NEW LEADER

MODEL DN 345 / MULTAPPLIER

The DN 345 includes the L3220G4 & the TR3000.

SERIAL NUMBER

L3220G4 _____

MULTAPPLIER _____

TR3000 _____

MANUAL NUMBER: 305813-D

EFFECTIVE 02/2016

Hi-Way NEW LEADER

Highway Equipment Company

Building the best since 1939.

1330 76TH AVE SW
CEDAR RAPIDS, IA 52404-7052
PHONE (319) 363-8281 | FAX (319) 286-3350
www.highwayequipment.com

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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. TEST

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 Product Sales & Support Department at (888) 363-8006.

SAFETY DECAL 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.

SAFETY DECAL 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.

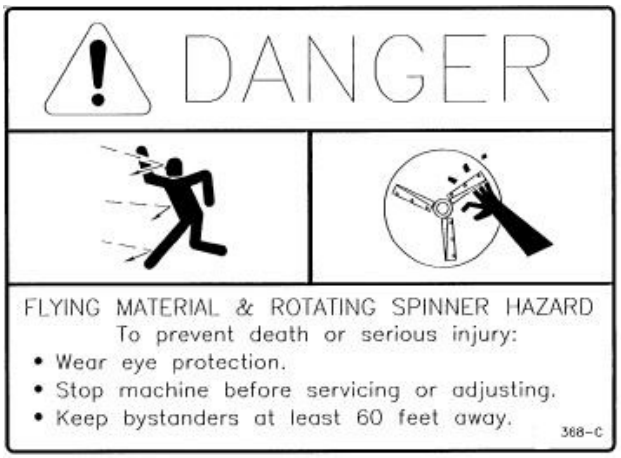
4. Apply Safety Decal
   a. Tack decal in place with thumb pressure in upper corners.
   b. Using firm initial squeegee pressure, begin at the center of the decal and work outward in all directions with overlapping strokes. NOTE: Keep squeegee blade even—nicked edges will leave application bubbles.
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

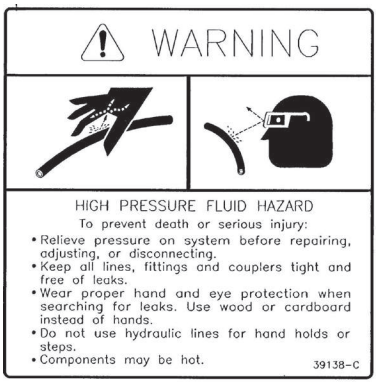
5. Remove Pre-mask
   If safety decal has a pre-mask cover remove it at this time by pulling it away from the decal at a 180 degree angle. NOTE: It is important that the pre-mask covering is removed before the decal is exposed to sunlight to avoid the pre-mask from permanently adhering to the decal.

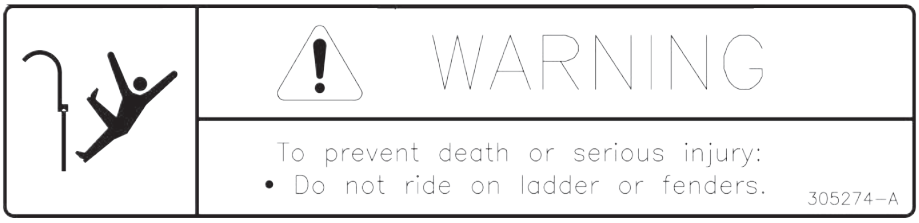
6. Remove Air Pockets
   Inspect the decal in the flat areas for bubbles. To eliminate the bubbles, puncture the decal at one end of the bubble with a pin (never a razor blade) and press out entrapped air with thumb moving toward the puncture.

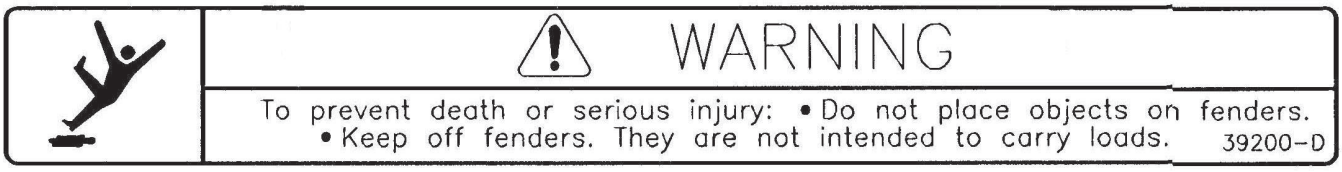
7. Re-Squeegee All Edges.

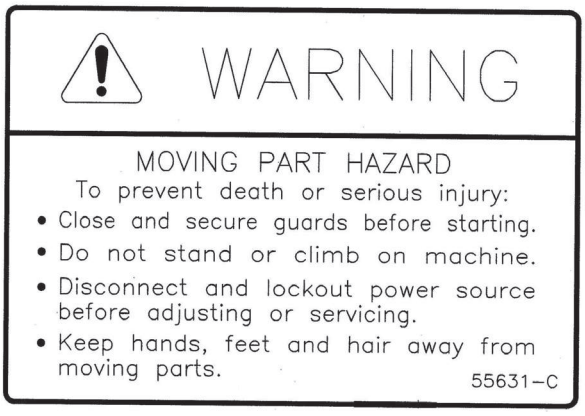

DANGER
MOVING PART HAZARD
To prevent death or serious injury:
• Stay out of box while conveyor is moving.
• Disconnect and lockout power source before adjusting or servicing.
• Do not ride on spreader.
364-C


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.
368-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

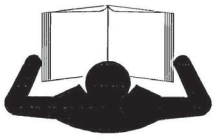

WARNING
To prevent death or serious injury:
• Do not ride on ladder or fenders.
305274-A


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
MOVING PART HAZARD
To prevent death or serious injury:
• Close and secure guards before starting.
• Do not stand or climb on machine.
• Disconnect and lockout power source before adjusting or servicing.
• Keep hands, feet and hair away from moving parts.
55631-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

⚠ CAUTION

DO NOT EXCEED GOVERNMENT WEIGHT RESTRICTIONS

Consult federal, state and local laws to ensure the gross weight on any one axle of a vehicle, or of a combination of vehicles, operated on the highways, does not exceed government weight restrictions.

305298-A

⚠ CAUTION

BRAKING SYSTEM REQUIREMENTS

Per ANSI/ASAE S365.8 MAY2007:

Do not tow equipment that <u>has</u> brakes
- **at speeds over 32 mph (50km/h); or**
- **at speeds above that recommended bythe manufacturer; or**
- **that, when fully loaded, has a weight more than 4.5 times the weight of the towing unit.**

Do not tow equipment that <u>does not have</u> brakes
- **at speeds over 20 mph (32km/h); or**
- **at speeds above that recommended bythe manufacturer; or**
- **that, when fully loaded, has a weight over 3300 lbs (1496kg) and more than 1.5 times the weight of the towing unit.**

Consult federal, state and local laws to ensure all weight restrictions are observed.

305281-B

⚠ 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

⚠ CAUTION

TOWING REQUIREMENTS

Tow only with tractors equipped with ISO 24347 hitch and brakes. Towing with light or medium duty trucks may result in loss of control, causing damage or injury.

305288-B

⚠ CAUTION

TIPPING HAZARD

To Avoid Injury or Machine Damage:

Make sure material is not concentrated at the rear of the machine before unhitching. Material at the rear of the machine may cause the trailer hitch to tip upward.

305289-A

SAFETY

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

NOTICE

Spinner assembly and material flow divider have NOT been adjusted at the factory. Before assembling unit, read and follow assembly instructions in the operation and maintenance manual for this unit.

Before spreading material, spread pattern tests must be conducted to properly adjust the spread pattern. Refer to the "How to Check Your Spread Pattern" manual for adjustment instructions. A spread pattern test kit is available from your New Leader dealer.

Wind, humidity, rain and other adverse weather conditions can affect spread pattern, resulting in uneven crop growth and loss of yield.

THE MANUFACTURER OF THIS SPREADER WILL NOT BE LIABLE FOR MISAPPLIED MATERIAL DUE TO AN IMPROPERLY ADJUSTED SPREADER OR ADVERSE WEATHER CONDITIONS.

It is recommended that spread pattern tests be conducted prior to each spreading season, after any spreader maintenance, and periodically during the spreading season. Spread pattern tests must be conducted whenever a new product is to be applied.

71526-F

NOTICE

- **Spreader hopper life will be noticeably extended if the unit is washed daily when spreading fertilizer.**
- **Wash under side of belt by using water hose in wash port daily.**
- **Conveyor belt should be turning during wash cycle.**
- **Failure to maintain the conveyor will drastically shorten belt life and is cause for voiding the warranty.**

21477-D

NOTICE

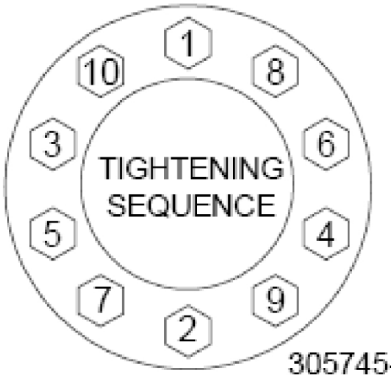
	No Cooler	With Cooler
Ideal Operating Temp.	140 - 190˚F	115 - 158˚F
Recommended Lubricant	SAE 15W-40	Multi-Purpose Ag Hydraulic Oil
Lubricant Specifications:		
Viscosity Index	>130	>130
Viscosity at 40˚C, cst	<115	<68
Viscosity at 100˚C, cst	>14	>9

304264-B

NOTICE

Repeat the following procedure on 22 mm wheel studs each time wheel is replaced:

1. Snug each wheel bolt to 68 N-m (50 lb-ft).
2. Torque each wheel bolt to 610-678 N-m (450-500 lb-ft).
3. Retorque after 10 hours of operation.



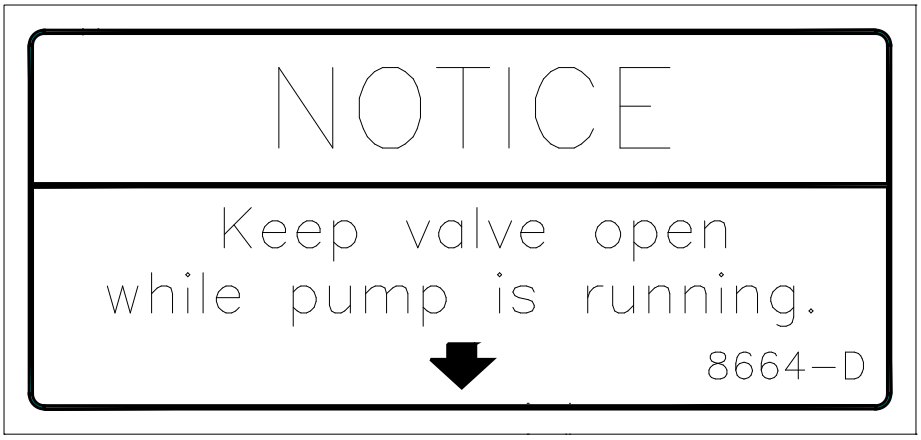
305745-C

NOTICE

TO AVOID MACHINE DAMAGE:

- **Do not operate this machine without first filling hydraulic reservoir with recommended volume and type of hydraulic oil per the operation manual instructions.**
- **Prior to start up, make sure gate valve located on the bottom of the reservior is fully open.**

307322-A


NOTICE
Keep valve open
while pump is running.
8664–D


NO STEP
39017-D

GENERAL SAFETY RULES-OPERATIONS

1. 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!

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

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

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

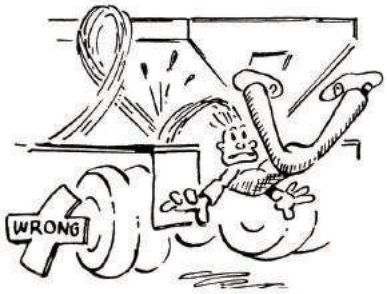
4. Stay out of the spreader. If it's necessary to enter the spreader, return to the shop, empty body, turn off all power, set vehicle brakes, lock engine starting switch and remove keys before entering. Tag all controls to prohibit operation. Tags should be placed, and later removed, only by person working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

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

6. 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.

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

8. 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.



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

10. Keep away from spinners while they are turning:
    a. Serious injury can occur if spinners touch you.
    b. Rocks, scrap metal or other material can be thrown off the spinner violently. Stay out of discharge area.
    c. 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.

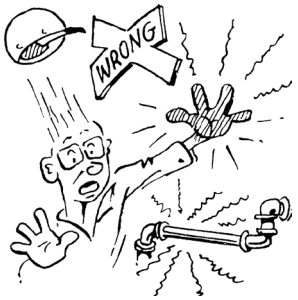
12. Inspect all bolts, screws, fasteners, keys, chain drives, body mountings and other attachments periodically. Replace any missing or damaged parts with proper specification items. Tighten all bolts, nuts and screws to specified torques according to the torque chart in this manual.

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.

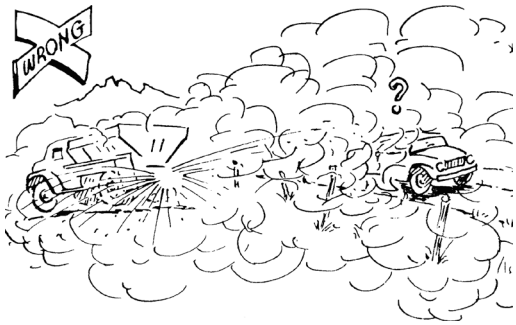
16. Hydraulic system and oil can get hot enough to cause burns. DO NOT work on system that is hot. Wait until oil has cooled. If an accident occurs, seek immediate medical assistance.

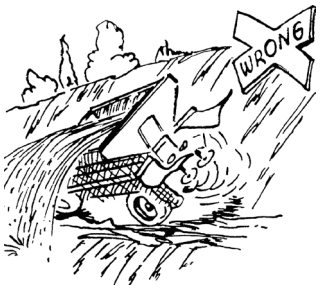


17. Wear eye protection while working around or on unit.
18. Read, understand and follow instructions and precautions given by the manufacturer or supplier of materials to be spread. Improper selection, application, use or handling may be hazardous to people, animals, plants, crops or other property.

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.

SAFETY

GENERAL SAFETY RULES-MAINTENANCE

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.

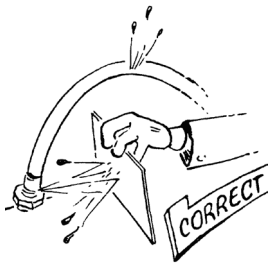
9. Keep a fully charged fire extinguisher readily available at all times. It should be a Type ABC or a Type BC unit.

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.

SAFETY

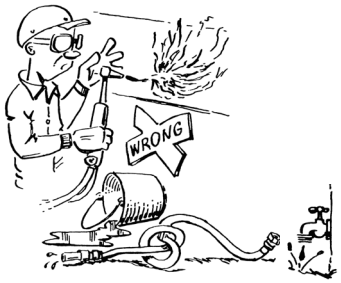
GENERAL SAFETY RULES-INSTALLATION

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.

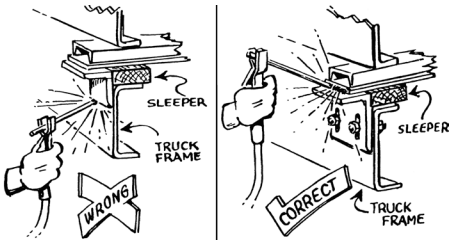
3. When making the installation, be sure that the lighting meets Federal Motor Vehicle Safety Standard (FMVSS) No. 108, ASABE S279 and all applicable local and state regulations.

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.

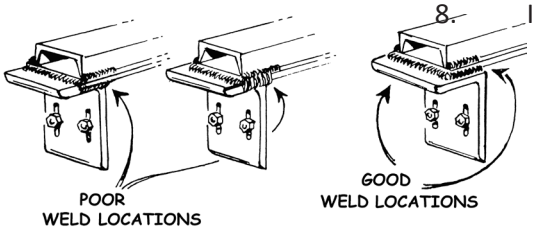


5. When truck frame must be shortened, cut off only the portion that extends behind rear shackle in accordance with the truck manufacturer's recommendations. If a torch is used to make the cut, all necessary precautions should be taken to prevent fire. Cuts should not be made near fuel tanks and hydraulic 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.

The Model DN 345 is an implement including a hopper type spreader and the TR3000 trailer. It is intended for spreading free flowing granular agricultural materials, such as chemical fertilizers, agricultural limestone, and gypsum. The optional MULTAPPLIER allows you to spread two different materials, individually or combined.

The TR3000 is a ball hitch style trailer designed for attachment to specially equipped tractors. It's equipped with brakes and floatation tires on a walking beam suspension.

The main spreader is powered hydraulically through a PTO attached to the TR3000, providing capability of independent variable speed control for the spinner and full automatic ground speed control for the conveyor.

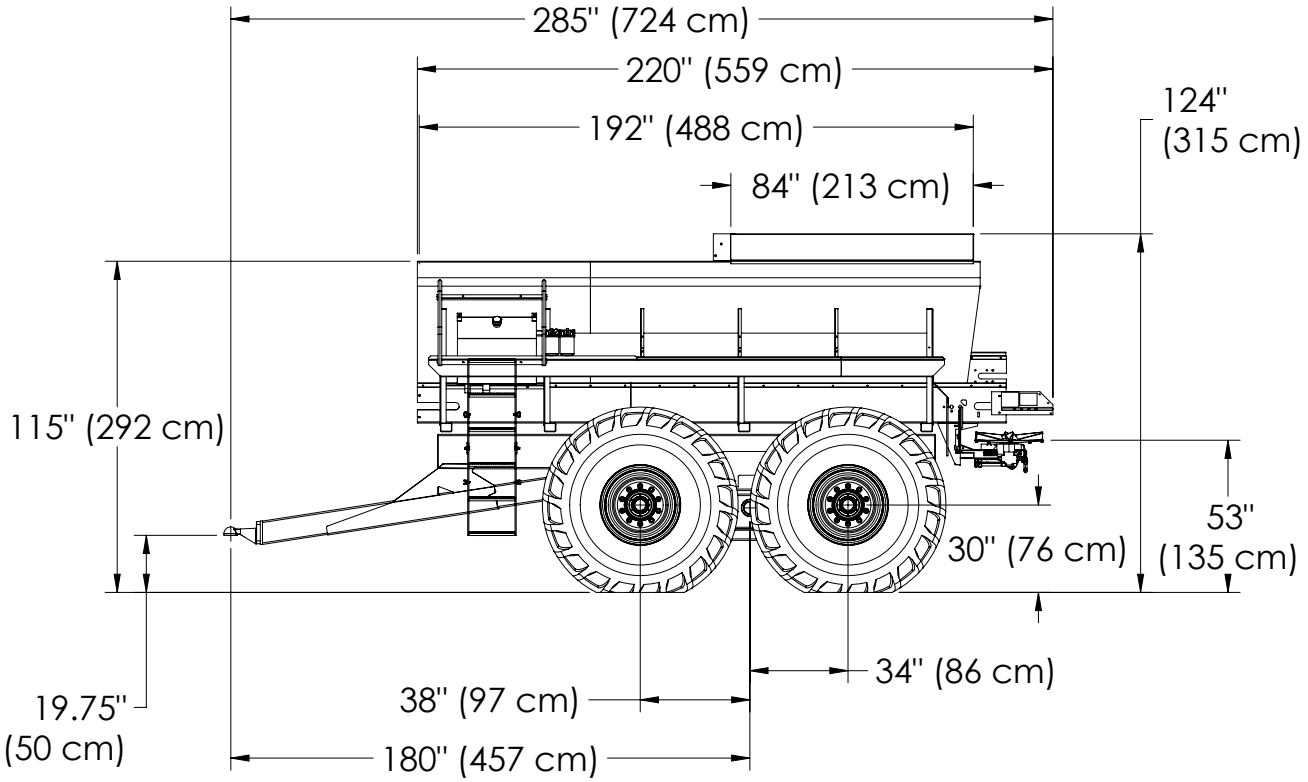
The optional MULTAPPLIER is powered hydraulically through a connection at the rear of the tractor.

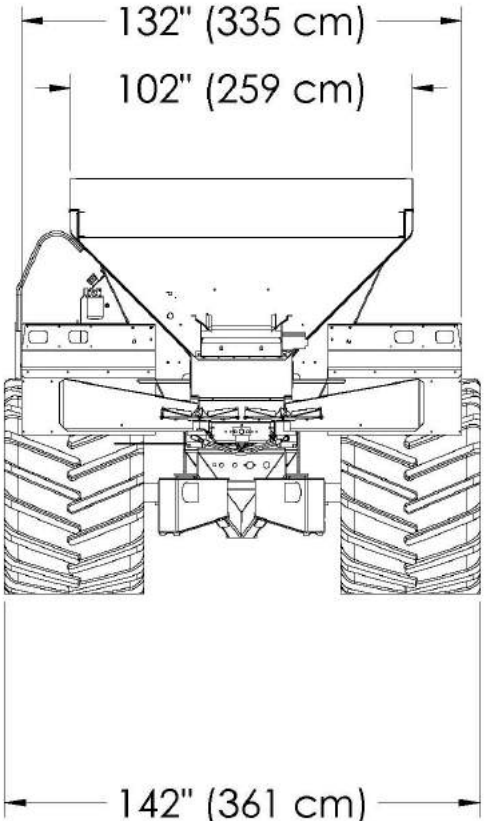
The MULTAPPLIER is currently available in two styles; Style I and Style II. The Style II MULTAPPLIER offers increased output capabilities. Refer to "MULTAPPLIER Style Comparison" in this manual to determine your style of MULTAPPLIER.

The conveyor(s) deliver material to the spinners through an adjustable metering gate at the rear of the hopper body. Orbital type hydraulic motors mounted to a 6 to 1 ratio dual pinion gear case on the main spreader and a direct drive motor on the MULTAPPLIER drive the conveyors. Available conveyors for the main hopper include a #3 type having parallel strands of pintle type chain joined by cross bars every link and a #4 belt-over-chain type having parallel strands of pintle type chain joined by cross bars every other link. The standard MULTAPPLIER conveyor is a #4 belt-over-chain.

The distributor spinner assembly has two 24 inch (60.96 cm) diameter dished discs. Each disc has four formed and heat treated fins that are adjustable to radial angle. The spinner assembly is fully adjustable by means of a rotating handle.

This product is intended for commercial use only.





APPROXIMATE WEIGHT	
L3220G4	4800 lbs (2177 kgs)
MULTAPPLIER	1200 lbs (544 kgs)
TR3000	14600 lbs (6623 kgs)

	BODY LENGTH	STRUCK CAPACITY Cu Yd (Cu M) Cu Ft
L3220G4	16’ (4.88m)	12.78 (9.77) 345
L3220G4 with MULTAPPLIER	16’ (4.88m)	7.15 (5.47) 193
MULTAPPLIER	7’ (2.13m)	5.96 (4.56) 161

HYDRAULIC REQUIREMENTS

Main Hopper

PUMP TYPE	PTO Driven Gear Pump
PTO SPEED	1000 RPM
PRESSURE	2500 PSI (172.39 bar) Continuous; 3100 PSI (213.78 bar) Intermittent
FLOW	42 GPM (158.99 LPM)
FILTRATION	Return line filter, 10 Micron
RESERVOIR	40 gallon (151.42 liters)
COOLER	Thermostatically Controlled at 117°F (47 C°)
RELIEF VALVE	3100 PSI (213.78 bar) at pump or control valve

MULTAPPLIER (provided by tractor)

PRESSURE	1500 PSI (103.42 bar)
FLOW REQUIREMENTS	9 GPM (34.07 LPM)
RELIEF VALVE	1500 PSI (103.42 bar)

TRACTOR REQUIREMENTS

The DN 345 is designed to operate with specially equipped JD 8530 or 9430 tractors.

See John Deere for specific tractor requirements and ordering code information.

IMPLEMENT PREPARATION & CONNECTION

WARNING	Make sure area is clear between the tractor and implement when backing up to implement.

WARNING	DO NOT wear loose clothing. Keep hands and other body parts away from connecting parts of tractor and implement. Entanglement could cause serious injury.

WARNING	DO NOT stand on PTO, tongue, or draw bar. Falling could cause death or serious injury.

NOTICE!	Inspect the cleanliness of connecting parts. All areas must be free of debris and dirt to ensure a secure connection.

1. Check visible wear and make sure hitch and keeper are clear of debris and dirt.
2. Raise hitch by turning the jack handle to lower the jack.
3. Pull out hitch holder pin and raise keeper mechanism on tractor. (Figure 1)
4. Back up tractor and line up ball to ball hitch on tongue of implement. Lower ball hitch onto tractor's ball. (Figure 2)
5. Lube ball hitch.
6. Lower tractor keeper mechanism on ball hitch, insert pin and lock to secure. (Figures 3-4)
7. Adjust the screw and secure jam nut. The distance between keeper mechanism and ball hitch should be between one and two millimeters.
8. Retract jack to storage position.

**JD 8530 Shown*

Figure 1

Figure 2

Figure 3

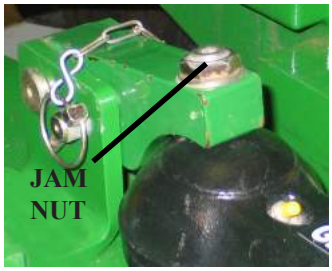


Figure 4

9. Attach safety chain.
   a. On left side of hitch, loop safety chain through tractor drawbar. (Figures 5-6) Hook on chain. (Figure 7) Make sure enough slack is left on chain for turning.
   b. Slide clasp on safety chain to secure locked position. (Figure 8) Excess chain will hang between tractor and implement. (Figure 9)

**JD 8530 Shown*

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

See John Deere for safety chain routing on other tractors.

10. Attach PTO shaft to tractor.
   a. Inspect, clean and lube PTO.
   b. Inspect all shields, make sure they are in proper working order.
   c. Lift tractor's PTO cover.
   d. Pull back coupler. (Figure 10) Slide PTO onto tractor PTO shaft and lock into place on shaft groove. (Figure 11-12)
   e. Place cover back in lowered position.
   f. Attach PTO shield chain to tractor.

**JD 8530 Shown*

Figure 10

Figure 11

Figure 12

11. If MULTAPPLIER is installed, connect MULTAPPLIER pressure hose to tractor selective control valve #1 “extend pressure port” and return hose to SCV #1 “retract pressure return port” or return to sump port, if equipped. Set tractor SCV to continuous flow at 9 GPM. See John Deere’s operator manual for hydraulic selective control valve settings and adjustments.

NOTICE!	Route all hoses and wiring through hose support (Figure 13). Avoid entanglement of hoses and wiring with the PTO, hitch, or tongue. Damage to equipment can occur if hoses and wires are not routed correctly.

12. Make sure all hoses and wires run through the hose support to remain clear of PTO. If needed, add additional clamps. (Figure 13)

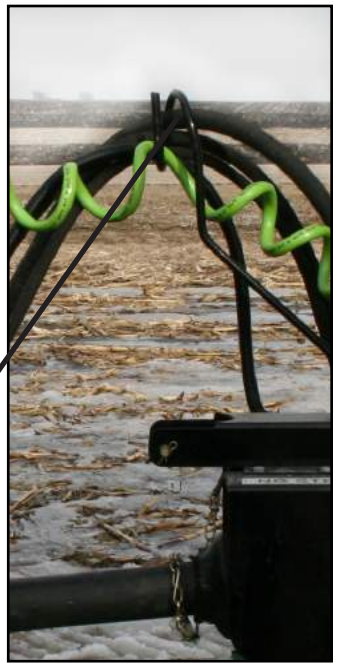


Figure 13

WARNING	Always turn on lights and safety warnings to provide adequate visibility while in transit on public roads. Failure to do so could result in serious injury or damage to implement.

13. Connect lights (1) by plugging connector cord into 7 pin connector at bulkhead and connect other end to back of tractor. Connect hydraulic brake line (2) and control harness (3) at bulkhead and connect other end to back of tractor (Figures 14, 15A and 15B).

Figure 14 - DN 345

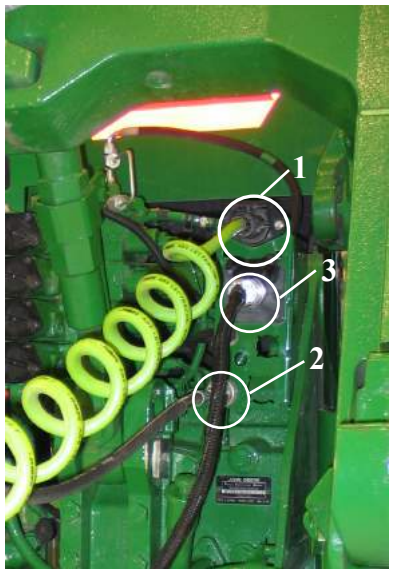


Figure 15A - 8530 Tractor

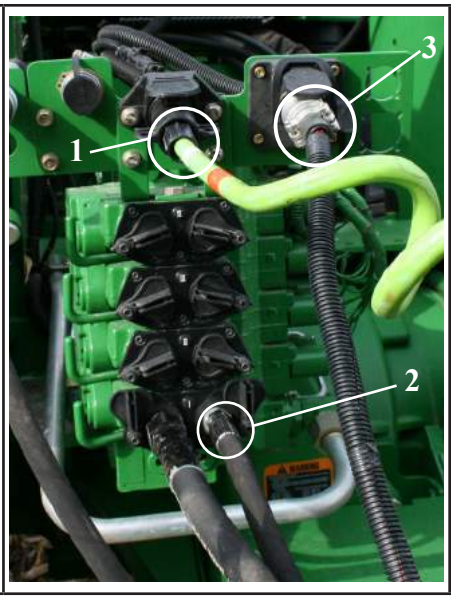


Figure 15B - 9430 Tractor

CONTROLLER INSTALLATION

See John Deere's controller manual for controller installation, operations, and diagnostics.

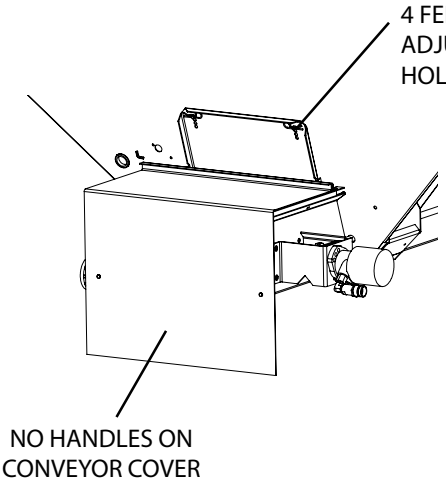
INVERTED "V" INSTALLATION

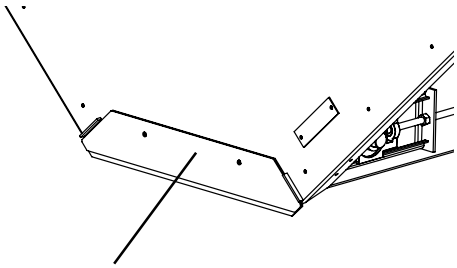
See "Inverted V" parts list in the back of this manual for illustrations of both typical and high yield installations. High Yield is the typical installation for spreading lime.

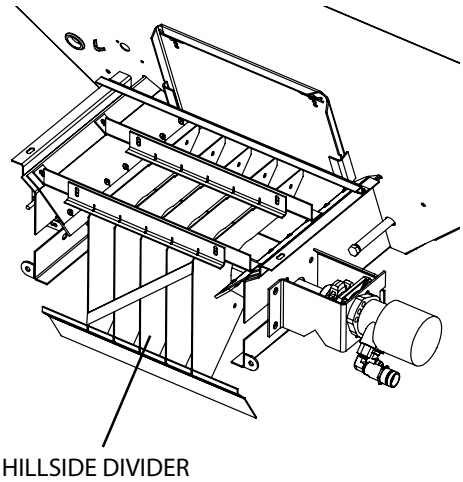
LUBRICATION

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

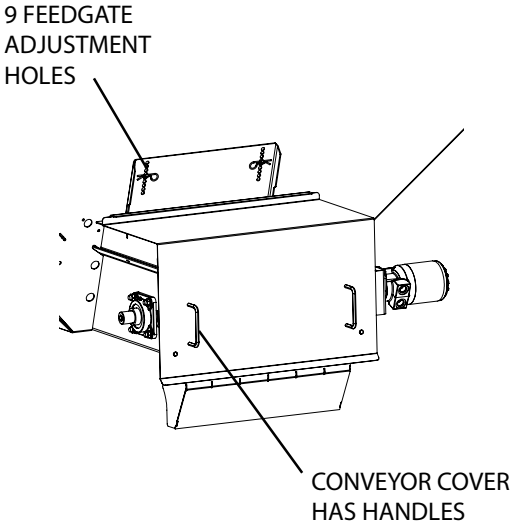
Style I

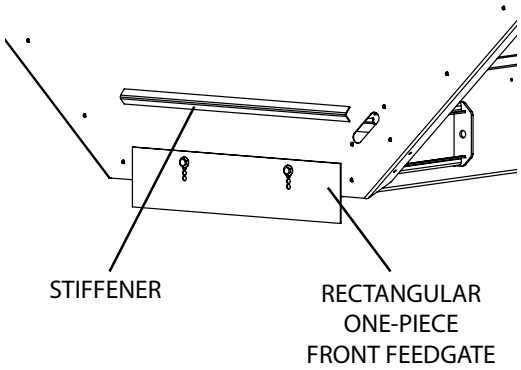


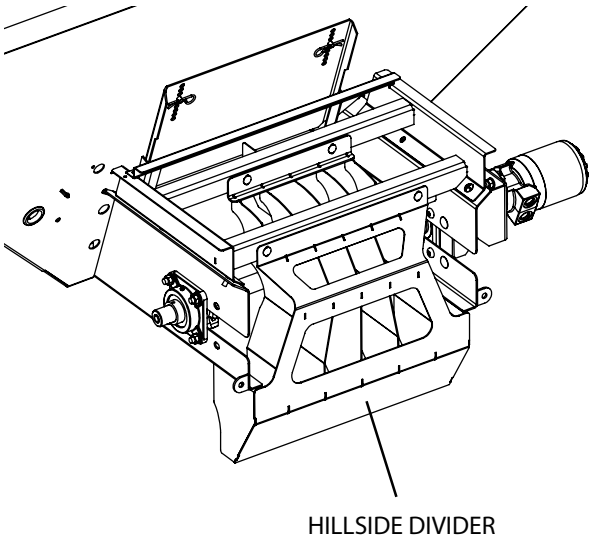




Style II







FEEDGATE ADJUSTMENT

WARNING	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.

Adjust the MULTAPPLIER's front feedgate prior to installation.

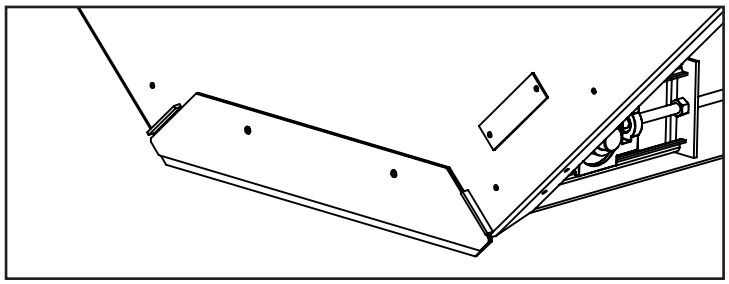


Figure 1 - 1 1/2" (3.81 cm) or 2" (5.08 cm) Opening (Style I)

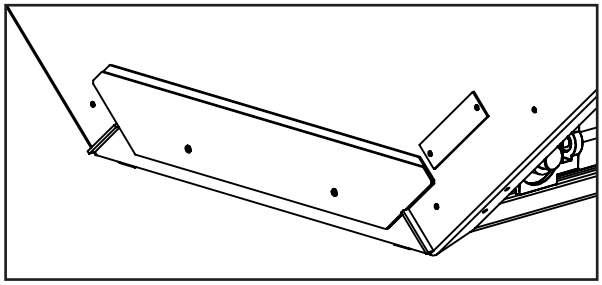


Figure 2 - 3" (7.62 cm) Opening (Style I)

Style I - To adjust main bin's feedgate opening on a Style I MULTAPPLIER-equipped unit: position front feedgates on MULTAPPLIER as necessary to achieve a 1-1/2 inch (3.81 cm), 2 inch (5.08 cm) (Figure 1) or 3 inch (7.62 cm) (Figure 2) opening. Position both feedgates with short side down for a 3" (7.62 cm) opening. NOTE: Both feedgates are installed for shipping.

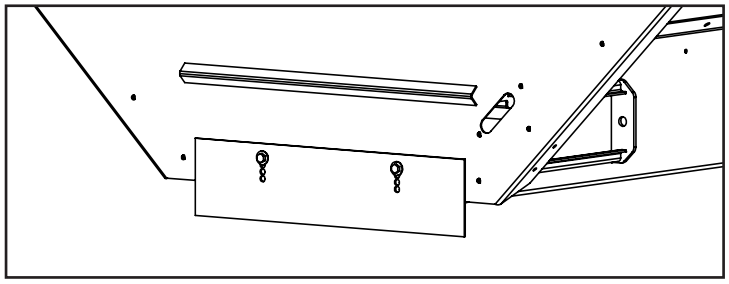


Figure 3 - 2 1/2" (3.81 cm) or 2" (5.08 cm) Opening (Style II)

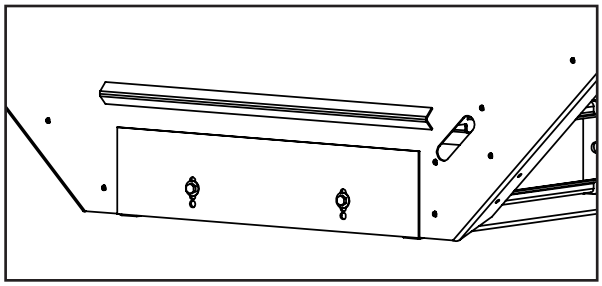


Figure 4 - 4" (10.16 cm) Opening (Style II)

Style II - To adjust main bin's feedgate opening on a Style II MULTAPPLIER-equipped unit: position front feedgate on MULTAPPLIER as necessary to achieve a 1 1/2 inch (3.81 cm) (Figure 3) to 4 inch (10.16 cm) (Figure 4) opening in 1/2 inch increments.

NOTE:	Visit www.newleadervip.com and enter parameters to determine minimum and maximum application rates and feedgate openings for optimal performance of your spreader.

INSERT INSTALLATION

WARNING	Use only lifting devices that meet or exceed OSHA standard 1910.184. Never exceed work load limits or lift equipment over people. Empty spreader before lifting. Loads may shift or fall if improperly supported, causing injury.

Before installing the MULTAPPLIER: Remove the Inverted V and Hillside Flow Divider from the spreader, if so equipped, and set hardware aside. Adjust the MULTAPPLIER's front feedgate to the proper opening. Support endgate by attaching a hoist to the lift hooks. Remove hardware from both sides of the endgate and hoist from the spreader.

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.

Parts Needed:

Description	Qty
MULTAPPLIER	1
Capscrew - 1/2 x 1 1/4 Grade 8	8
Flat Washer - 1/2 Grade 8	16
Lock Washer - 1/2 Grade 8	8
Hex Nut - 1/2 Grade 8	8

1. Make sure rubber sealer hardware is loose. If not, loosen.

Figure 3A

Figure 3B

2. To install MULTAPPLIER:
   a. Figure 3A - Hoist and slide MULTAPPLIER into position between main bin's side sheets.
   b. Figure 3B - Align MULTAPPLIER's and main bin's front and rear mount brackets.
   c. Make sure MULTAPPLIER is resting on inside of main bin, and not resting on tops of side sheets.
   d. Release tension on hoist but do not remove.

Figure 4A (uninstalled)

Figure 4B (shown installed)
View from rear of unit.

3. Figures 4A-4B - Visually make sure MULTAPPLIER is centered from side to side in main bin and rear pads are resting on main bin.

Figure 5

Figure 6

4. Figure 5 - There must be contact between rear pads and main unit. Check for contact by trying to slide paper between pads and main bin. If no contact, adjust MULTAPPLIER.

5. Figure 6 - Inside main unit, locate front pads by lifting rubber sealers on front endgate.

Figure 7A

Figure 7B

6. Figures 7A-7B - There must be contact between front pads and main unit. Check for contact by trying to slide paper between pads and main bin. If no contact, adjust MULTAPPLIER.
NOTE: Pry MULTAPPLIER at mount brackets if necessary.

Figure 8

Figure 9

7. Figure 8 - Once both front pads are in contact, insert hardware in front mount brackets' lower holes. Shim between main bin and MULTAPPLIER brackets if distance is larger than 1/8" (.32cm). Tighten hardware per torque recommendations.

8. Make sure feedgate is level.

NOTICE!	Leakage of material may occur if the sealer belts are not set properly on the front of the MULTAPPLIER. Highway Equipment Company is not liable for lost material due to improperly installed sealer belts.

9. Figure 9 - Make sure there is a complete seal covering the gap between the MULTAPPLIER and the main bin's side sheets. Tighten all hardware on rubber sealers at front of MULTAPPLIER.

10. Make sure rear pads are still in place against main bin. Install hardware in lower holes of rear mount brackets. Shim between main bin and MULTAPPLIER brackets if distance is larger than 1/8" (.32cm). Tighten hardware per torque recommendations in this manual.

11. Make sure MULTAPPLIER's side sheets are not resting on top of main bin's side sheets.

12. Install hardware in all four mount brackets' upper holes. Tighten hardware per torque recommendations.

13. Remove hoist.

14. Inspect unit for foreign debris around conveyor area.

HYDRAULICS

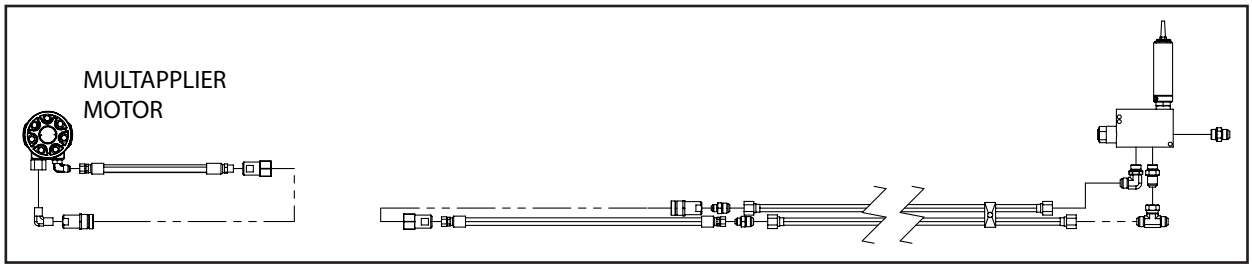


Figure 10 – Detach Quick Disconnects

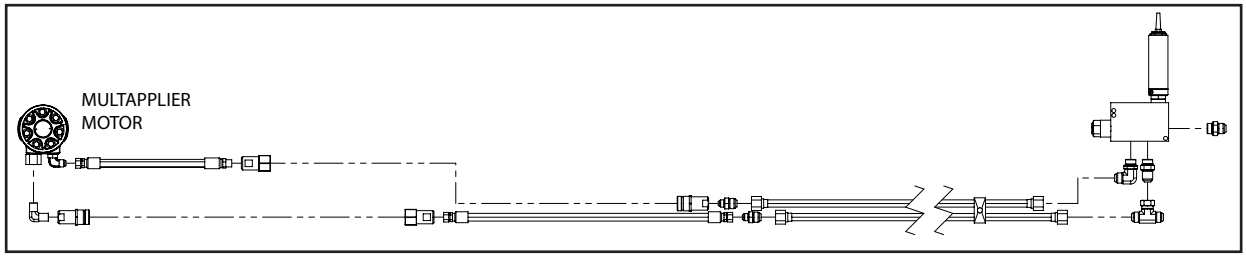


Figure 11 – MULTAPPLIER Operation

Detach quick disconnects on the main bin and the MULTAPPLIER as shown in Figure 10. Attach MULTAPPLIER disconnects to main bin's disconnects as shown in Figure 11. Plug in rate sensor.

HILLSIDE DIVIDER

NOTICE!	Highway Equipment Company will not be liable for misapplied material due to an improperly adjusted divider, spreader or both.

Figure 12 - Hillside Divider (Style I)

Style I - Remove hardware from rear two chain shield holes on each side of MULTAPPLIER and set aside. Install MULTAPPLIER Hillside Divider (A) over conveyors and attach using chain shield hardware. Adjust Hillside Divider so that the middle divider is centered over both conveyors and the Material Divider (B) as shown in Figure 12. Tighten hardware to recommended torque.

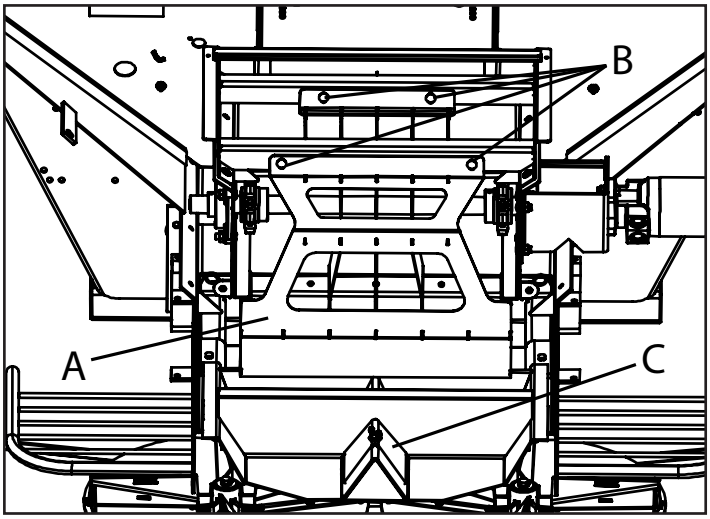


Figure 13 - Hillside Divider (Style II)

Style II - Loosen hardware from rear two chain shield holes on each side of MULTAPPLIER. Install MULTAPPLIER Hillside Divider (A) and fasten to Support using single bin Hillside Divider hardware removed before MULTAPPLIER installation (B). Adjust Hillside Divider so that the middle divider is centered over both conveyors and the Material Divider (C) as shown in Figure 13. Tighten all hardware to recommended torque.

DUAL CONVEYOR COVER

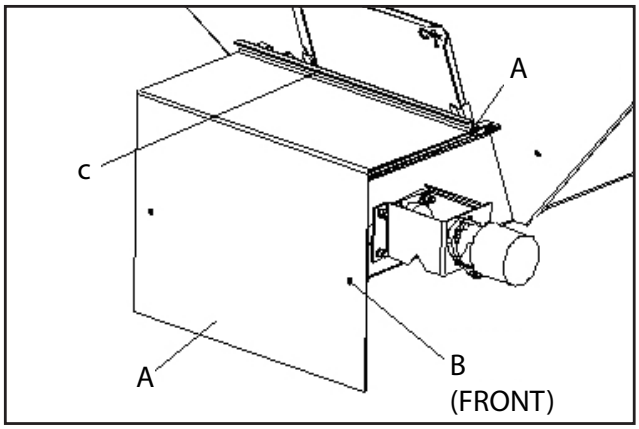


Figure 14 - Dual Conveyor Cover (Style I)

Parts Needed:

Description	Qty
Cover	1
Hold-down	1
Hair Pin	2
Capscrew - 3/8 x 1	6
Flat Washer - 3/8	6
Lock Washer - 3/8	6
Hex Nut - 3/8	8

Style I - Remove rear plate of Material Divider. Place Cover (A) on MULTAPPLIER sills as shown in Figure 14 and insert hair pins (B) through cover pins. Position Hold-down (C) over cover and attach with supplied hardware (D). Reinstall rear plate of material divider.

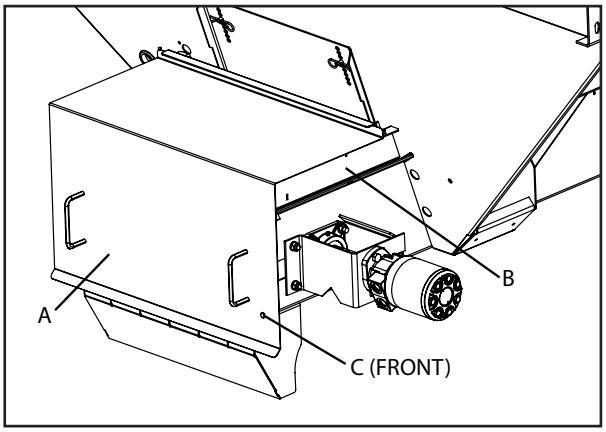


Figure 15 - Dual Conveyor Cover (Style II)

Parts Needed:

Description	Qty
Cover	**1**
Hair Pin	**2**

Style II - Remove rear plate of Material Divider. Place Cover (A) on Hillside Divider Support (B) as shown in Figure 15 and insert hair pins (C) through cover pins. Reinstall rear plate of material divider.

MULTAPPLIER REMOVAL/ENDGATE INSTALLATION

Remove MULTAPPLIER and reinstall endgate, Inverted V, single conveyor Hillside Divider, etc. by following installation instructions in reverse order. Make sure the MULTAPPLIER hydraulics and electrical are disconnected from the main bin before removal. See "Inverted V" in the *New Leader Installation Instructions* manual.

WARNING Stand clear of moving machinery. Entanglement could result in serious injury.

NOTE: Do not load spreader with material.

1. Refer to tractor's operations manual for preparation requirements.
2. Prepare implement per *Implement Connection Procedures*.
3. Check entire unit to make sure all fasteners are in place and properly tightened per *Standard Torques National Coarse (NC) Cap Screws* chart in this manual.
4. Make sure implement is lubricated per *Lubrication & Maintenance Chart*.
5. Make sure no other persons are in vicinity of implement.
6. Check vehicle visibility from the cab to the rear of the implement. Add or reposition mirrors as needed.
7. Make sure no loose parts are in unit or on conveyor or spinner.
8. Make sure all guards are in place and hardware is tightened.
9. Open feedgate until it is completely clear of conveyor.
10. Check oil level in reservoir; fill as necessary. Refer to *Lubricant & Hydraulic Oil Specifications* section of this manual for proper oil. Completely open gate valve under reservoir.
11. Set throttle so engine runs at an idle. Engage PTO driving pump. Allow pump to run and circulate oil for several minutes. Increase warm-up time in cold weather. When engine is warm, set tractor PTO to 1000 RPM.
12. Set spinner speed to 300 RPM.
    Spinner should run at slow speed. Allow to run until it is operating smoothly and all air has been purged.
13. Set spinner speed to 0 RPM.
14. Refer to the control's operation manual for the correct setting to operate the conveyor. Run conveyor until it's operating smoothly.
15. Set spinner speed to 500 RPM.
    Allow both spinner and conveyor(s) to run. Shut down system.

DANGER Do not check leaks with hands while system is operating as high pressure 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 with 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 hydraulic leaks adjacent to moving parts while system is operating as there may be danger of entanglement!

16. Check all connections in hydraulic system to make sure there are no leaks.
17. Check hydraulic oil reservoir and refill to maintain level around mid-point of sight gauge.
18. Make sure brakes are adjusted and operate properly.
19. Check tire pressure.
    Unit is now ready for field testing.

Become familiar with the *General Operating Procedures* section before preforming the initial field testing. The following procedure is a guide:

1. Field test over any suitable course which allows implement to be pulled at speeds to be used while spreading.
2. Make sure unit has been properly serviced, that oil reservoir is full and gate valve under reservoir is fully open. Do not load spreader.
3. Make sure all guards are in place and hardware is tightened.
4. Set spinner speed to run at 500 RPM.

	**DANGER**	Take proper safety precautions when observing conveyor and spinner speed while vehicle is in motion! These may include use of suitable mirrors clamped to permit observation by a safely seated observer, following the spreader in another vehicle at a safe distance, or other suitable means. Do not stand on fenders, in body or on any part of spreader as there is danger of falling off the vehicle or into moving parts! Use great care in performing this test!

5. Start tractor engine. Turn electronic in-cab control system “on”. Set SCV for MULTAPPLIER if required. Engage PTO and allow to run at idle long enough to bring hydraulic oil up to operating temperature. Spinners should revolve at moderate speed and the conveyor should not move.
6. Refer to control’s operation manual for conveyor operating instructions. Set program to operational mode and begin forward travel. Move conveyor switch to ‘‘on’’ position. Conveyor should start immediately when vehicle moves and should continue to run at speeds which should vary directly with the vehicle’s speed; the conveyor should speed up as tractor speed increases and slow down as tractor speed decreases. Spinner speed should remain constant when engine speed maintains PTO at 1000 RPM.

1. Make sure unit has been properly serviced and is in good operating condition. Field test unit prior to first use, prior to each spreading season's use, and following overhaul or repair work, to verify that all components and systems are functioning properly. See *Field Testing* section.
2. Fill body with material to be spread.
3. Drive to location where spreading is to be done.
4. Check and perform the following to maintain proper PTO working order.
   a. The PTO shaft must be cleaned and lubed every time PTO is attached to tractor.
   b. Make sure PTO shields are in proper working order.
   c. Check for loose, damaged, or missing hardware.
   d. Repair and replace parts as needed.
5. Turn on electric in-cab control system and set program to desired values.
6. Set spinner speed for material being applied to give spread width desired. See "G4 Spread Pattern" section.
7. Adjust spinner assembly position to give spread pattern desired. See "G4 Spread Pattern" section.
8. Set rear feedgate opening to obtain yield desired. Measure actual material depth. Turn feedgate handle to adjust feedgate opening.

	**WARNING**	Do not climb on unit. Use a portable ladder to view the feedgate. 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.

9. Fill hydraulic tank and lubricate per *Lubrication & Maintenance Chart*.
10. Make sure valve on hydraulic reservoir is fully opened. Start tractor engine. Turn electronic in-cab control system "on". Engage PTO and allow to run at idle long enough to bring hydraulic oil up to operating temperature. Spinners should revolve at moderate speed and the conveyor should not move.
11. Set throttle to full PTO operation speed (1000 RPM) to maintain performance of spreader. Refer to tractor's operators' manual for proper use of PTO.

	**WARNING**	Drive only at speeds which permit good control of tractor implement combination. Loss of control could cause injury.

12. Drive at speeds that allow PTO to turn at 1000 RPM.

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

TIRE PRESSURE & TRANSPORT SPEEDS

Proper air pressure achieves maximum tire performance. The following table should be used as a guide.

WARNING Drive at a reasonable and safe speed according to weather, field and road conditions. Loss of tractor or implement control could cause serious injury or death.

NOTICE! Consult federal, state and local weight laws to ensure government weight, speed, and road restrictions are not exceeded.

TRAILER TIRE
ROAD SPEED TABLE(3)

Tire Pressure (PSI)	Max Road Speed (MPH)	Max Gross Combined Axle Loads(2) (LBS)	Max Payload(1) (LBS)
20	30	35200	19600
	25	37300	22000
	20	39400	24400
	15	42900	28300
	10	46400	32200
	5	53000	35000
	0	53000	35000
25	30	39600	24600
	25	41900	27200
	20	44300	29900
	15	48300	34300
	10	52200	35000
	5	53000	35000
	0	53000	35000
30	30	44000	29500
	25	46600	32400
	20	49200	35000
	15	53000	35000
	10	53000	35000
	5	53000	35000
	0	53000	35000

1) Maximum payload assumes evenly distributed product in a single bin.
2) Consult federal, state and local laws to ensure the gross weight on any one axle or combination of axles, operated on highways, does not exceed government weight restrictions.
3) This chart is applicable for OEM tires and rims.

305275-A

INSPECTION LADDER

WARNING KEEP OFF FENDERS. Do not place objects on fenders. They are not intended to carry loads. Falling from the fenders could cause death or serious injury.

Always place the inspection ladder in the storage position while in transit (Figure 24).

Figure 24 - Inspection Ladder in Storage Position

REAR PULLING LUGS

NOTICE! Do not pull implement sideways—always pull straight. Always disconnect tractor from implement before using rear lugs. Otherwise, damage to implement may occur.

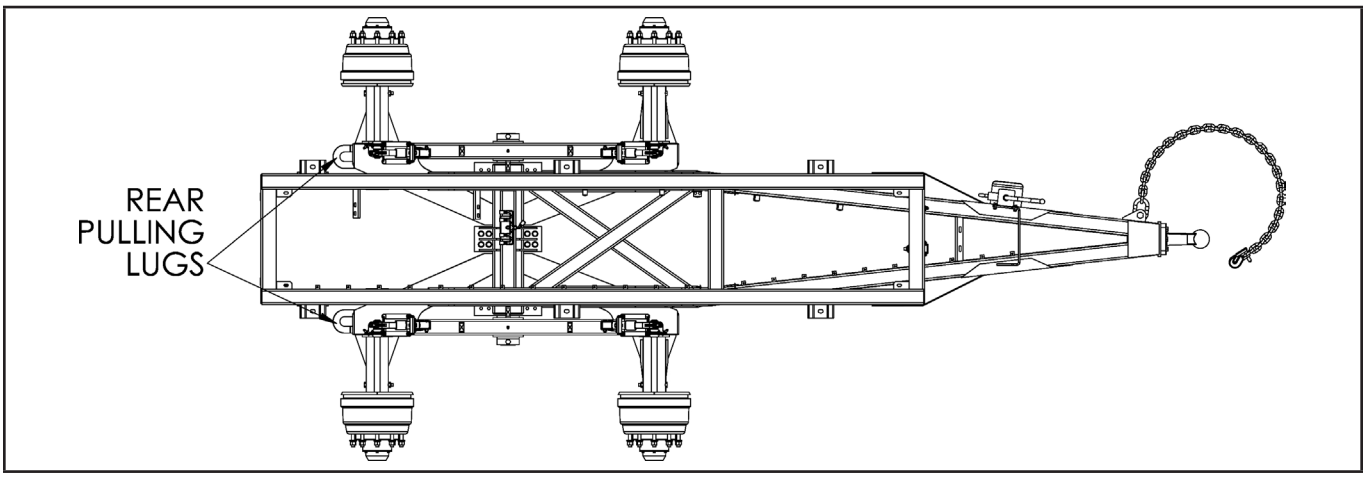


Figure 25 - Rear Pulling Lugs

If the implement gets stuck, attempt to dislodge the implement by powering the tractor. If that is unsuccessful: empty spreader; shut off tractor power; lower jack, disconnect tractor and all connections; hook appropriate chain to left and right hand rear pulling lugs (Figure 25); fasten chains to tractor; raise jack; and engage tractor to dislodge implement.

IMPLEMENT MANEUVERING

WARNING	Make sure the area behind the trailer is clear of obstructions and personnel. Turning or backing may result in limited visibility. Check blind spots. Back and/or turn cautiously. Failure to do so could result in death, serious injury or damage to the implement.

WARNING	Maintain reasonable speeds. Consider rough terrain including obstacles such as terraces, ditches, and approaching angles. Know the limits of hitch angles. Failure to do so could result in tipping of implement, bottoming of suspension, jack-knifing, spillage or loss of material and other damages to the implement and/or tractor, resulting in serious injury or death.

BACKING & TURNING TIPS

NOTICE!	Turning and backing at sharp angles will cause the tractor and implement to jack-knife. DO NOT exceed the angles in the chart below.

DO NOT exceed the angles in the chart below.

* - Based on 710/70R2 duals or larger (Group 48) 81” diameter.
** - Based on 480/80R50 duals or triples (Group 48) 81” diameter.

Tractor Type	Location	Maximum Angle
*JD 9430/DN 345	Tractor Tire to Front of Fender	75°
**JD 8530/DN 345	Tractor Tire to Trailer Tongue	62°

MAXIMUM HITCH ANGLES & WALKING BEAM TRAVEL

CAUTION DO NOT bottom out suspension. Damage may occur to implement. The manufacturer will not be liable for damage to implement due to improper usage.

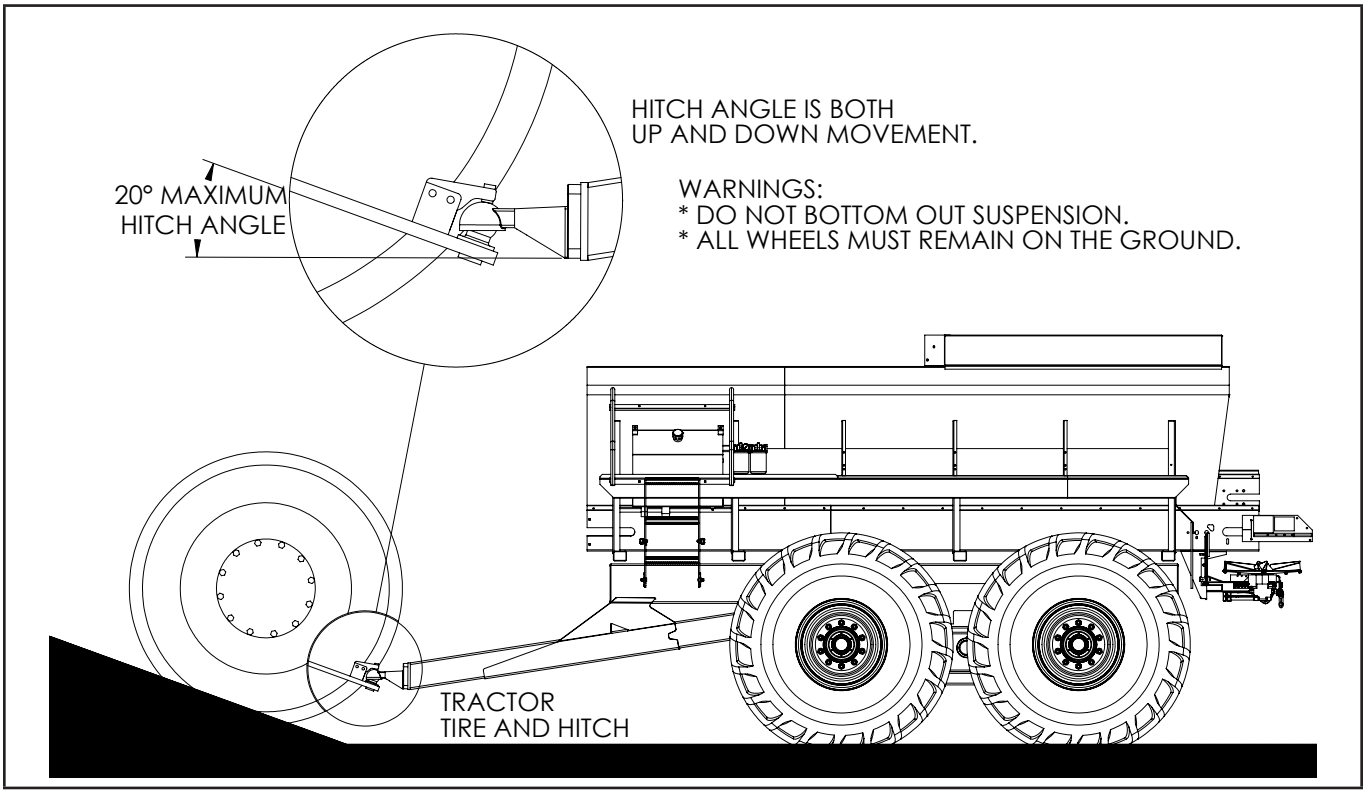


Figure 26 - Maximum Hitch Angles

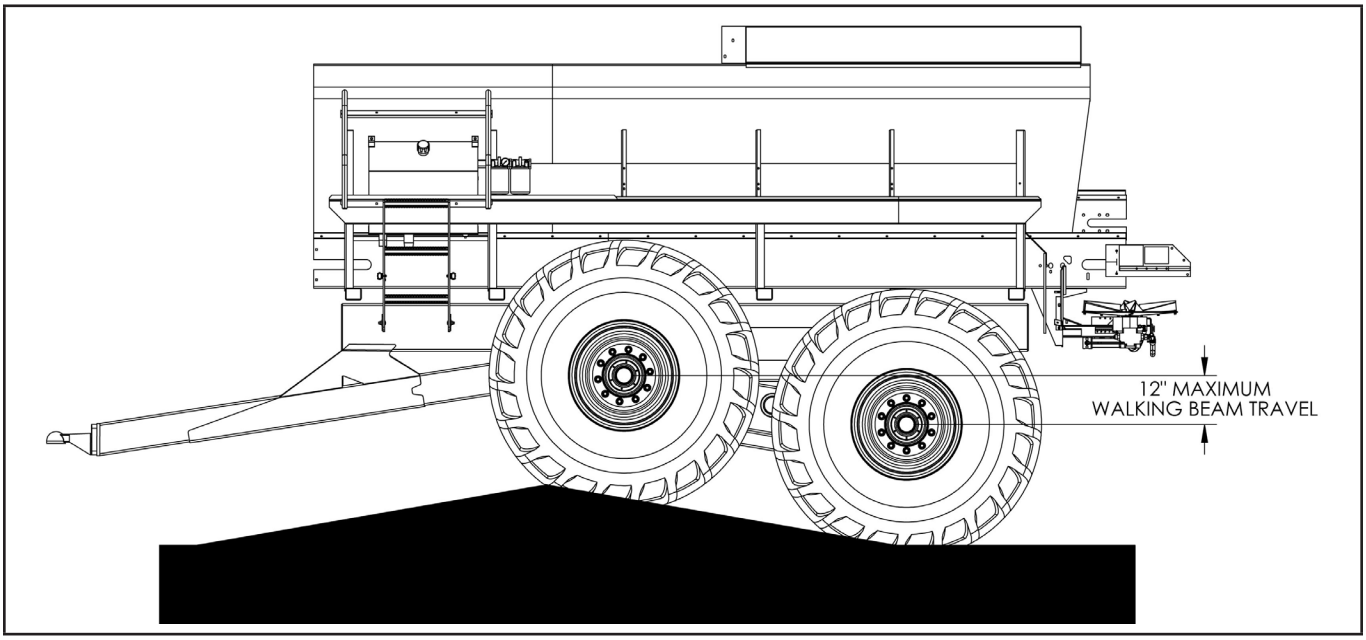


Figure 27 - Walking Beam Travel

PREVENTATIVE MAINTENANCE PAYS!

The handling and spreading of commercial fertilizers is a most severe operation with respect to metal corrosion. Establish a frequent, periodic preventative maintenance program to prevent rapid damage to spreading equipment. Proper cleaning, lubrication and maintenance will give you longer life, more satisfactory service and more economical use of your equipment.

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.

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 hydraulic oil in original closed containers, clean top of container before opening and pouring, and handle in extremely clean measures and funnels.

SPREADER - L3220G4

SERVICE SCHEDULE

DANGER	Do not check leaks with hands while system is operating as high pressure 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 with 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 hydraulic leaks adjacent to moving parts while system is operating as there may be danger of entanglement!

1. Check hydraulic oil daily by means of sight gauge on reservoir. Add oil as necessary to maintain level around mid-point. Periodically inspect hoses and fittings for leaks.

NOTICE!	2. Change hydraulic oil filter after first week (or not more than 50 hours) of operation on a unit.

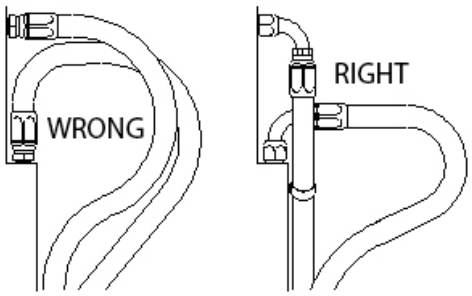
3. After first filter change, replace filter when indicated.
4. Drain reservoir through drain plug (not through suction outlet), flush, and refill and change filter element annually. Oil and filter should also be changed whenever oil shows any sign of breaking down under continued high-pressure operation. Discoloration of oil is one sign of breakdown.

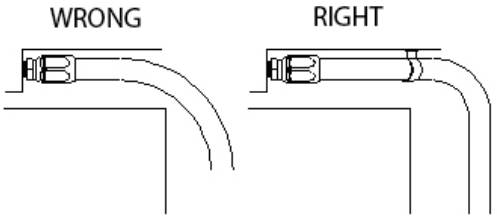
CONVEYOR GEARCASE

Drain oil in a new unit after first two weeks (or not more than 100 hours) of operation, and flush gear case thoroughly with light oil. Refer to Lubricant and Hydraulic Oil Specifications section for proper grade oil. Refill gear case with 1-1/2 pints (.71 liters) of recommended lubricant. After initial change, oil should be changed every 2,000 hours of operation or annually, whichever occurs first.

Check gear case oil level monthly. Make sure gear case vent is clear of obstruction and functioning properly daily.

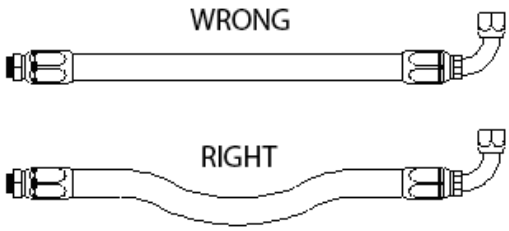
HOSE ROUTING

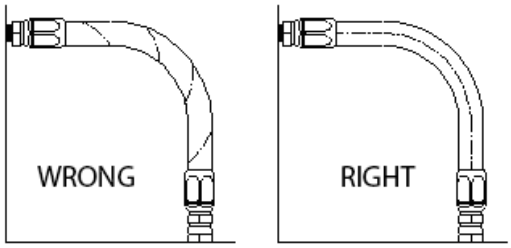




1. Use elbows and adapters in the installation to relieve strain on the assembly, and to provide easier and neater installations that are accessible for inspection and maintenance. Remember that metal end fittings cannot be considered as part of the flexible portion of the assembly.

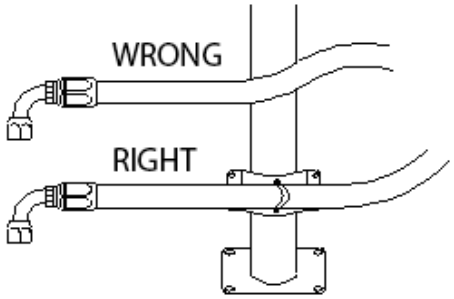
2. Install hose runs to avoid rubbing or abrasion. Clamps are often needed to support long runs of hose or to keep hose away from moving parts. It is important that the clamps be of the correct size. A clamp that is too large will allow the hose to move in the clamp causing abrasion at this point.

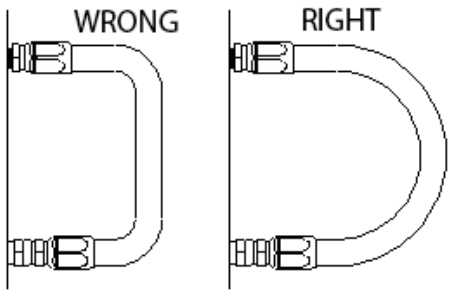




3. In straight hose installations allow enough slack in the hose line to provide for changes in length that will occur when pressure is applied. This change in length can be from +2% to -4%.

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.

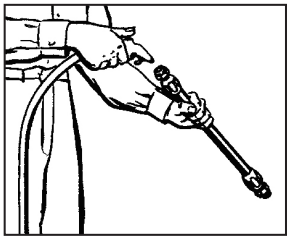
6. Keep the bend radii of the hose as large as possible to avoid hose collapsing and restriction of flow. Follow catalog specs on minimum bend radii.

(Used with the permission of The Weatherhead Company.)

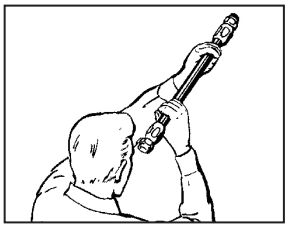
HYDRAULIC HOSE

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.

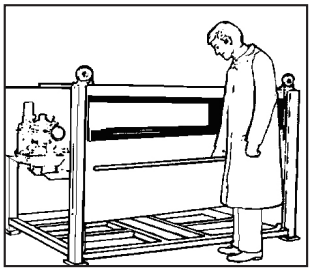
WARNING	Testing should be conducted in approved test stands with adequate guards to protect the operator.



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
(66 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 & HANDLING

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

BIN SENSOR

WARNING	Stay out of the spreader. Do not climb on spreader. Use a portable ladder to inspect, clean and maintain the bin sensor from outside the spreader. Failure to do so could result in injury from falling.

NOTICE!	Wipe sensor clean periodically to prevent accumulation of product. Avoid wet material as it may stick to sensor. If material sticks to sensor it won't warn user when bin is low.

Clean sensor with long handled brush or hose from outside of spreader. Do not aim high pressure sprayer directly at sensor—it could damage the components.

CONVEYOR CHAIN

WARNING	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.

WARNING	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.

WARNING	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!

NOTICE!	The conveyor will move away from the bottom panel if material accumulates under the conveyor or on the sprockets. The more material that accumulates, the closer the chain will come to the chain shields. If the conveyor should catch a chain shield, it could permanently damage the conveyor, the chain shields or the unit. Do not remove material while conveyor or spinner is running!

Hose down unit and remove any material build-up on sprockets and under chain.

LUBRICATION

Fill oiler reservoir daily with a mixture of 75% diesel fuel and 25% SAE 10 oil. Before each filling of unit with material to be spread, open petcock and run conveyor until full length of chain has been oiled, then shut petcock. Shut down spinner and run conveyor slowly to lubricate chain. After each washing unit, allow to dry, then lubricate the chain.

TENSION

Proper chain tension is also a factor in chain and sprocket life (Figure 28). Measure from rear of unit forward to achieve proper chain tension. Make sure 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:

Main conveyor - 36" to 40" (91 cm - 102 cm)

MULTAPPLIER conveyor - center*

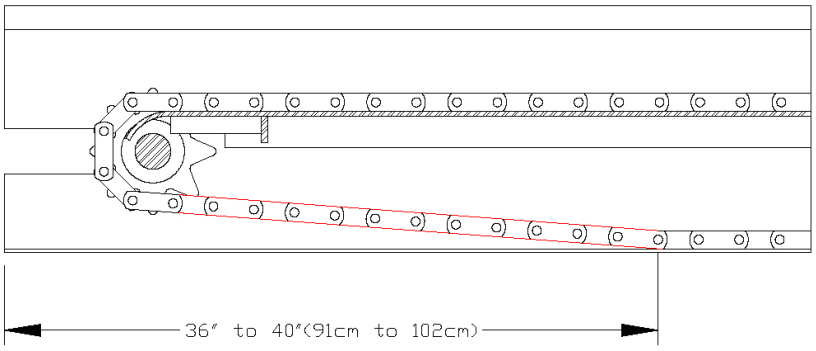


Figure 28 - Chain Tension

* NOTE: MULTAPPLIER conveyor touches bottom of sill only at center when properly tensioned.

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

CONVEYOR BELT MAINTENANCE

- Inspect belt fastener occasionally for wear or "raveling" of belt grip area.
- Make sure belt connecting pin is positioned correctly as shown in Figure 29.

NOTICE!	Pin must not rotate. If pin ends are not bent down and tight against lacing, the ends may cut into the chain shield sealers or belt wipers.

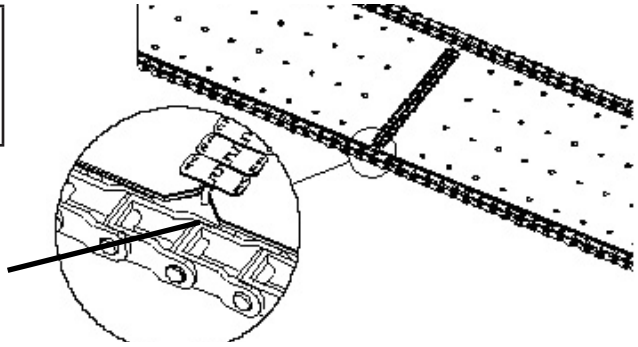


Figure 29 – Conveyor Belt Pin Installation

SPINNER SENSOR

NOTICE!	Do not use stainless steel hardware. Using stainless steel hardware may cause improper sensor RPM readings.

The spinner sensor must be mounted under the right-hand spinner disc in holes provided. Rotate disc so one of the cap screws is directly above the sensor. Position sensor 1/8 inch (3 mm) or less below cap screw and tighten sensor hardware. If the distance between the sensor and spinner cap screw is more than 1/8 inch (3 mm), the sensor may not get a good RPM reading. Rotate disc by hand to ensure no contact. See "Spinner Sensor" parts list for illustration.

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 maintain 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 a grease gun have standard grease fittings.

Lubricate bearings by pumping grease slowly 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

NOTICE!	High pressure wash can inject water and/or fertilizer into control components, causing damage. Use caution when cleaning these areas.

Thoroughly wash unit every two to three days during the operating season to maintain minimal maintenance operation. Hose unit down under pressure to free all sticky and frozen material.

It is important the unit be thoroughly cleaned at the end of each operating season. All lubrication and maintenance instructions should be closely followed. Repaint worn spots to prevent formation of rust.

FASTENERS

Tighten all fasteners to recommended torques after first week of operation and annually thereafter per Torque Chart in this manual or as specified. If loose fasteners are found at anytime, tighten to recommended torque. Replace any lost or damaged fasteners or other parts immediately.

Check torque on body mounting, hitch, wheels and suspension hardware every week. Tighten front mount hardware so springs are compressed from 3.5" (8.89 cm) - 3.75" (9.53 cm) (Figure 30A). Tighten each back mount hardware to 80-90 ft-lb (108.5-122 N-m). (Figure 30B)

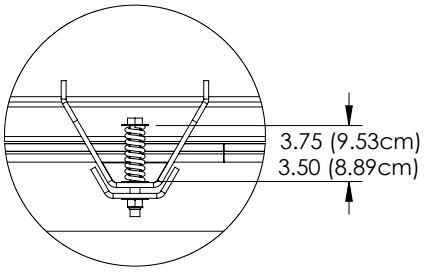


Figure 30A - Front Spring Compression

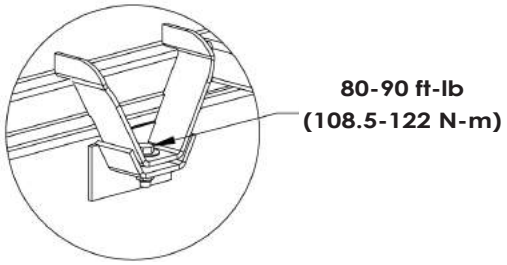


Figure 30B - Spring Torque on Rear Mount

TRAILER - TR3000

BRAKES

WARNING!	Perform maintenance on level surface with wheels blocked. There is no parking brake on the TR3000. Block the wheels prior to unhitching or any maintenance of the TR3000. Uncontrolled movement of the trailer could cause death or serious injury.

Using sight window on drums' dust shields, adjust brakes, tighten slack adjuster until brake pads touch brake drums, then back off 1/4 turn.

Brake noise and/or sluggish brake response may indicate air in the brake line. To correct this problem perform the bleeding procedure listed below.

Bleeding Procedure:
1. Modulate tractor brakes to low pressure and flow.
2. On top of rams, loosen bleeder plugs to fill system.
3. Attach supply line to tractor. Press brake pedal or operate a pump to charge system.

DANGER	Do not check leaks with hands while system is operating as high pressure 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 with 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.

4. When fluid is seeping from bleeder holes, release brake pedal or turn off hydraulic power unit pump and install bleeder plugs.
5. Loosen one bleeder plug a 1/2 turn and apply brakes to remove remaining air.
6. Tighten bleeder plug.
7. Make sure ram is free of air.
8. Complete steps 5-7 for all four rams.
9. Allow system to set for five or more minutes. This will allow any additional trapped air to rise to the top of the system.
10. Break the line at the highest point. This is located in the center of the bulkhead assembly.

NOTICE! Fittings must be tightened under hydraulic pressure or air may be drawn back into system.

11. Apply pressure to brake to remove any air from the system and tighten fittings.
12. Apply brakes and check for leaks. Make sure all rams are fully extended while applying braking force to brake drums. If done correctly, the ram and slack adjuster will be at 90° to each other (Figure 31). The ram should extend approximately 1 1/2 inch (38 mm) to 1 3/4 inch (44 mm).
13. If brakes chatter or rams do not fully extend repeat steps 5-12.
14. When complete, rams must be fully retracted.

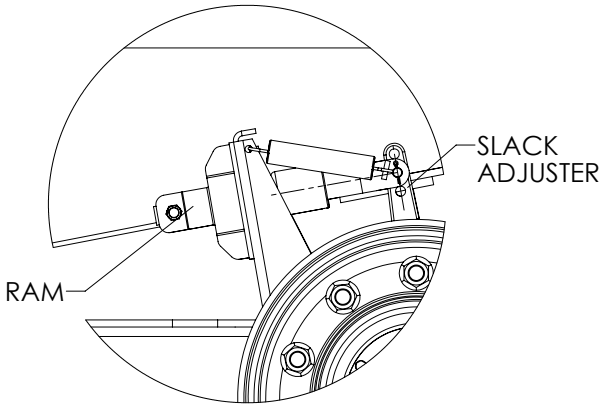


Figure 31 - 90° Ram & Slack Adjuster

TIRES

PRESSURE AND LOAD

NOTICE!	Inspect tires and wheels daily for wear and/or loose hardware.

WARNING	Service of tires and rims can be dangerous. Follow all safety rules. Only specialized personnel should mount tires. Use proper equipment and procedures. Damaged tires can explode causing injury. Falling and/or rolling tires may cause injury.

WARNING	Do not over inflate tires. DO NOT stand in front of or over tires when inflating. If necessary, use a clip-on air chuck and extension hose. Over-inflating can cause tire to explode, causing serious injury. Always inflate tire/rim assembly with an OSHA approved cage or restraining device. Tire and rim diameters should always match.

Always maintain correct tire pressure. Set tire pressure at 20 PSI (1.38 bar) to minimize ground compaction. See *General Operating Procedures* section.

Check tires frequently during extreme temperatures.

See tire manufacturer for additional information.

WHEELS & LUG NUTS

WHEEL REPLACEMENT

CAUTION	Retorque wheel studs after 10 hours of operation.

Perform the following steps:

1. Make sure brakes are not engaged.
2. Check all parts are free of dirt and grease. Make sure all parts are free of damage. The hub or drum mounting face must be cleaned and kept flat.
3. Position the brake drum on the pilots' raised step, seated fully against the hub.
4. Clean the wheel's center hole as necessary so it will fit easily on the hub pilots.
5. Apply two drops of oil between the nuts and flange and two drops to the last 2 or 3 threads at the end of each stud. Lightly lubricate the pilots on the hub to ease wheel installation and removal.

NOTICE!	DO NOT get lubricant on the mounting face of the drum or wheel. This will cause hardware to loosen prematurely.

6. Position hub with one pilot at 12 o'clock position. Place wheel onto hub carefully so as not to damage stud threads. Make sure wheel is fully seated against drum.
7. Install hardened spacer and nuts, finger-tight, at 12 o'clock and 6 o'clock positions. Rotate wheel 180° and make sure wheel is fully seated against drum. Repeat as needed. Install spacers and nuts finger-tight on remaining studs.

8. Tighten nuts to 50 ft-lb (67.8 N-m) following a crisscross sequence as shown in Figure 32.
9. After the wheel is installed inspect the seating of the wheels on all four pilots and turn the wheel checking for irregularity of the wheel assembly. This will ensure the wheel is seated on the pilots and flat against the drum.
10. Tighten all nuts to 450-500 ft-lb (610.2-678 N-m) using the crisscross sequence as shown in Figure 32.
11. Repeat torque sequence until all nuts are consistent to 450-500 ft-lb (610.2-678 N-m).

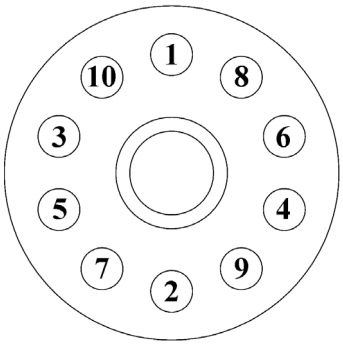


Figure 32 - Nut Tightening

PTO LUBRICATION & ALL GREASE POINTS

See *Lubrication and Maintenance Chart* section.

GENERAL

1. Inspect and lube per maintenance instructions.
2. Empty any material from unit.

WARNING Never store implement with material in bin. Implement could tip and crush or strike someone causing serious injury or even death.

3. Pressure wash
4. Store indoors on a hard, level surface, with blocked tires to prevent movement.

PTO STORAGE

Place PTO in storage position, as shown in Figure 33, and secure with pin when implement is not in use.

Figure 33 - PTO Storage Position

MATERIAL DIVIDER

Figure 34 – The material divider can be stored on the provided bracket when not in use.

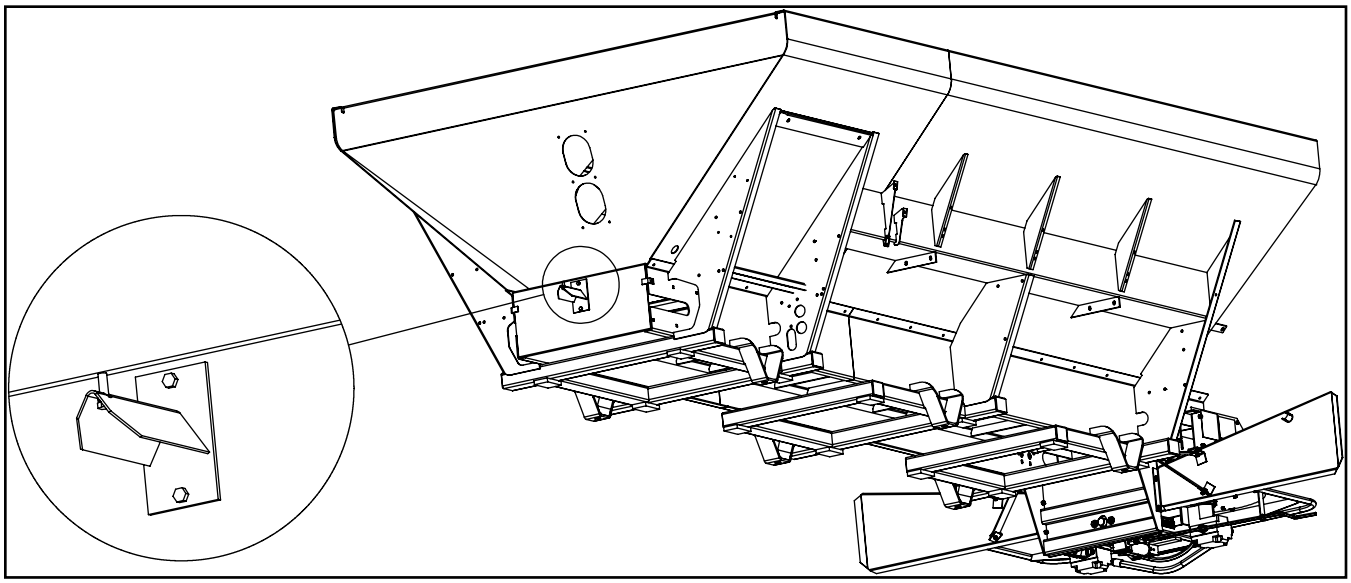


Figure 34 – Material Divider Storage

NOTICE!	The lubricant distributor and/or supplier is to be held responsible for results obtained from their products. Procure lubricants from distributors and/or suppliers of unquestioned 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

Use premium quality lubricants with 100-200 SUS or 20-43 cSt viscosity at operating temperatures. The hydraulic fluid's specifications in the table below are for normal operating conditions. Extreme environments or dirty conditions may require the use of different oils. Consult your New Leader dealer or the Product Support Department at Highway Equipment Company for systems operating outside normal conditions.

Ideal Oil Operating Temperature	115-158°F (46-70 C°)
Recommended Premium Lubricant	Multi-Purpose Agriculture Hydraulic & Transmission Oil
Lubricant Specifications Viscosity Index Viscosity at 40°C, cSt Viscosity at 100°C, cSt	 Greater than 130 Less than 68 Greater than 9
Acceptable Fluid Sample	**John Deere Hy-Gard® J20C**

GEARCASE LUBRICANT

Ambient Temperature	Gear Oil	Oil Requirements
40-100 F° (4-38 C°)	SAE 90 EP	MIL-L2105 B multi-purpose gear lubricating oil requirements (API Service GL4)
< 40 F° (4 C°)	SAE 80 EP	
>100 F° (38 C°)	SAE 140 EP	

GREASE GUN LUBRICANT

Use a grease with the following properties:

Soap Type - Lithium Complex or Equivalent
Additives - Corrosion & Oxidation Inhibitors, EP Optional
Base Oil - Solvent Refined Petroleum Oil
Consistency - NLGI No. 2 or No. 1

CONVEYOR CHAIN OILER MIXTURE

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

WHEEL BEARING GREASE

Wheel bearing grease will last as long as the wheel bearings are intact and not replaced. If the wheel bearings need to be replaced use the approved synthetic grease Chevron Delo, product code: 235253.

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

SPREADER			
Location	Places	Method	Frequency
1. PTO Shaft (Figure 35)			
a. Inner/Outer Tube Profile	1	Grease Gun 6-10 pumps	Every 8 Hours of Operation
b. Nylon Bearing Ring	1	Grease Gun 2-3 pumps	
c. **Double Yoke (Housing)	1	Grease Gun 15 pumps	
d. Tractor Yoke (Cross & Bearing)	1	Grease Gun 5-6 pumps or until purge	
e. **CV Yoke (Cross & Bearing)	1	Grease Gun 15 pumps	
f. Pump Yoke (Cross & Bearing)	1	Grease Gun 4-5 pumps or until purge	
g. Shield	2	Grease Gun 2-3 pumps on each	
h. *Grease PTO Spline	1	Hand Grease	See above or each time tractor & PTO attached.
* - Not Shown ** - Also feeds ball cavity.			
Hydraulic System (Figure 36)			
2. Reservoir	1	Oil	Check Daily. Change Annually
3. Filter	1	Check daily; Change when indicated (Red)	
Conveyor			
4. Dragshaft Bearings (Figure 37)	2	Grease Gun	Weekly
5. Idler Shaft Bearings (Figure 38)	2	Grease Gun	Weekly
6. Take-Up Screws (Figure 38)	2	Hand Grease	Weekly
7. Chain Oiler (Figure 39)	1	Oil Mixture	Daily, After Use
8. Gear Case (Figure 40)	1	Gear Oil	Check Monthly; Change Annually
Jack Assembly (Figure 41)			
9. Gears	1	Grease Gun	Annually
10. Tubes	1	Grease Gun	Weekly
Spinner (Figure 42)			
11. Shaft	2	Grease Gun	Weekly
12. Jack	2	Grease Gun	Weekly

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

See *Lubricant and Hydraulic Oil Specifications* for types of lubricants and oil to be used.

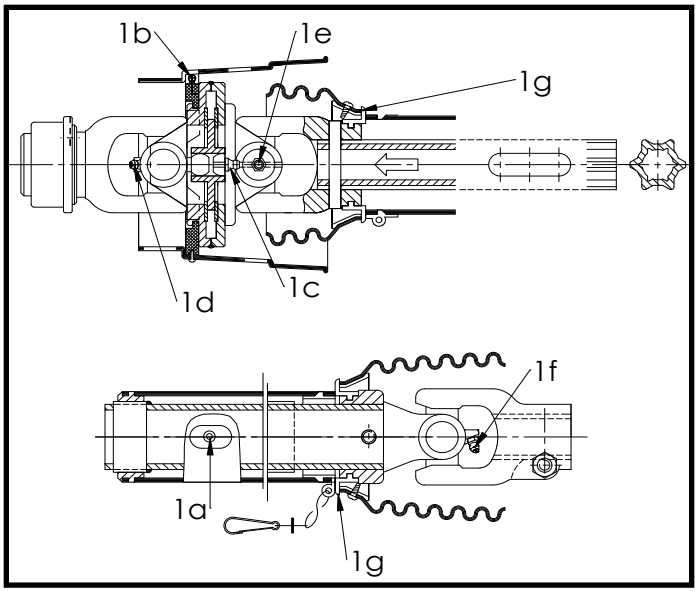


Figure 35- PTO Shaft - Slip Yoke & Universal Joint

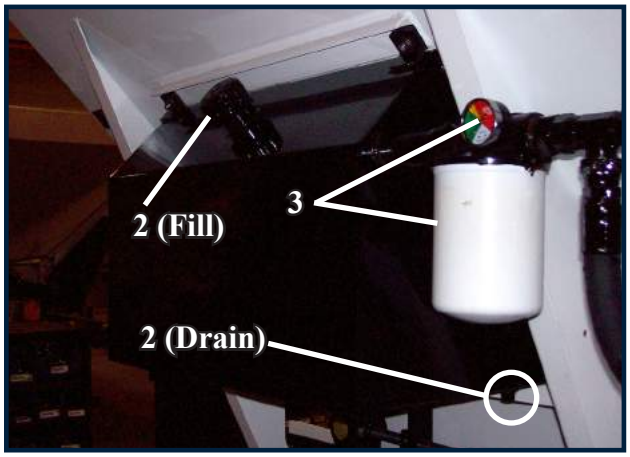


Figure 36 - Hydraulic System - Reservoir & Filter

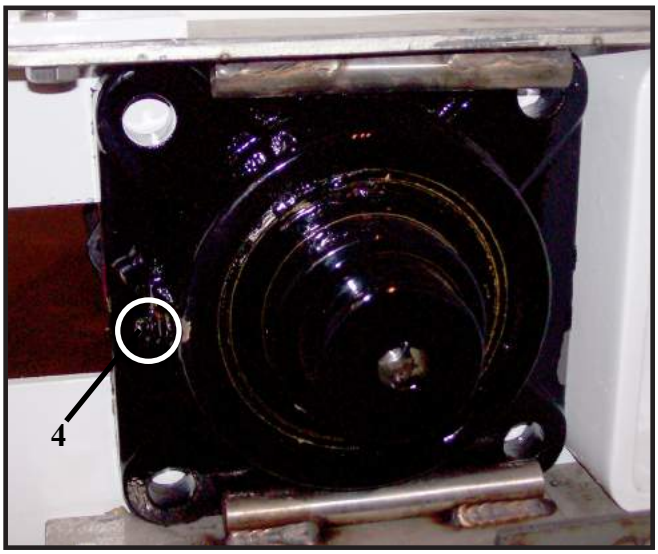


Figure 37 - Conveyor - Dragshaft Bearings

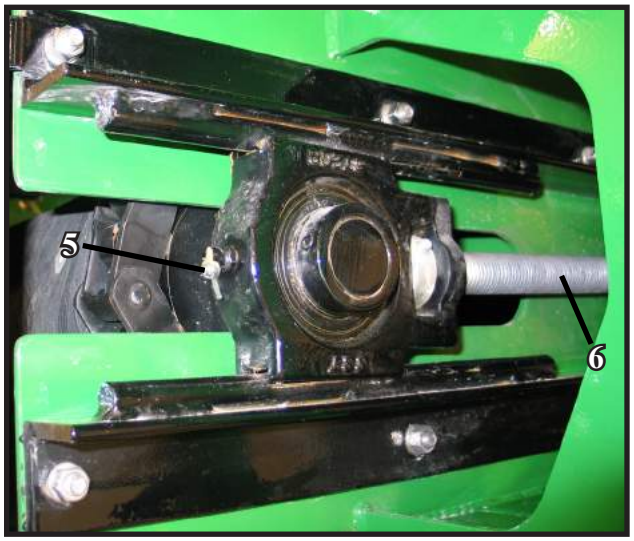


Figure 38 - Conveyor - Idler Shaft Bearings & Take-Up Screws

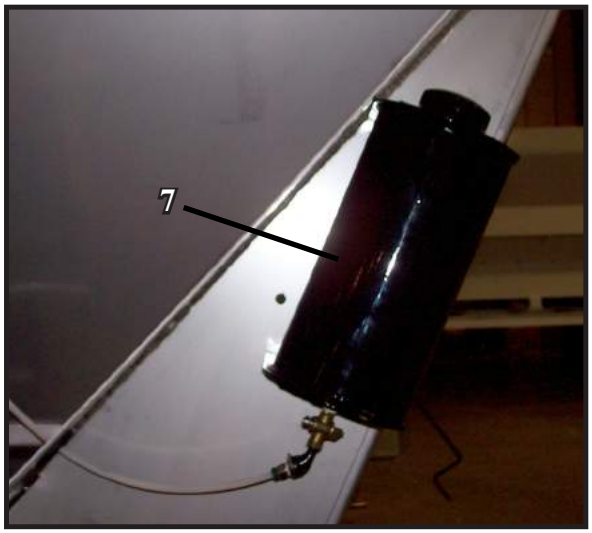


Figure 39 - Conveyor - Chain Oiler

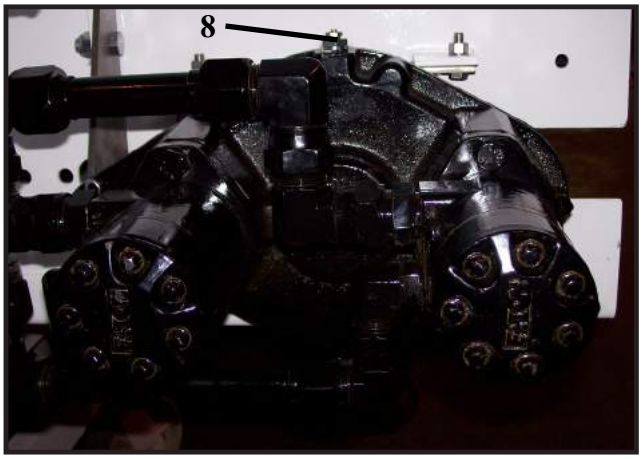


Figure 40 - Conveyor - Gear Case

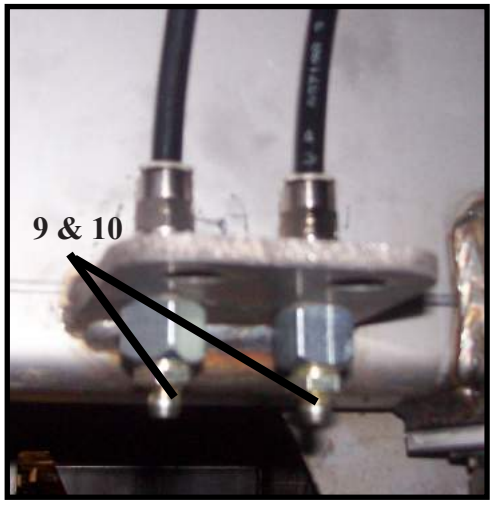


Figure 41 - Jack Assembly Gears & Tubes (MULTAPPLIER Ready)

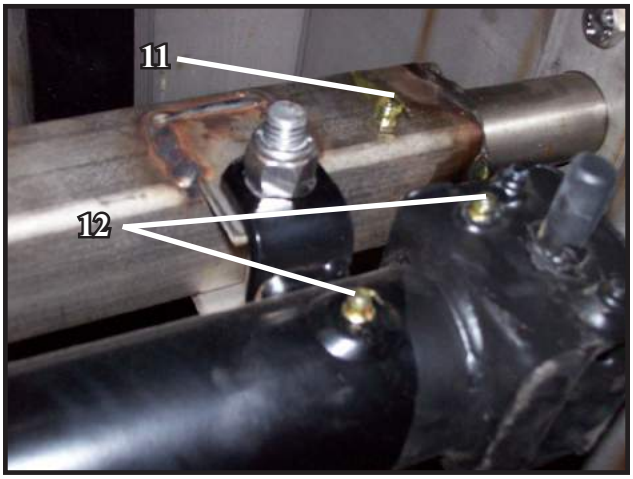


Figure 42 - Spinner - Grease Zerks - Shaft & Jack

TRAILER - TR3000			
Location	Places	Method	Frequency
13. Ball Hitch (Figure 43)	1	Grease Gun	Weekly
14. Walking Beam Pivots (Figure 44)	4	Grease Gun	Weekly
15. Trailer Jack (Figure 45)	1	Grease Gun	Weekly
16. S-Cam Bushings (Figure 46)	4	Grease Gun	Weekly
17. Ratchet Slack Adjusters (Figure 46)	4	Grease Gun	Weekly
18. Hangers (Figure 47)	3	Grease Gun	Weekly
19. Spindle Bushings (Figure 48)	4	Grease Gun	Weekly
20. Hub (Figure 49)	4	Replace synthetic "Semi-Fluid" Long Life Grease. Replace if hub is removed for servicing.	

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

*See *Lubricant and Hydraulic Oil Specifications* for types of lubricants and oil to be used.

Figure 43 - Ball Hitch

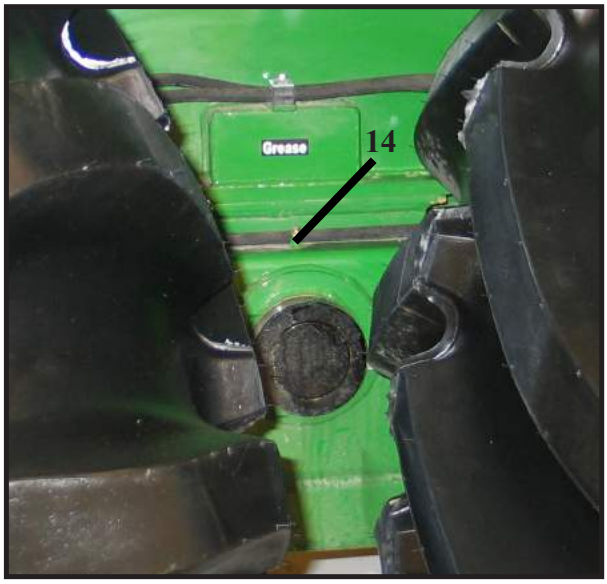


Figure 44 - LH & RH Walking Beam Pivots

Figure 45 - Trailer Jack

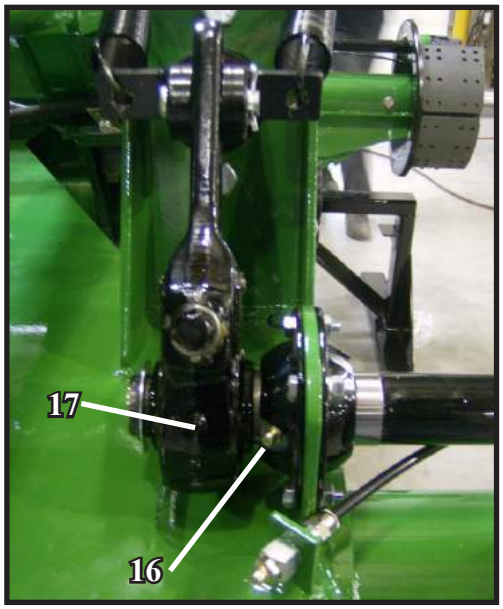


Figure 46 - S-Cam Bushing & Ratchet Slack Adjusters

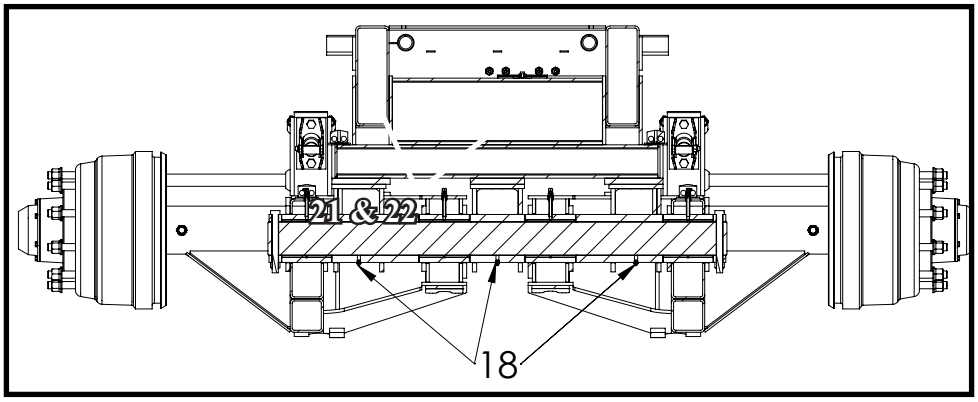


Figure 47 - Hangers

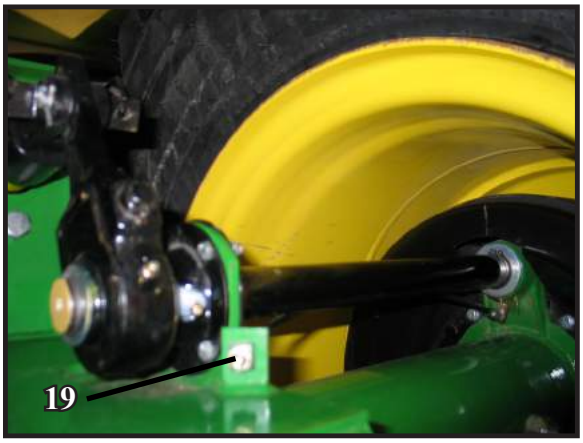


Figure 48 - Spindle Bushings

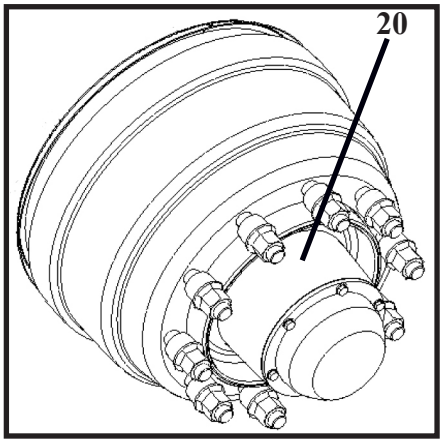


Figure 49 - Hub

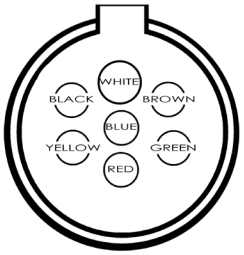
MULTAPPLIER			
Location	Places	Method	Frequency
21. Drive (Figure 50)	2	Grease Gun	Weekly
22. Idler (Figure 50)	2	Grease Gun	Weekly

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

*See *Lubricant and Hydraulic Oil Specifications* for types of lubricants and oil to be used.

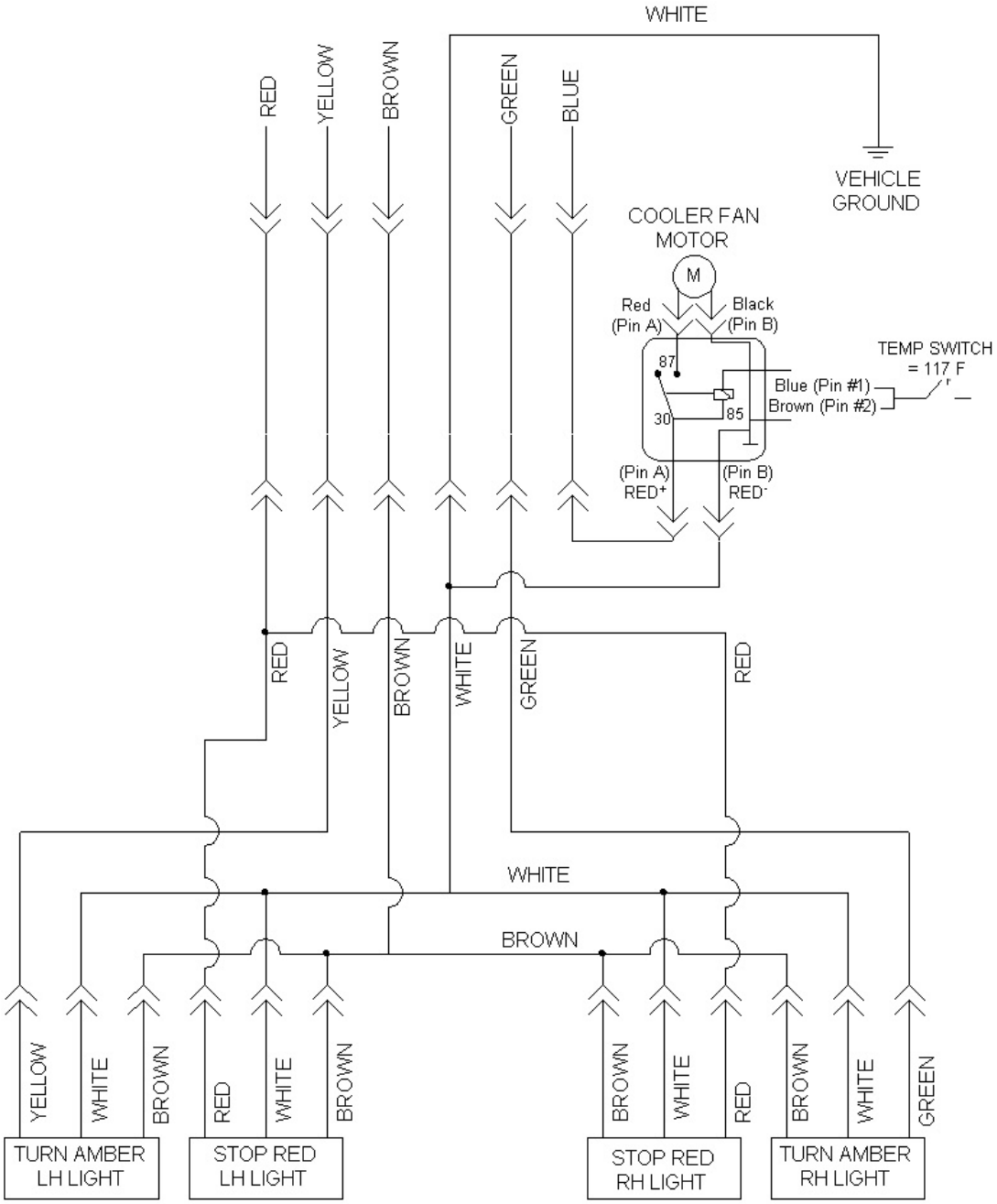
Figure 50 - MULTAPPLIER - Idler & Drive

ELECTRICAL SCHEMATIC - 12 VOLT DC

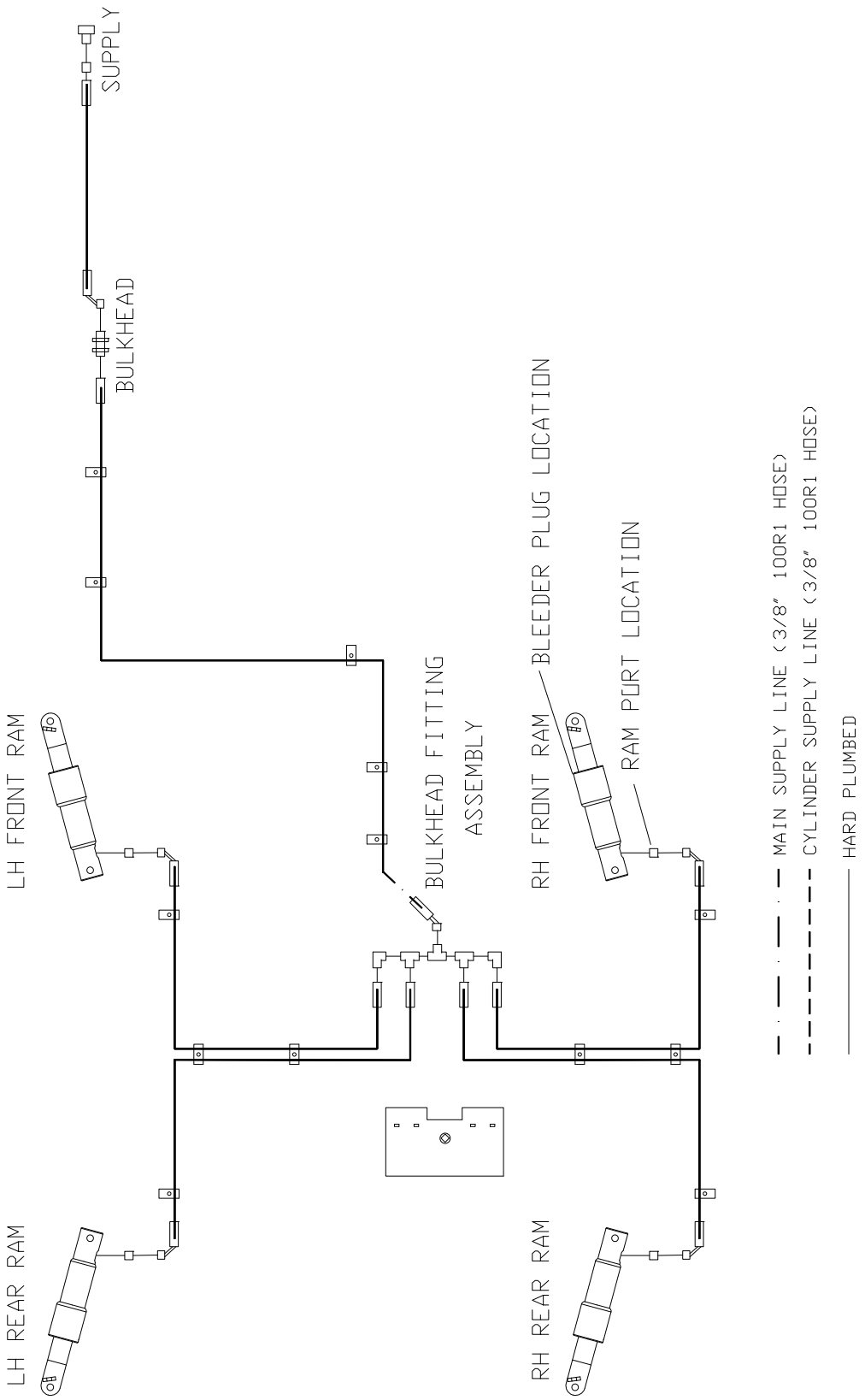


WIRING CODE

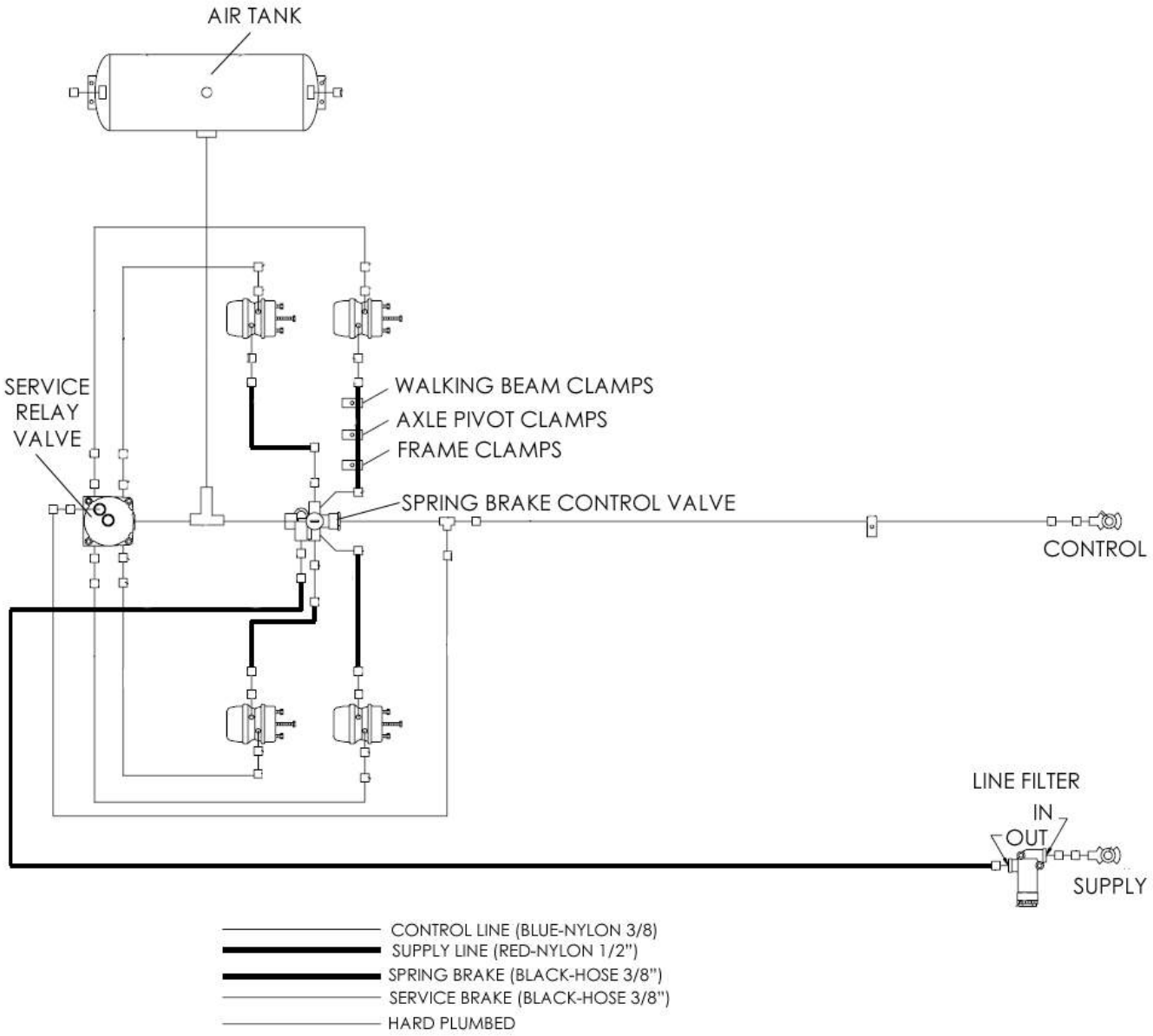
- 12GA White Wire (Ground)
- Black Wire (Not Used)
- 12GA Yellow Wire (LH Flash Warning & Turn Light)
- 12GA Red Wire (Stop Lights)
- 12GA Green Wire (RH Flash Warning & Turn Light)
- 12GA Brown Wire (Tail Lights)
- 12GA Blue Wire (Oil Cooler)



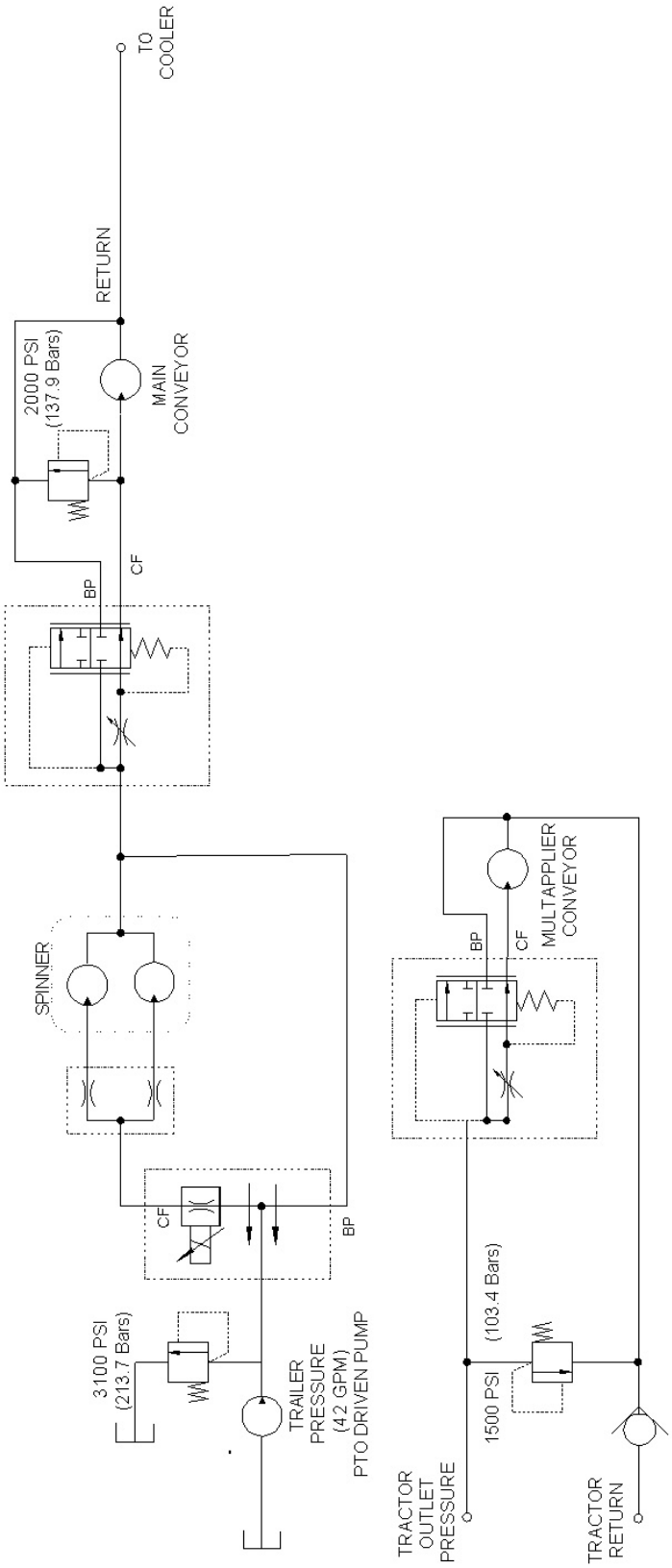
HYDRAULIC BRAKES SCHEMATIC



AIR BRAKES SCHEMATIC



HYDRAULIC SCHEMATIC



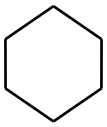
- Symptom: Spinner motors do not turn when spinner control valve is in running position. See reasons 1, 2, 3, 4, 5, 7 & 21.
- Symptom: Spinners turn but conveyor does not run in manual mode. See reasons 6, 8, 9, 10 & 21.
- Symptom: Console in operation mode, but the conveyor does not move when the machine moves. See reasons 6, 8, 9, 10 & 21.
- Symptom: Spinner speed does not stay constant. See reasons 4, 5, 11, 13, 21 & 22.
- Symptom: Hydraulic oil overheats (200° F (93 C°) or hotter). See reasons 1, 4, 6, 15, 16, 17 & 18.
- Symptom: Conveyor does not run with cab control "on", PTO engaged and tractor driving forward. See reasons 20 & 21.
- Symptom: Conveyor runs erratic. See reasons 19 & 21.
- Symptom: Conveyor runs when control switch in cab is in "Off" position. See reason 14.
- Symptom: Conveyor starts to run when PTO is engaged. See reasons 12 & 21.
- Symptom: Hydraulic system pulsates. See reason 20, 22, 23.
- Symptom: Controller application or programming. Refer to the control manual's Troubleshooting section.
- Symptom: Undesirable spread pattern. See G4 spread pattern section at the back of this manual.
- Symptom: Brakes are sluggish or noisy. See "Brakes" in *Lubrication & Maintenance* section.
- Symptom: Lights are not functioning. See "Electrical Schematic" in *Troubleshooting* Section.

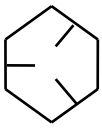
Reason:	Correction:
1. Hydraulic oil level low.	Add hydraulic oil as necessary to maintain level around mid-point of sight gauge.
2. Shut Off valve on oil reservoir not open.	Open valve fully by turning counter clockwise until it stops.
3. Hydraulic Pump is not rotating.	a. Pump is disengaged. Shift into engagement. b. Drive line has failed. Repair or replace. c. Key in pump shaft has failed. Replace key. d. U-joint pin or key has failed. Replace pin or key.
4. In line relief valve set too low.	In line relief valve pressure should be 3100 PSI (213.78 bar). If unit is not equipped with a pressure gauge, install one at main relief valve. Disconnect pressure line from main relief valve and reconnect to flow meter and load valve. Open load valve fully and run truck engine at field operating speed with pump engaged. Slowly close load valve until pressure reaches 3100 PSI (213.78 bar). If this pressure cannot be reached, adjust relief valve until gauge reads 3100 PSI (213.78 bar). **CAUTION: Do not set pressure above 3100 PSI (213.78 bar).**
5. Worn pump.	With flow meter arranged to check relief valve setting, open load valve fully. Read flow rate with engine running at field operating speed. Close load valve until pressure reads 2000 PSI (137.9 bar). Flow rate should not decrease more than ten percent. If flow loss is greater, replace pump.
6. Conveyor relief valve open to return line.	Using relief valve testing adapter and flow meter, test valve for opening pressure. If not 2000 PSI (137.9 bar), replace relief valve.
7. Jammed or frozen spinner motors.	Free up. If not possible, replace as required.
8. Jammed or frozen conveyor.	Free up conveyor.
9. Jammed or frozen conveyor hydraulic motor.	Replace motor.
10. Conveyor hydraulic motor shaft key sheared.	Replace key.
11. Pump speed is not adequate to provide sufficient flow to maintain spinner speed.	Increase engine speed.
12. Involves conveyor control valve timing.	Adjust timing of servo valve so conveyor will stop when valve is in the off position.
13. Defective spinner control valve.	Check connections on PWM spinner valve. Manually override PWM valve and test. If machine functions properly, replace or flush debris from small PWM cartridge.
14. Conveyor switch is on and controller is picking up speed input.	Turn conveyor switch off. Verify speed reading on monitor. If displaying speed, see # 20.

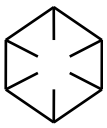
Reason:	Correction:
15. Excessive oil is being pumped.	a. PTO percentage too high. Change PTO to smaller percentage or use smaller pump. b. Pump is too large. Do not exceed 40 GPM (151.42 LPM) pumping rate. Change to smaller pump or use smaller percentage PTO. c. Pressure drop in control valve is sufficient to run lightly loaded conveyor motor. Shut off pump drive by disengaging PTO shaft.
16. Worn motor (spinner or conveyor).	Motor heats up at an excessive rate (check for this heating when system is cold). Replace motor.
17. Improper or deteriorated hydraulic oil.	Replace hydraulic oil with proper specification oil and replace filter.
18. Pinched or obstructed hose, hydraulic line or fitting.	Clear obstruction or replace part. Straighten kinked hoses.
19. Driving too fast for application rate.	Shift tractor transmission to a lower gear. Will not normally occur if within maximum application rates.
20. Defective radar/GPS Antenna.	Check speed on console. Repair or replace radar/GPS Antenna
21. Involves the controller.	Refer to control manual.
22. Tractor PTO is not adequate to maintain proper PTO speed.	Adjust engine speed to maintain proper PTO RPM.
23. Tractor hydraulic selective control valve is not set properly	Set tractor hydraulic selective control valve to achieve proper flow for MULTAPPLIER conveyor. Refer to tractor manuals for proper settings and diagnostics.

STANDARD TORQUES
NATIONAL COARSE (NC) CAP SCREW GRADES

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

Figure 51 - TR3000 Serial Tag

Figure 52 - L3220G4 Serial Tag

Figure 53 - MULTAPPLIER Serial Tag

Figure 54 - Dry Rate Controller Serial Tag
(Located under frame towards front of unit.)

Hi-Way NEW LEADER
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. See previous page for serial tag locations.

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.

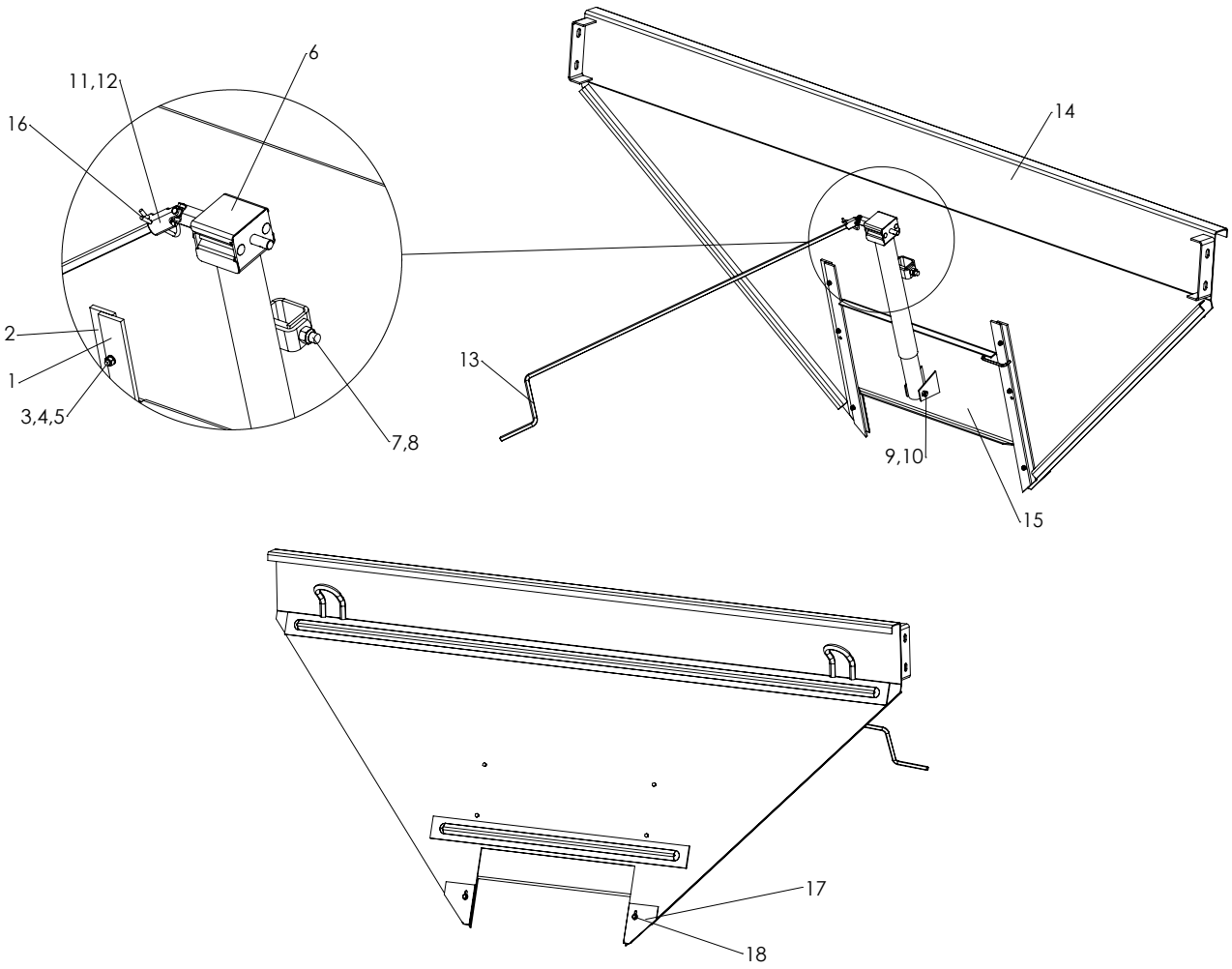
No responsibility is assumed for delay or damage to merchandise while in transit. Our responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them, therefore, claims (if any) should be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

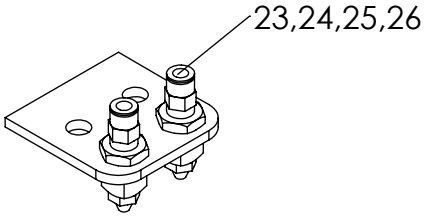
If your claims are not being handled (by the transportation company) to your satisfaction, please call the Parts Manager at Highway Equipment Company (319-363-8281) for assistance.

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.



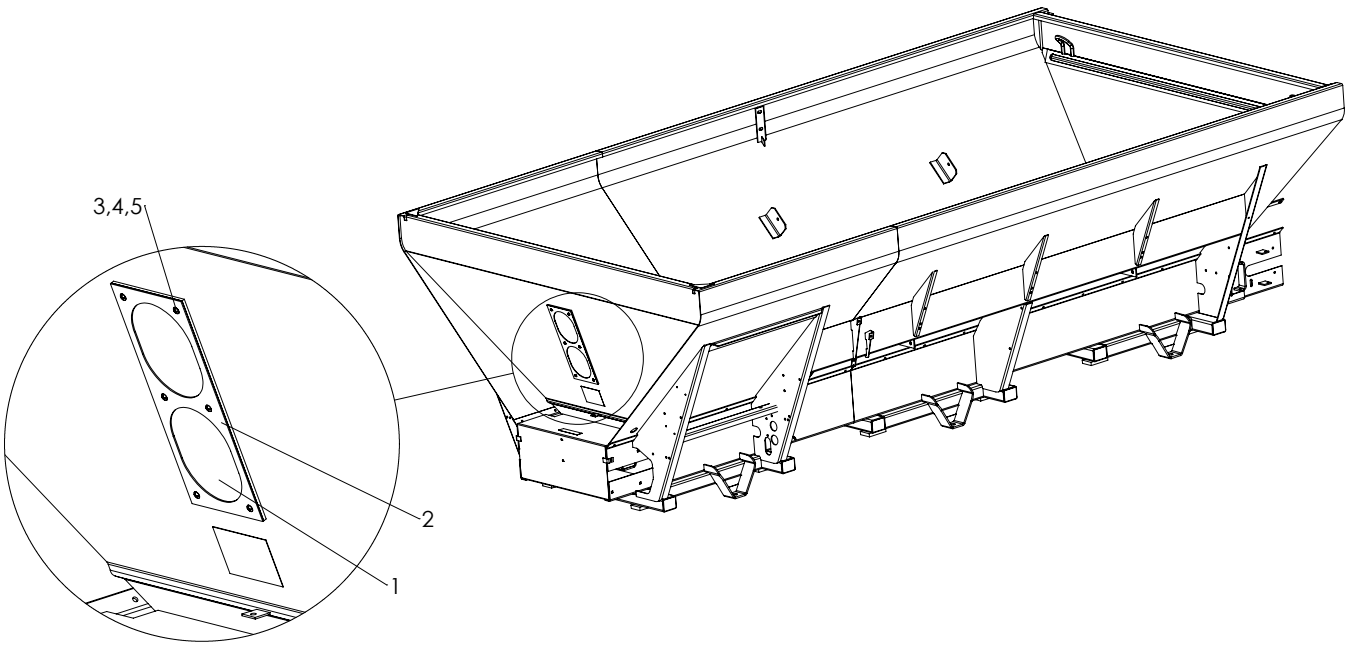


ZERKS

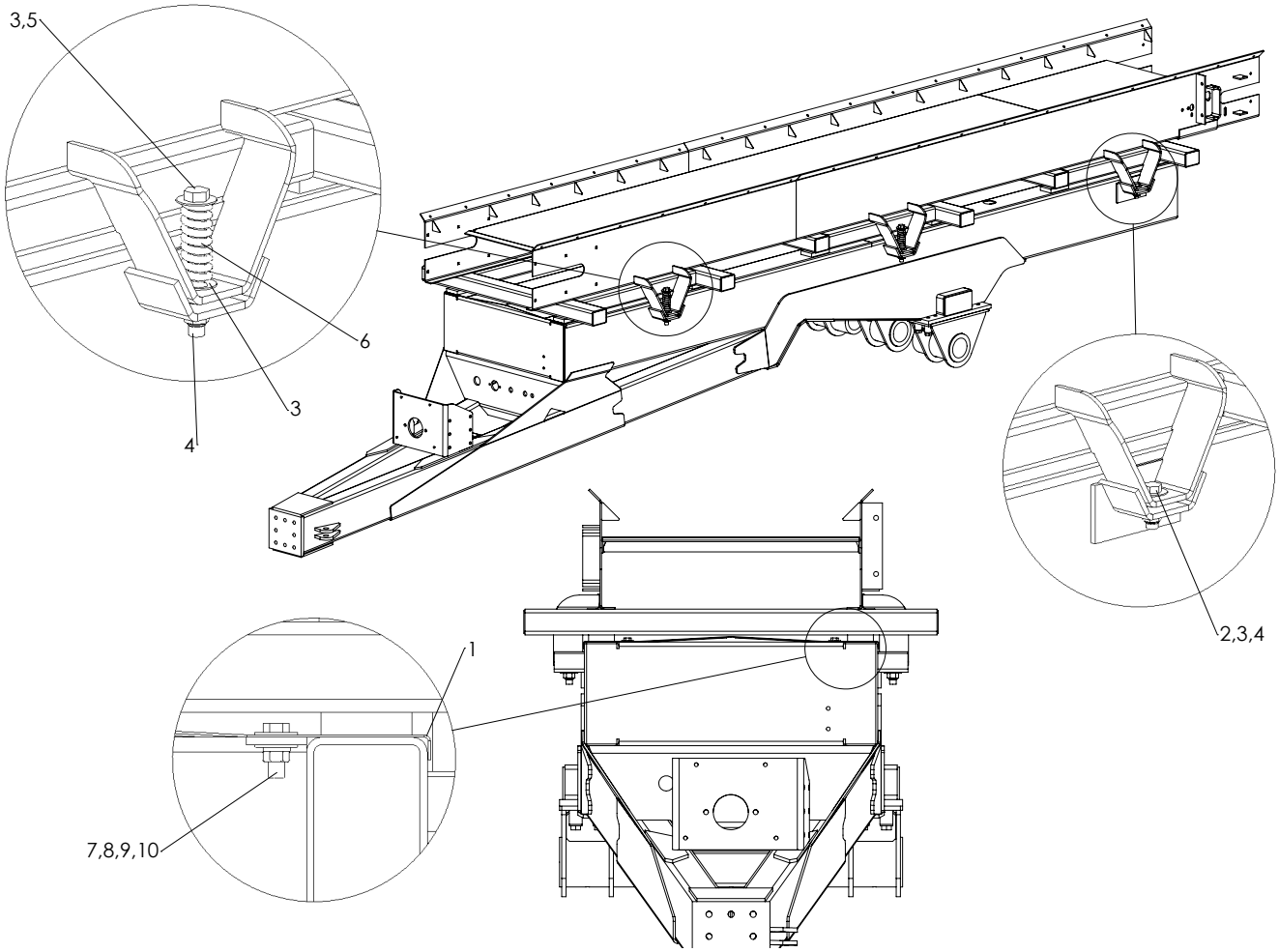
ITEM	PART NO.	DESCRIPTION	QTY
1	36384	Bar – Feedgate Slide 304	2
2	36385	Bar – Feedgate Slide 304	2
3	40750	Cap Screw – 1/4-20 x 1-1/4 SS	6
4	36418	Washer – Lock 1/4 SS	6
5	36412	Nut – Hex 1/4-20 SS	6
6	40704	Jack – Assy Feedgate	1
7	80798	Cap Screw – 3/8-16 x 2-3/4	1
8	39016	Nut – Lock Nylon 1/2	1
9	71827	Cap Screw – 3/8-16NC x 3 SS	1
10	72054	Nut – Lock Nylon 3/8	1
11	85002	U-Joint	1
12	20918	Pin – Roll 3/16 x 1	1
13	72641	Handle – Jack Feedgate	1
14	305232	Endgate – Wldmt Removable 102+6	1
15	98512	Feedgate – Wldmt 30” 409	1
16	86878	Pin – Hair	1
17	305078	Sealer – Endgate Bolt-in 304	2
18	36423	Washer – Flat 1/4 SS	2
19	*306349	Connector – Zerk Lock	2
20	*301338	Tube – 1/4 OD Black Nylon	11 Ft
21	*86951	Hardware Kit	1
	20128-X1	Cap Screw 1/2 x 1-1/4	4
	20695	Washer - Flat	8
	20714	Washer - Lock	4
	20646	Nut - Hex	4
22	*301336	Fitting - 90 Male Swivel 1/8 NPT	2
23	301332	Connector - Bulkhead	2
24	301333	Nut - Lock, Connector	2
25	301334	Fitting - Straight Male 1/4-28	2
26	6069	Zerk - Grease	2

* - Not Shown

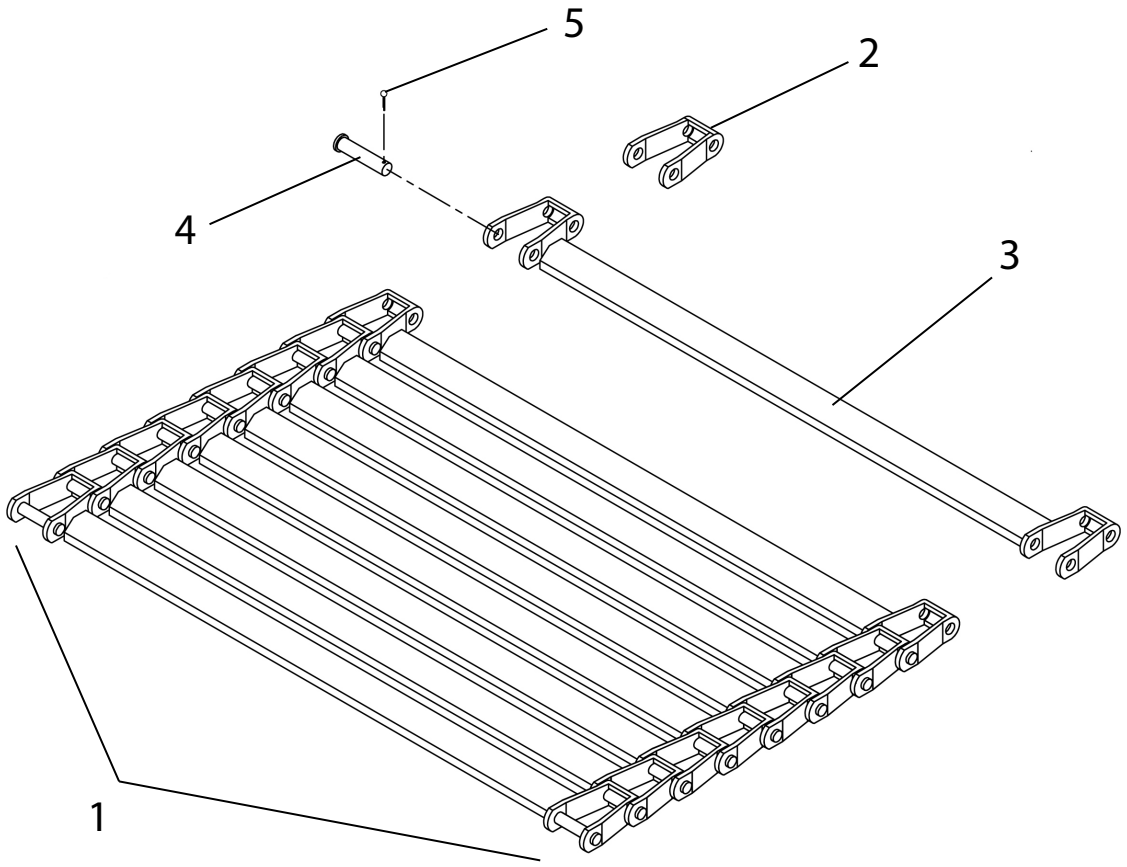
SIGHT WINDOW



ITEM	PART NO.	DESCRIPTION	QTY
1	305216	Window - Sight 8 x 20 x 1/4	1
2	305217	Frame - Sight Window 304	1
3	42033	Screw - Truss Head 1/4-20NC x 1 SS	6
4	36412	Nut - Hex 1/4-20NC SS	6
5	36418	Washer - Lock 1/4 SS	6



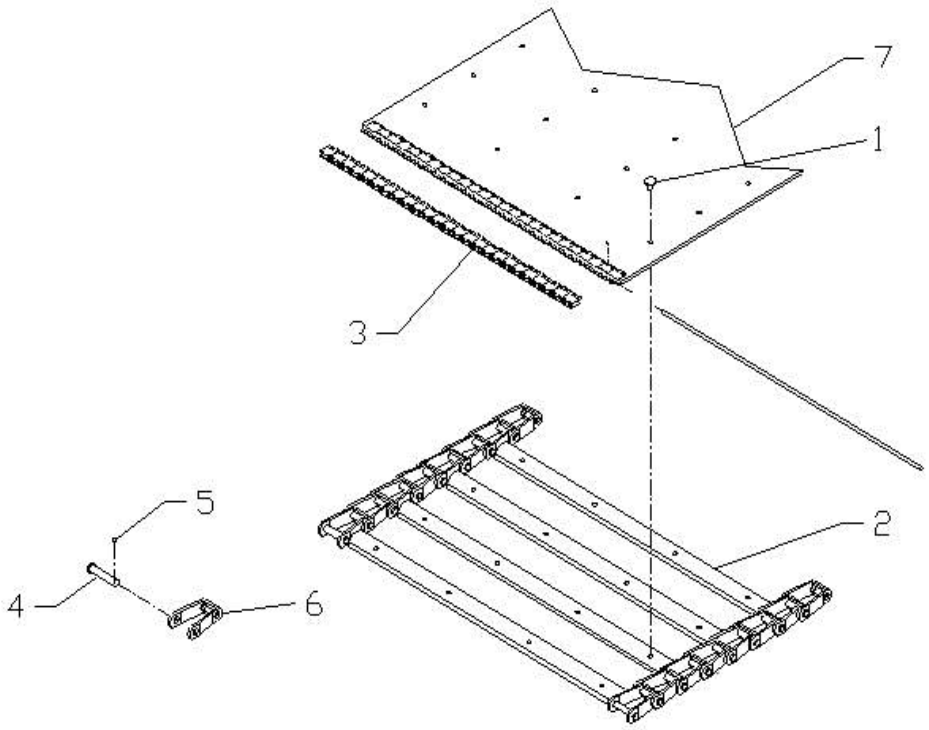
ITEM	PART NO.	DESCRIPTION	QTY
1	305222	Panel - Wldmt Under Body 304	2
2	20207	Cap Screw - 3/4-10 x 2-1/2	2
3	20698	Washer - Flat 3/4	16
4	20683	Nut - Lock 3/4	6
5	58560	Cap Screw - 3/4-10 x 7	4
6	305220	Spring - Compression	4
7	36411	Bolt - Carriage 1/2-13 x 1-1/2 SS	4
8	36426	Washer - Flat 1/2 SS	4
9	36422	Washer - Lock 1/2 SS	4
10	36416	Nut - Hex 1/2 SS	4



ITEM	PART NO.	DESCRIPTION	QTY
1		Full Chain Assembly - select from chart below	AR
2	36699	Link - Pintle Chain	AR
3	88857	Crossbar - Weld-in (Does NOT include chain links)	AR
4	36697	Pin - Pintle Chain	AR
5	20817	Pin - Cotter	AR

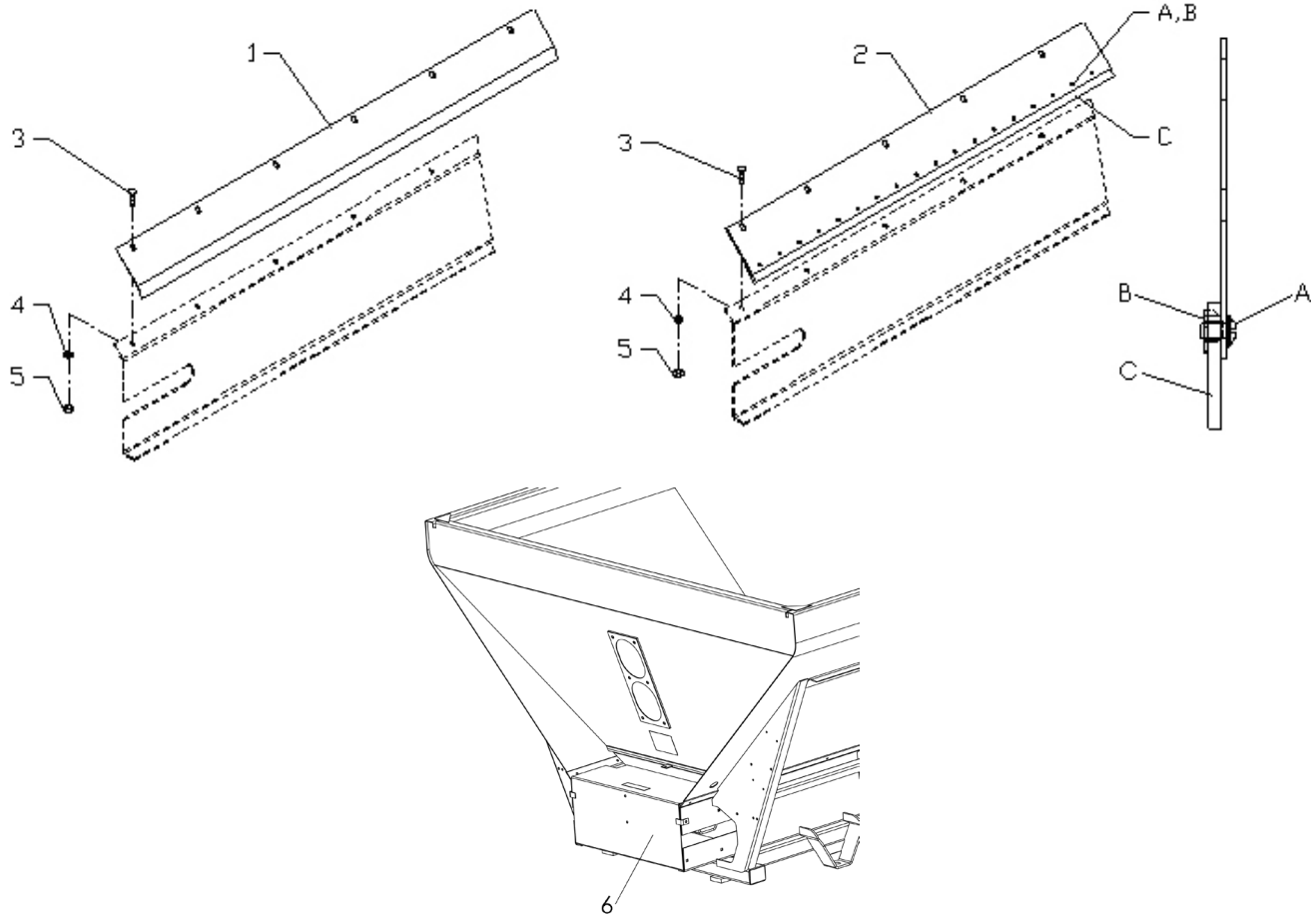
FULL ASSEMBLY

PART NO.	DESCRIPTION	16’
99239	Chain - 50 LK #3	1
97077	Chain - 60 LK #3	1
97078	Chain - 62 LK #3	1
36697	Pin - Pintle Chain	6
20817	Pin - Cotter	6

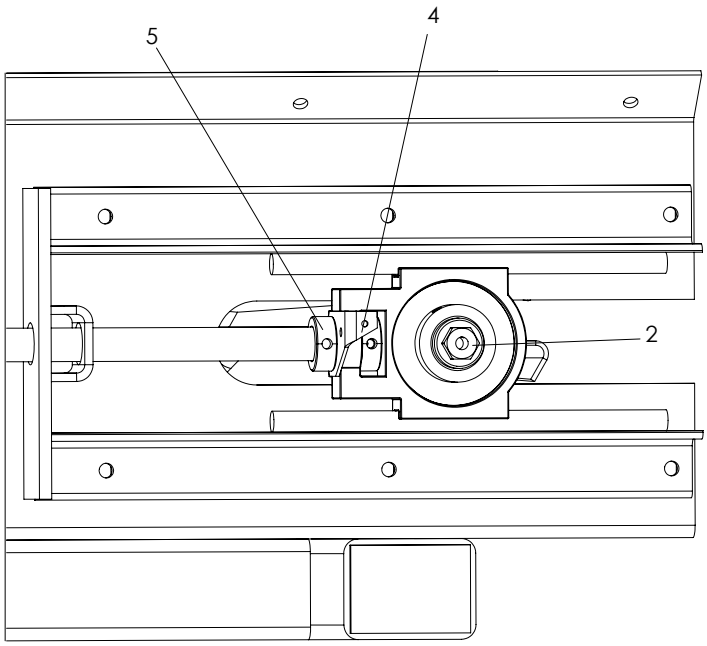


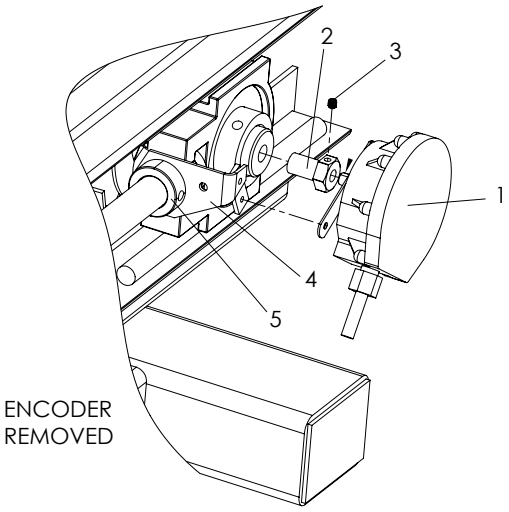
ITEM	PART NO.	DESCRIPTION	QTY
	305614-AJ	MOR 16' Unit	1
1	305646	Screw - #4 BOC 1/4 x 9/16 Torx Flat Head	AR
2	305643	Crossbar - Weld-in (Does NOT include chain links)	AR
3	73317	Kit – Splice	1
4	36697	Pin – Pintle Chain	AR
5	20817	Pin – Cotter	AR
6	36699	Link – Pintle Chain	AR
7	56377-AB	Belt – Conveyor	AR
8	305646	Screw - #4BOC 1/4 x 9/16 torx Flat Head	AR

* - Not Shown



ITEM	PART NO.	DESCRIPTION	QTY
1	308880	Chain Shield - RH #3 Chain	1
	308879	Chain Shield - LH #3 Chain	1
2	308881	Chain Shield #4 409	1
	303977	Chain Shield - MULTAPPLIER 7’	2
A	56258	Screw - Truss Head 1/4 x 1/2	AR
B	88931	Nut - Tee 1/4 x 1/4	AR
C	305975	Sealer - Belt, #4 BOC Shield (Specify Unit Length)	AR
3	71829	Bolt - Carriage 3/8 x 1	AR
4	36420	Washer - Lock 3/8 SS	AR
5	36414	Nut - Hex 3/8 SS	AR
6	305234	Guard - Wldmt Conveyor Extended	1





ENCODER
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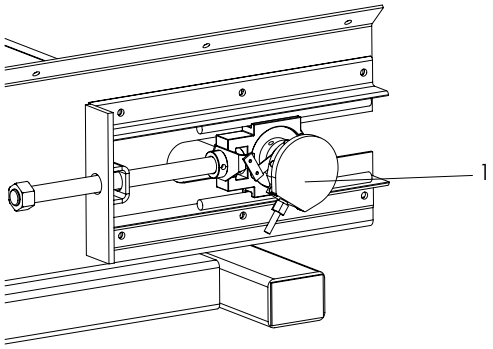
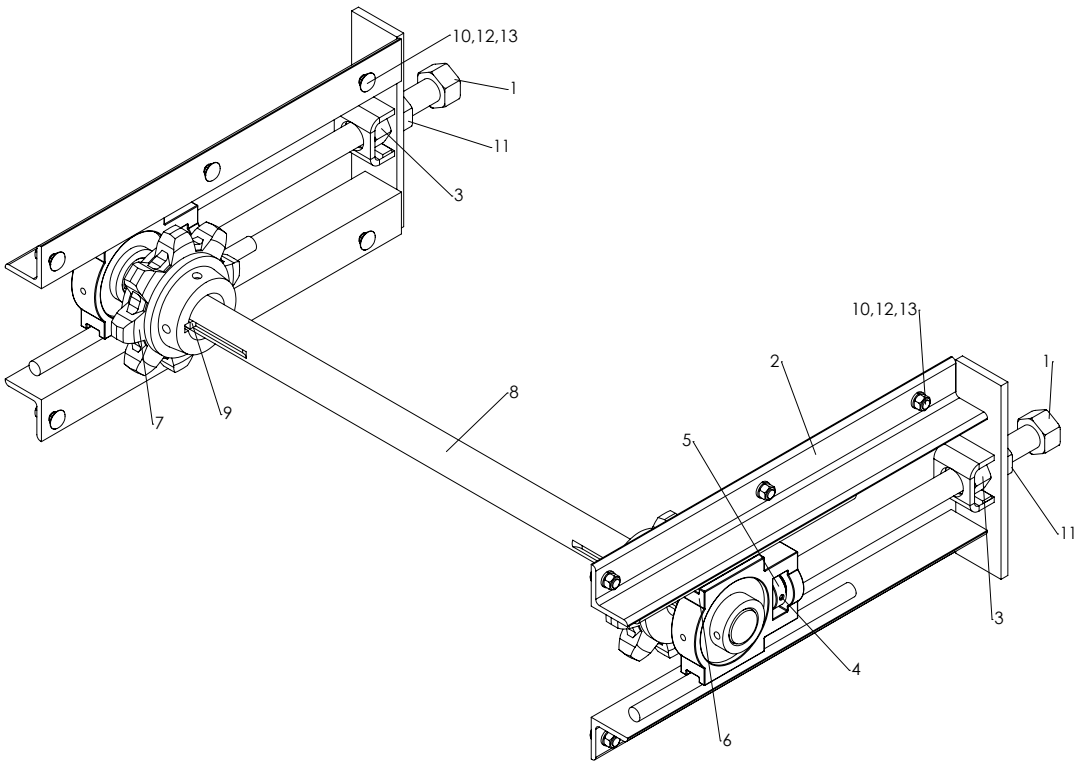
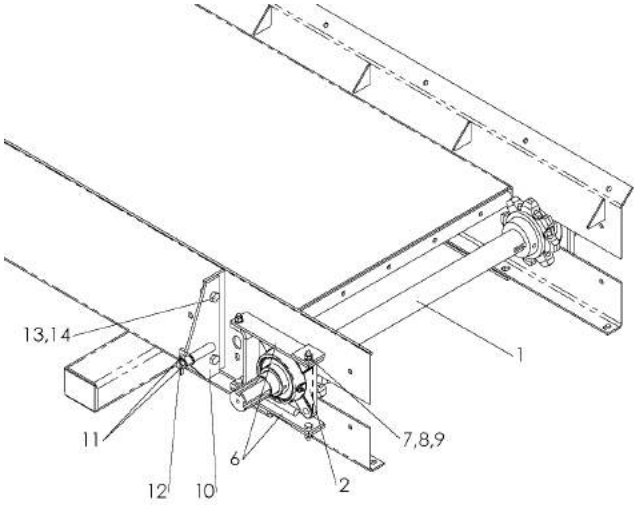
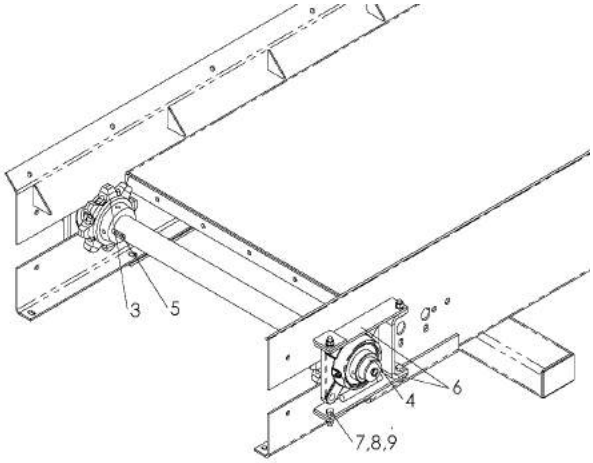


ITEM	PART NO.	DESCRIPTION	QTY
1	303994	Encoder – 180 with Hardware	1
2	310601	Coupler - Rate Sensor SS	1
3	310603	Screw - Set 1/4-20NC x 1/4 SS	1
4	81949	Bracket - Sensor, Idler Mount	1
5	2696	Collar - Set 1”	1



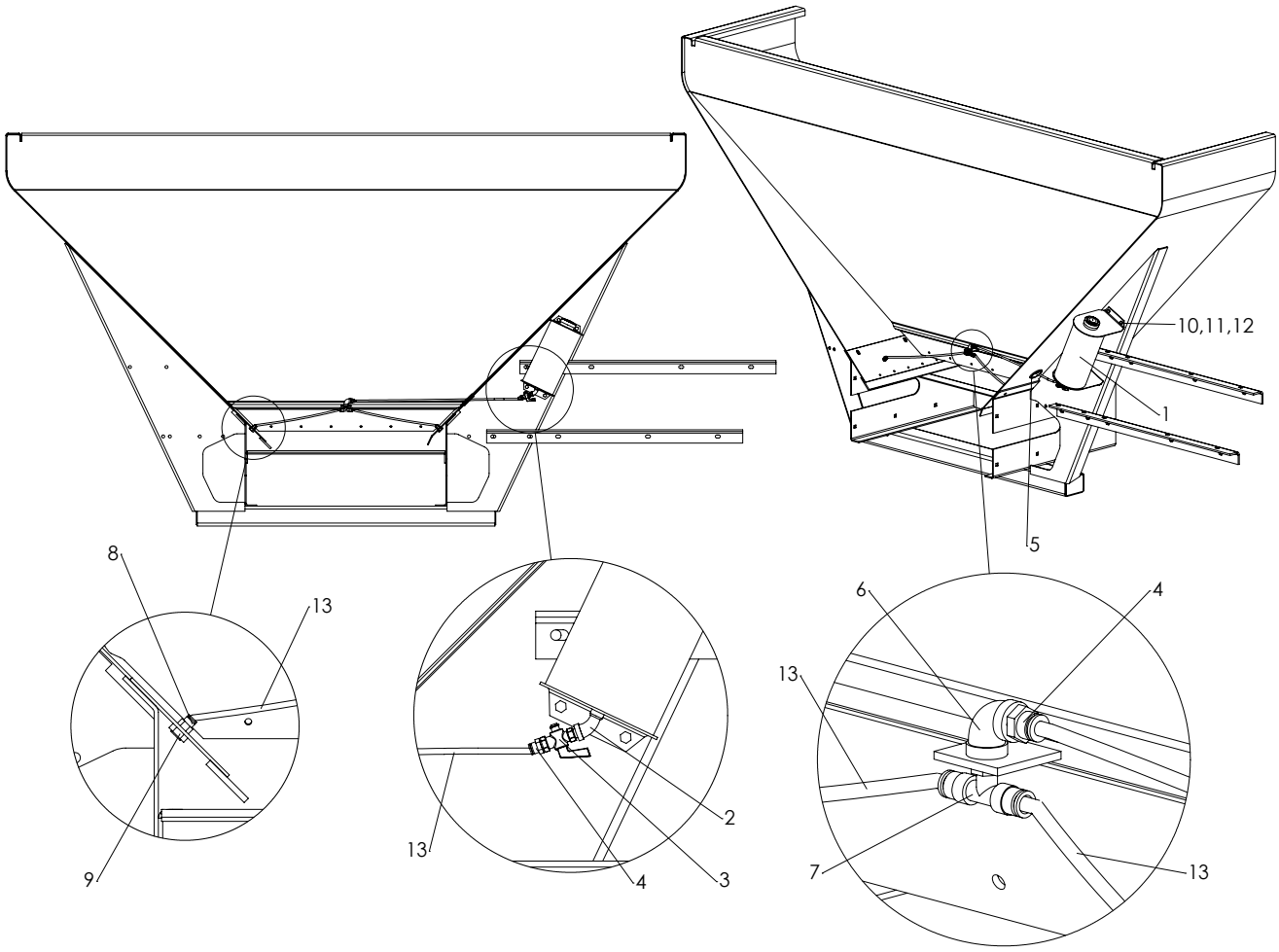
ITEM	PART NO.	DESCRIPTION	QTY
	97053	Shaft - Assy Idler 30", Includes 6-9	
1	36508	Tightener – Chain Wldmt	2
2	7895	Take-up Wldmt	2
3	39110	Nut Wldmt	2
4	20925	Pin – Roll 1/4 x 1 1/2	2
5	30725	Collar – Set 1"	2
6	22511	Bearing – Take-up	2
7	97051	Sprocket – Idler	2
8	82799	Shaft – Idler	1
9	2135	Key – Square 5/16 x 2 1/2	2
10	36414	Nut – Hex 3/8 SS	12
11	36509	Nut – Hex 1-8NC SS	2
12	36408	Bolt – Carriage 3/8 x 1 SS	12
13	36420	Washer – Lock 3/8 SS	12





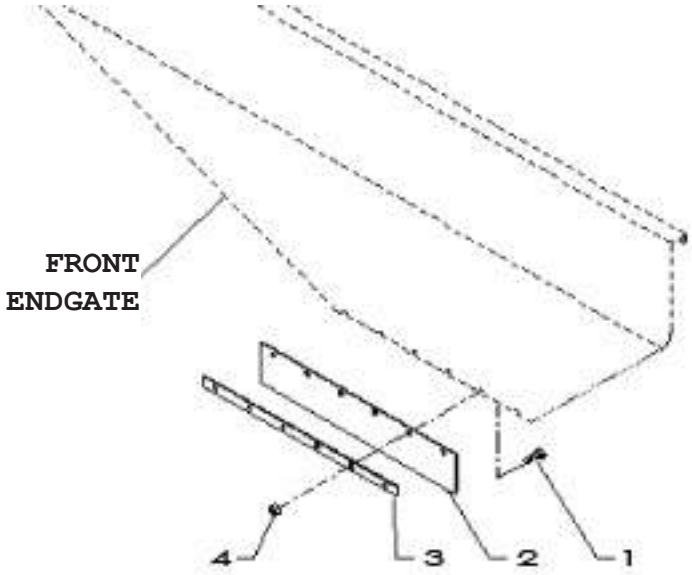
ITEM	PART NO.	DESCRIPTION	QTY
	97052	Shaft - Assy 30” Drive, Includes 1-5	
1	86999	Shaft – Drive	1
2	6465	Bearing	2
3	88276	Sprocket	2
4	20743	Screw – Set 5/16 x 3/8	1
5	6131	Key – Square 3/8 x 1 1/2	2
6	82885	Guide – Bearing SS 304	4
7	36399	Cap Screw - 3/8 x 1 1/4 SS	8
8	36420	Washer – Lock 3/8 SS	8
9	36414	Nut – Hex 3/8 SS	8
10	82552	Bracket – Torque Arm LH 304	1
11	2716	Washer - Flat 3/4	2
12	20833	Pin – Cotter 1/4 x 1 1/2	1
13	20128	Cap Screw - 1/2 x 1 1/4	2
14	20680	Nut – Lock 1/2	2
15		Gear Case Assy – Refer to “Gear Case Assy”	
16	*311172	V-Ring Seal	1

* Not Shown

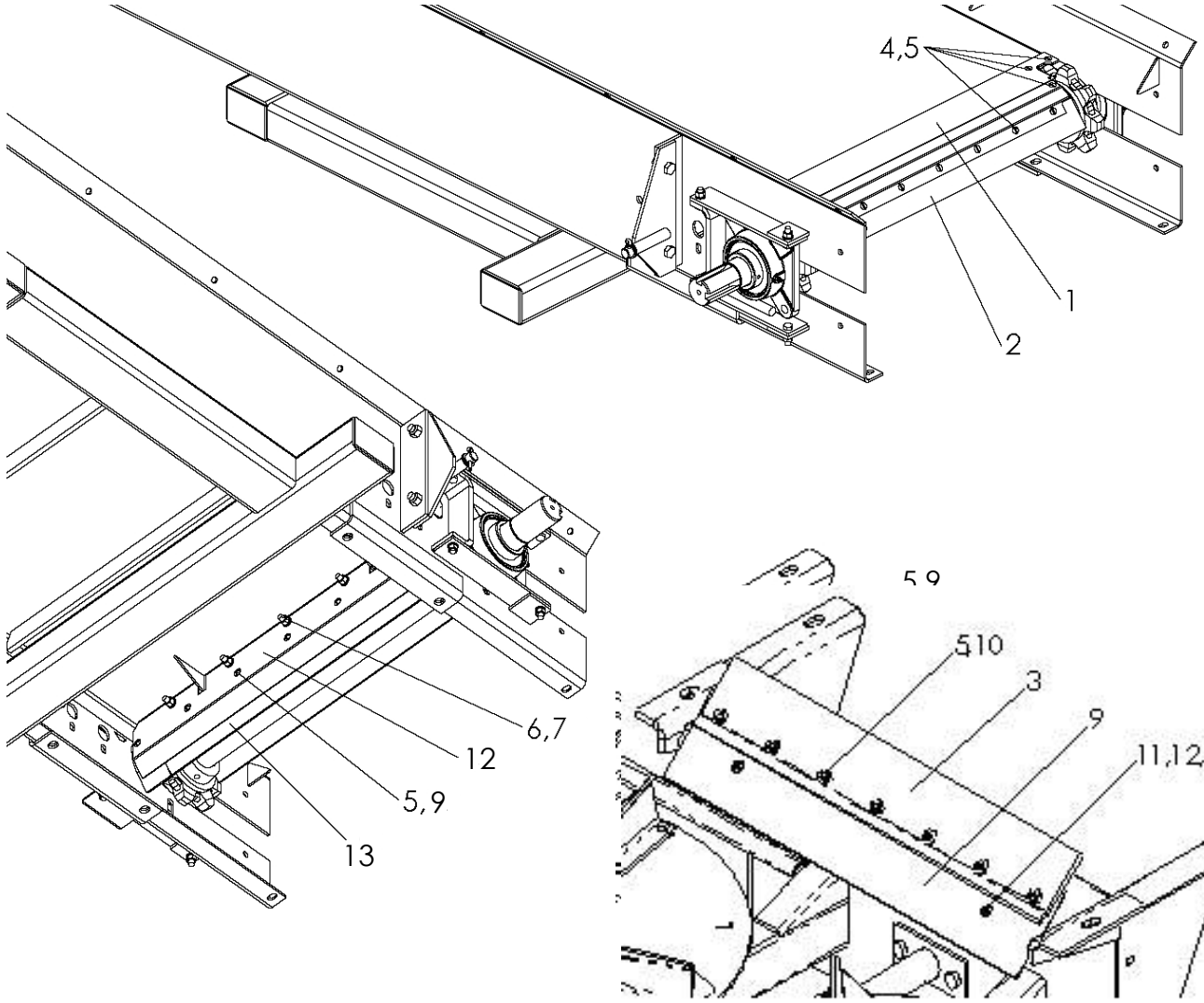


ITEM	PART NO.	DESCRIPTION	QTY
1	98051	Tank – Wldmt Oiler	1
2	21990	Elbow – Street 45°	1
3	82917	Valve – Shut-off	1
4	97806	Connector - Male	2
5	34129	Grommet – Rubber	1
6	6006	Elbow - 90° 1-1/4 NPT	1
7	97801	Tee – Male Branch Swivel	1
8	97802	Connector – Male	2
9	97803	Nut – Lock Brass 1/4 NPT	2
10	36393	Cap Screw – 1/4-20 x 3/4 SS	4
11	36418	Washer – Lock 1/4 SS	4
12	36412	Nut – Hex, 1/4-20 NC SS	4
13	82920	Tube – Clear Bulk 1/4 OD x 3/16 x 54”	4.5

WIPER FRONT



ITEM	PART NO.	DESCRIPTION	QTY
1	32446	Screw – TR HD 1/4 x 3/4	6
2	14743	Wiper – Belt, L3220G4	1
3	71656	Retainer – Belt, L3220G4	1
4	36412	Nut – Hex 1/4	6


4,5
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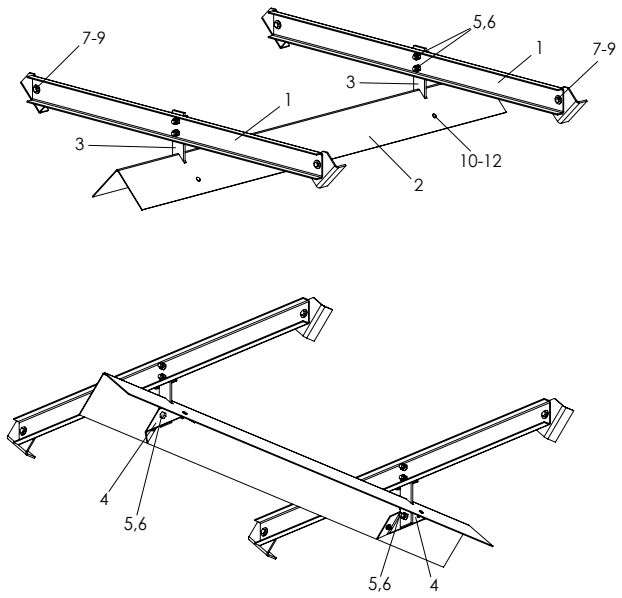
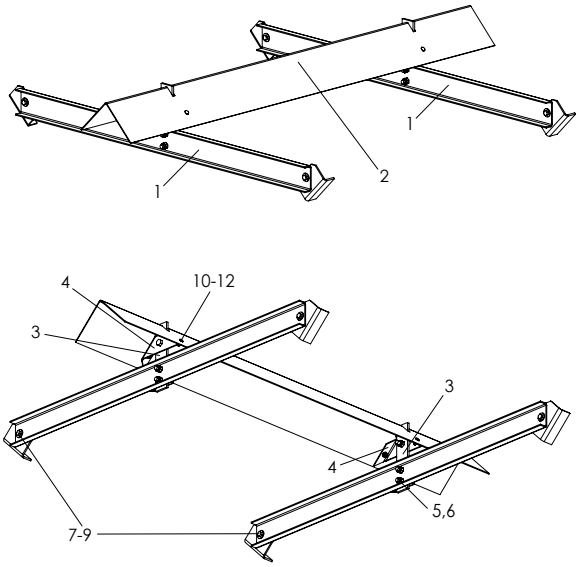
11,12,13

ITEM	PART NO.	DESCRIPTION	QTY
	98068	Lip – Rear 30” Assy, Includes 1, 2, 4, 5	
	304416	Wiper - Assy 30” Internal, Includes 5, 10, 14-15	
1	98030	Lip – Wldmt Rear	1
2	305331	Wiper – 30” Rear Lip	1
3	304418	Belt – Rear Wiper	1
4	56400	Screw – Flat Head 1/4 x 1/2	13
5	88931	Nut – Tee 1/4	27
6	36399	Cap Screw – 3/8 x 1	5
7	36420	Washer – Lock 3/8	5
8	36414	Nut – Hex 3/8	5
9	96746	Plate – Wiper Belt	1
10	56258	Screw – Truss Head 1/4 x 1/2	14
11	32446	Screw – Truss Head 1/4 x 3/4	2
12	36418	Washer – Lock 1/4	2
13	36412	Nut – Hex 1/4	2
14	304422	Mount – 30” Internal Wiper	1
15	304423	Rubber – 30” Internal Wiper	1

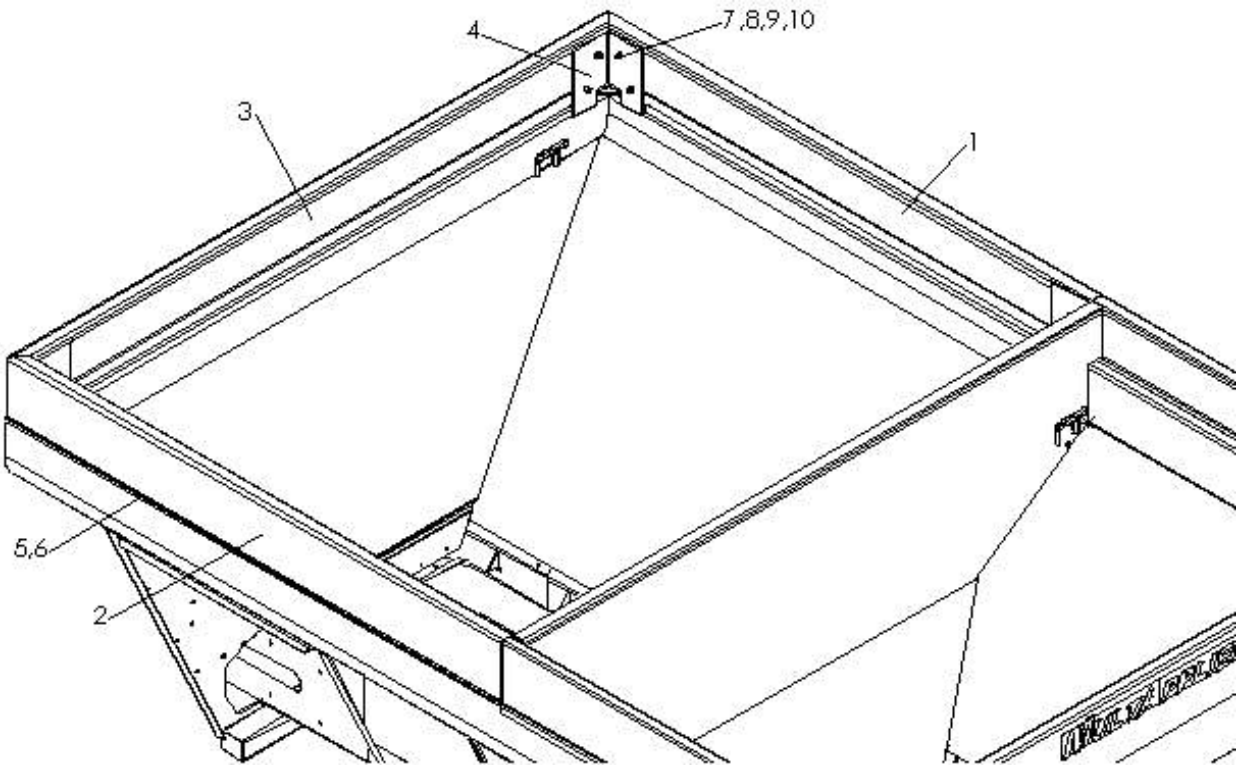


STANDARD (LOWER) ASSY



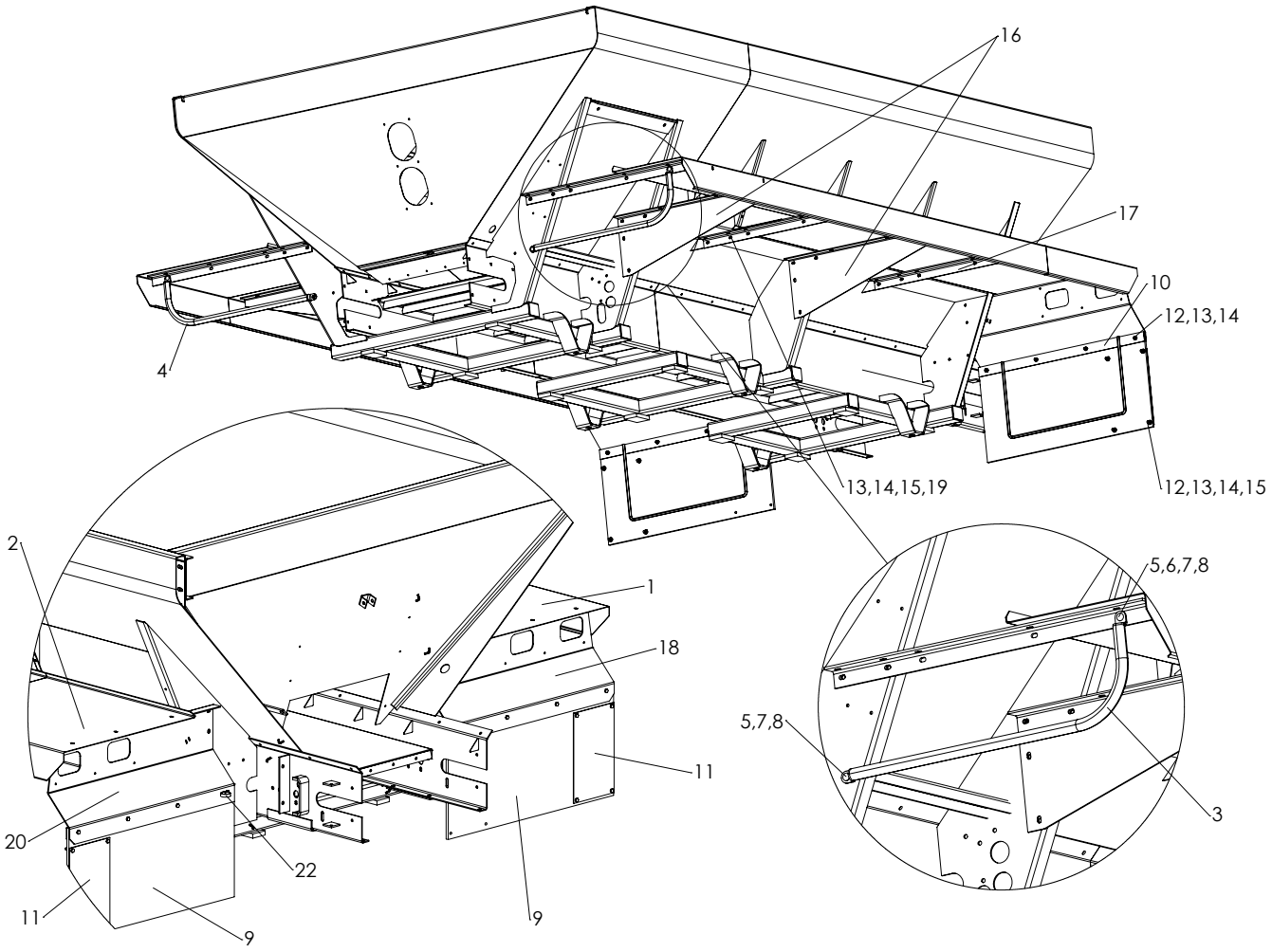
HIGH YIELD ASSY

ITEM	PART NO.	DESCRIPTION	QTY
1	81262	Hanger – V Wldmt	3
2	82618	Inverted V - 7' (11' - 12' Units)	1
	82619	Inverted V – 9' (13' - 14' Units)	1
	82620	Inverted V - 11' (15' - 16' Units)	1
3	308646	Bar – Adjusting	3
4	302371	Bracket – V Bolt-on	3
5	58800	Cap Screw – 5/8-11NC x 1-3/4 SS	9
6	41762	Nut - Lock 5/8-11NC SS	9
7	36402	Cap Screw - 1/2-13NC x 1-1/4 SS	6
8	36426	Washer - Flat 1/2 SS	6
9	39016	Nut - Lock 1/2-13NC SS	6
10	42639	Bolt - Carriage 5/16-18NC x 1 SS	6
11	36424	Washer - Flat 5/16 SS	6
12	42221	Nut - Lock 5/16-18NC SS	6



ITEM	PART NO.	DESCRIPTION	QTY
1	98752-AC	Side Board – RH Wldmt 14’ 304	1
2	98755-AC	Side Board – LH Wldmt 14’ 304	1
3	98758	Side Board – Front Wldmt 304	1
4	86867	Pocket – Side Board	2
5	53950	Rubber – 1/4 x 2-1/4	AR
6	96254-AB	Adhesive – Loctite 454*	AR
7	36398	Cap Screw – 3/8 x 1 SS	12
8	36425	Washer – Flat 3/8 SS	12
9	36420	Washer – Lock 3/8 SS	12
10	36414	Nut – Hex 3/8 SS	12

* - Use adhesive to attach rubber to bottom of side boards.


16
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13,14,15,19
12,13,14,15
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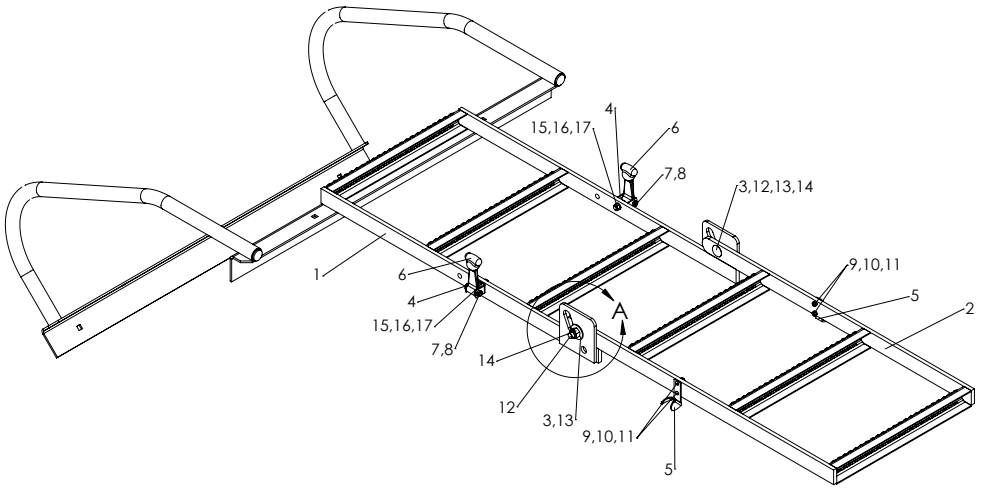
5,7,8
3

ITEM	PARTNO.	DESCRIPTION	QTY
1	305833	Fender – RH 16’ Unit 409	1
2	305834	Fender – LH 16’ Unit 409	1
3	306053	Guard - Wldmt Tire LH	1
4	306054	Guard - Wldmt Tire RH	1
5	20319	Bolt - Carriage 3/8 x 1-1/4	3
6	20693	Washer – Flat 3/8	2
7	20712	Washer – Lock 3/8	3
8	20644	Nut – Hex 3/8	3
9	305828	Mudflap - 20 x 40	2
10	305425	Antisail - Mudflap Wldmt	2
11	305422	Plate - Mudflap 304	2
12	34858	Cap Screw - 3/8 x 1-1/2 SS	16
13	36420	Washer – Lock 3/8 SS	AR
14	36414	Nut – Hex 3/8 SS	AR
15	36425	Washer – Flat 3/8 SS	AR
16	96970	Support - Front RH 304	2
	96971	Support - Front LH 304	2
17	96972	Angle - Fender 304	6
18	305210	Support - Rear Fender RH 304 w/6” Offset	1
19	36408	Bolt - Carriage 3/8 x 1	AR
20	305211	Support - Rear Fender LH 304 w/6” Offset	1
21	*305276	Angle - Decal Mount	2
22	*9011-0-0049	Clamp - Insulated Closed	1

AR – As Required * - Not Shown


4
15,16,17
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7,8
3,12,13,14
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7,8
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9,10,11
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9,10,11
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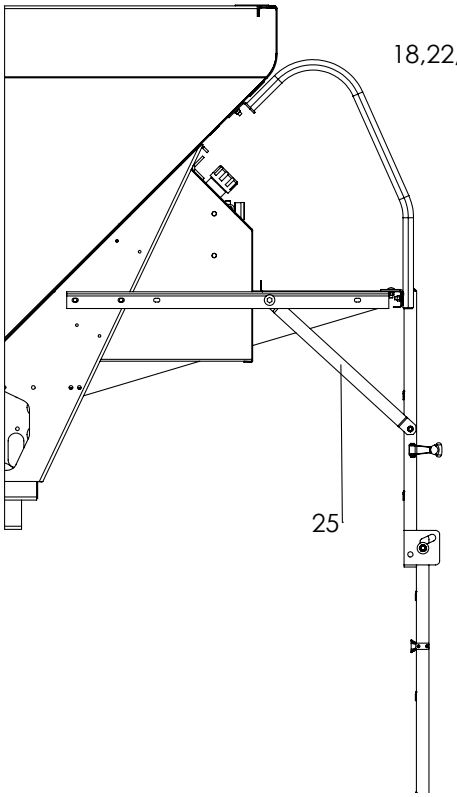
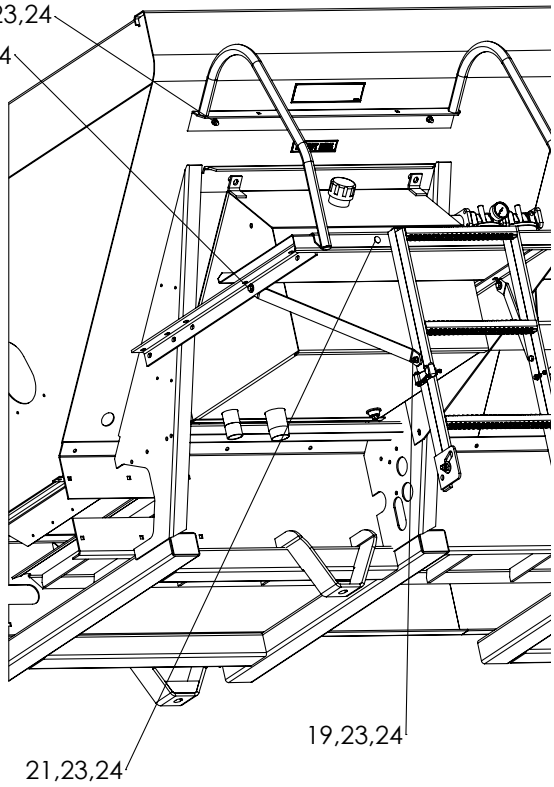
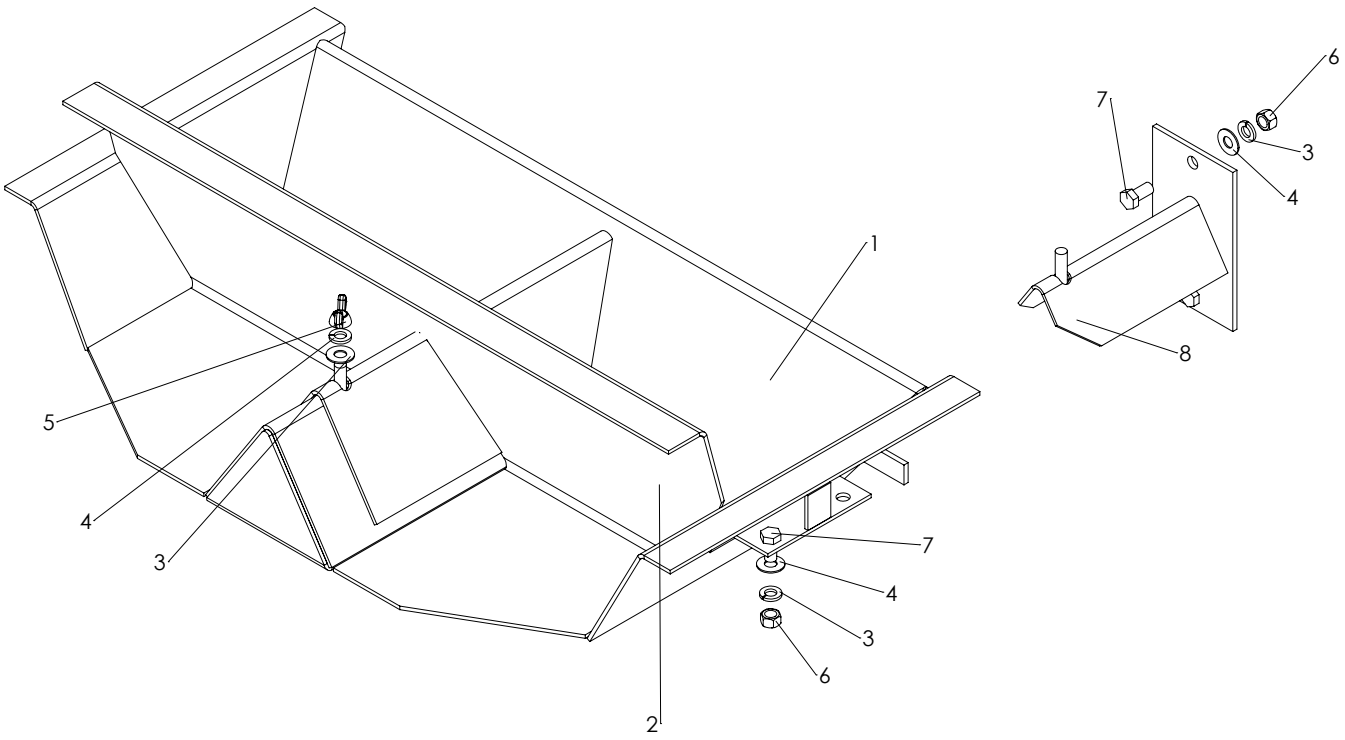

25

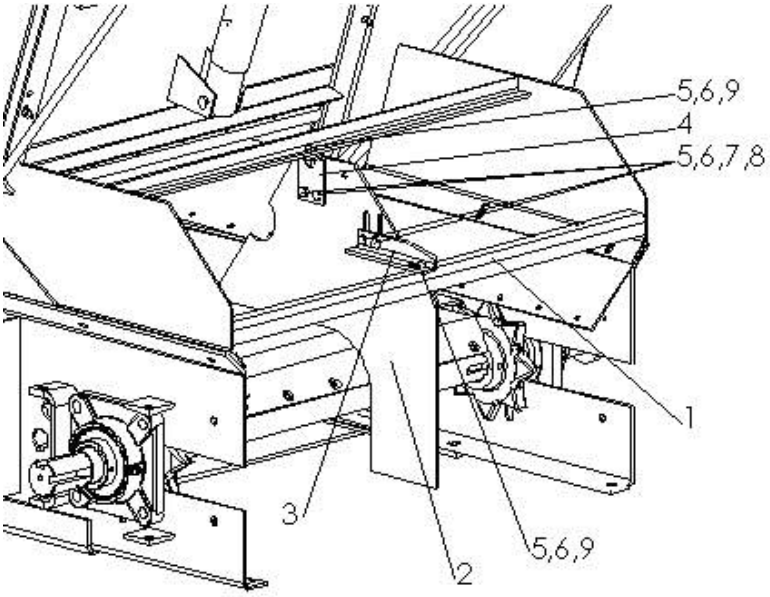

20,23,24
18,22,23,24
19,23,24
21,23,24

ITEM	PART NO.	DESCRIPTION	QTY
	305279	Ladder - Assy Folding	
		Includes: 1-17	
1	306114	Ladder - Wldmt Upper	1
2	305839	Ladder - Wldmt Lower	1
3	88638	Tube - 3/4 x 11GA x 3/8 SS	2
4	73344	Bracket - Anchor	2
5	150043	Bracket - Hood	2
6	73343	Hook - Rubber	2
7	20007	Cap Screw - 1/4-20 x 1-1/2	2
8	20676	Nut - Lock 1/4-20NC	2
9	20572	Screw - #10-24 x 3/4	4
10	20709	Washer - Lock 1/4-20NC	4
11	20641	Nut - Hex #10-20NC	4
12	20366	Bolt - Carriage 1/2-13 x 1-1/2	2
13	20695	Washer - Flat 1/2	2
14	20680	Nut - Lock 1/2-13NC	2
15	20035	Cap Screw - 5/16-18 x 7/8	2
16	20711	Washer - Lock 5/16	2
17	20643	Nut - Hex 5/16-18NC	2
18	20069	Cap Screw - 3/4 x 1-1/2	2
19	20068	Cap Screw - 3/8x 1-1/4	2
20	20067	Cap Screw - 3/8 x 1	2
21	20318	Bolt - Carriage 3/8 x 1	4
22	20693	Washer - Flat 3/8	2
23	20712	Washer - Lock 3/8	10
24	20644	Nut - Hex 3/8	10
25	305792	Strap - Support Ladder	2



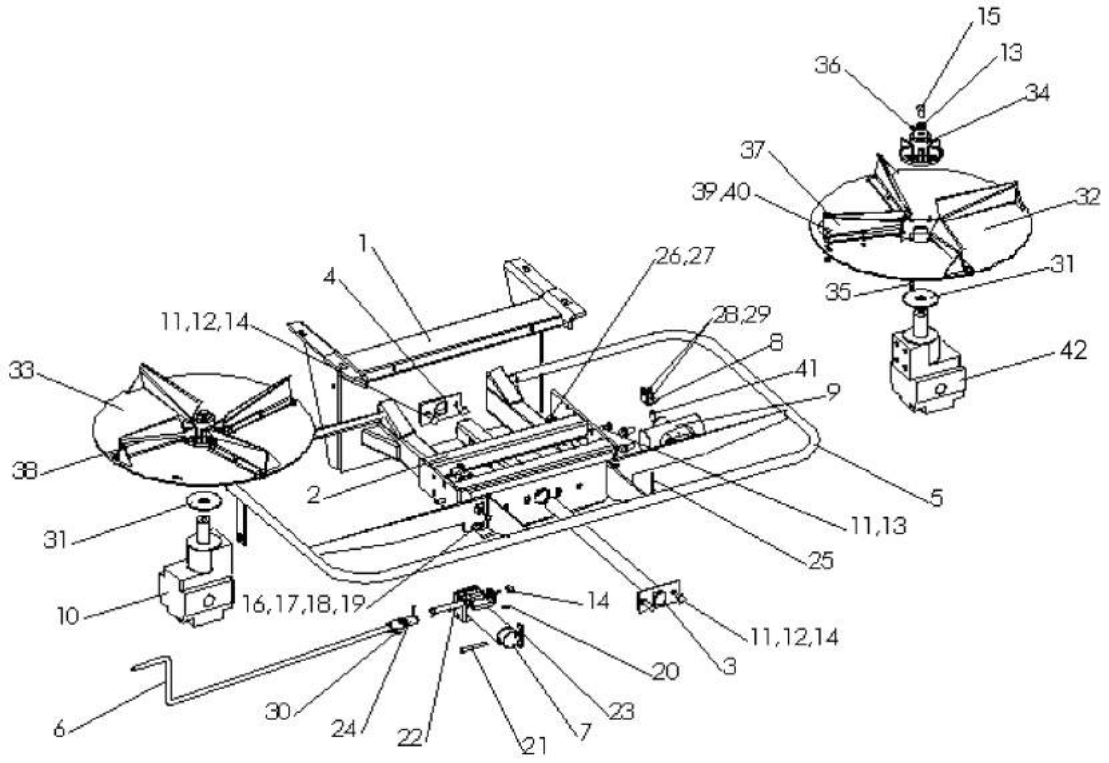
ITEM	PART NO.	DESCRIPTION	QTY
	87108	Divider – Material Assy	
1	87054	Divider – Wldmt	1
2	87064	Deflector – Rear Wldmt	1
3	36425	Washer – Flat 3/8 SS	5
4	36420	Washer – Lock 3/8 SS	5
5	20673	Nut – Wing 3/8	1
6	36414	Nut – Hex 3/8 SS	4
7	36398	Cap Screw – 3/8 x 1 SS	4
8	87381	Mount – Divider Wldmt	1

Item 8 mounts to front guard.



ITEM	PART NO.	DESCRIPTION	QTY
1	86788	Bracket – Wldmt Support	1
2	82288	Panel – Hillside Divider	1
3	56879	Bracket – Clamp	1
4	56880	Angle – Clamp	1
5	34580	Cap Screw – 5/16 x 1 SS	6
6	36424	Washer – Flat 5/16 SS	8
7	36419	Washer – Lock 5/16 SS	4
8	36413	Nut – Hex 5/16 SS	4
9	42221	Nut – Lock 5/16	2

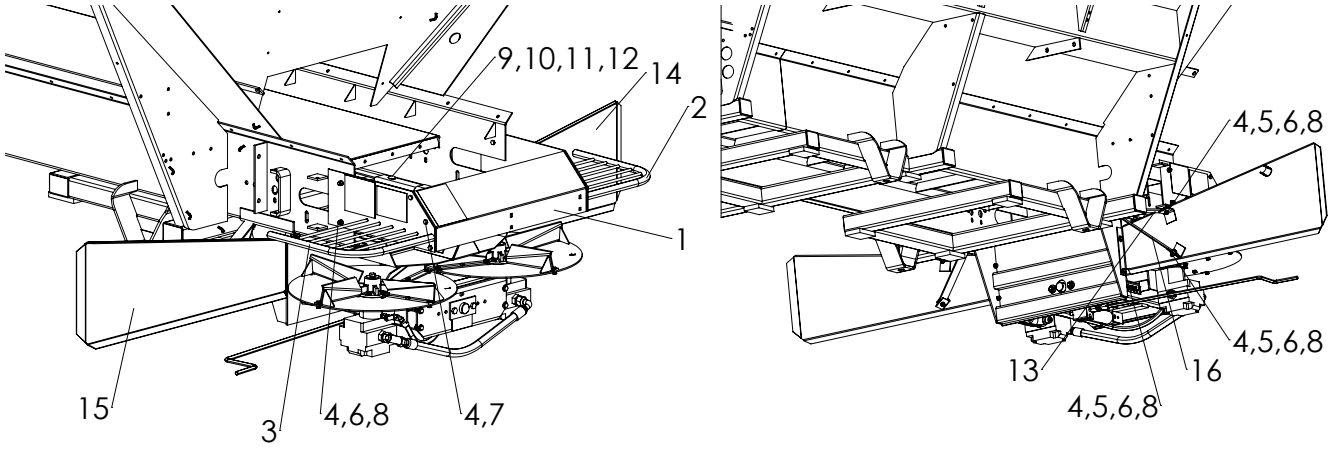
Note: Use chain shield hardware to attach Item 1 to sills.



ITEM	PART NO.	DESCRIPTION	QTY
	305946	Hydraulic Fan Assy	
	87105-X2	Disc - Assy RH, Includes 32, 34-36, 39-40	
	87106-X2	Disc - Assy LH, Includes 33-36, 38-40	
1	87090	Plate – Back	1
2	87082	Mount – Motor Wldmt	1
3	87021	Shaft – Support Wldmt	1
4	87023	Plate – Shaft Mount	1
5	87032-X1	Guard – Spinner Wldmt	1
6	87024	Handle	1
7	87170	Jack – Coated Assy	1
8	87025	Angle – Valve Mount	1
9	71781	Valve – Flow Divider	1
10	305948	Motor – Assy LH, see *Spinner Hydraulics* parts list	1
11	36402	Cap Screw - 1/2 x 1-1/4 SS	12
12	36426	Washer – Flat 1/2 SS	4
13	36422	Washer – Lock 1/2 SS	10
14	39016	Nut – Lock 1/2 SS	5
15	36401	Cap Screw - 1/2 x 1 SS	2
16	36398	Cap Screw - 3/8 x 1 SS	4

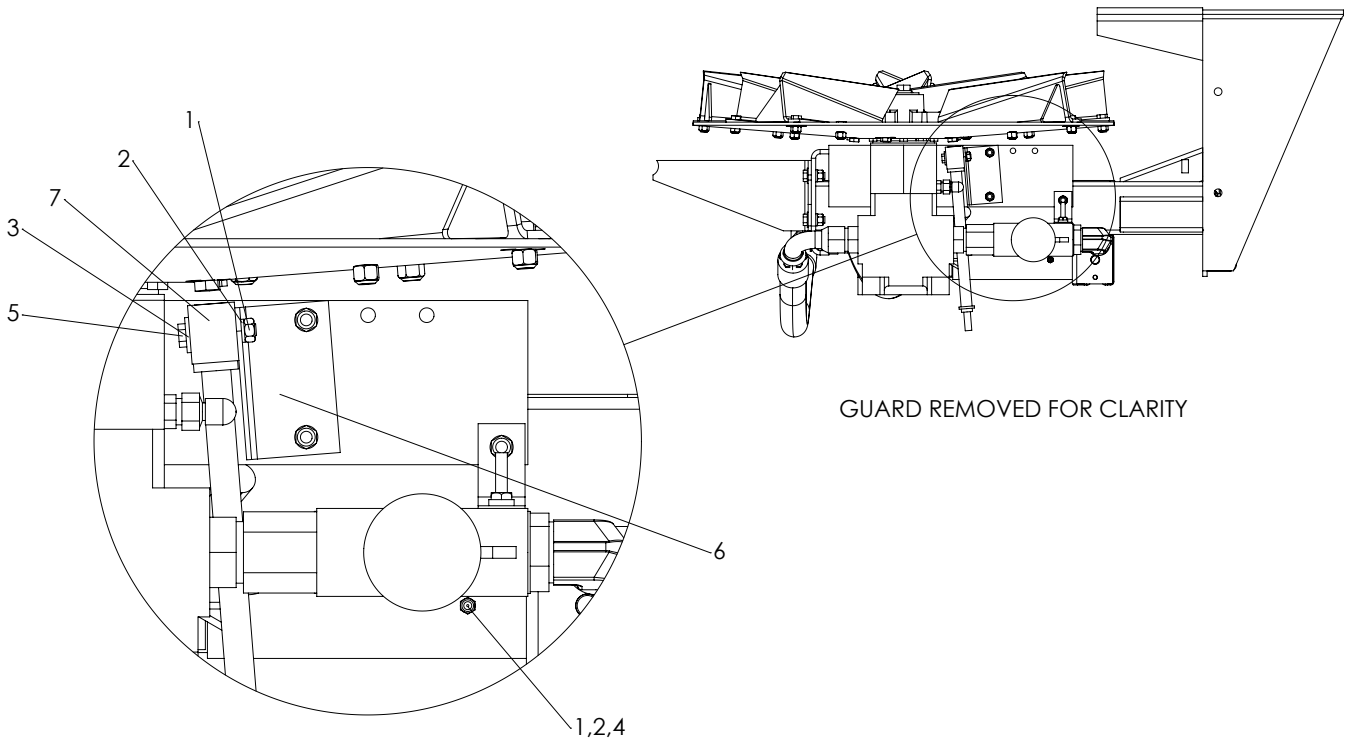
ITEM	PART NO.	DESCRIPTION	QTY
17	36425	Washer – Flat 3/8 SS	4
18	36420	Washer – Lock 3/8 SS	4
19	36414	Nut – Hex 3/8 SS	4
20	6072	Zerk – Grease	4
21	6547	Pin – Clevis	1
22	80798	Cap Screw – 1/2 x 3-1/4 SS	1
23	36429	Pin – Hair SS	1
24	85002	U-Joint	1
25	34865	Cap Screw – 1/4 x 2 1/4 SS	1
26	36395	Cap Screw – 1/4 x 1 SS	1
27	36423	Washer – Flat 1/4 SS	1
28	36418	Washer – Lock 1/4 SS	2
29	36412	Nut – Hex 1/4 SS	2
30	20918	Pin – Roll	2
31	305571	Washer – Rubber	2
32	57830-X2	Disc – Distributor RH	1
33	57830-X3	Disc – Distributor LH	1
34	10877	Hub	2
35	20004	Cap Screw - 1/4 x 7/8	12
36	20676	Nut - Lock 1/4	12
37	309091	Fin - RH Wldmt	4
38	309092	Fin – LH Wldmt	4
39	20035	Cap Screw – 5/16 x 3/4	24
40	20677	Nut – Lock 5/16	24
41	76825	Hinge - Pipe 1/4 x 1	1
42	305949	Motor - Assy RH, see *Spinner Hydraulics* parts list	1
43	*36940	Bolt – Carriage 1/2 x 2 SS	4
44	*36426	Washer – Flat 1/2 SS	4
45	*36422	Washer – Lock 1/2 SS	4
46	*36416	Nut – Hex 1/2 SS	4

* - Not Shown – 43 through 46 used to attach spinner to sills.

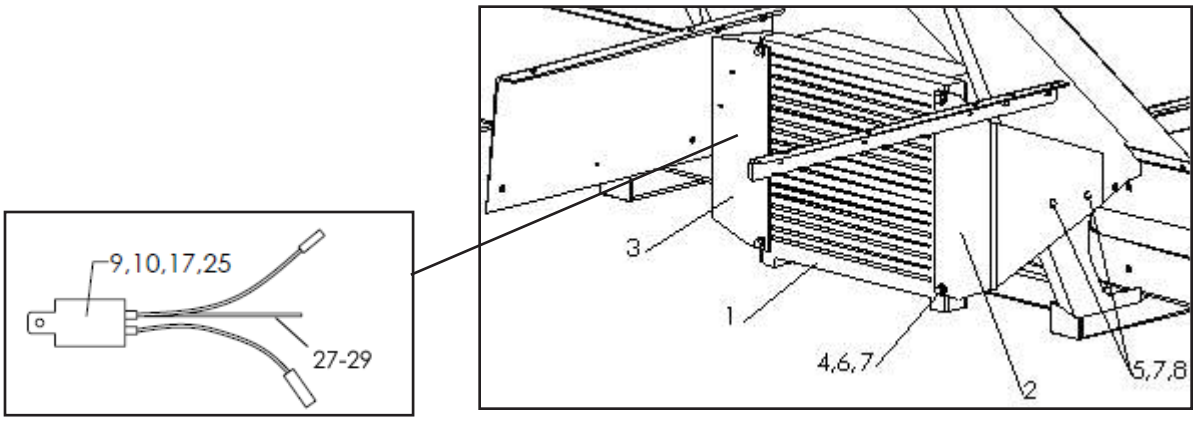


WARNING Guards are intended to reduce hazard of entanglement with machinery and injury. All guards must be installed per this drawing before spreader is put into operation.

ITEM	PART NO.	DESCRIPTION	QTY
1	305712	Guard – Center Section Wldmt	1
2	87027-X1	Guard – RH Wldmt	1
3	87031-X1	Guard – LH Wldmt	1
4	36398	Cap Screw - 3/8 x 1 SS	18
5	36425	Washer – Flat 3/8 SS	8
6	36420	Washer – Lock 3/8 SS	12
7	72054	Nut – Lock 3/8 SS	6
8	36414	Nut – Hex 3/8 SS	12
9	36940	Bolt – Carriage 1/2 SS	2
10	36426	Washer – Flat 1/2 SS	2
11	36422	Washer – Lock 1/2 SS	2
12	36416	Nut – Hex 1/2 SS	2
13	87068	Bar – Stiffener	2
14	305043	Shield – RH Wldmt 108”	1
15	305044	Shield – LH Wldmt 108”	1
16	305040	Bar - Stiffener Lower 304	2



ITEM	PART NO.	DESCRIPTION	QTY
1	36412	Nut – Hex 1/4 SS	6
2	36418	Washer – Lock 1/4 SS	6
3	36423	Washer – Flat 1/4 SS	3
4	36393	Cap Screw – 1/4 x 3/4 SS	2
5	42448	Cap Screw – 1/4 x 1-1/2 SS	2
6	86672	Bracket	1
7	89011	Sensor – Assy	1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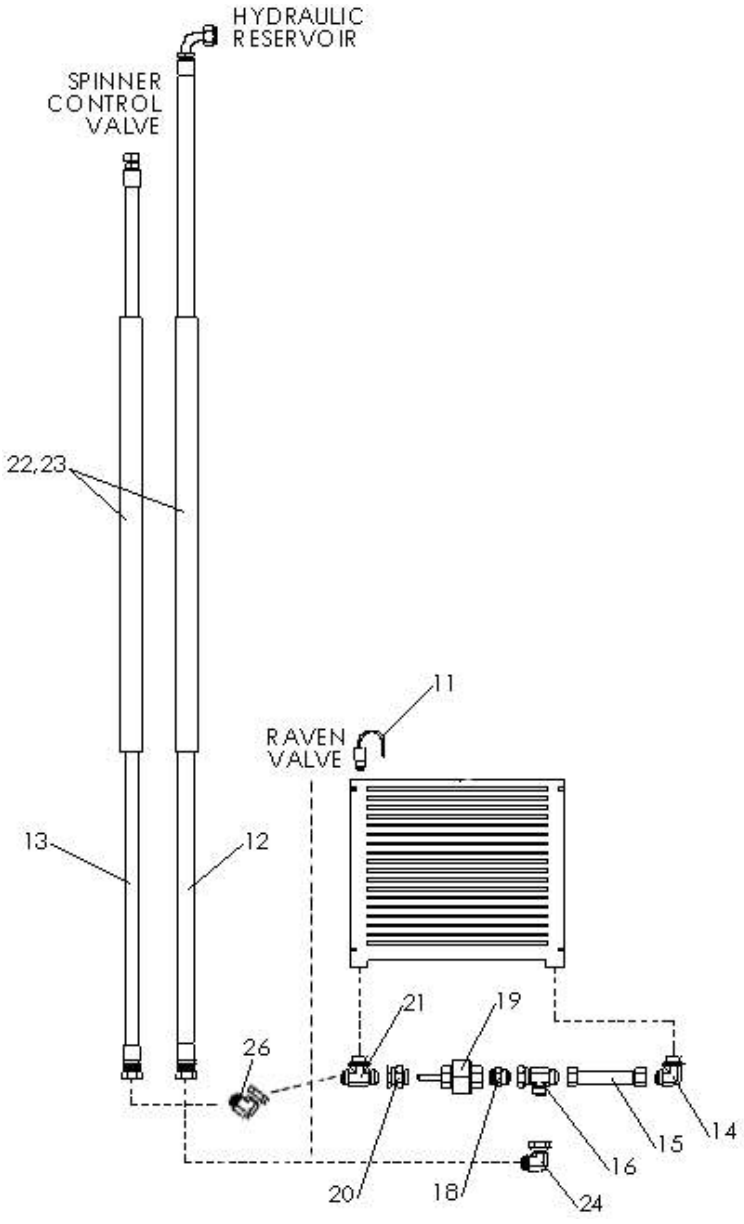
HYDRAULIC RESERVOIR
SPINNER CONTROL VALVE
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11
RAVEN VALVE
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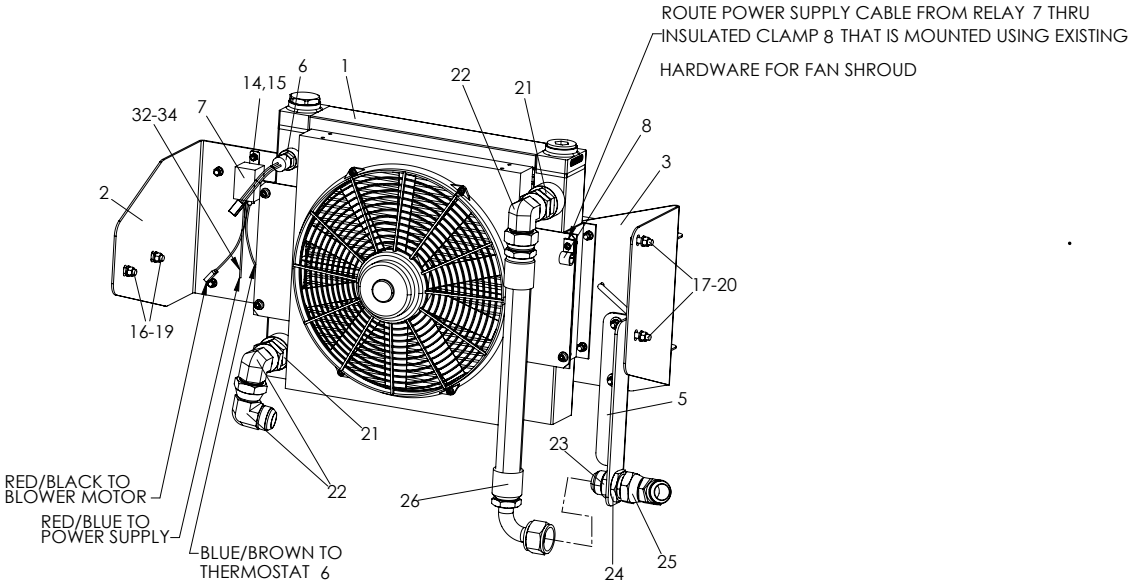
ITEM	PART NO.	DESCRIPTION	QTY
1	NA	Cooler – Assy 50 Gallon	1
2	96918	Bracket – Front Cooler Mount	1
3	96933	Bracket – Rear Cooler Mount	1
4	96921	Cap Screw – M10 x 20 SS	4
5	20318	Bolt – Carriage 3/8 x 1	4
6	36425	Washer – Flat 3/8 SS	4
7	36420	Washer – Lock 3/8 SS	8
8	36414	Nut – Hex 3/8 SS	4
9	96750-X1	Relay – 12 VDC 40A	1
10	36393	Cap Screw - 1/4-20 x 3/4 SS	1
11	96927	Switch – Temp 117°	1
12	98646	Hose – Assy 1-1/4 x 115	1
13	302447	Hose – Assy 1-1/4 x 58	1
14	96916	Adapter – Elbow 90°	1
15	96924	Tube – Assy 1-1/4 x 7-1/4, Includes:	1
16	96909	Tee – Run	1
17	36418	Washer - Lock 1/4 SS	1
18	96907	Adapter – Connector	1
19	96932	Valve – Check	1
20	96905	Adapter – Connector	1
21	96914	Tee – Branch	1
22	96906	Sleeve – Abrasive	8 ft
23	96942	Tie – Wrap 29”	4
24	98568	Adapter – Elbow 90°	1
25	36412	Nut - Hex 1/4-20NC SS	1
26	96910	Elbow - 45°	1
27	303730-AB	Connector - Female Sealed Tower	1
28	303730-CC	Terminal - Female Sealed	2
29	303730-EC	Seal - Cable	2


ROUTE POWER SUPPLY CABLE FROM RELAY 7 THRU
INSULATED CLAMP 8 THAT IS MOUNTED USING EXISTING
HARDWARE FOR FAN SHROUD
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14,15
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32-34
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17-20
16-19
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RED/BLACK TO
BLOWER MOTOR
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26
RED/BLUE TO
POWER SUPPLY
BLUE/BROWN TO
THERMOSTAT 6
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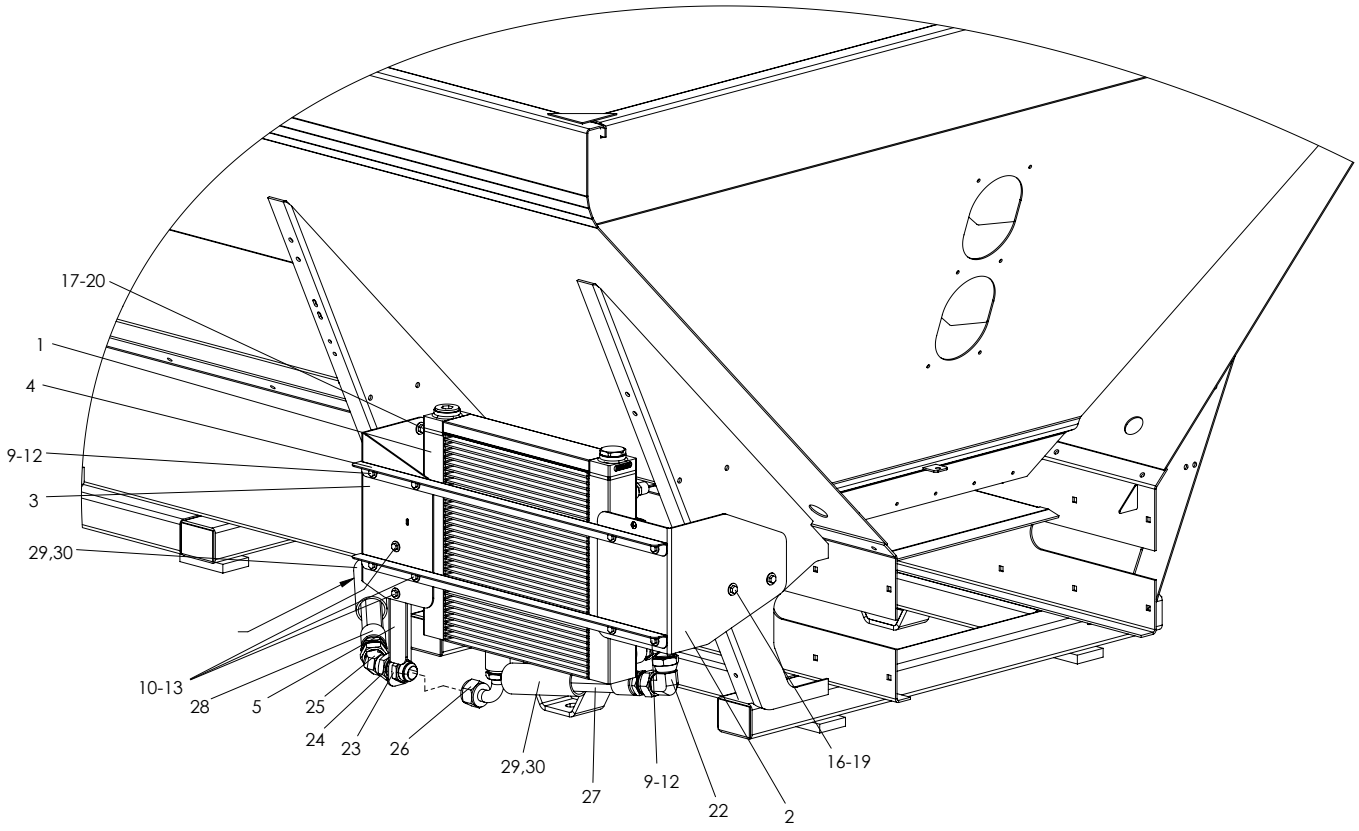
17-20
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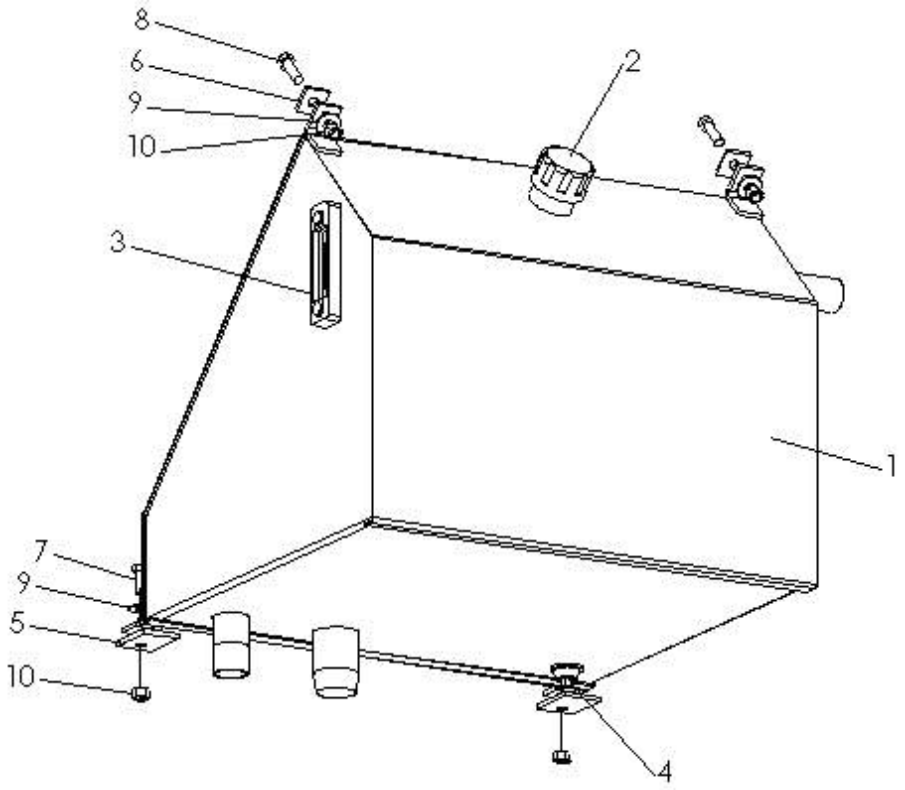
16-19

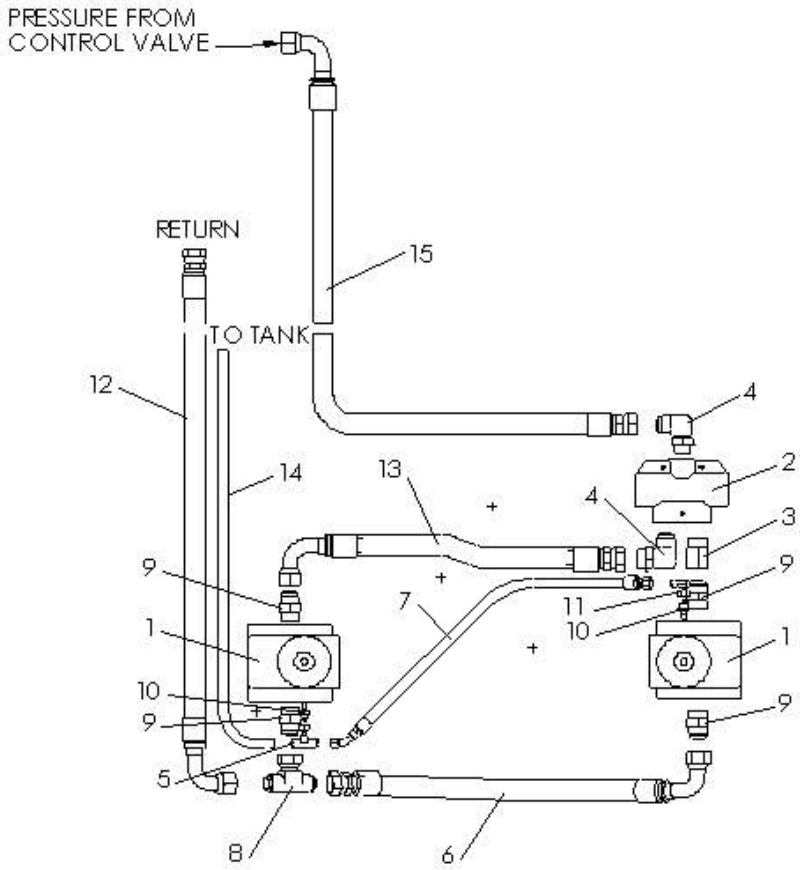
ITEM	PART NO.	DESCRIPTION	QTY
1	305767	Cooler – Assy Hydac ELD4.5	1
	305767-AA	Core	1
	305767-AB	Fan	1
	305767-AC	Housing	1
2	310928	Bracket – Front Cooler Mount Hydac 304	1
3	310929	Bracket – Rear Cooler Mount Hydac 304	1
4	310931	Angle - Mounting Cooler Hydac 304	2
5	310932	Angle - Bulkhead Mounting 304	1
6	305074	Switch - Temperature 114°	1
7	96750-X1	Relay – 12 VDC 40A	1
8	89051	Clamp - Insulated Closed	1
9	56858	Capscrew - 5/16-18NC x 3/4 SS	4
10	36424	Washer - Flat 5/16 SS	12
11	36419	Washer - Lock 5/16 SS	10
12	36413	Nut - Hex 5/16-18NC Ss	10
13	34580	Capscrew - 5/16-18NC x 1 SS	6
14	56258	Screw - Truss head 1/4-20NC x 1/2 SS	1
15	42034	Nut - Lock 1/4-20NC SS	1
16	36398	Capscrew - 3/8-16NC x 1 SS	2
17	36425	Washer - Flat 3/8 SS	4
18	36420	Washer - Lock 3/8 SS	4
19	36414	Nut - Hex 3/8-16NC SS	4
20	36399	Capscrew - 3/8-16NC x 1-1/4 SS	2
21	96907	Fitting - O-Ring -20 JIC x -20 SAE	2
22	98568	Fitting - 20-20 070221	3
23	310936	Fitting - 20-20 070601	1
24	310937	Fitting - 20 070118	1
25	96910	Fitting - 20-20 070321	1
26	310933	Hose - Return 1-1/4 x 21-1/4 Assy	1
27	310934	Hose - Return 1-1/4 x 79 Assy	1
28	310935	Hose - Return 1-1/4 x 99 Assy	1
29	96906	Sleeve – Abrasive	8 ft
30	96942	Tie - Wrap 29”	4
31	99674	Tie - Wrap 8”	3
32	303730-AB	Connector - Female Sealed Tower	1
33	303730-CC	Terminal - Female Sealed	2
34	303730-EC	Seal - Cable	2



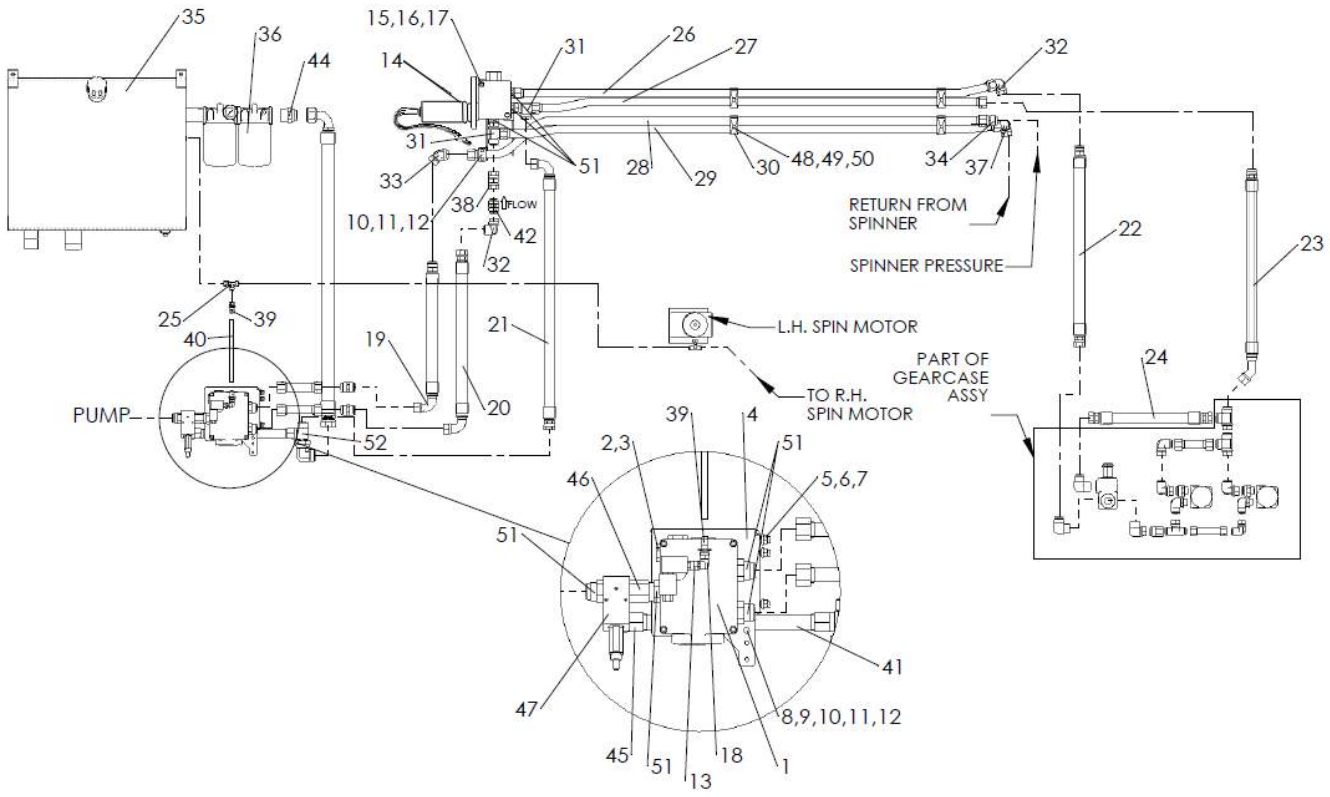
ITEM	PART NO.	DESCRIPTION	QTY
	97963	Tank - Assy 40 Gal, Includes 1, 2 & 4	
1	97977	Tank – Wldmt 40 Gallon	1
2	96747	Cap – Filler	1
3	38575	Gauge – Assy Sight & Temperature	1
4	6033	Plug – Pipe 3/4	1
5	39158	Belt – Flex Mount	2
6	39159	Belt – Spacer	2
7	36402	Cap Screw – 1/2 x 1-1/4 SS	2
8	71832	Cap Screw – 1/2 x 1-3/4 SS	2
9	36426	Washer – Flat 1/2 SS	4
10	39016	Nut – Lock 1/2 SS	4
11	* 6031	Plug – Pipe 3/8	1

* - Not Shown

PARTS LIST



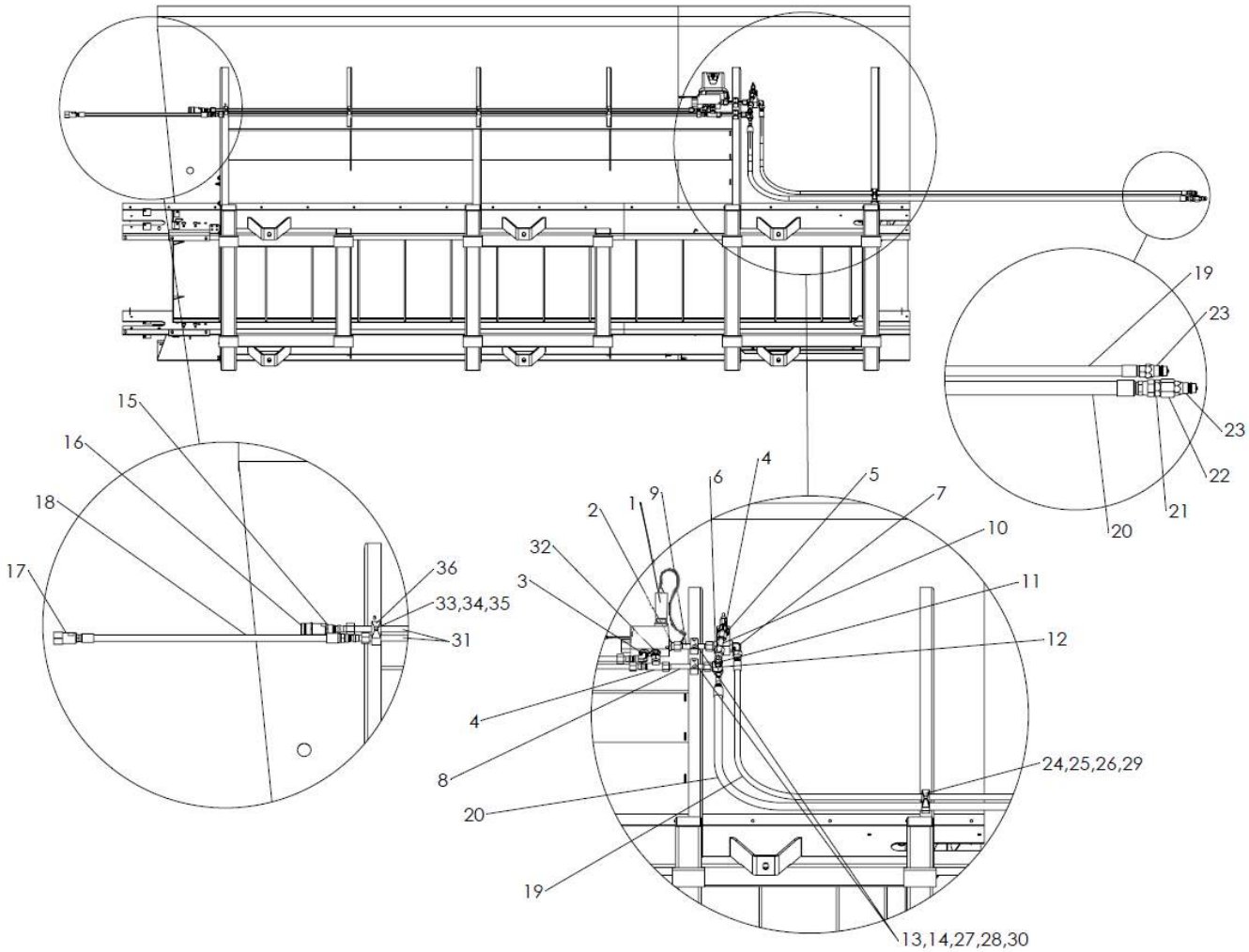
ITEM	PART NO.	DESCRIPTION	QTY
	305948	Motor - Assy LH Style II	
	305949	Motor - Assy RH Style II	
1	305950	Motor – Spinner	2
2	71781	Valve – Flow Divider	1
3	34810	Adapter	1
4	29840	Adapter - 90°	2
5	29825	Tee – Swivel Nut	1
6	87111	Hose Assy	1
7	87112	Hose Assy	1
8	29836	Tee – Swivel Nut	1
9	29803	Adapter	4
10	34763	Adapter	2
11	34816	Adapter - 90° 1	1
12	87113	Hose – Return Assy	1
13	98101	Hose – Pressure Assy	1
14	82983	Hose – Unit Drain Line	1
15	98102	Hose - 100R12 x 80 Assy	1



ITEM	PART NO.	DESCRIPTION	QTY
1	38576-X4	Valve - Hydraulic Electric Actuated	1
2	42794	Cap Screw - 5/16-18NC x 3-3/4 SS	4
3	42221	Nut - Lock 5/16-18 SS	4
4	302395	Bracket - Valve Mount	1
5	36398	Cap Screw - 3/8-16 NC x 1 SS	3
6	36420	Washer - Lock 3/8 SS	3
7	36414	Nut - Hex 3/8-16 SS	3
8	*86557	Clamp - Tube 1”	2
9	*86556	Plate - Cover Hydraulic Tube Clamp	2
10	34865	Cap Screw - 1/4-20 NC x 2-1/4	4
11	36418	Washer - Lock 1/4	4
12	36412	Nut - Hex 184-20NC	4
13	34757	Adapter - Connector	1
14	306272	Valve - Flow Control 40 GPM SFP	1
15	302099	Washer - Step	4
16	34860	Cap Screw - 3/8-16 x 4 SS	2
17	72054	Nut - Lock 3/8 SS	2
18	34816	Elbow - Hydraulic	1
19	302345	Hose - Assy 1 x 22-1/2 100 R12	1

ITEM	PART NO.	DESCRIPTION	QTY
20	29748	Hose - Assy 1 x 30 100R2	1
21	82599-X1	Hose - Assy 1 x 41 CB	1
22	302346	Hose - Assy 1 x 31 100R2	1
23	42996	Hose - Assy 1 x 32-7/8 2CB	1
24	82319	Hose - Assy 1 x 19 2CB	1
25	98724	Fitting - Tee Run	1
26	302413	Tube - Assy 1” OD x 121” 304	1
27	302420	Tube - Assy 1” OD x 117” 304	1
28	302427	Tube - Assy 1” OD x 127” 304	1
29	302434	Tube - Assy 1” OD x 121” 304	1
30	300033	Clamp - Tubing twin 1”	6
31	29850	Tee - Swivel Nut	2
32	29807	Adapter - Elbow	2
33	29806	Adapter - Elbow, 45°	1
34	34719	Adapter - Union	1
35	98590	Tank - Assy Hyd 40 Gal, see *Reservoir* parts list	1
36	98589	Filter - Assy w/Indicator	1
	43530	Filter	2
	43534	Indicator - Service	1
37	29783	Fitting - 6-6 070221	1
38	302449	Fitting - Union - 16 37° Swivel	1
39	34761	Fitting - Socketless 3/8 x 9/16	2
40	34195-28	Hose - Drain Line 3/8 x 28	1
41	302436	Tube - 1” OD Assy x 14-3/8 304	1
42	302160-AB	Valve - Check 1”	1
43	*29766	Fitting - 6-6 07102	1
44	96911	Fitting - 1-5/8 JIC x 1-1/2NPT	1
45	29840	Adapter - Elbow 90°	1
46	34810	Adapter - Connector	1
47	98109	Valve - Relief Soft Start	1
48	71830	Cap Screw - 5/16-18NC x 2-1/2 SS	6
49	36419	Washer – Lock 5/16 SS	6
50	36413	Nut – Hex 5/16 SS	6
51	29803	Adapter	7
52	96912	Adapter - Tee 1 x 1 1-1/4	1

* - Not Shown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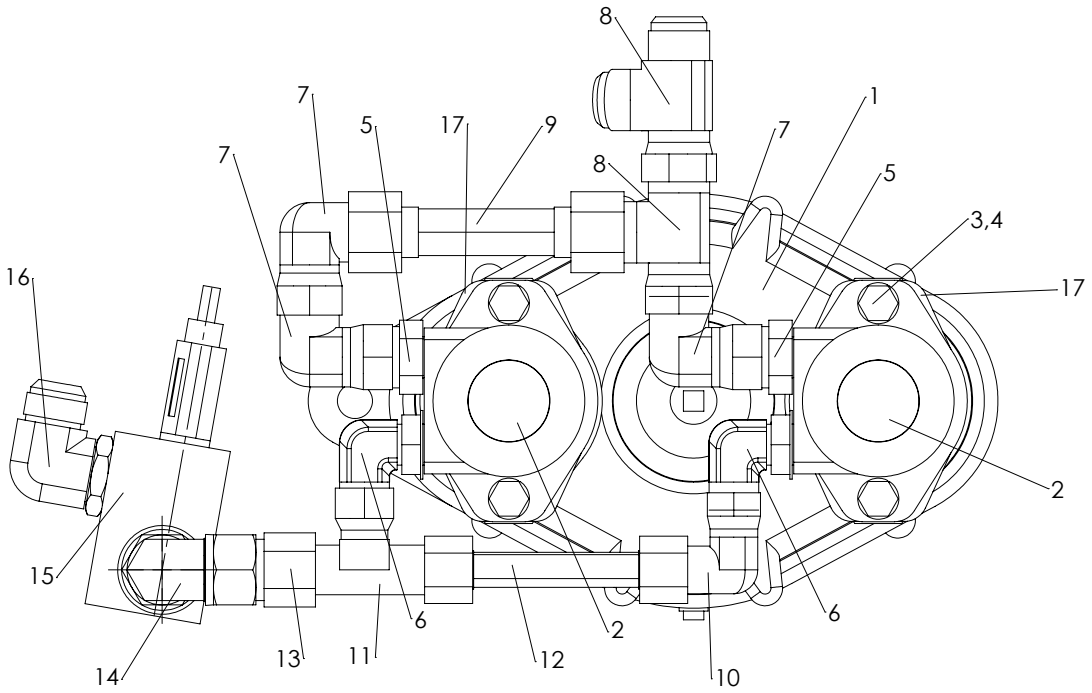
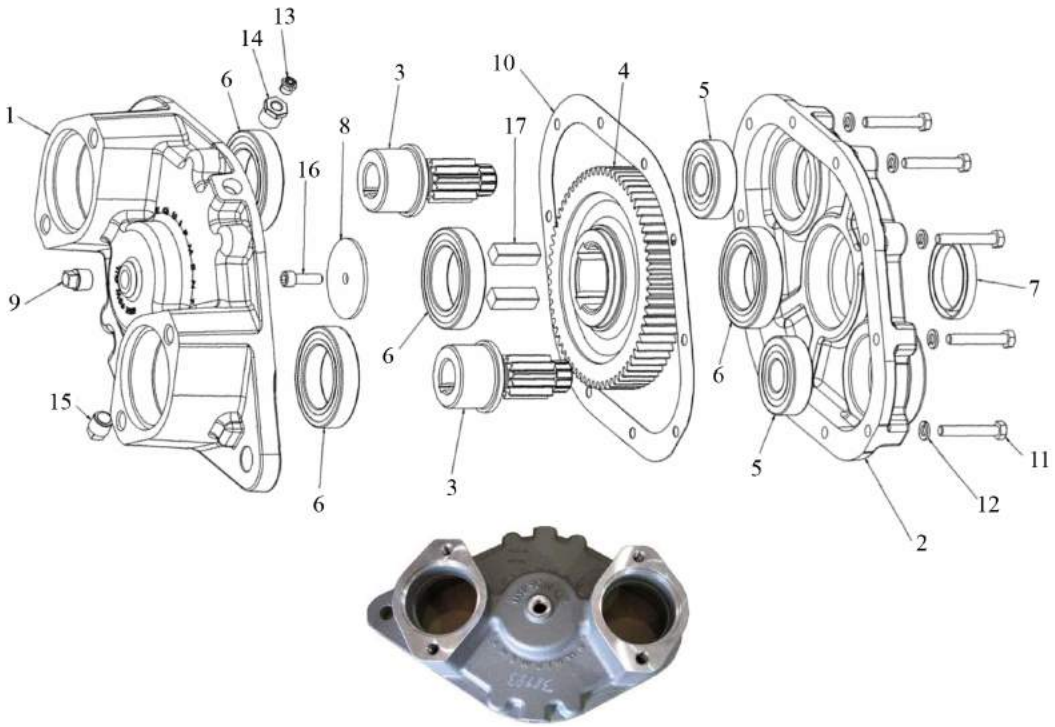
ITEM	PART NO.	DESCRIPTION	QTY
1	306277	Valve - Flow Control 9 GPM	1
	306274	Manifold - 5-25 GPM SFP	
2	29789	Adapter - Connector	1
3	29847	Adapter - Elbow 90°	1
4	29809	Adapter - Tee Branch	1
5	77498	Valve - Relief 1500PSI	1
6	29835	Adapter	1
7	29829	Adapter - Elbow 90°	2
8	98645	Tube - Assy 75” OD x 6-1/2” 304	1
9	98644	Tube - Assy 75” OD x 5” 304	1
10	98643	Tube - Assy 75” OD x 2-7/8 304	1
11	34709	Adapter - Elbow 90°	1
12	29792	Tee	1
13	98649	Clamp - Pair	2
14	86556	Plate - Cover Hyd. Tube Clamp	2
15	29784	Adapter - Connector	1
16	96652	Disconnect - Quick Nipple	1
17	96651	Disconnect - Quick Hex Nut	1
18	98668	Hose - Assy 1/2 100R1 x 36	1
19	305226	Hose - 1/2 100R2 x 180”	1
20	305227	Hose - 3/4 x 180”	1
21	305263	Valve - Check	1
22	305264	Adapter	1
23	305262	Nipple	2
24	305266	Clamp - Hose	1
25	305267	Plate - Cover, Hose Clamp	1
26	20042	Cap Screw - 5/16-18 x 2-1/2	1
27	34865	Cap Screw - 1/4-20 NC x 2-1/4 SS	4
28	36418	Washer - Lock 1/4 SS	4
29	20677	Nut - Lock 5/16-18 NC	1
30	36412	Nut - Hex 1/4-20NC SS	4
31	303984	Tube - Group 16’ RH Side, Includes 33-36	1
32	303226	Fitting - 12-12	1
33	71830	Cap Screw - 5/16 x -18 x 2-1/2 SS	4
34	36419	Washer - Lock 5/16 SS	4
35	36413	Nut - Hex 5/16-18 SS	4
36	75036	Clamp - Tubing 3/4	4

GEARCASE ASSEMBLY



ITEM	PART NO.	DESCRIPTION	QTY
1	37985	Gearcase 6:1	1
2	82459	Motor - Hydraulic 14.1 CID	2
	39137	Kit - Seal	
3	20129	Cap Screw - 1/2 x 1-1/2	4
4	20714	Washer - Lock 1/2	4
5	29778	Adapter - Reducing	2
6	29773	Adapter - Elbow	2
7	29807	Adapter - Elbow	3
8	29850	Tee - Swivel Nut	2
9	80888	Tube Assy - 1 OD x 2-15/16	1
10	34709	Adapter - Elbow	1
11	29809	Adapter - Tee Branch	1
12	80886	Tube - 3/4 x 4-7/8	1
13	34712	Adapter - Bushing	1
14	304819	Fitting - 16-16 Non Standard 90°	1
15	304818	Valve - Dump Relief 2050 PSI Soft Start	1
16	29840	Adapter - Elbow	2
17	74524	Gasket	2
18	*311172	V-Ring Seal	1

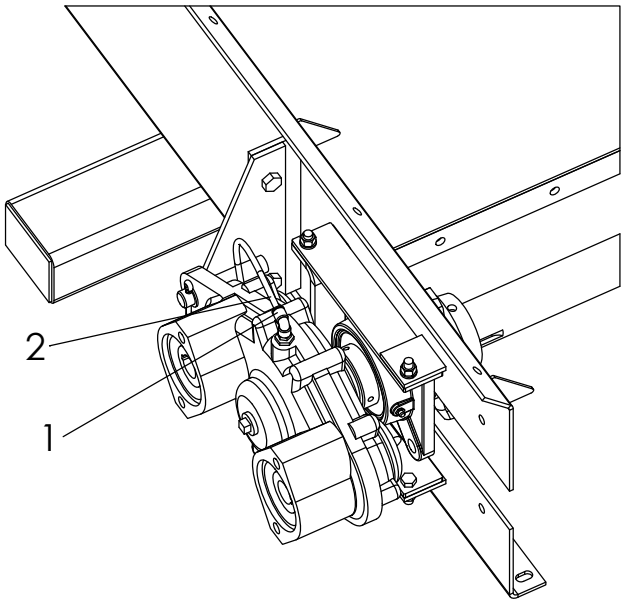
*Not Shown



ITEM	PART NO.	DESCRIPTION	QTY
	37985	Gearcase 6:1	
	304268-AB	Parts – Service, Includes 1–17	
1	304557	Housing – Outboard	1
2	304558	Housing – Inboard	1
3	304561	Gear – Pinion 11 Tooth	2
4	304562	Gear – Driven 67 Tooth	1
5	37007	Bearing	2
6	37008	Bearing	4
7	37006	Seal – Oil	1
8	38979	Washer – Flat 2-1/2 x 11/32	2
9	6031	Plug – Pipe	1
10	304564	Gasket – Housing	1
11	20040	Cap Screw – 5/16NC x 2	10
12	20711	Washer – Lock 5/16	10
13	2564	Cap – Breather	1
14	27465	Bushing – Pipe 1/8 x 3/8	1
15	21490	Plug – Pipe Magnetic	1
16	38980	Screw – Allen Head 5/16-18 x 1	1
17	37010	Key – 1/2 x 1/2 x1-1/2	2
18	*31172	V-Ring Seal	1

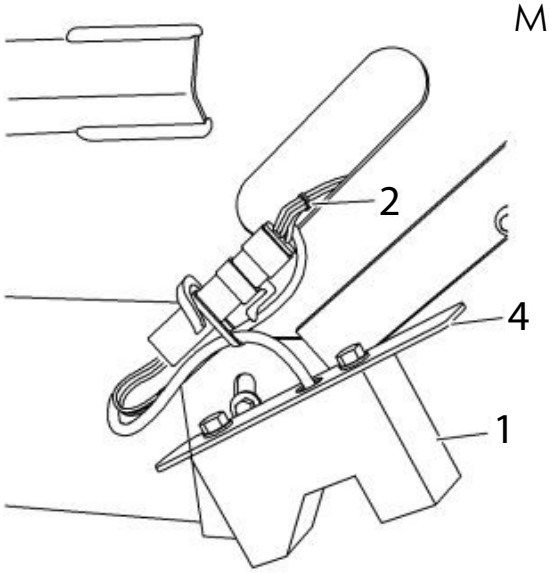
* Not Shown

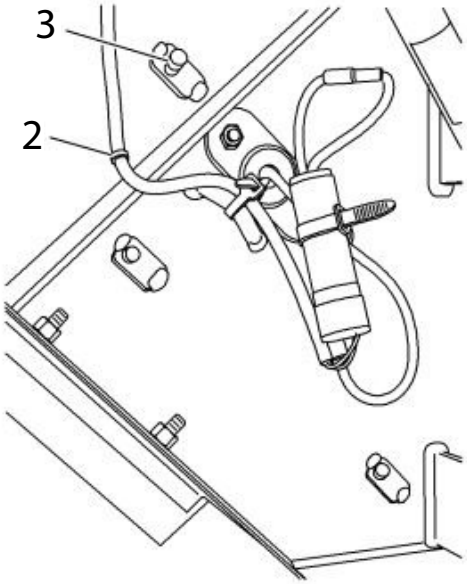
GEARCASE BREATHER TUBE



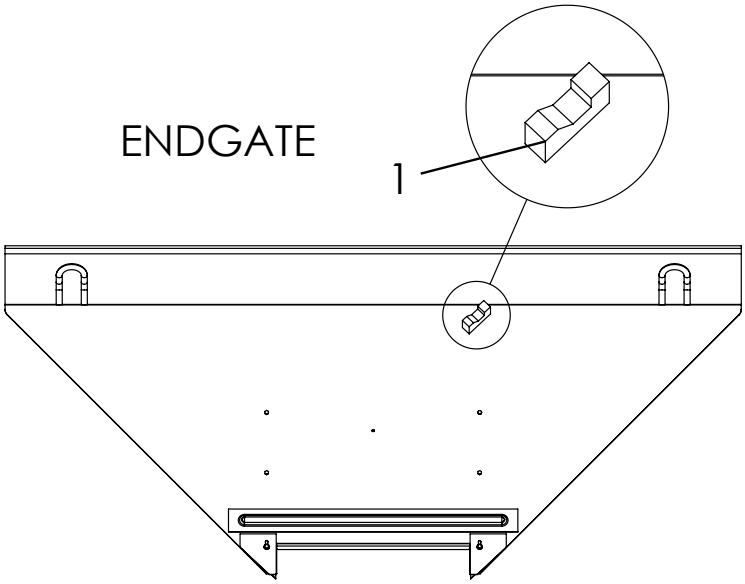
ITEM	PART NO.	DESCRIPTION		QTY
1	306891	Fitting - 4-2 630202K		1
2	9005-0-7761	Tubing - 1/4 OD Air Brake Black	ft	1.5

MULTAPPLIER



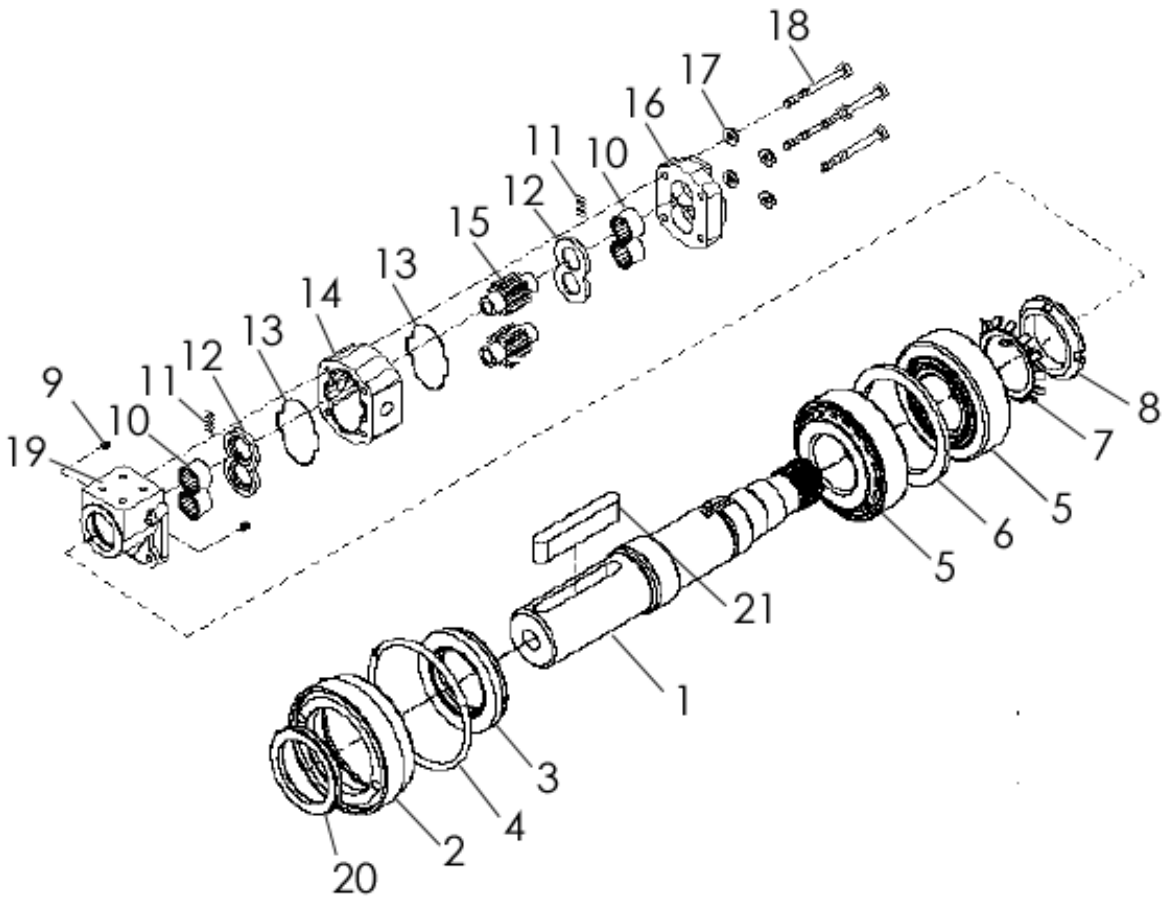


ENDGATE



ITEM	PART NO.	DESCRIPTION	QTY
1	98787-AB	Sensor - Bin Level, w/ 18” Lead	AR
2	307130	Cable - Jumper 102”	AR
3	36393	Cap Screw - 1/4-20NC x 3/4 SS	AR
4	307124	Mount - Sensor 304	AR

* - Not Shown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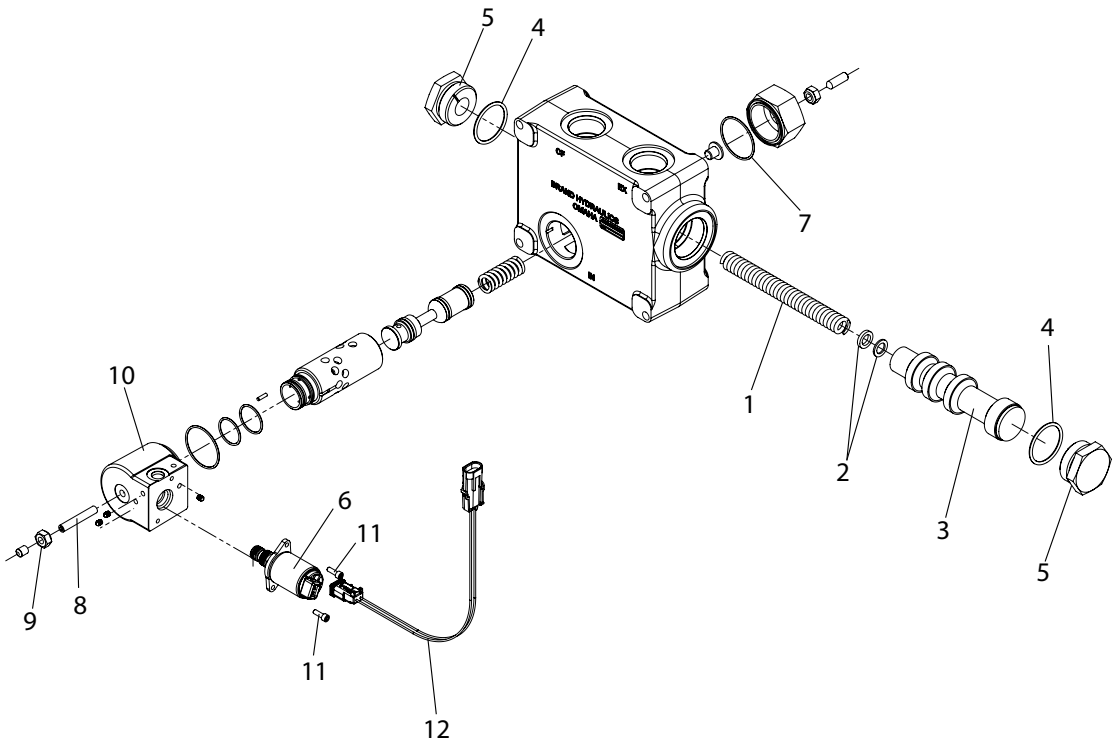
ITEM	PART NO.	DESCRIPTION	QTY
	306093	Shaft Assy - Output	
		Includes: 1-8, 20, 21,27	
	72548	Kit - Seal, Includes: 3, 4, 20, 27	
	305950	Motor - Hydraulic	
1	306088	Shaft - Output	1
2	306091	Ring - Retainer	1
3	71980	Seal	1
4	28494	“O” Ring	1
5	28491	Bearing - Tapered Roller Assy	2
	41014	Cone - Bearing	1
	41013	Cup - Bearing	1
6	28454	Spacer	1
7	306092	Washer - Lock	1
8	306089	Nut - Lock	1
9	58797	Plug	2
10	23806	Bearing	4
11	23819	Seals - Pocket	1
12	23818	Plate	2
13	23820	Gasket	2
14	41954	Housing	1
15	23824	Gear Set	1
16	23812	Cover - Port End	1
17	--	Washer	4
18	20190	Cap Screw	4
19	306087	Cover - Shaft End	1
20	33809	Seal - Excluder	1
21	24458	Key	1
22	*30723	Tool - Wrench Spinner	1
23	*24536	Tool - Seal Driver	1
24	*23940	Tool - Seal Sleeve	1
25	*28495	Bushing	1
26	*305824	Retainer - Assy, Includes 2-4, 20	1
27	*306090	Sleeve - Speedi	1
28	*306429	Tool - Speedi	1

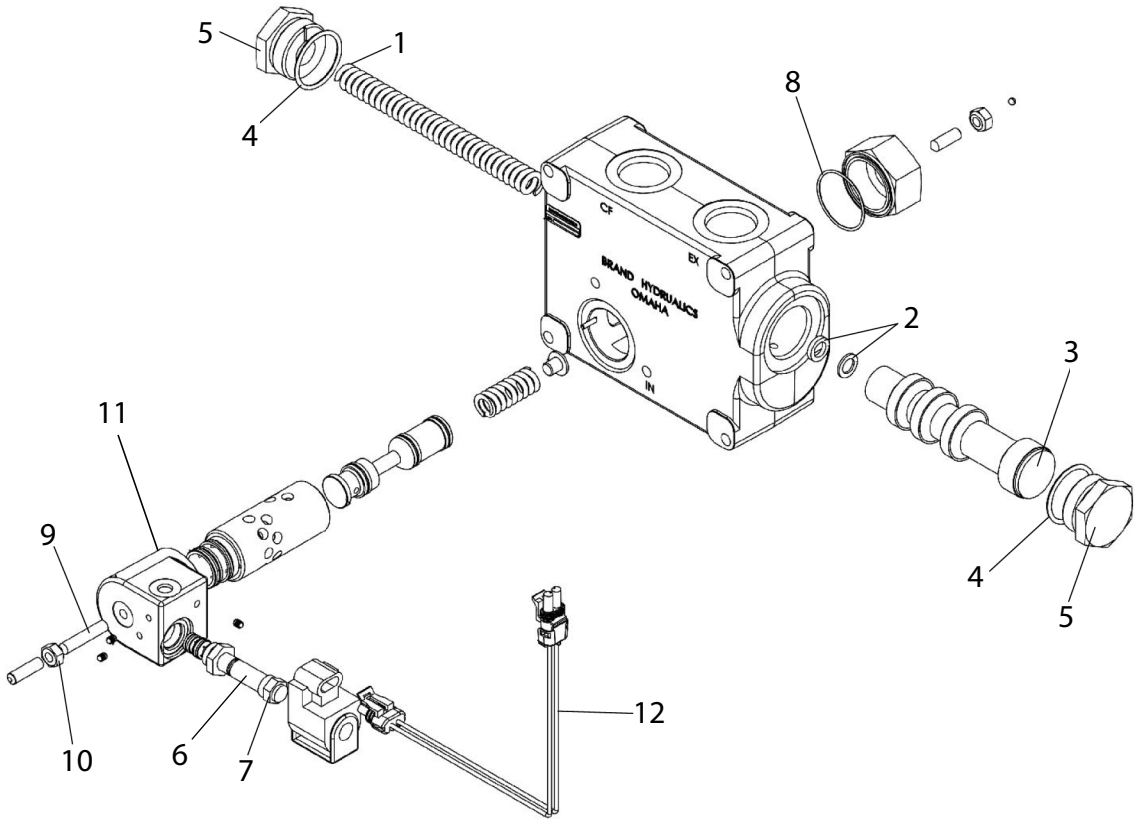
* - Not Shown

SPINNER CONTROL VALVE - STYLE A



ITEM	PART NO.	DESCRIPTION	QTY
	38576-X4	Valve - Flow Control Electric Actuated	1
1	53960	Spring	1
2	90696	Shim	2
3	90697	Spool	1
4	90698	O-Ring	1
5	90699	Plug	2
6	38576-AA	Cartridge	1
7	38576-AC	O-Ring	1
8	38576-AD	Screw - Set	1
9	38576-AE	Nut - Jam	1
10	38576-BC	Cartridge Valve Body	1
11	38576-BD	Screw - SHCS 8-32 x .5	2
12	38576-AI	Cable Assy	1
13	*38576-AH	Valve - Kit Seal	1

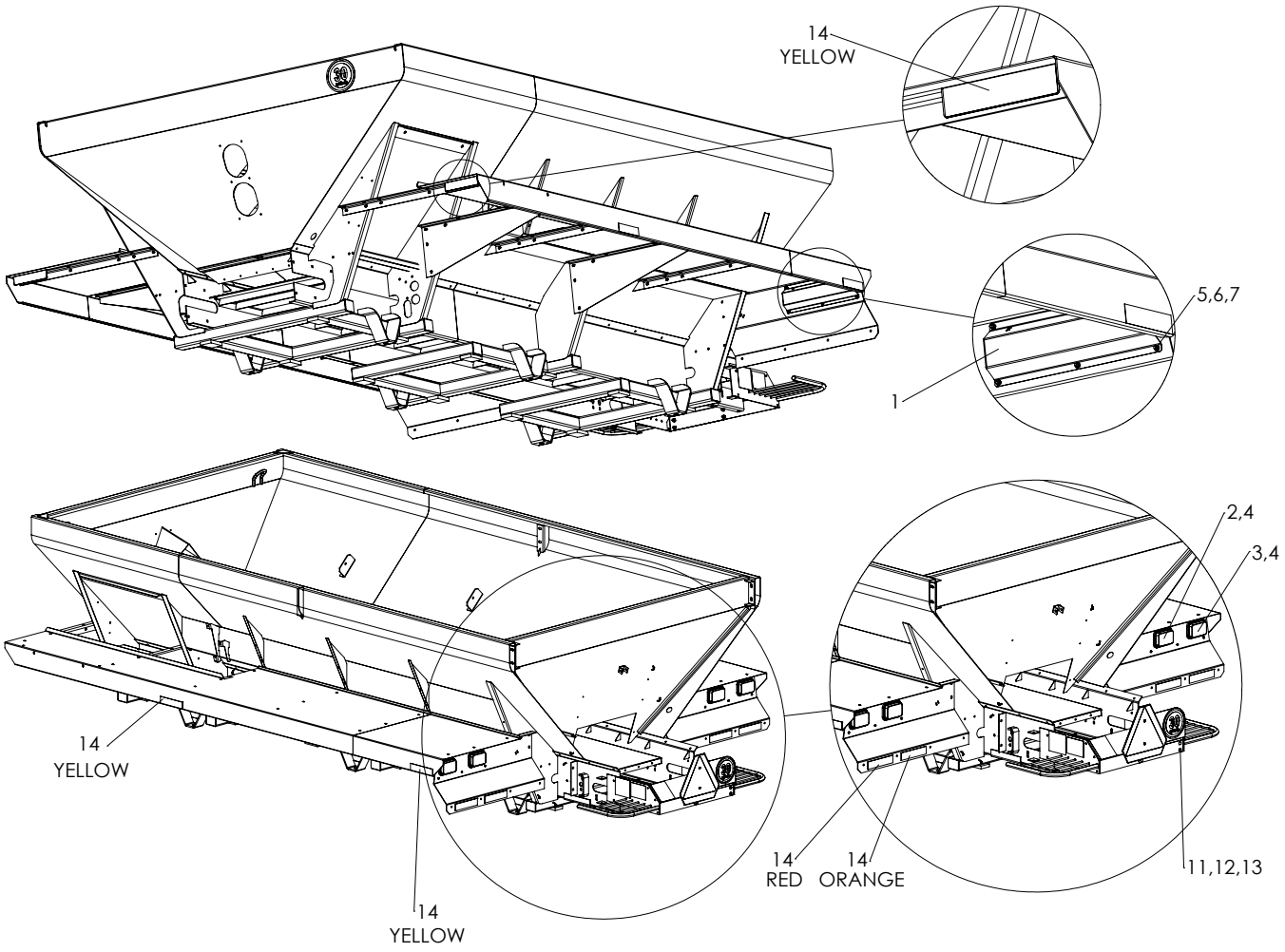
* - Not Shown



ITEM	PART NO.	DESCRIPTION	QTY
	38576-X4	Valve - Flow Control Electric Actuated	1
1	53960	Spring	1
2	90696	Shim	2
3	90697	Spool	1
4	90698	O-Ring	1
5	90699	Plug	2
6	38576-AA	Cartridge	1
7	38576-AG	Nut - Cartridge	1
8	38576-AC	O-Ring	1
9	38576-AD	Screw - Set	1
10	38576-AE	Nut - Jam	1
11	38576-AF	Cartridge Valve Body	1
12	38576-AI	Cable Assy	1
13	*38576-AH	Valve - Kit Seal	1
14	**38576-BA	Kit - Pilot Conversion	AR

* - Not Shown AR - As Required

** - Use kit to convert existing Style B valve to Style A.


14
YELLOW
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YELLOW
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YELLOW
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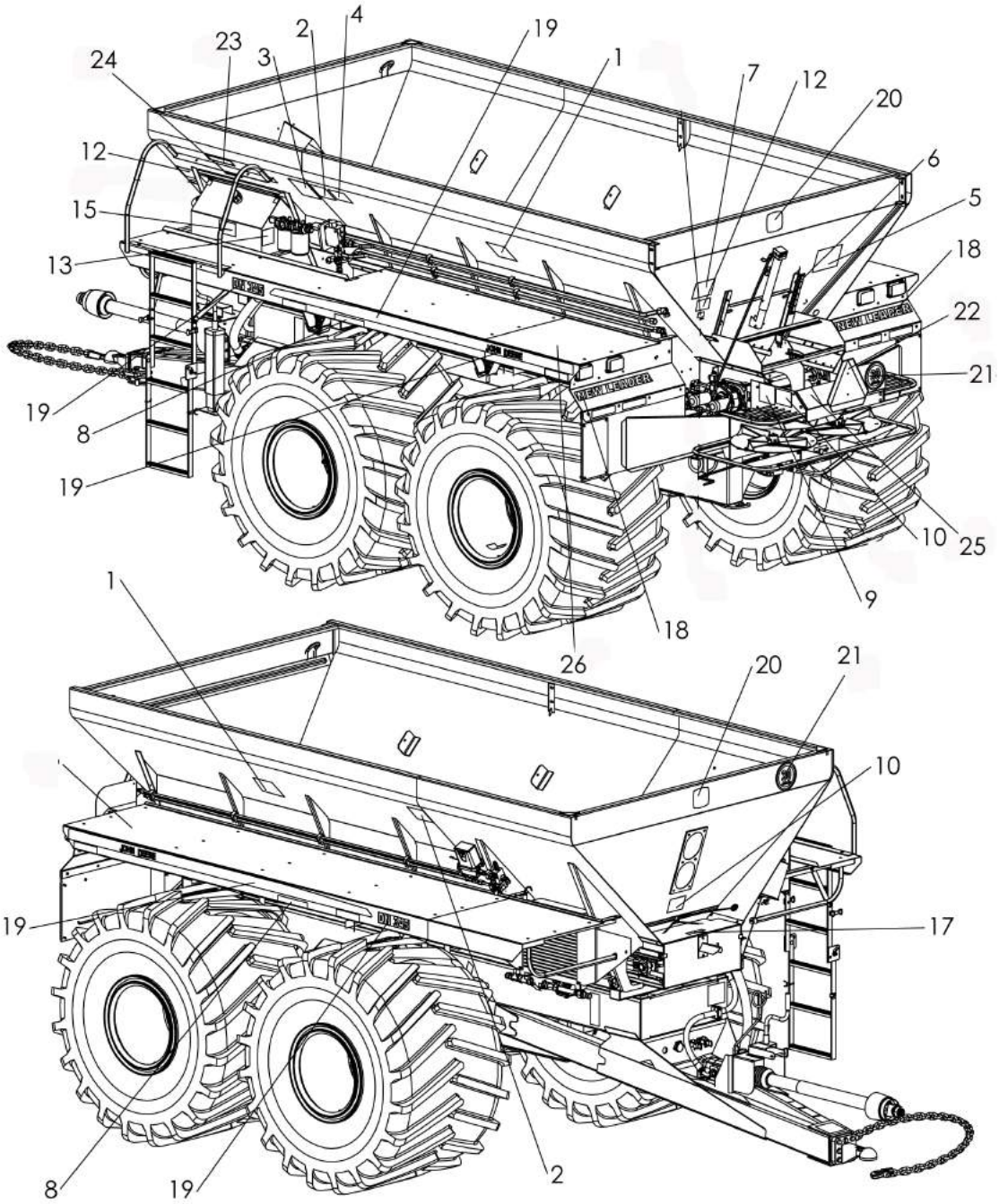
RED
14
ORANGE
11,12,13

ITEM	PART NO.	DESCRIPTION	QTY
1	305213	Guard - Tail Light 304	2
2	300150	Light - STT Red	2
3	304715	Light - Super 45 Yellow	2
4	304704	Grommet - Super 45	4
5	36393	Cap Screw - 1/4-20 x 3/4 SS	12
6	36418	Washer - Lock 1/4 SS	12
7	36412	Nut - Hex 184-20NC	12
8	*99674	Tie - Wrap Plastic BLK	6
9	*305414-AC	Harness - RH Lights	1
10	*305414-AB	Harness - LH Lights	1
11	42639	Bolt - Carriage 3/8-16NC x 1	2
12	36419	Washer - Lock 3/8 SS	4
13	36413	Nut - Hex 3/8 x 16NC SS	4
14	305186	Kit - Reflective Farm Implement	1
	306430	Orange - Flourescent	AR
	306431	Red - Reflective	AR
	306432	Yellow - Reflective	AR

* - Not Shown AR - As Required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ITEM	PART NO.	DESCRIPTION	QTY
1	39138	Decal – Warning, Hot Components	2
2	364	Decal - Warning, Stay Out of Box	2
3	150034	Decal - Caution, Improper Operation	1
4	321	Decal - Caution, Material to be Spread	1
5	368	Decal - Flying Material	AR
6	23769	Decal - Feedgate Slide Scale	1
7	71526	Decal - Spread Pattern	AR
8	39200	Decal - Fender Capacity	2
9	55630	Decal - Warning, No Step	2
10	55631	Decal - Warning, Guard for Protection	3
11	*87110	Decal - Scale Spinner (under LH spinner disc)	1
12	21476	Decal - Notice, Conveyor Chain Life	2
13	39378	Decal - Change Filter	1
14	*8664	Decal - Notice, Keep Valve Open	1
15	304264	Decal - Notice Hydraulic Oil	1
16	*306348	Decal - MULTAPPLIER	1
17	39017	Decal - No Step	1
18	87164	Decal - New Leader Black	2
19	305825	Decal - Group JD Stripes	1
	305825-AA	Decal - JD Stripes	1
	305825-AB	Decal - DN 345	1
20	305826	Decal - JD Leaping Deer	AR
	*306187	Decal - JD Leaping Deer (MultApplier only)	1
21	305273	Decal - 30mile/h	2
22	305229	Sign - S.M.V.	1
	305711	Plate - S.M.V. Mouting	1
	32446	Screw - Truss Head 1/4-20 x 3/4 SS	2
	36418	Washer - Lock 1/4	2
	36412	Nut - Hex 184-20NC	2
23	305274	Decal - Warning Falling Hazard	1
24	305272	Decal - Do Not Ride	1
25	87109	Decal - New Leader G4 Series	1
26	21699-179	Skid Fabric	4
27	*37285	Serial Plate - HECO	1
28	*6276	Screw - Drive	4

* - Not Shown

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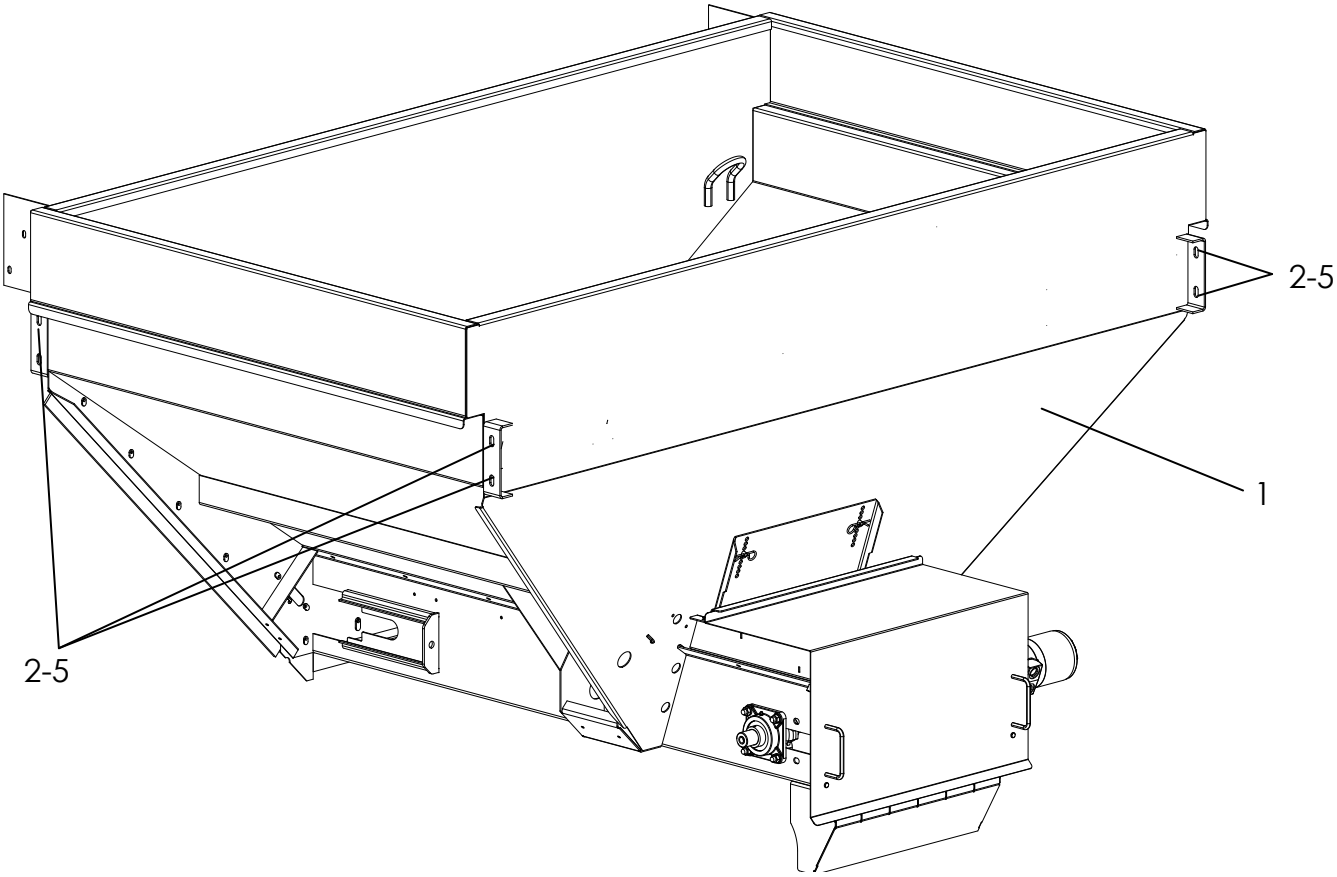
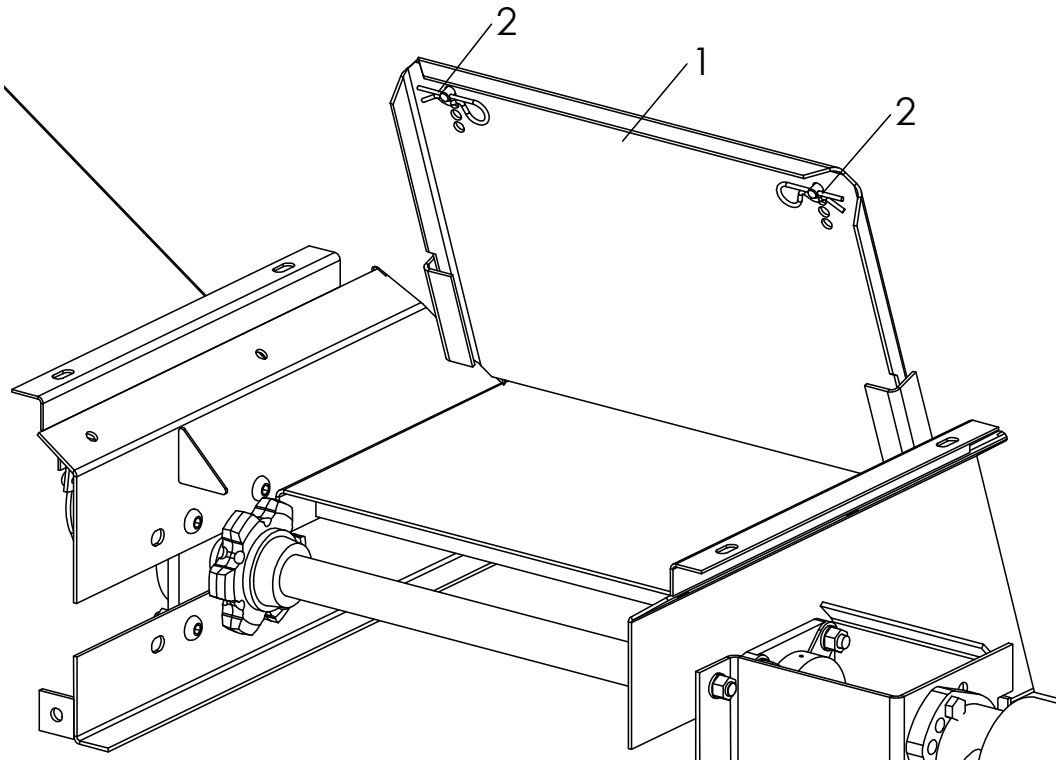
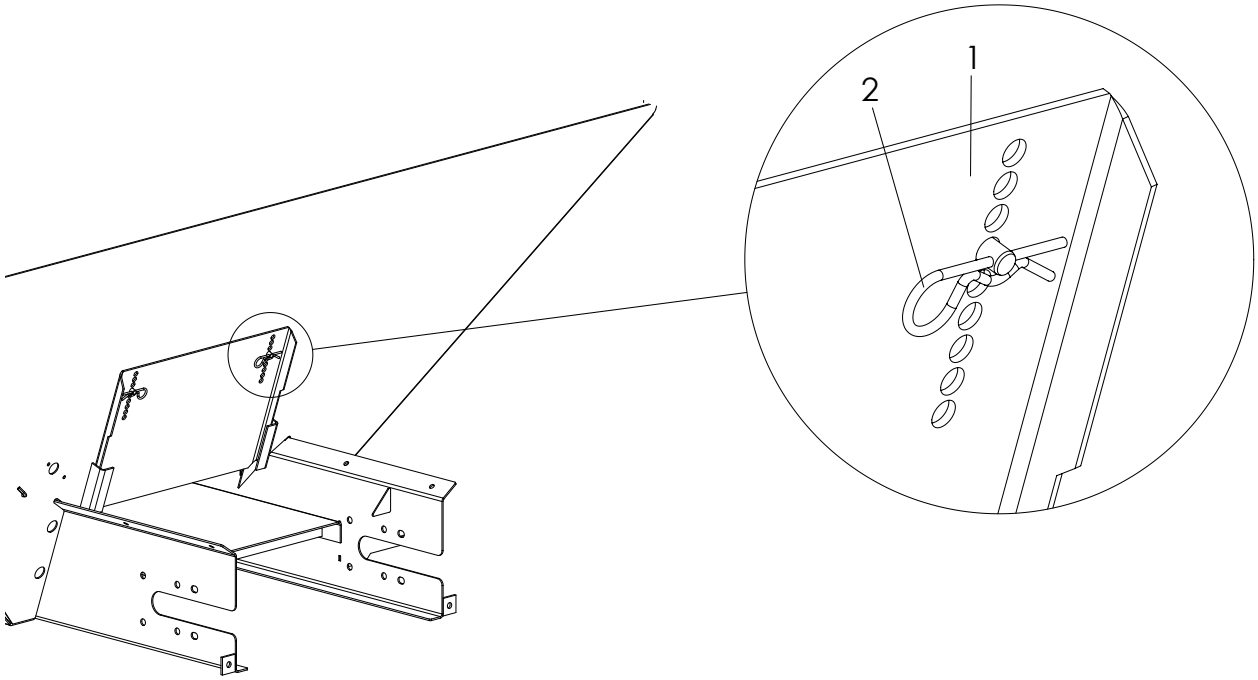


ITEM	PART NO.		DESCRIPTION	QTY
	Style I	Style II		
	86951	86951	Hardware - Kit Mount (Includes Items 2-5)	
1	303964	311680	MULTAPPLIER - 7' Shell Insert	1
2	20128-X1	20128-X1	Cap Screw - 1/2 x 1 1/4 Grade 8	8
3	20695	20695	Washer - Flat 1/2	16
4	20714	20714	Washer - Lock 1/2	8
5	20646	20646	Nut - Hex 1/2	8

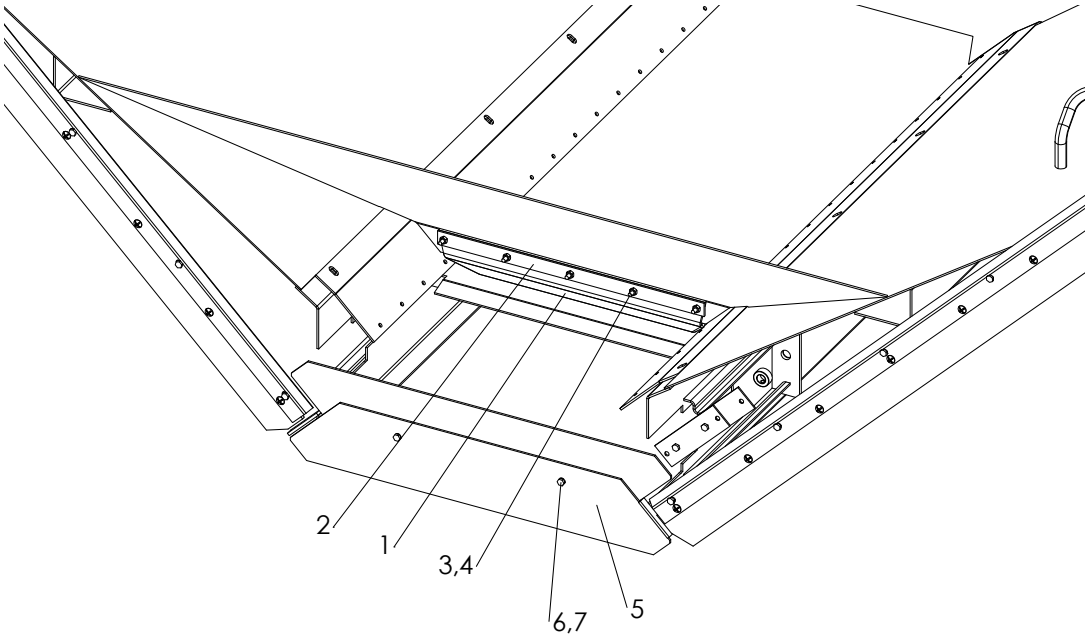
AR - As Required



ITEM	PART NO.	DESCRIPTION	QTY
1	98557	Panel - Feedgate	1
2	36429	Pin - Hair	2

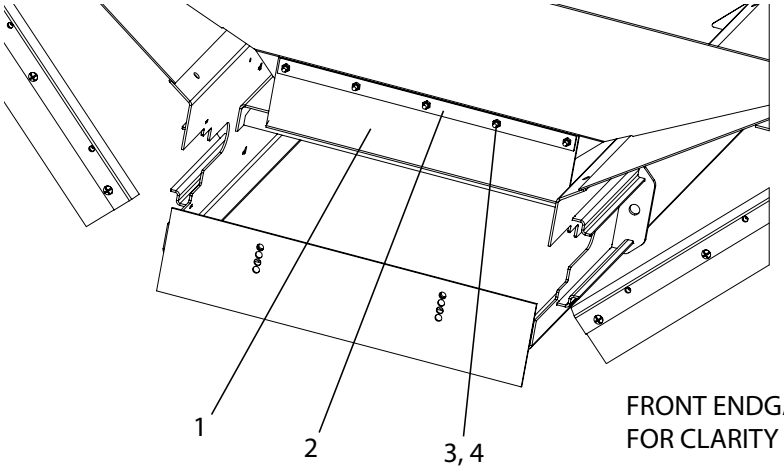


ITEM	PART NO.	DESCRIPTION	QTY
1	306579	Panel - Feedgate	1
2	36429	Pin - Hair	2

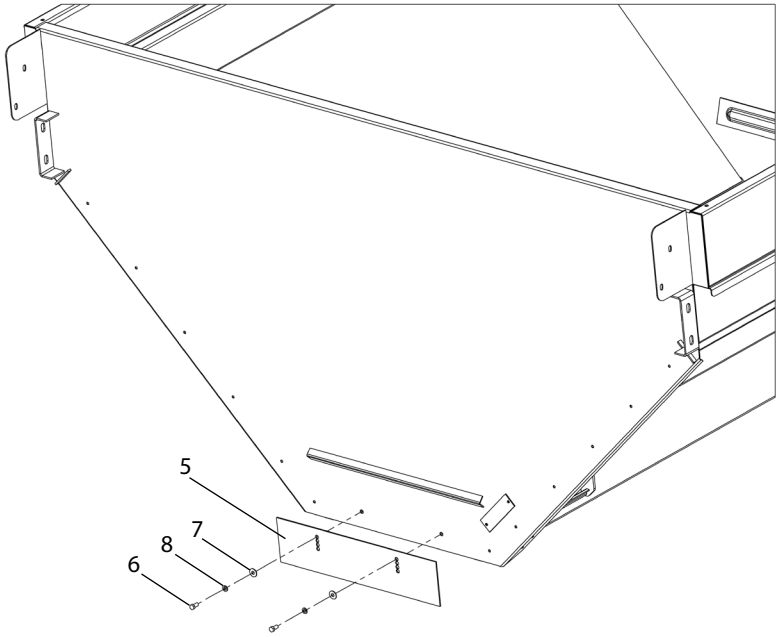


Note: Front endgate removed for clarity.

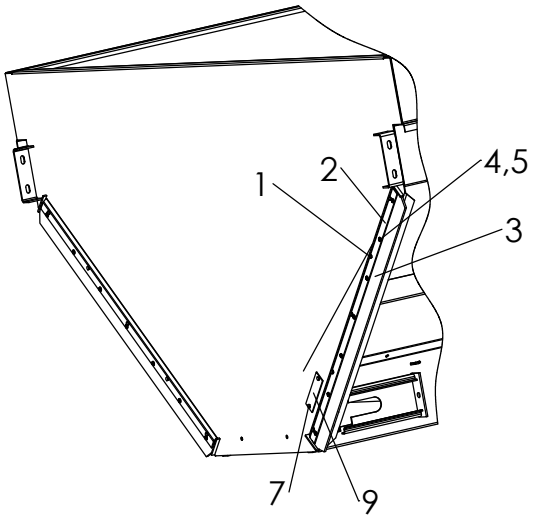
ITEM	PART NO.	DESCRIPTION	QTY
1	39426	Wiper – Belt Front	1
2	54230	Retainer – Wiper	1
3	42033	Screw - Truss Head 1/4 x 1	5
4	36412	Nut – Hex 1/4	5
5	86868	Feedgate - Panel 1.5”	1
	96984	Feedgate - Panel 2”	1
6	36398	Cap Screw - 3/8 x 1	2
7	36420	Washer - Lock 3/8	2



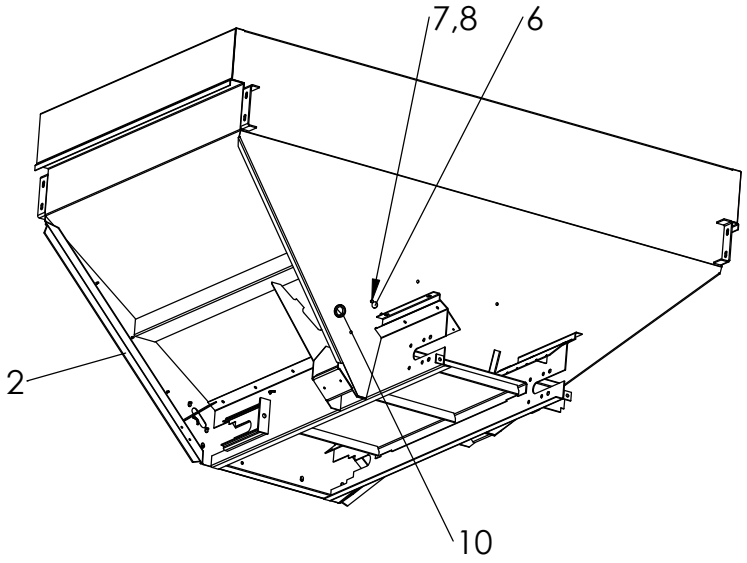
FRONT ENDGATE HIDDEN FOR CLARITY



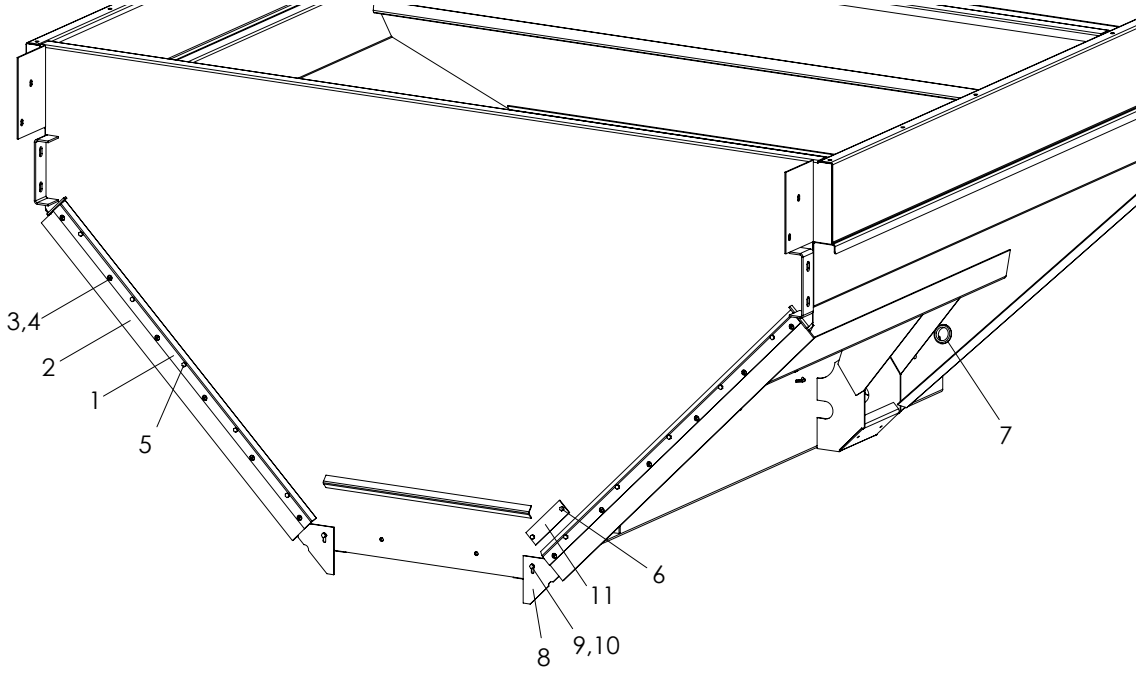
ITEM	PART NO.	DESCRIPTION	QTY
1	39426	Wiper – Belt Front	1
2	54230	Retainer – Wiper	1
3	42033	Screw – Machine 1/4-20NC x 1	5
4	36412	Nut – Hex 1/4-20NC	5
5	306583	Feedgate - 304	1
6	36293	Cap Screw - 3/8-16NC x 3/4 SS	2
7	36425	Washer - Flat 3/8 SS	2
8	36420	Washer - Lock 3/8 SS	2



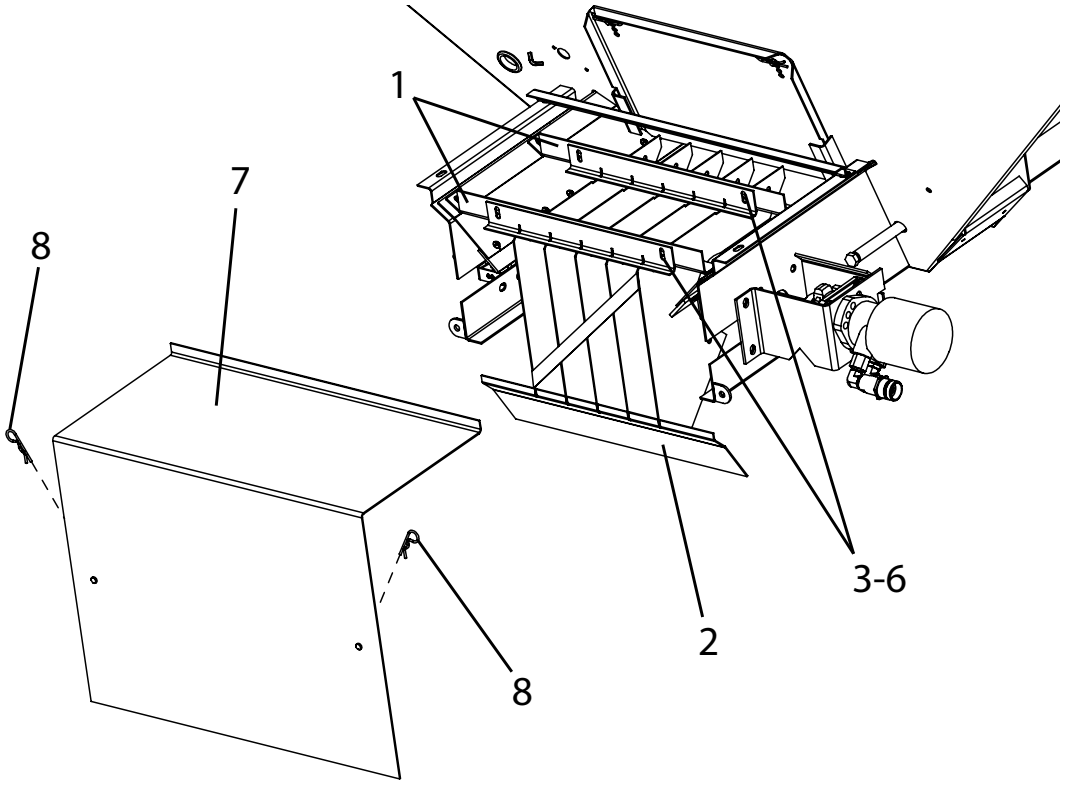
VIEW A-A



ITEM	PART NO.	DESCRIPTION	QTY
	97967	Seal - Assy, Includes 2-5	
1	36395	Cap Screw - 1/4-20NC x 1 SS	10
2	97966	Retainer - Seal 304	1
3	97968	Seal - 3 x 1/4 x 47-7/8	1
4	88931	Nut - Tee 1/4 x 1/4	7
5	56258	Screw - Truss Head 1/4-20 x 1/2 SS	7
6	305832	Plate - Bin Sensor	1
7	36393	Cap Screw - 1/4-20NC x 3/4 SS	4
8	42034	Nut - Lock 1/4-20 SS	2
9	307125	Plate - Bin Sensor 304	1
10	34129	Grommet - Rubber	1

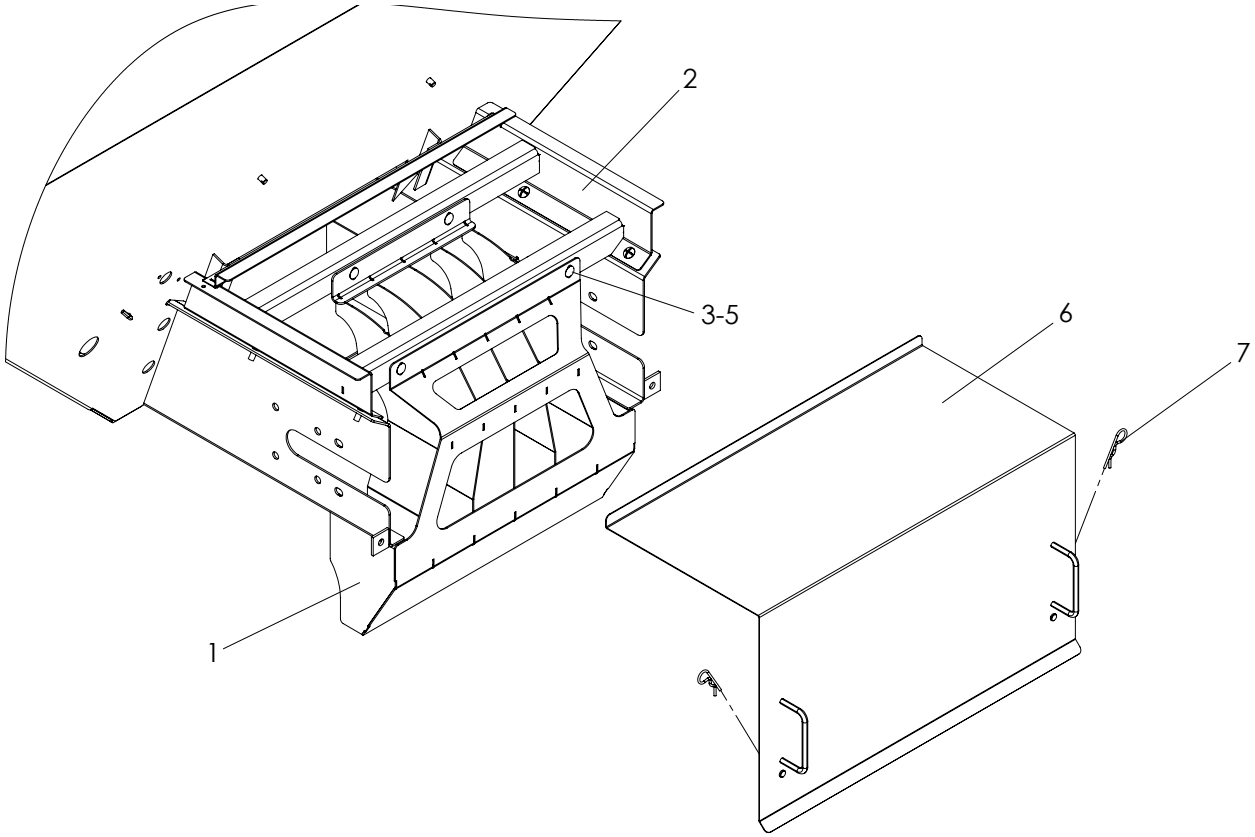


ITEM	PART NO.	DESCRIPTION	QTY
	306637	Seal - Assy, Includes 1-4	
1	306581	Retainer - Seal 304	2
2	306582	Seal - 3 x 1/4 x 45	2
3	56258	Screw - Truss Head 1/4-20NC x 1/2 SS	12
4	88931	Nut - Tee 1/4 x 1/4	12
5	36395	Cap Screw - 1/4-20NC x 1 SS	10
6	36393	Cap Screw - 1/4-20NC x 3/4 SS	2
7	34129	Grommet - Rubber	1
8	306707	Sealer - Endgate Bolt-In 304	2
9	36418	Washer - Lock 1/4 SS	2
10	40750	Cap Screw - 1/4-20NC x 1-1/4 SS	2
11	307125	Plate - Bin Sensor 304	1

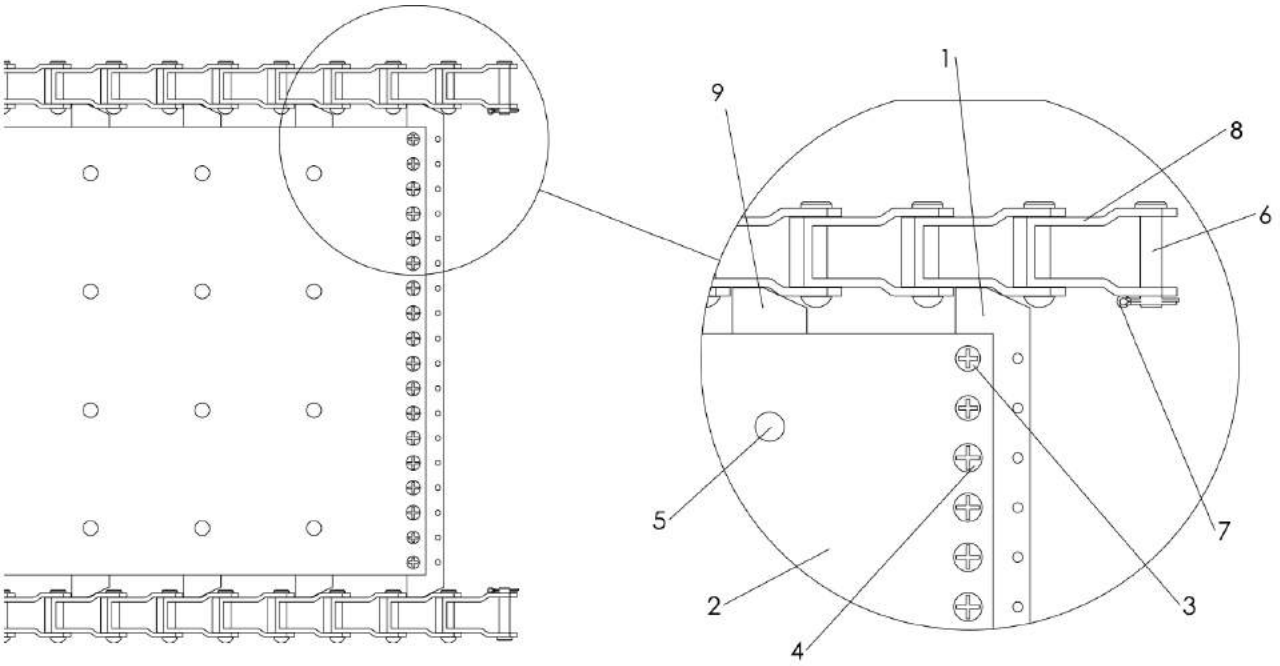


ITEM	PART NO.	DESCRIPTION	QTY
1	86825	Support – Divider	2
2	98553	Divider – Weldment Hillside	1
3	36408	Bolt – Carriage 3/8 x 1	4
4	36425	Washer – Flat 3/8	4
5	36420	Washer – Lock 3/8	4
6	36414	Nut – Hex 3/8	4
7	98562	Cover - Wldmt Rear 304	1
8	36429	Pin - Hair	2

Note: Use chain shield hardware to attach Item 1 to sills.

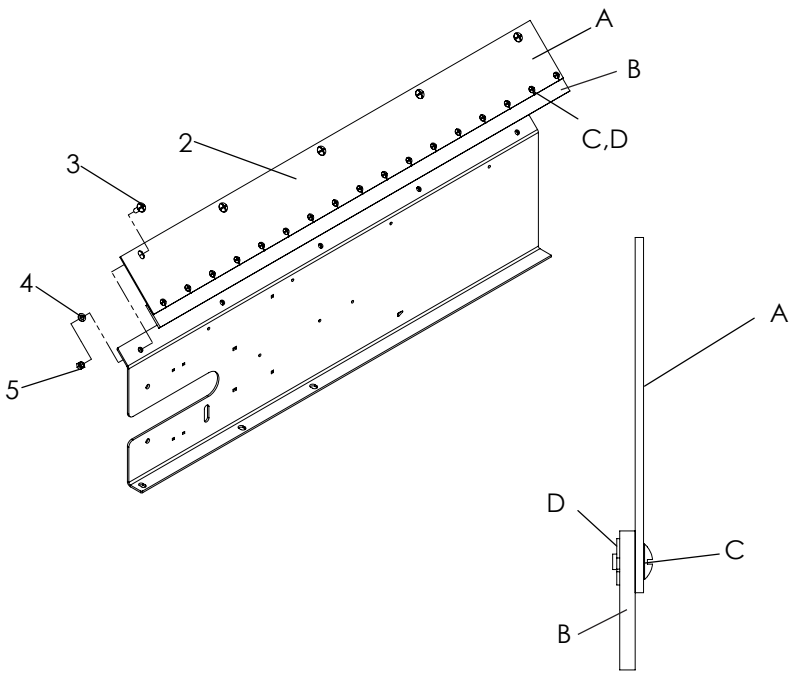


ITEM	PART NO.	DESCRIPTION	QTY
1	311428	Hillside Divider Wldmt 304	1
2	311438	Support - Hillside Divider Wldmt 304	1
3	36408	Bolt - Carriage 3/8-16NC x 1 SS	4
4	36425	Washer - Flat 3/8 SS	4
5	72054	Nut - Lock 3/8-16NC SS	4
6	311444	Cover - Wldmt Rear 304	1
7	36429	Pin - Hair	2



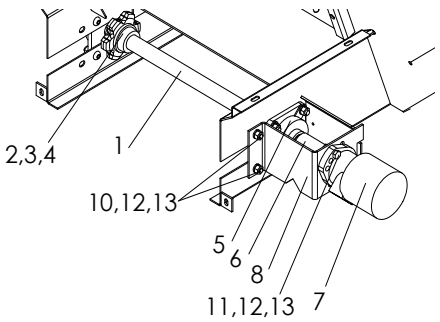
ITEM	PART NO.	DESCRIPTION	QTY
	70755	Splice Bar Assy, Includes 1, 6-8	
1	70473	Bar - Cross 40 LK	1
2	305304-AB	Belt - MOR 18” x 156” 7’	1
3	20617	Screw - Flat 1/4 x 1/2	8
4	20624	Screw - Truss 1/4 x 1/2	28
5	305834	Screw - 1/4-20 x 1/2 #4 BOC	AR
6	21118	Pin - Chain Pintle	2
7	20817	Pin - Cotter	2
8	90277	Chain - 44 Link	2
	303980	Chain - 35 Link	2
9	305642	Bar - Cross	AR

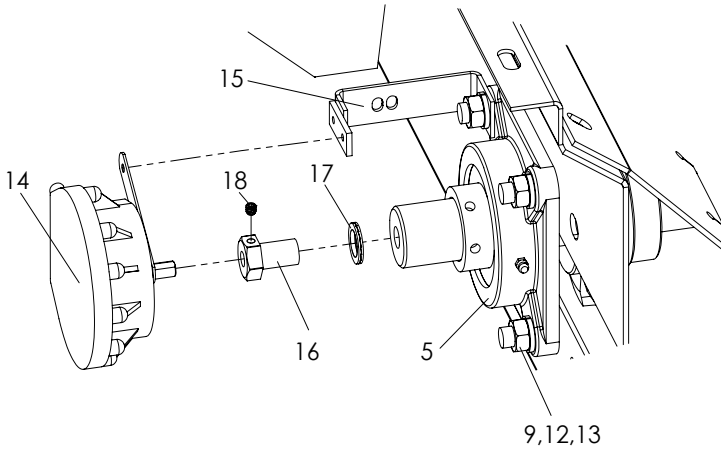
NOTE: For MULTAPPLIER chain shield parts see *Chain Shields* parts page.



ITEM	PART NO.	DESCRIPTION	QTY
1	303977	Shield – Chain Assy	2
A	303978	Shield – Chain	2
B	305975	Belting – Sealer	AR
C	56258	Screw – Truss Head 1/4-20 x 1/2	62
D	88931	Nut – Tee 1/4 x 1/4	62
2	71829	Screw – Machine 3/8-16 x 1 SS	16
3	36420	Washer – Lock 3/8 SS	16
4	36414	Nut – Hex 3/8-16 SS	16

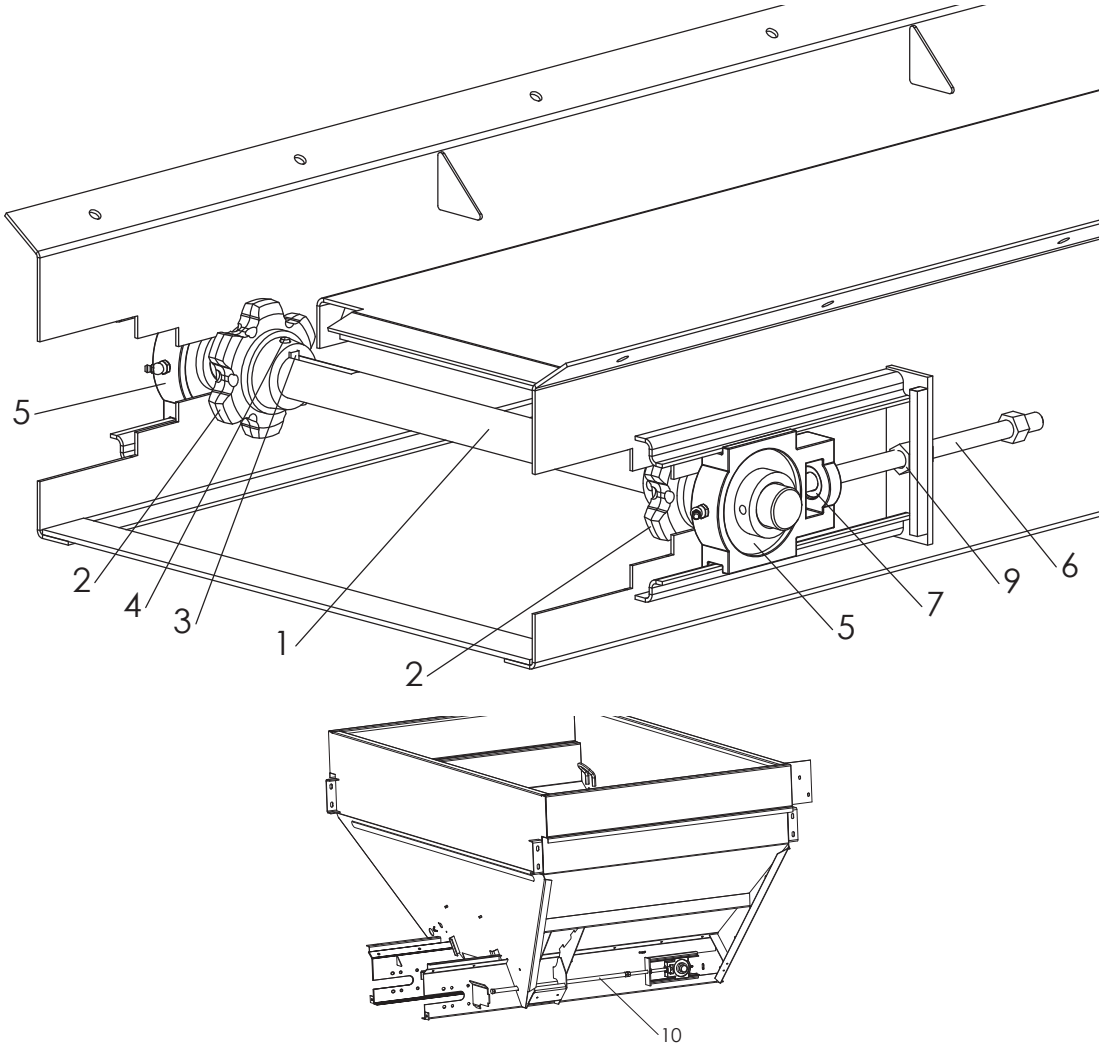
AR – As Required





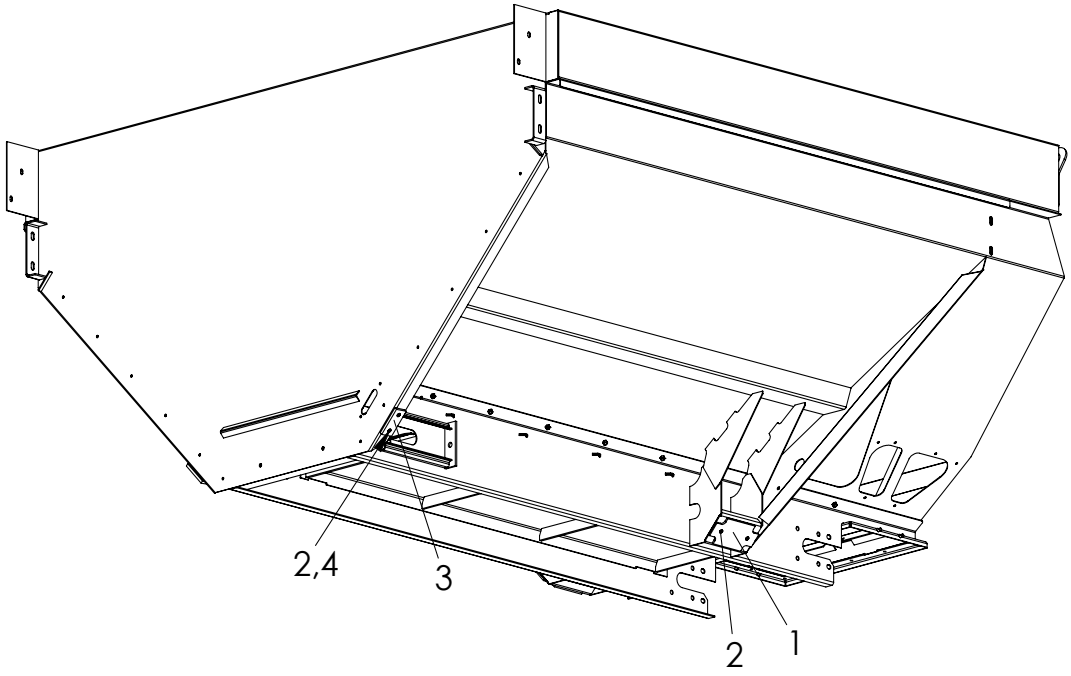
ITEM	PART NO.	DESCRIPTION	QTY
1	310644	Shaft – Drive	1
2	86757	Sprocket	2
3	6131	Key – Square	2
4	20743	Screw – Set	4
5	6697	Bearing	2
6	86762	Coupling – Shaft	1
	* 4059	Key – Square 5/16 x 1-1/2	1
7	311056	Motor – Hydraulic 17.1 CID	1
	*56327	Seal Kit	
8	86766	Mount – Motor	1
9	304484	Screw – Button Head 1/2-13NC x 1-1/2 SS	8
10	72056	Bolt – Carriage 1/2-13NC x 1 SS	2
11	36539	Cap Screw – 1/2-13NC x 1-1/2 SS	2
12	36422	Washer – Lock 1/2 SS	12
13	36416	Nut – Hex 1/2 SS	12
14	303994	Encoder – Conveyor 180	1
15	304953-X1	Bracket – Encoder	1
16	310601	Coupler – Rate Sensor	1
17	310602	Washer - Special Lock	1
18	310603	Screw - Set 1/4-20NC x 1/4 SS	1

* - Not Shown

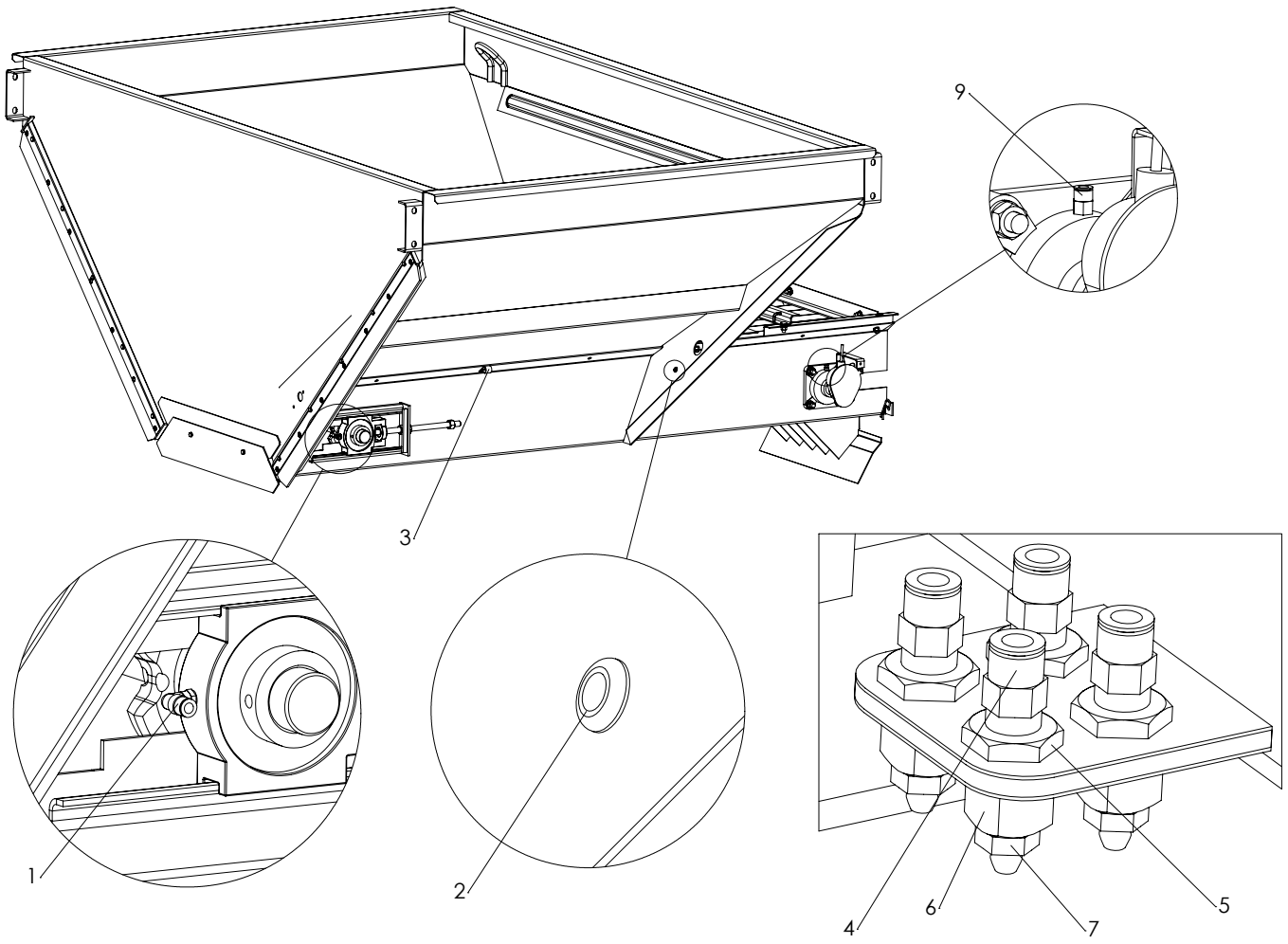


ITEM	PART NO.	DESCRIPTION	QTY
1	89779	Shaft – Idler	1
2	86757	Sprocket	2
3	6131	Key – Square	2
4	20743	Screw – Set 5/16-18NC x 3/8	4
5	22511	Bearing	2
6	87857	Bolt Wldmt	2
7	17078	Collar – Set	2
8	* 36417	Nut – Hex 5/8 SS	2
9	87856	Nut Wldmt 304	2
10	306595	Extended Idler - Pipe Wldmt Adj 7’ 304	2

* - Not Shown



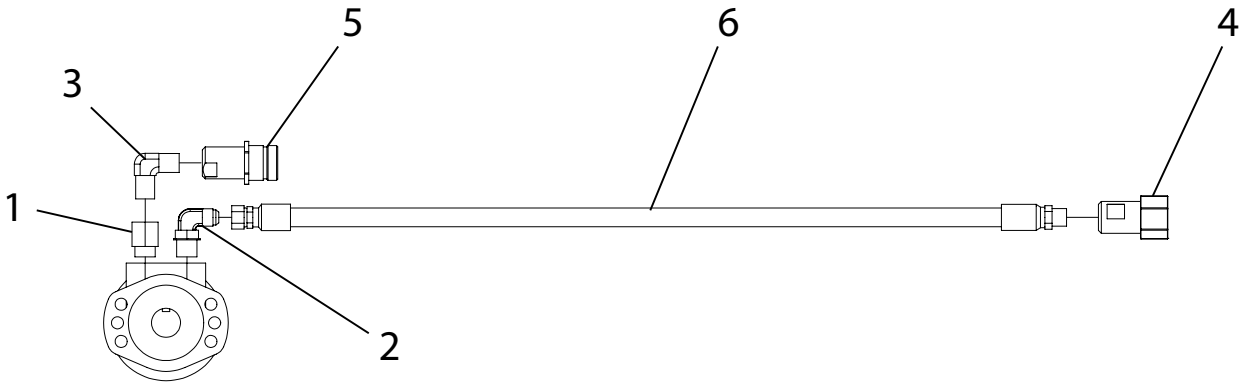
ITEM	PART NO.	DESCRIPTION	QTY
1	306924	Mount - Foot Pad	2
2	47268	Screw - Flathead 1/4-20NC x 1 SS	8
3	307097	Mount - Pad	2
4	42034	Nut - Lock 1/4-20NC SS	4



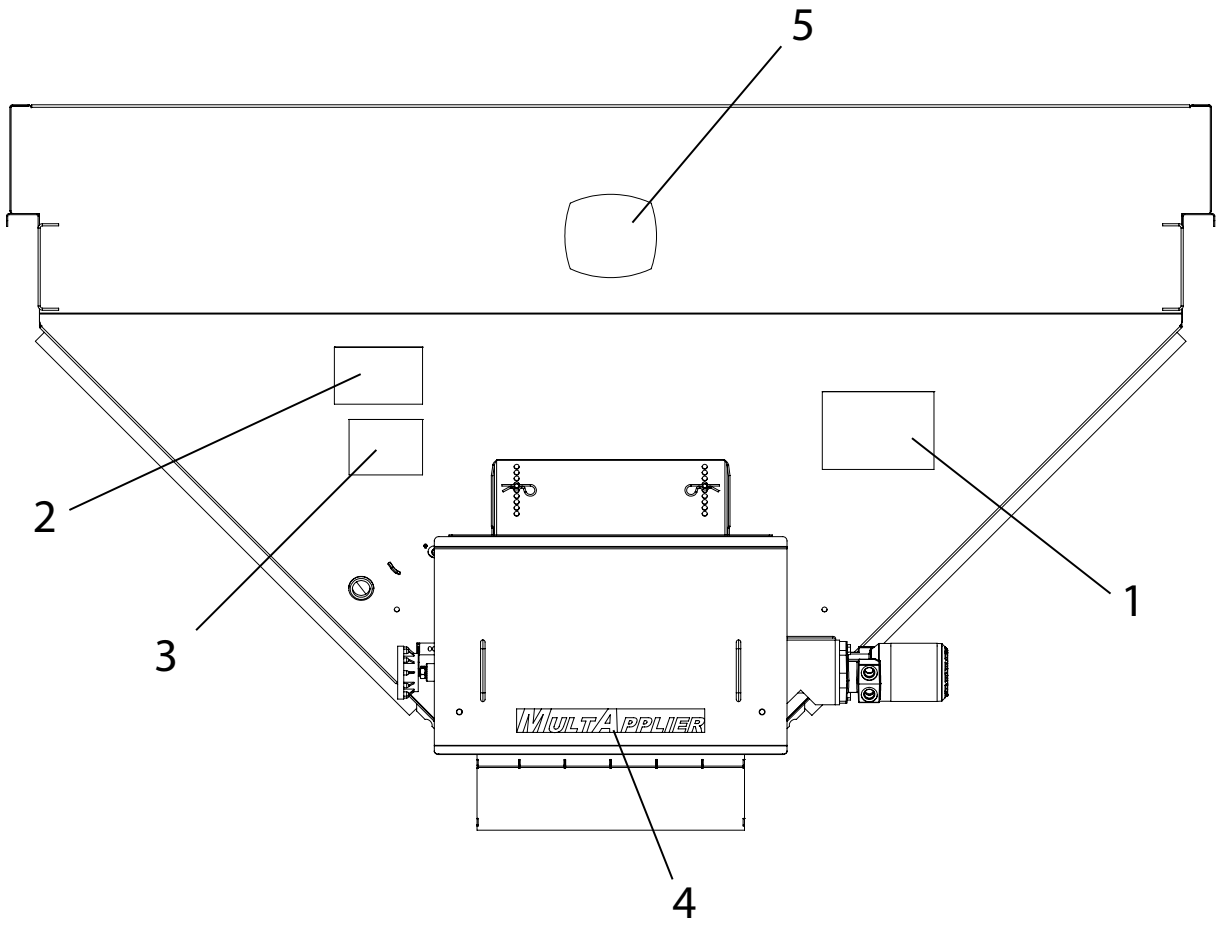
ITEM	PART NO.	DESCRIPTION	QTY
1	301337	Fitting – 90° Elbow Male	2
2	56395	Grommet - Rubber	2
3	89051	Clamp - Insulated	2
4	301334	Fitting - Straight Male 1/4-28	4
5	301333	Nut - Lock Connector	4
6	301332	Connector - Bulkhead	4
7	6069	Fitting - Grease	4
8	*301338	Tube - 1/4 OD	34 ft
9	301339	Fitting - Straight Male 1/8 NPT	2

* - Not Shown

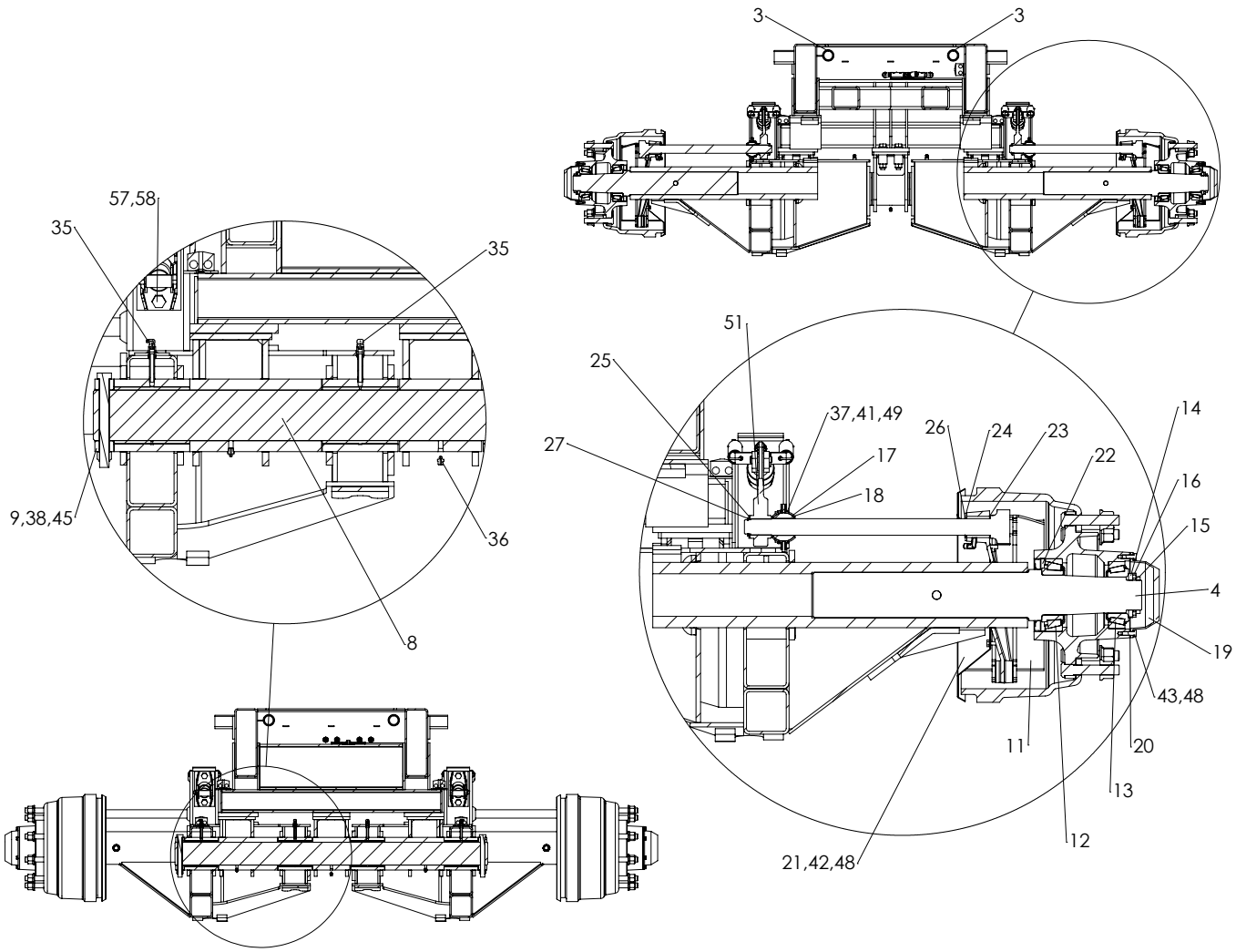
Note: Front endgate removed for clarity.



ITEM	PART NO.	DESCRIPTION	QTY
1	22020	Fitting - 10-8 Non Standard	1
2	29772	Fitting - 8-10 070220	1
3	34742	Fitting - 8-8 140237	1
4	96651	Disconnect - Quick Female	1
5	96652	Disconnect - Quick Male	1
6	98667	Hose Assembly - 1/2 x 36	1



ITEM	PART NO.	DESCRIPTION	QTY
1	368	Decal - Danger Flying Material	1
2	71526	Decal - Important Spread Pattern	1
3	21476	Decal - Important Chain Life	1
4	306348	Decal - MULTAPPLIER	1
5	305826	Decal - JD Leaping Deer	1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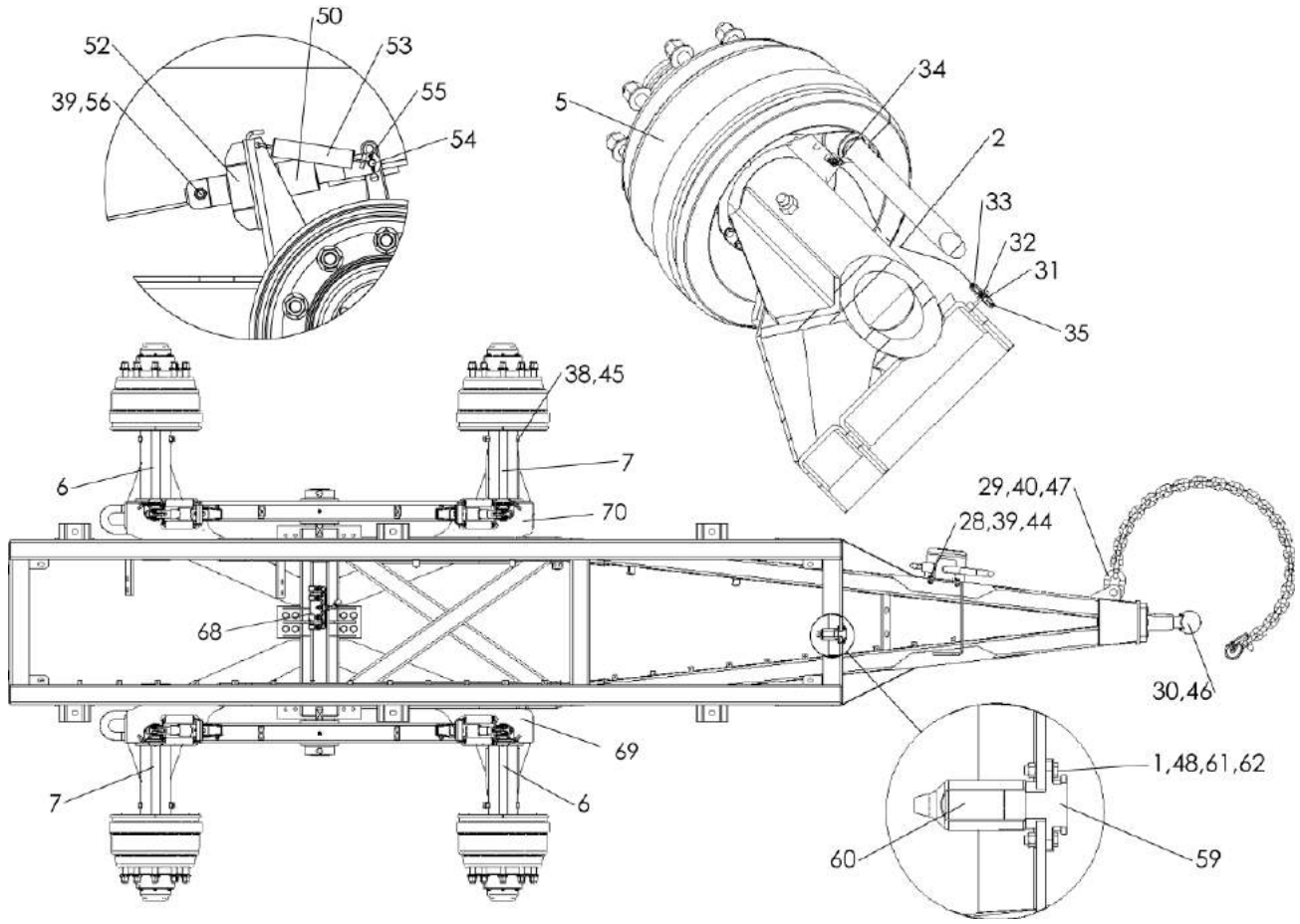
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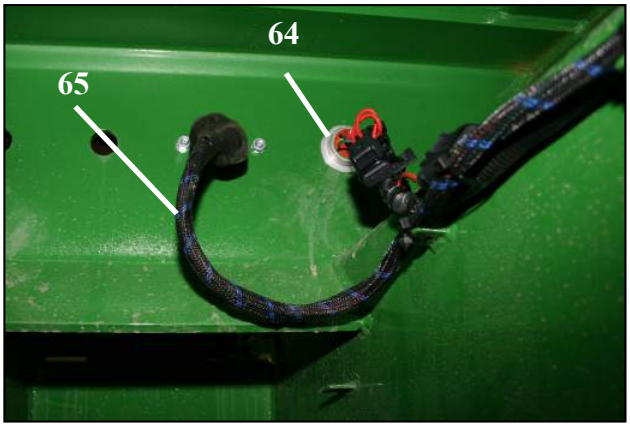
59

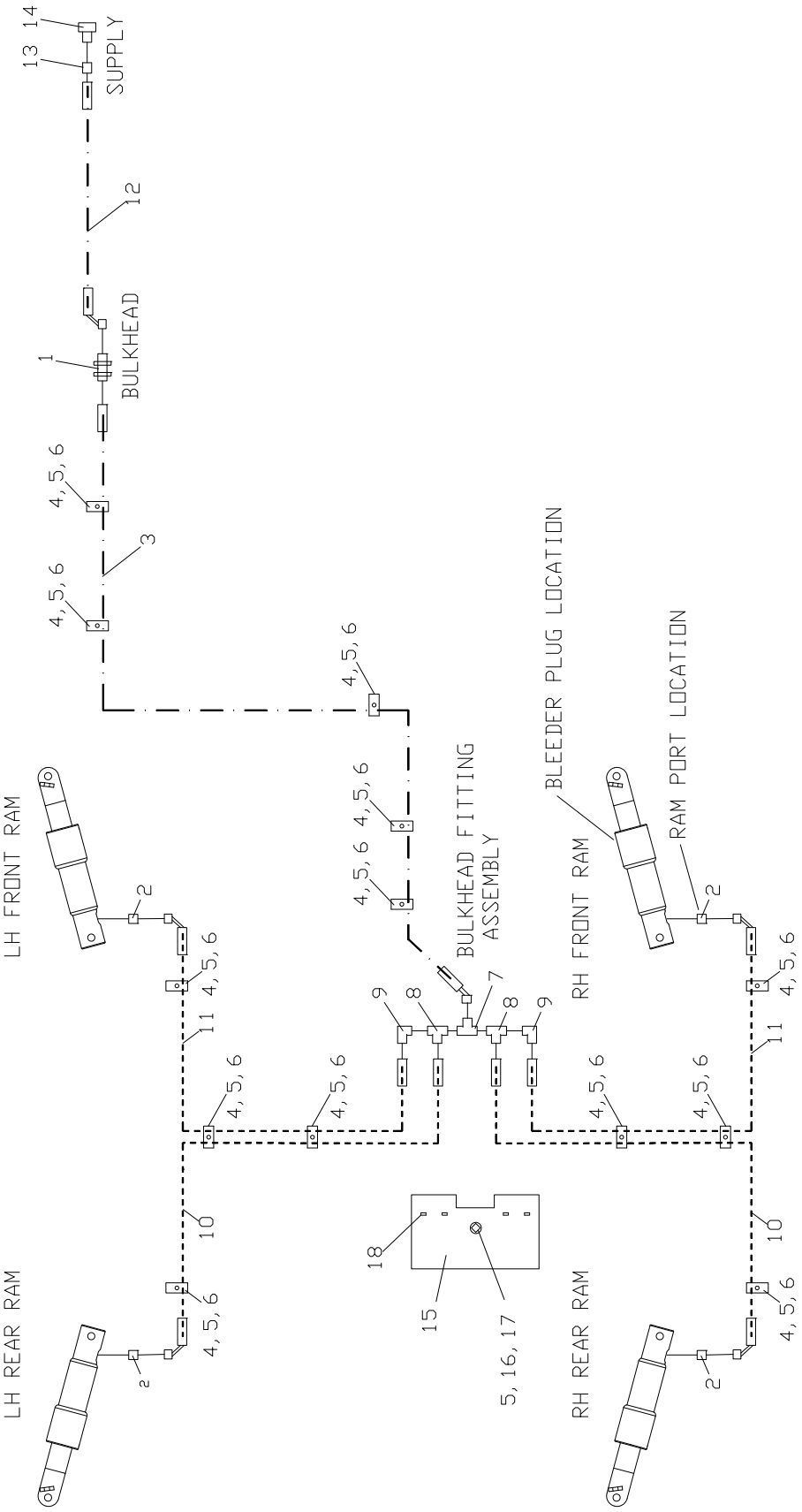

63


64
65

ITEM	PART NO.	DESCRIPTION	QTY
1	20643	Nut - Hex 5/16-18NC	2
2	301338	Tube - 1/4	6
3	21655	Grommet - Rubber 1-1/2	2
4	304925	Spindle	4
5	304926	Hub - Assy, see *Wheels & Tires* for parts list	4
6	304933	Cam - Shaft LH	2
7	304934	Cam - Shaft RH	2
8	309350	Shaft - Pivot	1
9	304991	Retainer - Pivot	2
10	*305237	Grease - Synthetic SF	2.5 ga
11	304928	Brake Shoe - Assy	4
	304928-AA	Brake - Shoe	2
	304928-AB	Roller	2
	304928-AC	Retainer - Roller	2
	304928-AD	Pin - Anchor	2
	304928-AE	Retainer - Spring Return	2
	304928-AF	Spring - Return	1
	304928-AG	Retainer - Spring	2
12	304936	Bearing - Cone 759	4
13	304937	Bearing - Cone 740	4
14	304938	Nut - Spindle Inner	4
15	304939	Nut - Spinner Outer	4
16	304940	Washer - Spindle	4
17	304932	Cover - Cam	8
18	304987	Bushing - Cam	4
19	304985	Cap - Hub	4
20	304986	Gasket - Hub Cap	4
21	304984	Shield - Dust	4
22	304989	Seal - Grease	4
23	304978	Spacer - Cam	4
24	304979	Washer - 1-1/2	4
25	304980	Washer - 1-1/4	4
26	304981	Ring - Snap 1-1/2	4
27	304982	Ring - Snap 1-1/4	4
28	305678	Jack - Wldmt	1
29	305420	Chain - Safety	1
30	304922	Hitch - Ball	1
31	301332	Connector - Bulkhead	4
32	301333	Nut - Lock, Connector	4

ITEM	PART NO.	DESCRIPTION	QTY
33	301334	Fitting - Straight Male	4
34	301336	Fitting - 90 Male Swivel	4
35	6071	Zerk - Grease	8
36	6069	Zerk - Grease	3
37	20642	Nut - Hex 1/4-20NC	16
38	20683	Nut - Lock 3/4-10NC	6
39	20680	Nut - Lock 1/2-13NC	10
40	20685	Nut - Lock 1-8NC	1
41	20005	Cap Screw - 1/4-20 x 1	16
42	20034	Cap Screw - 5/16-18NC x 3/4	24
43	20036	Cap Screw - 5/16-18NC x 1	24
44	20129	Cap Screw - 1/2-13NC x 1-1/4	6
45	58560	Cap Screw - 3/4-10 x 7	6
46	89536	Cap Screw - 3/4NC x 2-1/4	8
47	305702	Cap Screw - 1-8NC x 4-1/2	1
48	20711	Washer - Lock 5/16	50
49	20710	Washer - Lock 1/4	16
50	305358	Cylinder - Ram 1-1/2 x 3	4
51	304935	Slack - Adjuster	4
52	305369	Mount - Wldmt Ram Brake	4
53	305359	Spring - Ext	8
54	21028	Pin - Clevis	4
55	20817	Pin - Cotter	4
56	20135	Cap Screw - 1/2-13 x 3	4
57	20175	Cap Screw - 5/8-11 x 1-1/2	8
58	20682	Nut - Lock 5/8-11NC	8
59	9011-0-7102	Receptacle	1
60	9011-0-7103	Boot - Receptacle	1
61	20037	Cap Screw - 5/16-18 x 1-1/4	2
62	20692	Washer - Flat 5/16	2
63	9011-0-7104	Cord - Connector HD Antilock	1
64	306059	Control - Bundle TR3000	1
65	305414-AA	Harness - Main Light	1
66	*306433	Loctite - 271	.01
67	*306671	Cap - Plastic Tapered	4
68	305370	Hydraulic - Brakes 16' see *Hydraulic Brake Lines* parts list	1
69	309346	Walking Beam - Assy RH, see *Walking Beams* parts list	1
70	309352	Walking Beam - Assy LH, see *Walking Beams* parts list	1

* - Not Shown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SUPPLY
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BULKHEAD
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BLEEDER PLUG LOCATION
RAM PORT LOCATION
4,5,6 4,5,6
BULKHEAD FITTING ASSEMBLY
LH FRONT RAM
RH FRONT RAM
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11 4,5,6
9
8
7
8
9
4,5,6
4,5,6
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4,5,6
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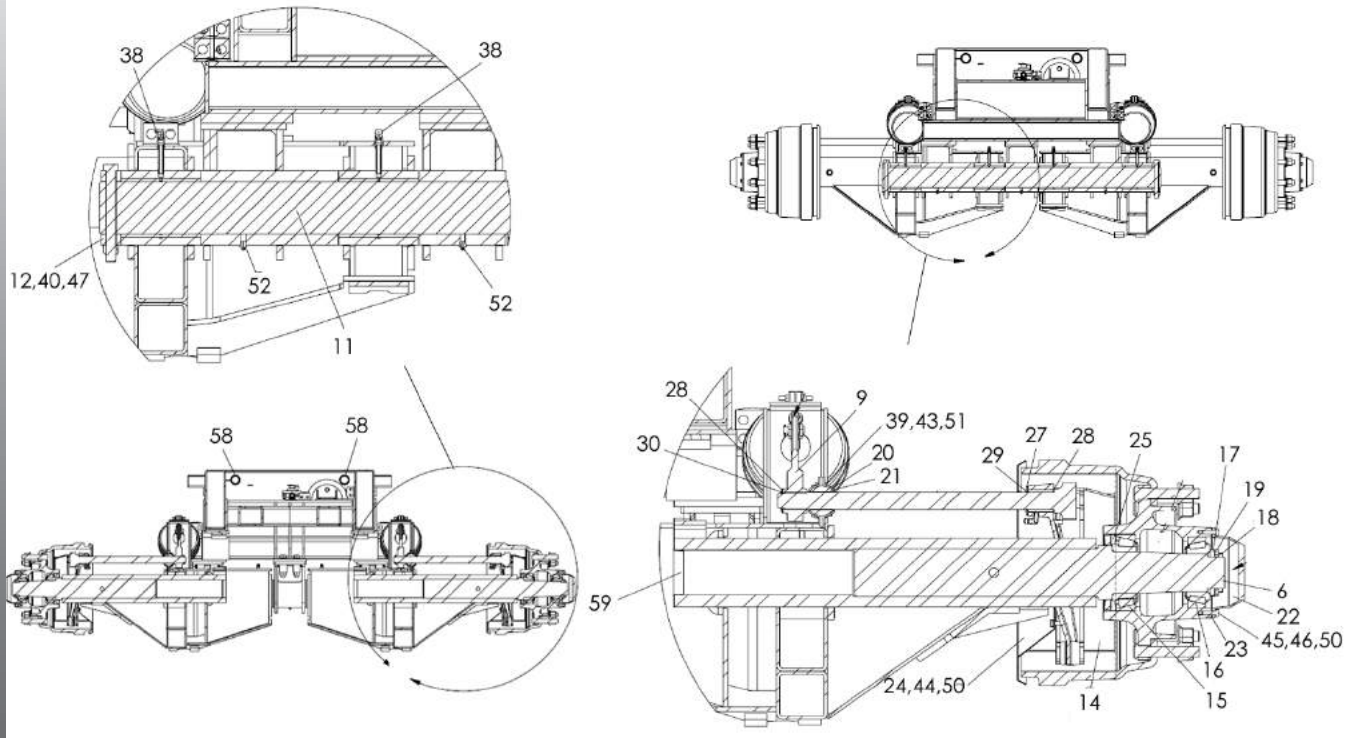
4,5,6
LH REAR RAM
RH REAR RAM
2
18
15
5,16,17

ITEM	PART NO.	DESCRIPTION	QTY
1	34839	Fitting - 8-8 070601	1
2	34809	Fitting - 8-6 070120	4
3	305408	Hose - Assy 3/8 100R1 x 124	1
4	305410	Clamp - Tubing	13
5	20711	Washer - Lock 3/8	14
6	20038	Cap Screw - 5/16-18 x 1-1/2	13
7	86419	Fitting - 8-8-8 070401	1
8	34804	Fitting - 8-8-8 070432	2
9	34803	Fitting - 8-8 070221	2
10	305409	Hose - Assy 3/8 100R1 x 96	2
11	306049	Hose - Assy 3/8 100R1 x 84	2
12	305415	Hose - Assy 3/8 100R1 x 120	1
13	306050	Fitting - 8-18 x 1-1/2 070187	1
14	305416	Coupling - Disconnect	1
15	306058	Bracket - Fitting Bulkhead	1
16	20692	Washer - Flat 5/16	1
17	20032	Cap Screw - 5/16-18 x 1/2	1
18	----	Cylinder - Ram, See *Hydraulic Brakes* for part number	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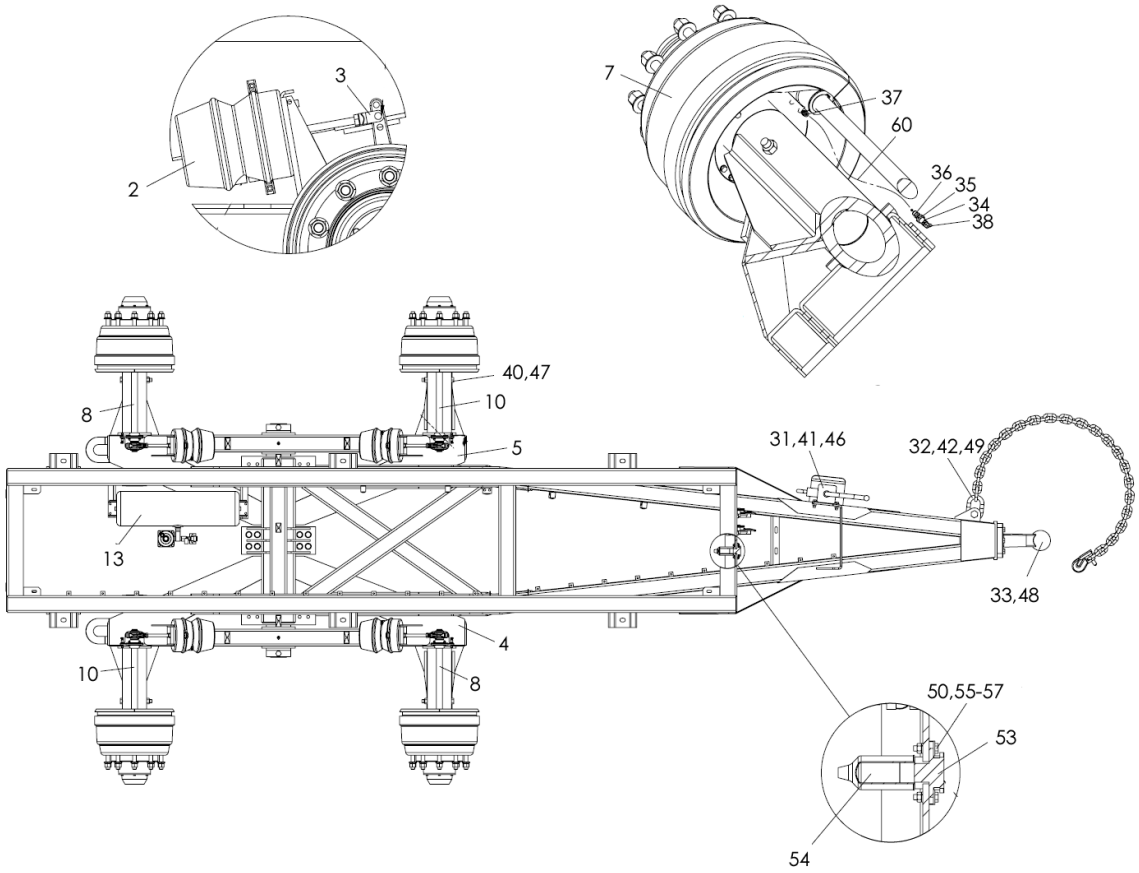
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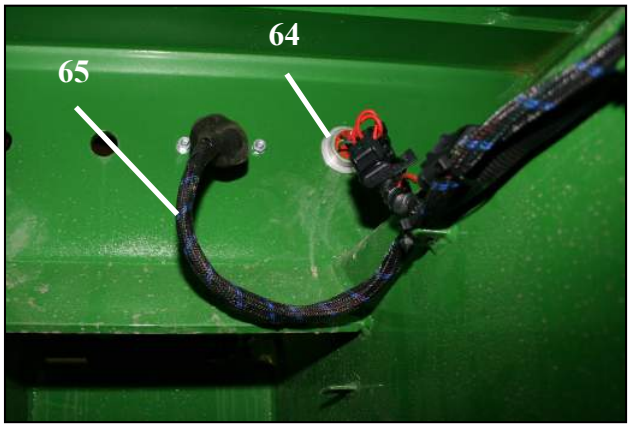
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ITEM	PART NO.	DESCRIPTION	QTY
1	305191	Frame - Wldmt Chassis	1
2	305669	Actuator - Brake	4
3	304988	Clevis - Assy	4
4	309346	Walking Beam - Assy RH, see *Walking Beams* parts lists	1
5	309352	Walking Beam - Assy LH, see *Walking Beams* parts lists	1
6	304925	Spindle	4
7	304926	Hub - Assy, see *Wheels & Tires* parts list	4
8	304933	Cam - Shaft LH 21-5/8”	2
9	304935	Slack - Adjuster	4
10	304934	Cam - Shaft RH 21-5/8”	2
11	309350	Shaft - Pivot	1
12	304991	Retainer - Pivot	2
13	305183	Air - Brakes 16’, see *Air Brake Lines* parts list	1
14	304928	Brake Shoe - Assy	4
	304928-AA	Brake - Shoe	2
	304928-AB	Roller	2
	304928-AC	Retainer - Roller	2
	304928-AD	Pin - Anchor	2
	304928-AE	Retainer - Spring Return	2
	304928-AF	Spring - Return	1
	304928-AG	Retainer - Spring	2
15	304936	Bearing - Cone 759	4
16	304937	Bearing - Cone 740	4
17	304938	Nut - Spindle Inner	4
18	304939	Nut - Spindle Outer	4
19	304940	Washer - Spindle	4
20	304932	Cover - Cam	8
21	304987	Bushing - Cam	4
22	304985	Cap - Hub	4
23	304986	Gasket - Hub Cap	4
24	304984	Shield - Dust	4
25	304989	Seal - Grease	4
26	304978	Spacer - Cam	4
27	304979	Washer - 1-1/2”	4
28	304980	Washer - 1-1/4”	4
29	304981	Ring - Snap 1-1/2”	4
30	304982	Ring - Snap 1-1/4”	4
31	305678	Jack - Wldmt	1

ITEM	PART NO.	DESCRIPTION	QTY
32	305420	Chain - Safety	1
33	304922	Hitch - Ball	1
34	301332	Connector - Bulkhead	4
35	301333	Nut - Lock	4
36	301334	Fitting - Straight Male	4
37	301336	Fitting - 90 Male Swivel	4
38	6071	Zerk - Grease	8
39	20642	Nut - Hex 1/4-20 NC	16
40	20683	Nut - Lock 3/4-10 NC	6
41	20680	Nut - Lock 1/2-13 NC	6
42	20685	Nut - Lock 1-8 NC	1
43	20005	Cap Screw - 1/4-20 x 1	16
44	20034	Cap Screw - 5/16-18 x 3/4	24
45	20036	Cap Screw - 5/16-18 x 1	24
46	20129	Cap Screw - 1/2-13 x 1-1/2	6
47	58560	Cap Screw - 3/4-10 x 7	6
48	89536	Cap Screw - 3/4 x 2-1/4 GR8	8
49	305702	Cap Screw - 1-8 x 4-1/5 GR8	1
50	20711	Washer - Lock 5/16	50
51	20710	Washer - Lock 1/4	16
52	6069	Zerk - Grease	3
53	9011-0-7102	Receptacle	1
54	9011-0-7103	Boot - Receptacle	1
55	20037	Cap Screw - 5/16-18 x 1-1/4	2
56	20692	Washer - Flat 5/16	2
57	20643	Nut - Hex	2
58	21655	Grommet - Rubber 1-1/2	2
59	306671	Cap - Plastic	4
60	301338	Tube - 1/4 Black Nylon	6
61	*305237	Grease - Synthetic SF	2.5ga
62	*306433	Loctite 271	.01
63	9011-0-7104	Cord - Connector HD Antilock	1
64	306059	Control - Bundle TR3000	1
65	305414-AA	Harness - Main Light	1

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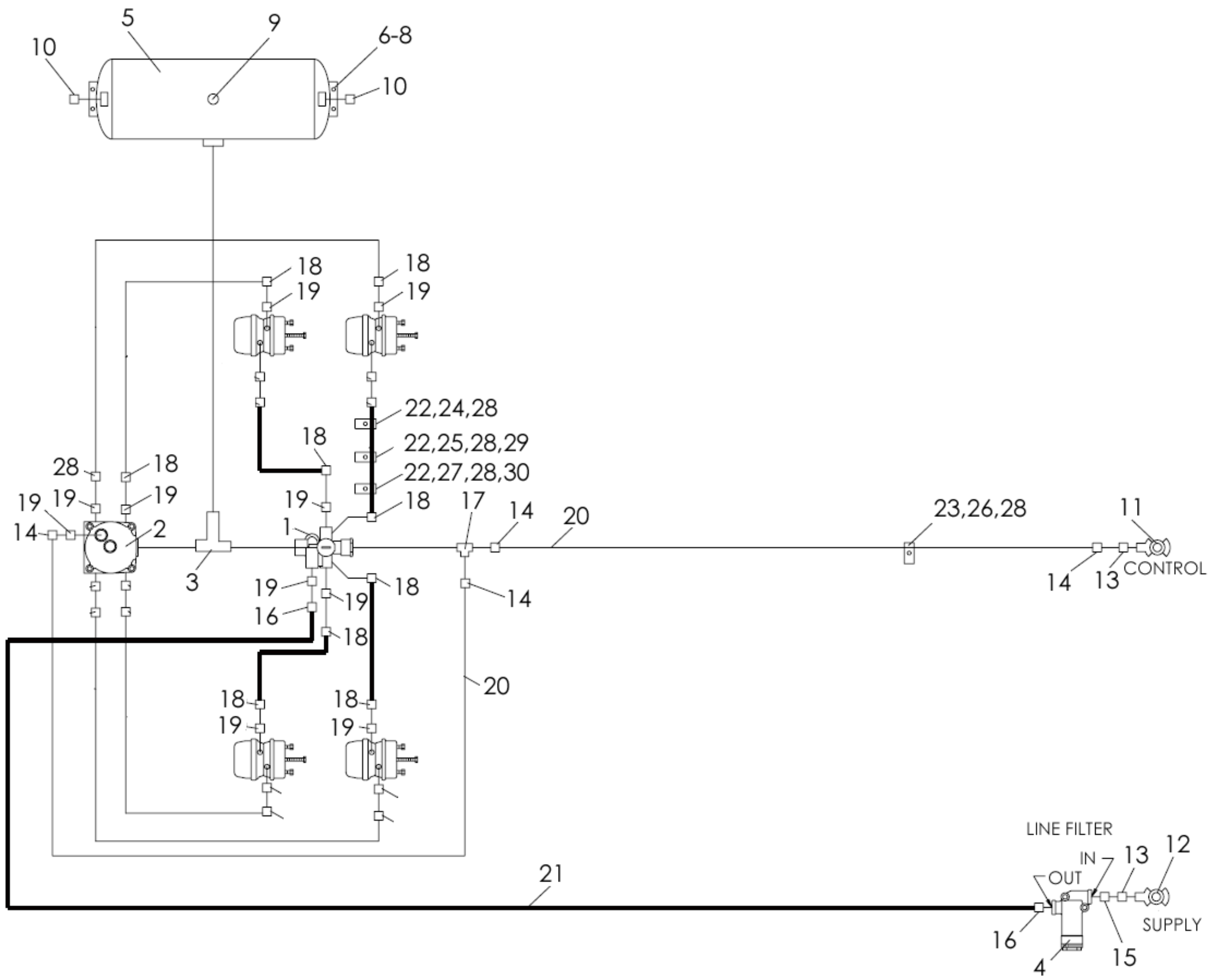
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CONTROL
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LINE FILTER
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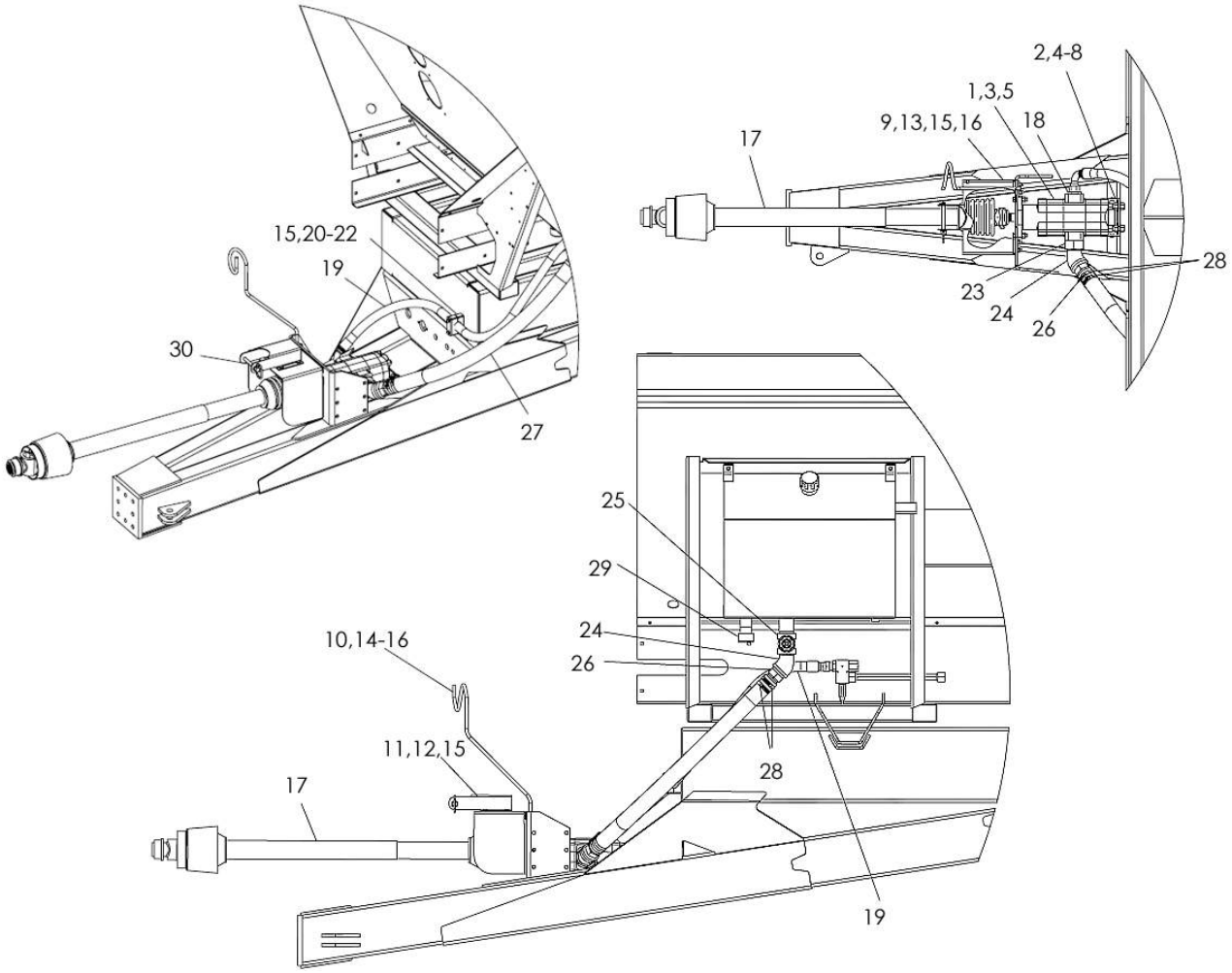
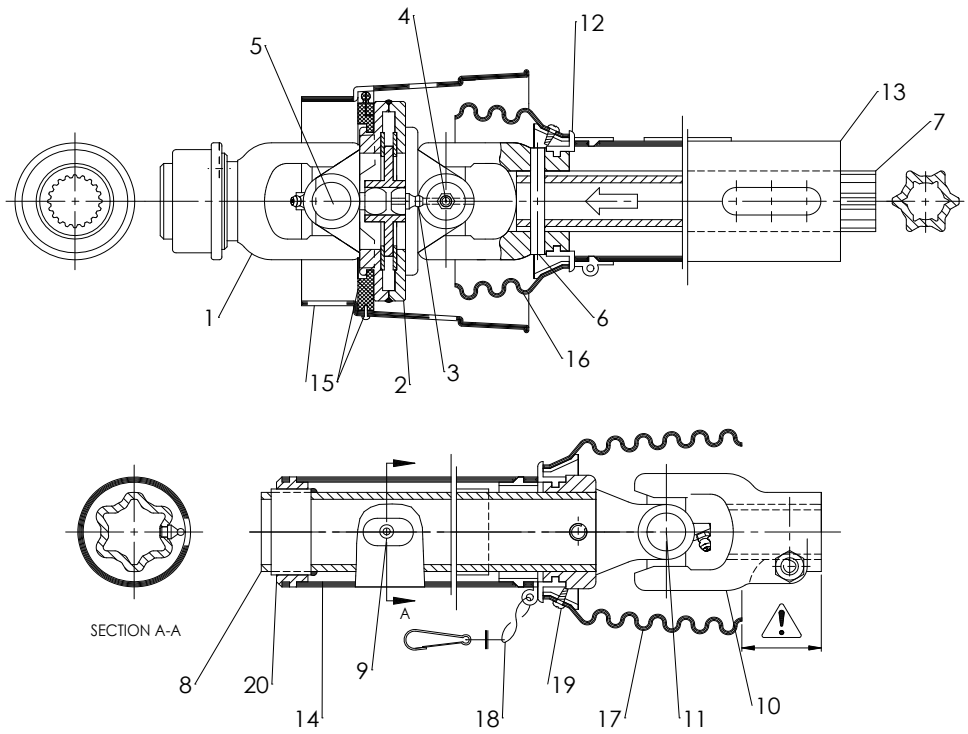
ITEM	PART NO.	DESCRIPTION	QTY
1	9005-0-1010	Valve - Control	1
2	305184	Valve - Relay	1
3	305185	Tee - Mounting	1
4	9005-0-0859	Filter	1
5	9005-0-0513	Tank - Air	1
6	20067	Cap Screw - 3/8-16 x 1	4
7	20712	Washer - Lock 3/8	4
8	20644	Nut - Hex 3/8-16	4
9	9005-0-7785	Drain - Cock	1
10	9005-0-7772	Fitting	2
11	9005-0-1502	Gladhand - Coupling (Service Blue)	1
12	9005-0-1503	Gladhand - Coupling (Emergency Red)	1
13	9005-0-7799	Fitting - 6-8 130618B	2
14	9005-0-7779	Fitting - 6-6 630102B	4
15	9005-0-7770	Fitting - 6 130137B	1
16	9005-0-7778	Fitting - 8-6 630102B	2
17	9005-0-7817	Fitting - 6-6-6	1
18	9005-0-7784	Fitting - 6-6 040106B	16
19	9005-0-7767	Fitting - 6-6 130239B	16
20	9005-0-7797	Tubing - 3/8 Nylon	12 ft.
21	9005-0-7796	Tubing - 1/2 Nylon	12 ft.
22	75036	Clamp - Tubing 3/4	12
23	300031	Clamp - Tubing 1/2	6
24	20040	Cap Screw - 5/16-18 x 2	4
25	20046	Cap Screw - 5/16-18 x 3-1/2	2
26	20038	Cap Screw - 5/16-18 x 1-1/2	6
27	20042	Cap Screw - 5/16-18 x 2-1/2	4
28	20711	Washer - Lock 5/16	16
29	20692	Washer - Flat 5/16	4
30	20643	Nut - 5/16-18	4
31	*3055238	Air Coil Kit	1
	305236	Air Coil Set	1
	9005-0-1503	Gladhand - Coupling (Emergency Red)	2
	9005-0-1502	Gladhand - Couplking (Service Blue)	2

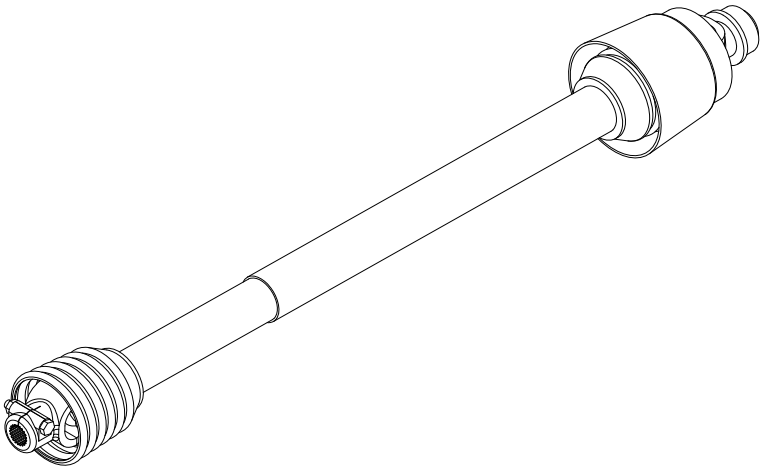


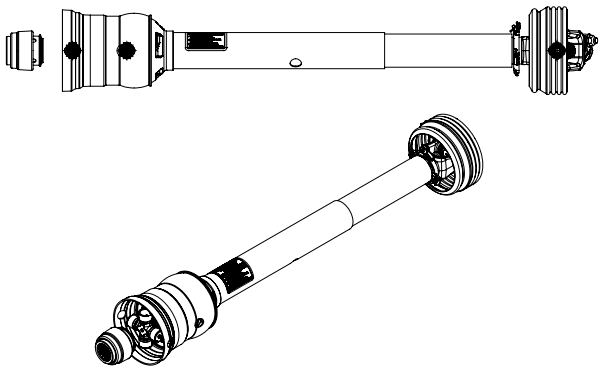
ITEM	PART NO.	DESCRIPTION	QTY
1	304921	Hydraulic Pump	1
	304921-AZ	Pump - Service Kit	1
	304921-AI	Shaft/Bearing Assy	1
	304921-AJ	Screw - Set	2
	304921-AS	Seal - O-Ring	1
	304921-AV	Seal - Lip	1
	304921-AX	Seal - Retainer	1
2	305173	Support - Pump	1
3	20131	Cap Screw - 1/2-13 x 2	2
4	20128	Cap Screw - 1/2-13NC x 1-1/4	2
5	20680	Nut - Lock 1/2-13NC	4
6	20682	Nut - Lock 5/8-11NC	4
7	20695	Washer - Flat 1/2	2

ITEM	PART NO.	DESCRIPTION	QTY
8	20697	Washer - Flat 5/8	4
9	305196	Guard - PTO	1
10	305197	Support - Hose	1
11	305225	Retainer - PTO	1
12	20067	Cap Screw - 3/5-16NC x 1	4
13	20068	Cap Screw - 3/8-16 x 1-1/4	2
14	20069	Cap Screw - 3/8-16NC x 1-1/2	2
15	20678	Nut - Lock 3/5-16NC	10
16	20693	Washer - Flat 3/8	4
17	304990	Driveline - CV, *See Driveline Parts Page*	1
	304990-AE	Cross and Bearing Kit	1
	304990-AK	Cross and Bearing Kit	1
	304990-AM	Outer Shield Tube Oval	1
	304990-AN	Inner Shield Tube Round	1
	304990-AO	CV Cone & Bearing Assy	1
	304990-AP	Shield Cone 3 Rib	1
	304990-AQ	Shield Cone 6 Rib	1
	304990-AX	Cross and Bearing Kit	1
18	34845	Adapter	1
19	98949	Hose - 1 x 80 100R12 Assy	1
20	305255	Clamp - Hose 1-1/2	1
21	305257	Plate - Cover Clamp	1
22	20077	Cap Screw - 3/8-16 x 3-1/2	2
23	305261	Adapter - 2-1/2 SAE x 2 NPT	1
24	305241	Elbow - 2 NPT 45°	2
25	23716	Valve - Gate 2 NPT	1
26	29811	End - Hose 2 NPT x 2	2
27	306435	Hose - 2” 100R4	45 in
28	22380	Clamp - Hose	4
29	300502	Cap - Pipe 1-1/2 NPT	1
30	305228	Pin - Hitch 1/2 x 4	1



Style 1





Style 2

Style 1

ITEM	PART NO.	DESCRIPTION	QTY
1	304990-AA	Yoke - 1-3/4-20 SPL. ASG	1
2	304990-AB	Yoke - Double	1
3	304990-AC	Zerk *(In Item 2)*	1
4	304990-AX	Kit - Cross & Bearing	1
5	304990-AE	Kit - Cross Bearing	1
6	304990-AF	Pin - Spring 10 x 80	2
7	304990-AG	Inner Profile S4LGA	1
8	304990-AH	Profile & Sleeve W.A.	1
9	304990-AW	Zerk *(In Item 8)*	1
10	304990-AJ	Yoke - 1-3/8-21 SPL I.C.	1
11	304990-AK	Kit - Cross and Bearing	1
12	304990-AL	Ring - Bearing	2
13	304990-AM	Tube - Outer Shield Oval	1
14	304990-AN	Tube - Round Inner Shield	1
15	304990-AO	CV Cone & Bearing Assy	1
16	304990-AP	Cone - Shield 3 Rib	1
17	304990-AQ	Cone - Shield 6 Rib	1
18	304990-AR	Chain - Safety	1
19	304990-AS	Screw *(In Items 15-17)*	8
20	304990-AV	Bearing - Support	1
21	*304990-AZ	ASG Col. Kit *(In Item 1)*	1

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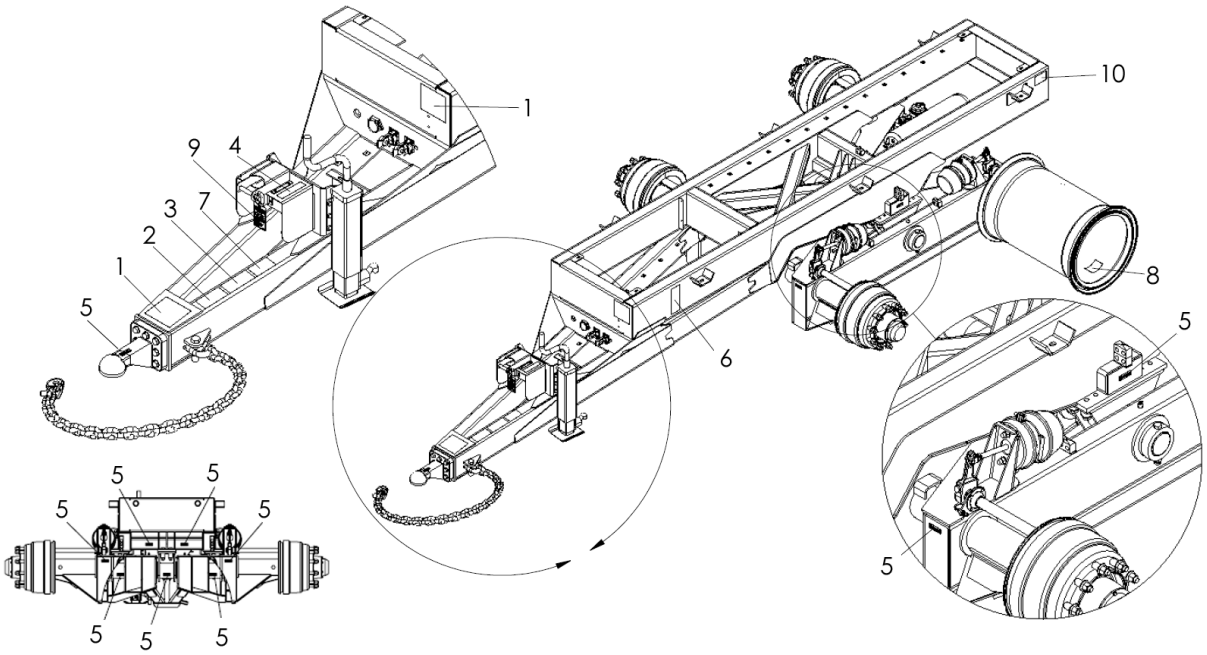
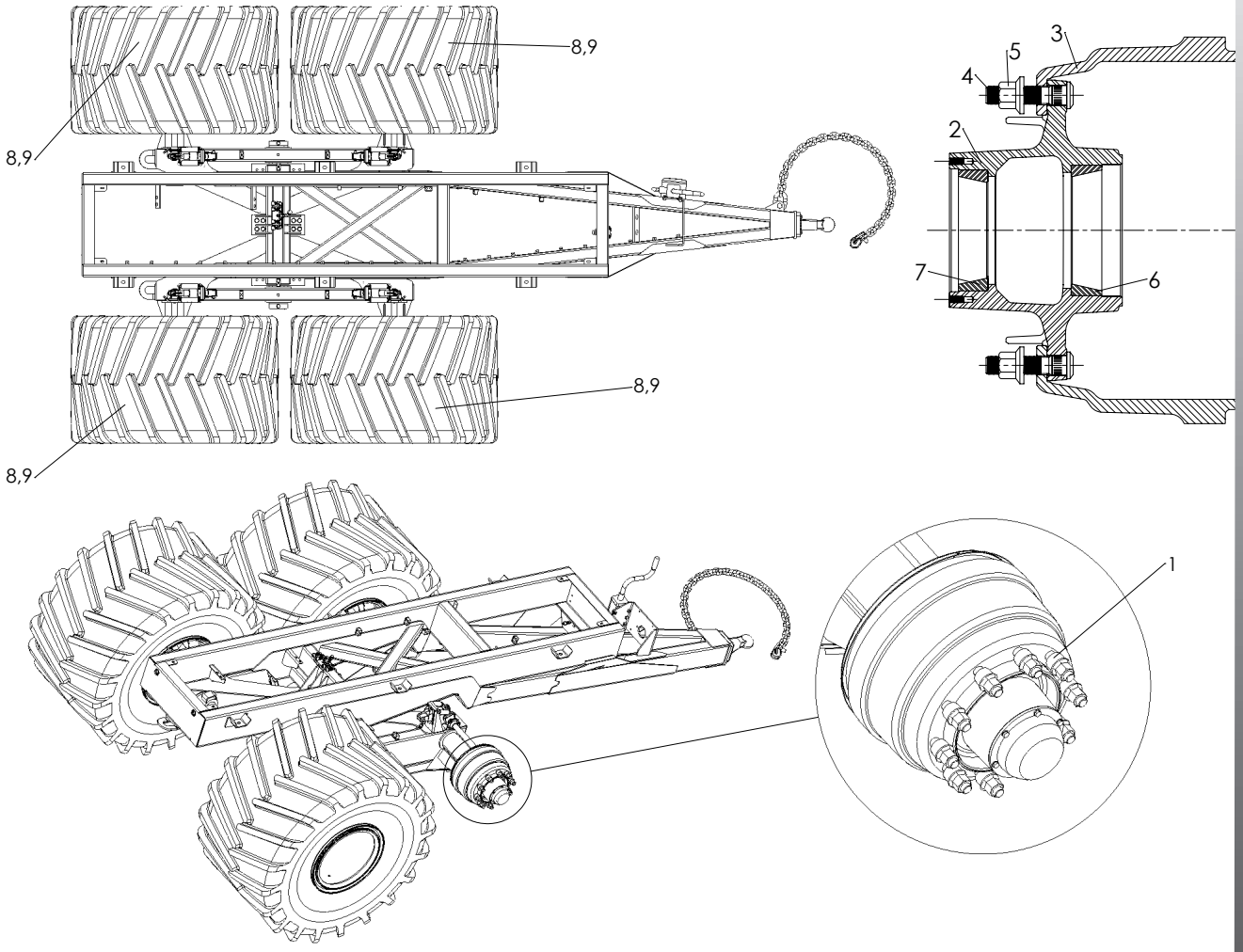
Style 2

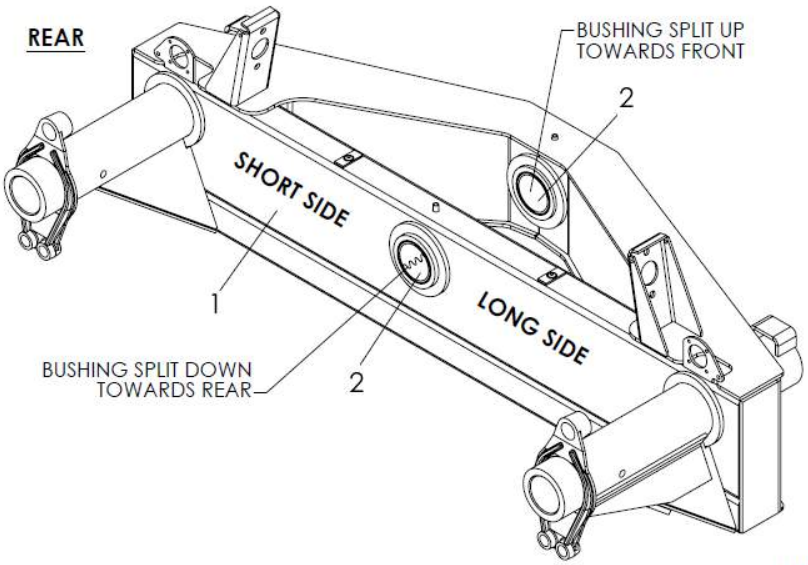
ITEM	PART NO.	DESCRIPTION	QTY
1	304990-WE	Drive Line	1



ITEM	PART NO.	DESCRIPTION	QTY
1	305281	Decal - Caution Braking	2
2	305288	Decal - Caution Tow	1
3	305289	Decal - Caution Tipping	1
4	39017	Decal - No Step	1
5	305239	Decal - Grease	12
6	305275	Decal - Trailer Tire Speed	2
7	305298	Decal - Weight Restrictions	1
8	305745	Decal - Notice Tightenting	4
9	307322	Tag - Notice to Avoid Machine Damage	1
10	9011-0-6252	Decal - Drain Air Tanks	1
11	*305647	Plate - Serial J.D. Control	1
12	*37285	Serial Plate - HECO (on New Leader Unit)	1
12	*6276	Screw - Drive	6



ITEM	PART NO.	DESCRIPTION	QTY
	304926	Hub - Assy	
1	305794	Spacer - Wheel Bolt	40
2	304926-AA	Hub - Wheel	1
3	304926-AB	Drum - Brake	1
4	304926-AC	Stud	10
5	304926-AD	Nut - Flange Swivel	10
6	304926-AE	Bearing - Cup Inner	1
7	304926-AF	Bearing - Cup Outer	1
8	304923	Wheel 25 x 36	4
9	304929	Tire - Float 66 x 43-25	4



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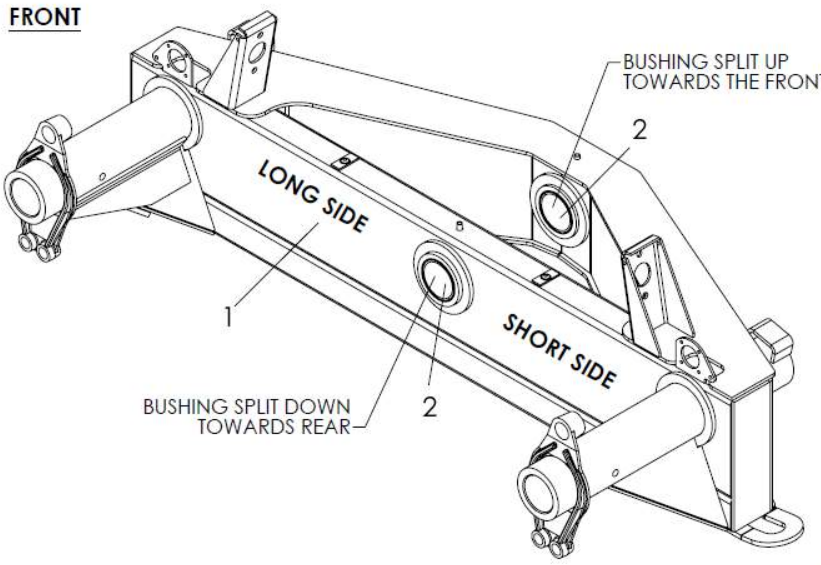
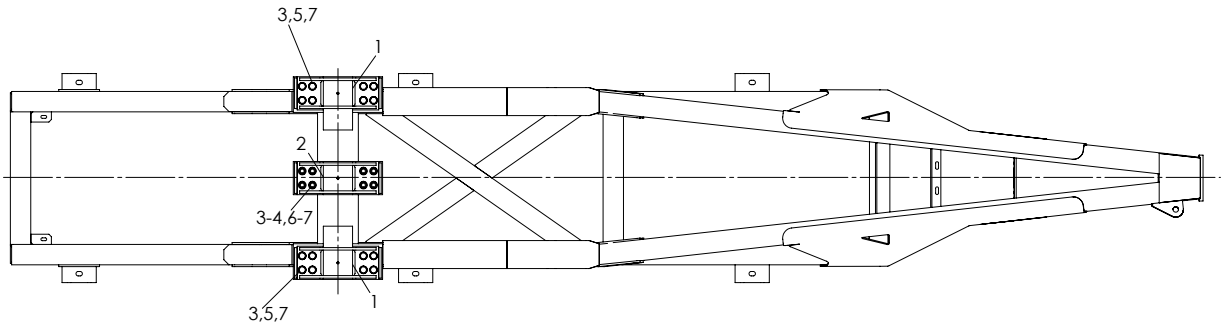


309352

ITEM	PART NO.	DESCRIPTION	QTY
	309346	Walking Beam - Assy RH	
	309352	Walking Beam - Assy LH	
1	309348	Walking Beam - Wldmt RH	1
	309355	Walking Beam - Wldmt LH	1
2	309351	Bushing - 4-1/2 x 4 x 6”	4



ITEM	PART NO.	DESCRIPTION	QTY
1	305664	Side Hanger Wldmt	2
2	305663	Center Hanger Wldmt	1
3	34579	Washer-Flat 3/4 Hardened	24
4	303692	Capscrew-3/4-10NC x 4	8
5	89538	Capscrew-3/4-10NC x 3	16
6	97015	Nut-Hex 3/4-10NC	8
7	305795	Spacer-Bolt	24

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