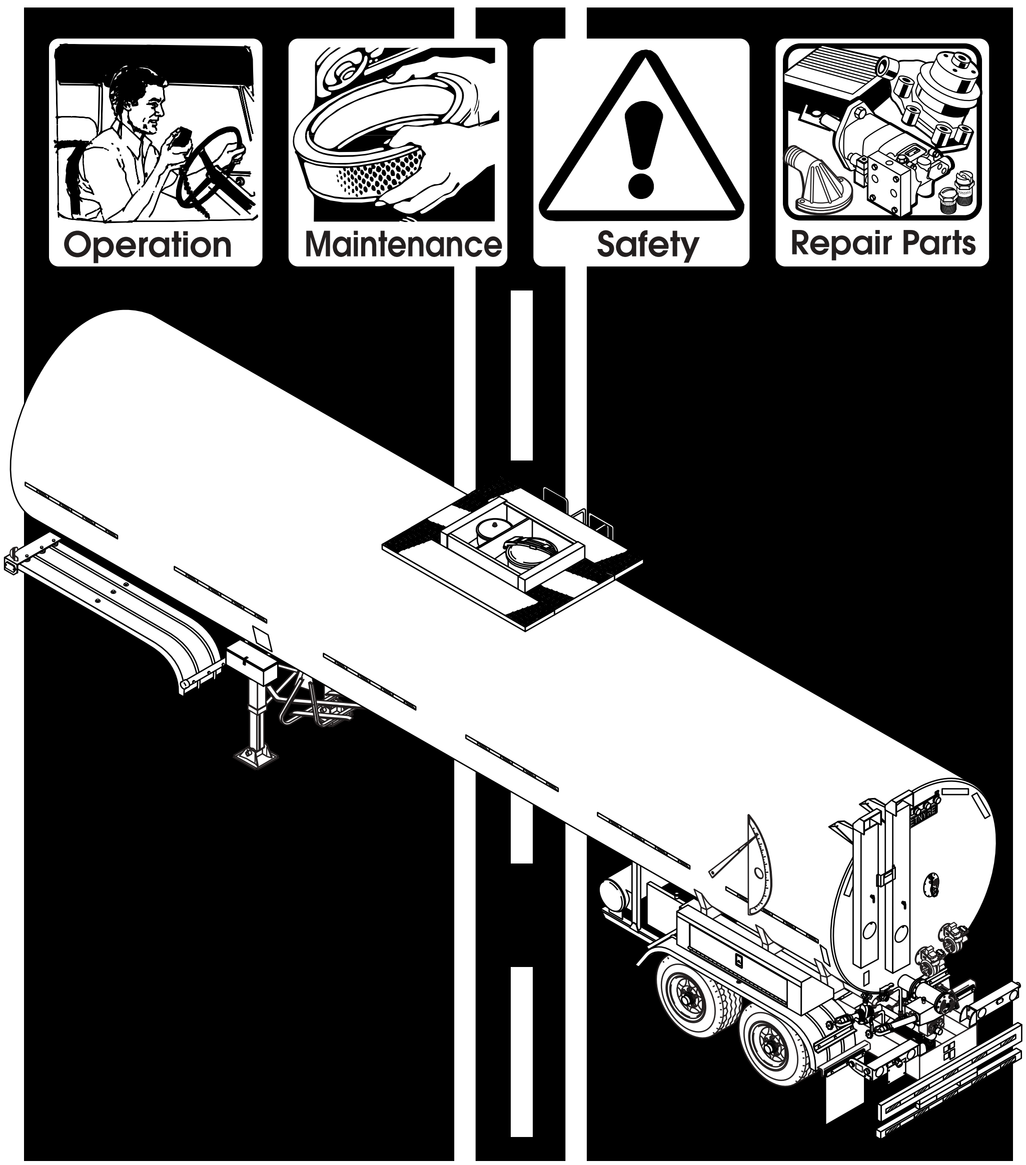
M-372-03R

Serial Numbers T-4901 thru T-5773

Etnyre®

Asphalt Relay Tank



E. D. ETNYRE & CO. 1333 S. Daysville Road, Oregon, Illinois 61061

Phone: 815/732-2116 or 800/995-2116 • Fax: 800-521-1107 • www.etnyre.com

M-372-03R

Operation, Maintenance, Safety and Parts Manual

HOW TO ORDER PARTS

To assure prompt delivery when ordering parts, please furnish the following information: **1)** Complete name and address of consignee. **2)** Method of shipment preferred. **3)** Is shipment to be prepaid or collect? **4)** Serial numbers of units to which parts apply. **5)** Complete part numbers and descriptions. **6)** Any special instructions.

Specify unit serial number when ordering parts!

PARTS WARRANTY

E. D. Etnyre & Co. warrants to the original Purchaser, it's replacement parts to be free from defects in material and workmanship for a period of twelve (12) months after date of delivery to original Purchaser.

The following are exceptions to this policy:

(1) All new electronic components are warranted for a period of 60 days. This is subject to vendor approval.

(2) Remanufactured electronic components are warranted for a period of 30 days.

(3) Remanufactured hydraulic components are warranted for a period of 60 days.

(4) All non-Etnyre manufactured components are subject to the original warranty of the manufacturer.

(5) New hydraulic components are warranted for the period of time set forth by the vendor of the individual item.

The obligation of the Company is limited to repairing or replacing any defective part returned to the Company and will not be responsible for consequential damages or any further loss by reason of such defect. Furthermore, the Etnyre Co. will not be responsible for any labor charges, freight charges, or transportation costs incurred by the purchaser if said part were to fail.

This warranty does not apply to:

(1) Normal start-up services, normal maintenance services or adjustments usually performed by the selling dealer, factory service representative or customer personnel.

(2) Any product manufactured by E. D. Etnyre & Co. purchased or subjected to rental use.

(3) Any product or part thereof which shows improper operation, improper maintenance, abuse, neglect, damage or modification after shipment from factory.

(4) Any product or part thereof damaged or lost in shipment. Inspection for damage should be made before acceptance or signing any delivery documents releasing responsibility of the delivering carrier.

This warranty and foregoing obligations are in lieu of all other obligations and liabilities including negligence and all warranties of merchantability or otherwise, express or implied in fact or by law.

The company excludes all implied warranties of merchantability and fitness for a particular purpose. There are no warranties, express or implied, which extend beyond the description of the goods contained in this contract.

Etnyre®

E. D. ETNYRE & CO., Oregon, Illinois 61061-9778

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WARNING

Fluoroelastomer Handling

Some "O" rings and seals used in this vehicle are made from fluoroelastomers. When used under design conditions, fluoroelastomers do not require special handling. However, when fluoroelastomers are heated to temperatures beyond their design temperature (around 600 degrees Fahrenheit), decomposition may occur with the formation of hydrofluoric acid. Hydrofluoric acid can be extremely corrosive to human tissue if not handled properly.

A degraded seal may appear as a charred or black sticky mass. Do not touch either the seal or the surrounding equipment without wearing neoprene or PVC gloves if degradation is suspected. Wash parts and equipment with 10% lime water (calcium hydroxide solution) to neutralize any hydrofluoric acid.

If contact with the skin occurs, wash the affected areas immediately with water. Then rub a 2.5 calcium gluconate gel into the skin until there is no further irritation, while seeking prompt medical attention.

Note to physicians: For advice or treatment of HF Burns, call the DuPont Medical Emergency Number 1-800-441-3637.

CAUTION

GENERAL - TIRE CARRIER

Loss of tire in transit can cause bodily injury or property damage. Carry only one spare tire at a time. Do not carry the tire loose in the carrier. Tightly wrap the chain around the tire to eliminate slack and always fasten the chain in the locking retainer plate.

Inspect carrier annually. Check for bent members and fatigue in welds. Closely examine chain, chain retainer and fastener for signs of wear, corrosion or fatigue. Replace or repair damaged or worn parts promptly.

Reporting Safety Defects

If you believe that your vehicle has a defect which could cause a crash, injury, or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying E.D. Etnyre & Co.

If NHTSA receives similar complaints, it may open an investigation. If it finds a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or E.D. Etnyre & Co.

To contact NHTSA, you may call the Auto Safety Hotline too-free at 1-800-424-9393 (or 366-0123 in the Washington, D.C. area). Or, you may write to: U.S. Department of Transportation, Washington, D.C. 20696. You may also obtain other information about motor vehicle safety from the Auto Safety Hotline.

E.D. Etnyre & Co., Oregon, Illinois 61061, Phone Area Code 800/995-2116

Proposition 65 WARNING

Diesel Engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Please note this warning and remember -

- Always start and operate the engine in a well ventilated area;
- If in an enclosed area, vent the exhaust to the outside;
- Do not modify or tamper with the exhaust system.

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General Safety Instructions

The operation of a Relay Tank normally requires handling of liquid products at elevated temperature. Also, these liquids may be of a volatile nature. A heating system is supplied to raise or maintain the product temperature, and these systems use highly combustible fuels. As with any type of construction equipment, there are certain hazards associated with careless or improper operation.

Safety warnings have been provided to call attention to any potentially hazardous situation that may cause property damage, personal injury or death to the operator or bystanders. These safety warnings will be shown at various times throughout this manual, as they are applicable to the subject being presented. These safety warnings are identified by the following warning symbols:

Safety Precautions, Hazard Seriousness Level

You will find safety information boxes throughout this manual. These boxes contain information alerting you to situations or actions to avoid.

Signal words (DANGER, WARNING and CAUTION) are used to identify levels of hazard seriousness. Their selection is based on the likely consequence of human interaction with a hazard. Definitions of hazard levels are as follows.

DANGER - Immediate hazards which **will** result in severe personal injury or death.

WARNING - Hazards or unsafe practices which **could** result in severe personal injury or death.

CAUTION - Hazards or unsafe practices which could result in minor personal injury or product or property damage.

All of these warnings are listed below and they also appear throughout the manual. In addition to these, you will find notes throughout the manual.

NOTE - A note provides general information that the operator should be aware of when performing an operation.

DANGER

To avoid an extreme fire hazard or explosion, NEVER use gasoline as fuel in low pressure or generating burners.

WARNING

A fully charged dry chemical type fire extinguisher must be within easy reach whenever the burners are operating or there is an open flame near the distributor. The minimum capacity of the fire extinguisher should be 10 pounds.

WARNING

To prevent an explosion or fire hazard: Position the unit broadside to the wind to prevent volatile fumes from drifting toward the burners.

To prevent an explosion or fire hazard: Do not operate the burners if the tank is damaged or leaking

To prevent an explosion or fire hazard: Ensure that the burners are extinguished before removing any material from the tank in any manner. Liquid petroleum (LP) burners can support a flame for several minutes after the fuel supply is turned off.

To prevent an explosion: Do not operate the burners when the vehicle is unattended, when the vehicle is in motion, or with the vehicle in a confined area.

To prevent an explosion or fire hazard: When the burners go out, shut off the fuel supply to both burners and allow the flues to ventilate for at least 3 minutes before re-lighting the burners.

To prevent an explosion or fire hazard: Do not heat the material beyond the manufacturer's recommended temperature.

To prevent an explosion or fire hazard: Keep burning cigarettes or other sources of combustion away from manholes and overflow vents.

To prevent possible hand or facial burns: Always light the inside burner first. Do not reach across a lit burner to light or re-light the inside burner. Shut off the outside burner before lighting the inside burner.

To prevent possible burns: Always use a torch to light the burners. Never attempt to light the burners using a match or pocket lighter.

WARNING

To prevent an explosion or fire hazard: Check the tank vent to insure that it is free from obstruction before lighting the burners.

To prevent an explosion or fire hazard: Do not operate the burners with the manhole open or open the manhole while the burners are in operation.

To prevent possible burns to operators or bystanders, or possible equipment damage, do not start any operation if any control settings are unknown.

To prevent possible burns from leaking material: Be sure all pipe, cap and hose connections are secure before opening valves, or beginning any operation.

To prevent possible burns from hot asphalt spray: Do not stand, or allow anyone to stand, where accidental opening of a valve may cause contact with hot asphalt.

To prevent an explosion or fire hazard: Keep area free of all sources of combustion when spraying.

To prevent an explosion or fire hazard: Eliminate sparks from engine exhaust.

To prevent burns: Always wear insulated gloves when handling spray bar sections or hoses.

WARNING

To prevent severe injury from becoming entangled in machinery: Stand clear of rotating drives.

To prevent possible injury: Always open the manhole cover slowly. Pressure build up in the tank may cause the cover to burst open.

To prevent possible fire hazards, burns or falls: Keep the unit clean for safe operation.

To prevent possible burns from material overflow: Allow sufficient space in the tank for expansion of the material when heating

To prevent possible burns from hot asphalt: Before removing the fill line cap, make certain that the asphalt pump is turning and the suction valve is closed.

To prevent possible personal injury: Do not load the vehicle beyond the GAWR or GVWR. The maximum load volume must be calculated based on material density

To prevent possible burns: Use extreme caution when using a torch to heat the pump. Asphalt accumulated around the pump may ignite when heating the pump with a torch

Allowing the burners to operate for a long period of time without circulating can damage the product and create explosive fumes. If product cannot be circulated after fifteen minutes of heating without circulation, the burners should be extinguished for 20 - 30 minutes before re-lighting the burners.

To prevent burns: Always wear eye protection, long sleeve shirt, insulated gloves, boots, and long pants outside the boots when working around the distributor.

To prevent an explosion or fire hazard: Flues must be covered by a minimum 6 inches of material (bitumen) when burners are in operation.

WARNING

To prevent possible burns from leaking material: Be sure all pipe, cap and hose connections are secure before opening valves.

To prevent possible burns from hot asphalt spray: Do not stand, or allow anyone to stand, where accidental opening of a valve may cause contact with hot asphalt.

To prevent an explosion or fire hazard: Keep area free of all sources of combustion.

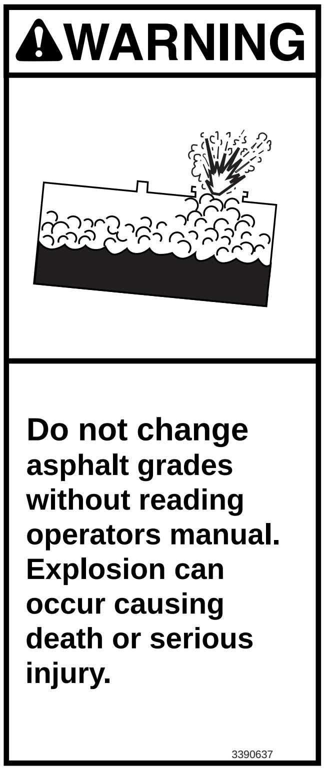
To prevent foaming or violent eruption: Do not load tank with material temperature over 200º F if water or condensation is present in tank, or if emulsion was used in the previous load. Clean and thoroughly drain tank first. If water or emulsion may be present in spray bar or circulating system, allow a small amount of hot material to circulate in bar BEFORE filling tank. Do not heat material over 200º if moisture or emulsion is present in tank.

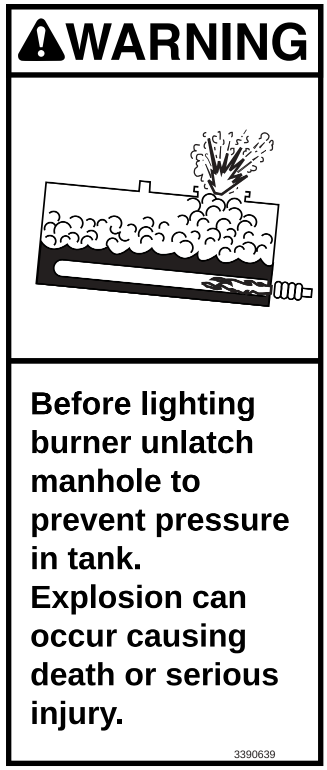
To prevent an explosion or fire hazard: Eliminate sparks from engine exhausts.

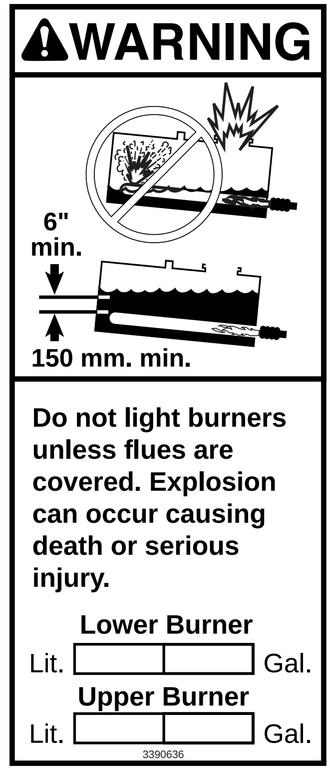
To prevent burns: Always wear insulated gloves when handling hoses.

To prevent severe injury from becoming entangled in machinery: Stand clear of rotating drives.

To prevent possible injury: Always open manhole cover slowly. Pressure build-up in tank may cause cover to burst open.





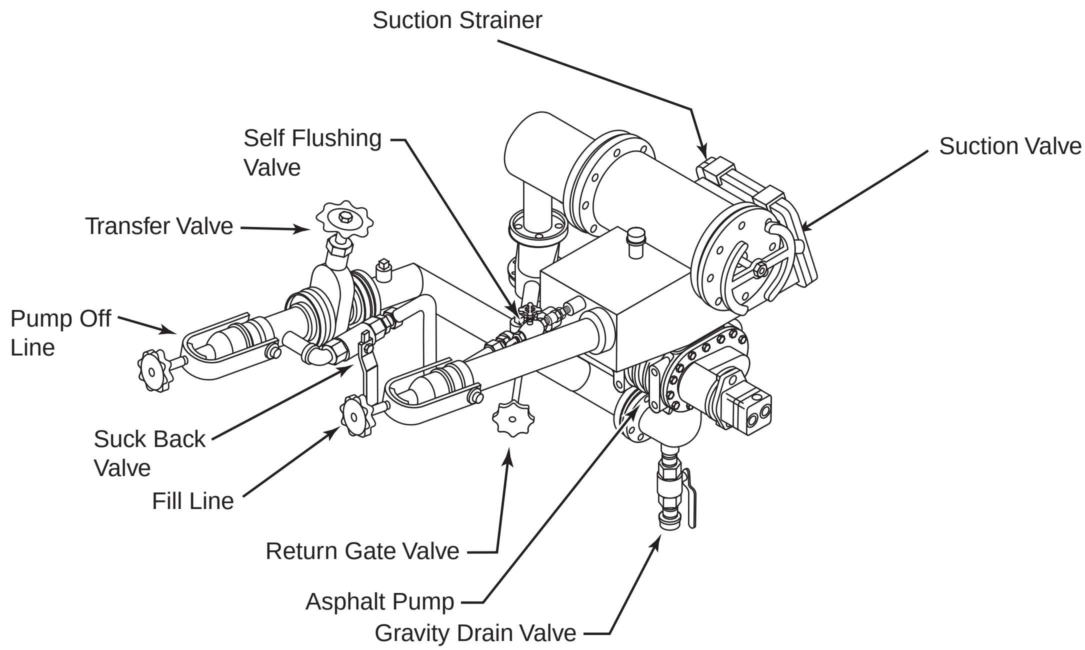


Your Relay Tank is designed to give you many years of dependable, economic service. The following instructions will enable you to receive the maximum performance.

The controls are designed for simple operation. They require a minimum of training for proficient usage. The exclusive Etnyre circulating system is designed and built for handling all grades of bituminous materials efficiently.

This manual is provided as a tool to aid personnel in the operation of the Etnyre Relay Tank in a safe and efficient manner. As with any type of construction equipment, there are certain hazards associated with improper or careless operation. The ability to read and understand the instructions in this manual should be a required qualification to become an operator. There are also functions that require a certain amount of physical strength to accomplish. Persons lacking the required strength may not only place themselves in jeopardy, but also others in the vicinity.

Component Location And Identification



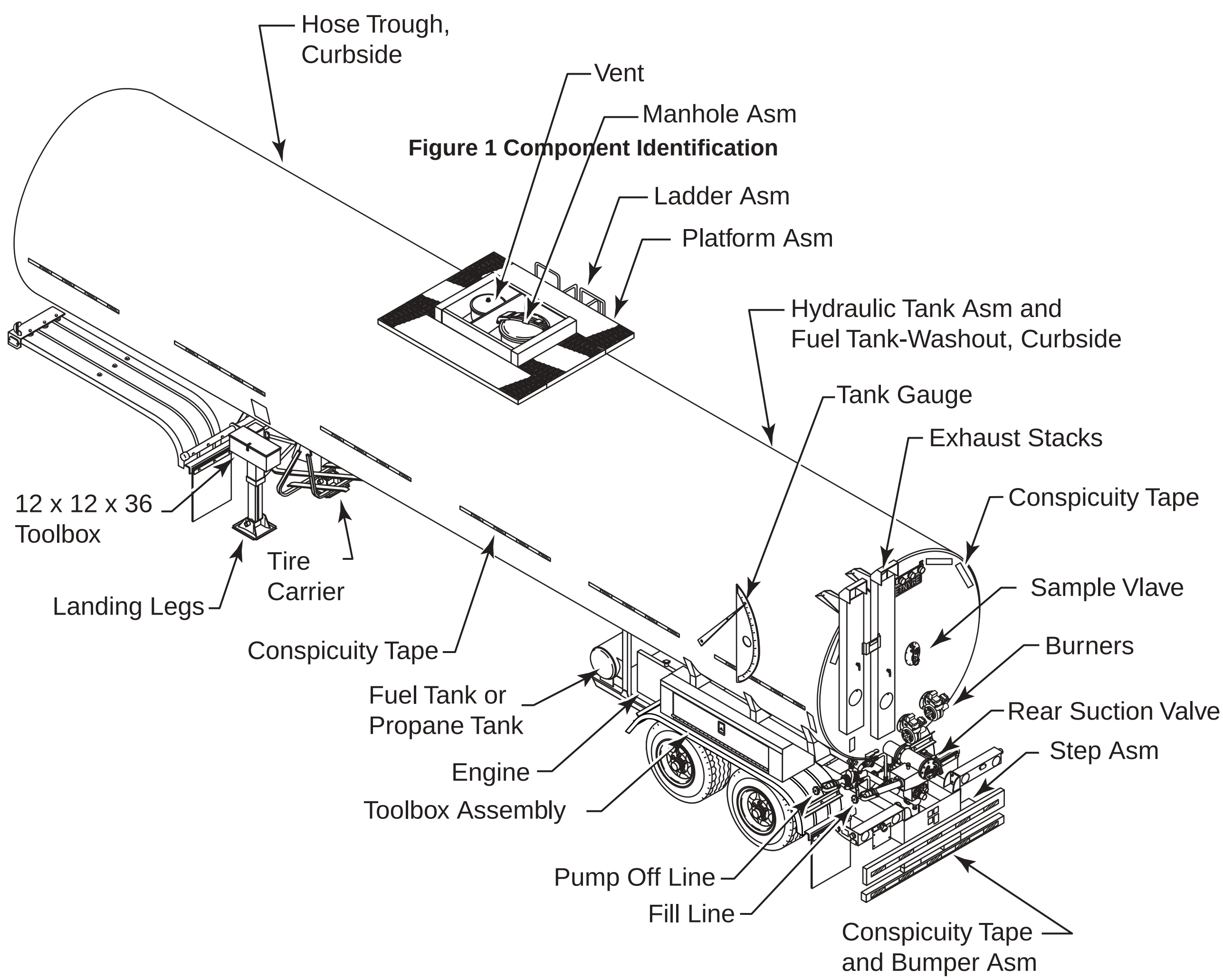


Figure 1 Component Identification

Preparing For Operation

Inspection

Refer to the transport operation manual M-302-02 for tank trailer maintenance and operation information.

Refer to the engine owner's manual for engine maintenance information.

1. Inspect unit for damage that may have occurred during transport.

2. Check and tighten all fasteners, body tie-down bolts, pipe and circulating line connections, etc., that may have loosened in transit.

Introduction

WARNING
To prevent becoming entangled in machinery, stand clear of rotating drives.

CAUTION
To prevent damage to asphalt pump, do not run pump for more than 10 minutes without bitumen to supply lubrication.

CAUTION
To prevent possible damage to equipment from material setting up in hose or distributor, ensure that bitumen in supply tank is heated sufficiently.

If pump and/or circulating system were not drained and flushed after previous use it may be necessary to preheat the circulating system to ensure that the first material to enter the pump will not stop the pump.

NOTE: Dow-Corning DC-200 may be used to pre vent foaming.

Mixing Dow-Corning DC-200 Anti-Foam Agent

Mix contents of can (16 oz.) with (1) gallon of diesel fuel or kerosene. Add one (1) oz. of this diluted mixture to each one thousand (1000) gallons of asphalt. The correct amount may be poured through the manhole. This will assist in reducing foaming, particularly if moisture is present or if emulsified asphalt was used in a previous load.

If no foaming occurs at the start of the filling operation but you suspect there may be moisture in the circulating system or spray bar, the filling operation should be stopped when the tank is no more than 25 per cent full. The product should then be circulated through the spray bar at 80 to 110 GPM before continuing the filling operation.

If foaming occurs, continue circulating until foaming stops, then suck the product in the spray bar back into the tank before filling the tank the rest of the way.

WARNING
To prevent possible personal injury, Do Not Load the vehicle beyond the GVWAR or GVWR. The maximum load volume must be calculated based on the material density.

The Tank has a built-in air space or expansion space above the "Tank Full" level. This air space is designed to minimize the chance that the tank will overflow if the material in the tank expands due to heating or foaming. The air space should not be used to carry product. The "Tank Full" level is based on the GVWAR, GVWR and a material density of 7.7 lb/gal. A lower "Tank Full" level must be calculated if a material with a density greater than 7.7 lb/gal. is loaded.

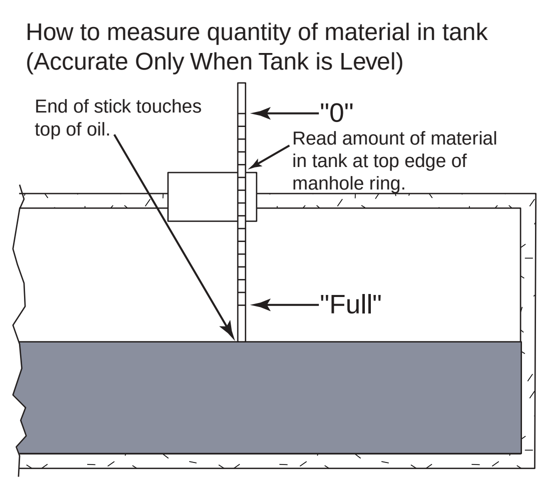


Figure 2 Measuring Stick

OPERATION

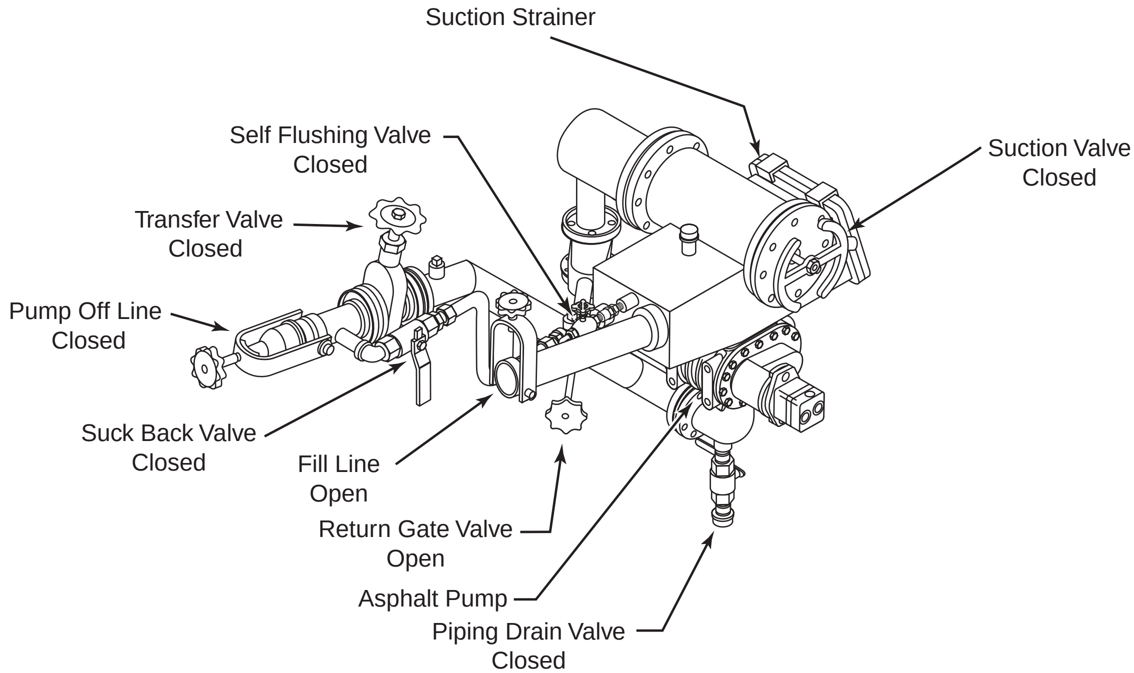


Figure 3. Valve Positions for Filling Through the Fill Line

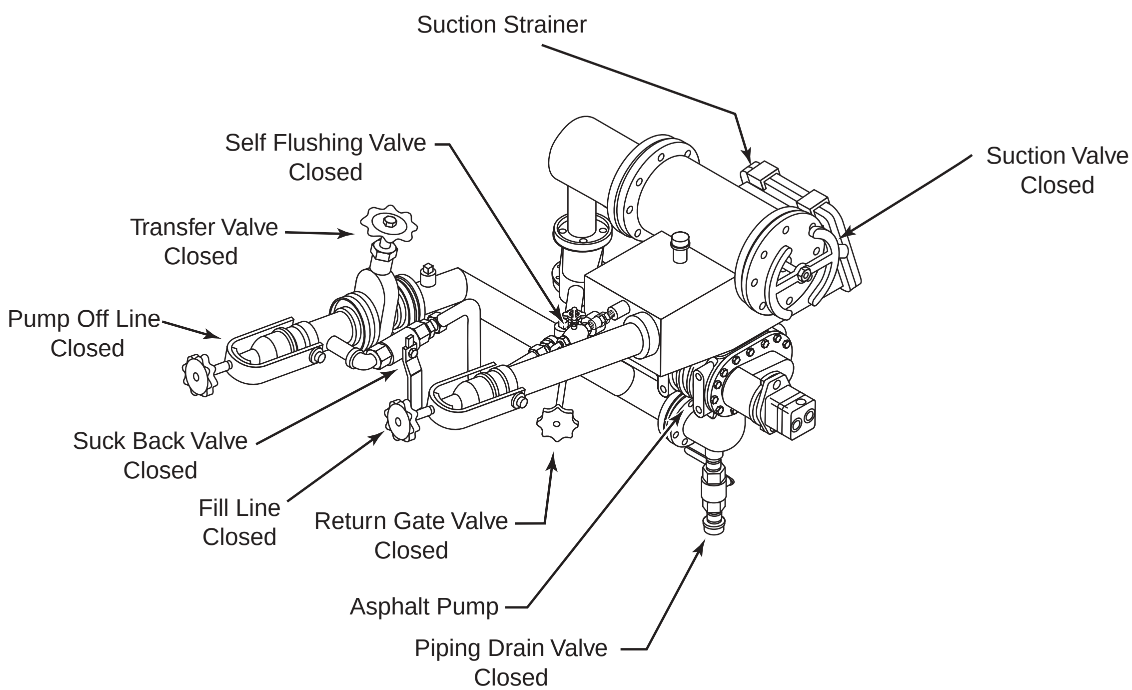


Figure 4. Valve Positions for Filling Through the Manhole

Connections And Preliminary Checks

1. Ensure that both the fill line and suction strainers are clean and properly installed.

WARNING

To prevent possible burns from leaking material, be sure all pipe, cap and hose connections are secure before opening valves.

2. Ensure that all connections between relay tank and supply source are tight. Air leaks will reduce vacuum and slow down filling operation.

WARNING

Before removing fill line cap, make certain asphalt pump is turning and suction valve is closed.

Filling Through Fill Line

1. Close the Suction Valve.

2. Open the Return Gate Valve.

3. Adjust engine speed for desired rate.

WARNING

To prevent possible burns from material overflow: allow sufficient space in tank for expansion of material when heating.

4. When loading is complete operate the pump at the maximum speed where it will run quietly. Higher speed will not load thick material faster. Normally 150 GPM is the best loading speed. Light materials, or heavy materials at spraying temperature may be loaded at faster pump speeds (maximum 200 GPM).

WARNING

To prevent an explosion or fire hazard: Keep burning cigarettes or other sources of combustion away from manholes and overflow vents.

5. Open the valve at the supply source and monitor the tank gauge. When the gauge shows half-full, position someone at the manhole to advise the person at the supply source when to close the valve. For safety reasons there should always be two people acting together during the filling operation.

6. After closing off the supply tank valve, open the bleeder valve (at the supply) to assist in sucking residual product out of the fill line before disconnecting the hose from either the supply source or the distributor fill line.

WARNING

To prevent burns, always wear insulated gloves when handling spray bar sections or hoses.

If there is no bleeder valve at the supply source, carefully break the connection between the valve and the fill hose to allow air into the hose.

7. Disconnect the hose at the supply end and elevate the hose to allow maximum drainage to the fill line.

8. Allow the pump to continue turning while the hose is disconnected from the fill line and the fill line cap is replaced and secured.

9. Close the Return Gate Valve.

10. Shut off the pump.

11. Open the Piping Drain Valve and drain the Piping into a suitable container for proper disposal. When finished draining the piping, close the Piping Drain Valve.

OPERATION

Filling Through Manhole

1. Close the Suction Valve.

2. Close the Return Gate Valve.

It is not necessary to run pump when filling through manhole.

⚠ WARNING
To prevent possible injury, always open manhole cover slowly. Pressure build-up in tank may cause cover to burst open. To prevent an explosion or fire hazard: Keep burning cigarettes or other sources of combustion away from manholes and over flow vents. To prevent possible burns from foaming or violent eruption, do not load tank with material temperature over 200º F if water or condensation is present in tank, or if emulsion was used in the previous load. Do not heat material over 200º if moisture or emulsion is present in tank. To prevent possible burns from material overflow, allow sufficient space in tank for expansion of material when heating.

⚠ CAUTION
To prevent possible damage to equipment, always use manhole strainer when filling through manhole.

If you suspect there may be moisture or emulsion in the tank, Dow-Corning DC-200 may be used to prevent foaming if product being fed through manhole is in excess of 200º F. One ounce of DC-200 concentrate should be adequate for 1000 gallons of asphalt. See (Mixing Instructions).

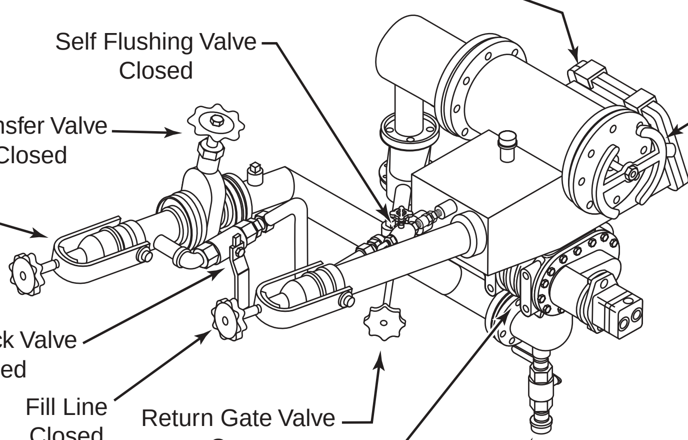


Figure 5. Valve Positions for Circulating In The Tank

Circulating In The Tank

WARNING

To prevent possible injury, always open manhole cover slowly. Pressure build-up in tank may cause cover to burst open.

To prevent an explosion or fire hazard: Keep burning cigarettes or other sources of combustion away from manholes and over flow vents.

To prevent possible burns from foaming or violent eruption, do not load tank with material temperature over 200º F if water or condensation is present in tank, or if emulsion was used in the previous load. Do not heat material over 200º if moisture or emulsion is present in tank.

To prevent possible burns from material overflow, allow sufficient space in tank for expansion of material when heating.

1. Turn the Burner Power Switch off (down).

2. Open the Suction Valve.

3. Open the Return Gate Valve

If the pump fails to quickly regain its speed, close suction valve and put a small amount of diesel fuel into the fill line to free up the pump or use hand torch to warm the pump.

WARNING

To prevent possible burns, use extreme caution when using a torch to heat the pump. Asphalt accumulated on and around the pump may ignite when heating the pump with a torch.

Even if the product in the tank is at (or near) spraying temperature, the cold pump may chill the product sufficiently to lock up the pump. If this occurs, heat may be applied to the pump with a hand-held torch.

If the product is too cold to be circulated, some heating with the flue burners will be needed to increase the temperature enough to start circulating. Refer to operating instructions for your particular burner type.

WARNING
Allowing the flue burners to operate for a long period of time without circulating can damage the product and create explosive fumes. If product cannot be circulated after fifteen minutes of heating without circulation, the burners should be extinguished for 20-30 minutes before re-lighting the burners.

Moving the tank back and forth while the burners are off will allow the hot product to mix with the cooler product. This should decrease the time required to bring the product temperature up enough to start circulating. Once circulation has been established, the heating can continue without interruption. Circulate at 100-160 GPM.

WARNING
To prevent an explosion or fire hazard, never move the vehicle when the burners are operating.

4. When finished circulating material in the tank, close the Suction Valve, while the pump is still running. Then close the Return Gate Valve and shut down the pump.

5. Open the Piping Drain Valve and drain the Piping into a suitable container for proper disposal. When finished draining the piping, close the Piping Drain Valve.

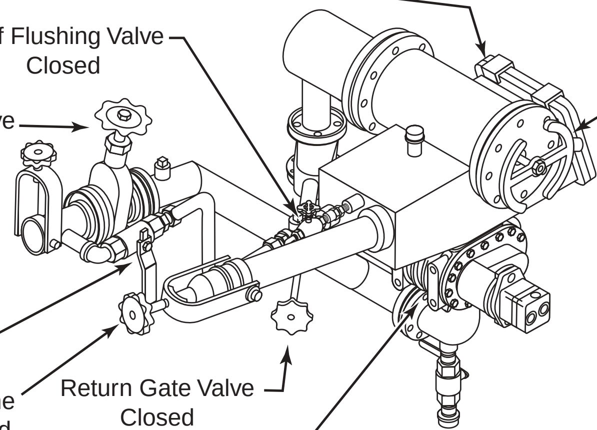


Figure 6. Valve Positions for Pump-Off

Pump Off Operations

When pumping off, ensure that all valves in the pump-off line between the Relay Tank and the storage tank are open before opening the suction valve on the Relay Tank.

1. Connect the pump-off hose to the transfer line.

2. Open the Transfer Gate Valve.

3. Open the Suction Valve.

4. Increase the pump speed to approximately 150 GPM.

5. Close the Return Gate Valve.

6. When pump-off is complete open the Return Gate Valve.

7. Decrease the pump speed.

8. Close the Suction Valve.

9. Close the valve at the storage tank.

10. Close Transfer Gate Valve in the transfer line.

11. Open the suckback valve in the transfer line and open bleeder valve at supply source.

12. Increase pump speed to approximately 150 GPM.

WARNING
To prevent burns, always wear insulated gloves when handling spray bar sections or hoses.

If there is no bleeder valve at the supply source, carefully break the connection between the valve and the fill hose to allow air into the hose.

13. Increase the pump speed to 200 GPM, disconnect the hose at the supply end and elevate the hose to allow maximum drainage to the transfer line.

14. Allow the pump to continue turning while the hose is disconnected from the transfer line and the transfer line cap is replaced and secured.

15. Open the Piping Drain Valve and drain the Piping into a suitable container for proper disposal. When finished draining the piping, close the Piping Drain Valve.

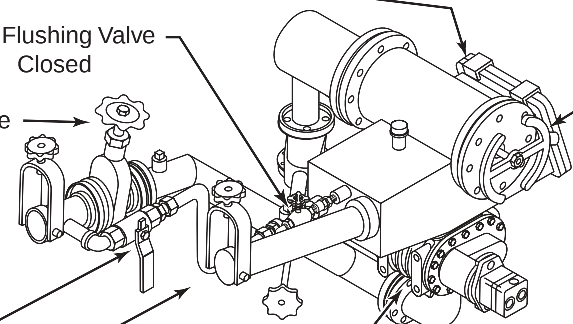


Figure 7. Valve Positions for Transfer

Transfer Operations

1. Connect a hose from the supply source to the Fill Line. Be sure the hose connections are tight.

2. Connect a hose from the storage tank to the Transfer Line. Be sure the hose connections are tight.

3. Close the Suction Valve.

4. Open the Transfer Gate Valve.

5. Increase the pump speed to approximately 150 GPM.

6. Close the Return Gate Valve.

7. After the material is transferred, close the valve at the supply source and open the supply line bleeder valve.

8. Disconnect the supply line hose and install the cap on the Transfer Line.

9. Close the valve at the storage tank.

10. Close the Transfer Gate Valve.

11. Open the Suckback Valve on the Transfer Line.

12. Open the Return Gate Valve.

13. Open the bleeder valve at the storage tank.

WARNING
To prevent burns, always wear insulated gloves when handling spray bar sections or hoses.

If there is no bleeder valve at the supply source, carefully break the connection between the valve and the fill hose to allow air into the hose,

14. Increase the pump speed to 200 GPM, disconnect the hose at the supply end and elevate the hose to allow maximum drainage to the transfer line.

15. Allow the pump to continue turning while the hose is disconnected from the transfer line and the transfer line cap is replaced and secured. Close the Return Gate Valve.

15. Open the Piping Drain Valve and drain the Piping into a suitable container for proper disposal. When finished draining the piping, close the Piping Drain Valve.

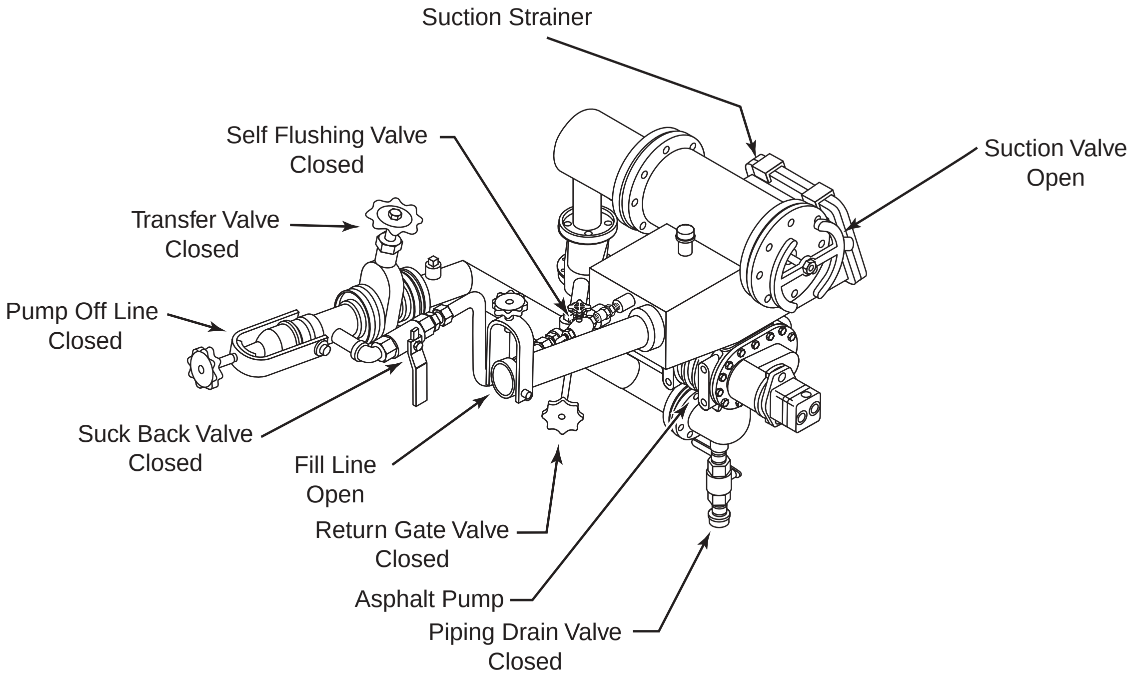


Figure 8. Valve Positions for Gravity Drain

Gravity Drain Operations

1. Close the Transfer Valve.

2. Close the Return Gate Valve.

3. Close the Suction Valve.

4. Connect a hose to the Fill Line.

5. Open the Suction Valve.

Allow the material in the Tank to drain out through the Fill Line. When the Tank has been emptied by gravity through the Fill Line, close the Suction Valve.

6. Open the Piping Drain Valve and drain the Piping into a suitable container for proper disposal. When finished draining the piping, close the Piping Drain Valve.

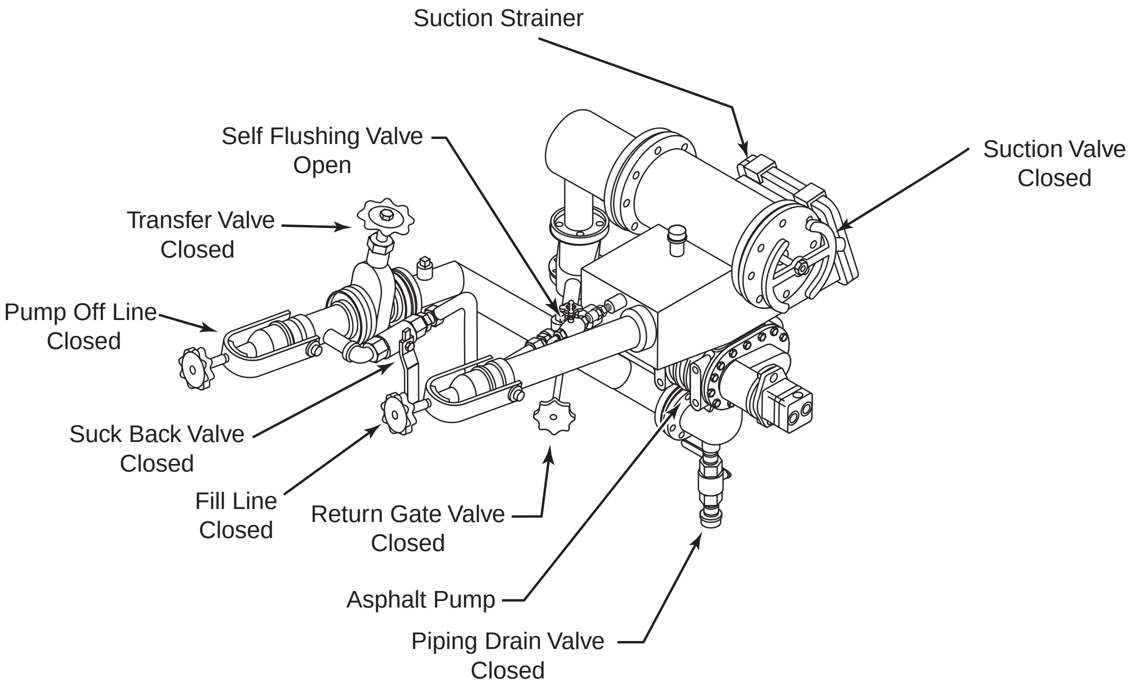


Figure 9. Valve Positions for Flushing

Flushing Operations

1. Open Self-Flushing Valve

2. Run the pump at approximately 100 GPM

3. After 2 minutes close the Self-Flushing Valve.

The flushing operation requires only 3 quarts of flushing solvent. This small amount is not sufficient to fill the line to the tank, thus preventing solvent from being forced into the tank.

A common practice following completion of the flushing procedure and subsequent shutdown is to pour 1 to 2 quarts of solvent into the fill line which then softens or dissolves the residual asphalt in the pump. Allow the solvent to remain in the system until the next use of the relay tank

General Fuel Data
And Heating Terminology

Fuel Data

Fuel	Wt Per Gal	BTU Content
#2 Fuel Oil	7.49 lbs	144,300 per gallon
Kerosene	6.97 lbs.	134,500 per gallon
Propane	4.20 lbs.	91,500 per gallon

Approximate Burner Fuel Consumption

Propane

1,000,000 BTU @ 40 PSI

(91,500 BTU/Gal)

A 100 pound bottle conatins 23 gallons

For Each Burner	@15 PSI	5 GPH
	@20 PSI	6 GPH
	@25 PSI	7 GPH
	@30 PSI	8.2 GPH
	@35 PSI	9.5 GPH
	@40 PSI	11 GPH

Low Pressure Fuel Oil

935,000 BTU @ 40 PSI

4.25 GPH per burner

(144,000 BTU per gallon)

Kerosene Generating

575,000 BTU @ 40 PSI

4.25 GPH per burner

(135,000 BTU per gallon)

Heating Terminology

Flash Point (Open Cup)

The temperature at which a flammable liquid in an open container emits vapor that will flash when exposed to a direct flame. This temperature is lower than required for the liquid mass to ignite.

Closed Flash Point

The temperature at which a flammable liquid in a closed container emits a vapor that will flash when exposed to a direct flame. This temperature is lower than required for the liquid mass to ignite. The closed flash point is generally 30°(F) lower than the open cup flash point.

Fire Point

The temperature at which a flammable liquid emits a vapor at a rate that will continue to burn after it has flashed.

Ignition Temperature (Kindling Temperature)

The lowest temperature at which a combustible material will continue to burn once ignited.

Convection

Heat transfer by a flow of a liquid or gas over a solid material. Example: Flues in asphalt tank are heated from hot gases passing through them, or, heat transfer coils in tank are heated from steam or hot oil passing through them.

Conduction

Heat transfer through a solid mass by direct molecular contact. Example: Heat applied only to one end of a metal rod will be transferred throughout the entire body by molecular transfer.

Troubleshooting		
Trouble	**Cause**	**Remedy**
Lacks Pressure	Pump speed too slow. One or more control valves in incorrect position, not fully opened or closed, or leaking. Suction strainer plugged.	Adjust pump speed. Check position of all control valves. Be sure all valves are fully opened or closed. Repair leaking valves as necessary. Clean suction strainer.
Pump Will Not Turn or Turns Slowly.	Material in tank or pump below pumping temperature. Air leak in suction line from reservoir to filter to inlet of charge pump. Hydraulic system pressure low. Low oil in hydraulic reservoir. Defective pump or motor.	Heat material to proper pump temperature. Locate and repair leak. Raise pressure. Add hydraulic oil to correct level. Check for excessive case drain in pump and/or motor. Repair or replace defective components.
Hydraulic Oil Overheats	Material in tank or pump below pumping temperature. Air leak in suction line from reservoir to filter to inlet of charge pump. Low oil in hydraulic reservoir.	Heat material to proper pump temperature. Locate and repair leak. Add hydraulic oil to correct level.

MAINTENANCE INSTRUCTIONS

General

This section contains instructions for the care and maintenance of the Etnyre Transport. This section is divided into two subsections: a **Maintenance Schedule** and **Maintenance Procedures.** The maintenance schedule lists the recommended distance/time intervals between maintenance checks. The procedures subsection provides detailed instructions for performing the maintenance checks. The instructions listed in the procedures subsection are given by systems and are not necessarily in the order listed in the table.

Keep unit clean for operating safety and appearance.

Flue liners which reduce scaling and eventual burn-thru in the flame impingement zone are recommended on tanks which routinely carry commodities requiring heating while in the tank. Inspect the liners often and replace as necessary.

Every three months during continual usage inspect inside of transport for carbon accumulation on outside of flue surface. Heaviest deposits occur at the flame area and should be removed periodically for efficiency of heating and longer flue life.

Roofing bitumens (pitch, steep, flat) will build up from bottom under flues and will sometimes push the flue upward and probably fracture it. Periodic removal by chipping or mining is recommended.

Inspection and Maintenance, Tank Proper

The inner tank barrel itself is an important piece of equipment. The barrel serves the purpose of transporting the product and must carry the weight of the product in addition to the weight of the barrel. The barrel is strongest when in its originally manufactured condition. A substantial amount of the load bearing capability is lost if bucking or distortion occurs in the tank shell due to an accident, overloading or any of the following:

1. Fast filling of hot product in a “cold” tank that has not been prewarmed can cause the tank shell to buckle and/or fail. Slow initial filling is highly recommended.

2. Loading with a product that is hotter than the maximum temperature rating of the trailer.

3. Vacuum created by the unloading process (or by tank cooling after unloading) with manhole closed and vents plugged with solidified material or otherwise inoperative.

4. Repeated travel over rough roadways at speeds that are not reasonable for longevity of any type of vehicle.

5. Dropping loaded trailer on the landing gear which creates unusual shock, instead of setting it down gently.

6. Operating the trailer at a continuous speed at which the frequency (vibration) is at its peak. Every trailer has such a frequency and a change in speed of two or three miles per hour either faster or slower reduces the vibration out of the peak range.

The caulking around the manhole should be inspected monthly to insure that it is intact, and recaulked as necessary. If not kept sealed, moisture leaking in will cause premature failure of the inner shell due to corrosion.

Annually inspect the special anti-corrosion paint on the lower third, and entire circumference of the inner shell in the area of the manhole, for corrosion. This requires removal of the jacketing in these areas and should only be done by an authorized tank repair facility.

It is recommended that the barrel and all internal members be checked regularly at intervals of every three (3) months or 15,000 miles, whichever occurs first. Corrective repairs should be made as soon as possible.

Maintenance Schedule

The Maintenance Schedule lists the recommended maintenance checks. It is outlined in two schedules: the mileage schedule and the periodic schedule. Perform maintenance on the basis of whichever occurs first.

ITEM NO.	ITEM	SCHEDULE					QUAN-TITY	TYPE or REMARKS
		Day	Wk	Mo.	25,000 mi.	50,000 mi.		
1	Fifth Wheel Plate and Kingpin	X	L					Multipurpose Grease Inspect
2	Frame	X						Check
3	Undercarriage	See Operator's Guide for the undercarriage specific to your trailer						
4	Wheel Bearings (Oil Lubricated)	X				C	3 pints per axle	Check Multipurpose Gear Oil Grade 90
5	Rims and Brake Drums			X				Inspect
6	Wheels	X	X					Visual Check. Tighten Cap Nuts or Rim Clamps.
7	Tires	X						Check Inflation Remove Debris Between Duals.
8	Air Lines	X		X				Test. See Page 33 Inspection
9	Air Reservoir	X						Drain Condensation
10	Relay Emergency Valve					X		Clean
11	Brake Chambers			X		X	2 Dia-phragms per axle.	Check Condensation Holes Clean. Inspect and replace Diaphragm.
12	Slack Adjuster and Yoke Pin				X		2 Zerks per Axle	Inspect. Lubricate with Multipurpose Grease.
13	Brakes	X	X		X		4 Fittings per Axle	Multipurpose Grease. Note: Do not over-grease Brake Spider (or Anchor Pins when applicable). Check for Overheating. Inspect and Adjust.
14	Manhole Caulking		X					Inspect and Recaulk As Necessary
15	Lights and Reflectors	X						Check Operation.
16	Anti-Corrosion Paint							Inspect and Repaint or Repair As Necessary

L = Lubricate X = Check C = Change

MAINTENANCE SCHEDULE

Maintenance Procedures

Fifth Wheel Plate and Kingpin Inspection and Lubrication

Inspect the kingpin throat for signs of wear. Replace the kingpin if worn 1/8 inch (3.18 mm) undersize (see figure 4).

If the grease remaining on the fifth wheel plate contains sand and dirt, clean it before lubricating. The kingpin and the fifth wheel plate should be greased thoroughly with multipurpose grease before connecting the tractor and trailer.

Wheel Bearings

The oil level must be maintained between the "add" and "full" lines on the hub cap windows (see figure 7). Check for cracked windows, missing vent plugs and for oil leaks around the hub cap. Oil can be added through either the vent plug or the filler plug. Clean and inspect the bearings and change the oil at 50,000 miles or at brake relinings.

Undercarriage

The undercarriage must be visually examined for broken and missing parts. Check brackets, adjusting screws and walking beam ends. Replace faulty parts. Check the rim clamps or cap nuts for tightness daily. See Figure 8 for torque specifications and tightening sequence. Brake drums should be carefully examined for cracks.

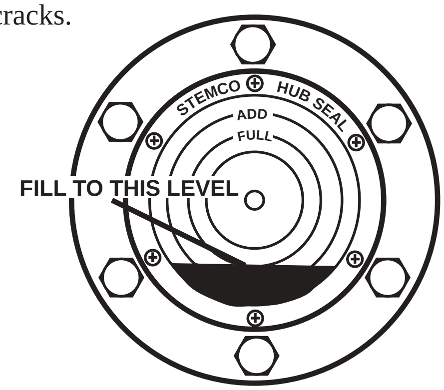


Figure 7M. Oil Level of Oil Lubricated Bearings

⚠ CAUTION
Do not allow brake drums to become excessively worn or expensive repairs will be required.

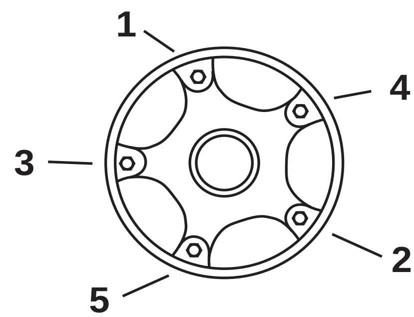


Figure 8M. Lug Tightening Sequence

Suspension Alignment & Fastener Torque

The major source of costly repair bills on suspensions is insufficient torque. After an initial shakedown run of 1,000 miles and every 25,000 miles thereafter, nuts on the suspension should be restored to original torque specifications.

Torque Specifications

Item	Transpro	Reyco 21B
U-bolt nuts	300 lb-ft	300 lb-ft
Torque arm nuts	400 lb-ft	160 lb-ft
Torque arm clamps	140 lb-ft	140 lb-ft
Equalizer Bolts	500 lb-ft	450 lb-ft

Alignment Adjustment

To assure proper alignment of the suspension, the following steps should be followed exactly:

Step 1. Locate the trailer on a flat, smooth surface and disconnect trailer brakes.

Step 2. With the brakes disconnected, roll the trailer forward and rearward a distance of approximately 10 feet to relieve any binding which might be caused by turning or braking.

Step 3. Remove the tractor from the trailer and level the trailer body until it is parallel to the ground, using the landing gear adjustment. Trailer should be leveled by measuring from the frame to the ground at the front and rear hanger.

Step 4. Check to make sure that there is no interference between the springs and the hanger brackets.

MAINTENANCE

Step 5. Tighten all torque arm bolt nuts and Ubolt nuts to the torque specified above.

Step 6. Remove hub caps from all four trailer wheels and install axle extensions on each end of each axle.

sion and center the sight level.

Step 8. Measure from the kingpin extension to either end of the front axle and make necessary adjustments.

Step 9. With the front axle properly aligned, measure between the axle extensions on either end of each axle and make necessary adjustments.

Step 10. Remove the axle extension, kingpin extension and install hub caps.

Step 11. Check the nuts on the adjustable torque arm tube clamps to insure they are tightened to torque shown above.

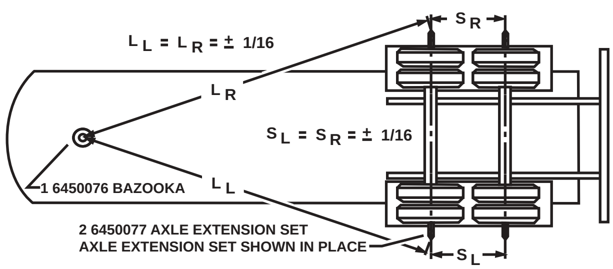


Figure 9M. Checking Alignment

Note A. Steps one and two are very important in the proper alignment of your suspension and should be done before any attempt is made to align the suspension.

Note B. The slot in the adjustable torque arm should be located in the down position and in alignment with the open part of the clamp to insure proper clamping.

Note C. The adjustable torque arm tube retaining nuts should be tightened to the torque shown above

Tires, Rims and Disc Wheels

Tire Inflation

Proper and improper inflation will produce the tire section and ground contact characteristics shown in Figure 10. Tire inflation must be checked daily while tires are cold.

Either overinflation or underinflation will cause premature tire wear.

CAUTION

Do not attempt to adjust the inflation pressure while the tires are hot.

CAUTION

Do not exceed the cold inflation pressures. In some cases the rim or disc wheel will have a lower inflation pressure that the tire, in which case the lower pressure must be used. The maximum inflation pressure to be used is shown on the certification label. Tire inflation must be checked during road stops to locate air losses. Also, remove any foreign objects jammed between the dual wheels.

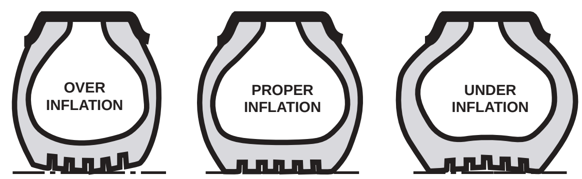


Figure 10M. Proper Tire Inflation

WARNING

Repair any leaks immediately. All tires must be equipped with valve caps.

Tire Overinflation

Overinflation weakens the cord body of the tire by reducing it's ability to absorb road shocks.

Overinflation can cause failure due to fatigue cracks.

Overinflation can also cause rim and wheel damage.

1. Inflate to correct pressure when tires are cool.

WARNING

Do not overinflate tires.

2. Never "bleed" tires to relieve excessive pressure buildup when the tires are warm. Excessive buildup of air pressure can be due to load, underinflation, speed, or a combination of the three.

Tire Underinflation

Underinflation causes rapid wear and premature failure. Underinflation or overloading of the tires on any vehicle driven at sustained speeds will result in weakening of the tire cords. This can make the tire susceptible to further damage or failure even under normal load and inflation conditions.

Matching Dual Tires

Matching of the duals by size will result in longer tire life. Improper matching will cause the larger diameter tire to carry an overload. This will cause typical overloaded tire difficulties. The smaller diameter tire will also wear more rapidly due to scuffing. Differences of not more than 1/4 inch (6.35 mm) in diameter or 3/4 inch (19.1 mm) in circumference are allowed.

NOTE: The smaller of the two tires should be mounted in the inside position.

Removing Tire and Rim Assemblies

⚠ WARNING

Before removing the tire and rim or the tire and disc wheel assemblies, remove the valve core and exhaust all air from both tires in the dual assembly. Check the valve stem by running a piece of wire through the stem to make sure it is not plugged.

Removing Tire and Disc Wheel Assemblies

With the trailer supported by jacks and blocks, remove all the air from the tires (see warning on this page). Remove the cap nuts (see figures 12 and 13). Remove the outside tire and disc wheel. Remove the inside tire and disc wheel if it must be changed.

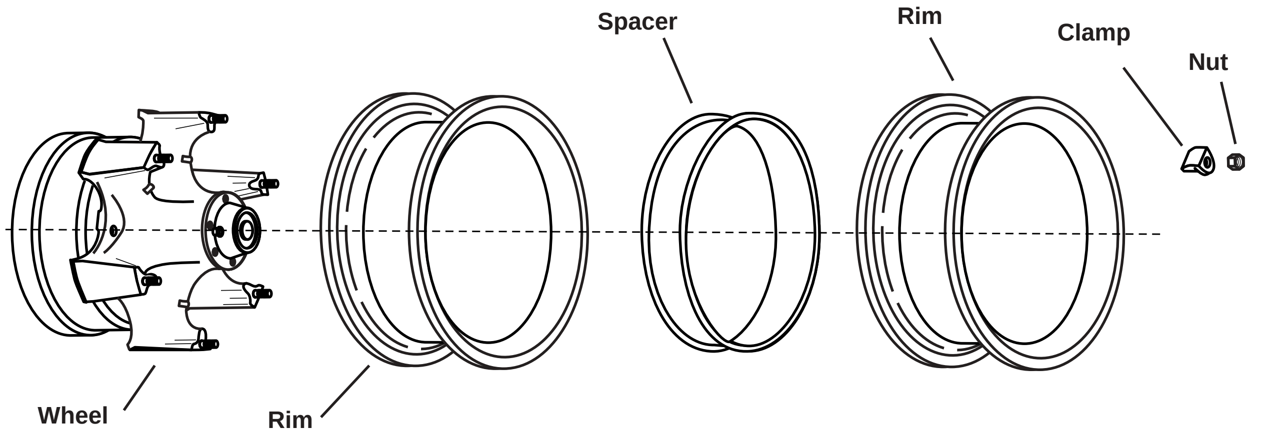


Figure 11. Removal of Rims on Cast Spoke Wheels

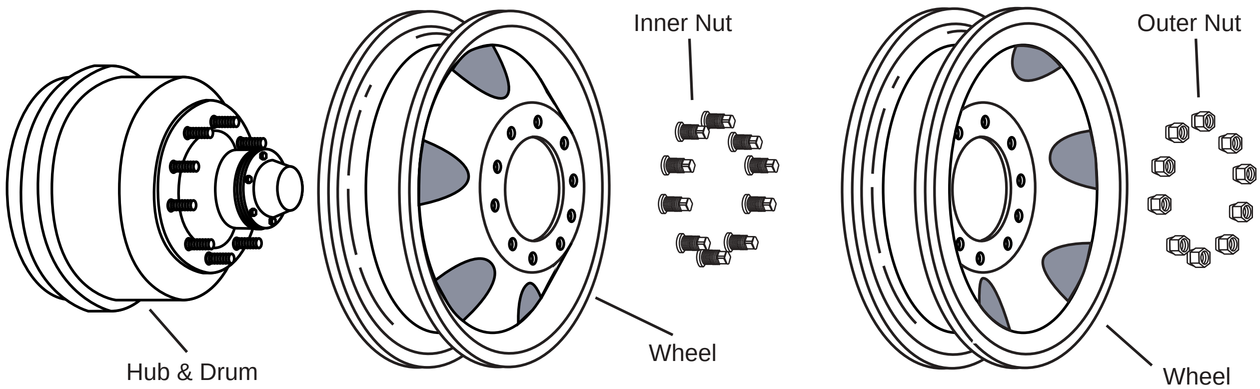


Figure 12. Removal of Tires and Ball Seat Wheels

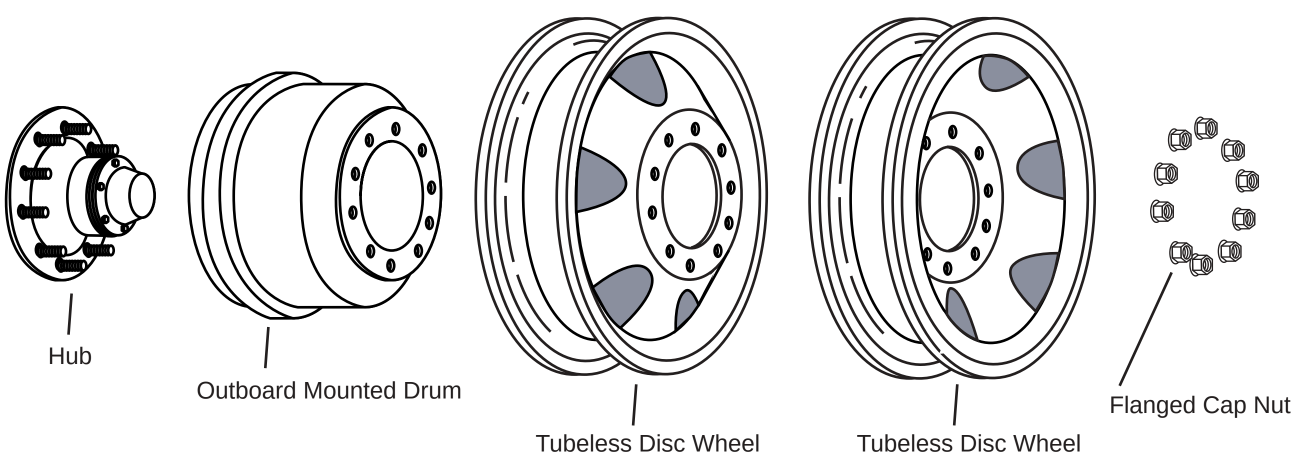


Figure 13M. Removal of Tires and Hub Piloted Wheels

Mounting and Demounting Tires on Rims or Disc Wheels

The following points must be considered when changing or repairing tires on rims or disc wheels.

⚠ WARNING
Mounting and demounting of tires must be done by trained personnel only! Always use industry approved procedures.

1. Do not mix rim or wheel components. They may come apart during inflation.

2. Check the rim base, side rings and lock rings for cracks or other damage. Do not attempt to repair rims or disc wheels. Scrap damaged parts.

3. Match the duals (see page 28).

4. Use only correct rim sizes.

5. Keep rims clean and painted to avoid corrosion.

6. Use proper valve stems and extensions. If valve spacers are used, be sure they are in place before reassembling.

7. Do not overinflate tires.

⚠ WARNING
Use properly constructed cages, guards or baskets when inflating tires. Tires are to be mounted by trained service personnel only!

8. When the tires are worn, the tube will also be worn. Replace the tube. Use the proper size tube.

9. Replace chafed, pinched, stretched or creased tubes.

10. Replace twisted, creased or folded flaps.

Mounting Tire and Rim Assemblies

Place the inside tire and rim on the wheel.

NOTE: If the inside tire and rim were not removed, be sure the side ring and/or lock ring are seated properly. Install the valve core, but do not inflate the tire.

Put on the spacer band and the outside tire and rim. Put on the rim clamps and nuts. Tighten to the torque and in the sequence shown in figure 8.

NOTE: Tighten in several stages to avoid distorting the rim. If the inside tire and rim were not removed, inflate the tire to the proper pressure.

Checking Tightness on Cast Wheel/Rim Assemblies

After the first 50 - 100 miles of service, check the clamp nut torque. Tighten the clamp nuts as shown in Figure 17.

Mounting Tire and *Hub Piloted Type* Disc Wheels

Before mounting the disc wheel, clean the mounting face of dirt and excess paint.

Place the inside tire and disc wheel assembly on the hub. Place the outside tire and disc wheel assembly on the hub and start the flange nuts. Valve stems for the two wheels should be mounted in different circumferential positions for easy inflation. Tighten the flange nuts to the torque and in the sequence shown in Figure 20. If the inside tire and disc wheel assembly was not removed, inflate the tire to the proper pressure.

Mounting Tire and *Ball Seat Type* Disc Wheel Assemblies

Before mounting the disc wheel, clean the mounting face of dirt and excess paint.

⚠ WARNING
Mounting faces which have been damaged must be repaired or replaced.

Right-hand threads are on the right side of the vehicle, and left-hand threads are on the left side.

Place the inside tire and disc wheel assembly on the hub and start the inner cap nuts. Tighten the inner cap nuts to the torque and in the sequence shown for your arrangement (see figure 18). Tighten in several stages to avoid distortion of the disc.

NOTE: If the inside tire and disc wheel assembly was not removed, tighten the inner cap nuts as described. Be sure the side ring and/or lock ring are seated properly. Install the valve core, but do not inflate the tire.

Place the outside tire and disc wheel assembly on the hub and start the outer cap nuts. Valve stems for the two wheels should be mounted in different circumferential positions for easy inflation. Tighten the outer cap nuts to the torque and in the sequence shown in Figure 18. If the inside tire and disc wheel assembly was not removed, inflate the tire to the proper pressure.

Checking Tightness on Mounted Disc Wheels

Check the inner and outer cap nut (ball seat style) or flange nut (cast spoke style) torque after the first 50 - 100 miles of service. Loosen the outer cap nut before tightening the inner cap nut. Tighten the nuts as shown in figure 18.

Wheels and Hubs

General

Two types of wheels are commonly used on Etnyre trailers. Disc wheels mounted on hubs are standard. Cast wheels with demountable rims are optional. Bearing cups are pressed into the wheel "spider" on cast wheels and into the hubs for disc wheels.

Cast Wheel or Hub Removal

Demountable rims and disc wheels must be removed before removing cast wheels or hubs. Support the cast wheel or hub assemblies prior to removal. The cast wheel and drum or hub and drum are removed as an assembly using the following procedure.

1. Loosen the brake adjustment by turning the adjusting screw on the slack adjuster.

2. Remove the hub.

3. Bend the flap or tang of the lockwasher from the flat of the outer spindle nut.

4. Remove the outer spindle nut, two (2) lockwashers, and the inner spindle nut.

5. Pull the cast wheel and drum or hub and drum assemblies carefully to avoid damage to the bearing, spindle, and inner seal. Catch the bearing cones as the wheel or hub is removed from the spindle.

Inspection and Cleaning

While the wheel or hub is removed, inspect the condition of the brake drum and linings. Also check the condition of the cups, cones, seal, and axle ring.

Preparing Bearing for Assembly

Coat the bearing cones and cups with oil prior to assembly.

Cast Wheel or Hub Installation

(see Figure 11)

After the parts have been cleaned, inspected and bearings oiled, install as follows:

1. Assemble the inner cone and seal into the wheel or hub.

2. Place the wheel or hub over the spindle, being careful to avoid damage to the spindle, seal and brake.

3. Put the outer cone into position.

4. Tighten the inner spindle nut while rotating the wheel or hub both directions until a slight bind is felt.

5. Loosen the nut 1/4 turn. The wheel or hub must rotate freely.

6. Install the inner nut lock and place the outer lockwasher on the spindle.

7. Tighten the outer nut.

8. The end play must be .001 in. (.0254 mm) to .010 in. (.254 mm).

9. Lock the outer spindle nut in place by bending the tangs or edge of the lockwasher over one flat on the outer nut.

10. Install the hub cap gasket and hub cap. Fill the hub to the "Full" line on the hub cap window (see Figure 7).

11. Adjust the brakes.

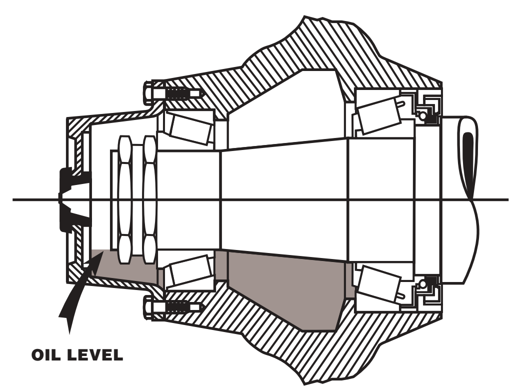


Figure 14M. Checking Oil Level in Hub

Rim Mounting Instructions

Careless Mounting is the Major Cause of Tire and Rim Problems

That means that the tire and rim assemblies must be correctly installed, and the rim clamps and nuts correctly tightened, in order to assure maximum service life - - - and maximum safety - - - for your equipment.

Mounting Procedure

1. Use a wire brush to clean the wheel mounting surfaces, being sure that they are free from dirt, rust and paint. The mounting surface of the wheel is the 28º taper on the inboard side of each spoke.

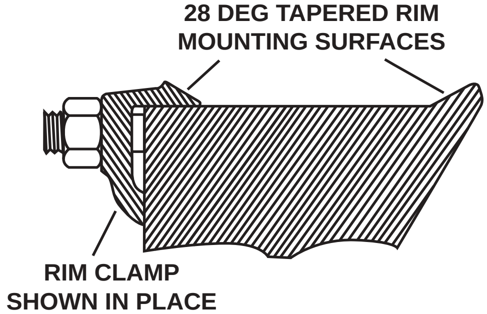


Figure 15M. Rim Mounting Surfaces

2. Slide the inside tire and rim assembly over the wheel and push it back into position against the tapered mounting surface. Be sure that the valve stem faces out and is centered between two spokes.

3. Slide the rim spacer in place over the wheel.

4. Slide the outside tire and rim assembly over the wheel. Be sure that this valve stem faces in, and is located in the same relative position on the wheel as the inner valve stem.

5. Push the whole assembly into position, so that inner rim fits snugly against tapers all around, spacer fits snugly and uniformly against inner rim, and outer rim fits snugly and uniformly against spacer.

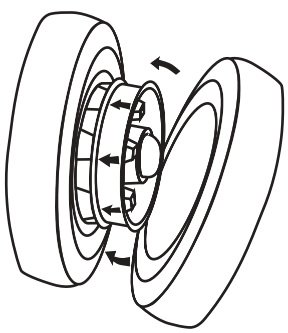


Figure 16M. Assembling Rims and Spacers

6. Install rim clamps and nuts all around. Run nuts up until the end of each stud is flush with the face of its nut, then rotate the wheel a half turn to allow parts to seat naturally.

A gap is permissible, but not required, between the clamp and the spoke wheel. If the gap exceeds 1/4" or if clamp bottoms out before reaching 80% of recommended torque, check to insure that proper clamps and spacer are being used.

7. Tighten the stud nuts a quarter turn at a time, following the crisscross pattern shown. This is very important. Failure to tighten nuts in this crisscross sequence will cause misalignment of tire. Continue until all stud nuts are tightened to these torque specifications:

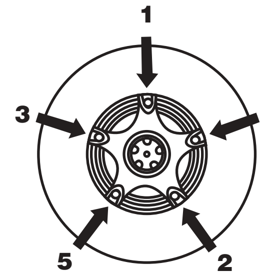


Figure 17M. Rim Clamp Tightening Sequence

Torque Specifications	
Stud Size and Threads Per Inch	Recommended Torque in Pound-Feet
5/8" x 11	175
3/4" x 10	190-225

Note: Studs MUST be clean and dry.

Check Wheel Alignment

To do this, place a block of wood or other object on the floor beside tire, and rotate the tire and wheel assembly. Note variations if any, in space between the tire and the block as the tire is rotated. If this variation exceeds 1/16" for front rims or 1/8" for rear duals, the rim is not properly mounted.

To correct misalignment, loosen nuts where the greatest deviation occurs, and tighten on the opposite side. Recheck and correct until deviation is eliminated.

After running a short distance recheck the stud nuts for tightness. Parts will usually seat naturally and torque on nuts will drop. Retighten all nuts to specified torque; this second tightening will assure a tight, properly aligned wheel assembly.

Check torque on all stud nuts once each week.

Special Note on Aluminum Wheels

Rim Clamps - To provide adequate metal thickness around the rim stub, special rim clamps are required. Use only the recommended Kelsey Hayes/Gunite rim clamps.

Rim Studs - 3/4” diameter high grade steel studs are factory installed. They are coated with 'Galenite" to insure a solid fit. A special shoulder on the stud insures proper assembly and prevents possible damage to the aluminum threads in the wheel. Use only WP-395 Rim Studs.

Examine Wheels at Frequent Intervals

Avoid Abuse - Use only plastic, rubber or leather faced tools in assembly or disassembly of tires and rims. Whenever tires and rims are removed, examine wheels for damage, especially the 28º angle ramp. This is the most critical area on the wheel. All mounting surfaces on rim clamps and wheel must be clean and smooth.

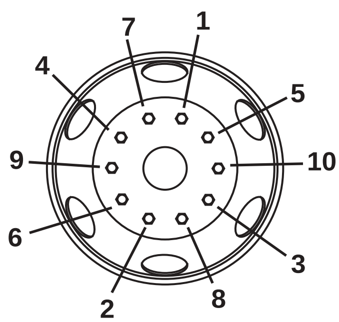
Keep Rim Clamps Tight - check frequently.

Recommended rim clamp torque is 160 to 175 ft.

lbs. Note that special clamps, designed for aluminum wheels, must be used.

Do not, under any circumstances, attempt to weld or heat the wheel for straightening or repair.

10 Stud Disc Wheel Tightening Sequence Gunite Disc Wheels



Hub-Piloted (Two piece flange nuts)	
Wheel Stud Thread Size M22x1.5 (W/1-1/2" Hex)	Torque Lbs. Ft. (Oiled*) 450 - 500
Torque Values for Dual Wheels Dry Threads - No Lubrication Stud Size 3/4 - 16	 Inner & Outer Capnut 450 - 500 ft. lbs.
Backnut Torque Size 3/4 - 16	 Torque 175 - 200 ft. lbs.

Figure 18M. Tightening Sequence of Standard Gunite Disc Wheels

For other wheel brands, follow manufacturers recommended sequence.

Air Systems and Brakes

This section contains a description of the operation of the trailer brake air supply system.

Also included in this section are test instructions, disassembly and assembly procedures and a troubleshooting guide.

Air System Tests

A series of tests must be run daily before operating trailers with air brakes.

1. Connect the air lines, turn on the air, and pressurize the system. The system must hold 100 PSI (7 Bar) pressure minimum.

2. Apply the brakes. Inspect the brake action on all the wheels for proper application.

3. Release the brakes. The brakes must release promptly. Air pressure must discharge quickly from the relay emergency valve.

4. Disconnect the emergency line from the trailer. The trailer brakes must automatically apply.

5. Connect the emergency line. The brakes must release.

Air Reservoir

Drain condensation from the reservoir while the reservoir is pressurized. Listen for leaks after closing the drain valve. The drain valve is located on the underside of the reservoir.

Air Hoses and Tubing

Air hoses and tubing must be checked for chafing, bends, and kinking. Replace faulty parts.

Brake Relay Emergency Valve

The air system tests may disclose a malfunction of the relay emergency valve. Repair or replace faulty units. Contact an authorized representative of the original equipment manufacturer for relay valve servicing.

Air Brake Chambers

The air system tests should disclose any malfunctioning brake chambers. Repair or replace faulty units. The diaphragm and any worn parts must be replaced. When replacing the diaphragm or the spring, replace the corresponding parts for the other chamber on the same axle, to aid in even brake application and release. Examine the yoke pin for wear and replace it if necessary.

Brake Air Supply System Description

(see Figure 21M)

The trailer relies on the tractor for its air supply. A description of the system operation follows:

1. When the service and emergency lines are connected to the towing vehicle, the reservoir is charged to approximately the same pressure as is present in the tractor reservoir. The relay emergency valve will keep the trailer brakes applied until the emergency line pressure reaches 60 PSI (4.14 Bar). The brakes will then be released.

2. When the towing vehicle and the trailer are traveling over the road, the brakes are released and the emergency line and reservoir are charged to full pressure.

3. When the service brakes are applied in the towing vehicle, the pressure is increased in the service line. This fills the brake chambers with the same pressure as the service line, and applies the trailer brakes.

4. Releasing the service brakes will cause the pressure in the service line to decrease, causing the relay emergency valve to exhaust the pressure from the brake chambers.

5. The trailer brakes can also be applied independently from the tractor brakes by actuating a hand controller. This supplies air pressure to the service line.

6. The brakes will also apply if the pressure in the emergency line is reduced to about 30 PSI (2.07 Bar). A gradual decrease in the emergency line pressure will cause a gradual increase in the pressure to the brake chambers.

7. A sudden release of pressure in the emergency line will cause a full release of reservoir pressure into the brake chambers, resulting in full brake application.

Relay Emergency Valve

(see Figure 19M)

The relay emergency valve senses the line pressures and relays the response to the brake chambers. Daily operating tests are described elsewhere in this manual. Before conducting further tests, check the tractor air pressure gauge against an accurate test gauge.

⚠ WARNING
Block the wheels during these tests

1. Connect the service and emergency lines. When the pressure reaches 60 -65 PSI (4.14 - 4.48 Bar), the brakes must automatically release.

2. Apply and release the service brake several times. Check for prompt brake application and release.

3. Release the brakes and stop the engine with the system pressure between 90 - 100 PSI (6.2 -6.9 Bar). A two minute check must show a pressure drop of no more than 6 PSI (0.41 Bar) for the combination vehicle system.

4. If step "3" indicates possible leakage, apply soap suds at the relay emergency valve exhaust port. A one inch (25.4 mm) soap bubble in not less than five seconds is permissible.

5. Apply soap suds at the pipe plugs and fittings. Correct all leaks as indicated.

6. With the engine stopped and the pressure at 90 - 100 PSI (6.2 - 6.9 Bar) make and hold a full service brake application. A two minute check must show a pressure drop of no more than 8 PSI (0.55 Bar) for the combination vehicle system.

7. If Step "6" indicates possible leakage, apply soap suds on the relay emergency valve cover and exhaust port. A one inch (25.4 mm) bubble in not less than three seconds is permissible. Correct all leaks as indicated.

8. Place the tractor protection control valve in "emergency" position or close the cutoff valve on the emergency line. Disconnect the emergency line coupling. The trailer brakes must apply promptly. Check for leakage at the emergency coupling. A leak indicates a leaking check valve or O-rings in the relay emergency valve. Also check the service line. A leak here indicates leaking O-rings in the relay emergency valve. Recharge the system. The brakes must release at 65 PSI (4.48 Bar) emergency line pressure.

9. Stop the engine with the system fully charged. Make a series of foot valve applications. Reduce the pressure to 30 PSI (2.07 Bar). The trailer brakes must apply automatically at this pressure or at the emergency setting of the tractor protection equipment.

If the valve does not function properly or leakage is excessive, it must be repaired or replaced.

Brake Chambers

(see Figure 20M)

Air pressure on the pressure plate side of the brake chamber diaphragm pushes the diaphragm against the push rod assembly. This extension of the push rod pushes against the slack adjuster, which actuates the brakes.

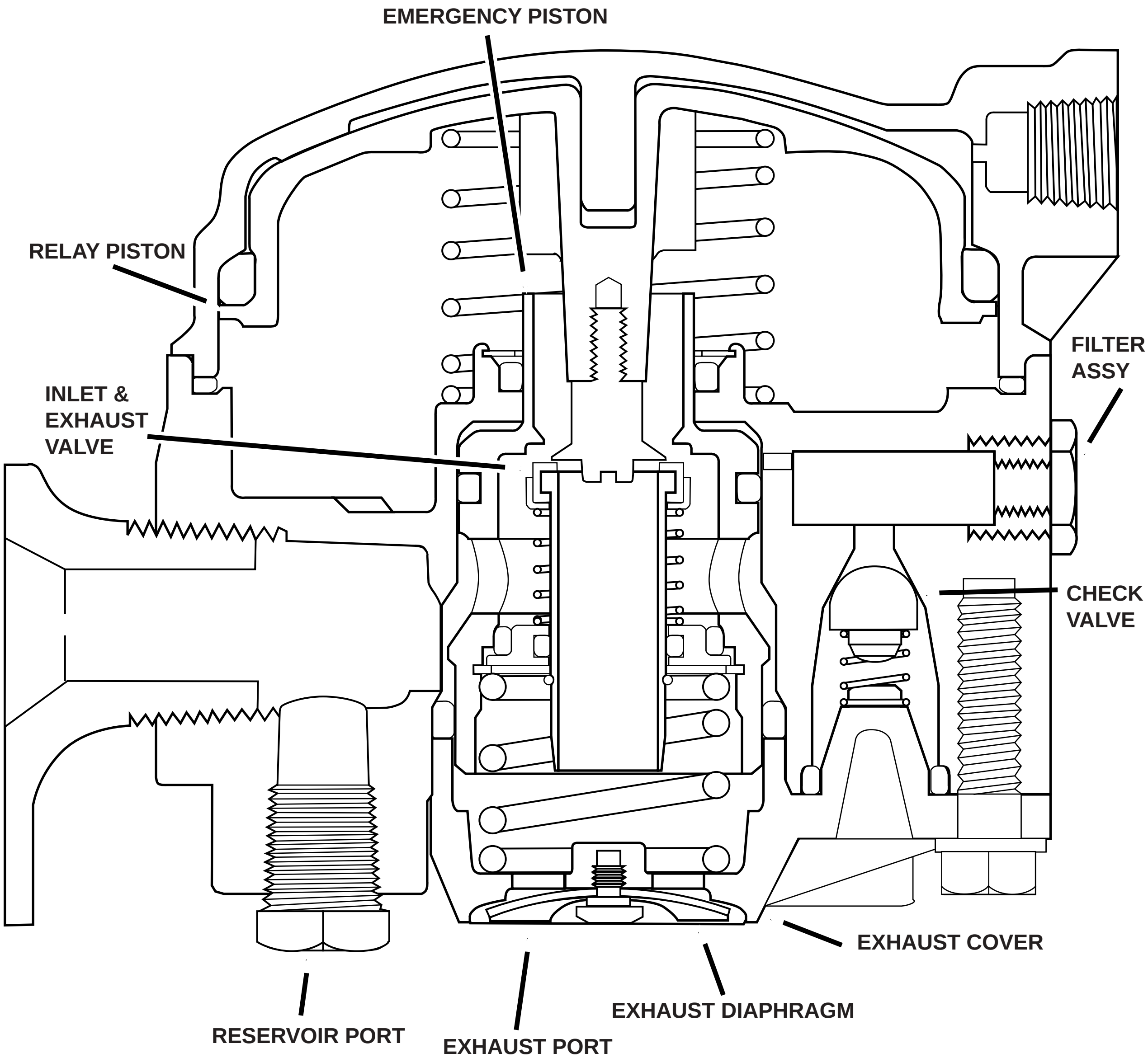


Figure 19M. Relay Emergency Valve

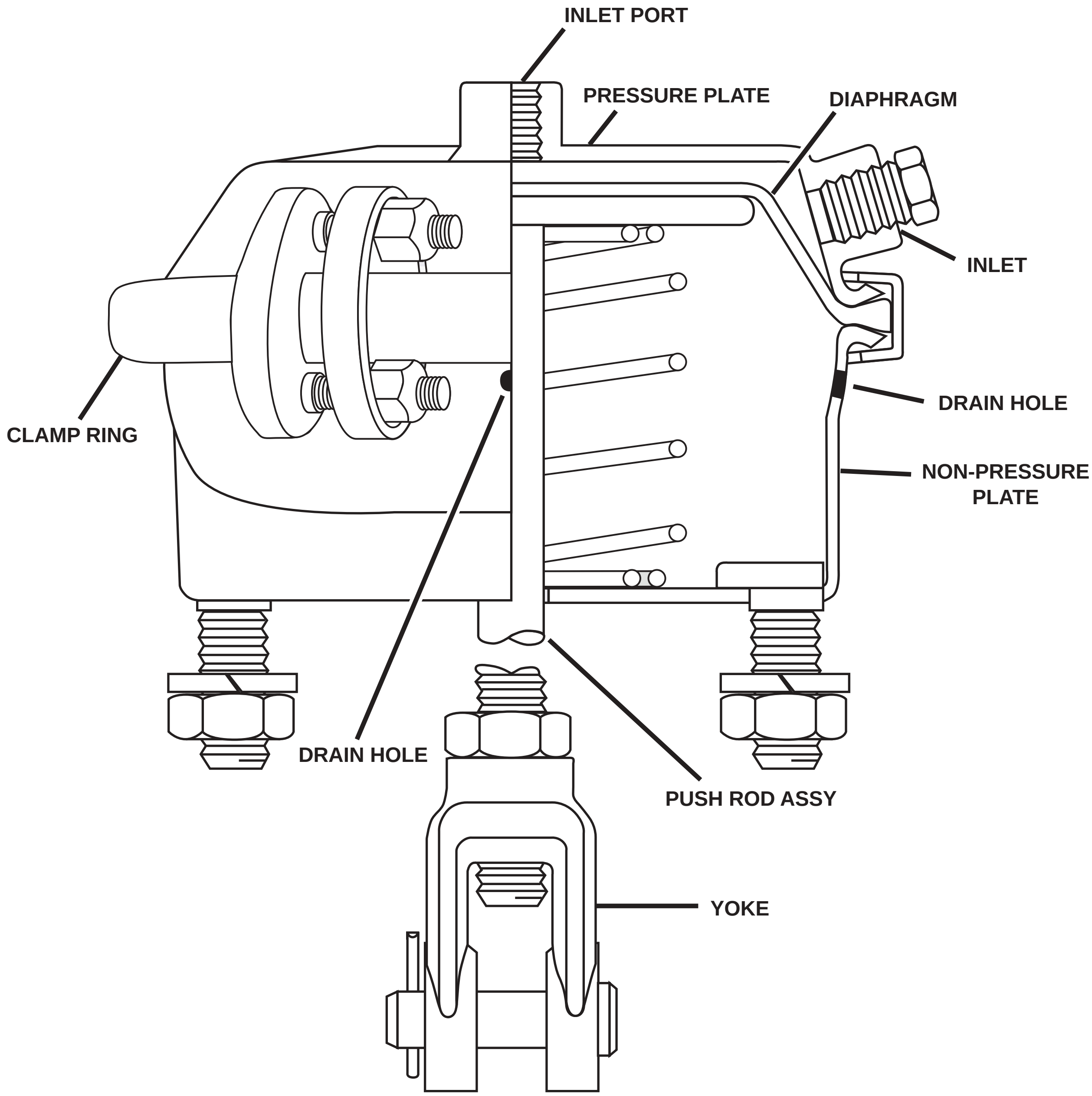


Figure 20M. Brake Chamber

MAINTENANCE

Brake Chamber Servicing

If an air leak is detected around the clamp ring, the bolts can be tightened to stop the leak.

CAUTION
Overtightening the bolts can cause permanent distortion of the clamp ring. Do Not exceed a torque of 130 inch lbs. (14.7 Nm.)

Brake Chamber Removal

Disconnect the air line and the push rod yoke. Remove the nuts from the mounting studs. Remove the air chamber.

Brake Chamber Disassembly

1. Clean the exterior of the brake chamber.

2. Put a mark on the parts so they can be reassembled in the same relative positions.

3. Pull out the push rod and clamp the push rod in the extended position with vise grip pliers.

NOTE: Tape the grips to prevent damage to the push rod.

4. Remove the bolts from the clamp ring.

5. Spread the clamp ring and remove it.

CAUTION
Use care not to bend the clamp ring out of shape.

6. Remove the pressure plate and diaphragm.

7. Remove the locknut and the yoke from the push rod.

8. Release the grip on the push rod.

9. Remove the push rod and the spring.

Cleaning and Inspection of Parts

Clean the metal parts in a solvent. Inspect all the parts for damage, wear or deterioration and replace defective parts.

Brake Chamber Assembly

1. Stand the push rod assembly on a flat surface.

2. Put the return spring in position.

3. Place the non-pressure plate over the push rod.

4. Push the non-pressure plate down against the flat surface. Hold it in place with vise grip pliers clamped to the push rod.

NOTE: Tape the grips to prevent damage to the push rod.

5. Place the clamp ring over the non-pressure plate clamping surface.

6. Position the diaphragm in the pressure plate. Assemble it with the non-pressure plate by working the clamp ring over the pressure plate. Align all the marks made during disassembly.

7. Draw the clamp lugs together. Start the clamp bolts and nuts. Tighten the nuts to a maximum torque of 130 inch lbs. (14.7 Nm.).

CAUTION
Overtightening the bolts can cause permanent distortion of the clamp ring.

Installation

Place the brake chamber in the mounting bracket and tighten the nuts on the studs. The drain hole must be placed in the down position. Install the yoke and the locknut on the push rod. Connect the push rod to the slack adjuster with the yoke pin. Adjust the brakes. Check the angle formed by the slack adjuster and the push rod with the brakes applied. This angle must not be less than 90^0 with the brakes adjusted. Turn the yoke to obtain this angle. The angle must be the same for all slack adjusters to obtain equal braking force at all wheels.

Trailer ABS

Meritor WABCO ABS is an electronic system that monitors and controls wheel speed during braking. The system works with standard air brake systems.

ABS monitors wheel speed at all times and controls braking during wheel lock situations. The system improves vehicle stability and control by reducing wheel lock during braking.

The ECU receives and processes signals from the wheel speed sensors. When the ECU detects a wheel lockup, the unit activates the appropriate modulator valve, and the air pressure is controlled.

In the event of a malfunction in the system, the ABS in the affected wheel(s) is disabled; that wheel still has normal brakes. The other wheels keep the ABS function.

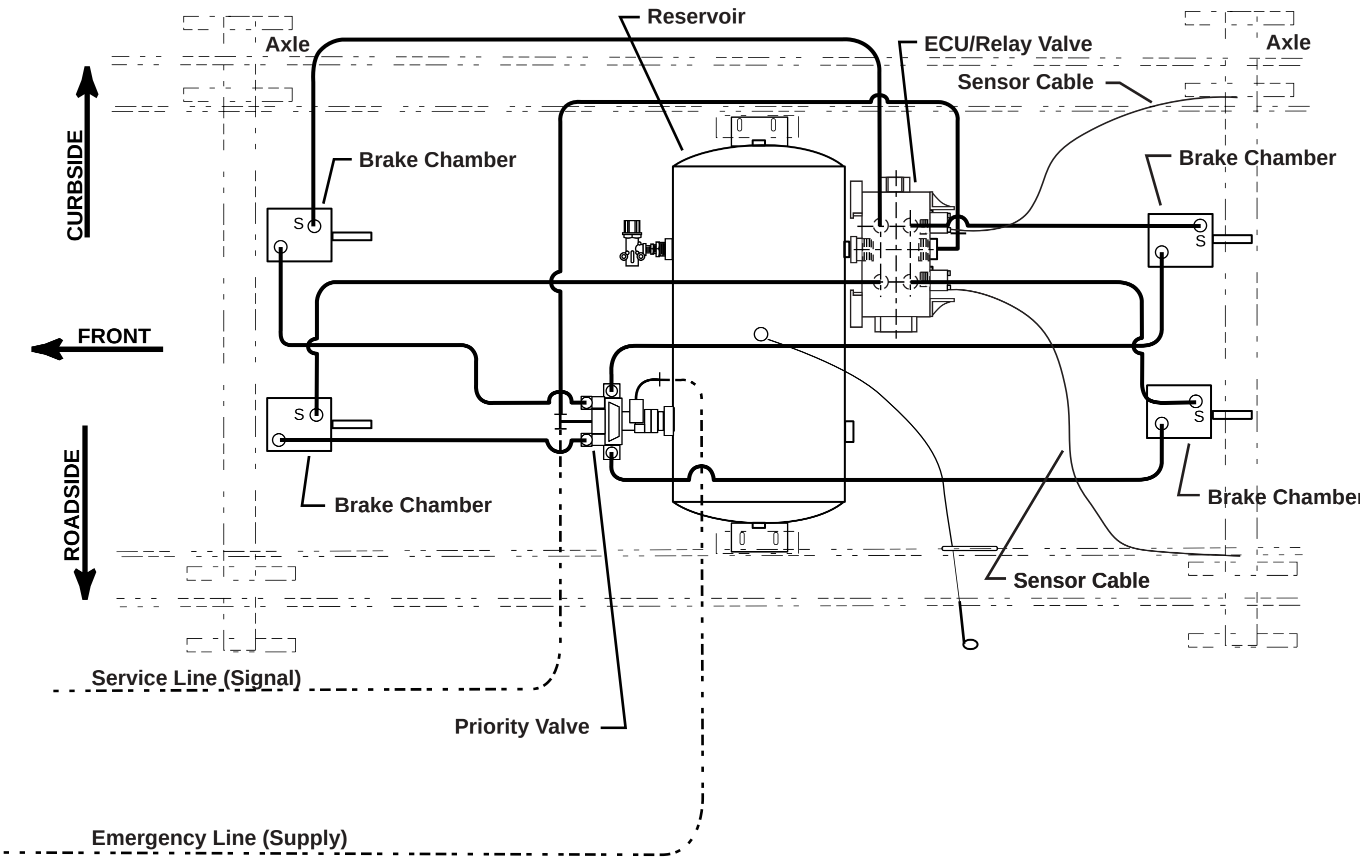


Figure 21M. Std ABS Air Schematic

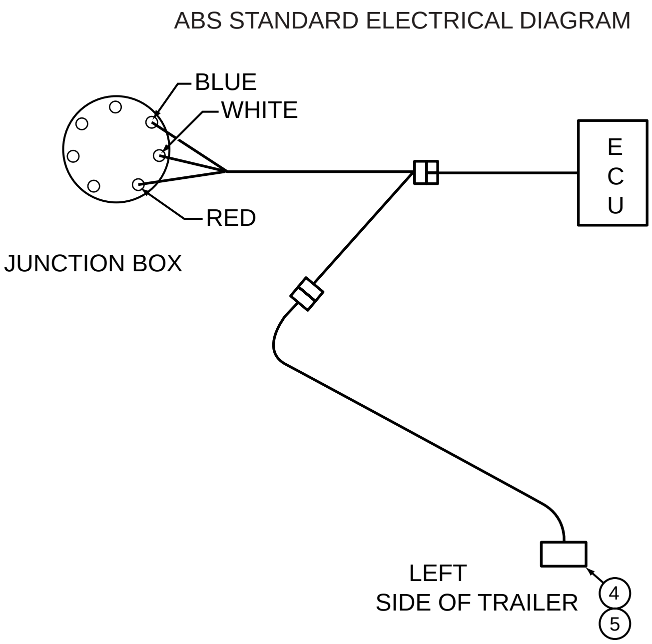


Figure 22M. Std ABS Electrical Schematic

An ABS warning light lets drivers know the status of the system.

For a complete description of diagnostic and maintenance procedures refer to Meritor WABCO Maintenance Manual no. 33.

Air Brakes - General

Etnyre trailers are equipped with cam actuated brakes. Braking force is supplied by air pressure in the brake chamber, which pushes a pushrod against the end of the slack adjuster. The slack adjuster rotates the camshaft, which forces the brake shoes against the brake drum.

Operating Checks

During road stops, check the brake drums for heating.

WARNING

Proceed cautiously. Malfunctioning or misaligned brakes can cause the drum to become extremely hot. Do not operate the vehicle until the problem causing the overheating is corrected.

A cool brake drum may indicate an inoperative brake.

Brake Assembly

Examine the brake linings visually to locate the lining showing the greatest amount of wear.

CAUTION

Do Not allow the linings to wear thin enough so the lining bolts or rivets contact the drum.

Grease the anchor pins, camshaft bracket bearing and the spider bushing at four (4) grease fittings. Do Not use an excessive amount of grease on the anchor pins and spider bushing. Avoid getting grease on the brake lining surfaces.

Slack Adjuster

Crewson Brunner Automatic Slack Adjuster

WARNING

This section is valid only for Crewson Brunner slack adjusters. If your Transport is equipped with any other OEM's slack adjusters, contact the appropriate OEM for maintenance and adjustment instructions.

Recommended Preventive Maintenance

Every Three Months or 25,000 Miles

1. Check the condition of the brakes, including drums, shoes and linings, cams, rollers, bearings, etc.

2. Check for structural damage of the automatic slack adjuster housing and condition of the boot for cuts, tears, etc. Replace if necessary.

3. After allowing brake drum to cool to room temperature, check for correct chamber stroke. See chart below for correct stroke measurements.

Chamber Type	Maximum Stroke
12..........................	less than 1-3/8"
16..........................	less than 1-3/4"
20..........................	less than 1-3/4"
24..........................	less than 1-3/4"
30..........................	less than 2"

Every Six Months or 50,000 Miles

The Crewson Brunner automatic slack adjusters are factory lubricated and extensively sealed to protect against dirt, water, salt and other corrosive elements. Nevertheless, periodic lubrication is recommended.

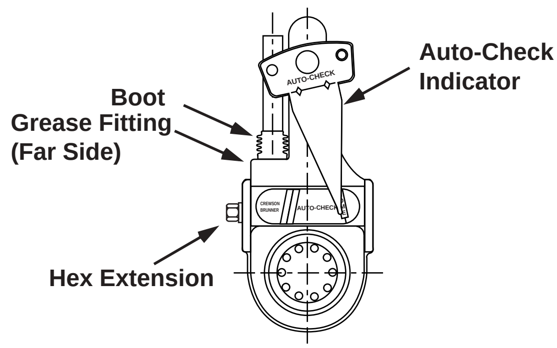


Figure 23M. Slack Adjuster Lubrication Points

1. Grease the automatic slack adjuster.

(a) The styles of grease plugs or reliefs may vary according to models.

(b) See Crewson Brunner service data for the approved types of lubricant.

2. Test adjuster function.

Testing Adjuster Function

Check the operation of the slack adjuster by observing the auto-check indicator during several applications of the brakes. The pointer should return to the "Home" position and not go into the red zone when the brakes are applied. Another way to check the operation is to measure the maximum stroke during brake application. If maximum stroke at 90 psi of the Crewson Brunner automatic slack adjuster is less than the distance in the **Maximum Stroke Chart** below, the adjuster is functioning properly.

Chamber Type	Maximum Stroke
12...........................	less than 1-3/8"
16...........................	less than 1-3/4"
20...........................	less than 1-3/4"
24...........................	less than 1-3/4"
30...........................	less than 2"

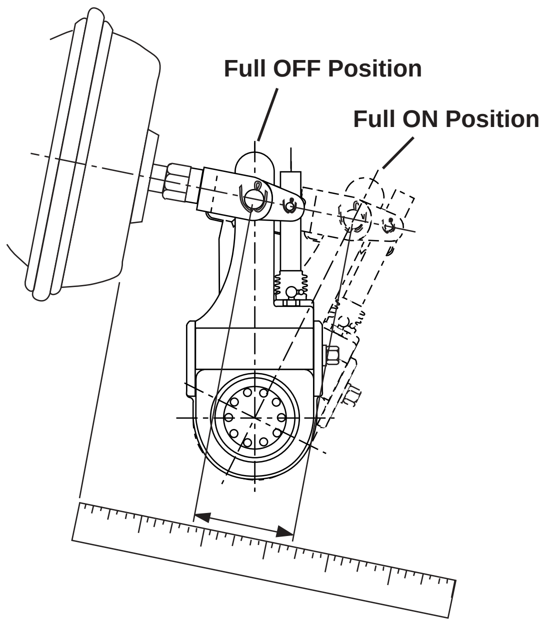


Figure 24M. Measuring Maximum Stroke

1. The Crewson Brunner Automatic Slack Adjuster should not require manual readjustment. If the maximum chamber stroke is within the range for the size chamber used, the slack should not be manually readjusted. If the chamber stroke exceeds the limit, and does not adjust to within the specifications, either the brake linings or the slack adjuster should be replaced**.** Apply the brakes several times and watch for the hex to rotate. A box wrench on the hex makes an excellent indicator to magnify the movement. The hex extension must rotate. The adjustment is intentionally made in small increments so it will take several cycles to bring the adjuster within the stroke limit shown in the chart.

2. If the hex extension did not rotate , the automatic slack must be replaced.

Slack Adjuster Replacement

1. Chock the wheels.

2. Fully cage the spring chamber with 100 psi air pressure or a threaded T-bolt only.

3. Remove the existing slack adjuster and clevis. Do not move the existing jam nut.

4. Clean and apply anti-seize compound to the pushrod threads.

5. Thread the Crewson Brunner clevis onto the pushrod and install the 1/2” clevis pin. Do not tighten the jam nut.

6. Slide the installation template over the “S” cam spline. Swing the template into the clevis until the appropriate slot totally engages the 1/2” clevis pin.

7. Once the template has been swung into place, install the 1/4” clevis pin. If the 1/4” pin does not slide freely into the clevis and template, remove the template from the clevis. Rotate the clevis clockwise or counterclockwise several turns and reinstall the template in the clevis.

8. Position the clevis on the pushrod so both pins fit freely in the clevis and the template.

9. If the pushrod threads extend through the clevis more than 1/16”, remove the clevis and cut the rod to length. A minimum of 1/2” thread engagement in the clevis body is required. If this is not the case, install a new pushrod and cut to length or use an extended length Crewson Brunner clevis.

10. Tighten jam nut to a minimum of 50 ft-lbs.

11. Remove both clevis pins and template.

12. Before installing auto slack adjuster, coat the “S” cam spline, both clevis pins, and the pushrod threads with anti-seize compound.

13. In stall the slack adjuster on the “S” cam spline. Using a 7/16” wrench, manually rotate the adjuster shaft clockwise until the slack adjuster arm holes line up with the clevis holes.

14. If your slack adjuster is equipped with an auto-check indicator, insert the 1/4” and 1/2” pins in to the auto-check holes. The clevis pin heads should be toward the front of the auto-check. The auto-check should face the center of the vehicle.

15. Insert the clevis pins through the auto-check and clevis and secure with cotter pins. If you do not have an auto-check insert the pins through the clevis and secure with cotter pins.

16. Using a 7/16” wrench, manually rotate the adjuster clockwise until the brake shoes contact the brake drum.

17. Install any washers and the snap ring on the “S” cam shaft.

18. Manually back off the adjuster counterclockwise 1/2 turn.

19. Uncage the spring brake.

20. Build up the vehicle air pressure to 90 psi.

21. Fully apply and release the brakes several times to check for adequate clearance to all of the adjacent components.

22. Measure the distance from the air chamber to the center of the 1/2" pin.

23. Apply the brakes with 80 to 90 psi air pressure, and measure the distance to the 1/2" pin. The difference between these 2 measurements is the stroke. The stroke, or difference between these two measurements must be less than as shown on the following charts.

Chamber Type	Maximum Stroke
12...	less than 1-3/8"
16...	less than 1-3/4"
20...	less than 1-3/4"
24...	less than 1-3/4"
30...	less than 2"

Long Stroke Chamber	Maximum Stroke
16..	less than 2"
20..	less than 2"
24 (below 3" max stroke)......	less than 2"
24 (3" max stroke version)....	less than 2 1/2"
30..	less than 2 1/2"

The auto-check pointer will point to the home position to verify proper installation.

WARNING

An auto slack adjuster should never have to manually adjusted while in service. The only time it should be manually adjusted is during installation or at brake relining. By constantly manually adjusting the hex shaft the internal clutch life can be shortened. The proper way of checking an auto slack to see if it is working within specifications is to measure the working stroke.

CAUTION

Check the brake adjustment frequently during the first 500 miles after relining. Overloading or using only the trailer brakes to stop the complete tractor-trailer unit will cause the heat absorption capacity of the brake to be exceeded. Hotter brake linings and drums, longer stopping distances, and shorter brake lining life will result.

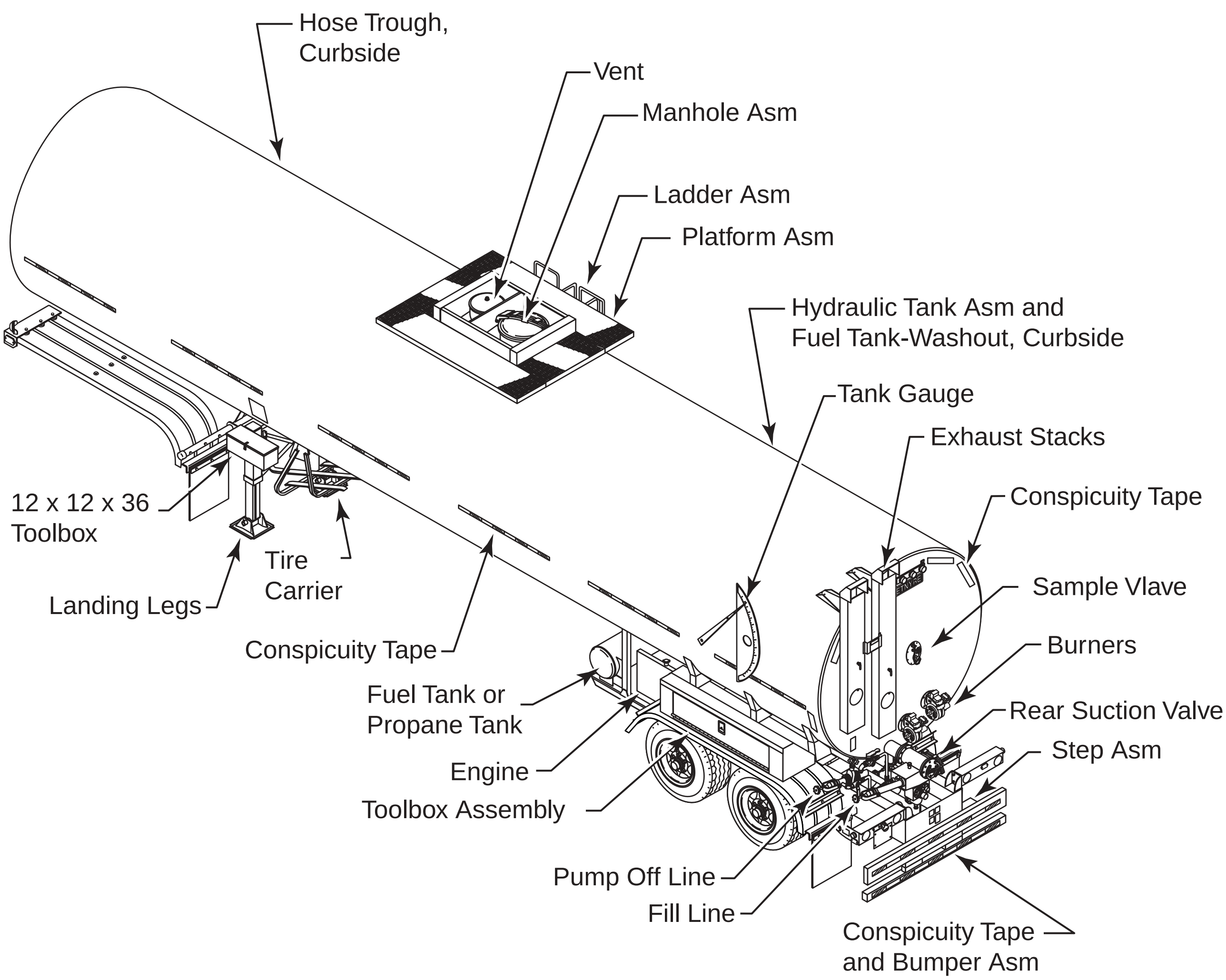
Trouble Analysis for Air Brakes		
Trouble	**Probable Cause**	**Corrective Action**
No brakes or intermittent brakes.	Brake air system improperly connected.	Reconnect correctly.
	Relay emergency valve contains water or oil.	Clean valve.
	Tractor protection valve malfunction.	Repair or replace valve.
	Restricted tubing or hose line.	Locate and remove restriction.
	No air pressure due to: a. Broken line. b. Failure in tractor air supply.	 Locate leak and repair. Troubleshoot tractor air system.
Single brake dragging or locked.	Broken component within brakes: a. Retract spring. b. Cam roller. c. Shoe. d. Lining fasteners. e. Anchor pin. f. Spider.	Replace broken part.
	Flat spot on cam roller or camshaft	Replace defective parts. DO NOT lubricate mating surfaces of cam roller.
	Improper adjustment.	Adjust slack adjusters.
	Spider bushing or cam bracket bushing binding.	Lubricate or replace bushing.
	Improper lubrication.	Lubricate.
	Worn anchor pin bushing.	Replace bushing.
	Brake drum distortion.	Repair or replace drum.
	Broken brake chamber spring.	Replace spring.
	Brake chamber pushrod binding.	Realign brake chamber bracket or install correct brake chamber.
Uneven brakes.	*See "Single brake dragging or locked" in this section.*	
	Restriction in brake hoses.	Locate and remove restriction.
	Leaking brake chamber diaphragm.	Replace diaphragm.
	Linings worn out.	Reline brakes.
	Grease on linings.	Reline brakes.
	Broken slack adjuster.	Replace slack adjuster.
Brakes apply too slowly.	Brakes need adjustment or lubrication.	Adjust and lubricate brakes.
	Low air pressure in brake system (below 80 PSI) (5.5 Bar).	Check tractor air system.
	Restricted tubing or hose.	Locate and remove restriction.
	Defective relay emergency valve.	Clean and repair or replace valve.
	(continued)	

Trouble Analysis for Air Brakes (continued)		
Trouble	**Probable Cause**	**Corrective Action**
Brakes release too slowly.	Brakes need adjustment or lubrication.	Adjust and lubricate brakes.
	Brake components binding.	Align brackets or replace bent components.
	Exhaust port or relay emergency valve restricted or plugged.	Clean valve.
All brakes do not release.	Brake air system improperly connected.	Reconnect correctly.
	Brake valve on towing vehicle applied.	Release brake.
	Relay emergency valve in emergency position.	Check line pressure and valve.
	Restriction in brake hoses.	Locate and remove restriction.
	Tractor protection valve malfunction.	Troubleshoot tractor air system.
Insufficient brakes.	Brakes need adjustment.	Adjust brakes.
	Brakes need lubrication.	Lubricate brakes.
	Lining worn away.	Reline brakes.
	Defective relay emergency valve.	Repair or replace valve.
	Brakes overheated.	Stop and allow to cool. Locate the cause of overheating.
	Low air pressure.	Troubleshoot tractor air system.
Brakes grabbing.	Lubricant on brake lining.	Reline brake.
	Brake components binding.	Locate cause and repair, adjust or replace components.
	Defective brake valve on towing vehicle.	Repair or replace valve.
	Defective relay emergency valve.	Repair or replace valve.
Excessive leakage with brakes released.	Relay emergency valve leaking.	Repair or replace valve.
	Leaking tubing or hose line.	Tighten or replace leaking lines.
Excessive leakage with brakes applied.	Relay emergency valve leaking.	Repair or replace valve.
	Leaking brake chamber or diaphragm.	Tighten clamp ring or replace diaphragm.
	Leaking tubing or hose line.	Tighten or replace leaking lines.

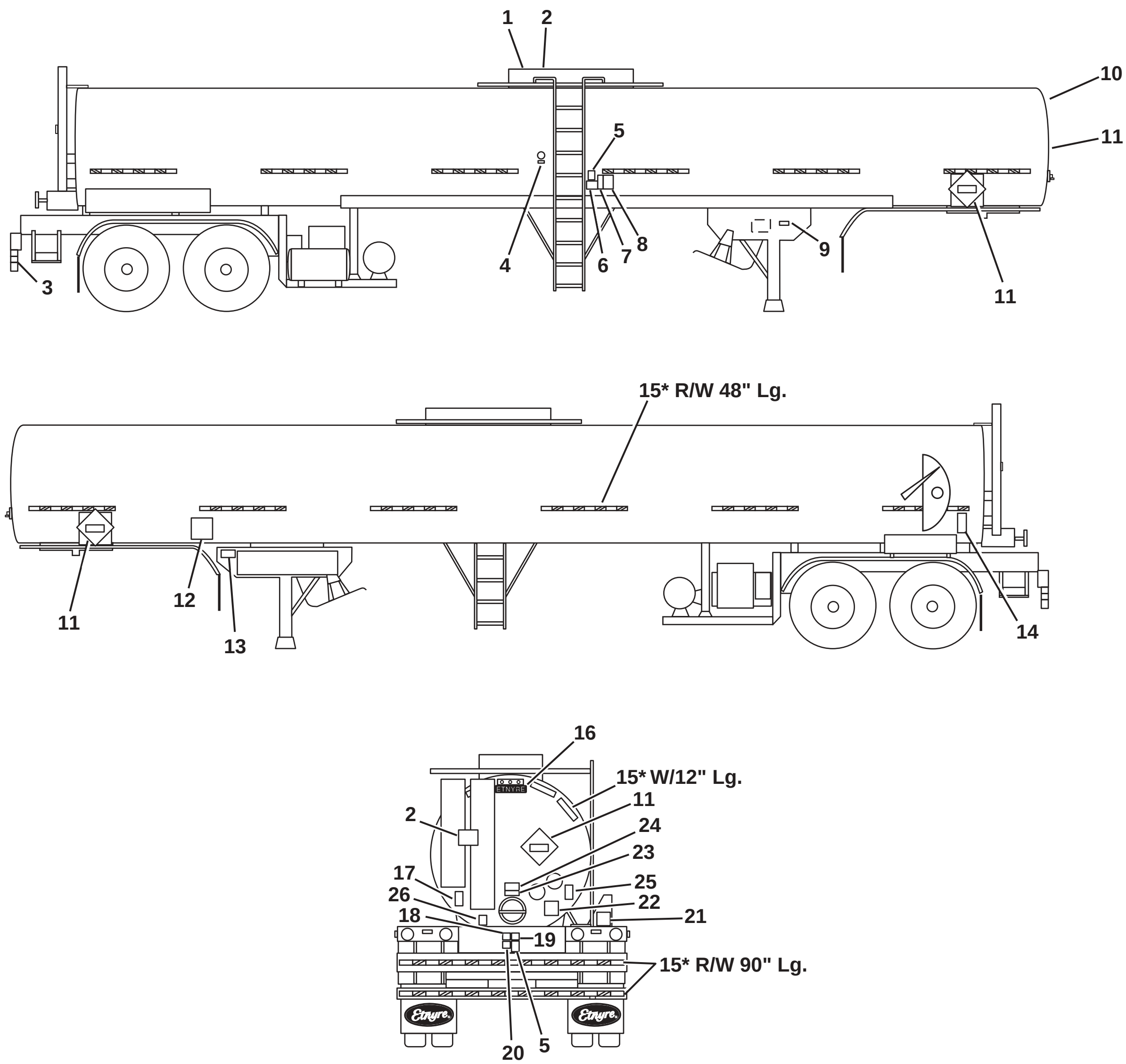
(continued)

Trouble Analysis for Air Brakes (continued)		
Trouble	**Probable Cause**	**Corrective Action**
Excessive leakage with emergency system only applied - no leakage with normal brake application.	Defective relay emergency valve.	Clean and repair, or replace valve.
Excessive water present in brake system.	Reservoir not drained often enough.	Drain reservoir daily.
Excessive oil present in brake system.	Compressor on towing vehicle passing excessive oil.	Repair compressor.
Brake will not apply.	Flat spot on cam roller or camshaft.	Replace defective parts.

General Identification



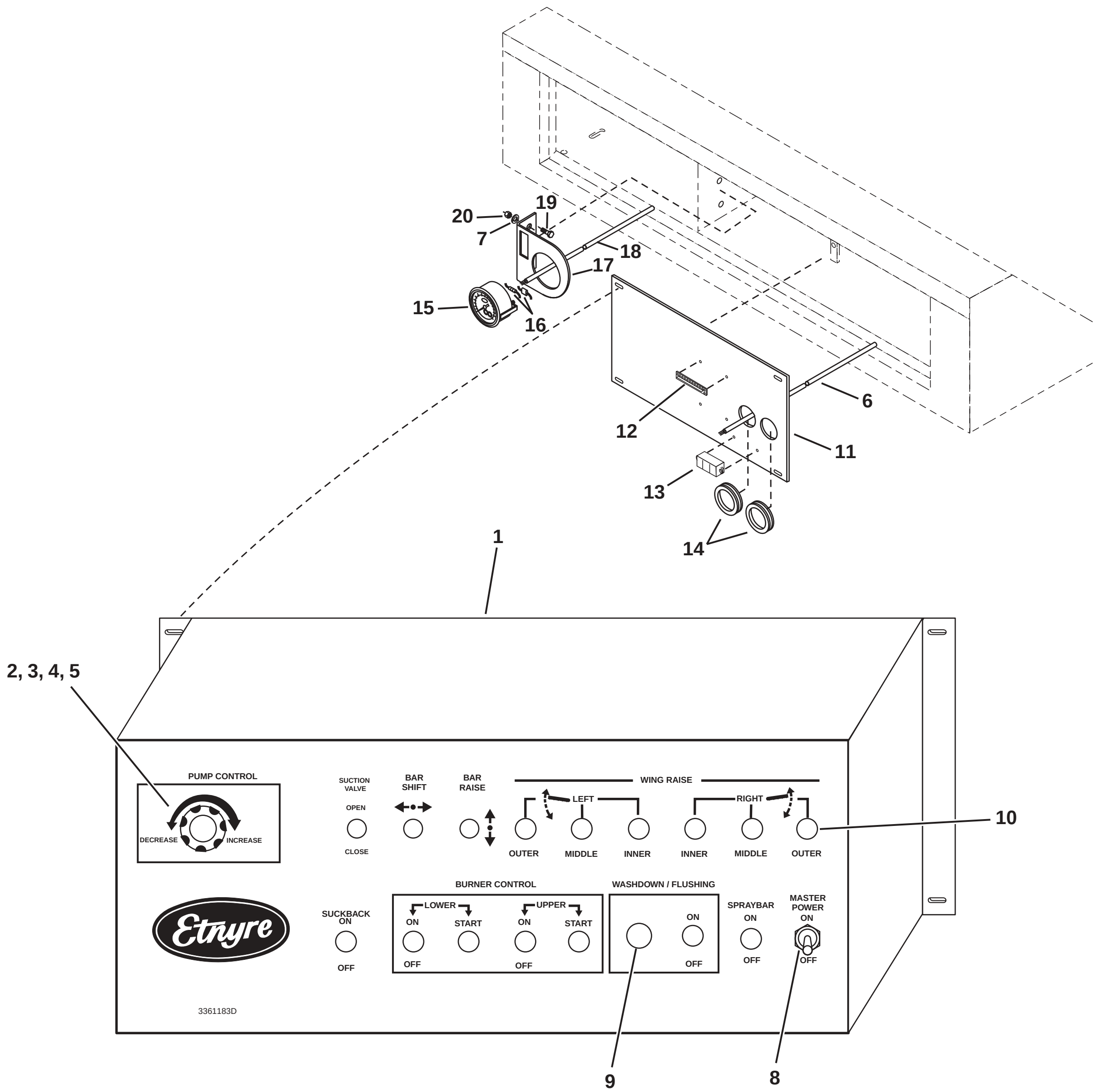
Plates and Conspicuity Tape



REF	PART NO.	QTY	DESCRIPTION
1	3390679	2	Decal: Warning, Manhole
2	3390684	2	Decal: Caution, Hot Surface
3	6320504	1	Decal: Rear Impact Guard
4	3390192	2	Plate-Temp, Hauling Tank
5	3390678	2	Decal: Warning, ÒRead ManualsÓ
6	2790006	2	Plate-Caution, HT W/O Flue, Gen.
7	3390637	1	Tag-Warning, DonÕt Mix Asphalts
8	3390685	1	Decal: Warning, Safety Hazard
9	2790004	1	Nameplate-Hauling Tank Brass
10	3390191	1	Decal-Oval, Etnyre
11	6320272	4	Placard-Dudflip 126SF
12	2790530	1	Plate-Name, Spec, 178.345, Var Sh
13	2790017	1	Label-Cent., FMVSS, Trailer, 1/81
14	3390639	2	Plate-Warning, Manhole/Burner
15	2790527	AR	Tape-Conspic, 2Ó Red/White or White
16	3390149	1	Plate-Name, Straight, Etnyre
17	3390680	1	Decal: Warning, Fill Cap
18	3390682	1	Decal: Caution, Before Starting
19	3390683	1	Decal: Caution, Shields
20	3390681	1	Decal: Warning, Remain Clear
21	3390540	1	Plate-Direction, LPG Burner
22	2790007	2	Plate-Caution, HT, W/Flue, Gen.
23	2790023	2	Decal-Valve, Open/Close
24	3390406	1	Plate-Warning
25	3390636	1	Plate-Warning, Burner
26	3390728	2	Decal-Gate Valves

AR - As Required

Rear Control Box

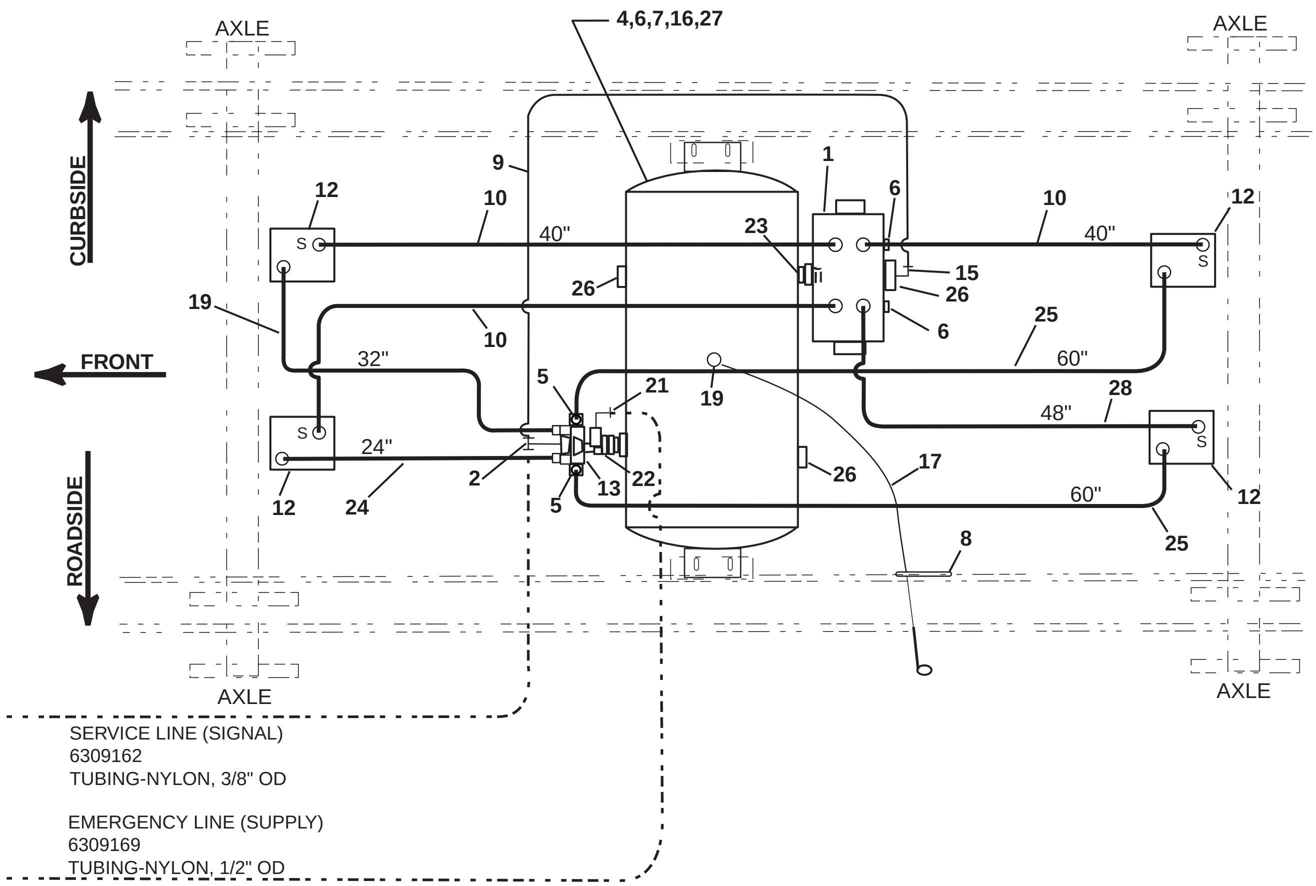


REF	PART NO.	QTY	DESCRIPTION	REF	PART NO.	QTY	DESCRIPTION
1	3361183D	1	Rear Control Box	13	6702000	1	Relay-3DPT, 10A, 6VDC, Coil
2	6701907	1	Knob-Control	14	6700878	2	Grommet-Rubber,1 1/2 ID x 3/8 x 2OD
3	6701911	1	Pot-1K,Single,Linear, 2 1/4 W	15	6702135	1	Pump Tachometer-Elec. Analog
4	6702033	1	Resistor-100 Ohm,1/2 W,5%	16	3370235	1	Capacitor-Resistor Asm
5	3361162	1	Disk-Foam,1 1/4 Dia 1/4 Thick	17	3361030	1	Brkt.-Bitumeter Odometer
6	3370250	1	Cable Asm-Power S2000	18	6701048	60’	Cable-Shielded,22-3,Stranded
7	0120380	2	Washer-Lock, 0.25, Spring, PD	19	0120854	2	Screw-Hex,1/4NC x 5/8,Gr2,PD
8	6700255	1	Switch-Toggle,SPST,2 Pos,Maint	20	0120375	2	Nut-Hex,3/4NC,PD
9	0142025	1	Plug-Button,3/4,PD				
10	6702199	16	Plug-Instrument Panel 1/2				
11	3361260	1	Plate Asm-Mounting				
12	6700306	1	Strip-Terminal,10				

Specify Unit Serial No., Part No., & Part Description

Air System - Wabco 2200 Seal Co. TDM

9302502 Spring Suspension

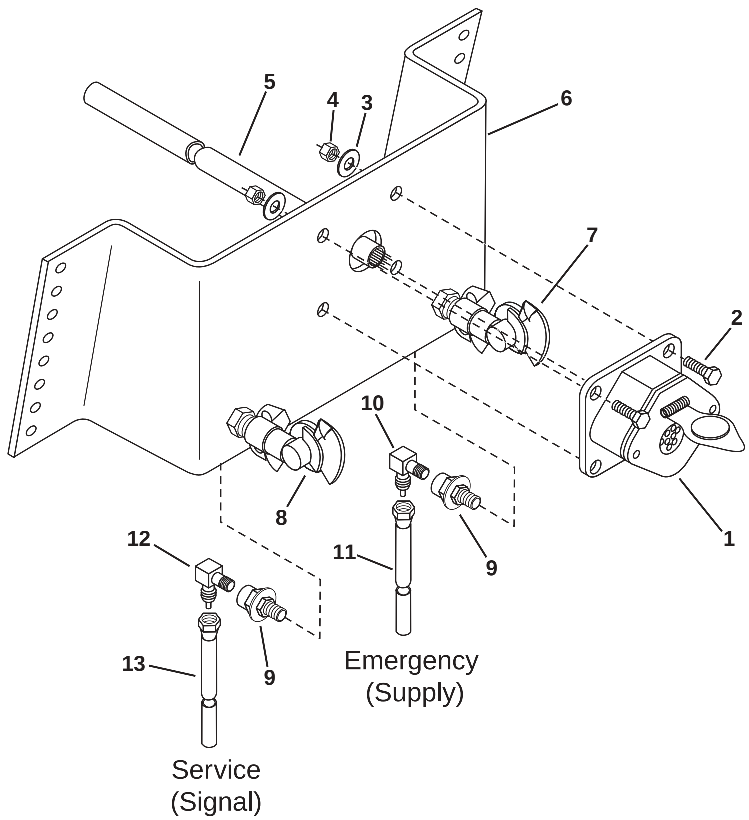


REF	PART NO.	QTY	DESCRIPTION
1	6451270	1	ECU/Valve Asm-2S/2M
2	6601242	1	Tee-Arbk,MB,06MT-06MP-06MT
3	6450956	2	Sensor Spring Clip
4	0274993	4	Nut-Hex,Lock,3/8NC,PD
5	0444042	2	Elbow-Auto,90,St,3/8 NPTF,Brass
6	0444867	4	Plug-Auto, Hex Sock, 3/8NPTF, PD
7	0446363	8	Washer-Flat,0.31A(0.38x0.88), PD
8	4010136	1	Guide-Cable,Pull,Drain Valve
9	6309162	8	Tubing-Nylon,Air Brake,3/8”
10	6602380-05	3	Hose Asm-Air Brake, 0.38 ID x 40”
11	Q400241	6	Hose Separator, M-473
12	6450521	4	Chamber-Spring, Brake
13	6450802	1	Valve-Spring Brake,Priority
14	6451097	2	Sensor Asm-441 032 808 0

REF	PART NO.	QTY	DESCRIPTION
15	6600832	1	Elbow-Arbk, 90, 04MP-06MT
16	6600967	1	Tank-Air,2800 cu in
17	6601428	1	Valve-Drain, Auto,With Cable
18	6451076	2	Cable-Sensor,894-590-0672 WABCO
19	6602380-03	1	Hose Asm- Air Brake,0.38x32”
20	6700169	30	Wire Tie
21	6600942	1	Elbow-ARBK,90,06MP-08MT
22	Q016074	1	Fitting-Hydraulic,3/4x1/2
23	Q012833	1	Hex Nipple Fitting
24	6602380-01	1	Hose Asm,Air Brake, 0.38 ID x 24”
25	6602380-09	1	Hose Asm,Air Brake, 0.38 ID x 60”
26	0273469	3	Plug-Auto,Sq Sock,0.75NPTF,PD
27	0122145	4	Screw-Hex,0.38NCx1.25,GR2,PD
28	6602380-06	1	Hose Asm,Air Brake, 0.38 ID x 48”

7 Way Receptacle Connection

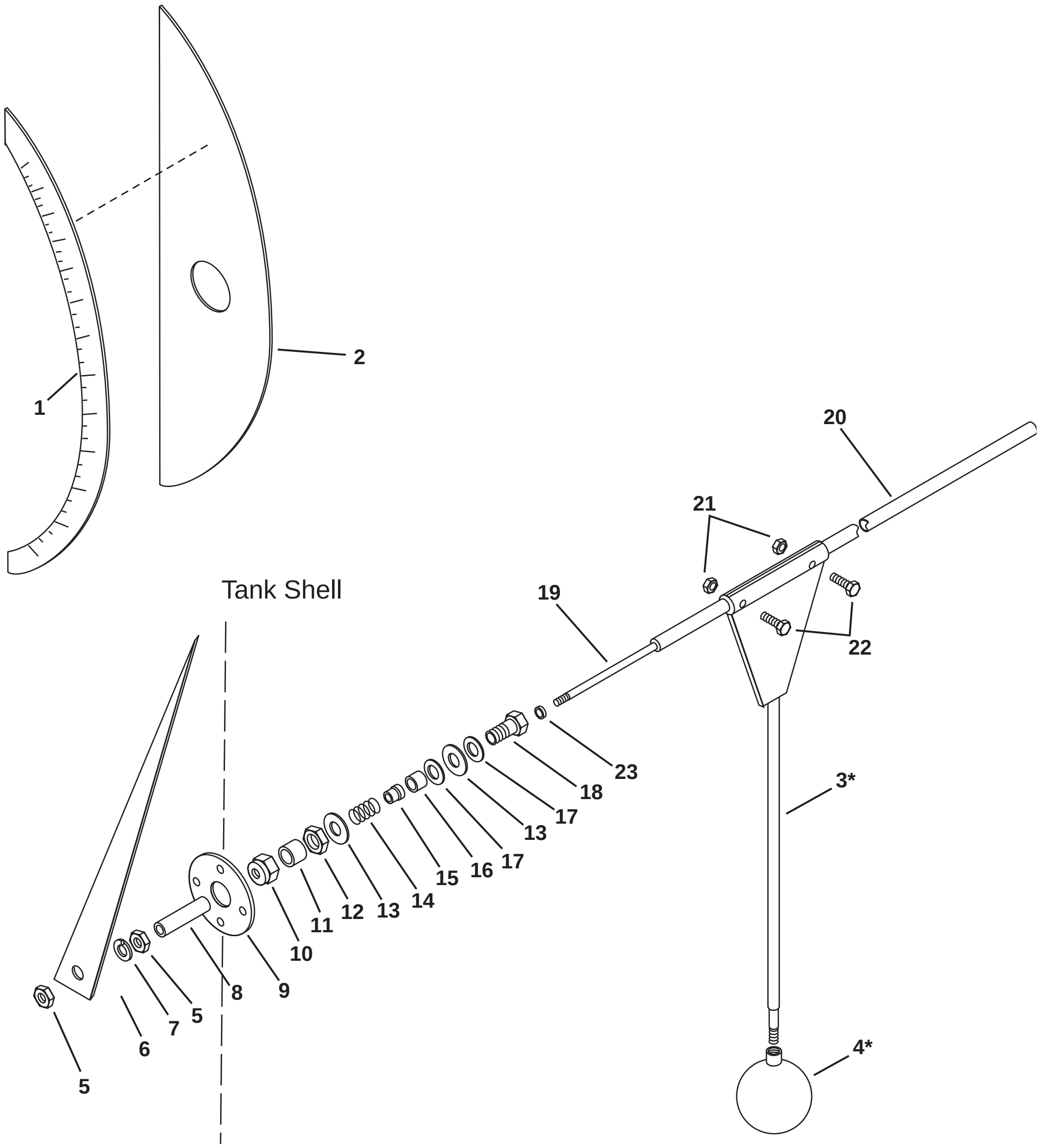
And Air Supply Connection



REF	PART NO.	QTY	DESCRIPTION
1	2770154	1	Receptacle-7 Way, 0.25NPT Taps
2	0121900	4	Screw-Hex, 0.25NC x 1.00, GR2, PD
3	0120386	4	Washer-Flat, 0.25 (0.31 x 0.73), PD
4	9413946	4	Nut-Hex, Lock, 0.25NC, EA, PD
5	6702504	50’	Cable-7 Way, Berkshire 81012
6	2770061	1	Bracket-Air, Elec. Alum, Low MNT
7	6601253	1	Coupling-Hose, Emer. W/Filter
8	6601254	1	Coupling-Hose, Service W/Filter
9	6601255	2	Stud-Clamping, 0.50MPT-0.38FPT
10	6600942	1	Elbow-Arbk. 90, 06MP-08MT
11	6309169	AR	Tube-Nylon, Air, 0.50, Generic
12	6600945	1	Elbow-Arbk, 90, 06MP-06MT
13	6309162	AR	Tube-Nylon, Air, 0.38, Generic
14	2770190	1	Label-7 Way, Electrical, ABS

Tank Gauge Assembly

Rear

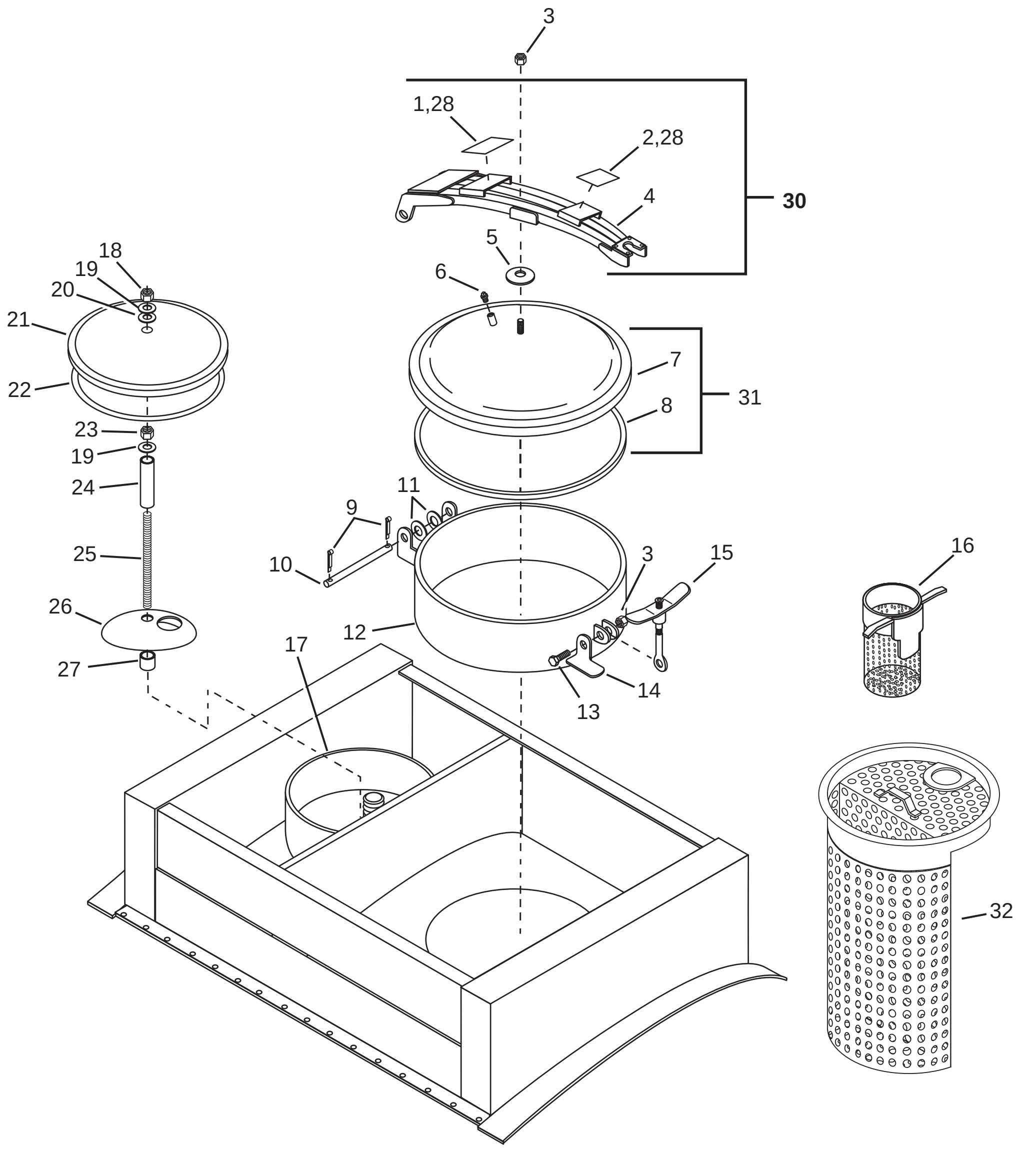


NOTE: Ref.# 3 includes Ref.# 4.

REF	PART NO.	QTY	DESCRIPTION
1	3380578	1	Dial Blank Trl. Dist. (Provide S/N)
2	3380579	1	Bracket Dial Mtg.
3	2700990	1	Stem Asm-Tank Gauge, 44.5
4	6600335	1	Float-Ball, .5 Dia, .25NPT SS304
5	0120376	2	Nut-Hex, 0.31NC, PD
6	3301181	1	Dial Pointer Stainless Steel
7	0120214	1	Washer-Lock, 0.31, Spring, PD
8	2700991	1	Spacer-Pointer, Tank Gauge
9	3341199	1	Cover-Jkt, Drive, Shaft Tk Gauge
10	3360828	1	Nut Asm-Packing Retainer, Sam
11	3301164	1	Spacer-Packing Tank Gauge
12	0426899	1	Nut-Hex, Jam, 1 In.
13	0131002	2	Washer-Flat, 1.00A(1.06 x 2.50), PD

REF	PART NO.	QTY	DESCRIPTION
14	3360192	1	Spring-Packing, Tank Gauge
15	3360187	1	Sleeve-Packing, Tank Gauge
16	3301352	1	Spacer-Tank Gauge
17	3360825	2	Gasket-ASB, Garlock 1 3/4 x 1 x 1/16
18	3301163	1	Screw-Fitt, Tank Gauge, 1" NC Mod.
19	2700988	1	Shaft-Drive Tank Gauge, 5” Insul
20	2700992	1	Shaft-Tank Gauge
21	9416509	2	Nut-Hex, Lock, 0.25, GRB, PN
22	0121900	2	Screw-Hex, 0.25NC x 1.00, GR2, PD
23	3360204	1	Packing-Tank Gauge

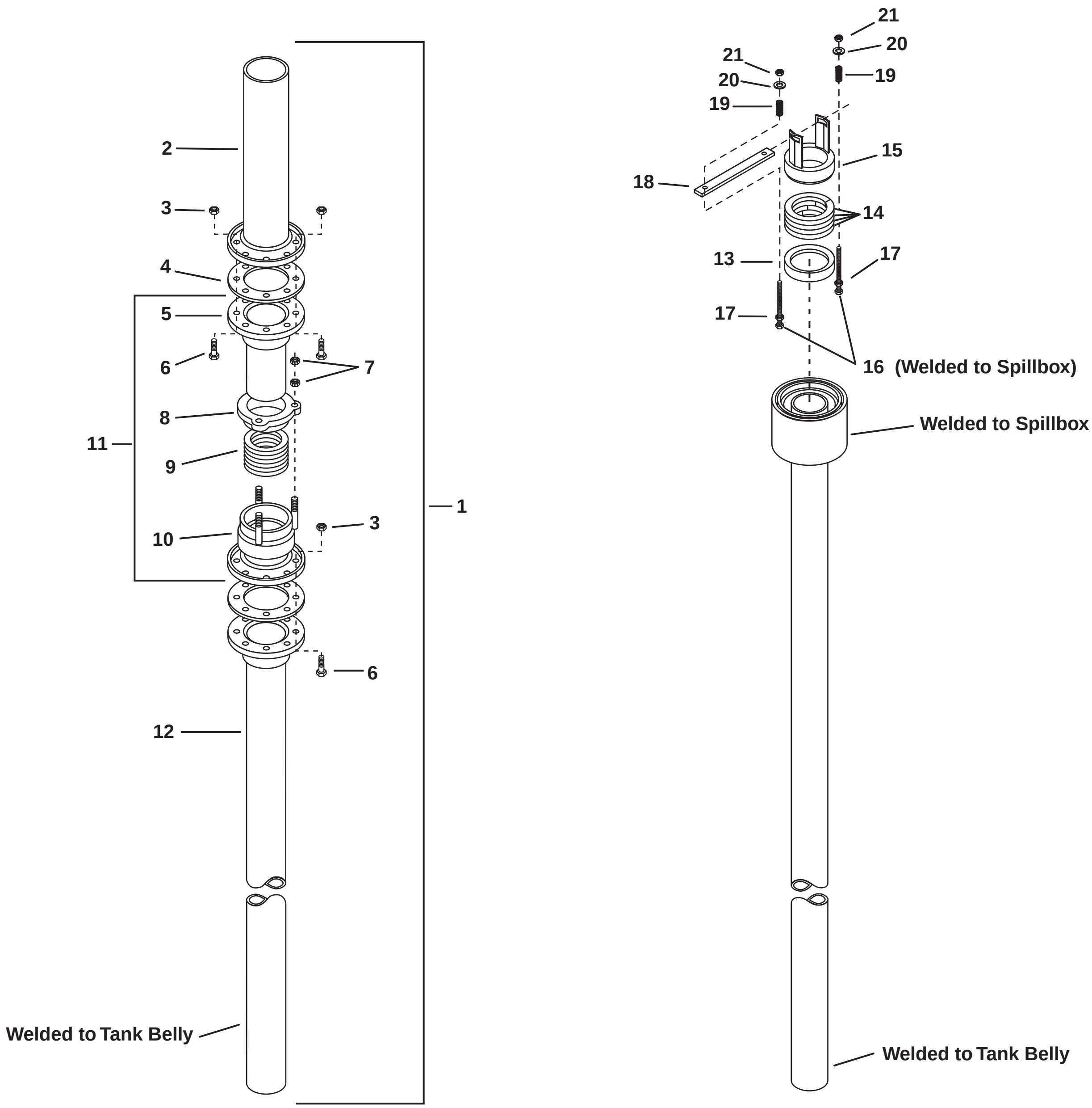
Manhole-Steel Transport 9301255



REF	PART NO.	QTY	DESCRIPTION
1	3390679	1	Decal: Warning, Manhole
2	3390684	1	Decal: Caution, Hot Surface
3	9411727	1	Nut-Hex, Lock, 0.50NC, EA, PD
4	7230257	1	Strongback Asm-MH, 20 Non-Rel
5	2700241	1	Reinforcer-Cover, 20 MH, Non-Rel
6	0444867	1	Plug-Auto, Hex Sock, 0.38NPTF, PF
7	2700545	1	Cover Asm-20 MH, Non-Rel, 600 Deg
8	2700248	1	Gasket-Cover, MH, Non-Rel
9	0137204	2	Pin-Cotter, 0.12 x 1.50, PD
10	2700233	1	Shaft-Hinge, MH, Non-Rel
11	6100376	AR	Washer-Wave, 0.75 x 1.06 x 0.105, CS
12	2700232	1	Collar Asm-20 MH, Non-Rel
13	0122459	1	Screw-Hex, 0.50NC x 2.00, GR2, PD
14	2700234	1	Prop-Cover. MH, Non-Rel
15	2700243	1	Hold Down Asm-20 MH, Non-Rel
16	3390173	1	Strainer Asm-6 In. Manhole
17	2700286	1	Shell-Base Asm-Resevoir Vent
18	9413948	1	Nut-Hex, Lock, 0.62NC, EA, GRA, PD
19	9422850	2	Washer-Flat, 0.62A(0.65 x 1.31), PN
20	6600725	1	Gasket-0,88 x 0.62, Copper ABS
21	2700288	1	Cover-Resevoir, Vent
22	2700287	1	Gasket-Vent, Resevoir Cover
23	0124589	1	Nut-Hex, 0.62NC, PD
24	2700283	1	Spacer-Upper, Deflector Plate
25	2700277	1	Rod-Mounting, Resevoir Cover
26	2700282	1	Plate-Deflector, Surge, Vent
27	2700281	1	Spacer-Bottom, Deflector Plate
28	6100139	8	Rivet-Pop, .12 x .18 Lg
29	3301355	1	Retainer-Cloth, Gasket (Not Shown)
30	7230257		Includes Item Nos 1,2,4 & 28
31	2700677		Includes Item Nos 7,8, & 29
32	3390095	1	Strainer-20” Manhole

Specify Unit Serial No., Part No., & Part Description

Drain Tubes



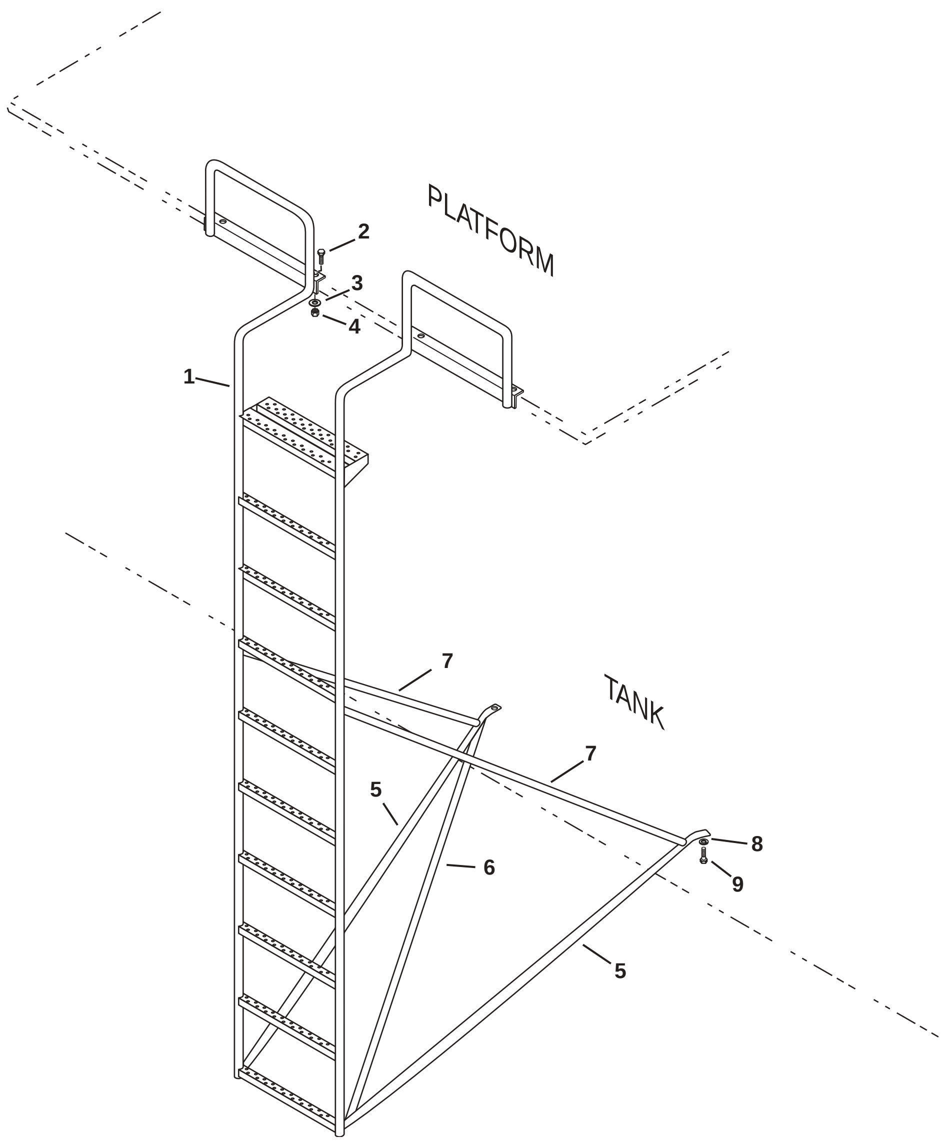
Optional 3 Inch Slip Tube

Standard 3 Inch Slip Tube

REF	PART NO.	QTY	DESCRIPTION
1	2750610	1	Tube-Drain, 3 Pack, Gland
2	2750621	1	Extension Asm-Tube, Drain
3	0274993	16	Nut-Hex, Lock, 3/8NC, PD
4	6000071	2	Gasket-Flange
5	2750612	1	Nipple Asm-Male
6	0120233	16	Screw-Hex, 3/8NC x 1, Gr 2, PD
7	0120377	6	Nut-Hex,3/8NC, PD
8	2750623	1	Joint-Swivel, Packing, Gland
9	6600323	1	Packing-Mogul, 0.38” x 0.29”
10	2750615	1	Body Asm-Nipple Stop

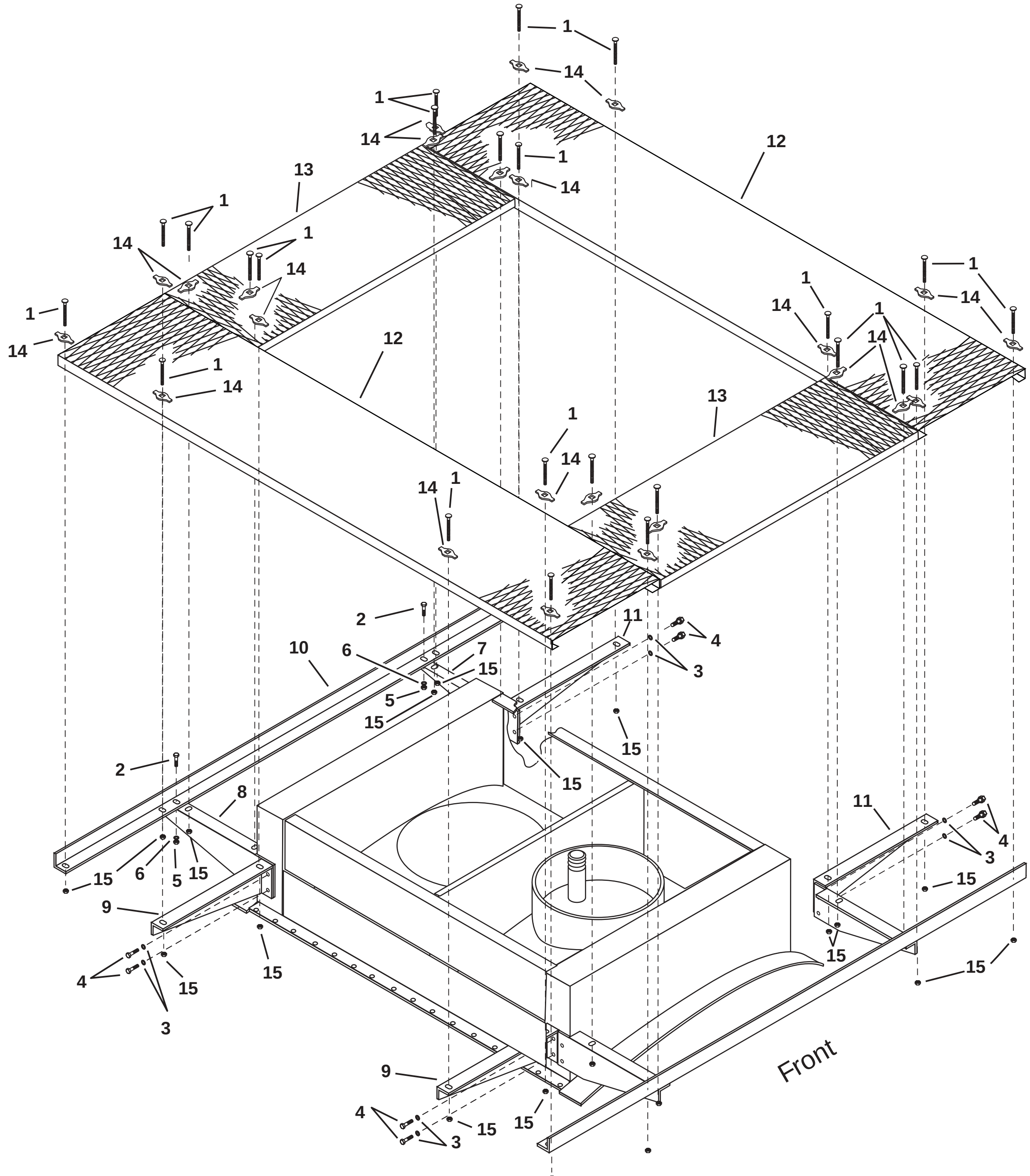
REF	PART NO.	QTY	DESCRIPTION
11	2750611	1	Gland Asm-Pack, Drain Tube
12	2780037	1	Ext Asm-Lower, 3” Drain, Tube
13	2700296	1	Ring-Inner, Packing, Drain Line
14	2700297	4	Packing-3/8 Sq, 3” Drain Line
15	2700300	1	Insert Asm-Packing Gland, Drain
16	6100382	2	Bolt-Tap, Hex,Hd, 38-16NC x 3” Lg
17	0120377	2	Nut-Hex, 3/8NC
18	2700302	1	Bar-Keeper, Gland Insert
19	3120059	2	Spring
20	0120388	2	Washer-Flat, 3/8
21	0274993	2	Nut-Hex, Lock, 3/8NC

Ladder Assembly-Steel Transport



REF	PART NO.	QTY	DESCRIPTION
1	2780628	1	Ladder Asm-Side, Steel
2	0120426	4	Screw-Hex, 0.50NC x 1.25, GR2, PD
3	0120390	4	Washer-Flat, 0.50A, W, PD
4	9411727	4	Nut-Hex, Lock, 0.50NC, EA, PD
5	2780575	2	Backstay-Steel Ladder
6	2780671	1	Brace-Ladder, Diagonal
7	2780138	2	Backstay-Ladder, Steel, Side
8	0120384	2	Washer-Lock, 0.50, Spring, PD
9	0120426	2	Screw-Hex, 0.50NC x 1.25, GR2, PD

4 Sided Platform-Steel Transport
9301266

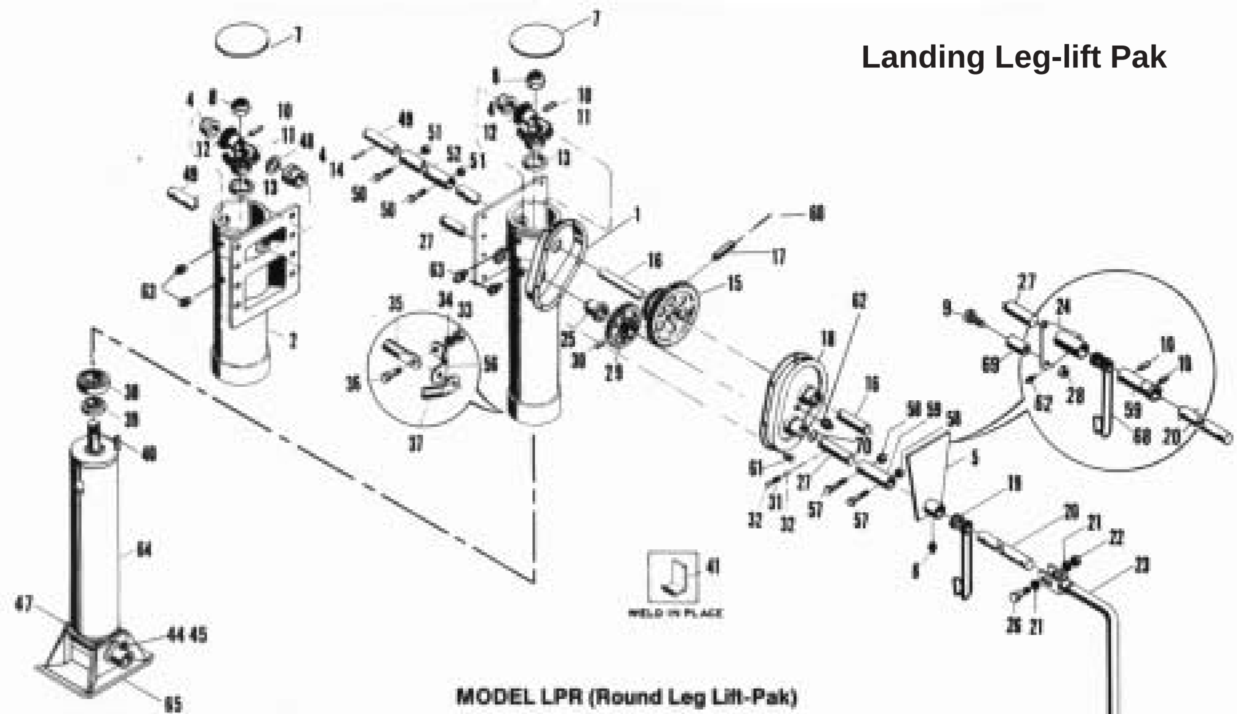


REF	PART NO.	QTY	DESCRIPTION
1	0126662	24	Screw-Carriage, 5/16 x 3, PD
2	0120233	4	Screw-Hex, 3/8NC x 1 Gr 2, PD
3	0120390	8	Washer-Flat, 1/2”, PD
4	0180175	8	Screw-Hex, 1/2NC x 1 1/4, Gr 5,, PD
5	0274993	4	Nut-Hex, Lock, 3/8NC, PD
6	0446363	4	Washer-Flat, 5/16”, PD
7	2780618	2	Bracket-Platform, End, Left
8	2780619	2	Bracket-Platform, End, Right

REF	PART NO.	QTY	DESCRIPTION
9	2780620	2	Bracket-Platform, Side, Right
10	2780631	2	Brace-Platform, End, 3-4 Sided
11	2780629	2	Bracket-Platform, Side, Left
12	2780632	2	Side-Platform, Grip Strut x 101.8”
13	2780633	2	End-Platform, Grip Strut x 39”
14	6000861	24	Anchor-Grip Strut, Glove #12262
15	9411638	24	Nut-Hex, Lock, 5/16NC, PD

TANK

Landing Leg-lift Pak



MODEL LPR (Round Leg Lift-Pak)

KYSOR/WESTRAN PARTS LIST AUSTIN VERTICAL LANDING GEAR				LPR
Index No.	Austin Number	Kysor Number	Nomenclature	Quantity
1	9558-0	750050	Upper Leg Weldment (two speed) 21-7/16" length	1
	9558-1	750051	Upper Leg Weldment (two speed) 22-11/16" length	
	9558-2	750052	Upper Leg Weldment (two speed) 23-13/16" length	
	9558-3	750000	Upper Leg Weldment (two speed) 25-7/16" length	
	9558-5	750053	Upper Leg Weldment (two speed) 27-11/16" length	
2	8999-0	750017	Upper Leg Weldment (single speed) 21-7/16" length	1
	8999-1	750018	Upper Leg Weldment (single speed) 22-11/16" length	
	8999-2	750019	Upper Leg Weldment (single speed) 23-13/16" length	
	8999-3	750001	Upper Leg Weldment (single speed) 25-7/16" length	
	8999-5	750020	Upper Leg Weldment (single speed) 27-11/16" length	
3	8997-0	740036	Lower Leg Assy. (round)	
	8997-1	740037	Lower Leg Assy. (round)	
	8997-2	740038	Lower Leg Assy. (round)	
	8997-3	740002	Lower Leg Assy. (round)	
	8997-5	740040	Lower Leg Assy. (round)	
4	8994	724003	Bushing	3
5	J-4702	730152	Crankshaft Bracket Assembly F.W. under 54	1
6	1351-A1	727002	Grease Fitting	1
7	8984	750109	Cover	2
8	1402-A7	723001	Locknut 1-14 Thin	2
9	1151-B99	721031	Bolt ¼-20 × 4¾" 2¼"	3
10	1453-A40	725002	Roll Pin 3/8 × 1-3/8	4
11	J-5312-1	750055	Bevel Gear 26T	2
12	J-5311-1	730011	Pinion-Bevel — 14 Tooth	2
13	J-5313	724000	Bushing-Screw	2
14	1453-A1	725001	Roll Pin ¼ × 1⅛	1
15	J-5309	730008	Gear Set Rigid 26/51 T.	1
16	6948-1	750002	Shaft Pinion	1
17	1453-A5	725003	Roll Pin 3/8 × 1⅞	1
18	9366-3	740001	Cover Assembly	1
19	J-122-B	730122	Crank Holder	1
20	†8829-17	750212	Shaft-Crank — Extension	1
21	1751-A1	722001	Washer 3/8 Plain Heavy	2
22	1402-A-1	723000	Nut 3/8-16	1
23	*J-27-BX-3	730113	Crank	1
24	*8374-1	719007	Crank Bracket Assembly	1
	*8374-2	719008	Crank Bracket Assembly	1
25	8364-1	724001	Bushing	1
26	1151-B81	721096	Hex Hd. Bolt 3/8-16 × 2-3/4	1
27	6943-2	750003	Shaft-Crank	1
27	6943-3	750238	Shaft Plated for Permanent Lube	
28	1402-A9	723009	Locknut ¼-20	3
29	J-5310-1	750010	Gear Set 37/12 T	1

KYSOR/WESTRAN PARTS LIST AUSTIN VERTICAL LANDING GEAR				LPR
Index No.	Austin Number	Kysor Number	Nomenclature	Quantity
30	1453-A81	725015	Roll Pin	1
31	6365-1	729000	Spring-Detent	1
32	1051-A1	729001	Ball-Detent	2
33	***1401-A4	723003	Hex Nut 5/8-11	8
34	***1752-A4	722008	Washer	8
35	**J-7043-A-B		Brace Lube (Cross)	2
36	***1151-B17	721009	Hex Bolt 5/8-11 × 2	8
37	**J-7043-A-B		Brace Tube-(Back)	2
38	1102-A2	729005	Bearing T127	2
38	1102-A9	729016	Bearing T151 for H/D Application	2
39	J-4928-1	730007	Collar	2
39	J-5321	730215	Collar for H/D Applications	2
40	J-3237	729003	Key ¼ × 13/16	2
41	J-7153	750812	Crank Holder	1
42	J-7324	730124	Wheel-8 × 3½	4
44	1402-A1	723000	Nut Lock 3/8-16	2
45	1151-B36	721018	Bolt 3/8-16 × 1	2
46	8298-2	750275	Axle-for Wheels	2
47	8298-1	750005	Axle-for Sand Shoes	2
48	J-1219	722000	Washer	1
49	6958-1	750004	Shaft (Pinion)	1
50	1151-B4	721001	Hex Bolt 3/8-16 × 2¾	2
51	1402-A-1	723000	Lock Nut 3/8-16	2
52	■8883		Intermediate Shaft ("A" Mount)	1
52	■8884		Intermediate Shaft ("B" Mount)	1
56	J-4104	730005	Brace Ear (For Round Leg)	2
56	J-4890	730157	Brace Ear (For Square Leg Not Shown)	
57	1151-B1	721003	Hex Bolt 3/8-16 × 1⅜	2
58	1402-A-1	723000	Lock Nut 3/8-16	2
59	J-3292	730092	Coupling	1
60	1914-A1	729002	Spring Clip	1
61	1655-A32	721002	Hex Washer Hd. Screw ¼-20 × ½	6
62	1351-A3	727001	Grease Fitting	1
63	1351-A7	727000	Grease Fitting	4
64	8897-0	740114	Lower Leg Assembly — with Cushion Foot (Std. Lube)	2
	8897-1	740115	Lower Leg Assembly — with Cushion Foot (Std. Lube)	
	8897-2	740116	Lower Leg Assembly — with Cushion Foot (Std. Lube)	
	8897-3	740074	Lower Leg Assembly — with Cushion Foot (Std. Lube)	
	8897-5	740119	Lower Leg Assembly — with Cushion Foot (Std. Lube)	
65	J-4514-3	730143	Sand Shoe	2
68	6868	730166	Crank Holder	1
69	9375	724018	Spacer	3
70	1804-A14	728000	Seal	1

*When ordering specify Frame width (F.W.), Length or part, or detail number.
**Optional equipment see spec. sheet for standard A & B dimensions.
***Furnished by customer.
■Indicate length, F.W. & inside or outside mounting.
†Cut to length, see dimensions on spec. sheet.
Date of Mfg. is stamped in single speed gear box cover — (item No. 7).

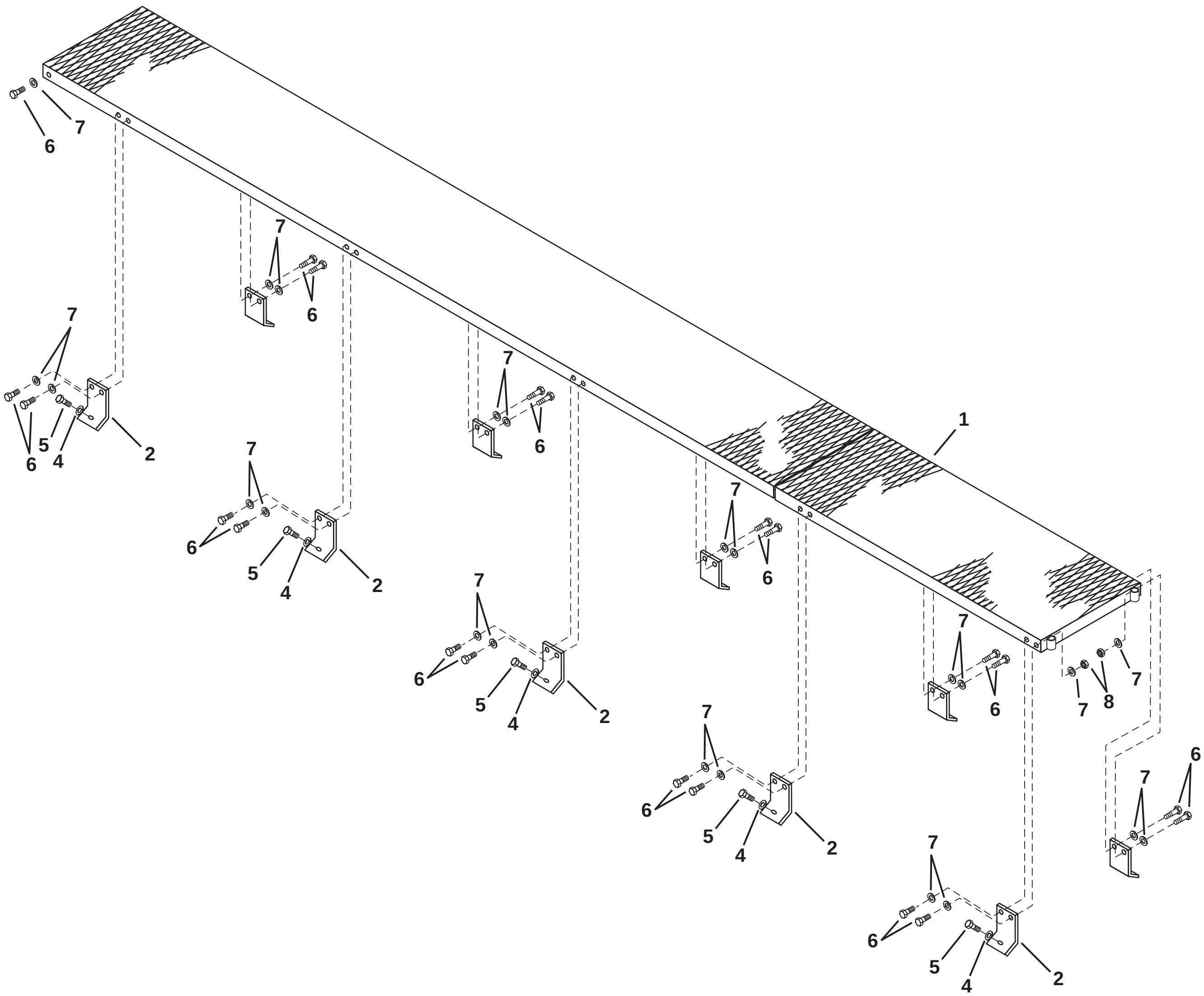
CAUTION ALWAYS SPECIFY FRAME WIDTH AND MODEL NUMBER WHEN ORDERING

NOTE:

1. Always specify frame width when ordering.
2. Brace ears will be supplied loose. To be welded in place by customer.
3. We recommend the use of cross and back braces.
4. Braces are accessories and will not be shipped unless specified by customer.
5. Where shaft is too short to use J-122-B hanger, J-7153 will be furnished. To be welded in place by customer.
6. CAUTION — When trailer design requires crankshaft bracket attached to leg, specify with leg mounted extension bracket. For frame width 30 to 45 inches use crank bracket 6855-2; for frame width 46 to 53 inches use crank bracket 6855-1.
7. Perm. lub. models available on request.

TANK

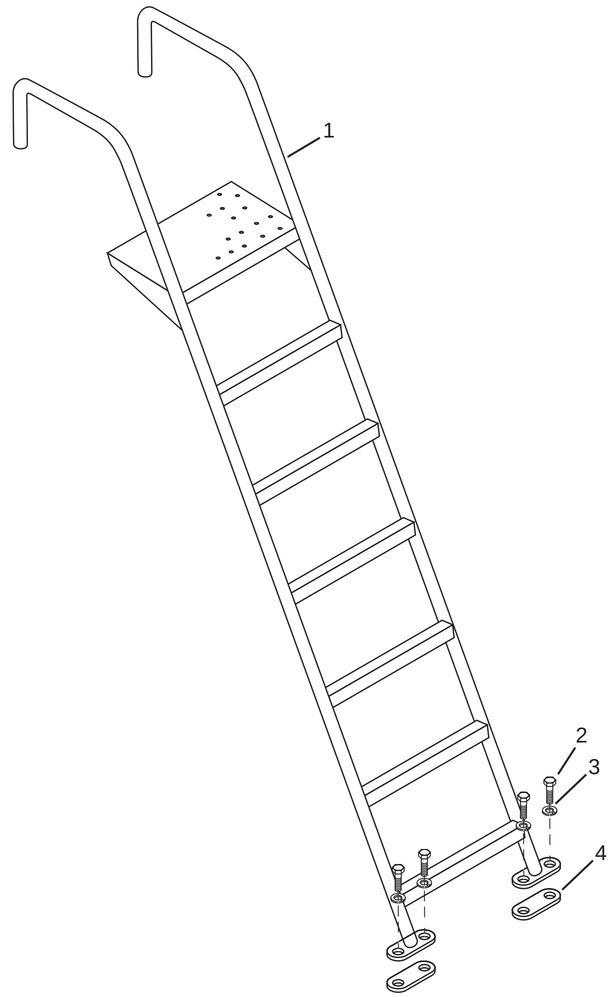
Catwalk-Relay Tank



REF	PART NO.	QTY	DESCRIPTION
1	3301785	1	Walkway and Marker Light Assembly
2	2780681	10	Bracket-Mounting,Walkway
3	2780338	2	Lug-Walkway, Grip Strut
4	0120384	10	Washer-Lock, 1/2, Spring, PD
5	0120426	10	Screw-Hex, 1/2NC x 1 1/4, Gr 2, PD
6	0120233	22	Screw-Hex, 3/8NC x 1, Gr 2, PD
7	0446363	44	Washer-Flat, 5/16, PD
8	0274993	22	Nut-Hex, Lock, 3/8, PD
9	3301454	1	Backplate-Marker Light

TANK

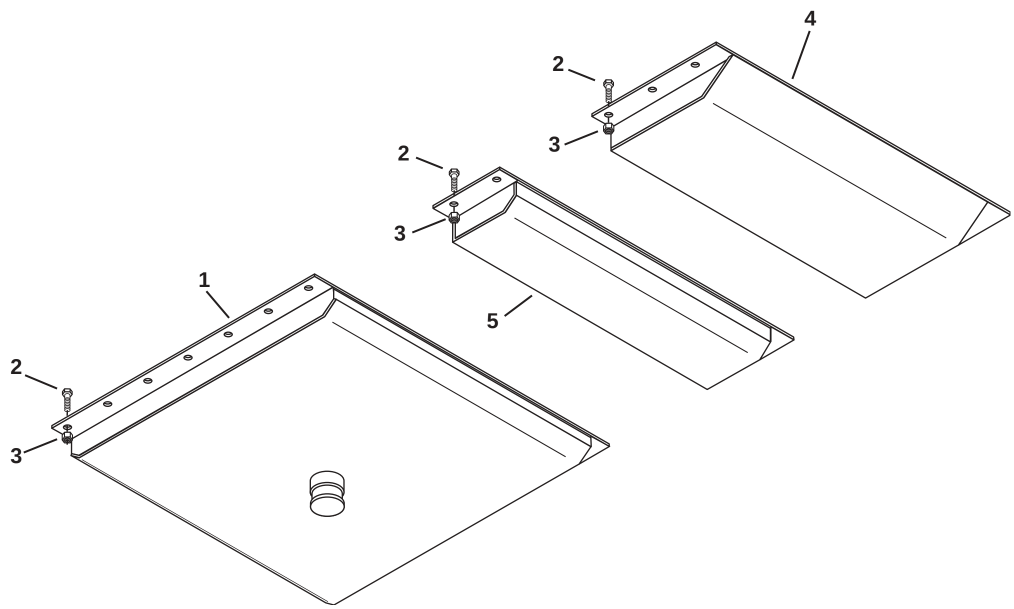
Rear Ladder-Relay Tank



REF	PART NO.	QTY	DESCRIPTION
1	3301788	1	Ladder Asm
2	0122017	2	Screw-Hex, 0.31NC x 1.00
3	0120214	2	Washer-Lock, 0.31
4	3310152	2	Plate Asm-Ladder Mt

TANK

Fifth Wheel Plate



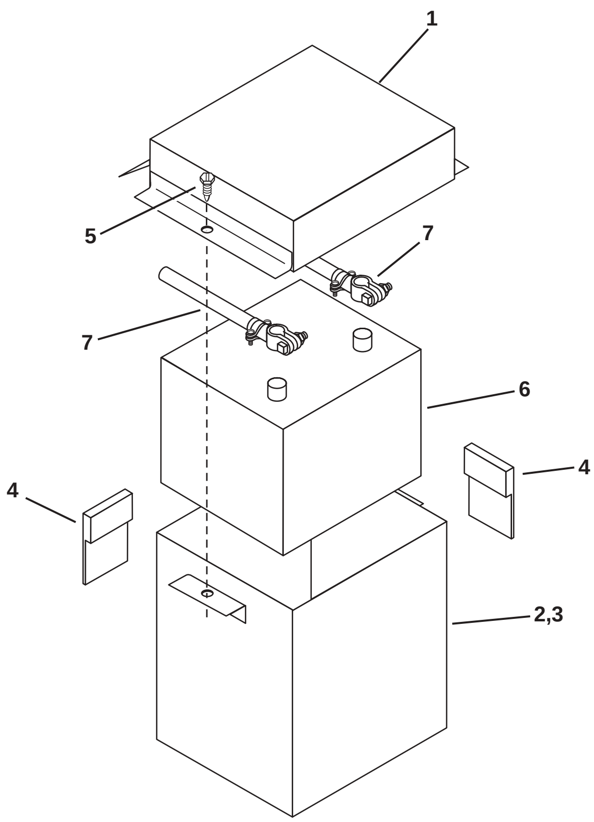
TANK

REF	PART NO.	QTY	DESCRIPTION
1	2710183	1	Upper Coupler Asm-2" x 34K
	2710195	1	Upper Coupler Asm-2" x 50K
2	0223512	24	Screw-Hex, 5/8NC-2A x 1 3/4, Gr 8
3	9419530	24	Nut-Lock, 5/8NC, Nylon Insert
4	2710182	*	Channel Asm- Pickup, Large, 3"
5	2710191	*	Channel Asm- Pickup, Small, 3"

* Unit Serial Number

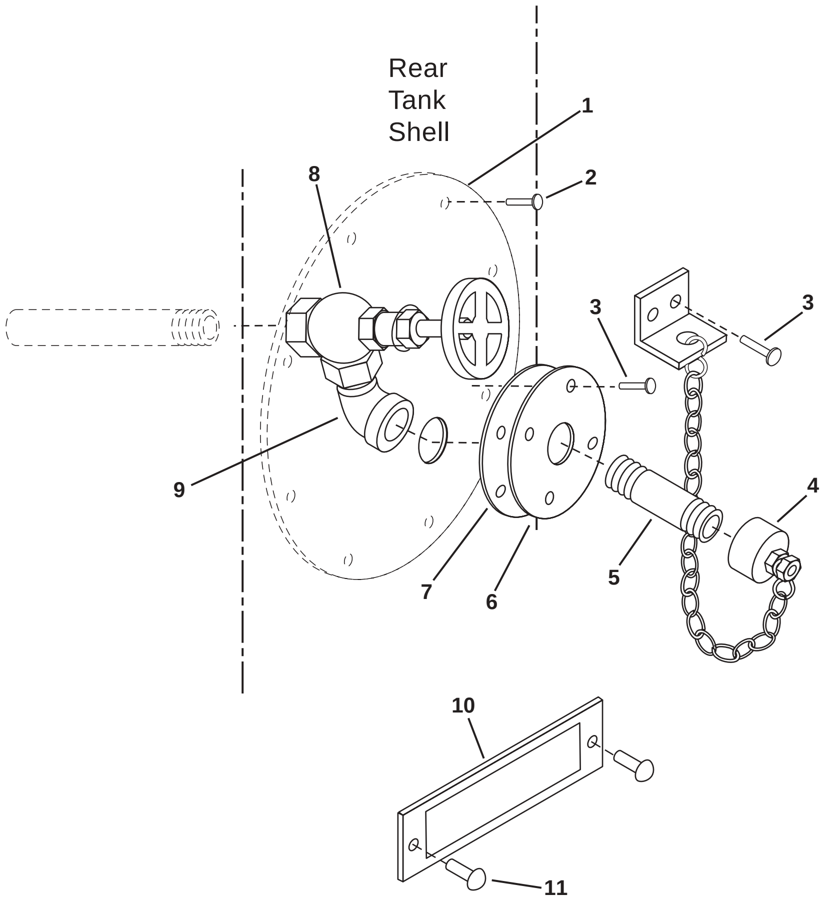
Battery Box Assembly

NOTE: Battery Box Assembly - 3320990
Includes Ref.#s 1, 2, 3 and 4.



REF	PART NO.	QTY	DESCRIPTION	REF	PART NO.	QTY	DESCRIPTION
1	3320461	1	Lid-12 Volt Battery Box				
2	3320990	1	Box Asm-Battery 70 Amp				
3	3320462	1	Bottom-Wood, 12 Volt Bat Box				
4	3320457	2	Hold Down-Battery				
5	9426128	2	Screw-Tap, Pnsl, 0.2K x 0.50, AB				
6	6700240	1	Battery-12V, 72AMP, Ele Start				
7	3190097	2	Cable Asm-Diesel Battery 51				

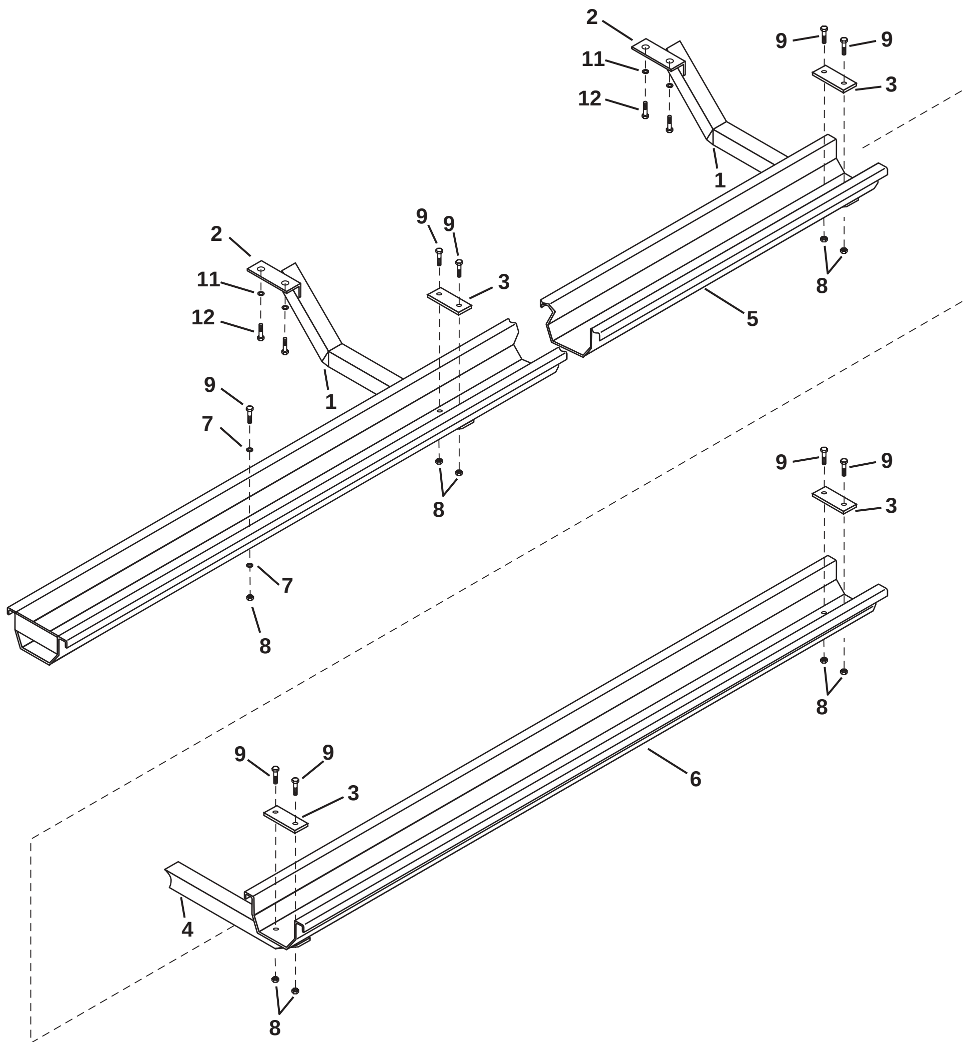
Sampling Valve



REF	PART NO.	QTY	DESCRIPTION
1	2780021	1	Ring, Fin, Recess, Sample Valve
2	6000434	6	Rivet-Dr, 0.19, 0.12 Grip, 0.17 Max
3	6000436	6	Rivet-0.19 Dr, 0.18 Grip, 0.234 Max
4	2780038	1	Cap Asm-Sampling Valve (Includes 6000345-Chain and 2780027-Mtg. Clip)
5	0190724	1	Nipple-, Sch 40, 0.75 x 4.00, PN
6	2700161	1	Ring-Finish, Sample Vlv, Outlet
7	2700162	1	Gasket-Sample Valve Outlet
8	6600349	1	Vlv-.75 In., Angle, Crane 2
9	0140798	1	Elbow-Pipe, 45, ST, 0.75NPT, PN
10	3390531	1	Plate-Warning Sampling Valve
11	6000690	2	Rivet-0.19 Dr, .047 Min-140 Max

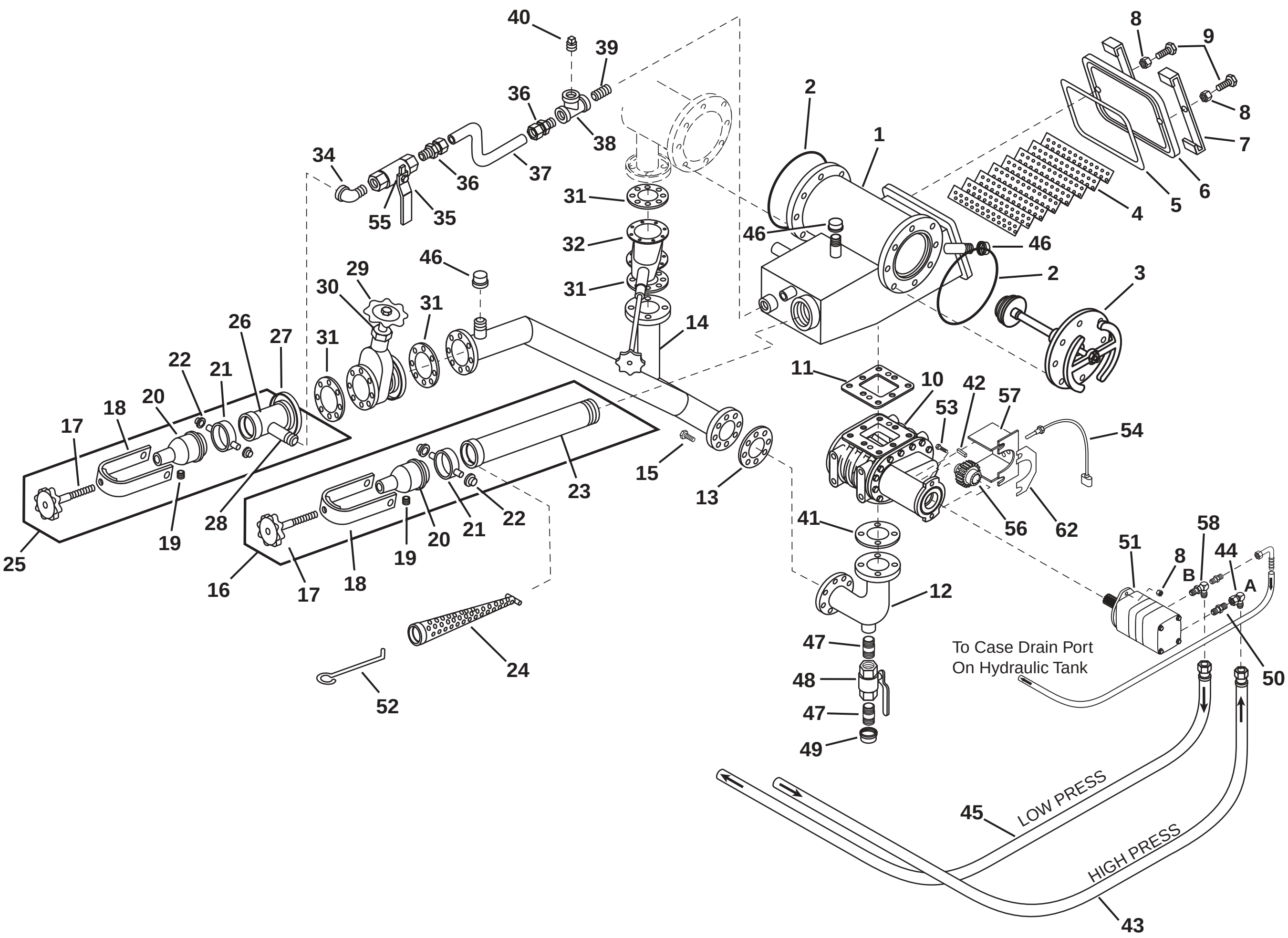
TANK

Hose Trough
8 Ft & 20 Ft Split



REF	PART NO.	QTY	DESCRIPTION
1	2780126	2	Support-Angle,Hose Trough
2	2750118	2	Angle-Support,Mid-Tank,Hose Trough
3	2780121	4	Plate,Reinf,6 Inch Hose Trough
4	2750120	1	Angle-Support,Bksty,Hose Trough
5	2780437	1	Trough Asm-Hose,Aluminum,20 Ft
6	2780509	1	Trough Asm-Hose,Aluminum,8 Ft
7	6000716	2	Washer-Flat,9/32 x 1 1/4,PD
8	9413946	10	Nut-Hex,Lock,1/4NC,PD
9	0121887	10	Screw-Hex,1/4NC x 3/4,Gr 2,PD
10	0120426	4	Screw-Hex,1/2NC x 1 1/4,Gr 2,PD
11	0120384	4	Washer-Lock,1/2,Spring,PD

Circulating System

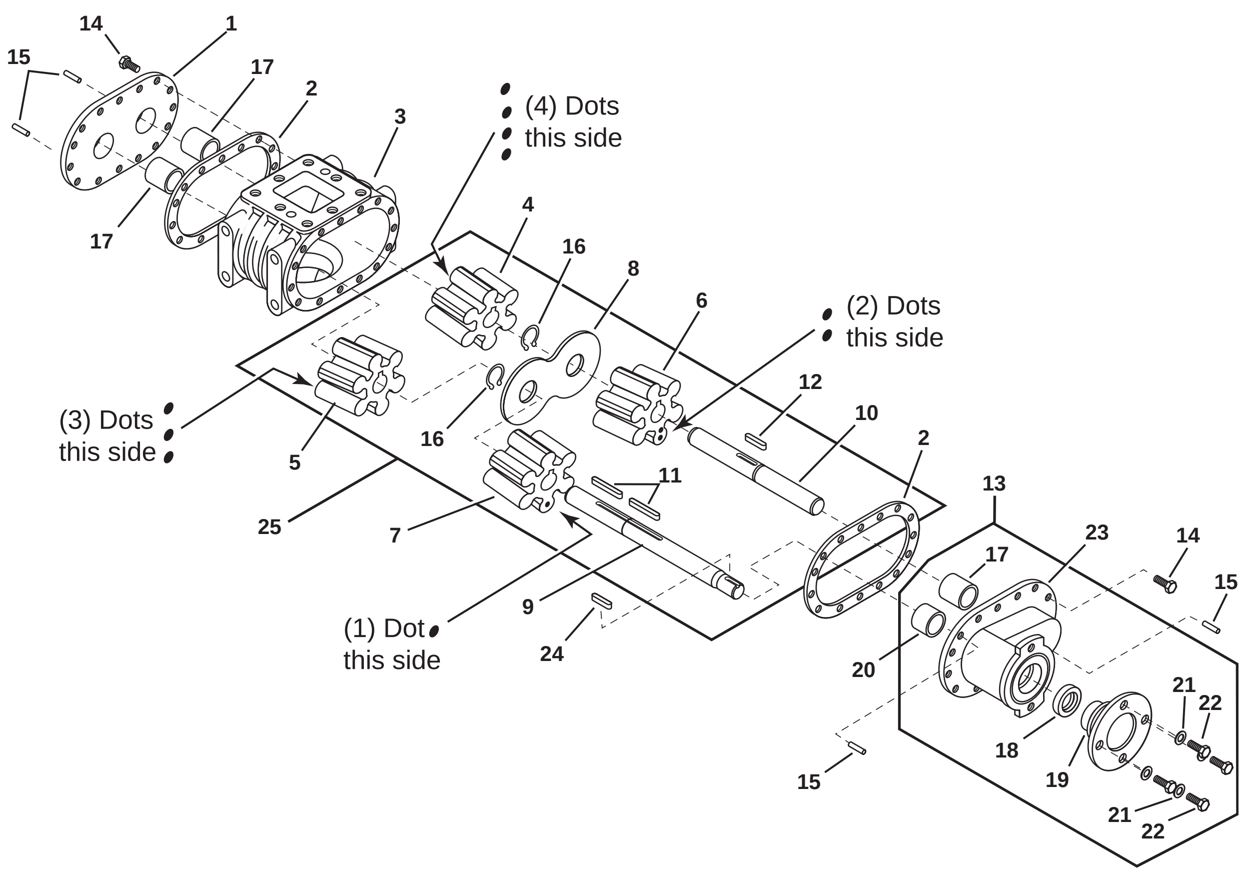


Circulating System

REF	PART NO.	QTY	DESCRIPTION
1	3341653	1	Strainer Box Asm-Phase II
2	6800033	AR	Loctite 51041 Temp .350 to 400
3	3341500	1	Rear Suction Valve Mech. (Man.)
4	3341442	1	Strainer Asm
5	7230359	1	Packing, 0.25 Sq.
6	3341965	1	Lid-Strainer Box, Clamp On
7	3341964	2	Clamp Bar Asm-Strainer Box Lid
8	9411727	4	Nut-Hex, Lock, 0.50NC, EA, PD
9	0180175	2	Screw-Hex, 0.50NC x 1.25, GR5, PD
10	3341848	1	Pump Asm W/Fabricated End Plts
11	3352222	1	Gasket-Pump-Strainer Box Sam
12	3341486	1	Elbow Asm-P15 to Return
13	3340519	1	Gasket-Cover, 3 Way Valve
14	3342012	1	Line Asm Ret. Pump Off, H.S.
15	0180124	12	Screw-Hex, 0.38NC x 1.25, GR5, PD
16	3301200	1	Fill Line Assembly
17	3340033	2	Clamp Asm-Screw, Filling Line
18	3340041	2	Clamp Asm-3 Hose Conn.
19	0219189	1	Plug-Pipe, SqHd, 0.25NPT, PN
20	3380388	2	Cap Asm-Fill Line
21	3341078	2	Ring Asm-Clamping, Transfer Vlv
	9413946	1	Nut-Hex, Lock, 0.25NC, EA, PD
	0121913	1	Screw-Hex, 0.25NC x 1.25, GR2, PD
22	6001056	4	Cap-Retainer, 0.5 Dia Stud
23	3301199	1	Tank Car Pipe Asm
24	3340004	1	Strainer Asm
25	3341482	1	Pipe Asm-Pump Off & Handspray
26	3341481	1	Pipe Asm-Fill Line
27	6000068	1	Flange-20056A, 3 Flued Alegny Cplg.
28	3301195	1	Nipple-Pump Off Line
29	3342034	1	Vlv-Gate, G1013, 3 Allegney Vlv
	7420250	1	Follower-Gland
	7420251	1	Packing-Set, 3 Rings
	7420252	1	Gland Washer
30	S1176AG	1	Valve Marker-Transfer
31	6000071	4	Gasket-3 Flange, AV10233B, ASB
32	3341903	1	Valve-Gate,Modified
33	3390728	2	Decal-Gate Valve
34	0141621	1	Elbow-Pipe, 90, ST, 0.75NPT, PN
35	6602237	1	Valve-Ball, 0.75, Bronze
36	6600852	4	Adapter-Arbk, ST, 12MP-12MT
37	3342023	1	“S” Tube, Suckback
38	0125988	1	Tee-Pipe, 0.75NPT, PN
39	0144613	1	Nipple-Sch 40, 0.75 x 1.38 CL, PN
40	0219301	1	Plug-Pipe,3/4
41	3340515	1	Gasket
42	6000224	1	Key-0.31 x 0.31CR x 1.00
43	9250610	1	Hyd Hose Asm-HP, S2000
44	9410283	1	Elbow-Hyd, 90, 12FJX-12MJ
45	9250611	1	Hose Asm-LP, 12FJX-16FJX, S2000
46	0119102	3	Cap-Pipe, 0.75NPT, PN
47	0191492	2	Nipple-PP, Sch 40, 1.00 x 2.00, PN
48	6601177	1	Valve, Ball, 1 In., Handspray
49	0108689	1	Cap-Pipe, 1.00NPT, PN
50	6600910	1	Elbow-Hyd, 90, 04FJX-04MJ
51	6602976	1	Motor-11.9 Cu In,SAE B,14T
52	3390030	1	Hook-Intake Strainer
53	0122459	2	Screw-Hex, 0.50NC x 2.00, GR2, PD
54	6702531	1	Sensor-Hall Effect, Speed, 3/8
55	S1176AF	1	Valve Marker-Handspray
56	2660156	1	Gear Spline Asm
	0102581	2	Screw-Sock, 0.31NC x 0.38, CUP, PN
57	3361274	1	Speed Sensor Bracket Asm
58	3321391	1	Elbow-Hyd,90,10MB-12MJ,Modified
59	2960203	1	Orifice Fitting-0.055 Orifice
60	6602137	1	Hose End-04-04FJX90M
61	6601452	AR	Hose-Fuel/Air,0.25”
62	3361273	1	Gasket-Asphalt Shaft Guard

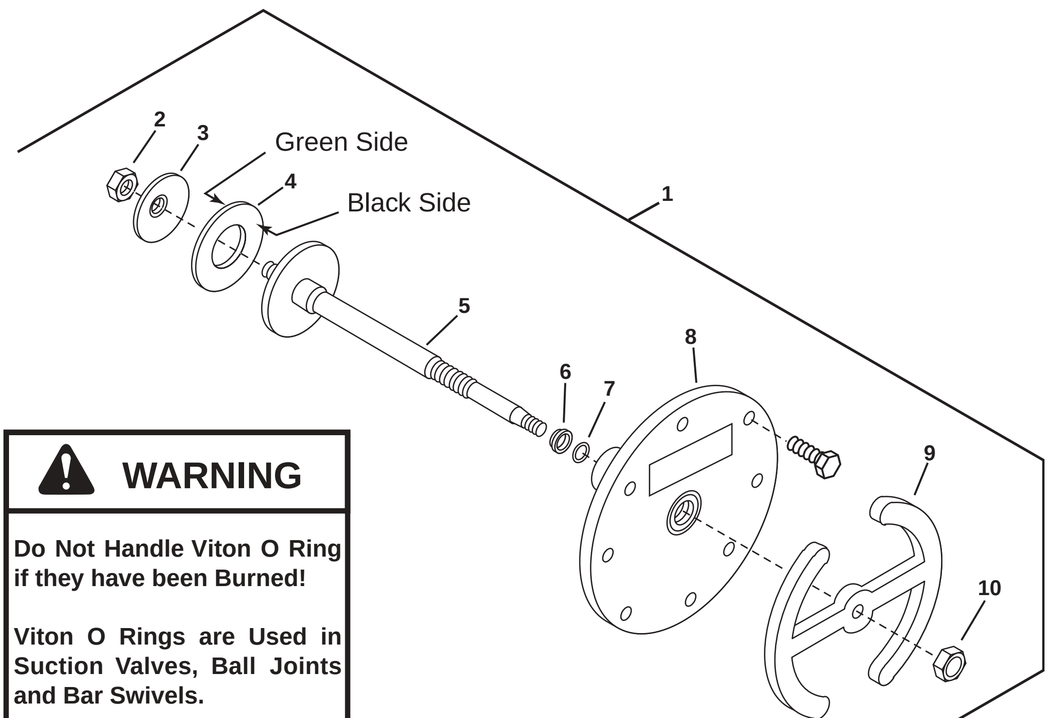
AR - As Required

Asphalt Pump Assembly



REF	PART NO.	QTY	DESCRIPTION	REF	PART NO.	QTY	DESCRIPTION
1	3341554	1	Plate Asm - Rear Plate	14	0120233	40	Screw-Hex, 0.38NC x 1.00 GR2,PD
2	3340287	2	Gasket-Face Plate	15	6100444	4	Pin-Dowel 0.25 x 0.75
3	3341216	1	Case-Pump, Sam, P-15	16	6001169	2	Snap Ring-Ext. Truarc-5100-143
4	3340279	1	Impeller-Herringbone (4)LH W/Key	17	3341559	3	Bearing-Pump Shaft
5	3340277	1	Impeller-Herringbone (3)RH W/Key	18	6600310	1	Packing-1.50 x 2.00
6	3341462	1	Impeller-Herringbone (2)	19	3341646	1	Seal Retainer
7	3341463	1	Impeller-Herringbone (1)	20	3341843	1	Bearing-Pump Shaft
8	3340298	1	Plate-Division, Herringbone Pump	21	0120382	2	Washer-Lock, 0.38, Spring, PD
9	3341698	1	Pump Shaft - Drive, 4 Impell Pump	22	0122119	2	Screw-Hex, 0.38NC x 0.75, GR2, PD
10	3341553	1	Pump Shaft - Idler, 4 Impell Pump	23	3341555	1	End Plate, Pump, Motor Mount
11	2640725	2	Keystock 1/4 X 1/4 x 2 1/2 Lg	24	6000224	1	Key-0.31 x 0.31CR x 1.00
12	2640726	2	Keystock 1/4 X 1/4 x 1 Lg	25	7000310	1	Impeller Set Centennial (Does not include Item 24)
13	3341842	1	Front Face Plate Asm (Includes items 17 thru 23)				

Rear Suction Valve - Manual



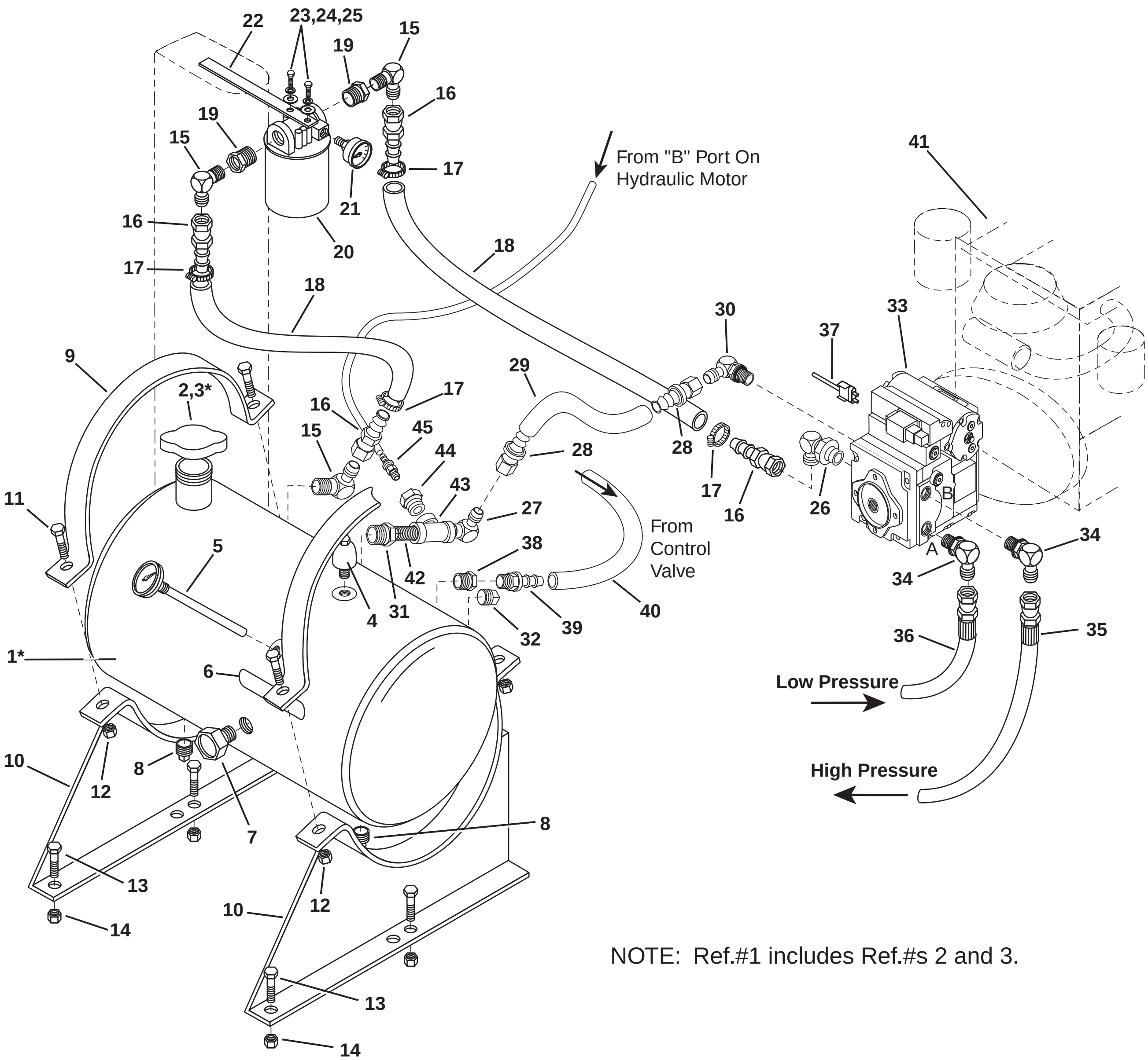
WARNING

Do Not Handle Viton O Ring if they have been Burned!

Viton O Rings are Used in Suction Valves, Ball Joints and Bar Swivels.

REF	PART NO.	QTY	DESCRIPTION	REF	PART NO.	QTY	DESCRIPTION
1	3341500	1	Rear Suction Valve, Mech. (Man)	10	0274637	1	Nut-Hex, Lock, 0.50NF, EA, GRA, PD
2	9413948	1	Nut-Hex, Lock, 0.62NC, EA, PD				
3	2740137	1	Retainer Gasket, 6 In. Disc Vlv				
4	2750597	1	Gasket-Seal, 6" Disc Valve				
		1	Green Fibre (Next to Retainer)				
	3341491	1	Gasket-Viton, 6" Valve				
			Black Viton (Next to Seat & Shaft Asm)				
5	3341499	1	Plunger Asm-Rear Suction				
6	6602151	1	Scraper-Nitril, 1.00 ID x 1.5 OD				
7	6602152	1	O Ring, 1.25 OD x 0.125				
8	3341497	1	Valve Body Asm (Manual)				
9	2740354	1	Handwheel-6" Pump Off Valve				

Hydraulic Tank & 42 Series Pump



NOTE: Ref.#1 includes Ref.#s 2 and 3.

HYDRAULIC

Hydraulic Tank & 42 Series Pump

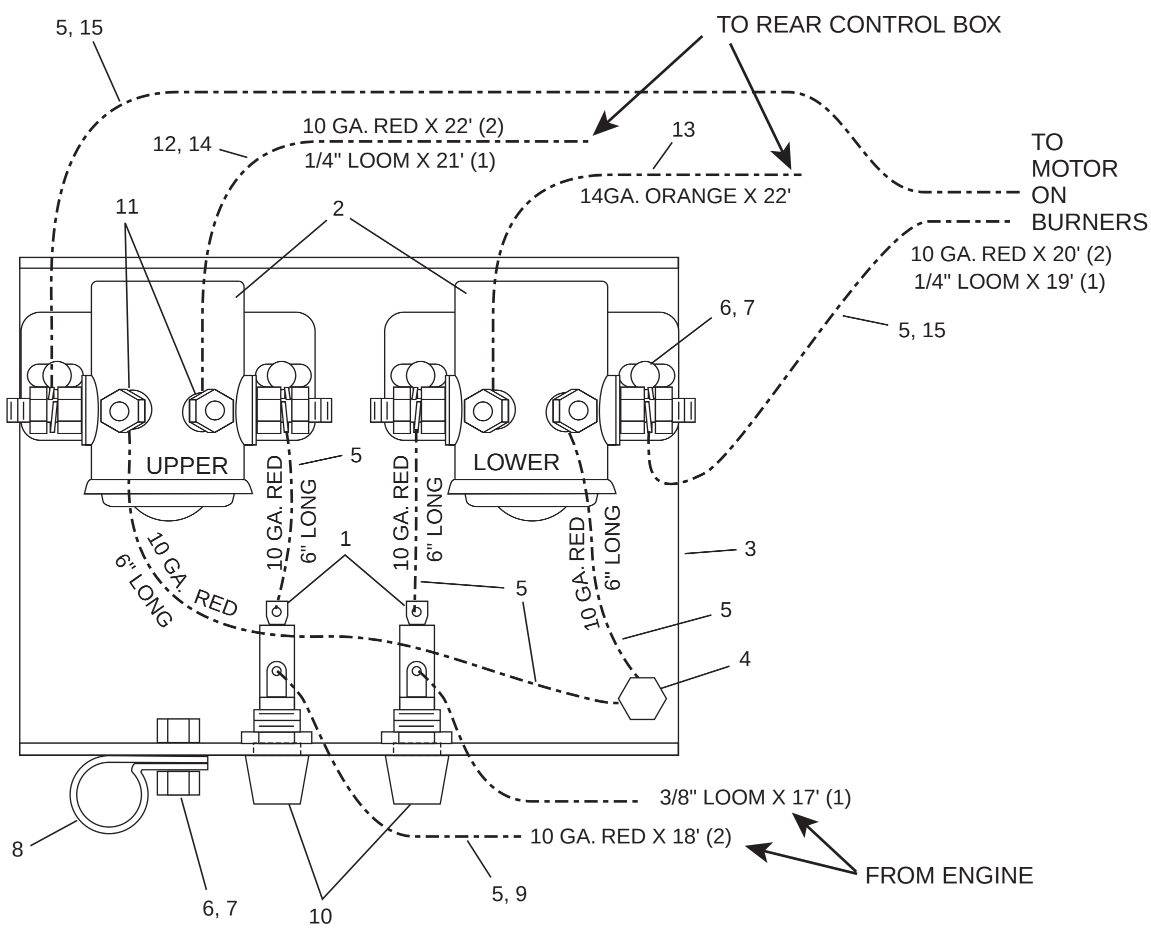
REF	PART NO.	QTY	DESCRIPTION
1	3321176	1	Tank Asm-Hyd, 20 Gal. Sam
2	3330026	1	Cap-Filling, Blank
3	6000233	1	Gasket-2.18 Filler Cap, Leather
4	6600223	1	Breather-Crenlo 1577AL
5	6500039	1	Thermometer-2 In. Dial, 9 In Dual
6	3390605	1	Plate-Instr Hydraulic Oil Spec
7	6600224	1	Plug-Oil, Eyesite McMast Carr
8	0219199	2	Plug-Pipe, SqHd, 0.50NPT, PN
9	3320325	2	Clamp-Mtg. Hyd Tank Cla
10	3321373	2	Bracket Asm-Mtg. Hyd Tank
11	0122433	4	Screw-Hex, 0.50NC x 1.50, GR2, PD
12	9411727	4	Nut-Hex, Lock, 0.50NC, EA, PD
13	0428691	4	Screw-Hex, 0.62NC x 2.00, GR2, PD
14	9413948	4	Nut-Hex, Lock, 0.62NC, EA, GRA, PD
15	6601135	3	Elbow-Hyd, 90, 16MJ-16MP
16	6601566	4	Hose End-16, 16FJX, ST, LP100R4
17	6000792	4	Clamp-Hose, Worm Drv, 1.06 to 2.00
18	6601564	AR	Hose-Suction 1.0 ID SAE100R4
19	0125915	2	Bushing-Pipe, 1.25 x 1.00NPT, PN
20	6602214	1	Filter-Hyd Vacuum 10 Micron ABS
	7420244	1	Element
21	7420042	1	Indicator-Filter, Gresen #1588
22	3321369	1	Bracket-Mtg. Hyd Filter
23	0122007	2	Screw-Hex, 0.31NC x 0.75, GR2, PD
24	0120214	2	Washer-Lock, 0.31, Spring, PD
25	0446363	2	Washer-Flat, 0.31A(0.38 x 0.88), PD
26	6601568	1	Elbow-Hyd, 90, 16MB-16MJ
27	9402867	1	Elbow-Hyd, 90, 12MJ-12MP
28	6601974	2	Hose End-12 x 12FJX, STR
29	6601979	AR	Hose-Hyd, 0.75, 2250 WP/FT
30	6602456	1	Elbow-Hyd, 90, 16MB-12MJ
31	0128003	1	Bushing-Pipe, 1.00 x 0.75NPT, PN
32	0219302	1	Plug-Pipe, SqHd, 0.75NPT, PD
33	6603161	1	Pump-42 Ser,RH,w/Pad,4000PSI Relief
34	6601568	2	Elbow-Hyd, 90, 16MB-16MJ
35	6602586	2	Elbow-Hyd, 90, 12MB-16MJ
36	9250610	1	Hyd Hose Asm-HP, S2000
37	3370337	1	Cable Asm-Pump Stroker,42 Series
38	0144034	1	Bushing-Pipe, 0.75 x 0.50NPT, PN
39	6600663	1	Hose End-08 x 08MP, ST, LPSP
40	6600662	1	Hose-Push Lok, Parker 801-8
41	2781473	1	Shield-Engine Guard
	*******	1	Engine- Call With Unit S/N
42	0144613	1	Nipple-3/4 Close
43	0125988	1	Tee-Pipe,3/4
44	0144033	1	Bushing-3/4 x 1/4
45	6601794	1	Hose End-04-04MP
46	6601452	AR	Hose-Fuel/Air,1/4

AR - As Required

HYDRAULIC

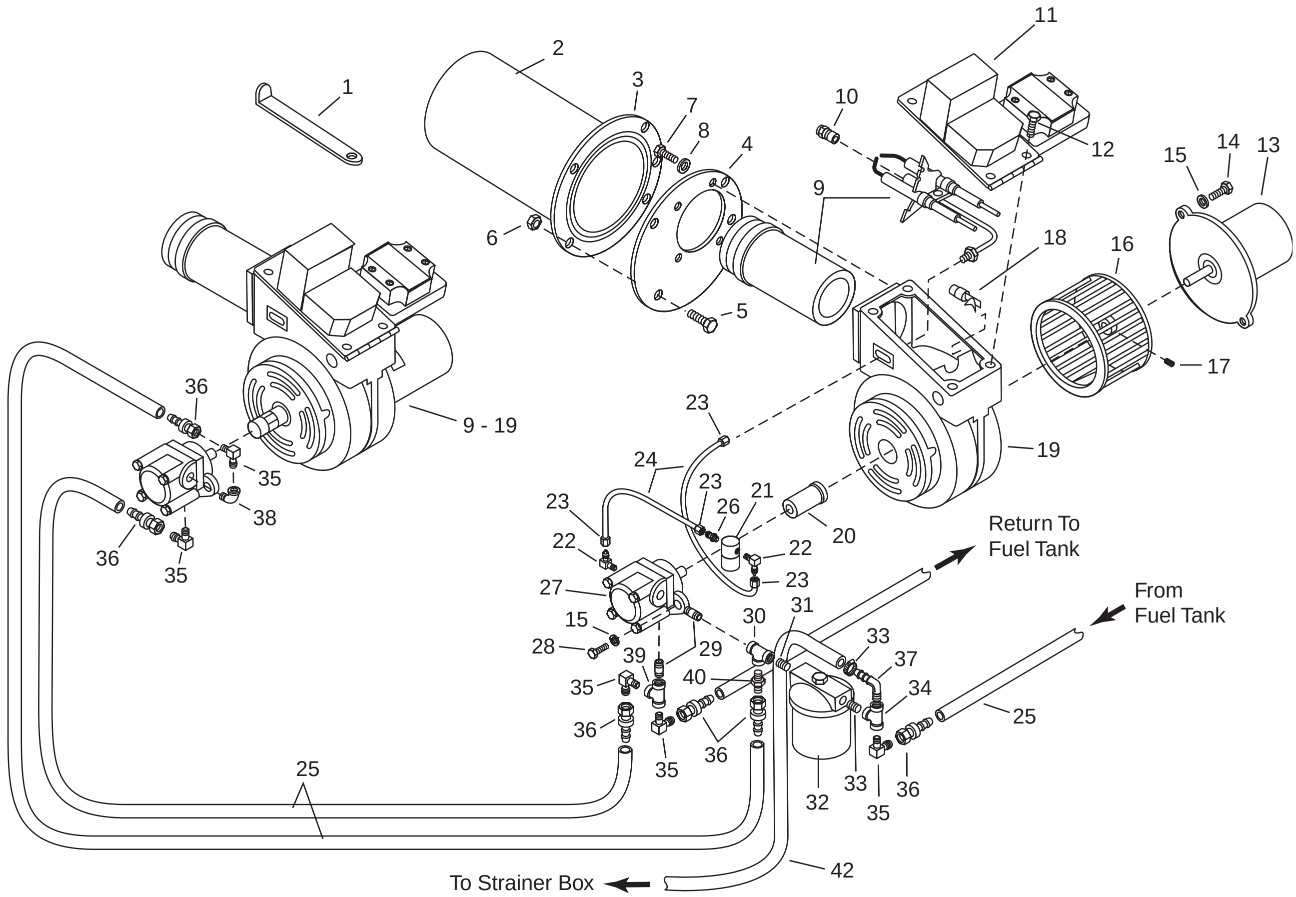
Relay And Fuse - Fuel Oil Burner Installation

7230287



REF	PART NO.	QTY	DESCRIPTION
1	6702460	2	25 Amp Fuse, 3AG, Sloblow
2	6702014	2	Solenoid Relay
3	3361179	1	Mounting Bracket
4	6701750	4	Terminal-Ring, 10 Ga., 0.25 in Stud
5	6700224	AR	10 Ga. Wire, Red
6	0120706	6	Screw-0.25NC x 0.50
7	9413946	6	Lock Nut-0.25NC
8	6000462	1	0.75 Rubber Clamp
9	6000109	AR	Fibre Loom, 0.38 In.
10	6702461	2	Fuseholder
11	6700238	5	Terminal
12	6700119	AR	14 Ga. Wire, Plastic, Red
13	6700118	AR	14 Ga. Wire, Plastic, Orange
14	6000108	AR	Fibre Loom, 0.31 In.
15	6000107	AR	Fibre Loom, 0.25 In.

Fuel Oil Burner Installation



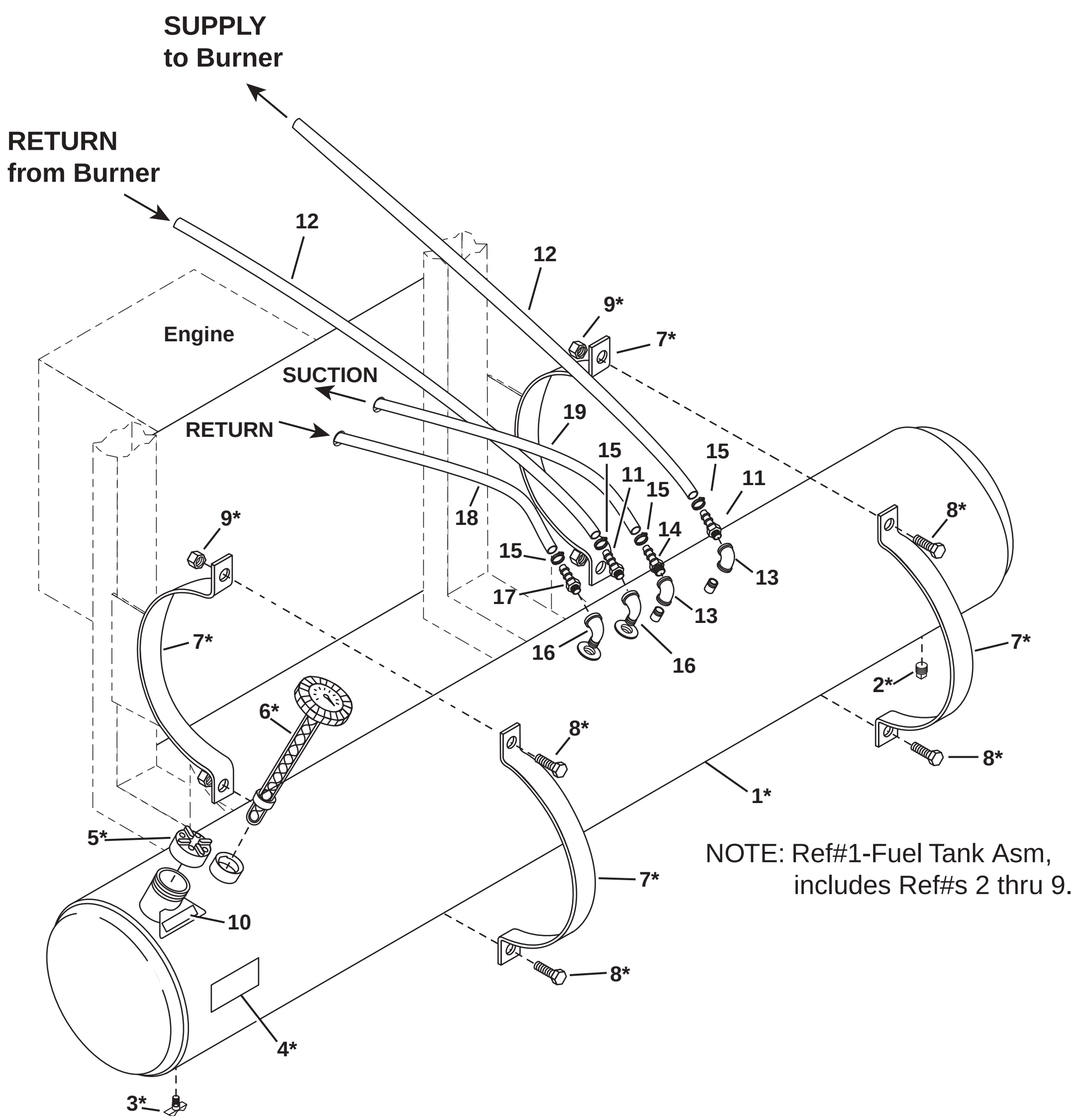
REF	PART NO.	QTY	DESCRIPTION
1	0120706	4	Screw-0.25NC x 0.50
2	6500344	1	Transformer-Ignition
3	6500395	1	Nozzle, 2.0 GPH, 30º B, Solid Core
4	6500337	1	Burner Air Tube - 7.5” Tube Length
	7710008	1	Burner Air Tube - 9.75” Tube Length
5	3331308	1	Flange
6	0120238	4	Lock Washer-0.25
7	0121887	4	Screw-Hex, 0.25NC x 0.75
8	3331277	1	Flue Mounting
9	6500041	1	Combustion Tube
10	3331270	1	Holder
11	0274993	4	Nut-Lock, 0.38NC
12	0120233	4	Screw-0.38NC x 1.00
13	6200362	1	Elbow-0.19 Tube x 0.12MPT
14	0120704	2	Nut-Flared Tube, 0.18 x 0.81
15	6309067	AR	Tube-0.19 Copper Ft.
16	6500335	1	Fuel Valve, 12V, NC, 0.12NPT
17	6701510	2	Connector-Romex, 0.75
18	6000107	AR	Loom-0.25"
19	0105404	1	Nipple-PP, 0.12 x 0.75PN
20	0105422	1	Elbow-PP. 90, ST, 0.12NPT
21	6500347	1	Fuel Pump
22	0120214	AR	Lock Washer-0.31
23	0122017	2	Screw-Hex,0.31NC x 1.00
24	6600324	AR	Hose-0.38. Per Ft.

REF	PART NO.	QTY	DESCRIPTION
25	6600306	4	Hose End-06 x 06FSX, ST, LPSP
26	9402708	1	Adapter-Hyd, ST, 04MP x 06MJ
27	0118755	2	Elbow-Auto, 90, 04MP-6MS
28	3331263	1	Shaft
29	6500387	1	Coupling-Type L, 0.50”
30	6500343	1	House Asm
31	6500346	1	Cad Cell
32	6500388	1	Blower Wheel, 6.25 Dia
33	3331257	1	Plate-Motor Mount
34	0122007	AR	Screw-0.31NC x 0.75
35	6601008	1	Adapter-Hyd, ST, 04FP-04MB
36	0105417	2	Tee-PP, 0.25NPT
37	0281839	1	Tee-PP, 0.38 x 0.25 x 0.25NPT
38	0105405	2	Nipple-PP, 0.25 x 0.87CL
39	0121207	1	Nipple-PP, 0.38 x 1.00CL
40	6500342	1	FilterAsm
	7730001	1	Filter Element-Oil, Replacement
41	6601200	1	Elbow-Hyd, 90, 06MJ-06MP
42	6601961	1	Motor-Hyd, 0.65 Cu.In, LH
43	6500351	1	Burner Head, F313
44	3331887	1	Plate-Motor Mount
45	6500386	1	Motor-Ele, 0.25HP, 14V, 3600RPM
46	6100391	4	Screw-FlHd Sock, 0.25NC x 0.75

AR = As Required

HEATING SYSTEM

Fuel Tank Assembly
Engine And Burners



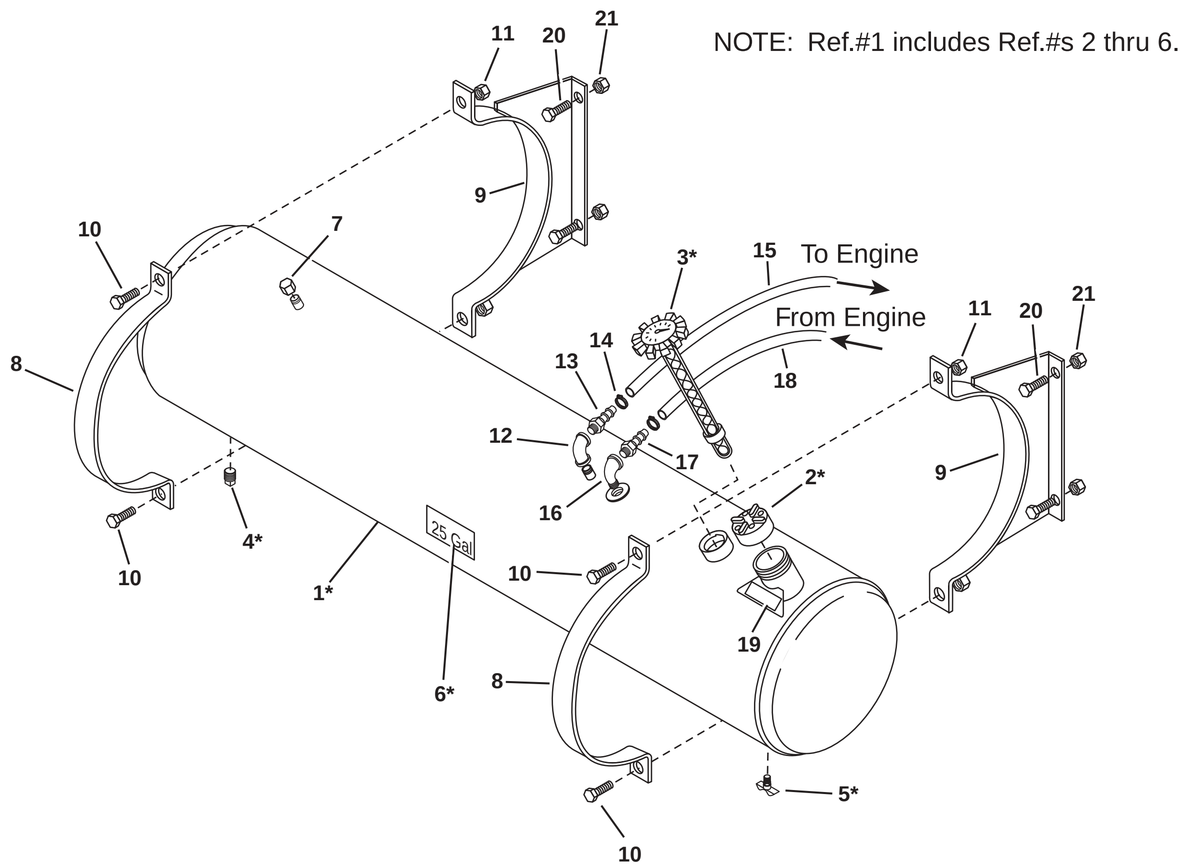
REF	PART NO.	QTY	DESCRIPTION
1	2781003	1	Tank-Fuel, 70 Gal
2	0219189	1	Plug-Pipe, SqHd, 0.25NPT, PN
3	6600162	1	Cock-Drain, 0.25 In. Spanco Brs
4	3390570	1	Plate-Identification, Fuel Tank
5	6100235	1	Cap-Filler, Fuel Tank
6	6601308	1	Gauge-Liquid, Level, 16 In Tanks
7	3320325	4	Clamp-Mtg., Hydraulic Tank Clamp
8	0122459	4	Screw-Hex, 0.50NC x 2.00, GR2, PD
9	9411727	4	Nut-Hex, Lock, 0.50NC, EA, PD
10	3360180	1	Plate-Fill W/Diesel Fuel Only
11	6600306	2	Hose End-06 x 04MP, ST, LPSP
12	6600324	AR	Hose-Hyd, 0.38, 300 WP/FT

REF	PART NO.	QTY	DESCRIPTION
13	0105413	1	Elbow-Pipe, 90, 0.25NPT, PN
14	6600407	1	Hose End-05 x 04MP, ST, LPSP
15	6001005	8	Clamp-Hose, Screw Type M5
16	0105423	1	Elbow-Pipe, 90, ST, 0.25NPT, PN
17	6602575	1	Hose End-03 x 04MP
18	6309255	AR	Hose-Fuel, 0.19 ID/FT
19	6309248	AR	Hose-Fuel Line, 0.31, Generic

AR - As Required

HEATING SYSTEM

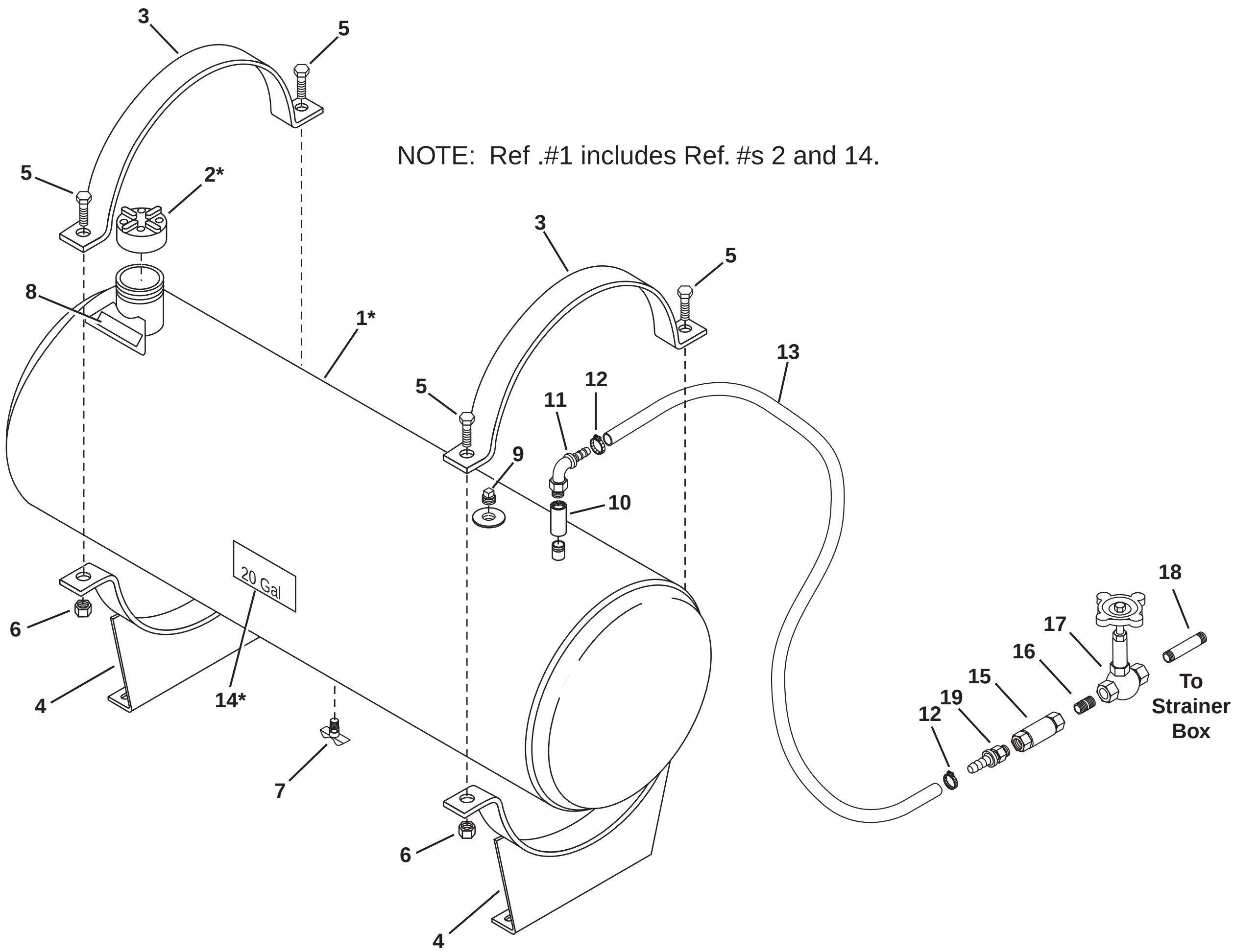
Fuel Tank Assembly
For Engine



REF	PART NO.	QTY	DESCRIPTION
1	2781019	1	Tank Asm-Fuel 12” x 50” 1 Comp 25 Gal
2	6100235	1	Cap-Filler, Fuel Tank
3	6601308	1	Gauge-Liquid, Level, 16 In Tanks
4	0219189	1	Plug-Pipe, SqHd, 0.25NPT, PN
5	6600162	1	Cock-Drain, 0.25 In. Spanco Brs
6	3390570	1	Plate-Identification, Fuel Tank
7	0110675	1	Cap-Pipe, 0.38NPT, PN
8	3311035	2	Band-Support, Fuel Tank 12 In.
9	2781314	2	Bracket Asm, Tank, Fuel 12”
10	0122433	4	Screw-Hex, 0.50NC x 1.50, GR2, PD
11	9411727	4	Nut-Hex, Lock, 0.50NC, EA, PD
12	0105413	1	Elbow-Pipe, 90, 0.25NPT, PN
13	6602575	1	Hose-End-3/16 Hose x 1/4MNPT
14	6001005	2	Clamp-Hose, Screw Type, M5
15	6309248	AR	Hose-Fuel Line, 0.31, Generic
16	0105423	1	Elbow-Pipe, 90, ST, 0.25NPT, PN
17	6445028	1	Hose End-04 x 04MP, ST, LP
18	6601452	AR	Hose-Fuel/Air, 0.25 ID/FT
19	3360180	1	Decal-Fill W/Diesel Fuel Only
20	0122433	4	Screw-Hex, 0.50NC x 1.50, GR2, PD
21	9411727	4	Nut-Hex, Lock, 0.50NC, EA, PD

AR - As Required

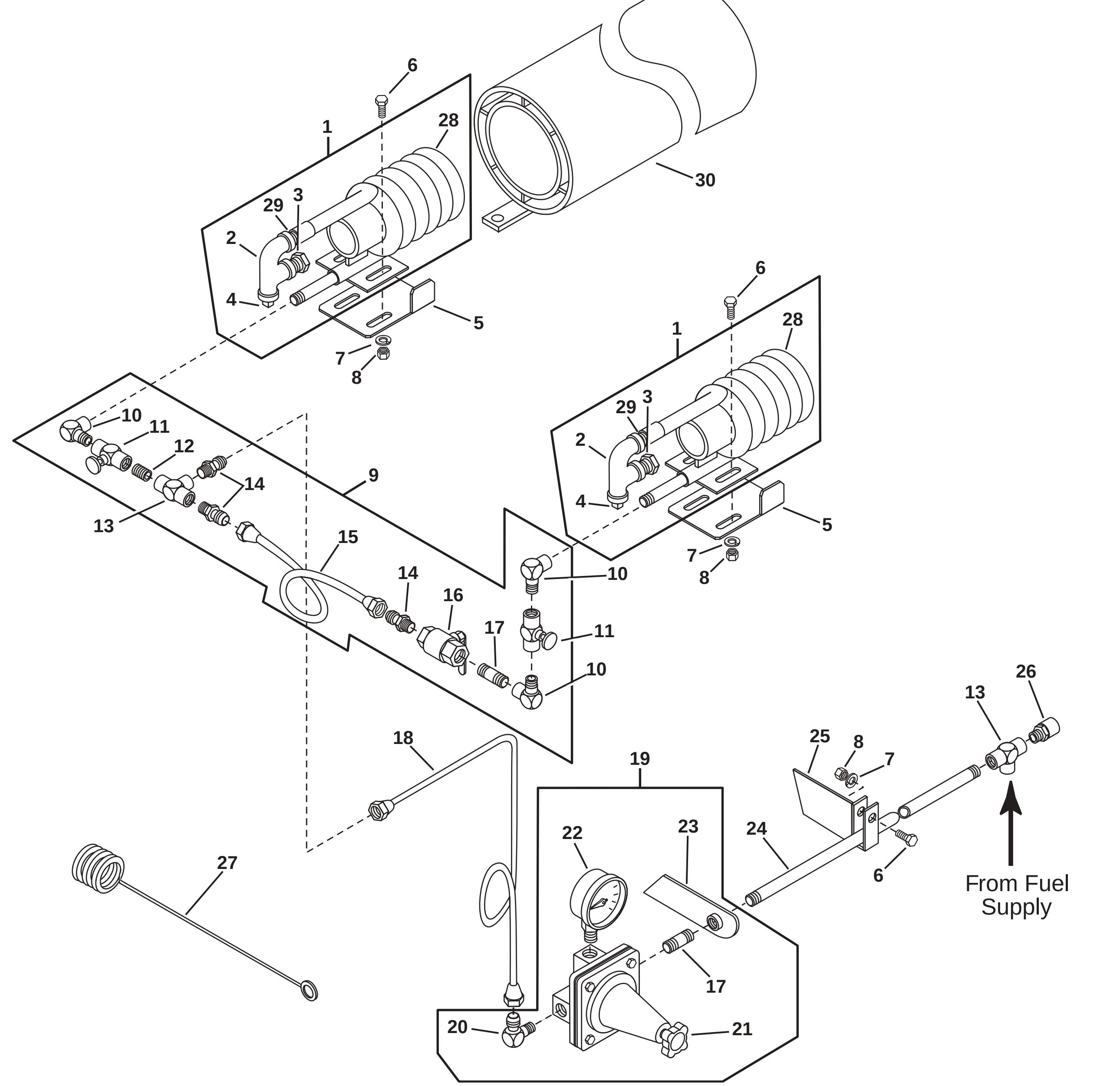
Fuel Tank Assembly
Self Flushing



REF	PART NO.	QTY	DESCRIPTION
1	2781005	1	Tank Asm-Fuel, 20 Gal, Pmpg Unit
2	6100235	1	Cap-Filler, Fuel Tank
3	3311035	2	Bank-Support, Fuel Tank, 12 In.
4	2781314	2	Bracket Asm, Tank, Fuel 12”
5	0122433	4	Screw-Hex, 0.50NC x 1.50, GR2, PD
6	9411727	2	Nut-Hex, Lock, 0.50NC, EA, PD
7	6600162	1	Cock-Drain, 0.25 In., Spanco Brs
8	3360180	1	Decal-Fill W/Diesel Fuel Only
9	0129189	1	Plug-Pipe, SqHd, 0.25NPT, PN
10	0105409	1	Coupling-Pipe, 0.25NPT, PN
11	6602402	1	Hose Barb-04 x 04MP90
12	6001005	2	Clamp-Hose, Screw Type, M5
13	6601452	AR	Hose-Fuel/Air, 0.25NPT, PN
14	3390570	1	Plate-Identification, Fuel Tank
15	6600963	1	Valve-Check, Single, 1/4 NPT
16	0105405	1	Nipple-Sch 40, 1/4 x 7/8, Cl, PN
17	6600303	1	Valve-Globe, St, 1/4
18	0119920	1	Nipple-Sch 40, 1/4 x 2, PN
19	6600305	1	Hose End-06 x 04MP, LPSP

AR - As Required

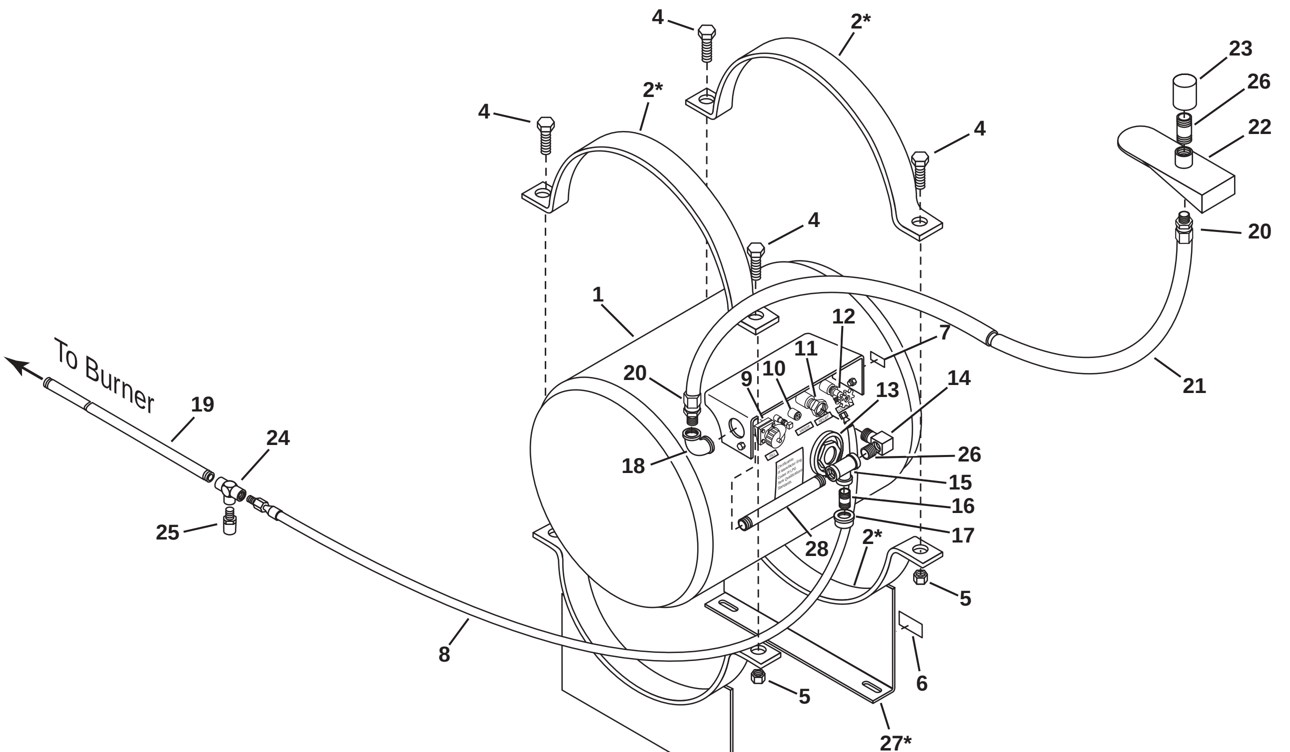
LPG Burners



REF	PART NO.	QTY	DESCRIPTION
1	3331073	2	Burner Asm-LPG Etnyre (8” Flue)
2	3331036	1	Holder-Vapor Plug
3	3331086	1	Nozzle-LPG Burner Etnyre (8” Flue)
4	0219191	1	Plug-Pipe, SqHd, 0.38NPT, PN
5	2730056	2	Bracket Asm-Mtg., LPG Burner Ht
6	0121887	5	Screw-Hex, 0.25NC x 0.75, GR2, PD
7	0120380	5	Washer-Lock, 0.25, Spring, PD
8	0120375	5	Nut-Hex, 0.25NC, PD
9	7720001	1	Piping Asm-B3 Burner Conn.
10	0454109	3	Elbow-Auto, 90, 04FP-04MP, PD
11	6500064	2	Valve-Needle, 0.25NPTF, W/Pilot
12	6200292	1	Nipple-PP, Sch 80, 0.25 x 0.87 CL, PD
13	0454121	2	Tee-Auto, 04FP-04FP-04FP, PD
14	0118750	3	Adapter-Auto, ST, 04MP-06MS
15	3331108	1	Tube Asm-Burner Piping Propane
16	6500366	1	Valve-Ball, 0.25” Jomar T-100
17	6200417	2	Nipple-PP, Sch 80, 0.25 x 1.50, PD
18	3331362	1	Tube Asm-Bottle to Burner 36”
19	3331885	1	Regulator Asm-LPG Tank & Gage
20	0118755	1	Elbow-Auto, 90, 04MP-06MS
21	7720018	1	Regulator-Pressure
22	6600196	1	Gage-Pressure, 1.0 In., 0-100 PSIG
23	3331875	1	Bracket Asm-Fuel Line
24	6303435	AR	Pipe-Sch 80, 0.25 Generic
25	3330185	1	Supt Asm-Right, Fuel Line
26	7720014	1	Valve-Relief, 400 PSI LPG Hydro
27	3330077	1	Lighter Assembly-Burner
28	3331082	1	Coil Asm-Burner LPG Etnyre
29	6200443	1	Nipple-Sch 80, 0.38 x CL, PN
30	3331196	2	Flue Liner-8 X 48, (Optional)

AR - As Required

LPG Tank - Texas Railroad

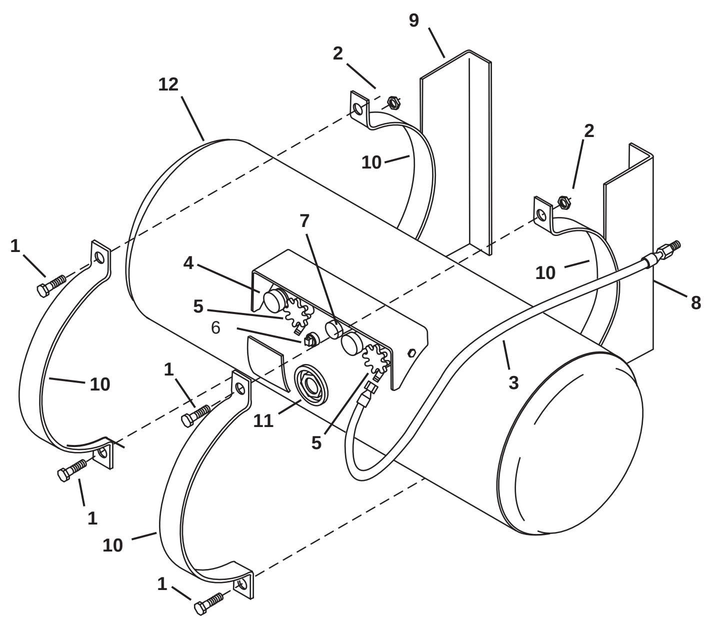


NOTE: Ref.#3 includes Ref.#2.
Ref.#27 includes Ref.#2.

REF	PART NO.	QTY	DESCRIPTION
1	6500360	1	Tank-52 GL LPG 22 x 36 Texas RR
2	3331296	4	Ring-Propane Tank, 22”
3	2781299	2	Bracket Asm-LPG Tank Mt. Lt., 22 In.
4	0179892	4	Screw-Hex, 0.50NC x 2.75, GR5
5	9411727	4	Nut-Hex, Lock, 0.50NC, PD
6	3390672	1	Tag-Manufacture, LPG Bracket
7	3390652	1	Tag-RR Com. Lisc. No.
8	3331076	1	Hose Asm-Propane Tank Inst RH
9	7720064	1	Valve-Fill, Tank LPG 18 x 42 + 53
10	7720062	1	Valve-20 Pct, Tank LPG 18 x 42 + 53
11	*******	1	Valve-Relief
12	7720066	1	Valve-Liquid, Tank LPG 18 x 42 + 53
13	7720063	1	Gauge-Sight, Tank LPG 18 x 42 + 53
14	6500358	1	Elbow-90 Deg. 1”FNPT x 1”MNPTF
15	0115237	1	Tee-Pipe, 1.00NPT, PN
16	0191492	1	Nipple-PP, Sch 40, 1.00 x 2.00, PN
17	0108689	1	Cap-Pipe, 1.00NPT, PN
18	0119100	1	Elbow-Pipe, 90, 1.00NPT, PN
19	6303435	AR	Pipe-Sch 80, 0.25, Generic
20	6500373	2	Hose End-16-16MP Aero, 412-165
21	6500374	AR	Hose-Propane 7/8” ID/FT
22	3331872	1	Brkt Asm-LPG Relief Vlv Vent
23	6500359	1	Vent Cap-1305 Gits 1”NPT
24	0454121	1	Tee-Auto, 04FP-04FP-04FP, PD
25	7720014	1	Valve-Relief, 400 PSI LPG Hydro
26	0127874	2	Nipple-PP, 1.00 x 1.50, CL, PN
27	3331300	1	Bracket Asm-LPG Tank Mt. Rt,22 In.
28	0219356	1	Nipple-Pipe, Sch 40, 1 x 12, PN, TBE

AR - As Required

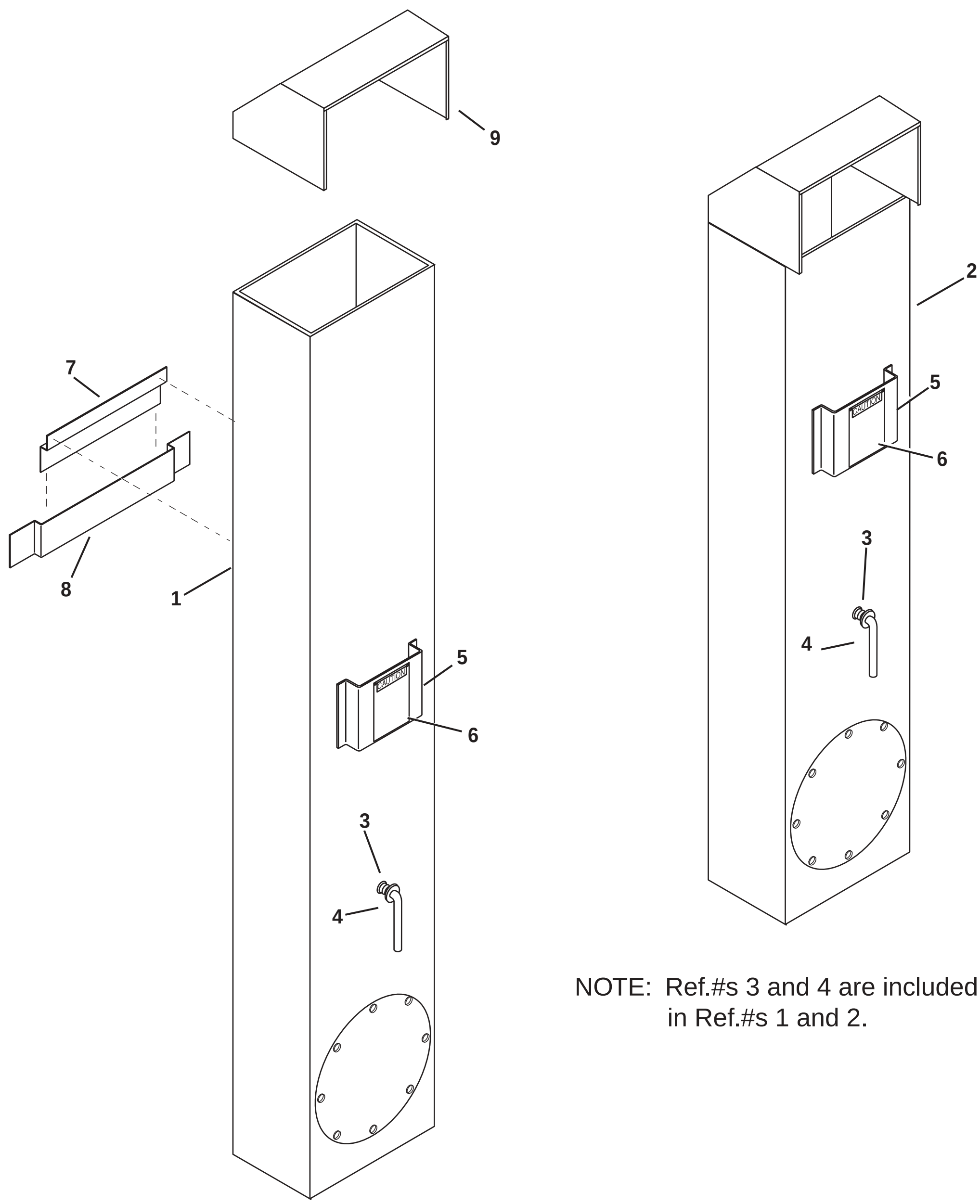
LPG Tank



REF	PART NO.	QTY	DESCRIPTION
1	0120237	4	Screw-Hex, 1/2NC x 3.00, GR2, PD
2	9410727	4	Nut-Hex, Lock, 1/2NC, PD
3	2730097	1	Hose-Propane
4	7720064	1	Valve-Fill, Tank, LPG 18x42x53
5	7720066	2	Valve-Liquid, Tank, LPG 18x42x53
6	7720065	1	Valve-Relief, Tank, LPG 18x42x53
7	7720062	1	Valve-20%, Tank, LPG 18x42x53
8	2780490	1	Bracket-Left, 52 Gal LPG Tank
9	2780491	1	Bracket-Right, 52 Gal LPG Tank
10	3330293	4	Ring-18 In, Propane bottle
11	7720063	1	Gage-Sight, Tank, LPG 18x42x53
12	6500045	1	Tank-LPG.52 Gal.18x53

*Item 20 for reference- normally furnished with bottle for liquid withdrawal of Propane

Exhaust Stack Assemblies

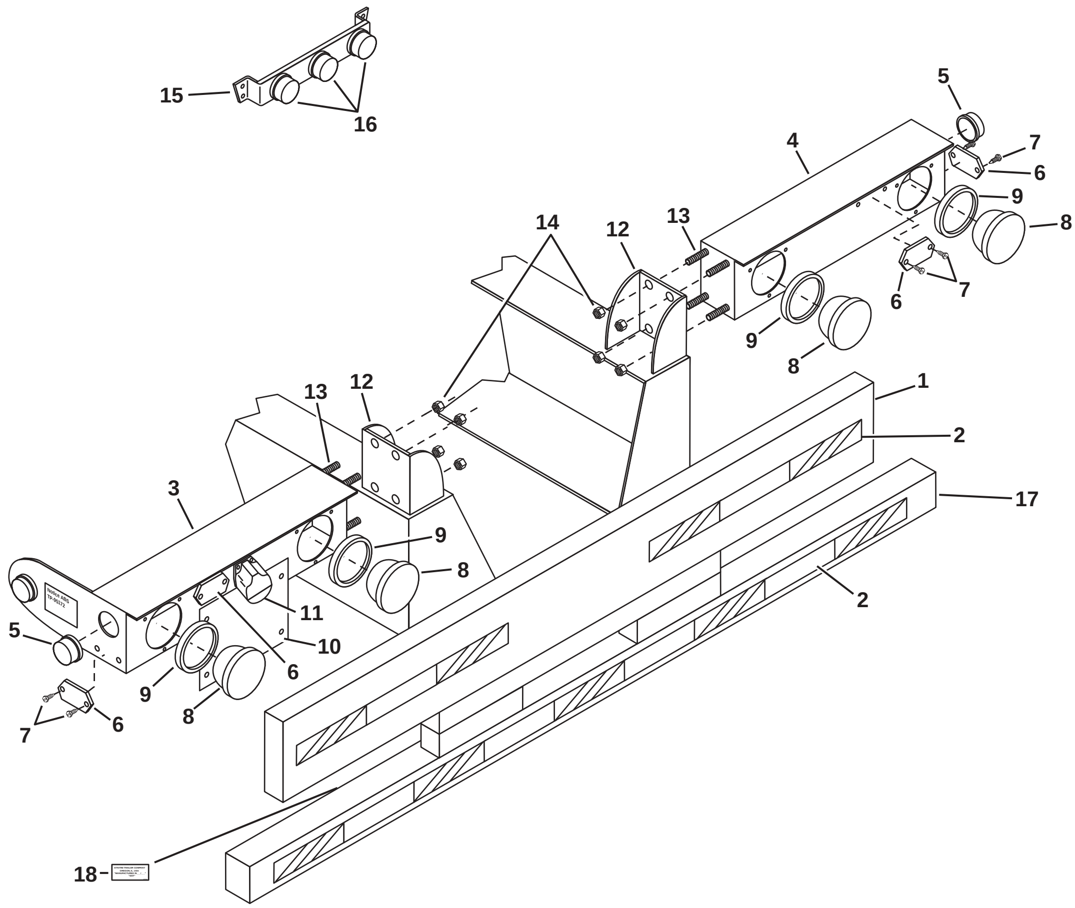


NOTE: Ref.#s 3 and 4 are included in Ref.#s 1 and 2.

REF	PART NO.	QTY	DESCRIPTION
1	2730023	1	Stack Asm-6” x 72”-Provide S/N
	2730091	1	Stack Asm-8” x 72”-Provide S/N
2	2730021	1	Stack Asm-6” x 60”
3	6000496	1	Spr-Release, LE ROI #1473
4	2630014	1	Arm Assembly-Damper Stack ,6”
	2730085	1	Arm Assembly-Damper Stack ,8”
5	2790014	2	Bracket-Caution, HT, W/Flue, GE

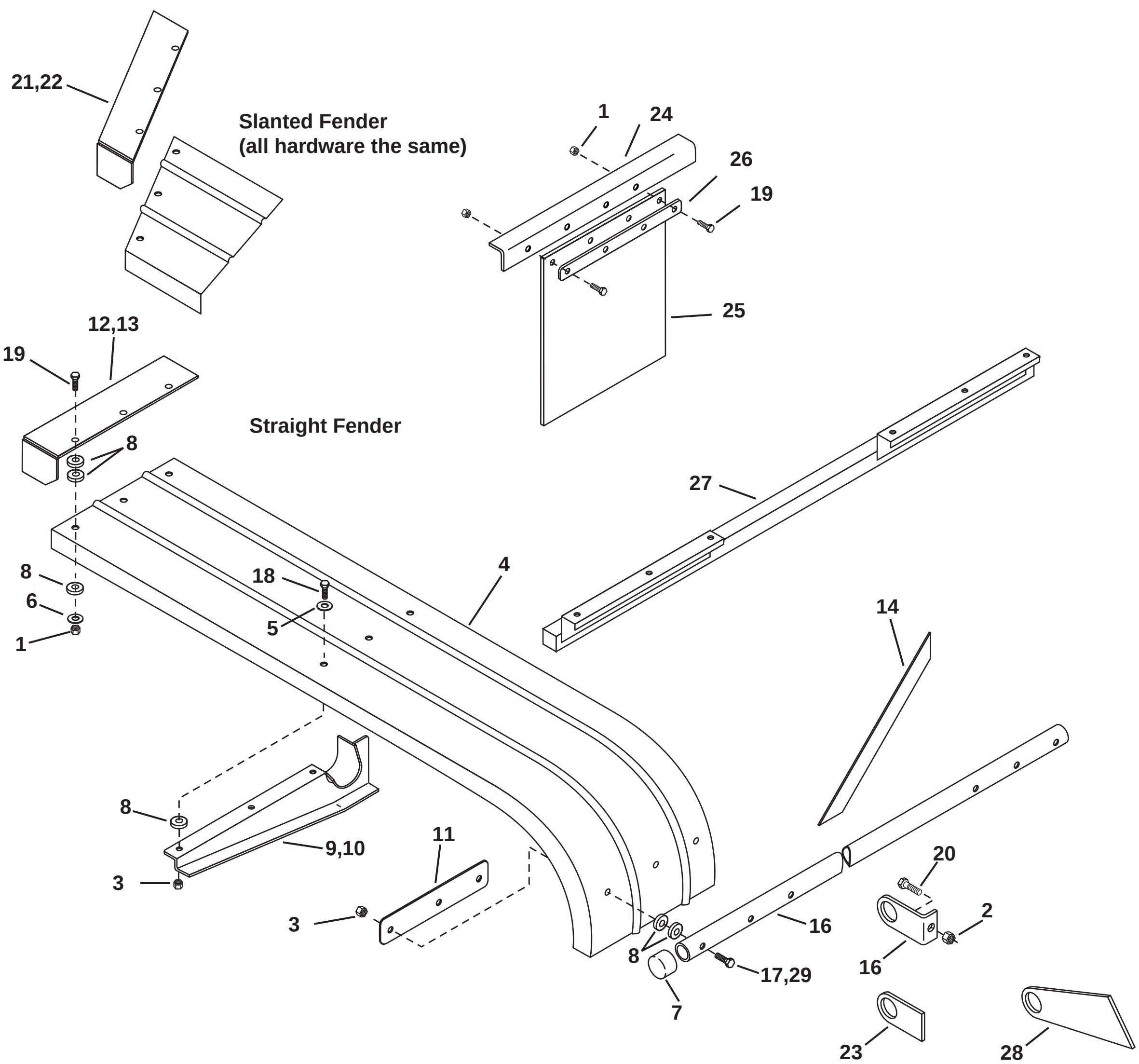
REF	PART NO.	QTY	DESCRIPTION
6	3390684	2	Decal: Caution, Hot Surface
7	2730034	1	Hook-Mt Ext,Smoke Stack
8	3380136	1	Bracket Mt-Exr,Smoke Stack
9	2750039	1	Cap Asm-Stack,6”
	2750090	1	Cap Asm-Stack,8”

Bumper Assembly



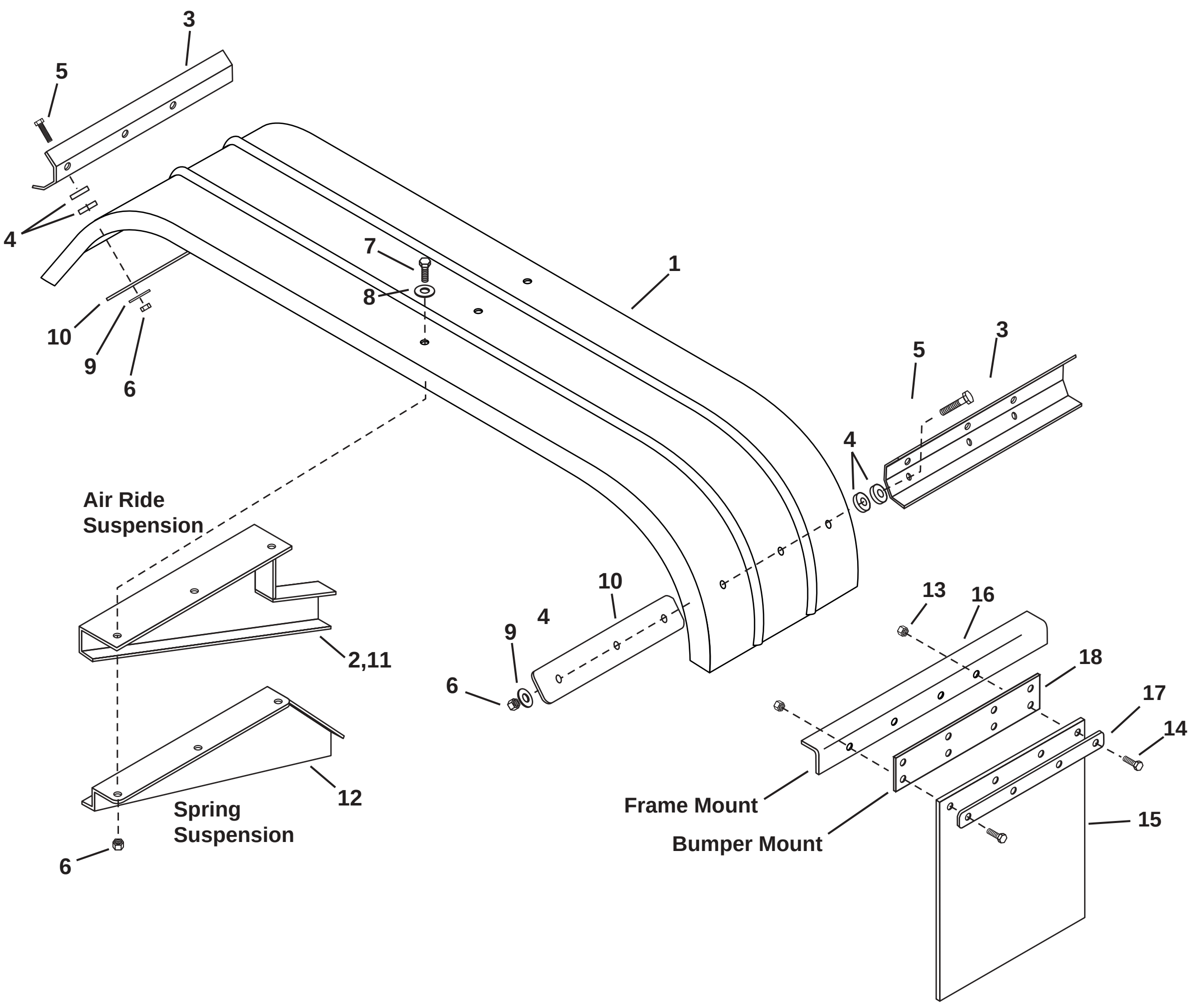
REF	PART NO.	QTY	DESCRIPTION
1	2780432	1	Bumper Asm
2	2790527	1	Tape-Conspicuity, 2 In., Red/Wh x 90”Lg.
3	2770156	1	Box-Light, LH, 2 Lamp, SST
4	2770073	1	Box-Light, RH, 2 Lamp, SST
5	Q478487	2	Lamp-Red Super Seal 10-2 1/2
6	6000685	4	Reflector-Red, Rect
7	0447839	8	Screw-Tape, PNSL, 10NF x 0.75, F
8	6702112	4	Lamp Super 40 Tk-Lt
9	Q478488	4	Grommet Mounting Mdl 40
10	2770071	1	Support-License Plate
11	6702112	1	Bracket-License Lamp Asm
12	2770074	2	Bracket-Mtg. Light Box
13	0180124	8	Screw-Hex, 0.38NC x 1.25, GR5, PD
14	0274993	8	Nut-Hex, Lock, 0.38NC, EA, PD
15	2770144	1	Bracket-Light, Triple Dished Head
16	Q478487	3	Lamp-Red, Super Seal
17	Q502482	1	Guard-Rear Impact
18	6320504	1	Decal: Rear Impact Guard

Front Fenders



REF	PART NO.	QTY	DESCRIPTION
1	9413946	14	Nut-Hex,Lock,0.25NC,PD
2	9411727	2	Nut-Hex,Lock,0.50NC,PD
3	9411638	12	Nut-Hex,Lock,0.31NC,PD
4	8000034	2	Fender-Front,Ribbed,Alum
5	6001129	6	Washer-Flat, .344 ID x 1.25 OD
6	6000716	6	Washer-Flat, 9/32 ID x 1.25 OD, PD
7	6000689	2	Cap-Vinyl, Plastisol, Blk, #89
8	6000455	36	Bushing-0.31 x 0.53, Atl, Ind #1530
9	2780598	1	Bracket Asm, Supt, Frt Fender, Rt, Al
10	2780597	1	Bracket Asm, Supt, Frt Fender, Lt, Al
11	2780581	2	Pad-Brace, 3 Hole, Al, Fender
12	2781309	1	Brace Asm, Rt, Frt Fender, Straight, Al
	2781306	1	Brace Asm, Rt, Frt Fender, Straight, Stl
13	2781310	1	Brace Asm, Lt, Frt Fender, Straight, Al
	2781305	1	Brace Asm, Lt, Frt Fender, Straight, Stl
14	2750717	2	Stiffener-Pipe,Fender
15	2750592	2	Bracket-Mtg, Front Fender
16	2750588	1	Brace-Pipe, Fender, Front, Al
17	0173063	6	Screw-Hex, 0.31NC x 3.50, Gr2, PD
18	0122040	6	Screw-Hex, 0.31NC x 1.50, Gr2, PD
19	0121954	14	Screw-Hex, 0.25NC x 2.00, Gr2, PD
20	0120426	2	Screw-Hex, 0.50NC x 1.25, Gr2, PD
21	2780307	1	Brace Asm, Rt, Front Fender
22	2780308	1	Brace Asm, Lt, Front Fender
23	2780584	2	Bracket- Mounting, Frt Fender, RL, Al
24	2710002	2	Angle-Mudflap Hanger,Short
25	6450074	2	Guard-Splash,Kant Sail 24x20
26	2710001	1	Bar-Mudflap, Backup
27	2780972	1	Support Asm- Frt Fender, Stl
28	2710445	2	Bracket- Mtg, Frt Fender, Stl
29	0122089	6	Screw-Hex, 0.31NC x 3.00, Gr2, PD

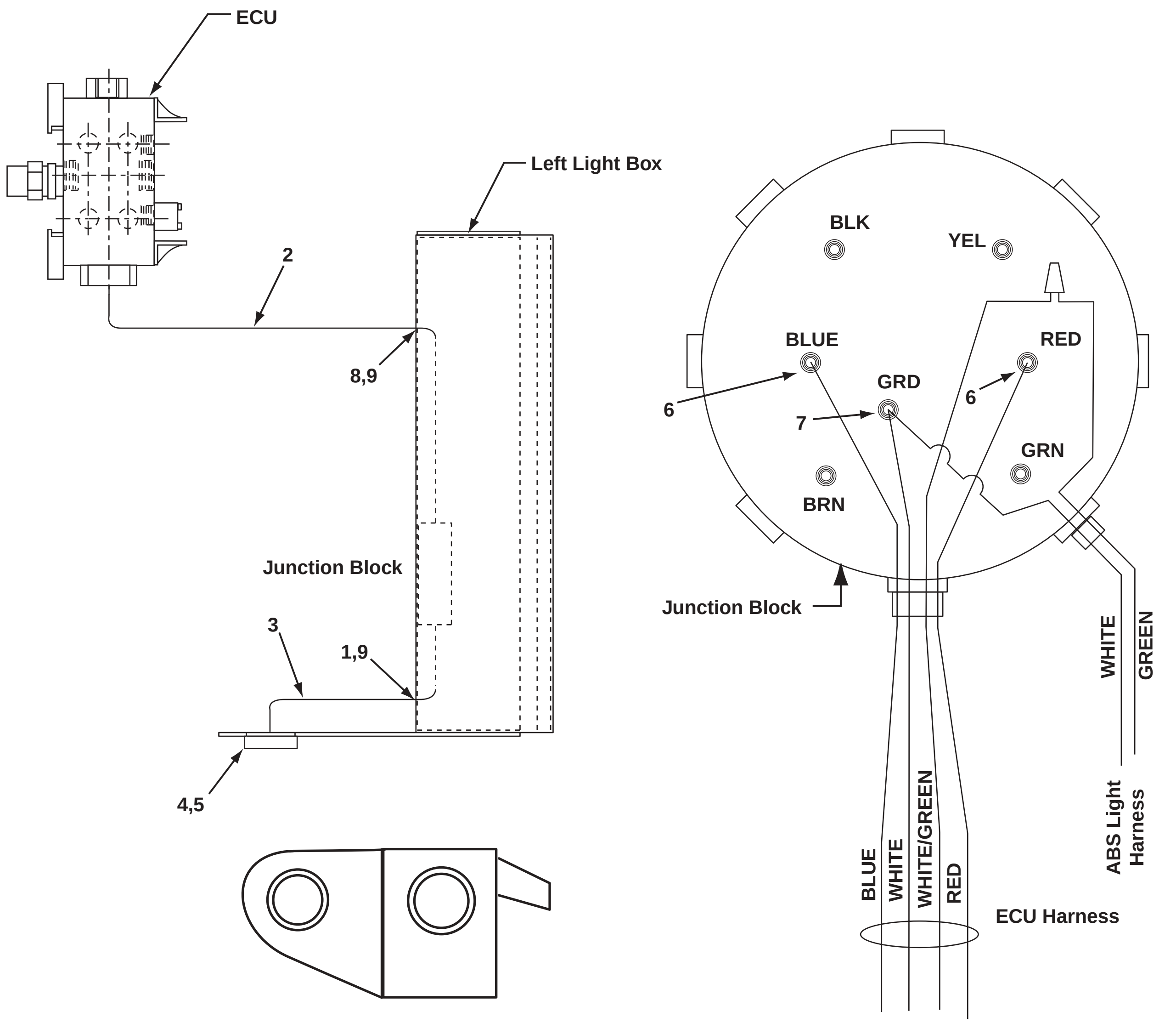
Tandem Axle Rear Fenders



REF	PART NO.	QTY	DESCRIPTION
1	2780218	2	Fender-Rear Rib Al, Tandem, 99
2	2781512	1	Support-Center, Fender, Rt, Air Ride
3	2780579	4	Bracket-Fender Support
4	6000455	24	Bushing, 0.31 x 0.53, ATL IND 1530
5	0122052	12	Screw-Hex, 0.31NC x 1.75, GR2, PD
6	9411638	18	Nut-Hex, Lock, 0.31NC, EA, PD
7	0122007	6	Screw-Hex, 0.31NC x 0.75, GR2, PD
8	6001129	6	Washer-Flat, 0.34 ID x 1.25 OD
9	0120386	12	Washer-Flat, 0.31 ID x 0.73 OD
10	2780581	4	Pad-Brace, 3 Hole, Al Fender
11	2781513	1	Support-Center, Fender, Lt, Air Ride
12	2780578	2	Support-Center, Fender, Spring Susp
13	9413946	8	Nut-Hex, Lock, 0.25NC, EA, PD
14	0121913	8	Screw-Hex, 0.25NC x 1.25, GR2, PD
15	6450074	2	Guard-Splash, Kant Sail 24 x 30
16	2710002	2	Mount-Frame, Mud Flap
17	2710001	2	Bar-Mudflap, Backup
18	2710037	2	Mount-Bumper, Mud Flap

Standard ABS Wiring

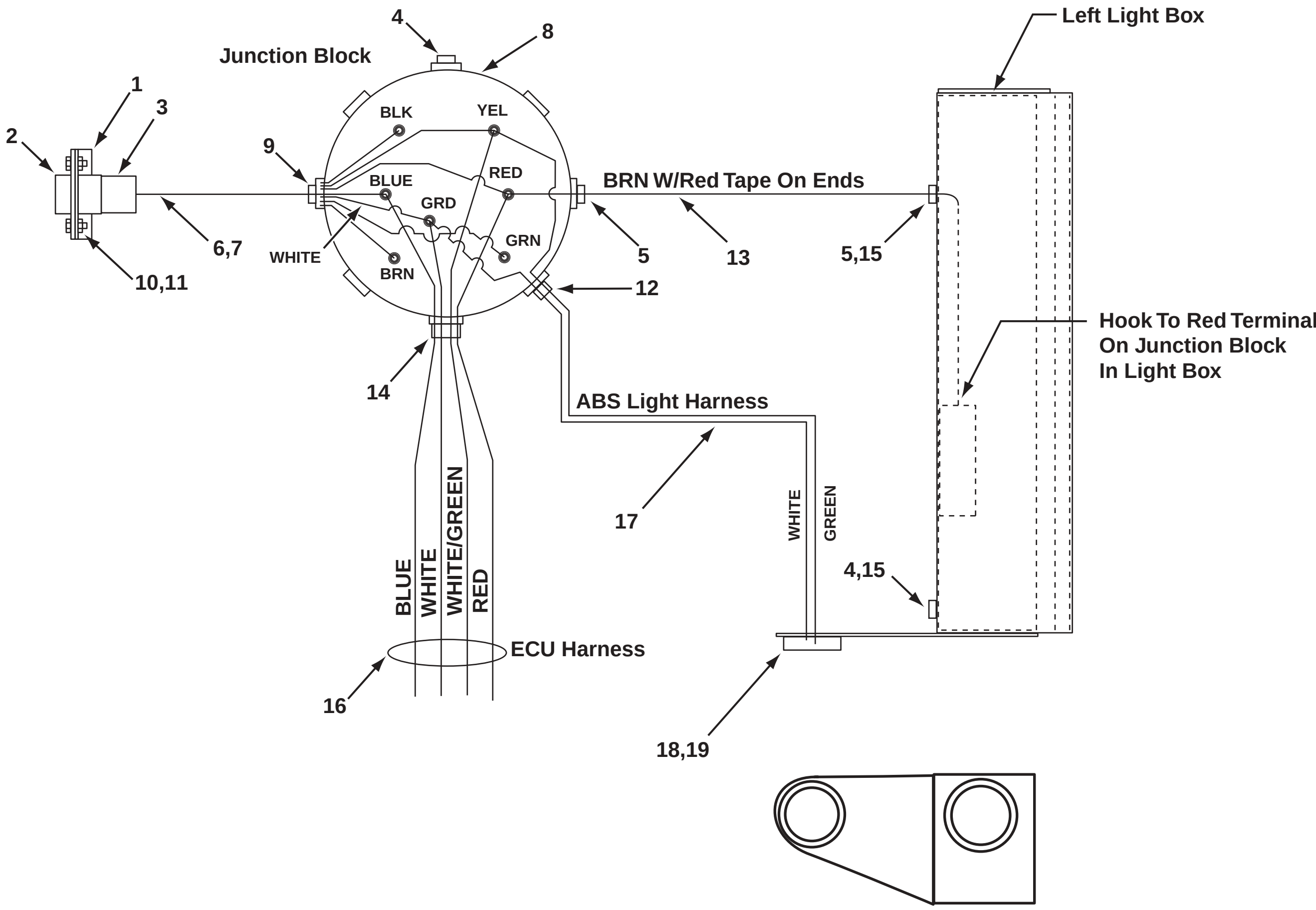
9302501



REF	PART NO.	QTY	DESCRIPTION
1	50846	1	Adapter-Trk-Lt 3 Con Flat
2	6702983	1	Harness-11.0 Meters WABCO
3	52200	1	Jumper Harness
4	30257Y	1	Light-Marker, 2”
5	30700	1	Grommet
6	35109	2	Terminal-Api
7	6702517	1	Terminal-8 Ga. Wire, 10 Stud
8	5084	1	Compression Fitting, 1.50 ID
9	50845	1	Jam Nut, Comp. Ftg.

ISO 3731 ABS Wiring

9302515

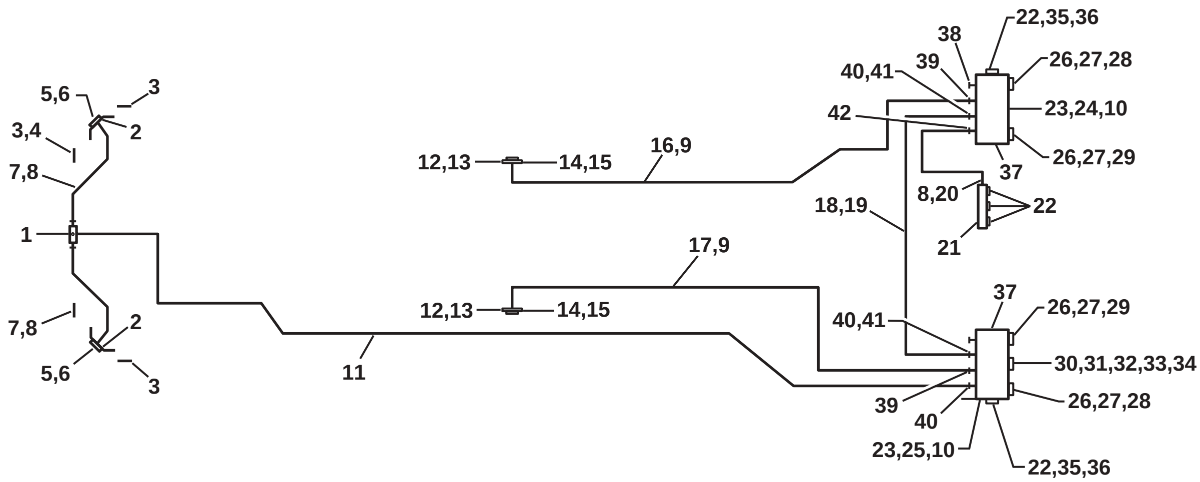


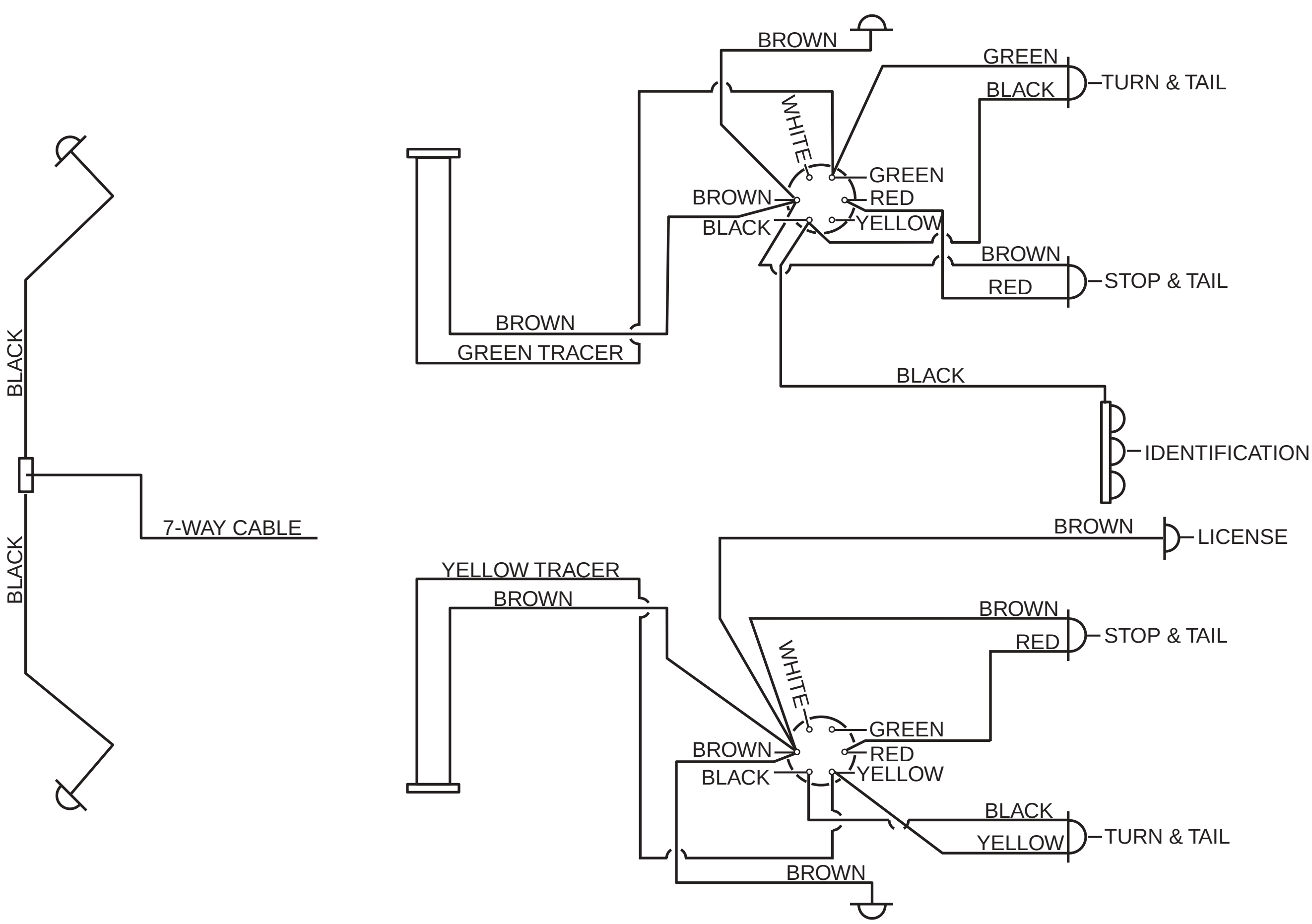
REF	PART NO.	QTY	DESCRIPTION
1	6702458	1	Bracket-Receptacle Mtg
2	6702456	1	Receptacle-ISO 3731
3	6452457	1	Boot-7 Pole Receptacle
4	6702141	1	Plug-Filler Trk Lite,50830
5	6702108	2	Adapter-Trk Lite 3/8 ID,50840
6	6702504	50	Cable-7 Way,Berkshire,81012
7	6000059	20	Clamp-5/8 Rubber,Tube,Berg 1511-5
8	Q478478	1	Junction Box Asm-Ctr Mount
9	6702110	1	Adapter-Trk Lite,3/4 ID,50842
10	9413946	2	Nut-Hex.Lock,1/4NC,PD

REF	PART NO.	QTY	DESCRIPTION
11	0120706	2	Screw-Hex,1/4NC x 1/2,Gr 2,PD
12	6702111	1	Adapter-Trk Lite,3 Conn,Flat,50846
13	6702123	1	Harness-Marker,168,Trk Lite,50304
14	Q478480	1	Fitting-Compression,1/2 ID,5084
15	6702107	2	Nut-Jam,Compr Fitting,Trk Lite,50845
16	6703983	1	Harness-11 Meters,ABS,ECU
17	6702507	1	Harness-ABS Lamp Jumper 84”,52200
18	6702505	1	Light-Marker,2”,ABS,TL 30257Y
19	6702151	1	Grommet-Mounting

Specify Unit Serial No., Part No., & Part Description

Lights Installation - Truck Lite
4 Lamp ABS

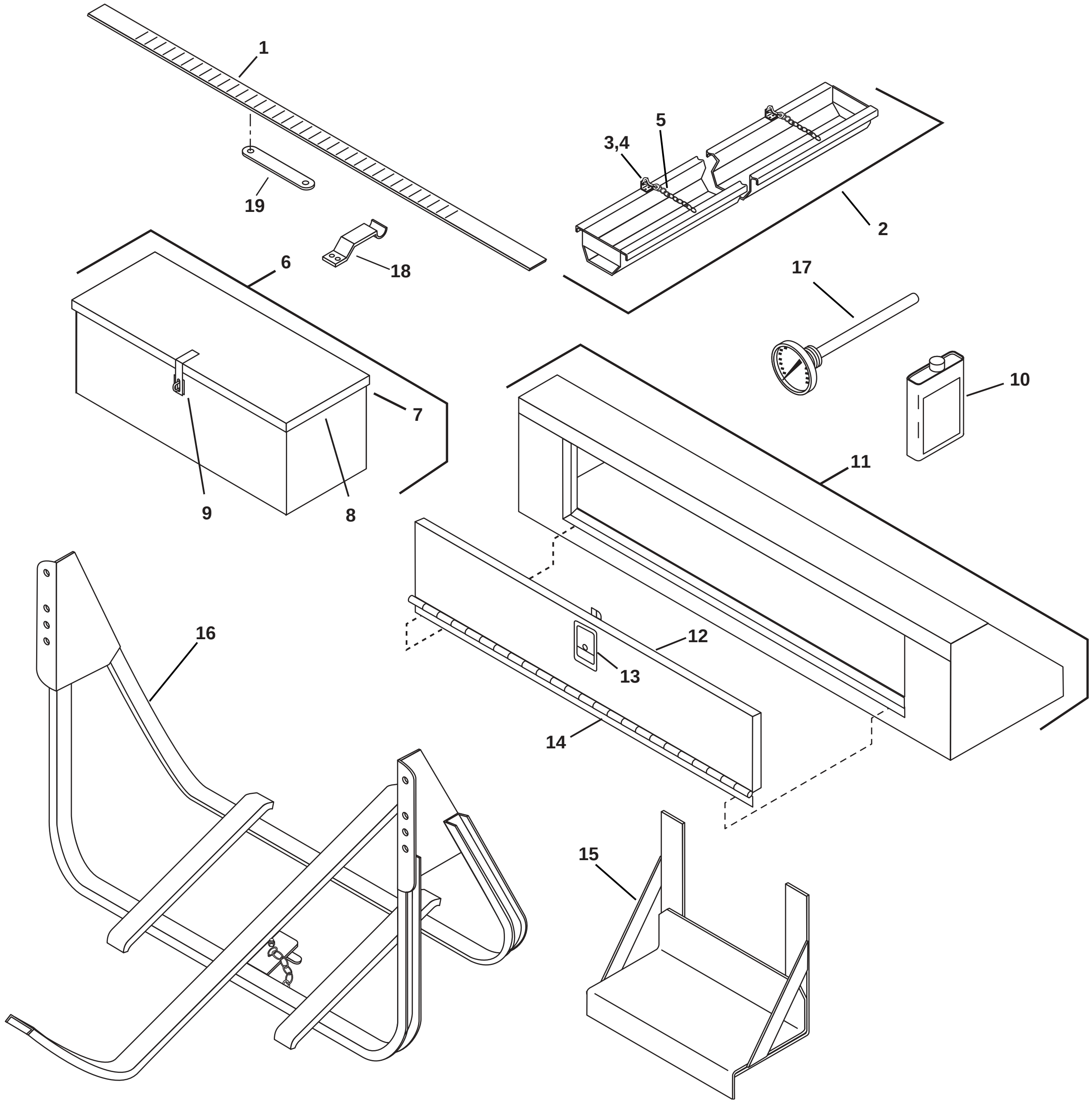




Lights Installation - Truck Lite
4 Lamp ABS

REF	PART NO.	QTY	DESCRIPTION
1	2770604	1	Connector Asm-7 Way, High Mt., .5E
2	2770075	2	Bracket-Light, Frt Fender, Steel
3	6000686	4	Reflector-Amb. Rect
4	2770117	2	Bracket-Reflector, Frt Fender, Alum.
5	Q478486	2	Lamp Amber Super Seal 10-2 1/2
6	Q478485	2	Grommet Mounting, 10 Mdl
7	6702123	2	Harness-Marker 168 Tk-Lt
8	6000055	20	Cla., .31 In. Rub Tube, Berg 1511-2
9	6000056	30	Cla., .38 In. Rub Tube, Berg 1511-3
10	6000685	4	Reflector-Red, Rect
11	6702504	50’	Cable-7 Way, Berkshire 81012
12	2770078	1	Extension Brkt., Side-Tk-Lt
	2770064	1	Bracket-Side, Tk-Lt (Hose Trg Mtg.)
13	2770077	2	Brkt.-Side Light, Tk-Lt
	2770065	1	Brace-Brkt, Side, (Hose Trg Mtg)
14	6702115	2	Lamp-Mid Turn/Mkr Tr-Lt
15	6702118	2	Grommet-Mid T/M Tk-Lt
16	6702127	1	Harness-RH STT 456 Tk-Lt
17	6702128	1	Harness-LH STT 456 Tk-Lt
18	6700461	10’	Cable-7 Way, Berkshire 3438/FT
19	6000059	30	Cla., .62 Rub Tube, Berg 1511-5
20	6702121	1	Harness-ID 288 Tk-Lt
21	6702117	1	Bracket-ID, 6 Cr Tk-Lt
	2770144	1	Bracket-Light, Triple Dished Head
22	Q478487	5	Lamp Red Super Seal, 10-2 1/2
23	2770099	2	Bracket Mtg., Light Box
24	2770073	1	Box-Light, RH, 2 Lamp, Stainless
25	2770165	1	Box-Light, LH, 2 Lamp, Stainless
26	6702112	4	Lamp-Super 40 Tk-Lt
27	Q478488	4	Grommet Mounting Mdl 40
28	6702125	2	Harness-S/T 9.75 Tk-Lt
29	6702126	2	Harness-S/T 48 Tk-Lt
30	6702116	1	Bracket-License Lamp
31	6702124	1	Harness-License 30 Tk-Lt
32	2770071	1	Support-License Plate
33	0443507	2	Screw-Mach, , 0.25NC x 0.50, PD
34	0447839	2	Screw-Tap, PNSL, 10NF x 0.75, , PD
35	6702119	5	Grommet-2.50 Lamp Ext Tk-Lt
36	6702122	2	Harness-Marker 15 Tk-Lt
37	6702106	2	Block-Term 8 Post, Tk-Lt
38	6702141	1	Plug-Filler Tk-Lt
39	6702111	2	Adapter-3 Con Flat Tk-Lt
40	6702110	3	Adapter-0.75 ID Tk-Lt
41	6702107	8	Nut-Jam, Compr Ftg. Tk-Lt
42	6702108	1	Adapter-0.38 ID Tk-Lt

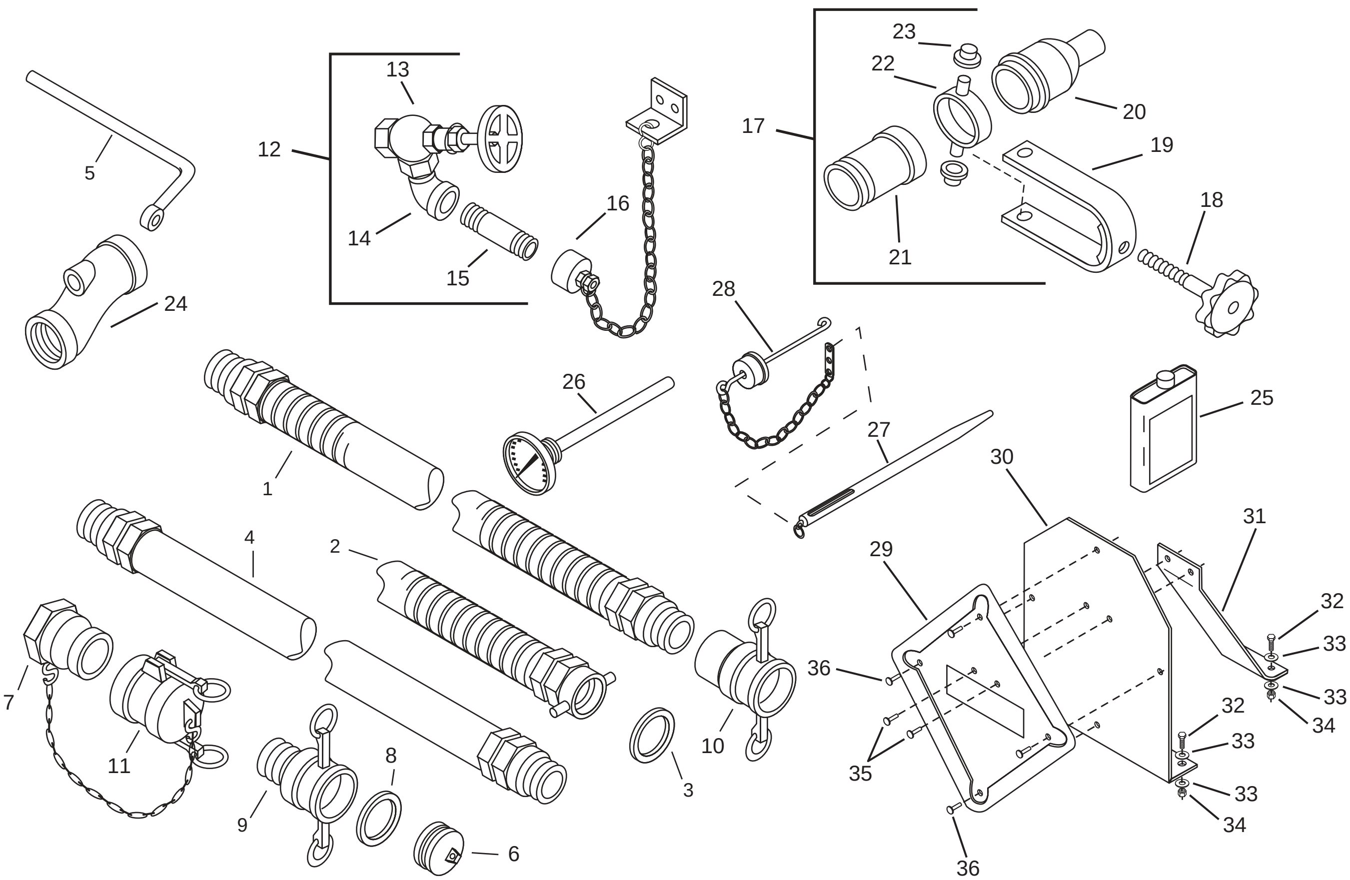
Miscellaneous Attachments



REF	PART NO.	QTY	DESCRIPTION
1	8000099	1	Blank-Measuring Stick(#2520)
2	2780437	1	Trough Asm-Hose, Aluminum, 20Ft.
3	2780027	3	Clip-Sealing, Sampling Valve
4	6000586	6	Screw-Pnhd, Tek, 10-16 x 0.50, PD
5	2780123	3	Holdown Asm-Hose, 6” Trough
6	2780502	1	Tool Box Asm-12” x 12” x 36”
7	2610039	1	Hinge-Tool Box
8	2780501	1	Lid-Tool Box, 12” x 12” x 36”
9	6000308	1	Hasp-Safety
10	7220056	1	Anti-Foam Concentrate, 1 Pint

REF	PART NO.	QTY	DESCRIPTION
11	3311628	1	LH Toolbox Asm-51” Mod. Dist.
12	3311624	1	Door-Mod. Dist. 43” Lg.
13	6000255	1	Lock Asm Dr, Ebrhd MFT 4891, R.
14	3311625	1	Hinge-Piano 2” Wide x 42” Lg.
15	3311320	1	Platform Asm-Relay Tank
16	2780615	1	Carrier Asm-Tire Bolt On
17	6500039	1	Thermometer-Dial,2 In. 9 In. Dual
18	3310402	2	Bracket-Measuring Stick
19	3390656	1	Label-Measuring Stick, 2 Flue

Miscellaneous Parts



REF	PART NO.	QTY	DESCRIPTION
1	6600442		Hose Asm-TA,3 In x 10 Ft,M/M Cplg
	6602576		Hose Asm-TA,3 In x 12 Ft,M/M Cplg
	6600273		Hose Asm-TA,3 In x 15 Ft,M/M Cplg
2	6600265		Hose Asm-TA,3 In x 15 Ft,M/F Cplg
	6600325		Hose Asm-TA,3 In, NoCplg,Spec Lgth
	6600271		Coupling-3 In Male,Flexweld
	6600272		Coupling-3 In Female,Flexweld
3	6600267		Gasket-Female Coupling
4	S241003		Hose Asm-Rubber TA,3 In x 12Ft,M/M
	7400004		Hose Asm-Rubber TA,3 In x 15Ft,M/M
5	3380095	1	Wrench Asm-Spanner,Hose
6	6600280	AR	Plug-Dust,3 In,Alum
	6602430	AR	Plug-Dust,4 In,Alum
7	6600277	AR	Adapter-3 In,Alum,Part A
	6000855	AR	Adapter-4 In,Alum,Part A
	6002580	AR	Adapter-5 In,Alum,Part A
8	6600279	AR	Gasket-Silicone,Used w/6600277
9	6600278	AR	Coupler-3 In,Alum,Part B
10	6001012	AR	Coupler-3 In,Alum,Part D
11	6600281	AR	Cap-Dust,3 In,Alum
	6000854	AR	Cap-Dust,4 In,Alum
	6602581	AR	Cap-Dust,5 In,Alum
12	2780017	1	Valve Asm-Sampling,3/4 In
13	6600349	1	Valve-3/4 In,Angle
14	0140798	1	Elbow-Pipe,45,St,3/4 NPT,PD
15	0190724	1	Nipple-3/4 x 4,PN
16	2780038	1	Cap Asm-Sampling Valve

REF	PART NO.	QTY	DESCRIPTION
17	3340039	1	Fill Line Asm x 4 In Long
	3340839	1	Fill Line Asm x 8 In Long
	2750309	1	Fill Line Asm x 24 In Long
18	3340033	1	Clamp Asm-Screw,Fill Line
19	3340041	1	Clamp Asm-3 In Hose Asm
20	3380388	1	Cap Asm-Fill Line
21	3340043	1	Pipe Asm-Fill Line,4 In Long
	3340402	1	Pipe Asm-Fill Line,8 In Long
	2750311	1	Pipe Asm-Fill Line,24 In Long
22	3341078	1	Ring Asm-Clamping,transfer Valve
	9413946	1	Nut-Hex,Lock,1/4NC,PD
	0121913	1	Screw-Hex,1/4NC x 1 1/4,Gr 2,PD
23	6001056	2	Cap-Retainer,1/2 In Stud
24	3340040	1	Connector-Hose,3 In
25	7220056	1	Anti-Foam Concentrate, 1 Pint
26	6500039	1	Thermometer-Dial,2 In. 9 In. Dual
	6500266	1	Thermometer-Dial,3 In. 0-600F
27	6500034	1	Thermo, 50-600 Deg. F. Eng #13654S
28	3300038	1	Cap Assembly-Thermometer
29	6320272	1	Placard-Dudflip 126F W/Hot
30	2780461	1	Bracket-Placard
31	2780476	1	Brace-Placard Fender Bracket
32	0121887	6	Screw-Hex, 0.25NC x 0.75, GR2, PD
33	0120386	12	Washer-Flat, 0.25A(0.31 x 0.73), PD
34	9413946	6	Nut-Hex, Lock, 0.25NC, EA, PD
35	6000436	2	Rivet-0.19 Dr, 0.18 Grip, 0.234 Max
36	6000434	4	Rivet-0.19 Dr, 0.12 Grip, 0.17 Max

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