



MODEL E2500

UNIT SERIAL NUMBER _____

MANUAL NUMBER: 87899-F

EFFECTIVE 10/2013



1330 76TH AVE SW
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Insert Current
Hi-Way Warranty

PREFACE**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 1-888-363-8006.

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 HECO parts and our authorized dealers for all work other than routine care and adjustments.

Highway Equipment Company 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 !!!**



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

Indicates an imminently hazardous situation that, if not avoided, WILL result in death or serious injury. This signal word is to be limited to the most extreme situations and typically for machine components that, for functional purposes, cannot be guarded.



WARNING

Indicates a potentially hazardous situation that, if not avoided, COULD result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



CAUTION

Indicates a potentially hazardous situation that, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE!

Is used for informational purposes in areas which may involve damage or deterioration to equipment but generally would not involve the potential for personal injury.

NOTE:

Provides additional information to simplify a procedure or clarify a process.

The need for safety cannot be stressed strongly enough in this manual. At Highway Equipment Company, we urge you to make safety your top priority when operating any equipment. We firmly advise that anyone allowed to operate this machine be thoroughly trained and tested, to prove they understand the fundamentals of safe operation.

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 factory at (319) 363-8281 or 1-800-363-1771.

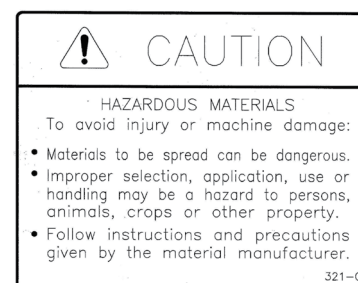
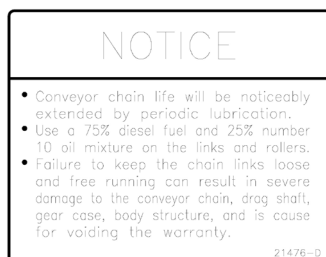
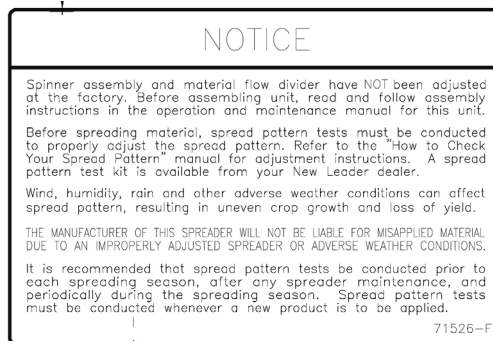
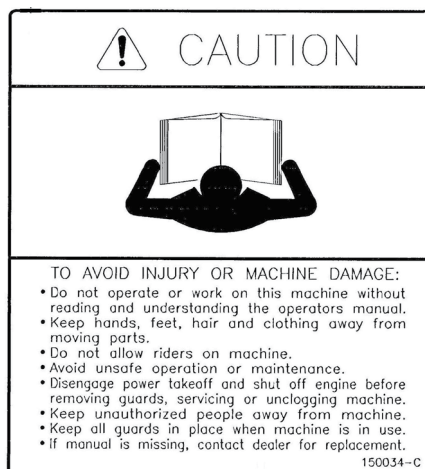
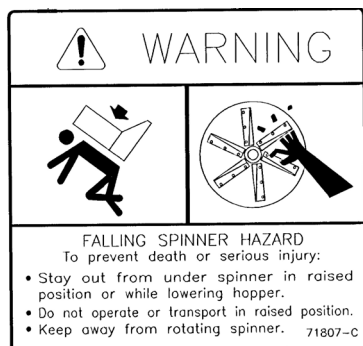
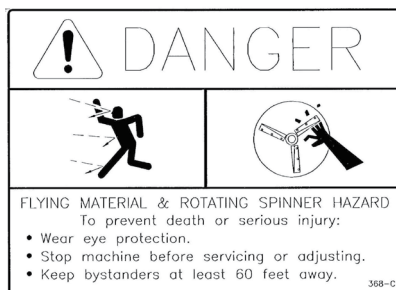
MAINTENANCE INSTRUCTIONS

1. Keep safety decals and signs clean and legible at all times.
2. Replace safety decals and signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety decals or signs are available from your dealer's Parts Department or our Cedar Rapids factory.

INSTALLATION INSTRUCTIONS

1. 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.
2. 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.
3. 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.
4. Apply Safety Decal
 - a. Tack decal in place with thumb pressure in upper corners.
 - b. 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.
 - c. Pull up tack points before squeegeeing over them to avoid wrinkles.
5. 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.
6. 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.
7. Re-Squeegee All Edges.

SAFETY DECALS



- Before attempting to operate this unit, read and be sure you understand the operation and maintenance manual. Locate all controls and determine the use of each. Know what you are doing!

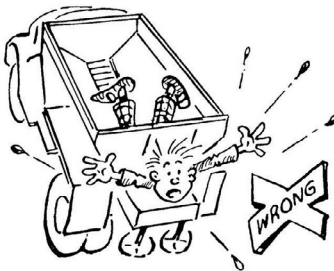


- When leaving the unit unattended for any reason, be sure to:
 - Take power take-off out of gear.
 - Shut off conveyor and spinner drives.
 - Shut off vehicle engine and unit engine (if so equipped).
 - Place transmission of the vehicle in "neutral" or "park".
 - Set parking brake firmly.
 - Lock ignition and take keys with you.
 - Lock vehicle cab.
 - If on steep grade, block wheels.

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

- Do not read, eat, talk on a mobile phone or take your attention away while operating the unit. Operating is a full-time job.

- Stay out of the spreader. If it's necessary to enter the spreader, return to the shop, empty body, turn off all power, set vehicle brakes, lock engine starting switch and remove keys before entering. Tag all controls to prohibit operation. Tags should be placed, and later removed, only by person working in the body.



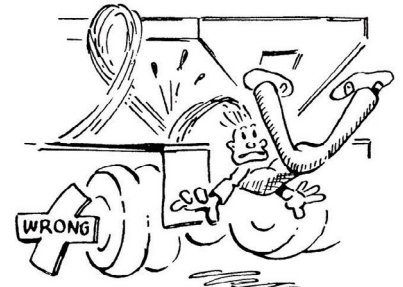
- Guards and covers are provided to help avoid injury. Stop all machinery before removing them. Replace guards and covers before starting spreader operation.

- Stay clear of any moving members, such as shafts, couplings and universal joints. Make adjustments in small steps, shutting down all motions for each adjustment.



- Before starting unit, be sure everyone is clear and out of the way.

- Do not climb on unit. Use the inspection ladder or a portable ladder to view the unit. Be careful in getting on and off the ladder, especially in wet, icy, snowy or muddy conditions. Clean mud, snow or ice from steps and footwear.



- Do not allow anyone to ride on any part of unit for any reason.



- Keep away from spinners while they are turning:

- Serious injury can occur if spinners touch you.

- Rocks, scrap metal or other material can be thrown off the spinner violently. Stay out of discharge area.

- Make sure discharge area is clear before spreading.



11. Inspect spinner fins, spinner frame mounting and spinner fin nuts and screws every day. Look for missing fasteners, looseness, wear and cracks. Replace immediately if required. Use only new SAE grade 5 or grade 8 screws and new self-locking nuts.

12. Inspect all bolts, screws, fasteners, keys, chain drives, body mountings and other attachments periodically. Replace any missing or damaged parts with proper specification items. Tighten all bolts, nuts and screws to specified torques according to the torque chart in this manual.



13. Shut off engine before filling fuel and oil tanks. Do not allow overflow. Wipe up all spills. Do not smoke. Stay away from open flame. FIRE HAZARD!



14. Starting fluids and sprays are extremely flammable. Don't smoke. Stay away from flame or heat!



15. All vehicles should be equipped with a serviceable fire extinguisher of 5 BC rating or larger.



16. Hydraulic system and oil can get hot enough to cause burns. DO NOT work on system that is hot. Wait until oil has cooled. If an accident occurs, seek immediate medical assistance.

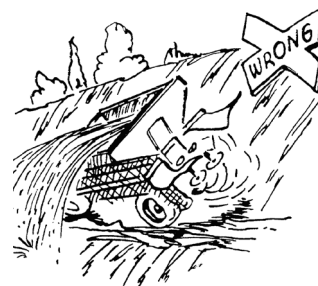
17. Wear eye protection while working around or on unit.
18. Read, understand and follow instructions and precautions given by the manufacturer or supplier of materials to be spread. Improper selection, application, use or handling may be hazardous to people, animals, plants, crops or other property.

**CAUTION**

If spreader is used to transport chemicals, check with your chemical supplier regarding DOT (Department of Transportation) requirements.



19. Cover all loads that can spill or blow away. Do not spread dusty materials where dust may create pollution or a traffic visibility problem.



20. Turn slowly and be careful when traveling on rough surfaces and side slopes, especially with a loaded spreader. Load may shift causing unit to tip.

21. Read and understand the precautionary decals on the spreader. Replace any that become defaced, damaged, lost or painted over. Replacement decals can be ordered from your dealer's parts department or from Highway Equipment Company by calling (319) 363-8281 or 1-800-363-1771.

1. Maintenance includes all lubrication, inspection, adjustments (other than operational control adjustments such as feedgate openings, conveyor speed, etc.) part replacement, repairs and such upkeep tasks as cleaning and painting.



2. When performing any maintenance work, wear proper protective equipment—always wear eye protection—safety shoes can help save your toes—gloves will help protect your hands against cuts, bruises, abrasions and from minor burns—a hard hat is better than a sore head!

3. Use proper tools for the job required. Use of improper tools (such as a screwdriver instead of a pry bar, a pair of pliers instead of a wrench, a wrench instead of a hammer) not only can damage the equipment being worked on, but can lead to serious injuries. **USE THE PROPER TOOLS.**



4. Before attempting any maintenance work (including lubrication), shut off power completely. **DO NOT WORK ON RUNNING MACHINERY!**
5. When guards and covers are removed for any maintenance, be sure that such guards are reinstalled before unit is put back into operation.
6. Check all screws, bolts and nuts for proper torques before placing equipment back in service. Refer to torque chart in this manual.

7. Some parts and assemblies are quite heavy. Before attempting to unfasten any heavy part or assembly, arrange to support it by means of a hoist, by blocking or by use of an adequate arrangement to prevent it from falling, tipping, swinging or moving in any manner which may damage it or injure someone. Always use lifting device that is properly rated to lift the equipment. Do not lift loaded spreader. **NEVER LIFT EQUIPMENT OVER PEOPLE.**



8. If repairs require use of a torch or electric welder, be sure that all flammable and combustible materials are removed. Fuel or oil reservoirs must be emptied, steam cleaned and filled with water before attempting to cut or weld them. **DO NOT** weld or flame cut on any tank containing oil, gasoline or their fumes or other flammable material, or any container whose contents or previous contents are unknown.



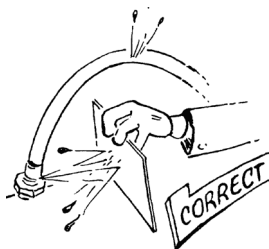
9. Keep a fully charged fire extinguisher readily available at all times. It should be a Type ABC or a Type BC unit.
10. Cleaning solvents should be used with care. Petroleum based solvents are flammable and present a fire hazard. Don't use gasoline. All solvents must be used with adequate ventilation, as their vapors should not be inhaled.

11. When batteries are being charged or discharged, they generate hydrogen and oxygen gases. This combination of gases is highly explosive. **DO NOT SMOKE** around batteries—**STAY AWAY FROM FLAME**—don't check batteries by shorting terminals as the spark could cause an explosion. Connect and disconnect battery charger leads only when charger is "off". Be very careful with "jumper" cables.



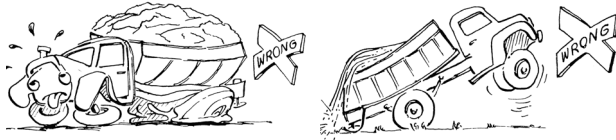
12. Batteries contain strong sulfuric acid—handle with care. If acid gets on you, flush it off with large amounts of water. If it gets in your eyes, flush it out with plenty of water immediately and get medical help.

13. Hydraulic fluid under high pressure leaking from a pin hole are dangerous as they can penetrate the skin as though injected with a hypodermic needle. Such liquids have a poisonous effect and can cause serious wounds. To avoid hazard, relieve pressure before disconnecting hydraulic lines or performing work on system. Any fluid injected into the skin must be treated within a few hours as gangrene may result. Get medical assistance immediately if such a wound occurs. To check for such leaks, use a piece of cardboard or wood instead of your hand. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to system. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.

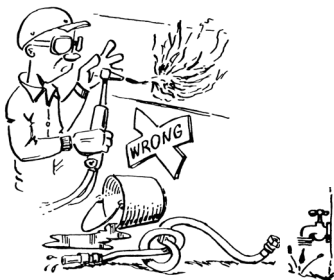


14. The fine spray from a small hydraulic oil leak can be highly explosive—**DO NOT SMOKE**—**STAY AWAY FROM FLAME OR SPARKS**.

1. The selection of the vehicle on which a spreader body is to be mounted has important safety aspects. To avoid overloading:
 - a. Do not mount spreader on a chassis which, when fully loaded with material to be spread, will exceed either the Gross Axle Weight Rating (GAWR) or the Gross Vehicle Weight Rating (GVWR) for the chassis.
 - b. Do install the spreader only on a vehicle with cab-to-axle dimension recommended for the spreader body length shown.



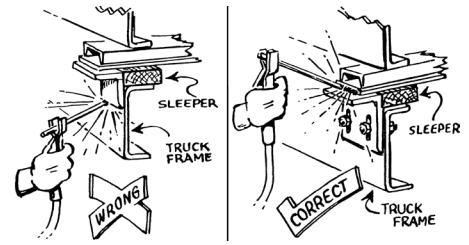
2. Follow mounting instructions in the Installation section of this manual. If mounting conditions require deviation from these instructions refer to factory.
3. When making the installation, be sure that the lighting meets Federal Motor Vehicle Safety Standard (FMVSS) No. 108, ASABE S279 and all applicable local and state regulations.
4. When selecting a PTO to drive hydraulic pump, do not use a higher percent speed drive than indicated in the Installation section of this manual. Too high a percent PTO will drive pump at excessive speed, which can ruin the pump, but more importantly, will overheat the hydraulic oil system and increase the possibility of fire.



5. When truck frame must be shortened, cut off only the portion that extends behind rear shackle in accordance with the truck manufacturer's recommendations. If a torch is used to make

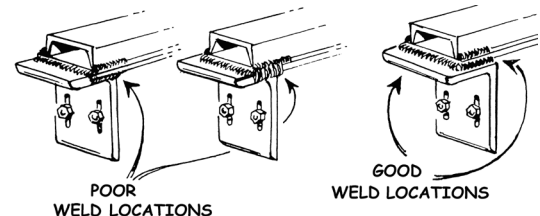
the cut, all necessary precautions should be taken to prevent fire. Cuts should not be made near fuel tanks and hydraulic oil reservoirs, fuel, brake, electric or hydraulic lines and such lines should be protected from flame, sparks or molten metal. Tires should be removed if there is any chance of their being struck by flame, sparks or molten metal. Have a fire extinguisher handy.

6. Do not weld on vehicle frame as such welding can lead to fatigue cracking



and must be avoided. When drilling holes in frame member, drill only through the vertical web portions do not put holes in top or bottom flanges. Refer to truck manufacturer's recommendations.

7. Be sure that welds between mounting bars and sill or between mounting angles and spreader cross sills are sound, full fillet welds. Center mounting angles so that good fillet welds can be made on three sides—and edge bead weld is not a satisfactory weld for this service. Use 309 rod/wire for carbon steel and 409 steel. On 304 stainless steel bodies use SAE grade 5 bolts—welding is recommended if type 308 welding rod is available.



8. Install controls so that they are located of convenient use. Position them so that they do not interfere with any vehicle control and that they do not interfere with driver or passenger or with access to or exit from the vehicle.
9. Check for vehicle visibility, especially toward the rear. Reposition or add mirrors so that adequate rearward visibility is maintained.
10. Add Caution, Warning, Danger and Instruction decals as required. Peel off any label masking which has not been removed.
11. Install all guards as required.
12. Check installation completely to be sure all fasteners are secure and that nothing has been left undone.



GENERAL DESCRIPTION

Refer to www.highwayequipment.com for installation instructions. Once on the website, Customer Support, Other Hi-Way Manuals & Instructions, then V-Bodies Installation Instructions.

The E2500 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.

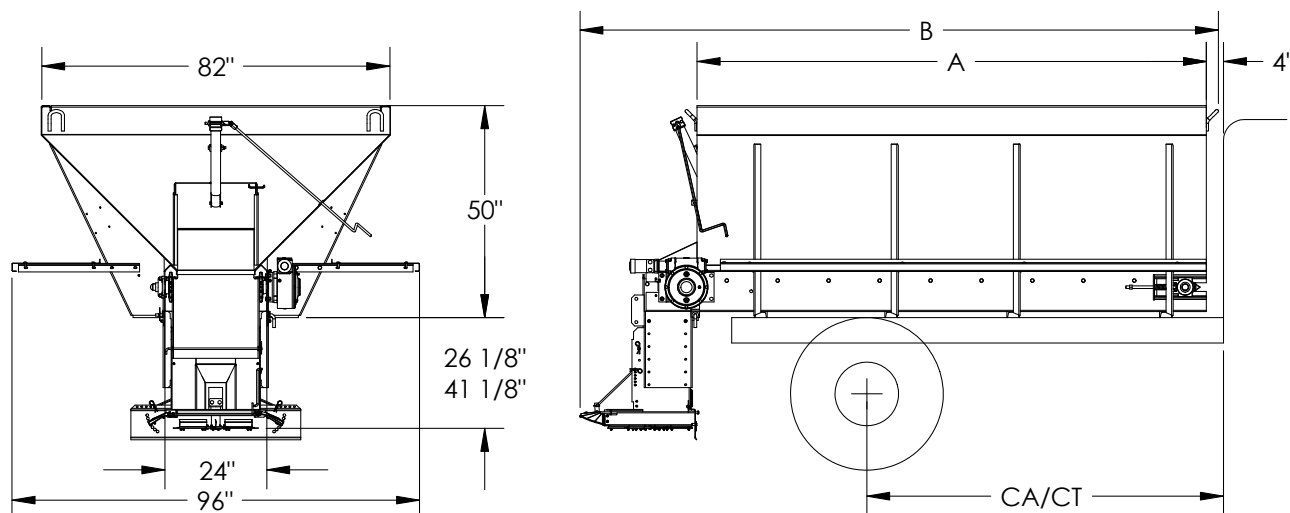
The unit is powered hydraulically. The manual dual pressure compensated valve type system provides independent, variable speed control to both the spinner and conveyor. The hydraulic pump, which provides the power, can be driven by a truck transmission PTO.

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

1. No. 2 Type Roller or Pintle Chain – Cross-bars every other link.
2. No. 3 Type Roller Chain – Cross-bars every link.

Many optional features are available to customize the E2500 to better suit your needs. These features include inverted v, fenders, screens, cab shield, ladders and more.

This product is intended for commercial use only.



A	B	CA/CT *			
INSIDE BODY LENGTH feet (m)	OVERALL LENGTH inches (cm)	TRUCK CAB TO AXLE/ TANDEM DIMENSION inches (cm)	STRUCK CAPACITY cubic yards (cu m)	CAPACITY ROUNDED 3:1 Slope cubic yards (cu m)	SPREADER WEIGHT*** pounds (kg)
9 (2.7)	138 (350.5)	72 (182.9) CA	4.65 (5.1)	5.49 (6)	2245 (1018)
10 (3)	150 (381)	84 (213.4) CA	5.21 (5.7)	6.18 (6.8)	2395 (1086)
11 (3.4)	162 (411.5)	84 (213.4) CA	5.77 (6.3)	6.87 (7.5)	2600 (1179)
12 (3.7)	174 (442)	102 (259.1) CA	6.33 (6.9)	7.56 (8.3)	2749 (1247)
13 (4)	186 (472.4)	102 (259.1) CA / 108 (274.3) CT	6.89 (7.5)	8.25 (9)	3003 (1362)
14 (4.3)	198 (503)	120 (304.8) CT	7.45 (8.2)	8.94 (9.8)	3052 (1384)
15 (4.6)	210 (533.4)	130 (330.2) CT	8.01 (8.7)	9.63 (10.5)	3349 (1519)
16 (4.9)	222 (563.9)	138 (350.5) CT	8.57 (9.4)	10.32 (11.3)	3509 (1592)

***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.

** Spreader weight includes unit with screens, inverted v and spinner.

Check over entire unit to be sure all guards and fasteners are in place and fasteners are properly tightened per *Standard Torque Coarse (NC) Cap Screws*.

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.



DANGER Stay clear of moving machinery.

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.



WARNING

DO NOT check for leaks adjacent to moving parts while system is operating as there may be danger of entanglement!

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:

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

Where: Y = Yield in cubic feet per mile per inch.

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.

$$Y = \frac{(\text{PTO}) (\text{TR}) (\text{RA}) (\text{TRM}) (\text{CFR}) (\text{PD})}{16665}$$

$$Y = \frac{47 \times 2.24 \times 8.87 \times 523 \times .192 \times 2.77}{16665}$$

$$Y = 15.586 \text{ Cubic Feet/Mile/Inch of Gate Opening}$$

MANUAL DUAL SYSTEM

When using this 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: For all systems described, 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.

AUTOMATIC DUAL CONTROL SYSTEM

This system utilizes a ground-speed sensing arrangement to automatically adjust the conveyor control portion of a dual pressure compensated valve so that conveyor speed is coordinated with ground speed.

This system has three basic spread rate ranges which, when properly adjusted, should achieve the following deliveries which should be fairly constant for road speeds of 10 miles (16 kilometers) per hour and above:

Spread Rate Range	Theoretical Delivery Cu. Ft./Mile/Inch of Gate
1	2.3
2	6.0
3	8.3

As factory settings of the automatic dual control system may not be suitable, the system should be adjusted before initial use. Readjustment should be done if there is any question that delivery rates are not desired. Calibration procedure is listed in Fluid Control, Inc. "Hydra-Tach Adjustment" instructions included in the installation bulletin.

(NOTE: If other delivery rates are desired, they can be obtained by adjusting metering gate opening accordingly.)

If the tachometer simulator (GTS - 1250) is not available, truck can be driven on smooth roadway at speeds indicated in the Adjustment Instructions to obtain proper ground speed signals. Follow remainder of instructions for adjustment. Do not jack or block up rear wheels so that road speeds can be simulated since vibration from engine, driveline and wheels could jar truck off jacks or blocks and cause an accident.

Recommended settings for adjusting Automatic Dual Control System are:

Spread Rate Range	Valve Setting			
	10 MPH	15 MPH	30 MPH	40 MPH
1	1			3
2		3		9
3		4	9	

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

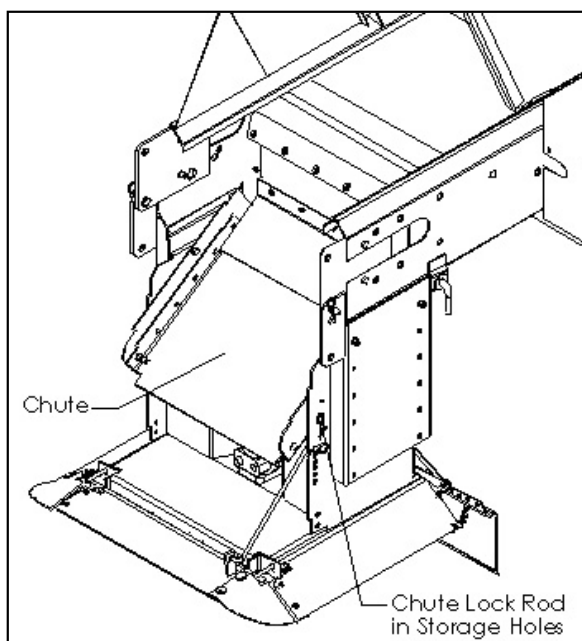
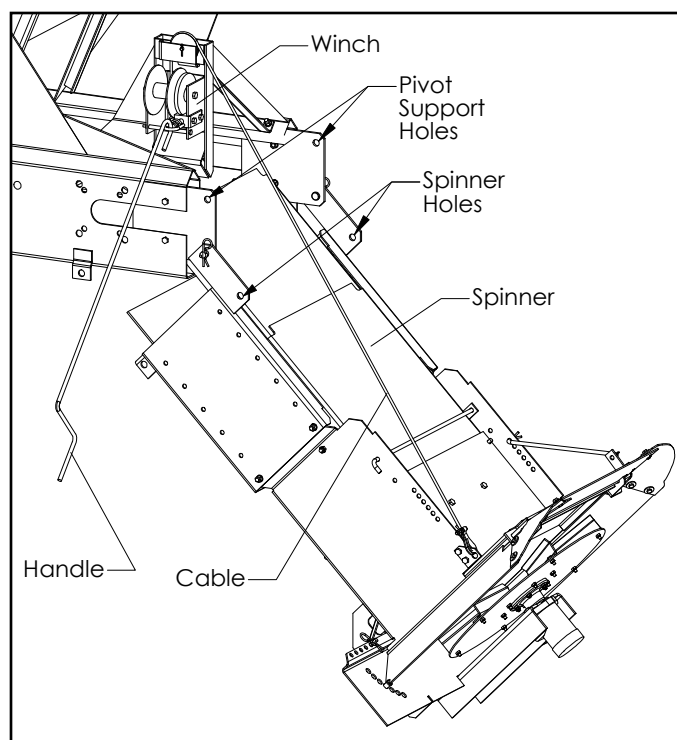


Figure 1 – Dump-Over Chute

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.

WINCH**Figure 2 - Winch Operation****CAUTION**

Stand to side of spinner when removing lock rod. Spinner will swing when lock rod is removed.

Make sure Spinner chute is locked in vertical position. If chute is in dump-over application position (See Figure 1), chute will interfere with Winch operation.

Remove hair pin and lock rod from Spinner. Attach Handle to loop drive on Winch. Remove excess slack in Cable caused by Spinner swinging loose. Inspect Cable to make sure it is running in pulley groove and has no tangles or interference.



CAUTION Never attempt to untangle the cable while it is taut. Serious injury could occur.



CAUTION Never stand or place hands behind the spinner when the winch cable is taut and the spinner is not locked into position. If the spinner lowers inadvertently, serious injury or component damage could occur.

Stand to the left-hand side of Spinner while operating Winch. Rotate Handle to lift Spinner into a fully raised position. Watch Cable and Winch to make sure it does not become entangled. If Cable becomes tangled, lower Spinner before attempting to untangle it.

Insert lock rod through right and left-hand Pivot Support Holes and corresponding Spinner Holes shown in Figure 2. Secure lock rod with hair pin.

Rotate Handle enough to remove excess tension from Cable, but leave enough tension to keep Cable securely in pulley groove. Remove Handle and store in an easily accessible location.

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.

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!	2. CHANGE THE HYDRAULIC OIL FILTER AFTER THE FIRST WEEK (OR NOT MORE THAN 50 HOURS) OF OPERATION ON A UNIT.
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3. After first filter change, replace filter when indicator reaches Danger Zone.
4. 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.

GEAR CASE

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 50:1 gear case with two and a half (2 1/2) pints (1.18 liters) of recommended lubricant. Refill 6:1 gear case with one pint (.47 liters) of recommended lubricant. After the initial change, the oil should be changed ever 2,000 hours of operation or annually, whichever occurs first.

Check the level in the gear case 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.

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 3. Be sure the chain is tensioned equally on both sides. This adjustment is made on each side of the unit at the idler bearings.

Chain Tension to be Measured from Rear of Sill - Proper Tension 36" to 40" (91 to 102 cm).

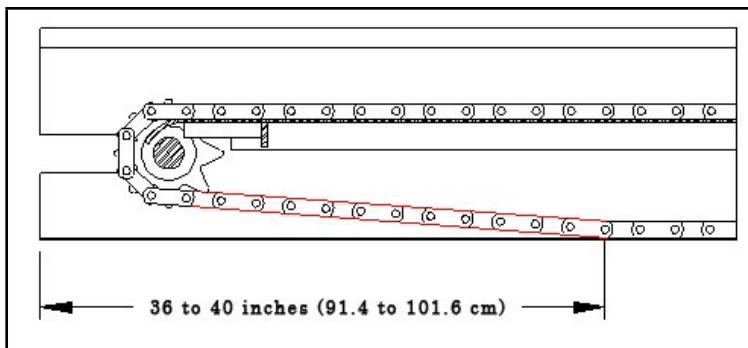


Figure 3 - Adjusting Chain Tension

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.

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.

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.

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

GEAR CASE 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)
50:1 Gear Case	2.5 pints (1.18 liters)	SAE 85W 140	SAE 88W 90
6:1 Gear Case	1 pint (.47 liters)	SAE 80 or 90W	SAE 80 or 90W

PRESSURE 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.

CHAIN OILER LUBRICANT

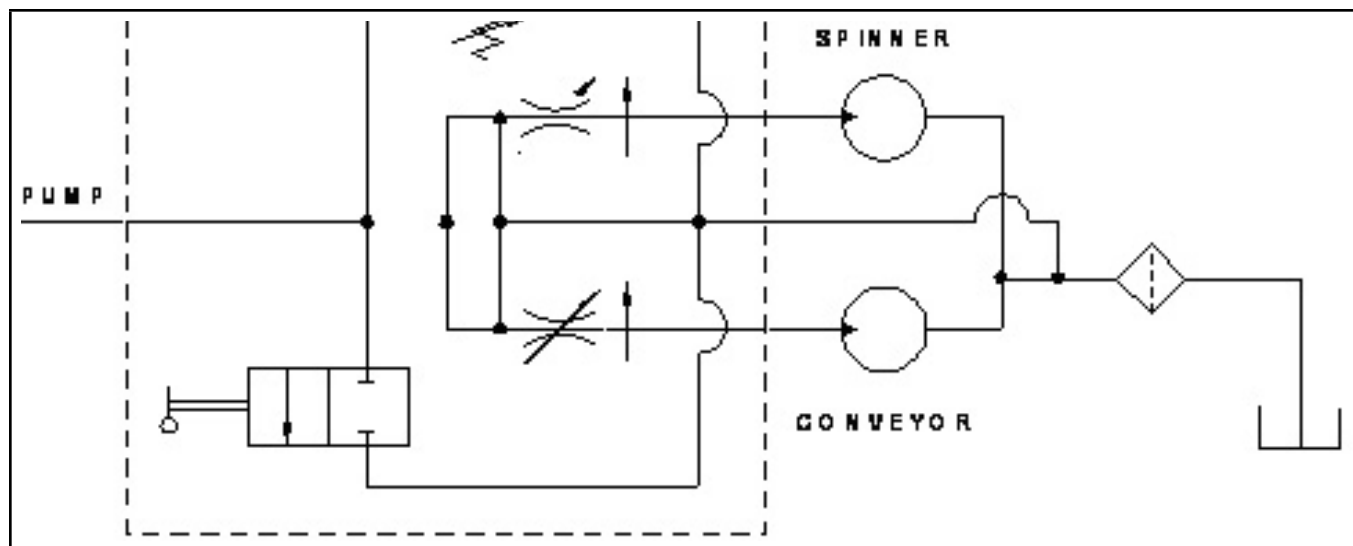
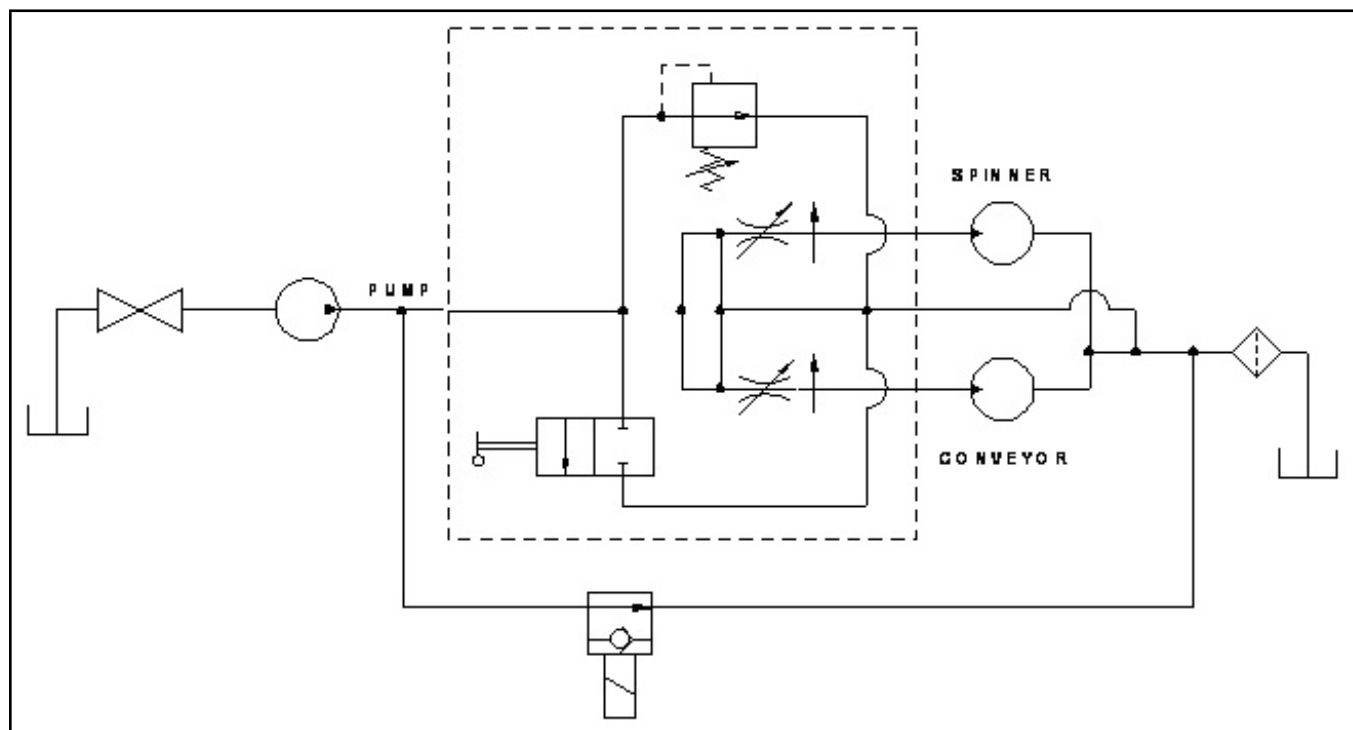
Use a mixture of 75% No. 1 or No. 2 diesel fuel or kerosene mixed with 25% SAE 10 engine oil.

**WARNING**

Shut off all power and allow all moving parts to come to a rest before performing any maintenance operation.

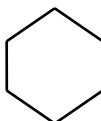
LOCATION	PLACES	METHOD	FREQUENCY
Hydraulic System			
Reservoir	1	Check Daily; Change Annually	
Filter	1	Check Daily; Change when indicator is red	
Hydraulic System - Dual Control Valve			
Hex Valve Stem (Under hand knob)	2	Hand Grease	Check Annually
Conveyor			
Drive Shaft Bearings	2	Grease Gun	Weekly
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
Tube	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**

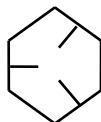
CAP SCREW GRADE IDENTIFICATION - MARKINGS ON HEAD

SAE GRADE 2



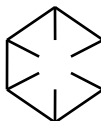
NO MARKINGS

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.

CAP SCREW SIZE	TORQUE - FOOT-POUNDS					
	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

**Highway Equipment Company***Building the best since 1939.*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 Highway Equipment Company.

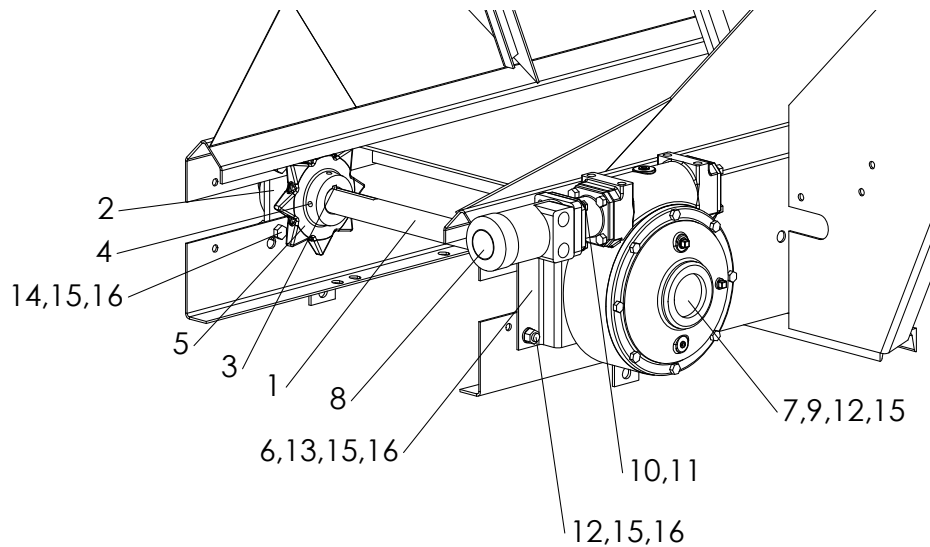
If your claims are not being handled (by the transportation company) to your satisfaction, please call the Parts Manager at Highway Equipment Company (319-363-8281) for assistance.

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.

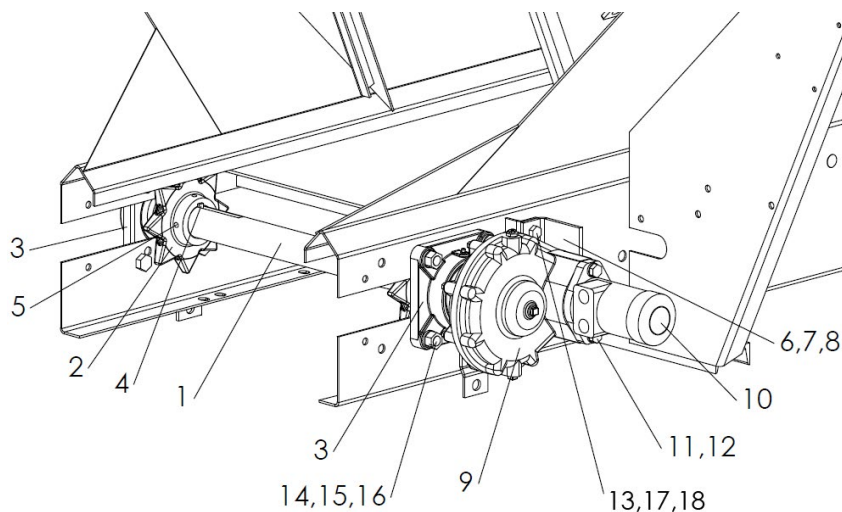




Bottom panel removed for clarity.

<u>ITEM</u>	<u>PART NO.</u>		<u>DESCRIPTION</u>	<u>QTY</u>
	<u>CS</u>	<u>SS</u>		
1	87798	87798	Shaft – Drive	1
2	6697	6697	Bearing	1
3	2135	2135	Key – Square	2
4	20743	20743	Screw – Set	4
5	1899	1899	Sprocket	2
6	87800	87859	Plate – Gear Case	1
7	70926	70926	Gear Case	1
8	70927	70927	Motor – Hydraulic	1
	* 70927-X1	70927-X1	Motor – Hydraulic with Sensor	1
9	21443	21443	Key – Square	1
10	20067	36398	Cap Screw – 3/8 x 1	4
11	20712	36420	Washer – Lock 3/8	4
12	20127	36401	Cap Screw – 1/2 x 1	6
13	20128	36402	Cap Screw – 1/2 x 1 1/4	2
14	21101	304484	Screw Buttonhead – 1/2 x 1 1/2	4
15	20714	36422	Washer – Lock 1/2	12
16	20646	36416	Nut – Hex 1/2	8
17	*74524	*74524	Gasket - SAE 101-2	1

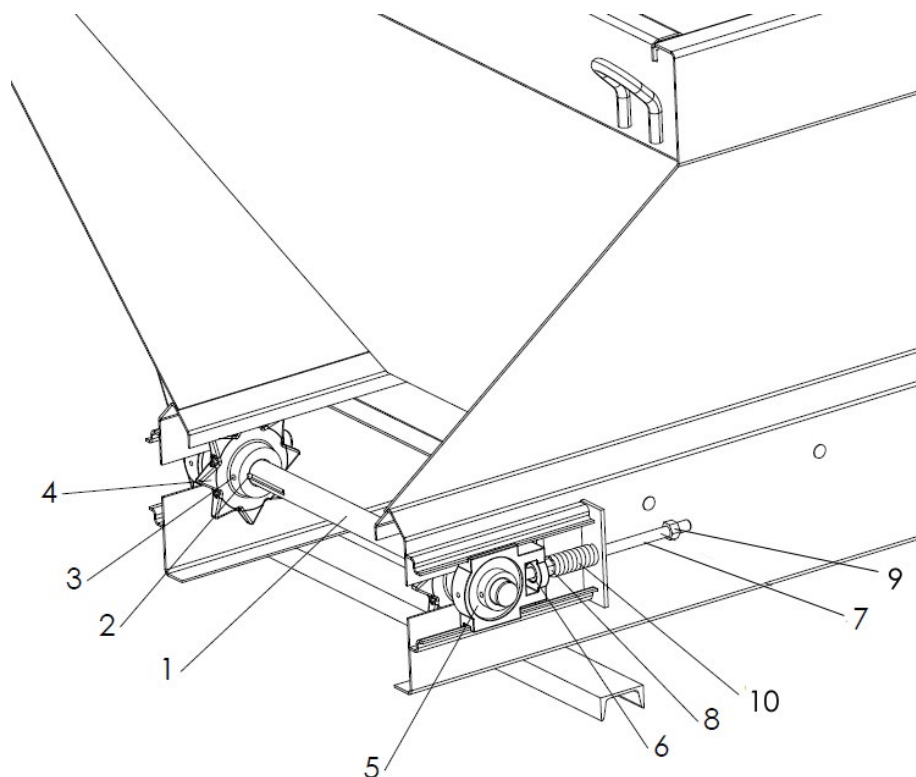
* - Not Shown



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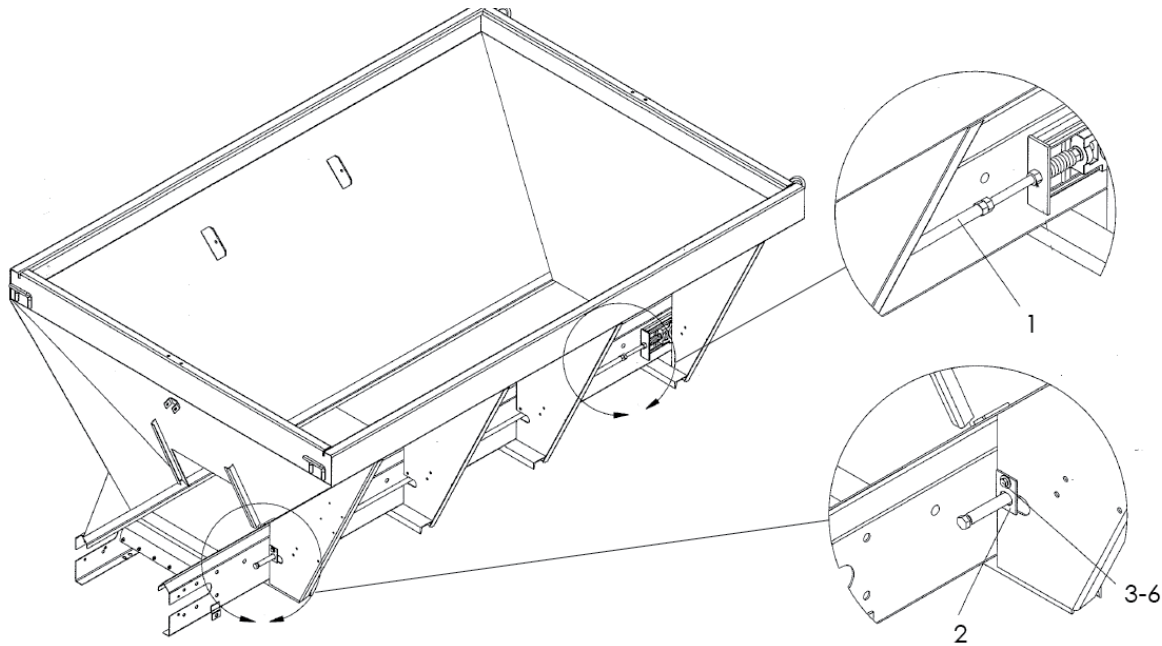
<u>ITEM</u>	<u>PART NO.</u>		<u>DESCRIPTION</u>	<u>QTY</u>
	<u>CS</u>	<u>SS</u>		
1	39582	39582	Shaft – Drive	1
2	27275	27275	Sprocket	2
3	6465	6465	Bearing	2
4	6131	6131	Key – Square	2
5	20748	20748	Screw – Set	4
6	88047	88048	Mount – Torque Arm	1
7	2716	2716	Washer – Machine 3/4	2
8	20833	20833	Pin – Cotter	1
9	36671	36671	Gear Case	1
10	38897	38897	Motor – Hydraulic	1
	* 38897-X2	38897-X2	Motor – Hydraulic with Sensor	1
11	20129	20129	Cap Screw – 1/2 x 1 1/2	2
12	20714	20714	Washer – Lock 1/2	2
13	20646	36416	Nut – Hex 1/2	2
14	20262	20262	Screw Buttonhead– 5/8 x 2	8
15	20716	40597	Washer – Lock 5/8	8
16	20648	36417	Nut – Hex 5/8	8
17	20128	36402	Cap Screw - 1/5-13 x 1-1/4	2
18	20714	36422	Washer - Lock 1/2	2
19	*74524	*74524	Gasket - SAE 101-2	1

* - Not Shown

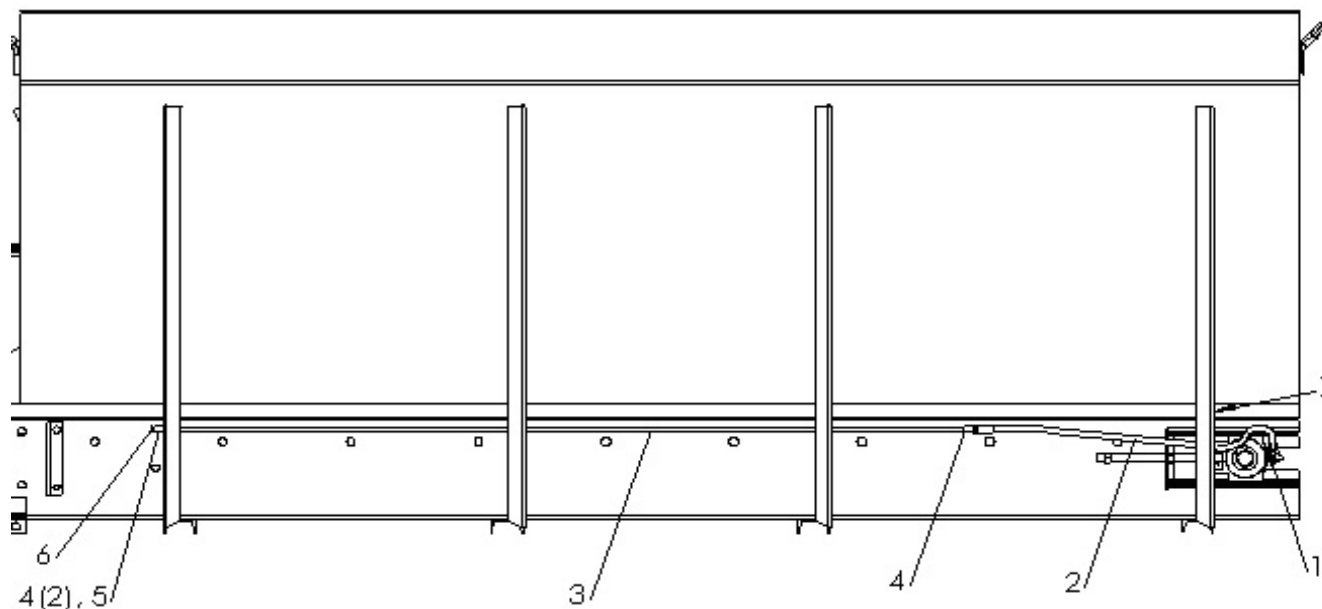


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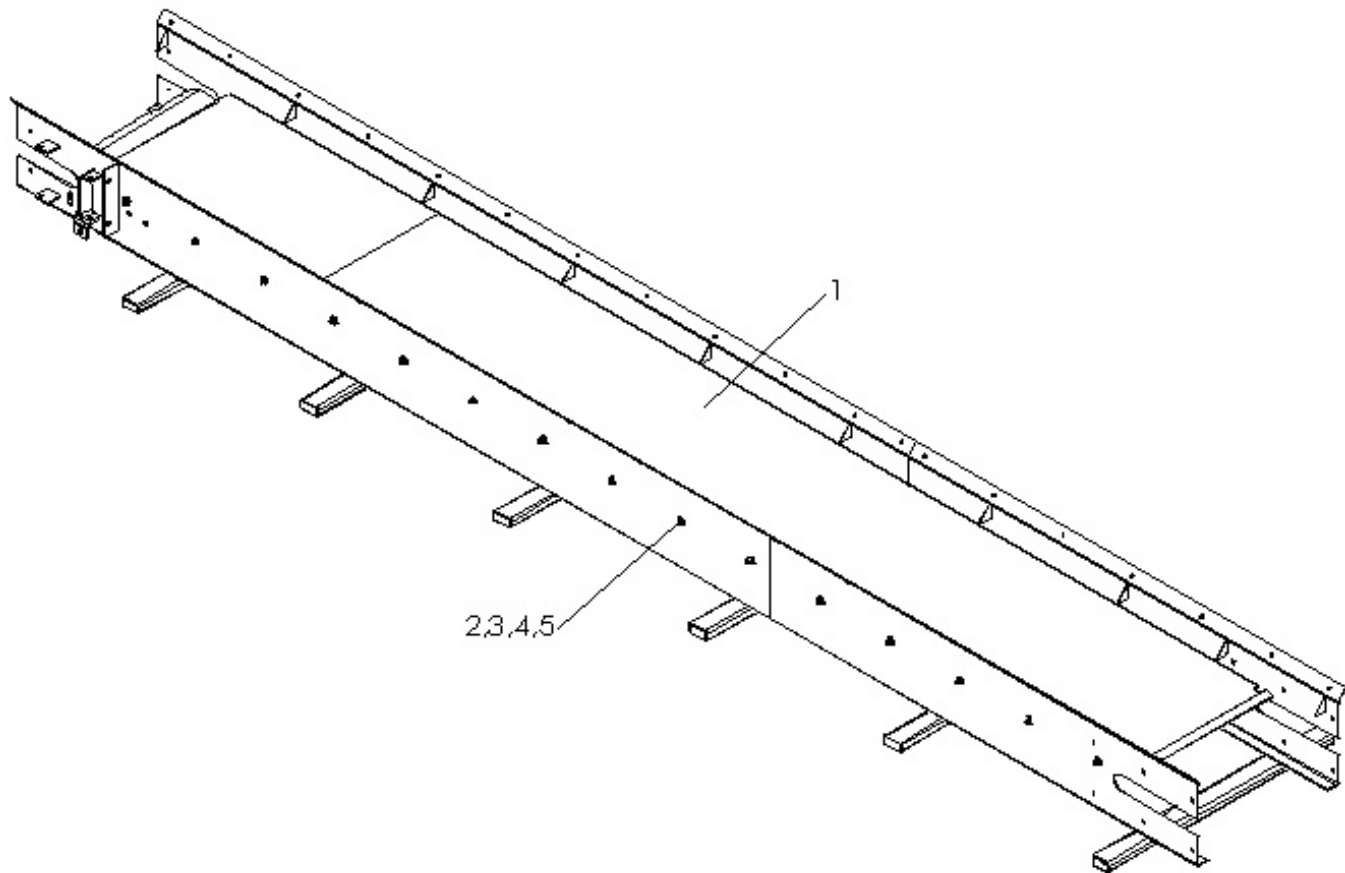
<u>ITEM</u>	<u>PART NO.</u>		<u>DESCRIPTION</u>	<u>QTY</u>
	<u>CS</u>	<u>SS</u>		
1	48279	48279	Shaft - Idler	1
2	2135	2135	Key - Square	2
3	20743	20743	Screw - Set	4
4	1899	1899	Sprocket	2
5	22511	22511	Bearing - 1.5 Take-up	2
6	17078	17078	Collar - Set	2
7	87791	87857	Bolt - Wldmt Take-up	2
8	87794	87856	Nut - Wldmt	2
9	20648	36417	Nut - Hex 9/16-11NC	2
10	2704	2704	Spring, Used on Optional Spring-Loaded Idler Only	2



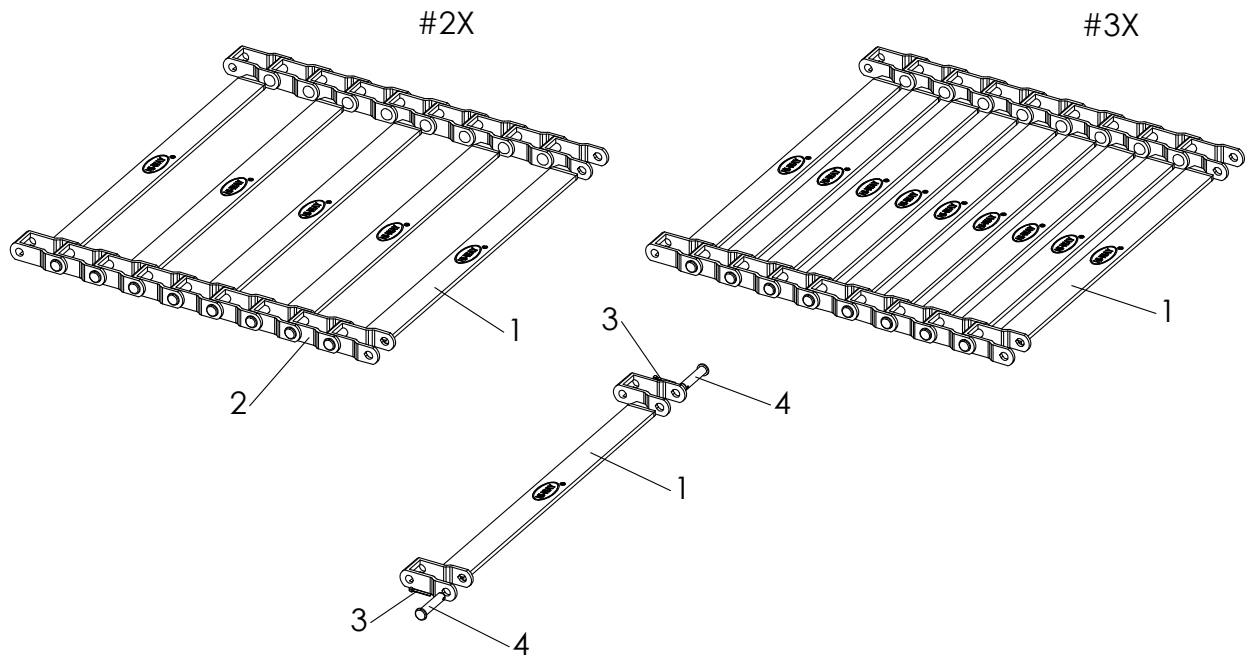
<u>ITEM</u>	<u>PART NO.</u>		<u>DESCRIPTION</u>	<u>QTY</u>
	<u>CS</u>	<u>SS</u>		
1	88009	88017	Pipe – Adjustment 9'	2
	88010	88018	Pipe – Adjustment 10'	2
	88011	88019	Pipe – Adjustment 11'	2
	88012	88020	Pipe – Adjustment 12'	2
	88013	88021	Pipe – Adjustment 13'	2
	88014	88022	Pipe – Adjustment 14'	2
	88015	88023	Pipe – Adjustment 15'	2
	88016	88024	Pipe – Adjustment 16'	2
2	88007	88008	Support – Pipe Adjustment	2
3	20067	36398	Cap Screw – 3/8 x 1	2
4	20693	36425	Washer - Flat 3/8	2
5	20712	36420	Washer - Lock 3/8	2
6	20644	36414	Nut - Hex 3/8	2



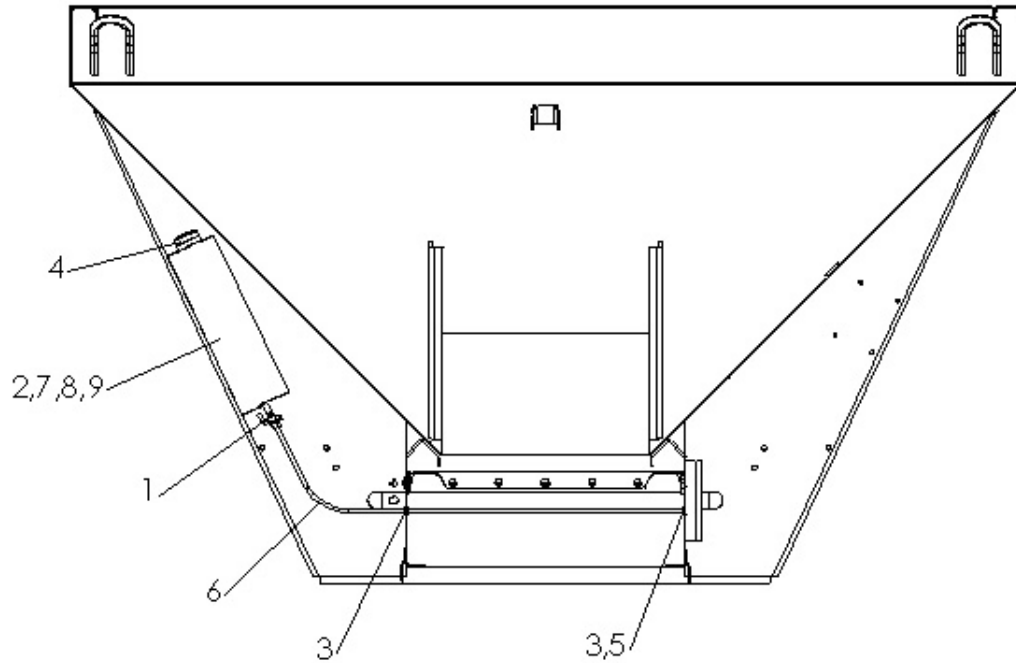
ITEM	PART NO.	DESCRIPTION	QTY
1	34734	Adapter – Elbow 90°	2
2	79893	Hose Assy	2
3	79885	Pipe – Grease 9' Unit	2
	79886	Pipe – Grease 10' Unit	2
	79887	Pipe – Grease 11' Unit	2
	79888	Pipe – Grease 12' Unit	2
	79889	Pipe – Grease 13' Unit	2
	79890	Pipe – Grease 14' Unit	2
	79891	Pipe – Grease 15' Unit	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



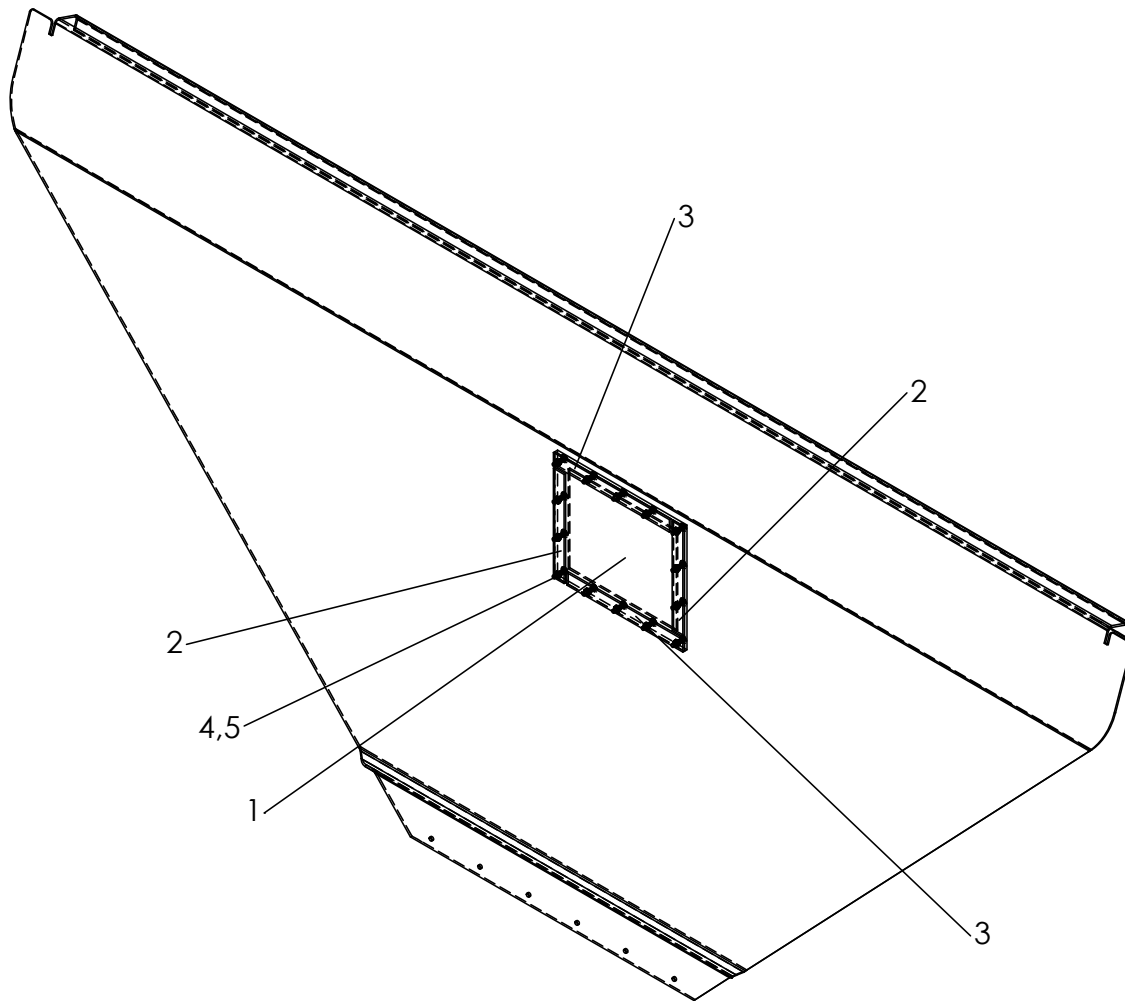
<u>ITEM</u>	<u>PART NO.</u>			<u>DESCRIPTION</u>	<u>QTY</u>
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
1	87975	88118	88110	Panel – Wldmt Bottom 9'	1
	87976	88119	88111	Panel – Wldmt Bottom 10'	1
	87977	88120	88112	Panel – Wldmt Bottom 11'	1
	87978	88121	88113	Panel – Wldmt Bottom 12'	1
	87979	88122	88114	Panel – Wldmt Bottom 13'	1
	87980	88123	88115	Panel – Wldmt Bottom 14'	1
	87981	88124	88116	Panel – Wldmt Bottom 15'	1
	87982	88125	88117	Panel – Wldmt Bottom 16'	1
2	20318	36408	36408	Bolt – Carriage 3/8 x 1	AR
3	20693	36425	36425	Washer – Flat 3/8	AR
4	20712	36420	36420	Washer – Lock 3/8	AR
5	20644	36414	36414	Nut – Hex 3/8	AR



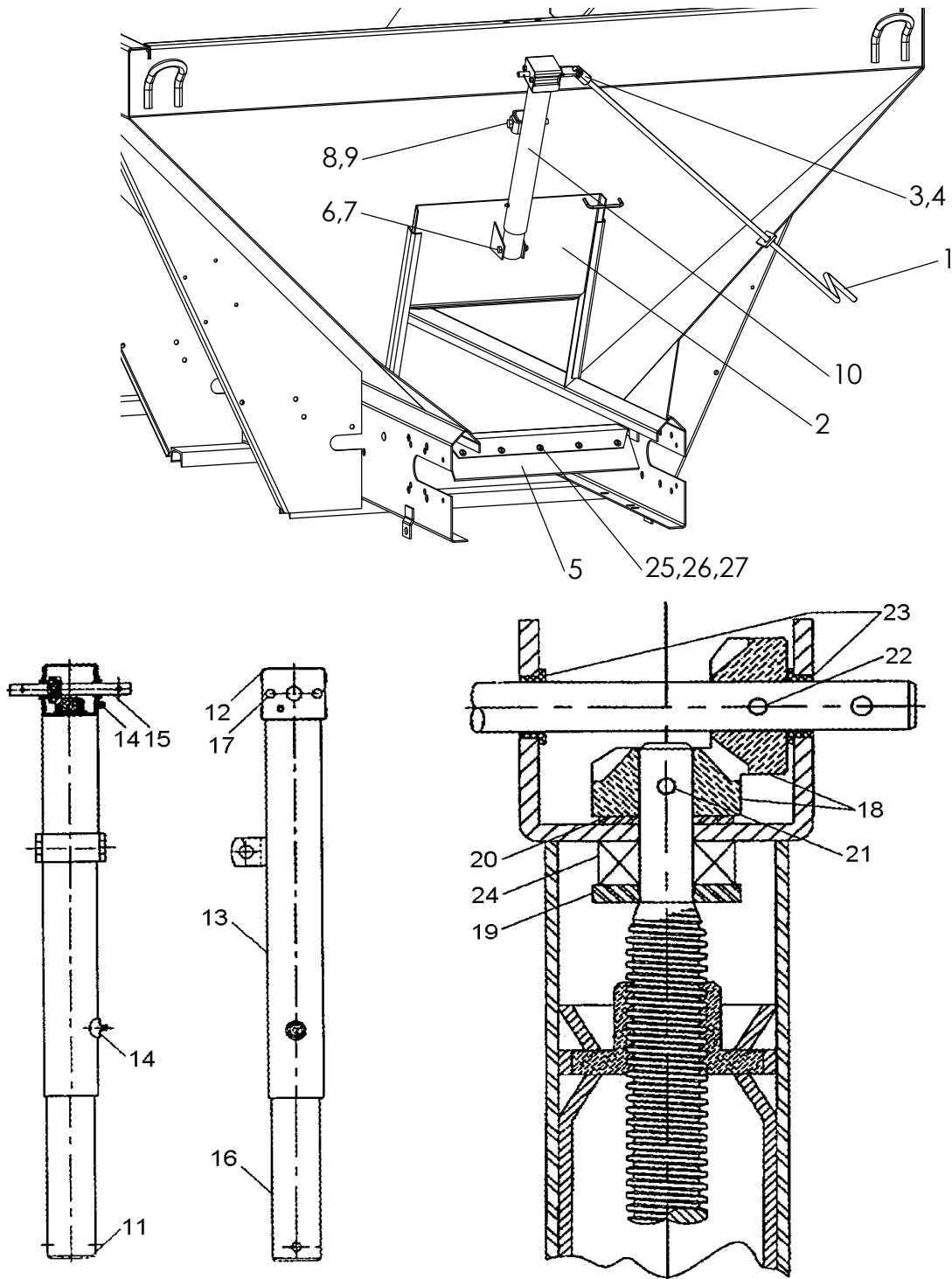
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	271371	Cross Bar Wldmt	AR
2	21120	Link – Connecting	AR
3	20817	Pin – Cotter	AR
4	21118	Pin – Clevis	AR



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
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



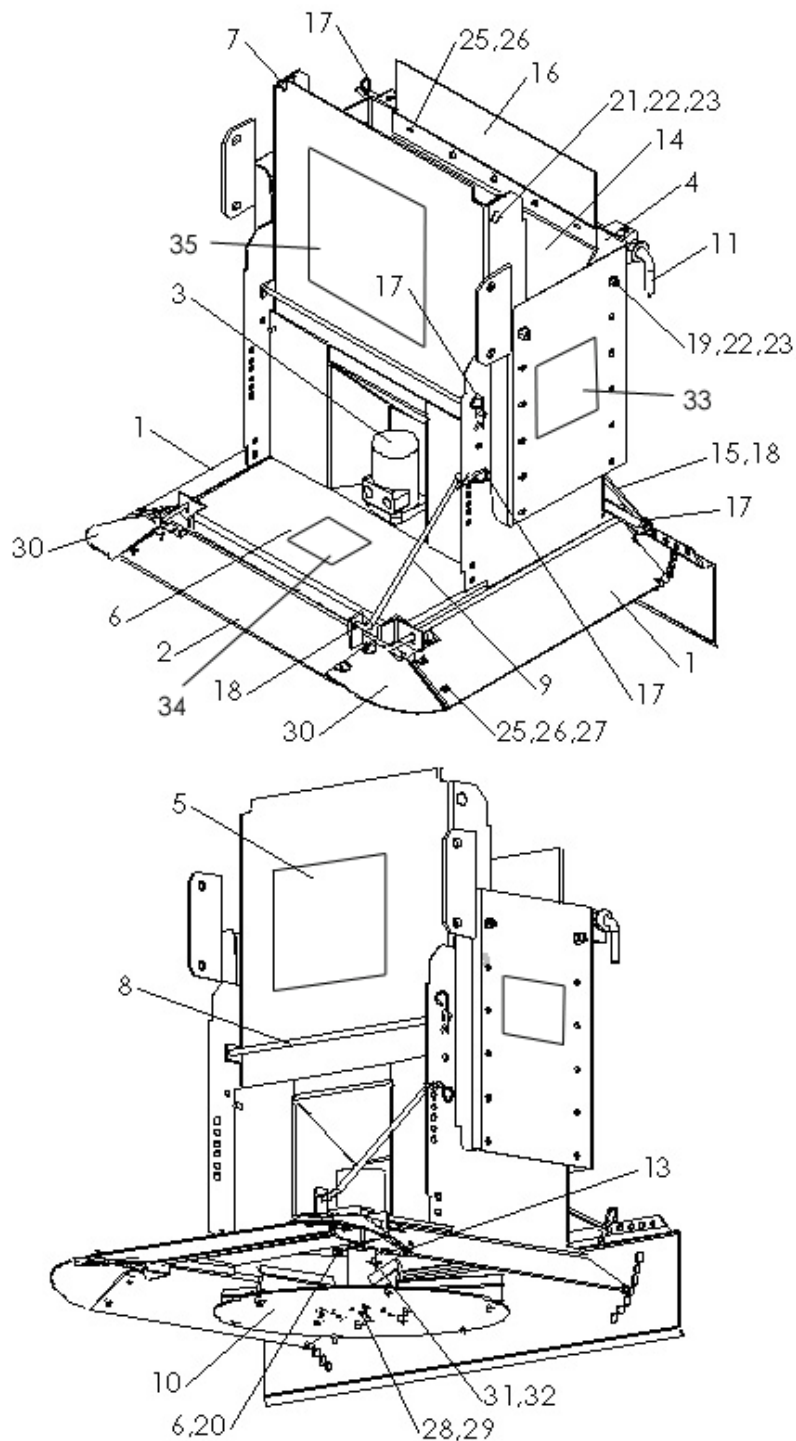
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	80831	Window - Sight 8 x 10	1
2	80832-X1	Bar - Retainer Side	2
3	80833-X1	Bar - Retainer Top & Bottom	2
4	42033	Screw - Truss Head 1/4-20NC x 1 SS	14
5	42034	Nut - Lock 1/4-20 SS	14



FEEDGATE & JACK CONTINUED

<u>ITEM</u>	<u>PART NO.</u>			<u>DESCRIPTION</u>	<u>QTY</u>
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
1	14382	14382	14382	Handle	1
2	87761	87850	87851	Feedgate Wldmt	1
3	85002	85002	85002	U-Joint	1
4	20918	20918	20918	Pin – Roll	2
5	87854	87854	87854	Wiper – Belt	1
6	20074	36296	36296	Cap Screw - 3/8 x 2 3/4	1
7	20678	72054	72054	Nut – Lock 3/8	1
8	20138	80798	80798	Cap Screw - 1/2 x 3 3/4	1
9	20680	39016	39016	Nut – Hex 1/2	1
10	40704	40704	40704	Jack Assy, Includes 11-24	1
	84221	84221	84221	Repair Kit, Includes Items 11, 18-24	1
11	40707	40707	40707	Cap – Tube Lower	1
12	NSS	NSS	NSS	Cover – Tube Upper	1
13	NSS	NSS	NSS	Tube – Outer Assy	1
14	NSS	NSS	NSS	Grease Fitting	2
15	84217	84217	84217	Shaft	1
16	NSS	NSS	NSS	Tube – Inner Assy	1
17	84218	84218	84218	Bolt – 1/4 x 3	2
	84219	84219	84219	Nut – Lock 1/4	2
18	84214	84214	84214	Gear – Miter	2
19	84210	84210	84210	Washer - Thrust	1
20	84212	84212	84212	Washer	1
21	84216	84216	84216	Pin	1
22	84215	84215	84215	Pin – Groove	1
23	84213	84213	84213	Bushing	2
24	84211	84211	84211	Bearing – Thrust	1
25	20619	36405	36405	Screw – Machine 1/4 x 3/4	5
26	20692	36423	36423	Washer – Flat 1/4	5
27	20642	36412	36412	Nut – Hex 1/4	5

NSS - Not Serviced Separately

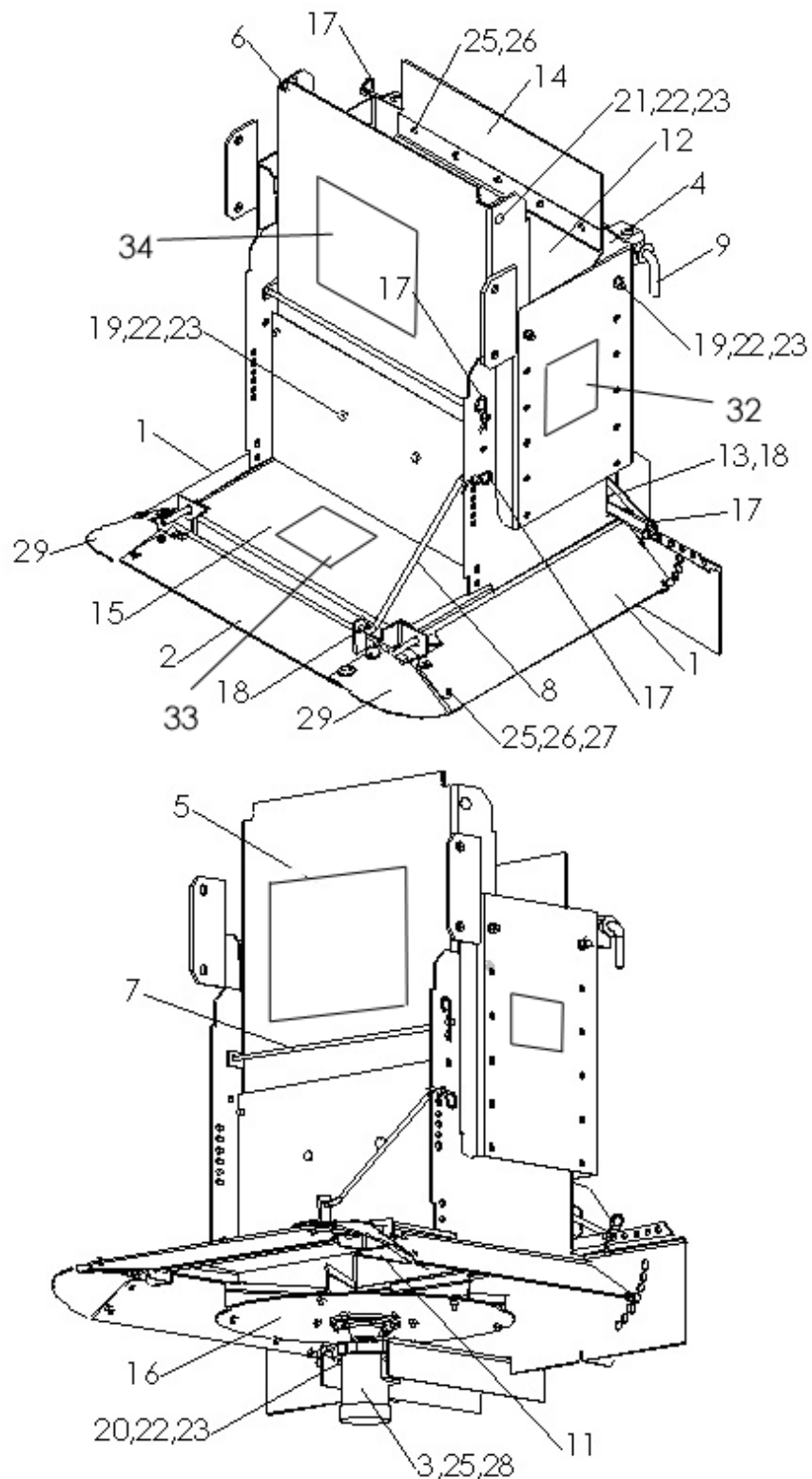


ITEM	PART NO.			DESCRIPTION	QTY
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
	87758	88481	88482	Spinner Assy – Steel	
	88483	88484	88485	Spinner Assy – Polyurethane	
1	87780	88463	88464	Baffle – Wldmt Side	2
2	87778	88461	88462	Baffle – Wldmt Rear	1
3	58806	58806	58806	Motor – Hydraulic	1
4	87775	88459	88460	Spinner – Wldmt Upper	1
5	87783	88465	88466	Chute Wldmt	1
6	87772	88457	88458	Spinner – Wldmt Lower	1
7	87751	88403	88404	Chute – Extension	1
8	87750	88401	88401	Rod – Lock Chute	1
9	87776	88420	88420	Rod – Control Rear	1
10	87757	87757	87757	Disc Assy – Steel, Includes:	1
	9098	9098	9098	Disc – Spinner Steel	1
	4731	4731	4731	Fin – Formed Spinner	6
	88002	88002	88002	Hub – Spinner	1
	20003	20003	20003	Cap Screw – 1/4 x 3/4	12
	20004	20004	20004	Cap Screw – 1/4 x 7/8	6
	20676	20676	20676	Nut – Lock 1/4	18
	88396	88396	88396	Disc Assy – Poly, Includes:	1
	34853	34853	34853	Spinner – Urethane	1
	88002	88002	88002	Hub – Spinner	1
	20007	20007	20007	Cap Screw – 1/4 x 1 1/2	6
	21423	21423	21423	Washer – Flat special 1/4	6
	20676	20676	20676	Nut – Lock 1/4	6
11	88397	88397	88397	Lock – Wldmt Pivot	1
12	* 87809	88467	88468	Baffle – Wldmt RH Inner	1
13	87813	88469	88470	Baffle – Wldmt LH Inner	1
14	87803	88431	88432	Plate – Drop	1
15	87815	88444	88444	Rod – Control Front	2
16	87847	87847	87847	Belt – Spinner Wiper	1
17	40576	36429	36429	Pin – Hair	7
18	20822	36427	36427	Pin – Cotter	5
19	20067	36398	36398	Cap Screw – 3/8 x 1	6
20	20065	36293	36293	Cap Screw – 3/8 x 3/4	4

ITEM	PART NO.			DESCRIPTION	QTY
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
21	20319	36409	36409	Bolt – Carriage 3/8 x 1 1/4	2
22	20712	36420	36420	Washer – Lock 3/8	10
23	20644	36414	36414	Nut – Hex 3/8	6
24	* 20678	72054	72054	Nut – Lock 3/8	2
25	20003	36393	36393	Cap Screw – 1/4 x 3/4	13
26	20676	42034	42034	Nut – Lock 1/4	13
27	21423	21423	21423-X1	Washer – Flat special 1/4	8
28	20014	20014	20014	Cap Screw – 1/4 x 3 1/4	1
29	20710	20710	20710	Washer – Lock 1/4	1
30	87801	87801	87801	Deflector – Belt	2
31	6123	6123	6123	Pin – Clevis	1
32	20817	20817	20817	Pin – Cotter	1
33	71807	71807	71807	Decal - Warning Falling Spinner Hazard	2
34	55630	55630	55630	Decal - Warning Falling Hazard	1
35	368	368	368	Decal - Flying Material	1
36	* 88050	88050	88050	Spacer – Dump-Over Chute	2

* - Not Shown

SPINNER - UNDERSLUNG



Please Give Part No., Description
& Unit Serial No.

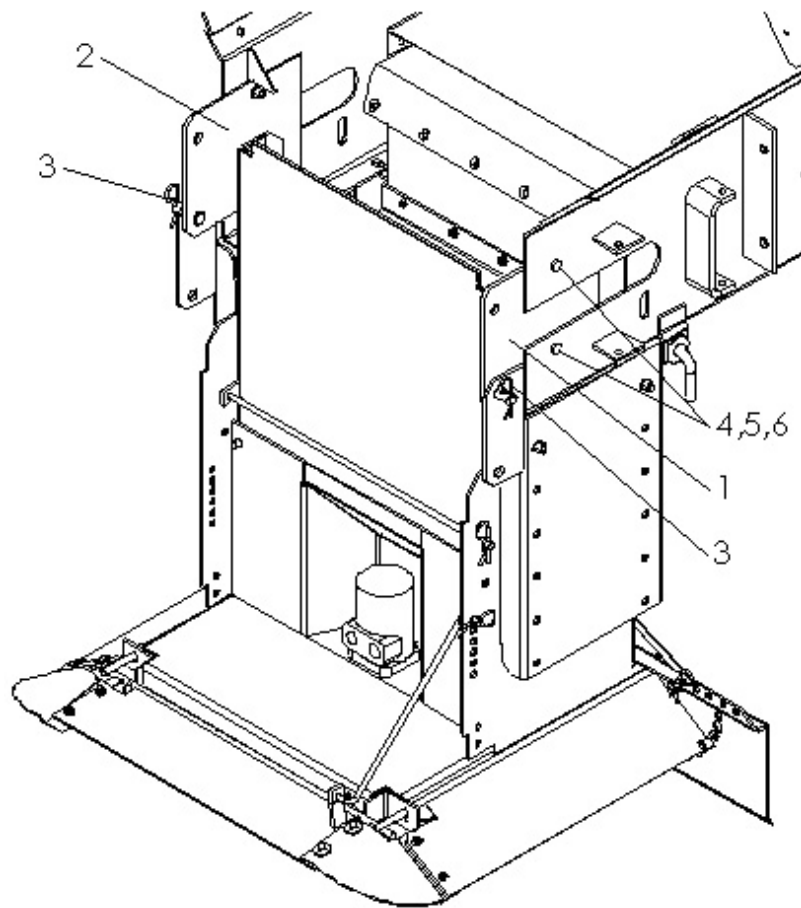


ITEM	PART NO.			DESCRIPTION	QTY
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
	87876	88477	88478	Spinner Assy – Steel	
	88486	88487	88488	Spinner Assy – Polyurethane	
1	87780	88463	88464	Baffle – Wldmt Side	2
2	87778	88461	88462	Baffle – Wldmt Rear	1
3	37339	37339	37339	Motor – Hydraulic	1
4	87775	88459	88460	Spinner – Wldmt Upper	1
5	87783	88465	88466	Chute Wldmt	1
6	87751	88403	88404	Chute – Extension	1
7	87750	88401	88401	Rod – Lock Chute	1
8	87776	88420	88420	Rod – Control Rear	1
9	88397	88397	88397	Lock – Wldmt Pivot	1
10	* 87809	88467	88468	Baffle – Wldmt RH Inner	1
11	87813	88469	88470	Baffle – Wldmt LH Inner	1
12	87803	88431	88432	Plate – Drop	1
13	87815	88444	88444	Rod – Control Front	2
14	87847	87847	87847	Belt – Spinner Wiper	1
15	87874	88475	88476	Spinner – Wldmt Lower	1
16	73492	73492	73492	Disc Assy – Steel, Includes:	
	9098	9098	9098	Disc – Spinner Steel	1
	4731	4731	4731	Fin – Formed Spinner	6
	74122	74122	74122	Hub – Spinner	1
	20003	20003	20003	Cap Screw – 1/4 x 3/4	12
	20004	20004	20004	Cap Screw – 1/4 x 7/8	6
	20676	20676	20676	Nut – Lock 1/4	18
	90831	90831	90831	Disc Assy – Poly, Includes:	
	34853	34853	34853	Spinner – Urethane	1
	39178	39178	39178	Plate – Spinner Mount	1
	74122	74122	74122	Hub – Spinner	1
	20007	20007	20007	Cap Screw – 1/4 x 1 1/2	6
	21423	21423	21423	Washer - Flat 1/4	6
	20676	20676	20676	Nut – Lock 1/4	6
17	40576	36429	36429	Pin – Hair	7
18	20822	36427	36427	Pin – Cotter	5
19	20067	36398	36398	Cap Screw – 3/8 x 1	8

SPINNER - UNDERSLUNG CONTINUED

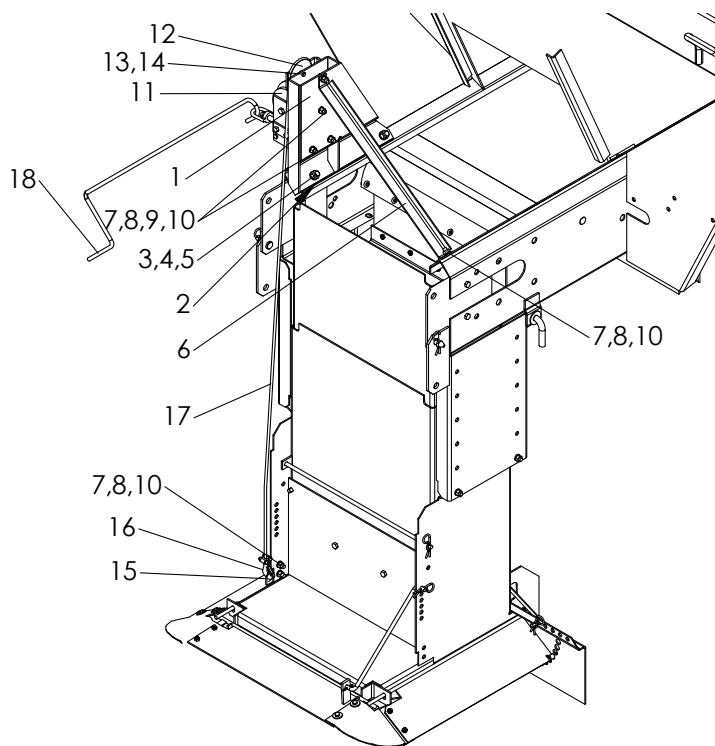
ITEM	PART NO.			DESCRIPTION	QTY
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
20	20068	36399	36399	Cap Screw – 3/8 x 1 1/4	2
21	20319	36409	36409	Bolt – Carriage 3/8 x 1 1/4	2
22	20712	36420	36420	Washer – Lock 3/8	10
23	20644	36414	36414	Nut – Hex 3/8	10
24	* 20678	72054	72054	Nut – Lock 3/8	2
25	20003	36393	36393	Cap Screw – 1/4 x 3/4	13
26	20676	42034	42034	Nut – Lock 1/4	13
27	21423	21423	21423-X1	Washer – Special 1/4	8
28	20710	20710	20710	Washer – Lock 1/4	1
29	87801	87801	87801	Deflector – Belt	2
30	* 96242	88455	88456	Plate – Deflector	1
31	* 88050	88050	88050	Spacer – Dump-Over Chute	2
32	20003	20003	20003	Cap Screw - 1/4-20NC x 3/4	1
33	71807	71807	71807	Decal - Warning Falling Spinner Hazard	2
34	55630	55630	55630	Decal - Warning Falling Hazard	1
35	368	368	368	Decal - Flying Material	1

* - Not Shown



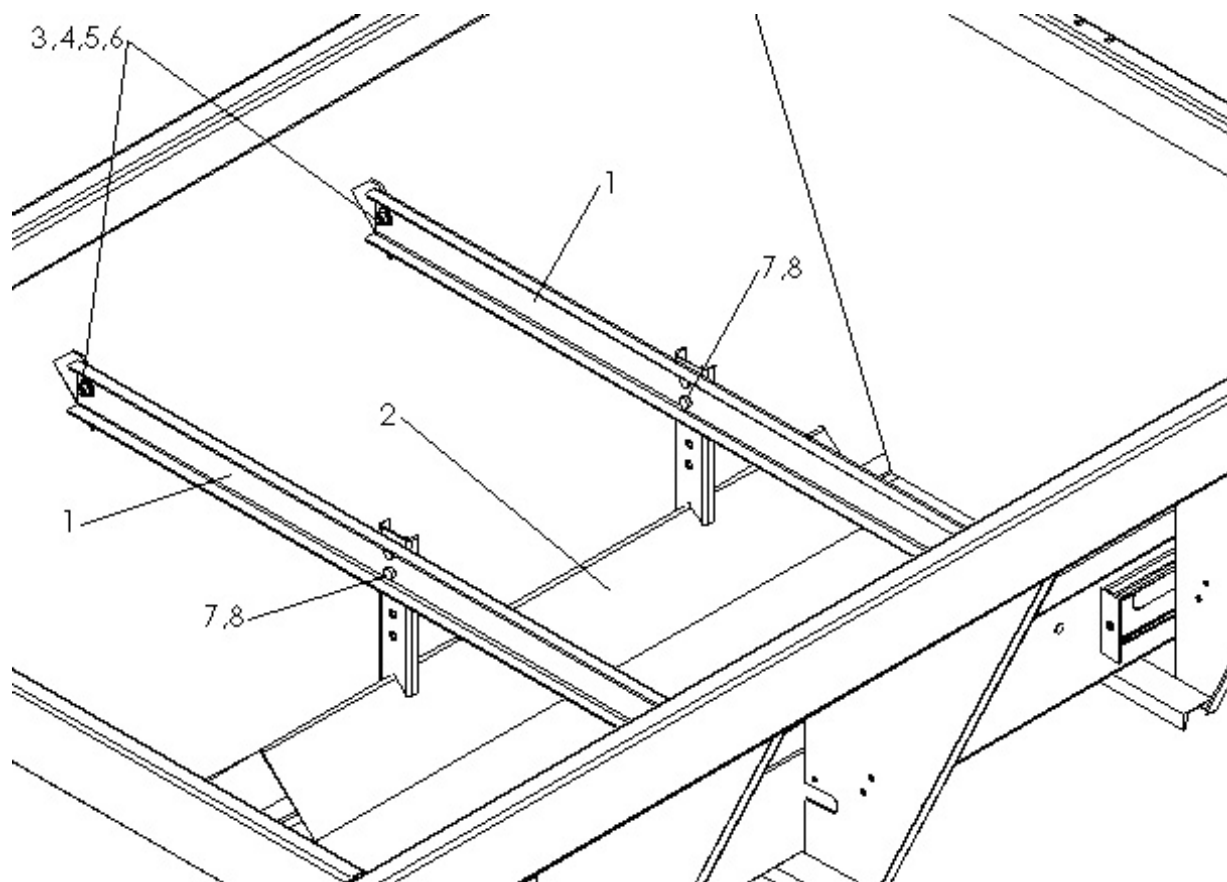
<u>ITEM</u>	<u>PART NO.</u>			<u>DESCRIPTION</u>	<u>QTY</u>
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
1	87843	88471	88472	Support - Rivot RH Wldmt	1
2	87844	88473	88474	Support – Pivot LH Wldmt	1
3	40576	36429	36429	Pin – Hair	2
4	20067	36298	36298	Cap Screw – 3/8 x 1	4
5	20712	36420	36420	Washer – Lock 3/8	4
6	20644	36414	36414	Nut – Hex 3/8	4
7	* 20364	72056	72056	Bolt – Carriage 1/2 x 1	2
8	* 20695	36426	36426	Washer – Flat 1/2	2
9	* 20714	36422	36422	Washer – Lock 1/2	2
10	* 20646	36416	36416	Nut – Hex 1/2	2
11	* 20693	36425	36425	Washer - Flat 3/8	4

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



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	88261	Base – Winch Wldmt	1
2	88266	Plate – Winch Spacer	1
3	20128	Cap Screw – 1/2 x 1 1/4	2
4	20714	Washer – Lock 1/2	2
5	20646	Nut – Hex 1/2	2
6	88267	Crossbar – Winch	1
7	20067	Cap Screw – 3/8 x 1	7
8	20712	Washer – Lock 3/8	7
9	20693	Washer – Flat 3/8	3
10	20644	Nut – Hex 3/8	7
11	88269	Winch – Worm Gear	1
12	88271	Pulley	1
13	21004	Pin – Clevis	1
14	20817	Pin – Cotter	1
15	88268	Plate – Winch Lift	1
16	88272	Clamp – Wire Rope	1
17	88273-96	Cable	1
18	88270	Handle - Winch	1

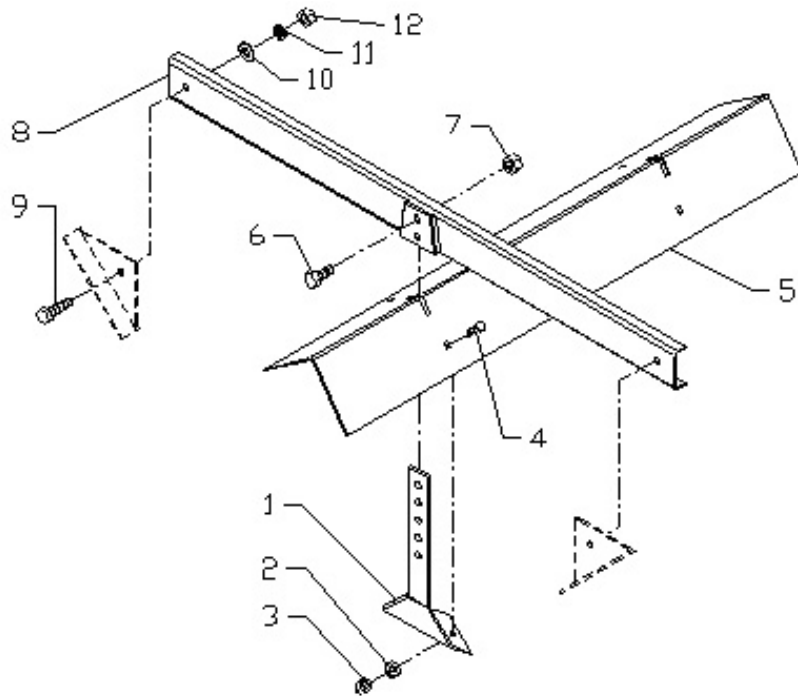
* - Not Shown – Used to prevent spinner from pivoting.



ITEM	PART NO.			DESCRIPTION	QTY
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
1	81264-AA	81265-AA	81266	Channel – Hanger V	AR
2	87790	87880	87884	Inverted V – Wldmt 9'-10' Units	1
	87877	87881	87885	Inverted V – Wldmt 11'-12' Units	1
	87878	87882	87886	Inverted V – Wldmt 13'-14' Units	1
	87879	87883	87887	Inverted V – Wldmt 15'-16' Units	1
3	20128	36402	36402	Cap Screw – 1/2 x 1 1/4	AR
4	20695	36426	36426	Washer – Flat 1/2	AR
5	20714	36422	36422	Washer – Lock 1/2	AR
6	20646	36416	36416	Nut – Hex 1/2	AR
7	20176	58800	58800	Cap Screw – 5/8 x 1 3/4	AR
8	20682	41762	41762	Nut – Lock 5/8	AR

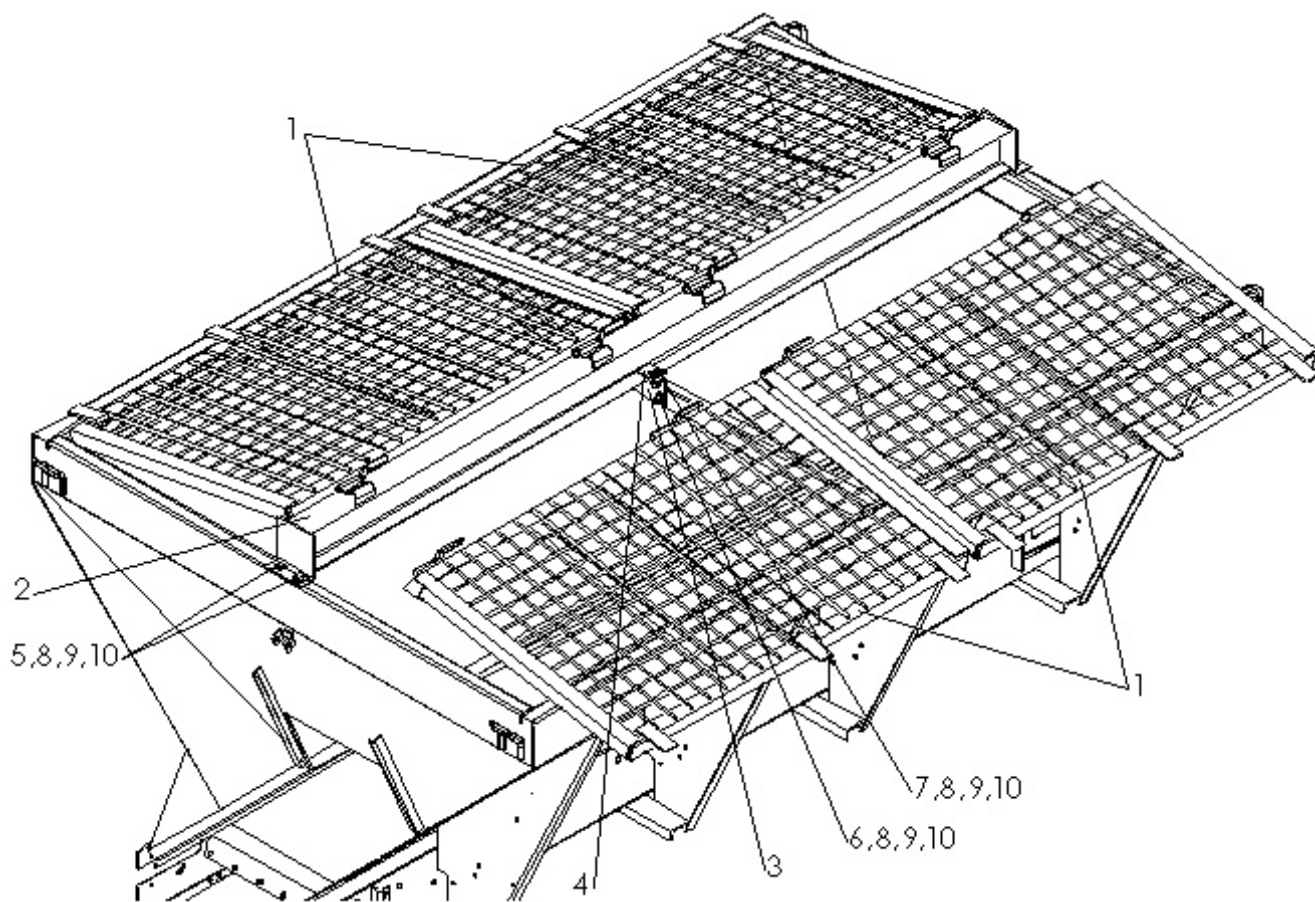
AR – As Required

INVERTED V - SWINGING



ITEM	PART NO.			DESCRIPTION	QTY
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
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

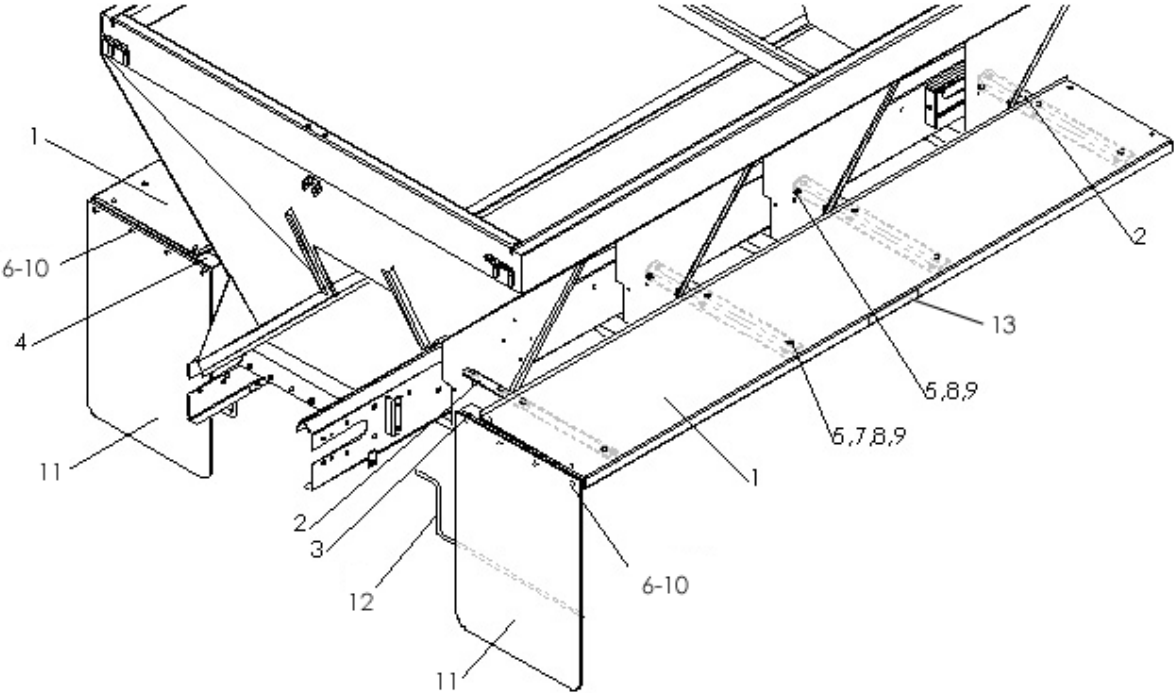


UNIT LENGTH	QUANTITY		
	4' SCREEN	5' SCREEN	6' SCREEN
9'	2	2	-
10'	-	4	-
11'	-	2	2
12'	-	-	4
13'	4	2	-
14'	2	4	-
15'	-	6	-
16'	-	4	2

SCREENS CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	44184	Screen Wldmt – 4'	AR
	44185	Screen Wldmt – 5'	AR
	44186	Screen Wldmt – 6'	AR
	* 77425	Screen Wldmt – 4' w/ Wide Openings	AR
	* 77426	Screen Wldmt – 5' w/ Wide Openings	AR
	* 77427	Screen Wldmt – 6' w/ Wide Openings	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

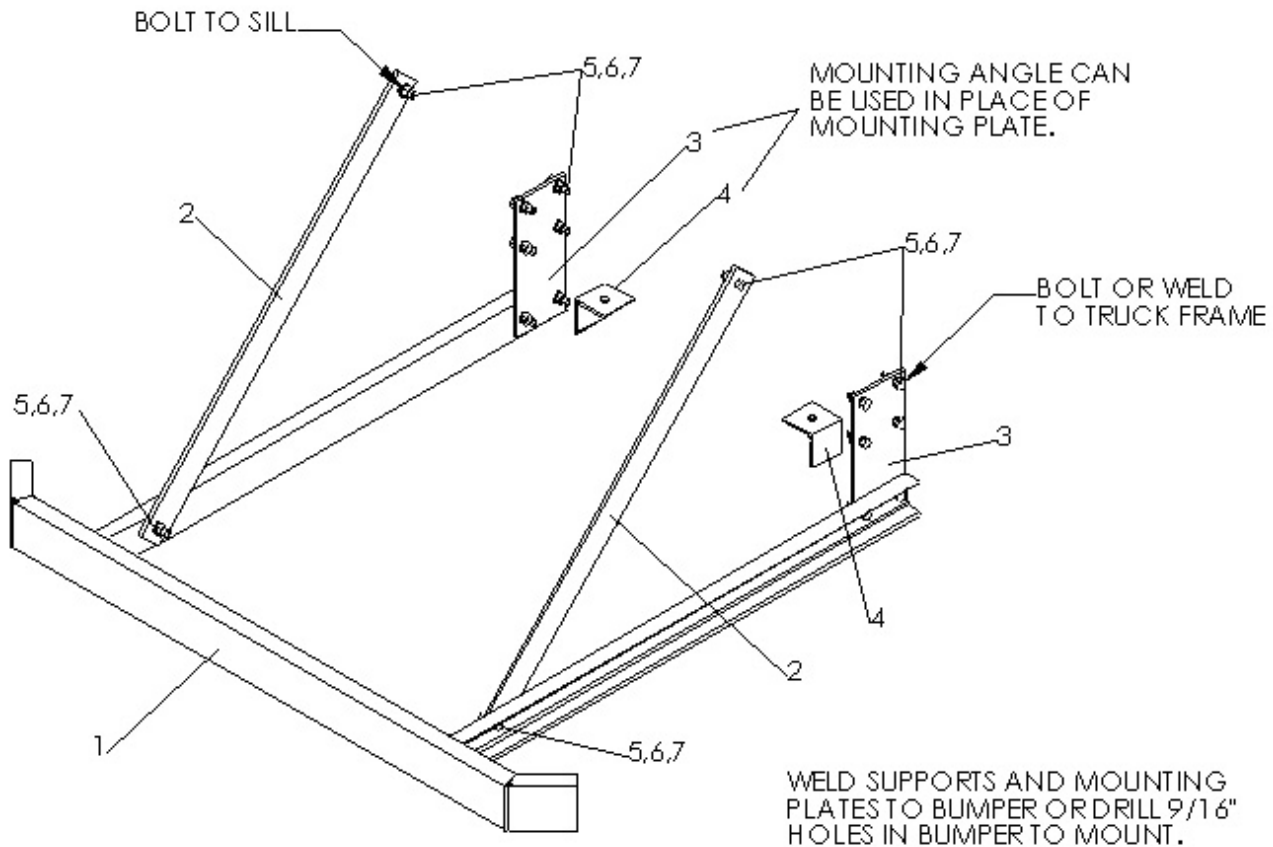
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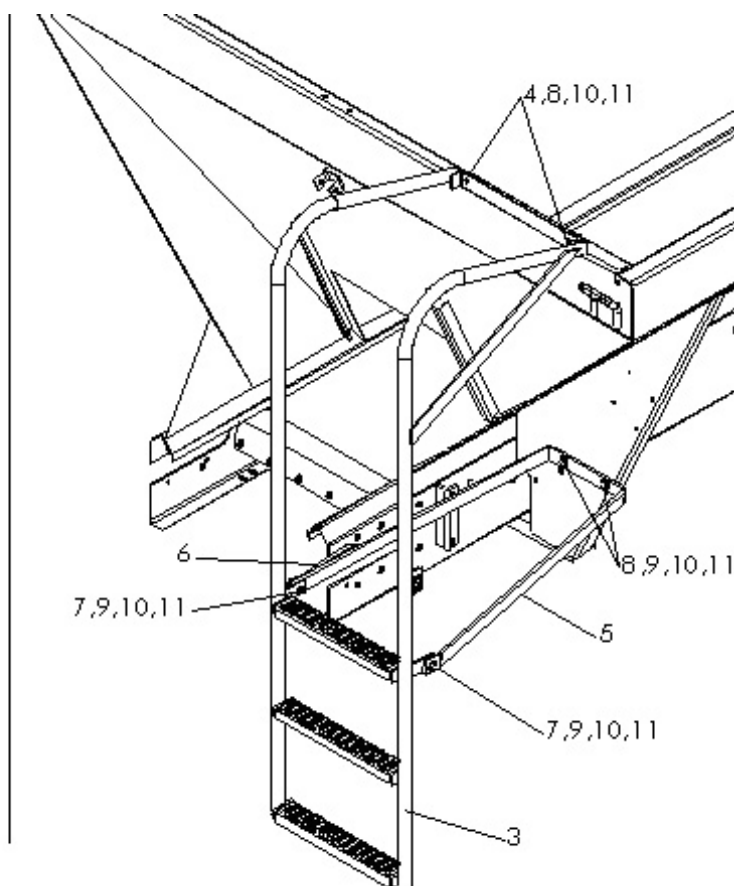
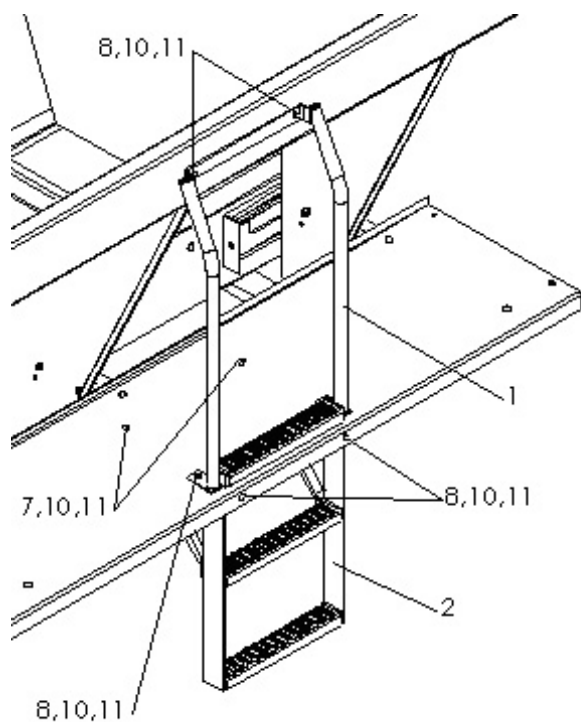
FENDERS CONTINUED

<u>ITEM</u>	<u>PART NO.</u>			<u>DESCRIPTION</u>	<u>QTY</u>
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
1	81415	81440	81463	Fender – 9'	
	81416	81441	81464	Fender – 10'	2
	81417	81442	81465	Fender – 11'	2
	81418	81443	81466	Fender – 12'	2
	81419	81444	81467	Fender – 13'	2
	81420	81445	81468	Fender – 14'	2
	81421	81446	81469	Fender – 15'	2
	81422	81447	81470	Fender – 16'	2
2	46445	46445	46445	Angle – Fender	AR
3	46434	71900	71872	Bracket – Mudflap Mounting RH	1
4	46435	71901	71873	Bracket – Mudflap Mounting LH	1
5	20318	36408	36408	Bolt – Carriage 3/8 x 1	AR
6	20067	36398	36398	Cap Screw – 3/8 x 1	4
7	20693	36425	36425	Washer – Flat 3/8	AR
8	20712	36420	36420	Washer – Lock 3/8	AR
9	20644	36414	36414	Nut – Hex 3/8	AR
10	20067	20067	20067	Cap Screw - 3/8 x 1	8
11	21770	21770	21770	Mudflap	2
12	36844	36844	36844	Rod – Mudflap	2
13	39200	39200	39200	Decal - Warning Keep Off Fender	2
14	*21699	21699	21699	Anti-Skid Fabric (Specify Length)	2

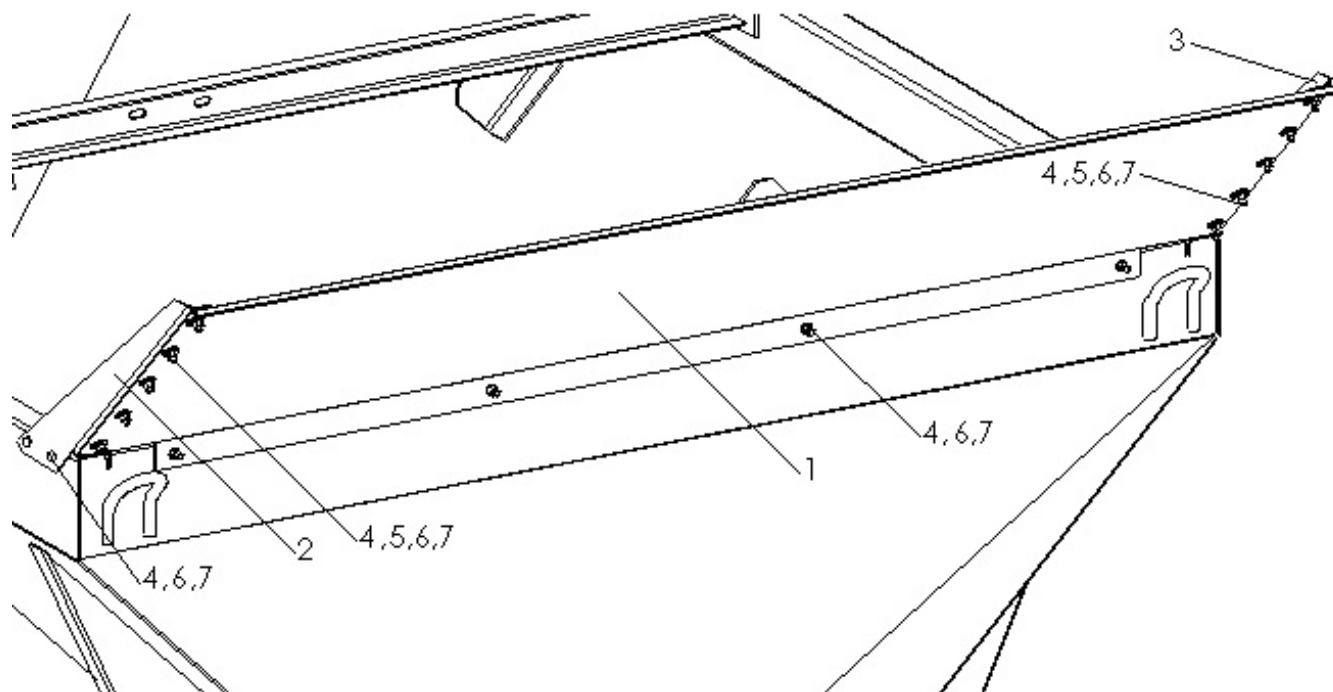
* - Not Shown AR - As Required



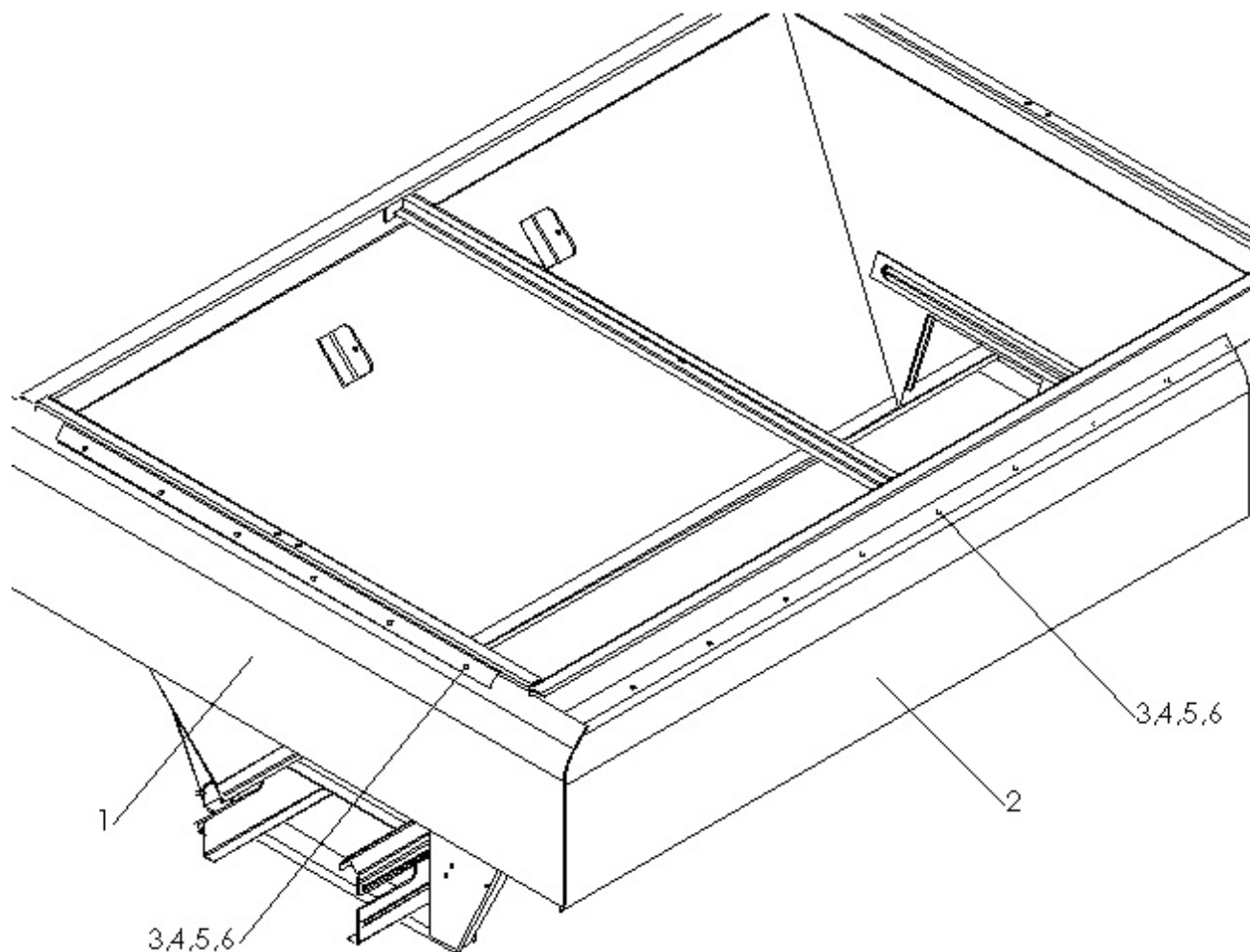
ITEM	PART NO.	DESCRIPTION	QTY
1	71272	Bumper Wldmt	1
2	851	Bar – Support	2
3	71274	Plate – Mounting	2
4	1014	Angle – Mounting (Can replace 71274)	2
5	20129	Cap Screw – 1/2 x 1 1/2	16
6	20714	Washer – Lock 1/2	16
7	20646	Nut – Hex 1/2	16



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
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



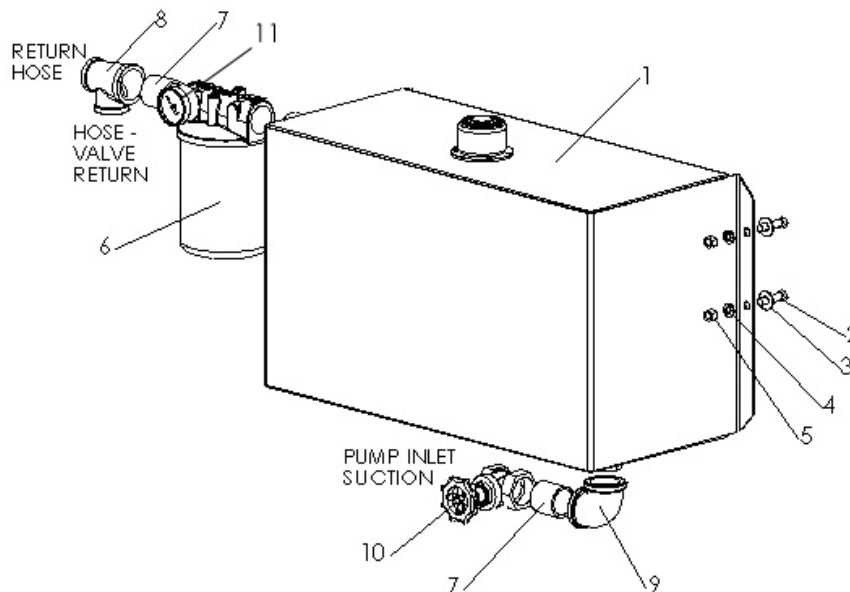
ITEM	PART NO.			DESCRIPTION	QTY
	<u>CS</u>	<u>409 SS</u>	<u>304 SS</u>		
1	31787	79153	79152	Panel – Shield 51" Cab Height	
	39812	79155	79154	Panel – Shield 57" Cab Height	1
	39818	79157	79156	Panel – Shield 63" Cab Height	1
	39824	79159	79158	Panel – Shield 69" Cab Height	1
2	31788	79167	79166	Support – RH 51" Cab Height	1
	39813	79171	79170	Support – RH 57" Cab Height	1
	39819	79175	79174	Support – RH 63" Cab Height	1
	39825	79179	79178	Support – RH 69" Cab Height	1
3	31789	79169	79168	Support – LH 51" Cab Height	1
	39815	79173	79172	Support – LH 57" Cab Height	1
	39821	79177	79176	Support – LH 63" Cab Height	1
	39827	79181	79180	Support – LH 69" Cab Height	1
4	20067	36398	36398	Cap Screw – 3/8 x 1	AR
5	20693	36425	36425	Washer – Flat 3/8	AR
6	20712	36420	36420	Washer – Lock 3/8	AR
7	20644	36414	36414	Nut – Hex 3/8	AR



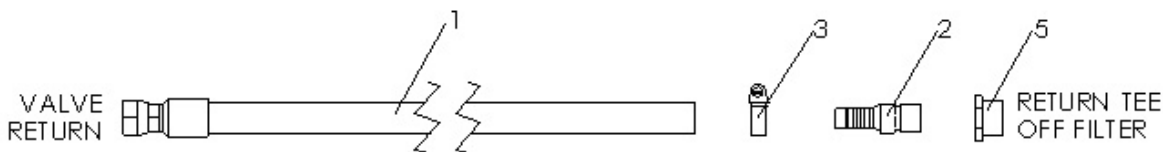
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	84191	Skirt – Front	1
2	84202	Skirt – Side 9' Unit	2
	84203	Skirt – Side 10' Unit	2
	84204	Skirt – Side 11' Unit	2
	84205	Skirt – Side 12' Unit	2
	84206	Skirt – Side 13' Unit	2
	84207	Skirt – Side 14' Unit	2
	84208	Skirt – Side 15' Unit	2
	84209	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	36412	Nut – Hex 1/4	AR

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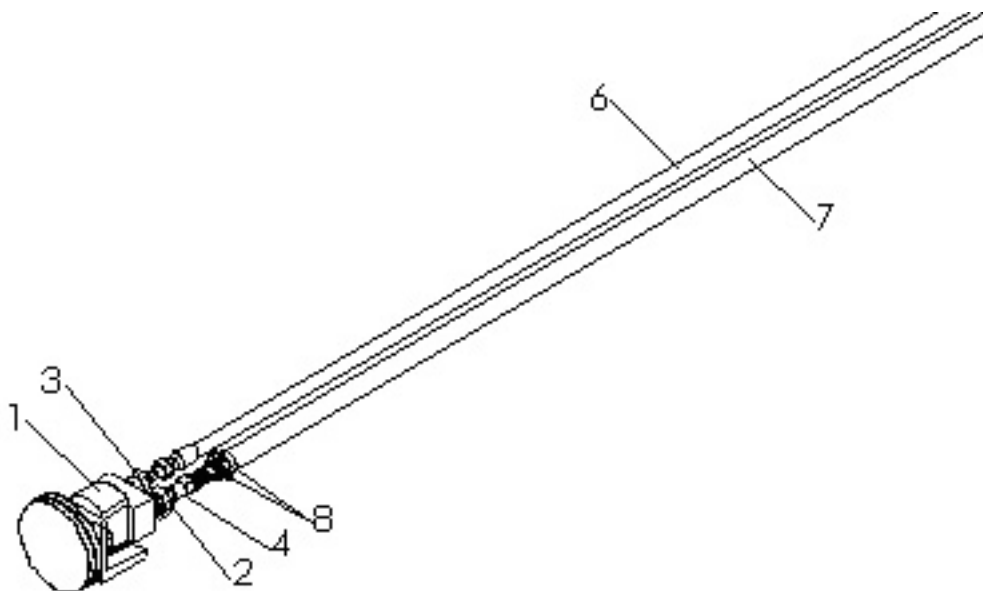


ITEM	PART NO.	DESCRIPTION	QTY
1	39796	12 Gal. Reservoir Wldmt, Includes:	1
	39929	Cap – Filler	1
	6033	Plug	1
2	20069	Cap Screw – 3/8 x 1 1/2	4
3	20693	Washer – Flat 3/8	4
4	20712	Washer – Lock 3/8	4
5	20644	Nut – Hex 3/8	4
6	39845	Filter Assy	1
	43530	Filter Element	1
7	6028	Nipple – Close	2
8	6318	Tee – Pipe	1
9	6011	Elbow – Pipe	1
10	22155	Valve – Gate	1
11	43534	Gauge	1

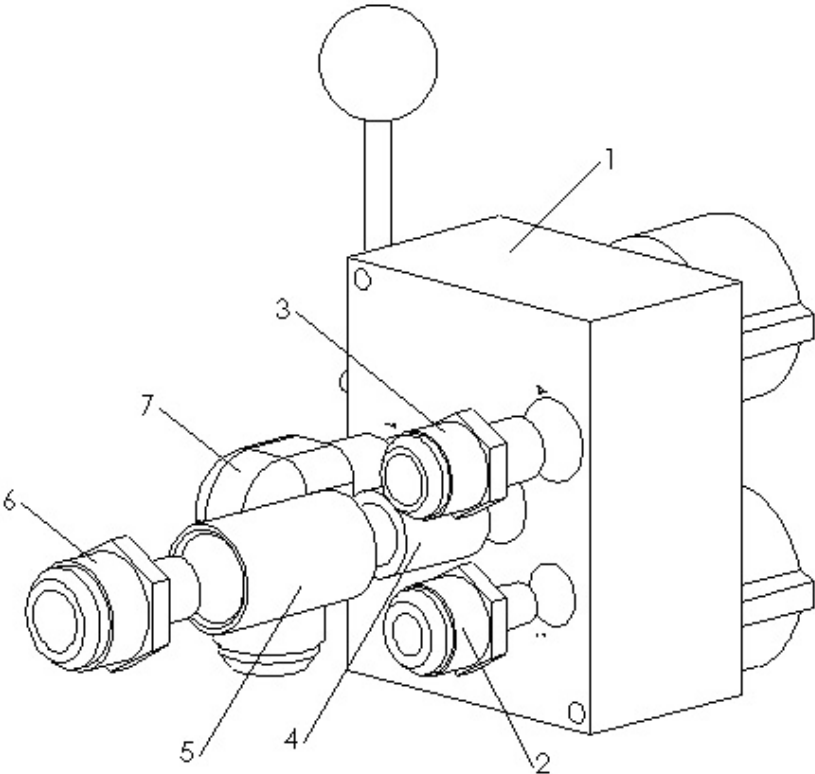


INSERT PLUG IN BOTTOM
OF TEE OFF FILTER ON UNITS
WITH VALVE AT REAR ONLY

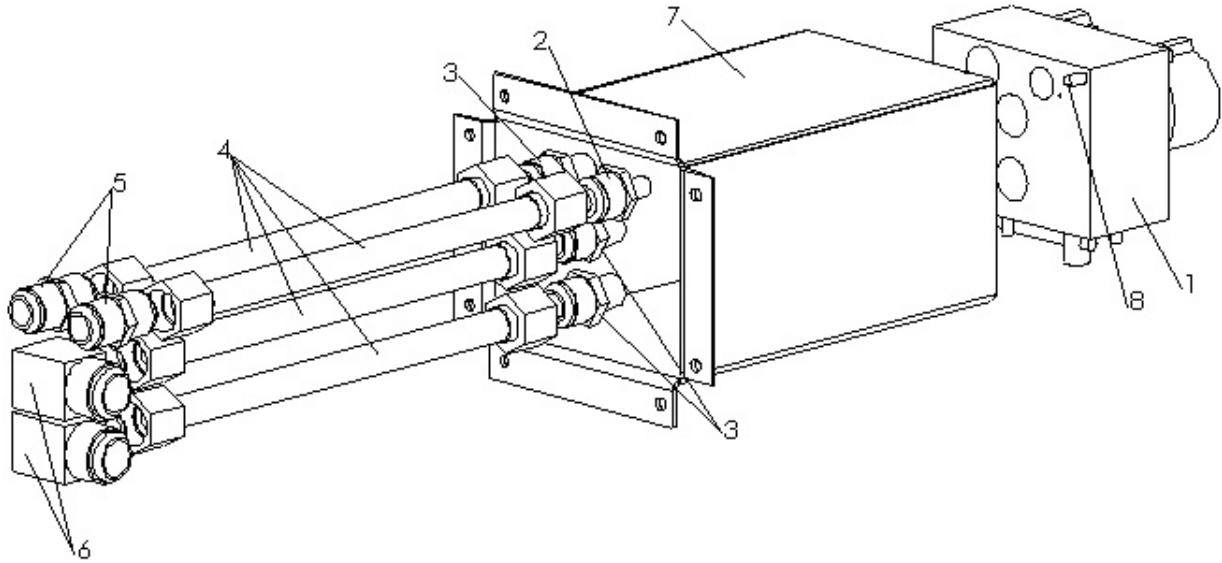
ITEM	PART NO.	DESCRIPTION	QTY
1	88326	Hose Assy, Valve at Cab	1
	88325	Hose Assy, Valve at Rear	1
	88319	Hose Assy, Valve at Rear Series Valve	1
2	22426	End – Hose,	1
	22425	End – Hose, Series Valve at Rear	1
3	6335	Clamp – Hose 1"	1
	22381	Clamp – Hose 3/4", Series Valve at Rear	1
4	6034	Plug – Pipe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



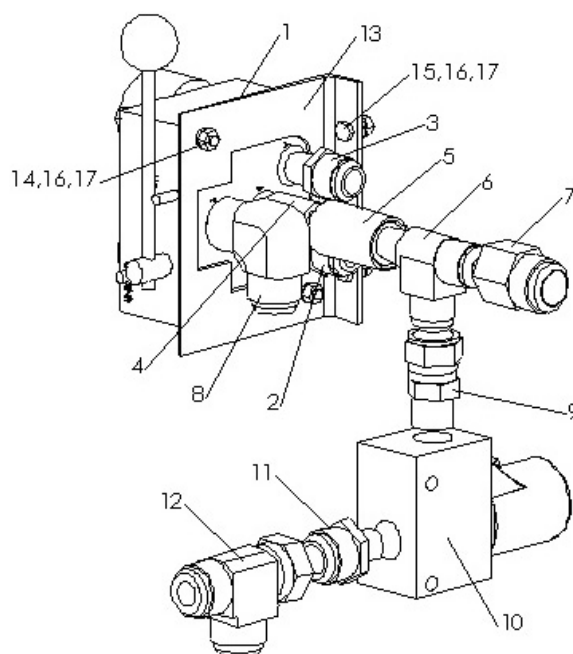
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	34569	Pump – Electric Clutch	1
2	21506	Adapter	1
3	29835	Adapter	1
4	22426	End – Hose	2
5	29721	Hose Assembly, Valve at Cab	1
	88317	Hose Assembly, Valve at Rear	1
6	23203-120	Hose	1
7	6335	Clamp – Hose	4
8	56508	Fitting – Hose	1
9	34849	Adapter	1
10	22206	Bushing	1



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	310650	Valve – Manual Dual	1
2	29784	Adapter – Connector	1
3	29752	Adapter – Connector	1
4	16362	Nipple – Pipe	1
5	16276	Coupling – Pipe	1
6	29757	Adapter – Connector	1
7	29779	Adapter – Elbow	1

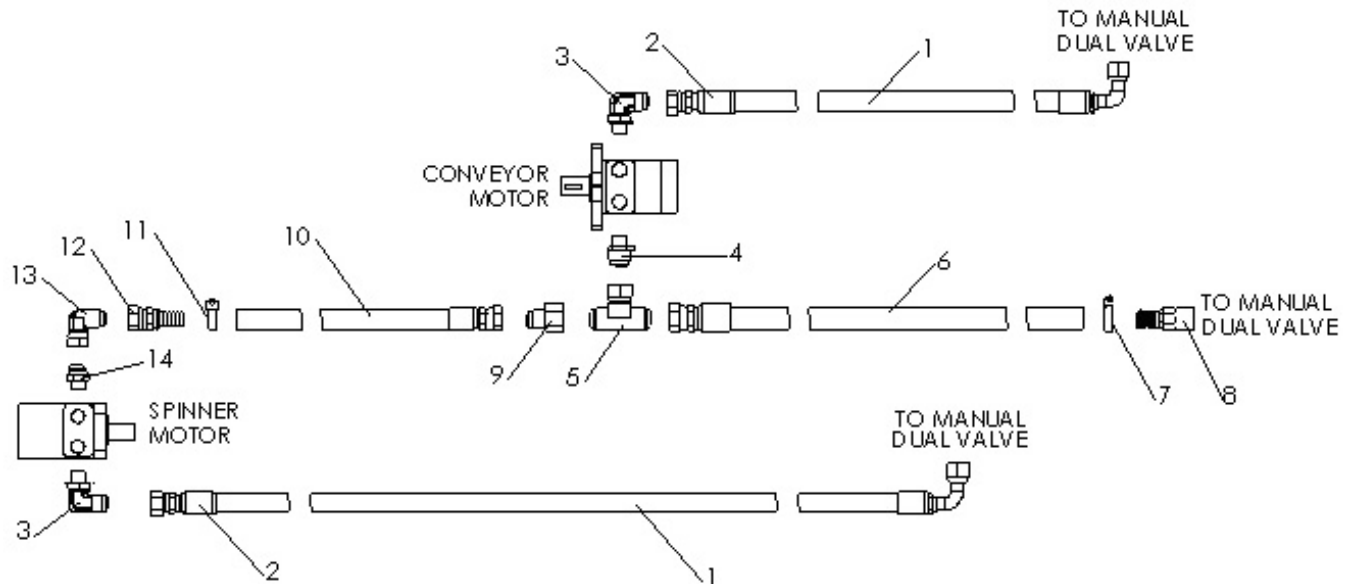


<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	34144	Valve – Manual Dual	1
2	29784	Adapter – Connector	1
3	29752	Adapter – Connector	3
4	36800	Tube Assy	4
5	29817	Adapter – Union	2
6	29786	Adapter – Elbow	2
7	36803	Pedestal	1
8	20013	Cap Screw – 1/4 x 3	2

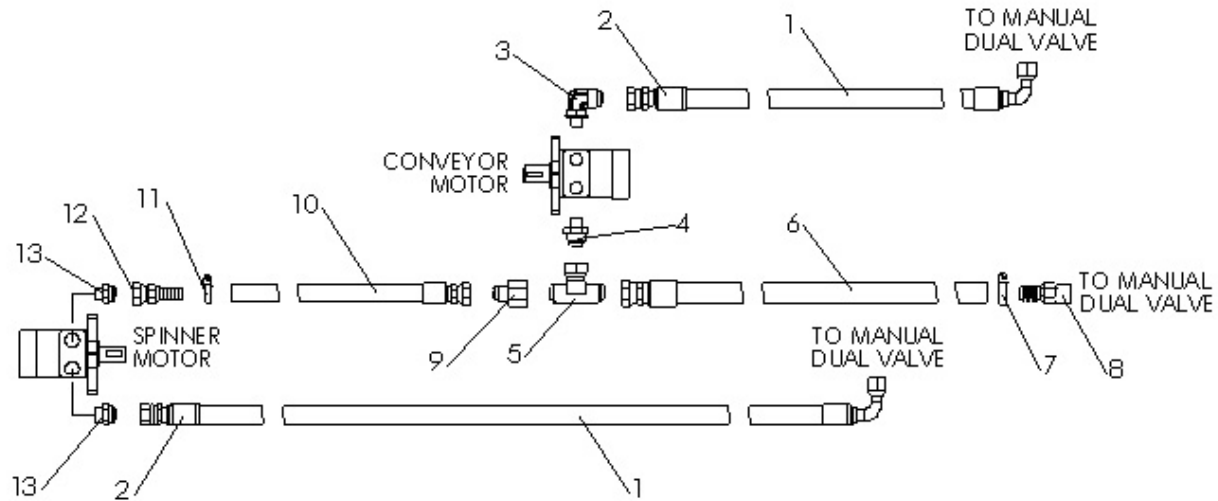


<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	310655	Valve Assy – Manual, Rear Mount	
	*31375	Kit - Electrical Control Switch for Dump Valve	
1	34144	Valve – Manual Dual	1
2	29784	Adapter – Connector	1
3	29752	Adapter – Connector	1
4	16362	Nipple – Pipe	1
5	16276	Coupling – Pipe	1
6	29769	Tee – Swivel Nut	1
7	34712	Adapter	1
8	29779	Adapter – Elbow	1
9	34826	Adapter – Connector	1
10	302564	Valve - Solenoid 2-Way	1
11	29757	Adapter – Connector	1
12	29850	Tee – Swivel Nut	1
13	88049	Bracket – Valve	1
14	20013	Cap Screw – 1/4 x 3	2
15	20003	Cap Screw – 1/4 x 3/4	2
16	20710	Washer – Lock 1/4	4
17	20642	Nut – Hex 1/4	4
18	*31572	Terminal - Ring	1
19	*6488	Connector - Wire	3
20	*12373	Plug	1
21	*21583	Wire	3

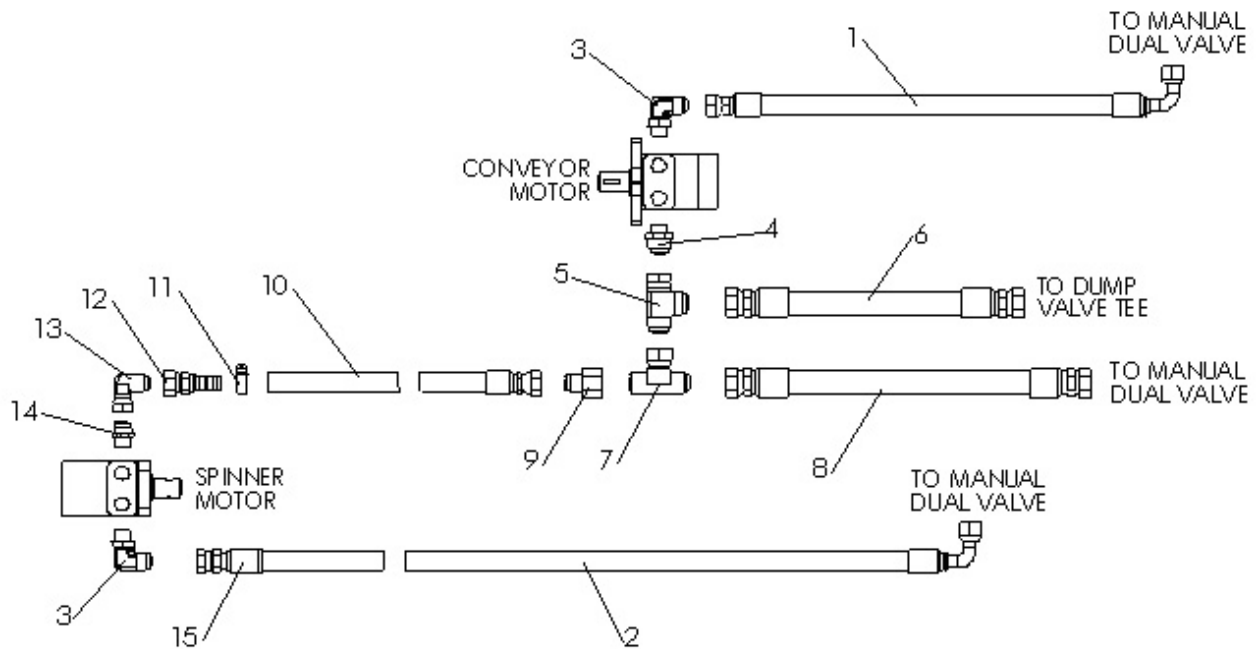
* - Not Shown



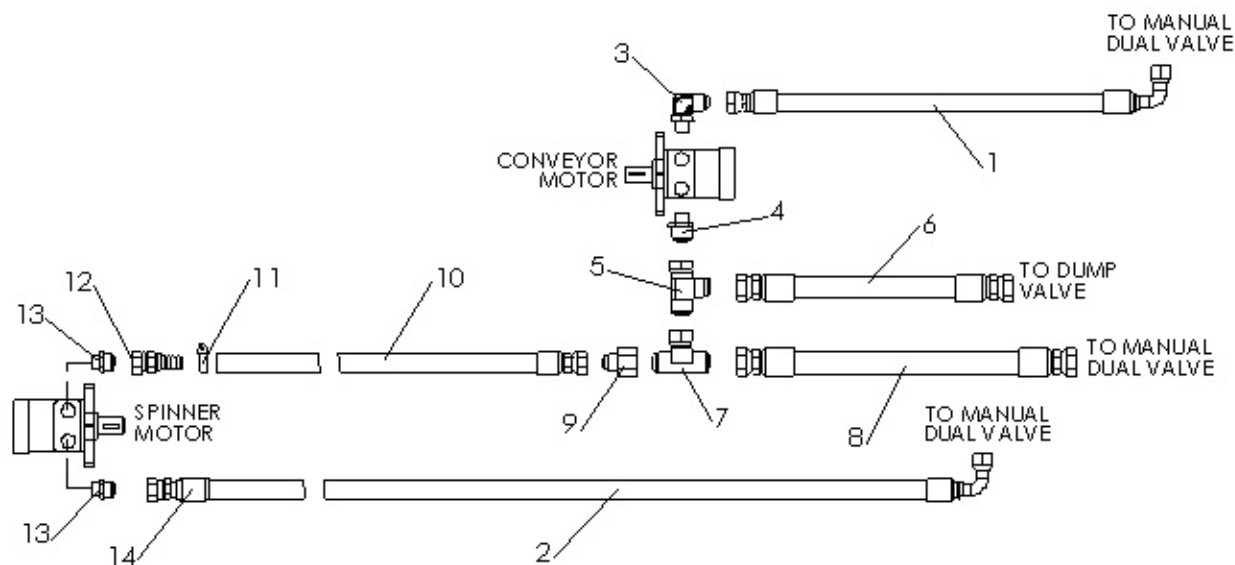
ITEM	PART NO.	DESCRIPTION	QTY
1	88313	Hose Assy	2
2	56508	Fitting – Hose	2
3	29773	Adapter – Elbow	2
4	29778	Adapter – Connector	1
5	29836	Tee – Swivel Nut	1
6	88325	Hose Assy	1
7	6335	Clamp – Hose	1
8	22426	End – Hose	1
9	34849	Adapter	1
10	88320	Hose Assy	1
11	22381	Clamp – Hose	1
12	11424	End – Hose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



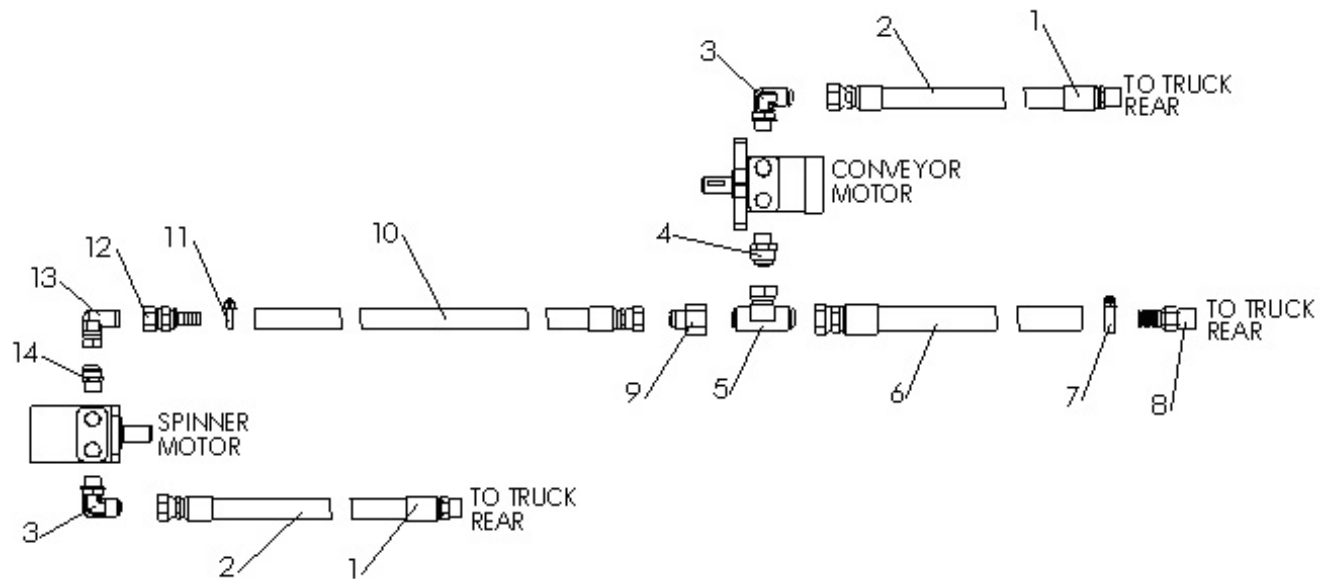
ITEM	PART NO.	DESCRIPTION	QTY
1	88313	Hose Assy	2
2	56508	Fitting – Hose	2
3	29773	Adapter – Elbow	1
4	29778	Adapter – Connector	1
5	29836	Tee – Swivel Nut	1
6	88325	Hose Assy	1
7	6335	Clamp – Hose	1
8	22426	End – Hose	1
9	34849	Adapter	1
10	88320	Hose Assy	1
11	22381	Clamp – Hose	1
12	11424	End – Hose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



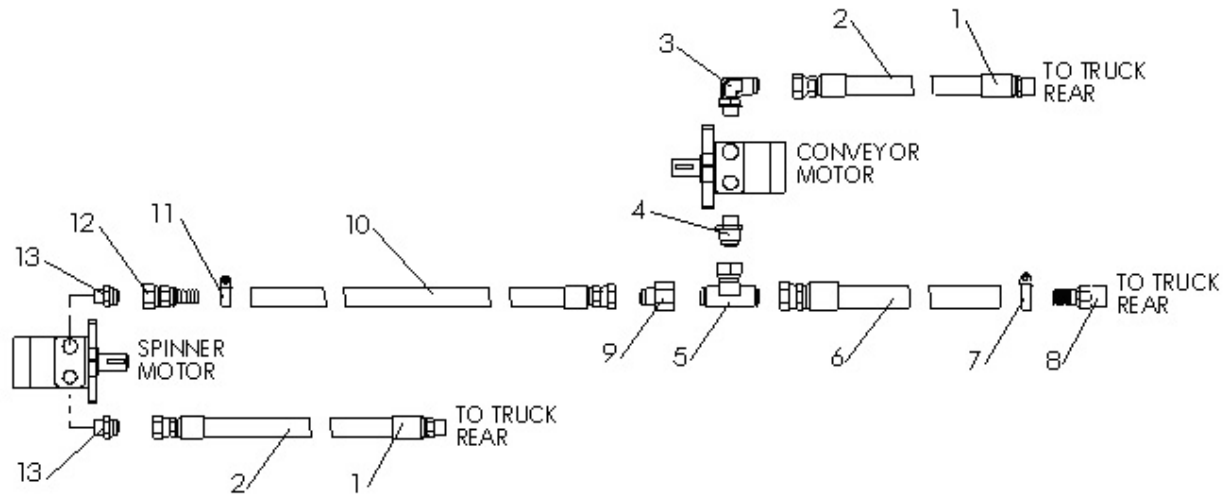
ITEM	PART NO.	DESCRIPTION	QTY
1	88316	Hose Assy	1
2	88312	Hose Assy	1
3	29773	Adapter – Elbow	2
4	29778	Adapter – Connector	1
5	29850	Tee – Swivel Nut	1
6	88328	Hose Assy	1
7	29836	Tee – Swivel Nut	1
8	88327	Hose Assy	1
9	34849	Adapter	1
10	88320	Hose Assy	1
11	22381	Clamp – Hose	1
12	11424	End – Hose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



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
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

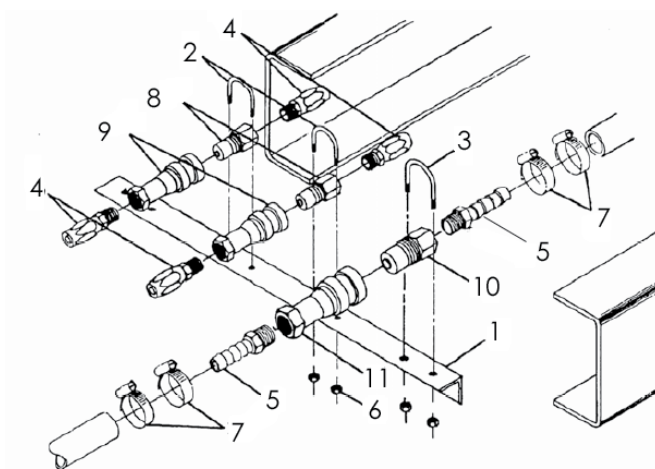


ITEM	PART NO.	DESCRIPTION	QTY
1	56503	End – Hose	2
2	88314	Hose Assembly	2
3	29773	Adapter – Elbow	2
4	29778	Adapter – Connector	1
5	29836	Tee – Swivel Nut	1
6	88326	Hose Assembly	1
7	6335	Clamp – Hose	1
8	22426	End – Hose	1
9	34849	Adapter	1
10	88320	Hose Assembly	1
11	22381	Clamp – Hose	1
12	11424	End – Hose	1
13	34709	Adapter – Elbow	1
14	29753	Adapter – Connector	1



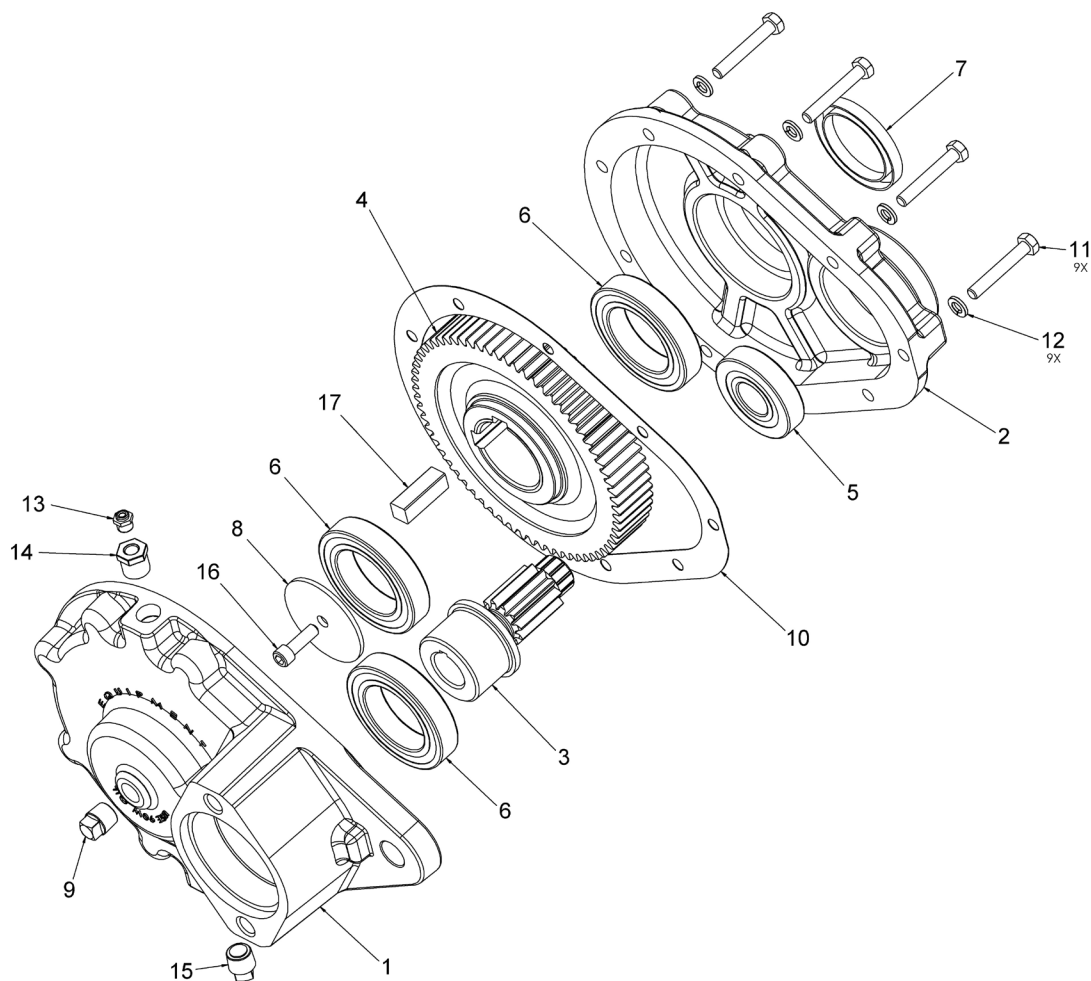
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	56503	End – Hose	2
2	88314	Hose Assy	2
3	29773	Adapter – Elbow	1
4	29778	Adapter – Connector	1
5	29836	Tee – Swivel Nut	1
6	88326	Hose Assy	1
7	6335	Clamp – Hose	1
8	22426	End – Hose	1
9	34849	Adapter	1
10	88320	Hose Assy	1
11	22381	Clamp – Hose	1
12	11424	End – Hose	1
13	29753	Adapter – Connector	2

HYDRAULICS - QUICK DISCONNECT



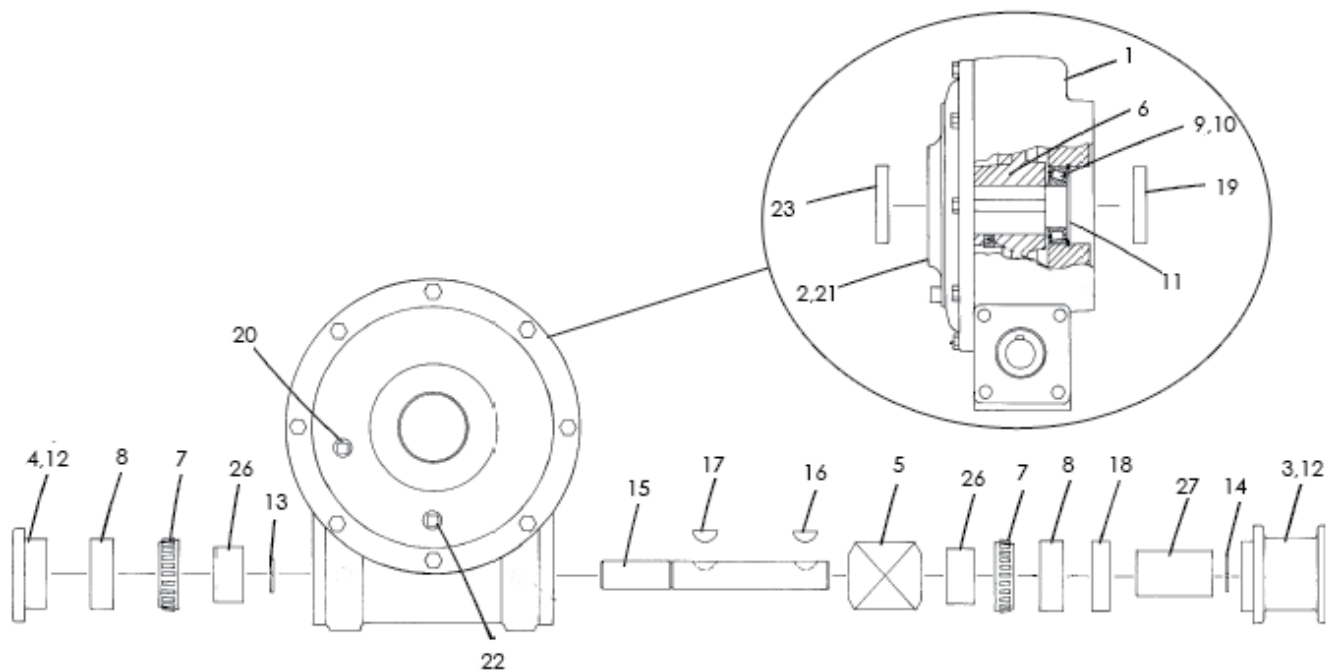
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	39851	Angle Mounting	1
2	39854	U-Bolt 1-1/2"	AR
3	39855	U-Bolt 1-3/4"	AR
4	56503	Hose - End, Reusable 3/4"	AR
5	22426	Hose - End Nipple	2
6	20643	Nut - Hex 5/16	AR
7	6335	Clamp - Hose	4
8	39905	Disconnect - Quick Male 3/4"	2
9	39906	Disconnect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

* - Not Shown AR - As Required



GEAR CASE - SINGLE PINION CONTINUED

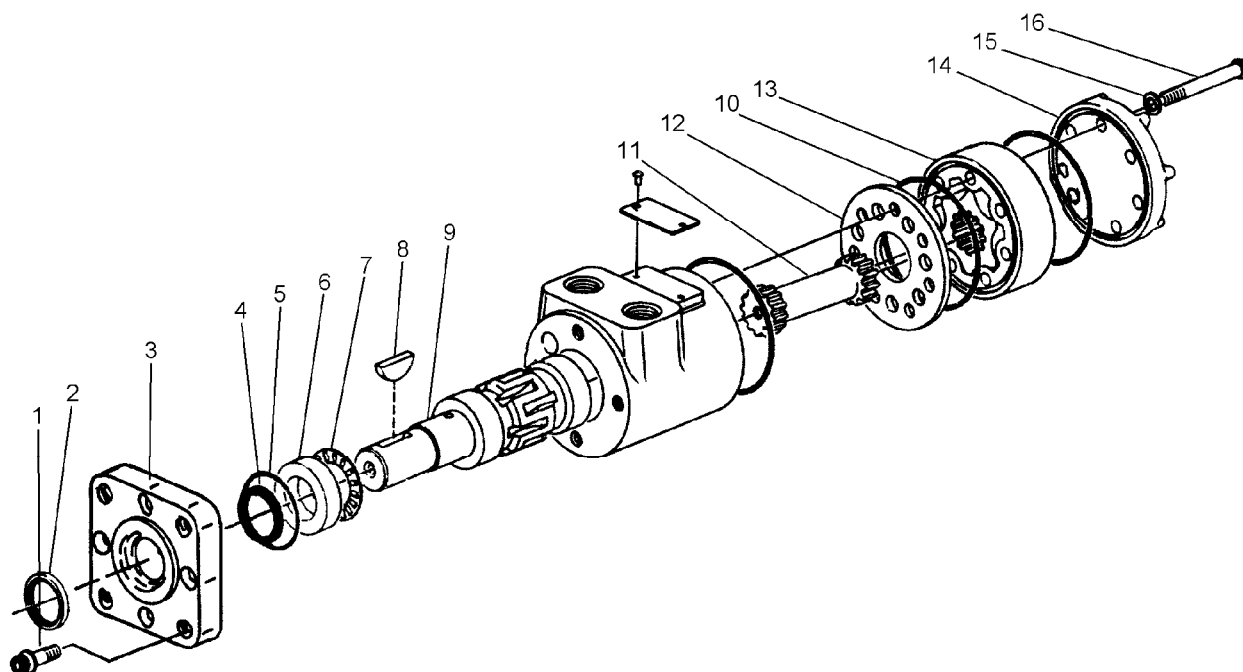
<u>ITEM</u>	<u>PART NO.</u>		<u>DESCRIPTION</u>	<u>QTY</u>
	36671		Gear Case – Assy Single Pinion	
	<u>CS</u>	<u>SS</u>		
	304269-AA	304269-AB	Parts - Service, Includes 1-17	
1	37001	304559	Housing – Outboard	1
2	37002	304560	Housing – Inboard	1
3	37003	304561	Gear – Pinion 11 Tooth	1
4	38981	304562	Gear – Driven 67 Tooth	1
5	37007	37007	Bearing	1
6	37008	37008	Bearing	3
7	37006	37006	Seal – Oil	1
8	38979	38979	Washer – Flat 2-1/2 x 11/32	1
9	6031	6031	Plug – Pipe	1
10	37005	304563	Gasket – Housing	1
11	20040	20040	Cap Screw – 5/16NC x 2	9
12	20711	20711	Washer – Lock 5/16	9
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 x 1-1/2	1



GEAR CASE 50:1 CONTINUED

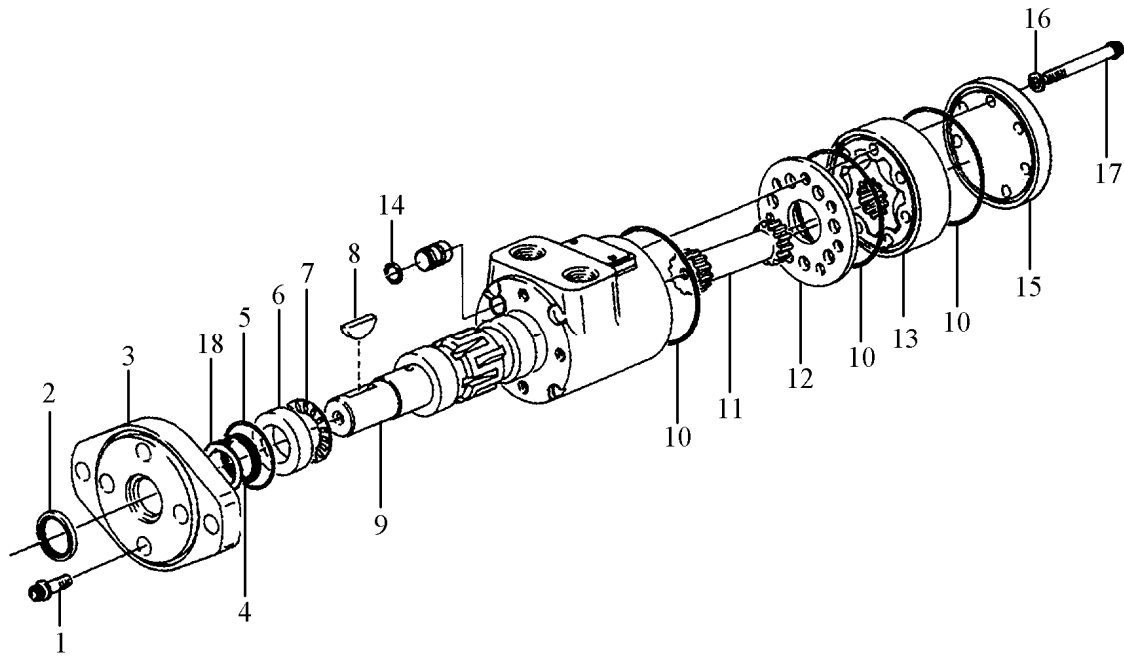
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	70926	Gear Case Assy	
1	71088	Housing	1
2	71089	Cover	1
3	71090	Adapter	1
4	71091	Cap – End	1
5	22894	Worm	1
6	71094	Gear – Worm	1
7	24230	Cone – Bearing	2
8	24225	Cap – Bearing	2
9	71095	Cone – Bearing	2
10	22869	Cup – Bearing	2
11	22850	Ring – Snap	1
12	56336	Gasket - Cover	2
13	71097	Ring – Snap	1
14	71098	Ring – Snap	1
15	71101	Shaft – Input	1
16	6137	Key - Square 1/4 x 1	1
17	24234	Key – Woodruff	1
18	56337	Seal	1
19	22849	Seal	1
20	6031	Plug	1
21	22852	Gasket	1
22	3014	Plug – Vent	1
23	71103	Cap – Output	1
24	* 22851	Shim	AR
25	* 19407	Shim	AR
26	71104	Spacer	2
27	71105	Coupling – Motor	1

* - Not Shown



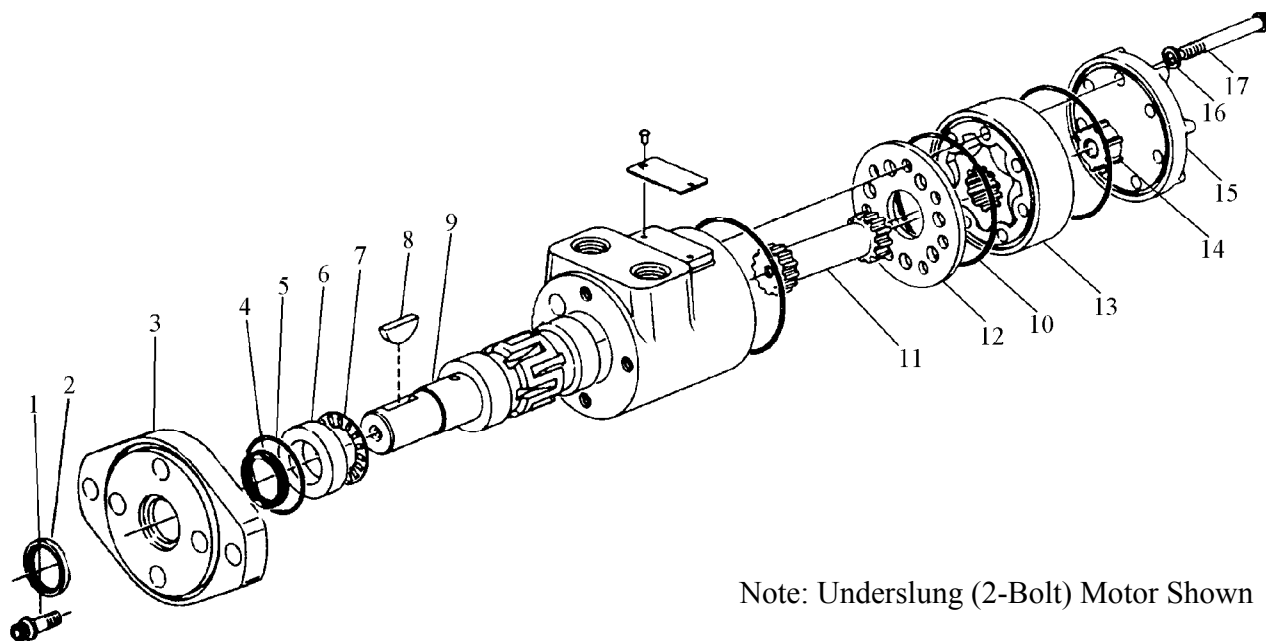
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	70927	Motor – Hydraulic	
1	30665	Cap Screw	4
2	37382	Seal	1
3	37383	Flange – Mounting	1
4	37378	Seal	1
5	37379	Seal – O-Ring	1
6	37385	Bearing – Spacer	1
7	37401	Bearing – Thrust Needle	1
8	3065	Key – Woodruff	1
9	37386	Shaft – Output	1
10	37380	Seal – O-Ring	3
11	16945	Drive	1
12	37388	Plate – Spacer	1
13	37391	Gerotor	1
14	37400	Cap – End	1
15	37381	Washer – Seal	7
16	16933	Cap Screw	7
17	* 22068	Seal – O-Ring	1
	37352	Kit – Seal, Includes Items 2, 4, 5, 10, 15, 17	

* - Not Shown



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	38897	Motor – Hydraulic 1 1/2"	
1	30665	Cap Screw	4
2	73471	Seal	1
3	73555	Flange – Mounting	1
4	73473	Seal	1
5	73474	Seal – O-Ring	1
6	37385	Race – Bearing	1
7	37401	Bearing – Thrust Needle	1
8	3065	Key	1
9	37386	Shaft - Output Keyed	1
10	73480	Seal – O-Ring	3
11	83014	Drive	1
12	37388	Plate – Spacer	1
13	73553	Gerotor – 1 1/2"	1
14	22068	Seal – O-Ring	1
15	37400	Cap – End	1
16	37381	Washer – Seal	7
17	16937	Cap Screw	7
18	73472	Washer – Back-up	1
19	* 73477	Seal – O-Ring	1
	39137	Kit – Seal, Includes Items 2,4,5,10,16, 18 & 19	

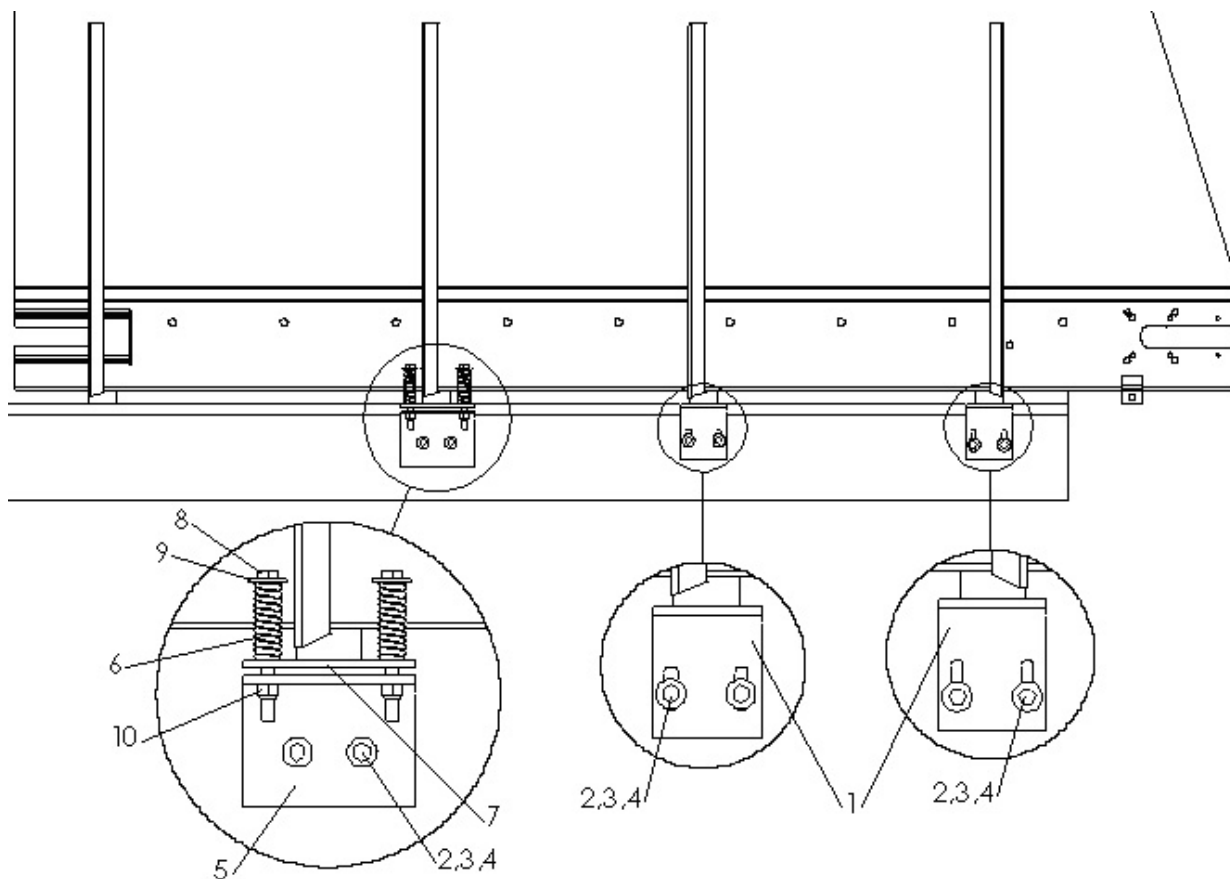
* - Not Shown



Note: Underslung (2-Bolt) Motor Shown

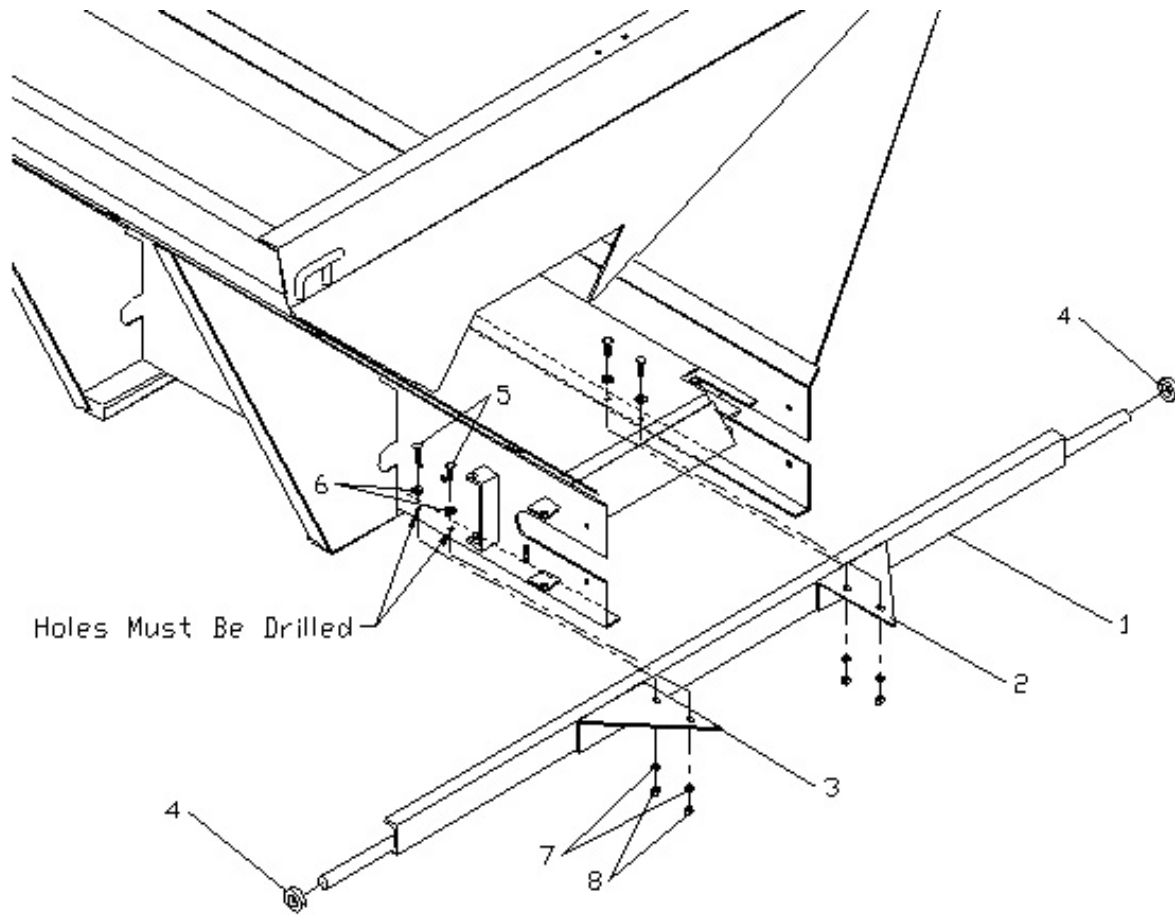
ITEM	PART NO.		DESCRIPTION	QTY
	Direct Drive	Underslung		
	58806	37339	Motor – Hydraulic	
1	30665	30665	Cap Screw	4
2	37382	37382	Seal	1
3	37383	73546	Flange – Mounting	1
4	73473	73473	Seal	1
5	37379	37379	Seal – O-Ring	1
6	37385	37385	Race – Bearing	1
7	37401	37401	Bearing – Thrust Needle	1
8	NA	3065	Key – Woodruff	1
9	NS	37386	Shaft – Output	1
10	37380	37380	Seal – O-Ring	3
11	16945	16945	Drive	1
12	37388	37388	Plate – Spacer	1
13	37389	37389	Gerotor	1
14	37399	37399	Spacer	1
15	37400	37400	Cap – End	1
16	37381	37381	Washer – Seal	7
17	16931	16931	Cap Screw	7
18	* 22068	* 22068	Seal – O-Ring	1
19	73472	73472	Ring – Back-up	1
	39137	39137	Seal Kit, Includes Items 2, 4, 5, 10, 16	

* – Not Shown NA – Not Applicable NS – Not Serviced



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



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

* - Not Shown

LIGHTS

LIGHTS & REFLECTORS

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

DIRECTIONAL LIGHTS

3	72734	Light – Kit Directional w/o Controls	1
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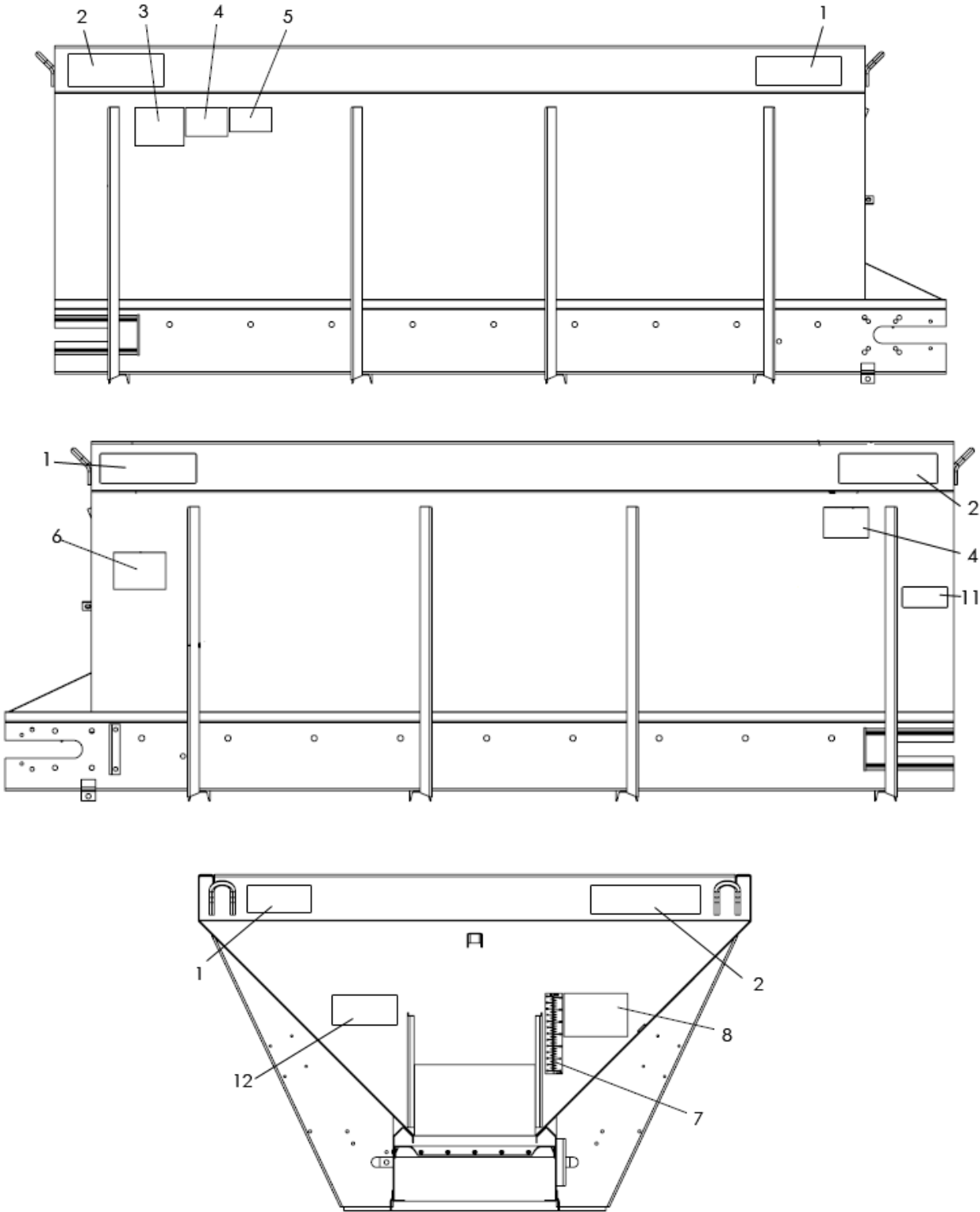
WARNING LIGHTS

4	29496	Light – Kit 1 Red Flashing	1
5	26421	Light – Kit 2 Red Flashing	1
6	29494	Light – Kit 1 Amber Flashing	1
7	26422	Light – Kit 2 Amber Flashing	1

FLOOD LIGHTS

8	21606	Light – Kit 1 Flood	1
9	21605	Light – Kit 2 Flood	1

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



DECALS CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	39870	Hi-Way Black	3
	90639	Hi-Way White	3
2	96231	E2500 - Black	3
	96232	E2500 - 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)	1
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	71526	Decal - Notice Spread Test	1
13	*55630	Decal - Warning Falling Hazard (Spinner)	1

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