



NL345 G4 Edge / MULTAPPLIER Operator's/Parts Manual

UNIT SERIAL NUMBER _____

TR3000 SERIAL NUMBER _____

MULTAPPLIER SERIAL NUMBER _____

MANUAL NUMBER: 312884-D

EFFECTIVE 06/2023



1330 76TH AVE SW
CEDAR RAPIDS, IA 52404-7052
PHONE (800) 363-1771 | FAX (319) 286-3350
www.newleader.com

Copyright 2021 New Leader Manufacturing

Interactive Features	6
Warranty	8
Preface	11
Safety	12
Important Safety Information	12
Safety Alert Symbols	12
General Safety Rules	13
Safety Decals.....	23
Safety Decal Maintenance.....	23
Safety Decal Installation	23
Informational Decals	29
Installation.....	34
Hydraulic Requirements.....	34
Hitch Requirements.....	34
Electrical Requirements	34
Controller Requirements	34
Connecting Implement.....	34
Implement Preparation and Connection.....	35
Implement Hitch Adjustment	35
Implement Connection.....	35
Power Take-Off Connection	37
ISOBUS Connections	38
Hydraulic Hose Installation Guide	39
Insert Installation.....	40
Spreader Preparation.....	40
Feedgate Adjustment.....	41
Insert Install.....	42
Hydraulics.....	45
Hydraulic Installation.....	45
Hillside Divider & Conveyor Cover	46
Install Valve Bracket.....	47
Install Valve	47
Install Clamp Assemblies.....	48
Install Tubes and Hoses	48
Electrical.....	50
Insert Removal/Endgate Installation.....	53
Operations	57
General Description	57
Introduction.....	58
Dimensions & Capacities	60
NL345, Single Bin	60
Weights & Capacities.....	61
NL345, With MultiApplier.....	62
MultiApplier Complete Weights & Capacities	63
MultiApplier Alone Dimensions & Capacities	64
Initial Startup.....	65
General Operating Procedures	66
Inspection Ladder	67
Back Plate Storage	67
Anti-Slab Chain Storage / Hillside Divider Panel.....	67
Tire Pressure and Transport Speeds.....	68
Implement Maneuvering	69
Backing and Turning Tips	69

Table of Contents

Maximum Hitch Angles and Walking Beam Travel..... 69
 Rear Pulling Lugs 70
 Maintenance 74
 Preventative Maintenance Pays! 74
 Hydraulic System 74
 Service Schedule 74
 Lubrication and Maintenance..... 74
 Hydraulic Hose 75
 Conveyor Chain 76
 Conveyor Belt Maintenance 77
 Bin Sensor 77
 Spinner Fins 78
 Spinner Deflectors..... 78
 Material & Hillside Flow Dividers 78
 Conveyor Gearcase 79
 Lubrication of Bearings 79
 Fasteners 79
 Trailer Brakes..... 80
 Tires 81
 Wheels & Lug Nuts 81
 End-of-Season Storage..... 82
 Clean Up 82
 Lubricant & Oil Specifications 83
 Hydraulic System 83
 Gearcase Lubricant 83
 Grease Gun Lubricant 83
 Chain Oiler Mixture 83
 Lubrication & Maintenance Chart 84
 Serial Number Locations..... 88
 Standard Torques..... 89
 Troubleshooting..... 90
 Electrical Schematic - Trailer..... 92
 Spreader Module LED Light Alerts 93
 Pre- & Post-Season Checklists 94
 Hydraulics 98
 Controller Operations 107
 Introduction 107
 How the ISOBUS Works..... 107
 Terminologies 107
 Cab to Enclosure Diagram 108
 Modules to Function Diagram 109
 Requirements..... 110
 Navigation..... 111
 Navigation Control Buttons..... 112
 Machine Configuration 113
 Initial Configuration/Factory Setup 113
 Enable Installed Bins 114
 Bin Settings..... 114
 GPS Offsets..... 116
 System Setup Summary 116
 Configuring Auxiliary Switches..... 116
 Settings 117
 Enable/Disable Bins 117

Valve Calibration Adjustment.....	117
Alarm Settings	117
Alarm Settings	120
Reconfigure System	120
Switch Assignment.....	121
Component Calibration.....	122
Spinner Disc Calibration	122
Calibrate Rate Encoder.....	123
Conveyor Calibration	124
Operations/Features.....	127
Feedgate Optimizer.....	130
Boundary Spreading	131
Hydraulics.....	133
Bin Flush.....	134
Body Module	136
Bin Cover Control.....	136
Chain Oiler.....	137
Bin Sequencing	139
General Alarms.....	141
General Product Control Alarms.....	142
Spinner Alarms	143
Hydraulic Alarms	144
Bin Sequencing Alarms.....	144
Chain Oiler Alarms	144
Default Settings.....	145
Calibration	146
Alarms	146
Spread Pattern	150
Catch Test	150
Spread Pattern	151
Spread Pattern Test Kit	151
Spinners	152
Spreader Preparation.....	152
Test Procedure.....	154
Test Results	156
Troubleshooting	157
Determining Driving Centers	158
Verifying Driving Centers.....	159
Parts	163
Instructions for Ordering Parts.....	163
Body.....	164
Mounting.....	164
Inverted "V"	166
Sight Window	167
Fenders	168
Side Boards.....	169
Inspection Ladder	170
Lubrication	172
Lighting & Visibility.....	174
Body Hydraulics	176
Hydraulic Reservoir	178
Hydraulic Reservoir w/ Cooler.....	180
Main Bin Hydraulics.....	183

Hydraulic Manifold Assembly.....	187
MultApplier Hydraulics	189
Conveyor	192
#4 Belt-Over-Chain Conveyor	192
Chain Shields	193
Conveyor Idler	194
Conveyor Drive	195
Gearcase Assembly - Dual Pinion	196
Gearcase Breather Tube	197
Encoder	198
Guard - Front	199
Wiper - Front	200
Conveyor Chain Oiler	201
Decals	204
Electronics	206
Bin Sensor	206
Hydraulic Reservoir Sensors	207
Switch Box & Harness	208
Controller Mount.....	209
Enclosure Assembly	210
Controller - Main Bin.....	212
Controller - MultApplier	214
Scale System.....	216
Scale Link Bracket.....	219
Endgate	220
Feedgate & Jack Assembly	220
Lubrication	222
Spinners.....	223
Material Divider	223
Hillside Divider	224
Anti-Slab.....	225
Spinner Guards & Deflectors.....	231
Spinner Speed Sensors.....	232
MultApplier	233
Mounting Hardware	233
Rear Feedgate	234
#4 BOC Conveyor.....	235
Wiper - Front	236
Conveyor Idler	237
Conveyor Drive & Encoder.....	238
Chain Shields - MultApplier	239
Mounts	240
Lubrication	241
Decals.....	242
Trailer	243
Electrical.....	247
Trailer Decals w/Brakes.....	251
Trailer Decals w/o Brakes.....	253

NOTE:

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

Hyperlinks

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

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

This page is intentionally left blank.

Insert Current New Leader Warranty

SAFETY

PLEASE ! ALWAYS THINK SAFETY FIRST !!

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

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

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

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

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

ACCIDENTS HURT !!!

ACCIDENTS COST !!!

ACCIDENTS CAN BE AVOIDED !!!

Important Safety Information

▲ WARNING

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

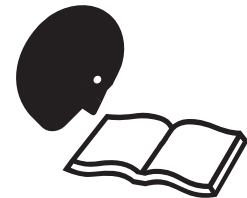


Figure 1.1

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

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

Safety Alert Symbols



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

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



DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE is used to address practices not related to physical injury.

NOTE:

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

General Safety Rules

Operations

PREPARE FOR EMERGENCIES

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

Fire extinguisher must be Type ABC or Type BC.

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



Figure 1.2

INSPECT HARDWARE BEFORE USE

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

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

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

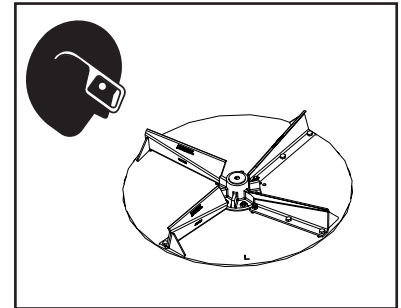


Figure 1.3

HANDLE FLAMMABLE MATERIALS SAFELY

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

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

Always stop engine before refueling machine or filling hydraulic reservoir.

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

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

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



Figure 1.4

General Safety Rules

Operations

HANDLE HAZARDOUS MATERIALS SAFELY

Figure 1.5 - Materials to spread can be dangerous.

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

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

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



Figure 1.5

WORK IN WELL-VENTILATED AREAS

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

Figure 1.6 - Always work in a properly ventilated area.

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

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

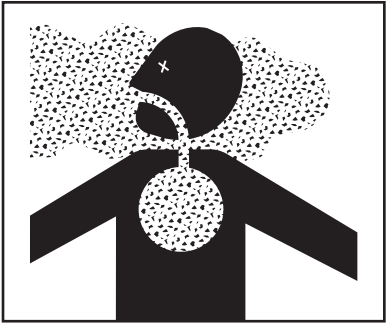


Figure 1.6

PROTECT AGAINST NOISE

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

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



Figure 1.7

General Safety Rules

Operations

AVOID MOVING PART HAZARDS

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

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

Make sure all personnel are clear of machine before starting.



Figure 1.8

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

Disconnect and lock out power source before removing guards.

Disconnect and lock out power source before adjusting or servicing.

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

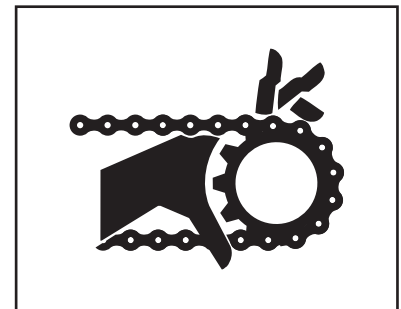


Figure 1.9

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

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

Stop machine before servicing or adjusting. Wear eye protection.

Make sure discharge area is clear before spreading.

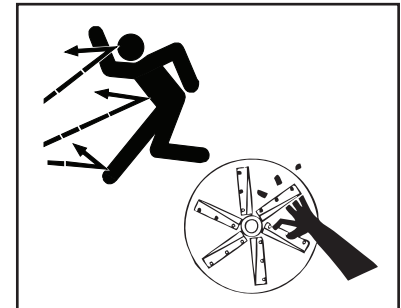


Figure 1.10

Figure 1.11 - Stay out of spreader.

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

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

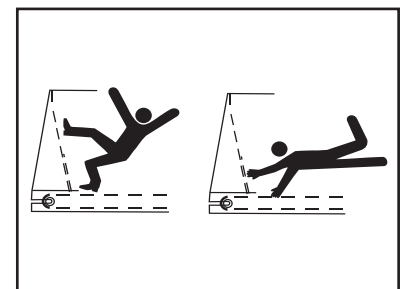


Figure 1.11

General Safety Rules

Operations

DO NOT CLIMB OR STAND ON MACHINE

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

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

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



Figure 1.12

OPERATE MACHINE SAFELY

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

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

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

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

General Safety Rules

Transportation & Handling

TRAVELING & TRANSPORTING ON PUBLIC ROADS

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

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

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

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

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

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

NAVIGATING ROUGH & UNEVEN TERRAIN

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

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

Load may shift, causing vehicle to tip.

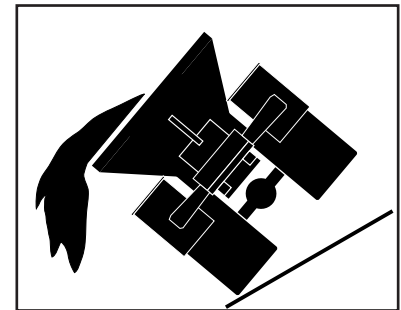


Figure 2.1

General Safety Rules

Maintenance

READ AND UNDERSTAND MAINTENANCE PROCEDURES

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

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

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

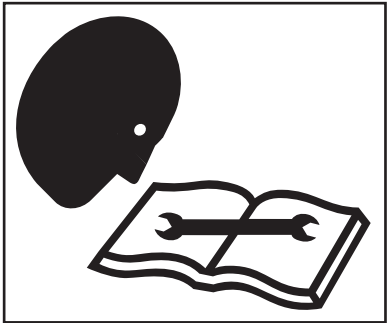


Figure 3.1

DO NOT SERVICE OR ADJUST MACHINE WHILE IN MOTION

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

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

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

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

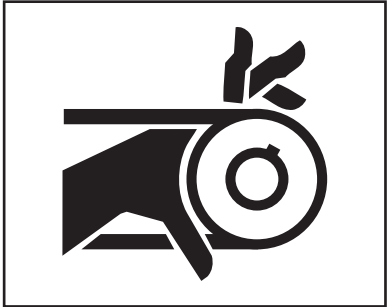


Figure 3.2

WEAR PROPER PROTECTIVE EQUIPMENT

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

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

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

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



Figure 3.3

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

General Safety Rules

Maintenance

HANDLE FLAMMABLE SOLVENTS SAFELY

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

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

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

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

Clean up spilled fuel and oil immediately.

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



Figure 3.4

USE PROPER LIFTING EQUIPMENT

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

Never lift equipment over people.

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

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



Figure 3.5

USE PROPER TOOLS FOR THE JOB

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

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

Use only service parts meeting New Leader specifications.

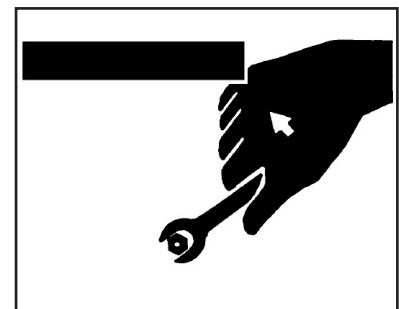


Figure 3.6

General Safety Rules

Maintenance

HIGH PRESSURE FLUID HAZARDS

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

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

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

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



Figure 3.7

AVOID HEATING NEAR HIGH PRESSURE FLUID LINES

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

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

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

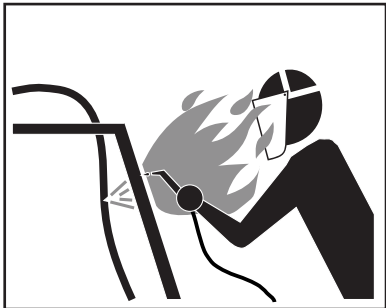


Figure 3.8

AVOID TOXIC FUMES & DUST

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

Remove paint before heating:

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

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

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



Figure 3.9

General Safety Rules

Maintenance

CLEAN MACHINE OF HAZARDOUS CHEMICALS

CAUTION

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

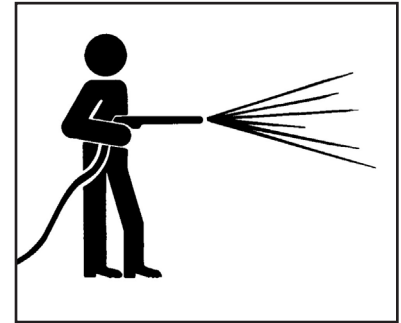


Figure 3.10

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

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

NOTICE

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

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

HANDLE BATTERIES SAFELY

WARNING

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

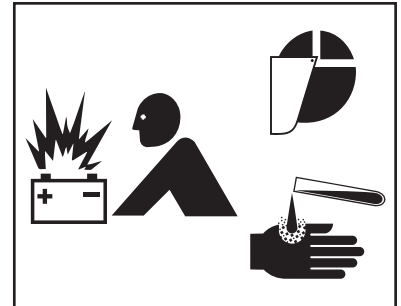


Figure 3.11

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

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

PROPER TIRE MAINTENANCE

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

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



Figure 3.12

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

General Safety Rules

Storage

PARK VEHICLE SAFELY

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

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

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

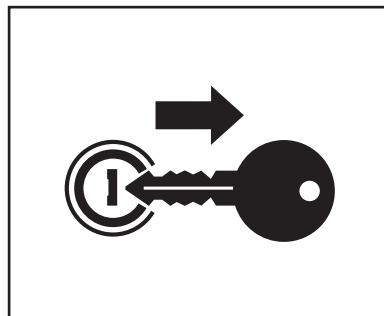


Figure 4.1

SUPPORT MACHINE PROPERLY

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

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



Figure 4.2

DISPOSE OF WASTE PROPERLY

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

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

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

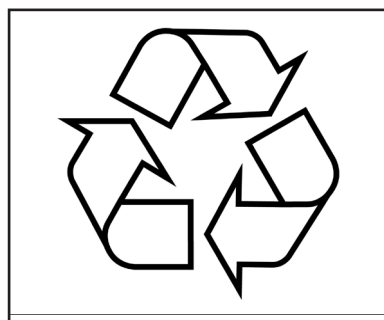


Figure 4.3

Safety Decal Maintenance

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

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

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

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

Safety Decal Installation

Clean Surface

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

Position Safety Decal

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

Remove the Liner

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

Apply Safety Decal

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

Remove Pre-mask

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

Remove Air Pockets

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

Re-Squeegee All Edges

1 CAUTION
TO AVOID INJURY OR MACHINE DAMAGE:
 • Do not operate at 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, lockout and shut off engine before servicing guards, servicing or working on machine.
 • Keep all guards in place when machine is in use.
 • If removal is required, contact dealer for replacement.

2 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.

3 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.

2 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.

3A WARNING
Cancer and Reproductive Harm - www.P65Warning.ca.gov

4 WARNING
HIGH PRESSURE FLUID HAZARD
 To prevent death or serious injury:
 • Do not touch hot liquid or steam components in high pressure areas.
 • Release pressure before attempting to service or working on high pressure areas.
 • Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are properly secured before operating the machine.
 • Make certain the guard and safety covers or plates are secured in place before operating the machine.
 • Do not touch hot liquid or steam components in high pressure areas.
 • Components may be hot.
 • Do not touch hot liquid or steam components in high pressure areas until they have cooled.

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

5 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.

5 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.

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

4 WARNING
HIGH PRESSURE FLUID HAZARD
 To prevent death or serious injury:
 • Do not touch hot liquid or steam components in high pressure areas.
 • Release pressure before attempting to service or working on high pressure areas.
 • Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are properly secured before operating the machine.
 • Make certain the guard and safety covers or plates are secured in place before operating the machine.
 • Do not touch hot liquid or steam components in high pressure areas.
 • Components may be hot.
 • Do not touch hot liquid or steam components in high pressure areas until they have cooled.

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

5 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.

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

5 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.

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

4 WARNING
HIGH PRESSURE FLUID HAZARD
 To prevent death or serious injury:
 • Do not touch hot liquid or steam components in high pressure areas.
 • Release pressure before attempting to service or working on high pressure areas.
 • Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are properly secured before operating the machine.
 • Make certain the guard and safety covers or plates are secured in place before operating the machine.
 • Do not touch hot liquid or steam components in high pressure areas.
 • Components may be hot.
 • Do not touch hot liquid or steam components in high pressure areas until they have cooled.

8 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.

4 NO STEP

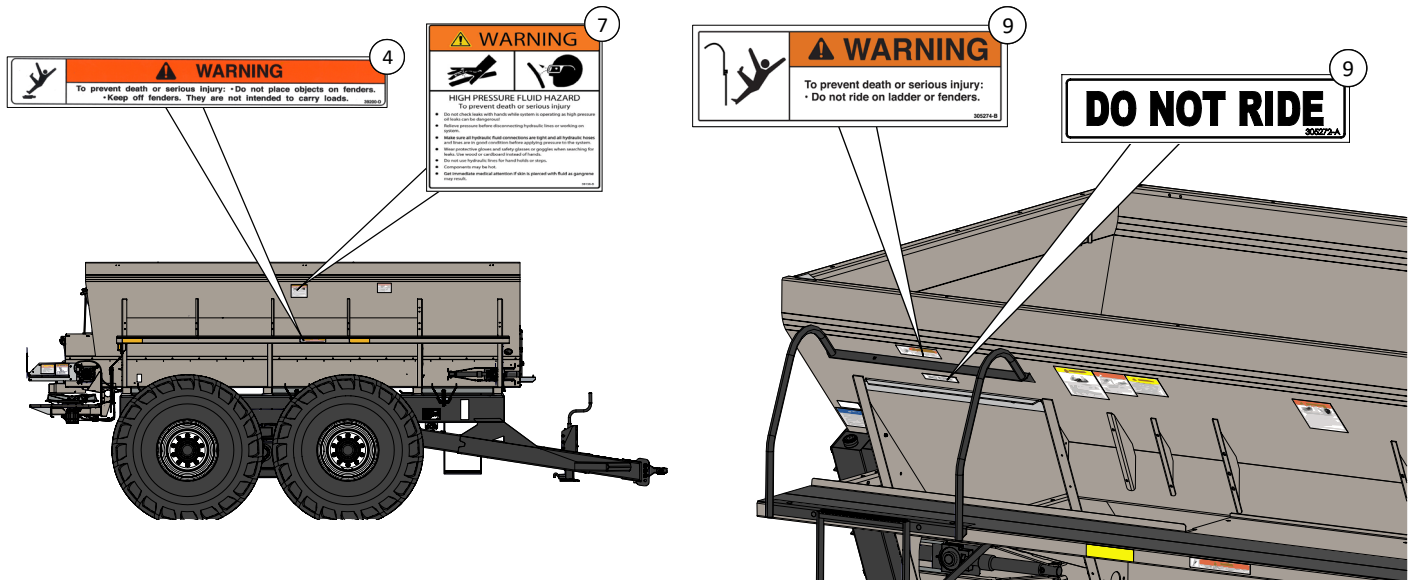
6 DANGER
GUARD IS MISSING WHEN THIS IS VISIBLE
 To prevent death or serious injury:
 • Do not operate this unit without guard in place.

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

10 DANGER
PINCH POINT HAZARD
 To prevent death or serious injury:
 • Keep all persons and objects clear while any part of this machine is in motion.
 • Keep hands, feet, hair and clothing away from moving parts.



Safety Decals



1. CAUTION: TO AVOID INJURY OR MACHINE DAMAGE:

- Do not operate or work on this machine without reading and understanding the operator's 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, or print a new copy free of charge from www.highwayequipment.com.

2. DANGER: MOVING PART HAZARD
To prevent death or serious injury:

- Stay out of box while conveyor is moving.
- Disconnect and lock out power source before adjusting or servicing.
- Do not ride on the spreader.

3. CAUTION: HAZARDOUS MATERIALS
To avoid injury or machine damage:

- Materials to be spread can be dangerous.
- Improper selection, application, use or handling may be hazardous to persons, animals, crops or other property.
- Follow instructions and precautions given by material manufacturer.

3A. WARNING: Prop 65-B
To avoid injury or machine damage:

- Cancer and Reproductive Harm - www.P65Warning.ca.gov

4. WARNING: HIGH-PRESSURE FLUIDS**To prevent death or serious injury:**

- Do not check leaks with hands while system is operating as high pressure oil leaks can be dangerous!
- Relieve pressure before disconnecting hydraulic lines or working on 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 searching for leaks. Use wood or cardboard instead of hands.
- Do not use hydraulic lines for hand holds or steps.
- Components may be hot.
- Get immediate medical attention if skin is pierced with fluid as gangrene may result.

5. 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.

6. WARNING: FALLING HAZARD**To prevent death, serious injury or machine damage:**

- Do not climb or stand on guard.

7. DANGER: GUARD IS MISSING WHEN THIS IS VISIBLE**To prevent death or serious injury:**

- Do not operate this unit without guard in place.

8. DANGER: FLYING MATERIAL AND 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.

9. WARNING: FALLING HAZARD**To prevent death, serious injury or machine damage:**

- Do not place objects on fenders.
- Keep off fenders. They are not intended to carry loads.

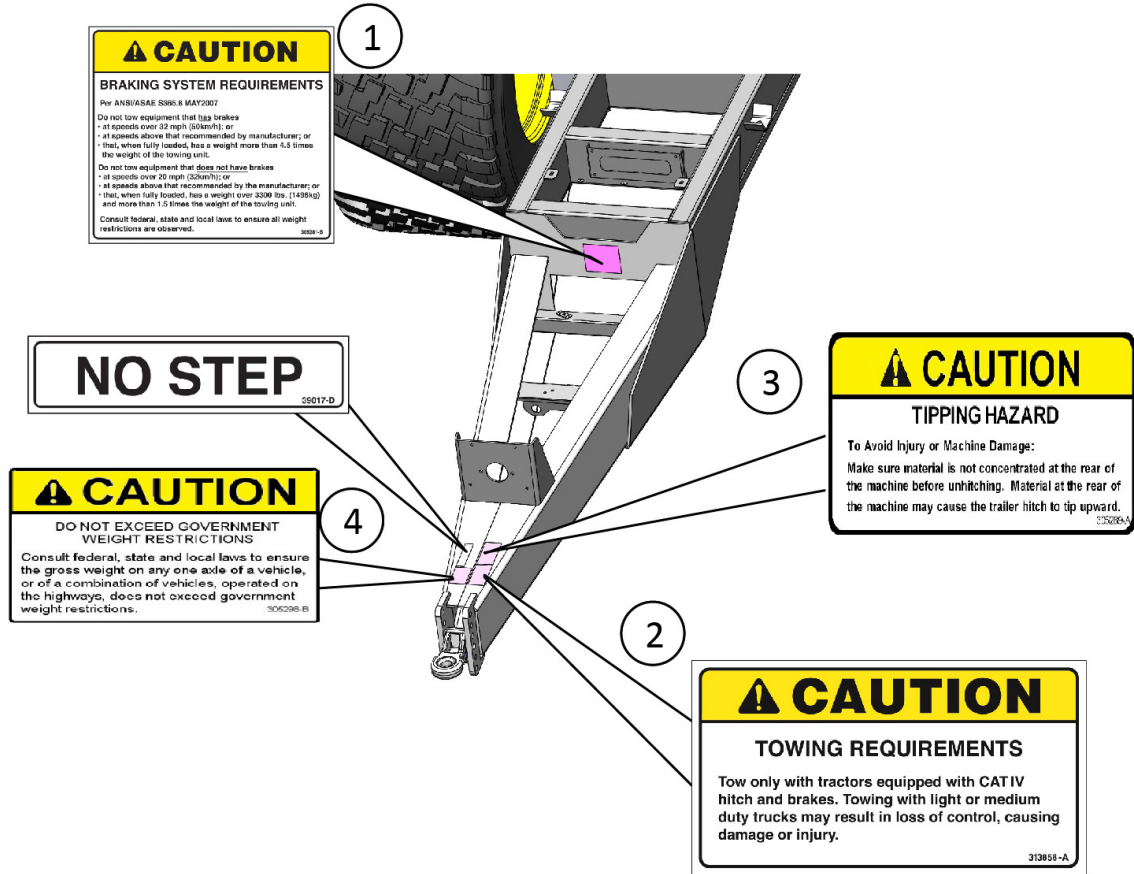
10. DANGER: PINCH POINT HAZARD**To prevent death or serious injury:**

- Keep all persons and objects clear while any part of this machine is in motion.
- Keep hands, feet, hair and clothing away from moving parts.

11. WARNING: FALLING HAZARD**To prevent death or serious injury:**

- Do not ride on ladder or fenders.

Safety Decals Trailer



Safety Decals**Trailer****1. CAUTION: BRAKING SYSTEM REQUIREMENTS****To prevent injury or machine damage, per ANSI/SAE S365.8 MAY 2007:**

Do not tow equipment that has brakes:

- at speeds over 32mph (50km/hr); or
- at speeds above that recommended by the manufacturer; or
- that, when fully loaded, has a weight more than 4.5 times the weight of the towing unit.

Do not tow equipment that does not have brakes:

- at speeds over 20mph (32km/hr); or
- at speeds above that recommended by the manufacturer; or
- that, when fully loaded, has a weight over 3300 lbs (1496kg) and more than 1.5 times the weight of the towing unit.

2. CAUTION: TOWING REQUIREMENTS**To prevent injury or machine damage:**

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

3. CAUTION: TIPPING HAZARD**To prevent injury or machine damage:**

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

4. CAUTION: DO NOT EXCEED GOVERNMENT WEIGHT RESTRICTIONS**To prevent injury or machine damage:**

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

1

NOTICE

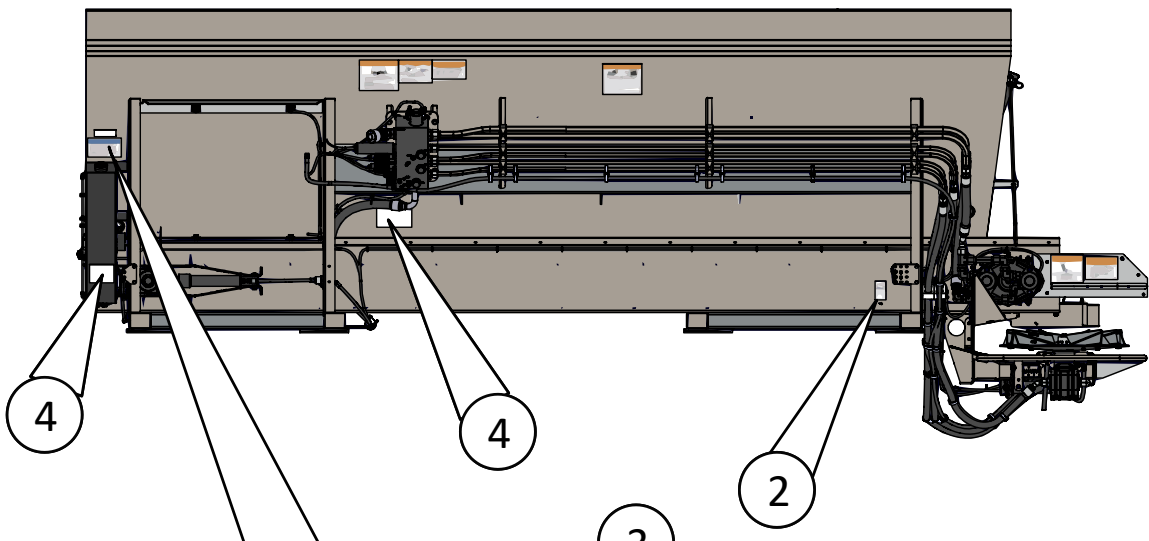
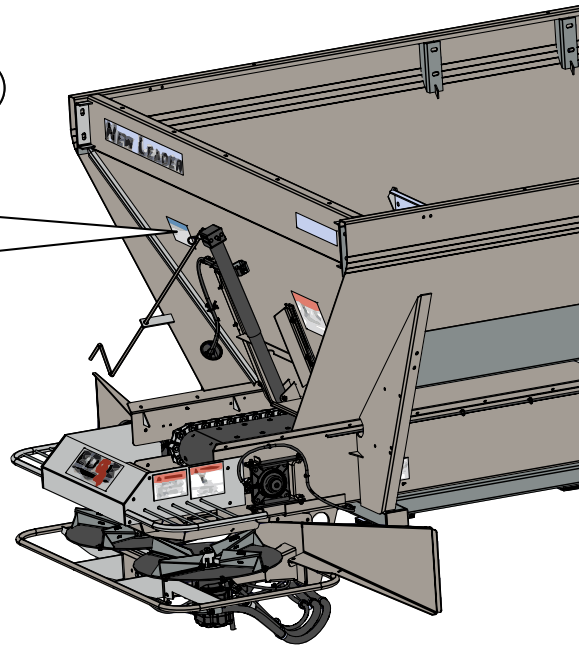
Before spreading material, spread pattern tests must be conducted to properly adjust the spread pattern. Refer to the manual for adjustment instructions. A spread pattern test kit is available from your New Leader dealer.

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

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.

312276-A



3

NOTICE

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

21476-E

1. NOTICE: SPREAD PATTERN TESTING

To obtain optimal machine performance:

Before spreading material, spread pattern tests must be conducted to properly adjust the spread pattern. Refer to 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 yields.

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

This unit is intended for dispensing micronutrients and seeds only - NOT HERBICIDES. The manufacturer is not liable for damage resulting from improper use.

2. NOTICE: CONVEYOR CHAIN LUBRICATION

To avoid machine damage and premature wear:

- Conveyor chain life will be noticeably extended by periodic lubrication.
- See "Lubricant & Hydraulic Oil Specifications" in this manual for details.
- Failure to keep the chain links loose and free running can result in severe damage to the conveyor chain, drag shaft, gearcase and body structure, and is cause for voiding the warranty.

3. NOTICE: CONVEYOR CHAIN TENSION

To avoid machine damage and premature deterioration:

- Periodically inspect conveyor chain tension to ensure proper tension is maintained.
- See "Lubrication & Maintenance" section of this manual for details.

4. NOTICE: MACHINE LUBRICATION

To avoid machine damage and premature deterioration:

- Periodically lubricate the machine components at the front and rear remote grease banks.
- See "Lubrication & Maintenance Chart" in this manual for details.

This page is intentionally left blank.

INSTALLATION

INSTALLATION

Connecting Implement**Hydraulic Requirements**

Hydraulics		GPM (LPM) (Gallons/Liters per Minute)	Maximum Pressure (PSI)
Spinner/Conveyor	PTO Gear Pump - 1000 RPM	42.0 (159)	2500 Continuous
			3100 Intermittent
Multapplier	Tractor Supplied	9.0 (34)	2000

Hitch Requirements

- The Trailer is equipped with a category 4 receiver hitch, requiring a 2" (51mm) hitch pin.

Electrical Requirements

- The Trailer is equipped with a standard 7-pin connector for operation of lights.
- See "ISOBUS Connections" for controller connections.

Controller Requirements

The spreader is equipped with an ISO 11783 compatible control system and will connect to any ISO 11783 compliant virtual terminal with a task controller that supports multi-channel dry granular applicators.

Implement Preparation and Connection

⚠ DANGER

DO NOT wear loose clothing. Keep hands and other body parts away from connecting parts of tractor and implement. Entanglement could cause serious injury. Failure to comply with this requirement will result in death or serious injury.

⚠ DANGER

DO NOT stand on PTO, PTO driveline, tongue, or draw bar. Falling could cause death or serious injury. Failure to comply with this requirement will result in death or serious injury.

⚠ WARNING

Make sure area is clear between the tractor and implement when backing up to implement. Failure to comply with this requirement could result in death or serious injury.

⚠ WARNING

DO NOT use intermediate support as attaching point. Failure to comply with this requirement could result in death or serious injury.

NOTICE

Make sure safety chain is stored safely when not in use.

NOTICE

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

Implement Hitch Adjustment

Factory installs implement hitch in lower three holes of hitch holder. Dealer/customer must adjust hitch position to match tractor drawbar. When hitch is in correct position, tighten grade 8 bolts to torque per "Standard Torques" chart in this manual.

Implement Connection

1. Check for visible wear and make sure hitch and draw pin are clear of debris and dirt.
2. Crank the jack to adjust hitch height to match the tractor.
3. Pull out draw pin on tractor hitch. (Figure 1)
4. Back up tractor and align holes on implement hitch and hitch on tongue of implement. (Figure 2)
5. Insert draw pin through implement hitch and tractor drawbar. Insert hitch pin and lock to secure. (Figure 3)
6. Lower handle on draw pin into locking position. Insert securing pin through hole at bottom of draw pin and lock. (Figure 4)
7. Lube implement hitch.
8. Retract jack to storage position.



Figure 1



Figure 2



Figure 3

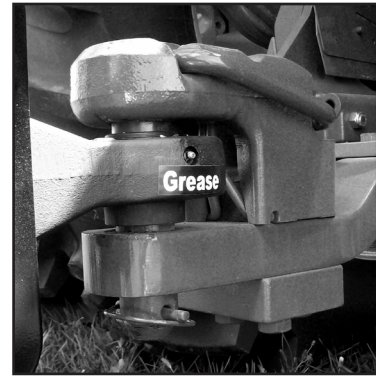


Figure 4

9. Attach safety chain.
10. On left side of hitch, loop safety chain through tractor intermediate support (Figure 5).
11. On left side of hitch, loop safety chain around tractor drawbar (Figure 6).
12. Hook on chain (Figure 7). Allow only adequate slack for articulation.
13. Slide clasp on safety chain to secure locked position (Figure 8). Excess chain will hang between tractor and implement (Figure 9).

NOTE: Replace safety chain if one of more links are deformed or damaged.



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9

Power Take-Off Connection

1. Inspect, clean and lubricate PTO and PTO driveline.
2. Inspect all guards, making sure they are in proper working order.
3. Lift tractor's PTO cover.
4. Slide PTO driveline coupler onto tractor PTO and lock into place on driveline groove (Figure 10-12).
5. Place tractor's PTO cover back into lowered position.
6. Attach PTO driveline guard chain to tractor.



Figure 10



Figure 11

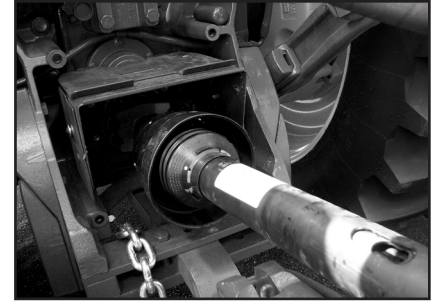


Figure 12

NOTICE

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

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

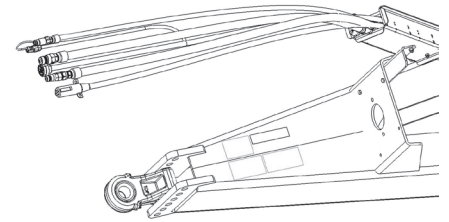


Figure 13

ISOBUS Connections

A: Factory Supplied CAN-ISO Connector -
Deutsch part no. HDP24-24-91PN-P064
Connects to: ISOBUS Implement Extension
Harness - HECO part no. 312894

- Pin 1 - Battery Ground
- Pin 2 - ECU Return (ECU Ground)
- Pin 3 - 60-amp fused power
- Pin 4 - ECU Power (Switched 12v)
- Pin 5 - N/A
- Pin 6 - TBC Power
- Pin 7 - TBC Return
- Pin 8 - ISO-BUS Can High
- Pin 9 - ISO-BUS Can Low

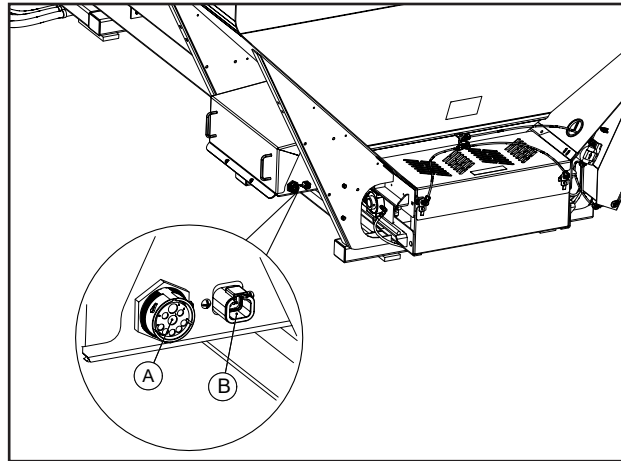


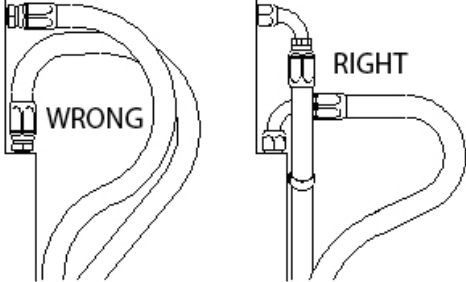
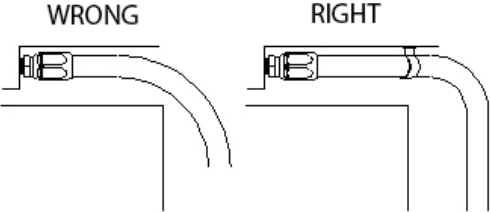
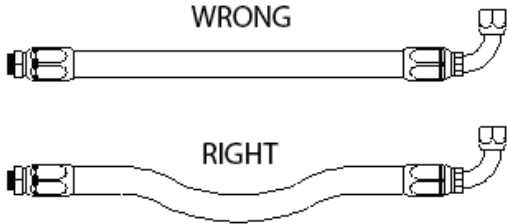
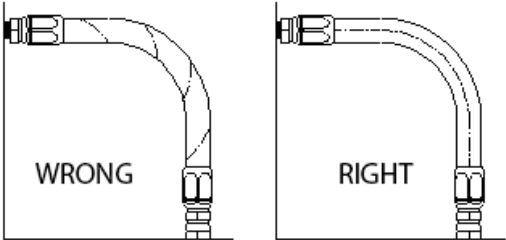
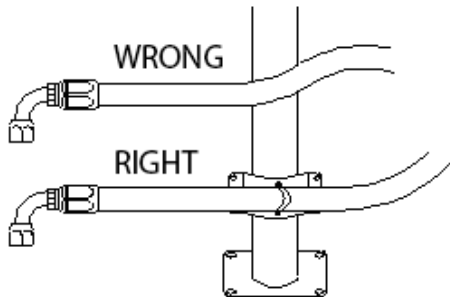
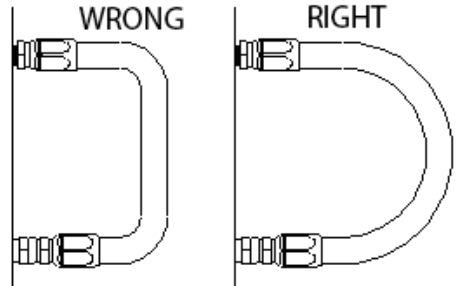
Figure 14

B: Factory Supplied Power Connector - Deutsch part no. DTP04-4P-L012
Connects to: Trailer Main Harness - HECO part no. 312893

- Pin 1 - Hydraulic cooler fan power (Switched 12v)
- Pin 2 - Hydraulic cooler fan ground
- Pin 3 - N/A
- Pin 4 - N/A

30-amp power on pin 1 must be fused at battery.

Hydraulic Hose Installation Guide

	
<p>1. Use elbows and adapters in the installation to relieve strain on the assembly, and to provide easier and neater installations that are accessible for inspection and maintenance. Remember that metal end fittings cannot be considered as part of the flexible portion of the assembly.</p>	<p>2. Install hose runs to avoid rubbing or abrasion. Clamps are often needed to support long runs of hose or to keep hose away from moving parts. It is important that the clamps be of the correct size. A clamp that is too large will allow the hose to move in the clamp causing abrasion at this point.</p>
	
<p>3. In straight hose installations allow enough slack in the hose line to provide for changes in length that will occur when pressure is applied. This change in length can be from +2% to -4%.</p>	<p>4. Do not twist hose during installation. This can be determined by the printed layline on the hose. Pressure applied to a twisted hose can cause hose failure or loosening of the connections.</p>
	
<p>5. Keep hose away from hot parts. High ambient temperature will shorten hose life. If you cannot route it away from the heat source, insulate it.</p>	<p>6. Keep the bend radii of the hose as large as possible to avoid hose collapsing and restriction of flow. Follow catalog specs on minimum bend radii.</p>

(Used with the permission of The Weatherhead Company.)

Spreader Preparation

Recommended sequence of installation is:

1. Spreader preparation.
2. Insert preparation.
3. Mounting of insert.
4. Connecting hydraulic hoses.
5. Installation of hillside divider and conveyor cover.
6. Checking installation.
7. Checking for leaks and proper functioning.

WARNING

Use only lifting devices that meet or exceed OSHA standard 1910.184. Never exceed work load limits or lift equipment over people. Empty spreader before lifting. Loads may shift or fall if improperly supported. Failure to comply with this requirement could result in death or serious injury.

8. Figure 1 - Remove Hardware (1) and Inverted "V" (2).
9. Remove Hardware (3) and Hillside Divider (4).
10. Remove Hardware (5) and Side Boards (6) from the spreader, if so equipped, and set hardware aside. Replace chain shield hardware (3) from Hillside Divider and torque to specification.
11. Figure 2 - Support endgate by attaching a hoist to the lift hooks. Remove hardware (10) from both sides of the endgate and carefully remove from the spreader.

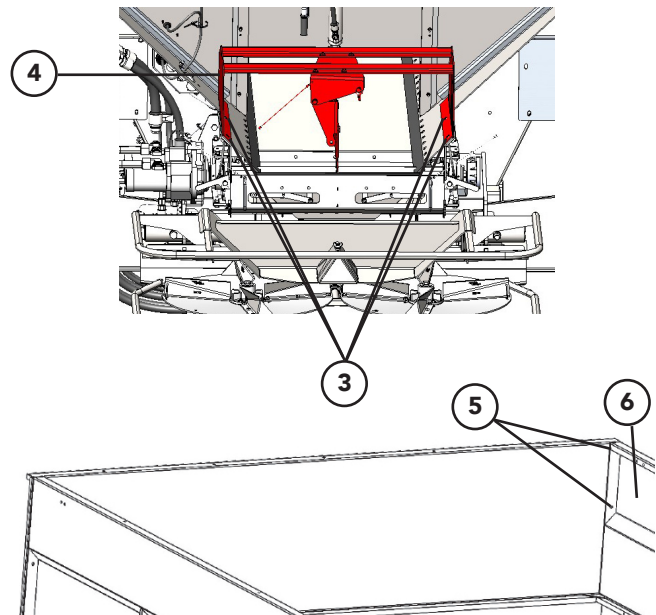
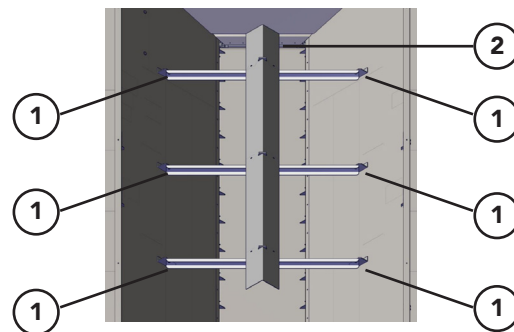


Figure 1

12. Figure 2 - Support endgate by attaching a hoist to the lift hooks. Remove hardware (7) from both sides of the endgate and carefully remove from the spreader.

NOTE: Always use a sling, spreader bar, or lifting bar that attaches to the lifting points with a minimum of 60 degrees from horizontal. It is preferable to use a straight style lifting bar that keeps the attaching chains in a near vertical orientation.

NOTE: Always inspect unit lift hooks for signs of wear, cracking, corrosion, gouges, alterations, or distortion before use.

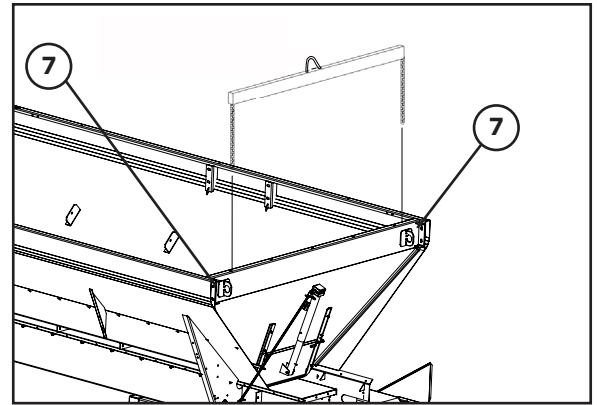


Figure 2

Feedgate Adjustment

⚠ WARNING

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

Adjust the insert's front feedgate prior to installation.

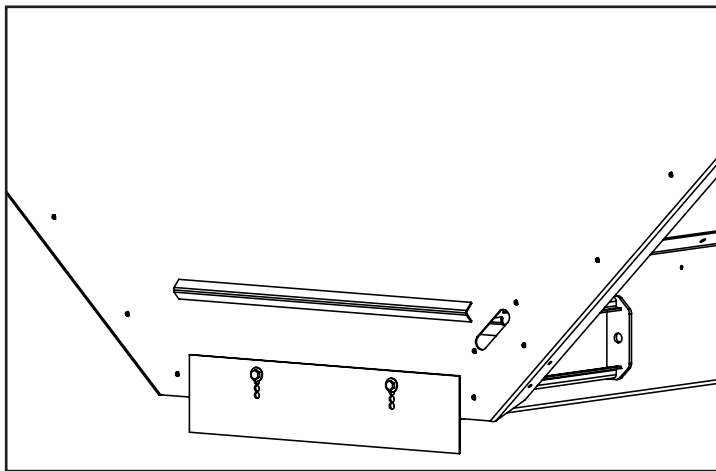


Figure 1

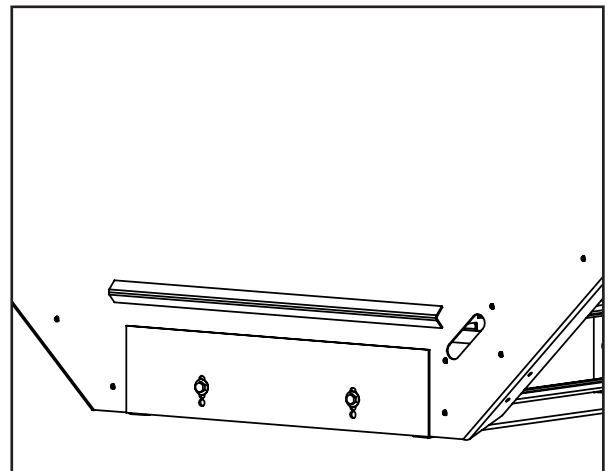


Figure 2

To adjust main bin's feedgate opening, position front feedgate on insert as necessary to achieve a 1-1/2 inch (3.81 cm) (Figure 1) to 4 inch (10.16 cm) (Figure 2) opening in 1/2 inch increments.

Insert Install

⚠ WARNING

Use only lifting devices that meet or exceed OSHA standard 1910.184. Never exceed work load limits or lift equipment over people. Empty spreader before lifting. Loads may shift or fall if improperly supported. Failure to comply with this requirement could result in death or serious injury.

Before installing the insert:

Parts Needed:	
Description	Qty
Insert Unit	1
Capscrew - 1/2 x 1 1/4 Grade 8	8
Flat Washer - 1/2 Grade 8	16
Lock Washer - 1/2 Grade 8	8
Hex Nut - 1/2 Grade 8	8

To install insert bin:

Figure 1A - Make sure rubber sealer hardware (1) is loose.

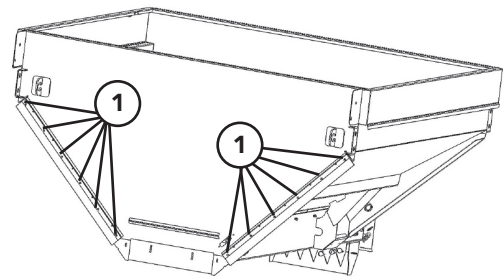


Figure 1A

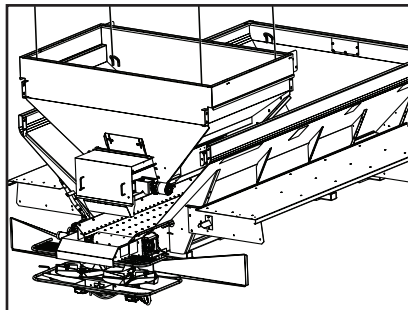


Figure 1B

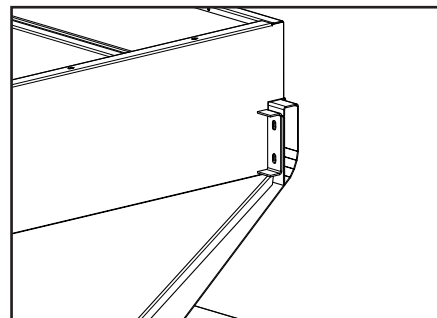


Figure 1C

Figure 1B - Hoist and slide insert into position between main bin's side sheets.

Figure 1C - Align front and rear mount brackets.

Make sure insert is resting on inside of main bin, and not resting on tops of side sheets.

Release tension on hoist but do not remove.

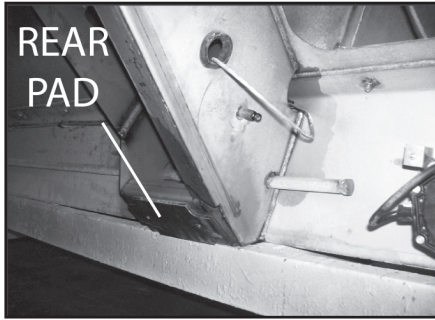


Figure 2A (uninstalled)

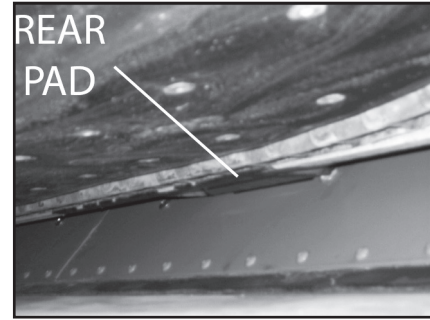


Figure 2B (shown installed)
View from rear of unit.

Figures 2A-2B - Visually make sure insert is centered from side to side in main bin and rear pads are resting on main bin.

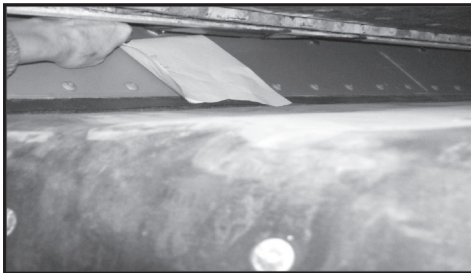


Figure 3



Figure 4

Figure 3 - There must be contact between rear pads and main unit. Check for contact by trying to slide paper between pads and main bin. If no contact, adjust insert.

Figure 4 - Inside main unit, locate front pads by lifting rubber sealers on front endgate.

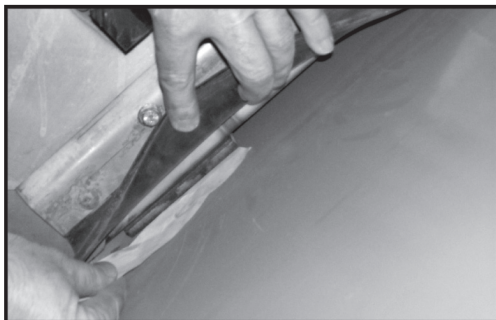


Figure 5A



Figure 5B

Figures 5A-5B - There must be contact between front pads and main bin. Check for contact by trying to slide paper between pads and main bin. If no contact, adjust insert.

NOTE: Pry insert at mount brackets if necessary.



Figure 6



Figure 7



Figure 8A

Figure 6 - Once both front pads make contact, insert hardware in front mount brackets' lower holes. Shim between main bin and insert brackets if distance is larger than 1/8" (.32cm). Tighten hardware per torque recommendations in this manual.

Figure 7 - Make sure front feedgate is level. Lower endgate sealers so flush with chain shields and tighten hardware.

NOTICE Leakage of material may occur if the sealer belts are not set properly on the front of the insert. New Leader Manufacturing is not liable for lost material due to improperly installed sealer belts.

Figure 8A-8B - Make sure there is a complete seal covering the gap between the insert and the main bin's side sheets. Tighten all hardware (1) on rubber sealers at front of insert.

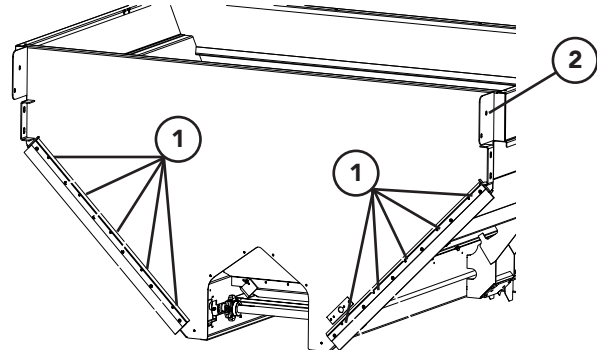


Figure 8B

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

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

Install hardware (2) in all four mount brackets' upper holes. Tighten hardware per torque recommendations.

Remove hoist.

Inspect unit for foreign debris in conveyor area.

Hydraulics

Attach insert hoses to spreader hoses as shown in Figure 17.

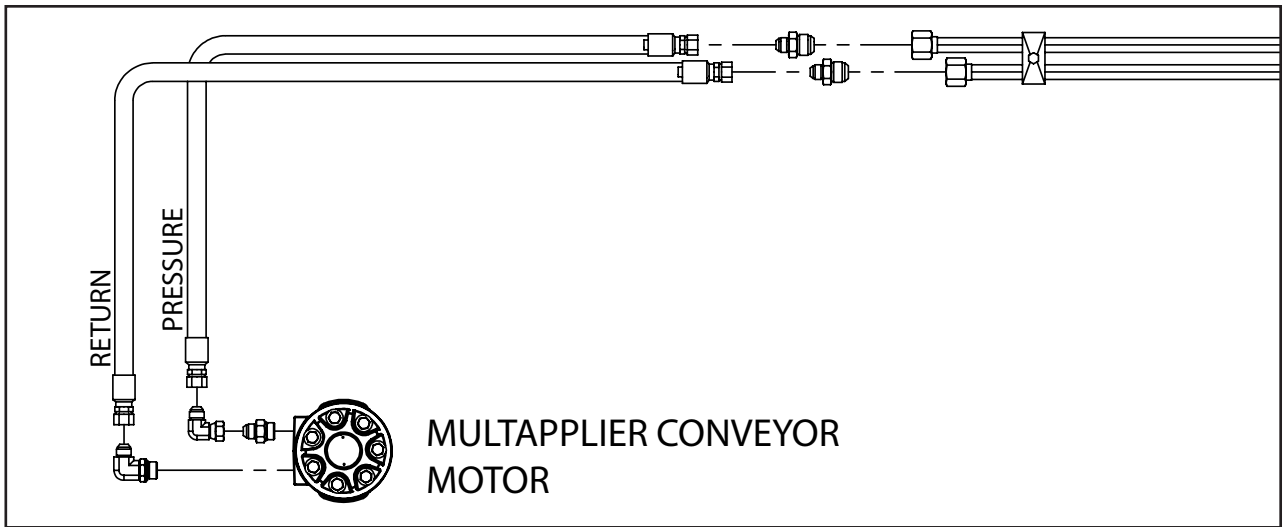


Figure 17 - MULTAPPLIER Operation

Hydraulic Installation

Refer to "Installation Guide" for proper hydraulic hose installation guidelines.

If insert was purchased separately from spreader, refer to parts pages for hydraulic installation. Install valve mounting bracket on two right hand front stakes as shown in Figure 18.

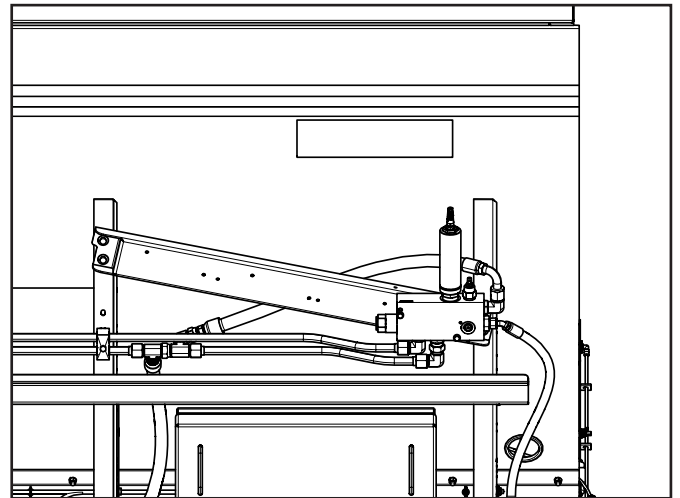


Figure 18 - Hydraulic Installation

Hillside Divider & Conveyor Cover

NOTICE

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

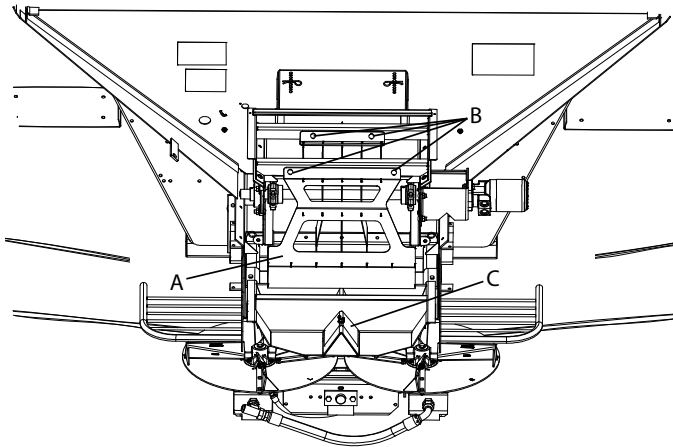


Figure 19A - MULTAPPLIER Hillside Divider

Loosen hardware from rear two chain shield holes on each side of MULTAPPLIER. Install MULTAPPLIER Hillside Divider (A) and fasten to Support using single bin Hillside Divider hardware removed before MULTAPPLIER installation (B). Adjust Hillside Divider so that the middle divider is centered over both conveyors and the Material Divider (C) as shown in Figure 19. Tighten all hardware to recommended torque.

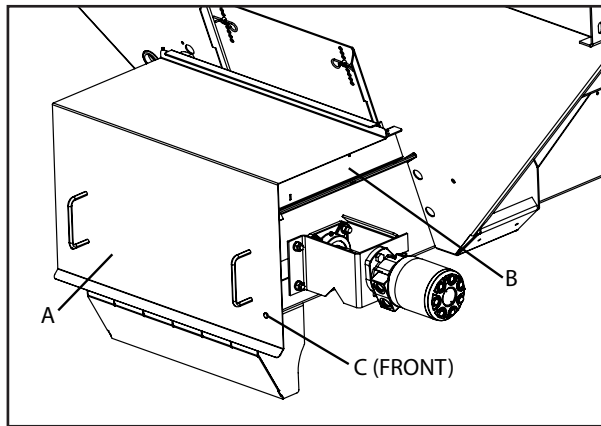


Figure 19B - MULTAPPLIER Dual Conveyor Cover

Parts Needed:

Description	Qty
Cover	1
Hair Pin	2

Install Valve Bracket

Parts Needed:	
Description	Qty
Mounting Bracket	1
Capscrew - .375-16NC X 1 SS	4
Flat Washer - .375 SS	4
Lock Nut - .375-16NC SS	4

1. ket (1) using associated hardware.
2. Tighten hardware per torque recommendations.
Install Brac

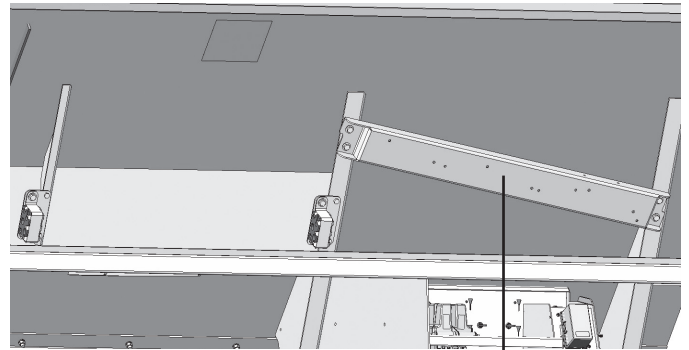


Figure 1 - Mounting Bracket

1

Install Valve

Parts Needed:	
Description	Qty
Valve	1
Capscrew - .25-20NC X 3.25 SS	2
Washer - .25 ID X .40 OD X .13 THK SS	2
Washer - .25 ID X .40 OD X .5 THK SS	2
Lock Nut - .25-20NC SS	2

1. Install Valve (1) using associated hardware.
2. Tighten hardware per torque recommendations.

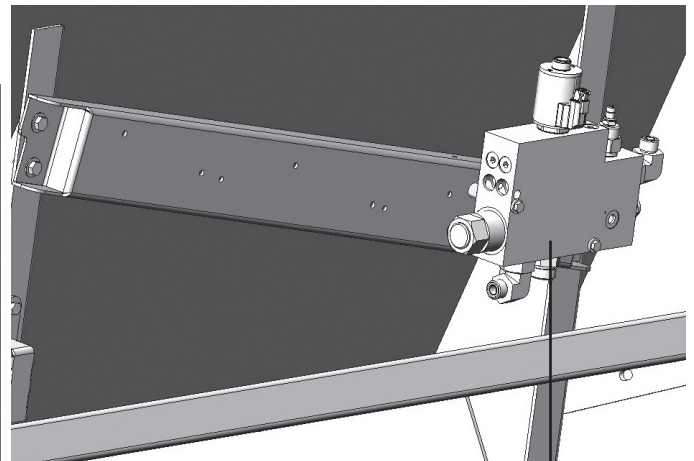
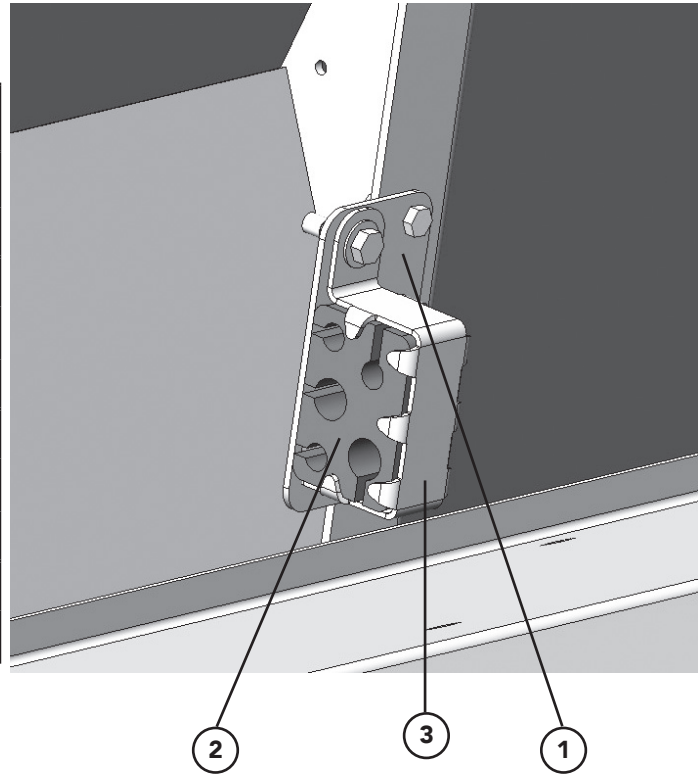


Figure 1 - Valve

1

Install Clamp Assemblies

Parts Needed:	
Description	Qty
Plate	5
Bar Tube Clamp	5
Rubber Insert	5
Capscrew - .313-18NC X 1 SS	10
Capscrew - .375-16NC X 1.25 SS	5
Flat Washer - .313 SS	10
Flat Washer - .375 SS	5
Lock Nut - .313-18NC SS	10
Lock Nut - .375-16NC SS	5



1. Install Plate (1) using associated hardware.
2. Insert tubing into Rubber Insert (2).
3. Secure in place with Bar Tube Clamp (3).
4. Tighten hardware per torque recommendations.

Figure 1 - Clamp Assembly

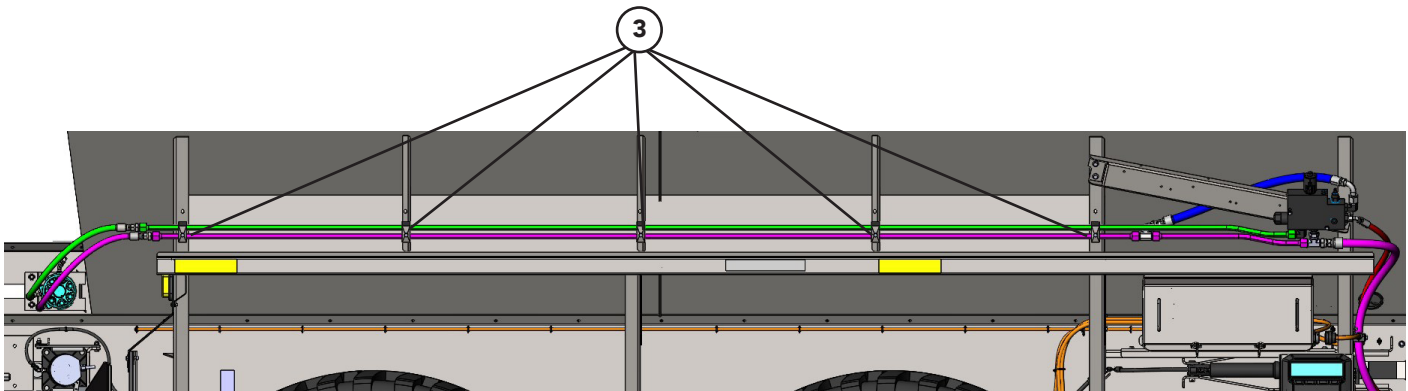


Figure 2 - Clamp Assemblies

Install Tubes and Hoses

See Parts Manual for part numbers and additional clarification.

1. Connect tubes and hoses as illustrated.
2. Check for leaks.

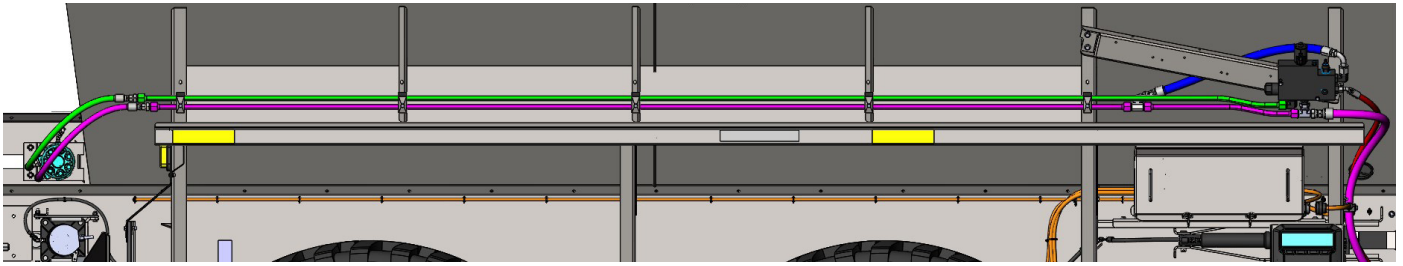


Figure 1A - MULTAPPLIER Right Side

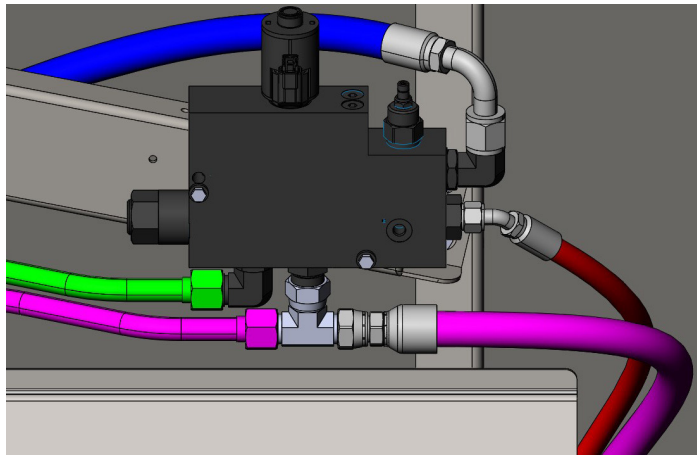


Figure 1B - MULTAPPLIER Valve Assy Connections

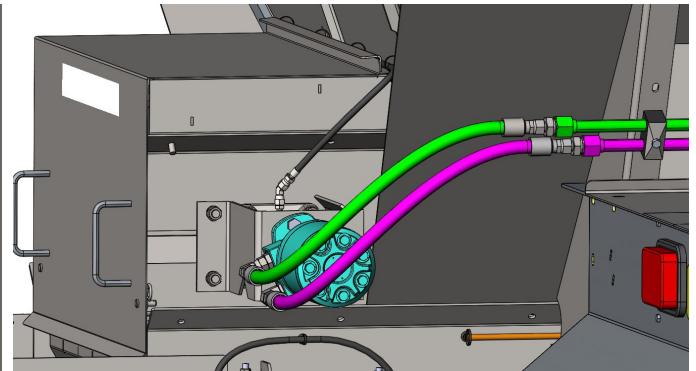


Figure 1C - MULTAPPLIER Motor Connections

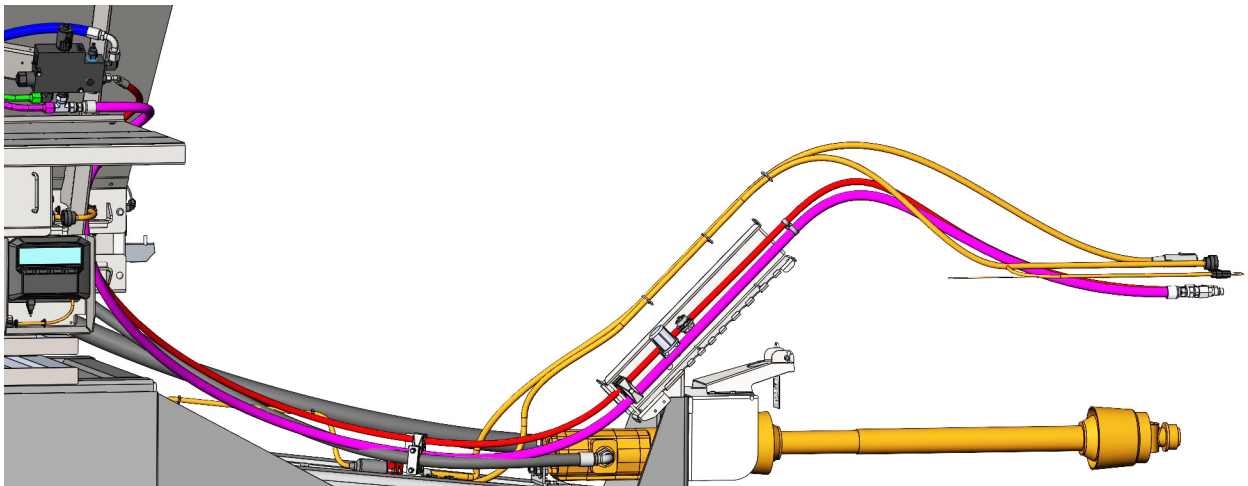


Figure 1D - MULTAPPLIER Tractor Connection

Electrical

Use the following illustrations to aid in electrical connections.

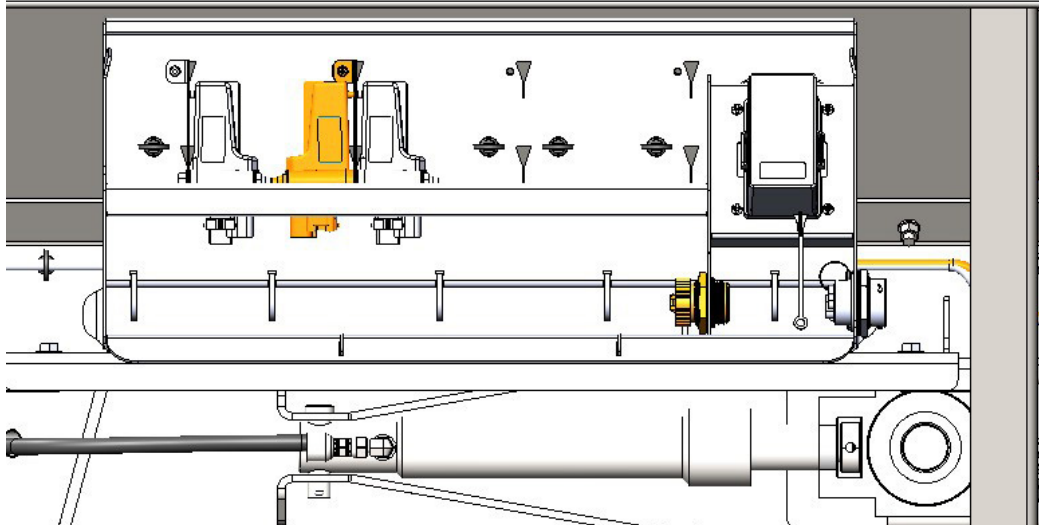


Figure 1 - Enclosure SINGLE BIN

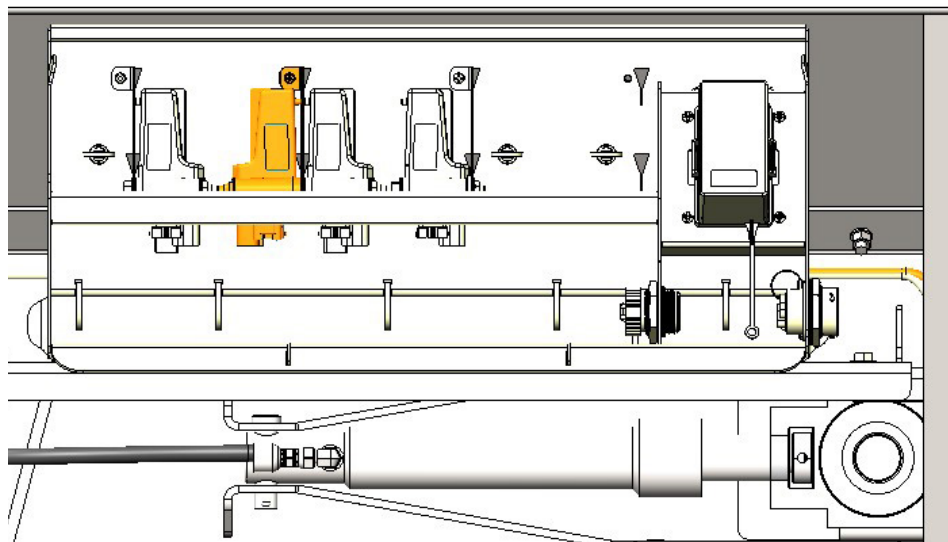
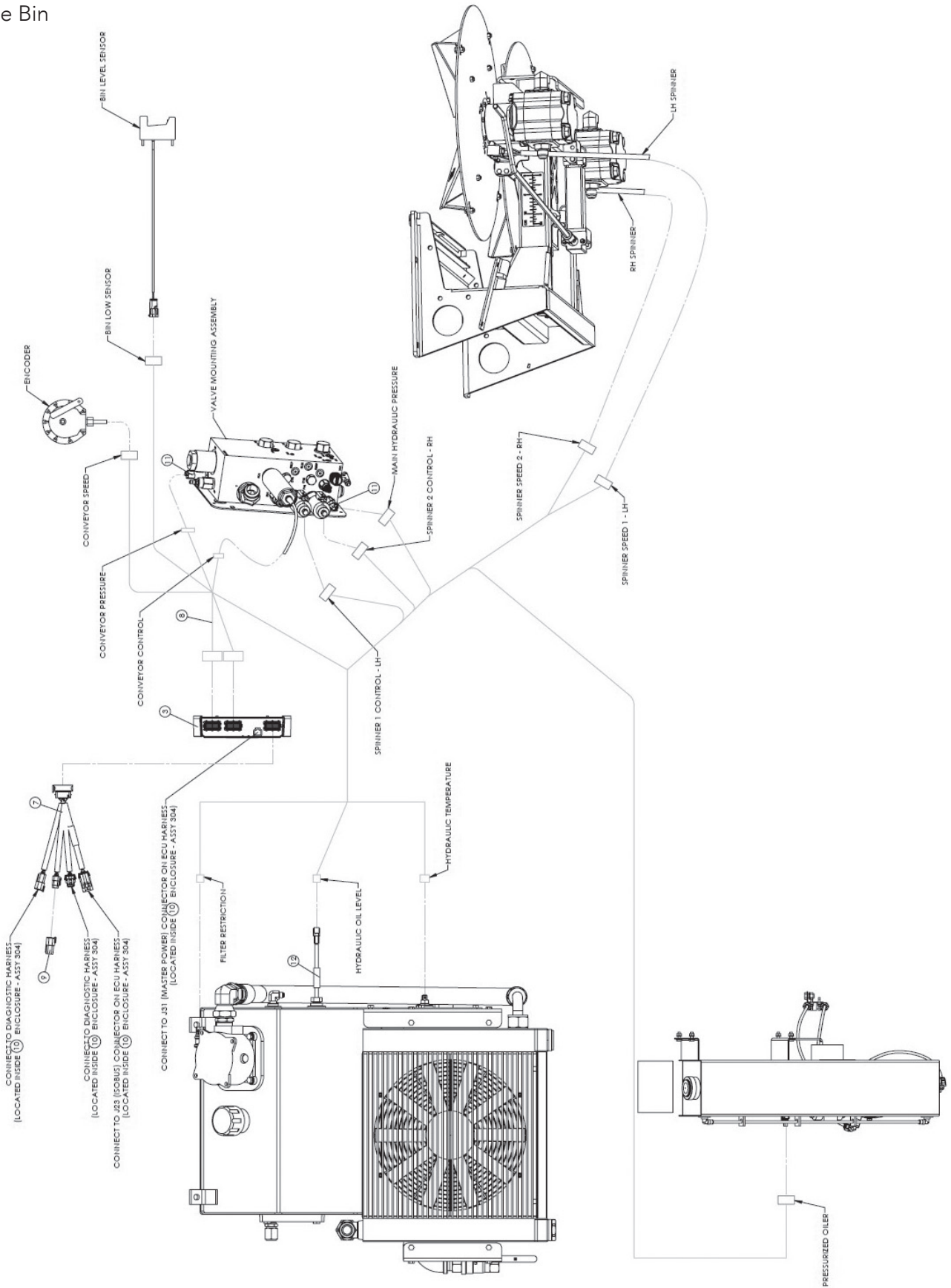
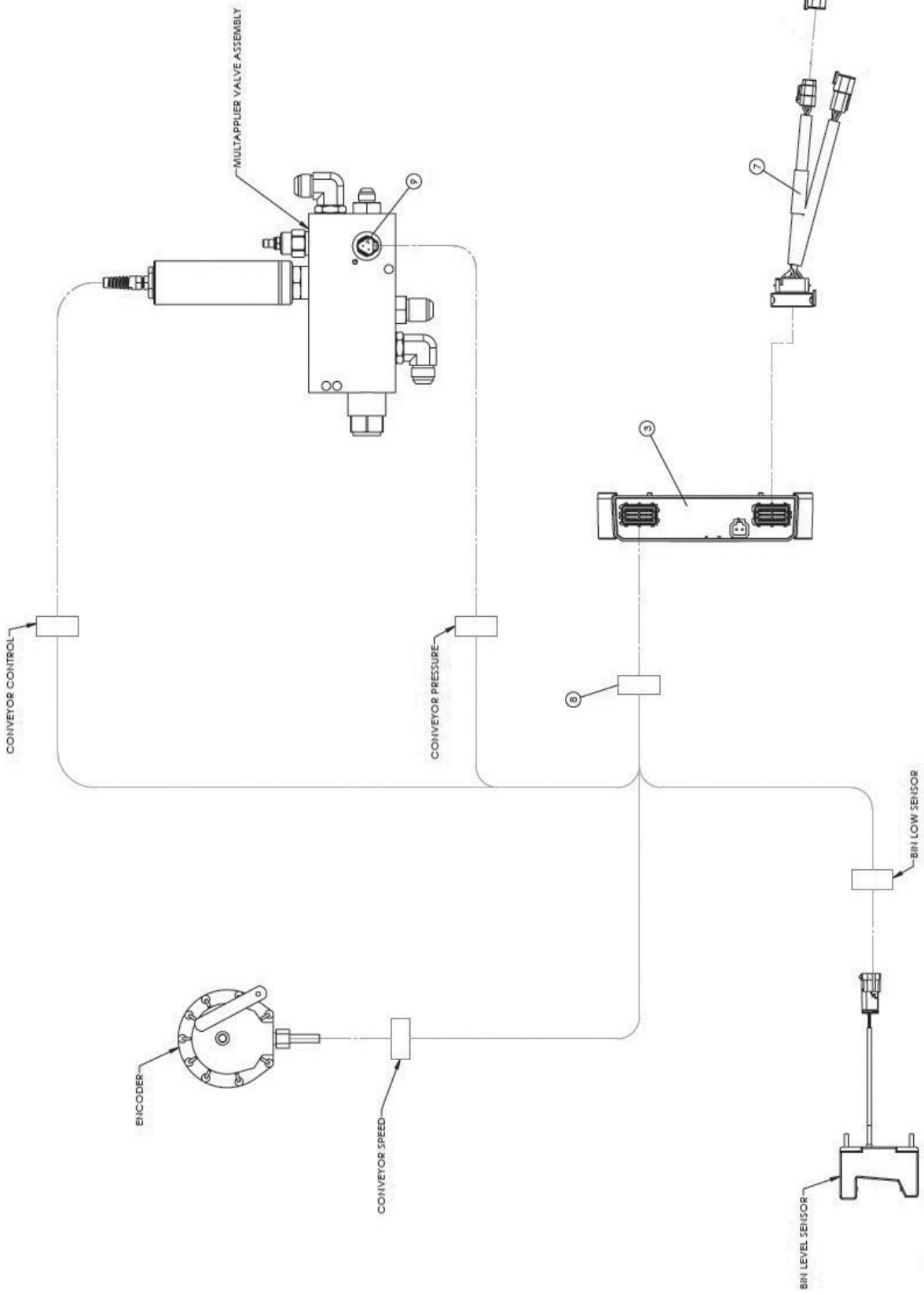


Figure 2 - Enclosure MULTAPIER

Single Bin



MultApplier



Insert Removal/Endgate Installation

Remove insert and reinstall endgate, Inverted "V", single conveyor Hillside Divider, etc. by following applicable installation instructions in reverse order. Make sure the insert hydraulics, electrical connections and air lines are disconnected from the spreader before removal. See "Inverted V" in spreader parts manual.

Hydraulics Removal

Route hydraulic hoses on the spreader and the insert as shown in Figure 20.

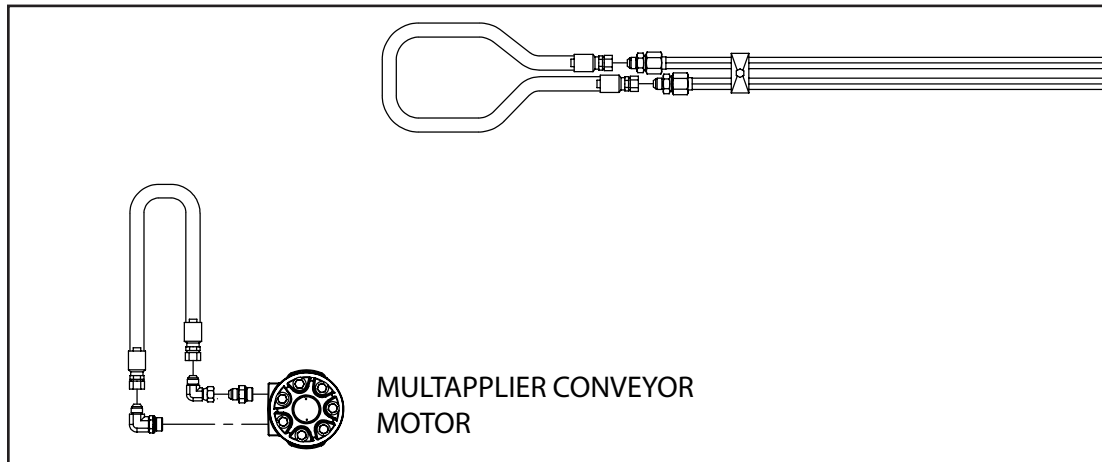


Figure 20 - Detach MULTAPPLIER

This page is intentionally left blank.

OPERATIONS

OPERATIONS

Operations

General Description

The NL345 is a pull-type spreader intended for spreading free flowing granular agricultural materials, such as chemical fertilizers and lime. It comprises of a specialized NL4500G4 EDGE spreader and a Trailer trailer.

The Trailer is an agricultural implement flotation trailer designed for attachment to specially equipped tractors by means of a category 4 receiver hitch. The Trailer is equipped with hydraulic brakes and walking beam suspension.

The unit is powered hydraulically by a PTO-driven pump and provides independent variable speed control for the spinners and full automatic ground speed control for the conveyor.

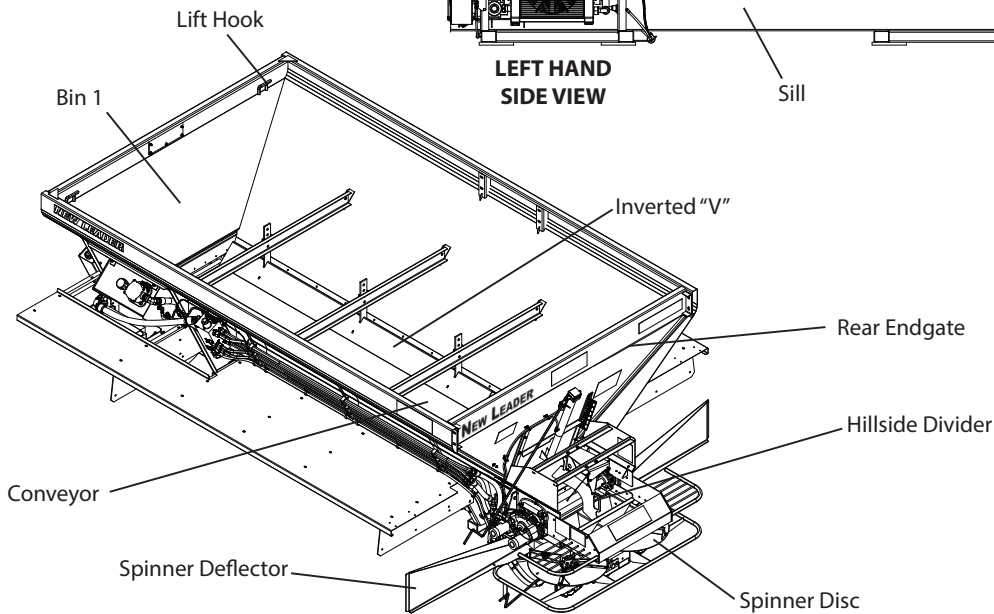
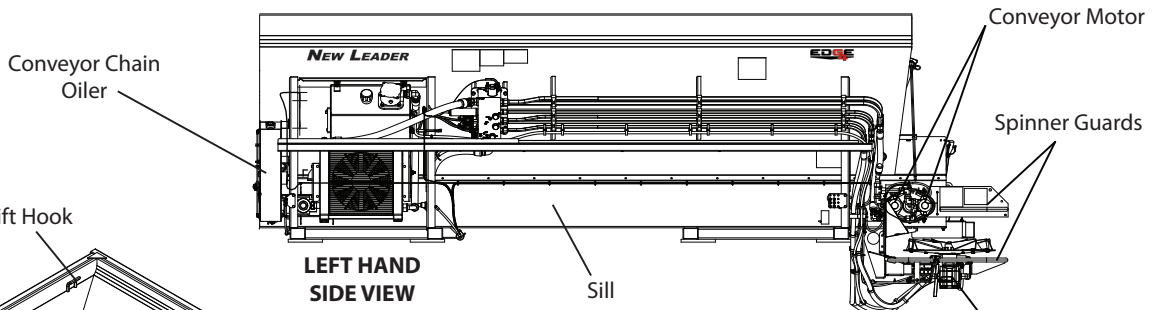
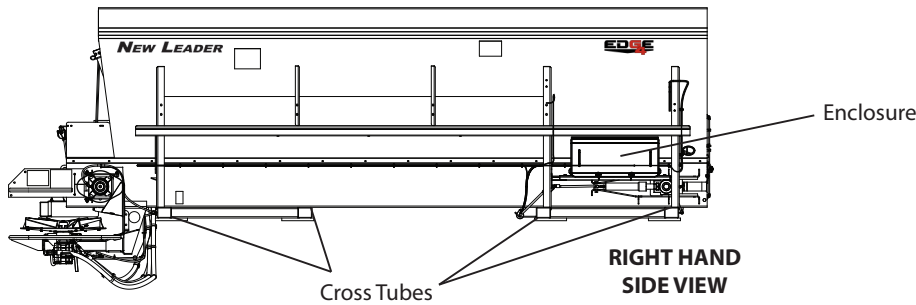
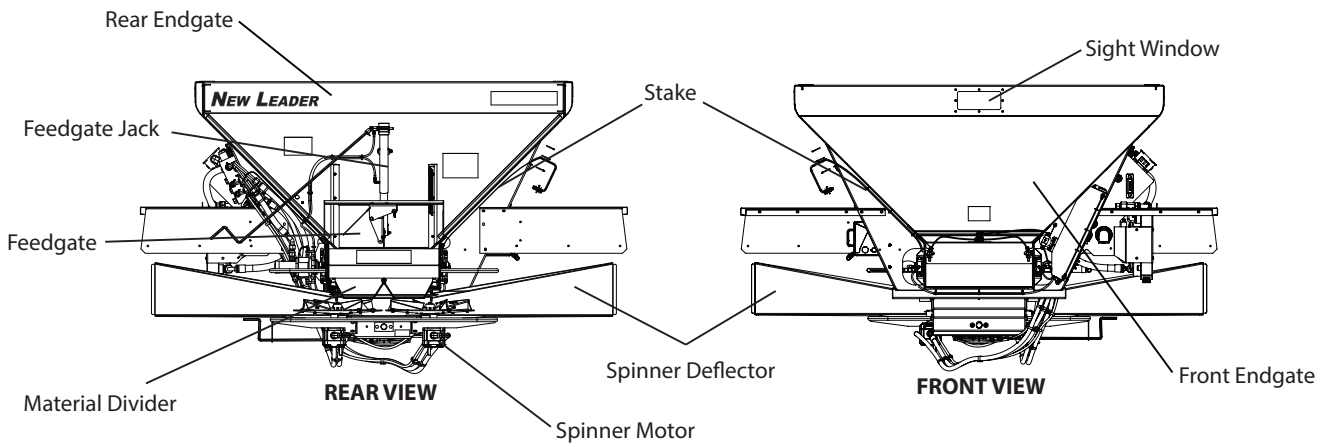
The 30-inch (76cm) wide conveyor delivers material to the spinners through an adjustable metering gate at the rear of the hopper body. Orbital type hydraulic motors mounted to 6-to-1 ratio spur gear case drive the conveyor. The #4 belt-over-chain (BOC) type conveyor consists of parallel strands of pintle type chain joined by cross bars every other link with moderately oil resistant (MOR) belting fastened to each bar.

The 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. The spinner assembly features independent spinner speed control, allowing for boundary spreading capabilities.

The optional 304 stainless steel hopper style spreader MULTAPPLIER may be inserted in the main bin.

- Inserting the MULTAPPLIER allows for two materials to be spread simultaneously. It features a 24-inch (61cm) belt-over-chain type conveyor having parallel strands of pintle type (#4) chain joined by cross bars every other link. The direct driven conveyor is also controlled independently enabling the delivery of material at variable rates through the adjustable gate at the rear of the hopper body. The hillside divider improves material placement on the spinner for a more effective spread pattern.

This product is intended for commercial use only.



Bin 1: Main holding bin for material or Insert. MultiApplier and MultiBin inserts (shown on following pages) are configured as Bins 2-4 depending on type used.

Conveyor: Conveys material to rear of unit.

Cross Tubes: Supports body, attaches to Chassis frame. Transfers weight from Main Hopper to Chassis.

Enclosure: Houses spreader control modules and fuse panel.

Feedgate: Adjustable gate mounted into Rear Endgate. Allows for variable rates of material flow by adjusting jack to desired height.

Hillside Divider: Ensures balanced flow of material across conveyor when on hillsides or uneven terrain.

Inverted "V": Mounted inside Main Hopper when Insert not installed. Distributes weight pressure across conveyor, allowing for consistent material flow to Feedgate, and promotes an improved blend when spreading fertilizer.

Lift Hooks: Used to lift unit or insert with appropriately rated lifting device.

Material Divider: Ensures uniform spread pattern by directing material off of conveyor onto spinner discs.

Rear Endgate: Welded or bolt-in endgate (depending on model) furthest from chassis cab (Rear based on direction of travel). Holds mounted Feedgate, allowing for rear release of material from bin.

Sill: Base of Main Hopper side walls. Contains Conveyor and supports machine walls.

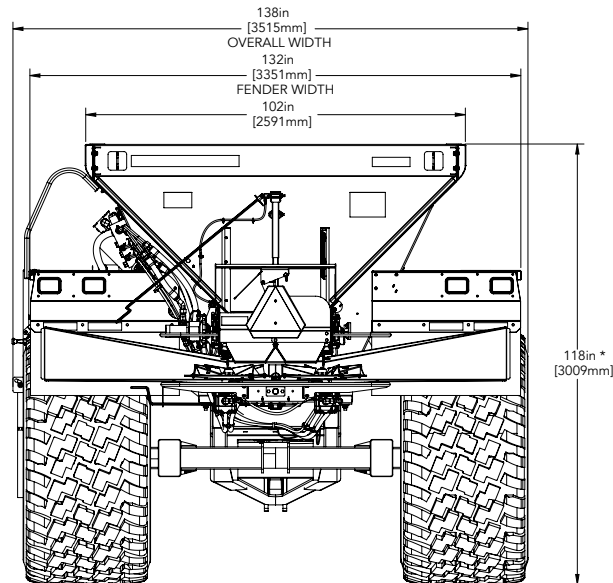
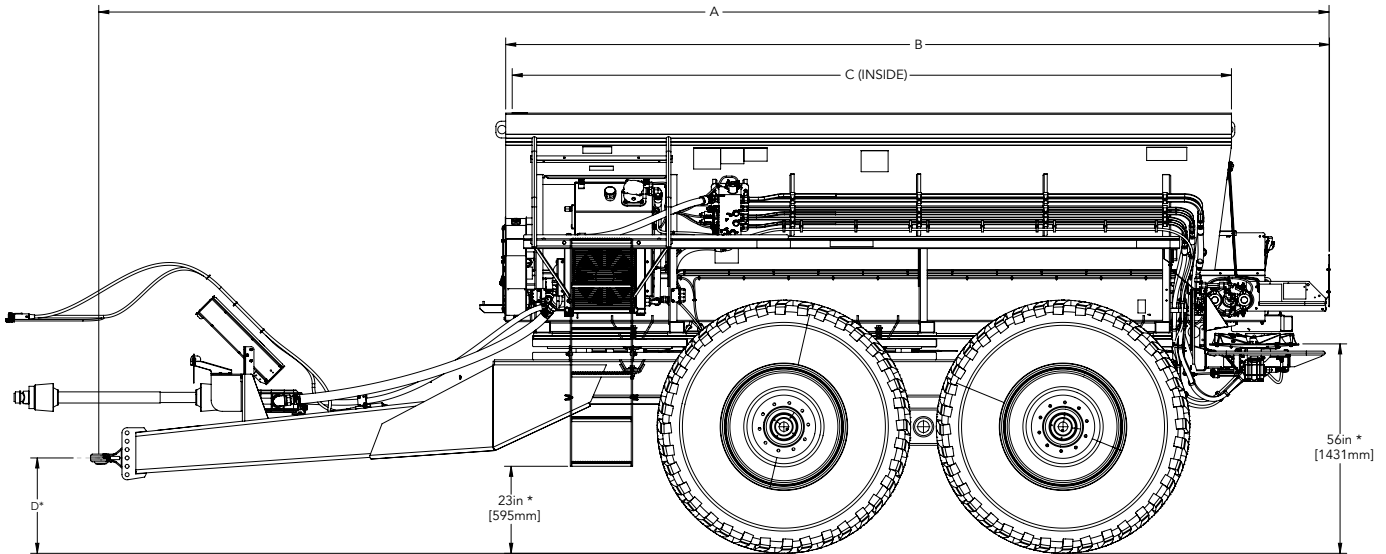
Spinner Assembly: Contains adjustable G4 Spreader system, consisting of hydraulic spinners used for dispersal of various materials at different positioned settings allowing for consistent, even spread patterns across a wide variety of material with a high rate of accuracy.

Spinner Deflectors: Deflect material away from machine.

Spinner Guards: Upper and Lower guards, protects operators from spinner discs. Must be in place during any operation.

Stake: Side support for machine walls.

NL345, Single Bin



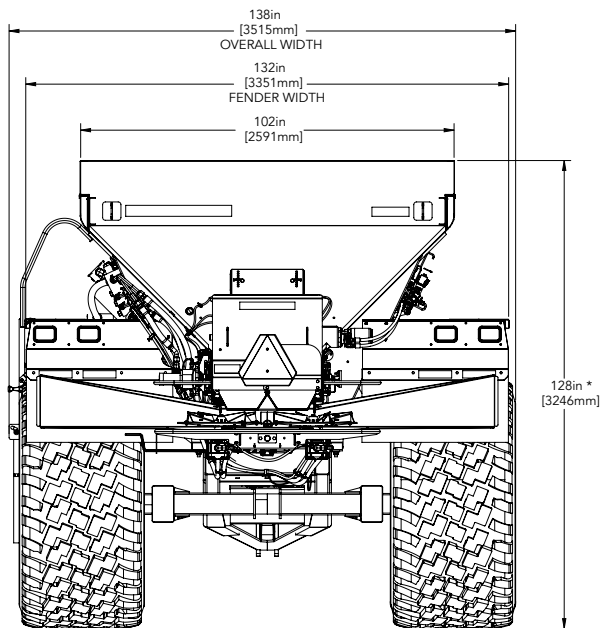
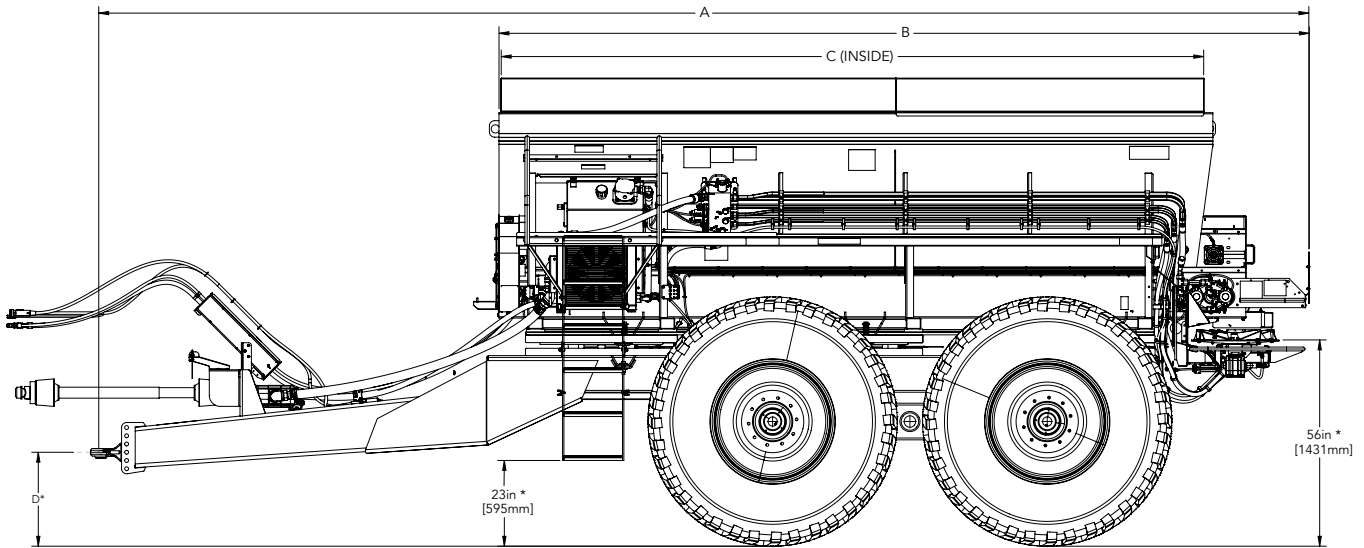
*Height dimensions shown with static loaded, OEM-size tires.

Weights & Capacities

Unit Length	Overall Length A	Spreader Length B	Body Length C	Approximate Weight Lbs (Kg)	Struck Capacity Cu Ft (Cu M)
16' (4.88m)	285" (7239mm)	220" (5588mm)	192" (4877mm)	18200 (8255)	343 (9.71)

	Hitch Height D*
Position 1	19" (483mm)

NL345, With MultiApplier



*Height dimensions shown with static loaded, OEM-size tires.

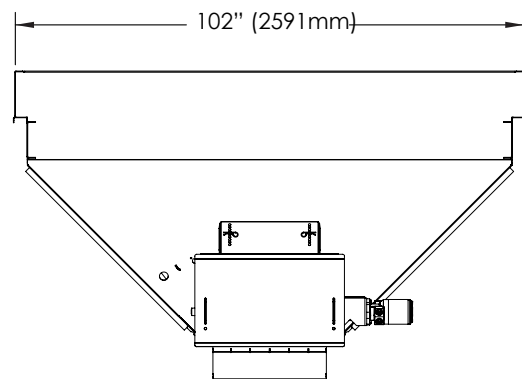
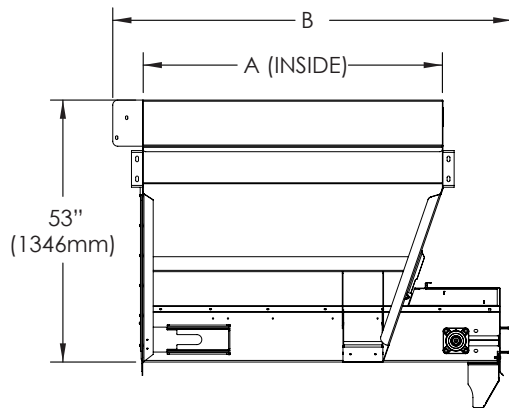
MultApplier Complete Weights & Capacities

With 7' MultApplier					
Unit Length	Overall Length A	Spreader Length B	Body Length C	Approximate Weight Lbs (Kg)	Bin 1 Struck Capacity Cu Ft (Cu M)
16' (4.88m)	285" (7239mm)	220" (5588mm)	192" (4877mm)	19,200 (8709)	253 (7.16)

*Height dimensions shown with static loaded, OEM-sized tires.

MultApplier Alone Dimensions & Capacities

Insert Unit Length	Inside Length A	Overall Length B	Approximate Weight Lbs (Kg)	Struck Capacity Cu Ft (Cu M)
7' (2.13m) MultApplier	84" (2137mm)	104" (2642mm)	1,303 (590)	161 (4.56)



⚠ WARNING

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

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" section in this manual.
2. Make sure no other persons are in vicinity of spreader.
3. Make sure no loose parts are in unit or on conveyor or spinner.
4. Check oil level in hydraulic reservoir; fill as necessary. Refer to "Lubricant & Hydraulic Oil Specifications" section of this manual for proper oil. Completely open reservoir valves.
5. Start engine and turn on hydraulics. Allow hydraulics to circulate until oil is warm.
6. Run spinner at 300 RPM. Allow to run until spinner is operating smoothly and all air has been purged from system.
7. Run conveyor at 20 RPM and spinner at 300 RPM. Run until conveyor is operating smoothly.
8. Run conveyor at 20 RPM and spinner at 700 RPM. Allow both conveyor and spinner to run until operating smoothly.
9. Enable boundary left and right and verify that RPM adjust accordingly.
10. Run conveyor at 0RPM and spinner at 0RPM. Make sure both conveyor and spinner do not move.
11. Calibrate spreader as defined in the manual for the controller that is supplied with your machine.
12. Complete spread pattern test per "Spread Pattern" section in this manual.
13. Shut system down.

⚠ WARNING

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

⚠ WARNING

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

Check all connections in hydraulic system to make sure there are no leaks.
Check hydraulic oil tank and refill to maintain level at mid-point of gauge.

Unit is now ready for field testing.

1. Make sure unit has been properly serviced and is in good operating condition. It is recommended to run the spreader prior to loading material to ensure acceptable operation.
2. Set manual machine settings in controller per Controller section in this manual.
3. Program controller with correct data for material and application.
4. Adjust feedgate to appropriate setting.
5. Adjust spinner to give spread pattern desired. See "Spread Pattern" and "Controller" sections for details. Calibrate and spread pattern test for any new material.
6. Fill unit with material to be spread.
7. Engage hydraulics.
8. Begin spreading.

CAUTION Drive only at speeds which permit secure control of vehicle! Failure to follow this requirement may result in injury or machine damage.

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

Inspection Ladder

WARNING

KEEP OFF FENDERS. Do not place objects on fenders. They are not intended to carry loads. Falling from the fenders could cause death or serious injury. Failure to comply with this requirement could result in death or serious injury.

NOTICE

Figure 1 - Always place the inspection ladder in the storage position while unit is in transit with rubber latches (A) secured.

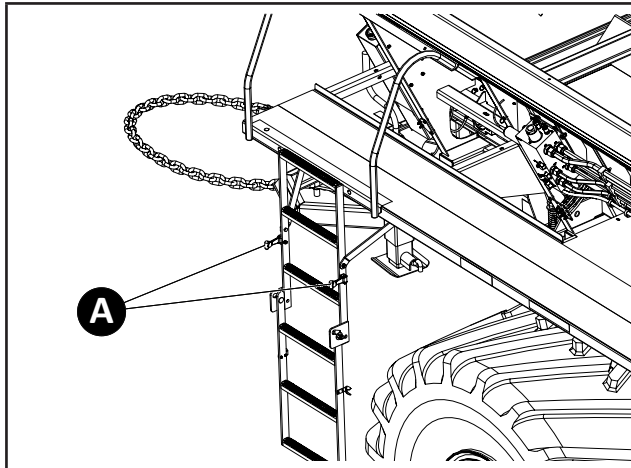


Figure 1A - Inspection Ladder Down

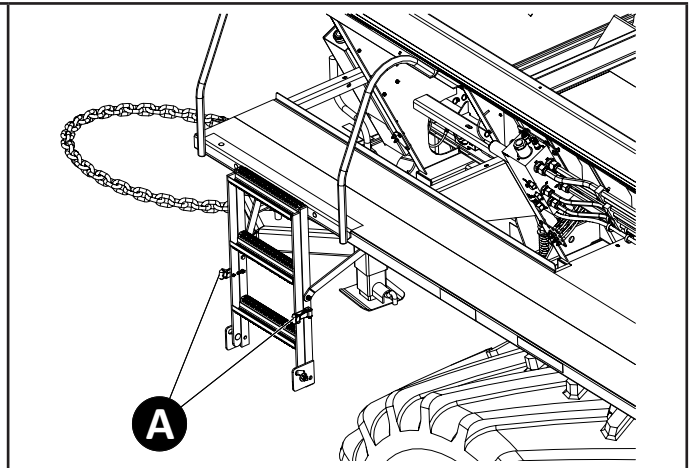


Figure 1B - Inspection Ladder Up

Back Plate Storage

Figure 2 - When spreading without the Material Divider Back Plate (A) equipped, it can be stored at the front of the unit.

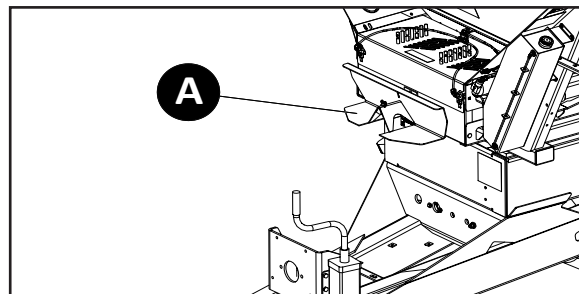


Figure 2

Anti-Slab Chain Storage / Hillside Divider Panel

Figure 3A - Hook chains over rearmost cross member of Anti-Slab Support to position out of the way.

Figure 3B - Install Hillside Divider Panel on Anti-Slab Support with proper hardware. Adjust so that panel is approximately 3/8" (1cm) above the rubber of the conveyor belt. See "Anti-Slab" in parts manual for details.

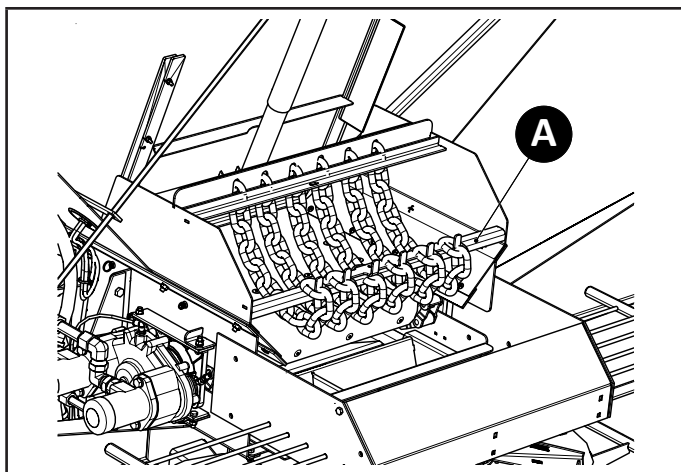


Figure 3A - Chain Storage

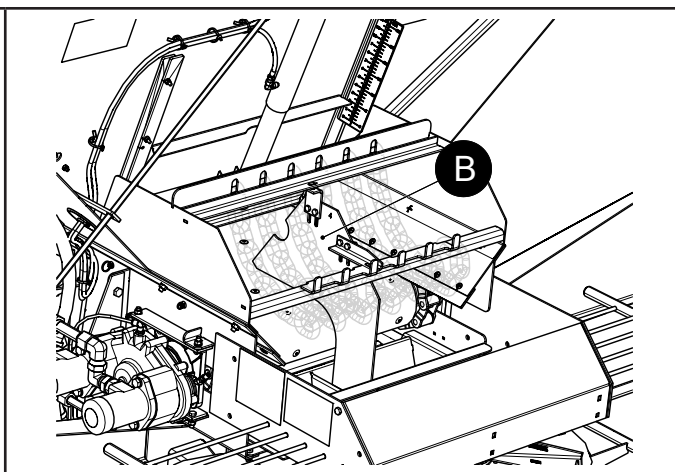


Figure 3B - Divider Panel

Tire Pressure and Transport Speeds

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

TRAILER TIRE ROAD SPEED TABLE ⁽³⁾			
Tire Pressure (PSI)	Max Road Speed (MPH)	Max Gross Combined Axle Loads ⁽²⁾	Max Payload ⁽¹⁾ (LBS)
20	30	35200	19600
	25	37300	22000
	20	39400	24400
	15	42900	28300
	10	46400	32200
	5	53000	35000
	0	53000	35000
25	30	39600	24600
	25	41900	27200
	20	44300	29900
	15	48300	34300
	10	52200	35000
	5	53000	35000
	0	53000	35000
30	30	44000	29500
	25	46600	32400
	20	49200	35000
	15	53000	35000
	10	53000	35000
	5	53000	35000
	0	53000	35000

WARNING

Drive at a reasonable and safe speed according to weather, field and road conditions. Loss of tractor or implement control could cause serious injury or death. Failure to comply with this requirement could result in death or serious injury.

NOTICE

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

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

Implement Maneuvering

⚠ WARNING

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

⚠ WARNING

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

Backing and Turning Tips

NOTICE!

Turning and backing at sharp angles will cause the tractor and implement to jack-knife. DO NOT exceed maximum turning angle of 60°.

Maximum Hitch Angles and Walking Beam Travel

⚠ CAUTION

DO NOT max out suspension travel. Damage may occur to implement. The manufacturer will not be liable for damage to implement due to improper usage. Failure to comply with this requirement may result in minor or moderate injury.

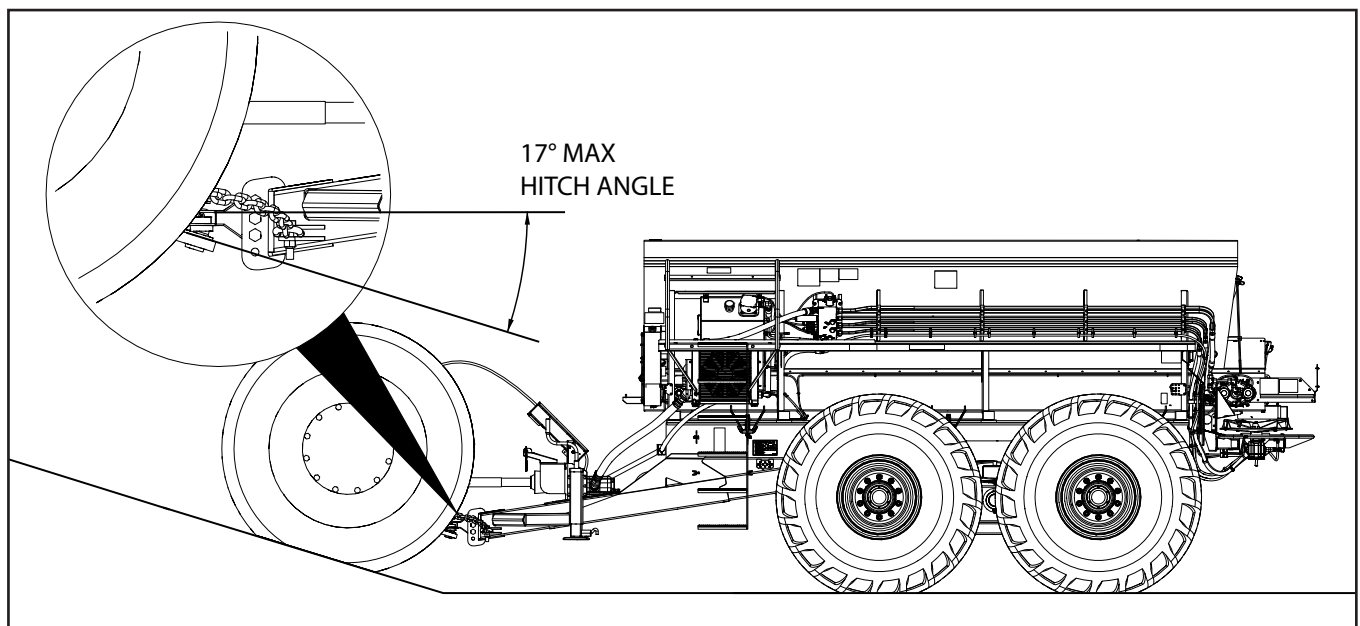


Figure 4 - Maximum Hitch Angles

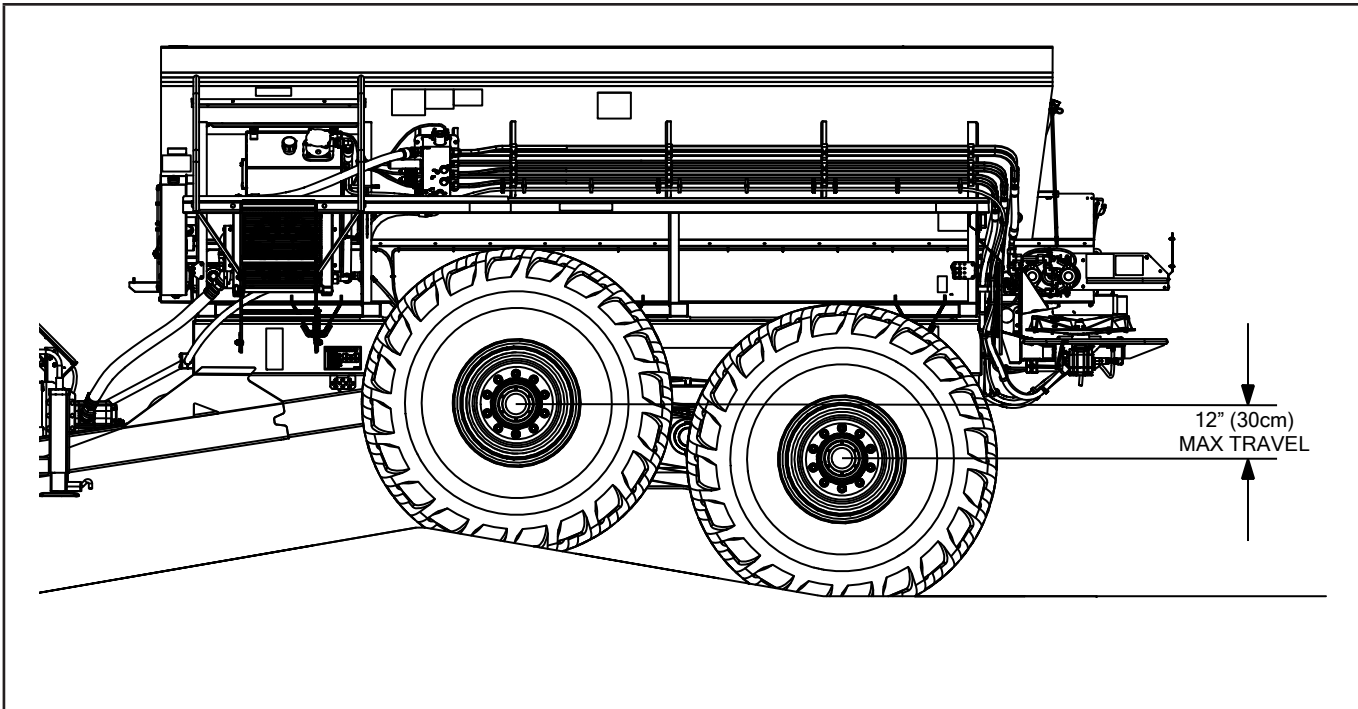


Figure 5 - Walking Beam Travel

Rear Pulling Lugs

NOTICE

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

NOTICE

Failure to raise jack before pulling stuck implement will destroy jack.

If implement becomes stuck in field and cannot be freed by towing through:

1. Empty spreader, shut off tractor power and lower jack.
2. Disconnect implement from tractor.
3. Hook appropriately rated chain to both the left and right hand rear pulling lugs as shown in Figure 5.
4. Fasten chains to tractor.
5. Raise jack.
6. Engage tractor to dislodge implement.

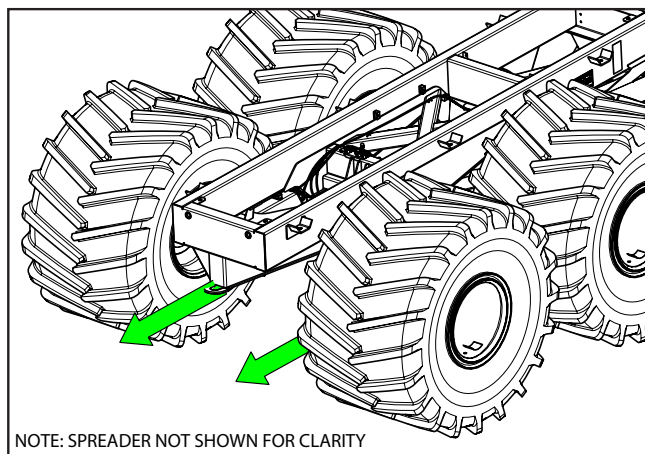


Figure 6 - Rear Pulling Lugs

This page is intentionally left blank.

MAINTENANCE

MAINTENANCE

Maintenance

Lubrication and Maintenance

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. Failure to comply with this requirement could result in death or serious injury.

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 "Lubrication & Hydraulic Oil Specifications" on page <?> 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. Failure to comply with this requirement could result in death or serious injury.

⚠ WARNING

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

Check hydraulic oil daily by means of sight gauge on hydraulic tank. 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.

Controller will warn when filter is restricted. Change filter when warning sounds.

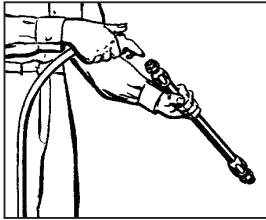
Drain hydraulic tank through drain plug (not through suction outlet), flush, and refill and change filter element annually. Oil and filter should also be changed whenever oil shows any signs of breaking down under continued high-pressure operation. Discoloration of oil is one sign of breakdown.

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. When replacing, use hoses of same or better rating and construction.

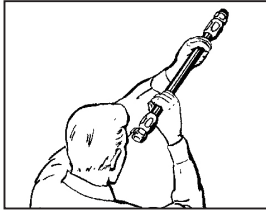
▲ WARNING

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



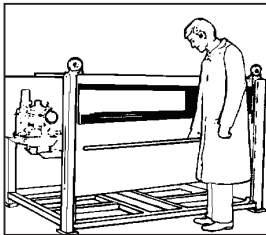
Clean

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



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 ends of 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).

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. Failure to comply with this requirement could result in death or serious injury.

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.

Tension

Proper chain tension is a factor in chain and sprocket life. Measuring from rear of unit, conveyor should touch at 36" - 40" (91 - 102cm) mark, and top of chain should appear between MIN and MAX lines in sight window (Figure 1). If manual adjustments need to be made, on valve block, loosen jam nut, turn counterclockwise to lower tension, or turn clockwise to increase tension (Figure 2). All tension adjustments must be made when machine is unloaded and conveyor running 15-20 RPM.

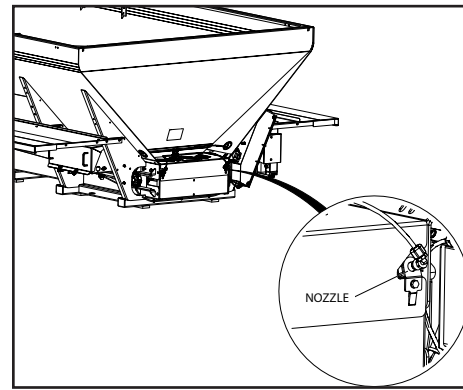


Figure 1

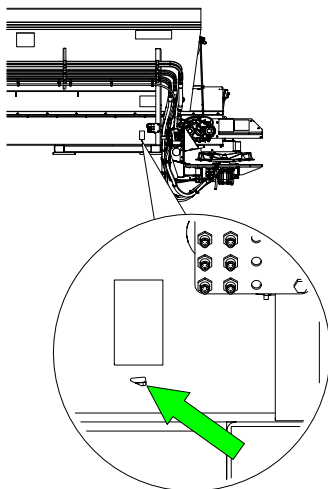


Figure 2A

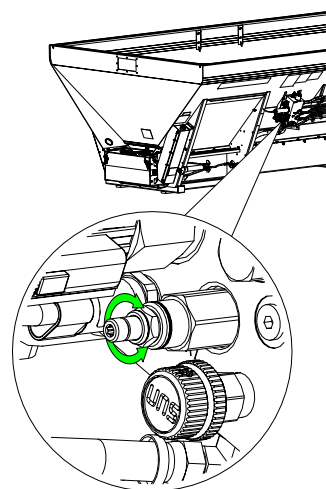
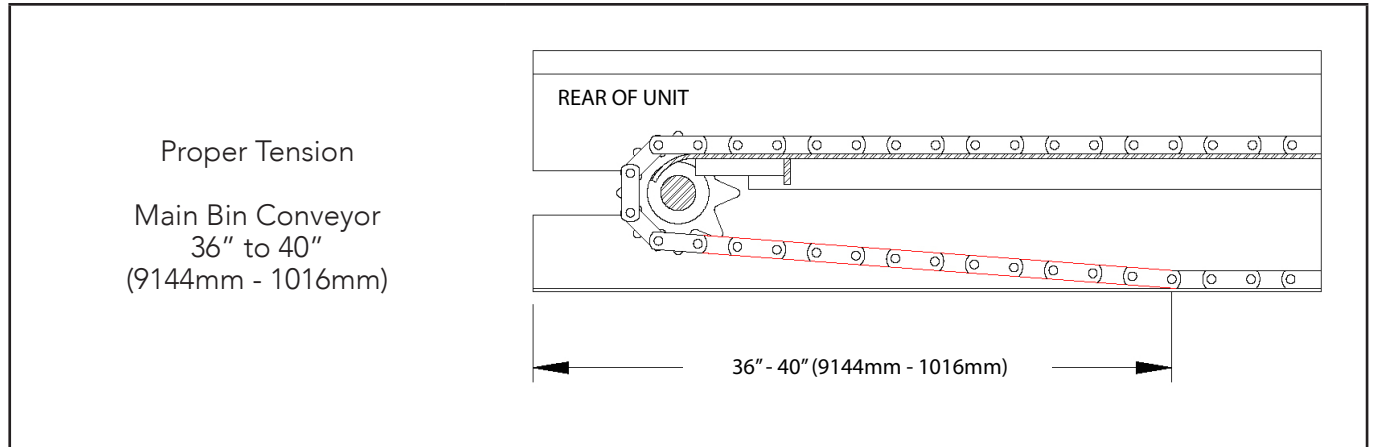


Figure 2B

Over-tensioning of conveyor chain will lead to excessive load on the system which will cause excessive chain and sprocket wear and can cause extremely high starting pressures. Under-tensioning allows



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 3.

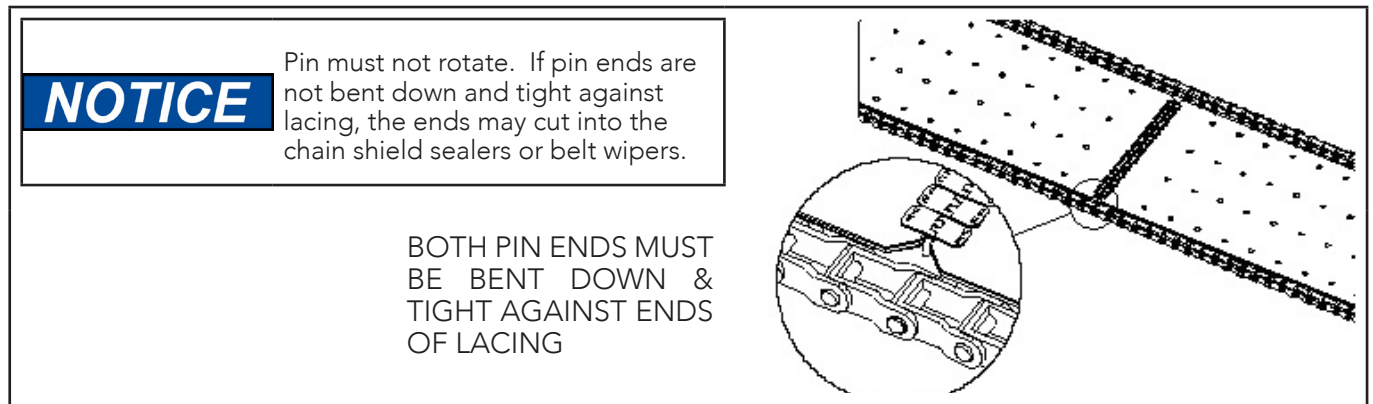


Figure 3 - Conveyor Belt Pin Installation

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 comply with this requirement could result in death or serious injury.

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.

Spinner Fins

Visually inspect spinner fins (Figure 4) daily for build-up of material and wear. Spinner discs and fins must be kept clean and polished. Even a small build-up of material on a spinner can significantly affect the spread pattern. Rough, bent or worn fins will produce bad spread patterns. Replace worn fins or discs as needed. See Fin Kit Installation Instructions for replacement part numbers and instructions.

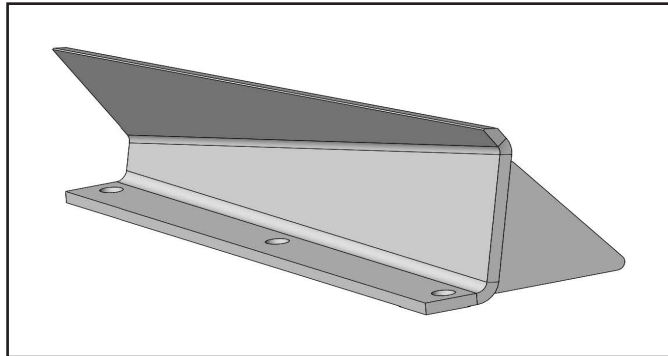


Figure 4 - Fin

Spinner Deflectors

Visually inspect spinner deflectors (Figure 5) daily for build-up of material and damage. Clean as needed. Even a small build-up of material on a spinner deflector can affect the spread pattern. If damaged, bent or otherwise, replace. See Parts List in this manual for replacement part numbers.

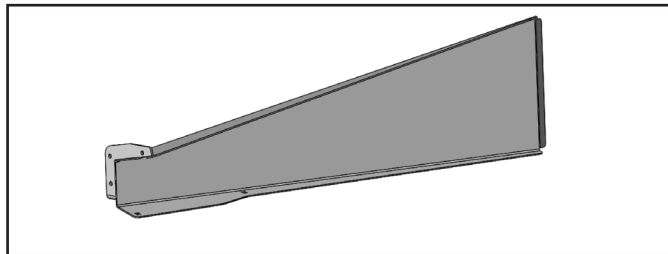


Figure 5 - Spinner Deflector

Material & Hillside Flow Dividers

Visually inspect material divider (Figure 6) and hillside flow dividers (as equipped) daily for build-up of material and wear. Any build-up of material on divider components can affect performance. Clean as needed. Replace worn or damaged parts as necessary. See Parts List in this manual for replacement part numbers.

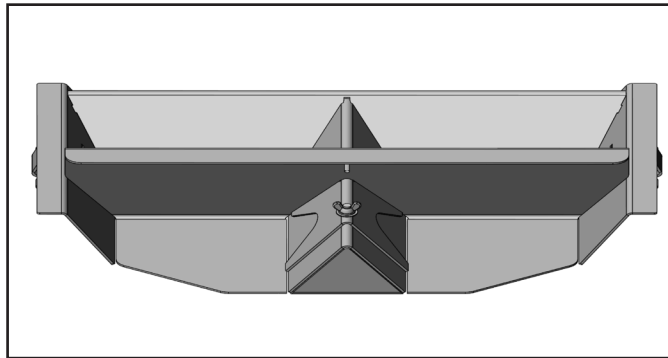


Figure 6 - Material Divider

Conveyor Gearcase

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

Check gearcase oil level monthly.

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.

Check torque on body mounting, hitch, wheels and suspension hardware every week. Tighten front mount hardware so springs are compressed from 3.5" - 3.75" (8.89 - 9.53 cm) (Figure 7A). Tighten each back mount hardware to 80 - 90 ft-lb (108.5 - 122 N-m) (Figure 7B).

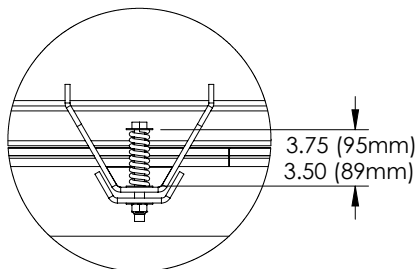


Figure 7A - Front Spring Compression

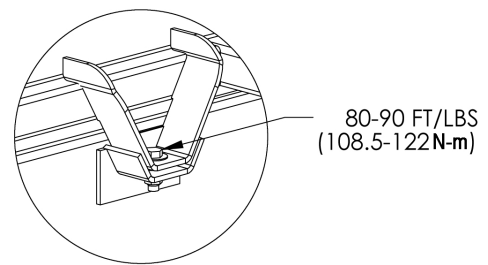


Figure 7B - Spring Torque on Rear Mount

Trailer Brakes

WARNING

Perform maintenance on level surface with wheels blocked. There is no parking brake on the Trailer. Block the wheels prior to unhitching or any maintenance of the Trailer. Uncontrolled movement of the trailer could cause death or serious injury. Failure to comply with this requirement could result in death or serious injury.

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

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

Bleeding Procedure:

Modulate tractor brakes to low pressure and flow.

On top of rams, loosen bleeder plugs to fill system.

Attach supply line to tractor. Press brake pedal or operate a pump to charge system.

DANGER

Do not check leaks with hands while system is operating as high pressure leaks can be dangerous! If skin is pierced with hydraulic fluid at high pressure seek immediate medical attention as fluid injected into the skin could cause gangrene if left untreated.

Relieve pressure before disconnecting hydraulic lines or working with system. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. Failure to comply with this requirement will result in death or serious injury.

When fluid is seeping from bleeder holes, release brake pedal or turn off hydraulic power unit pump and install bleeder plugs.

Loosen one bleeder plug a 1/2 turn and apply brakes to remove remaining air.

Tighten bleeder plug.

Make sure ram is free of air.

Complete steps 5-7 for all four rams.

Allow system to set for five or more minutes. This will allow any additional trapped air to rise to the top of the system.

Break the line at the highest point. This is located in the center of the bulkhead assembly.

NOTICE

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

Apply pressure to brake to remove any air from the system and tighten fittings.

Apply brakes and check for leaks. Make sure all rams are fully extended while applying braking force to brake drums. If done correctly, the ram and slack adjuster will be at 90° to each other (Figure 8). The ram should extend approximately 1 1/2 inch (38 mm) to 1 3/4 inch (44 mm).

If brakes chatter or rams do not fully extend repeat steps 5-12.

When complete, rams must be fully retracted.

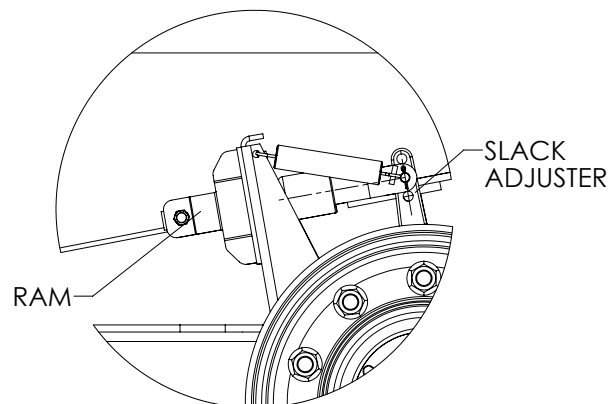


Figure 8

Tires

NOTICE

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

⚠ WARNING

Service of tires and rims can be dangerous. Follow all safety rules. Only specialized personnel should mount tires. Use proper equipment and procedures. Damaged tires can explode causing injury. Falling and/or rolling tires may cause injury. Failure to comply with this requirement could result in death or serious injury.

⚠ WARNING

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

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

Check tires frequently during extreme temperatures.

Refer to tire manufacturer for additional information.

Wheels & Lug Nuts

Wheel Installation

⚠ CAUTION

Re-torque wheel studs after 10 hours of operation.

Make sure brakes are not engaged.

Check all parts are free of dirt and grease. Make sure all parts are free of damage. The hub or drum mounting face must be cleaned and kept flat.

Ensure that the brake drum is on the pilots' raised step, seated fully against the hub.

Clean the wheel's center hole as necessary so it will fit easily on the hub pilots.

Apply two drops of oil between the nuts and flange and two drops to the last 2 or 3 threads at the end of each stud. Lightly lubricate the pilots on the hub to ease wheel installation and removal.

NOTICE

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

Position hub with one pilot at 12 o'clock position. Place wheel onto hub carefully so as not to damage stud threads. Make sure wheel is fully seated against drum.

Install hardened spacer and nuts, finger-tight, at 12 o'clock and 6 o'clock positions. Rotate wheel 180° and make sure wheel is fully seated against drum. Repeat as needed. Install spacers and nuts finger-tight on remaining studs.

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

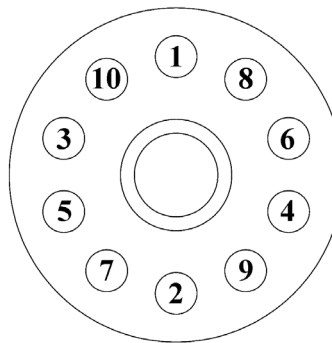


Figure 10

End-of-Season Storage

WARNING Never store implement with material in bin. Implement could tip and crush or strike someone causing serious injury or even death. Failure to comply with this requirement could result in death or serious injury.

1. Refer to "Pre- & Post-Season Checklists" at the end of this section. Complete End-of-Season Checklist as required.
2. Store implement indoors on a hard, level surface, with wheels blocked to prevent rolling.
3. Lower jack to support the implement so that it is level. Ensure that the jack is placed securely on a hard surface.
4. Place all power connections in storage positions as shown in Figure 10:
 - Store light connector in storage bracket located on hose guide (A).
 - Store ISOBUS connector in receptacle (B).
 - Store hydraulic hoses in provisions on hose guide (C).
5. Disconnect implement from tractor.

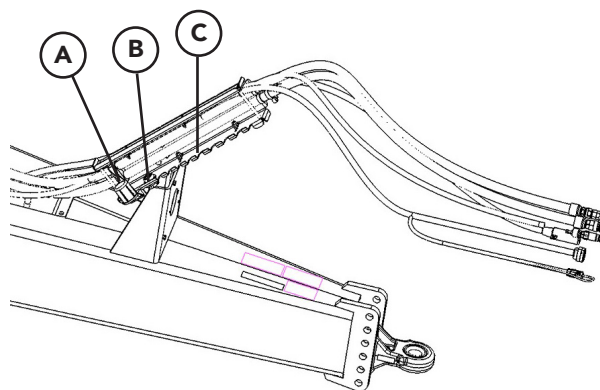


Figure 10

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 New Leader Manufacturing for systems operating outside normal conditions.

Ideal Oil Operating Temperature	115-158°F (46.11-70° C)
Recommended Premium Lubricant	Multi-Purpose Agriculture Hydraulic & Transmission Oil
Lubricant Specifications	
Viscosity Index	Greater than 130
Viscosity at 40°C, cst	Less than 68
Viscosity at 100°C, cst	Greater than 9
Acceptable Fluid Example	Mobil 424

Gearcase Lubricant

Lubricate these assemblies with non-corrosive type extreme pressure (E.P.) gear oil conforming to MIL-L2105 B multi-purpose gear lubricating oil requirements (API Service GL 4) based on ambient temperatures listed below. Refill gearcase with one and a half (1-1/2) pints (.70 liters) of recommended lubricant.

Ambient Temperature	Oil Type
Below 40°F (4.4°C)	SAE 80 E.P.
40° - 100° F (4.4° - 38° C)	SAE 90 E.P.
Above 100° F (38° C)	SAE 140 E.P.

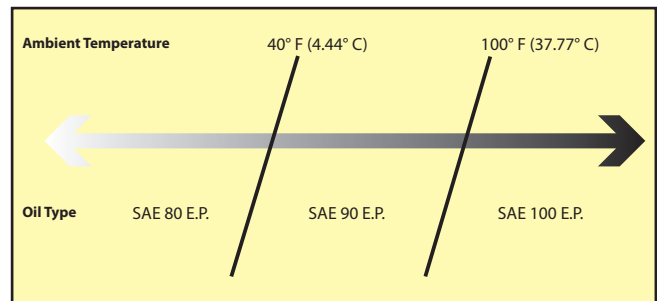


Figure 1

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.

Chain Oiler Mixture

Use a mixture of 75% diesel fuel mixed with 25% SAE 10 engine oil (use clean oil, not pre-used oil).

⚠ WARNING

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

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

Location	Places	Method	Frequency
Hydraulic System			
Hydraulic Reservoir	1		Check Daily. Change Annually
Filter	1		Check daily; Change when indicated by controller
Conveyor			
Idler Bearings (1, 2 - Front Bank)	2	Grease Gun	Weekly
Driveshaft Bearings (2, 3 - Rear Bank)	2		
Chain Oiler	1	Oil Mixture	Daily, After first 10 hours spreading
Gearcase	1	Gear Oil	Check Monthly; Change Annually
Feedgate			
Jack Assembly (4 - Rear Bank)	2	Grease Gun	Weekly
Spinner Assembly			
Jack Assembly (4, 8 - Rear Bank)	2	Grease Gun	Weekly
Bin 2 Insert Conveyor			
Idler Bearings (9, 11 - Rear Bank)	2	Grease Gun	Weekly
Driveshaft Bearings (10, 12 - Rear Bank)	2		
Idler Take -Up Screws	2	Hand Grease	Annually

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

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

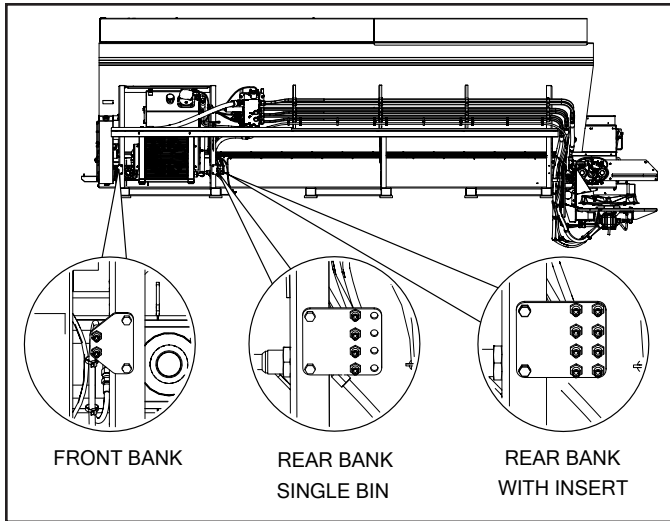


Figure 7 - Spreader Grease Banks

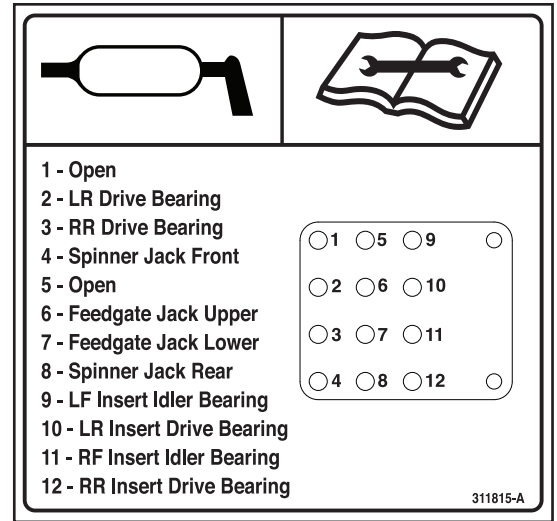


Figure 8 - Rear Grease Bank Decal

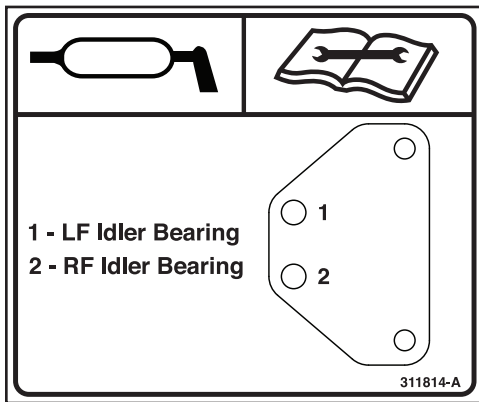


Figure 9 - Front Grease Bank Decal

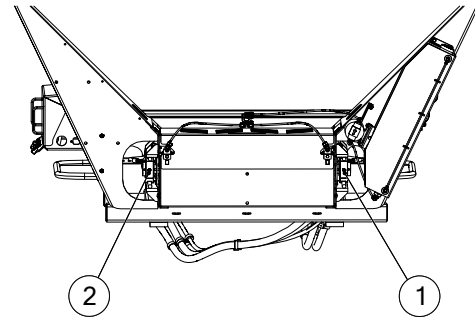


Figure 10 - Front Grease Bank Locations

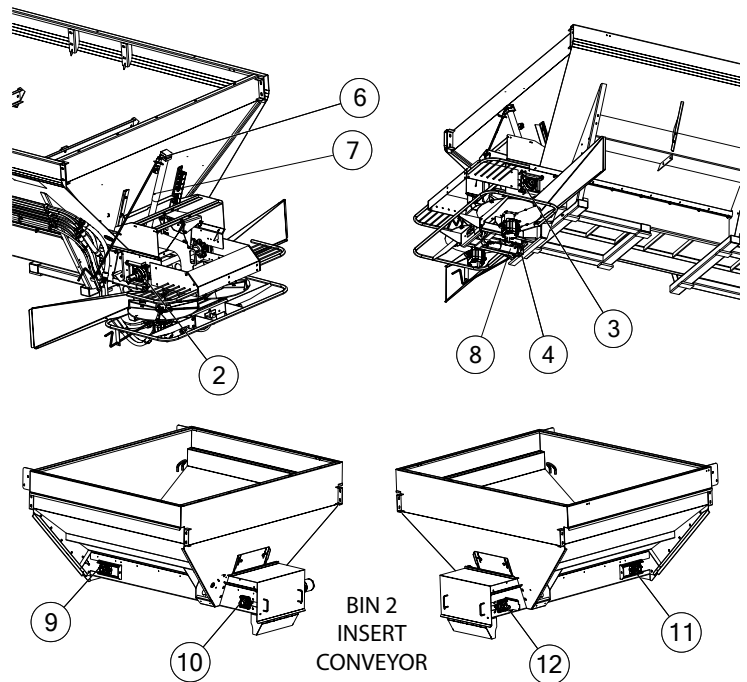


Figure 11 - Rear Grease Bank Locations

⚠ WARNING

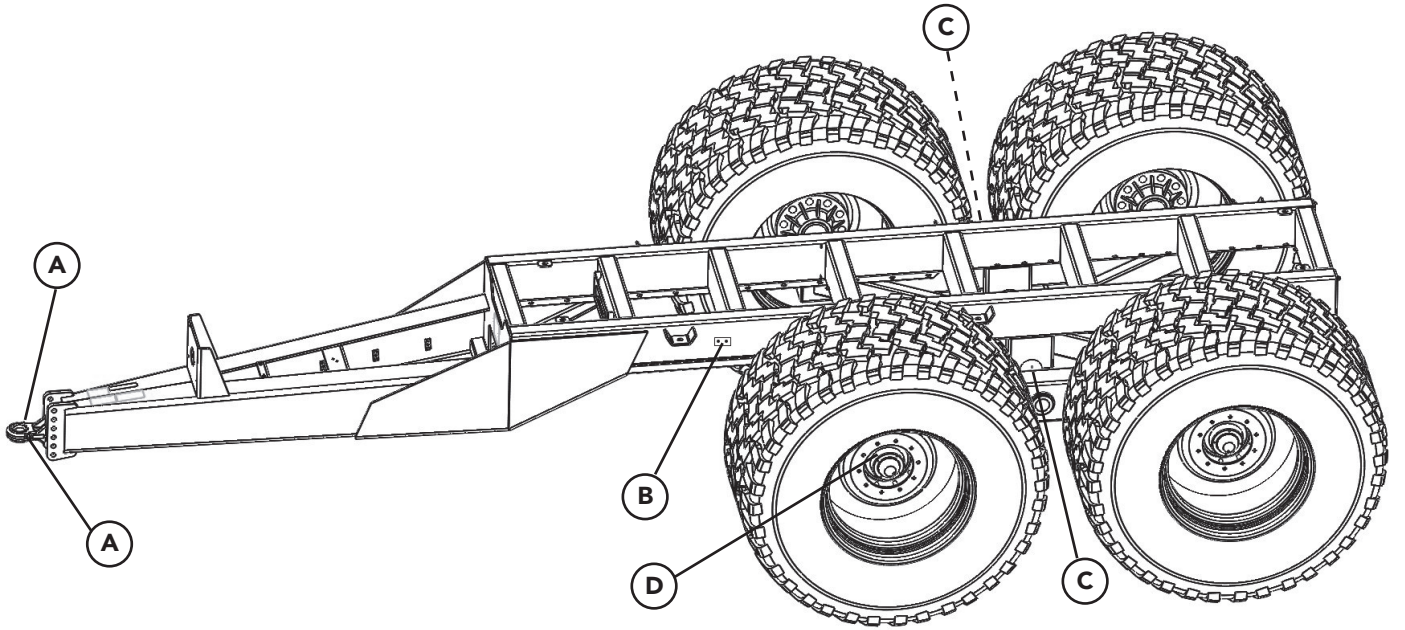
Shut off all power and allow all moving parts to come to rest before performing any maintenance operation.

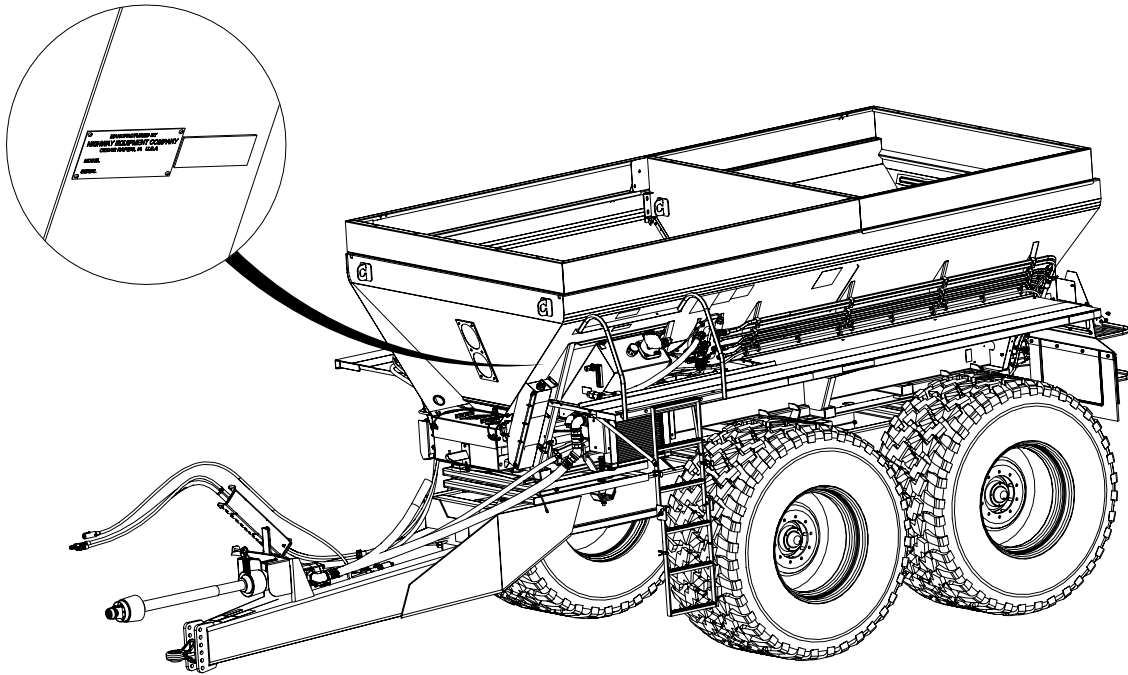
The implement should be regularly lubricated with the lubricants recommended in this manual in accordance with the following chart:

Location	Places	Method	Frequency
1. Tongue			
Trailer Jack (A)	1	Grease Gun	Weekly
2. Wheel End & Axles			
Grease Banks (B)	4	Grease Gun	Weekly
Walking Beam (C)	2	Grease Gun	
Hub (D)	4	Grease Gun	

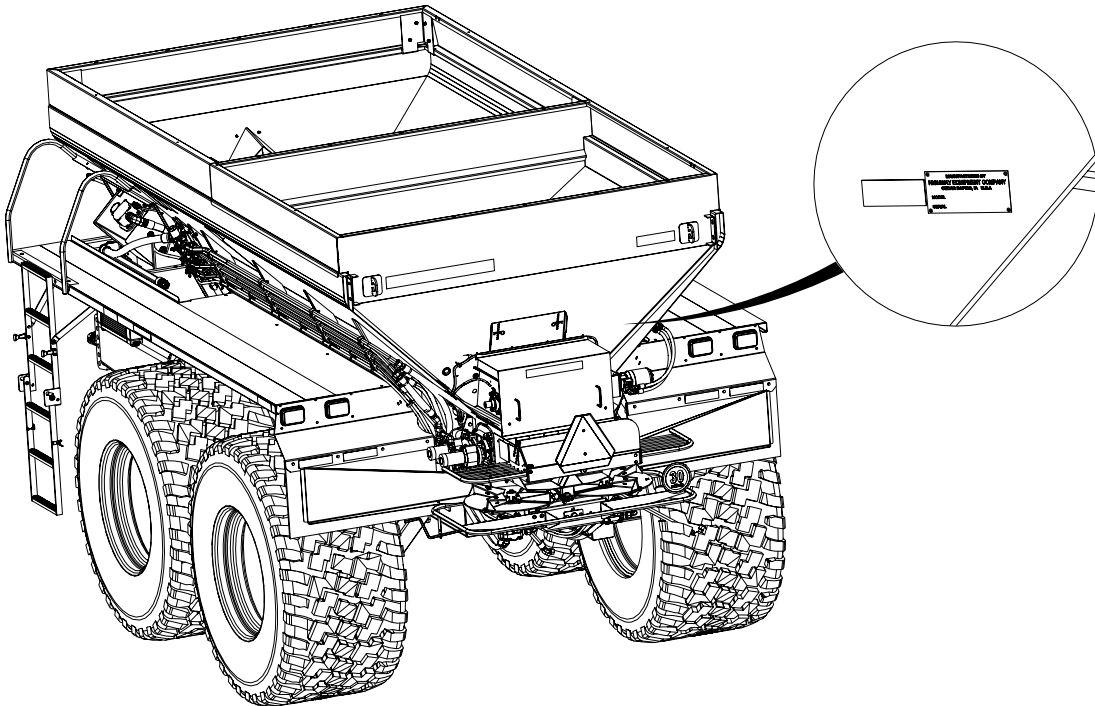
NOTE: Unusual conditions, such as excessive dust, temperature extremes or excessive moisture may require more frequent lubrication of specific parts.

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





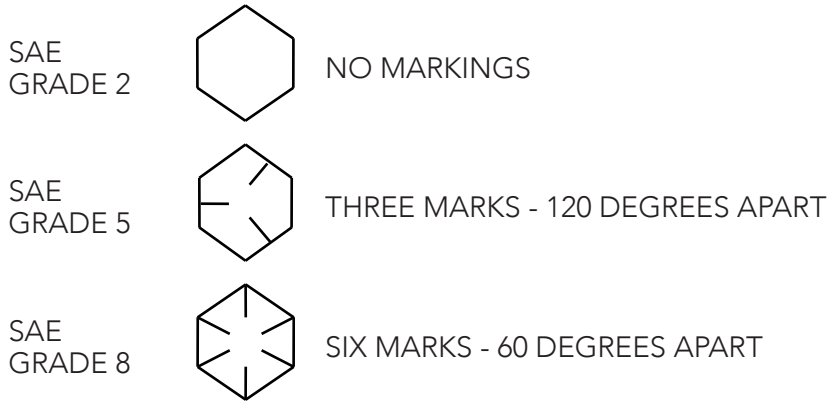
SPREADER



MULTAPPLIER



CAP SCREW GRADE IDENTIFICATION - MARKINGS ON HEAD



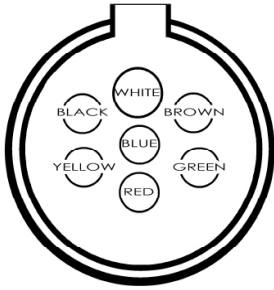
USE GRADE 2 TORQUES FOR STAINLESS STEEL FASTENERS AND CARRIAGE BOLTS.

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

Symptom:	Reason:	Correction:
Spinner will not run	Defective Spinner Control Valve	Replace spinner control valve cartridge and coil.
	No voltage at valve	Verify spinner switch is on.
		Verify spinner enable is checked.
		Verify controller has a target spinner RPM entered.
		Check WSM 7.5 amp fuse is not blown.
		Verify spinner control harness is not damaged.
	No hydraulic flow	Verify system was configured as Basic independent.
		Verify hydraulics are on.
Pressure test pump - replace as needed. System is going over relief - test & replace as needed.		
Spinner will not shut off	Defective spinner control valve	Replace spinner control valve cartridge.
	Control valve is manually override	Loosen jam nut on control valve cartridge and back set screw out until spinner stops.
Spinner runs erratic	Defective spinner control valve	Replace spinner control valve cartridge.
	Spinner speed sensor harness failure	Replace sensor harness.
	Spinner speed sensor not properly installed	Adjust sensor so that gap between sensor and fin mounting bolt is less than 1/8".
Spinner speed drops off when turning around	Improper control settings	Verify PWM control is set properly (HOLD for gear pumps, CONTROL for variable displacement).
Not applying correct rate	Incorrect settings	Verify density, swath width, gate opening, encoder pulses, and CFR number are all adjusted as needed.
No ground speed	Manual speed is enabled, but set to 0	Enter correct speed or disable manual speed
	AUX broadcast speed is enabled but radar not installed	Disable broadcast AUX speed.
	Incorrect speed source is selected	Select correct speed source.
Spinner speed does not hit target	Defective spinner control valve	Replace spinner control valve cartridge.
	Pump failure	Flow and pressure test pump.
	Spinner speed sensor not properly installed	Adjust sensor so that gap between sensor and fin mounting bolt is less than 1/8".
	Hydraulic flow dropping off	Adjust settings and speed. Pressure test relief (adjust or replace as needed).
	Spinner speed sensor harness failure	Replace sensor harness.
	Spinner speed sensor failure	Replace spinner speed sensor.

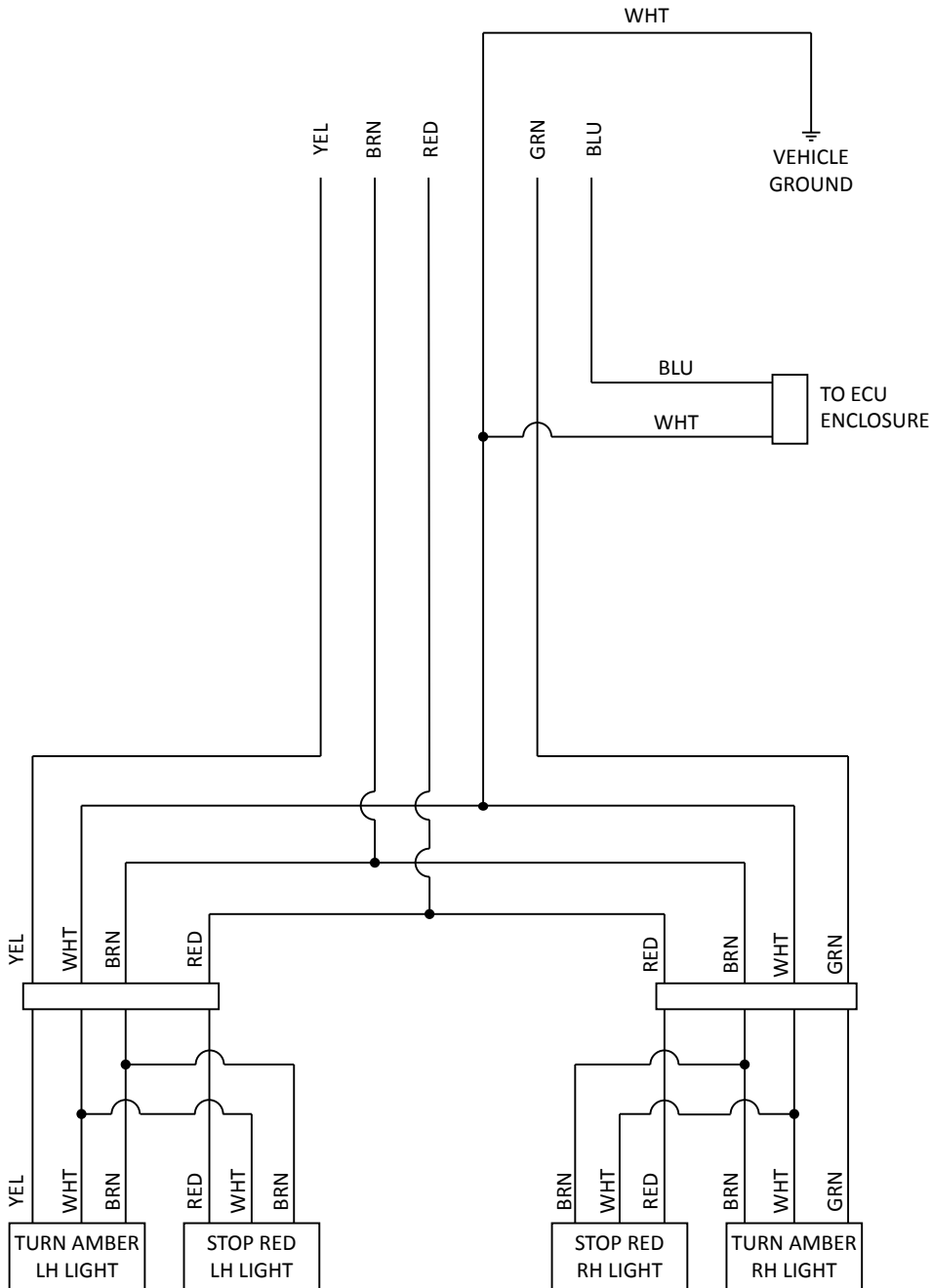
Symptom:	Reason:	Correction:
Conveyor will not run	Defective conveyor control valve	Replace conveyor valve cartridge.
	No voltage at valve	Verify bin switch and master switches on.
		Verify in controller that target rate, density, ground speed and a CFR number are all entered.
		Check WSM 7.5 amp fuse is not blown.
		Verify conveyor control harness is not damaged.
	No hydraulic flow	Verify hydraulics are on.
		Pressure test pump - replace as needed.
System is going over relief - test & replace as needed.		
Conveyor is going over relief - test & replace as needed.		
Conveyor will not shut off	Defective conveyor cartridge	Replace conveyor control valve cartridge.
	Control valve is out of time	Adjust cartridge timing.
Conveyor runs erratic	Defective conveyor cartridge	Replace conveyor control valve cartridge.
	Encoder failure	Replace encoder.
	Encoder harness failure	Replace harness.
	Rates smoothing is disabled	Enable rate smoothing.
Bin will not hit target rate	Defective conveyor cartridge	Replace conveyor control valve cartridge.
	Pump failure	Flow and pressure test pump.
	Going over relief	Adjust setting and speed. Pressure test relief (adjust or replace as needed).
	Encoder failure	Replace encoder.
	Encoder harness failure	Replace harness.
Hydraulics over-heating	Pump failure	Flow and pressure test pump.
	Too much flow	Flow test pump.
	System relief	Pressure test relief (adjust or replace as needed). Adjust settings and speed.
	Conveyor valve relief	Pressure test relief (adjust or replace as needed). Adjust settings and speed.
	Oil cooler fan failure	see oil cooler fan failures.
	Case drain is plugged.	Case drain requires zero pressure line back to tank.
Oil cooler fan failure	No power at fan	Verify FAN 30-amp fuse is not blown. Verify relay is working properly.
	Fan failure	Replace fan.
Bin level sensors not working properly	Not enabled	Verify system was configured with bin level sensors.
	Bin level sensor failure	Replace sensor.
	Bin level sensor harness failure	Replace harness.

Electrical Schematic - Trailer









WIRING CODE

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









Spreader Module LED Light Alerts







Power LED

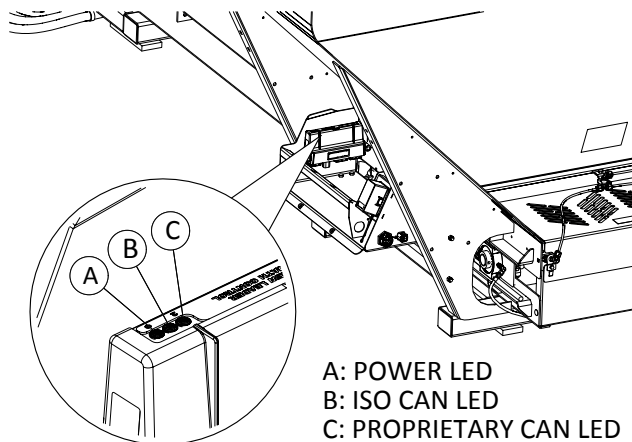
	Off	Solid Red 	Flashing Red 	Solid Amber 	Flashing Amber 	Solid Green 	Flasing Green 
Boot	No Power	N/A	No App	Running	N/A	N/A	N/A
Upgrage		N/A	N/A	N/A	Running	N/A	
Main Application		High Current Power Low	N/A	N/A	N/A	Power OK	

ISO CAN LED

	Off	Solid Red 	Flashing Red 	Solid Amber 	Flashing Amber 	Solid Green 	Flasing Green 
Boot	X	N/A	N/A	N/A	N/A	N/A	N/A
Upgrage	Idle	Bus Off		Bus Error Passive	Bus Error Active		TX / RX
Main Application				TX / RX			

Proprietary CAN LED

	Off	Solid Red 	Flashing Red 	Solid Amber 	Flashing Amber 	Solid Green 	Flasing Green 
Boot	X	N/A	N/A	N/A	N/A	N/A	N/A
Upgrage	X	N/A		N/A	N/A		TX / RX
Main Application	Idle	Bus Off		Bus Error Passive	Bus Error Active		



IMPORTANT! Do not operate or work on machine without reading and understanding the operator's manual.

Before starting engine/before starting machine operation

- Program rate controller and document settings
- All stop, tail, and turn lights function properly
- Tire pressures are equal on each side of chassis
- Battery condition and connection
- Electrical connections are tight and secure
- All fasteners are secure
- Inverted "V" is secure and installed properly
- Sensor(s) are functioning properly
- Lubricate all grease fittings
- Hydraulic oil level and line connections are tight
- Hydraulic filters are current and gauge is functional
- Chain oiler tank is full and operates correctly
- Hydraulic hoses are secured properly
- Gearcase oil level is correct
- Safety shields in place
- Spinner Assy moves through full range of operation
- Spinner discs and fins installed properly
- Spinner discs and fins are in acceptable condition
- Material Divider assembly is square and secure
- Material Divider is clean of build-up
- Feedgate assembly is level
- Encoder installed and secured
- Spinner sensor adjusted to proper gap

Start engine/Start and run to operational temperatures

- Hydraulic fittings are tight, no leaks *
- Check operation of all alarms
- Hydraulic flow test: ___GPM @ operating engine RPM
- Check main relief valve setting : ___ PSI
- Conveyor control valve is operating correctly
- Calibrate radar/ground speed input
- Test maximum conveyor(s) RPM
- Test right and left hand spinner speed; ensure difference is less than 30 RPM (when at operating RPM)

Stop operation/Turn off engine and engage parking brake

- Visually check for leaks
- Check belt/chain tension and alignment
- All oil levels full

Perform Calibrations

- Product density testing, crush strength, and SGN scale (See Spread Pattern Calibration section for instructions).
Catch tests of all products and at least 1 blend for conveyor calibration and document settings and product characteristics
- Spread pattern tests of all products and at least 1 blend and document settings and product characteristics

End of Season

- Empty unit of all material
- Sand and touch-up paint as necessary
- Wash chain conveyor, lubricate thoroughly when dry
- Check spinner discs and fins for wear
- Clean unit inside and out
- Check for leaks
- Lubricate all grease fittings
- Ensure all fasteners are secure and properly torqued

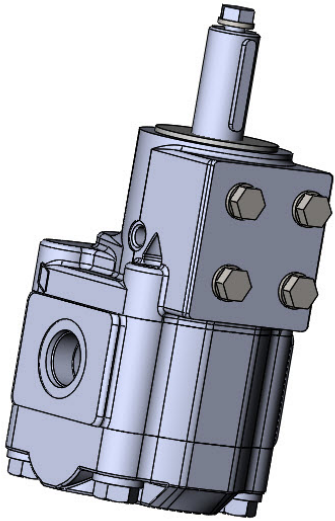
This page is intentionally left blank.

HYDRAULICS

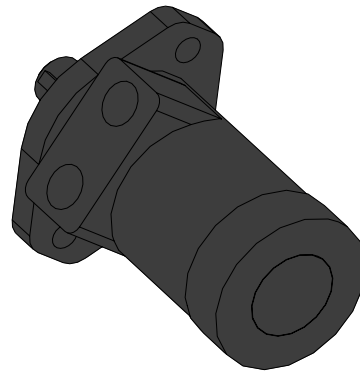
HYDRAULICS

The following pages contain representative hydraulic schematics and flow diagrams for the NL345 model spreader.

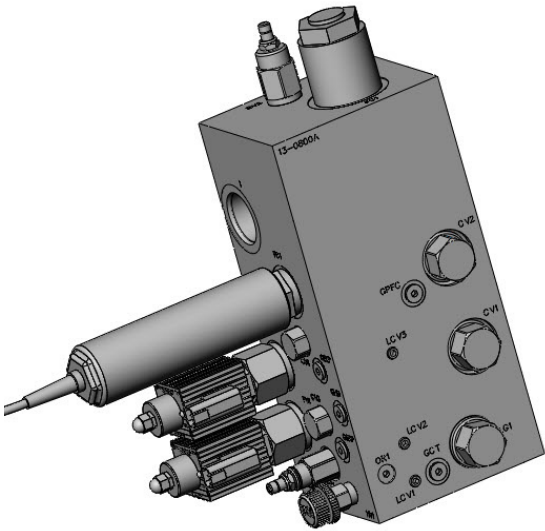
Hydraulic Components



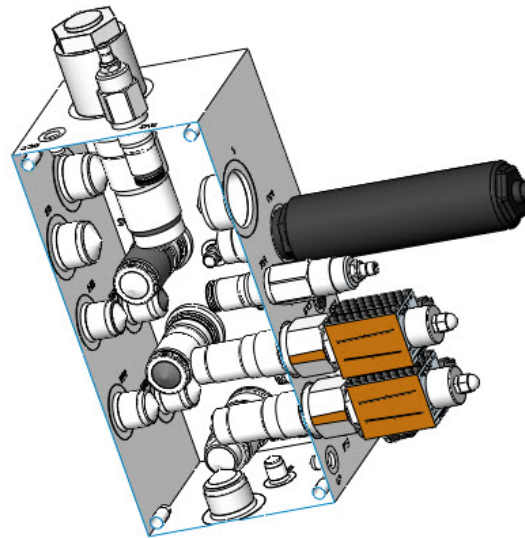
Spinner Motor



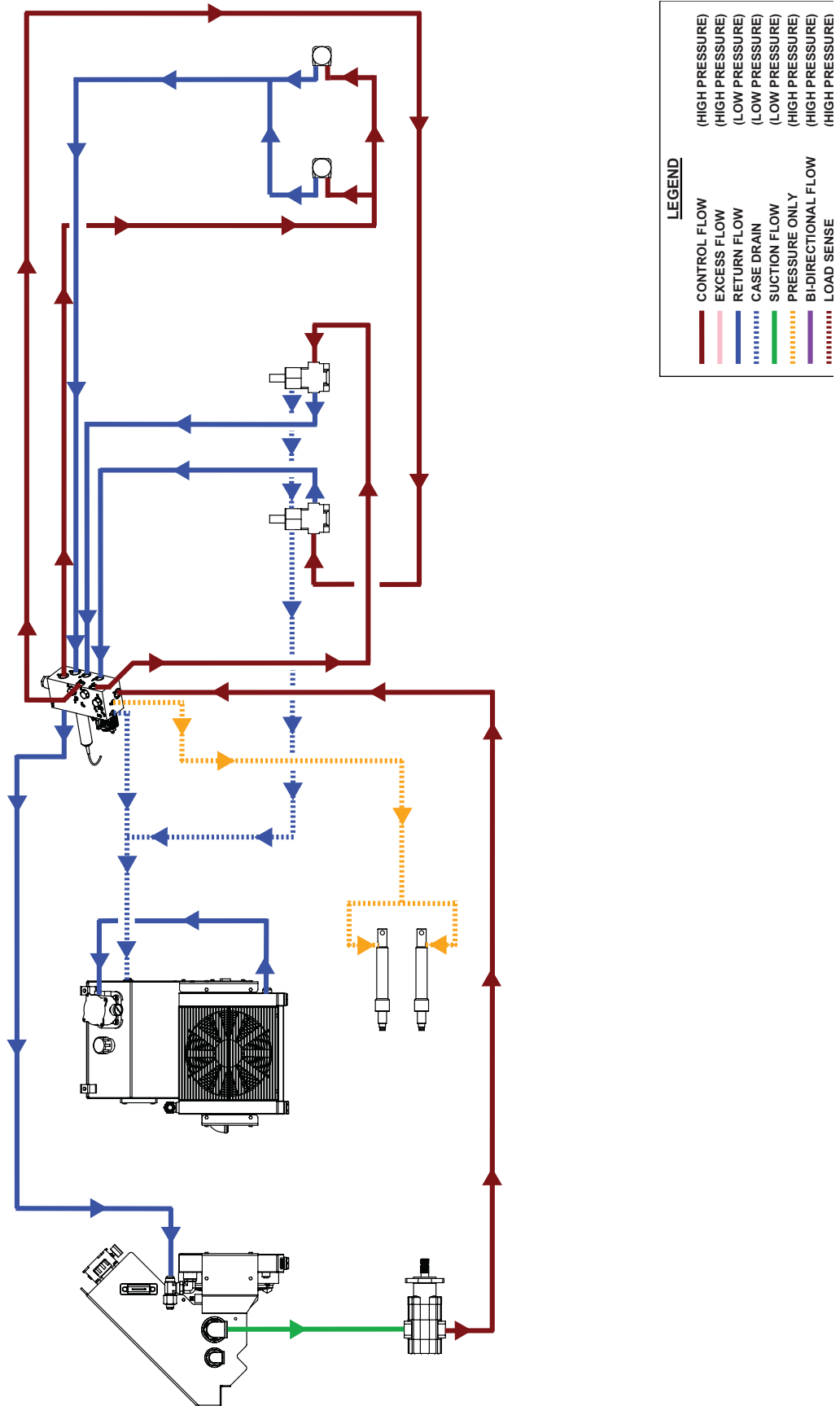
Conveyor Motor

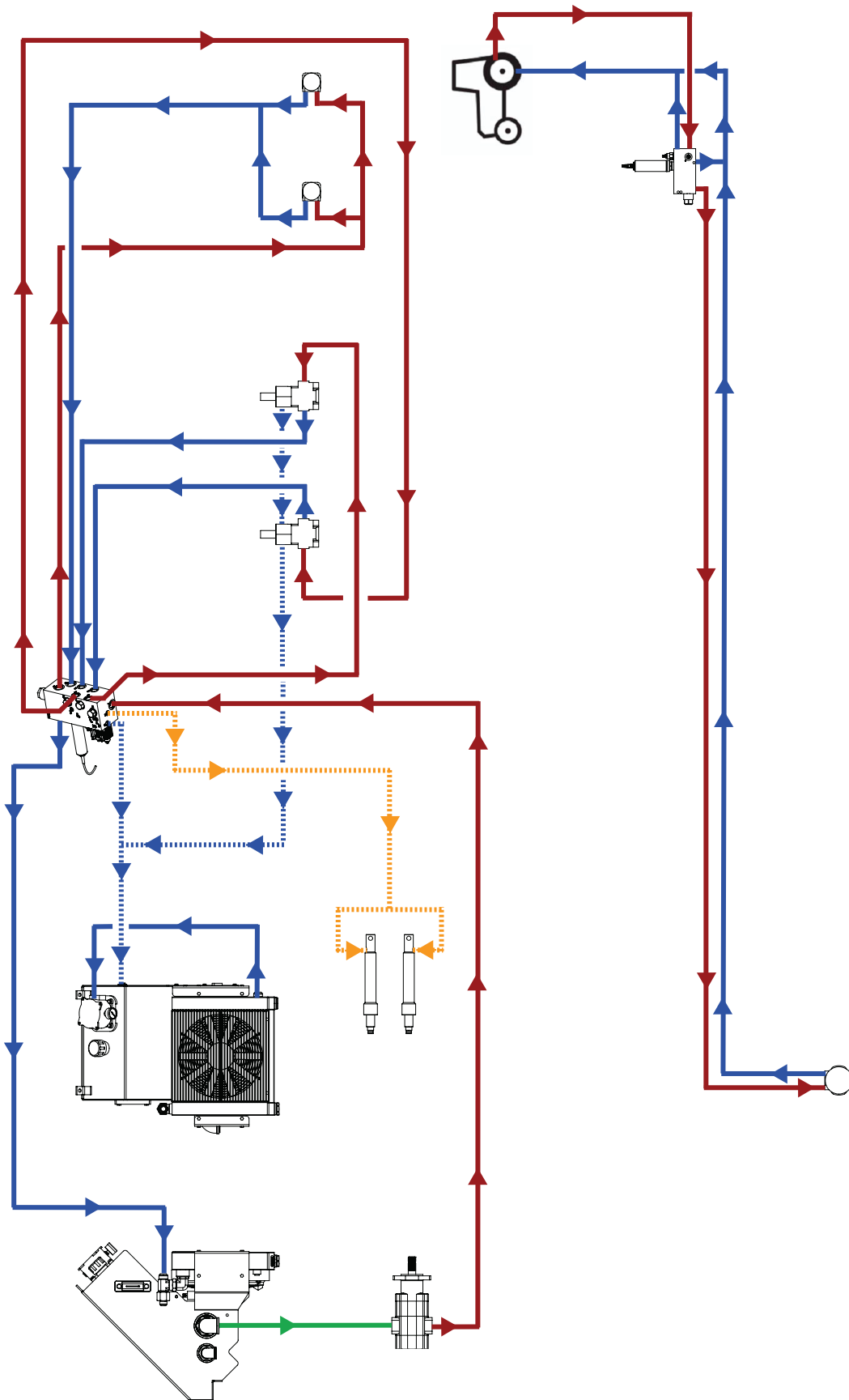


Valve Block - Face



Valve Block - Rear (cut-away)

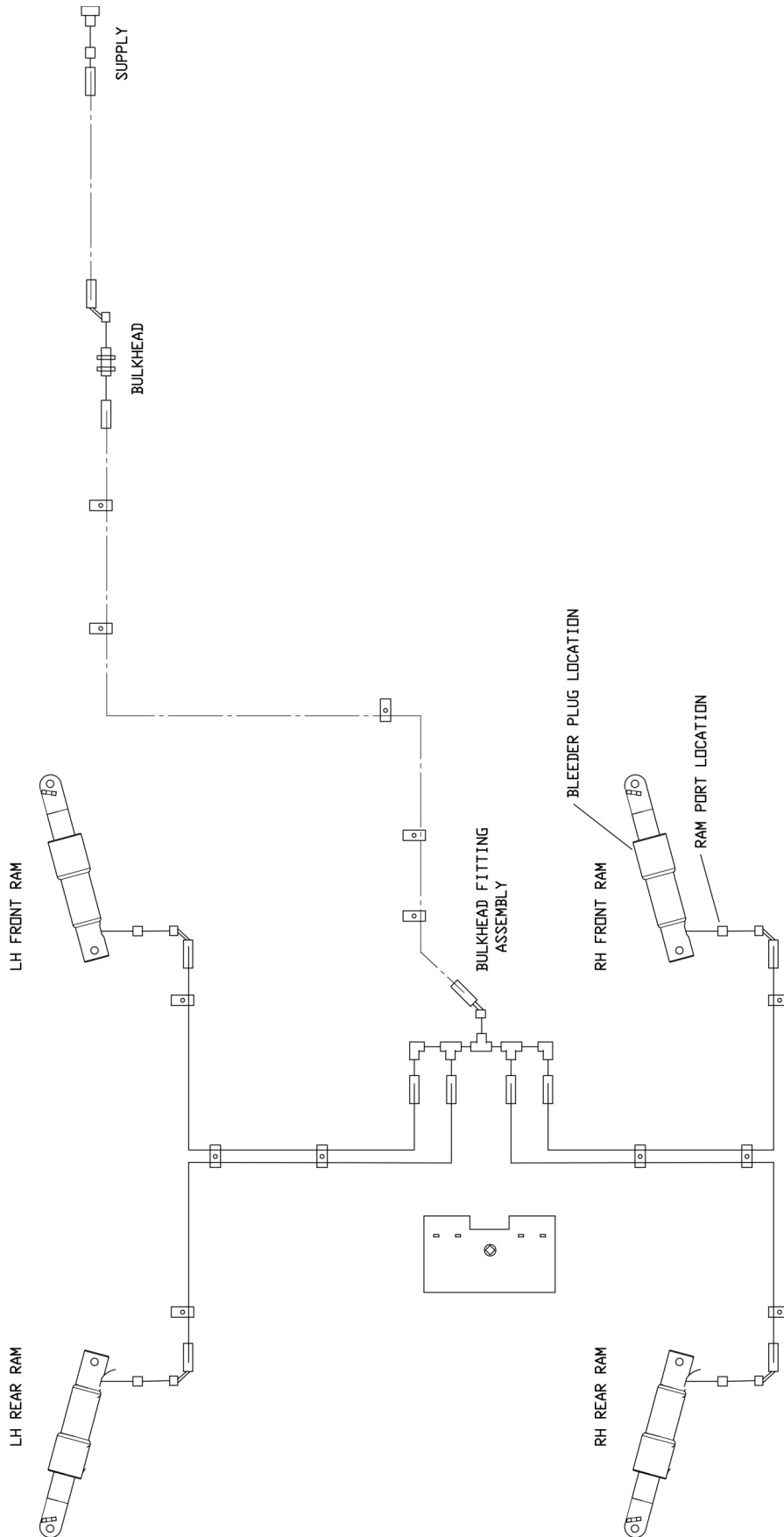




LEGEND

(HIGH PRESSURE)	CONTROL FLOW
(HIGH PRESSURE)	EXCESS FLOW
(LOW PRESSURE)	RETURN FLOW
(LOW PRESSURE)	CASE DRAIN
(LOW PRESSURE)	SUCTION FLOW
(LOW PRESSURE)	PRESSURE ONLY
(HIGH PRESSURE)	BIDIRECTIONAL FLOW
(HIGH PRESSURE)	LOAD SENSE

Hydraulic Schematic - Trailer Brakes



This page is intentionally left blank.

CONTROLLER

CONTROLLER

Introduction

ISOBUS is a protocol standardizing communication between chassis, displays, farm management software, and implements. Adhering to ISO 11783 standards, ISOBUS allows chassis and implements of different colors to share information through a common display. The use of ISOBUS technology allows the end user to minimize the number of necessary monitors in the cab of the chassis, while still enabling full functionality of the implements. The data displays the same way on any monitor.

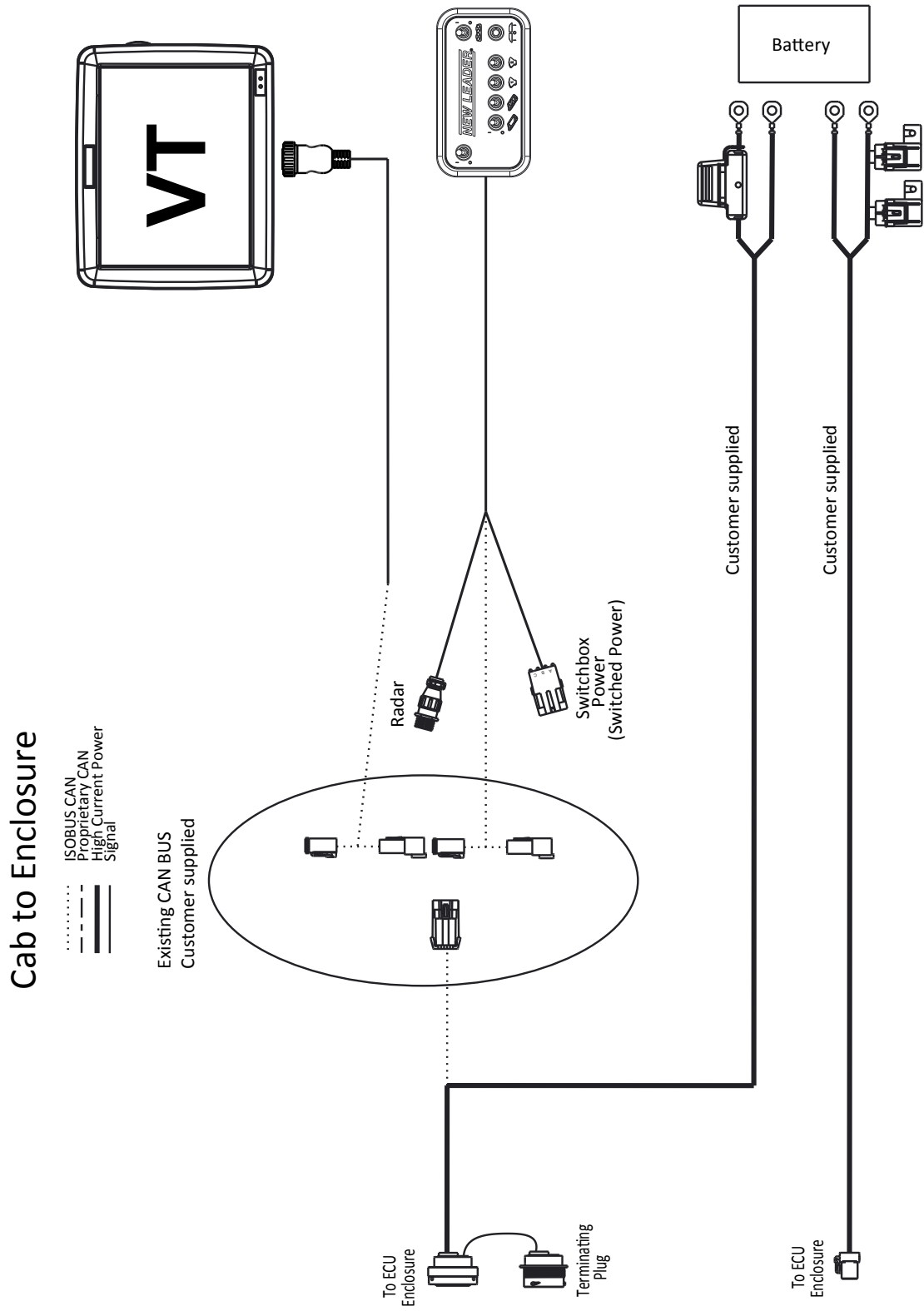
How the ISOBUS Works

The BUS is a distinct set of conductors designed to carry data and control signals within a system of parallel connected equipment. Information from the equipment modules is transmitted through the BUS to a Virtual Terminal (VT) in the cab. The Virtual Terminal (VT) uploads a User Interface (UI) which feeds into any Display Monitor. From one Display Monitor, the user can read information and make control changes to the implement(s). Since everything is virtual, multiple implements can be controlled with one monitor by switching back and forth between different VT's.

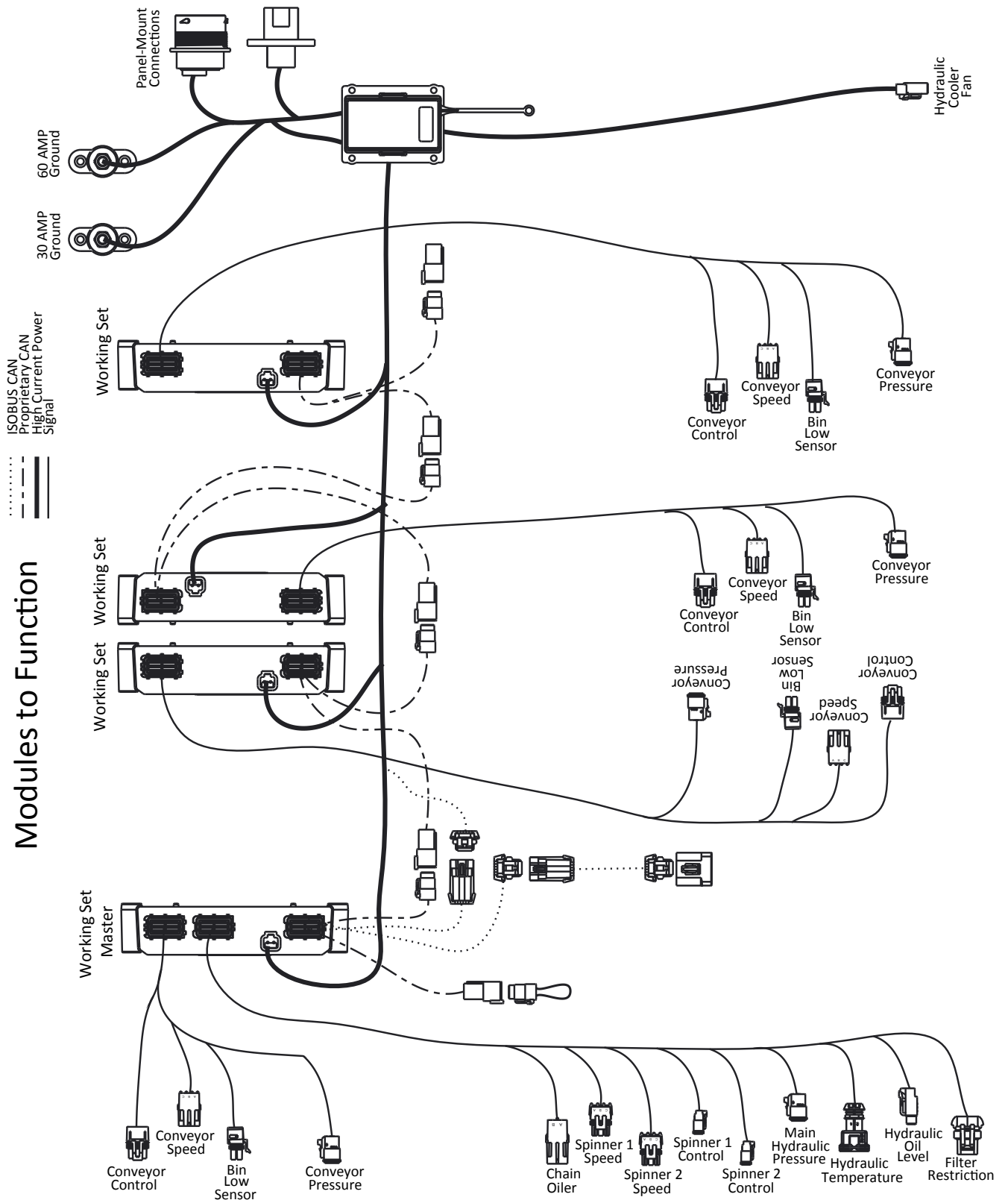
Terminologies

- ISOBUS - An electronic communications network used on agricultural and forestry equipment that adheres to the ISO 11783 standards.
- VT (Virtual Terminal) - The electronic interface that resides within the system, rather than on the Display Monitor. By being virtual, the information will display consistently the same on any monitor being used.
- UI (User Interface) - The displayed information and controls the user interacts with on the Display Monitor to make any necessary changes to implement performance.
- ECU (Electronic Control Unit) - New Leader module that controls specific functions of the implement and is attached to the BUS.
- Task Controller - A crucial software component that resides within the Virtual Terminal and is required to provide support for Data Logging, Variable rate application via prescription maps, and on/off implement section control via AutoSwath.
- CANBUS - A CAN (Controller Area Network) BUS system is a vehicle bus standard that allows microcontrollers and devices to communicate with each other within a vehicle without a host computer.
- Display Monitor - The physical monitor used in the cab that communicates with the VT to run the implement(s) and display data from the operations.

Cab to Enclosure Diagram



Modules to Function Diagram



Requirements

System Requirements:

- Virtual Terminal version 3 that supports AUX-N functionality
- Task Control (Multi-product up to 4 bins)
 - TC-BAS
 - TC-GEO
 - TC-SC

Function:

- VT will load New Leader UI and assign functions to in-cab switches.
 - Ability to track totals.
 - Ability to log as-applied maps and load prescription maps.
 - Ability to activate section control or AutoSwath.

Navigation

To activate the New Leader Controller Interface, power up the monitor and activate the VT settings. For instructions on how to activate the VT, see the Manufacturer's Operations Manual for the specific monitor being used.

Activation of VT will bring up the New Leader Home Screen, also called the "Run Screen", as shown in Figure 1.

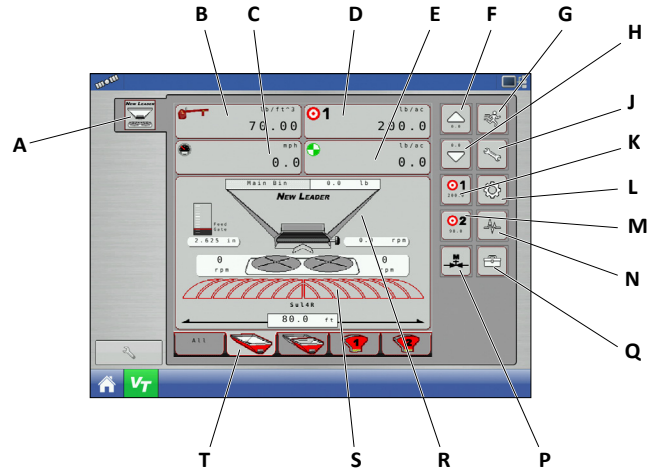


Figure 1 - Home Screen
















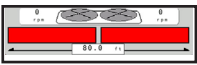

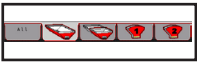
A		Spreader Operations	K		Target Rate 1
B		Density	L		Calibration
C		Speed Source	M		Target Rate 2
D		Target Rate	N		Diagnostics
E		Actual Rate	P		Manual Conveyor Mode
F		Increase Rate Value	Q		Tools
G		Run Screen	R		Bin/Gate settings
H		Decrease Rate Value	S		Spinner Settings
J		Settings	T		Bin Selection

Figure 2 - New Leader Home Screen

An on-screen Numeric Keypad is made available for changing configuration settings and calibration numbers. Press the keypad button to access the on-screen numeric entry screen. Keypads may look different depending on VT being used.

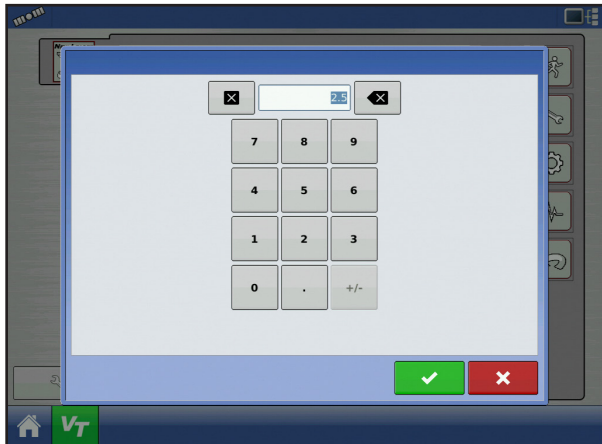


Figure 3 - Numeric Keypad

Navigation Control Buttons



Back Button



Forward Button



Return to Previous Screen



Accept Entry



Cancel


Machine Configuration

NOTE: Refer to default settings table at end of controller section for factory setup defaults.

NOTE: Before use, Display Monitor must be setup to enable VT connection and a machine configuration may need to be built. See Manufacturer's Operations Manual for detailed instructions on these processes.


Initial Configuration/Factory Setup

(Only seen on first boot, or if system is reset/reconfigured)

- Power up Display Monitor and activate VT.
- Alert screen appears identifying that system is not configured. Press  to continue.




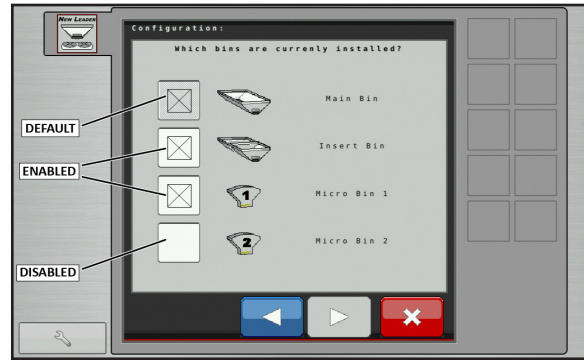
Overview of attached modules:

- Number of spreader modules will be shown along with any add on modules. Press  to continue.







Enable Installed Bins

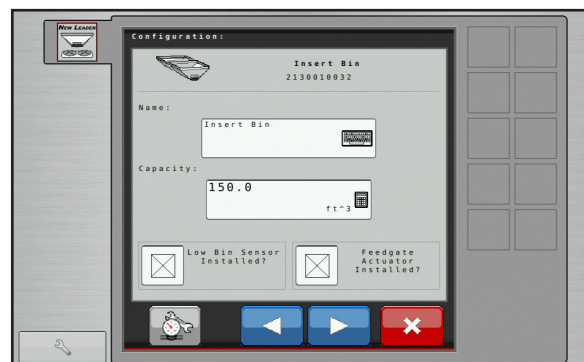
- Enable all bins that are installed on the unit by pressing the button next to each. A will appear next to enabled bins as shown. Press  to continue.




Bin Settings


Bin settings include Name, Capacity, Bin Sensor, Feedgate enabled/disabled, and Pressure Transducer calibration.

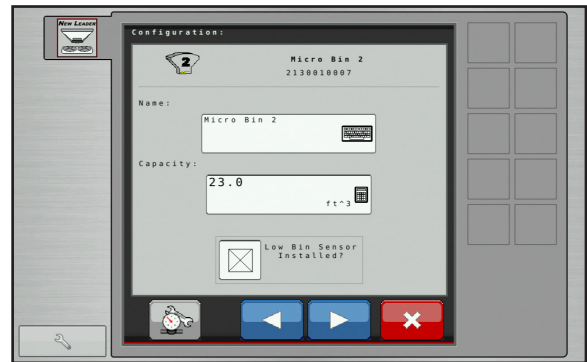
- Enter Capacity for Main Bin using keypad. Enable or disable bin level sensor as required. Press  to edit pressure transducer settings. If standard transducers are being used, press  to continue.
- Enable transducers and set calibration settings as necessary (adjust only if standard HECO provided transducers are not being used). Press  to continue.
- Repeat step 3 for MultiApplier or MultiBin Bin 2 as necessary. Press  to continue.



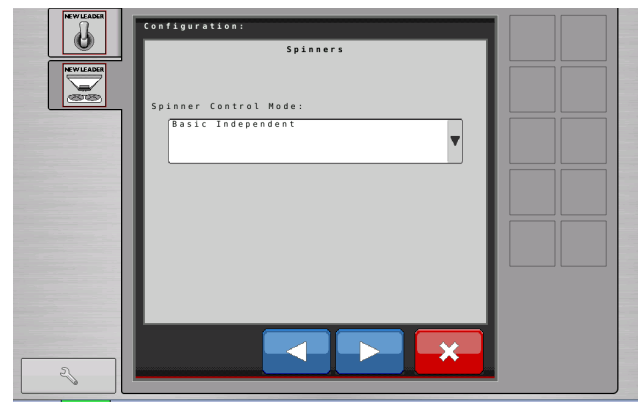
- Repeat step 3 for MultiBin Micro 1 as necessary. Press  to continue.



- Repeat step 3 for MultiBin Micro 2 as necessary. Press  to continue.




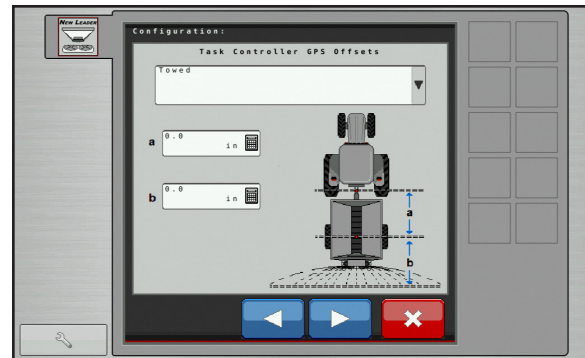
- Monitor- open loop control with spinner speed read out.
- Basic Single- Closed loop control for one PWM valve- Used on L4000
- Basic Independent- Closed loop control for 2 PWM valves- Used on L4500



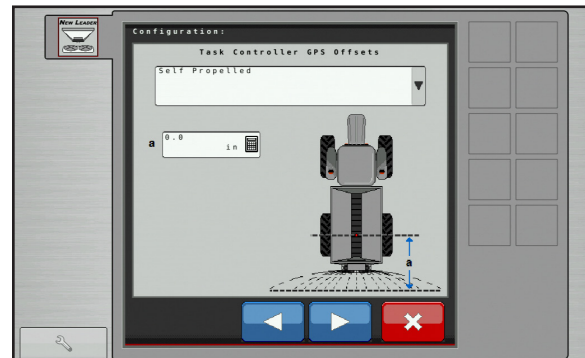
GPS Offsets

Editing the task controller GPS offset settings will determine drop point of material behind chassis.

- Select Towed or Self Propelled and enter GPS Offset using keypad.
- For single axle towed units, enter the distance from the center of the hitch pin to the center of the axle (a). Then enter the distance from the center of the axle to the center of the spinner disc (b).
- For self-propelled units, enter the distance from the center of the rear axle to the center of the spinner disc (a).
- NOTE: For units and trailers with tandem axles, use the center of the tandem for measurement reference point.
- Press  to continue.



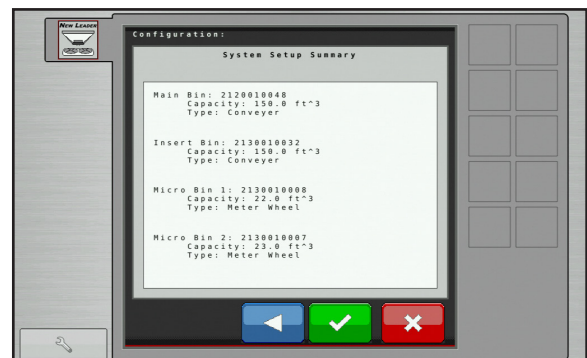
Towed



Self-Propelled

System Setup Summary


- Verify all settings are correct. Press  to continue or  to go back and adjust as necessary.



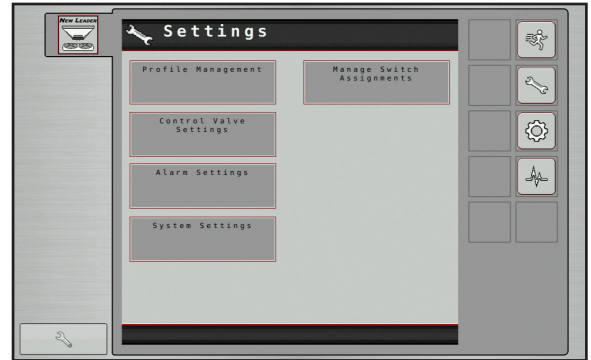
Configuring Auxiliary Switches

- Switches must be configured before calibration.
- Switchbox switches need to be mapped. Use the Display Monitor's operations manual to map all switches as necessary.

Settings

Changing machine calibrations allows operator to enable/disable bins, adjust valve calibration numbers, change alarm settings and reset modules. On the Home Screen, press  to change these settings:

Press  to to enable/disable bins.

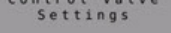


Enable/Disable Bins

- Each Installed Bin (as set up in Step 4) will appear. Press each "Enable" button to enable or disable each bin as appropriate for the current job.



Valve Calibration Adjustment


- Press  to adjust valve calibration numbers.

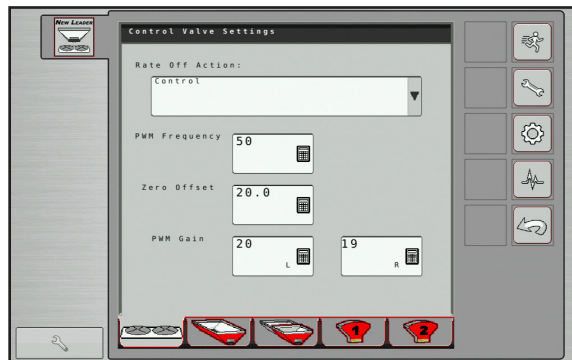
NOTE:

Default values are not fine tuned and may result in a slower response time than desired. Adjust at first time start up and when valve is replaced.



Controller Operations

- Press  to set spinners. Enter appropriate settings:
 - PWM Valve settings:
 - "Monitor" - no PWM control
 - "Control" - tries to maintain spinner speed at all times regardless of available hydraulic flow. Best for hydrostatic or CVT drives.
 - "Hold" - Preserves last PWM signal to valve when conveyor is deactivated. Best for geared transmissions with gear pumps.



- PWM Frequency - Frequency that PWM control valve is pulsed at. Settings can be found from valve manufacturer.
- Zero Flow Offset - Represents maximum duty cycle sent to control valve without producing any hydraulic flow from. Increase this number to hit target rate sooner.

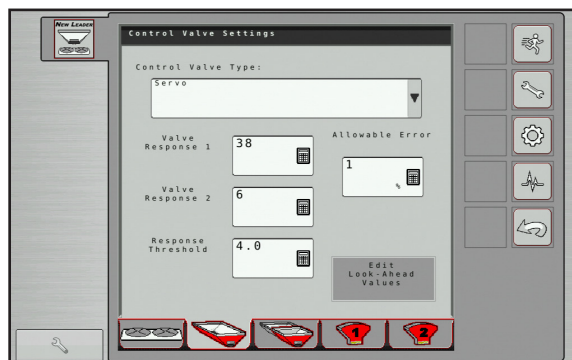
IMPORTANT! Setting Zero Flow Offset too high will cause spinners to overshoot Low Spinner Speeds and could cause delay in reaching set speed. Adjust as needed in small increments.

- PWM Gain - Determines how aggressively control valve responds when making rate adjustments. Higher value means more aggressive system response.

IMPORTANT! Setting PWM Gain too high spinners will become erratic. Adjust as needed in small increments.

- Set Conveyors by selecting each bin at bottom of screen.

NOTE: If using PWM valves instead of Servo valved, select "PWM" from "Control Valve Type" list and enter settings as per notes on Spinner valves and test for accuracy.



NOTE: Setting value too low can cause product control system to continually hunt for target application rate. Setting too high will cause excessive product application error and a delay in target rate being reached.

SERVO

Enter appropriate settings:

- Valve Response 1 - Determines speed of servo valve when product control error exceeds Response Threshold setting. Represents fast speed of servo valve. Decreasing value will cause servo valve to run slower. Default setting is 40%.
- Valve Response 2 - Determines speed of servo valve when product control error is less than

Response Threshold setting. Represents slow speed of servo valve. Decreasing value causes servo valve to run slower. Default setting is 8%.

- Response Threshold - Determines where control channel switches between using Valve Response 1 and Valve Response 2 speed setting. Leaving all other valve control settings at default value and making small adjustments to this setting is usually all that is required to fine-tune system performance. Default setting is 4.

NOTE: Decreasing Response Threshold value will have overall effect of speeding up servo valve response. Increasing Response Threshold value will have overall effect of slowing servo valve response.

- Allowable Error - Determines the percent of error that is allowed prior to product control system making any flow rate changes. 2% - 3% is normal dead band setting range.

PWM

- **PWM Frequency**

- Frequency that the PWM control valve is pulsed.
- Settings can be found from valve manufacture
- Do not adjust

- **Zero Offset**

- Represents the maximum duty cycle sent to the control valve with out producing any hydraulic flow.

- Increase this number to hit target rate sooner
- Note: Setting this value too high will result in constant overshooting of the target rate.

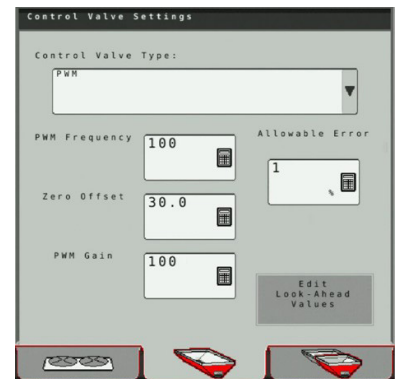
- **PWM Gain**

- Gain determine show aggressively the control valve responds when making rate changes. Higher the value means more aggressive system response.

- Note: Setting this value too high will result in erratic operation.

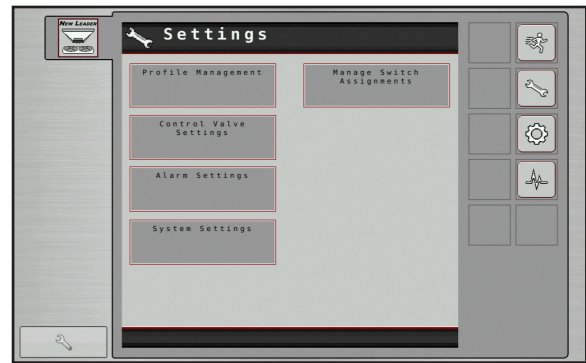
- **Allowable Error**

- Is the percent of error that is allowed before the product control system makes any f Color low rate changes.

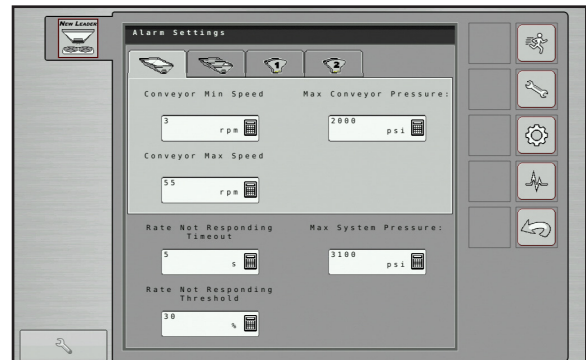


Alarm Settings

- Press  to adjust alarm settings.



- Edit each Alarm setting as desired.

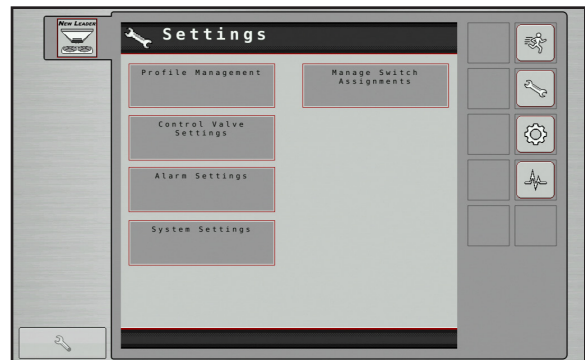


Reconfigure System

NOTICE!

Pressing "Reset" under "System Settings" will restore all settings to factory default and all calibration numbers will be lost. It should only be pressed if instructed to do so by service technician or New Leader product support.

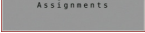
- Press  to reset/reconfigure system.

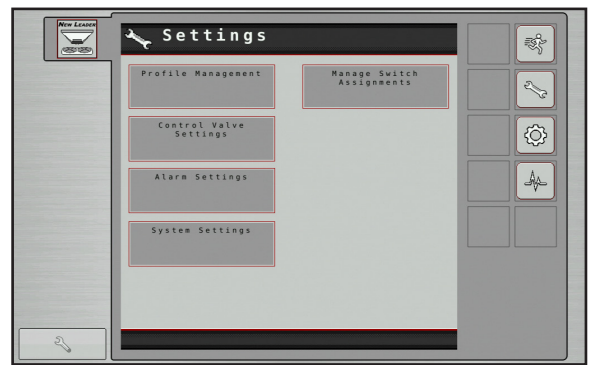


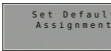
- "Reconfigure" allows the user to adjust any of the system settings made during first time start up ("Machine Configuration" steps). "Reset" will restore all settings to factory default and all calibration numbers will be lost.
- Display will then jump to GPS offset screen. See "GPS Offsets" in this section for details.



Switch Assignment

- Press  to show connected devices.




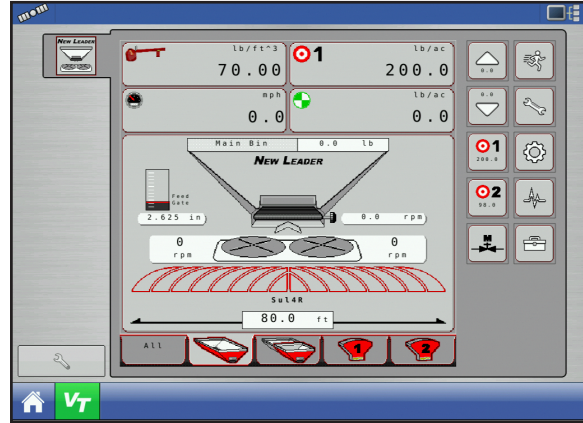
- Connected devices will appear in the device list.
- If using a New Leader switch box, press  to automatically map the switches to the correct function.






Component Calibration

NOTE: Before regular use, system must be calibrated to ensure accurate spreading.

- Power up Display Monitor and activate VT.
- The Run screen will appear. Press  to continue.



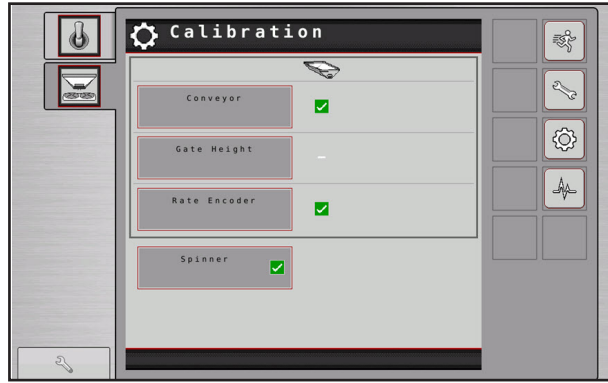
Spinner Disc Calibration


- Press  to calibrate spinner discs.
- Use keypad to edit numeric setting as necessary:
 - Standard spinner discs, set to 4.
 - If using 5 fin discs, set to 5.
 - If using 6 fin discs, set to 6.
 - Press  to accept change and continue,
 - or  to cancel.



Calibrate Rate Encoder

1. Press **Rate Encoder** to calibrate encoder.



2. Use keypad to edit setting as necessary. Enter 180 or 360 as labeled on back of encoder. Press  to continue.



This page is intentionally left blank.

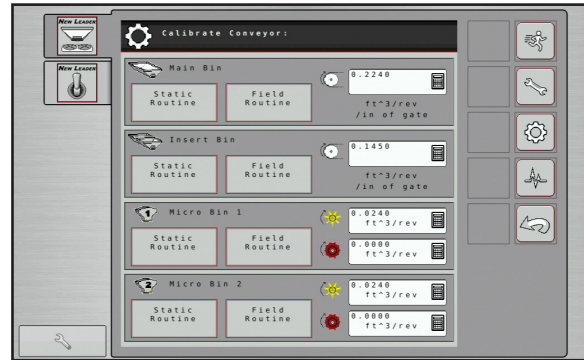
Conveyor Calibration

IMPORTANT!

For best results, a catch test must be done for each product to be spread before season begins, or any time a new supply of product is received.



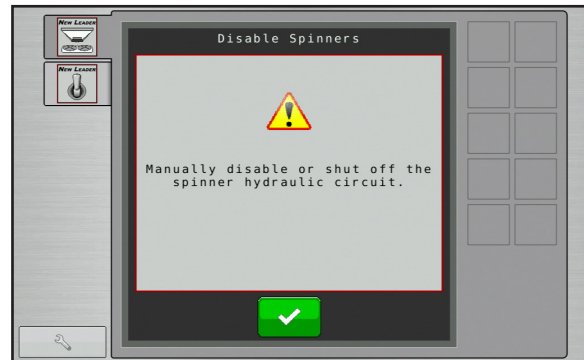
- Press **Conveyor** to calibrate conveyor.
- Manually enter cubic feet per revolution (CFR) rate using keypad.
- To begin catch test, press **Static Routine** for the bin to be tested.
- To perform in-field calibration, press **Field Routine** for the bin to be tested.



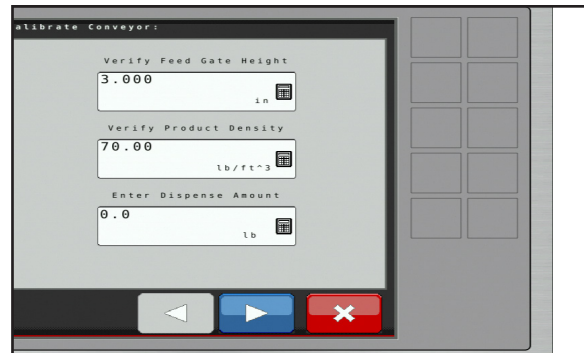
WARNING







Do not work near rotating spinners. Severe injury can result from contact with moving parts. Failure to comply with this requirement could result in death or serious injury.

- Spinners will automatically shut off. For added safety, disconnect PWM valves. Press **✓** to continue.




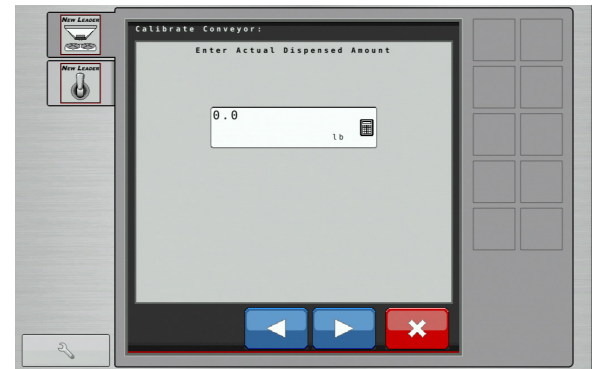
- Verify Feed Gate Height and Product Density are correct. Use keypad to edit as needed. Enter Dispense Amount using keypad. Press **▶** to continue.
- Bring engine up to full operating RPM.




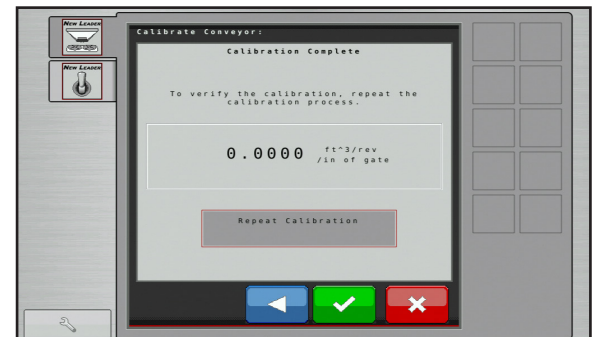
- Using the control buttons    (Reset, Run, Stop), run a catch test. If spreading product that has already been tested, press  to continue. To begin a test, press . Conveyor will run.
- Once controller dispenses specific amount, conveyor will stop. Press  to continue.




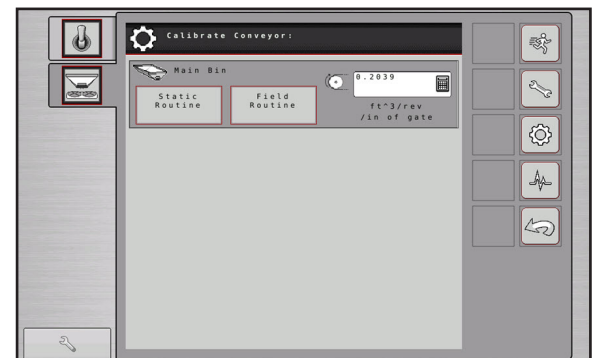
- Weigh material dispensed and enter actual weight of material dispensed. Press  to continue.




- It is recommended a minimum of three (3) tests be done PER PRODUCT to ensure accuracy. Once each test is done, press "Repeat Calibration" to run a subsequent test. When finished, press .

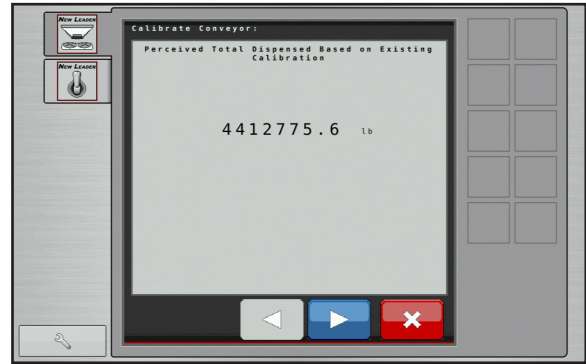



- The main Calibration screen will appear. To calibrate with a known amount brought to a field, press .

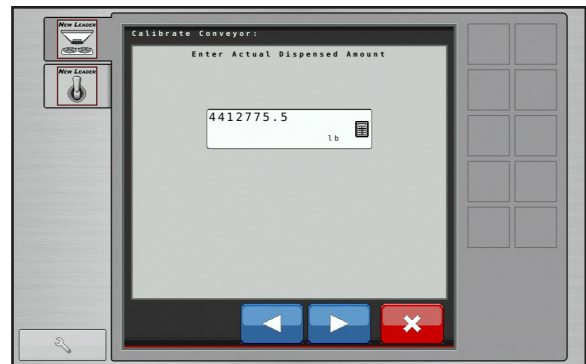



Note: Field totals can be reset from Summary Screen if needed.

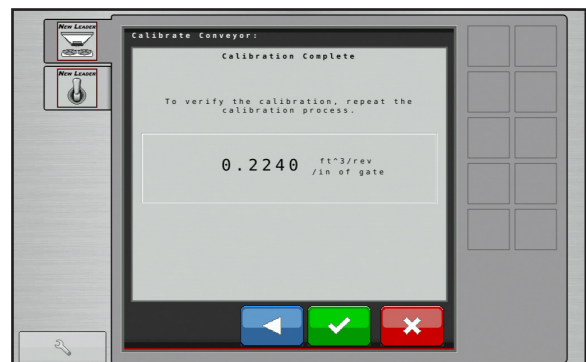
- After dispensing product in field, screen displays system perceived total of dispensed product. To enter actual dispensed amount, press .



- Using keypad, enter actual weight of product dispensed. Press  to continue.



- New cubic feet per revolution (CFR) rate will be displayed. Press  when finished.



Operations/Features

Create New Job

The following is a guide for running system for first time.

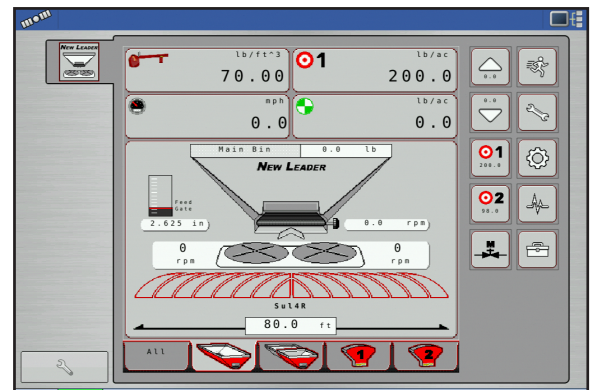
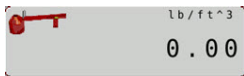
1. Create Job in display.



This operation will vary from display to display. Refer to display manual on how to create a job using Task Control. When finished, activate VT.

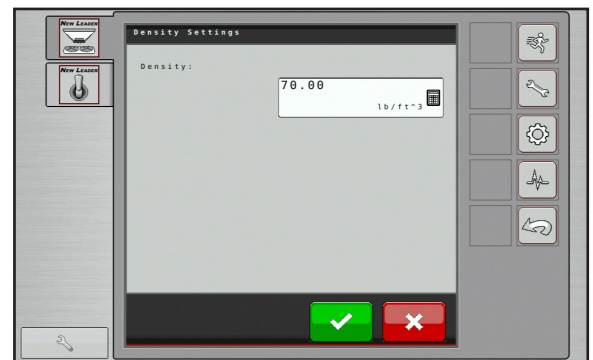
2. Verify Product Density.

Material Density will vary from product to product. It is imperative that correct density is entered in controller for rates to come out correctly.

- To change product density, press

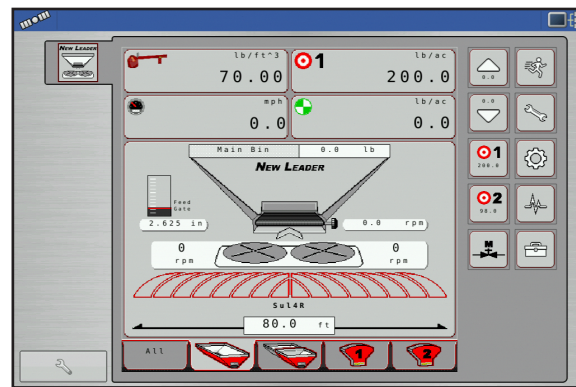


- Use keypad to enter density. Press  to accept change and continue, or  to cancel.



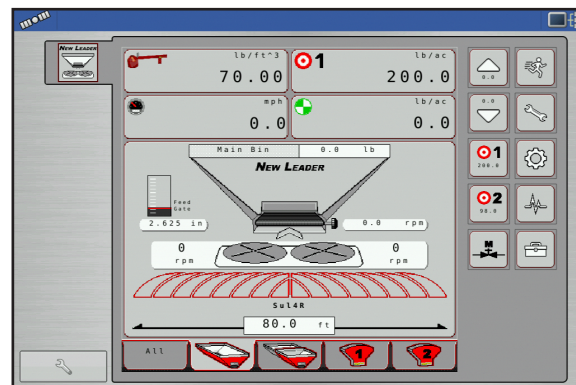
3. Verify task control in Target Rate 1.

- Rate will be driven by job setup in display. To verify this, TC should show in place of target rate 1. If not, verify job has been created correctly. Refer to display manual.

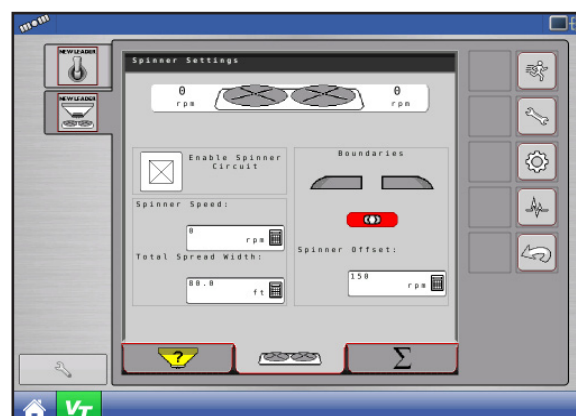


4. Verify total spread width and spinner speed:

- Different products may require different spread widths or spinner speeds. Always verify the material profile is configured correctly before applying product.
- Edit current profile or create a new one if necessary. See "Material Profile Management" for details.

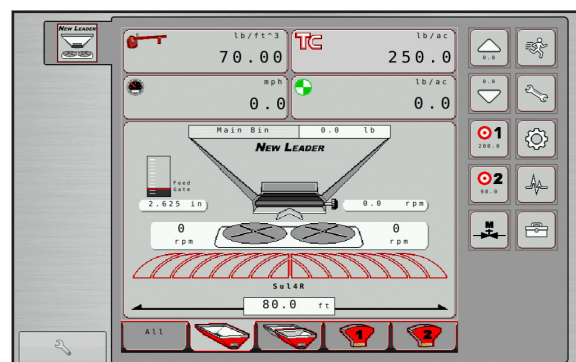


- Enable Spinner Circuit. Using keypads, enter Spinner Speed and Total Spread Width. If desired, enter Spinner Offset (see Boundary Spreading section of this manual for instructions).

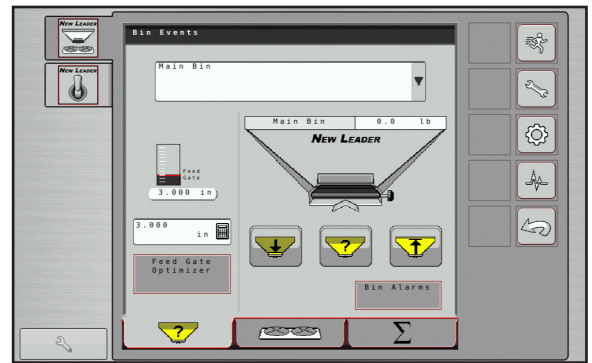


5. Verify gate opening:

- Press  to set bin levels and change gate opening.



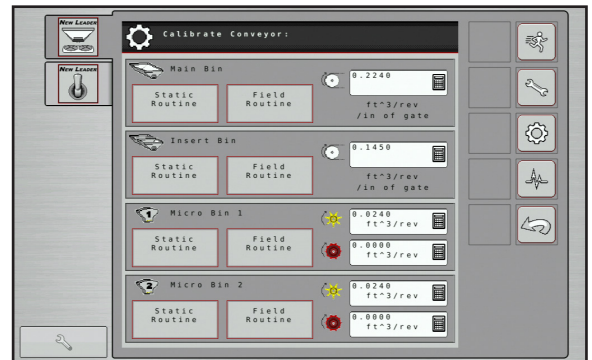
- Use keypad to set feedgate opening to correct reading.



6. Verify CFR number is correct:

Different products may require different calibration numbers. Verify the CFR number is correct before applying product.


- Press  then .
- Use keypad to change CFR number as needed.

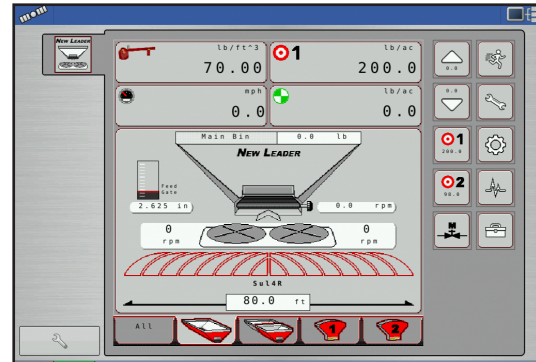



Feedgate Optimizer

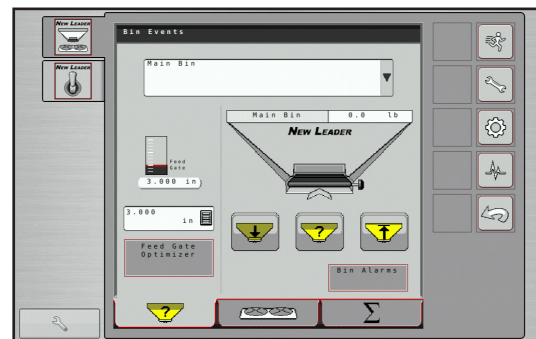
NOTE: This program will help to determine the ideal gate position for each specific application, based on speed, swath width, density, and application rate.

1. Power up Display Monitor and activate VT.

- The Run screen will appear. Select appropriate bin button at bottom of screen. Press  to continue.

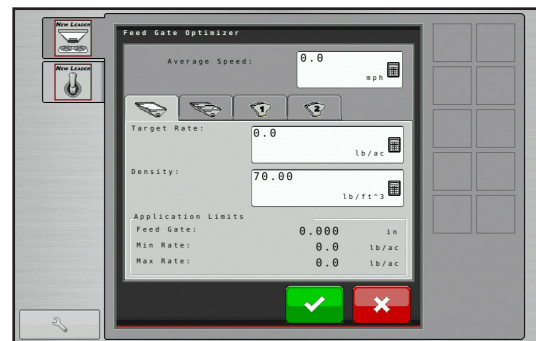


- The Bin Events screen will appear. Press  to continue.





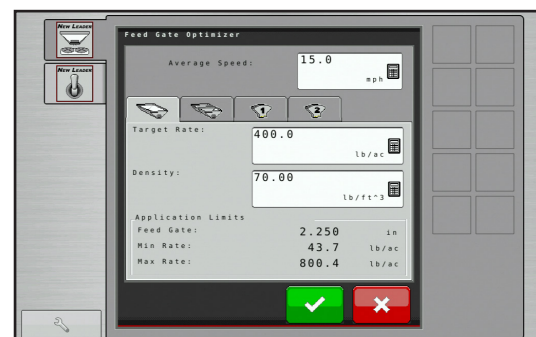
2. Enter average speed and target rate:

- The Feedgate Optimizer screen will appear. Using keypads, enter Average Speed and Target Rate into appropriate fields for each bin.




3. Accept recommended settings:

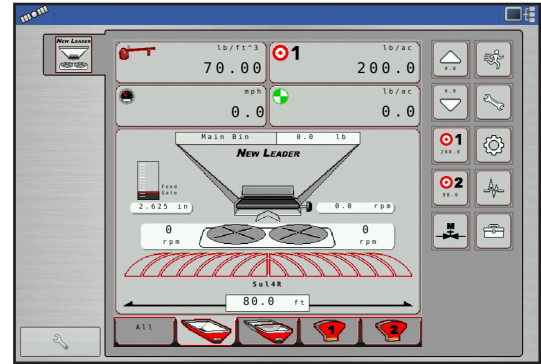
- Recommended feedgate opening will be displayed along with minimum and maximum rates. If  is selected, new feedgate setting will save and automatically move to proper height. If  is selected, new settings are ignored and system settings are kept.




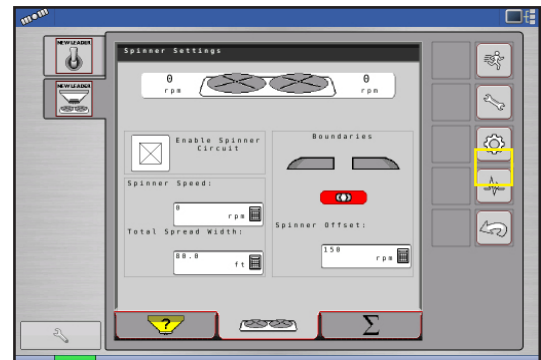
Boundary Spreading

NOTE: This program allows the operator to independently modify spinner speeds to change the width of spread to either side, creating a "boundary" line to maximize spreading efficiency.

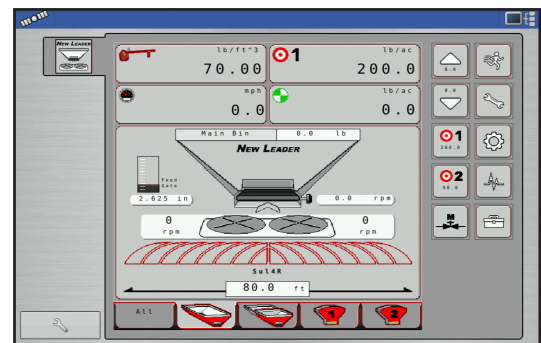
- On the Run Screen, press  to access spinner settings.



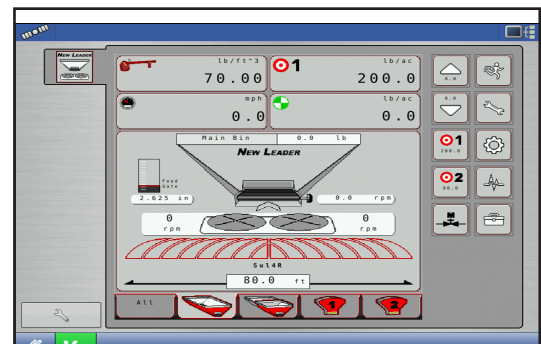
- Enter spinner offset:
 - The Spinner Settings screen will appear. To create a Boundary, use the keypad to enter a specific Spinner Offset. Spread pattern tests should be completed for each product to be spread to determine best offset settings, based on density, crush strength and size. See "Spread Pattern" section for details. Press  to save and return.



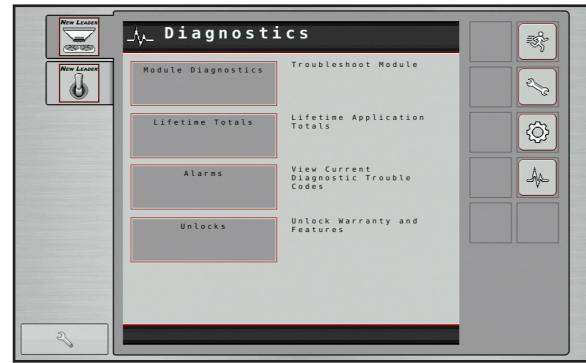
- Enable boundary spreading:
 - When running normally, Run Screen will display all swath sections normally. To activate the Boundary, flip the spinner switch on the switch box to the side that the boundary is on.
 - EXAMPLE: If spreading with a boundary to the right hand side in relation to direction of travel, flip the switch to the right to limit the spread pattern on the right hand side.




- When Boundary is activated, Run Screen will display with the outer swath section darkened on the boundary side (right hand boundary activation shown).



- To view unlocked features, press



- Current unlocked features will display. Press "Unlock" to display module serial number and registration number. Press  to return.




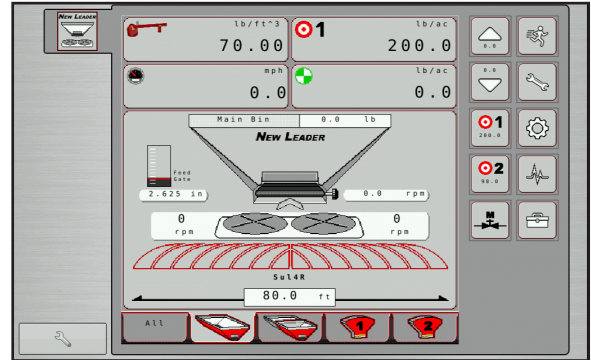
Hydraulics


NOTE:

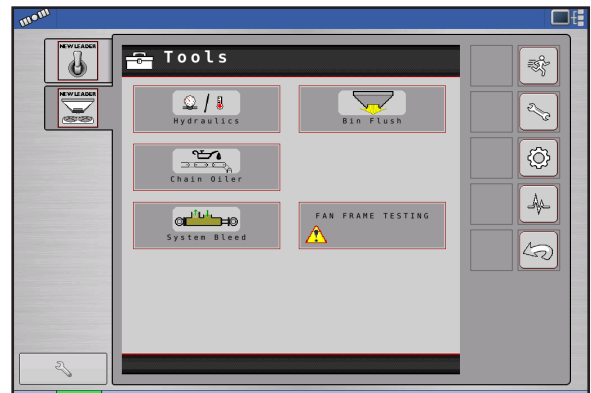
This program will show a visual representation of hydraulic monitoring, including system pressure, temperature, conveyor pressure, and indicators for low fluid level and filter restriction. Individual bins can be viewed by pressing the bin icons along the bottom of the screen.

1. Power up Display Monitor and activate VT.

- The Run screen will appear. Press  to continue.





- The Tools main screen will appear. Press  to continue.



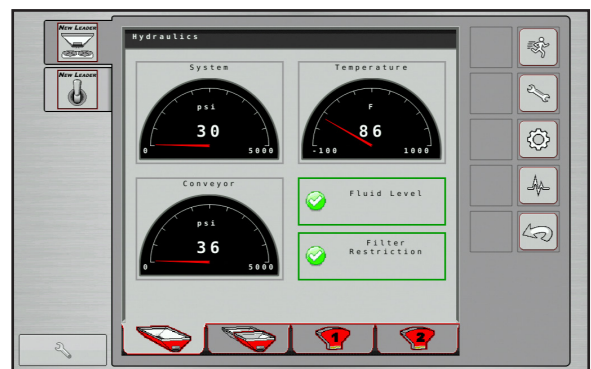
2. View hydraulic monitoring:

- Hydraulics - System pressure, Temperature, and status of Fluid Level and Filter Restrictions will show system wide.

- Conveyor Pressure will display for Bin 1, and cumulatively for Bins 2 - 4 as equipped.

- Fluid Level and Filter Restriction status are shown in the lower right hand corner. When within acceptable levels, the boxes are outlined in green and display a  (as shown). If fluid level is low or if filter is restricted, the box will be outlined in red and display a .

- Press  to return to Tools Screen.




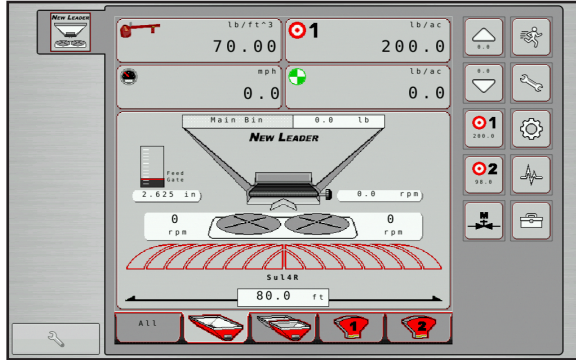
NOTE:


If the spreader does not have an onboard hydraulic reservoir, fluid temperature, fluid level and filter restriction are not accurately displayed.

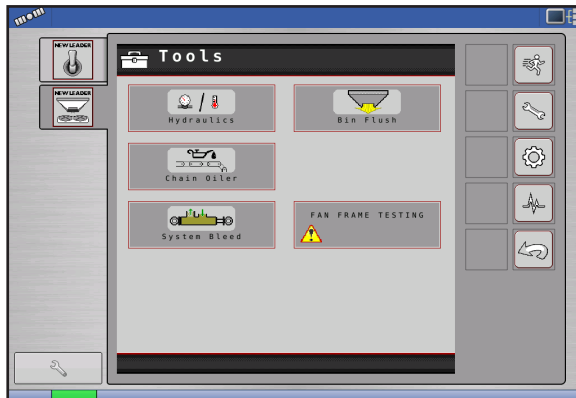
Bin Flush

NOTE: This program is used to quickly empty each bin. Spinners will automatically shut off and allow the operator to select which bins to empty.

1. Power up Display Monitor and activate VT.
 - The Run screen will appear. Press  to continue.




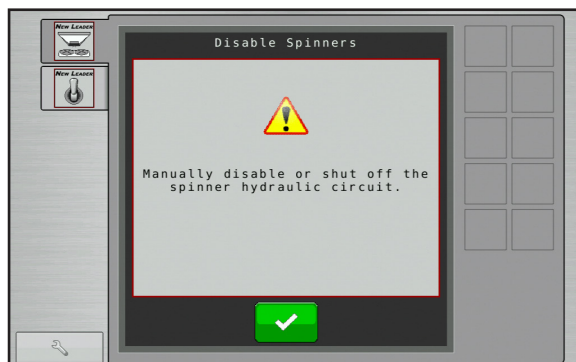
- The Tools main screen will appear. Press  to continue.



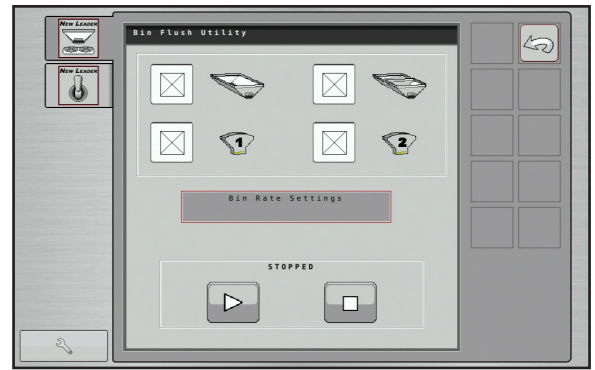
WARNING Do not work near rotating spinners. Severe injury can result from contact with moving parts. Failure to comply with this requirement could result in death or serious injury.

WARNING For added safety, unplug PWM valves to ensure spinners cannot run while in Bin Flush mode to avoid injury. Failure to comply with this requirement could result in death or serious injury.

- Bin Flush will automatically disable spinners. Press  to continue.

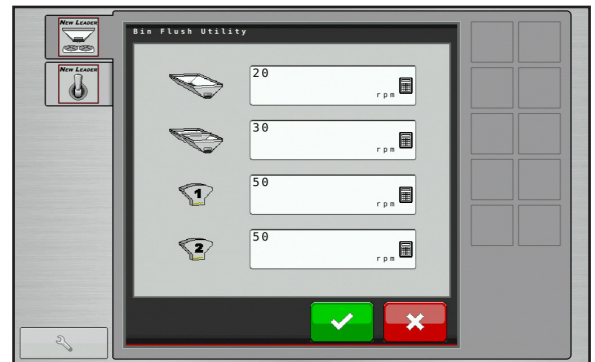


2. Select bins:
 - Select bins to be flushed by pressing enable buttons next to each. To adjust conveyor RPM for flush, press .




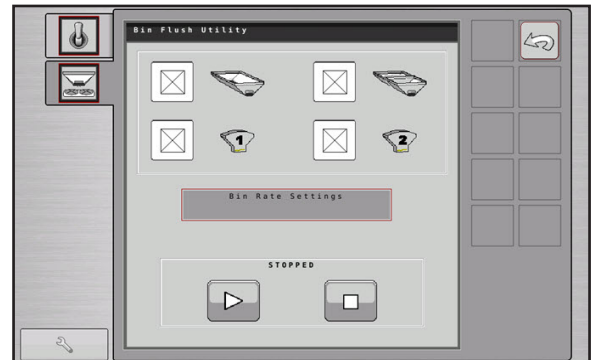
3. Set conveyor RPM:
 - Use keypads to set conveyor RPM for each bin. 20 RPM is default.
 - Bin 1 Maximum = 50 RPM
 - Bin 2 Maximum = 60 RPM
 - Bins 3 & 4 Maximum = 85 RPM

Press  to continue.




4. Perform bin flush:
 - To flush bins, press . Conveyors will run until  is pressed.

When process completes, press  to continue.




▲ WARNING

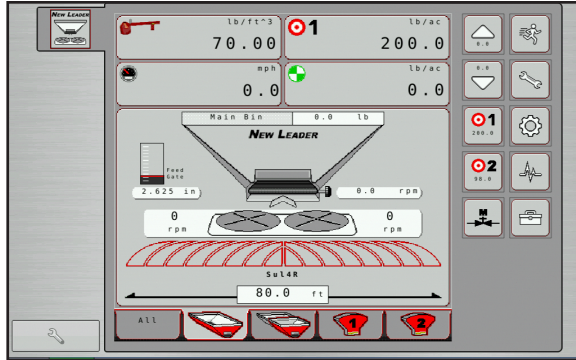
Do not work near rotating spinners. Severe injury can result from contact with moving parts. Failure to comply with this requirement could result in death or serious injury.


- When exiting Bin Flush process, spinners will restart. Plug PWM valves back in if it was previously disabled. Press  to continue.

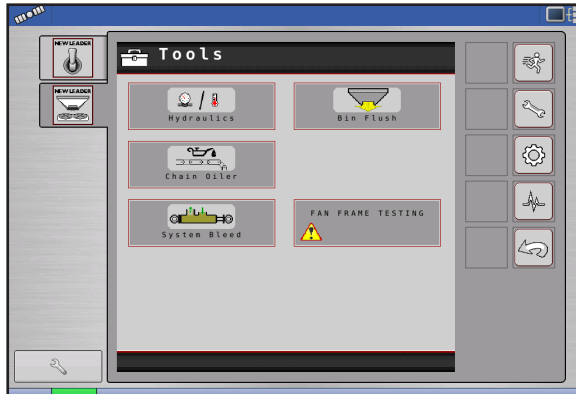


Body Module

1. Power up Display Monitor and activate VT.
 - The Run screen will appear. Press  to continue.

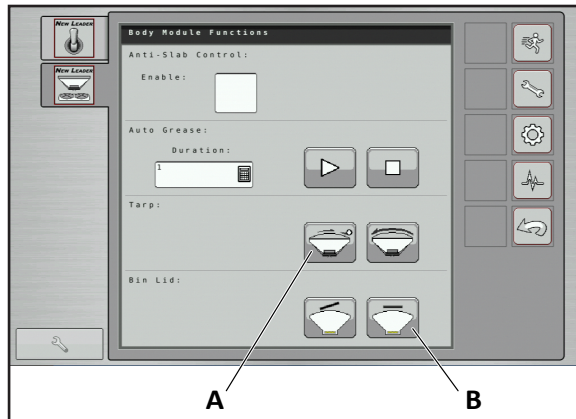


- The Tools main screen will appear. Press  to continue.



Bin Cover Control


- If equipped, press  (A) to open and close tarp.
- If MultiBin insert is installed, press  (B) to open and close Micro cover.

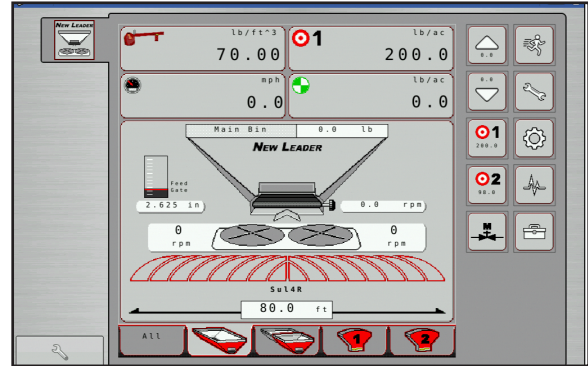


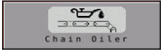
Chain Oiler

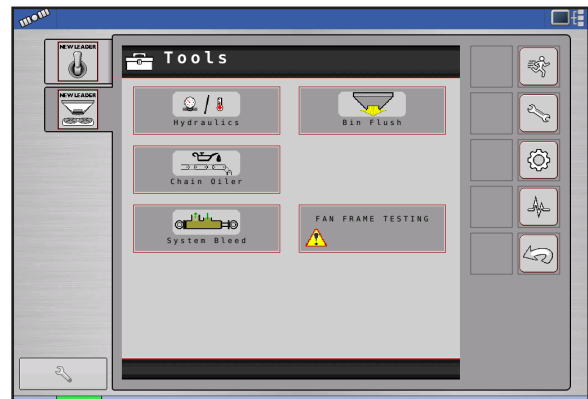
NOTE: This program is used to manually oil the chain, set alarm frequency, and set auto-lube settings.

1. Power up Display Monitor and activate VT.

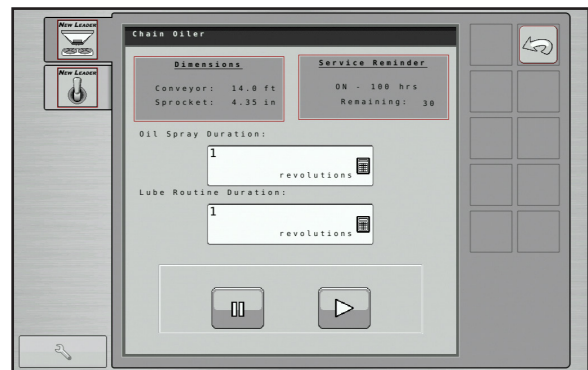
- The Run screen will appear. Press  to continue.




- The Tools main screen will appear. Press  to continue.



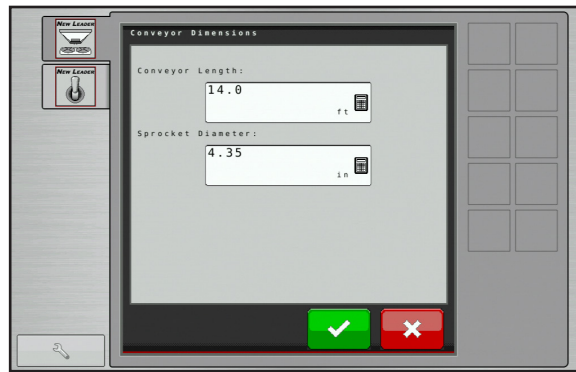
2. Set duration:
- Use keypads to set oil chain duration (recommended 1 revolution). Lube routine is not used at this time.





3. Set conveyor dimensions:
- Press "Dimensions" to input conveyor dimensions. Use keypads to input conveyor length and sprocket diameter.

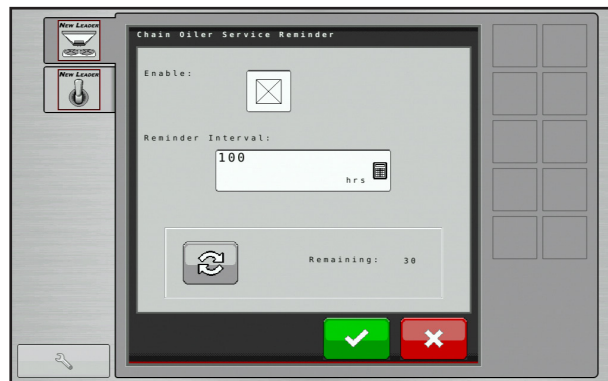
Press  to return to Chain Oiler screen.

Press  to return to Tools Screen.



4. Set service reminder:
- Press "Service Reminder" to set chain oiler reminder. Enable Reminder and use keypad to enter interval hours desired. To restart reminder after manually oiling conveyor, press .

Press  to return to Chain Oiler Screen.

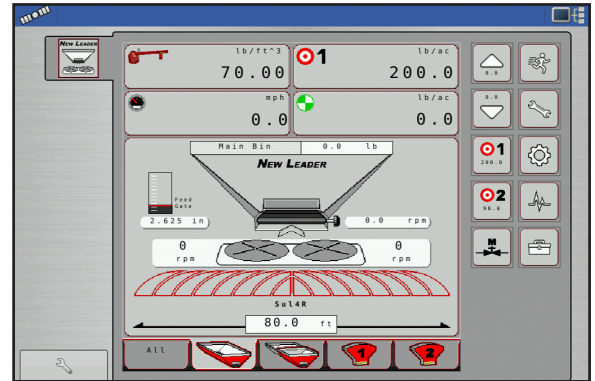



Bin Sequencing

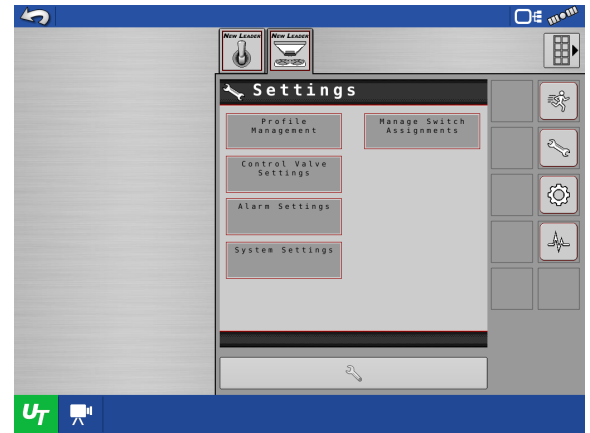
NOTE: This function allows the operator to run same product out of two bins, chaining them together so bin 2 starts emptying immediately after bin 1 is empty.

1. Power up Display Monitor and activate VT.

- The Run screen will appear. Press  to continue.



- The Tools main screen will appear. Press  to continue.



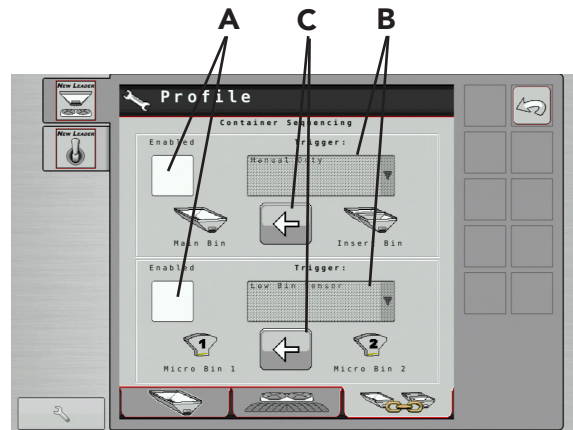
- Press the Bin Chaining tab at the bottom of the screen to continue.



2. Setup Bin Sequencing (Chaining):

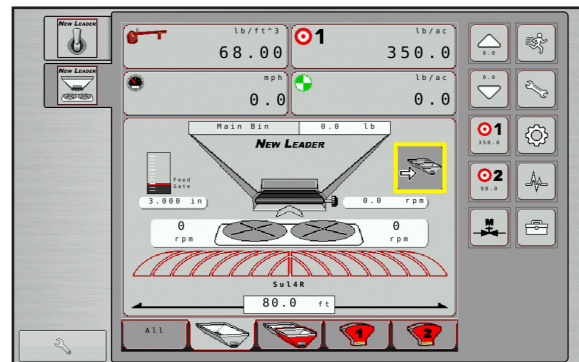
- A. Enable bin chaining for Bins 1 & 2, or Bins 3 & 4 as applicable.
- B. Select trigger type (Manual Only, Low Bin Threshold, Low Bin Sensor, Container Reaches 0).
- C. Select which bin to empty first by pressing arrow button until arrow points to second bin to empty. Figure at right shows Insert Bin emptying first and Main Bin second; Micro Bin 2 emptying first and Micro Bin 1 second.

Press  to continue.



3. To manually switch bins:

- When Bin Sequencing is enabled, Manual Override button appears on Run Screen to force switch over to next bin.



General Alarms

Alarm	Title	Description
WSM Spreader Module	Local CAN Bus Error	Check the local CAN bus connection.
WSM Spreader Module	Module Software Reset	The module software reset due to an unhandled error.
WSM Spreader Module	Local CAN Bus Warning	Check the local CAN bus connection.
WSM Spreader Module	Local ISOBUS Error	Check the ISOBUS connections.
WSM Spreader Module	Local ISOBUS Warning	Check the ISOBUS connections.
WSM Spreader Module	CAN Power Voltage Low	The CAN power voltage is below 8.0 volts. Check CAN bus power supply.
WSM Spreader Module	High Power Voltage Low	The high power voltage is below 10.0 volts. Check high power supply connections.
WSM Spreader Module	Bin Not on Bus	Bin set as installed is not on bus. Check wiring or edit the profile.
WSM Spreader Module	Body Module Offline	The body module is no longer available. Check power supply and communication wiring.
WSM Spreader Module	Module Indexing Failure	System has not indexed itself properly. This can be caused by a missing index pin in the cabling.

General Product Control Alarms

Alarm	Description	Trigger
Rate sensor error during calibration	"Calibration error, lost or intermittent signal from rate sensor. Check sensor and related wiring prior to calibrating conveyor."	Rate sensor signal is lost for a period of two or more consecutive seconds during the Static Conveyor Calibration Routine.
Rate Sensor Error During Conveyor Flush	"Lost or intermittent signal from rate sensor. Check sensor and related wiring prior to continuing Conveyor Flush Routine."	Rate sensor signal is lost for a period of two or more consecutive seconds during the Conveyor Flush Routine.
Low Bin Sensor	"Low Bin Sensor." [Channel Name].	Bin Level Sensor is installed, metering circuit is commanded on, and the product in the bin does not cover the sensor for a consecutive period of time greater than current [Low Bin Time Delay] setting.
Disable Spinners	"Manually disable or shut off the spinner hydraulic circuit."	At the beginning of the Static Conveyor Calibration and Conveyor flush routine.
Enable Spinners	"Return the spinner hydraulic control to a field ready condition. The spinners will now restart."	At the end of the Static Conveyor Calibration routine and Conveyor flush routine.
Boundary Spinner Not Responding	"Boundary Spinner Not Responding." + [Spinner Name].	Automatic control for spinners must be enabled. At least one conveyor must be commanded on. Perceived spinner speed is greater than 30RPM in error from the [Boundary Spreading Spinner RPM Offset].
Rate Not Responding	"Rate Not Responding" + [Channel Name].	Control channel is commanded on using automatic control mode. Application rate is +/- [Rate Not Responding Threshold] from target rate for a period of [Rate Not Responding Timeout] or more.
Maximum Conveyor Speed	"Conveyor At Maximum RPM, Slow Down" + [Channel Name].	Product channel is commanded on and conveyor is run at or above maximum speed for a period of 5 or more consecutive seconds.
Minimum Conveyor Speed	"Conveyor At Minimum RPM", + [Channel Name].	Product channel is commanded on and conveyor is run at or below minimum speed for a period of 5 or more consecutive seconds.
Conveyor Not Responding	"Conveyor Running While Turned Off" + [Channel Name].	Product bin is commanded off and conveyor speed >0 and <1 RPM for a period of 30 or more consecutive seconds. Or conveyor speed is >=1 RPM for a period of 5 or more consecutive seconds.

Spinner Alarms

Alarm	Description	Trigger
CLF Basic Single Spinners Not Responding	"Spinners Not Responding"	Automatic control for spinners must be enabled. [CLF Mode] [Basic Single] must be selected. At least one product bin must be commanded on. Perceived spinner speed is greater than 30 rpm in error from [Target Spinner Speed] for a period of five consecutive seconds or longer.
CLF Basic Independent Spinners Not Responding	"Spinner Not Responding" + [Spinner Name]	enabled. [CLF Mode] [Basic Independent] must be selected. At least one product bin must be commanded on. Perceived spinner speed is greater than 30 rpm in error from [Target Spinner Speed] for a period of five consecutive seconds or longer.
Spinners Off	"Stop Application, Spinners Off!"	CLF is enabled, no spinner speed detected, one or more control channels is commanded on.
Spinners On	"Turn spinner switch off to prevent spinners from running!"	Upon system start up, [CLF Mode] enabled, spinner functionality switch detected in the ON position.

Hydraulic Alarms

Alarm	Description	Trigger
Conveyor Hydraulic Pressure Exceeds Maximum	"Conveyor Hydraulic Pressure Exceeds Maximum Operating Range."	Conveyor hydraulic pressure exceeds [Max Conveyor Hydraulics Pressure] setting for a period of five consecutive seconds or longer.
System Hydraulic Pressure Exceeds Maximum	"System Hydraulic Pressure Exceeds Maximum Operating Range."	System hydraulic pressure exceeds [Max System Hydraulics Pressure] setting for a period of five consecutive seconds or longer.
Hydraulic Fluid Level Low	"Hydraulic Fluid Level Low."	Hydraulic fluid level has fallen below lowest level tank sensor.
Hydraulic Fluid Temperature Below Minimum	"Hydraulic Fluid Temperature Below Minimum Operating Range."	Hydraulic temperature is below 65°F (18°C). Hydraulic fluid too cold to operate machine.
Hydraulic Fluid Temperature Exceeds Maximum	"Hydraulic Fluid Temperature Exceeds Maximum Operating Range."	Hydraulic temperature exceeds maximum operating range, greater than or equal to 200°F (93°C).
Hydraulic Filter Restriction Detected	"Hydraulic Filter Restriction Detected."	Hydraulic filter pressure is greater than or equal to 25 psi for five consecutive seconds or longer.

Bin Sequencing Alarms

Alarm	Description	Trigger
Container Advance	Moving to next container in the sequence.	At the point when the [Container Advance] criteria has been met.
End of Sequence	End of container sequence, do you wish to start the sequence from the beginning?	At the point the last container in the sequence has met the [Container Advance] criteria.

Chain Oiler Alarms

Alarm	Description	Trigger
Disable Spinners	Manually disable or shut off the spinner hydraulic circuit.	The point the user selects to run the chain oiler routine.
Enable Spinners	Return the spinner hydraulic circuit to a field ready condition.	The point the user exits the chain oiler routine.
Conveyor Lubrication Required	Conveyor Chain Lubrication Is Required.	[Service Reminder On] setting is enabled and [Service Reminder Interval] has expired.

Default Settings

NOTE: Compatible Insert Bin configurations vary per model. See "General Description" in Operations section of this manual for details.

Refer to "Dimensions & Capacities" in Operations section of this manual for capacities on all applicable bin configurations.

Pressure Transducer Settings	
Min PSI	0
Max PSI	5000
Min voltage	1
Max voltage	5

Spinner Settings	
PWM Frequency	50 Hz
Zero Flow Offset	30
PWM Gain	20

Spinner Settings	
PWM Frequency	30 Hz
Zero Flow Offset	
PWM Gain	

Calibration

CFR Values	
Bin	Value
Main Bin	0.256
Insert Bin	0.144
Yellow Micro Bin	0.038
Red Micro Bin	0.019

Control Valve Settings				
	Control Valve			
Control Variable	Main	Insert	Micro 1	Micro 2
Control Valve Type	Servo	Servo	Servo	Servo
Valve Response 1	40	40	40	40
Valve Response 2	8	8	8	8
Response Threshold	4.0	4.0	4.0	4.0
Allowable Error	1	1	1	1

Sensor Settings	
Encoder pulses	180 or 360 - verify by looking on encoder
Spinner pulses	4

Alarms

Alarm Settings				
Alarm Variable	Bin			
	Main (PSI)	Insert (PSI)	Micro 1 (PSI)	Micro 2 (PSI)
Min Conveyor Speed	5	5	3	3
Max Conveyor Speed	50	60	85	85
Max Conveyor Pressure - Std Hydraulics	2000	2000	-	-
Max Conveyor Pressure - HP Hydraulics	3400	2000		
Rate Responding Time	5	5	5	5
Rate Responding Threshold	30	30	30	30
Max System Pressure - Spinner	3100	-	-	-

This page is intentionally left blank.

**SPREAD
PATTERN**

**SPREAD
PATTERN**

⚠ WARNING

Use great caution while working around the spreader. Contact with spinners and other moving parts is very dangerous. Do not adjust while machinery is moving, wear eye protection and avoid discharge from spinners. Do not ride on moving spreader. Failure to comply with this requirement could result in death or serious injury.

A Catch Test is required prior to each season, before using a new product, or if a significant visible change has occurred with a product.

Catch Test

The CFR number, or cubic feet per revolution number, is a calibration number entered into the controller to determine rate output from the spreader's conveyor. A catch test is performed to verify accurate rate output per the controller.

NOTE: An optional calibration chute (P/N 312688) is available to simplify the catch test process. The calibration chute fits all New Leader spreader models with 30" wide conveyor bottoms. Contact your local New Leader dealer for details.

⚠ WARNING

To prevent injury, disable the spinners by unplugging the PWM valve before beginning the catch test procedure. Failure to comply with this requirement could result in death or serious injury.

1. Disable the spinners by unplugging the PWM valve(s).
2. Move the spinner assembly to the 4" (102mm) position.
3. Remove the Material Divider back plate, and Vane Assembly (if applicable). Install calibration chute if available.
4. Position an end loader or other suitable device beneath the spinners to catch material.
5. Load material into all applicable bins.
6. Prime the conveyor as specified per the controller.
 - If using a calibration chute, run the conveyor just until material reaches the end. Remove any excess material that falls into the catching device.
 - If not using a calibration chute, run the conveyor until the spinner discs are full of material. Remove any excess product from the catching device. Do not remove material from spinner discs.
7. Measure the depth of material on the end of the conveyor to verify the constant number feedgate height information entered into the controller. Adjust feedgate height or recalibrate feedgate as necessary.
8. Verify that all other product settings entered into the controller are correct.
9. Select the correct bin in the controller for the first bin to be tested. Enter the anticipated weight of product to be dispensed from the conveyor.
10. Start the engine and engage hydraulics. Allow to run for several minutes to bring hydraulic oil up to operating temperature. Bring engine up to operating RPM.
11. Following the setup wizard on the controller, run the catch test. The conveyor will start dispensing material, and automatically shut off when the estimated amount of product is dispensed.
12. If not using a calibration chute, leave the material on the spinner discs. Weigh the amount of product that the conveyor actually dispensed into the catching device, and note the result.
13. Enter the actual weight of material dispensed into the controller. The controller will then automatically perform the calibration.
14. Repeat Steps 5 - 12 for all other applicable bins, if an insert bin is installed.
15. Once satisfactory results have been achieved for all applicable bins, turn the engine off, replace the back plate on the Material Divider, return the spinner assembly to its original position setting, and plug the PWM valve(s) back in.

NOTE: For more information on controller operations and setup, contact your local dealer.



▲ WARNING

Use great caution while working around the spreader. Contact with spinners and other moving parts is very dangerous. Do not adjust while machinery is moving, wear eye protection and avoid discharge from spinners. Do not ride on moving spreader. Failure to comply with this requirement could result in death or serious injury.

NOTICE

Spinner assembly and material divider have NOT been adjusted at the factory. Before spreading material, spread pattern tests must be conducted to properly adjust the spread pattern. A spread pattern test kit is available for this purpose.
 THE MANUFACTURER OF THIS SPREADER WILL NOT BE HELD LIABLE FOR MISAPPLIED MATERIAL DUE TO AN IMPROPERLY ADJUSTED SPREADER.

Spread Pattern

Product quality will affect spread pattern and product performance. Spread pattern testing is required to ensure proper application of material. Larger products will produce wider swath widths.

Spread pattern is adjusted using one or more of the following:

- Point of material delivery on spinner discs
- Spinner speed
- Angle of the distributor fins on the spinner discs

Since adjustments will vary for each job, trial and experience must be used to determine the adjustments required to obtain the swath width and spread pattern desired.

Spread Pattern Test Kit

Spread Pattern Test Kit, part no. 313960, includes the following:

DESCRIPTION	QTY	DESCRIPTION	QTY
Box - Plastic Storage	1	Scale – Density	1
Center Collection Tray - Blue	1	Data Sheet – 100 Ct. Booklet	1
Collection Tray - Brown	22	Funnel	1
Divider Screen	23	Flag	5
Assy – Test Tube Rack	1	Rope – 120’ marked	1
Test Tube	23	Stake	2

NOTE: If desired, a material calibration kit is available to aid in measuring product quality. Contact your local dealer for details.

Spinners

NOTICE

Spinner discs and fins must be kept clean and polished. Even a small build-up on a spinner fin can significantly affect the spread pattern. Rusty, rough, bent or worn fins will produce poor spread patterns.

In general, critical spinner speed will fall somewhere between 600 and 900 RPM. Spinner speed is adjusted by changing the settings in the controller. Proper spinner speed adjustment is critical in obtaining optimal spread patterns. The best spinner speed to use will depend entirely on the material being spread, and must be determined by testing.

Spreader Preparation

The spreader to be tested must be in good mechanical condition and properly adjusted. Refer to operator's manual for details.

All damaged and worn parts must be replaced. Spinner discs and fins must be free of any material build-up, rust or paint.

Fill the hopper with the material to be spread. Run the material out to the end of the conveyor.

Set the feedgate and the in-cab controller to deliver the required rate per acre. Make sure the feedgate is level and the indicator reflects the actual gate opening measured by standing a tape measure vertically in the material.

NOTE: Do not match slope of endgate when making this measurement. Measurement must be perpendicular to conveyor.

Adjust the spinner assembly by turning the crank or, if an actuator is installed, change the setting in the controller. To begin testing, position the spinner according to following chart.

NOTE: This chart is to be used as a reference only to begin testing.

Material	Density	Ground Speed (mph)	SIMPLE START SETTINGS			
			Rate (lbs)	Feedgate (in)	Spinner Frame Setting	Spinner RPM
Lime	90	11*	1000-5000	6	.5"	600
			2000-8000	12	.5"	600
Urea	46	18	110	2.5	4	800
			225	2.5	3.5	800
			450	2.5	2.5	800
Corn Blend	53	18	125	2.5	3.5"	800
			250	2.5	2.5"	800
			500	2.5	0.7	800
All other fertilizer types and blends	64	18	150	2.5	3.5"	800
			300	2.5	2.5"	800
			600	2.5	1.2	800
* 15 mph when using high performance (HP) hydraulics.						

Test Procedure

Using the data sheets supplied with the kit, document all spreader information and adjustments as necessary. See Figure 1.

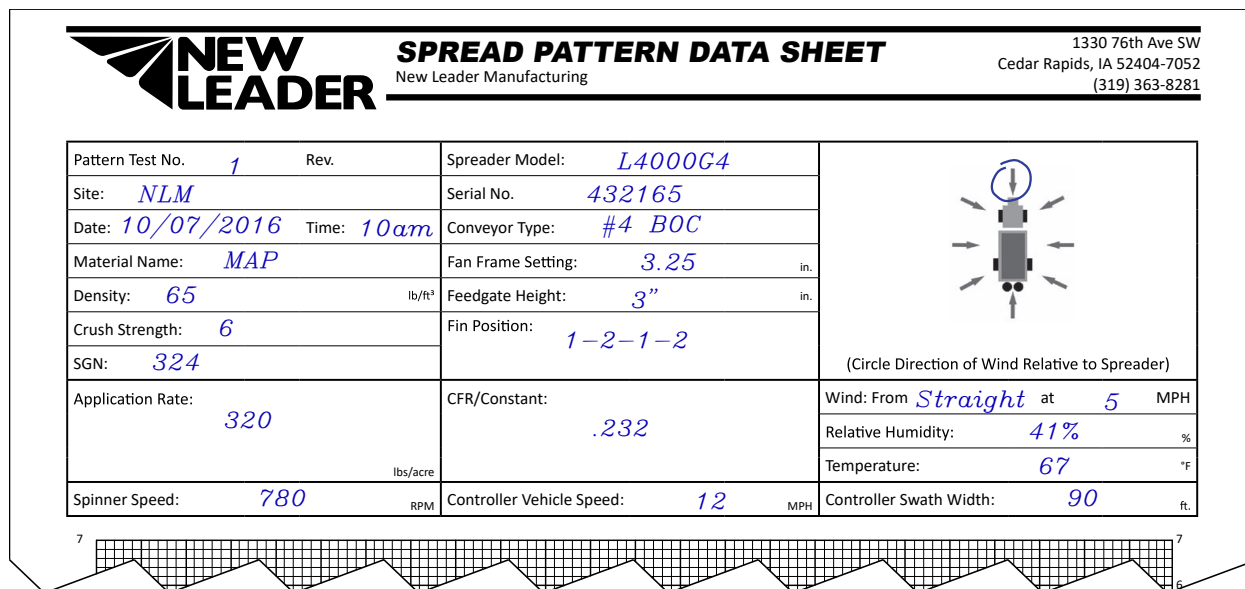


Figure 1

Select an area for testing measuring at least 120 feet x 200 feet (37 m x 61 m), and with a slope of less than two degrees.

All testing should be done when the wind velocity is less than 5 MPH (8.05 km). If wind is present, testing must be done with spreader traveling parallel (within ± 15 degrees) to the wind direction.

Do not allow loaded spreader to sit for more than one hour prior to testing.

At this stage of testing, drive the spreader over the collection trays in ONLY ONE DIRECTION.

Insert a plastic grid into each of the 23 collection trays. Position the blue collection tray in the center of the spreader's path with the longest dimension of the tray parallel to the direction of travel. Position the first left-hand and right-hand trays 10' (3m) from center, and all subsequent trays on 5' (1.5m) centers.

Four-Wheeled Vehicles

For four-wheeled application vehicles, position the spreader at the beginning of the course so that the vehicle will straddle the center collection tray. See Figure 2.

Engage spinners before navigating the course. As the vehicle approaches the flag positioned 75' before the row of collection trays, engage the conveyor(s). Do not shut the conveyor(s) off until the vehicle approaches the second flag.

Drive spreader completely through course at normal operating speeds.

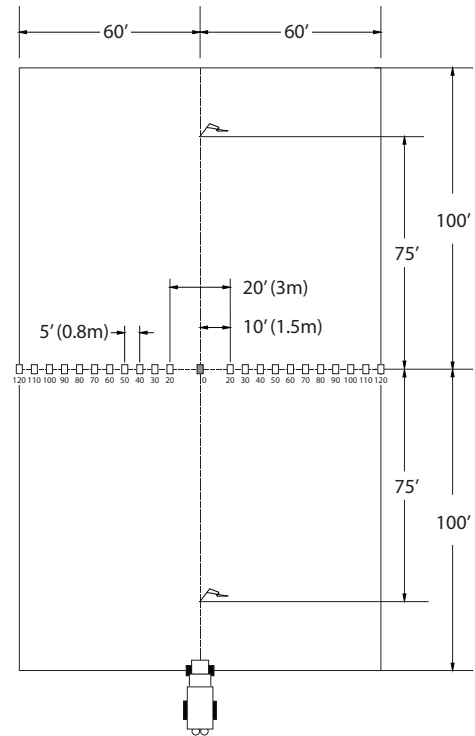


Figure 2 – Four-Wheeled Vehicles

Three-Wheeled Vehicles

For three-wheeled application vehicles, straddling the center tray is not possible. Place the center collection tray beneath the vehicle just behind the front tire when the spreader is in position at the beginning of the course. See Figure 3.

Engage both the spinners and conveyor(s) before navigating the course. Do not shut the conveyor(s) off until the vehicle approaches the second flag.

Drive spreader completely through course at normal operating speeds.

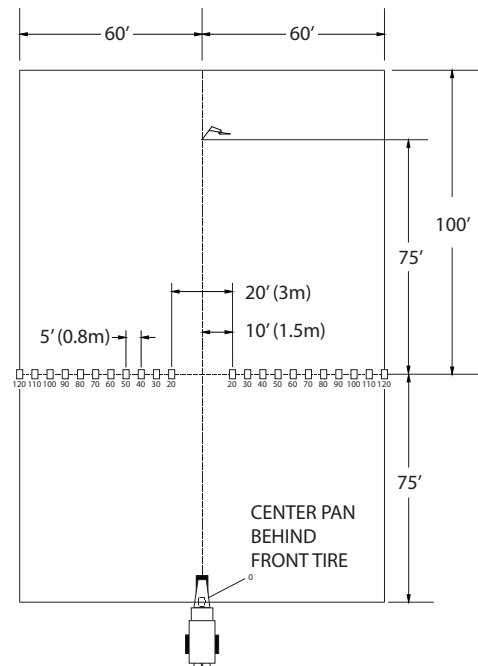


Figure 3 – Three-Wheeled Vehicles

Test Results

After navigating the course, shut the spreader down and park in a secure location.

Using the funnel, transfer the contents of each collection tray into its corresponding test tube beginning at one end of the trays and working towards the opposite end.

If spreading a blend of materials, inspect all tubes to determine if the blend is consistent across the entire swath width. If the blend is not consistent, use a narrower swath width. The swath width should be based on the material thrown the shortest distance.

Record each test tube's volume in the box on the data sheet under the corresponding tray position and graph the spread pattern profile. See Figure 4.

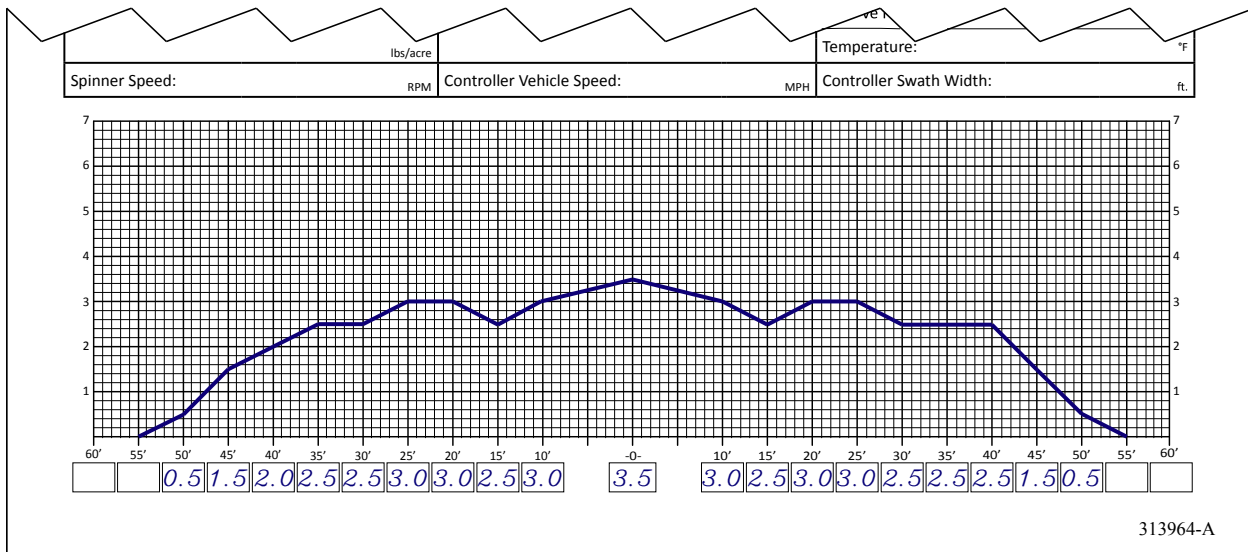


Figure 4

Looking at the material in the test tubes and the graphed profile on the data sheet, compare the overall shape of the spread pattern to the three acceptable patterns, shown in Figure 5. If an acceptable pattern has not been achieved, proceed to "Troubleshooting". Once an acceptable pattern has been achieved, proceed to "Determining Driving Centers".

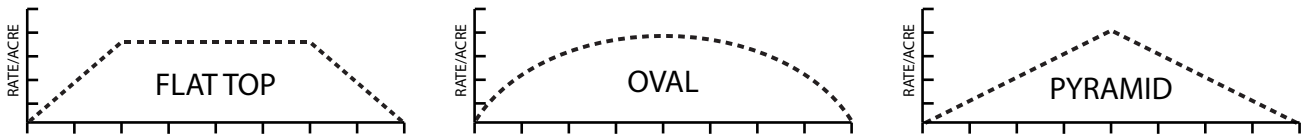


Figure 5 – Acceptable Patterns

Troubleshooting

NOTE: It is highly recommended that **ONLY ONE ADJUSTMENT** be made between test samples taken. If more than one adjustment is made, it will be difficult to determine which adjustment was responsible for the change in pattern shape.

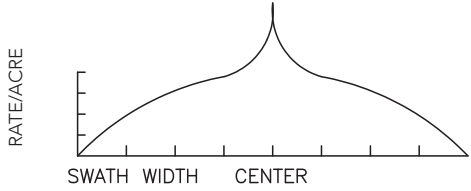
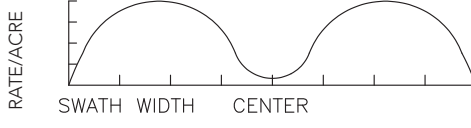
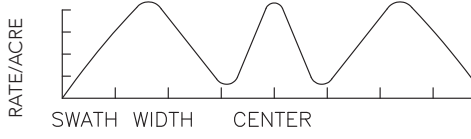
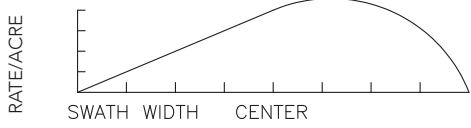
Problem	Pattern	Recommended Adjustments
Heavy Directly Behind the Vehicle		<ol style="list-style-type: none"> 1. Move the spinner forward (toward the conveyor).
Light Directly Behind the Vehicle		<ol style="list-style-type: none"> 1. Move the spinner rearward (away from conveyor).
Light Outside Vehicle's Tire Tracks		<ol style="list-style-type: none"> 1. Check spinner fins for material buildup, rust or paint. 2. Increase spinner RPM. 3. Move spinner fins to 2 - 3 - 2 - 3 positions. See Figure below.
Pattern Off Center		<ol style="list-style-type: none"> 1. Check to see feedgate is level and free of caked material. 2. Make sure hillside divider spinner assembly and material divider are mounted squarely and centered. 3. Testing should be done parallel to wind.

Figure 6

Spinner fins are adjustable to radial angle as shown in Figure 7. Refer to Figure 6 for fin adjustment recommendations.

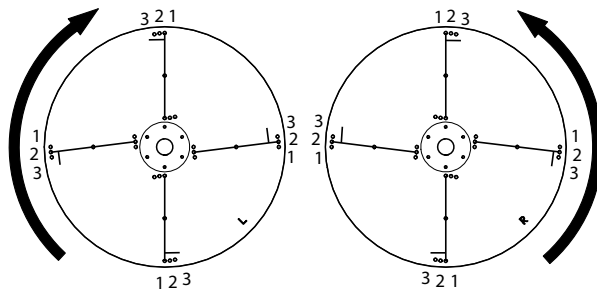


Figure 7 - Spinner Fin Adjustment

Determining Driving Centers

Once an acceptable pattern is obtained, as shown in Figure 5, driving centers can be determined. To determine optimum driving centers (effective swath width), determine the average amount of material in the center of the pattern. Figure 8 shows an example data sheet recorded from the profile shown in Figure 9. Based on the example, the average amount of material in the center of the pattern is 3.0, as indicated with the red dotted line.

Next, locate the points on both the left and right side of the pattern where the amount of material is half the average amount at the center of the pattern. In the example shown in Figure 8, these points are located 45' to the left of center, and 45' to the right of center. The distance between these two points (90') represents the driving centers to use.

NOTE: Once the effective swath width has been established, a change in the controller may be required.

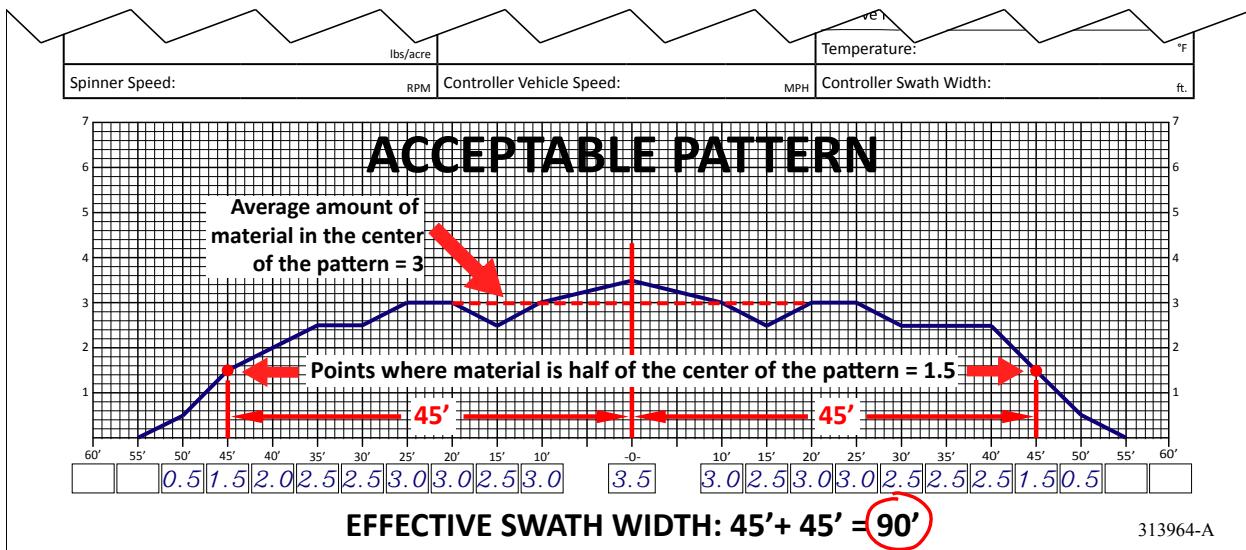


Figure 8 - Effective Swath Width

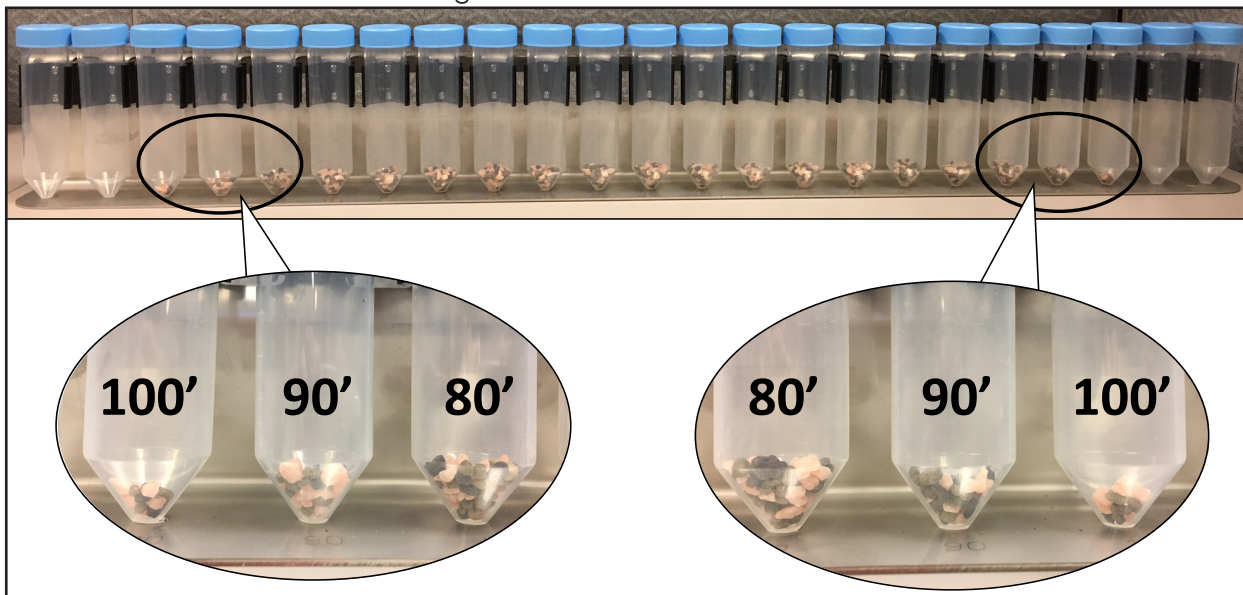


Figure 9



Verifying Driving Centers

Once optimum driving centers (effective swath width) have been established, conduct a final "S" pass over the trays to verify. Refer to Figure 10.

1. With both the spinners and conveyor turned off, drive the spreader through the center of the course, establishing an "AB" line. If the spreader vehicle is a three-wheel type, remove the center pan.
2. Line the vehicle up with either end of the row of collection trays, at a distance from the "AB" line equal to the effective swath width.
3. With both the spinner and conveyor engaged, drive past the trays.
4. Switch back and drive over the center of the trays, down the "AB" line.
5. Drive through the row of trays and switch back once again, driving past the trays on the opposite side, at an equal distance from the "AB" line as the first pass.

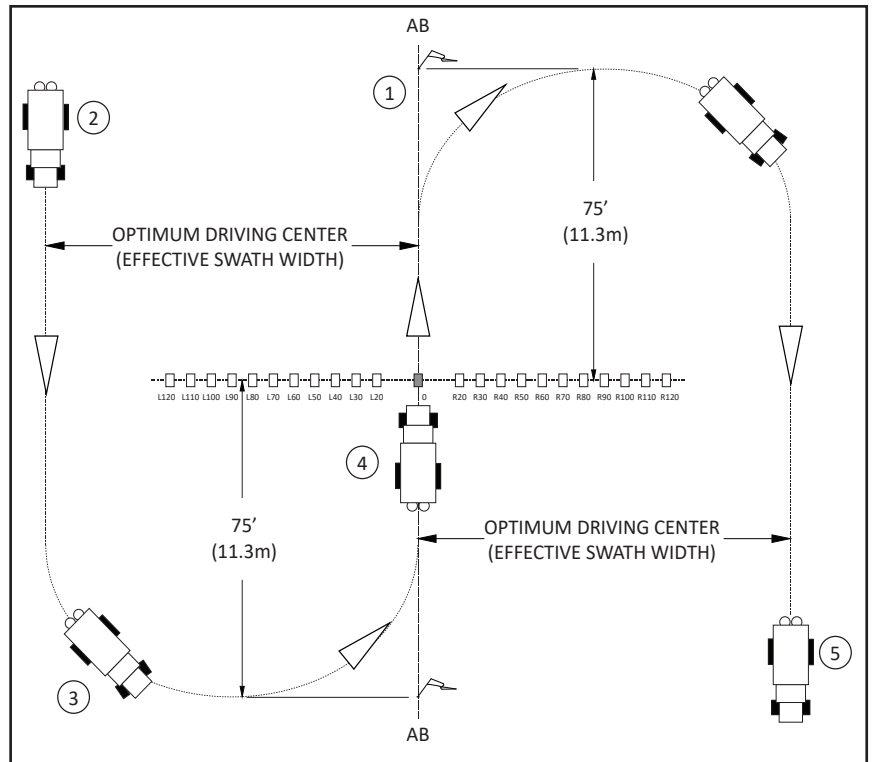


Figure 10

If the driving centers were determined correctly, all trays should have a similar amount of material, showing a near flat profile in the test tubes. If the trays near the center of the row contain more material than the others, increase driving centers. If the trays near the center of the row contain less material, decrease driving centers.

NOTE: If spreading a blend of materials, verify blend of all products is consistent across all tubes.

This page is intentionally left blank.

PARTS

PARTS

Instructions for Ordering Parts



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

Always give the pertinent model and serial number.

Give part name, part number and the quantity required.

Give the correct address to where the parts are to be shipped, and the carrier if there is a preference.

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

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

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

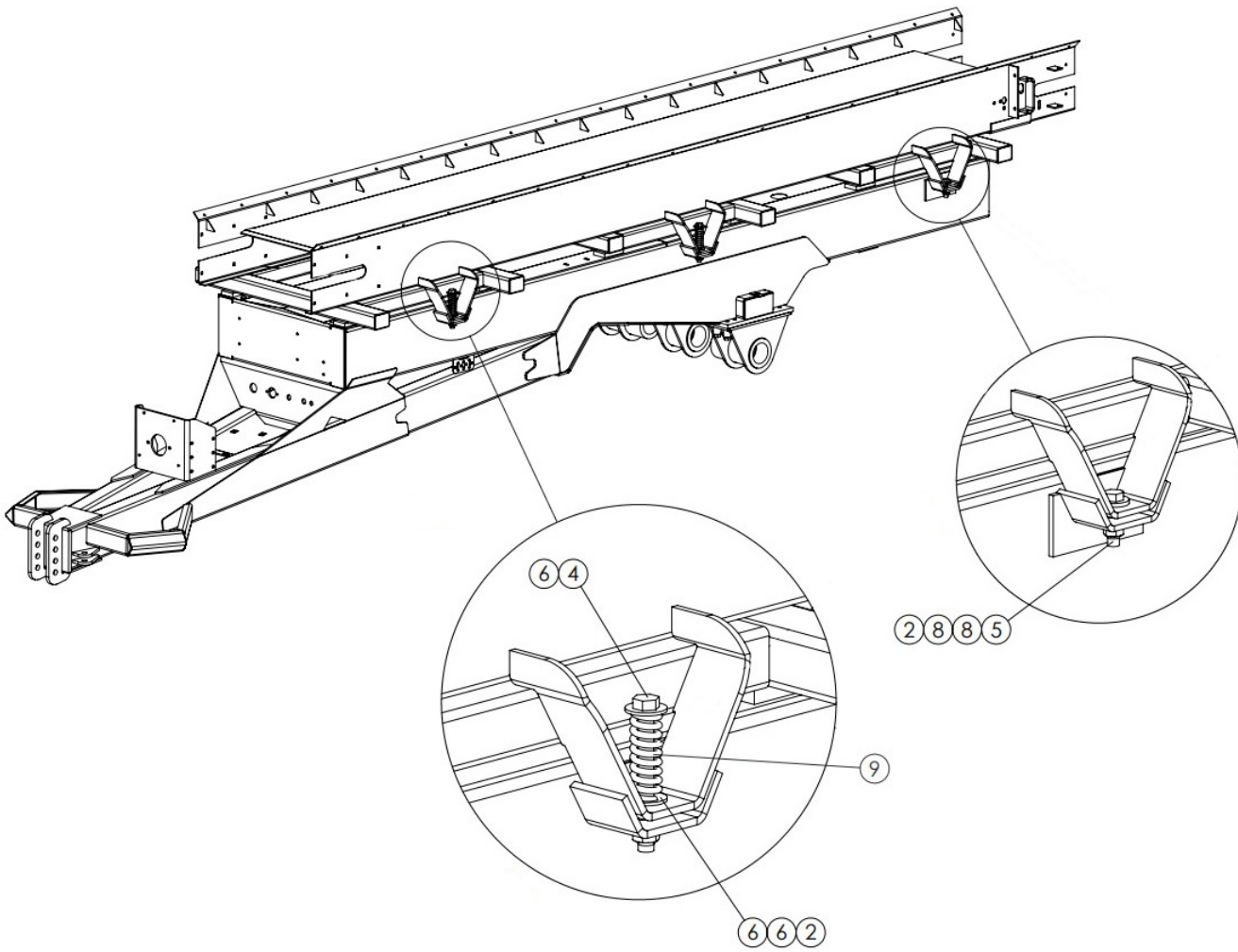
If your claims are not being handled (by the transportation company) to your satisfaction, please call our Product Sales & Support Department at New Leader Manufacturing at 888-363-8006 for assistance.

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

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

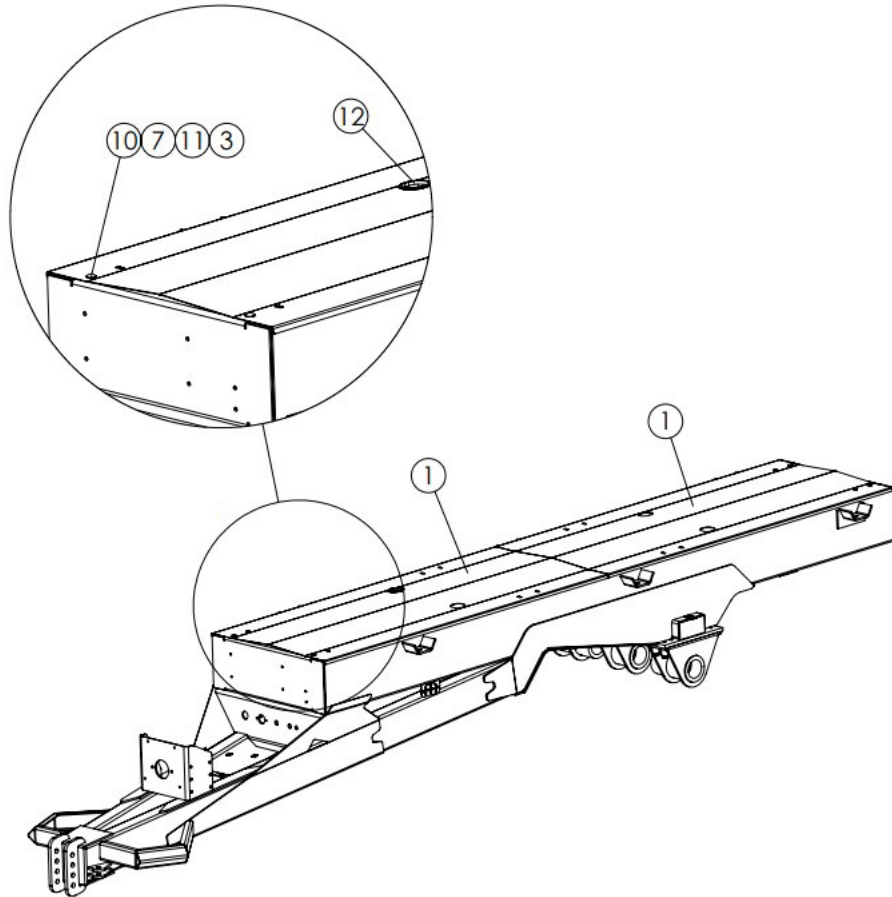
The parts listed under the different steel types (CS, 409 SS and 304 SS) are for that type of unit and do not necessarily mean the part is made of that type of steel.

Mounting



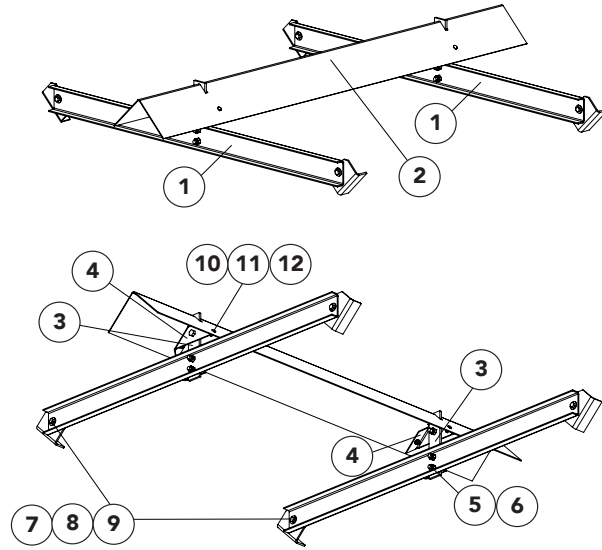
Body

Mounting



ITEM	PART NO.	DESCRIPTION	QTY
1	318019	Panel - Wldmt Under Body 304	2
2	20683	Nut - Lock .75-10nc Zn	6
3	36416	Nut - Hex .5-13nc SS	4
4	58560	Capscrew - .75-10nc X 7 Gr5 Zn	4
5	20209	Capscrew - .75-10 X 3 Hex Hd	2
6	20698	Washer - Flat .75 Zn	12
7	36426	Washer - Flat .5 SS	4
8	310487	Washer - Flat .781 X 2 304	4
9	305220	Spring - Compression 1.53od	4
10	36411	Bolt - Carriage .5-13nc X 1.5	4
11	36422	Washer - Lock .5 SS	4
12	307583	Grommet - Rubber 3 Id	1

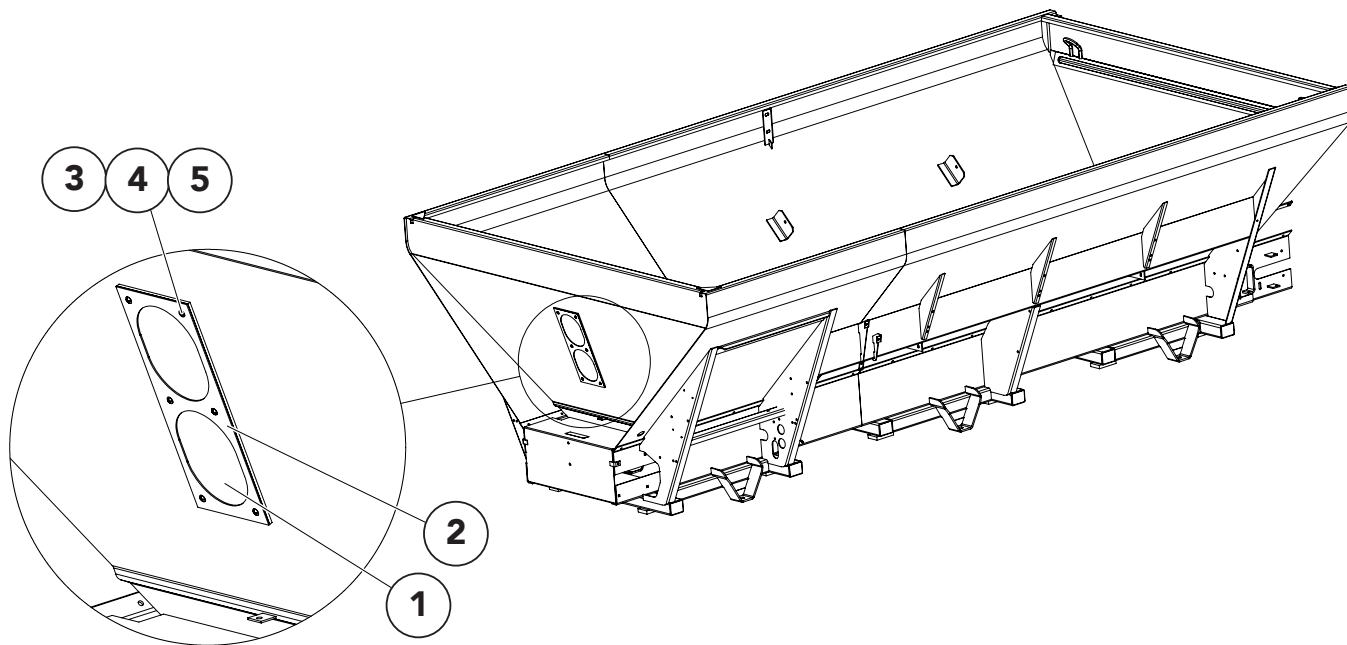
Inverted "V"



ITEM	PART NO.	DESCRIPTION	QTY
	304 SS		
1	81263	Hanger – V Wldmt	3
2	82624	Inverted V	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

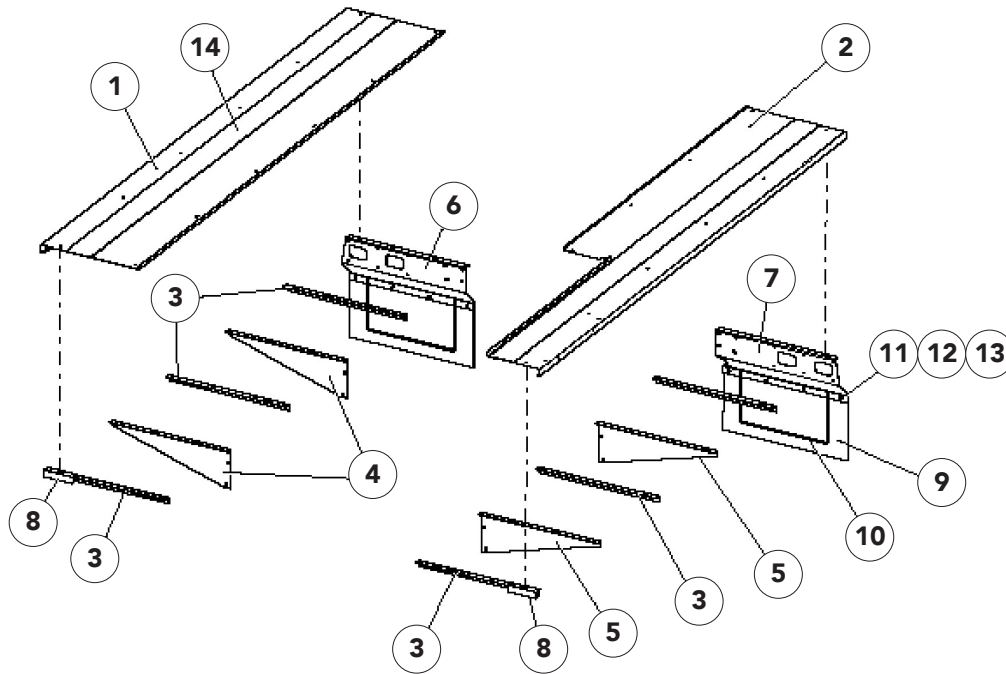
Body

Sight Window



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

Fenders



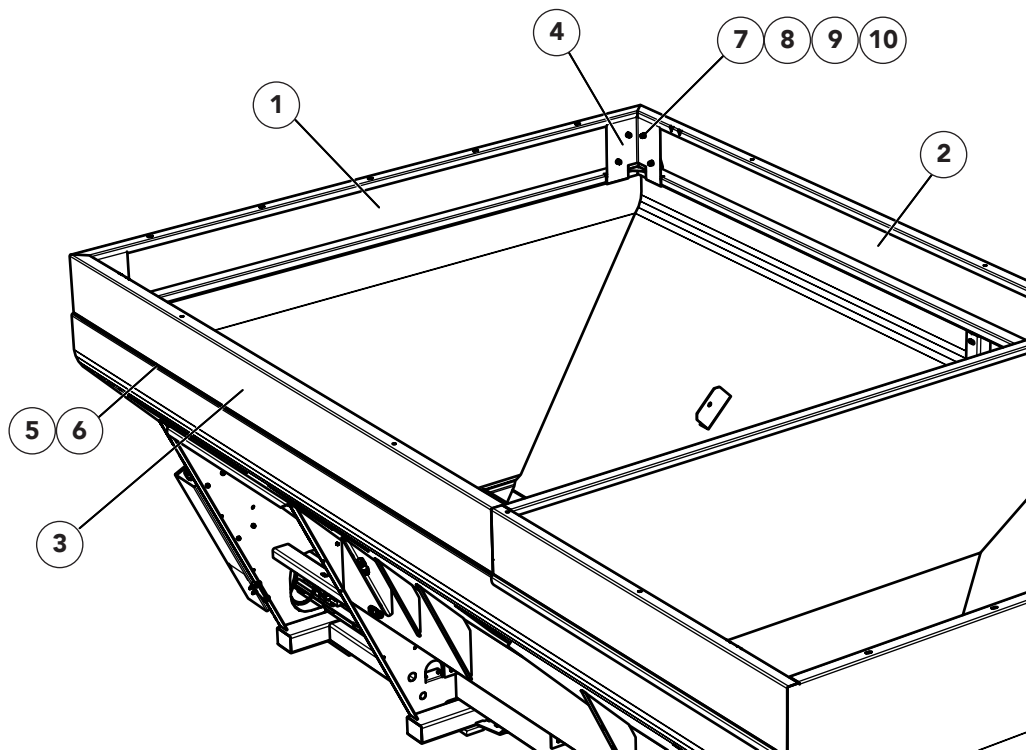
ITEM	PART NO.		DESCRIPTION	QTY
	409 SS	304 SS		
1	312869	312867	Fender - 16' x 32" RH	1
2	312868	312866	Fender - 16' x 32" LH	1
3	96972	96972	Angle - Fender 132" 304	6
4	96970	96970	Support - Fender RH 304	2
5	96971	96971	Support - Fender LH 304	2
6	305210	305210	Support - Rear Fender RH 304	1
7	312870	312870	Support - Rear Fender LH 304	1
8	305276	305276	Angle - Decal Mt	2
9	312874	312874	Mud Flap - 20 x 40	2
10	305425	305425	Anti-Sail - Wldmt Mud Flap	2
11	34858	34858	Cap Screw - 3/8-16NC x 1-1/2 SS	8
12	36420	36420	Washer - Lock 3/8 SS	8
13	36414	36414	Nut - Hex 3/8-16NC SS	8
14	21699	21699	Skid Fabric - 8"	AR
15	*83375	*83375	Hardware Kit	1

AR – As Required * - Not Shown



Body

Side Boards

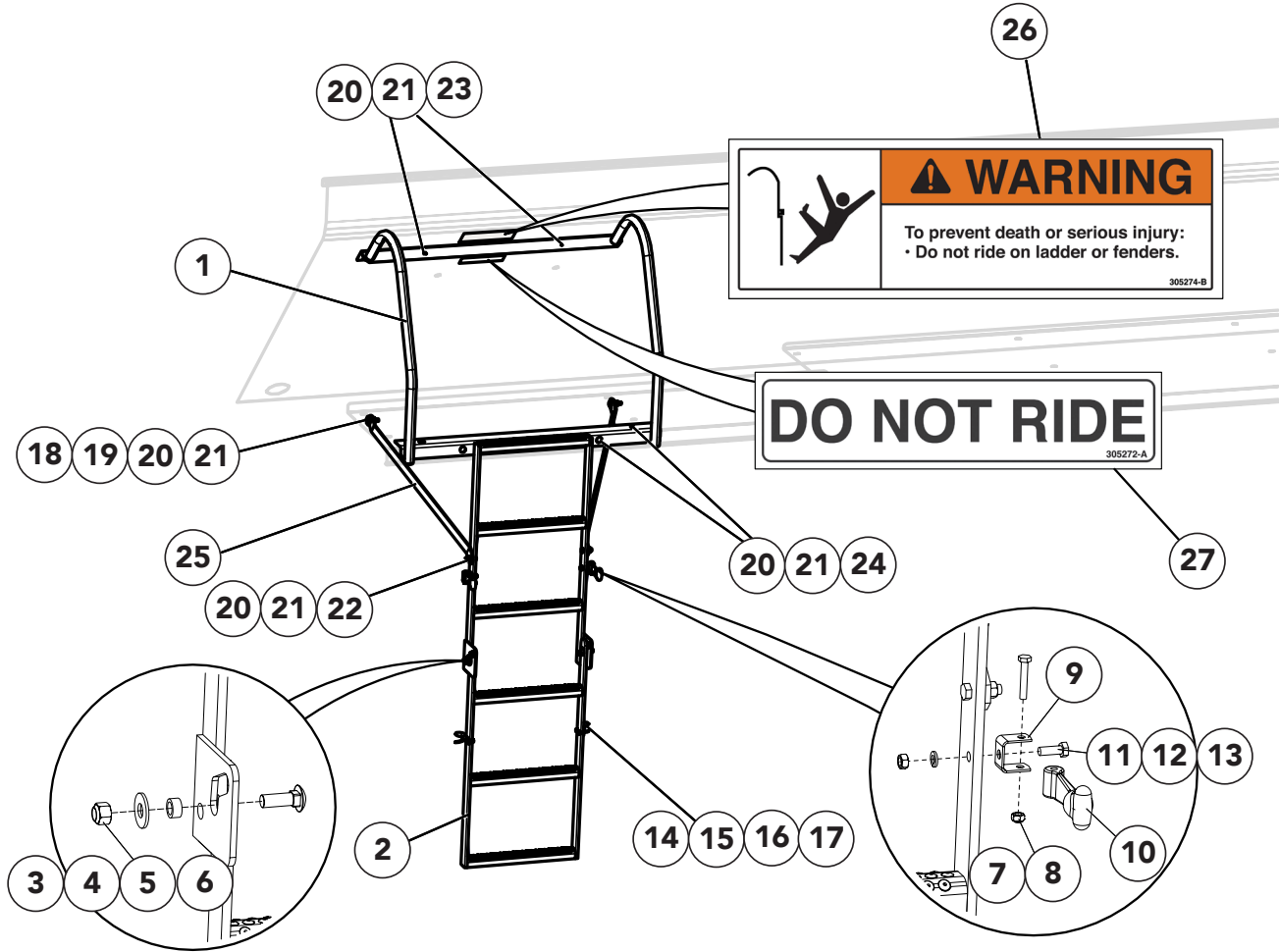


<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	98746	Kit - Hardware Side Boards SS, Includes Items 7 - 10	1
1	312601	Side Board – Front Wldmt	1
2	312928	Side Board – RH Wldmt	1
3	312929	Side Board – LH Wldmt	1
4	86867	Pocket – Side Board	2
5	53950	Rubber – 1/4 x 2-1/4	AR
6	96254-AB	Adhesive – Blk Cyanoacrylate*	AR
7	36398	Cap Screw – 3/8 x 1	12
8	36425	Washer – Flat 3/8	12
9	36420	Washer – Lock 3/8	12
10	36414	Nut – Hex 3/8	12

AR - As Required

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

Inspection Ladder

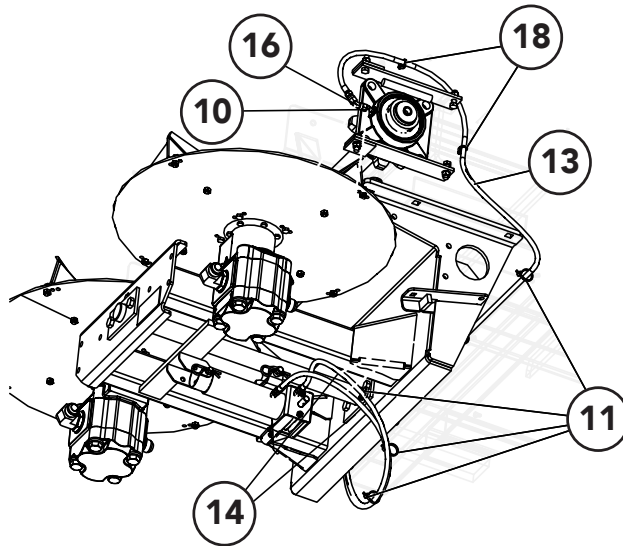
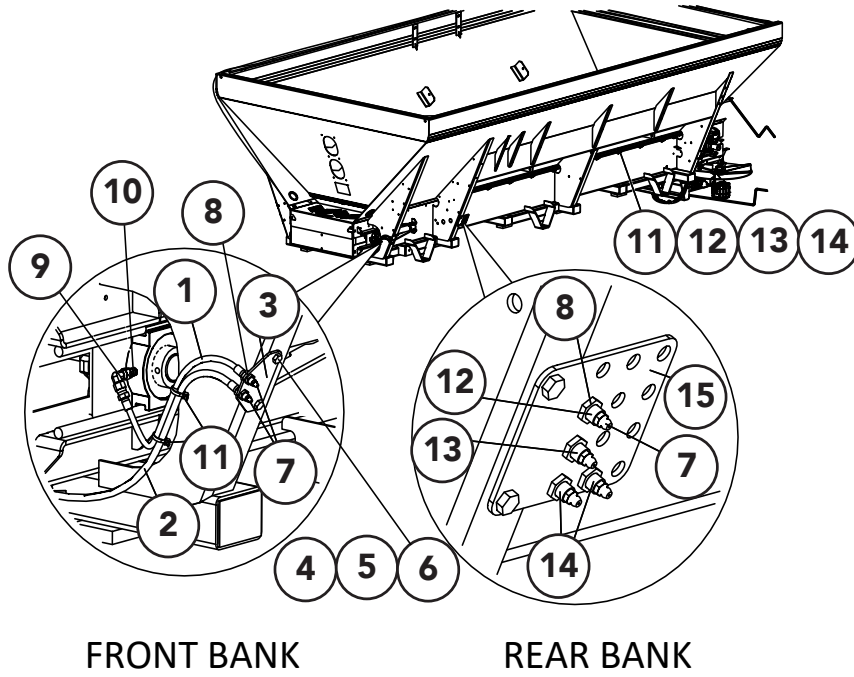


Body**Inspection Ladder Cont.**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	306112	Ladder - Kit, 132" w Fenders, Includes Items 1 - 27	1
	306113	Ladder - Assy Folding, Includes Items 1 - 17	1
1	306115	Ladder - Wldmt Upper	1
2	89044	Ladder - Wldmt Insp Lower CS	1
3	20680	Nut - Lock 1/2-13NC	2
4	20695	Washer - Flat 1/2	2
5	88638	Spacer - Bushing	2
6	21101	Screw - Buttonhead .5-13NC X 1.5 ZN	2
7	20007	Cap Screw - 1/4-20NC x 1-1/2	2
8	20676	Nut - Lock 1/4-20NC	2
9	73344	Bracket - Anchor	2
10	73343	Hook - Rubber	2
11	20035	Cap Screw - 5/16-18NC x 7/8	2
12	20711	Washer - Lock 5/16	2
13	20643	Nut - HEx 5/16-18NC	2
14	150043	Bracket - Hood	2
15	20572	Screw - #10-24 x 3/4	4
16	20709	Washer - Lock #10	4
17	20641	Nut - Hex #10-24	4
18	34858	Cap Screw - 3/8-16NC x 1-1/2	2
19	36425	Washer - Flat 3/8	2
20	36420	Washer - Lock 3/8	10
21	36414	Nut - Hex 3/8-16NC	10
22	36399	Cap Screw - 3/8-16NC x 1-1/4	2
23	36398	Cap Screw - 3/8-16NC x 1	2
24	36408	Bolt - Carriage 3/8-16NC x 1	4
25	305792	Strap - Support Ladder	2
26	305274	Decal - Warning, Do Not Ride	1
27	305272	Decal - Do Not Ride	1

AR - As Required

Lubrication

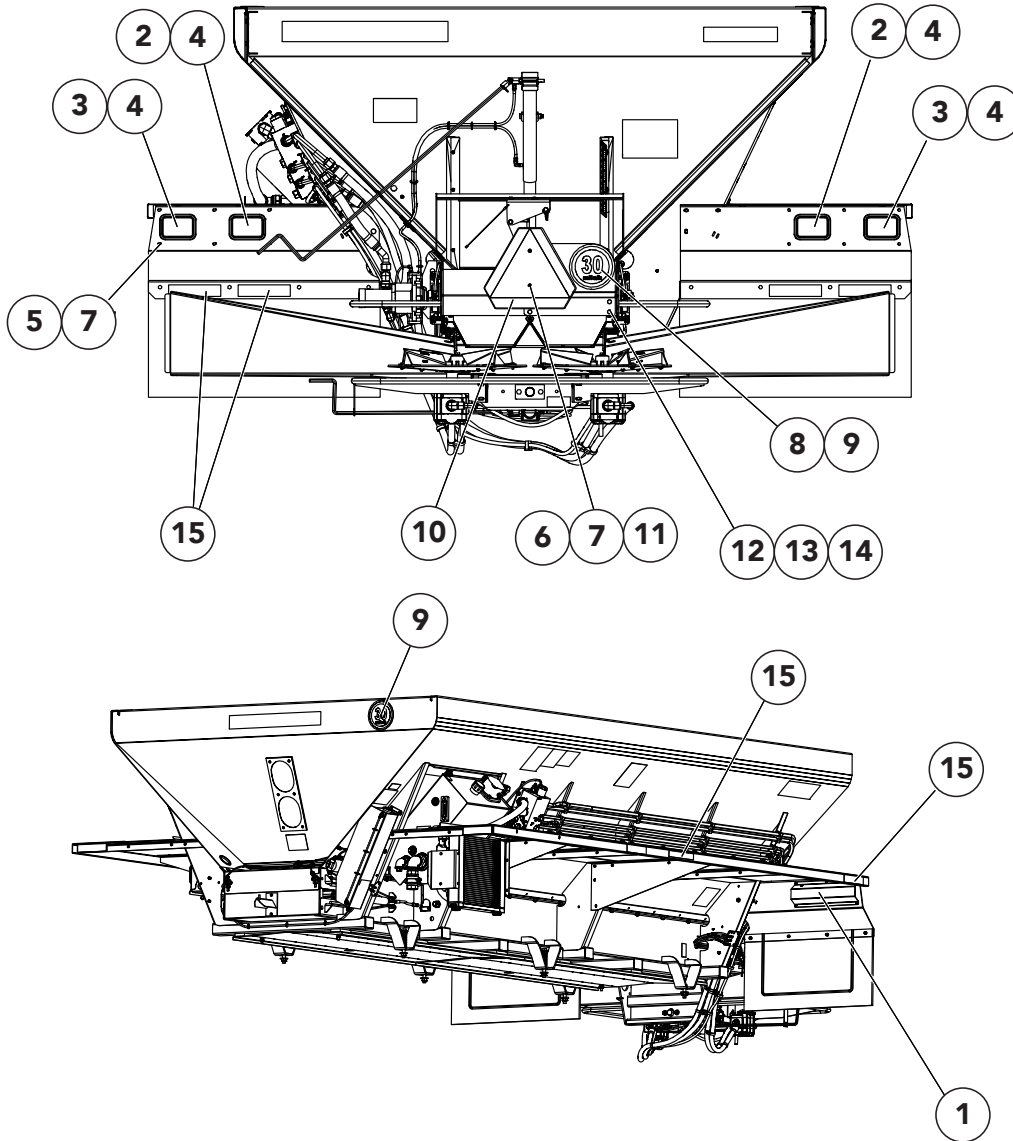


Body**Lubrication Cont.**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	311327	Hose - Assy LH Front Idler Bearing	1
2	311326	Hose - Assy RH Front Idler Bearing	1
3	314681	Plate - Grease Bank Front	1
4	56858	Cap Screw - 5/16-18NC x 3/4 SS	4
5	Not Used		
6	42221	Nut - Lock .313-18NC SS	4
7	311663	Zerk - Grease 1/4-28 Straight SS	5
8	310471	Nut - Bulkhead 1/8-27	5
9	34868	Fitting - 4-4 070221	2
10	34787	Fitting - 4-2 070102	4
11	99674	Tie - Wire	AR
12	313036	Hose - Assy LH Rear Drive Bearing	1
13	313038	Hose - Assy RH Rear Drive Bearing	1
14	313037	Hose - Assy Spinner Jack	1
15	314682	Plate - Grease Bank Rear	1
16	313501	Fitting - 4-4 070321	2
17	*313814	Decal - Lubrication Chart Front	1
18	311806	Tie - Wire Fir Tree	AR
19	*313815	Decal - Lubrication Chart Rear	1

* - Not Shown

Lighting & Visibility

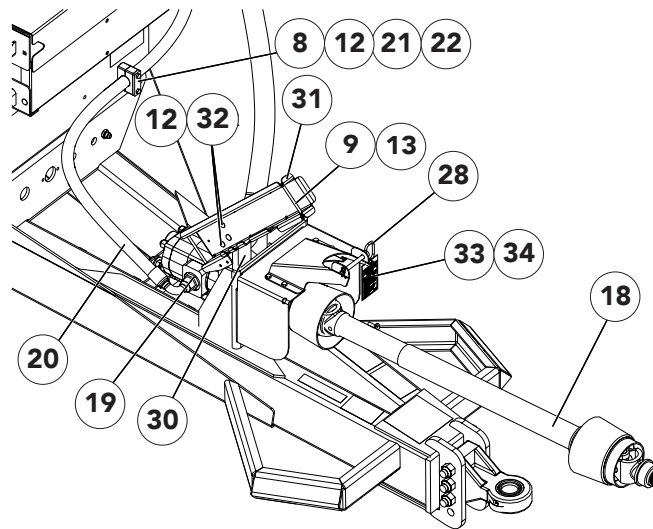
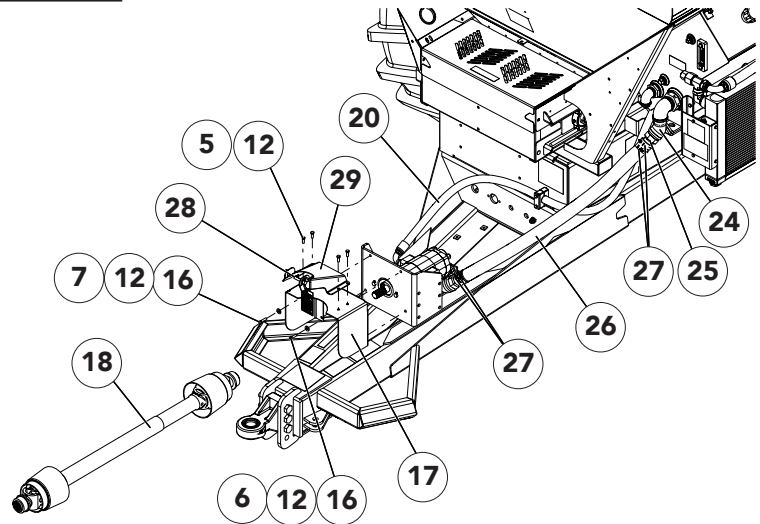
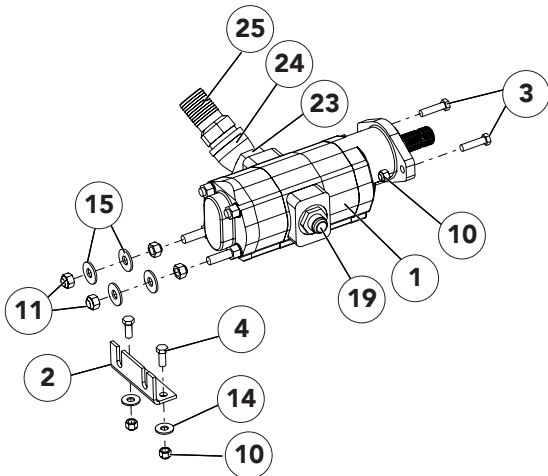


Body**Lighting & Visibility Cont.**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	305213	Guard - Tail Light 304	2
2	300150	Light - SST Red	2
3	304715	Light - Super 45 Yellow	2
4	304704	Grommet - Super 45	4
5	36393	Cap Screw - 1/4-20 NC x 3/4 SS	12
6	36418	Washer - Lock 1/4 SS	14
7	36412	Nut - Hex 1/4-20 NC SS	14
8	305711	Plate - SMV Mounting	1
9	305273	Decal - 30 m/h	2
10	305229	Sign - SMV	1
11	32446	Screw - Truss Head 1/4-20 x 3/4 SS	2
12	42639	Bolt - Carriage 5/16-18 NC x 1 SS	4
13	36419	Washer - Lock 5/16 SS	4
14	36413	Nut - Hex 5/16-18 NC SS	4
15	305186	Kit - Reflective Farm Implement	1
16	*305414-AB	Harness - LH Tail Lights TR3000	1
17	*305414-AC	Harness - RH Tail Lights TR3000	1
18	*99674	Tie - Wire 8"	6

* Not Shown

PTO Pump Hydraulics

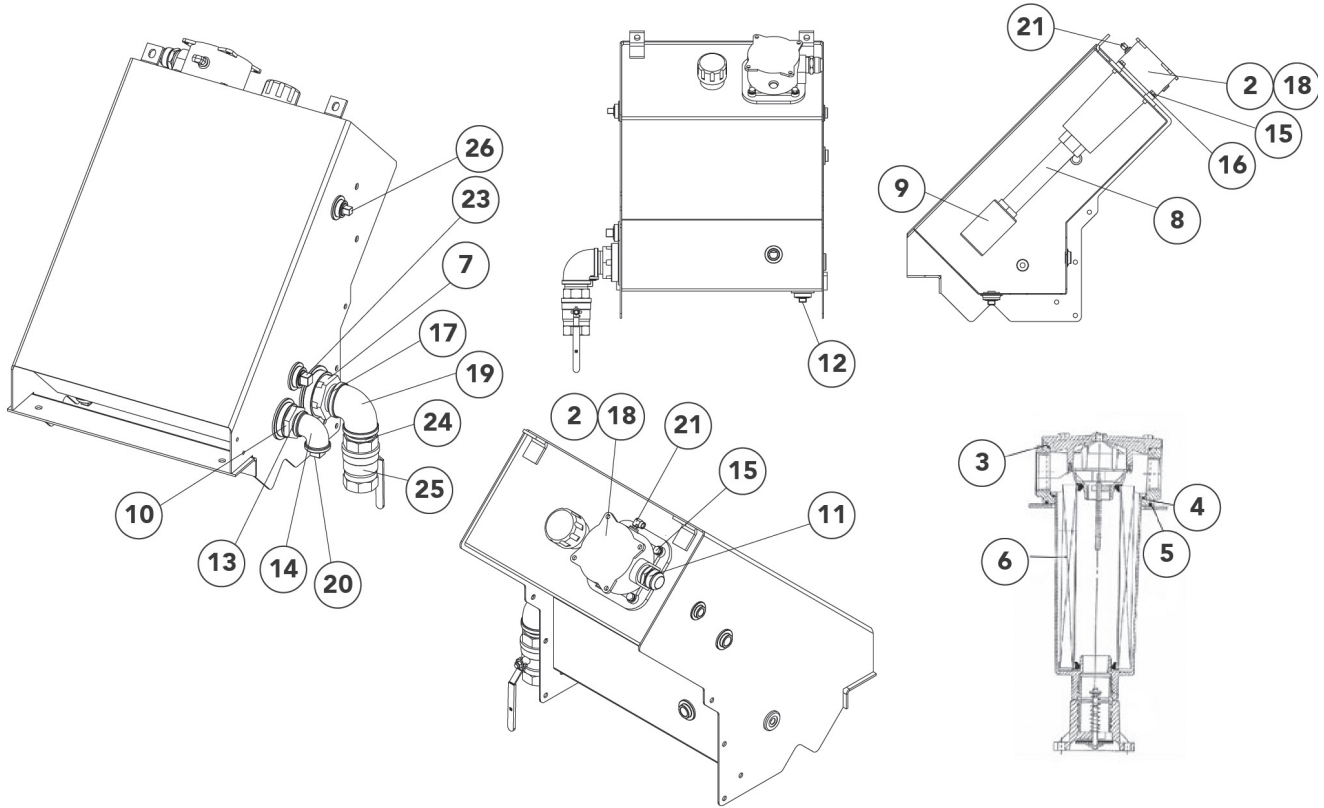


ITEM	PART NO.	DESCRIPTION	QTY
1	304921	Hydraulic Pump	1
2	305173	Support - Pump	1
3	20131	Cap Screw - 1/2-13NC x 2	2
4	20128	Cap Screw - 1/2-13NC x 1-1/4	2
5	20067	Cap Screw - 3/8-16NC x 1	4
6	20068	Cap Screw - 3/8-16NC x1-1/4	2
7	20069	Cap Screw - 3/8-16NC x1-1/2	2
8	20077	Cap Screw - 3/8-16NC x 3-3/4	2
9	20056	Cap Screw - 3/8-16NC x 6	2
10	20680	Nut - Lock 1/2-13NC	4

Body Hydraulics**PTO Pump Hydraulics Cont.**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
11	20682	Nut - Lock 5/8-11NC	4
12	20678	Nut - Lock 3/8-16NC	13
13	20677	Nut - Lock 5/16-18NC	2
14	20695	Washer - Flat 1/2	2
15	20697	Washer - Flat 5/8	4
16	20693	Washer - Flat 3/8	4
17	307300	Guard - PTO	1
18	307294	Driveline - CV	1
19	34845	Adapter	1
20	307305	Hose - 1" x 96 100R12	1
21	305255	Clamp - Hose 1-1/2	1
22	305257	Plate - Cover	1
23	305261	Adapter - 2.5 SAE x 2 NPT	1
24	305241	Elbow - 2 NPT 45° Street	2
25	29811	End - Hose 2 NPT x 2 Hose	2
26	313877	Hose - 2" x 96 100R4	1
27	22380	Clamp - Hose	4
28	305228	Pin - Hitch	1
29	307302	Retainer - PTO	1
30	312885	Angle - Upright	1
31	313843	Channel - Hose Guide	1
32	20318	Bolt - Carriage 3/8-16NC x 1	3
33	308221	Wire Tie - 4 Black	1
34	307322	Tag - Notice, To Avoid Machine Damage	1

Hydraulic Reservoir

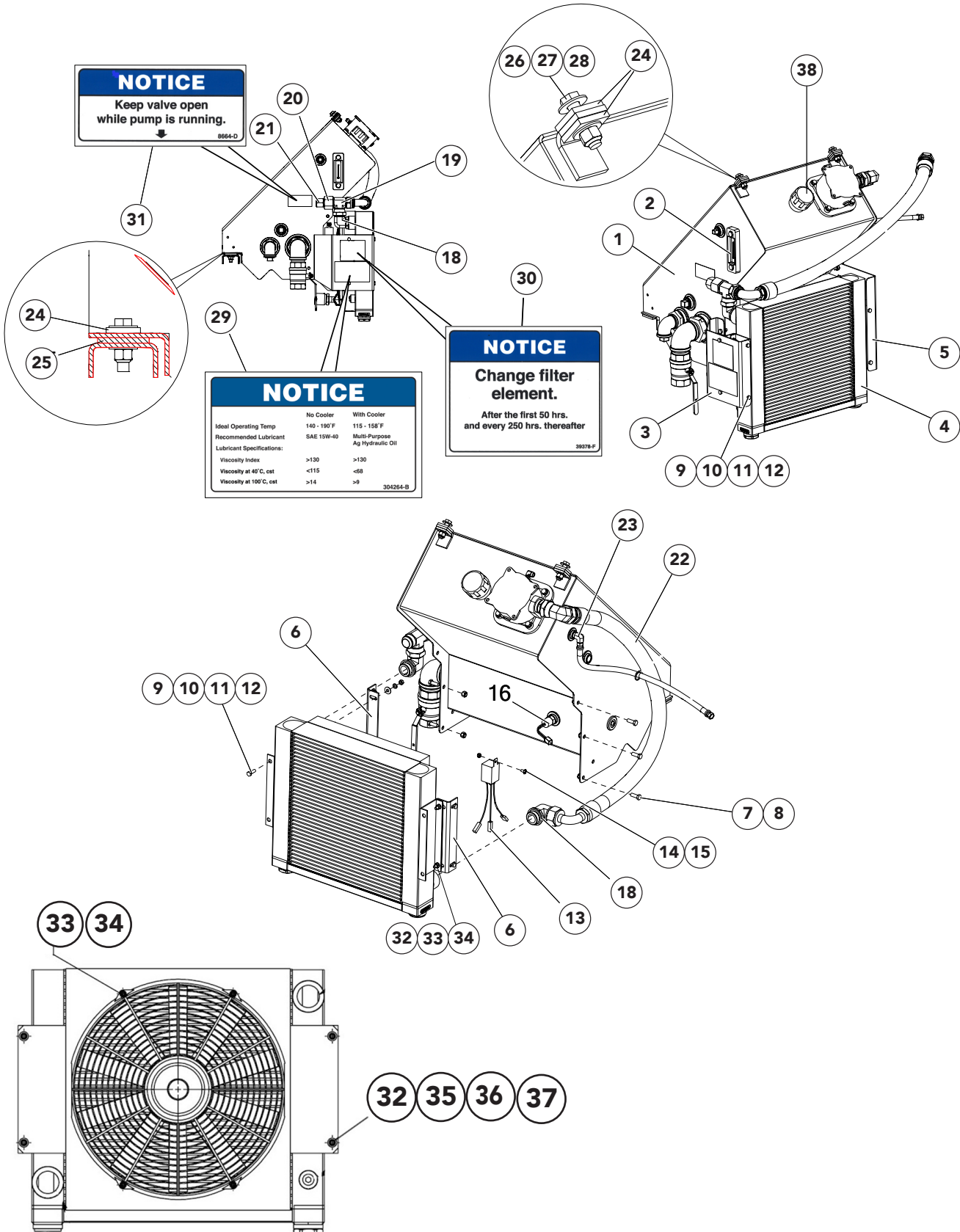


Body Hydraulics**Hydraulic Reservoir Cont.**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	311735	Hydraulic Reservoir Assy	
	311743	Hydraulic Reservoir Assy 304 SS	
1	311736	Tank – Hydraulic Wldmt	1
	311744	Tank - Hydraulic Wldmt 304 SS	1
2	88838	Filter – Return, Includes 3-6	1
3	306772	O-Ring - Cover Filter	1
4	306773	O - Ring - Housing Filter	1
5	306789	Seal - Filter Assy	1
6	305066	Element - Filter	1
7	305063	Strainer – 2 NPT	1
8	305058	Pipe – 1.5 SCH40 10	1
9	305057	Diffuser – Tank	1
10	305062	Strainer – 1-1/4 NPT	1
11	29768	Fitting – 20-20 070102	1
12	305061	Plug – Magnetic 1 NPT	1
13	6028	Nipple - Close 1-1/4 NPT	1
14	6011	Elbow 90° 2 NPT	1
15	20068	Cap Screw – 3/8-16 x 1-1/4	4
	36399	Cap Screw - 3/8-16 x 1-1/4 SS	4
16	20712	Washer – Lock 3/8	4
	36420	Washer - Lock 3/8 SS	4
17	22324	Nipple - Close 2 NPT STD	1
18	306186	Gasket Maker - Silicone	AR
19	23703	Adapter - Elbow 90° 2 NPT	1
20	6035	Plug - Pipe 1-1/4 NPT	1
21	311214	Fitting - 2-2 140239	1
22	29752	Fitting - 12-12 070102	1
23	6034	Plug - Pipe 1 NPT	1
24	22324	Nipple - Pipe 2 NPT x 2	1
25	305060	Valve - Ball 2 NPT	1
26	29801	Fitting - 12 070112	1

AR - As Required

Hydraulic Reservoir w/ Cooler



Hydraulic Reservoir w/ Cooler

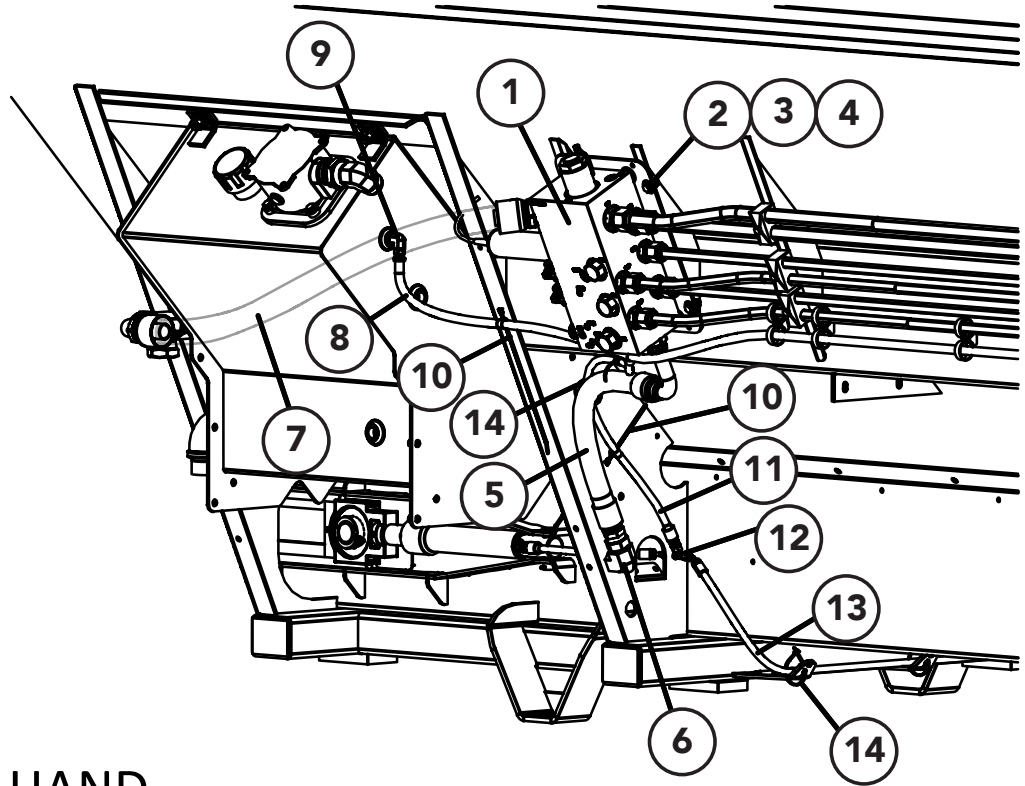
ITEM	PART NO.	DESCRIPTION	QTY
1	311735	Hydraulic Reservoir Assy	1
2	38575	Gauge – Sight & Temperature	1
3	305761	Bracket – Cooler LH	1
4	305767	Cooler – Assy	1
	*305767-AA	Core - Cooler	1
	*305767-AB	Fan - Assy Cooler	1
	*305767-AC	Housing - Cooler	1
5	305760	Bracket – Cooler RH	1
6	306447	Bracket - Cooler Mount	2
7	36398	Cap Screw – 3/8-16NC x 1 SS	5
8	72054	Nut – Lock 3/8 SS	5
9	34580	Cap Screw - 5/16 x 1	8
10	36424	Washer – Flat 5/16	8
11	36419	Washer – Lock 5/16 SS	8
12	36413	Nut – Hex 1/3-18NC SS	8
13	312271	Relay – 12VDC 40A	1
14	56258	Screw – Truss Head 1/4-20 x 1/2 SS	1
15	42034	Nut – Lock 1/4-20 SS	1
16	305074	Switch – Temperature 114°	1
17	98568	Fitting – 20-20 070221	1
18	96916	Fitting – 20-20 070220	2
19	56267	Fitting – 20-20 070433	1
20	34819	Fitting – 20-16 070123	1
21	29802	Fitting - 16 070123	1
22	98662	Hose – 1-1/4" x 48" 100R4	1
23	34779	Fitting - 6-6 070202	1
24	39159	Belt - Spacer	6
25	39158	Belt - Flex Mount	2
26	36426	Washer - Flat 1/2 SS	6
27	36403	Cap Screw - 1/2-13NC x 2 SS	4
28	39016	Nut - Lock 1/2-13NC SS	4

Hydraulic Reservoir w/ Cooler

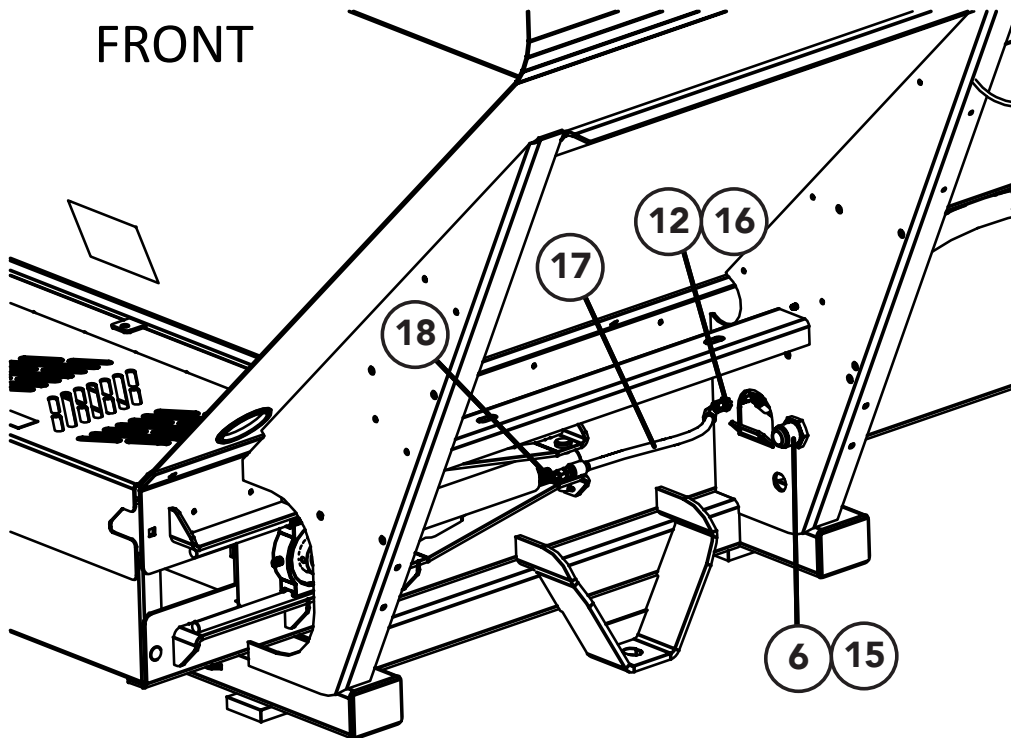
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
29	304264	Decal - Important Cooler	1
30	39378	Decal - Change Filter Element	1
31	8664	Decal - Important Keep Valve Open	1
32	319927	Screw - Sockethead .313-18 Nc X .5 SS	4
33	319928	Washer - Lock M6	4
34	319929	Screw - Sockethead M6-20	4
35	20711	Washer - Lock .313 Zn	4
36	20677	Nut - Lock .313-18nc Zn	4
37	20692	Washer - Flat .313 Zn	8
38	96747	Filler - Weld In Neck	1
-	320410	Filler - Cap Breather	1

* - Not Shown

Main Bin Hydraulics

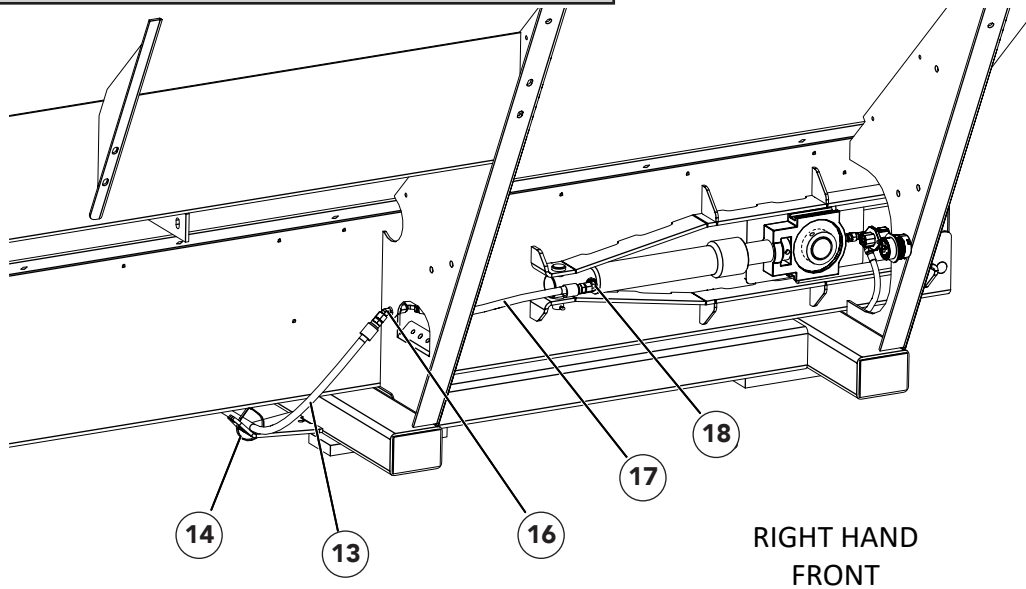


LEFT HAND
FRONT



Body Hydraulics

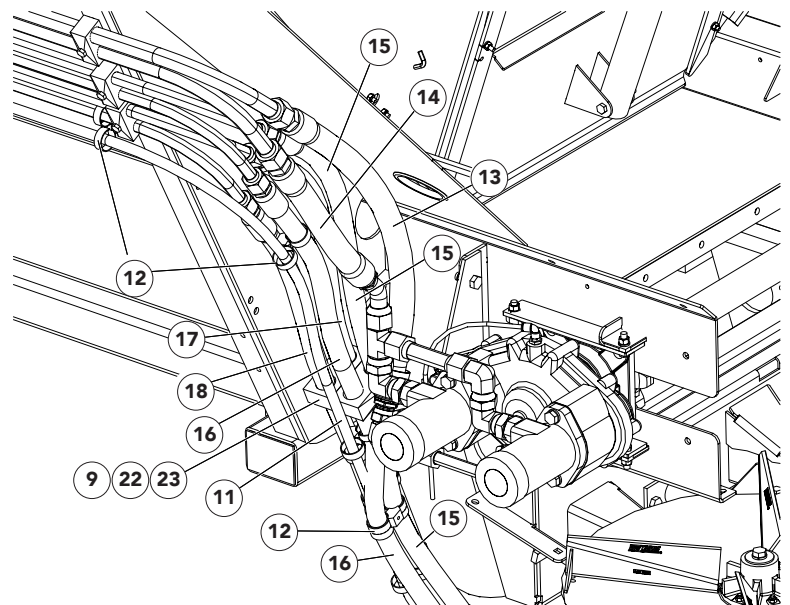
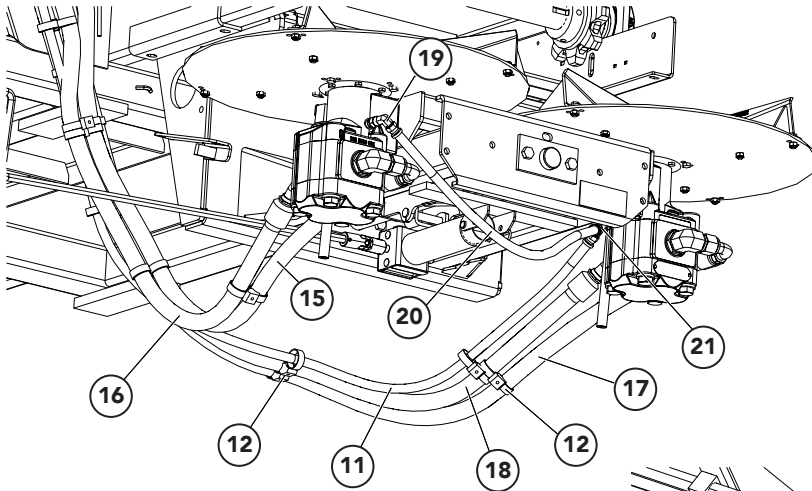
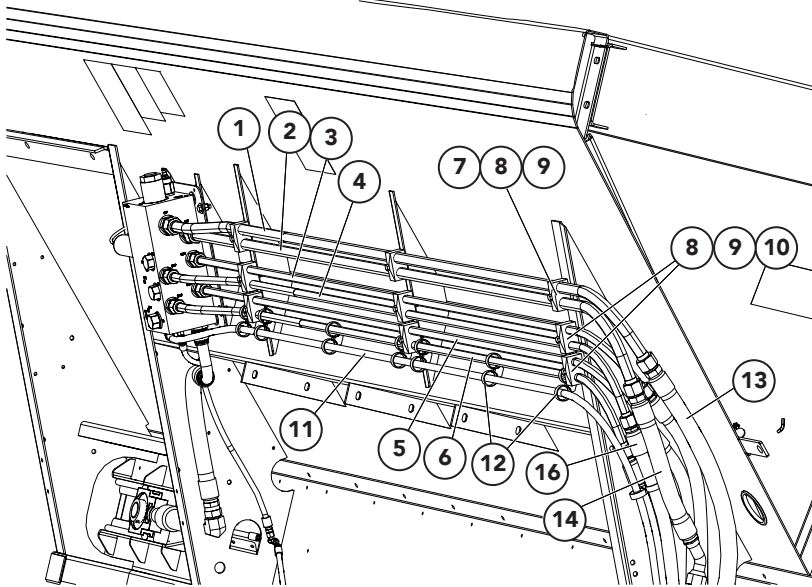
Main Bin Hydraulics Cont.



RIGHT HAND
FRONT

ITEM	PART NO.	DESCRIPTION	QTY
1	311797	Valve - Mounting Assy 40 GPM See "Valve Assembly" parts page for details.	1
2	36398	Cap Screw - 3/8-16NC x 1 SS	4
3	36425	Washer - Flat 3/8 SS	4
4	72054	Nut - Lock 3/8-16NC SS	4
5	311717	Hose - Assy SAE 16 x 28.88 100R2	1
6	306040	Fitting - 16-16 070701	2
7	311716	Hose - Assy SAE 20 x 43.25 100R4	1
8	311706	Hose - Assy SAE 6 x 25.5	1
9	34779	Fitting - 6-6 070202	1
10	311806	Tie - Wire Fir Tree	2
11	311708	Hose - Assy SAE 4 x 36.63 1000R1	1
12	311487	Fitting - 4-4-4 070958	1
13	311709	Hose - Assy SAE 4 x 52.25100R1	1
14	99674	Tie - Wire	5
15	306041	Fitting - Nut 16 Bulkhead 070118	2
16	311489	Fitting - Nut 4 Bulkhead 070118	2
17	311707	Hose - Assy SAE 4 x 14.5 100R1	2
18	29795	Fitting - 4-4 070220	2
19	311491	Fitting - 4-4 070801	1

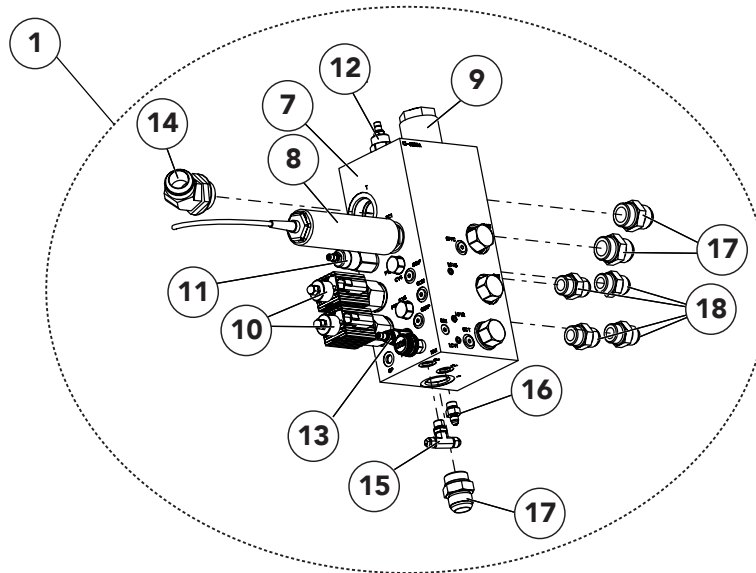
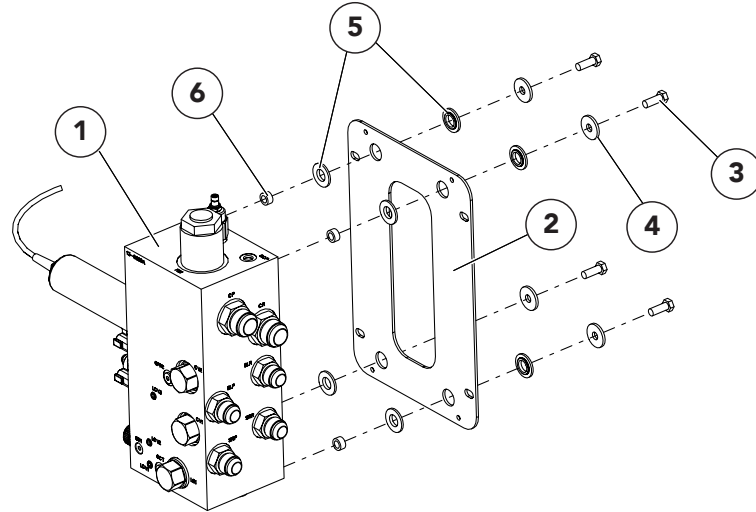
Main Bin Hydraulics Cont.



Main Bin Hydraulics Cont.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	311763	Tube - Assy 1.0 OD 304	1
2	311762	Tube - Assy 1.0 OD 304	1
3	311761	Tube - Assy .75 OD 304	1
4	311760	Tube - Assy .75 OD 304	1
5	311759	Tube - Assy .75 OD 304	1
6	311758	Tube - Assy .75 OD 304	1
7	300033	Clamp - Tubing Twin 1	2
8	71830	Cap Screw - 5/16-18NC x 2-1/2 SS	6
9	42221	Nut - Lock 5/16-18NC SS	7
10	75036	Clamp - Tubing Twin 3/4	4
11	311715	Hose - Assy SAE 6 x 213	1
12	310648	Tie - Dual Clamp	22
13	311704	Hose - Assy SAE 12 x 32 100R2	1
14	311703	Hose - Assy SAE 16 x 19 100R1	1
15	311702	Hose - Assy SAE 12 x 73.25 100R2	1
16	311700	Hose - Assy SAE 12 x 62.38 100R2	1
17	311701	Hose - Assy SAE 12 x 92 100R2	1
18	311699	Hose - Assy SAE 12 x 78.75 100R2	1
19	34816	Fitting - 6-6 070221	1
20	311705	Hose - Assy SAE 6 x 28.5	1
21	98724	Fitting - 6-6-6 070432	1
22	305928	Clamp - Tubing Twin 1-1/4	2
23	311665	Cap Screw - 5/16-18NC x 5 SS	1

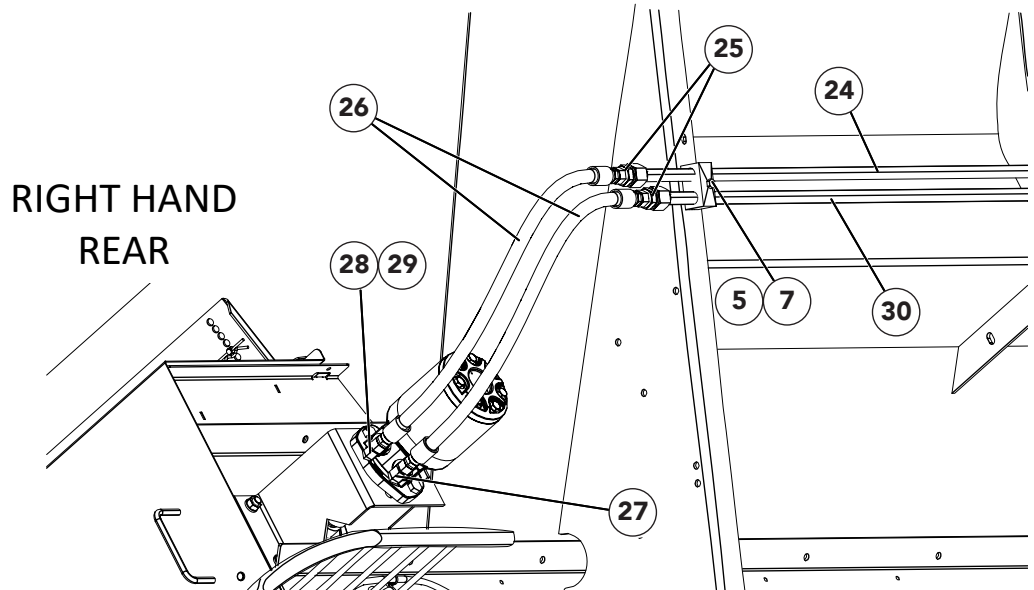
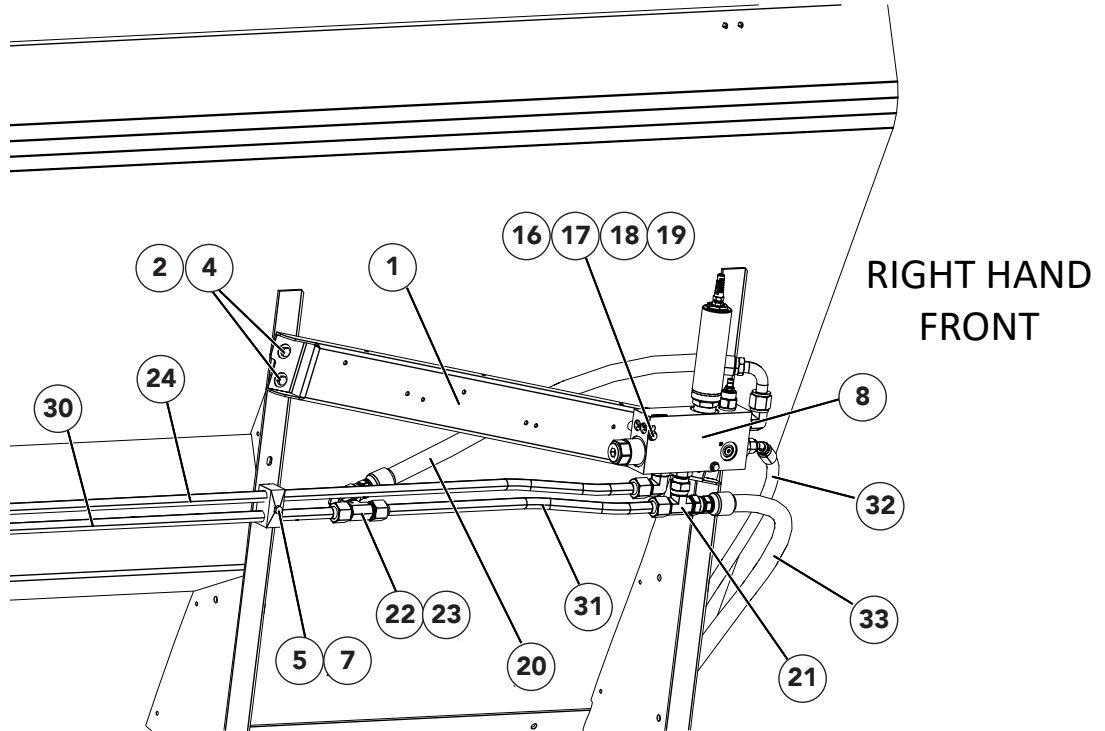
Hydraulic Manifold Assembly



Hydraulic Manifold Assembly Cont.

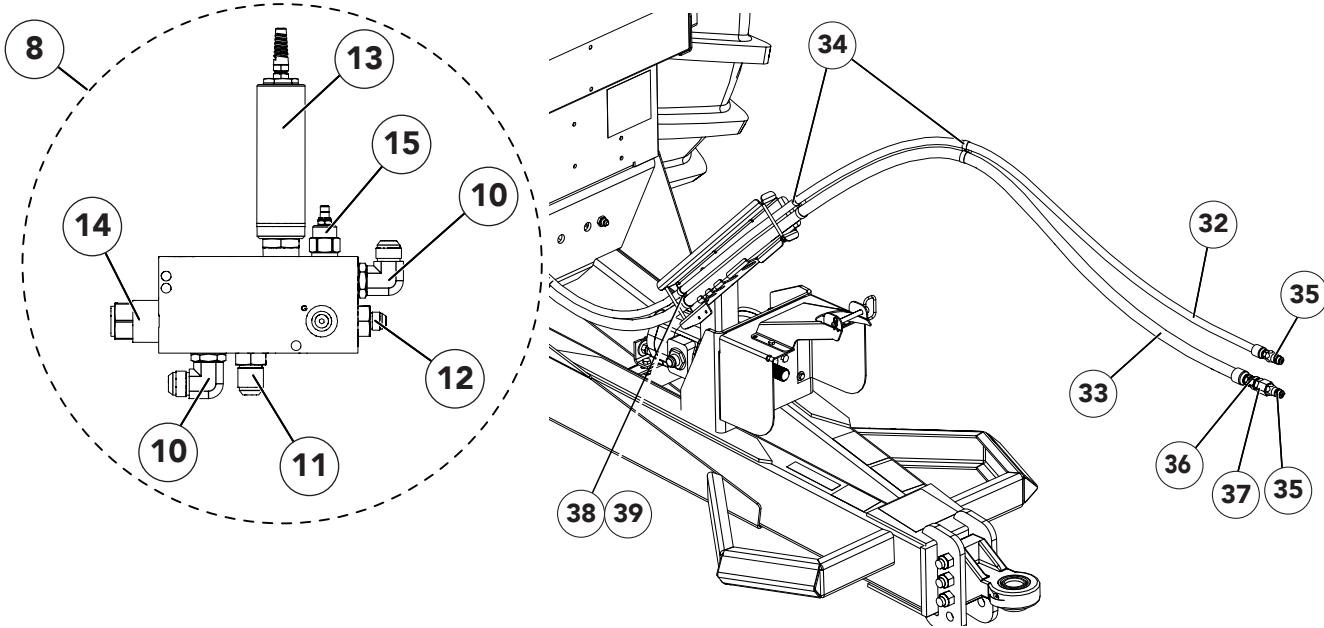
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	311797	Valve - Mounting Assy 40 GPM, Includes Items 1 - 18	1
1	317360	Valve - Assy 40 GPM, Includes Items 7 - 18	1
2	311790	Plate - Valve Mount 304	1
3	36398	Cap Screw - 3/8-16NC x 1 SS	4
4	311798	Washer - Special	4
5	311664	Washer - Step Poly	8
6	88050	Spacer	4
7	311515	Valve - Hydraulic 40 GPM, Includes Items 8 - 13	1
8	306272	Valve - Flow Control 40 GPM SFP	1
9	311515-AA	Valve - Compensator 50 GPM SFP	1
10	317358 317359	Valve - PWM Flow Control 20 GPM, Includes Coil Coil - Proportion 10VDC	2 2
11	311515-AD	Valve - Relief Soft Start	1
12	311515-AE	Valve - Relief	1
13	311515-AF	Valve - Pressure Reducing / Relieving	1
14	311484	Fitting - 20-20 070320	1
15	311482	Fitting - 6-6-6 070429	1
16	311480	Fitting - 4-6 070120	1
17	29803	Fitting - 16-16 070120	3
18	29789	Fitting - 12-12 070120	4

MultApplier Hydraulics



Body Hydraulics

MultApplier Hydraulics Cont.



ITEM	PART NO.	DESCRIPTION	QTY
1	306638	Bracket - Valve Mounting SFP	1
2	36425	Washer - Flat 3/8 SS	4
3	36398	Cap Screw - 3/8-16NC x 1 SS	4
4	72054	Nut - Lock 3/8-16NC SS	4
5	71830	Cap Screw - 5/16-18NC x 2-1/2 SS	5
6	42221	Nut - Lock 5/16-18NC SS	6
7	75036	Clamp - Tubing Twin 3/4	5
8	315742	Valve - Assy 9 GPM SFP w/ Relief, Includes Items 9 - 15	1
9	315741	Valve - Flow Control 9 GPM SFP w/ Relief, Includes Items 13 - 15	1
10	29847	Fitting - 12-12 070220	2
11	303226	Fitting - 12-12 S1040-14 Non-Standard	1
12	34842	Fitting - 8-12 070120	1
13	306277	Valve - Flow Control 9 GPM SFP	1
14	311817-AA	Valve - Compensator 25 GPM SFP	1
15	315741-AB	Valve - Relief	1
16	56396	Cap Screw - 1/4-20NC x 3-1/4 SS	2

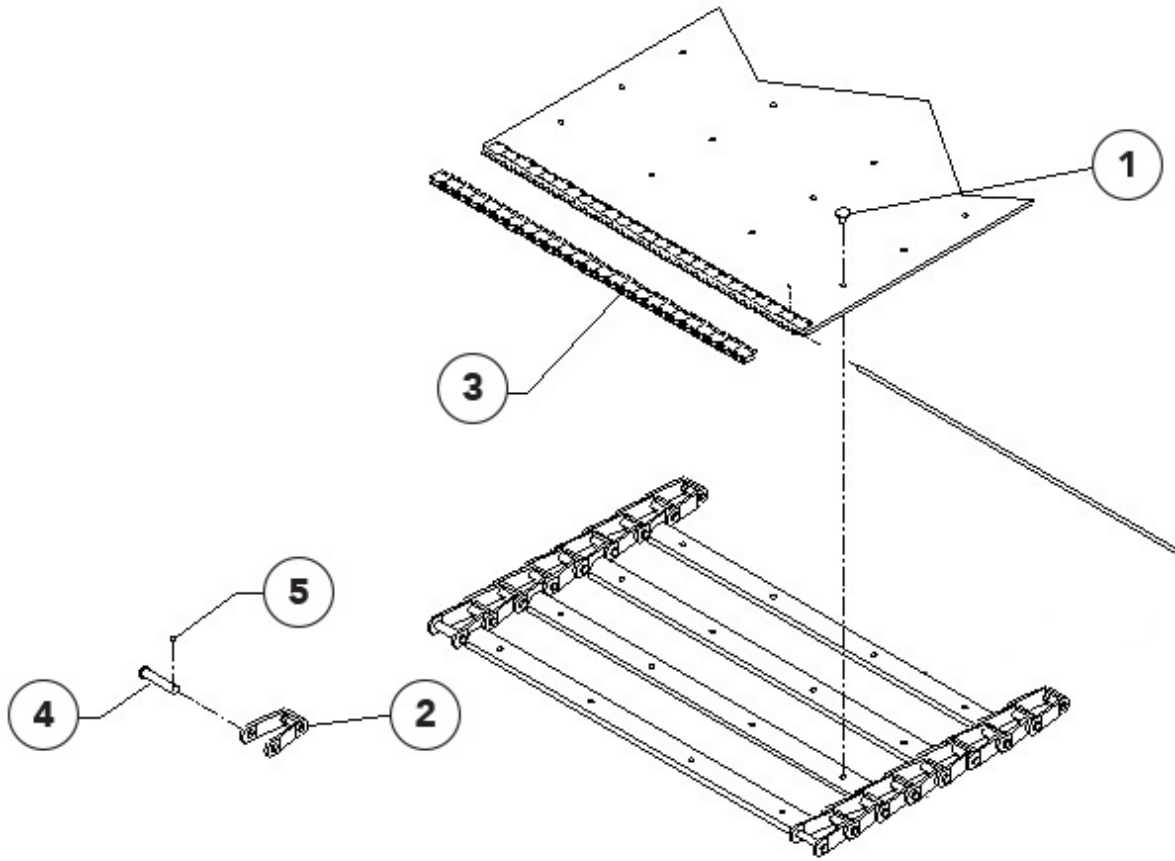
* - Not Shown AR - As Required

Body Hydraulics**MultApplier Hydraulics Cont.**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
17	42034	Nut - Lock 1/4-20NC SS	2
18	302098	Washer - Step	2
19	302097	Washer - Step	2
20	311823	Hose - Assy SAE 12 x 31.63 100R4	1
21	29809	Fitting - 12-12-12 070433	1
22	29792	Fitting - 12-12-12 070401	1
23	34709	Fitting - 12-12 070221	1
24	311867	Tube - Assy	1
25	306743	Fitting - 12-8 070101S 304	2
26	306691	Hose - Assy SAE 8 x 30 100R1 SS	2
27	306741	Fitting - 8-10 070220S 304	1
28	306740	Fitting - 8-10 070120S 304	1
29	306742	Fitting - 8-8 070221S 304	1
30	312881	Tube - Assy	1
31	311820	Tube - Assy	1
32	312879	Hose - Assy SAE 8 x 173 100R1	1
33	312880	Hose - Assy SAE 12 x 173 100R1	1
34	310648	Tie - Dual Clamp	5
35	305262	Nipple - QD 1/2" Ag, 8 ORB	2
36	305263	Valve - Check, 12 JIC x 12 ORB	1
37	305264	Fitting - 10-12 S1040-22 Non-Standard	1
38	20576	Screw - Round Head #10-24NC x 1-1/4 SS	1
39	20675	Nut - Lock #10-24NC	1
40	*306771	Compound - Antiseize Used on all stainless connections	AR

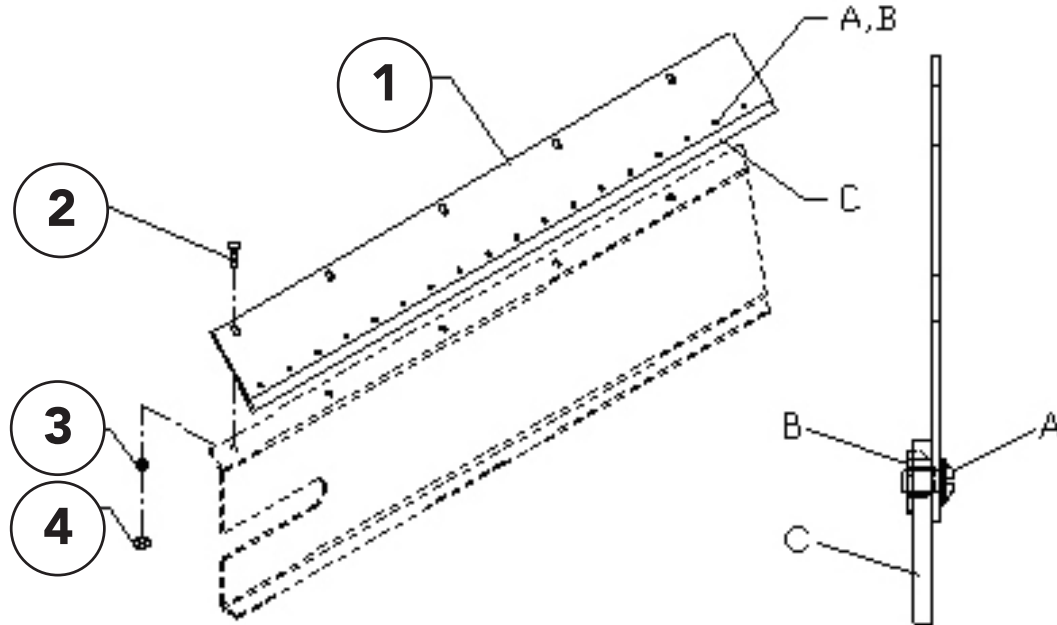
* - Not Shown AR - As Required

#4 Belt-Over-Chain Conveyor



ITEM	PART NO.	DESCRIPTION	QTY
	311465-AE	Belt-Over-Chain - #4 16' MOR	1
1	305646	Screw - #4BOC 1/4 x 9/16 torx Flat Head	AR
2	310295	Crossbar - Wldmt w/ Links, Includes Items 4 & 5	AR
3	73317	Kit - Splicer	1
		Lacing Strips 23"	2
	56405	Pin - Connecting	1
		Staples	AR
4	36697	Pin - Pintle Chain	AR
5	20817	Pin - Cotter	AR
6	36699	Link - Pintle Chain	AR

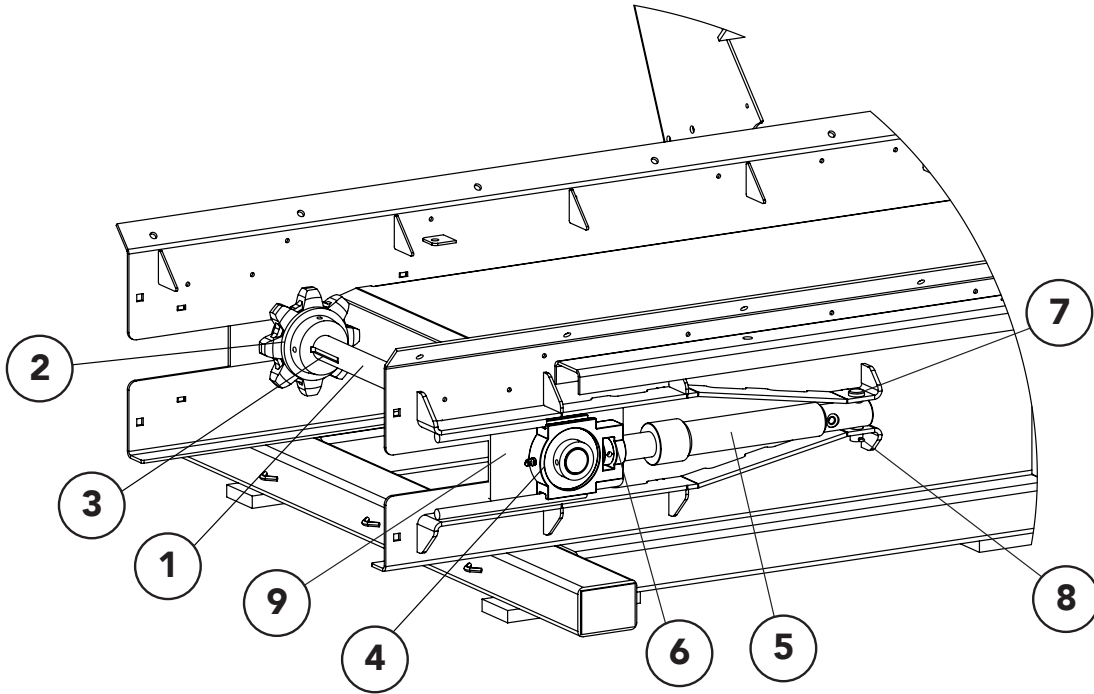
Chain Shields



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	<u>304 SS</u>		
1	97857	Chain Shield – #4 Chain	2
A	56258	Screw – Truss Head 1/4 x 1/2	AR
B	88931	Nut – Tee 1/4 x 1/4	AR
C	305975	Sealer - Belt, #4 BOC Shield	AR
2	71829	Screw – Truss Head 3/8 x 1 SS (RH Side)	12
	*98321	Screw – Truss Head 3/8 x 1-1/4 SS (LH Side)	12
3	36420	Washer – Lock 3/8	36
4	36414	Nut – Hex 3/8	36
5	*313047	Mount - Cable Tie 3/8	12

* - Not Shown AR - As Required

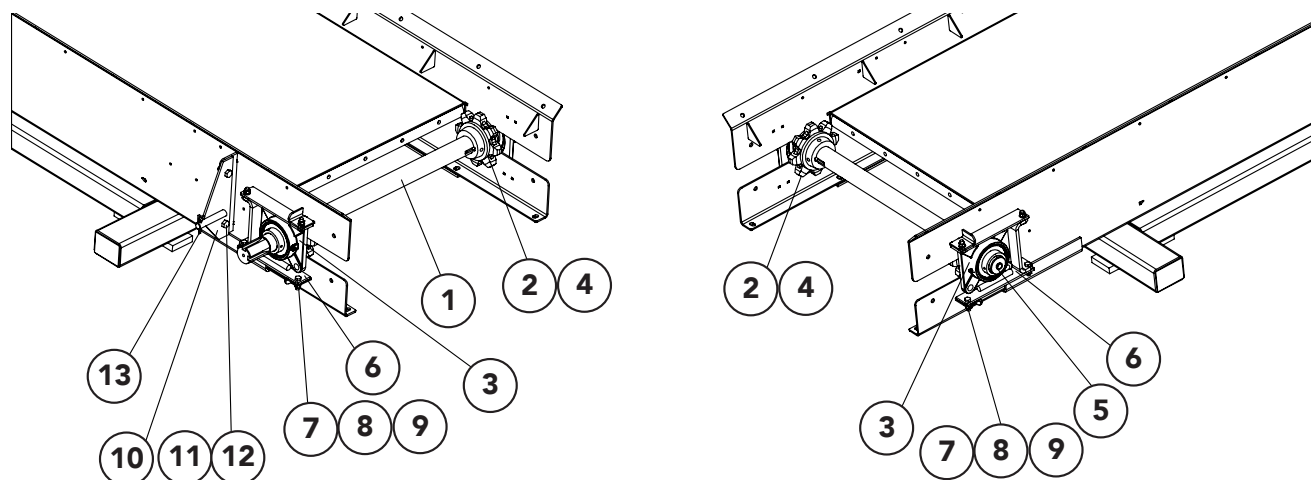
Conveyor Idler



ITEM	PART NO.	DESCRIPTION	QTY
	97053	Shaft - Idler Assembly, Includes Items 1 - 4	1
1	82799	Shaft - Idler	1
2	97051	Sprocket - Idler	2
3	2135	Key - Square 5/16 x 2-1/2	2
4	22511	Bearing - Take-up	2
5	311359	Cylinder - Ram 1-1/2 x 8"	2
	312938	Kit - Seal, Snap-in Rod Wiper	1
	312939	Kit - Seal, Press-in Rod Wiper	1
6	2696	Collar - Set 1"	2
7	89630	Pin - Clevis 3/4 x 2-3/4	2
8	20822	Pin - Cotter	2
9	311670	Plate - Cover	2

Conveyor

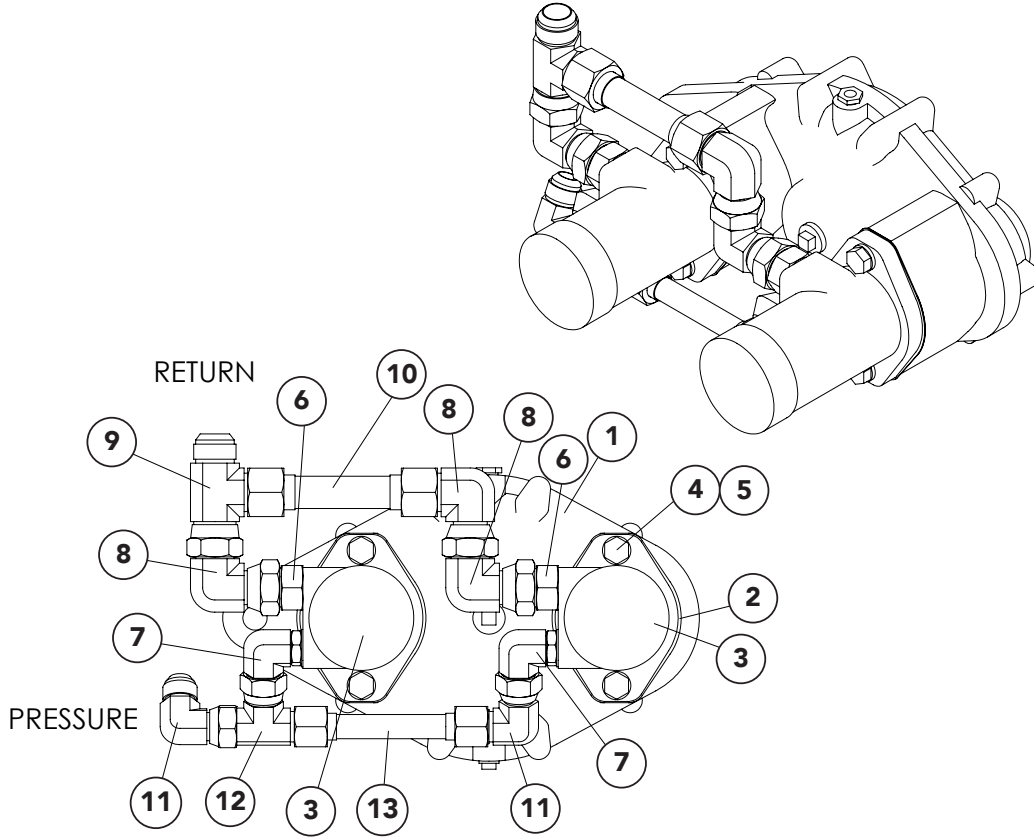
Conveyor Drive



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	97052	Shaft - Drive Assy, Includes Items 1 - 5	
1	310606	Shaft – Drive	1
2	88276	Sprocket	2
	20743	Screw – Set 5/16 x 3/8	1
3	6465	Bearing	2
4	6131	Key – Square 3/8 x 1 1/2	2
5	56264	Cap/Plug - Plastic	1
6	82885	Guide – Bearing	4
7	36399	Cap Screw - 3/8 x 1 1/4	8
8	36420	Washer – Lock 3/8	8
9	36414	Nut – Hex 3/8	8
10	82552	Bracket – Torque Arm LH	1
11	20128	Cap Screw - 1/2 x 1 1/4	2
12	20680	Nut – Lock 1/2	2
13	20833	Pin – Cotter 1/4 x 1 1/2	1
14	311172	V-Ring Seal	1

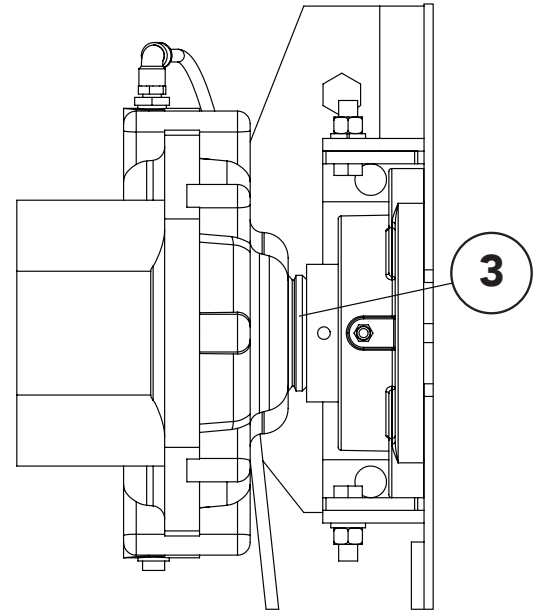
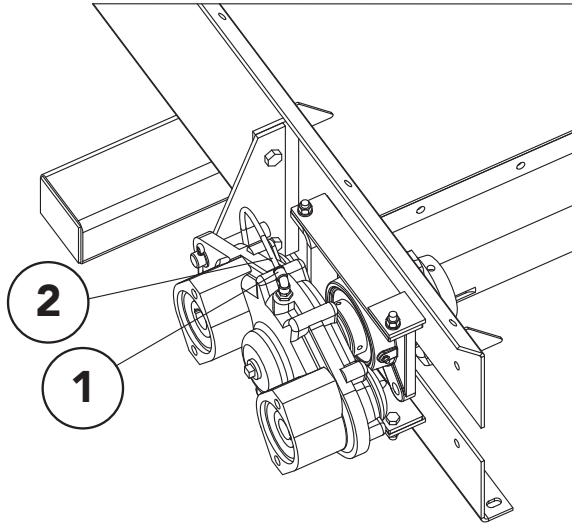
* Not Shown

Gearcase Assembly - Dual Pinion

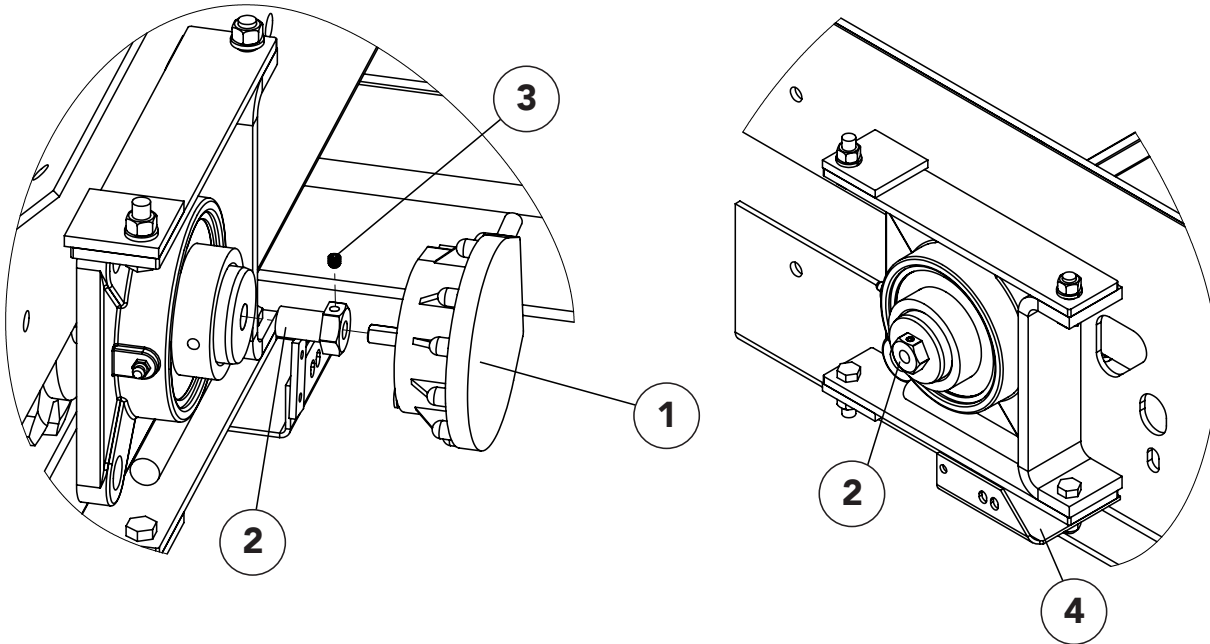


ITEM	PART NO.	DESCRIPTION	QTY
	313837	Gearcase - Assy Dual 11.3 CID, Includes Items 1 - 13	1
1	37985	Gearcase 6:1	1
2	74524	Gasket - SAE 101-2 (B)	2
3	55970	Motor - Hydraulic 11.3 CID	2
4	20714	Washer - Lock 1/2	4
5	20129	Cap Screw - 1/2-13NC x 1-1/2	4
6	29778	Fitting - 16-10 070120	2
7	29773	Fitting - 12-10 070220	2
8	29807	Fitting - 16-16 070221	3
9	29850	Fitting - 16-16-16 070432	1
10	80888	Tube - 1 OD x 4-5/8 Assy	1
11	34709	Fitting - 12-12 070221	2
12	29809	Fitting - 12-12-12 070433	1
13	80886	Tube - 3/4 OD x 4-7/8 Assy	1

Gearcase Breather Tube



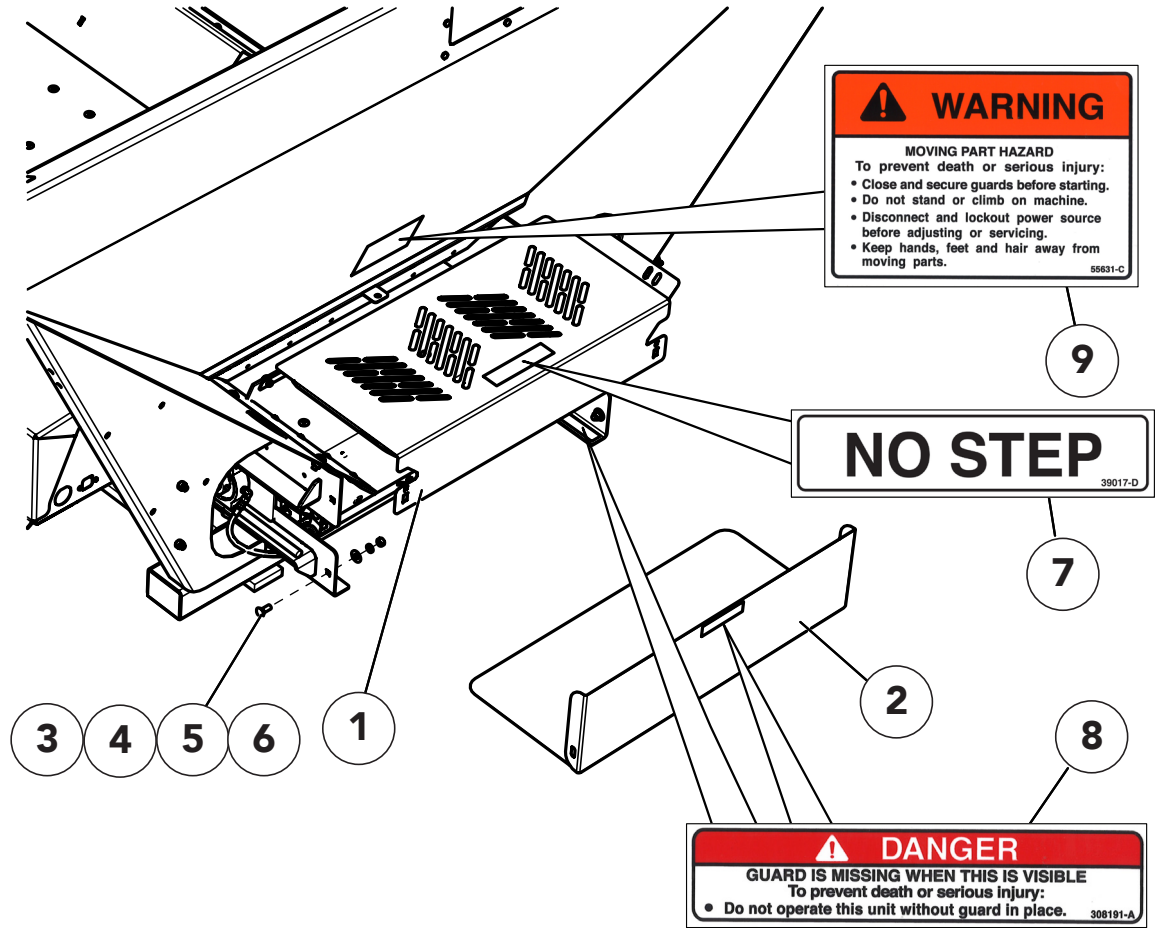
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	306891	Fitting - 4-2 630202K	1
2	9005-0-7761	Tubing - 1/4" OD Air Brake Black	1.5 ft
3	311172	V-Ring Seal	1



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	303994	Encoder – 180 with Hardware	1
2	310601	Coupler - Rate Sensor SS	1
3	310603	Screw - Set 1/4-20NC x 5/16 SS	1
4	304946	Bracket - Sensor, Drive Mount	1

Conveyor

Guard - Front



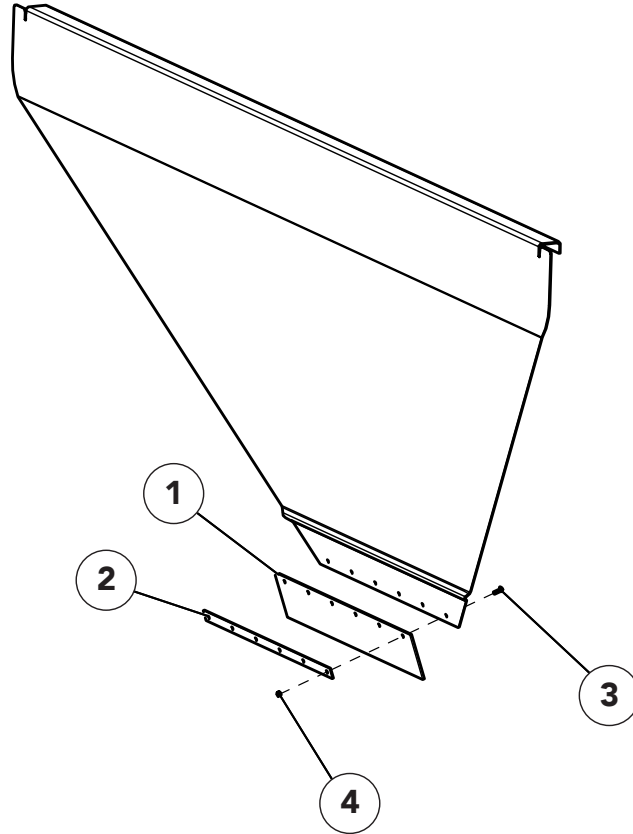
WARNING
 MOVING PART HAZARD
 To prevent death or serious injury:
 • Close and secure guards before starting.
 • Do not stand or climb on machine.
 • Disconnect and lockout power source before adjusting or servicing.
 • Keep hands, feet and hair away from moving parts.
 55631-C

NO STEP
 39017-D

DANGER
 GUARD IS MISSING WHEN THIS IS VISIBLE
 To prevent death or serious injury:
 • Do not operate this unit without guard in place.
 308191-A

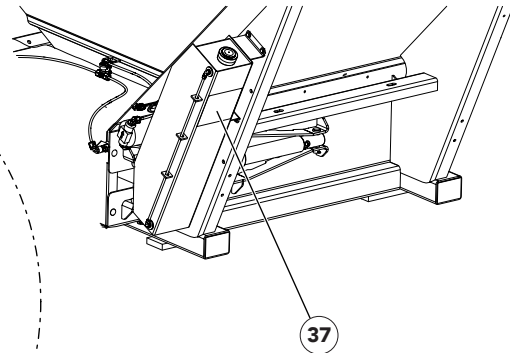
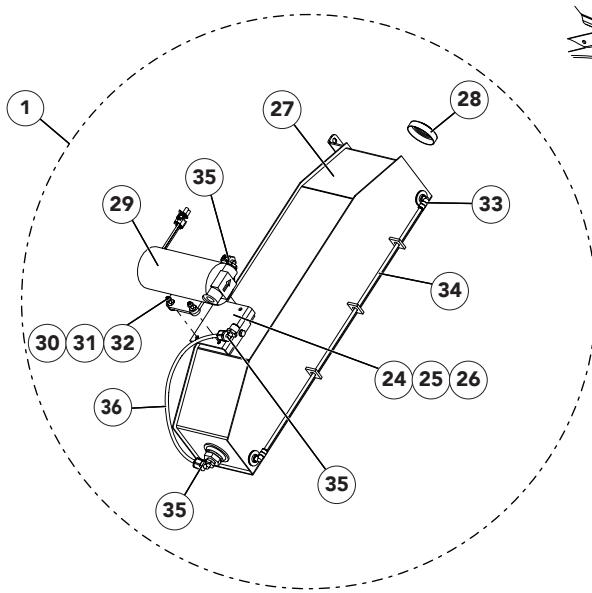
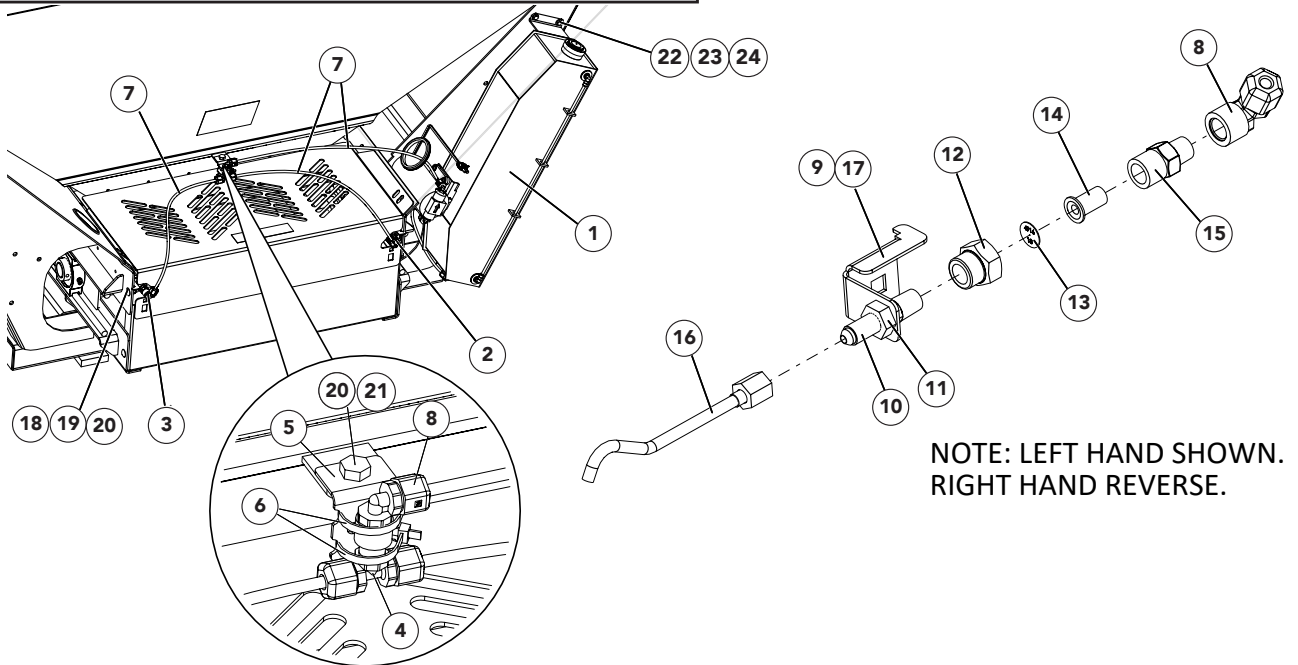
ITEM	PART NO.	DESCRIPTION	QTY
1	314316	Guard - Front Top, Includes Item 7	1
2	312877	Guard - Front Bottom, Includes Item 8	1
3	36408	Bolt - Carriage 3/8-16NC x 1 SS	2
4	36425	Washer - Flat 3/8 SS	2
5	36420	Washer - Lock 3/8 SS	2
6	36414	Nut - Hex 3/8-16NC SS	2
7	39017	Decal - No Step	1
8	308191	Decal - Danger, Guard is Missing	2
9	55631	Decal - Danger, Moving Part Hazard	1

Wiper - Front



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	90826	Belt - Front Wiper Assy, Includes Items 1 - 4	1
1	14743	Wiper - Belt	1
2	71656	Retainer - Belt 304	1
3	32446	Screw - TR HD 1/4 x 3/4	6
4	36412	Nut - Hex 1/4	6

Conveyor Chain Oiler



Conveyor Chain Oiler Cont.

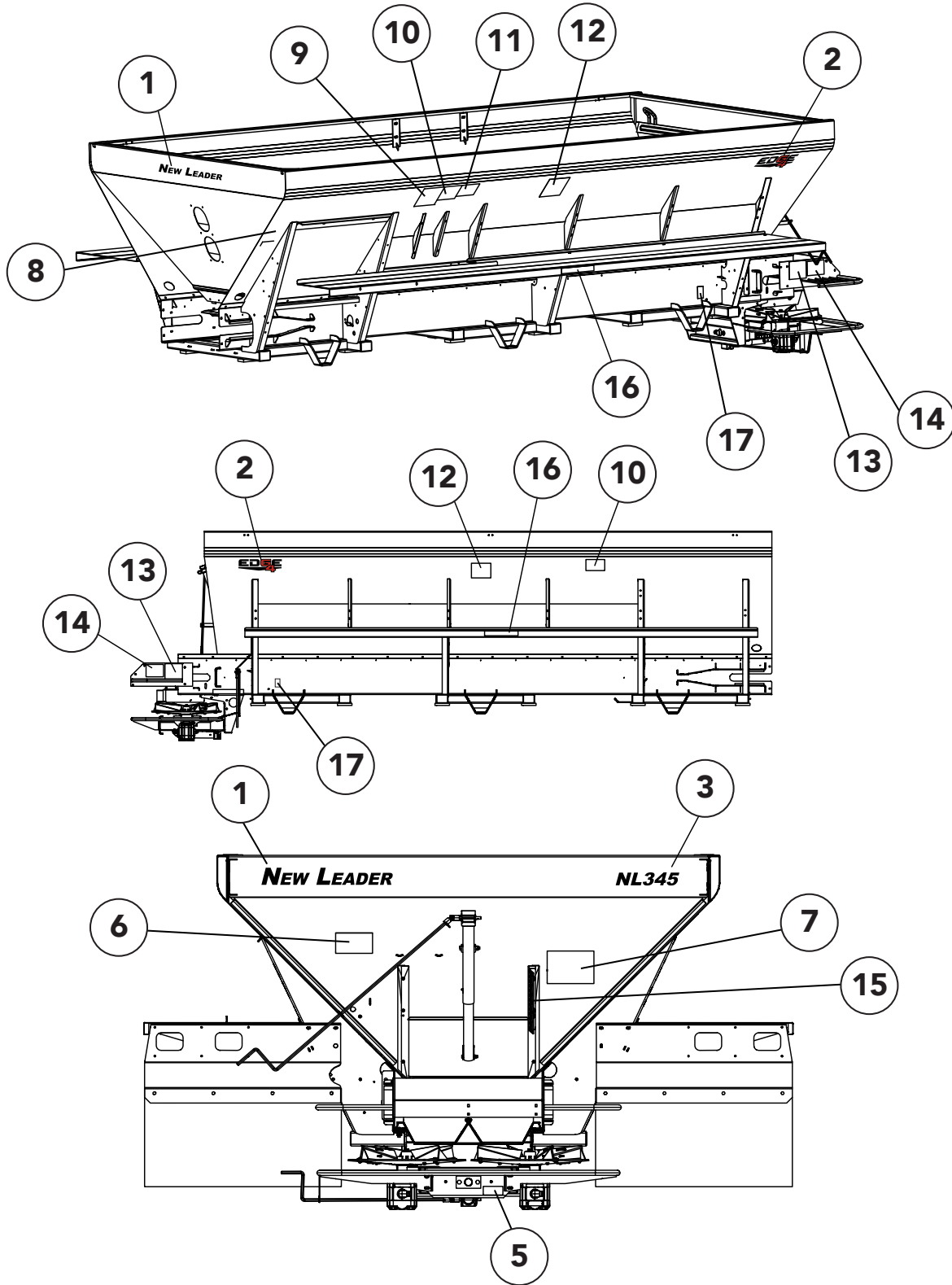
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	314022	Oiler - Group Conveyor Chain, Includes Items 1 - 38	1
	314232	Nozzle & Hose - Assy, Includes Items 2 - 8, 37	1
1	310760	Tank - Assy Chain Oiler, Includes Items 24 - 37	1
2	314019	Nozzle - Assy LH, Includes Items 8 - 16, 37	1
3	314020	Nozzle - Assy RH, Includes Items 8, 10 - 17, 37	1
4	309905	Tee - HDPP 1/4 NPT Male x 1/4 Tube	1
5	306804	Bracket - Coupling	1
6	99674	Tie - Wire	2
7	301338	Tubing - Black 1/4" Nylon 24"	1
		20"	2
8	309904	Elbow - HDPP 1/4 NPT Fem x 1/4 Tube	3
9	314016	Angle - Nozzle Mount LH	1
10	314012	Fitting - 4-4 070602	1
11	314261	Fitting - 4 070118	1
12	314014	Fitting - Outlet 1/4 NPT Fem x 1/4 TT Fem Nylon	1
13	314013	Plate - Orifice SS	1
14	306651	Strainer - w/ Check Valve	1
15	314015	Fitting - Adapter 1/4 NPT Male x 1/4 TT Male Nylon	1
16	314018	Nozzle - Tube 304	1
17	314017	Angle - Nozzle Mount RH	1
18	36398	Capscrew 3/8-16NC x 1 SS	2
19	36425	Washer - Flat 3/8 SS	2
20	72054	Nut - Lock 3/8-16NC SS	3
21	36293	Cap Screw - 3/8-16NC x 3/4 SS	1
22	36423	Washer - Flat 1/4 SS	4
23	42034	Nut - Lock 1/4-20NC SS	4
24	36393	Cap Screw - 1/4-20NC x 3/4 SS	5
25	36418	Washer - Lock 1/4 SS	1
26	304409	Mount - Pump	1
27	304398	Tank - Wldmt Chain Oiler, Includes Item 28	1

* - Not Shown AR - As Required

Conveyor Chain Oiler Cont.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
28	21980	Cap - Vented	1
29	304390	Pump - Assy w/ Connector	1
	304834	Diaphragm - 1.1 GPM 30 PSI	AR
	303730-AB	Connector - Weatherpack Female	AR
30	44454	Screw - Socket Head #10-24NC x 1 SS	4
31	171052	Washer - Flat #10 SS	8
32	56355	Nut - Lock #10-24NC SS	4
33	301337	Fitting - 90° Male 1/8 NPT	2
34	306437	Tubing - Clear 1/4 OD x 24-3/4	2.031' 1
35	309902	Elbow - HDPP 3/8 NPT Male x 1/4 Tubing	3
36	301338	Tube - 1/4 Black Nylon	15" 1
37	*306670	Tape - Thread Seal PTFE Yellow Gas Line	AR
38	21476	Decal - Notice, Conveyor Chain Life	1

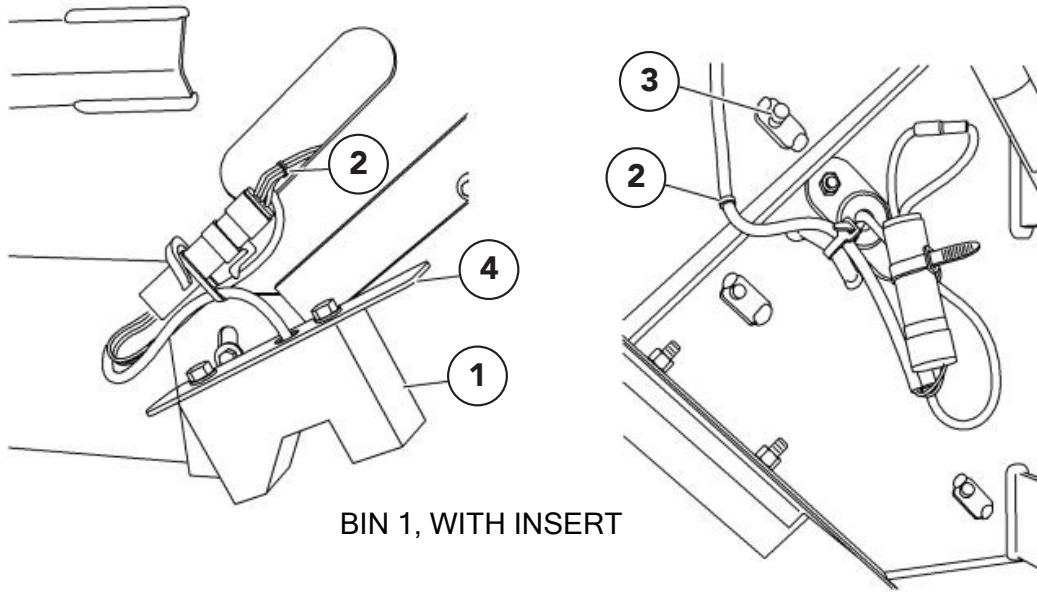
* - Not Shown AR - As Required



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	312561 312562	Decal - New Leader, Black Decal - New Leader, White	2 2
2	311757 312697	Decal - G4 Edge, Black/Red Decal - G4 Edge, Black/White	2 2
3	312890 313021	Decal - NL345, Black Decal - NL345, White	1 1
4	Not Used		
5	98319	Decal - Patent	1
6	312276	Decal - Notice Spread Pattern	1
7	368	Decal - Danger, Flying Material	1
8	315865	Decal - Warning, Prop 65	1
9	150034	Decal - Caution, Improper Operation	1
10	364	Decal - Danger, Moving Part	2
11	321	Decal - Caution, Hazardous Material	1
12	39138	Decal - Warning, High Pressure Fluid	2
13	55630	Decal - Warning, Falling Hazard	2
14	55631	Decal - Warning Moving Part Hazard	2
15	311604	Feedgate Slide Scale	1
16	39200	Decal - Keep Off (fenders)	2
17	311828	Decal - Conveyor Chain Tension	2

NOTE: Refer to "Safety Decals" and "Informational Decals" in Safety section of operator's manual for details.

Bin Sensor



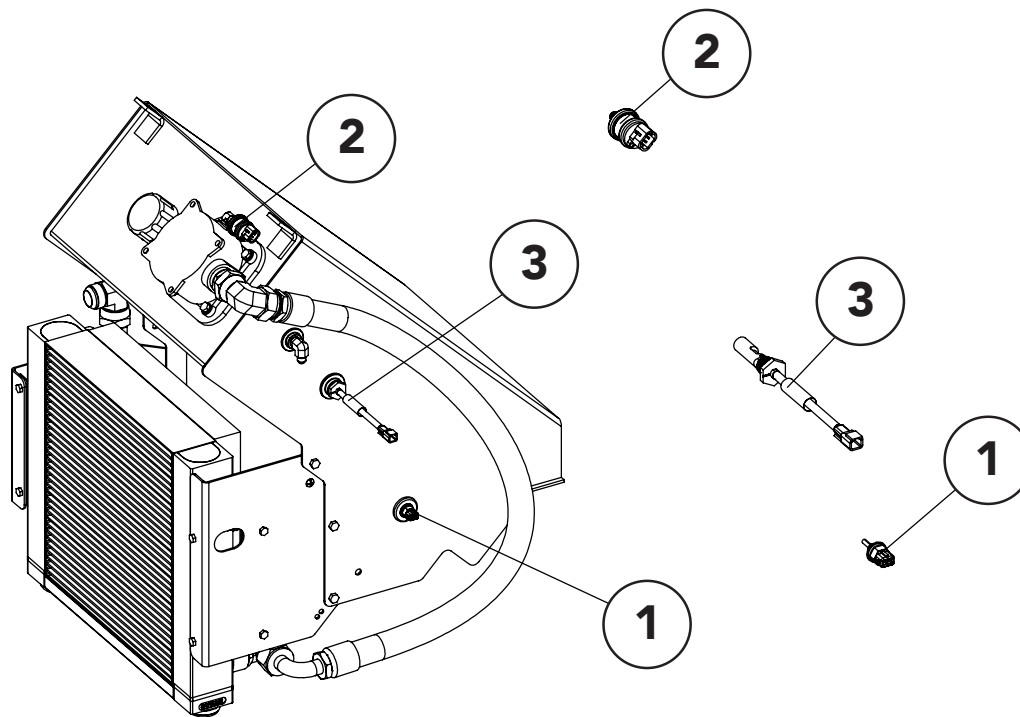
BIN 1, WITH INSERT

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

* - Not Shown

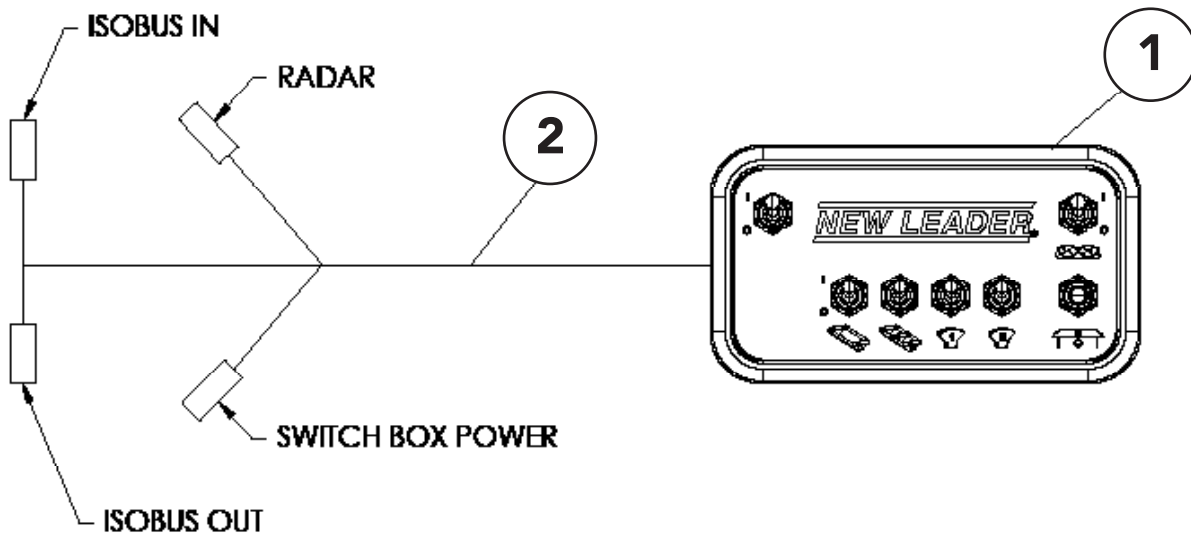
Electronics

Hydraulic Reservoir Sensors



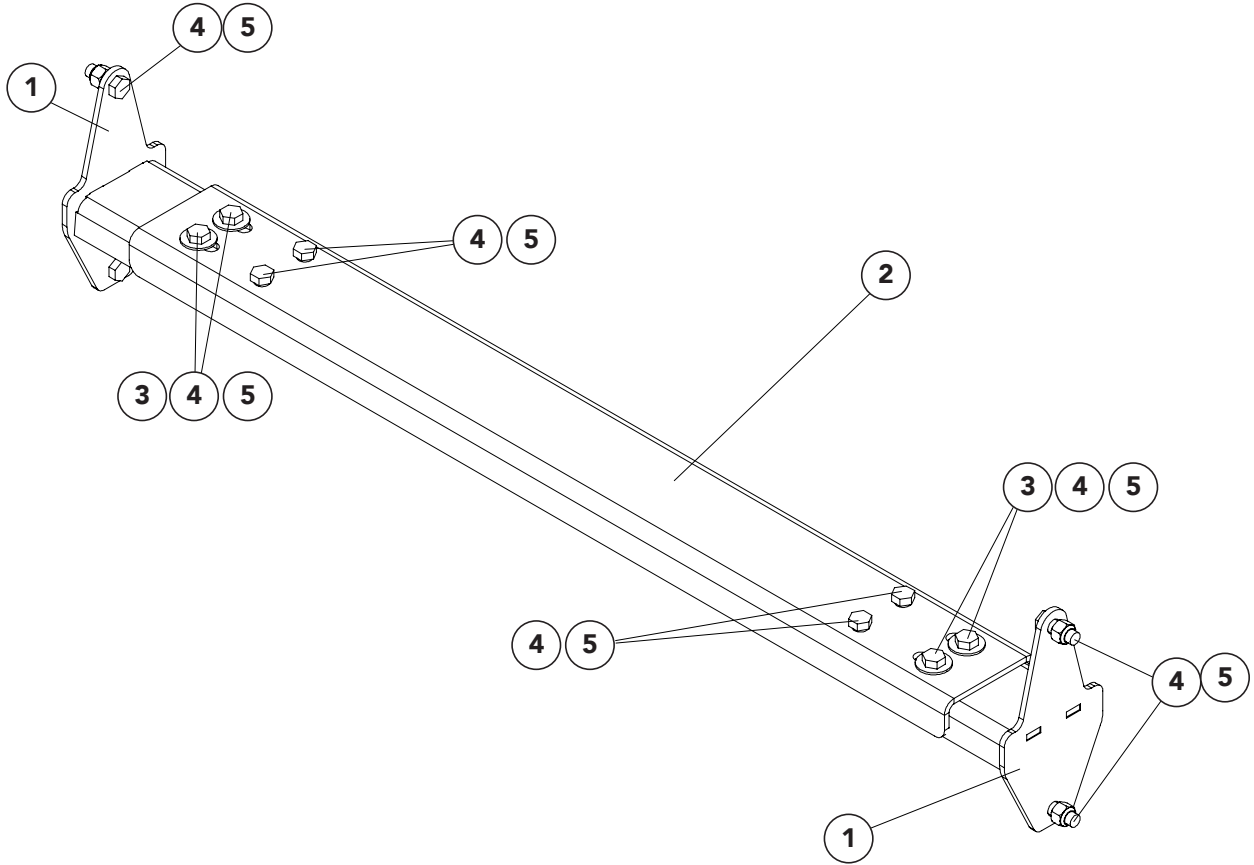
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	311075	Sensor - Temp	1
2	311076	Switch - Pressure	1
3	316127	Sensor - Oil Level	1

Switch Box & Harness



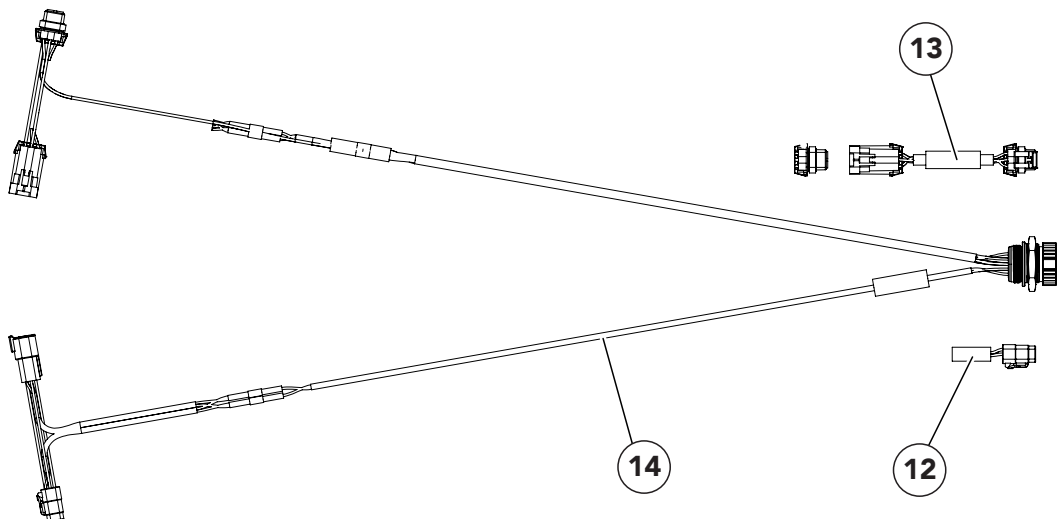
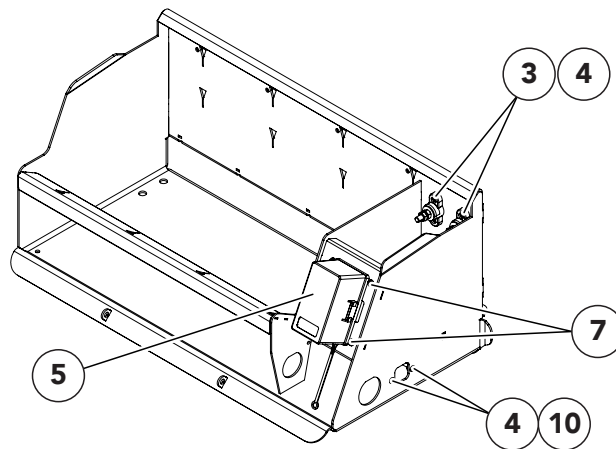
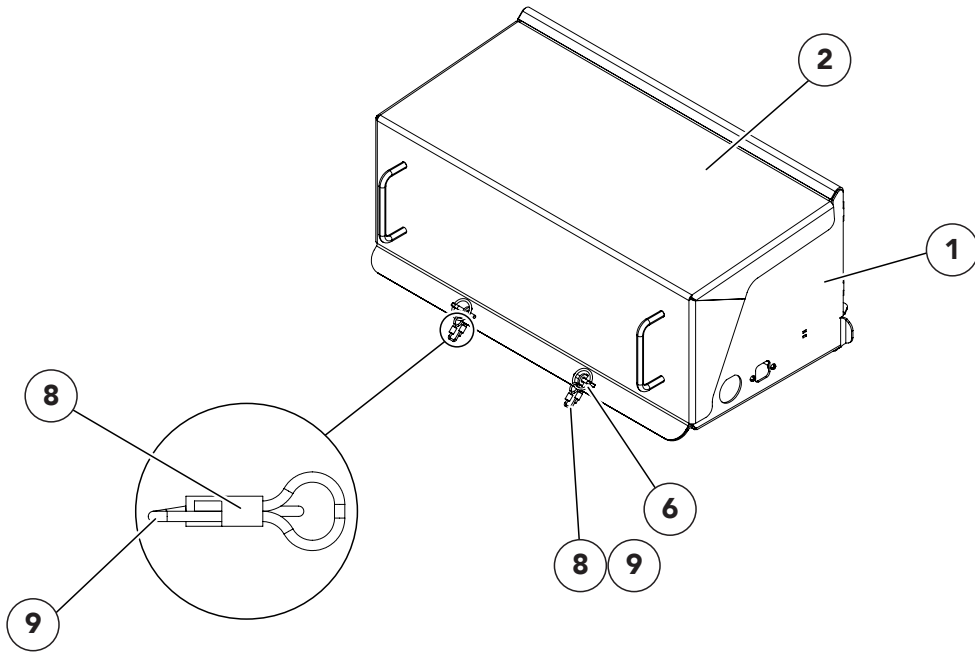
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	310742	Switch Box - NL G5	1
2	310743	Harness - ISO AUX Console	1

Controller Mount



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	311850	Mount - Wldmt	2
2	310717	Channel - Mount	1
3	36425	Washer - Flat 3/8 SS	4
4	36398	Cap Screw - 3/8-16NC x 1 SS	12
5	72054	Nut - Lock 3/8-16NC SS	12

Enclosure Assembly

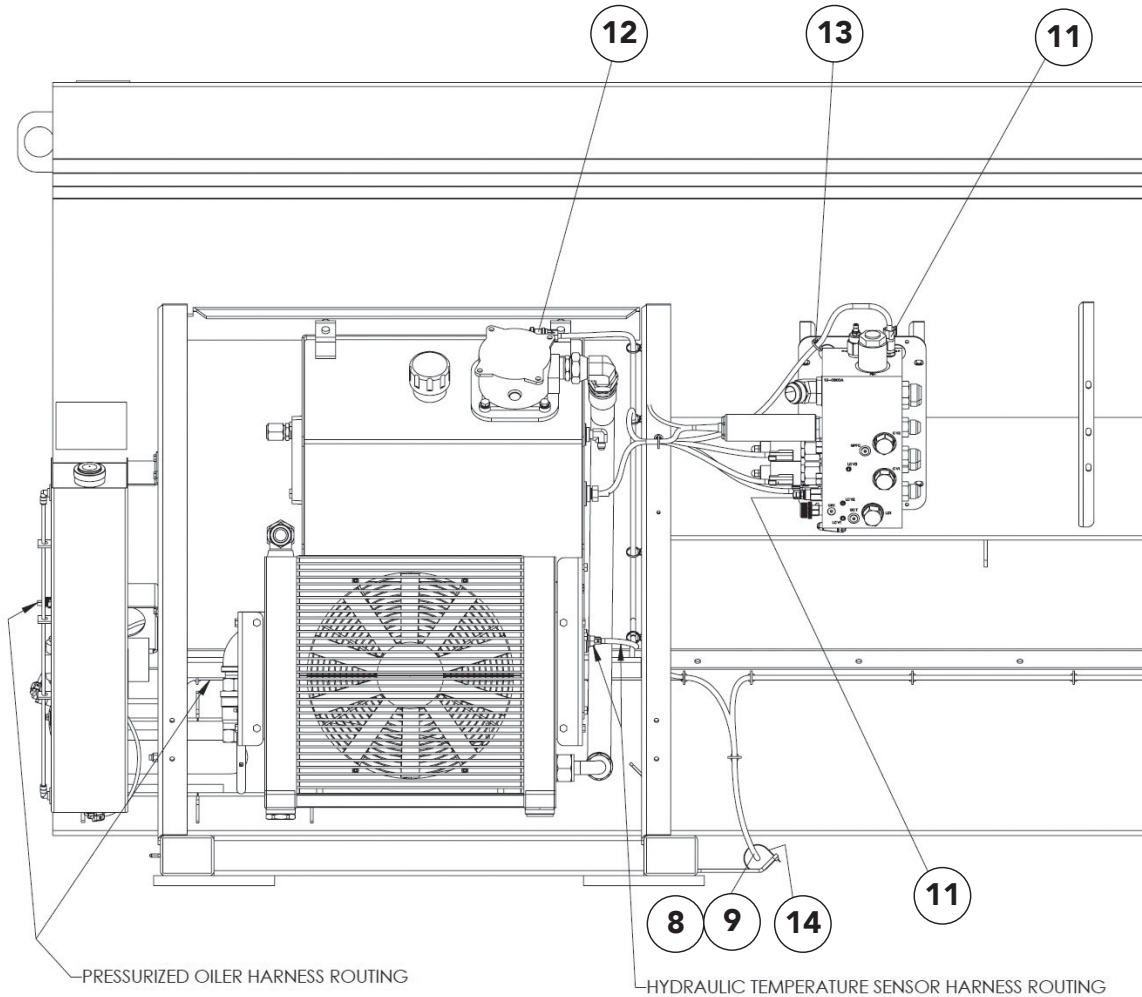
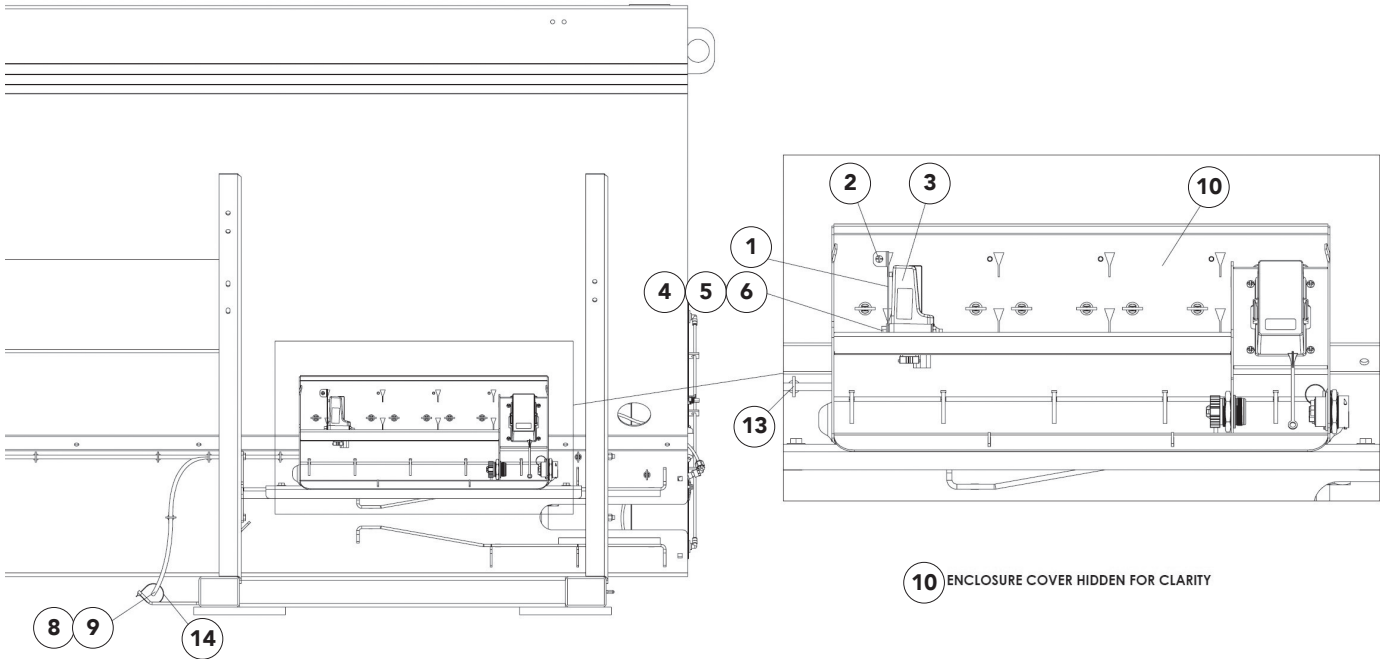


Enclosure Assembly Cont.

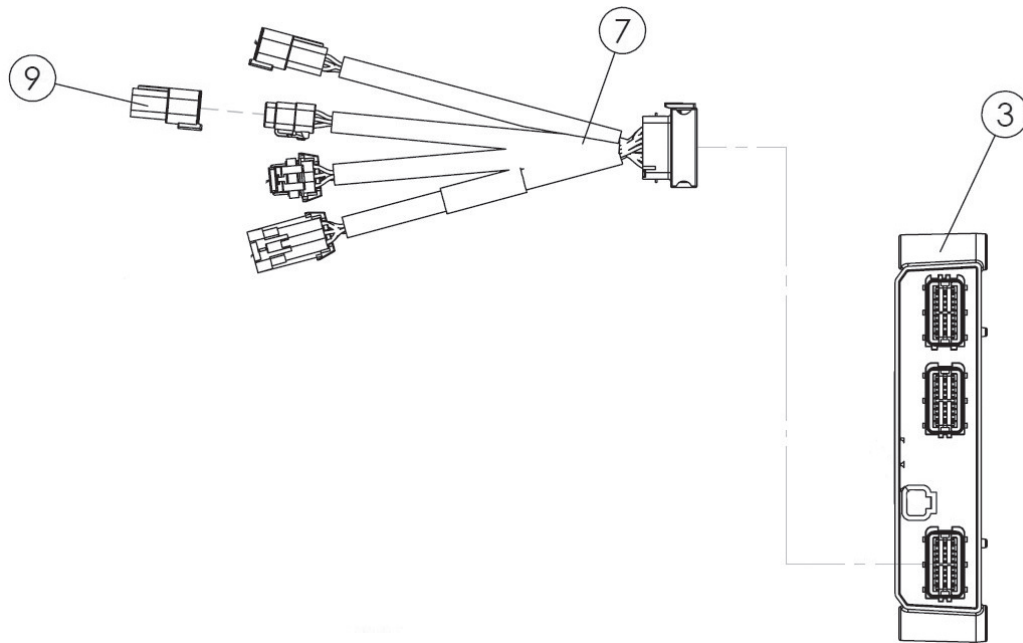
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	311841	Enclosure - Assy 304, Includes Items 1 - 15	1
1	310722	Enclosure - Weldment Controller 304	1
2	310724	Cover - Weldment 304	1
3	310740	Post - Power Distribution	2
4	44483	Screw - Panhead #10-24 x 3/4 SS	6
5	310739	Harness - New Leader ECU Enclosure	1
6	310732	Pin - Lynch .188 x 1.25 SS	2
7	310733	Screw - Panhead #10-32 x 1/2 SS	4
8	308085	Ferrule - .185 x .734	4
9	311731	Cable - 12 Coated SS	2
10	*99674	Strap - Zip Tie 8" Black	12
11	56355	Nut - Lock #10-24 SS	2
12	311068	Plug - Terminating Local CAN	1
13	311070	Harness - ISOBUS Active Termination	1
	311069	Circuit - Terminating Bias ISO CAN	1
14	312448	Harness - ISOBUS Diagnostic Tee	1

*-Not Shown

Controller - Main Bin

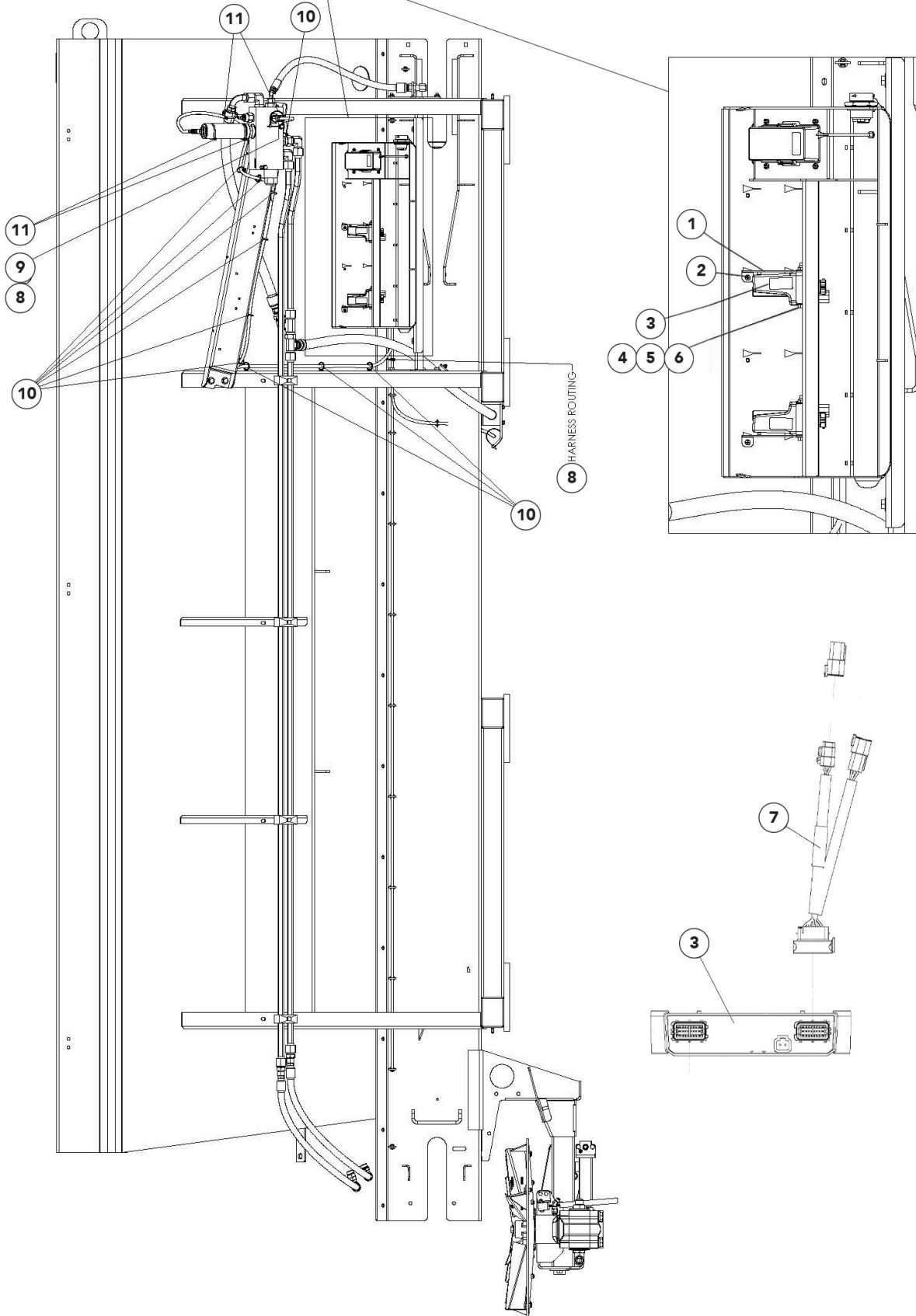


Controller - Main Bin Cont.



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	310718	Bracket - Module 304	1
2	44483	Screw - Round Head #10-24nc X	1
3	310734	Module - Master Control	1
4	36296	Capscrew - .3846 X 2.75 Ss	2
5	36425	Washer - Flat .375 Ss	4
6	307395	Nut - Lock Thin .375-16nc Ss	2
7	310754	Harness - Isobus Breakout	1
8	316947	Harness - Master Control 11'-12'	1
	316948	Harness - Master Control 13'-14'	1
	316949	Harness - Master Control 15'-16'	1
9	311067	Receptacle - Terminating Local	1
10	311841	Enclosure - Assy	1
11	311074	Transducer - Pressure	2
12	311845	Sensor - Group Hyd Tank	1
13	311806	Tie - Wire Fir Tree	44
14	99674	Strap - Zip Tie 8 Black	10

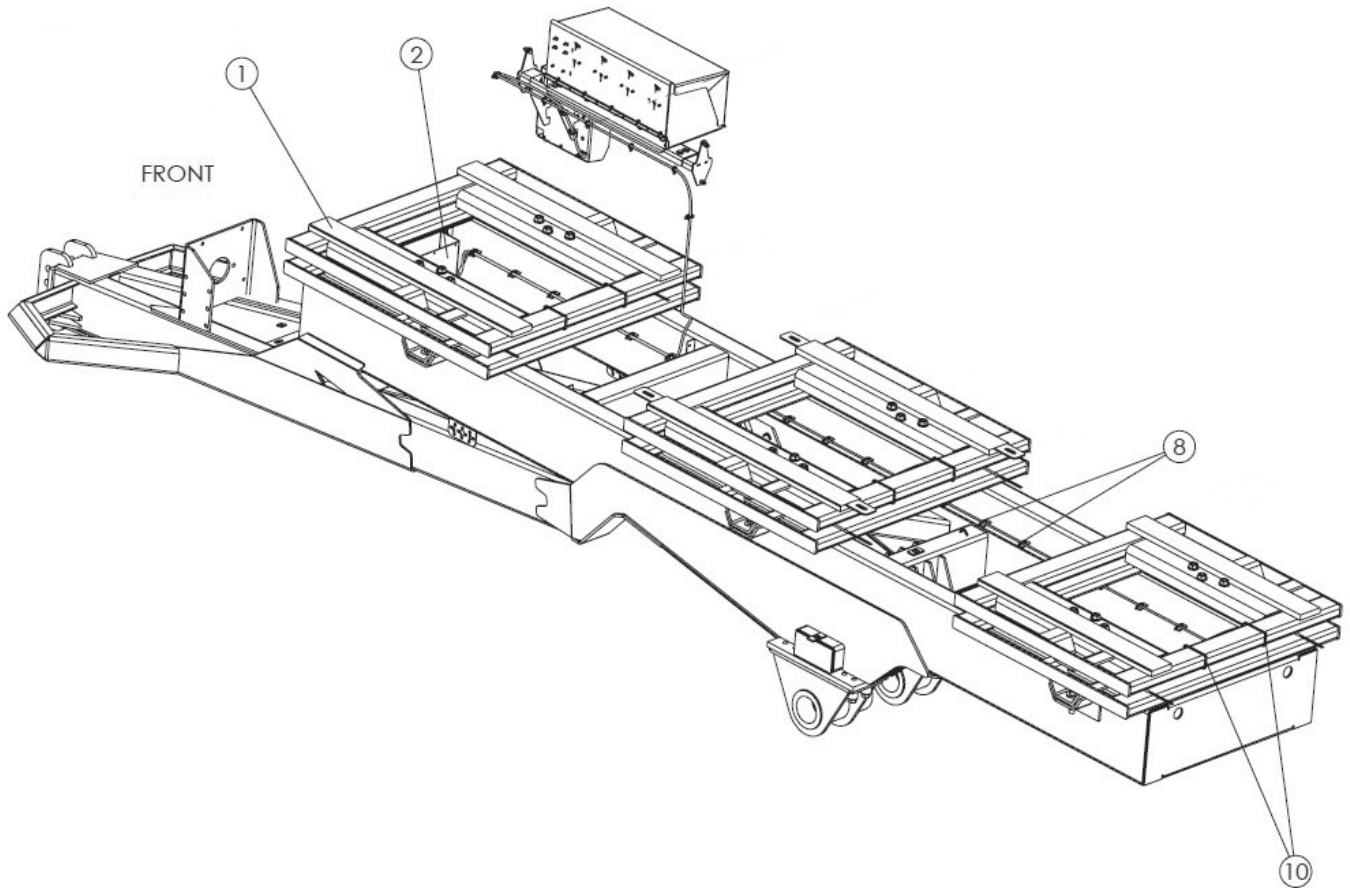
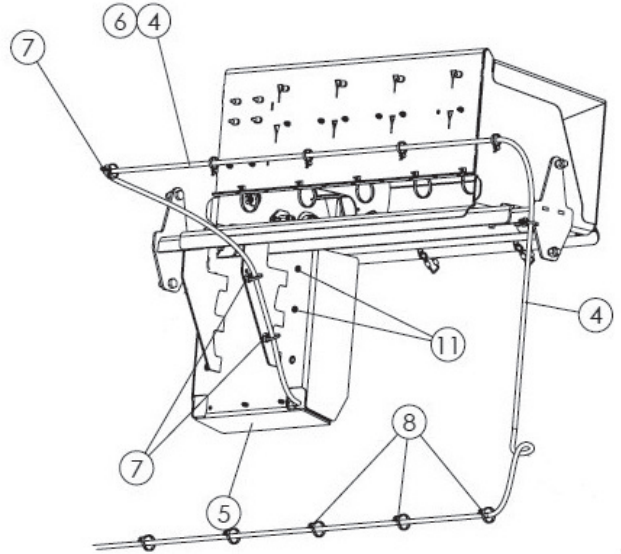
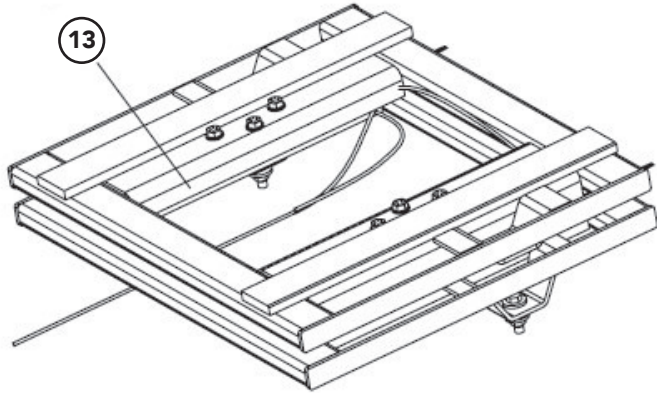
Controller - MultiApplier



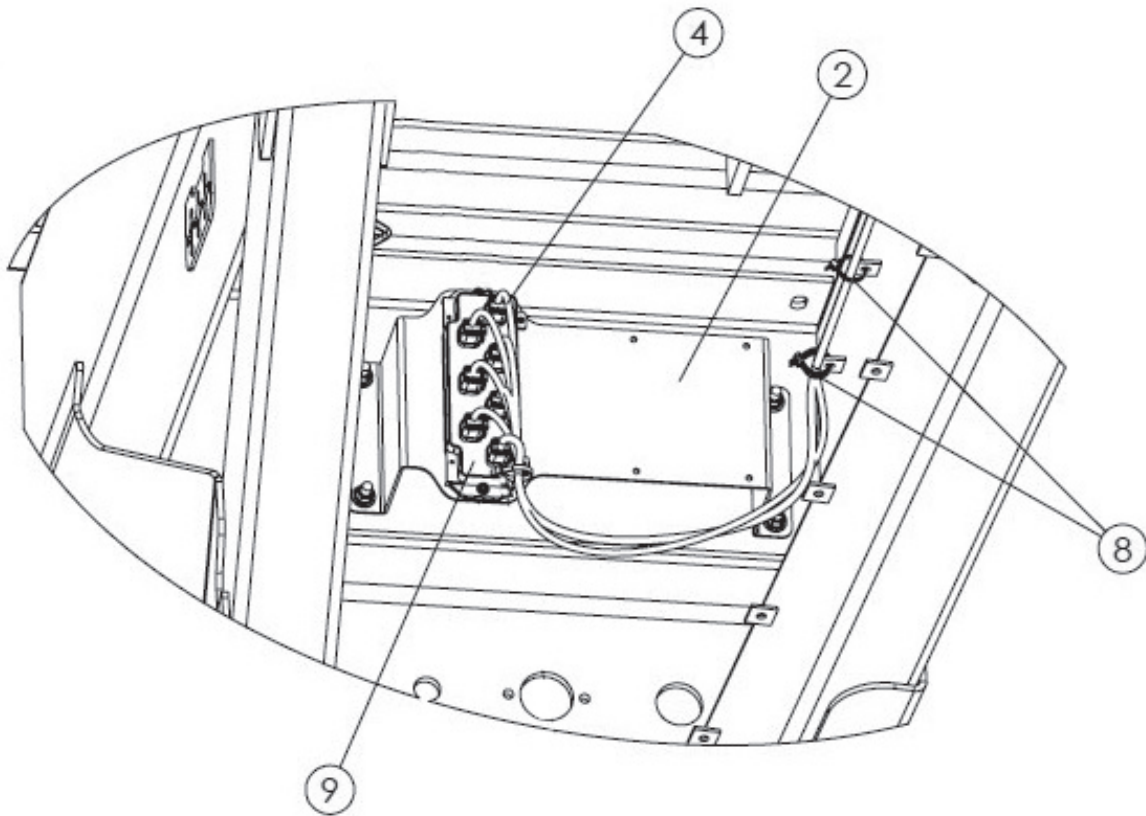
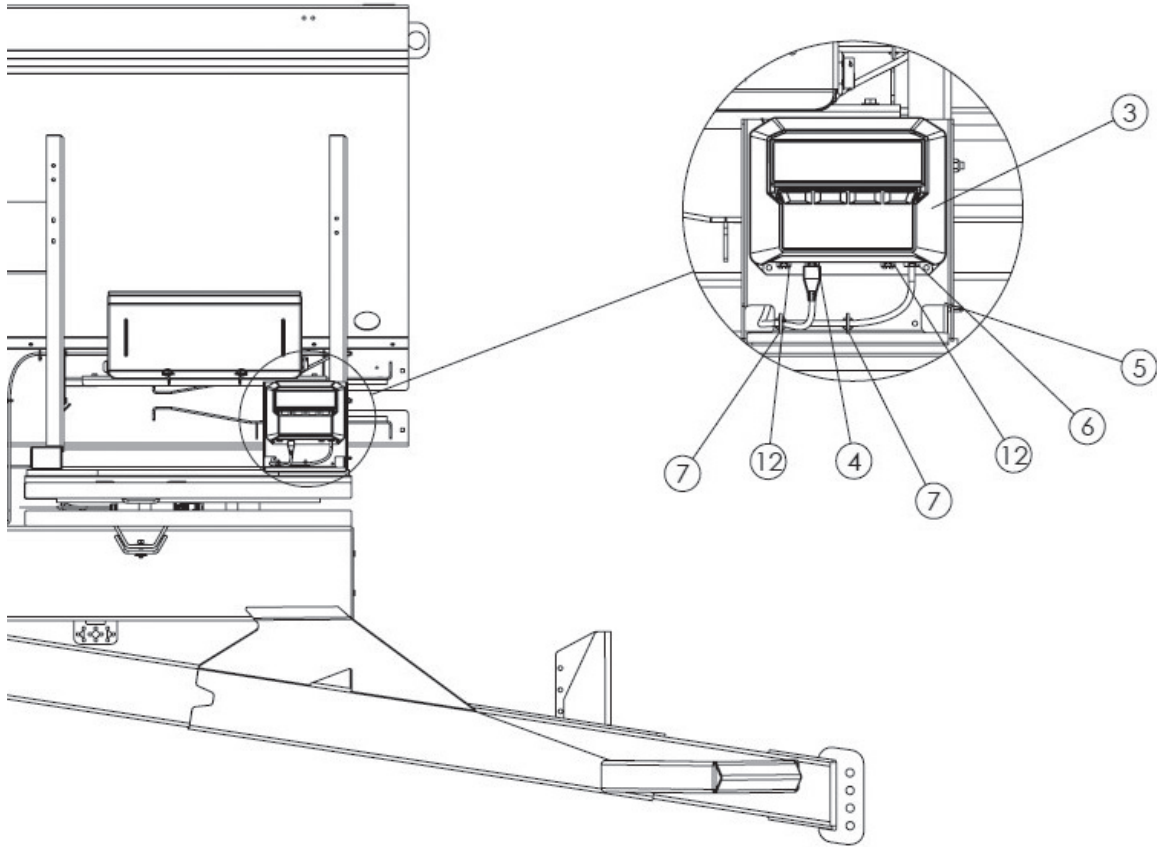
Controller - Multiplier Cont.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	310718	Bracket - Module 304	1
2	44483	Screw - Round Head #10-24nc X .75 SS	1
3	310735	Module - Slave Control	1
4	36296	Capscrew - .3846 X 2.75 SS	2
5	36425	Washer - Flat .375 SS	4
6	307395	Nut - Lock Thin .375-16nc SS	2
7	311060	Harness - Local Can Breakout	1
8	316950	Harness - Bin 2 Control 11-12'	1
	316951	Harness - Bin 2 Control 13-14'	1
	316952	Harness - Bin 2 Control 15-16'	1
9	311074	Transducer - Pressure	1
10	311806	Tie - Wire Fir Tree	12
11	99674	Strap - Zip Tie 8 Black	4

Scale System



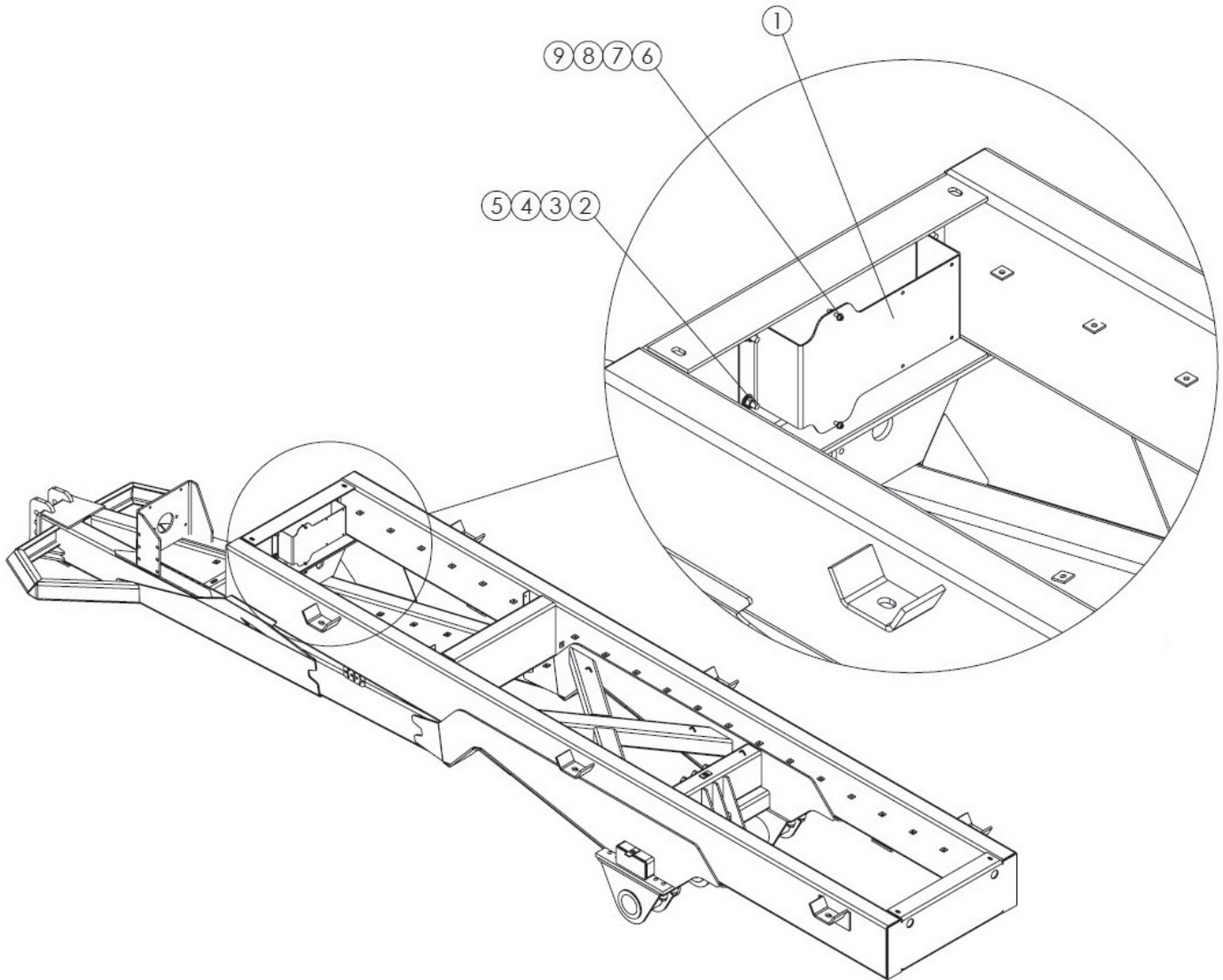
Scale System



Scale System

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	318738	Scale - Kit 6 Cell Hd	1
2	318016	Bracket - Group Scale Link	1
3	318654	Scale - Assy Point	1
4	318655	Cable - Scale Dt6	1
5	318656	Mount - Wldmt Scale Display	1
6	318739	Harness - Point Scale Isobus	1
7	311806	Tie - Wire Fir Tree	5
8	99674	Strap - Zip Tie 8 Black	24
9	317105	Junction - Bank 7 Position	1
10	96942	Tie - Wire Hd 29 Long	6
11	313886	Screw - Panhead M5-0.8 X 10 SS	4
12	318752	Plug - Dt06-4s	2
13	318013	Load Cell - Service Part	6

Scale Link Bracket



ITEM	PART NO.	DESCRIPTION	QTY
1	318017	Bracket - Scale Link 304	1
2	36399	Capscrew - .375-16nc X 1.25 SS	4
3	36425	Washer - Flat .375 SS	4
4	36420	Washer - Lock .375 SS	4
5	36414	Nut - Hex .375-16nc SS	4
6	44454	Screw - Sockethead #10-24	2
7	171052	Washer - Flat #10 SS	2
8	44451	Washer - Lock #10 SS	2
9	47295	Nut - Hex #10-24nc SS	2

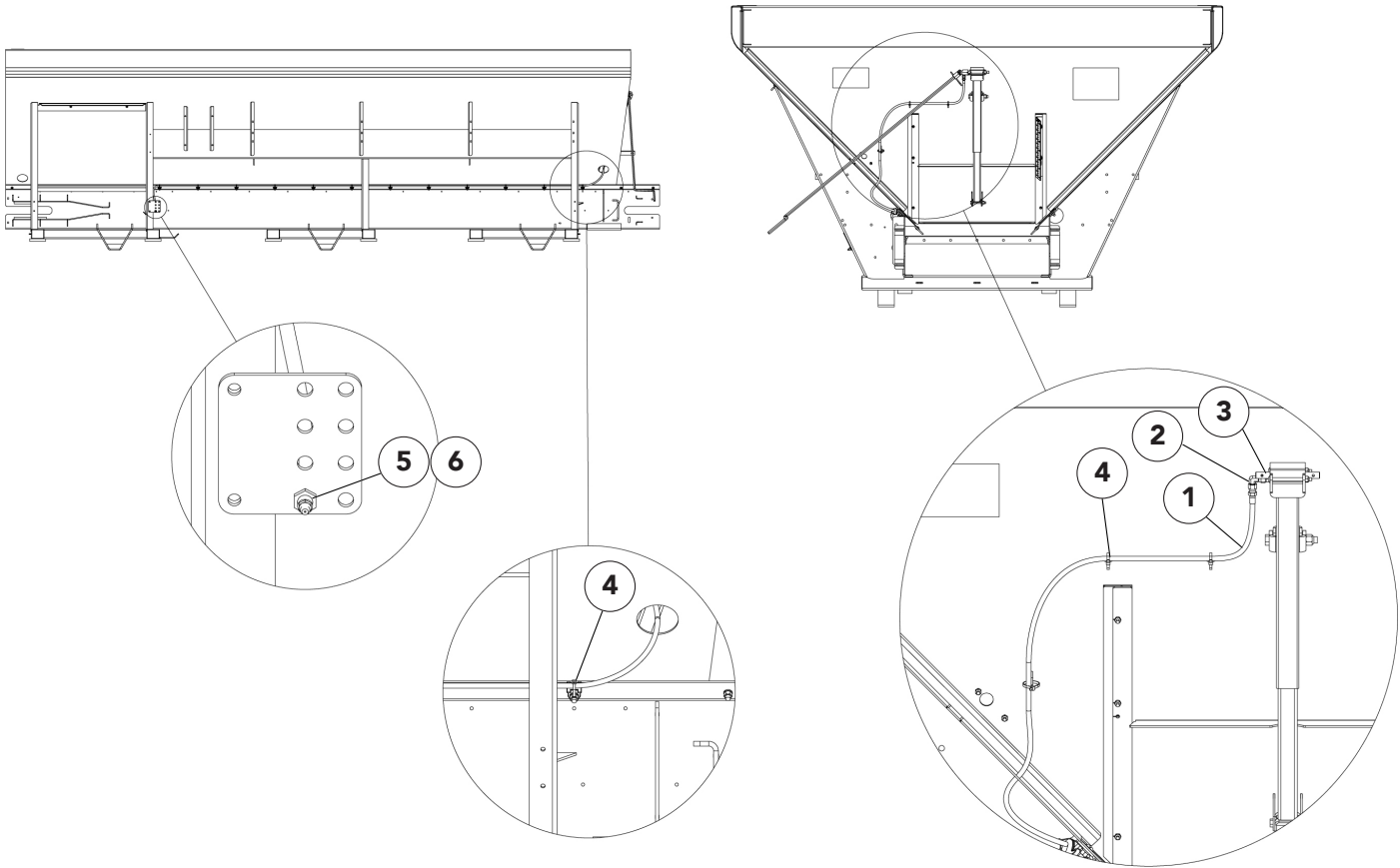
Endgate

Feedgate & Jack Assembly Cont.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>	
	409 SS	304 SS		
	314665	314664	Endgate - Assy, Includes Items 1 - 24	1
1	313591	313594	Endgate - Removable Wldmt	1
2	311684	311685	Feedgate - Wldmt	1
3	36384	36384	Slide - Feedgate	2
4	36385	36385	Guide - Feedgate	2
5	86090	86090	Shim - Plastic	2
6	311604	311604	Scale - 0 to 12"	1
7	311690	311690	Decal Plate	1
8	312994	312994	Jack - Coated	1
9	85002	85002	U-Joint	1
10	306558	305078	Sealer - Endgate	2
11	32446	312394	Cap Screw - 1/4-20NC x 1-3/8 SS	6
12	71827	71827	Cap Screw - 3/8-16NC x 3 SS	1
13	80798	80798	Cap Screw - 1/2-13NC x 3-3/4 SS	1
14	36423	36423	Washer - Flat 1/4 SS	4
15	311605	311605	Jack Handle	1
16	72054	72054	Nut - Lock 3/8-16NC SS	1
17	39016	39016	Nut - Lock 1/2-13NC SS	1
18	312268	312268	Pin - Roll SS	1
19	86878	86878	Pin - Hair	1
20	305832	305832	Plate - Bin Sensor	1
21	36393	36393	Cap Screw - 1/4-20NC x 3/4 SS	2
22	42034	42034	Nut - Hex 1/4-20NC SS	8
23	*312276	*312276	Decal - Notice, Spread Pattern	1
24	*368	*368	Decal - Danger, Flying Material Hazard	1

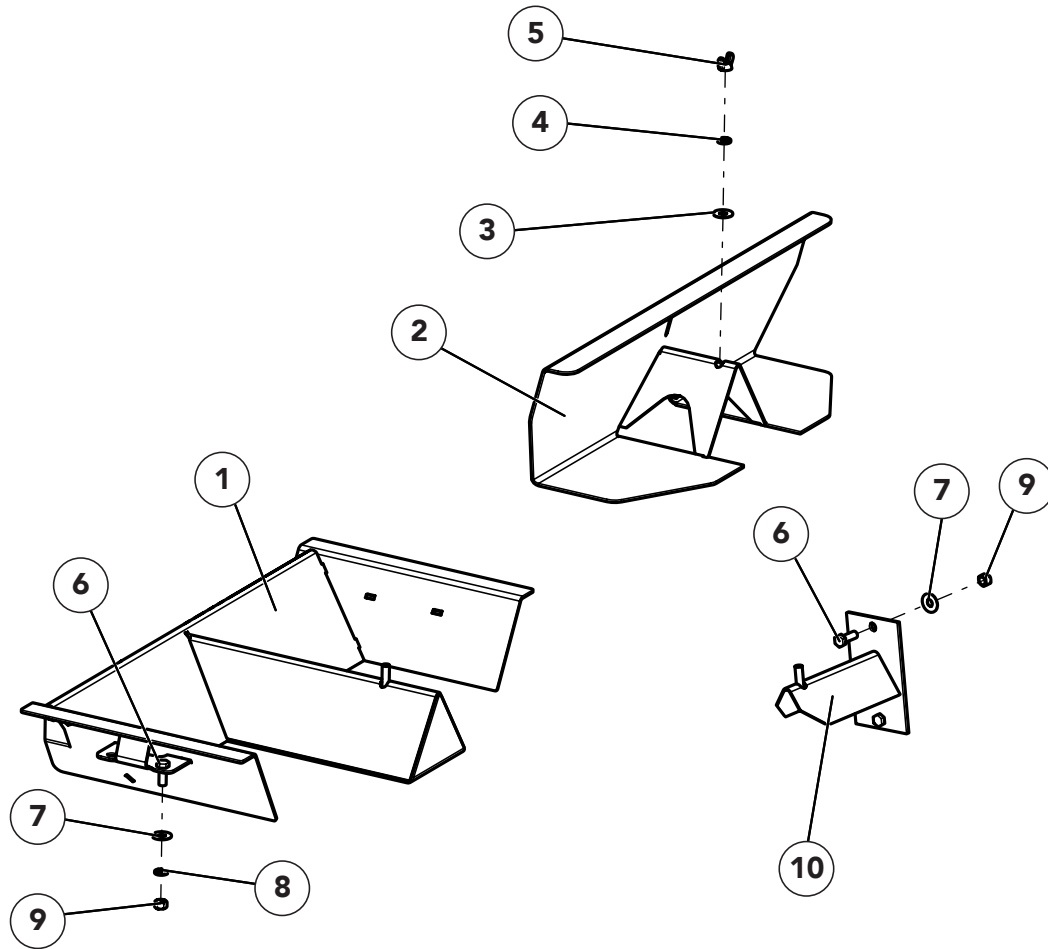
* - Not Shown. See "Decals" parts page for details.

Lubrication



ITEM	PART NO.	DESCRIPTION	QTY
1	313035	Hose - Assy Upper Jack	1
2	34734	Fitting - 4-2 070202	2
3	306349	Connector - Zerk Lock	2
4	99674	Tie - Wire	8
5	311663	Zerk - Grease 1/4-28 Straight SS	2
6	310471	Nut - Bulkhead 1/8-27	2

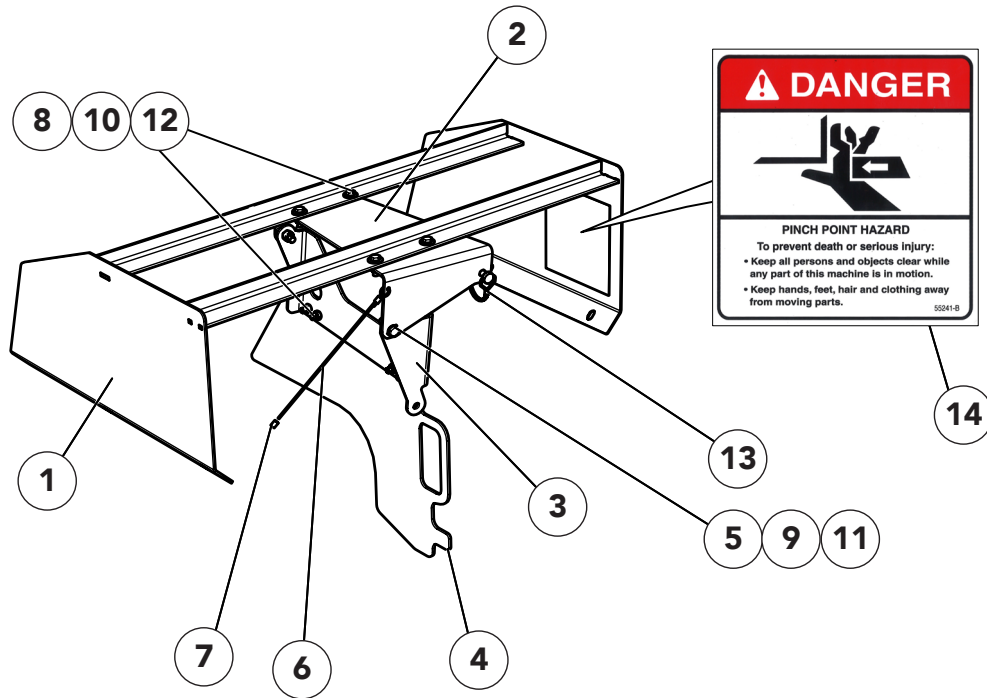
Material Divider



ITEM	PART NO.	DESCRIPTION	QTY
	311640	Divider – Material Assy 304	
1	311641	Divider – Wldmt 304	1
2	311648	Deflector – Rear Wldmt 304	1
3	36425	Washer – Flat 3/8 SS	1
4	36420	Washer – Lock 3/8 SS	1
5	20673	Nut – Wing 3/8 SS	1
6	36398	Cap Screw – 3/8 x 1 SS	4
7	36425	Washer - Flat 3/8 SS	4
8	36420	Washer – Lock 3/8 SS	2
9	36414	Nut – Hex 3/8 SS	4
10	87381*	Mount – Divider Wldmt	1

*Item 10 mounts on unit to hold Item 2 when not in use.

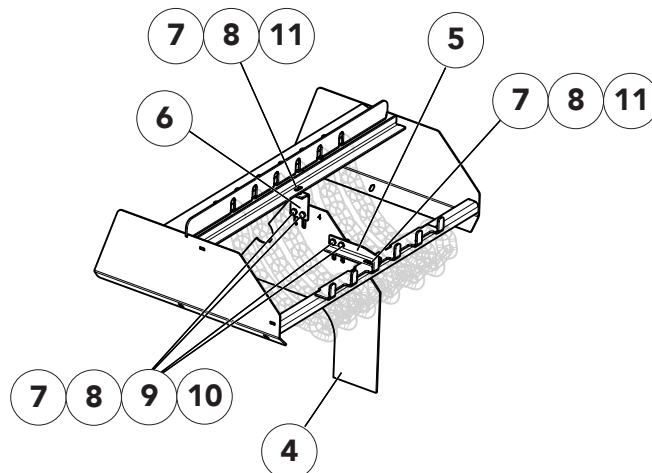
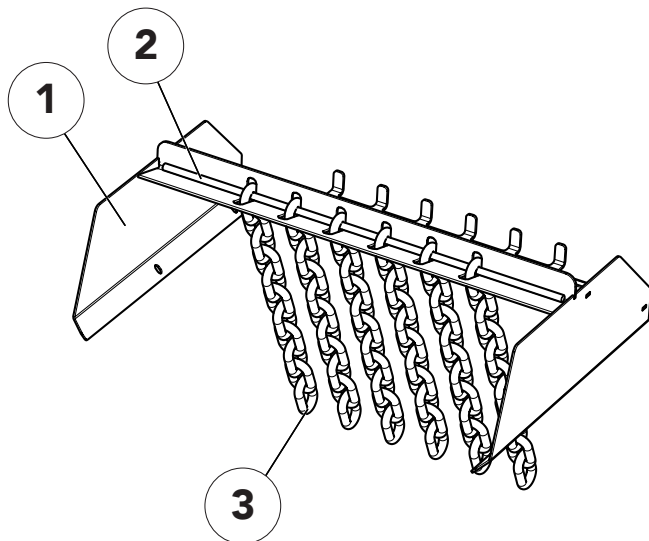
Hillside Divider



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	311720	Divider - Hillside Assy 304	
1	311721	Support - Wldmt	1
2	311725	Bracket - Upper	1
3	311728	Bracket - Lower	1
4	311729	Panel - Divider	1
5	311730	Bushing - Pivot	2
6	311731	Cable 12" Coated SS (feet)	1
7	308085	Ferrule	2
8	34580	Cap Screw - 5/16-18NC x 1 SS	8
9	36399	Cap Screw - 3/8-16NC x 1-1/4 SS	2
10	42221	Nut - Lock 5/16-18NC SS	8
11	72054	Nut - Lock 3/8-16NC SS	2
12	36424	Washer - Flat 5/16 SS	8
13	311732	Pin - Lock	1
14	55241	Decal - Danger, Pinch Point Hazard	1

Spinners

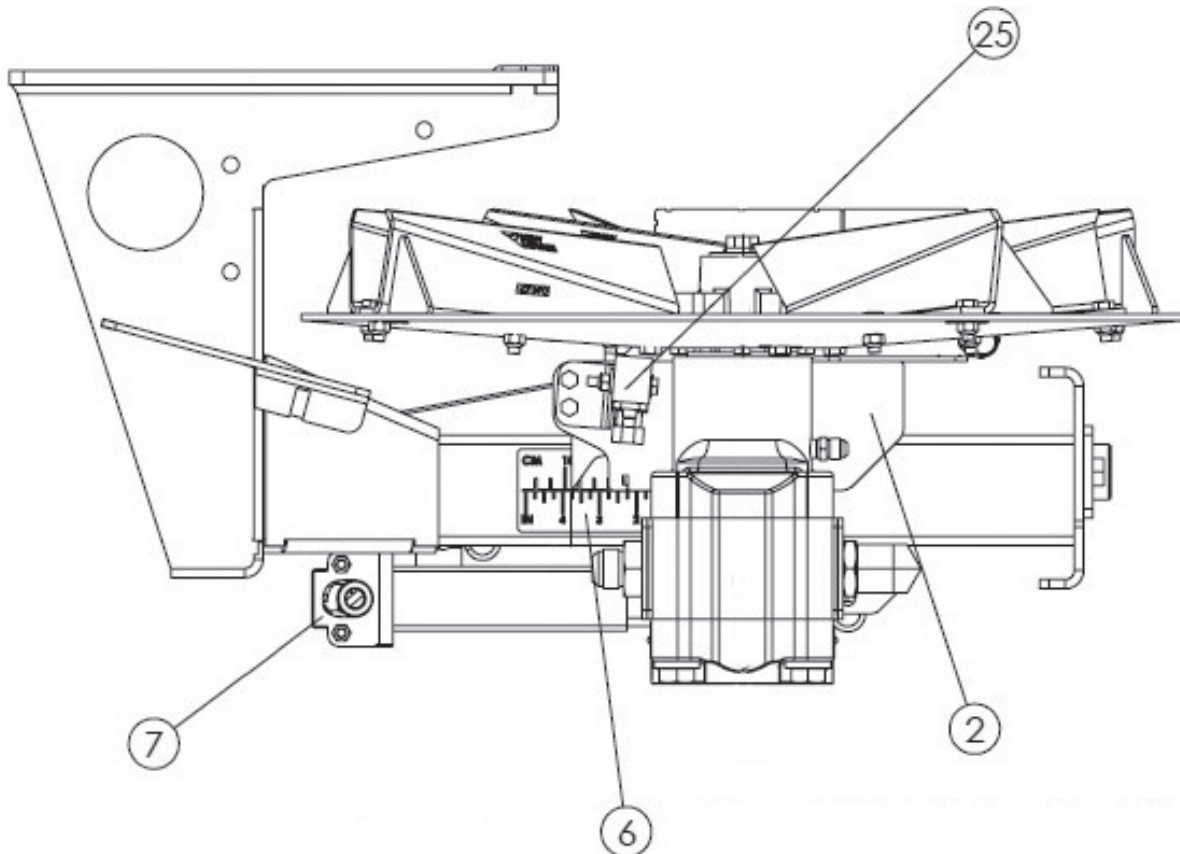
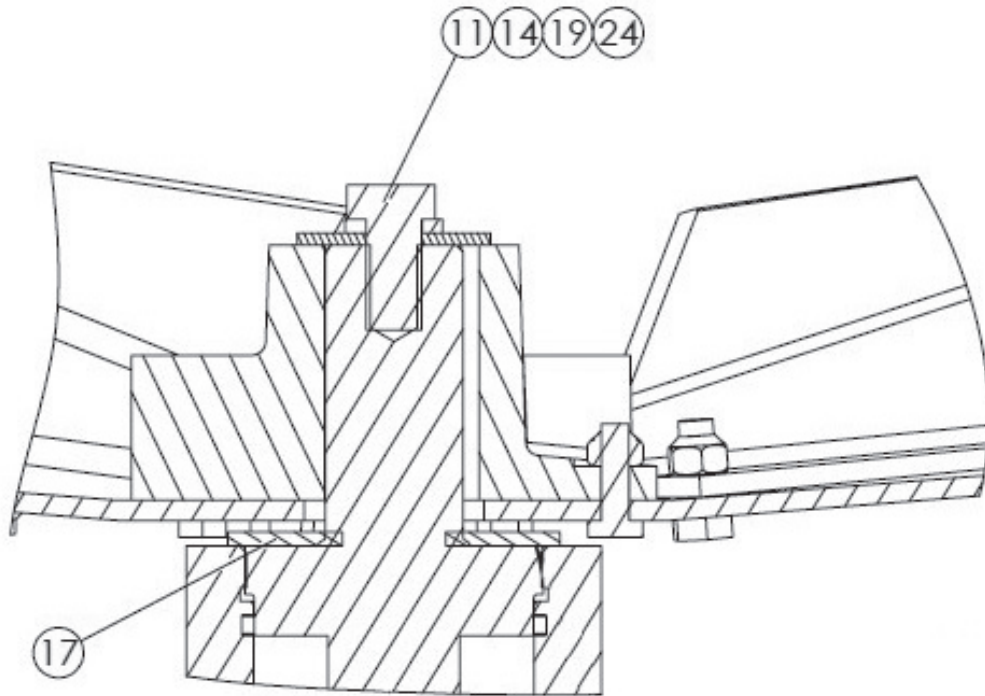
Anti-Slab



OPTIONAL HILLSIDE DIVIDER PANEL

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	312953	Anti-Slab Assy, Includes Items 1 - 3	1
1	312954	Support - Wldmt 304	1
2	312959	Round - 1/2 x 31 304	1
3	312960	Chain	6
4	82288	Panel - Hillside Divider	1
5	56879	Bracket - Clamp	1
6	56880	Angle - Clamp	1
7	34580	Cap Screw - 5/16-18NC x 1 SS	6
8	36424	Washer - Flat 5/16 SS	8
9	36419	Washer - Lock 5/16 SS	4
10	36413	Nut - Hex 5/16-18NC SS	4
11	42221	Nut - Lock 5/16-18NC SS	2

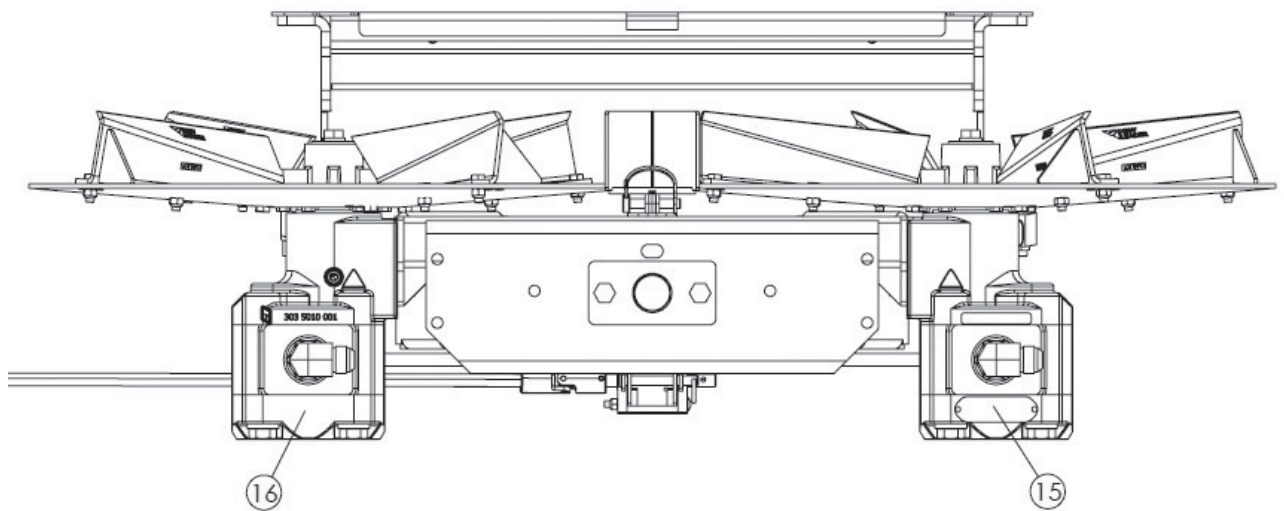
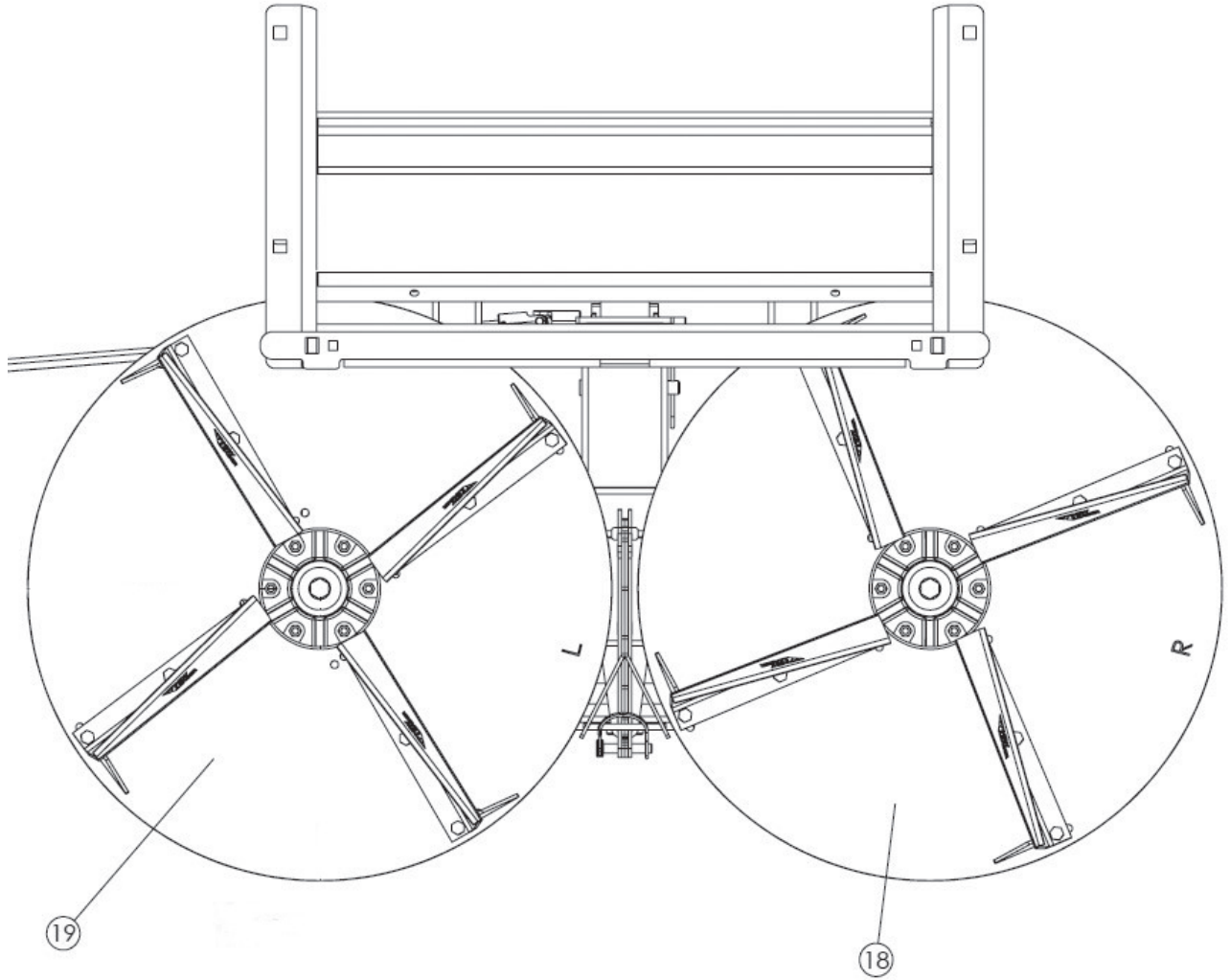
Spinner Assembly



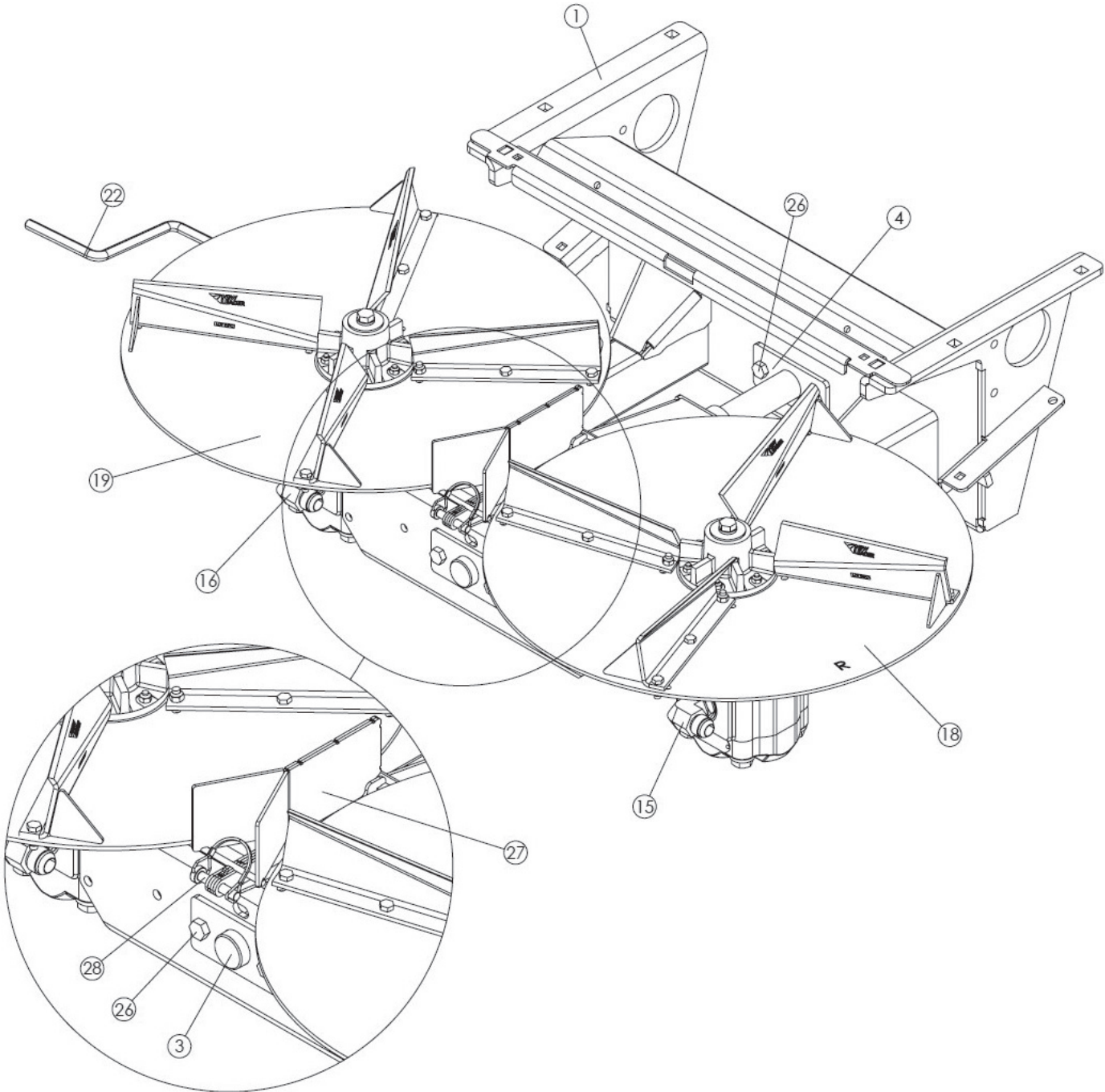
22 HANDLE 304 HIDDEN FOR CLARITY

Spinner

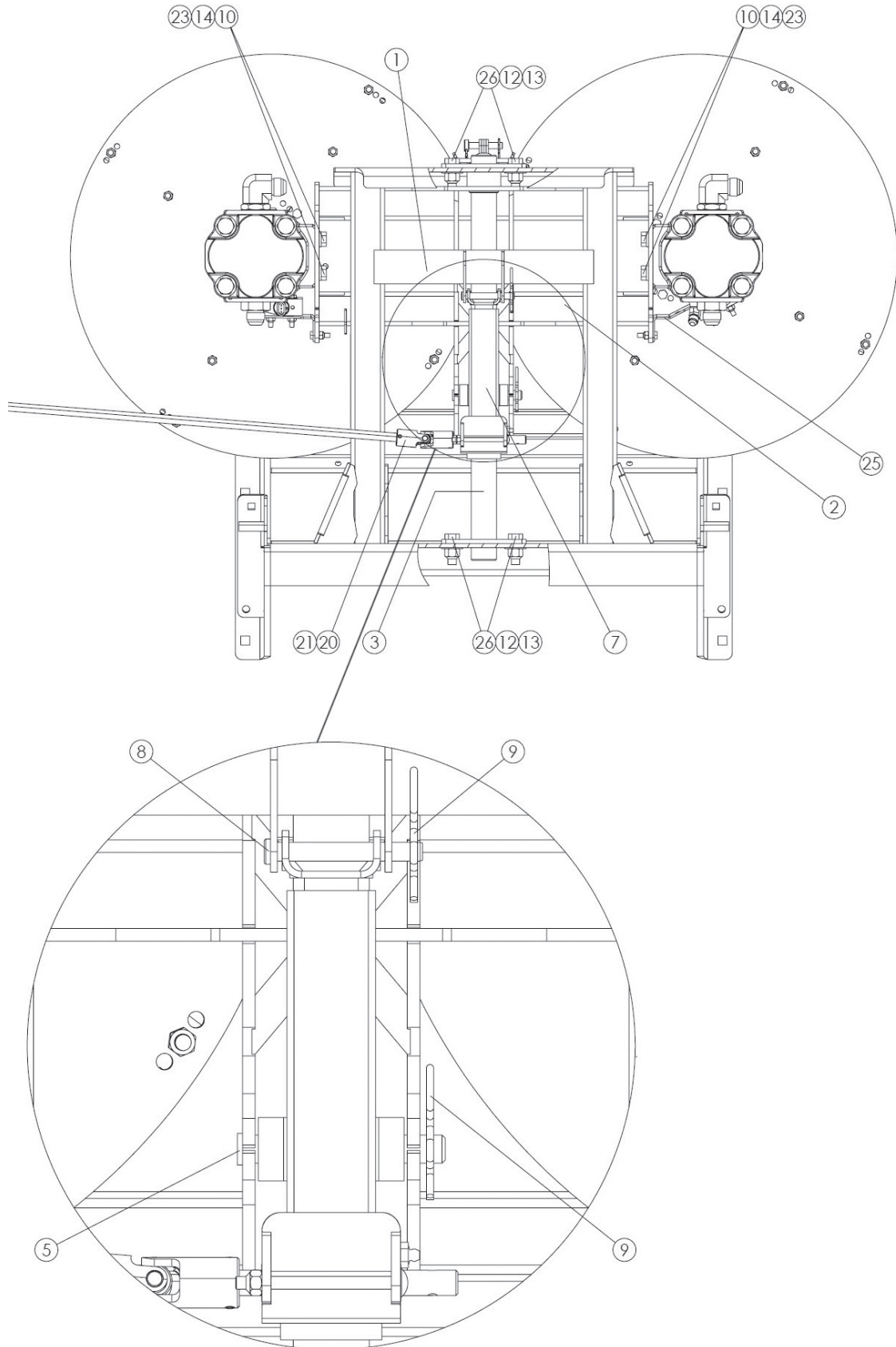
Spinner Assembly



Spinner Assembly



Spinner Assembly

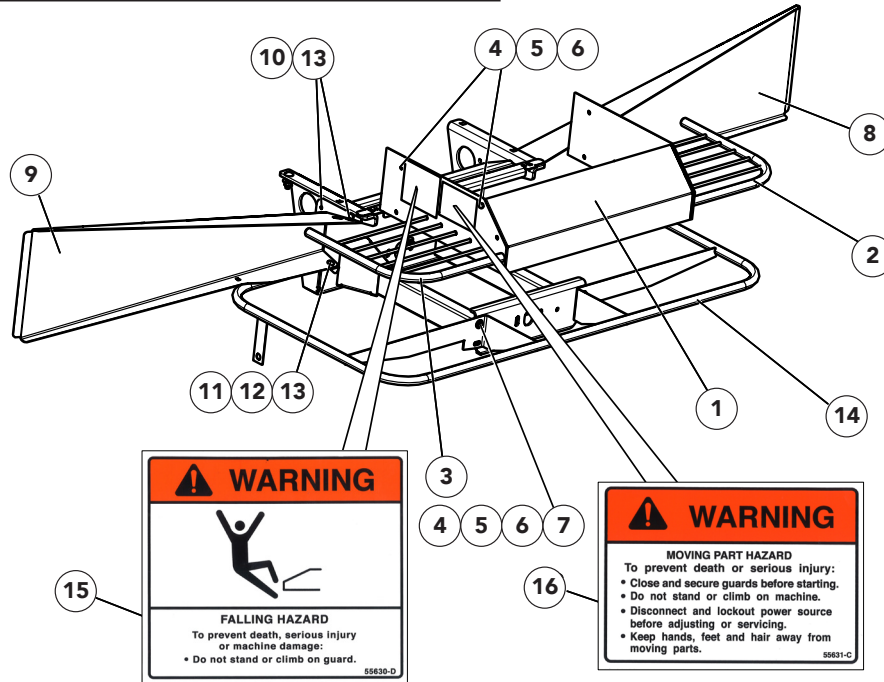


Spinner Assembly Cont.

ITEM	PART NO.	DESCRIPTION	QTY
1	311388	Frame - Wldmt Spinner 304	1
2	321387	Mount - Wldmt Motor 304	1
3	87021	Shaft - Wldmt 304	1
4	87023	Plate - Mounting Shaft 304	1
5	311425	Pin - Jack 304	1
6	87110	Decal - Scale	1
7	312975	Jack - Assy 4.5 304	1
8	6547	Pin - Clevis .375 X 3 SS	1
9	36429	Pin - Hair .148 X 2.688 SS	2
10	36402	Capscrew - .5-13nc X 1.25 SS	8
11	36401	Capscrew - .5-13nc X 1 SS	2
12	36426	Washer - Flat .5 SS	4
13	39016	Nut - Lock .5-13nc SS	4
14	36422	Washer - Lock .5 SS	10
15	311456	Motor - Assy Spinner RH	1
16	311455	Motor - Assy Spinner LH	1
17	305571	Washer - Rubber 3od X .94id X .13THICK 60DURO	2
18	87105	Disc - Assy 24 RH	1
	87105-X2	Disc - Assy 24 .25 RH	1
19	87106	Disc - Assy LH	1
	87106-X2	Disc - Assy 24 .25 LH	1
20	85002	Joint - U	1
21	312268	Pin - Roll .188 X 1.0 SS	2
22	311719	Handle - 304	1
23	301315	Loctite - 243	0
24	311082	Compound - Antiseize Heavy	0
25	D00162	Wi Swc - G4 Spinner Assembly	0
26	F01141	Fixture - Go/ No-Go Gauge For	0
27	320224	Sensor - Group Dual Spinner	1
28	36539	Capscrew - .5-13nc X 1.5 SS	4
29	321404	Y - Wldmt Spinner 304	1
30	311732	Pin - Lock .375 X 1.375 SS	1

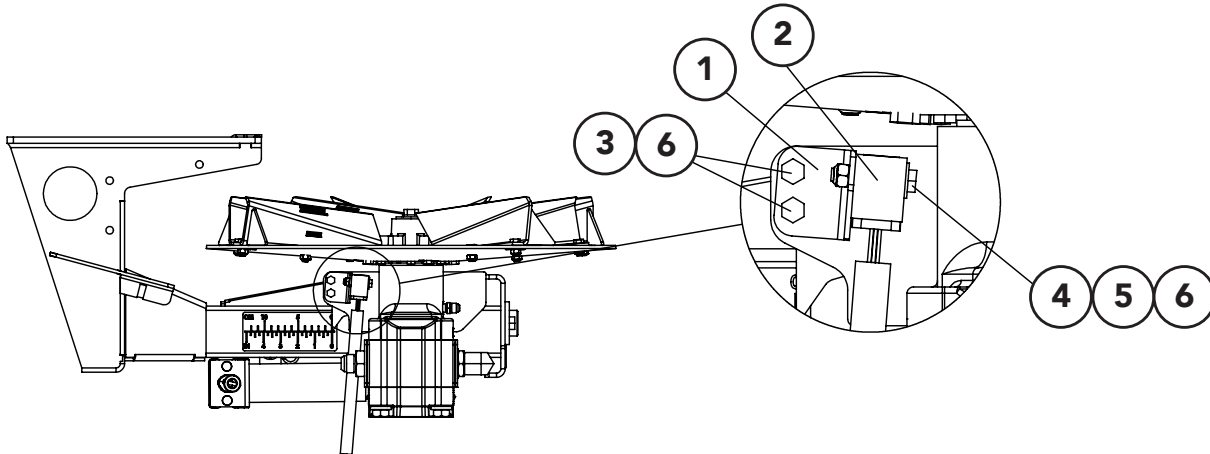
Spinners

Spinner Guards & Deflectors



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	311802	Kit - Hardware SS, Includes Items 4 - 7	1
	311803	Kit - Hardware, Includes Items 10- 13	1
1	305712	Guard – Center Section Assy 304, SMV	1
2	87027-X1	Guard – RH Wldmt 304	1
3	87031-X1	Guard – LH Wldmt 304	1
4	36398	Cap Screw - 3/8-16NC x 1 SS	14
5	36420	Washer – Lock 3/8 SS	14
6	36414	Nut - Hex 3/8-16NC SS	14
7	36425	Washer - Flat 3/8 SS	4
8	311341	Deflector - Wldmt RH	1
9	311340	Deflector - Wldmt LH	1
10	36399	Cap Screw - 3/8-16NC x 1-1/4 SS	6
11	36408	Bolt - Carriage 3/8-16NC x 1 SS	2
12	36425	Washer - Flat 3/8 SS	2
13	72054	Nut - Lock 3/8-16NC SS	8
14	311337	Guard - Lower Wldmt 304	1
15	55630	Decal - Warning, Falling Hazard	2
16	55631	Decal - Warning, Moving Part Hazard	2

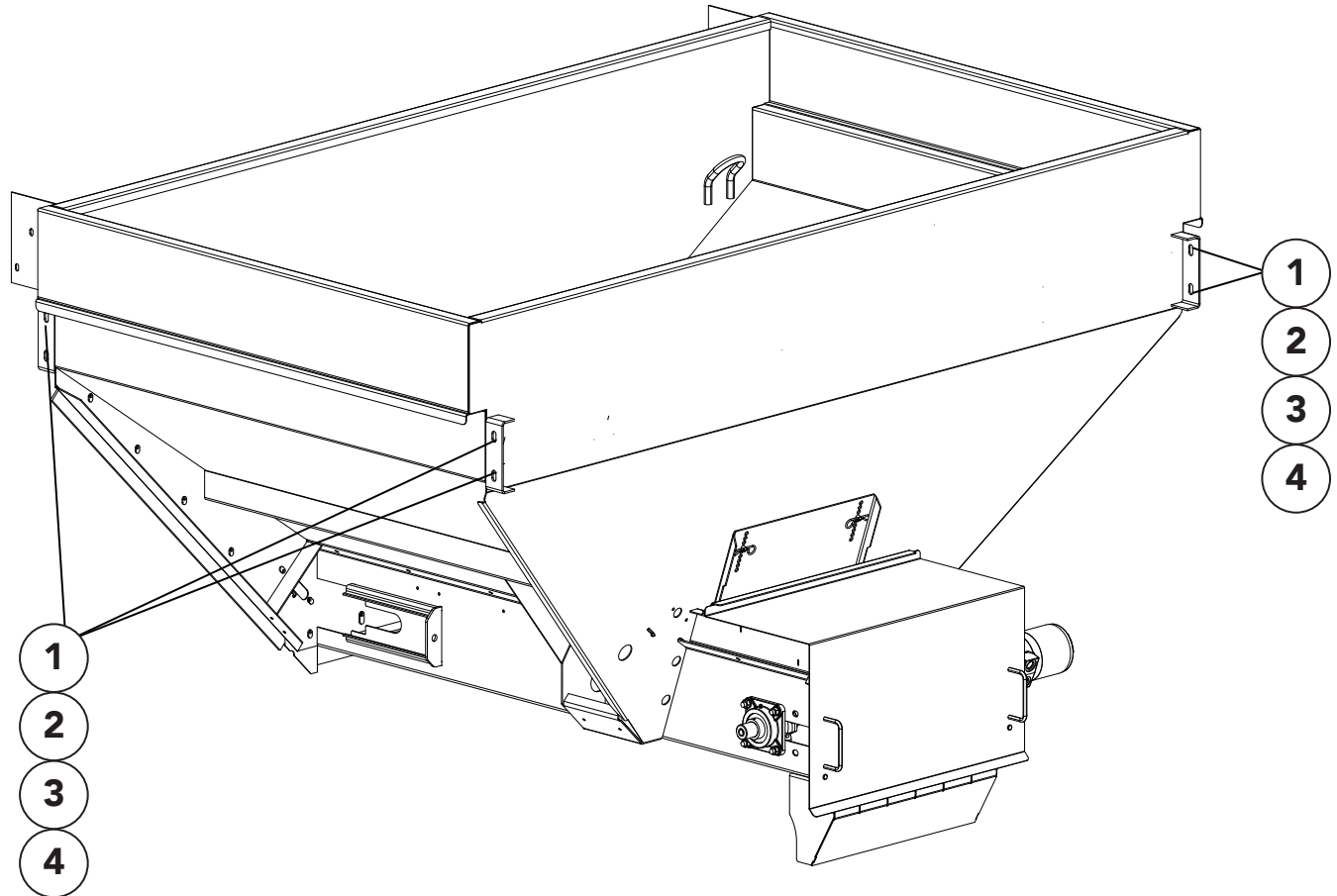
Spinner Speed Sensors



LH Side Shown

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	311852	Bracket - Speed Sensor LH 304	1
	311853	Bracket - Speed Sensor RH 304	1
2	89011	Sensor - Assy w/ Block	2
3	36393	Cap Screw - 1/4-20NC x 3/4 SS	4
4	41669	Capscrew - .25-20NC X 1.75 SS	4
5	36423	Washer - Flat 1/4 SS	4
6	42034	Nut - Lock 1/4-20NC SS	8

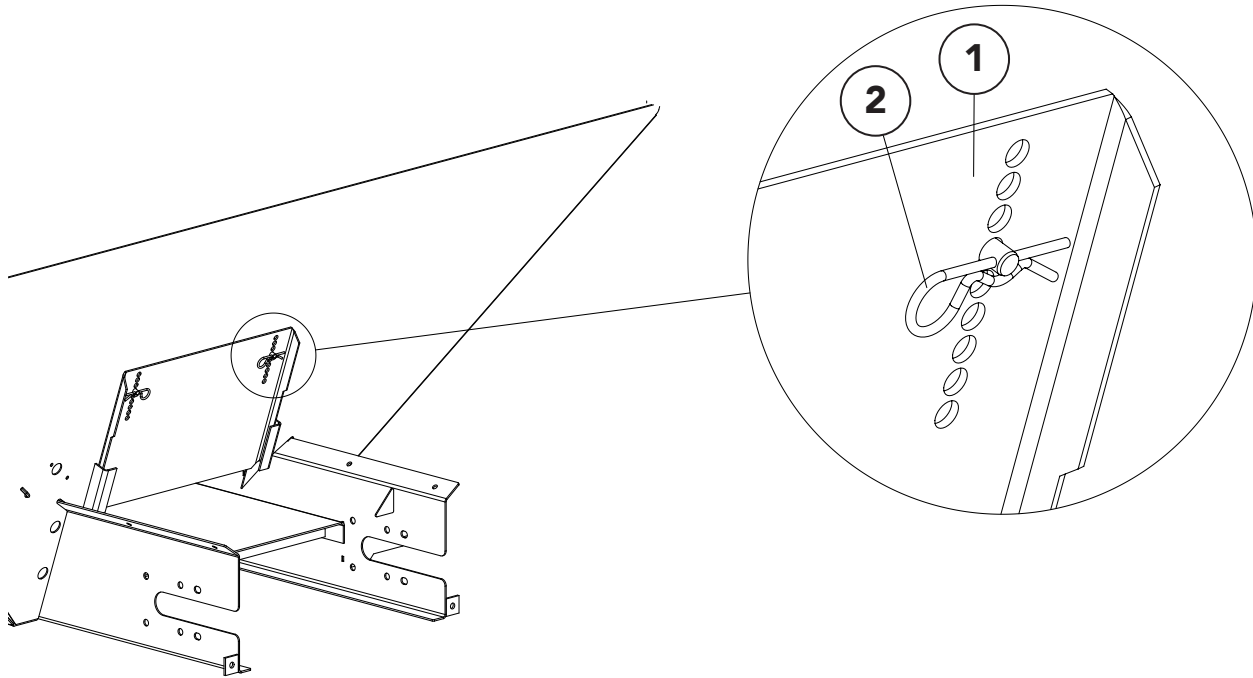
Mounting Hardware



ITEM	PART NO.	DESCRIPTION	QTY
	86951	Hardware - Kit Mount	
1	20128-X1	Cap Screw - 1/2 x 1 1/4 Grade 8	8
2	20695	Washer - Flat 1/2	16
3	20714	Washer - Lock 1/2	8
4	20646	Nut - Hex 1/2	8

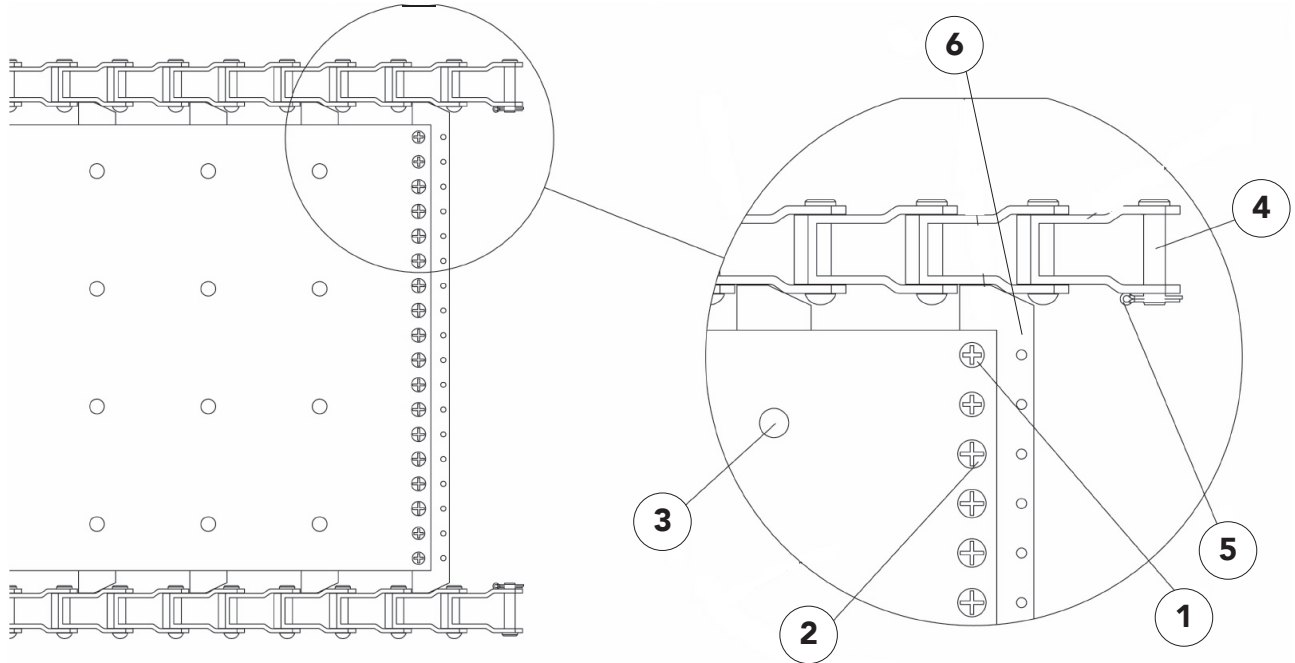
AR - As Required

Rear Feedgate



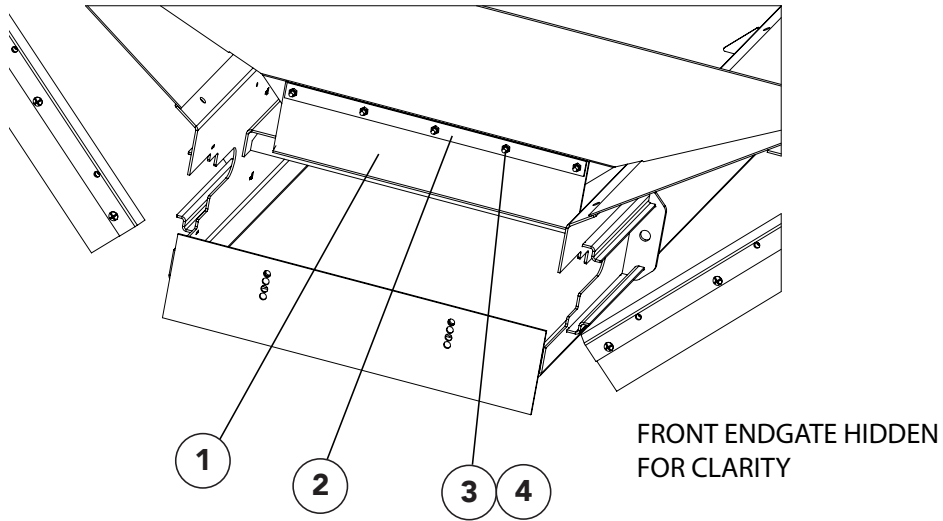
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	306579	Panel - Feedgate	1
2	36429	Pin - Hair	2

#4 BOC Conveyor



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	308712-AC	Chain Wldmt - 7', Includes Items 1 - 6	1
1	20617	Screw - Flat 1/4-20NC x 1/2	8
2	20624	Screw - Truss Head 1/4-20NC x 1/2	28
3	308534	Screw - 1/4 x 1/2-20NC	AR
4	21118	Pin - Chain Pintle	2
5	20817	Pin - Cotter	2
6	70473	Bar - Splicer	1

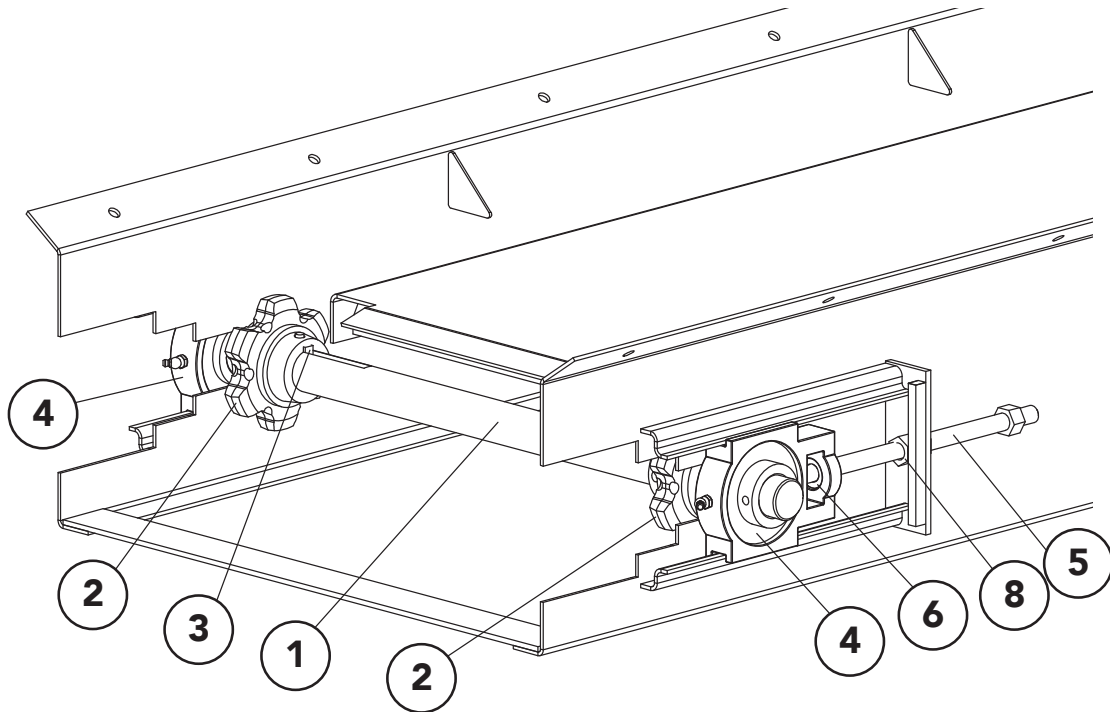
Wiper - Front



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	39426	Wiper – Belt Front	1
2	54230	Retainer – Wiper	1
3	42033	Screw – Machine 1/4-20NC x 1	5
4	36412	Nut – Hex 1/4-20NC	5

MultApplier Conveyor Idler

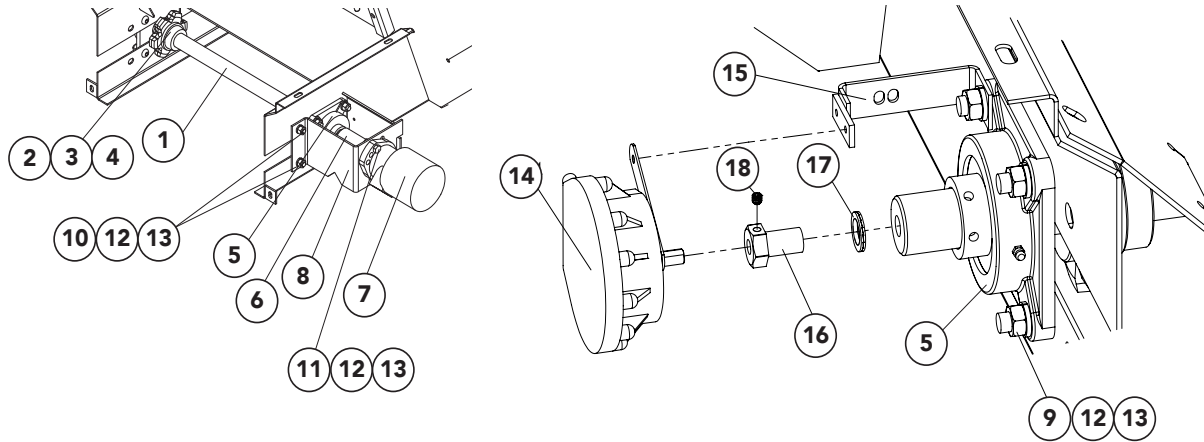
NL345



ITEM	PART NO.	DESCRIPTION	QTY
	89780	Shaft - Idler Assy, Includes 1-5	
1	89779	Shaft - Idler	1
2	86757	Sprocket	2
	20743	Screw - Set 5/16-18NC x 3/8	4
3	6131	Key - Square	2
4	22511	Bearing	2
5	87857	Bolt Wldmt	2
6	17078	Collar - Set	2
7	* 36417	Nut - Hex 5/8 SS	2
8	87856	Nut Wldmt 304	2
9	306595	Extended Idler - Pipe Wldmt Adj 7' 304	2

* - Not Shown

Conveyor Drive & Encoder

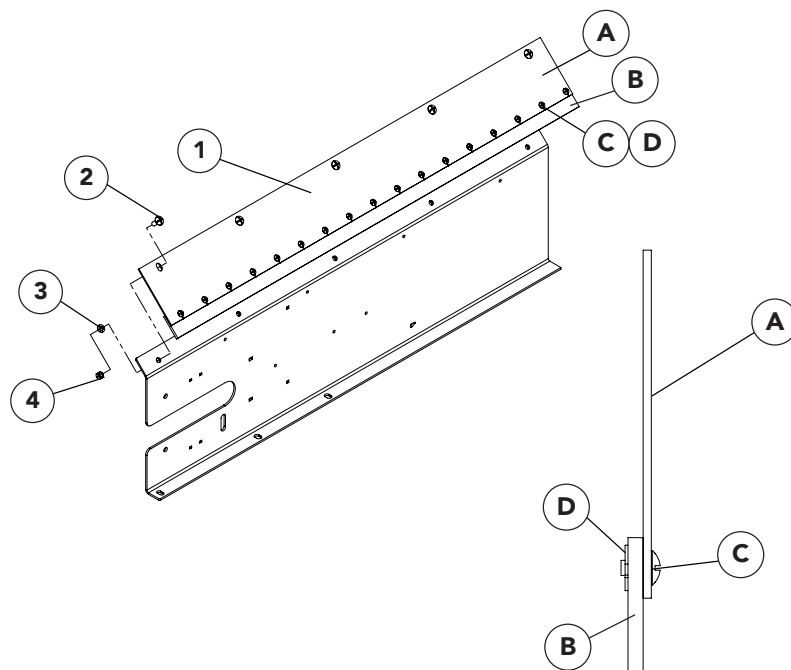


<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	86759-X1	Shaft - Drive Assy, Includes Items 1-5	
1	310644	Shaft - Drive	1
2	86757	Sprocket	2
3	6131	Key - Square	2
4	20743	Screw - Set	4
5	6697	Bearing	2
6	86762 * 4059	Coupling - Shaft Key - Square 5/16 x 1-1/2	1 1
7	311056 *56327	Motor - Hydraulic 29.1 CID Seal Kit	1 1
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 5/16 SS	1

* - Not Shown

MultApplier

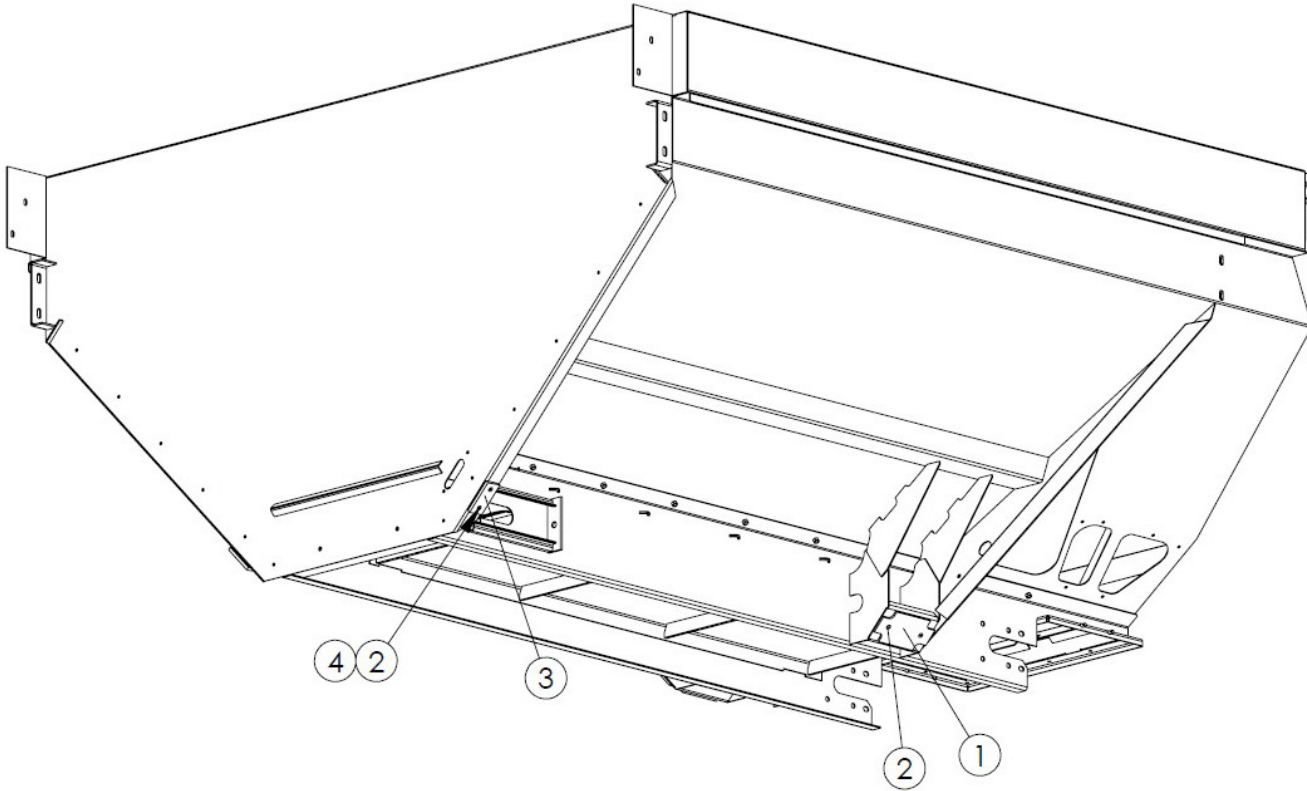
Chain Shields - MultApplier



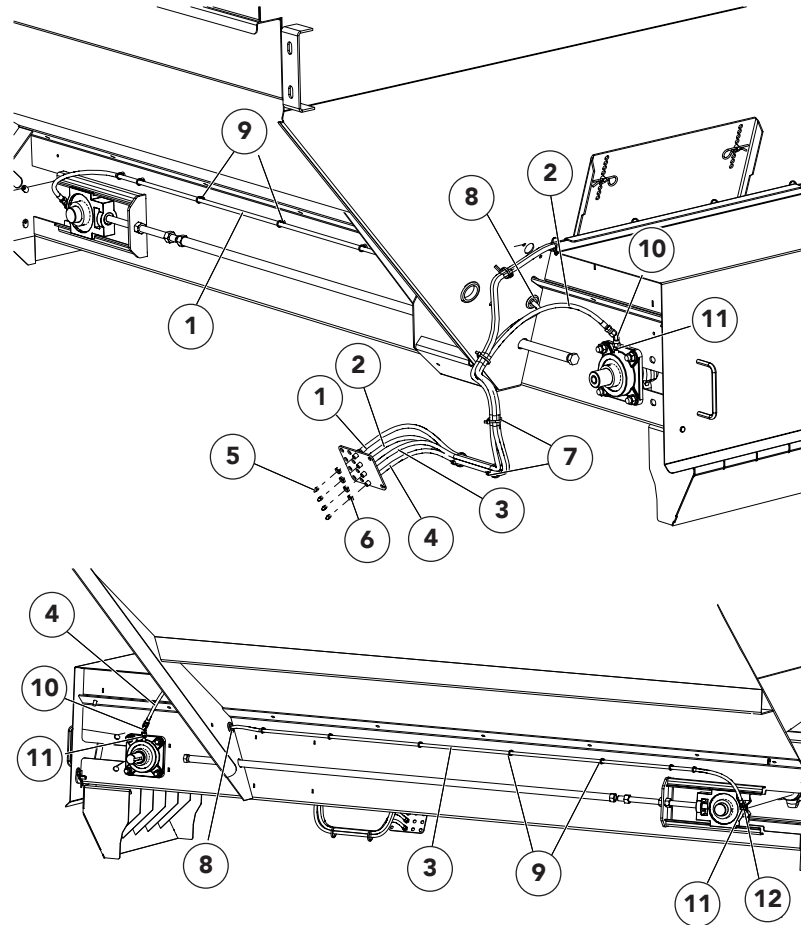
ITEM	PART NO.	DESCRIPTION	QTY
1	303977	Shield – Chain Assy - 7' Unit	2
A	303978	Shield – Chain - 7' Unit	2
B	305975	Belting – Sealer, specify length	AR
C	56258	Screw – Truss Head 1/4-20 x 1/2	AR
D	88931	Nut – Tee 1/4 x 1/4	AR
2	71829	Screw – Machine 3/8-16 x 1 SS	AR
3	36420	Washer – Lock 3/8 SS	AR
4	36414	Nut – Hex 3/8-16 SS	AR
AR – As Required			

MultApplier Mounts

NL345



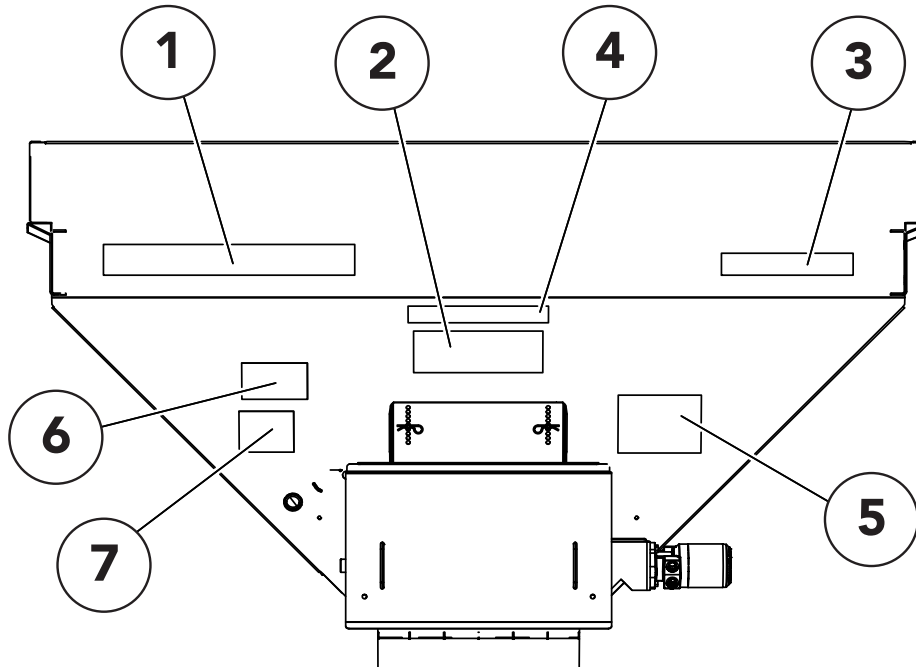
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	306924	Mount - Foot Pad	2
2	47268	Screw - Flathead 1/4-20 x 1 SS	8
3	307097	Mount - Pad	2
4	42034	Nut - Lock 1/4-20 SS	4



NOTE: SOME PARTS HIDDEN FOR CLARITY

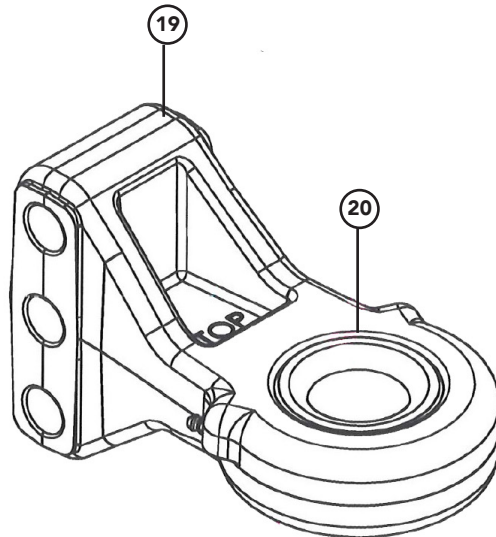
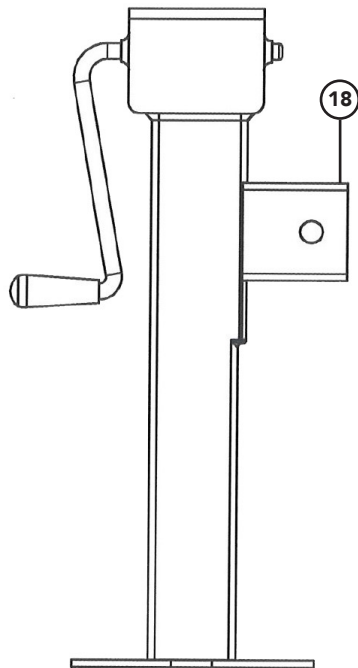
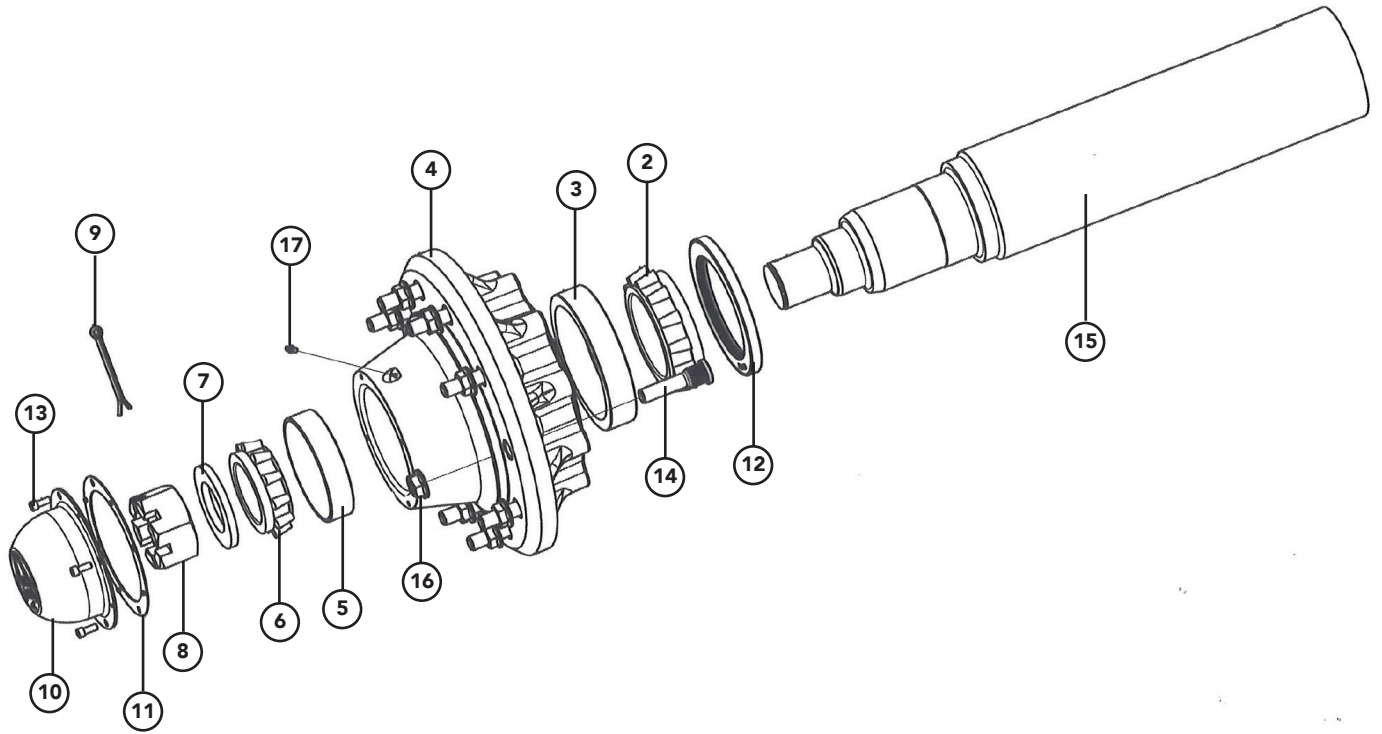
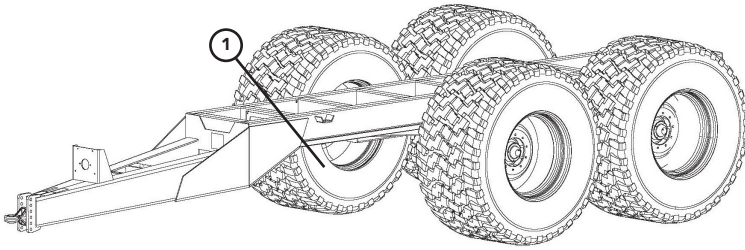
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	313042	Hose - Assy LH Front Idler Bearing 7'	1
2	313040	Hose - Assy LH Rear Drive Bearing	1
3	313043	Hose - Assy RH Front Idler Bearing 7'	1
4	313041	Hose - Assy RH Rear Drive Bearing	1
5	311663	Zerk - Grease 1/4-28 Straight SS	4
6	310471	Nut - Bulkhead 1/8-27	4
7	99674	Tie - Wire	5
8	19383	Grommet - Rubber	2
9	311806	Tie - Wire Fir Tree	18
10	313501	Fitting - 4-4 070321	2
11	34787	Fitting - 4-2 070102	4
12	34868	Fitting - 4-4 070221	2

Decals

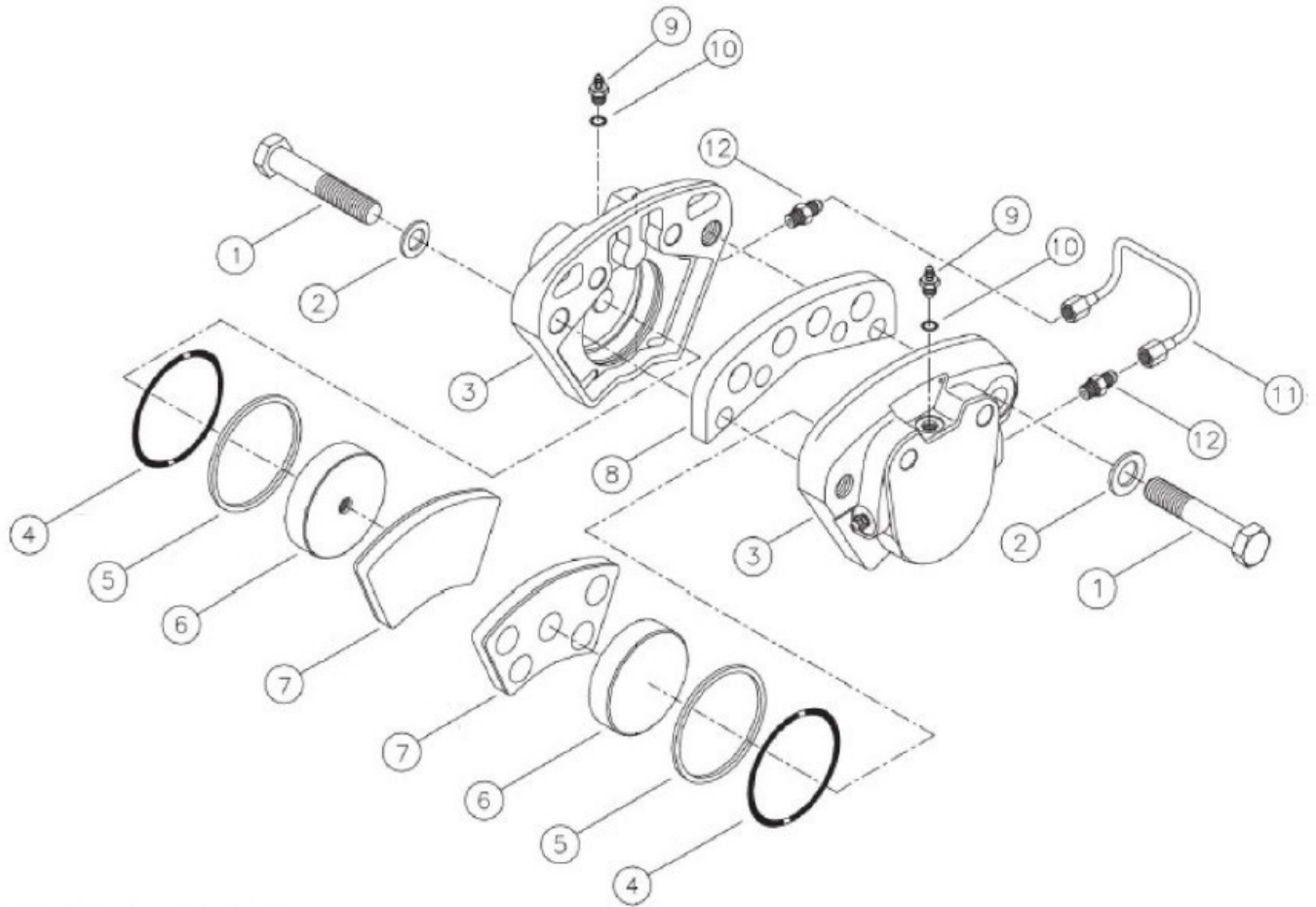


NOTE: See "Decals" in Safety section for details.

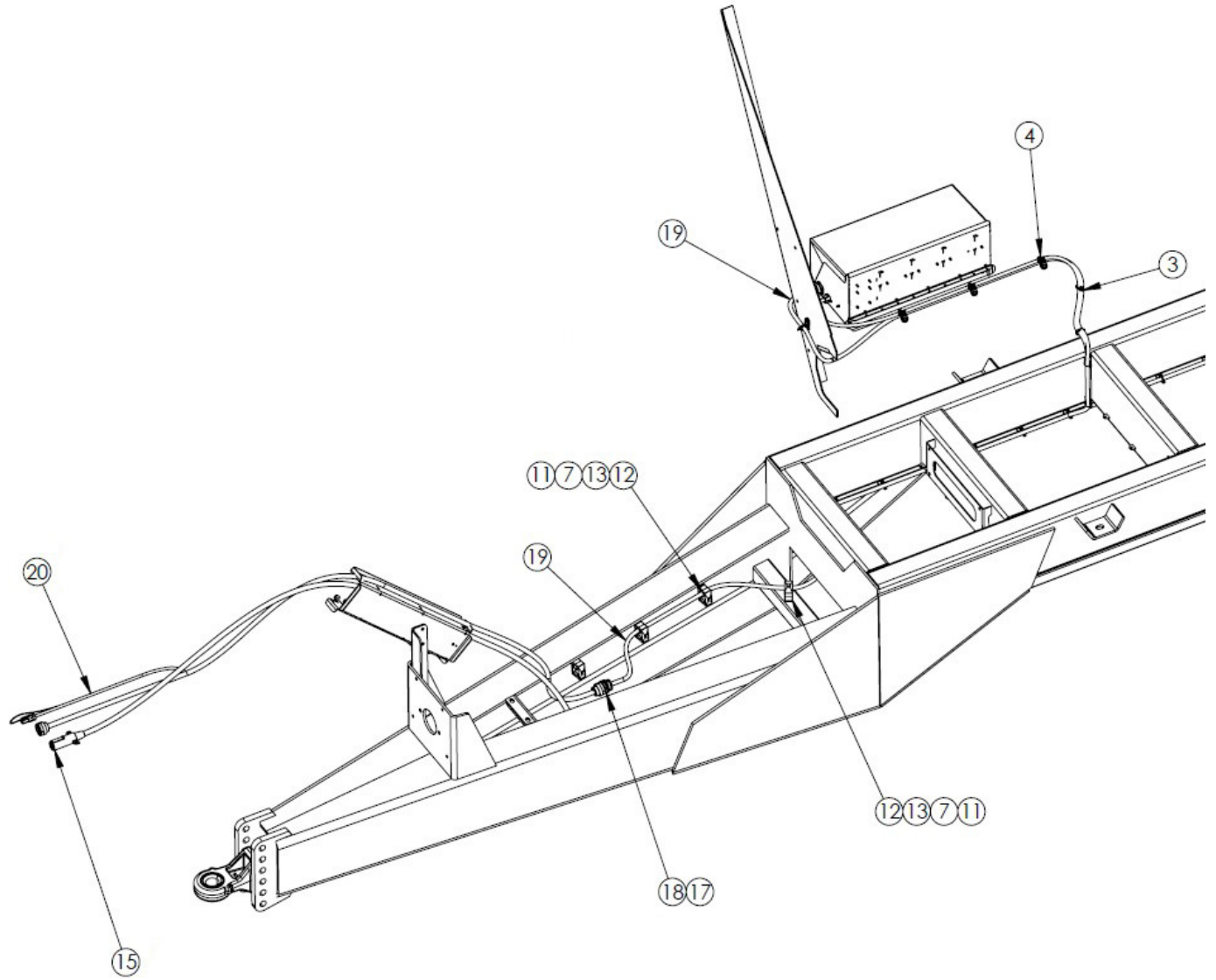
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	312561	Decal - New Leader, Black	1
2	311757	Decal - G4 Edge, Black/Red	1
3	312890	Decal - NL345	1
4	312591	Decal - MultApplier, Black	1
5	368	Decal - Danger, Flying Material	1
6	312276	Decal - Notice, Spread Pattern	1
7	21476	Decal - Notice, Chain Lubrication	1

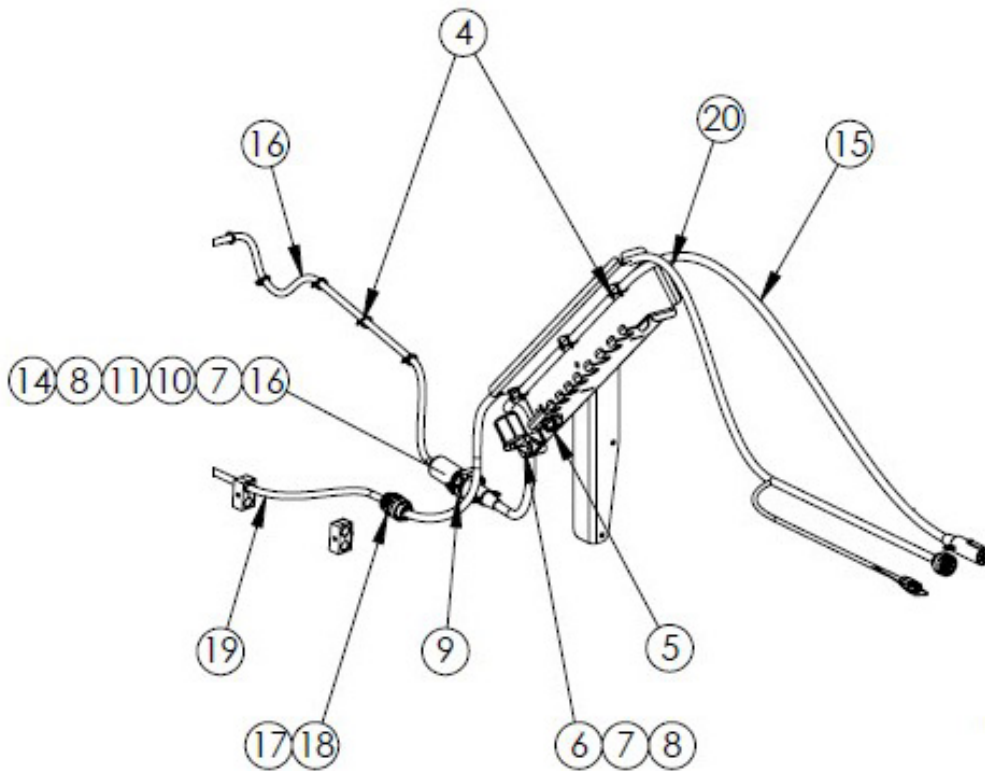
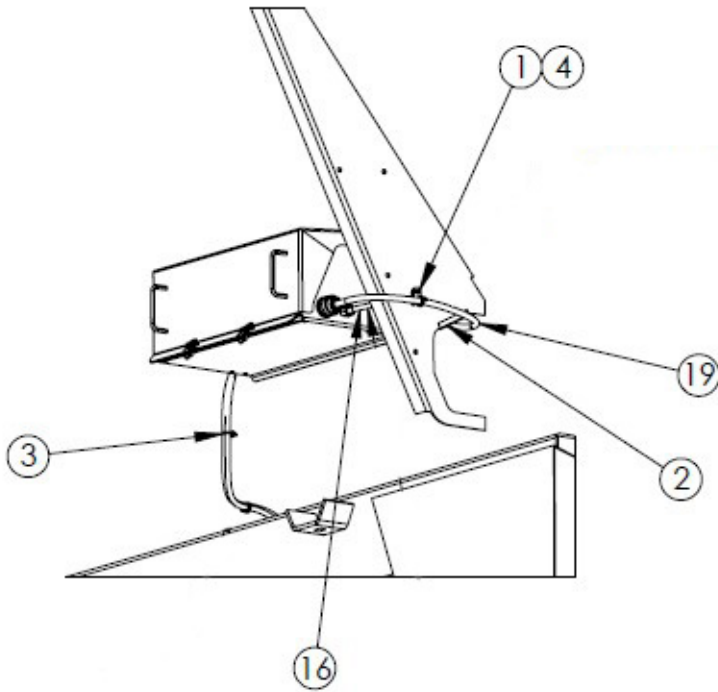


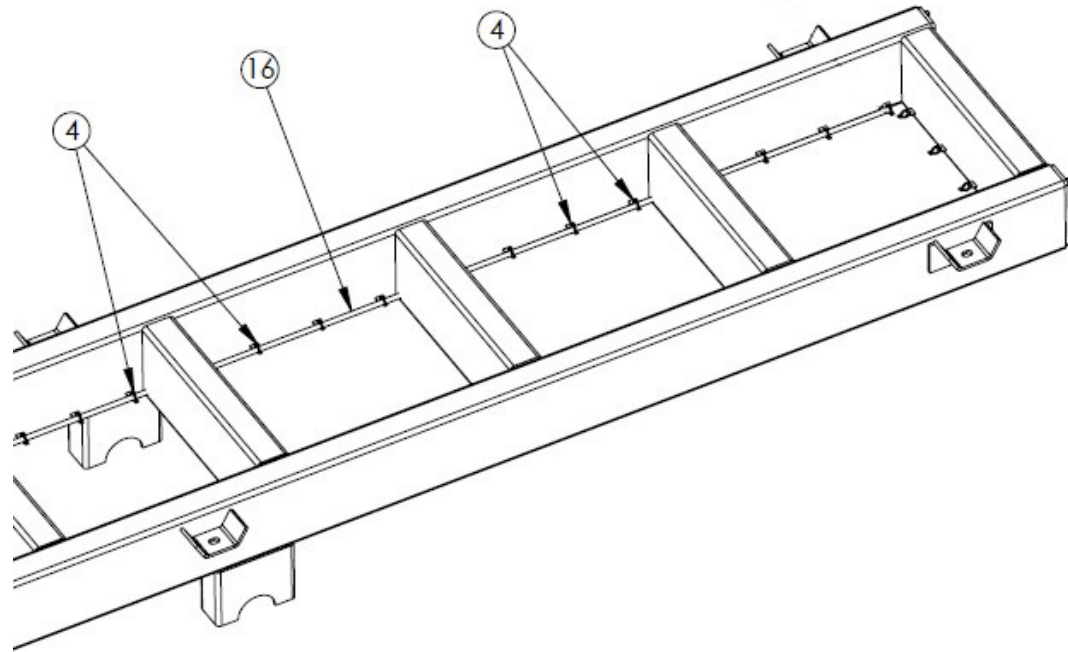
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	318959	Trailer - TR0932 W/Brakes	1
-	318960	Trailer - TR0932 W/O Brakes	1
2	318591-AA	Inner Bearing	1
3	318591-AB	Inner Race	1
4	318591-AC	Hub (with Races)	1
5	318591-AD	Outer Race	1
6	318591-AE	Outer Bearing	1
7	318591-AF	Washer - Spindle	1
8	318591-AG	Nut - Spindle 2.5" - 12	1
9	318591-AH	Cotter Pin	1
10	318591-AI	Dust Cap	1
11	318591-AJ	Dust Cap Gasket	1
12	318591-AK	Seal	1
13	318591-AL	Bolts	1
14	318591-AM	Wheel Stud	1
-	318591-AN	Wheel Stud - Spherical Washer	1
15	318591-AO	Spindle	1
16	318591-AP	Wheel Nut	1
17	318591-AQ	Hyd. Fitting - Grease - 0.25" MP Straight	1
18	318592-AA	Jack - 9000 lb - With Sleeve	1
19	318593-AA	Hitch - Articulating Power Pin - Category 4 - 3 Hole (2" Ball)	1
20	318593-AB	Hitch - Articulating Ball Insert - 2" - Power Pin - Category 4	1



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
4,5,10	318590-AA	Brake - Kit Micro Repair Seal Kit	1
6	318590-AB	Brake - Micro Piston Service	1
7	318590-AC	Brake - Kit Micro Lining 2	1
11	318590-AD	Brake - Assy Micro Tubing	1
12	318590-AE	Brake - Micro Connector Fittng	1
1-12	318590-AF	Brake - Micro 520 Series Calip	1





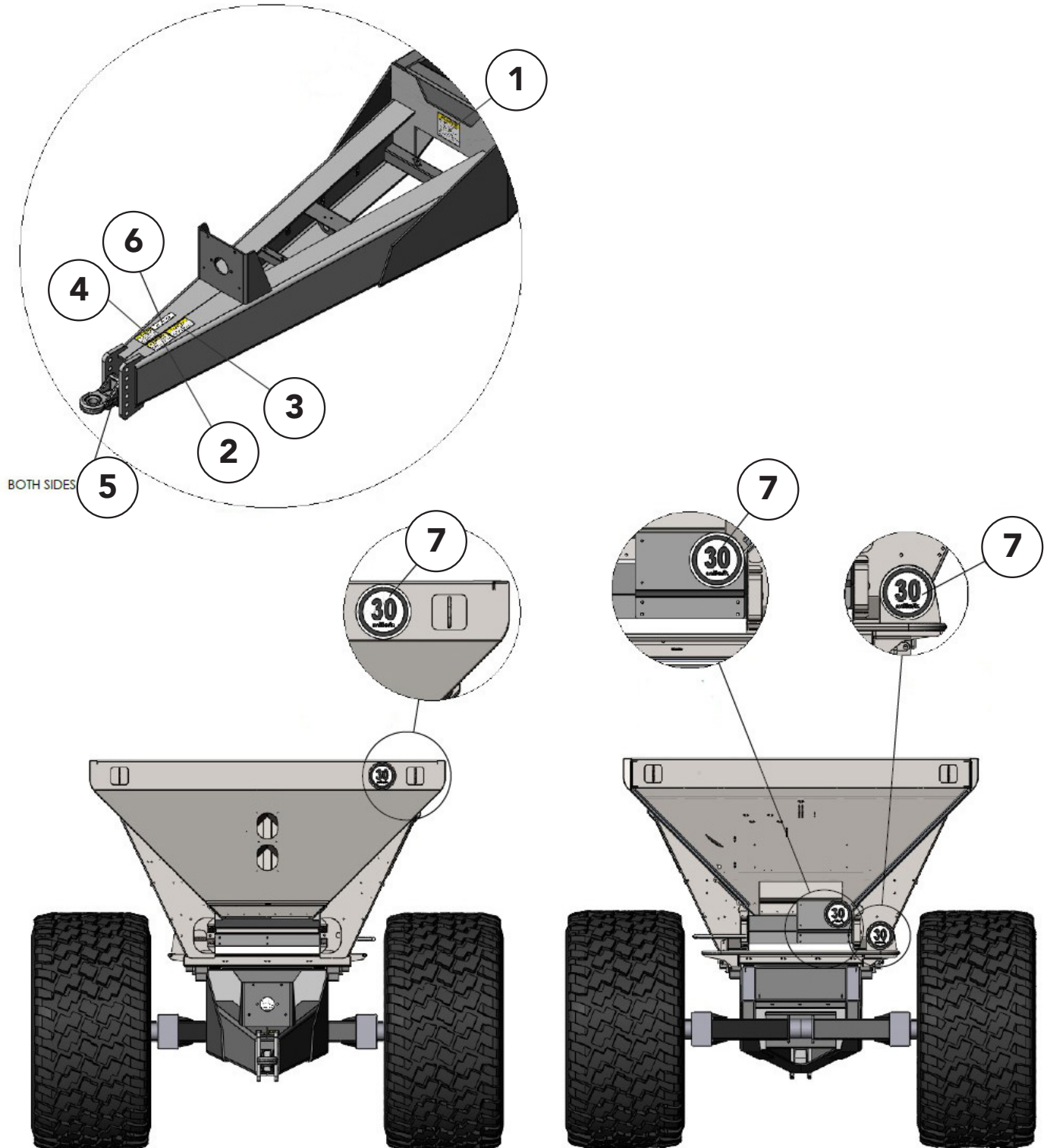


Electrical

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	313047	Mount - Cable Tie .375	1
2	73797	Liner - Edge	1
3	311806	Tie - Wire Fir Tree	1
4	99674	Strap - Zip Tie 8 Black	54
5	313050	Receptacle - Assy	1
6	312887	Plug - Stor A Way 7 Pole	1
7	20039	Capscrew - .313-18nc X 1.75	8
8	20643	Nut - Hex .313-18nc Zn	4
9	9011-0-7102	Receptacle - 7 Way Flush Mount	1
10	20692	Washer - Flat .313 Zn	2
11	20711	Washer - Lock .313 Zn	6
12	310649	Clamp - Tubing Twin .84	4
13	310688	Plate - Cover Hose Clamp 304	4
14	9011-0-7103	Boot - Receptacle	1
15	312888	Cord - Connector 12'	1
16	317391	Harness - Tr0859 Iso	1
17	317731	Washer - Lock Size 24 Hdp	1
18	317730	Nut - Panel Plastic Size 24hdp	1
19	318430	Harness - Extension Isobus	1
20	318431	Harness - Implement Isobus	1

Trailer

Trailer Decals w/Brakes

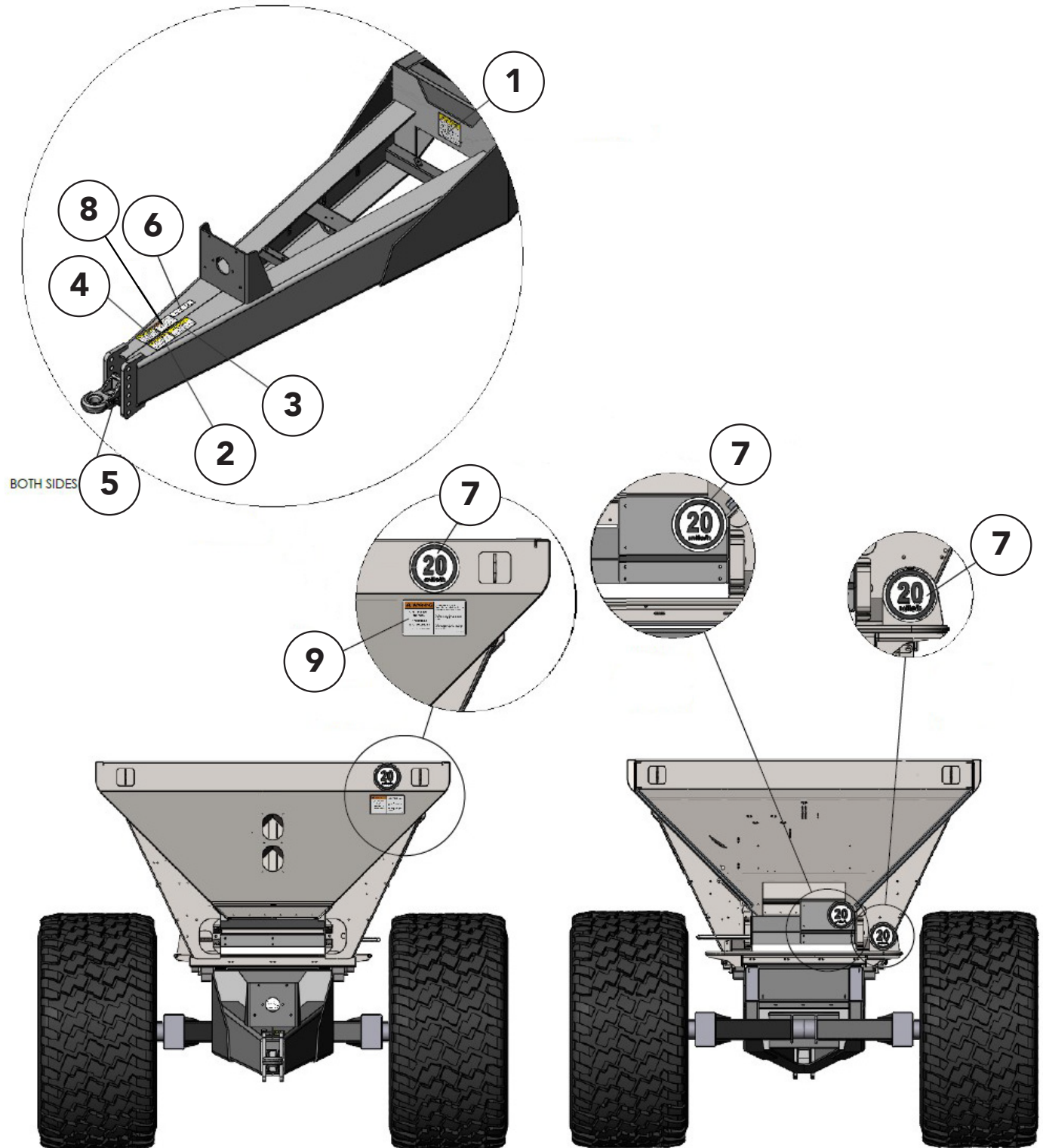


Trailer Decals w/Brakes

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	305281	Decal - Caution Braking	1
2	313858	Decal - Caution Tow	1
3	305289	Decal - Caution Tipping Hazard	1
4	305298	Decal - Weight Restrictions	1
5	305239	Decal - Grease	2
6	39017	Decal - No Step	1
7	305273	Decal - 30 Mile/H	2

Trailer

Trailer Decals w/o Brakes



Trailer Decals w/o Brakes

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	305281	Decal - Caution Braking	1
2	313858	Decal - Caution Tow	1
3	305289	Decal - Caution Tipping Hazard	1
4	305298	Decal - Weight Restrictions	1
5	305239	Decal - Grease	2
6	39017	Decal - No Step	1
7	317739	Decal - 20 Mile/H	2
8	317740	Decal - Warning Speed Limit	1
9	317741	Decal - Warning Speed Limit	1

This page is intentionally left blank.