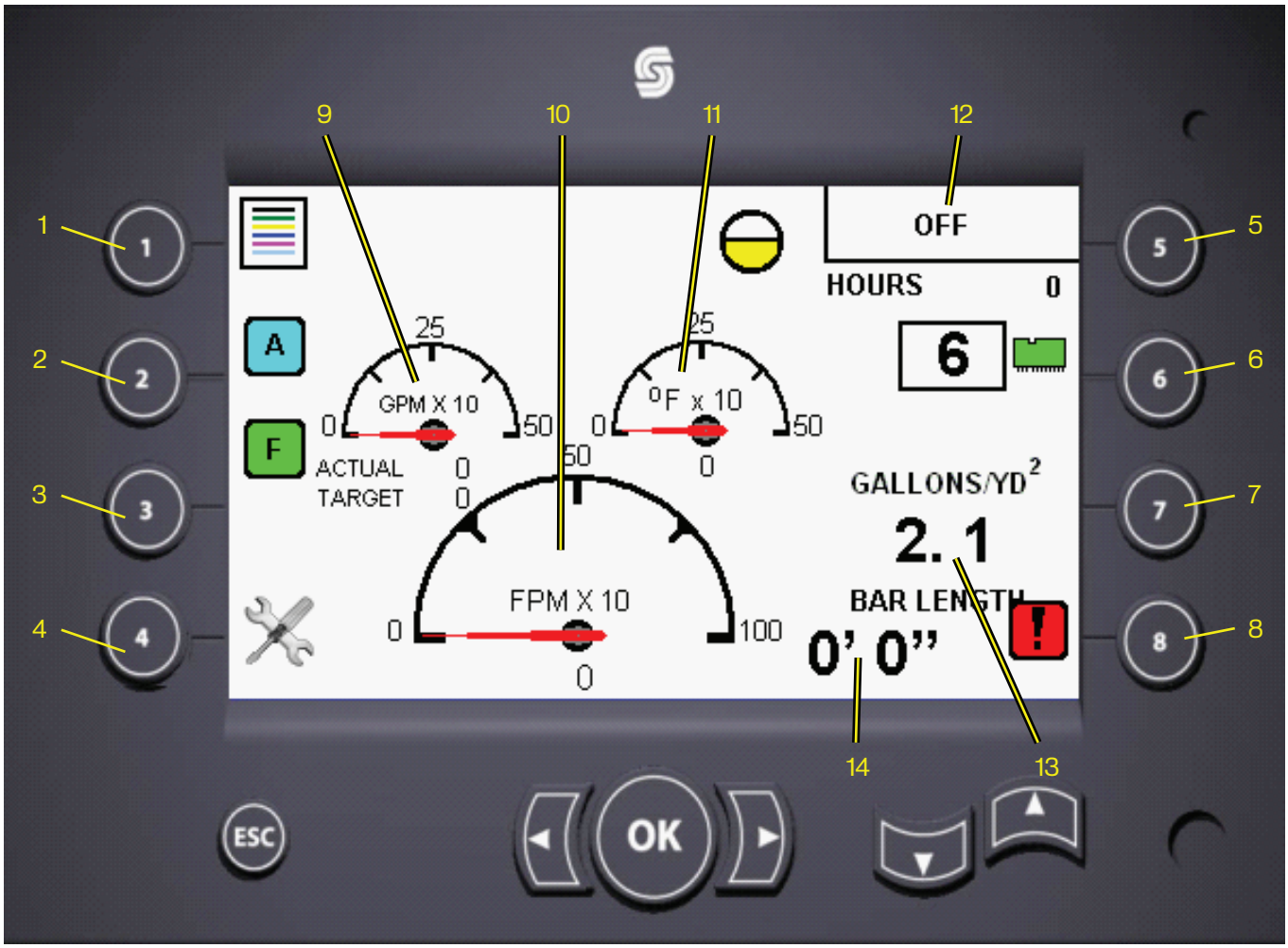
5 - Clean-out Solvent / Diesel Button

6 - Clean-out Enviroflush Button

Table 5-3. Rear Controller

ITEM NO.	CONTROL NAME	FUNCTION
1	Manual Pump Speed Control Dial	This dial controls and adjusts the GPM generated by the Asphalt Pump. The larger the number on the dial, the faster the pump will turn. Turning the dial clockwise adjusts the pump speed in the forward direction. Turning the dial counterclockwise adjusts the pump speed in the reverse direction. Always return the dial to the zero (0) position to cancel pump movement. The REAR Control Priority on the in-cab controller must be set for this control to be active.
2	Spraybar Extend / Retract Buttons	Right and Left Spraybar Extend/Retract - This button is a momentary button which allows the operator to extend and retract the spraybar assembly in 4 inch increments for the precise alignment of asphalt spray. The spray bar assembly moves as long as the operator depresses and holds this button. Once released the spraybar movement stops at the nearest 4 inch increment unless the limits of travel have been reached.
3	Spraybar Lift / Lower Button	Raises or lowers the spraybar height as long as the button is depressed or until the limits of travel are reached.
4	Washdown Button (option)	Activates the washdown system and buzzer. The buzzer sounds when pump is ON.
5	Clean-out Solvent / Diesel Button	Initiates automated clean-out cycle using the contents of the SOLVENT / DIESEL TANK as a cleaning media.
6	Clean-out Enviroflush Button	Initiates automated clean-out cycle using the contents of the ENVIROFLUSH TANK as a cleaning media.

RUN SCREEN



Run Screen

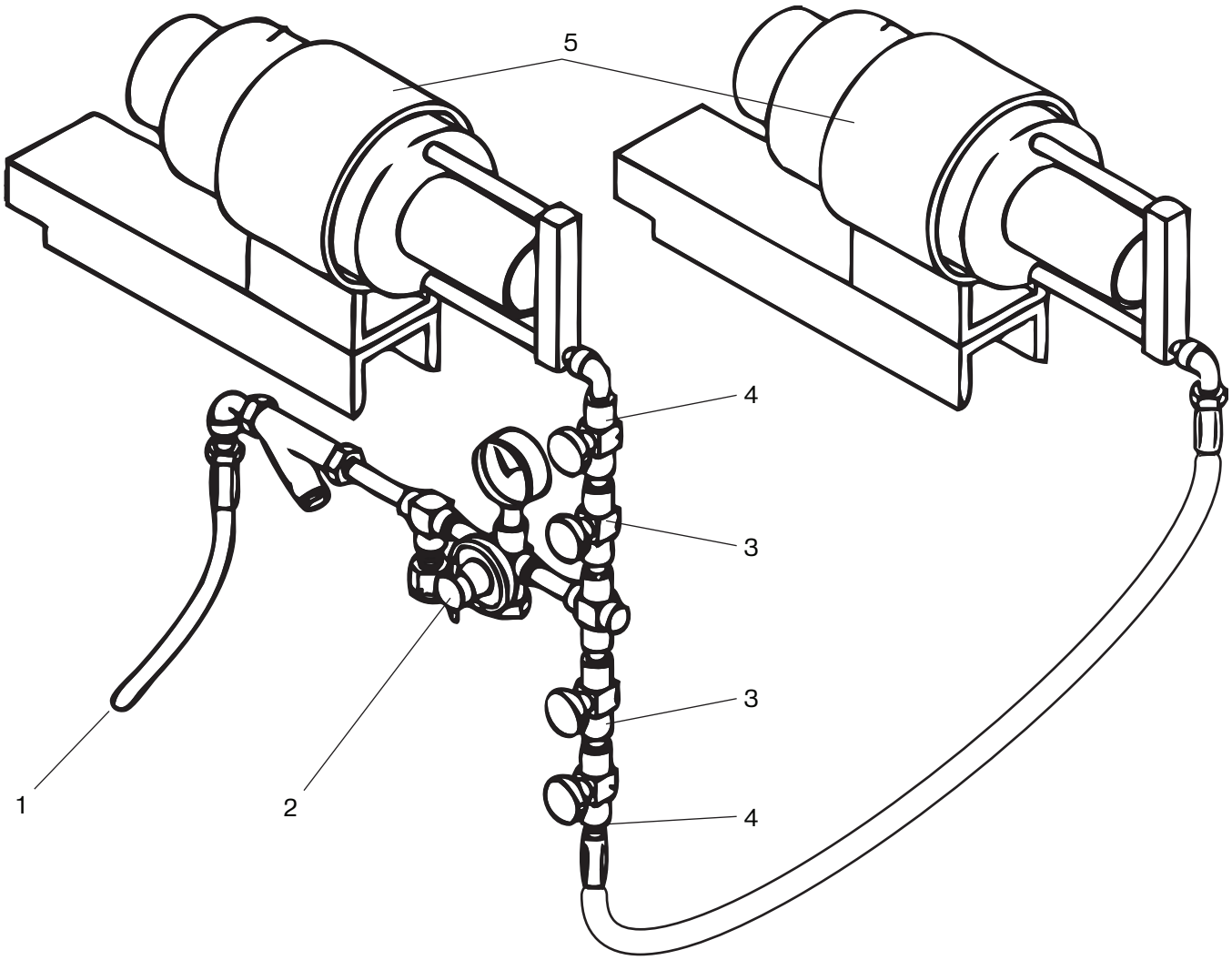
Figure 5-4

1 - Mode Selection Screen
2 - AUTO / MANUAL Selection Mode
3 - REAR / FRONT Control Priority Selection
4 - Setup Parameters
5 - Inactive Button
6 - Memory Presets (1 of 12)
7 - Application Rate (gal / sq. yd.)
8 - Error Fault Screen
9 - Flow Rate Dial (gpm)
10 - Distributor Speed Dial (fpm)
11 - Asphalt Tank Temperature (°F)
12 - Current Mode Indicator
13 - Application Rate (gal / sq. yd.)
14 - Bar Length (ft.-in.)

Table 5-4. Run Screen

ITEM NO.	CONTROL NAME	FUNCTION
1	Mode Selection Screen	Calls up the Mode Selection Screen to select and set 1 of 8 modes of distributor operation (see ***Modes Of Operation*** in Section 6).
2	AUTO / MANUAL Selection	Distributor control mode selection. The operator has the ability to operate in AUTO or MANUAL mode. If the operator selects a mode of operation other than SPRAY/BAR CIRCULATE or Clean-out, the control system defaults to the MANUAL mode. The valves on the rear Pump Platform function per mode (see Table 6-4. Valve Status During Operational Modes) with the operator responsible for adjusting the asphalt pump direction and speed in MANUAL mode. The display indicates the flow rate on the Run Screen as a feedback for the operator. The speed and direction of the pump are set by either the speed pot in the cab or on the Rear Fender Control depending on the Pump Control Priority selection (Figure 5-4,3). If the operator selects AUTO mode then the rear valves operate as shown in Table 6-4. Valve Status During Operational Modes. In AUTO mode the speed of the pump is controlled by a PID rhythm based on the set Application Rate, Vehicle Speed, and Spraybar Width. When switched to MANUAL (button 2 of the Run Screen) mode, the Manual Pump Speed pot controls the asphalt pump speed and direction. MANUAL mode of operation must be selected when the distributor is operating in any of the following operating modes: CLEAN-OUT, REVERSE SUCTION, UNLOAD, HANDSPRAY, TRANSFER, LOAD, TANK CIRCULATE, SPRAY MANUAL, BAR CIRCULATE (MANUAL) When set to AUTO (button 2 of the Run Screen), the Plus One controls the asphalt pump speed during SPRAY or BAR CIRCULATE (BAR CRCLT) functions only.
3	REAR / FRONT Control Priority Selection	Defines either in-cab or rear fender control of the spraybar hydraulic functions and asphalt pump speed/direction.
4	Setup Parameters	Define operating parameters.
5	Inactive Button	Not used - Button 5 is inactive
6	Memory (1 of 12)	Pre defined distributor application rates stored in memory.
7	Application Rate	Set the application rate (gal/sq.yd.).
8	Error Fault Screen	Used for help troubleshooting the distributor when an error occurs. Used as a diagnostic tool if a problem or breakdown should occur.
9	Flow Rate Dial (gpm)	Real time measurement of asphalt moving through the asphalt pump.
10	Distributor Speed Dial (fpm)	Real time measurement of distributor ground speed.
11	Asphalt Tank Temperature (°F)	Real time measurement of asphalt temperature in the tank.
12	Current Mode Indicator	Current Distributor Operating Mode.
13	Application Rate (gal/sq.yd.)	Display of set application rate.
14	Bar Length (ft.-in.)	Real time display showing the spraybar length from 8'0" to 16'0" in 4" increments.

LPG BURNER SYSTEM



LPG Burner System

Figure 5-5

1 - To Tank Valve (Not Shown)

2 - Regulator

3 - Shut-off Valve

4 - Pilot Light Valve

5 - Solenoid (Not Shown)

Table 5-5. LPG Burner System

ITEM NO.	CONTROL NAME	FUNCTION
1	To Tank Valve (Not Shown)	Controls the flow of the fuel from the tank. Turn counterclockwise to open and clockwise to close. Activated by burner control switch on the in-cab controller (Figure 5-2,2).
2	Regulator	The regulator is used to set the pressure. Turn clockwise (CW) to increase and set the pressure. Turn counterclockwise (CCW) to reduce the pressure. Always set the pressure at 10 to 20 PSI for operation.
3	Shut-Off Valve	Controls the flow of fuel to the burner. Turn counterclockwise to open the valve to provide gas to the burner. Turn clockwise to close the valve and extinguish the burner.
4	Pilot Light Valve (on manual ignition only)	Controls the operation of the burner pilot light. Turn clockwise to close the valve when lighting the pilot light. Turn counterclockwise to allow full flow after the burners are ignited.
5	Solenoid: (Not Shown)	Shuts off fuel to burners when high temperature is reached

NOTES

ROSCO

A LeeBoy Company

Section 6
OPERATION

	Page
Operation	**6-1**
Operator Safety Considerations	6-3
Regeneration	6-3
Machine Break-In	6-4
Before Starting	6-4
After 2 Hours Of Operation	6-4
After 8 & 20 Hours Of Operation	6-4
Pre-Operating Check List	6-4
Visual Inspection	6-4
Service And Maintenance	6-4
Spraybar Inspection	6-4
Functional Check	6-5
Hydraulic Circuit	6-5
Hydrostatic Circuit	6-5
Automatic Valve System	6-6
Asphalt Spraybar	6-7
Preventing Spraybar Failure	6-8
Valves And Nozzles	6-9
Adjustment	6-9
Nozzle Selection	6-10
Burners & Torch Operation	6-10
Diesel Burners	6-10
Portable LPG Torch	6-15
Plus One Controller	6-16
Distributor Operation	6-16
In-Cab Controller Screens	6-17

Flow/Distance Calibration 6-19
Plus One Controller Error Messages 6-20
Electro Motive Radiation Interference 6-20
Modes Of Operation 6-21
Load Mode 6-21
Tank Circulate Mode 6-25
Spray / Bar Circulate Mode (Bar Circulate) 6-27
Spray / Bar Circulate Mode (Spray) 6-29
Handspraying 6-31
Handspray / Unload Mode 6-33
Handspray Mode (Spray / Bar Circulate) 6-35
Reverse Suction Mode 6-37
Automated Clean-out Mode 6-39
Clean-out Mode 6-43
Transfer Mode 6-45
Unloading Mode 6-47
Washdown 6-48
Combating Poor Visibility 6-48
Manual Operation 6-49
Calculations 6-49
Run Simulation Example 6-50
Trial Run 6-51

OPERATOR SAFETY CONSIDERATIONS

Asphalt Distributor Operators

The most IMPORTANT safety device on this equipment is a well trained and safe operator. It is his/her responsibility to read and understand all safety and operating instructions in this manual. A person who has not read and understood all operating and safety instructions is not qualified to operate the Maximizer 3B. An untrained operator exposes himself/herself and bystanders to possible serious injury or death. All accidents can be avoided!

Operation shall be limited to persons with the following minimum qualifications:

1. Designated persons selected or assigned by the employer or the employer's representative as being qualified to operate the Asphalt Distributor.
2. Trainees under the direct supervision of a designated person.
3. Maintenance and test personnel (when it is necessary in the performance of their duties).

No one other than the personnel specified above shall operate the Asphalt Distributor with the exception of persons such as oilers, supervisors and those specified persons authorized by supervisors whose duties require them to do so, and then only in the performance of their duties and with the knowledge of the operator or other appointed person.

Qualifications For Operators

1. Operators shall be required by the employer to pass a practical operating examination. All operators must meet state licensing requirements including but not limited to a commercial driver's license (CDL) and a hazardous material handling license.
2. Demonstrate the ability to comprehend and interpret all labels, operator manuals, safety codes and other information pertinent to correct Asphalt Distributor operation.
3. Possess knowledge of emergency procedures and the ability to implement them.
4. Be familiar with applicable safety regulations.
5. Understand responsibility for maintenance requirements of the Asphalt Distributor (see ***Maintenance*** in Section 7).
6. Be thoroughly familiar with the Asphalt Distributor and its control functions.
7. Understand the operating procedures as outlined by the manufacturer.

Conduct of Operators

YOU are responsible for the safe operation and maintenance of your Rosco Maximizer 3B Asphalt Distributor. You must ensure that you and anyone else who is going to operate, maintain or work around the machine, be familiar with the operating and maintenance procedures and all related safety information contained in this manual.

- The operator shall not engage in any practice which will divert his/her attention while actually engaged in operating the Asphalt Distributor
- Each operator shall be responsible for those operations under the operator's direct control. Whenever there is any doubt as to safety, the operator shall consult with the supervisor.
- The operator should not leave the Asphalt Distributor when asphalt material is being loaded, unloaded, transferred or heated by the distributor's burner system.
- If there is a warning sign on a switch, engine control or distributor component, the operator shall not close the switch, start the engine or use the component until the warning sign has been acknowledged and corrected by the appropriate person.
- Before operating the Asphalt Distributor, the operator shall see that all controls are in the OFF or neutral position and that all personnel are in the clear.
- In accordance with OSHA regulations 1928.51 and 1928.52, operating instructions must be provided initially to operators/employees before allowing them to operate the Maximizer 3B and should be reviewed annually thereafter.

Regeneration

NOTICE **Collected soot particles in the Diesel Particulate Filter (PDF) are automatically burned off through normal regeneration. If conditions for normal regeneration cannot be achieved, it may be necessary to perform a Parked Regeneration as indicated by the cluster warning indicators. Failure to perform a Parked Regeneration when exhaust filter indicator is ON will cause the engine to lose power and eventually shutdown. Refer to Truck manufactures manual.**

MACHINE BREAK-IN

Although there are no operational restrictions on the Maximizer 3B when used for the first time, it is recommended that the following mechanical items be checked:

Before Starting

1. Read the Maximizer 3B Operator's Manual and all Safety Decals.
2. Read the truck manufacturer's manual before starting. Review and follow truck break-in instructions.
3. Tighten the tank tie-down hardware.

After 2 Hours Of Operation

1. Tighten all wheel bolts (see ***Torque Specs*** in Section 4).
2. Tighten all fasteners and tank tie-down hardware as required (see ***Torque Specs*** in Section 4).
3. Lubricate asphalt pump bearings with Rosco hi-temperature grease. (#33384)
4. Check all fluid levels.
5. Perform truck break-in checks.
6. Check that no hydraulic lines are pinched or crimped.

After 8 & 20 Hours Of Operation

1. Repeat all steps described above for 2-Hour check.
2. Complete the maintenance check lists, (see ***Maintenance Intervals Chart*** in Section 7).

PRE-OPERATING CHECK LIST

It is important for both personal safety and for the efficient operation of the Maximizer 3B that this check list be followed. Before operating the Distributor for the first time and each time thereafter, the following areas should be checked:

Visual Inspection

1. Check the tightness of the tank tie-down hardware (see ***Mounting Hardware*** in Section 7) and tighten as required (see ***Torque Specs*** in Section 4).
2. Check for loose fasteners and hardware on the machine and spraybar. Tighten as required.
3. Check for any loose components. Tighten, secure or adjust as required.
4. Check the condition of all hydraulic lines, air lines, couplers, fittings, connections and asphalt supply lines. Reroute, repair or replace any parts that are loose or damaged.

Service And Maintenance

1. Perform all truck service checks specified in the truck manufacturer's manual.
2. Lubricate the asphalt pump bearings and circulating system valves using Rosco hi-temperature grease. (#33384)
3. Check all fluid levels: Hydraulic Tank, Solvent Tank and Burner Fuel Tank. Fill or add as required.
4. Check for leaks. Repair before starting.

Spraybar Inspection

1. Check for loose fasteners and hardware on the machine and spraybar. Tighten as required, (see ***Torque Specs*** in Section 4).
2. Check the condition of all hydraulic lines, asphalt lines, couplers, fittings and connections. Reroute, adjust, repair or replace any parts that are loose or damaged.
3. Check the angle of the spraybar valves using the Valve Alignment Wrench supplied with the machine. Valves set at the wrong angle will not open completely or will leak.
4. Check the angle of each nozzle using the Nozzle Alignment Wrench supplied with the machine. Be sure that they are all set at the same angle.

FUNCTIONAL CHECK

Before starting the day's work, perform a functional check on each system and major component to insure that each is functioning properly. Use two people - one person in the truck cab to run the engine and Maximizer 3B controls, and one person at the appropriate check point.

⚠CAUTION Keep safety in mind and make sure that personnel, vehicles, and property are clear of the distributor during the functional check.

Hydraulic Circuit

The Maximizer 3B is equipped with electric solenoids that control the hydraulic circuit. The solenoids are located inside the rear platform.

1. Start the truck engine and run at low idle.
2. Turn the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).

NOTE: If equipped with PTO driven hydrostatic pump, follow steps 3 and 4. If not, go to step 5.

3. Engage the PTO clutch.

Manual Transmission: Set parking brake. Depress clutch pedal, place transmission in neutral, engage PTO clutch and release clutch pedal. The hydraulic and hydrostatic systems should now be functioning.

Automatic Transmission: Set the parking brake. Apply vehicle brakes, and place the transmission in neutral. Engage the PTO. The hydrostatic systems should now be functioning.

⚠CAUTION It may be necessary to let the truck creep forward slightly to allow the clutch to engage. Be sure that all personnel are clear of the vehicle.

4. Press the Spraybar Lift switch (**Figure 5-2,11**) UP to raise the spraybar to its highest position.
5. Press the Spraybar Lift switch (**Figure 5-2,11**) DOWN and verify that the spraybar moves to its down position.
6. Press the Left Bar Extend/Retract switch to the left and verify that the spraybar extends fully to the left.
7. Press the Right Bar Extend/Retract switch to the right and verify that the spraybar extends fully to the right.

Hydrostatic Circuit

It may be necessary to run the engine at 1500 RPM to provide sufficient oil flow to the hydrostatic circuit to operate the asphalt pump.

NOTICE Do not run the asphalt pump for more than 15 minutes with no material in the system. Seal damage could occur.

NOTE: If the machine is equipped with a PTO system, perform all functional checks after the PTO has been engaged and is running.

1. Start the truck engine and run at low idle.
2. Turn the Plus One Controller Master switch ON (**Figure 5-2,1**) to activate the system. Set the Auto/Manual switch to MANUAL, (**Figure 5-2**)
3. Be sure the Mode Selection is set to OFF (**Figure 6-1**).



Mode Selection Screen

Figure 6-1

4. Set the Front/Rear control (**Figure 5-4,3**) to the FRONT position. Turn the Manual Pump Speed dial clockwise and verify that the asphalt pump rotates in the clockwise direction as viewed from the right side of the machine. Turn the Manual Pump Speed dial to the center position (0 on the dial), to stop the pump.
5. Rotate the Front Manual Pump Speed dial (**Figure 5-2,3**) counterclockwise and verify that the asphalt pump rotates in the counterclockwise direction as viewed from the right side of the unit. Return the Manual Pump Speed dial to the center position (0 on the dial), to stop the pump.

6. Set the Front/Rear control to the REAR position. Use the Manual Pump Speed dial (**Figure 5-3,1**) on the Rear Controller to operate the hydrostatic motor and asphalt pump in the forward and reverse directions. The center position, (0 on the dial), will stop the pump. Visually verify that the pump turns in both directions.

NOTE: There is no material in the tank so be careful not to operate pump for more than 15 minutes.

Automatic Valve System

A functional check of the automatic valve system will verify that the air actuators and cylinders are operating properly. Review the plumbing circuit and familiarize yourself with the valve locations.

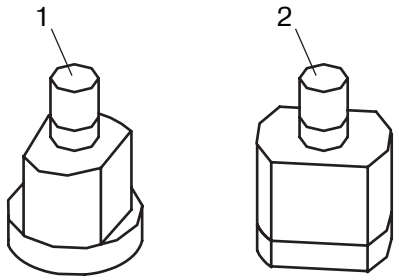
1. Set the engine speed at 1500 RPM to provide adequate power to the air system.
2. Push Mode Selection Button 1 - Spray Bar Circulate (**Figure 6-1**). Have a person at the back of the Maximizer verify that the circuit valves move into position.

Tank Valve

The Tank Valve has two positions, open or closed. Refer to Modes Of Operation, later in this section for further diagrams.

2-Way Valve

The 2-Way Valve also has two positions, open or closed. You can tell which position is being used by the position of the directional stem on top of the valve. **Figure 6-2** shows the positions as viewed from the rear of the unit.



2-Way Valve Positions

Figure 6-2

1 - Closed Position

2 - Open Position

3-Way Valve

The 3-Way Valve has three positions depending on the mode selected. The positions can be determined by looking at the corner welds on the socket below the assembly, (**Figure 6-3**).

Position 1: Shown in **Figure 6-3**. Used in four modes:

Off

Spray

Reverse Suction

Clean-out

Position 2: The bottom actuator will move and the socket will move to the shown position. Used in three modes:

Bar Circulate

Transfer

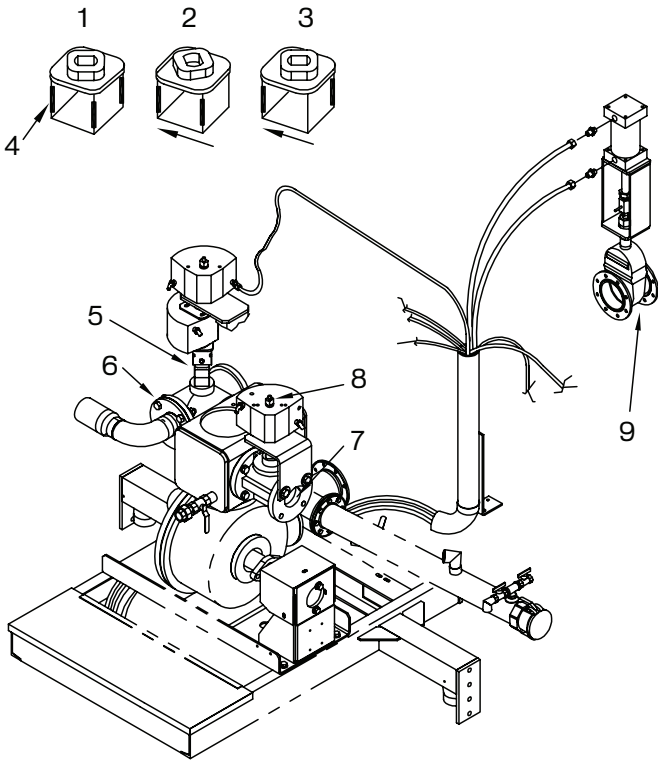
Unload

Position 3: To achieve this position the top actuator moves. Used in two modes:

Load

Tank Circulate

3. Continue to set the Mode of Operation through each setting and verify that each valve moves into position (see ***Valve Status During Operational Modes*** in Section 6).



3-Way Valve And Valve Positions

Figure 6-3

1 - Position 1

2 - Position 2

3 - Position 3

4 - Indicator Welds

5 - Socket w/ Direction Indicator Welds

6 - 3-Way Valve

7 - 2-Way Valve

8 - Directional Indicator

9 - Tank Valve

ASPHALT SPRAYBAR

This component of the Distributor is considered the most important component. It is through the spraybar that the asphalt will be applied to the road surface. For best results, use the right size nozzle and proper spraybar height for your type and grade of asphalt and specific application rate. Before starting a job, check the nozzles for damage and proper settings.

Spray Pattern

1. Set the long axis of the nozzle openings to 20 degrees (**Figure 6-4)** so that the spray fans do not interfere with each other. This setting will give the best coverage without interference with the spray pattern.
2. Check the angle using the Nozzle Alignment Wrench provided with your unit (see ***Valves And Nozzles*** in Section 6).

Spraybar Height

NOTE: Although there is rarely a difference in fan patterns as the truck load lightens, if you notice a change in the pattern, you may need to readjust the height of the bar.

1. Set the spraybar height to provide exact triple coverage of the spray fans **(Figure 6-5)**. Usually this coverage is found when the bar is set 9 to 11 inches (23 to 28 cm) above the ground.

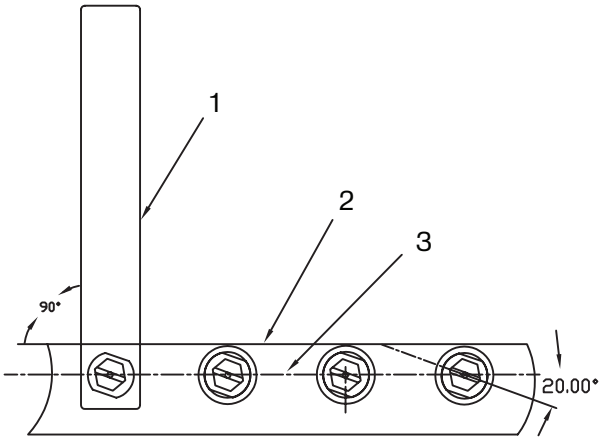
NOTE: Different weights of material require slightly different heights. Generally, lighter weight materials should be sprayed at closer to the 9 inch height, while heavier weight material will need to be sprayed at a height closer to the 11 inch height.

2. To set the height, measure from the bottom of the nozzle to the ground, since the nozzle extends below the bar. The operator will have to try spraying to see which height gives the best coverage.

NOTE: Be sure the spraybar height is set properly to obtain a uniform asphalt spread. It is also important to maintain the correct height during the spraying procedure.

3. Once the best spraybar height has been determined, set the support chains by locking into the slot so there is no more than 13 mm (1/2 inch) variance during the spraying operation.

4. Mark the link of the chain that gives the proper height for a job so there is no need to recount the chain links each day. If the bar is improperly set, streaking or wind distortion of the spray fans may occur.



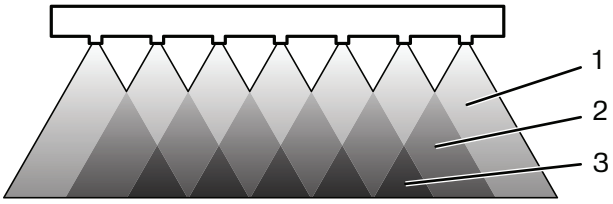
Setting Nozzle Openings

Figure 6-4

1 - Nozzle Wrench

2 - Rear of Spraybar

3 - Spraybar Axis



Spray Fan Coverage

Figure 6-5

1 - Single Coverage

2 - Double Coverage

3 - Triple Coverage

Preventing Spraybar Failure

It is very important to keep the spraybar cylinder rods free of asphalt build-up. Build-up on these rods may be pulled into the cylinder and cause premature failure of the cylinders.

Some asphalt materials may build up faster than others. Therefore, check the cylinder rods frequently. It may be necessary to clean the cylinder rods several times a day. The rods must be cleaned at the end of each day. See **Washdown**, later in this section, for recommended solvents.

⚠WARNING Fire Hazard! Never spray cleaning solvent or release agent on or near a heating element that is hot or being heated or on or near any open flame or source of ignition. Do not operate Burner System during cleaning! Cleaning solvent and release agent could ignite causing serious personal injury.

NOTICE When using spray down, consider the environment and do not allow cleaning solvent to run onto the ground.

⚠WARNING DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.

VALVES AND NOZZLES

Adjustment

1. To adjust the nozzles, lay the Nozzle Alignment Wrench over a single nozzle and turn the wrench until the nozzle wrench is at a 90° angle with the rear of the spraybar. This will give the nozzle the proper 20° angle for spraying without interference with the other nozzles (**Figure 6-4**).

NOTICE **Do not overtighten nozzles. Constant overtightening will cause the threads inside the valve to wear, requiring replacement of the outer body of the valve.**

2. For spraybar valve assemblies controlled by the 1 foot control switches, align the components as follows, (**Figure 6-6**):

   a. Position the valve on the top of each cylinder so that the nut on the valve is facing the return air line.

   b. Line up the lower air port on the cylinder body with the “tee” in the air line.

3. For spraybar valve assemblies activated by extensions, align the components as follows, (**Figure 6-6**):

   a. Position the end of the valve without the nut towards the inside end of the bar and parallel to the bar.

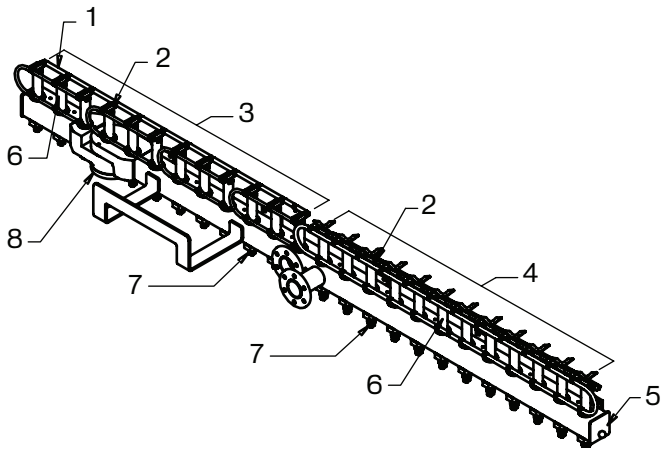
   b. Line up the lower air port on the cylinder body with the “tee” in the air line.

NOTICE **When changing or repairing a spraybar valve assembly, be sure that all reinstalled components are aligned properly.**

NOTE: The valve on top of each cylinder must be placed in the proper direction for correct function of the spray system.

NOTICE **Always check the function of the valve after servicing and before starting a job. Be sure there is a proper connection and no leakage.**

For a further breakdown of the spraybar valve assembly, (see ***Illustrated Parts List (IPL)*** in Section 10).



Left Spraybar in Retracted Position

Figure 6-6

1 - Return Air Line

2 - Valve

3 - Valves activate w/ 1 ft Control Switch

4 - Valves activate as bar extends

5 - Inside End

6 - Cylinder Body

7 - Nozzle

8 - Breakaway Pivot

Nozzle Selection

The correct nozzle selection depends on:

1. the application rate setting
2. the truck speed
3. the type of material being sprayed.

The standard Rosco nozzle size is a NO. 1. However, other factors will determine efficiency and the quality of the spray pattern. Exceeding nozzle maximum flow rate may cause fogging and inconsistent application rates. Using a nozzle that is too large will cause a poor spray pattern, (**Table 6-1. Nozzle Size to Flow Rate** and **Table 6-2. Nozzle Size to Application Rate**).

The recommended nozzle angle is 20° and is set to that specification at the factory. After changing nozzles, or when adjustments need to be made, use the Nozzle Alignment Wrench and the Valve Alignment Wrench for accurate positioning. Tools are provided with each unit, (**Figure 6-4**).

NOTE: For additional information about nozzle selection and adjustment, see applicable troubleshooting topics (see ***Maintenance*** in Section 7).

Table 6-1. Nozzle Size to Flow Rate

NOZZLE SIZE	RECOMM-ENDED FLOW - GPM	APPLICATION RATE - GAL / SQ. YD.	ROSCO PN
00	1.2	.03 - .08	35565
0	3.0	.05 - .20	32917
1	4.0	.10 - .30	32918
1.5	6.0	.15 - .40	36299
2	8.5	.25 - .55	32919
3	13.5	.35 - 1.00	32920

Table 6-2. Nozzle Size to Application Rate

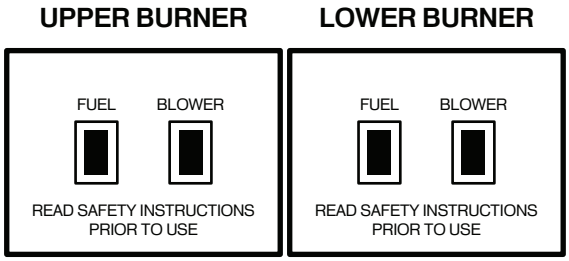
NOZZLE SIZE	APPLICATION RATE (GPM)
00	Extremely Light (1.5)
0	Light (4.0)
1	General (5.0)
1.5	Intermediate w/ certain emulsions (6.0)
2	Heavy (10.0)
3	Extra Heavy (15.0)

BURNERS & TORCH OPERATION

Diesel Burners

Control switches for the electronic ignited diesel burners are mounted on the left rear fender, (**Figure 6-7**).

1. Fuel Switch: Activates burner fuel solenoid and ignites burner. Turn off to extinguish burner.
2. Blower Switch: Activates blower and fuel pump. Burner will ignite if fuel switch is on.



Fender Diesel Burner Switches

Figure 6-7

Diesel Burner Ignition

NOTICE **Before heating asphalt material, refer to Systems Overview, Burner System, earlier in this section for further information and precautions.**

NOTICE **Run the burners for short periods of time (15 minutes ON, 15 minutes OFF) to allow the heat to dissipate through the material. This will prevent damage to the flue liner.**

NOTE: If your unit is equipped with dual diesel burners you will have separate controls for each burner, (**Figure 6-7**). This allows the operator to run one or both of the burners to heat the material. Light the upper burner using the same steps as with the lower burner.

1. Be sure the unit is sitting on a level area.

DANGER **Do not put your head in the tank. Serious injury or death could result from breathing poisonous fumes.**

2. With a flash light, look into the tank from the top and check that there is no visible water or condensation in the tank. If there is, drain the tank to an approved container before lighting the burner. Dispose of material and water according to local, state and federal regulations.

⚠ DANGER DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.

⚠ DANGER Hot material will turn water into steam and can cause an explosion.

3. Be sure that flue tubes are covered by at least 8 inches of material. Read the tank dipstick. If the amount in the tank is less than the recommended amount in **Table 6-3. Tank Contents Chart to Ensure Flue Tube Coverage**, do not use the burners. Using the burners without enough material in the tank will cause damage to the flue tubes and could cause an explosion.

⚠ DANGER Never operate the burners if the flue tubes are not covered with at least 8" of material. The flue tubes can become red hot and ignite the vapors causing an explosion.

4. Start and run the engine at 1000 to 1200 RPM, engage PTO (if equipped). This provides power to the asphalt pump.
5. Do not load, unload, transport or spray while burners are operating.
6. Turn the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).
7. Set the Plus One Controller to the required temperature for the material being used, (**Figure 6-11**).
8. Push the Mode Selection Button 2 - Tank Circulate (**Figure 6-1**), (see ***Tank Circulate Mode*** in Section 6).

⚠ WARNING Operating the burners without circulating the product can create explosive fumes. If the product can not be circulated after 15 minutes of heating, the fuel to the burners must be turned off, while leaving the blowers running (15 minutes ON, 15 minutes OFF). Do not try to heat material again for 30 minutes.

9. Set asphalt pump to the forward position at a flow of 75 - 100 GPM.
10. Turn the fuel and blower switches on the fender controls OFF.

NOTE: Burner Control switch is a momentary switch and will return to the OFF position. An icon will display on the screen when the Burner Control switch has enabled the burner system controls.

11. Turn the Burner Control switch ON.
12. Turn lower burner blower switch on the fender controls ON. Wait 1 to 2 minutes to purge residual gas fumes from system before proceeding.
13. Turn lower burner fuel switch on the fender controls to the ON position.

NOTE: The burner should light. If it does not start immediately, shut OFF fuel, run blower to clear fuel from flue and retry in 1 to 2 minutes.

⚠ CAUTION If the fuel is not cleared from the flue, the fuel may backfire through the burner when the operator tries to relight it. The operator could get burned.

6

Table 6-3. Tank Contents Chart to Ensure Flue Tube Coverage

TANK SIZE		AMOUNT W/ ONE FLUE		AMOUNT W/ TWO FLUES	
GALLONS	LITERS	GALLONS	LITERS	GALLONS	LITERS
1000 - 1100	3785 - 4164	500	1893	700	2650
1250 - 1350	4732 - 5110	600	2271	900	3407
1500 - 1600	5678 - 6057	650	2461	1000	3785
1750 - 1850 (10 ft Tank)	6625 - 7003 (3 m Tank)	650	2461	1000	3785
1750 - 1850 (14 ft Tank)	6625 - 7003 (4 m Tank)	750	2839	1150	4353
1950 - 2000	7382 - 7571	750	2839	1150	4353
2500 - 2600	9464 - 9842	900	3407	1450	5489
3000 - 3100	11,356 - 11,375	1000	3785	1600	6057
3500 - 3600	13,249 - 13,627	1000	3785	1600	6057
4000 - 4100	15,142 - 15,520	1150	4353	1800	6814

High Temperature Limit Control

NOTE: This feature is designed as a safety feature only. It is not to be used for thermostatic control.

This feature causes the burners to automatically shut off when the high temperature limit is reached, (**Figure 6-11**).

NOTE: Burner Control switch is a momentary switch and will return to the OFF position. An icon will display on the screen when the Burner Control switch has enabled the burner system controls.

Until the material cools to less than the set temperature, the burners will not relight. This feature helps to prevent overheating the material.

⚠CAUTION **DO NOT leave the unit unattended while heating material. Monitor the Controller display temperature, as well as the dial or pencil thermometer, to insure that all equipment is functioning properly and that the material does not heat beyond the required spraying temperature,** (see ***Guideline Temperatures For Liquid Asphalts*** in Section 4).

Diesel Burner Extinguishing

1. Turn fuel switch on the fender controls OFF.
2. Wait 3 to 5 minutes to allow the blower to cool the flue and the burner. Turn blower switch on the fender controls OFF.
3. Wait 5 minutes before relighting burners.

LPG Burner Manual Ignition

Before operating the propane burner system become familiar with the position, function and operation of each control in the system, (**Figure 5-5**, **Figure 6-8**).

NOTICE **Before heating asphalt material with all applicable systems and safety precautions, (see *General Information* in Section 4) .**

NOTICE **Run the burners for short periods of time (15 minutes ON, 15 minutes OFF) to allow the heat to dissipate through the material. This will prevent damage to the flue liner.**

1. Be sure the unit is sitting on a level area.
2. With a flash light, look into the tank from the top and check that there is no water or condensation in the bottom of the tank. If there is, drain the tank to an approved container before heating. Dispose of material and water according to local, state and federal regulations.

⚠DANGER **Do not put your head in the tank. Serious injury or death could result from breathing poisonous fumes.**

⚠DANGER **DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.**

⚠DANGER **Hot material will turn water into steam and can cause an explosion.**

3. Be sure that flue tubes are covered by at least 8 inches of material. Read the tank dipstick. If the amount in the tank is less than the recommended amount in **Table 6-3. Tank Contents Chart to Ensure Flue Tube Coverage**, do not use the burners. Using the burners without enough material in the tank will cause damage to the flue tubes and could cause an explosion.

⚠DANGER **Never operate the burners if the flue tubes are not covered with at least 8” of material. The flue tubes can become red hot and ignite the vapors causing an explosion.**

4. Do not load, unload, transport or spray while burners are operating.

5. Start and run the engine at 1000 to 1200 RPM. Engage PTO (if equipped). This provides power to the asphalt pump.
6. Set the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).
7. Set the Plus One Controller to required temperature for the material being used, (**Figure 6-11**).
8. Push Plus One Controller Mode Selection control to Tank Circulate Mode (**Figure 6-1**), (see ***Tank Circulate Mode*** in Section 6).

⚠WARNING **Operating the burners without circulating the product in the tank can create explosive fumes. If the product can not be circulated after 15 minutes of heating, the fuel to the burners must be turned off, while leaving the blowers running (15 minutes ON, 15 minutes OFF). Do not try to heat material again for 30 minutes.**

9. Set the asphalt pump to the forward position at a flow of 75 - 100 GPM.
10. Close pilot valves and shut-off valves.

NOTE: Burner Control switch is a momentary switch and will return to the OFF position. An icon will display on the screen when the Burner Control switch has enabled the burner system controls.

11. Turn Plus One Burner Control switch ON.
12. Open the LPG tank valve to start the flow of propane.
13. Open the shut-off valve to the lower burner a little to allow a small amount of fuel to flow to the burner.

⚠CAUTION **To prevent injury, use a wick type torch to light pilot flame and burner. DO NOT use a match or lighter.**

14. Light the pilot light on the lower burner using a wick type torch.
15. When the pilot flame is lit, open the shut-off valve completely. The pilot valve contains an orifice that will allow sufficient fuel through to maintain the pilot light.
16. Open the pilot valve to supply fuel to operate the burner.
17. Repeat procedure for the upper burner.
18. Use the regulator to set the fuel pressure at 10 to 20 PSI.

High Temperature Limit Control

NOTE: This feature is designed as a safety feature only. It is not to be used for thermostatic control.

This feature causes the burners to automatically shut off when the high temperature limit is reached, (**Figure 6-11**). The burners will not restart until the Burner Control switch on the Plus One Controller is shut OFF to reset the control. However, until the material cools to less than the set temperature limit, the burners will not relight. This feature helps to prevent overheating the material.

NOTE: Burner Control switch is a momentary switch and will return to the OFF position. An icon will display on the screen when the Burner Control switch has enabled the burner system controls.

⚠CAUTION **DO NOT leave the unit unattended while heating material. Monitor the Controller display temperature, as well as the dial or pencil thermometer, to insure that all equipment is functioning properly and that the material does not heat beyond the required spraying temperature,** (see ***Guideline Temperatures For Liquid Asphalts*** in Section 4).

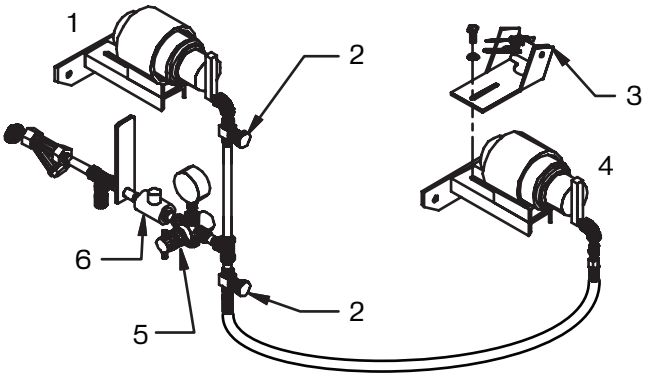
LPG Burner Manual Extinguishing

1. Close the tank valve and allow the fuel to flow to the burners until they go out.
2. Close the pilot and shut-off valves in the lines.
3. Wait 5 minutes before relighting to insure there are no fumes in the flue.

LPG Burner Auto Ignition

NOTICE **Before heating asphalt material, refer to Systems Overview, Burner System, earlier in this section for further information and precautions.**

NOTICE **Run the burners for short periods of time (15 minutes ON, 15 minutes OFF) to allow the heat to dissipate through the material. This will prevent damage to the flue liner.**



LPG Burner System (Auto Ignition)

Figure 6-8

1 - Upper Burner (Double Flue)

2 - Shut-off Valve

3 - Igniter

4 - Lower Burner (Double Flue)

5 - Regulator

6 - Solenoid

1. Be sure the unit is sitting on a level area.
2. With a flash light, look into the tank from the top and check that there is no water or condensation in the bottom of the tank. If there is, drain the tank to an approved container before heating. Dispose of material and water according to local, state and federal regulations.

⚠ DANGER **Do not put your head in the tank. Serious injury or death could result from breathing poisonous fumes.**

⚠ DANGER **DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.**

⚠ DANGER **Hot material will turn water into steam and can cause an explosion.**

⚠ DANGER **Never operate the burners if the flue tubes are not covered with at least 8" of material. The flue tubes can become red hot and ignite the vapors causing an explosion.**

3. Be sure that flue tubes are covered by at least 8 inches of material. Read the tank dipstick. If the amount in the tank is less than the recommended amount in **Table 6-3. Tank Contents Chart to Ensure Flue Tube Coverage**, do not use the burners.
4. Do not load, unload, transport or spray while burners are operating.
5. Start and run engine at 1000 to 1200 RPM, engage PTO (if equipped). This provides power to the asphalt pump.
6. Turn the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).
7. Set Plus One Controller Mode Selector switch to TANK CRCLT, (see ***Tank Circulate Mode*** in Section 6).

⚠ WARNING **Operating the burners without circulating the product can create explosive fumes. If the product can not be circulated after 15 minutes of heating, the fuel to the burners must be turned OFF, leaving the blowers running. Do not try to heat material again for 30 minutes.**

8. Set asphalt pump to the forward position at a flow of 75 - 100 GPM.
9. Verify burner switch in rear control box is OFF.
10. Set the Plus One Controller to the required temperature for the material being used, (**Figure 6-11**).
11. Set Plus One Burner Control switch ON.

NOTE: Burner Control switch is a momentary switch and will return to the OFF position. An icon will display on the screen when the Burner Control switch has enabled the burner system controls.

12. Open the LPG tank valve to start the flow of propane.
13. Partially open lower burner shut off valve for starting.
14. Turn ON burner switch in rear control box. Burner should light within 10 seconds. If not, turn switch OFF to reset and retry.
15. After burners light, fully open lower burner valve.

16. Open valve for upper burner if equipped.
17. Burners should be operating. If not, turn off valves and do not light until problem is fixed, (see ***Troubleshooting*** in Section 8).

High Temperature Limit Control

NOTE: This feature is designed as a safety feature only. It is not to be used for thermostatic control.

This feature causes the burners to automatically shut off when the high temperature limit is reached, (**Figure 6-11**). The burners will not restart until the Burner Control switch on the Plus One Controller is shut OFF and then turned back on to reset the control. However, until the material cools to less than the temperature limit setting, the burners will not relight. This feature helps to prevent overheating the material.

NOTE: Burner Control switch is a momentary switch and will return to the OFF position. An icon will display on the screen when the Burner Control switch has enabled the burner system controls.

⚠CAUTION **DO NOT leave the unit unattended while heating material. Monitor the Controller display temperature, as well as the dial or pencil thermometer, to insure that all equipment is functioning properly and that the material does not heat beyond the required spraying temperature,** (see ***Guideline Temperatures For Liquid Asphalts*** in Section 4).

LPG Burner Auto Extinguishing

1. Close the tank valve and allow the fuel to flow to the burners until they go out.
2. Close the pilot and shut-off valves in LPG lines.
3. Turn OFF burner switch in rear control box.

NOTE: Burner Control switch (**Figure 5-2,2**) is a momentary switch and will return to the OFF position. An icon will display on the screen when the Burner Control switch has enabled the burner system controls.

4. Wait 5 minutes before relighting to ensure there are no fumes in the flue.

Portable LPG Torch

A portable LPG torch may be supplied on the Maximizer 3B as an option. If the unit is equipped with LPG burners for tank heating, the portable torch is plumbed into the unit's LPG burner regulator. If the unit is equipped with diesel fired burners, the portable torch will have its own LPG tank and regulator.

⚠DANGER **Use extreme caution when operating a portable torch, either independently of the Maximizer 3B or as an integral part of the Maximizer 3B burner fuel system. Read and be familiar with the torch operating instructions. Any external flame is extremely hazardous around the Maximizer 3B and can cause fire and explosion. Follow all of the safety precautions provided for burner operation in this manual.**

Portable LPG Torch Ignition

1. Open valve on LPG tank. If torch has separate regulator, set regulator for no more than 15 PSI.
2. Open the shut-off valve on the torch with the pilot valve closed. When the pilot valve is closed, the orifice will allow enough LPG flow to light the torch.
3. To prevent injury, use a wick-type torch to light the portable torch. Do not use a match or lighter.

⚠DANGER **Using a portable torch is extremely hazardous. Use a sweeping motion when using the torch. Do not direct the flame on one point for an extended period of time. Fire and explosion will occur.**

4. Open pilot valve on torch to allow enough flow for torch operation.

Portable LPG Torch Extinguishing

1. Close pilot valve to shut down flame.
2. Close tank valve and allow the fuel to flow to the burners until they go out.
3. After pilot flame goes out, close shut-off valve and store torch.

Table 6-4. Valve Status During Operational Modes

OPERATIONAL MODE	TANK VALVE	2-WAY VALVE	3-WAY TOP	3-WAY BOTTOM	PUMP DIRECTION
Off	0	0	0	0	Fwd or Rev
Clean-out	0	0	0	0	Fwd or Rev
Reverse Suction	1	1	0	0	Reverse
Hand Spray / Unload	1	0	1	0	Forward
Transfer	0	0	1	0	Forward
Load	0	0	1	1	Forward
Tank Circulate	1	0	1	1	Forward
Spray / Bar Circulate (OFF)	1	1	0	0	Forward
Spray / Bar Circulate (Bar Circulate)	1	1	1	0	Forward
Spray / Bar Circulate (Spray Circulate)	1	1	0	0	Forward
0 - Solenoid OFF 1 - Solenoid ENERGIZED					

PLUS ONE CONTROLLER

The following instructions are used to set your application rate and calibration factors with the Plus One Controller (see ***Main In-Cab Control Box*** in Section 5). Review the job specifications to determine the application rate required. Start the truck and turn on the Master control switch. The display will show “Read The Operator’s Manual Before Using Machine”. After a few seconds the display will automatically change to the first operating screen.

Distributor Operation

On startup the control system defaults to OFF mode for safety reasons. The operator chooses the operational mode from the Mode Selection Screen (**Figure 6-10**).

Table 6-4. Valve Status During Operational Modes represents the status of each valve and the corresponding pump direction according to the operational mode selected.

NOTE: All spray bar functions have the capability of being activated in the OFF mode or SPRAY/BAR CIRCULATE mode. Individual one foot section valves are active in SPRAY and REVERSE SUCTION.

NOTE: Right & Left Outside Exhaust solenoids are active every time the “SPRAY” position on the spraybar switch is turned on. The Right Outside 1 foot thru 4 foot solenoids, the Left Outside 1 foot thru 4 foot solenoids and the Right Inside and Left Inside 4 foot control solenoids are active when the spraybar switch is set to “SPRAY” and when the individual 1 foot spraybar switches are turned on.

NOTE: When the Front/Rear priority switch is in the “FRONT” position, the rear hydraulic controls can still be operated. The “REAR” mode allows control priority to be set using the rear pump speed pot only.

The distributor operates in one of two modes; AUTO or MANUAL. In MANUAL mode; the asphalt valves function as shown in **Table 6-4. Valve Status During Operational Modes** with the operator having total control of the distributor.

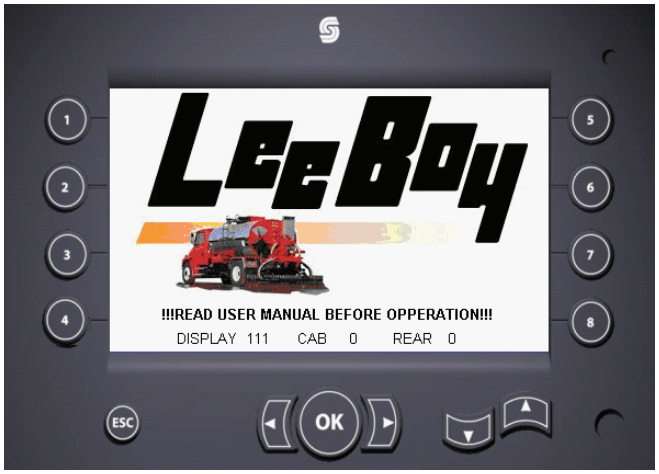
The operator assumes the responsibility of adjusting the asphalt pump direction and speed in coordination with the vehicle speed and the spraybar width.

In MANUAL mode with front control priority the direction and speed of the asphalt pump is set by a speed pot in the cab. The asphalt pump speed pot on the right side rear fender control is inactive. In MANUAL mode with rear control priority, the asphalt pump speed pot on the right side rear fender is active and the in-cab speed pot is inactive. Manual speed adjustments of the asphalt pump are made at the right side rear fender speed pot. The RUN SCREEN display indicates the flow rate as a feedback for the operator. In MANUAL mode no automatic rate control applies.

In AUTO mode the spray rate is automatically held constant regardless of changes in vehicle speed or spraybar width. The rear valves operate per the selected mode shown in **Table 6-4. Valve Status During Operational Modes** and the speed of the asphalt pump is controlled by a PID rhythm based on the set Application Rate, Vehicle Speed, and Spraybar Width.

The operator can increase or decrease the application rate via a setting on the run screen or the previously stored application rate can be recalled from one of twelve memory locations. Application rate settings range from 0.01-4.50 gallons/yd2.

In-Cab Controller Screens



Welcome Screen

Figure 6-9

Welcome Screen

On power up the in-cab controller displays the Leeboy logo on the Welcome Screen and displays the instruction !!!READ USER MANUAL BEFORE OPERATION !!! There are many safety issues covered in the User Manual that the operator must be aware of before operating the distributor.

Run Screen

After a short period of time the Run Screen is displayed. The Run Screen is the normal display during distributor operations and provides machine status, graphics, and selection options (see ***Run Screen*** in Section 5).

NOTE: Use the Plus One in the AUTO mode only while spraying asphalt through the spraybar and during BAR CIRCULATE function.

NOTICE **All other functions such as Clean-out, REVERSE SUCTION, HANDSPRAY/UNLOAD, TRANSFER, LOAD, and TANK CIRCULATE must be performed in the MANUAL mode of operation.**

Mode Selection Screen

The Mode Selection Screen displays the current mode of operation selected and a graphical display showing the status of the four main asphalt tank valves, (**Figure 6-10**).

- Tank Valve position
- 2Way Valve position
- 3Way Top Valve position
- 3Way Bottom Valve position



Mode Selection Screen

Figure 6-10

The eight modes of operation available through the Mode Selection Screen are (see ***Modes Of Operation*** in Section 6):

SPRAYBAR CIRCULATE (Button 1 of the Mode Selection Screen)

This mode circulates the hot asphalt through the spraybar. It is used to heat the spraybar and nozzles in preparation for spraying.

TANK CIRCULATE - HAND SPRAY (Button 2 of the Mode Selection Screen)

Runs the Maximizer 3B in TANK CRCLT in order to mix and distribute the material in the tank and to minimize the loss of heat from the plumbing. This mode of operation is used to heat and transport material.

LOAD (Button 3 of the Mode Selection Screen)

This mode of operation is used to fill the distributor with material. Fill the tank no more than 80% to 90% full to allow for material expansion.

TRANSFER (Button 4 of the Mode Selection Screen)

The distributor can be used as a pumping station without placing material in the tank. The TRANSFER mode of operation is used to transfer emulsified asphalt from one location to another.

UNLOAD - HAND SPRAY (Button 5 of the Mode Selection Screen)

Use this mode of operation to remove excess material from the tank or to hand spray using the spray wand.

REVERSE SUCTION (Button 6 of the Mode Selection Screen)

REVERSE SUCTION mode of operation removes material from the spray bar. It should always be used to remove material from the spray bars and other piping at the end of the work day before the spray material has a chance to cool and thicken. REVERSE SUCTION mode should always precede the AUTOMATED Clean-out mode of operation.

AUTOMATED CLEAN OUT (Button 7 of the Mode Selection Screen)

This function automatically starts a cycle to circulate solvent through the asphalt pump, valves, and plumbing as a means of cleaning. This is a timed process once started. Used solvent is placed in the enviroflush tank.

OFF (Button 8 of the Mode Selection Screen)

OFF mode of operation is the startup condition of the Maximizer. The asphalt tank valve is closed and a pathway is opened between the asphalt pump and the spraybar.

Bar Width

Bar width is determined by monitoring the switch positions on the main control panel. There is a linkage on each spray valve that makes it possible for the operator to mechanically disengage or engage the valve linkage from each valve. The operator can manually turn off spray nozzles every 4” along the length of the spraybar in this manner.

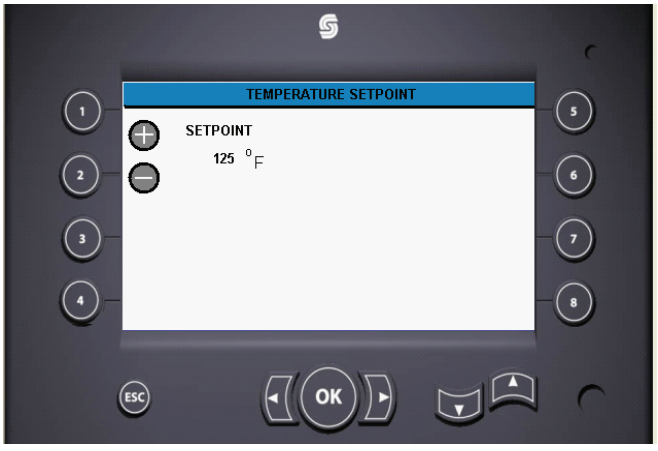
The Maximizer 3B Asphalt Distributor has a variable bar width. The operator can extend or retract the right , the left, or both halves of the spraybar. An algorithm is used to limit the movement of the bar in 4” increments.

If the operator toggles the Extend or Retract Switch one time the bar moves 4”. If the operator holds the Extend or Retract Switch the bar moves until the switch is released or until the limits of travel are reached. The bar locates the closest 4” increment of travel once the switch is released.

The outside left and right spray bar sections (ranging from 4 feet to 8 feet per side) are controlled in one foot sections with three spray valves per foot. The inside left and right 4 foot center sections are controlled in 4 foot sections with three spray valves per foot.

Burner

The control system enables a relay that allows the burner to be ignited. If the temperature should exceed the high temperature set point in the controller; a relay will turn off the burner, (**Figure 6-11**). The burner will also turn off if the distributor ground speed exceeds 5 MPH.



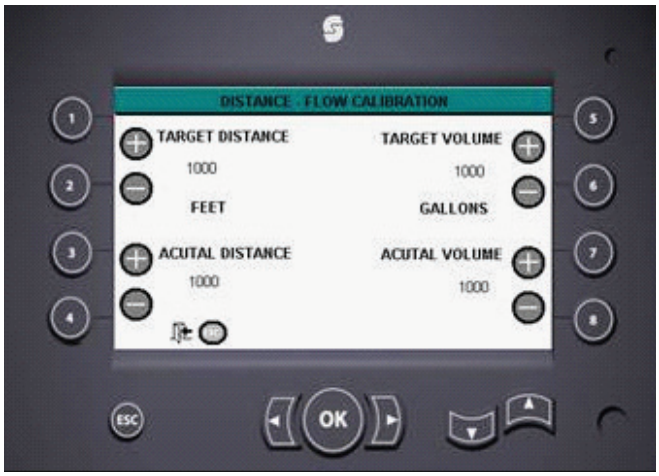
Temperature Set Point Screen

Figure 6-11

Rear Fender Controls

Rear controls are located in the right hand side rear fender tool box and are used to control asphalt pump speed, asphalt pump direction, spraybar hydraulic functions and the optional washdown pump. Rear control priority must be set to use asphalt pump (see ***Rear Controller*** in Section 5).

Flow/Distance Calibration



Distance / Flow Calibration

Figure 6-12

Flow Calibration

Flow calibration compares a programmed volume of material to be applied with the actual volume of material used and then compensates for the difference. This procedure is done to assure accurate application of material.

From the setup menu the operator can select flow calibration. Clear the gallons total and then enter auto spray mode to spray an amount of asphalt. Dip the tank with the measuring stick before and after spraying to determine how much material was sprayed. Entering the actual amount of asphalt used will calibrate the control system.

Distance Calibration

Distance calibration makes sure the distributor accurately measures the distance travelled. Similar to flow calibration it compares a known distance with the actual distance travelled and compensates for any difference. Select Distance Calibration from the setup menu. Clear the totals and drive a known distance. Complete Distance Calibration by entering the actual distance travelled.

Bar Calibration

Select bar calibration from the main menu of the In-Cab Controller. The screen will prompt to retract the bar to be calibrated. Once the bar is retracted the screen will give the opportunity to reset the calibration values.

Extend the bar until the screen indicates that the calibration is complete. If the SPRAYBAR CALIBRATION SCREEN indicates that the calibration is out of range, the Bar Sensor must be repaired.



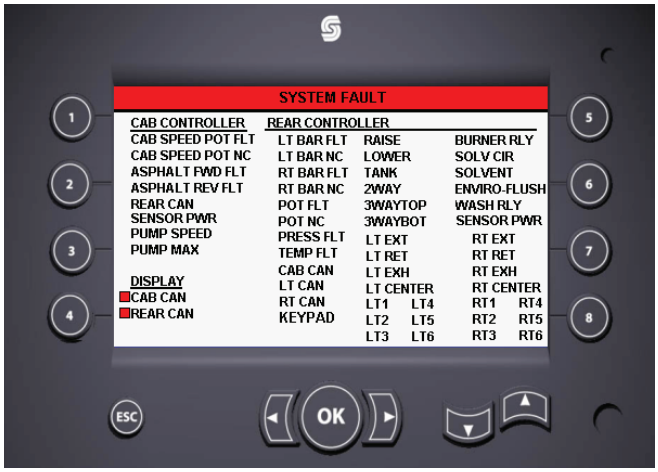
Spraybar Calibration

Figure 6-13

6

Plus One Controller Error Messages

If the Plus One Controller malfunctions, it will display an error message informing the operator that there is a problem. If this occurs, do not try to repair the controller on-site. Call your authorized Rosco Dealer or a Rosco Factory Representative for assistance.



System Fault Screen

Figure 6-14

Electro Motive Radiation Interference

High Electro Motive Radiation (EMR) produced by citizen band radios and other sources can interfere with the function of the Plus One Controller. EMR causes stray voltages to be induced in the signals to and from the computer. As a result, the machine could unespectedly speed up and/or the application rate could suddenly change.

NOTICE **If EMR is present, the machine should be tested at a remote site to insure that there are no abrupt movements or extreme levels of application.**

Possible solutions for problems caused by EMR include:

1. Remove the source of the radiation.
2. Move the source of the radiation away from the computer area.
3. Shield the computer and/or the wiring (particularly the power lead going to the computer) in metal enclosures.

MODES OF OPERATION

The remainder of this section will explain the different modes of operation for the Maximizer 3B Asphalt Distributor. Each function is explained in detail and includes safety concerns that the operator must be aware of when operating the unit.

With each mode, there are illustrations to show the correct mode control selections and the path of travel of asphalt flow in the system. The flow illustration shows the proper orientation of the valves throughout the system. The illustrations may also be used to help troubleshoot the unit if a certain mode does not operate properly.

When operating the unit for the first time, be sure to read each mode section carefully before operating in that mode. Keep this book handy for reference during each mode of operation. If you are unsure how to perform a function with the unit, reread the instruction or seek the help of trained, experienced personnel.

Load Mode

Bottom Tank Loading

1. Review and follow the Pre-Operating Check List earlier in this section before starting.
2. Be sure the unit is sitting on a level area.

⚠ DANGER Do not put your head in the tank. Serious injury or death could result from breathing poisonous fumes.

3. With a flashlight, look into the tank from the top and check for water or condensation in the bottom of the tank. If necessary, drain the tank contents into an approved container before loading. Dispose of material and water according to local, state and federal regulation.

⚠ DANGER DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.

⚠ DANGER Hot material will turn water into steam and can cause an explosion.

⚠ DANGER Check that the material being loaded is compatible with the previously used asphalt, (see *Material Considerations* in Section 4). Some asphalt material can be vaporized by high temperature materials and can explode. If material is not compatible, clean out the tank.

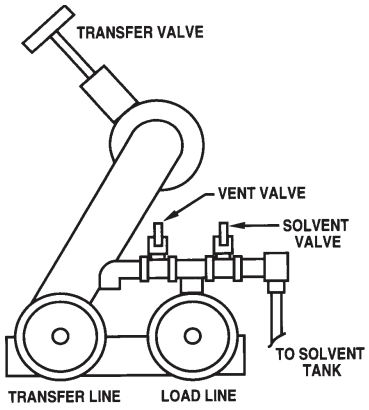
⚠ WARNING Fumes from asphalt materials can be poisonous. When using the top opening, the operator should stand up-wind and to one side to avoid hot gases, fumes or being struck by a cover or hot asphalt spray.

4. Move the Maximizer 3B to the storage tank or transfer vehicle.

⚠ DANGER Never operate burner equipment when the vehicle is being loaded or in transit. The flue tubes can become exposed, causing an explosion inside the tank, or material being sprayed could ignite.

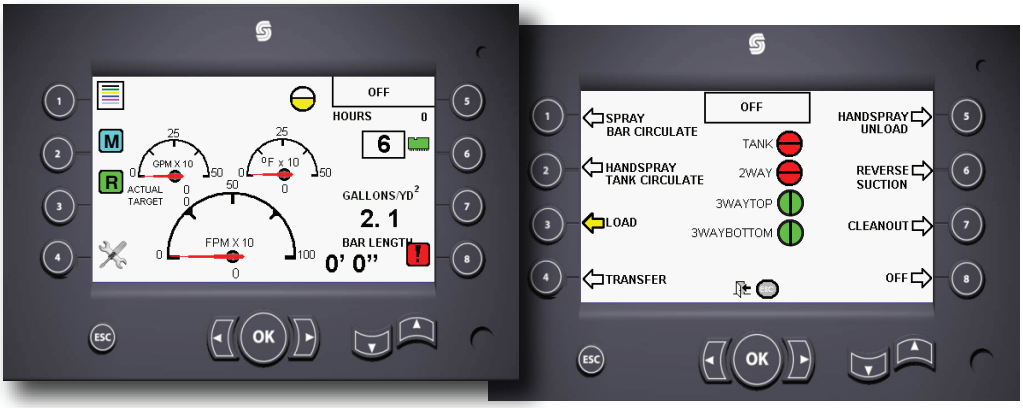
⚠ CAUTION Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

5. Turn the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).
6. Set the Plus One Controller Auto/Manual selection to MANUAL.
7. Set the Plus One Controller Mode Selection control to LOAD.
8. Set the Plus One Controller Pump Control priority selection to REAR.
9. Set the Plus One Controller Spraybar Master selection to OFF or BAR CRCLT.
10. Using Rear Controller (**Figure 5-3**), turn the Manual Pump Speed dial slowly in FORWARD direction to provide suction to the line (50 - 75 GPM).

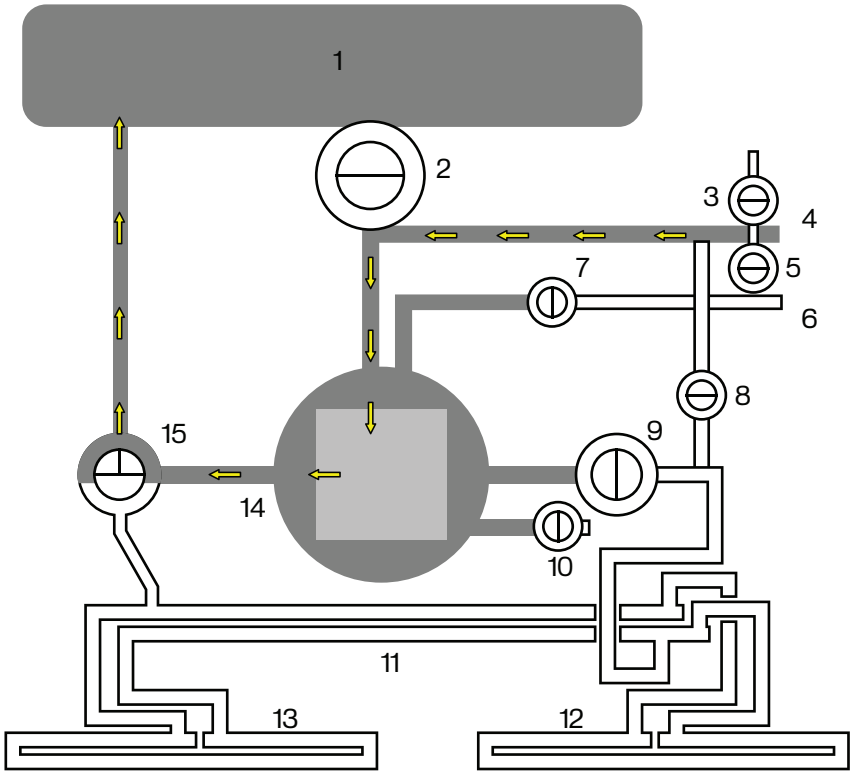


Load Line and Transfer Line

Figure 6-15



16



Load Mode

Figure 6-16

1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

11. Slowly open the small vent valve (**Figure 6-16,5**) to the top left of the Load Line coupler, (**Figure 6-15**) to relieve the vacuum in the line. When suction relief is heard, remove the Load Line cap. If no relief is heard, do not remove the cap. Check that pump is turning in the forward direction and that the vent valve is open.

⚠WARNING Never remove the Load Line cap unless the pump is turning in the forward direction and the vent valve is open. Hot asphalt in the load line is under pressure and could spray the operator. Check the direction by opening the vent valve.

12. After removing the Load Line cap, close the vent valve. Connect the loading hose. Be sure the over center latches lock the coupler in place.
13. Using the Rear Controller (**Figure 5-3**), run the asphalt pump in FORWARD at 50 - 150 GPM.
14. Fill until the tank is 80% to 90% full.
15. When the tank is filled, slow the pump speed so that it just provides suction to the line. (50 - 75 GPM)
16. Close the valve at the storage or transfer tank to stop the flow.
17. Open the small vent on the top left of the Load Line to allow the pump to draw material out of the load line.

⚠CAUTION Some residue will remain in the line. Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

18. Disconnect the loading hose, replace the cap, secure latches, close the small vent valve and stow the loading hose.
19. Set the Plus One Controller Pump Control priority selection to REAR.
20. Set the Plus One Controller Mode Selection control to TANK CRCLT.

Top Tank Loading

1. Follow pre-operation procedures, (see ***Pre-Operating Check List*** in Section 6).
2. Be sure the unit is sitting on a level area.

⚠DANGER Do not put your head in the tank. Serious injury or death could result from breathing poisonous fumes.

3. With a flash light, look into the tank from the top and check that there is no water or condensation in the bottom of the tank. If there is, drain the tank to an approved container before loading. Dispose of material and water according to local, state and federal regulations.

⚠WARNING Fumes from asphalt materials can be poisonous. When using the top opening, the operator should stand up-wind and to one side to avoid hot gases, fumes or being struck by a cover or hot asphalt spray.

⚠DANGER DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.

⚠DANGER Hot material will turn water into steam and can cause an explosion.

⚠DANGER Check that the material being loaded is compatible with the previously used asphalt, (see ***Guide For Loading Asphalt Products*** in Section 4)**. Some asphalt material can be vaporized by high temperature materials and can explode. If material is not compatible, clean out the tank.**

4. Move the Maximizer 3B to the storage tank or transfer vehicle.

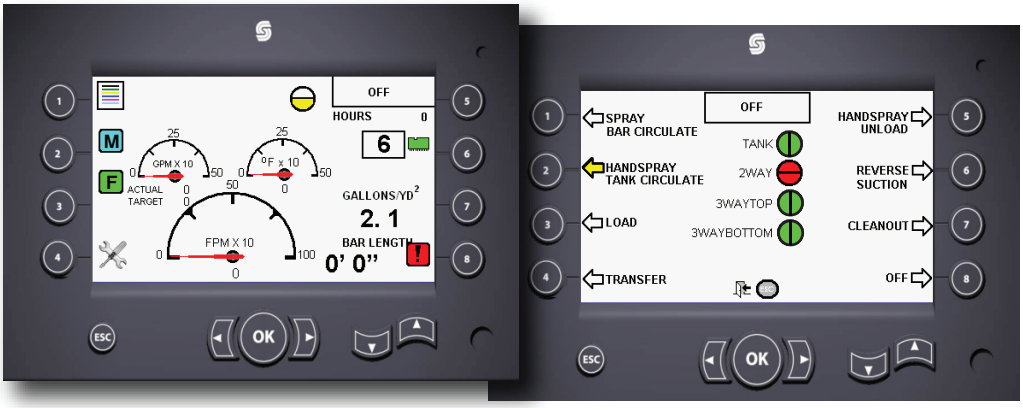
⚠DANGER Never operate burner when the vehicle is being loaded or in transit. The flue tubes can become exposed, causing an explosion inside the tank or material being sprayed could ignite.

⚠CAUTION Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

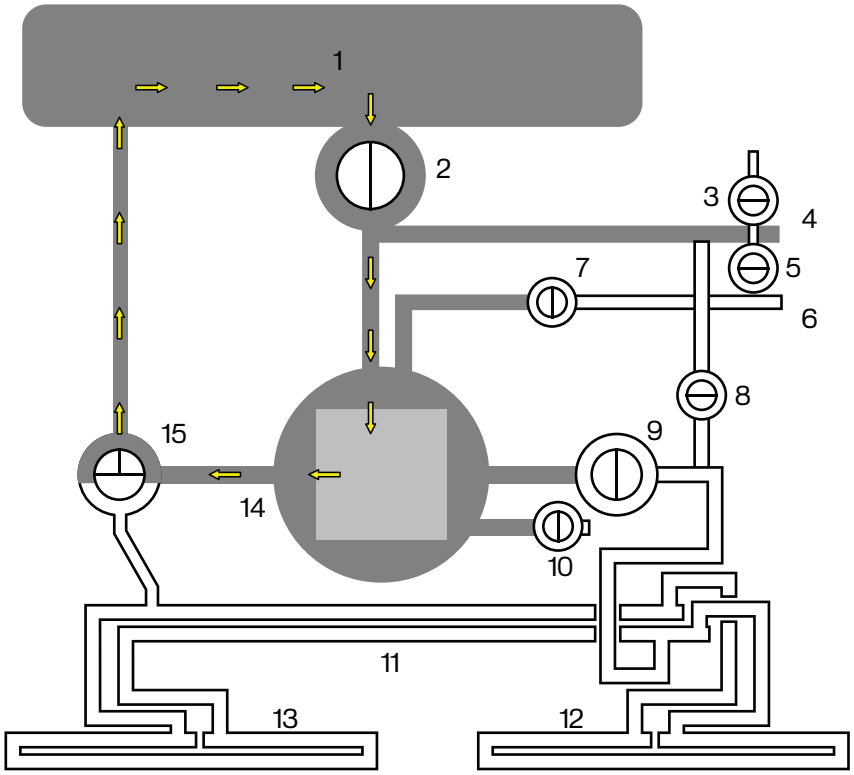
5. Position loading hose at top of the tank and open Top Opening cover.
6. Clean strainer in Top Opening cover before loading.
7. Position end of the hose in strainer and start pump on storage tank or transfer vehicle to load the tank. Be sure that hose stays in Top Opening. It may be necessary to hold it or tie it to lid hinges or platform to keep it in place.
8. Fill until tank is 80% to 90% full.
9. Reverse storage tank pump to draw excess material out of loading hose.
10. Remove hose from Top Opening and close cover.

⚠CAUTION Some residue will remain in the line. Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

11. Remove the hose from the storage tank and stow as appropriate.



16



Tank Circulate Mode

Figure 6-17

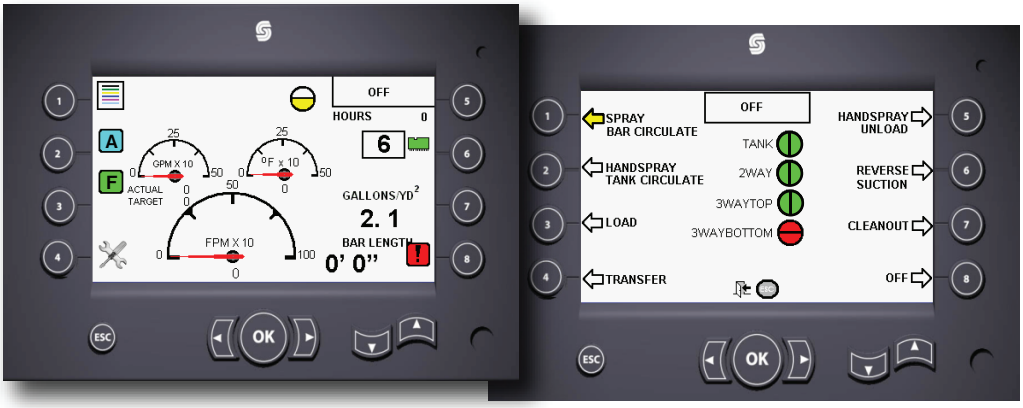
1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

Tank Circulate Mode

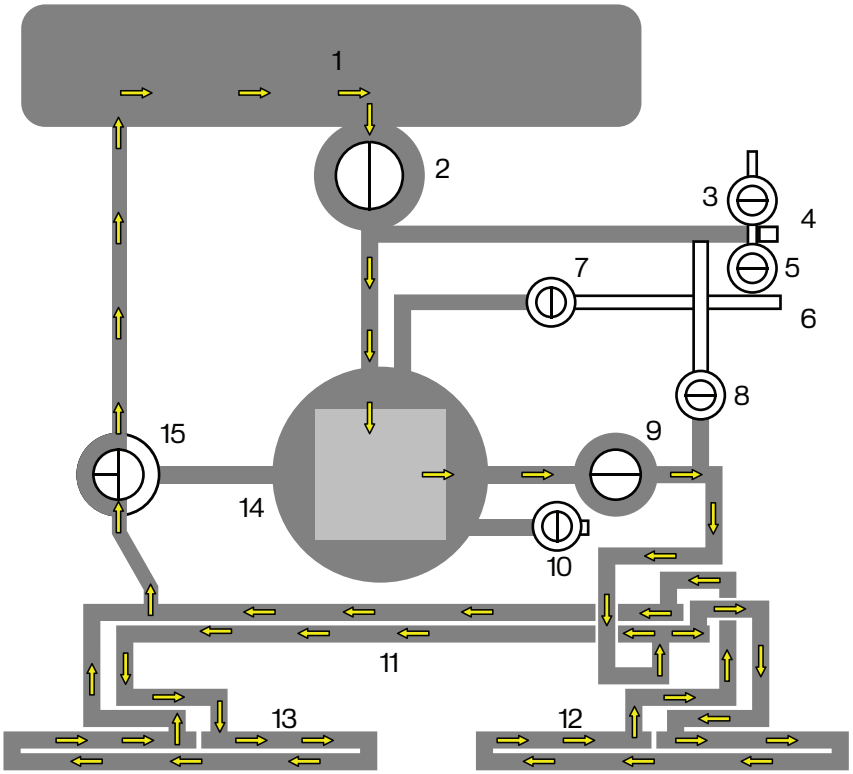
When heating and transporting material, run the Maximizer 3B in TANK CRCLT in order to mix and distribute the material in the tank and to minimize the loss of heat from the plumbing (**Figure 6-17**).

⚠ DANGER Never operate burner when the vehicle is being loaded or in transit. The flue tubes can become exposed, causing an explosion inside the tank, or material being sprayed could ignite.

1. Turn the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).
2. Set the Plus One Controller Auto/Manual selection to MANUAL.
3. Set the Plus One Controller Pump Control priority to FRONT.
4. Set the Plus One Controller Mode Selection control to TANK CRCLT.
5. Turn Manual Pump Speed dial in FORWARD direction and run pump at 50 - 75 GPM to circulate the asphalt.



16



Spray / Bar Circulate Mode (Bar Circulate)

Figure 6-18

1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

Spray / Bar Circulate Mode (Bar Circulate)

This mode circulates the hot asphalt through the spraybar and is used to heat the spraybar and nozzles prior to spraying (**Figure 6-18**). Review these instructions and follow them to insure the safety of the operator and to maintain a safe working environment.

1. Be sure that the material temperature is high enough to prevent setting up in the pump, plumbing and spraybar. Heat it before starting if it is at the low end of the operating range, **(see *Material Considerations* in Section 4).**
2. Set the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).
3. Set the Plus One Controller Auto/Manual selection to AUTO and the Pump Control priority selection to FRONT. The Controller will then control the circulation rate.

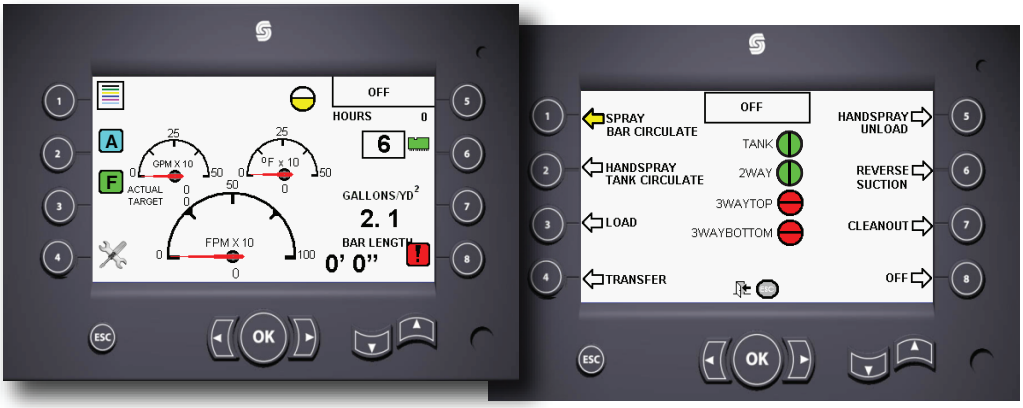
NOTE: This rate was set at the factory to 30 GPM.

4. Turn the Mode Selection to the SPRAY/BAR CRCLT.

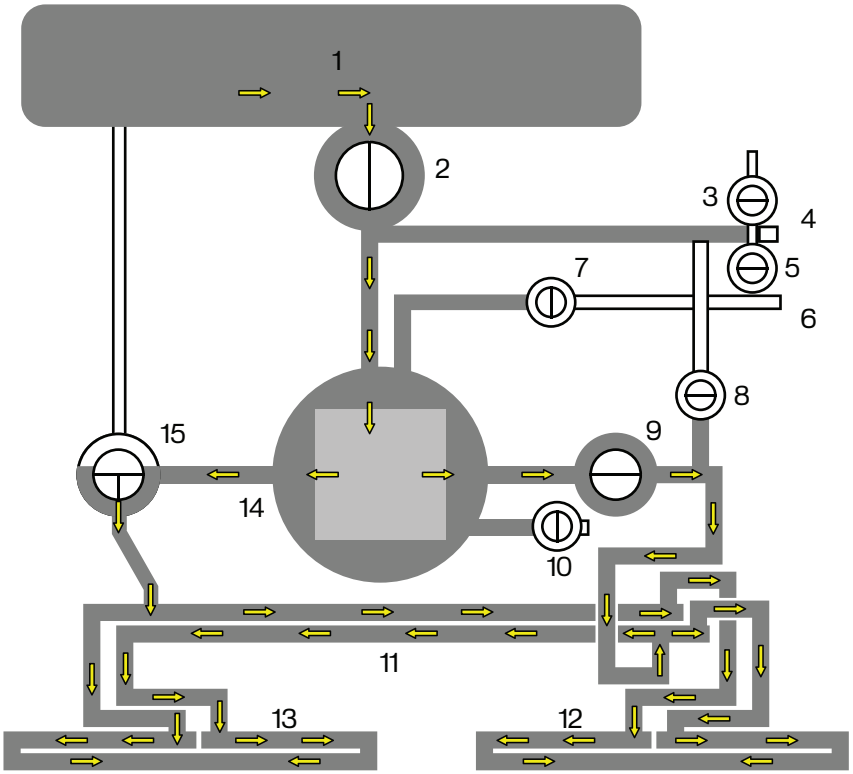
⚠WARNING Do not open spray nozzles. Asphalt spray will occur. Contact with hot asphalt can cause severe burns.

⚠CAUTION Beware of hot material in lines. Wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

5. Push the Spraybar Master switch UP to the BAR CRCLT position.
6. Before starting to spray, run for at least 5 minutes at 30 GPM for emulsion, or 75 - 100 GPM for cutbacks, to be sure that the spraybar, nozzles and other components have warmed up.
7. The unit is ready to spray.



16



Spray / Bar Circulate Mode (Spray)

Figure 6-19

1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

Spray / Bar Circulate Mode (Spray)

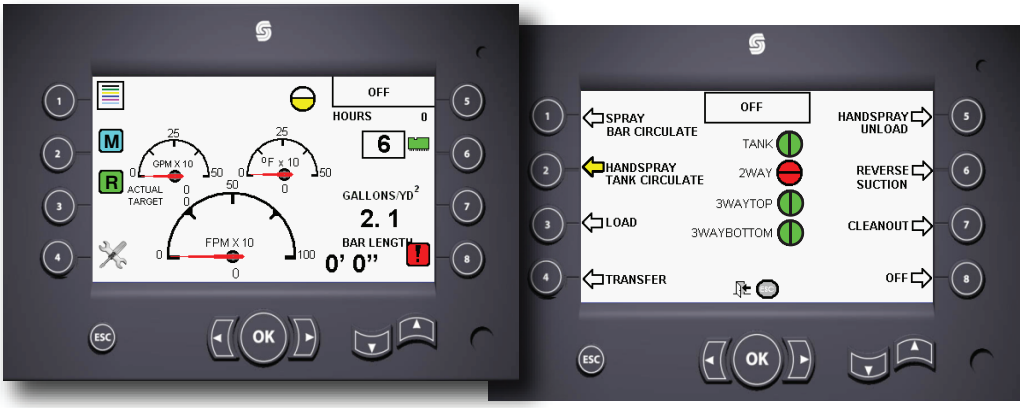
This section explains the procedure to be followed when spraying asphalt (**Figure 6-19**). Review these instructions and follow them to insure the safety of the operator and to maintain a safe working environment.

1. Turn the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).
2. Set the Plus One Controller Auto/Manual selection to AUTO and the Pump Control priority selection to FRONT. The Controller will then control the spraybar circulate rate.
3. Turn the Mode Selection switch to SPRAY/BAR CRCLT position.
4. Push the Spraybar Master switch UP to the BAR CRCLT position.
5. Be sure that the Plus One Controller has been programmed to deliver the specified amount of asphalt. Turn on individual spraybar switches on the Controller panel for the spraybar sections to be used, (see ***Plus One Controller*** in Section 6).
6. Run the Maximizer 3B in SPRAY/BAR CRCLT mode for at least 5 minutes to heat the spraybar components to operating temperature.
7. Check the temperature of the material in the tank. Heat the material before starting if it is at the low end of the operating range, **(see *Material Considerations* in Section 4)**.
8. Extend the spraybar sections into their operating configuration.
9. Set the height of the spraybar to obtain triple fan coverage using the chains to fix the down position. If the day is very windy, use slightly less than triple coverage to avoid wind drift of the asphalt, (see ***Asphalt Spraybar*** in Section 6).
10. Clear the area of bystanders.

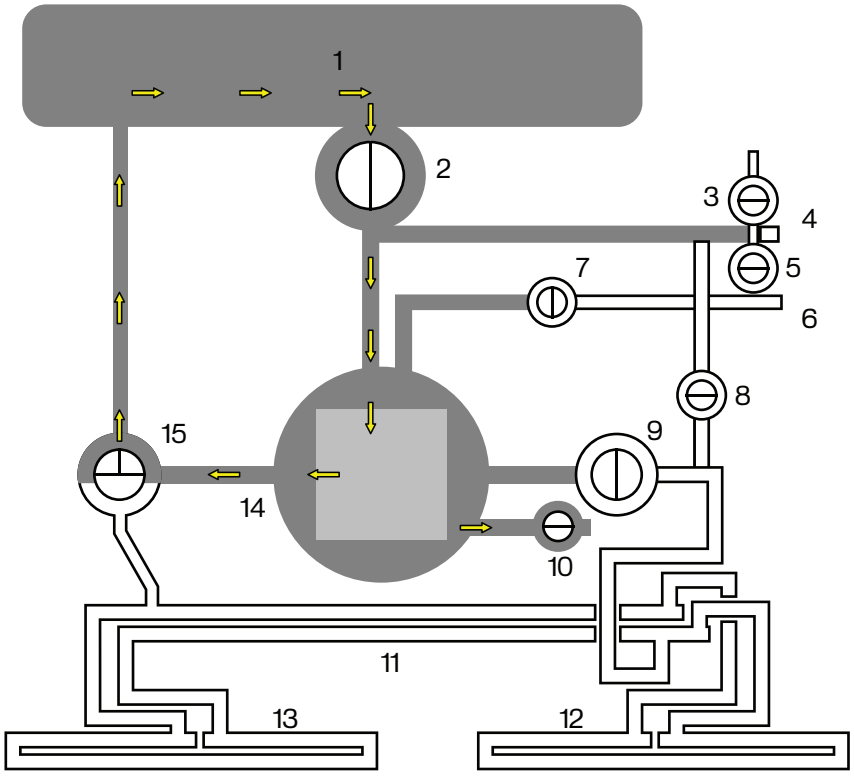
⚠WARNING DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.

⚠CAUTION Beware of hot material in lines. Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

11. Align the truck with the area to be sprayed. Position the truck so the rear wheels are even with the stop point of the last shot. Do not let the rear wheels get into the fresh oil from the last shot.
12. Proceed toward the area to be sprayed. As the spraybar crosses the starting point, push the Spraybar Master switch DOWN to the ON position. The valves for each nozzle will be opened and the spraying will begin.
13. When the spraying run is finished, push the Spraybar Master switch UP to BAR CRCLT. The nozzle valves will close and the spraying will stop.
14. Leave the Mode Selection control in SPRAY/BAR CRCLT if you want to keep the spraybar components hot, or refer to the Reverse Suction Mode for instructions on how to draw excess asphalt out of the spraybar and piping.



16



Handspray Mode (Tank Circulate)

Figure 6-20

1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

Handspraying

This section explains the procedure to be followed when hand spraying asphalt (**Figure 6-20**). Review these instructions and follow them to insure the safety of the operator and to maintain a safe working environment.

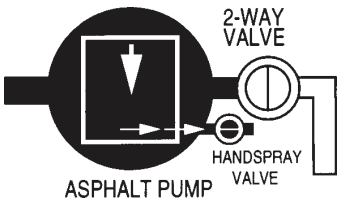
1. Turn the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).
2. Set the Plus One Controller Auto/Manual selection to MANUAL.
3. Set the Plus One Controller Pump priority selection to REAR.
4. Push the Spraybar Master switch UP to the BAR CRCLT position.

⚠WARNING DO NOT SMOKE around the machine. Fuel, asphalt material and their fumes can explode when exposed to flame or heat from smoking or other sources.

⚠CAUTION Contact with hot asphalt can cause severe burns. Always wear protective clothing, gloves and a face shield.

5. Turn the Mode Selection button to one of three modes to handspray:
   - **Handspraying (Figure 6-20)**
   - **Handspray / Unload Mode ((Figure 6-23)**
   - **Handspray Mode (Spray / Bar Circulate) ((Figure 6-24)**

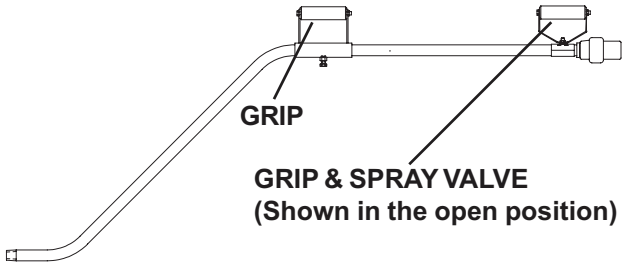
NOTE: When the operator uses the TANK CRCLT mode to handspray, no asphalt will reach the spraybar while the handspray operation is being used. This is the preferred mode.



Load Line and Transfer Line

Figure 6-21

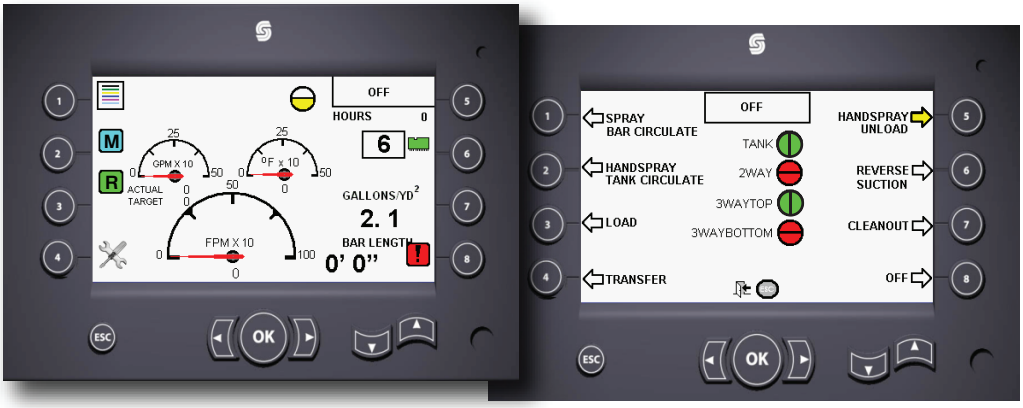
6. Open the Handspray Valve (**Figure 6-20,10; Figure 6-21**).
7. Remove the spray wand and hose from its storage position.



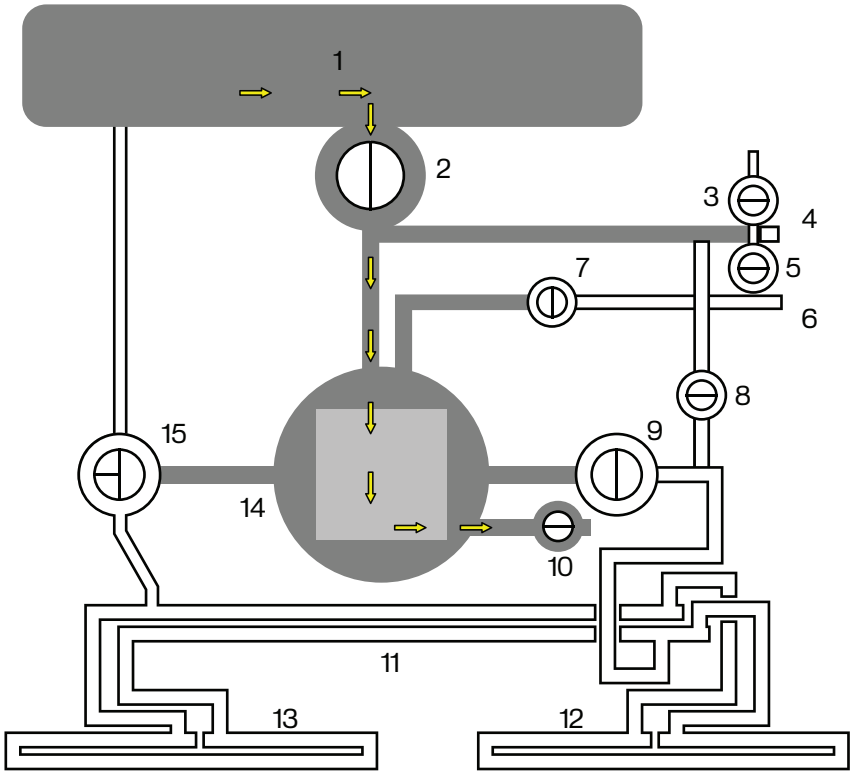
Load Line and Transfer Line

Figure 6-22

8. Hold the spray wand firmly by the hand grips (**Figure 6-22**). The grips will remain cool while the hot asphalt flows through the wand.
9. Be sure that the area is free of bystanders to prevent possible injury from spray or splatter.
10. Be sure that you have a firm grip on the wand. Open the combination Grip & Spray Valve on the wand. Adjust pump speed to desired pressure.
11. Direct the wand to the spraying area. Use long sweeping arcs with the wand to evenly distribute the asphalt.
12. When spraying is complete, use the Rear Controller to reverse the pump and draw the excess asphalt from the spray wand and its hose. Then draw some clean-out solution into the hose to help prevent any material from setting up in the hose during storage.
13. Close the Handspray Valve and the Grip & Spray Valve. Place the wand back in its storage position.
14. Set the Plus One Controller Mode Selection button to TANK CRCLT (Tank Circulate.)



16



Handspray / Unload Mode

Figure 6-23

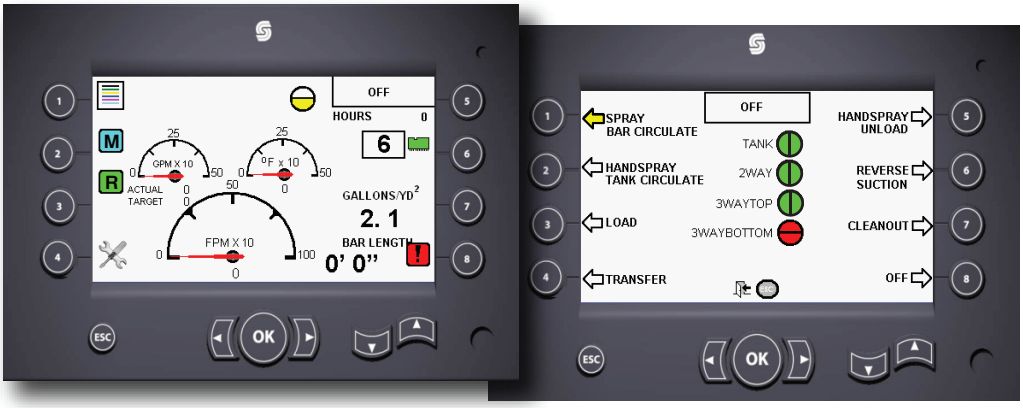
1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

Handspray / Unload Mode

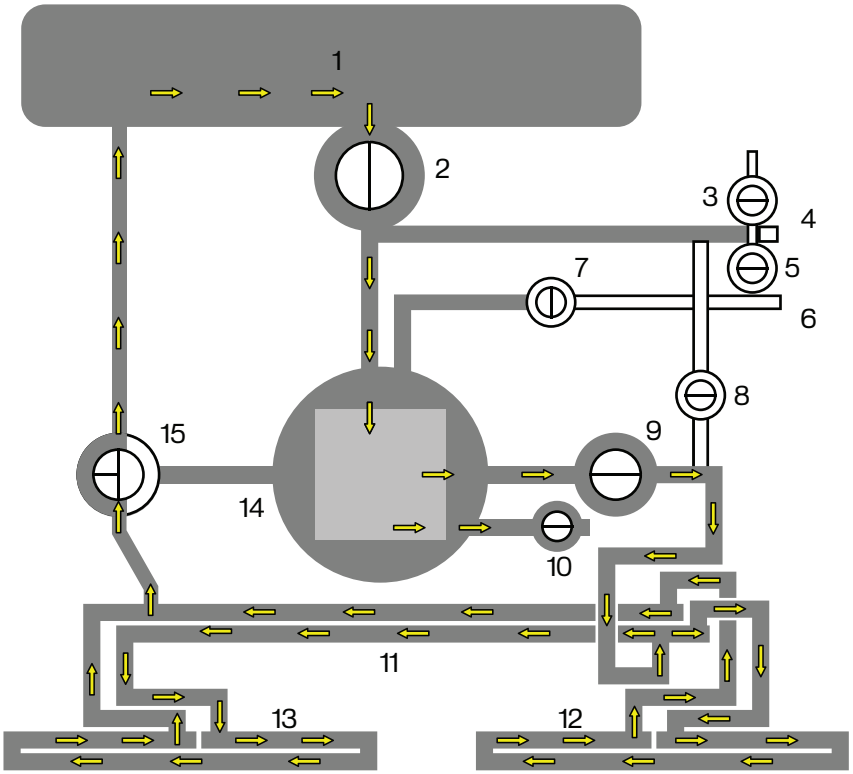
The operator may choose to use the HANDSPRAY/ UNLOAD mode (**Figure 6-23**) which allows the use of higher pressure. However, if the level of material in the tank is above the return line, this mode may allow material to return to the spraybar.

⚠CAUTION **This mode significantly increases the pump pressure since the 2-Way and 3-Way valves are closed. Be sure to maintain a firm grip on the handspray wand.**

NOTE: All material that is being pumped will be sprayed, so running the pump at a slower GPM than in Tank Circulate Mode will still deliver higher pressure.



16



Handspray Mode (Spray / Bar Circulate)

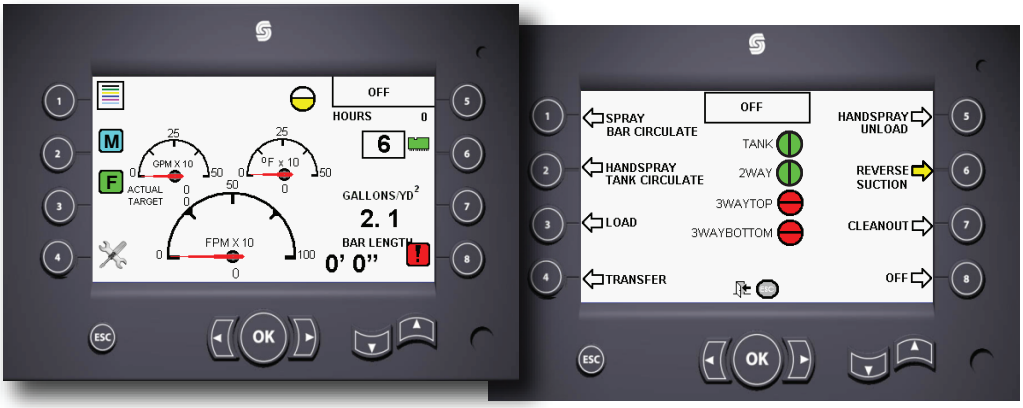
Figure 6-24

1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

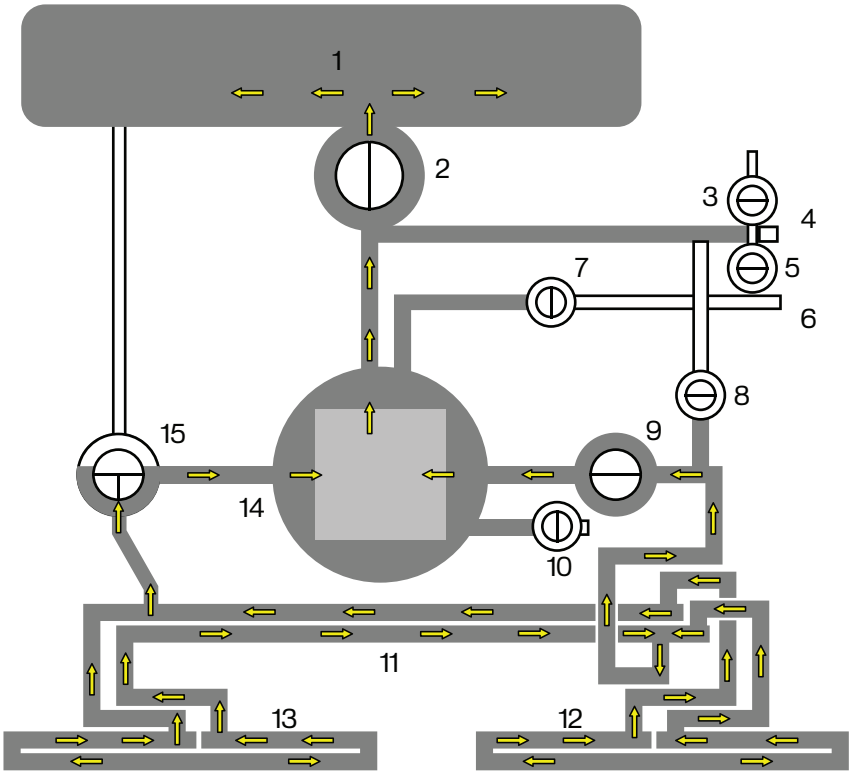
Handspray Mode (Spray / Bar Circulate)

Some operators have found that using the SPRAY/ BAR CRCLT mode (**Figure 6-24**) allows better control of the handspray wand. SPRAY/BAR CRCLT mode will also eliminate any setup of material that is still in the spraybar.

NOTE: This mode significantly reduces the pump pressure since the 2-Way and 3-Way valves are open. The operator may have to increase the GPM 25 to 50 gallons to get sufficient pressure to the wand.



16



Reverse Suction Mode

Figure 6-25

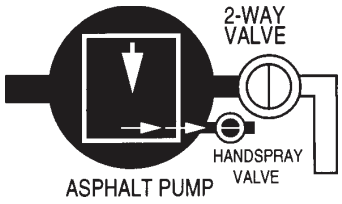
1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

Reverse Suction Mode

When spraying is complete, and before starting the clean-out process, use the following instructions to remove asphalt from the spraybar and plumbing circuit. Review these instructions and follow them to insure the safety of the operator and to maintain a safe working environment.

NOTICE **If the operator fails to perform this function at the end of the day, the asphalt will set up over night and the Maximizer 3B will be unable to spray the next time that it is used.**

1. Turn the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).
2. Set the Plus One Controller Auto/Manual selection to MANUAL.
3. Turn the Controller Spraybar Master switch to the OFF position.
4. Position the Spraybar so that it is parallel to the ground.
5. Select REVERSE SUCTION MODE.
6. Set the Controller Pump Priority Control to FRONT.
7. Turn all of the Plus One Controller individual spraybar switches OFF.
8. Turn the Controller Spraybar Master switch to the ON position.
9. Run the Manual Pump Speed control in REVERSE at 100 to 125 GPM.
10. Using the Plus One Controller individual spraybar switches, turn on the one-foot section farthest from the spraybar feed lines (right or left) for 2 seconds and then turn off. Do the same for the adjoining one-foot section and then the next, always working toward the spraybar feed lines.



Load Line and Transfer Line

Figure 6-26

NOTICE **If the handspray wand was used, open the Handspray Valve (Figure 6-26) on the pump and leave it open for 30 to 60 seconds. Close the Handspray Valve, stow the wand and hose. It may be necessary to draw some clean-out material into the hand spray hose to remove oil in the hose and spray nozzle.**

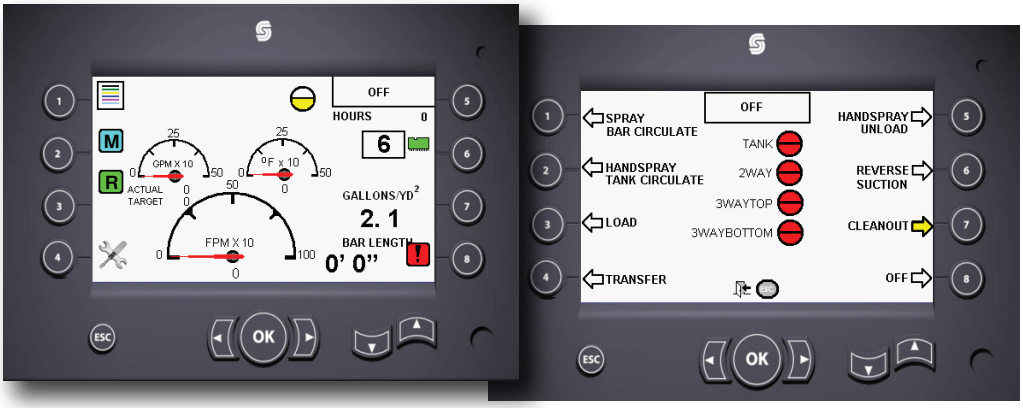
⚠WARNING **Beware of hot material in lines. Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.**

⚠WARNING **DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.**

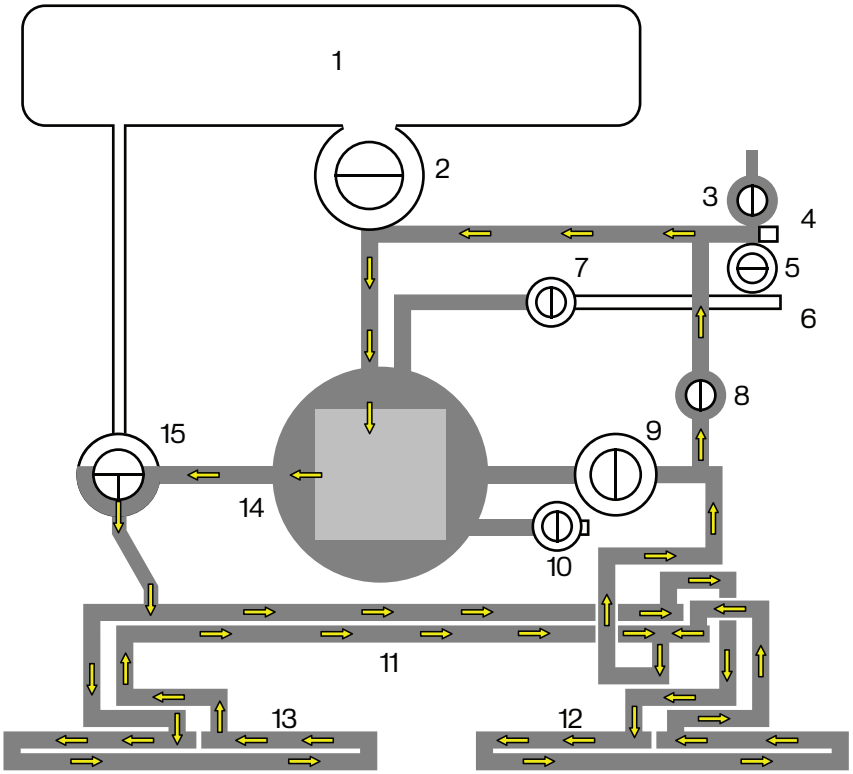
11. Turn the Plus One Controller Spraybar Master switch OFF and without turning off the pump or switching the pump to the forward position, set the Mode Selection to Clean-out.

NOTICE **If you switch the rotation of the pump or shut it off before you change the Mode Selection switch, material removed from the spraybar with suction will gravity-feed back into the spraybar.**

6



16



Clean-out Mode

Figure 6-27

1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

Automated Clean-out Mode

When spraying is complete, and Reverse Suction mode has been completed, follow these instructions to flush and wash out the spraybar and plumbing circuit. Review these instructions and follow them to ensure the safety of the operator and to maintain a safe working environment.

NOTICE **If the operator fails to perform this function at the end of the day the asphalt may set up over night leaving the Maximizer 3B inoperable the next time it is to be used.**

⚠WARNING **Always use the Reverse Suction mode to remove excess asphalt from the system prior to going to Clean-out mode.**

⚠WARNING **Fire Hazard! Never spray cleaning solvent or release agent on or near a heating element that is hot or being heated or on or near an open flame or source of ignition. Do not operate Burner System during cleaning! Cleaning solvent and release agent could ignite causing serious personal injury.**

NOTICE **When using spray down, consider the environment and do not allow cleaning solvent to run onto the ground.**

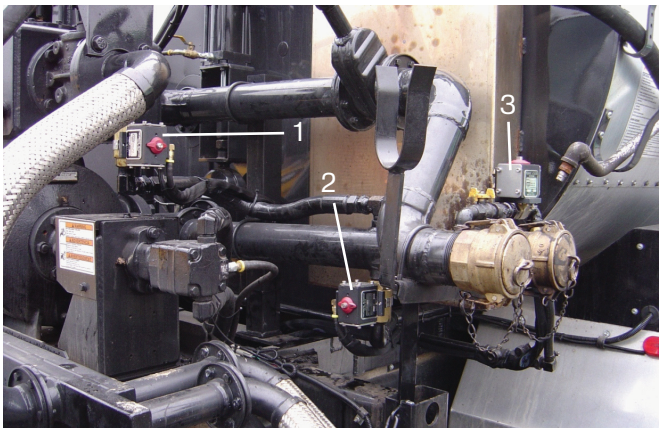
⚠WARNING **DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.**

There are two forms of Automated Clean-out.

1. Release Agent Tank Clean-out: This uses the driver side diesel tank for the solvent.
2. Enviroflush Tank Clean-out: This uses the passenger side solvent tank which holds the used solvent or alternative solvent to diesel.

Both modes of Automated Clean-out put the “used solvent” used during the clean-out cycle back into the Enviroflush tank.

The Solvent Circulate Valve (**Figure 6-28,1**), Solvent Valve (**Figure 6-28,3**) and Enviroflush Solvent Valve (**Figure 6-28,2**) are used during the Automated Clean-out Cycle.



Valve Locations

Figure 6-28

Sequence for Release Agent Tank Clean-out

1. Always precede Automated Clean-out with Reverse Suction procedure, (see ***Reverse Suction Mode*** in Section 6). While the asphalt pump is still turning in reverse from the Reverse Suction Mode, proceed with step 2.

NOTE: Release Agent Tank must contain at least 3 gallons of release agent fuel for Auto Clean Out operation.

2. Select Rear Control (**Figure 6-29,2**) on the in-cab control.



Release Agent **Clean-out Sequence**

Figure 6-29

3. Select the next page (**Figure 6-29,1**) on the In-Cab Controller and select Clean Out (**Figure 6-30,1**).



Release Agent **Clean-out Sequence**

Figure 6-30

4. Initiate automated clean-out by pressing the button labeled “CL.OUT SOLVENT” on the rear fender control panel (**Figure 6-31,1**).



Release Agent **Clean-out Sequence**

Figure 6-31

5. This initiates the following automated steps:

- Asphalt pump runs in Forward up to 200 GPM.
- Solvent Circulate Valve and Solvent Valve open.
- Solvent Valve closes after 2 minutes.
- Solvent Circulate Valve remains open and then closes after an additional 5 minutes.
- The Asphalt pump stops after the Solvent Circulate Valve closes.
- Asphalt pump runs in Reverse at 100 GPM.
- Enviroflush Solvent Valve opens.
- Enviroflush Solvent Valve closes after 2 minutes.
- Asphalt pump stops.



Release Agent **Clean-out Sequence**

Figure 6-32

6. Diesel Tank Clean-out Completes after approximately 9 minutes.

NOTE: If the HANDSPRAY WAND was used, open the Handspray Valve (**Figure 6-22**) on the pump. Place a five gallon bucket under the wand to catch solvent. Be sure not to contaminate the environment. Open and close the combination Grip & Spray Valve handle until a small amount of solvent comes out of the wand. The on/off action will allow the air to come out of the hose and liquefy the asphalt in the wand to keep it from setting up. Close the Handspray Valve. Cover bucket with a snap on lid to contain cleaning material. Be sure to dispose of cleaning material according to local, state and federal regulations.

Sequence for Enviroflush Tank Clean-out



Enviroflush Clean-out Sequence

Figure 6-33

1. Always precede Automated Clean-out with Reverse Suction procedure, (see ***Reverse Suction Mode*** in Section 6).

NOTE: With the pump still turning in reverse, proceed to step 2 below.

NOTE: Enviroflush Tank must contain at least 3 gallons of release agent fuel for Auto Clean Out operation.

2. Select Rear Control on the in-cab control (**Figure 6-33,2**).
3. Select the next page (**Figure 6-33,1**) on the In-Cab Controller and select Clean Out (**Figure 6-34,1**).



Enviroflush Clean-out Sequence

Figure 6-34

4. Initiate automated clean-out by pressing the button labeled "CL.OUT ENVIRO" (**Figure 6-35,1**) on the rear fender control panel.



Enviroflush Clean-out Sequence

Figure 6-35

5. This initiates the following automated steps:

- Asphalt pump runs in Forward up to 200 GPM.
- Solvent Circulate Valve and Enviroflush Solvent Valve open.
- Enviroflush Solvent Valve closes after 2 minutes.
- Solvent Circulate Valve remains open and then closes after an additional 5 minutes.
- The Asphalt pump stops after the Solvent Circulate Valve closes.
- Asphalt pump runs in Reverse at 100 GPM.
- Enviroflush Solvent Valve opens.
- Enviroflush Solvent Valve closes after 2 minutes.
- Asphalt pump stops.



Enviroflush Clean-out Sequence

Figure 6-36

6. Enviroflush Tank Clean-out Completes after approximately 9 minutes.

NOTE: See NOTE regarding HANDSPRAY WAND Valve in previous section.

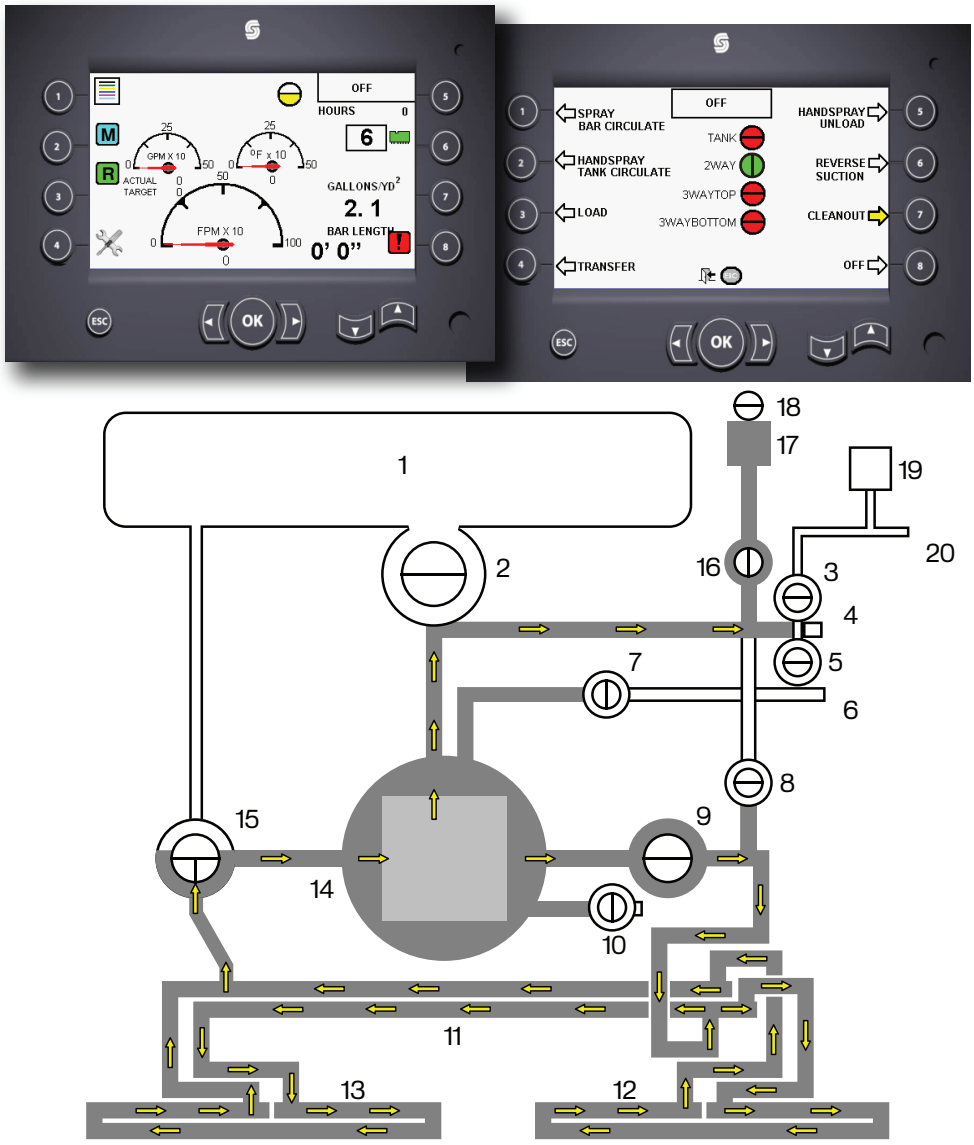
⚠WARNING DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.

⚠CAUTION Some residue will remain in the line. Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

Removing Solvent From The System

NOTICE **Always drain solvent from the system before loading additional asphalt and before changing the mode of operation. Failure to do so could damage the system.**

⚠WARNING All solvent tank and vent valves must be closed for ALL OTHER FUNCTIONS.



Clean-out Mode

Figure 6-37

1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Enviro Solvent Valve
17 - Enviroflush Holding Tank
18 - Drain Valve
19 - Clean Fuel or Solvent Tank
20 - To Burner

Clean-out Mode

Follow this procedure when flushing the spraybar and plumbing circuit using the Enviroflush System, (see ***Automated Clean-out Mode*** in Section 6).

NOTICE **Do not use Terpene Hydrocarbon or equivalent to clean out the spraybar. It destroys the Viton seals.**

1. After the automated clean-out process drain Enviroflush tank as necessary and dispose of solvent in accordance with local, state and federal regulations.

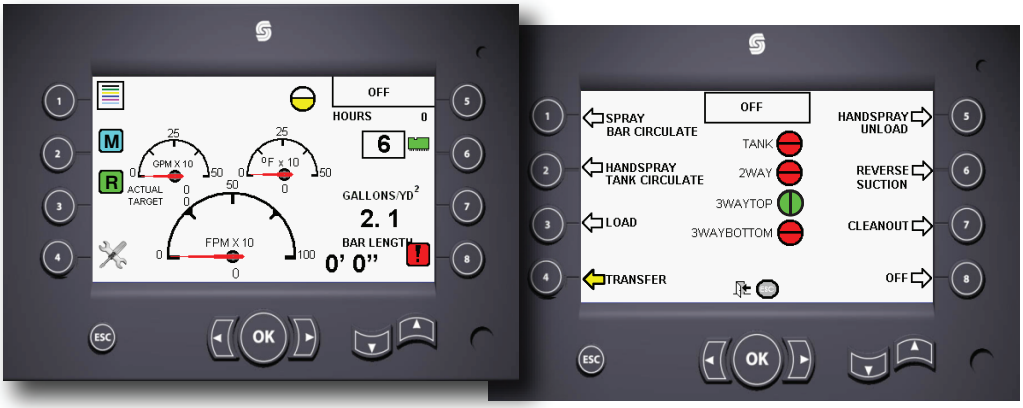
NOTICE **Depending on the type of asphalt materials being used, the solvent in the Enviroflush tank can be used multiple times to clean the spraybar and pumping circuit. However, if the solvent is used too many times, the concentration of asphalt material in the tank may become so high that it will set up. This makes the tank unusable and the material is difficult to remove. The same problem will occur if the spraybar is full of asphalt and this asphalt is pumped into the Enviroflush tank.**

To prevent the material from setting up in the tank, monitor the solvent in the tank by removing the fill cap and checking the fluid in the tank with a flashlight. Remove and replace the solvent before it becomes too thick to remove. This will require a container of at least 25 gallons.

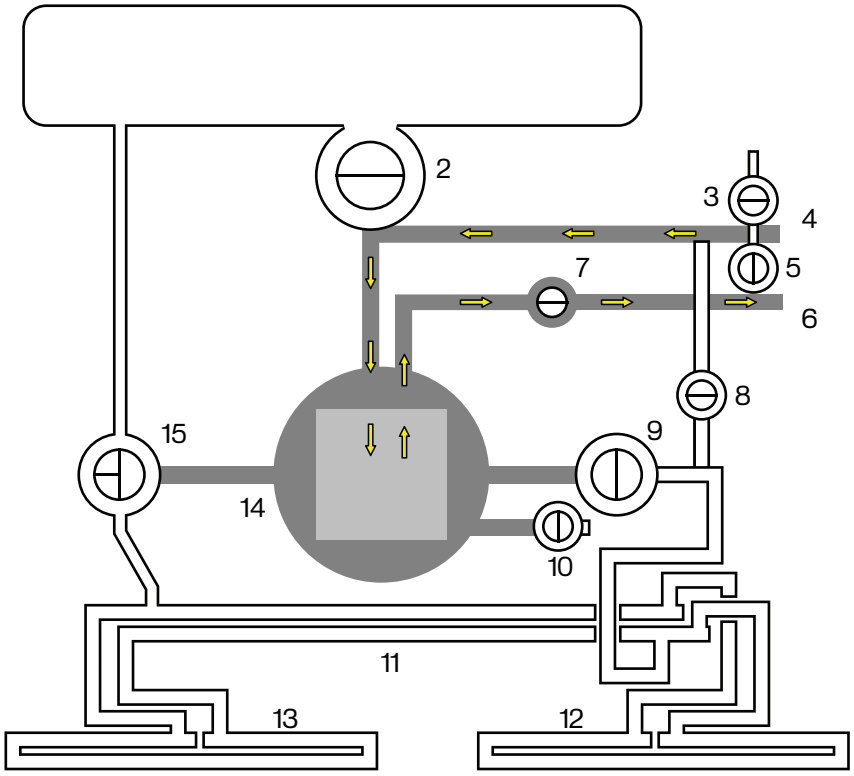
Avoid contaminating the environment while draining the solvent. Dispose of material according to local, state and federal regulations. If the material becomes set, heat the Enviroflush tank with steam until the material becomes fluid enough to drain.

⚠WARNING **DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from both can explode when exposed to flame or heat from smoking or other sources.**

⚠CAUTION **Beware of hot material in lines. Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.**



16



Transfer Mode

Figure 6-38

1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

Transfer Mode

When the Maximizer 3B is used to transfer asphalt from one tank to another, follow these procedures. Review these instructions and follow them to insure the safety of the operator and to maintain a safe working environment.

⚠ DANGER Be sure that the material in both tanks is compatible (see *Material Considerations* in Section 4). If material is not compatible or you are not sure, do not transfer!

1. Check the temperature of the material in the external tanks. Be sure that it is hot enough to be transferred without setting up in the transfer lines or the pump. If the temperature is marginal or the material is starting to set up, heat the material before starting.

⚠ WARNING Heat material before moving the unit next to storage tanks. Some asphalt materials emit flammable vapors that can be ignited by the burner flame and cause an explosion.

2. Move the Maximizer 3B next to the tanks.
3. Turn the Plus One Controller Master switch ON to activate the system, (**Figure 5-2,1**).
4. Set the Plus One Controller Auto/Manual to MANUAL.
5. Turn the Spraybar Master switch to OFF.
6. Set the Controller Mode Selection button to TRANSFER.
7. Open vent valve (**Figure 6-38,5**) to relieve pressure. Run the pump in FORWARD at 40 - 50 GPM before removing the Load Line cap.
8. Remove Load Line cap and Transfer Line cap. Attach loading hoses between the Maximizer 3B and the external tank. Use the over-center clamps to secure the couplers. Be sure to connect the hoses so that material is drawn in through the Load Line and sent out through the Transfer Line, (**Figure 6-15**).

⚠ WARNING Never remove the Load Line cap unless the pump is turning in the Forward position and the vent valve is open. Hot asphalt in the Load Line is under pressure and could spray the operator if proper procedure is not followed.

⚠ CAUTION Some residue will remain in the line. Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

9. Open the external tank valves.
10. Open the Maximizer Transfer Valve.

⚠ WARNING Do not open the Transfer Valve until transfer line is in place. Failure to follow this procedure could result in serious burns to the operator from hot asphalt in the lines. The Transfer Valve must be opened and closed manually.

⚠ CAUTION Contact with hot asphalt can cause severe burns. Always wear protective clothing, gloves and a face shield.

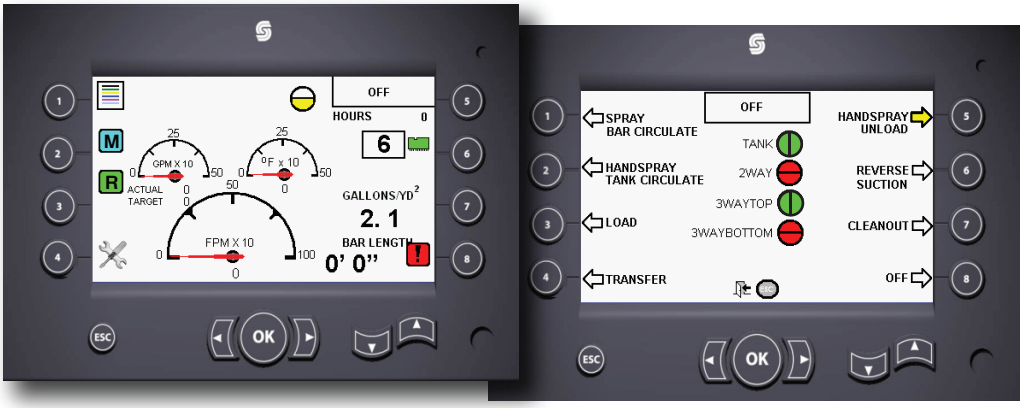
11. Turn the Pump Control to REAR Priority. (If the Front Controller is used, set the Pump Control switch to FRONT Priority and run the pump in the FORWARD direction.)
12. Run the Controller Pump Speed at 50 - 150 RPM.
13. When the transfer is completed, close the valve at the external supply from tank.
14. Run the pump slowly to clean all the material out of the system emptying into the external transfer to tank.
15. Open the vent valve at the left of the Maximizer 3B Load Line.
16. When the lines are cleaned out, close the valve on the external transfer to tank. To release pressure in the system, open the vent valve (**Figure 6-15**).

⚠ CAUTION Use extreme caution when removing the lines. The transfer line may still have some pressure in it.

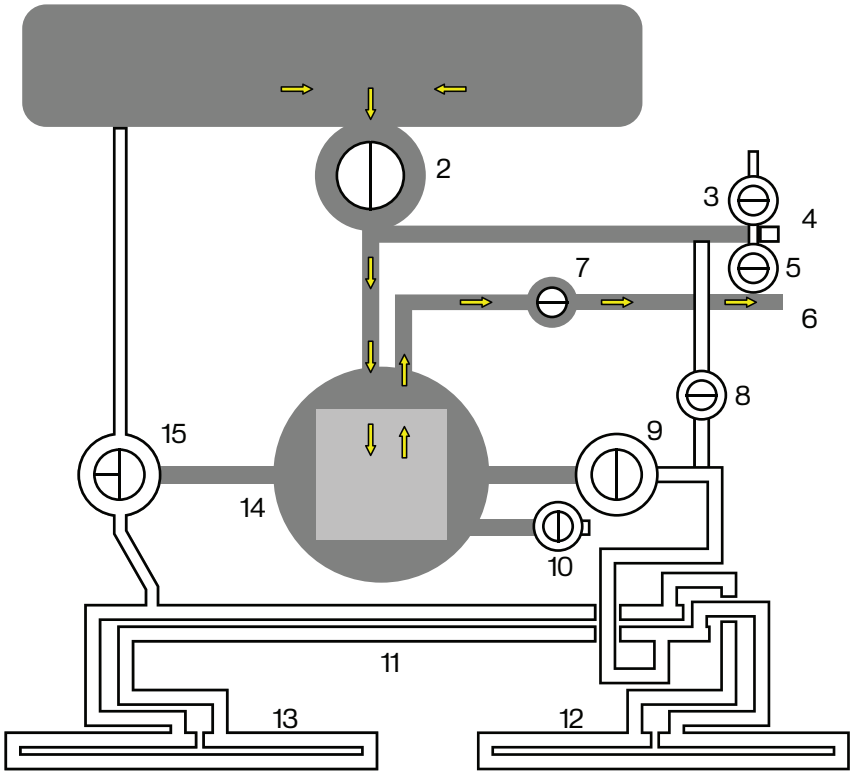
17. Remove the loading lines and place in their storage locations.

⚠ CAUTION Some residue will remain in the line. Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

18. Install and secure the Transfer Line and Load Line caps making sure to use the over-center clamps for the caps. Then stop the pump.
19. Set the Plus One Controller Mode Selection switch to Clean-out and follow instructions for Clean-out Mode earlier in this section.



16



Unloading Mode

Figure 6-39

1 - Maximizer Tank
2 - Tank Valve
3 - Solvent Valve
4 - Load Line
5 - Vent Valve
6 - Transfer Line
7 - Transfer Valve
8 - Solvent Circlt Valve
9 - 2-Way Valve
10 - Handspray Valve
11 - Manifold
12 - Right Spray Bar
13 - Left Spray Bar
14 - Asphalt Pump
15 - 3-Way Valve
16 - Run and Mode Screens

Unloading Mode

Follow these procedures when unloading excess asphalt from the Maximizer 3B. Review these instructions and follow them to insure the safety of the operator and to maintain a safe working environment.

⚠ DANGER Be sure that the material in both tanks is compatible (see *Material Considerations* in Section 4). If material is not compatible or if you are not sure, do not transfer!

1. Check the temperature of the material in the tank. Be sure that it is hot enough to be transferred without setting up in the transfer lines or the pump, **(see *Material Considerations* in Section 4)**.

NOTE: If the temperature is marginal or material is starting to set up, fill the tank with fresh, hot material to heat it. Set the Mode Selection switch to TANK CRCLT for 5 minutes to mix and heat the remainder before unloading.

⚠ WARNING Heat material before moving the unit next to storage tanks. Some asphalt materials emit flammable vapors that can be ignited by the burner flame and cause an explosion.

NOTICE It may be necessary to operate the burners to heat the tank prior to unloading. In this case, be sure that the fire tubes are covered with at least 8 inches of material, (see *Burners & Torch Operation* in Section 6).

⚠ DANGER Do not operate burner equipment when the vehicle is being loaded or unloaded. The flue tubes could be exposed causing an explosion inside the tank, or the material could ignite, causing a fire.

2. Move the Maximizer 3B to the unloading site.

⚠ WARNING Do not open the Transfer Valve until transfer line is in place. Failure to follow this procedure could result in serious burns to the operator from hot asphalt in the lines. The Transfer Valve must be opened and closed manually.

⚠ WARNING Check the storage tank for condensation. If necessary drain the storage tank before unloading the Maximizer 3B.

3. Check the Transfer Valve and be sure that it is closed (**Figure 6-15**).
4. Remove the Transfer Line cap.
5. Connect the loading hose to the Transfer Line coupler on the distributor and to the storage tank coupler. Use the over-center latches to secure couplers.

⚠ WARNING Do not open the Transfer Valve until transfer line is in place. Failure to follow this procedure could result in serious burns to the operator from hot asphalt in the lines. The Transfer Valve must be opened and closed manually.

6. Open the valve on the storage tank and the Transfer Valve.
7. Set the Plus One Controller Mode Selection button to the HANDSPRAY/UNLOAD mode.
8. Put the Pump Control switch to FRONT Priority.

NOTE: If the Rear Controller is used, set the in-cab controller to Rear Priority mode.

9. Run the Manual Pump Speed control in the FORWARD direction at 50 - 150 GPM.
10. When the tank is empty, immediately close the valve on the external storage tank and stop the pump.
11. Open the vent valve to relieve pressure in the line.
12. Reverse pump for 10 seconds to be sure all pressure is released. Close Transfer Valve.
13. Slowly remove loading hose.

⚠ CAUTION Some residue will remain in the line. Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

14. Install the cap on the Transfer Line. Secure with the over-center latches.
15. Set the Plus One Controller to Clean-out mode and follow instructions for Clean-out Mode earlier in this section.

WASHDOWN

It is extremely important that the components, lights, reflectors and safety decals on the Maximizer 3B are kept clean and visible.

Rosco recommends the use of biodegradable cleaning solvents (**Figure 6-31**).

⚠WARNING **Fire Hazard! Never spray cleaning solvent or release agent near a heating element or near any open flame or source of ignition. Do not operate Burner System during cleaning! Cleaning solvent and release agent could ignite causing serious personal injury.**

NOTICE **When using washhdown, consider the environment and do not allow cleaning solvent to run onto the ground.**

COMBATING POOR VISIBILITY

Increasingly, asphalt maintenance equipment is being used during less than ideal light conditions, such as fog, smog and at night. Using the equipment during these conditions presents safety hazards to the workers, bystanders and passing traffic. People can be injured or killed by the equipment, passing traffic or distractions caused by road work.

⚠WARNING **If you will be operating the machine under less than ideal light conditions, the unit should be equipped with special lighting. Such lighting will help prevent serious personal injury, as well as damage to machine and property.**

To help combat these hazards, the equipment must be equipped with front and rear lighting options, back up lights and shielded rotating beacons. The shielding protects the operator's vision and prevents eye strain. Use reflective tape on the sides of all machines that may be used at night.

Be sure that all personnel wear reflective vests. Use impact barriers (movable or stationary) to protect the workers from traffic and help direct the traffic flow away from road hazards.

MANUAL OPERATION

The Maximizer 3B comes equipped with the Plus One Controller that will automatically set and maintain the operator's required application rate. Rosco strongly recommends that the operator depend on the Controller rather than setting the application rate manually. The Controller's calculations are more reliable and accurate. In the event that manual operation is required, follow the instructions provided in this section.

Asphalt application rates are dependent upon nozzle size, pump speed, ground speed and spraybar width. Carefully review and follow the procedures for calculating the required settings, simulating a run and doing a trial run to be sure the desired application rate is obtained.

Calculations

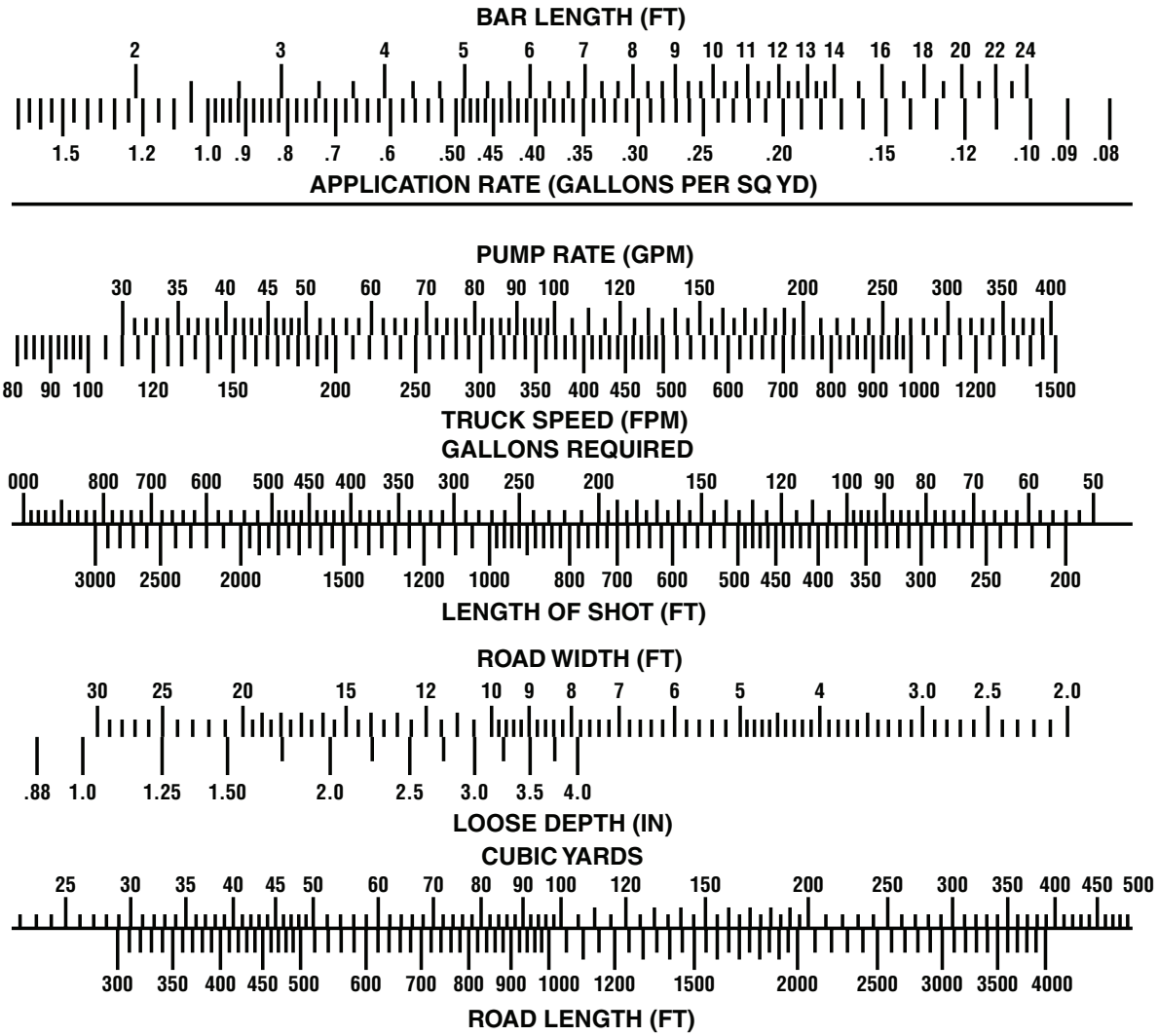
To obtain the desired performance, use the Slide Rule Application Guide (**Figure 6-40**), supplied with the Maximizer, to determine the settings of the machine.

Determine the type of nozzles used on the spraybar. The nozzle type will determine the range of pump flow that will give an acceptable nozzle spray pattern.

Determine the application rate in Gal/Sq. Yd. or Liter/Sq. Meter for the work to be done. This will be specified by the job requirements and selected nozzle size.

Determine the ground speed, pump flow and the spraybar width being used for each specific job.

The slide rule covers spraybar widths from 4 feet to 24 feet in 1 foot increments.



Slide Rule Application Guide

Figure 6-40

The following example demonstrates the use of the Slide Rule Application Guide.

NOTE: In this example, we are using a 12-foot spraybar. Use your correct spraybar length and make appropriate adjustments to the calculations.

1. Go to the top scale for the Bar Length. Move the inner sleeve to the desired application rate with the correct bar length.

   For Example:

   Spraybar Length = 12 Feet

   Application Rate = .3 Gal/Sq.Yd.

NOTE: For No. 1 Nozzles the recommended pump rate is 8 -14 GPM per feet bar length.

   For 12 Ft bar, pump rate is 96 (12 x 8) to 168 (12 x 14) or approximately 100 - 170 GPM.

2. Go to the center scale (Pump Rate) and bracket the pump rate from the above example (100 - 170 GPM).
3. Look directly below the pump rate scale at the truck speed (FPM) scale. For 12 Ft bar and 0.3 rate setting you should read 250 FPM below 100 GPM and 425 FPM below 170 GPM.
4. Select a truck speed between 250 and 425 FPM that is appropriate for the terrain and operating conditions.
5. Select the pump flow rate above the selected truck speed.

   For example:

   Select 350 FPM (4.0 MPH) as speed.

   140 GPM will be the pump setting.

NOTE: Do not exceed the nozzle maximum flow, (see ***Nozzle Size to Flow Rate*** in Section 6): 170 GPM is overflow for 36 #1 nozzles. Call a Rosco factory representative for additional help.

Run Simulation Example

For this phase of manual calibration and operation, a loaded Distributor operating in the Bar Circulate Mode will be driven per the operator's calculations. It is recommended that a data sheet be kept to record the machine performance and application information for future reference.

1. Before starting, review and follow the Pre-Operating Check List, (see ***Pre-Operating Check List*** in Section 6).

NOTE: Read Modes Of Operation before proceeding, (see ***Modes Of Operation*** in Section 6).

2. Load the tank.
3. Go to the simulation area.
4. Check that the material in the tank is at the proper application temperature and level so that the heat tubes are covered with at least 8 inches of material..

NOTE: Application temperatures will vary depending on the product being used. Refer to the product supplier's recommendations for application temperatures.

NOTE: Temperature affects the viscosity of the material. If the temperature is not at the recommended rate, the range in viscosity could affect the accuracy of the calibration, (see ***Guideline Temperatures For Liquid Asphalts*** in Section 4).

5. Select a transmission gear and axle ratio to give the required ground speed of 350 FPM. Use the panel readout to measure the speed. The best results are obtained when the engine speed is maintained between 1500 and 1800 RPM for a specific gear ratio.

Table 6-5. Example Application Data Sheet

APPLICATION RATE	SPRAYBAR LENGTH	NOZZLE SIZE	TRUCK GEAR	TRUCK SPEED	PUMP FLOW
0.3 GAL / SQ. YD	12 FEET	1	LOW, 2ND	350 FPM	140 GPM

6. Operate the unit in the Bar Circulate Mode. Use the Manual Pump Speed dial on the Plus One Controller to set the pump flow to 140 GPM at the specific engine RPM for operation.
7. Drive the unit over the application route in the specific gear, axle ratio, engine RPM and travel speed, and set the pump rate.
8. Record all operating parameters on your data sheet (**Table 6-4. Valve Status During Operational Modes**) for future reference.

NOTE: Small variations in ground speed will not affect the application rate. As the truck speed increases or decreases, there will be a proportional increase or decrease in the flow from the hydrostatic pump. This will also give a proportional change in the asphalt pump flow.

Trial Run

A trial run can be made with the unit spraying to verify the application rate. This may be required if the material being sprayed has a viscosity that is different than that normally sprayed.

1. Measure the amount of material in the tank. Read the measuring stick in the top opening or weigh the unit before and after the run to measure the volume sprayed during the run. This latter method requires that you know the density or the weight per gallon of the asphalt.
2. Mark out a known distance on the spraying area. Use even numbers such as 600 or 900 feet to make the calculations easy. Allow a starting distance before you begin spraying so the truck speed and pump flow stabilize.
3. Start spraying as you cross the start line. Maintain the ground speed and engine RPM at the values recorded on the data sheet.
4. Watch the pump GPM on the Run Screen readout closely. You may have to adjust the speed slightly to compensate for the change between Bar Circulate and Spray. Use the Manual Pump Speed dial to make the adjustment.
5. Use the measuring stick or weigh the machine to determine the quantity sprayed.
6. Calculate the expected results.

   For example:

   900 Ft x 12 Ft Wide x .3 Gal/Sq Yd / 9 Sq Ft/Sq Yd = 360 Gal.

   or

   600 Ft x 12 Ft Wide x .3 Gal/Sq Yd / 9 Sq Ft/Sq Yd = 240 Gal.
7. If the measured volume does not equal the calculated volume, adjust the flow rate to make them equal.

   For example:

   Calculated Volume = 360 Gal

   If Measured Volume = 340 Gal

   Calculated Vol x Pump Flow / Measured Volume = Correct GPM

   360 Gal x 140 Gal / 340 Gal = 148 GPM
8. Reset the pump flow to 148 GPM to obtain an application rate of .3 Gal/Sq.Yd.

NOTES

ROSCO

A LeeBoy Company

Section 7
MAINTENANCE

Page

Maintenance 7-1

General Information 7-4

Routine Maintenance. 7-4

General Information 7-4

Fluids And Lubricants 7-5

Asphalt Pump Lubrication 7-5

Grease For Other Components 7-5

Hydraulic Oil 7-5

Clean-out Solvent 7-5

Truck Systems. 7-6

Tank Components 7-6

Tank Sump 7-6

Top Opening. 7-6

Capacity Indicator Gauge 7-7

Mounting Hardware 7-7

Asphalt Pump System 7-8

Asphalt Pump 7-8

Relief Valve 7-8

Discharge Screen 7-9

Load Line Screen 7-10

Pump Drive 7-10

Automatic Valves. 7-10

Spraybar. 7-12

Hydraulic System 7-13

Burner System 7-14

Diesel Burners. 7-14

LPG Burners (Option) 7-14
GPS Ground Speed Sensor 7-15
Radar Horn (Option) 7-15
Daily Exterior Maintenance 7-16
Storage 7-16
Hydraulic Fluids 7-17
Hydraulic Oil Requirements 7-17
Safety Label Installation 7-18

Table 7-1. Maintenance Intervals Chart

SYSTEM	ITEM	3 Hours Twice Daily	8 Hours Daily	20 Hours Weekly	80 Hours Monthly	250 Hours Semi-annually	400 Hours Annually
C = Check, CL = Clean, L = Lubricate, R = Replace, T = Tighten							
Asphalt	Asphalt System	C					
	Pump Bearing (1)	L					
	Pump Bearing Gland (1)	L					
	Asphalt Circuit Valve Stems (2)	L					
	Asphalt Distribution Hoses		C				
	Asphalt Pump, Packing Gland		T				
	Asphalt Pump, Chain Coupler		C				
	Asphalt Pump, Load Line Screen, (Diesel / Kerosene)		CL		CL		
Hydraulic	System	C					
	Hydraulic Hoses		C				
	Hydraulic Filter			C		R	
	Change Oil Filter					R	R
Tank	Top Opening Cover		C				
	Cover Gasket		C	C			
	Overflow Vent		CL				
	Clean-out Solvent Level		C				
	Capacity Indicator			C			
	Float Shaft Packing			T			
	Tie-Down Hardware			C			
	Sump				CL		
Burner	System		C				
	Fuel Level, Add as Required		C				
	Fire Tubes		C				
	Burner (Diesel)				CL		
	Flue Liner				C		
	Burner, Fuel in Solvent and Burner Tank						R

Table 7-1. Maintenance Intervals Chart (continued)

SYSTEM	ITEM	3 Hours Twice Daily	8 Hours Daily	20 Hours Weekly	80 Hours Monthly	250 Hours Semi-annually	400 Hours Annually
C = Check, CL = Clean, L = Lubricate, R = Replace, T = Tighten							
Spraybar	Hydraulic Cylinders		CL				
	Nozzles, adjust alignment if necessary			C			
	Hardware, tighten if necessary			C			
	Spraybar, Extension & Pivot Point Gaskets & Washers						R
Truck	Truck, service per Truck Operator's Manual		C				
	Wash Machine			CL			
	Radar Horn Face Cover		CL				
	Air System	C					
Engine	Coolant Level		C				
	Engine Oil Level		C				
	Fuel Level		C				

GENERAL INFORMATION

This section gives the necessary procedures for routine and general maintenance on the Rosco Maximizer 3B Asphalt Distributor.

NOTE: By following a careful service and maintenance program for your Asphalt Distributor, you will insure many years of trouble free operation.

⚠WARNING **Follow all safety precautions in this manual.**

ROUTINE MAINTENANCE

General Information

Maintenance must be a planned program that includes periodic machine inspection and lubrication procedures, (**Table 7-1. Maintenance Intervals Chart**).

The maintenance program must be done based on the machine's "Operating Hours" recorded on the hourmeter, or on a "Periodic Schedule" which is done at daily, weekly, monthly or yearly intervals.

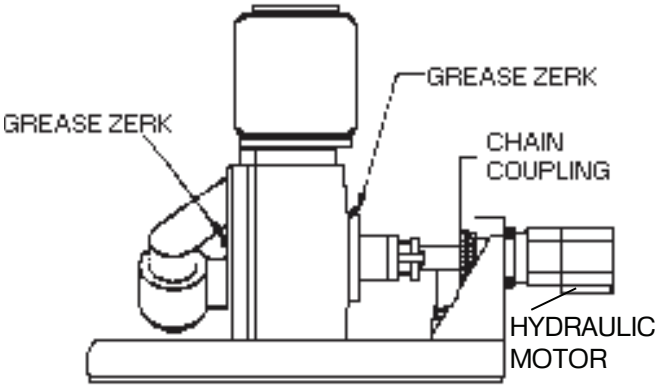
FLUIDS AND LUBRICANTS

Asphalt Pump Lubrication

Use only Rosco high-temperature, Teflon impregnated grease (part # 33384) at all times. Any other grease will be liquefied in the high operating temperature and will run out of the bearings. With no lubrication, the bearings will seize in a short time.

Use only a hand held grease gun for all greasing. Wipe grease fittings with clean cloth before greasing, to avoid injecting dirt and grit. Replace and repair broken grease fittings immediately. If a fitting will not take grease, remove and clean thoroughly. Clean lubricant passageway.

1. Lubricate asphalt pump bearings, 2 locations (**Figure 7-1**) every 3 hours or twice daily.



Asphalt Pump

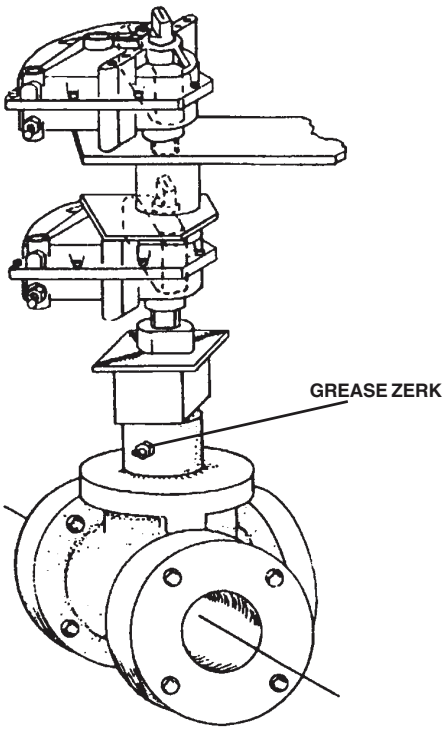
Figure 7-1

2. Lubricate asphalt circuit valve stems, one location on the 3-Way valve and the 2-Way valve every 3 hours or twice daily. **Figure 7-2** shows the 3-Way valve.

NOTICE **Lubricate the points described above at the end of the day to prevent seizing or setting up over night.**

Grease For Other Components

Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance or a SAE multi-purpose lithium base grease.



Asphalt Pump Valve

Figure 7-2

Hydraulic Oil

When adding or changing the hydraulic oil, refer to **Table 7-2. Hydraulic Fluids Chart**. Fluids that are not equal to those listed could result in substandard performance or failure of components.

Clean-out Solvent

Any commercially available cleaning solvent or release agent can be used to flush out the system. If the circuit is connected to the burner fuel supply, comply with the burner fuel specification when filling the tank.

NOTICE **Do not use Terpene Hydrocarbon or equivalent to clean out the spraybar. It destroys the Viton seals.**

7

Truck Systems

Follow recommendations in the truck Operator's Manual for fuel, lubricating oils, coolants and lubricating greases. Consult with truck manual for system capacities and servicing frequencies.

TANK COMPONENTS

Tank Sump

The Maximizer 3B is designed with a sump in the bottom of the tank where the asphalt gathers and is drawn into the pump. The tank is equipped with a removable plug on the bottom for draining condensation from the tank and cleaning the sump. When opening the sump, follow this procedure:

1. Drain or clean the sump at the start of the day. If it is necessary to open the sump during the work day, be sure the tank is cool to the touch.
2. Stop the engine, place all controls in neutral, set the park brake, remove ignition key and make sure tank is empty before starting by following the Unloading procedure (see ***Unloading Mode*** in Section 6).

⚠CAUTION **Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.**

⚠WARNING **DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from either can explode when exposed to flame or heat from smoking or other sources.**

3. Remove the plug in the bottom of the sump. The water in the bottom of the tank will drain out.
4. When draining is complete, install and tighten the plug.

Top Opening

An overflow vent is located in the front of the top opening to allow excess material to overflow the tank if required. Check the overflow vent at the start of each day and remove any obstruction.

A gasket is used to seal the top opening cover to prevent water from getting into the tank. It must be kept in good condition. When inspecting or replacing the seal follow this procedure:

1. Stop the engine, place all controls in neutral, set the park brake and remove ignition key.
2. Be sure the tank is cool to the touch.
3. Loosen both latches and lift the top opening cover.
4. To provide a proper seal, the gasket material must be in good condition. If it is damaged in any way it must be replaced. To provide a good seal, the four (4) top opening crossbar adjustment bolts must be tightened to provide uniform pressure on the gasket.
5. To replace gasket, remove fasteners in gasket retainer.
6. Fit the new gasket in the top opening lid and reinstall the gasket retainer.
7. Adjust the four (4) adjustment bolts on the top opening crossbar to provide uniform gasket compression.

Capacity Indicator Gauge

A pointer gauge is located on the front and on the rear of the tank to indicate the amount of asphalt in the tank. The float in the tank is attached to a shaft through the tank wall and moves the pointer accordingly. The shaft is sealed with packing material to prevent leakage. If the seal needs adjustment or replacement, follow this procedure:

1. Stop the engine, place all controls in neutral, set the park brake and remove ignition key.
2. Check under the float shaft at the start of each day for seal leakage. If seal is leaking, tighten the nut on the packing gland 1/3 turn at a time. Fill the tank and determine if the float shaft still leaks. Repeat if leaking continues. If the nut bottoms out and the shaft still leaks, replace the seal.

NOTICE **Do not over-tighten the packing gland nut. If it is too tight it will bind the shaft, preventing the shaft from turning properly.**

3. Before replacing seal, empty the tank and allow it to cool. Remove the pointer from the shaft. Loosen and remove the packing nut. Use a small screwdriver to remove the old packing material from the cavity.
4. Install the new packing into the cavity. Install the packing nut and turn until it contacts the packing material. Use vise grips to turn the shaft and lift the float. When the shaft is released, the float should turn the shaft easily as it moves down. Install the pointer in its previous position.

Mounting Hardware

The tank is attached to the truck frame with spring loaded bolts. Wooden blocks are mounted between the tank and the truck frame to absorb shock loads and to act as wear surfaces. During use, the blocks wear and mounting hardware will need to be tightened. To tighten, follow this procedure:

1. Stop the engine, place all controls in neutral, set the park brake and remove ignition key. Be sure the tank is cool to the touch.
2. The best time to check the hardware is at the start of the working day.
3. Tighten the anchor bolts. Measure spring length and maintain at 2.75 inches (7 cm). The spring coils should have a visible gap between them.
4. If mounting bolts can no longer be adjusted to proper spring compression, the wooden blocks must be replaced.
5. Keep the hardware tight at all times to prevent the tank from shifting on the frame.

ASPHALT PUMP SYSTEM

Asphalt Pump

The asphalt pump input shaft uses a special material that is packed into a cavity around the shaft to seal the hot material in the pump. To adjust this seal, follow this procedure:

⚠CAUTION Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

⚠WARNING DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from either can explode when exposed to flame or heat from smoking or other sources.

1. Stop the engine, place all controls in neutral, set the park brake and remove ignition key. Be sure that all components are cool to the touch before adjusting.
2. Visually inspect the pump on a weekly basis for shaft leakage. Correct adjustment of the packing gland will allow for a slight weeping at the shaft. If there is no weeping, the gland is probably too tight and shaft damage could occur. If more than slight weeping is observed, tighten the packing gland.

⚠WARNING Fire Hazard! Never spray cleaning solvent or release agent near a heating element or near any open flame or source of ignition. Do not operate Burner System during cleaning! Cleaning solvent and release agent could ignite causing serious personal injury.

NOTICE When using washdown, consider the environment and do not allow cleaning solvent to run onto the ground.

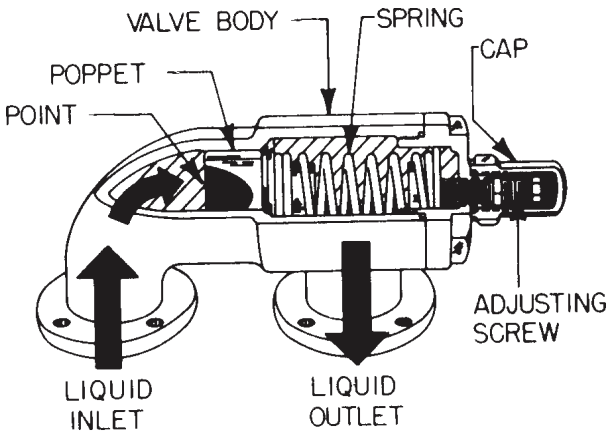
NOTE: When in CLEAN-OUT Mode, a small amount of cleaning solvent or release agent may leak from the shaft. This is normal.

3. To adjust the packing material, tighten the bolts on the packing gland. Tighten both bolts one half (1/2) turn and check for seepage. Readjust if required. Adjust the mounting bolts an equal amount each time to maintain an even pressure on the packing material.
4. Replace packing material when gland adjustment does not stop shaft leakage.

Relief Valve

The asphalt circuit is designed with a relief valve (**Figure 7-3**) to prevent damaging components when the system pressure gets too high. To adjust the relief pressure, follow this procedure:

1. The valve is set at the factory to 70 PSI for all operating conditions.
2. To check the relief pressure, there must be material in the tank. Stop the engine, place all controls in neutral, set park brake and remove ignition key.

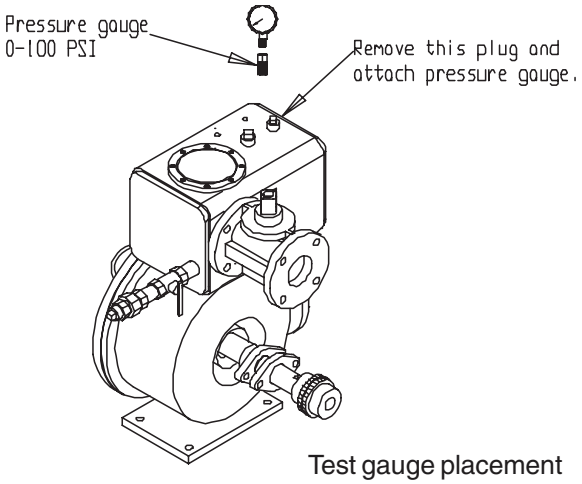


Relief Valve

Figure 7-3

3. Be sure the machine is cool to the touch.
4. Restart the engine. Turn the Plus One Controller Master switch ON.
5. Set the Plus One Controller Mode Selection button to RVS SUCT (Reverse Suction). Set the Auto/Manual Switch to MANUAL and run the pump IN REVERSE at 200 GPM.
6. Slowly open the 3/4 inch (19.05 mm) plug on top of the strainer box and listen for a suction sound. If sound is heard, remove the plug and install a 0-100 PSI pressure gauge with diaphragm (Rosco part #5058) to the screen box. (**Figure 7-4**) If a suction sound is not heard, check all switches to be sure the right settings are being used.
7. After the gauge is installed, set the Plus One Controller Mode button to SPRAY/BAR CRCLT for 3 to 5 minutes. Then set the Spraybar Master switch to OFF. Run the pump FORWARD at 300 GPM. Check the pressure. It should read 70 PSI. If it does not, adjust with the adjusting screw.

8. Remove the valve cap that covers the adjusting screw.



Test gauge placement

Pressure Gauge

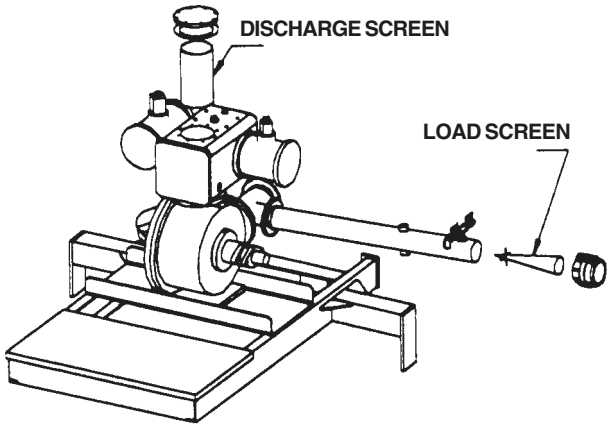
Figure 7-4

9. Slowly turn the adjusting screw in to increase the relief pressure and turn it out to decrease pressure. The screw height should extend 9/16 inch (14 mm) out of the bonnet casting for the needed pressure.
10. If proper pressure cannot be achieved, valve may need to be cleaned or replaced.
11. To clean the relief valve, disconnect the dump line from the asphalt pump housing. Remove the relief valve from the asphalt pump housing.
12. Use cleaning solvent or release agent to thoroughly clean the valve. Dispose of cleaning material according to local, state and federal regulations.
13. Be sure nothing is stuck under the poppet. Check that the spring moves the poppet easily and seats it firmly in the base.
14. If any components are damaged or broken, replace the valve.
15. Set the adjusting screw to extend 9/16 inch out of the bonnet casting.
16. Attach to the pump housing and connect the dump line using new gaskets.

Discharge Screen

The discharge screen (**Figure 7-5**) prevents large contaminants from reaching the nozzles. It is located on the outlet side of the pump manifold weldment box. Clean the screen monthly during the working season. To clean the screen, follow this procedure:

1. Stop the engine, place all controls in neutral, set the park brake and remove ignition key.
2. Be sure the tank is empty and the circuit is washed out.
3. Allow machine to cool to the touch.
4. Remove bolts holding access cover to pump weldment. Remove the access cover from the pump weldment box.



Discharge Screen & Load Screen

Figure 7-5

5. Remove any trash or debris that has become caught in the screen.
6. If the screen is damaged in any way, replace it using genuine Rosco parts.
7. Use a screwdriver or putty knife to remove the old gasket on the cover and housing.
8. Use Rosco high temperature gasket sealant (part #33384) under this cover to prevent leakage.
9. Install the cover and tighten the mounting bolts to their specified torque (28 Ft/Lbs).

⚠CAUTION Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

⚠WARNING DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from either can explode when exposed to flame or heat from smoking or other sources.

Load Line Screen

A conical screen (**Figure 7-5**) is located in the load line to stop debris or trash from entering the system. To inspect the screen, follow this procedure:

1. Visually inspect the screen at the start of each working day and whenever the cap is removed from the load line.
2. Remove any objects lodged against the screen. Do not remove the screen for cleaning.
3. Inspect the screen for damage or holes. If any are noticed, remove screen from the line and replace immediately.

NOTICE **Do not operate the machine with a damaged screen. Objects that enter the system can damage the pump.**

Pump Drive

The asphalt pump is driven by a fixed displacement hydraulic motor through a double chain coupler (**Figure 7-1**). Inspect the components and maintain the system in good working order. To inspect the pump drive, follow this procedure:

1. Stop the engine, place all controls in neutral, set the park brake and remove ignition key.
2. Allow machine to cool to the touch.
3. Visually check the condition of the coupler on a bi-weekly basis. If wear can be seen on the rollers or sprocket teeth, replace the coupler. Be sure the shafts are aligned and the sprockets securely fastened to the shaft before resuming operation.
4. A sensor is installed in the hydraulic motor to measure motor speed. If the sensor malfunctions, contact an authorized Rosco dealer for assistance.
5. Check the tightness of the hydraulic motor mounting bolts. Tighten if necessary. Adjust the hydraulic motor mounts when aligning shaft and chain coupler.

Automatic Valves

The asphalt flow is controlled by a 2-Way valve, a 3-Way valve and a Tank Valve. The valves are switched using electric solenoids controlling air actuators. Refer to **Figure 7-6**, **Figure 7-7**, and **Figure 7-8** to understand the function of the 3-Way Valve System.

Functional Check

Cycle the Plus One Controller Mode Selection from one mode to another and watch the valve to see if it functions correctly (see ***Valve Status During Operational Modes*** in Section 6).

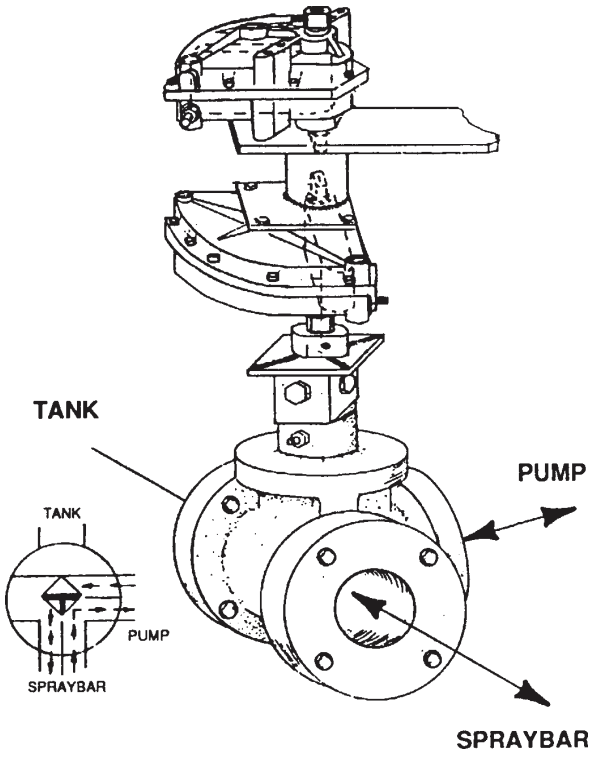
Solenoid Check

The air valves are located in the rear valve compartment. To check the solenoids:

1. Shut Master switch OFF or disconnect the power wire from the solenoid on the valve.
2. Depress or turn the slotted button on the air valve. You should hear the valve or air actuator respond.
3. Reset to normal and the valve should return to its original position.
4. On the 3-Way valve, repeat with other solenoid.
5. Reconnect the power wire.

Electrical Check

Disconnect power wire and use a digital multimeter to check the coil resistance. A good coil will have between 30 and 35 ohms resistance.

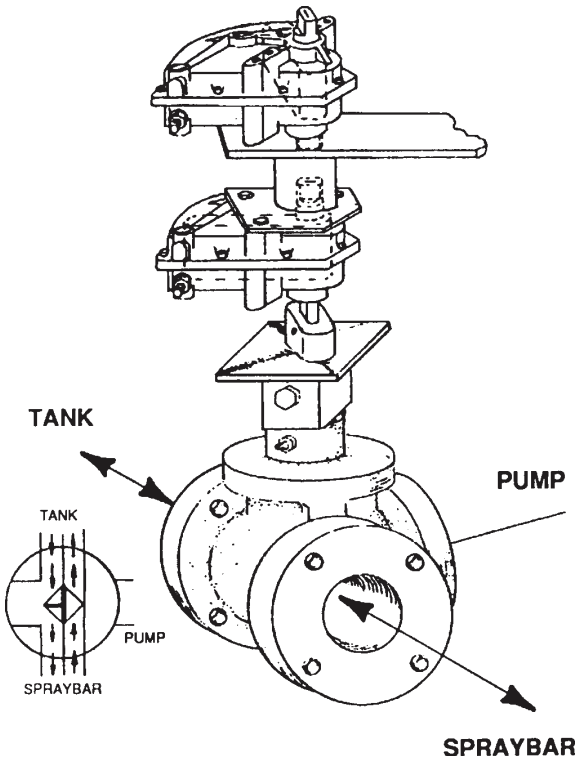


3-Way Valve Position 1

Figure 7-6

Top Solenoid Valve OFF

Bottom Solenoid Valve OFF

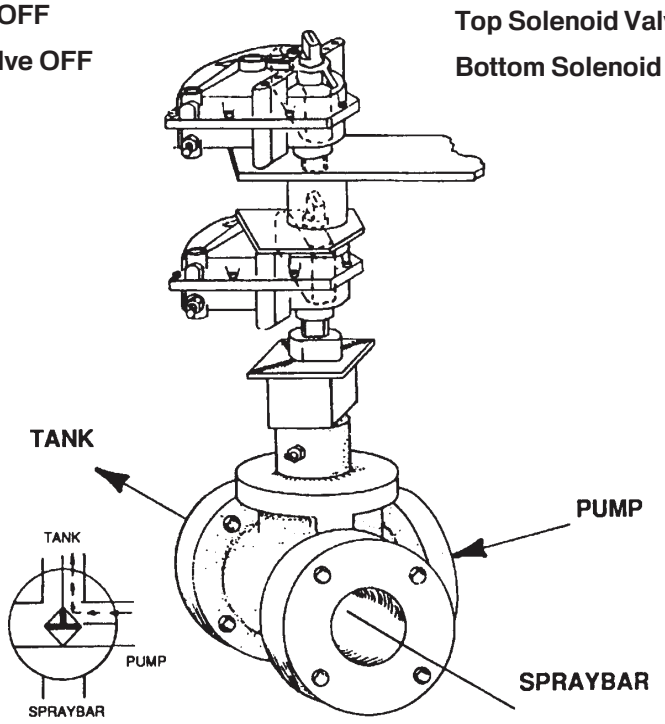


3-Way Valve Position 2

Figure 7-7

Top Solenoid Valve OFF

Bottom Solenoid Valve ENERGIZED



3-Way Valve Position 3

Figure 7-8

Top Solenoid Valve ENEGIZED

Bottom Solenoid Valve ENERGIZED

7

SPRAYBAR

The spraybar, mounted on the back of the Maximizer 3B, distributes asphalt over the road surface. The spraybar includes circuits to distribute asphalt to the nozzles, hydraulic lines for moving the bar and an air system for valve actuation. Maintain the system by following this procedure:

⚠CAUTION Always wear protective clothing, gloves and a face shield. Contact with hot asphalt can cause severe burns.

NOTICE Do not use Terpene Hydrocarbon or equivalent to clean out the spraybar. It destroys the Viton seals.

⚠WARNING DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from either can explode when exposed to flame or heat from smoking or other sources.

1. Clean the internal asphalt system after each use by going through the Reverse Suction and Clean-out modes, (see ***Modes Of Operation*** in Section 6). Keep the internal components clean to prevent clogging of components and asphalt set-up in the nozzles.

NOTE: Some residue will always remain on the inner surfaces of the plumbing, but it will liquefy when the hot asphalt flows through the system in the SPRAY/BAR CIRCULATE mode.

2. Clean all spraybar components at the end of each working day or more frequently if required.
3. Clean all joints and pivots of the asphalt, hydraulic and air systems to prevent caked dirt or asphalt from interfering with their function. Be sure to clean the exposed shafts of each air and hydraulic cylinder to prevent caked asphalt from being drawn into the system when the cylinder rod is retracted.
4. After cleaning, visually check all hoses, fittings and clamps for leaks or loose components. Leaks can affect the performance and function of the machine by causing uneven asphalt application and wasted asphalt.

⚠CAUTION Do not operate the unit with leaking or damaged parts. Leaks can result in hot asphalt spilling on the machine or the operator, creating a hazardous condition

5. Check that all pivots, hinges and joints are tight and can move freely. Free up all points that are binding. Check that all fasteners are tight. Do not operate with loose components.
6. Refer to the Bolt Torque Charts and review torque specifications. Maintain bolts at their specified torque.

HYDRAULIC SYSTEM

Hydraulic power is used to drive the asphalt pump, raise, and move the spraybar. A direct connection to the engine or a PTO drive from the transmission is used to power a variable displacement piston pump which in turn drives the asphalt pump and auxiliary functions. The hydraulic motor powering the asphalt pump is a fixed displacement high torque low speed motor. To service and maintain the system, follow this procedure:

⚠CAUTION **Always wear protective clothing, gloves and a face shield. Hydraulic fluid under pressure can penetrate skin and cause serious injury.**

⚠WARNING **DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from either can explode when exposed to flame or heat from smoking or other sources.**

1. The hydraulic reservoir is located on the left side of the vehicle. Check the sight gauge at the start of each working day. The oil level should be at the center of the sight glass to allow room for expansion as the oil warms during operation.
2. Add oil through the filler cap on the side of the tank. Clean the cap and filler neck before filling to be sure that no dirt or contaminants enter the tank. Hydrostatic systems will fail in a short time if the oil is not clean. Watch the sight glass when adding oil. Add until the oil level is in the center of the gauge.
3. The reservoir has a temperature switch that is set at 210° F (99° C). The sight gauge also displays the hydraulic oil temperature. Check the sight gauge if the control panel hydraulic temperature indicator comes on. Check the temperature to assure operating temperature is below 225° F (107° C). If the temperature exceeds 225° F (107° C), check the system for a failing motor or pump (see ***Troubleshooting*** in Section 8). Keep the tank exterior clean to maximize heat dissipation which will help cool the oil in the system.
4. Change the oil in the reservoir annually or every 400 hours, whichever comes first. The drain plug is located in the bottom of the tank. Drain the oil when the system is warm or hot to remove the most contaminants. DO NOT SMOKE when working around hot oil. Use a large pail or container to collect the used oil. Dispose of the used oil in an approved manner. Refer to **Table 7-2. Hydraulic Fluids Chart** for recommended grades and manufacturers. Watch the sight gauge.

NOTE: Contaminants can enter the system when hydraulic cylinder rods are retracted. The asphalt can get past the seals and can be dissolved by the oil. Changing the oil will remove these contaminants and prevent gum deposits from building up on the internal components.

5. The hydraulic system is equipped with an oil filter to remove dirt and other contaminants. Change the oil filter if the pointer is in the red position. To check the condition of the oil filter or change it:

   a. Start the engine.

   b. Engage PTO (if equipped) to operate the hydraulic system.

   c. Run the engine at 1200 RPM.

   d. Visually check the pointer on the gauge at the top of the filter. If the pointer is not in the red area, the filter does not need to be changed.

   e. Change the oil filter after 400 hours or annually.

NOTICE **The pointer indicates the pressure drop across the filter. This can only give an accurate reading when oil is circulating through the system.**

BURNER SYSTEM

Diesel Burners

The diesel burners are located at the rear of the Maximizer 3B. Check the burner operation daily. Follow this procedure:

⚠WARNING DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from either can explode when exposed to flame or heat from smoking or other sources.

⚠CAUTION Always wear protective clothing, gloves and a face shield. Burners are hot and contact with skin can cause severe injury.

1. Excessive smoke or trouble starting means burner cover must be removed for cleaning or adjustment. Visually inspect the burner and mounting system daily. Tighten, repair or replace components as required.
2. Check fuel level in the tanks on a daily basis. Add fuel as required.
3. Check the fuel filter and fuel lines before the burners are ignited. Tighten fittings that are leaking and replace any damaged parts. Clean filter as required.
4. On a monthly basis or every 80 hours remove burner covers and check condition of burner. Clean asphalt build-up from burner components.
5. On a monthly basis or every 80 hours remove burner from tank and check the condition of the flue liners and flue tubes. Replace liner if damaged and inspect flue tubes for damage.

⚠WARNING Never operate burners if flue tubes are damaged. Asphalt material coming through the cracked tube could ignite when the burner is lit. Consult your Rosco dealer for repair procedures.

LPG Burners (Option)

The LPG Burners are located at the rear of the Maximizer 3B. Check the burner operation daily. Follow this procedure:

⚠WARNING DO NOT SMOKE around the machine. Fuel, asphalt material and the fumes from either can explode when exposed to flame or heat from smoking or other sources.

⚠CAUTION Always wear protective clothing, gloves and a face shield. Burners are hot and contact with skin can cause severe injury.

1. Visually inspect the burner and mounting system daily. Tighten, repair or replace components as required.
2. Check the fuel level in the tanks daily.
3. Check the valves and fuel lines before the burners are lit. If a leak is suspected, use soapy water to identify the source of the leak.
4. Use a wrench to tighten the burner mounting hardware before using the burners.
5. Visually inspect the flue liners and flue tubes for cracks or other damage.

⚠WARNING Never operate burners if flue tubes are damaged. Asphalt material coming through the cracked tube could ignite when the burner is lit. Consult your Rosco dealer for repair procedures.

GPS GROUND SPEED SENSOR

The controller uses either a GPS (Global Positioning System) Speed Sensor or the (optional) Radar Horn Speed Sensor to measure distributor ground speed for use in application rate calculations and the display of real time distributor metrics.

The GPS is a space-based global navigation satellite system that provides reliable location and time information in all weather and at all times and anywhere on or near the Earth when and where there is an unobstructed line of sight to four or more GPS satellites. It is maintained by the United States government and is freely accessible by anyone with a GPS receiver.

GPS is the normal method of measuring distributor ground speed. The GPS receiver is mounted on the roof of the cab and provides input to the Plus One Controller. This information is used to control the speed of the variable speed hydraulic pump which provides proportional control of the asphalt pump. This method guarantees constant spray rates regardless of changes in distributor ground speed.

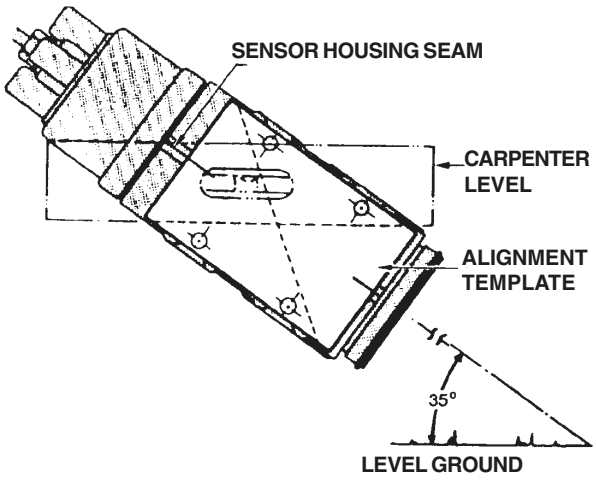
NOTE: If Sensor signal is blocked by an object (e.g. a tree or overhead structure) the system will continue to spray at the same rate for approximately 30 seconds.

RADAR HORN (OPTION)

The radar speed sensor (**Figure 7-9**) is used to measure ground speed for the Maximizer 3B. It is mounted on the outside of the truck frame. The radar horn operates by directing a beam of microwave energy (fixed frequency) at the ground and comparing it with the frequency of energy reflected back from the ground (return frequency). The return frequency is then proportional to the true ground speed of the Maximizer 3B.

In addition to providing speed information to the Plus One Controller, this signal is used in calculating the asphalt application rate. The radar horn is capable of full time operation and is activated by the Master switch on the Plus One Controller.

Keep the face of the radar horn clean. Mounting bolts should be kept snug (10 Ft/Lb torque) but not over-tight as the housing could be damaged. Mounting bracket to truck frame bolts should be tightened to 30 Ft/Lb torque.



Radar Horn

Figure 7-9

DAILY EXTERIOR MAINTENANCE

Clean the top platform, steps, railings, ladder and catwalk to prevent accidents during operation. Clean the instruction plates, decals and gauges so they can be seen and read by the operator at all times. Replace any decals or information plates that are damaged or illegible. Clean all lights and reflectors so they can be seen by other vehicles.

STORAGE

NOTICE **Do not store equipment where it is subjected to damage from dirt and weather.**

A stored machine requires as much periodic maintenance as a machine at work. Stored units must receive periodic scheduled maintenance. Many instances of customer downtime and dissatisfaction can be traced to parts that became defective due to inattention during storage.

The following procedures will help maintain equipment and lessen downtime:

1. Thoroughly clean the unit as you would at the end of the day. Be sure there is no asphalt in the tank, pump or piping. Use (see ***Maintenance Intervals Chart*** in Section 7) to check and/or clean every component listed.
2. Replace any worn or damaged parts. Touch up any scratched or chipped painted surfaces.
3. Lubricate all grease points. Make sure all grease cavities have been filled with grease.
4. Top up all fluid levels to minimize condensation during storage.
5. Inspect all air and hydraulic hoses, couplers, fittings and cylinders. Tighten any loose fittings and replace any hoses that are worn.
6. Check all safety decals. Replace any decals that are damaged or illegible.
7. Store the unit where it will be protected from adverse weather conditions. All replacement parts, whether complete assemblies, component repair parts or service kits should be stored in a dry sheltered area.
8. Fill the pump and spraybar with solvent (see ***Clean-out Mode*** in Section 6).
9. If a unit will not be used for more than two months, (see ***Maintenance Intervals Chart*** in Section 7). Follow the procedure for the monthly interval, as well as these preventative maintenance procedures:

Check for Water in Hydraulic Fluid - Any machine that is stored for an extended period in a climate that has a wide range of temperatures and/or humidity, will develop condensation on the inside of the tank walls. Check the hydraulic fluid on a regular basis for possible moisture contamination.

NOTICE **Hydraulic oil that is contaminated, must be drained, the filter elements replaced and the tank refilled with Rosco approved fluid. Failure to do this could result in premature failure of the pumps and/or motors.**

Warm-up and Cycling - Start and run the engine until it is warm. Cycle all hydraulic and/or hydrostatic functions until all components are warm and the hydraulic fluid is up to operating temperature.

Lubrication - After the machine is warmed up, grease all pivot points.

Protection of Exposed Cylinder Rods - During periods of extended storage, (two months or longer), retract all cylinder rods as far as possible. Coat with grease any exposed part of the cylinder rod, to prevent rusting. Any stored cylinders, all exposed seals, o-rings, etc. should be coated with grease to prevent cracking.

HYDRAULIC FLUIDS

The hydraulic oils listed in **Table 7-2. Hydraulic Fluids Chart** have been reviewed by Rosco and are recommended as replacements. It is best to use the heaviest weight oil that can safely be used for the temperature range of machine operation. If your machine will never be used at temperatures below 0°F, use a heavier weight oil.

If you are considering using an oil that is not listed, contact the Rosco factory to obtain the specifications that the hydraulic oil must meet to provide the needed lubrication and cooling for the unit's hydraulic components.

HYDRAULIC OIL REQUIREMENTS

NOTICE **DO NOT MIX manufacturers or grade weights when adding hydraulic oil.**

1. Be sure hydraulic oil selection is compatible with your hydraulic system.
2. Be sure to use mineral base hydraulic oil.
3. Be sure hydraulic oil selection assistance is from a reputable supplier.

Hydraulic oil must provide anti-wear properties that meet or exceed those found in the API (American Petroleum Institute) classification SD, SE or CC crank case oil.

Hydraulic oil viscosity must not fall below 70 SUS (13 cs) in the reservoir under the most adverse conditions. The best viscosity is 80-300 SUS (17 cs to 65 cs). The viscosity rating at the lowest expected start-up temperature should not exceed 10,000 SUS (2158 cs).

Hydraulic oil must have rust and oxidation inhibitors that will maintain chemical stability. When changing the hydraulic oil, the hydraulic system must be completely drained. Be sure to purge or drain all hoses, cylinders, valves, motors and pumps of hydraulic oil. All hydraulic oil filters must also be changed at this time.

Table 7-2. Hydraulic Fluids Chart

ISO 46 / SAE 20	ISO 68	ISO 100 / SAE 30
AMBIENT TEMP -15°F to 80°F (-26°C to 27°C)	AMBIENT TEMP 0°F to 100°F (-18°C to 38°C)	AMBIENT TEMP 15°F to 115°F (-9°C to 46°C)
Mobil DTE 25	Mobil DTE 26	Mobil DTE 100 / DTE 18M
CITGO AW 46	CITGO AW 68	CITGO AW 100
Conoco Phillips 46	Conoco Phillips 68	Conoco Phillips 100
Chevron Texaco AW 46	Chevron Texaco AW 68	Chevron Texaco AW 100
Shell Tellus 46	Shell Tellus 68	Shell Tellus 100
Exxon Nuto 46	Exxon Nuto 68	Exxon Nuto 100
Special Start-up below 5°F (-15°C)	Special Start-up below 20°F (-7°C)	Special Start-up below 32°F (0°C)
Hyd Res Temp Max 165°F (74°C)	Hyd Res Temp Max 185°F (85°C)	Hyd Res Temp Max 200°F (93°C)

SAFETY LABEL INSTALLATION

Anytime the Rosco Model Maximizer 3B Asphalt Distributor has been repainted or the safety labels have been removed, damaged or can't be read, a new set of labels should be ordered and reinstalled for safe operation (see ***Safety Label Locations*** in Section 2).

1. Be sure that the installation area is clean and thoroughly dry before installing decals.. Use hot soapy water to install decals.
2. Determine the exact position by taking measurements and test fitting before you remove the backing paper.
3. For decals with no top protection paper, determine the decal location and remove the smallest portion of the split backing paper.
4. Align the decal over the specified area and carefully press the small portion with the exposed adhesive backing into place.
5. Peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
6. Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.
7. If the decal has a protective top paper, use hot soapy water on the surface to which the decal is being applied. Leave wet. After determining the location, remove the backing paper and soak the decal in clean soapy water before application. This will help prevent air bubbles in the finished decal.
8. Smooth the decal into place with a sponge and check for air bubbles. Small air pockets may be pierced with a pin and smoothed out. When the decal is completely smoothed out, carefully remove the top paper.

ROSCO

A LeeBoy Company

Section 8
TROUBLESHOOTING

Page

Troubleshooting 8-1

General 8-2

Troubleshooting Charts 8-2

GENERAL

The following Troubleshooting Guide includes some problems that an operator may encounter during the course of operating the Maximizer 3B Asphalt Distributor. It also includes some acceptable corrections to these problems. Unless otherwise noted, the problems listed here are those which an operator can diagnose and repair. See an authorized ROSCO Dealer/Distributor for diagnosis and repair of problems not listed.

For specific engine and hydraulic problems not covered by this guide, refer to the Engine or Hydraulic Pump/ Motor Manufacturer's manual.

NOTICE **DO NOT attempt to service or repair major components, such as the engine, hydrostatic pump or motor, unless authorized to do so by your ROSCO Dealer/Distributor. ANY UNAUTHORIZED REPAIR WILL VOID THE WARRANTY.**

When a problem occurs, don't overlook the simple causes. For example, a starting problem could be caused by something as simple as an empty fuel tank. After a problem has been corrected, be sure to repair or replace the mechanical component that caused the problem.

TROUBLESHOOTING CHARTS

The troubleshooting charts below identify the most common symptoms of failure. Use these charts to help identify the failed component and possible remedies. If the problem persists, see your authorized LeeBoy Dealer (see ***Contact Information*** in Section 3).

Table 8-1. Air Solenoids

SYMPTOM	CAUSE	REMEDY
Air solenoid valves leaking	Spool section jammed or sticking on air valve	Replace spool. NOTE: Block at A & B ports with pipe plugs. Bench test assembly with shop air supplied to inlet. Manually and/or electrically operate each valve section to insure proper operation.
Air solenoid valve sticking	Dirt in valves or gummy deposits causing spool to hang up	Clean or replace. Solvent washing of air valves creates problems by causing valve seals to swell. Replacement is the most reliable repair.
	Dirt in valves	Check truck air system for water or contamination
	Bodies of valves damaged or warped	Replace valves
Solenoids are hot. (Too hot to hold on to after they have been energized continuously for several minutes.) NOTE: Solenoids will feel hot to the touch when operating properly.	Short in solenoid wiring	Check voltage marked on side of solenoid. Should show 12V DC

Table 8-2. Asphalt Application

SYMPTOM	CAUSE	REMEDY
Asphalt application is inconsistent	Relief valve on asphalt pump stuck in open position	Reset relief valve; should be set at 70 psi
	Relief valve not seating properly	Take unit to an authorized dealer to check the seal between the seat and the poppet
	Inconsistent temperature and viscosity between asphalt loads	Monitor asphalt temperature and reheat when needed. Circulate spraybar for several minutes before spraying.
	Asphalt pump speed too high for type of nozzles used; relief valve on pump limits pressure to spraybar; excess flow bypasses to inlet of pump.	Decrease truck speed. Refer to calibration and application rate information to determine correct settings, (see ***Valves And Nozzles*** in Section 6) or (see ***Manual Operation*** in Section 6).
	2-Way and 3-Way control valves not fully open	With asphalt tank empty and truck engine OFF, remove flanged hose ends from 2-Way and 3-Way valves. With ignition ON, power ON and air pressure available, set Mode Selection to SPRAY mode. Check port alignment. There are two socket head adjusting screws on the vane air actuator which adjust amount of rotation. Loosen jam nut and turn set screw in or out to obtain proper port alignment. Only the set screw in contact with vane in air actuator should be adjusted.
Asphalt streaks during spraying.	Incorrect spraybar height	Adjust spraybar high enough so spray fans completely overlap
	Asphalt not heated to recommended temperature for spraying	Heat material to temperature recommended by asphalt supplier
	Spraybar nozzles not uniformly set at 20 degree angle	Check angle setting of all nozzles with Nozzle Alignment Wrench
	Valves not aligned correctly	Check angle setting with Valve Alignment Wrench
	Wrong size nozzle	Refer to Valves and Nozzles in Section 3, Material & Operation
	Asphalt pump speed too slow for spraybar width or size of nozzles	Refer to calibration and application rate information at Operating Screens in Section 3, Material & Operation
	Streaking during start of a "shot" indicates material in spraybar has cooled	Run distributor in Spray/Bar Circulate mode for several minutes before starting to spray
	Spraybar pressure too low	Increase ground speed

Table 8-2. Asphalt Application *(continued)*

SYMPTOM	CAUSE	REMEDY
Asphalt is "fogging" during spraying	Ground speed is too fast for desired application rate	Decrease the ground speed
	Nozzles are too small	Increase the nozzle size
	Asphalt viscosity is thinner than recommended for spraying	Allow the asphalt to cool to spraying temperature recommended by the asphalt supplier
	Asphalt pump is running too fast for desired application rate	Adjust flow calibration and/or ground speed calibration, (see ***Spraybar and Valves*** in Section 8).
Asphalt application rate is too light	Ground speed is too fast	Decrease truck speed
	Engine RPM is not sufficient to maintain asphalt pump speed	Gear down and/or idle up
	Plugged or restricted inlet to asphalt pump	Clean asphalt tank sump and suction screens
	Nozzles are too small for application rate at given ground speed	Decrease truck speed and/or use larger nozzles
	Asphalt material viscosity is too thick, temperature is too low	Heat material to a higher temperature
	More spraybar extended or activated than used in calibration	(see ***Valves And Nozzles*** in Section 6) or (see ***Manual Operation*** in Section 6)
	Individual nozzles are clogged	Clean nozzles

Table 8-3. Asphalt Pump

SYMPTOM	CAUSE	REMEDY
Asphalt pump leaks bitumen at rotor shaft gland	Gland not properly tightened	Tighten gland
	Shaft packing worn	Replace packing
	Insufficient lubrication of pump rotor shaft	Lubricate pump rotor shaft
	Pump shaft grooved, bent or worn	Replace pump shaft. Check for causes of shaft damage: misalignment, loose mounts, packing too tight.
Asphalt pump does not turn	PTO not engaged; hydrostatic pump not turning	Engage PTO
	Hydrostatic pump failure	With PTO engaged and low engine idle, check charge pressure of hydrostatic pump; should be at least 220 PSI. NOTE: A plugged charge filter can cause low charge pressure.
	Asphalt not heated to recommended temperature for spraying	Heat material to temperature recommended by asphalt supplier

Table 8-3. Asphalt Pump *(continued)*

SYMPTOM	CAUSE	REMEDY
Asphalt pump turns but won't pick up material	Air leak on suction side of asphalt pump	Check gasket on quick coupling cap of load inlet. No "air suction" should be heard
		Check for hole in piping on the suction side of the asphalt pump
		Ensure ball valve from solvent tank and load line vent valve are closed
	Asphalt cold or too thick	Heat material to the proper temperature recommended by asphalt supplier
	Tank valve is closed	Check operation of the tank valve. Free the valve if it is stuck and air cylinder cannot pull it open. Reversing rotation of asphalt pump may assist valve opening.
	Asphalt pump not turning in a "forward" rotation	When viewed from the shaft end (motor end), shaft should turn clockwise for forward. Check that the pump moves in a forward direction when the Controller Manual Pump Speed dial is rotated clockwise. The pump control switch must be in FRT FWD position.
	Circulating system valves not set correctly for the required operating mode	Refer to Section 3, Material & Operation, to determine correct valve positions for desired mode. Check corresponding air solenoids to see if they are activated.
	Asphalt tank is empty	Fill asphalt tank with material
	Load line hose plugged / collapsed	Clean hose or replace
	Valve on external tank closed on transport vehicle or remote tank. (Occurs on Tank Loading only.)	Open tank valve
	Inlet screen plugged	Clean inlet screen in load line and optional inlet box if so equipped
Asphalt pump won't turn fast enough	Asphalt not heated to recommended temperature	Heat material to temperature recommended by asphalt supplier
	Sump is full of asphalt or debris	Unload tank contents and clean sump by removing plug in bottom of tank. NOTE: Maximizer 3B controller is programmed to not allow reverse operation while in Tank Circulate mode of operation.
	Cold asphalt clogging pump or circulating system valves	Apply heat with portable torch to asphalt pump, piping or valves in circulating system
	Speed of hydraulic pump not matched to needs of asphalt pump. Truck engine too slow	Increase truck engine RPM
	Malfunction of the hydraulic system components	Check for leaks in hydraulic system hoses and fittings. See **Table 8-5. Hydraulic System.**
	High system temperature	See **Table 8-5. Hydraulic System**
	Air trapped in hydraulic system	

Table 8-4. Diesel Burner

SYMPTOM	CAUSE	REMEDY
Burner motor will not run	Check for power	Run truck and check the truck alternator
	Check for loose wires and connections	Repair or replace. Tighten connections
Burner fan turns too slowly	Check for excessive dirt build up on blower fins	Clean fins and fan shroud
	Not enough voltage for proper fan operation	Check voltage with truck running. Check truck electrical system
	Check for loose wire connections	Repair or replace. Tighten connections.
Burner getting no diesel fuel	No fuel in tank	Fill fuel tank
	Faulty fuel solenoid	Check solenoid. Repair or replace.
	Plugged fuel filter. Check both main and in-line filters.	Replace fuel filter(s)
	Contaminated fuel	Drain fuel system and replace with known fuel quality
	Loose or damaged fuel pump coupling	Tighten or replace
	Air in the fuel system	Check and tighten hose connections or filter
Burner igniters not working	Fuel combustion problems	Test for combustibility. Remove fuel suction line. Insert line into a container of #1 diesel fuel or stove fuel, and run the burner. If burner lights and runs properly, it is a fuel problem due to low sulphur fuel. Use a fuel additive to aid combustion.
	Low fuel pressure	Check fuel pressure. Must be 140 PSI.
	Igniter clearance is wrong	The electrodes should be 1/4" (6.4 mm) from tip of nozzle and no more than 1/4" (6.4 mm) from electrode tip to tip.
	Faulty relay inside burner control box.	Replace relay
	Soot build up on fuel nozzle	Replace nozzles
	Air intake not set properly	Adjust air inlet or band on blower
Burner has fluttering and blow back	Clogged fuel filter	Replace in-line fuel filter
	Air intake not set properly	Adjust air inlet or band on blower
	Low sulfur fuel is being used	Use a fuel additive to aid combustion
	Fan is running too slow	Clean fan blade fins. Check voltage
	Low fuel pressure	Fuel pressure must be 140 PSI
	Faulty fuel nozzle	Replace with factory recommended nozzle
	Air in the fuel system	Check and tighten all fuel connections and filters
	Flue liner plugged with soot or carbon	Clean flue liner with pressure wash

Table 8-5. Hydraulic System

SYMPTOM	CAUSE	REMEDY
Hydraulic system “chatters”. NOTE: Some clicking or chattering noise is natural and can be heard at the asphalt pump motor. The gerotor motor and the double link chain coupling make some noise.	Air in hydraulic system is causing oil to foam. Possible causes: 1. Clogged air filter 2. Low oil level 3. Leaks in system 4. Hydraulic pump cavitation	1. Change air filter. 2. Add fluid to proper level. 3. Purge air from system; check for leaks. 4. Check for restrictions to inlet flow in hydrostatic and hydraulic pumps. Check for restrictions to inlet flow in hydrostatic and hydraulic pumps.
	Pressure setting of hydrostatic pump relief valve too low	Check hydrostatic pump relief pressure; should be 4350 PSI
	Tank valve closed causing asphalt pump to cavitate	Open tank valve; tank valve may be stuck closed and require additional force to open
	Asphalt pump relief valve not operating	Check asphalt pump relief valve; should be set at 70 PSI
Hydraulic oil “High Temp” indicator is ON or higher than usual	Low hydraulic oil level	Add fluid to proper level
	Reservoir and/or hoses covered with asphalt	Clean with solvent
	Hydraulic filter(s) plugged	Replace filters
	Air trapped in hydraulic system	Check for leaks and/or restrictions in the hydraulic lines
	Asphalt viscosity is too thick causing excessive hydraulic pressures	Heat material to proper temperature recommended by the asphalt supplier
	Relief valve setting too low on hydrostatic pump	Check hydrostatic pump relief pressure; should be 4350 PSI. Relief is adjustable by adding shims. Refer to pump manual.
	Hydraulic cooler is dirty or plugged	Clean cooler
	Spraybar Lift or Extend valve is stuck. Oil is being pumped over relief valve.	Manually operate hydraulic valves to see if any are activated when switches are OFF. Repair or replace any defective valves.
	Faulty temperature sender	Replace sender
	Short in temperature sender wiring	Correct shorted wire

Table 8-6. Spraybar and Valves

SYMPTOM	CAUSE	REMEDY
Spraybar doesn't circulate heated material	Circulating system valves may not be set for Spray/Bar Circulate mode	Free stuck air actuators (see ***Automatic Valve System*** in Section 6). Check that proper air solenoid valves are activated, (see ***Valve Status During Operational Modes*** in Section 6).
	Cold asphalt material blocking passages in the spraybar	Apply heat to spraybar with hot steam, air or electrical heat tapes to loosen material
	Asphalt pump not turning, or tank valve is closed. (Pump should turn clockwise when looking at input shaft.)	See Asphalt Pump Troubleshooting
	Plugged or restricted inlet to asphalt pump	See Asphalt Pump Troubleshooting
Spraybar doesn't heat material	See Causes listed above	See Remedies listed above
Spraybar won't lift or lower	Obstruction in the lifting mechanism	Remove obstruction
	Hydraulic solenoid valve not working	Check solenoid operation
	Hydraulic system relief valve set too low	Check system pressure (should be 4350 PSI)
	Electrical wiring failure	Check wiring
Spraybar shuts off while spraying	Blown fuse or circuit breaker	Replace fuse or reset circuit breaker
	Faulty wires; loose wiring plug on back of instrument panel	Check wiring continuity; reconnect plugs on panel
	Low air pressure; air leak	Rebuild truck air pressure; check for and fix air leaks
	Vibration from rough road surface affecting mercury switches	Mercury switches located under the shields on the spraybar need to be readjusted
Spraybar entire section not coming on	Control switch for that section not activated	Activate switch on instrument panel
	Solenoid air valve for that section not coming on	Check solenoid air valve by using manual override button. Check wiring and solenoid. Repair or replace.
	Air hose plugged, collapsed/ broken	Replace hose(s)
	Asphalt feed hoses to that section are plugged or collapsed	Clean or replace asphalt hose(s)
Spraybar sections spraying light	Spraybar not heated properly	Circulate asphalt in spraybar for several minutes before attempting to spray
	Asphalt feed hose(s) partially plugged or collapsed	Clean or replace hose(s)

Table 8-6. Spraybar and Valves *(continued)*

SYMPTOM	CAUSE	REMEDY
Spraybar sprays streaks before coming on full	Spraybar not heated properly	Circulate asphalt in spraybar for several minutes
	Asphalt pump not at correct speed	Check flow and speed calibration factors and adjust if necessary, see **Table 8-3. Asphalt Pump.**
	Ground speed sensor not working properly	See **GPS Ground Speed Sensor** See **Table 8-8. General Machine**
	Faulty wiring	Check GPS or Radar Horn wiring. Check Controller wiring
	Hydrostatic pump malfunction	See **Table 8-2. Asphalt Application** and **Table 8-3. Asphalt Pump**
	Truck transmission in too high gear	Use lower truck gear
Spraybar lowers excessively. NOTE: Normal lowering may be as much as 2 inches per hours.	Internal leakage in the hydraulic cylinders or the valves. To check, raise the base end of the cylinders and open the rod end. If the bar doesn't settle, the problem is in the valves. If the bar does settle on the cylinders, repeat the check to see which cylinder is the problem.	Repack the cylinder or replace the valve section
Spray valve (individual) staying ON or not fully closing	Debris in spray valve	Open spray valve, remove nozzle and clear debris with wire hook
	Actuator handle on spray valve not correctly aligned with spray valve body	Use Valve Alignment Wrench to align actuator with valve body, (see ***Nozzle Selection*** in Section 6).
Spray valve (individual) staying closed or not fully open	Actuator handle on spray valve not correctly aligned with valve	Use Valve Alignment Wrench to align actuator with valve body, (see ***Nozzle Selection*** in Section 6).

Table 8-7. Tank Valves

SYMPTOM	CAUSE	REMEDY
Tank valves are difficult to operate	Insufficient valve lubrication	Lubricate valves
	Cold asphalt material clogging valves	Apply heat to valves with portable torch to restore operation. NOTE: Do not heat air actuators or air lines (see ***Clean-out Mode*** in Section 6).
	Low air pressure or no air pressure	Increase truck air pressure to 90 - 110 PSI. Check for broken hoses.
	90 degree vane air actuators are stuck	Check air actuators. They may not be getting lubricated or may be getting dirty air.
	Defective solenoid valve	Replace valve. Contact a factory representative for help, if necessary.
Tank valves are stuck closed	No air pressure on lift side (bottom) of spray valve air cylinder	Check air solenoid valve operation. Check for kinked or blocked air hoses.
	Tank valve stem packing nut too tight	Loosen stem nut slightly

Table 8-8. General Machine

SYMPTOM	CAUSE	REMEDY
No GPM readout on display, or inconsistent readout	Sensor not adjusted properly	Contact a factory representative for instructions on adjusting the sensor
	Faulty wiring or sensor	Check wiring and sensor. Replace if necessary.
No ground speed reading on display	No power to GPS or Radar Horn	Check fuses, circuit breakers and wiring. Replace, reset or repair as needed.
	Vehicle not moving	Vehicle must be moving to show ground speed reading
	Lost contact with satellites for GPS	Move to area having contact with GPS satellites.
	Obstruction blocking Radar Horn signal from reaching the ground	Clear the obstruction blocking the radar horn signal.
	Faulty GPS or Radar Horn	Replace GPS or Radar Horn
Machine vibrates	PTO drive shaft u-joints worn	Replace u-joints
	PTO drive shaft out of balance	Have drive shaft balanced by qualified repair shop
	Drive shaft not phased correctly	Have drive shaft phased with both yoke ends parallel to each other. Just on spline off creates vibration.
	Output shaft of the PTO and input shaft of the hydraulic pump are out of parallel by more than 8 degrees	Check for worn/loose pump mounts. Realign pump input shaft with PTO output shaft to be parallel.
	Hydraulic pump mounting bolts or bracket bolts loose	Tighten bolts

Table 8-8. General Machine *(continued)*

SYMPTOM	CAUSE	REMEDY
Ground speed reading when truck isn't moving (Radar Horn Option). NOTE: Ground speed reading with the truck not moving is fairly common and will not total as long as Spraybar Master switch is OFF or in Bar Crclt mode.	Truck parked over/near open water or waving grass	Move truck to a clean, dry, litter-free area of pavement and check FPM reading
	Loose piece of trash hung up on or near the Radar Horn face	Inspect the area near the Radar Horn face and clean as needed
	Mounting bolts on bracket of Radar Horn are loose	Tighten bolts
	Radar Horn is picking up: • PTO shaft rotation • engine fan rotation • engine exhaust leaks • system vibration	NOTE: Radar Horn mountings are checked at factory prior to shipment. All work correctly when they leave. It may be necessary to remount sensor at a slightly different angle (redrill bracket) or rotate sensor and face it towards rear of truck at the same downward angle. The sensor gives an absolute speed reading so it doesn't matter which direction it is facing. The speed factor will have to be recalibrated in either case, (see ***Manual Operation*** in Section 6). Shielding the radar horn from other interfering signal inputs may also be effective.
Machine vibrates at front only	Asphalt pump cavitating and running too fast	Troubleshoot cause of pump cavitation; decrease pump speed
	Engine or driveline problems with truck	Have truck inspected and repaired by qualified dealer mechanic
	Set screw holding the splined coupling on the pump shaft is loose, allowing the coupling to back up	Push the splined coupling back on to the pump shaft and torque the set screw to 24 Ft/Lb and replace locking wire
	Drive shaft has been reassembled improperly and is out of balance	Insure that the alignment arrows on the drive shaft are in line. If not, disassemble and realign
	Bolts holding the drive shaft to the engine crankshaft are loose and have allowed the drive shaft to move out of alignment	Align and properly torque the drive shaft to the engine crankshaft (Front Live Power)
	Hydraulic pump mount has moved	Loosen mounting bolts. Realign the pump and retighten the bolts

NOTES

ROSCO

A LeeBoy Company

Section 9
SCHEMATICS

	Page
Schematics	**9-1**
Electrical Schematic - Plus One Overview	9-3
Electrical Schematic - Plus One 1 of 5	9-5
Electrical Schematic - Plus One 2 of 5	9-7
Electrical Schematic - Plus One 3 of 5	9-9
Electrical Schematic - Plus One 4 of 5	9-11
Electrical Schematic - Plus One 5 of 5	9-13
Pneumatic Schematic - Control, Air 1 of 1	9-15
Electrical Schematic - Control, Front Machine 1 of 1	9-17
Electrical Schematic - Control, Rear Machine 1 of 1	9-19
Electrical Schematic - Control, LH Spraybar 1 of 1	9-21
Electrical Schematic - Control, RH Spraybar 1 of 1	9-23
Electrical Schematic - Can Bus Kit 1 of 4	9-25
Electrical Schematic - Can Bus Kit 2 of 4	9-27
Electrical Schematic - Can Bus Kit 3 of 4	9-29
Electrical Schematic - Can Bus Kit 4 of 4	9-31

NOTES

ELECTRICAL SCHEMATIC - PLUS ONE OVERVIEW

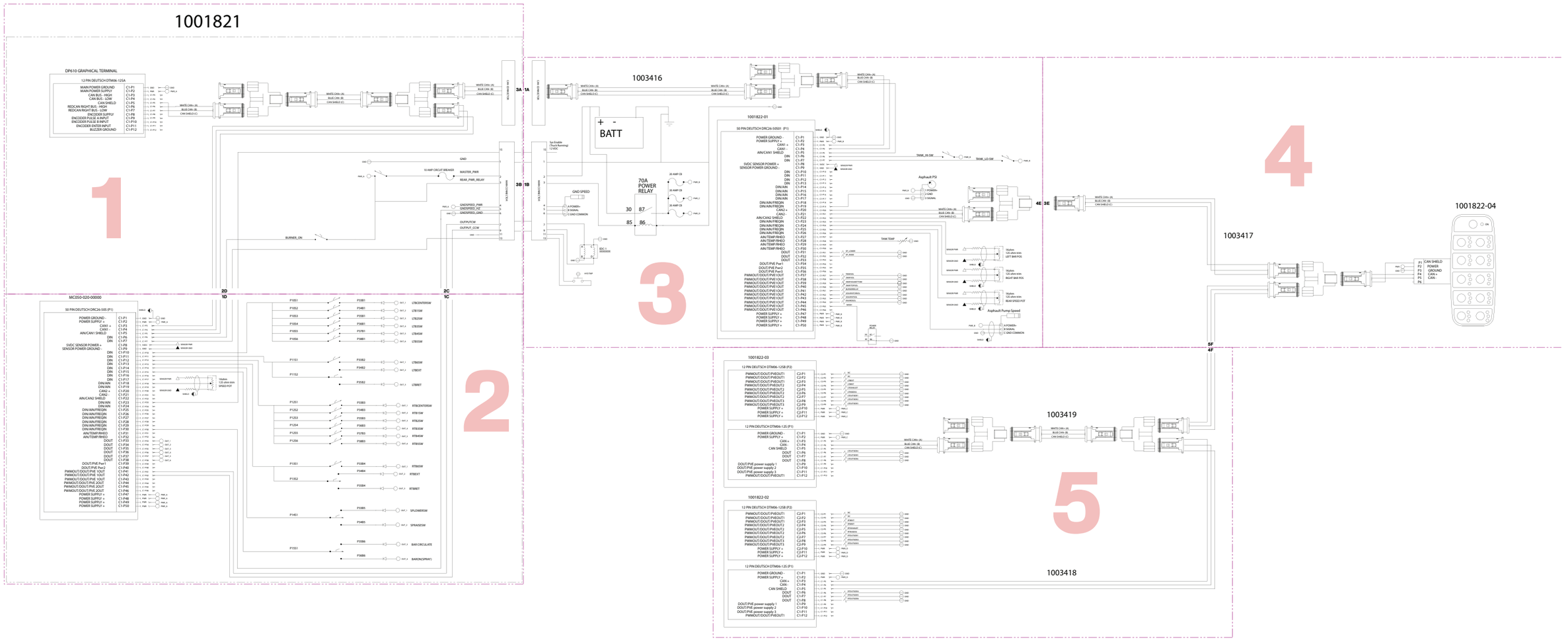


Figure 9-1

NOTES

Electrical Schematic - Plus One 1 of 5

1001821

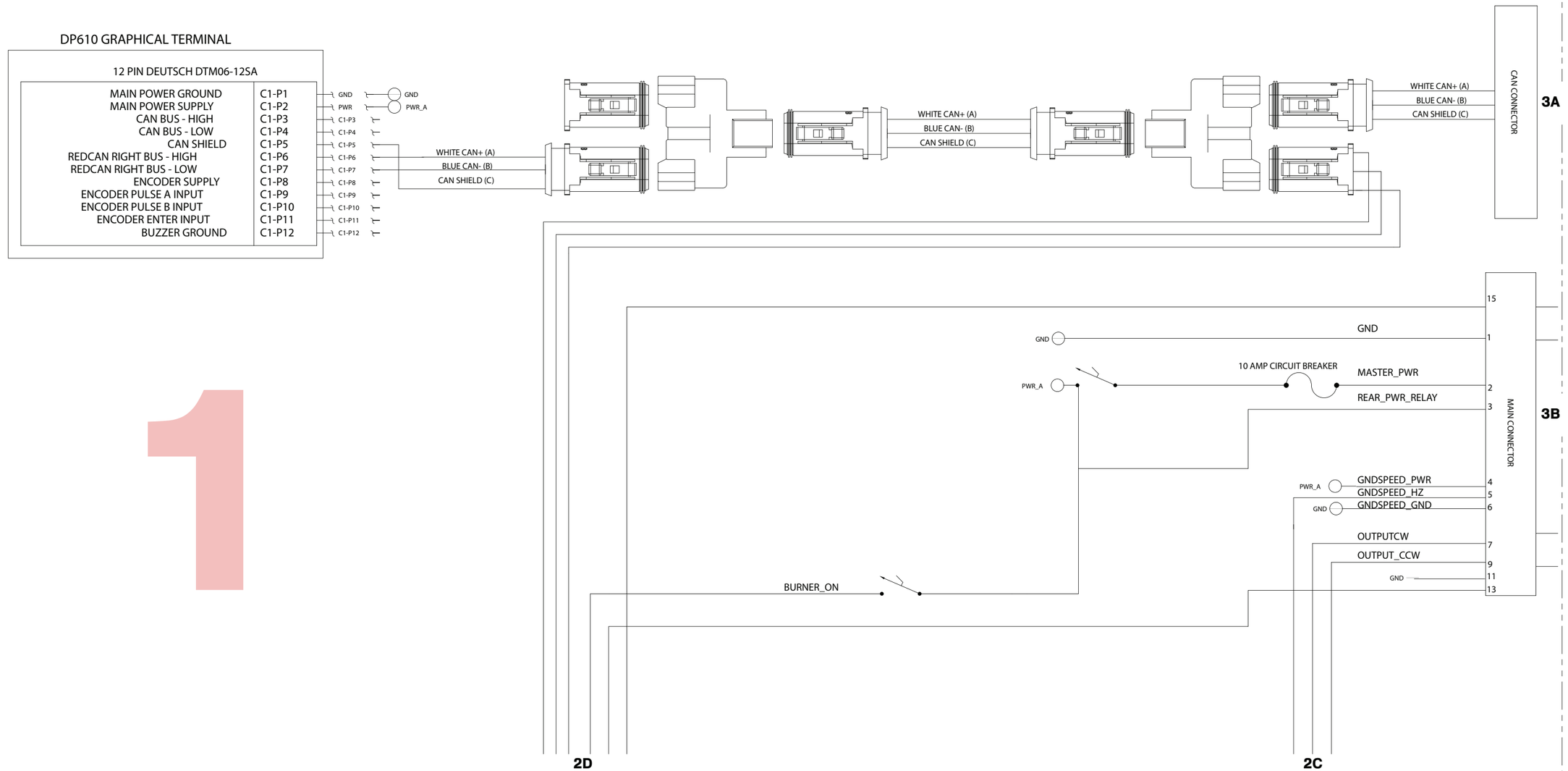


Figure 9-2

NOTES

Electrical Schematic - Plus One 2 of 5

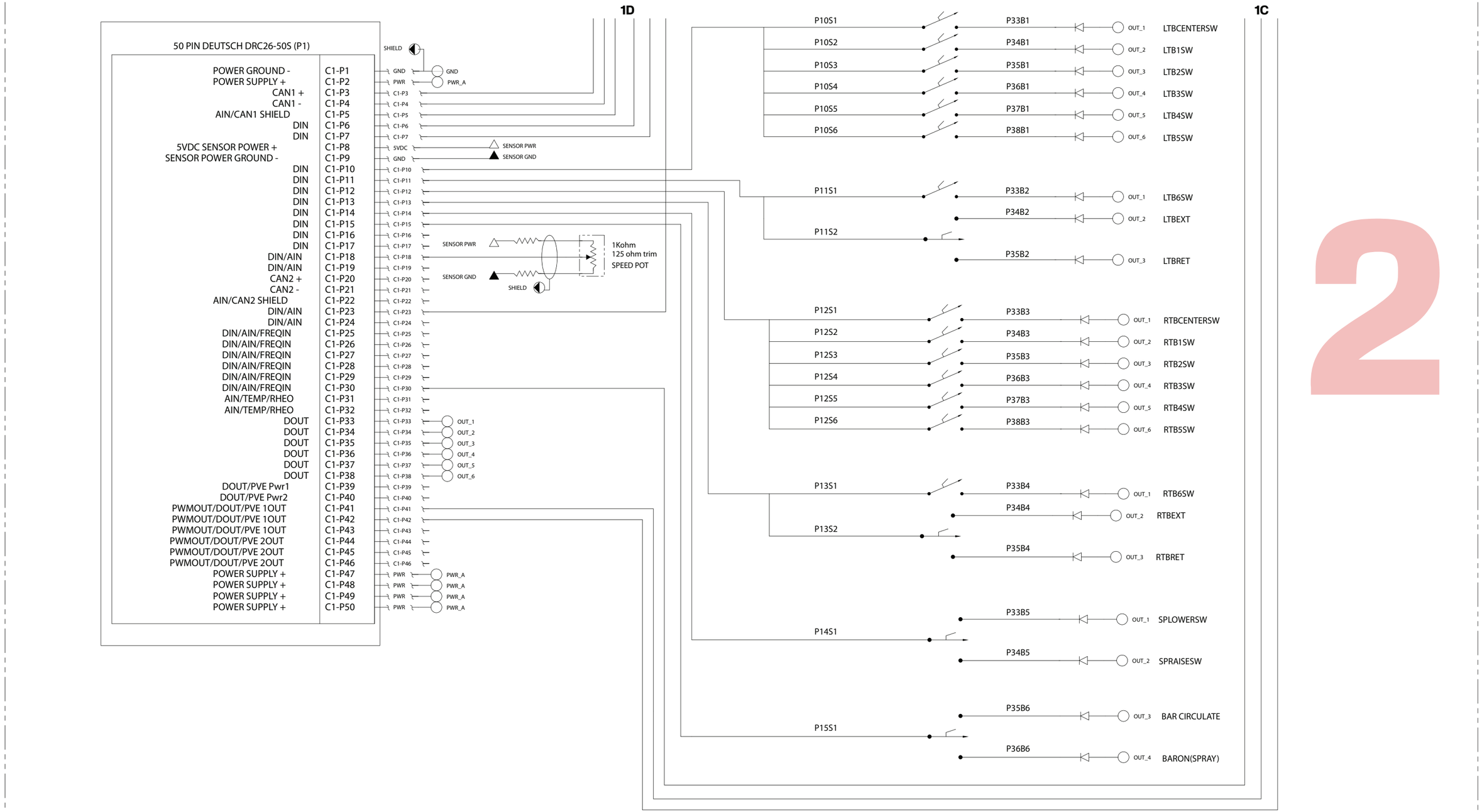


Figure 9-3

NOTES

Electrical Schematic - Plus One 3 of 5

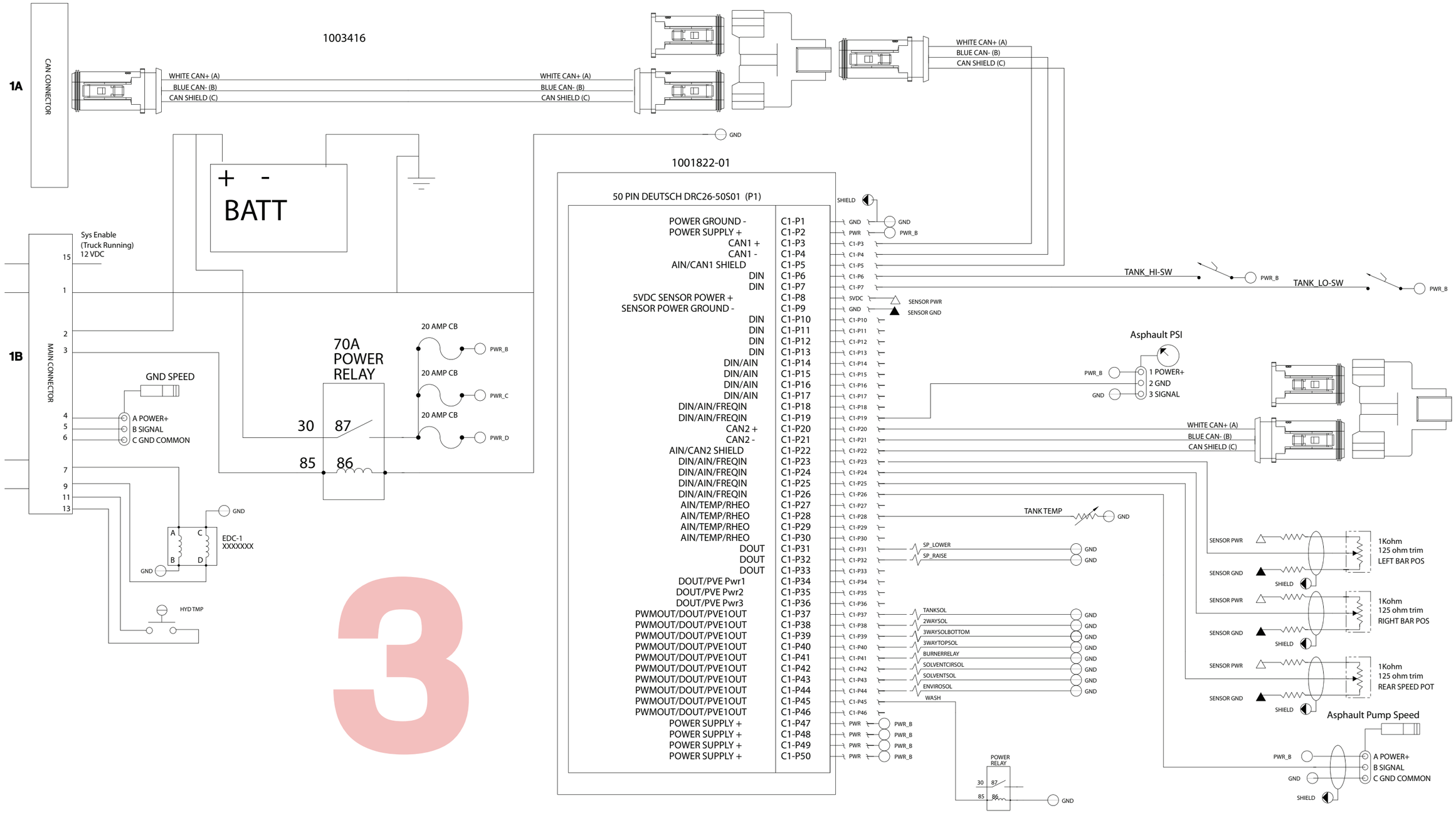


Figure 9-4

NOTES

Electrical Schematic - Plus One 4 of 5

4

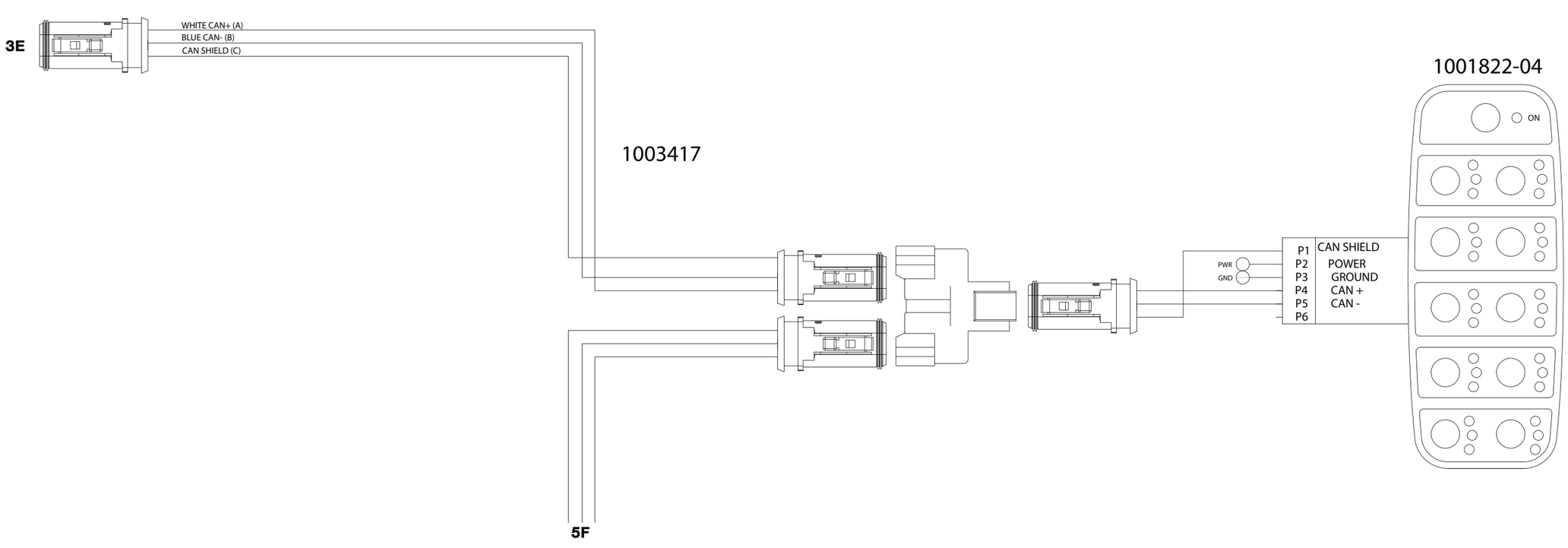


Figure 9-5

NOTES

Electrical Schematic - Plus One 5 of 5

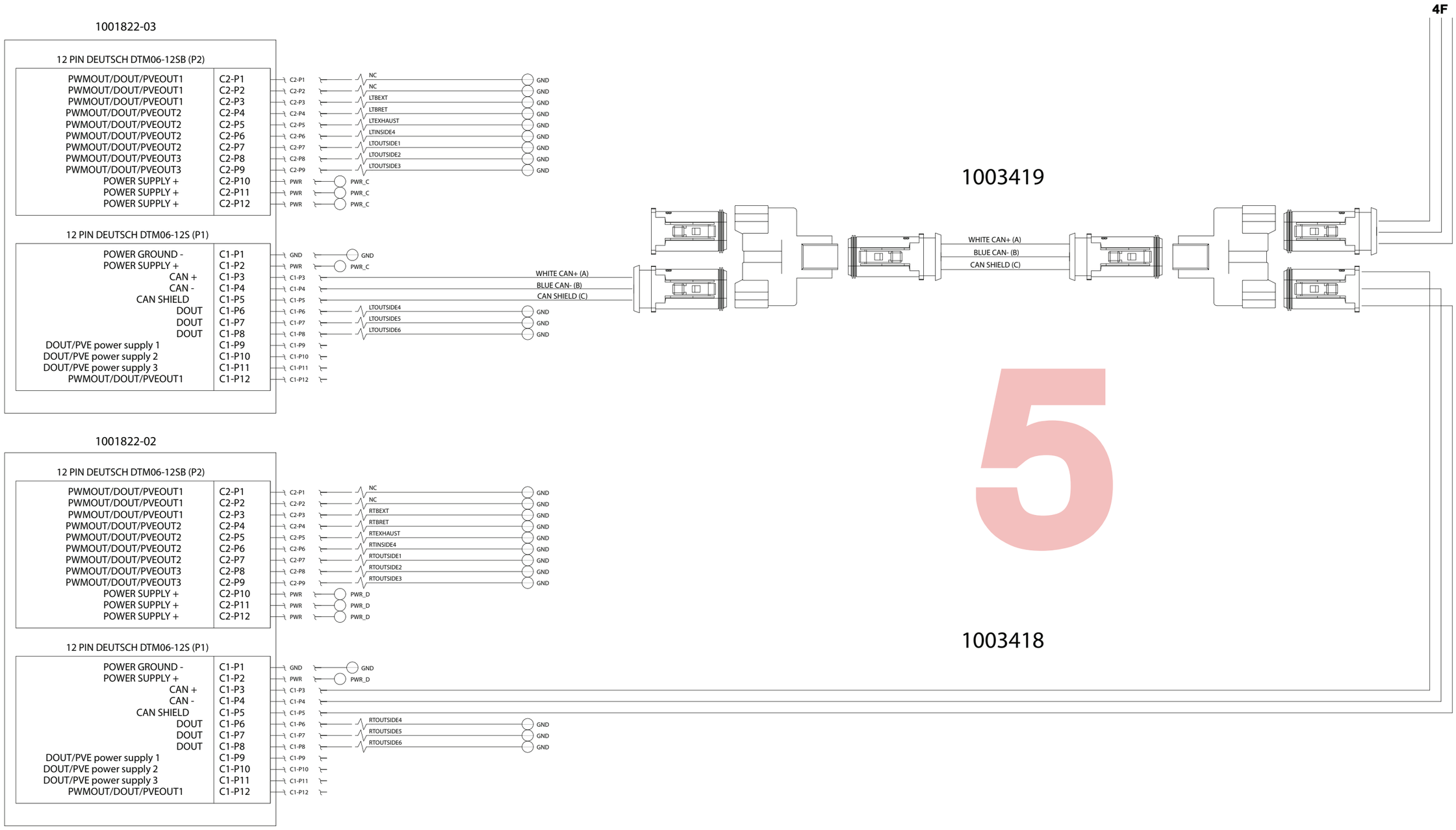
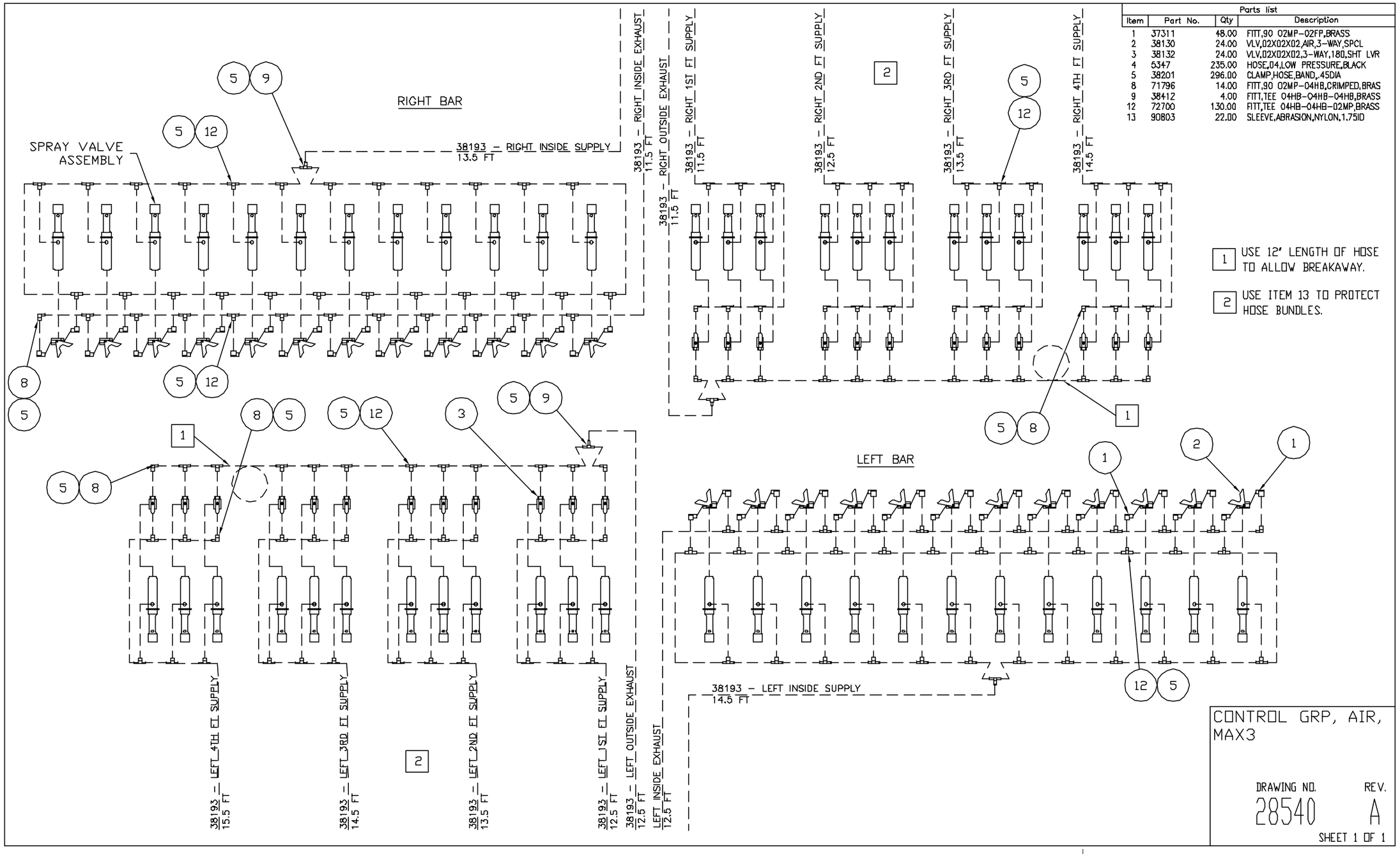


Figure 9-6

NOTES

PNEUMATIC SCHEMATIC - CONTROL, AIR 1 OF 1



Parts list

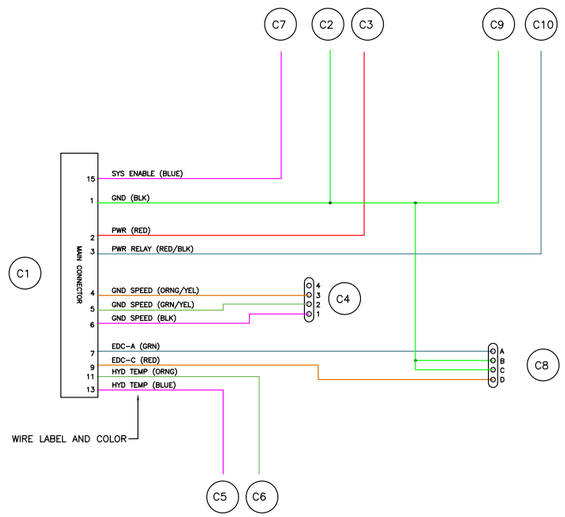
Item	Part No.	Qty	Description
1	37311	48.00	FITT,90 02MP-02FP,BRASS
2	38130	24.00	VLV,02X02X02,AIR,3-WAY,SPCL
3	38132	24.00	VLV,02X02X02,3-WAY,180,SHT LVR
4	6347	235.00	HOSE,04,LOW PRESSURE,BLACK
5	38201	296.00	CLAMP,HOSE,BAND,.45DIA
8	71796	14.00	FITT,90 02MP-04HB,CRIMPED,BRAS
9	38412	4.00	FITT,TEE 04HB-04HB-04HB,BRASS
12	72700	130.00	FITT,TEE 04HB-04HB-02MP,BRASS
13	90803	22.00	SLEEVE,ABRASION,NYLON,1.75ID

Figure 9-7

NOTES

ELECTRICAL SCHEMATIC - CONTROL, FRONT MACHINE 1 OF 1

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED, WIRE TO BE 16AWG GXL COLOR SPECIFIED ON SCHEMATIC WITH TEXT – "VIDEOJET #2, OR "DOMINO" EQUIVALENT. "C" NUMBER TO BE ON ALL CONNECTORS USING POLY STICKER
REFERENCE "BUILT PER SA–1000–SPEC" ON HARNESS LABEL.



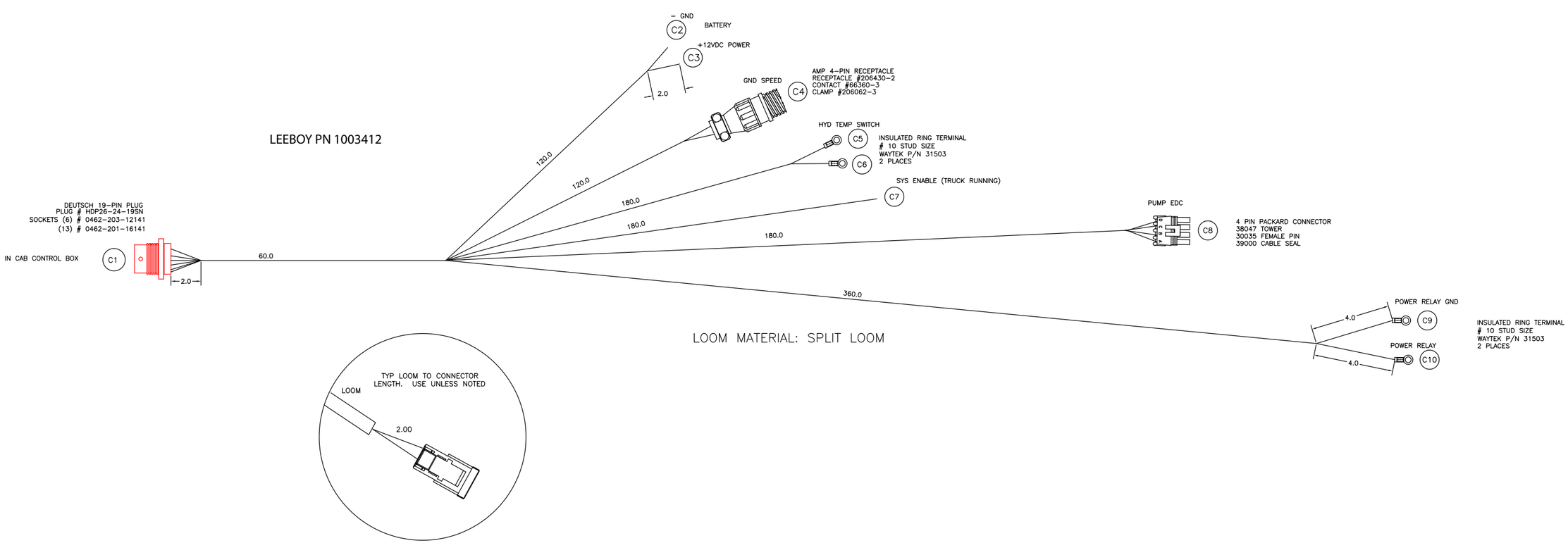
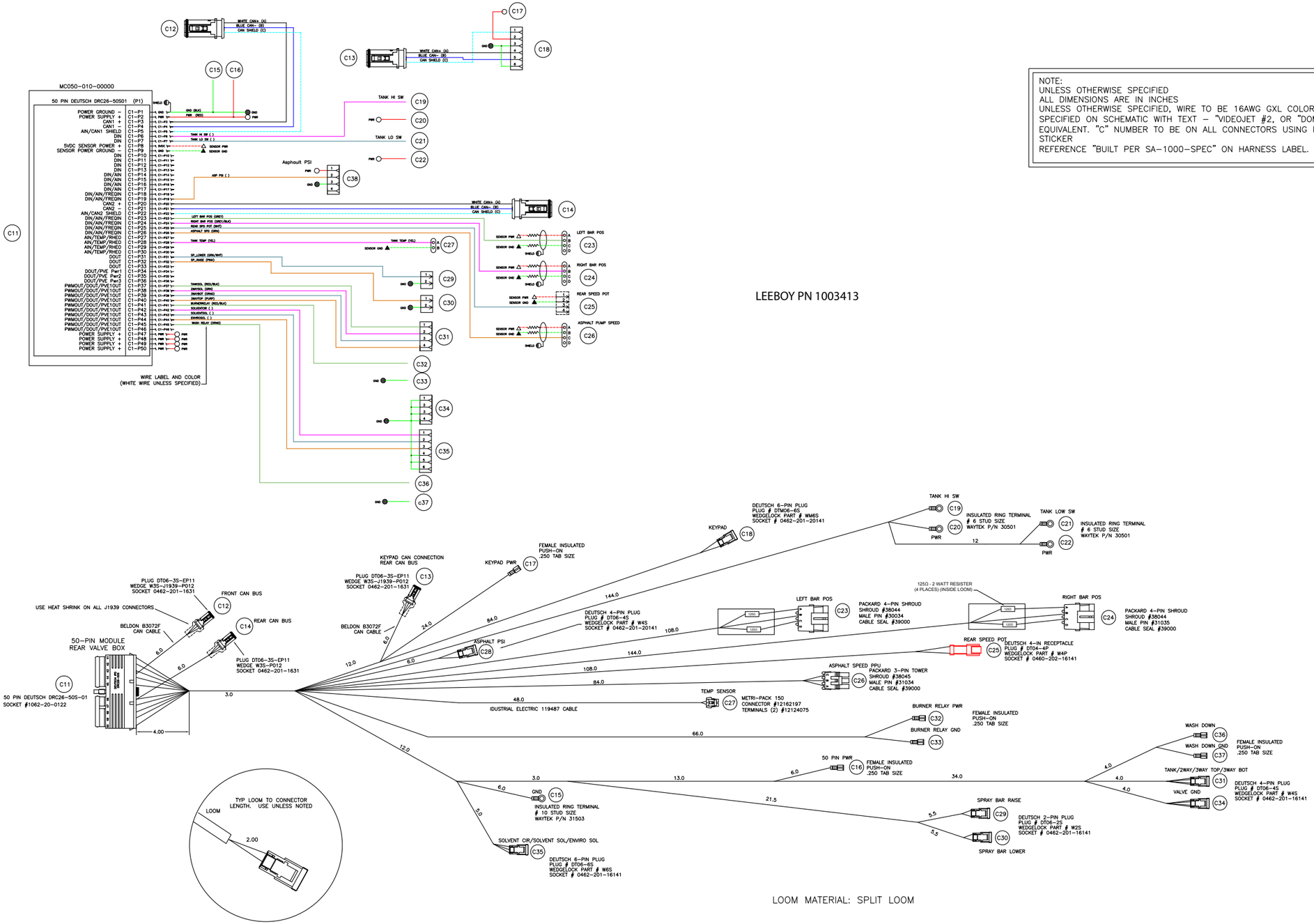


Figure 9-8

NOTES

ELECTRICAL SCHEMATIC - CONTROL, REAR MACHINE 1 OF 1



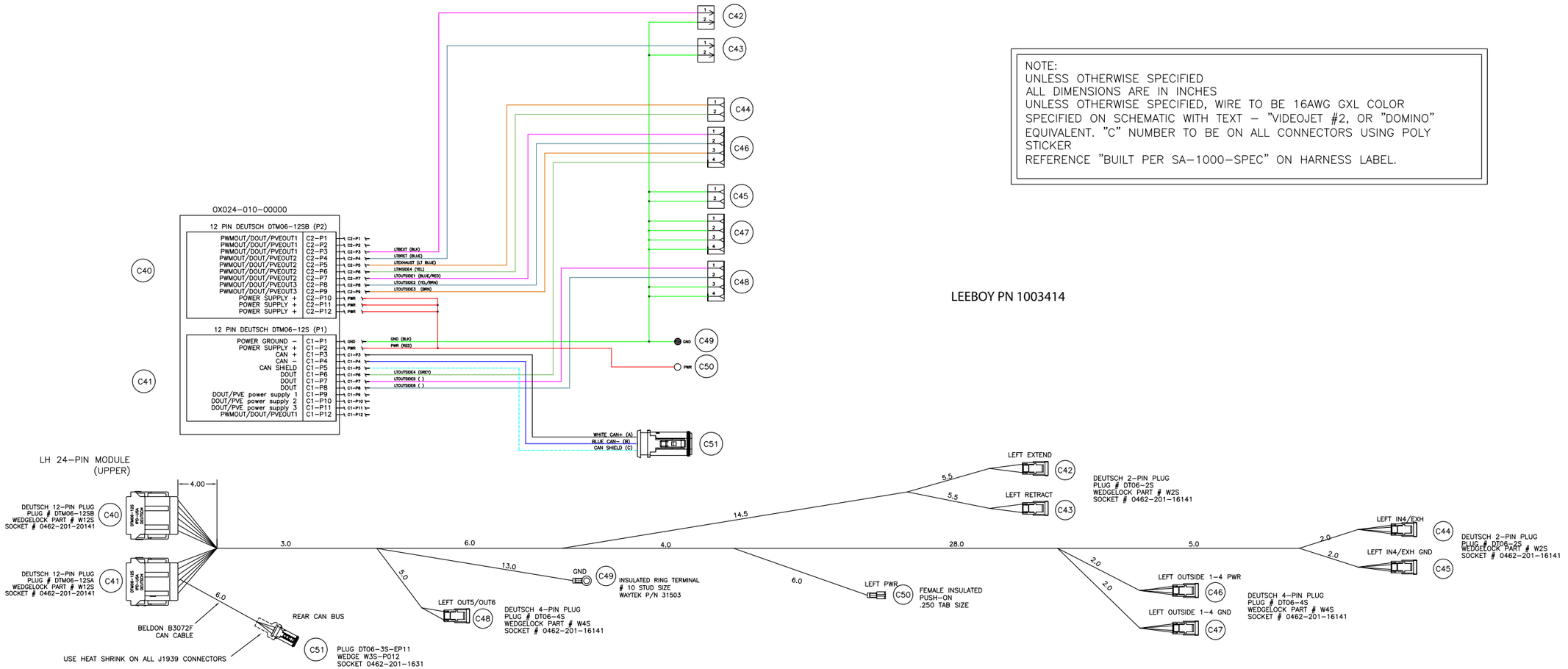
NOTE:
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED, WIRE TO BE 16AWG GXL COLOR SPECIFIED ON SCHEMATIC WITH TEXT – "VIDEOJET #2, OR "DOMINO" EQUIVALENT. "C" NUMBER TO BE ON ALL CONNECTORS USING POLY STICKER
REFERENCE "BUILT PER SA–1000–SPEC" ON HARNESS LABEL.

LEEBOY PN 1003413

Figure 9-9

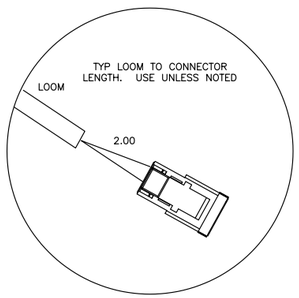
NOTES

ELECTRICAL SCHEMATIC - CONTROL, LH SPRAYBAR 1 OF 1



NOTE:
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED, WIRE TO BE 16AWG GXL COLOR SPECIFIED ON SCHEMATIC WITH TEXT – "VIDEOJET #2, OR "DOMINO" EQUIVALENT. "C" NUMBER TO BE ON ALL CONNECTORS USING POLY STICKER
REFERENCE "BUILT PER SA–1000–SPEC" ON HARNESS LABEL.

LEEBOY PN 1003414

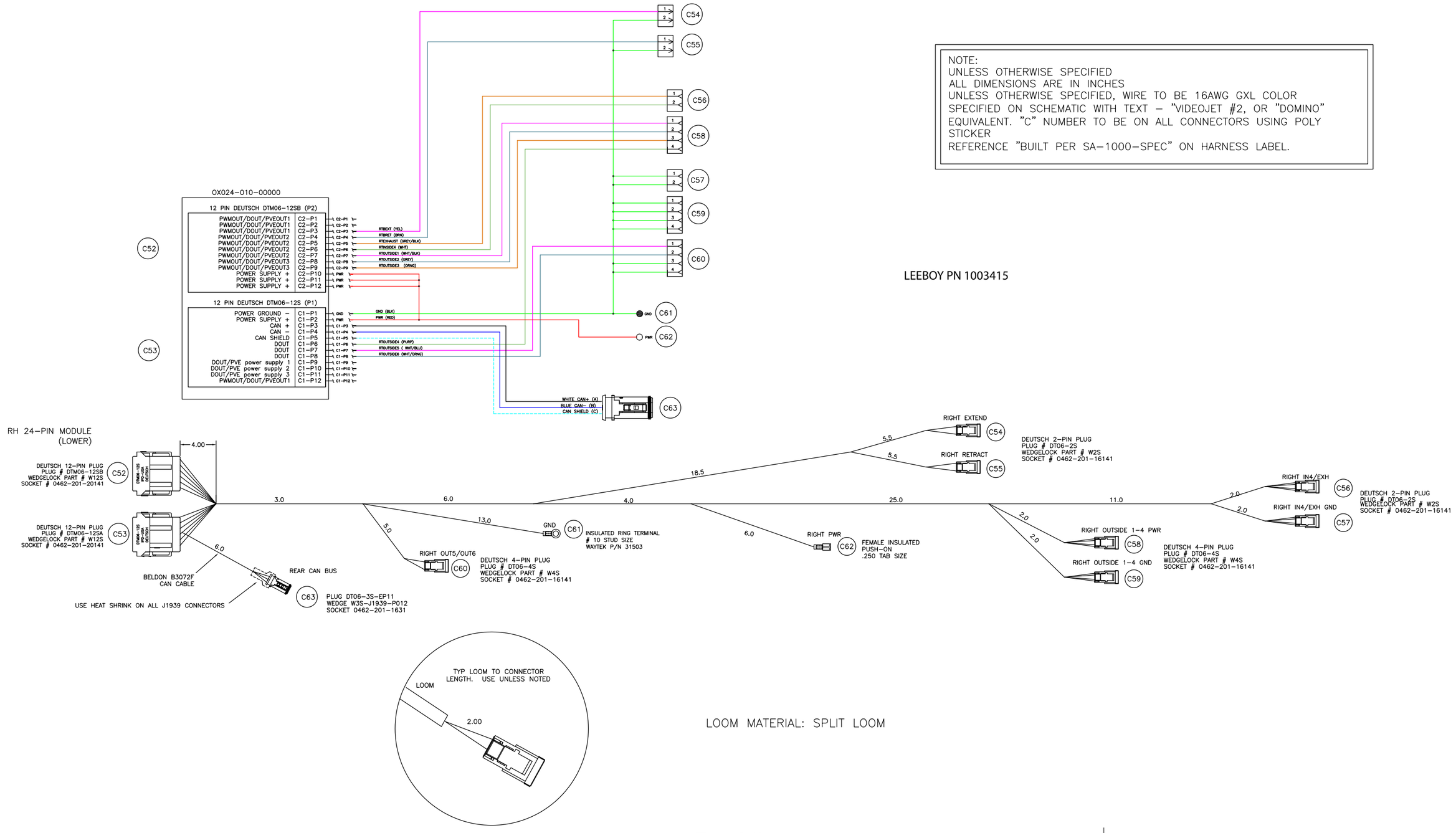


LOOM MATERIAL: SPLIT LOOM

Figure 9-10

NOTES

ELECTRICAL SCHEMATIC - CONTROL, RH SPRAYBAR 1 OF 1



NOTE:
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED, WIRE TO BE 16AWG GXL COLOR SPECIFIED ON SCHEMATIC WITH TEXT – "VIDEOJET #2, OR "DOMINO" EQUIVALENT. "C" NUMBER TO BE ON ALL CONNECTORS USING POLY STICKER
REFERENCE "BUILT PER SA-1000-SPEC" ON HARNESS LABEL.

LEEBOY PN 1003415

LOOM MATERIAL: SPLIT LOOM

Figure 9-11

NOTES

ELECTRICAL SCHEMATIC - CAN BUS KIT 1 OF 4

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED, WIRE TO BE BELDON B3072F
CAN CABLE. "C" OR "J" NUMBER TO BE ON ALL CONNECTORS
USING POLY STICKER
REFERENCE "BUILT PER SA-1000-SPEC" ON HARNESS LABEL.

LEEBOY PN 1003416

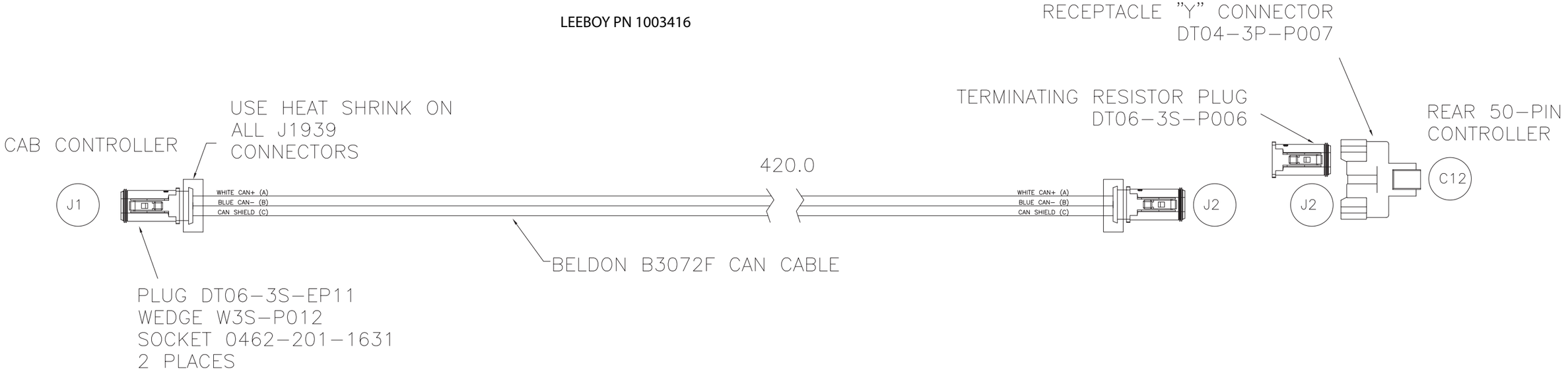


Figure 9-12

NOTES

ELECTRICAL SCHEMATIC - CAN BUS KIT 2 OF 4

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED, WIRE TO BE BELDON B3072F
CAN CABLE. "C" OR "J" NUMBER TO BE ON ALL CONNECTORS
USING POLY STICKER
REFERENCE "BUILT PER SA–1000–SPEC" ON HARNESS LABEL.

LEEBOY PN 1003417

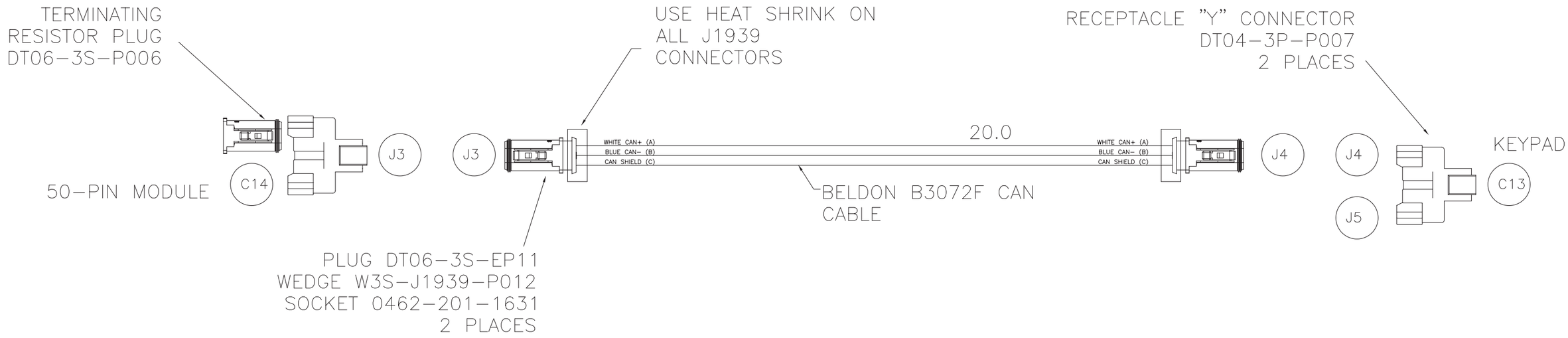


Figure 9-13

NOTES

ELECTRICAL SCHEMATIC - CAN BUS KIT 3 OF 4

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED, WIRE TO BE BELDON B3072F
CAN CABLE. "C" OR "J" NUMBER TO BE ON ALL CONNECTORS
USING POLY STICKER
REFERENCE "BUILT PER SA-1000-SPEC" ON HARNESS LABEL.

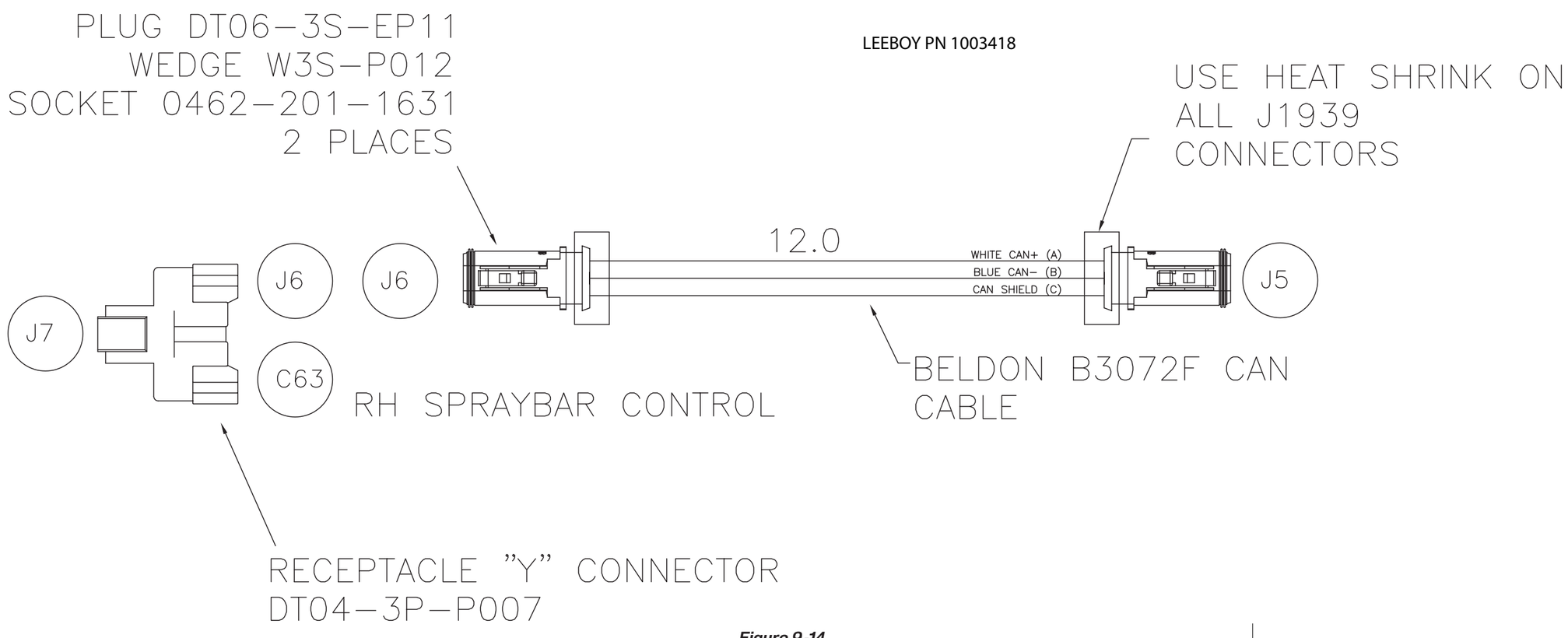


Figure 9-14

NOTES

ELECTRICAL SCHEMATIC - CAN BUS KIT 4 OF 4

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED, WIRE TO BE BELDON B3072F
CAN CABLE. "C" OR "J" NUMBER TO BE ON ALL CONNECTORS
USING POLY STICKER
REFERENCE "BUILT PER SA-1000-SPEC" ON HARNESS LABEL.

LEEBOY PN 1003419

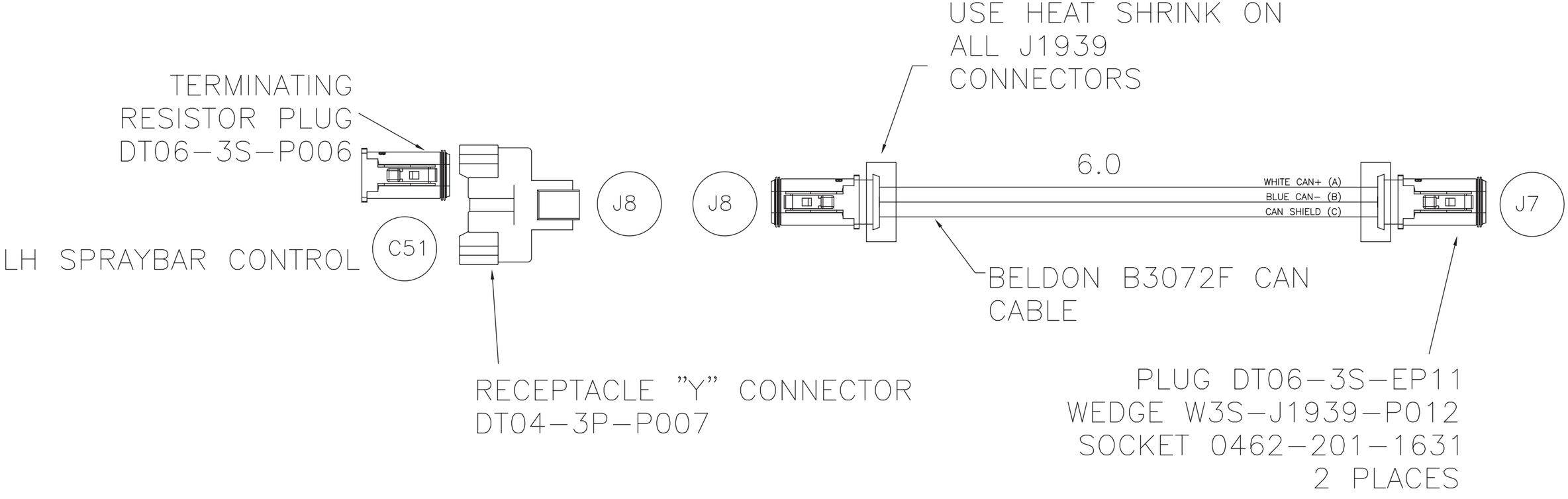


Figure 9-15

NOTES

ROSCO

A LeeBoy Company

Section 10

ILLUSTRATED PARTS LIST (IPL)

	Page
Illustrated Parts List (IPL)	**10-1**
Platform Installation, w/o Handrail	10-4
Rear Platform and Piping Assembly	10-6
Asphalt Pump	10-10
Asphalt Pump Relief Valve	10-12
Transfer Line, Ground Level	10-14
Automatic Valve, Cab Control	10-16
Tank Valve Assembly	10-18
Flex Hose Assembly	10-20
Handspray Wand Assembly	10-22
Hydraulic, Front Live	10-26
Hydraulic, PTO	10-34
Hydraulic Reservoir	10-40
Drive Shaft Group	10-42
Control Box, Plus One, 16 Ft Spraybar	10-44
Ground Speed Sensor	10-46
Spraybar Assembly, 16 Foot	10-48
Potentiometer	10-54
Spray Valve Assembly	10-56
Air Reservoir Group	10-58
Valve Box, Subassembly	10-60
Solenoid Valve, 8 Valve	10-62
Diesel Burner, Double Flue, No Outfire I	10-64
Diesel Burner, Double Flue, No Outfire II	10-66
Control Box, Diesel Burner	10-68
Burner Covers & Flue Liners	10-70

Light & Reflector Group 10-72
Decal Group 10-74
Ladder & Platform Group 10-76
Tank Top Opening 10-78
Fender Group, Single Axle 10-80
Mud Flap Installation 10-82
Sampling Valve, Front Head 10-84
Overflow Attachment Group 10-86
Thermometers 10-88
Enviroflush System. 10-90
Insulated Tank & Tank Components 10-92
Spraybar Assembly, 18 FT 10-96
Potentiometer 10-102
Spray Valve Assembly 10-104
Spray Valve Assembly, 20 FT. 10-106
Spray Valve Assembly 10-110
Solenoid Valve, 10/12 Valve (For 18 FT Spraybar) 10-112
Solenoid Valve, 12 Valve (For 20 FT Spraybar) 10-114
Diesel Burner, Double Flue, Outfire, No Thermostat I 10-116
Diesel Burner, Double Flue, Outfire, No Thermostat II 10-118
LPG Burners, Double Flue, Auto Ignition 10-120
LPG Burners, Double Flue, Manual Ignition 10-124
LPG Tank, 52 Gallon 10-126
Portable Torch Holder Assembly, LPG 10-128
Fender Group, Tandem Axle 10-130
Fender Group, Triple Axle 10-132
Mud Flap Group, Full Width. 10-134
Washdown System 10-136
Return Line Valve 10-140
Tank & Ladder Group, 1000 Gallon Tank 10-142
Tank & Ladder Group, 1500 Gallon Tank 10-144
Tank & Ladder Group, 3000 Gallon Tank 10-146
Tank & Ladder Group, 3500 Gallon Tank 10-148
Tank & Ladder Group, 4000 Gallon Tank 10-150
Alphabetical Parts Index 10-152

NOTES

Platform Installation, w/o Handrail

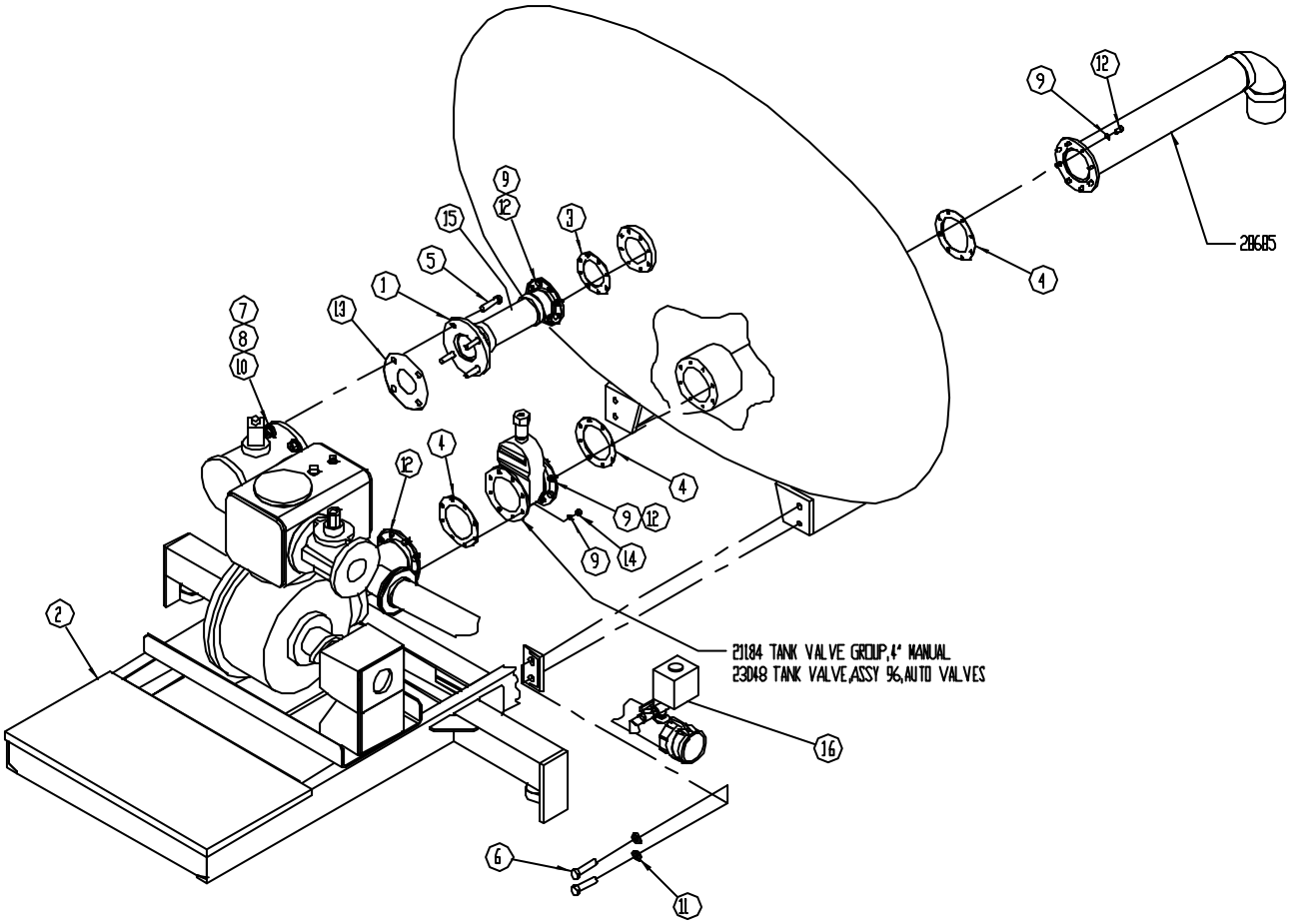


Figure 10-1

Platform Installation, w/o Handrail Parts List

Item No.	Part Number	Qty.	Description	Remarks
	1002456	1	Platform Installation, W/O Handrail	
1	20841	1	•Hose,Flex,Met,3.00X13.94	
2	1002455	1	•Rear Platform & Piping Assy,96	
3	34981	1	•Gasket,3" Flange	
4	34983	3	•Gasket,4" Flange	
5	71640	4	•CSHH,.625-11X2.50,Gr571678	
6	71643	4	•CSHH,.750-10X1.75,Gr5	
7	80042	4	•Nut,Hex,.625-11	
8	80146	4	•Washer,Type A Plain,.625	
9	80162	32	•Washer,Lock,.375	
10	80166	4	•Washer,Lock,.625	
11	80168	4	•Washer,Lock,.750	
12	80219	32	•CSHH,.375-16X.75,Gr5	
13	911	1	•Gasket,3.00 Companion Flange	
14	80038		•Nut,Hex,.375-16	
15	20841	1	Hose, 3.00 x 13.94	Metal Flex
16	1003146	1	Valve, Solenoid, 1/2" Ball	

Rear Platform and Piping Assembly

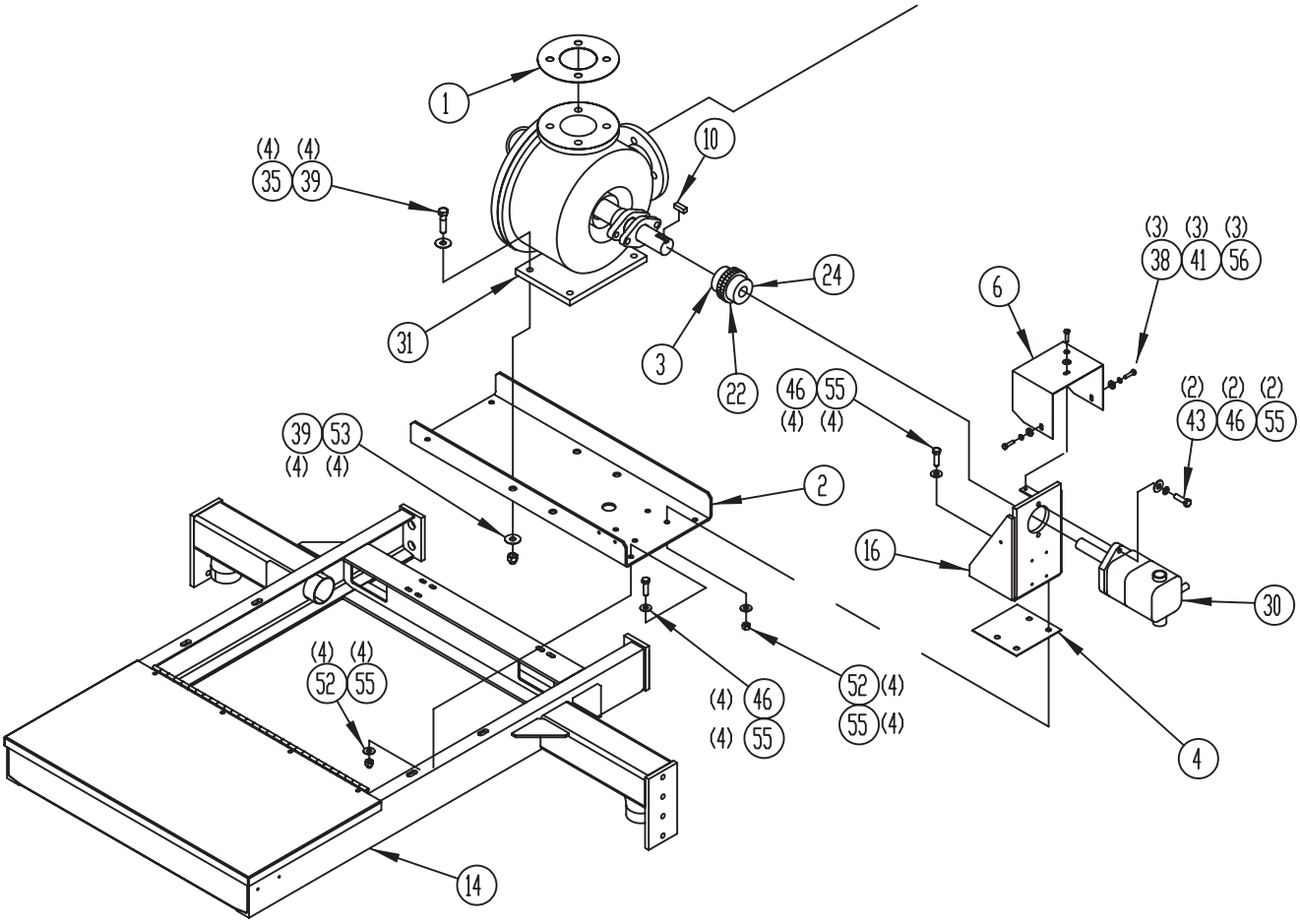


Figure 10-2

Rear Platform and Piping Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
	1002455	1	•Rear Platform & Piping	
1	1488	2	••Gasket,Flange,4.00	
2	15772	1	••Platform,Pump	
3	34985	1	••Coupling Half,Pump	
4	15787	4	••Shim,Motor Mount	
5	16420SRV	1	••Load & Suction Tee W/M	
6	16460	1	••Guard	
7	16464SRV	1	••Vlv,Plug,3.00 2-Way,Modified	
-701	34970-01	A/R	•••Seal Kit,602 Vlv	
8	16465SRV	1	••Vlv,Plug,3.00 3-Way,Modified	
-801	34971-01	A/R	•••Seal Kit,606 Vlv	
10	17431	1	••Key,Sq,.500X1.75	
11	19798	1	••Cover,Strainer Access	
12	19800	1	••Strainer W/M,Disch Manifold	
13	21808SRV	1	••Weldment,Load Line,Modified	
14	1001749	1	••Platform W/M	
15	22697	1	••Pump Discharge Manifold W/M	
16	22710	1	••Motor Mount,2000	
17	28519	1	••Screen,Wldmt,Cone	
18	36863	2	••Clamp,Hose,#K-24 Knox	
19	280210	1	••Valve,Ball,1.00	
20	34981	2	••Gasket,3” Flange	
21	34983	1	••Gasket,4” Flange	
22	34987	1	••Coupling Chain W/ Conn. Pin	
24	35043	1	••Half Coupling,Motor,1 1/4 Shaft	
25	35554	0.01	••Threadlocker,High Temp 272	
26	36359	1	••Gasket,Strainer Access	
27	36360	0.25	••Sealant,Pipe,W/Teflon,8.45 Oz	
28	36622	1	••Vlv,Ball,08 Npt,T Handle	
29	36999	1.5	••Hose,1.00 Id,Hot Asphalt	
30	37196	1	••Motor,Hyd,2000 Series	
-31	37196-1	1	•••Gpm Sensor (Speed)	Old Style Screw-In
32	6289	1	••Fitt,Qd 3.00F-3.00Fp,Brass	
-3201	6573	1	•••Gskt,3.00,Cplg,Hot Oil,Buna	
33	6290	1	••Fitt,Qd 3.00 Plug	
34	70036	2	••Fitt,Str 16Mp-16Hb,Crimped	
35	71640	4	••CSHH,.625-11X2.50,Gr571678	
36	80038	8	••Nut,Hex,.375-16	

Rear Platform and Piping Assembly (continued)

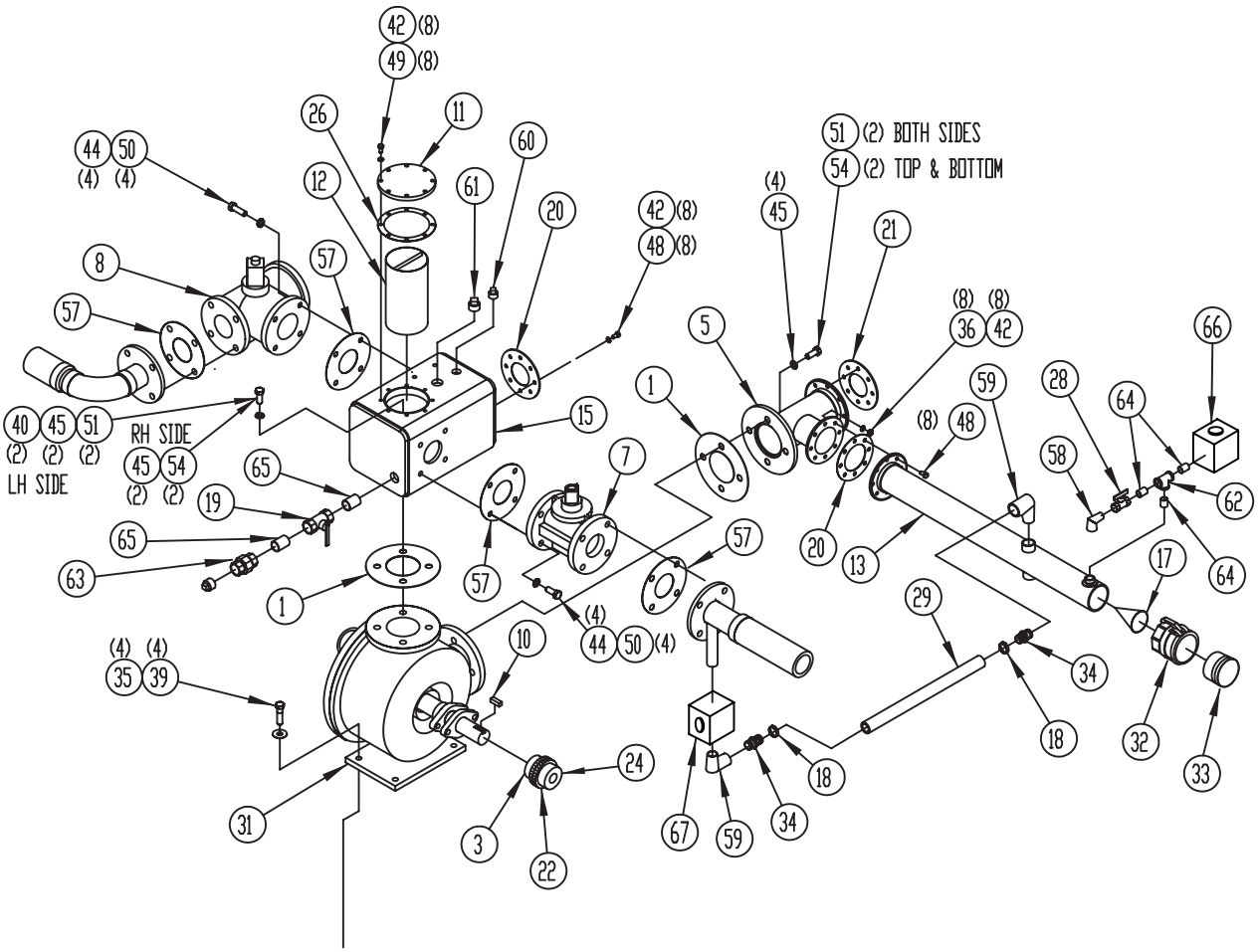


Figure 10-2

Rear Platform and Piping Assembly (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
38	80141	3	••Washer,Flat,Uss,.312	
39	80146	8	••Washer,Type A Plain,.625	
40	80147	2	••Washer,Type A Plain,.750	
41	80161	3	••Washer,Lock,.312	
42	80162	24	••Washer,Lock,.375	
43	80164	2	••Washer,Lock,.500	
44	80166	8	••Washer,Lock,.625	
45	80168	8	••Washer,Lock,.750	
46	80186	10	••CSHH,.500-13X1.75,Gr5	
48	80219	16	••CSHH,.375-16X.75,Gr5	
49	80224	8	••CSHH,.375-16X1.25,Gr5	
50	80280	8	••CSHH,.625-11X1.50,Gr5	
51	80291	4	••CSHH,.750-10X1.25,Gr5	
52	80354	8	••Nut,Flexloc,.500-13,Full,Lt	
53	80356	4	••Nut,Flexloc,.625-11,Full,Lt	
54	80500	4	••CSHH,.750-10X1.50,Gr5	
55	80695	18	••Washer,Sae Plain,.500	
56	80967	3	••CSHH,.312-18X.62,Gr5	
57	911	4	••Gasket,3.00 Companion Flange	
58	99526	1	••Pipe,90,08Mp-O8fp,Mi	
59	99528	2	••Pipe,90,16Mp-16Fp,Mi	
60	99538	1	••Pipe,Plug,12Mp,Sq Hd,Mi	
61	99539	1	••Pipe,Plug,16Mp,Sq Hd,Mi	
62	99569	1	••Pipe,Tee,08Fp,Mi	
63	99589	1	••Pipe,Union,16Fp,Mi	
64	99596	3	••Pipe,Nipple,08Xclose	
65	99606	2	••Pipe,Nipple,16Xclose	
66	1003146	1	Valve, Solenoid, 1/2" Ball	
67	1003147	2	Valve, Solenoid, 1" Ball	

Asphalt Pump

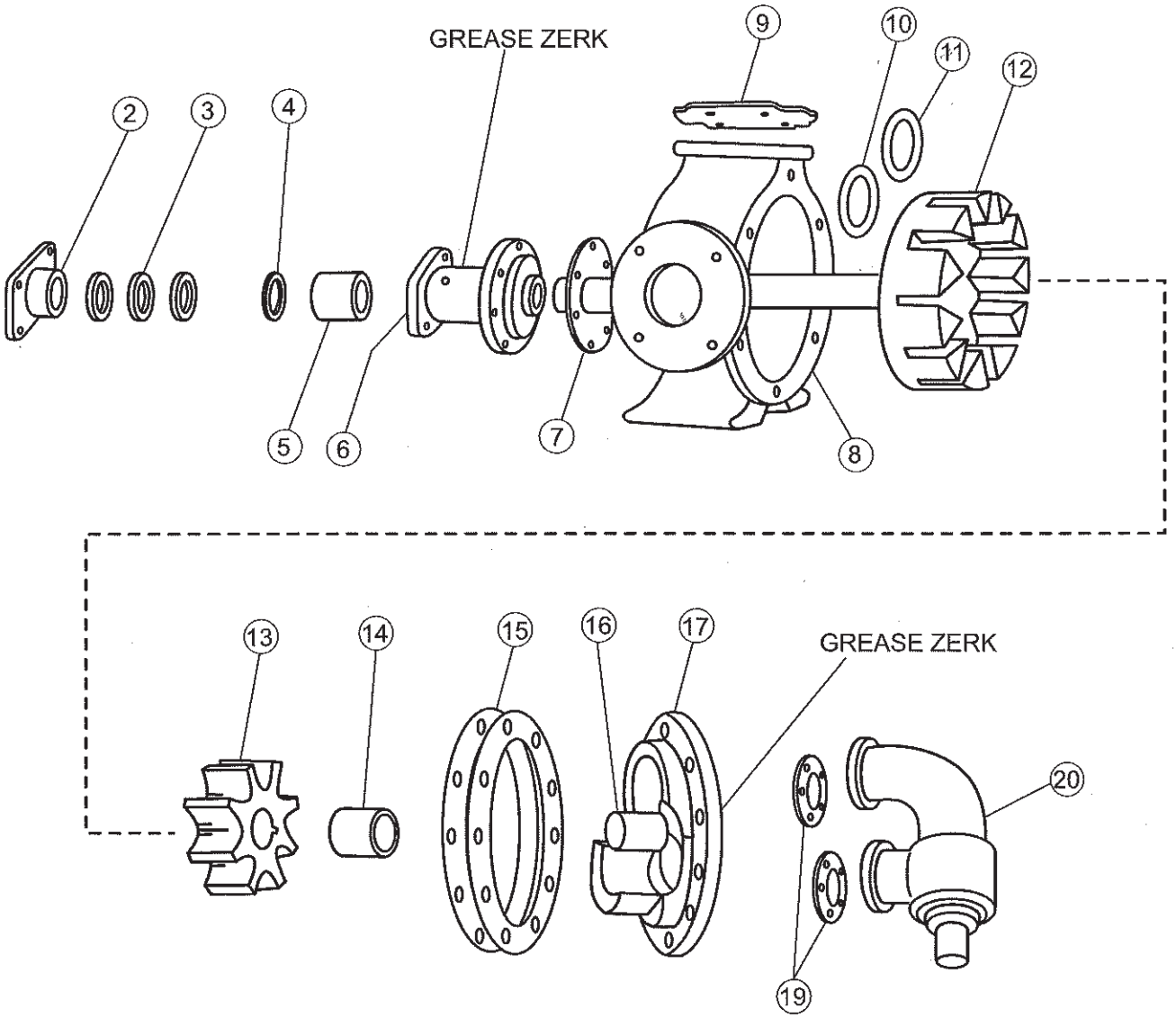


Figure 10-3

Asphalt Pump Parts List

Item No.	Part Number	Qty.	Description	Remarks
	4165-16	1	Asphalt Pump, Viking	
2	5257	1	•Packing Gland	
3	5249	1	•Packing,10 Pcs Per Pack	
4	32821	1	•Packing Retainer Washer	
5	5247	1	•Rotor Bearing Sleeve Bushing Only	
6	5250	1	•Rotor Bearing With Bushing Sleeve	
7	6541	1	•Rotor Bearing Sleeve Gasket	
8	5240	1	•Casing	
9	1488	1	•Gasket,Flange,4.00	
10	5251	1	•Rotor Bearing Sleeve Washer	
11	5248	1	•Rotor Thrust Washer	
12	5241	1	•Rotor And Shaft	
13	5244	1	•Idler With Bushing	
14	5255	1	•Idler Bushing Only	
15	5246	1	•Head Gasket Set	
17	6313	1	•Head With Idler Pin	
19	6314	1	•Relief Valve Gasket Set	
20	6315	1	•Relief Valve Assy (See Fig 1-4)	

Asphalt Pump Relief Valve

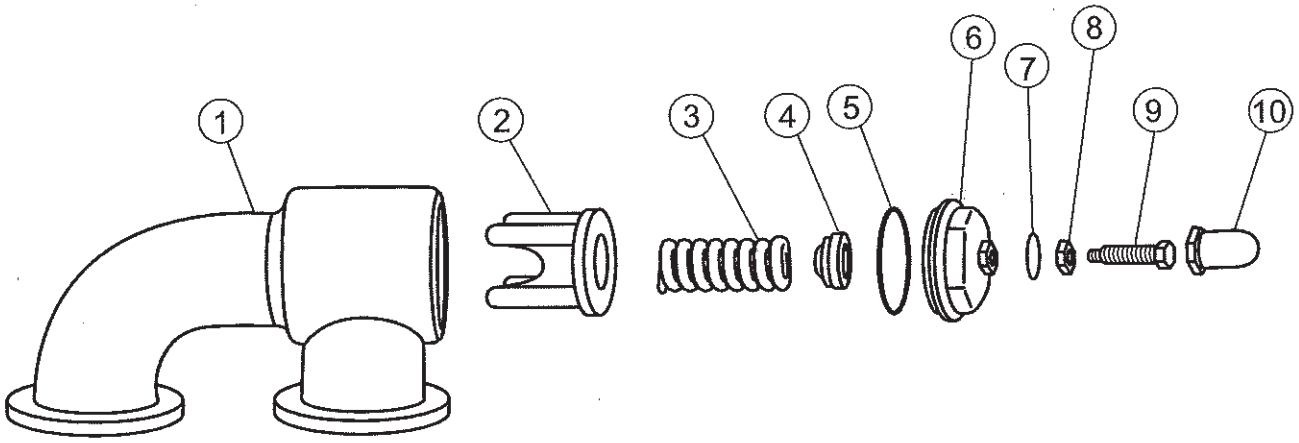
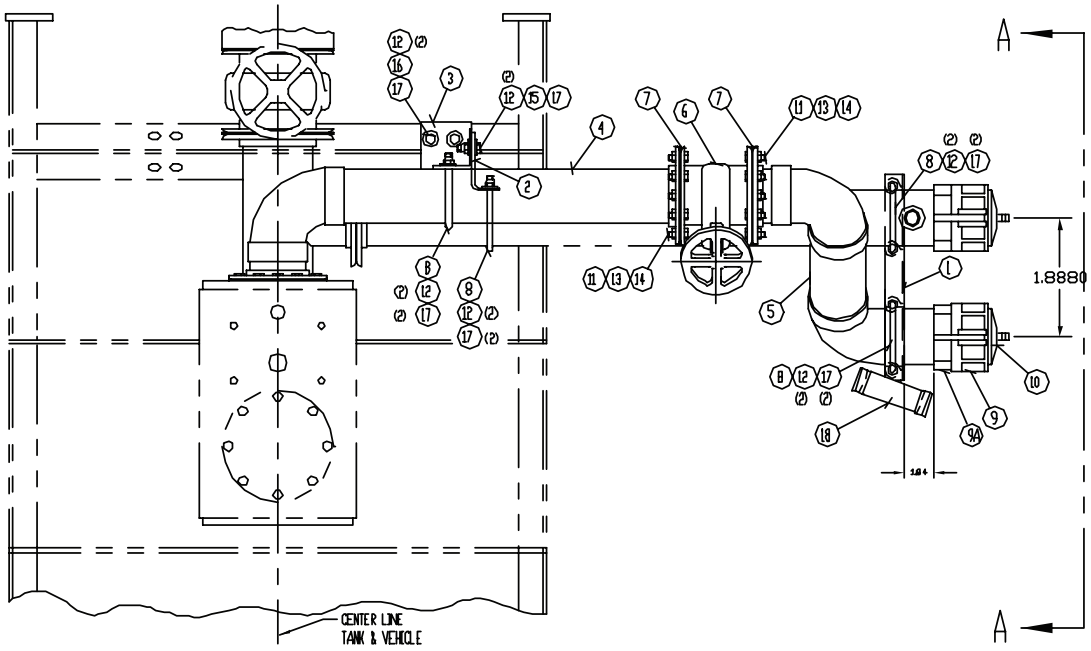


Figure 10-4

Asphalt Pump Relief Valve Parts List

Item No.	Part Number	Qty.	Description	Remarks
	6315	1	•Relief Valve	
1	6315-6	1	••Valve Body	
2	6315-8	1	••Poppet	
3	6315-7	1	••Spring	
4	6315-4	1	••Spring Guide	
5	6315-9	1	••Flat Bonnet Gasket	
6	6315-5	1	••Bonnet	
7	6315-10	1	••Flat Cap Gasket	
8	6315-3	1	••Locknut	
9	6315-2	1	••Adjusting Screw	
10	6315-1	1	••Cap	

Transfer Line, Ground Level



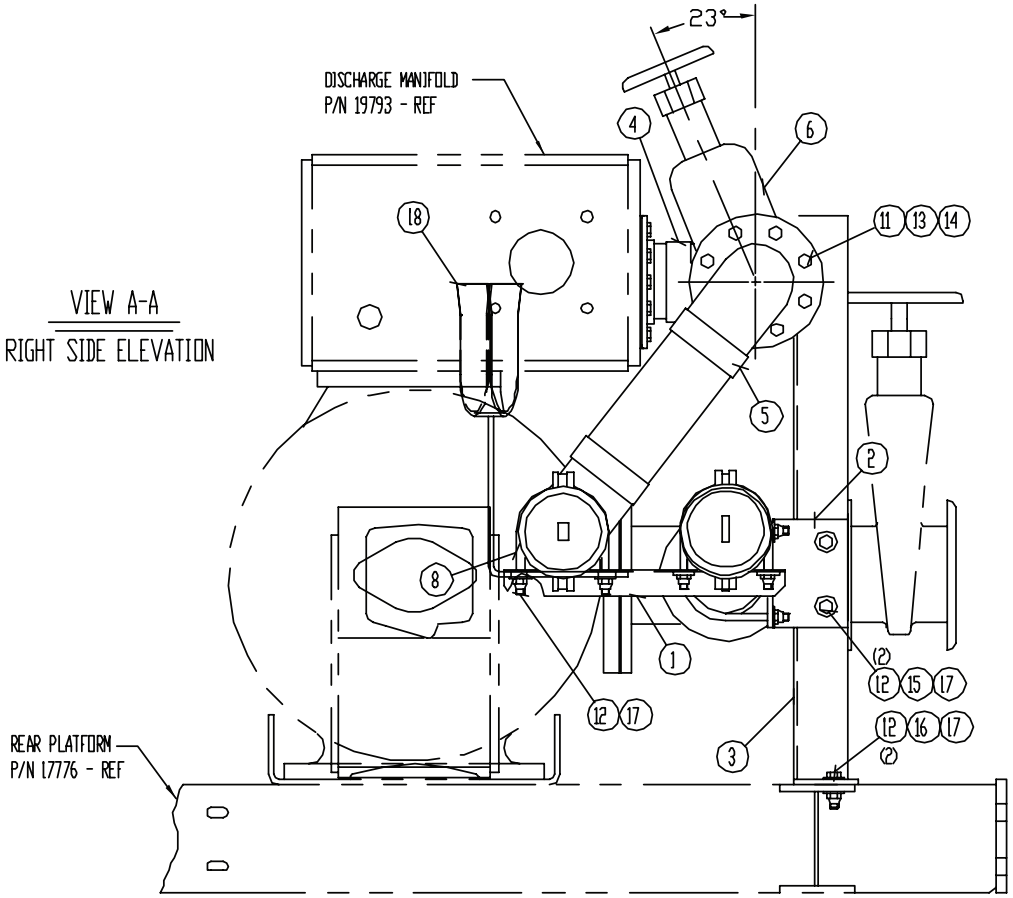


Figure 10-5

Transfer Line, Ground Level Parts List

Item No.	Part Number	Qty.	Description	Remarks
	19895	1	Transfer Line, Ground Level	
1	15855	1	•Bracket,Transfer Line Support	
2	17374	1	•Bar,Load Line Support	
3	17376	1	•Support,W/M,Load & Transfer	
4	19891SRV	1	•Transfer Line,Upper,Grd Level	
5	19892SRV	1	•Transfer Line,Lower,Grd Level	
6	34973	1	•Vlv,Gate,3.00,Flanged	
7	34981	2	•Gasket,3" Flange	
8	35089	4	•U-Bolt,.375-16,3.62lw,4.62ll	
9	6289	1	•Fitt,Qd 3.00F-3.00Fp,Brass	
9A	6573	1	••Gskt,3.00,Cplg,Hot Oil,Buna	
10	6290	1	•Fitt,Qd 3.00Plug	
11	80038	16	•Nut,Hex,.375-16	
12	80142	16	•Washer,Flat,Uss,.375	
13	80162	16	•Washer,Lock,.375	
14	80219	16	•Cshh,.375-16X.75,Gr5	
15	80224	2	•CSHH,.375-16X1.25,Gr5	
16	80226	2	•CSHH,.375-16X1.50,Gr5	
17	80352	12	•Nut,Flexloc,.375-16,Full,Lt	
18	28847	1	•Holster,Load Hose	

Automatic Valve, Cab Control

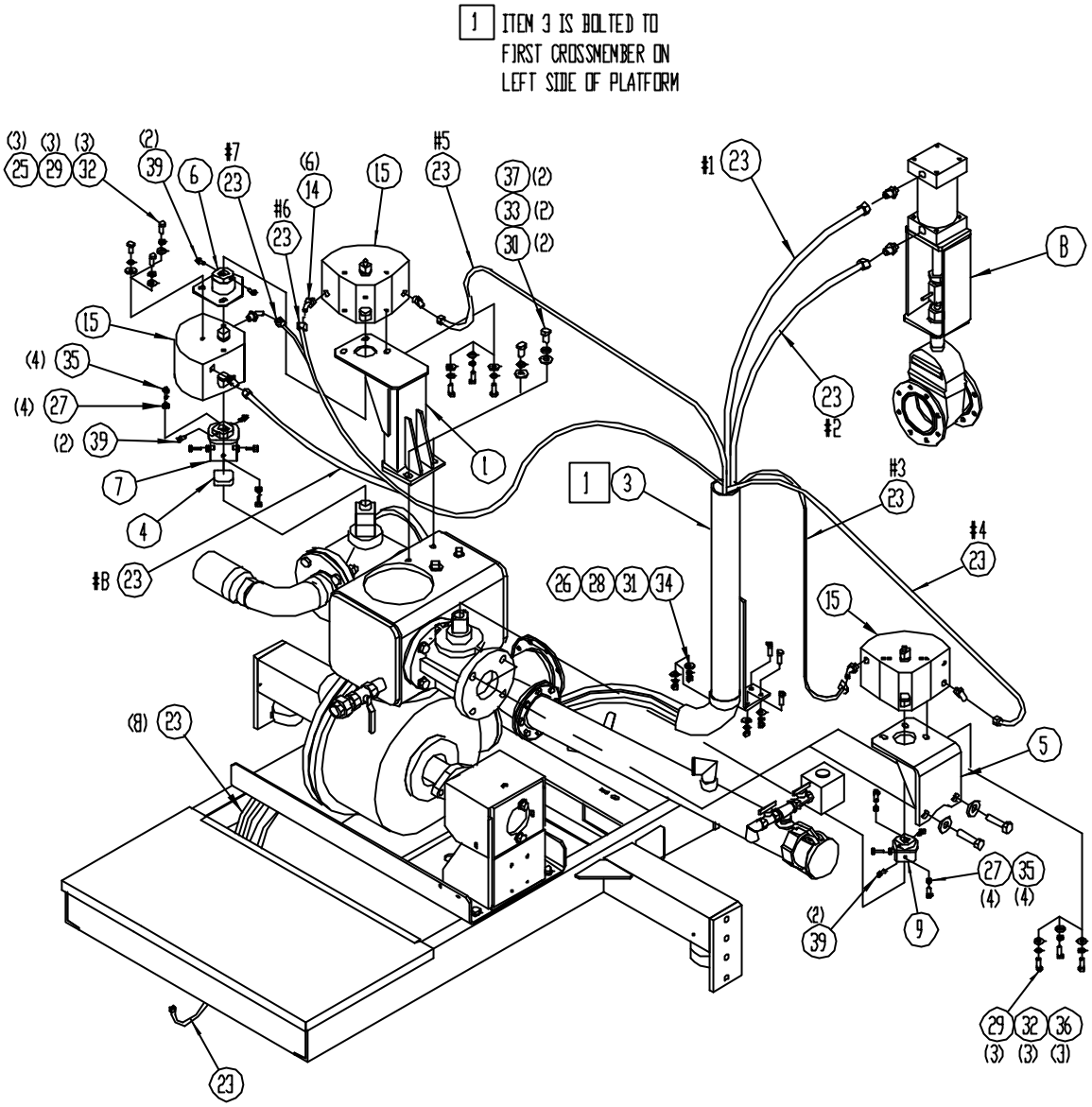


Figure 10-6

Automatic Valve, Cab Control Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	16431SRV	1	•Bracket,W/M,Dbl Actr	
3	23503	1	•Bracket,W/M,Hose Guard	
4	20596	1	•Spacer,Socket,3.00 3 Way Valve	
5	22638	1	•Brkt,Mount,Sgl Actuator W/M	
6	22775SRV	1	•Connector Wldmt,Actuator	
7	22776SRV	1	•Socket Wldmt,2 Sq	
8	27136SRV	1	•Vlv,Assy,Tank,4 Inch	
9	23059SRV	1	•Socket Wldmt,1.50 Sq	
11	37463	2	•Fitt,Str 04Mj-08Mp	
14	33115	6	•Fitt,45 04Mj-04Mp	
15	35515	3	•Actuator,Vane,90 Degrees	
-1501	35149-01	1	••Seal Kit,Actuator	(For Item 15)
22	35926	4	•Term,Push-On,.25,Fem,22-18 Ga	
23	23553	1	•Kit,Hose & Adapter,Auto Valve Attaching Parts	
#1	23553-01	1	••Hose Assy,Auto Valve,84.00 Lg	Acquire Locally
#2	23553-02	1	••Hose Assy,Auto Valve,84.00 Lg	Acquire Locally
#3	23553-03	1	••Hose Assy,Auto Valve,106.00 Lg	Acquire Locally
#4	23553-04	1	••Hose Assy,Auto Valve,95.00 Lg	Acquire Locally
#5	23553-05	1	••Hose Assy,Auto Valve,87.00 Lg	Acquire Locally
#6	23553-06	1	••Hose Assy,Auto Valve,99.00 Lg	Acquire Locally
#7	23553-07	1	••Hose Assy,Auto Valve,88.00 Lg	Acquire Locally
#8	23553-08	1	••Hose Assy,Auto Valve,95.00 Lg	Acquire Locally
25	71622	3	•CSHH,.375-16X.88,Gr5	Acquire Locally
26	80037	4	•Nut,Hex,.312-18	Acquire Locally
27	80073	8	•Nut,Hex,Jam,.312-18	Acquire Locally
28	80141	4	•Washer,Flat,Uss,.312	Acquire Locally
29	80142	9	•Washer,Flat,Uss,.375	Acquire Locally
30	80144	2	•Washer,Flat,Uss,.500	Acquire Locally
31	80161	4	•Washer,Lock,.312	Acquire Locally
32	80162	9	•Washer,Lock,.375	Acquire Locally
33	80164	2	•Washer,Lock,.500	Acquire Locally
34	80206	4	•CSHH,.312-18X1.25,Gr5	Acquire Locally
35	80208	8	•CSHH,.312-18X1.00,Gr5	Acquire Locally
36	80221	6	•CSHH,.375-16X1.00,Gr5	Acquire Locally
37	80248	2	•CSHH,.500-13X1.00,Gr5	Acquire Locally
39	80397	6	•Set S,Hskt,Kcup,.312-18X.50	Acquire Locally

Tank Valve Assembly

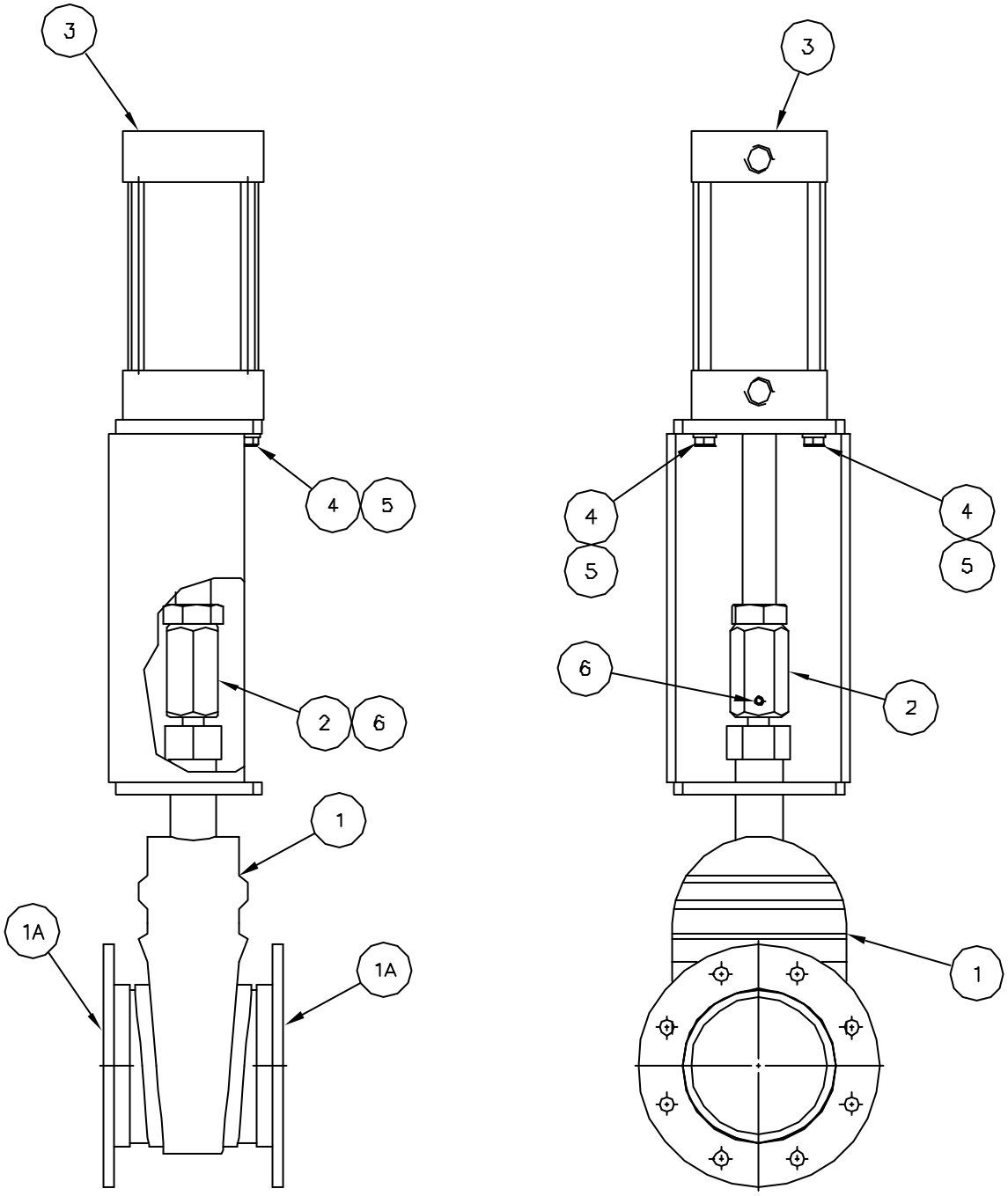


Figure 10-7

Tank Valve Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
	27136SRV	1	•Tank Valve Assy, 4”	
1	27135SRV	1	••Vlv,Wldmt,Tank,4”	
1A	34983	2	•••Gasket,4” Flange	
2	27137	1	••Connector,Tank Valve	
3	37301	1	••Cyl,3/50X4.00,2.50psi,11.17 Oa	
4	80162	4	••Washer,Lock,.375	
5	80222	4	••CSHH,.375-24X1.00,Gr5	
6	80345	1	••Roll Pin,.250X1.50	
7	34972-01	A/R	••Packing Set,3 Rings	

Flex Hose Assembly

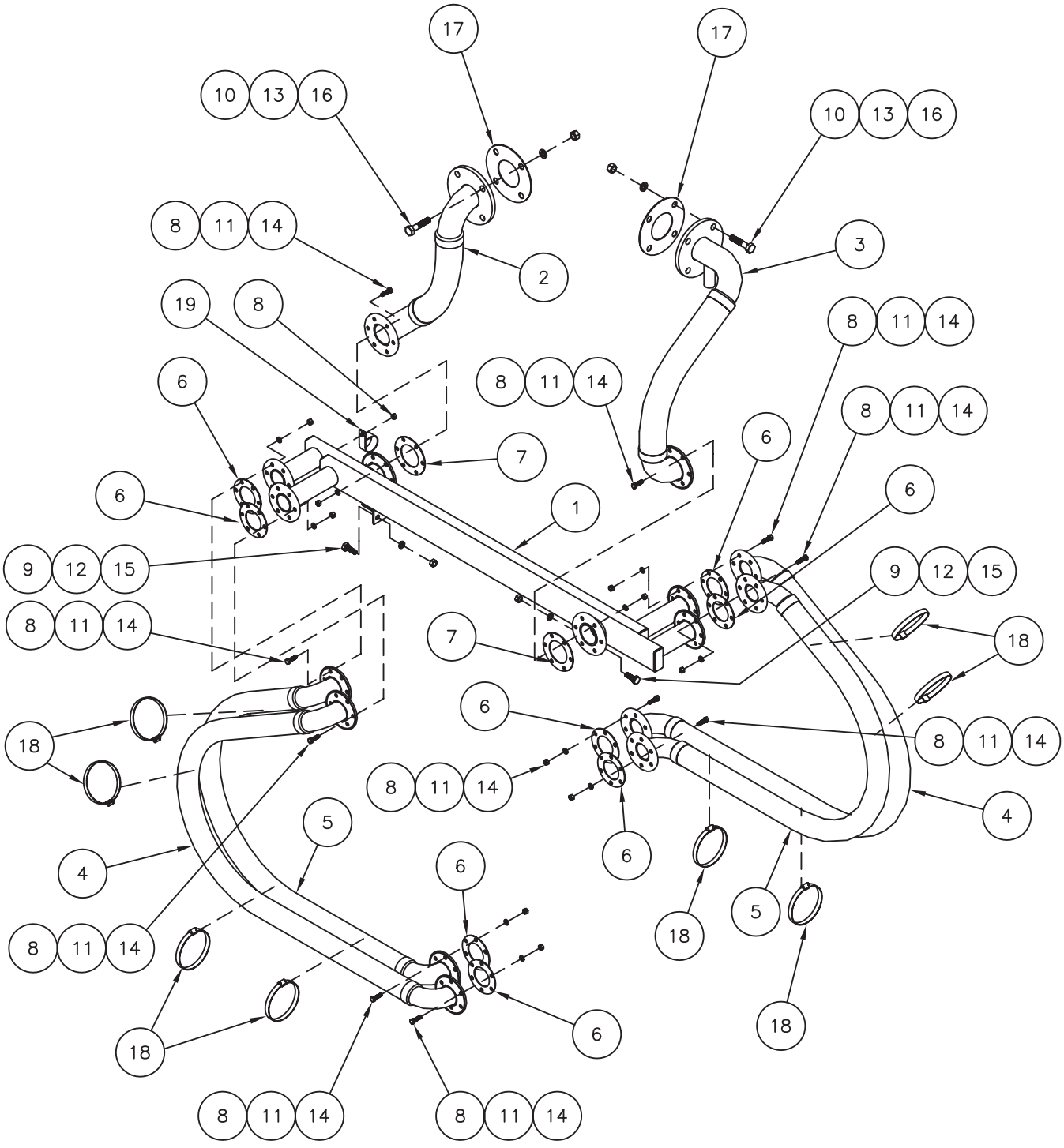


Figure 10-8

Flex Hose Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
	26145	1	Flex Hose Assembly	
1	25963SRV	1	•Manifold,Maxiii	
2	26137	1	•Hose,Feed,Lh,Max3	
3	26138	1	•Hose,Feed,Rh,Max3	
4	26146	2	•Hose,Spraybar Feed,2.00Idx80	
5	26147	2	•Hose,Spraybar Feed,2.00Idx72	
6	38153	8	•Gasket,2.00 Flange	
7	38212	2	•Gasket,2.50,Flange,Graphite	
8	80038	61	•Nut,Hex,.375-16	
9	80040	4	•Nut,Hex,.500-13	
10	80042	8	•Nut,Hex,.625-11	
11	80162	60	•Washer,Lock,.375	
12	80164	4	•Washer,Lock,.500	
13	80166	8	•Washer,Lock,.625	
14	80221	60	•CSHH,.375-16X1.00,Gr5	
15	71627	4	•CSHH,.500-13X1.50,Gr5	
16	80287	8	•CSHH,.625-11X3.00,Gr5	
17	911	2	•Gasket,3.00 Companion Flange	
18	851437	8	•Clamp,Hose,#72 (4”)	
19	36894	1	•Clamp,Loop,2.00 Od,Plstc Cover	
TBD	26146-H	A/R	Hose,S-Bar Feed,2X80,Hastalloy	
TBD	26147-H	A/R	Hose,S-Bar Fee,2X72,Hastalloy	

Handspray Wand Assembly

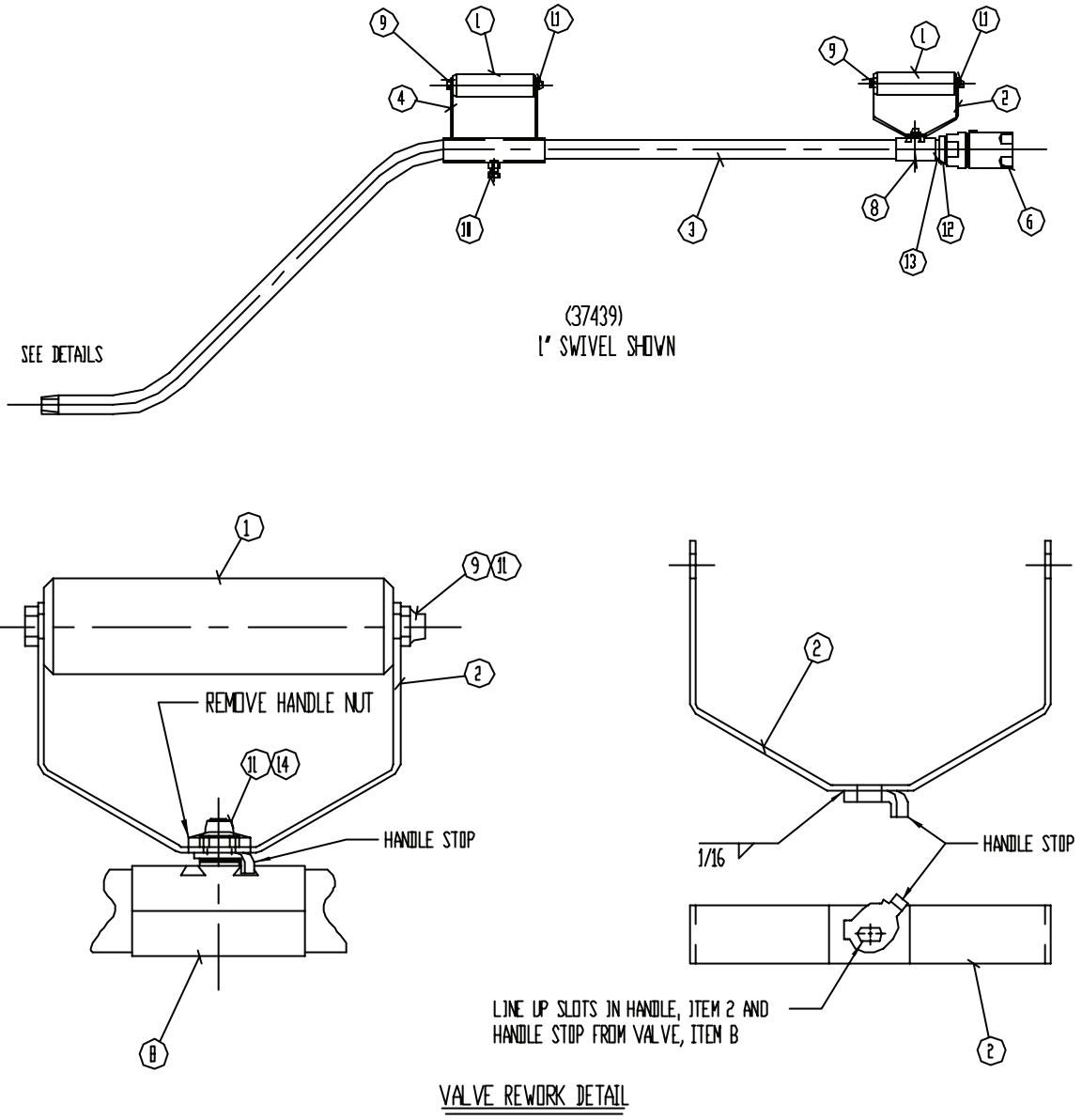


Figure 10-9

Handspray Wand Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
	18595	1	Handspray Wand Assembly	
1	1557	2	•Handle,Hand Spray	
2	23489	1	•Bent Handle,Ball Valve	
3	18593	1	•Wand,Handspray	
			Attaching Parts	
-	18595-1	1	•Handspray Wand,1 Nozzle,W/Swivel	
5	91158	1	••Pipe,90,12Fp-08Fp,Galv	
6	37439	1	••Swivel,In-Line,16Fp	
7	32923	1	••Nozzle, #6	
			Attaching Parts	
-	18595-2	1	•Handspray Wand,2 Nozzles,W/Swivel	
5	19576	1	••Spraybar,Handspray,2-Nozzles	
6	37439	1	••Swivel,In-Line,16Fp	
7	32923	2	••Nozzle, #6	
			Attaching Parts	
-	18595-3	1	•Handspray Wand,3 Nozzles,W/Swivel	
5	19578SRV	1	••Spraybar,Handspray,3-Nozzles	
6	37439	1	••Swivel,In-Line,16Fp	
7	32923	3	••Nozzle, #6	
			Attaching Parts	
-	18595-4	1	•Handspray Wand,1 Nozzle,No Swivel	
5	91158	1	••Pipe,90,12Fp-08Fp,Galv	
6	90126	1	••Pipe,Cplg,1.00	
7	32923	1	••Nozzle, #6	
			Attaching Parts	
-	18595-5	1	•Handspray Wand,2 Nozzles,No Swivel	
5	19576	1	••Spraybar,Handspray,2-Nozzles	
6	90126	1	••Pipe,Cplg,16Fp	
7	32923	2	••Nozzle, #6	
			Attaching Parts	
-	18595-6	1	•Handspray Wand,3 Nozzles,No Swivel	
5	19578SRV	1	••Spraybar,Handspray,3-Nozzles	
6	90126	1	••Pipe,Cplg,1.00	
7	32923	3	••Nozzle, #6	
4	18597SRV	1	•Handle W/M	
8	35832	1	•Vlv,Ball,12 Npt	
9	80199	2	•CSHH,.250-20X5.00,Gr5	
10	80219	1	•CSHH,.375-16X.75,Gr5	

Handspray Wand Assembly (continued)

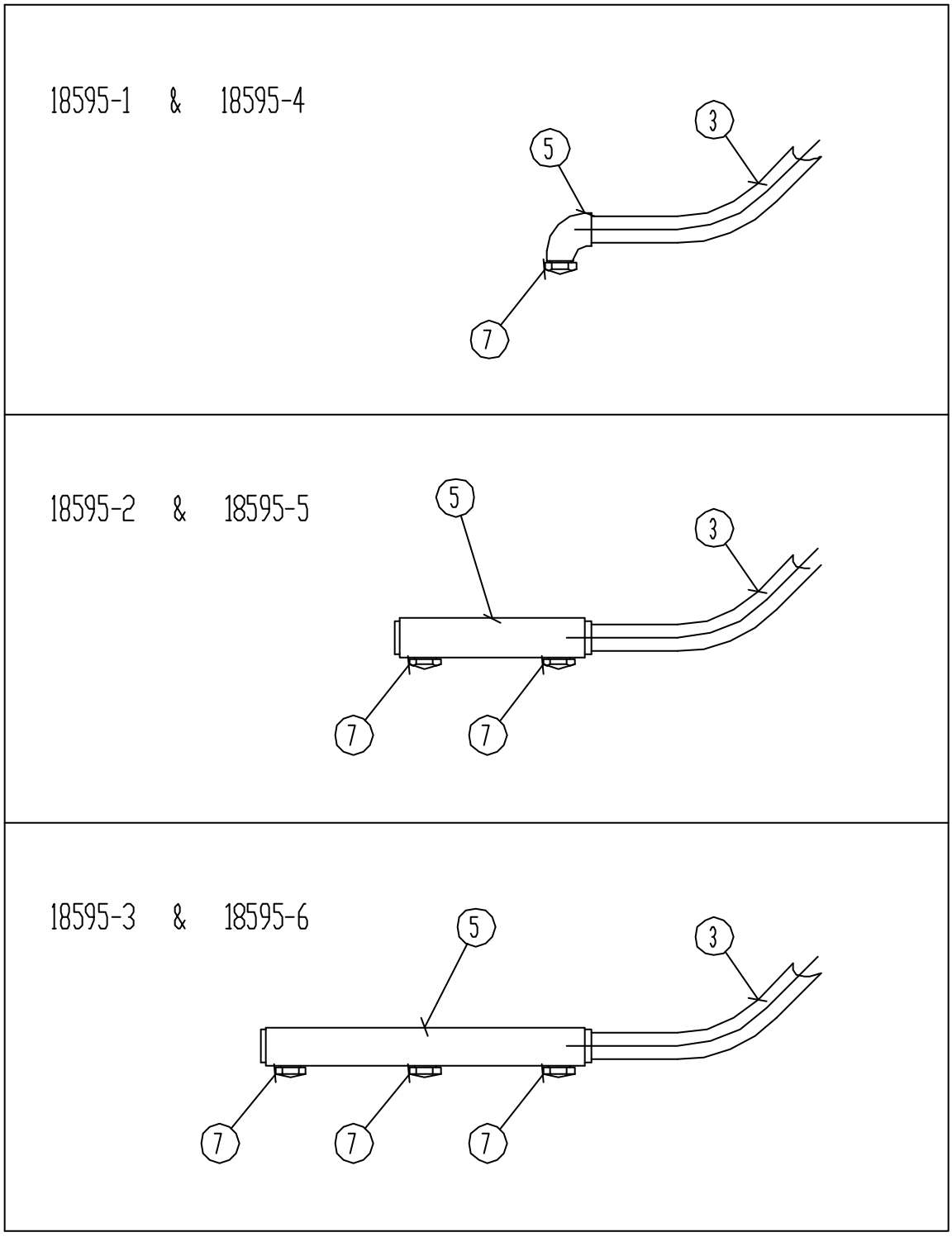


Figure 10-9

Handspray Wand Assembly (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
11	80350	3	•Nut,Flexloc,.250-20,Full,Lt	
12	91159	1	•Pipe,Bush,16Mp-12Fp,Galv,Mi	
13	99600	1	•Pipe,Nipple,12Xclose	
14	35480	0.01	•Penetrating Thread Locker 29014	
-100	5112R	1	•Hose,16X25ft,Handspray,M End	

Hydraulic, Front Live

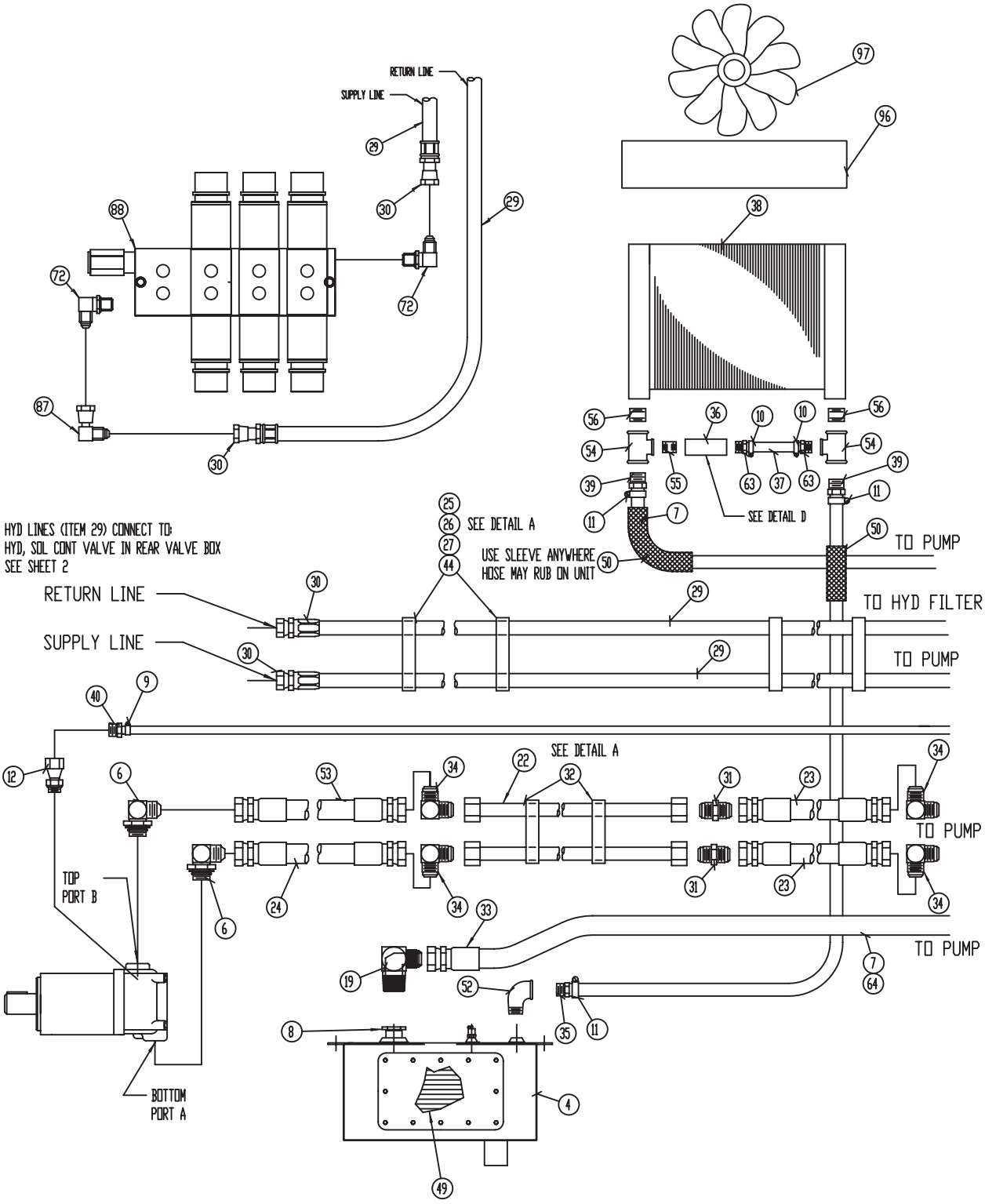


Figure 10-10

Hydraulic, Front Live Parts List

Item No.	Part Number	Qty.	Description	Remarks
	26126	1	Hydraulic, Front Live	
1	15795	1	•Fitt,Plug,12Mb,Hex,W/04Fp	
2	15984	1	•Support,Filter	
3	17211	2	•Bar,.250X3.00x5.00	
4	22490SRV	1	•Reservoir,Installation,20 Gal	
5	23363	2	•Bracket,Hydraulic Line	
6	6250	2	•Fitt,90,16Mj-12Mb	
7	32592	40	•Hose,16,Suction,250	
8	33148	1	•Strainer,Suct,2Npt,25Gpm,100Me	
9	33162	2	•Clamp,Hose,.44-.78,Worm,#06	
10	33164	2	•Clamp,Hose,.56-1.06,Worm,#10	
11	33167	4	•Clamp,Hose,.81-1.75,Worm,#20	
12	33275	1	•Fitt,Str 04Mb-04Fpx	
13	33307	1	•Fitt,90 10Mj-12Mb	
14	33365	1	•Fitt,90 04Mp-06Hb,Crimped	
15	33863	1	•Hose Assy,1500 Psi,-10X34.00	
16	33887	1	•Fitt,Str 16Mj-16Mb	
17	34083	1	•Fitt,90 12Mj-10Mb	
18	34463	1	•Filter,Return,Hp,-12Sae Ports	
-1801	34464	1	••Filter Element,Hyd	(Element Only)
-1802	35269	1	••Gauge,Sight Lh Visual	(Restriction Indicator)
19	33781	1	•Fit,90,16Mj-20Mp	
20	34799	10	•Clamp,Loop,1.562 Od,Nprn Cover	
21	X329	1	•Fitt,Tee 16Mj-16Mb-16Mj	
22	23383SRV	1	•Tube Assy,Hydraulics,Max Ii	
23	35067	3	•Hose Assy,4000 Psi,-16 X 45.00	
24	35068	1	•Hose Assy,4000 Psi,-16 X 21.00	
25	34861	4	•Cover Plate,Hose Clamp	
26	34860	8	•Clamp,Half,Hose,.750	
27	35543	4	•Weld Plate	
29	38208	60	•Hose,08,Hyd,3000	
30	38209	4	•Fitt,Hes,08Fj-08Hb,Fld Crmp	
31	36077	4	•Fitt,Str 16Mj-16Mh	
32	36167	4	•Clamp,Tube,1.00 Od Twin,Set	
33	36606	2	•Fitt,Hes,16Fj-16Hb,Fld Crmp	
34	37245	4	•Fitt,90 16Mj-16Mj	
35	6342	2	•Fitt,Str 12Mp-16Hb,Crimped	
36	6351	1	•Vlv,Check,08 Npt,20 Psi Crack	

Hydraulic, Front Live (continued)

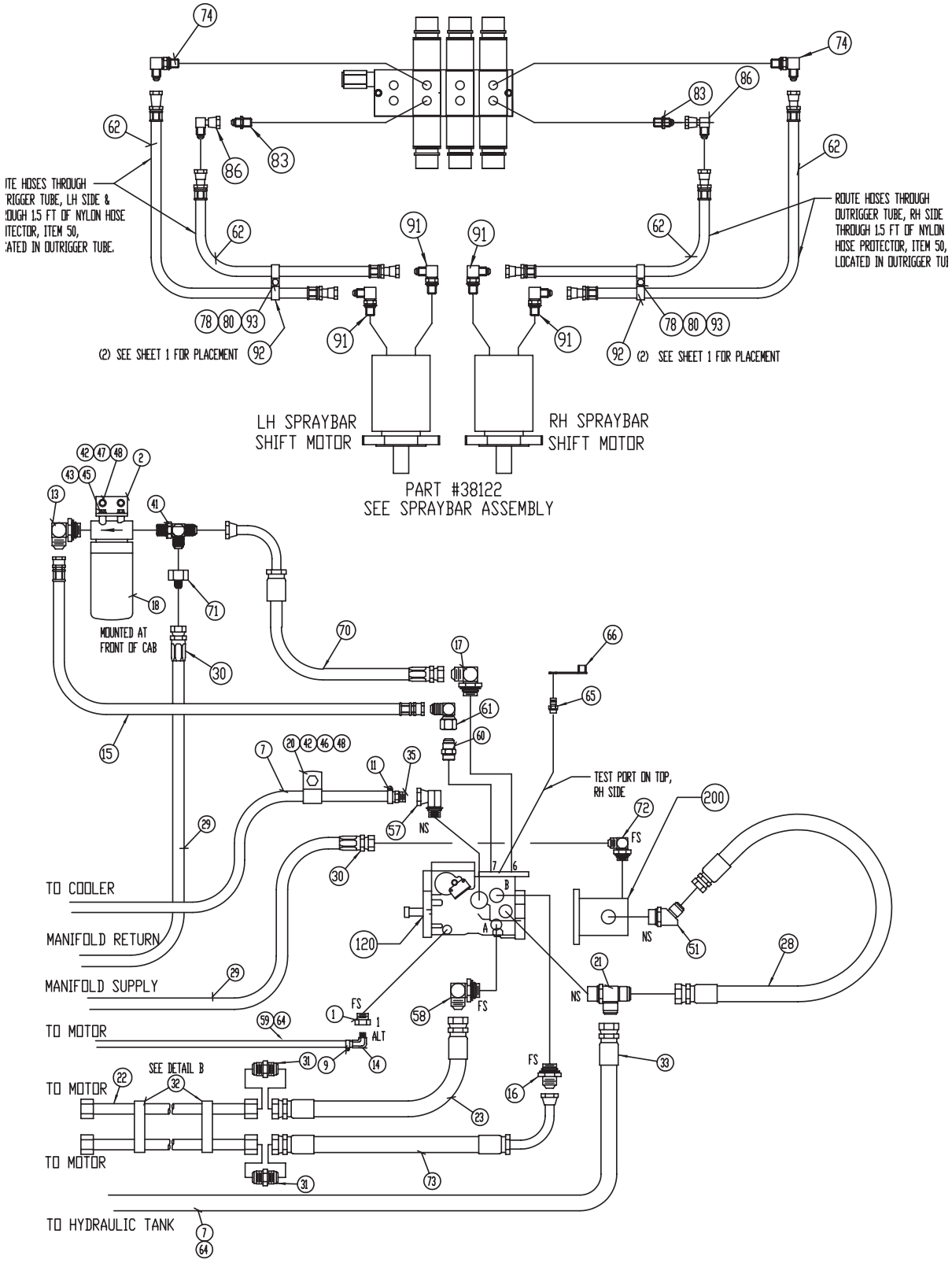


Figure 10-10

Hydraulic, Front Live (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
37	6352	0.75	•Hose,08,Push-On,250	
38	6364	1	•Cooler	
-3801	23353	1	••Screen	
39	70036	2	•Fitt,Str 16Mp-16Hb,Crimped	
40	X300	1	•Fitt,Str 04Mp-06Hb,Push-On	
41	X324	1	•Fitt,Tee 12Mj-12Mb-12Mj	
42	80142	12	•Washer,Flat,Uss,.375	
43	80162	4	•Washer,Lock,.375	
44	80212	4	•CSHH,.312-18X2.00,Gr5	
45	80219	4	•CSHH,.375-16X.75,Gr5	
46	80224	10	•CSHH,.375-16X1.25,Gr5	
47	80226	2	•CSHH,.375-16X1.50,Gr5	
48	80352	12	•Nut,Flexloc,.375-16,Full,Lt	
49		27	•Oil,Hydraulic,Multi Service	VG32
50	90803	8	•Sleeve,Abrasion,Nylon,1.75Id	
51	38203	1	•Fitt,45 12Mj-16Mb	
52	99527	1	•Pipe,90,12Mp-12Fp,Mi	
53	37309	1	•Hose Assy,4000 Psi,-16 X 27.00	
54	99581	2	•Pipe,Tee,16Fp-16Fp-08Fp,Mi	
55	99596	1	•Pipe,Nipple,08Xclose	
56	99606	2	•Pipe,Nipple,16Xclose	
57	X269	1	•Fitt,90 12Mb-12Fpx	
58	X319	1	•Fitt,90 16Mj-16Mb	
59	38579	30	•Hose,06,Low Press Push On	
60	X392	1	•Fitt,Str 10Mj-10Mb	
61	X401	1	•Fitt,90 10Mj-10Fjx	
62	35664	4	•Hose Assy,-06X106,2500	
63	X427	2	•Fitt,Str 08Mp-08Hb,Crimped	
64	33597	8	•Tie Wrap,.188X11.00	
65	72689	1	•Fitt,Test 06Mb-02Pd	
66	72372	1	•Fitt,Plug 02Pd,Dust	
67	80144	2	•Washer,Flat,Uss,.500	
68	80255	2	•CSHH,.500-13X2.00,Gr5	
69	80354	2	•Nut,Flexloc,.500-13,Full,Lt	
70	38206-41	1	•Hose,12 12Fj-12Rj9,3000	
71	35402	1	•Fitt,Red 08Mj-12Fj	
72	70754	3	•Fitt,90 08Mj-06Mb	
73	38207-49	1	•Hose,16 16Fj-16Fj990t,4000	

Hydraulic, Front Live (continued)

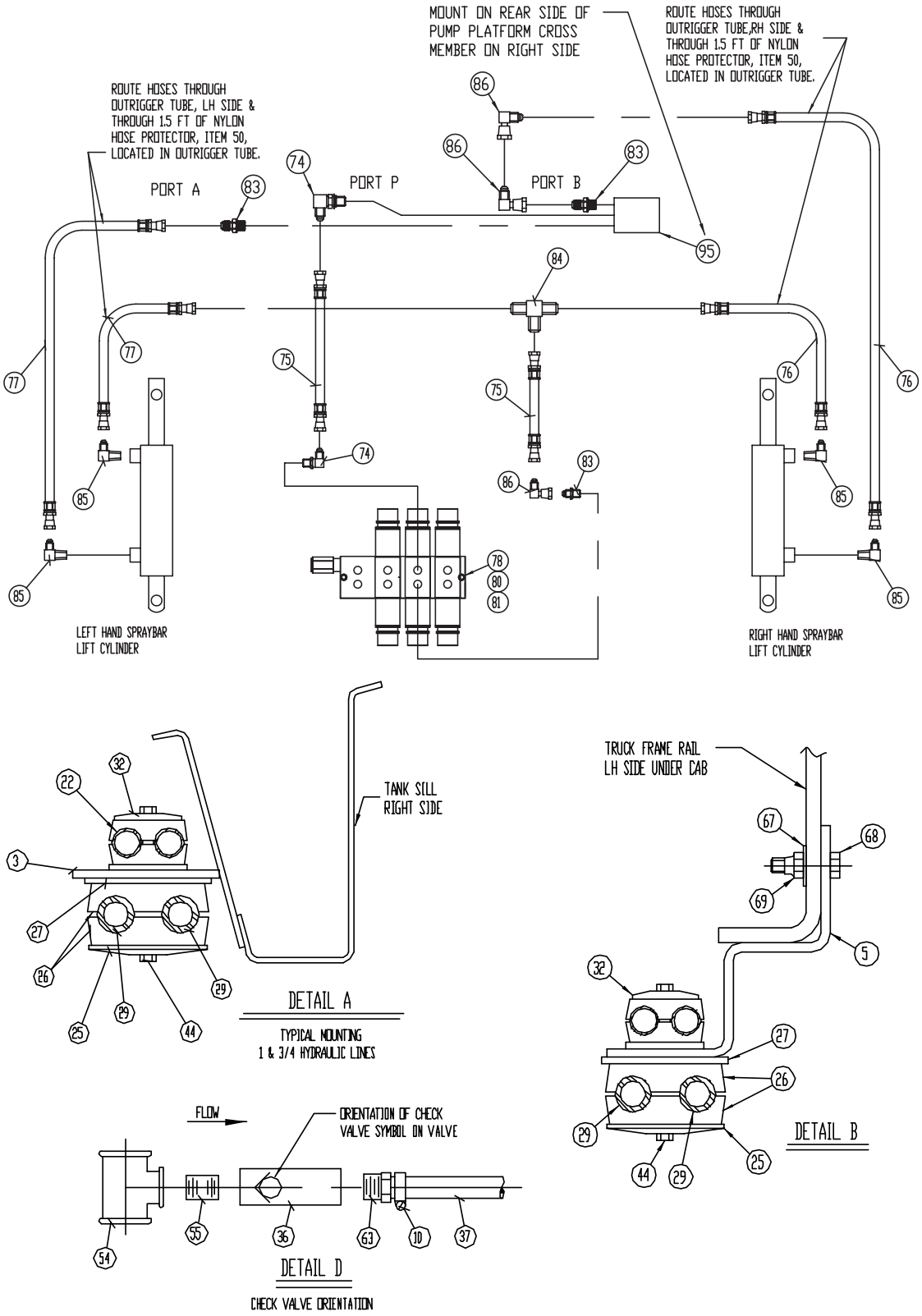


Figure 10-10

Hydraulic, Front Live (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
74	33892	4	•Fitt,90 06Mj-06Mb	
75	35611	2	•Hose Assy,-06 X 36, 2500	
76	35612	2	•Hose Assy,-06 X 61, 2500	
77	35614	2	•Hose Assy,-06 X 52, 2500	
78	80140	4	•Washer,Type A Plain,.250	
80	80350	4	•Nut,Flexloc,.250-20,Full,Lt	
81	80941	2	•CSHH,.250-20X2.25	
83	X217	5	•Fitt,Str 06Mj-06Mb	
84	X275	1	•Fitt,Tee 06Mj-06Mj-06Mj	
85	X383	4	•Fitt,90 06Mj-06Mp	
86	X387	5	•Fitt,90 06Mj-06Fjx	
87	33900	1	•Fitt,90 08Mj-08Fjx	
88	38123	REF	•Manifold,Hyd,4 Sta,3 Vlv W/Rel	(Part Of Valve Box)
			Attaching Parts	
-8801	37488-01	REF	••Valve	
-8802	37488-03	1	••Relief Valve	
-8803	37488-04	1	••Bolt Kit,For Valve	
-8804	37488-05	2	••Cover Plate,Includes Bolts	
-8805	37488-06	1	••Coil,For Valve	
	984579-12		Connector	Old Style Wiring To New Valve
120	38120	1	•Pump,Hyd,M46,Cc2,Edc,A Pad	CCW
200	38200	1	•Pump,Hyd,Constant Flow	Gear CCW
-808	36808	1	•Oring,3.237 Id X .103,Sae 152	Loc b/w Part #38120 & #38200
	38543		CW Hydraulic Pump	
	38542		CW Hydraulic Auxiliary Gear Pump	
	988398		CCW Pump Kit	
91	34535	4	•Fitt,90 06Mj-08Mb	
93	80185	2	•CSHH,.250-20X1.00,Gr5	
95	38210	1	•Vlv,Hyd,Flow Divider,	
96	37735	1	Oil Cooler	On Top
97	36997	1	Oil Cooler Fan	
			Front Live Pump Mounting Group	
	23196		Pump Mounting Group	GMC, Ford Trucks
	23894		Pump Mounting Group	Frtliner, LHC Trucks
1	17645	1	•Guard,Front Live Power,4.0" Lg	GMC, Ford Trucks (not shown)
1	23893	1	•Guard,Front Live Power,2.5" Lg	Frtliner, LHC Trucks (not shown)
2	21743	1	•Channel,Pump Support	GMC, Ford Trucks (not shown)
2	21743	1	•Channel,Pump Support	Frtliner, LHC Trucks (not shown)

Hydraulic, Front Live (continued)

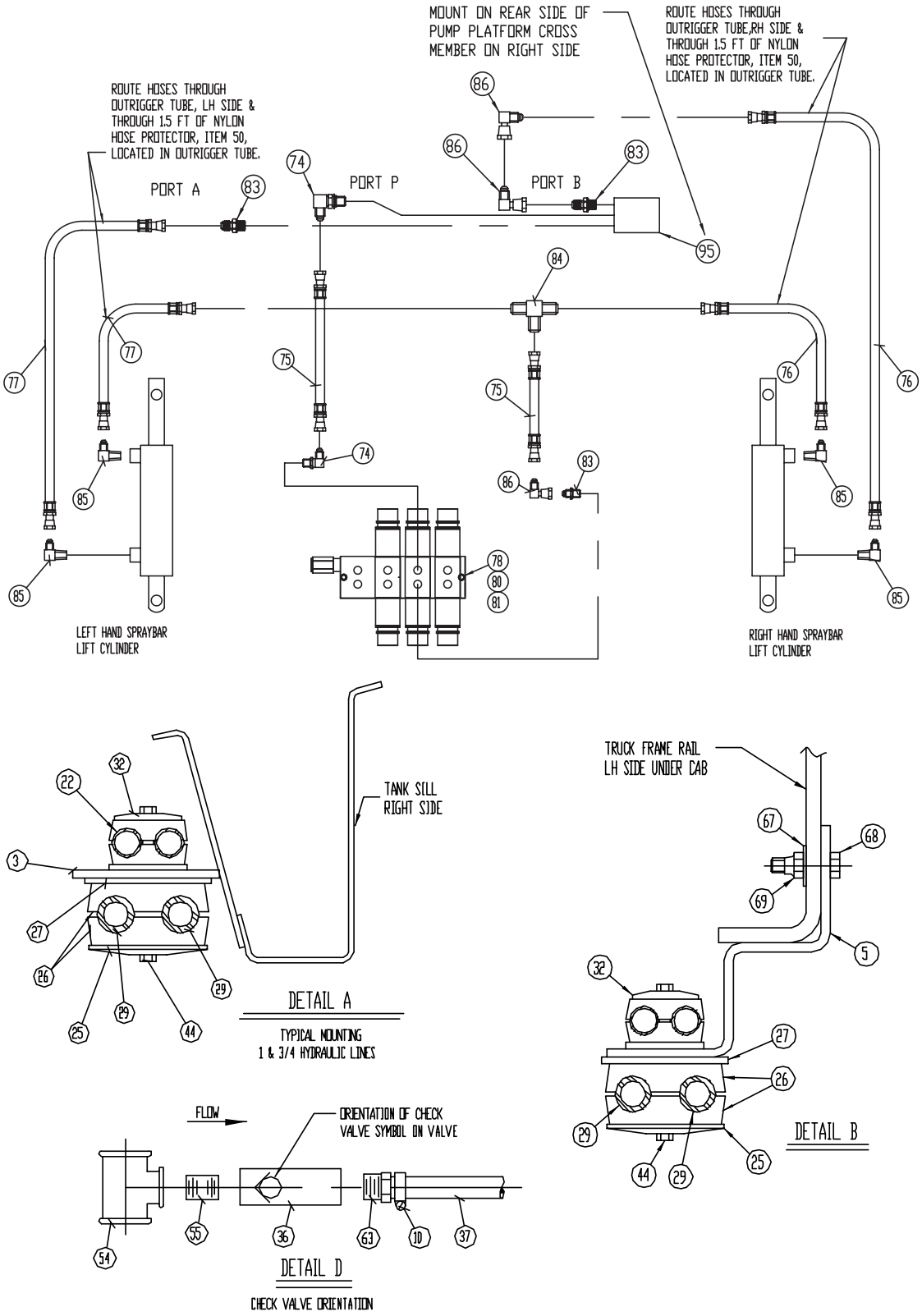


Figure 10-10

Hydraulic, Front Live (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
3	23194	1	•Mount,Pump,Front Live	GMC, Ford Trucks (988398)
3	23194	1	•Mount,Pump,Front Live	Frtliner, LHC Trucks (988398)
4	23196	1	•Screen	GMC, Ford Trucks
4	23353	1	•Screen	Frtliner, LHC Trucks
5	23354	2	•Bracket,Cooler Mount	GMC, Ford Trucks
5	23354	2	•Bracket,Cooler Mount	Frtliner, LHC Trucks
6	23361	2	•Mount,Cooler	GMC, Ford Trucks
6	23361	2	•Mount,Cooler	Frtliner, LHC Trucks
7	38200	1	Gear Pump Assembly	Part of 988398
8	34463	1	Filter Assembly	

Hydraulic, PTO

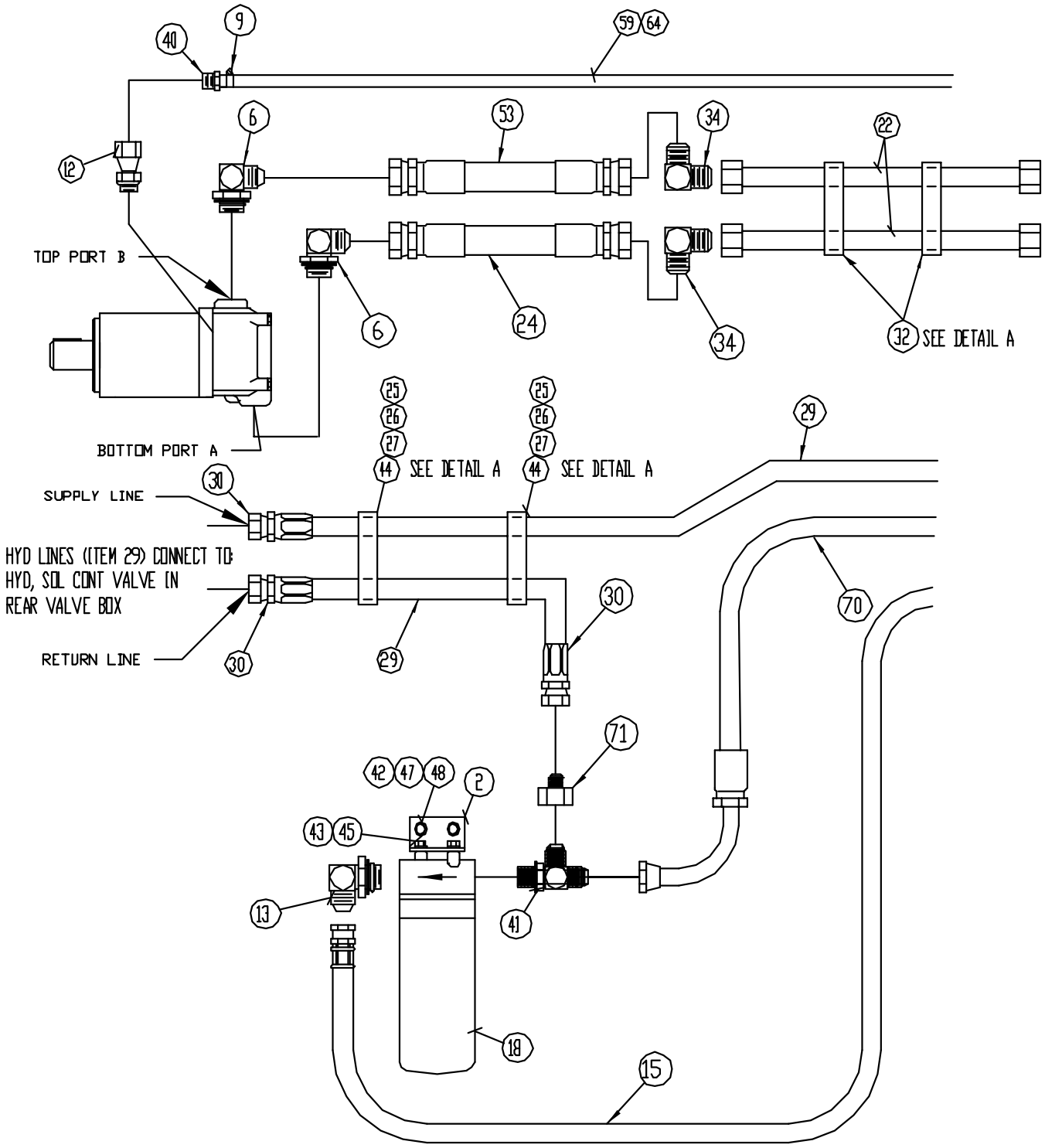


Figure 10-11

Hydraulic, PTO Parts List

Item No.	Part Number	Qty.	Description	Remarks
	27022	1	Hydraulic, Pto Drive	
1	15795	1	•Fitt,Plug,12Mb,Hex,W/04Fp	
2	15984	1	•Support,Filter	
3	17211	2	•Bar,.250X3.00x5.00	
4	22490SRV	1	•Reservoir,Installation,20 Gal	
6	6250	2	•Fitt,90 16Mj-12Mb	
7	32952	30	•Hose,16,Suction,250	
8	33148	1	•Strainer,Suct,2Npt,25Gpm,100Me	
9	33162	2	•Clamp,Hose,.44-.78,Worm,#06	
10	33164	2	•Clamp,Hose,.56-1.06,Worm,#10	
11	33167	4	•Clamp,Hose,.81-1.75,Worm,#20	
12	33275	1	•Fitt,Str 04Mb-04Fpx	
13	33307	1	•Fitt,90 10Mj-12Mb	
14	33365	1	•Fitt,90 04Mp-06Hb,Crimped	
15	33863	1	•Hose Assy,1500 Psi,-10X34.00	
18	34463	1	•Filter,Return,Hp,-12Sae Ports	
19	35781	1	•Fitt,90 16Mj-20Mp	
20	34799	10	•Clamp,Loop,1.562 Od,Nprn Cover	
21	X329	1	•Fitt,Tee 16Mj-16Mb-16Mj	
22	27021	1	•Tube Assy,Hyd,Max,Pto	
23	35067	2	•Hose Assy,4000 Psi,-16 X 45.00	
24	35068	1	•Hose Assy,4000 Psi,-16 X 21.00	
25	34861	2	•Cover Plate,Hose Clamp	
26	34860	4	•Clamp,Half,Hose,.750	
27	35543	2	•Weld Plate	
28	38205-25	1	•Hose,12 12Fj-16Fj,300	
29	38208	40	•Hose,08,Hyd,3000	
30	38209	4	•Fitt,Hes,08Fj-08Hb,Fld Crmp	
32	36167	2	•Clamp,Tube,1.00 Od Twin,Set	
33	36606	2	•Fitt,Hes,16Fj-16Hb,Fld Crmp	
34	37245	4	•Fitt,90 16Mj-16Mj	
35	6342	2	•Fitt,Str 12Mp-16Hb,Crimped	
36	6351	1	•Vlv,Check,08 Npt,20 Psi Crack	
37	6352	0.75	•Hose,08,Push-On,250	
38	6364	1	•Cooler	
39	70036	2	•Fitt,Str 16Mp-16Hb,Crimped	
40	X300	1	•Fitt,Str 04Mp-06Hb,Push-On	
41	X324	1	•Fitt,Tee 12Mj-12Mb-12Mj	

Hydraulic, PTO (continued)

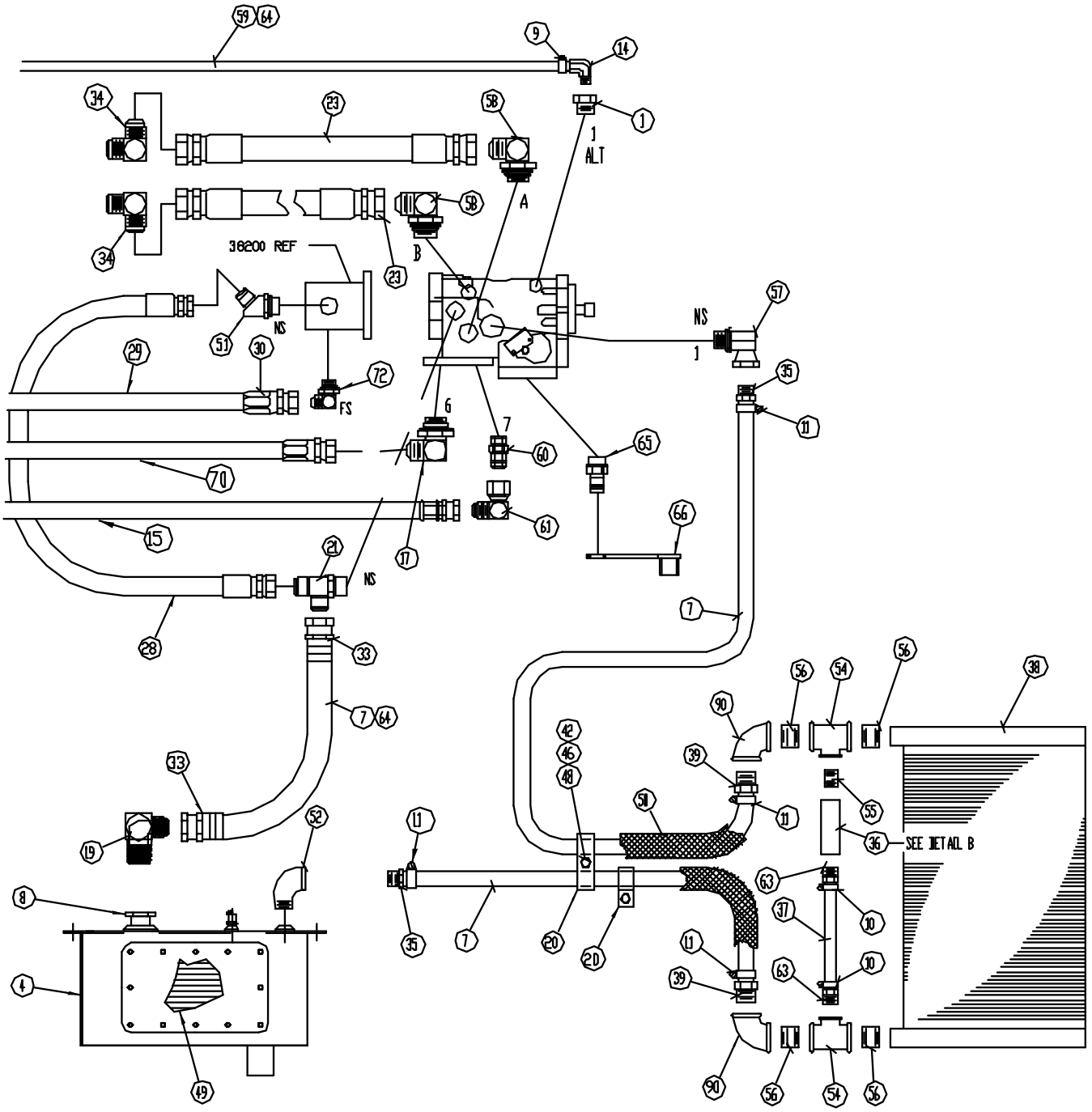


Figure 10-11

Hydraulic, PTO (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
42	80142	12	•Washer,Flat,Uss,.375	
43	80162	4	•Washer,Lock,.375	
44	80212	2	•CSHH,.312-18X2.00,Gr5	
45	80219	4	•CSHH,.375-16X.75,Gr5	
46	80224	10	•CSHH,.375-16X1.25,Gr5	
47	80226	2	•CSHH,.375-16X1.50,Gr5	
48	80352	12	•Nut,Flexloc,.375-16,Full,Lt	
49	91500	27	•Oil,Hydraulic,Iso68	Acquire Locally
50	90803	8	•Sleeve,Abrasion,Nylon,1.75Id	
51	38203	1	•Fitt,45 12Mj-16Mb	
52	99527	1	•Pipe,90,12Mp-12Fp,Mi	
53	37309	1	•Hose Assy,4000 Psi,-16 X 27.00	
54	99581	2	•Pipe,Tee,16Fp-16Fp-08Fp,Mi	
55	99596	1	•Pipe,Nipple,08Xclose	
56	99606	4	•Pipe,Nipple,16Xclose	
57	X269	1	•Fitt,90 12Mb-12Fpx	
58	X319	2	•Fitt,90 16Mj-16Mb	
59	38579	30	•Hose,06,Low Press Push On	
61	X401	1	•Fitt,90 10Mj-10Fjx	
63	X427	2	•Fitt,Str 08Mp-08Hb,Crimped	
64	33597	8	•Tie Wrap,.188X11.00	
65	72689	1	•Fitt,Test 06Mb-02Pd	
66	72372	1	•Fitt,Plug 02Pd,Dust	
70	38206-41	1	•Hose,12 12Fj-12Rj9,3000	
71	35402	1	•Fitt,Red 08Mj-12Fj	
70	38206-41	1	•Hose,12 12Fj-12Rj9,3000	
72	70754	3	•Fitt,90 08Mj-06Mb	
74	33892	4	•Fitt,90 06Mj-06Mb	
75	35611	2	•Hose Assy,-06 X 36, 2500	
76	35612	2	•Hose Assy,-06 X 61, 2500	
77	35614	2	•Hose Assy,-06 X 52, 2500	
78	80140	4	•Washer,Type A Plain,.250	
79	6408	2	•Fitt,Plug 06Mb,Hex	
80	80350	4	•Nut,Flexloc,.250-20,Full,Lt	
81	80941	2	•CSSH,.250-20X2.25	
83	X217	5	•Fitt,Str 06Mj-06Mb	
84	X275	1	•Fitt,Tee 06Mj-06Mj-06Mj	
85	X383	4	•Fitt,90 06Mj-06Mp	

Hydraulic, PTO (continued)

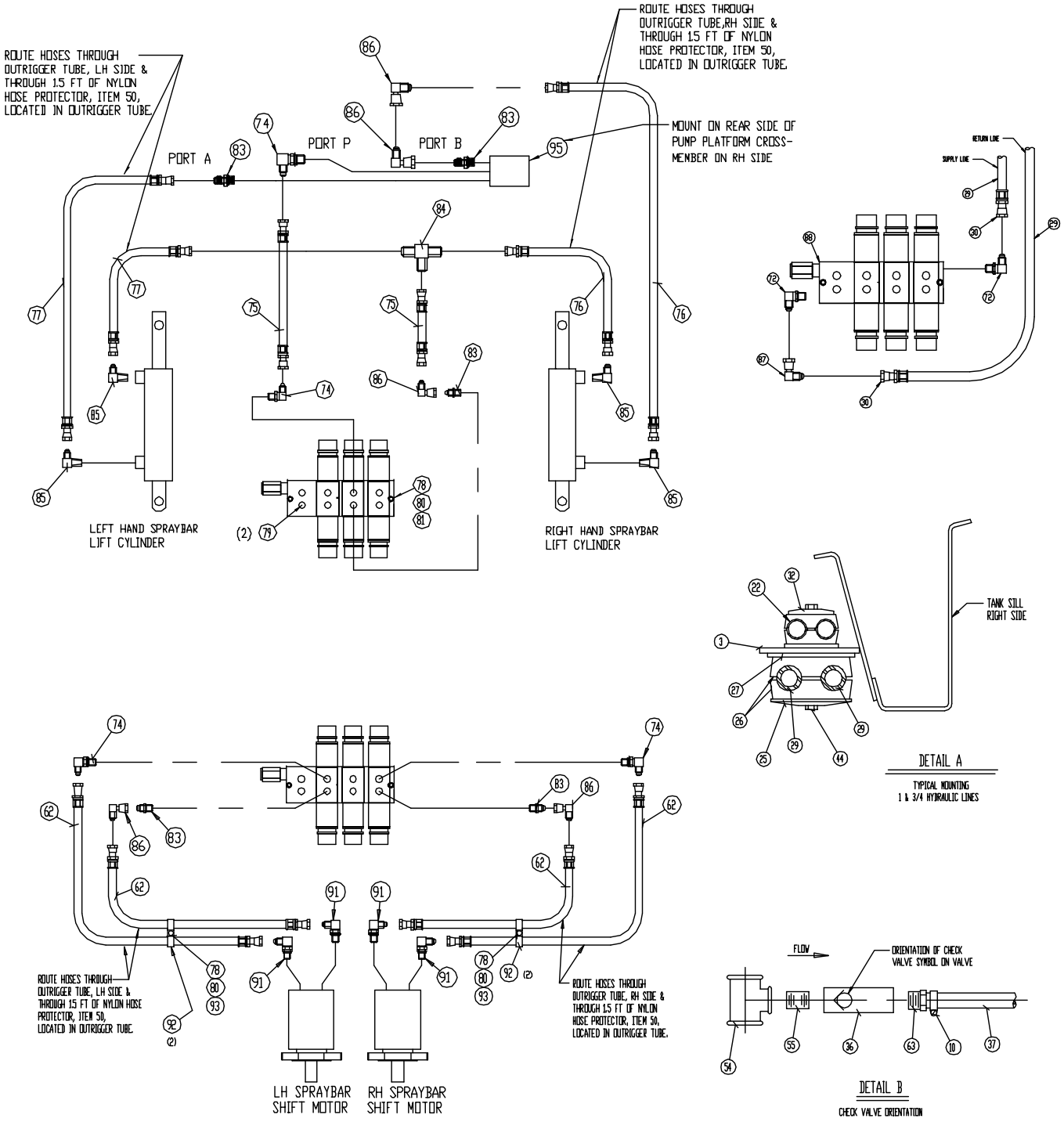


Figure 10-11

Hydraulic, PTO (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
86	X387	5	•Fitt,90 06Mj-06Fjx	
87	33900	1	•Fitt,90 08Mj-08Fjx	
88	38123	REF	•Manifold,Hyd,4 Sta,3 Vlv,W/Rel	(Part Of Valve Box)
90	99514	2	•Pipe,90,16Fp,Mi	
91	34535	4	•Fitt,90 06Mj-08Mb	
93	80185	2	•CSHH,.250-20X1.00,Gr5	
95	38210	1	•Vlv,Hyd,Flow Divider,	
96	38620	16	•Wire,Mechanics,16.5 Ga	

Hydraulic Reservoir

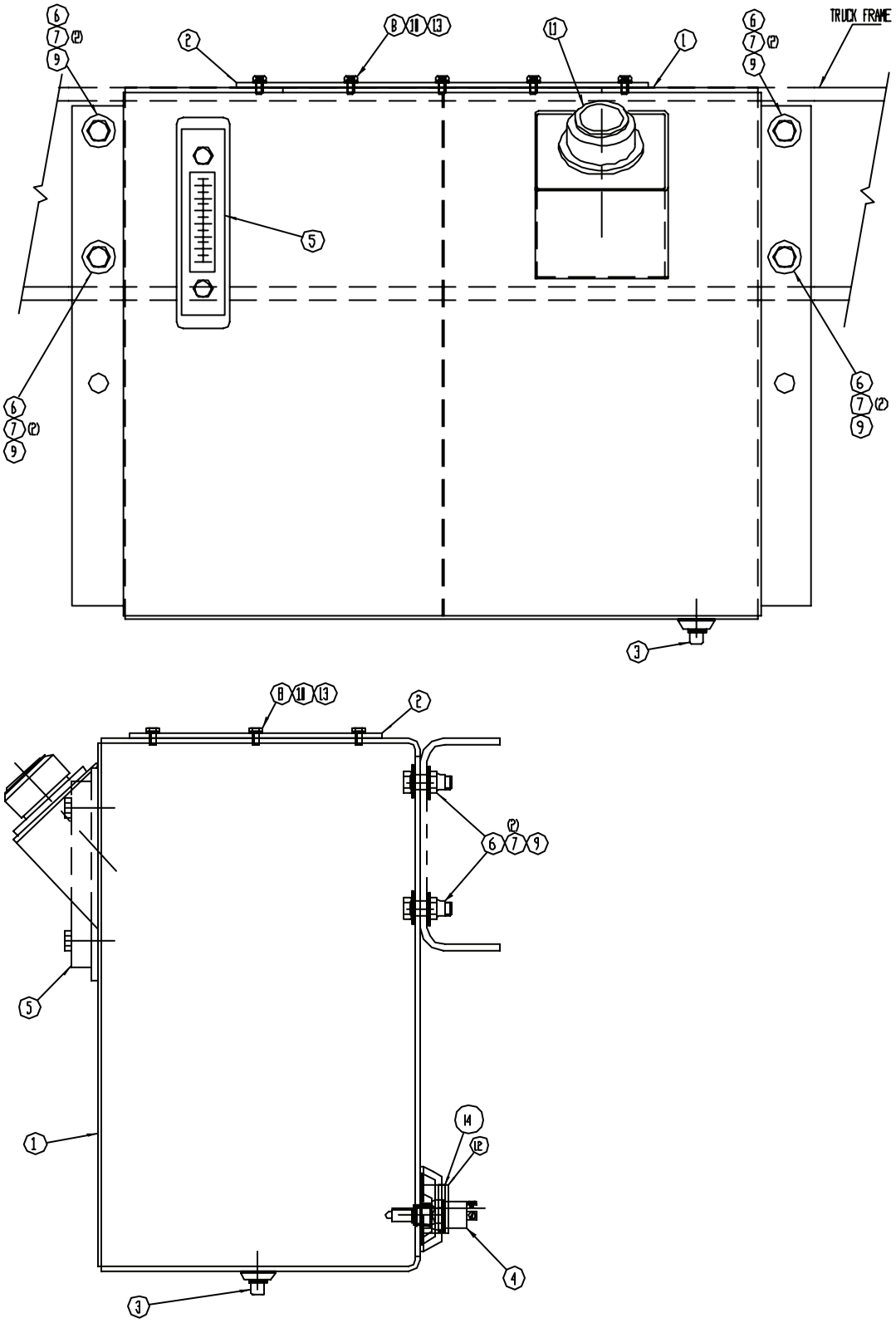
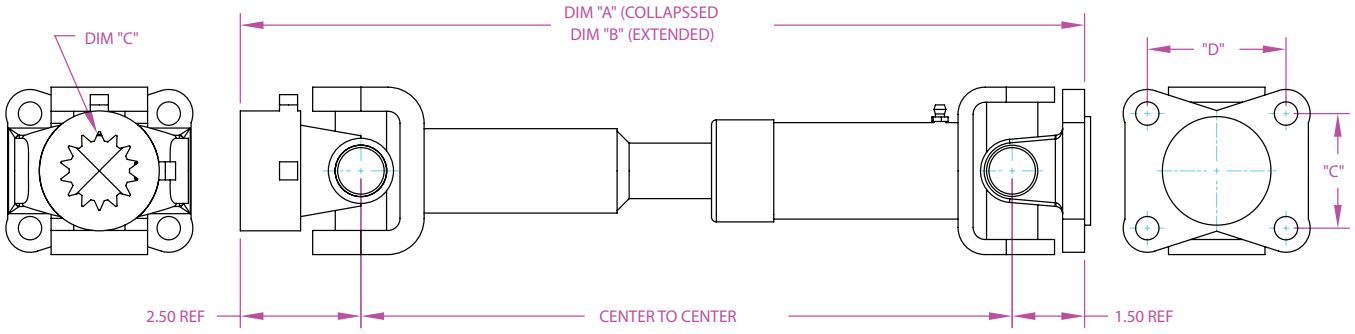


Figure 10-12

Hydraulic Reservoir Parts List

Item No.	Part Number	Qty.	Description	Remarks
	22490SRV	1	•Hydraulic Reservoir	
1	22489	1	••Reservoir,20 Gal	
2	22750	1	••Reservoir,Cleanout Cover	
3	35254	1	••Pipe Plug,Mag,06Mp,Sq Hd	
4	36343	1	••Switch,Temp,210 Deg F.,-08Mp	
5	500070	1	••Gauge,Hyd Oil Level/Temp	
6	71627	4	••CSHH,.500-13X1.50,Gr5	
7	80144	8	••Washer,Flat,Uss,.500	
8	80160	12	••Washer,Lock,.250	
9	80354	4	••Nut,Flexloc,.500-13,Full,Lt	
10	80192	12	••CSHH,.250-20X.75,Gr5	
11	37680	1	••Filler,Hyd Fluid,10 Psi	
12	99299	1	••Pipe Plug,2.00Mp,Skt Hd,Mi	
13	81161	12	••Washer,Weather Seal,#10	
14	99463	1	••Pipe,Bush,1.25 Mp-12Fp,Mi	

Drive Shaft Group



RATED HORSEPOWER: 55 HP
PULSATING TORQUE: 130 FT-LBS
CONSTANT TORQUE: 195 FT-LBS
SHORT DURATION TORQUE: 800 FT-LBS
TORSIONAL ELASTIC LIMIT: 1600 FT-LBS

PART NO	DIM "A" COLLAPSED LENGTH	DIM "B" EXTENDED LENGTH	DIM "C" INTERNAL SPINE	DIM "D"	DIM "E"
34851-20	18.00	20.88	15 TEETH	2.875	2.375
34851-42	18.00	20.75	15 TEETH	2.375	2.000

Figure 10-13

Drive Shaft Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
			Driveshaft	
	34851-20SRV	1	Front Live Power	
			International Trucks	
-1	39105	1	•Driveshaft,Flange,1350	
-2	39107	1	•Solid Shaft Assembly	
-3	39111	1	•Driveshaft,End Yoke,15T Spln	
-4	39112	2	•Driveshaft,Set Screw W/Wire Lk	
	34851-42SRV	1	Front Live Power	
			Ford, Sterling, Freightliner, GMC Trucks	
-1	39104	1	•Driveshaft,Flange,1310	
-2	39107	1	•Solid Shaft Assembly	
-3	39111	1	•Driveshaft,End Yoke,15T Spln	
-4	39112	2	•Driveshaft,Set Screw W/Wire Lk	
	34850-XXX	1	PTO, Varies Per Truck	
-1	39109	1	•Driveshaft,End Yoke,1.25 W/5/16	
-2	39108	1	•Driveshaft,2” Tube,55 3/4	
-3	39111	1	•Driveshaft,End Yoke,15T Spln	
-4	39112	2	•Driveshaft,Set Screw W/Wire Lk	

Control Box, Plus One, 16 Ft Spraybar

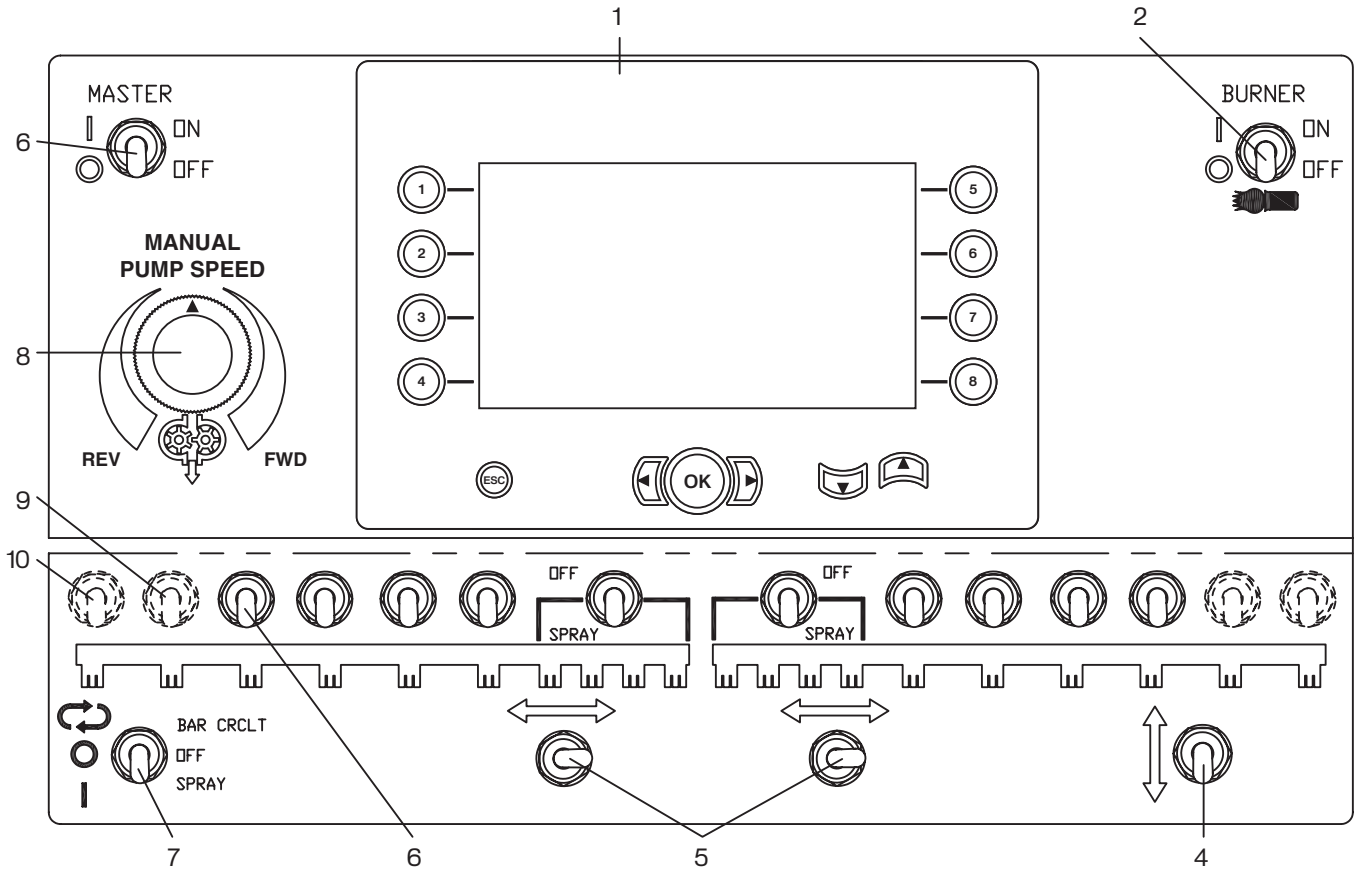


Figure 10-14

Control Box, Plus One, 16 Ft Spraybar Parts List

Item No.	Part Number	Qty.	Description	Remarks
	1002293	1	Control Box, Plus One	
1	1005316	1	Display,DP610,Max3	
2	1005317	1	Switch, Toggle, DPDT, MOM	
–	1005320	1	Controller, 50 Pin Module	Not shown
4	37516	1	Switch, Toggle, SPDT, 3 Pos, MOM	
5	38185	2	Switch, Toggle, DPDT, MOM, Blade	
6	38157	11	Switch, Toggle, DPST, 2 Pos	
7	36768	1	Switch, Toggle, DPDT, 3 Pos, Long	
8	35050	1	Potentiometer, 100 Ohm	
–	35049	1	Knob, .25 Shaft	Not shown
9	38157	13	Switch, Toggle, DPST, 2 Pos	18’ option
10	38157	15	Switch, Toggle, DPST, 2 Pos	20’ option
–	1003412	1	Harness, Front Machine Control	Not shown
–	1003413	1	Harness, Rear Machine Control	Not shown
–	1003414	1	Harness, LH Spraybar Control	Not shown
–	1003415	1	Harness, RH Spraybar Control	Not shown
–	1003416	1	Kit, CAN BUS 01	Not shown
–	1003417	1	Kit, CAN BUS 02	Not shown
–	1003418	1	Kit, CAN BUS 03	Not shown
–	1003419	1	Kit, CAN BUS 04	Not shown

Ground Speed Sensor

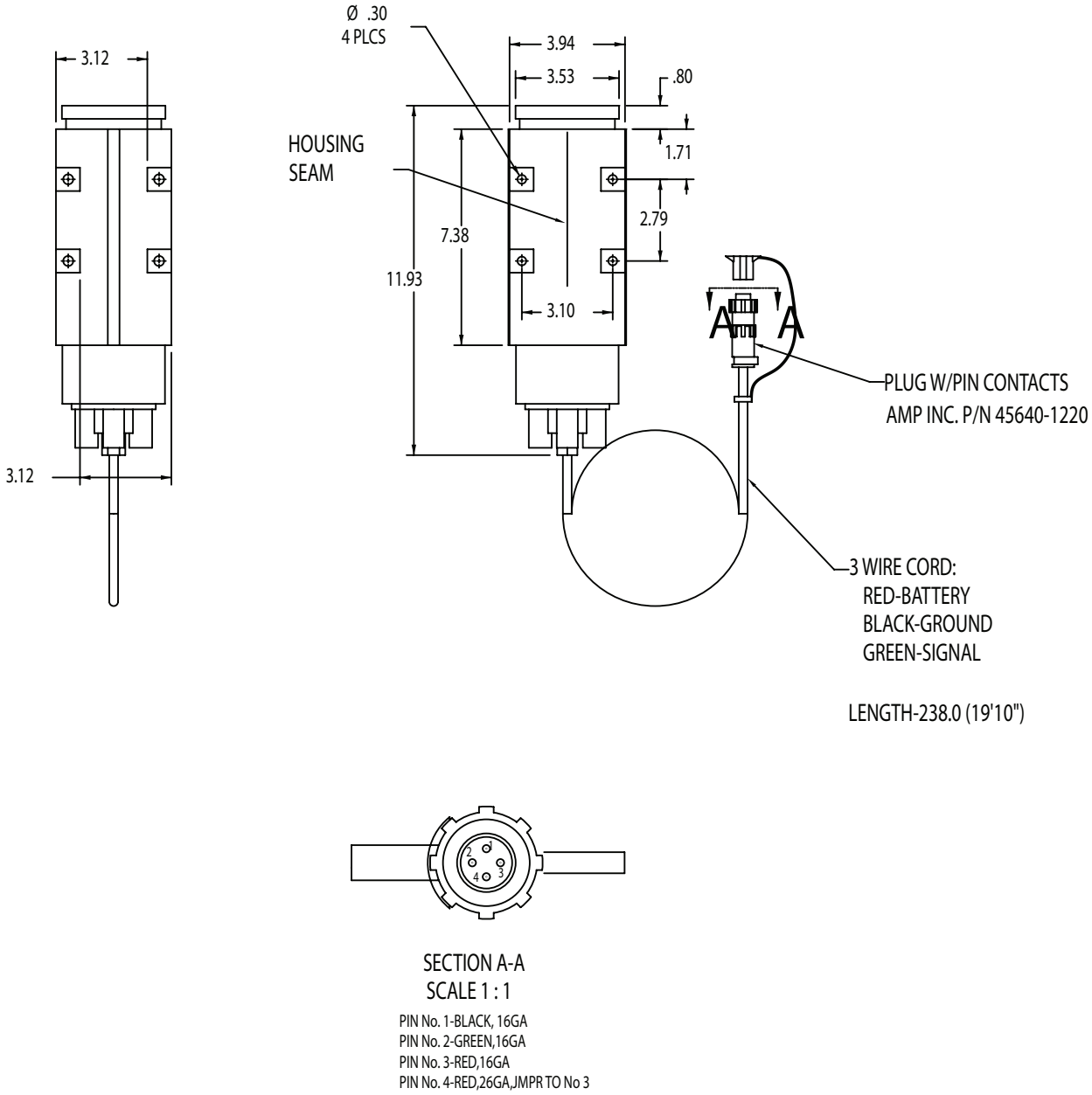


Figure 10-15

Ground Speed Sensor Parts List

Item No.	Part Number	Qty.	Description	Remarks
	18122SRV	1	Radar Horn	
-1	15716	1	•Bracket,Radar Vel Sensor	
-2	35023	1	•Radar Horn	
-4	80142	2	•Washer,Flat,Uss,.375	
-5	80228	2	•CSHH,.375-16X1.75,Gr5	
-6	80350	4	•Nut,Flexloc,.250-20,Full,Lt	
-7	80352	2	•Nut,Flexloc,.375-16,Full,Lt	
-8	80411	4	•CSHH,.250-20X4.00,Gr5	
	1000174		Speed, Gps Sensor	

Spraybar Assembly, 16 Foot

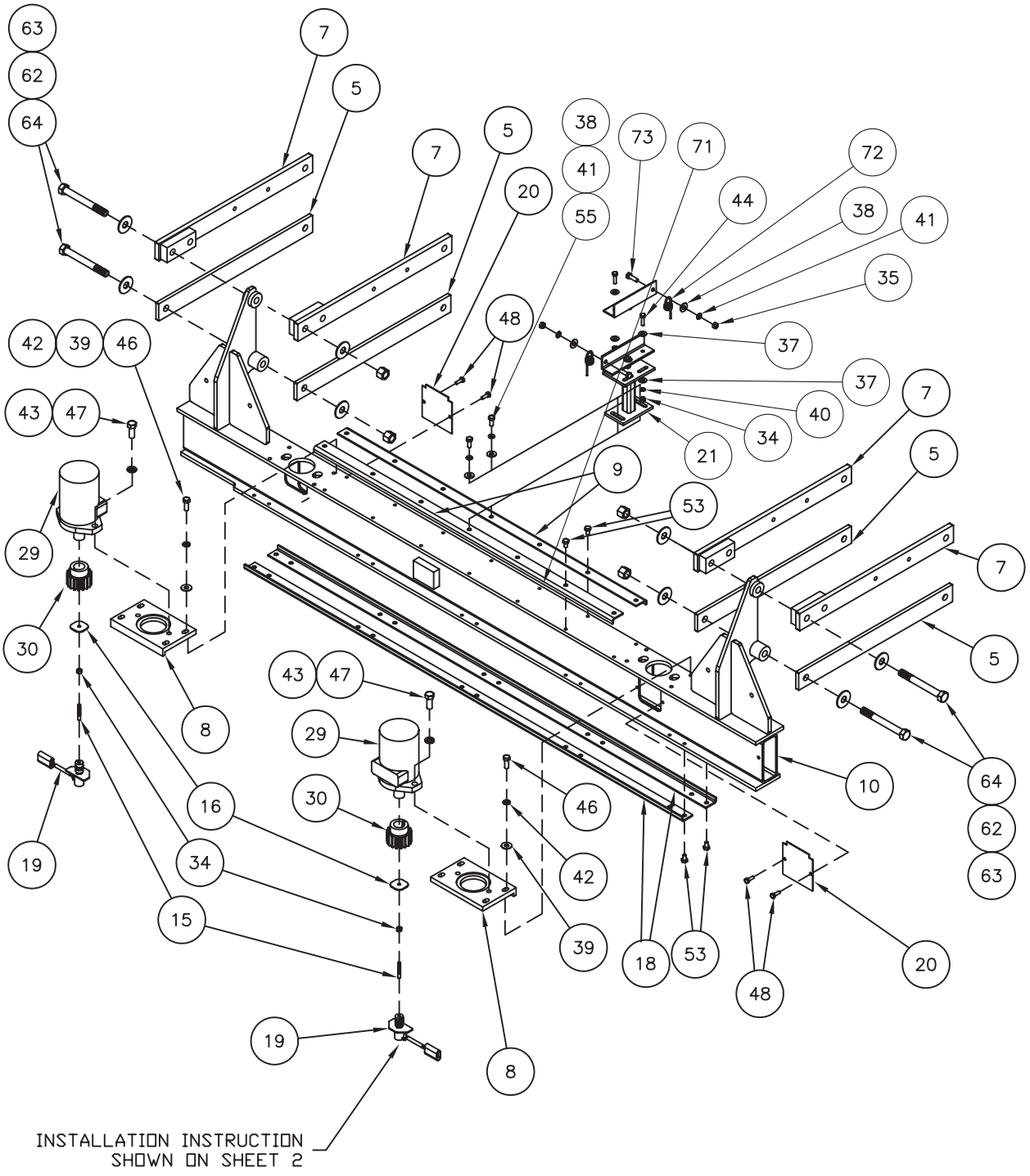


Figure 10-16

Spraybar Assembly, 16 Foot Parts List

Item No.	Part Number	Qty.	Description	Remarks
	25961	1	Spraybar Assembly, 16 Foot	
1	15929	2	•Nut	
2	28631	2	•Extension,Spraybar	
3	25901	2	•Spraybar W/M,Extendable	
4	25944	1	•Support,Spraybar,Rh	
5	25948	4	•Link,Support,Bottom	
-6	25949	1	•Support,Spraybar,Lh	
7	25997SRV	4	•Link,Support,Top	
8	26016	2	•Mount,Motor,Spraybar	
9	26017	2	•Rail,Barslide,Top	
10	26019	1	•Barslide W/M	
11	26033	2	•Plate,Slide	
12	26034	2	•Block,Slide,Bottom	
13	26035	2	•Block,Slide,Top	
14	26036	2	•Rack,Gear,8 D.P.,Modified	
15	26059	2	•Shaft,Thd'd,1.75	
16	26060	2	•Washer,Sq,.281Idx1.5	
17	26106	4	•Block,Stop,Extend	
18	26112	2	•Rail,Barslide,Bttm	
19	26141SRV	2	•Pot Assembly,Max3	
20	26142	2	•Plate,Access	
21	27594	1	•Bracket,Actuator	
22	28540	1	•Control Grp,Air,Max3	
			Attaching Parts	
		1	••Wiring Diagram	
-2201	37311	48	••Fitt,90 02Mp-02Fp,Brass	
-2202	38130	24	••Valve,3 Way,Air,Spray Bar	(No Seal Kit Available)
-2203	38132	24	••Valve,3 Way,02X02x02,	(No Seal Kit)
-2204	38201	296	••Clamp,Hose,Band,.45Dia	
-2205	38412	4	••Fitt,Tee 04Hb-O4hb-04Hb,Brass	
-2206	5347	235	••Hose,04,Push-On,Low Pressure	
-2207	71796	14	••Fitt,90 02Mp-04Hb,Crimped,Bras	
-2208	72700	130	••Fitt,Tee 04Hb-04Hb-02Mp,Brass	
-2209	90803	22	••Sleeve,Abrasion,Nylon,1.75Id	
23	26469	48	•Spray Valve Assembly,Max3	
24	35565	48	•Nozzle #00	
24	32917	A/R	•Nozzle #0	
24	32918	A/R	•Nozzle #1, 5 Gpm/40 Psi	

Spraybar Assembly, 16 Foot (continued)

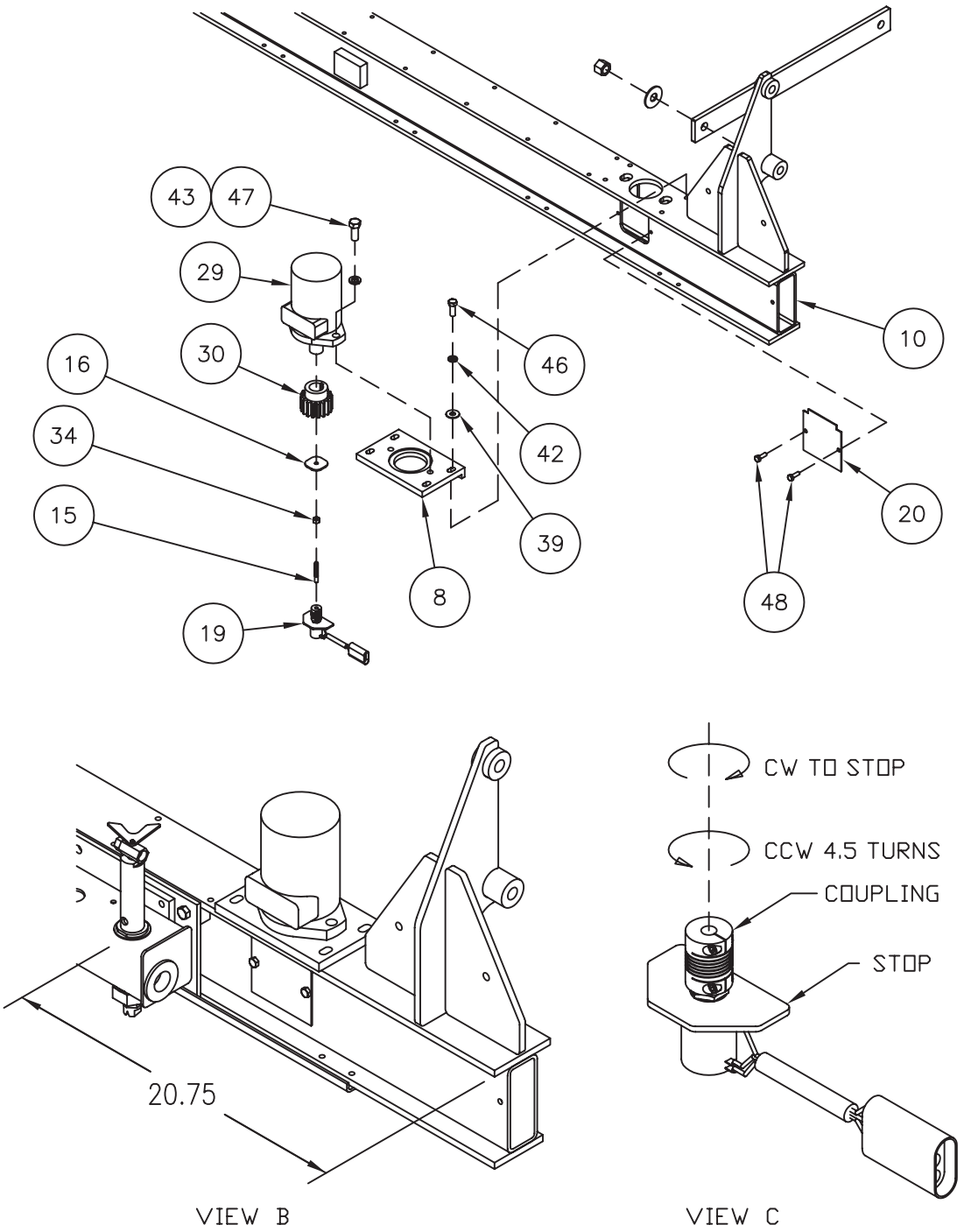


Figure 10-16

Spraybar Assembly, 16 Foot (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
24	36299	A/R	•Nozzle #1.5	
24	32919	A/R	•Nozzle #2	
24	32920	A/R	•Nozzle #3	
-26	34998	0.1	•Loctite,#242	
27	35008	4	•O-Ring,4.50 Od	
28	35036	4	•Washer,Teflon	
29	38122	2	•Motor,Hyd,Lsht,8.0 Disp	
-2901	38122-01		••Seal Kit,38122 Motor	
30	38125	2	•Gear,Spur,Pinion,8 D.P.,17T	
31	38141	48	•Washer,1.50Odx1.187idx.10Thk	
32	38149	96	•Gasket,Spray Valve	
33	71622	12	•CSHH,.375-16X.88,Gr5	
34	80036	6	•Nut,Hex,.250-20	
35	80037	10	•Nut,Hex,.312-18	
36	80099	48	•Nut,Hex,Jam,1.125-12	
37	80140	10	•Washer,Type A Plain,.250	
38	80141	18	•Washer,Flat,Uss,.312	
39	80142	8	•Washer,Flat,Uss,.375	
40	80160	4	•Washer,Lock,.250	
41	80161	4	•Washer,Lock,.312	
42	80162	8	•Washer,Lock,.375	
43	80164	4	•Washer,Lock,.500	
44	80185	6	•CSHH,.250-20X1.00,Gr5	
45	80209	8	•CSHH,.312-18X1.50,Gr5	
46	80221	8	•CSHH,.375-16X1.00,Gr5	
47	80250	4	•CSHH,.500-13X1.25,Gr5	
48	80324	4	•Scr,Slftpg,Hh,.250-20X.75	
50	80351	48	•Nut,Flexloc,.312-18,Full,Lt	
-50	16070	1	•Bar,Plug Group	
			Attaching Parts	
-5001	10166	1	••Rework,Bar Plug	
-5002	99479	1	••Pipe,Cap,12Fp,Mi	
-5003	99602	1	••Pipe,Nipple,12X3.00	
51	80876	10	•CSHH,.250-28X.50,Gr5	
53	81211	34	•CSHH,.312-24X.50,Gr5	
54	81213	32	•CSFHS,.312-18X1.25,Gr5	
55	81227	2	•CSHH,.312-24X.875,Gr5	
56	80206	8	•CSHH,.312-18X1.25,Gr5	

Spraybar Assembly, 16 Foot (continued)

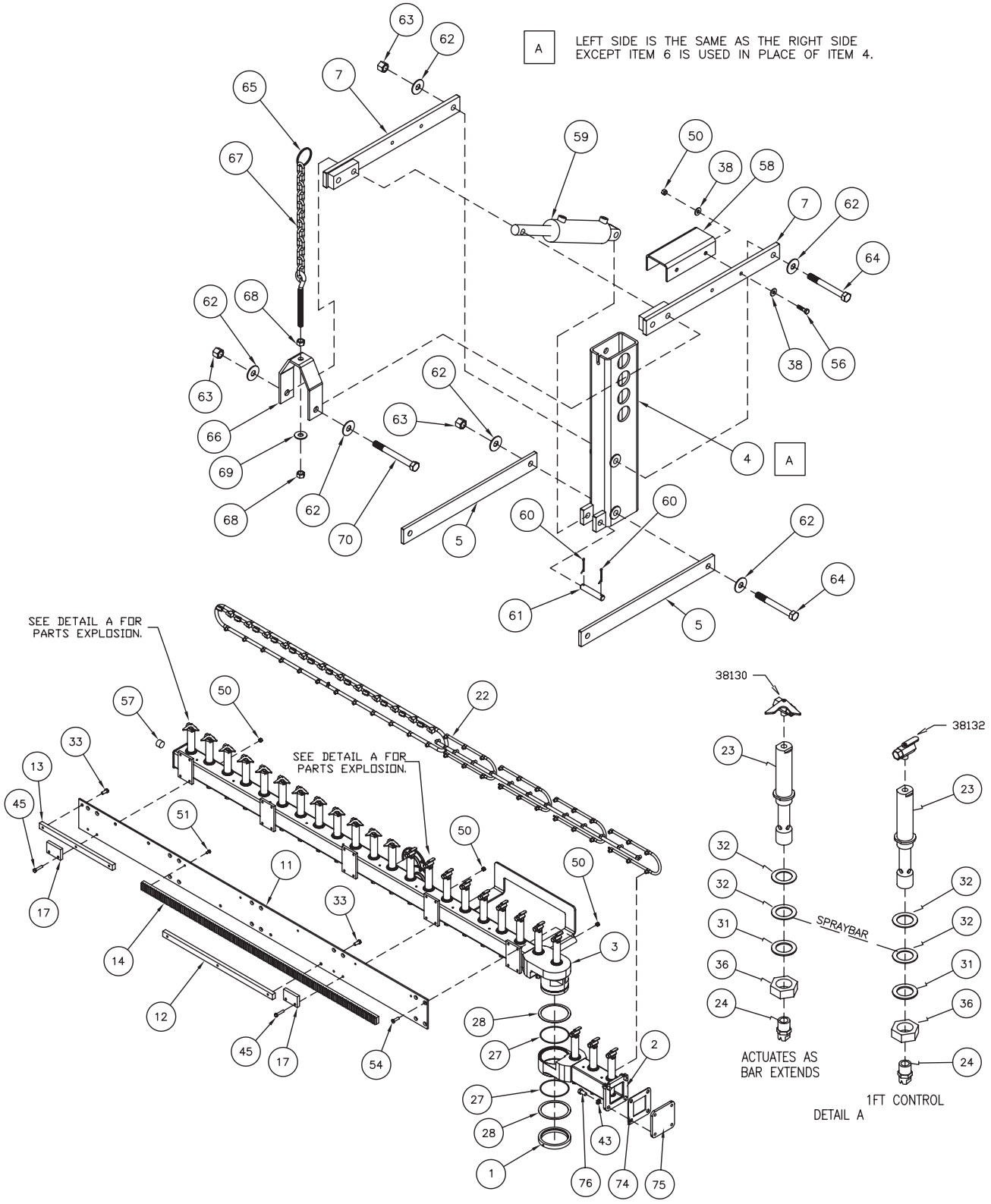


Figure 10-16

Spraybar Assembly, 16 Foot (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
57	70700	4	•Pipe,Plug,16Mp,Sq Csk Head,Mi	
58	26622	2	•Stiffener,Wide,Scissor Bar	
59	6231	2	•Cyl,Hyd,2.00X5.75stroke,12.50	
5901	6231-01		••Seal Kit,For Cyl	
60	80332	4	•Cotter Pin,.125X1.50	
61	9081	2	•Pin,Hyd,Lift Cylinder	
62	80146	20	•Washer,Type A Plain,.625	
63	80356	10	•Nut,Flexloc,.625-11,Full,Lt	
64	80445	8	•Cshh,.625-11X5.50,Gr 5	
65	37187	2	•Ring,Split,2.02Idx.18,Zinc Ctd	
66	26721	2	•Clevis	
67	26725	2	•Chain,Adjustment	
68	80040	4	•Nut,Hex,.500-13	
69	80144	2	•Washer,Flat,Uss,.500	
70	71697	2	•Cap Screw Ht 5/8 X 6 1/2 Nc	
71	27591	2	•Arm,Actuator	
72	38660	2	•Spring,Max3,Torsion	
73	80208	2	•CSHH,.312-18X1.00,Gr5	
74	35035	2	•Gasket,Spraybar Ext	
75	15930	2	•Cap,End,Spraybar	
76	80248	8	•CSHH,.500-13X1.00,Gr5	
-100	8695	1	•Wrench,Nozzle Alignment	
	1002281	1	Spraybar Slide Assembly	

Potentiometer

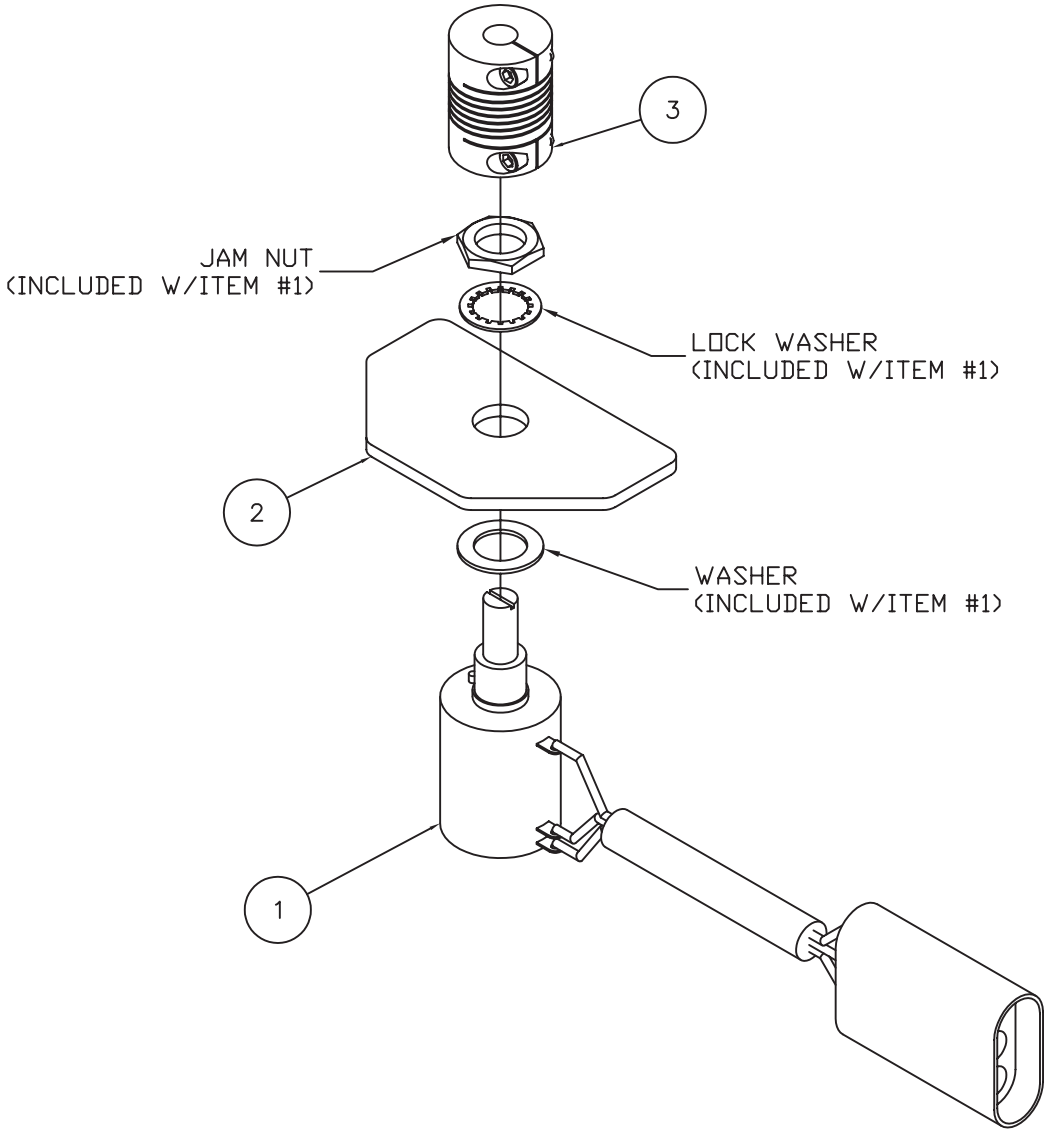


Figure 10-17

Potentiometer Parts List

Item No.	Part Number	Qty.	Description	Remarks
	26141SRV	2	•Pot Assembly,Max3	
1	26184	1	••Potentiometer W/Conn,Max3	
2	26140	1	••Stop,Pot Body	
3	38118	1	••Coupling,Flex,.25 Bore,.75 Len	

Spray Valve Assembly

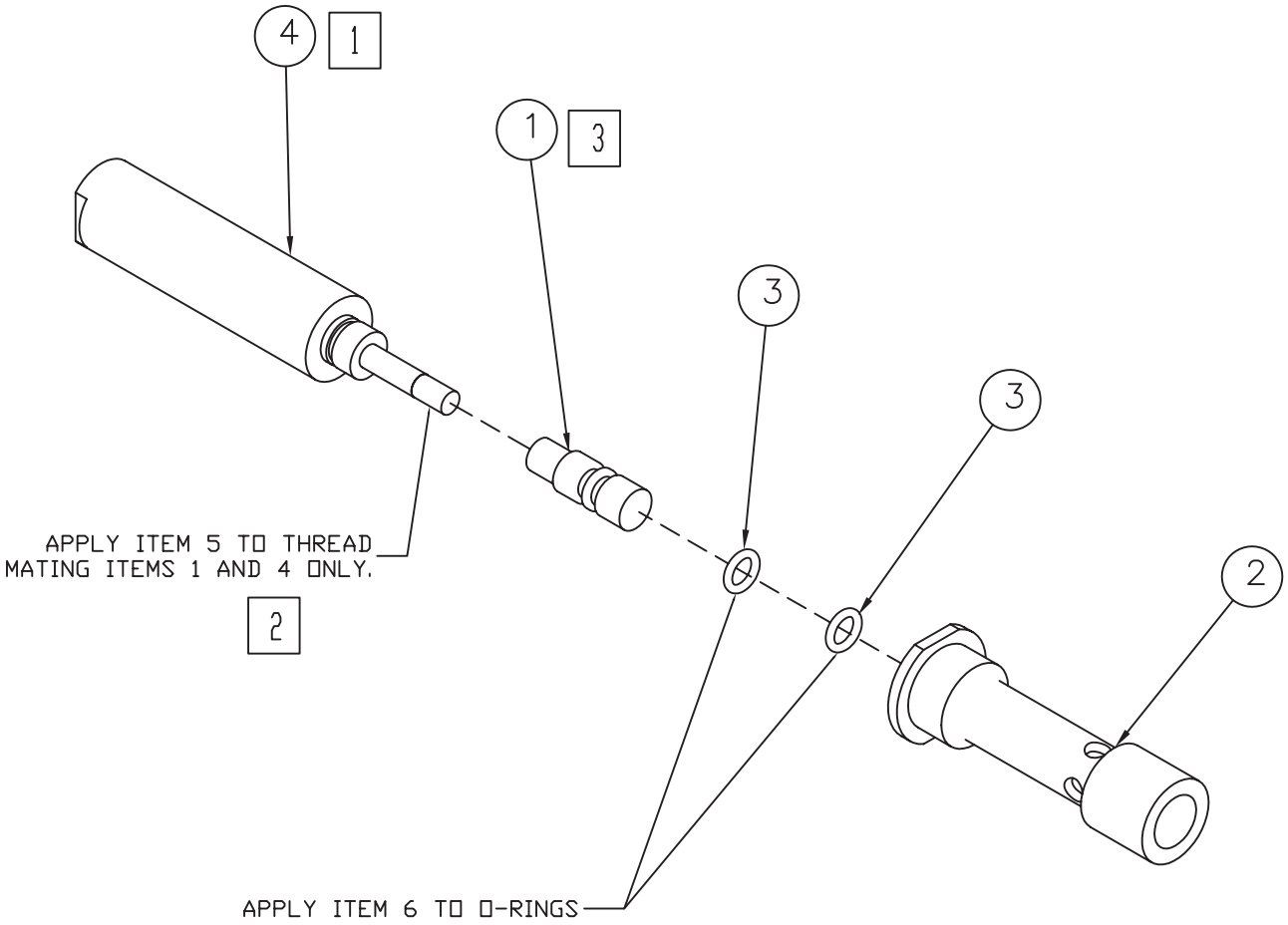


Figure 10-18

Spray Valve Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
	26469	48	•Spray Valve Assembly	
1	25260	1	••Plunger	
2	25261	1	••Body,Valve	
3	38054	2	••O-Ring,.103 X .362,Viton	
4	38129	1	••Cyl,1.06X.50,Air,Spring Ext	

Air Reservoir Group

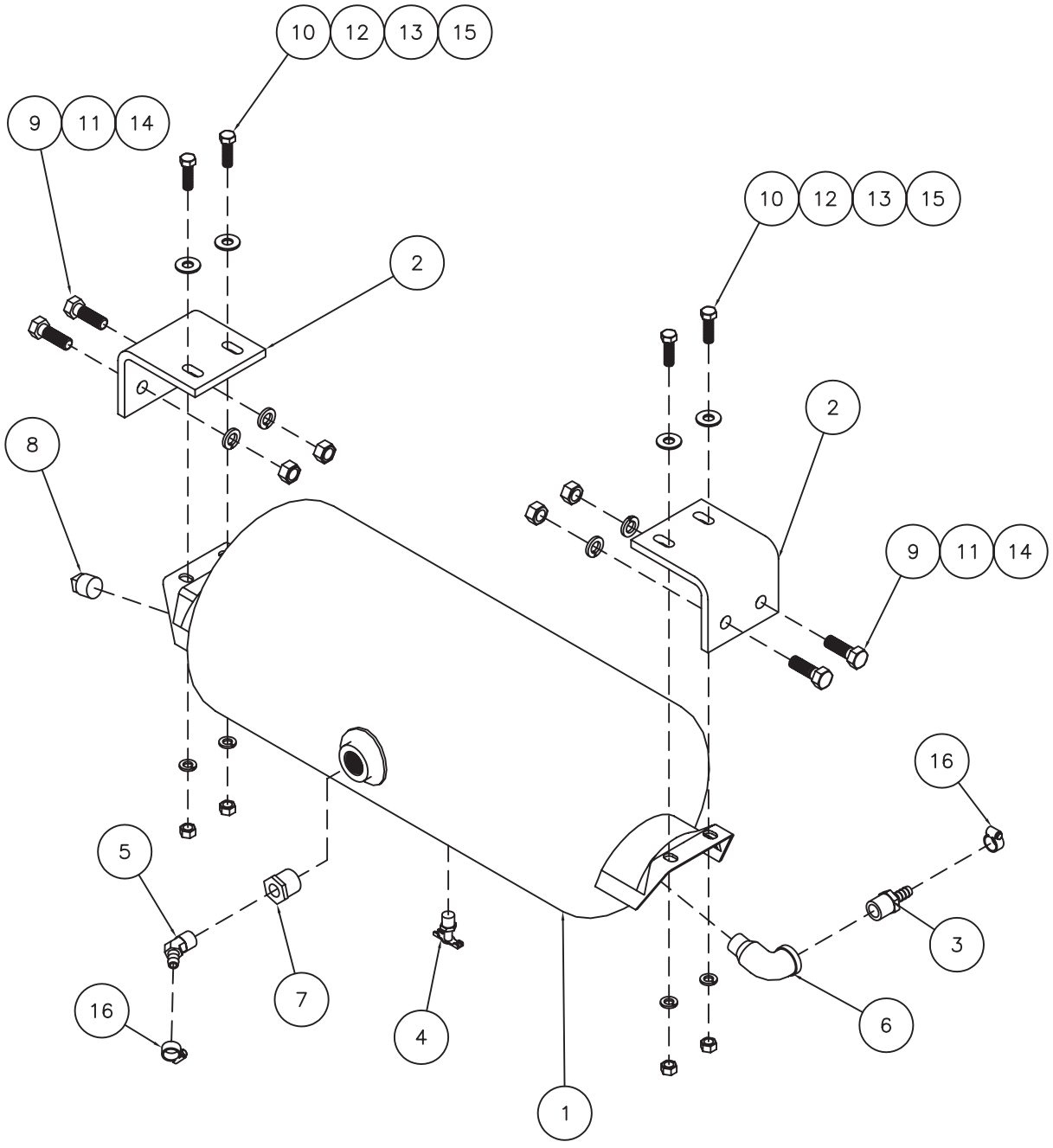


Figure 10-19

Air Reservoir Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
	26424	1	Air Reservoir Group	
1	72828	1	•Air,Rsvr,9.50X22.50,1488 Cu In	
2	26420	2	•Bracket,Air Tank	
3	X144	1	•Fitt,Str 08Mp-06Hb,Crimped	
4	910150	1	•Vlv,Drain Cock,.250 Npt	
5	35830	1	•Fitt,45 06Mp-06Hb,Crimped	
6	99526	1	•Pipe,90,08Mp-08Fp,Mi	
7	99984	1	•Pipe,Bush,12Mp-06Fp,Stl	
8	99537	1	•Pipe,Plug,08Mp,Sq Hd,Mi	
9	80164	4	•Washer,Lock,.500	
10	80162	4	•Washer,Lock,.375	
11	80040	4	•Nut,Hex,.500-13	
12	80038	4	•Nut,Hex,.375-16	
13	80224	4	•CSHH,.375-16X1.25,Gr5	
14	71627	4	•CSHH,.500-13X1.50,Gr5	
15	80142	4	•Washer,Flat,Uss,.375	
16	33162	2	•Clamp,Hose,.44-.78,Worm,#06	

Valve Box, Subassembly

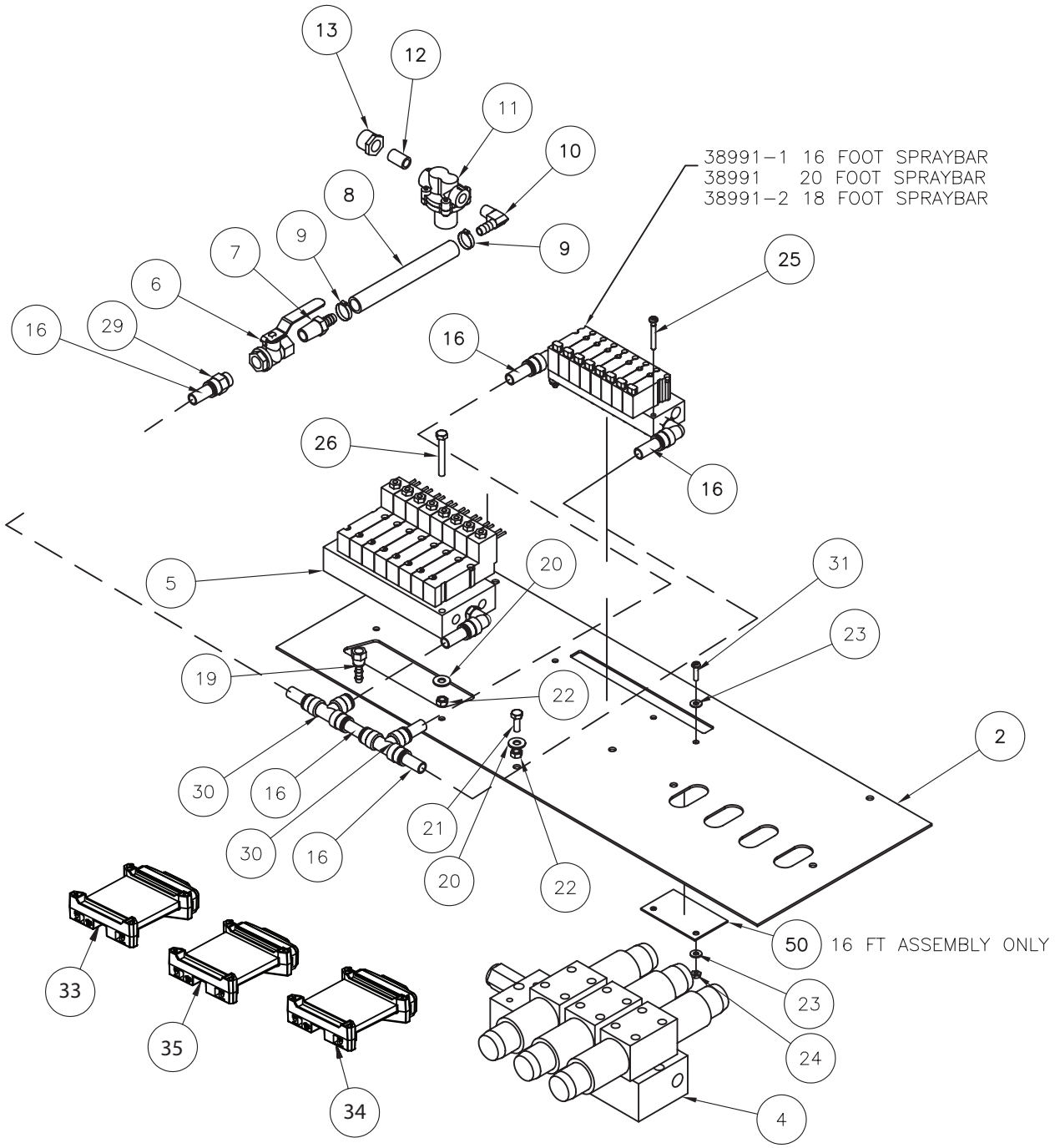


Figure 10-20

Valve Box, Subassembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
	28274	1	Valve Box, Subassembly	
2	1002015	1	•Plate,Vlv,Max3	
4	38123	1	•Manifold,Hyd,4 Sta,3 Vlv,W/Rel	
			Attaching Parts	
-401	37488-01	A/R	••Valve	
-402	37488-03	1	••Relief Valve	
-403	37488-04	1	••Bolt Kit,For Valve	
-404	37488-05	2	••Cover Plate,Includes Bolts	
-405	37488-06	1	••Coil,For Valve	
5	38815	1	•Vlv,Sol,Air,8 Pos,Assy,1 Cv	Single
	38722-01		Solenoid Air Valve	Not Shown
-501	38815-01	A/R	••Manifold,8 Pos,Air	
6	480160	1	•Vlv,Ball,.375	
7	31959	1	•Fitt,Str 06Mp-06Hb,Push-On	
8	38579	10	•Hose,06,Low Press Push On	
9	33162	4	•Clamp,Hose,.44-.78,Worm,#06	
10	33365	1	•Fitt,90 04Mp-06Hb,Crimped	
11	37049	1	•Vlv,Press Protection,102-88	
12	99591	1	•Pipe,Nipple,04Xclose(7/8)	
13	99980	1	•Pipe,Bush,08Mp-04Fp,Stl	
16	36481	2	•Tubing,Air Brake,Blk,08	
19	70957	6	•Fitt,Str 04Fjx-04Hb,Push-On	
20	80140	5	•Washer,Type A Plain,.250	
21	80192	3	•CSHH,.250-20X.75,Gr5	
22	80350	5	•Nut,Flexloc,.250-20,Full,Lt	
23	80995	4	•Washer,Type A Plain,#10	
24	80824	3	•Nut,Hex,#10-24	
25	81146	2	•Mach Scr,Ph,#10-24 X 1.50	
26	80196	2	•CSHH,.250-20X2.00,Gr5	
29	38913	1	•Fitt,Str 06Mp-08Nt	
30	38914	2	•Fitt,Tee 08Nt	
31	71716	1	•Mach Scr,Ph,#10-24X.75	
32	28956	1	•Harness,Wire,Vlv Box,Max3	
33	1001822-01	1	Controller, 50 pin module	
34	1001822-02	1	Controller, 24 pin module	LH Spraybar
35	1001822-03	1	Controller, 24 pin module	RH Spraybar
50	28954	1	•Sheet, Blanking	

Solenoid Valve, 8 Valve

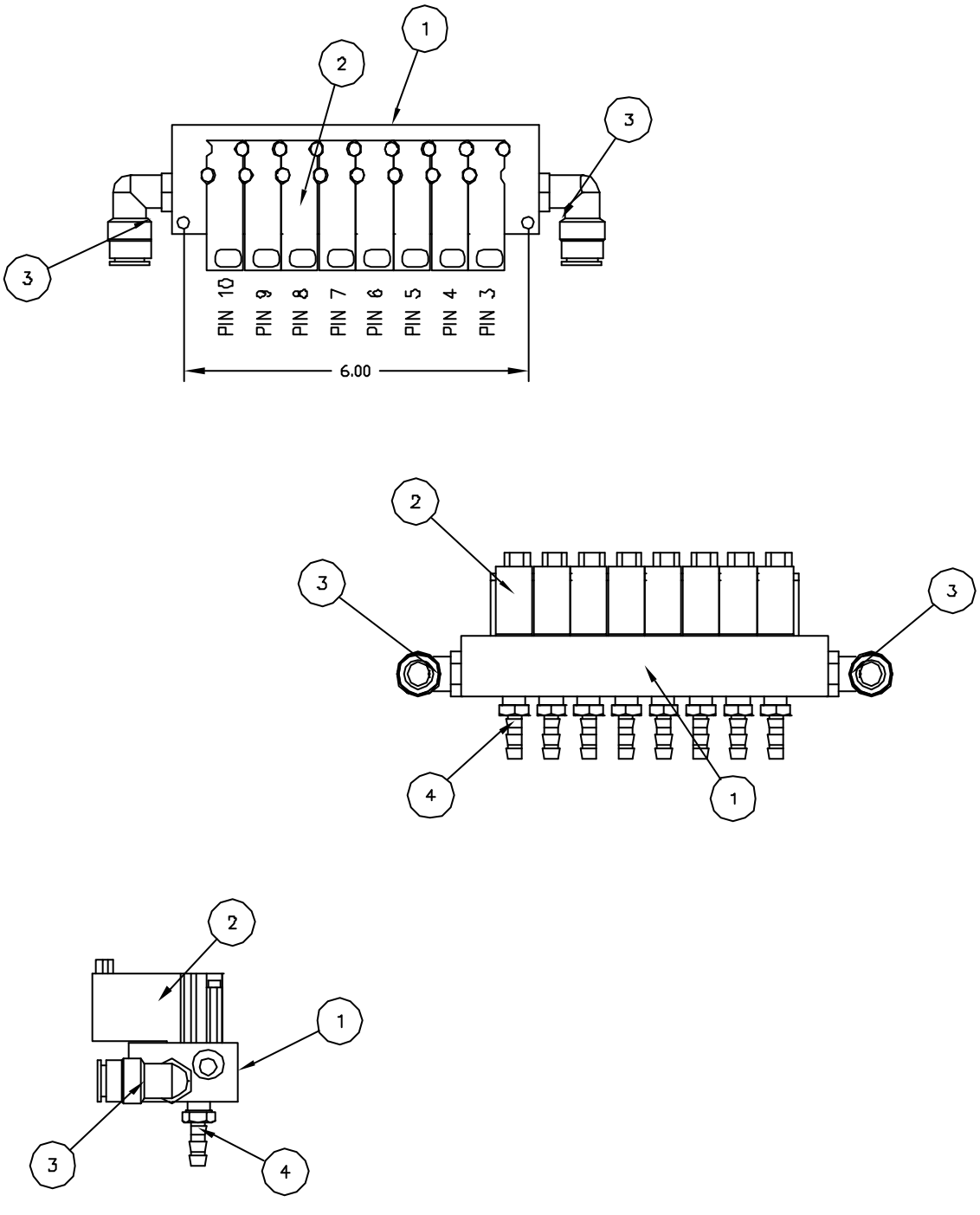
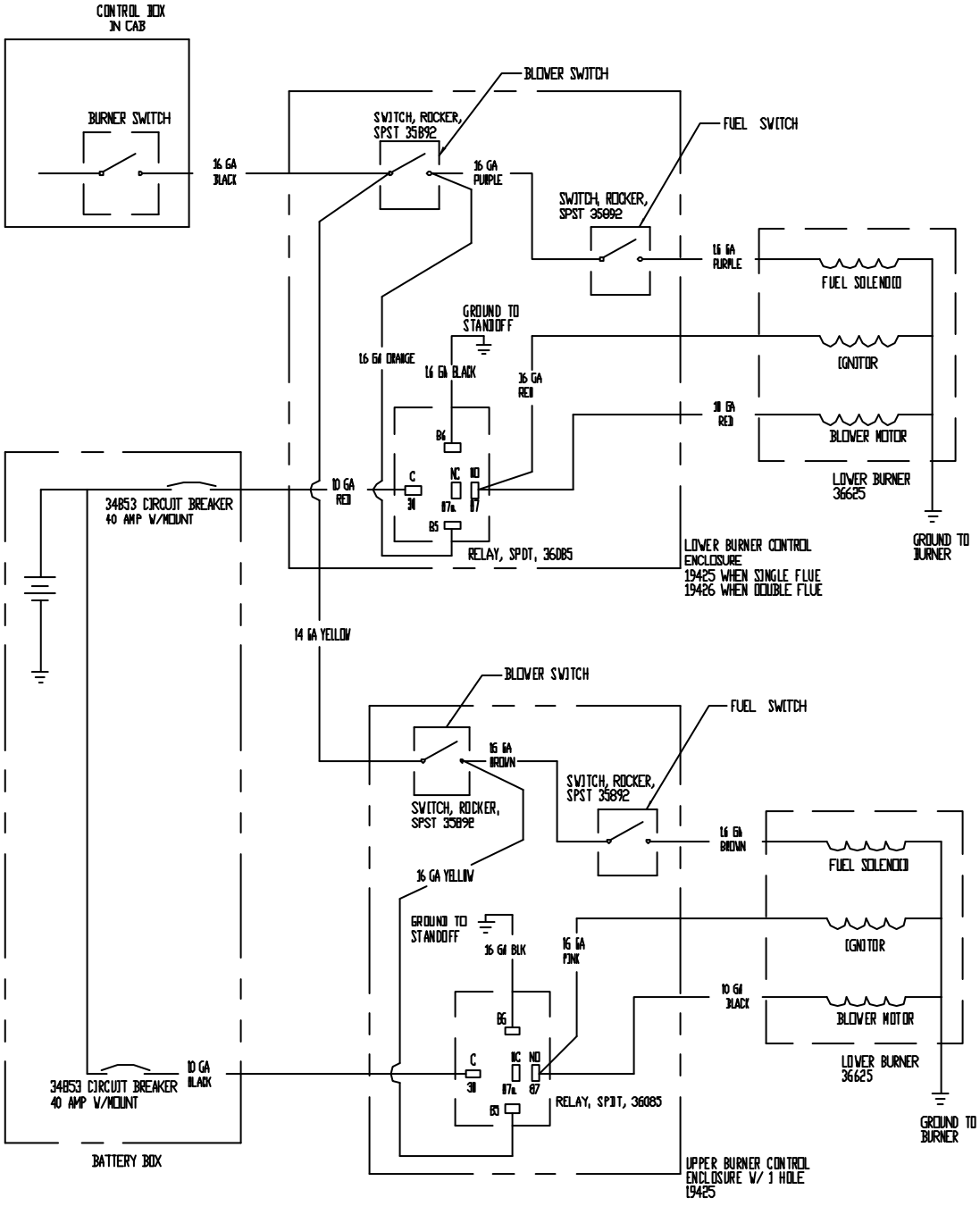


Figure 10-21

Solenoid Valve, 8 Valve Parts List

Item No.	Part Number	Qty.	Description	Remarks
	38991-1	1	Solenoid Valve, 8 Valve Manifold	
1	38991-03	1	•Manifold,8 Station	
2	38991-01	8	•Vlv,36 Series	
3	38915	2	•Fitt,90 04Mp-08Nt	
4	33926	8	•Fitt,Str 02Mp-04Hb,Crimped	
5	34468	1	•Conn Housing,Cap,12 Circuit	
6	34471	8	•Contact,Socket,20-14 Ga	
	38991-04		Blanking Kit	

Diesel Burner, Double Flue, No Outfire I



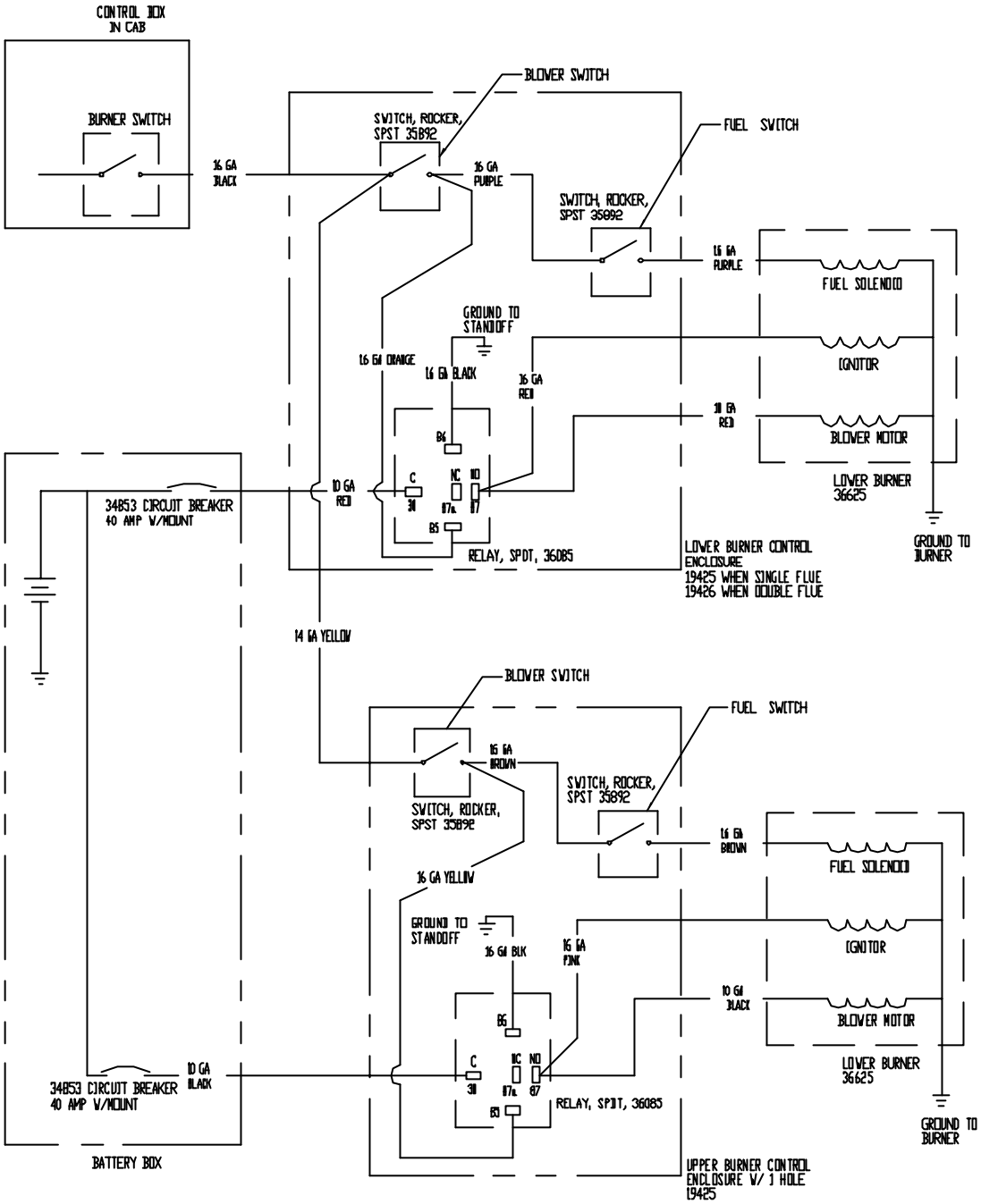
NOTE: THE DIESEL BURNER CONTROL BOX ASSEMBLY W/O OUTFIRE IS 29507-01

Figure 10-22

Diesel Burner, Double Flue, No Outfire I Parts List

Item No.	Part Number	Qty.	Description	Remarks
	29508-01	1	Diesel Burner,Dbl Flue,No Outfire	
-1	5347	18	•Hose,04,Push-On,Low Pressure	
-2	38662	1	•Filter Assy,Fuel Oil	
-201	38662-01	1	••Filter Only,Spin On Type	
-3	99568	1	•Pipe,Tee,06Fp,Mi	
-4	99980	1	•Pipe,Bush,08Mp-04Fp,Stl	
-5	99638	2	•Pipe,Nipple,.375Xclose	
-6	34185	2	•Conduit Connector, 1/2 Npt	
-7	33277	3	•Clamp,Hose,# 04	
-8	33612	2	•Term,Ring,12-10 Ga,.375 Stud	
-9	80141	10	•Washer,Flat,Uss,.313	
-10	80142	14	•Washer,Flat,Uss,.375	
-11	80161	10	•Washer,Lock,.312	
-12	80352	14	•Nut,Flexloc,.375-16,Full,Lt	
-13	986858	1	•Fitt,90 04Hb-06Mp	
-14	34311	1	•Fitt,Tee 04Mj-04Mj-04Mj	
-15	81160	8	•Scr,Slfdrl,Hh,#10X1.00,#3Pt	
-16	81161	8	•Washer,Weather Seal,#10	
-17	35246	4	•Fitt,Str 04Mp-04Ms,Lpg,Brass	
-18	70957	5	•Fitt,Str 04Fjx-04Hb,Push-On	
-19	36625	2	•Hp Dsl Brnr, W/O Cad Cell	
-20	33765	2	•Nut,Lk,Elec Cnd,.500-14 Npt	
-21	33279	1	•Fitt,Str 06Mp-04Hb,Crimped	
-22	851201417	12	•Tie Wrap,.094X4.00	
	5820-01		Filter Element, With Gasket	Glass Bowl Fuel Oil Filter

Diesel Burner, Double Flue, No Outfire II



NOTE: THE DIESEL BURNER CONTROL BOX ASSEMBLY W/O OUTFIRE IS 29507-01

Figure 10-23

Diesel Burner, Double Flue, No Outfire II Parts List

Item No.	Part Number	Qty.	Description	Remarks
	36625	2	•Hp Dsl Brnr W/O Cad Cell	
-1	36044-01	1	••Blower Motor	
-2	36044-02	1	••Motor Coupling	
-3	36044-03	1	••Ignition Assy Without Outfire	
-4	36044-04	1	••Fuel Valve,Shut-Off	
-5	36044-05	1	••Flange Gasket,Felt	
-6	36044-06	1	••Square Plate Gasket	
-7	36044-08	1	••Nozzle, 3.5 Gal, 45B	
-8	36044-09	1	••Air Shutter	
-9	36044-10	1	••Air Band	
-10	36044-11	1	••Square Plate	
-11	36044-12	1	••Air Tube W/Flange	(2 Electrodes)
-12	36044-14	1	••Blower Wheel	
-13	36044-15	1	••Fuel Pump	
-14	36044-16	1	••Pump Nozzle Fitting	
-15	36044-17	1	••Connector Tube Assembly	
-16	36044-19	1	••Locknut, Nozzle Line	
-17	36044-25	1	••Nozzle,3.0 Gal,45B	
-18	36044-26	1	••Electrode Assy	(2 Electrodes)
-19	36044-27	1	••Nozzle,2.5 Gal,45B	
-20	36044-28	1	••Nozzle,3.0 Gal,60B	(Cold Weather)
-21	36044-29	1	••Nozzle,2.0 Gal,60B	

Control Box, Diesel Burner

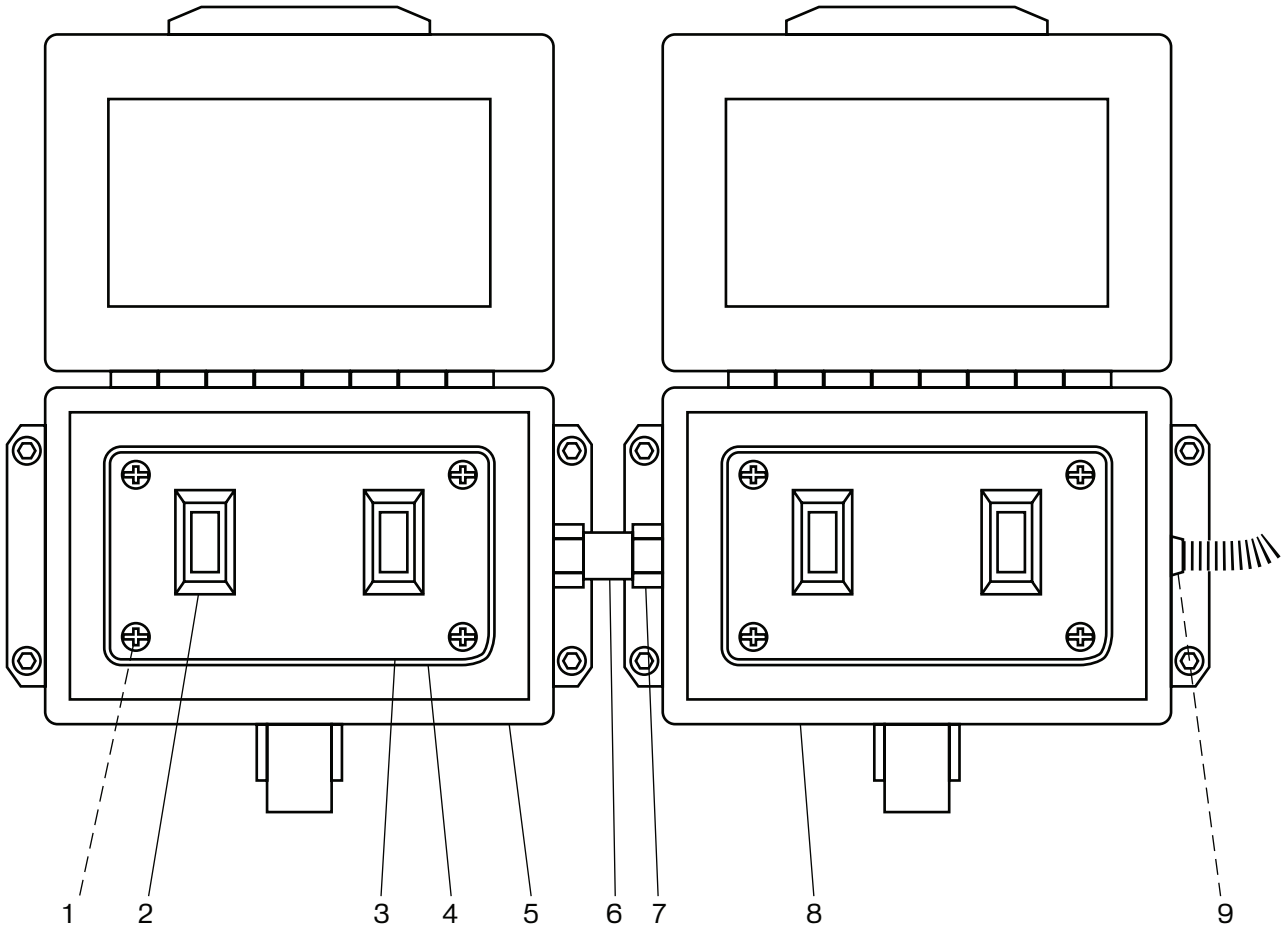
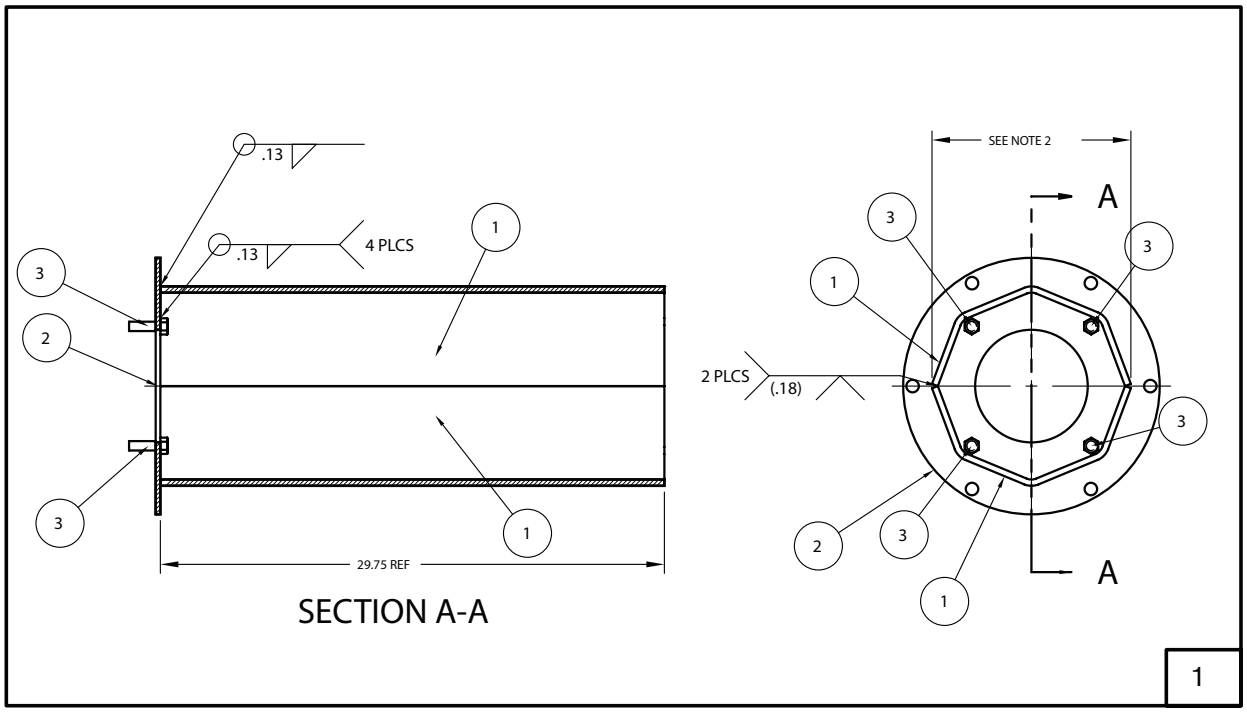


Figure 10-24

Control Box, Diesel Burner Parts List

Item No.	Part Number	Qty.	Description	Remarks
	29507-01	1	Control Box,Diesel Burner, No Outfire	
1	36050	8	•Standoff,10-32Unfx3,Male-Fem	
2	35892	4	•Switch,Rocker,Spst,Off/On	
3	36597	2	•Decal,Rear Control,Diesel Bnr,W/O Ign	
4	19344	2	•Switch Plate,Hp Diesel Burner	
5	19425	1	•Enclosure,Elec,4X4x6,W/1 Hole	
6	19427	1	•Conduit,Rigid,.50X1.75	
7	34185	2	•Conduit Connector, 1/2 Npt	
8	19426	1	•Enclosure,Elec,4X4x6,W/2 Holes	
9	3200DI	2	•Water Tight Conn,1/2 X 1/2	
	33765	1	Nut, Lock	
	36085	2	•Relay,Spdt,40Amp,12Vdc	
	34853	2	Circuit Breaker, 40 amp	Located in battery box

Burner Covers & Flue Liners



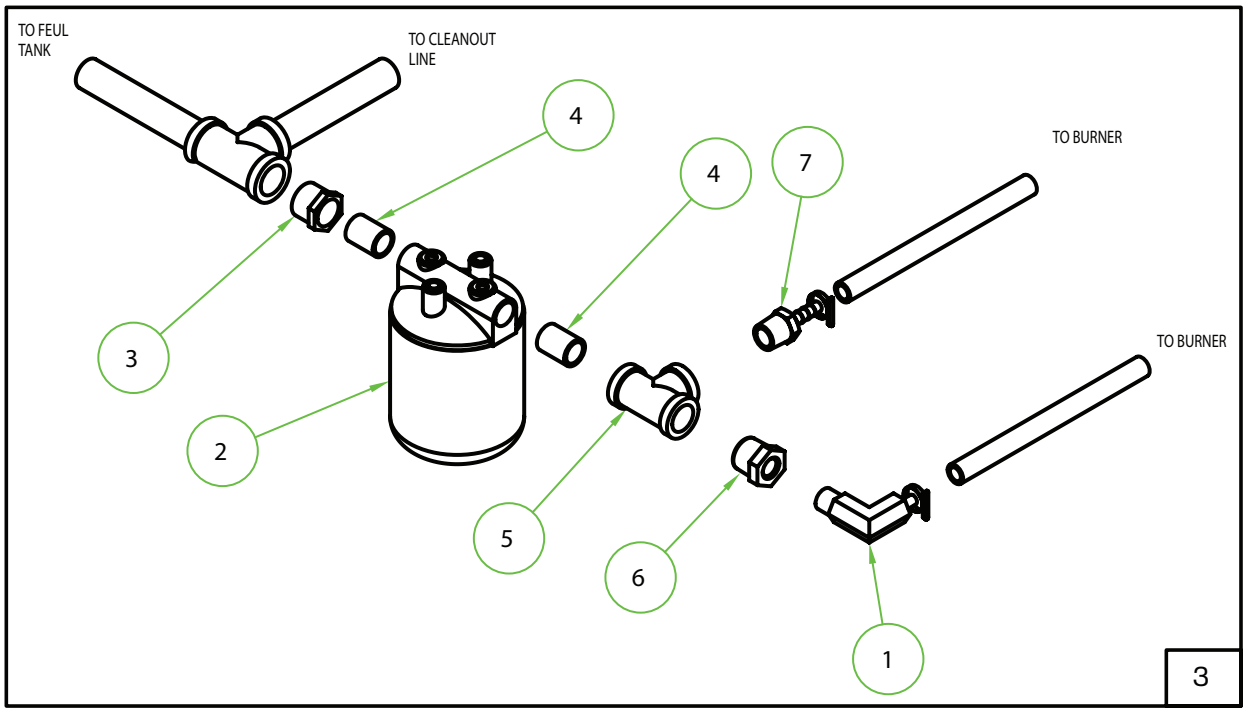


Figure 10-25

Burner Covers & Flue Liners Parts List

Item No.	Part Number	Qty.	Description	Remarks
-1	27848	2	•Flue Liner W/M, Diesel Burner, Sst	
			Attaching Parts	
-101	22781	1	••Flange,Flue Liner	
-102	27849	2	••Flue Liner Half,Hex	
-2	22475	1	•Burner Cover, Double Flue	Not Shown
			Attaching Parts	
-201	22469	1	••Mtg Plate,Bnr Cover,Dbl Flue	
-202	22472	1	••Burner Cover W/M,Double Flue	
-3	38662S2SRV	2	•Filter Kit,Double Burner	
			Attaching Parts	
-301	31971	1	••Fitt,90,04Mp-04Hb,Crimped	
-302	33280	1	••Fitt,Str,06Mp-04Hb,Push-On	
-303	38662	1	••Filter Assembly,Fuel Oil	
-304	99448	1	••Pipe,Bush,06Mp-04Fp,Stl	
-305	99450	1	••Pipe,Bush,08Mp-06Fm,Mi	
-306	99537	1	••Pipe,Plug08mp,Sq Head	
-307	99568	1	••Pipe,Tee,06Fp,Mi	
-308	99569	1	••Pipe,Tee,08Fp,Mi	
-309	99638	2	••Pipe,Nipple,.375Xclose	

Light & Reflector Group

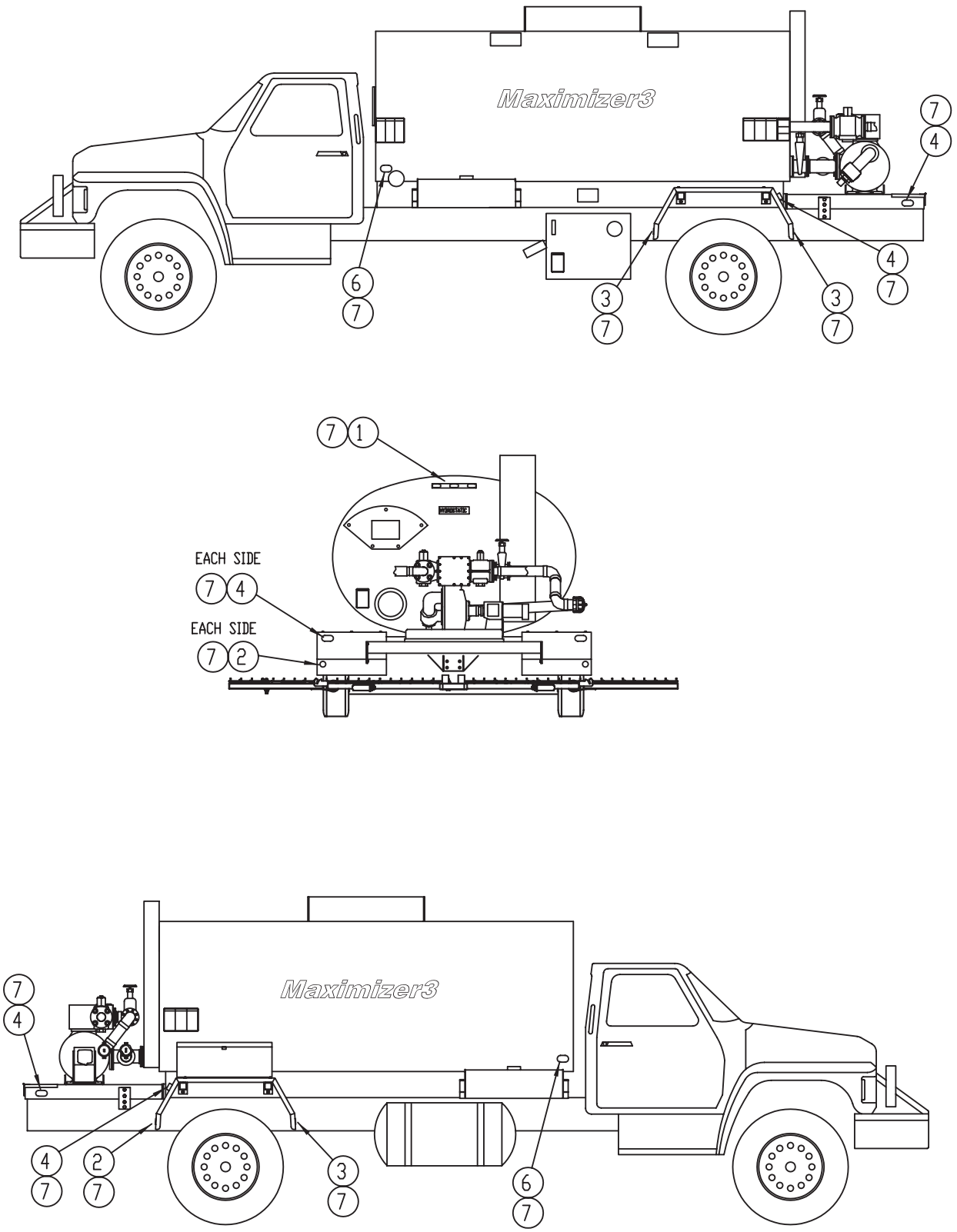


Figure 10-26

Light & Reflector Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
	26421	1	Light & Reflector Group	
1	35663	1	•Light Bar,Red,Kd502	
2	5036	2	•Reflector,Red	
3	5037	2	•Reflector,Amber	
4	5096	4	•Light,Clearance,Red W/Reflect	
-5	5096-02	6	•Gasket,Light,Clearance	
6	5097	2	•Light,Clearance,Amber,W/Reflec	
7	81160	22	•Scr,Slfdrl,Hh,#10X1.00,#3Pt	
-100	23966-01	1	•Harness,Wire,Lighting,135.00"	
			Attaching Parts	
-1001	23867-3	1	••Wire Harness,202.00"	
-10001	33271-1	51.25	•••Wire,16Ga,Black	
-10002	71060	41.167	•••Loom,Split,Convoluted,.250	
-1002	81160	12	••Scr,Slfdrl,Hh,#10X1.00,#3Pt	
-1003	80036	11	••Nut,Hex,.250-20	

Decal Group

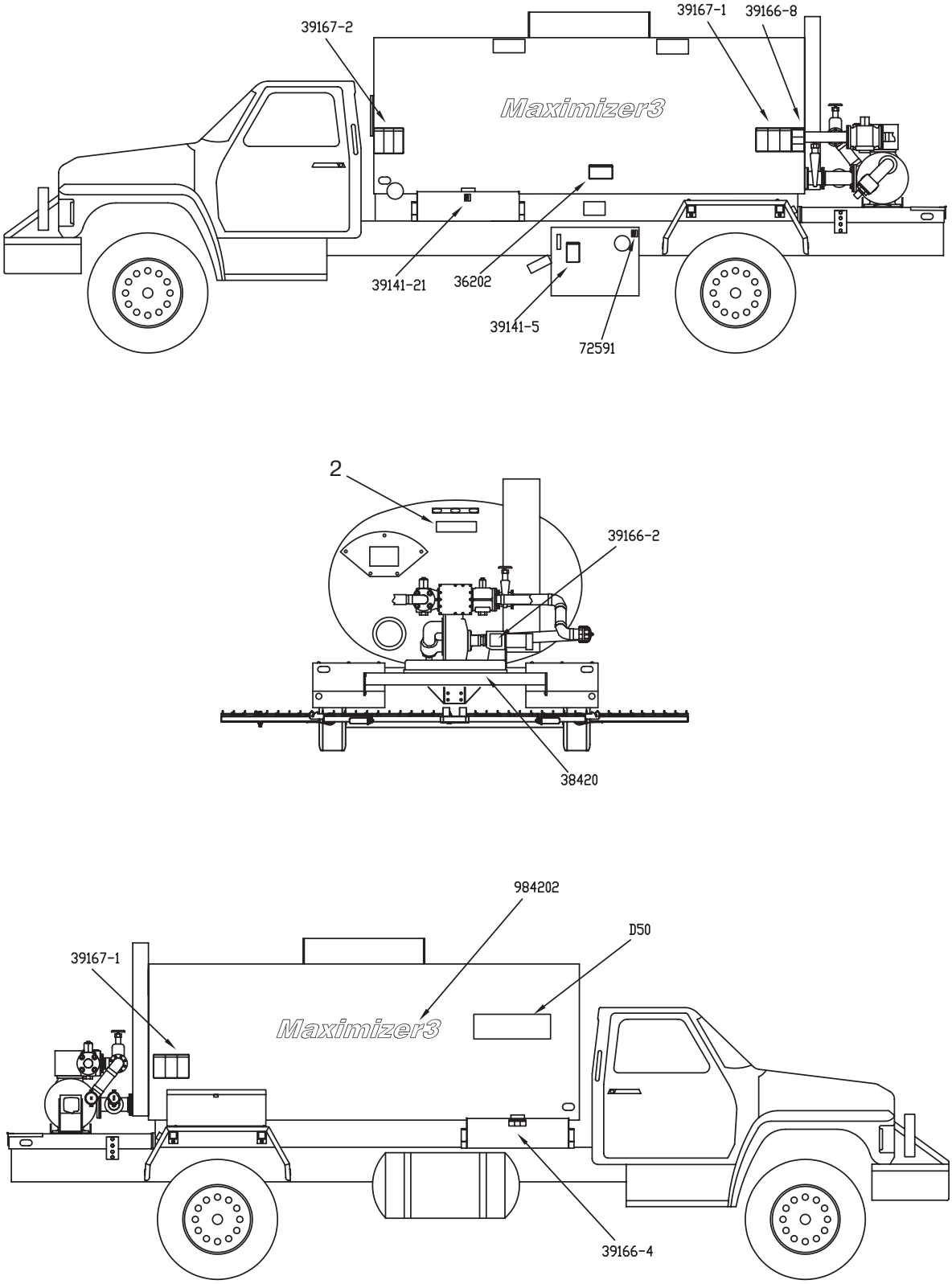


Figure 10-27

Decal Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
	26422	1	Decal Group	
-1	35244	7.66	•Strip,Adh Sponge,.75X.062	
2	1002471	1	•License Plate,"Rosco"	
3	36202	1	•Decal,Warning,Keep Clean	
-4	36624	1	•Decal Plate,Prod Ident No,Maxi	
-5	39166	1	•Decal Kit,Max Master	
-6	39167	1	•Decal Kit,Distributor Tanks	
-7	81159	12	•Tack,Dia.146/.104X.04 Grip Lg	
-8	81160	38	•Scr,Slfdrl,Hh,#10X1.00,#3Pt	
-10	72589	1	•Decal,Diesel Fuel	
20	72591	1	•Decal,Hydraulic Oil	
30	984202	2	•Decal Kit,Max3 Logo	
40	38420	1	•Decal,Valve Configuration	
-50	38414	3.33	•Tape,Butyl,Glass Setting	
60	D50	2	•Decal,Rosco Logo,Medium,Black	

Ladder & Platform Group

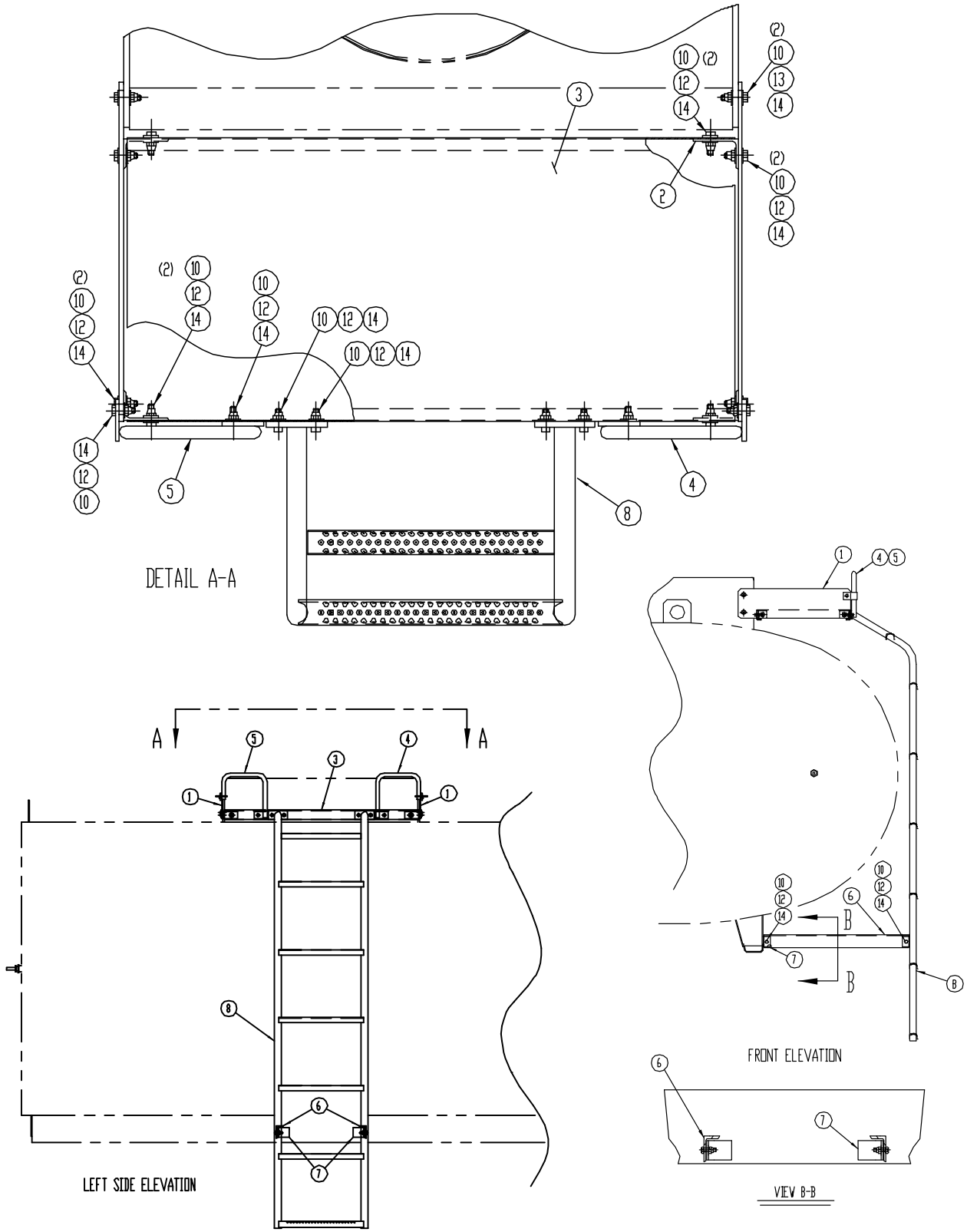


Figure 10-28

Ladder & Platform Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
	21652	1	Ladder & Platform Group	
1	21676	2	•End,Platform	
2	21677	4	•Bracket	
3	21678	1	•Platform	
4	21679	1	•Handhold,Rh	
5	21680	1	•Handhold,Lh	
6	21798	2	•Bracket, Ladder	
7	21799	2	•Spacer,Ladder	
8	21683	1	•Ladder,56X84 & 52X80	
10	80142	40	•Washer,Flat,Uss,.375	
-11	80162	4	•Washer,Lock,.375	
12	80224	20	•CSHH,.375-16X1.25,Gr5	
13	80226	4	•CSHH,.375-16X1.50,Gr5	
14	80352	24	•Nut,Flexloc,.375-16,Full,Lt	

Tank Top Opening

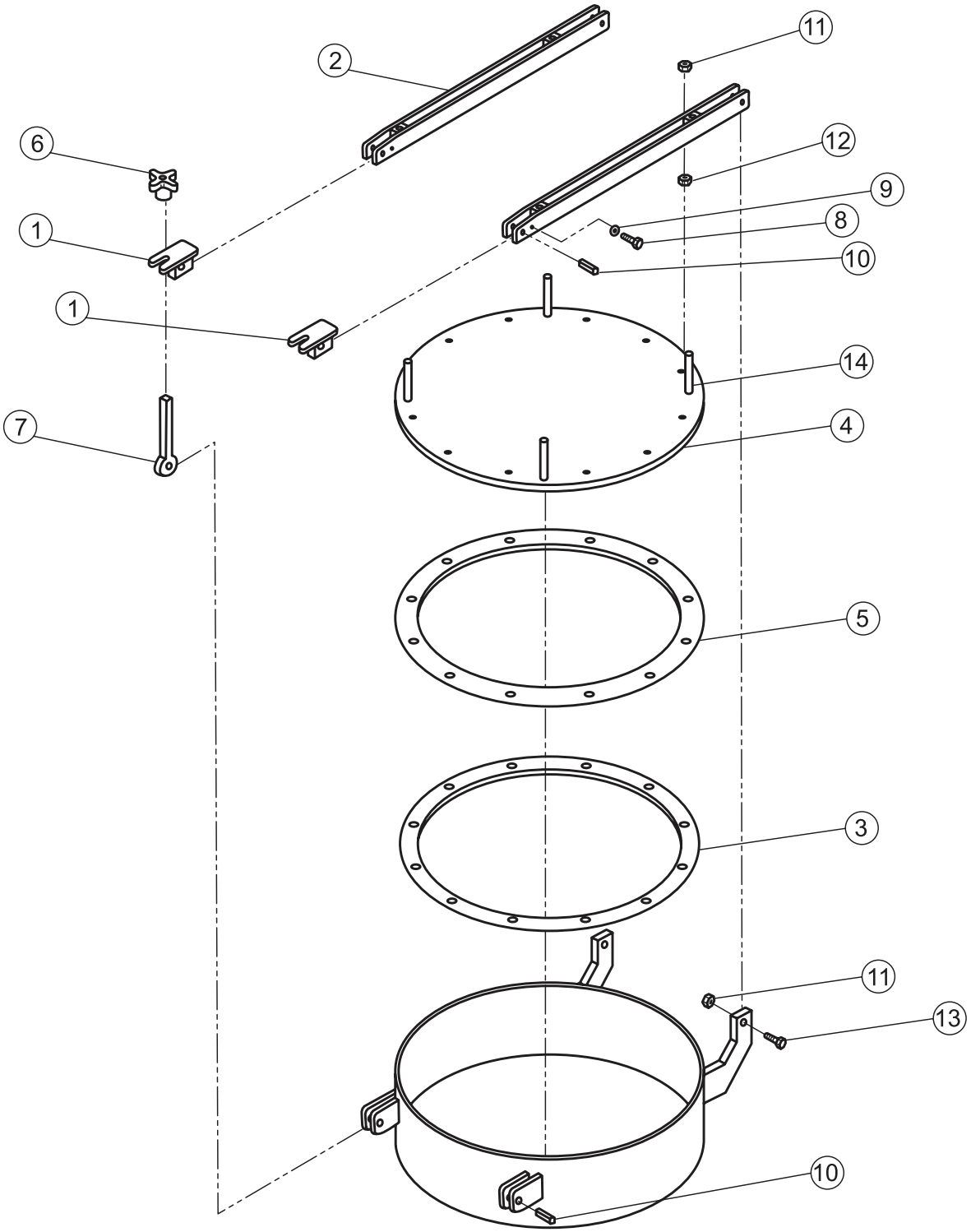


Figure 10-29

Tank Top Opening Parts List

Item No.	Part Number	Qty.	Description	Remarks
	TBD	1	Tank Top Opening	
1	20162	2	•Top Opening Cover Latch	
2	20165	1	•Top Opening Cover Cross Bar	
3	20167	1	•Top Opening Cover Retainer	
4	20168	1	•Top Opening Cover	
5	36062	1	•Top Opening Cover Gasket	
6	6066	2	•Top Opening Cover Knob	
7	8530	2	•Eyebolt	
8	71716	2	•Pan Head Screw,#10-24 Unc X3/4	
9	871071601	2	•Washer,Lock,#10	
10	80348	4	•Roll Pin,.500X1.50	
11	80354	4	•Nut,Flexloc,.500-13,Full,Lt	
12	80076	4	•Nut,Hex,Jam,.500-13	
13	80255	2	•CSHH,.500-13X2.00,Gr5	
14	20166	4	•Thd'd Rod,.500-13X3.25	
-15	21282	1	•Top Opening Screen Assembly,Full	
-50	23514	1	•Manhole Screen	

Fender Group, Single Axle

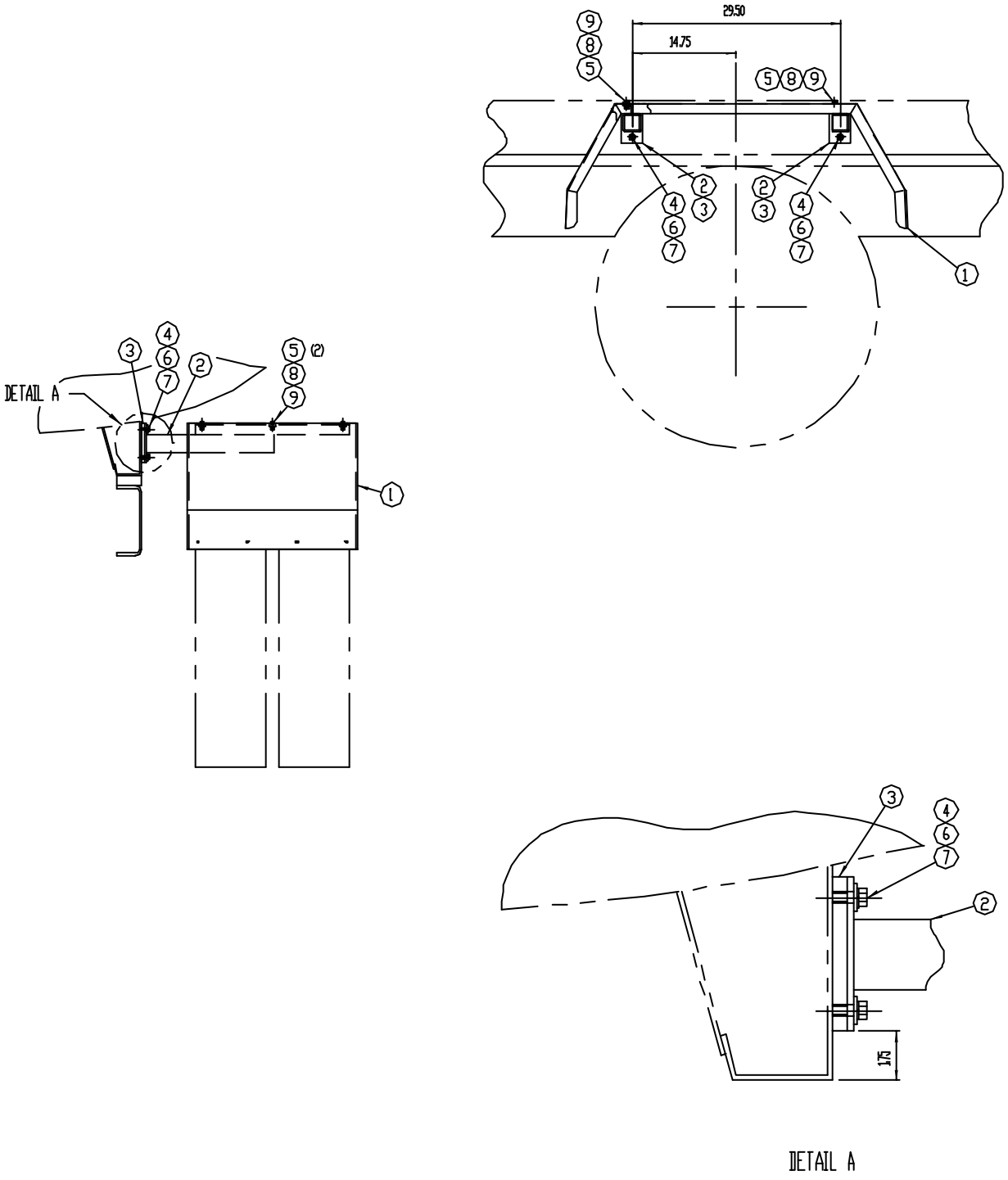


Figure 10-30

Fender Group, Single Axle Parts List

Item No.	Part Number	Qty.	Description	Remarks
	21633	1	Fender Group, Single Axle	
1	21634	2	•Fender,Single Axle,Al	
2	21635	4	•Mount,Fender,Wldmt	
3	21636	4	•Pad,Tapped	
4	71622	8	•CSHH,.375-16X.88,Gr5	
5	80141	24	•Washer,Type A Plain,.312	
6	80142	8	•Washer,Flat,Uss,.375	
7	80162	8	•Washer,Lock,.375	
8	80208	12	•CSHH,.312-18X1.00,Gr5	
9	80351	12	•Nut,Flexloc,.312-18,Full,Lt	
-10	23977	1	•Toolbox Assembly	
			Attaching Parts	
-101	15956	1	••Door,Tool Box	
-102	15963	1	••Hinge,Door	
-103	23974	1	••Toolbox Wldmt,W/Control Box	
-104	34865	1	••Lock,Recessed Paddle	
-105	34865-01	1	••Key,545Ch	

10

Mud Flap Installation

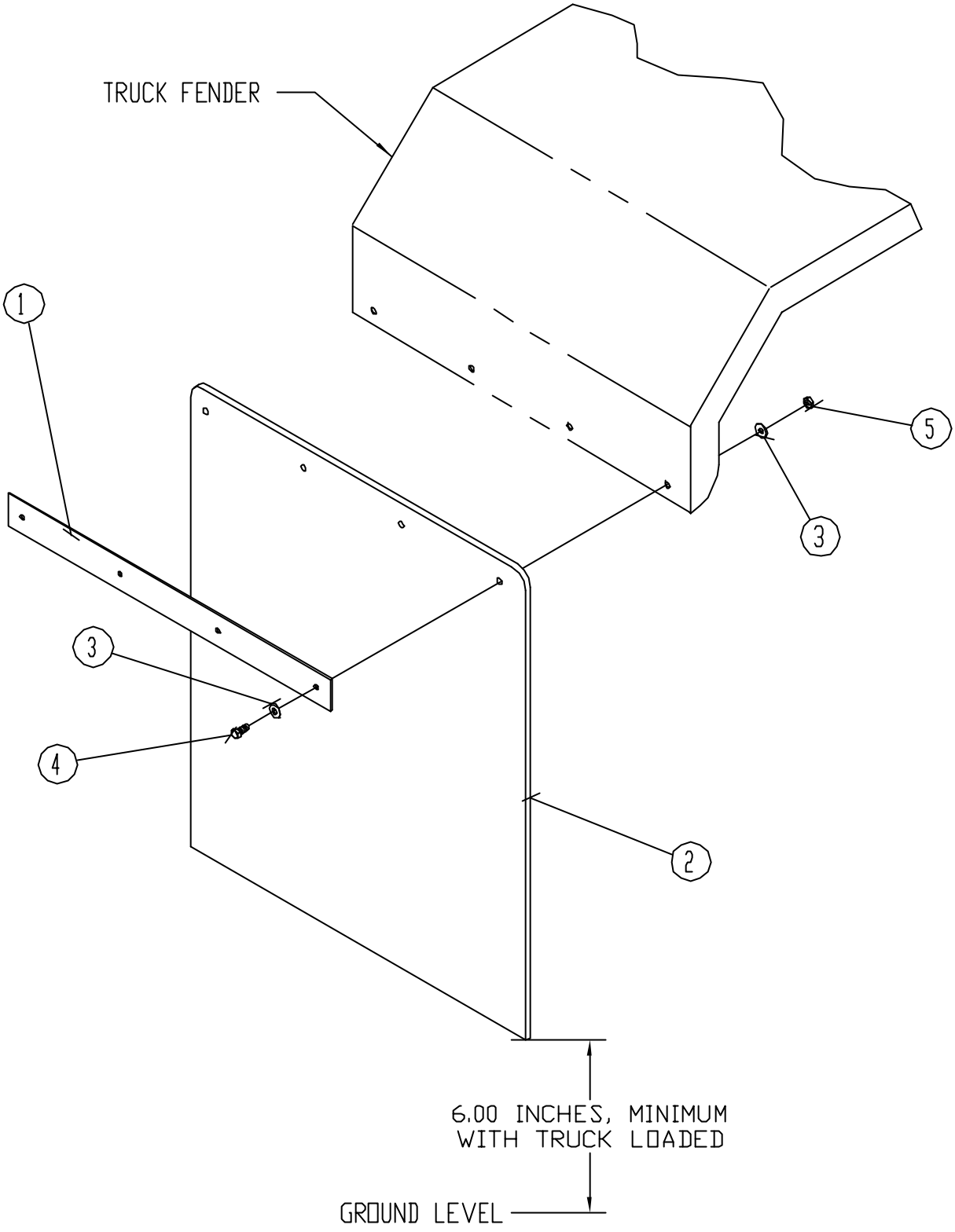


Figure 10-31

Mud Flap Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
	14402	1	Mud Flap Assembly	
1	13960	2	•Mount Bar,Mud Flap	
2	27737	2	•Mud Flap,24Wx24	
3	80141	16	•Washer,Flat,Uss,.312	
4	80208	8	•CSHH,.312-18X1.00,Gr5	
5	80351	8	•Nut,Flexloc,.312-18,Full,Lt	

Sampling Valve, Front Head

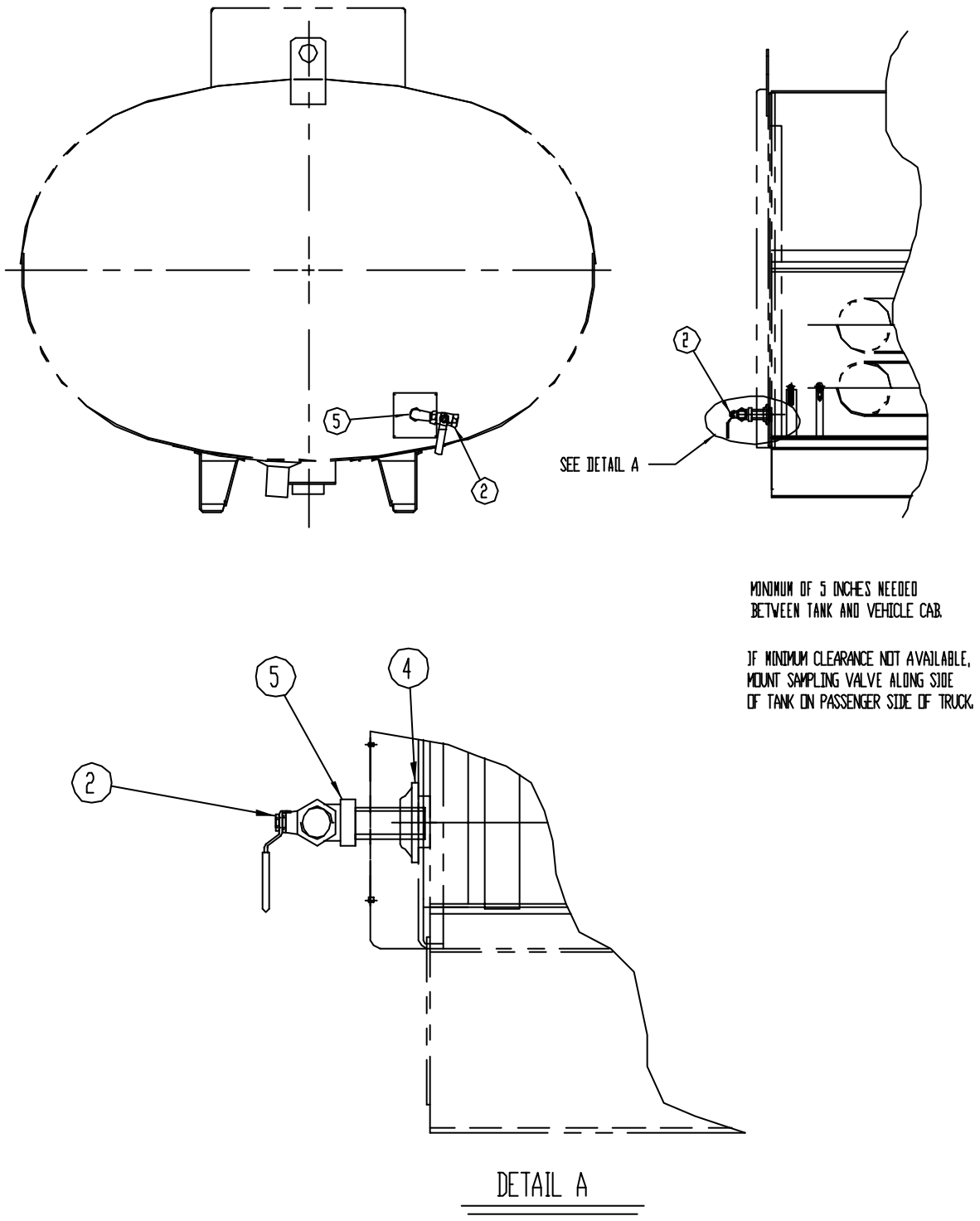


Figure 10-32

Sampling Valve, Front Head Parts List

Item No.	Part Number	Qty.	Description	Remarks
	22468	1	Sampling Valve, Front Head	
2	280210	1	•Valve,Ball,1.00	
4	71936	REF	•Flange,Weld,1 Npt	(Part Of Tank)
5	99528	1	•Pipe,90,16Mp-16Fp,Mi	

Overflow Attachment Group

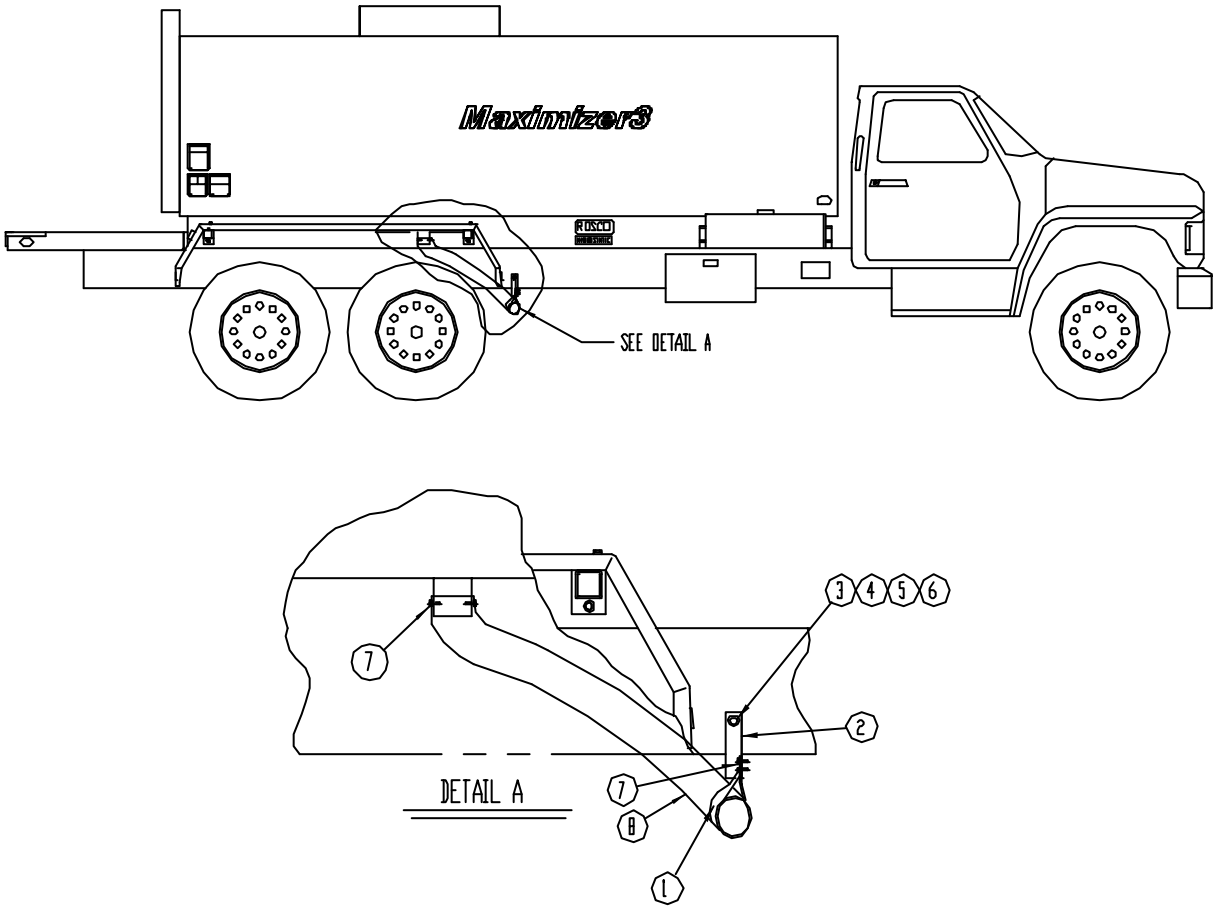


Figure 10-33

Overflow Attachment Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
	23572	1	Overflow Attachment Group	
1	38771	1	•Clamp,Muffler Strap,3-1/2”	
2	981708	1	•Brkt,Wood Rail Joint	
3	80038	1	•Nut,Hex,.375-16	
4	80142	2	•Washer,Flat,Uss,.375	
5	80162	1	•Washer,Lock,.375	
6	80224	1	•CSHH,.375-16X1.25,Gr5	
7	80324	2	•Scr,Slftpg,Hh,.250-20X.75	
8	90268	4.16	•Hose,3.50Id,Flex,Metal	

Thermometers

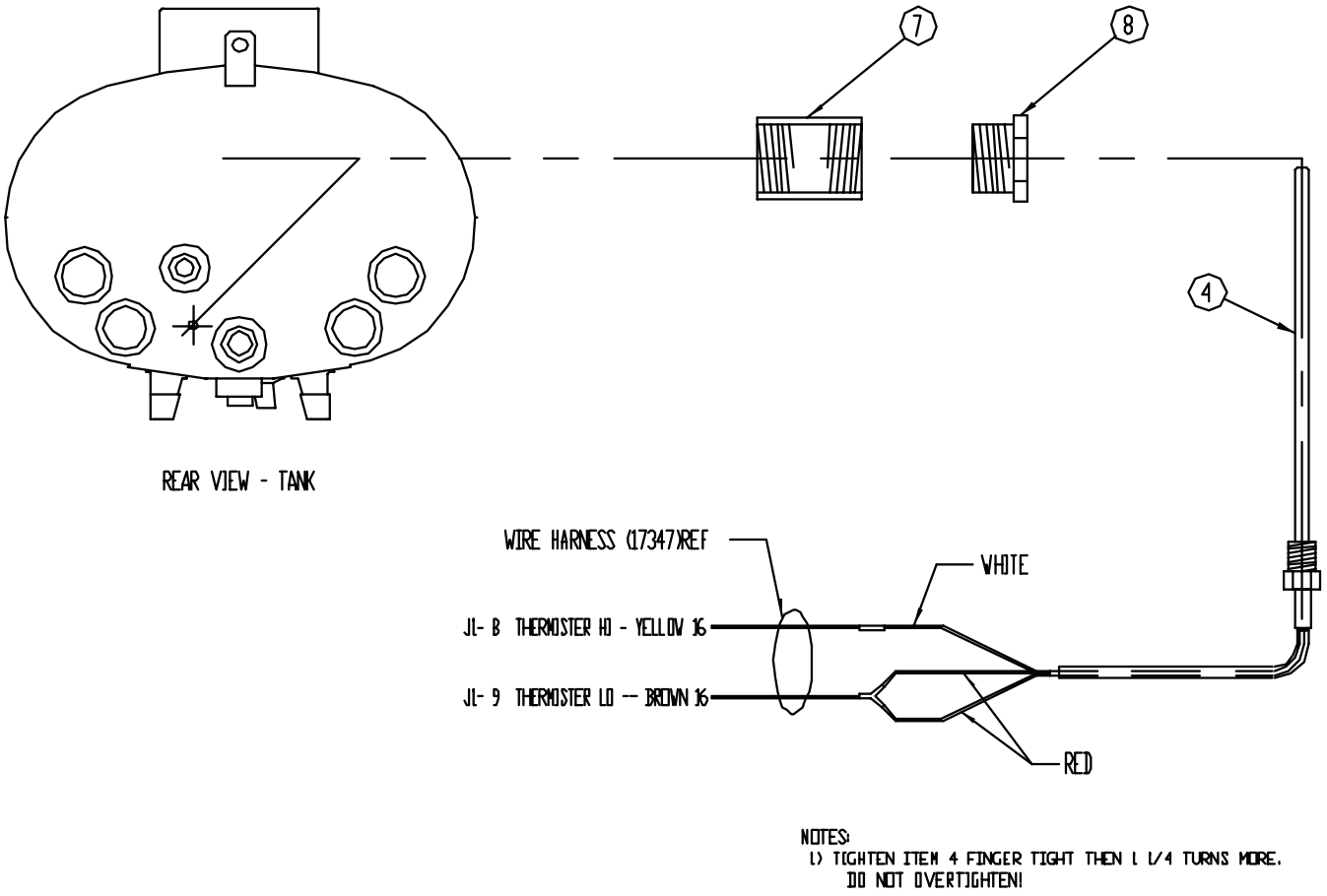


Figure 10-34

Thermometers Parts List

Item No.	Part Number	Qty.	Description	Remarks
100	22212	1	•Thermometer Group	
			Attaching Parts	
4	38435	1	••Temp Probe,Rtd,9 In,Min Ins	
-6	71060	3	••Loom,Split,Convoluted,.250	
7	90126	1	••Pipe,Cplg,1.00	
8	99460	1	••Pipe,Bush,16Mp-04Fp,Mi	
-200	17862	1	•Dial, Therm, 50° - 500° F, Group	
			Attaching Parts	
-2001	5470	1	••Therm, Dial, 5.0 Face, 500F	
-2002	99450	1	••Pipe,Bush,08Mp-06Fp,Mi	
-2003	99492	1	••Pipe, Cplg, 08Fp	
-300	5133	1	•Therm, Armored,Pencil,100° - 500° F	

Enviroflush System

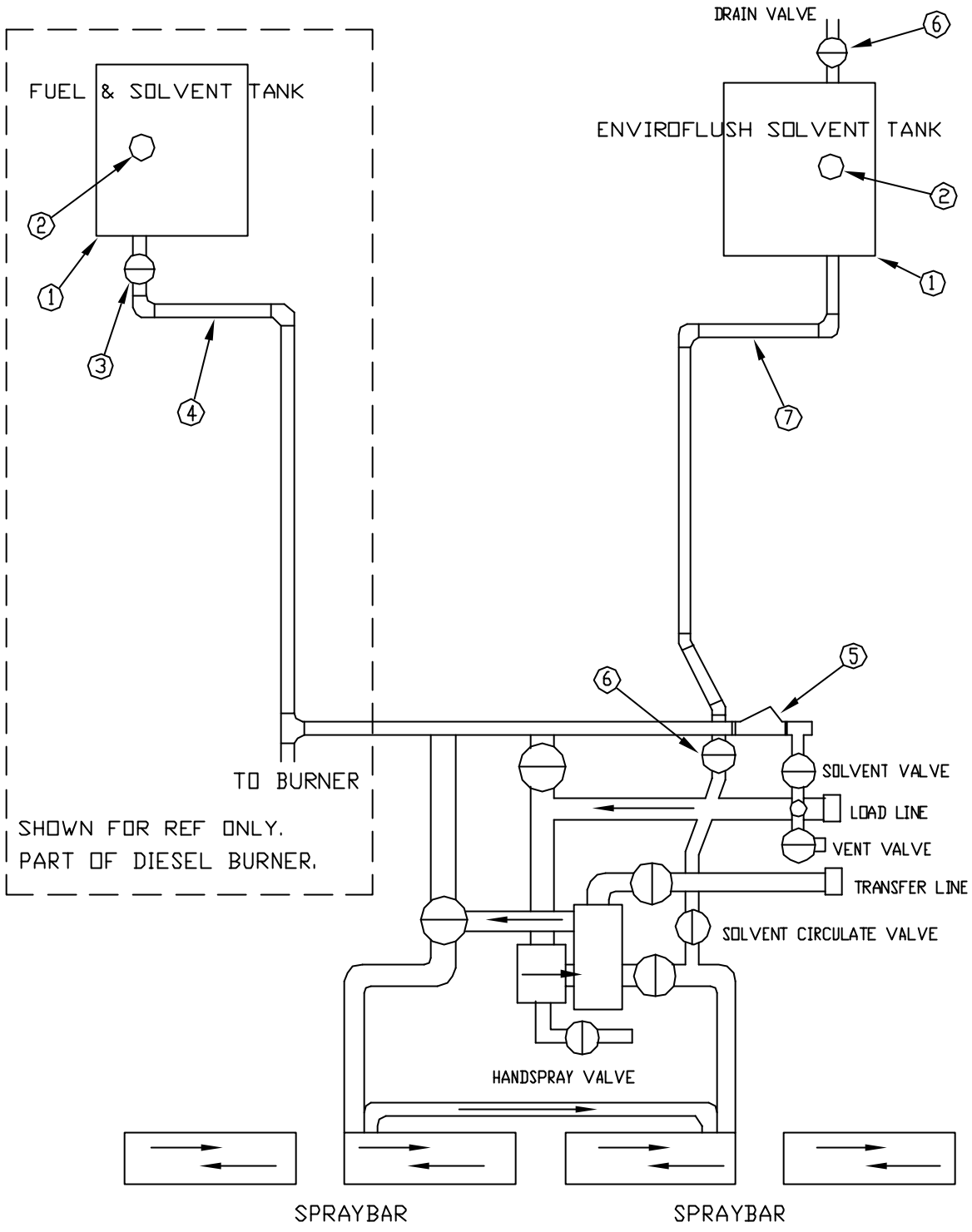


Figure 10-35

Enviroflush System Parts List

Item No.	Part Number	Qty.	Description	Remarks
	21810	1	Enviro Flush System	
1	21701	1	•Tank Wldmt,Diesel	
2	36940	1	•Cap,Fuel,4.0 Npt,Al,W/Gasket	
3	5499	REF	•Vlv,Drain Cock,.250 Npt	(Part Of Diesel Burner)
4	6352	REF	•Hose,08,Push-On,250	(Part Of Diesel Burner)
5	35569	REF	•Vlv,Check,08 Npt,Swing	(Part Of Flush Tank)
6	1003147	2	•Valve,Solenoid, 1.00 Ball	
7	36999	1.83’	•Hose,1.00 Id,Hot Asphalt	
-15	17934	1	•Flush Tank System	
			Attaching Parts	
-1503	21701	1	••Tank Wldmt,Diesel	
-1504	31971	1	••Fitt,90 04Mp-04Hb,Crimped	
-1506	33328	2	••Fitt,90 08Mp-08Hb,Crimped	
-1507	35569	1	••Vlv,Check,08 Npt,Swing	
-1508	36940	1	••Cap,Fuel,4.0 Npt,Al,W/Gasket	
-1509	5499	1	••Vlv,Drain Cock,.250 Npt	
-1511	91315	1	••Pipe,Tbe,08X83.00	
-1512	91316	1	••Pipe,Tbe,08X55.00	
-1513	9672	4	••Bracket,Pipe,0.50	
-1514	99535	2	••Pipe,Plug,04Mp,Sq Hd,Mi	
-1515	99980	1	••Pipe,Bush,08Mp-04Fp,Stl	
-1516	99990	1	••Pipe,Bush,16Mp-08Fp,Stl	
-1517	X427	1	••Fitt,Str 08Mp-08Hb,Crimped	
-21	15944	2	•Plate,Tapped	
-22	21813	2	•Brkt,Pipe Support	
-23	33167	4	•Clamp,Hose,.81-1.75,Worm,#20	
-24	33277	1	•Clamp,Hose,# 04	
-25	5347	2	•Hose,04,Push-On,Low Pressure	
-26	70036	4	•Fitt,Str 16Mp-16Hb,Crimped	
-27	70444	1	•Pipe,Plug,2.00Mp,Sq Hd,Mi	
-28	71622	4	•CSHH,.375-16X.88,Gr5	
-29	80162	4	•Washer,Lock,.375	
-30	80142	8	•Washer,Flat,Uss,.375	
-31	99507	1	•Pipe,45,16Fp,Mi	
-32	99514	1	•Pipe,90,16Fp,Mi	
-33	99539	1	•Pipe,Plug,16Mp,Sq Hd,Mi	
-100	10553	1	•Decal,Solvent Tank	

Insulated Tank & Tank Components

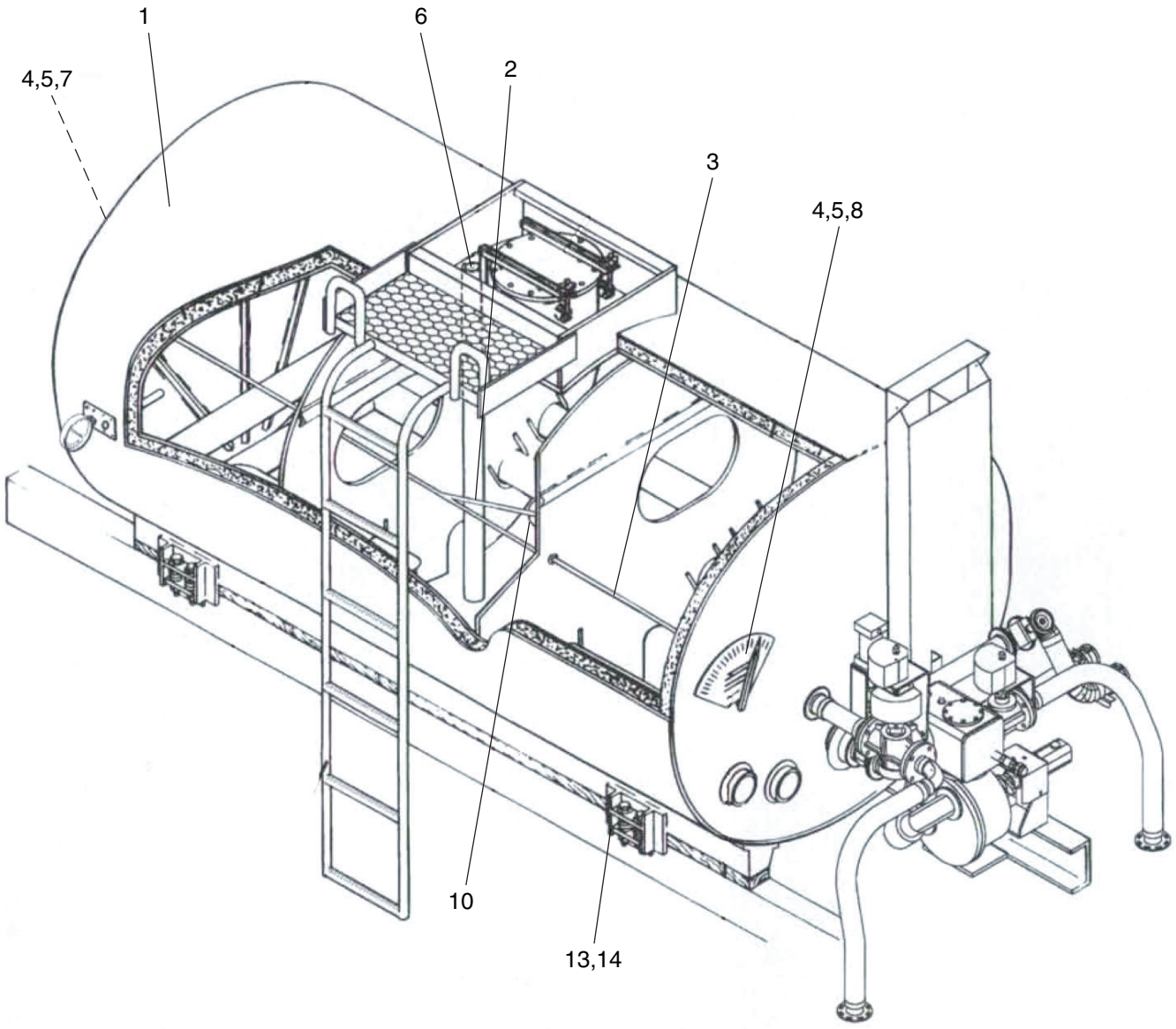


Figure 10-36

Insulated Tank & Tank Components Parts List

Item No.	Part Number	Qty.	Description	Remarks
			Insulated Tank & Tank Components	
1	29468	1	•Insulated Tank,48X74x96,W/Stack	1000 gallon tank
	29470	1	•Insulated Tank,52X80x120,W/Stack	1500 gallon tank
	29473	1	•Insulated Tank,56X84x132,W/Stack	1900 gallon tank
	29504	1	•Insulated Tank,60X90x176,W/Stack	3000 gallon tank
	29505	1	•Insulated Tank,68X90x174,W/Stack	3500 gallon tank
	29506	1	•Insulated Tank,68X90x200,W/Stack	4000 gallon tank
2	17283	1	•Float Rods,Vertical	
	17283-1		For Tank Heights Of 60" And 68"	3000, 3500, 4000 gallon tanks
	17283-2		For Tank Heights Of 48"	1000 gallon tanks
	17283-3		For Tank Heights Of 56"	1900 gallon tanks
	17283-4		For Tank Heights Of 52"	1500 gallon tanks
3	20793	1	•Float Rods,Horizontal	
	20793-01		For Tank Lengths Of 96"	1000 gallon tanks
	20793-02		For Tank Lengths Of 120"	1500 gallon tanks
	20793-04		For Tank Lengths Of 140"	
	20793-05		For Tank Lengths Of 142"	
	20793-06		For Tank Lengths Of 170"	
	20793-07		For Tank Lengths Of 174"	3500 gallon tanks
	20793-08		For Tank Lengths Of 176"	3000 gallon tanks
	20793-09		For Tank Lengths Of 200"	4000 gallon tanks
	20793-10		For Tank Lengths Of 132"	1900 gallon tanks
4	17288-1	1	•Pointer,W/M 17.25	1900, 3000, 3500, 4000 tanks
5	17288-2	1	•Pointer,W/M,13.50	1000, 1500 gallon tanks only
6	17300	1	•Measuring Stick	1000 gallon tank
	17303	1	•Measuring Stick	1500 gallon tank
	22175	1	•Measuring Stick	1900 gallon tank
	23161	1	•Measuring Stick	3000 gallon tank
	17310	1	•Measuring Stick	3500 gallon tank
	19488	1	•Measuring Stick	4000 gallon tank
7	17311	1	•Contents Ga,Fr,48X74x96,Dbl Flue	1000 gallon tank
	17314	1	•Contents Ga,Fr,52X80x120,Dbl Flue	1500 gallon tank
	22176	1	•Contents Ga,Fr,56X84x132,Dbl Flue	1900 gallon tank
	17319	1	•Contents Ga,Fr,60X90x176,Dbl Flue	3000 gallon tank
	17321	1	•Contents Ga,Fr,68X90x174,Dbl Flue	3500 gallon tank
	19489	1	•Contents Ga,Fr,68X90x200,Dbl Flue	4000 gallon tank

Insulated Tank & Tank Components (continued)

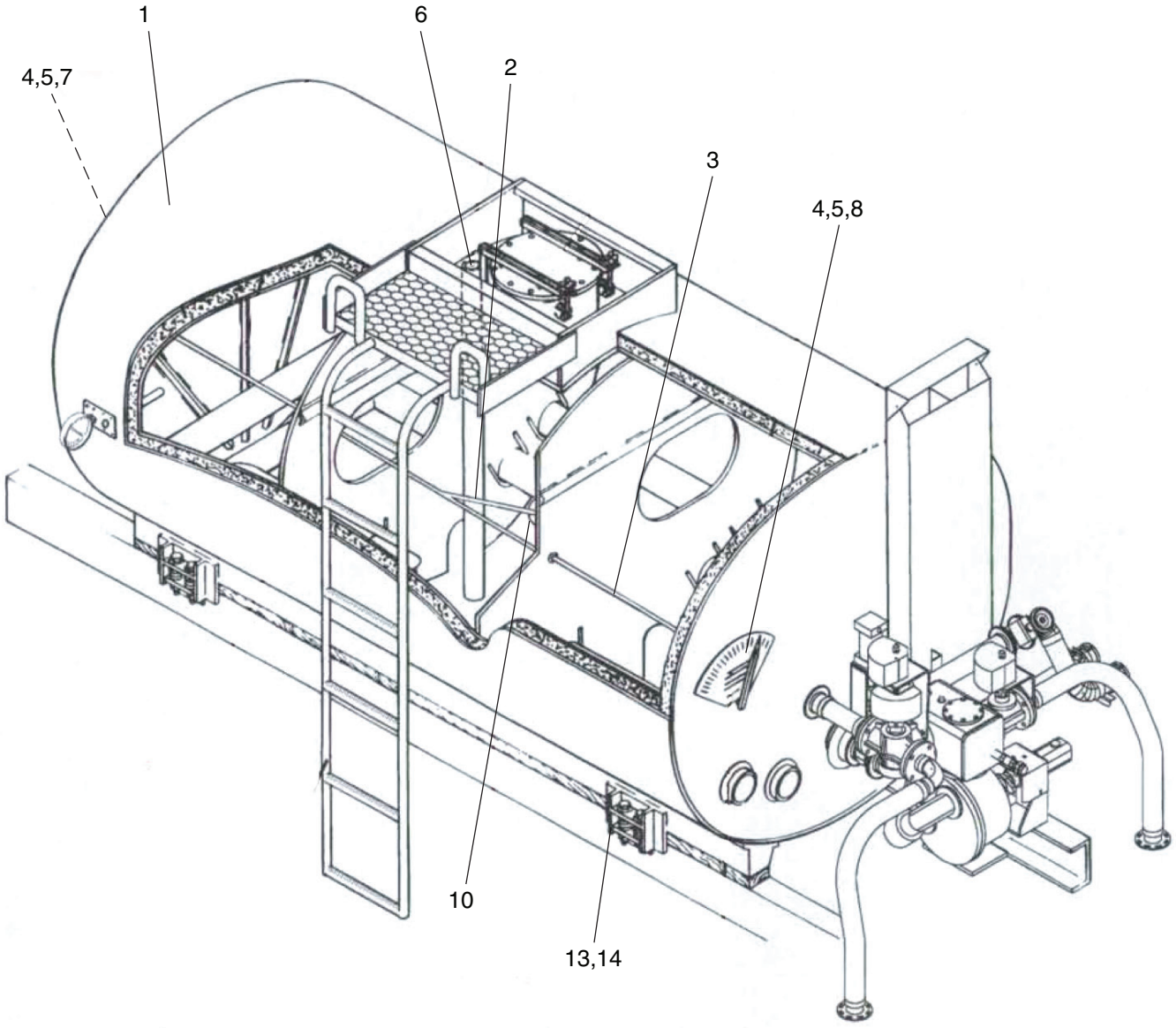


Figure 10-367

Insulated Tank & Tank Components (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
8	18045	1	•Contents Ga,Rear,48X74x96,Dbl Flue	1000 gallon tank
	18049	1	•Contents Ga,Rear,52X80x120,Dbl Flue	1500 gallon tank
	22177	1	•Contents Ga,Rear,56X84x132,Dbl Flue	1900 gallon tank
	18053	1	•Contents Ga,Rear,60X90x176,Dbl Flue	3000 gallon tank
	18055	1	•Contents Ga,Rear,68X90x174,Dbl Flue	3500 gallon tank
	19490	1	•Contents Ga,Rear,68X90x200,Dbl Flue	4000 gallon tank
-9	1270	2	•Gland,Relief Valve Stem	
10	35500	1	•Float,Ball,Ss	
-11	4896-3	2	•Gland Packing	
-12	80097	2	•Nut,Hex,Jam .875-14	
13	17565	1	•Tank Mounting,Single	
			Attaching Parts	
-1301	16159	A/R	••Tie Down W/M,Tank	Quantity depends on tank size
-1302	16243	2	••Bent Plate	
-1303	21934	4	••Bar,.250X1.00x3.00,Hrs	
-1304	21936	2	••Bracket,End Cap	
14	17564	1	•Truck Mounting,Single	
			Attaching Parts	
-1401	14253	4	••Tank Mount,Truck Angle	
-1402	35209	8	••Spr,1.62 Diax3.5,1005 Psi	
-1403	71684	8	••CSHH,.625-11X7.00,Gr5	
-1404	80146	16	••Washer,Type A Plain,.625	
-1405	80283	8	••CSHH,.625-11X2.00,Gr5	
-1406	80356	16	••Nut,Flexloc,.625-11,Full,Lt	
-1407	90383-06	A/R	••Wood,Oak,1.50X3.00x10ft	Quantity depends on tank size

Spraybar Assembly, 18 FT

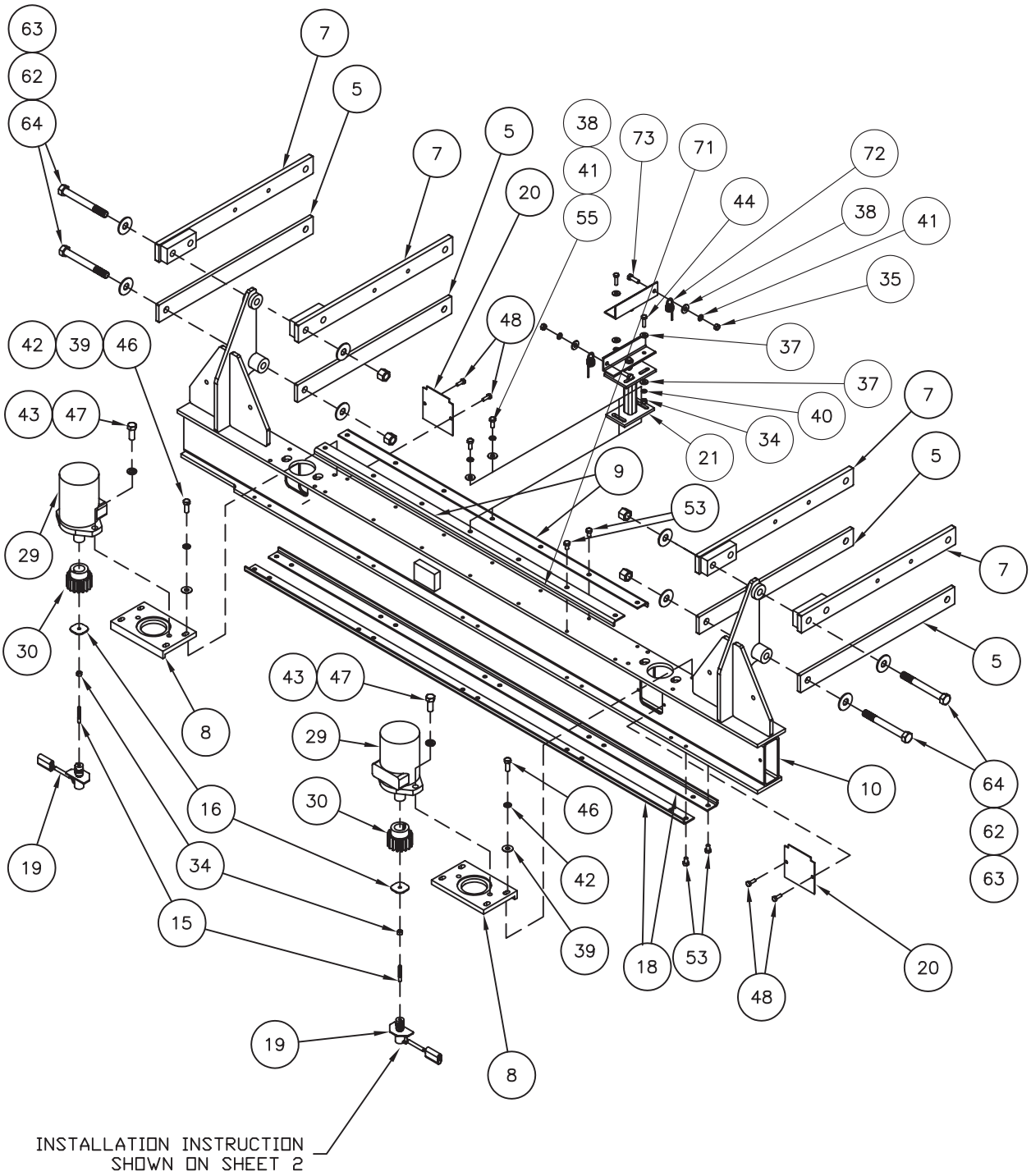


Figure 10-37

Spraybar Assembly, 18 FT Parts List

Item No.	Part Number	Qty.	Description	Remarks
	28762	1	Spraybar Assy, 18 Foot	
1	15929	2	•Nut	
2	15930	2	•Cap,End,Spraybar	
3	25901	2	•Spraybar W/M,Extendable	
4	25944	1	•Support,Spraybar,Rh	
5	25948	4	•Link,Support,Bottom	
-6	25949	1	•Support,Spraybar,Lh	
7	25997	4	•Link,Support,Top	
8	26016	2	•Mount,Motor,Spraybar	
9	26017	2	•Rail,Barslide,Top	
10	26019	1	•Barslide W/M	
11	26033	2	•Plate,Slide	
12	26034	2	•Block,Slide,Bottom	
13	26035	2	•Block,Slide,Top	
14	26036	2	•Rack,Gear,8 D.P.,Modified	
15	26059	2	•Shaft,Thd'd,1.75	
16	26060	2	•Washer,Sq,.281Idx1.5	
17	26106	4	•Block,Stop,Extend	
18	26112	2	•Rail,Barslide,Bttm	
19	26141	2	•Pot Assembly,Max3	
20	26142	2	•Plate,Access	
21	27594	1	•Bracket,Actuator	
22	28764	1	•Control Grp,Air,Max3,18' Bar	Uses Hose Pn 5347
			Attaching Parts	
-2201	33343	8	••Fitt,Str 02Mp-04Hb,Push-On	
-2202	35924	4	••Fitt,Plug 02Qd	
-2203	35925	4	••Socket,Quick Coupler,02Npt	
-2204	37311	48	••Fitt,90 02Mp-02Fp,Brass	
-2205	38130	24	••Valve,3 Way,Air,Spray Bar	(No Seal Kit Avail.)
-2206	38132	30	••Valve,3 Way,02X02x02	(No Seal Kit)
-2207	5347	235	••Hose,04,Push-On,Low Pressure	
-2208	38201	320	••Clamp,Hose,Band,.45Dia	
-2209	38412	4	••Fitt,Tee 04Hb-O4hb-04Hb,Brass	
-2210	71796	16	••Fitt,90 02Mp-04Hb,Crimped,Bras	
-2211	72700	146	••Fitt,Tee 04Hb-04Hb-02Mp,Brass	
-2212	90803	22	••Sleeve,Abrasion,Nylon,1.75Id	
23	26469	54	•Spray Valve Assembly,Max3	(See Fig 7-5)
24	35565	54	•Nozzle #00	

Spraybar Assembly, 18 FT (continued)

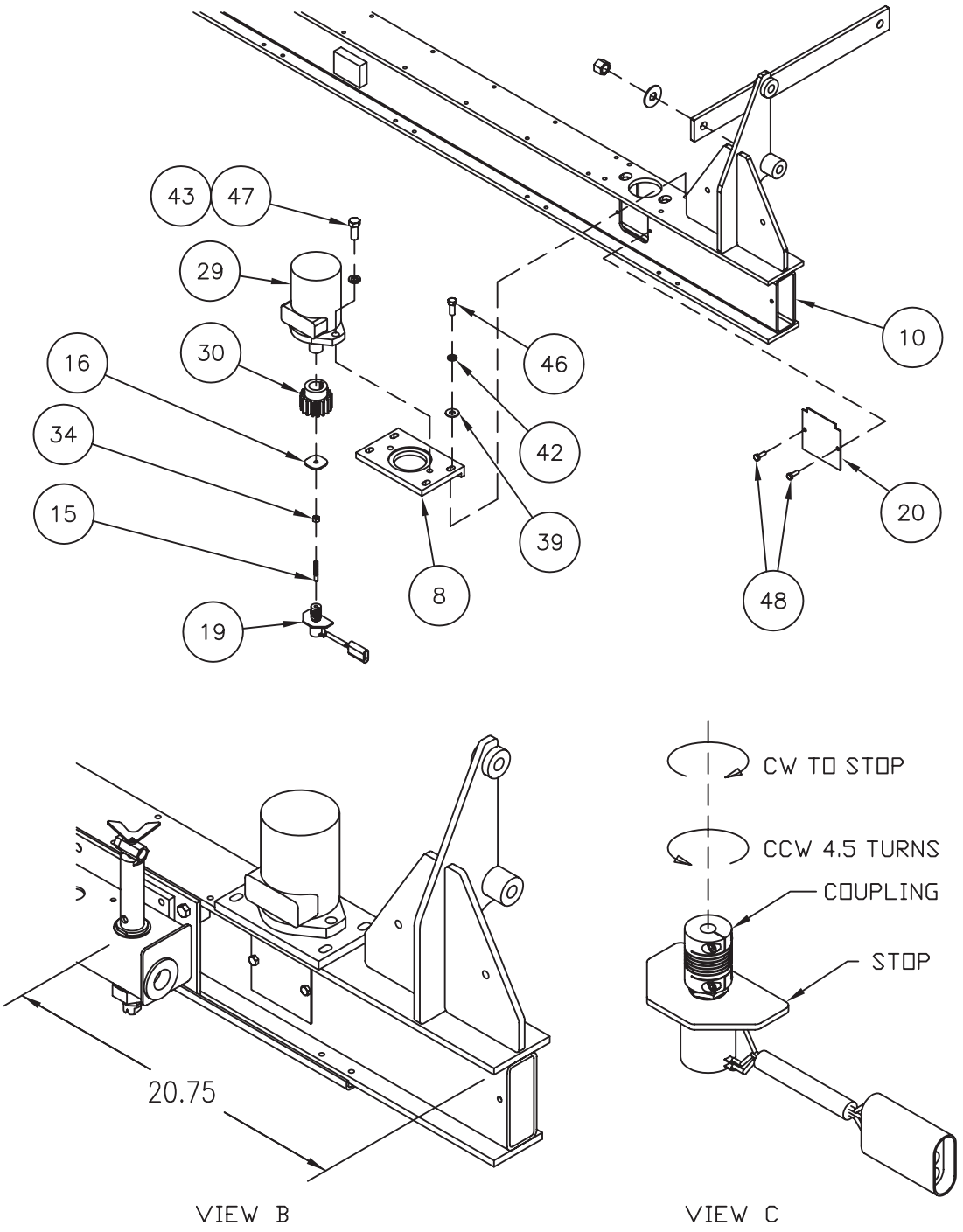


Figure 10-37

Spraybar Assembly, 18 FT (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
24	32917	A/R	•Nozzle #0	
24	32918	A/R	•Nozzle #1	
24	36299	A/R	•Nozzle #1.5	
24	32919	A/R	•Nozzle #2	
24	32920	A/R	•Nozzle #3	
-26	34998	0.1	•Loctite,#242	
27	35008	4	•O-Ring,4.50 Od	
28	35036	4	•Washer,Teflon	
29	38122	2	•Motor,Hyd,Lsht,8.0 Disp	
-2901	38122-02		••Seal Kit,38122 Motor	
30	38125	2	•Gear,Spur,Pinion,8 D.P.,17T	
31	38141	54	•Washer,1.50Odx1.187idx.10Thk	
32	38149	108	•Gasket,Spray Valve	
33	71622	12	•Cshh,.375-16X.88,Gr5	
34	80036	6	•Nut,Hex,.250-20	
35	80037	10	•Nut,Hex,.312-18	
36	80099	54	•Nut,Hex,Jam,1.125-12	
37	80140	10	•Washer,Type A Plain,.250	
38	80141	18	•Washer,Flat,Uss,.313	
39	80142	8	•Washer,Flat,Uss,.375	
40	80160	4	•Washer,Lock,.250	
41	80161	4	•Washer,Lock,.312	
42	80162	8	•Washer,Lock,.375	
43	80164	20	•Washer,Lock,.500	
44	80185	6	•CSHH,.250-20X1.00,Gr5	
45	80209	8	•CSHH,.312-18X1.50,Gr5	
46	80221	8	•CSHH,.375-16X1.00,Gr5	
47	80250	4	•CSHH,.500-13X1.25,Gr5	
48	80324	4	•Scr,Slftpg,Hh,.250-20X.75	
50	80351	48	•Nut,Flexloc,.312-18,Full,Lt	
-50	16070	1	•Bar,Plug Group	
			Attaching Parts	
-5001	983602	1	••Pipe,Hex Bushing,4X.75,Blk,Mi	
-5002	99479	1	••Pipe,Cap,12Fp,Mi	
-5003	99602	1	••Pipe,Nipple,12X3.00	
51	80876	10	•CSHH,.250-28X.50,Gr5	
53	81211	34	•CSHH,.312-24X.50,Gr5	
54	81213	32	•CSFHS,.312-18X1.25,Gr5	

Spraybar Assembly, 18 FT (continued)

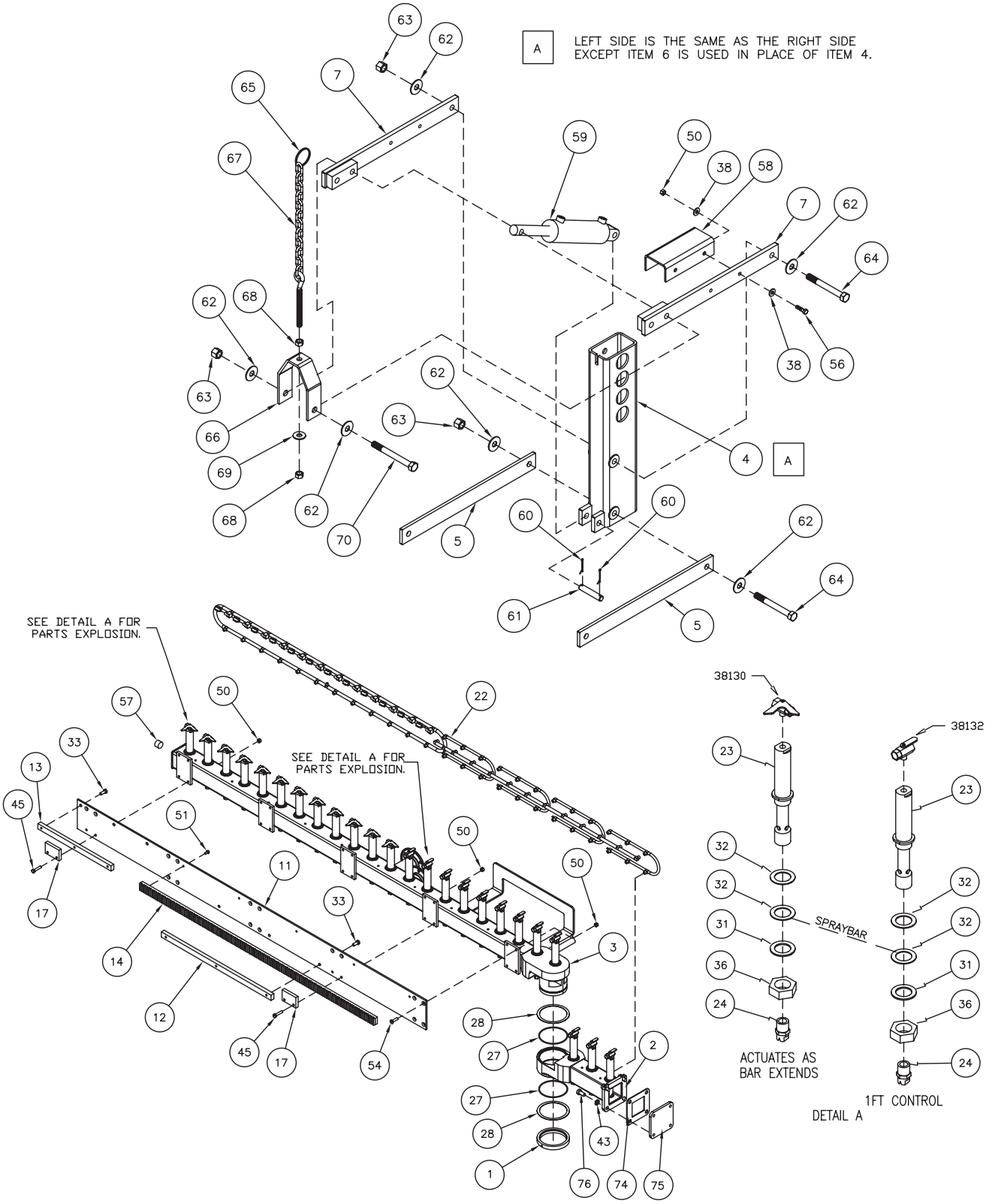


Figure 10-37

Spraybar Assembly, 18 FT (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
55	81227	2	•CSHH,.312-24X.875,Gr5	
56	80206	8	•CSHH,.312-18X1.25,Gr5	
57	70700	4	•Pipe,Plug,16Mp,Sq Csk Head,Mi	
58	26622	2	•Stiffener,Wide,Scissor Bar	
59	6231	2	•Cyl,Hyd,2.00X5.75stroke,12.50	
-5901	6231-01		••Seal Kit,For Cyl	
60	80332	4	•Cotter Pin,.125X1.50	
61	9081	2	•Pin,Hyd,Lift Cylinder	
62	80146	20	•Washer,Type A Plain,.625	
63	80356	10	•Nut,Flexloc,.625-11,Full,Lt	
64	80445	8	•CSHH,.625-11X5.50,Gr 5	
65	37187	2	•Ring,Split,2.02Idx.18,Zinc Ctd	
66	26721	2	•Clevis	
67	26725	2	•Chain,Adjustment	
68	80040	4	•Nut,Hex,.500-13	
69	80144	2	•Washer,Flat,Uss,.500	
70	71697	2	•Cap Screw Ht 5/8 X 6 1/2 Nc	
71	27591	2	•Arm,Actuator	
72	38660	2	•Spring,Max3,Torsion	
73	80208	2	•CSHH,.312-18X1.00,Gr5	
74	28630	2	•Spraybar,W/M,Ext	
75	28631	2	•Extension,Spraybar	
76	35035	4	•Gasket,Spraybar Ext	
77	80248	16	•CSHH,.500-13X1.00,Gr5	
-100	8695	1	•Wrench,Nozzle Alignment	

Potentiometer

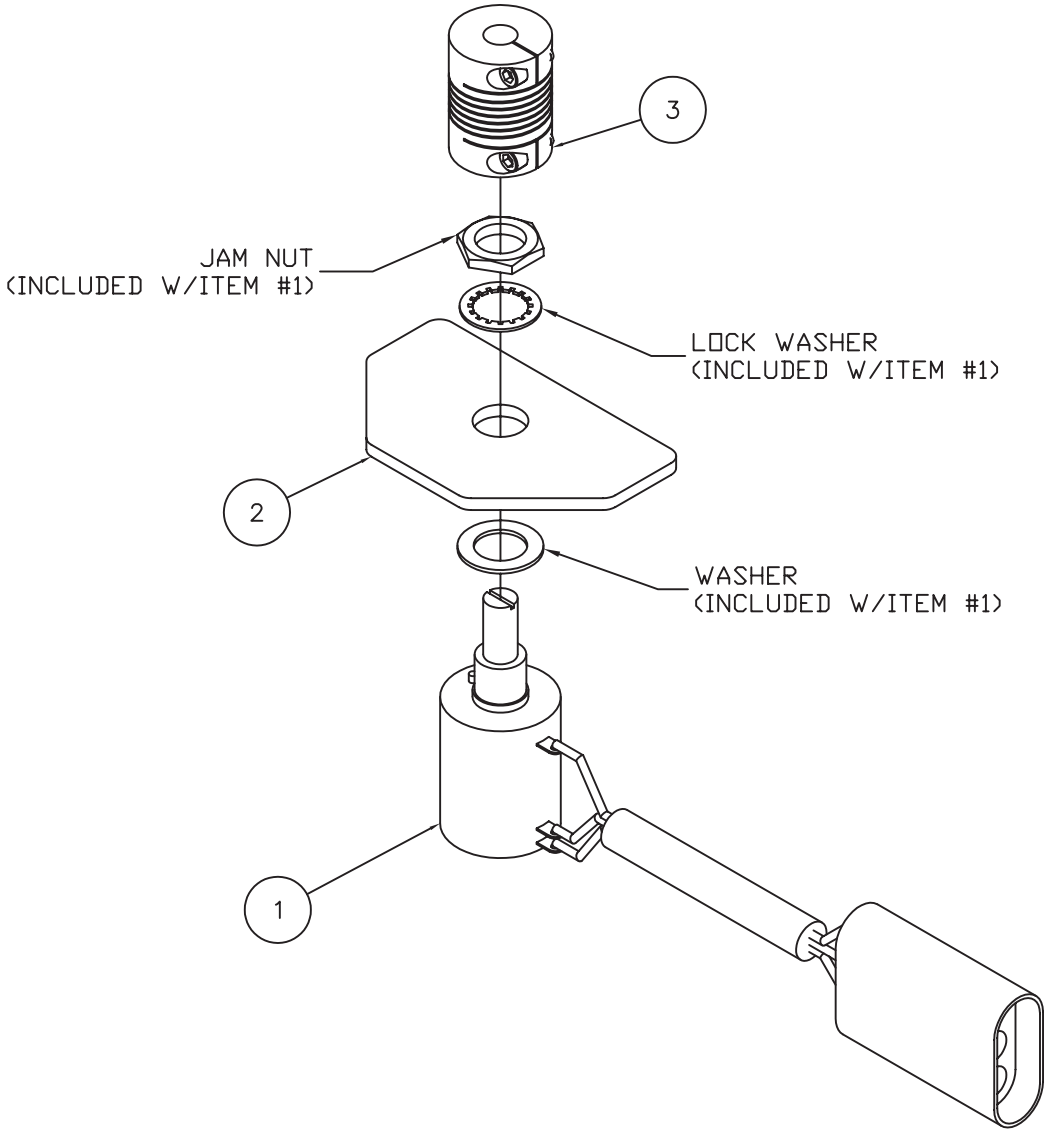


Figure 10-38

Potentiometer Parts List

Item No.	Part Number	Qty.	Description	Remarks
	26141	2	•Pot Assembly,Max3	(See Fig 7-3 For NHA)
1	26184	1	••Potentiometer W/Conn,Max3	
2	26140	1	••Stop,Pot Body	
3	38118	1	••Coupling,Flex,.25 Bore,.75 Len	

Spray Valve Assembly

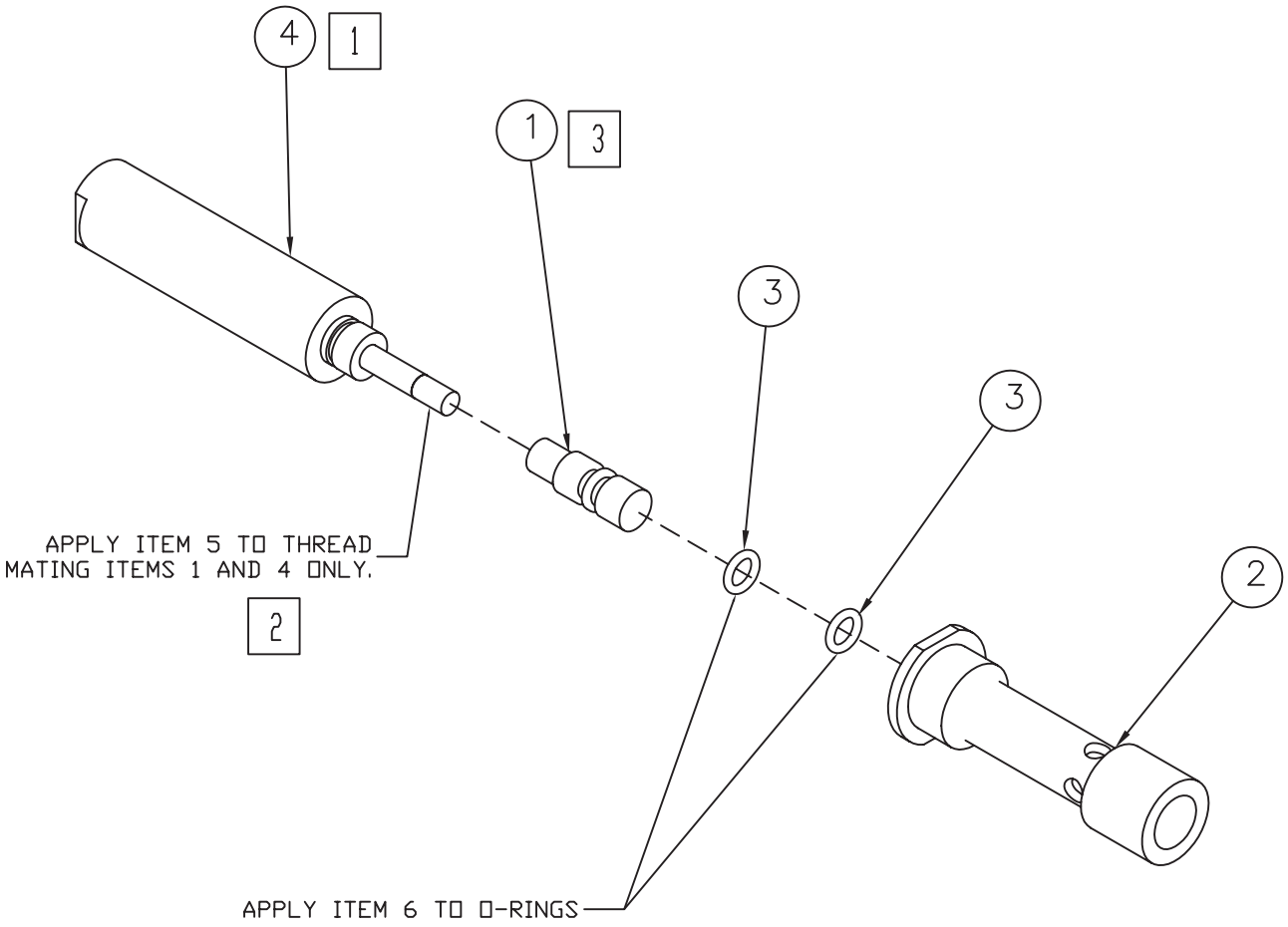


Figure 10-39

Spray Valve Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
	26469	54	•Spray Valve Assembly	(See Fig 7-3 For NHA)
1	25260	1	••Plunger	
2	25261	1	••Body,Valve	
3	38054	2	••O-Ring,.103 X .362,Viton	
4	38129	1	••Cyl,1.06X.50,Air,Spring Ext	
5	38992	0.05	••Loctite #272	
6	36222	0.01	••Lubricant, Anti-Seize, 8 Oz	

Spray Valve Assembly, 20 FT

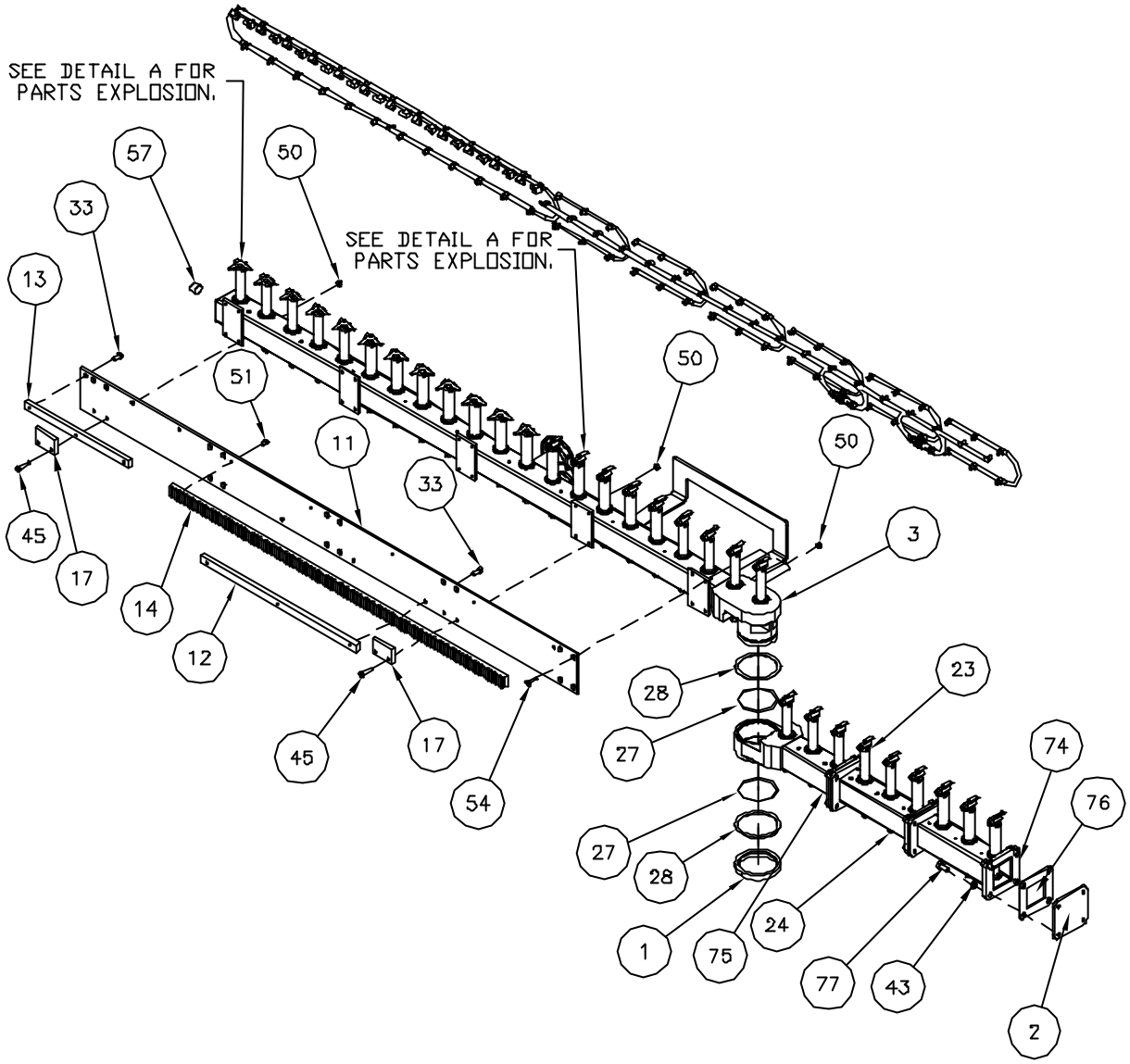


Figure 10-40

Spray Valve Assembly, 20 FT Parts List

Item No.	Part Number	Qty.	Description	Remarks
	28971		Spraybar Assembly	
1	15929	2	•Nut	
2	15930	2	•Cap,End,Spraybar	
3	25901	2	•Spraybar W/M,Extendable	
11	26033	2	•Plate,Slide	
12	26034	2	•Block,Slide,Bottom	
13	26035	2	•Block,Slide,Top	
14	26036	2	•Rack,Gear,8 D.P.,Modified	
17	26106	4	•Block,Stop,Extend	
22	28972	1	•Control Grp,Air,Max3,20' Bar	
			Attaching Parts	
-2201	33343	16	••Fitt,Str 02Mp-04Hb,Push-On	
-2202	35924	8	••Fitt,Plug 02Qd	
-2203	35925	8	••Socket,Quick Coupler,02Npt	
-2204	37311	48	••Fitt,90 02Mp-02Fp,Brass	
-2205	38130	24	••Valve,3 Way,Air,Spray Bar	(No Seal Kit Avail.)
-2206	38132	36	••Valve,3 Way,02X02x02,	(No Seal Kit)
-2207	5347	300	••Hose,04,Push-On,Low Pressure	
-2208	38201	354	••Clamp,Hose,Band,.45Dia	
-2209	38412	4	••Fitt,Tee 04Hb-O4hb-04Hb,Brass	
-2210	71796	18	••Fitt,90 02Mp-04Hb,Crimped,Bras	
-2211	72700	162	••Fitt,Tee 04Hb-04Hb-02Mp,Brass	
-2212	90803	22	••Sleeve,Abrasion,Nylon,1.75Id	
23	26469	60	•Spray Valve Assembly,Max3	(See Fig 7-7)
24	35565	60	•Nozzle #00	
24	32917	A/R	•Nozzle #0	
24	32918	A/R	•Nozzle #1, 5 Gpm/40 Psi	
24	36299	A/R	•Nozzle #1.5	
24	32919	A/R	•Nozzle #2	
24	32920	A/R	•Nozzle #3	
27	35008	4	•O-Ring,4.50 Od	
28	35036	4	•Washer,Teflon	
31	38141	60	•Washer,1.50Odx1.187idx.10Thk	
32	38149	120	•Gasket,Spray Valve	
33	71622	12	•CSHH,.375-16X.88,Gr5	
36	80099	60	•Nut,Hex,Jam,1.125-12	
43	80164	28	•Washer,Lock,.500	
45	80209	8	•CSHH,.312-18X1.50,Gr5	

Spray Valve Assembly, 20 FT (continued)

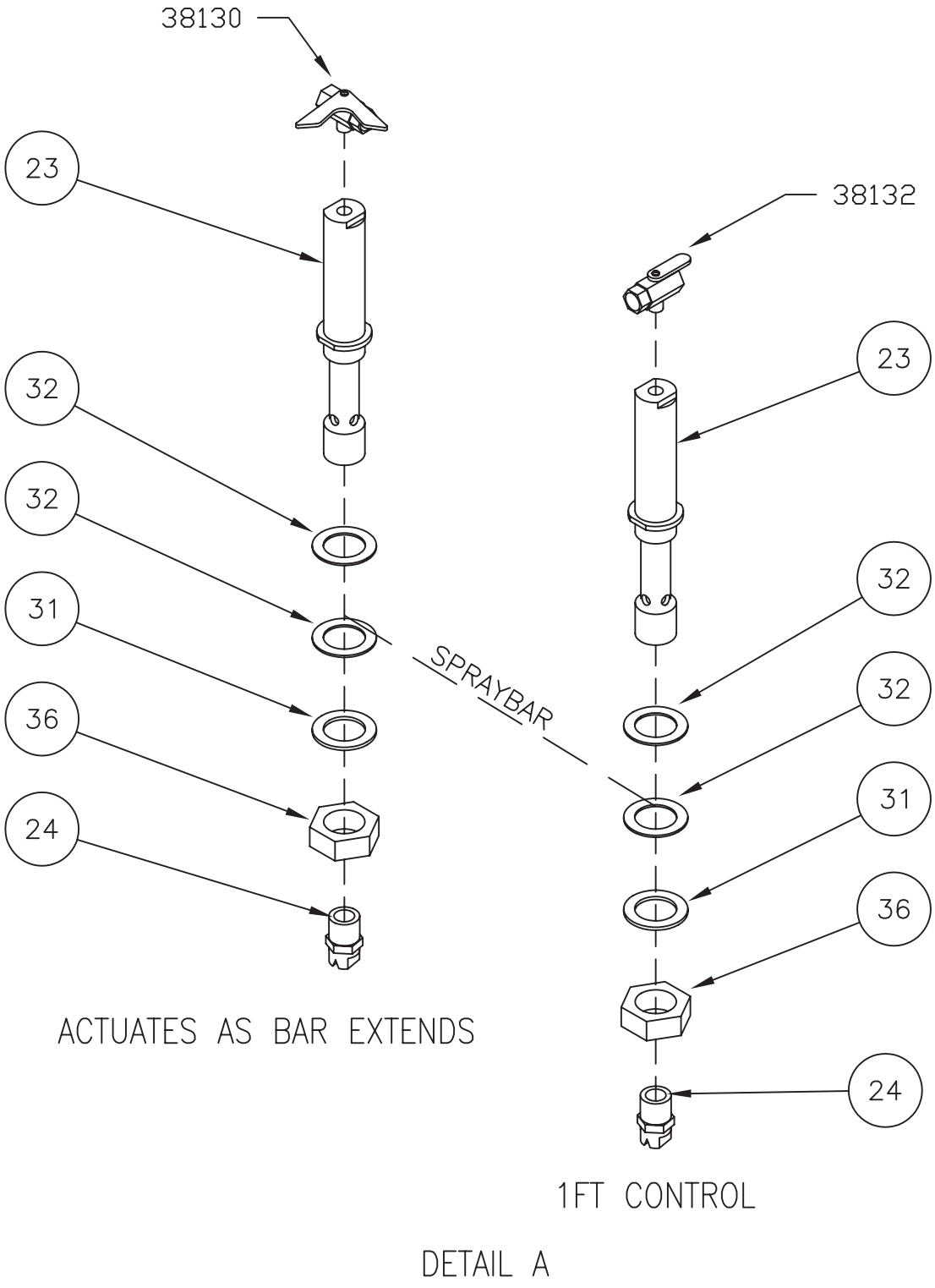


Figure 10-40

Spray Valve Assembly, 20 FT (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
50	80351	48	•Nut,Flexloc,.312-18,Full,Lt	
51	80876	10	•CSHH,.250-28X.50,Gr5	
54	81213	32	•CSFHS,.312-18X1.25,Gr5	
57	70700	4	•Pipe,Plug,16Mp,Sq Csk Head,Mi	
74	28630	4	•Spraybar,W/M,Ext	
75	28631	2	•Extension,Spraybar	
76	35035	6	•Gasket,Spraybar Ext	
77	80248	24	•CSHH,.500-13X1.00,Gr5	
-50	16070	1	•Bar,Plug Group	
			Attaching Parts	
-5001	983602	1	••Pipe,Hex Bushing,4X.75,Blk,Mi	
-5002	99479	1	••Pipe,Cap,12Fp,Mi	
-5003	99602	1	••Pipe,Nipple,12X3.00	
-100	8695	1	•Wrench,Nozzle Alignment	

Spray Valve Assembly

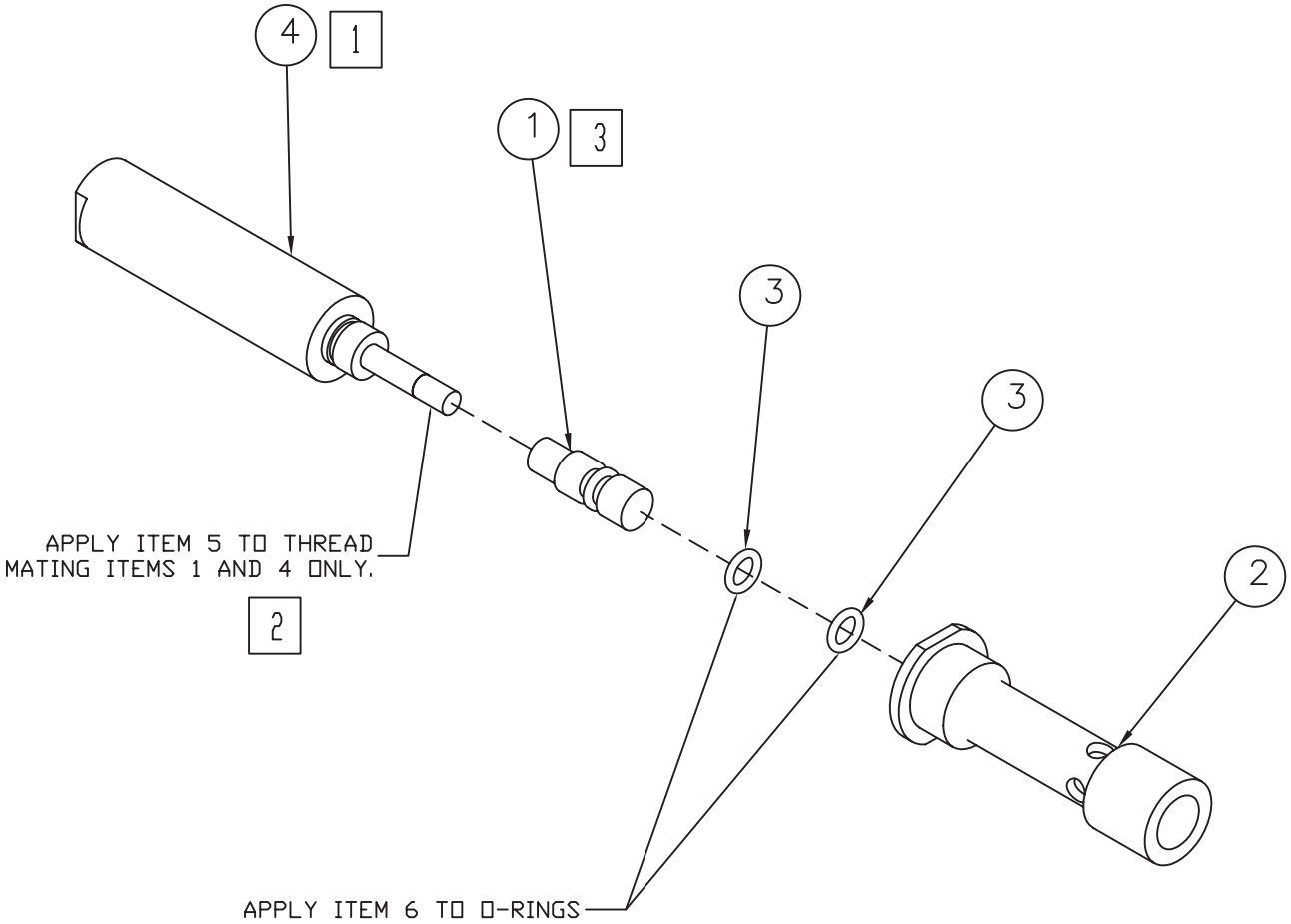


Figure 10-41

Spray Valve Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
	26469	60	•Spray Valve Assembly	(See Fig 7-6 For NHA)
1	25260	1	••Plunger	
2	25261	1	••Body,Valve	
3	38054	2	••O-Ring,.103 X .362,Viton	
4	38129	1	••Cyl,1.06X.50,Air,Spring Ext	
5	38992	0.05	••Loctite #272	
6	36222	0.01	••Lubricant, Anti-Seize, 8 Oz	

Solenoid Valve, 10/12 Valve (For 18 FT Spraybar)

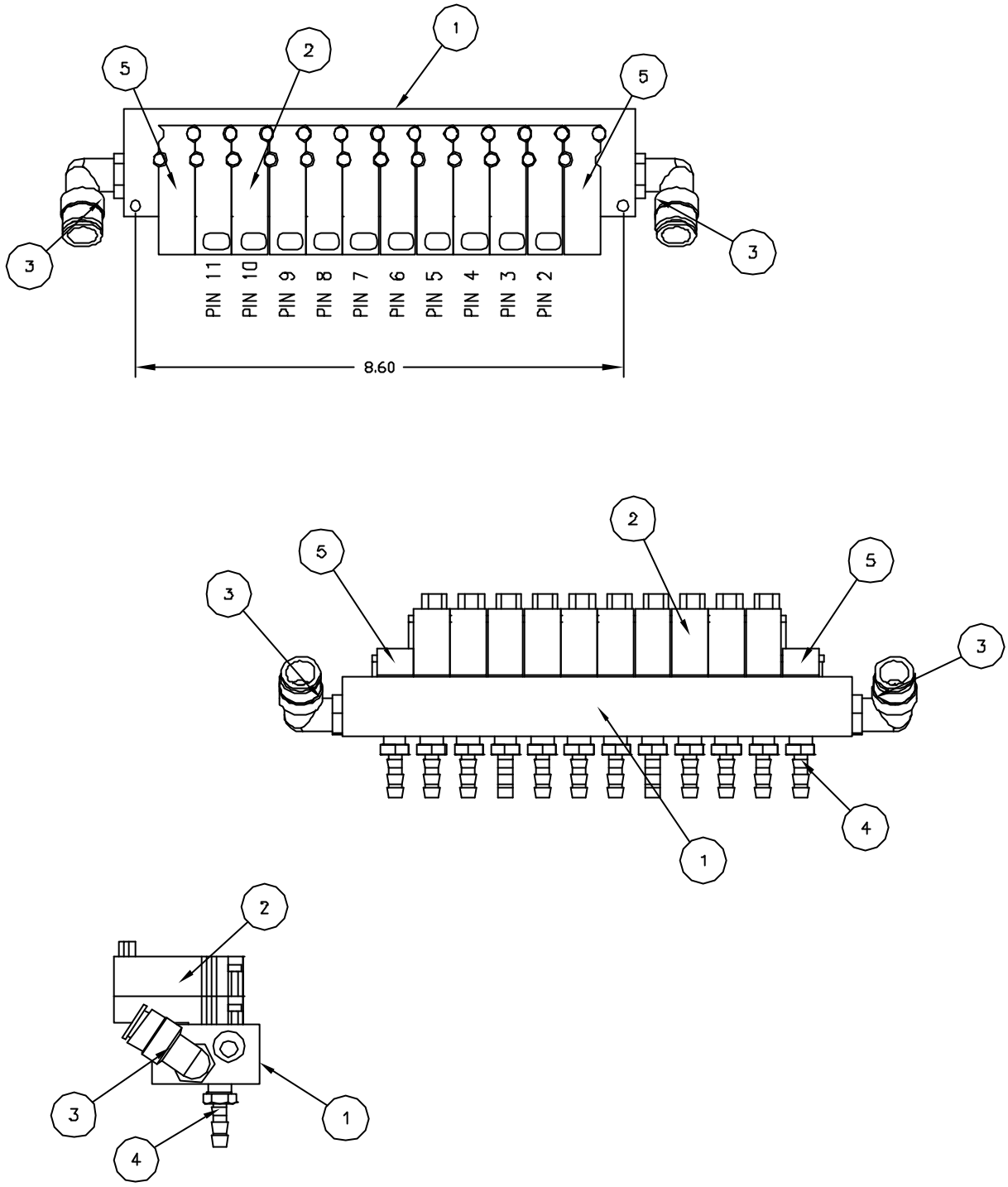


Figure 10-42

Solenoid Valve, 10/12 Valve (For 18 FT Spraybar) Parts List

Item No.	Part Number	Qty.	Description	Remarks
	38991-2	1	Solenoid Valve, 10/12 Valve Manifold	
1	38991-02	1	•Manifold,12 Station	
2	38991-01	10	•Vlv,36 Series	
3	38915	2	•Fitt,90 04Mp-08Nt	
4	33926	10	•Fitt,Str 02Mp-04Hb,Crimped	
5	38991-04	2	•Blanking Kit	
6	34468	1	•Conn Housing,Cap,12 Circuit	
10	34471	7	•Contact,Socket,20-14 Ga	

Solenoid Valve, 12 Valve (For 20 FT Spraybar)

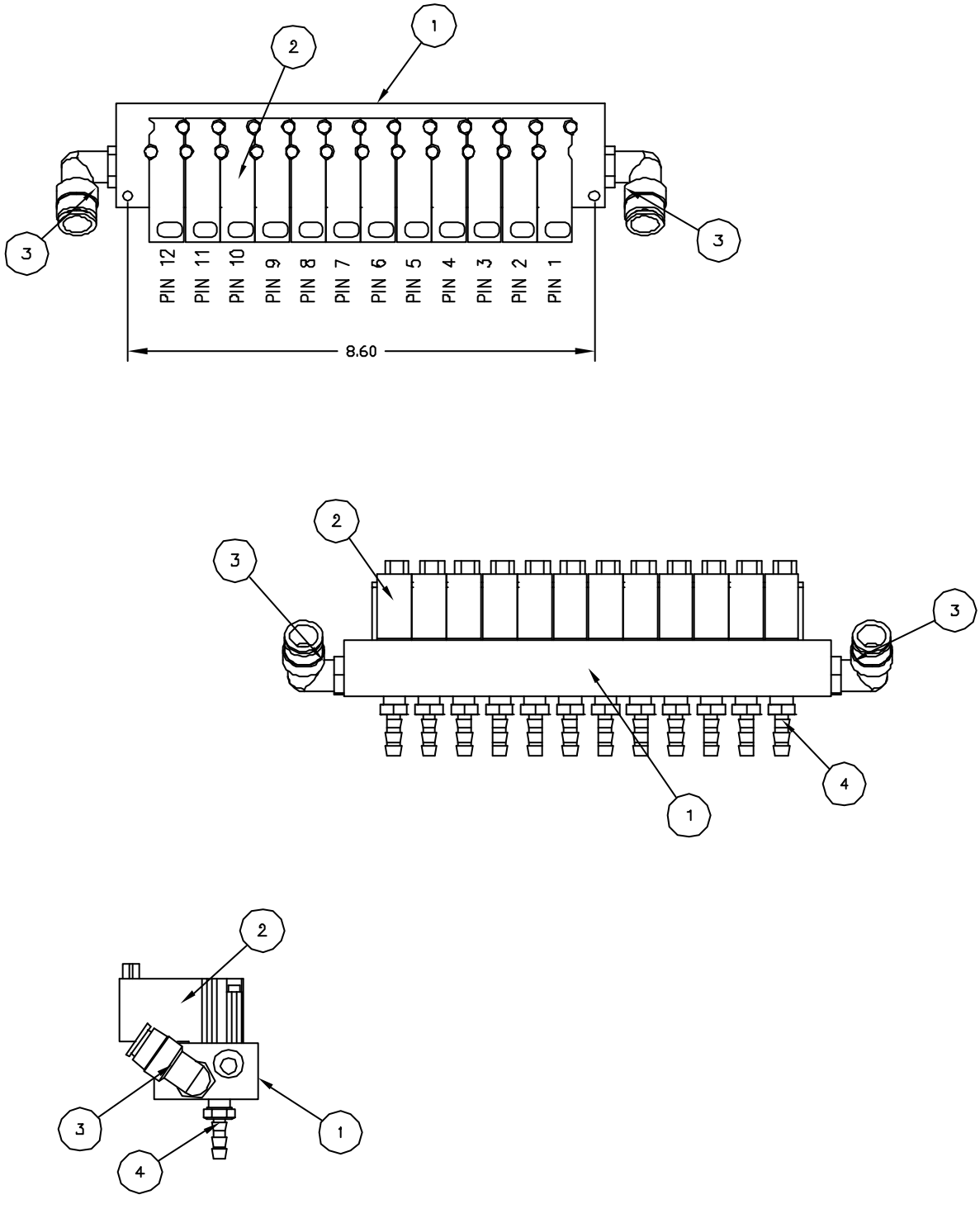
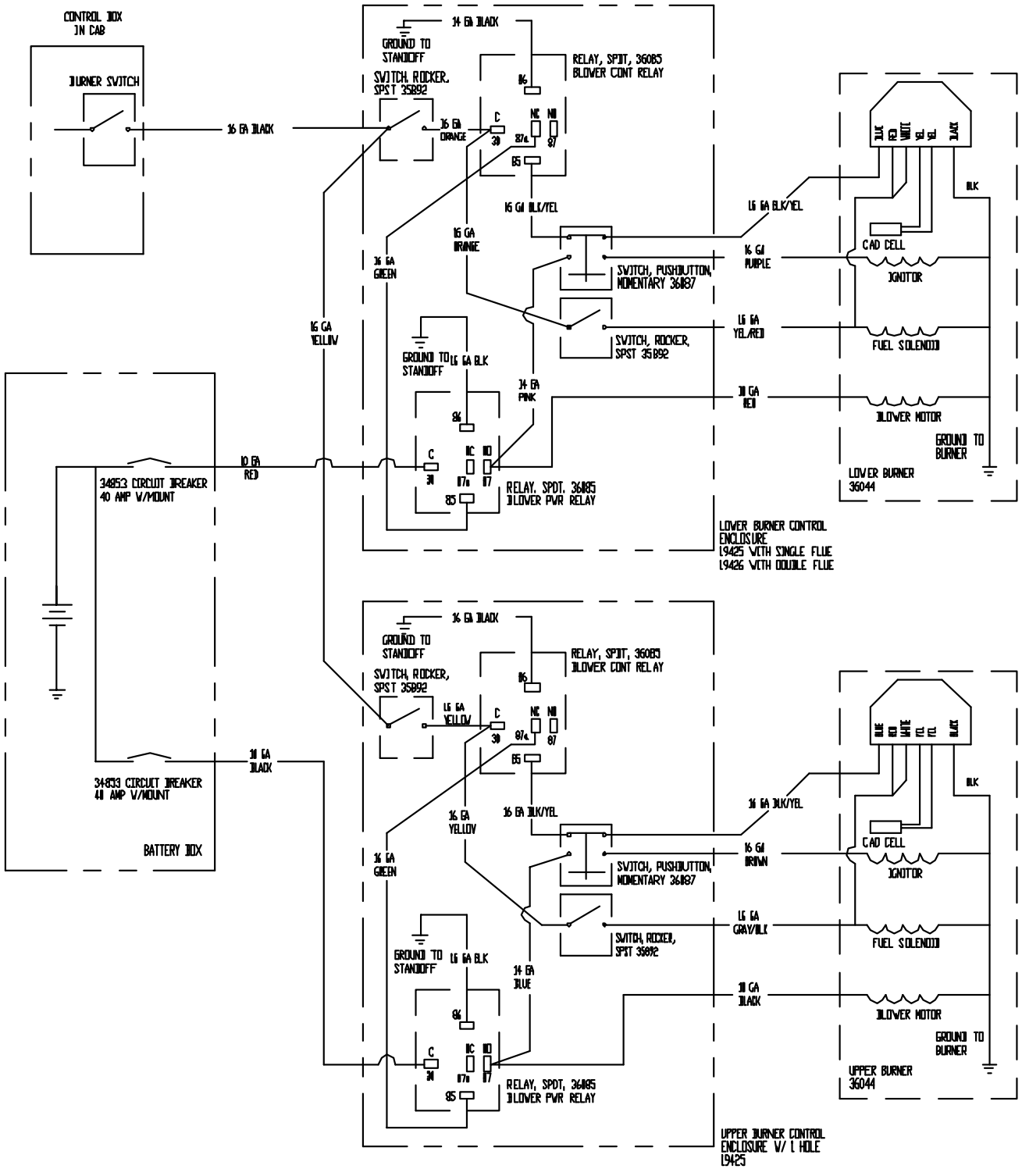


Figure 10-43

Solenoid Valve, 12 Valve (For 20 FT Spraybar) Parts List

Item No.	Part Number	Qty.	Description	Remarks
	38991	1	Solenoid Valve, 12 Valve Manifold	
1	38991-02	1	•Manifold,12 Station	
2	38991-01	12	•Vlv,36 Series	
3	38915	2	•Fitt,90 04Mp-08Nt	
4	33926	12	•Fitt,Str 02Mp-04Hb,Crimped	
5	34468	1	•Conn Housing,Cap,12 Circuit	
6	34471	12	•Contact,Socket,20-14 Ga	

Diesel Burner, Double Flue, Outfire, No Thermostat I



NOTE: THE DIESEL BURNER CONTROL BOX W/OUTFIRE ASSEMBLY IS 29507

Figure 10-44

Diesel Burner, Double Flue, Outfire, No Thermostat I Parts List

Item No.	Part Number	Qty.	Description	Remarks
	29508	1	Diesel Burner, Dbl Flue, Outfire, W/O Cont	
-1	33277	3	•Clamp,Hose,# 04	
-2	33612	2	•Term,Ring,12-10 Ga,.375 Stud	
-3	33765	2	•Nut,Lk,Elec Cnd,.500-14 Npt	
-4	34853	2	•Circuit Breaker,40 Amp	
-5	36044	2	•Hp Dsl Burner, W/Cad Cell	(See Table 7-10A)
-6	38662	1	•Filter Assy,Fuel Oil	
-601	38662-01		••Element,Spin On Type	
-7	80141	10	•Washer,Flat,Uss,.313	
-8	80142	14	•Washer,Flat,Uss,.375	
-9	80161	10	•Washer,Lock,.312	
-10	80352	14	•Nut,Flexloc,.375-16,Full,Lt	
-11	81160	8	•Scr,Slfdrl,Hh,#10X1.00,#3Pt	
-12	81161	8	•Washer,Weather Seal,#10	
-13	851201417	13	•Tie Wrap,.094X4.00	
-14	5347	18	•Hose,04,Push-On,Low Pressure	
-15	986858	1	•Fitt,90 04Hb-06Mp	
-16	34311	1	•Fitt,Tee 04Mj-04Mj-04Mj	
-17	34185	2	•Conduit Connector, 1/2 Npt	
-18	99568	1	•Pipe,Tee,06Fp,Mi	
-19	99980	1	•Pipe,Bush,08Mp-04Fp,Stl	
-20	99638	2	•Pipe,Nipple,.375Xclose	
-21	70957	4	•Fitt,Str 04Fjx-04Hb,Push-On	
-22	33279	1	•Fitt,Str 06Mp-04Hb,Crimped	
-23	35246	1	•Fitt,Str 04Mp-04Ms,Lpg,Brass	

Diesel Burner, Double Flue, Outfire, No Thermostat II

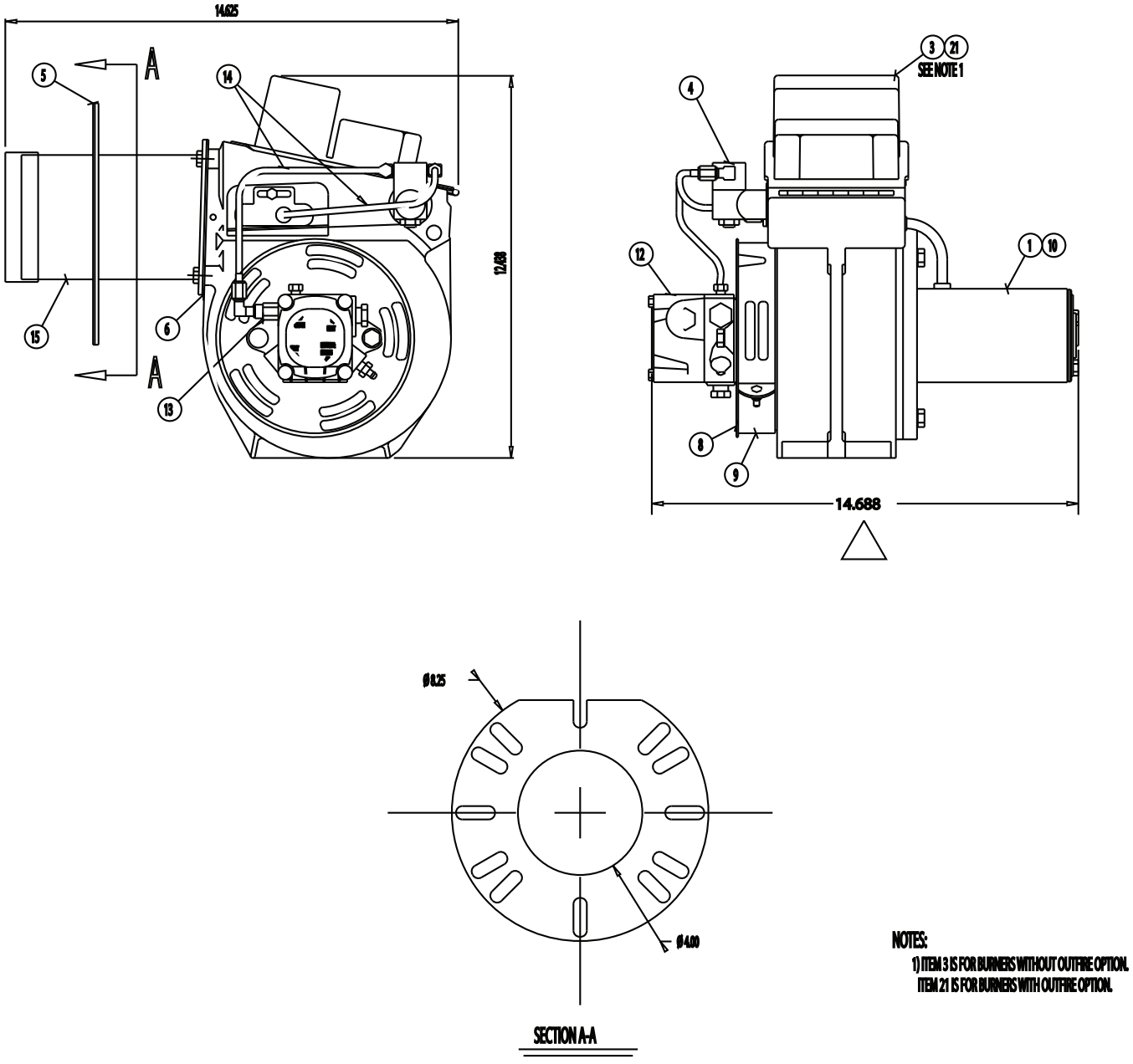
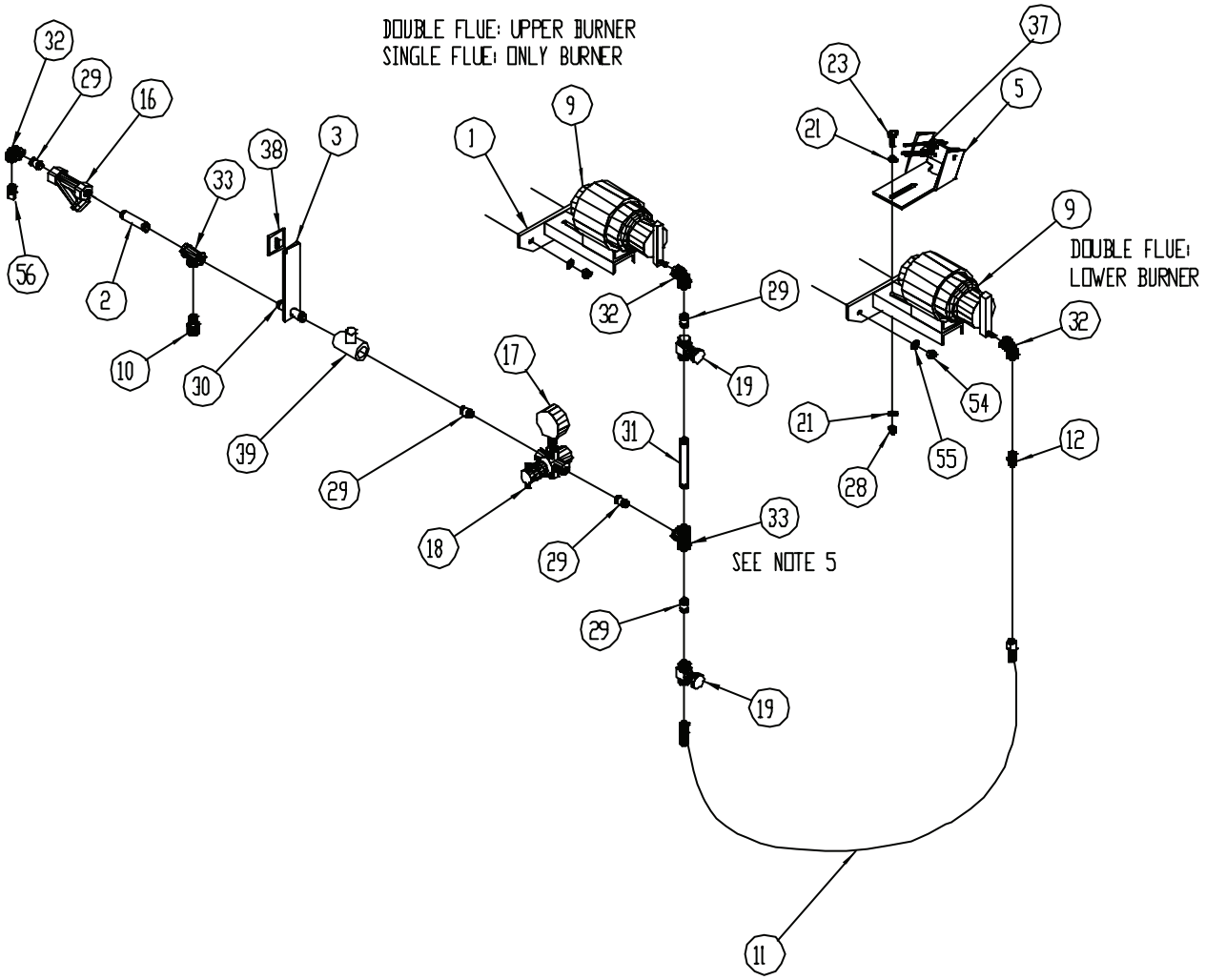


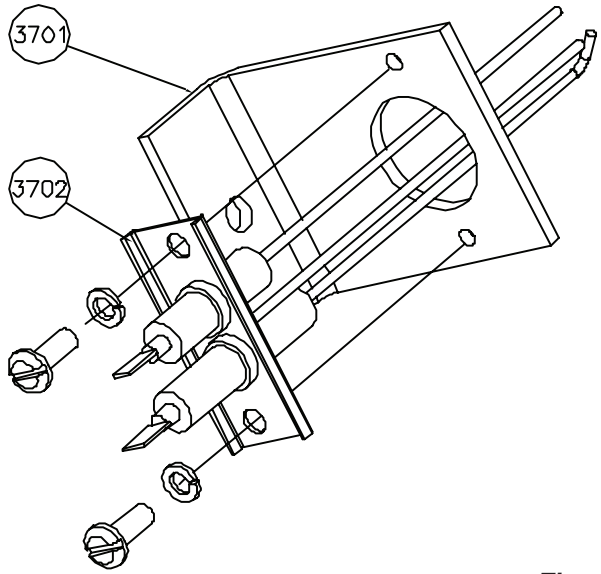
Figure 10-45

Diesel Burner, Double Flue, Outfire, No Thermostat II Parts List

Item No.	Part Number	Qty.	Description	Remarks
	36044	2	•Hp Dsl Burner W/Cad Cell	(See Fig 7-10 For NHA)
-1	36044-01	1	••Blower Motor	
-2	36044-02	1	••Motor Coupling	
-3	36044-24	1	••Ignition Assy With Outfire	
-4	36044-04	1	••Fuel Valve,Shut-Off	
-5	36044-05	1	••Flange Gasket,Felt	
-6	36044-06	1	••Square Plate Gasket	
-7	36044-08	1	••Nozzle, 3.5 Gal, 45B	
-8	36044-09	1	••Air Shutter	
-9	36044-10	1	••Air Band	
-10	36044-11	1	••Square Plate	
-11	36044-12	1	••Air Tube W/Flange	(2 Electrodes)
-12	36044-14	1	••Blower Wheel	
-13	36044-15	1	••Fuel Pump	
-14	36044-16	1	••Pump Nozzle Fitting	
-15	36044-17	1	••Connector Tube Assembly	
-16	36044-19	1	••Locknut, Nozzle Line	
-17	36044-25	1	••Nozzle,3.0 Gal,45B	
-18	36044-26	1	••Electrode Assy	(2 Electrodes)
-19	36044-27	1	••Nozzle,2.5 Gal,45B	
-20	36044-28	1	••Nozzle,3.0 Gal,60B	(Cold Weather)
-21	36044-29	1	••Nozzle,2.0 Gal,60B	
-22	36044-31	1	••Cad Cell	
	29507	1	Control Box,Diesel Bnr,W/Outfire	

LPG Burners, Double Flue, Auto Ignition





NOTES:

1. Set ignition contacts gap at .09 inch.
2. Scrape paint away from hole on Igniter Bracket, Item 5, to insure proper ground.
3. Add Item 27 to the spark plug wire and the flame sensor wire at the burner end.
4. Weld Item 38 to the bottom of Item 1 (top burner on double flue). Drill and bolt Item 3 to Item 38.
5. Double burner shown. Single burner uses Item 32 instead of Item 33.

Figure 10-46

LPG Burners, Double Flue, Auto Ignition Parts List

Item No.	Part Number	Qty.	Description	Remarks
	24657-04	1	Burner,Lpg,B3,Dbl Flue,Auto Ignition	
1	23508	2	•Burner Brkt Assy W/M	
2	90745	1	•Pipe,Nipple,04X1.50,300#	
3	17648	1	•Support,Burner Piping	
4	24659	1	•Plate,Switch	
5	22869	1	•Bracket,Ignitor	
-6	22397	2	•Flue Tube Flange W/M,Dsl Burn	
7	25704	1	•Crossover Pipe,Lp Burners	
8	24684	1	•Enclosure,Elec,6X6x4,Modified	
9	6118	2	•Burner,Propane,Liquid,B2	
10	34318	1	•Vlv,Lpg,Relief,04 Npt,450 Psi	
11	34448	1	•Hose,04X14,04mp-04Fjx,350	
12	35245	1	•Fitt,Str 04Fp-04Ms,Lpg,Brass	
13	35465-09	3	•Grommet,Ins,.375Id X 1.00Grv	
14	35892	1	•Switch,Rocker,Spst,Off/On	
-15	37777	1	•Decal,Lpg Burner Safety	
16	5121	1	•Strainer,Y,.250Pt,40 Mesh	
17	5122	1	•Gauge,Press,0-100Psi,2.00,04Mp	
18	6119	1	•Regulator,Lpg	
19	6120	2	•Vlv,Needle,04 Female,Npt	
-20	71060	12	•Loom,Split,Convoluted,.250	
21	80141	6	•Washer,Flatt,Uss,.313	
22	37422	2	•Term,Solder Splice,20-10 Awg	
23	80208	5	•Cshh,.312-18X1.00,Gr5	
24	33271-3	6	•Wire,16 Ga,Brown	
25	80351	5	•Nut,Flexloc,.312-18,Full,Lt	
26	33271-7	6	•Wire,16 Ga,Red	
-27	90723	4	•Loom,Braided Fiberglass,.375	
28	33271-11	6	•Wire,16 Ga,Blue	
29	90744	3	•Pipe,Nipple,04Xclose,300#	
30	90746	1	•Pipe,Nipple,04X2.50,300#	
31	90749	1	•Pipe,Nipple,04X4.00,300#	
32	91531	3	•Pipe,90,04Fp-0Fmp,Forged,2000#	
33	91532	2	•Pipe,Tee,04Fp,Forged,2000#	
34	36964	1	•Fuse,Blade,2 Amp	
35	37118	1	•Fuse Holder,In-Line,Blade,Seal	
36	37241-03	1	•Circuit Board	
37	38216	1	•Igniter/Flame Rod,W/Bracket	

LPG Burners, Double Flue, Auto Ignition (continued)

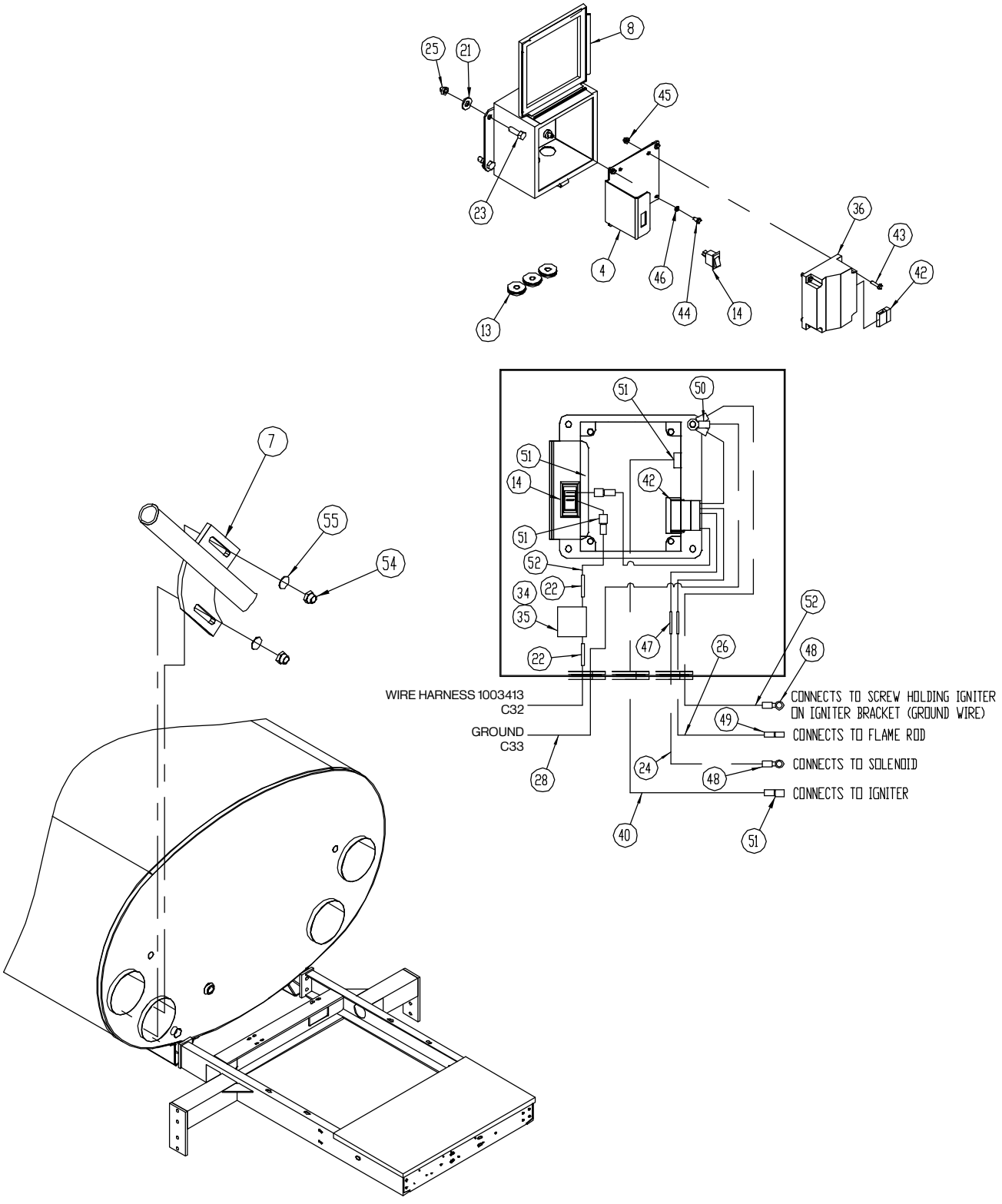


Figure 10-46

LPG Burners, Double Flue, Auto Ignition (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
			Attaching Parts	
3701	38216-01	1	••Bracket,Igniter & Flame Rod	
3702	38216-02	1	••Igniter/Flame Rod	
38	28539	1	•Tab,Mt Piping Bracket	
39	37241-07	1	•Solenoid	
40	37241-08	3.17	•Ignition Wire	
42	37241-10	1	•Harness,Wiring	
43	71716	4	•Mach Scr,Ph,#10-24X.75	
44	71720	4	•Mach Scr,Ph,#10-32X.38	
45	81005	4	•Nut,Flexloc,#10-24,Full,Lt	
46	871071601	4	•Washer,Lock,#10	
47	37421	2	•Term,Solder Splice,22-14 Awg	
48	35123	2	•Term,Ring,16-14 Ga,#6 Stud	
49	72203	1	•Term,Push-On,.18,Fem,16-14 Ga	
50	851390204	2	•Term,Ring,16-14 Ga,#10 Stud	
51	33600	4	•Term,Push-On,.25,Fem,16-14 Ga	
52	33271-1	7	•Wire,16 Ga,Black	
54	80352	6	•Nut,Flexloc,.375-16,Full,Lt	
55	80142	6	•Washer,Flat,Uss,.375	
56	X126	1	•Fitt,Str 04Mp-04Fpx	
57	985000	1	•Bar,Lp Line Brkt,S-Shaped	
58	7640	1	•Brkt,.250 Pipe	
59	99636	2	•Nipple,04X11.00,Std	
60	99490	1	•Pipe,Cplg,04Fp	
61	985812	1	•Pipe,Nipple,04X36.00	
-100	23507	2	Flue Liner W/M, Lp Burner, Sst	

LPG Burners, Double Flue, Manual Ignition

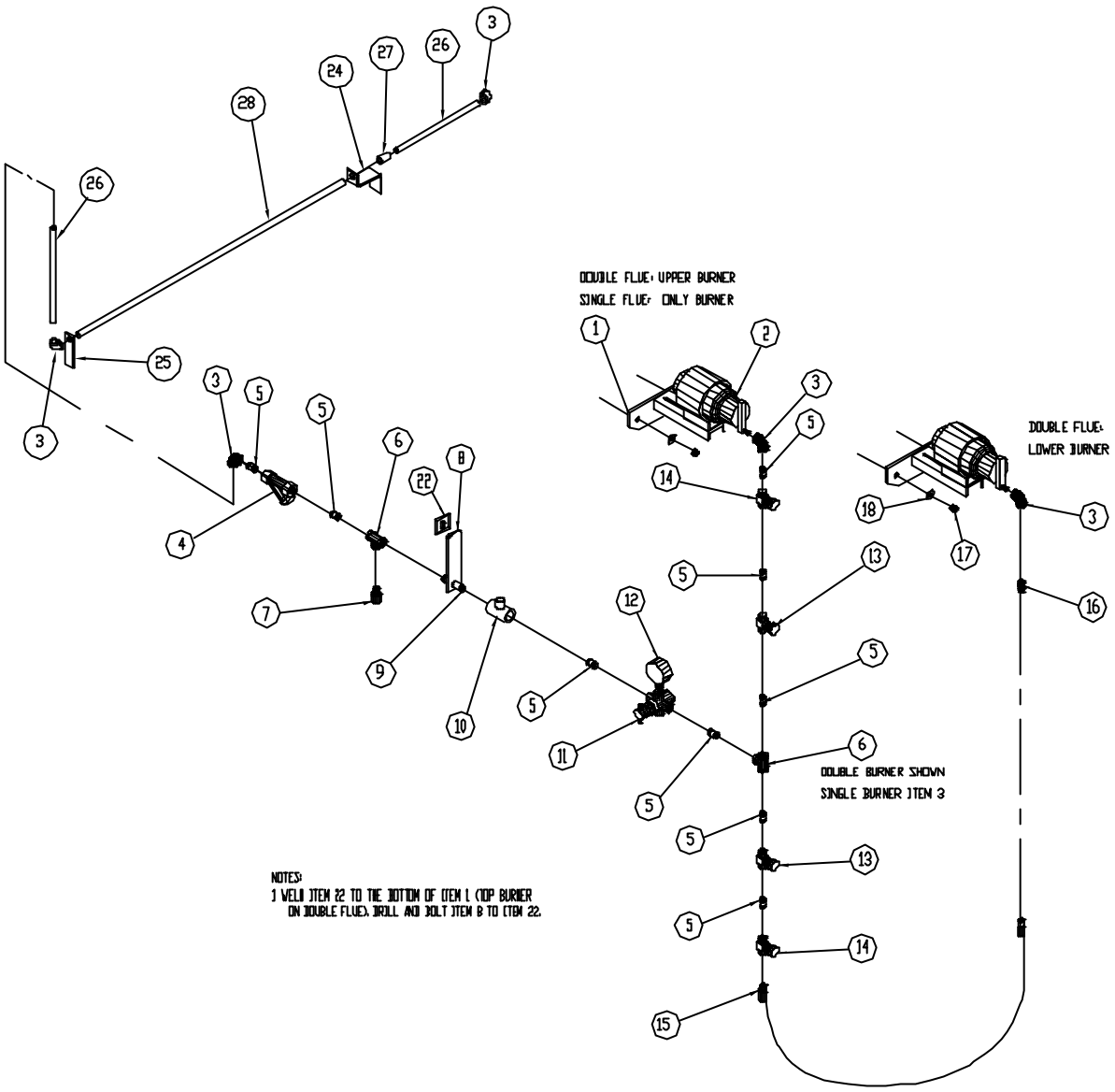


Figure 10-47

LPG Burners, Double Flue, Manual Ignition Parts List

Item No.	Part Number	Qty.	Description	Remarks
	25179-04		Burner,Lpg,B3,Dbl Flue	
1	23508	2	•Burner Brkt Assy W/M	
2	31931	2	•Burner,Lpg,B3	
3	91531	5	•Pipe,90,04Fp-0Fmp,Forged,2000#	
4	5121	1	•Strainer,Y,.250Pt,40 Mesh	
5	90744	9	•Pipe,Nipple,04Xclose,300#	
6	91532	2	•Pipe,Tee,04Fp,Forged,2000#	
7	34318	1	•Vlv,Lpg,Relief,04 Npt,450 Psi	
8	17648	1	•Support,Burner Piping	
9	90746	1	•Pipe,Nipple,04X2.50,300#	
10	37241-07	1	•Solenoid	
11	6119	1	•Regulator,Lpg	
12	5122	1	•Gauge,Press,0-100Psi,2.00,04Mp	
13	6120	2	•Vlv,Needle,04 Female,Npt	
14	6297	2	•Vlv,Pilot	
15	34448	1	•Hose,04X14,04mp-04Fjx,350	
16	35245	1	•Fitt,Str 04Fp-04Ms,Lpg,Brass	
17	80352	4	•Nut,Flexloc,.375-16,Full,Lt	
18	80142	4	•Washer,Flat,Uss,.375	
-19	22397	2	•Flue Tube Flange W/M,Dsl Burn	
-20	37850	1	•Decal,Lpg Burner Safety	
22	28539	1	•Tab,Mt Piping Bracket	
24	985000	1	•Bar,Lp Line Brkt,S-Shaped	
25	7640	1	•Brkt,.250 Pipe	
26	99636	2	•Nipple,04X11.00,Std	
27	99490	1	•Pipe,Cplg,04Fp	
28	985812	1	•Pipe,Nipple,04X36.00	
-100	23507	2	Flue Liner W/M, Lp Burner, Sst	

LPG Tank, 52 Gallon

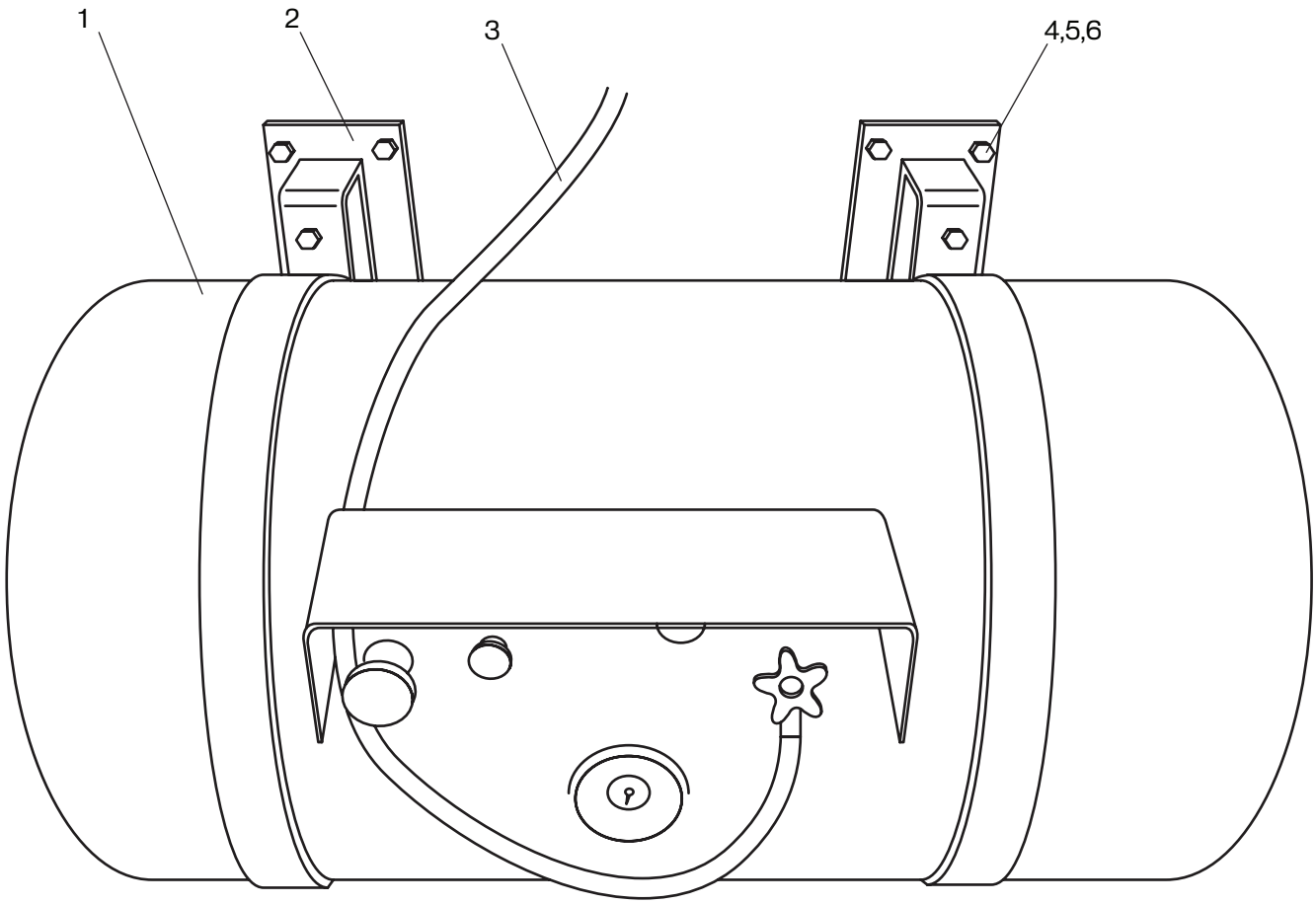


Figure 10-48

LPG Tank, 52 Gallon Parts List

Item No.	Part Number	Qty.	Description	Remarks
	13766	1	Tank,Lpg,52Gal,Frame Mount	
-1	34079	1	•Tank,Lpg,52Gal	(Tank Only)
-101	34079-01	1	••Gauge Assy,Tank Level	Supplied with 34709
-102	34079-02	1	••Gauge,Face/Dial Only	Supplied with 34709
-103	34079-03	1	••Solenoid,52Gal Lp Tank	Supplied with 34709
			Attaching Parts	
-2	34080	1	•Brackets,20",Tank Mtg	Kit, Comes with 2 Brackets per
-3	35657-96	1	•Hose,04X96,350 Psi	
-4	80144	16	•Washer,Flat,Uss,.500	
-5	80255	8	•CSHH,.500-13X2.00,Gr5	
-6	80354	8	•Nut,Flexloc,.500-13,Full,Lt	

Portable Torch Holder Assembly, LPG

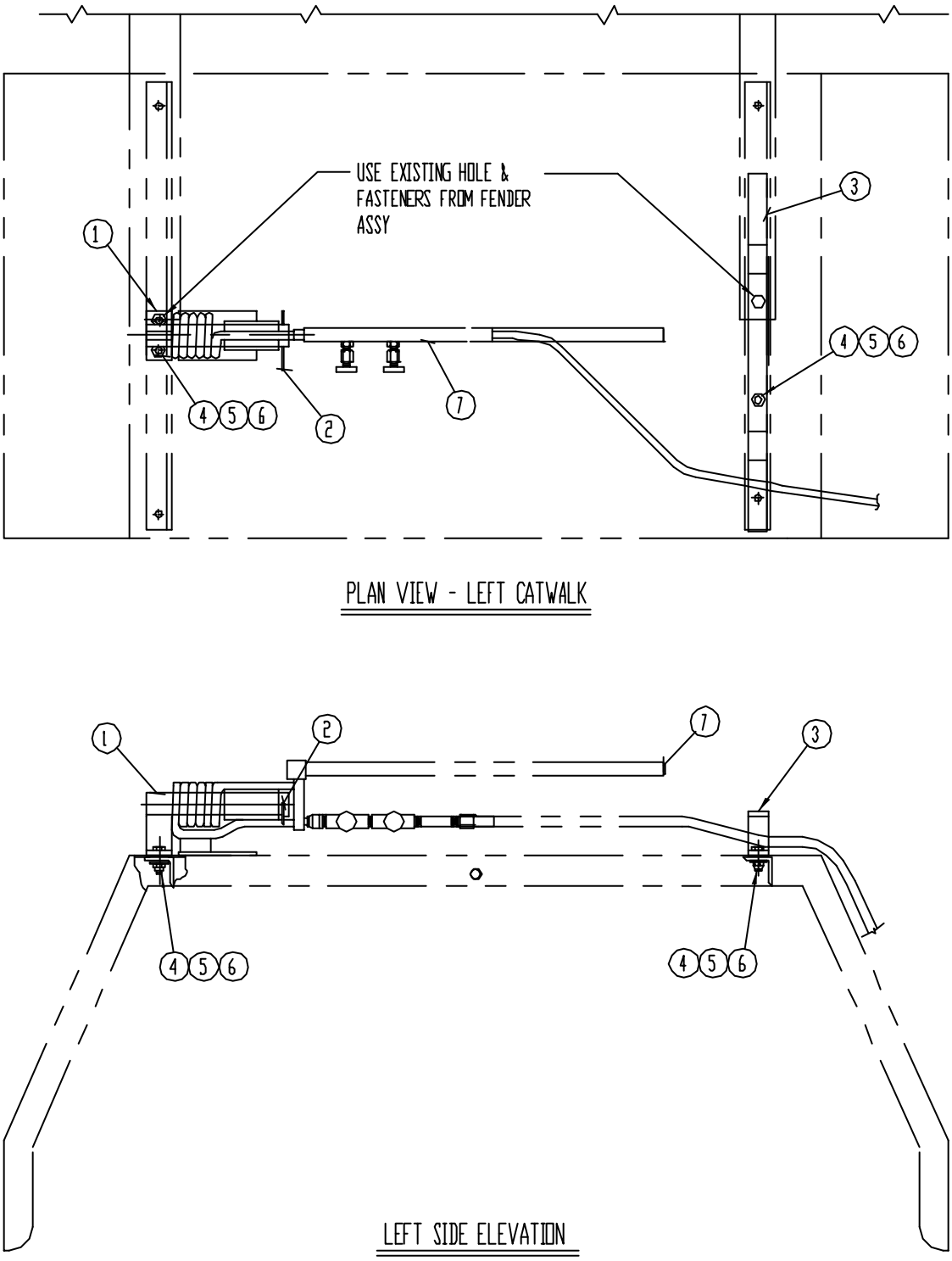


Figure 10-49

Portable Torch Holder Assembly, LPG Parts List

Item No.	Part Number	Qty.	Description	Remarks
	17442	1	Portable Torch Holder Assembly	
1	17438	1	•Portable Torch Holder,W/M	
2	7303	1	•Hairpin Clip,No 11,1/8 Dia	
3	16499	1	•Hook,Wash Down Hose	
4	80141	4	•Washer,Flat,Uss,.313	
5	80208	4	•CSHH,.312-18X1.00,Gr5	
6	80351	4	•Nut,Flexloc,.312-18,Full,Lt	
7	25666	REF	•Torch,Portable,Lpg	
			Attaching Parts	
-701	12447	1	••Pipe W/Slug Therm Tube Amc Eng	
-702	32881	1	••Hose,04X300,04fpx-04Re,350	
-703	32958	1	••Burner J1 Lpg Liquid	
-704	6120	2	••Vlv,Needle,04 Female,Npt	
-705	6297	1	••Vlv,Pilot	
-706	6298	1	••Fitt,Str 04Mp-09Mpf,Lh Lp Gas	
-707	90744	5	••Pipe,Nipple,04Xclose,300#	
-708	90749	1	••Pipe,Nipple,04X4.00,300#	
-709	90897	1	••Pipe,Half Cplg,06Fp,300#	
-710	91531	1	••Pipe,90,04Fp-0Fmp,Forged,2000#	
-711	6119	1	••Regulator,Lpg	
-712	91532	1	••Pipe,Tee,04Fp,Forged,2000#	

Fender Group, Tandem Axle

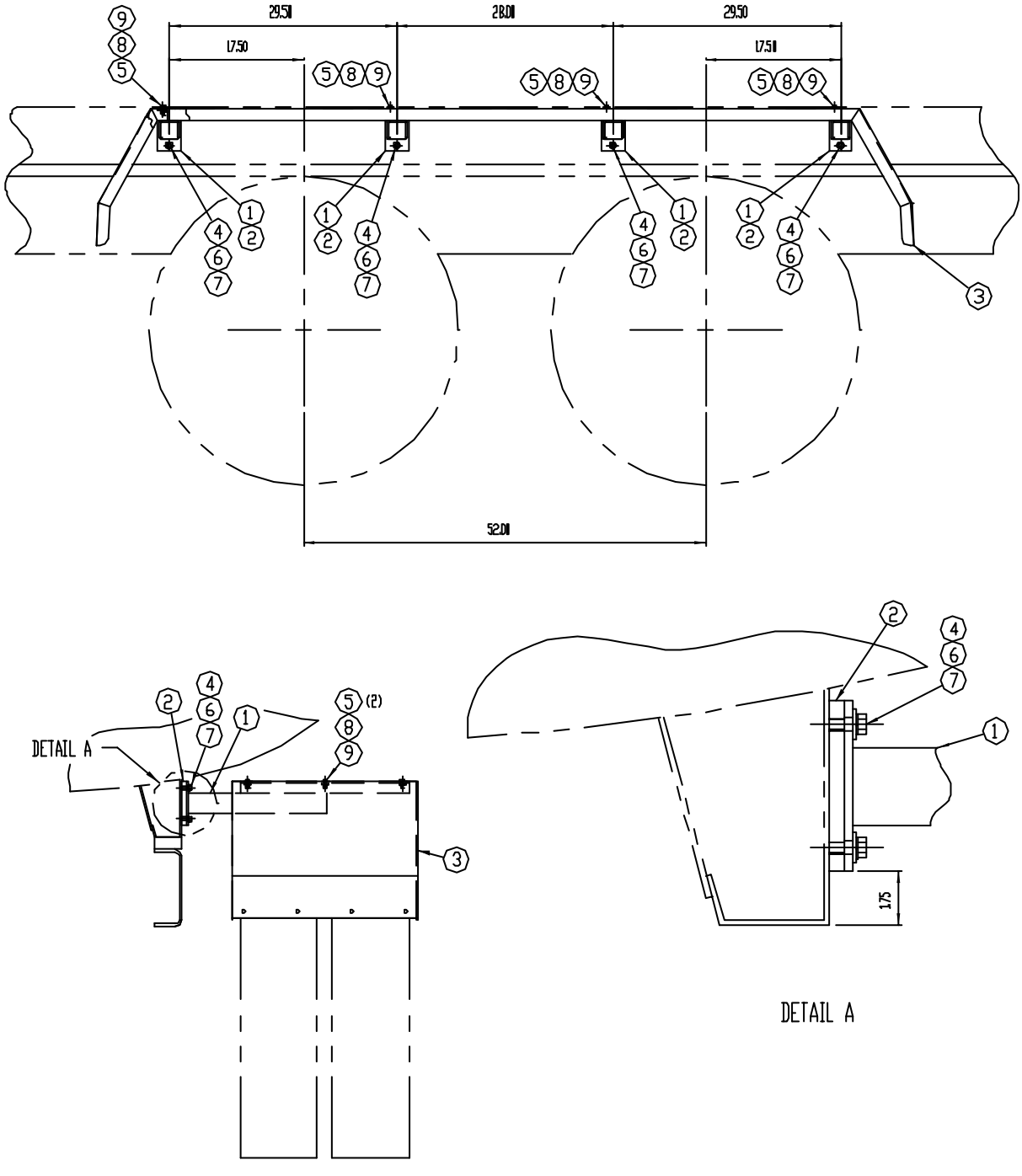
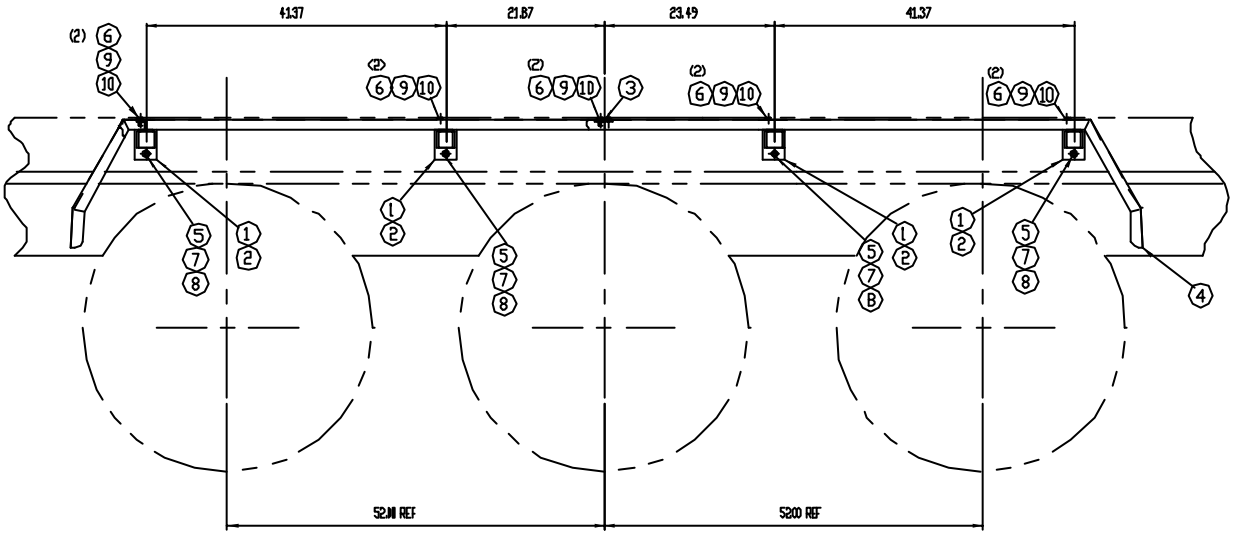


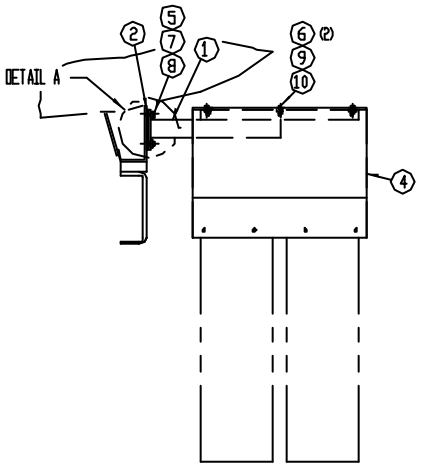
Figure 10-50

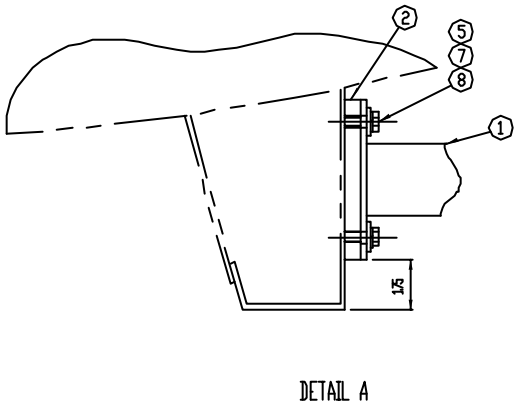
Fender Group, Tandem Axle Parts List

Item No.	Part Number	Qty.	Description	Remarks
	29198	1	Fender Group, Tandem Axle	
1	21635	8	•Mount,Fender,Wldmt	
2	21636	8	•Pad,Tapped	
3	21814	2	•Fender,Tandem Axle	
4	71622	16	•CSHH,.375-16X.88,Gr5	
5	80141	48	•Washer,Flat,Uss,.313	
6	80142	16	•Washer,Flat,Uss,..375	
7	80162	16	•Washer,Lock,.375	
8	80208	24	•CSHH,.312-18X1.00,Gr5	
9	80351	24	•Nut,Flexloc,.312-18,Full,Lt	

Fender Group, Triple Axle







DETAIL A

Figure 10-51

Fender Group, Triple Axle Parts List

Item No.	Part Number	Qty.	Description	Remarks
	24124	1	Fender Grp, Triple Axle	
1	21635	8	•Mount,Fender,Wldmt	
2	21636	8	•Pad,Tapped	
3	23959	2	•Splice,Triple Axle Fender	
4	24125	4	•Fender,Half,Spl,Stl	
5	71622	16	•CSHH,.375-16X.88,Gr5	
6	80141	72	•Washer,Flat,Uss,.313	
7	80142	16	•Washer,Flat,Uss,.375	
8	80162	16	•Washer,Lock,.375	
9	80208	36	•CSHH,.312-18X1.00,Gr5	
10	80351	36	•Nut,Flexloc,.312-18,Full,Lt	

Mud Flap Group, Full Width

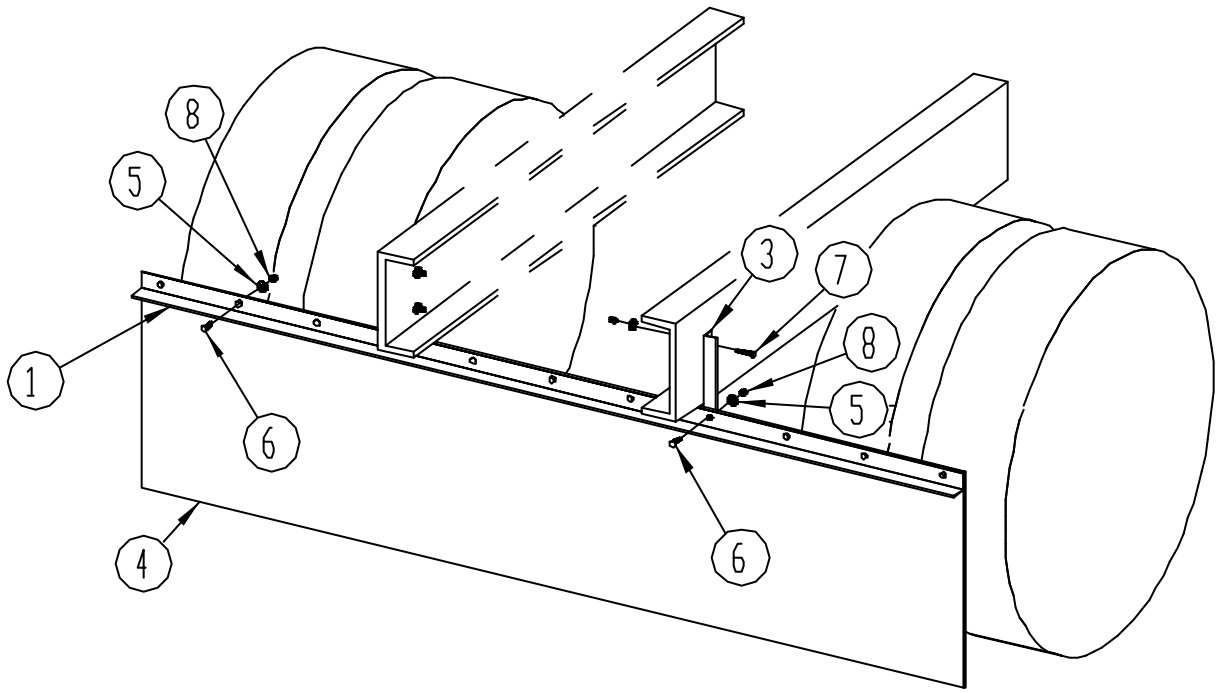
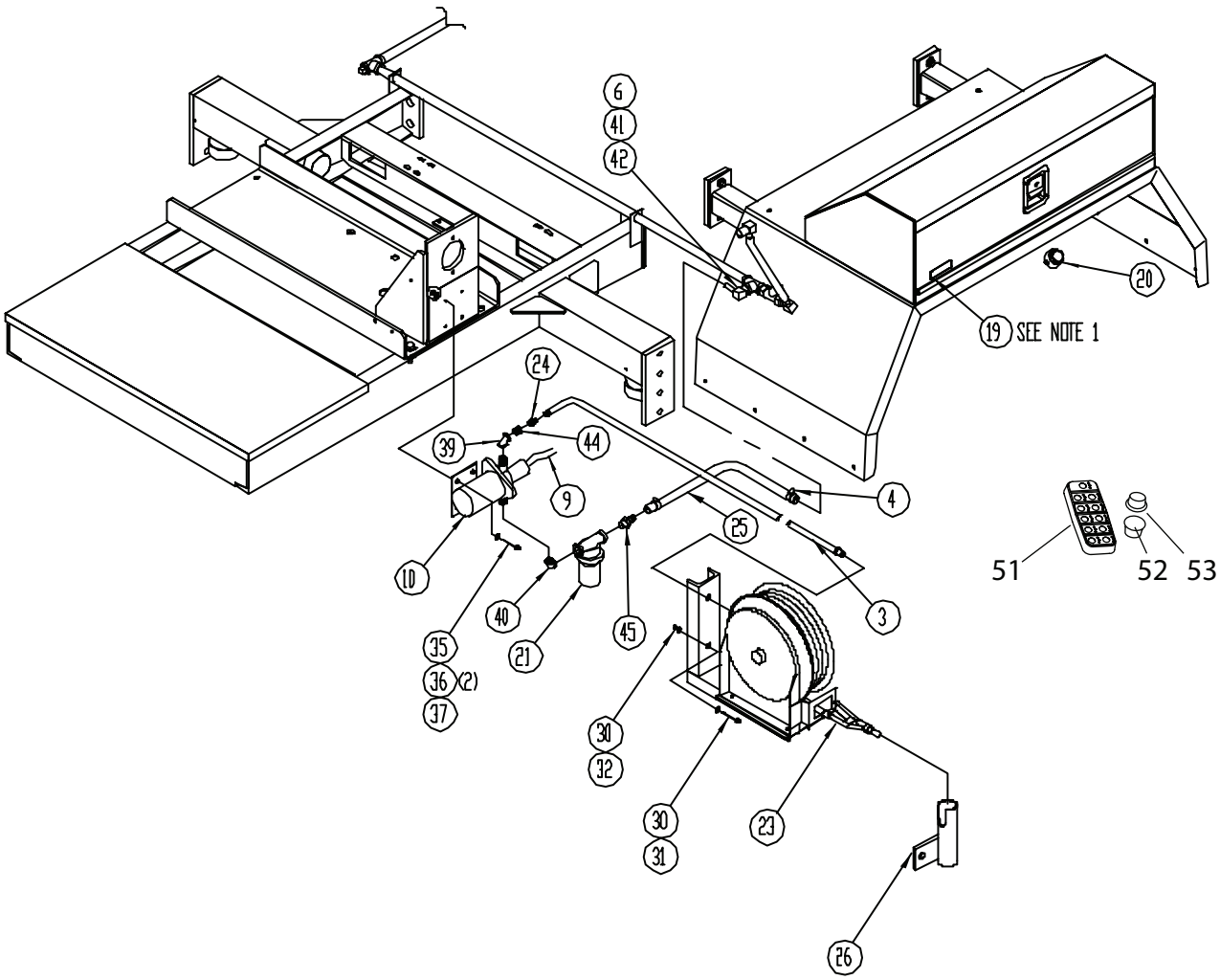


Figure 10-52

Mud Flap Group, Full Width Parts List

Item No.	Part Number	Qty.	Description	Remarks
	22942	1	Mud Flap Group, Full Width	
1	22943	1	•Angle,Mud Flap Mount	
-2	22944	1	•Angle,Hanger Bracket,Lh	
3	22945	1	•Angle,Hanger Bracket,Rh	
4	37269	1	•Belt,Mud Flap,30.00X96.00	
5	80142	15	•Washer,Flat,Uss,.375	
6	80224	11	•CSHH,.375-16X1.25,Gr5	
7	80228	4	•CSHH,.375-16X1.75,Gr5	
8	80352	15	•Nut,Flexloc,.375-16, Full,Lt	

Washdown System



NOTES:

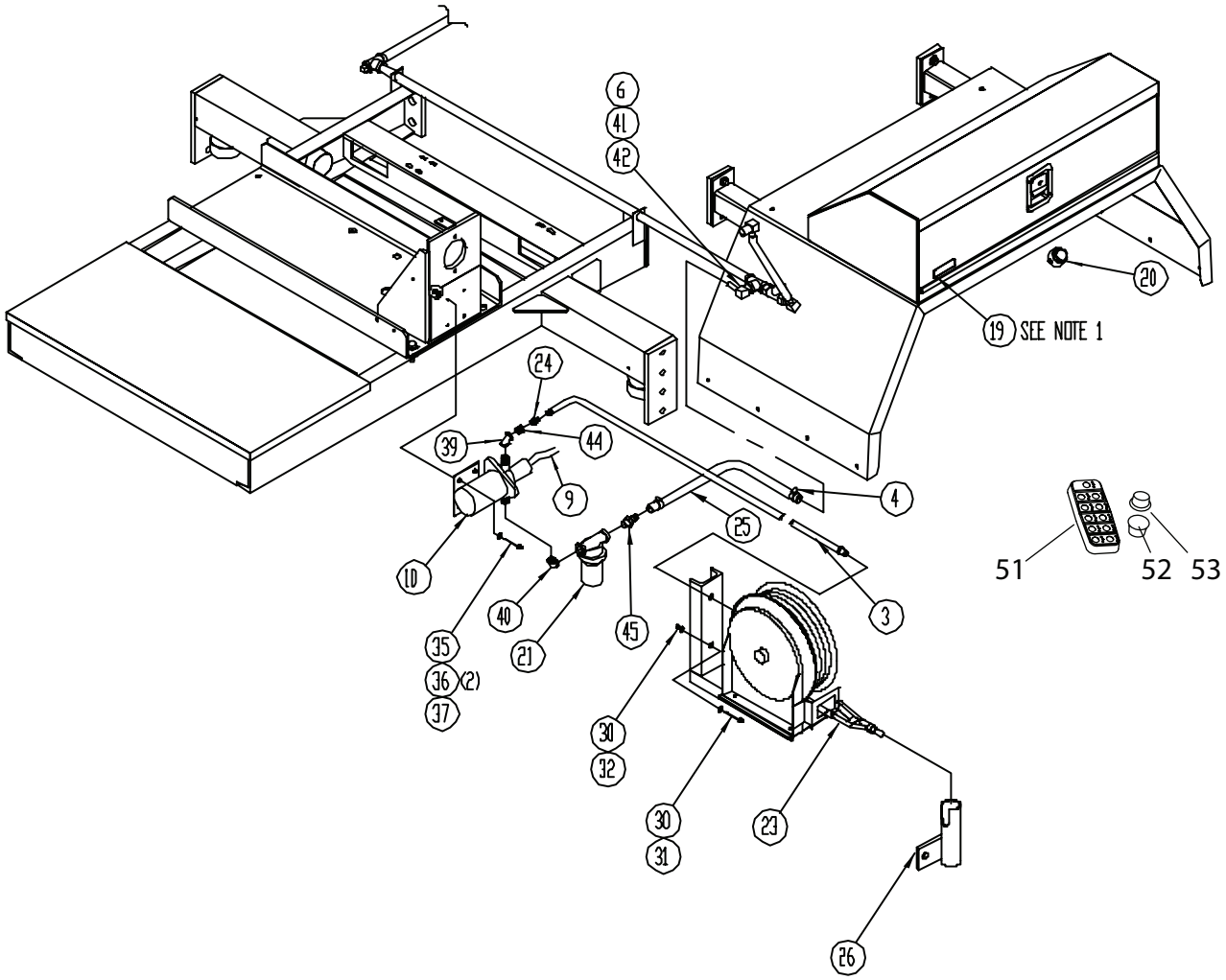
1. ITEM 19, DECAL, TO BE MOUNTED INSIDE TOOL BOX COVER.
2. REFER TO DWG 1003413 FOR WIRING & TERMINAL CONNECTION.
3. ITEM 23 MOUNTS TO THE TRUCK FRAME
4. ITEM 26 MOUNTS TO THE SPRAYBAR SUPPORT

Figure 10-53

Washdown System Parts List

Item No.	Part Number	Qty.	Description	Remarks
	23223	1	Washdown System	
3	32881	1	•Hose,04X300,04fpx-04Re,350	
4	33163	2	•Clamp,Hose,.50-.91,Worm,#08	
6	33328	1	•Fitt,90 08Mp-08Hb,Crimped	
-7	33596	4	•Tie Wrap,.188X7.5	
9	33602	2	•Conn,Butt,16-14 Ga	
10	985043	1	•Pump,Water/Fuel,Diaphragm,12V	
-1001	984385	1	••Port Kit,08 Threaded	
19	36206	1	•Decal,Washdown Pump Buzzer	
20	36208	1	•Buzzer,12 Vdc,Continuous Tone	
21	36926	1	•Strainer,Lqd,100Mesh,Nyl,08Fp	
23	986227	1	•Reel,W/Hose,Spraydown	
			Attaching Parts	
-2301	80164	4	••Washer,Lock,.500	
-2302	80186	2	••Cshh,.500-13X1.75 Gr5	
-2303	80354	2	••Nut,Flexloc,.500-13,Full,Lt	
-2304	920200	1	••Reel,W/Hose,Spray Down	
-2305	920220	1	••Nozzle,Fuel Washdown,W/Handle	
-2305I	901210A	1	•••Nozzle,Fuel,Washdown (Nozzle Only)	
-2305Z	984948	1	•••Handle,Fuel,Washdown (Handle Only)	
-2306	986226	1	••Mount Assy,Hose Reel	
24	6298	1	•Fitt,Str 04Mp-09Mpf,Lh Lp Gas	
25	6352	5	•Hose,08,Push-On,250	
26	986274	1	•Holster Assy,Nozzle,Washdown	
			Attaching Parts	
-2601	80963	1	••Washer,Flat,Sae,.312	
-2602	986272	1	••Holster Tube,Washdown System	
-2603	986273	1	••Tab,Washdown Holster	
30	80141	4	•Washer,Flat,Uss,.313	
31	80207	2	•CSHH,.312-18X.75,Gr5	
32	80351	2	•Nut,Flexloc,.312-18,Full,Lt	
35	80924	4	•Nut,Flexloc,#10-24,Full,Lt	
36	80995	8	•Washer,Type A Plain,#10	
37	80997	4	•Mach Scr,Ph,#10-24X2.00	
38	99503	1	•Pipe,45,04Fp,Mi	
39	99512	1	•Pipe,90,08Fp,Mi	
40	99526	1	•Pipe,90,08Mp-08Fp,Mi	
41	99569	1	•Pipe,Tee,08Fp,Mi	

Washdown System (continued)



NOTES:

1. ITEM 19, DECAL, TO BE MOUNTED INSIDE TOOL BOX COVER.
2. REFER TO DWG 1003413 FOR WIRING & TERMINAL CONNECTION.
3. ITEM 23 MOUNTS TO THE TRUCK FRAME
4. ITEM 26 MOUNTS TO THE SPRAYBAR SUPPORT

Figure 10-53

Washdown System (continued) Parts List

Item No.	Part Number	Qty.	Description	Remarks
42	99596	1	•Pipe,Nipple,08Xclose	
43	99636	1	•Nipple,04X11.00,Std	
44	99980	1	•Pipe,Bush,08Mp-04Fp,Stl	
45	X427	1	•Fitt,Str 08Mp-08Hb,Crimped	
-46	18234	1	•Miscellaneous Group,Max Non Skirted Attaching Parts	
-461	5059	2	••Packing,.125 Sq	(For Contents Gauge)
-462	18233	4	••Hook,Hose,3.00	
-463	8096	4	••Hanger, Handspray Hose	
-464	99539	2	••Pipe,Plug,16Mp,Sq Hd,Mi	
-465	81062	16	••Screw,Self Tap,Btn Hd,.312X	
-47	5112R	1	•Hose,16X25ft,Handspray,M End	
-48	33384	1	•Grease,Tube. 50Ep With Decal	
-49	34249	1	•Gun,Grease	
-50	36941	1	•Guide,Slide Rule Application	
51	1001822-04	1	Keypad, Rear Control	
	1003417		Harness, Rear Control	Not Shown
52	1001822-05	1	Rear Control Pot	
53	1001823	1	Knob, Rear Control Pot	Knob only

Return Line Valve

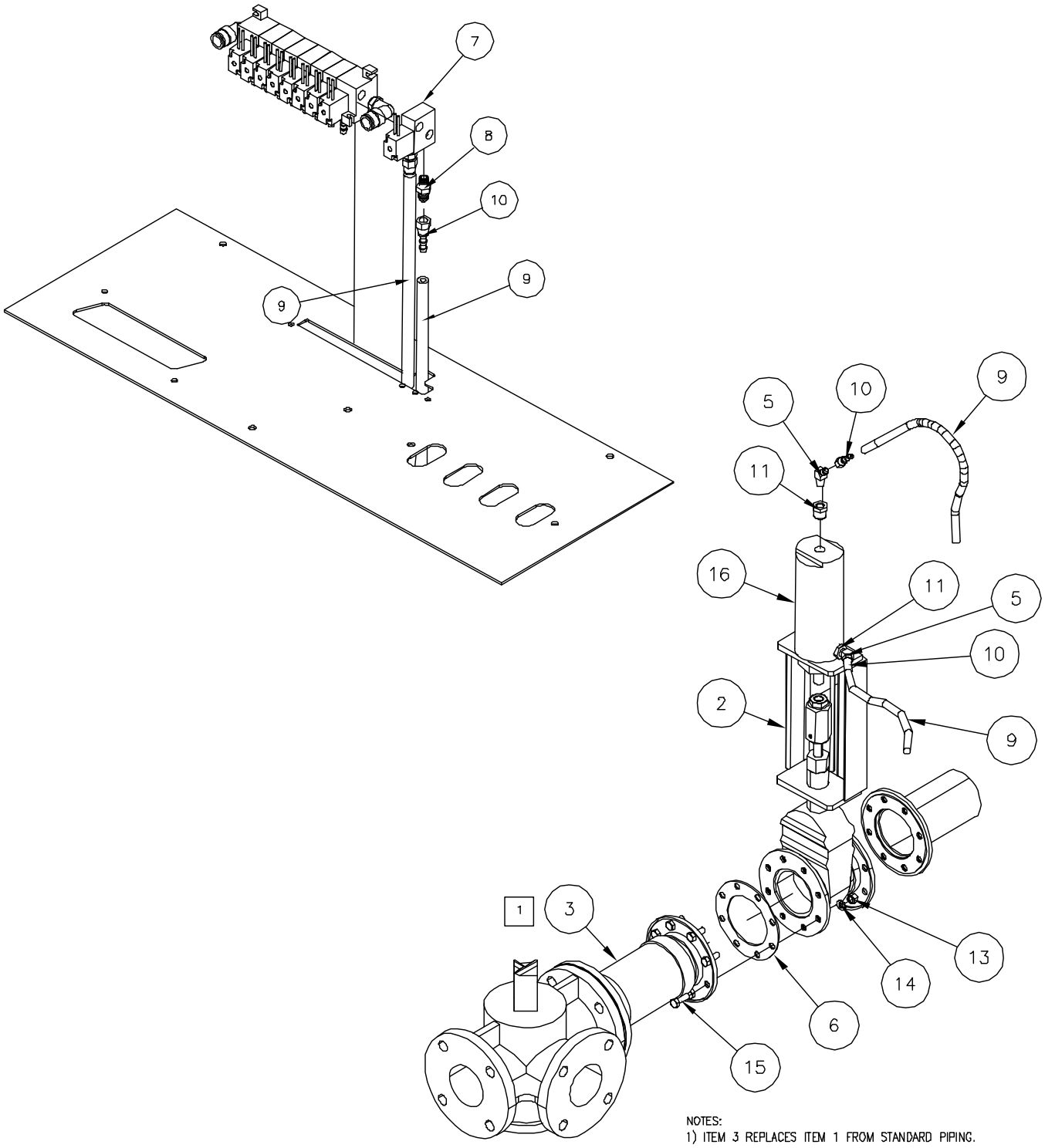


Figure 10-54

Return Line Valve Parts List

Item No.	Part Number	Qty.	Description	Remarks
	28725	1	Return Line Valve	
-1	20841	1	•Hose,Flex,Met,3.00X13.94	
2	28184SRV	1	•Valve Assy,Tank,3.00	
3	28694	1	•Hose Wldmt,Flex,3.0 X 9.34	
5	33115	2	•Fitt,45 04Mj-04Mp	
6	34981	1	•Gasket,3" Flange	
7	38816-01	1	•Valve,Sol,Air,3 Cv	
8	72649	2	•Fitt,Str 04Mj-02Mp	
9	5347	16	•Hose,04,Push-On,Low Pressure	
10	70957	4	•Fitt,Str 04Fjx-04Hb,Push-On	
11	99448	2	•Pipe,Bush,06Mp-04Fp,Stl	
13	80038	8	•Nut,Hex,.375-16	
14	80162	8	•Washer,Lock,.375	
15	80221	8	•CSHH,.375-16X1.00,Gr5	
16	35040	1	Cyl, Air, 3.0 x 4.0	

Tank & Ladder Group, 1000 Gallon Tank

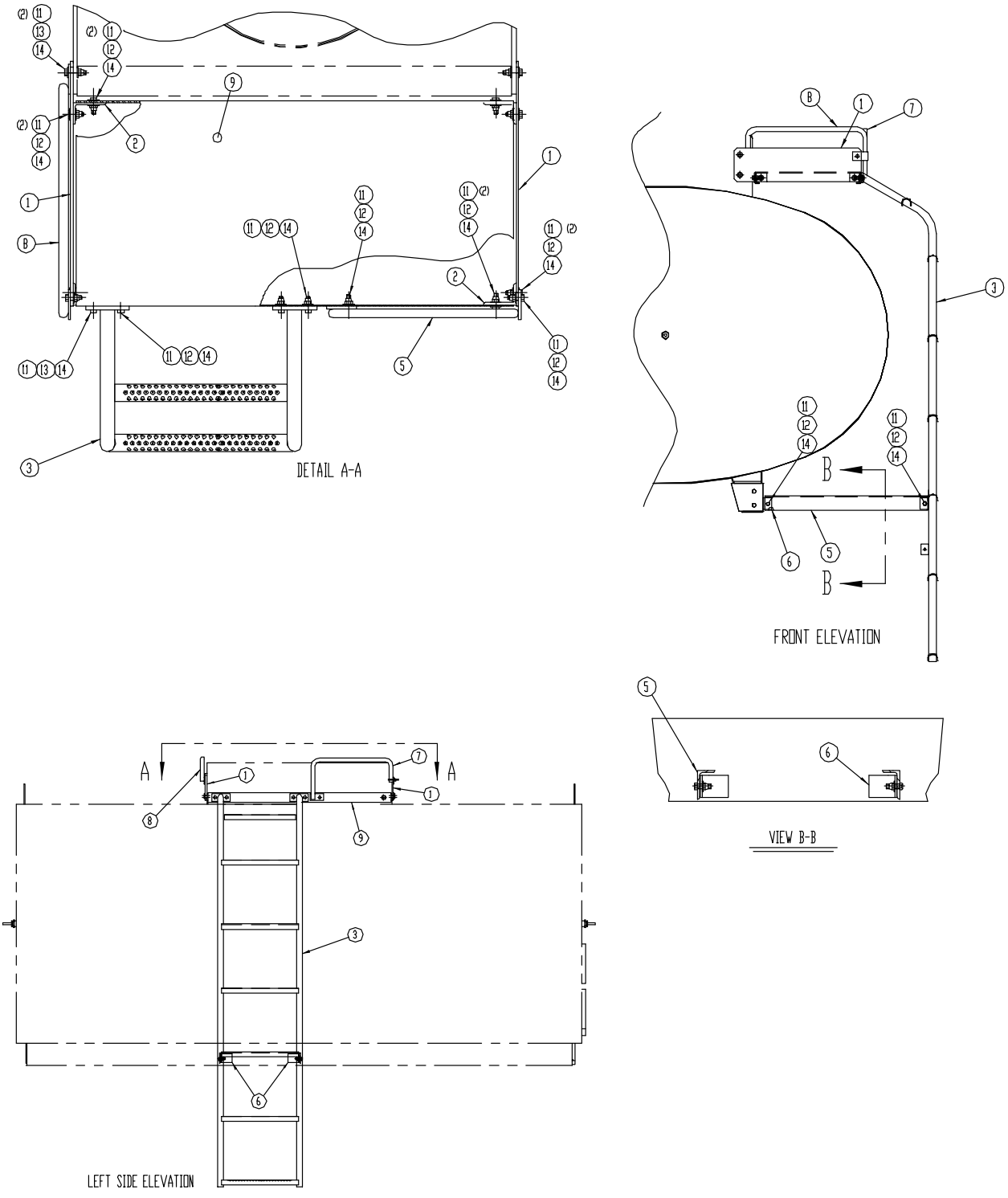


Figure 10-55

Tank & Ladder Group, 1000 Gallon Tank Parts List

Item No.	Part Number	Qty.	Description	Remarks
	985597-10	1	Tank Grp,1000 Gal,48X74x96,Df	
-10	29468	1	•Ins Tank,48X74x96,W/Stack	
-20	17288-2	2	•Pointer,W/M,Fr Head	
-30	17300	1	•Measuring Stick,48X74x96,D/F	
-40	17311	1	•Cont Ga,Fr,48X74x96,D/F	
-50	18045	1	•Cont Ga,Rear,48X74x96,D/F	
-60	25561	1	•Spacer,Ladder	
-70	22485	1	•Ladder & Platf,48X74 Offset	
			Attaching Parts	
1	21676	2	••End,Platform	
2	21677	4	••Bracket	
3	21683	1	••Ladder,56X84 & 52X80	
5	21798	2	••Bracket, Ladder	
6	21799	2	••Spacer,Ladder	
7	23088	1	••Handle,Side,Rh	
8	23089	1	••Handle,End,Lh	
9	22484	1	••Platform,Non-Skirt	
11	80142	33	••Washer,Flat,Uss,.375	
12	80224	17	••CSHH,.375-16X1.25,Gr5	
13	80226	5	••CSHH,.375-16X1.50,Gr5	
14	80352	22	••Nut,Flexloc,.375-16,Full,Lt	

Tank & Ladder Group, 1500 Gallon Tank

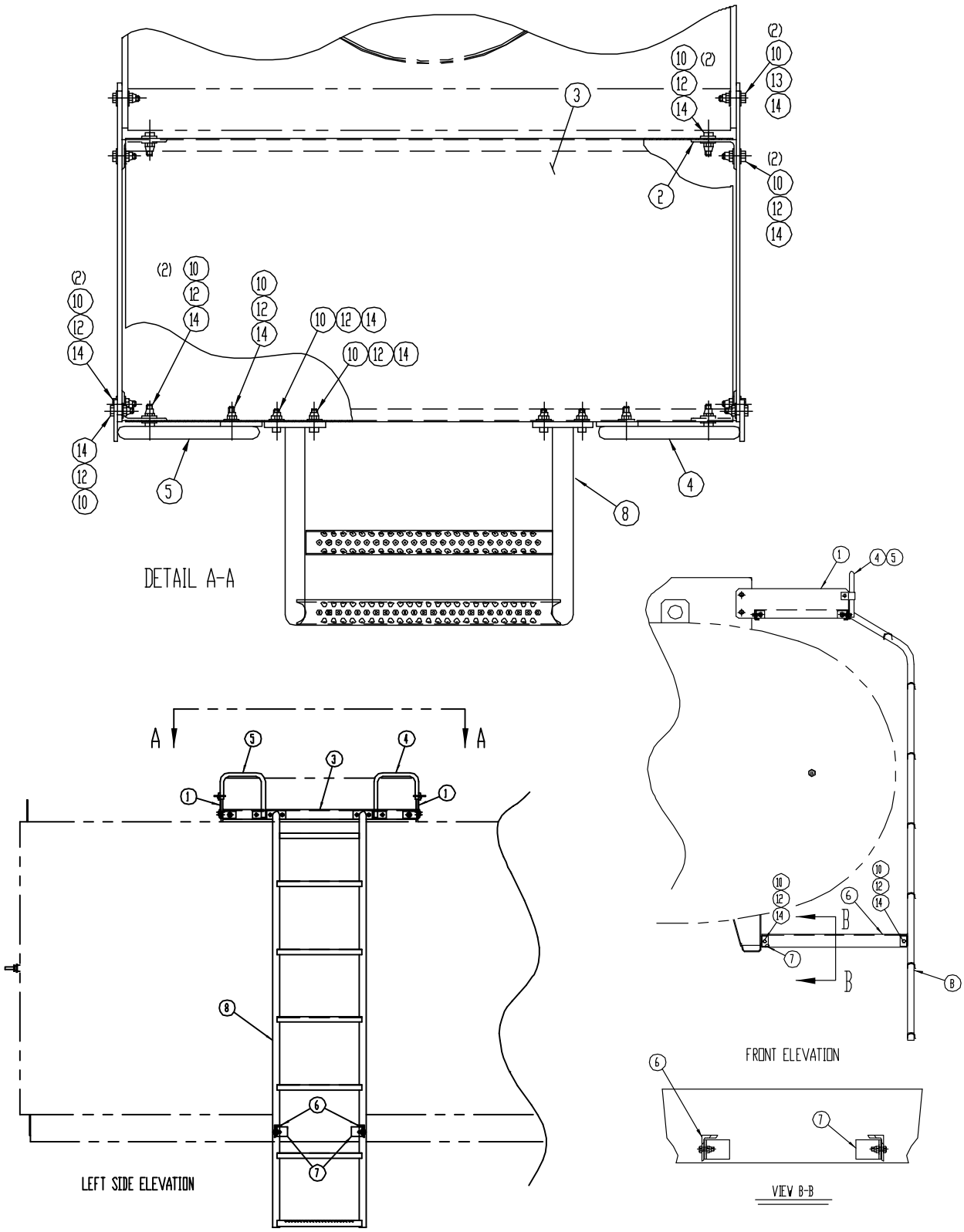


Figure 10-56

Tank & Ladder Group, 1500 Gallon Tank Parts List

Item No.	Part Number	Qty.	Description	Remarks
	985597-15	1	Tank Grp,1500 Gal,52X80x120,Df	
-10	29470	1	•Ins Tank,52X80x120,D/F,Al	
-20	17288-2	2	•Pointer,W/M,Fr Head	
-30	17303	1	•Measuring Stick,52X80x120,D/F	
-40	17314	1	•Cont Ga,Fr,52X80x120,D/F	
-50	18049	1	•Cont Ga,Rear,52X80x120,D/F	
-60	21652	1	•Ladder & Platf,56X84&52X80,95	
			Attaching Parts	
1	21676	2	••End,Platform	
2	21677	4	••Bracket	
3	21678	1	••Platform	
4	21679	1	••Handhold,Rh	
5	21680	1	••Handhold,Lh	
6	21683	1	••Ladder,56X84 & 52X80	
7	21798	2	••Bracket, Ladder	
8	21799	2	••Spacer,Ladder	
9	80142	40	••Washer,Flat,Uss,.375	
10	80162	4	••Washer,Lock,.375	
11	80224	20	••CSHH,.375-16X1.25,Gr5	
12	80226	4	••CSHH,.375-16X1.50,Gr5	
13	80352	24	••Nut,Flexloc,.375-16,Full,Lt	

Tank & Ladder Group, 3000 Gallon Tank

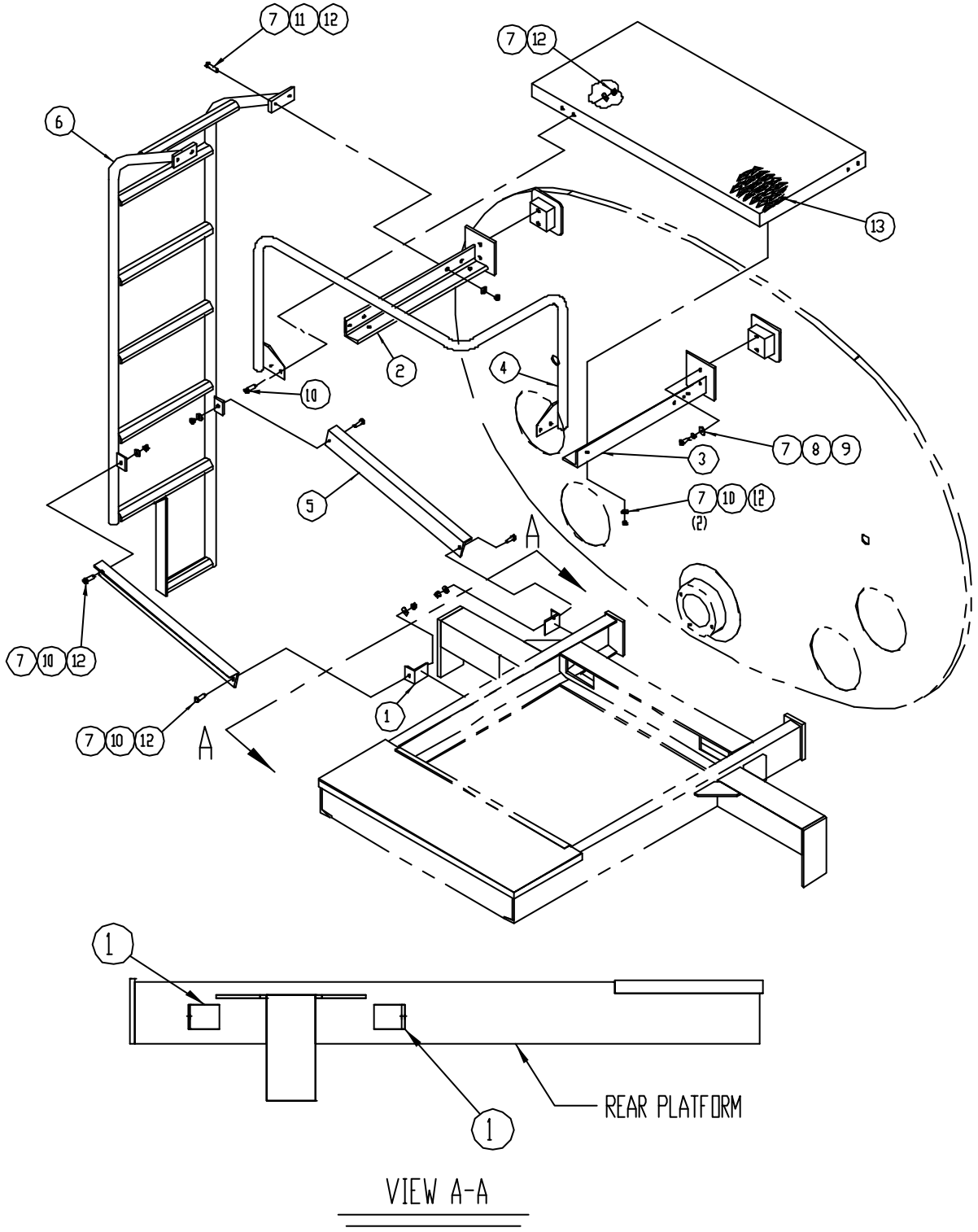


Figure 10-57

Tank & Ladder Group, 3000 Gallon Tank Parts List

Item No.	Part Number	Qty.	Description	Remarks
	985597-30	1	Tank Grp,3000 Gal,60X90x176,Df	
-10	29504	1	•Ins Tank,60X90x176,W/Stack	
-20	17288-1	2	•Pointer,W/M 17.25	
-30	17319	1	•Cont Ga,Fr,60X90x176,D/F	
-40	18053	1	•Cont Ga,Rear,60X90x176,D/F	
-50	23161	1	•Measuring Stick,60X90x176,D/F	
-60	986973	1	•Platform,Rear,Tank Assy	
			Attaching Parts	
-6001	27538	2	••Rail Side	
-6002	986975	1	••Grating,24X45,Tank Platform	
-6003	986974	1	••Endplate,Tank Platform,Left	
-6004	986976	1	••Endplate,Tank Platform,Right	
-70	21992	1	•Ladder Group,Rear,60X90	
			Attaching Parts	
1	21799	2	••Spacer,Ladder	
2	21981-1	1	••Ladder Bracket W/M,Lh	
3	21981-2	1	••Ladder Bracket W/M,Rh	
4	986648	1	••Rail W/M,Safety,Ladder Platform	
5	22322	2	••Spacer,Ladder,60X90	
6	23567	1	••Ladder,68X90,Rear Head	
-601	23559	1	•••Brace,Ladder	
-602	23562	2	•••Pad,Mount	
-603	23563	2	•••Bracket,Step	
7	80142	24	••Washer,Flat,Uss,.375	
8	80162	4	••Washer,Lock,.375	
9	80221	4	••CSHH,.375-16X1.00,Gr5	
10	80224	12	••CSHH,.375-16X1.25,Gr5	
11	80226	4	••CSHH,.375-16X1.50,Gr5	
12	80352	16	••Nut,Flexloc,.375-16,Full,Lt	
13	91302	1	••Grating,Step,12Gax18.75x40.00	

Tank & Ladder Group, 3500 Gallon Tank

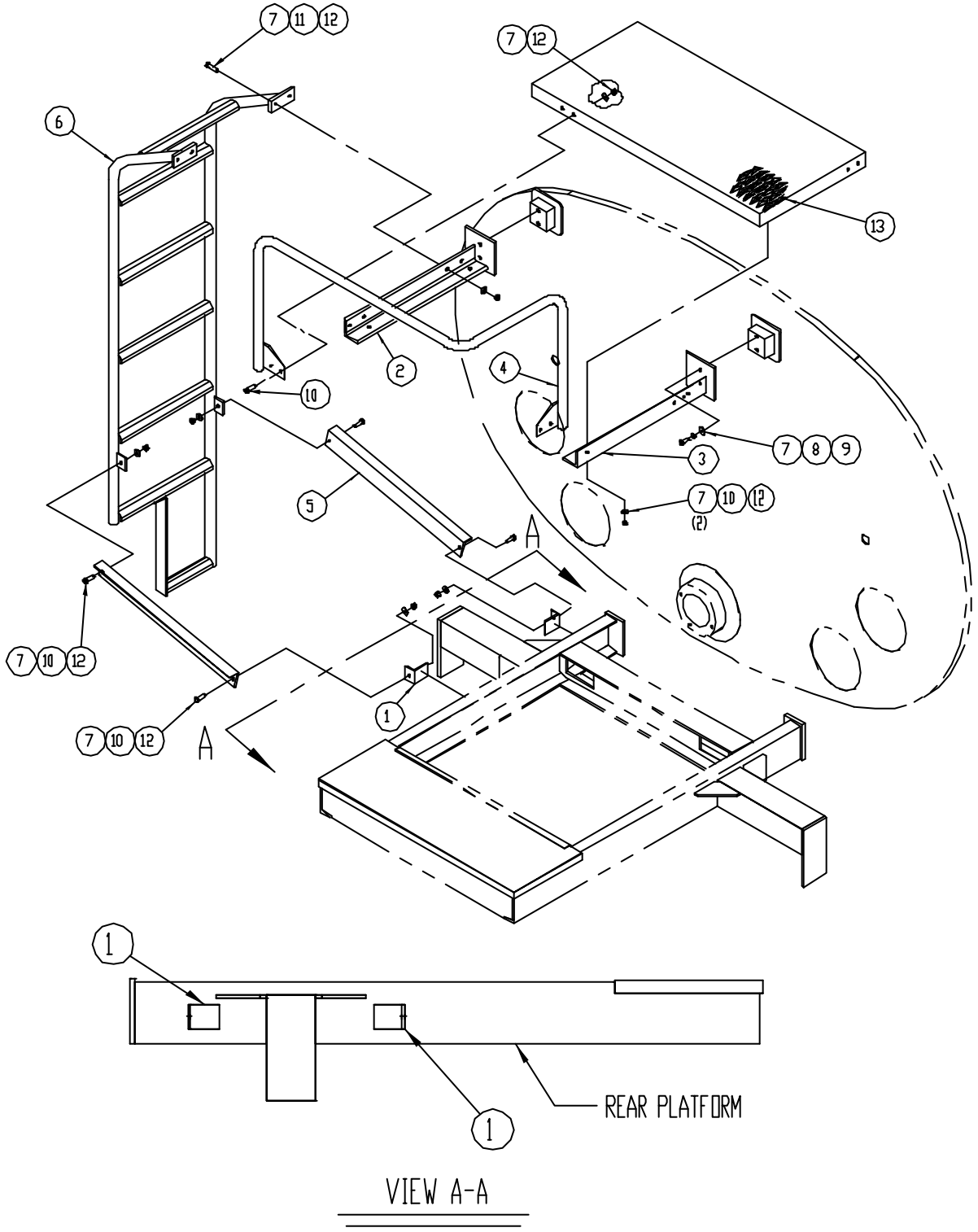


Figure 10-58

Tank & Ladder Group, 3500 Gallon Tank Parts List

Item No.	Part Number	Qty.	Description	Remarks
	985597-35	1	Tank Grp,3500 Gal,68X90x174,Df	
-10	29505	1	•Ins Tank,68X90x174,W/Stack	
-20	17288-1	2	•Pointer,W/M 17.25	
-30	17310	1	•Measuring Stick,68X90x174,D/F	
-40	17321	1	•Cont Ga,Fr,68X90x174,D/F	
-50	18055	1	•Cont Ga,Rear,68X90x174,D/F	
-60	986973	1	•Platform,Rear,Tank Assy	
			Attaching Parts	
-6001	27538	2	••Rail Side	
-6002	986975	1	••Grating,24X45,Tank Platform	
-6003	986974	1	••Endplate,Tank Platform,Left	
-6004	986976	1	••Endplate,Tank Platform,Right	
-70	21992-1	1	•Ladder Group,Rear,68X90	
			Attaching Parts	
1	21799	2	••Spacer,Ladder	
2	21981-1	1	••Ladder Bracket W/M,Lh	
3	21981-2	1	••Ladder Bracket W/M,Rh	
4	986648	1	••Rail W/M,Safety,Ladder Platform	
5	22322	2	••Spacer,Ladder,60X90	
6	23567	1	••Ladder,68X90,Rear Head	
-601	23559	1	•••Brace,Ladder	
-602	23562	2	•••Pad,Mount	
-603	23563	2	•••Bracket,Step	
7	80142	24	••Washer,Flat,Uss,.375	
8	80162	4	••Washer,Lock,.375	
9	80221	4	••CSHH,.375-16X1.00,Gr5	
10	80224	12	••CSHH,.375-16X1.25,Gr5	
11	80226	4	••CSHH,.375-16X1.50,Gr5	
12	80352	16	••Nut,Flexloc,.375-16,Full,Lt	
13	91302	1	••Grating,Step,12Gax18.75x40.00	

Tank & Ladder Group, 4000 Gallon Tank

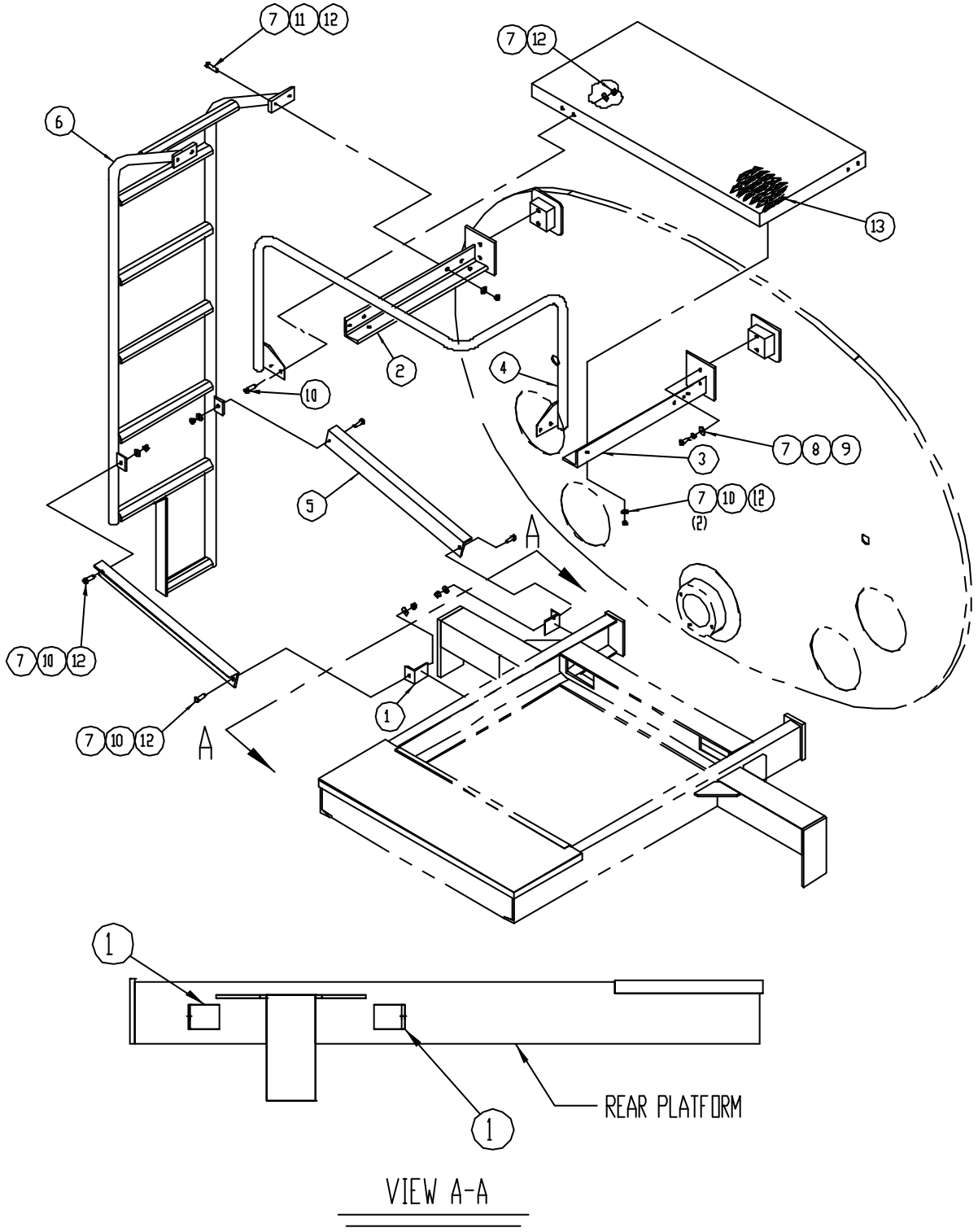


Figure 10-59

Tank & Ladder Group, 4000 Gallon Tank Parts List

Item No.	Part Number	Qty.	Description	Remarks
	985597-40	1	Tank Grp,4000 Gal,68X90x200,Df	
-10	29506	1	•Ins Tank,68X90x200,W/Stack	
-20	17288-1	2	•Pointer,W/M 17.25	
-30	19488	1	•Measuring Stick,68X90x200,D/F	
-40	19489	1	•Cont Ga,Fr,68X90x200,D/F	
-50	19490	1	•Cont Ga,Rear,68X90x200,D/F	
-60	986973	1	•Platform,Rear,Tank Assy	
			Attaching Parts	
-6001	27538	2	••Rail Side	
-6002	986975	1	••Grating,24X45,Tank Platform	
-6003	986974	1	••Endplate,Tank Platform,Left	
-6004	986976	1	••Endplate,Tank Platform,Right	
-70	21992-1	1	•Ladder Group,Rear,68X90	
			Attaching Parts	
1	21799	2	••Spacer,Ladder	
2	21981-1	1	••Ladder Bracket W/M,Lh	
3	21981-2	1	••Ladder Bracket W/M,Rh	
4	986648	1	••Rail W/M,Safety,Ladder Platform	
5	22322	2	••Spacer,Ladder,60X90	
6	23567	1	••Ladder,68X90,Rear Head	
-601	23559	1	•••Brace,Ladder	
-602	23562	2	•••Pad,Mount	
-603	23563	2	•••Bracket,Step	
-7	80142	24	••Washer,Flat,Uss,.375	
-8	80162	4	••Washer,Lock,.375	
-9	80221	4	••CSHH,.375-16X1.00,Gr5	
-10	80224	12	••CSHH,.375-16X1.25,Gr5	
-11	80226	4	••CSHH,.375-16X1.50,Gr5	
-12	80352	16	••Nut,Flexloc,.375-16,Full,Lt	
-13	91302	1	••Grating,Step,12Gax18.75x40.00	

ALPHABETICAL PARTS INDEX

Description	Part Number	Figure Number	Item Number
Actuator,Vane,90 Degrees	35515	10-6	15
Adjusting Screw	6315-2	10-4	9
Air Band	36044-10	10-24	-9
Air Band	36044-10	10-46	-9
Air Reservoir Group	26424	10-20	
Air Shutter	36044-09	10-24	-8
Air Shutter	36044-09	10-46	-8
Air Tube W/Flange	36044-12	10-24	-11
Air Tube W/Flange	36044-12	10-46	-11
Air,Rsvr,9.50X22.50,1488 Cu In	72828	10-20	1
Angle,Hanger Bracket,Lh	22944	10-53	-2
Angle,Hanger Bracket,Rh	22945	10-53	3
Angle,Mud Flap Mount	22943	10-53	1
Arm,Actuator	27591	10-17	71
Arm,Actuator	27591	10-38	71
Asphalt Pump, Viking	4165-16	10-3	
Bar,.250X1.00x3.00,Hrs	21934	10-37	-1303
Bar,.250X3.00x5.00	17211	10-10	3
Bar,.250X3.00x5.00	17211	10-11	3
Bar,Load Line Support	17374	10-5	2
Bar,Lp Line Brkt,S-Shaped	985000	10-47	57
Bar,Lp Line Brkt,S-Shaped	985000	10-48	24
Bar,Plug Group	16070	10-17	-50
Bar,Plug Group	16070	10-38	-50
Bar,Plug Group	16070	10-41	-50
Barslide W/M	26019	10-17	10
Barslide W/M	26019	10-38	10
Belt,Mud Flap,30.00X96.00	37269	10-53	4
Bent Handle,Ball Valve	23489	10-9	2
Bent Plate	16243	10-37	-1302
Blanking Kit	38991-04	10-22	
Blanking Kit	38991-04	10-43	5
Block,Slide,Bottom	26034	10-17	12
Block,Slide,Bottom	26034	10-38	12
Block,Slide,Bottom	26034	10-41	12
Block,Slide,Top	26035	10-17	13
Block,Slide,Top	26035	10-38	13
Block,Slide,Top	26035	10-41	13

Description	Part Number	Figure Number	Item Number
Block,Stop,Extend	26106	10-17	17
Block,Stop,Extend	26106	10-38	17
Block,Stop,Extend	26106	10-41	17
Blower Motor	36044-01	10-24	-1
Blower Motor	36044-01	10-46	-1
Blower Wheel	36044-14	10-24	-12
Blower Wheel	36044-14	10-46	-12
Body,Valve	25261	10-19	2
Body,Valve	25261	10-40	2
Body,Valve	25261	10-42	2
Bolt Kit,For Valve	37488-04	10-10	-8803
Bolt Kit,For Valve	37488-04	10-21	-403
Bonnet	6315-5	10-4	6
Brace,Ladder	23559	10-58	-601
Brace,Ladder	23559	10-59	-601
Brace,Ladder	23559	10-60	-601
Bracket	21677	10-29	2
Bracket	21677	10-56	2
Bracket	21677	10-57	2
Bracket, Ladder	21798	10-29	6
Bracket, Ladder	21798	10-56	5
Bracket, Ladder	21798	10-57	7
Bracket,Actuator	27594	10-17	21
Bracket,Actuator	27594	10-38	21
Bracket,Air Tank	26420	10-20	2
Bracket,Cooler Mount	23354	10-13	5
Bracket,Cooler Mount	23354	10-13	5
Bracket,End Cap	21936	10-37	-1304
Bracket,Hydraulic Line	23363	10-10	5
Bracket,Igniter & Flame Rod	38216-01	10-47	3701
Bracket,Ignitor	22869	10-47	5
Bracket,Pipe,0.50	9672	10-36	-1513
Bracket,Radar Vel Sensor	15716	10-16	-1
Bracket,Step	23563	10-58	-603
Bracket,Step	23563	10-59	-603
Bracket,Step	23563	10-60	-603
Bracket,Transfer Line Support	15855	10-5	1
Bracket,W/M,Dbl Actr	16431SRV	10-6	1
Bracket,W/M,Hose Guard	23503	10-6	3
Brackets,20",Tank Mtg	34080	10-49	-2

Description	Part Number	Figure Number	Item Number
Brkt,.250 Pipe	7640	10-47	58
Brkt,.250 Pipe	7640	10-48	25
Brkt,Mount,Sgl Actuator W/M	22638	10-6	5
Brkt,Pipe Support	21813	10-36	-22
Brkt,Wood Rail Joint	981708	10-34	2
Burner Brkt Assy W/M	23508	10-47	1
Burner Brkt Assy W/M	23508	10-48	1
Burner Cover W/M,Double Flue	22472	10-26	-202
Burner Cover, Double Flue	22475	10-26	-2
Burner J1 Lpg Liquid	32958	10-50	-703
Burner,Lpg,B3	31931	10-48	2
Burner,Lpg,B3,Dbl Flue	25179-04	10-48	
Burner,Lpg,B3,Dbl Flue,Auto Ignition	24657-04	10-47	
Burner,Propane,Liquid,B2	6118	10-47	9
Buzzer,12 Vdc,Continuous Tone	36208	10-54	20
Cad Cell	36044-31	10-46	-22
Cap	6315-1	10-4	10
Cap Screw Ht 5/8 X 6 1/2 Nc	71697	10-17	70
Cap Screw Ht 5/8 X 6 1/2 Nc	71697	10-38	70
Cap,End,Spraybar	15930	10-17	75
Cap,End,Spraybar	15930	10-38	2
Cap,End,Spraybar	15930	10-41	2
Cap,Fuel,4.0 Npt,Al,W/Gasket	36940	10-36	2
Cap,Fuel,4.0 Npt,Al,W/Gasket	36940	10-36	-1508
Casing	5240	10-3	8
CCW Pump Kit	988398	10-10	
Chain,Adjustment	26725	10-17	67
Chain,Adjustment	26725	10-38	67
Channel,Pump Support	21743	10-13	2
Channel,Pump Support	21743	10-13	2
Circuit Board	37241-03	10-47	36
Circuit Breaker, 40 amp	34853	10-25	
Circuit Breaker,40 Amp	34853	10-45	-4
Clamp,Half,Hose,.750	34860	10-10	26
Clamp,Half,Hose,.750	34860	10-11	26
Clamp,Hose,# 04	33277	10-23	-7
Clamp,Hose,# 04	33277	10-36	-24
Clamp,Hose,# 04	33277	10-45	-1
Clamp,Hose,#72 (4”)	851437	10-8	18
Clamp,Hose,#K-24 Knox	36863	10-2	18

Description	Part Number	Figure Number	Item Number
Clamp,Hose,.44-.78,Worm,#06	33162	10-10	9
Clamp,Hose,.44-.78,Worm,#06	33162	10-11	9
Clamp,Hose,.44-.78,Worm,#06	33162	10-20	16
Clamp,Hose,.44-.78,Worm,#06	33162	10-21	9
Clamp,Hose,.50-.91,Worm,#08	33163	10-54	4
Clamp,Hose,.56-1.06,Worm,#10	33164	10-10	10
Clamp,Hose,.56-1.06,Worm,#10	33164	10-11	10
Clamp,Hose,.81-1.75,Worm,#20	33167	10-10	11
Clamp,Hose,.81-1.75,Worm,#20	33167	10-11	11
Clamp,Hose,.81-1.75,Worm,#20	33167	10-36	-23
Clamp,Hose,Band,.45Dia	38201	10-17	-2204
Clamp,Hose,Band,.45Dia	38201	10-38	-2208
Clamp,Hose,Band,.45Dia	38201	10-41	-2208
Clamp,Loop,.75 Od,Plastic Cover	87111602	10-10	92
Clamp,Loop,.75 Od,Plstc Cover	871111602	10-11	92
Clamp,Loop,1.562 Od,Nprn Cover	34799	10-10	20
Clamp,Loop,1.562 Od,Nprn Cover	34799	10-11	20
Clamp,Loop,2.00 Od,Plstc Cover	36894	10-8	19
Clamp,Muffler Strap,3-1/2”	38771	10-34	1
Clamp,Tube,1.00 Od Twin,Set	36167	10-10	32
Clamp,Tube,1.00 Od Twin,Set	36167	10-11	32
Clevis	26721	10-17	66
Clevis	26721	10-38	66
Coil,For Valve	37488-06	10-10	-8805
Coil,For Valve	37488-06	10-21	-405
Conduit Connector, 1/2 Npt	34185	10-23	-6
Conduit Connector, 1/2 Npt	34185	10-25	7
Conduit Connector, 1/2 Npt	34185	10-45	-17
Conduit,Rigid,.50X1.75	19427	10-25	6
Conn Housing,Cap,12 Circuit	34468	10-22	5
Conn Housing,Cap,12 Circuit	34468	10-43	6
Conn Housing,Cap,12 Circuit	34468	10-44	5
Conn,Butt,16-14 Ga	33602	10-54	9
Connector	984579-12	10-10	
Connector Tube Assembly	36044-17	10-24	-15
Connector Tube Assembly	36044-17	10-46	-15
Connector Wldmt,Actuator	22775SRV	10-6	6
Connector,Tank Valve	27137	10-7	2
Cont Ga,Fr,48X74x96,D/F	17311	10-56	-40
Cont Ga,Fr,52X80x120,D/F	17314	10-57	-40

Description	Part Number	Figure Number	Item Number
Cont Ga,Fr,60X90x176,D/F	17319	10-58	-30
Cont Ga,Fr,68X90x174,D/F	17321	10-59	-40
Cont Ga,Fr,68X90x200,D/F	19489	10-60	-40
Cont Ga,Rear,48X74x96,D/F	18045	10-56	-50
Cont Ga,Rear,52X80x120,D/F	18049	10-57	-50
Cont Ga,Rear,60X90x176,D/F	18053	10-58	-40
Cont Ga,Rear,68X90x174,D/F	18055	10-59	-50
Cont Ga,Rear,68X90x200,D/F	19490	10-60	-50
Contact,Socket,20-14 Ga	34471	10-22	6
Contact,Socket,20-14 Ga	34471	10-43	10
Contact,Socket,20-14 Ga	34471	10-44	6
Contents Ga,Fr,48X74x96,Dbl Flue	17311	10-37	7
Contents Ga,Fr,52X80x120,Dbl Flue	17314	10-37	
Contents Ga,Fr,56X84x132,Dbl Flue	22176	10-37	
Contents Ga,Fr,60X90x176,Dbl Flue	17319	10-37	
Contents Ga,Fr,68X90x174,Dbl Flue	17321	10-37	
Contents Ga,Fr,68X90x200,Dbl Flue	19489	10-37	
Contents Ga,Rear,48X74x96,Dbl Flue	18045	10-37	8
Contents Ga,Rear,52X80x120,Dbl Flue	18049	10-37	
Contents Ga,Rear,56X84x132,Dbl Flue	22177	10-37	
Contents Ga,Rear,60X90x176,Dbl Flue	18053	10-37	
Contents Ga,Rear,68X90x174,Dbl Flue	18055	10-37	
Contents Ga,Rear,68X90x200,Dbl Flue	19490	10-37	
Control Box, Plus One	1002293	10-15	
Control Box,Diesel Bnr,W/Outfire	29507	10-46	
Control Box,Diesel Burner, No Outfire	29507-01	10-25	
Control Grp,Air,Max3	28540	10-17	22
Control Grp,Air,Max3,18' Bar	28764	10-38	22
Control Grp,Air,Max3,20' Bar	28972	10-41	22
Cooler	6364	10-10	38
Cooler	6364	10-11	38
Cotter Pin,.125X1.50	80332	10-17	60
Cotter Pin,.125X1.50	80332	10-38	60
Coupling Chain W/ Conn. Pin	34987	10-2	22
Coupling Half,Pump	34985	10-2	3
Coupling,Flex,.25 Bore,.75 Len	38118	10-18	3
Coupling,Flex,.25 Bore,.75 Len	38118	10-39	3
Cover Plate,Hose Clamp	34861	10-10	25
Cover Plate,Hose Clamp	34861	10-11	25
Cover Plate,Includes Bolts	37488-05	10-10	-8804

Description	Part Number	Figure Number	Item Number
Cover Plate,Includes Bolts	37488-05	10-21	-404
Cover,Strainer Access	19798	10-2	11
Crossover Pipe,Lp Burners	25704	10-47	7
CSFHS,.312-18X1.25,Gr5	81213	10-17	54
CSFHS,.312-18X1.25,Gr5	81213	10-38	54
CSFHS,.312-18X1.25,Gr5	81213	10-41	54
CSHH,.250-20X.75,Gr5	80192	10-12	10
CSHH,.250-20X.75,Gr5	80192	10-21	21
CSHH,.250-20X1.00,Gr5	80185	10-10	93
CSHH,.250-20X1.00,Gr5	80185	10-11	93
CSHH,.250-20X1.00,Gr5	80185	10-17	44
CSHH,.250-20X1.00,Gr5	80185	10-38	44
CSHH,.250-20X2.00,Gr5	80196	10-21	26
CSHH,.250-20X2.25	80941	10-10	81
CSHH,.250-20X4.00,Gr5	80411	10-16	-8
CSHH,.250-20X5.00,Gr5	80199	10-9	9
CSHH,.250-28X.50,Gr5	80876	10-17	51
CSHH,.250-28X.50,Gr5	80876	10-38	51
CSHH,.250-28X.50,Gr5	80876	10-41	51
CSHH,.312-18X.62,Gr5	80967	10-2	56
CSHH,.312-18X.75,Gr5	80207	10-54	31
CSHH,.312-18X1.00,Gr5	80208	10-6	35
CSHH,.312-18X1.00,Gr5	80208	10-17	73
CSHH,.312-18X1.00,Gr5	80208	10-31	8
CSHH,.312-18X1.00,Gr5	80208	10-32	4
CSHH,.312-18X1.00,Gr5	80208	10-38	73
Cshh,.312-18X1.00,Gr5	80208	10-47	23
CSHH,.312-18X1.00,Gr5	80208	10-50	5
CSHH,.312-18X1.00,Gr5	80208	10-51	8
CSHH,.312-18X1.00,Gr5	80208	10-52	9
CSHH,.312-18X1.25,Gr5	80206	10-6	34
CSHH,.312-18X1.25,Gr5	80206	10-17	56
CSHH,.312-18X1.25,Gr5	80206	10-38	56
CSHH,.312-18X1.50,Gr5	80209	10-17	45
CSHH,.312-18X1.50,Gr5	80209	10-38	45
CSHH,.312-18X1.50,Gr5	80209	10-41	45
CSHH,.312-18X2.00,Gr5	80212	10-10	44
CSHH,.312-18X2.00,Gr5	80212	10-11	44
CSHH,.312-24X.50,Gr5	81211	10-17	53
CSHH,.312-24X.50,Gr5	81211	10-38	53

Description	Part Number	Figure Number	Item Number
CSHH,.312-24X.875,Gr5	81227	10-17	55
CSHH,.312-24X.875,Gr5	81227	10-38	55
CSHH,.375-16X.75,Gr5	80219	10-1	12
CSHH,.375-16X.75,Gr5	80219	10-2	48
Cshh,.375-16X.75,Gr5	80219	10-5	14
CSHH,.375-16X.75,Gr5	80219	10-9	10
CSHH,.375-16X.75,Gr5	80219	10-10	45
CSHH,.375-16X.75,Gr5	80219	10-11	45
CSHH,.375-16X.88,Gr5	71622	10-6	25
CSHH,.375-16X.88,Gr5	71622	10-17	33
CSHH,.375-16X.88,Gr5	71622	10-31	4
CSHH,.375-16X.88,Gr5	71622	10-36	-28
Cshh,.375-16X.88,Gr5	71622	10-38	33
CSHH,.375-16X.88,Gr5	71622	10-41	33
CSHH,.375-16X.88,Gr5	71622	10-51	4
CSHH,.375-16X.88,Gr5	71622	10-52	5
CSHH,.375-16X1.00,Gr5	80221	10-6	36
CSHH,.375-16X1.00,Gr5	80221	10-8	14
CSHH,.375-16X1.00,Gr5	80221	10-17	46
CSHH,.375-16X1.00,Gr5	80221	10-38	46
CSHH,.375-16X1.00,Gr5	80221	10-55	15
CSHH,.375-16X1.00,Gr5	80221	10-58	9
CSHH,.375-16X1.00,Gr5	80221	10-59	9
CSHH,.375-16X1.00,Gr5	80221	10-60	-9
CSHH,.375-16X1.25,Gr5	80224	10-2	49
CSHH,.375-16X1.25,Gr5	80224	10-5	15
CSHH,.375-16X1.25,Gr5	80224	10-10	46
CSHH,.375-16X1.25,Gr5	80224	10-11	46
CSHH,.375-16X1.25,Gr5	80224	10-20	13
CSHH,.375-16X1.25,Gr5	80224	10-29	12
CSHH,.375-16X1.25,Gr5	80224	10-34	6
CSHH,.375-16X1.25,Gr5	80224	10-53	6
CSHH,.375-16X1.25,Gr5	80224	10-56	12
CSHH,.375-16X1.25,Gr5	80224	10-57	11
CSHH,.375-16X1.25,Gr5	80224	10-58	10
CSHH,.375-16X1.25,Gr5	80224	10-59	10
CSHH,.375-16X1.25,Gr5	80224	10-60	-10
CSHH,.375-16X1.50,Gr5	80226	10-5	16
CSHH,.375-16X1.50,Gr5	80226	10-10	47
CSHH,.375-16X1.50,Gr5	80226	10-11	47

Description	Part Number	Figure Number	Item Number
CSHH,.375-16X1.50,Gr5	80226	10-29	13
CSHH,.375-16X1.50,Gr5	80226	10-56	13
CSHH,.375-16X1.50,Gr5	80226	10-57	12
CSHH,.375-16X1.50,Gr5	80226	10-58	11
CSHH,.375-16X1.50,Gr5	80226	10-59	11
CSHH,.375-16X1.50,Gr5	80226	10-60	-11
CSHH,.375-16X1.75,Gr5	80228	10-16	-5
CSHH,.375-16X1.75,Gr5	80228	10-53	7
CSHH,.375-24X1.00,Gr5	80222	10-7	5
CSHH,.500-13X1.00,Gr5	80248	10-6	37
CSHH,.500-13X1.00,Gr5	80248	10-17	76
CSHH,.500-13X1.00,Gr5	80248	10-38	77
CSHH,.500-13X1.00,Gr5	80248	10-41	77
CSHH,.500-13X1.25,Gr5	80250	10-17	47
CSHH,.500-13X1.25,Gr5	80250	10-38	47
CSHH,.500-13X1.50,Gr5	71627	10-8	15
CSHH,.500-13X1.50,Gr5	71627	10-12	6
CSHH,.500-13X1.50,Gr5	71627	10-20	14
Cshh,.500-13X1.75 Gr5	80186	10-54	-2302
CSHH,.500-13X1.75,Gr5	80186	10-2	46
CSHH,.500-13X2.00,Gr5	80255	10-10	68
CSHH,.500-13X2.00,Gr5	80255	10-30	13
CSHH,.500-13X2.00,Gr5	80255	10-49	-5
CSHH,.625-11X1.50,Gr5	80280	10-2	50
CSHH,.625-11X2.00,Gr5	80283	10-37	-1405
CSHH,.625-11X2.50,Gr571678	71640	10-1	5
CSHH,.625-11X2.50,Gr571678	71640	10-2	35
CSHH,.625-11X3.00,Gr5	80287	10-8	16
Cshh,.625-11X5.50,Gr 5	80445	10-17	64
CSHH,.625-11X5.50,Gr 5	80445	10-38	64
CSHH,.625-11X7.00,Gr5	71684	10-37	-1403
CSHH,.750-10X1.25,Gr5	80291	10-2	51
CSHH,.750-10X1.50,Gr5	80500	10-2	54
CSHH,.750-10X1.75,Gr5	71643	10-1	6
CSSH,.250-20X2.25	80941	10-11	81
CW Hydraulic Auxiliary Gear Pump	38542	10-10	
CW Hydraulic Pump	38543	10-10	
Cyl,1.06X.50,Air,Spring Ext	38129	10-19	4
Cyl,1.06X.50,Air,Spring Ext	38129	10-40	4
Cyl,1.06X.50,Air,Spring Ext	38129	10-42	4

Description	Part Number	Figure Number	Item Number
Cyl,3/50X4.00,2.50psi,11.17 Oa	37301	10-7	3
Cyl,Hyd,2.00X5.75stroke,12.50	6231	10-17	59
Cyl,Hyd,2.00X5.75stroke,12.50	6231	10-38	59
Decal Group	26422	10-28	
Decal Kit,Distributor Tanks	39167	10-28	-6
Decal Kit,Max Master	39166	10-28	-5
Decal Kit,Max3 Logo	984202	10-28	30
Decal Plate,Prod Ident No,Maxi	36624	10-28	-4
Decal, Control Panel		10-15	3
Decal,Diesel Fuel	72589	10-28	-10
Decal,Hydraulic Oil	72591	10-28	20
Decal,Lpg Burner Safety	37777	10-47	-15
Decal,Lpg Burner Safety	37850	10-48	-20
Decal,Rear Control,Diesel Bnr,W/O Ign	36597	10-25	3
Decal,Rosco Logo,Medium,Black	D50	10-28	60
Decal,Solvent Tank	10553	10-36	-100
Decal,Valve Configuration	38420	10-28	40
Decal,Warning,Keep Clean	36202	10-28	3
Decal,Washdown Pump Buzzer	36206	10-54	19
Dial, Therm, 50° - 500° F, Group	17862	10-35	-200
Diesel Burner, Dbl Flue, Outfire, W/O Cont	29508	10-45	
Diesel Burner,Dbl Flue,No Outfire	29508-01	10-23	
Display,DP610,Max3		10-15	1
Door,Tool Box	15956	10-31	-101
Driveshaft		10-14	
Driveshaft,2” Tube,55 3/4	39108	10-14	-2
Driveshaft,End Yoke,1.25 W/5/16	39109	10-14	-1
Driveshaft,End Yoke,15T Spln	39111	10-14	-3
Driveshaft,End Yoke,15T Spln	39111	10-14	-3
Driveshaft,End Yoke,15T Spln	39111	10-14	-3
Driveshaft,Flange,1310	39104	10-14	-1
Driveshaft,Flange,1350	39105	10-14	-1
Driveshaft,Set Screw W/Wire Lk	39112	10-14	-4
Driveshaft,Set Screw W/Wire Lk	39112	10-14	-4
Driveshaft,Set Screw W/Wire Lk	39112	10-14	-4
Electrode Assy	36044-26	10-24	-18
Electrode Assy	36044-26	10-46	-18
Element,Spin On Type	38662-01	10-45	-601
Enclosure,Elec,4X4x6,W/1 Hole	19425	10-25	5
Enclosure,Elec,4X4x6,W/2 Holes	19426	10-25	8

Description	Part Number	Figure Number	Item Number
Enclosure,Elec,6X6x4,Modified	24684	10-47	8
End,Platform	21676	10-29	1
End,Platform	21676	10-56	1
End,Platform	21676	10-57	1
Endplate,Tank Platform,Left	986974	10-58	-6003
Endplate,Tank Platform,Left	986974	10-59	-6003
Endplate,Tank Platform,Left	986974	10-60	-6003
Endplate,Tank Platform,Right	986976	10-58	-6004
Endplate,Tank Platform,Right	986976	10-59	-6004
Endplate,Tank Platform,Right	986976	10-60	-6004
Enviro Flush System	21810	10-36	
Extension,Spraybar	28631	10-17	2
Extension,Spraybar	28631	10-38	75
Extension,Spraybar	28631	10-41	75
Eyebolt	8530	10-30	7
Fender Group, Single Axle	21633	10-31	
Fender Group, Tandem Axle	29198	10-51	
Fender Grp, Triple Axle	24124	10-52	
Fender,Half,Spl,Stl	24125	10-52	4
Fender,Single Axle,Al	21634	10-31	1
Fender,Tandem Axle	21814	10-51	3
Filler,Hyd Fluid,10 Psi	37680	10-12	11
Filter Assembly	34463	10-13	8
Filter Assembly,Fuel Oil	38662	10-26	-303
Filter Assy,Fuel Oil	38662	10-23	-2
Filter Assy,Fuel Oil	38662	10-45	-6
Filter Element, With Gasket	5820-01	10-23	
Filter Element,Hyd	34464	10-10	-1801
Filter Kit,Double Burner	38662S2SRV	10-26	-3
Filter Only,Spin On Type	38662-01	10-23	-201
Filter,Return,Hp,-12Sae Ports	34463	10-10	18
Filter,Return,Hp,-12Sae Ports	34463	10-11	18
Fit,90,16Mj-20Mp	33781	10-10	19
Fitt,45 04Mj-04Mp	33115	10-6	14
Fitt,45 04Mj-04Mp	33115	10-55	5
Fitt,45 06Mp-06Hb,Crimped	35830	10-20	5
Fitt,45 12Mj-16Mb	38203	10-10	51
Fitt,45 12Mj-16Mb	38203	10-11	51
Fitt,90 02Mp-02Fp,Brass	37311	10-17	-2201
Fitt,90 02Mp-02Fp,Brass	37311	10-38	-2204

Description	Part Number	Figure Number	Item Number
Fitt,90 02Mp-02Fp,Brass	37311	10-41	-2204
Fitt,90 02Mp-04Hb,Crimped,Bras	71796	10-17	-2207
Fitt,90 02Mp-04Hb,Crimped,Bras	71796	10-38	-2210
Fitt,90 02Mp-04Hb,Crimped,Bras	71796	10-41	-2210
Fitt,90 04Hb-06Mp	986858	10-23	-13
Fitt,90 04Hb-06Mp	986858	10-45	-15
Fitt,90 04Mp-04Hb,Crimped	31971	10-36	-1504
Fitt,90 04Mp-06Hb,Crimped	33365	10-10	14
Fitt,90 04Mp-06Hb,Crimped	33365	10-11	14
Fitt,90 04Mp-06Hb,Crimped	33365	10-21	10
Fitt,90 04Mp-08Nt	38915	10-22	3
Fitt,90 04Mp-08Nt	38915	10-43	3
Fitt,90 04Mp-08Nt	38915	10-44	3
Fitt,90 06Mj-06Fjx	X387	10-10	86
Fitt,90 06Mj-06Fjx	X387	10-11	86
Fitt,90 06Mj-06Mb	33892	10-10	74
Fitt,90 06Mj-06Mb	33892	10-11	74
Fitt,90 06Mj-06Mp	X383	10-10	85
Fitt,90 06Mj-06Mp	X383	10-11	85
Fitt,90 06Mj-08Mb	34535	10-10	91
Fitt,90 06Mj-08Mb	34535	10-11	91
Fitt,90 08Mj-06Mb	70754	10-10	72
Fitt,90 08Mj-06Mb	70754	10-11	72
Fitt,90 08Mj-08Fjx	33900	10-10	87
Fitt,90 08Mj-08Fjx	33900	10-11	87
Fitt,90 08Mp-08Hb,Crimped	33328	10-36	-1506
Fitt,90 08Mp-08Hb,Crimped	33328	10-54	6
Fitt,90 10Mj-10Fjx	X401	10-10	61
Fitt,90 10Mj-10Fjx	X401	10-11	61
Fitt,90 10Mj-12Mb	33307	10-10	13
Fitt,90 10Mj-12Mb	33307	10-11	13
Fitt,90 12Mb-12Fpx	X269	10-10	57
Fitt,90 12Mb-12Fpx	X269	10-11	57
Fitt,90 12Mj-10Mb	34083	10-10	17
Fitt,90 16Mj-12Mb	6250	10-11	6
Fitt,90 16Mj-16Mb	X319	10-10	58
Fitt,90 16Mj-16Mb	X319	10-11	58
Fitt,90 16Mj-16Mj	37245	10-10	34
Fitt,90 16Mj-16Mj	37245	10-11	34
Fitt,90 16Mj-20Mp	35781	10-11	19

Description	Part Number	Figure Number	Item Number
Fitt,90,04Mp-04Hb,Crimped	31971	10-26	-301
Fitt,90,16Mj-12Mb	6250	10-10	6
Fitt,Hes,08Fj-08Hb,Fld Crmp	38209	10-10	30
Fitt,Hes,08Fj-08Hb,Fld Crmp	38209	10-11	30
Fitt,Hes,16Fj-16Hb,Fld Crmp	36606	10-10	33
Fitt,Hes,16Fj-16Hb,Fld Crmp	36606	10-11	33
Fitt,Plug 02Pd,Dust	72372	10-10	66
Fitt,Plug 02Pd,Dust	72372	10-11	66
Fitt,Plug 02Qd	35924	10-38	-2202
Fitt,Plug 02Qd	35924	10-41	-2202
Fitt,Plug 06Mb,Hex	6408	10-11	79
Fitt,Plug,12Mb,Hex,W/04Fp	15795	10-10	1
Fitt,Plug,12Mb,Hex,W/04Fp	15795	10-11	1
Fitt,Qd 3.00 Plug	6290	10-2	33
Fitt,Qd 3.00F-3.00Fp,Brass	6289	10-2	32
Fitt,Qd 3.00F-3.00Fp,Brass	6289	10-5	9
Fitt,Qd 3.00Plug	6290	10-5	10
Fitt,Red 08Mj-12Fj	35402	10-10	71
Fitt,Red 08Mj-12Fj	35402	10-11	71
Fitt,Str 02Mp-04Hb,Crimped	33926	10-22	4
Fitt,Str 02Mp-04Hb,Crimped	33926	10-43	4
Fitt,Str 02Mp-04Hb,Crimped	33926	10-44	4
Fitt,Str 02Mp-04Hb,Push-On	33343	10-38	-2201
Fitt,Str 02Mp-04Hb,Push-On	33343	10-41	-2201
Fitt,Str 04Fjx-04Hb,Push-On	70957	10-21	19
Fitt,Str 04Fjx-04Hb,Push-On	70957	10-23	-18
Fitt,Str 04Fjx-04Hb,Push-On	70957	10-45	-21
Fitt,Str 04Fjx-04Hb,Push-On	70957	10-55	10
Fitt,Str 04Fp-04Ms,Lpg,Brass	35245	10-47	12
Fitt,Str 04Fp-04Ms,Lpg,Brass	35245	10-48	16
Fitt,Str 04Mb-04Fpx	33275	10-10	12
Fitt,Str 04Mb-04Fpx	33275	10-11	12
Fitt,Str 04Mj-02Mp	72649	10-55	8
Fitt,Str 04Mj-08Mp	37463	10-6	11
Fitt,Str 04Mp-04Fpx	X126	10-47	56
Fitt,Str 04Mp-04Ms,Lpg,Brass	35246	10-23	-17
Fitt,Str 04Mp-04Ms,Lpg,Brass	35246	10-45	-23
Fitt,Str 04Mp-06Hb,Push-On	X300	10-10	40
Fitt,Str 04Mp-06Hb,Push-On	X300	10-11	40
Fitt,Str 04Mp-09Mpf,Lh Lp Gas	6298	10-50	-706

Description	Part Number	Figure Number	Item Number
Fitt,Str 04Mp-09Mpf,Lh Lp Gas	6298	10-54	24
Fitt,Str 06Mj-06Mb	X217	10-10	83
Fitt,Str 06Mj-06Mb	X217	10-11	83
Fitt,Str 06Mp-04Hb,Crimped	33279	10-23	-21
Fitt,Str 06Mp-04Hb,Crimped	33279	10-45	-22
Fitt,Str 06Mp-06Hb,Push-On	31959	10-21	7
Fitt,Str 06Mp-08Nt	38913	10-21	29
Fitt,Str 08Mp-06Hb,Crimped	X144	10-20	3
Fitt,Str 08Mp-08Hb,Crimped	X427	10-10	63
Fitt,Str 08Mp-08Hb,Crimped	X427	10-11	63
Fitt,Str 08Mp-08Hb,Crimped	X427	10-36	-1517
Fitt,Str 08Mp-08Hb,Crimped	X427	10-54	45
Fitt,Str 10Mj-10Mb	X392	10-10	60
Fitt,Str 12Mp-16Hb,Crimped	6342	10-10	35
Fitt,Str 12Mp-16Hb,Crimped	6342	10-11	35
Fitt,Str 16Mj-16Mb	33887	10-10	16
Fitt,Str 16Mj-16Mh	36077	10-10	31
Fitt,Str 16Mp-16Hb,Crimped	70036	10-2	34
Fitt,Str 16Mp-16Hb,Crimped	70036	10-10	39
Fitt,Str 16Mp-16Hb,Crimped	70036	10-11	39
Fitt,Str 16Mp-16Hb,Crimped	70036	10-36	-26
Fitt,Str,06Mp-04Hb,Push-On	33280	10-26	-302
Fitt,Tee 04Hb-04Hb-02Mp,Brass	72700	10-17	-2208
Fitt,Tee 04Hb-04Hb-02Mp,Brass	72700	10-38	-2211
Fitt,Tee 04Hb-04Hb-02Mp,Brass	72700	10-41	-2211
Fitt,Tee 04Hb-O4hb-04Hb,Brass	38412	10-17	-2205
Fitt,Tee 04Hb-O4hb-04Hb,Brass	38412	10-38	-2209
Fitt,Tee 04Hb-O4hb-04Hb,Brass	38412	10-41	-2209
Fitt,Tee 04Mj-04Mj-04Mj	34311	10-23	-14
Fitt,Tee 04Mj-04Mj-04Mj	34311	10-45	-16
Fitt,Tee 06Mj-06Mj-06Mj	X275	10-10	84
Fitt,Tee 06Mj-06Mj-06Mj	X275	10-11	84
Fitt,Tee 08Nt	38914	10-21	30
Fitt,Tee 12Mj-12Mb-12Mj	X324	10-10	41
Fitt,Tee 12Mj-12Mb-12Mj	X324	10-11	41
Fitt,Tee 16Mj-16Mb-16Mj	X329	10-10	21
Fitt,Tee 16Mj-16Mb-16Mj	X329	10-11	21
Fitt,Test 06Mb-02Pd	72689	10-10	65
Fitt,Test 06Mb-02Pd	72689	10-11	65
Flange Gasket,Felt	36044-05	10-24	-5

Description	Part Number	Figure Number	Item Number
Flange Gasket,Felt	36044-05	10-46	-5
Flange,Flue Liner	22781	10-26	-101
Flange,Weld,1 Npt	71936	10-33	4
Flat Bonnet Gasket	6315-9	10-4	5
Flat Cap Gasket	6315-10	10-4	7
Flex Hose Assembly	26145	10-8	
Float Rods,Horizontal	20793	10-37	3
Float Rods,Vertical	17283	10-37	2
Float,Ball,Ss	35500	10-37	10
Flue Liner Half,Hex	27849	10-26	-102
Flue Liner W/M, Diesel Burner, Sst	27848	10-26	-1
Flue Liner W/M, Lp Burner, Sst	23507	10-47	-100
Flue Liner W/M, Lp Burner, Sst	23507	10-48	-100
Flue Tube Flange W/M,Dsl Burn	22397	10-47	-6
Flue Tube Flange W/M,Dsl Burn	22397	10-48	-19
Flush Tank System	17934	10-36	-15
For Tank Heights Of 48”	17283-2	10-37	
For Tank Heights Of 52”	17283-4	10-37	
For Tank Heights Of 56”	17283-3	10-37	
For Tank Heights Of 60” And 68”	17283-1	10-37	
For Tank Lengths Of 120”	20793-02	10-37	
For Tank Lengths Of 132”	20793-10	10-37	
For Tank Lengths Of 140”	20793-04	10-37	
For Tank Lengths Of 142”	20793-05	10-37	
For Tank Lengths Of 170”	20793-06	10-37	
For Tank Lengths Of 174”	20793-07	10-37	
For Tank Lengths Of 176”	20793-08	10-37	
For Tank Lengths Of 200”	20793-09	10-37	
For Tank Lengths Of 96”	20793-01	10-37	
Ford, Sterling, Freightliner, GMC Trucks		10-14	
Front Live Power	34851-20SRV	10-14	
Front Live Power	34851-42SRV	10-14	
Front Live Pump Mounting Group		10-13	
Fuel Pump	36044-15	10-24	-13
Fuel Pump	36044-15	10-46	-13
Fuel Valve,Shut-Off	36044-04	10-24	-4
Fuel Valve,Shut-Off	36044-04	10-46	-4
Fuse Holder,In-Line,Blade,Seal	37118	10-47	35
Fuse,Blade,2 Amp	36964	10-47	34
Gasket,2.00 Flange	38153	10-8	6

Description	Part Number	Figure Number	Item Number
Gasket,2.50,Flange,Graphite	38212	10-8	7
Gasket,3.00 Companion Flange	911	10-1	13
Gasket,3.00 Companion Flange	911	10-2	57
Gasket,3.00 Companion Flange	911	10-8	17
Gasket,3” Flange	34981	10-1	3
Gasket,3” Flange	34981	10-2	20
Gasket,3” Flange	34981	10-5	7
Gasket,3” Flange	34981	10-55	6
Gasket,4” Flange	34983	10-1	4
Gasket,4” Flange	34983	10-2	21
Gasket,4” Flange	34983	10-7	1A
Gasket,Flange,4.00	1488	10-2	1
Gasket,Flange,4.00	1488	10-3	9
Gasket,Light,Clearance	5096-02	10-27	-5
Gasket,Spray Valve	38149	10-17	32
Gasket,Spray Valve	38149	10-38	32
Gasket,Spray Valve	38149	10-41	32
Gasket,Spraybar Ext	35035	10-17	74
Gasket,Spraybar Ext	35035	10-38	76
Gasket,Spraybar Ext	35035	10-41	76
Gasket,Strainer Access	36359	10-2	26
Gauge Assy,Tank Level	34079-01	10-49	-101
Gauge,Face/Dial Only	34079-02	10-49	-102
Gauge,Hyd Oil Level/Temp	500070	10-12	5
Gauge,Press,0-100Psi,2.00,04Mp	5122	10-47	17
Gauge,Press,0-100Psi,2.00,04Mp	5122	10-48	12
Gauge,Sight Lh Visual	35269	10-10	-1802
Gear Pump Assembly	38200	10-13	7
Gear,Spur,Pinion,8 D.P.,17T	38125	10-17	30
Gear,Spur,Pinion,8 D.P.,17T	38125	10-38	30
Gland Packing	4896-3	10-37	-11
Gland,Relief Valve Stem	1270	10-37	-9
Gpm Sensor	37196-1	10-2	-31
Grating,24X45,Tank Platform	986975	10-58	-6002
Grating,24X45,Tank Platform	986975	10-59	-6002
Grating,24X45,Tank Platform	986975	10-60	-6002
Grating,Step,12Gax18.75x40.00	91302	10-58	13
Grating,Step,12Gax18.75x40.00	91302	10-59	13
Grating,Step,12Gax18.75x40.00	91302	10-60	-13
Grease,Tube. 50Ep With Decal	33384	10-54	-48

Description	Part Number	Figure Number	Item Number
Grommet,Ins,.375Id X 1.00Grv	35465-09	10-47	13
Gskt,3.00,Cplg,Hot Oil,Buna	6573	10-2	-3201
Gskt,3.00,Cplg,Hot Oil,Buna	6573	10-5	9A
Guard	16460	10-2	6
Guard,Front Live Power,2.5” Lg	23893	10-13	1
Guard,Front Live Power,4.0” Lg	17645	10-13	1
Guide,Slide Rule Application	36941	10-54	-50
Gun,Grease	34249	10-54	-49
Hairpin Clip,No 11,1/8 Dia	7303	10-50	2
Half Coupling,Motor,1 1/4 Shaft	35043	10-2	24
Handhold,Lh	21680	10-29	5
Handhold,Lh	21680	10-57	5
Handhold,Rh	21679	10-29	4
Handhold,Rh	21679	10-57	4
Handle W/M	18597SRV	10-9	4
Handle,End,Lh	23089	10-56	8
Handle,Fuel,Washdown (Handle Only)	984948	10-54	-23052
Handle,Hand Spray	1557	10-9	1
Handle,Side,Rh	23088	10-56	7
Handspray Wand Assembly	18595	10-9	
Handspray Wand,1 Nozzle,No Swivel	18595-4	10-9	-
Handspray Wand,1 Nozzle,W/Swivel	18595-1	10-9	-
Handspray Wand,2 Nozzles,No Swivel	18595-5	10-9	-
Handspray Wand,2 Nozzles,W/Swivel	18595-2	10-9	-
Handspray Wand,3 Nozzles,No Swivel	18595-6	10-9	-
Handspray Wand,3 Nozzles,W/Swivel	18595-3	10-9	-
Hanger, Handspray Hose	8096	10-54	-463
Harness,Wire,Lighting,135.00”	23966-01	10-27	-100
Harness,Wire,Vlv Box,Max3	28956	10-21	32
Harness,Wiring	37241-10	10-47	42
Head Gasket Set	5246	10-3	15
Head With Idler Pin	6313	10-3	17
Hinge,Door	15963	10-31	-102
Holster Assy,Nozzle,Washdown	986274	10-54	26
Holster Tube,Washdown System	986272	10-54	-2602
Holster,Load Hose	28847	10-5	18
Hook,Hose,3.00	18233	10-54	-462
Hook,Wash Down Hose	16499	10-50	3
Hose Assy,-06 X 36, 2500	35611	10-10	75
Hose Assy,-06 X 36, 2500	35611	10-11	75

Description	Part Number	Figure Number	Item Number
Hose Assy,-06 X 52, 2500	35614	10-10	77
Hose Assy,-06 X 52, 2500	35614	10-11	77
Hose Assy,-06 X 61, 2500	35612	10-10	76
Hose Assy,-06 X 61, 2500	35612	10-11	76
Hose Assy,-06X106,2500	35664	10-10	62
Hose Assy,1500 Psi,-10X34.00	33863	10-10	15
Hose Assy,1500 Psi,-10X34.00	33863	10-11	15
Hose Assy,4000 Psi,-16 X 21.00	35068	10-10	24
Hose Assy,4000 Psi,-16 X 21.00	35068	10-11	24
Hose Assy,4000 Psi,-16 X 27.00	37309	10-10	53
Hose Assy,4000 Psi,-16 X 27.00	37309	10-11	53
Hose Assy,4000 Psi,-16 X 45.00	35067	10-10	23
Hose Assy,4000 Psi,-16 X 45.00	35067	10-11	23
Hose Assy,Auto Valve,106.00 Lg	23553-03	10-6	#3
Hose Assy,Auto Valve,84.00 Lg	23553-01	10-6	#1
Hose Assy,Auto Valve,84.00 Lg	23553-02	10-6	#2
Hose Assy,Auto Valve,87.00 Lg	23553-05	10-6	#5
Hose Assy,Auto Valve,88.00 Lg	23553-07	10-6	#7
Hose Assy,Auto Valve,95.00 Lg	23553-04	10-6	#4
Hose Assy,Auto Valve,95.00 Lg	23553-08	10-6	#8
Hose Assy,Auto Valve,99.00 Lg	23553-06	10-6	#6
Hose Wldmt,Flex,3.0 X 9.34	28694	10-55	3
Hose,04,Push-On,Low Pressure	5347	10-17	-2206
Hose,04,Push-On,Low Pressure	5347	10-23	-1
Hose,04,Push-On,Low Pressure	5347	10-36	-25
Hose,04,Push-On,Low Pressure	5347	10-38	-2207
Hose,04,Push-On,Low Pressure	5347	10-41	-2207
Hose,04,Push-On,Low Pressure	5347	10-45	-14
Hose,04,Push-On,Low Pressure	5347	10-55	9
Hose,04X14,04mp-04Fjx,350	34448	10-47	11
Hose,04X14,04mp-04Fjx,350	34448	10-48	15
Hose,04X300,04fpx-04Re,350	32881	10-50	-702
Hose,04X300,04fpx-04Re,350	32881	10-54	3
Hose,04X96,350 Psi	35657-96	10-49	-3
Hose,06,Low Press Push On	38579	10-10	59
Hose,06,Low Press Push On	38579	10-11	59
Hose,06,Low Press Push On	38579	10-21	8
Hose,08,Hyd,3000	38208	10-10	29
Hose,08,Hyd,3000	38208	10-11	29
Hose,08,Push-On,250	6352	10-10	37

Description	Part Number	Figure Number	Item Number
Hose,08,Push-On,250	6352	10-11	37
Hose,08,Push-On,250	6352	10-36	4
Hose,08,Push-On,250	6352	10-54	25
Hose,1.00 Id,Hot Asphalt	36999	10-2	29
Hose,1.00 Id,Hot Asphalt	36999	10-36	7
Hose,12 12Fj-12Rj9,3000	38206-41	10-10	70
Hose,12 12Fj-12Rj9,3000	38206-41	10-11	70
Hose,12 12Fj-12Rj9,3000	38206-41	10-11	70
Hose,12 12Fj-16Fj,300	38205-25	10-11	28
Hose,16 16Fj-16Fj990t,4000	38207-49	10-10	73
Hose,16,Suction,250	32592	10-10	7
Hose,16,Suction,250	32952	10-11	7
Hose,16X25ft,Handspray,M End	5112R	10-9	-100
Hose,16X25ft,Handspray,M End	5112R	10-54	-47
Hose,3.50Id,Flex,Metal	90268	10-34	8
Hose,Feed,Lh,Max3	26137	10-8	2
Hose,Feed,Rh,Max3	26138	10-8	3
Hose,Flex,Met,3.00X13.94	20841	10-1	1
Hose,Flex,Met,3.00X13.94	20841	10-55	-1
Hose,S-Bar Fee,2X72,Hastalloy	26147-H	10-8	TBD
Hose,S-Bar Feed,2X80,Hastalloy	26146-H	10-8	TBD
Hose,Spraybar Feed,2.00Idx72	26147	10-8	5
Hose,Spraybar Feed,2.00Idx80	26146	10-8	4
Hp Dsl Brnr W/O Cad Cell	36625	10-24	
Hp Dsl Brnr, W/O Cad Cell	36625	10-23	-19
Hp Dsl Burner W/Cad Cell	36044	10-46	
Hp Dsl Burner, W/Cad Cell	36044	10-45	-5
Hydraulic Reservoir	22490SRV	10-12	
Hydraulic, Front Live	26126	10-10	
Hydraulic, Pto Drive	27022	10-11	
Idler Bushing Only	5255	10-3	14
Idler With Bushing	5244	10-3	13
Igniter/Flame Rod	38216-02	10-47	3702
Igniter/Flame Rod,W/Bracket	38216	10-47	37
Ignition Assy With Outfire	36044-24	10-46	-3
Ignition Assy Without Outfire	36044-03	10-24	-3
Ignition Wire	37241-08	10-47	40
Ins Tank,48X74x96,W/Stack	29468	10-56	-10
Ins Tank,52X80x120,D/F,Al	29470	10-57	-10
Ins Tank,60X90x176,W/Stack	29504	10-58	-10

Description	Part Number	Figure Number	Item Number
Ins Tank,68X90x174,W/Stack	29505	10-59	-10
Ins Tank,68X90x200,W/Stack	29506	10-60	-10
Insulated Tank & Tank Components		10-37	
Insulated Tank,48X74x96,W/Stack	29468	10-37	1
Insulated Tank,52X80x120,W/Stack	29470	10-37	
Insulated Tank,56X84x132,W/Stack	29473	10-37	
Insulated Tank,60X90x176,W/Stack	29504	10-37	
Insulated Tank,68X90x174,W/Stack	29505	10-37	
Insulated Tank,68X90x200,W/Stack	29506	10-37	
International Trucks		10-14	
Key,545Ch	34865-01	10-31	-105
Key,Sq,.500X1.75	17431	10-2	10
Kit,Hose & Adapter,Auto Valve	23553	10-6	23
Knob, .25 Shaft	35049	10-15	—
Ladder & Platf,48X74 Offset	22485	10-56	-70
Ladder & Platf,56X84&52X80,95	21652	10-57	-60
Ladder & Platform Group	21652	10-29	
Ladder Bracket W/M,Lh	21981-1	10-58	2
Ladder Bracket W/M,Lh	21981-1	10-59	2
Ladder Bracket W/M,Lh	21981-1	10-60	2
Ladder Bracket W/M,Rh	21981-2	10-58	3
Ladder Bracket W/M,Rh	21981-2	10-59	3
Ladder Bracket W/M,Rh	21981-2	10-60	3
Ladder Group,Rear,60X90	21992	10-58	-70
Ladder Group,Rear,68X90	21992-1	10-59	-70
Ladder Group,Rear,68X90	21992-1	10-60	-70
Ladder,56X84 & 52X80	21683	10-29	8
Ladder,56X84 & 52X80	21683	10-56	3
Ladder,56X84 & 52X80	21683	10-57	6
Ladder,68X90,Rear Head	23567	10-58	6
Ladder,68X90,Rear Head	23567	10-59	6
Ladder,68X90,Rear Head	23567	10-60	6
License Plate,"Rosco"	1002471	10-28	2
Light & Reflector Group	26421	10-27	
Light Bar,Red,Kd502	35663	10-27	1
Light,Clearance,Amber,W/Reflec	5097	10-27	6
Light,Clearance,Red W/Reflect	5096	10-27	4
Link,Support,Bottom	25948	10-17	5
Link,Support,Bottom	25948	10-38	5
Link,Support,Top	25997SRV	10-17	7

Description	Part Number	Figure Number	Item Number
Link,Support,Top	25997	10-38	7
Load & Suction Tee W/M	16420	10-2	5
Lock,Recessed Paddle	34865	10-31	-104
Locknut	6315-3	10-4	8
Locknut, Nozzle Line	36044-19	10-24	-16
Locknut, Nozzle Line	36044-19	10-46	-16
Loctite #272	38992	10-40	5
Loctite #272	38992	10-42	5
Loctite,#242	34998	10-17	-26
Loctite,#242	34998	10-38	-26
Loom,Braided Fiberglass,.375	90723	10-47	-27
Loom,Split,Convoluted,.250	71060	10-27	-10002
Loom,Split,Convoluted,.250	71060	10-35	-6
Loom,Split,Convoluted,.250	71060	10-47	-20
Lubricant, Anti-Seize, 8 Oz	36222	10-40	6
Lubricant, Anti-Seize, 8 Oz	36222	10-42	6
Mach Scr,Ph,#10-24 X 1.50	81146	10-21	25
Mach Scr,Ph,#10-24X.75	71716	10-21	31
Mach Scr,Ph,#10-24X.75	71716	10-47	43
Mach Scr,Ph,#10-24X2.00	80997	10-54	37
Mach Scr,Ph,#10-32X.38	71720	10-47	44
Manhole Screen	23514	10-30	-50
Manifold,12 Station	38991-02	10-43	1
Manifold,12 Station	38991-02	10-44	1
Manifold,8 Pos,Air	38815-01	10-21	-501
Manifold,8 Station	38991-03	10-22	1
Manifold,Hyd,4 Sta,3 Vlv W/Rel	38123	10-10	88
Manifold,Hyd,4 Sta,3 Vlv,W/Rel	38123	10-11	88
Manifold,Hyd,4 Sta,3 Vlv,W/Rel	38123	10-21	4
Manifold,Maxiii	25963SRV	10-8	1
Measuring Stick	17300	10-37	6
Measuring Stick	17303	10-37	
Measuring Stick	22175	10-37	
Measuring Stick	23161	10-37	
Measuring Stick	17310	10-37	
Measuring Stick	19488	10-37	
Measuring Stick,48X74x96,D/F	17300	10-56	-30
Measuring Stick,52X80x120,D/F	17303	10-57	-30
Measuring Stick,60X90x176,D/F	23161	10-58	-50
Measuring Stick,68X90x174,D/F	17310	10-59	-30

Description	Part Number	Figure Number	Item Number
Measuring Stick,68X90x200,D/F	19488	10-60	-30
Miscellaneous Group,Max Non Skirted	18234	10-54	-46
Motor Coupling	36044-02	10-24	-2
Motor Coupling	36044-02	10-46	-2
Motor Mount,2000	22710	10-2	16
Motor,Hyd,2000 Series	37196	10-2	30
Motor,Hyd,Lsht,8.0 Disp	38122	10-17	29
Motor,Hyd,Lsht,8.0 Disp	38122	10-38	29
Mount Assy,Hose Reel	986226	10-54	-2306
Mount Bar,Mud Flap	13960	10-32	1
Mount,Cooler	23361	10-13	6
Mount,Cooler	23361	10-13	6
Mount,Fender,Wldmt	21635	10-31	2
Mount,Fender,Wldmt	21635	10-51	1
Mount,Fender,Wldmt	21635	10-52	1
Mount,Motor,Spraybar	26016	10-17	8
Mount,Motor,Spraybar	26016	10-38	8
Mount,Pump,Front Live	23194	10-13	3
Mount,Pump,Front Live	23194	10-13	3
Mtg Plate,Bnr Cover,Dbl Flue	22469	10-26	-201
Mud Flap Assembly	14402	10-32	
Mud Flap Group, Full Width	22942	10-53	
Mud Flap,24Wx24	27737	10-32	2
Nipple,04X11.00,Std	99636	10-47	59
Nipple,04X11.00,Std	99636	10-48	26
Nipple,04X11.00,Std	99636	10-54	43
Nozzle #0	32917	10-17	24
Nozzle #0	32917	10-38	24
Nozzle #0	32917	10-41	24
Nozzle #00	35565	10-17	24
Nozzle #00	35565	10-38	24
Nozzle #00	35565	10-41	24
Nozzle #1	32918	10-38	24
Nozzle #1, 5 Gpm/40 Psi	32918	10-17	24
Nozzle #1, 5 Gpm/40 Psi	32918	10-41	24
Nozzle #1.5	36299	10-17	24
Nozzle #1.5	36299	10-38	24
Nozzle #1.5	36299	10-41	24
Nozzle #2	32919	10-17	24
Nozzle #2	32919	10-38	24

Description	Part Number	Figure Number	Item Number
Nozzle #2	32919	10-41	24
Nozzle #3	32920	10-17	24
Nozzle #3	32920	10-38	24
Nozzle #3	32920	10-41	24
Nozzle, #6	32923	10-9	7
Nozzle, #6	32923	10-9	7
Nozzle, #6	32923	10-9	7
Nozzle, #6	32923	10-9	7
Nozzle, #6	32923	10-9	7
Nozzle, #6	32923	10-9	7
Nozzle, 3.5 Gal, 45B	36044-08	10-24	-7
Nozzle, 3.5 Gal, 45B	36044-08	10-46	-7
Nozzle,2.0 Gal,60B	36044-29	10-24	-21
Nozzle,2.0 Gal,60B	36044-29	10-46	-21
Nozzle,2.5 Gal,45B	36044-27	10-24	-19
Nozzle,2.5 Gal,45B	36044-27	10-46	-19
Nozzle,3.0 Gal,45B	36044-25	10-24	-17
Nozzle,3.0 Gal,45B	36044-25	10-46	-17
Nozzle,3.0 Gal,60B	36044-28	10-24	-20
Nozzle,3.0 Gal,60B	36044-28	10-46	-20
Nozzle,Fuel Washdown,W/Handle	920220A	10-54	-2305
Nozzle,Fuel,Washdown (Nozzle Only)	901210A	10-54	-23051
Nut	15929	10-17	1
Nut	15929	10-38	1
Nut	15929	10-41	1
Nut, Lock	33765	10-25	
Nut,Flexloc,#10-24,Full,Lt	81005	10-47	45
Nut,Flexloc,#10-24,Full,Lt	80924	10-54	35
Nut,Flexloc,.250-20,Full,Lt	80350	10-9	11
Nut,Flexloc,.250-20,Full,Lt	80350	10-10	80
Nut,Flexloc,.250-20,Full,Lt	80350	10-11	80
Nut,Flexloc,.250-20,Full,Lt	80350	10-16	-6
Nut,Flexloc,.250-20,Full,Lt	80350	10-21	22
Nut,Flexloc,.312-18,Full,Lt	80351	10-17	50
Nut,Flexloc,.312-18,Full,Lt	80351	10-31	9
Nut,Flexloc,.312-18,Full,Lt	80351	10-32	5
Nut,Flexloc,.312-18,Full,Lt	80351	10-38	50
Nut,Flexloc,.312-18,Full,Lt	80351	10-41	50
Nut,Flexloc,.312-18,Full,Lt	80351	10-47	25
Nut,Flexloc,.312-18,Full,Lt	80351	10-50	6

Description	Part Number	Figure Number	Item Number
Nut,Flexloc,.312-18,Full,Lt	80351	10-51	9
Nut,Flexloc,.312-18,Full,Lt	80351	10-52	10
Nut,Flexloc,.312-18,Full,Lt	80351	10-54	32
Nut,Flexloc,.375-16, Full,Lt	80352	10-53	8
Nut,Flexloc,.375-16,Full,Lt	80352	10-5	17
Nut,Flexloc,.375-16,Full,Lt	80352	10-10	48
Nut,Flexloc,.375-16,Full,Lt	80352	10-11	48
Nut,Flexloc,.375-16,Full,Lt	80352	10-16	-7
Nut,Flexloc,.375-16,Full,Lt	80352	10-23	-12
Nut,Flexloc,.375-16,Full,Lt	80352	10-29	14
Nut,Flexloc,.375-16,Full,Lt	80352	10-45	-10
Nut,Flexloc,.375-16,Full,Lt	80352	10-47	54
Nut,Flexloc,.375-16,Full,Lt	80352	10-48	17
Nut,Flexloc,.375-16,Full,Lt	80352	10-56	14
Nut,Flexloc,.375-16,Full,Lt	80352	10-57	13
Nut,Flexloc,.375-16,Full,Lt	80352	10-58	12
Nut,Flexloc,.375-16,Full,Lt	80352	10-59	12
Nut,Flexloc,.375-16,Full,Lt	80352	10-60	-12
Nut,Flexloc,.500-13,Full,Lt	80354	10-2	52
Nut,Flexloc,.500-13,Full,Lt	80354	10-10	69
Nut,Flexloc,.500-13,Full,Lt	80354	10-12	9
Nut,Flexloc,.500-13,Full,Lt	80354	10-30	11
Nut,Flexloc,.500-13,Full,Lt	80354	10-49	-6
Nut,Flexloc,.500-13,Full,Lt	80354	10-54	-2303
Nut,Flexloc,.625-11,Full,Lt	80356	10-2	53
Nut,Flexloc,.625-11,Full,Lt	80356	10-17	63
Nut,Flexloc,.625-11,Full,Lt	80356	10-37	-1406
Nut,Flexloc,.625-11,Full,Lt	80356	10-38	63
Nut,Hex,#10-24	80824	10-21	24
Nut,Hex,.250-20	80036	10-17	34
Nut,Hex,.250-20	80036	10-27	-1003
Nut,Hex,.250-20	80036	10-38	34
Nut,Hex,.312-18	80037	10-6	26
Nut,Hex,.312-18	80037	10-17	35
Nut,Hex,.312-18	80037	10-38	35
Nut,Hex,.375-16	80038	10-1	14
Nut,Hex,.375-16	80038	10-2	36
Nut,Hex,.375-16	80038	10-5	11
Nut,Hex,.375-16	80038	10-8	8
Nut,Hex,.375-16	80038	10-20	12

Description	Part Number	Figure Number	Item Number
Nut,Hex,.375-16	80038	10-34	3
Nut,Hex,.375-16	80038	10-55	13
Nut,Hex,.500-13	80040	10-8	9
Nut,Hex,.500-13	80040	10-17	68
Nut,Hex,.500-13	80040	10-20	11
Nut,Hex,.500-13	80040	10-38	68
Nut,Hex,.625-11	80042	10-1	7
Nut,Hex,.625-11	80042	10-8	10
Nut,Hex,Jam .875-14	80097	10-37	-12
Nut,Hex,Jam,.312-18	80073	10-6	27
Nut,Hex,Jam,.500-13	80076	10-30	12
Nut,Hex,Jam,1.125-12	80099	10-17	36
Nut,Hex,Jam,1.125-12	80099	10-38	36
Nut,Hex,Jam,1.125-12	80099	10-41	36
Nut,Lk,Elec Cnd,.500-14 Npt	33765	10-23	-20
Nut,Lk,Elec Cnd,.500-14 Npt	33765	10-45	-3
Oil,Hydraulic,Iso68	91500	10-11	49
Oil,Hydraulic,Multi Service		10-10	49
O-Ring,.103 X .362,Viton	38054	10-19	3
O-Ring,.103 X .362,Viton	38054	10-40	3
O-Ring,.103 X .362,Viton	38054	10-42	3
Oring,3.237 Id X .103,Sae 152	36808	10-10	-808
O-Ring,4.50 Od	35008	10-17	27
O-Ring,4.50 Od	35008	10-38	27
O-Ring,4.50 Od	35008	10-41	27
Overflow Attachment Group	23572	10-34	
Packing Gland	5257	10-3	2
Packing Retainer Washer	32821	10-3	4
Packing Set,3 Rings	34972-01	10-7	7
Packing,.125 Sq	5059	10-54	-461
Packing,10 Pcs Per Pack	5249	10-3	3
Pad,Mount	23562	10-58	-602
Pad,Mount	23562	10-59	-602
Pad,Mount	23562	10-60	-602
Pad,Tapped	21636	10-31	3
Pad,Tapped	21636	10-51	2
Pad,Tapped	21636	10-52	2
Pan Head Screw,#10-24 Unc X3/4	71716	10-30	8
Penetrating Thread Locker 29014	35480	10-9	14
Pin,Hyd,Lift Cylinder	9081	10-17	61

Description	Part Number	Figure Number	Item Number
Pin,Hyd,Lift Cylinder	9081	10-38	61
Pipe Plug,2.00Mp,Skt Hd,Mi	99299	10-12	12
Pipe Plug,Mag,06Mp,Sq Hd	35254	10-12	3
Pipe W/Slug Therm Tube Amc Eng	12447	10-50	-701
Pipe, Cplg, 08Fp	99492	10-35	-2003
Pipe,45,04Fp,Mi	99503	10-54	38
Pipe,45,16Fp,Mi	99507	10-36	-31
Pipe,90,04Fp-0Fmp,Forged,2000#	91531	10-47	32
Pipe,90,04Fp-0Fmp,Forged,2000#	91531	10-48	3
Pipe,90,04Fp-0Fmp,Forged,2000#	91531	10-50	-710
Pipe,90,08Fp,Mi	99512	10-54	39
Pipe,90,08Mp-08Fp,Mi	99526	10-20	6
Pipe,90,08Mp-08Fp,Mi	99526	10-54	40
Pipe,90,08Mp-O8fp,Mi	99526	10-2	58
Pipe,90,12Fp-08Fp,Galv	91158	10-9	5
Pipe,90,12Fp-08Fp,Galv	91158	10-9	5
Pipe,90,12Mp-12Fp,Mi	99527	10-10	52
Pipe,90,12Mp-12Fp,Mi	99527	10-11	52
Pipe,90,16Fp,Mi	99514	10-11	90
Pipe,90,16Fp,Mi	99514	10-36	-32
Pipe,90,16Mp-16Fp,Mi	99528	10-2	59
Pipe,90,16Mp-16Fp,Mi	99528	10-33	5
Pipe,Bush,06Mp-04Fp,Stl	99448	10-26	-304
Pipe,Bush,06Mp-04Fp,Stl	99448	10-55	11
Pipe,Bush,08Mp-04Fp,Stl	99980	10-21	13
Pipe,Bush,08Mp-04Fp,Stl	99980	10-23	-4
Pipe,Bush,08Mp-04Fp,Stl	99980	10-36	-1515
Pipe,Bush,08Mp-04Fp,Stl	99980	10-45	-19
Pipe,Bush,08Mp-04Fp,Stl	99980	10-54	44
Pipe,Bush,08Mp-06Fm,Mi	99450	10-26	-305
Pipe,Bush,08Mp-06Fp,Mi	99450	10-35	-2002
Pipe,Bush,1.25 Mp-12Fp,Mi	99463	10-12	14
Pipe,Bush,12Mp-06Fp,Stl	99984	10-20	7
Pipe,Bush,16Mp-04Fp,Mi	99460	10-35	8
Pipe,Bush,16Mp-08Fp,Stl	99990	10-36	-1516
Pipe,Bush,16Mp-12Fp,Galv,Mi	91159	10-9	12
Pipe,Cap,12Fp,Mi	99479	10-17	-5002
Pipe,Cap,12Fp,Mi	99479	10-38	-5002
Pipe,Cap,12Fp,Mi	99479	10-41	-5002
Pipe,Cplg,04Fp	99490	10-47	60

Description	Part Number	Figure Number	Item Number
Pipe,Cplg,04Fp	99490	10-48	27
Pipe,Cplg,1.00	90126	10-9	6
Pipe,Cplg,1.00	90126	10-9	6
Pipe,Cplg,1.00	90126	10-35	7
Pipe,Cplg,16Fp	90126	10-9	6
Pipe,Half Cplg,06Fp,300#	90897	10-50	-709
Pipe,Hex Bushing,4X.75,Blk,Mi	983602	10-38	-5001
Pipe,Hex Bushing,4X.75,Blk,Mi	983602	10-41	-5001
Pipe,Nipple,.375Xclose	99638	10-23	-5
Pipe,Nipple,.375Xclose	99638	10-26	-309
Pipe,Nipple,.375Xclose	99638	10-45	-20
Pipe,Nipple,04X1.50,300#	90745	10-47	2
Pipe,Nipple,04X2.50,300#	90746	10-47	30
Pipe,Nipple,04X2.50,300#	90746	10-48	9
Pipe,Nipple,04X36.00	985812	10-47	61
Pipe,Nipple,04X36.00	985812	10-48	28
Pipe,Nipple,04X4.00,300#	90749	10-47	31
Pipe,Nipple,04X4.00,300#	90749	10-50	-708
Pipe,Nipple,04Xclose(7/8)	99591	10-21	12
Pipe,Nipple,04Xclose,300#	90744	10-47	29
Pipe,Nipple,04Xclose,300#	90744	10-48	5
Pipe,Nipple,04Xclose,300#	90744	10-50	-707
Pipe,Nipple,08Xclose	99596	10-2	64
Pipe,Nipple,08Xclose	99596	10-10	55
Pipe,Nipple,08Xclose	99596	10-11	55
Pipe,Nipple,08Xclose	99596	10-54	42
Pipe,Nipple,12X3.00	99602	10-17	-5003
Pipe,Nipple,12X3.00	99602	10-38	-5003
Pipe,Nipple,12X3.00	99602	10-41	-5003
Pipe,Nipple,12Xclose	99600	10-9	13
Pipe,Nipple,16Xclose	99606	10-2	65
Pipe,Nipple,16Xclose	99606	10-10	56
Pipe,Nipple,16Xclose	99606	10-11	56
Pipe,Plug,04Mp,Sq Hd,Mi	99535	10-36	-1514
Pipe,Plug,08Mp,Sq Hd,Mi	99537	10-20	8
Pipe,Plug,12Mp,Sq Hd,Mi	99538	10-2	60
Pipe,Plug,16Mp,Sq Csk Head,Mi	70700	10-17	57
Pipe,Plug,16Mp,Sq Csk Head,Mi	70700	10-38	57
Pipe,Plug,16Mp,Sq Csk Head,Mi	70700	10-41	57
Pipe,Plug,16Mp,Sq Hd,Mi	99539	10-2	61

Description	Part Number	Figure Number	Item Number
Pipe,Plug,16Mp,Sq Hd,Mi	99539	10-36	-33
Pipe,Plug,16Mp,Sq Hd,Mi	99539	10-54	-464
Pipe,Plug,2.00Mp,Sq Hd,Mi	70444	10-36	-27
Pipe,Plug08mp,Sq Head	99537	10-26	-306
Pipe,Tbe,08X55.00	91316	10-36	-1512
Pipe,Tbe,08X83.00	91315	10-36	-1511
Pipe,Tee,04Fp,Forged,2000#	91532	10-47	33
Pipe,Tee,04Fp,Forged,2000#	91532	10-48	6
Pipe,Tee,04Fp,Forged,2000#	91532	10-50	-712
Pipe,Tee,06Fp,Mi	99568	10-23	-3
Pipe,Tee,06Fp,Mi	99568	10-26	-307
Pipe,Tee,06Fp,Mi	99568	10-45	-18
Pipe,Tee,08Fp,Mi	99569	10-2	62
Pipe,Tee,08Fp,Mi	99569	10-26	-308
Pipe,Tee,08Fp,Mi	99569	10-54	41
Pipe,Tee,16Fp-16Fp-08Fp,Mi	99581	10-10	54
Pipe,Tee,16Fp-16Fp-08Fp,Mi	99581	10-11	54
Pipe,Union,16Fp,Mi	99589	10-2	63
Plate,Access	26142	10-17	20
Plate,Access	26142	10-38	20
Plate,Slide	26033	10-17	11
Plate,Slide	26033	10-38	11
Plate,Slide	26033	10-41	11
Plate,Switch	24659	10-47	4
Plate,Tapped	15944	10-36	-21
Plate,Vlv,Max3	1002015	10-21	2
Platform	21678	10-29	3
Platform	21678	10-57	3
Platform Installation, W/O Handrail	1002456	10-1	
Platform W/M	1001749	10-2	14
Platform,Non-Skirt	22484	10-56	9
Platform,Pump	15772	10-2	2
Platform,Rear,Tank Assy	986973	10-58	-60
Platform,Rear,Tank Assy	986973	10-59	-60
Platform,Rear,Tank Assy	986973	10-60	-60
Plunger	25260	10-19	1
Plunger	25260	10-40	1
Plunger	25260	10-42	1
Pointer,W/M 17.25	17288-1	10-37	4
Pointer,W/M 17.25	17288-1	10-58	-20

Description	Part Number	Figure Number	Item Number
Pointer,W/M 17.25	17288-1	10-59	-20
Pointer,W/M 17.25	17288-1	10-60	-20
Pointer,W/M,13.50	17288-2	10-37	5
Pointer,W/M,Fr Head	17288-2	10-56	-20
Pointer,W/M,Fr Head	17288-2	10-57	-20
Poppet	6315-8	10-4	2
Port Kit,08 Threaded	984385	10-54	-1001
Portable Torch Holder Assembly	17442	10-50	
Portable Torch Holder,W/M	17438	10-50	1
Pot Assembly,Max3	26141SRV	10-17	19
Pot Assembly,Max3	26141SRV	10-18	
Pot Assembly,Max3	26141	10-38	19
Pot Assembly,Max3	26141	10-39	
Potentiometer W/Conn,Max3	26184	10-18	1
Potentiometer W/Conn,Max3	26184	10-39	1
Potentiometer, 100 Ohm	35050	10-15	8
PTO, Varies Per Truck	34850-XXX	10-14	
Pump Discharge Manifold W/M	22697	10-2	15
Pump Mounting Group	23196	10-13	
Pump Mounting Group	23894	10-13	
Pump Nozzle Fitting	36044-16	10-24	-14
Pump Nozzle Fitting	36044-16	10-46	-14
Pump,Hyd,Constant Flow	38200	10-10	200
Pump,Hyd,M46,Cc2,Edc,A Pad	38120	10-10	120
Pump,Water/Fuel,Diaphragm,12V	985043	10-54	10
Rack,Gear,8 D.P.,Modified	26036	10-17	14
Rack,Gear,8 D.P.,Modified	26036	10-38	14
Rack,Gear,8 D.P.,Modified	26036	10-41	14
Radar Horn	18122SRV	10-16	
Radar Horn	35023	10-16	-2
Rail Side	27538	10-58	-6001
Rail Side	27538	10-59	-6001
Rail Side	27538	10-60	-6001
Rail W/M,Safety,Ladder Platform	986648	10-58	4
Rail W/M,Safety,Ladder Platform	986648	10-59	4
Rail W/M,Safety,Ladder Platform	986648	10-60	4
Rail,Barslide,Bttm	26112	10-17	18
Rail,Barslide,Bttm	26112	10-38	18
Rail,Barslide,Top	26017	10-17	9
Rail,Barslide,Top	26017	10-38	9

Description	Part Number	Figure Number	Item Number
Rear Platform & Piping	1002455	10-2	
Rear Platform & Piping Assy,96	1002455	10-1	2
Reel,W/Hose,Spray Down	920200	10-54	-2304
Reel,W/Hose,Spraydown	986227	10-54	23
Reflector,Amber	5037	10-27	3
Reflector,Red	5036	10-27	2
Regulator,Lpg	6119	10-47	18
Regulator,Lpg	6119	10-48	11
Regulator,Lpg	6119	10-50	-711
Relay,Spdt,40Amp,12Vdc	36085	10-25	
Relief Valve	6315	10-4	
Relief Valve	37488-03	10-10	-8802
Relief Valve	37488-03	10-21	-402
Relief Valve Assy (See Fig 1-4)	6315	10-3	20
Relief Valve Gasket Set	6314	10-3	19
Reservoir,20 Gal	22489	10-12	1
Reservoir,Cleanout Cover	22750	10-12	2
Reservoir,Installation,20 Gal	22490SRV	10-10	4
Reservoir,Installation,20 Gal	22490SRV	10-11	4
Return Line Valve	28725	10-55	
Rework,Bar Plug	10166	10-17	-5001
Ring,Split,2.02Idx.18,Zinc Ctd	37187	10-17	65
Ring,Split,2.02Idx.18,Zinc Ctd	37187	10-38	65
Roll Pin,.250X1.50	80345	10-7	6
Roll Pin,.500X1.50	80348	10-30	10
Rotor And Shaft	5241	10-3	12
Rotor Bearing Sleeve Bushing Only	5247	10-3	5
Rotor Bearing Sleeve Gasket	6541	10-3	7
Rotor Bearing Sleeve Washer	5251	10-3	10
Rotor Bearing With Bushing Sleeve	5250	10-3	6
Rotor Thrust Washer	5248	10-3	11
Sampling Valve, Front Head	22468	10-33	
Scr,Slfdrl,Hh,#10X1.00,#3Pt	81160	10-23	-15
Scr,Slfdrl,Hh,#10X1.00,#3Pt	81160	10-27	7
Scr,Slfdrl,Hh,#10X1.00,#3Pt	81160	10-27	-1002
Scr,Slfdrl,Hh,#10X1.00,#3Pt	81160	10-28	-8
Scr,Slfdrl,Hh,#10X1.00,#3Pt	81160	10-45	-11
Scr,Slftpg,Hh,.250-20X.75	80324	10-17	48
Scr,Slftpg,Hh,.250-20X.75	80324	10-34	7
Scr,Slftpg,Hh,.250-20X.75	80324	10-38	48

Description	Part Number	Figure Number	Item Number
Screen	23353	10-10	-3801
Screen	23196	10-13	4
Screen	23353	10-13	4
Screen,Wldmt,Cone	28519	10-2	17
Screw,Self Tap,Btn Hd,.312X	81062	10-54	-465
Seal Kit,38122 Motor	38122-01	10-17	-2901
Seal Kit,38122 Motor	38122-02	10-38	-2901
Seal Kit,602 Vlv	34970-01	10-2	-701
Seal Kit,606 Vlv	34971-01	10-2	-801
Seal Kit,Actuator	35149-01	10-6	-1501
Seal Kit,For Cyl	6231-01	10-17	5901
Seal Kit,For Cyl	6231-01	10-38	-5901
Sealant,Pipe,W/Teflon,8.45 Oz	36360	10-2	27
Set S,Hskt,Kcup,.312-18X.50	80397	10-6	39
Shaft,Thd'd,1.75	26059	10-17	15
Shaft,Thd'd,1.75	26059	10-38	15
Sheet, Blanking	28954	10-21	50
Shim,Motor Mount	15787	10-2	4
Sleeve,Abrasion,Nylon,1.75Id	90803	10-10	50
Sleeve,Abrasion,Nylon,1.75Id	90803	10-11	50
Sleeve,Abrasion,Nylon,1.75Id	90803	10-17	-2209
Sleeve,Abrasion,Nylon,1.75Id	90803	10-38	-2212
Sleeve,Abrasion,Nylon,1.75Id	90803	10-41	-2212
Socket Wldmt,1.50 Sq	23059SRV	10-6	9
Socket Wldmt,2 Sq	22776SRV	10-6	7
Socket,Quick Coupler,02Npt	35925	10-38	-2203
Socket,Quick Coupler,02Npt	35925	10-41	-2203
Solenoid	37241-07	10-47	39
Solenoid	37241-07	10-48	10
Solenoid Valve, 10/12 Valve Manifold	38991-2	10-43	
Solenoid Valve, 12 Valve Manifold	38991	10-44	
Solenoid Valve, 8 Valve Manifold	38991-1	10-22	
Solenoid,52Gal Lp Tank	34079-03	10-49	-103
Solid Shaft Assembly	39107	10-14	-2
Solid Shaft Assembly	39107	10-14	-2
Spacer,Ladder	21799	10-29	7
Spacer,Ladder	25561	10-56	-60
Spacer,Ladder	21799	10-56	6
Spacer,Ladder	21799	10-57	8
Spacer,Ladder	21799	10-58	1

Description	Part Number	Figure Number	Item Number
Spacer,Ladder	21799	10-59	1
Spacer,Ladder	21799	10-60	1
Spacer,Ladder,60X90	22322	10-58	5
Spacer,Ladder,60X90	22322	10-59	5
Spacer,Ladder,60X90	22322	10-60	5
Spacer,Socket,3.00 3 Way Valve	20596	10-6	4
Speed, Gps Sensor	1000174	10-16	
Splice,Triple Axle Fender	23959	10-52	3
Spr,1.62 Diax3.5,1005 Psi	35209	10-37	-1402
Spray Valve Assembly	26469	10-19	
Spray Valve Assembly	26469	10-40	
Spray Valve Assembly	26469	10-42	
Spray Valve Assembly,Max3	26469	10-17	23
Spray Valve Assembly,Max3	26469	10-38	23
Spray Valve Assembly,Max3	26469	10-41	23
Spraybar Assembly	28971	10-41	
Spraybar Assembly, 16 Foot	25961	10-17	
Spraybar Assy, 18 Foot	28762	10-38	
Spraybar Slide Assembly	1002281	10-17	
Spraybar W/M,Extendable	25901	10-17	3
Spraybar W/M,Extendable	25901	10-38	3
Spraybar W/M,Extendable	25901	10-41	3
Spraybar,Handspray,2-Nozzles	19576	10-9	5
Spraybar,Handspray,2-Nozzles	19576	10-9	5
Spraybar,Handspray,3-Nozzles	19578SRV	10-9	5
Spraybar,Handspray,3-Nozzles	19578SRV	10-9	5
Spraybar,W/M,Ext	28630	10-38	74
Spraybar,W/M,Ext	28630	10-41	74
Spring	6315-7	10-4	3
Spring Guide	6315-4	10-4	4
Spring,Max3,Torsion	38660	10-17	72
Spring,Max3,Torsion	38660	10-38	72
Square Plate	36044-11	10-24	-10
Square Plate	36044-11	10-46	-10
Square Plate Gasket	36044-06	10-24	-6
Square Plate Gasket	36044-06	10-46	-6
Standoff,10-32Unfx3,Male-Fem	36050	10-25	1
Stiffener,Wide,Scissor Bar	26622	10-17	58
Stiffener,Wide,Scissor Bar	26622	10-38	58
Stop,Pot Body	26140	10-18	2

Description	Part Number	Figure Number	Item Number
Stop,Pot Body	26140	10-39	2
Strainer W/M,Disch Manifold	19800	10-2	12
Strainer,Lqd,100Mesh,Nyl,08Fp	36926	10-54	21
Strainer,Suct,2Npt,25Gpm,100Me	33148	10-10	8
Strainer,Suct,2Npt,25Gpm,100Me	33148	10-11	8
Strainer,Y,.250Pt,40 Mesh	5121	10-47	16
Strainer,Y,.250Pt,40 Mesh	5121	10-48	4
Strip,Adh Sponge,.75X.062	35244	10-28	-1
Support,Burner Piping	17648	10-47	3
Support,Burner Piping	17648	10-48	8
Support,Filter	15984	10-10	2
Support,Filter	15984	10-11	2
Support,Spraybar,Lh	25949	10-17	-6
Support,Spraybar,Lh	25949	10-38	-6
Support,Spraybar,Rh	25944	10-17	4
Support,Spraybar,Rh	25944	10-38	4
Support,W/M,Load & Transfer	17376	10-5	3
Switch Plate,Hp Diesel Burner	19344	10-25	4
Switch, Toggle, DPDT, 2 Pos, 6 Pole	38158	10-15	2
Switch, Toggle, DPDT, 3 Pos, Long	36768	10-15	7
Switch, Toggle, DPDT, MOM, Blade	38185	10-15	5
Switch, Toggle, DPST, 2 Pos	38157	10-15	6
Switch, Toggle, DPST, 2 Pos	38157	10-15	9
Switch, Toggle, DPST, 2 Pos	38157	10-15	10
Switch, Toggle, SPDT, 3 Pos, MOM	37516	10-15	4
Switch,Rocker,Spst,Off/On	35892	10-25	2
Switch,Rocker,Spst,Off/On	35892	10-47	14
Switch,Temp,210 Deg F.,-08Mp	36343	10-12	4
Swivel,In-Line,16Fp	37439	10-9	6
Swivel,In-Line,16Fp	37439	10-9	6
Swivel,In-Line,16Fp	37439	10-9	6
Tab,Mt Piping Bracket	28539	10-47	38
Tab,Mt Piping Bracket	28539	10-48	22
Tab,Washdown Holster	986273	10-54	-2603
Tack,Dia.146/.104X.04 Grip Lg	81159	10-28	-7
Tank Grp,1000 Gal,48X74x96,Df	985597-10	10-56	
Tank Grp,1500 Gal,52X80x120,Df	985597-15	10-57	
Tank Grp,3000 Gal,60X90x176,Df	985597-30	10-58	
Tank Grp,3500 Gal,68X90x174,Df	985597-35	10-59	
Tank Grp,4000 Gal,68X90x200,Df	985597-40	10-60	

Description	Part Number	Figure Number	Item Number
Tank Mount,Truck Angle	14253	10-37	-1401
Tank Mounting,Single	17565	10-37	13
Tank Top Opening	TBD	10-30	
Tank Valve Assy, 4”	27136SRV	10-7	
Tank Wldmt,Diesel	21701	10-36	1
Tank Wldmt,Diesel	21701	10-36	-1503
Tank,Lpg,52Gal	34079	10-49	-1
Tank,Lpg,52Gal,Frame Mount	13766	10-49	
Tape,Butyl,Glass Setting	38414	10-28	-50
Temp Probe,Rtd,9 In,Min Ins	38435	10-35	4
Term,Push-On,.18,Fem,16-14 Ga	72203	10-47	49
Term,Push-On,.25,Fem,16-14 Ga	33600	10-47	51
Term,Push-On,.25,Fem,22-18 Ga	35926	10-6	22
Term,Ring,12-10 Ga,.375 Stud	33612	10-23	-8
Term,Ring,12-10 Ga,.375 Stud	33612	10-45	-2
Term,Ring,16-14 Ga,#10 Stud	851390204	10-47	50
Term,Ring,16-14 Ga,#6 Stud	35123	10-47	48
Term,Solder Splice,20-10 Awg	37422	10-47	22
Term,Solder Splice,22-14 Awg	37421	10-47	47
Thd’d Rod,.500-13X3.25	20166	10-30	14
Therm, Armored,Pencil,100° - 500° F	5133	10-35	-300
Therm, Dial, 5.0 Face, 500F	5470	10-35	-2001
Thermometer Group	22212	10-35	100
Threadlocker,High Temp 272	35554	10-2	25
Tie Down W/M,Tank	16159	10-37	-1301
Tie Wrap,.094X4.00	851201417	10-23	-22
Tie Wrap,.094X4.00	851201417	10-45	-13
Tie Wrap,.188X11.00	33597	10-10	64
Tie Wrap,.188X11.00	33597	10-11	64
Tie Wrap,.188X7.5	33596	10-54	-7
Toolbox Assembly	23977	10-31	-10
Toolbox Wldmt,W/Control Box	23974	10-31	-103
Top Opening Cover	20168	10-30	4
Top Opening Cover Cross Bar	20165	10-30	2
Top Opening Cover Gasket	36062	10-30	5
Top Opening Cover Knob	6066	10-30	6
Top Opening Cover Latch	20162	10-30	1
Top Opening Cover Retainer	20167	10-30	3
Top Opening Screen Assembly,Full	21282	10-30	-15
Torch,Portable,Lpg	25666	10-50	7

Description	Part Number	Figure Number	Item Number
Transfer Line, Ground Level	19895	10-5	
Transfer Line,Lower,Grd Level	19892SRV	10-5	5
Transfer Line,Upper,Grd Level	19891SRV	10-5	4
Truck Mounting,Single	17564	10-37	14
Tube Assy,Hyd,Max,Pto	27021	10-11	22
Tube Assy,Hydraulics,Max Ii	23383SRV	10-10	22
Tubing,Air Brake,Blk,08	36481	10-21	16
U-Bolt,.375-16,3.62Iw,4.62Il	35089	10-5	8
Valve	37488-01	10-10	-8801
Valve	37488-01	10-21	-401
Valve Assy,Tank,3.00	28184	10-55	2
Valve Body	6315-6	10-4	1
Valve Box, Subassembly	28274	10-21	
Valve, Solenoid, 1" Ball	1003147	10-2	67
Valve, Solenoid, 1/2" Ball	1003146	10-2	66
Valve,3 Way,02X02x02	38132	10-38	-2206
Valve,3 Way,02X02x02,	38132	10-17	-2203
Valve,3 Way,02X02x02,	38132	10-41	-2206
Valve,3 Way,Air,Spray Bar	38130	10-41	-2205
Valve,3 Way,Air,Spray Bar	38130	10-17	-2202
Valve,3 Way,Air,Spray Bar	38130	10-38	-2205
Valve,Ball,1.00	280210	10-2	19
Valve,Ball,1.00	280210	10-33	2
Valve,Sol,Air,3 Cv	38816-01	10-55	7
Valve,Solenoid, 1.00 Ball	1003147	10-36	6
Vlv,36 Series	38991-01	10-22	2
Vlv,36 Series	38991-01	10-43	2
Vlv,36 Series	38991-01	10-44	2
Vlv,Assy,Tank,4 Inch	27136SRV	10-6	8
Vlv,Ball,.375	480160	10-21	6
Vlv,Ball,08 Npt,T Handle	36622	10-2	28
Vlv,Ball,12 Npt	35832	10-9	8
Vlv,Check,08 Npt,20 Psi Crack	6351	10-10	36
Vlv,Check,08 Npt,20 Psi Crack	6351	10-11	36
Vlv,Check,08 Npt,Swing	35569	10-36	5
Vlv,Check,08 Npt,Swing	35569	10-36	-1507
Vlv,Drain Cock,.250 Npt	910150	10-20	4
Vlv,Drain Cock,.250 Npt	5499	10-36	3
Vlv,Drain Cock,.250 Npt	5499	10-36	-1509
Vlv,Gate,3.00,Flanged	34973	10-5	6

Description	Part Number	Figure Number	Item Number
Vlv,Hyd,Flow Divider,	38210	10-10	95
Vlv,Hyd,Flow Divider,	38210	10-11	95
Vlv,Lpg,Relief,04 Npt,450 Psi	34318	10-47	10
Vlv,Lpg,Relief,04 Npt,450 Psi	34318	10-48	7
Vlv,Needle,04 Female,Npt	6120	10-47	19
Vlv,Needle,04 Female,Npt	6120	10-48	13
Vlv,Needle,04 Female,Npt	6120	10-50	-704
Vlv,Pilot	6297	10-48	14
Vlv,Pilot	6297	10-50	-705
Vlv,Plug,3.00 2-Way,Modified	16464SRV	10-2	7
Vlv,Plug,3.00 3-Way,Modified	16465SRV	10-2	8
Vlv,Press Protection,102-88	37049	10-21	11
Vlv,Sol,Air,8 Pos,Assy,1 Cv	38815	10-21	5
Vlv,Wldmt,Tank,4”	27135SRV	10-7	1
Wand,Handspray	18593	10-9	3
Washdown System	23223	10-54	
Washer,1.50Odx1.187idx.10Thk	38141	10-17	31
Washer,1.50Odx1.187idx.10Thk	38141	10-38	31
Washer,1.50Odx1.187idx.10Thk	38141	10-41	31
Washer,Flat,Sae,.312	80963	10-54	-2601
Washer,Flat,Uss,..375	80142	10-51	6
Washer,Flat,Uss,.312	80141	10-2	38
Washer,Flat,Uss,.312	80141	10-6	28
Washer,Flat,Uss,.312	80141	10-17	38
Washer,Flat,Uss,.312	80141	10-32	3
Washer,Flat,Uss,.313	80141	10-23	-9
Washer,Flat,Uss,.313	80141	10-38	38
Washer,Flat,Uss,.313	80141	10-45	-7
Washer,Flat,Uss,.313	80141	10-50	4
Washer,Flat,Uss,.313	80141	10-51	5
Washer,Flat,Uss,.313	80141	10-52	6
Washer,Flat,Uss,.313	80141	10-54	30
Washer,Flat,Uss,.375	80142	10-5	12
Washer,Flat,Uss,.375	80142	10-6	29
Washer,Flat,Uss,.375	80142	10-10	42
Washer,Flat,Uss,.375	80142	10-11	42
Washer,Flat,Uss,.375	80142	10-16	-4
Washer,Flat,Uss,.375	80142	10-17	39
Washer,Flat,Uss,.375	80142	10-20	15
Washer,Flat,Uss,.375	80142	10-23	-10

Description	Part Number	Figure Number	Item Number
Washer,Flat,Uss,.375	80142	10-29	10
Washer,Flat,Uss,.375	80142	10-31	6
Washer,Flat,Uss,.375	80142	10-34	4
Washer,Flat,Uss,.375	80142	10-36	-30
Washer,Flat,Uss,.375	80142	10-38	39
Washer,Flat,Uss,.375	80142	10-45	-8
Washer,Flat,Uss,.375	80142	10-47	55
Washer,Flat,Uss,.375	80142	10-48	18
Washer,Flat,Uss,.375	80142	10-52	7
Washer,Flat,Uss,.375	80142	10-53	5
Washer,Flat,Uss,.375	80142	10-56	11
Washer,Flat,Uss,.375	80142	10-57	9
Washer,Flat,Uss,.375	80142	10-58	7
Washer,Flat,Uss,.375	80142	10-59	7
Washer,Flat,Uss,.375	80142	10-60	-7
Washer,Flat,Uss,.500	80144	10-6	30
Washer,Flat,Uss,.500	80144	10-10	67
Washer,Flat,Uss,.500	80144	10-12	7
Washer,Flat,Uss,.500	80144	10-17	69
Washer,Flat,Uss,.500	80144	10-38	69
Washer,Flat,Uss,.500	80144	10-49	-4
Washer,Flatt,Uss,.313	80141	10-47	21
Washer,Lock,#10	871071601	10-30	9
Washer,Lock,#10	871071601	10-47	46
Washer,Lock,.250	80160	10-12	8
Washer,Lock,.250	80160	10-17	40
Washer,Lock,.250	80160	10-38	40
Washer,Lock,.312	80161	10-2	41
Washer,Lock,.312	80161	10-6	31
Washer,Lock,.312	80161	10-17	41
Washer,Lock,.312	80161	10-23	-11
Washer,Lock,.312	80161	10-38	41
Washer,Lock,.312	80161	10-45	-9
Washer,Lock,.375	80162	10-1	9
Washer,Lock,.375	80162	10-2	42
Washer,Lock,.375	80162	10-5	13
Washer,Lock,.375	80162	10-6	32
Washer,Lock,.375	80162	10-7	4
Washer,Lock,.375	80162	10-8	11
Washer,Lock,.375	80162	10-10	43

Description	Part Number	Figure Number	Item Number
Washer,Lock,.375	80162	10-11	43
Washer,Lock,.375	80162	10-17	42
Washer,Lock,.375	80162	10-20	10
Washer,Lock,.375	80162	10-29	-11
Washer,Lock,.375	80162	10-31	7
Washer,Lock,.375	80162	10-34	5
Washer,Lock,.375	80162	10-36	-29
Washer,Lock,.375	80162	10-38	42
Washer,Lock,.375	80162	10-51	7
Washer,Lock,.375	80162	10-52	8
Washer,Lock,.375	80162	10-55	14
Washer,Lock,.375	80162	10-57	10
Washer,Lock,.375	80162	10-58	8
Washer,Lock,.375	80162	10-59	8
Washer,Lock,.375	80162	10-60	-8
Washer,Lock,.500	80164	10-2	43
Washer,Lock,.500	80164	10-6	33
Washer,Lock,.500	80164	10-8	12
Washer,Lock,.500	80164	10-17	43
Washer,Lock,.500	80164	10-20	9
Washer,Lock,.500	80164	10-38	43
Washer,Lock,.500	80164	10-41	43
Washer,Lock,.500	80164	10-54	-2301
Washer,Lock,.625	80166	10-1	10
Washer,Lock,.625	80166	10-2	44
Washer,Lock,.625	80166	10-8	13
Washer,Lock,.750	80168	10-1	11
Washer,Lock,.750	80168	10-2	45
Washer,Sae Plain,.500	80695	10-2	55
Washer,Sq,.281Idx1.5	26060	10-17	16
Washer,Sq,.281Idx1.5	26060	10-38	16
Washer,Teflon	35036	10-17	28
Washer,Teflon	35036	10-38	28
Washer,Teflon	35036	10-41	28
Washer,Type A Plain,#10	80995	10-21	23
Washer,Type A Plain,#10	80995	10-54	36
Washer,Type A Plain,.250	80140	10-10	78
Washer,Type A Plain,.250	80140	10-11	78
Washer,Type A Plain,.250	80140	10-17	37
Washer,Type A Plain,.250	80140	10-21	20

Description	Part Number	Figure Number	Item Number
Washer,Type A Plain,.250	80140	10-38	37
Washer,Type A Plain,.312	80141	10-31	5
Washer,Type A Plain,.625	80146	10-1	8
Washer,Type A Plain,.625	80146	10-2	39
Washer,Type A Plain,.625	80146	10-17	62
Washer,Type A Plain,.625	80146	10-37	-1404
Washer,Type A Plain,.625	80146	10-38	62
Washer,Type A Plain,.750	80147	10-2	40
Washer,Weather Seal,#10	81161	10-12	13
Washer,Weather Seal,#10	81161	10-23	-16
Washer,Weather Seal,#10	81161	10-45	-12
Water Tight Conn,1/2 X 1/2	3200DI	10-25	9
Weld Plate	35543	10-10	27
Weld Plate	35543	10-11	27
Weldment,Load Line,Modified	21808SRV	10-2	13
Wire Harness,202.00”	23867-3	10-27	-1001
Wire,16 Ga,Black	33271-1	10-47	52
Wire,16 Ga,Blue	33271-11	10-47	28
Wire,16 Ga,Brown	33271-3	10-47	24
Wire,16 Ga,Red	33271-7	10-47	26
Wire,16Ga,Black	33271-1	10-27	-10001
Wire,Mechanics,16.5 Ga	38620	10-11	96
Wiring Diagram		10-17	
Wood,Oak,1.50X3.00x10ft	90383-06	10-37	-1407
Wrench,Nozzle Alignment	8695	10-17	-100
Wrench,Nozzle Alignment	8695	10-38	-100
Wrench,Nozzle Alignment	8695	10-41	-100
Washer,Type A Plain,.625	80146	10-2	39
Washer,Type A Plain,.625	80146	10-17	62
Washer,Type A Plain,.625	80146	10-37	-1404
Washer,Type A Plain,.625	80146	10-38	62
Washer,Type A Plain,.750	80147	10-2	40
Washer,Weather Seal,#10	81161	10-12	13
Washer,Weather Seal,#10	81161	10-23	-16
Washer,Weather Seal,#10	81161	10-45	-12
Water Tight Conn,1/2 X 1/2	3200DI	10-25	9
Weld Plate	35543	10-10	27
Weld Plate	35543	10-11	27
Weldment,Load Line,Modified	21808SRV	10-2	13
Wire Harness,202.00”	23867-3	10-27	-1001

Description	Part Number	Figure Number	Item Number
Wire,16 Ga,Black	33271-1	10-47	52
Wire,16 Ga,Blue	33271-11	10-47	28
Wire,16 Ga,Brown	33271-3	10-47	24
Wire,16 Ga,Red	33271-7	10-47	26
Wire,16Ga,Black	33271-1	10-27	-10001
Wire,Mechanics,16.5 Ga	38620	10-11	96
Wiring Diagram		10-17	
Wood,Oak,1.50X3.00x10ft	90383-06	10-37	-1407
Wrench,Nozzle Alignment	8695	10-17	-100
Wrench,Nozzle Alignment	8695	10-38	-100
Wrench,Nozzle Alignment	8695	10-41	-100
Wrench,Nozzle Alignment	8695	10-60	-100

NOTES

NOTES





500 Lincoln County Parkway Ext.

Lincolnton, North Carolina 28092

Phone: (704) 966-3300 - Fax Sales: (704) 483-5802

www.leeboy.com

Printed in the U.S.A.