ROSCO

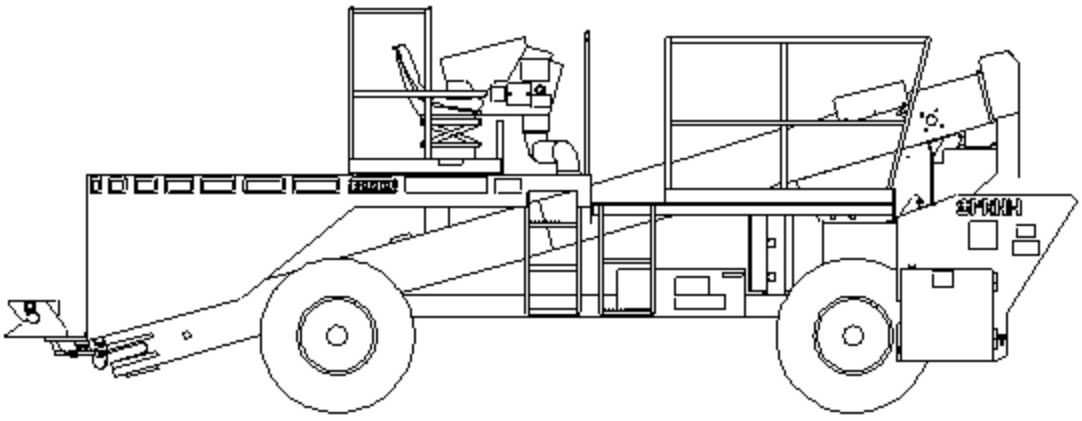
A LeeBoy Company

HCS-F/F4 CHIPSPREADER

OPERATOR'S MANUAL

For Front Wheel Drive and 4-Wheel Drive

MANUAL PART NO. 39176
FOR UNITS WITH SERIAL NUMBER 38348 AND UP
REVISED 08/01/03



OPERATION, MAINTENANCE, SERVICE and PARTS MANUAL

NOTE: It is the responsibility of the customer or user's management to train, educate or supervise his employees in the proper operation and maintenance of this equipment.

ROSCO - A LeeBoy Company

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INTRODUCTION

INTRODUCTION

This manual has been compiled to assist the owner and/or operator with the correct operation and routine preventive maintenance procedures for the Hydraulic Chipspreader, with front wheel drive and 4-wheel drive (HCS-F/F4), as manufactured by ROSCO MANUFACTURING COMPANY (ROSCO) of Madison, South Dakota, U.S.A. A parts catalog is also included in this manual to allow for the accurate ordering of repair parts from Authorized Rosco Dealers/Distributors.

THIS MANUAL HAS BEEN ORGANIZED INTO SIX (6) MAJOR SECTIONS:

1. INTRODUCTION
2. SAFETY
3. OPERATION
4. MAINTENANCE
5. TROUBLESHOOTING
6. PARTS CATALOG

A general contents page is located at the beginning of this manual as a quick reference to the these sections and their major subsections. In order to receive the performance and efficiency that has been designed into the HCS-F/F4 Chipspreader, it is very important to:

A. Read this manual thoroughly before operating or servicing the Chipspreader.
B. Keep this manual in a convenient place for ready reference.
C. Not attempt to make repairs or adjustments you do not understand. If you require additional information or service, contact your Authorized ROSCO Dealer/Distributor.

Throughout this manual references are made to the **LEFT SIDE** and **RIGHT SIDE** of the Chipspreader. These terms are used as the HCS-F/F4 Chipspreader is viewed from the rear of the machine.

Serial Number - It is important to know the Serial Number of this equipment. The Serial Number Plate is located on the left side of the machine below the power gate control. Record the Serial Number in the space below. Use the Serial Number in all correspondence referring to the HCS-F/F4 Chipspreader and when ordering parts.

Model _____

Serial Number _____

Production Year _____

Design Specifications - ROSCO MANUFACTURING COMPANY reserves the right to make design or specification changes without prior notification or to make any other improvements without incurring obligations to add them to any machine in existence.

Technical Information - ROSCO MANUFACTURING COMPANY is continuously improving its products. The technical information found in this manual was correct at the time it was approved for publication. However, if you find differences between your Chipspreader and the information contained in this manual, please contact your local Authorized ROSCO Dealer/Distributor.

INTRODUCTION

LIMITED WARRANTY POLICY & PROCEDURES

A. WARRANTY

1. If a defect in material or workmanship is found and the authorized Dealer is notified during the waranty period, ROSCO will repair or replace any part or component of the unit or part that fails to conform to the warranty during the warranty period.

2. The warranty will begin upon the completion of the warranty form by the initial customer and will expire after twelve (12) months have passed. The Warranty Card must be filled out within ten (10) days of delivery of the unit.

3. Engines and truck chassis are warranted by their manufacturers and may have warranty coverage that differs from that of ROSCO.

4. Replacement parts furnished by ROSCO are covered for the remainder of the warranty period applicable to the unit or component in which such parts are installed.

5. ROSCO has the right to repair any component or part before replacing it with a new part.

6. All new replacement parts purchased by a ROSCO dealer will carry a six (6) month warranty. Remanufactured parts purchased by a ROSCO dealer will carry a ninety (90) day warranty.

B. LIMITATIONS

ROSCO has no obligation under this warranty for:

1. Any defects caused by misuse, misapplication, negligence, accident or failure to maintain or use in accordance with the most current operating instructions.

2. Unauthorized alterations.

3. Defects or failures caused by any replacement parts or attachments not manufactured by or apporved by ROSCO.

4. Failure to conduct normal maintenance and operating service, including without limitation, providing lubricants, coolant, fuel, tune-ups, inspections or adjustments.

5. Unreasonable delay, as established by ROSCO, in making the applicable units or parts available upon notification of a service notice ordered by ROSCO.

6. The warranty responsibility on all engines and/or truck chassis rests with the respective manufacturer.

7. ROSCO may have support agreements with some engine and/or truck chassis manufacturers for warranty and parts support.

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LIMITED WARRANTY POLICY & PROCEDURES

C. ITEMS NOT COVERED

ROSCO is not responsible for the following:

1. Charges for travel time, mileage or overtime.

2. Charges related to transporting the product to and from the place at which warranty work is performed.

3. Freight charges related to transporting repair parts to the place at which warranty work is performed.

4. All used units or used parts of any kind.

5. Repairs made necessary by normal wear and tear or brought about by abuse or lack of maintenance of the equipment, except for premature failures.

6. Attachments not manufactured or installed by ROSCO.

7. Liability for incidental or consequential damages of any type, including, but not limited to lost profits or expenses of acquiring replacement equipment.

8. Miscellaneous charges.

D. OTHER WARRANTIES

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESSED, STATUATORY AND IMPLIED WARRANTIES APPLICABLE TO UNITS, ENGINES OR PARTS, WITHOUT LIMITATION, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE OR PURPOSE. IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT OR WARRANTY, OR ALLEGED NEGLIGENCE OR LIABILITY WITHOUT FAULT, SHALL ROSCO BE LIABLE FOR SPECIAL, INDIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOSS OF PROFIT OR REVENUE, COST OF CAPITAL, COST OF SUBSTITUTED EQUIPMENT, FACILITIES OR SERVICES, DOWN TIME COSTS, LABOR COSTS OR CLAIMS OF CUSTOMERS, PURCHASERS OR LESSEES FOR SUCH DAMAGES.

INTRODUCTION

SPECIFICATIONS: HCS-F/F4 CHIPSPREADER

Rosco Manufacturing Company is continuously improving its products. The information found in this manual was correct at the time it was approved for publication.

DIMENSIONS

WHEEL BASE ..... 126 inches (320 cm)
OUTSIDE TURNING RADIUS ..... 246 inches (625 cm)
HEIGHT ..... 100 inches (254 cm)
WIDTH (body) ..... 153 inches (389 cm)
MINIMUM GROUND CLEARANCE ..... 7 inches (18 cm)
OVERALL LENGTH ..... 294 inches (747 cm)
TRACK WIDTH, front ..... 76.5 inches (194 cm)
TRACK WIDTH, rear ..... 91 inches (231 cm)
WEIGHT (without hopper) ..... 12,580 lbs (5706 kg)
TIRE SIZE (Std) ..... 385/65R x 22.50

DRIVE TRAIN

ENGINE:
Type ..... 6-cyl, water cooled diesel
Make and Model ..... Cummins 6BT5.9
Displacement ..... 359 in^3 (5.88 liters)
Bore ..... 4.02 inches (102 mm)
Stroke ..... 4.72 inches (120 mm)
Power @ 2200 rpm ..... 156 hp (116 kw)
Ignition System ..... 12 volt
Battery (2) ..... 12 volt (950 CCA rated)
Alternator ..... 63 Amp rated
Air Cleaner ..... dry type, dual element
Oil Filter ..... full flow
Oil Capacity ..... 17.3 quarts (16.4 liters)
Idle Speed ..... 600 rpm
Fuel Tank Capacity ..... 50 gallons (189 liters)
Cooling System Capacity ..... 31 quarts (29 liters)
STEERING ..... Full Hydraulic, Orbitol Motor with Automotive Steering Wheel
HYDROSTATIC DRIVE SYSTEM:
Pump, Make and Model ..... Sauer/Sundstrand 90 series
Pump, Displacement (2) ..... 4.57 CIR (75 cc)
Motor, Make and Model ..... Sauer/Sundstrand 51 series
Motor, Displacement ..... 6.10 CIR (100 cc)
Torque Hub, 4 wheel drive only ..... 23.50:1 ratio
Control Handle ..... J.R. Merritt
Hydraulic Reservoir ..... 30 gallons (113 liters)
Fluid Type ..... ISO 68
Filters ..... 10 Micron, spin-on type
Oil Cooler ..... flow-thru type

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AUXILIARY SYSTEMS

Pump, Tandem without Flow Control (2) ..... Gear
Motor, Conveyor (2) ..... Gerotor
Motor, Spreadroll ..... Gerotor

MISCELLANEOUS EQUIPMENT

Instrumentation ..... Oil Pressure, Coolant Temperature, Voltmeter, Hourmeter, Hydraulic Temperature, Fuel Level, Tachometer
Engine Warning System ..... High Coolant Temperature/Low Oil Pressure
Seat (dual) ..... Suspension with Seat Belt
Dynamic Braking, rear (4WD) ..... Dynamic Hydrostatic
Service Brakes, front ..... Hydraulic Power Assist Drum
Parking Brakes, rear (2) ..... Spring Applied, Hydraulic Release
Horn ..... 12 volt
Back-up Alarm ..... 5db above ambient to 112 db
Front Hopper Sizes:
- 10 ft (3.05 m) ..... 2300 lbs (1043 kg)
- 11 ft (3.35 m) ..... 2420 lbs (1098 kg)
- 12 ft (3.66 m) ..... 2570 lbs (1166 kg)
- 13 ft (3.96 m) ..... 2725 lbs (1236 kg)
- 13.5 ft (4.12 m) ..... 2800 lbs (1270 kg)
- 14 ft (4.27 m) ..... 2875 lbs (1304 kg)
- 14.5 ft (4.57 m) ..... 2950 lbs (1338 kg)
- 15 ft (4.57 m) ..... 3030 lbs (1374 kg)
- 16 ft (4.88 m) ..... 3185 lbs (1445 kg)

OPTIONAL EQUIPMENT

Engine (200 hp) ..... Cummins 6BTA5.9
Lights ..... Work Lights, Tail and/or Turn
Rotating Beacon ..... 12 volt
Ether Start (Metered System) ..... 12 volt
Engine Shut Down System ..... High Engine Temp/Low Oil Pressure
Aggregate Placement Screen ..... Wire Mesh
Stemco Axle Seals
Second Hopper Agitator
Tires and Wheels (Single Rear) ..... 11.00 x 22.50 Smooth Compaction
Tires and Wheels (Dual Rear) ..... 11.00 x 22.50 Smooth Compaction
Tires and Wheels (Single Rear) ..... 15.00 x 22.50 Duples Flotation
Tires and Wheels (Single Rear) ..... 11.50 x 22.50 Highway Tread

SAFETY

SAFETY

SAFETY ALERT SYMBOLS

This Safety Alert symbol means
ATTENTION ! BECOME ALERT!
YOUR SAFETY IS INVOLVED!

The Safety Alert symbol identifies important safety messages on the ROSCO HCS-F/F4 Chipspreader and in its manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you ?

3 Big Reasons:
- **Accidents Disable and Kill**
- **Accidents Cost**
- **Accidents Can be Avoided**

SIGNAL WORDS

Note the use of the signal words **DANGER, WARNING** and **CAUTION** with the safety message. The appropriate signal word for each message has been selected using the following guidelines:

DANGER: An immediate and specific hazard which WILL result in severe personal injury or death if the proper precautions are not taken.

WARNING A specific hazard or unsafe practice which COULD result in severe personal injury or death if proper precautions are not taken.

CAUTION Unsafe practices which COULD result in personal injury if proper practices are not taken, or as a reminder of good safety practices.

EQUIPMENT DAMAGE SYMBOL

Throughout this manual, whenever you see this “broken bolt” symbol, it means:

ATTENTION: Equipment on the machine could be damaged through improper performance of an operation, maintenance or repair procedure.

SAFETY

You are responsible for the safe operation and maintenance of your ROSCO Chipspreader. **You** must ensure that **you and anyone** else who is going to operate, maintain or work around the machine be familiar with the operating and maintenance procedures. Special attention should be given to learning and understanding the safety information contained in the manual.

In accordance with OSHA regulations 1928.51 and 1928.52, operating instructions must be provided initially to operators or employees before allowing them to operate the ROSCO Chipspreader, and at least annually thereafter.

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

Do not modify the ROSCO Chipspreader in any way. Unauthorized modification may impair function and/or safety and affect the working life of the equipment.

ROSCO Manufacturing Company assumes **NO LIABILITY** for accident or injury incurred through the improper use of this equipment.

SAFETY PRECAUTIONS

GENERAL

1. **Read and fully understand** the Operator's Manual and the Safety Decals on the machine **before** trying to operate or service this equipment.

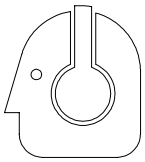
2. Have a first-aid kit available and **know how to use it**.

3. Keep a charged fire extinguisher within reach whenever you work in an area where fire may occur. Have the correct type of extinguisher for your situation and **know how to use it**.

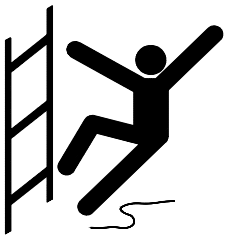
Type A: Wood, paper, textile and rubbish
Type B: Flammable liquids
Type C: Electrical equipment

4. **Wear safe work clothing**. Do not wear clothing that is loose fitting or in poor repair when working on machinery. **Do not wear rings** or wrist watches when working on machinery. They can catch on moving parts and pull you into the machinery, causing serious injury. Wear sturdy, rough-soled work shoes, safety glasses and any other protective gear that is warranted by the work environment.

5. Keep work area organized and clean. Wipe up oil spills of any kind. Keep tools and parts off floor. Eliminate the possibility of a fall which could result in serious injury.



6. **Wear appropriate ear protection** when exposed to loud noise for prolonged periods of time. Permanent loss of hearing can result from prolonged exposure.



7. **Do not hurry!** Use recommended hand holds and steps with at least three points of support when

SAFETY

getting on and off the Chipspreader. Keep steps, floor, hand holds and controls clean and free from grease. Face the machine when climbing up and down and **never** jump off or dismount while the machine is in motion. Falls from the machine can cause serious injury.

8. **Do not smoke** around machinery. Fuel, emulsion and the fumes from both can explode when exposed to flame or heat from smoking or other sources.

9. **Do not get in** or on top of the spread hopper when the Chipspreader is in operation or moving. Death or serious injury can occur from entanglement in moving parts.

10. **Always wear your seat belt**.

STARTING AND STOPPING PRECAUTIONS

BEFORE STARTING:

1. Walk around the Chipspreader and **warn all personnel** in the area before starting the machine. Do not start until the area is clear. Death or serious injury can occur to bystanders from being crushed under a moving machine or being hit by debris.

2. Before starting, **check brakes, steering and other control devices** in accordance with instructions. Be sure parking brake is applied, the Forward/Reverse control is in neutral and the right hand arm rest is **down**. Turn off conveyor and hopper controls.

3. Adjust, secure and latch the seat belt before starting the machine. Start or operate the machine **only** from the operator's seat.

4. **Do not bypass** the Chipspreader's neutral-start system. The system must be repaired if it malfunctions.

WARNING: *DO NOT operate the engine in an enclosed area without proper ventilation. Exhaust gases are orderless and deadly.*

WHEN PARKING:

1. Park the Chipspreader on level ground whenever possible and **always apply the parking brake**. On grades, park the Chipspreader with the wheels securely blocked.

2. Before leaving the operator's station, place the Forward/Reverse handle in neutral, turn off all accessories, conveyor and hopper controls, set the parking brake and **shut off the engine**.

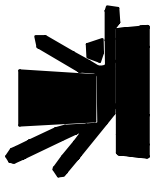
3. Remove the ignition key when leaving the Chipspreader parked or unattended.

OPERATING PRECAUTIONS

1. Always comply with local regulations regarding moving equipment on public roads and highways. **DO NOT DRINK AND DRIVE and ALWAYS USE SEAT BELTS.**

2. Know and use the hand signals required for a particular job and know who has the responsibility for signaling.

3. Be sure that all lights and reflectors comply with state and local regulations. Make sure they are clean, in good working order and are clearly visible to all overtaking and oncoming traffic.



4. Do not stand between the equipment and the truck while the truck is being coupled with the Chipspreader. Death or serious injury can result from being crushed between the two machines.

5. **Do not permit riders** on the Chipspreader who are not provided with a specific seat and seat belt. Do not ride on hopper. Death or serious injury can result from riders falling off or under the machine while in motion.

6. The Chipspreader is designed to operate specifically on new seal coat surfaces which may be slippery. Therefore, the Chipspreader is designed with a **reduced braking capability** in order to prevent scuffing new surfaces. In some cases, the truck should assist in stopping.

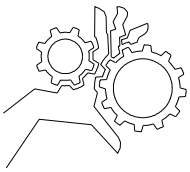
SAFETY

On other surfaces, stopping distances must be watched, particularly when towing a truck or going downhill. The larger the truck, the more slippery the surface, or steeper the grade, the longer the stopping distance. **Familiarize yourself** with these variables so that you can anticipate when a longer stopping distance is required.

7. Observe all gauges or warning instruments. **Do not operate unit** when a warning buzzer or light is "ON". Shut down the machine and report the problem to a supervisor. If the failure causes loss of control such as steering, service brakes or engine power, stop the Chipspreader motion as quickly as possible, apply parking brake, and keep machine securely parked until failure is corrected or the machine can be safely towed.

8. **Drive with care**. Make sure speed is compatible with conditions. **Use caution** on rough ground, slopes or when turning.

9. **Be alert for hazards** and obstructions such as ditches, trees, cliffs, overhead power lines or areas where there is danger of a slide. Be aware of and understand the job site traffic flow patterns and obey flagmen, road signs and signals.



10. Watch for bystanders and **never allow anyone** to be under or reach through the Chipspreader and its equipment while operating.

11. When roading a Chipspreader, **know and use required signaling devices**. Use tail lights, slow moving vehicle signs and/or a warning beacon when traveling on public roads. Provide an escort for roading when required.

12. **Do not tow** the Chipspreader, except to remove from road or to load on a trailer.

13. When towing with the Chipspreader, **only** use the Rear Truck Hitch.

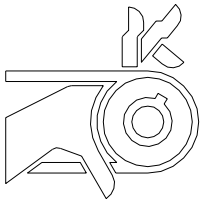
MAINTENANCE PRECAUTIONS

1. **Do not attempt repairs unless trained.** Refer to manuals and experienced repair personnel for help.

2. Wear safety glasses and other required safety equipment when servicing or making repairs.

3. Follow good shop practices: Keep service area clean and dry. Be sure electrical outlets and tools are properly **grounded**. Use adequate light for the job at hand. **Disconnect the battery** before working on the electrical system.

4. Place all controls in neutral, apply parking brake, shut engine off, remove ignition key and wait for all moving parts to stop before servicing or repairing equipment. Death or serious injury can occur from entanglement in moving parts.



5. **Block any working components** to prevent unexpected movement while repairs are being made. Securely block the machine and any components that may fall.

6. **Never make repairs** on pressurized components, fluid, gas or mechanical items until the pressure has been relieved according to instructions. Use **extreme caution** when removing radiator cap, drain plug, grease fittings or pressure taps.

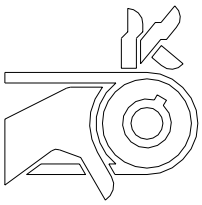
7. When inflating tires, use a **self-attaching inflation chuck** with remote shut-off and stand clear of the tire.

8. When servicing or replacing hardened pins etc., use a brass drift or other suitable material between the hammer and pin. Wear appropriate protection to prevent injury to face and eyes.

SAFETY

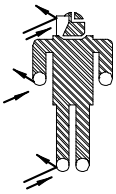
9. Do not operate the unit with loose wheels or rims. Check wheel nuts periodically for tightness. Refer to the Bolt Torque chart at the end of the **Maintenance Section** of this manual.

10. Keep brakes and steering systems in good operating condition.



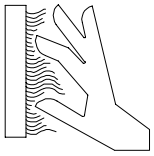
11. Make sure all guards are in place and properly secured when maintenance work is completed. Death or serious injury can occur from entanglement in unguarded moving parts.

HOT MATERIAL PRECAUTIONS



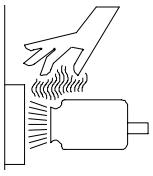
1. Wear protective gear for face, hands, feet and body when operating the Chipspreader.

2. When hot asphalt touches skin, flush area immediately with cold water. **Do not apply ice** to the affected area. DO NOT ATTEMPT TO REMOVE ASPHALT CEMENT with products containing solvents or ammonia. Natural seperation will occur in about 48 - 72 hours. **Get medical attention as soon as possible!**



3. **Allow machine to cool** before repairing or maintaining working components.

4. **Do not remove radiator cap**, drain plugs, or service grease fittings or pressure taps when engine is hot. Add coolant to the radiator and perform other service only when the engine is stopped and fully cooled.

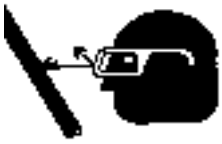


HYDRAULIC SYSTEMS PRECAUTIONS

1. Make sure that all components are in good working condition. Replace any worn, cut, abraded, flattened or crimped hoses and metal lines.

2. **Do not make repairs** using tape, clamps or cements. The hydraulic system operates under extremely high pressure and such repairs can fail, causing a hazardous condition.

3. Wear proper hand and eye protection when searching for a high pressure leak. Use a piece of wood or cardboard as a back stop instead of hands to isolate and identify leaks.



Do not use your hands. Relieve pressure on the system before doing any repairs or disconnecting lines, hoses or valves. Before reapplying pressure to a hydraulic system, make sure all lines, fittings and couplings are tight and in good repair.

4. Pressurized hydraulic fluid or oil has sufficient force to penetrate the skin. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin. If injured by a high pressure steam or hydraulic fluid, **seek medical attention immediately**.

REFUELING PRECAUTIONS

1. **Handle fuel with care**. It is highly flammable. When refueling, keep the hose nozzle or funnel in contact with the metal of the fuel tank to avoid an electrical spark igniting the fuel. Maintain control of filler nozzle.

2. Clean up spilled fuel before restarting the engine. A spark could ignite the spillage.

3. **Do not smoke** when refueling and **never refuel** when the engine is running. **Do not refuel** the machine near open flame or sparks. **Do not use fuel** for cleaning purposes. Death or serious injury can occure from explosion or fire.

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4. Fill fuel tank outdoors to reduce the chance of fumes accumulating and causing a fire or explosion. Keep the hose nozzle or funnel inside the tank while filling to avoid spilling fuel. Spilled fuel is a fire hazard.

5. **Prevent fires** by keeping the machine clean of accumulated debris, grease and spilled fuel.

6. **Do not fill tank to capacity**. Allow room for expansion. Expansion and spillage create a fire hazard.

7. Tighten fuel cap securely. If fuel is lost, replace it only with the original manufacturer's approved cap. A non-approved cap may result in pressurization of the tank.

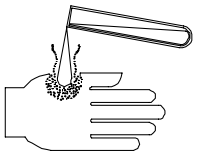
8. Use the correct fuel grade for the operating season. Refer to the Hydraulic Fluid chart in the **Maintenance Section** of this manual.

BATTERY PRECAUTIONS

1. Keep all sparks and flames away from batteries. Fumes from the battery's **electrolyte solution is extremely explosive**. Acid propelled by an explosion can cause blindness if it comes in contact with eyes.

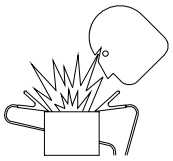
2. **Always wear safety glasses** when working near batteries. If you come in contact with battery electrolyte solution, **wash off immediately**. Chemical burns can cause injury.

3. Do not tip batteries more than 45 degrees to avoid spilling electrolyte solution and causing a chemical burn.



4. To avoid injury from a spark or short circuit, **disconnect the battery ground cable** before servicing any part of the electrical system. Failure to do so can result in electrical shock or burns.

5. Use jumper cables **only** in recommended manner. Improper use can result in battery explosion or unexpected Chipspreader motion. Refer to the Engine and Battery pages of the **Maintenance Section** of this manual.



TIRE PRECAUTIONS

WARNING: *DO NOT mount or demount tires without proper training. A violent explosion like a bomb can occur.*

Follow all procedures and safety instructions. Wall charts containing mounting and demounting instructions for all rims are available through the United States Department of Transportation (DOT), Washington, D.C.

Note: When in doubt, have a qualified tire dealer or repair service perform required tire maintenance.

INSPECTION

1. Clean and repaint rims to stop corrosion and to facilitate checking and tire mounting. Clean all dirt and rust from the lock ring and gutter. **This is important** to secure the lock ring in the proper position.

2. Check rim components periodically for cracks. Replace all cracked, badly worn, damaged and severely rusted components with new parts of the same size and type. If you are not sure about proper mating of tire and wheel parts, consult a rim and wheel expert. This may be the tire man servicing your equipment or the rim and wheel distributor in your area.

3. **Do not rework**, weld, heat or braze any rim components that are cracked, broken or damaged. **Replace** with like parts. Mixing parts of one type with those of another is potentially dangerous.

SAFETY

4. **Do not reinflate** a tire that has been run flat without first inspecting the tire, tube, flap, rim and wheel assembly. Double check the side ring and the "O ring" for damage and make sure that they are secured in the gutter before inflation.

DEMOUNTING

1. **Remove valve core** to exhaust all air from tire. **Always** exhaust all air from tire prior to removing rim components or wheel components such as nuts or rim clamps. Check the valve stem by running a piece of wire through the stem to make sure it is not plugged.

2. **Do not demount** a tire unless you have the proper equipment and experience to do the job.

MOUNTING AND INFLATION

1. Do not seat rings or other components by hammering while tire is inflated or partially inflated. Double check all components prior to inflation.

2. **Do not inflate** a tire before all components are properly in place. Place tire in a safety cage and inflate to approximately 10 psi. Recheck components for proper assembly. If assembly is wrong, deflate and correct.

3. **Never hammer** on an inflated or partially inflated tire/rim assembly. If assembly is proper at 10 psi, continue to inflate to fully seat the tire beads. Then completely deflate the tire to prevent localized overstretching of the tube. Reinflate to recommended operating pressure.

4. Never sit on or stand in front of a tire/rim assembly being inflated. Use a clip-on chuck and make sure inflation hose is long enough to permit the person inflating the tire to stand to the side of the tire.

5. **Do not hammer** components with steel hammers. Use rubber, lead, plastic or brass faced mallets to tap components together.

SERVICING TIRE AND RIM ON VEHICLE

1. **Do not drive** an assembled or partially assembled tire/rim over a cast spoke wheel by hammering. **STOP!** Deflate and examine to determine the reason for the improper fit. Look for distortion or components that are not properly locked or seated.

2. Block the tire and wheel on opposite side of the vehicle before you place the jack in position. **Always** put hardwood blocks under the jack and crib up the vehicle in case the jack slips.

OPERATION

1. **Do not inflate tires** beyond the maximum recommended inflation pressure.

2. **Never run** a vehicle on one tire of a dual assembly. The carrying capacity of the single tire and rim is dangerously exceeded, and operating a vehicle in this manner can damage the rim and tire.

WARNING: *Mismatched rim parts are dangerous and could cause SEVERE injury.*

BRAKING PRECAUTIONS

1. The operator must become accustomed to using the Hydrostatic Transmission to assist in braking. This is done by moving the Speed/ Direction Joystick into the neutral position before applying the Service Brakes with the foot pedal.

2. The Service Brakes alone are **not sufficient** to stop the Chipspreader if it is operating in a Forward or Reverse drive mode.

CAUTION: *Do not engage the park brake while the machine is in motion. Instantaneous damage will occur.*

SAFETY

3. Stopping distances must be carefully anticipated when towing a truck and/or going downhill. The larger the truck being towed or the steeper the grade, when going downhill, the longer it will take to stop the Chipspreader. In some cases, the truck being towed should assist in braking. Advise the truck driver of this requirement.

4. Familiarize yourself with road conditions and road surface variables so you can anticipate when a longer stopping distance is required.

STORAGE PRECAUTIONS

1. Store the Chipspreader in an area away from human activity.

2. Do not permit children to play on or around the stored machine! Serious injury can occur from falling from the machine.

3. Make sure the unit is stored in an area that is firm, level and free of debris.

4. Store the machine inside a building or cover securely with a weatherproof tarpaulin.

SAFETY DECALS

1. Become familiar with the content and position of each safety decal. **Important information** is written on the decals. The location and description of each safety decal is described or illustrated on the following pages.

2. Keep safety decals and signs clean and legible at all times

3. Replace all missing, illegible or damaged safety signs.

4. When replacing parts that previously displayed a safety decal, be sure to replace the decal.

5. Obtain safety decals or signs from your authorized ROSCO Dealer.

DECAL INSTALLATION

1. Be sure that the installation area is clean and dry. Use hot soapy water and dry the area thoroughly before installing decals.

2. Decide on the exact position by taking measurements and test fitting before you remove any of the backing paper.

3. For decals with no top protection paper, decide on the decal location and remove the smallest portion of the split backing paper.

4. Align the decal over the specified area and carefully press the small portion with the exposed adhesive backing into place.

5. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.

6. Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.

7. If the decal has a protective top paper, use hot soapy water on the surface to which the decal is being applied. Leave wet. After deciding on the location, remove the backing paper and soak the decal in clean soapy water before application. This will help prevent air bubbles in the finished decal.

8. Smooth the decal into place with a sponge and check for air bubbles. Small air pockets may be pierced with a pin and smoothed out. When the decal is completely smoothed out, carefully remove the top paper.

SAFETY

SIGN-OFF FORM

ROSCO Manufacturing Company follows the general Safety Standard specified by the Society of Automotive Engineers (SAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or servicing the SPREADPRO Chipspreader must read and clearly understand all safety, operating and maintenance information presented in this manual. Do not operate or allow anyone to operate this equipment until such information has been reviewed. Annually review this information before the season start-up. Make these periodic reviews of SAFETY and OPERATION a standard practice for all your equipment. An untrained employee is unqualified to operate this machine.

A sign-off sheet is provided for your record keeping to show that all personnel who will be working with the Chipspreaders have read and understand the information in the Operator's Manual and have been instructed in the operation of this equipment.

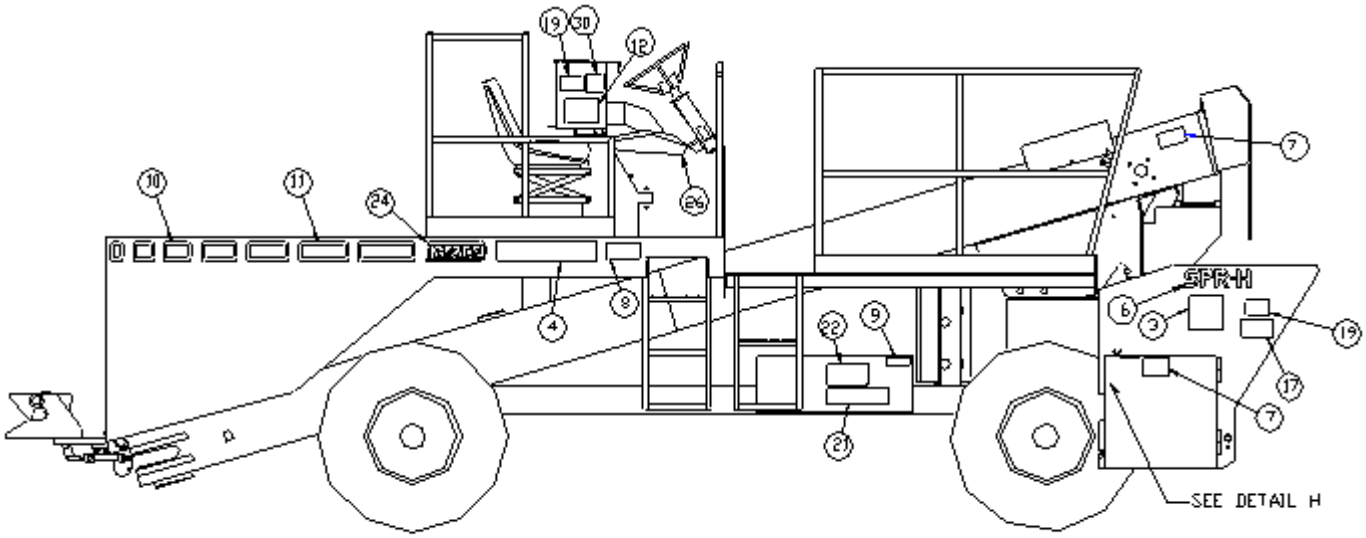
Date	Employee Signature	Employer Signature

SAFETY

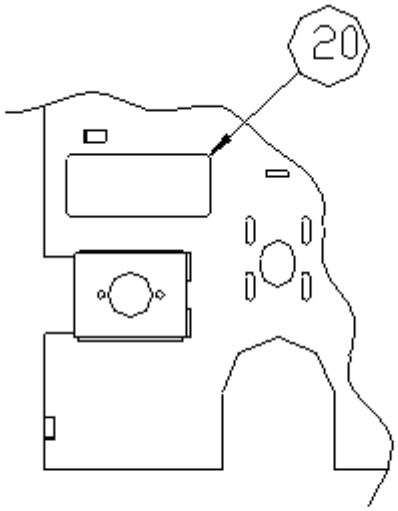
SAFETY DECAL LOCATIONS

The types of Safety Decals and their location on the Chip Spreader are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various Safety Decals, the type of warning and the area or particular function related to that area, which requires your SAFETY AWARENESS.

The numbers on the illustrations show the placement of all decals on the Chip Spreader and refer to the list of decal parts found in the Parts Book Section of this manual. The Safety Decals are illustrated on the following pages and use the same numbers for easy reference.

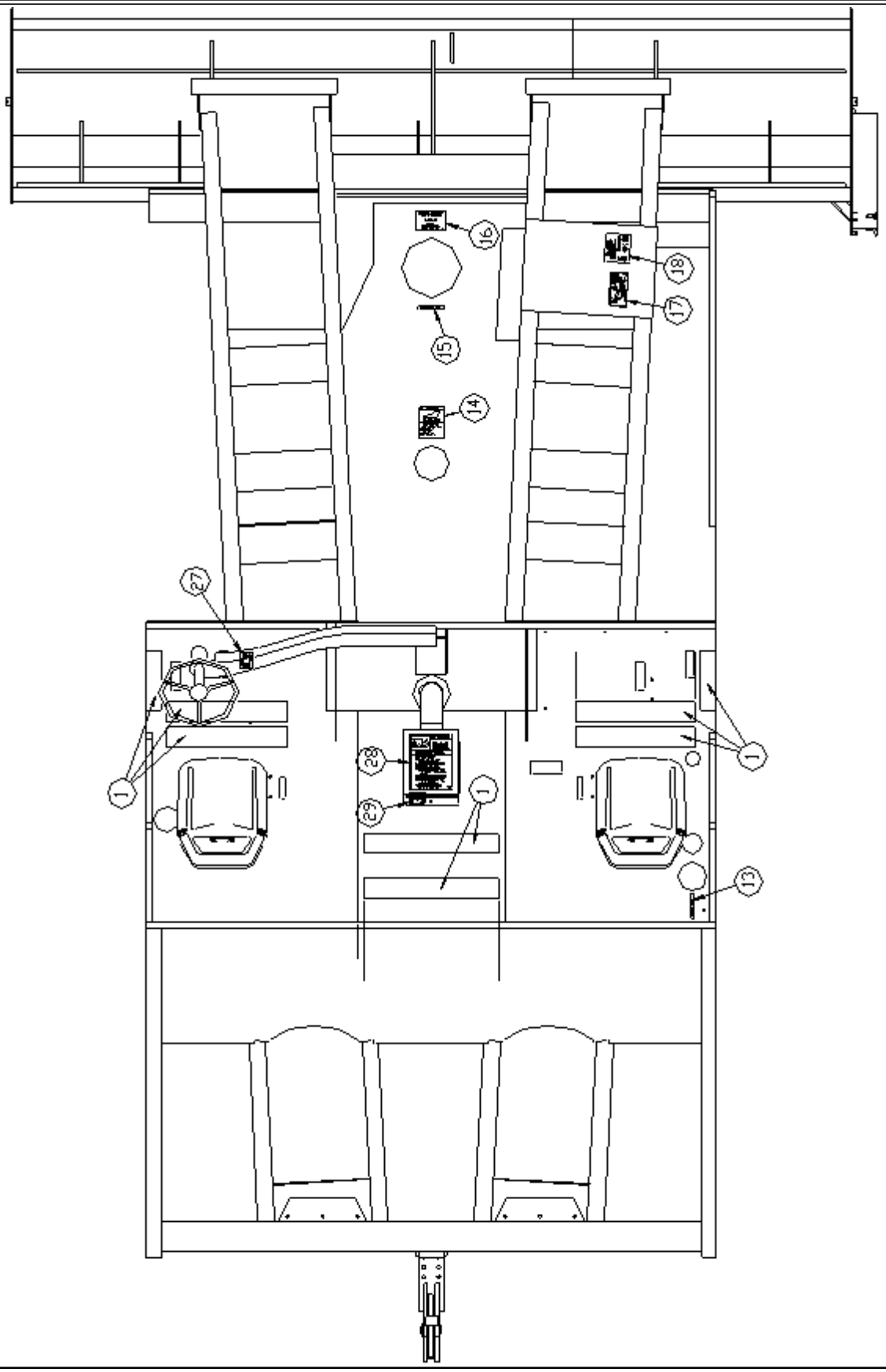


RIGHT SIDE VIEW



DETAIL H
SHOWN WITH CHAIN GUARD REMOVED

SAFETY



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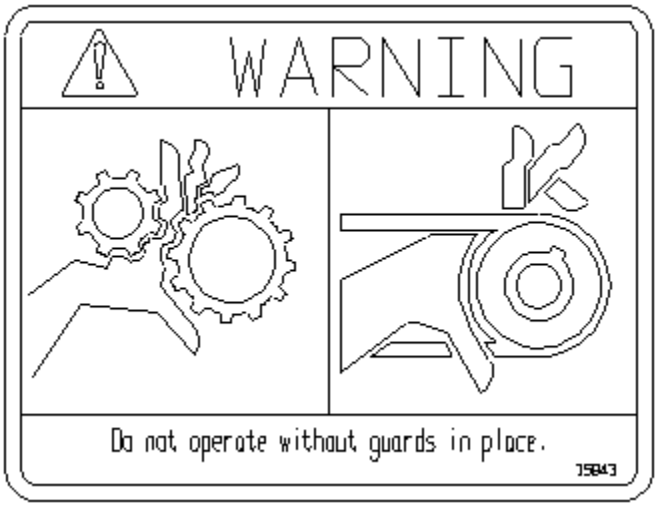
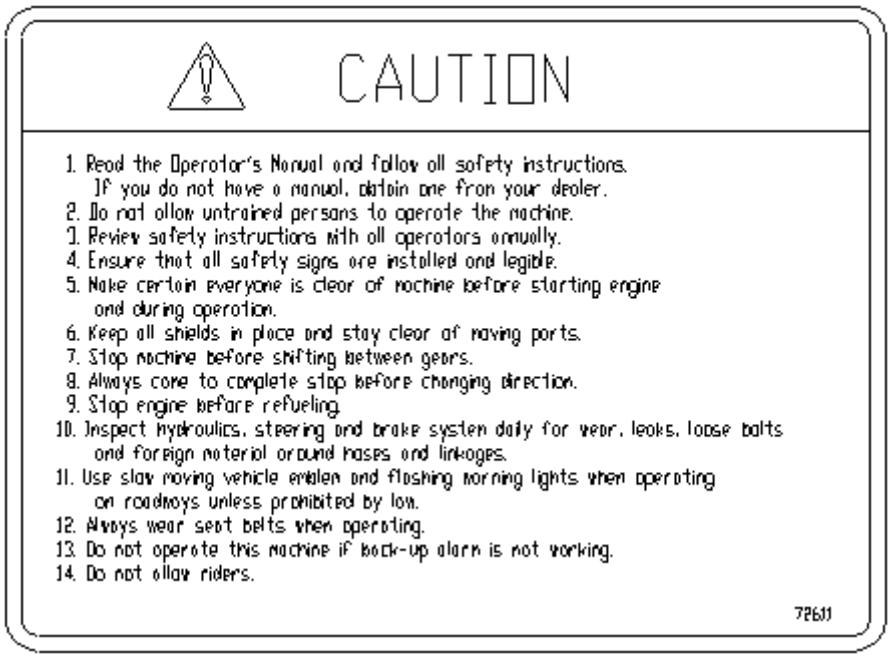


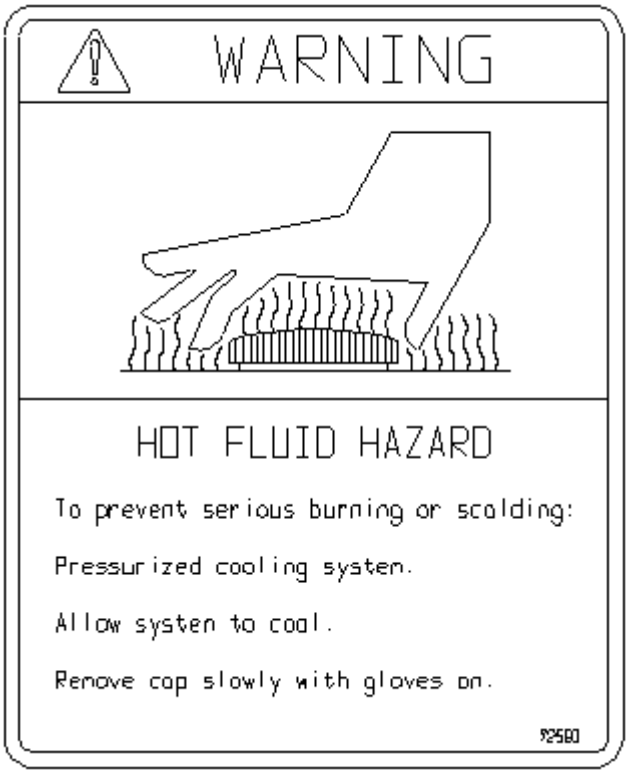
DECAL 7 --- P/N 35943

DECAL 8 --- P/N 36202

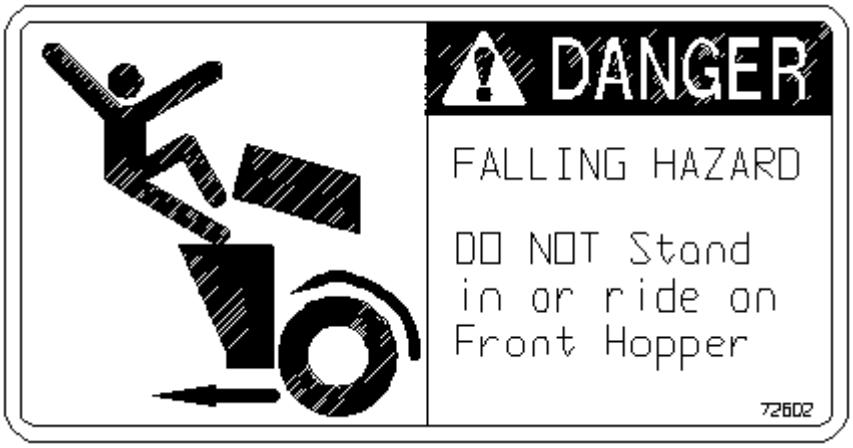


DECAL 12 --- P/N 72611

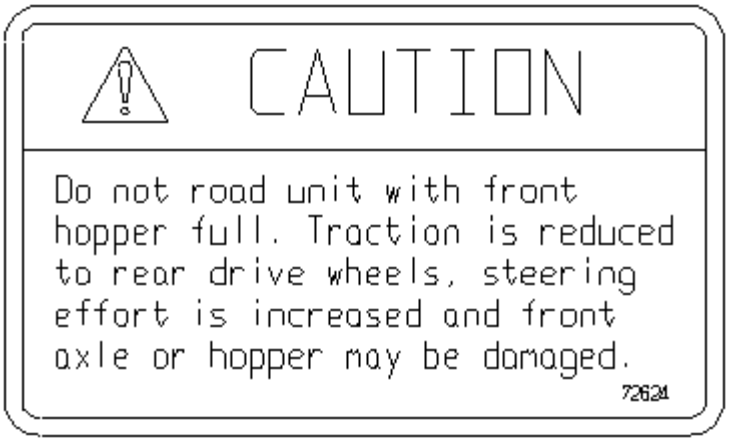
SAFETY



DECAL 14 --- P/N 72590

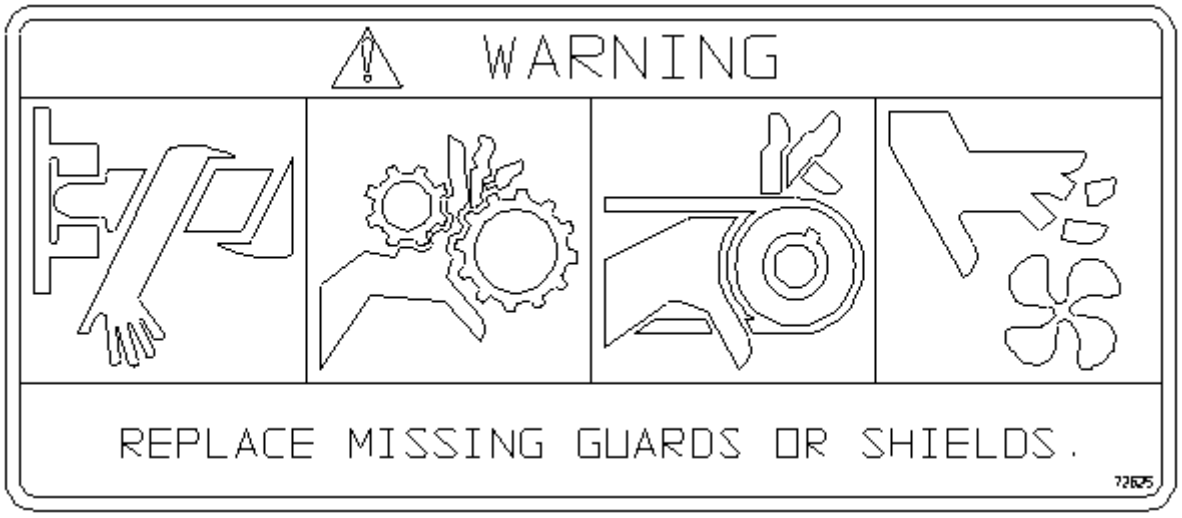


DECAL 17 --- P/N 72602

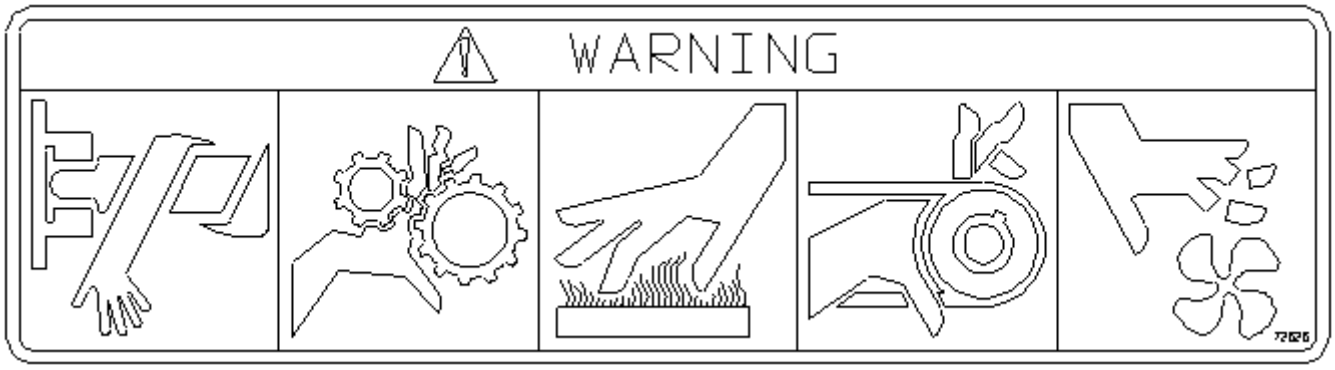


DECAL 19 --- P/N 72624

SAFETY

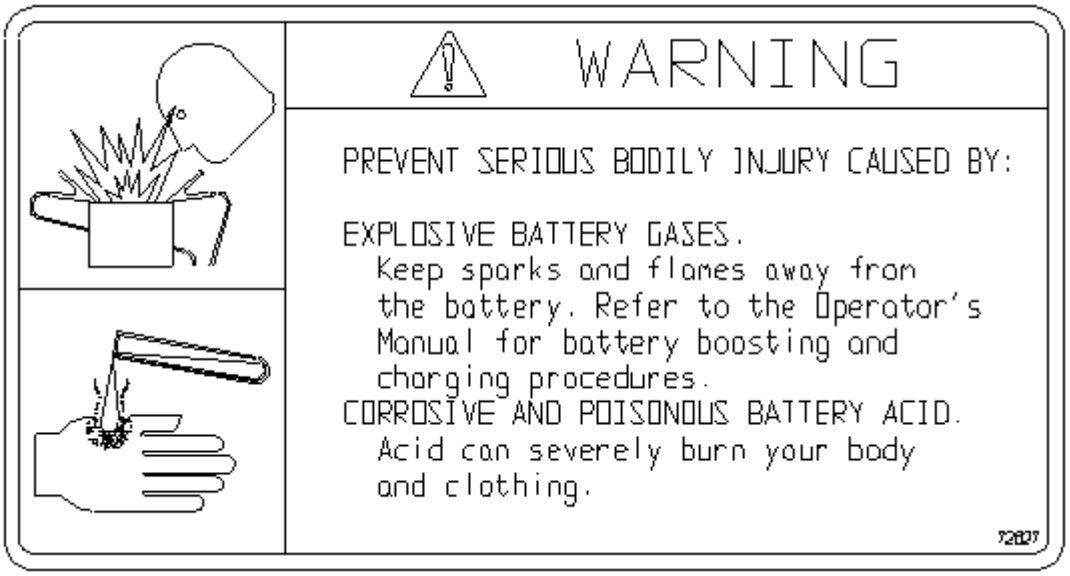


DECAL 20 --- P/N 72625

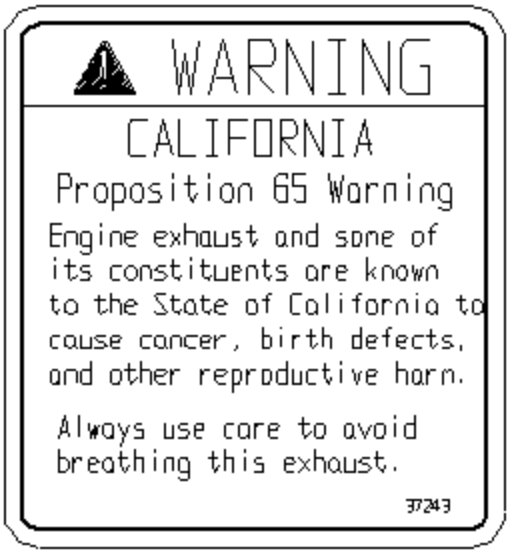


DECAL 21 --- P/N 72626

SAFETY



DECAL 22 --- P/N 72627



DECAL 30 --- P/N 37243

OPERATION

OPERATION

GENERAL

The ROSCO Hydrostatic Drive Chipspreader, with front wheel drive and optional 4-wheel drive, was designed and built to handle and accurately apply all **uniform** types of aggregate materials to road surfaces. In addition, the Chipspreader was designed to permit operation by a single person, the driver, from either side of the machine.

Note: Non-uniform materials such as sand with wet and dry spots will have an increased range of dispersal. A non-satisfactory seal will result.

To obtain the maximum performance and efficiency designed into the Chipspreader, owners and operators **must** identify and understand the function and operation of all systems and components. All functions of the unit are covered in this section and it is vital that the operator read this entire section **before** operating or servicing the unit.

The ROSCO Chipspreader may be delivered with various options installed, depending on the requirements of the job or customer specifications. This manual describes available options, some of which may not be included on your Chipspreader. Disregard those sections of the manual referring to equipment and features not supplied with your unit.

AGGREGATE SELECTION AND APPLICATION

The ROSCO Chipspreader is capable of spreading a wide variety of aggregate in the surface treatment of asphalt pavements. Such treatments are used to seal the asphalt surface from weathering problems caused by water and air permeation, and as an aid in preventing traffic wear to the pavement, thus extending the pavement life while providing a better non-skid surface.

The Chipspreader produces a higher duration chip seal because of the aggregate separation effect of the spreadroll. The rotation of the spreadroll throws the larger aggregate ahead so they land in the asphalt before the smaller particles. The smaller particles then "chock" the larger particles in place. The effect of this system is not only a chip seal with a longer life by better bonding of all sized particles, but less chance of particles becoming loosened by traffic and causing damage to vehicles.

TYPES OF TREATMENTS

Usually, there are three types of asphalt/aggregate surface treatments used. The three treatments are:

Single Surface Treatment - This treatment is used to prevent wear and aid in waterproofing a surface. It involves a single pass of sprayed asphalt followed at once by a single layer of aggregate.

Multiple Surface Treatment - This treatment provides greater surface protection against both traffic wear and weather. It is made by using two or more alternating layers of asphalt and aggregate. Each succeeding layer of aggregate should be no more than one half the size of the aggregate in the preceding layer.

Sand Seal - This treatment is used to provide a tight seal against the weather and to make the surface more skid resistant. Its construction is comparable to a Single Surface Treatment.

MATERIAL SELECTION

In general, the majority of **hard** aggregates can be used for aggregate/asphalt surface treatments. Aggregate for sand seal treatment may consist of sand or screenings. However, all aggregate should meet the following requirements:

OPERATION

1. It should be as uniform in size as is economical. Generally, the biggest particle should be no more than twice the size of the smallest particle.

2. Aggregates of 1/2 inch (13 mm) or less provide a quieter, smoother road surface. Larger aggregate will provide a more skid-resistant surface, but will create more noise so are most often used in non-populated areas.

3. The best aggregate shape is cubical. Flat or elongated shapes may be completely buried in asphalt that is needed to hold cubical shaped aggregate. The fewer flat or elongated shapes in the aggregate the better.

4. Aggregate must be clean. Coatings of dust, silt or clay prevent adhesion to the asphalt and interfere with uniform spreading. Both problems will lessen the life of the surface treatment.

5. Aggregate should be as dry as possible and warm. Dry aggregate will adhere to the asphalt better. Surface treatments are best applied when the temperature is 50°F (10°C) or above. The surface being treated should also be dry and warm.

6. Dry sand is best for most application. Sand naturally holds and attracts water which makes even application difficult. Wet sand will bridge and therefore may not flow as required.

SPREADING THE AGGREGATE

The following steps should be taken to assure a successful asphalt/aggregate surface treatment:

1. Have all aggregate on hand before starting treatment.

2. Cover sprayed asphalt with aggregate within 30 seconds of spraying.

3. Spread aggregate evenly. Aggregate will not stick more than one particle thick and excess may actually loosen adhered aggregate by the action of the traffic on the surface.

4. The gate opening should be at least 2 times (i.e. 1/2 inch aggregate needs a gate opening of 1 inch) the size of the aggregate for uniform feeding. However, the gate opening will vary with the size of aggregate used and the uniformity of the aggregate. Use the 2 times aggregate opening as a starting point and test the spreading rate (see Starting Spread Rate) before starting each job to make any adjustments needed.

ROLLING

Chip seal treated surfaces should be rolled with pneumatic-tired rollers **only**. Pneumatic-tired rollers provide even pressure to all particles and slight depressions in the surface. Steel drum rollers will bridge over any small depressions in the surface or smaller particles of aggregate. They also crush softer particles and degrade the surface.

FINISHING A TREATED SURFACE

Light brushing with a rotary powered brush should be done to clean the surface of excess aggregate before traffic flow is restored. The sweeping process should be done after the asphalt has had sufficient time to set and bond. Early morning is a good time to do the surface treated the day before.

OPERATION

FUNCTIONAL DESCRIPTION

HYDROSTATIC DRIVE

The ROSCO Chipspreader is a diesel engine powered, dual-range hydrostatically driven aggregate spreading machine. The hydrostatic drive system on the Chipspreader propels the unit forward and reverse at varying speeds with dynamic braking action.

A turbocharged Cummins 6BT5.9,156 HP, is the standard equipment diesel engine in the Chipspreader. A Cummins 6BTA5.9, 200 HP, turbocharged after-cooled engine is available as optional equipment.

Components of the hydrostatic drive system include:

- ☞ two variable displacement axial piston pumps which are direct coupled to the diesel engine.
- ☞ one high-torque bent axis hydraulic motor, at the front axle, which receives hydrostatic power for the pumps.
- ☞ (4 WD unit only) two torque hubs coupled to the hydraulic motors, which provide 4-wheel drive to the wheels and tires.

Three driver-selectable ground speed modes are provided to accommodate a wide range of requirements:

Low Automatic - A programmable mode that allows the operator to pre-set Chipspreader maximum ground speed for accurate and repeatable applications. Top speed in **Low Automatic** is approximately 880 ft/min or 268 m/min (10 mph or 16 km/h), depending on engine and tire options. At speeds less than the set maximum speed, the operator has full control.

Low Manual - A non-programmable mode that allows the operator to adjust Chipspreader ground speed and direction with the Joystick. Top speed in **Low Manual** is approximately 880 ft/min or 268 m/min (10 mph or 16 km/h), depending on engine and tire options.

High Manual - A non-programmable mode that allows the operator to adjust Chipspreader ground speed for travel between spreading locations. In this mode, electric controls adjust the position of the hydraulic drive motor swash plates to provide the same effect as the high range gear in a two-speed axle. Top speed in **High Manual** is approximately 1760 ft/min or 537 m/min (20 mph or 32 km/h), depending on engine and tire options.

Note: Further details on ground speed modes can be found later in this section.

OPERATION

CONVEYOR BELT ADJUSTMENT

Proper alignment and tension adjustment of the conveyor belts is necessary to deliver proper system operation and maximum life from the components. Instructions for verifying correct belt alignment and tension can be found in the Maintenance Section of this manual.

If mis-alignment or slack is noticed in a conveyor belt, make adjustments as soon as possible to prevent premature wear of the belt and related components.

AGGREGATE DELIVERY SYSTEM

Components of the aggregate delivery system on the ROSCO Chipspreader are illustrated in Figures 1, 2, and 3. In the following paragraphs, except where other figures are referenced, the numbers in parenthesis () refer to item numbers in these figures.

A. Receiving Hopper

Hopper - Aggregate material is delivered by a dump truck into the 3.5 yd^3 (2.68 m^3) capacity rear hopper known as the **receiving hopper (13)**. The receiving hopper is equipped with rubber **sealing skirts (14)** to seal the receiving hopper to the truck dump box during operation.

Feed Gates - A **feed gate (12)** is provided in the receiving hopper for each conveyor to permit control over the amount of aggregate being conveyed to the spread hopper.

B. Conveyors

Belts - Two hydraulic motor-driven 20 inch (508 mm) wide **conveyor belts (10)** move the aggregate from the receiving hopper to the front spread hopper. The **conveyor drive motors (16)** are mounted on top of the conveyor assembly at the front of the Chipspreader.

Chute Lining - Rubber **chute liners (9)** seal each side of the conveyors to prevent spillage of aggregate. The chute liners are held in place by **channel strips (8)** bolted to the conveyor frame. The chute liners can be adjusted to maintain even contact with the conveyor belts.

Pulleys - Drive, tension and suspension for the conveyor belts are provided by various pulleys attached to each conveyor frame. Figure 4 shows the relative location of these pulleys.

The **head pulley** (item 1, Fig. 4), located at the spread hopper end, is driven by the hydraulic motors and drives the conveyor belts.

The **tail pulley** (item 3, Fig. 4), located at the receiving hopper end, can be used to adjust the tension of the conveyor belt.

A number of **trough idlers** (item 2, Fig. 4), an **adjustable idler** (item 4, Fig. 4) and two **rolling pulleys** (item 5, Fig. 4) are located between the head and tail pulleys to provide suspension and tension adjustment for each conveyor belt.

Deflectors - There are two types of deflectors located at the spread hopper end of each conveyor. Refer to Figure 3.

The **deflector hood (1)** is attached by four bolts to the conveyor frame. This deflector is used to control the distribution of aggregate into the spread hopper so that, depending on the speed of the conveyors, the aggregate lands in the center of the hopper and doesn't spill over the front edge. Adjustment of the deflector hood is shown in Figure 5.

The **vertical plate (2)** is used to control the stream of aggregate flow from side to side in the hopper. **Reach rods (3)** are provided which allow adjustment of both vertical plates from the right side of the Chipspreader. When spreading with less than the full hopper width, these vertical plates can be adjusted to direct aggregate flow to the engaged (active) cut-off gates.

C. Spread Hopper

The spread hopper is attached to the front of the Chipspreader and is responsible for accurate application of the aggregate to the road surface. Spread hoppers are available in various widths from 10 to 16 feet (3 to 5 meters) to meet customer or job specifications.

OPERATION

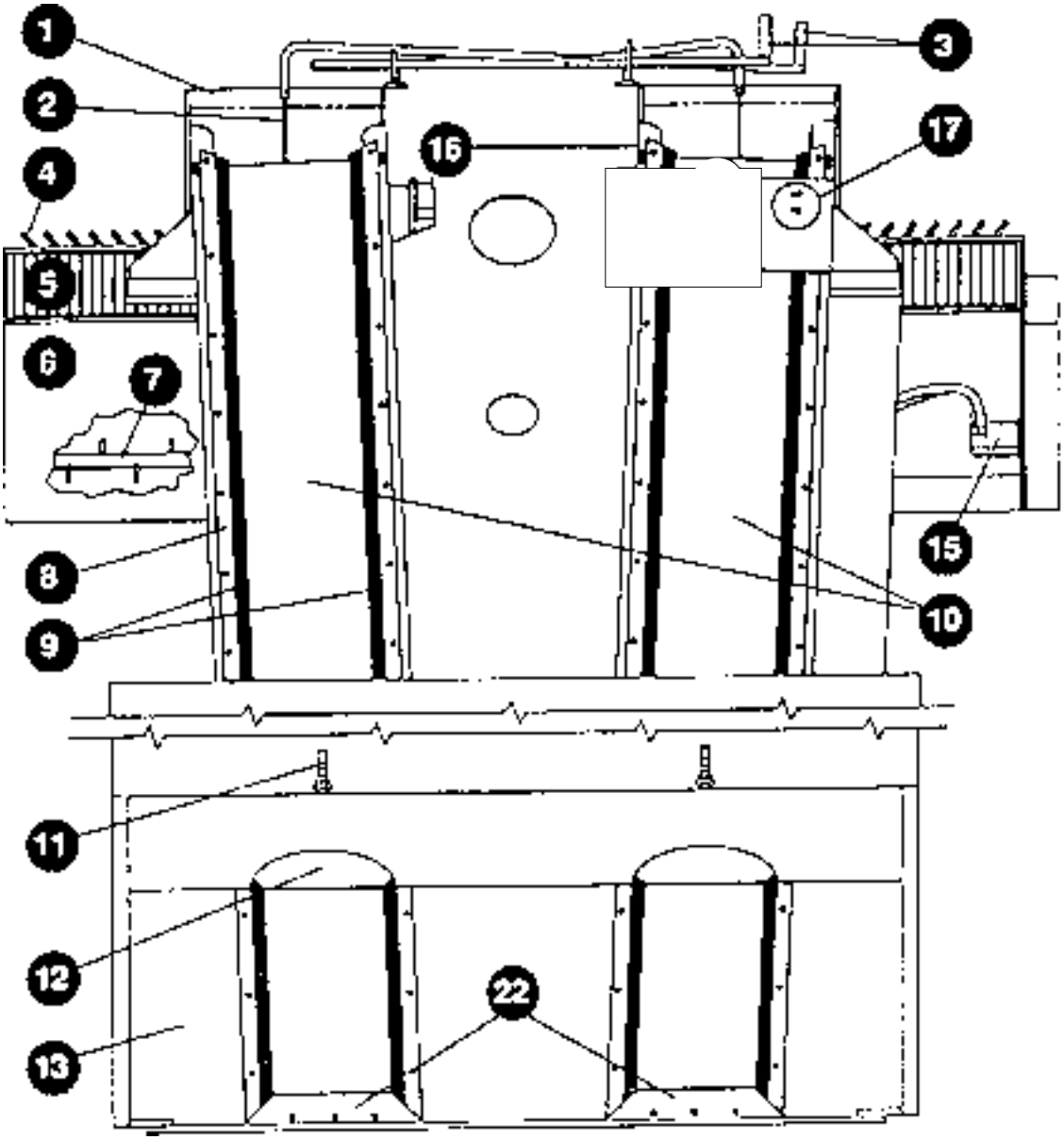


Figure 1
Chip Spreader - Top View

1. Deflector Hood
2. Vertical Plate Deflector
3. Vertical Deflector Reach Rods
4. Cut-Off Gate Levers
5. Reject Screens
6. Spread Hopper
7. Agitator Shaft
8. Channel Strip
9. Chute Liner
10. Conveyor Belt
11. Feed Gate Adjuster
12. Feed Gate
13. Receiving Hopper
15. Motor, Agitator/Spreadroll
16. Motor, Conveyor
17. Auxiliary Conveyor Switches
22. Lagging Skirts

OPERATION

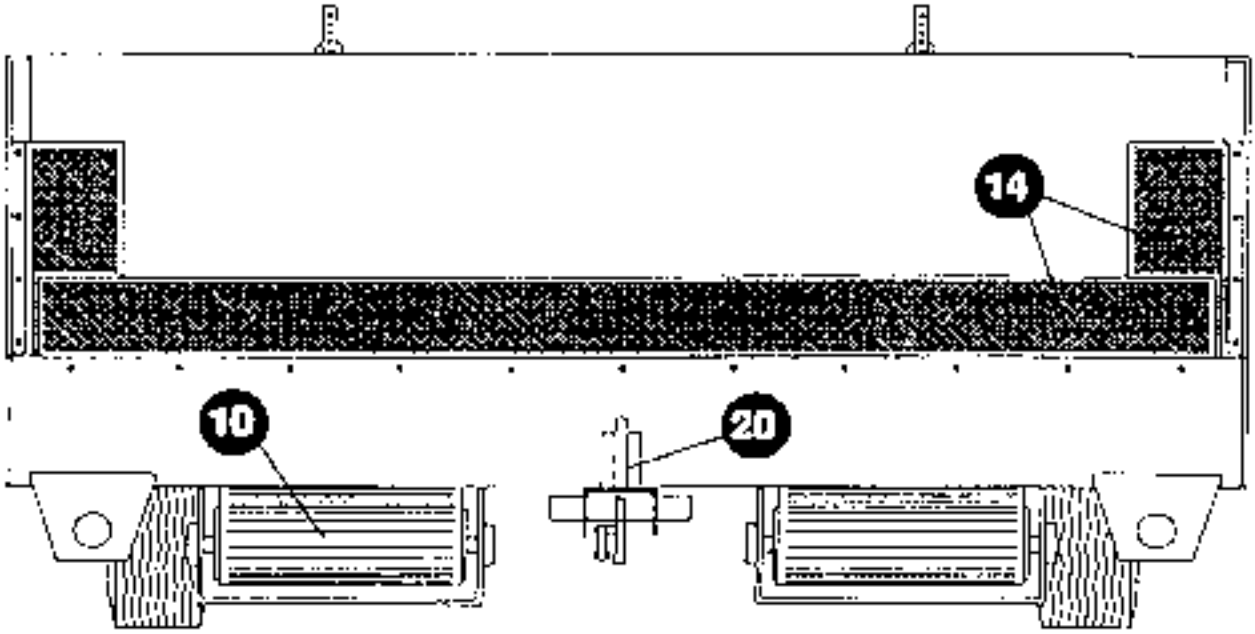


Figure 2
Chip Spreader - Rear View

1. Deflector Hood
2. Vertical Plate Deflector
3. Vertical Deflector Reach Rod
6. Spread Hopper
10. Conveyor Belt
14. Sealing Skirts
16. Motor, Conveyor
19. Auto Conveyor Belt Cut-Off Switches
20. Truck Hitch
21. Belt Wiper

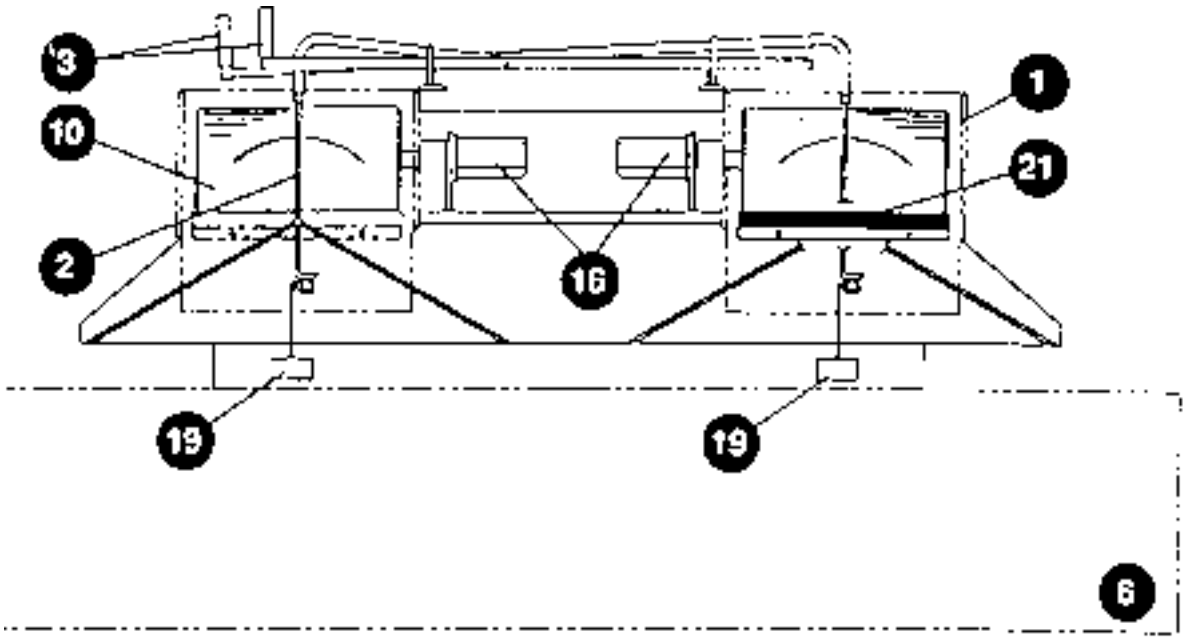


Figure 3
Chip Spreader - Front View

OPERATION

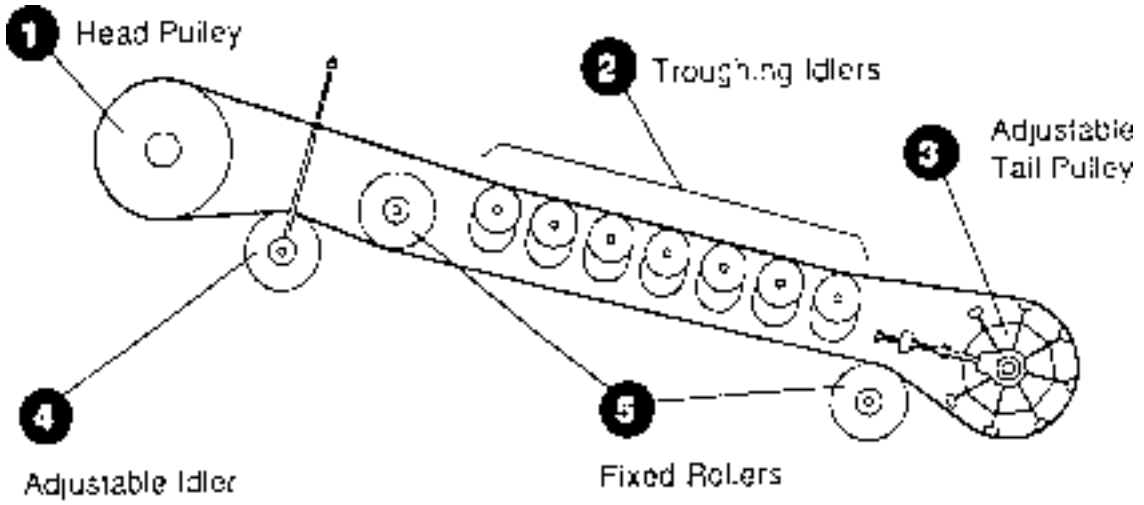


Figure 4
Conveyor Pulley Schematic

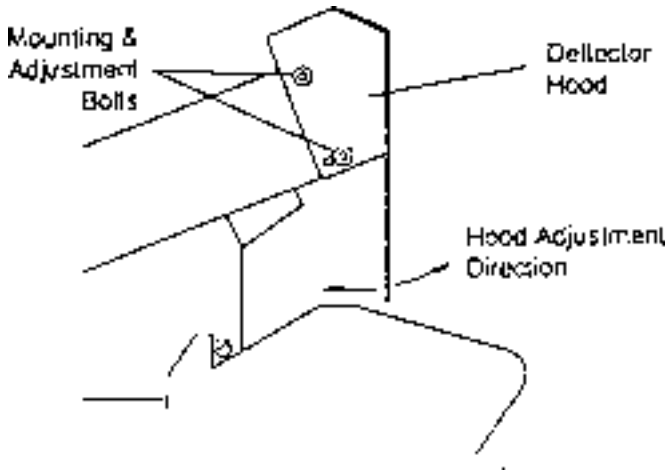


Figure 5
Deflector Hood Adjustment

OPERATION

Reject Screens - At the top of the spread hopper are **reject screens (5)**, also known as grizzly screens, which prevent oversized aggregate, sticks or other debris from entering the hopper.

Agitator - An **agitator shaft (7)** is located inside the spread hopper which rotates to keep the aggregate flowing to the spreadroll and prevent "bridging". The agitator and the spreadroll are driven by a **hydraulic motor (15)** through a sprocket gear and chain arrangement.

Cut-off Gates - Cut-off gates, in 6 and 12 inch (152 and 305 mm) widths, on the spreadroll allow spreading width adjustments from 6 inch (152 mm) to the full width of the hopper. The operator can engage or disengage individual cut-off gates with hand operated **cut-off gate levers (4)**. When engaged (active), the cut-off gates are opened and closed by an electro-hydraulic power gate control system which is operated by the driver (See *"Operating Instructions"*).

Spreadroll - The spreadroll forms the bottom of the spread hopper. When the spreadroll is rotating, it moves the aggregate out of the hopper through the cut-off gate openings and onto the road surface.

AUTOMATIC CONVEYOR CUT-OFF SWITCH

The **automatic conveyor cut-off switch (19)** is a limit switch located at the hopper that automatically shuts off the conveyors when needed while the unit is being controlled by a single operator. This switch is tripped when the paddle that is connected to it is pushed by a build up of aggregate. It is released as the spread hopper empties.

TRUCK HITCH

The ROSCO Chipspreader is equipped with a positive-latching, hydraulic-release **truck hitch (20)**, that secures the Chipspreader to a pull bar on the dump truck.

The left-hand foot pedal at each driver's station operates the truck hitch. A hitch control lever at the right front operator's walkway is available as optional equipment. The pedal (or lever) controls the height of the hitch to attach to the truck pull bar. The hitch will automatically lock and can be released by using the **push button located on the control panel (Item 42, figure 6)** or, if equipped, the optional button at the right walkway.

Further details on the truck hitch and instructions for installing the truck pull bar can be found in this section of the manual. (See *"Truck Hitch Installation"*).

OPERATION

CONTROL PANEL

The numbers in parenthesis () refer to item numbers in Fig. 6. The intended use of this unit is to spread aggregate at a precise rate. This is accomplished by using a processor to monitor the speed of the unit and the position of the hopper gates. The speed sensor is mounted in one of the wheel motors and the gate position sensor is located on the right side of the aggregate hopper at the end of the actuating shaft. The **joystick (60)** controls the speed and direction of travel. The rocker switch on top of the joystick opens and closes the hopper gates. The gates will close automatically when the joystick is returned to NEUTRAL position, however the gates will not open automatically.

Operation Mode

This unit is intended to be operated in **AUTO (50)** for all operations, except when roading the unit from one location to another. The screen below is the **operating screen (61)**.

```
0352 C .375  022.5   01
FPM  M SIZE  PSY   MEM
```

You can change these settings anytime the top line is flashing. (See detailed instructions later in this section). These settings can be changed while the unit is in motion, however the desired change must be flashing.

"FPM" (feet per minute) is the fastest speed the joystick will develop in **AUTO**. If the *"FPM"* value is set to zero, the machine will not move. The operator controls the speed and ramping (acceleration/ deceleration) with the joystick. If the joystick is at full stroke, the unit will maintain the *"FPM"* setting. You can place the joystick in an intermediate position and operate.

"M" is the type of material you are spreading. *"C"* is crushed rock and *"P"* is pit gravel.

"SIZE" is the size (decimal of an inch) of the aggregate being applied. This function will flash if the speed is too slow to distribute the correct *"PSY"* setting. The gates will not open if *"SIZE"* is flashing.

"PSY" (pounds per square yard) is the amount of material you wish to distribute. If *"PSY"* is flashing, the unit is traveling too fast to distribute the amount of aggregate specified *("PSY")*. Decrease your *"FPM"* to correct this problem.

"MEM" (memory) is saved settings of *"M", "SIZE", "PSY"* and calibration numbers. *"FPM"* is not saved. Details on setting calibration numbers are found in the "Auto Rate Controller" chapter of this section.

MANUAL mode (50) is used **only** if the processor and/or the unit is not functioning correctly in **AUTO** mode. You can manually open or close the gates in this mode, but the gates will not automatically close if the joystick is moved to the NEUTRAL position. This mode would allow you to finish a job if the processor fails.

TRAVEL mode (50) is for moving the unit from one site to another. No chipping operation can be performed in this mode.

Automatic Rate Control

Before attempting operation, become familiar with the functions of the toggle switches **(74), (74A), (74B)** on the controller. The switches are used to move from screen to screen, as well as input data into the controller, and are designed to give the operator a more accurate and efficient means of controlling aggregate flow. (See *"Automatic Rate Controller"* later in this section for detailed instructions.)

SCREEN Toggle Switch (74)

Moving the switch to **INC** activates the display functions from left to right and moves you to the previous screen.

Moving the switch to **DEC** activates the display functions from right to left and moves you to the next screen.

OPERATION

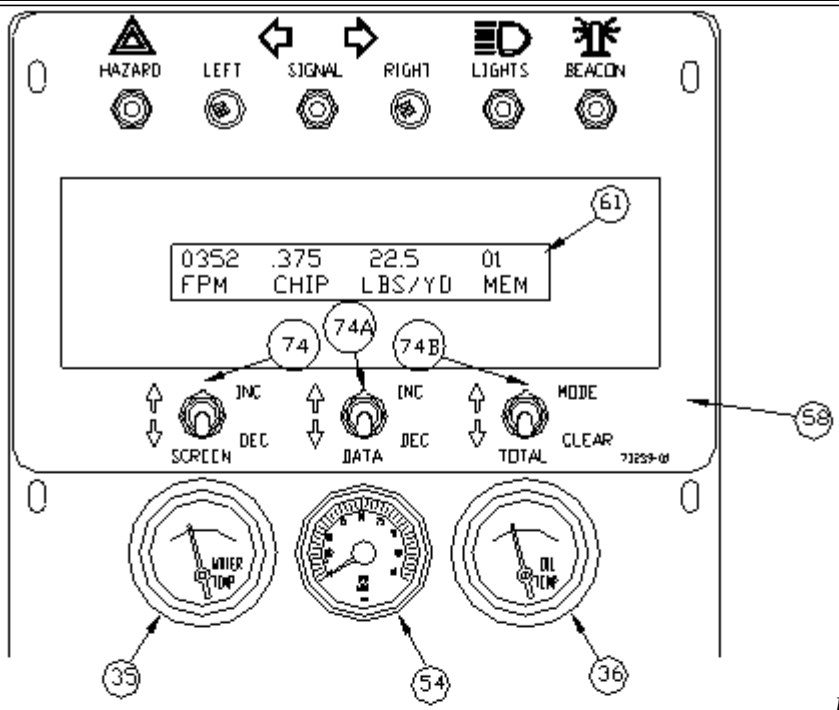
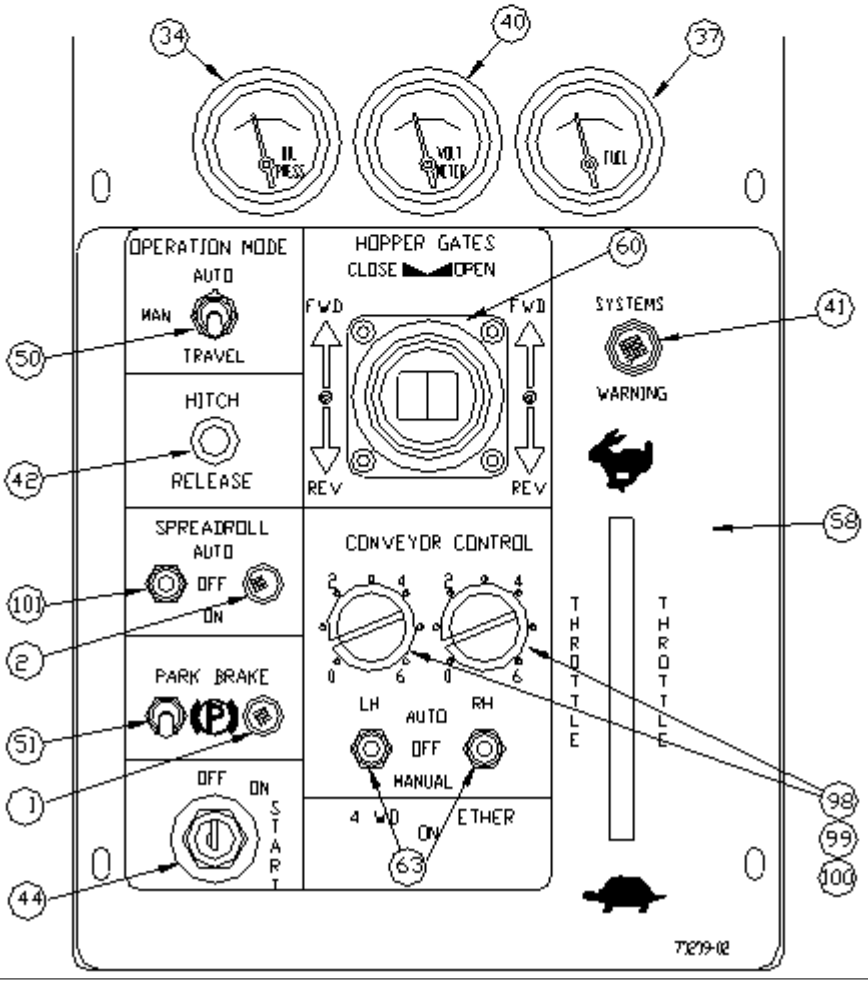


Figure 6
der - Control Panel



OPERATION

DATA Toggle Switch (74A)
Moving the switch to **INC** increases the value of the flashing display.

Moving the switch to **DEC** decreases the value of the flashing display.

TOTAL Toggle Switch (74B)
The TOTAL Toggle Switch has two positions. **MODE**, when used in combination with the DATA Toggle Switch **DEC** changes screen displays.

CLEAR is used to clear or save data depending on the instructions. Activate the **CLEAR** function **only** when the unit is in NEUTRAL.

CAUTION: *If **CLEAR** is activated when the unit is moving, the unit will come to a sudden stop.*

INSTRUMENTS AND GAUGES
The Chipspreader is equipped with analog gauges to monitor the engine and hydrostatic drive system. The unit is also equipped with an alarm system to alert the operator of the following conditions:

- **hydraulic oil temp (36)** is 210° F (99° C) or higher
- **engine oil pressure (34)** is 5 PSI or lower
- **engine coolant temp (35)** is 210° F (99° C) or higher

If an alarm point is reached, the **system warning (41)** will light up and a buzzer will sound.

Other gauges include a **volt meter (40)**, a **tachometer (54)** and a **fuel gauge (37)**.

Other control switches on the panel include:

Spreadroll Switch and Indicator Light (101). This switch has three positions of operation.

AUTO is the normal operating position. In this mode the spreadroll will start and stop with the **joystick (60)**. When the joystick is moved forward, the spreadroll engages and when the joystick is returned to NEUTRAL, the spreadroll automatically stops.

OFF turns the spreadroll off.

ON turns the spreadroll on independently of the joystick. This means that the spreadroll will be active even if the unit is not moving.

Park Brake Switch and Light (51). This switch applies the spring applied, hydraulic-released brake. When the switch is on and the brake is applied, the **indicator light (1)** will come on.

ATTENTION: *If the park brake indicator light comes on while the unit is in operation, it means there is a loss of hydraulic pressure. The unit should be immediately moved to a safe area and shut down and the problem fixed. Refer to the Trouble Shooting Section for corrective action.*

CONVEYOR CONTROL SWITCHES
The **conveyor control switches (63)** are used in conjunction with conveyor controls located above the right hand conveyor. (See figure 7.) They control the engagement and speed of the conveyors. The switches on the panel allow the operator to control the right and left conveyors individually. There are three operating positions:

AUTO - The conveyor(s) will automatically shut off when the **joystick (60)** is returned to NEUTRAL and will engage when the joystick is moved forward. This mode also permits the conveyors to be turned on/off using the paddle switches at the spread hopper. (See Automatic Conveyor Cut-Off Switches). This maintains a constant material supply in the hopper.

OFF turns off each conveyor individually.

MANUAL allows a second operator to control the conveyors with the Second Operator Conveyor Controls located above the right hand conveyor near the spread hopper end. This mode also allows a single operator to override the automatic cut-off switches.

OPERATION

Speed control knobs (98) are used to adjust the conveyor speed. Rotating the knob clockwise increases the speed and rotating the knob counter-clockwise decreases the conveyor speed.

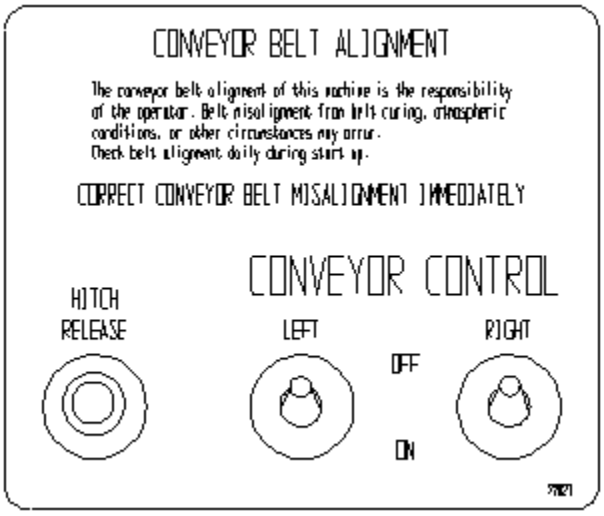
CONVEYOR OPERATION

The conveyor speed may be adjusted to match the spread needs of the machine. The proper conveyor speed is slightly faster than the machine spread requirements. At this speed, the conveyors will run nearly continously, stopping infrequently to insure the aggregate does not over flow in the hoppers.

ATTENTION: *The conveyor system can be damaged by setting the conveyor speed too high. This causes the conveyors to start and stop continously which shocks the system repeatedly.*

SECOND OPERATOR CONVEYOR CONTROLS

As previously stated, controls for the second operator are located on the right side of the Chipspreader near the spread hopper end of the conveyors. (See figure 7.) There are two toggle switches which allow the operator to control each conveyor individually. There also may be an optional push button release to allow the second operator to release the truck hitch. (See figure opposite.)



Second Operator Controls

OPERATION

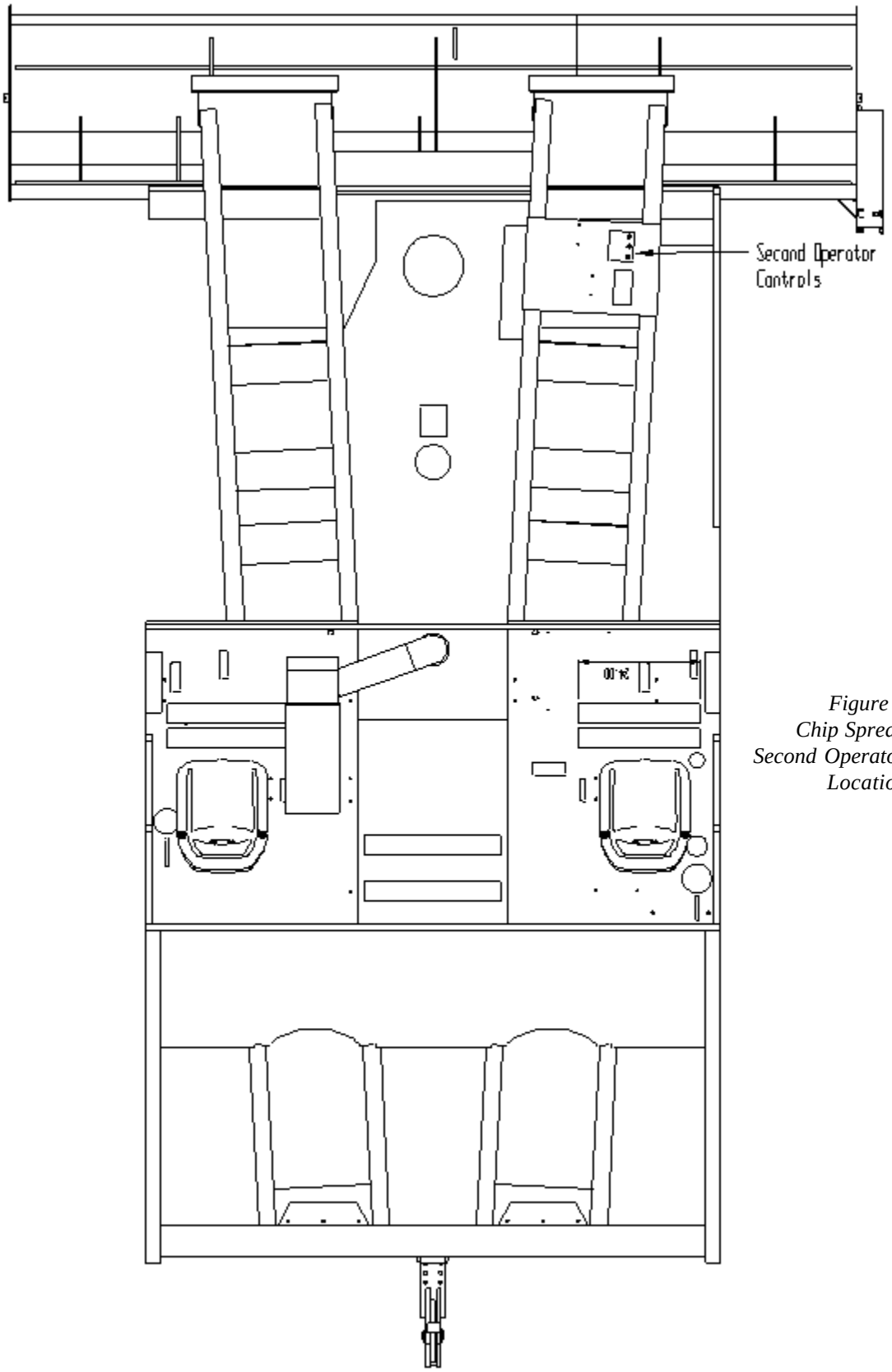


Figure 7
Chip Spreader -
Second Operator Control
Location

OPERATION

PREPARATION FOR USE

The following procedures are necessary to prepare the ROSCO Chipspreader for initial operation. They will also be needed any time one or all of the components are removed for repair, moving or storage.

ATTACHING THE SPREAD HOPPER

See figure 8 for illustrations of each step.

ATTENTION: *To avoid interference with the lifting boom, the gravel deflector adjustment bars must be disconnected while attaching hopper.*

CAUTION: *Verify that lifting equipment is capable of easily lifting and moving the hopper into position. The lifting equipment must have a minimum capacity rating of 2 tons (4000 lbs. or 1815 kg).*

Step A - Verify that the **locking pins (1)** are removed. Lift the spread hopper using the two **lifting eyes (2)**. While the front of the hopper is tipped slightly forward, engage the lip on the back of the hopper with the **hopper seat (3)** on the Chipspreader frame. An assist chain can be fastened between the **front lifting eye (4)** and the hook to prevent the spread hopper from tipping too far forward.

Step B - Attach assist chain between the **front lifting eye (4)** of the hopper and the front of the Chipspreader Release tension on the lifting chain.

Step C - Move the lifting chain to the **front lifting eye (4)** of the hopper. Then lift the boom to put tension on the lifting chain.

Step D - Make sure the assist chain attached to the **front lifting eye (4)** will not interfere with moving the spread hopper. With tension on the lifting chain, move the lifting vehicle toward the Chipspreader which will tip the hopper back into position. Insert the **locking pins (1)** and rotate to insure the handle is behind the lug welded to the frame. This prevents the pin from moving out.

Attach the hopper drive motor hydraulic hoses and plug in electrical connections.

OPERATION

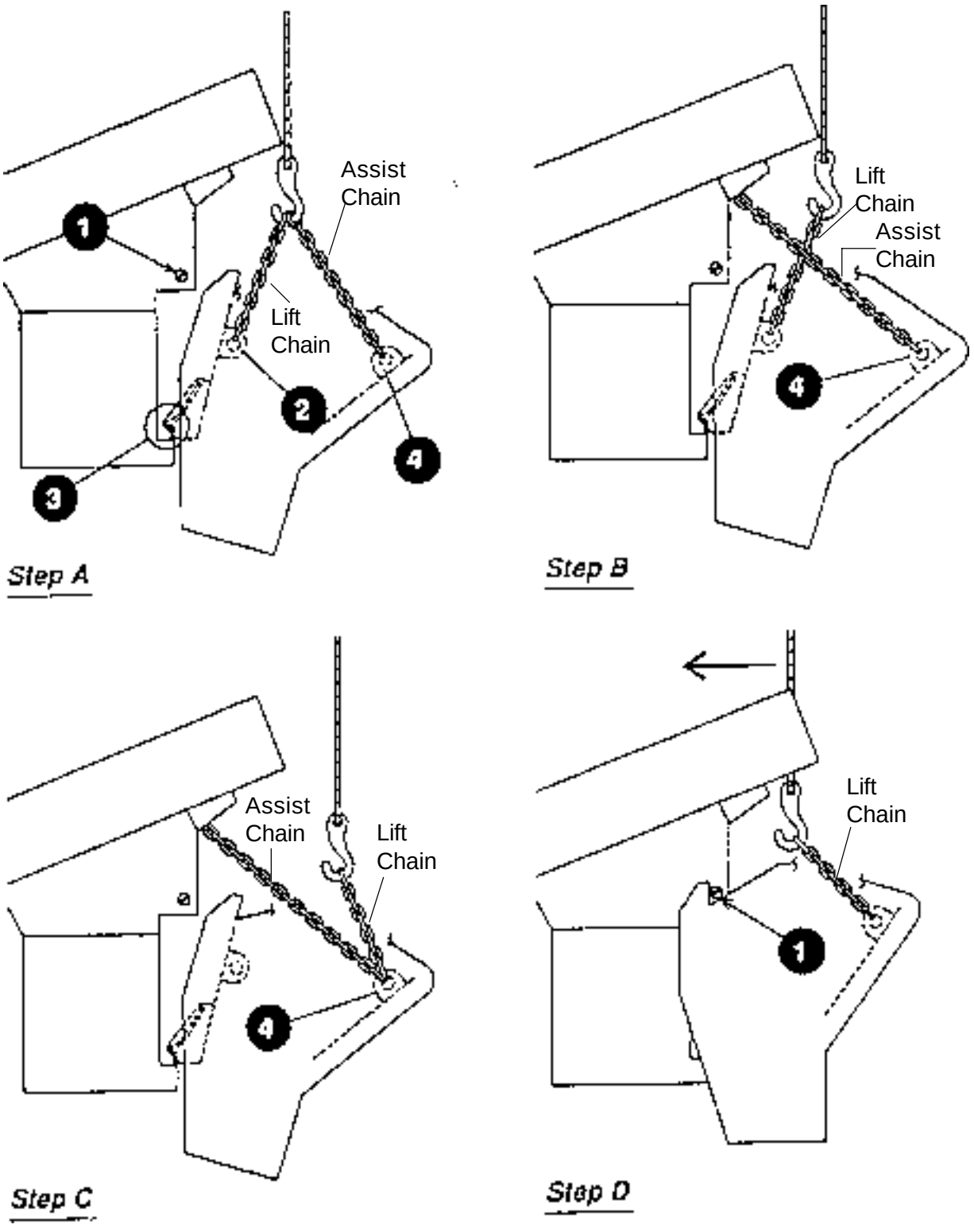


Figure 8
Chip Spreader - Spread Hopper Attachment

OPERATION

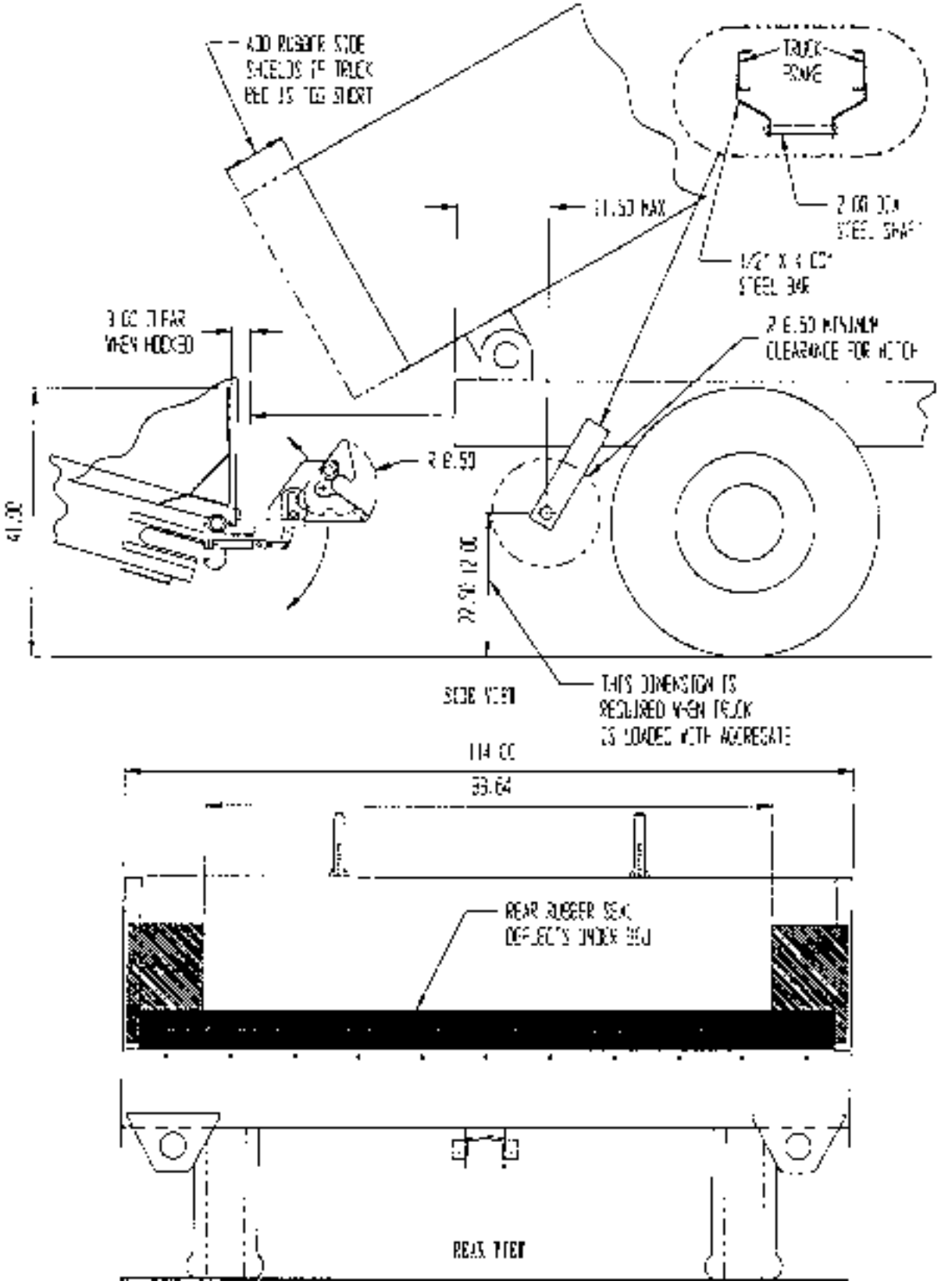


Figure 9
Chip Spreader - Truck Hitch Installation

OPERATION

TRUCK HITCH INSTALLATION

The truck hitch on the Chipspreader is provided to keep the truck close to the receiving (rear) hopper. The success of the entire spreading function is directly related to this hook-up, and care should be taken to insure the accuracy of the hook-up with every truck that will be working with the Chipspreader.

Figure 9 illustrates the relative dimensions of various components and shows the general relationship of the Chipspreader and the truck when they are hooked together. This information should be used to determine where on the truck to mount the pull bar so that a good hook-up can be achieved.

Note: The height of the pull bar is shown with the truck loaded. As all trucks are different, it is impossible for ROSCO to manufacture pull bar components as stock items to send with the Chipspreader.

In general, the tailgate of the truck bed must be set 8"(203.2 mm) inside of the retaining rubber skirt of the Chipspreader when the bed is raised. Frame lengths vary, the overhang of the dump bed on the frame varies, and the relationship of the rear wheels to the frame varies among trucks. Therefore, a check of each truck bed in relation to the Chipspreader receiving hopper must be made.

On large, tandem axle trucks, the frame, rear wheels and often the gate of the dump bed are on the same vertical line. In such cases, it will be necessary to install extensions to the truck bed to insure a proper seal when in the dumping position. When these conditions arise, hitches should be installed/located to allow a minimum of 2 to 2½ inches (50.8 to 63.5 mm) clearance between the rear truck tire and the bumper member of the Chipspreader.

POSITIONING THE CONTROL PANEL

The control panel and steering wheel are designed to be positioned from either the left or right side of the Chipspreader. To position from either the right or left side, follow these steps:

1. To move the control panel, pull the pin handle on the control panel boom and rotate to lock up.

2. While rotating the boom, guide the control panel into position.

3. When positioned, release the boom pin handle and verify that is has engaged the hole.

4. To position the steering wheel, pull the spring pin on the steering wheel arm and rotate the steering wheel to the desired position and release the pin. Verify that it is engaged in the hole.

OPERATION

PRE-START INSTRUCTIONS

Prior to using the ROSCO Chipspreader, the operator should familiarize himself with **all the features and controls** of the Chipspreader as described in the *"Functional Description"*. Also, it is important to become familiar with the safety considerations found in the Safety Section of this manual.

PROCEDURES

To assure proper performance, the following daily inspection should be performed before putting the Chipspreader into operation. Consult the Maintenance Section of this manual for details of these procedures.

1. Check all fluid levels as detailed in the Maintenance Section of this manual including the following:
   - ☞ Check engine crankcase oil. Add if low. **Do not overfill.**
   - ☞ Check hydraulic oil reservoir. Add if low.
   - ☞ Check engine diesel fuel tank. Add if low.
   - ☞ Check engine coolant level at the radiator. Fill if low.

2. Drain the engine fuel/water separator on the fuel filter.

3. Check the engine air filter restriction indicator. Clean or replace filter element(s) if indicator shows red or above 35 Hg.

4. Check tire pressure. Maintain even pressure in all tires.

5. Check Chipspreader for loose bolts or signs of leaking hoses. Refer to the Maintenance Section for leak inspection procedures.

ATTENTION: *Know the location and function of the controls **before** starting the engine. Refer to diagrams in this section for the position of all operating controls and system monitoring gauges.*

OPERATION

OPERATING INSTRUCTIONS

The ROSCO Chipspreader is ready for operation after all procedures of the *"Preparation for Use"* and *"Pre-start Instruction"* sections have been performed.

ENGINE START-UP

In the following procedures, item numbers listed in parenthesis () refer to Figure 10 which illustrates the location of the operator controls on the control dash panel.

1. To obtain the desired spreading width, engage the required spread hopper gate handles by moving them to the right as you face the hopper.

DANGER: *Never walk in front of the unit to operate the gates while spreading operation is being performed or while unit is in motion. Should a person fall while walking in front of the unit during operation, the operator would not be able to see or hear them and serious injury or death would occur.*

2. Mount the driver's station, fasten the seat belt and become familiar with the location of all controls.

CAUTION: *Wear the provided seat belt when operating the Chipspreader.*

3. Verify that the **conveyor control (63**) and the **spreadroll switches (101)** are in the OFF position.

4. Place the **joystick (60)** in the NEUTRAL position.

5. Turn the **park brake switch (51)** to the ON position.

6. Set the engine throttle to ½ speed.

7. Turn the **ignition switch key (44)** to activate the engine starter. As soon as the engine starts, release the switch. If the weather is cold, see *"Cold Weather Starting"* instructions later in this section.

ATTENTION: *Do not crank the engine for more than 30 seconds at a time. Starter failure may result from continuous cranking.*

Note: If the starter doesn't turn the engine over, shut off the ignition key immediately and make no further attempts to start the engine until the condition is corrected. Refer to the Trouble Shooting Section in this manual (or the **Cummins Diesel Engine manual**) for possible solutions. For further trouble analysis, contact your Cummins Diesel Engine Service Dealer.

ATTENTION: *Allow the starter to cool down for 2 minutes between unsuccessful attempts to start the engine. Failure to follow these guidelines may result in burning out the starter motor.*

8. Move the engine throttle to "*IDLE*" position as soon as the engine starts.

9. Check the various gauges on the control panel for proper readings and investigate if any mode is not functioning properly.

ATTENTION: *Be sure oil pressure is observed within 15 seconds after starting the engine. If no oil pressure is shown on the gauge in 15 seconds, shut down the engine and determine the cause.*

OPERATION

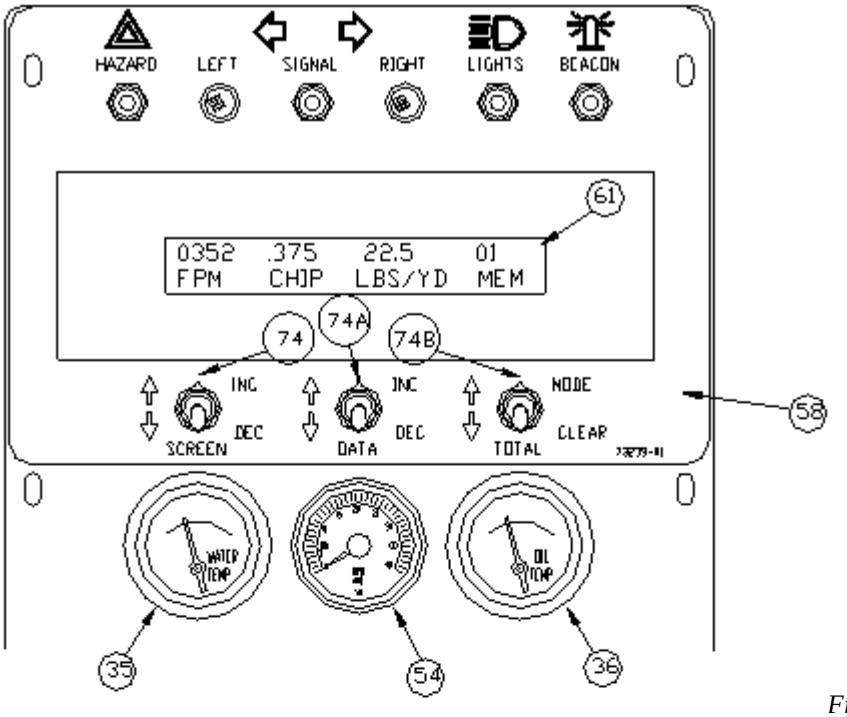
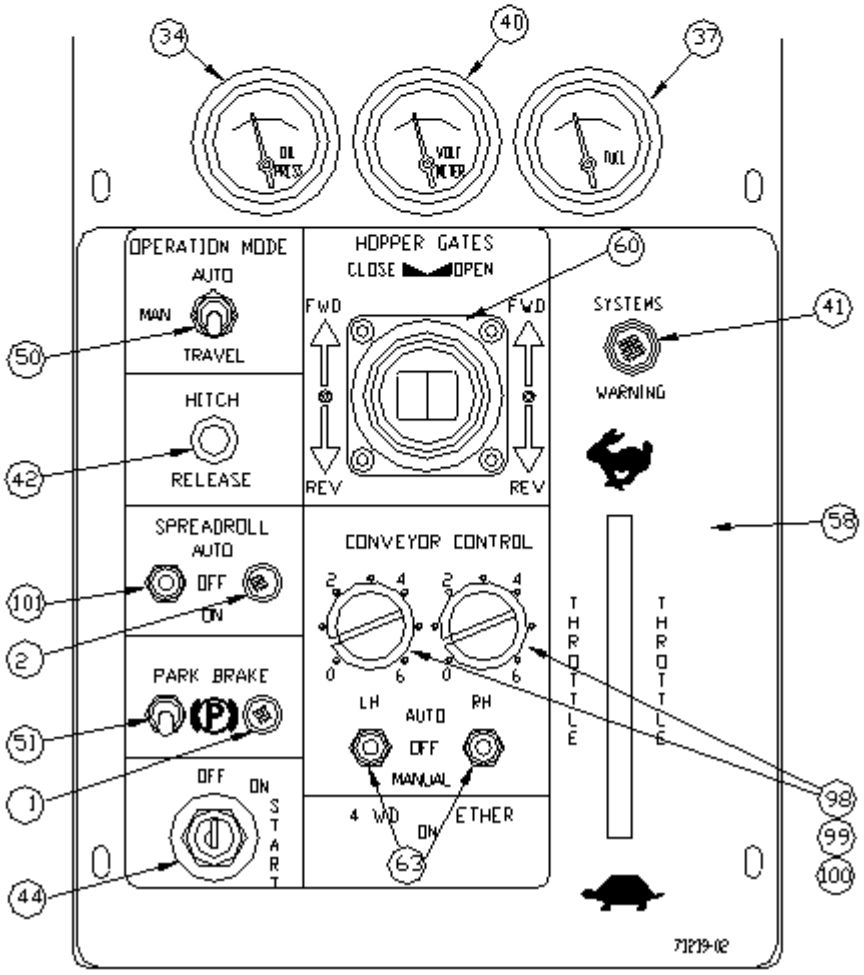


Figure 10
ıder - Control Panel



OPERATION

ATTENTION: *Avoid idling the engine for more than 10 minutes. Long periods of idling can be harmful to your engine because combustion chamber temperatures can drop so low that the fuel may not burn completely. Unburned fuel will dilute the crankcase oil, reducing its viscosity and ability to protect the engine.*

COLD WEATHER STARTING

The direct-injected Cummins Diesel Engine starts well in cold weather. If it is necessary to use ether as a starting aid, do it promptly. Read and follow the steps below and on the ether manufacturer's recommendations for safe and effective use.

1. Place unit in NEUTRAL and set the parking brake.

2. Set throttle to IDLE.

3. Have another person crank the engine while you spray starting fluid into the air cleaner for no more than two (2) seconds at a time.

ATTENTION: *NEVER remove the air filter element and spray ether directly into the air inlet piping or the intake manifold.*

4. Be sure that engine oil pressure is indicated on the gauge within 30 seconds after starting.

DANGER: *Never use ether near open flames or with pre-heater or glow-plugs. The combination can cause an explosion.*

WARNING: *Do not inhale ether fumes, as they are harmful.*

ATTENTION: *Do not use excessive amounts (spray for more than two (2) seconds per time) of ether starting fluid when starting the engine. The use of too much ether will cause engine damage.*

If the unit is equipped with an Automatic Ether Injection system, follow the described steps for starting in cold weather.

1. Put the unit in NEUTRAL and set the parking brake.

2. Set throttle at IDLE.

3. While cranking the engine, inject a metered amount of ether by pushing the Ether Injection Button on the control panel.

4. Be sure the engine oil pressure is indicated on the gauge within 30 seconds after starting.

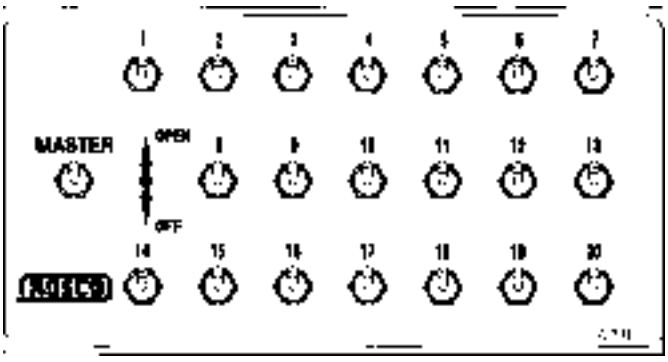
5. Never inject ether for more than 2 seconds at a time.

REMOTE SELECTION OF HOPPER GATES (optional)

The remote selection of individual hopper gates is an electrical/hydraulic function.

The feature allows for better control of spread width and requires less adjustment time from the operator. It also eliminates the need for a walkway above the hopper from which the operator opens and closes the gates manually.

From his normal station, the operator can elect to open or close individual gates. The gates are numbered from left to right when viewed from the operator's station.



OPERATION

The operator controls the spread width of the Chipspreader by means of toggle switches on the control console of the operator's station. Each gate is selected to be opened or closed by means of toggle switches located on the control panel.

A Master Switch is also located on this panel.

To achieve the best results from this feature:

1. When starting a new spread, determine the width and the number of gates needed to achieve the desired spread.

2. Select the desired gate or gates to be opened by placing the coordinating numbered toggle switch in the up OPEN position. Leave all other gate switches in the OFF position.

3. Place the master switch in the up OPEN position. This activates the selected gates.

4. Proceeded with your spreading operation.

5. If it becomes necessary while spreading to adjust the spread width, simply select OPEN to open a new gate or OFF to close a gate. Placing a toggle switch in the down OFF position will prevent the gate from opening.

6. The full hopper width may be used by placing all toggle switches in the up OPEN position.

7. Placing the master switch in the OFF position will deactivate all gates.

To Stop Spreading

The operator may stop the spreading operation by putting the Master Switch in the OFF or down position.

The Chipspreader will also close the gates automatically when the forward/reverse joy stick is brought to the NEUTRAL position.

DANGER: *Never walk in front of the unit to operate the gates while spreading operation is being preformed or while unit is in motion. Should a person fall while walking in front of the unit during operation, the operator would not be able to see or hear them and serious injury or death would occur.*

ELECTRO MOTIVE RADIATION INTERFERENCE

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

WARNING: *The machine should be tested at a remote site if EMR is present to insure that there are no abrupt movements or extreme levels of application.*

Possible solutions for problems caused by EMR include:

1. Remove the source of the radiation.

2. Move the source of the radiation away from the computer area.

3. Shield the computer and/or the wiring in metal enclosures, particularly the power lead going to the computer.

OPERATION

OPERATION ON STEEP GRADES

Operation on hills with a 10% or higher grade requires special techniques to avoid wheels slipping when accelerating up slope or stopping down slope.

CAUTION: *Operation on steep grades can cause death or serious injury due to jackknifing and unit runaways. Review this section carefully and do not operate on grades with poor surfaces and deep ditches.*

Wheel slippage causes mat marking as well. Usually only one wheel slips during acceleration and climbing on steep grades, but both wheels may slip on stopping. The most common cause is the tractive effort of the tires exceeding the friction of the tires to the road surface.

The ROSCO Chipspreader's hydraulic system eliminates the possibility of wheel slippage when the machine is fully loaded with aggregate. The multi-function valves on the wheel motor drive pumps are set to limit the pressure that creates the traction effort. For most applications the forward pressure is set at 4500 psi and the reverse pressure to 2900 psi. However, the settings will depend on the friction created by the material being spread.

You may vary these settings slightly so the machine will pull up the steepest possible grade without slipping. Caution must be used to avoid excessively increasing the pressure settings to pull up steep grades. A slight increase in pressure above the optimum will cause the wheels to mark the mat during start up on level ground and when climbing steep grades.

When the Chipspreader is operated on a slope steeper than it can climb, the pumps hold a constant maximum pressure but will not put out any flow. The machine stops moving and the engine unloads.

Wheel slippage can also be elimated by one or more of the following techniques:

1) The operator can increase the weight on the driving axle by filling the rear hopper to maximum capacity prior to take-off and during stopping.

2) When stopping on steep down-hill grades (10% or more) the truck driver can assist the operator by lightly applying the truck brakes.

When climbing steep grades the truck operator may shift into reverse and push lightly. On some grades the Chipspreader can operate alone, spreading the rock contained on the unit. On long, steep grades, the chipping operation may be performed down hill, taking all necessary precautions to prevent jackknifing and run aways.

ATTENTION: *Increasing the pressure on the multi-function valves of the wheel motor drive pumps can cause the wheels to slip or skid, marking the mat. The pressures must be set so the wheels will not spin, but will create maximum pull.*

OPERATION

To achieve the best results from this unit, the operator must become comfortable with the operation of the Chipspreader's Automatic Rate Controller. The following section will give you detailed instructions on the proper way to use the Automatic Rate Controller. Keep these instructions handy for the operator at **all** times for easy reference. Proper spreading operation requires a thorough understanding of the capabilities and operation of all components of the Chipspreader. With proper maintenance and operation, the Chipspreader should give years of service.

There are three things an operator should be aware of before starting the spreading operation.

☞ **First** - Most of the following functions may be performed without the engine running, however, the key switch must be on. This is a good way to acquaint an operator with the different screens and how to move from one screen to another.

☞ **Second** - When the key is turned OFF, the display will stay illuminated for 5 seconds to allow the controller to compile and save data.

☞ **Third** - **Do not** perform any data saving functions (**CLEAR**) while unit is in motion. This will cause the unit to come to a sudden stop.

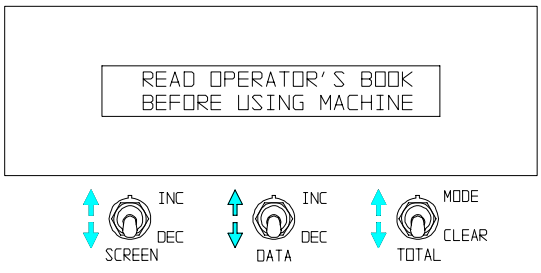
AUTOMATIC RATE CONTROLLER

MAIN OPERATING MODE

When you first turn on the key, the main operating screens will be the first group you see. Other mode screens will be explained later in this section.

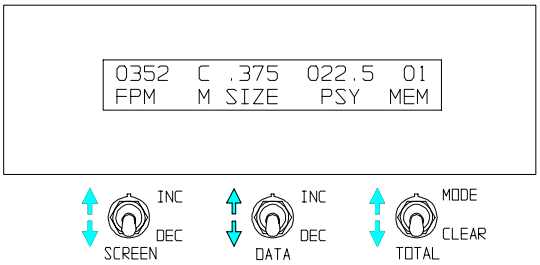
STEP 1. Select **AUTO** mode with the **Operation Mode (50)** toggle switch on the lower left side of the control panel. In this mode, the unit will function only in low range and forward direction.

Screen 1: Displays the *"READ OPERATOR'S BOOK"* screen and holds it for 5 seconds. Then the display will automatically display *"NEUTRAL POSITION"* if the joystick is in neutral.



As soon as the joystick control handle is moved slightlyforward, Screen 2 will display.

Screen 2: Displays the current settings. This display is the Main Operating Screen. If the current settings are OK, proceed to step 2.



If settings need to be changed:

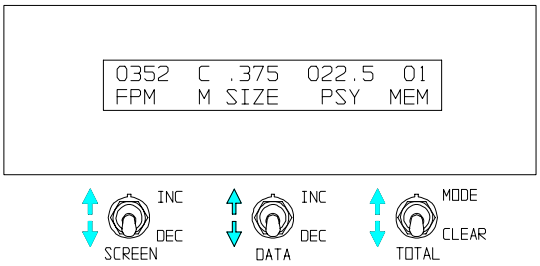
a. Move **SCREEN toggle (74)** to **DEC** (down) two times. The speed above *"FPM"* (feet per minute) flashes.

1) When flashing, you can increase or decrease the maximum travel speed by using the **DATA toggle (74A).** This function is possible only when the machine is in motion.

2) The *"FPM"* function will display the Miles Per Hour when in Manual or Travel

OPERATION

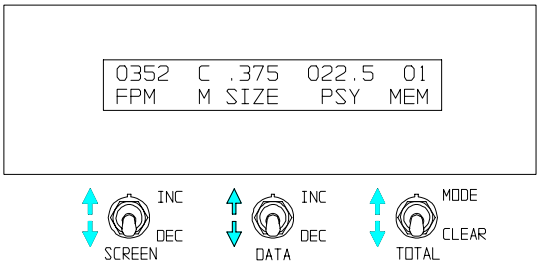
Operation Mode and the speed of travel is over 800 FPM. This information will be displayed as screen 5 for **MANUAL** or screen 6 for **TRAVEL**.



b. Move the **SCREEN toggle (74)** to **DEC** again to display Material Type.

1) When the Material Type is active, the letter above *"M"* will flash.

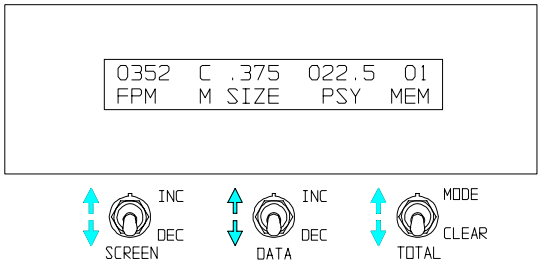
2) Use the **DATA toggle (74A)** to select the type of aggregate to be used - *"C"* for chip rock or *"P"* for pit gravel.



c. Move the **SCREEN toggle (74)** to **DEC** to the Material Size.

1) When the Material Size is active, the number above *"SIZE"* flashes.

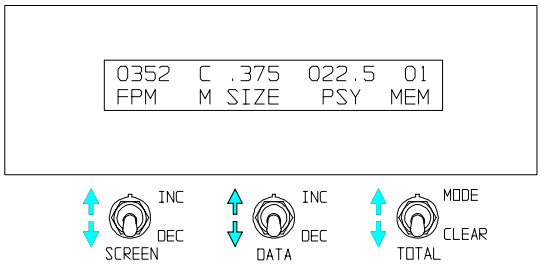
2) Use the **DATA toggle (74A)** to select the desired aggregate size. The sizes include the following: .250, .375, .500, .625, .750, 1.00, 1.25, 1.50 inches (6.35, 9.525, 12.7, 15.87, 19.05, 25.40, 31.75, 38.10 mm).



d. Move the **SCREEN toggle (74)** to **DEC** again to show the *"PSY"*. (pounds per square yards)

1) When the *"PSY"* function is active, the rate above *"PSY"* flashes.

2) Use the **DATA toggle (74A)** to select the desired rate of application.



e. Move the **SCREEN toggle (74)** once more to activate the *"MEMORY"* settings. This function allows you to select material, size and rate from memory. There are a total of 8 possible memory settings.

1) When the Memory function is active, the number above *"MEM"* flashes.

2) Select the desired memory setting with the **DATA toggle (74A)**. You may scroll through the different displays to check the current memory settings.

3) If the rate (*"PSY"*) does not match the rate applied, calibrate the rate and hold the **TOTAL toggle (74B)** in the **CLEAR** (down) position while memory is flashing to save the calibrated rate in the memory.

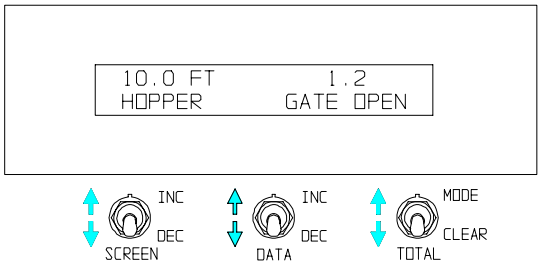
OPERATION

4) If you need to change the saved Memory settings, see section *"Storing Settings In Memory From The Main Screen"* later in this section.

f. If you want to stop here, move the **SCREEN toggle (74)** to **INC** until you return to the neutral position. You will move backwards through the Main Operating Screen.

If you want to check the Hopper Width, move the **SCREEN toggle (74)** to **DEC** to call up Screen 3.

Screen 3: Displays Hopper Width and Gate Opening sizes.



a. Move the **SCREEN toggle (74)** to **DEC** to activate Hopper Width.

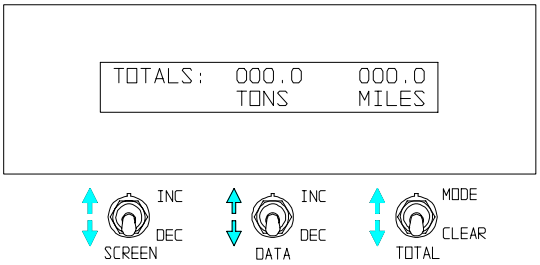
1) When the Hopper Width function is active, the number above *"HOPPER"* flashes.

2) Use the **DATA toggle (74A)** to select the Hopper Width per gates open. Be sure to use the actual width desired and not the hopper width unless the full hopper width is needed for the job.

Note: Hopper Width is used for calculation purposes only.

b. The Gate Open function displays the gate opening at a specific speed (*"FPM"*). This function is set automatically and is for reference only.

Screen 4: Displays *"TOTALS"* of Materials Used.

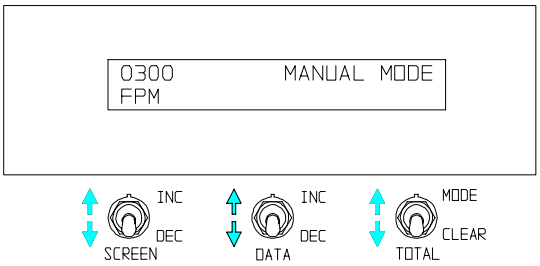


a. Move the **SCREEN toggle (74)** to **DEC** to activate screen 4.

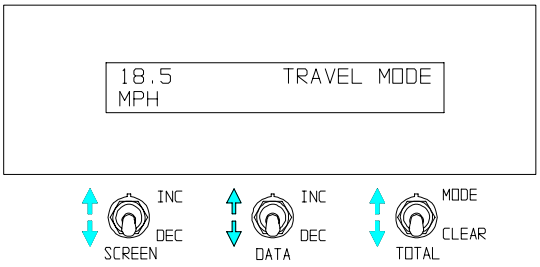
b. To clear totals, hold the **TOTAL toggle (74B)** in the **CLEAR** position. Totals can only be cleared in this screen.

c. Move the **SCREEN toggle (74)** to **DEC** to return to the neutral position.

Screen 5: Displays *"FPM"* and *"MANUAL"* mode.



Screen 6: Displays *"MPH"* and *"TRAVEL"* mode.



OPERATION

STEP 2. Increase the throttle to maximum RPM. Using maximum throttle is necessary to insure proper operation of all circuits.

STEP 3. Push the joystick forward, until preset speed is reached. When joystick is fully stroked, the preset speed should be reached.

a. There is a rocker switch on the joystick to control the gates. Moving the rocker switch to the right will open the gates to the preset rate of application in relation to the ground speed. Moving the rocker switch to the left will close the gates when the operator wishes. The gates will automatically close when the joystick is moved to NEUTRAL.

Note: The gates will not function correctly if the engine is not at maximum RPM.

b. When the Chipspreader's actual speed falls below the minimum ground speed for the material being applied, the number above *"SIZE"* will flash to alert the operator, and the gates will close as the accurate lay down of the aggregate can not be assured.

STEP 4. Moving the joystick back will decrease the speed and adjust the gate opening for that speed.

a. The gates will not open until the minimum gate opening for the rock size being applied is reached. When the minimum gate opening is reached, the gates will fully close and the spreadroll will stop.

OPERATION

STARTING SPREAD RATE

To determine an acceptable starting rate, completely cover a 3 foot by 3 foot (1 meter by 1 meter) board with the aggregate to be used in a layer one stone deep. Then remove the aggregate and weigh it. This will give you the pounds per square yard (.45 kg per square meter) required. This rate may need to be adjusted on the job, but remember, **do not use more aggregate than is required for the job.**

CHECKING THE APPLICATION RATE

To check the application rate, the Chipspreader with truck attached may be driven over a square yard (square meter) of cloth and the aggregate weighed. This will give you the rate actually being spread.

Another test is to measure the area that a weighed truckload of material covers. Divide the weight of the load in pounds (.45 kg) by the area covered in square yards (square meters). This will give you the pounds per square yard (.45 kg per square meter).

Example:
Rate required: 25 lbs/sq. yd. (11 kg/sq.m)

Truck load weight: 12,000lbs.
or (approx. 5400 kg)
Area covered: 300 ft. x 12 ft. = 3600 sq. ft. = 400 sq. yds.
or (approx. 90 m x 4 m = 360 sq. m)

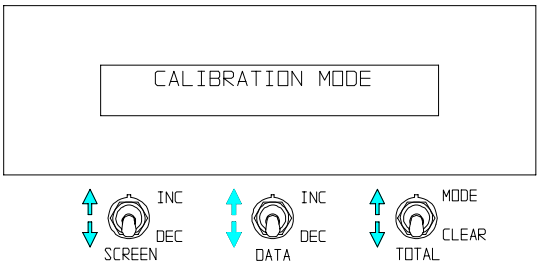
Actual rate:
12000 lbs / 400 sq yds = 30 lbs / sq yd
or (5400 kg / 360 sq m = 15 kg / sq m)

The actual rate is higher than needed. This number is entered at **Screen 2**, at *"ENTER TEST RATE"*.

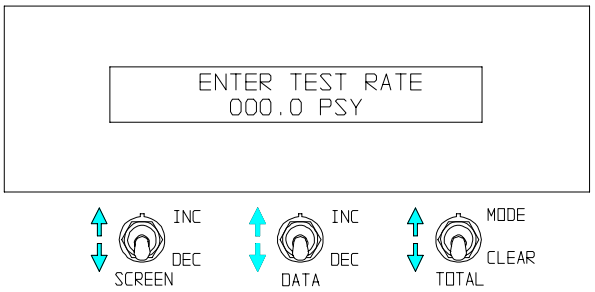
CALIBRATION OF SPREAD RATE

Hold the **TOTAL toggle (74B)** at **MODE** (up) and the **DATA toggle (74A)** in the **DEC** (down) position to call up this mode on the screen.

Screen 1: Displays the heading *"CALIBRATION MODE"*.



Screen 2: Displays *"ENTER TEST RATE"*.



a. Move **SCREEN toggle (74)** to **DEC** until the value below *"ENTER TEST RATE"* flashes. Move the **DATA toggle (74A)** to the correct pounds per square yard value obtained by the test pass. (This rate is obtained by weighing the aggregate applied in a three foot by three foot pass).

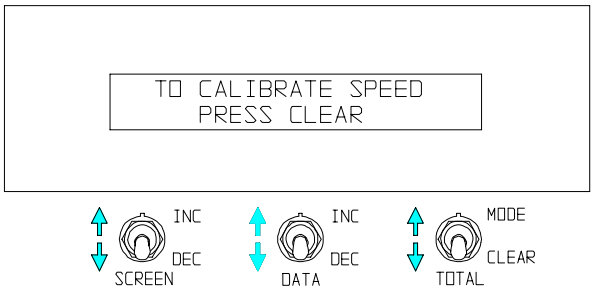
CALIBRATION OF SPEED RATE

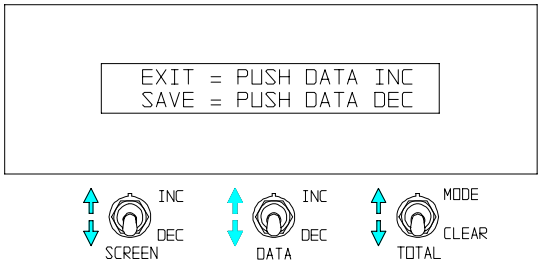
Hold the **TOTAL toggle (74B)** at **MODE** (up) and the **DATA toggle (74A)** in the **DEC** (down) position to call up this mode on the screen.

Screens 3, 4 and 5: Are used to calibrate speed and/or distance traveled. Move the machine to a pre-measured starting point (example 100 feet). Move the **Operation Mode toggle (50)** to **MANUAL**.

To Calibrate use the steps as follows:
a. Move the **SCREEN toggle (74)** to **DEC** to call up **Screen 3**. Move **TOTAL toggle (74B)** to **CLEAR** twice (2) to start calibration.

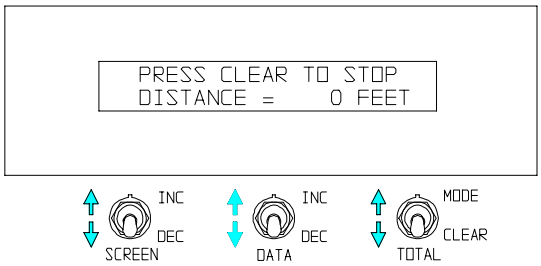
OPERATION



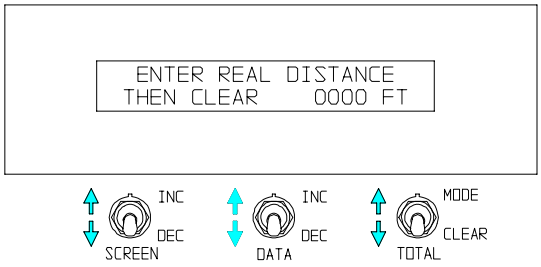


CAUTION: *IF CLEAR is activated when the unit is moving, the unit will come to a sudden stop.*

Screen 4 will appear with *"DISTANCE = 0 FEET".*



b. Stop the unit at the end of the pre-measured distance (example 100 feet). Move **TOTAL toggle (74B)** to **CLEAR** and ***Screen 5*** will appear and be flashing.



Use the **DATA toggle (74A)** to enter the pre-measured distance. Move the **TOTAL toggle (74B)** to **CLEAR.**

Screen 6: Move **SCREEN toggle (74)** to **DEC** to call up Screen 6.

Move the **DATA toggle (74A)** to **INC** to exit without saving the information. To exit and save the data, move the **DATA toggle (74A)** to **DEC** and hold until the controller exits this mode. If you reenter the calibration mode, the numbers you just entered will not appear on the screen as they are used by the program for callibration only.

To return to the Neutral position: (begining screen of the Main Operating Mode), move the **TOTAL toggle (74B)** to **MODE** and the **DATA toggle (74A)** to **DEC.** Each time this combination is pressed, you will move one mode display.

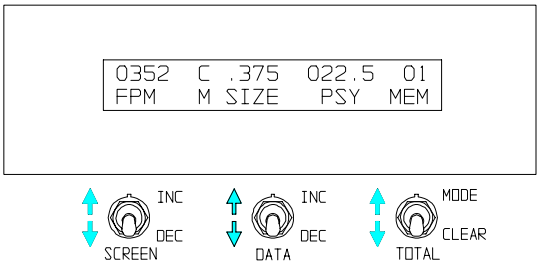
The Setup Mode will appear. This mode can only be accessed by authorized service personnel. This mode shows the version of software in your unit and may be required information for servicing.

Repeat the toggle positions twice (2) more to obtain the Neutral position.

OPERATION

STORING SETTINGS IN MEMORY FROM THE MAIN SCREEN

To select pre-stored data from the Memory fuction, proceed as follows:



a. Move the **SCREEN toggle (74)** to **DEC** until the Memory selection function is active.

b. When the Memory selection function is activated, the number above *"MEM"* flashes.

c. To select a stored set of data, move the **DATA toggle (74A)** until the desired data is displayed.

To enter data into a Memory selection or change the data in a selection, proceed as follows:

d. Move the **SCREEN toggle (74)** to **INC** to activate the Material Type.

1) When the Material Type is active, the letter above *"M"* flashes.

2) Move the **DATA toggle (74A)** to select the Material Type, *"C"* for chip rock and *"P"* for pit gravel.

e. Move the **SCREEN toggle (74)** to **DEC** again to select the Aggregate *"SIZE".*

1) When the Aggregate Size information is active, the value above *"SIZE"* will flash.

2) Use the **DATA toggle (74A)** to select the desired aggregate size.

f. Move the **SCREEN toggle (74)** to **DEC** again to activate the *"PSY".*

1) When the PSY is active, the rate value above the *"PSY"* will flash.

2) Select the desired rate (PSY) by moving the **DATA toggle (74A)** to either the **INC** or **DEC** position.

g. Move the **SCREEN toggle (74)** to **DEC** again to activate the Memory selection function.

1) When the Memory Selection function is active, the number above *"MEM"* will flash.

2) Using the **TOTAL toggle (74B)**, select **CLEAR** and hold until the number flashes.

3) The new settings are now saved.

USING MANUAL MODE

In Manual Mode the speed is controlled by the joystick and throttle. The spreadroll will function the same in Manual Mode as in Auto Mode if the **spreadroll toggle (101)** is in the **AUTO** position. The gates are preset by the operator. However, when the joystick is returned to the neutral position and the rocker switch on the joy stick is activated, the gates will need to be manually closed.

Remember: Manual Mode is intended for use only if the Auto Rate Control is not functioning properly. This is **not** intended for normal operational use.

When in Manual Mode the gates will only open to the preset value and the amount of material distributed will vary with the speed of the machine. To preset the gate opening refer to the following instructions and figure 11:

a) Loosen screws (E) and set cam pointer (Item 1) to desired gate opening on decal (Item 3).

OPERATION

b) Retighten the screws (E). Now the gates will ONLY open to the specified gate opening shown on the decal.

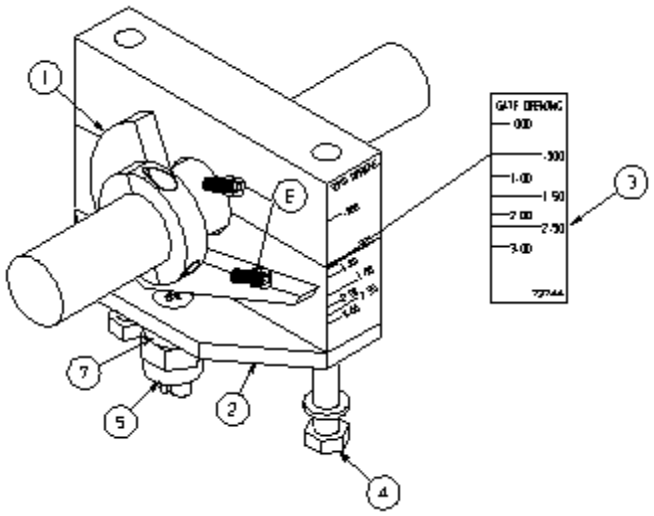


Figure 11
Manual Mode Gate Stop

TRAVEL MODE

In Travel Mode the gates and spreadroll do not operate. This mode is made for non-application site-to-site travel.

CONTROLLER ERROR MESSAGES

The following are error messages that may appear on the screen of the Auto Rate Controller. The explanation of each message also gives the operator some suggestions to correct the problem. If the suggested procedures do not correct the problem, call your local ROSCO Dealer/Distributor.

1. *"LOW BATTERY VOLTAGE"'* is displayed if the voltage to the controller is below 9.0 VDC. Check battery, alternator, and wiring.

2. *"NO PICKUP SIGNAL"* is displayed when no travel feedback is detected from the pulse pickup located in the motor. Check wiring from the controller to the travel motor.

3. *"NO GATE SIGNAL"* is displayed when no feedback is detected from the gate position indicator. Check potentiometer link at hopper and wiring.

4. *"NO GATE VALVE"* is displayed when the feedback does not respond when the signal is sent to the gate solenoid valves. Activate mechanical overrides to insure valve hydraulics are functioning, then check wiring.

5. *"RAM FAILURE"* is displayed after a self test is performed and fails to write or read the controller's internal ram correctly. The controller is disabled and repair is required.

6. *"PROM FAILURE"* is displayed after a self test is performed and fails to calculate the proper check-sum for the prom or program memory.

7. *'EDC OPEN-CK RELAY'* is displayed if the resistance of the EDC is calculated to be greater than 40 ohms for greater than approximately 1 second.

8. *"EDC CONTROL SHORTED"* is displayed if the resistance of the EDC is calculated to be less than 5 ohms for greater than approximately 1 second.

MAINTENANCE

MAINTENANCE

The recommendations contained in this manual for maintenance should be followed to obtain long life and best performance from the ROSCO Hydrostatic Chipspreader.

PROPERLY MAINTAINED EQUIPMENT IS SAFE EQUIPMENT! The user of this product is responsible for inspecting the Chipspreader daily and for having parts replaced or repaired when continued use of the machine would cause damage or excessive wear to other parts. General daily inspection of the Chipspreader should include observation for loose bolts, fluid leaks, worn or damaged hoses, debris or dirt accumulations which could cause a potential service or safety problem.

PREVENTIVE MAINTENANCE CHART. A preventive maintenance chart is included at the end of this section as a guide to assist the user in establishing a preventive maintenance schedule for the Chipspreader.

KEEP YOUR MACHINE CLEAN! The first and most important requirement for satisfactory Hydrostatic Chipspreader performance is a clean machine. Many failures in the field are due to equipment that has been allowed to become so covered with an excess amount of gravel and dirt that even ordinary adjustments and lubrication are neglected.

ENGINE MAINTENANCE

In addition to the following recommendations for engine maintenance, consult the Cummins Diesel Engine Manufacturer's Operation and Maintenance Manual. A copy of this manual was provided with the Chipspreader at the time of its shipment from the factory. If additional copies are needed, they can be obtained from an authorized ROSCO dealer/distributor or through a local equipment dealer who sells or services the particular engine make that your Chipspreader is equipped with.

FUEL

In general, use clean, good quality ASTM No. 2-0 or No.2-D climatized diesel fuel. If the Chipspreader will be used often in cold weather (below 20° F or -6° C), blended fuels or #1 diesel fuel is recommended. However, the engine performance will be lessened by approximately 10%.

The direct-injected Cummins Diesel Engine starts well in cold weather. If it is necessary to use ether as a starting aid, see *"Cold Weather Starting"* in the Operation Chapter of this manual.

ATTENTION: *Avoid using contaminated fuel. Fuel contaminated by water or dirt can cause severe damage to engine components. Fuel tanks contaminated with water will promote the growth of "microbes" which will form a "slime" that clogs fuel filters and lines.*

FUEL FILTER

Diesel engine injection systems use fuel for lubrication of close tolerance internal engine parts. Therefore, proper maintenance of the fuel filters and the fuel tank are required to insure top performance and to prevent damage to internal engine components.

The engine fuel filter and water separator are located on the left side of the engine. A drain valve is provided on the bottom of the water separator. See Figure 1.

1. Before operating the engine, use the valve to drain a small quantity of fuel from the water separator into a clean, clear container. This is an absolutely necessary daily routine.

2. If water or contaminants are found in the fuel you drained, DO NOT attempt to start the engine. Continue to drain fuel into the container until it runs clear.

MAINTENANCE

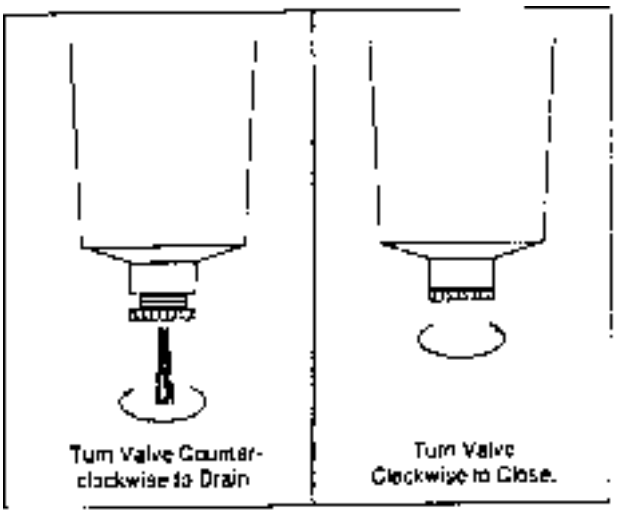


Figure 1

3. If large amounts of contamination are found, drain the fuel tank until the lines run clear. Then, replace the filters, fill the new filters with fresh clean fuel and install.

The Cummins diesel engine manual provided with your Chipspreader contains more detailed information on fuel system maintenance procedures.

CRANKCASE OIL

CAUTION: *Prolonged and repeated skin contact with used engine oils should be avoided. Such contact may cause skin disorders or other bodily injury.*

The engine crankcase oil level should be checked daily prior or each day's use of the Chipspreader. The Chipspreader must be parked on a level surface when checking the oil to assure accurate measurements.

When checking the oil level, wait until the engine has been turned off for at least five minutes. This allows the oil to drain back to the crankcase.

The oil dipstick is located on the left side of the engine. If the oil measures below the *"L"* mark on the dipstick, add the proper oil according to the Preventive Maintenance Chart found at the end of this chapter. After adding oil, recheck the level with the dipstick and make sure it doesn't measure above the *"H"* mark.

ATTENTION: *Never operate the engine with the oil level below the "L" (low) mark or above the "H" (high) mark.*

Change the engine crankcase oil and filter element(s) after every 250 hours or 3 months of service. Refer to the Preventive Maintenance Chart and/or engine manufacturer's manual for engine oil recommendations.

CAUTION: *Hot oil can cause personal injury.*

AIR INTAKE SYSTEM

Turbocharger engines are especially demanding of air filter performance, and sensitive to filter failure. The operator should be continually aware of the condition of air intake system components.

The heavy-duty engine air cleaner is mounted on top of the engine sound shield between the conveyors. A restriction indicator is mounted on the outlet side of the air cleaner assembly housing, near the large inlet tube to the engine.

When inspecting the air intake system components, follow these guidelines:

1. Prior to daily operation, inspect all air intake system components for damage, cracked hoses, loose clamps, etc.

2. Inspect the restriction indicator several times daily during operation. If the red indicator is visible, the air cleaner element must be replaced.

ATTENTION: *Be sure to clean the inside of the air cleaner body assembly BEFORE removing the safety element.*

MAINTENANCE

a. Before replacing any new element into the air filter housing, wipe the inside of the housing with a damp cloth. Replace the element and then reset the restriction indicator. *Be sure not to introduce any contaminants into the engine intake tube.*

b. When replacing body assembly or rubber adaptors, torque the T-clamp to 50 inch pounds.

3. DO NOT replace the filter elements until the restriction indicator shows red or the maintenance interval has been reached.

4. Replace the primary filter element every 100 service hours. Replace the safety element during every third replacement of the primary element. Refer to the Preventive Maintenance Chart in this manual for the correct ROSCO part number.

5. The air inlet hood should not require maintenance or service unless visual damage is noticed.

ATTENTION: *Never operate the engine without an air cleaner. Destruction of internal engine components will occur in minutes.*

RADIATOR AND COOLANT

CAUTION: *Prolonged and repeated skin contact with used antifreeze should be avoided. Such contact may cause skin disorders or other bodily injury. Wash thoroughly after contact. Keep out of reach of children.*

Check the engine radiator daily for rocks and/or debris. A partially blocked radiator will significantly reduce the efficiency of the radiator and could cause overheating and possible premature failure of the engine or its components.

Compressed air can be used to remove rocks or debris from the radiator.

CAUTION: *Wear eye protection when using compressed air. Flying debris can cause serious eye injury.*

Check radiator coolant level prior to each day's use of the Chipspreader (when engine is cold). The coolant level, when the engine is cold, should cover the radiator core. If low, fill with a 50% water and 50% ethylene-glycol type antifreeze.

WARNING: *DO NOT remove the radiator cap when the engine is hot. Escaping coolant can cause serious burns. Add coolant only when engine is stopped and fully cooled.*

Seasonally, or after every 500 service hours, most engine manufacturers recommend that the cooling system be flushed. Consult the engine manufacturer's manual for recommendations on the procedure and type of cleaner to use.

As an option, a coolant conditioner/filter assembly may be provided and mounted on the right side of the engine. This assembly has two isolation/shut-off valves for easy replacement of the spin-on element. This element should be replaced every 500 hours or 6 months of service.

If the engine is equipped with an optional low coolant level switch/gauge, and the coolant level is OK, visually verify that the gauge pointer is in the "SAFE" range. The low coolant level alarm can be tested with the engine running by twisting the black knob on the switch/gauge counterclockwise until the pointer makes contact with the bottom terminal stop. The system warning light on the driver's control panel should activate.

BATTERY MAINTENANCE

The Chipspreader is equipped with two batteries that provide efficient starting of the diesel engine. Proper maintenance of these batteries will provide years of trouble free service.

WARNING: *Always wear eye protection when servicing batteries.*

MAINTENANCE

Starting the engine depends heavily on good cranking speed. It is important that the Chipspreader battery always be fully charged and that all terminals are cleaned and properly connected.

Check the level of the battery electrolyte (water) bimonthly. Add distilled water if necessary, but do not overfill. Overfilling can cause poor performance. "Maintenance-free" type batteries rarely require additional electrolyte.

Keep the top of the battery clean. When necessary, wash with a solution of 1 part baking soda and 4 parts water and then rinse with fresh water. Do not allow solution to enter the battery cells.

CAUTION: *Always <u>disconnect</u> battery ground (-) cables first and always <u>reconnect</u> the positive(+) cables first when servicing battery cables and when removing and replacing a battery. Remove the ground (-) cables when welding on the machine.*

Inspect the cables, clamps and hold-down brackets regularly. Clean and apply a light coating of grease when needed. Replace corroded, damaged parts if necessary.

If the engine is difficult to start or the batteries become discharged repeatedly, clean the terminal connections. If the problem continues, test the battery with a battery tester for voltage and current draw.

DANGER: *Explosive gases may remain around a battery several hours after it has been charged. Sparks or flame can ignite these fumes causing an explosion which could shatter the battery and cause severe personal injury.* ***Always shut off the battery charger before disconnecting cables from the battery terminals.***

If the Chipspreader is to be stored for more than 30 days, remove the batteries and store them in a cool, dry place. During storage, keep the batteries fully charged and check the level of the electrolyte prior to charging and storing.

ENGINE BELT MAINTENANCE

Check the primary diesel engine belt for excessive wear, fraying and cracking every 250 service hours. Auxiliary V-drive belts should be inspected every 100 hours.

Adjust engine belts as required to provide proper tension. Consult the Cummins Engine manufacturer's manual for correct tension instructions and specifications.

DANGER: *Always shut down the engine before adjusting belts. Severe injury can result if belts are adjusted on a running engine.*

When installing new belts, always shorten the distance between pulley centers so the belt can be installed without force. Never roll the belt over the pulley and never pry it with a tool such as a screwdriver. This will damage the belts and cause early failure.

DANGER: *Keep all belt guards in place. Severe personal injury may result from contact with turning belts and pulleys.*

MAINTENANCE

The ROSCO Chipspreader's hydraulic system is composed of two major component groups- the Hydrostatic Drive group and the Auxiliary Hydraulic group.

The Hydrostatic Drive group consists of:

- ⇨ two axial piston hydrostatic pumps direct coupled to a gearbox pump drive on the rear of the diesel engine.
- ⇨ one high-torque hydraulic motor driving a planatary front axle.
- ⇨ (4 WD only) two high-torque hydraulic motors that drive two planatary torque hubs.
- ⇨ (4 WD only) two planatary torque hubs at the rear axle, direct coupled to the hydraulic motors, which provide final drive to the wheels.

The Auxiliary Hydraulic group consists of:

- ⇨ two two-section hydraulic gear pumps, directly mounted on the rear of the hydraulic pumps.

Independent circuits are provided for:

- ⇨ left hand conveyor drive to hydraulic motor at conveyor.
- ⇨ right hand conveyor drive to hydraulic motor at conveyor.
- ⇨ hopper spreadroll and agitator to hydraulic motor on hopper.
- ⇨ steering system, power brakes and gate control.

Included in the Chipspreader's hydraulic system are solenoid valves, flow control valves and dividers and other components that allow for simultaneous function and control of all hydraulic sub-systems. A 30 gallon hydraulic reservoir with suction strainers, charge pressure and return filters stores and cleans the hydraulic fluid. An oil cooler is mounted in front of the engine radiator to complete the hydraulic system.

This manual contains general system maintenance guidelines. More detailed service and maintenance information is available directly from the hydraulic component manufacturers if necessary or desired.

HYDRAULIC SYSTEM MANITENANCE

HYDRAULIC FLUID

Refer to the Hydraulic Fluids chart at the end of this section. When adding or changing hydraulic system fluid, be sure to use an equivalent grade of hydraulic fluid.

The use of hydraulic oils or fluids that DO NOT have equal characteristics to the recommended fluid could result in substandard performance or even possible failures of the hydrostatic system components.

If you are not sure whether a specific hydraulic fluid is suitable for use with the Chipspreader, consult your authorized ROSCO Dealer or the ROSCO factory service department.

HYDRAULIC RESERVOIR

The hydraulic reservoir is located below the operator's seat on the left side of the Chipspreader. The fill cap is located behind the operator's seat on the left side of the unit.

ATTENTION: *Use extreme caution when removing the filler cap to prevent foreign matter from entering the hydraulic reservoir. Clean around the reservoir cap before removal.*

A sight gauge is provided on the side of the reservoir to monitor the fluid level. See Figure 3 for location of sight gauge and for other component items in the following descriptions shown in () parenthesis.

MAINTENANCE

When inspecting the hydraulic reservoir, follow these guidelines:

1. Check the level of the hydraulic fluid prior to each day's operation of the Chipspreader. Hydraulic fluid should be visible at least half way up the glass in the **sight gauge (2)**. If not, fill to this level with an approved hydraulic fluid. (See Hydraulic Fluid Chart in this chapter).

2. The reservoir **fill cap strainer (7)** should be cleaned each time hydraulic fluid is added or changed. Remove strainer and back flush.

3. The **filler cap (6)** should be padlocked in place when practical to eliminate the possibility of tampering.

4. Condensation that may build up in the hydraulic system is capable of clogging the filter elements. This condition can lead to insufficient hydraulic fluid at the pump, which will in turn degrade the performance of and possibly damage the hydrostatic pump or other system components. Therefore, check the indicators periodically.

5. To Check the indicators on the hydraulic system, warm the system to above 100° F (38° C) and be sure the engine is at full throttle. Check the **charge pressure filter indicators (12)** and **return filter indicators (5).** If any indicators are in the "RED" area, replace the **filter element(s) (10) or (4)**.

Note: The filter element(s) should be replaced using only genuine ROSCO replacement parts.

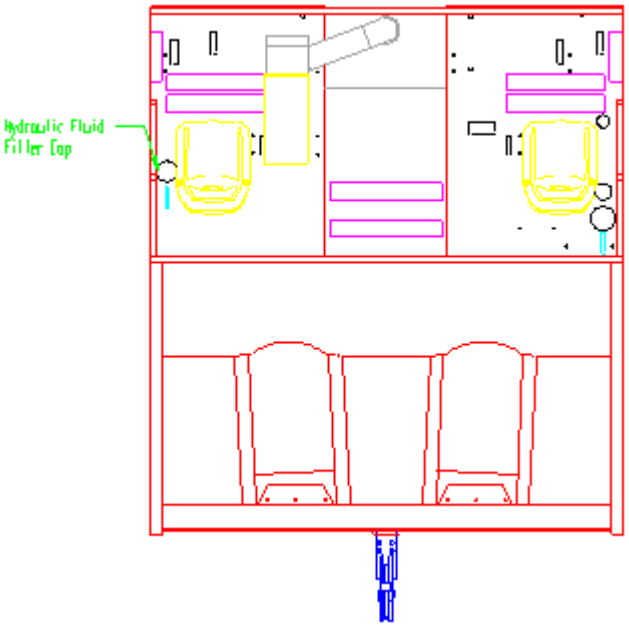


Figure 2
Chip Spreader - Top View

MAINTENANCE

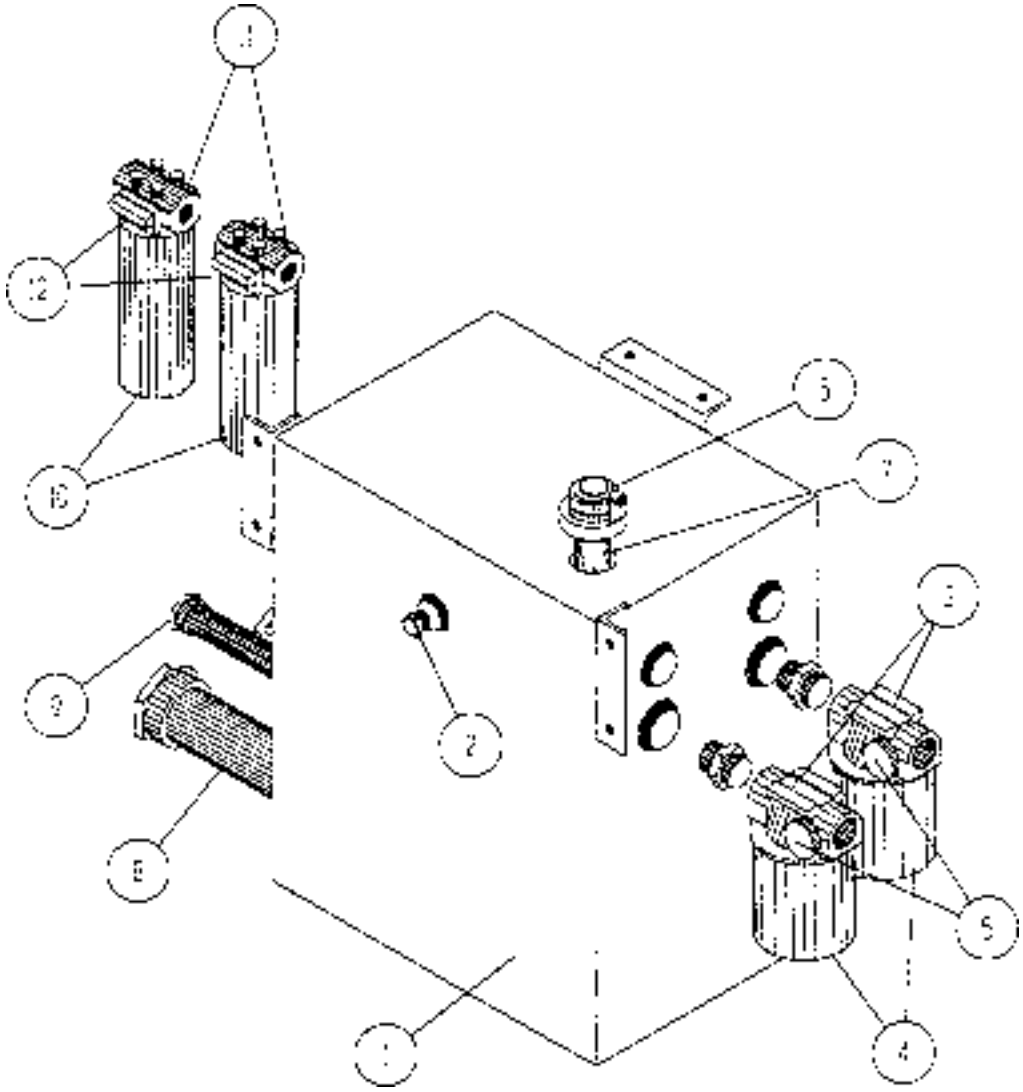
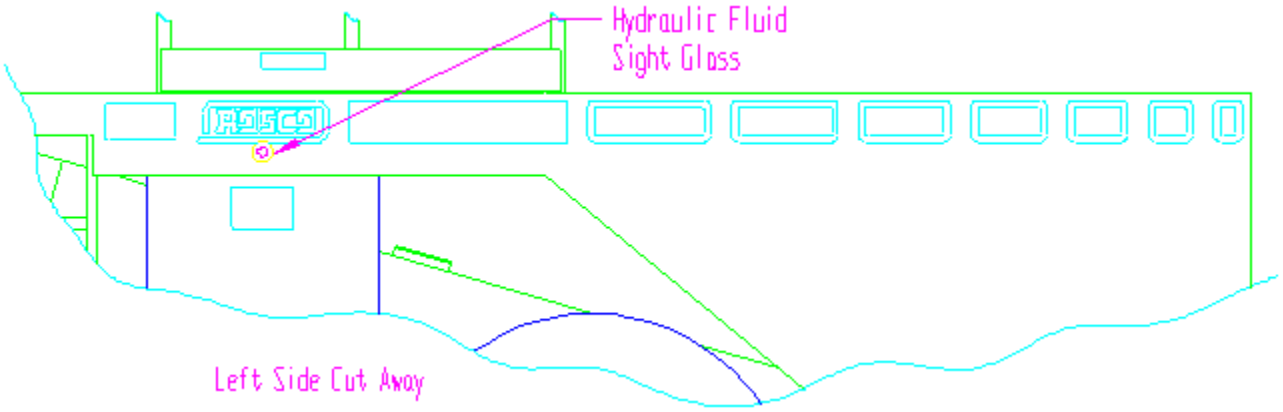


Figure 3
Hydraulic Reservoir and Sight Glass Location



MAINTENANCE

FILTER ELEMENTS

For filter element change intervals, refer to the Preventive Maintenance Chart at the end of this chapter. In the following paragraphs, the numbers in parenthesis () refer to items in Figure 4.

Return Filters (3) - There are two filters located on the right side of the hydraulic reservoir and one located between the conveyors near the front of the Chipspreader. These are spin-on type filter elements.

Charge Pressure Filters (11) - There are two filters located to the left of the hydraulic reservoir, behind the steps. These are also spin-on type filter elements (10).

Suction Strainers, 50 GPM (8) - The 50 GPM strainers are located on the lower left side of the hydraulic reservoir. They service the auxiliary system circuits. Refer to the Preventive Maintenance Chart for service intervals.

Suction Strainers, 15 GPM (9) - The 15 GPM strainers are located above the 50 GPM strainers. They should be serviced per the maintenance chart schedule.

HYDRAULIC SYSTEM CHECKS

Before each day's use, inspect the Chipspreader for hydraulic leaks. A weekly check should be performed to make sure that all fittings are secure and tight.

DANGER: *Always wear eye protection when inspecting for leaks in the hydraulic system.*

DANGER: *Never use your hand to locate hydraulic leaks. Hydraulic fluid under pressure will pierce the skin and may cause serious infection or toxic reaction. If hydraulic fluid has pierced the skin, get immediate medical attention.*

If leaking fluid is found, it is probably on the pressure side of the hydraulic system. Find and repair the leaking component before starting the Chipspreader.

Leaks on the suction side of the hydraulic system are more difficult to find. Some symptoms of suction side leakage are:

- ⇨ Foaming of hydraulic fluid.
- ⇨ Sluggish system operation.
- ⇨ Unusual noises in hydraulic pumps/motors.

Leaking on the suction side of the system is serious, since air or dirt introduced into the hydraulic system causes rapid component wear and eventual failure.

To isolate a suction side leak:

1. Verify that all reservoir valves are fully open and all connectors are properly tightened.

2. If the problem persists, wrap the suction side hose and the connectors with a high-quality electrical tape. Start at the pump inlet and work towards the hydraulic reservoir.

3. If this technique isolates the leak, replace the defective hose assembly or fitting. Never attempt to repair hydraulic hoses and/or leave the tape attached.

DANGER: *Never attempt makeshift repairs using tape, clamps or cements. The system operates under extremely high pressure and such repairs could fail, causing serious injury.*

An operator should stop and inspect the Chipspreader occasionally for leaks during operation. Some hydraulic leaks may only be noticeable while the unit is running.

MAINTENANCE

PUMPS AND MOTORS

The hydraulic pumps and motors generally require no regularly scheduled maintenance. As stated, frequent inspection for leaks will indicate the need for possible service of these components. If a problem develops with a pump or motor, contact your ROSCO dealer before making any repairs to avoid warranty problems. Any repairs that are made must be in accordance with the pump or motor manuals supplied with the unit.

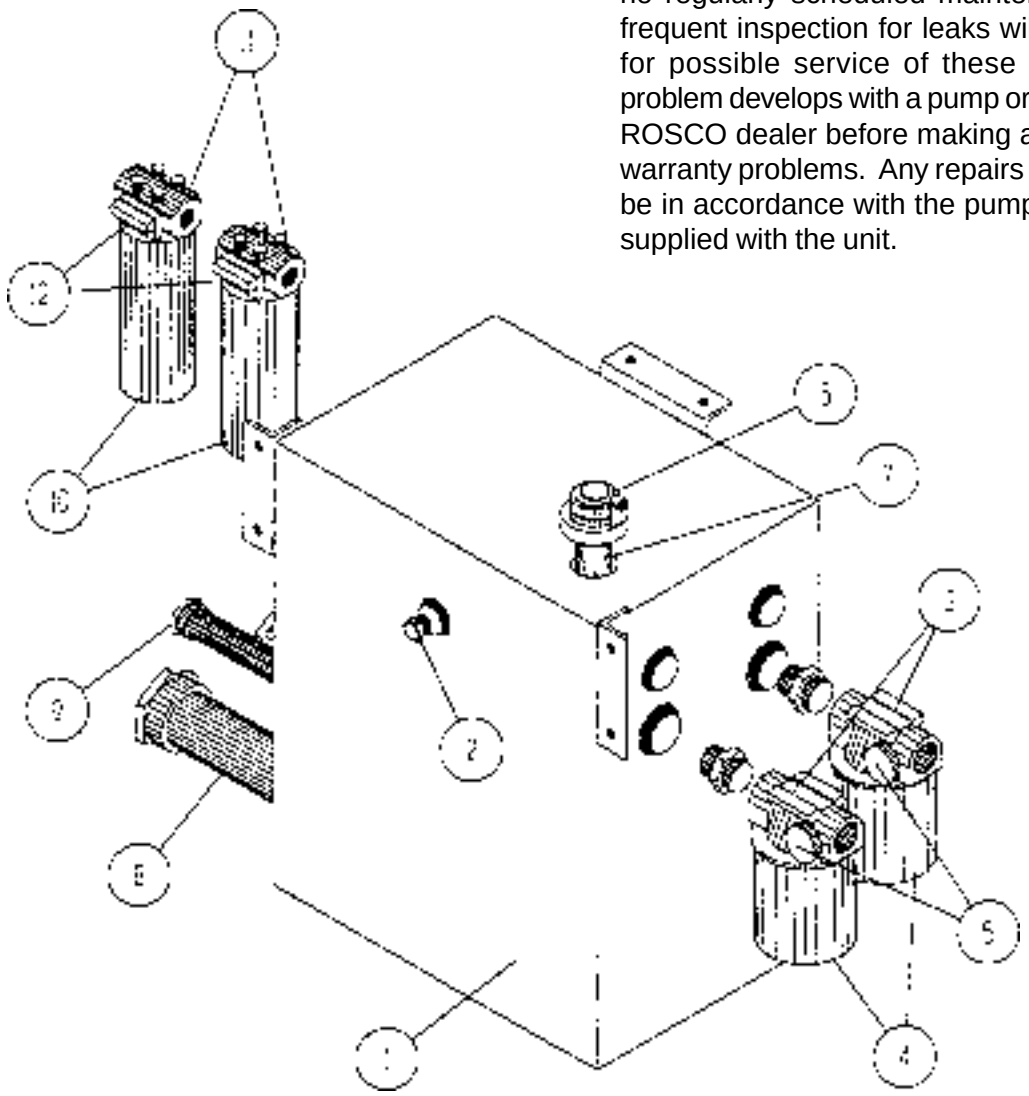


Figure 4
Hydraulic Reservoir

MAINTENANCE

AGGREGATE DELIVERY SYSTEM MAINTENANCE

Components of the aggregate delivery system are identified in Figures 5, and 6. In the following paragraphs, unless another figure is referenced, the numbers in parenthesis () refer to these figures.

BELT WIPERS

The **conveyor belt wipers (21)** are mounted immediately below the conveyor head pulleys and contact the conveyor belt. They serve to remove any material sticking to the belt as it changes direction and heads back towards the receiving hopper.

Periodically check for clearance between the **conveyor belt wipers (21)** and the **conveyor belts (10).**

To adjust the **conveyor belt wipers (21),** loosen the channel strip bolts on the wiper and move the wiper to firmly touch the **conveyor belt (10)**.

If a **conveyor belt wiper (21)** shows excessive wear, replace it with a genuine ROSCO part (see Parts Catalog).

ATTENTION: *Use genuine ROSCO parts for replacement of rubber conveyor components. Using hard rubber, old conveyor belting, or any other rubber containing fabric or reinforcement, will cause rapid conveyor belt wear and eventual failure.*

CONVEYOR CHUTE LINER

The sections of **rubber chute liner (9)** on each side of each **conveyor belt (10)** are designed to prevent aggregate material from leaving the conveyors. They should be adjusted to touch the **conveyor belts (10)** evenly along the entire length of the belts.

Periodically check for clearance between the **chute liners (9)** and the **conveyor belts (10)**.

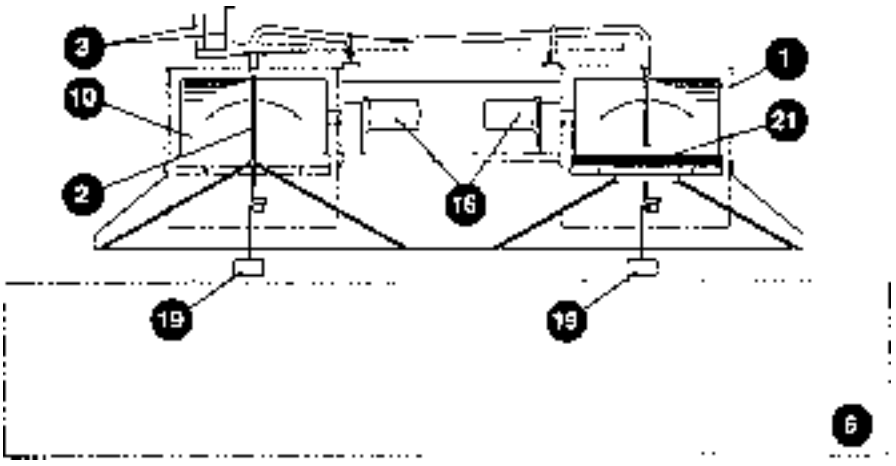


Figure 5
Front View

1. Deflector Hood
2 Vertical Plate Deflector
3. Vertical Deflector Reach Rod
6. Spread Hopper
10. Conveyor Belt
16. Motor, Conveyor
19. Auto Belt Switches
21. Belt Wiper

MAINTENANCE

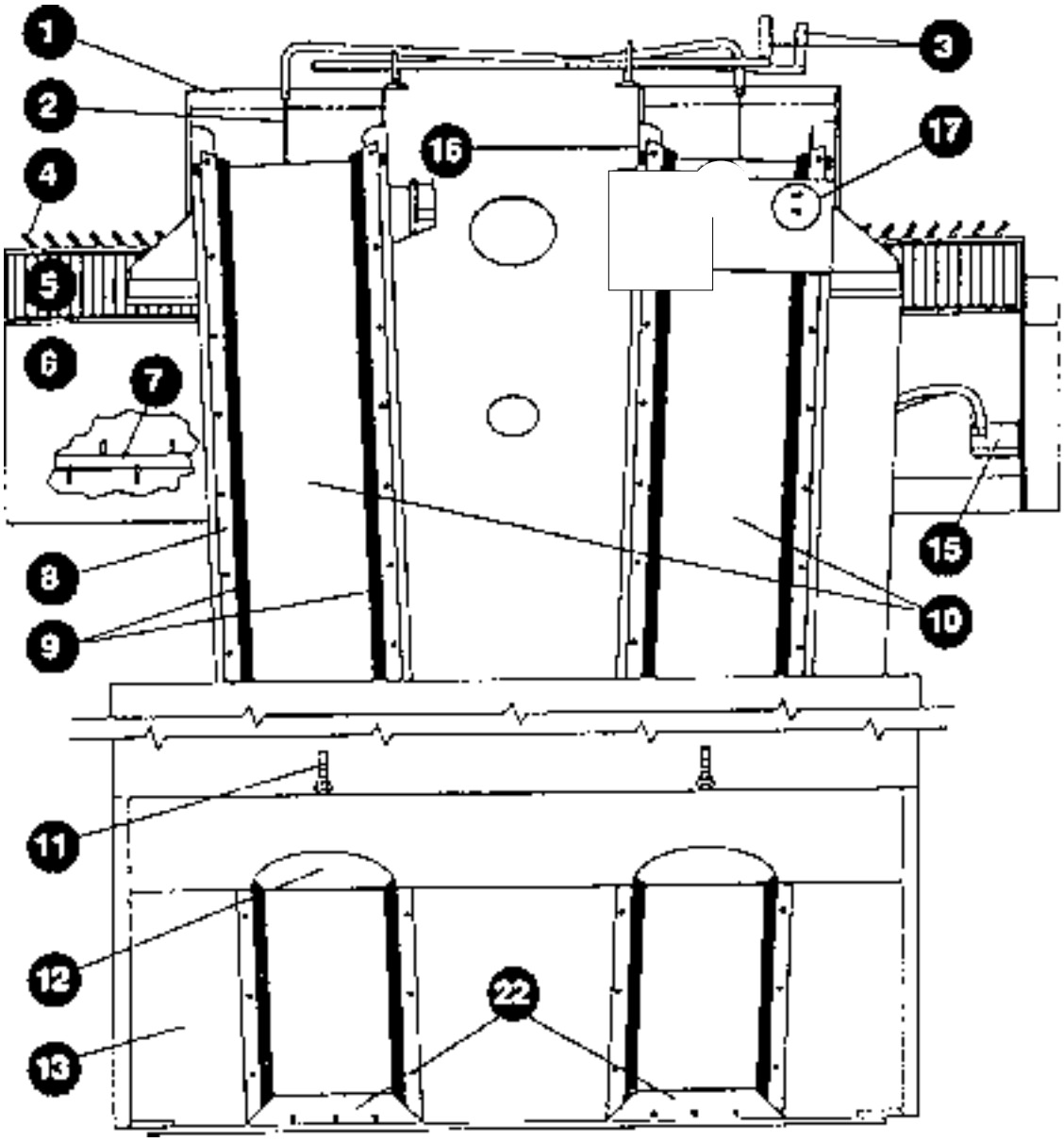


Figure 6
Chip Spreader - Top View

1. Deflector Hood
2. Vertical Plate Deflector
3. Vertical Deflector Reach Rods
4. Cut-Off Gate Levers
5. Reject Screens
6. Spread Hopper
7. Agitator Shaft
8. Channel Strip
9. Chute Liner
10. Conveyor Belt
11. Feed Gate Adjuster
12. Feed Gate
13. Receiving Hopper
15. Motor, Agitator/Spreadroll
16. Motor, Conveyor
17. Auxiliary Conveyor Switches
22. Lagging Skirts

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Adjust the **chute liners (9)** when necessary by loosening the **channel strip bolts (8)** and moving the **rubber liner (9)** to just touch the **conveyor belt (10)**.

If a section of **chute liner (9)** shows excessive wear, replace it with a genuine ROSCO rubber chute liner (see parts catalog).

ATTENTION: *Use genuine ROSCO parts for replacement of rubber conveyor components. Using hard rubber, old conveyor belting, or any other rubber containing fabric or reinforcement, will cause rapid conveyor belt wear and eventual failure.*

LAGGING SKIRTS

The **lagging skirts (22)** are mounted at the bottom of the **receiving hopper (13)** and contact the **conveyor belts (10)** immediately above the tail pulley.

Periodically check for clearance between the **lagging skirts (22)** and the **conveyor belts (10)**.

Adjust the **lagging skirts (22)** when necessary by loosening the skirt mounting bolts and moving the rubber skirt to just touch the **conveyor belt (10)**.

If a **lagging skirt (22)** shows excessive wear, replace it with a genuine ROSCO lagging skirt (see Parts Catalog).

ATTENTION: *Use genuine ROSCO parts for replacement of rubber conveyor components. Using hard rubber, old conveyor belting, or any other rubber containing fabric or reinforcement, will cause rapid conveyor belt wear and eventual failure.*

CONVEYOR BELTS

Proper alignment and tension adjustment of the conveyor belts is necessary to deliver proper system operation and maximum life from the components. In the following paragraphs, the numbers in parenthesis () refer to items in Figure 7.

If mis-alignment or slack is noticed in a conveyor belt, make adjustments as soon as possible to prevent premature wear of the belt and related components. Three pulleys in the conveyor group are adjustable:

- ⇨ **Adjustable Idler (4)**
- ⇨ **Head Pulley (1)**
- ⇨ **Tail Pulley (3)**

WARNING: *Keep clear of rotating shafts. Loose clothing or long hair may become entangled. Use patience and caution when adjusting conveyor belts.*

A. ***Alignment Adjustment*** - Stop conveyors when making adjustments. Load conveyor with material and check results after adjustment is made.

Note: Special care is taken at the factory to align the **head and tail pulleys (1 & 3)** to precise alignment. Therefore, alignment adjustments should be made *first* on the **adjustable idler (4)**.

1. To adjust conveyor belt alignment, tighten the **adjuster nut (6)** on the side opposite the direction you want the belt to move. For example, to move the belt to the left, tighten the right **adjuster nut (6)**.

2. If primary adjustments of the **adjustable idler (4)** fails to cause the conveyor belt to track properly, next adjust the **tail pulley (3)**.

Since the outside **tail pulley adjusters (7)** are more accessible, adjust them by extending (move the belt away from the adjuster) or retracting (move the belt towards the adjuster).

Make small initial adjustments and wait sufficient time between changes to avoid overshooting the desired setting.

MAINTENANCE

B. *Tension Adjustment* - Belt tension adjustment is necessary periodically since normal working stress causes the conveyor belts to stretch. This is especially true of new belts.

1. To check for slack in a conveyor belt, examine the return side of the belt running under load. Belts with too much slack will bounce enough to contact the conveyor frame.

2. Extend both **tail pulley adjusters (7)** slowly and evenly only enough to eliminate the bouncing. ***Do Not Overtighten***.

3. Observe conveyor belt alignment and make adjustments, if necessary, as outlined previously.

C. *Replacing Belts* - Sufficient adjustment range has been designed into the tail pulley assembly to allow for replacing a conveyor belt without pre-stretching.

Belt splices should be made with No.375 x 20 plate grip fasteners. The fasteners must work on a 10" pulley radius without pulling. Too large a fastener will tear out the belt very quickly.

Note: Genuine ROSCO replacement parts for the conveyor belt group are listed in the Parts Catalog of this manual.

CONVEYOR BELT LUBRICATION POINTS

Prior to daily operation of the Chip Spreader, the following conveyor components should be lubricatted with a high quality bearing grease:

A. *Head Pulley Bearings* - 4 places. There is a bearing on each end of each **head pulley (1)**.

B. *Tail Pulley Bearings* - 4 places. There is a bearing on each end of each **tail pulley (3)**.

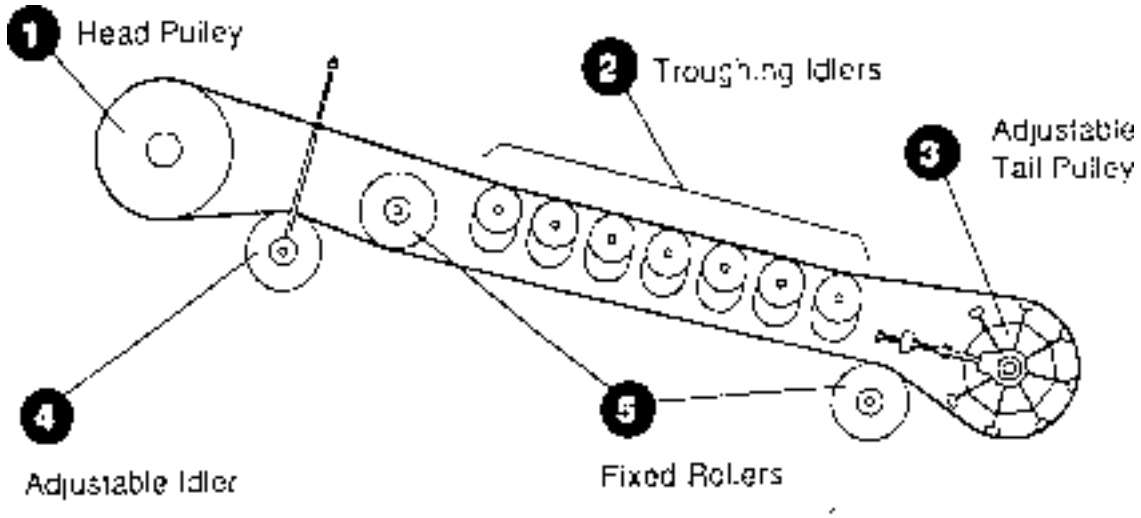

Figure 7
Conveyor Pulley Schematic

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NOTES:

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All widths of spread hoppers share common components, however the quantity of these components vary with the hopper width. Components of the spread hopper are shown in Figures 8, 9 and 10. In the following paragraphs, the numbers in parenthesis () refer to items in these figures.

SPREAD HOPPER MAINTENANCE

LUBRICATION

Prior to daily operation of the Chipspreader, the following items on the spread hopper should be lubricated with a high quality bearing grease:

A. ***Agitator Shaft Bearings (2)*** - In 2 places. There is a bearing on each end of the agitator shaft.

B. ***Spreadroll Shaft Bearings (1)*** - In 2 places. There is a bearing on each end of the spreadroll.

C. ***Gate Pivot Points (3)*** - Grease zerks are provided on each spread hopper gate. The number of gates depends on the spreadroll width.

GATE WEAR PLATES

The spread hopper gate wear plates are adjustable and reversible. Use the adjusting screw with locknut (see Figure 9) to obtain an even 1/16" (1.59 mm) gap between the gate and spreadroll surface. Check this adjustment every 50 hours of service.

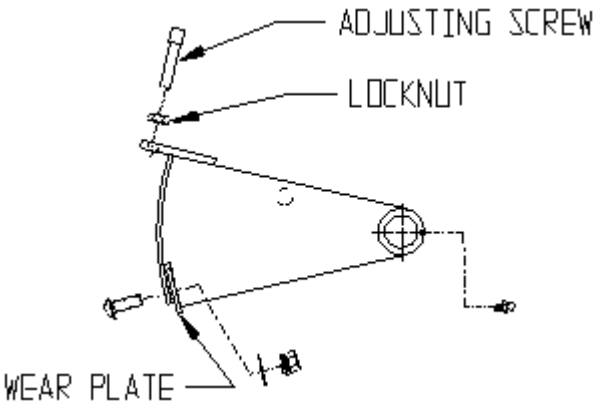


Figure 9

AGITATOR

Components of the spread hopper agitator are illustrated in Figure 10. In the following paragraphs, the items discussed are shown in that illustration.

The function of the spread hopper agitator is to prevent certain aggregate material, like wet sand, from bridging or arching in the hopper. By preventing material bridging, the agitator assures an even feed of aggregate to the spreadroll.

On each end of the agitator sections is a ductile steel wear plate facing against a fixed wear plate. The fixed wear plates are bolted to the hopper end by the bearing bolts. The plates must be replaced periodically as wear occurs. Neglect of these wear plates will cause shafts and bearings to fail.

SPREADROLL SEAL

The spreadroll seal in the spread hopper, which runs along the length of the spreadroll, should be checked every 50 hours for proper adjustment. Loosen the retaining bolts and slide the spreadroll seal to obtain an even 1/16" (1.59 mm) gap between the seal and the spreadroll for the entire length of the spreadroll.

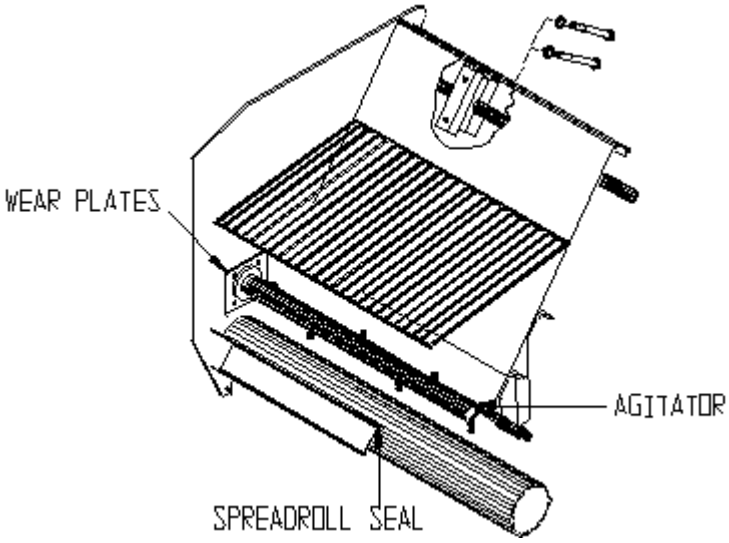
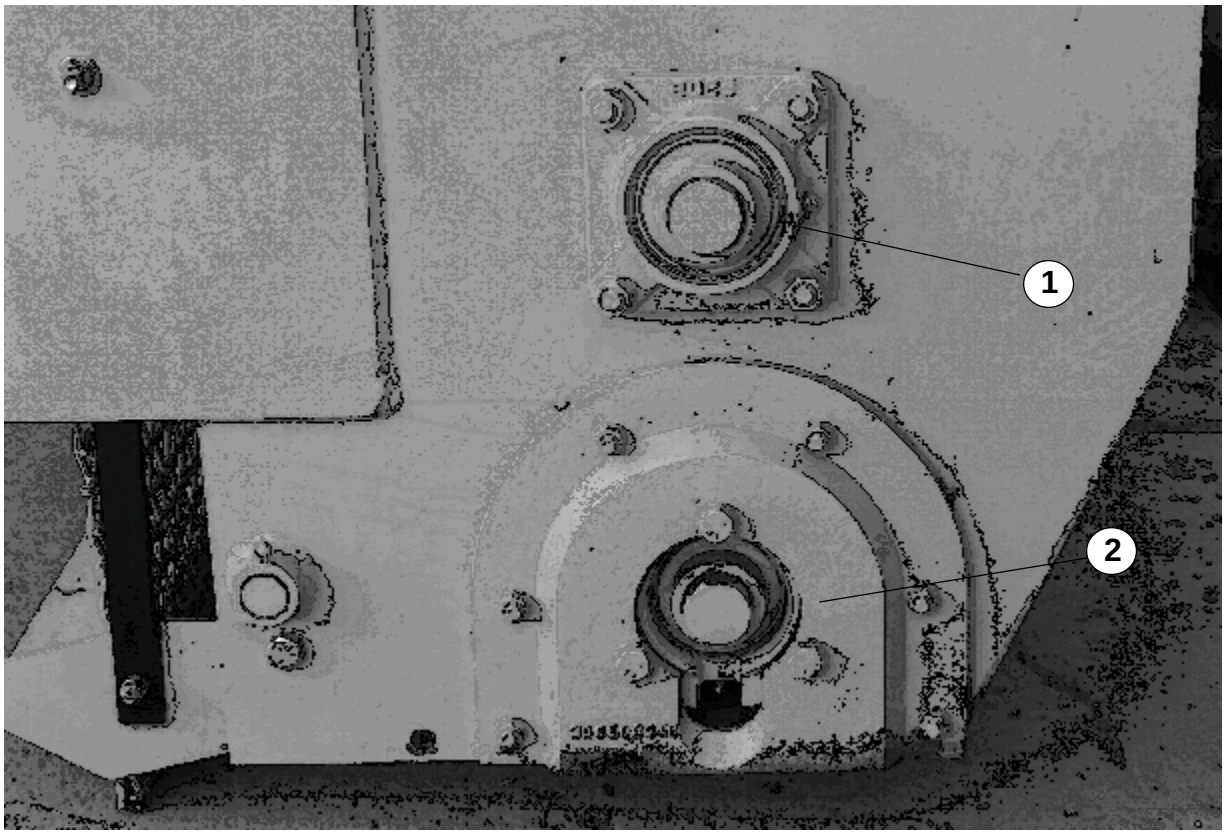
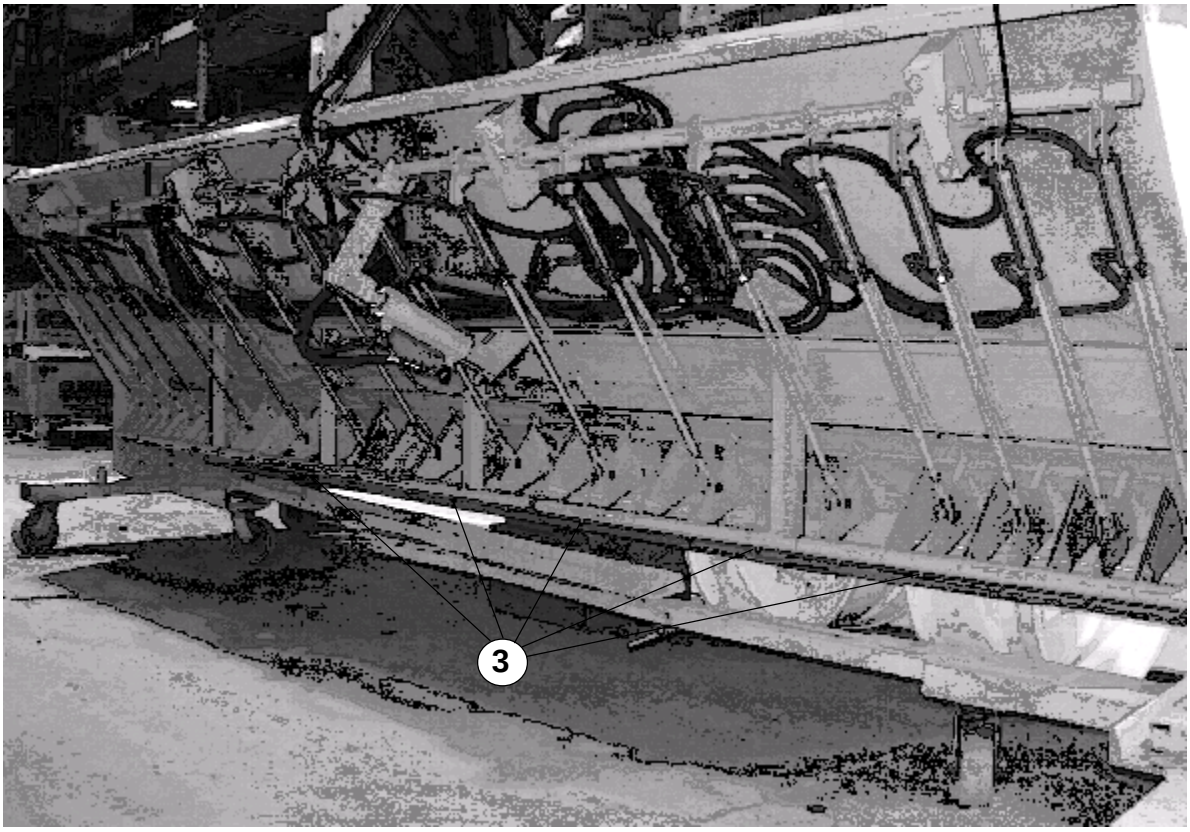


Figure 10

MAINTENANCE





MAINTENANCE

CHASSIS & RUNNING GEAR MAINTENANCE

TIRES

Check the tires daily for damage or noticeably low pressure.

Inflate tires to 50 PSI in front and 65 PSI in the rear for best performance. However, various operating speeds, road bed conditions, truck pulling arrangements, tire options and other operating conditions may require different tire pressure.

ATTENTION: *Never exceed the tire manufacturer's maximum recommended inflation pressure. See the Safety Chapter in this manual for further information on tire maintenance.*

Protect the tires from exposure to petroleum products and other chemicals.

FRONT AXLE & STEERING

The following components of the front axle and steering group require lubrication at intervals per the Preventive Maintenance Chart.

A. ***Front Axle Oscillating Shaft*** - In 1 place. A grease zerk is located on the left side of the shaft.

B. ***Tie Rod Ends*** - In 2 places. There is one tie rod end on each side of the Chipspreader.

C. ***King Pins*** - In 4 places. Two grease zerks are located on each side of the Chipspreader - one on the upper and one on the lower king pin.

D. ***Wheel Bearings*** - There are two bearings on the hub assembly of each side of the front axle. Remove and repack the bearings with high quality wheel bearing grease seasonally or after 500 service hours, whichever occurs first. The inner grease seal should be replaced each time the bearings are serviced.

E. ***Stemco Hub Covers*** - This optional hub cover includes a see-through cap and rubber fill plug. With Stemco hub covers, the hub assemblies are filled with 90 weight gear lube to lubricate the wheel bearings (instead of wheel bearing grease). The level of the gear lube should be maintained up to the bottom of the fill plug.

TORQUE HUBS

The torque hubs on the rear axle should be checked periodically to make sure they contain the proper amount of gear lube.

There are two drain/fill plugs in the outer end of each torque hub. They are internal hex plugs and are removable with a large Allen wrench. When inspecting the torque hubs, follow these guidelines:

1. Check the level of the gear lube by moving the Chipspreader so that one drain/fill plug is at the 12 o'clock position and the other is at the 9 or 3 o'clock position.

2. Remove the plug positioned at 9 or 3 o'clock. The gear lube level should be just up to the bottom of the hole, indicating the hub case is at its proper half-full volume.

3. If the gear lube level is low, remove the top plug and add EP90 weight gear lube until it just begins to drain out of the lower hole. Then replace both plugs.

If necessary, the torque hubs can be disengaged for *emergency* towing.

WARNING: *Be sure the wheels of the unit are blocked before disengaging the torque hubs for towing.*

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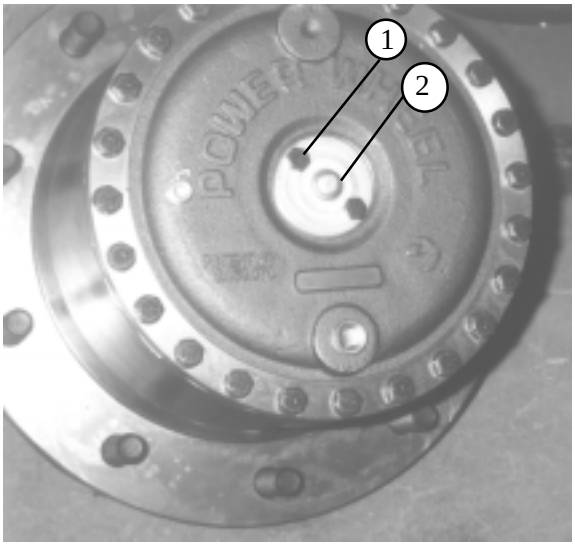
You may disengage the torque hubs by removing the two bolts (1) on the center of the hub and reversing the disengagement cap (2).

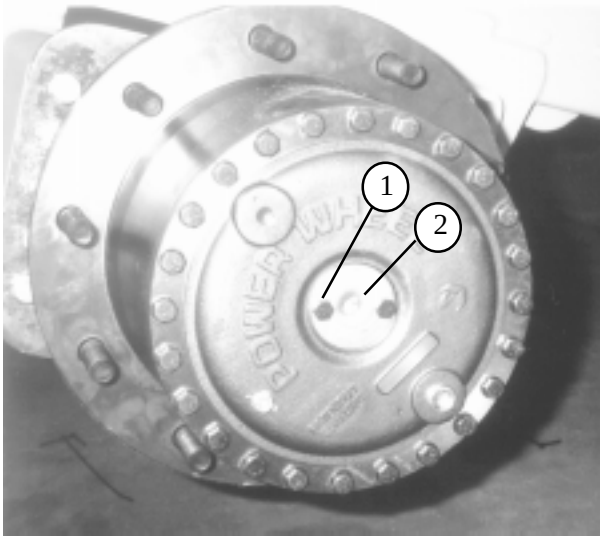
ATTENTION: *When torque hubs are disengaged, the Chipspreader will free wheel. Be sure towing vehicle is attached to the Chipspreader before disengaging the torque hubs.*

WARNING: *Tow ONLY at speeds below 10 MPH and only for a short distance to remove from roadway. Be sure to park on level ground, as the parking brake will not work with the hubs disengaged.*

After the towing destination is reached, the operator on the Chipspreader should keep the front brakes applied while someone blocks the wheels of the unit before releasing the towing vehicle and before dismounting the Chipspreader.



Torque Hub shown engaged for normal operation.



Torque Hub shown disengaged for emergency towing.

MAINTENANCE

MISCELLANEOUS MAINTENANCE AREAS

BRAKE ADJUSTMENT PROCEDURE (2 Wheel Drive Units)

For safe and effective braking, the following procedures are recommended:

CAUTION: *Failure to properly adjust brakes could cause reduced braking performance.*

1. Grease cam bracket and spider fittings prior to brake shoe installation.

WARNING: *Do not allow grease to come in contact with brake linings. This could cause a reduction in braking performance. Reduced braking performance could cause an accident, resulting in serious injury or death.*

2. Adjust the slack adjuster until the brake lining comes into contact with the brake drum.

A. For green brakes, there should be a slight amount of wheel drag at initial adjustment to compensate for any lining irregularities or high spots.

Note: a green brake is an unground, unburnished brake. There is a break-in period where the lining will seat into a normal contact pattern with the drum.

B. For burnished or broken-in brakes, back off the slack adjuster to achieve .010" (.25 mm) clearance between drum and shoe.

3. Apply brakes using normal truck operating pressure. (Average line pressure should be 90 psi.)

WARNING: *Air pressure in excess of 130 psi could result in failure of the air chamber or spring brake chamber, which could result in serious injury or death.*

A. Check the amount of push rod travel. Maximum should not exceed 2 1/2" (6.35 cm) for Type 30 Long Stroke chambers, 2" (5.08 cm) for Type 30 chambers and 1 3/4" (4.45 cm) for Type 24 chambers.

1. Optimum push rod travel on a green brake should be under 2" (5.08 cm).

2. Optimum push rod travel on a burnished or broken-in brake should be under 1 3/4" (4.45 cm).

B. Check the angle between the slack adjuster and push rod. With the brakes applied, the angle should be 90° +/- 5°.

When Automatic Brake Adjusters are used, it is necessary to follow the installation and adjustment procedures recommended by the Automatic Brake Adjuster manufacturer.

ATTENTION: *Failure to follow the recommended procedure for Automatic Brake Adjusters could result in improper operation of the automatic slack adjuster, resulting in reduced brake performance or premature lining wear.*

C. For burnished brakes, apply pressure to brakes and check for lining to drum contact. Using a .010" (.25 mm) feeler gauge, the lining to drum contact should range from 60 to 100% during brake application.

D. Check to ensure the lining is inside the drum during application. More than .060" (1.52 mm) protruding out of the drum is not recommended.

4. Rapidly release air pressure from the brakes and confirm that all brakes quickly release to the normal relaxed position.

MAINTENANCE

WARNING: *Any brake drum reaching maximum wear diameter, as cast on drum by turning, grinding and/or wearing* ***is unsafe*** *and should be replaced immediately. Any brake drum exceeding this dimension is a safety hazard and could cause serious injury or death. If in doubt, contact the brake drum manufacturer.*

WARNING: *Brake linings contain non-asbestos fibers. Breathing brake dust may be hazardous to your health and may cause serious respiratory or other bodily harm.*

When working on brake drums and linings, use the following precautions:

- **Avoid creating dust.**
- **Do not remove brake drum without proper protective equipment.**
- **Do not work on brake linings without proper protective equipment.**
- **Do not replace brake linings without proper protective equipment.**
- **Do not sand, grind, chisel, file, hammer or alter brake linings without proper protective equipment.**
- **Follow O.S.H.A. standards for proper protective devices to be used when working with brake materials.**

HITCH MAINTENANCE

There are two (2) lubrication points on the positive lock truck hitch that should be serviced prior to daily operation of the Chipspreader. A grease zerk is provided on the pivot point at each side of the hitch assembly (visible at the rear of the machine). Other pivot points of the hitch linkage are mounted with sealed bearings which require no lubrications.

CONTROL CONSOLE MAINTENANCE

There are four (4) lubrication points on the control console support tube assembly that should be serviced prior to daily operation of the Chipspreader. Two (2) grease zerks are provided on each end of the support tube assembly.

Also wipe off all gauges and warning lights before the start of each day to be sure the operator has clear visibility of all system warnings and gauges.

LIGHTING MAINTENANCE

If the unit is equipped with a lighting system, be sure all lights are clean and securely mounted.

Also check the following:

A. Inspect all lights daily for proper operation.

B. If a light or group of lights does not function:

1. Check for a blown fuse. The fuse panel is located behind a panel on the right side of the control console.

2. Examine all visible wiring connections, making sure that they are securely fastened.

3. If the light(s) still does not work, remove the lens from the light and inspect the bulb(s), replacing any that appear damaged or discolored.

4. If the trouble is not located, inspect the wiring harness for damage. Wiring schematics are provided in the *"Parts Catalog"* of this manual to assist in trouble shooting the Chipspreader electrical system and wiring harness.

C. If broken wires are found, solder them together and cover with a shrink wrap plastic covering to prevent contamination of the solder joint. If shrink wrap is not readily available, electrician's tape should be wrapped tightly around the solder joint to prevent a short circuit.

D. After making repairs to a wiring harness, always replace or repair the protective loom which covers the wiring to prevent future damage to the wiring harness. Examine the routing of the harness and make sure that it is not subject to excessive movement which causes broken wiring. Always make sure that all wiring harnesses are securely fastened.

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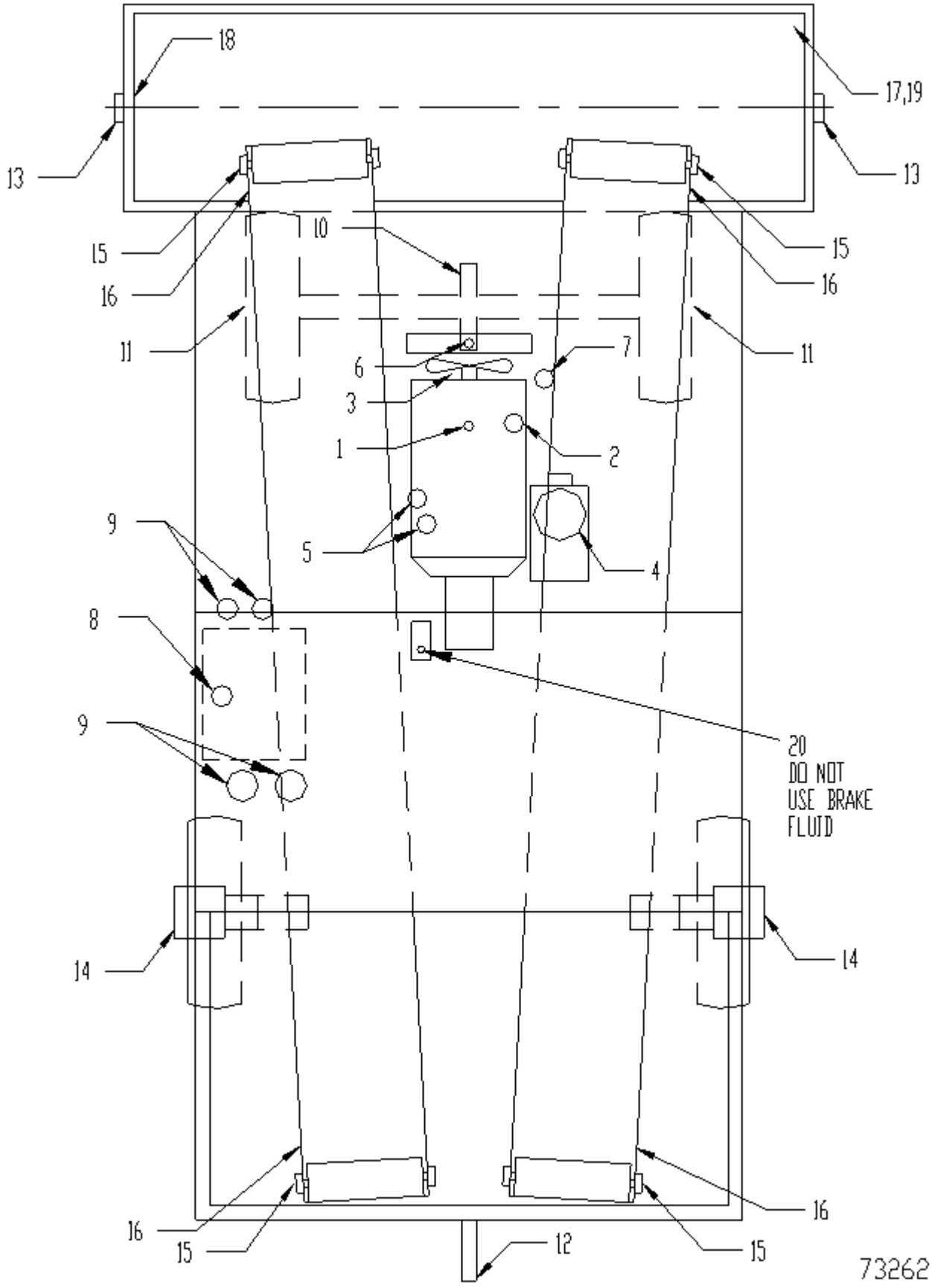


MAINTENANCE

PREVENTIVE MAINTENANCE AND LUBRICATION CHART

ITEM	DESCRIPTION	LUBE TYPE	OPERATION	
1	ENGINE OIL LEVEL	EO	I	R2
2	ENGINE OIL FILTER	C	R2	
3	ENGINE BELT WEAR & TENSION		I	
4	ENGINE AIR FILTERS	C	R2	
5	ENGINE FUEL FILTERS	C	S	R5
6	ENGINE COOLANT LEVEL		I	
7	ENGINE COOLANT FILTER (OPT)		R5	
8	HYDRAULIC OIL LEVEL	HTF	I	R5
9	HYDRAUILC OIL FILTER	C	R5	
10	FRONT AXLE OSCILLATION	MPG	L	
11	FRONT AXLE OIL FRONT PLANATARY HUBS	Mobil 424 Mobil 424	R5 R5	
12	TRUCK HITCH ASSEMBLY	MPG	L	
13	SPREAD HOPPER BEARINGS		L	
14	REAR AXLE TORQUE HUBS	SPC	R5	
15	CONVEYOR PULLEY BEARINGS	MPG	L	
16	CONVEYOR BELT ALIGNMENT		I	A2
17	SPREAD HOPPER GATES		I	A2
18	SPREAD ROLL SEAL		I	A2
19	GATE WEAR PLATE		I	A2
20a 20b	BRAKE MASTER BRAKE ACCUMULATOR	DTE 11M HTF	I I	R5 R5

OPERATION CODE:

I = INSPECT DAILY
A = ADJUST DAILY
L = LUBRICATE DAILY
S = SERVICE DAILY
A2 = ADJUST EVERY 250 HOURS
R2 = REPLACE EVERY 250 HOURS
R5 = REPLACE EVERY 500 HOURS

LUBE TYPE:

EO = ENGINE OIL
C = CARTRIDGE ELEMENT
HTF = HYDRAULIC FLUID
MPG = MULTI-PURPOSE GREASE
SPC = EP-90

MAINTENANCE

PREVENTIVE MAINTENANCE CHART

Identifying Codes: I = Inspect L = Lubricate R = Replace
A = Adjust S = Service

ITEM	MAINT INTERVAL				CAPACITIES		PART NUMBER		TYPE OF SUPPLIES REQUIRED
	Daily	50 Hours	250 Hours	500 Hours	Cummins 6BT/6BTA	6CT	Cummins 6BT/6BTA	6CT	
Engine Oil	I		R		15 qts 14.20 L	20 qts 18.93 L			CC/CD 15W40
Engine Oil Filter			R				72082	35393	Cartridge Filter
Engine Belt	I		I/A				(C) 3903114 3911561	(C) 3905873 3911583	V-Rib Belt
Engine Air Filter	I	I	R	I		Safety- Primary-	853521208 72382	72396 72395	Cartridge Filter
Engine Fuel Filter(s)	S			R			Primary - Secondary -	72079 72078	Cartridge Filter
Engine Coolant	I		I		31 qts 29.34 L	32 qts 30.28 L			50/50 Antifreeze
Opt. Engine Coolant Filter	S			R			72239	72239	Cartridge Filter
Hydraulic Fluid	I	I	I	R	30 gal 113.56 L Reservoir				See Hydraulic Fluids chart
Hydraulic Oil Filters				S S R R	Low Strainer (2) High Strainer (2) Charge Pump (2) Return (3)		72243 36123 34464 6442	72243 36123 34464 6442	Cartridge Filters
Front Axle Osc. Shaft/Steering	L								Multi-Service Grease
Front Axle		I		R	16 qts 15.14 L				Mobil 424
Front Axle Planatary		I		R	1.6 qts 1.5 L				Mobil 424
Truck Hitch	L								Multi-Service Grease

(C) = Cummins Part Number

MAINTENANCE

PREVENTIVE MAINTENANCE CHART

Identifying Codes: I = Inspect L = Lubricate R = Replace
A = Adjust S = Service

ITEM	MAINT INTERVAL				CAPACITIES		PART NUMBER		TYPE OF SUPPLIES REQUIRED
	Daily	50 Hours	250 Hours	500 Hours	Cummins 6BT/6BTA	6CT	Cummins 6BT/6BTA	6CT	
Spread Hopper Bearings	L								Multi-Service Grease
Rear Axle Torque Hubs	I	I	I	R	3.1 qts (2.93 L)	3.1 qts (2.93 L)			Gear Lube EP 90
Conveyor Pulley Bearing	L		L						
Conveyor Belt Alignment	I	I/A	I/A	A					
Spread Hopper Gate Adjust.	I		I/A	I/A					
Spreadroll Seal Adjustment	I	I/A	A						
Gate Wear Plate Adjust.	I	I/A	I/A						
Gear Box	I	I	I	R	4 qts (3.8 L)	4 qts (3.8 L)			80W90

MAINTENANCE

HYDRAULIC FLUIDS

The below recommended hydraulic oils have been reviewed by Rosco and are recommended as replacements. It is best to use the heaviest weight oil that can be safely used for the temperature range of machine operation. If your machine will never be used at below 0°F temperatures, we recommend that you use a heavier weight oil.

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

HYDRAULIC OIL REQUIREMENTS AND APPROVED BRANDS FOR FIELD FILL:

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

Be sure hydraulic oil selection is compatable with your hydraulic system.
Be sure to use mineral base hydraulic oil.
Be sure hydraulic oil selection assistance is from a reputable supplier.
Be sure the hydraulic specifications meet or exceed the following specifications.

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

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

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

ISO 46 / SAE 20 ***AMBIENT TEMP.*** -15° F TO 80° F (-26° TO 27° C)	***ISO 68*** ***AMBIENT TEMP.*** -0° F TO 100° F (-18° TO 38° C)	***ISO 100 / SAE 30*** ***AMBIENT TEMP.*** 15° F TO 115° F (-9° TO 46° C)
Special Start-up Below 5° F (-15° C)	Special Start-up Below 20° F (-7° C)	Special Start-up Below 32° F (0° C)
Hyd Res Temp Max 165° F (74° C)	Hyd Res Temp Max 185° F (85° C)	Hyd Res Temp Max 200°F (93° C)
MOBIL DTE 25	MOBIL DTE 26	MOBIL DTE AW 100/DTE 18M
CITGO AW 46	CITGO AW 68	CITGO AW 100
CONOCO PHILLIPS 46	CONOCO PHILLIPS 68	CONOCO PHILLIPS 100
CHEVRON TEXACO AW 46	CHEVRON TEXACO AW 68	CHEVRON TEXACO AW 100
SHELL TELLUS 46	SHELL TELLUS 68	SHELL TELLUS 100
EXXON NUTO 46	EXXON NUTO 68	EXXON NUTO 100

MAINTENANCE

HYDRAULIC FITTING TORQUE

Tightening Flare Type Tube Fittings

1. Check the flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tighting.
3. Lubricate connection and hand tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

Note: *The torque values showen are based on lubricated connections as in assembly.*

Tube Size OD		Nut Size Across Flats		Torque Value (see note)		Recommended Turns to Tighten (After Finger Tightening)	
in	mm	in	mm	N.m.	lb-ft	Flats	Turns
3/16	4.76	7/16	11.11	8	6	1	1/6
1/4	6.35	9/16	14.29	12	9	1	1/6
5/16	7.94	5/8	15.88	16	12	1	1/6
3/8	9.53	11/16	17.46	24	18	1	1/6
1/2	12.70	7/8	22.23	46	34	1	1/6
5/8	15.88	1	25.40	62	46	1	1/6
3/4	19.10	1¼	31.75	102	75	3/4	1/8
7/8	22.23	1-3/8	34.93	122	90	3/4	1/8

TIGHTENING O-RING FITTINGS

1. Inspect O-ring and seat for dirt or obvious defects.
2. On angle fittings, back the lock nut off until washer bottoms out at top of groove.
3. Hand tighten fitting until back-up washer or washer face (if straight fitting) bottoms on face and O-ring is seated.
4. Position angle fittings by unscrewing no more than one turn.
5. Tighten straight fittings to torque shown.
6. Tighten while holding body of fitting with a wrench.

Note: *The torque values shown are based on lubricated connections as in reassembly.*

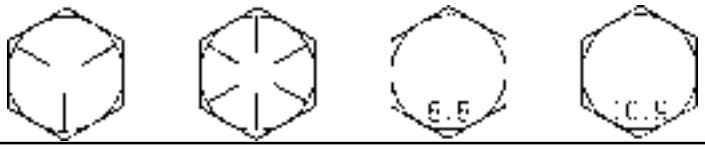
Tube Size OD		Nut Size Across Flats		Torque Value (see note)		Recommended Turns to Tighten (After Finger Tightening)	
in	mm	in	mm	N.m.	lb-ft	Flats	Turns
3/8	9.53	1/2	12.70	8	6	2	1/3
7/16	11.11	9/16	14.29	12	9	2	1/3
1/2	12.70	5/8	15.88	16	12	2	1/3
9/16	14.29	11/16	17.46	24	18	2	1/3
3/4	19.10	7/8	22.23	46	34	2	1/3
7/8	22.23	1	25.40	62	46	1½	1/4
1-1/16	26.99	1¼	31.75	102	75	1	1/6
1-3/16	22.23	1-3/8	34.93	122	90	1	1/6
1-5/16	33.34	1½	38.10	142	105	¾	1/8
1-5/8	41.28	1-7/8	47.63	190	140	¾	1/8
1-7/8	47.63	2-1/8	53.98	217	160	½	1/12

MAINTENANCE

BOLT TORQUE CHART

The table below gives the correct torque values for various **NON-LUBRICATED** bolts. **DO NOT** lubricate bolts unless otherwise specified in this manual. Check tightness of bolts periodically, using this table as a guide. **ALWAYS** replace hardware with an equal strength fastener. When using locking fasteners, increase torque values by 5%.

Bolt Identification By Head Markings:



ft-lb = foot-pounds
N-m = Newton-meter

Bolt Size	English				Metric			
	Grade 5		Grade 8		Class 8.8		Class 10.9	
	ft-lb	N-m	ft-lb	N-m	ft-lb	N-m	ft-lb	N-m
M6					7	10	11	15
1/4	9	12	12	17				
5/16	19	25	27	36				
M8					18	25	26	35
3/8	33	45	45	63				
M10					37	50	52	70
7/16	53	72	75	100				
M12					66	90	92	125
1/2	80	110	115	155				
M14					103	140	148	200
9/16	115	155	165	220				
5/8	160	215	220	305				
M16					166	225	229	310
3/4	290	390	400	540				
M20					321	435	450	610
7/8	420	570	650	880				
M24					553	750	774	1050
1	630	850	970	1320				
M30					1130	1495	1550	2100

TROUBLESHOOTING

The following Troubleshooting Guide includes some problems that an operator may encounter during the course of operating the Chipspreader. It also includes some acceptable corrections to these problems. Unless otherwise noted, the problems llisted here are those which an opertor can diagnose and repair. See an authorized ROSCO Dealer/Distributor for diagnosis and repair of problems **not** listed. For specific engine and hydraulic system problems not covered by this guide, please refer to the engine or hydraulic pump/motor manufacturer's manual.

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

When a problem occurs, don't overlook the simple causes. For example, a starting problem could be caused by something as simple as an empty fuel tank. After a mechanical failure has been corrected, be sure to locate and correct the cause of the problem.

PROBLEM INDEX

TROUBLESHOOTING

Problem	Cause	Solution
Engine Doesn't Crank	Battery is weak or dead.	Charge or replace battery.
	Park brake switch not "ON".	Park brake switch must be "ON" to start engine.
	Neutral start switch not activated.	Put direction control lever in neutral.
	Faulty ignition switch.	Replace.
	Faulty start solenoid.	Replace.
	Faulty solenoid on starter or faulty starter.	Repair/Replace.
	Faulty wiring.	Repair/Replace.
Engine Cranks but Won't Start (No Smoke From Exhaust)	No fuel in fuel tank.	Add fuel to fuel tank.
	No voltage to fuel shut off solenoid.	Check fuel shut off voltage (voltage should be a minimum of 9 volts with the ignition key on during cranking).
	No fuel to the injector pump.	Check fuel supply system.
	Fuel connections loose on suction side of injector pump.	Tighten all fuel filter fittings and connections from the fuel tank to the injector pump.
	Fuel filter plugged or restricted.	Replace the fuel filter(s).
	Intake or exhaust system restricted.	Check for and remove restrictions.
Engine Difficult to Start or Won't Start	Engine cranking speed too low (below 150 RPM).	Repair/clean battery terminal connections. Charge/replace battery.
	Insufficient supply of fuel to injector nozzles.	Check fuel system. Clean/replace fuel filter.

(cont.) *(cont.)* *(cont.)*

TROUBLESHOOTING

Problem	Cause	Solution
Engine Difficult to Start or Won't Start (cont.)	Fuel solenoid is defective.	Check/replace defective fuel solenoid. (See engine manual).
	Fuel filter is plugged.	Replace the fuel filter(s).
	Air in the fuel system.	Check for air leaks in the low pressure side of the fuel system. Prime the fuel system. (See engine manual).
	Fuel supply is contaminated.	Verify by operating engine with a fuel of known quality.
	Intake air system is restricted.	Check for and remove restrictions.
Unit Doesn't Move with Engine Running or Moves in One Direction Only	Park brake switch "ON".	Turn park brake switch "OFF".
	Hydrostatic pump forward/ reverse relief valves not seated.	Relief valves can be turned out 2 turns for towing. Check and turn hex nut cartridges in (clockwise) to seat valves.
	Insufficient hydraulic system charge pressure to release park brake.	See problem "*Brake Won't Release or Only Partially Releases*".
	No voltage to control handle.	Check voltage and wiring.
	Forward/reverse relief valves are bypassing oil at low pressure.	Repair/replace relief valve cartridge(s).
	Damaged hydrostatic pump.	Repair/replace hydrostatic pump.
	Damaged hydrostatic motor.	Repair/replace hydrostatic motor.
	Damaged torque hub.	Repair/replace torque hub.
	Faulty control handle.	Repair/replace control handle.
Unit Jerks When Operating in Forward or Reverse	Fast movement of direction control handle.	Move handle slowly when changing speed and/or direction.

(cont.) *(cont.)* *(cont.)*

TROUBLESHOOTING

Problem	Cause	Solution
Unit Jerks When Operating in Forward or Reverse (cont.)	Parking brake not fully disengaged.	See problem "*Brake Won't Release or Only Partially Releases*".
	Engine speed set too low.	Run engine at maximum RPM.
	Low hydraulic fluid level.	Fill hydraulic fluid reservoir with correct fluid until visible in the sight gauge.
	Air leaking into hydraulic system.	Tighten or replace hoses, fittings, and/or filter(s).
	Hydrostatic pump is malfunctioning.	Repair/replace the pump.
Engine Power Output is Low	Excessive load for engine horsepower rating.	Reduce load on unit by reducing ground speed.
	Operating engine at high altitude.	De-rate engine power output for altitudes above 1000 feet (305 m).
	Air intake piping is restricted or air cleaner element is dirty.	Remove restrictions. Replace air cleaner element(s).
	Fuel suction line or fuel filter is restricted.	Check fuel line for restrictions. Replace fuel filter element(s).
	Fuel return system is restricted.	Check/correct restricted fuel return system.
	Fuel transfer pump is malfunctioning.	Check/replace fuel transfer pump. (See engine manual).
	Throttle lever is improperly adjusted.	Check/adjust throttle controls.
	Injector is malfunctioning.	Check/replace injector. (See engine manual).
	Poor quality fuel.	Verify by operating with a fuel of known quality.

TROUBLESHOOTING

Problem	Cause	Solution
Steering is Difficult	Low hydraulic fluid level.	Add hydraulic fluid to proper level. (See *Maintenance Chapter)*.
	Hydraulic reservoir return filters contain contamination.	Check return filter(s) for contamination and replace if necessary. (See *Maintenance Chapter*).
	Hydraulic relief valve in steering circuit is set incorrectly.	Check relief valve setting (should be at 1250 PSI.) Adjust setting if necessary.
	Worn hydraulic pump.	Check for worn pump. Repair/ replace.
	Worn steering orbitrol motor.	Check for worn steering orbitrol motor. Repair/replace.
	Worn or damaged steering cylinder.	Repair/replace steering cylinder.
Hydraulic System Overheats (Temperature above 220° F or 104.4° C)	Low hydraulic fluid level.	Fill with the correct fluid until fluid is visible in the sight gauge.
	Defective gauge or sender giving wrong temperature reading.	Replace gauge or sender.
	Primary relief valve on pump set too low or left out when towed.	Adjust setting to 5090 PSI on both Forward/Reverse. (See pump service manual).
	Excessive air temperature and high duty cycle.	Operate unit at slower ground speed and maximum engine RPM during hot weather.
	Plugged fins on oil cooler.	Clean fins and correct any other problems with cooling air flow.
	Worn out hydrostatic pump.	Repair or replace.

TROUBLESHOOTING

Problem	Cause	Solution
Engine Oil Pressure Low	Electrical power not being supplied to gauge.	Check fuse.
	Incorrect oil level.	Check for oil leaks. Add or drain engine oil. Check dipstick calibration.
	Oil filter plugged.	Change full flow oil filter.
	Oil diluted with fuel.	Check/replace injector, fuel transfer pump and/or injection pump.
	Oil diluted with coolant.	See authorized repair facility.
	Incorrect oil specifications.	Change oil and check oil specifications. (See *Maintenance chapter* in this manual and engine manual).
	Oil pressure sender or gauge malfunctioning.	Replace oil pressure sender or gauge.
Engine Coolant Temperature is Above Normal	Coolant level too low.	Add coolant.
	Unit operating with excessive loads.	Reduce unit loading.
	Radiator fins are damaged or obstructed with debris.	Inspect radiator fins. Clean/ repair or replace.
	Collapsed or restricted radiator hose(s).	Inspect radiator hoses. Replace if necessary.
	Loose fan drive belt.	Check belt tension and tighten if necessary.
	Cooling fan shroud damaged or missing.	Inspect shroud. Repair, replace or install as needed.
	Incorrect or malfunctioning radiator cap.	Check the radiator cap. Replace if necessary.

(cont.) *(cont.)* *(cont.)*

TROUBLESHOOTING

Problem	Cause	Solution
Engine Coolant Temperature Above Normal (cont.)	Temperature gauge or sender malfunctioning.	Repair/replace the sender or gauge.
	Thermostat stuck in closed position.	Test thermostat. Replace if necessary.
	Dirt, scale or rust in the cooling system.	Clean cooling system.
	Loose wiring, faulty connection.	Repair/replace loose wiring or connector.
Alternator Not Charging	Diode at alternator loose or faulty.	Tighten connection or replace diode.
	Alternator belt loose or broken.	Adjust or replace belt.
	Alternator malfunctioning.	Replace alternator.
	Faulty gauge or sender.	Replace gauge or sender.
	Loose wiring or faulty connection.	Repair/replace loose wiring or connector.
Instruments Won't Work	Faulty wiring.	Check and replace wiring or connector.
	Electrical wiring fault supplying power to fuel solenoid when key is in the "OFF" position.	Check or repair wiring.
	Injection pump fuel solenoid inoperative.	Check solenoid for defects or foreign material inhibiting proper operations.
	Engine operating on fumes drawn into air intake.	Locate and isolate the source of fumes.
	Low idle set too high.	Set idle to specifications.

TROUBLESHOOTING

Problem	Cause	Solution
Parking Brake Won't Release	Engine not running.	Engine must be running to release brake.
	Park brake switch is "ON".	Turn park brake switch "OFF".
	Faulty brake switch.	Replace switch.
	Loose wiring to brake solenoid.	Repair/replace wiring.
	Faulty solenoid to brake valve.	Replace solenoid cartridge or coil.
	Low charge pressure to brakes (300 PSI or less).	Check/adjust charge relief valves on hydrostatic pump to 350 to 400 PSI in neutral. Engine must be at maximum RPM when adjusting charge pressure. Repair/replace hydrostatic pump.
	Faulty brake.	Repair/replace brakes.
Parking Brake Won't Hold	Park brake switch not "ON".	Red indicator light should come on when park brake switch is "ON".
	Faulty switch/wiring allowing electrical power to brake solenoid valve when switch is in "OFF" position.	Repair/replace switch or wiring.
	Faulty brake.	Repair/replace brake(s) on rear wheels.
Park Brake Indicator Light Comes On When Traveling	Park brakes are spring applied and hydraulically released. Hydraulic pressure has dropped to 300 PSI or less.	Check the hydrostatic travel system charge pressure. (See the previous section *"Low charge pressure to brakes.")*
Unit Won't Shift to "High" Range (default is "Low" range)	Faulty switch.	Check/replace if necessary.
	Loose wiring or connector to the two-speed solenoid valve.	Repair/replace wiring or connections.
(cont.)	*(cont.)*	*(cont.)*

TROUBLESHOOTING

Problem	Cause	Solution
Unit Won't Shift to "High" Range (default is "Low" range) (cont.)	Faulty solenoid on two-speed solenoid valve.	Replace solenoid cartridge or coil.
Conveyor Belt Not Running In the Center of the Conveyor (May run true when not loaded but not under load)	Conveyor belts out of adjustment.	Adjust belt alignment. (See *Maintenance Chapter* in this manual). Adjust belt tension. (See *Maintenance Chapter* in this manual).
	One or more of the trough rollers are not turning.	Clean debris out of the roller. Replace if the roller has a flat spot or will not free-up.
Spreadroll Fails to Operate When Gates are Opened	Spread hopper agitator or spreadroll jammed with aggregate or foreign material.	Remove aggregate or foreign material.
	Low hydraulic fluid level.	Add fluid to proper level. (See *Maintenance Chapter* in this manual.)
	Hydraulic reservoir return filters contain contamination and/or are plugged.	Check return filter(s) for contamination and replace if necessary.
	Hydraulic relief valve in spread hopper control circuit set incorrectly.	Check relief valve setting (should be set at 2700 PSI.) Adjust setting if necessary.
	Worn hydraulic pump and/or motor.	Check for worn pump and/or motor and repair or replace if necessary.
Conveyors Fail to Operate	Low hydraulic fluid level.	Add fluid to proper level.
	Hydraulic reservoir suction strainers contain contamination.	Check suction filter for contamination. Clean or replace as necessary.
(cont.)	*(cont.)*	*(cont.)*

TROUBLESHOOTING

Problem	Cause	Solution
Conveyors Fail to Operate (cont.)	No electrical power to conveyor control solenoid valve.	Check for electrical power at the conveyor solenoid valves when the dash conveyor control switch is set to "MANUAL" and the auxiliary conveyor switches are "ON". If power is available, and the problem is not hydraulic system related, replace solenoid cartridge. If there is no power at the solenoid valves, check for electrical power at the conveyor control switch and auxiliary conveyor switches. If power is available, switches may need replacement. If there is no power, check wiring to switches - look for shorts or incorrectly connected wires. (See wiring schematics in the *Parts Catalog* in this manual)
	Sheared key in motor/head pulley drive coupling.	Replace key.
	Faulty relief cartridge on conveyor solenoid valve.	Exchange relief cartridge with another cartridge on the machine. If the problem doesn't transfer to the other function on the machine, cartridge is OK. If the problem transfers, replace the cartridge.
	Worn hydraulic pump or motor.	Check for worn pump or motor. Replace if necessary.
Aggregate Material is Not Distributing Evenly in Spread Hopper	Conveyor hood deflector out of adjustment.	Adjust conveyor hood deflector. (See *Operation Chapter* in this manual.)

TROUBLESHOOTING

Problem	Cause	Solution
Spread Hopper Gates Fail to Open	Low hydraulic fluid level.	Add fluid to proper level. (See *Maintenance Chapter* in this manual.)
	Hydraulic reservoir return filters contain contamination.	Check return filter(s) for contamination and replace if necessary. (See *Maintenance Chapter* in this manual.)
	Gate opener jammed with aggregate or other foreign material.	Remove aggregate or foreign material.
	Hydraulic relief valve in gate opener circuit set incorrectly.	Check relief valve setting (should be set at 250 PSI.) Adjust setting if necessary.
Spread Hopper Gates Will Not Open to the Same Width	Damage or malfunction of potentiometer or linkage at the end of the actuator.	Repair, readjust or replace.
Aggregate Builds Up Behind Auto Conveyor Paddles (Fails to Shut Off Conveyors)	Conveyor hood deflector out of adjustment.	Adjust conveyor hood deflector. (See *Operation Chapter* in this manual).
	Control paddle bent.	If control paddle is bent forward, bend to a position slightly to the rear of vertical.
	Conveyors operating too fast and/ or spread hopper gates closed on one side of the hopper (for narrow spread width).	On units with variable speed conveyor controls, slow down belt speed on side of spread hopper with closed gates. Operate conveyor belt manually with auxiliary conveyor switch on side of spread hopper with gates closed.

TROUBLESHOOTING

Problem	Cause	Solution
Conveyors Fail to Operate with Auto Conveyor Control	If conveyor control switch set is set to "MANUAL", see problem "Conveyors Fail to Operate".	See problem *"Conveyors Fail to Operate".*
	If conveyor control switch is set to "AUTO", possible causes are shorts in the electrical wiring, wire connected incorrectly or faulty switches.	Check for electrical power at the paddle switch in "AUTO" position. If there is no power, check the conveyor control switch wiring. Look for shorts or incorrectly connected wires. (See wiring schematics in the *Parts Catalog* in this manual.) If the conveyor control switch wiring is OK, but there is no power to the paddle switch, replace the conveyor control switch. If power is available at the paddle switch, but not at the solenoid, replace the paddle switch.
Variable Speed Conveyor Control Fails to Change Belt Speed	Faulty belt speed control valve.	Replace the valve.
Wheels Slip or Unit Looses Power or Stops When Negotiating a Hill	Insufficient horsepower to negotiate the grade at the set speed.	Slow the machine down by moving the joystick toward neutral position.
	The unit is operating on a slope so steep that the machine can not pull the load up the hill. Operation of the joystick lever is abrupt when starting and stopping.	The multi-function valves on the pumps are set too low. Set the forward multi-function valve to 4500 PSI and the reverse multi-function valve to 2900 PSI. Insure that the machine hoppers are fully loaded with aggregate to achieve maximum draw bar pull.

(cont.) *(cont.)* *(cont.)*

TROUBLESHOOTING

Problem	Cause	Solution
Wheels Slip or Unit Looses Power or Stops When Negotiating a Hill (cont.)	The unit is operating on a slope so steep that the machine cannot pull the load up the hill. Operation of the joystick lever is abrupt when starting and stopping.	When operating on steep slopes (11% or greater with a 50,000 lb truck) the truck operator will have to push going up hill and brake coming down to insure that the tires do not slip.

HCS-F/F4 CHIPSPREADER

SECTION 2
PARTS CATALOG

PART NO. 39176
FOR UNITS WITH SERIAL NUMBER 38348 AND UP
REVISED 08/01/03

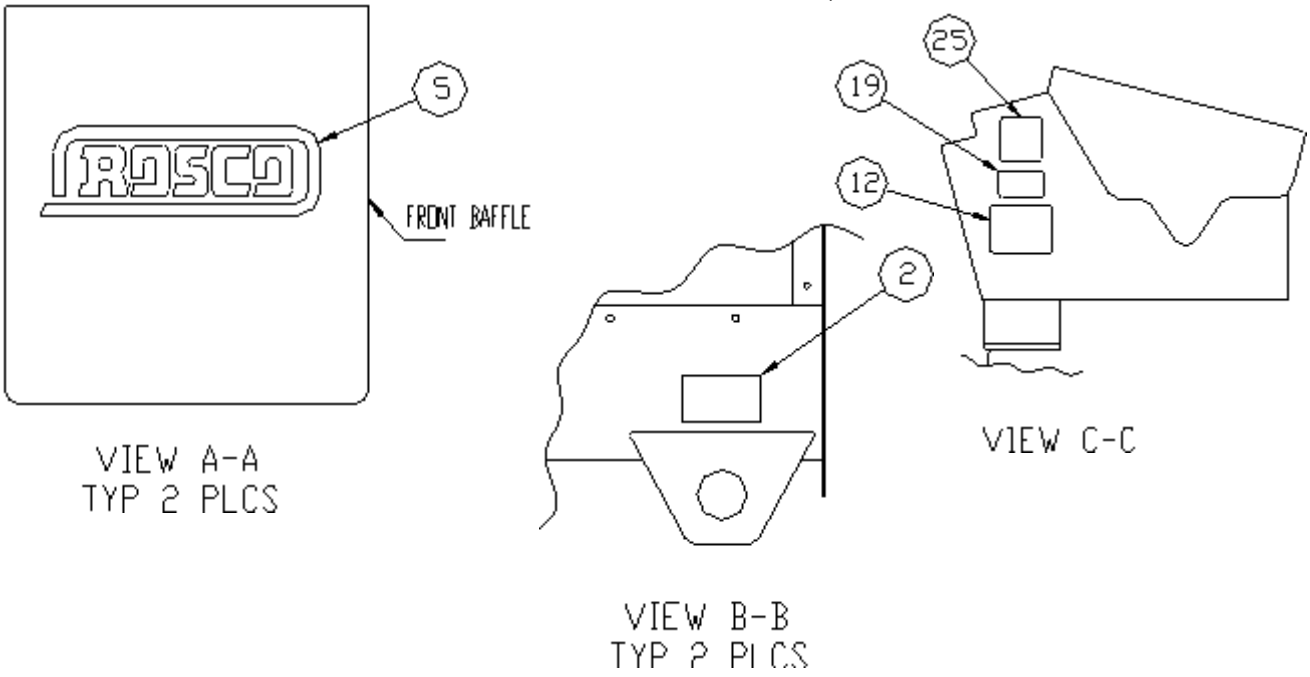
NOTE: It is the responsibility of the customer or user's management to train, educate or supervise his employees in the proper operation and maintenance of this equipment.

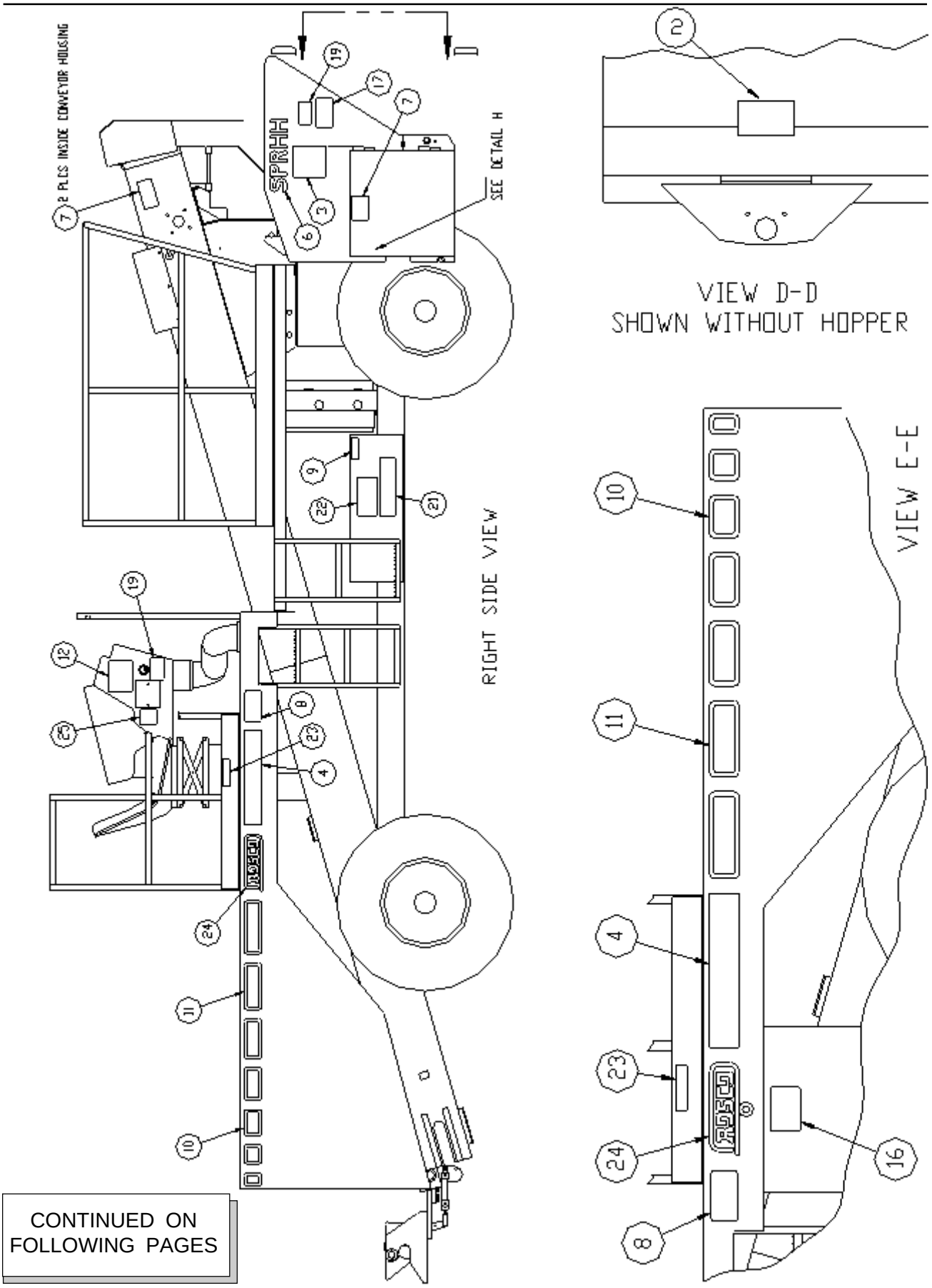
ROSCO - A LeeBoy Company

688 North Highway 16
Denver, North Carolina
Telephone: 704-966-3300
www.LeeBoy.com

Parts Catalog

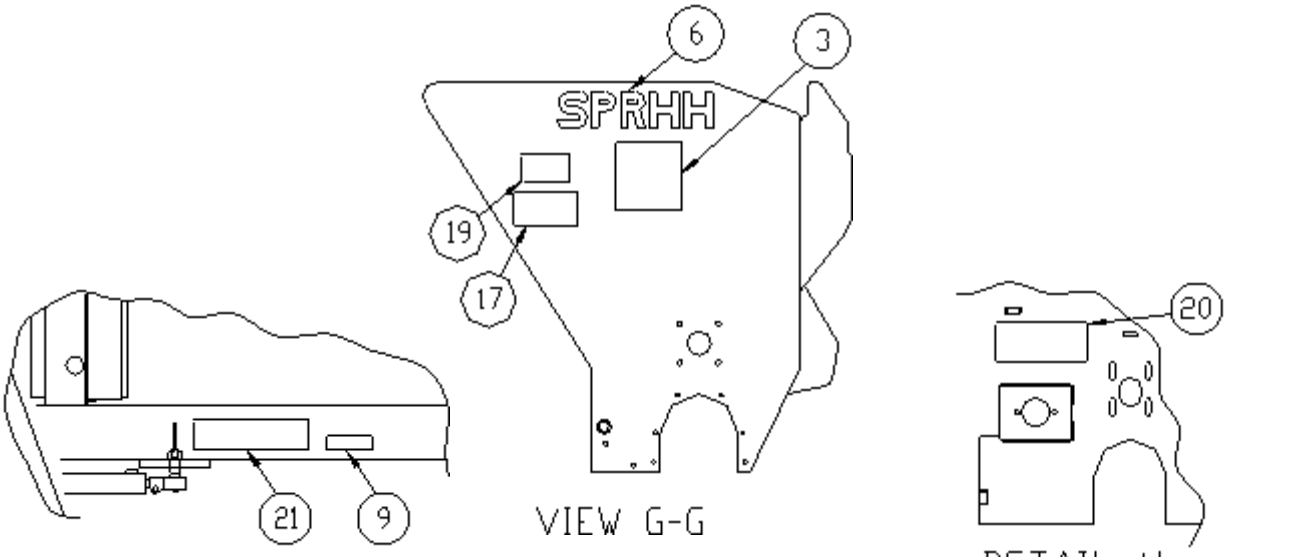
ITEM	PART NO.	QTY	DESCRIPTION
1	004684102	14.50	STRIP,ABRASIVE,4"X60'ROLL,BLK
NS	106000110	4.00	LAGGING,CONV BELT .25X4.00X216
NS	106006161	2.00	WIPER,CONV BELT SCRAPER
NS	106008061	2.00	LINING,CHUTE .250X7.00X26.00
2	106008221	3.00	DECAL,TIE DOWN
4	306001152	2.00	DECAL,FLAHERTY
NS	33630	7.00	STRIPPING,.062
NS	33630-2	1.00	STRIPPING,.250
5	33908	2.00	DECAL,ROSCO LOGO,LARGE,BLACK
NS	34735	5.00	TRIM,STEEL CORE
NS	35355	1.00	PLATE,SERIAL NUMBER,ROSCO
6	35570	2.00	DECAL,SPRHH
7	35943	2.00	DECAL,WARNING,GUARDS
NS	35952	1.00	DECAL,SMV SIGN COVER
NS	36130	1.00	KIT,HORN,STEERING WHEEL CENTER
8	36202	2.00	DECAL,WARNING,KEEP CLEAN
NS	36898	2.00	SEAT BELT,3.00 W/HARDWARE
NS	37053	4.00	ANCHOR,STEP GRATING
NS	38956	1.00	ALARM,BACKUP,97DB
NS	40447	6.00	WASHER,2.25OD,.562IDX7GA.1793
NS	6436	1.00	STEERING WHEEL
NS	72048-01	2.00	SUSPENSION,LOW PROFILE
9	72062	2.00	DECAL,DIESEL POWER,CUMMINS
NS	72124	1.00	PULL,DRAWER,3.00,ALUM
NS	72125	1.00	GRIP,HANDLE,.125X2.75,FLAT
10	72292	2.00	DECAL,STROBE STRIP,SMALL,26.00
11	72293	2.00	DECAL,STROBE STRIP,LARGE,34.75
NS	72376	1.00	SKIRT,HOPPER BUMPER
NS	72527	2.00	SEAT,MICHIGAN,SERIES V-818
NS	72527-01	2.00	SLIDER SET,SEAT BASE

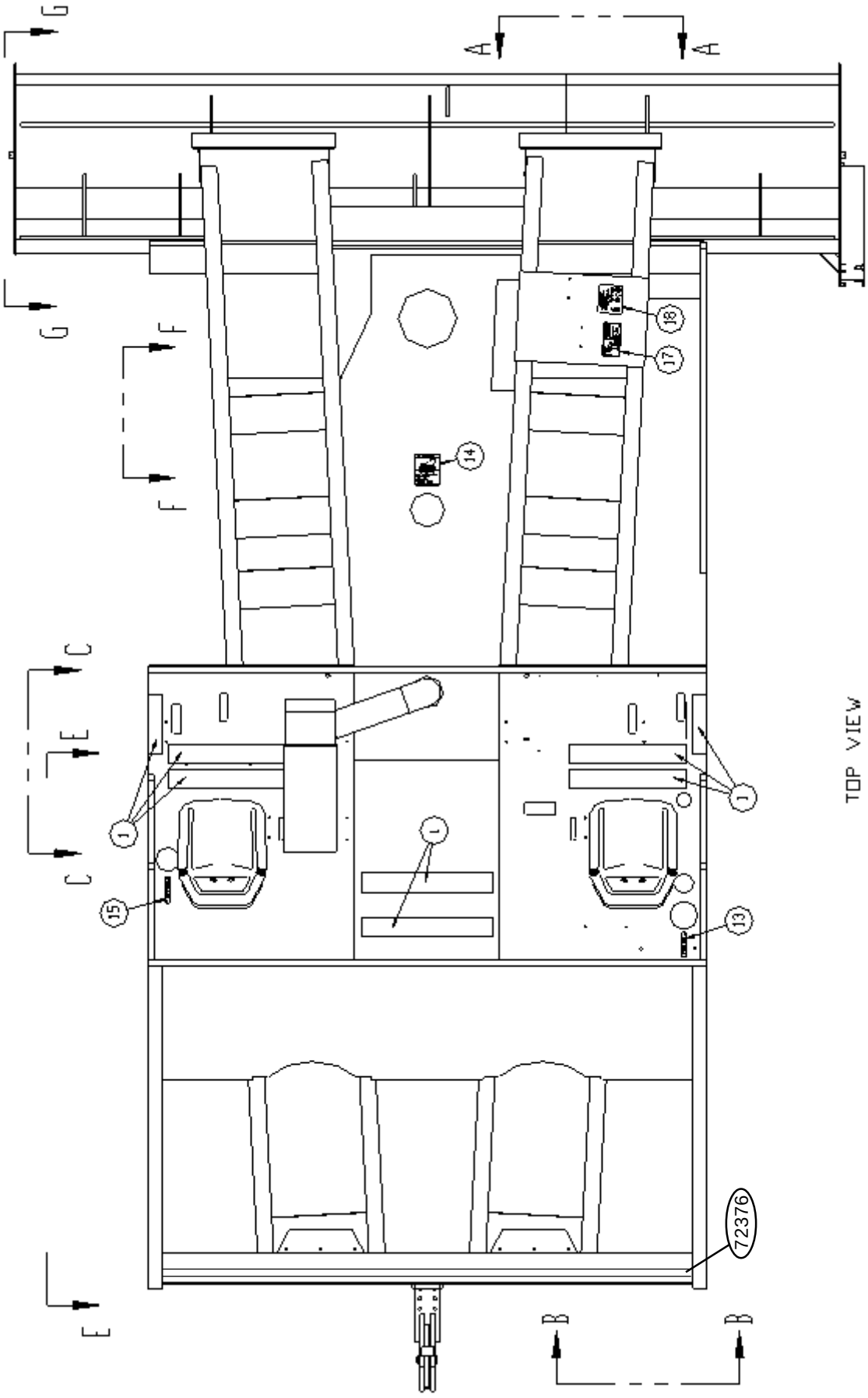




CONTINUED ON FOLLOWING PAGES

ITEM	PART NO.	QTY	DESCRIPTION
NS	72527-02	2.00	KIT,ARM REST SET,SERIES V-818
NS	72527-03	4.00	SPACER,SEAT SLIDE,PLASTIC
12	72587	2.00	DECAL,OPERATING CAUTION
13	72589	1.00	DECAL,DIESEL FUEL
14	72590	1.00	DECAL,HOT FLUID HAZARD,WARNING
15	72591	1.00	DECAL,HYDRAULIC OIL
16	37664	1.00	DECAL,HYD OIL,SIGHT GLASS
17	72602	1.00	DECAL,DANGER,FRONT HOPPER
18	72623	1.00	DECAL,FR CONVEYOR CONTROLS
19	72624	2.00	DECAL,CAUTION,FULL HOPPER
20	72625	1.00	DECAL,GUARD MISSING,WARNING
21	72626	2.00	DECAL,ENGINE COMP,WARNING
22	72627	1.00	DECAL,WARNING,BATTERY INJURY
NS	72638	2.00	SKIRT,HOPPER SIDE,12X23.50
NS	80037	4.00	NUT,HEX,.312-18
NS	80141	4.00	WASHER,TYPE A PLAIN,.312
NS	80161	4.00	WASHER,SPLIT LOCK,.312
NS	80224	6.00	CSHH,.375-16X1.25,GR5
NS	80352	13.00	NUT,FLEXLOC,.375-16,FULL,LT
NS	80996	20.00	WASHER,SAE PLAIN,.375
NS	81089	1.00	WASHER,SAE PLAIN,1.500
NS	81133	4.00	CRG BOLT,.312-18X3.50,GR5
NS	81159	4.00	TACK,DIA.146/.104X.04 GRIP LG
NS	853521158	1.00	INDICATOR,AIR CLEANER
NS	871081000	3.00	PIN,CLEVIS,W/COTTER PIN
NS	91202	1.00	DECK SPAN,GALV,11.75WX75.00 LG
NS	951250115	1.00	KIT,HORN
NS	956011180	1.00	SIGN,SMV,METAL
23	D49	2.00	DECAL,HYDROSTATIC,SMALL,CLEAR
24	D50	2.00	DECAL,ROSCO LOGO,MEDIUM,BLACK
25	37243	2.00	DECAL,WARNING,ENGINE EXHAUST



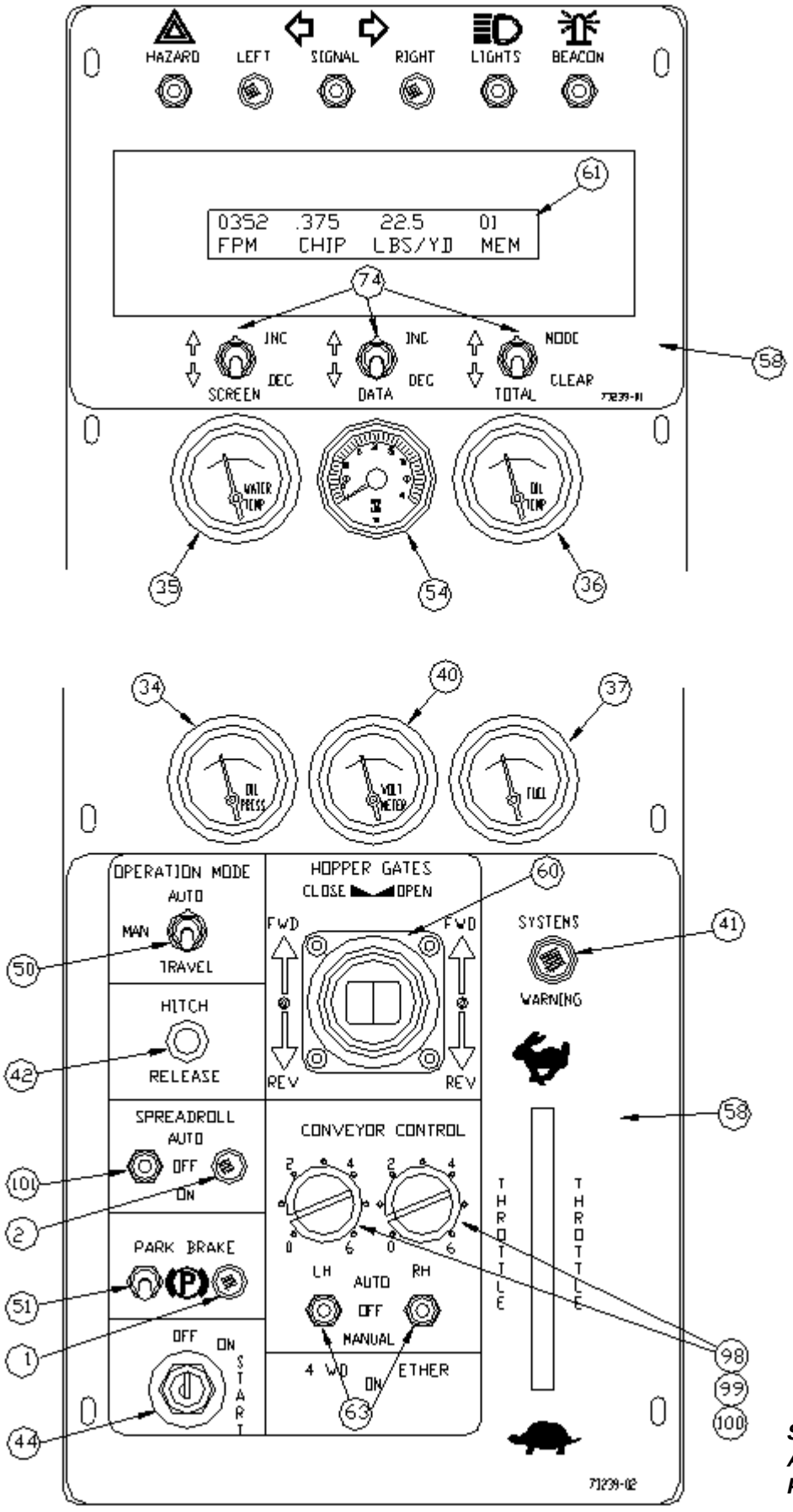

TOP VIEW
72376

ITEM	PART NO.	QTY	DESCRIPTION
1	106004605	1.00	DISC,FRICTION
2	207001201	2.00	W/M,SEAT BASE
3	33118	1.00	NUT,HEX,.813-20
4	33265	1.00	SAFETY HASP W/SWIVEL STAPLE
5	33597	15.00	TIE WRAP,.188X11.00
6	72781	1.00	ORBITROL,STEERING,11.3CIR
7	36128	1.00	COLUMN,STEERING,6.00 W/WIRE
9	40131	1.00	THROTTLE LEVER
10	40571	1.00	W/M,PIVOT,THROTTLE LEVER
11	40834	1.00	W/M,STEERING ARM
12	41174	1.00	DOOR,FUSE BLOCK C/S
13	42393	1.00	HARNESS,CONVEYOR,HCS-F
14	40913	1.00	HARNESS,WIRE PADDLE SWITCHES
15	42396	1.00	HARNESS,CONN,FRONT HOPPER
16	42394	1.00	HARNESS,2-SPEED,HITCH,BRAKE
17	40916	1.00	HARNESS,WIRE HORN,FUEL,BACK-UP
18	40917	1.00	HARNESS,WIRE HYD TANK
20	41146	1.00	CONSOLE PIVOT W/M
21	41148	1.00	PIVOT DECK W/M
22	41165	1.00	COVER,CONTROL CONSOLE
23	**42302**	**1.00**	**CONTROL CONSOLE ASSY, HCS-F** **(See Detail on Following Pages)**
24	71719	18.00	MACH SCR,PH,#8-32X.50
25	71766	2.00	HANDLE,6.00
27	72224	1.00	CASTER,RIGID 1.50X4.00
29	80144	1.00	WASHER,TYPE A PLAIN,.500
30	80160	4.00	WASHER,SPLIT LOCK,.250
31	80161	4.00	WASHER,SPLIT LOCK,.312
32	80207	4.00	CSHH,.312-18X.75,GR5
33	80219	4.00	CSHH,.375-16X.75,GR5
34	80304	1.00	SET S,HSKT,KCUP,.375-16X.375
35	80352	4.00	NUT,FLEXLOC,.375-16,FULL,LT
37	80423	4.00	CSHH,.250-20X.50,GR5
38	80423	2.00	CSHH,.250-20X.50,GR5
39	80793	2.00	NUT,HEX,#8-32
41	80974	2.00	SHLDR SCR,.500X.500X.375-16
42	81091	7.00	RIVET,BLIND,STL,.188,.251-.375
43	846082155	1.00	SPRING,1.18OD,1.15LG,.225WIRE
44	848039222	2.00	ROD END,SPHER,FEM,.250-28
45	848039511	1.00	CABLE,BRAKE,3.00 TRAVELX120.00
46	853750102	2.00	FITT,LUBE,STR,.250-28
48	41158	1.00	COVER,PIVOT CHANNEL
49	36063	2.00	NUT,J-TYPE,.375-16
50	90803	14.00	SLEEVE,ABRASION,NYLON,1.75ID
51	42399	1.00	HARNESS,BRAKE SWITCH
54	72608	1.00	SENSOR,SPEED (PPU) W/HARNESS
60	26461	1.00	CLAMP,WELDMENT
61	21553	2.00	T-HANDLE W/M,.375-16X1.00
62	80185	4.00	CSHH,.250-20X1.00,GR5
63	80141	4.00	WASHER,TYPE A PLAIN,.312
64	80350	4.00	NUT,FLEXLOC,.250-20,FULL,LT

REF: 42302
REV: 0

ITEM	PART NO.	QTY	DESCRIPTION
1	31983	1.00	LIGHT,RED,DASH,.50 HOLE
2	31985	3.00	LIGHT,GREEN,DASH,.50 HOLE
3	33271-0	8.00	WIRE,16 GA,GRAY
4	33271-1	8.00	WIRE,16 GA,BLACK
5	33271-2	8.00	WIRE,16 GA,YELLOW
6	33271-3	8.00	WIRE,16 GA,BROWN
7	33271-4	8.00	WIRE,16 GA,GREEN
8	33271-5	8.00	WIRE,16 GA,WHITE
9	33271-6	8.00	WIRE,16 GA,ORANGE
10	33271-7	8.00	WIRE,16 GA,RED
11	33271-8	8.00	WIRE,16 GA,PINK
12	33271-9	8.00	WIRE,16 GA,PURPLE
13	33271-10	8.00	WIRE,16 GA,GREEN/WHITE STRIPE
14	33271-11	8.00	WIRE,16 GA,BLUE
15	33271-12	8.00	WIRE,16 GA,RED/BLACK STRIPE
16	33271-13	8.00	WIRE,16 GA,BLACK/YELLOW STRIPE
17	33271-14	8.00	WIRE,16 GA,YELLOW/RED STRIPE
18	33271-15	8.00	WIRE,16 GA,BROWN/YELLOW STRIPE
19	33271-16	8.00	WIRE,16 GA,PURPLE/WHITE STRIPE
20	33271-17	8.00	WIRE,16 GA,WHITE/BLACK STRIPE
21	33271-18	8.00	WIRE,16 GA,BLUE/RED STRIPE
22	33271-19	8.00	WIRE,16 GA,GREEN/YEL STRIPE
23	33271-20	8.00	WIRE,16 GA,GRAY/BLACK STRIPE
24	33271-21	8.00	WIRE,16 GA,ORANGE/YEL STRIPE
25	33599	1.00	TERM,PUSH-ON,.25,MALE,16-14GA
26	33600	10.00	TERM,PUSH-ON,.25,FEM,16-14 GA
27	33620	5.00	TERM,RING,12-10 GA,#10 STUD
28	33882-7	8.00	WIRE,12 GA,BROWN
29	34469	65.00	CONTACT,PIN,20-14 GA
30	34471	42.00	CONTACT,SOCKET,20-14 GA
31	35123	69.00	TERM,RING,16-14 GA,#6 STUD
32	33964	1.00	SWITCH,BACKUP ALARM
33	35213	1.00	HOLDER,WIRE TIE,ADHESIVE BACK
34	35362	1.00	GAUGE,PRESS,OIL
35	35364	1.00	GAUGE,TEMP,WATER
36	35365	1.00	GAUGE,TEMP,OIL
37	35366	1.00	GAUGE,FUEL
38	35390	1.00	CONTACT,SOCKET,12-10 GA
39	35391	1.00	CONTACT,PIN,12-10 GA
40	35668	1.00	GAUGE,VOLTMETER,8-18 V DC
41	36150	1.00	ALARM,BUZZ/LIGHT,RED
42	36393	1.00	SWITCH,PUSH BTN,OFF-MOM ON
43	36432	4.00	DIODE,.001AMP,20 VOLTS
44	36699	1.00	SWITCH,IGNITION,3 POS,30 AMP
45	37492	1.00	CONNECTOR GROUP,28 PIN
46	71064	8.00	WIRE,14 GA,BLACK
47	71066	8.00	WIRE,14 GA,YELLOW
48	71861-2	8.00	WIRE,10 GA,RED
49	36342	2.00	FUSE,BLADE,20AMP,ATC-20
50	72058	1.00	SWITCH,TOGGLE,4PDT,3-POS,SPL
51	72086	2.00	SWITCH,TOGGLE,DPDT,2-POS

ITEM	PART NO.	QTY	DESCRIPTION
52	72203	6.00	TERM,PUSH-ON,.18,FEM,16-14 GA
53	72209	.50	KIT,WIRE MARKER,0-9
54	72721	1.00	TACHOMETER,ALT 3000RPM, 2.00
55	36340	4.00	FUSE,BLADE,10AMP,ATC-10
56	72593	1.00	CONN HOUSING,PLUG,15 CIRCUIT
57	72594	2.00	CONN HOUSING,CAP,15 CIRCUIT
58	73239	1.00	DECAL,CONTROL CONSOLE,HCS-F
60	73232	1.00	HANDLE,EDC CONTROL,2-POT
61	72709	1.00	DISPLAY,LCD COMPUTER
62	72710	1.00	CABLE,DISPLAY TO COMPUTER
63	851090613	3.00	SWITCH,TOGGLE,SPDT,3-POS
64	851201417	15.00	TIE WRAP,.094X4.00
65	851390204	8.00	TERM,RING,16-14 GA,#10 STUD
66	41145	1.00	CONTROL CONSOLE W/M
67	36746	12.00	FUSE,BLADE,5AMP,ATC-5
68	37344	1.00	RELAY,TIME DELAY,5SEC,SPST,12V
69	36085	7.00	RELAY,SPDT,40AMP,12VDC
70	36086	7.00	BRACKET,RELAY MOUNT
71	36118-2	35.00	TERM,CRIMP,16-14 GA
72	72713	5.00	RESISTOR,5K OHM,.50 WATT
73	72541	1.00	RESISTOR,10K,.50 WATT
74	36252	3.00	SWITCH,TOGGLE,SPDT,3-POS,MOM
76	34467	2.00	CONN HOUSING,PLUG,12 CIRCUIT
77	36350	2.00	CONNECTOR,SEALED,SHROUD,3-PIN
78	37232	1.00	MICROPROSSESOR,S 10
79	36694	1.00	FUSE BLOCK,BLADE-TYPE,10 POS
80	73240	2.00	CONN HOUSING,PLUG,9 CIRCUIT
81	37284	8.00	TERM PIN METRIC PACK 150 SERIE
82	37286	8.00	SEAL,CABLE,METRI PACK,150 S
83	38038	1.00	TERM,BLOCK,4-GANG
84	35385	1.00	GAUGE,HOUR METER
85	36300	2.00	CONNECTOR,SEALED,TOWER,3-PIN
86	36165	6.00	TERM,SEALED CONN,16-14 GA,FEM
87	36166	9.00	SEAL,CABLE,18-16 GA
88	36168	8.00	TERM,FUSE BLOCK,12 GA
90	71716	2.00	MACH SCR,PH,#10-24X.75
91	80824	6.00	NUT,HEX,#10-24
92	871071601	6.00	WASHER,SPLIT LOCK,#10
93	42310	1.00	PANEL,CONTROL,HCS-F
94	81173	4.00	CSSH,#10-24 X .500
95	42311	1.00	HARNESS,MAIN,CONN,HCS-F ***(See Schematics)***
96	36461	3.00	PLUG,CAVITY,SEALED CONN
98	72843	2.00	RESISTOR,3 OHM,25 WATT
99	73102	2.00	POTENTIOMETER,15 OHMS,25 WATTS
100	72055	2.00	KNOB,HYD CONTROL
101	36149	1.00	SWITCH,TOGGLE,DPDT,3 POS
102	000200190	1.00	SWITCH,TOGGLE,SPST,2-POS
103	851091608	1.00	FLASHER,SIGNAL
104	33435	5.00	LIGHT & SOCKET,12V,2.00 GAUGE
105	34468	2.00	CONN HOUSING,CAP,12 CIRCUIT
106	36164	3.00	TERM,SEALED CONN,16-14 GA,MALE

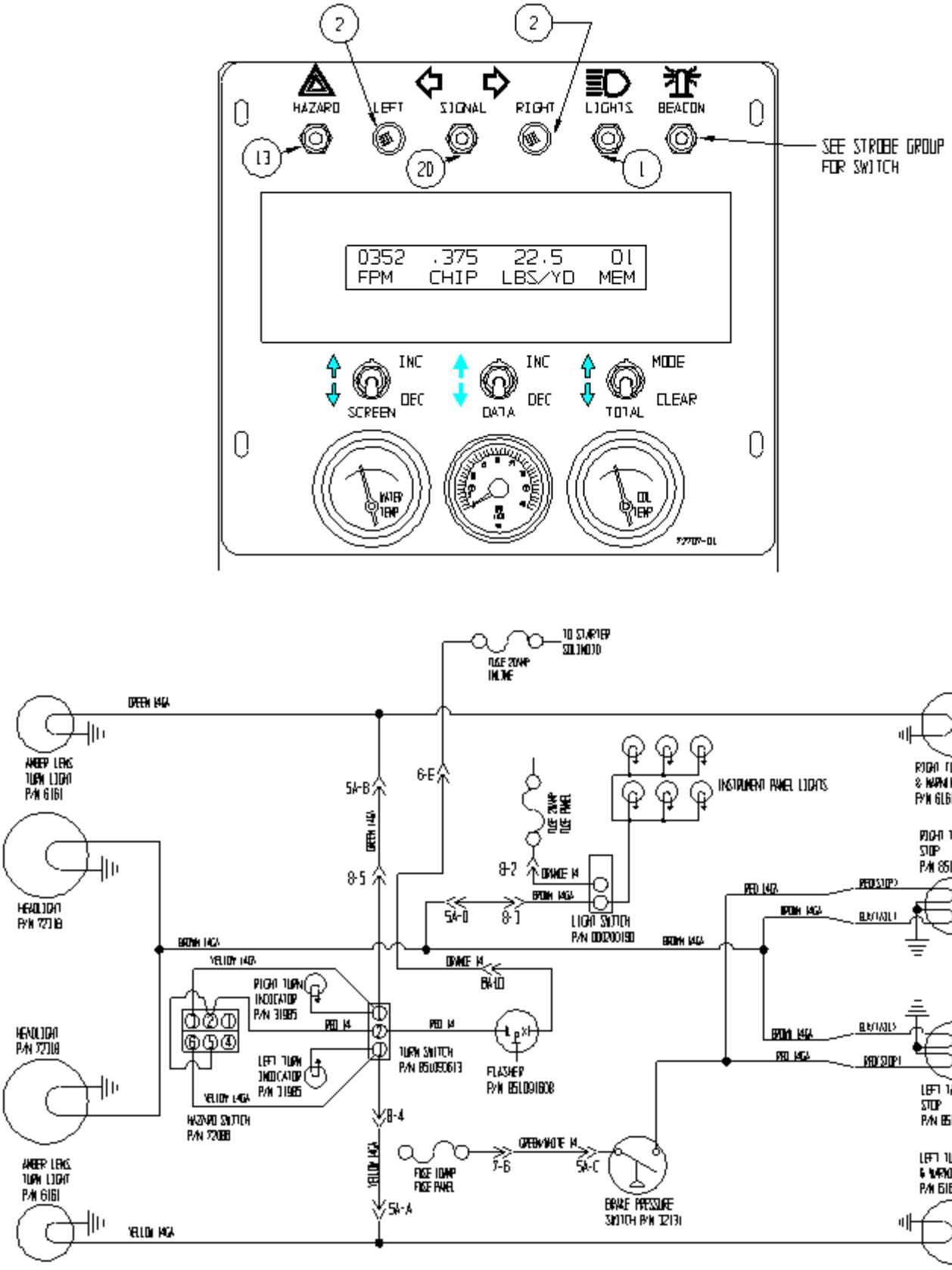


SCHEMATICS AT END OF PARTS BOOK

ITEM	PART NO.	QTY	DESCRIPTION
NS	010101027	6.00	SPACER,.75ODX11GAX.375LG
NS	106000087	2.00	WIPER,CLIP BAR CONV
NS	106000117	2.00	STRAP,BOLTING .250X1.50X19.00
NS	106000118	1.00	STRAP,BOLTING .250X1.50X110.00
NS	106002258	2.00	CHAIN,SASH,#35 X 14 LINKS=7.84
NS	106004708	2.00	KEY,SQ,.313X1.50,BER
NS	106004790	1.00	SHAFT,1.438 X 96.50
NS	106008101	2.00	CONNECTOR, PEDAL LINK
NS	106008282	1.00	LINK,BRAKE
NS	107000058	1.00	ADJUST BAR W/M,LH
NS	107000059	1.00	ADJUST BAR W/M,RH
NS	107000060	1.00	ADJUST BAR W/M,RH
NS	107000349	3.00	DEFLECTION GUIDE
NS	307000202	2.00	W/M,CLUTCH PEDAL
NS	307000813	2.00	W/M,BRAKE PEDAL,SPRING TAB
NS	31878	2.00	EYE BOLT,.375-16X2.50,.75ID
NS	33277	1.00	CLAMP,HOSE,.22-.62,WORM,#04
NS	33708	1.00	TOOL BOX
NS	34180	1.00	CAP & RING ASSY
NS	34231	1.00	STRAINER,FUEL,IN FILLER NECK
NS	35370-2	1.00	SENDER,FUEL LEVEL,24.00 TANK
NS	37352	1.00	VLV,HYD,RELIEF,ADJ 500-3500PSI
NS	38076	2.00	PIN,QUICK RELEASE,.25X1.7 GRIP
NS	40146	1.00	CENTER HANDRAIL,W/M
NS	40151	1.00	SHAFT,CLUTCH & BRAKE
NS	40200	1.00	FUEL TANK W/M,50 GAL,LOCKABLE
NS	40447	8.00	WASHER,2.25OD,.562IDX7GA.1793
NS	40533	1.00	SUPPORT,SOUND SHIELD
NS	40641	1.00	W/M,BAFFLE,FRONT HEAD,RH
NS	40642	1.00	W/M,BAFFLE,FRONT HEAD,LH
NS	40724	2.00	HOPPER PIN W/M
NS	41024	1.00	DECK,CENTER,CONTROL
NS	80211	2.00	CSHH,.312-18X1.75,GR5
NS	80351	2.00	NUT,FLEXLOC,.312-18,FULL,LT
NS	80406	2.00	CSHH,.375-16X2.25,GR5
NS	80845	2.00	COTTER PIN,.312X3.50
NS	845202026	4.00	BEARING,PILLOW BLOCK
NS	845292019	3.00	BRG,1.44,2-BOLT FLANGE
NS	871090324	2.00	SPR,1.062 DIA X 8.24 PSI
NS	871111605	20.00	CLAMP,LOOP,.50 OD PLSTC COVER
NS	871111609	40.00	CLAMP,LOOP,.625 OD,PLSTC COVER
NS	971100714	1.00	CLEVIS,.50-20 UNF
NS	99293	1.00	PIPE,PLUG,1.50MP,SQ HD,MI
NS	99534	1.00	PIPE,PLUG,02MP,SQ HD,MI
NS	99535	1.00	PIPE,PLUG,04MP,SQ HD,MI
NS	99537	1.00	PIPE,PLUG,08MP,SQ HD,MI
NS	99537	1.00	PIPE,PLUG,08MP,SQ HD,MI

ITEM	PART NO.	QTY	DESCRIPTION
NS	010101027	6.00	SPACER,.75ODX11GAX.375LG
NS	106000087	2.00	WIPER,CLIP BAR CONV
NS	106000117	2.00	STRAP,BOLTING .250X1.50X19.00
NS	106000118	1.00	STRAP,BOLTING .250X1.50X110.00
NS	106002258	2.00	CHAIN,SASH,#35 X 14 LINKS=7.84
NS	106004708	2.00	KEY,SQ,.313X1.50,BER
NS	106004790	1.00	SHAFT,1.438 X 96.50
NS	106008101	2.00	CONNECTOR, PEDAL LINK
NS	106008282	1.00	LINK,BRAKE
NS	107000058	1.00	ADJUST BAR W/M,LH
NS	107000059	1.00	ADJUST BAR W/M,RH
NS	107000060	1.00	ADJUST BAR W/M,RH
NS	107000349	3.00	DEFLECTION GUIDE
NS	307000202	2.00	W/M,CLUTCH PEDAL
NS	31878	2.00	EYE BOLT,.375-16X2.50,.75ID
NS	33277	1.00	CLAMP,HOSE,.22-.62,WORM,#04
NS	33708	1.00	TOOL BOX
NS	34180	1.00	CAP & RING ASSY
NS	34231	1.00	STRAINER,FUEL,IN FILLER NECK
NS	35370-2	1.00	SENDER,FUEL LEVEL,24.00 TANK
NS	37352	1.00	VLV,HYD,RELIEF,ADJ 500-3500PSI
NS	38076	2.00	PIN,QUICK RELEASE,.25X1.7 GRIP
NS	40146	1.00	CENTER HANDRAIL,W/M
NS	40151	1.00	SHAFT,CLUTCH & BRAKE
NS	40200	1.00	FUEL TANK W/M,50 GAL,LOCKABLE
NS	40447	8.00	WASHER,2.25OD,.562IDX7GA.1793
NS	40533	1.00	SUPPORT,SOUND SHIELD
NS	40641	1.00	W/M,BAFFLE,FRONT HEAD,RH
NS	40642	1.00	W/M,BAFFLE,FRONT HEAD,LH
NS	40724	2.00	HOPPER PIN W/M
NS	41024	1.00	DECK,CENTER,CONTROL
NS	42448	1.00	PEDAL,BRAKE,SHORT
NS	80211	2.00	CSHH,.312-18X1.75,GR5
NS	80351	2.00	NUT,FLEXLOC,.312-18,FULL,LT
NS	80406	2.00	CSHH,.375-16X2.25,GR5
NS	80845	2.00	COTTER PIN,.312X3.50
NS	845202026	4.00	BEARING,PILLOW BLOCK
NS	845292019	3.00	BRG,1.44,2-BOLT FLANGE
NS	871090324	2.00	SPR,1.062 DIA X 8.24 PSI
NS	871111605	20.00	CLAMP,LOOP,.50 OD PLSTC COVER
NS	871111609	40.00	CLAMP,LOOP,.625 OD,PLSTC COVER
NS	971100714	1.00	CLEVIS,.50-20 UNF
NS	99293	1.00	PIPE,PLUG,1.50MP,SQ HD,MI
NS	99534	1.00	PIPE,PLUG,02MP,SQ HD,MI
NS	99535	1.00	PIPE,PLUG,04MP,SQ HD,MI
NS	99537	1.00	PIPE,PLUG,08MP,SQ HD,MI
NS	99537	1.00	PIPE,PLUG,08MP,SQ HD,MI

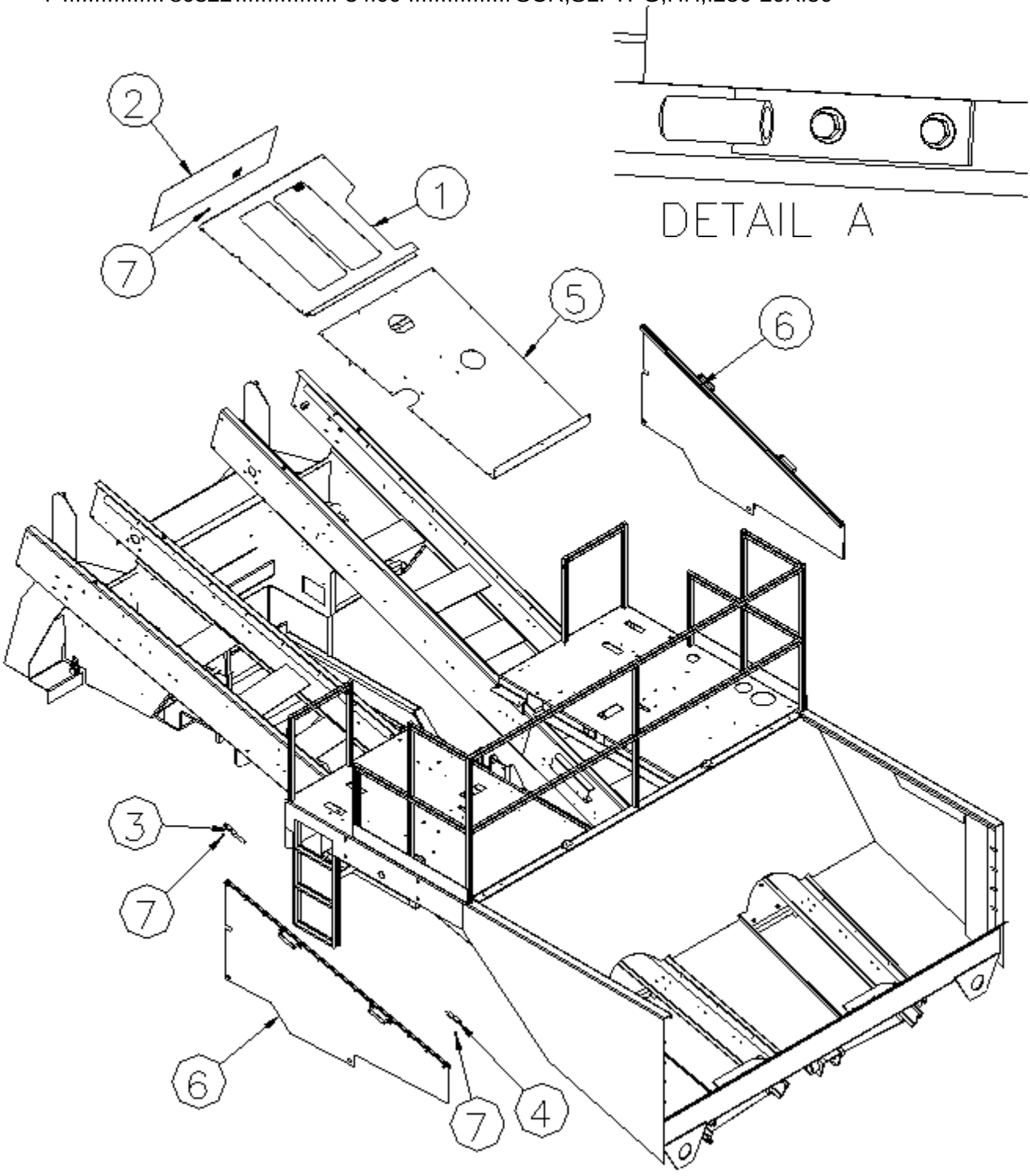
ITEM	PART NO.	QTY	DESCRIPTION
1	000200190	1.00	SWITCH, TOGGLE,SPST,2-POS
2	31985	2.00	LIGHT,GREEN,DASH,.50 HOLE
NS	32131	1.00	SWITCH,STOP LAMP,HYD TYPE,NO
NS	33271-2	6.00'	WIRE,16 GA,YELLOW
NS	33271-3	6.00'	WIRE,16 GA,BROWN
NS	33271-4	6.00'	WIRE,16 GA,GREEN
NS	33271-7	6.00'	WIRE,16 GA, RED
NS	33435	5.00	LIGHT & SOCKET,12V,2.00 GAUGE
NS	33596	10.00	TIE WRAP, .188X7.5
NS	40899	2.00	BRACKET,HEADLAMP & TURN SIGNAL
NS	4100	1.00	HARNESS,WIRE,LIGHTS & FLASHER
NS	6161	4.00	LIGHT,TURN SIGNAL,AMBER
13	72086	1.00	SWITCH,TOGGLE,DPDT,2-POS
NS	72143	16.00	TERM,RING,22-16 GA,#8 STUD
NS	72318	2.00	LAMP,HALOGEN,FLOOD,80X30 DEG
NS	80038	4.00	NUT,HEX,.375-16
NS	80162	4.00	WASHER,SPLIT LOCK,.375
NS	80221	4.00	CSHH,.375-16X1.00,GR5
NS	80322	28.00	SCR,SLFTPG,HH,.250-20X.50
20	851090613	1.00	SWITCH,TOGGLE,SPDT,3-POS
NS	851091608	1.00	FLASHER,SIGNAL
NS	851342007	2.00	LIGHT,TURN/BRAKE,RED
NS	871111605	23.00	CLAMP,LOOP,.50 OD PLSTC COVER

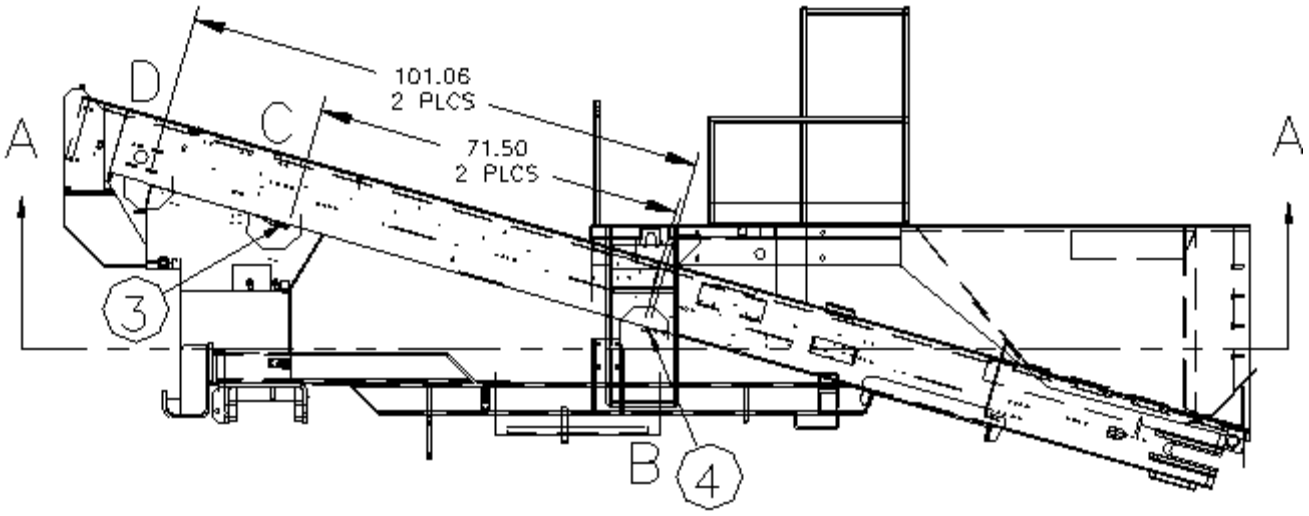


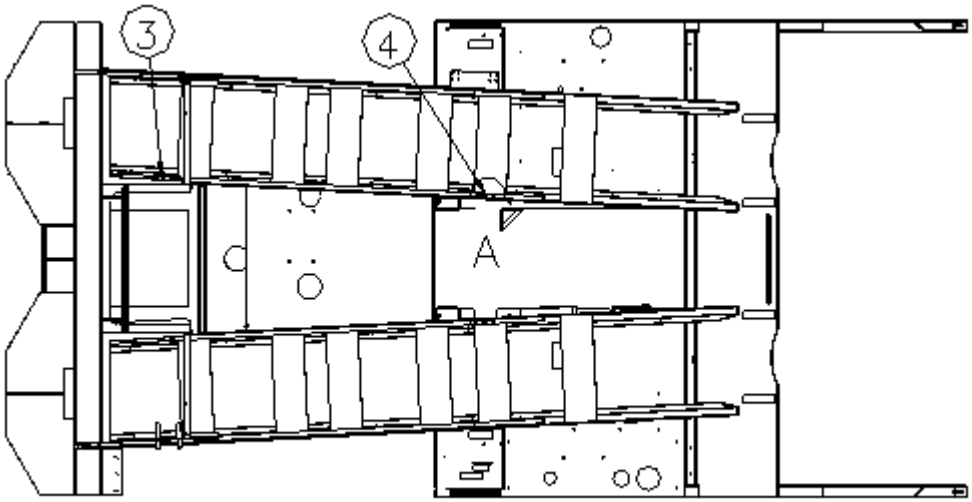
LIGHTS, HEAD, STOP & TURN

REF: 42122
REV: A

ITEM	PART NO.	QTY	DESCRIPTION
1	42138	1.00	W/M,ENG COVER,14 GA,TOP FRONT
2	42156	1.00	GRILL,AIR IN,18 GA 3/16RND,FRT
3	41516	2.00	MOUNT,CURTAIN,UPPER
4	41515	2.00	MOUNT,CURTAIN,LOWER
5	42118	1.00	W/M,ENG COVER,14 GA,TOP REAR
6	42275	2.00	ASSY,ENG CURTAIN,SPRHH-F
7	80322	34.00	SCR,SLFTPG,HH,.250-20X.50




D
C
A
A
101.06
2 PLCS
71.50
2 PLCS
3
B
4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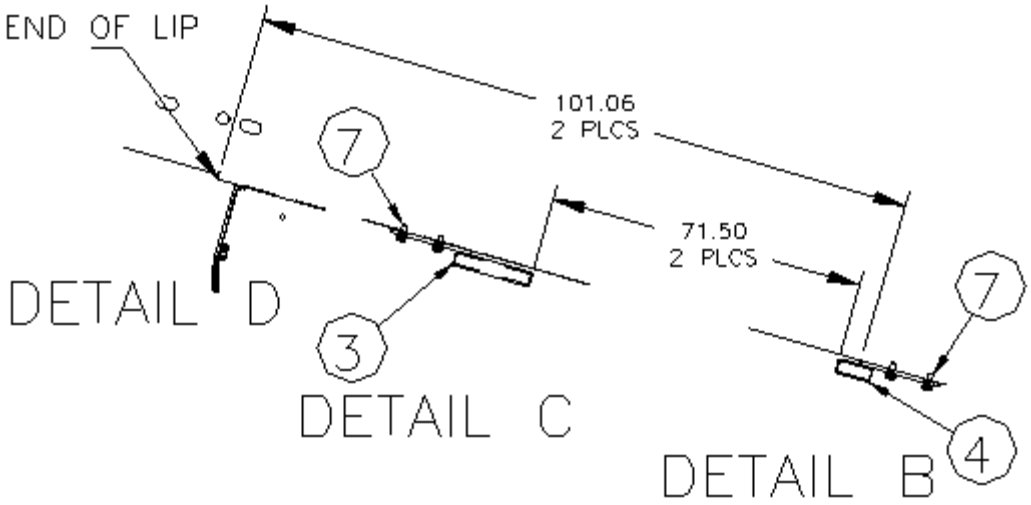
A

SECTION A–A

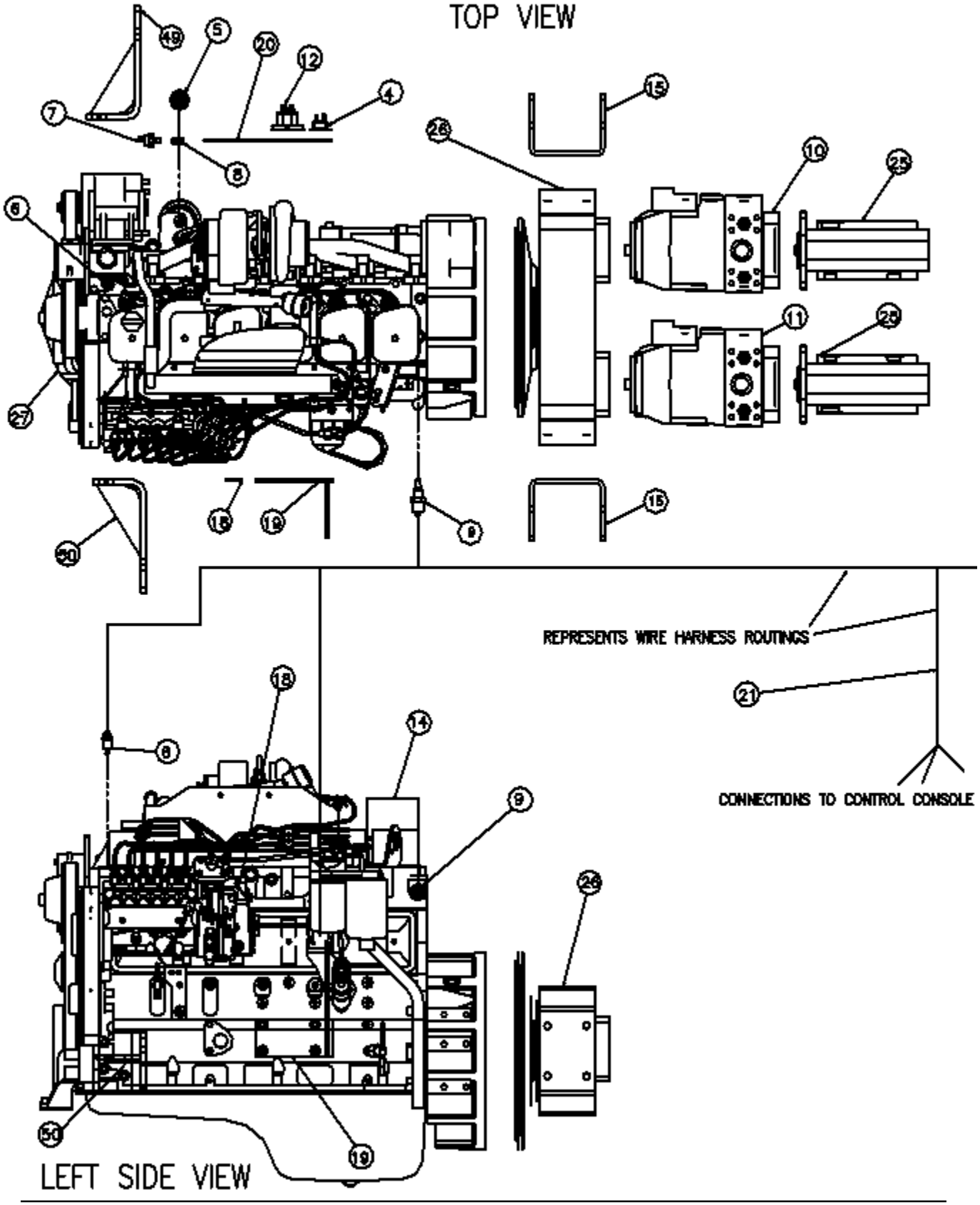

END OF LIP
101.06
2 PLCS
7
71.50
2 PLCS
7
DETAIL D
3
DETAIL C
4
DETAIL B

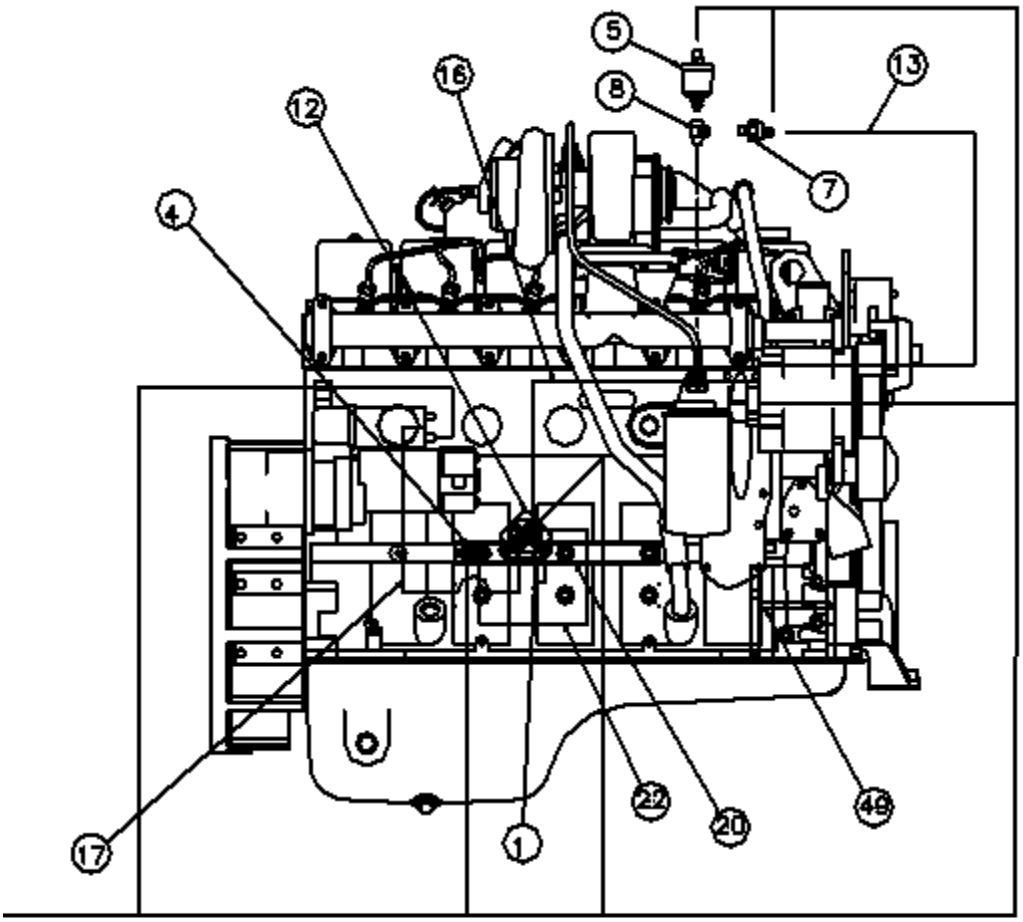
ITEM	PART NO.	QTY	DESCRIPTION
NS	007020096	2.00	HOOK,RUBBER
NS	007020097	2.00	BRACKET,ANCHOR
NS	007020098	2.00	BRACKET,HOOD
NS	33146-6	2.00	BATTERY,12V,1000 CRK AMPS
NS	33162	2.00	CLAMP,HOSE,.44-.78,WORM,#06
NS	33365	1.00	FITT,90 04MP-06HB,CRIMPED
NS	33491	1.00	FITT,STR 04MP-05HB,CRIMPED
NS	34735	3.79	TRIM,STEEL CORE
NS	36339	1.00	CABLE,BATTERY,2 LUG,0 GAX17
NS	38579	5.00	HOSE,O6,LOW PRESS PUSH ON
NS	41591	1.00	W/M,COVER,BATTERY BOX
NS	42279	1.00	W/M,MOTOR MNT,FRONT RH,6 BT
NS	42280	1.00	W/M,MOTOR MNT,FRONT LH,6 BT
Detail	**42453**	**1.00**	**ENG SUB ASSY,6BT 156HP,HYDRO**
Detail	**42470**	**1.00**	**GRP,EXHAUST,6BT ENG,HCS-F**
Detail	**42471**	**1.00**	**GRP,AIR INTAKE,6BT ENG,HCS-F**
Detail	**42472**	**1.00**	**GRP,RADIATOR,6BT ENG,HCS-F**
NS	70437	2.00	BATTERY BOOT,POS(RED)
NS	71812	9.00	HOSE,05,PUSH-ON,.3125
NS	72136	2.00	CABLE,BATTERY,POS,1GA,.50STUD
NS	72313	2.00	HOLD DOWN,BATTERY
NS	73077	2.00	WASHER,BATTERY COROSION,RED
NS	73078	2.00	WASHER,BATTERY COROSION,GREEN
NS	80036	1.00	NUT,HEX,.250-20
NS	80141	2.00	WASHER,TYPE A PLAIN,.312
NS	80350	1.00	NUT,FLEXLOC,.250-20,FULL,LT
NS	80351	4.00	NUT,FLEXLOC,.312-18,FULL,LT
NS	80393	4.00	CSHH,.375-16X9.50,GR5
NS	80830	2.00	CRG BOLT,.312-18X.75,GR5
NS	80938	1.00	EYE BOLT,.250-20X1.00X.75ID
NS	871111605	2.00	CLAMP,LOOP,.50 OD PLSTC COVER
NS	99448	2.00	PIPE,BUSH,06MP-04FP,STL
NS	R442	2.00	CABLE,BATTERY,NEG,14,4GA,.406

ITEM	PART NO.	QTY	DESCRIPTION
NS	007020096	2.00	HOOK,RUBBER
NS	007020097	2.00	BRACKET,ANCHOR
NS	007020098	2.00	BRACKET,HOOD
NS	33146-6	2.00	BATTERY,12V,1000 CRK AMPS
NS	33277	1.00	CLAMP,HOSE,.22-.62,WORM,#04
NS	33365	1.00	FITT,90 04MP-06HB,CRIMPED
NS	33491	1.00	FITT,STR 04MP-05HB,CRIMPED
NS	34735	3.79	TRIM,STEEL CORE
NS	36339	1.00	CABLE,BATTERY,2 LUG,0 GAX17
Detail	**41218**	**1.00**	**ENGINE SUB ASSY,200HP,HYDRO**
NS	41591	1.00	W/M,COVER,BATTERY BOX
Detail	**42470**	**1.00**	**GRP,EXHAUST,6BT ENG,HCS-F**
Detail	**42471**	**1.00**	**GRP,AIR INTAKE,6BT ENG,HCS-F**
Detail	**42472**	**1.00**	**GRP,RADIATOR,6BT ENG,HCS-F**
NS	70437	2.00	BATTERY BOOT,POS(RED)
NS	71812	6.00	HOSE,05,PUSH-ON,.3125
NS	72136	2.00	CABLE,BATTERY,POS,1GA,.50STUD
NS	72313	2.00	HOLD DOWN,BATTERY
NS	73077	2.00	WASHER,BATTERY COROSION,RED
NS	73078	2.00	WASHER,BATTERY COROSION,GREEN
NS	80036	1.00	NUT,HEX,.250-20
NS	80141	2.00	WASHER,TYPE A PLAIN,.312
NS	80350	1.00	NUT,FLEXLOC,.250-20,FULL,LT
NS	80351	4.00	NUT,FLEXLOC,.312-18,FULL,LT
NS	80393	4.00	CSHH,.375-16X9.50,GR5
NS	80830	2.00	CRG BOLT,.312-18X.75,GR5
NS	80938	1.00	EYE BOLT,.250-20X1.00X.75ID
NS	871111605	2.00	CLAMP,LOOP,.50 OD PLSTC COVER
NS	99448	1.00	PIPE,BUSH,06MP-04FP,STL
NS	R442	2.00	CABLE,BATTERY,NEG,14,4GA,.406

ITEM	PART NO.	QTY	DESCRIPTION
1	28701	1.00	WIRE,JUMPER,GROUND
2	33169	2.00	CLAMP,HOSE,1.31-2.25,WORM #28
3	33171	2.00	CLAMP,HOSE,1.81-2.75,WORM,#36
4	34853	1.00	CIRCUIT BREAKER,40 AMP
5	35363	1.00	SENDER,PRESS,OIL,02 MP
6	35367	1.00	SENDER,TEMP GAUGE,08 MP
7	35571	1.00	SWITCH,PRESSURE,02 MP,NO & NC
8	36066	1.00	FITT,TEE 02MP-02FP-02FP,STL
9	36343	1.00	SWITCH,TEMP,210 DEG F,08 MP
10	**36692-01**	**1.00**	**PUMP,HYD 4.57CIR,EDC,W/B-PAD**
11	**36692-02**	**1.00**	**PUMP,HYD 4.57CIR,HDC,W/B-PAD**
12	38954	1.00	RELAY,STARTER
13	40562	1.00	HARNESS,WIRE,ALT TO OIL SW
14	40715	1.00	HARNESS,WIRE,WATER SW TO GND
15	40745	2.00	MOUNT,PUMP DRIVE
16	40894	1.00	HARNESS,WIRE ALT TO RELAY
17	40895	1.00	HARNESS,WIRE SOL TO STARTER
18	41120	1.00	EXTENSION,THROTTLE ARM, 6BTA
19	41121	1.00	THROTTLE BRACKET W/M, 6BTA
20	41224	1.00	BRKT,SOLENOID/CIRCUIT BREAKER
21	41263	1.00	HARNESS,ENGINE 6BT & 6BTA ***(See Schematics)***
22	42292	1.00	WIRE,JUMPER,10 GA
23	71627	8.00	CSHH,.500-13X1.50,GR5
24	71638	8.00	CSHH,.625-11X1.25,GR5
25	**72410**	**2.00**	**PUMP,HYD,DUAL,1.6/1.6CIR,LH**
26	72540-50	1.00	PLATE,DRIVE,DUAL PUMP DRIVE
27	**72540-52**	**1.00**	**PUMP DRIVE,DUAL.1:1.15 RATIO**
28	73273	1.00	ENGINE,DIESEL 6BT,156HP,HYDRO
29	80036	2.00	NUT,HEX,.250-20
30	80140	2.00	WASHER,TYPE A PLAIN,.250
31	80144	4.00	WASHER,TYPE A PLAIN,.500
32	80164	16.00	WASHER,SPLIT LOCK,.500
33	80166	8.00	WASHER,SPLIT LOCK,.625
34	80192	2.00	CSHH,.250-20X.75,GR5
35	80250	4.00	CSHH,.500-13X1.25,GR5
36	80478	12.00	WASHER,SPLIT LOCK,M10
37	80482	2.00	CSHH,M12X1.25X25,CL8.8
38	80484	6.00	WASHER,SPLIT LOCK,M12
39	80514	4.00	CSHH,M12X1.75X35,CL8.8
40	80824	2.00	NUT,HEX,#10-24
41	80914	2.00	CSHH,M12X1.75X25,CL8.8
42	80918	14.00	CSHH,M8X1.25X30,CL8.8
43	80928	4.00	CSHH,M8X1.25X75,CL8.8
44	80972	8.00	CSSH,.375-16X.75
45	80990	12.00	CSHH,M10X1.5X35,CL8.8
46	81007	1.00	NUT,HEX,M5X.80
47	81008	1.00	NUT,HEX,M10X1.50
48	871052400	2.00	MACH SCR,RH,#10-24X.50
49	871071601	2.00	WASHER,SPLIT LOCK,#10
50	42279	1.00	W/M,MOTOR MNT,FRONT RH,6 BT
51	42280	1.00	W/M,MOTOR MNT,FRONT LH,6 BT

ITEM	PART NO.	QTY	DESCRIPTION
1	28701	1.00	WIRE,JUMPER,GROUND
4	34853	1.00	CIRCUIT BREAKER,40 AMP
5	35363	1.00	SENDER,PRESS,OIL,02 MP
6	35367	1.00	SENDER,TEMP GAUGE,08 MP
7	35571	1.00	SWITCH,PRESSURE,02 MP,NO & NC
8	36066	1.00	FITT,TEE 02MP-02FP-02FP,STL
9	36343	1.00	SWITCH,TEMP,210 DEG F,08 MP
10	**36692-01**	**1.00**	**PUMP,HYD 4.57CIR,EDC,W/B-PAD**
11	**36692-02**	**1.00**	**PUMP,HYD 4.57CIR,HDC,W/B-PAD**
12	38954	1.00	RELAY,STARTER
13	40562	1.00	HARNESS,WIRE,ALT TO OIL SW
14	40715	1.00	HARNESS,WIRE,WATER SW TO GND
15	40745	2.00	MOUNT,PUMP DRIVE
16	40894	1.00	HARNESS,WIRE ALT TO RELAY
17	40895	1.00	HARNESS,WIRE SOL TO STARTER
18	41120	1.00	EXTENSION,THROTTLE ARM, 6BTA
19	41121	1.00	THROTTLE BRACKET W/M, 6BTA
20	41224	1.00	BRKT,SOLENOID/CIRCUIT BREAKER
21	41263	1.00	HARNESS,ENGINE 6BT & 6BTA ***(See Schematics)***
22	42292	1.00	WIRE,JUMPER,10 GA
23	71627	8.00	CSHH,.500-13X1.50,GR5
24	71638	8.00	CSHH,.625-11X1.25,GR5
25	**72410**	**2.00**	**PUMP,HYD,DUAL,1.6/1.6CIR,LH**
26A	72540-50	1.00	DRIVE PLATE,DUAL PUMP DRIVE
26B	**72540-52**	**1.00**	**PUMP DRIVE,DUAL,1:1.15 RATIO**
27	72672-01	1.00	ENGINE,DIESEL 6BTA,200HP,HYDRO
28	80036	2.00	NUT,HEX,.250-20
29	80140	2.00	WASHER,TYPE A PLAIN,.250
30	80144	4.00	WASHER,TYPE A PLAIN,.500
31	80164	16.00	WASHER,SPLIT LOCK,.500
32	80166	8.00	WASHER,SPLIT LOCK,.625
33	80192	2.00	CSHH,.250-20X.75,GR5
34	80250	4.00	CSHH,.500-13X1.25,GR5
35	80465	2.00	CSHH,M6X1.0X12,CL8.8
36	80472	2.00	WASHER,PLAIN,M6
37	80478	12.00	WASHER,SPLIT LOCK,M10
38	80482	2.00	CSHH,M12X1.25X25,CL8.8
39	80484	6.00	WASHER,SPLIT LOCK,M12
40	80514	4.00	CSHH,M12X1.75X35,CL8.8
41	80824	2.00	NUT,HEX,#10-24
42	80914	2.00	CSHH,M12X1.75X25,CL8.8
43	80918	14.00	CSHH,M8X1.25X30,CL8.8
44	80928	4.00	CSHH,M8X1.25X75,CL8.8
45	80972	8.00	CSSH,.375-16X.75
46	80990	12.00	CSHH,M10X1.5X35,CL8.8
47	81007	1.00	NUT,HEX,M5X.80
48	81008	1.00	NUT,HEX,M10X1.50
49	42279	1.00	W/M,MOTOR MNT,FRONT RH,6 BT
50	42280	1.00	W/M,MOTOR MNT,FRONT LH,6 BT
51	871052400	2.00	MACH SCR,RH,#10-24X.50
52	871071601	2.00	WASHER,SPLIT LOCK,#10

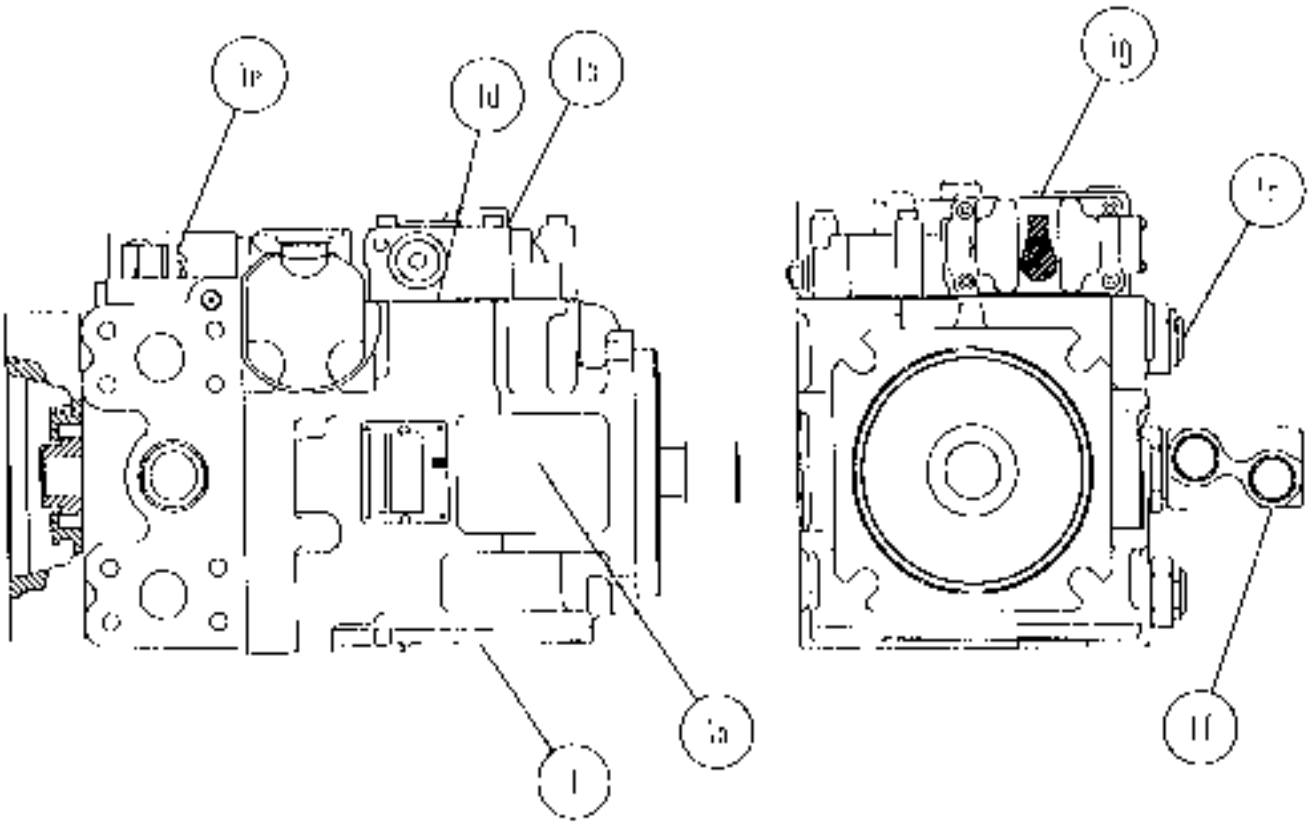

TOP VIEW
REPRESENTS WIRE HARNESS ROUTINGS
CONNECTIONS TO CONTROL CONSOLE
LEFT SIDE VIEW



RIGHT SIDE VIEW

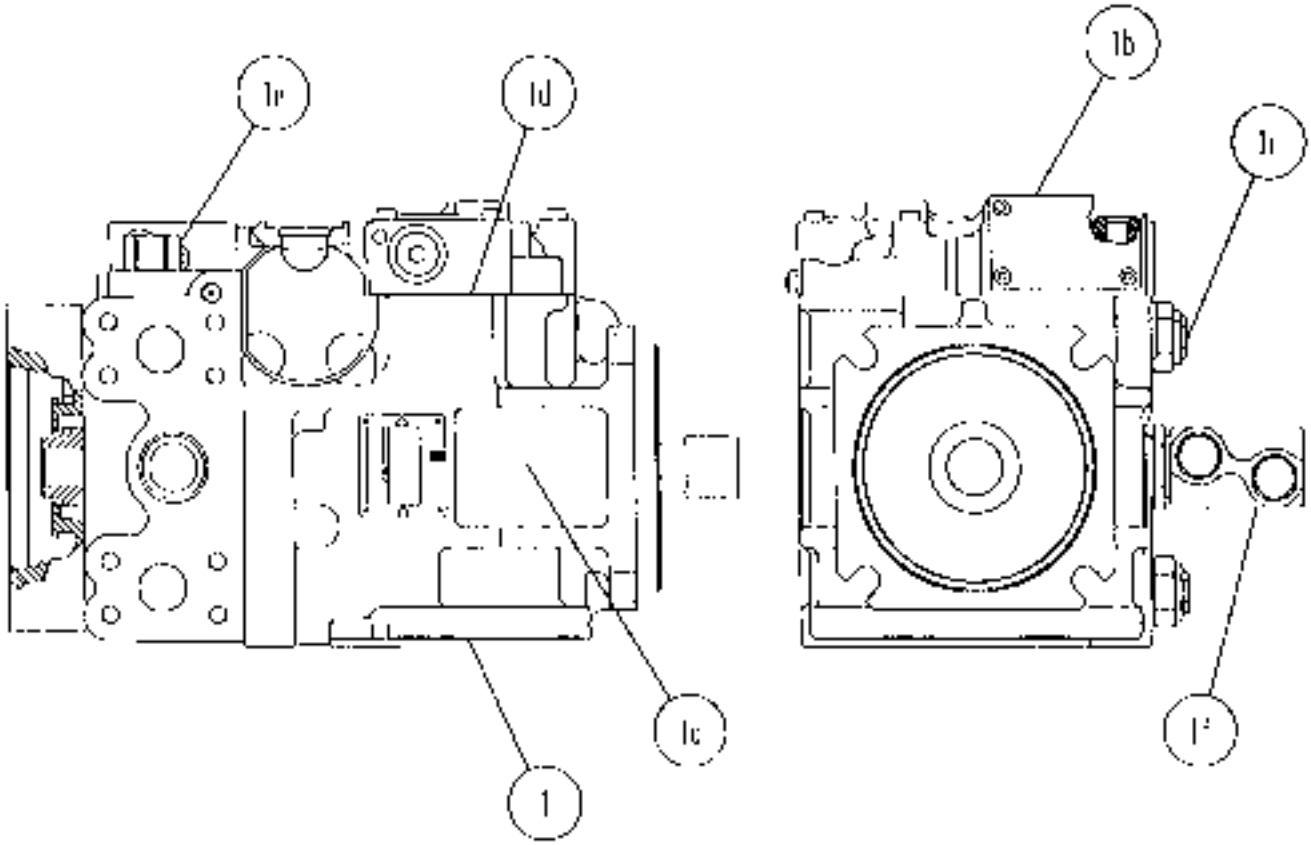
ITEM	PART NO.	QTY	DESCRIPTION
1	36692-01	1.00	PUMP, HYDRAULIC W/EDC
1a	36692-100	1.00	KIT,SEAL *(OVERHAUL)*
1b	36692-110	1.00	KIT,EDC CONTROL
1c	36692-120	2.00	VALVE,MULTI-FUNCTION
1d	36692-130	1.00	ORIFICE,CONTROL .022
1e	36692-140	1.00	VALVE,CHARGE RELIEF
1f	36692-150	1.00	KIT,FILTRATION MANIFOLD
1g	36692-112	1.00	PILOT VALVE (PCP), EDC

SEE PUMP MANUFACTURER'S PARTS MANUAL FOR COMPLETE PARTS BREAKDOWN.

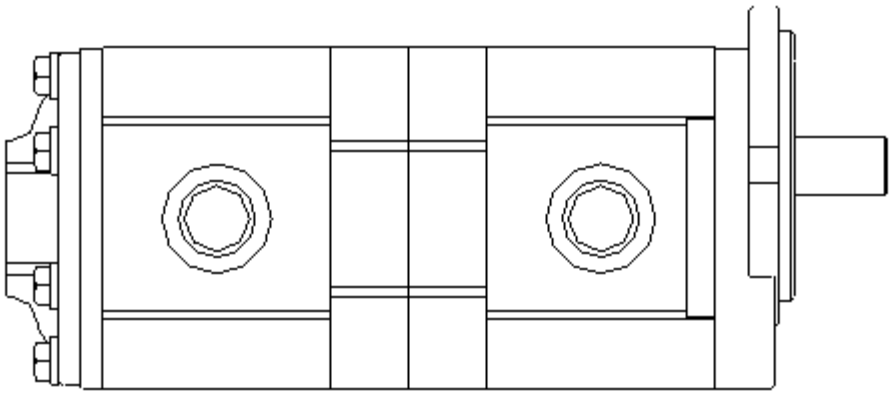


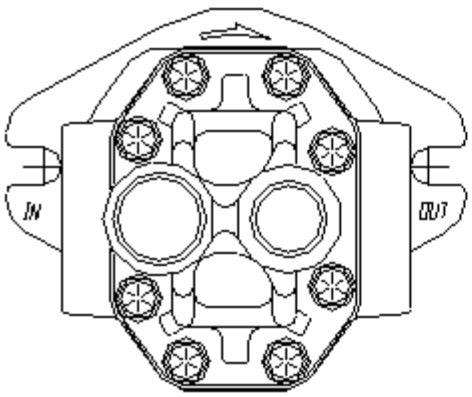
ITEM	PART NO.	QTY	DESCRIPTION
1	36692-02	1.00	PUMP,HYDRAULIC W/HDC
1a	36692-100	1.00	KIT,SEAL *(OVERHAUL)*
1b	36692-111	1.00	KIT,HDC CONTROL
1c	36692-120	2.00	VALVE,MULTI-FUNCTION
1d	36692-130	1.00	ORIFICE, CONROL .022
1e	36692-140	1.00	VALVE,CHARGE RELIEF
1f	36692-150	1.00	KIT,FILTRATION MANIFOLD.

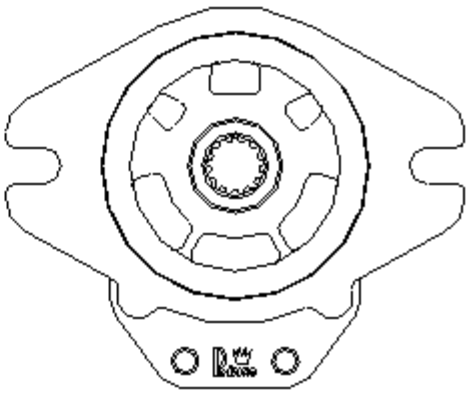
SEE PUMP MANUFACTURER'S PARTS MANUAL FOR COMPLETE PARTS



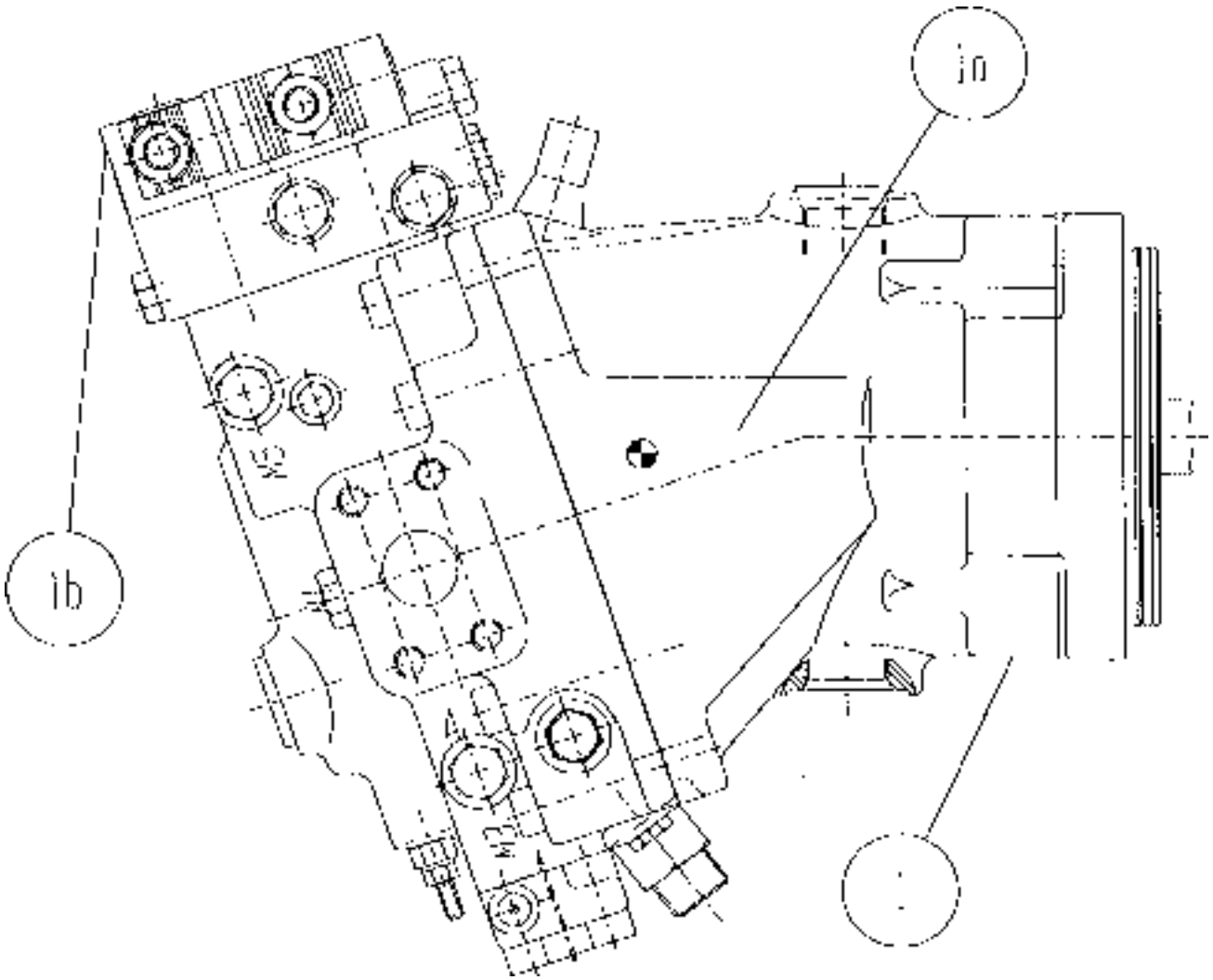
ITEM	PART NO.	QTY	DESCRIPTION
1	72410	1.00	PUMP,TANDEM GEAR
1a	72410-100	1.00	KIT,SEAL
	72410-101	1.00	SEAL, SHAFT *(INCLUDED IN KIT)*



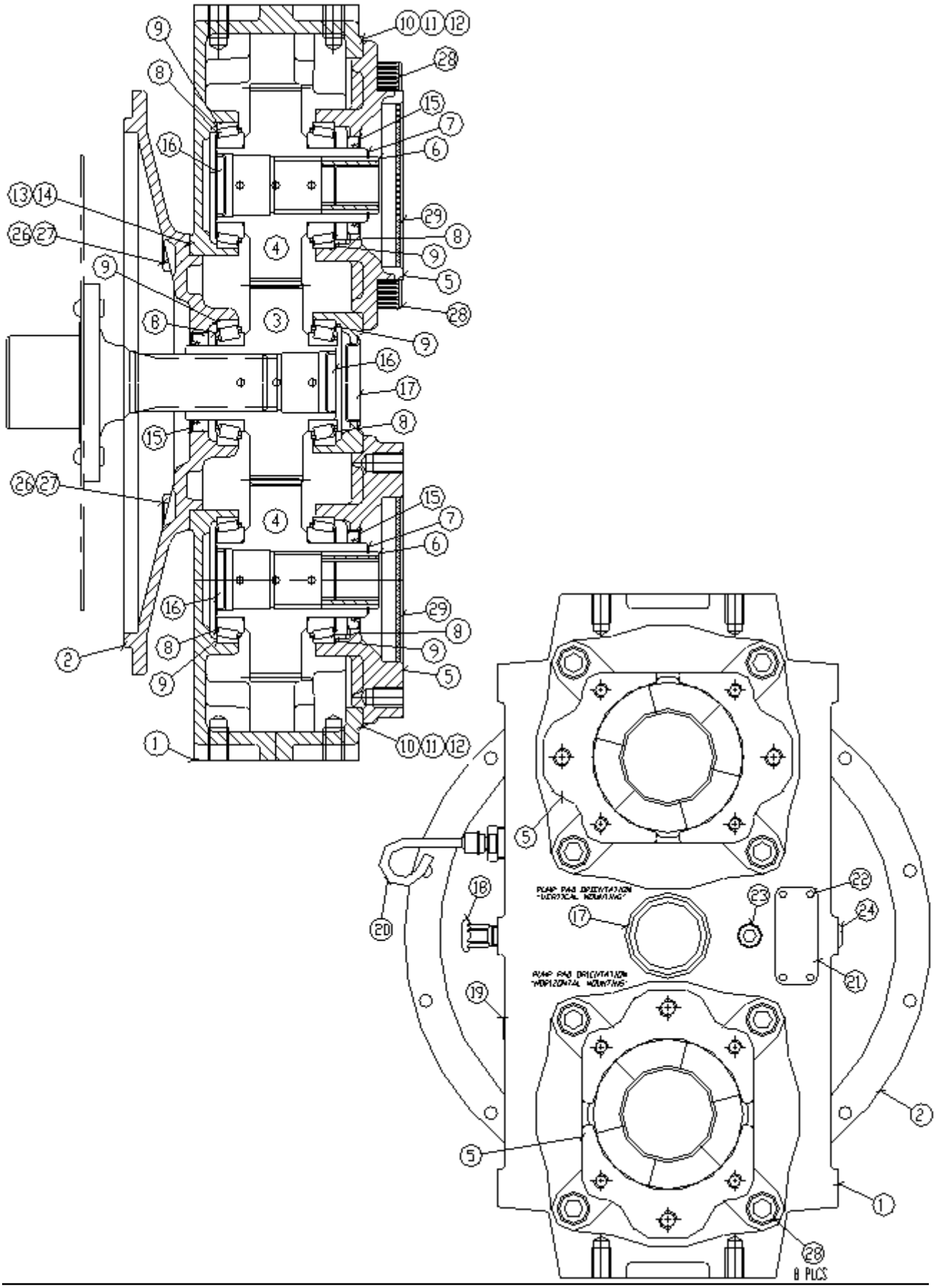




ITEM	PART NO.	QTY	DESCRIPTION
ALL UNITS			
1	72773	2.00	MOTOR,HYD,9.82/5.85 CIR,W/PICK
1a	72773-01	1.00	KIT,SEAL,SHAFT,51 SERIES,160 CC
1b	72773-110	1.00	CONTROL,2-SPEED
4-WHEEL-DRIVE UNIT ONLY			
1	73033	2.00	MOTOR,HYD,3.66/.73 CIR
1a	73033-01	1.00	KIT,SEAL (OVERHAUL) 60 CC
1b	73033-110	1.00	SOLENOID,2-SPEED,60CC,51 SERIES

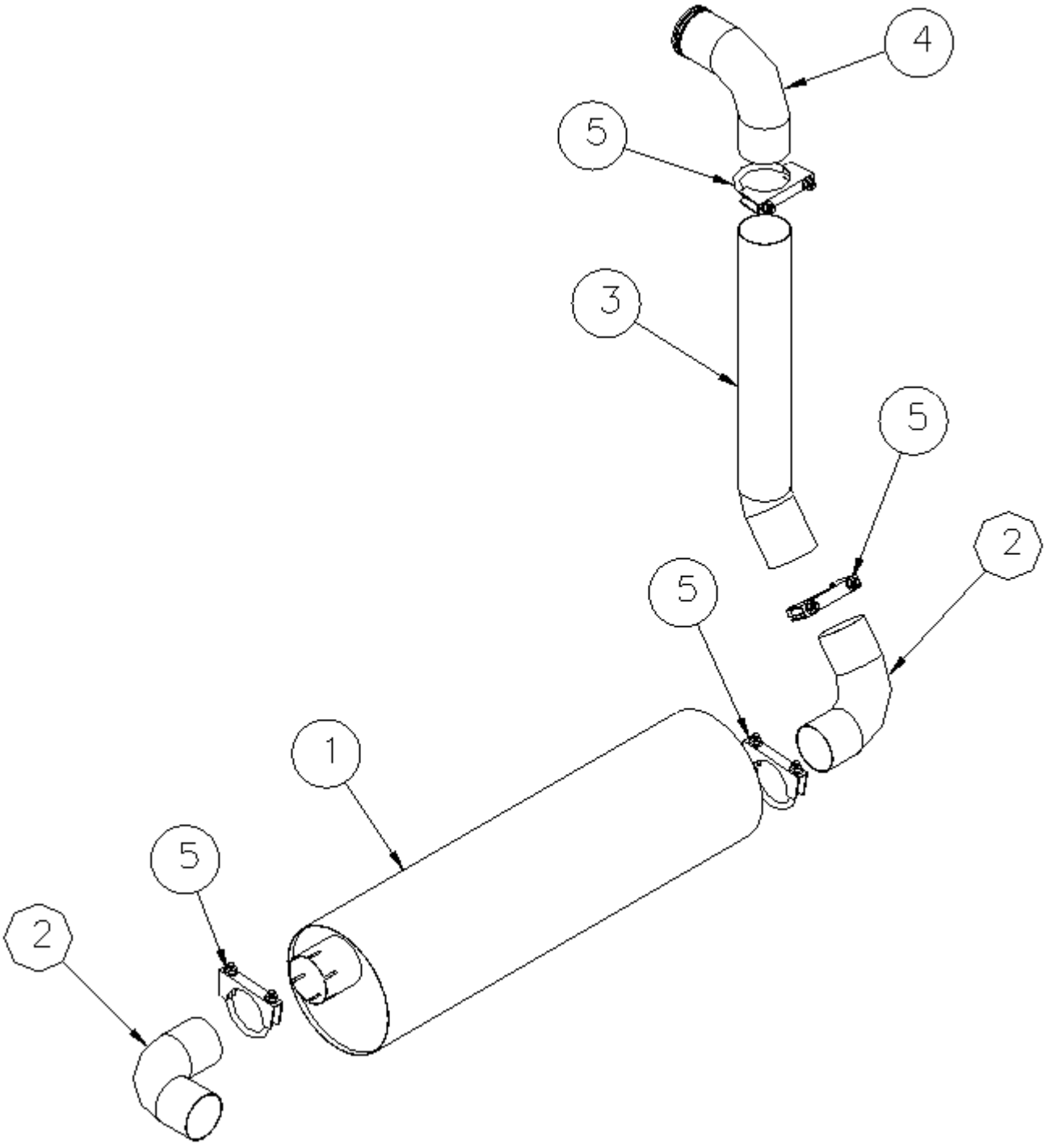


ITEM	PART NO.	QTY	DESCRIPTION
1	72540-01	1.00	HOUSING,MACHINED
2	72540-02	1.00	ENGINE,ADAPTER SAE #3
3	72540-30	1.00	GEAR,DRIVER,63 T
4	72540-31	2.00	GEAR, DRIVEN 55 T
5	72540-05	2.00	PUMP PAD,SAE (C) MOUNTED HORIZONTAL
6	72540-06	2.00	SHAFT ADAPTER,SAE (C)14 T 12/24
7	X246	2.00	EXTERNAL RETAINING RING72
8	72540-08	6.00	BEARING CUP
9	72540-09	6.00	BEARING CONE
10	72540-10	4.00	SHIM,.005 ALUMINIUM
11	72540-11	4.00	SHIM,.007 ALUMINIUM
12	72540-12	1.00	SHIM,.020 ALUMINIUM
13	72540-13	2.00	SHIM,.005 ALUMINIUM
14	72540-14	2.00	SHIM,.007 ALUMINIUM
15	72540-15	3.00	SEAL,HIGH TEMP
16	72540-16	3.00	PLUG
17	72540-17	1.00	PLUG, LIPPED
18	72540-18	1.00	BREATHER
19	99545	1.00	SOCKET HEAD PIPE PLUG,3/4NPT
20	72540-20	1.00	DIPSTICK ASSEMBLY,AUTOMOTIVE STYLE
21	72540-21	1.00	NAME TAG
22	72540-22	4.00	DRIVE SCREW,#6X1/4 LG
23	99544	1.00	SOCKET HEAD PIPE PLUG,1/2 NPT
24	72540-24	1.00	MAGNETIC DRAIN PLUG,1/2 NPT
25	99543	2.00	SOCKET HEAD PIPE PLUG,3/8 NPT
26	80250	6.00	HEX HEAD CAP SCREW, 1/2-13X1 1/4
27	80164	6.00	LOCK WASHER,1/2
28	72540-28	8.00	SOCKET HEAD CAP SCREW,3/4-10X1 1/2
29	72540-29	2.00	CARDBOARD COVER SAE (C)
	72540-50	1.00	DRIVE PLATE
	72540-52	1.00	PUMP DRIVE,DUAL,1:1.15 RATIO


8 PLCS

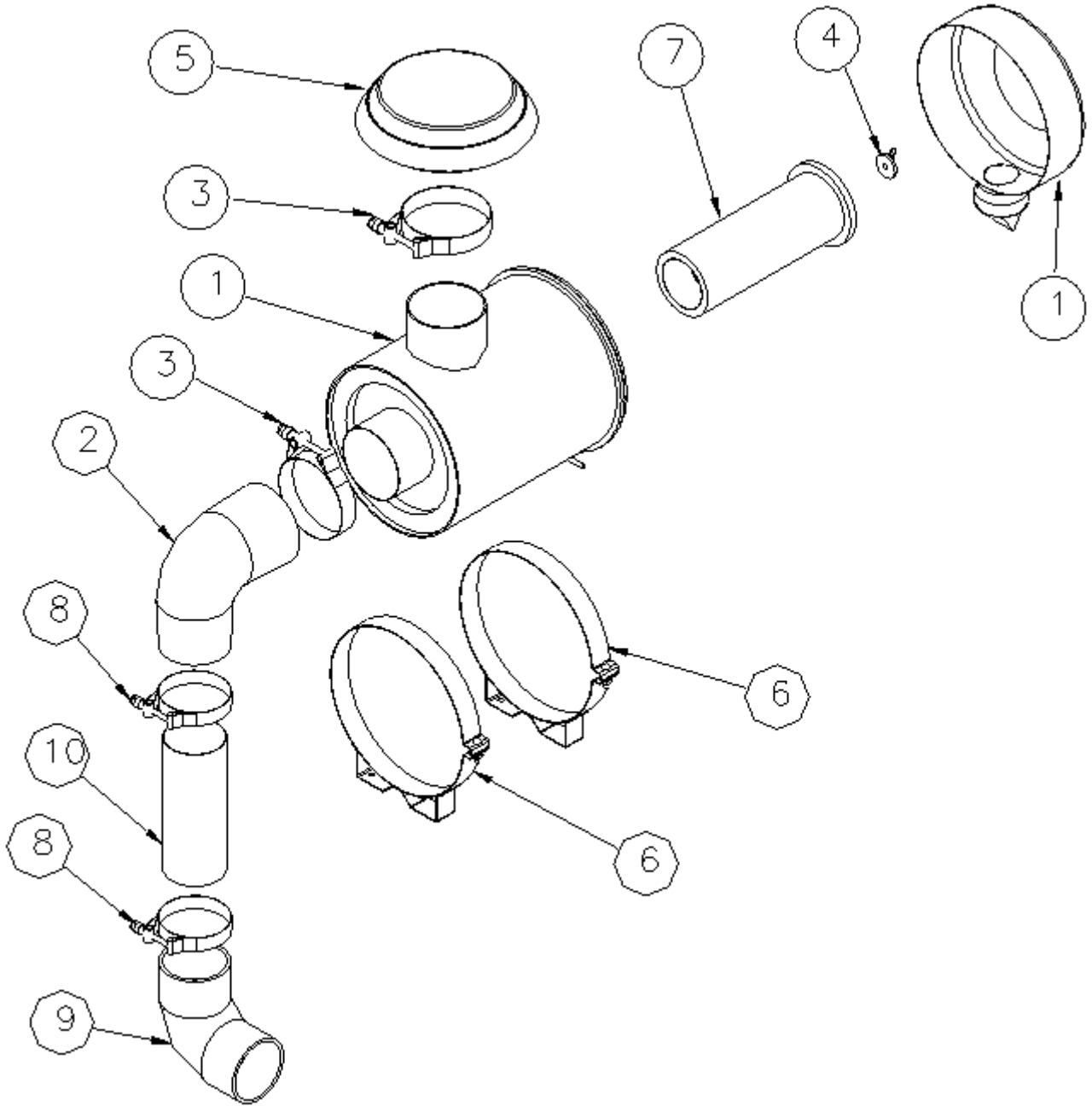
REF: 42470
REV: 0

ITEM	PART NO.	QTY	DESCRIPTION
1	846100247	1.00	MUFFLER,3 IN INLET
2	36792	2.00	ELBOW,EXHAUST,SR90,3.00 OD
3	36795-02	1.00	TUBE,FLEX EXHAUST,3.00 ID X 35
4	42123	1.00	W/M,EXHAUST ELBOW,6 BT
5	34039	4.00	CLAMP,MUFFLER,3.00



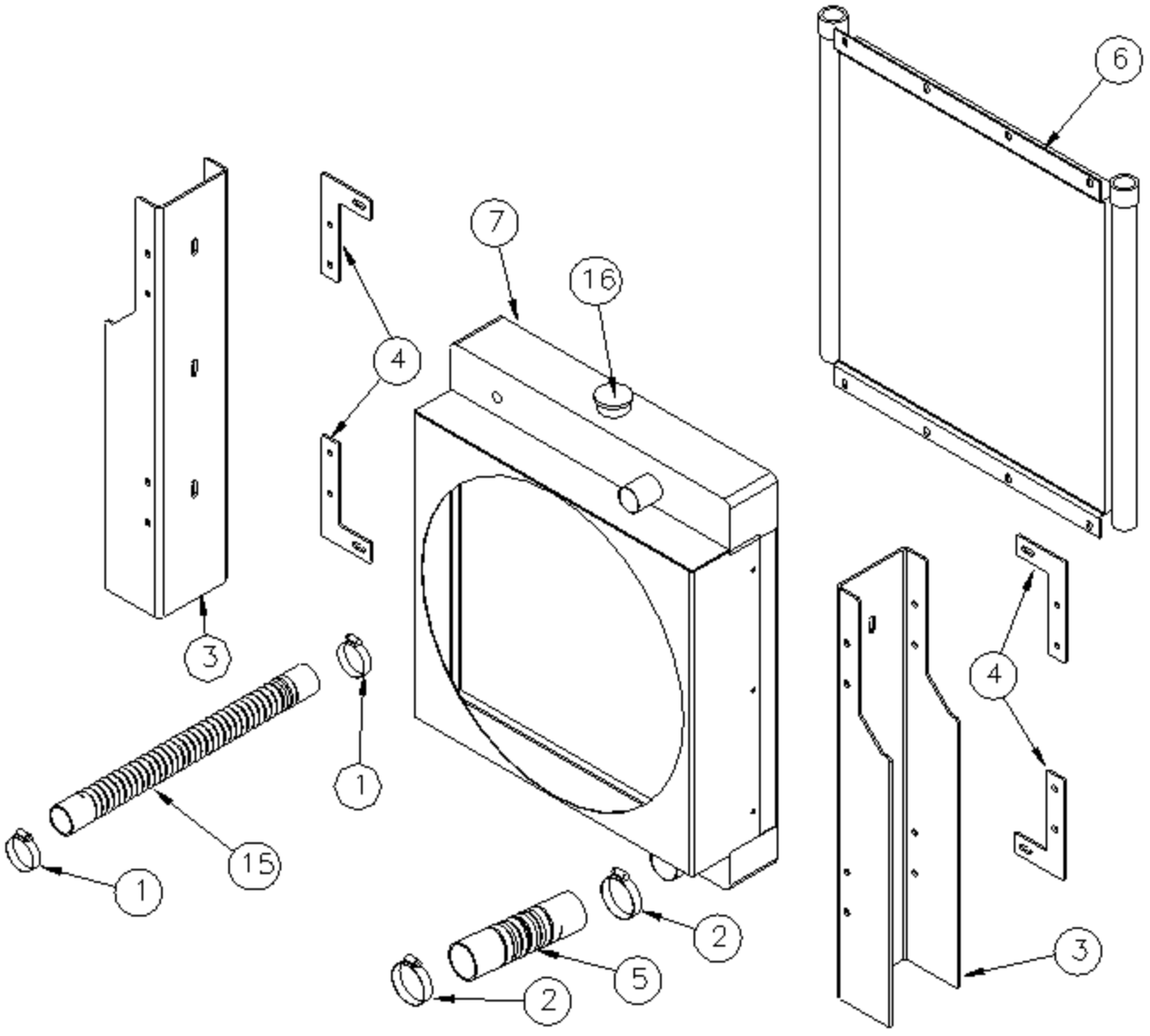
REF: 42471
REV: 0

ITEM	PART NO.	QTY	DESCRIPTION
1	953521247	1.00	AIR CLEANER,STYLE A,510CFM @ 8
	853521155	1.00	FILTER,AIR CLEANER
2	72172	1.00	ADPTR,RUBBER 90,5.00-4.00 ID
3	72174	2.00	CLAMP,T-BOLT,5.34 - 5.66 ID
4	72380	1.00	NUT,WING,AIR CLEANER
5	72381	1.00	HOOD,AIR INLET,5.00 PLASTIC
6	853521156	2.00	MOUNT,AIR CLEANER
7	853521208	1.00	ELEMENT,SAFETY,AIR CLEANER
8	953521243	2.00	CLAMP,T-BOLT,4.00 ID HOSE
9	36919	1.00	ADPTR,RUBBER 90,4.00 ID
10	99945-10	1.00	TUBE,4.00ODX3.87IDX10.00



REF: 42472
REV: 0

ITEM	PART NO.	QTY	DESCRIPTION
1	33169	2.00	CLAMP,HOSE,1.31-2.25,WORM #28
2	33171	2.00	CLAMP,HOSE,1.81-2.75,WORM,#36
3	42284	2.00	MNT,RAD,6BT HCS-F
4	42321	4.00	CLIP,OIL COOLER,HCS-F
5	72146	1.00	HOSE,RADIATOR-2 1/4x9" FLEX
6	72722	1.00	COOLER,OIL 30GPM 23.13 X 23.5
7	73126	1.00	RADIATOR,6B,6BT,6BTA,HD TUBES
8	80038	4.00	NUT,HEX,.375-16
9	80141	6.00	WASHER,TYPE A PLAIN,.312
10	80142	4.00	WASHER,TYPE A PLAIN,.375
11	80161	6.00	WASHER,SPLIT LOCK,.312
12	80162	4.00	WASHER,SPLIT LOCK,.375
13	80207	6.00	CSHH,.312-18X.75,GR5
14	80221	4.00	CSHH,.375-16X1.00,GR5
15	853313015	1.00	HOSE,RADIATOR,1.75X23.25
16	33770		CAP,RADIATOR,7 LB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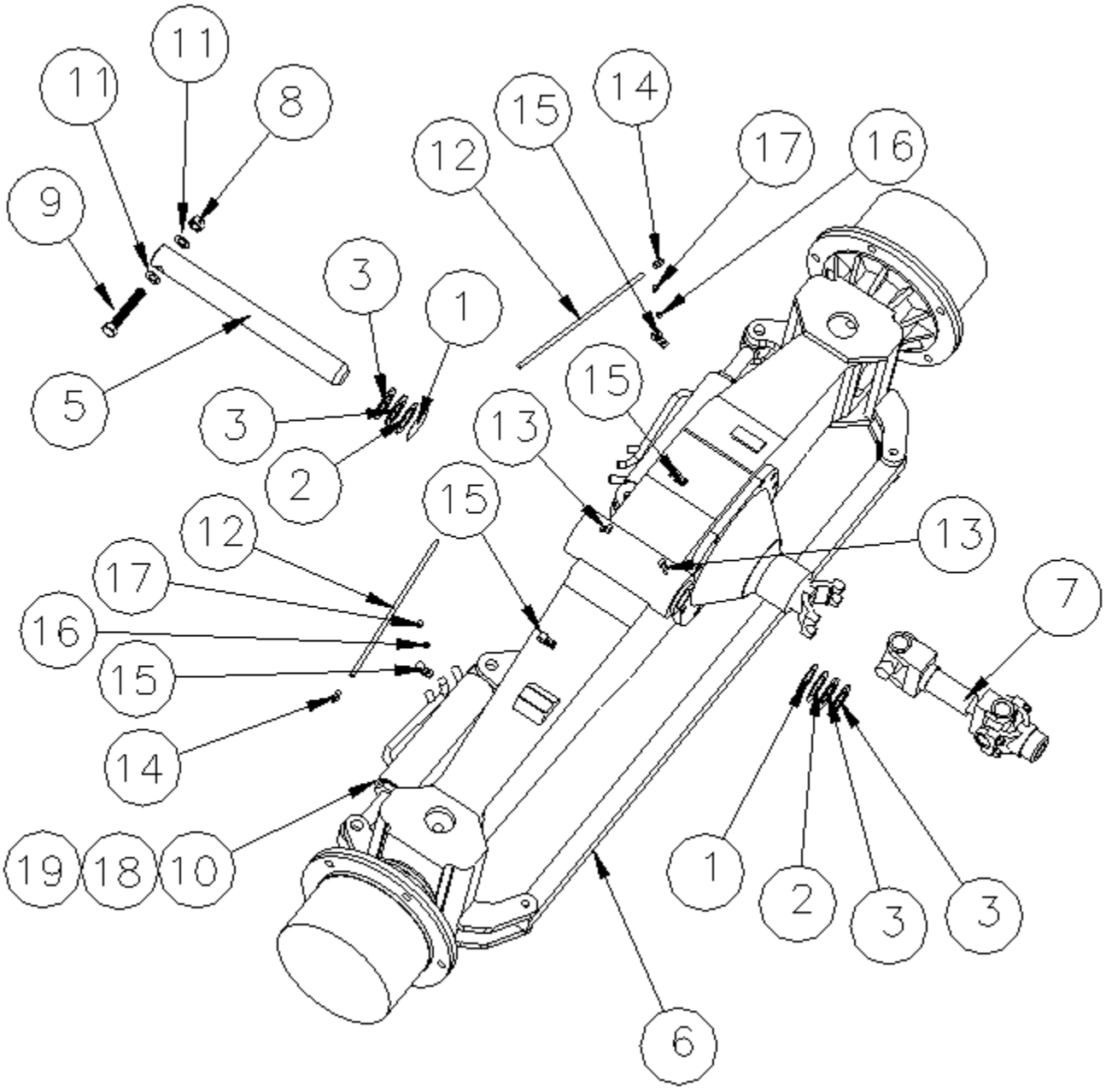
ITEM	PART NO.	QTY	DESCRIPTION
1	19780	1.00	SCHEM,SOLENOID VALVE
2	31886	1.00	GAUGE,SIGHT,12NPT
3	34463	2.00	FILTER,RETURN,HP,-12SAE PORTS
4	36123	2.00	STRAINER,SUCTION 15GPM 100MESH
5	37624	1.00	VLV,HYD,SOLENOID W/RELIEF
6	37680	1.00	FILLER,HYD FLUID,10 PSI
7	38013	1.00	VLV,CHECK,25PSI,.75NPT
8	41261	1.00	COVER,HYD TANK CLEANOUT
9	41284	1.00	W/M,HYD TANK,30 GAL,W/CLEANOUT
10	72243	2.00	STRAINER,SUCTION,50GPM,100MESH
11	72372	6.00	FITT,PLUG 02PD,DUST
12	72543	2.00	FILTER,RETURN 20 ORB,W/GAGE
13	72689	4.00	FITT,TEST 06MB-02PD
14	72691	2.00	FITT,TEST 04FP-02PD COUPLER
15	72773	1.00	MOTOR,HYD,9.82/5.85CIR,W/PICK
16	72781	1.00	ORBITROL,STEERING,11.3CIR
17	73159	17.00	VLV,HYD,MAN,FLOW CTRL,8 GPM
***18**	**73195**	**1.00**	**KIT,HOSE/FITT,DRIVE SYSTM,FRNT**
***19**	**73229**	**1.00**	**KIT,HOSE/FITT,AUX,HCS-F**
20	80160	16.00	WASHER,SPLIT LOCK,.250
21	80192	16.00	CSHH,.250-20X.75,GR5
22	80195	2.00	CSHH,.250-20X1.75,GR5
23	80350	2.00	NUT,FLEXLOC,.250-20,FULL,LT
24	80970	4.00	WASHER,SAE PLAIN,.250
25	81161	16.00	WASHER,WEATHER SEAL,#10
26	99283	2.00	PIPE,90,2.00MP-2.00FP,MI
27	99293	1.00	PIPE,PLUG,1.50MP,SQ HD,MI

* HOSE KIT SCHEMATICS AT END OF PARTS SECTION

ITEM	PART NO.	QTY	DESCRIPTION
NS	73093	1.00	VLV,RELIEF,W/MANIFOLD,500 PSI
*****	**73275**	**1.00**	**KIT,HOSE/FITT,BRAKE,STEER,CONV**
NS	80160	16.00	WASHER,SPLIT LOCK,.250
NS	80192	16.00	CSHH,.250-20X.75,GR5
NS	80195	2.00	CSHH,.250-20X1.75,GR5
NS	80350	2.00	NUT,FLEXLOC,.250-20,FULL,LT
NS	80970	4.00	WASHER,SAE PLAIN,.250
NS	81161	16.00	WASHER,WEATHER SEAL,#10
NS	99283	2.00	PIPE,90,2.00MP-2.00FP,MI
NS	99293	1.00	PIPE,PLUG,1.50MP,SQ HD,MI
7	38013	1.00	VLV,CHECK,25PSI,.75NPT
8	41261	1.00	COVER,HYD TANK CLEANOUT
9	41284	1.00	W/M,HYD TANK,30 GAL,W/CLEANOUT
10	72243	2.00	STRAINER,SUCTION,50GPM,100MESH
11	72372	6.00	FITT,PLUG 02PD,DUST
12	72543	2.00	FILTER,RETURN 20 ORB,W/GAGE
13	72636	1.00	BRAKE,MASTER CYL,SINGLE STAGE
14	72636-05	1.00	KIT,CONVERT CYL TO HYD OIL
15	72689	4.00	FITT,TEST 06MB-02PD
16	72691	2.00	FITT,TEST 04FP-02PD COUPLER
17	72773	1.00	MOTOR,HYD,9.82/5.85CIR,W/PICK
18	72781	1.00	ORBITROL,STEERING,11.3CIR
19	73159	1.00	VLV,HYD,MAN,FLOW CTRL,8 GPM
***20**	**73195**	**1.00**	**KIT,HOSE/FITT,DRIVE SYSTM,FRNT**
101	19780	1.00	SCHEM,SOLENOID VALVE
102	31886	1.00	GAUGE,SIGHT,12NPT
103	34463	2.00	FILTER,RETURN,HP,-12SAE PORTS
104	36123	2.00	STRAINER,SUCTION 15GPM 100MESH
105	37624	1.00	VLV,HYD,SOLENOID W/RELIEF
106	37680	1.00	FILLER,HYD FLUID,10 PSI

* HOSE KIT SCHEMATICS AT END OF PARTS SECTION

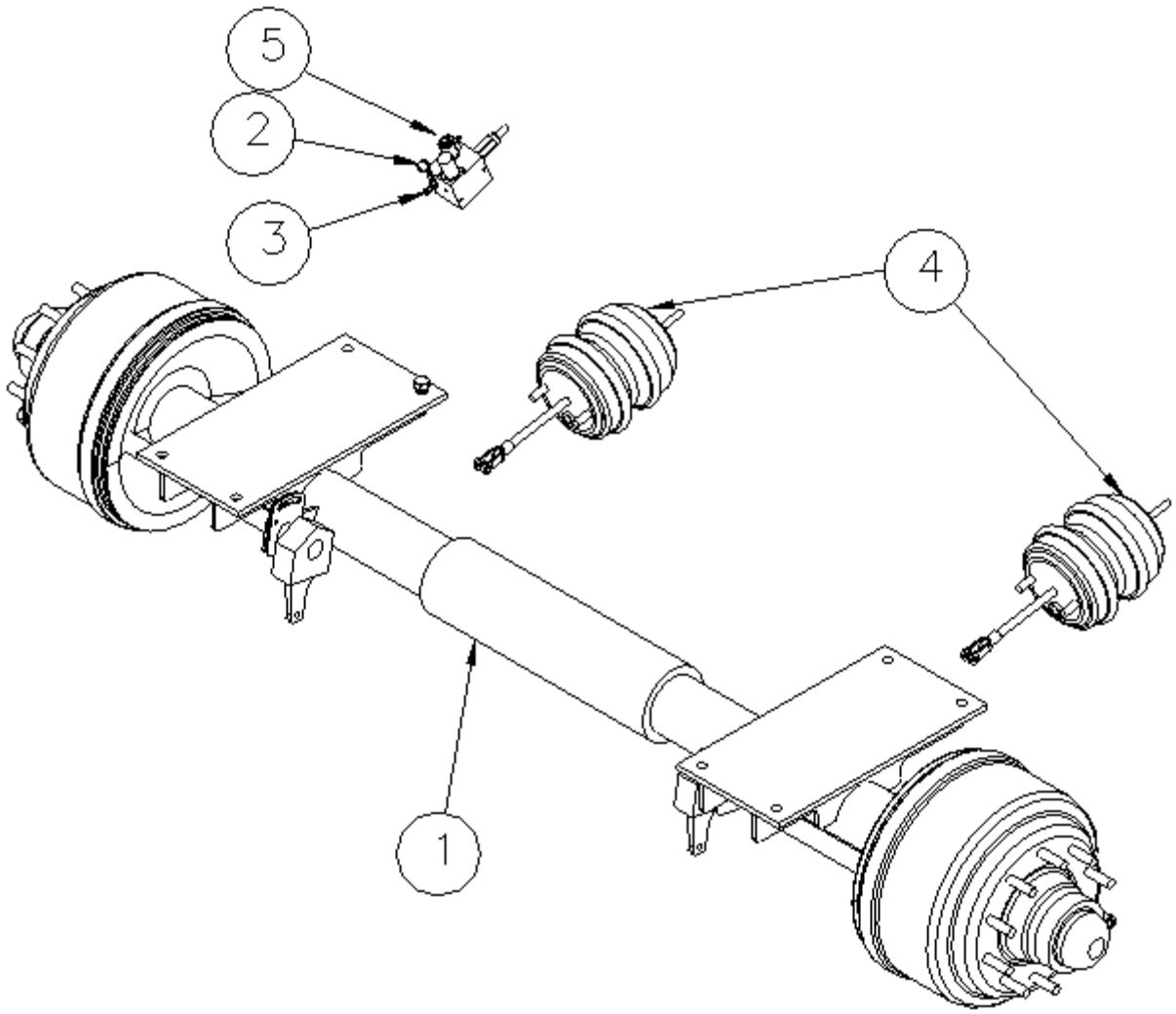
ITEM	PART NO.	QTY	DESCRIPTION
1	38180	2.00	WASHER,THRUST,2.00IDX.03THICK
2	38180-01	2.00	WASHER,THRUST,2.00IDX.06THICK
3	38180-02	4.00	WASHER,THRUST,2.00IDX.13THICK
4	38182-01	5.00	OIL,HYD,MOBIL 424
5	41396	1.00	SHAFT,PIVOT,FRONT AXLE
6	72785	1.00	AXLE,DRIVE/STEER,77.50 TRACK
7	73173	1.00	DRIVE SHAFT,1480,11.50 CL
8	80357	1.00	NUT,FLEXLOC,.750-10,FULL,LT
9	80838	1.00	CSHH,.750-10X4.50,GR5
10	72785-01	1.00	CYL,HYD,2.36BX1.18ROD,METRIC
	72785-02		KIT,SEAL,HYD CYL
	72785-09		KIT,BRAKE REPAIR,ITL AXLE
	72785-17		WHEEL NUT
11	81154	2.00	WASHER,SAE,HARDENED,.750
12	71952	2.00	HOSE ASSY 3000 PSI,-03 X 22
13	99523	2.00	PIPE,90,02MP-02FP,MI
14	72660	2.00	FITT,LUBE,STR,02FP
15	871111605	5.00	CLAMP,LOOP,.50 OD PLSTC COVER
16	80476	4.00	WASHER,SPLIT LOCK,M6
17	80465	4.00	CSHH,M6X1.0X12,CL8.8
18	80478	4.00	WASHER,SPLIT LOCK,M10
19	80515	4.00	CSHH,M10X1.5X25,CL8.8
20	42271	1.00	BRACKET,CABLE CLAMP
21	80423	1.00	CSHH,.250-20X.50,GR5
22	80036	1.00	NUT,HEX,.250-20
23	80160	1.00	WASHER,SPLIT LOCK,.250
24	72984-010	2.00	HOSE,03,04FJX-M12X1,3000



FILL WITH MOBIL FLUID 424, ITEM 4.
HOUSING & HUBS. CAP 4.68 GAL
HOUSING & .44 GAL EACH HUB.
NOTE: DO NOT USE MOBIL 424
IN BRAKE RESERVOIR. USE
ONLY MOBIL DTE 11M. DO
NOT USE ORDINARY BRAKE
FLUID (J 1703).

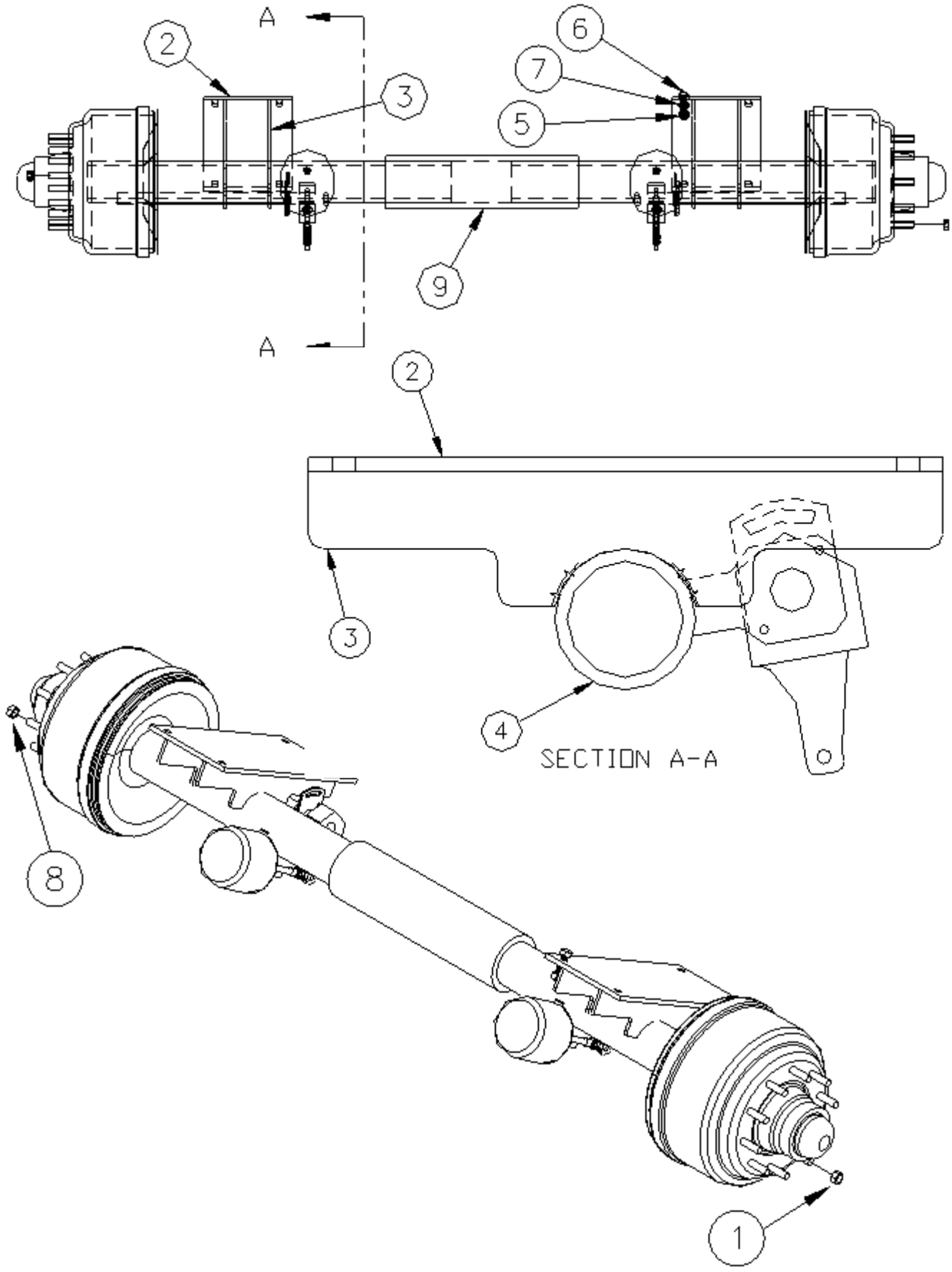
REF: 42293,42296
REV: 0

ITEM	PART NO.	QTY	DESCRIPTION
1	**42296**	**1.00**	**GRP,REAR AXLE,FRT 2WD**
2	72372	1.00	FITT,PLUG 02PD,DUST
3	72702	1.00	FITT,TEST 02MP-02PD
4	73230	2.00	ACTUATOR,BRAKE,HYD
5	73233	1.00	VLV,HYD,DUAL SOL,PRES RED



42296 **REAR AXLE, FRT 2WD (Drawing Opposite)**

1	33462	10.00	NUT,LUG,.750-16,LH
2	42297	2.00	BASE, AXLE MOUNT
3	42298	4.00	GUSSET, AXLE MOUNT
4	72769	1.00	AXLE,TRAILER,96",22,500#
5	80357	8.00	NUT,FLEXLOC,.750-10,FULL,LT
6	81114	8.00	CSHH,.750-10X2.50,GR8
7	81154	8.00	WASHER,SAE,HARDENED,.750
8	846171807	10.00	NUT,LUG,.750-16
9	90965-01	1.00	TUBE,RND,6.50 ODX.75W,24.00 LG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SECTION A-A
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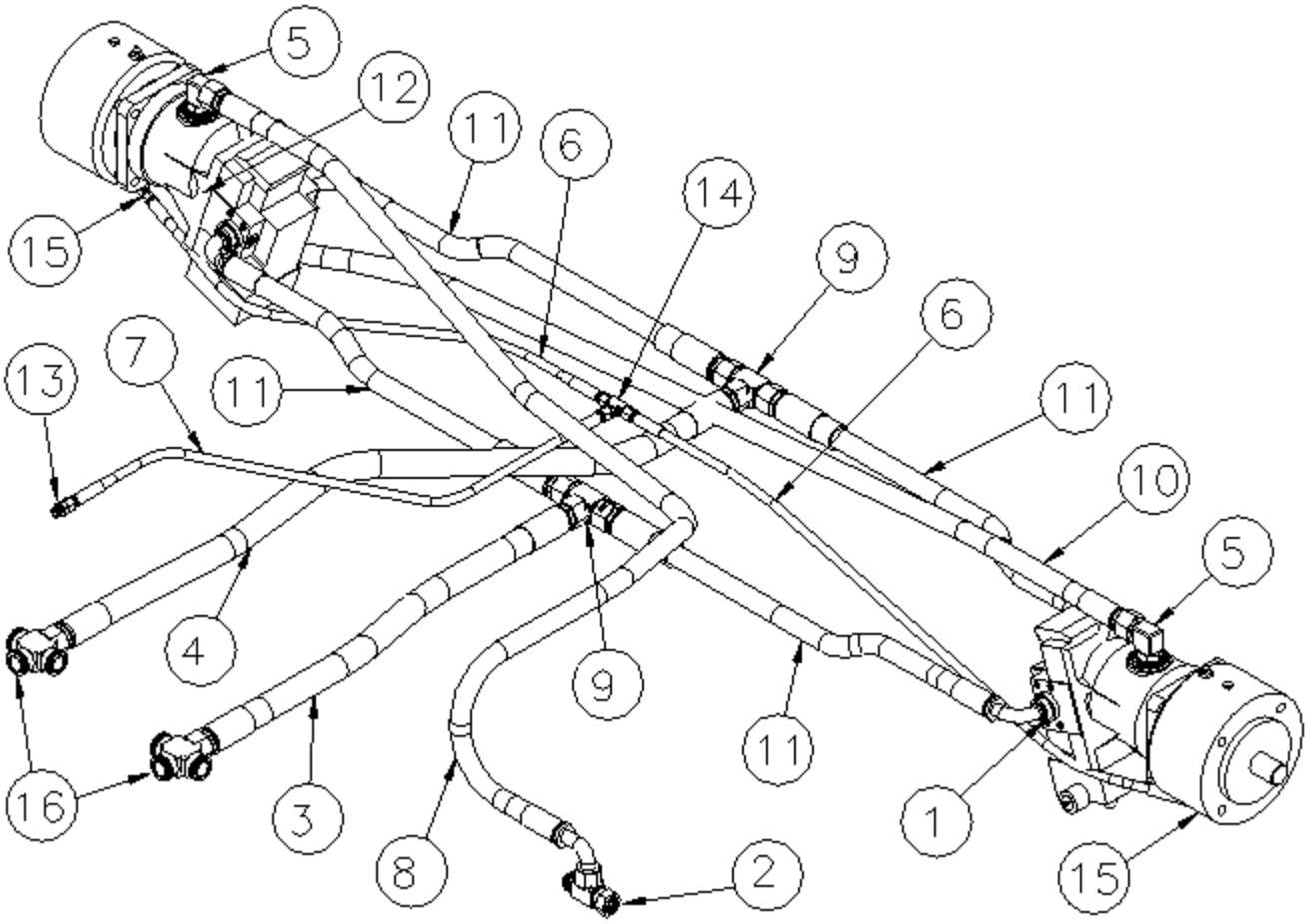
ITEM	PART NO.	QTY	DESCRIPTION
NS	40212	2.00	MOUNT,HYD MOTOR
NS	40213	2.00	GUARD,HYD MOTOR
NS	40220	2.00	CHANNEL W/M, AXLE HSG
Detail	**73196**	**1.00**	**KIT,HOSE/FITT,REAR DRIVE MTRS**
2	73067	8.00	CSSH,.500-13X6.00,GR8
3	**73215**	**2.00**	**HUB,TORQUE,23.50:1 RATIO**
5	72685	3.00	CONN,METRIC 4-PIN
6	73033	2.00	MOTOR,HYD,3.66/.73CIR
9	73040	2.00	BRAKE,HYD,WET,5400 LB
10	73041	1.00	VLV,HYD,SOL,3-WAY,NO,-06
13	80280	36.00	CSHH,.625-11X1.50,GR5
14	80357	8.00	NUT,FLEXLOC,.750-10,FULL,LT
15	81114	8.00	CSHH,.750-10X2.50,GR8
16	81141	8.00	WASHER,SAE,HARDENED,.500
17	81154	8.00	WASHER,SAE,HARDENED,.750
18	81201	36.00	WASHER,SAE,HARDENED,.625
19	846171807	20.00	NUT,LUG,.750-16
20	99534	2.00	PIPE,PLUG,02MP,SQ HD,MI
23	73084	2.00	FITT,RELIEF,02MP,5 PSI
25	80195	2.00	CSHH,.250-20X1.75,GR5
26	80140	2.00	WASHER,TYPE A PLAIN,.250
27	80160	2.00	WASHER,SPLIT LOCK,.250
28	80036	2.00	NUT,HEX,.250-20
30	80219	8.00	CSHH,.375-16X.75,GR5
31	80162	8.00	WASHER,SPLIT LOCK,.375

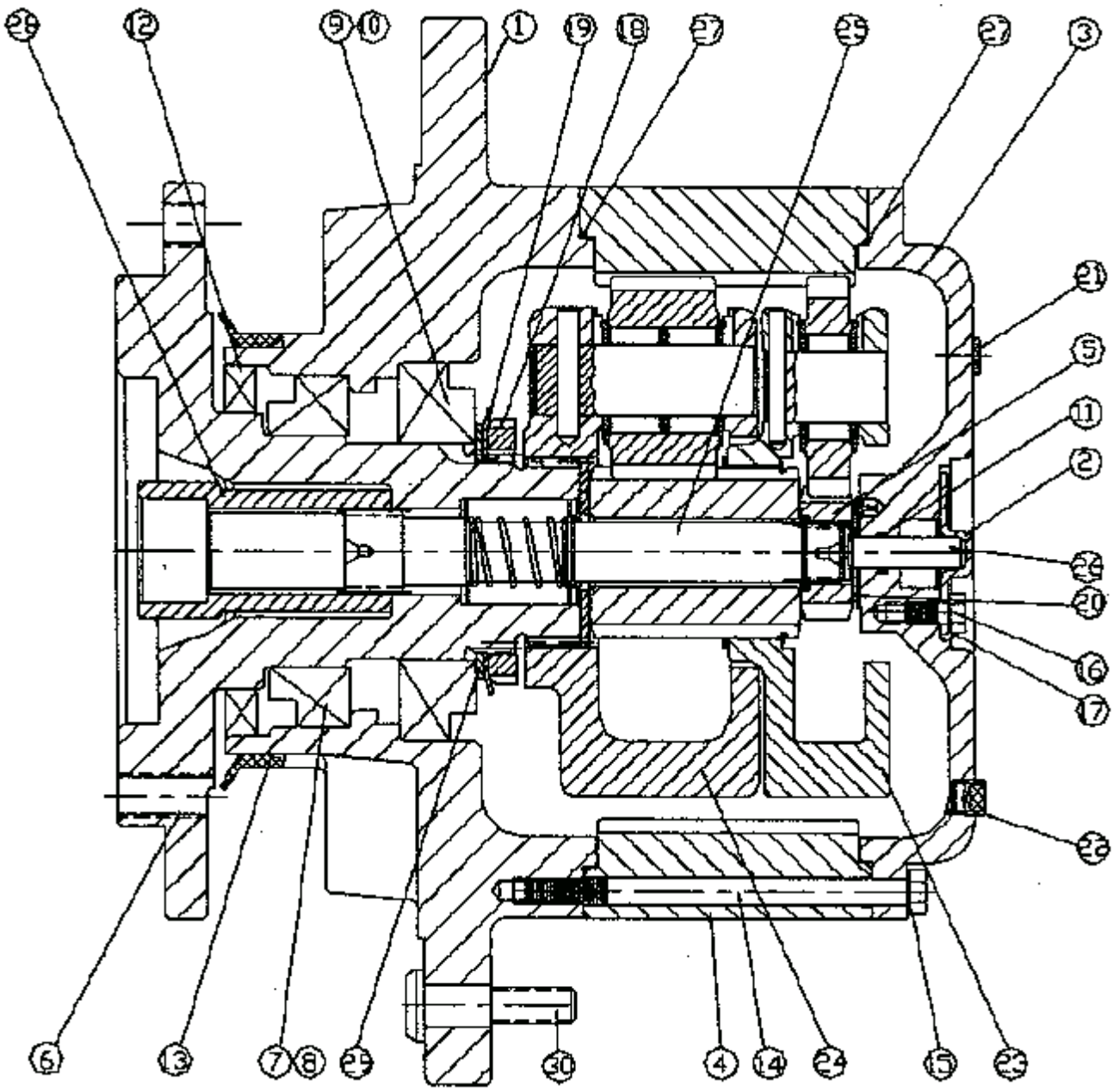
HOSE KIT, REAR DRIVE MOTORS,4WD

REF: 73196
REV: 0

ITEM	PART NO.	QTY	DESCRIPTION
0	RES1001	.00	HYDRAULIC SPECIFICATIONS
1	33103	4.00	FITT,KIT 12FL,CODE 62
2	33160	1.00	FITT,TEE 12MJ-12FJX-12MJ
3	38730-041	1.00	HOSE,16,16OFS-160FS,6000
4	38730-049.	1.00	HOSE,16,16OFS-160FS,6000
5	71775	2.00	FITT,90 12MJ-12MB
6	72415-044	2.00	HOSE,04,04FJX-06FJX,3000
8	72558-118	1.00	HOSE,12,12FJX-12RJ90,1250
9	72942	.00	FITT,TEE 16MRS-16MRS-16MRS
10	72558-085.	1.00	HOSE,12,12FJX-12RJ90,1250
11	73101-033	4.00	HOSE,12,16OFS-12FH9B,6000
12	853180160	1.00	FITT,STR 12MJ-12MB
15	X360	2.00	FITT,90 04MJ-04MB
17	73036	2.00	FITT,CROSS 16MRS
18	X365	1.00	FITT,90 12MJ-12FJX



ITEM	PART NO.	QTY	DESCRIPTION
1	73215-01	1.00	HOUSING,OMNI GEAR
2	73215-02	1.00	CAP,LOCKOUT,OMNI GEAR
3	73215-03	1.00	CAP,END,OMNI GEAR
4	73215-04	1.00	GEAR,RING,79T,OMNI GEAR
5	73215-05	1.00	GEAR,SUN 20T,OMNI GEAR
6	73215-06	1.00	SPINDLE,SAE 'C2',OMNI GEAR
7	73215-07	1.00	BEARING CUP,OMNI GEAR
8	73215-08	1.00	BEARING CONE,OMNI GEAR
9	73215-09	1.00	BEARING CUP,OMNI GEAR
10	73215-10	1.00	BEARING CONE,OMNI GEAR
11	73215-11	1.00	O-RING,OMNI GEAR
12	73215-12	1.00	OIL SEAL,OMNI GEAR
13	73215-13	1.00	PROTECTOR SEAL,OMNI GEAR
14	73215-14	12.00	HEX HEAD BOLT,M10X1.5,GR.10.9,OMNI
15	73215-15	12.00	LOCK WAHER,M10,OMNI GEAR
16	73215-16	2.00	HEX HEAD BOLT,M8X1.25,GR.10.9,OMNI
17	73215-17	2.00	LOCK WASHER,M8,OMNI GEAR
18	73215-18	1.00	LOCK NUT,M75X2,OMNI GEAR
19	73215-19	1.00	LOCK NUT WASHER,M75,OMNI GEAR
20	73215-20	1.00	RETAINING WASHER,SUN,OMNI GEAR
21	73215-21	1.00	PIPE PLUG,1/4"-18NPT SOCKET,HD,OMNI
22	73215-22	1.00	PIPE PLUG,1/2"-14NPT,MAGNETIC,OMNI
23	73215-23	1.00	PRIMARY CARRIER,SUB ASSY,OMNI
24	73215-24	1.00	SECONDARY CARRIER,SUB ASSY,OMN
25	73215-25	1.00	DRIVE SHAFT SUB ASSY,OMNI GEAR
26	73215-26	1.00	PLUNGER,OMNI GEAR
27	73215-27	2.00	O-RING,OMNI GEAR
28	73215-28	1.00	MOTOR COUPLER,14T,OMNI GEAR
29	73215-29	1.00	SPACER,FLAT TONGUE,OMNI GEAR
30	73215-30	10.00	WHEEL STUD,3/4"-16UNF-2A,OMNI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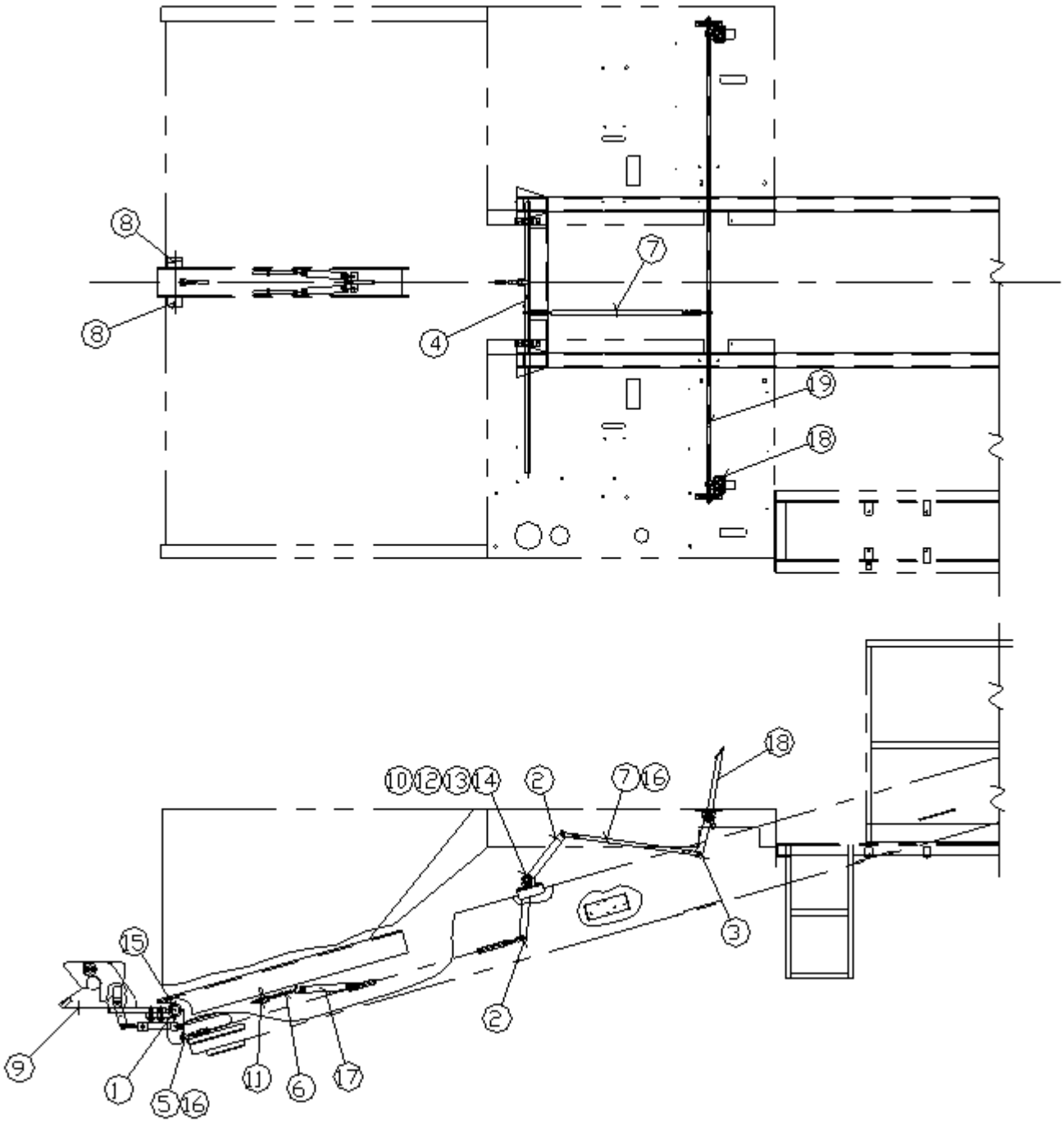
ITEM	PART NO.	QTY	DESCRIPTION
1	106000690	1.00	SHAFT,TRUCK HOOK
2	41245	2.00	BAR,.500X1.50X13.25 W/HOLES
3	106008299	1.00	LINK,TRUCK HOOK
4	42326	1.00	SHAFT,TRUCK HITCH,LONG
5	107000062	1.00	ROD,TRUCK HOOK
6	107000225	2.00	ROD,SPRING
7	107000672	1.00	W/M,ROD,W/2 CLEVIS'S,W/LINK
8	33684	2.00	FITT,LUBE,STR,02MP,SHORT
9	**41239**	**1.00**	**HITCH,HYD RELEASE,SMALL**
	72536-01		KIT,SEAL,HYD CYL
10	80038	8.00	NUT,HEX,.375-16
11	80040	4.00	NUT,HEX,.500-13
12	80162	8.00	WASHER,SPLIT LOCK,.375
13	80221	8.00	CSHH,.375-16X1.00,GR5
14	845202026	2.00	BEARING,PILLOW BLOCK
15	871045703	1.00	SET S,.50DOG,.500-13X.50
16	871081000	4.00	PIN,CLEVIS,W/COTTER PIN
17	871090326	2.00	SPR,177WIRE,1.38OD,39CL,8.75LG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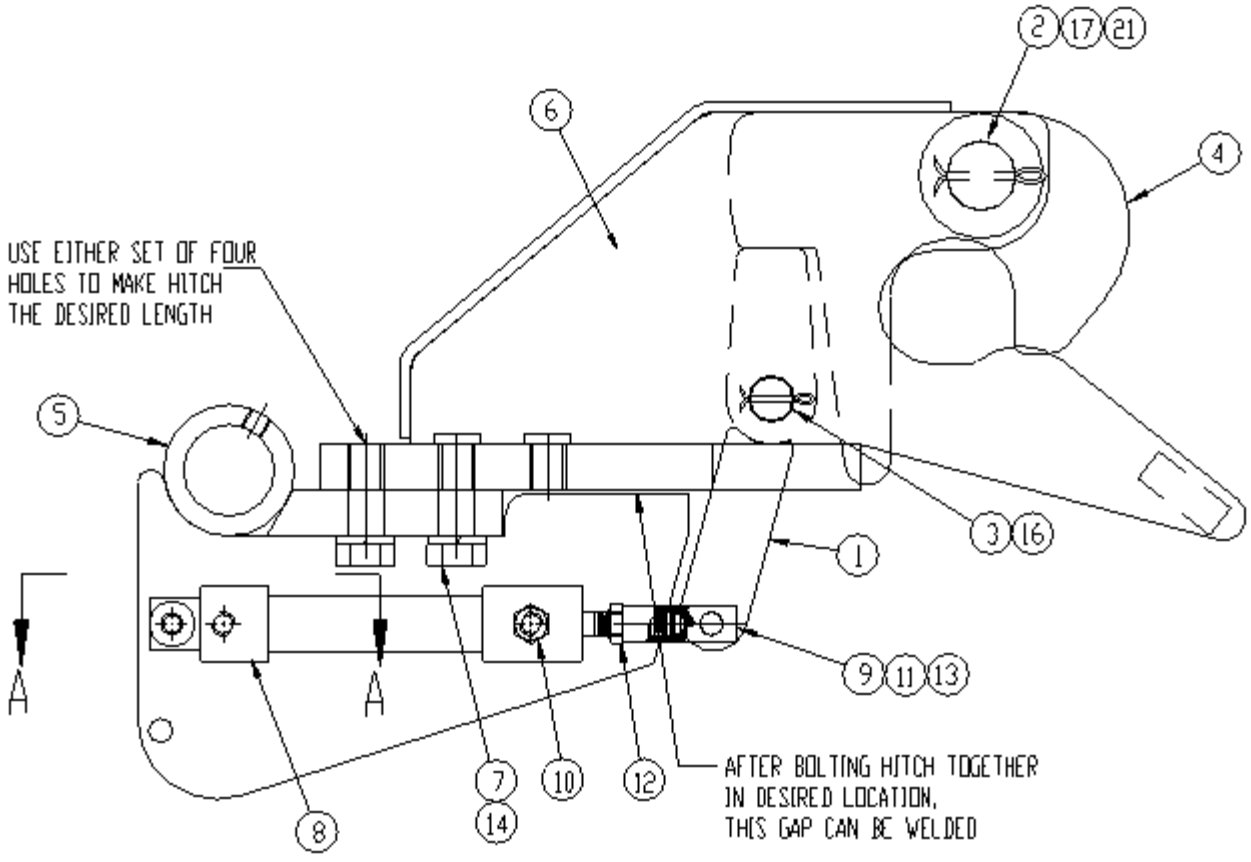
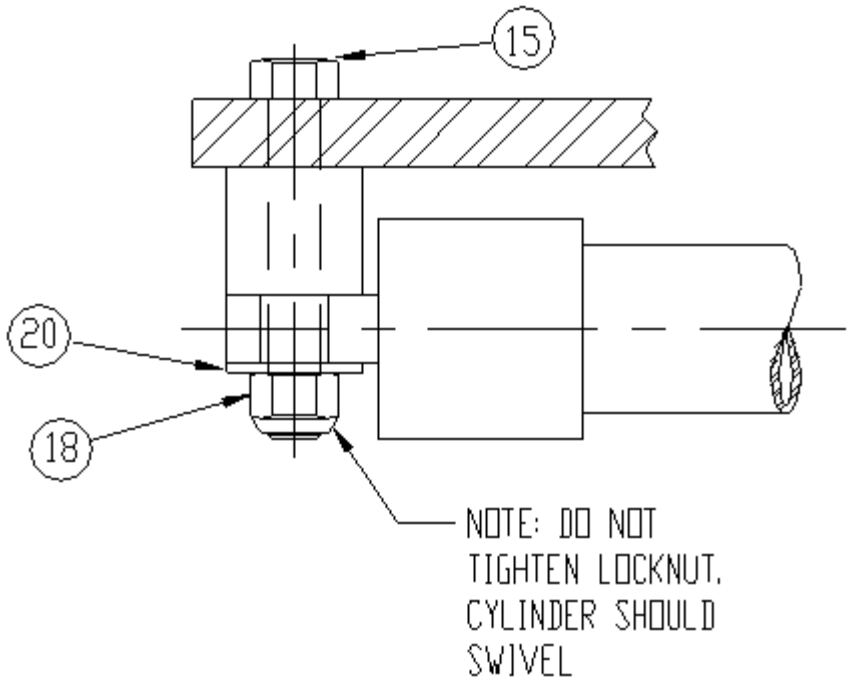
ITEM	PART NO.	QTY	DESCRIPTION
1	40541	1.00	LATCH,HOOK
2	40543	1.00	PIN,HOOK,1.50 OD
3	40549	1.00	PIN,LATCH,1.00 OD
4	40984	1.00	HOOK,HD TRUCK HITCH
5	41178	1.00	W/M,HITCH PIVOT,HD HITCH
6	41180	1.00	W/M,BASE,HD HITCH
7	71641	4.00	CSHH,.750-10X2.25,GR5
8	72526	1.00	CYL,HYD,1.00B X 3.00S(SPRING)
9	72528	1.00	BALL JOINT,.500-20
10	72529	1.00	BREATHER,04-MP
11	80058	1.00	NUT,HEX,.500-20
12	80093	1.00	NUT,HEX,JAM,.500-20
13	80164	1.00	WASHER,SPLIT LOCK,.500
14	80168	4.00	WASHER,SPLIT LOCK,.750
15	80232	1.00	CSHH,.375-16X2.50,GR5
16	80336	2.00	COTTER PIN,.188X1.50
17	80338	2.00	COTTER PIN,.188X2.00
18	80352	1.00	NUT,FLEXLOC,.375-16,FULL,LT
19	80706	4.00	WASHER,SAE PLAIN,1.000
20	80996	1.00	WASHER,SAE PLAIN,.375
21	81089	4.00	WASHER,SAE PLAIN,1.500



See DETAIL A on opposite page

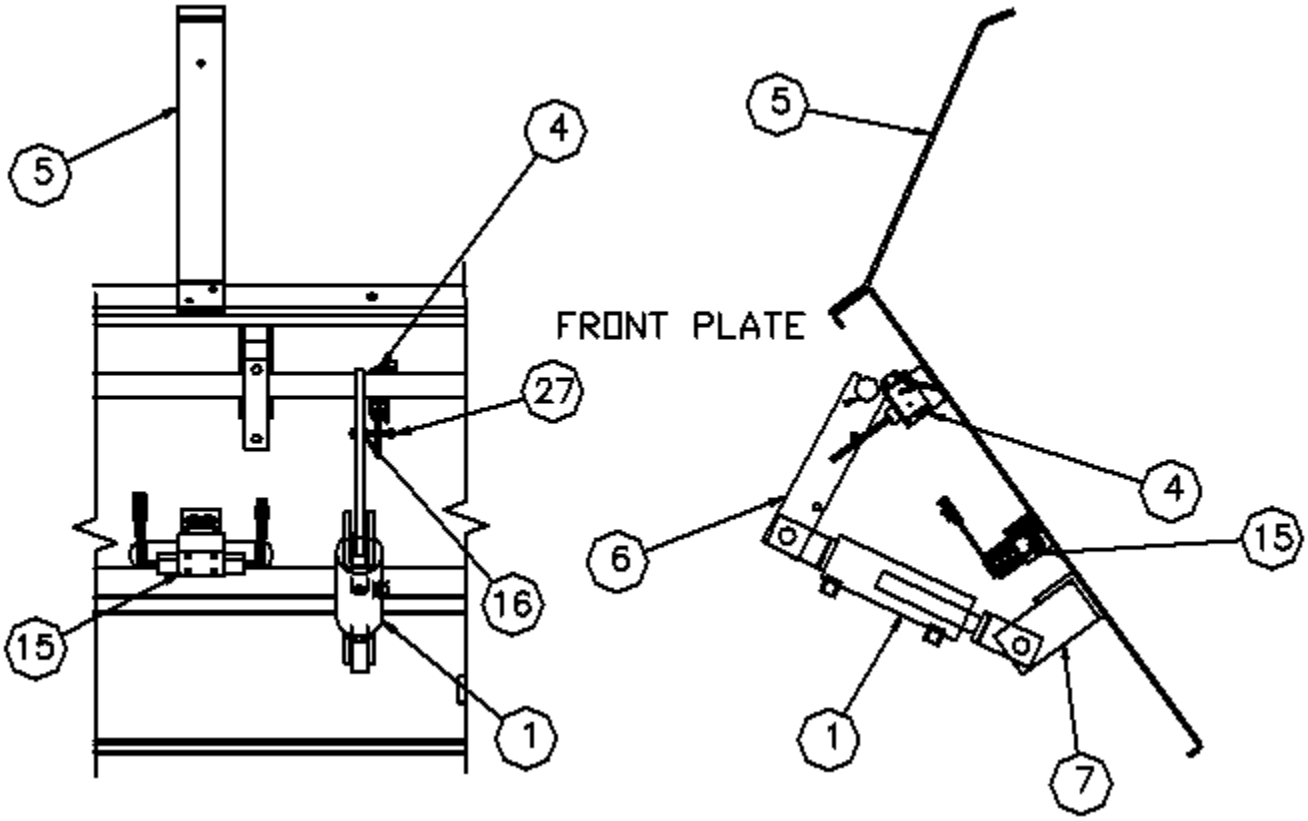
ITEM	PART NO.	QTY	DESCRIPTION
	40830		**FRONT HOPPER, 4WD GROUP**
NS	40066	1.00	BRACKET,QUICK COUPLER
NS	72321	1.00	VLV,HYD,RELIEF,VENTABLE
Detail	**72724**	**1.00**	**KIT,HOSE,FR HOPPER W/RATE CONT**
NS	80036	12.00	NUT,HEX,.250-20
NS	80160	4.00	WASHER,SPLIT LOCK,.250
NS	80194	4.00	CSHH,.250-20X1.50,GR5
NS	99985	1.00	PIPE,BUSH,12MP-08FP,STL

ITEM	PART NO.	QTY	DESCRIPTION
	42387		**FRONT HOPPER, 2WD GROUP**
NS	40066	1.00	BRACKET,QUICK COUPLER
NS	37624	1.00	VLV,HYD,SOLENOID W/RELIEF
Detail	**72724**	**1.00**	**KIT,HOSE,FR HOPPER W/RATE CONT**
NS	80036	12.00	NUT,HEX,.250-20
NS	80160	4.00	WASHER,SPLIT LOCK,.250
NS	80194	4.00	CSHH,.250-20X1.50,GR5
NS	99985	1.00	PIPE,BUSH,12MP-08FP,STL



VIEW A-A

ITEM	PART NO.	QTY	DESCRIPTION
1	31884A	1.00	CYL,HYD,2.50X6.00
	31885A-01		KIT,SEAL,HYD CYL
2	33590	1.00	LOOM,SPIRAL CUT,.50 ID,NATURAL
3	33596	8.00	TIE WRAP,.188X7.5
4	33964	1.00	SWITCH,BACKUP ALARM
5	40065	1.00	SUPPORT,FRONT HOPPER HOSE
6	41193	1.00	LEVER,FRONT GATE W/RATE CONT
7	41194	1.00	MOUNT,GATE CYL W/RATE CONTROL
8	41232	1.00	STOP CAM W/M
9	41234	1.00	MOUNT,SWITCH,STOP CAM
10	**41788**	**1.00**	**GATE POSITION SENSOR ASSY** **(See Detail on Following Page)**
11	41825	1.00	HARNESS,FR HOPPER,W/RATE
12	72152	1.00	ROLL PIN,.313X2.50,EXP TYPE
13	**72724**	**1.00**	**KIT,HOSE,FR HOPPER W/RATE CONT** **(See Detail on Following Page)**
14	72744	1.00	DECAL,GATE STOP
15	73083	1.00	VLV,HYD,DO3 W/MANIFOLD,BOSCH
16	80036	11.00	NUT,HEX,.250-20
17	80037	5.00	NUT,HEX,.312-18
18	80056	2.00	NUT,HEX,.375-24
19	80160	9.00	WASHER,SPLIT LOCK,.250
20	80161	5.00	WASHER,SPLIT LOCK,.312
21	80185	4.00	CSHH,.250-20X1.00,GR5
22	80192	9.00	CSHH,.250-20X.75,GR5
23	80208	5.00	CSHH,.312-18X1.00,GR5
24	80300	1.00	SET S,HSKT,KCUP,.250-20X.25
25	80350	6.00	NUT,FLEXLOC,.250-20,FULL,LT
26	80698	2.00	WASHER,SAE PLAIN,.750
27	80787	2.00	CSHH,.250-20X2.50,GR5
28	80798	2.00	MACH SCR,PH,#10-24X1.00
29	81147	1.00	RETAINER,TRUARC,.156 ID
30	871111605	2.00	CLAMP,LOOP,.50 OD PLSTC COVER
31	871111609	4.00	CLAMP,LOOP,.625 OD,PLSTC COVER
32	951091224	1.00	SWITCH,SAFETY START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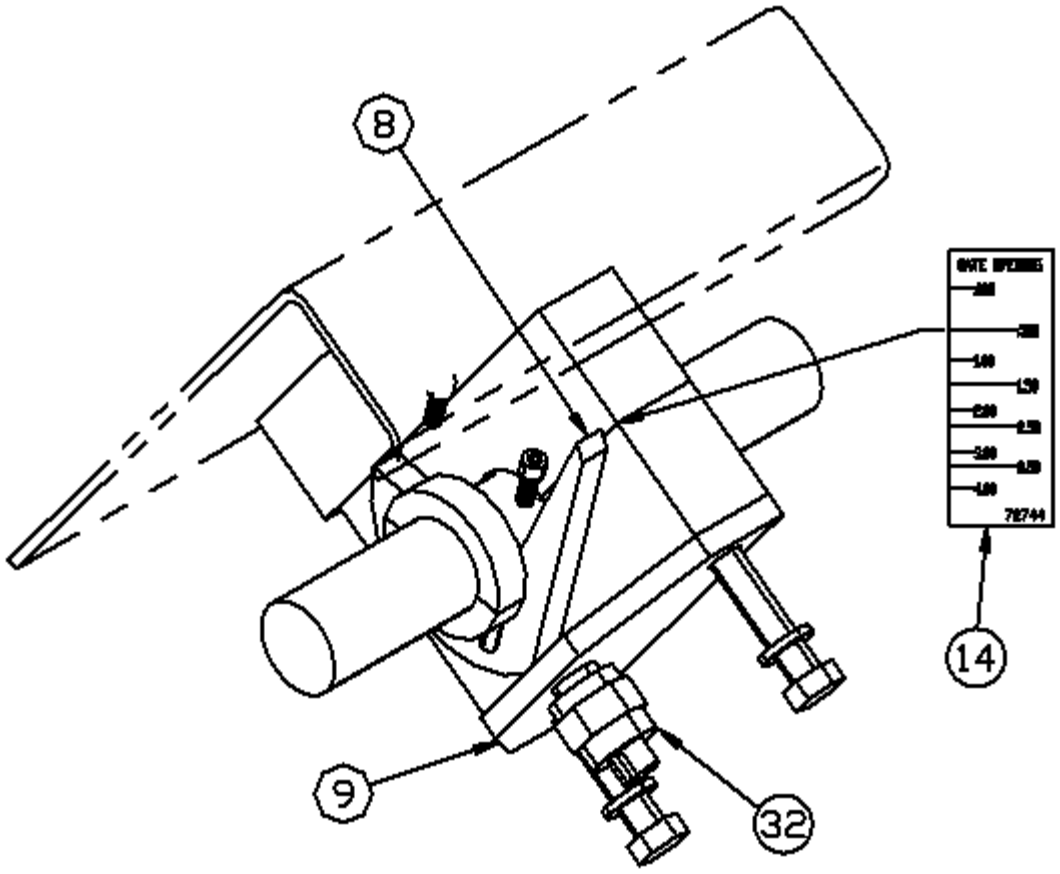
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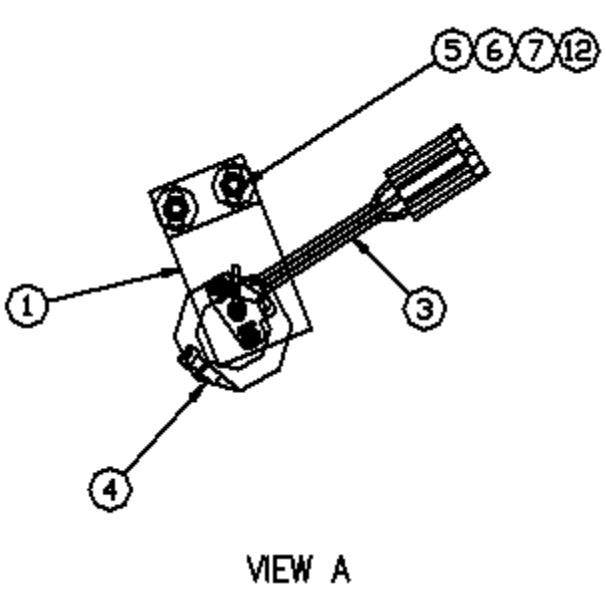
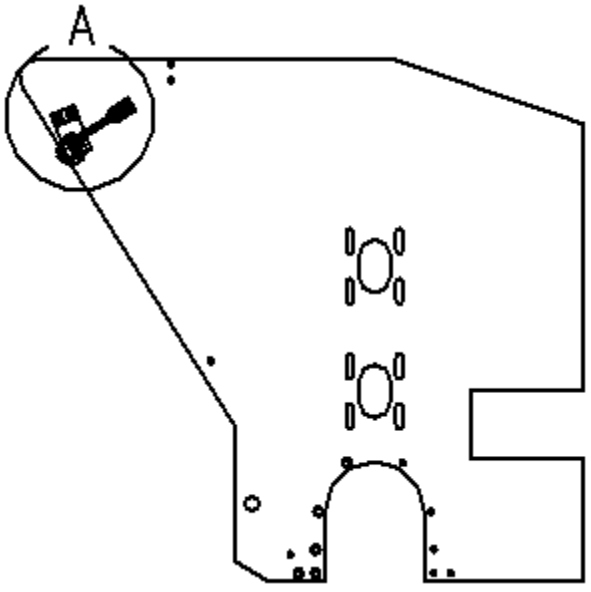
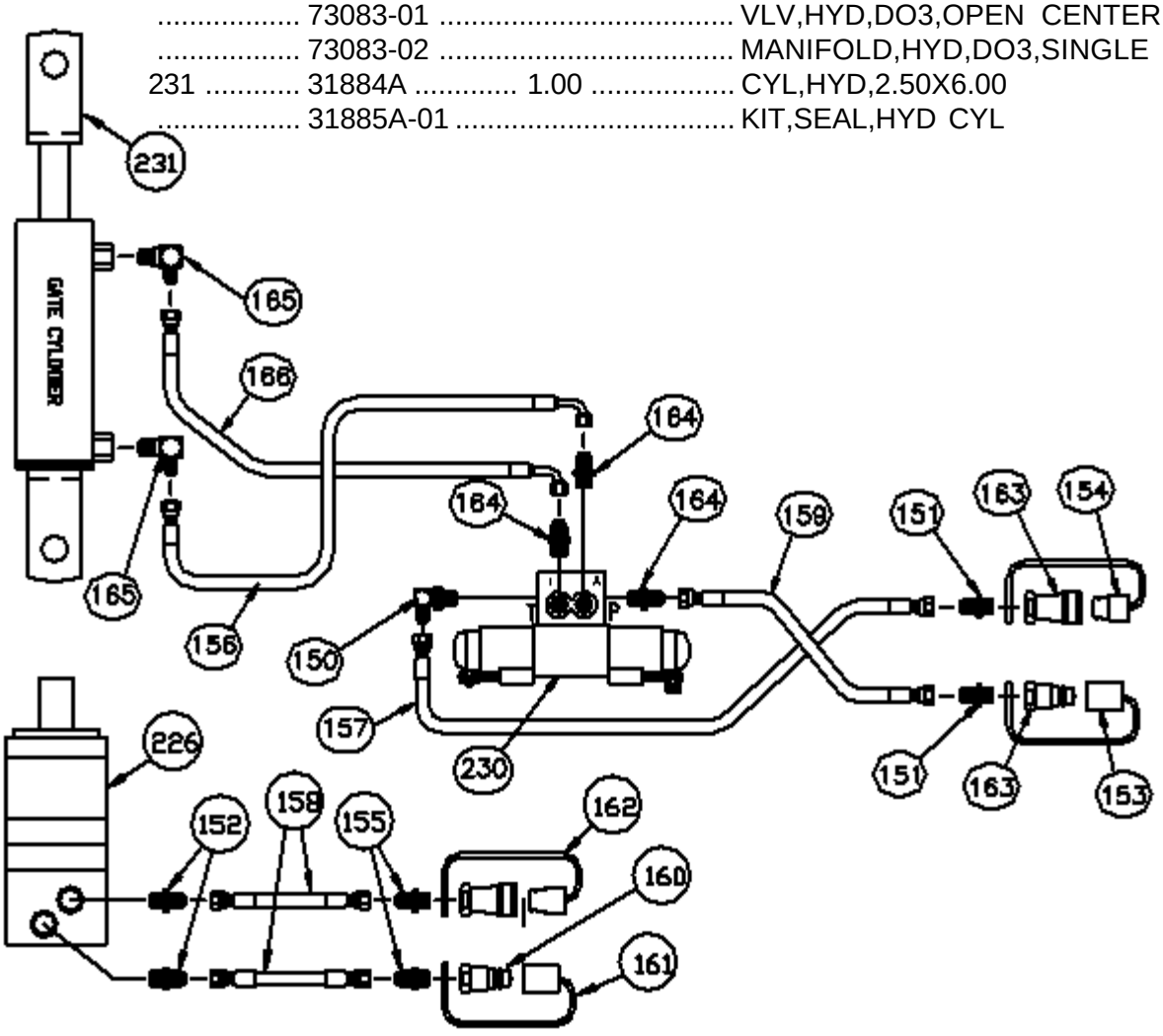
ITEM	PART NO.	QTY	DESCRIPTION
1	41789	1.00	BAR,GATE POSITION SENSOR BASE
2	41790	1.00	BAR,GATE POS SENSOR SPACER
3	41791	1.00	WIRING,GATE POSITION SENSOR
4	41792	1.00	COLLAR,MODIFIED,.125 HOLE
5	80036	2.00	NUT,HEX,.250-20
6	80160	2.00	WASHER,SPLIT LOCK,.250
7	80187	2.00	CSHH,.250-20X1.25,GR5
8	80493	2.00	NUT,HEX,#6-32
9	80797	2.00	WASHER,SPLIT LOCK,#6
10	80800	2.00	MACH SCR,PH,#6-32X1.00
11	81046	1.00	SPRING PIN, 1/8 DIA X 1 LG



VIEW A



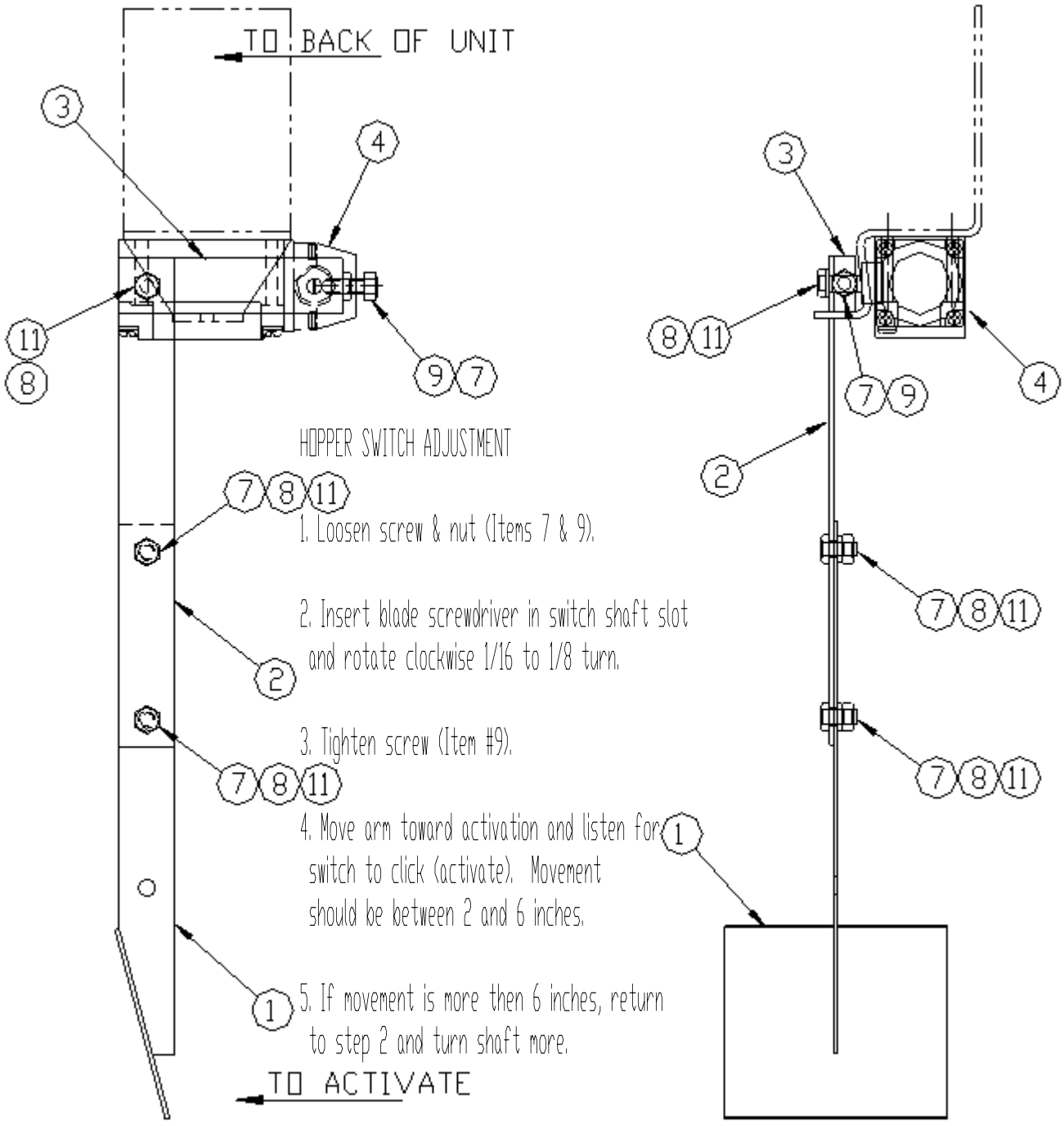
ITEM	PART NO.	QTY	DESCRIPTION
150	33892	1.00	FITT,90 06MJ-06MB
151	35499	2.00	FITT,STR 06MJ-06MP
152	71882	2.00	FITT,STR 12MJ-10MB
153	72117	1.00	CAP,DUST,06 QD
154	72118	1.00	PLUG,DUST,06 QD
155	72178	2.00	FITT,STR 12MJ-12MP
156	72549-024	1.00	HOSE,06,06FJX-06RJ90,3000
157	72550-065	1.00	HOSE,06,06FJX-06FJX,3000
158	72565-058	2.00	HOSE,12,12FJX-12FJX,2250
159	72576-068	1.00	HOSE,06,06FJX-06RJ90L,3000
160	853182304	1.00	FITT,QD -12 FP,SET
161	853182305	1.00	CAP,DUST,12 QD
162	853182306	1.00	PLUG,DUST,12 QD
163	953182310	1.00	FITT,QD 06 FP,SET
164	X217	3.00	FITT,STR 06MJ-06MB
165	X383	2.00	FITT,90 06MJ-06MP
166	72549-028	1.00	HOSE,06,06FJX-06RJ90,3000
226	73220	1.00	MOTOR,HYD,15.5 CIR,LOW SPEED
230	73083	1.00	VLV,HYD,DO3 W/MANIFOLD,BOSCH
	73083-01		VLV,HYD,DO3,OPEN CENTER,BOSCH
	73083-02		MANIFOLD,HYD,DO3,SINGLE
231	31884A	1.00	CYL,HYD,2.50X6.00
	31885A-01		KIT,SEAL,HYD CYL



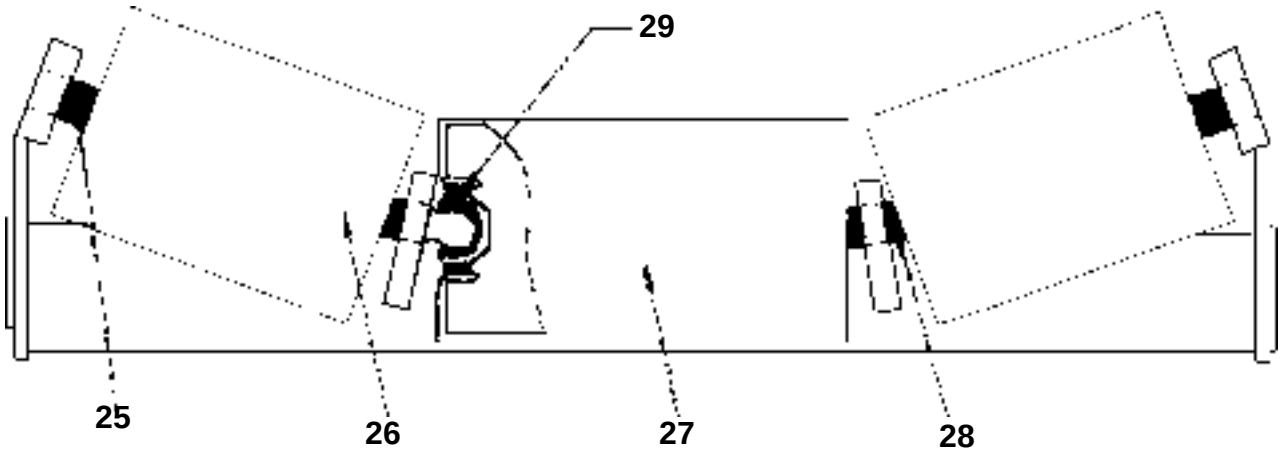
ITEM	PART NO.	QTY	DESCRIPTION
NS	34821	5.00	WELD PLATE,HOSE CLAMP
NS	34860-01	8.00	CLAMP,HALF,HOSE,1.00
NS	34861	5.00	COVER PLATE,HOSE CLAMP
NS	80468	5.00	CSHH,.312-18X3.25,GR5
1	000200190	2.00	SWITCH,TOGGLE,SPST,2-POS
2	207001186	2.00	COUPLING
3	21934	2.00	BAR,.250X1.00X3.00,HRS
4	306001174	2.00	ARM,TORQUE
5	33063	1.00	U-BOLT,.250-20,1.12IW,2.00IL
6	34798	7.00	CLAMP,LOOP,1.25 OD,NPRN COVER
7	34799	5.00	CLAMP,LOOP,1.562 OD,NPRN COVER
10	34860	4.00	CLAMP,HALF,HOSE,.750
12	35368	1.00	SENDER,TEMP GAUGE,04 MP
13	35371	1.00	SWITCH,TEMP,205 DEG,06MP
14	37903	4.00	FITT,TEST 08FJ-02PD
15	38170	2.00	VLV,HYD,PROP,17 GPM,12V
16	40757	1.00	VALVE MOUNT W/M
17	**40927**	**2.00**	**PADDLE ASSY,AUTO CONVEYOR(See Detail)**
18	40928	4.00	CLAMP,DUAL HOSE,.75 OD
19	70452	2.00	KEY,SQ,.375X2
20	72372	9.00	FITT,PLUG 02PD,DUST
21	72689	1.00	FITT,TEST 06MB-02PD
22	73220	3.00	MOTOR,HYD,15.5CIR,LOW SPEED
23	80140	4.00	WASHER,TYPE A PLAIN,.250
24	80350	4.00	NUT,FLEXLOC,.250-20,FULL,LT
26	80787	4.00	CSHH,.250-20X2.50,GR5
27	80824	4.00	NUT,HEX,#10-24
28	80914	1.00	CSHH,M12X1.75X25,CL8.8
29	80997	4.00	MACH SCR,PH,#10-24X2.00
30	81108	2.00	CSHH,.312-18X3.75,GR5
31	851390302	2.00	FITT,CABLE 08MP,.250-.375
32	871066120	2.00	SEAL,SWITCH,NUT,.469-32
33	871071601	4.00	WASHER,SPLIT LOCK,#10
34	871111605	5.00	CLAMP,LOOP,.50 OD PLSTC COVER

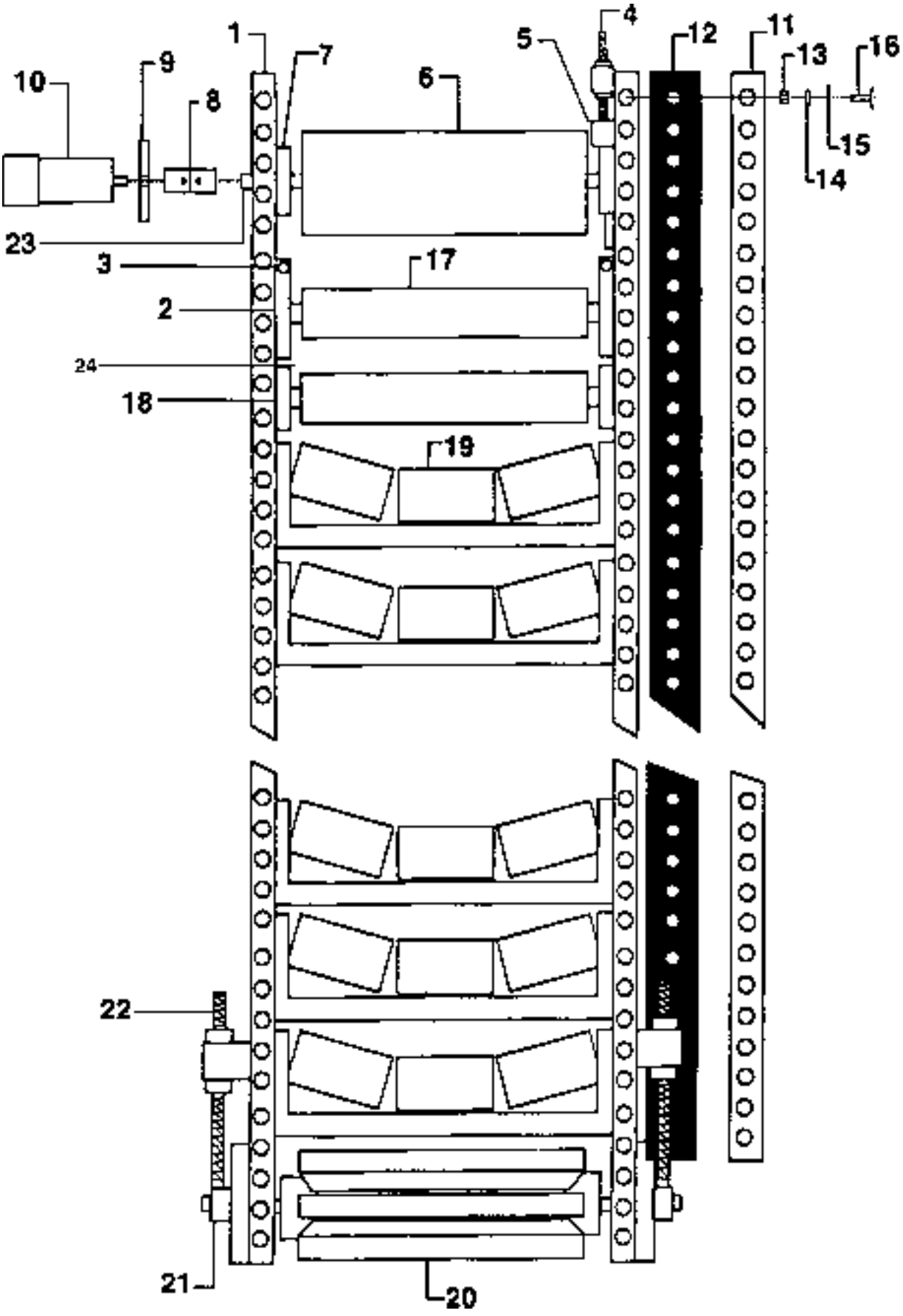
REF: 40927
REV: B

ITEM	PART NO.	QTY	DESCRIPTION
1	40920	1.00	LOWER PADDLE ARM W/M
2	40923	1.00	ARM, UPPER PADDLE
3	40924	1.00	ARM, PADDLE SWITCH
4	72411	1.00	LIMIT SWITCH ASSY
7	80036	3.00	NUT,HEX .25-20
8	80160	3.00	WASHER,SPLIT LOCK, .250
9	80185	1.00	CSHH, .250-20 X 1.00,GR5
11	80423	3.00	CSHH, .250-20 X .50, GR5



ITEM	PART NO.	QTY	DESCRIPTION
1	40343	1.00	RH CONVEYOR W/M
	40342	1.00	LH CONVEYOR W/M
2	106003046	2.00	BRACKET, BELT TIGHTENER
3	107000029	2.00	ROD, IDLER ROLLER ADJ, W/M
4	106007199	1.00	SCREW,ADJ .500-13X8.00
5	207001095	1.00	ADJUSTING PLATE W/M
6	307000815	1.00	PULLEY,HEAD
7	845311009	2.00	BEARING,FLANGE 1.50,4-BOLT
NS	40477	4.00	WASHER,2.50OD,.562IDX7GA.1793
8	207001186	1.00	COUPLING (MODIFIED)
9	306001174	1.00	TORQUE ARM
10	73220	REF	MOTOR,HYD,15.5 CIR,LOW SPEED
11	206000045	2.00	STRIP,CONVEYOR LAGGING
12	106000110	2.00	LAGGING,CONV BELT .25X4.00X216
13	80038	36.00	NUT,HEX,.375-16
14	80162	36.00	WASHER,SPLIT LOCK .375
15	80142	36.00	WASHER,TYPE A PLAIN,.375
16	871020102	36.00	CRG BOLT, .375-16X1.25,GR5
17	848031703	3.00	IDLER,RETURN,ROLLERS
18	40712	4.00	BRACKET, IDLER
19	848031702	7.00	IDLERS,TROUGHING
20	72534	1.00	PULLY,TAIL,WELDED
21	845282005	2.00	BEARING,TAKEUP,1.4375
22	106005801	2.00	SCREW,ADJ 7.50-10X18.00
23	106008031	1.00	SHAFT,HEAD PULLEY-*part of Head Pulley group*
24	848039014	6.00	END SHAFT
NS	871065533	2.00	LOCKNUT,3/4-10,THIN
NS	106006161	1.00	WIPER,CONV BELT SCRAPER-*Head Pulley End*
NS	106008061	1.00	LINING,CHUTE .25X7.00X26.00-*Tail Pulley End*
25	848039017	2.00	STUB SHAFT
26	848039010	2.00	ROLLER,END,4.50 DIAX6.375
27	848039011	1.00	ROLLER,CENTER,4.50 DIAX8.375
28	848039018	2.00	BEARING,SHAFT,2.625 LG
29	851500220	6.00	BEARING,CONVEYOR

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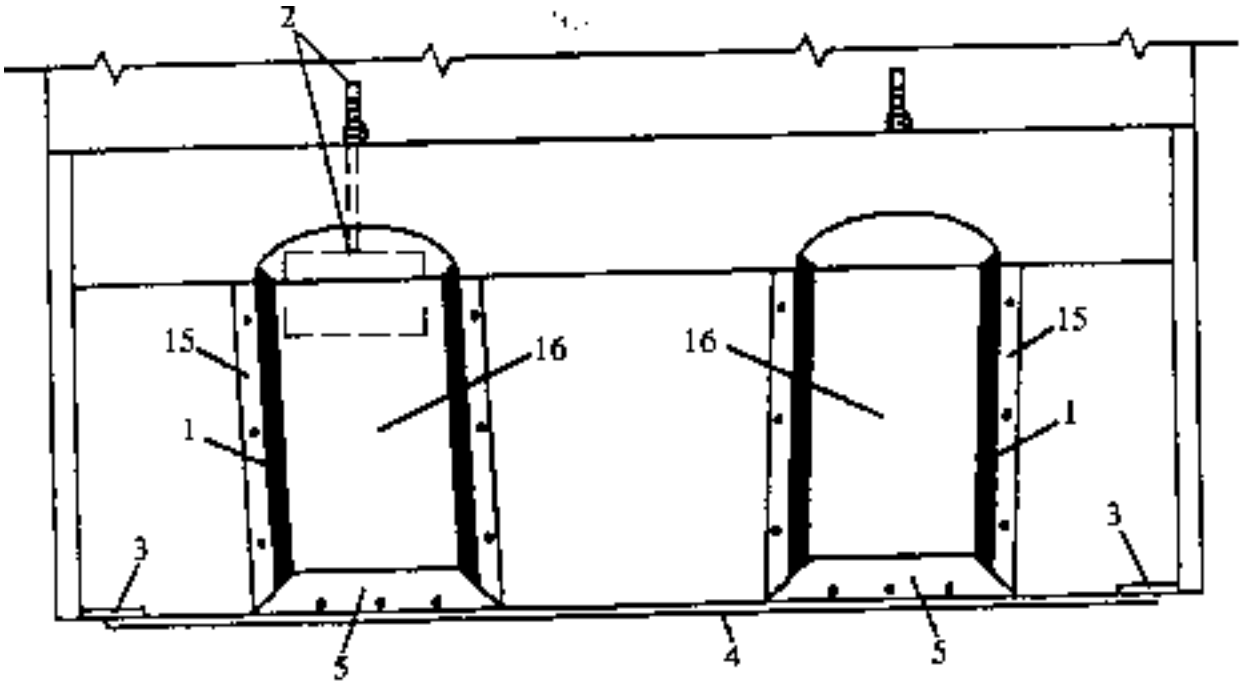
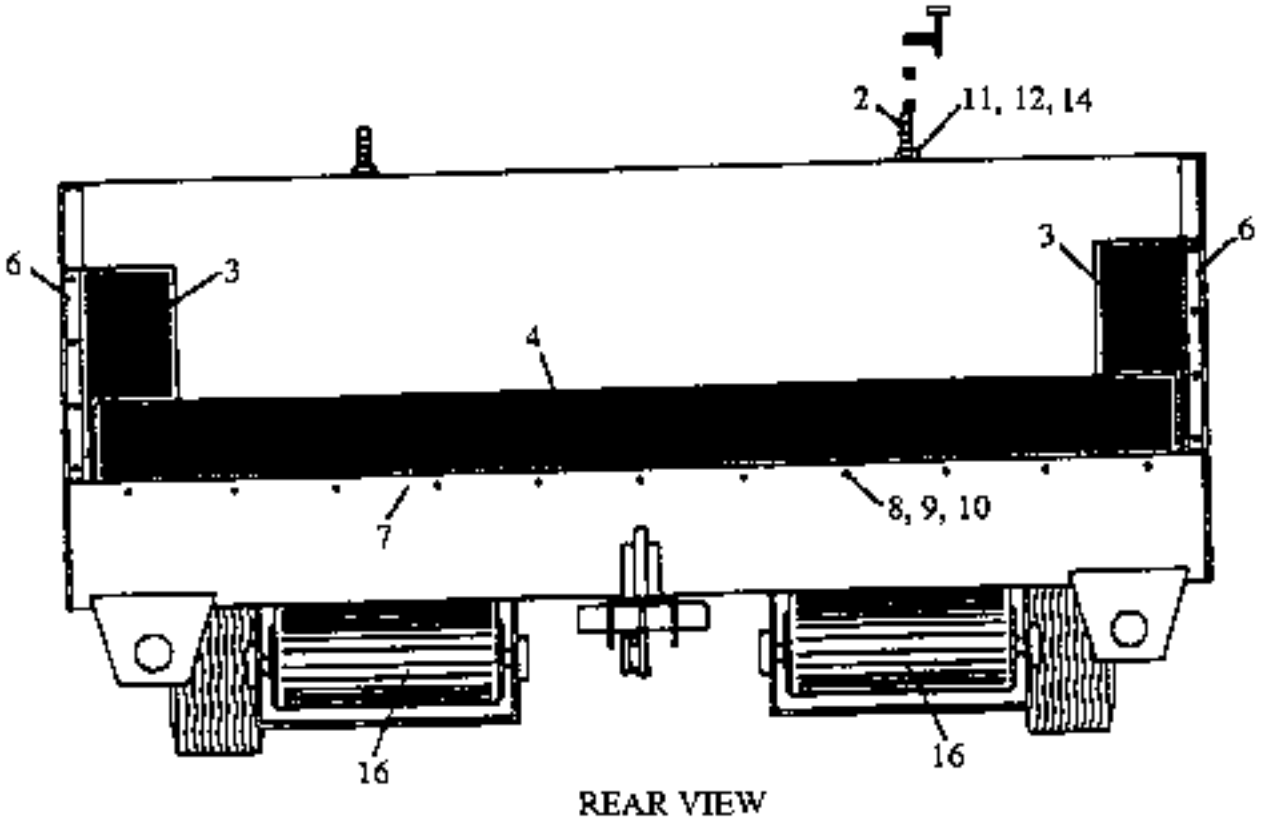
ITEM	PART NO.	QTY	DESCRIPTION
1	106000110	2.00	LAGGING,CONVEYOR BELT
2	40826	2.00	GATE,REAR W/M
3	72638	2.00	SKIRT,HOPPER SIDE, 12X18.50
4	72376	1.00	SKIRT,HOPPER BUMPER
5	106008061	2.00	CHUTE LINING
6	106000117	2.00	STRAP,BOLTING,.250X1.50X19.00
7	106000118	1.00	STRAP,BOLTING,.250X1.50X110
8	80255	17.00	CAPSCREW,.50-13 UNCX 2,GR5
9	80354	25.00	LOCKNUT,.50-13 UNC,LT
10	80144	25.00	WASHER,.50,TYPE A
11	84717053	2.00	COIL CHAIN #2
12	80845	2.00	COTTER PIN,.312X3.5
14	40825	2.00	GATE PIN HOLDER
15	206000045	2.00	STRIP,CONVEYOR LAGGING,RETAINER
16	209214001	2.00	CONVEYOR BELT ASSEMBLY
40706	**CONVEYOR DRIVE GROUP (NON-ILLUSTRATED)**		
	000200190	2.00	SWITCH,TOGGLE,SPST,2-POS
	206002610	2.00	GUARD, COUPLING
	207001186	2.00	COUPLING
	21934	2.00	BAR,.250X1.00X3.00
	306001174	2.00	ARM,TORQUE
	33063	1.00	U-BOLT,.250-20,1.12IW,2.00IL
	34798	7.00	CLAMP,LOOP,1.25 OD,NPRN COVER
	34799	5.00	CLAMP,LOOP,1.562 OD,NPRN COVER
	34821	1.00	WELD PLATE,HOSE CLAMP
	34849	4.00	CLAMP,TUBE,1.00 OD TWIN
	34860	4.00	CLAMP,HALF,HOSE,.750
	34861	1.00	COVER,PLATE,HOSE CLAMP
	35368	1.00	SENDER,TEMP GAUGE,04 MP
	35371	1.00	SWITCH,TEMP,06 MP,230 DEG
	36305	2.00	PIPE,TEE,08MP-08FP-08FP,STL
	40757	1.00	VALVE,MOUNT W/M
	40927	2.00	PADDLE ASSEMBLY,AUTO-CONVEYOR
	40928	7.00	CLAMP,DUAL HOSE,.75 OD
	70452	2.00	KEY,SQ,.375X2
	72372	3.00	FITT,PLUG 02PD,DUST
	72536	2.00	VLV,HYD,SOLENOID,2 WAY,NO
	72689	1.00	FITT,TEST 06MB-02PD
	72690	2.00	FITT,TEST 06MP-PD
	80140	4.00	WASHER,TYPE A PLAIN,.250
	80350	4.00	NUT,FLEXLOC,.250-20,FULL,LT
	80468	1.00	CSHH,.312-18X3.25,GR5
	80787	4.00	CSHH,.250-20X2.50,GR5
	80824	4.00	NUT,HEX,#10-24
	80914	1.00	CSHH,M12X1.75X25,CL8.8
	80997	4.00	MACH SCR,PH,#10-24X2.00
	81108	2.00	CSHH,.312-18X3,75,GR5
	851390302	2.00	FITT,CABLE 08MP,.250-.375
	871066120	2.00	SEAL,SWITCH,NUT,.469-32
	871071601	4.00	WASHER,SPLIT LOCK,#10
	871111605	5.00	CLAMP,LOOP,.50 OD PLSTC COVER
	953111045	2.00	MOTOR,HYD
	953183086	2.00	VLV,HYD,FLW CONT,2500RLF,12NPT
	99450	2.00	PIPE,BUSH,08MP-06FP,MI



TOP VIEW

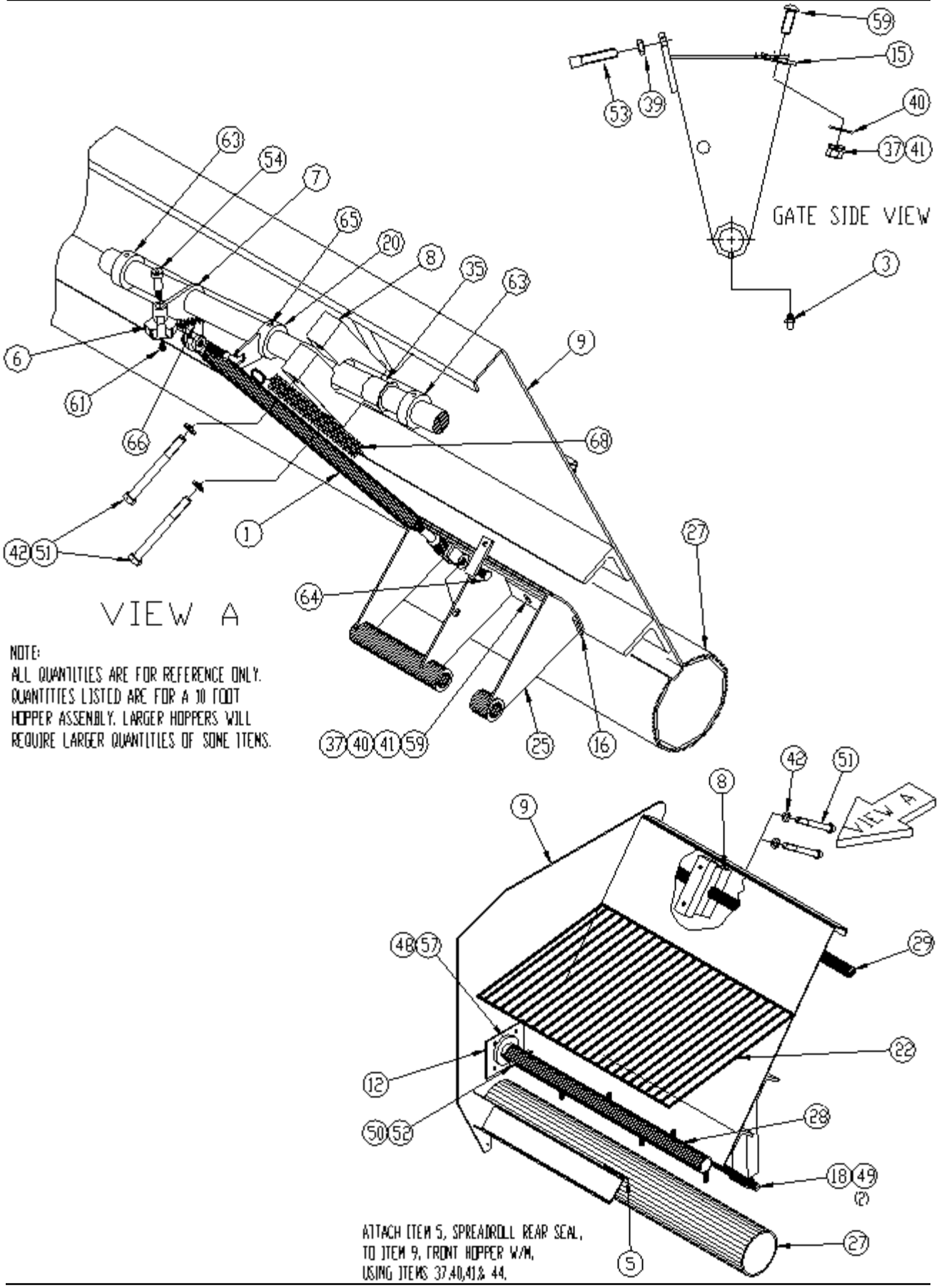


REAR VIEW

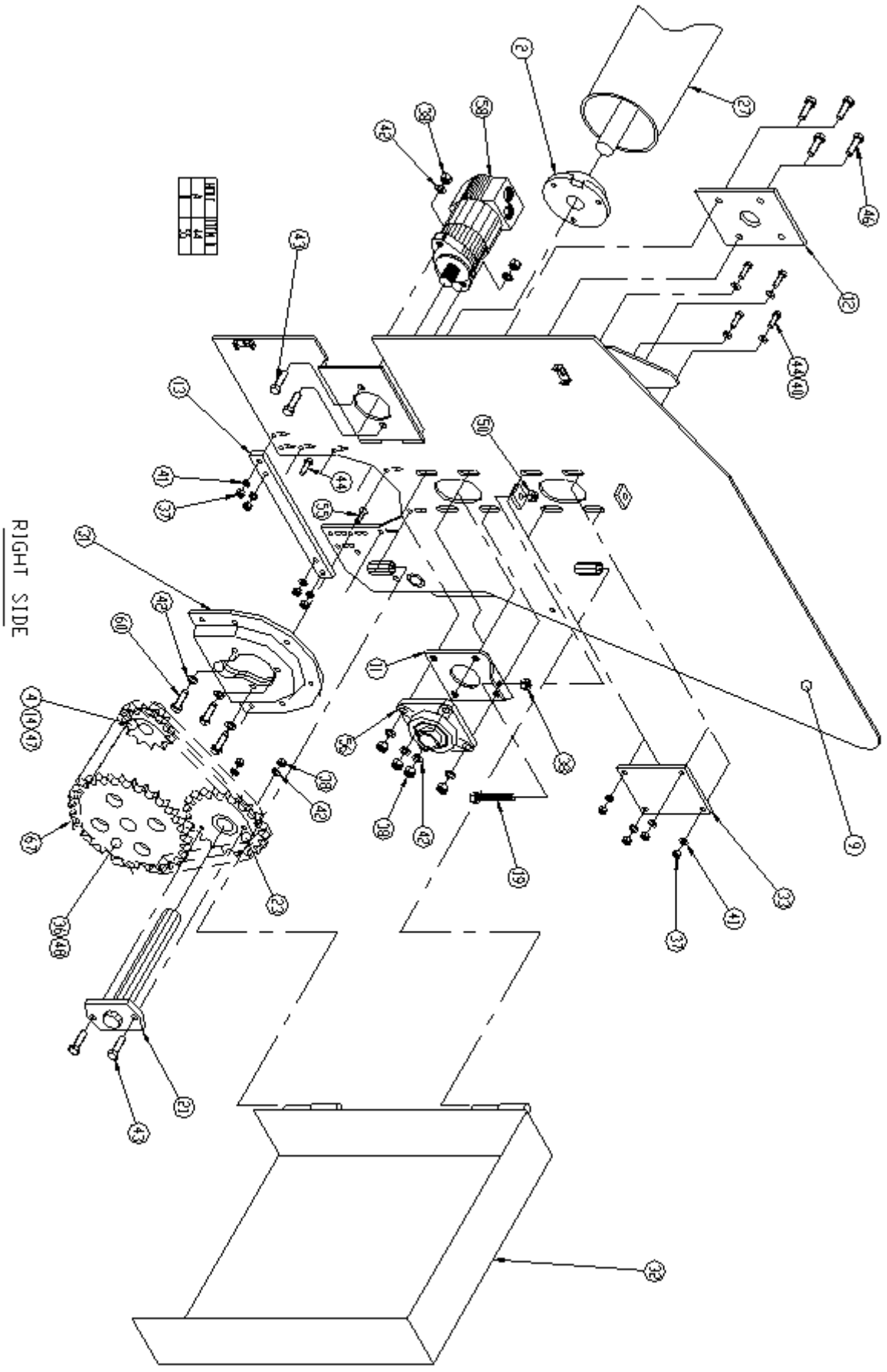
ITEM	PART NO.	QTY	DESCRIPTION
NS	007020096	2.00	HOOK,RUBBER
NS	206002562	2.00	DECAL,SHAMROCK
NS	35570	2.00	DECAL,SPRHH
NS	35943	1.00	DECAL,WARNING,GUARDS
Detail	**40789-01**	**1.00**	**FRONT HOPPER ASSY,10 (Following Pages)**
Detail	**40789-02**	**1.00**	**FRONT HOPPER ASSY,11 (Following Pages)**
Detail	**40789-03**	**1.00**	**FRONT HOPPER ASSY,12 (Following Pages)**
Detail	**40789-04**	**1.00**	**FRONT HOPPER ASSY,13.5(Following Pages)**
Detail	**40789-05**	**1.00**	**FRONT HOPPER ASSY,14 (Following Pages)**
Detail	**40789-06**	**1.00**	**FRONT HOPPER ASSY,15 (Following Pages)**
Detail	**40789-07**	**1.00**	**FRONT HOPPER ASSY,16 (Following Pages)**
Detail	**40789-08**	**1.00**	**FRONT HOPPER ASSY,13 (Following Pages)**
Detail	**40789-09**	**1.00**	**FRONT HOPPER ASSY,14.5(Following Pages)**
NS	72602	2.00	DECAL,DANGER,FRONT HOPPER
NS	72624	2.00	DECAL,CAUTION,FULL HOPPER
NS	72625	1.00	DECAL,GUARD MISSING,WARNING
NS	80196	2.00	CSHH,.250-20X2.00,GR5
NS	80350	2.00	NUT,FLEXLOC,.250-20,FULL,LT
NS	90709	1.00	PAINT,PRIMER
NS	91156	2.00	PAINT,CAT 1 YELLOW,ACRYLIC
NS	R135	14.00	GRIP,RUBBER,.625 ID

40789-01 **FRONT HOPPER ASSY,10 FT**

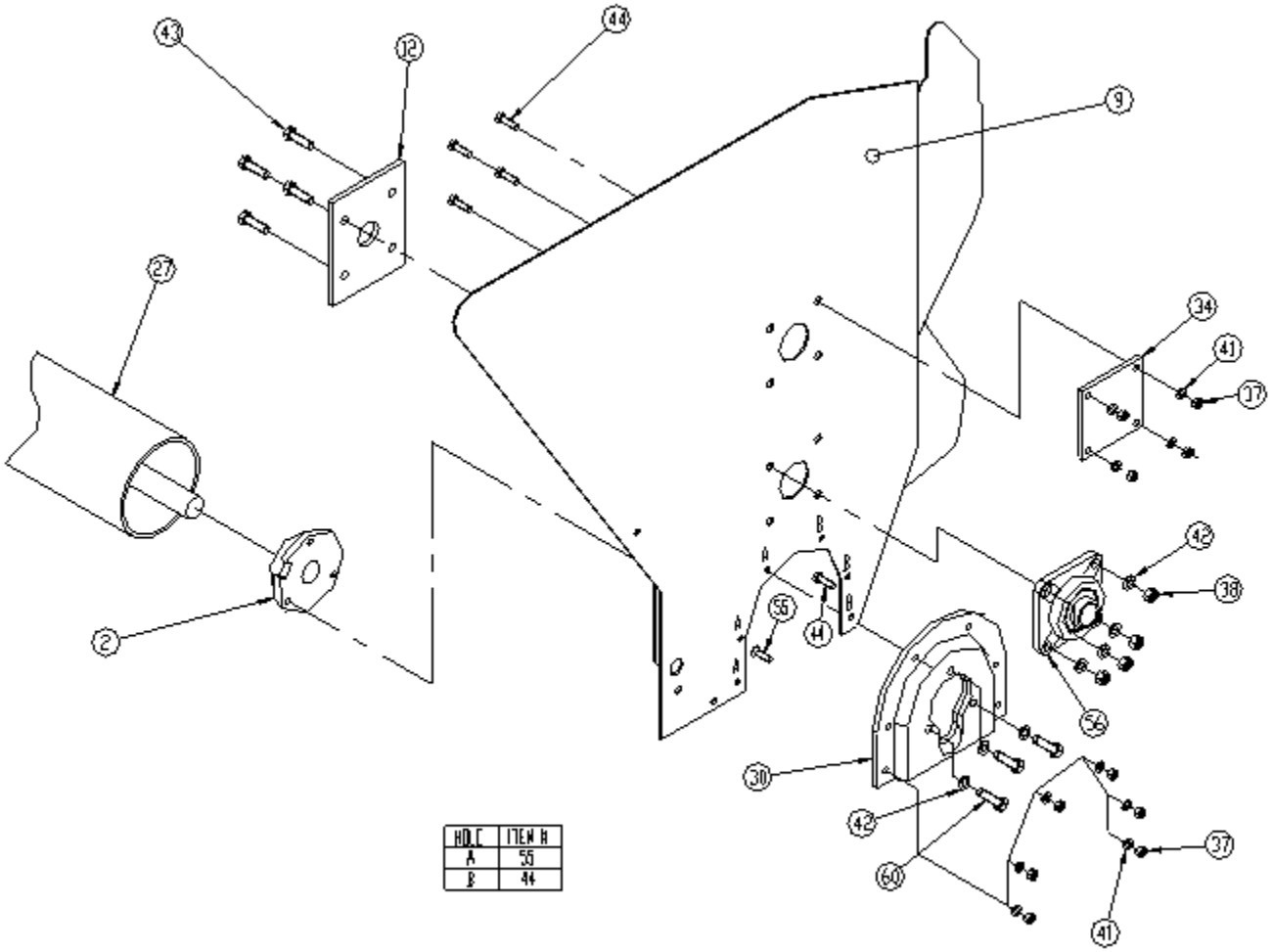
NS	40345	1.00	ARM,FRONT GATE CONTROL
NS	40474	1.00	CHAIN GUARD W/M
NS	80038	63.00	NUT,HEX,.375-16
NS	80142	70.00	WASHER,TYPE A PLAIN,.375
NS	80162	63.00	WASHER,SPLIT LOCK,.375
NS	80224	23.00	CSHH,.375-16X1.25,GR5
NS	80786	14.00	SET S,SQ,.375-16X1.75
NS	R48-1	6.00	WASHER,FLAT,1.50X1.031X.062
NS	R48-2	6.00	WASHER,FLAT,1.50X1.031X.075
NS	R48-3	6.00	WASHER,FLAT,1.50X1.031X.125
1	107000672	14.00	ROD,W/M W/2 CLEVIS'S
2	208712192	2.00	BEARING ASSY,1.50 BORE,STEP
3	32956	18.00	FITT,LUBE,STR,.188 DRIVE
3	853750102	18.00	FITT,LUBE,STR,1/4-28
4	40074	1.00	SPROCKET,80FB12,.313 KEYWAY
5	40360	1.00	SPREADROLL REAR SEAL,10
6	40655	14.00	HANDLE,GATE LEVER
7	40668	14.00	GATE LATCH PLATE W/M
8	40738	3.00	BEARING BLOCK,FRONT HOPPER
9	40784-01	1.00	FRONT HOPPER W/M,10
10	40790	1.00	AUGER SHAFT,LH
11	40791	1.00	ADJUSTER PLATE
12	40792	2.00	WEAR PLATE
13	40793	1.00	BAR,.500X1.25X13.50,W/HOLES
14	40794-01	1.00	KEY,SQ,.375X3.25
15	40795	8.00	WEAR BAR,6 GATE
16	40796	4.00	WEAR BAR,12 GATE


GATE SIDE VIEW
VIEW A
NOTE:
ALL QUANTITIES ARE FOR REFERENCE ONLY.
QUANTITIES LISTED ARE FOR A 10 FOOT
HOPPER ASSEMBLY. LARGER HOPPERS WILL
REQUIRE LARGER QUANTITIES OF SOME ITEMS.
ATTACH ITEM 5, SPREADROLL REAR SEAL,
TO ITEM 9, FRONT HOPPER W/M,
USING ITEMS 37,40,41 & 44.

ITEM	PART NO.	QTY	DESCRIPTION
17	40797	2.00	WEAR BAR,13.5 GATE
18	40798-07	1.00	GATE HINGE ROD,1 OD X 125.50
19	40799	1.00	ADJUSTMENT ROD W/M
20	40800	14.00	GATE LATCH FLANGE W/M
21	40846	1.00	AUGER SHAFT W/M,RH
22	40849-01	2.00	SEGREGATION SCREEN W/M,10
23	40850	1.00	BEARING & SPROCKET ASSY
24	40856	2.00	GATE,W/M,13.5
25	40857	4.00	GATE W/M,12,WITH PIVOT
26	40859	8.00	GATE W/M,6
27	40867-01	1.00	SPREADROLL W/M,10
28	40870-01	1.00	AUGER W/M,10
29	40872-01	1.00	ACTUATING SHAFT,10
30	41004	1.00	SHIELD,SPREAD ROLL,LH
31	41005	1.00	SHIELD,SPREAD ROLL,RH
32	41031	1.00	CHAIN GUARD W/M
33	41032	1.00	PLATE,HOLE COVER,RH
34	41033	1.00	PLATE,HOLE COVER,LH
35	72414	3.00	BEARING,PLASTIC,1.5 SHAFT
36	72530	1.00	SPROCKET,CHAIN,80BS30
37	80038	71.00	NUT,HEX,.375-16
38	80040	10.00	NUT,HEX,.500-13
39	80074	14.00	NUT,HEX,JAM,.375-16
40	80142	78.00	WASHER,TYPE A PLAIN,.375
41	80162	71.00	WASHER,SPLIT LOCK,.375
42	80164	12.00	WASHER,SPLIT LOCK,.500
43	80186	8.00	CSHH,.500-13X1.75,GR5
44	80224	31.00	CSHH,.375-16X1.25,GR5
46	80255	4.00	CSHH,.500-13X2.00,GR5
47	80301	1.00	SET S,HSKT,KCUP,.250-20X.500
48	80305	4.00	SET S,HSKT,.375-16X.50
49	80336	2.00	COTTER PIN,.188X1.50
50	80354	3.00	NUT,FLEXLOC,.500-13,FULL,LT
51	80403	6.00	CSHH,.500-13X5.00,GR5
52	80778	2.00	CSHH,.500-13X3.25,GR5
53	80831	14.00	SET S,SQ,.375-16X2.00
54	80973	14.00	SHLDR SCR,.500X1.00X.375-16
55	81022	8.00	CSSFH,.375-16X1.25
56	845311009	2.00	BEARING,FLANGE,1.50,4 BOLT
57	848019756	2.00	PLATE,WEAR
58	73220	1.00	MOTOR,HYD,15.5 CIR,LOW SPEED
59	871020103	40.00	CRG BOLT,.375-16X1.00,GR5
60	871032322	6.00	CSSFH,.500-13X1.25
61	871054100	14.00	DRIVE SCREW,#14x3/4
62	871072703	6.00	WASHER,LOCK,EXT TOOTH CSK,.500
63	871075203	17.00	COLLAR,SET,1.5IDX2.25ODX.75SST
64	871081000	28.00	PIN,CLEVIS,W/COTTER PIN
65	871081814	14.00	ROLL PIN,.313X2.25
66	871090146	14.00	SPRING
67	947071040	1.00	CHAIN,80X52 PITCHES W CONN&OFF
68	971090337	14.00	SPR,1.02 DIA X 11,3.92 PSI


RIGHT SIDE

ITEM	PART NO.	QTY	DESCRIPTION
	40789-02		**FRONT HOPPER ASSY,11 FT**
1	107000672	14.00	ROD,W/M W/2 CLEVIS'S
2	208712192	2.00	BEARING ASSY
3	32956	18.00	FITT,LUBE,STR,.188 DRIVE
4	40074	1.00	SPROCKET,REWORK,.313 KEYWAY
5	40361	1.00	SPREADROLL REAR SEAL,11
6	40655	14.00	HANDLE,GATE LEVER
7	40668	14.00	GATE LATCH PLATE W/M
8	40738	3.00	BEARING BLOCK,FRONT HOPPER
9	40784-02	1.00	FRONT HOPPER W/M,11
10	40790	1.00	AUGER SHAFT,LH
11	40791	1.00	ADJUSTER PLATE
12	40792	2.00	WEAR PLATE
13	40793	1.00	BAR,.500X1.25X13.50,W/HOLES
14	40794-01	1.00	KEY,SQ,.375X3.25
15	40795	6.00	WEAR BAR,6 GATE
16	40796	8.00	WEAR BAR,12 GATE
18	40798-08	1.00	GATE HINGE ROD,1 OD X 134.50
19	40799	1.00	ADJUSTMENT ROD W/M
20	40800	14.00	GATE LATCH FLANGE W/M
21	40846	1.00	AUGER SHAFT W/M,RH
22	40849-02	2.00	SEGREGATION SCREEN W/M,11
23	40850	1.00	BEARING & SPROCKET ASSY
24	40858	4.00	GATE W/M,12
25	40857	4.00	GATE W/M,12,WITH PIVOT
26	40859	6.00	GATE W/M,6
27	40867-02	1.00	SPREADROLL W/M,11
28	40870-02	1.00	AUGER W/M,11
29	40872-02	1.00	ACTUATING SHAFT,11
30	41004	1.00	SHIELD,SPREAD ROLL,LH
31	41005	1.00	SHIELD,SPREAD ROLL,RH
32	41031	1.00	CHAIN GUARD W/M
33	41032	1.00	PLATE,HOLE COVER,RH
34	41033	1.00	PLATE,HOLE COVER,LH
35	72414	3.00	BEARING,PLASTIC,1.5 SHAFT
36	72530	1.00	SPROCKET,CHAIN,80BS30
37	80038	76.00	NUT,HEX,.375-16
38	80040	10.00	NUT,HEX,.500-13
39	80074	14.00	NUT,HEX,JAM,.375-16
40	80142	84.00	WASHER,TYPE A PLAIN,.375
41	80162	76.00	WASHER,SPLIT LOCK,.375
42	80164	12.00	WASHER,SPLIT LOCK,.500
43	80186	8.00	CSHH,.500-13X1.75,GR5
44	80224	32.00	CSHH,.375-16X1.25,GR5
46	80255	4.00	CSHH,.500-13X2.00,GR5
47	80301	1.00	SET S,HSKT,KCUP,.250-20X.500
48	80305	4.00	SET S,HSKT,.375-16X.50
49	80336	2.00	COTTER PIN,.188X1.50
50	80354	3.00	NUT,FLEXLOC,.500-13,FULL,LT
51	80403	6.00	CSHH,.500-13X5.00,GR5
52	80778	2.00	CSHH,.500-13X3.25,GR5



LEFT SIDE

ITEM	PART NO.	QTY	DESCRIPTION
53	80831	14.00	SET S,SQ,.375-16X2.00
54	80973	14.00	SHLDR SCR,.500X1.00X.375-16
55	81022	8.00	CSSFH,.375-16X1.25
56	845311009	2.00	BEARING,FLANGE 1.50,4-BOLT
57	848019756	2.00	PLATE,WEAR
58	853111043	1.00	MOTOR,HYDRAULIC
59	871020103	44.00	CRG BOLT,.375-16X1.00,GR5
60	871032322	6.00	CSSFH,.500-13X1.25
61	871054100	14.00	DRIVE SCREW,#14x3/4
62	871072703	6.00	WASHER,LOCK,EXT TOOTH CSK,.500
63	871075203	17.00	COLLAR,SET,1.5IDX2.25ODX.75SST
64	871081000	28.00	PIN,CLEVIS,W/COTTER PIN
65	871081814	14.00	PIN,ROLL,.313X2.25
66	871090146	14.00	SPRING
67	947071040	1.00	CHAIN,80X53 PITCHES W CONN
68	971090337	14.00	SPR,1.02 DIA X 11,3.92 PSI

40789-03 FRONT HOPPER ASSY,12 FT

1	107000672	16.00	ROD,W/M W/2 CLEVIS'S
2	208712192	2.00	BEARING ASSY
3	32956	20.00	FITT,LUBE,STR,.188 DRIVE
4	40074	1.00	SPROCKET,REWORK,.313 KEYWAY
5	40362	1.00	SPREADROLL REAR SEAL,12
6	40655	16.00	HANDLE,GATE LEVER
7	40668	16.00	GATE LATCH PLATE W/M
8	40738	5.00	BEARING BLOCK,FRONT HOPPER
9	40784-03	1.00	FRONT HOPPER W/M,12
10	40790	1.00	AUGER SHAFT,LH
11	40791	1.00	ADJUSTER PLATE
12	40792	2.00	WEAR PLATE
13	40793	1.00	BAR,.500X1.25X13.50,W/HOLES
14	40794-01	1.00	KEY,SQ,.375X3.25
15	40795	8.00	WEAR BAR,6 GATE
16	40796	8.00	WEAR BAR,12 GATE
18	40798-01	1.00	GATE HINGE ROD,1 OD X 70.00
18	40798-02	1.00	GATE HINGE ROD,1 OD X 76.00
19	40799	1.00	ADJUSTMENT ROD W/M
20	40800	16.00	GATE LATCH FLANGE W/M
21	40846	1.00	AUGER SHAFT W/M,RH
22	40849-03	2.00	SEGREGATION SCREEN W/M,12
23	40850	1.00	BEARING & SPROCKET ASSY
24	40858	4.00	GATE W/M,12
25	40857	4.00	GATE W/M,12,WITH PIVOT
26	40859	8.00	GATE W/M,6
27	40867-03	1.00	SPREADROLL W/M,12
28	40870-03	1.00	AUGER W/M,12
29	40872-03	1.00	ACTUATING SHAFT,12
30	41004	1.00	SHIELD,SPREAD ROLL,LH
31	41005	1.00	SHIELD,SPREAD ROLL,RH
32	41031	1.00	CHAIN GUARD W/M
33	41032	1.00	PLATE,HOLE COVER,RH

ITEM	PART NO.	QTY	DESCRIPTION
34	41033	1.00	PLATE,HOLE COVER,LH
35	72414	5.00	BEARING,PLASTIC,1.5 SHAFT
36	72530	1.00	SPROCKET,CHAIN,80BS30
37	80038	81.00	NUT,HEX,.375-16
38	80040	10.00	NUT,HEX,.500-13
39	80074	16.00	NUT,HEX,JAM,.375-16
40	80142	90.00	WASHER,TYPE A PLAIN,.375
41	80162	81.00	WASHER,SPLIT LOCK,.375
42	80164	14.00	WASHER,SPLIT LOCK,.500
43	80186	8.00	CSHH,.500-13X1.75,GR5
44	80224	33.00	CSHH,.375-16X1.25,GR5
46	80255	4.00	CSHH,.500-13X2.00,GR5
47	80301	1.00	SET S,HSKT,KCUP,.250-20X.500
48	80305	4.00	SET S,HSKT,.375-16X.50
49	80336	2.00	COTTER PIN,.188X1.50
50	80354	3.00	NUT,FLEXLOC,.500-13,FULL,LT
51	80403	10.00	CSHH,.500-13X5.00,GR5
52	80778	2.00	CSHH,.500-13X3.25,GR5
53	80831	16.00	SET S,SQ,.375-16X2.00
54	80973	16.00	SHLDR SCR,.500X1.00X.375-16
55	81022	8.00	CSSFH,.375-16X1.25
56	845311009	2.00	BEARING,FLANGE 1.50,4-BOLT
57	848019756	2.00	PLATE,WEAR
58	853111043	1.00	MOTOR,HYDRAULIC
59	871020103	48.00	CRG BOLT,.375-16X1.00,GR5
60	871032322	6.00	CSSFH,.500-13X1.25
61	871054100	16.00	DRIVE SCREW,#14x3/4
62	871072703	6.00	WASHER,LOCK,EXT TOOTH CSK,.500
63	871075203	21.00	COLLAR,SET,1.5IDX2.25ODX.75SST
64	871081000	32.00	PIN,CLEVIS,W/COTTER PIN
65	871081814	16.00	PIN,ROLL,.313X2.25
66	871090146	16.00	SPRING
67	947071040	1.00	CHAIN,80X53 PITCHES W CONN
68	971090337	16.00	SPR,1.02 DIA X 11,3.92 PSI

40789-04 **FRONT HOPPER ASSY,13.5 FT**

1	107000672	19.00	ROD,W/M W/2 CLEVIS'S
2	208712192	2.00	BEARING ASSY
3	32956	23.00	FITT,LUBE,STR,.188 DRIVE
4	40074	1.00	SPROCKET,REWORK,.313 KEYWAY
5	40363	1.00	SPREADROLL REAR SEAL,13.5
6	40655	19.00	HANDLE,GATE LEVER
7	40668	19.00	GATE LATCH PLATE W/M
8	40738	5.00	BEARING BLOCK,FRONT HOPPER
9	40784-04	1.00	FRONT HOPPER W/M,13.5
10	40790	1.00	AUGER SHAFT,LH
11	40791	1.00	ADJUSTER PLATE
12	40792	2.00	WEAR PLATE
13	40793	1.00	BAR,.500X1.25X13.50,W/HOLES
14	40794-01	1.00	KEY,SQ,.375X3.25

ITEM	PART NO.	QTY	DESCRIPTION
15	40795	11.00	WEAR BAR,6 GATE
16	40796	8.00	WEAR BAR,12 GATE
18	40798-02	1.00	GATE HINGE ROD,1 OD X 76.00
18	40798-04	1.00	GATE HINGE ROD,1 OD X 88.00
19	40799	1.00	ADJUSTMENT ROD W/M
20	40800	19.00	GATE LATCH FLANGE W/M
21	40846	1.00	AUGER SHAFT W/M,RH
22	40849-04	2.00	SEGREGATION SCREEN W/M,13.5
23	40850	1.00	BEARING & SPROCKET ASSY
24	40858	4.00	GATE W/M,12
25	40857	4.00	GATE W/M,12,WITH PIVOT
26	40859	11.00	GATE W/M,6
27	40867-04	1.00	SPREADROLL W/M,13.5
28	40870-04	1.00	AUGER W/M,13.5
29	40872-04	1.00	ACTUATING SHAFT,13.5
30	41004	1.00	SHIELD,SPREAD ROLL,LH
31	41005	1.00	SHIELD,SPREAD ROLL,RH
32	41031	1.00	CHAIN GUARD W/M
33	41032	1.00	PLATE,HOLE COVER,RH
34	41033	1.00	PLATE,HOLE COVER,LH
35	72414	5.00	BEARING,PLASTIC,1.5 SHAFT
36	72530	1.00	SPROCKET,CHAIN,80BS30
37	80038	88.00	NUT,HEX,.375-16
38	80040	10.00	NUT,HEX,.500-13
39	80074	19.00	NUT,HEX,JAM,.375-16
40	80142	98.00	WASHER,TYPE A PLAIN,.375
41	80162	88.00	WASHER,SPLIT LOCK,.375
42	80164	14.00	WASHER,SPLIT LOCK,.500
43	80186	8.00	CSHH,.500-13X1.75,GR5
44	80224	34.00	CSHH,.375-16X1.25,GR5
46	80255	4.00	CSHH,.500-13X2.00,GR5
47	80301	1.00	SET S,HSKT,KCUP,.250-20X.500
48	80305	4.00	SET S,HSKT,.375-16X.50
49	80336	2.00	COTTER PIN,.188X1.50
50	80354	3.00	NUT,FLEXLOC,.500-13,FULL,LT
51	80403	10.00	CSHH,.500-13X5.00,GR5
52	80778	2.00	CSHH,.500-13X3.25,GR5
53	80831	19.00	SET S,SQ,.375-16X2.00
54	80973	19.00	SHLDR SCR,.500X1.00X.375-16
55	81022	8.00	CSSFH,.375-16X1.25
56	845311009	2.00	BEARING,FLANGE 1.50,4-BOLT
57	848019756	2.00	PLATE,WEAR
58	853111043	1.00	MOTOR,HYDRAULIC
59	871020103	54.00	CRG BOLT,.375-16X1.00,GR5
60	871032322	6.00	CSSFH,.500-13X1.25
61	871054100	19.00	DRIVE SCREW,#14x3/4
62	871072703	6.00	WASHER,LOCK,EXT TOOTH CSK,.500
63	871075203	24.00	COLLAR,SET,1.5IDX2.25ODX.75SST
64	871081000	38.00	PIN,CLEVIS,W/COTTER PIN
66	871081814	19.00	PIN,ROLL,.313X2.25
66	871090146	19.00	SPRING

ITEM	PART NO.	QTY	DESCRIPTION
67	947071040	1.00	CHAIN,80X53 PITCHES W CONN
68	971090337	19.00	SPR,1.02 DIA X 11,3.92 PSI
	40789-05		**FRONT HOPPER ASSY,14 FT**
1	107000672	20.00	ROD,W/M W/2 CLEVIS'S
2	208712192	2.00	BEARING ASSY
3	32956	24.00	FITT,LUBE,STR,.188 DRIVE
4	40074	1.00	SPROCKET,REWORK,.313 KEYWAY
5	40364	1.00	SPREADROLL REAR SEAL,14
6	40655	20.00	HANDLE,GATE LEVER
7	40668	20.00	GATE LATCH PLATE W/M
8	40738	5.00	BEARING BLOCK,FRONT HOPPER
9	40784-05	1.00	FRONT HOPPER W/M,14
10	40790	1.00	AUGER SHAFT,LH
11	40791	1.00	ADJUSTER PLATE
12	40792	2.00	WEAR PLATE
13	40793	1.00	BAR,.500X1.25X13.50,W/HOLES
14	40794-01	1.00	KEY,SQ,.375X3.25
15	40795	12.00	WEAR BAR,6 GATE
16	40796	8.00	WEAR BAR,12 GATE
18	40798-03	1.00	GATE HINGE ROD,1 OD X 82.00
18	40798-04	1.00	GATE HINGE ROD,1 OD X 88.00
19	40799	1.00	ADJUSTMENT ROD W/M
20	40800	20.00	GATE LATCH FLANGE W/M
21	40846	1.00	AUGER SHAFT W/M,RH
22	40849-05	2.00	SEGREGATION SCREEN W/M,14
23	40850	1.00	BEARING & SPROCKET ASSY
24	40858	4.00	GATE W/M,12
25	40857	4.00	GATE W/M,12,WITH PIVOT
26	40859	12.00	GATE W/M,6
27	40867-05	1.00	SPREADROLL W/M,14
28	40870-05	1.00	AUGER W/M,14
29	40872-05	1.00	ACTUATING SHAFT,14
30	41004	1.00	SHIELD,SPREAD ROLL,LH
31	41005	1.00	SHIELD,SPREAD ROLL,RH
32	41031	1.00	CHAIN GUARD W/M
33	41032	1.00	PLATE,HOLE COVER,RH
34	41033	1.00	PLATE,HOLE COVER,LH
35	72414	5.00	BEARING,PLASTIC,1.5 SHAFT
36	72530	1.00	SPROCKET,CHAIN,80BS30
37	80038	91.00	NUT,HEX,.375-16
38	80040	10.00	NUT,HEX,.500-13
39	80074	20.00	NUT,HEX,JAM,.375-16
40	80142	102.00	WASHER,TYPE A PLAIN,.375
41	80162	91.00	WASHER,SPLIT LOCK,.375
42	80164	14.00	WASHER,SPLIT LOCK,.500
43	80186	8.00	CSHH,.500-13X1.75,GR5
44	80224	35.00	CSHH,.375-16X1.25,GR5
46	80255	4.00	CSHH,.500-13X2.00,GR5
47	80301	1.00	SET S,HSKT,KCUP,.250-20X.500
48	80305	4.00	SET S,HSKT,.375-16X.50

ITEM	PART NO.	QTY	DESCRIPTION
49	80336	2.00	COTTER PIN,.188X1.50
50	80354	3.00	NUT,FLEXLOC,.500-13,FULL,LT
51	80403	10.00	CSHH,.500-13X5.00,GR5
52	80778	2.00	CSHH,.500-13X3.25,GR5
53	80831	20.00	SET S,SQ,.375-16X2.00
54	80973	20.00	SHLDR SCR,.500X1.00X.375-16
55	81022	8.00	CSSFH,.375-16X1.25
56	845311009	2.00	BEARING,FLANGE 1.50,4-BOLT
57	848019756	2.00	PLATE,WEAR
58	853111043	1.00	MOTOR,HYDRAULIC
59	871020103	56.00	CRG BOLT,.375-16X1.00,GR5
60	871032322	6.00	CSSFH,.500-13X1.25
61	871054100	20.00	DRIVE SCREW,#14x3/4
62	871072703	6.00	WASHER,LOCK,EXT TOOTH CSK,.500
63	871075203	25.00	COLLAR,SET,1.5IDX2.25ODX.75SST
64	871081000	40.00	PIN,CLEVIS,W/COTTER PIN
65	871081814	20.00	PIN,ROLL,.313X2.25
66	871090146	20.00	SPRING
67	947071040	1.00	CHAIN,80X53 PITCHES W CONN
68	971090337	20.00	SPR,1.02 DIA X 11,3.92 PSI

40789-06 FRONT HOPPER ASSY,15 FT

1	107000672	21.00	ROD,W/M W/2 CLEVIS'S
2	208712192	2.00	BEARING ASSY
3	32956	26.00	FITT,LUBE,STR,.188 DRIVE
4	40074	1.00	SPROCKET,REWORK,.313 KEYWAY
5	40365	1.00	SPREADROLL REAR SEAL,15
6	40655	21.00	HANDLE,GATE LEVER
7	40668	21.00	GATE LATCH PLATE W/M
8	40738	5.00	BEARING BLOCK,FRONT HOPPER
9	40784-06	1.00	FRONT HOPPER W/M,15
10	40790	1.00	AUGER SHAFT,LH
11	40791	1.00	ADJUSTER PLATE
12	40792	2.00	WEAR PLATE
13	40793	1.00	BAR,.500X1.25X13.50,W/HOLES
14	40794-01	1.00	KEY,SQ,.375X3.25
15	40795	12.00	WEAR BAR,6 GATE
16	40796	9.00	WEAR BAR,12 GATE
18	40798-05	1.00	GATE HINGE ROD,1 OD X 94.00
18	40798-04	1.00	GATE HINGE ROD,1 OD X 88.00
19	40799	1.00	ADJUSTMENT ROD W/M
20	40800	21.00	GATE LATCH FLANGE W/M
21	40846	1.00	AUGER SHAFT W/M,RH
22	40849-06	2.00	SEGREGATION SCREEN W/M,15
23	40850	1.00	BEARING & SPROCKET ASSY
24	40858	4.00	GATE W/M,12
25	40857	5.00	GATE W/M,12,WITH PIVOT
26	40859	12.00	GATE W/M,6
27	40867-06	1.00	SPREADROLL W/M,15
28	40870-06	1.00	AUGER W/M,15

ITEM	PART NO.	QTY	DESCRIPTION
29	40872-06	1.00	ACTUATING SHAFT,15
30	41004	1.00	SHIELD,SPREAD ROLL,LH
31	41005	1.00	SHIELD,SPREAD ROLL,RH
32	41031	1.00	CHAIN GUARD W/M
33	41032	1.00	PLATE,HOLE COVER,RH
34	41033	1.00	PLATE,HOLE COVER,LH
35	72414	5.00	BEARING,PLASTIC,1.5 SHAFT
36	72530	1.00	SPROCKET,CHAIN,80BS30
37	80038	96.00	NUT,HEX,.375-16
38	80040	10.00	NUT,HEX,.500-13
39	80074	21.00	NUT,HEX,JAM,.375-16
40	80142	108.00	WASHER,TYPE A PLAIN,.375
41	80162	96.00	WASHER,SPLIT LOCK,.375
42	80164	14.00	WASHER,SPLIT LOCK,.500
43	80186	8.00	CSHH,.500-13X1.75,GR5
44	80224	36.00	CSHH,.375-16X1.25,GR5
46	80255	4.00	CSHH,.500-13X2.00,GR5
47	80301	1.00	SET S,HSKT,KCUP,.250-20X.500
48	80305	4.00	SET S,HSKT,.375-16X.50
49	80336	2.00	COTTER PIN,.188X1.50
50	80354	3.00	NUT,FLEXLOC,.500-13,FULL,LT
51	80403	10.00	CSHH,.500-13X5.00,GR5
52	80778	2.00	CSHH,.500-13X3.25,GR5
53	80831	21.00	SET S,SQ,.375-16X2.00
54	80973	21.00	SHLDR SCR,.500X1.00X.375-16
55	81022	8.00	CSSFH,.375-16X1.25
56	845311009	2.00	BEARING,FLANGE 1.50,4-BOLT
57	848019756	2.00	PLATE,WEAR
58	853111043	1.00	MOTOR,HYDRAULIC
59	871020103	60.00	CRG BOLT,.375-16X1.00,GR5
60	871032322	6.00	CSSFH,.500-13X1.25
61	871054100	21.00	DRIVE SCREW,#14x3/4
62	871072703	6.00	WASHER,LOCK,EXT TOOTH CSK,.500
63	871075203	26.00	COLLAR,SET,1.5IDX2.25ODX.75SST
64	871081000	42.00	PIN,CLEVIS,W/COTTER PIN
65	871081814	21.00	PIN,ROLL,.313X2.25
66	871090146	21.00	SPRING
67	947071040	1.00	CHAIN,80X53 PITCHES W CONN
68	971090337	21.00	SPR,1.02 DIA X 11,3.92 PSI

40789-07 **FRONT HOPPER ASSY,16 FT**

0	72565-063	2.00	HOSE,12,12FJX-12FJX,2250
0	6104	1.00	BEARING,PB,P224 1.50 B
1	107000672	23.00	ROD,W/M W/2 CLEVIS'S
2	208712192	2.00	BEARING ASSY
3	32956	28.00	FITT,LUBE,STR,.188 DRIVE
4	40074	1.00	SPROCKET,REWORK,.313 KEYWAY
5	40582	1.00	SPREADROLL REAR SEAL,16
6	40655	23.00	HANDLE,GATE LEVER
7	40668	23.00	GATE LATCH PLATE W/M

ITEM	PART NO.	QTY	DESCRIPTION
8	40738	5.00	BEARING BLOCK,FRONT HOPPER
9	40784-07	1.00	FRONT HOPPER W/M,16
10	40790	1.00	AUGER SHAFT,LH
11	40791	1.00	ADJUSTER PLATE
12	40792	2.00	WEAR PLATE
13	40793	1.00	BAR,.500X1.25X13.50,W/HOLES
14	40794-01	1.00	KEY,SQ,.375X3.25
15	40795	14.00	WEAR BAR,6 GATE
16	40796	9.00	WEAR BAR,12 GATE
18	40798-04	1.00	GATE HINGE ROD,1 OD X 88.00
18	40798-06	1.00	GATE HINGE ROD,1 OD X 106.00
19	40799	1.00	ADJUSTMENT ROD W/M
20	40800	23.00	GATE LATCH FLANGE W/M
21	40846	1.00	AUGER SHAFT W/M,RH
22	40849-07	2.00	SEGREGATION SCREEN W/M,16
23	40850	1.00	BEARING & SPROCKET ASSY
24	40858	4.00	GATE W/M,12
25	40857	5.00	GATE W/M,12,WITH PIVOT
26	40859	14.00	GATE W/M,6
27	40867-07	1.00	SPREADROLL W/M,16
28	40583	1.00	AUGER W/M,RIGHT,16FT HOPPER
28	40646	1.00	SHAFT,CENTER AUGER W/M
28	40652	1.00	AUGER W/M,LH,16FT HOPPER
29	40872-07	1.00	ACTUATING SHAFT,16
30	41004	1.00	SHIELD,SPREAD ROLL,LH
31	41005	1.00	SHIELD,SPREAD ROLL,RH
32	41031	1.00	CHAIN GUARD W/M
33	41032	1.00	PLATE,HOLE COVER,RH
34	41033	1.00	PLATE,HOLE COVER,LH
35	72414	5.00	BEARING,PLASTIC,1.5 SHAFT
36	72530	1.00	SPROCKET,CHAIN,80BS30
37	80038	101.00	NUT,HEX,.375-16
38	80040	10.00	NUT,HEX,.500-13
39	80074	23.00	NUT,HEX,JAM,.375-16
40	80142	114.00	WASHER,TYPE A PLAIN,.375
41	80162	101.00	WASHER,SPLIT LOCK,.375
42	80164	14.00	WASHER,SPLIT LOCK,.500
43	80186	8.00	CSHH,.500-13X1.75,GR5
44	80224	37.00	CSHH,.375-16X1.25,GR5
46	80255	6.00	CSHH,.500-13X2.00,GR5
47	80301	1.00	SET S,HSKT,KCUP,.250-20X.500
48	80305	4.00	SET S,HSKT,.375-16X.50
49	80336	2.00	COTTER PIN,.188X1.50
50	80354	7.00	NUT,FLEXLOC,.500-13,FULL,LT
51	80403	10.00	CSHH,.500-13X5.00,GR5
52	80778	4.00	CSHH,.500-13X3.25,GR5
53	80831	23.00	SET S,SQ,.375-16X2.00
54	80973	23.00	SHLDR SCR,.500X1.00X.375-16
55	81022	8.00	CSSFH,.375-16X1.25
56	845311009	2.00	BEARING,FLANGE 1.50,4-BOLT
57	848019756	2.00	PLATE,WEAR

ITEM	PART NO.	QTY	DESCRIPTION
58	853111043	1.00	MOTOR,HYDRAULIC
59	871020103	64.00	CRG BOLT,.375-16X1.00,GR5
60	871032322	6.00	CSSFH,.500-13X1.25
61	871054100	23.00	DRIVE SCREW,#14x3/4
62	871072703	6.00	WASHER,LOCK,EXT TOOTH CSK,.500
63	871075203	28.00	COLLAR,SET,1.5IDX2.25ODX.75SST
64	871081000	46.00	PIN,CLEVIS,W/COTTER PIN
65	871081814	23.00	PIN,ROLL,.313X2.25
66	871090146	23.00	SPRING
67	947071040	1.00	CHAIN,80X53 PITCHES W CONN
68	971090337	23.00	SPR,1.02 DIA X 11,3.92 PSI

40789-08 **FRONT HOPPER ASSY,13 FT**

1	107000672	18.00	ROD,W/M W/2 CLEVIS'S
2	208712192	2.00	BEARING ASSY
3	32956	22.00	FITT,LUBE,STR,.188 DRIVE
4	40074	1.00	SPROCKET,REWORK,.313 KEYWAY
5	41104	1.00	SPREADROLL REAR SEAL,13
6	40655	18.00	HANDLE,GATE LEVER
7	40668	18.00	GATE LATCH PLATE W/M
8	40738	5.00	BEARING BLOCK,FRONT HOPPER
9	40784-08	1.00	FRONT HOPPER W/M,13
10	40790	1.00	AUGER SHAFT,LH
11	40791	1.00	ADJUSTER PLATE
12	40792	2.00	WEAR PLATE
13	40793	1.00	BAR,.500X1.25X13.50,W/HOLES
14	40794-01	1.00	KEY,SQ,.375X3.25
15	40795	10.00	WEAR BAR,6 GATE
16	40796	8.00	WEAR BAR,12 GATE
18	40798-02	1.00	GATE HINGE ROD,1 OD X 76.00
18	40798-03	1.00	GATE HINGE ROD,1 OD X 82.00
19	40799	1.00	ADJUSTMENT ROD W/M
20	40800	18.00	GATE LATCH FLANGE W/M
21	40846	1.00	AUGER SHAFT W/M,RH
22	40849-03	1.00	SEGREGATION SCREEN W/M,12
22	40849-05	1.00	SEGREGATION SCREEN W/M,14
23	40850	1.00	BEARING & SPROCKET ASSY
24	40858	4.00	GATE W/M,12
25	40857	4.00	GATE W/M,12,WITH PIVOT
26	40859	10.00	GATE W/M,6
27	40867-08	1.00	SPREADROLL W/M,13
28	40870-08	1.00	AUGER W/M,13
29	40872-08	1.00	ACTUATING SHAFT,13
30	41004	1.00	SHIELD,SPREAD ROLL,LH
31	41005	1.00	SHIELD,SPREAD ROLL,RH
32	41031	1.00	CHAIN GUARD W/M
33	41032	1.00	PLATE,HOLE COVER,RH
34	41033	1.00	PLATE,HOLE COVER,LH
35	72414	5.00	BEARING,PLASTIC,1.5 SHAFT
36	72530	1.00	SPROCKET,CHAIN,80BS30

ITEM	PART NO.	QTY	DESCRIPTION
37	80038	85.00	NUT,HEX,.375-16
38	80040	10.00	NUT,HEX,.500-13
39	80074	18.00	NUT,HEX,JAM,.375-16
40	80142	94.00	WASHER,TYPE A PLAIN,.375
41	80162	85.00	WASHER,SPLIT LOCK,.375
42	80164	14.00	WASHER,SPLIT LOCK,.500
43	80186	8.00	CSHH,.500-13X1.75,GR5
44	80224	33.00	CSHH,.375-16X1.25,GR5
46	80255	4.00	CSHH,.500-13X2.00,GR5
47	80301	1.00	SET S,HSKT,KCUP,.250-20X.500
48	80305	4.00	SET S,HSKT,.375-16X.50
49	80336	2.00	COTTER PIN,.188X1.50
50	80354	3.00	NUT,FLEXLOC,.500-13,FULL,LT
51	80403	10.00	CSHH,.500-13X5.00,GR5
52	80778	2.00	CSHH,.500-13X3.25,GR5
53	80831	18.00	SET S,SQ,.375-16X2.00
54	80973	18.00	SHLDR SCR,.500X1.00X.375-16
55	81022	8.00	CSSFH,.375-16X1.25
56	845311009	2.00	BEARING,FLANGE 1.50,4-BOLT
57	848019756	2.00	PLATE,WEAR
58	853111043	1.00	MOTOR,HYDRAULIC
59	871020103	52.00	CRG BOLT,.375-16X1.00,GR5
60	871032322	6.00	CSSFH,.500-13X1.25
61	871054100	18.00	DRIVE SCREW,#14x3/4
62	871072703	6.00	WASHER,LOCK,EXT TOOTH CSK,.500
63	871075203	23.00	COLLAR,SET,1.5IDX2.25ODX.75SST
64	871081000	32.00	PIN,CLEVIS,W/COTTER PIN
65	871081814	18.00	PIN,ROLL,.313X2.25
66	871090146	18.00	SPRING
67	947071040	1.00	CHAIN,80X53 PITCHES W CONN
68	971090337	18.00	SPR,1.02 DIA X 11,3.92 PSI
40789-09			**FRONT HOPPER ASSY,14.5 FT**
1	107000672	20.00	W/M,ROD,W/2 CLEVIS'S,W/LINK
2	208712192	2.00	BEARING ASSY,1.50 BORE,STEP
3	853750102	24.00	FITT,LUBE,STR,.250-28
4	40074	1.00	SPROCKET,80FB12,.313 KEYWAY
5	41267	1.00	SPREADROLL SEAL,14.5 HOPPER
6	40655	20.00	HANDLE,GATE LEVER
7	40668	20.00	W/M,GATE LATCH PLATE
8	40738	5.00	BEARING BLOCK
9	40784-09	1.00	FRONT HOPPER W/M,14.5
10	40790	1.00	AUGER SHAFT,LH
11	40791	1.00	ADJUSTER PLATE
12	40792	2.00	WEAR PLATE
13	40793	1.00	BAR,.500X1.25X13.50,W/HOLES
14	40794-01	1.00	KEY,SQ,.375X3.25
15	40795	11.00	WEAR BAR,6 GATE
16	40796	9.00	WEAR BAR,12 GATE
18	40798-03	1.00	GATE HINGE ROD,1 OD X 82.00
19	40799	1.00	ADJUSTMENT ROD W/M

ITEM	PART NO.	QTY	DESCRIPTION
20	40800	20.00	W/M,GATE LATCH FLANGE
21	40846	1.00	AUGER SHAFT W/M,RH
22	40849-05	1.00	SEGREGATION SCREEN W/M,14
22	40849-06	1.00	SEGREGATION SCREEN W/M,15
23	40850	1.00	BEARING & SPROCKET ASSY
24	40858	4.00	W/M,GATE,12"
25	40857	5.00	W/M,GATE 12",WITH PIVOT
26	40859	11.00	W/M,GATE,6
27	40867-09	1.00	SPREADROLL W/M,14.5 HOPPER
28	40870-09	1.00	AUGER W/M,14.5
29	40872-09	1.00	ACTUATING SHAFT,14.5 HOPPER
30	41004	1.00	SHIELD,SPREAD ROLL,LH
31	41005	1.00	SHIELD,SPREAD ROLL,RH
32	41031	1.00	CHAIN GUARD W/M
33	41032	1.00	PLATE,HOLE COVER,RH
34	41033	1.00	PLATE,HOLE COVER,LH
35	72414	5.00	BRNG,NYLON,1.5 SHAFT
36	72530	1.00	SPROCKET,CHAIN,80BS30
37	80038	91.00	NUT,HEX,.375-16
38	80040	10.00	NUT,HEX,.500-13
39	80074	20.00	NUT,HEX,JAM,.375-16
40	80142	102.00	WASHER,TYPE A PLAIN,.375
41	80162	91.00	WASHER,SPLIT LOCK,.375
42	80164	20.00	WASHER,SPLIT LOCK,.500
43	80186	8.00	CSHH,.500-13X1.75,GR5
44	80224	35.00	CSHH,.375-16X1.25,GR5
46	80255	4.00	CSHH,.500-13X2.00,GR5
47	80301	1.00	SET S,HSKT,KCUP,.250-20X.500
48	80305	4.00	SET S,HSKT,.375-16X.50
49	80336	2.00	COTTER PIN,.188X1.50
50	80354	3.00	NUT,FLEXLOC,.500-13,FULL,LT
51	80403	10.00	CSHH,.500-13X5.00,GR5
52	80778	2.00	CSHH,.500-13X3.25,GR5
53	80831	20.00	SET S,SQ,.375-16X2.00
54	80973	20.00	SHLDR SCR,.500X1.00X.375-16
55	81022	8.00	CSFHS,.375-16X1.25
56	845311009	2.00	BEARING,FLANGE,1.50,4 BOLT
57	848019756	2.00	PLATE,WEAR
59	871020103	56.00	CRG BOLT,.375-16X1.00,GR5
60	80250	6.00	CSHH,.500-13X1.25,GR5
61	871054100	20.00	DRIVE SCREW,#14x3/4
63	871075203	25.00	COLLAR,SET,1.5IDX2.25ODX.75SST
64	871081000	40.00	PIN,CLEVIS,W/COTTER PIN
65	871081814	20.00	ROLL PIN,.313X2.25
66	871090146	20.00	SPRING
67	947071040	1.00	CHAIN,80X52 PITCHES W CONN&OFF
68	971090337	20.00	SPR,1.02 DIA X 11,3.92 PSI
69	R48-1	6.00	WASHER,FLAT,1.50X1.031X.062
70	R48-2	6.00	WASHER,FLAT,1.50X1.031X.075
71	R48-3	6.00	WASHER,FLAT,1.50X1.031X.125
72	40798-05	1.00	GATE HINGE ROD,1 OD X 94.00

ITEM	PART NO.	QTY	DESCRIPTION
1	33277	28.00	CLAMP,HOSE,.22-.62,WORM,#04
2	5347	20.00	HOSE,04,PUSH-ON,LOW PRESS
3	72696	2.00	VLV,SOLENOID,3-WAY,7 STATION
4	72697	1.00	VLV,SEQ 3-WAY, 06FB
5	**72699-01**	**1.00**	**KIT,HOSE,INDIV GATE,10FT (See below)**
8	80141	8.00	WASHER,TYPE A PLAIN,.312
9	80214	2.00	CSHH,.312-18X2.25,GR5
10	80351	4.00	NUT,FLEXLOC,.312-18,FULL,LT
11	80427	2.00	CSHH,.312-18X3.50,GR5
12	73083	1.00	VLV,HYD,DO3 W/MANIFOLD,BOSCH
13	6408	2.00	FITT,PLUG 06MB,HEX

SCHEMATIC AT END OF PARTS BOOK

72699-01 HOSE KIT,INDIVIDUAL GATE,10 FOOT HOPPER

101	33892	1.00	FITT,90 06MJ-06MB
102	36490	3.00	FITT,TEE 06MJ-06FJX-06MJ
103	37394	2.00	FITT,STR 04MJ-06FJ
104	37409-030	2.00	HOSE,04 04FJX-04FJ90,180 OS
105	37409-036	2.00	HOSE,04 04FJX-04FJ90,180 OS
106	37409-044	4.00	HOSE,04 04FJX-04FJ90,180 OS
107	37410-038	2.00	HOSE,04 04FJX-04FJ90,3000
108	37411-023	1.00	HOSE,04 04FJX-04FJ90,225 OS
109	37412-023	1.00	HOSE,04 04FJ-04FJ90,135 OS
110	37413-021	2.00	HOSE,04 04FJ90-04FJ90,3000
111	37509-015	1.00	HOSE,06 06FJ90-06FJ90, 180 OS
112	37509-023	1.00	HOSE,06 06FJ90-06FJ90, 180 OS
113	37414-074	2.00	HOSE,06 06FJ90-06FJ90,3000
114	70957	2.00	FITT,STR 04FJX-04HB,PUSH-ON
115	71796	2.00	FITT,90 02MP-04HB,CRIMPED
116	33278	14.00	FITT,STR 04MJ-04MB
117	72306	1.00	FITT,TEE 06MJ-06MJ-06FJX
118	72549-051	1.00	HOSE,06,06FJX-06RJ90,3000
119	72550-014	1.00	HOSE,06,06FJX-06FJX,3000
120	72649	14.00	FITT,STR 04MJ-02MP
121	72700	12.00	FITT,TEE 04HB-04HB-02MP,BRASS
122	X217	10.00	FITT,STR 06MJ-06MB
124	X387	1.00	FITT,90 06MJ-06FJX
125	37414-076	1.00	HOSE,06,06FJ90-06FJ90,3000

ITEM	PART NO.	QTY	DESCRIPTION
1	33277	28.00	CLAMP,HOSE,.22-.62,WORM,#04
2	36071	1.00	VLV,HYD,SOLENOID,DUAL 3 WAY
3	72696	2.00	VLV,SOLENOID,3-WAY,7 STATION
4	72697	1.00	VLV,SEQ 3-WAY, 06FB
6	**72699-03**	**1.00**	**KIT,HOSE,INDIV GATE,12FT (See Below)**
8	80141	10.00	WASHER,TYPE A PLAIN,.312
9	80214	4.00	CSHH,.312-18X2.25,GR5
10	80351	6.00	NUT,FLEXLOC,.312-18,FULL,LT
11	80468	4.00	CSHH,.312-18X3.25,GR5
12	99534	1.00	PIPE,PLUG,02MP,SQ HD,MI
13	6408	1.00	FITT,PLUG 06MB,HEX
14	73083	1.00	VLV,HYD,DO3 W/MANIFOLD,BOSCH

SCHEMATIC AT END OF PARTS BOOK

72699-03 HOSE KIT,INDIVIDUAL GATE,12 FOOT HOPPER

100	32882	28.00	HOSE,04,PUSH-ON,250
101	33892	1.00	FITT,90 06MJ-06MB
102	36490	3.00	FITT,TEE 06MJ-06FJX-06MJ
103	37394	2.00	FITT,STR 04MJ-06FJ
104	37409-030	2.00	HOSE,04,04FJX-04FJ90,180 OS
105	37409-036	2.00	HOSE,04,04FJX-04FJ90,180 OS
106	37409-044	4.00	HOSE,04,04FJX-04FJ90,180 OS
107	37410-038	2.00	HOSE,04,04FJX-04FJ90,3000
108	37411-023	4.00	HOSE,04,04FJX-04FJ90,225 OS
109	37412-029	1.00	HOSE,04,04FJ-04FJ90,135 OS
110	37409-042	1.00	HOSE,04,04FJX-04FJ90,180 OS
111	37509-015	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
112	37509-028	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
113	37414-072	1.00	HOSE,06,06FJ90-06FJ90,3000
114	70957	2.00	FITT,STR 04FJX-04HB,PUSH-ON
115	71796	2.00	FITT,90 02MP-04HB,CRIMPED,BRAS
116	33278	16.00	FITT,STR 04MJ-04MB
117	72306	2.00	FITT,TEE 06MJ-06MJ-06FJX
118	72550-051	1.00	HOSE,06,06FJX-06FJX,3000
119	72550-014	1.00	HOSE,06,06FJX-06FJX,3000
120	72649	16.00	FITT,STR 04MJ-02MP
121	72700	14.00	FITT,TEE 04HB-04HB-02MP,BRASS
122	X217	13.00	FITT,STR 06MJ-06MB
124	72157	2.00	FITT,STR 04MJ-06MB
125	72549-019	1.00	HOSE,06,06FJX-06RJ90,3000
126	37509-026	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
127	37414-074	1.00	HOSE,06,06FJ90-06FJ90,3000
128	X387	1.00	FITT,90 06MJ-06FJX

ITEM	PART NO.	QTY	DESCRIPTION
1	33277	40.00	CLAMP,HOSE,.22-.62,WORM,#04
2	72730	2.00	PLUG,CAVITY 3-WAY
3	72696	3.00	VLV,SOLENOID,3-WAY,7 STATION
4	72697	1.00	VLV,SEQ 3-WAY, 06FB
6	**72699-04**	**1.00**	**KIT,HOSE,INDIV GATE,13.5FT (See Below)**
8	80141	12.00	WASHER,TYPE A PLAIN,.312
9	80214	4.00	CSHH,.312-18X2.25,GR5
10	80351	6.00	NUT,FLEXLOC,.312-18,FULL,LT
11	80468	6.00	CSHH,.312-18X3.25,GR5
12	73083	1.00	VLV,HYD,DO3 W/MANIFOLD,BOSCH
13	6408	2.00	FITT,PLUG 06MB,HEX

SCHEMATIC AT END OF PARTS BOOK

72699-04 HOSE KIT,INDIVIDUAL GATE,13.5 FOOT HOPPER

100	32882	32.00	HOSE,04,PUSH-ON,250
101	33892	1.00	FITT,90 06MJ-06MB
102	36490	2.00	FITT,TEE 06MJ-06FJX-06MJ
103	37394	2.00	FITT,STR 04MJ-06FJ
104	37409-030	3.00	HOSE,04,04FJX-04FJ90,180 OS
105	37409-036	2.00	HOSE,04,04FJX-04FJ90,180 OS
106	37409-044	2.00	HOSE,04,04FJX-04FJ90,180 OS
107	37409-050	2.00	HOSE,04,04FJX-04FJ90,180 OS
108	37409-056	1.00	HOSE,04,04FJX-04FJ90,180 OS
109	37409-061	1.00	HOSE,04,04FJX-04FJ90,180 OS
110	37409-023	6.00	HOSE,04,04FJX-04FJ90,180 OS
111	37509-015	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
112	37509-028	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
113	37509-069	2.00	HOSE,06,06FJ90-06FJ90, 180 OS
114	70957	2.00	FITT,STR 04FJX-04HB,PUSH-ON
115	71796	2.00	FITT,90 02MP-04HB,CRIMPED,BRAS
116	33278	19.00	FITT,STR 04MJ-04MB
117	72306	2.00	FITT,TEE 06MJ-06MJ-06FJX
118	72549-051	1.00	HOSE,06,06FJX-06RJ90,3000
119	72550-014	1.00	HOSE,06,06FJX-06FJX,3000
120	72649	19.00	FITT,STR 04MJ-02MP
121	72700	17.00	FITT,TEE 04HB-04HB-02MP,BRASS
122	X217	14.00	FITT,STR 06MJ-06MB
123	37409-040	1.00	HOSE,04,04FJX-04FJ90,180 OS
124	34854	2.00	FITT,PLUG 04MB,HEX
125	37409-052	1.00	HOSE,04,04FJX-04FJ90,180 OS
126	37414-016	1.00	HOSE,06,06FJ90-06FJ90,3000
127	37414-014	1.00	HOSE,06,06FJ90-06FJ90,3000
128	X387	1.00	FITT,90 06MJ-06FJX

ITEM	PART NO.	QTY	DESCRIPTION
1	33277	40.00	CLAMP,HOSE,.22-.62,WORM,#04
2	72730	1.00	PLUG,CAVITY 3-WAY
3	72696	3.00	VLV,SOLENOID,3-WAY,7 STATION
4	72697	1.00	VLV,SEQ 3-WAY, 06FB
6	**72699-05**	**1.00**	**KIT,HOSE,INDIV GATE,14FT**
8	80141	12.00	WASHER,TYPE A PLAIN,.312
9	80214	4.00	CSHH,.312-18X2.25,GR5
10	80351	6.00	NUT,FLEXLOC,.312-18,FULL,LT
11	80468	6.00	CSHH,.312-18X3.25,GR5
12	73083	1.00	VLV,HYD,DO3 W/MANIFOLD,BOSCH
13	6408	2.00	FITT,PLUG 06MB,HEX

SCHEMATIC AT END OF PARTS BOOK

72699-05 HOSE KIT,INDIVIDUAL GATE,14 FOOT HOPPER

100	32882	32.00	HOSE,04,PUSH-ON,250
101	33892	1.00	FITT,90 06MJ-06MB
102	36490	2.00	FITT,TEE 06MJ-06FJX-06MJ
103	37394	2.00	FITT,STR 04MJ-06FJ
104	37409-030	3.00	HOSE,04,04FJX-04FJ90,180 OS
105	37409-036	2.00	HOSE,04,04FJX-04FJ90,180 OS
106	37409-044	2.00	HOSE,04,04FJX-04FJ90,180 OS
107	37409-050	2.00	HOSE,04,04FJX-04FJ90,180 OS
108	37409-056	2.00	HOSE,04,04FJX-04FJ90,180 OS
109	37409-061	1.00	HOSE,04,04FJX-04FJ90,180 OS
110	37409-023	6.00	HOSE,04,04FJX-04FJ90,180 OS
111	37509-015	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
112	37509-028	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
113	37509-069	2.00	HOSE,06,06FJ90-06FJ90, 180 OS
114	70957	2.00	FITT,STR 04FJX-04HB,PUSH-ON
115	71796	2.00	FITT,90 02MP-04HB,CRIMPED,BRAS
116	33278	20.00	FITT,STR 04MJ-04MB
117	72306	2.00	FITT,TEE 06MJ-06MJ-06FJX
118	72549-051	1.00	HOSE,06,06FJX-06RJ90,3000
119	72550-014	1.00	HOSE,06,06FJX-06FJX,3000
120	72649	20.00	FITT,STR 04MJ-02MP
121	72700	18.00	FITT,TEE 04HB-04HB-02MP,BRASS
122	X217	14.00	FITT,STR 06MJ-06MB
123	37409-040	1.00	HOSE,04,04FJX-04FJ90,180 OS
124	34854	1.00	FITT,PLUG 04MB,HEX
125	37409-052	1.00	HOSE,04,04FJX-04FJ90,180 OS
126	37414-016	1.00	HOSE,06,06FJ90-06FJ90,3000
127	37414-014	1.00	HOSE,06,06FJ90-06FJ90,3000
128	X387	1.00	FITT,90 06MJ-06FJX

ITEM	PART NO.	QTY	DESCRIPTION
1	33277	40.00	CLAMP,HOSE,.22-.62,WORM,#04
2	72730	1.00	PLUG,CAVITY 3-WAY
3	72696	3.00	VLV,SOLENOID,3-WAY,7 STATION
4	72697	1.00	VLV,SEQ 3-WAY, 06FB
5	**72699-07**	**1.00**	**KIT,HOSE,INDIV GATE,16FT (See Below)**
8	80141	12.00	WASHER,TYPE A PLAIN,.312
9	80214	4.00	CSHH,.312-18X2.25,GR5
10	80351	6.00	NUT,FLEXLOC,.312-18,FULL,LT
11	80468	6.00	CSHH,.312-18X3.25,GR5
12	73083	1.00	VLV,HYD,DO3 W/MANIFOLD,BOSCH
13	6408	2.00	FITT,PLUG 06MB,HEX

SCHEMATIC AT END OF PARTS BOOK

72699-07 HOSE KIT,INDIVIDUAL GATE,16 FOOT HOPPER

100	32882	32.00	HOSE,04,PUSH-ON,250
101	33892	1.00	FITT,90 06MJ-06MB
102	36490	3.00	FITT,TEE 06MJ-06FJX-06MJ
103	37394	2.00	FITT,STR 04MJ-06FJ
104	37409-030	1.00	HOSE,04,04FJX-04FJ90,180 OS
105	37409-048	2.00	HOSE,04,04FJX-04FJ90,180 OS
106	37409-056	2.00	HOSE,04,04FJX-04FJ90,180 OS
107	37409-026	2.00	HOSE,04,04FJX-04FJ90,180 OS
108	37409-067	2.00	HOSE,04,04FJX-04FJ90,180 OS
109	37409-061	3.00	HOSE,04,04FJX-04FJ90,180 OS
110	37409-023	4.00	HOSE,04,04FJX-04FJ90,180 OS
111	37509-015	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
112	37509-028	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
113	37509-069	2.00	HOSE,06,06FJ90-06FJ90, 180 OS
114	70957	2.00	FITT,STR 04FJX-04HB,PUSH-ON
115	71796	2.00	FITT,90 02MP-04HB,CRIMPED,BRAS
116	33278	20.00	FITT,STR 04MJ-04MB
117	72306	2.00	FITT,TEE 06MJ-06MJ-06FJX
118	72549-051	1.00	HOSE,06,06FJX-06RJ90,3000
119	72550-014	1.00	HOSE,06,06FJX-06FJX,3000
120	72649	20.00	FITT,STR 04MJ-02MP
121	72700	18.00	FITT,TEE 04HB-04HB-02MP,BRASS
122	X217	14.00	FITT,STR 06MJ-06MB
123	37409-040	3.00	HOSE,04,04FJX-04FJ90,180 OS
124	34854	1.00	FITT,PLUG 04MB,HEX
125	37409-052	1.00	HOSE,04,04FJX-04FJ90,180 OS
126	37414-016	1.00	HOSE,06,06FJ90-06FJ90,3000
127	37414-014	1.00	HOSE,06,06FJ90-06FJ90,3000
128	X387	1.00	FITT,90 06MJ-06FJX

ITEM	PART NO.	QTY	DESCRIPTION
1	33277	40.00	CLAMP,HOSE,.22-.62,WORM,#04
2	72730	3.00	PLUG,CAVITY 3-WAY
3	72696	3.00	VLV,SOLENOID,3-WAY,7 STATION
4	72697	1.00	VLV,SEQ 3-WAY, 06FB
6	**72699-08**	**1.00**	**KIT,HOSE,INDIV GATE,13 FT (See Below)**
8	80141	12.00	WASHER,TYPE A PLAIN,.312
9	80214	4.00	CSHH,.312-18X2.25,GR5
10	80351	6.00	NUT,FLEXLOC,.312-18,FULL,LT
11	80468	6.00	CSHH,.312-18X3.25,GR5
12	73083	1.00	VLV,HYD,DO3 W/MANIFOLD,BOSCH
13	6408	2.00	FITT,PLUG 06MB,HEX

SCHEMATIC AT END OF PARTS BOOK

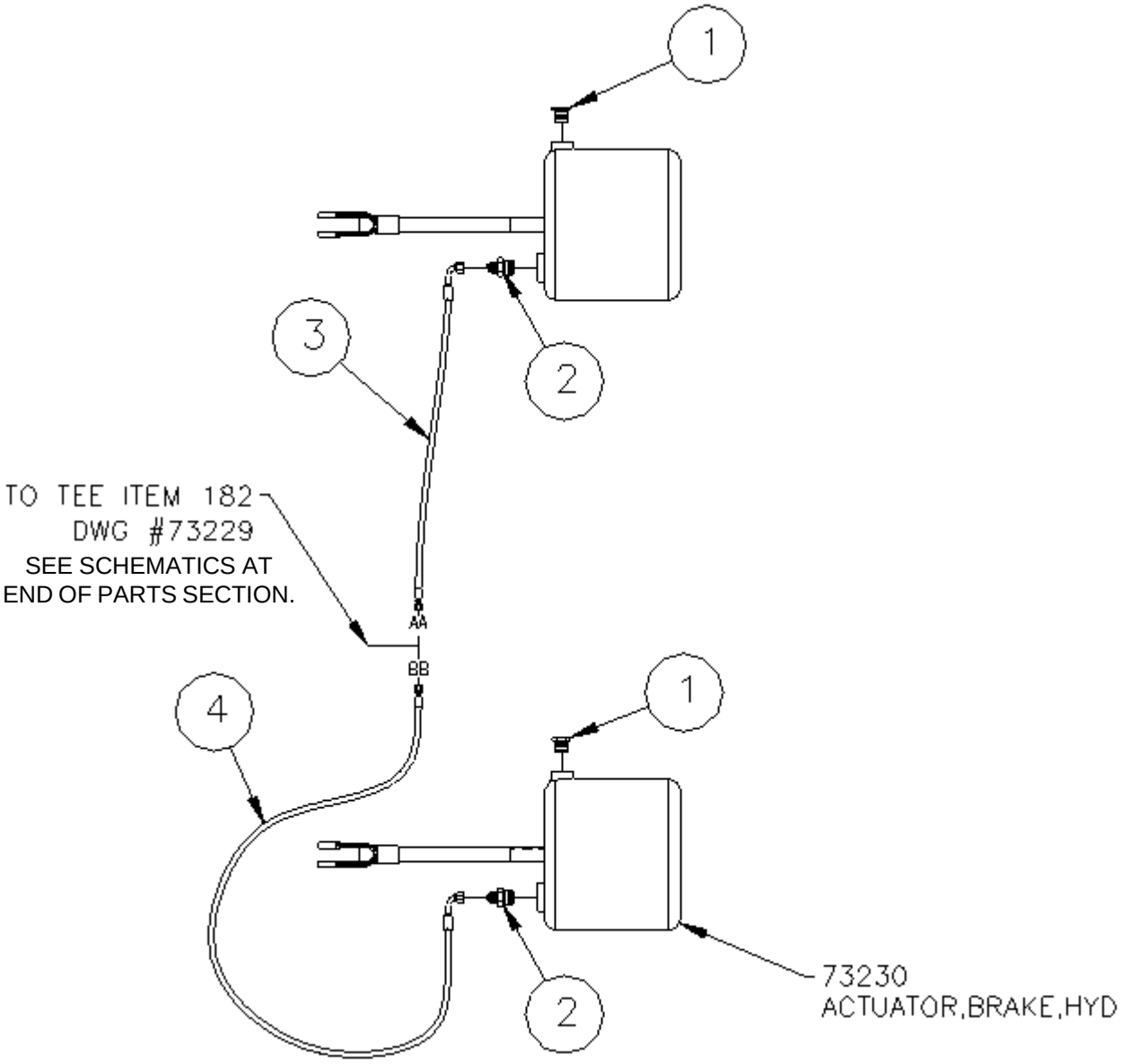
72699-08 HOSE KIT,INDIVIDUAL GATE,13 FOOT HOPPER

100	32882	32.00	HOSE,04,PUSH-ON,250
101	33892	1.00	FITT,90 06MJ-06MB
102	36490	2.00	FITT,TEE 06MJ-06FJX-06MJ
103	37394	2.00	FITT,STR 04MJ-06FJ
104	37409-030	3.00	HOSE,04,04FJX-04FJ90,180 OS
105	37409-036	2.00	HOSE,04,04FJX-04FJ90,180 OS
106	37409-044	2.00	HOSE,04,04FJX-04FJ90,180 OS
107	37409-050	2.00	HOSE,04,04FJX-04FJ90,180 OS
109	37409-061	1.00	HOSE,04,04FJX-04FJ90,180 OS
110	37409-023	6.00	HOSE,04,04FJX-04FJ90,180 OS
111	37509-015	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
112	37509-028	1.00	HOSE,06,06FJ90-06FJ90, 180 OS
113	37509-069	2.00	HOSE,06,06FJ90-06FJ90, 180 OS
114	70957	2.00	FITT,STR 04FJX-04HB,PUSH-ON
115	71796	2.00	FITT,90 02MP-04HB,CRIMPED,BRAS
116	33278	18.00	FITT,STR 04MJ-04MB
117	72306	2.00	FITT,TEE 06MJ-06MJ-06FJX
118	72549-051	1.00	HOSE,06,06FJX-06RJ90,3000
119	72550-014	1.00	HOSE,06,06FJX-06FJX,3000
120	72649	18.00	FITT,STR 04MJ-02MP
121	72700	16.00	FITT,TEE 04HB-04HB-02MP,BRASS
122	X217	14.00	FITT,STR 06MJ-06MB
123	37409-040	1.00	HOSE,04,04FJX-04FJ90,180 OS
124	34854	3.00	FITT,PLUG 04MB,HEX
125	37409-052	1.00	HOSE,04,04FJX-04FJ90,180 OS
126	37414-016	1.00	HOSE,06,06FJ90-06FJ90,3000
127	37414-014	1.00	HOSE,06,06FJ90-06FJ90,3000
128	X387	1.00	FITT,90 06MJ-06FJX

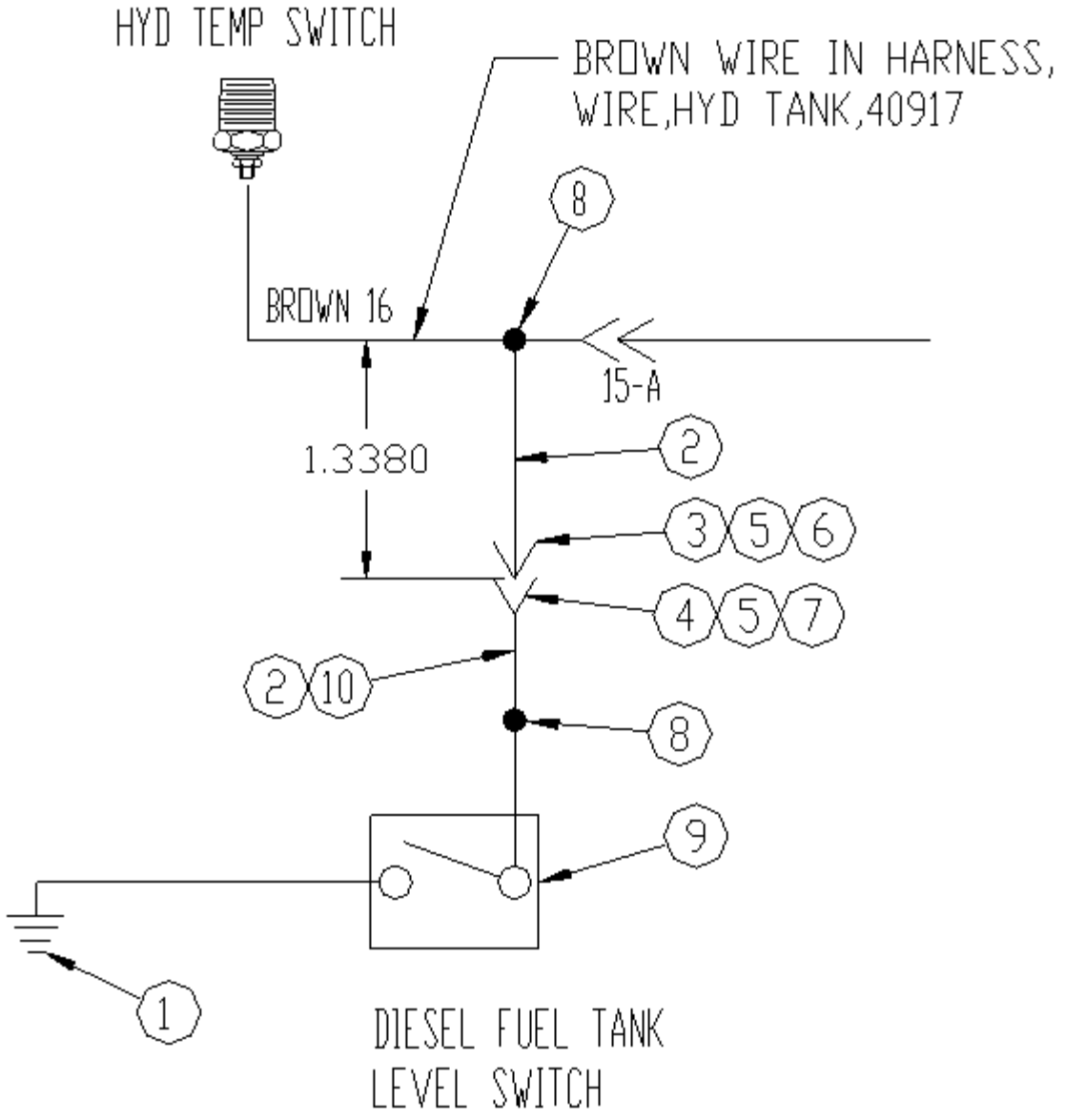
ITEM	PART NO.	QTY	DESCRIPTION
4WD UNIT USES 4 OF ITEM #42114			
	42114		**TIRE & RIM GROUP,385/65R 22.5 J**
1	42113	1.00	RIM W/M,22.5X12.25,11.46 PILOT
2	72758	1.00	TIRE,RADIAL,385/65R22.5
3	72760	1.00	TIRE VALVE,TUBELESS,3.13 LG
2WD UNIT USES 2 OF ITEM #42114 AND 2 OF ITEM #42299			
	42299		**TIRE & RIM GROUP,385/65R 22.5**
1	72760	1.00	TIRE VALVE,TUBELESS,3.13 LG
2	73231	1.00	RIM 22.5X12.25,11.25BC,4.0 OS
3	72758	1.00	TIRE,RADIAL,385/65R22.5
	40422		**FRONT FENDER GROUP,DUPLEX**
0	206002648	1.00	BRACE,FRONT FENDER
0	40421	1.00	FENDER,FRONT,DUPLEX TIRES
0	80221	6.00	CSHH,.375-16X1.00,GR5
0	80352	6.00	NUT,FLEXLOC,.375-16,FULL,LT
	42294		**HYD BRAKE GRP,2WD**
1	73219	1.00	ROLLER,CAM,1.00 OD X .625W
2	73225	1.00	ACCUMULATOR,PISTON,183 CU.IN.
3	73226	1.00	VLV,HYD,MODULATING,BRAKE
4	73227	1.00	VLV,HYD,ACCUMULATOR CHARGE
5	73228	1.00	SWITCH,LOW PRESSURE,1500 PSI
6	**73269**	**1.00**	**KIT,HOSE/FITT,REAR BRAKES,2WD**
			(See Detail Opposite)
	42325		**FORWARD HANDLE,RH,HITCH GROUP**
0	106000692	1.00	LEVER,TH OPERATING
0	106001295	1.00	ARM
0	107000061	1.00	REACH ROD W/M
0	36393	1.00	SWITCH,PUSH BTN,OFF-MOM ON
0	40025	1.00	LEVER GUIDE W/M,TRUCK HOOK
0	41059	1.00	HARNESS,WIRE,FWD HORN & HITCH
0	71629	1.00	CSHH,.500-13X3.00,GR5
0	72244	1.00	GRIP,RUBBER,HANDLE,FLEX
0	80038	4.00	NUT,HEX,.375-16
0	80162	4.00	WASHER,SPLIT LOCK,.375
0	80221	4.00	CSHH,.375-16X1.00,GR5
0	80354	1.00	NUT,FLEXLOC,.500-13,FULL,LT
0	845202026	1.00	BEARING,PILLOW BLOCK
0	871081000	2.00	PIN,CLEVIS,W/COTTER PIN
	209214001		**BELT,CONVEYOR 37'6" W/SPLICE**
	90384		**OIL,SAE 15W-40,CH-4**
	90599		**ANTIFREEZE**
	91500		**OIL,HYDRAULIC,ISO68**

REF: 73269
REV: 0

ITEM	PART NO.	QTY	DESCRIPTION
	73269		**KIT,HOSE/FITT,REAR BRAKES,2WD**
1	39101	2.00	FITT,PLUG 03MB,SKT
2	70062	2.00	FITT,STR 08MJ-08MB
3	72555-011	1.00	HOSE,08,08FJX-08RJ90,3000
4	72555-028.	1.00	HOSE,08,08FJX-08RJ90,3000

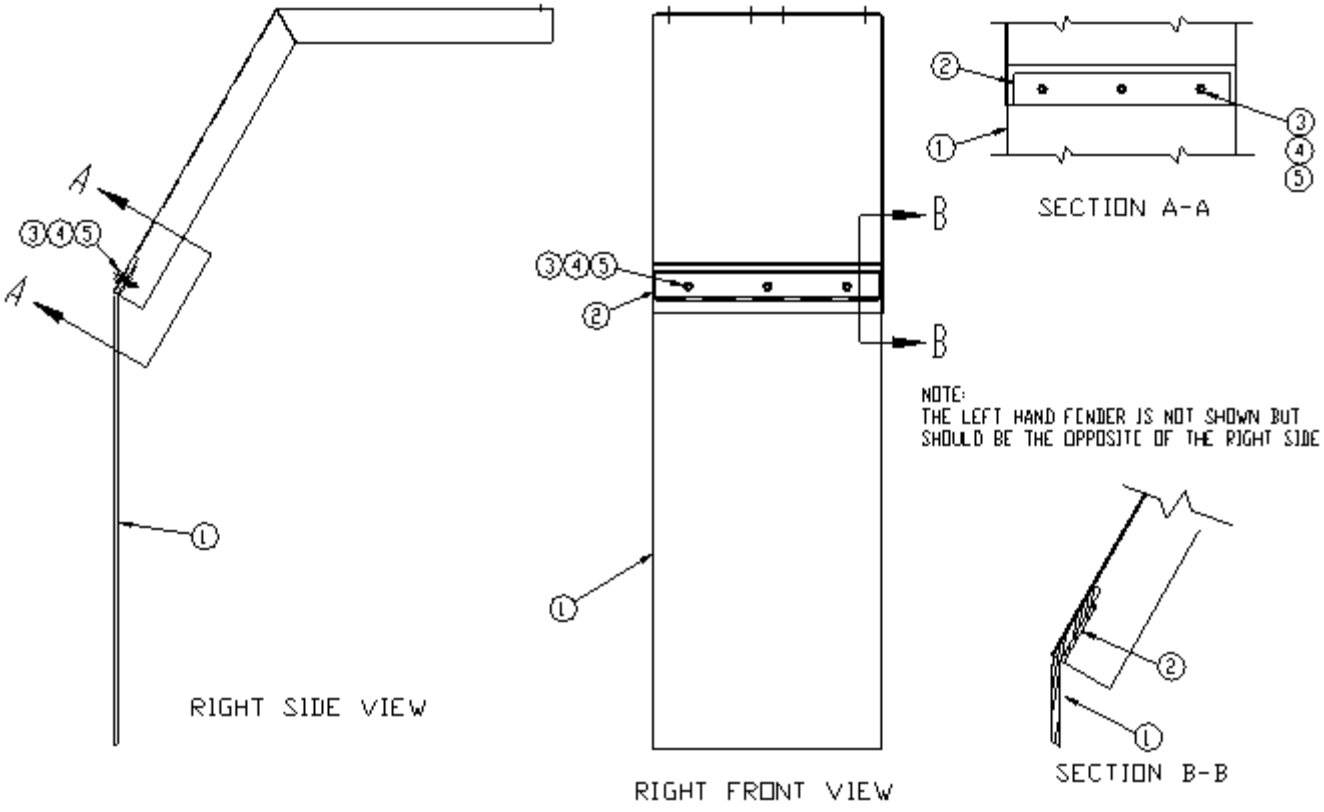


ITEM	PART NO.	QTY	DESCRIPTION
	41298		**FUEL LEVEL GROUP**
1	33612	1.00	TERM,RING,12-10 GA,.375 STUD
2	33271-15	5.80	WIRE,16 GA,BROWN/YELLOW STRIPE
3	36164	1.00	TERM,SEALED CONN,16-14 GA,MALE
4	36165	1.00	TERM,SEALED CONN,16-14 GA,FEM
5	36166	2.00	SEAL,CABLE,18-16 GA
6	37089	1.00	CONNECTOR,SEALED,SHROUD,1-PIN
7	37090	1.00	CONNECTOR,SEALED,TOWER,1-PIN
8	37422	2.00	TERM,SOLDER SPLICE,20-10 AWG
9	38035	1.00	SWITCH,LIQUID LEVEL,NYLON
10	71060	5.00	LOOM,SPLIT,CONVOLUTED,.250

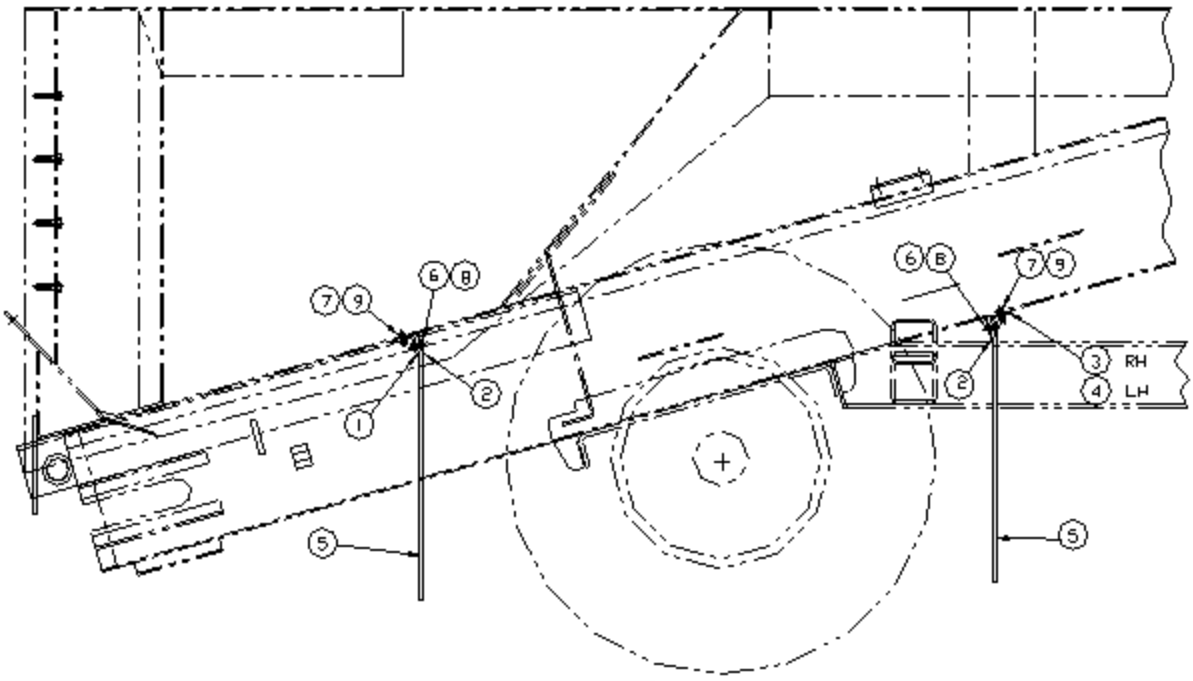


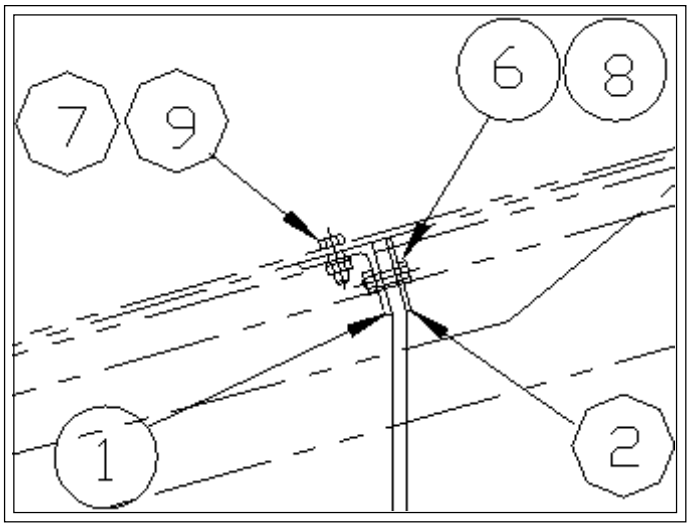
REF: 41247
REV: 0

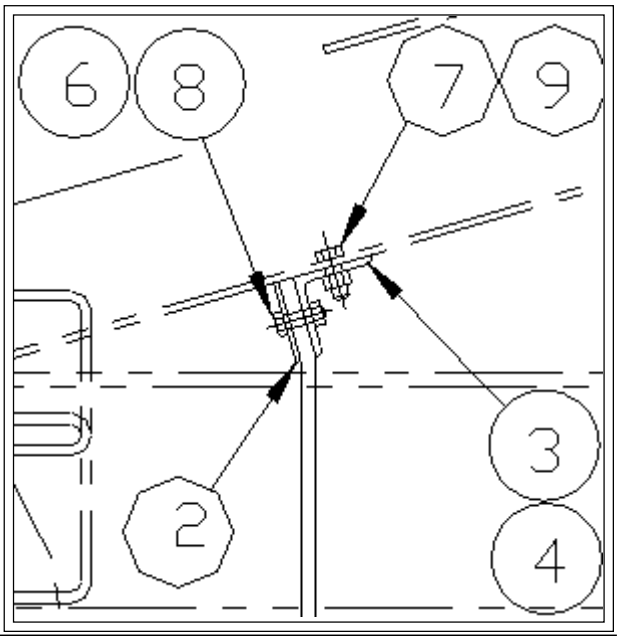
ITEM	PART NO.	QTY	DESCRIPTION
	41247		**FRONT MUD FLAP GROUP (OPTION)**
1	41048	2.00	MUD FLAP REWORK,14X30
2	41049	2.00	MOUNT BAR,MUD FLAP
3	80141	6.00	WASHER,TYPE A PLAIN,.312
4	80208	6.00	CSHH,.312-18X1.00,GR5
5	80351	6.00	NUT,FLEXLOC,.312-18,FULL,LT



ITEM	PART NO.	QTY	DESCRIPTION
	41248		**REAR MUD FLAP GROUP (OPTION)**
1	41250	2.00	ANGLE,REAR MUD FLAP MOUNT
2	41251	4.00	MOUNT BAR,MUD FLAP,REAR
3	41252	1.00	ANGLE,FR RH,REAR MUD FLAP MNT
4	41253	1.00	ANGLE,FR LH,REAR MUD FLAP MNT
5	41254	4.00	MUD FLAP REWORK,20WX24
6	80208	16.00	CSHH,.312-18X1.00,GR5
7	80221	8.00	CSHH,.375-16X1.00,GR5
8	80351	16.00	NUT,FLEXLOC,.312-18,FULL,LT
9	80352	8.00	NUT,FLEXLOC,.375-16,FULL,LT







ITEM	PART NO.	QTY	DESCRIPTION
	40939-01	1.00	FRONT HOPPER RAILING,10
	40939-02	1.00	FRONT HOPPER RAILING,11
	40939-03	1.00	FRONT HOPPER RAILING,12
	40939-04	1.00	FRONT HOPPER RAILING,13.5
	40939-05	1.00	FRONT HOPPER RAILING,14
	40939-06	1.00	FRONT HOPPER RAILING,15
	40939-07	1.00	FRONT HOPPER RAILING,16
	40939-08	1.00	FRONT HOPPER RAILING,14.5
	40939-09	1.00	FRONT HOPPER RAILING,13
	41018-01	1.00	PLACEMENT SCREEN ASSY, 10
	41018-02	1.00	PLACEMENT SCREEN ASSY, 11
	41018-03	1.00	PLACEMENT SCREEN ASSY, 12
	41018-04	1.00	PLACEMENT SCREEN ASSY, 13
	41018-05	1.00	PLACEMENT SCREEN ASSY, 13.5
	41018-06	1.00	PLACEMENT SCREEN ASSY, 14
	41018-07	1.00	PLACEMENT SCREEN ASSY, 15
	41018-08	1.00	PLACEMENT SCREEN ASSY, 14.5
	41018-09	1.00	PLACEMENT SCREEN ASSY, 16
	41035-01	1.00	SECOND AGITATOR ASSY,10
	41035-02	1.00	SECOND AGITATOR ASSY,11
	41035-03	1.00	SECOND AGITATOR ASSY,12
	41035-04	1.00	SECOND AGITATOR ASSY,13.5
	41035-05	1.00	SECOND AGITATOR ASSY,14
	41035-06	1.00	SECOND AGITATOR ASSY,15
	41035-07	1.00	SECOND AGITATOR ASSY, 13
	41035-08	1.00	SECOND AGITATOR ASSY, 16
	41278-01	1.00	HARNESS,HOPPER SENSOR,10
	41278-02	1.00	HARNESS,HOPPER SENSOR,11
	41278-03	1.00	HARNESS,HOPPER SENSOR,12
	41278-04	1.00	HARNESS,HOPPER SENSOR,13.5
	41278-05	1.00	HARNESS,HOPPER SENSOR,14
	41278-06	1.00	HARNESS,HOPPER SENSOR,15
	41278-07	1.00	HARNESS,HOPPER SENSOR,16
	41278-08	1.00	HARNESS,HOPPER SENSOR,13
	41278-09	1.00	HARNESS,HOPPER SENSOR,14.5

ITEM	PART NO.	QTY	DESCRIPTION
	40299		**VANDALISM PACKAGE (OPTION)**
0	16131	1.00	LOCK BAR,RADIATOR COVER
0	40300	1.00	RADIATOR COVER, W/M
0	72011	7.00	PADLOCK, W/KEYS
	28917		**GPS SYSTEM & LOCK BOX (OPTION)**
0	38965	1.00	NUT,LK,ELEC CND,.750-14 NPT
0	38963-02	1.00	MANUAL,GPS SYSTEM
1	28916	1.00	BOX,MODIFY GPS,14GA,LOCK&HOLES
2	35812	1.00	LOCK,WITH OFFSET CAM
3	34226	1.00	FITT,CABLE ENTR,12MP,.500-.750
4	38963	1.00	GPS SYSTEM
5	38963-01	1.00	GPS BATTERY, 12V
	40265		**ETHER STARTING AID GROUP (OPTION)**
0	33271-5	2.00	WIRE,16 GA,WHITE
0	33607	1.00	TERM,RING,16-14 GA,.250 STUD
0	34340	1.00	INSUL,IN-LINE,3 WAY,MALE
0	34341	1.00	WEDGE,IN-LINE INSUL,3 WAY,MALE
0	34347	1.00	TERM,MINI BLADE,16-14 GA
0	34895	1.00	ETHER INJECTION KIT,3.0 CC
0	40269	1.00	MOUNT,ETHER INJECTION
0	71060	2.00	LOOM,SPLIT,CONVOLUTED,.250
0	80036	4.00	NUT,HEX,.250-20
0	80160	4.00	WASHER,SPLIT LOCK,.250
0	80192	4.00	CSHH,.250-20X.75,GR5
0	851201417	3.00	TIE WRAP,.094X4.00
0	851390204	3.00	TERM,RING,16-14 GA,#10 STUD
0	946096028	1.00	CYLINDER,STARTING FLUID
	40623		**BATTERY DISCONNECT GROUP (OPTION)**
0	40626	1.00	PLATE,SWITCH MOUNTING
0	5804	1.00	CABLE,BATTERY,2 LUG,0GAX13
0	72254	1.00	SWITCH,BATTERY DISCONNECT
0	R443	2.00	CABLE,BATTERY,POS,28,4GA,.406
	41486		**ENGINE SHUTDOWN (OPTION)**
0	33271-1	3.00	WIRE,16 GA,BLACK
0	35174	6.00	WIRE,14 GA,PURPLE
0	36085	1.00	RELAY,SPDT,40AMP,12VDC
0	36086	1.00	BRACKET,RELAY MOUNT
0	36118-2	4.00	TERM,CRIMP,16-14 GA
0	36393	1.00	SWITCH,PUSH BTN,OFF-MOM ON
0	71066	3.00	WIRE,14 GA,YELLOW

REF: See List
REV:

ITEM	PART NO.	QTY	DESCRIPTION
	41701		**WATER SEPARATER GROUP (OPTION)**
1	41699	1.00	BRK'T,WATER SEPERATOR,RACOR
2	33162	2.00	CLAMP,HOSE,.44-.78,WORM,#06
3	33365	1.00	FITT,90 04MP-06HB,CRIMPED
4	72021	1.00	SEPARATOR,WATER,RACOR SPIN ON
5	X300	1.00	FITT,STR 04MP-06HB,PUSH-ON
6	80224	2.00	CSHH,.375-16X1.25,GR5
7	80142	2.00	WASHER,TYPE A PLAIN,.375
8	80162	2.00	WASHER,SPLIT LOCK,.375
9	80038	2.00	NUT,HEX,.375-16
10	80482	2.00	CSHH,M12X1.25X25,CL8.8
11	80484	2.00	WASHER,SPLIT LOCK,M12
	41001		**COOLANT FILTER GROUP,C/S (OPTION)**
0	33164	4.00	CLAMP,HOSE,.56-1.06,WORM,#10
0	35521	1.00	ELEMENT,COOLANT FILTER
0	35523	1.00	HEAD,COOLANT FILTER
0	41002	1.00	MOUNT,COOLANT FILTER HEAD
0	71104	10.00	HOSE,10,PUSH-ON,250
0	80142	4.00	WASHER,TYPE A PLAIN,.375
0	80162	4.00	WASHER,SPLIT LOCK,.375
0	80221	4.00	CSHH,.375-16X1.00,GR5
0	80484	2.00	WASHER,SPLIT LOCK,M12
0	80914	2.00	CSHH,M12X1.75X25,CL8.8
0	99526	1.00	PIPE,90,08MP-O8FP,MI
0	99552	2.00	PIPE,RED,08FP-06FP,MI
0	99569	1.00	PIPE,TEE,08FP,MI
0	99596	1.00	PIPE,NIPPLE,08XCLOSE
0	99638	2.00	PIPE,NIPPLE,06XCLOSE
0	X294	4.00	FITT,STR 08MP-10HB,PUSH-ON
	42398		**HARNESS, HITCH/HORN (OPTION)**
1	33271-1	11.50	WIRE,16 GA,BLACK
2	33271-12	13.00	WIRE,16 GA,RED/BLACK STRIPE
3	33271-15	13.00	WIRE,16 GA,BROWN/YELLOW STRIPE
4	33271-21	13.00	WIRE,16 GA,ORANGE/YEL STRIPE
5	33607	1.00	TERM,RING,16-14 GA,.250 STUD
6	35139	1.00	CONNECTOR,SEALED,TOWER,2-PIN
7	36165	2.00	TERM,SEALED CONN,16-14 GA,FEM
8	36166	2.00	SEAL,CABLE,18-16 GA
9	36348	1.00	TERM,PUSH-ON,.25,M,18-14,SLV
10	851390204	4.00	TERM,RING,16-14 GA,#10 STUD
	41877		**REMOTE HORN BUTTON (OPTION)**
0	106006756	1.00	DECAL,HORN
0	33271-15	10.00	WIRE,16 GA,BROWN/YELLOW STRIPE
0	35123	4.00	TERM,RING,16-14 GA,#6 STUD
0	35905	1.00	SWITCH,PUSH BTN,OFF-MOM ON

ITEM	PART NO.	QTY	DESCRIPTION
	40657		**STROBE GROUP WITH MOUNT (OPTION)**
0	000200190	1.00	SWITCH,TOGGLE,SPST,2-POS
0	33602	2.00	CONN,BUTT,16-14 GA
0	40667	1.00	STROBE MOUNT W/M
0	71060	18.00	LOOM,SPLIT,CONVOLUTED,.250
0	71062	18.00	WIRE,14 GA,BLUE
0	71938	1.00	LIGHT,STROBE,AMBER
	40998		**LIGHTING GROUP (OPTION)**
0	000200190	1.00	SWITCH,TOGGLE,SPST,2-POS
0	31985	2.00	LIGHT,GREEN,DASH,.50 HOLE
0	32131	1.00	SWITCH,STOP LAMP,HYD TYPE,NO
0	33271-2	6.00	WIRE,16 GA,YELLOW
0	33271-3	6.00	WIRE,16 GA,BROWN
0	33271-4	6.00	WIRE,16 GA,GREEN
0	33271-7	6.00	WIRE,16 GA,RED
0	33435	5.00	LIGHT & SOCKET,12V,2.00 GAUGE
0	33596	10.00	TIE WRAP,.188X7.5
0	40899	2.00	BRACKET,HEADLAMP & TURN SIGNAL
0	42397	1.00	HARNESS,LIGHTS & FLASHER
0	6161	4.00	LIGHT,TURN SIGNAL,AMBER
0	72086	1.00	SWITCH,TOGGLE,DPDT,2-POS
0	72143	16.00	TERM,RING,22-16 GA,#8 STUD
0	72318	2.00	LAMP,HALOGEN,FLOOD,80X30 DEG
0	80038	4.00	NUT,HEX,.375-16
0	80162	4.00	WASHER,SPLIT LOCK,.375
0	80221	4.00	CSHH,.375-16X1.00,GR5
0	80322	28.00	SCR,SLFTPG,HH,.250-20X.50
0	851090613	1.00	SWITCH,TOGGLE,SPDT,3-POS
0	851091608	1.00	FLASHER,SIGNAL
0	851342007	2.00	LIGHT,TURN/BRAKE,RED
0	871111605	28.00	CLAMP,LOOP,.50 OD PLSTC COVER
	71528		**LAMP,LICENSE (OPTION)**
	71529		**BRACKET, W/LIGHT (OPTION)**

REF: See List
REV:

ITEM	PART NO.	QTY	DESCRIPTION
	41702		**FIRE EXTINGUISHER GRP (OPTION)**
1	41700	1.00	BRK'T,FIRE EXTINGUISHER
2	35272	1.00	FIRE EXTINGUISHER, 20 LB DRY C
3	35775	1.00	MOUNT BRACKET, 20# FIRE EXTING
4	80221	8.00	CSHH,.375-16X1.00,GR5
5	80230	4.00	CSHH,.375-16X2.00,GR5
6	80162	12.00	WASHER,SPLIT LOCK,.375
7	80038	12.00	NUT,HEX,.375-16
	108061115		**SEAL,STEMCO AXLE (OPTION)**
0	946170957	2.00	SEAL,HUB AND GASKET
0	946170958	2.00	SEAL,HUB, AXLE RING
	40479		**KIT,FAST LUBE OIL CHANGE(OPTION)**
0	19096	1.00	BRACKET,12 BHD UNION
0	35492	1.00	FITT,STR 12MJ-12MJ,BHD
0	35540	1.00	FITT,STR 12MP-12FJX
0	36303	1.00	FITT,STR 08MJ-M18,METRIC
0	72368	1.00	HOSE ASSY,-10 x 24,1750
0	853182304	1.00	FITT,QD -12 FP,SET
0	853182305	1.00	CAP,DUST,12 QD
0	33900	1.00	FITT,90 08MJ-08FJX
	40534		**DECAL,PREV. MAINTENANCE & LUBE CHART (OPTION)**
	73049		**PRECLEANER,TURBO II,5.00 ID (OPTION)**
	73153		**UMBRELLA,YELLOW CANVAS W/MOUNT (OPTION)**
	40166		**BELT ASSEMBLY,HOT OIL, 20 X 449 (OPTION)**
0	72168	1.00	CONV BELT, HOT OIL, 20 X 449
0	948022317	1.00	KIT,BELT LACING
	72276		**BELT ASSEMBLY,CHEVRON CONVEYOR (OPT)**

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