NEW LEADER®

MODEL L3030G4

UNIT SERIAL NUMBER _____

MANUAL NUMBER: 305021-F

EFFECTIVE 07/2015

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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Insert Current New Leader Warranty

PREFACE

PLEASE ! ALWAYS THINK SAFETY FIRST !!

The purpose of this manual is to familiarize the person (or persons) using this unit with the information necessary to properly install, operate, and maintain this system. The safety instructions indicated by the safety alert symbol in the following pages supersede the general safety rules and must be followed. These instructions cannot replace the following: the fundamental knowledge that must be possessed by the installer or operator, the knowledge of a qualified person, or the clear thinking necessary to install and operate this equipment. Since the life of any machine depends largely upon the care it is given, we suggest that this manual be read thoroughly and referred to frequently. If for any reason you do not understand the instructions, please call your authorized dealer or our Product Sales and Support Department at (319) 363-8281 or 1-888-363-8006.

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

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

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

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

ACCIDENTS HURT !!!

ACCIDENTS COST !!!

ACCIDENTS CAN BE AVOIDED !!!

TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY AND THAT OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.

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

DANGER	Indicates an imminently hazardous situation that, if not avoided, WILL result in death or serious injury. This signal word is to be limited to the most extreme situations and typically for machine components that, for functional purposes, cannot be guarded.
WARNING	Indicates a potentially hazardous situation that, if not avoided, COULD result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.
CAUTION	Indicates a potentially hazardous situation that, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.
NOTICE!	Is used for informational purposes in areas which may involve damage or deterioration to equipment but generally would not involve the potential for personal injury.
NOTE:	Provides additional information to simplify a procedure or clarify a process.

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

The following guidelines are intended to cover general usage and to assist you in avoiding accidents. There will be times when you will run into situations that are not covered in this section. At those times the best standard to use is common sense. If, at any time, you have a question concerning these guidelines, please call your authorized dealer or our factory at (319) 363-8281 or 1-888-363-8006.

MAINTENANCE INSTRUCTIONS

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

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

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

4. Safety decals or signs are available from your dealer's Parts Department or our Cedar Rapids factory.

INSTALLATION INSTRUCTIONS

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

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

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

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

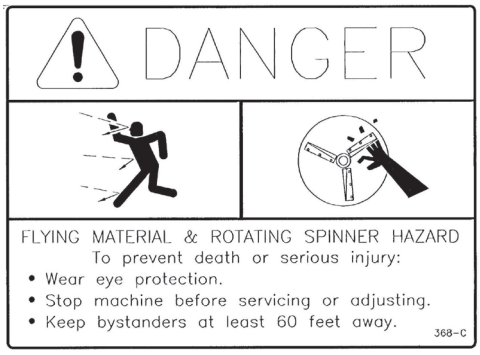
5. Remove Pre-mask
   If safety decal has a pre-mask cover remove it at this time by pulling it away from the decal at a 180 degree angle. NOTE: It is important that the pre-mask covering is removed before the decal is exposed to sunlight to avoid the pre-mask from permanently adhering to the decal.

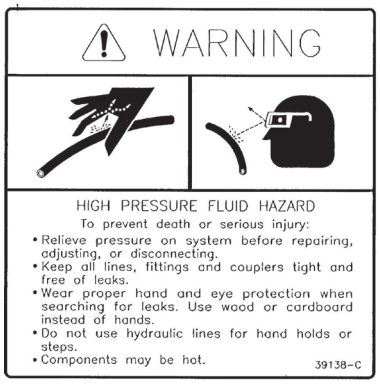
6. Remove Air Pockets
   Inspect the decal in the flat areas for bubbles. To eliminate the bubbles, puncture the decal at one end of the bubble with a pin (never a razor blade) and press out entrapped air with thumb moving toward the puncture.

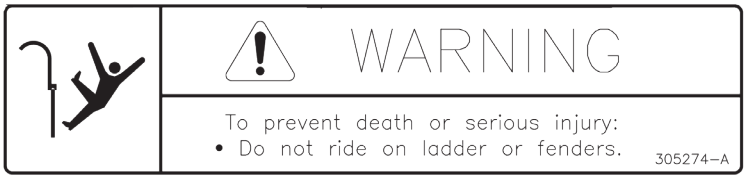
7. Re-Squeegee All Edges.

SAFETY

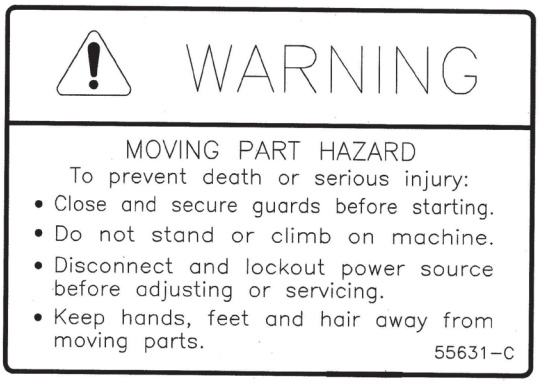

DANGER
MOVING PART HAZARD
To prevent death or serious injury:
• Stay out of box while conveyor is moving.
• Disconnect and lockout power source before adjusting or servicing.
• Do not ride on spreader.
364–C

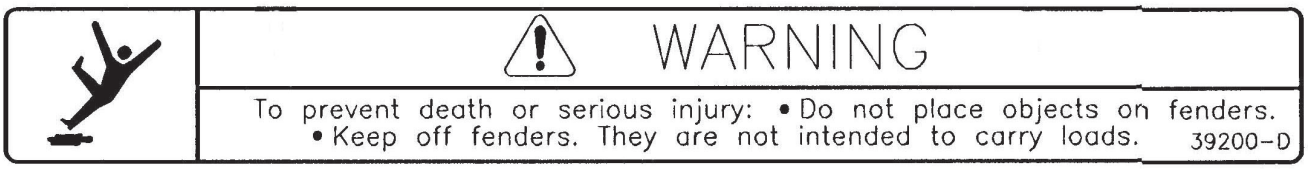

DANGER
FLYING MATERIAL & ROTATING SPINNER HAZARD
To prevent death or serious injury:
• Wear eye protection.
• Stop machine before servicing or adjusting.
• Keep bystanders at least 60 feet away.
368–C


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
FALLING HAZARD
To prevent death, serious injury or machine damage:
• Do not stand or climb on guard.
55630–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
To prevent death or serious injury: • Do not place objects on fenders.
• Keep off fenders. They are not intended to carry loads.
39200–D

SAFETY DECALS CONTINUED

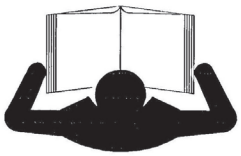
⚠ CAUTION

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



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

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

304284–B

NOTICE

- Use SAE 15W–40 for hydraulic fluid.
- Extreme operating temperatures may require a different viscosity oil range.
- Consult dealer for recommendation.

8665–D

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

Keep valve open while pump is running.

8664–D

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

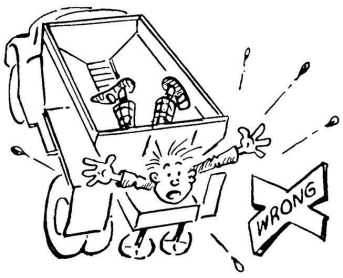
1. Before attempting to operate this unit, read and be sure you understand the operation and maintenance manual. Locate all controls and determine the use of each. Know what you are doing!

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.



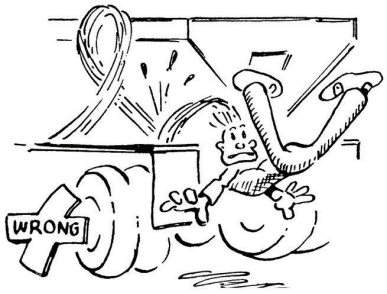
   Tag all controls to prohibit operation. Tags should be placed, and later removed, only by person working in the body.

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.



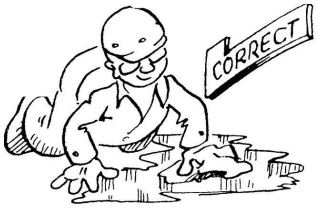
9. Do not allow anyone to ride on any part of unit for any reason.

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.

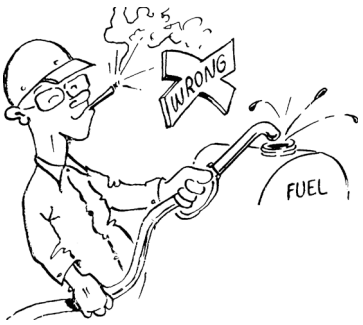
11. Inspect spinner fins, spinner frame mounting and spinner fin nuts and screws every day. Look for missing fasteners, looseness, wear and cracks. Replace immediately if required. Use only new SAE grade 5 or grade 8 screws and new self-locking nuts.

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!

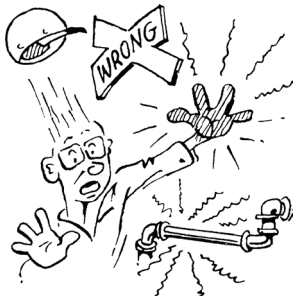


14. Starting fluids and sprays are extremely flammable. Don't smoke. Stay away from flame or heat!



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.

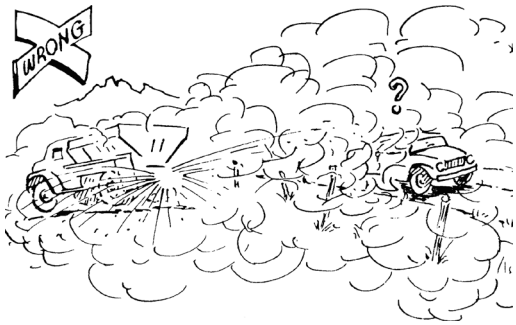


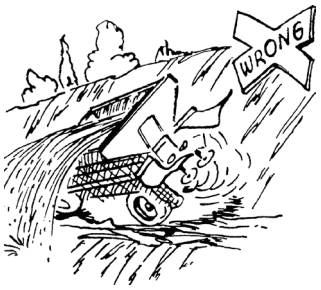
17. Wear eye protection while working around or on unit.

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 or 1-888-363-8006.

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.

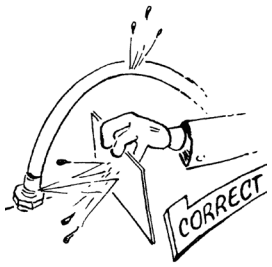
9. Keep a fully charged fire extinguisher readily available at all times. It should be a Type ABC or a Type BC unit.

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.

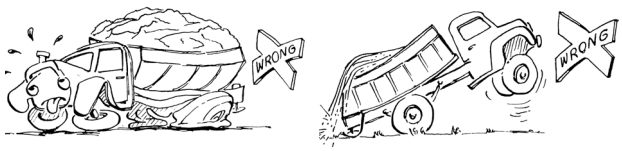
13. Hydraulic fluid under high pressure leaking from a pin hole are dangerous as they can penetrate the skin as though injected with a hypodermic needle. Such liquids have a poisonous effect and can cause serious wounds. To avoid hazard, relieve pressure before disconnecting hydraulic lines or performing 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

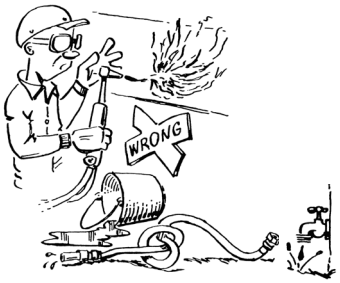
1. The selection of the vehicle on which a spreader body is to be mounted has important safety aspects. To avoid overloading:
   a. Do not mount spreader on a chassis which, when fully loaded with material to be spread, will exceed either the Gross Axle Weight Rating (GAWR) or the Gross Vehicle Weight 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.

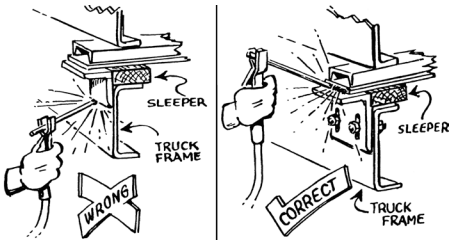
3. When making the installation, be sure that the lighting meets Federal Motor Vehicle Safety Standard (FMVSS) No. 108, ASABE S279 and all applicable local and state regulations.

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.

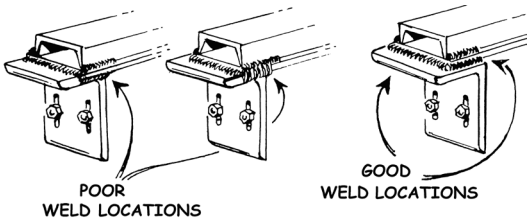


5. When truck frame must be shortened, cut off only the portion that extends behind rear shackle in accordance with the truck manufacturer's recommendations. If a torch is used to make the cut, all necessary precautions should be taken to prevent fire. Cuts should not be made near fuel tanks and hydraulic 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 L3030G4 is a hopper type spreader intended for spreading free flowing granular agricultural materials, such as chemical fertilizers, agricultural limestone and gypsum. The MULTAPPLIER allows you to spread two different materials individually or combined. It is intended for truck chassis or flotation vehicle mounting.

The unit is powered hydraulically and provides independent variable speed control for the spinner and full automatic ground speed control for the conveyor. The hydraulic pump, which provides the hydraulic power, is a gear type pump and is driven by means of a transmission PTO.

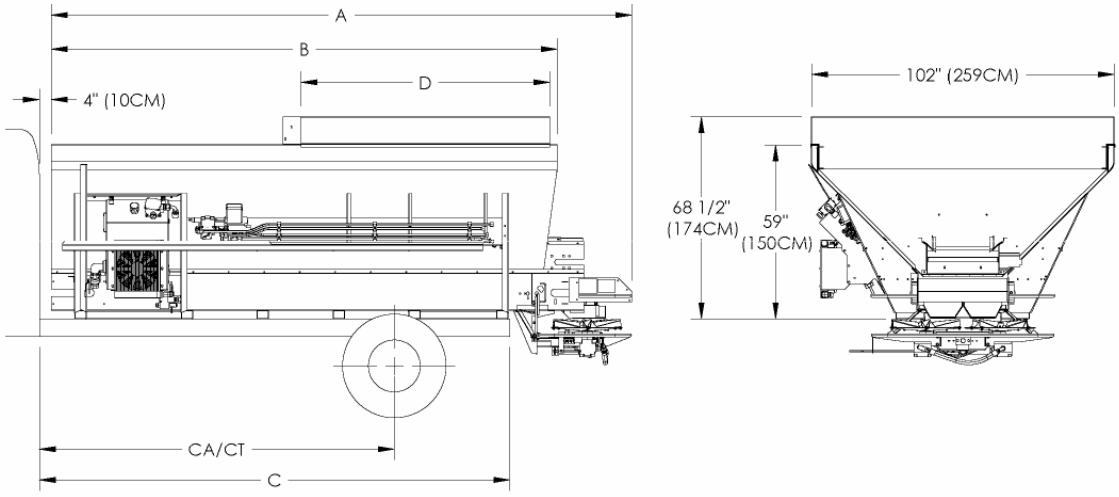
The dual conveyors deliver material to the spinners through an adjustable metering gate at the rear of the hopper body. An orbital type hydraulic motor mounted to 6 to 1 ratio spur gear case on the L3030G4. The L3030G4 has a belt conveyor. The MULTAPPLIER has a belt-over-chain conveyor with parallel strands of pintle type chain joined by cross bars every other link.

The distributor spinner assembly has two 24-inch (61cm) diameter dished discs. Each disc has four formed and heat treated fins that are adjustable to radial angle. The spinner is fully adjustable by means of a rotating handle.

This product is intended for commercial use only.

NEW LEADER HIGHWAY EQUIPMENT COMPANY

DIMENSIONS & CAPACITIES



L3030G4				
Body Length B	Overall Length A	Frame Length C	Cab to Axle or Cab to Tandem – CA/CT	Struck Capacity Cu Yd (Cu M) Cu Ft
11’ (3.36m)	160” (406cm)	123” (312 cm)	84” (213) CA	8.6 (6.6) 232.1
12’ (3.66m)	172” (437cm)	135” (343 cm)	102” (259 cm) CA	9.4 (7.2) 254.6
13’ (3.96m)	184” (467 cm)	147” (373 cm)	102-108” (259-274 cm) CT	10.3 (7.8) 277.1
14’ (4.27m)	196” (498 cm)	159” (404 cm)	120” (305 cm) CT	11.1 (8.5) 299.6

L3030G4	With 5’ MultApplier	With 7’ MultApplier
Body Length B	Struck Capacity Cu Yd (Cu M) Cu Ft	Struck Capacity Cu Yd (Cu M) Cu Ft
11’ (3.36m)	4.72 (3.61) 127	3.16 (2.42) 85
12’ (3.66m)	5.51 (4.21) 149	3.94 (3.01) 106
13’ (3.96m)	6.34 (4.85) 171	4.72 (3.61) 127
14’ (4.27m)	7.18 (5.49) 194	5.51 (4.21) 149

MultApplier	
Length D	Struck Capacity Cu Yd (Cu M) Cu Ft
5’ (1.52m)	4.25 (3.25) 115
7’ (2.13m)	5.95 (4.55) 161

NOTE:

Refer to www.highwayequipment.com for installation instructions.

Once on the website:

- **Click Customer Support.**
- **Select: Other New Leader Manuals and Instructions.**
- **Select: *New Leader Installation Instructions.***

WARNING Stand clear of moving machinery.

NOTE: Do not load spreader with material.

1. Check entire unit to make sure all fasteners are in place and properly tightened per *Standard Torques National Coarse (NC) Capscrews* section in this manual.
2. Make sure no other persons are in vicinity of truck or spreader.
3. Make sure no loose parts are in unit or on conveyor or spinner.
4. Open feedgate until it is completely clear of conveyor.
5. 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.
6. Set throttle so engine runs at about 1000 RPM. Engage PTO driving pump. Allow pump to run and circulate oil for several minutes. Increase warm-up time in cold weather.
7. Manual spinner control valve: Move to position "3''.
   PWM spinner control valve: Run at 300 RPM.
   Spinner should run at slow speed. Allow to run until it is operating smoothly and all air has been purged.
8. Manual spinner control valve: Move to position "0''.
   PWM spinner control valve: Run at 0 RPM.
9. Refer to the control's operation manual for the correct setting to operate the conveyor. Run conveyor until it's operating smoothly.
10. Manual spinner control valve: Move to position "5".
    PWM spinner control valve: Run at 500 RPM.
    Allow both spinner and conveyor to run. Shut down system.

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

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

11. Check all connections in hydraulic system to make sure there are no leaks.
12. Check hydraulic oil reservoir and refill to maintain level around mid-point of sight gauge.
    Unit is now ready for field testing.

The following procedure is a guide:

1. Field test over any suitable course which allows vehicle to be driven 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. Manual spinner control valve: Set to position “5”.
   PWM spinner control valve: 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!

4. Start truck engine. Turn control to “on’’ position. Engage PTO and allow to run at fast idle long enough to bring hydraulic oil up to operating temperature. Spinners should revolve at moderate speed and the conveyor should not move.
5. 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 vehicles road speed; the conveyor should speed up as truck speed increases and slow down as truck speed reduces. Spinner speed should remain constant when engine speed is above minimum operating range.

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. Adjust spinner control valve for material being applied to give spread width desired. See *G4 Spread Pattern* section.
5. Adjust spinner to give spread pattern desired. See *G4 Spread Pattern* section.
6. Set rear feedgate opening to obtain yield desired. Turn feedgate handle to adjust L3030G4 feedgate opening.
7. Make sure shut-off valve on hydraulic reservoir is fully opened.
8. Turn on power to controller and set program to desired values.
9. Engage pump drive PTO.

CAUTION Drive only at speeds which permit good control of vehicle!

10. Drive at speeds that allow engine to turn at proper RPM.

    Higher transmission gears may be used with speeds to 30 MPH. If lower speeds must be used, shift transmission into lower gears so that engine speed can be maintained to allow adequate hydraulic oil delivery from pump.

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

*Visit **www.newleadervip.com** for interactive tools to calculate yield, proper feedgate opening, conveyor revolutions per minute, and mph to maximize the performance of your spreader.

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.

HYDRAULIC SYSTEM

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.

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

Service Schedule

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

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

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

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

After first filter change, replace filter when indicator reaches Red Zone.

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 signs of breaking down under continued high-pressure operation. Discoloration of oil is one sign of breakdown.

CONVEYOR GEAR CASE

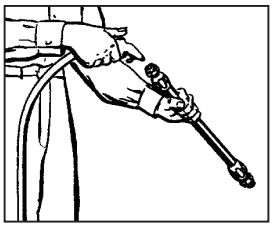
Drain oil in a new unit after first two weeks (or not more than 100 hours) of operation, and flush gear case thoroughly with light oil. Refer to *Lubricant and Hydraulic Oil Specifications* section for proper grade oil and recommended amounts of lubricant. After initial change, oil should be changed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

Check gear case oil level monthly.

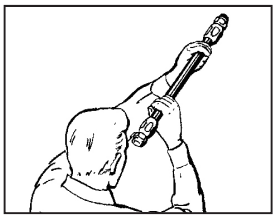
HYDRAULIC HOSE

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.

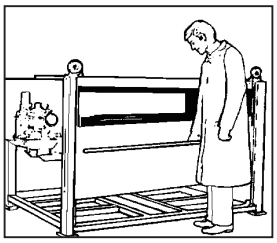
WARNING Testing should be conducted in approved test stands with adequate guards to protect the operator.



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 (65.55° C) maximum may be used.



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



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

Storage and Handling

Hose should be stored in a dark, dry atmosphere away from electrical equipment, and the temperature should not exceed 90° F (32.22° C).

#5 CONVEYOR BELT

Maintenance

The conveyor belt should be checked daily for proper tension and tracking. See "Adjustment" under *Lubrication & Maintenance* section.

Do not be alarmed as sides of belt wear unless belt is out of track. The belt will continue to operate satisfactorily with up to 1" (25.4mm) total worn from the sides. Inspect belt lacing frequently for wear or "raveling" of belt grip area and loosening hardware. Retighten loose nuts and peen end of lacing screw into slot of nut as required.

Adjustment

1. TENSION
   Belt tension should be just tight enough to prevent slippage—no tighter. If the "flats" on the conveyor drive pulley are visible through the belt, tension is high enough.

2. TRACKING
   Empty spreader to check tracking by doing the following:
   A. Make sure truck engine is shut off and move spinner control valve to "0" position. Start truck engine and engage pump drive PTO. Spinners should not turn. If they do, correct the problem before proceeding.

WARNING	Do not work near rotating spinners. Severe injury can result from contact with moving parts.

   B. Run truck engine, place controller in manual mode (see control manufacturer's manual) and run conveyor at slow speed. Gradually increase speed until tracking is visual.

CAUTION	Use great care to avoid entanglement with any moving parts.

A properly adjusted belt will either remain in a steady position centered on the pulley or more often will "wander" back and forth 1/4 to 1/2 inch (6mm to 13mm) across the pulley, but remain generally centered. The conveyor belt sides should not curl or scuff.

Improper tracking is usually due to three basic causes. These problems and their respective solutions follow:

PROBLEM 1: (Figure 1)
Belt tracks to one side, contacts side of conveyor. Contact is more severe at the front and may not quite touch at the rear.

SOLUTION:
Tighten idler bearing at side in contact with belt. Make this adjustment one turn at a time. Operate conveyor 10 to 15 minutes at a high speed to allow belt to react to the adjustment. Repeat if necessary.

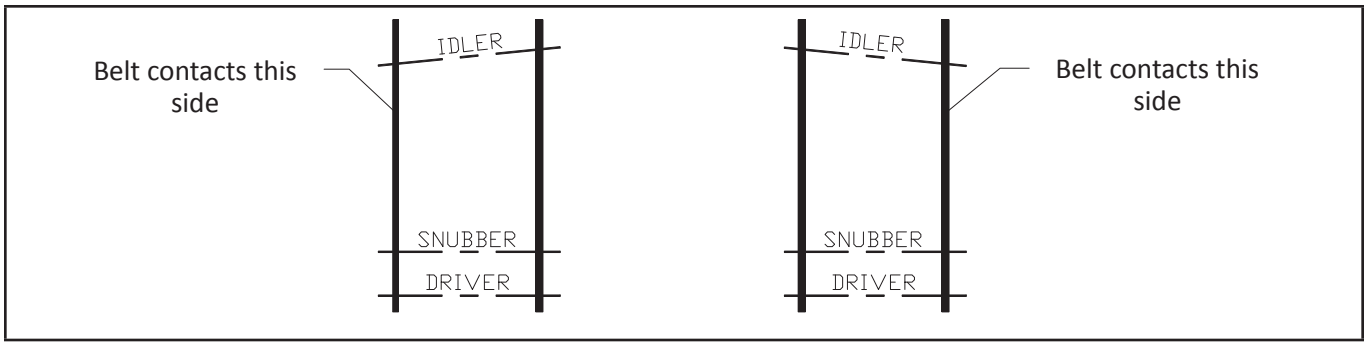


Figure 1

PROBLEM 2: (Figure 2)
Belt contacts one side at front and contacts other side at rear.

SOLUTION:
If adjusting as in Problem 1 does not remedy the situation, adjustment of the drive pulley is necessary. Mark the position of the adjustment screw (RH side) on the side of the unit. Determine which illustration shows the problem to figure out which direction the drive shaft should be moved. Loosen the adjustment screw to move the shaft forward; tighten the screw to move the shaft rearward.
NOTE: The illustration is exaggerated. Only move the adjustment screw 1/4 turn at a time after loosening the bolts holding the bearing. Usually, 1/64 to 1/32 inch (.4mm to .8mm) adjustment is all that is necessary. Retighten bearing. Operate conveyor for 10 to 15 minutes at a high speed to allow belt to react to adjustment. The problem should change to Problem 1. Adjust as in Problem 1 to track belt properly.

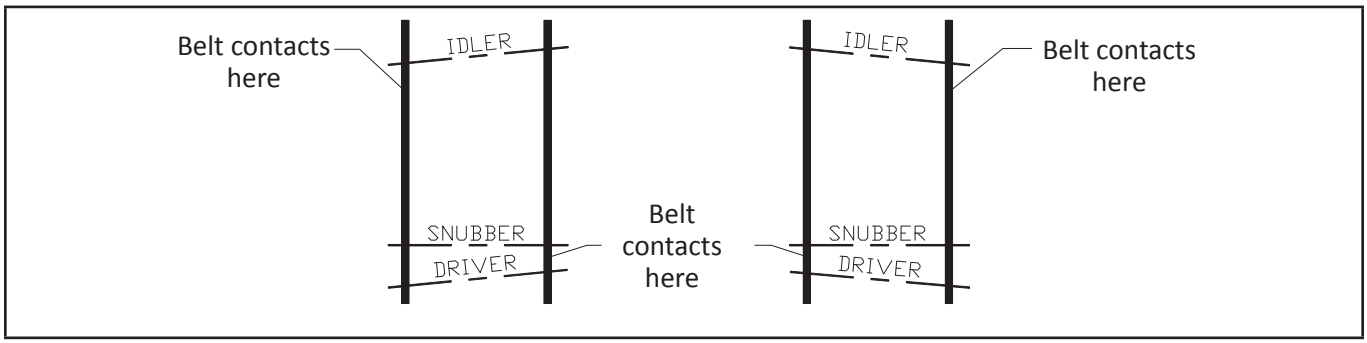


Figure 2

PROBLEM 3: (Figure 3)
Belt contacts side as in Problem 1, but contacts more heavily at a point approximately three feet from rear.

SOLUTION:
Realign snubber pulley. Note the point or side of contact from the illustration. This side of the snubber is too low.
NOTE: This pulley moves up and down ONLY.
Loosen belt and raise or lower as necessary. Loosen the two bolts holding the snubber bearing on the side to be adjusted after marking the old position. Move approximately 1/16 inch (1.6mm) at a time and retighten. Retighten belt the exact number of turns previously loosened. Operate conveyor 10 to 15 minutes to allow belt to react to adjustment. Refer to Problem 1 and readjust. If readjustment does not compensate, repeat.

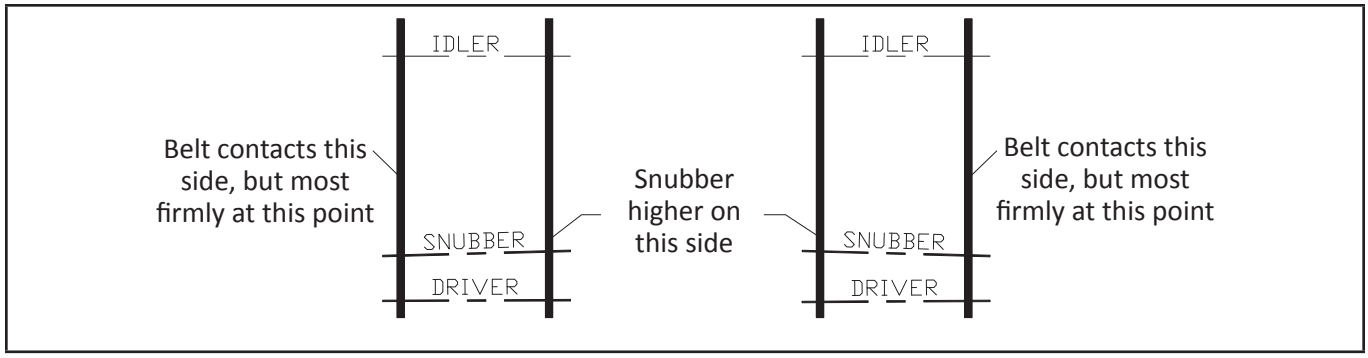


Figure 3

If, after continued adjustment, the belt does not track properly, check the following:

1. Check for twisted spreader body. Shims must be placed between spreader cross tubes and the mounting surface to eliminate any twist in the body structure.
2. Check for crowned Idler Pulley by placing a straight edge on the pulley. If properly crowned, the straight edge will contact the center pulley leaving 1/16 inch (1.6mm) gap between the straight edge and both pulley ends. Replace the pulley if crown is not present.
3. Check for lacing squareness by removing the belt. This should be done as a last resort. If the lacing is not square to the belt ends, contact your dealer for service.
4. Sight down the body under the belt shields. The only point which should come close to or slightly contact the belt, is the lowest point on the shield. If the belt contacts the shield firmly at any other point, tracking will be impossible and you should see your dealer immediately. Only your dealer can correct the situation.

Shield

The belt shields along each side of the belt inside the unit should be just contacting the belt when the belt is properly adjusted and the unit is empty (Figure 4). If a shield has clearance along its length, it can be moved down until it just contacts the belt by loosening the fastener bolts, allowing the shield to slide downward and tightening the bolts. If the shield is tending to cut into the belt along its full length, loosening the bolts and raising the shield until it just contacts the belt will correct the problem.

If the shield cuts the belt at one or more points or if it gaps at one or more points, it should be replaced.

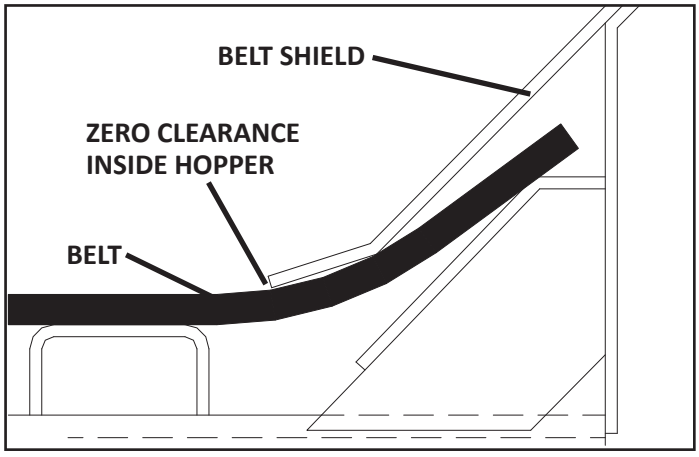


Figure 4 - #5 Bottom

NOTICE! Don't lubricate the #5 belt. Use of lubricants will cause the belt to deteriorate and fail prematurely.

Removal & Replacement

Tools and Equipment Required (NOTE: Two people MUST be used for this procedure.):

1. 1 1/2" Hex Wrench
2. 25 to 30 Feet (762cm – 915cm) of 1/4" (6mm) to 3/8" (10mm) Rope.
3. 3 or 4 Pieces of 2" x 4" (5cm x 10cm) Lumber about 3 Feet (1m) Long.
4. 10 Feet (304cm) of 14 or 16 Gauge Soft Iron Wire.

Parts Required: See Parts Pages.

Procedure:

1. Set spinner speed to stop spinners.
2. Remove both belt shields, clean thoroughly and repaint.
3. Adjust processor to Manual operation. Select a slow Manual Speed so tracking is visual.
4. Move the front idler adjustment bolts to extreme rear position.
5. Shut down spreader. Pull out splice pin to separate belt splice.
6. Insert pin into one side of belt splice. Attach a winch to the belt splice and remove belt.
   NOTE: If the splice pin cannot be removed, cut belt and remove belt by hand.
7. Using any suitable tool, remove any caked material from the drive pulley, snubber pulley, idler pulley and from inside the frame channels. Clean and repaint as required.
8. Thread OLD splice pin through one end of new belt splice. Connect wire to pin about 1/4" (6.4mm) in from each side of the belt, forming a loop.
9. Ensure belt is threaded properly with bottom of rivet facing outward as shown in Figure 5. Thread the rope along the top of the belt channel, around the front idler pulley, over the snubber pulley, and under the drive pulley.

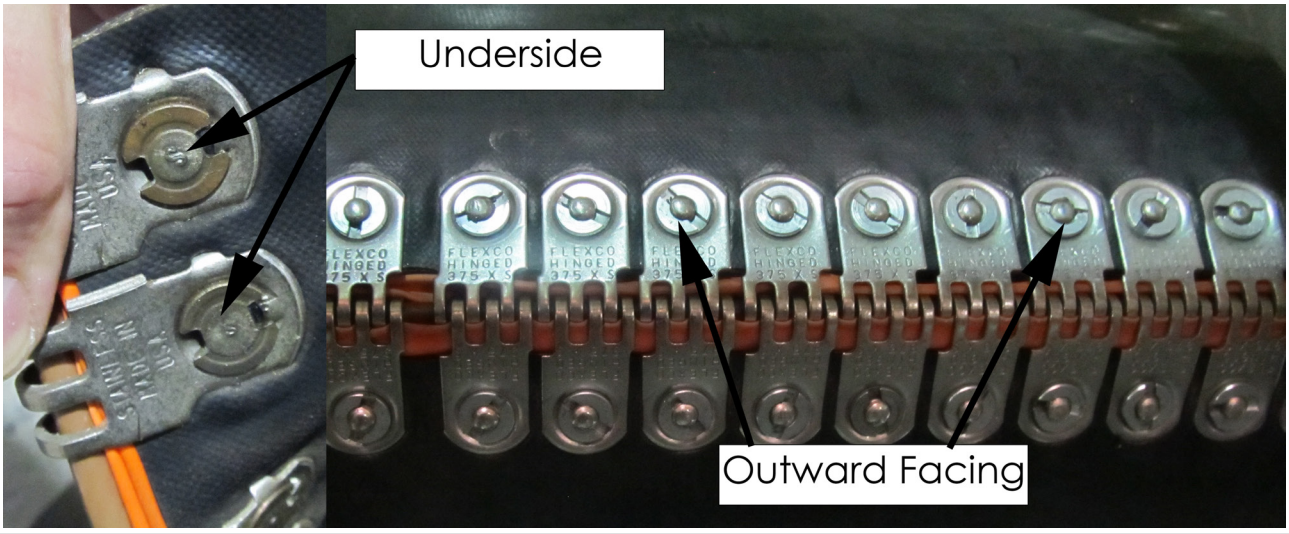


Figure 5 - Belt splice facing

CAUTION Make sure power is shut off before performing threading operation.

10. Tie end of rope under drive pulley to wire loop. Wrap other end of rope once around drive pulley and out to rear.
11. Start conveyor drive so drive pulley turns slowly. One person should pull on rope while other feeds belt into unit from rear. Pull new belt under drive pulley, over snubber pulley, along frame channels, around front idler pulley and back to drive pulley.

CAUTION	Use extreme care to avoid entanglement! Someone must stay at controls to stop conveyor instantly if required.

CAUTION	Use extreme care to avoid entanglement! Stand well back from drive pulley.

12. Shut off all power and insert lumber under belt to support its weight as shown in Figure 6.
13. Insert a plastic tube in each splice and across the full width of the belt and pull the two ends together at the center of the rear face of the drive pulley.
14. Insert the splice pin (flexible, plastic covered).
15. Snug the belt up by tightening the idler pulley.
16. Tighten the belt until the edge of the belt is approximately 2" (51mm) above the lower edge of the sill lower flange on each side. Remove lumber.
17. Adjust for proper tracking as outlined in the *Belt Conveyor Adjustment* section of this manual.

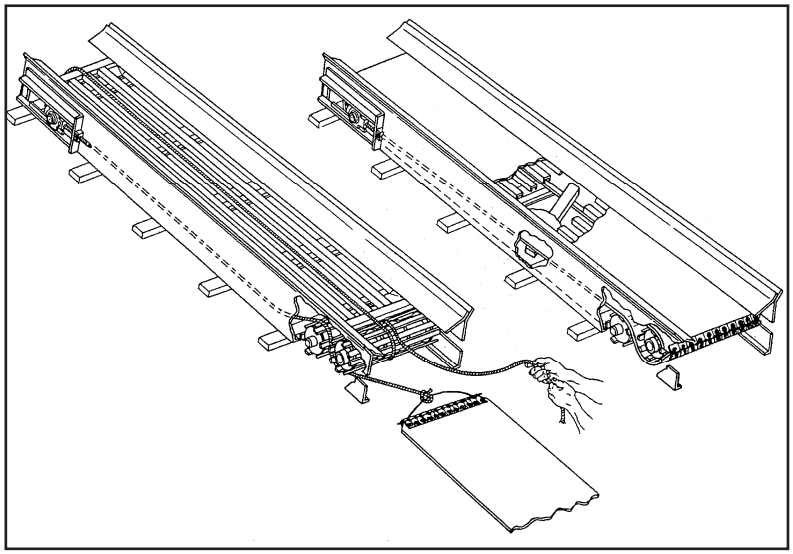


Figure 6 – #5 Belt Installation

#4 CONVEYOR CHAIN

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.

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

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!

Lubrication

Make sure unit is clean and completely dry. Lubricate conveyor chain at the end of each day of usage using a mixture of 75% diesel fuel and 25% SAE 10 oil. Shut down spinner and run conveyor at 20 RPM for two full revolutions to

lubricate chain. After each unit washing, allow to dry, then lubricate.

Before filling the unit with spreading material, activate the controller or power switch to run the pump oiler. Bleed all air from the lines and adjust the two spray nozzles (figure 7) so that the oil mixture sprays vertical onto the sprockets and chain.

Tension

Proper chain tension is also a factor in chain and sprocket life (Figure 8). 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.

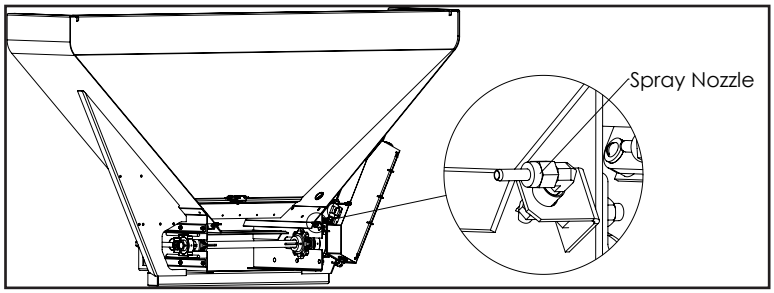


Figure 7 - Spray Nozzle

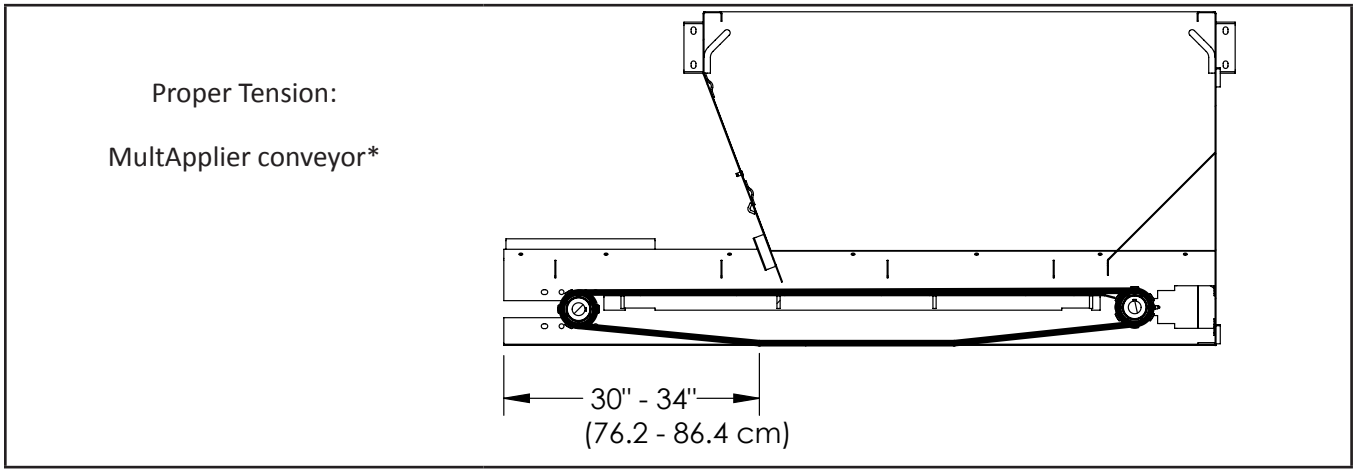


Figure 8 - Chain Tension

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. Bent or distorted chain bars will cause damage as well. Straighten or replace bent or distorted chain bars immediately. It also causes fertilizer leakage with chain conveyors.

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 BELT MAINTENANCE

Standard belt for the #4 chain is moderate oil resistant that is impervious to moisture, weathering, or normal action which can be used with chemical impregnated fertilizer or oil based additives.

- Inspect belt fastener occasionally for wear or "raveling" of belt grip area.
- Make sure belt connecting pin is positioned correctly as shown in Figure 9.

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.

BOTH PIN ENDS MUST BE BENT DOWN & TIGHT AGAINST ENDS OF LACING

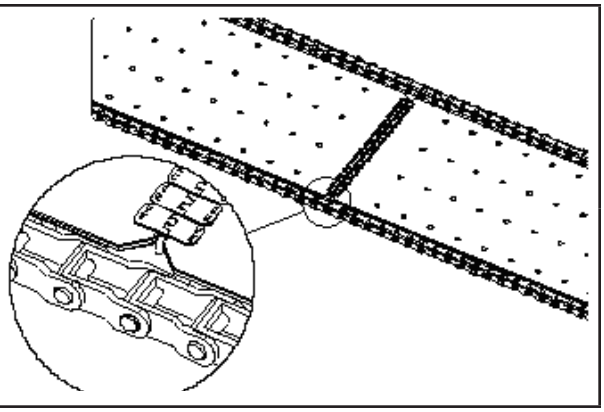


Figure 9 - Conveyor Belt Pin Installation

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.

FASTENERS

Tighten all screws fasteners to recommended torque's after first week of operation and annually thereafter. If loose fasteners are found at anytime, tighten to recommended torque. Replace any lost or damaged fasteners or other parts immediately. Check body mounting hardware every week.

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.

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 unquestionable integrity, supplying known and tested products. Do not jeopardize your equipment with inferior lubricants. No specific brands of oil are recommended. Use only products qualified under the following oil viscosity specifications and classification recommended by reputable oil companies.

HYDRAULIC SYSTEM

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.

	No Cooler	With Cooler
Ideal Oil Temperature	140-190°F (60-88° C)	115-158°F (46-70° C)
Recommended Premium Lubricant	Automotive Engine Oil	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 115 Greater than 14	 Greater than 130 Less than 68 Greater than 9
Acceptable Fluid Sample	**Valvoline All-Fleet Plus® SAE 15W-40**	**John Deere Hy-Gard® J20C**

GEAR CASE LUBRICANT

Lubricate these assemblies with non-corrosive type SAE 90 E.P. (extreme pressure) gear oil conforming to MIL-L2105 B multi-purpose gear lubricating oil requirements (API Service GL 4) with ambient temperatures from 40 to 100° F (4.44 to 37.77° C). Ambient temperatures below 40° F (4.44° C). require an SAE 80 E.P. lubricant; above 100° F (37.77° C). use an SAE 140 E.P. grade oil. Refill gear case with one and a half (1-1/2) pints (.70 liters) of recommended lubricant.

GREASE GUN LUBRICANT

Use a waterproof ball and roller bearing lithium base lubricant with a minimum melting point of 300°F (148.8° C). This lubricant should have a viscosity which assures easy handling in the pressure gun at prevailing atmospheric temperatures. The grease should conform to NLGI No. 2 consistency.

NOTICE!	DON'T LUBRICATE THE #5 BELT. USE OF LUBRICANTS WILL CAUSE THE BELT TO DETERIORATE AND FAIL PREMATURELY.

LUBRICATION AND MAINTENANCE CHART

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

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

LOCATION	PLACES	METHOD	FREQUENCY
Transmission PTO			
Slip Yoke	1	Grease Gun	Weekly
Universal Joint	2	Grease Gun	Monthly
Hydraulic System			
Reservoir	1		Check Daily. Change Annually
Filter	1	Check daily; Change when indicated (Red)	
#5 Conveyor			
Drive Pulley Bearings	2	Grease Gun	Weekly
Idler Turnkleen Bearings	2	Grease Gun	Weekly
Snubber Pulley Bearings	2	Grease Gun	Weekly
Idler Adjusting Screws	2	Hand Grease	Weekly
Gear Case	1	Gear Oil	Check Monthly; Change Annually
#4 Conveyor - MultApplier			
Drive Shaft Bearings	2	Grease Gun	Weekly
Idler Shaft Bearings	2	Grease Gun	Weekly
Idler Adjusting Screws	2	Hand Grease	Weekly
Chain	2 Strands	Spray Oil	Daily
Jack Assembly			
Gears	1	Grease Gun	Annually
Tube	1	Grease Gun	Weekly
Spinner			
Grease Zerks - Shaft	2	Grease Gun	Weekly
Grease Zerks - 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.

- Symptom: Spinner motors do not turn when spinner control valve is in running position. See reasons 1, 2, 3, 4, 5, 7, 8 & 9.
- Symptom: Spinners turn but conveyor does not run in manual mode. See reasons 6, 8, 9, 10 & 22.
- Symptom: Console in operation mode, but the conveyor does not move when the machine moves. See reasons 6, 8, 9, 10 & 22.
- Symptom: Spinner speed does not stay constant. See reasons 4, 5, 11, 12 & 13.
- Symptom: Spinners run with cab control in "Off" position. See reason 14.
- Symptom: Hydraulic oil overheats (200° F (93.33° C) or hotter). See reasons 1, 4, 6, 15, 16, 17 & 18.
- Symptom: Light flashes and buzzer sounds intermittently. Conveyor runs in jerks. See reasons 19 & 22.
- Symptom: Conveyor does not run with cab control "On", PTO engaged and vehicle driving forward. See reasons 20 & 22.
- Symptom: Conveyor runs when control switch in cab is in "Off" position. See reasons 15 & 21.
- Symptom: Conveyor starts to run when PTO is engaged. See reasons 15, 20, 21 & 22.
- 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.

Reason:	Correction:
1. Hydraulic oil level low.	Add hydraulic oil to reservoir 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.	1. PTO is disengaged. Shift into engagement. 2. Drive line has failed. Repair or replace. 3. Key in pump shaft has failed. Replace key. 4. 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 (213.7 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 (213.7 bar). If this pressure cannot be reached, adjust relief valve until gauge reads 3100 PSI (213.7 bar). **CAUTION: Do not set pressure above 3100 PSI (213.7 bar).**
5. Worn pump.	With flow meter arranged to check relief valve setting above, open load valve fully. Read flow rate with truck 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.

Reason:	Correction:
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. Insufficient hydraulic oil flow at normal driving speeds.	Check PTO-Pump matching. If insufficient flow results, install higher percent PTO or use larger pump (Special).
13. Defective spinner control valve.	Replace valve metering spool spring. If no improvement, replace spinner control valve.
14. Cab control is for conveyor only—spinners run anytime vehicle engine is running, PTO is engaged and spinner control valve is in a running position.	None required. This is a normal condition. To stop spinners, set spinner control valve at "O" position, disconnect PTO, or shut off vehicle engine.
15. Excessive oil is being pumped.	1. PTO percentage too high. Change PTO to smaller percentage or use smaller pump. 2. Pump is too large. Do not exceed 40 GPM (151.4 LPM) pumping rate. Change to smaller pump or use smaller percentage PTO. 3. 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 truck transmission to a lower gear. Will not normally occur if within maximum application rates.
20. Defective radar.	Check speed on console. Repair or replace radar as required.
21. Control processor's power is in "Off" position.	Turn on control processor.
22. Involves the controller.	Refer to control manual.

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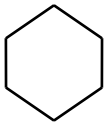
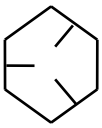
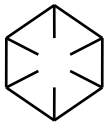
STANDARD TORQUES NATIONAL COARSE (NC) CAPSCREWS

CAP SCREW GRADE IDENTIFICATION - MARKINGS ON HEAD

SAE GRADE 2  NO MARKINGS

SAE GRADE 5  THREE MARKS - 120 DEGREES APART

SAE GRADE 8  SIX MARKS - 60 DEGREES APART

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

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

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.
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.

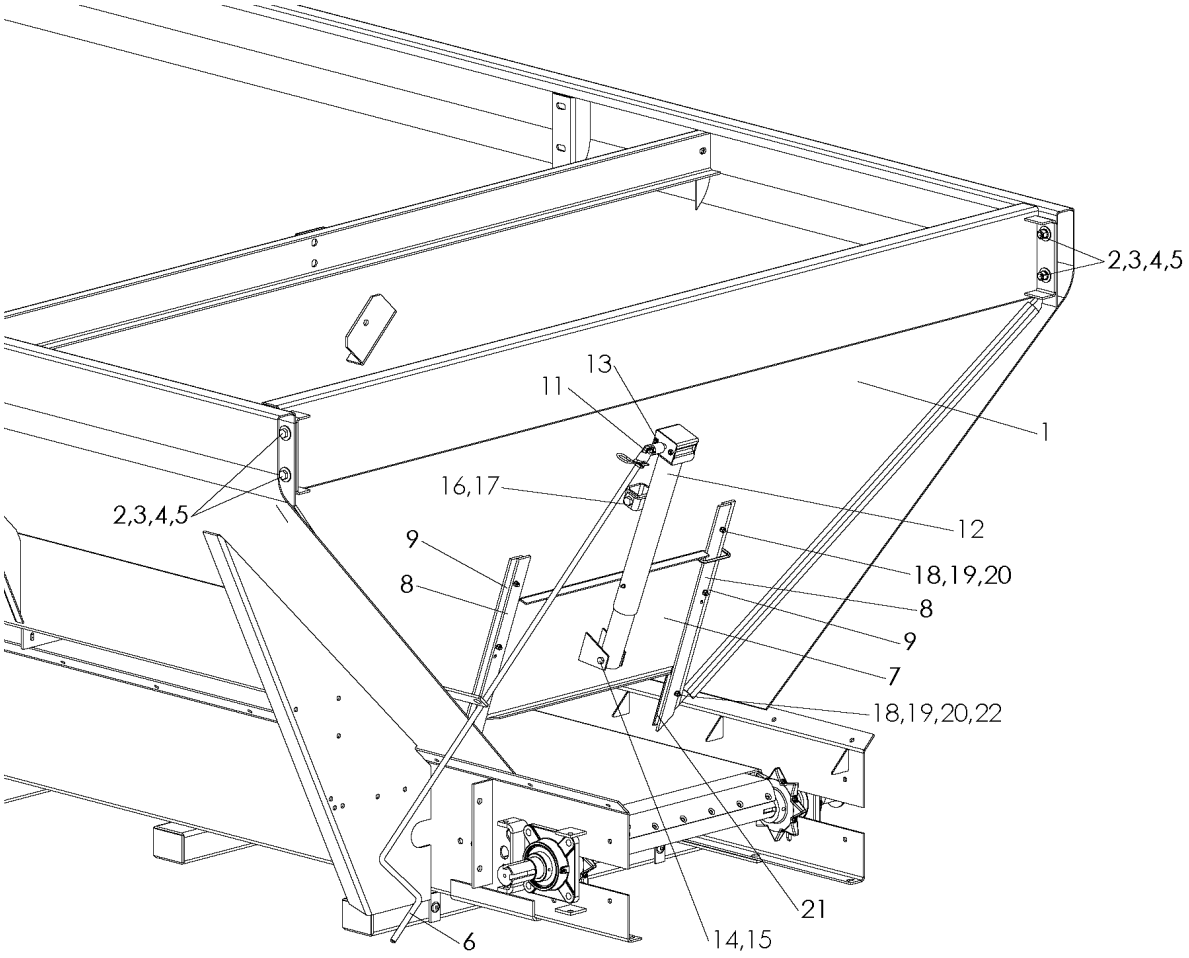
If your claims are not being handled (by the transportation company) to your satisfaction, please call the Parts Manager at Highway Equipment Company (319-363-8281) for assistance.

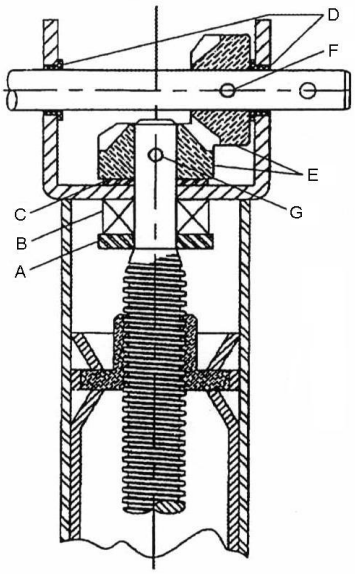
In the parts list the following symbols and abbreviations stand for:

* - 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.

REMOVABLE ENDGATE, FEEDGATE & JACK





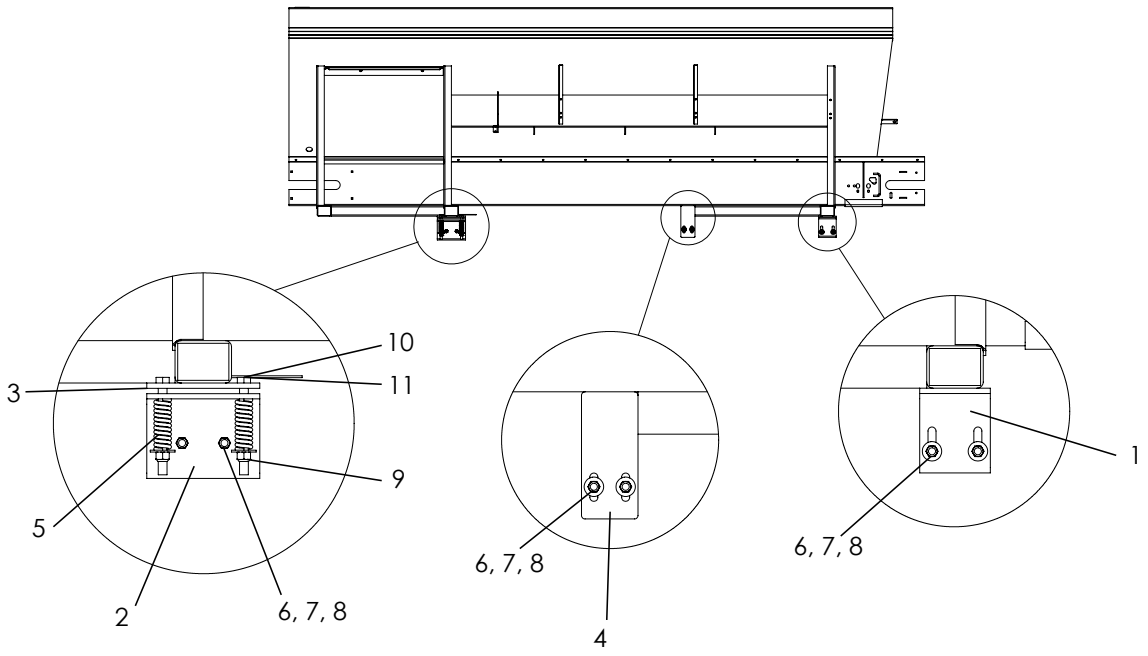
JACK

REMOVABLE ENDGATE, FEEDGATE & JACK CONTINUED

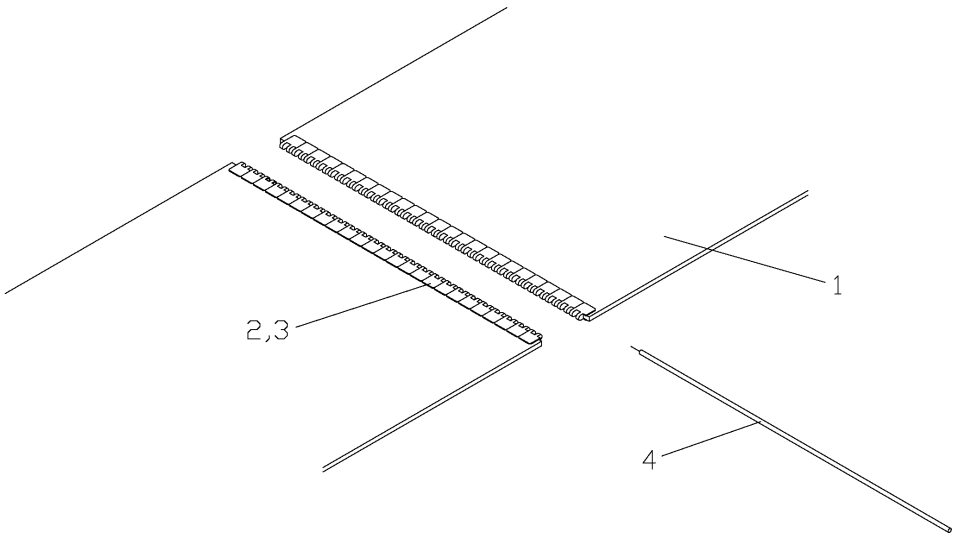
ITEM	PART NO.	DESCRIPTION	QTY
	86951	Hardware – Kit, Includes 2-5	
1	86952	Endgate – Removable Weldment	1
2	20128-X1	Cap Screw – 1/2 x 1-1/4 Gr8	4
3	20695	Washer – Flat 1/2	8
4	20714	Washer – Lock 1/2	4
5	20646	Nut – Hex 1/2	4
6	72641	Handle	1
7	303937-AA	Feedgate – Weldment	1
8	36384	Slide – Feedgate RH	1
9	36385	Guide – Feedgate	
10	85002	U-Joint	1
11	20918	Pin – Roll	2
12	40704	Jack	1
A	84210	Washer – Thrust	1
B	84211	Bearing – Thrust	1
C	84212	Washer	1
D	84213	Bushing	2
E	84214	Gear – Miter	2
F	84215	Pin – Groove	1
G	84216	Pin – Roll	1
13	86878	Pin – Hair	1
14	80798	Cap Screw – 1/2 x 3-3/4 SS	1
15	39016	Nut – Hex 1/2 SS	1
16	71827	Cap Screw – 3/8 x 3 SS	1
17	72054	Nut – Lock 3/8 SS	1
18	40750	Cap Screw – 1/4 x 1-1/4 SS	6
19	36418	Washer – Lock 1/4 SS	6
20	36412	Nut – Hex 1/4 SS	6
21	305078	Sealer – Endgate Bolt-in (inside)	2
22	36423	Washer – Flat 1/4	2

* - Not Shown

MOUNTING ANGLE

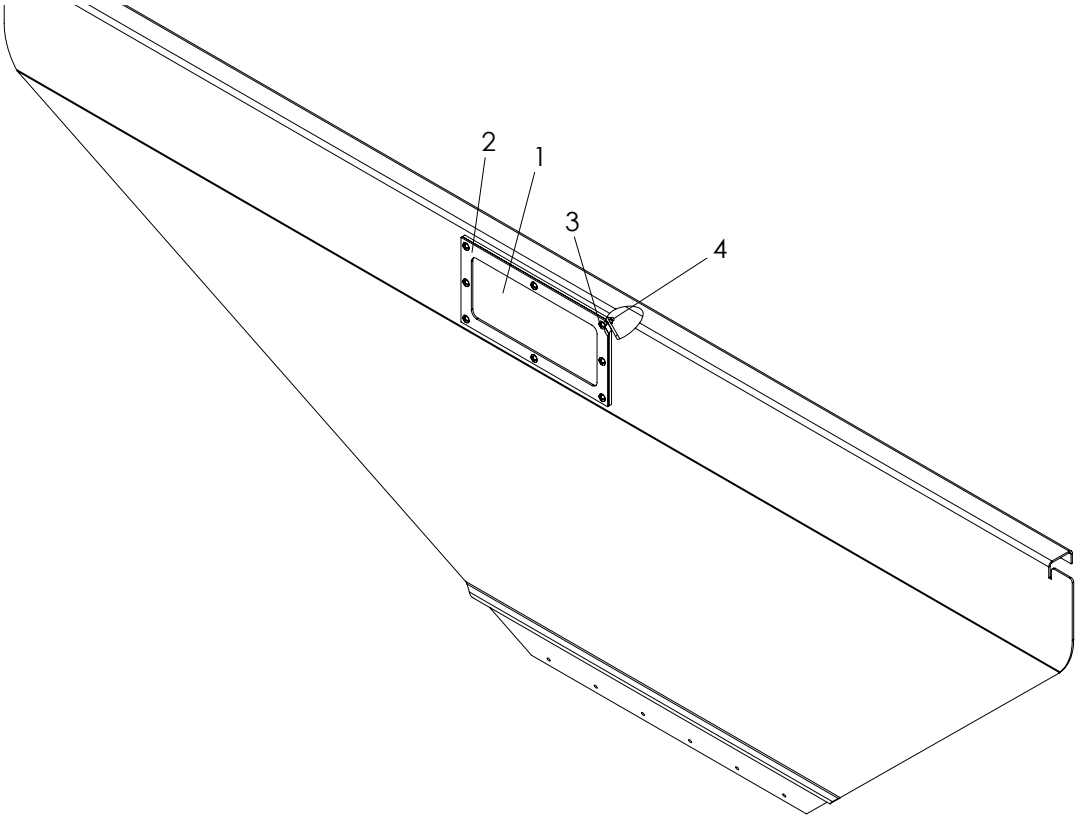


ITEM	PART NO.	DESCRIPTION	QTY
1	31856	Angle - Mounting	2
2	81847	Angle - Tie Down	2
3	81848	Mounting - Bar	2
4	310424	Mounting - Bar 4” x 9”	2
5	81000	Spring	4
	305579-AB	Hardware Kit - Includes 6-11	
6	20131	Cap Screw - 1/2-13NC x 2	12
7	20695	Washer – Flat 1/2	12
8	20680	Nut - Lock 1/2-13NC	12
9	41762	Nut – Lock 5/8-11NC	4
10	20195	Cap Screw - 5/8-11NC x 6-1/2	4
11	20697	Washer – Flat 5/8	4

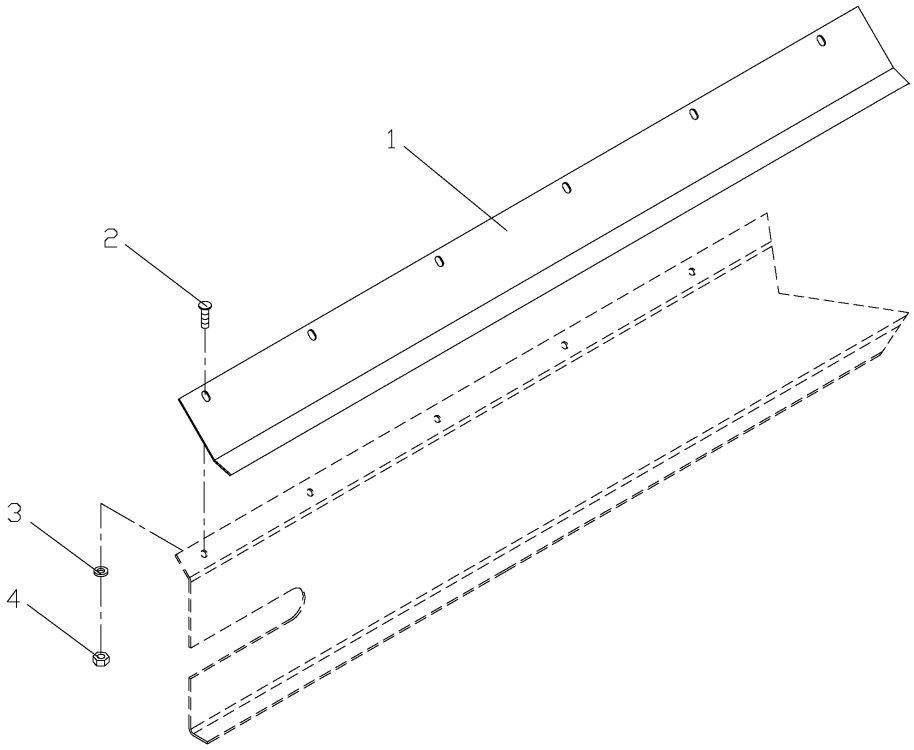


ITEM	PART NO.	DESCRIPTION	QTY
	70946	Conveyor – Assembly #5 11’ Unit	
	71267	Conveyor – Assembly #5 12’ Unit	
	305016	Conveyor – Assembly #5 13’ Unit	
	305017	Conveyor – Assembly #5 14’ Unit	
1	71108	Belt – Conveyor 11’ Unit	1
	71109	Belt – Conveyor 12’ Unit	1
	71110	Belt – Conveyor 13’ Unit	1
	71111	Belt – Conveyor 14’ Unit	1
	33884	Tape – Belt (per foot)	AR
2	53992	Fastener – Assembly 1-Bolt	4
	53993	Fastener – Assembly 2-Bolt	2
	53994	Fastener – Assembly 3-Bolt	6
3	39604-29	Tube – Plastic	2
4	70950	Pin – Hinge	1

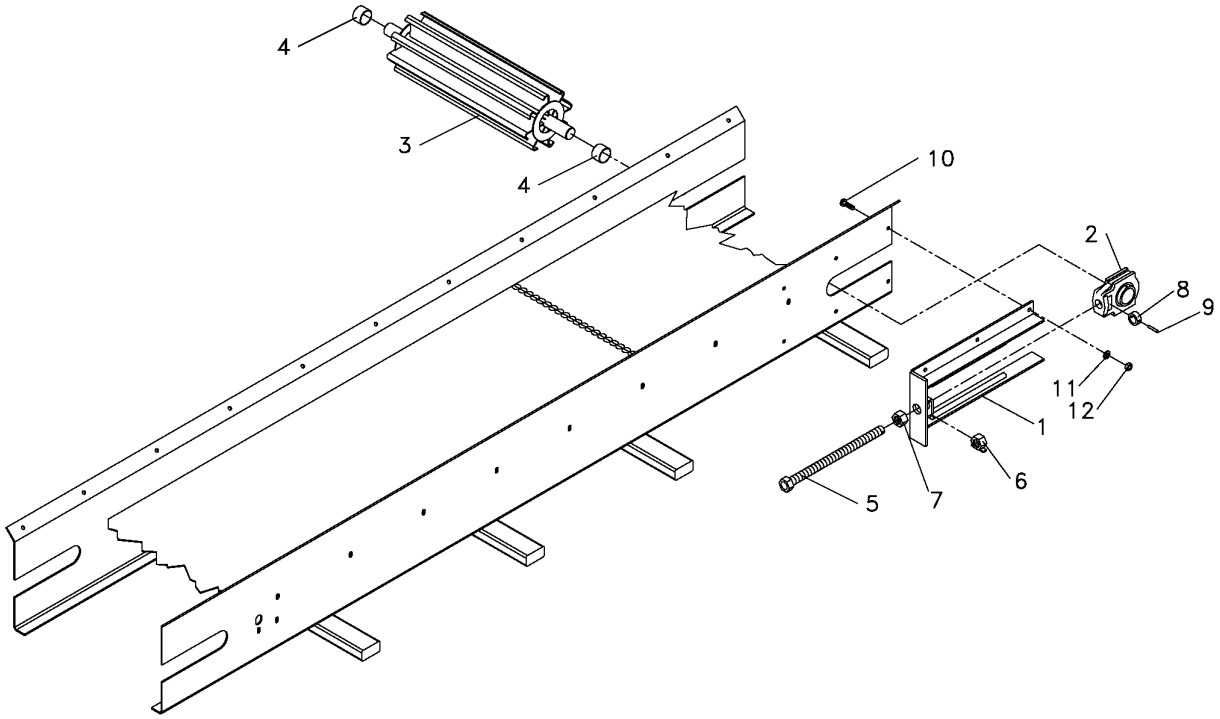
SIGHT WINDOW



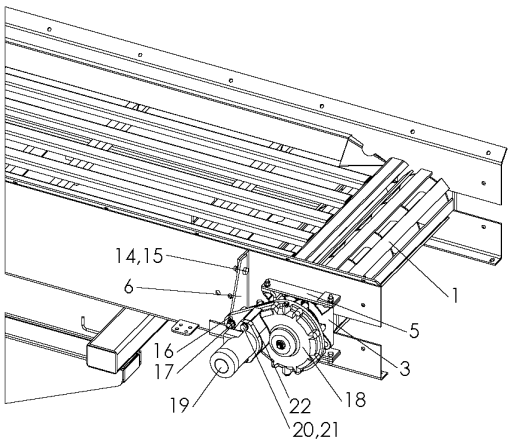
ITEM	PART NO.	DESCRIPTION	QTY
1	302686	Window – Sight 5 x 12	1
2	302687	Window – Frame 5 x 12 304	1
3	42033	Screw – Truss Head 1/4-20NC x 1 SS	8
4	42034	Nut – Lock 1/4-20 SS	8

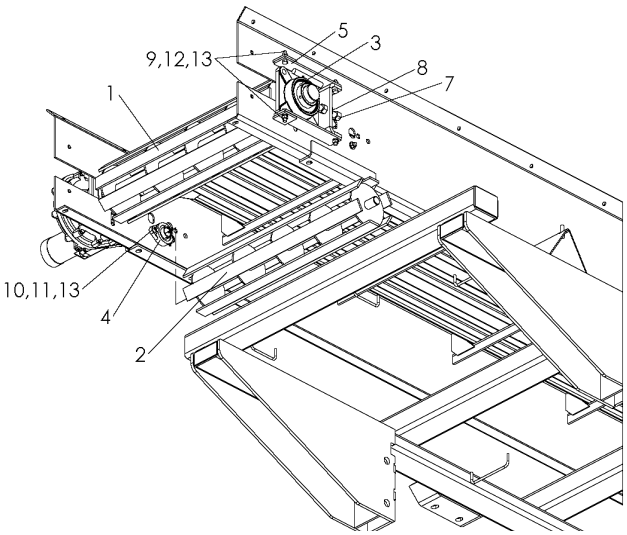


ITEM	PART NO.	DESCRIPTION	QTY
1	54120	Shield – Chain 11’	2
	54121	Shield – Chain 12’	2
	54122	Shield – Chain 13’	2
	54123	Shield – Chain 14’	2
2	71829	Screw – Truss Head 3/8-16 x 1 SS	AR
3	36420	Washer – Lock 3/8 SS	AR
4	36414	Nut – Hex 3/8-16 SS	AR



ITEM	PART NO.	DESCRIPTION	QTY
1	7895	Take-up – Weldment	2
2	22511	Bearing – Take-up	2
3	81344-X1	Idler – Weldment Turnkleen 30”	1
4	81345	Spacer – Pipe Idler Pulley	2
5	36508	Tightener – Chain Weldment	2
6	39110	Nut Weldment	2
7	36509	Nut – Hex 1-8NC SS	2
8	30725	Collar – Set 1”	2
9	20925	Pin – Roll 1/4 x 1-1/2	2
10	36409	Bolt – Carriage 3/8 x 1-1/4 SS	12
11	36420	Washer – Lock 3/8 SS	12
12	36414	Nut – Hex 3/8 SS	12

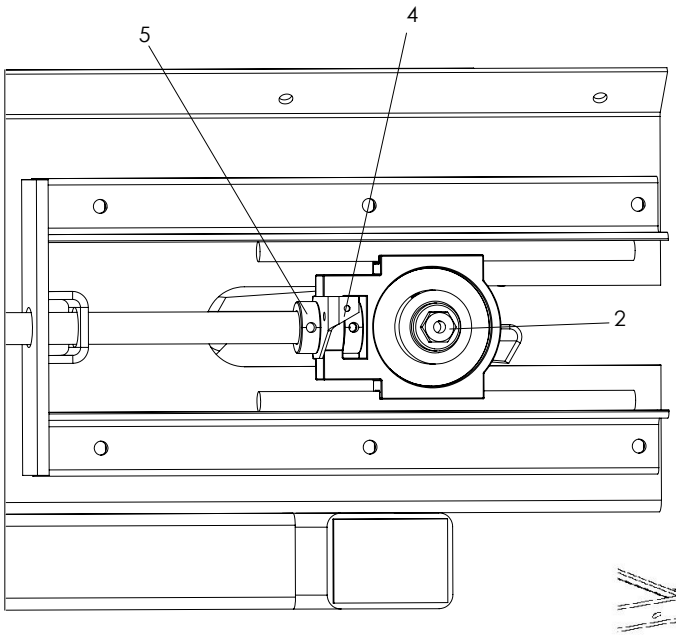


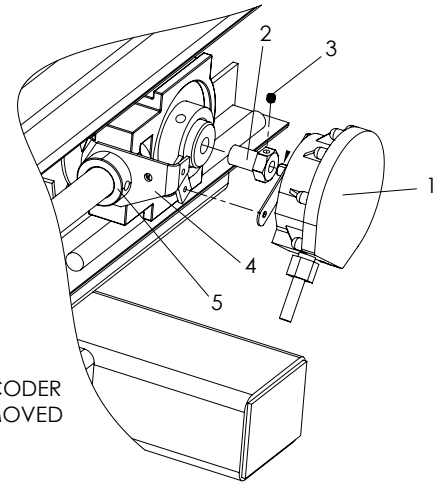


ITEM	PART NO.	DESCRIPTION	QTY
1	71674	Drive – Weldment Pulley	1
2	71676	Snubber – Weldment Pulley	1
3	6465	Bearing	2
4	32468	Bearing – Assembly	2
	22563	Bearing	2
	34798	Fitting – Zerk	2
	6071	Zerk – Grease 1/8 NPT 90	2
5	82885	Guide – Weldment Bearing	4
6	82552	Bracket – Torque Arm LH	1
7	81354	Screw – Weldment Set 5/8	1
8	36417	Nut – Hex 5/8 SS	1
9	36399	Cap Screw – 3/8-16 x 1-1/4 SS	8
10	71772	Screw – Button Head 3/8-16 x 1-1/4	4
11	36425	Washer – Flat 3/8 SS	4
12	36420	Washer – Lock 3/8 SS	8
13	36414	Nut – Hex 3/8 SS	12
14	20128	Cap Screw – 1/2-13 x 1-1/4	2
15	20680	Nut – Lock 1/2-13	2
16	20833	Pin – Cotter 1/4 x 1-1/2	1
17	2716	Washer – Machine 1 O.D. x 3/4 I.D.	2
18	36671	Gear Case – Single	1
19	38897	Motor – Hydraulic, 1-1/2”	1
20	20128	Cap Screw – 1/2 x 1-1/2	2
21	20714	Washer – Lock 1/2	2
22	74524	Gasket – Motor Flange	2
23	*311172	V-Ring Seal	1

* Not Shown

ENCODER





ENCODER
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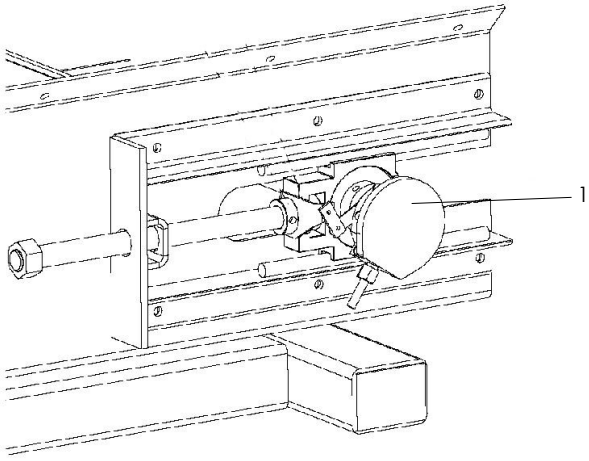
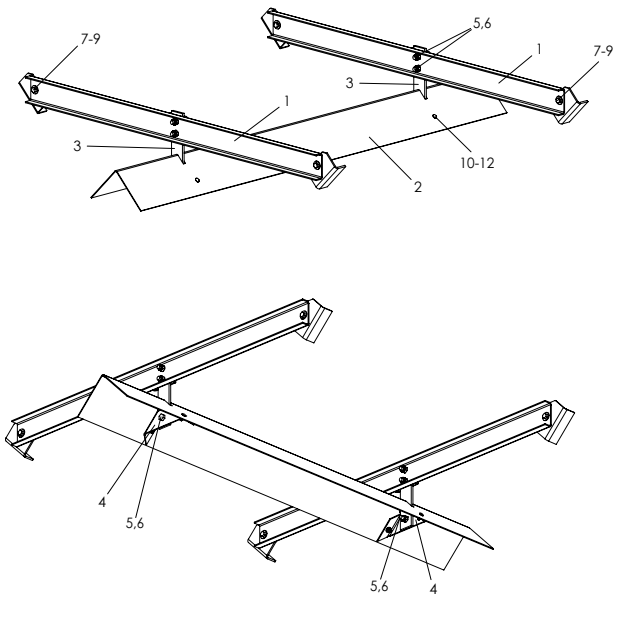
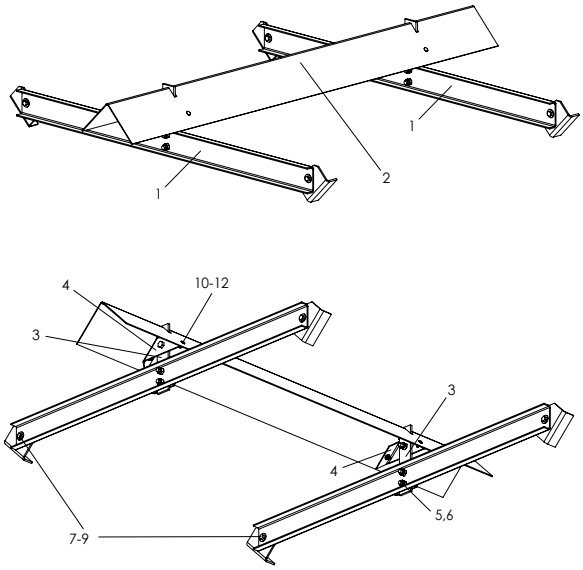


ITEM	PART NO.	DESCRIPTION	QTY
1	303994	Encoder – 180 with Hardware	1
2	310601	Coupler - Rate Sensor SS	1
3	310603	Screw - Set 1/4-20NC x 1/4 SS	1
4	81949	Bracket - Sensor, Idler Mount	1
5	2696	Collar - Set 1”	1

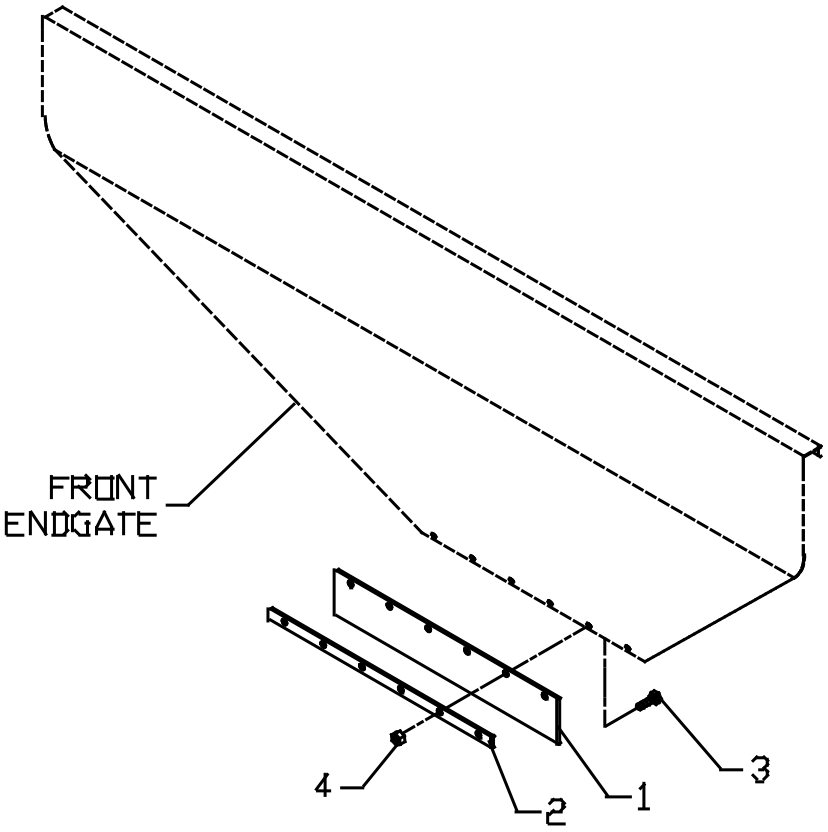


STANDARD (LOWER) ASSY



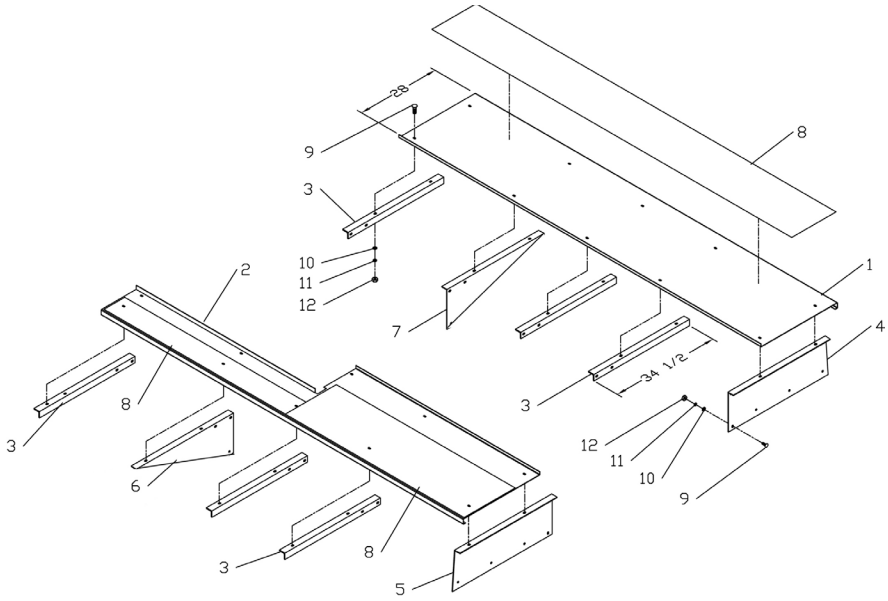
HIGH YIELD ASSY

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

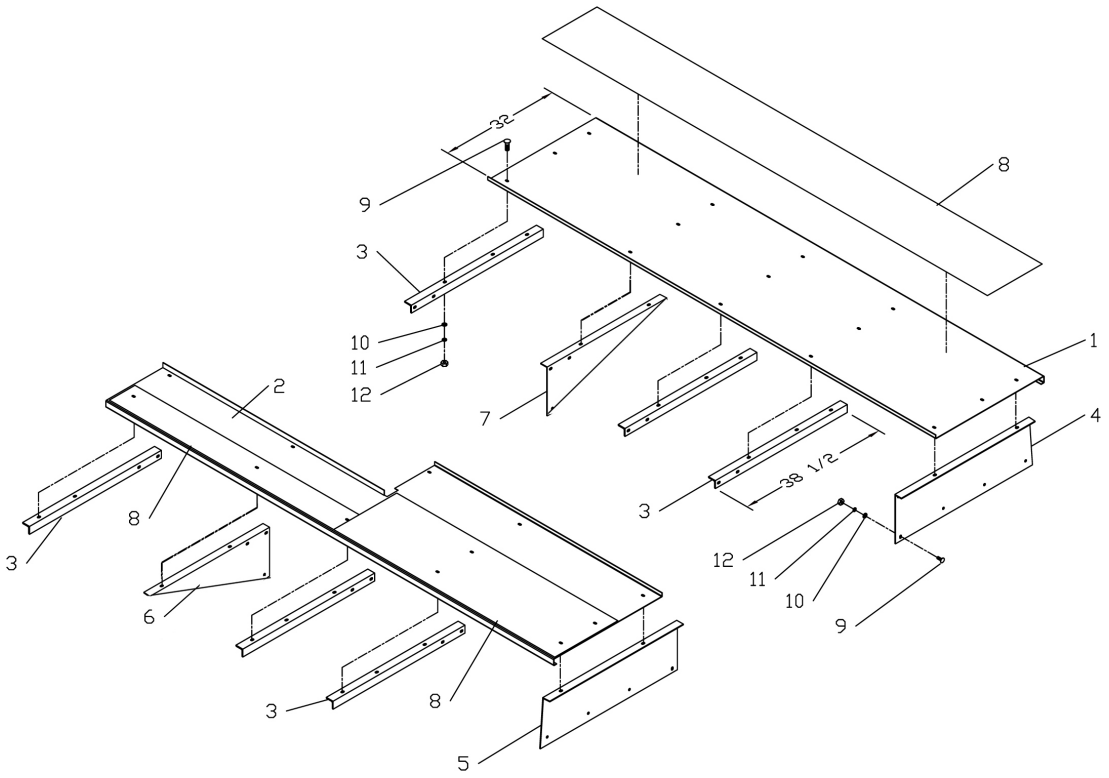


ITEM	PART NO.	DESCRIPTION	QTY
1	14743	Wiper – Belt	1
2	71656	Retainer – Belt	1
3	32446	Screw – Truss Head 1/4 x 3/4	6
4	36412	Nut – Hex 1/4	6

FENDERS - FULL FLOATATION TIRES

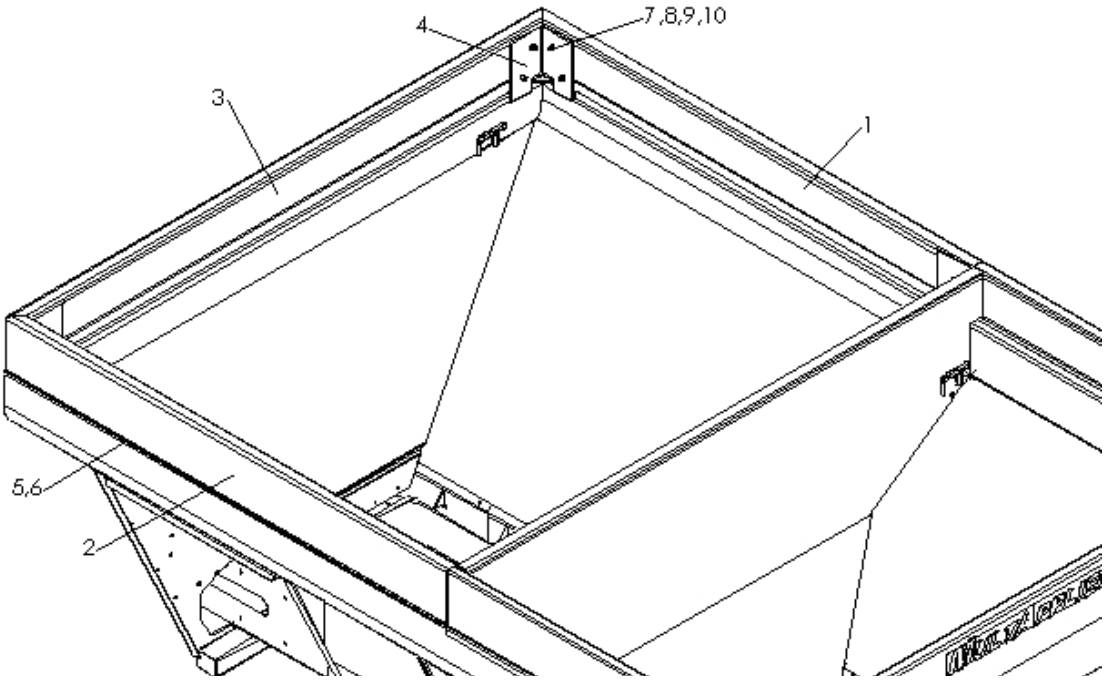


ITEM		DESCRIPTION	QTY
1	83057	Fender – RH, 11’ Unit	1
	83058	Fender – RH, 12’ Unit	1
	83059	Fender – RH, 13’ Unit	1
	305097	Fender – RH, 13’ Unit Light Mtg & Tank Cutout	1
	83084	Fender – RH, 14’ Unit	1
	305584	Fender – RH, 13’ Unit Light Mtg & Tank Cutout	1
2	83065	Fender – LH, 11’ Unit	1
	83066	Fender – LH, 12’ Unit	1
	83067	Fender – LH, 13’ Unit	1
	305096	Fender – RH, 13’ Unit Light Mtg & Tank Cutout	1
	83087	Fender – LH, 14’ Unit	1
	305585	Fender – RH, 13’ Unit Light Mtg & Tank Cutout	1
3	96969	Angle – Mounting	AR
4	96967	Support – Fender RH Mudflap	1
5	96968	Support – Fender LH Mudflap	1
6	96965	Support – Fender RH Front	1
	96967	Support – Fender RH Mudflap	1
7	96966	Support – Fender LH Front	1
	96968	Support – Fender LH Mudflap	1
8	21699	Material - Non-Skid, 8” Wide	Inches
9	36408	Bolt – Carriage 3/8 x 1 SS	AR
10	36425	Washer – Flat 3/8 SS	AR
11	36420	Washer – Lock 3/8 SS	AR
12	36414	Nut – Hex 3/8 SS	AR



ITEM		DESCRIPTION	QTY
1	83292	Fender – RH, 11’ Unit	1
	83293	Fender – RH, 12’ Unit	1
	83294	Fender – RH, 13’ Unit	1
	83319	Fender – RH, 14’ Unit	1
2	83300	Fender – LH, 12’ Unit	1
	83301	Fender – LH, 12’ Unit	1
	83302	Fender – LH, 13’ Unit	1
	83322	Fender – LH, 14’ Unit	1
3	96972	Angle – Mounting	AR
4	83254-X10	Support – Fender RH Mudflap	1
5	83255-X10	Support – Fender LH Mudflap	1
6	96970	Support – Fender RH Front	1
	83254-X10	Support – Fender RH Mudflap	1
7	96971	Support – Fender LH Front	1
	83255-X10	Support – Fender LH Mudflap	1
8	21699	Material - Non-Skid, 8” Wide	Inches
9	36408	Bolt – Carriage 3/8 x 1 SS	AR
10	36425	Washer – Flat 3/8 SS	AR
11	36420	Washer – Lock 3/8 SS	AR

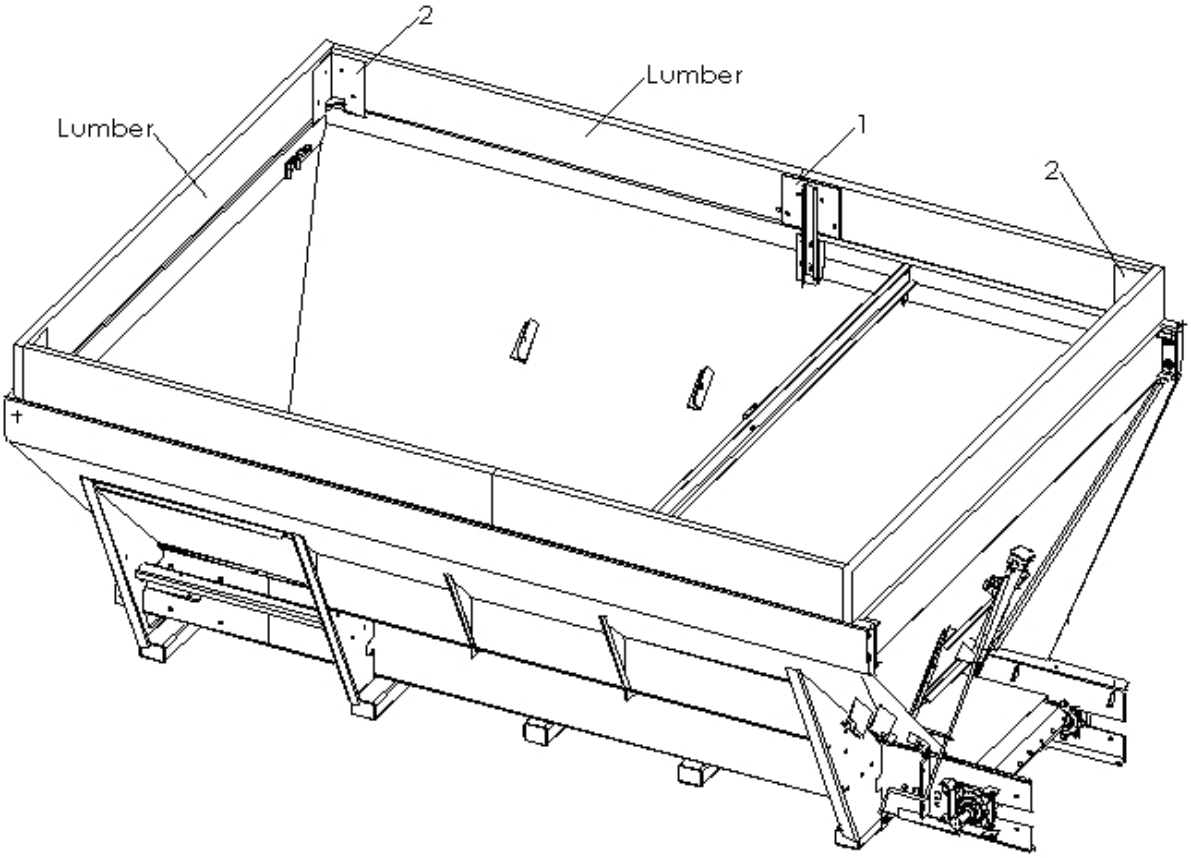
12	36414	Nut – Hex 3/8 SS	AR



ITEM	PART NO.	DESCRIPTION	QTY
	98746	Hardware – Kit, Includes 7-10	
1	98752-AE	Side Board – RH 11’/5’, 13’/7’ Weldment	1
	98752-AA	Side Board – RH 12’/5’, 14’/7’ Weldment	1
	98752-AF	Side Board – RH 12’/7’ Weldment	1
	98752-AB	Side Board – RH 13’/5’ Weldment	1
	98752-AC	Side Board – RH 14’/5’ Weldment	1
2	98755-AE	Side Board – LH 11’/5’, 13’/7’ Weldment	1
	98755-AA	Side Board – LH 12’/5’, 14’/7’ Weldment	1
	98755-AF	Side Board – LH 12’/7’ Weldment	1
	98755-AB	Side Board – LH 13’/5’ Weldment	1
	98755-AC	Side Board – LH 14’/5’ Weldment	1
3	98758	Side Board – Front Weldment	1
4	86867	Pocket – Side Board	2
5	53950	Rubber – 1/4 x 2-1/4	AR
6	87522	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

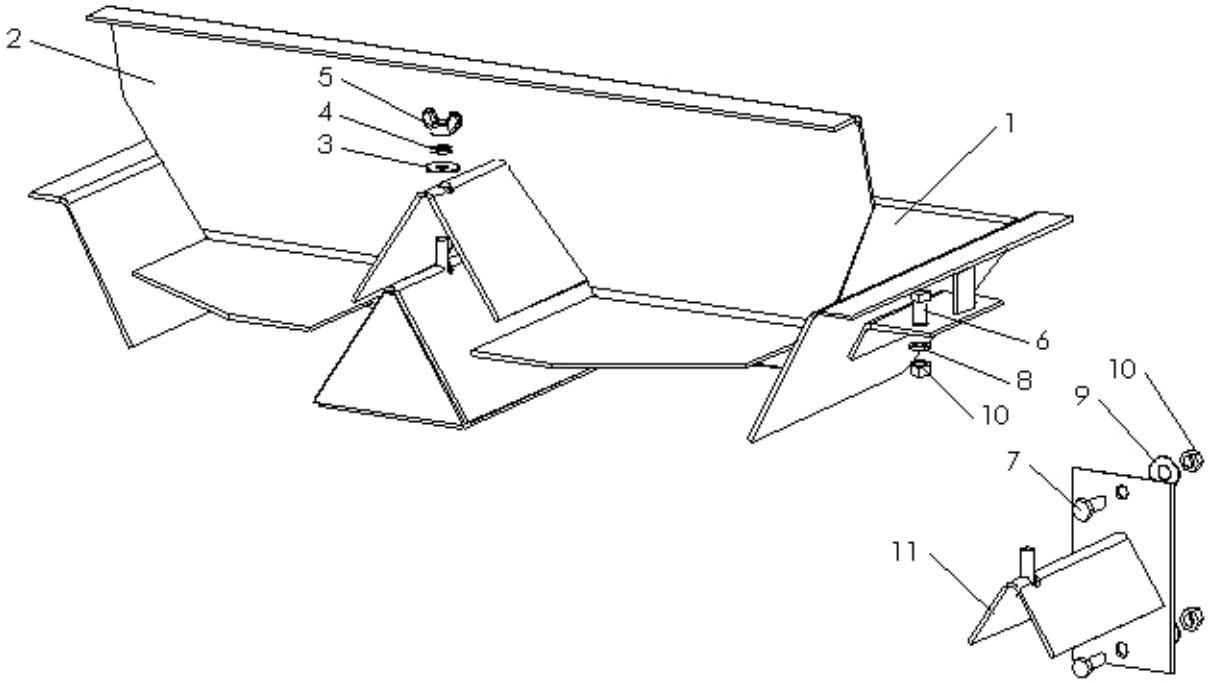
* - Use adhesive to attach rubber to bottom of side boards.

SIDE BOARD MOUNTS (WOOD)



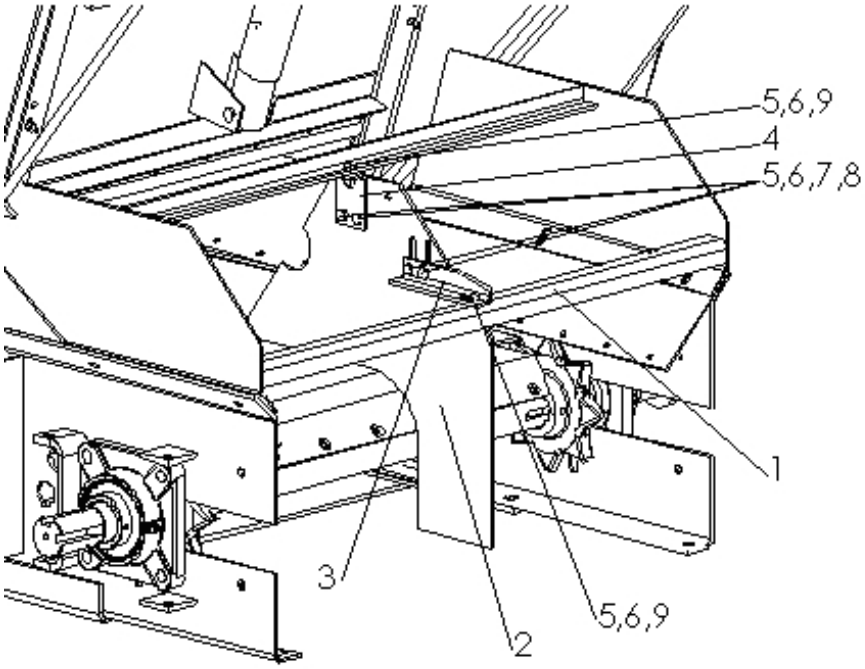
ITEM	PART NO.	DESCRIPTION	QTY
	96290	Hardware – Kit, Includes 3-6	
1	96285	Mount – Weldment Side Board	2
2	86867	Pocket – Side Board	4
3	36401	Cap Screw – 1/2 x 1 SS	4
4	36426	Washer – Flat 1/2 SS	8
5	36422	Washer – Lock 1/2 SS	4
6	36416	Nut – Hex 1/2 SS	4

Note: Lumber not provided. Use 2 x 10 lumber cut to length for side boards. Attach to mounts with 3/8" carriage bolts (not provided).



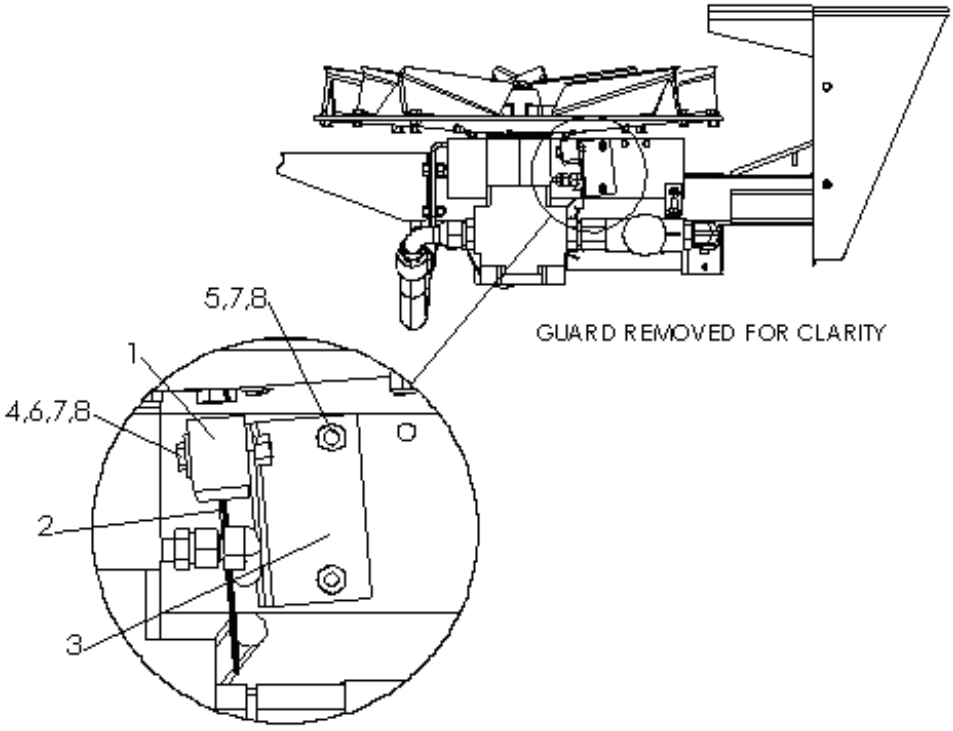
ITEM	PART NO.	DESCRIPTION	QTY
	87108	Divider – Material Assy	
1	87054	Divider – Wldmt	1
2	87064	Deflector – Rear Wldmt	1
3	36425	Washer – Flat 3/8 SS	1
4	36420	Washer – Lock 3/8 SS	1
5	20673	Nut – Wing 3/8	1
6	36293	Cap Screw – 3/8 x 3/4	2
7	36398	Cap Screw – 3/8 x 1 SS	2
8	36420	Washer – Lock 3/8	2
9	36425	Washer – Flat 3/8 SS	2
10	36414	Nut – Hex 3/8 SS	4
11	87381	Mount – Divider Wldmt	1

Mount Item 11 on truck to hold Item 2 when not in use.

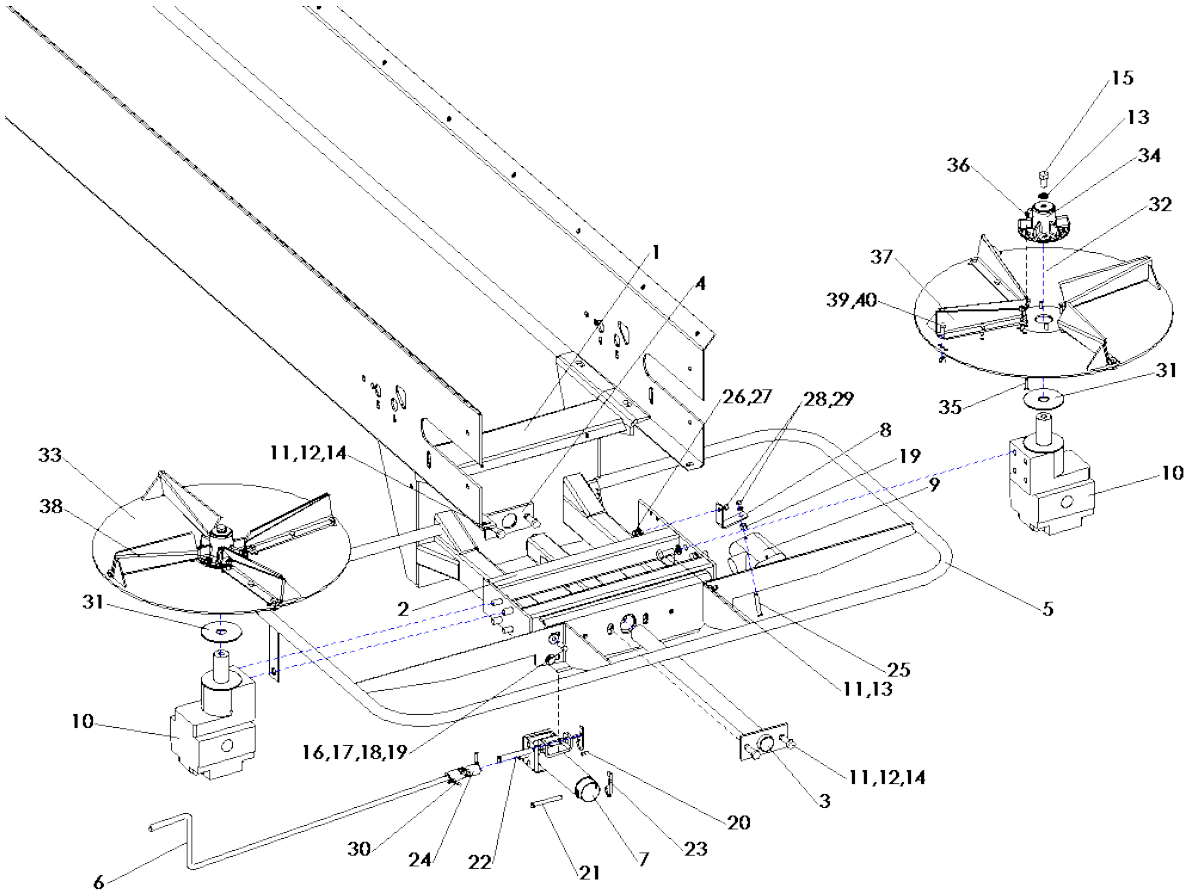


ITEM	PART NO.	DESCRIPTION	QTY
	84792	Hardware – Kit	
1	86788	Bracket – Weldment Support	1
2	56878	Panel – Hillside Divider	1
3	56879	Bracket – Clamp	1
4	56880	Angle – Clamp	1
5	34580	Cap Screw – 5/16 x 1 SS	6
6	36424	Washer – Flat 5/16 SS	8
7	36419	Washer – Lock 5/16 SS	4
8	36413	Nut – Hex 5/16 SS	4
9	42221	Nut – Lock 5/16 SS	2

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



ITEM	PART NO.	DESCRIPTION	QTY
	97310	Sensor – Kit Spinner	
1	89011	Sensor – Assy	1
2	89009	Cable – Sensor Extension	1
3	86672	Bracket	1
4	42448	Cap Screw – 1/4 x 1-1/2 SS	2
5	36393	Cap Screw – 1/4 x 3/4 SS	2
6	36423	Washer – Flat 1/4 SS	3
7	36418	Washer – Lock 1/4 SS	6
8	36412	Nut – Hex 1/4 SS	6

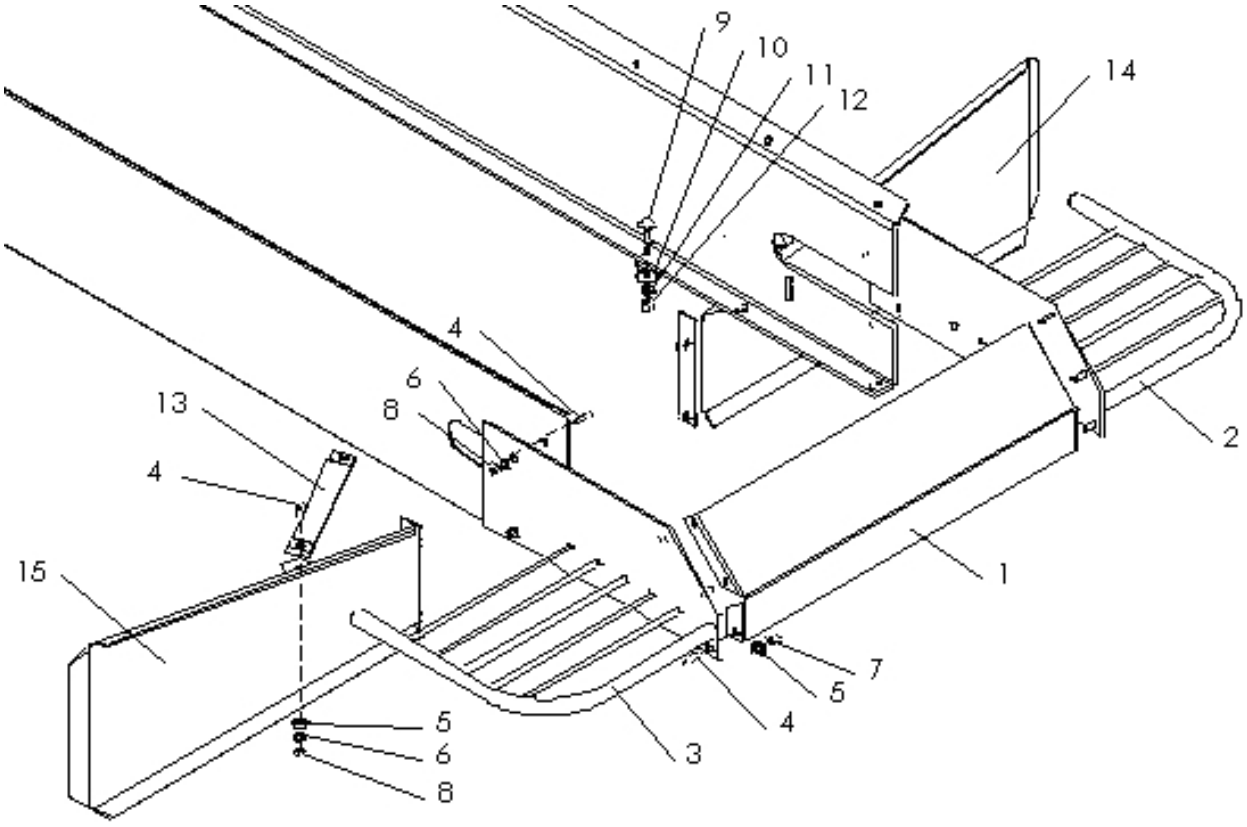


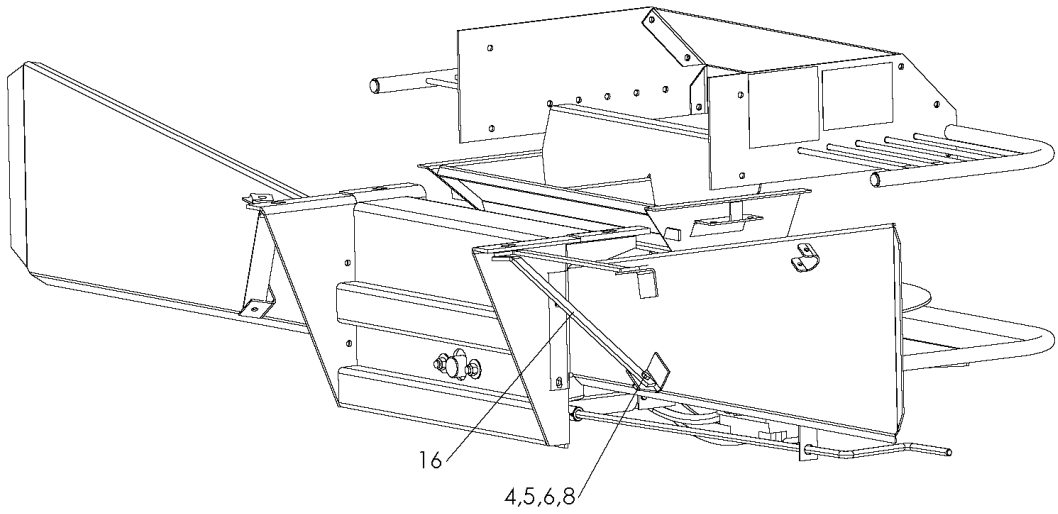
ITEM	PART NO.	DESCRIPTION	QTY
	86503	24” Hydraulic Fan Assembly	
	87106	Fan – LH Assembly, Includes Items 32 & 34-40	1
	87105	Fan – RH Assembly, Includes Items 33-40	1
	71871	Hardware – Kit, Includes 16-19	
1	87090	Plate – Back	1
2	87082	Mount – Motor Weldment	1
3	87021	Shaft – Support Weldment	1
4	87023	Plate – Shaft Mount	1
5	87032-X1	Guard – Spinner Weldment	1
6	87024	Handle	1
7	87170	Jack – Coated Assembly	1
8	87053	Angle – Valve Mount	1
9	43510	Valve – Flow Divider	1
10	305944	Motor – Hydraulic	2
11	36402	Cap Screw – 1/2 x 1-1/4	12
12	36426	Washer – Flat 1/2	4
13	36422	Washer – Lock 1/2	10

24" HYDRAULIC FANS CONTINUED

ITEM	PART NO.	DESCRIPTION	QTY
14	39016	Nut – Lock 1/2	5
15	36401	Cap Screw – 1/2 x 1	2
16	36398	Cap Screw – 3/8 x 1	4
17	36425	Washer – Flat 3/8	4
18	36420	Washer – Lock 3/8	4
19	36414	Nut – Hex 3/8	5
20	6072	Zerk – Grease	4
21	6547	Pin – Clevis	1
22	80798	Cap Screw – 1/2 x 3-1/4	1
23	36429	Pin – Hair	1
24	85002	U-Joint	1
25	34865	Cap Screw – 1/4 x 2-1/4	1
26	36395	Cap Screw – 1/4 x 1	1
27	36423	Washer – Flat 1/4	1
28	36418	Washer – Lock 1/4	2
29	36412	Nut – Hex 1/4	2
30	20918	Pin – Roll	2
31	72294	Washer – Rubber	2
32	27056-X4	Disc – Distributor RH	1
33	27056-X5	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 Weldment	4
38	309092	Fin – LH Weldment	4
39	20034	Cap Screw – 5/16 x 3/4	24
40	20677	Nut – Lock 5/16	24
41	* 36940	Bolt – Carriage 1/2 x 2	4
42	* 36426	Washer – Flat 1/2	4
43	* 36422	Washer – Lock 1/2	4
44	* 36416	Nut – Hex 1/2	4

* - Not Shown – used to attach spinner to sills.

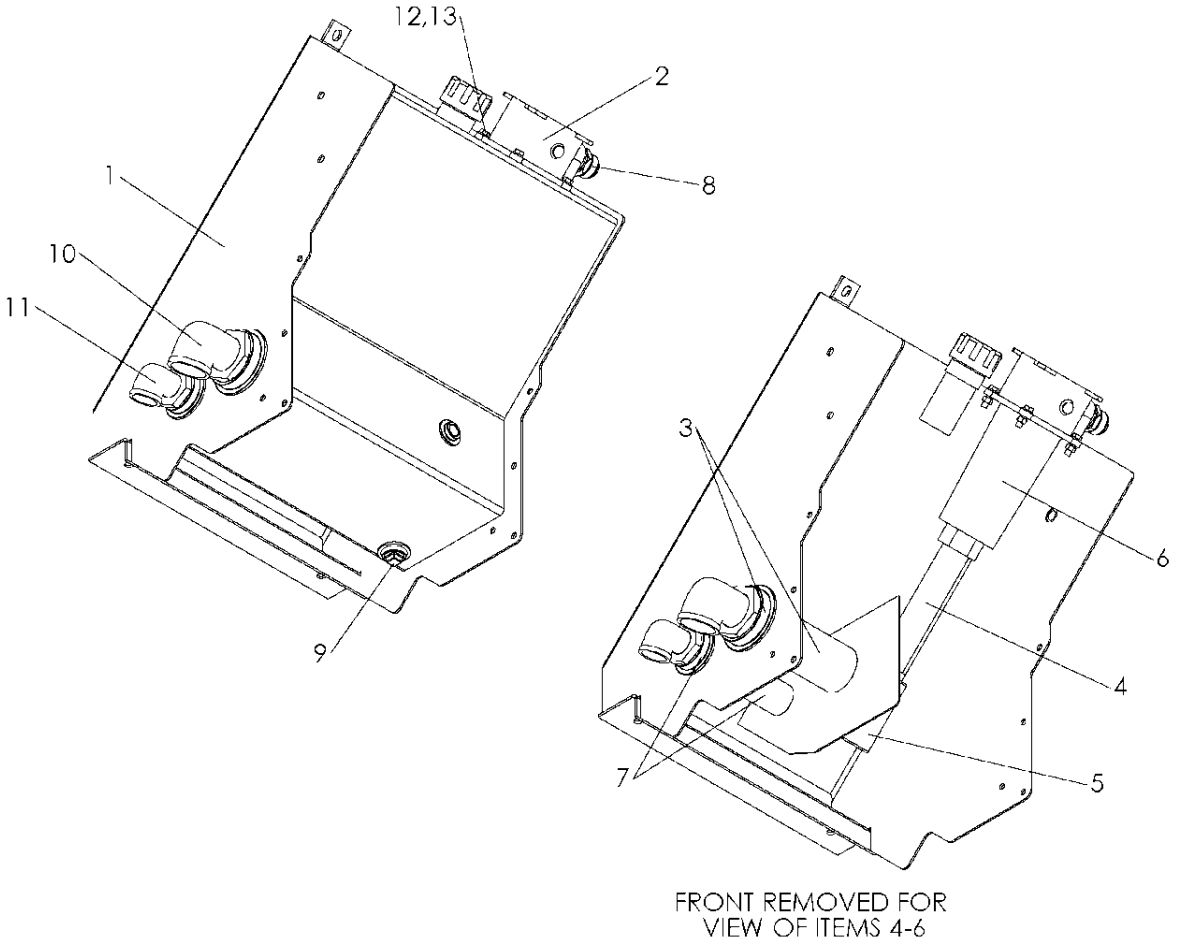




WARNING Guards are intended to reduce hazard of entanglement with machinery and injury. All guards must be installed per this drawing before spreader is put into operation.

ITEM	PART NO.	DESCRIPTION	QTY
	87118	Hardware – Kit Fan Frame, Guard & Divider	
1	87066-X1	Guard – Center Section Weldment	1
2	87027-X1	Guard – RH Weldment	1
3	87031-X1	Guard – LH Weldment	2
4	36398	Cap Screw – 3/8 x 1 SS	AR
5	36425	Washer – Flat 3/8 SS	AR
6	36420	Washer – Lock 3/8 SS	AR
7	72054	Nut – Lock 3/8 SS	6
8	36414	Nut – Hex 3/8 SS	AR
9	36940	Bolt – Carriage 1/2-13 x 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	82964	Shield – RH Weldment	1
	* 305043	Shield – RH Weldment 108”	1
	* 305075	Shield – RH Weldment 126”	1
15	82965	Shield – LH Weldment	1
	* 305044	Shield – LH Weldment 108”	1
	* 305076	Shield – LH Weldment 126”	1
16	305040	Bar – Stiffener Lower	2

* not shown

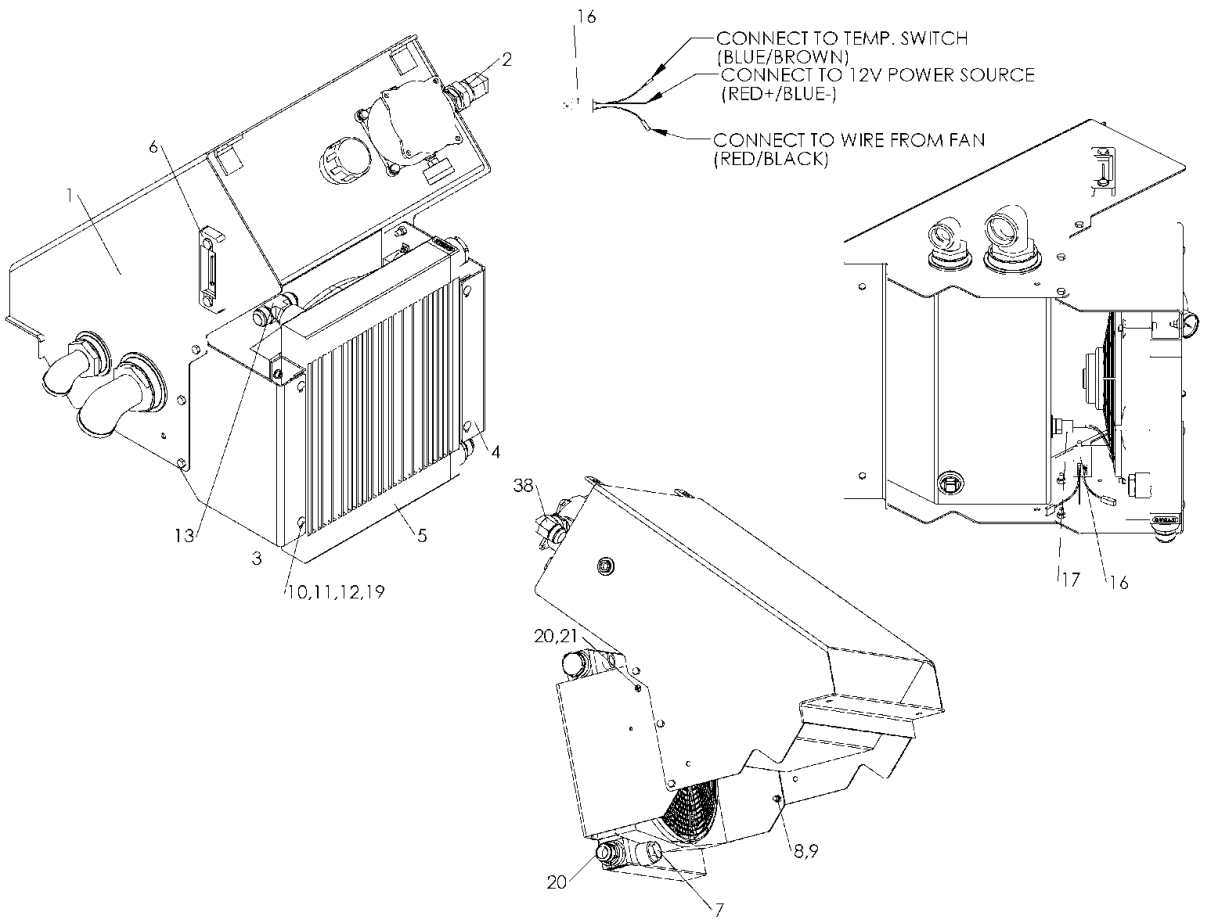


FRONT REMOVED FOR
VIEW OF ITEMS 4-6

ITEM	PART NO.	DESCRIPTION	QTY
	305054	Hydraulic Tank Assy	
1	305050	Tank – Hydraulic Wldmt	1
2	88838	Filter – Return-Includes 3 items below	1
	*306772	O-Ring - Cover Filter	1
	*306773	O - Ring - Housing Filter	1
	*306789	Seal - Filter Assy	1
3	305063	Strainer – 2 NPT	1
4	305058	Pipe – 1.5 SCH40 10	1
5	305057	Diffuser – Tank	1
6	305066	Filter – Element	1
7	305062	Strainer – 1-1/4 NPT	1
8	29768	Fitting – 20-20 070102	1
9	305061	Plug – Magnetic 1 NPT	1
10	6028	Nipple - Close 1-1/4 NPT	1
11	6011	Elbow 90° 2 NPT	1
12	20068	Capscrew – 3/8-16 x 1-1/4	4
13	20712	Washer – Lock 3/8	4
14	22324	Nipple - Close 2 NPT STD	1
15	*06186	Gasket Maker - Silicone	1
16	23703	Adapter - Elbow 90° 2 NPT	1
17	6035	Plug - Pipe 1-1/4 NPT	1
18	*306301	Plug - Tapered 2 NPT	1

*not shown

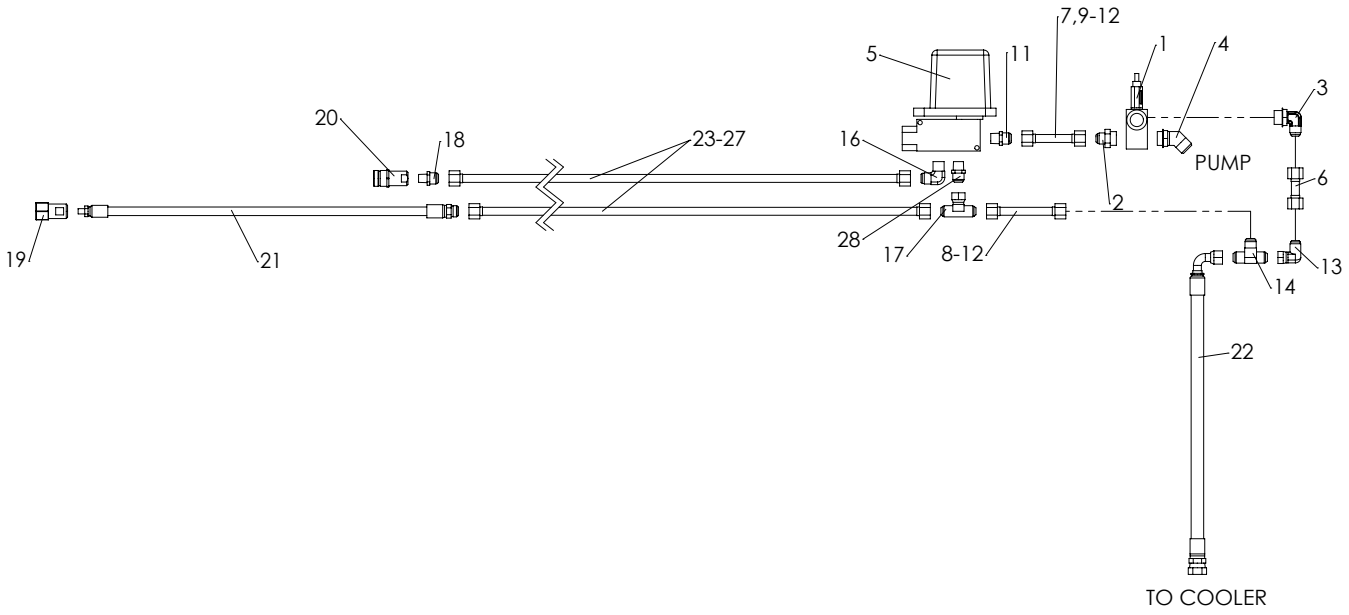
RESERVOIR W/COOLER



ITEM	PART NO.	DESCRIPTION	QTY
1	305054	Tank – Assembly Hydraulics	1
2	43534	Indicator – Service	1
3	305065-AA	Bracket – Cooler Mount LH	1
4	305065-AB	Bracket – Cooler Mount RH	1
5	305064	Cooler – Assembly	1
	305064-AA	Core – Cooler	1
	305767-AB	Fan – Assembly Cooler	1
	305064-AC	Housing – Cooler	1
6	38575	Gauge – Sight & Temperature	1
7	56311	Fitting – 16 090109A	1
8	36398	Cap Screw – 3/8-16 x 1 SS	6
9	72054	Nut – Lock 3/8-16	6
10	36424	Washer – Flat 5/16	4
11	42639	Bolt – Carriage 5/16 x 1 SS	4
12	36413	Nut – Hex - 5/16-18	4
13	34750	Fitting – 16-16-16 070429	1
14	29768	Fitting – 20-20 070102	1
15	98568	Fitting – 20-20 070221	1
16	96750-X1	Relay – 12 VDC 40 Amp	1
17	305074	Switch – Temperature	1
*18	98662	Hose – 1-1/4 2 CB x 48	1
19	36419	Washer – Lock 5/16 SS	4
20	56258	Screw – Truss Head 1/4-20 x 1/2 SS	1
21	42034	Nut – Lock 1/4-20 SS	1

* - Not Shown

RIGHT HAND SIDE HYDRAULICS

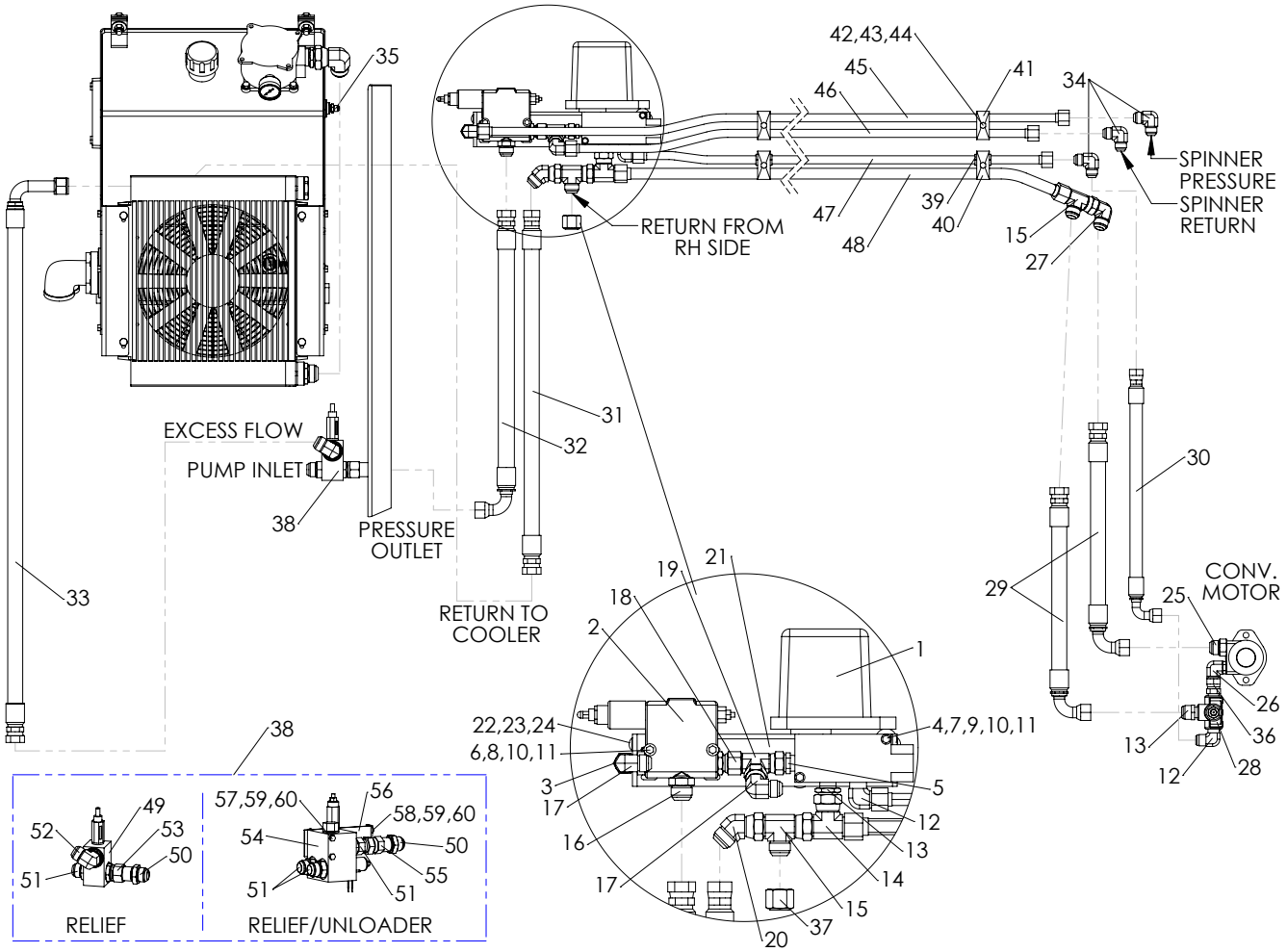


ITEM	PART NO.	DESCRIPTION	QTY
	98650	Valve – Assembly, Includes 1-4	
1	77498	Valve – Relief 1500 PSI	1
2	29835	Fitting – 12-16 070120	1
3	29829	Fitting – 12-16 070220	1
4	56269	Fitting – 12-16 070320	1
5	306292	Valve – Hydraulic 9 GPM Raven II	1
6	98643	Tube – Assembly 3/4 OD x 2-7/8	1
7	98644	Tube – Assembly 3/4 OD x 5	1
8	98645	Tube – Assembly 3/4 OD x 6-1/2	1
9	98649	Clamp – Pair 3/4	2
10	41669	Cap Screw – 1/4-20 x 1-3/4	4
11	36418	Washer – Lock 1/4	4
12	36412	Nut – Hex 1/4-20	4
13	34709	Fitting – 12-12 070221	1
14	29792	Fitting – 12-12-12 070401	1
15	29789	Fitting – 12-12 070120	1

ITEM	PART NO.	DESCRIPTION	QTY
16	29847	Fitting – 12-12 070220	1
17	29809	Fitting – 12-12-12 070433	1
18	29784	Fitting – 12-8 070102	1
19	96651	Disconnect – Quick Hex Nut	1
20	96652	Disconnect – Quick Nipple	1
21	98668	Hose – Assembly 1/2 100R1 x 36	1
22	305046	Hose – Assembly 3/4 2CB x 105	1
	* 96906	Sleeve – Abrasive	4
	* 96942	Tie – Wire	3
23	302851	Tube – Assembly 3/4 OD x 68	2
	98639	Tube – Assembly 3/4 OD x 80	2
	98640	Tube – Assembly 3/4 OD x 92	2
	98641	Tube – Assembly 3/4 OD x 104	2
24	75036	Clamp – Tubing Twin 3/4”	AR
25	71830	Cap Screw – 5/16-18 x 2-1/2	AR
26	36419	Washer – Lock 5/16	AR
27	36413	Nut – Hex 5/16-18	AR
28	303226	Fitting – 12-12 Special STR. JIC X SAE	1

* - Not Shown AR – As Required

LEFT HAND SIDE HYDRAULICS



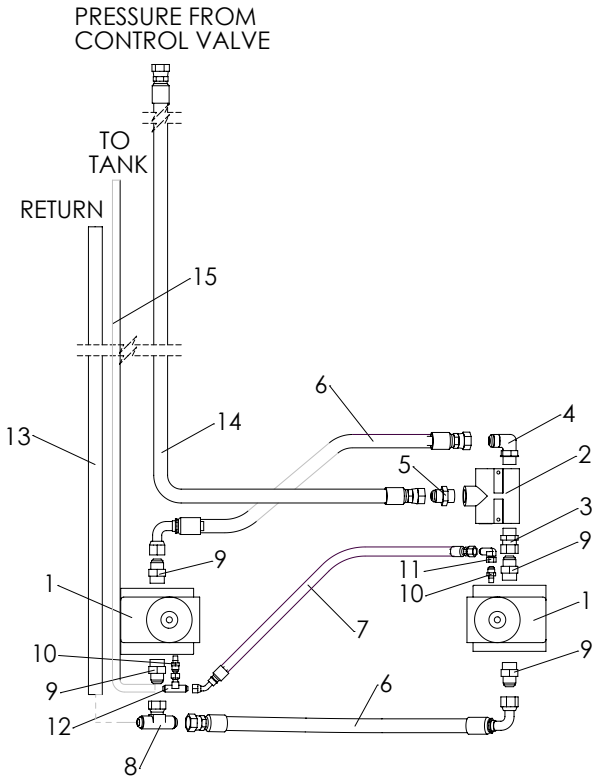
ITEM	PART NO.	DESCRIPTION	QTY
1	306278	Valve – Control 25 GPM Raven II	1
2	32485-X1	Valve – PWM Hydraulic	1
	56290	Cartridge	1
	56289	Coil	1
	303922	Cable – Jumper	1
3	29847	Fitting – 12-12 070220	1
4	302098	Washer – Step 1/4-ID x 4/10-OD x 1/2	2
5	29789	Fitting – 12-12 070120	1
6	70341-X1	Pipe – Spacer 1/2	2
7	302097	Washer – Step 1/4-ID x 4/10-OD x 1/8	2
8	36423	Washer – Flat 1/4	10
9	36396	Cap Screw – 1/4-20 x 3	2
10	56396	Cap Screw – 1/4-20 3-1/4	2

LEFT HAND SIDE HYDRAULICS CONTINUED

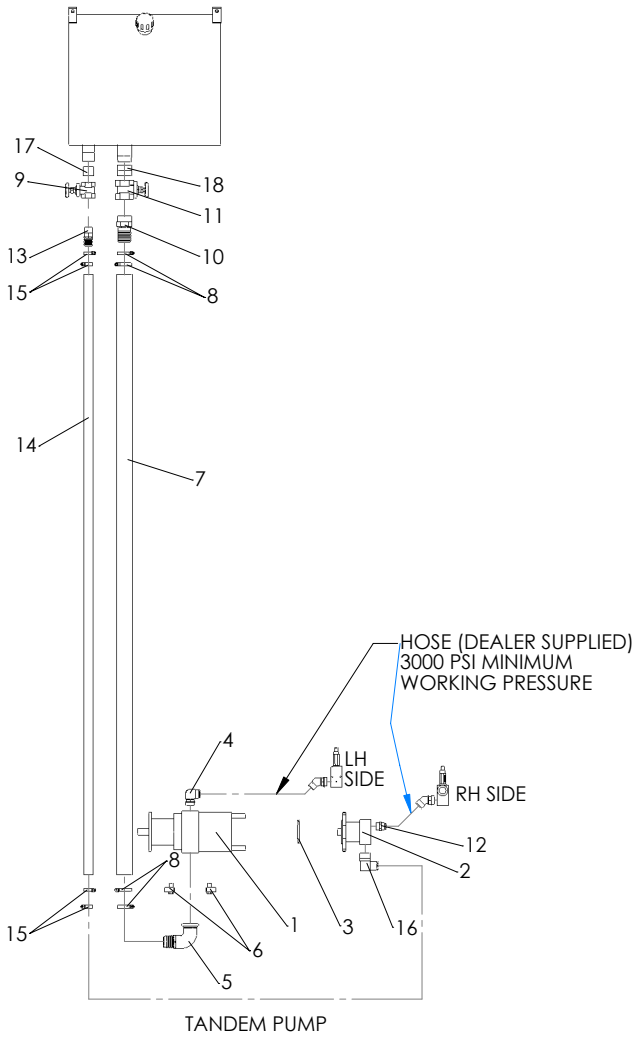
ITEM	PART NO.	DESCRIPTION	QTY
11	42034	Nut – Lock 1/4-20	4
12	29847	Fitting – 12-12 070220	1
13	305407	Fitting – 16-12 Special STR. JIC X SAE	1
14	29836	Fitting – 16-16-16 070433	1
15	29850	Fitting – 16-16-16 070432	2
16	29775	Fitting – 16-12 070120	1
17	34709	Fitting – 12-12 070221	2
18	29788	Fitting – 12-12 S1040-30 NS	1
19	29781	Fitting – 12-12-12 070432	1
20	29806	Fitting – 16-16 070321	1
21	305022	Bracket – Valve	1
22	36408	Bolt – Carriage 3/8-16 x 1	4
23	36425	Washer – Flat 3/8	4
24	72054	Nut – Lock 3/8-16	4
25	29778	Fitting – 16-10 070120	1
26	29773	Fitting – 12-10 070220	1
27	29783	Fitting – 16-16 070201	1
28	87336	Valve – Assy Relief 2000 PSI	1
29	83013	Hose – Assembly 1 x 21 Return	2
30	29638	Hose – Assembly 3/4 100R2 x 24	AR
1	42221	Nut - Lock 5/16-19 SS	AR
31	79552	Hose – Assembly 1 x 34 Return	1
32	305047	Hose – Assembly 1 100R12 x 28	1
33	305045	Hose – Assembly 1 x 52 Return	1
34	29785	Fitting – 12-12 070201	3
35	29766	Fitting – 6-6 070102	1
36	34826	Fitting – 12-12 NS 37 Swivel x NPTF	1
37	29802	Cap – MR units only	1
38	305037	Relief – Group 3100 PSI, Includes 49-53	1
	305038	Relief – Group 3100 PSI Unloader, Includes 50,51,54-60	1
39	305073	Bushing – Rubber Hose	AR
40	300033	Clamp – Tubing Twin 1”	AR
41	75036	Clamp – Tubing Twin 3/4”	AR
42	71830	Cap Screw – 5/16-18 x 2-1/2	AR
43	36419	Washer – Lock 5/16	AR
44	36413	Nut – Hex 5/16-18	AR
45	305026-AA	Tube – Assembly 3/4” OD x 74	1
	305026-AB	Tube – Assembly 3/4” OD x 86	1
	305026-AC	Tube – Assembly 3/4” OD x 98	1

ITEM	PART NO.	DESCRIPTION	QTY
	305026-AD	Tube – Assembly 3/4” OD x 110	1
46	305028-AA	Tube – Assembly 3/4” OD x 63	1
	305028-AB	Tube – Assembly 3/4” OD x 75	1
	305028-AC	Tube – Assembly 3/4” OD x 87	1
	305028-AD	Tube – Assembly 3/4” OD x 99	1
47	305027-AA	Tube – Assembly 3/4” OD x 58	1
	305027-AB	Tube – Assembly 3/4” OD x 70	1
	305027-AC	Tube – Assembly 3/4” OD x 82	1
	305027-AD	Tube – Assembly 3/4” OD x 94	1
48	302407	Tube – Assembly 1 OD x 61	1
	302408	Tube – Assembly 1 OD x 73	1
	302410	Tube – Assembly 1 OD x 85	1
	302411	Tube – Assembly 1 OD x 97	1
49	98109	Valve – Relief 3100 PSI	1
50	34747	Fitting – 16-16 070601	1
51	29803	Fitting – 16-16 070120	AR
52	29840	Fitting – 16-16 070220	1
53	34810	Fitting – 16-16 S1040-30 NS	1
54	56291	Valve – Relief/Unloader 3100 PSI	1
	56291-AA	Coil – Dump Valve	
	56291-AB	Cartridge – Dump Valve	
	56291-AC	Cartridge – Relief Valve	
	56291-AD	Cartridge – Check Valve	
55	302449	Fitting – 16-16 NS Union JICF X JICF	1
56	305035	Bracket – Unloader Valve	1
57	84599	Cap Screw – 5/16-18 x 5	2
58	42639	Bolt – Carriage 5/16-18 x 1	2
59	36424	Washer – Flat 5/16	4
60	42221	Nut – Lock 5/16-18	2

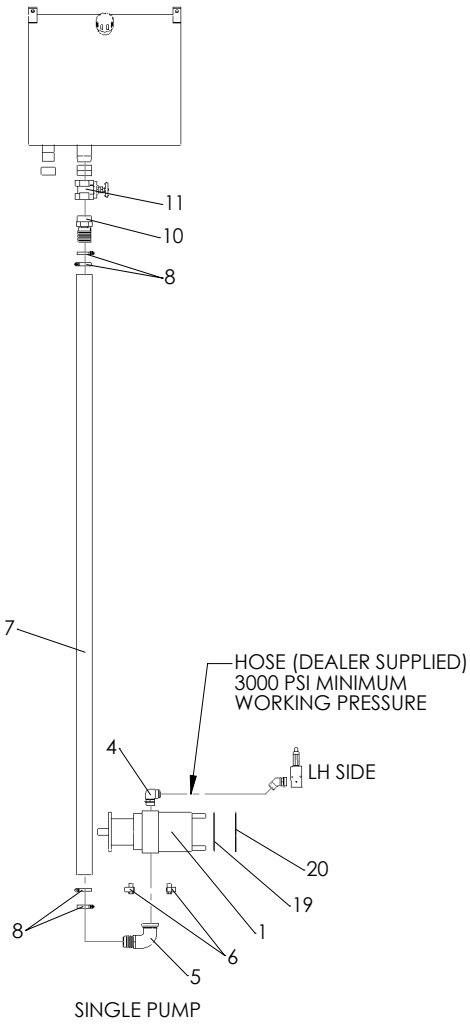
* - Not Shown AR – As Required



ITEM	PART NO.	DESCRIPTION	QTY
1	305944	Motor – Spinner	2
2	43510	Valve – Flow Divider	1
3	29788	Adapter	1
4	29847	Adapter – 90° Elbow	1
5	29789	Adapter	1
6	87049	Hose Assembly	2
7	87112	Hose Assembly	1
8	29809	Adapter – Tee	1
9	34717	Adapter – Connector	4
10	34763	Adapter	2
11	34816	Adapter – 90° Elbow	1
12	29825	Adapter – Tee	1
13	54788	Hose – Return Assembly	1
14	98104	Hose – Pressure Assembly	1
15	83599	Hose – Drain Line, 11’ Unit	1
	83600	Hose – Drain Line, 12’ Unit	1
	83601	Hose – Drain Line, 13’ Unit	1
	83602	Hose – Drain Line, 14’ Unit	1

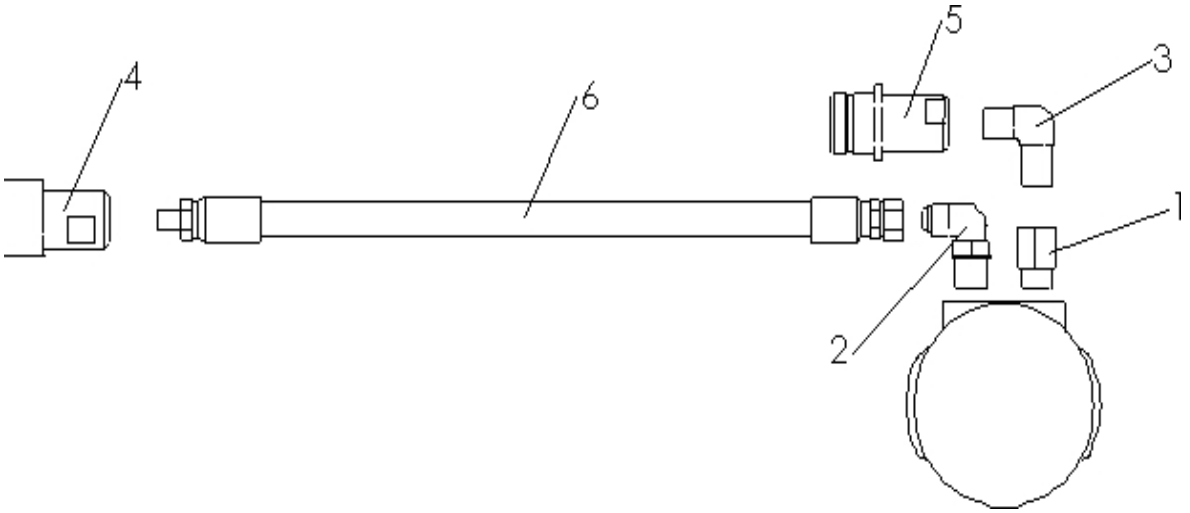


TANDEM PUMP

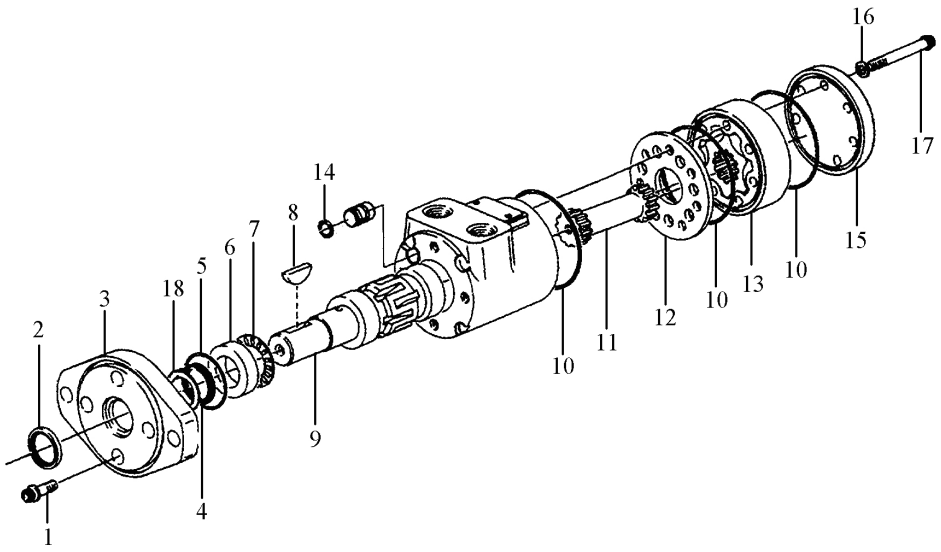


SINGLE PUMP

ITEM	PART NO.	DESCRIPTION	QTY
1	304428	Pump – 3.19 CID (Front section)	1
2	304425	Pump – .93 CID (Rear section)	1
3	300669	O-Ring – 4” ID	1
4	29840	Adapter – Elbow 90	1
5	34806	Fitting – 32-32 12151-3-E90S -L	1
6	41015	Kit – Flange Split -32	1
7	32401-108	Hose – Suction 2 x 108	1
8	22380	Clamp – Hose	4
9	305059	Valve – Ball 1-1/4	1
10	29811	Fitting – Hose End 2 NPT x 2	1
11	305060	Valve – Ball 2” NPT	1
12	29789	Fitting – 12-12 070120	1
13	16582	Fitting – Hose Barb	1
14	23184-108	Hose – Suction 1-1/4	1
15	6335	Clamp – Hose	4
16	304427	Fitting – 20-20 430260	1
17	6028	Nipple – 1-1/4” NPT	1
18	22324	Nipple – 2” NPT	1
19	300493	Gasket – Paper Pump	1
20	300492	Cover – Pump Rear	1



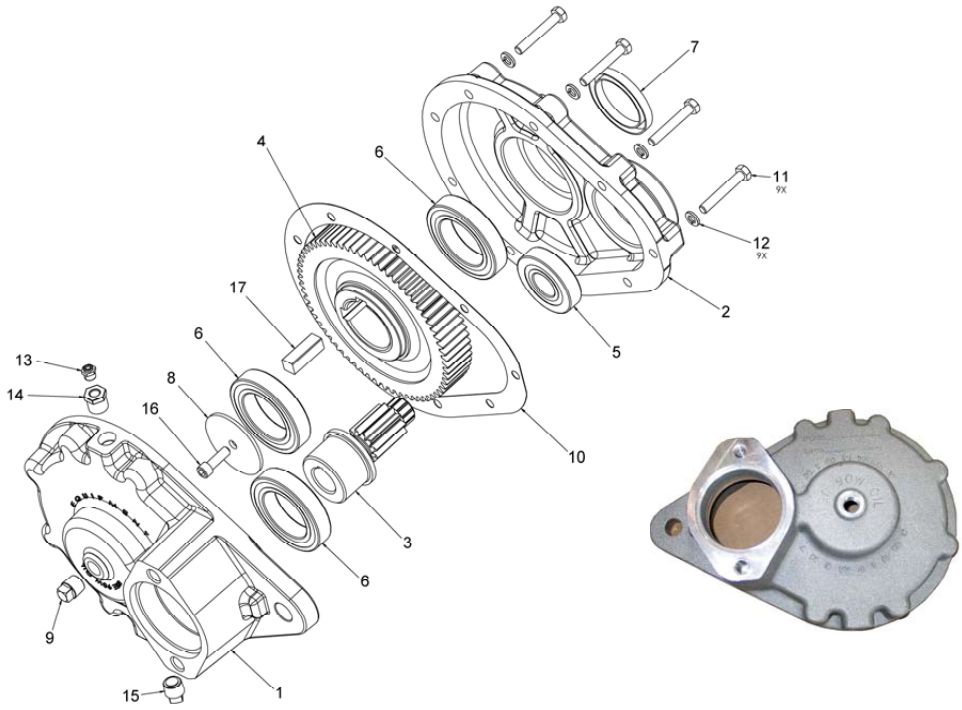
ITEM	PART NO.	DESCRIPTION	QTY
1	22020	Bushing	1
2	29772	Adapter – Elbow 90°	1
3	34742	Adapter – Elbow 90°	1
4	96651	Disconnect – Quick Female	1
5	96652	Disconnect – Quick Male	1
6	98667	Hose Assembly – 1/2 x 36	1



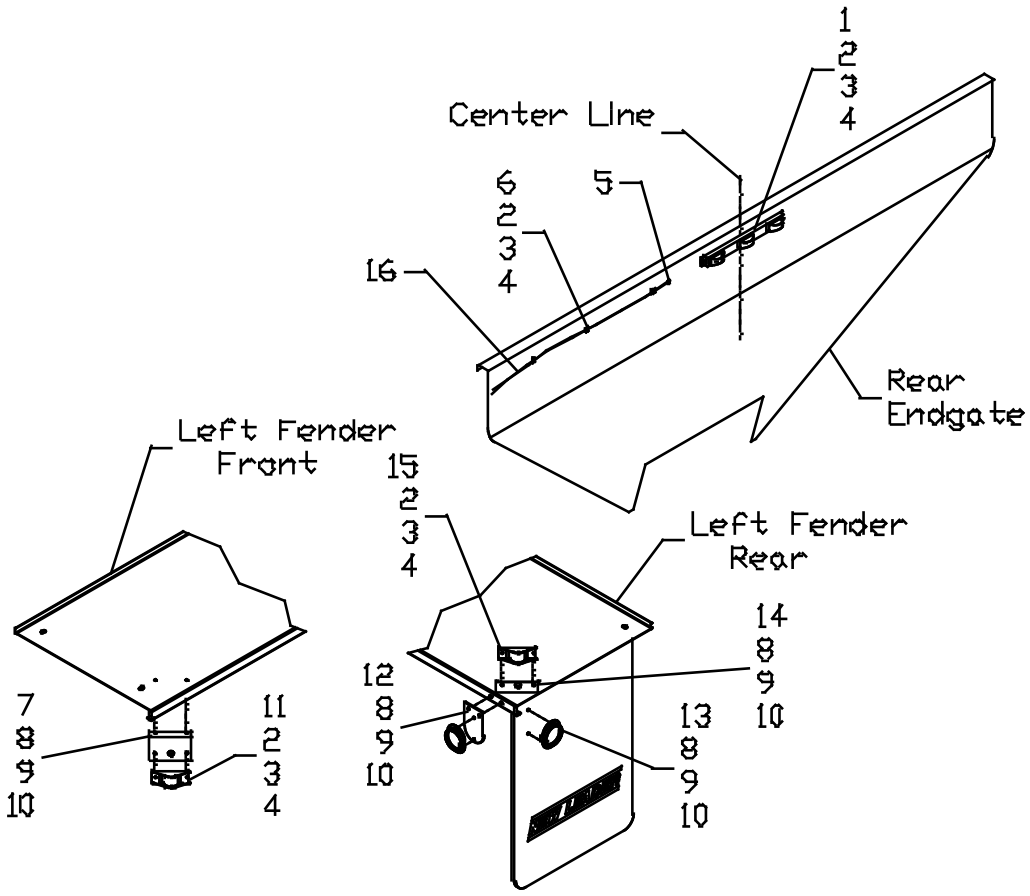
ITEM	PART NO.	DESCRIPTION	QTY
	82459	Motor - Hydraulic, 1 1/4" Standard	
1	30665	Cap Screw	4
2	73471	Seal	1
3	73555	Flange - Mounting (Used on 82459)	1
	73556	Flange - Mounting (Used on 82462)	1
4	73473	Seal	1
5	73474	Seal - "O" Ring	1
6	37385	Race - Bearing	1
7	37401	Bearing - Thrust Needle	1
8	3065	Key	1
9	37386	Shaft - Output Keyed	1
10	73480	Seal - "O" Ring	1
11	83014	Drive	1
12	37388	Plate - Spacer	1
13	83015	Gerotor - 1 1/4"	1
14	22068	Seal - "O" Ring	1
15	37400	Cap - End	1
16	37381	Washer - Seal	7
17	83016	Cap Screw	7
18	73472	Washer - Back-up	1
19	* 73477	Seal - "O" Ring	1
	39137	Kit - Seal, Includes Items 2,4,5,10,16,18 & 19	

* - Not Shown

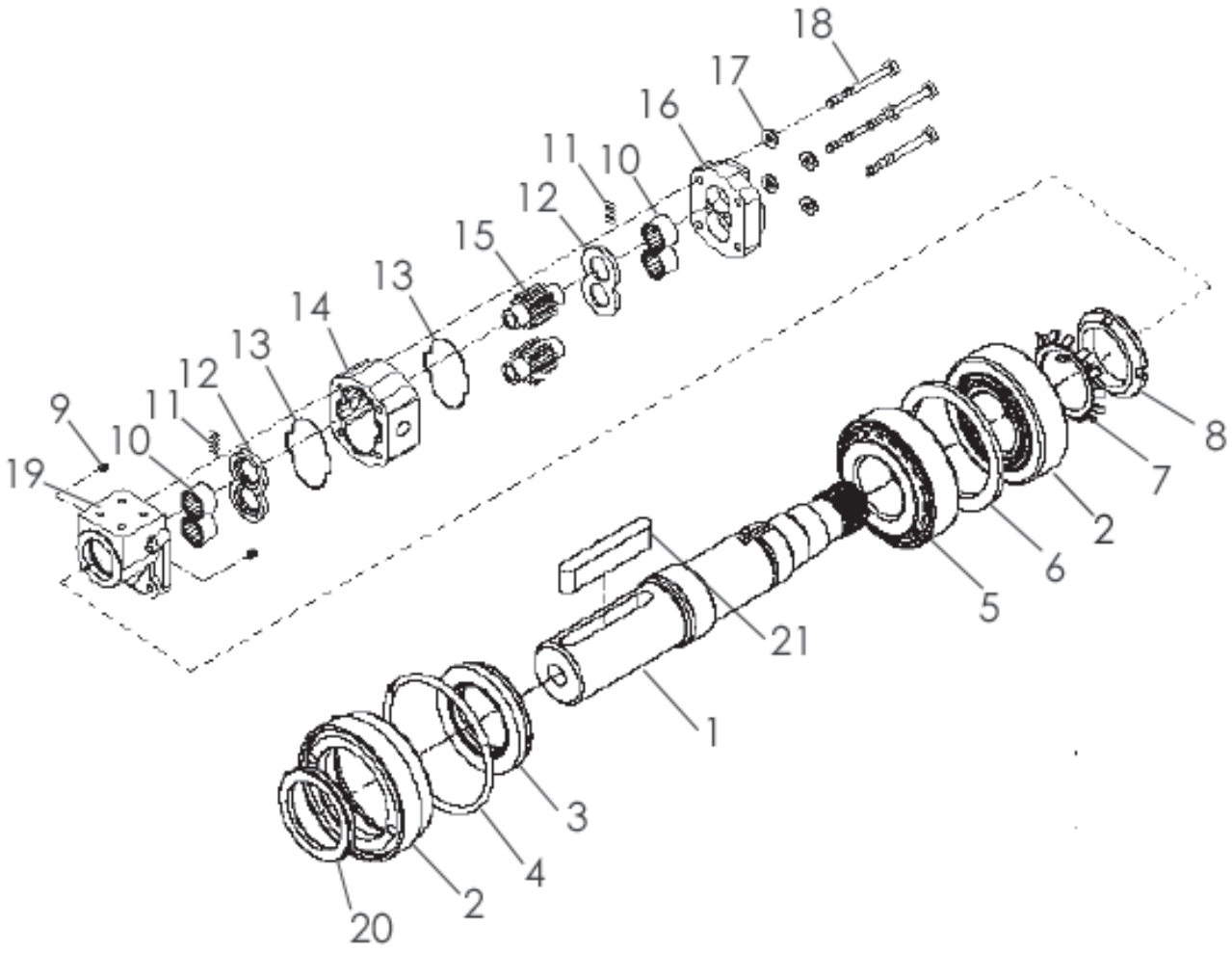
GEAR CASE - SINGLE PINION



ITEM	PART NO.	DESCRIPTION	QTY
	36671	Gear Case – Assy Single Pinion	
	304269-AB	Parts – Service, Includes 1–17	
1	304559	Housing – Outboard	1
2	304560	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	304563	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



ITEM	PART NO.	DESCRIPTION		QTY
1	6114	Cluster - Light, Red		1
2	20572	Screw – Machine 3/16 x 3/4	33	1.5
3	20709	Washer – Lock 3/16	33	
4	20641	Nut – Hex 3/16	33	
5	21986	Grommet - Rubber	AR	
6	6198	Clamp - Wire	AR	
7	38611	Bracket - Front Light, Amber	2	
8	20003	Cap Screw - 1/4 x 3/4	24	
9	20691	Washer – Flat 1/4	24	
10	20642	Nut – Hex 1/4	24	
11	6108	Clearance Lamp - Amber	2	
12	3824	Mount - Belt Reflector	4	
13	6107	Reflector - Red	4	
14	3775	Bracket - Rear Light, Red	2	
15	6110	Clearance Lamp - Red	2	
16	21580	Wire - 14 Gauge, Black	Inches	AR


18
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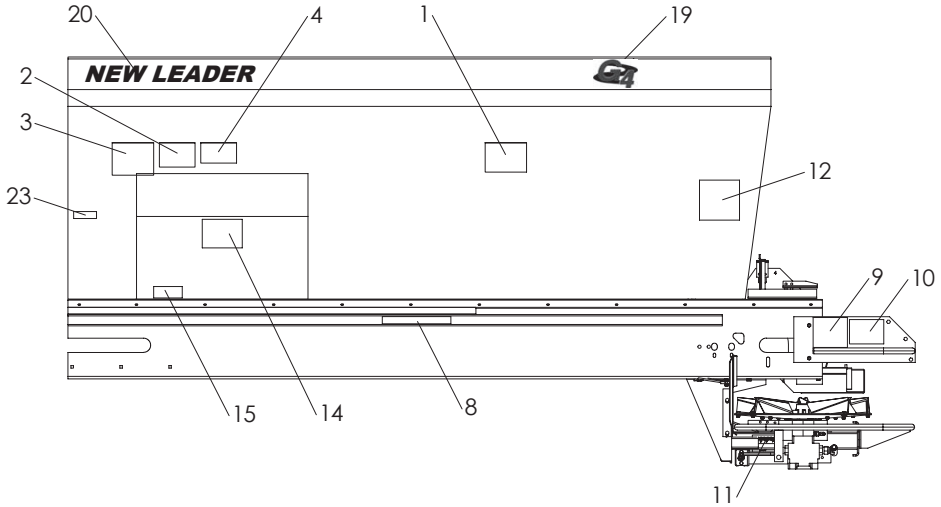
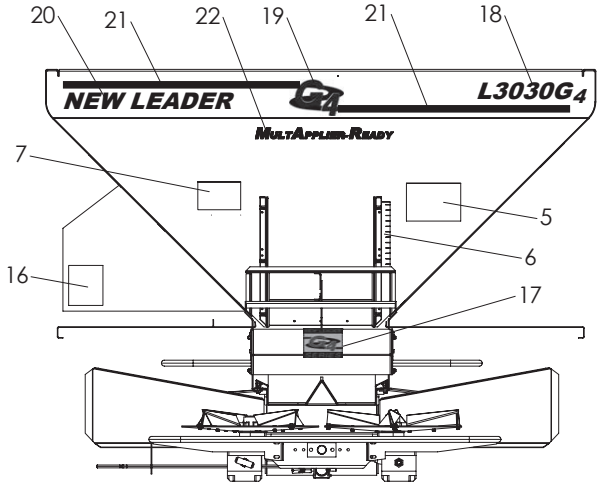
21
1
3
4
2
20

SPINNER MOTOR CONTINUED

ITEM	PART NO.	DESCRIPTION	QTY
	306093	Shaft Assy - Output	
		Includes: 1-8, 20, 21	
	72548	Kit - Seal, Includes: 3, 4, 20 & 27	
	305944	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	1
10	23806	Bearing	4
11	23819	Seals - Pocket (Makes 12 Seals)	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	N/A	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	* 306429	Tool - Speedi	1
26	*305824	Retainer - Assy w/Seals, Includes 2-4, 20 & 27	1
27	*306090	Sleeve - Speedi	1

* - Not Shown


20
4
1
19
NEW LEADER
2
3
23
12
9
10
15
14
8
11


20
21
22
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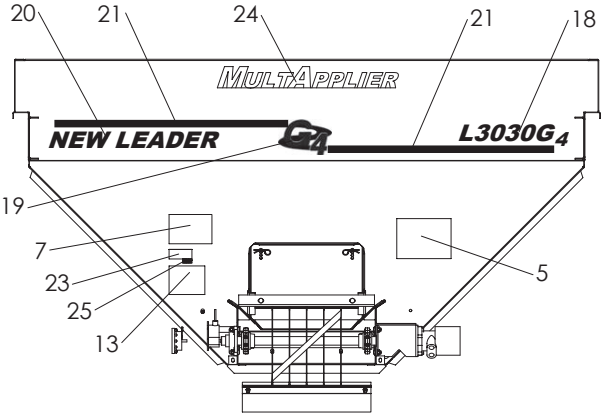
21
18
NEW LEADER
L3030G4
MULTAPPLIER-READY
7
5
6
16
17


20
21
24
21
18
MULTAPPLIER
NEW LEADER
L3030G4
19
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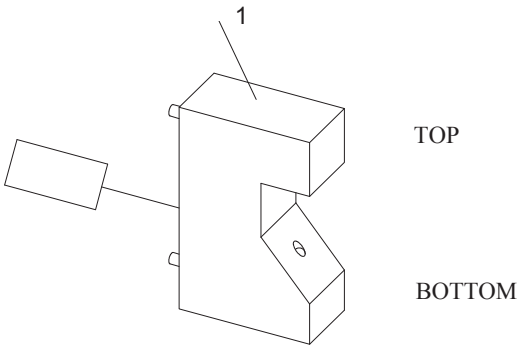
25
13
5

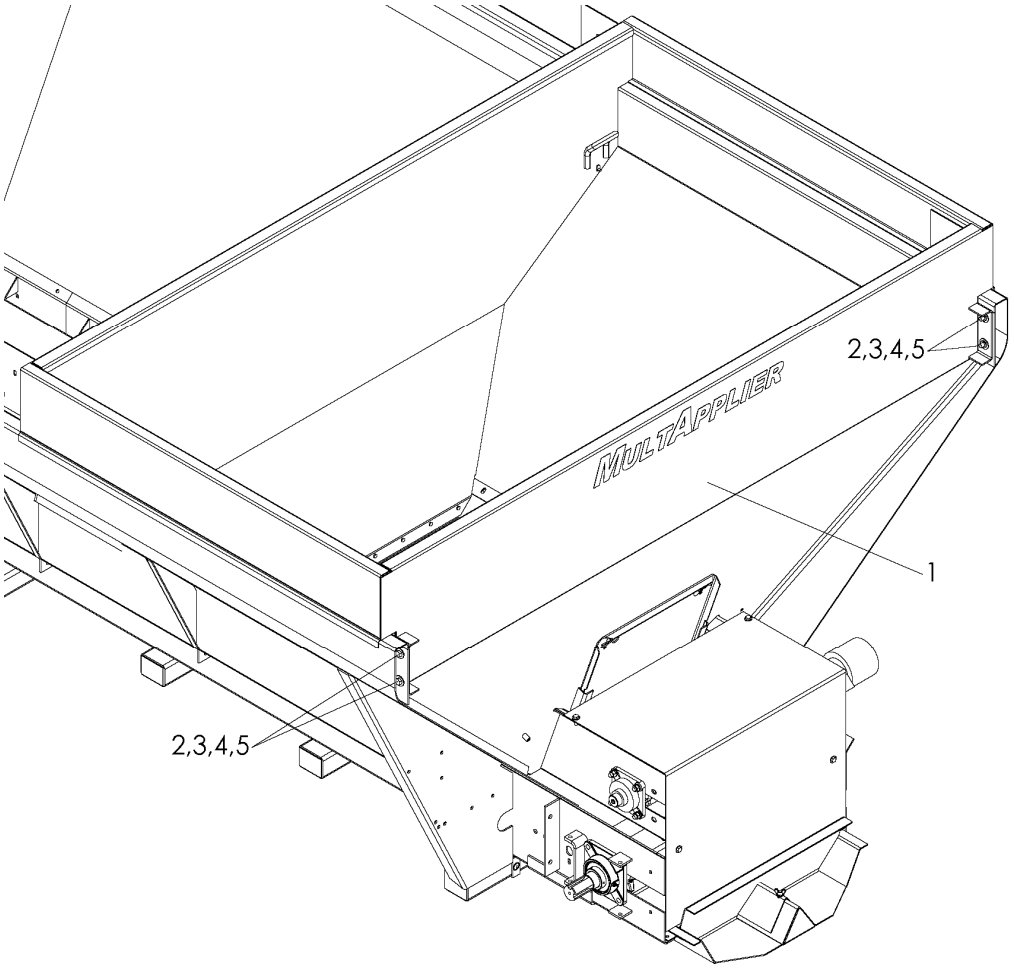
ITEM	PART NO.	DESCRIPTION	QTY
1	39138	Decal – Warning, Hot Components	1
2	364	Decal – Warning, Stay Out of Box	2
3	150034	Decal – Caution, Improper Operation	1
4	321	Decal – Caution, Material to be Spread	1
5	368	Decal – Flying Material	1
6	23769	Decal – Feedgate Slide Scale	1
7	71526	Decal – Notice, Adjust Spinner	1
8	39200	Decal – Fender Capacity	2
9	55630	Decal – Warning, No Step	2
10	55631	Decal – Warning, Guard for Protection	2
11	87110	Decal – Scale Spinner	1
12	21477	Decal – Notice, Conveyor Life	1
13	21476	Decal – Notice, Conveyor Chain Life	1
14	8664	Decal – Caution, Keep Valve Open	1
15	304264	Decal – Notice, Cooler	1
16	39378	Decal – Change Filter	1
17	87109	Decal – G4	1
18	305018	Decal – L3030G4, Black	1
19	87122	Decal – G4 Black/Red	3
20	87164	Decal – New Leader, Black	3
21	87162	Decal – Striping Black (per foot)	AR
22	300403	Decal – MULTAPPLIER-Ready	1
23	302601	Decal – U.S. Patent Dual Bin	1
24	88245	Decal – MULTAPPLIER	1
25	97367	Decal – U.S. Patents Controller	1

BIN SENSOR

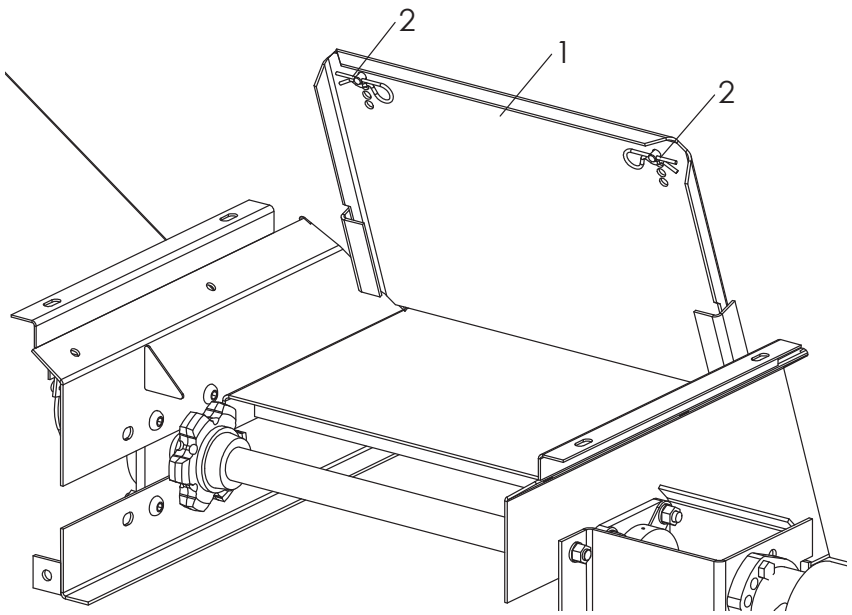


ITEM	PART NO.	DESCRIPTION	QTY
1	98787-AB	Lead - 18” Bin Level Sensor	AR
2	*98787-AD	Cable - 27’ Bin Level Sensor	AR
3	*307130	Cable - Jumper 102”	AR
4	*307124	Mount - Sensor 304	AR
5	*36393	Cap Screw - 1/4-20NC x 3/4 SS	AR

* - Not Shown

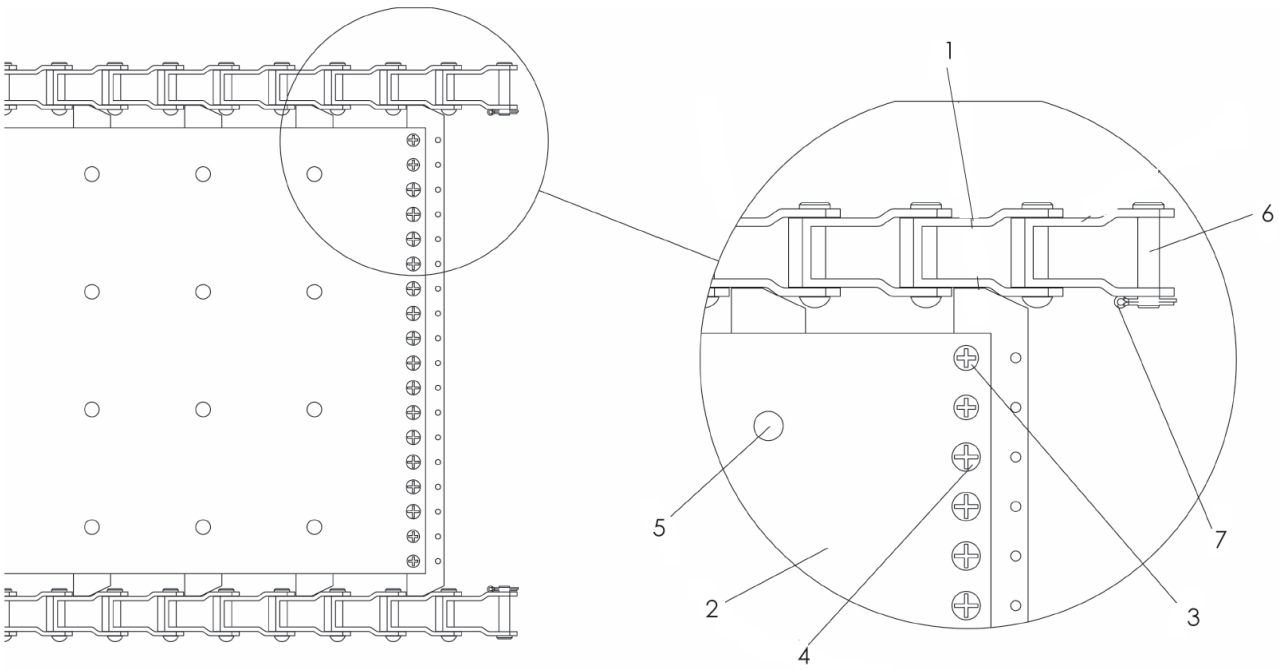


ITEM	PART NO.	DESCRIPTION	QTY
	86951	Hardware – Kit Mount	
1	98552	MULTAPPLIER – 5' SHELL INSERT	1
	303964	MULTAPPLIER – 7' Shell Insert	1
2	20128-X1	Cap Screw – 1/2 x 1 1/4 Grade 8	8
3	20695	Washer – Flat 1/2	16
4	20714	Washer – Lock 1/2	8
5	20646	Nut – Hex 1/2	8

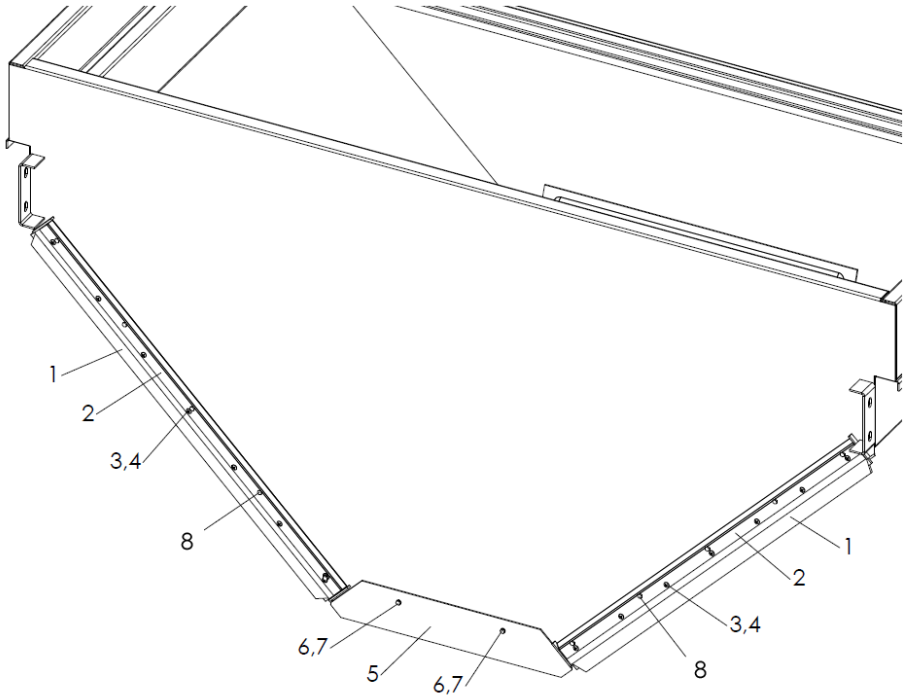


ITEM	PART NO.	DESCRIPTION	QTY
1	98557	Panel – Feedgate	1
2	36429	Pin – Hair 2.562 x .148	2

MULTAPPLIER #4 BELT-OVER-CHAIN



ITEM	PART NO.	DESCRIPTION	QTY
1	308712-AA	Chain Wldmt	1
2	305304-AC	Belt - MOR 18” x 156”	1
3	20617	Screw - Flat 1/4 x 1/2	8
4	20624	Screw - Truss 1/4 x 1/2	28
5	308534	Screw - 1/4 x 1/2	124
6	21118	Pin - Chain Pintle	2
7	20817	Pin - Cotter	2


1
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3,4
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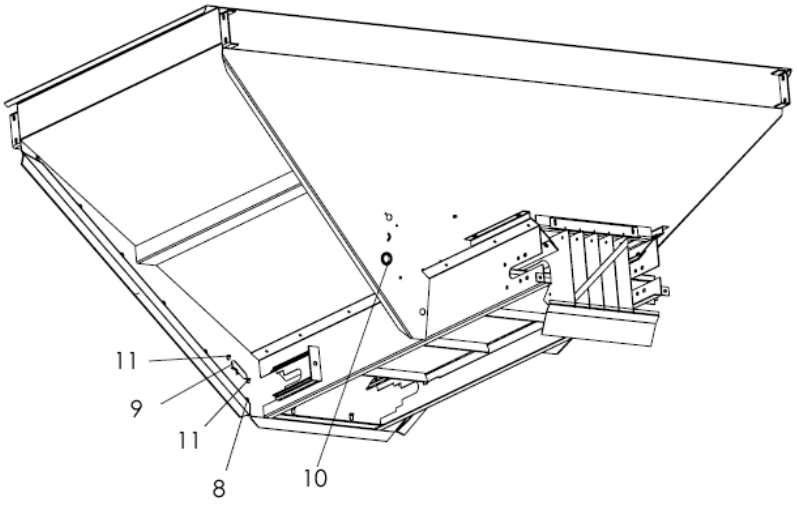
6,7
5
6,7
1
2
3,4
8


11
9
11
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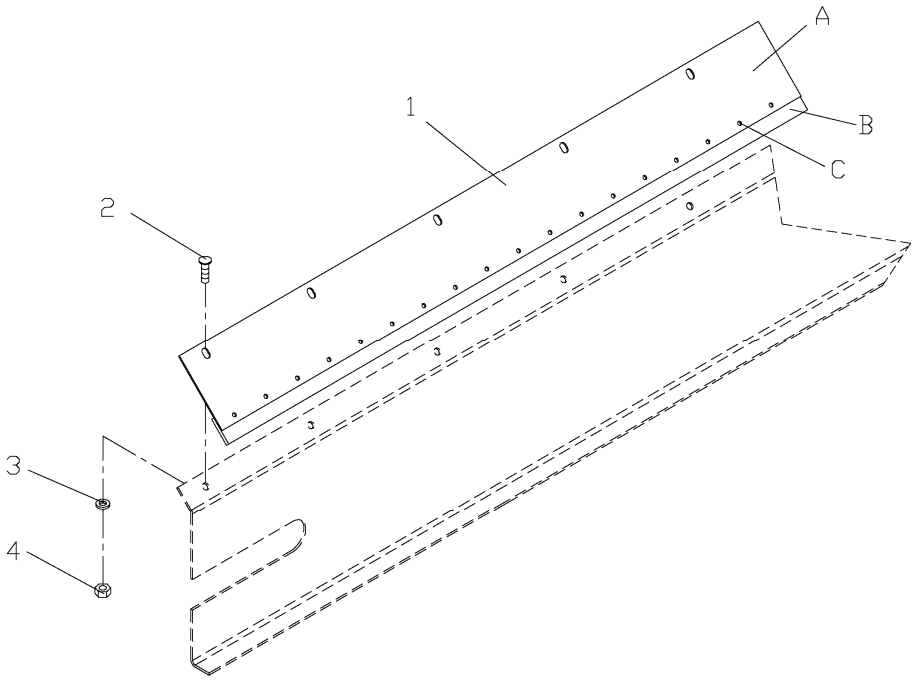
10

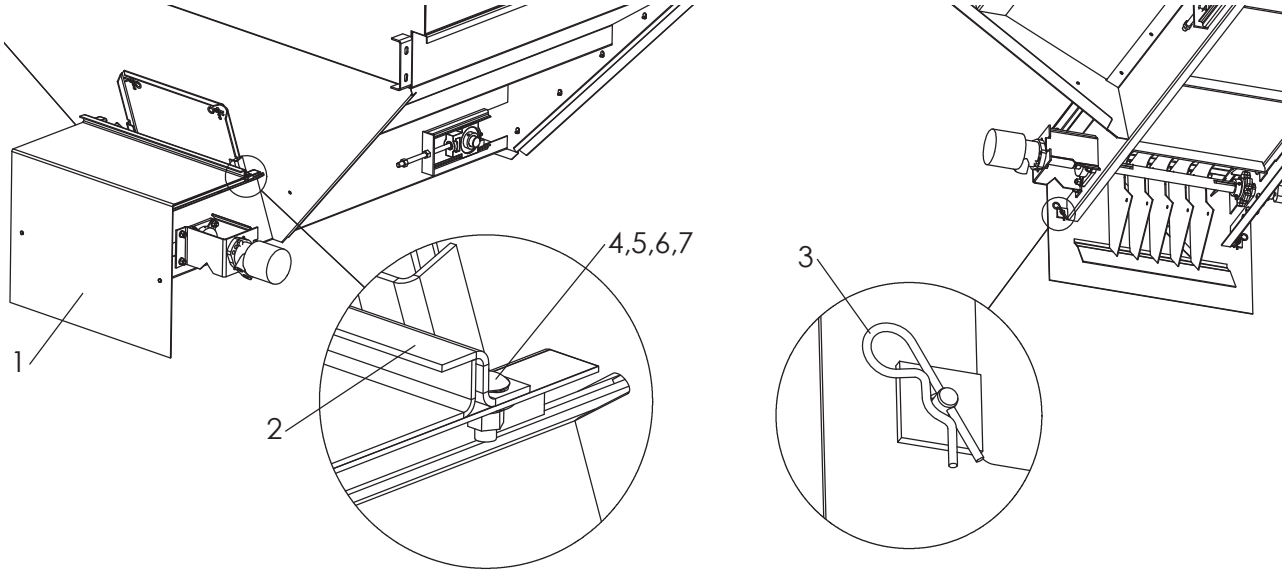
ITEM	PART NO.	DESCRIPTION	QTY
1	304810	Sealer 3 X 1/4 X 59-3/16”	2
2	304809	Retainer – Seal	2
3	56258	Screw – Truss Head 1/4-20 x 1/2	14
4	88931	Nut – Tee 1/4 x 1/4	14
5	304811	Feedgate – Panel 1.5”	1
	304812	Feedgate – Panel 2”	1
6	36398	Cap Screw – 3/8 x 1 SS	2
7	36420	Washer – Lock 3/8 SS	2
8	36395	Cap Screw - 1/4 x 1 SS	12
9	307125	Plate - Bin Sensor	1
10	34129	Grommet - Rubber	1
11	36393	Cap Screw - 1/4-20 x 3/4 SS	2



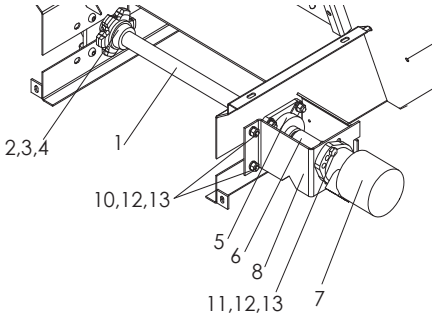
ITEM	PART NO.	DESCRIPTION	QTY
1	302828	Shield – Chain Assy	2
A	302827	Shield – Chain	2
B	305975	Belting – Sealer, specify length	AR
C	56258	Screw – Truss Hd 1/4-20 x 1/2	54
	88931	Nut – Tee 1/4 x 1/4	54
2	71829	Screw – Machine 3/8-16 x 1 SS	14
3	36420	Washer – Lock 3/8 SS	14
4	36414	Nut – Hex 3/8-16 SS	14

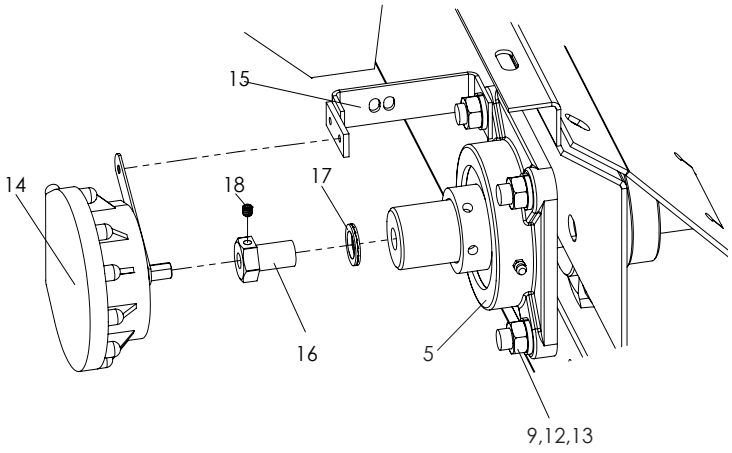
AR – As Required

MULTAPPLIER CONVEYOR COVER



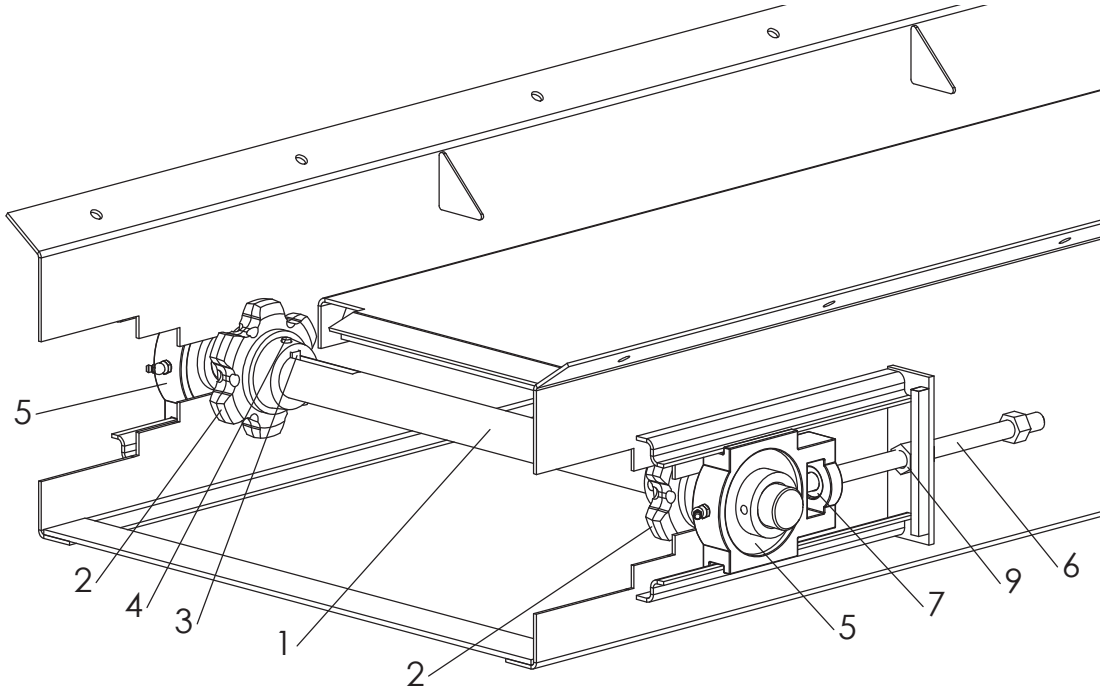
ITEM	PART NO.	DESCRIPTION	QTY
1	98562	Cover – Wldmt Rear Conveyor	1
2	302853	Hold-down – Cover Rear	1
3	36429	Pin – Hair 2.562 x .148	2
4	36408	Bolt – Carriage 3/8 x 1 SS	2
5	36425	Washer – Flat 3/8 SS	2
6	36420	Washer – Lock 3/8 SS	2
7	36414	Nut – Hex 3/8 SS	2

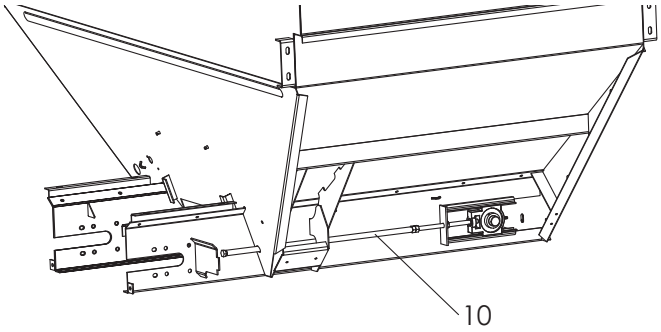




ITEM	PART NO.	DESCRIPTION	QTY
1	86761-X2	Shaft – Drive	1
2	86757	Sprocket	2
3	6131	Key – Square	2
4	20743	Screw – Set	4
5	6697	Bearing	2
6	86762	Coupling – Shaft	1
	* 4059	Key – Square 5/16 x 1-1/2	1
7	309126	Motor – Hydraulic 17.1 CID	1
	*56327	Seal Kit	
8	86766	Mount – Motor	1
9	304484	Screw – Button 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

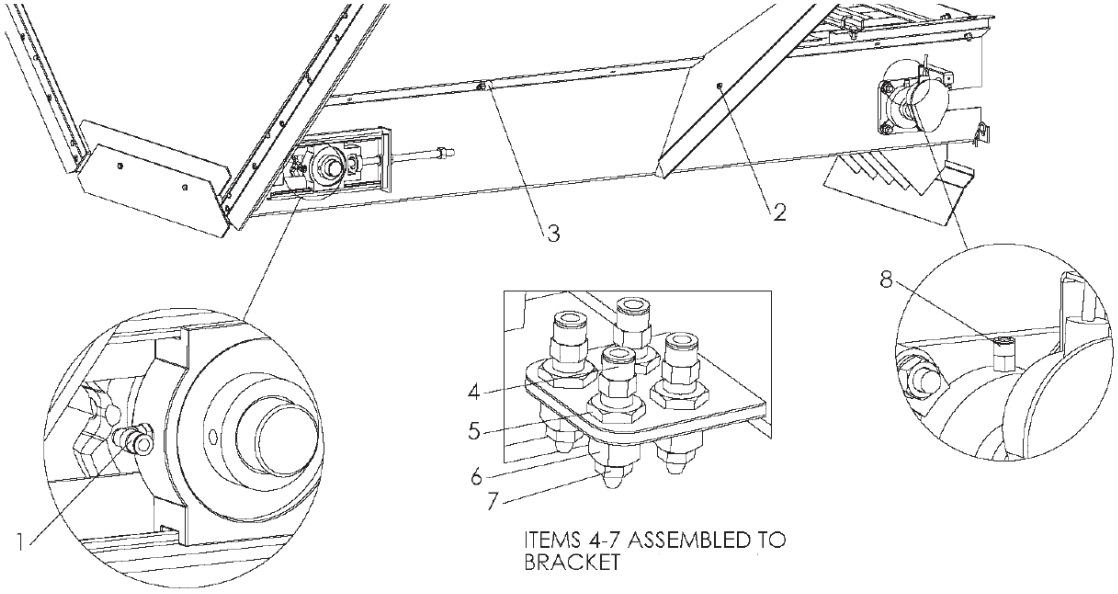




ITEM	PART NO.	DESCRIPTION	QTY
1	89779	Shaft – Idler	1
2	86757	Sprocket	2
3	6131	Key – Square	2
4	20743	Screw – Set 5/16 x 3/8	2
5	22511	Bearing	2
6	87857	Bolt Wldmt	2
7	17078	Collar – Set	2
8	* 36417	Nut – Hex 5/8 SS	2
9	87856	Nut Wldmt 304	2
10	*306974	Extended Idler - Pipe Wldmt Adj 5’ 304	2

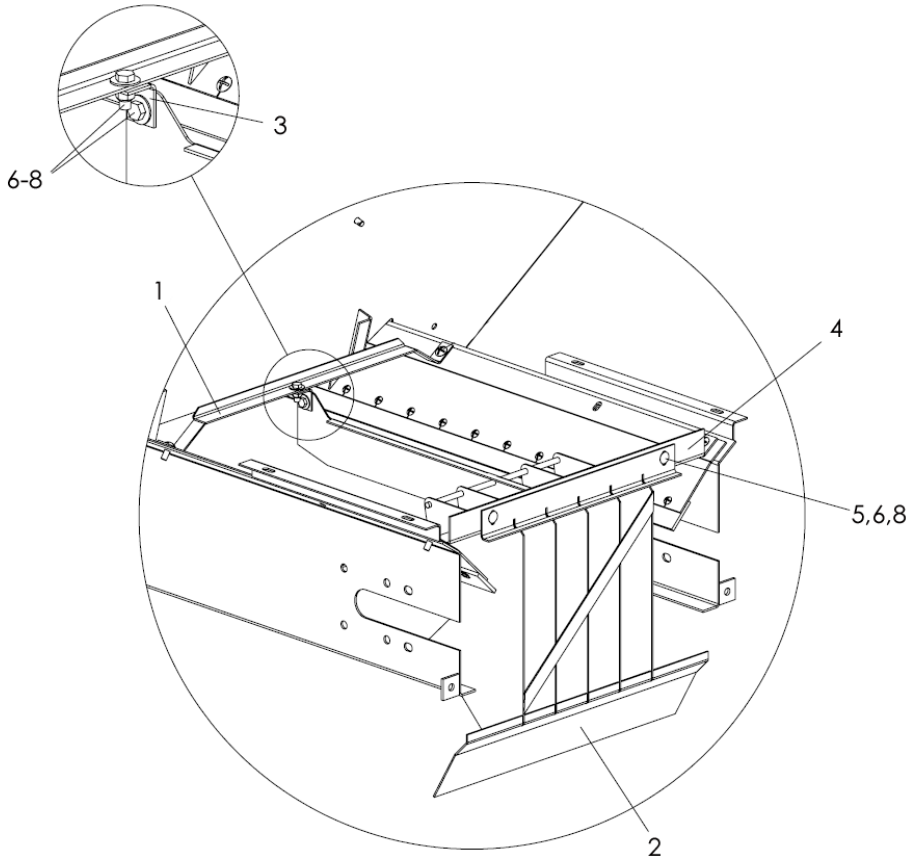
* - Not Shown

MULTAPPLIER REAR IDLER ZERKS



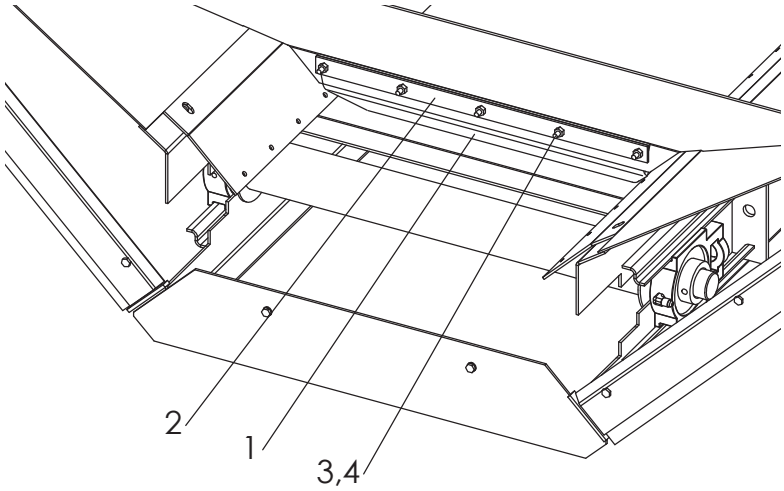
ITEM	PART NO.	DESCRIPTION	QTY
1	301337	Fitting – 90° Elbow Male	2
2	56395	Grommet – Rubber	2
3	89051	Clamp – Insulated	2
4	301334	Fitting – Straight Male 1/4-28	4
5	301333	Nut – Lock Connector	4
6	301332	Connector – Bulkhead	4
7	6069	Fitting – Grease	4
8	301339	Fitting – Straight Male 1/8	2
9	* 301338	Tube – 1/4	30

* - Not Shown



ITEM	PART NO.	DESCRIPTION	QTY
1	306576	Support - Divider 304	1
2	310503	Divider - Wldmt Hillside 304	1
3	306575	Clamp - Angle 304	1
4	86825	Support - Divider	1
5	36408	Bolt - Carriage 3/8-16NC x 1 SS	2
6	36425	Washer - Flat 3/8 SS	5
7	36398	Cap Screw - 3/8-16NC x 1 SS	2
8	72054	Nut - Lock 3/8-16NC SS	4

Note: Use chain shield hardware to attach Items 1 & 4 to sills.



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 – Machine 1/4 x 1	5
4	36412	Nut – Hex 1/4	5