HI-WAY

MODEL E2020XT
Operator's/Parts Manual

UNIT SERIAL NUMBER _____

MANUAL NUMBER: 97411-M

EFFECTIVE 06/2023

NLM
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Interactive Features

NOTE:	This manual incorporates several interactive features to provide supplemental information and ease of navigation. The information below is to aid in the identification and use of these features.

Hyperlinks

Hyperlinks provide direct access to a specific destination when clicked. The entire Table of Contents of this manual is hyperlinked to provide quick access to all sections of this manual when viewing the electronic version.

Hyperlinks within the content are denoted by **blue, bold underlined text**. Electronic format viewers can click these links for direct access to New Leader online features. Internet access is required.

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Insert Current HI-WAY Warranty

SAFETY

SAFETY

PLEASE ! ALWAYS THINK SAFETY FIRST !!

The purpose of this manual is to familiarize the person (or persons) using this unit with the information necessary to properly install, operate, and maintain this system. The safety instructions indicated by the safety alert symbol in the following pages supersede the general safety rules. These instructions cannot replace the following: the fundamental knowledge that must be possessed by the installer or operator, the knowledge of a qualified person, or the clear thinking necessary to install and operate this equipment. Since the life of any machine depends largely upon the care it is given, we suggest that this manual be read thoroughly and referred to frequently. If for any reason you do not understand the instructions, please call your authorized dealer or our Product Sales and Support Department at (319) 363-8281 or 1-800-363-8006.

It has been our experience that by following these installation instructions, and by observing the operation of the spreader, you will have sufficient understanding of the machine enabling you to troubleshoot and correct all normal problems that you may encounter. Again, we urge you to call your authorized dealer or our Product Sales and Support Department if you find the unit is not operating properly, or if you are having trouble with repairs, installation, or removal of this unit.

We urge you to protect your investment by using genuine NLM parts and our authorized dealers for all work other than routine care and adjustments.

New Leader Manufacturing reserves the right to make alterations or modifications to this equipment at any time. The manufacturer shall not be obligated to make such changes to machines already in the field.

This Safety Section should be read thoroughly and referred to frequently.

ACCIDENTS HURT !!!

ACCIDENTS COST !!!

ACCIDENTS CAN BE AVOIDED !!!

Important Safety Information

⚠WARNING	Before using this equipment, read, understand and follow all instructions in the Operator's Manual provided with this equipment. If the user and/or assistants cannot read or understand the warnings and instructions, the employer of the user and/or assistants must provide adequate and necessary training to ensure proper operation and compliance with all safety procedures pertaining to this equipment. If Operator's Manual has been lost, visit www.newleader.com or call your authorized dealer or our Product Sales & Support Department at (800) 363-1771 for replacements. Serious injury or death can result from the failure to read, understand, and follow instructions provided in this manual.

Figure 1.1 - The need for safety cannot be stressed strongly enough in this manual. At New Leader Manufacturing, we urge you to make safety your top priority when operating any equipment. We firmly advise that anyone allowed to operate this machine carefully read, learn and understand all messages and information in this manual and on machine's safety decals before operating machine, as well as familiarize themselves with the location and function of all machine controls.

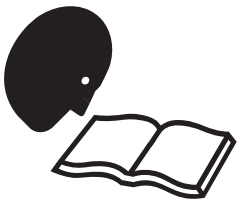


Figure 1.1

The following guidelines are intended to cover general usage and to assist you in avoiding accidents. There will be times when you will run into situations that are not covered in this section. At those times the best standard to use is common sense. If, at any time, you have a question concerning these guidelines, please call your authorized dealer or our Product Sales & Support Department at (800) 363-1771.

Safety Alert Symbols

⚠	Take note! This safety alert symbol found throughout this manual is used to call your attention to instructions involving your personal safety and that of others. Failure to follow these instructions can result in injury or death.

In this manual and on the safety signs placed on the unit, the words "DANGER," "WARNING," "CAUTION," and "NOTICE" are used to indicate the following:

⚠DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	NOTICE is used to address practices not related to physical injury.
NOTE:	Provides additional information to simplify a procedure or clarify a process.

PREPARE FOR EMERGENCIES

Figure 1.2 - Be prepared if a fire starts. Keep a fully charged fire extinguisher and first aid kit in accessible place on the vehicle at all times.

Fire extinguisher must be Type ABC or Type BC.

Keep emergency numbers for doctors, ambulance service, hospital and fire department available at all times.

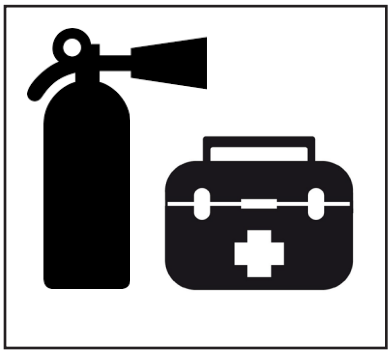


Figure 1.2

INSPECT HARDWARE BEFORE USE

Figure 1.3 - Inspect all bolts, screws, fasteners, keys, chain drives, body mounts and other attachments periodically. Immediately replace any missing or damaged parts with NLM specified parts.

Inspect spinner fins, spinner frame mounting and spinner fin hardware daily. Look for missing or loose fasteners, wear and cracks. Replace immediately with NLM specified parts.

Tighten all bolts, nuts and screws to specified torques. Refer to "Standard Torques" in Maintenance section of this manual.

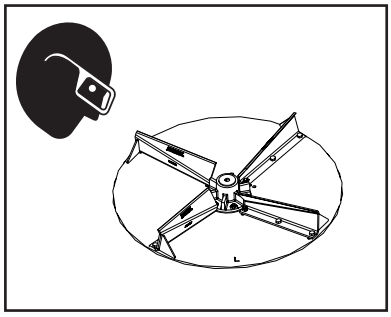


Figure 1.3

HANDLE FLAMMABLE MATERIALS SAFELY

Figure 1.4 - Handle fuel and hydraulic oil with care. They are highly flammable.

Exposure to toxic fluids or fumes may occur during the normal operation of this system. Before attempting to fill, use, or service this system, read Safety Data Sheets (SDS) to know the specific hazards of the fluids you are using. Always use proper Personal Protective Equipment when attempting to fill, use, or service this system.

Always stop engine before refueling machine or filling hydraulic reservoir.

Never smoke while adding fuel or oil to machine. Add fluids in a safe place away from open flame and sparks.

Do not allow overflow. Clean up spilled fuel and oil immediately.

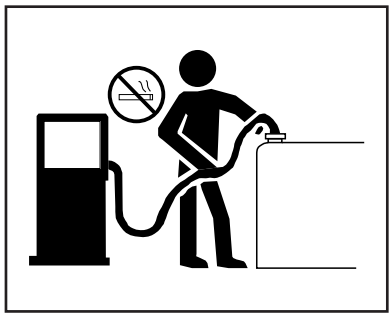


Figure 1.4

Always have a multipurpose dry chemical fire extinguisher filled and available during machine operation and when adding fuel. Know how to use it.

HANDLE HAZARDOUS MATERIALS SAFELY

Figure 1.5 - Materials to spread can be dangerous.

Figure 1.5

Improper selection, application, use or handling may be a hazard to persons, animals, plants, crops or other property.

A Safety Data Sheet (SDS) provides specific details on chemical products: physical and health hazards, safety procedures and emergency response techniques.

Check all SDS's before starting any job using a hazardous material. Follow all instructions and precautions given by the material manufacturer.

WORK IN WELL-VENTILATED AREAS

⚠WARNING

Never run machine engine inside a building unless adequate ventilation is provided to safely and properly remove exhaust fumes. Failure to comply with this requirement could result in death or serious injury.

Figure 1.6 - Always work in a properly ventilated area.

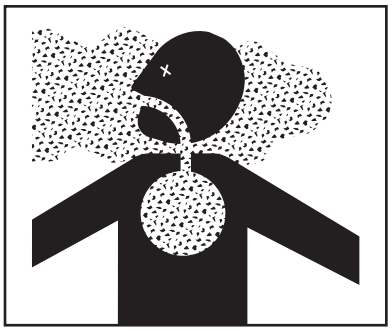


Figure 1.6

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, use proper equipment to safely remove exhaust fumes from the working area.

Open building doors and get fresh air into the working area whenever possible.

PROTECT AGAINST NOISE

Figure 1.7 - Long periods of exposure to high decibels or loud noise can cause hearing impairment or loss.

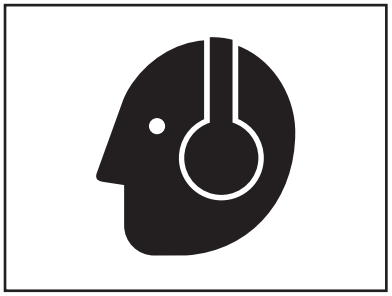


Figure 1.7

Wear proper hearing protection such as earmuffs or earplugs during periods of exposure to high decibels or loud noise.

AVOID MOVING PART HAZARDS

Figure 1.8 - Entanglement in rotating drive lines or moving parts will cause serious injury or death.

Stay clear of all moving parts, such as shafts, couplings and universal joints.

Make sure all personnel are clear of machine before starting.

Figure 1.8

Figure 1.9 - Do not operate machine without all guards and shields closed and secured.

Disconnect and lock out power source before removing guards.

Disconnect and lock out power source before adjusting or servicing.

Keep hands, feet, hair and clothing away from moving parts.

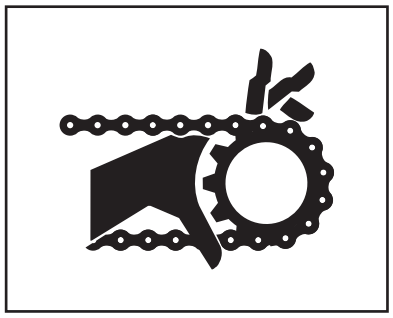


Figure 1.9

Figure 1.10 - Keep away from spinners while they are turning.

Rocks, scrap metal and other material can be thrown from the spinners violently. Stay away from discharge area.

Stop machine before servicing or adjusting. Wear eye protection.

Make sure discharge area is clear before spreading.

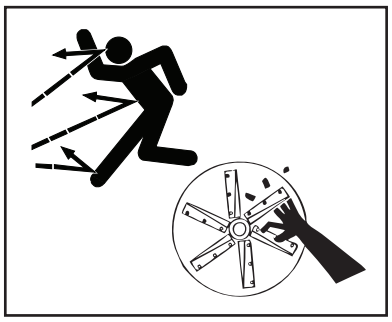


Figure 1.10

Figure 1.11 - Stay out of spreader.

If necessary to enter the spreader, return to shop, empty body, turn off all power, engage brakes, shut down engine and remove keys before entering.

Tag all controls to prohibit operation. Tags should be placed, and removed, by the person working in the body.

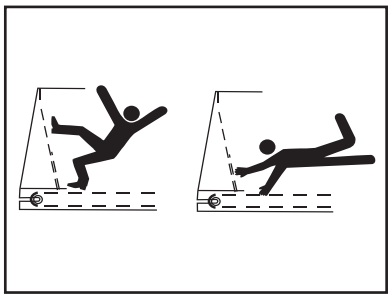


Figure 1.11

DO NOT CLIMB OR STAND ON MACHINE

Figure 1.12 - Never allow any personnel to ride in or on the machine.

Use inspection ladder or portable ladder to view the unit. Use caution when getting on and off the ladder, especially in wet, icy, snowy or muddy conditions. Clean mud, snow and ice from steps and footwear.

Always maintain three-point contact with steps, ladders and handholds. Face the machine when mounting and dismounting inspection ladder. Do not jump off machine.

Figure 1.12

OPERATE MACHINE SAFELY

Always walk around and visually inspect machine before using. Check the immediate vicinity of machine for people and obstructions. Ensure adequate visibility.

Avoid distractions such as reading, eating or operating personal electronics while operating machine. Never operate the machine under the influence of alcohol, drugs or while otherwise impaired.

Always come to a complete stop before reversing. Be sure that all personnel are clear of machine path. Turn around and look directly for best visibility. Ensure all rear view mirrors are properly installed and adjusted. Use a signal person when backing if view is obstructed or when in close quarters.

Always disengage hydraulics before shutting down engine. DO NOT start engine with hydraulics engaged.

TRAVELING & TRANSPORTING ON PUBLIC ROADS

Always walk around and visually inspect the machine before traveling on public roads. Check for damage and/or faulty components that can fail and create a hazard or unsafe condition. Make sure all machine systems operate properly, including but not limited to: headlights, tail and brake lights, hazard warning lights, turn indicators, parking brake, horn and rear view mirrors. Repair or replace any component that is not in proper working order.

Never drive machine at a speed that causes it to bounce or cause loss of control.

Obey all traffic safety laws and regulations. Operate the machine with hazard warning lights on, unless prohibited by law. It is the operator's responsibility to activate and use road lights properly while traveling on public roads.

Cover all loads that may spill or blow away. Environmental damage may result. Do not spread dusty materials where dust may create pollution, visibility issues or interfere with traffic on public roads.

When transporting equipment or machine on a trailer, ensure it is properly secured. Be sure that SMV signs on equipment or machine are covered while in transport on a trailer.

Be aware of overhead structures and power lines. Make sure machine can safely pass under. Refer to "Dimensions & Capacities" pages in the Operations section of this manual.

NAVIGATING ROUGH & UNEVEN TERRAIN

Figure 2.1 - Turn slowly and be careful when traveling on rough surfaces and side slopes. Avoid holes, ditches and obstructions that may cause machine to roll over, especially with a loaded spreader.

Never drive near the edge of a gully or steep embankment.

Load may shift, causing vehicle to tip.

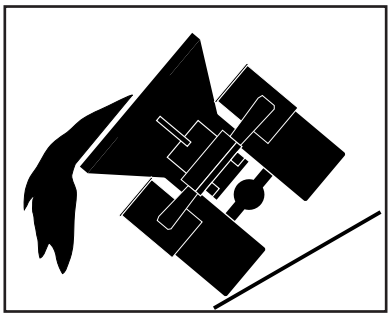


Figure 2.1

READ AND UNDERSTAND MAINTENANCE PROCEDURES

Figure 3.1 - Read the maintenance and safety instructions and understand them before performing any maintenance procedure.

Never perform any maintenance procedure or repair if the instructions and safety procedures are not fully understood. Only trained and qualified personnel should perform any maintenance procedure or repair.

Never modify any equipment or add attachments not approved by New Leader Manufacturing.

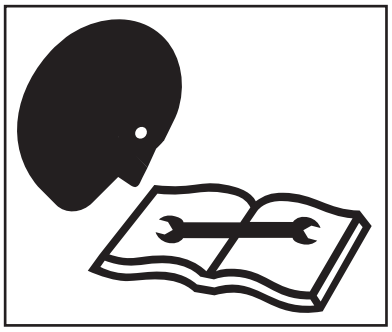


Figure 3.1

DO NOT SERVICE OR ADJUST MACHINE WHILE IN MOTION

Figure 3.2 - Never lubricate, service or adjust the machine or any of its components while they are moving.

Never wear loose clothing or jewelry when working near machine tools or moving parts.

Remove rings and other jewelry to prevent electrical shorts and other personal injury when in contact with machine tools or moving parts.

Close and secure all guards removed for service. Check all screws, bolts, nuts and fasteners for proper torques before operating machine.

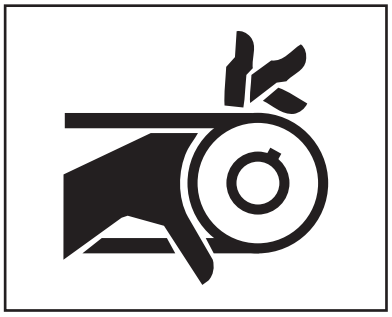


Figure 3.2

WEAR PROPER PROTECTIVE EQUIPMENT

Figure 3.3 - Wear close-fitting clothing and proper safety equipment for the job.

Always wear eye protection when working on or around the machine.

Wear a suitable hearing protection device such as earmuffs or earplugs to protect against high decibels or loud noises.

Prolonged exposure to high decibels or loud noise can cause hearing impairment or loss of hearing.

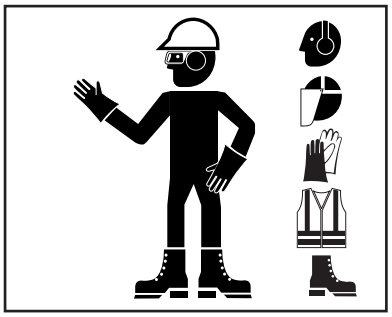


Figure 3.3

Wear protective gloves to protect hands from cuts, abrasions and minor burns.

HANDLE FLAMMABLE SOLVENTS SAFELY

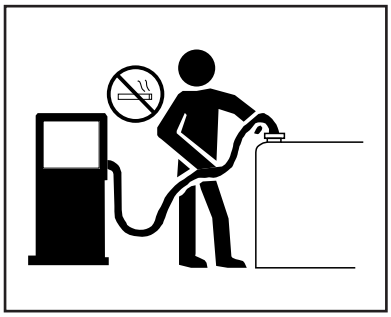


Figure 3.4

Figure 3.4 - Never use diesel fuel, kerosene, gasoline or any flammable solvents for cleaning.

Exposure to toxic fluids or fumes may occur during the normal operation of this system. Before attempting to fill, use, or service this system, read Safety Data Sheets (SDS) to know the specific hazards of the fluids you are using. Always use proper Personal Protective Equipment when attempting to fill, use, or service this system.

Perform work using flammable fluids and solvents in a safe place away from open flame and sparks. Do not smoke.

Do not weld, grind or flame cut on any tank containing oil, fuel, fumes or any other flammable material, or any container that contents or previous contents are unknown. Move all flammable materials and containers away from work area.

Clean up spilled fuel and oil immediately.

Always have a multipurpose dry chemical fire extinguisher filled and available. Know how to use it.

USE PROPER LIFTING EQUIPMENT

Figure 3.5

Figure 3.5 - Use only lifting devices that meet or exceed OSHA standard 1910.184 or ASME B30.20-2013.

Never lift equipment over people.

Never lift a loaded unit. Never lift unit with any loose objects or persons in the body. Loads may shift or fall if improperly supported, causing death, serious injury or machine damage.

Before unfastening heavy parts or assemblies, support with adequate hoist or other device to prevent falling, tipping, swinging or any other movement that may cause injury or damage.

USE PROPER TOOLS FOR THE JOB

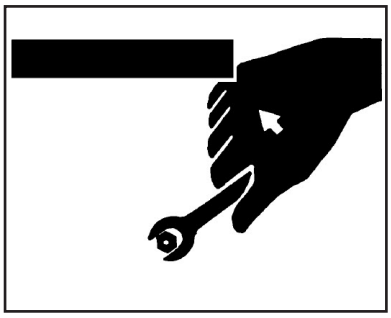


Figure 3.6

Figure 3.6 - Use of improper tools (such as a screwdriver instead of a pry bar, pliers instead of a wrench, a wrench instead of a hammer) can cause serious injuries or machine damage.

Use power tools only to loosen threaded parts and fasteners. Using power tools to tighten may cause over-tightening and component damage.

Use only service parts meeting New Leader specifications.

HIGH PRESSURE FLUID HAZARDS

Figure 3.7 - Escaping fluid under pressure can penetrate the skin causing serious injury.

Always stop machine, allow to cool and relieve pressure before servicing hydraulic system. Never open hydraulic lines under pressure. Make sure all connections are tight and all hoses are in good condition before pressurizing system.

Always use a piece of cardboard or wood to search for leaks instead of hand. Wear impervious gloves and eye protection when servicing system.

Seek medical attention immediately if fluid penetrates your skin. Gangrene may result if wound is left untreated.

Figure 3.7

AVOID HEATING NEAR HIGH PRESSURE FLUID LINES

Figure 3.8 - Flammable spray can be generated by heating near pressurized fluid lines, resulting in burns to yourself and bystanders.

Do not heat by welding, soldering or using a torch near pressurized fluid lines or other flammable materials.

Pressure lines can suddenly burst when heat goes beyond the immediate flame area.

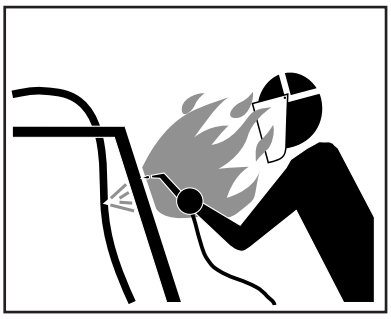


Figure 3.8

AVOID TOXIC FUMES & DUST

Figure 3.9 - Hazardous fumes can be generated when paint is heated from welding, soldering or using a torch.

Remove paint before heating:

- Remove a minimum of 4 in (100 mm) from area to be affected by heating. If paint cannot be removed, wear an approved respirator while heating or welding.
- Avoid breathing dust from sanding or grinding on paint.
- If a solvent or paint stripper is used, wash stripper away with soap and water before heating or welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse for at least 15 minutes before heating or welding.

Do not use chlorinated solvents in areas where welding will take place.

Perform all work in a well-ventilated area that will carry all toxic fumes and dust away.

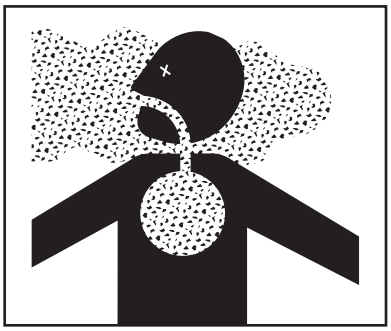


Figure 3.9

CLEAN MACHINE OF HAZARDOUS CHEMICALS

⚠CAUTION

During application of hazardous chemicals, residue can build up on the inside or outside of the vehicle. Clean vehicle according to use instructions of hazardous chemical. Failure to comply with this requirement may result in minor or moderate injury.

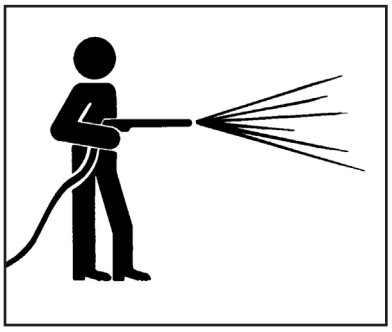


Figure 3.10

Figure 3.10 - When exposed to hazardous chemicals, clean exterior and interior of vehicle daily to keep free of the accumulation of visible dirt and contamination.

1. Clean operator's station to maintain unobstructed visibility of all windows and mirrors, and safe operation of all controls.

NOTICE

Directing pressurized water at electronic/ electrical components, bearings and hydraulic seals or other sensitive parts and components may cause product malfunctions. Reduce pressure and spray at 45 to 90 degree angles.

2. Wash entire exterior of vehicle.
3. Dispose of any wash water with hazardous concentrations of active or non-active ingredients according to published regulations or directives.

HANDLE BATTERIES SAFELY

⚠WARNING

Sulfuric acid in battery electrolyte is poisonous. It can burn skin, eat holes in clothing, and cause blindness if it contacts eyes. Keep sparks and flame away from batteries. Wear proper safety equipment. Failure to comply with this requirement could result in death or serious injury.

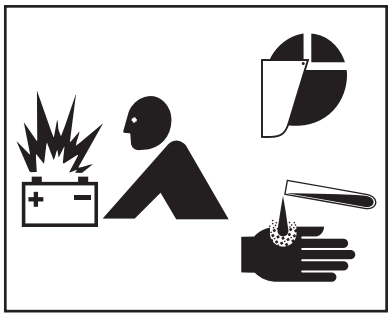


Figure 3.11

Figure 3.11 - Lead acid batteries generate flammable and explosive gases. Keep sparks and flame away from batteries. Do not smoke.

If acid contacts eyes, skin or clothing, flush with water immediately. Seek immediate medical attention if acid contacts eyes.

PROPER TIRE MAINTENANCE

Figure 3.12 - Never weld on a wheel or rim that has a tire on it.

Never attempt to mount or remove a tire unless using the proper equipment, tire safety cage, instructions, training, and you are qualified to perform the work safely. Failure to follow the correct procedures when mounting a tire on a wheel or rim can cause an explosion and serious injury.

Tire service procedures must be performed by trained and qualified personnel.

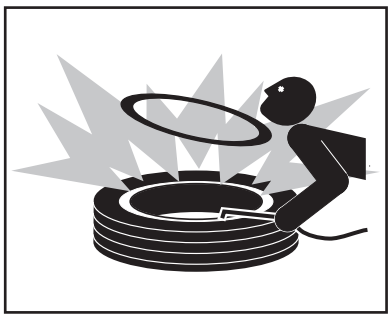


Figure 3.12

PARK VEHICLE SAFELY

Figure 4.1 - When leaving the vehicle unattended for any reason, be sure to:

- Shut down PTO.
- Shut off vehicle's engine, and unit's engine if applicable.
- Place vehicle transmission in "Neutral" or "Park".
- Set parking brake firmly.
- Remove ignition key and take it with you.
- Block wheels.

These actions are recommended to avoid unauthorized use, runaway, vandalism, theft and unexpected operation during startup.

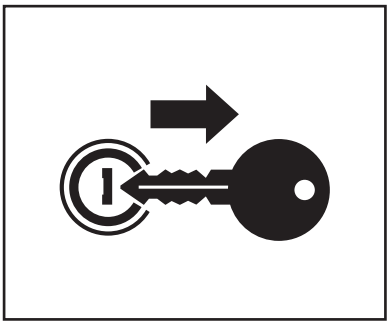


Figure 4.1

SUPPORT MACHINE PROPERLY

Figure 4.2 - When machine is removed from vehicle, always store on adequate supports on a firm level surface. Improper supporting or storage of spreader may cause machine to fall, resulting in serious injury or death.

Never use lifting device to free machine from a chassis, storage stands or frozen ground, or to lift the chassis in any way. Shock loading is prohibited and sudden accelerations must be avoided. Lifting in such a manner could result in injury or machine damage.

Figure 4.2

DISPOSE OF WASTE PROPERLY

Figure 4.3 - Improper disposal of waste can threaten the environment and ecology. Potentially harmful waste used with equipment include items such as fuel, oil, filters and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them. Do not pour waste onto the ground, down a drain, or into any water source.

Comply with all OSHA, local, City, State, Province, Country and jurisdiction regulations, ordinances and standards, related to your particular work area and environment. Inquire on proper disposal methods from your local environmental or recycling center, or from your local dealer.

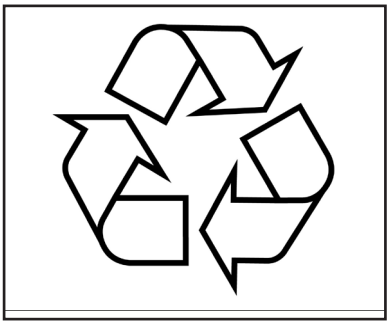


Figure 4.3

Safety Decal Maintenance

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

Replace safety decals and signs that are missing or have become illegible.

Replaced parts that displayed a safety sign should also display the current sign.

Safety decals or signs are available from your dealer's Parts Department or from New Leader Manufacturing by calling (800) 363-1771.

Safety Decal Installation

Clean Surface

Wash the installation surface with a synthetic, free-rinsing detergent. Avoid washing the surface with a soap containing creams or lotion. Allow to dry.

Position Safety Decal

Decide on the exact position before application. Application marks may be made on the top or side edge of the substrate with a lead pencil, marking pen, or small pieces of masking tape. NOTE: Do not use chalk line, china marker, or grease pencil. Safety decals will not adhere to these.

Remove the Liner

A small bend at the corner or edge will cause the liner to separate from the decal. Pull the liner away in a continuous motion at a 180-degree angle. If the liner is scored, bend at score and remove.

Apply Safety Decal

Tack decal in place with thumb pressure in upper corners. Using firm initial squeegee pressure, begin at the center of the decal and work outward in all directions with overlapping strokes. NOTE: Keep squeegee blade even—nicked edges will leave application bubbles. Pull up tack points before squeegeeing over them to avoid wrinkles.

Remove Pre-mask

If safety decal has a pre-mask cover remove it at this time by pulling it away from the decal at a 180 degree angle. NOTE: It is important that the pre-mask covering is removed before the decal is exposed to sunlight to avoid the pre-mask from permanently adhering to the decal.

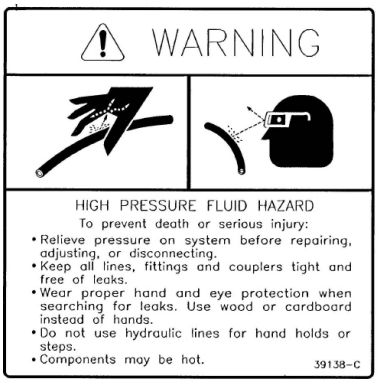
Remove Air Pockets

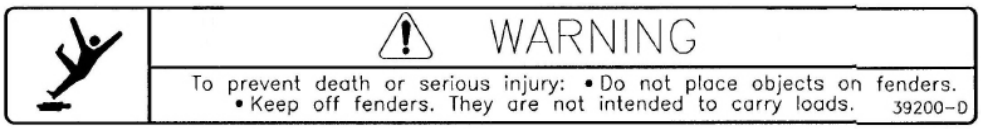
Inspect the decal in the flat areas for bubbles. To eliminate the bubbles, puncture the decal at one end of the bubble with a pin (never a razor blade) and press out entrapped air with thumb moving toward the puncture.

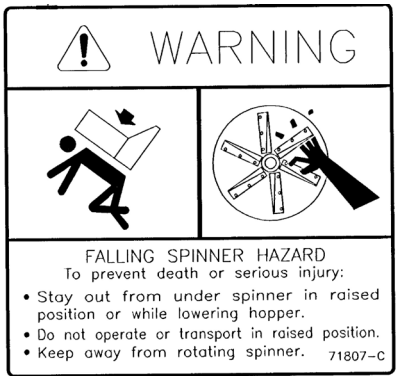
Re-Squeegee All Edges


DANGER
MOVING PART HAZARD
To prevent death or serious injury:
• Stay out of box while conveyor is moving.
• Disconnect and lockout power source before adjusting or servicing.
• Do not ride on spreader.
364-C

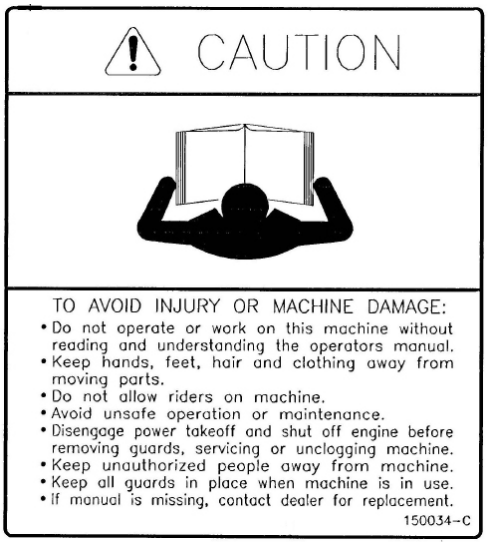

DANGER
FLYING MATERIAL & ROTATING SPINNER HAZARD
To prevent death or serious injury:
• Wear eye protection.
• Stop machine before servicing or adjusting.
• Keep bystanders at least 60 feet away.
388-C


WARNING
HIGH PRESSURE FLUID HAZARD
To prevent death or serious injury:
• Relieve pressure on system before repairing, adjusting, or disconnecting.
• Keep all lines, fittings and couplers tight and free of leaks.
• Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
• Do not use hydraulic lines for hand holds or steps.
• Components may be hot.
39138-C

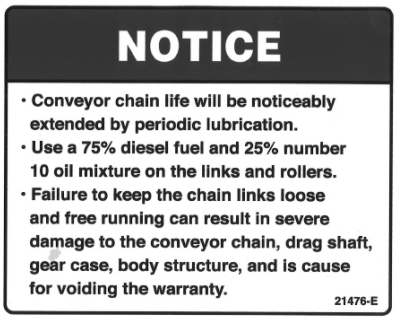

WARNING
To prevent death or serious injury: • Do not place objects on fenders.
• Keep off fenders. They are not intended to carry loads.
39200-D

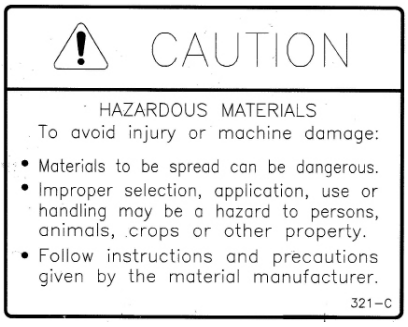

WARNING
FALLING SPINNER HAZARD
To prevent death or serious injury:
• Stay out from under spinner in raised position or while lowering hopper.
• Do not operate or transport in raised position.
• Keep away from rotating spinner.
71807-C


WARNING
FALLING HAZARD
To prevent death, serious injury or machine damage:
• Do not stand or climb on guard.
55630-D


CAUTION
TO AVOID INJURY OR MACHINE DAMAGE:
• Do not operate or work on this machine without reading and understanding the operators manual.
• Keep hands, feet, hair and clothing away from moving parts.
• Do not allow riders on machine.
• Avoid unsafe operation or maintenance.
• Disengage power takeoff and shut off engine before removing guards, servicing or unclogging machine.
• Keep unauthorized people away from machine.
• Keep all guards in place when machine is in use.
• If manual is missing, contact dealer for replacement.
150034-C


WARNING: Cancer and Reproductive Harm-
www.P65Warning.ca.gov
315865-A


NOTICE
• Conveyor chain life will be noticeably extended by periodic lubrication.
• Use a 75% diesel fuel and 25% number 10 oil mixture on the links and rollers.
• Failure to keep the chain links loose and free running can result in severe damage to the conveyor chain, drag shaft, gear case, body structure, and is cause for voiding the warranty.
21476-E


CAUTION
HAZARDOUS MATERIALS
To avoid injury or machine damage:
• Materials to be spread can be dangerous.
• Improper selection, application, use or handling may be a hazard to persons, animals, crops or other property.
• Follow instructions and precautions given by the material manufacturer.
321-C

INSTALLATION

INSTALLATION

In mounting the Model E2020XT spreader on a truck, the following questions must be considered:

1. Is the CA (Cab to Axle) dimension of the truck (for chassis mounting) and/or the length of the truck's dump body (for dump body mounting) correct for the length of the spreader?

To answer this question, the following chart will assist in matching spreader to truck:

Spreader Inside Body Length (Feet)	Truck CA/CT Dimension (Inches)	Truck Dump Body Length (Feet)
9	72 CA	9
10	84 CA	10
11	84 CA	11
12	102 CA	12
13	102 CA/108 CT	13
14	120 CT	14
15	130 CT	15
16	138 CT	16

NOTICE The Cab to Axle/Tandem dimensions are only guidelines. Consult federal, state and local weight laws and chassis manufacturer's ratings to ensure neither government weight restrictions, nor GVWR and GAWRs are exceeded.

2. Is the truck's GAWR (Gross Axle Weight Rating) and the GVWR (Gross Vehicle Weight Rating) adequate to carry the fully loaded spreader?

To answer this question, refer to your Hi-Way dealer. He knows where to find the GAWR and GVWR for most trucks, and how to calculate the weight distribution on each axle and total loaded vehicle weight.

3. How will the hydraulic pump be driven?

The answer to this question will depend upon the availability of means to drive a pump that exist on the particular truck chosen for the mounting. Your dealer should be able to help here as well. However, the pump to be used will be determined by both the pump drive selected and the hydraulic control system chosen. If an auxiliary engine drive for the pump has been selected, the pump will come already installed and no further mounting will be necessary. If another pump drive arrangement has been chosen, you should have been supplied one of the following pumps to meet your requirements:

PUMP DRIVE	HIGHWAY EQUIPMENT PART NUMBER
Auxiliary Engine Drive	88496
Electric Clutch V-Belt Drive	34569
Transmission PTO	24759-X1

Except for the Electric Clutch V-Belt Drive arrangement, which is based on driving pump at engine speed (3000 RPM expected), the above pump selections are based on an expected engine operating speed of 3000 RPM and a 50% PTO. This results in an expected pump speed of 1500 RPM (Pump speed equals engine speed times PTO percentage divided by 100). If the PTO percentage available on the truck used differs by more than 10% from this figure, consult your dealer for recommendations. Too high a PTO percentage may overspeed the pump and may also cause pumping of excess oil so that overheating of the hydraulic system results. Too low a PTO percentage may pump too little oil so that inadequate spinner and conveyor speeds result, especially at lower engine speeds.

If you are supplying your own pump, the system requires a hydraulic pump rated for 1500 PSI operation and has a capacity at maximum engine operating speed of:

20 - 25 GPM for the "Dual Control" system with 1500 psi relief valve.

Pumps for Electric Clutch V-Belt Drive or Crankshaft PTO mounting must operate in engine rotation direction (pump shaft must rotate in same direction as engine crankshaft). Those used for transmission PTO mounting are through shafted and can operate on PTO's of either direction or rotation.

Recommended sequence of installation is as follows:
1. Mounting of pump and pump drive.
2. Installation of cab controls.
3. Mounting of spreader.
4. Installation of hydraulic hose and electrical wiring.
5. Filling hydraulic tank and lubrication.
6. Checking for leaks and functioning.
7. Installation of optional assemblies.

Hydraulic Pump Installation

Transmission PTO Drive

A mounting bracket for the hydraulic pump is shipped with the spreader. It may be necessary to modify this bracket to fit your truck since many variable factors, such as PTO make and model, muffler position, transmission make and model, etc., all affect the mounting position. DO NOT WELD THE BRACKET TO THE TRUCK FRAME. To do so may void the truck manufacturer's warranty.

Position the mounting bracket so that the pump drive shaft will be as straight as possible. In no case may the angle at any universal joint exceed 15 degrees. The pump shaft and the PTO shaft should be parallel. (Figure 1.)

Crankshaft PTO Drive

As a crankshaft PTO drive normally requires repositioning of both truck radiator and front bumper, it is recommended that the truck be procured by specifying that it be adapted for front crankshaft PTO installation. A crankshaft adapter to fit either a "Spicer" type or "Mechanics" type universal joint companion flange should also be specified.

If the vehicle is not already adapted for front crankshaft PTO installation the following steps must be taken:

A crankshaft adapter described above must be supplied. The radiator must be raised or modified to allow the PTO drive line to pass beneath it. The radiator fan must also clear all parts of the PTO drive line. The fan shroud, if any, must be modified to suit the new radiator position. It is recommended that your local dealer or radiator specialist be consulted for guidance.

The front bumper must be moved forward far enough to clear all PTO components. A mounting channel is to be fabricated locally to provide a mounting surface on which the PTO cast mounting plate is to be bolted. The shaft centerline of the PTO must be positioned parallel to the engine crankshaft centerline. The universal joint timing is to be as shown in Figure 1.

The pump drive control cable is to be located at a convenient point in the truck cab, usually on the instrument panel, and run to the pump drive engaging lever on the PTO. Avoid sharp bends in the cable, moving parts and hot manifold and exhaust pipe. Secure cable sheath near the end and at frequent intermediate points with cable clips.

Electric Clutch V-Belt Drive

As available space around truck engine varies greatly from model to model, no specific mounting instructions can be given. The electric clutch pump assembly supplied will be rear ported and have two 7.082 inch (18cm) diameter V-Belt pulleys for 1/2" (1.27cm) A-section V-belts. Two equal V-belt sheaves of approximately 6" (15.24cm) to 7" (17.78cm) diameter must be mounted on the front end of the engine crankshaft. Two V-belts of 1/2" (1.27cm) A-section rated at 100 pounds per belt must be procured.

A mounting bracket to provide adequate belt adjustment must be fabricated locally. Your local truck dealer may be able to provide a bracket that can be readily adapted for this use. Check to be sure adequate belt, electric clutch, pump, hose and adjustment clearances are obtained.

Hydraulic hose and electric wire connections must be made to provide for adequate V-belt adjustment and to avoid interference with moving parts. Hot surfaces such as exhaust manifolds must be avoided.

Hydraulic Pump Drive Shaft

The pump drive shaft included may be too long for some installations. It may be cut and redrilled as necessary. When redrilling the shaft, be sure that universal joints are properly "timed."

Install the slip joint at the end of the pump drive shaft. Failure to install the slip joint will result in bearing failure in pump, PTO or both.

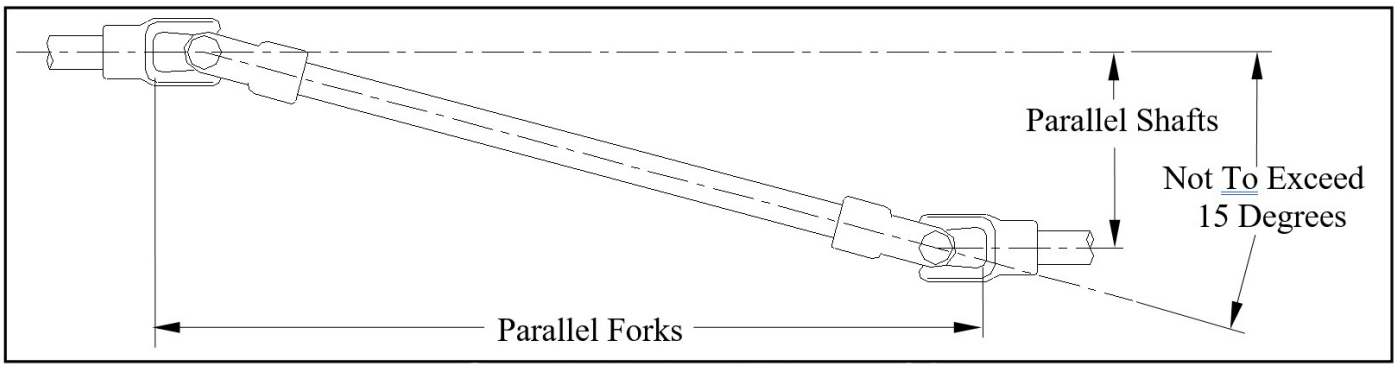


Figure 1 - Timing of Universal Joints

Hydraulic Reservoir & Filter Installation

The hydraulic reservoir is mounted on the truck frame on either side. It should be as close to the truck cab as practical and where the filler neck is accessible with the suction line being as short as possible. Drill four 7/16" (1.1cm) diameter holes through the frame channel for mounting the tank brackets. Bolt the reservoir into place.

Connect filter to reservoir using thread sealer.

NOTICE DO NOT PUT HOLES INTO TOP OR BOTTOM FRAME FLANGES. To do so may void truck manufacturer's warranty. When drilling holes in frame member, drill only through vertical web portions.

Cab Control Valve Installation

When selecting a location for the cab control, there are a number of things to consider:

1. Select a suitable location for the operator to adjust the control and to turn it ON and OFF.
2. Check for clearance with the seat in all positions.
3. Check the transmission gear shift in all gears for clearance with the valve and with the valve lever in the ON and OFF position.
4. If there are any other controls, such as parking brake, plow and wiring controls, check for clearance.
5. Under the cab, check for interference with transmission, etc.
6. Check to see that control valve installation does not interfere with entering or leaving the cab.
7. For the "Electric Dual Control System," the control valve is mounted on the right rear stake of the spreader. The control box is mounted wherever it is convenient to locate it inside the cab.
8. "Manual Dual Control System" valve arrangement may be mounted on the right rear stake, a pedestal (Optional Item) or directly to the floor of the truck cab.
9. "Automatic Dual Control System" mounting is similar to the "Manual Dual Control System" but requires additional vertical height.

⚠CAUTION All holes in the truck cab walls, floor and firewall for control wires, hoses and cables are to be grommetted, plugged and sealed to prevent entrance of engine fumes, dust, dirt, water, and noise. Failure to follow this requirement may result in injury or machine damage.

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Truck Chassis Installation

Chassis Mounting

Truck Frame Length:

In most cases, the truck frame must be shortened. The length from the rear of the cab to the end of the frame should be approximately as shown on the following chart.

MINIMUM RECOMMENDED FRAME LENGTH

Spreader Length - Feet	9	10	11	12	13	14	15	16
Minimum Frame Length - Inches	99	111	123	135	147	159	171	183

Wood Filler Strips

Hardwood filler strips (not supplied with spreader), one by three inches, must be installed the length of the frame behind the truck cab. Cut the filler strip to length and place on top of the truck frame rails. With a heavy hammer strike directly above each rivet head to mark the position of the rivet, if frame has rivets in top flange. Remove the filler strips and counterbore for the rivet heads. Replace the filler strips and hold them in place by bending anchor clips as shown in Figure 2. If the truck frame has fishplates on the top flange, it will be necessary to provide a level top surface by adding steel shim bars or strips of the same thickness as the fishplates and as wide as the frame channel top flange. These shim bars or strips must be drilled out to clear any rivet or bolt heads. DO NOT WELD these bars or strips to the truck frame. To do so may void truck warranty. Place the wood filler strips on top of them and secure both steel shims and wood filler strips by means of bending the anchor clips around them and the frame top flanges as shown in Figure 2. Each steel shim bar or strip and each separate wood filler strip should have three (3) anchor clips. Locate anchor clips between spreader body cross sills. Secure each anchor clip by driving 1/4" sheet metal screw through clip into wood filler strip as shown in Figure 2.

Positioning Body

Place the spreader body on the truck frame. Position body centrally with respect to the truck frame rails and approximately four inches to the rear of the cab. Check the position of the spreader at the rear to insure that the rear mounting angles can be properly positioned on truck frame and centered on rear cross tubes. Center filler plates under the ends of the cross channels where necessary to prevent the channels from gouging into the wood.

Lifting the Spreader

⚠WARNING Use only lifting devices that meet or exceed OSHA standard 1910.84 or ASME B30.20-2006. Never lift equipment over people. Never lift unit with anything or anybody in the body. Loads may shift or fall if improperly supported, causing damage to unit, injury or even death. Failure to comply with this requirement could result in death or serious injury.

⚠CAUTION Do not use lifting device to free unit from a chassis, storage stands or frozen ground, or to lift the chassis in any way. Shock loading is prohibited and sudden accelerations should be avoided. Failure to follow this requirement may result in injury or machine damage.

Always inspect unit lift points for signs of wear, cracking, corrosion, gouges, alterations, or distortion.

Always use a sling, spreader bar, or lifting bar that attaches to the lifting points with a minimum of 60 degrees from horizontal. It is preferable to use an "H" style lifting bar that keeps the attaching chains in a near vertical orientation as shown in Figure 1. Operators of lifting devices must be qualified and knowledgeable in their use and application.

Position the chassis with adequate room around the unit. Work in an environment that permits clear communication to others nearby. Keep area clear of persons when loads are to be lifted and suspended. Do not allow the lifted load to come in contact with any obstruction.

Store units on a solid surface using appropriate storage stands when not installed.

Attach lifting bar to spreader and remove slack. Remove Highway Storage Leg System (HSLS) if applicable. Lift spreader for installation onto truck chassis.

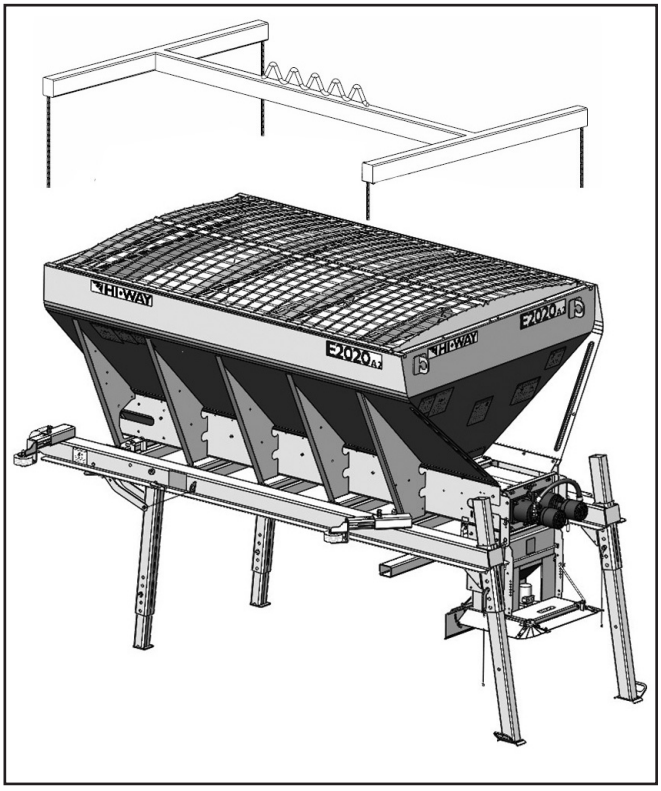

Figure 1 - Lifting Bar (HSLS Shown)

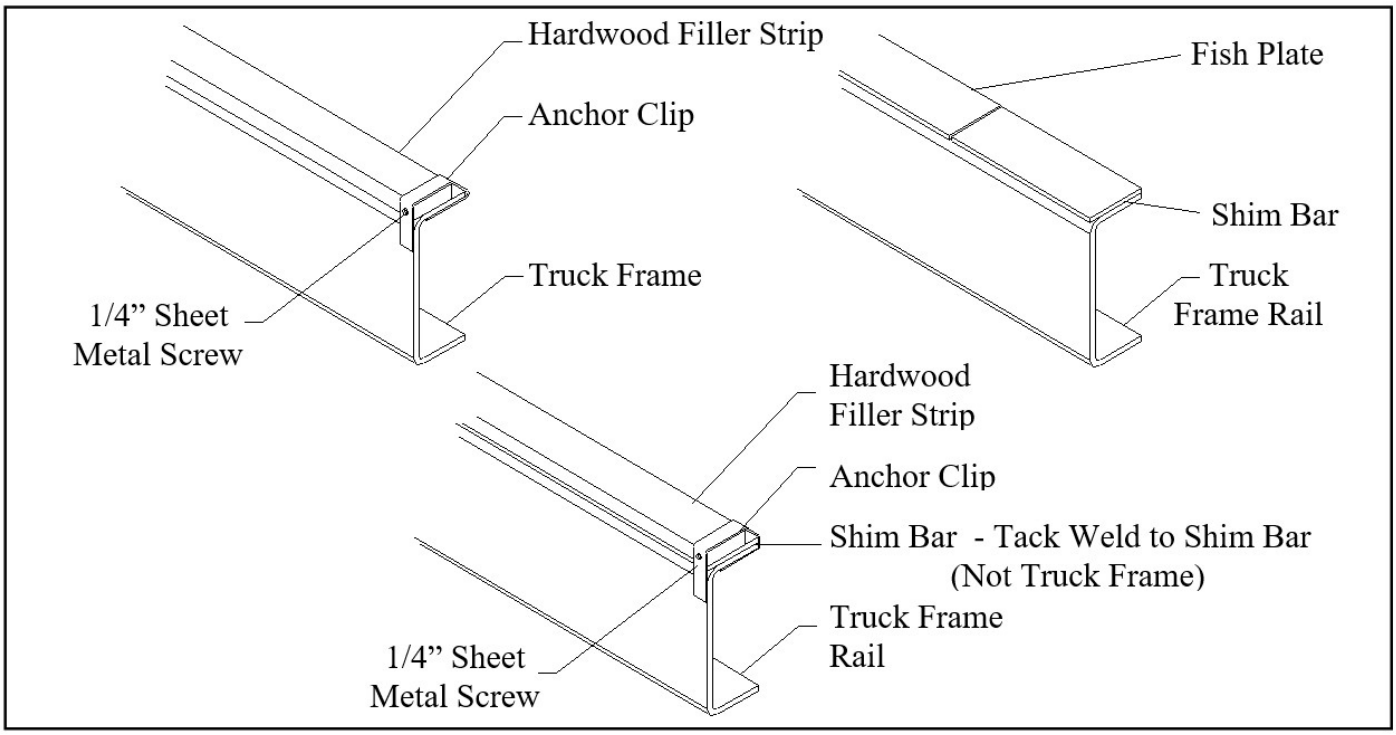

Figure 2 - Wood Filler Strips & Anchor Clips

NOTICE DO NOT PUT HOLES INTO TOP OR BOTTOM FRAME FLANGES. To do so may void truck manufacturer's warranty. When drilling holes in frame member, drill only through vertical web portions.

Installing Front Mounting Angles

Assemble the two front mounting angle springs and hardware. Use a 3/8" shim between the cross tube mounting plate and truck frame mounting angle. Position assembly under the second cross tube from the front and against the truck frame, make sure that the springs do not contact the cross tube. Mark the position of the holes in the mounting angle onto the truck frame. Drill two (2) 9/16" holes through the truck frame and install the mounting assembly using the 1/2" hardware supplied. Weld the mounting plate to the bottom of the cross tube on three sides and remove 3/8" shim. (Figure 4) Tighten the spring assembly until the compressed spring height is 3 5/8". There should be a 3/8" space between the cross tube mounting plate and the truck frame mounting angle. (Figure 3) Repeat this procedure on the other side of the truck frame, on the same cross tube.

Installing Center Mounting Angles (9 Foot through 11 Foot Bodies)

Position the center mounting angles at a convenient cross tube near the center of the body with the slotted faces against the truck frame. Weld on three sides the mounting angle to the bottom of the cross tube. (Figure 4) Do not install hardware, these mounting angles are for side-to-side support only. (Figure 3)

Installing Center Mounting Angles (12 Foot to 16 Foot Bodies)

Position the center mounting angles at a convenient cross tube near the center of the body with the slotted faces against the truck frame and mark the location of the slots on the truck frame. Drill two (2) 9/16" diameter holes through the truck frame, approximately 3/4" from the bottom of the slot. (Figure 3) Weld on three sides the mounting angle to the bottom of the cross tube. (Figure 4) Install hardware and torque according to torque chart.

NOTE: The position of the center mounting angles will vary from truck to truck due to obstructions, such as spring shackles, etc.

Installing Rear Mounting Angles

Position the rear mounting angles with the slotted faces against the side of the truck frame and centered on the rear cross sill. Mark the location of the slots on the truck frame. Drill two (2) 9/16" diameter holes through the truck frame at the bottom end of the slots. (Figure 3) Weld on three sides the mounting angle to the bottom of the cross tube. (Figure 4) Install hardware and torque according to torque chart.

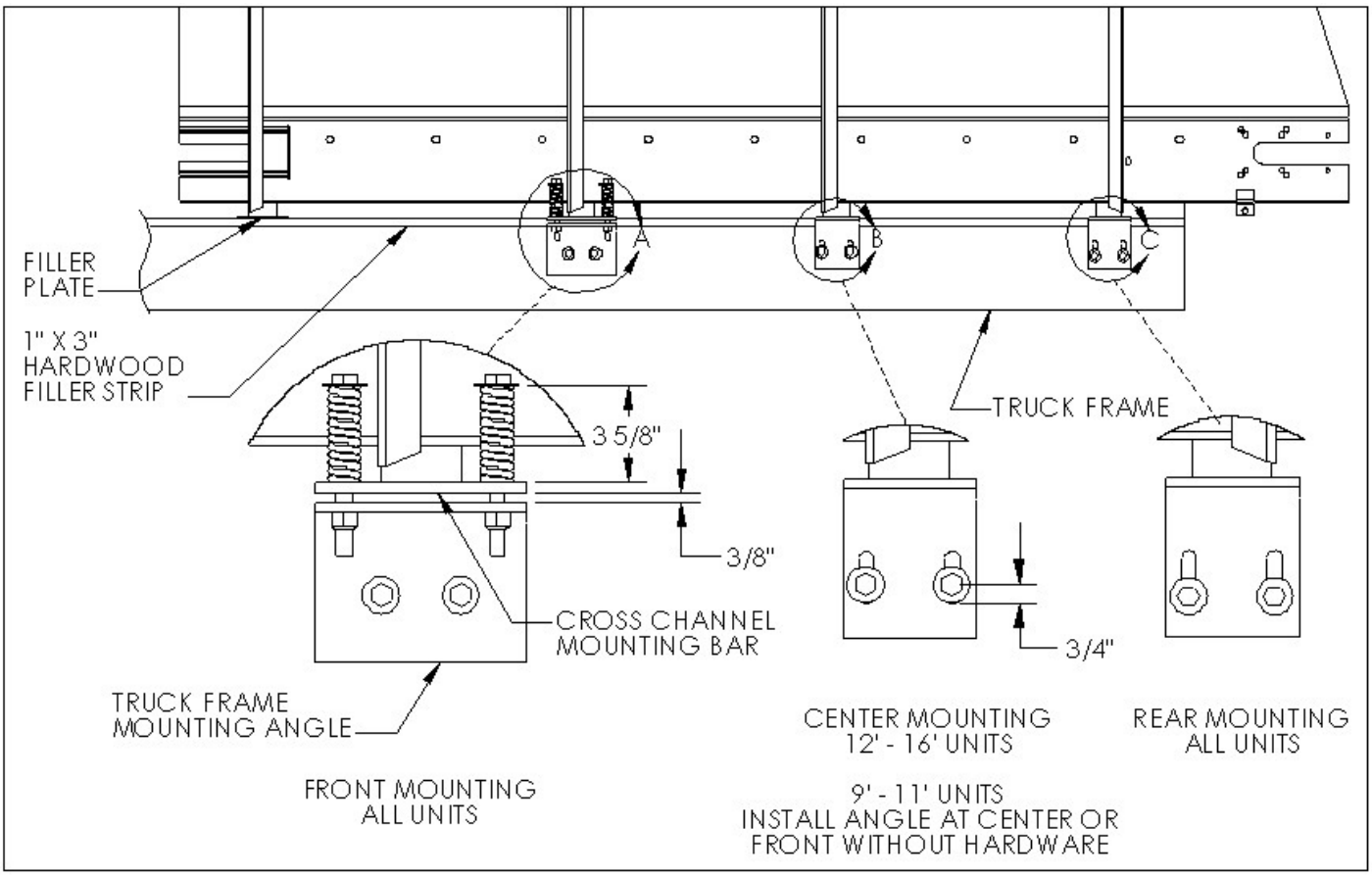

Figure 3 - Mounting Angle Installation

NOTICE DO NOT WELD TO VEHICLE FRAME! Such welding can lead to fatigue cracking and must be avoided.

⚠CAUTION When drilling holes, make sure that the drill will not puncture the gas tank or harm any other obstruction! Failure to follow this requirement may result in injury or machine damage.

Securing Spreader Body to Frame

Install the mounting angles and tighten the mounting bolts according to the torque chart. Weld the mounting angles to the spreader cross tubes by welding them on the front, outer and rear sides. (Figure 4) Be sure welds between mounting angles and spreader cross tubes are sound full fillet welds. Center mounting angles so good fillet welds can be made on three sides—an edge bead weld is not a satisfactory weld for this service. Use dry E6013 or E7018 rod for mild steel spreaders. On stainless steel spreaders, use type 308 welding rod.

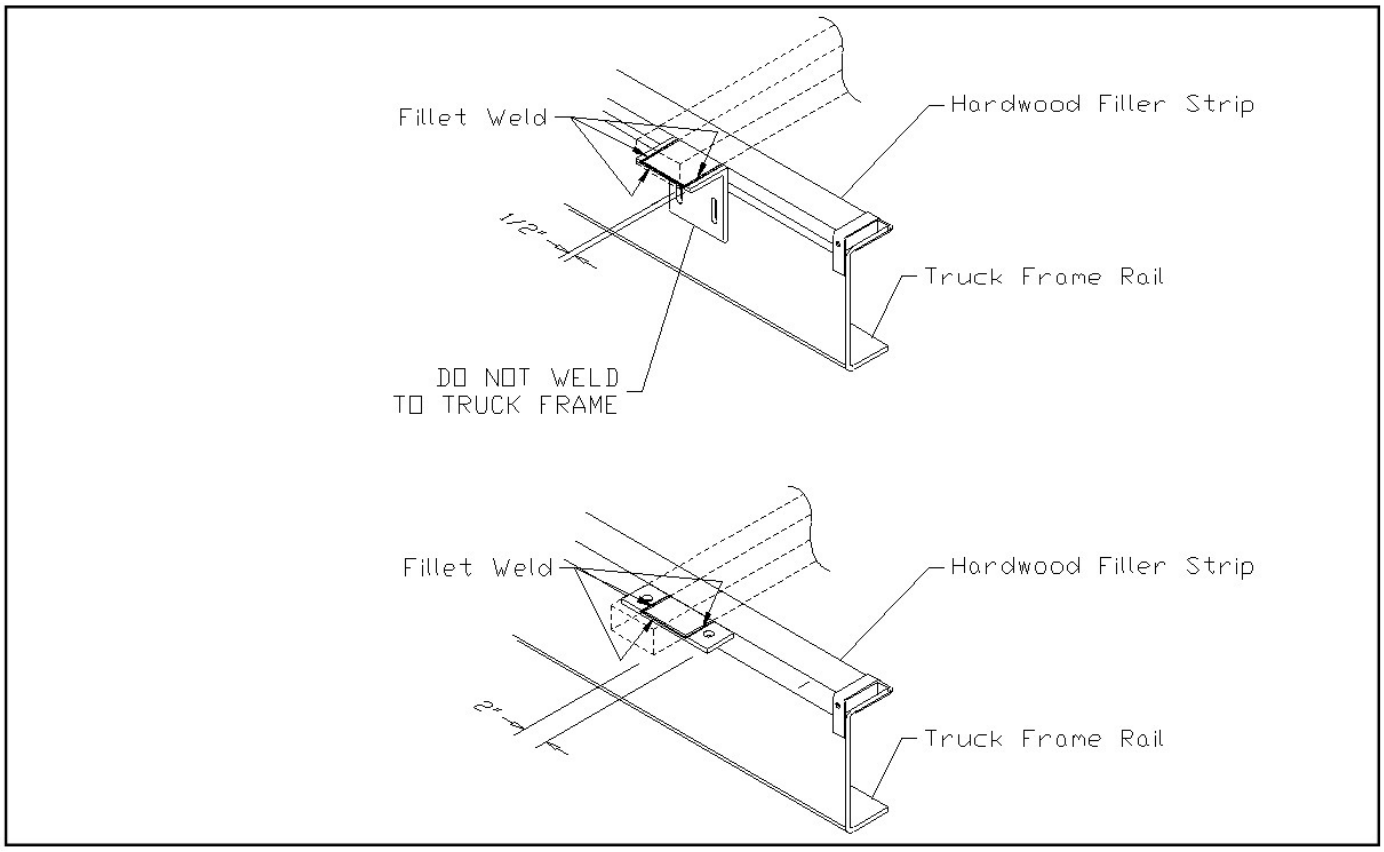

Figure 4 - Welding Instructions

NOTICE DO NOT WELD TO VEHICLE FRAME! Such welding can lead to fatigue cracking and must be avoided.

Dump Body Mounting - No HSLS

The unobstructed dump body should be approximately the same as the length of the spreader body.

1. Remove the tailgate from the dump body as well as any other object which will interfere with the spreader body. (We recommend removing the tailgate to prevent damage to the spinner hopper.)
2. Next, set the spreader in the dump body. (Rear cross sill must rest fully on the dump body floor.) Use the four (4) lift hooks located on each corner of the spreader to lift the spreader. Be sure adequate clearance for the spinner hopper assembly is allowed.
3. With the hardware provided, mount the spinner hopper assembly to the spreader. Raise or lower spinner by means of adjustment holes and bolts in spinner hopper sides until spinner is approximately eighteen inches (18") above ground level.
4. Move the spreader as far forward as possible without having the spreader or spinner hopper contact the body. Make sure the hopper is centered from side to side in the dump body.
5. Attach the four (4) hold down clamps to the spreader with the hardware provided. Shorten the chain before tightening nuts. (See illustration in parts listings.)

NOTICE After body is loaded and after an hour or so of operation, retighten the clamps. Strains during operation may loosen them.

6. Tailgate latching device is mounted by setting the channel weldment into the tailgate latches and secure. Set the brackets in place. Drill and bolt these to the sills and to the channel. The shafts at the end of the channel should be trimmed to suit the dump body. Use the collars as spacers on each shaft just inside of each tailgate latch. (See illustration in parts listings.)

Dump Body Installation - With HSLS

Spreader Preparation

Roller Sidebars

The four roller sidebars are intended to guide the spreader along the sidewalls during loading and unloading. Settings on each side of the spreader must be equal to center spreader on the dump body.

NOTE: If the dump body has large radiused corners, the sidebars can be flipped to increase the height of the roller.

1. Measure the inside width of the dump body at the front just above any radiused corner.
2. Measure the distance between the two front rollers on the spreader as shown in Figure 1. Start from the outside edge of one roller and measure to the outside edge of the opposite roller.

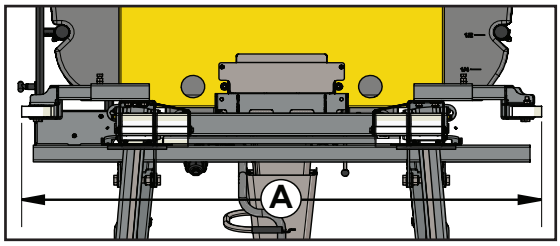

Figure 1 - Distance Between Front Rollers

3. Adjust the roller sidebars as necessary so distance between rollers is just less than the inside width of dump body:
   a. Loosen the locknut (A) and bolt (B) on top of side bar.
   b. Adjust roller sidebars as shown in Figure 2. Align bolt with sidebar hole.
   c. Verify the distance between two front rollers. Adjust if necessary.
   d. Tighten bolt so it is securely in sidebar hole.
   e. Tigthen locknut.

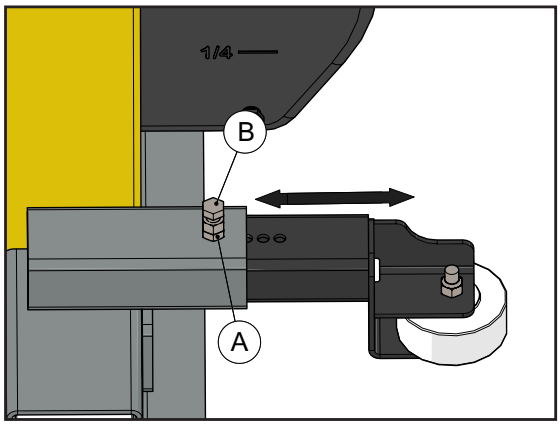

Figure 2 - Adjust Roller Sidebars

4. Repeat for the two rear roller sidebars.

Loading

The Highway Storage Leg System (HSLS) is designed to be used where the dump body floor is between the height of 50" to 62". The height of the legs will need to be adjusted for first time use to match the dump body floor height. The legs should be adjusted so the spreader sits level or slightly elevated at the front.

Check to make sure the vehicle is suitable for the spreader. Consider all other auxiliary equipment such as front snow plows, wings and scrapper blades. Consider the total weight of the spreader, liquid and granular materials.

The dump body floor must be clear of sand, salt, snow, ice or any other debris and the four rubber pads should always contact the floor when the spreader is installed.

1. Raise loading platform approximately 10°.

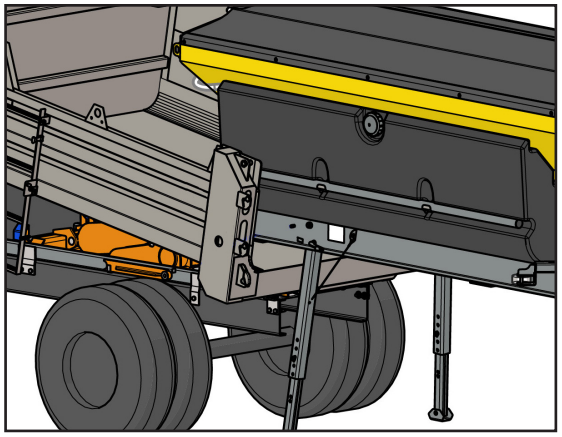

Figure 1 - Loading

2. Figure 1 - Back truck underneath spreader until spreader's front leg supports leave the ground.

3. Apply truck's parking brake and chock wheels.

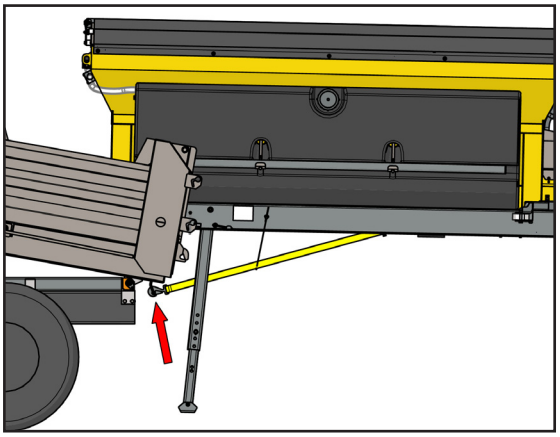

Figure 2 - Attach Safety Strap

4. Figure 2 - Attach safety strap to chassis and tighten so strap is taut. Front legs remain locked.

5. Figure 3 - Remove front leg locking pins (A). Store front leg locking pins in hole (B).

NOTE: On high truck floors and short spreader bodies, the front legs may need to be shortened to fold up.

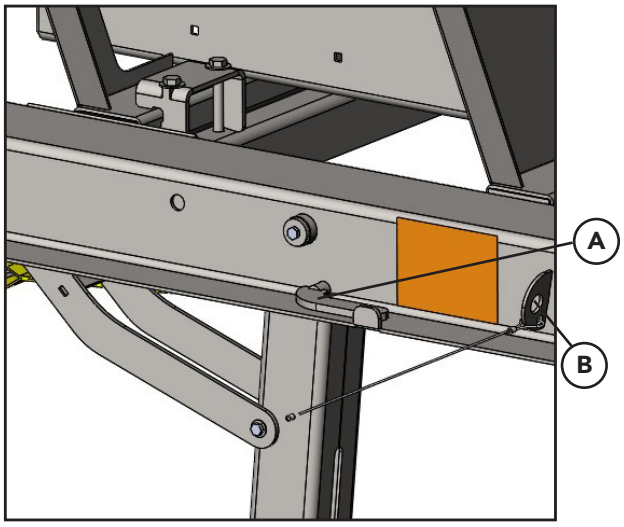

Figure 3 - Leg Support Lock Pin

NOTICE Spreader angle may need to be increased or decreased to properly position on truck.

6. Figure 4 - Continue to back dump body underneath spreader until truck makes contact with spreader.
7. Apply truck's parking brake and chock wheels.

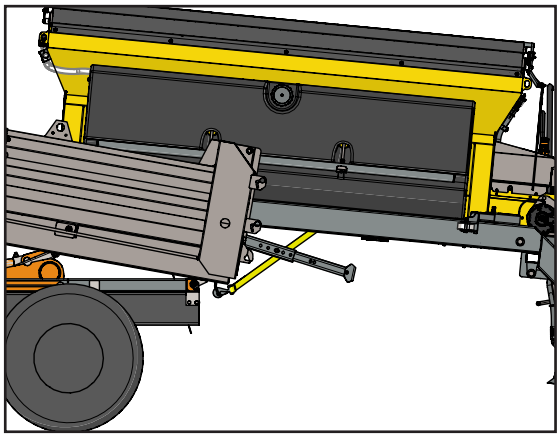

Figure 4

8. Figure 5 - Lower the dump body completely. The rear legs should be off the ground.

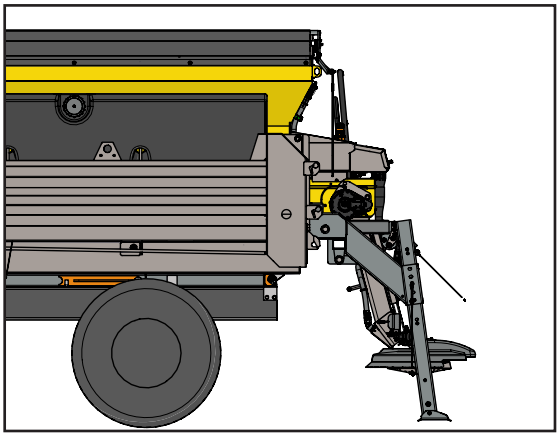

Figure 5

9. Figure 6 - Raise rear legs:
   a. Remove lock pin (A).
   b. Grip rear leg at handle (B).
   c. Lift leg above the height of the spinner.
   d. Insert lock pin into hole (C).

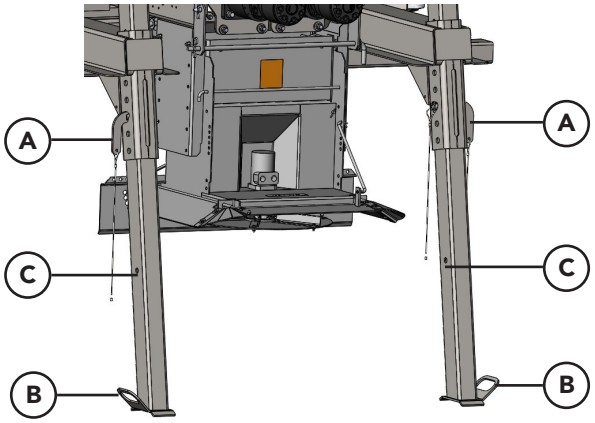

Figure 6 - Rear Leg detail

10. Secure spreader. See Securing Spreader section.
11. Hook up all connections between spreader and chassis.

Securing Spreader

⚠WARNING Inspect securing devices and tie-down points for wear and tear. Replace securing device and repair tie-down points if any sign of wear or damage. Make sure securing devices do not contact sharp edges, moving or hot components. If securing device fails, spreader could slide causing damage or serious injury. Failure to comply with this requirement could result in death or serious injury.

Spreader must be secured to dump body to eliminate movement caused by braking, cornering and acceleration of truck. Operator is responsible for supplying and attaching appropriate securing devices as the spreader can be installed in many different types of dump bodies with a variety of tie downs. The Federal Motor Carrier Safety Administration may be used as a guide for securing loads.

Ensure roller sidebars are correctly positioned to restrict side-to-side movement.

⚠CAUTION Avoid sharp edges and corners when attaching straps to prevent personal injury. Failure to follow this requirement may result in injury or machine damage.

Secure spreader to chassis and dump body with ratchet straps, mounting to the securing hooks located at each corner of the spreader, on the top and the sides.

Removal From Dump Body

Reference illustrations on previous pages in reverse order as necessary.

1. Empty spreader of all liquid and granular materials.
2. Drive to level, firm surface to unload spreader. Take truck out of gear and set parking brake.
3. Disconnect all hydraulic and electrical connections from spreader to truck.
4. Remove devices used to secure spreader.
5. Lower rear legs of spreader to approximately 1" (5cm) from ground and lock in position.
6. Ensure safety strap on bottom side of spreader is still connected to dump body.
7. Raise dump body approximately 10°, so the spreader's rear legs touch the ground and the rubber pads lift off of the dump body floor.
8. Drive truck forward, sliding spreader out of box unil front leg locking pins can be removed.
9. Drive truck forward until front legs fold down.
10. Take truck out of gear, set parking brake and chock wheels.
11. Set front legs approximately 1" (5cm) from ground and lock in position. Secure in upright position with locking pin through subframe.
12. Unhook safety strap from truck.
13. Slowly drive truck out from under spreader. Lower dump body.

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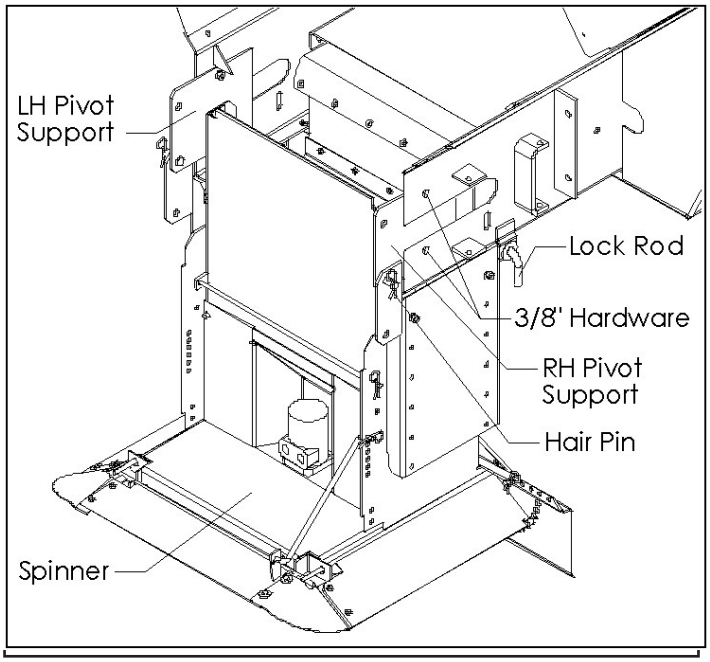
Spinner



Parts needed:

Description	Qty
Spinner	1
Pivot Support – RH & LH	2
Hair Pin	2
Cap Screw – 3/8 x 3/4	4
Lock Washer – 3/8	4
Hex Nut – 3/8	4
* Carriage Bolt – 1/2 x 1	2
* Flat Washer – 1/2	2
* Lock Washer – 1/2	2
* Hex Nut – 1/2	2

* - Not Shown, See Below
**NOTE: See parts lists at the back of this manual for Driveline and Underslung Spinner mounting hardware.

Figure 5 – Spinner Installation (Direct Drive shown**)

Place pins of Pivot Supports through sides of Spinner as shown in Figure 5 and insert Hair Pins. Position Spinner and Pivot Supports inside bottom of E2020XT and align holes. (NOTE: Driveline Spinner mounts outside of bottom sills.) Place supports under Spinner so hardware can be installed. Attach Pivot Supports to bottom of unit with 3/8" hardware. Tighten to recommended torque. Install Lock Rod and secure with cotter pin.

* NOTE: The 1/2" hardware may be used in place of Lock Rod to attach Spinner to bottom lip of unit so spinner will not pivot.

⚠WARNING Testing should be conducted in approved test stands with adequate guards to protect the operator. Failure to comply with this requirement could result in death or serious injury.

Extended Spinner

Spinner can be adjusted by removing extension hardware from side of spinner and lowering spinner weldment to appropriate level for spreading. Replace hardware. Remove Chute Lock Rod (Figure 16) and rotate Chute to remove hardware from both sides of chute extension. Raise chute extension the same number of holes as the spinner weldment was previously lowered. Replace hardware.

Dump-Over Chute

Refer to General Operating Procedures for "Dump-Over Chute Conversion" instructions.

Inverted V

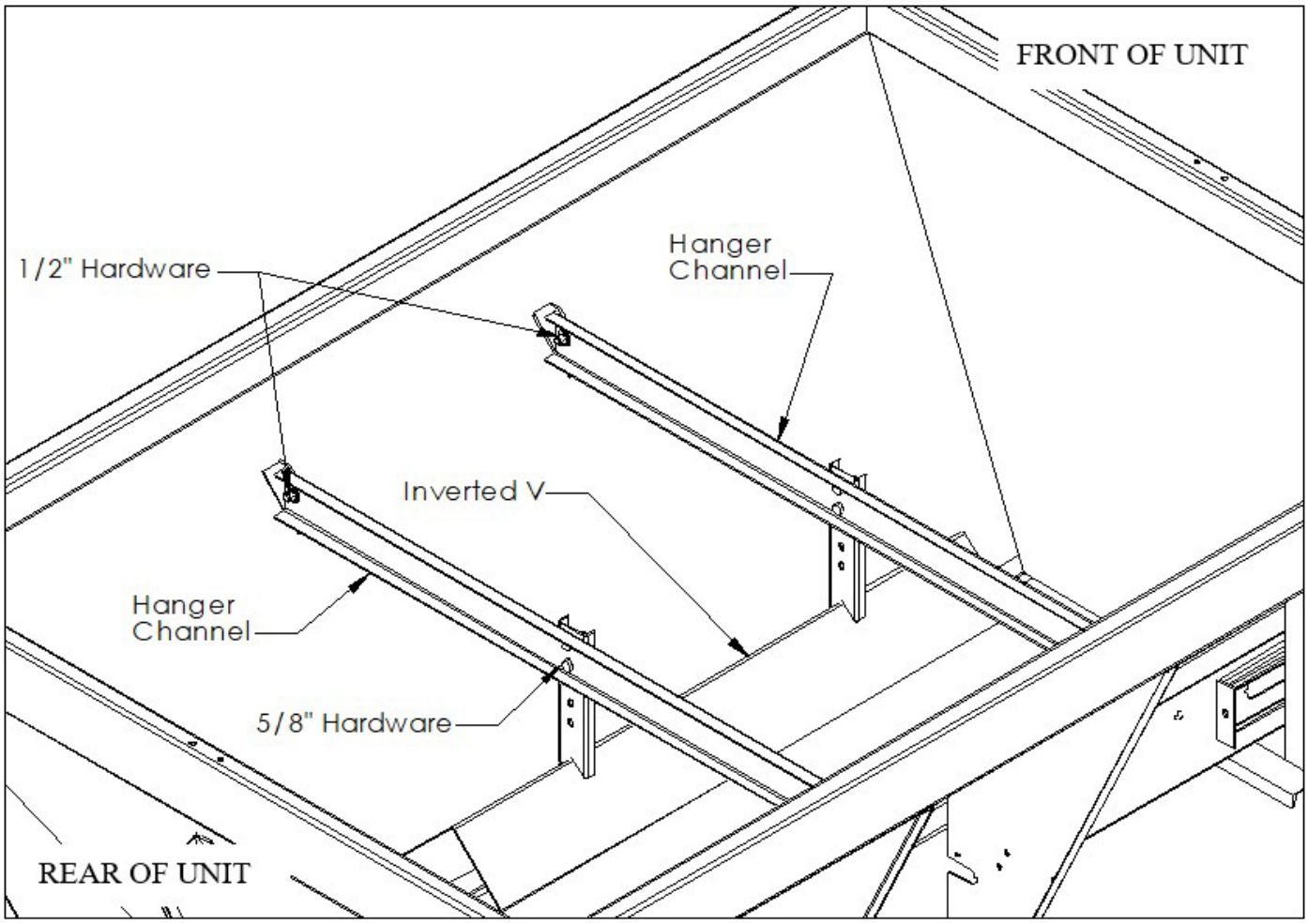


Figure 6 – Inverted V Installation

Description	Qty
Hanger Channel	2 or 3
Inverted V	1
Cap Screw – 1/2 x 1 1/4	4 or 6
Flat Washer – 1/2	4 or 6
Lock Washer – 1/2	4 or 6
Hex Nut – 1/2	4 or 6
Cap Screw – 5/8 x 1 3/4	2 or 3
Lock Nut – 5/8	2 or 3

Set Inverted V on the bottom inside the spreader body facing the direction shown in Figure 6. Attach Hanger Channels to the sides of the spreader body with the flanges facing the rear of the unit, using 1/2" cap screws, flat washers, lock washers and hex nut. Attach Inverted V to Hanger Channels using 5/8" cap screws and lock nuts. Tighten all hardware to recommended torques.

Fenders

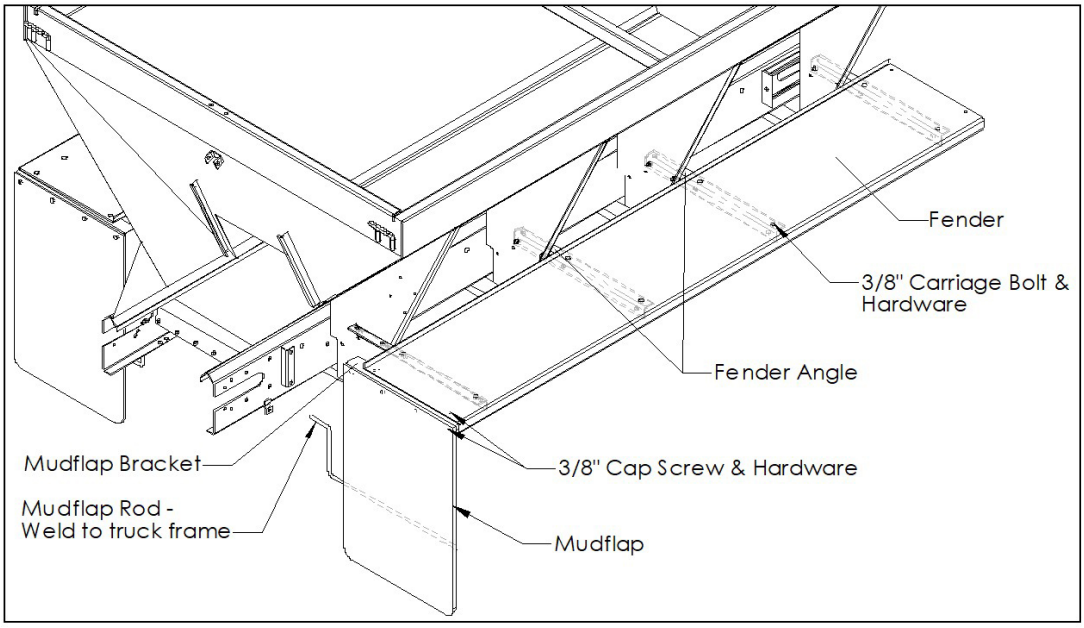


Figure 7 – Fender Installation

Parts needed:

Description	Qty
Fender Panel	2
Angle – Fender	AR
Carriage Bolt – 3/8 x 1	AR
Flat Washer – 3/8	AR
Lock Washer – 3/8	AR
Hex Nut – 3/8	AR

Attach fender angles to spreader stakes using 3/8" carriage bolts, lock washers and hex nuts as shown in Figure 7. Do not tighten the hardware at this time. Attach the fender panels on top of the fender angles using 3/8" carriage bolts, flat washers, lock washers and hex nuts. Tighten angle and panel hardware to recommended torque. Repeat on opposite side.

Mudflaps

Bracket – Mudflap Mount RH	1
Bracket – Mudflap Mount LH	1
Cap Screw – 3/8 x 1	12
Flat Washer – 3/8	12
Lock Washer – 3/8	12
Hex Nut – 3/8	12
Mudflap	2
Rod – Mudflap	2

Attach mudflap brackets to fender panels using 3/8" cap screws, flat washers, lock washers and hex nuts as shown in Figure 7. Install mudflap on brackets using remaining hardware. Place mudflap rod in front of the mudflap and find a suitable location to weld the rod onto the truck frame.

Ladder – Side

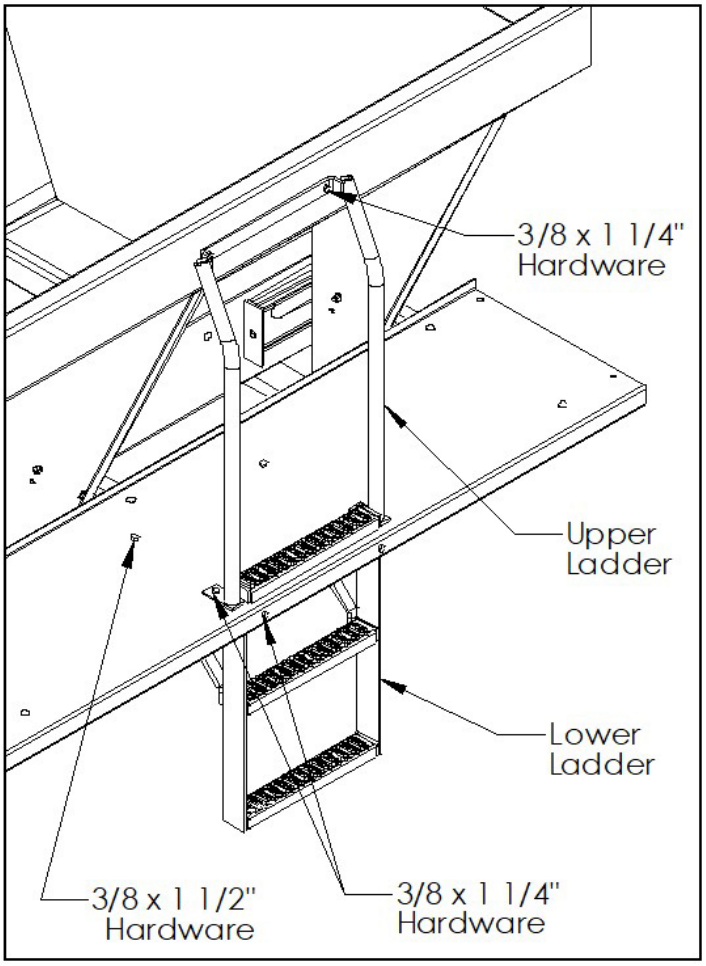


Figure 8 – Side Ladder Installation

Parts needed:

Description	Qty
Upper Ladder	1
Lower Ladder	1
Cap Screw – 3/8 x 1 1/2	2
Cap Screw – 3/8 x 1 1/4	6
Lock Washer – 3/8	8
Hex Nut – 3/8	8

Position upper ladder in a suitable location on fender as shown in Figure 8 and mark holes on side sheet and fender. Remove ladder and drill 7/16" holes. Attach to side sheet with hardware.

Align lower ladder below upper ladder and mark holes on lip and bottom of fender. Drill 7/16" holes. Attach lower ladder to fender, using longer cap screws on top of fender and shorter cap screws through lip.

Attach upper ladder to the fender using the remaining hardware. Tighten all hardware to recommended torque.

Ladder – Rear

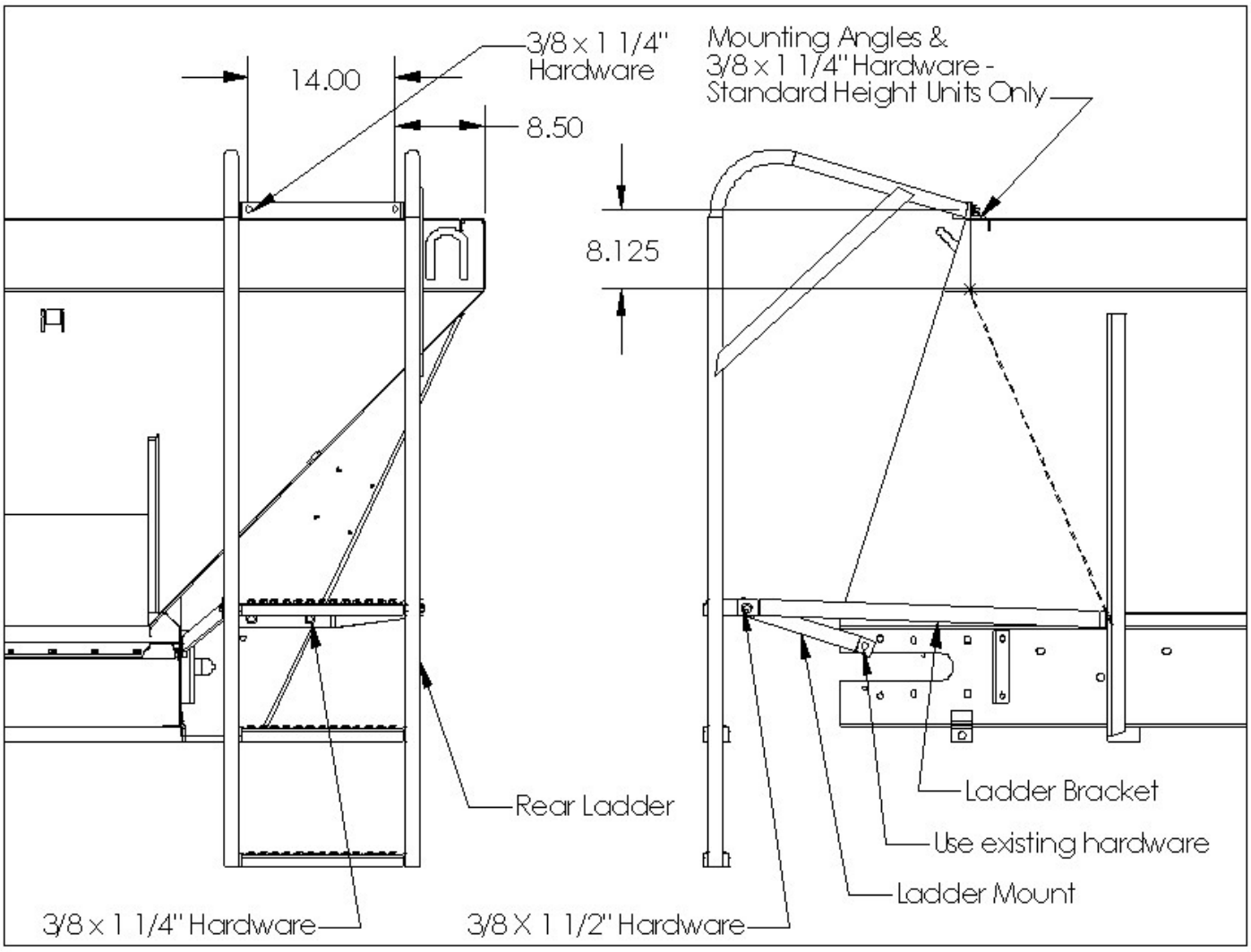


Figure 9 – Rear Ladder Installation

Parts needed:

Description	Qty
Rear Ladder	1
Ladder Bracket	1
Ladder Mount	1
Mounting Angle	2
Cap Screw – 3/8 x 1 1/2	2
Lock Washer – 3/8	8
Hex Nut – 3/8	8
Cap Screw – 3/8 x 1 1/4	6
Flat Washer – 3/8	4

On standard height units, position Mounting Angles on top of rear endgate as shown in Figure 9 and mark hole locations. On taller units, mark hole locations on vertical portion of rear endgate according to dimensions in Figure 9. Drill 7/16" holes. Install Mounting Angles, as required, and attach Rear Ladder to Mounting Angles or rear endgate with hardware.

Remove "existing hardware" (Figure 9) from bottom and use to install Ladder Mount. Position Ladder Bracket on Rear Ladder so bracket holes line up with holes in rear stake. Attach Rear Ladder to Ladder Bracket and Ladder Mount using longer cap screws. Use flat washers whenever there's a slot. Attach Ladder Bracket to rear stake with remaining hardware. Tighten all hardware to recommended torque.

Screens

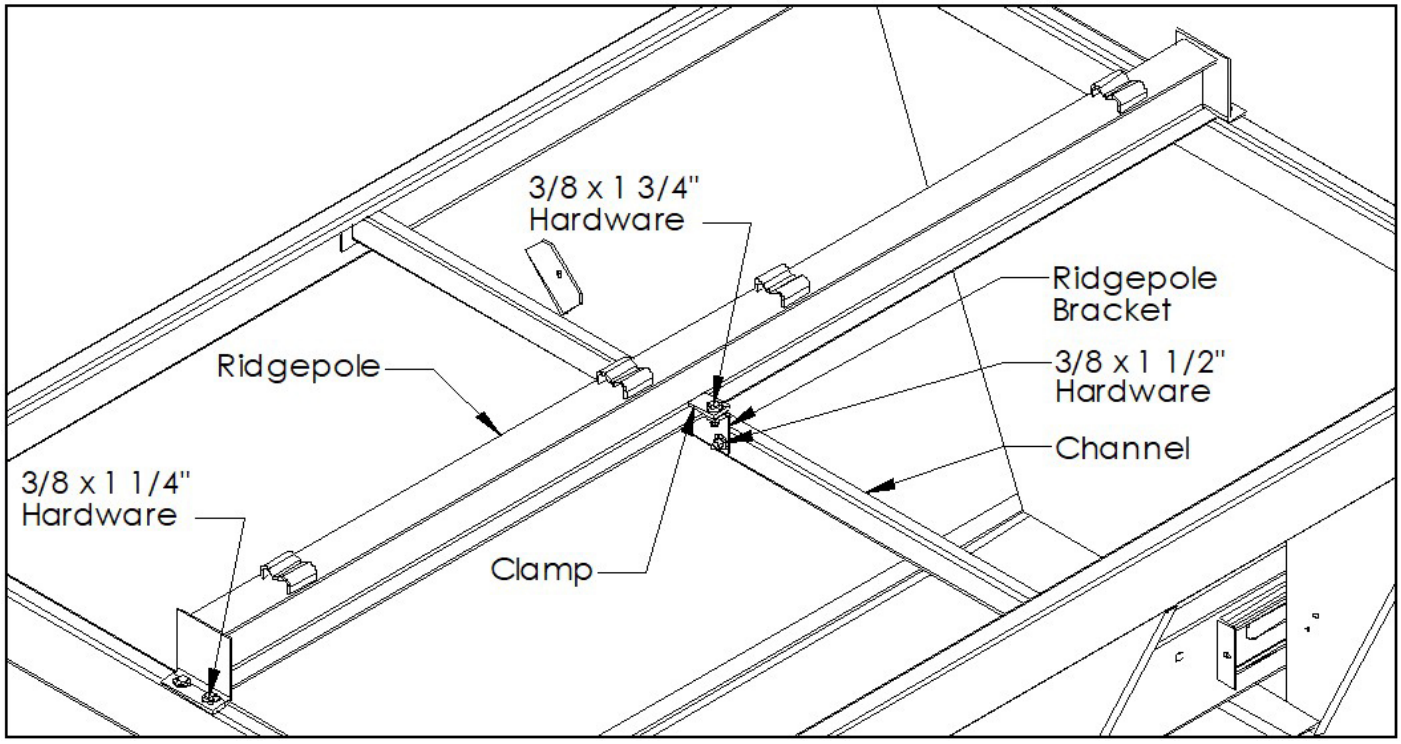


Figure 10 – Ridgepole Installation, 12' – 16' Units

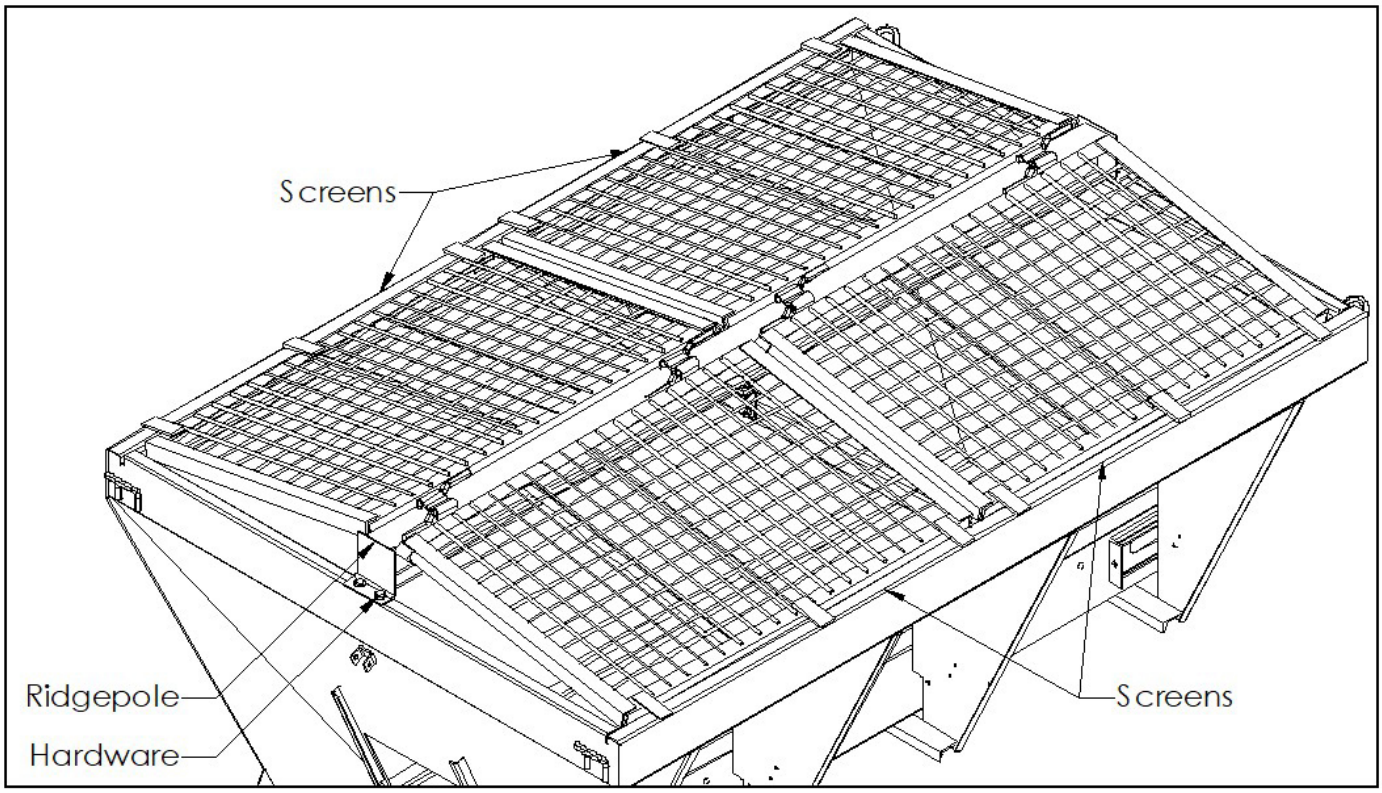


Figure 11 – Screen Installation

Installation Instructions Cont.

Parts needed:

Description	Qty
Screen	AR
Ridgepole	1
Ridgepole Bracket	1
Clamp	2
Cap Screw – 1/2 x 1 1/4	4
Cap Screw – 1/2 x 1 1/2	2
Cap Screw – 1/2 x 1 3/4	2
Flat Washer – 1/2	12
Lock Washer – 1/2	8
Hex Nut – 1/2	8

Note: Not all parts are needed for 9′ to 11′ units.

9′ – 11′ Units

Align slots in Ridgepole with holes in top of endgates and loosely attach with 3/8″ x 1 1/2″ hardware.

12′ – 16′ Units

Attach Ridgepole Bracket to channel as shown in Figure 10, using 3/8 x 1 1/2″ hardware. Tighten to recommended torque.

Align slots in Ridgepole with holes in top of endgates and loosely attach with 3/8 x 1 1/2″ hardware.

Install Clamp on Ridgepole Bracket using 3/8 x 1 3/4″ hardware. Tighten hardware with bottom flange of Ridgepole between Clamp and Bracket as shown in Figure 10. Repeat on other side and tighten hardware to recommended torque.

All Units

Slide Screen hooks into retainers on Ridgepole as shown in Figure 11. Press outer sides of Screens into E2020XT body so that the tabs rest on the side sheets. Tighten Ridgepole hardware to recommended torque.

BUMPER

See the Bumper parts list in the back of this manual for parts needed and installation guidelines. Position bumper parallel to the ground, above the baffles, so it will not interfere with spreading.

Cab Shield

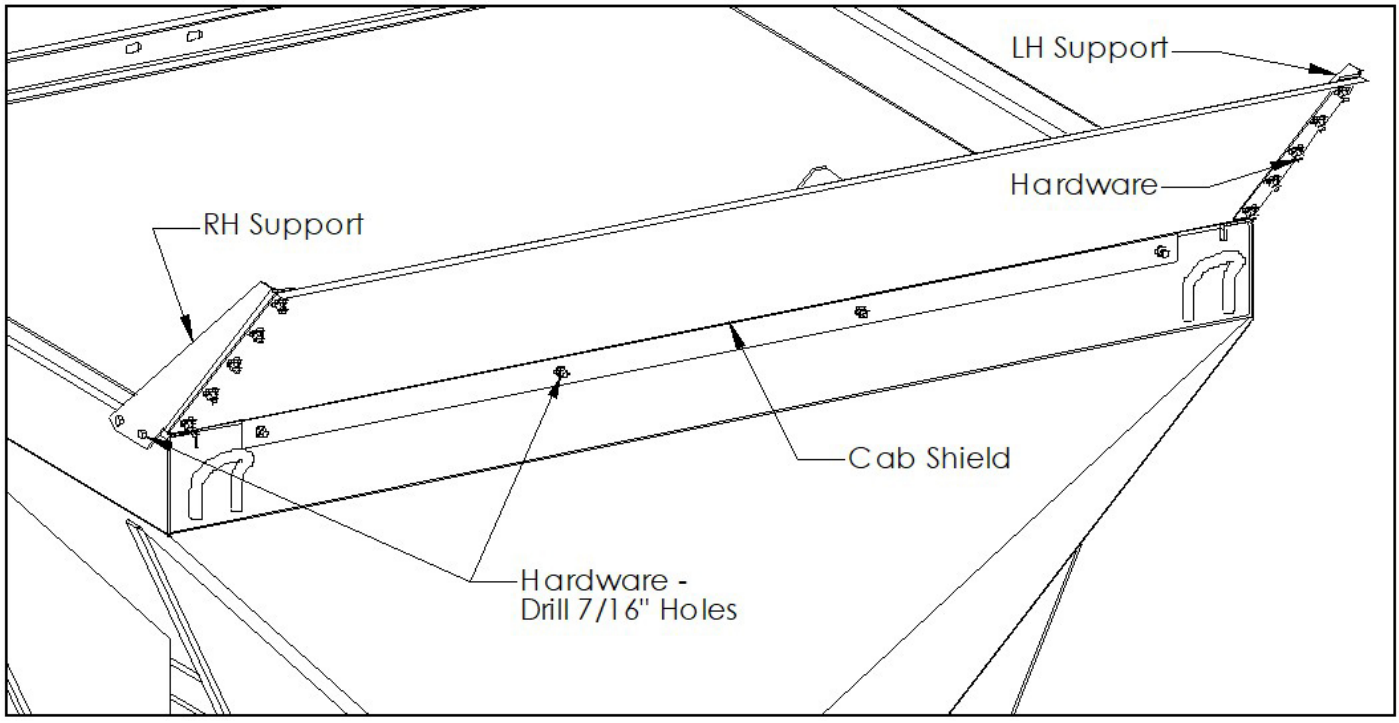


Figure 12 – Cab Shield Installation

Parts needed:

Description	Qty
Cab Shield	1
Support – RH & LH	2
Cap Screw – 3/8 x 1	AR
Flat Washer – 3/8	AR
Lock Washer – 3/8	AR
Hex Nut – 3/8	AR

Attach Supports to the Cab Shield using the hardware provided, but do not tighten. Center Cab Shield on front of the unit as shown in Figure 12 and mark the hole locations on the front endgate and both sides. Remove the Cab Shield and drill 7/16" holes where marked. Install Cab Shield using remaining hardware. Tighten all hardware to recommended torque.

Electric Dump Valve Control

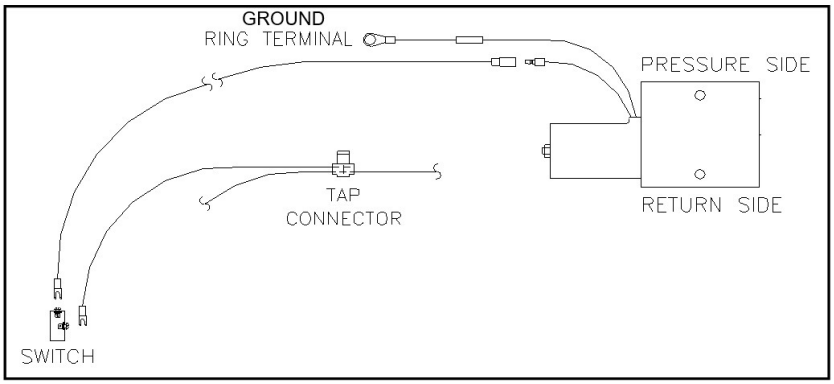


Figure 13 - Electric Dump Valve Control

Splice wire from switch into a wire that is fused with a two amp to four amp fuse using a tap connector. (See location of tap connector in Figure 13.) Ground ring terminal to manual dual valve hardware. Mount switch in dash or control panel in a location that is easily accessible while operating vehicle.

Control Panel

When selecting a location for the control panel, there are a number of items to consider:

1. Select a suitable location in the cab to mount the control panel, where it is easily accessed and viewed by the operator without obstructing normal driving view.
2. Check for clearance with the seat in all positions.
3. Check the transmission gear shift in all gears for clearance with the control panel.
4. If there are any other controls, such as parking brake or plow and wing controls, check for clearance.
5. Under the cab check for interference with transmission, exhaust pipe and transmission gear linkages.
6. Check to see that control panel location does not interfere with entering or leaving cab.
7. Route the cable through the cab wall to an easily accessible location at the rear of the truck body, within reach of the E2020XT connector.

⚠CAUTION All holes in truck cab floor or firewall for control wires, hoses or cables are to be grommetted, plugged and sealed to prevent entrance of engine fumes, dust, dirt and noise. Failure to follow this requirement may result in injury or machine damage.

8. Attach the connector mounting bracket to the truck and feed the cable through the center hole.
9. If necessary, trim cable to appropriate length. Assemble the connector as shown in Figure 14 and mount connector on bracket.
10. Attach the black wire of the two-conductor cable to a switched circuit and the white wire to a ground. NOTE: Disconnect vehicle battery prior to making any electrical connections.

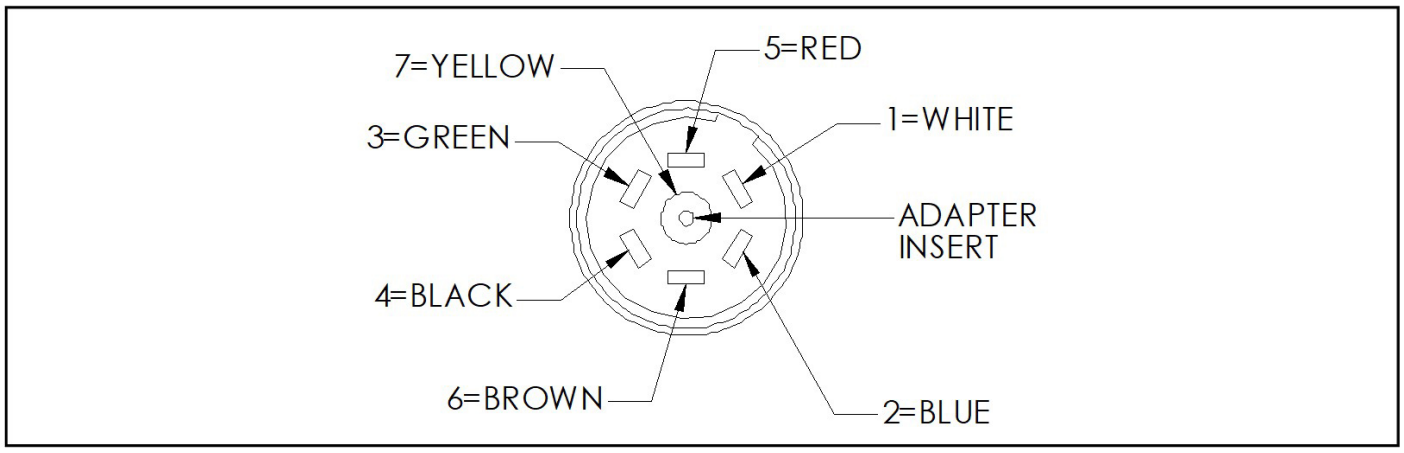


Figure 14 – Wire Connections

Hydraulic Hose Installation

Determine the pressure port of the pump. Install the pressure hose into this port as shown in Figure 15. Connect the suction hose to the opposite port and to the tank outlet on the reservoir. If necessary, use plastic tie straps to support hoses so that they will not catch on field obstructions or contact the muffler or moving parts.

Use thread sealer on all fittings, except "O" ring and JIC adapters, "O" ring valves and motors, etc. When using thread sealer, do not put it on the first three threads of the fitting. Too much sealer on the fitting or on the first three threads will force it into the oil stream where it could damage the system.

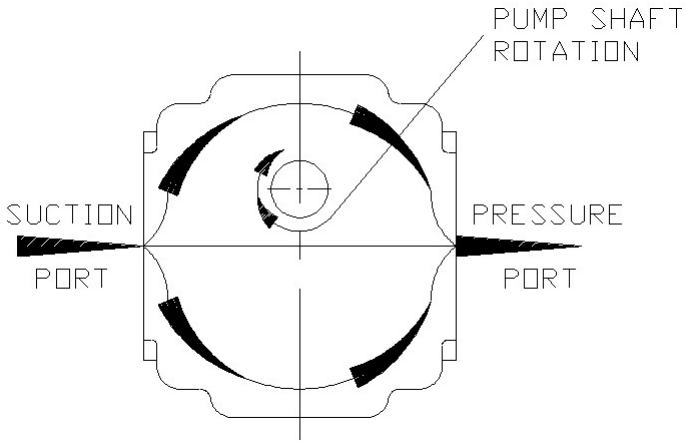


Figure 15 – Hydraulic Pump

⚠CAUTION If a threaded connection is tightened too tightly, the fitting or housing into which the fitting is placed could be distorted and an unstoppable leak could occur. Failure to follow this requirement may result in injury or machine damage.

Assemble the system as shown in the "Hydraulics System" parts list. Place the hose clamps as needed to keep hoses away from hot or moving parts. Do not let hoses hang so low as to be snagged. Do not stretch hoses tight.

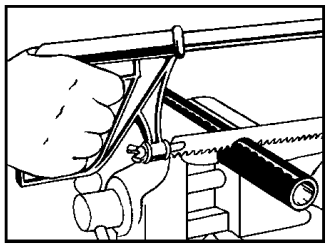
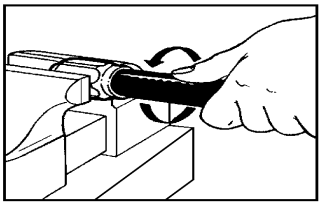
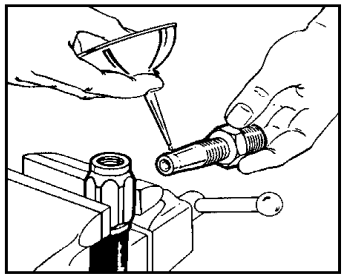
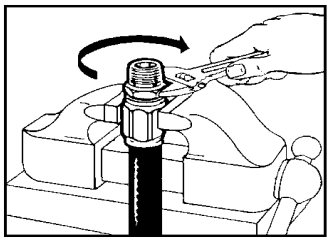
The hydraulic hoses supplied are as follows:

Pressure Line - Two wire braid hose, one end fitting crimped on, other end fitting to be field installed after cutting hose to length. See assembly instructions on the following pages.

Suction Line - Single spiral wire reinforced to be cut to length. Fittings to be assembled with double hose clamps.

All Return Lines - Double cotton braid to be cut to length as necessary. Fittings to be assembled with single hose clamps.

Reusable Non-Skive Type Ends

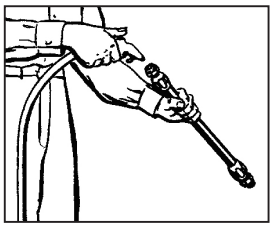
	**Step 1** Cut hose to length required using a fine tooth hacksaw or cut-off machine. Clean hose bore.
	**Step 2** Liberally lubricate hose cover with hose assembly lube. Place socket in vise and turn hose into socket counterclockwise until it bottoms. When assembling long lengths of hose, it may be preferred to put hose in the vise just tight enough to prevent from turning, and screw socket onto the hose counterclockwise until it bottoms.
	**Step 3** Liberally lubricate nipple threads and inside of hose. Use heavy weight oil.
	**Step 4** Screw nipple clockwise into socket and hose. Leave 1/32" (.08cm) to 1/16" (.16cm) clearance between nipple hex and socket. Disassemble in reverse order. Used with permission of the Aeroquip Company

⚠WARNING	Do not use one manufacturer's hose with another manufacturer's fittings! Such use will void any warranty and may cause premature burst or leak of hydraulic fluids! Such bursting or leaking may cause severe injury and/or fire! Failure to comply with this requirement could result in death or serious injury.

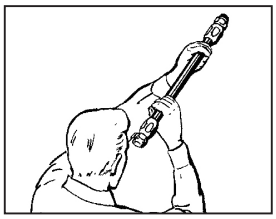
Hydraulic Hose Maintenance

Hose assemblies in operation should be inspected frequently for leakage, kinking, abrasion, corrosion or other signs of wear or damage. Worn or damaged hose assemblies should be replaced immediately.

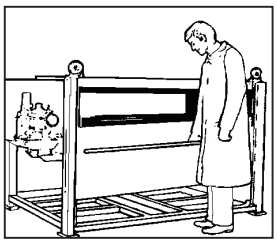
⚠WARNING Testing should be conducted in approved test stands with adequate guards to protect the operator. Failure to comply with this requirement could result in death or serious injury.



Clean
Clean assembly by blowing out with clean compressed air. Assemblies may be rinsed out with mineral spirits if the tube stock is compatible with oil, otherwise hot water at 150°F (65.55° C) maximum may be used.



Inspect
Examine hose assembly internally for cut or bulged tube, obstructions, and cleanliness. For segment style fittings, be sure that the hose butts up against the nipple shoulder; band and retaining ring are properly set and tight, and segments are properly spaced. Check for proper gap between nut and socket or hex and socket. Nuts should swivel freely. Check the layline of the hose to be sure the assembly is not twisted. Cap the ends of the hose with plastic covers to keep clean.

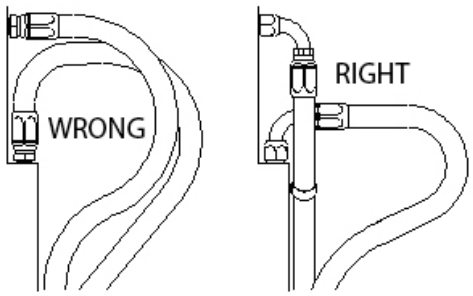


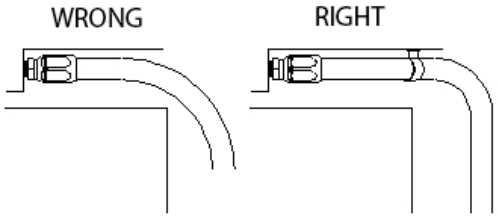
Test
The hose assembly should be hydrostatically tested at twice the recommended working pressure of the hose.
Test pressure should be held for not more than one minute and not less than 30 seconds. When test pressure is reached, visually inspect hose assembly for: 1. Any leaks or signs of weakness. 2. Any movement of the hose fitting in relation to the hose. Any of these defects are cause for rejection.

Storage and Handling

Hose should be stored in a dark, dry atmosphere away from electrical equipment, and the temperature should not exceed 90° F (32° C).

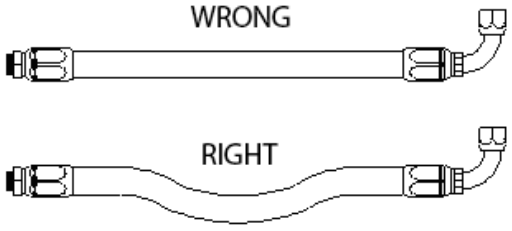
Hydraulic Hose Installation Guide

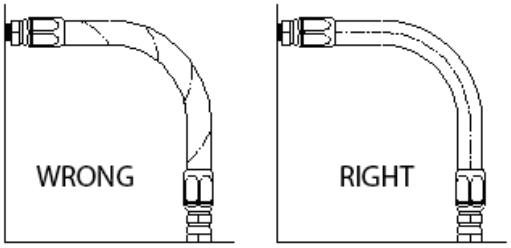




1. Use elbows and adapters in the installation to relieve strain on the assembly, and to provide easier and neater installations that are accessible for inspection and maintenance. Remember that metal end fittings cannot be considered as part of the flexible portion of the assembly.

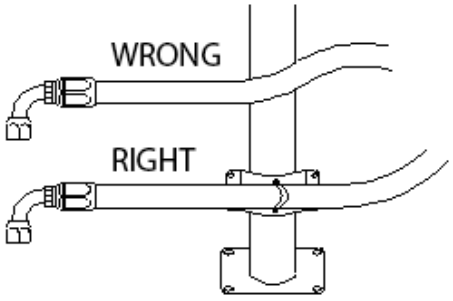
2. Install hose runs to avoid rubbing or abrasion. Clamps are often needed to support long runs of hose or to keep hose away from moving parts. It is important that the clamps be of the correct size. A clamp that is too large will allow the hose to move in the clamp causing abrasion at this point.

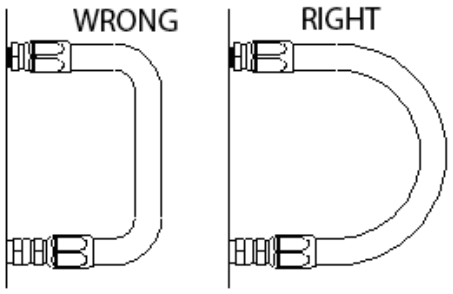




3. In straight hose installations allow enough slack in the hose line to provide for changes in length that will occur when pressure is applied. This change in length can be from +2% to -4%.

4. Do not twist hose during installation. This can be determined by the printed layline on the hose. Pressure applied to a twisted hose can cause hose failure or loosening of the connections.





5. Keep hose away from hot parts. High ambient temperature will shorten hose life. If you cannot route it away from the heat source, insulate it.

6. Keep the bend radii of the hose as large as possible to avoid hose collapsing and restriction of flow. Follow catalog specs on minimum bend radii.

(Used with the permission of The Weatherhead Company.)

Electrical Connections

Connect all electrical control circuits. The supply conductor should be connected to the accessory terminal of the truck ignition switch through the fifteen amp. circuit breaker provided in the control panel. All wiring should be approved automotive insulated wire, should be supported adequately with insulating ties or straps, should be located where it will not interfere with any control access, does not contact any moving parts or sharp edge and is kept away from any hydraulic line or any heated part.

Lights

Lights and reflectors are provided to meet DOT FMVSS 108 requirements but not necessarily any other applicable local, regional or national codes. Install lights and reflective devices to conform to DOT FMVSS-108 and state requirements.

Filling The Hydraulic System

NOTICE DO NOT attempt to run pump without first filling hydraulic oil reservoir and opening suction line gate valve, or pump may be ruined.

Fill reservoir with hydraulic oil as specified in the Lubricant Specifications section of this manual. Be sure oil is clean, free from dirt, water and other contaminants.

Lubricate all points requiring lubrication per Lubrication Chart in this manual.

Control Panel

The control panel is equipped with a conveyor indicator light. The purpose of the indicator light is to be aware when the conveyor is running. The control panel must be mounted in the cab such that the indicator light is clearly visible. The pressure switch that activates the indicator light must be plumbed into the conveyor hydraulic circuit. (See "Hydraulic System" parts list, item 52) Wire as shown in figure 5. (See "Control Panel" parts list)

NOTICE The conveyor must be moving (Indicator light on) whenever the dump box is being raised. Failure to do so will result in the shearing of the leveling link shear pin and possible damage to the conveyor hopper.

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OPERATIONS & MAINTENANCE

OPERATIONS & MAINTENANCE

Operations

General Description

The E2020XT is a hopper-type spreader intended for spreading abrasives and/or chemicals, primarily for ice and snow control. It is available for truck chassis or dump body mounting.

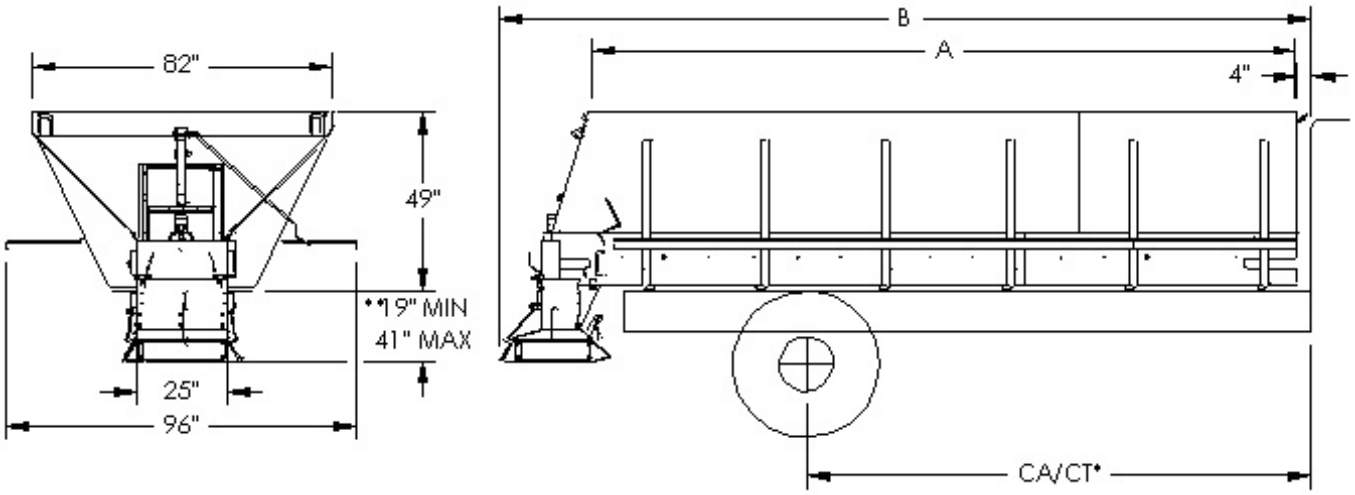
The unit is powered hydraulically. The standard control system is the "Series Type" providing independent, variable speed control for the spinner, with conveyor speed being a direct function of hydraulic pump speed. An optional manual dual pressure compensated valve type system provides independent, variable speed control for the spinner and conveyor.

The conveyor runs the full length of the hopper bottom to deliver material to the spinner through an adjustable feedgate at the rear of the hopper body. Conveyors are:

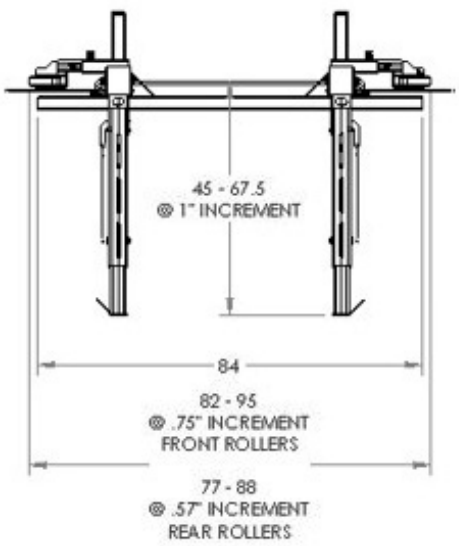
1. No. 2 Type Roller or Pintle Chain – Cross-bars every other link.
2. No. 3 Type Roller Chain – Cross-bars every link.
3. No. 4 Type Belt-Over-Chain Conveyor with Roller or Pintle Chain.

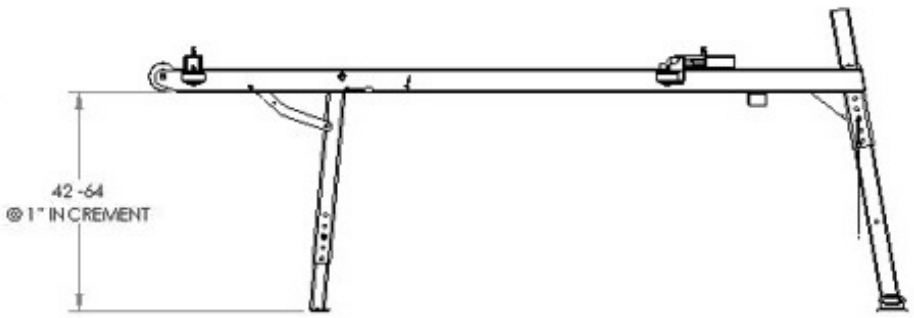
Distributor spinner assembly has a twelve inch (12") (30.5cm) vertically adjustable height hopper with two (2) internal, adjustable deflectors and three (3) external adjustable baffles and a twenty inch (20") (50.8cm) diameter spinner with six formed, heat-treated replaceable fins.

This product is intended for commercial use only.



INSIDE BODY LENGTH A	OVERALL LENGTH B	TRUCK CAB TO AXLE/TANDEM DIMENSION (CA/CT)*	STRUCK CAPACITY cubic foot (cu m)	CAPACITY ROUNDED 3:1 Slope cubic foot (cu m)	SPREADER WEIGHT*** pounds (kg)
9 ft (2.7m)	138" (3505mm)	72" (1828mm) CA	180 (5.1)	212 (6.0)	2000 (907.2)
10 ft (3.0m)	150" (3810mm)	84" (2134mm) CA	201 (5.7)	240 (6.8)	2100 (952.5)
11 ft (3.4m)	162" (4115mm)	84" (2134mm) CA	222 (6.3)	265 (7.5)	2200 (997.9)
12 ft (3.7m)	174" (4420mm)	102" (2591mm) CA	244 (6.9)	293 (8.3)	2400 (1088.6)
13 ft (4.0m)	186" (4724mm)	102" (2591mm) CA / 108" (2743mm) CT	265 (7.5)	318 (9.0)	2600 (1179.3)
14 ft (4.3m)	198" (5029mm)	120" (3048mm) CT	290 (8.2)	346 (9.8)	2700 (1224.7)
15 ft (4.6m)	210" (5334mm)	130" (3302mm) CT	307 (8.7)	371 (10.5)	2900 (1315.4)
16 ft (4.9m)	222" (5639mm)	138" (3505mm) CT	332 (9.4)	399 (11.3)	3000 (1360.8)





Initial Start-Up

Prior to testing the unit, check the position of the ON-OFF control in the cab. It should be in the OFF position. Do not load the hopper.

1. Check to be sure that no loose parts or other material are in body, on spinner hopper or on spinner disk.
2. Raise feedgate until it is completely clear of conveyor.
3. Fill the hydraulic tank with oil. Refer to the Lubricant and Hydraulic Oil Specifications section for proper oil. Check to make sure that the gate valve under the reservoir is fully open (rotate counter-clockwise to open).
4. If crankshaft PTO transmission has been installed, be sure transmission has proper amount of lubricant.
5. Start engine. Engage PTO or actuate electric clutch switch (if applicable). Let the engine run at approximately 1000 RPM for a few minutes, allowing the oil to circulate through the pump and back to the reservoir. In cold weather, allow greater warm-up time.

⚠WARNING Stand clear of moving machinery. Failure to comply with this requirement could result in death or serious injury.

6. Place the cab ON-OFF control in ON position and open the spinner control approximately one quarter (Position 3). Let the unit run until the air is expelled from the circuit and the spinner is running smoothly. Turn the spinner knob to the OFF position.
7. Open the conveyor knob approximately one quarter (Position 3) on the valve. Let the unit run for a few minutes until the conveyor is running smoothly.
8. Check all connections in the hydraulic system to make sure that there are no leaks.
9. Check hydraulic oil reservoir and refill to maintain level around mid-point of sight gauge. Unit is now ready for road testing.

⚠WARNING DO NOT check leaks with hands while system is operating as high pressure oil leaks can be dangerous! If skin is pierced with hydraulic fluid at high pressure seek immediate medical attention as fluid injected into the skin could cause gangrene if left untreated. Relieve pressure before disconnecting hydraulic lines or working system. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. Failure to comply with this requirement could result in death or serious injury.

⚠WARNING DO NOT check for leaks adjacent to moving parts while system is operating as there may be danger of entanglement! Failure to comply with this requirement could result in death or serious injury.

Before taking unit out to use, make a "walk-around" inspection to ensure that spreader is not damaged, that all essential parts are in place and that all fasteners are tight and all guards are in place. Check all controls to be sure that they are operating satisfactorily.

If material to be spread is not already in spreader, have the unit loaded. With ON-OFF control in OFF position, engage pump drive and allow oil to circulate until it is warm (this may be done while traveling to loading or starting point). The colder the weather, the more important this "warm-up."

All spinner speed, flow deflector and baffle adjustments must be made with ON-OFF control in OFF position to stop spinner and conveyor to avoid injury from spinner and/or discharging material.

Set variable speed spinner control to obtain spread width desired. Since spread width is affected by spinner speed, spinner height, flow deflector settings, baffle positions, as well as material granule size, density and moisture content; proper settings are gained by trial and experience.

Spinner speed selected should be the lowest required to obtain the desired spread width with the material being spread. Use of high spinner speeds and attempting to control spread width by means of the external baffles will increase wear and tear on parts and create excessive damage to vehicle finishes through uncontrolled throw and bounce of materials. It will also degrade materials being spread by causing unnecessary particle break-up and waste material.

To increase spread to one side, raise the exterior baffle on that side. Raise (swing inward) the interior flow deflector on that side to direct material away from the direction of spread increase. Lower (swing downward) the interior flow deflector on the opposite side to allow material to fall on the side of the spinner away from the direction of the desired spread.

Determination of the volume of the material spread in cubic feet per mile (per inch of metering gate opening) depends upon the hydraulic system with which the spreader is equipped.
NOTE: Close feedgate before loading spreader and when traveling to point where spreading is to be done. Open feedgate before starting to spread.

In order to determine the spread rates for a particular truck, the following information is needed to perform the required calculations:

1. Calculations require accurate and complete information.
   a. PTO Data
      1. PTO percentage of engine RPM.
      2. For calculations, PTO percentage of electric clutch drive will be 100%.
   b. Transmission gear ratios.
   c. Rear Axle Ratio. If two speed, determine both ratios.
   d. Auxiliary transmission (if so equipped) gear ratios.
   e. Rear tire size and type. From tire size and type, tire revolutions per mile may be obtained from a tire manual or tire distributor. The following lists some typical values:

HIGHWAY TIRES		
Tube Type	Tubeless Type	Tire Revolutions Per Mile
8.25 x 20	9.00 x 22.5	543
9.00 x 20	10.00 x 22.5	523
10.00 x 20	11.00 x 22.5	507
11.00 x 20		492
10.00 x 22	11.00 x 24.5	488

   f. Type of spreader conveyor.
   g. Displacement of pump in cubic inches per revolution.

2. Spread Rate Calculations:
   From the data obtained above (1), the spread rate in cubic feet of material per mile per inch of feedgate opening will be:

$$Y = \frac{PTO \times TR \times RA \times AUX \times TRM \times CFR \times PD}{16665}$$

Where:
- Y = Yield in cubic feet per mile per inch of feedgate height.
- PTO = Power Take Off percentage.
- TR = Transmission gear Ratio.
- RA = Rear Axle ratio.
- AUX = Auxiliary transmission gear ratio.
- TRM = Tire Revolutions per Mile.
- CFR = Cubic Feet per Revolution delivered by conveyor.
  - = .192 for #2 or #4 conveyor
  - = .237 for #5 conveyor
- PD = Pump Displacement in cubic inches per revolution.

If the vehicle has no auxiliary transmission and is to be operated in third gear (Ratio 2.24), low range rear axle (Ratio 8.87), and a #2 conveyor is in the spreader, the equation would be solved as shown below.

$$Y = \frac{(PTO)\ (TR)\ (RA)\ (TRM)\ (CFR)\ (PD)}{16665} = \frac{47 \times 2.24 \times 8.87 \times 523 \times .192 \times 2.77}{16665}$$

Y = 15.586 Cubic Feet/Mile/Inch of Gate Opening

Manual Dual System

When using the manual dual system, conveyor speeds and spinner speeds can be set independently of one another and will remain relatively constant regardless of truck road speed as long as speed is above low idle. Truck road speed, therefore, will affect volume of material spread per mile. An increase in truck road speed will decrease the volume per mile spread while a decrease in truck road speed will increase the volume spread per mile at any specific valve setting. The following delivery rate chart tabulates theoretical deliveries at various road speeds for various valve settings.

MANUAL DUAL CONTROL

Conveyor Hydraulic Valve Setting	Theoretical Delivery Cu. Ft./Mile/Inch of Gate		
	10 MPH	20 MPH	30 MPH
1	2.3	1.1	.8
2	5.9	2.9	2.0
3	9.1	4.6	3.0
4	12.5	6.3	4.2
5	15.1	7.5	5.0
6	17.8	8.9	5.9
7	20.2	10.1	6.7
8	22.3	11.2	7.4
9	24.3	12.1	8.1
10	26.1	13.1	8.7
11	27.7	13.9	9.2

NOTE: If other delivery rates are desired, they can be obtained by adjusting metering gate opening accordingly. Doubling gate opening will approximately double delivery. Changes in gate openings may affect spread pattern and may require changes in baffle and deflector adjustments.

Calibration Procedure

The material delivery charts in this manual have been based upon theoretical volumes calculated from expected engine, pump, hydraulic valve and hydraulic motor operating characteristics, together with ideal material flow to conveyor and from conveyor to spinner. The attainment of the listed material volumes are not guaranteed.

It is recommended that the spreader be calibrated periodically (a yearly calibration is recommended) so that actual deliveries can be determined under a representative set of operating conditions. The following procedure is suggested.

Select a smooth, level test course about 1/4 mile long. Place a marker about 200 yards (183 m) from the starting point and a second marker just 100 feet down course from the first marker.

Set feedgate opening of spreader at one inch by measuring vertically from conveyor bottom with a #2 conveyor, or from belt surface at center of belt with #4 and #5 conveyors to bottom edge of feedgate belt. Fill spreader body about half full of material for which calibration is to be run (full load may be used if desired).

Place unit at start of test-course. Without moving truck, run conveyor and spinner until uniform discharge from spinner occurs. Shut off conveyor and spinner. Close spinner valve so that spinner does not turn. Brush off any material remaining on the spinner. Lower all external baffles so that they hang straight down and set in that position.

Weigh empty calibration box and record weight. Hang empty box below spinner by suspending from spinner hopper.

With conveyor control OFF, start truck, bring up to speed in gear for which calibration is desired. Turn conveyor ON when first marker is passed and turn conveyor OFF when second marker is passed. Bring truck to a halt. Lower calibration box and carefully brush all material on spinner into box.

Weigh box with material. Subtract weight of empty box. Material weight represents amount of material discharged per 100 feet (30.9 m) of travel per inch of gate opening.

Repeat above for two more runs and average results of all three runs. The average weight of material discharged per 100 feet (30.9 m) of travel per inch of gate opening multiplied by 52.8 will give the weight of material used in test that would be delivered per mile of travel.

If volume is desired instead of weight, divide weight discharged by the weight of one cubic foot of the material used in the calibration above. Result will be volume discharge in cubic feet.

Weights Of Various Materials

MATERIAL	APPROXIMATE WEIGHTS (Pounds)	
	Per Cu. Foot	Per Cu. Yard
Ashes	40	1080
Cinders	30	810
Limestone, Crushed	100	2700
Salt	80	2160
Sand	100	2700
Urea	60	1620

Dump-Over Chute Conversion

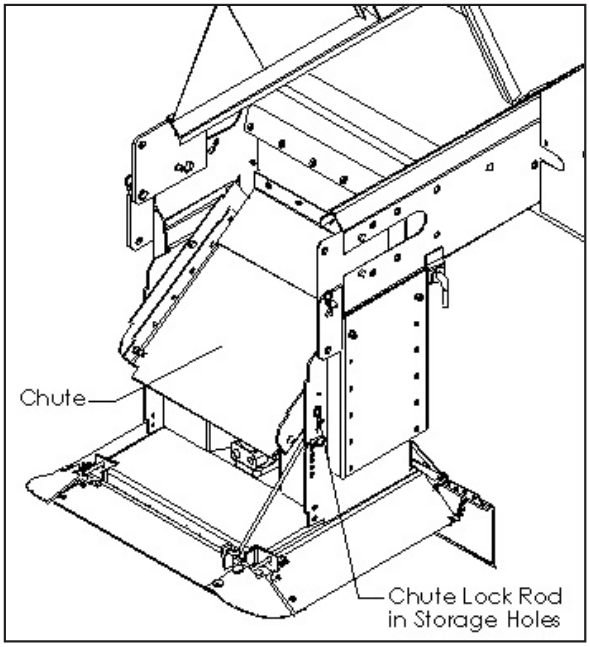


Figure 1 – Dump-Over Chute

Remove hair pin from Chute Lock Rod and remove Chute Lock Rod from spinner. Rotate Chute to the dump-over position as shown in Figure 1. Store Chute Lock Rod and hair pin in Storage Holes. Chute is now ready for dump-over application.

Convert back to Spinner from Dump-Over Chute, by following the above steps in the reverse order. Make sure to install Chute Lock Rod in upper hole and secure with hair pin.

Hydraulic System

The use of proper oil in the hydraulic system is one of the most important factors for satisfactory operation. Utmost cleanliness in handling the oil cannot be stressed enough. Keep the hydraulic oil in original closed containers, clean top of container before opening and pouring, and handle in extremely clean measures and funnels.

Refer to the Lubricant and Hydraulic Oil Specifications section of the manual for selection of the proper hydraulic fluid for use in the hydraulic system.

⚠WARNING

DO NOT check leaks with hands while system is operating as high pressure oil leaks can be dangerous! If skin is pierced with hydraulic fluid at high pressure seek immediate medical attention as fluid injected into the skin could cause gangrene if left untreated. Relieve pressure before disconnecting hydraulic lines or working system. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. Failure to comply with this requirement could result in death or serious injury.

⚠WARNING

DO NOT check for leaks adjacent to moving parts while system is operating as there may be danger of entanglement! Failure to comply with this requirement could result in death or serious injury.

Service Schedule

1. Check the hydraulic oil daily by means of dipstick. Add oil if required. Periodically inspect the hoses and fittings for leaks.

NOTICE CHANGE THE HYDRAULIC OIL FILTER AFTER THE FIRST WEEK (OR NOT MORE THAN 50 HOURS) OF OPERATION ON A UNIT.

2. After first filter change, replace filter when indicator reaches Danger Zone.
3. The reservoir should be drained through drain plug (not through suction outlet), flushed, and refilled annually, or the oil should be changed if it shows any signs of breaking down under continued high-pressure operation. Discoloration of oil is one sign of breakdown.

Gearcase

The oil in a new unit should be drained at the end of the first two weeks (or not more than 100 hours) of operation and the case should be thoroughly flushed with light oil. Refer to the Lubrication Specifications section for the proper grade oil. Refill 6:1 gearcase with one pint (.47 liters) of recommended lubricant. After the initial change, the oil should be changed every 2,000 hours of operation or annually, whichever occurs first.

Check the level in the gearcase weekly.

Conveyor Chain

DANGER

When conveyor is running, stay out of the body. Stay clear of all moving parts. Entanglement of clothes, any part of your body or anything you have in your hands can cause serious injury. Do not use a bar, rod or hammer on conveyor while it is moving--if it gets caught it could cause injury. With the spinner shut down and the conveyor running slowly, spray the mixture of oil between the links of the chain by spraying through openings at the rear end of sill or from front outside body when access clearance is adequate. Do this at least once a week and after each time the machine is washed down. Allow to become dry before lubricating. Failure to comply with this requirement will result in death or serious injury.

Hose down the machine and remove any material build-up on the sprockets or under the chain. If material is allowed to build up, the chain may ride up and damage the chain or body.

NOTE: If material builds up under the chain, the chain will ride on the material instead of the bottom panel. The more material allowed to build, the closer the chain will come to the chain shields. If the chain should catch a chain shield, it could permanently distort the chain, the chain shields or the body. In the same manner, if material is allowed to build up on the sprockets, the chain will have a larger diameter to follow. The more material allowed to build up, the closer the chain will run to the chain shields, until damage has occurred. Do not remove material while conveyor or spinner is running.

Lubricate the conveyor chain at least once a week. Use a mixture of 75% diesel fuel and 25% SAE 10 oil in a pressurized hand spray gun.

If a chain oiler is used, fill the oiler reservoir daily with a mixture of 75% diesel fuel and 25% SAE 10 oil. Before each filling of the spreader with material to be spread, open petcock and run the conveyor until the full length of chain has been oiled, then shut petcock.

Proper chain tension is also a factor in chain and sprocket life. The proper chain tension is illustrated in Figure 2. Be sure the chain is tensioned equally on both sides. This adjustment is made on each side of the unit at the idler bearings.

Figure 2 - Chain Tension to be Measured from Rear of Sill - Proper Tension 36" to 40" (9144mm to 1016 mm).

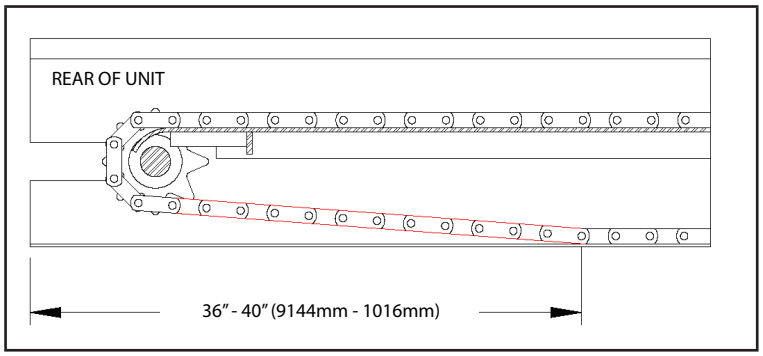


Figure 2 - Adjusting Chain Tension

Conveyor chains that are too tight will tend to stretch. This will cause excess sprocket wear and eventually cause breakage. Excess slack presents the possibility of the chain catching on sub-frame parts. Bent or distorted chain bars will cause damage to the body as well. Straighten or replace bent or distorted chain bars immediately.

Lubrication of Bearings

Grease in a bearing acts to prevent excessive wear of parts, protects ball races and balls from corrosion and aids in preventing excessive heat within the bearing. It is very important the grease maintains its proper consistency during operation. It must not be fluid and it must not channel.

Make sure all fittings are thoroughly cleaned before grease is injected. Points to be lubricated by means of grease gun have standard grease fittings.
Lubricate bearings by pumping grease until it forms a slight bead around the seals. This bead indicates adequate lubrication and also provides additional protection against the entrance of dirt.

Fasteners

Tighten all screw fasteners to recommended torques after the first week of operation and annually thereafter. If loose fasteners are found at any time, tighten to the recommended torques. Replace any lost or damaged fasteners or other parts immediately upon finding such damage or loss. Check body mounting bolts every week.

Clean-Up

For maintaining minimum maintenance operation, this equipment should be thoroughly washed every two (2) to three (3) days during the operating season. Hose the unit down under pressure to free all sticky and frozen material.

It is important that the machine be thoroughly cleaned at the end of each operating season. All lubrication and maintenance instructions should be closely followed. For longer life, repaint worn spots to prevent formation of rust.

NOTICE

The lubricant distributor and/or supplier is to be held responsible for the results obtained from their products. Procure lubricants from distributors and/or suppliers of unquestionable integrity, supplying known and tested products. Do not jeopardize your equipment with inferior lubricants. No specific brands of oil are recommended. Use only products qualified under the following oil viscosity specifications and classification recommended by reputable oil companies.

Hydraulic System

The following are the recommended procedures for selecting the proper hydraulic fluid for use in the hydraulic system. Select a major brand industrial PREMIUM QUALITY (anti-wear type) hydraulic oil to provide viscosity between 100-200 SSU at operating temperature. Premium hydraulic oils with viscosity indexes of 95 or above will provide the following temperature ranges :

INDUSTRY IDENTIFICATION VISCOSITY GRADE	OPERATING TEMPERATURE	VISCOSITY
150 SSU	122° F (50° C) 84° F (28.9° C)	100 SSU 200 SSU
225 SSU	140° F (60° C) 107° F (41.7° C)	100 SSU 200 SSU
300 SSU	150° F (66.6° C) 116° F (46.1° C)	100 SSU 200 SSU
450 SSU	165° F (73.9° C) 130° F (54.5° C)	100 SSU 200 SSU
600 SSU	182° F (83.3° C) 145° F (62.8° C)	100 SSU 200 SSU

If, because of necessity or convenience, it is desirable to use an automotive engine oil, multi-viscosity oils of SC rating (formerly MS quality) which will provide between 100-200 SSU at operating temperature can be used. These will provide proper viscosity over a wide range. For example:

SAE VISCOSITY GRADE	OPERATING TEMPERATURE	VISCOSITY
10W-30	130° F (54.5° C)	100 SSU
	100° F (37.8° C)	200 SSU
10W-40	190° F (87.8° C)	100 SSU
	140° F (60° C)	200 SSU

Gearcase Lubricant

Lubricate these assemblies with non-corrosive type SAE 90 EP (extreme pressure) gear oil conforming to MIL-L2105 B multi-purpose gear lubricating oil requirements (API Service GL 4) with ambient temperatures from 40° to 100° F (4.5° to 37.8° C). Ambient temperatures below 40° F (4.5° C) require SAE 80 EP lubricant; above 100° F (37.8° C) use SAE 140 EP grade oil.

Lubricate the gear cases with a synthetic or non-corrosive type gear oil conforming to MIL-L2105 B multi-purpose gear lubricating oil requirements according to the chart below:

Part	Refill Quantity	40° to 120° F (4.5° to 48.9° C)	Below 40° F (4.5° C)
6:1 Gear Case	1 pint (.47 liters)	SAE 80 or 90W	SAE 80 or 90W

Grease Gun Lubricant

Use a ball and roller bearing lithium base lubricant with a minimum melting point of 300° F (148.9° C). This lubricant should have a viscosity that assures easy handling in the pressure gun at prevailing atmospheric temperatures. The lubricant must be waterproof. The grease should conform to NLGI No. 2 consistency.

Conveyor Chain Oiler Lubricant

Use a mixture of 75% No. 1 or No. 2 diesel fuel or kerosene mixed with 25% SAE 10 engine oil.

⚠WARNING Shut off all power and allow all moving parts to come to a rest before performing any maintenance operation. Failure to comply with this requirement could result in death or serious injury.

Lubrication Chart

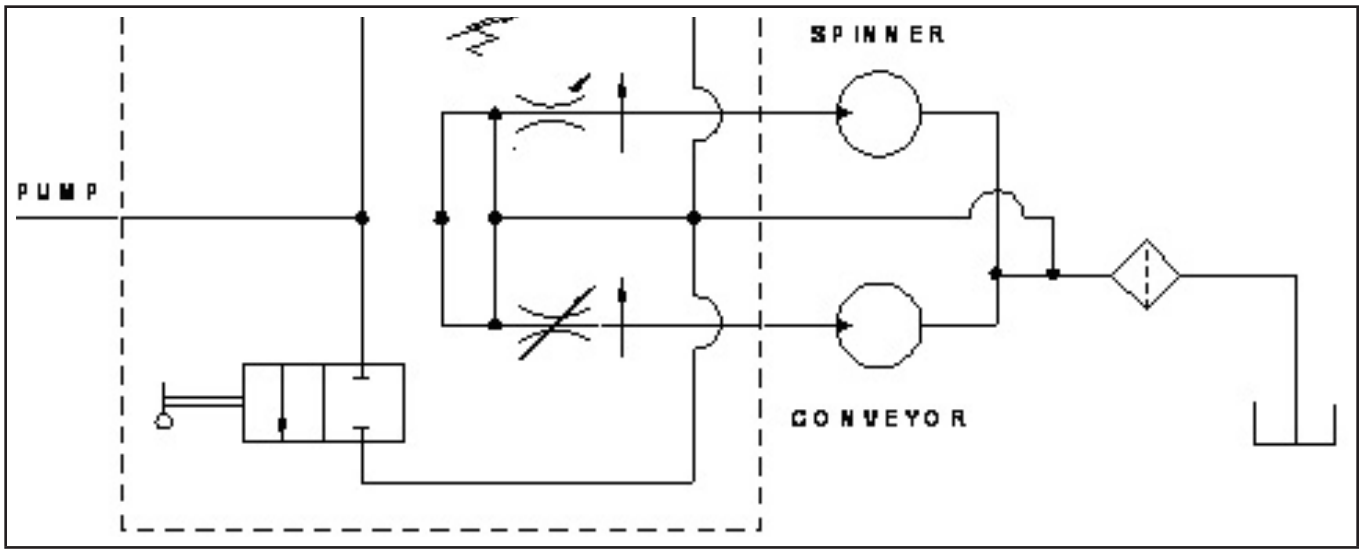
⚠WARNING Shut off all power and allow all moving parts to come to rest before performing any maintenance operation. Entanglement with moving parts could cause serious injury. Failure to comply with this requirement could result in death or serious injury.

The spreader should be regularly lubricated with the lubricants recommended in this manual in accordance with the following chart:

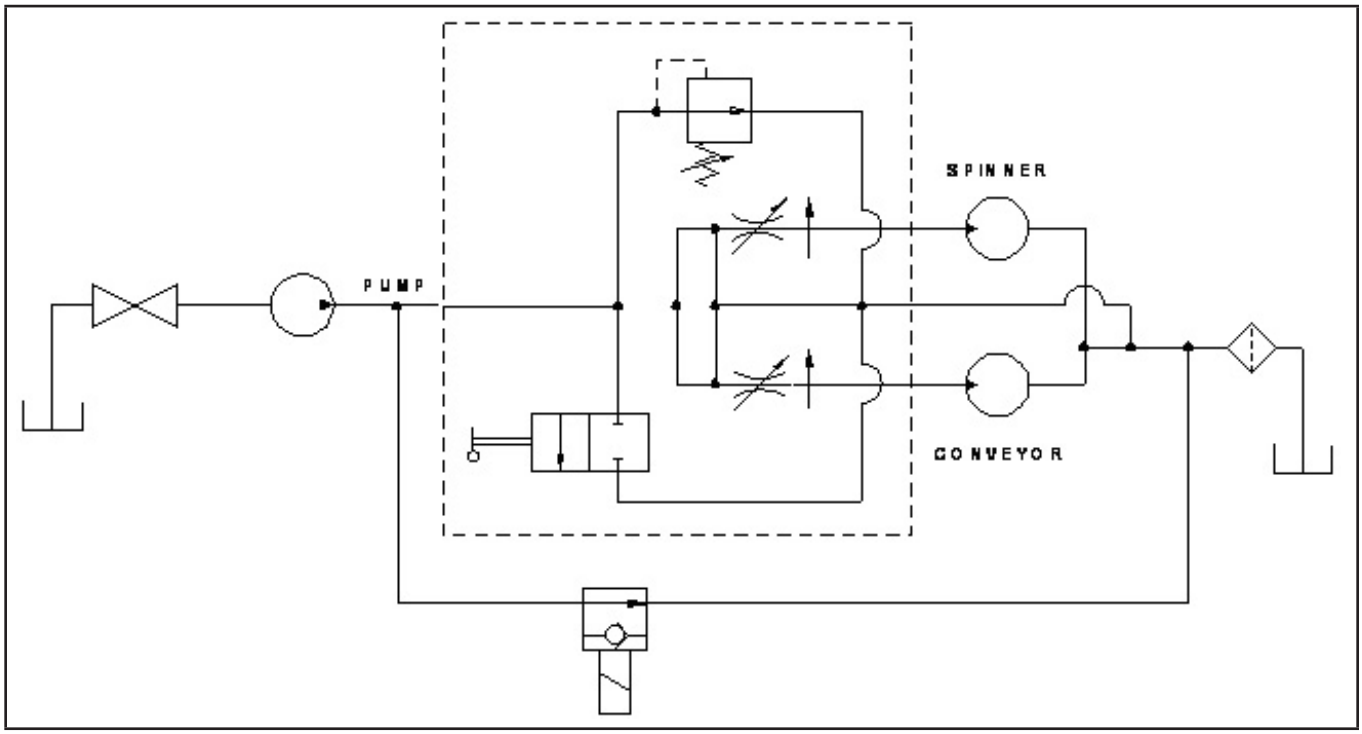
Location	Places	Method	Frequency
Hydraulic System			
Reservoir	1	Check Daily; Change Annually	
Filter	1	Check Daily; Change when indicator is red	
Hydraulic System - Dual Control Valve			
Hex Valve Stem (Under hand knob)	2	Hand Grease	Check Annually
Conveyor			
Drive Shaft Bearings	2	Grease Gun	Weekly
Idler Shaft Bearings	2	Grease Gun	Weekly
Take-up Screws	2	Hand Grease	Monthly
Chain	2 Strands	Spray Oil	Weekly
Chain Oiler (If so equipped)	1	Oil	Daily
Gear Case	1	Gear Box	Check Monthly
Feedgate			
Jack Assembly - Gears	1	Grease Gun	Monthly
Spinner Assembly - Drive Line Spinner Only			
Drive Shaft - Slip Joint	1	Hand Grease	Annually
U-Joints	2	Grease Gun	Weekly
Pillow Block Bearings	2	Grease Gun	Weekly

NOTE: Unusual conditions, such as excessive dust, temperature extremes or excessive moisture may require more frequent lubrication of specific parts.

HYDRAULICS SCHEMATIC – MANUAL DUAL VALVE IN CAB

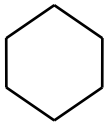


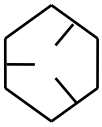
HYDRAULICS SCHEMATIC – MANUAL DUAL VALVE AT REAR

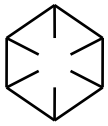


Standard Torques

CAP SCREW GRADE IDENTIFICATION - MARKINGS ON HEAD

SAE GRADE 2  NO MARKINGS

SAE GRADE 5  THREE MARKS - 120 DEGREES APART

SAE GRADE 8  SIX MARKS - 60 DEGREES APART

USE GRADE 2 TORQUES FOR STAINLESS STEEL FASTENERS AND CARRIAGE BOLTS.

	TORQUE - FOOT-POUNDS					
CAP SCREW SIZE	GRADE 2		GRADE 5		GRADE 8	
	DRY	LUBE	DRY	LUBE	DRY	LUBE
1/4″	5	4	8	6	12	9
5/16″	11	8	17	13	25	18
3/8″	20	15	30	23	45	35
7/16″	30	24	50	35	70	55
1/2″	50	35	75	55	110	80
9/16″	65	50	110	80	150	110
5/8″	90	70	150	110	220	170
3/4″	100	120	260	200	380	280
7/8″	140	110	400	300	600	460
1″	220	160	580	440	900	650

PARTS

PARTS

Instructions for Ordering Parts

Order from the **AUTHORIZED DEALER** in your area.

1. Always give the pertinent model and serial number.
2. Give part name, part number and the quantity required.
3. Give the correct address to where the parts are to be shipped, and the carrier if there is a preference.

Unless claims for shortages or errors are made immediately upon receipt of goods they will not be considered. Any part returns should be directed through the dealer from which they were purchased.

When broken goods are received, a full description of the damage should be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can always be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Our responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them, therefore, claims (if any) should be filed with the transportation company and not with New Leader Manufacturing.

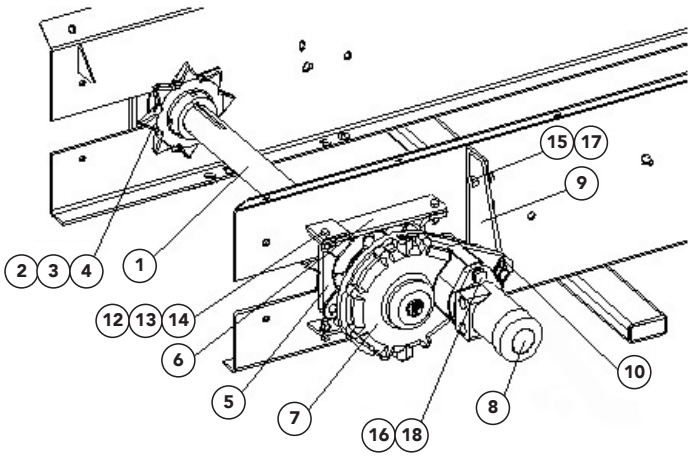
If your claims are not being handled (by the transportation company) to your satisfaction, please call the Parts Manager at New Leader Manufacturing (319-363-8281) for assistance.

In the parts list the following symbols and abbreviations stand for:

* - Not Shown
AR – As Required
CS – Carbon Steel
SS – Stainless Steel

The parts listed under the different steel types (CS, 409 SS and 304 SS) are for that type of unit and do not necessarily mean the part is made of that type of steel.

Conveyor Drive

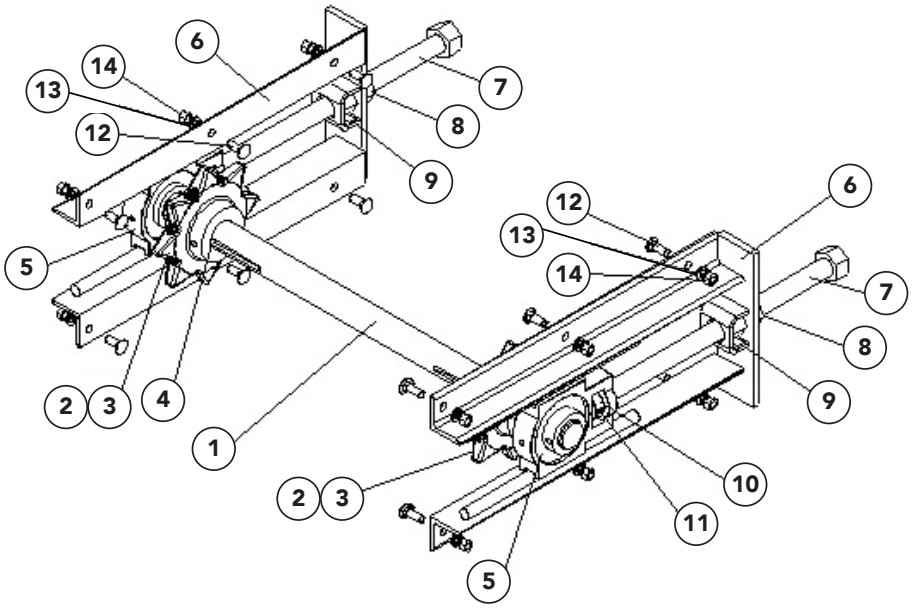


Bottom panel removed for clarity.

ITEM	PART NO.		DESCRIPTION	QTY
	CS	SS		
1	39582	39582	Shaft – Drive	1
2	27275	27275	Sprocket	2
3	6131	6131	Key – Square	2
4	20748	20748	Screw – Set	4
5	6465	6465	Bearing	2
6	82882	82885	Guide – Bearing	4
7	36671	36671	Gear Case 6:1 Single Pinion	1
8	38897	38897	Motor – Hydraulic 1-1/2"	1
	* 38897-X2	*38897-X2	Motor – Hydraulic 1-1/2" with Sensor	1
	38898	38898	Motor – Hydraulic 2" (11'-16' Units)	1
	*38898-X2	*38898-X2	Motor – Hydraulic 2" with Sensor (11'-16' Units)	1
	*38898-X3	*38898-X3	Motor - Hyd 22.6 CID M-12 Sensor (11'-16' Units)	1
	*42828	*42828	Motor - Hyd 17.9 CID White W/ M-12 Sensor	1
9	82549	82551	Mount – Torque Arm RH	1
10	20833	20833	Pin – Cotter	1
11			NOT USED	
12	20068	36399	Cap Screw – 3/8 x 1-1/4	8
13	20712	36420	Washer – Lock 3/8	8
14	20644	36414	Nut – Hex 3/8	8
15	20128	20128	Cap Screw – 1/2 x 1 1/4	2
16	20714	20714	Washer – Lock 1/2	2
17	20680	20680	Nut – Lock 1/2	2
18	20129	20129	Cap Screw - 1/2-13NC x 1-1/2	2
19	*74524	*74524	Gasket - SAE 101-2	1

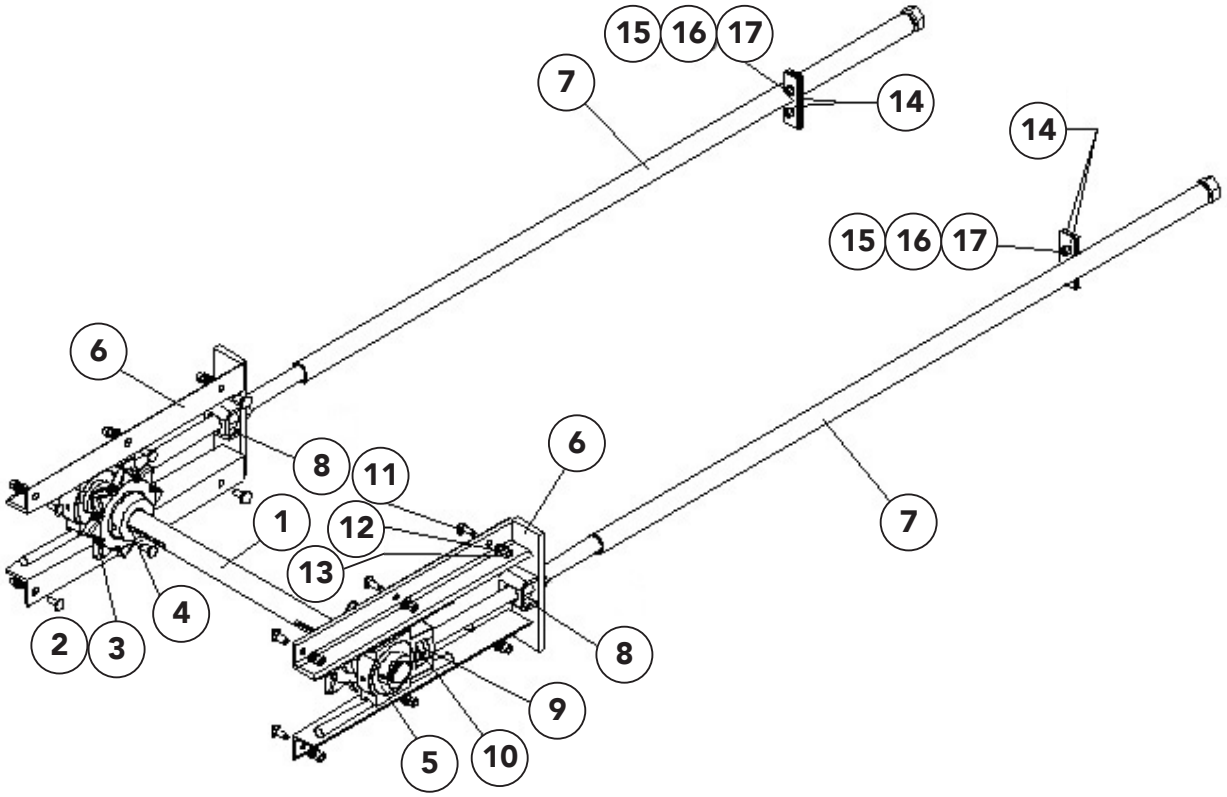
* - Not Shown

Conveyor Idler



ITEM	PART NO.		DESCRIPTION	QTY
	CS	SS		
1	48279	48279	Shaft – Idler	1
2	1899	1899	Sprocket	2
3	20743	20743	Screw – Set	4
4	2135	2135	Key – Square	2
5	22511	22511	Bearing – 1.5 Take-up	2
6	7895	7895	Take-up – Wldmt	2
7	36508	36508	Screw – Adjusting	2
8	36509	36509	Nut – Hex 1-8NC	2
9	39110	39110	Nut – Wldmt	2
10	30725	30725	Collar – Set	2
11	20925	20925	Pin – Roll	2
12	20318	36408	Bolt – Carriage 3/8 x 1	12
13	20712	36420	Washer – Lock 3/8	12
14	20644	36414	Nut – Hex 3/8	12

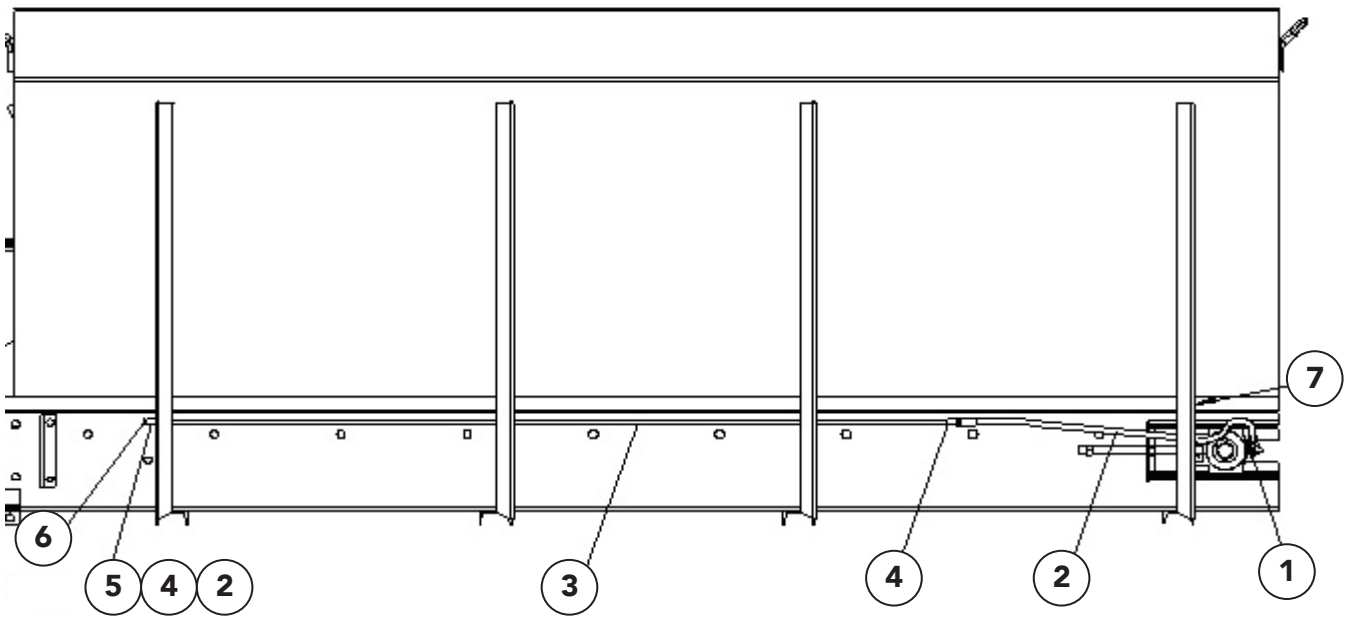
Extended Idler



Extended Idler Continued

ITEM	PART NO.		DESCRIPTION	QTY
	CS	SS		
1	48279	48279	Shaft – Idler	1
2	1899	1899	Sprocket	2
3	20743	20743	Screw – Set	4
4	2135	2135	Key – Square	2
5	22511	22511	Bearing – 1.5 Take-up	2
6	7895	7895	Take-up – Wldmt	2
7	97406-AA	97407-AA	Bolt – Idler Extended 9'	2
	97406-AB	97407-AB	Bolt – Idler Extended 10'	2
	97406-AC	97407-AC	Bolt – Idler Extended 11'	2
	97406-AD	97407-AD	Bolt – Idler Extended 12'	2
	97406-AE	97407-AE	Bolt – Idler Extended 13'	2
	97406-AF	97407-AF	Bolt – Idler Extended 14'	2
	97406-AG	97407-AG	Bolt – Idler Extended 15'	2
	97406-AH	97407-AH	Bolt – Idler Extended 16'	2
8	39110	39110	Nut – Wldmt	2
9	30725	30725	Collar – Set	2
10	20925	20925	Pin – Roll	2
11	20318	36408	Bolt – Carriage 3/8 x 1	12
12	20712	36420	Washer – Lock 3/8	12
13	20644	36414	Nut – Hex 3/8	12
14	84108	84108	Plate – Rear	4
15	20290	96880	Bolt – Carriage 5/16 x 3/4	4
16	20711	36419	Washer – Lock 5/16	4
17	20643	36413	Nut – Hex 5/16	4

Extended Grease Zerks



ITEM	PART NO.	DESCRIPTION	QTY
1	34734	Adapter – Elbow 90°	2
2	79893	Hose Assy	2
3	79885	Pipe – Grease 9′ Unit	2
	79886	Pipe – Grease 10′ Unit	2
	79887	Pipe – Grease 11′ Unit	2
	79888	Pipe – Grease 12′ Unit	2
	79889	Pipe – Grease 13′ Unit	2
	79890	Pipe – Grease 14′ Unit	2
	79891	Pipe – Grease 15′ Unit	2
	79892	Pipe – Grease 16′ Unit	2
4	6000	Coupling – Pipe	6
5	6023	Nipple – Closed	2
6	6069	Zerk – Grease (from Idler Bearing)	2
7	73797-13	Liner – Edge	2

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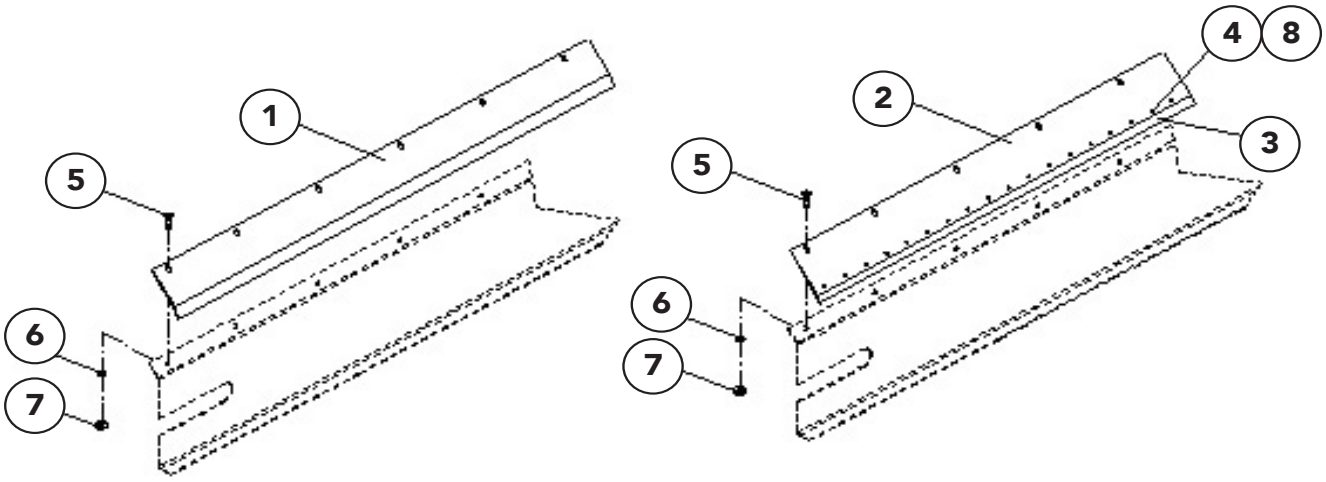
Chain Shields

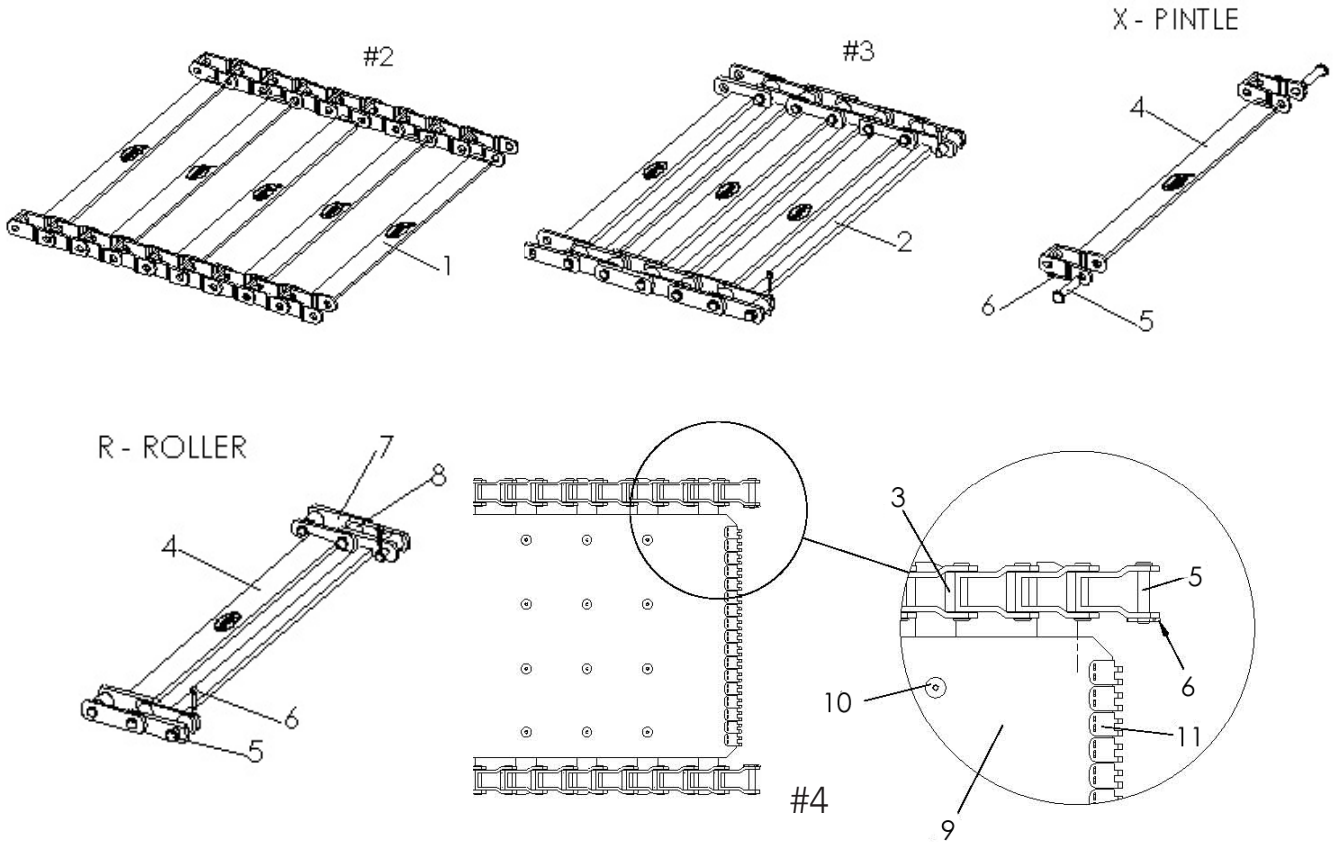


ITEM	PART NO.		DESCRIPTION	QTY
	CS	304 SS		
1			Shield – Chain #2 & #3	
	39614	54118	9′ Units	2
	39615	54119	10′ Units	2
	39616	54120	11′ Units	2
	97715-AA	97749-AA	12′ Units	2
	97715-AB	97749-AB	13′ Units	2
	97715-AC	97749-AC	14′ Units	2
	97715-AD	97749-AD	15′ Units	2
	97715-AE	97749-AE	16′ Units	2
2			Shield – Chain #4 Assy, Includes 3,4,8	
	97814	97850	9′ Units	2
	97815	97851	10′ Units	2
	97816	97852	11′ Units	2
	97817	97853	12′ Units	2
	97818	97854	13′ Units	2
	97819	97855	14′ Units	2
	97820	97856	15′ Units	2
	97821	97857	16′ Units	2
3	305975	305975	Belt - Sealer	AR

Chain Shields Continued

ITEM	PART NO.		DESCRIPTION	QTY
4	88931	88931	Nut - Tee	AR
5	20318	----	Bolt – Carriage 3/8 x 1	AR
	----	71829	Screw - Truss Head	AR
6	20712	36420	Washer – Lock 3/8	AR
7	20644	36414	Nut – Hex 3/8	AR
	----	88981	Nut - Tee 1/4 x 1/4	AR
8	20624	56258	Screw - Truss Head	AR

Conveyor Chain

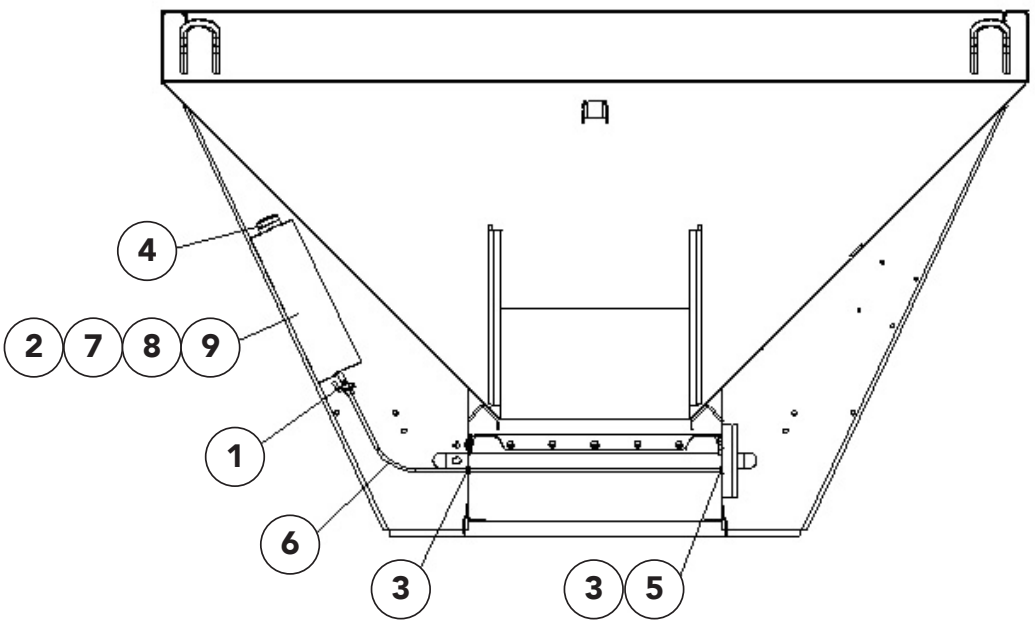


ITEM	PART NO.		DESCRIPTION	QTY
	PINTLE	**ROLLER**		
1			Chain – Assy #2	
	12992	90673	9′ Unit	1
	12993	90674	10′ Unit	1
	12994	90675	11′ Unit	1
	12995	90676	12′ Unit	1
	12990	90677	13′ Unit	1
	39605	90678	14′ Unit	1
	12996	90679	15′ Unit	1
	46598	90680	16′ Unit	1

Conveyor Chain Continued

ITEM	PART NO.		DESCRIPTION	QTY
	PINTLE	**ROLLER**		
2			Chain – Assy #3	
		90682	9′ Unit	1
		90683	10′ Unit	1
		90684	11′ Unit	1
		90685	12′ Unit	1
		90686	13′ Unit	1
		90687	14′ Unit	1
		90688	15′ Unit	1
		90689	16′ Unit	1
3			Chain – Assy #4 BOC	
	305611-AB	305612-AB	9′ Unit	1
	305611-AC	305612-AC	10′ Unit	1
	305611-AD	305612-AD	11′ Unit	1
	305611-AE	305612-AE	12′ Unit	1
	305611-AF	305612-AF	13′ Unit	1
	305611-AG	305612-AG	14′ Unit	1
	305611-AH	305612-AH	15′ Unit	1
	305611-AI	305612-AI	16′ Unit	1
4	99209	90659	Cross Bar – Wldmt Wide	AR
		33721	Cross Bar – Wldmt Narrow	AR
	70756	7126	Cross Bar – Wldmt #4 Rivets	AR
5	36697	6119	Pin – Clevis	AR
6	20817	20826	Pin – Cotter	AR
7		2127	Link – Side	AR
8		29919	Roller – Chain	AR
9	6251	6251	Belt – Specify Length and Pintle/Roller	1
10	305646	305646	Rivets	AR
11	73317-X1	73317-X1	Kit - Splicer	1
			Lacing Strips 23″	1
			Pin - Connecting	2
			Staples	1

Oiler - Conveyor



ITEM	PART NO.	DESCRIPTION	QTY
1	21982	Valve – Shut-Off	1
2	1572	Tank – Wldmt Oiler	1
3	21983	Grommet – Rubber	2
4	21980	Cap – Vented	1
5	21984	Plug – Sleeve	1
6	88003	Tube – Oiler	1
7	20003	Cap Screw – 1/4 x 3/4	4
8	20710	Washer – Lock 1/4	4
9	20642	Nut – Hex 1/4	4

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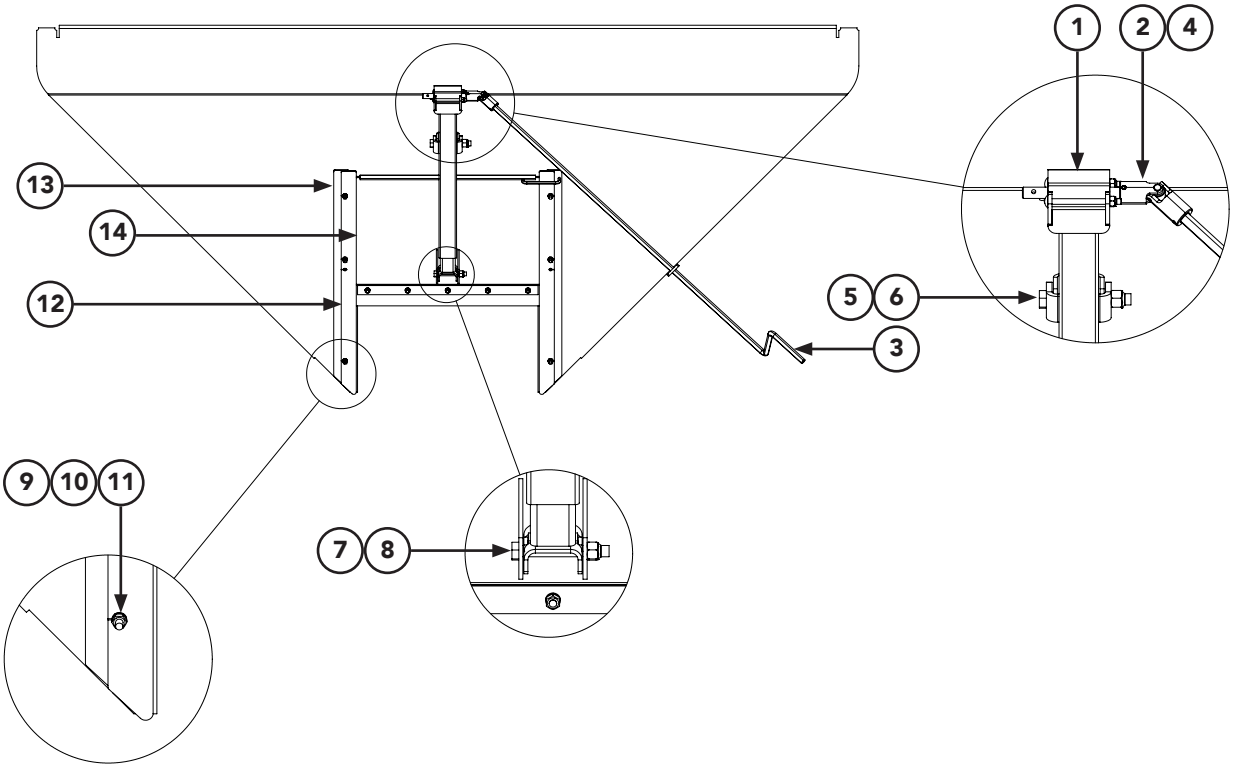
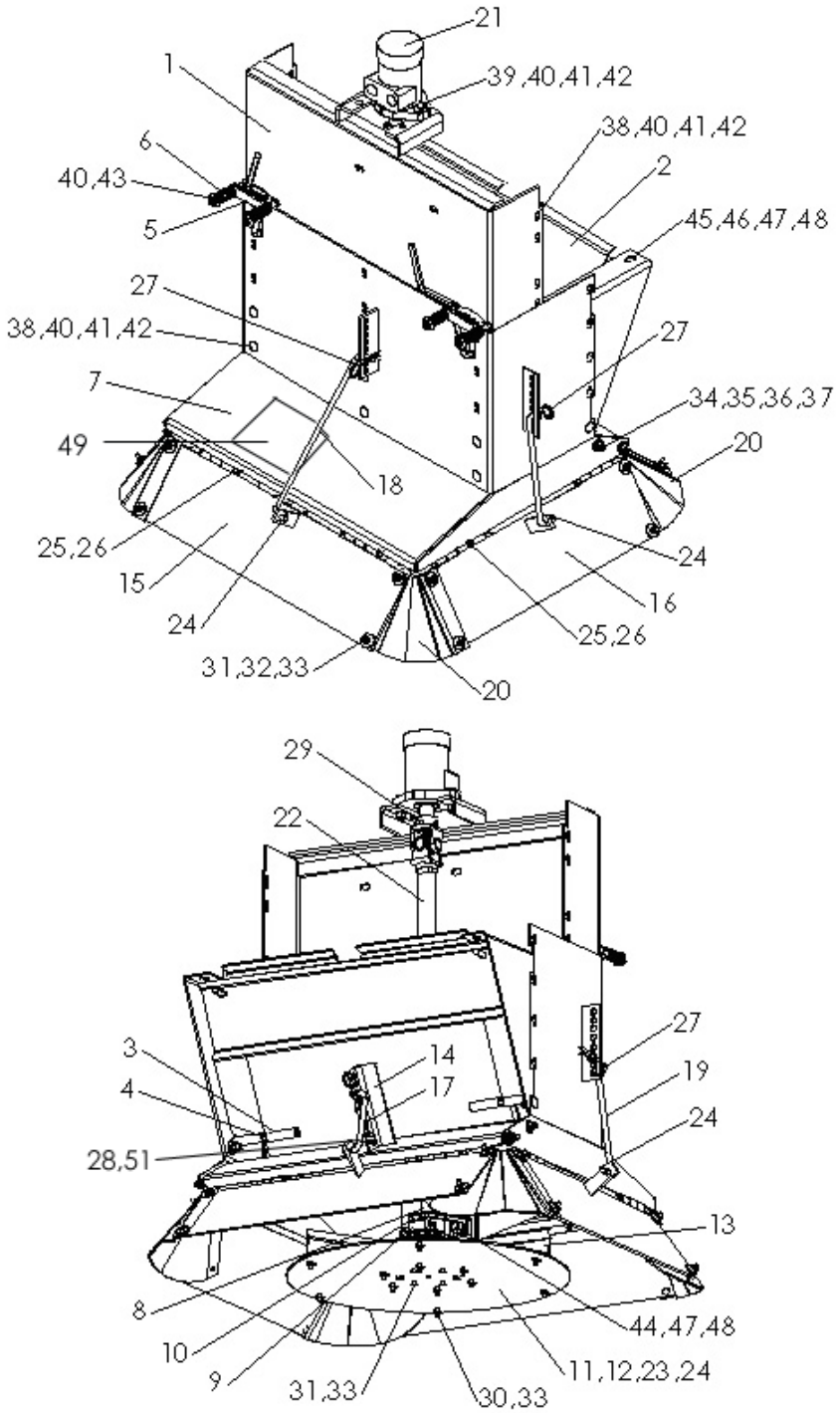
Feedgate & Jack



ITEM	PART NO.		DESCRIPTION	QTY
	CS	304 SS		
1	312994	312994	Jack - Assy 13.38 304	1
2	85002	85002	Joint - U	1
3	307476	307476	Handle - Jack Feedgate 304	1
4	312268	312268	Pin - Roll .188 X 1.0	2
5	20138	80798	Capscrew - .5-13NC X 3.75 GR5	1
6	20680	39016	Nut - Lock .5-13NC	1
7	20075	71827	Capscrew - .375-16NC X 3 Gr5	1
8	20678	72054	Nut - Lock .375-16NC	1
9	20006	40750	Capscrew - .25-20NC X 1.25 GR5	6
10	20710	36418	Washer - Lock .25	6
11	20676	42034	Nut – Lock 1/4	6
12	36384	36384	Bar - Feedgate Slide	2
13	36385	36385	Bar - Feedgate Guide	2
14	83664	83666	Feedgate - Assy	1



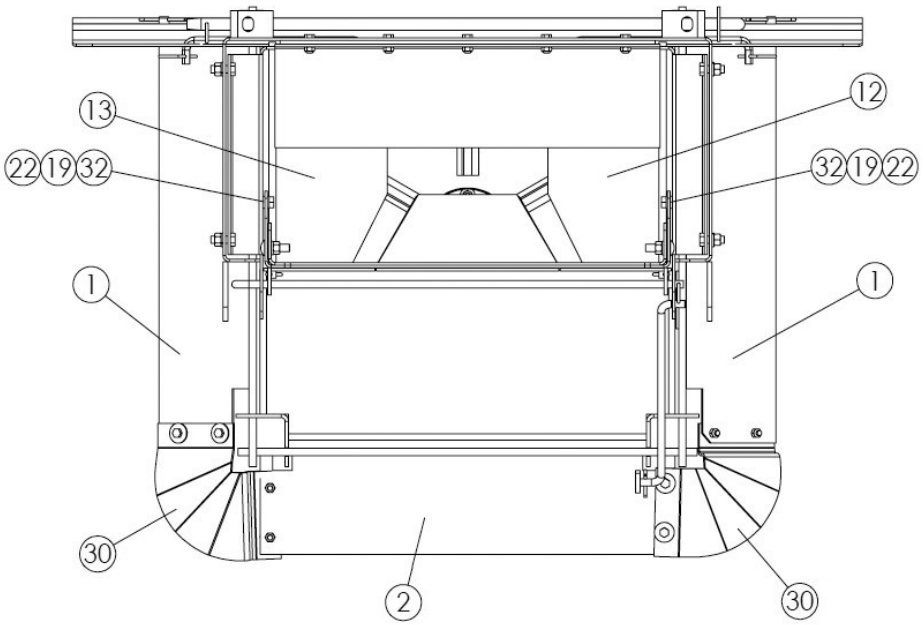
Steel disc, standard height spinner shown.

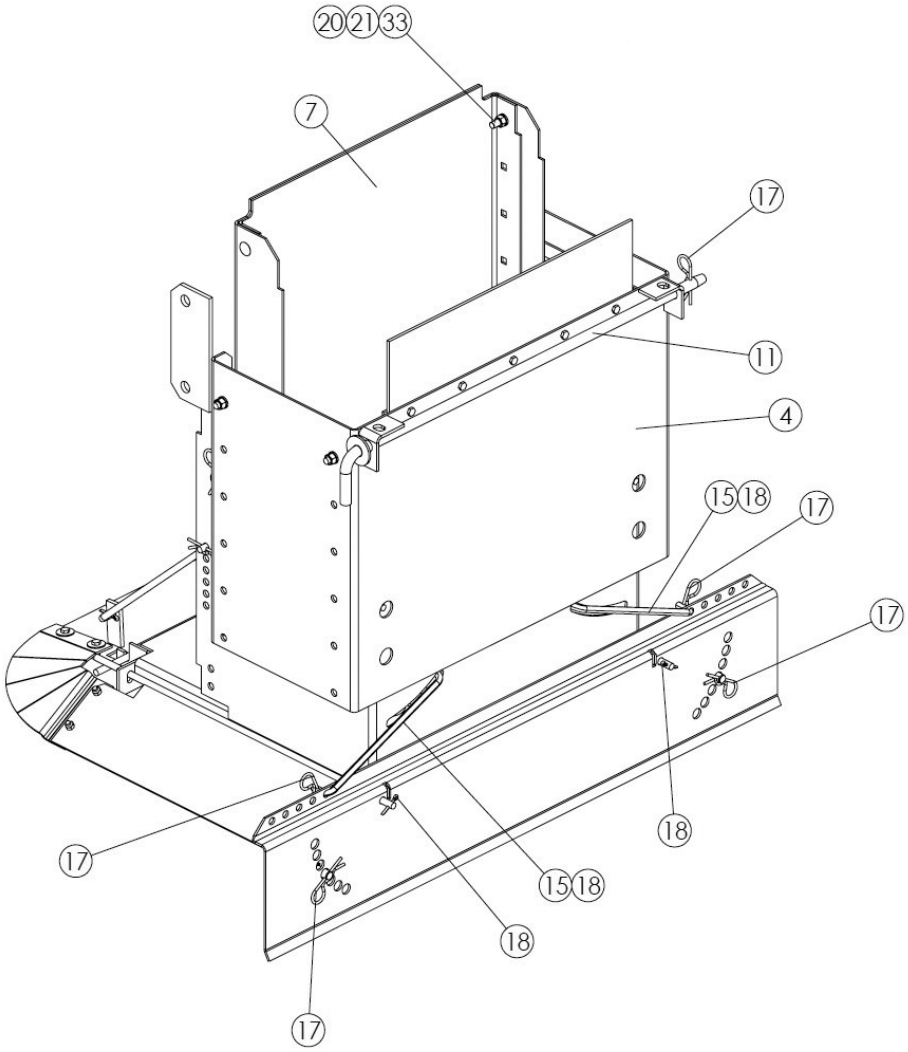
Spinner -Driveline Continued

ITEM	PART NO. CS	PART NO. 304 SS	DESCRIPTION	QTY
	86720	88873	Hardware – Kit Spinner Mounting	1
	16352	16352	Disc – Assy Steel Spinner	1
			Includes 11-13, 30, 31, 33	
	76794	76794	Disc – Assy Poly Spinner	1
			Includes 11, 12, 31-33	
1	39650	76856	Hopper – Wldmt Upper	1
	44362	76852	Hopper – Extended Wldmt Upper	1
2	39663	76879	Baffle – Chute	1
3	39665	76883	Pin – Baffle Front	2
4	20986	20986	Pin – Roll	2
5	1517	76885	Plate – Adjustment	2
6	3126	3126	Spring	4
7	86704	86722	Hopper – Wldmt Lower	1
8	39636	39636	Shaft – Spinner	1
9	3054	3054	Bearing – Pillow Block	2
10	58896	58896	Washer – Rubber 5/8	2
11	34853	34853	Disc – Distributor Polyurethane	1
	9098	9098	Disc – Distributor Steel	1
12	2242	2242	Hub – Disc	1
13	4731	4731	Fin – Formed	6
14	39669	76815	Support – Baffle Front	1
15	99372	99377	Baffle – End	2
16	99370	99365	Baffle – Side	2
17	39672	80990	Rod – Control Front	1
18	17639	76893	Rod – Control Rear	1
19	17640	76900	Rod – Control Side	2
20	36794	36794	Belt – Deflector	4
21	37339 39137	37339 39137	Motor – Hydraulic Seal Kit	1
22	86435	86435	Shaft – Drive Telescopic	1
	86437	86437	Shaft – Drive Extended Telescopic	1
23	6123	88229	Pin – Clevis 3/8 x 2-1/4	1
24	20817	36427	Pin – Cotter 1/8 x 1	5

Spinner -Driveline Continued

ITEM	PART NO.		DESCRIPTION	QTY
	CS	304 SS		
25	17770	76821	Pin – Clevis 5/16 x 3-1/2	8
26	20810	76822	Pin – Cotter 3/32 x 1/2	8
27	40576	36429	Pin – Hair	4
28	6122	6122	Pin – Clevis 3/8 x 2	1
29	20742	20742	Screw - Set 5/16-18 x 5/16	1
30	20003	20003	Cap Screw – 1/4 x 3/4, Steel Disc	12
31	20004	36394	Cap Screw – 1/4 x 7/8	16
	20004	20004	Cap Screw – 1/4 x 7/8, Steel Disc	6
	20007	20007	Cap Screw – 1/4 x 1-1/2, Poly Disc	6
32	21423	21423-X1	Washer – Flat Special 1/4	16
	21423	21423	Washer – Flat 1/4, Poly Disc	6
33	20676	42034	Nut – Lock 1/4	16
	20676	20676	Nut – Lock 1/4, Disc	AR
34	20036	34580	Cap Screw – 5/16 x 1	4
35	20692	36424	Washer – Flat 5/16	4
36	20711	36419	Washer – Lock 5/16	4
37	20643	36413	Nut – Hex 5/16	4
38	20318	36408	Bolt – Carriage 3/8 x 1	12
39	20069	34858	Cap Screw – 3/8 x 1-1/2	2
40	20693	36425	Washer – Flat 3/8	18
41	20712	36420	Washer – Lock 3/8	14
42	20644	36414	Nut – Hex 3/8	14
43	20678	72054	Nut – Lock 3/8	4
44	20129	36539	Cap Screw – 1/2 x 1-1/2	4
45	20364	72056	Bolt – Carriage 1/2 x 1	2
46	20695	36426	Washer – Flat 1/2	2
47	20714	36422	Washer – Lock 1/2	6
48	20646	36416	Nut – Hex 1/2	6
49	55630	55630	Decal - Warning Falling Hazard	1
50	20817	20817	Pin - Cotter 1/8 x 1	1
51	*368	*368	Decal - Flying Material	1


13
22 19 32
12
32 19 22
1
1
30
2
30


20 21 33
7
17
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15 18
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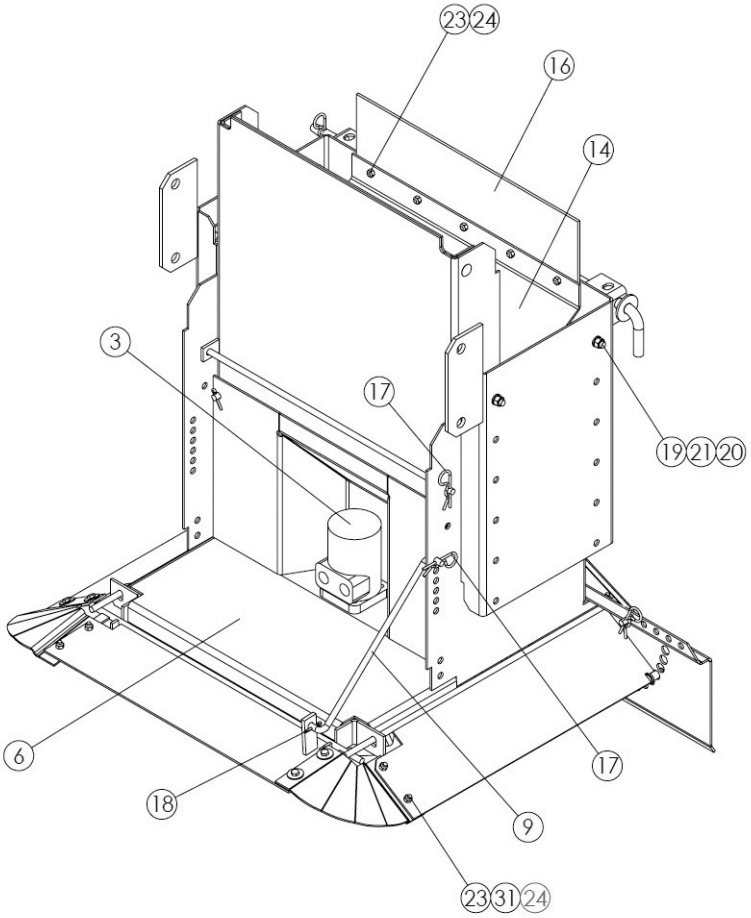
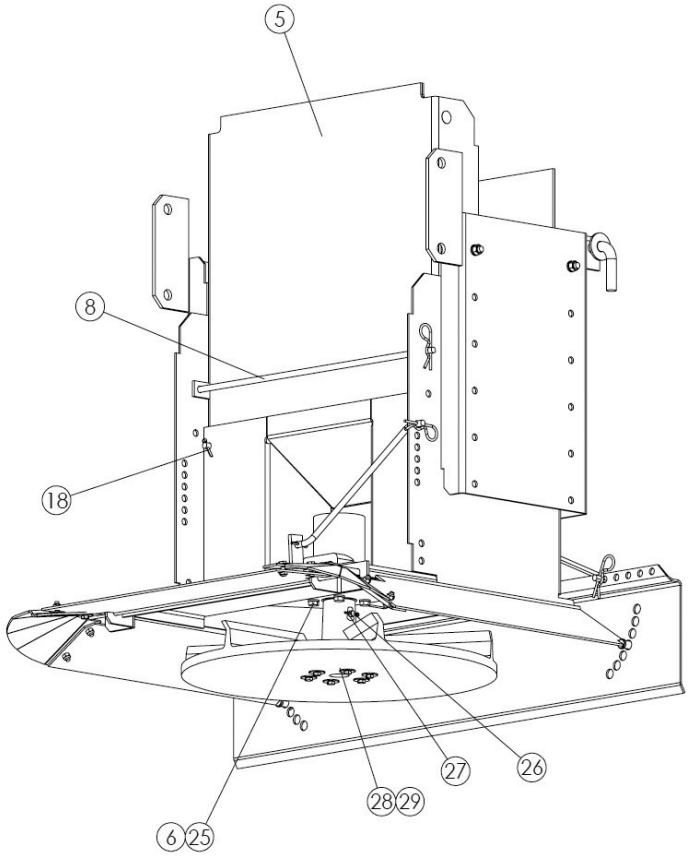
18
17

Spinner - Direct Drive Continued





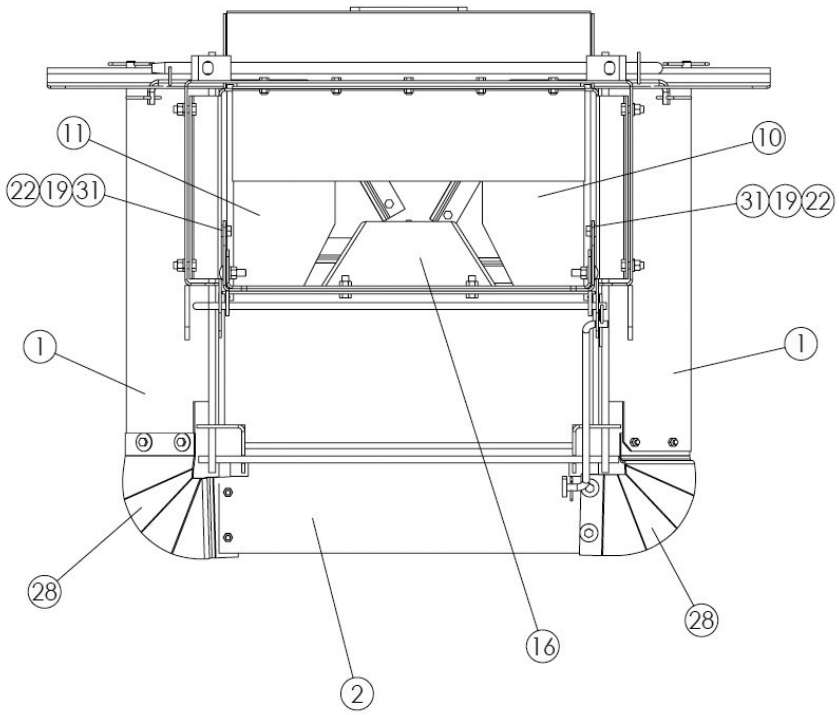
Spinner - Direct Drive Continued

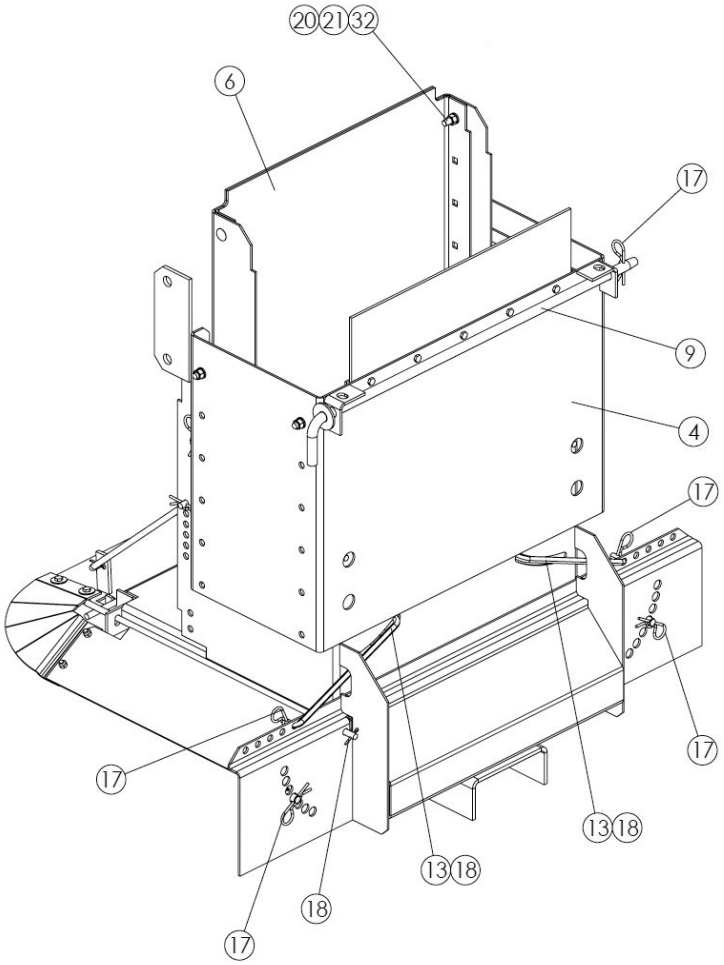
ITEM	PART NO.		DESCRIPTION	QTY
	CS	304 SS		
	87758	88482	Spinner Assy – Steel	
	88483	88485	Spinner Assy – Polyurethane	
1	87780	88464	Baffle - Wldmt Side	2
2	87778	88462	Baffle - Wldmt Rear	1
3	58806	58806	Motor - Hydraulic	1
4	87775	88460	Spinner - Wldmt Upper	1
5	87783	88466	Chute - Wldmt	1
6	87772	88458	Spinner - Wldmt Lower	1
7	87751	88404	Chute - Ext	1
8	87750	88401	Rod - Lock Chute	1
9	87776	88420	Rod - Control Rear	1
10	88396	88396	Disc - Assy 20 Cw Poly	1
	87757	87757	Disc - Assy 20 Cw Steel	
11	88397	88397	Lock - Wldmt Pivot	1
12	87809	88468	Baffle - Wldmt Inner Rh	1
13	87813	88470	Baffle - Wldmt Inner Lh	1
14	87803	88432	Plate - Drop	1
15	87815	88444	Rod - Control Front	2
16	87847	87847	Belt - Spinner Wiper	1
17	40576	36429	Pin - Hair .148 X 2.938 Type	7
18	20822	36427	Pin - Cotter .156 X 1 Zn	7
19	20067	36398	Capscrew - .375-16nc X 1 Gr5	6
20	20712	36420	Washer - Lock .375 Zn	10
21	20644	36414	Nut - Hex .375-16nc Zn	6
22	20678	72054	Nut - Lock .375-16nc Zn	2
23	20003	36393	Capscrew - .25-20nc X .75gr5	13
24	20676	42034	Nut - Lock .25-20nc Zn	13
25	20065	36293	Capscrew - .375-16nc X .75	4
26	6123	6123	Pin - Clevis .375 X 2.25 Zn	1
27	20817	20817	Pin - Cotter .125 X 1 Zn	1

Spinner - Direct Drive Continued

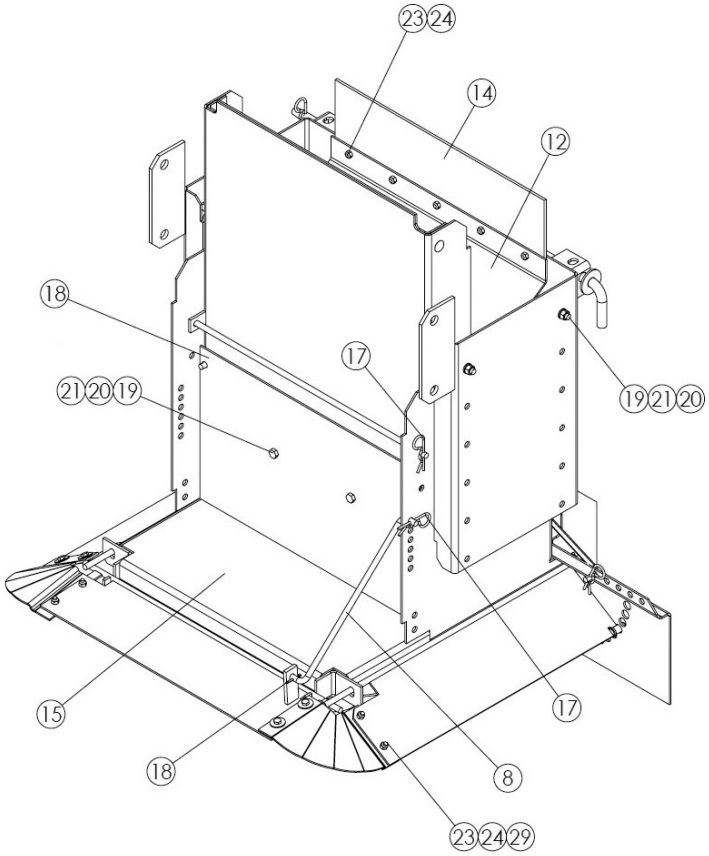
ITEM	PART NO.		DESCRIPTION	QTY
	CS	304 SS		
28	20014	20014	Capscrew - .25-20nc X 3.25 Gr5	1
29	20710	20710	Washer - Lock .25 Zn	1
30	87801	87801	Deflector - Belt	2
31	21423	21423-X1	Washer - Flat .25 Special	8
32	88050	88050	Spacer - Dump Over Chute 304	2
33	20319	36409	Bolt - Carriage .375-16nc X 1.25 ZN	2
34	307255	307255	Decal - Group Spinner	1

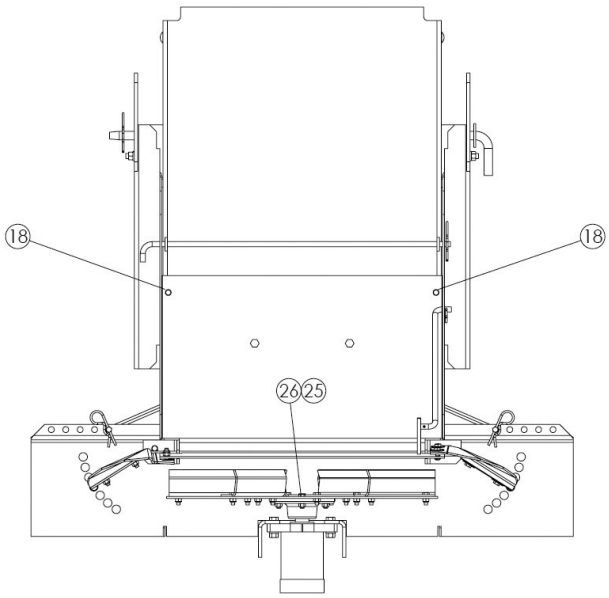
Spinner - Underslung

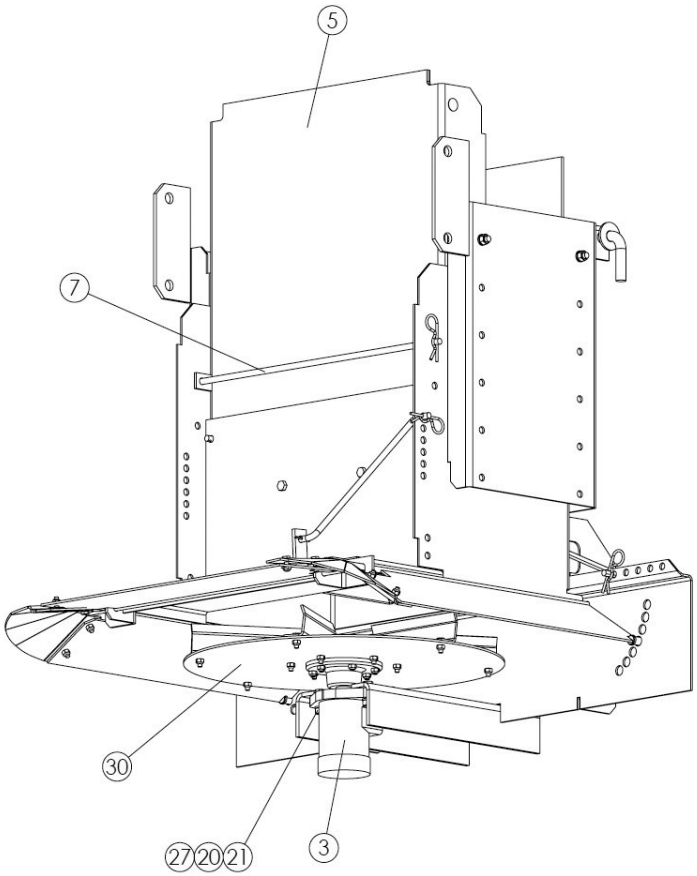




Spinner - Underslung Continued







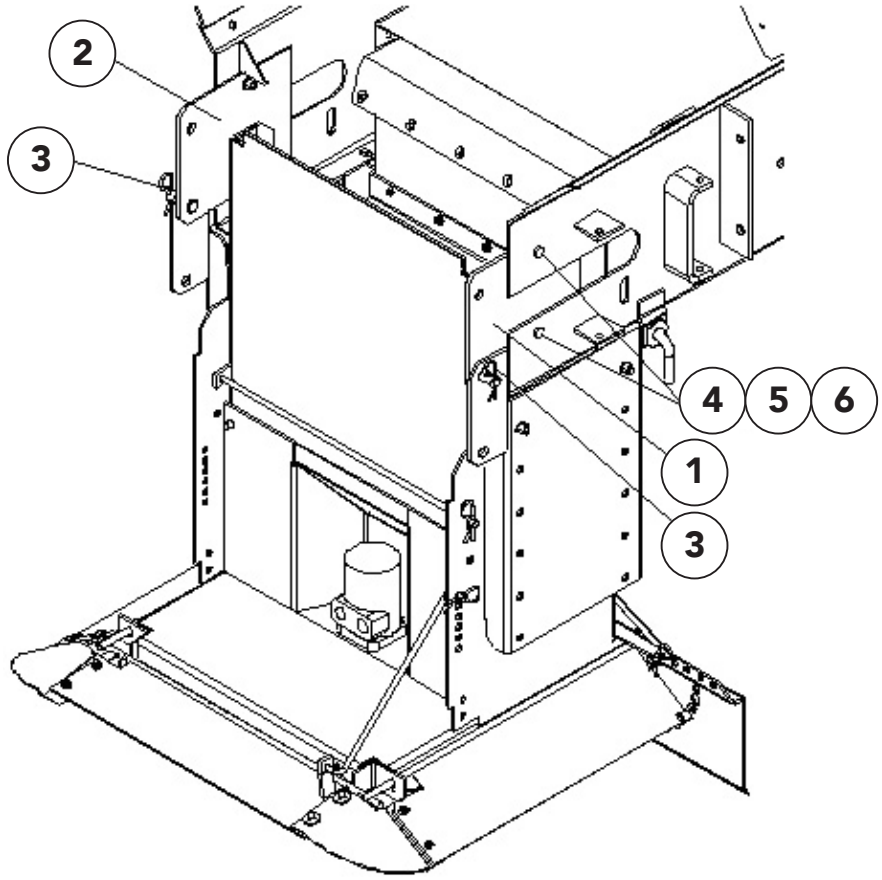
Spinner - Underslung Continued

ITEM	PART NO.		DESCRIPTION	QTY
	CS	304		
	87876	88478	Spinner Assy – Steel	
	88486	88488	Spinner Assy – Polyurethane	
1	87780	88464	Baffle - Side Weldment	2
2	87778	88462	Baffle - Rear Weldment	1
3	37339	37339	Motor - Hydraulic .25"	1
4	87775	88460	Upper - Spinner Wldmt	1
5	87783	88466	Chute - Wldmt	1
6	87751	88404	Chute - Extension	1
7	87750	88401	Rod - Lock Chute	1
8	87776	88420	Rod - Control Rear	1
9	88397	88397	Lock - Pivot Weldment	1
10	87809	88468	Baffle - Inner Rh Wldmt	1
11	87813	88470	Baffle - Inner Lh Wldmt	1
12	87803	88432	Drop - Plate	1
13	87815	88444	Rod - Control Front	2
14	87847	87847	Belt - Spinner Wiper	1
15	87874	88476	Lower - Spinner Wldmt	1
16	96242	88456	Plate - Deflector	1
17	40576	36429	Pin - Hair .148 X 2.688	7
18	20822	36427	Pin - Cotter .125 X 1	7
19	20067	36398	Capscrew - .375-16nc X 1	8
20	20712	36420	Washer - Lock .375	10
21	20644	36414	Nut - Hex .375-16nc	10
22	20678	72054	Nut - Lock .375-16nc	2
23	20003	36393	Capscrew - .25-20nc X .75	13
24	20676	42034	Nut - Lock .25-20nc	13
25	-	20003	Capscrew - .25-20nc X .75	1
26	-	20710	Washer - Lock .25	1
27	20068	36399	Capscrew - .375-16nc X 1.25	2
28	87801	87801	Deflector - Belt	2

Spinner - Underslung Continued

ITEM	PART NO.		DESCRIPTION	QTY
	CS	304		
29	21423	21423-X1	Washer - Flat .25 Special	8
30	90831	90831	Disc - Spinner Assembly Poly	1
	73492	73492	Disc - Spinner Assembly Steel	1
31	88050	88050	Spacer - Dump Over Chute	2
32	20319	36409	Bolt - Carriage .375-16nc X 1.25	2
33	307255	307255	Decal - Group Spinner	1

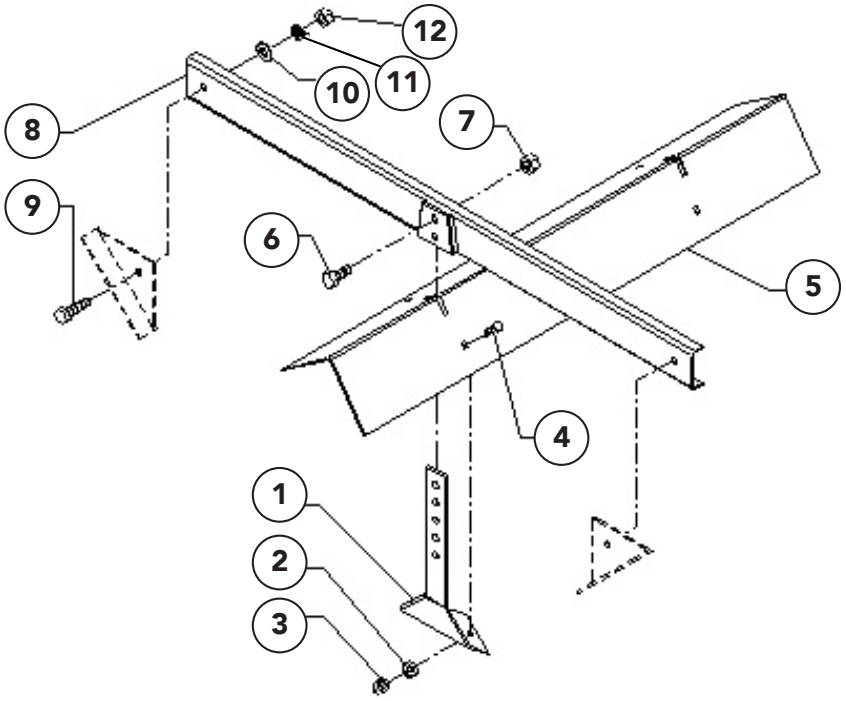
Spinner Mounting Kit



ITEM	PART NO.		DESCRIPTION	QTY
	CS	304 SS		
1	87845	97145	Support – Pivot RH Wldmt	1
2	87846	97146	Support – Pivot LH Wldmt	1
3	40576	36429	Pin – Hair	2
4	20067	36398	Cap Screw – 3/8 x 1	4
5	20712	36420	Washer – Lock 3/8	4
6	20644	36414	Nut – Hex 3/8	4
7	* 20364	72056	Bolt – Carriage 1/2 x 1	2
8	* 20695	36426	Washer – Flat 1/2	2
9	* 20714	36422	Washer – Lock 1/2	2
10	* 20646	36416	Nut – Hex 1/2	2
11	*20693	36425	Washer - Flat 3/8	4

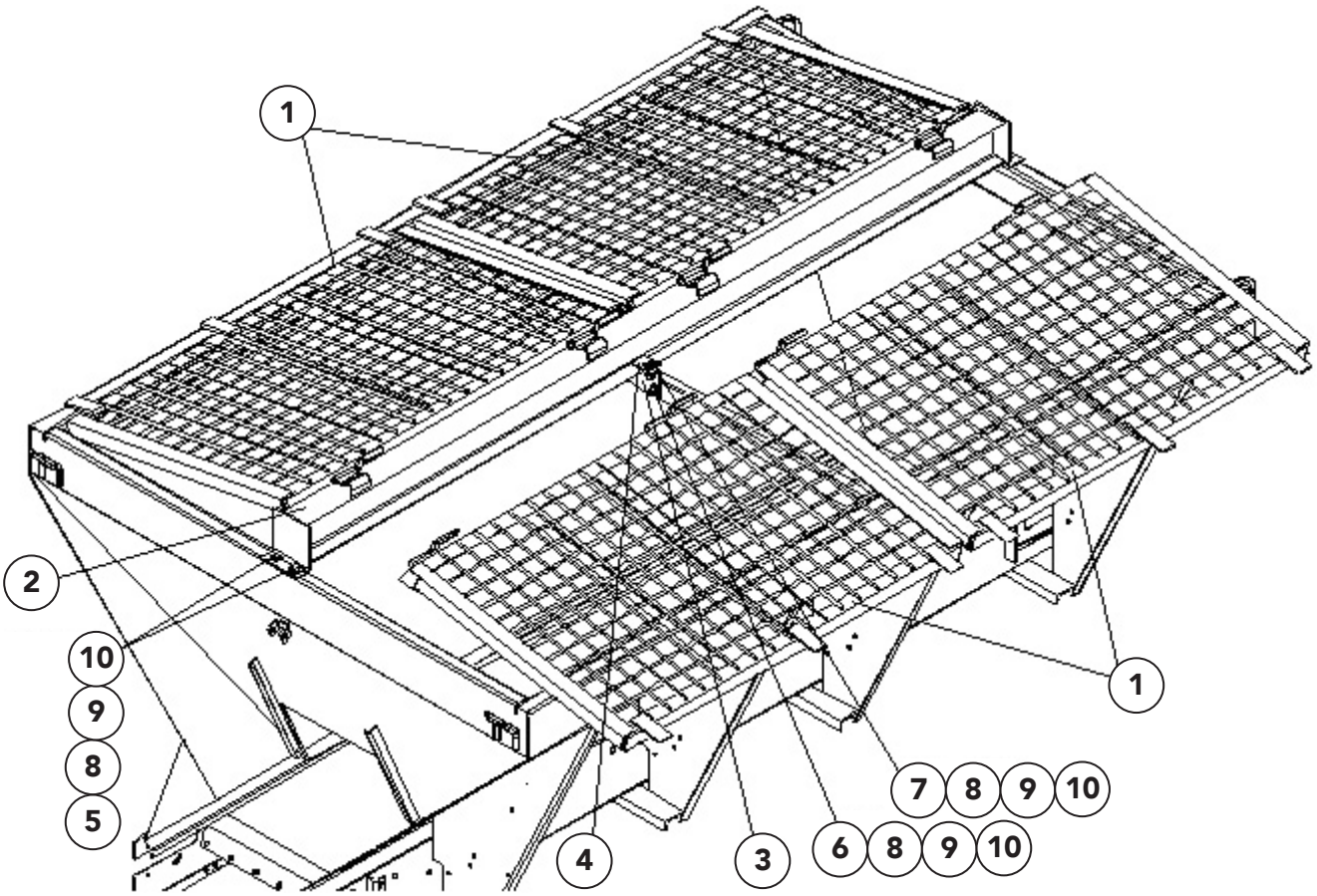
* - Not Shown – Used to prevent spinner from pivoting.

Inverted "V" - Swinging



ITEM	PART NO.			DESCRIPTION	QTY
	CS	409 SS	304 SS		
1	82625	82626	82626	Bar – Adjustment	AR
2	20692	36424	36424	Washer – Flat 5/16	AR
3	20677	42221	42221	Nut – Lock 5/16	AR
4	20291	42639	42639	Bolt – Carriage 5/16 x 1	AR
5	82613	82617	82621	Inverted V – Wldmt 9'-10' Units	1
	82614	82618	82622	Inverted V – Wldmt 11'-12' Units	1
	82615	82619	82623	Inverted V – Wldmt 13'-14' Units	1
	82616	82620	82624	Inverted V – Wldmt 15'-16' Units	1
6	20176	58800	58800	Cap Screw – 5/8 x 1 3/4	AR
7	20682	41762	41762	Nut – Lock 5/8	AR
8	81261	81262	81263	Hanger – Wldmt V	AR
9	20128	36402	36402	Cap Screw – 1/2 x 1 1/4	AR
10	20695	36426	36426	Washer – Flat 1/2	AR
11	20714	36422	36422	Washer – Lock 1/2	AR
12	20646	36416	36416	Nut – Hex 1/2	AR

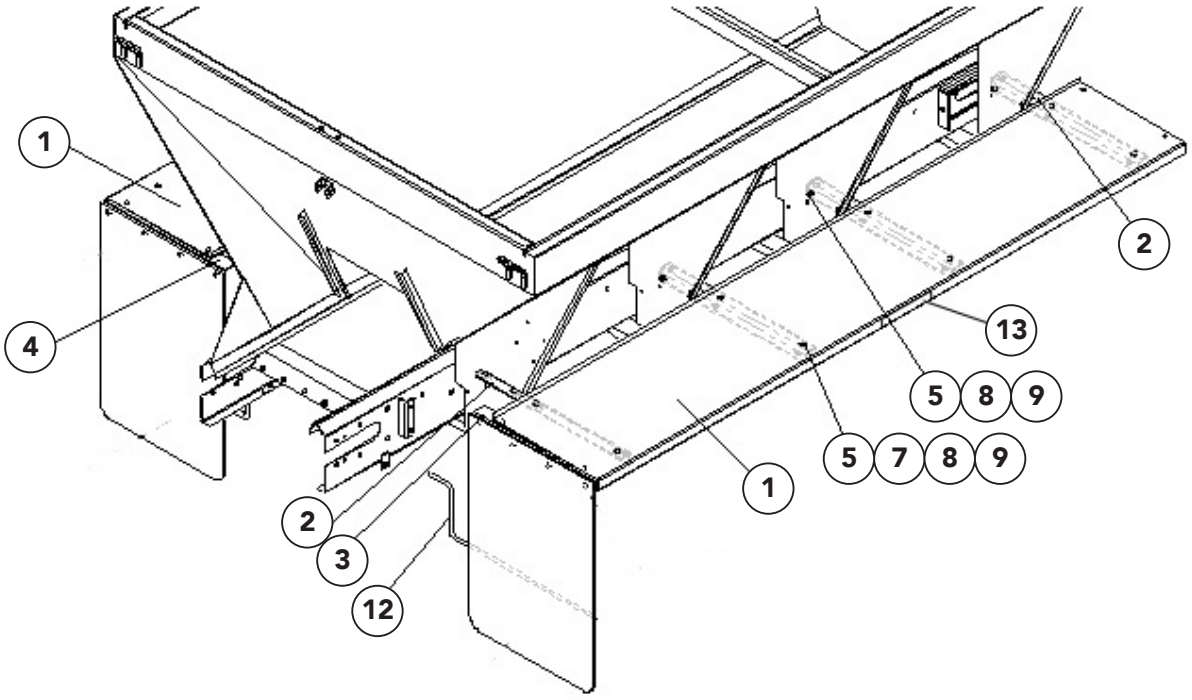
AR – As Required



UNIT LENGTH	QUANTITY		
	4′ SCREEN	5′ SCREEN	6′ SCREEN
9′	2	2	-
10′	-	4	-
11′	-	2	2
12′	-	-	4
13′	4	2	-
14′	2	4	-
15′	-	6	-
16′	-	4	2

ITEM	PART NO.	DESCRIPTION	QTY
1	44184	Screen Wldmt – 4′	AR
	44185	Screen Wldmt – 5′	AR
	44186	Screen Wldmt – 6′	AR
2	44188	Ridgepole Wldmt – 9′ Units	1
	44189	Ridgepole Wldmt – 10′ Units	1
	44190	Ridgepole Wldmt – 11′ Units	1
	44191	Ridgepole Wldmt – 12′ Units	1
	44192	Ridgepole Wldmt – 13′ Units	1
	44193	Ridgepole Wldmt – 14′ Units	1
	44194	Ridgepole Wldmt – 15′ Units	1
	44195	Ridgepole Wldmt – 16′ Units	1
3	203886	Bracket – Angle, 12′ – 16′ Units	1
4	44238	Clamp – Flat, 12′ – 16′ Units	2
5	20128	Cap Screw – 1/2 x 1 1/4	4
6	20129	Cap Screw – 1/2 x 1 1/2, 12′ – 16′ Units	2
7	20130	Cap Screw – 1/2 x 1 3/4, 12′ – 16′ Units	2
8	20695	Washer – Flat 1/2	12
9	20714	Washer – Lock 1/2	8
10	20646	Nut – Hex 1/2	8

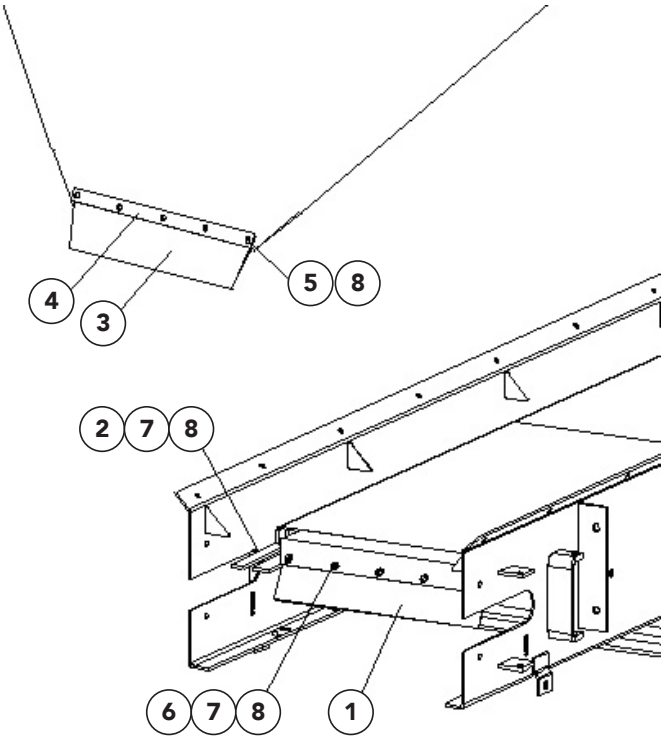
* - Not Shown


1
4
2
13
5
8
9
5
7
8
9
1
2
3
12

Fenders continued

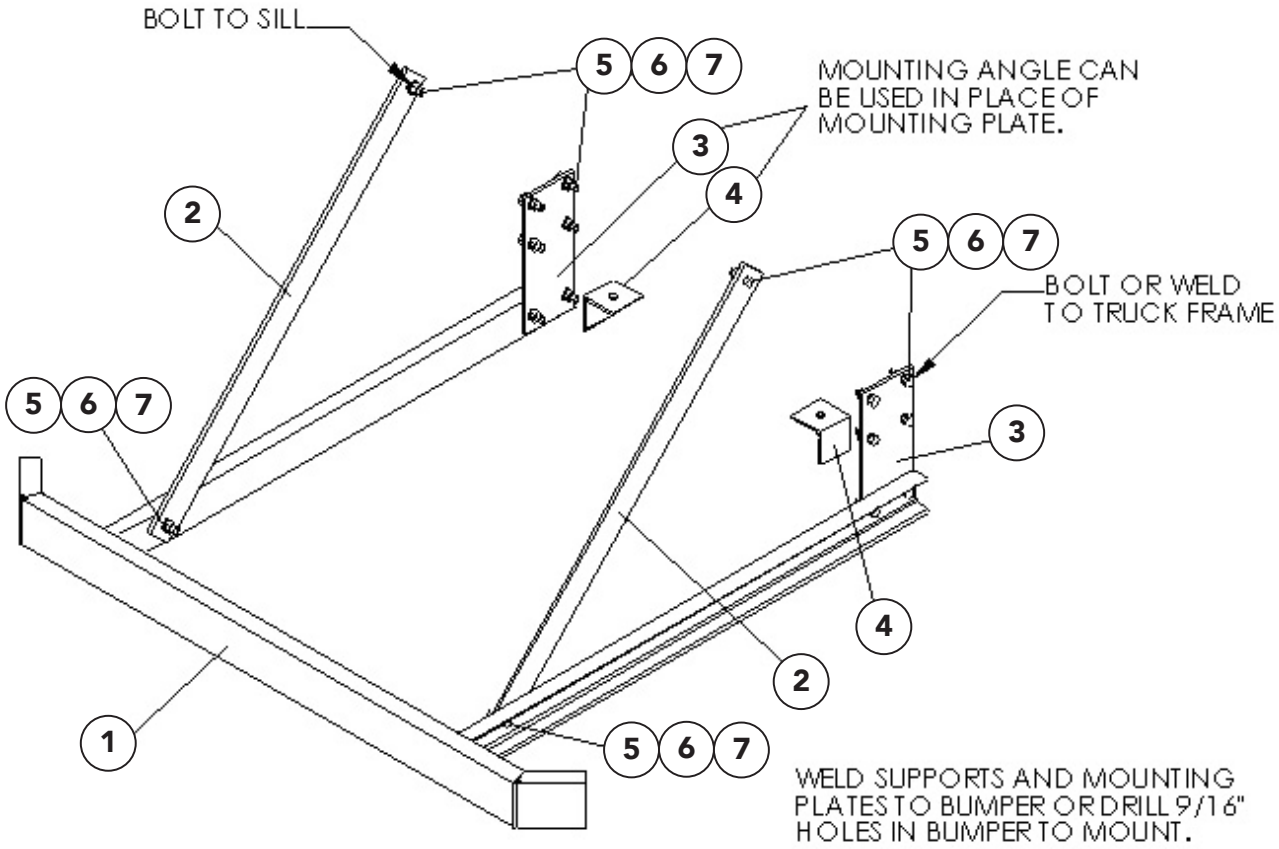
ITEM	PART NO.		DESCRIPTION	QTY
	CS	304 SS		
1	81415	81463	Fender – 9′	
	81416	81464	Fender – 10′	2
	81417	81465	Fender – 11′	2
	81418	81466	Fender – 12′	2
	81419	81467	Fender – 13′	2
	81420	81468	Fender – 14′	2
	81421	81469	Fender – 15′	2
	81422	81470	Fender – 16′	2
2	46445	46445	Angle – Fender	AR
3	46434	71872	Bracket – Mudflap Mounting RH	1
4	46435	71873	Bracket – Mudflap Mounting LH	1
5	20318	36408	Bolt – Carriage 3/8 x 1	AR
6			NOT USED	
7	20693	36425	Washer – Flat 3/8	AR
8	20712	36420	Washer – Lock 3/8	AR
9	20644	36414	Nut – Hex 3/8	AR
10			NOT USED	
11			NOT USED	
12			NOT USED	
13	39200	39200	Decal - Warning Keep Off Fender	2
14	*21699	21699	Anti-Skid Fabric (Specify Length)	2

* - Not Shown AR - As Required

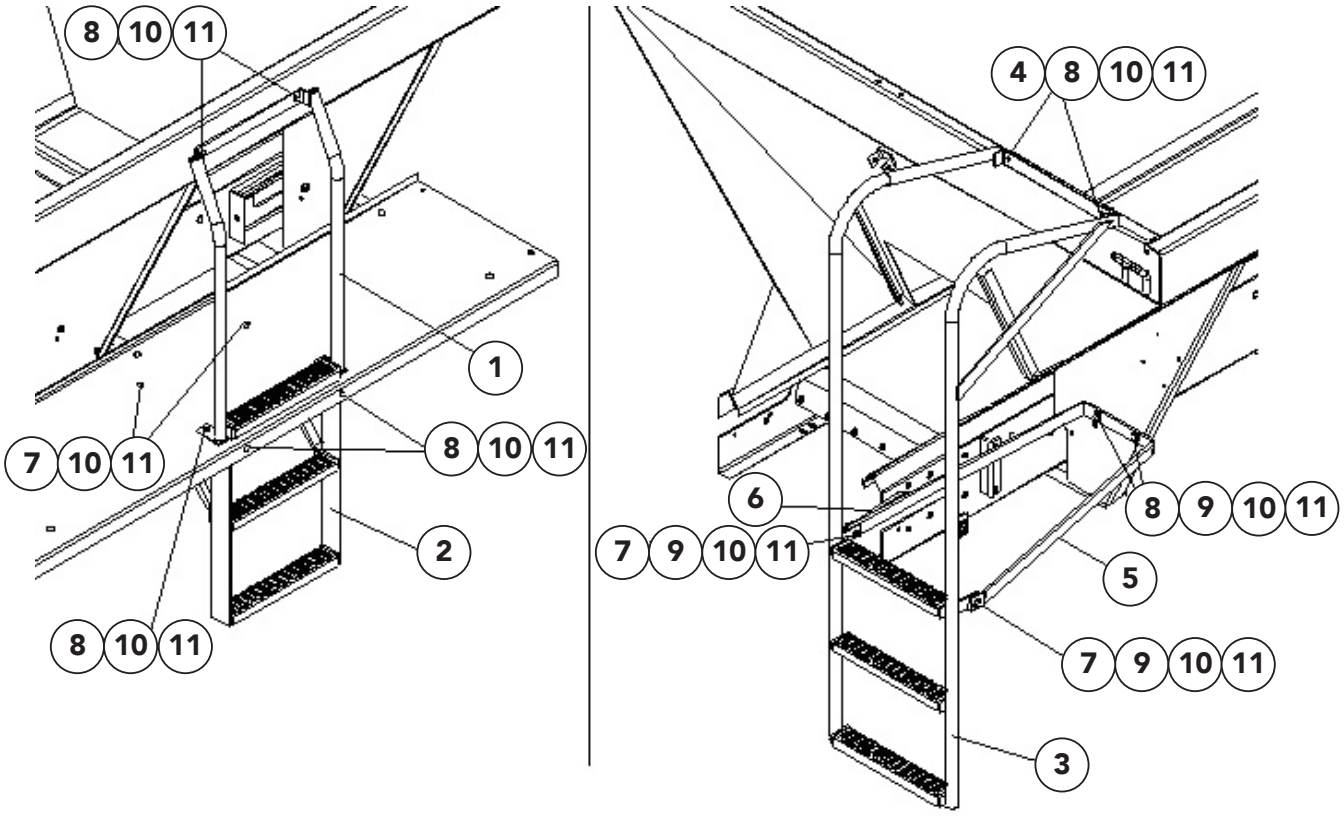


ITEM	PART NO.		DESCRIPTION	QTY
	CS	SS		
1	3735	3735	Wiper – Belt Rear (#3 Only)	1
2	33207	33207	Sealer – Belt Sprocket	2
3	39426	39426	Wiper – Belt Front	1
4	54230	54230	Retainer – Belt	1
5	20583	32446	Screw – 1/4 x 3/4	5
6	20619	36405	Screw – Machine 1/4 x 3/4 (#3 Only)	5
7	20692	36423	Washer – Flat 1/4	AR
8	20676	42034	Nut – Lock 1/4	AR

AR - As Required

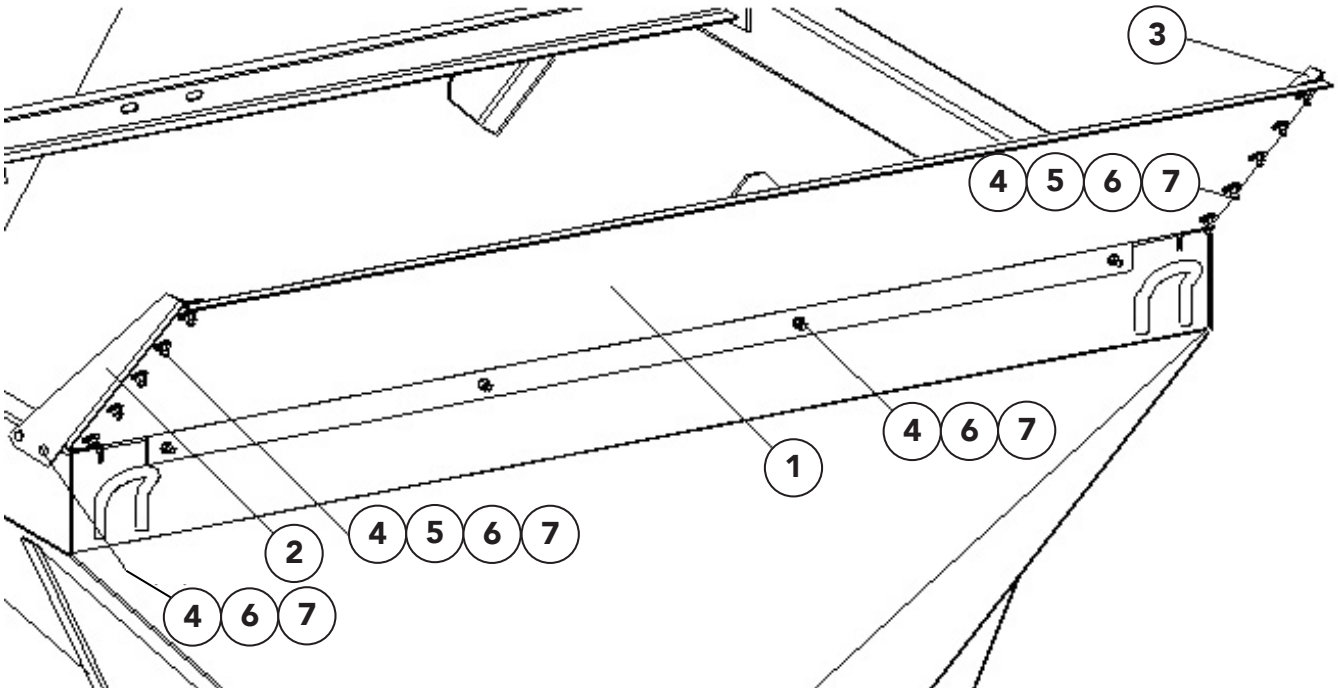


ITEM	PART NO.	DESCRIPTION	QTY
1	71272	Bumper Wldmt	1
2	851	Bar – Support	2
3	71274	Plate – Mounting	2
4	1014	Angle – Mounting (Can replace 71274)	2
5	20129	Cap Screw – 1/2 x 1 1/2	16
6	20714	Washer – Lock 1/2	16
7	20646	Nut – Hex 1/2	16



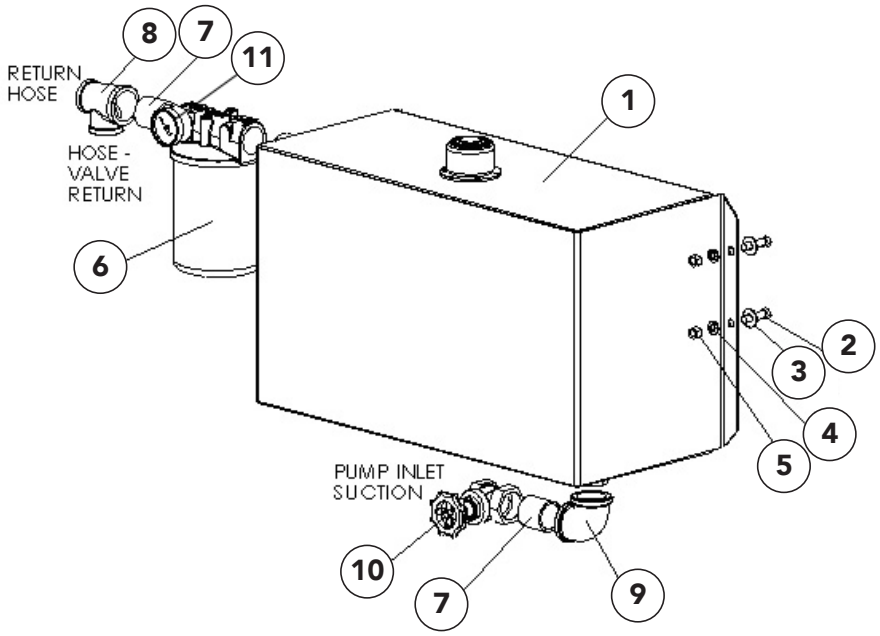
ITEM	PART NO.	DESCRIPTION	QTY
1	72795	Ladder – Upper Wldmt	1
2	72797	Ladder – Lower Wldmt	1
3	72770	Ladder – Rear Wldmt	1
4	39935	Angle – Mounting, Use on standard units only	2
5	96237	Bracket – Ladder	1
6	72575	Bracket – Ladder	1
7	20069	Cap Screw – 3/8 x 1 1/2	AR
8	20068	Cap Screw – 3/8 x 1 1/4	AR
9	20693	Washer – Flat 3/8	AR
10	20712	Washer – Lock 3/8	AR
11	20644	Nut – Hex 3/8	AR

Cab Shield



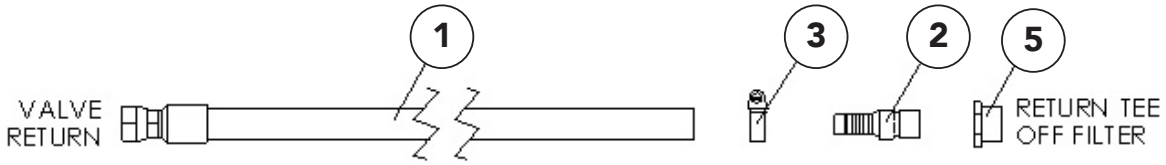
ITEM	PART NO.		DESCRIPTION	QTY
	CS	304 SS		
1	39812	79154	Panel – Shield 57" Cab Height	1
	39818	79156	Panel – Shield 63" Cab Height	1
	39824	79158	Panel – Shield 69" Cab Height	1
2	39813	79170	Support – RH 57" Cab Height	1
	39819	79174	Support – RH 63" Cab Height	1
	39825	79178	Support – RH 69" Cab Height	1
3	39815	79172	Support – LH 57" Cab Height	1
	39821	79176	Support – LH 63" Cab Height	1
	39827	79180	Support – LH 69" Cab Height	1
4	20067	36398	Cap Screw – 3/8 x 1	AR
5	20693	36425	Washer – Flat 3/8	AR
6	20712	36420	Washer – Lock 3/8	AR
7	20644	36414	Nut – Hex 3/8	AR

Reservoir & Filter Truck Chassis Mount



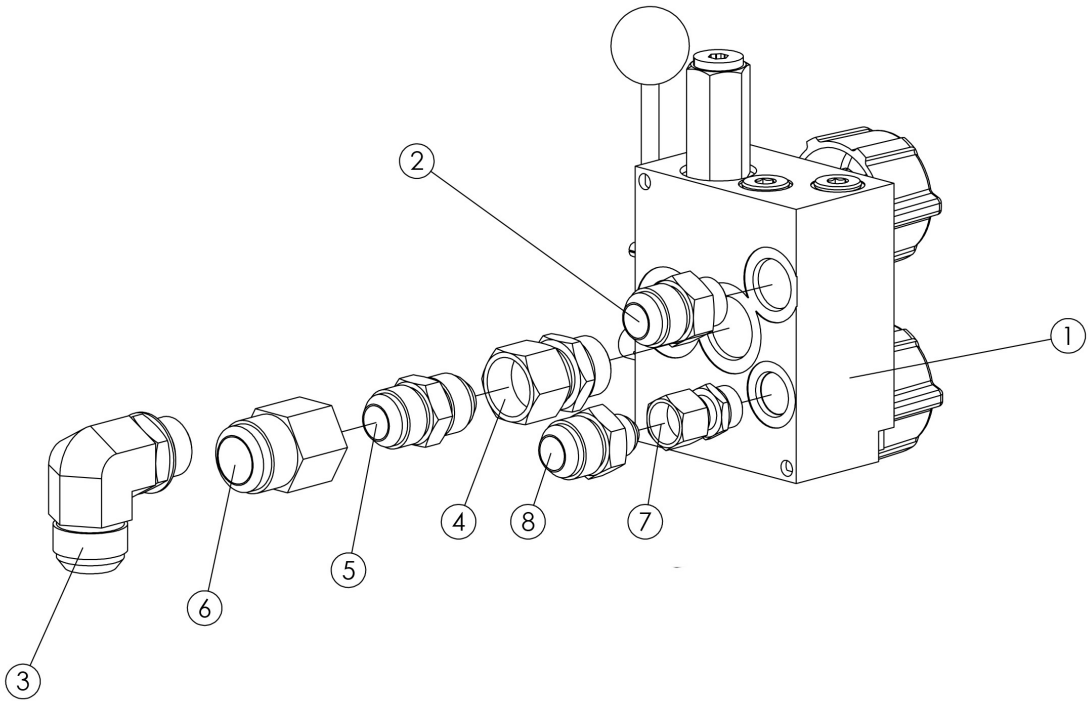
ITEM	PART NO.	DESCRIPTION	QTY
1	39796	Reservoir Wldmt, Includes:	1
	39929	Cap – Filler	1
	6033	Plug	1
2	20069	Cap Screw – 3/8 x 1 1/2	4
3	20693	Washer – Flat 3/8	4
4	20712	Washer – Lock 3/8	4
5	20644	Nut – Hex 3/8	4
6	39845	Filter Assy	1
	43530	Filter Element	1
7	6028	Nipple – Close	2
8	6318	Tee – Pipe	1
9	6011	Elbow – Pipe	1
10	22155	Valve – Gate	1
11	43534	Gauge	1

Hose - Return Kit, Truck Chassis Reservoir



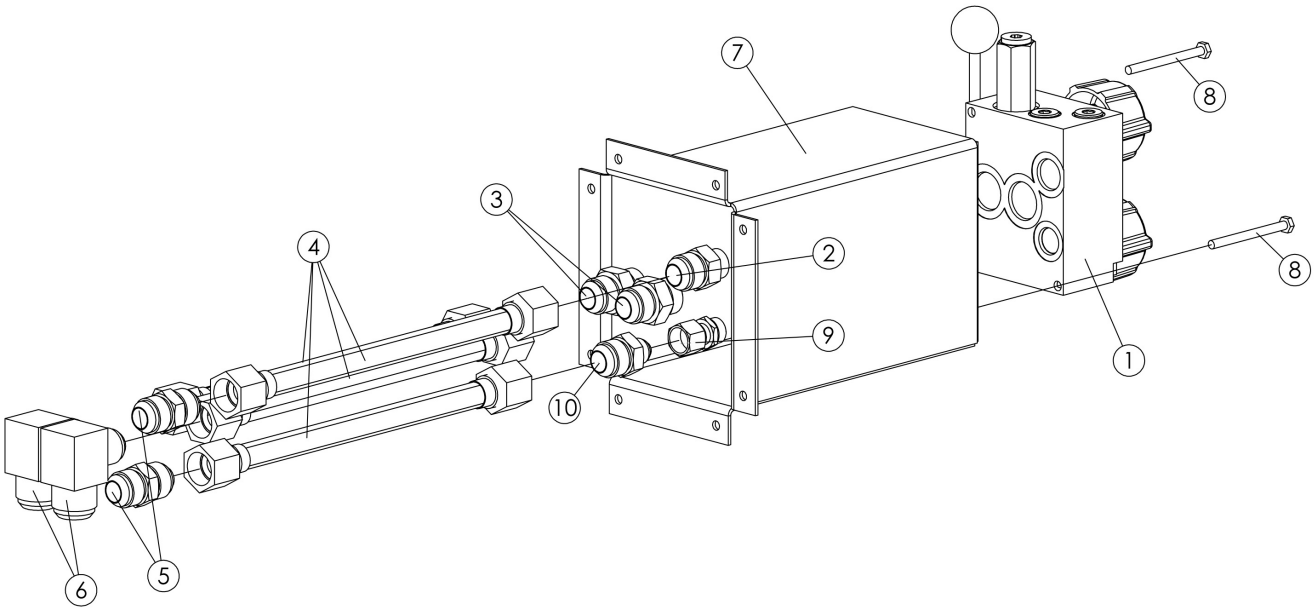
ITEM	PART NO.	DESCRIPTION	QTY
1	88326	Hose Assy, Valve at Cab	1
	88325	Hose Assy, Valve at Rear	1
	88319	Hose Assy, Valve at Rear Series Valve	1
2	22426	End – Hose	1
	22425	End – Hose, Valve at Rear Series Valve	1
3	6335	Clamp – Hose 1"	1
	22381	Clamp – Hose 3/4", Valve at Rear Series Valve	1
4	6034	Plug – Pipe, Valve at Rear	1
5	22208	Bushing – Pipe	1

Valve - Manual, Cab Mount
Truck Chassis Mount Reservoir



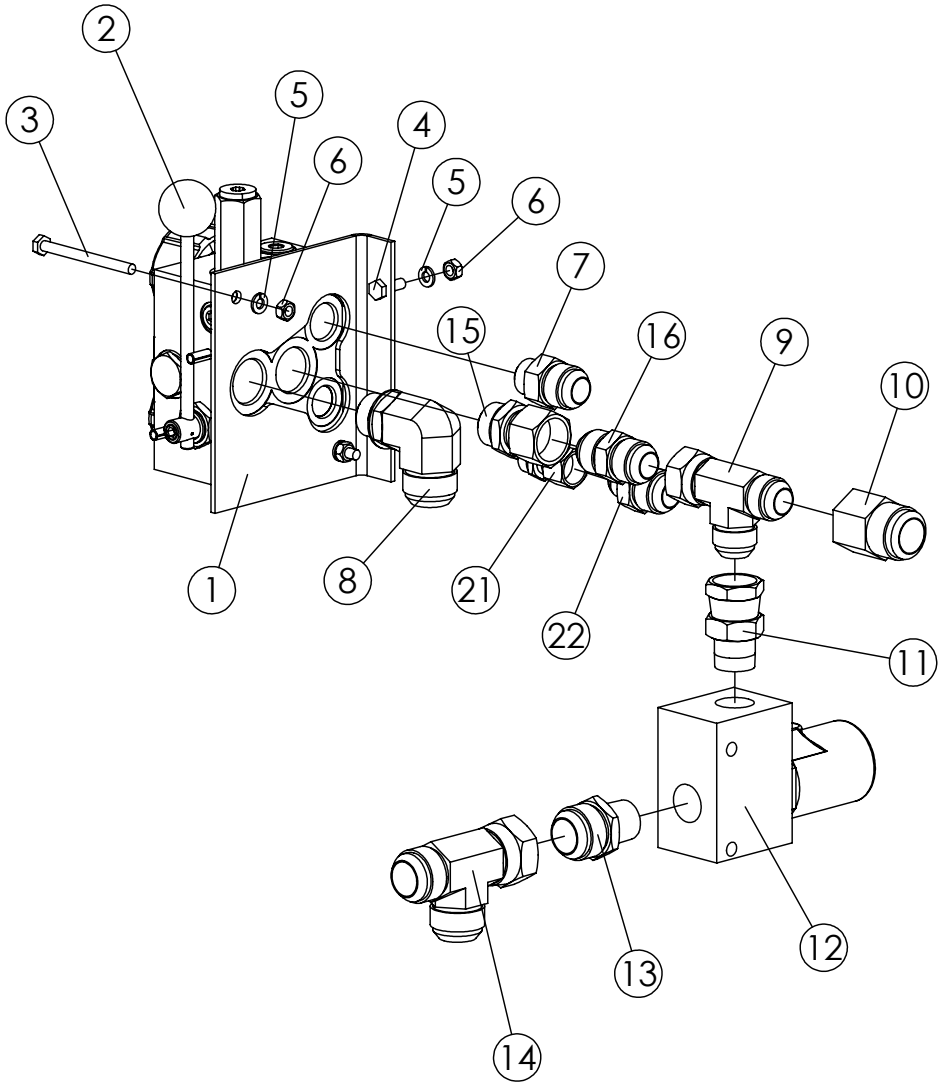
ITEM	PART NO.	DESCRIPTION	QTY
1	310650	Valve – Manual Dual	1
2	29753	Adapter – Connector	1
3	29838	Adapter – Elbow	1
4	29788	Nipple – Pipe	1
5	29817	Coupling – Pipe	1
6	34712	Adapter – Connector	1
7	34846	Adapter – Connector	1
8	306377	Fitting	1

Valve - Manual, Pedestal Mount
Truck Chassis Mount Reservoir



ITEM	PART NO.	DESCRIPTION	QTY
1	310650	Valve – Manual Dual	1
2	29753	Adapter – Connector	1
3	29789	Adapter – Connector	2
4	36800	Tube Assy	4
5	29817	Adapter – Union	2
6	29786	Adapter – Elbow	2
7	36803	Pedestal	1
8	20013	Cap Screw – 1/4 x 3	2
9	34846	Fitting	1
10	306377	Fitting	1

Valve - Manual, Rear Mount
Truck Chassis Mount Reservoir

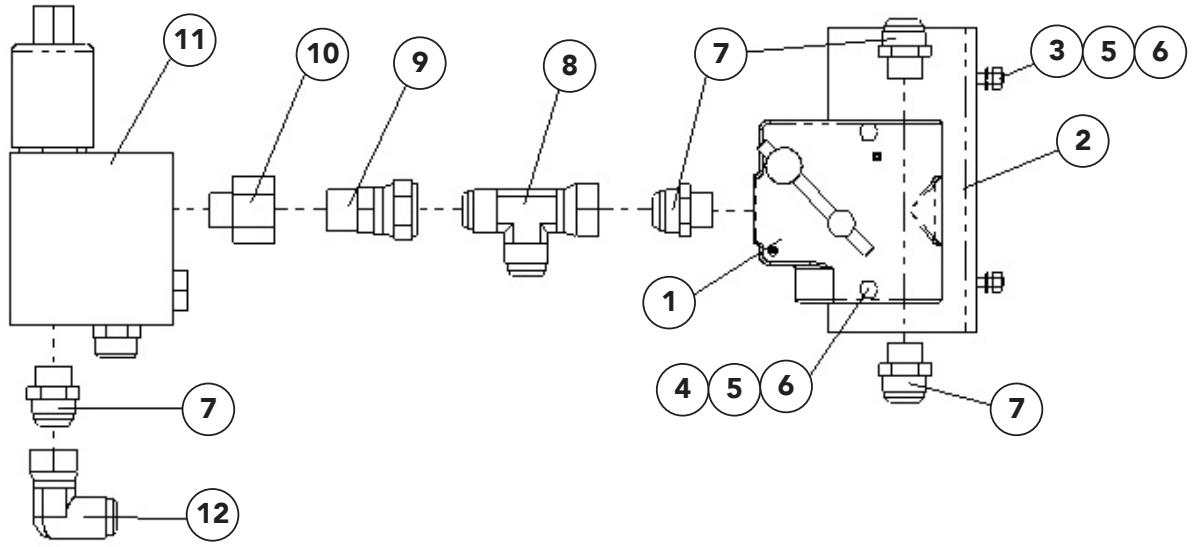


Valve - Manual, Rear Mount
Truck Chassis Mount Reservoir Cont.

ITEM	PART NO.	DESCRIPTION	QTY
	310655	Valve Assy – Manual, Rear Mount	
	*31375	Kit - Electrical Control Switch for Dump Valve	
1	88049	BRACKET - VALVE	1
2	310650	VALVE - CONTROL 1500PSI	1
3	20013	CAPSCREW - .25-20NC X 3 GR5 ZN	2
4	20003	CAPSCREW - .25-20NC X .75GR5	2
5	20710	WASHER - LOCK .25 ZN	4
6	20642	NUT - HEX .25-20NC ZN	4
7	29753	FITTING - 12-10 SPECIAL STRGHT	1
8	29838	FITTING - 16-12 070220	1
9	29781	FITTING - 12-12-12 070432	1
10	34712	FITTING - 12-16 070123	1
11	34826	FITTING - 12-12 NON STANDARD	1
12	302564	VALVE - SOLENOID 2-WAY N/O	1
13	29757	FITTING - 16-12 070102	1
14	29850	FITTING - 16-16-16 070432	1
15	29788	FITTING - 12-12 NON STANDARD	1
16	29817	FITTING - 12-12 070101	1
17	31572	TERMINAL - RING	1
18	21583	WIRE - 14GA BROWN	3
19	6488	CONNECTOR - WIRE MALE	3
20	12373	CONNECTOR - WIRE	1
21	34846	FITTING - 8-8 NON STANDARD	1
22	306377	FITTING - 12-8 070101	1

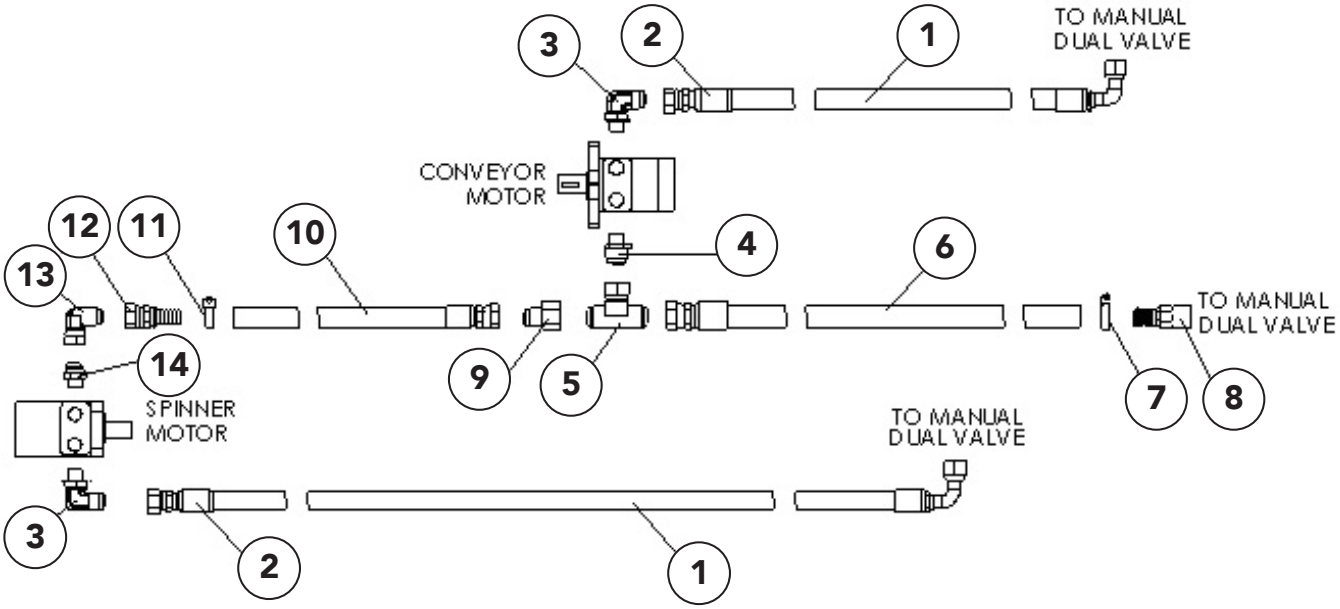
* - Not Shown

Valve - Series



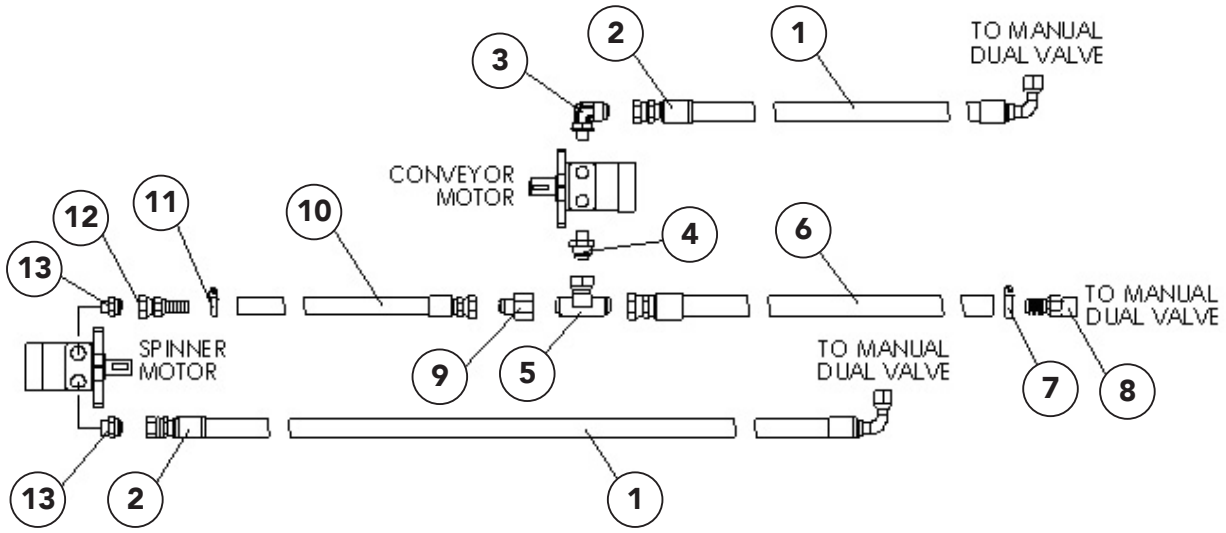
ITEM	PART NO.	DESCRIPTION	QTY
1	38420	Valve – Control	1
2	98779	Bracket – Valve	1
3	20003	Cap Screw – 1/4 x 3/4	2
4	20011	Cap Screw – 1/4 x 2-1/2	2
5	20710	Washer – Lock 1/4	4
6	20642	Nut – Hex 1/4	4
7	29753	Adapter – Connector	AR
8	29781	Tee – Swivel Nut	1
9	34826	Adapter – Connector	1
10	22020	Fitting	1
11	56296	Valve – Dump/Relief 1500 PSI	1
12	34709	Adapter – Elbow 90°	1
13	*31375	Kit - Electrical Control Switch	1

Hydraulics - Hose & Fittings Direct Drive Spinner, Manual Valve At Cab



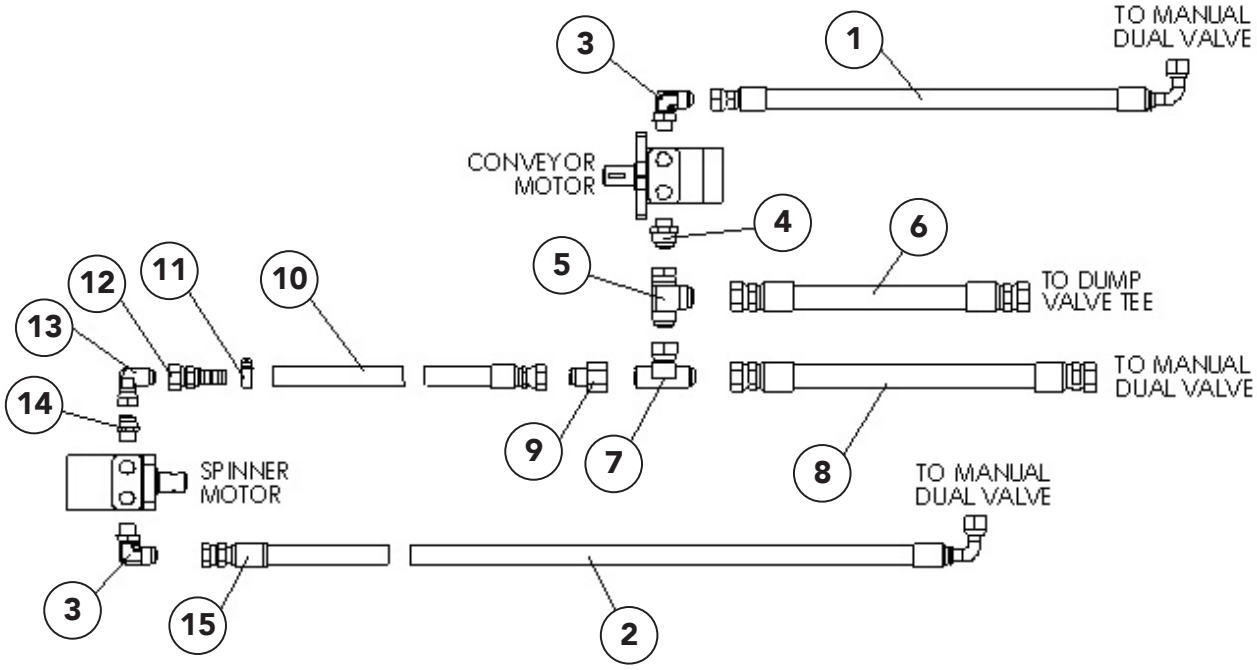
ITEM	PART NO.	DESCRIPTION	QTY
1	88313	Hose Assy	2
2	56508	Fitting – Hose	2
3	29773	Adapter – Elbow	2
4	29778	Adapter – Connector	1
5	29836	Tee – Swivel Nut	1
6	88325	Hose Assy	1
7	6335	Clamp – Hose	1
8	22426	End – Hose	1
9	34849	Adapter	1
10	88320	Hose Assy	1
11	22381	Clamp – Hose	1
12	11424	End – Hose	1
13	34709	Adapter – Elbow	1
14	29753	Adapter - Connector	1

Hydraulics - Hose & Fittings Underslung Spinner, Manual Valve at Cab



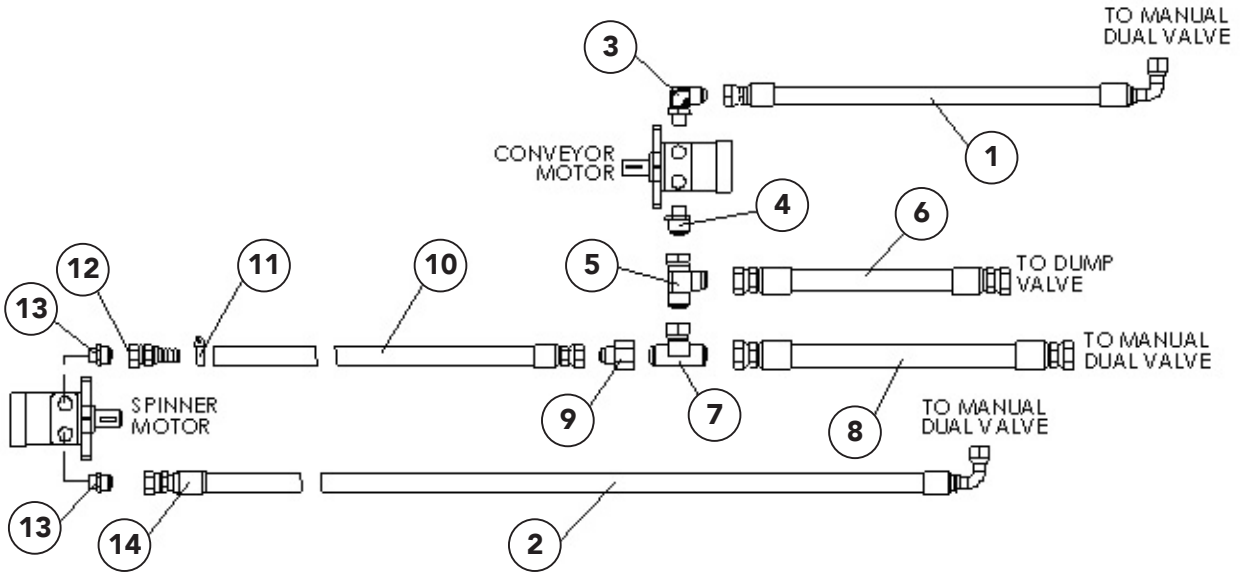
ITEM	PART NO.	DESCRIPTION	QTY
1	88313	Hose Assy	2
2	56508	Fitting – Hose	2
3	29773	Adapter – Elbow	1
4	29778	Adapter – Connector	1
5	29836	Tee – Swivel Nut	1
6	88325	Hose Assy	1
7	6335	Clamp – Hose	1
8	22426	End – Hose	1
9	34849	Adapter	1
10	88320	Hose Assy	1
11	22381	Clamp – Hose	1
12	11424	End – Hose	1
13	29753	Adapter – Connector	2

Hydraulics - Hose & Fittings Direct Drive Spinner, Manual Valve at Rear



ITEM	PART NO.	DESCRIPTION	QTY
1	88316	Hose Assy	1
2	88312	Hose Assy	1
3	29773	Adapter – Elbow	2
4	29778	Adapter – Connector	1
5	29850	Tee – Swivel Nut	1
6	88328	Hose Assy	1
7	29836	Tee – Swivel Nut	1
8	88327	Hose Assy	1
9	34849	Adapter	1
10	88320	Hose Assy	1
11	22381	Clamp – Hose	1
12	11424	End – Hose	1
13	34709	Adapter – Elbow	1
14	29753	Adapter – Connector	1
15	56508	Fitting – Hose	1

Hydraulics - Hose & Fittings
Underslung Spinner, Manual Valve At Rear



ITEM	PART NO.	DESCRIPTION	QTY
1	88316	Hose Assy	1
2	88312	Hose Assy	1
3	29773	Adapter – Elbow	1
4	29778	Adapter – Connector	1
5	29850	Tee – Swivel Nut	1
6	88328	Hose Assy	1
7	29836	Tee – Swivel Nut	1
8	88327	Hose Assy	1
9	34849	Adapter	1
10	88320	Hose Assy	1
11	22381	Clamp – Hose	1
12	11424	End – Hose	1
13	29753	Adapter – Connector	2
14	56508	Fitting – Hose	1

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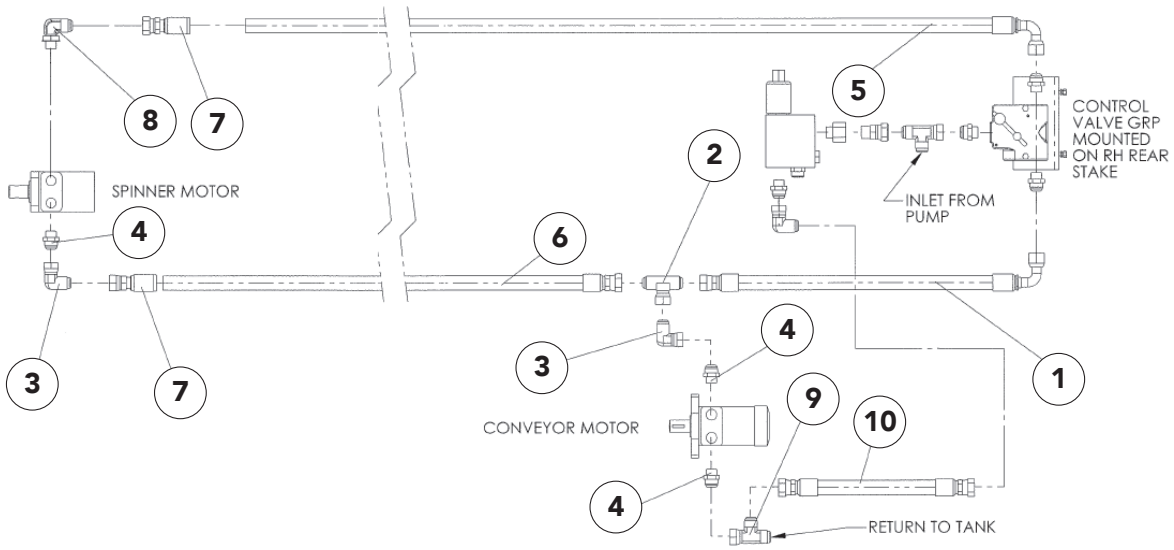
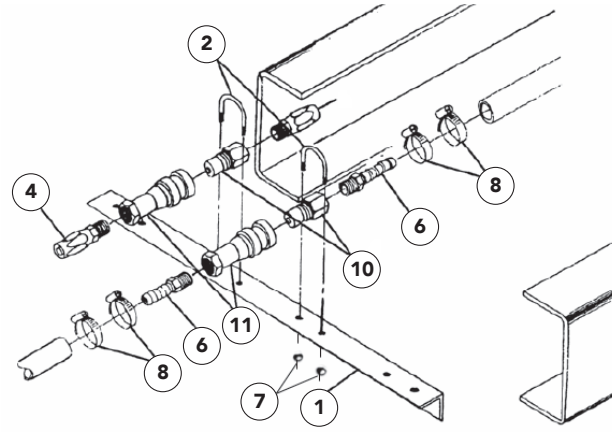
Hydraulics - Hose & Fittings
Series Valve To Valve

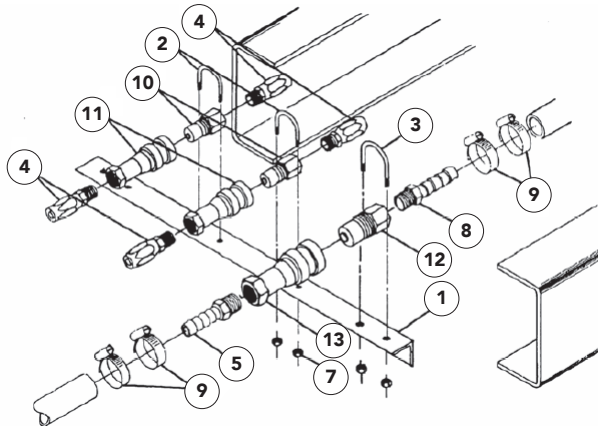


ITEM	PART NO.	DESCRIPTION	QTY
1	88316	Hose – Assy 3/4 x 27-1/2	1
2	29809	Adapter – Tee Branch	1
3	34709	Adapter – Elbow 90°	2
4	29753	Adapter – Connector	3
5	88312	Hose – Assy 3/4 x 118	1
6	56442	Hose – 3/4 x 90-5/8	1
7	56508	Fitting – Hose Reusable	2
8	29773	Adapter – Elbow 90°	1
9	29781	Tee – Swivel Nut	1
10	88324	Hose – Assy 3/4 x 16 CB	1

Hydraulics - Quick Disconnect



Quick Disconnect Series Valve

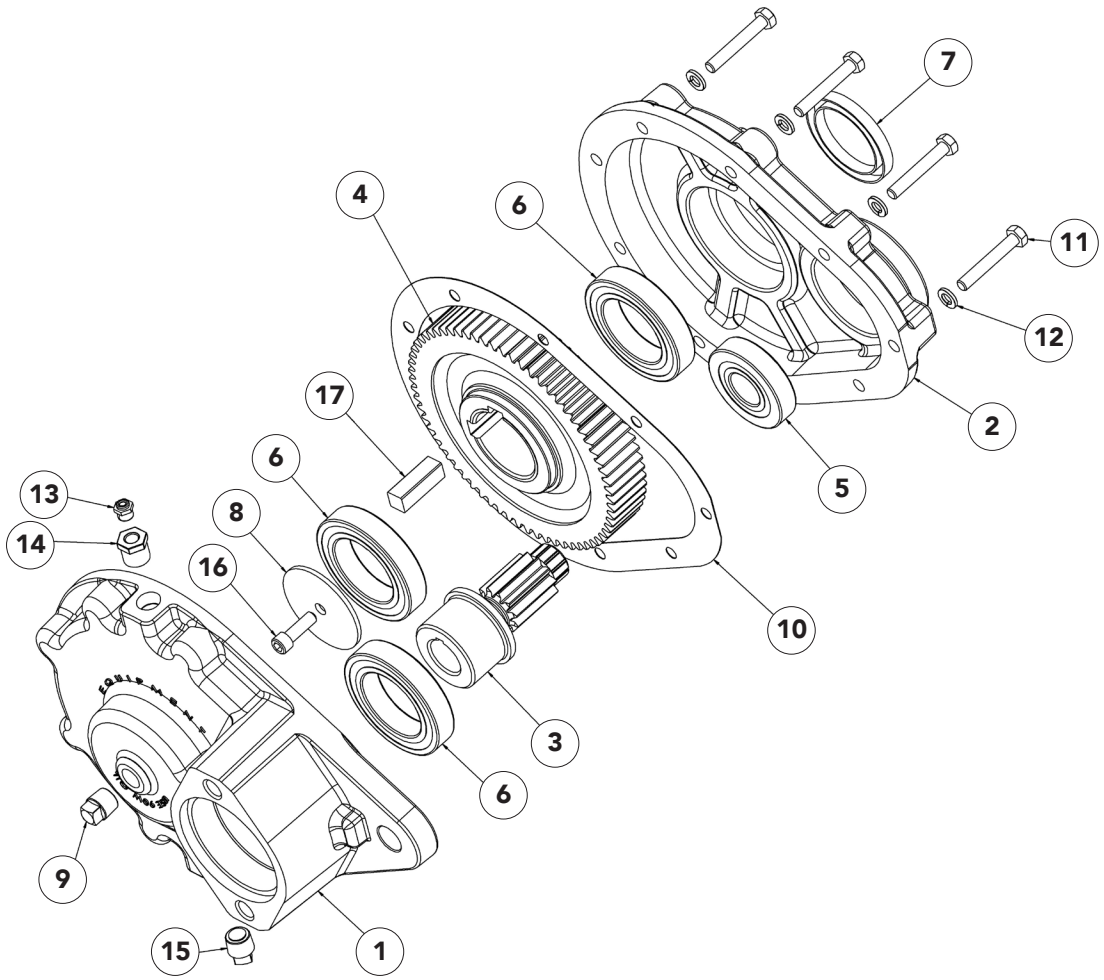


Quick Disconnect Manual Dual Valve

ITEM	PART NO.	DESCRIPTION	QTY
1	39851	Angle Mounting	1
2	39854	U-Bolt 1-1/2"	AR
3	39855	U-Bolt 1-3/4"	AR
4	56503	Hose - End, Reusable 3/4"	AR
5	22426	Hose - End Nipple	2
6	22425	Hose - End	2
7	20643	Nut - Hex 5/16	AR
8	22381	Clamp - Hose	4
9	6335	Clamp - Hose	4
10	39905	Disconnect - Quick Male 3/4"	2
11	39906	Disconnect - Quick Female 3/4"	2
12	39908	Disconnect - Quick Male 1"	AR
13	39909	Disconnect - Quick Female "	AR
14	*39910	Dust - Cap 3/4"	2
15	*39911	Dust - Cap 1"	AR
16	*39912	Dust - Plug 3/4"	2
17	*39913	Plug - Dust 1"	AR

* - Not Shown AR - As Required

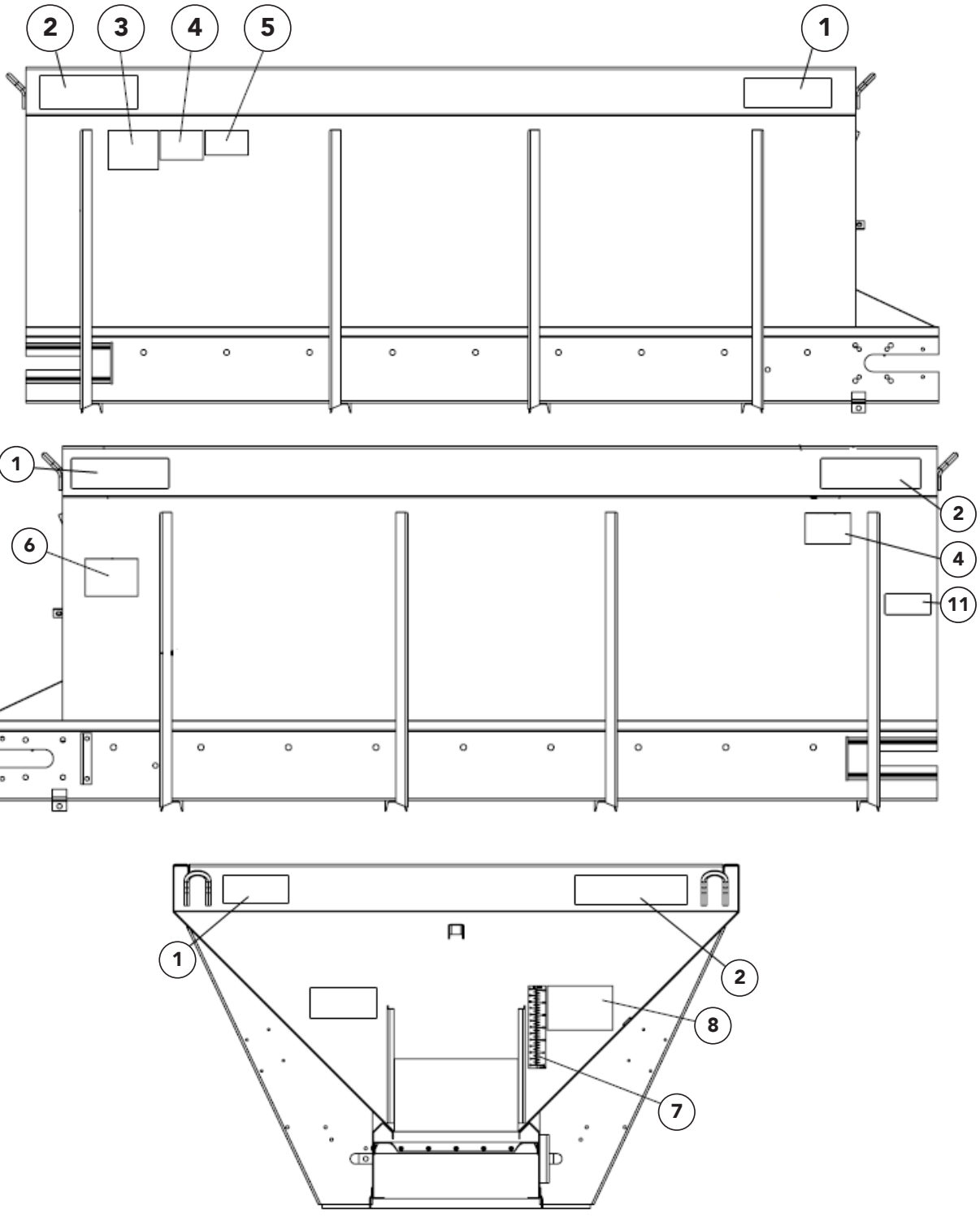
Gear Case - Single Pinion



Gear Case - Single Pinion Cont.

ITEM	PART NO.		DESCRIPTION	QTY
	36671		Gear Case – Assy Single Pinion	
	RAWSON	SUPERIOR		
	304269-AA	304269-AB	Parts - Service, Includes 1-17	
1	37001	304559	Housing – Outboard	1
2	37002	304560	Housing – Inboard	1
3	37003	304561	Gear – Pinion 11 Tooth	2
4	38981	304562	Gear – Driven 67 Tooth	1
5	37007	37007	Bearing	2
6	37008	37008	Bearing	4
7	37006	37006	Seal – Oil	1
8	38979	38979	Washer – Flat 2-1/2 x 11/32	2
9	6031	6031	Plug – Pipe	1
10	37005	304563	Gasket – Housing	1
11	20040	20040	Cap Screw – 5/16NC x 2	10
12	20711	20711	Washer – Lock 5/16	10
13	2564	2564	Cap – Breather	1
14	27465	27465	Bushing – Pipe 1/8 x 3/8	1
15	21490	21490	Plug – Pipe Magnetic	1
16	38980	38980	Screw – Allen Head 5/16-18 x 1	1
17	37010	37010	Key – 1/2 x 1/2 x1-1/2	2

Decals

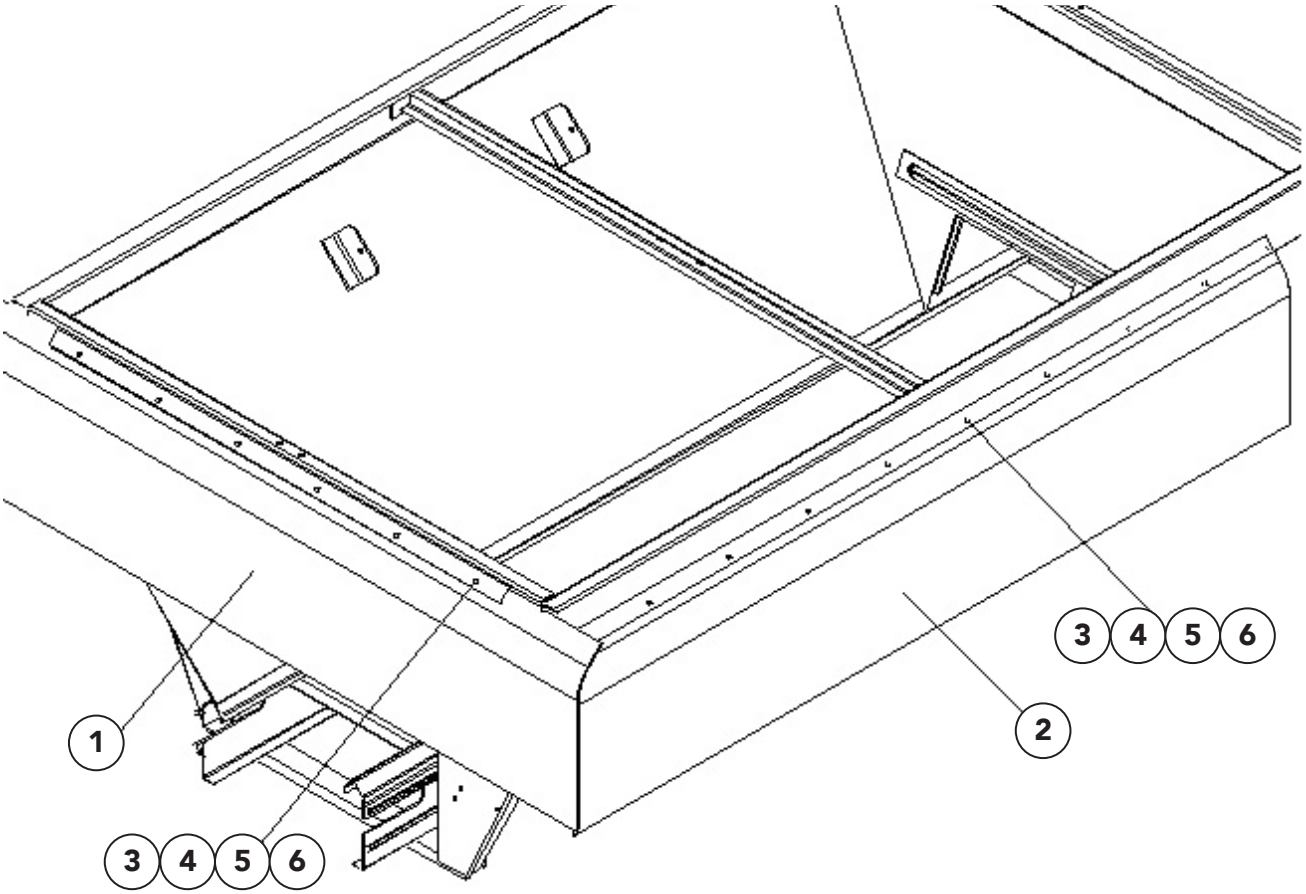


Decals Cont.

ITEM	PART NO.	DESCRIPTION	QTY
1	315810	Hi-Way Black	3
	315811	Hi-Way White	3
2	83648	E2020XT - Black	3
	90638	E2020XT - White	3
3	150034	Decal - Caution Operation & Maintenance	1
4	364	Decal - Danger Moving Part Hazard	2
5	321	Decal - Caution Hazardous Material	1
6	39138	Decal - Warning High Pressure Fluid	1
7	23769	Ruler - Feedgate	1
8	368	Decal - Danger Flying Material (Spinner)	2
9	* 39200	Decal - Warning Slipping Hazard (Fenders)	2
10	* 71807	Decal - Warning Falling Spinner Hazard (Spinner)	2
11	21476	Decal - Notice Chain Life	1
12		Not Used	
13	*55630	Decal - Warning Falling Hazard (Spinner)	1

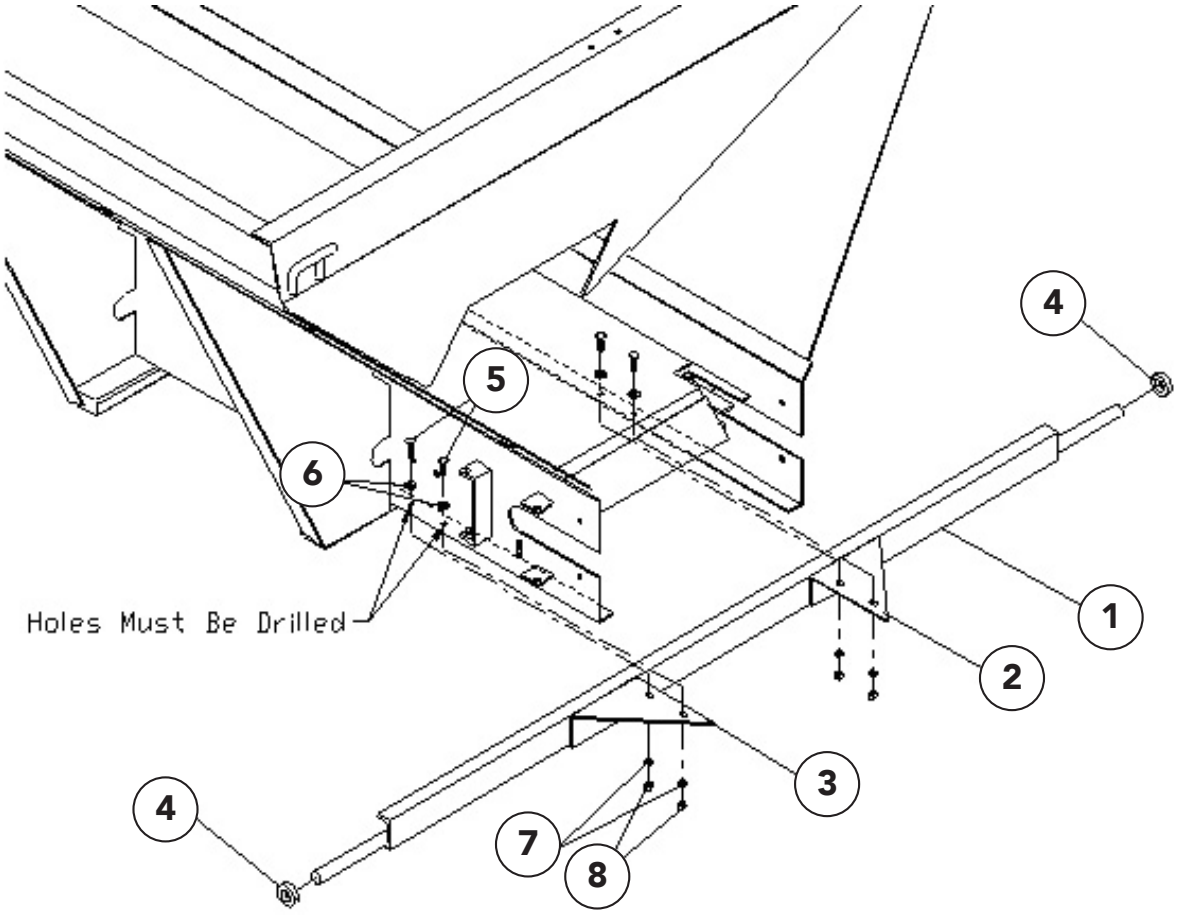
* - Not Shown - see Spinner parts pages for additional decals

Skirting



ITEM	PART NO.	DESCRIPTION	QTY
1	84191	Skirt – Front	1
2	84202	Skirt – Side 9' Unit	2
	84203	Skirt – Side 10' Unit	2
	84204	Skirt – Side 11' Unit	2
	84205	Skirt – Side 12' Unit	2
	84206	Skirt – Side 13' Unit	2
	84207	Skirt – Side 14' Unit	2
	84208	Skirt – Side 15' Unit	2
	84209	Skirt – Side 16' Unit	2
3	36395	Cap Screw – 1/4 x 1	AR
4	36418	Washer – Flat 1/4	AR
5	36423	Washer – Lock 1/4	AR
6	42034	Nut – Lock 1/4	AR

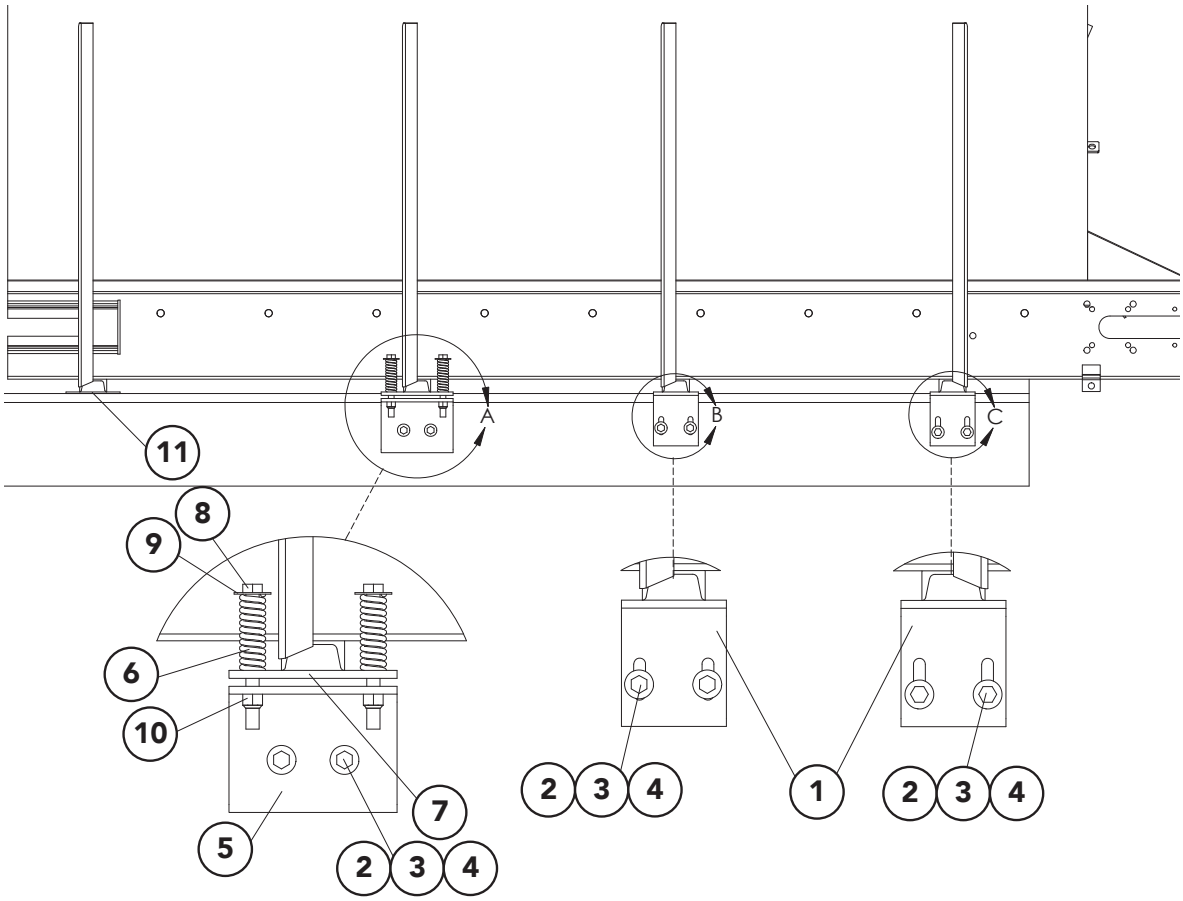
Dump Body Mounting - Ratchet With Tailgate Latch & Strap Kit



ITEM	PART NO.	DESCRIPTION	QTY
1	39946	Tailgate Latch Wldmt	1
2	71254	Gusset – Mounting RH	1
3	71255	Gusset – Mounting LH	1
4	21055	Collar – Set	2
5	20319	Bolt – Carriage 3/8 x 1 1/4	8
6	20644	Nut – Hex 3/8	8
7	20693	Washer – Flat 3/8	8
8	20712	Washer – Lock 3/8	8
9	* 88291	Strap – Ratchet	4
10	* 308794	Hook – Upper Wldmt	4
Dump Body Hold Down and Tailgate Latch are both part of kit # 80999.			

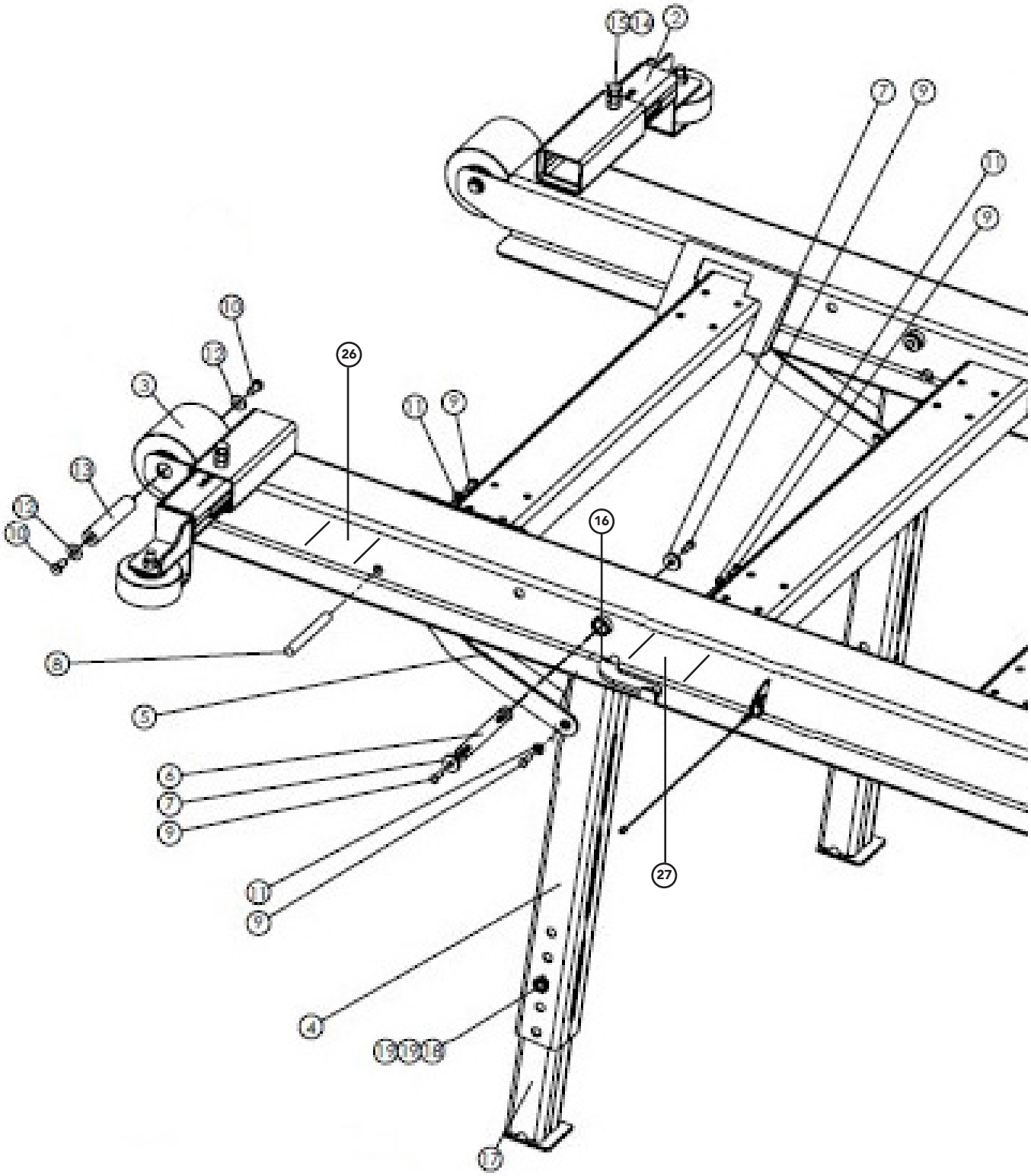
* - Not Shown

Mounting Angles

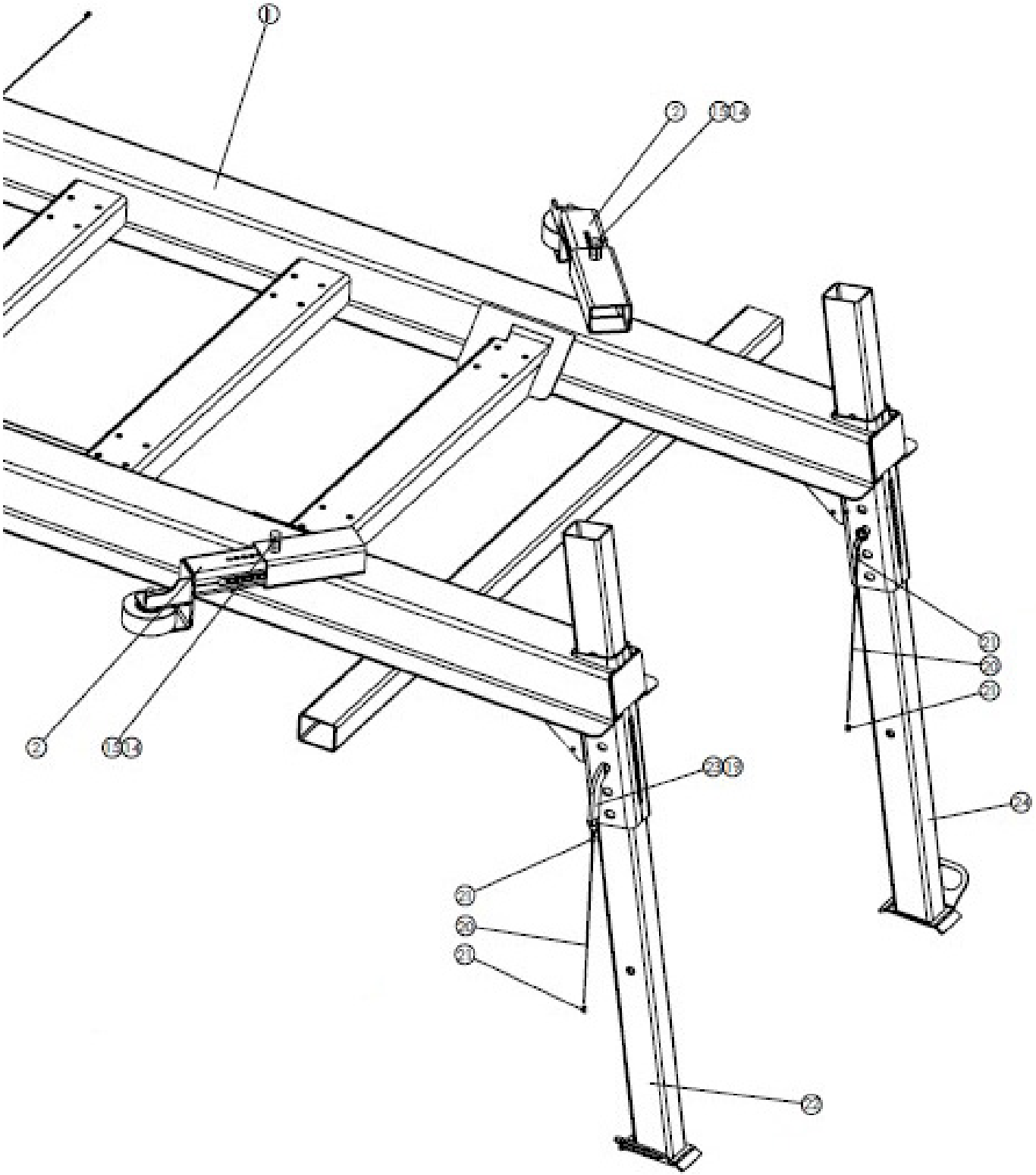


ITEM	PART NO.	DESCRIPTION	QTY
1	31856	Angle – Mounting	4
2	20131	Cap Screw – 1/2 x 2	12
3	20695	Washer – Flat 1/2	12
4	20680	Nut – Lock 1/2-13	12
5	81847	Angle – Tie Down	2
6	81000	Spring	4
7	81848	Mounting – Bar	2
8	20195	Cap Screw – 5/8 x 6 1/2	4
9	20697	Washer – Flat 5/8	4
10	41762	Nut – Lock 5/8	4
11	* 72071	Screw – Self Tapping 1/4 x 3/4	8
12	* 39942	Strap – Retainer	8
* - Not Shown			

Subframe



Subframe

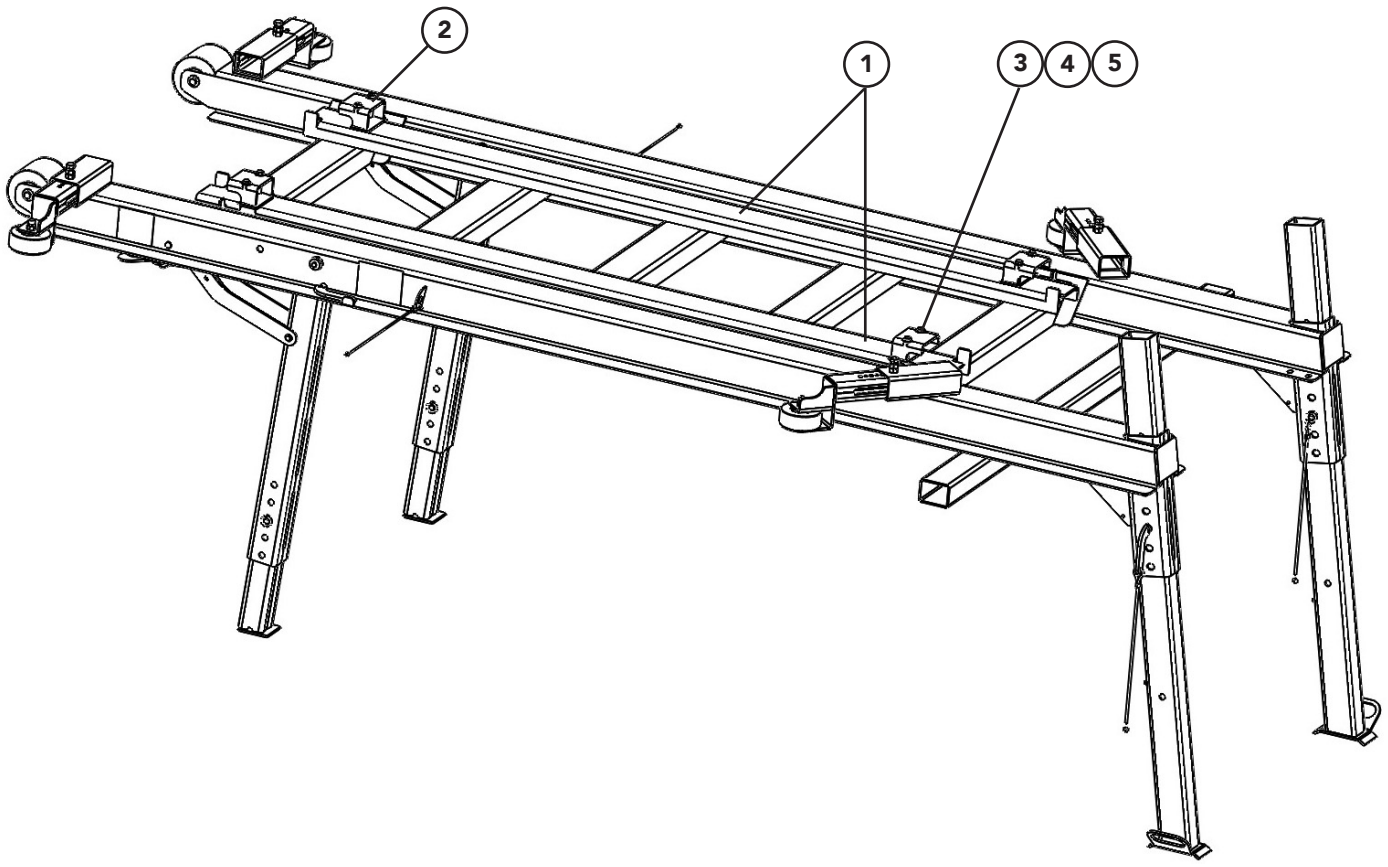


Subframe

ITEM	PART NO.	DESCRIPTION	QTY
1	318091	FRAME - WLDMT 304 10'	1
-	318685	FRAME - WLDMT 12' 304	1
-	318882	FRAME - WLDMT 13' 304	1
-	318686	FRAME - WLDMT 14' 304	1
2	318092	WHEEL - ASSY GUIDE 304	4
3	307764	WHEEL - MOUNT ROLL-ON	2
4	318093	LEG - WLDMT 304	2
5	318094	BRACE - WLDMT 304	2
6	307808	PIN - HINGE LEG 304	2
7	307746	SPACER - .438ID X .25 304	4
8	318095	ROUND - .75 X 6.125 304	2
9	36398	CAPSCREW - .375-16NC X 1 SS	10
10	36401	CAPSCREW - .5-13NC X 1 SS	4
11	36425	WASHER - FLAT .375 SS	6
12	318694	WASHER - FLAT .5 X 1.5 SS	4
13	318096	AXLE - WHEEL SUB-FRAME 304	2
14	36417	NUT - HEX .625-11NC SS	4
15	307997	CAPSCREW - .625-11NC X 2 SS	4
16	318098	PIN - WLDMT 304	2
17	318099	LEG - WLDMT 304	2
18	317961	ROUND - .75 X 5 304	2
19	310732	PIN - LYNCH .188 X 1.25 SS	6
20	308084	CABLE - .094 X 24 COATED	6
21	317522	SLEEVE - ALUMINUM .094 X .5	12
22	318100	LEG - WLDMT LH 304	1
23	318101	PIN - WLDMT 304	2
24	318102	LEG - WLDMT RH 304	1
25	*308091	STRAP - KIT SAFETY	1
26	308194	DECAL - DANGER CRUSHING HAZARD	2
27	308195	DECAL - LOCK LEG	2

* Not Shown

Subframe Mount Kit



ITEM	PART NO.	DESCRIPTION	QTY
1	318759	Rail - Wldmt 10' 304	2
	318760	Rail - Wldmt 12’ 304	2
	318886	Rail - Wldmt 13’ 304	2
	318761	Rail - Wldmt 14’ 304	2
2	318767	Clamp - 304	4
3	316743	Capscrew - .5-13nc X 6 SS	8
4	36426	Washer - Flat .5 SS	8
5	39016	Nut - Lock .5-13nc SS	8

LIGHTS & REFLECTORS

ITEM	PART NO.	DESCRIPTION	QTY
1	39830	Light – Kit Truck Chassis Mount	1
2	39852	Light – Kit Dump Body Mount	1

DIRECTIONAL LIGHTS

ITEM	PART NO.	DESCRIPTION	QTY
1	72734	Light – Kit Directional w/o Controls	1

WARNING LIGHTS

ITEM	PART NO.	DESCRIPTION	QTY
1	29496	Light – Kit 1 Red Flashing	1
2	26421	Light – Kit 2 Red Flashing	1
3	29494	Light – Kit 1 Amber Flashing	1
4	26422	Light – Kit 2 Amber Flashing	1

FLOOD LIGHTS

ITEM	PART NO.	DESCRIPTION	QTY
1	21606	Light – Kit 1 Flood	1
2	21605	Light – Kit 2 Flood	1

Install lights and reflective devices to conform to FMVSS-108 and state requirements.

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