

Fertilizer Spreader

Pro-Force™ Dry Spreader
Floater Chassis Mount
Models 1250, 1350, 1450, 1650,
1850, 2050, 2250 & 2650

Serial Number B39840100 & Higher

Part No. 414342

Foreword

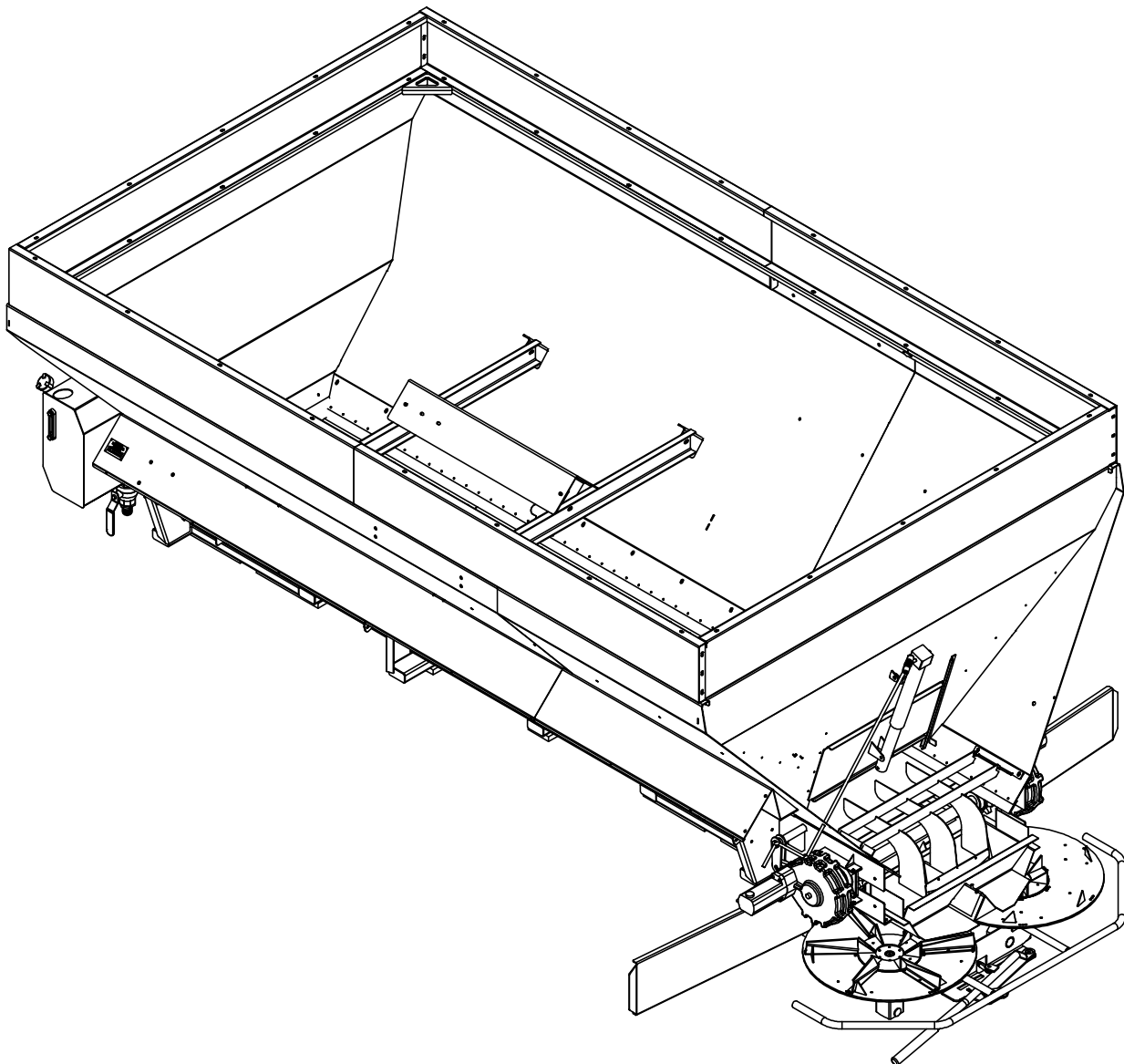


This symbol identifies important safety messages. When you see it, read the message that follows and be alert to the possibility of personal injury.

Remember, safety instructions stated in this manual are for your protection. Read them carefully and follow them closely when working around or using this machine.

Read and study this manual completely before attempting to operate this implement. Take this manual to the field for handy reference when operating, adjusting, or servicing your machine. It can be stored in the supplied tube located on the implement.

When referenced, “Right-Hand” (RH) and “Left-Hand” (LH) side of the machine are determined by standing behind the machine and facing in the direction of travel.



Product Information

When ordering parts or when requesting further information or assistance, always give the following information:

- Machine name
- Model
- Serial number

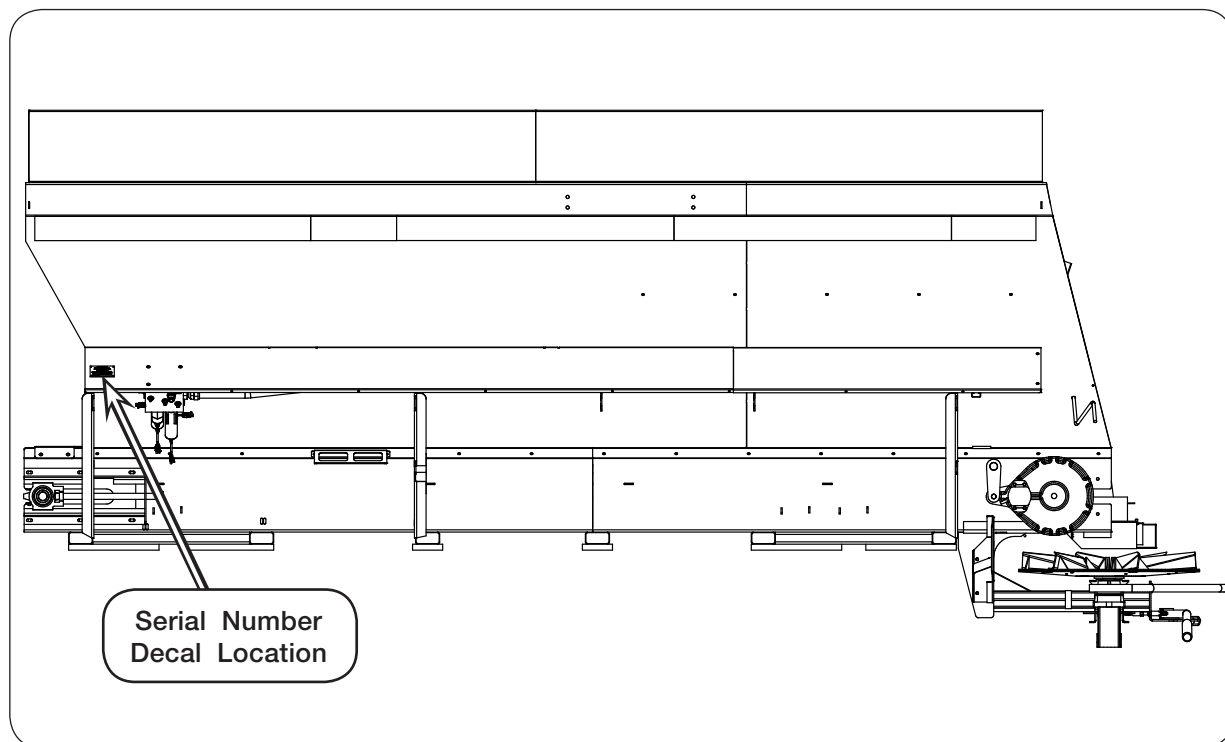
All products manufactured by Unverferth Mfg. Co., Inc. are warranted to be free from material and workmanship defects for one full year from time of consumer delivery. Your local dealer will gladly assist you with any warranty questions.

Please fill out and retain this portion for your records.

Purchase Date _____ Model _____ Serial Number _____

Dealer _____ City _____

Dealer Contact _____ Phone _____



IMPORTANT

- The information, specifications, and illustrations in the manual are based on information available at the time it was written. Due to continuing improvements in the design and manufacture of Unverferth products, all specifications and information contained herein are subject to change without notice.

Table of Contents

Introduction

Foreword..... 2

Product Information 3

Section I
Safety

General Hazard Information..... 1-2

Safety Decals 1-3

Following Safety Instructions..... 1-5

Before Operating 1-5

Before Servicing 1-6

During Operation 1-7

Before Transporting..... 1-7

During Transport..... 1-7

Pressurized Oil 1-8

Fertilizer & Chemical Hazards..... 1-9

Preparing for Emergencies..... 1-10

Wearing Protective Equipment..... 1-10

Table of Contents

Section II
Set Up

Pre-Delivery Checklist..... 2-2

Dealer Set Up 2-3

 SMV Emblem & SIS Decals..... 2-3

Fin Assembly Location 2-4

Box Mounting Locations..... 2-5

Spinner Disc Set Up..... 2-7

RCM Spreader Set Up 2-8

 RCM Spreader Test Speed Procedure..... 2-22

FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.

FOR AUTO GREASE INFORMATION, PLEASE REFER TO YOUR AUTO GREASE MANUAL.

FOR TARP INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.

Table of Contents

Section III
Operation

Preparing Dry Spreader..... 3-2

 Hardware..... 3-2

 Hydraulic System..... 3-2

 Lubrication..... 3-2

Transporting..... 3-3

Spreader Constant for Gate Setting 3-4

Spinner Disc Operation..... 3-5

Lime Spreading Operation..... 3-6

Hydraulic PWM Valve Manual Override..... 3-8

Rate Control Module (RCM) Spreader Reset 3-8

Ladder Operation..... 3-9

FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR AUTO GREASE INFORMATION, PLEASE REFER TO YOUR AUTO GREASE MANUAL.
FOR TARP INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.

Table of Contents

Section IV
Maintenance

Dry Spreader Maintenance.....	4-2
Seasonal Storage.....	4-2
Purging Hydraulic System	4-3
Lubrication.....	4-4
Gearbox Removal and Oil Change.....	4-7
Jack Shaft Disassembly.....	4-8
Conveyor Speed Sensor Replacement.....	4-9
Spinner Motor Speed Sensor Replacement.....	4-11
Hydraulic Servo Valve Manual Override & Timing.....	4-13
Chain Tension	4-14
Chain Shield Seal Strip Replacement.....	4-15
Bin Level Sensor Assembly.....	4-16
Spinner and Material Flow Divider Assembly.....	4-17
Rear Feedgate Door Replacement	4-18
Winterizing.....	4-21
Main Valve Block Assembly - Spinner and Conveyor.....	4-22
Schematics	4-23
Fertilizer Density Chart.....	4-27
Complete Torque Chart.....	4-28
Hydraulic Fittings - Torque and Installation	4-30
Hydraulic System Valves and Steel Pipe Adapters.....	4-31

FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR AUTO GREASE INFORMATION, PLEASE REFER TO YOUR AUTO GREASE MANUAL.
FOR TARP INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.

Table of Contents

Section V
Parts

Please visit www.unverferth.com/parts/ for the most current parts listing.

Decals.....	5-2
Touch-Up Paint.....	5-5
Ladder Assembly Without Fenders.....	5-6
Ladder Assembly With Full Float Fenders.....	5-7
Point Scale System Assembly Components.....	5-8
John Deere Chassis Scale System Assembly Components.....	5-10
CNH Trident Chassis Scale System Assembly Components.....	5-12
Conveyor Drive.....	5-14
Conveyor Idler.....	5-16
Spinner Assembly Components.....	5-18
Spinner Guards & Flow Divider Components.....	5-22
Main Valve Block Assembly Components - Spinner & Conveyor Set Up.....	5-24
Jack Shaft Assembly Components.....	5-26
Dump Valve - For Chassis Mounted Units.....	5-27
Spinner & Conveyor Drive Hydraulic Components - For Chassis Mounted Units.....	5-28
Spinner & Dual Conveyor Drive Hydraulic Components - For Chassis Mounted Units.....	5-30
Hydraulic Reservoir Components - For Chassis Mounted Units.....	5-32
Reservoir / Pump Hydraulic Components - For Chassis Mounted Units.....	5-33
In-Line Hydraulic Filter.....	5-34
Oil Cooler (Optional).....	5-35
Full Float Fender & Mudflap Components (Optional).....	5-36
Semi Float Fender Components.....	5-38
Inverted "V" & Cross Brace Assembly Components.....	5-40
Bin Level Sensor Assembly Components.....	5-42
RCM Wiring Harness Components.....	5-44
Gearbox.....	5-46
Straight Chain Components (Optional).....	5-48
Belt Over Pintle Chain Components.....	5-50
Chain Shield.....	5-52
Conveyor Mounting Rubber.....	5-54
Chassis Cover Components.....	5-55
Front Belt Sealer Components.....	5-56
Feedgate Assembly Components.....	5-58
Hydraulic Pipe Components.....	5-60
12" SS Box Sideboard Extension Components.....	5-62
Sideboard Extensions Handrail (Optional).....	5-64
Cab Shield (Optional).....	5-65
Tail Light Assembly Components Without Fenders.....	5-66
Tail Light Assembly Components With Fenders.....	5-67
Transport Lighting Components.....	5-68
Box Window.....	5-69
Hillside Flow Divider.....	5-70
Box Mount.....	5-71

FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR AUTO GREASE INFORMATION, PLEASE REFER TO YOUR AUTO GREASE MANUAL.
FOR TARP INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.

Section I

Safety

General Hazard Information	1-2
Safety Decals	1-3
Following Safety Instructions	1-5
Before Operating	1-5
Before Servicing	1-6
During Operation	1-7
Before Transporting	1-7
During Transport	1-7
Pressurized Oil	1-8
Fertilizer & Chemical Hazards	1-9
Preparing for Emergencies	1-10
Wearing Protective Equipment	1-10

General Hazard Information

No accident-prevention program can be successful without the wholehearted cooperation of the person who is directly responsible for the operation of the equipment.

A large number of accidents can be prevented only by the operator anticipating the result before the accident is caused and doing something about it. No power-driven equipment, whether it be transportation or processing, whether it be on the highway, in the field, or in the industrial plant, can be safer than the person who is at the controls. If accidents are to be prevented--and they can be prevented--it will be done by the operators who accept the full measure of their responsibility.

It is true that the designer, the manufacturer, and the safety engineer can help; and they will help, but their combined efforts can be wiped out by a single careless act of the operator.

It is said that, "the best kind of a safety device is a careful operator." We, at Unverferth Mfg. Co., Inc. ask that you be that kind of operator.



REMEMBER:
THINK SAFETY
A CAREFUL OPERATOR IS THE
BEST INSURANCE AGAINST AN
ACCIDENT!

SIGNAL WORDS



INDICATES AN EXTREMELY HAZARDOUS SITUATION OR ACTION THAT WILL RESULT IN SERIOUS INJURY OR DEATH.



INDICATES A HAZARDOUS SITUATION OR ACTION THAT COULD RESULT IN SERIOUS INJURY OR DEATH.



INDICATES AN UNSAFE SITUATION OR ACTION THAT MAY RESULT IN PERSONAL INJURY.

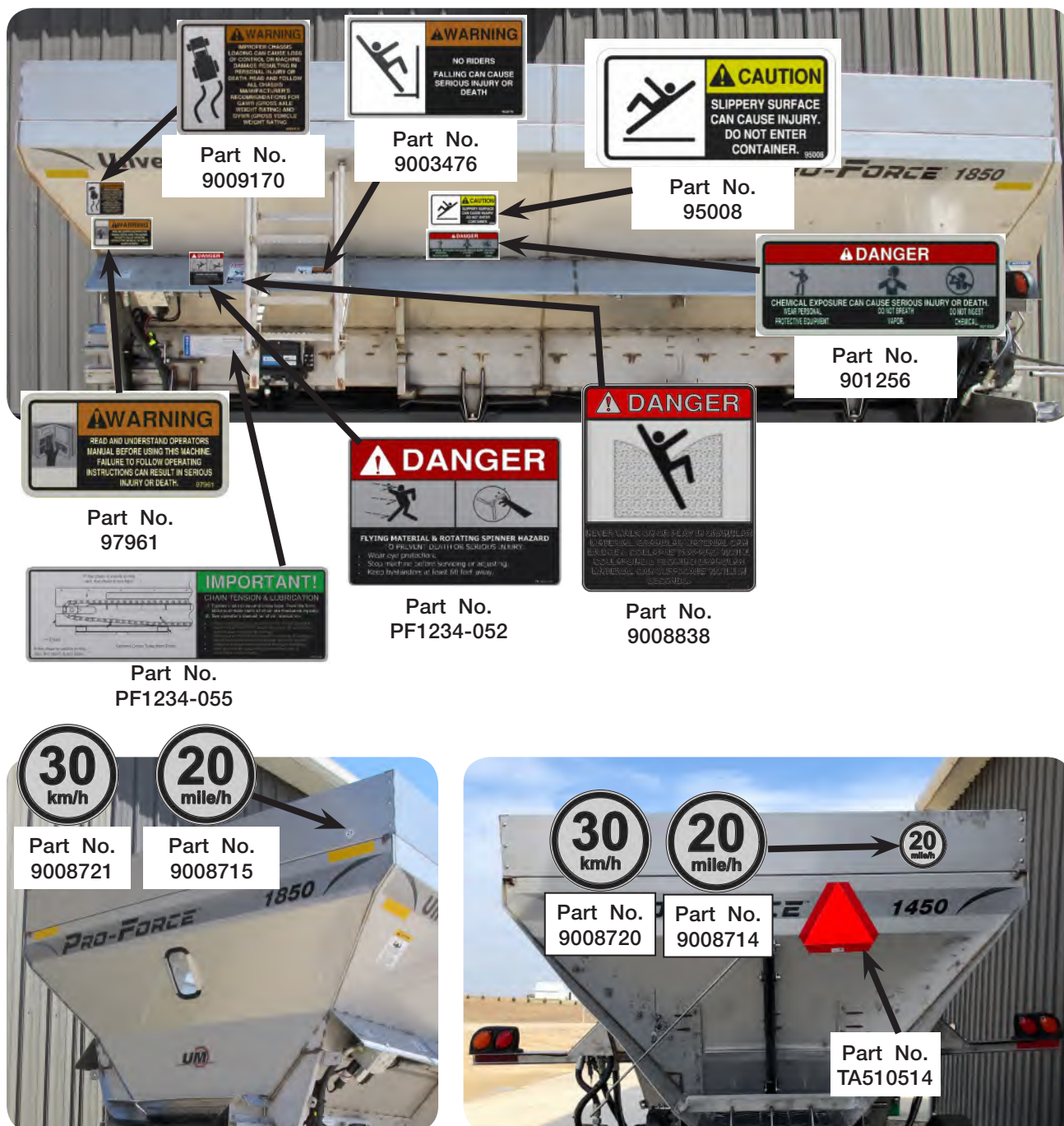


Is used for instruction on operating, adjusting, or servicing a machine.

Safety Decals

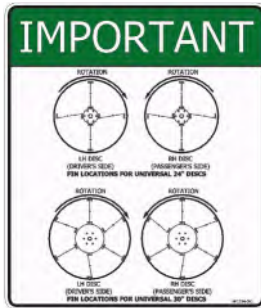
WARNING

- REPLACE LOST, DAMAGED, PAINTED, OR UNREADABLE DECALS IMMEDIATELY. IF PARTS THAT HAVE DECALS ARE REPLACED, ALSO MAKE SURE TO INSTALL NEW DECALS. THESE DECALS INFORM AND REMIND THE OPERATOR WITH OPERATIONAL INFORMATION AND SAFETY MESSAGES.

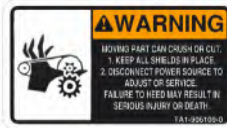


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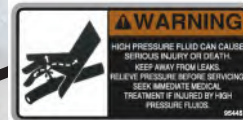
Safety Decals (continued)



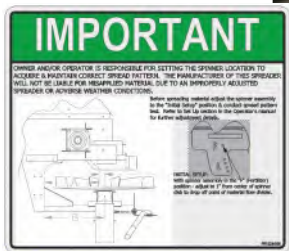
Part No.
PF1234-051



Part No.
TA1-906109-0



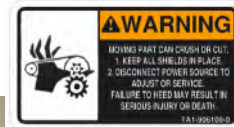
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Part No.
PF1234-050

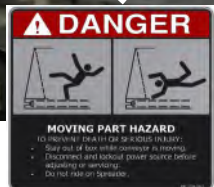


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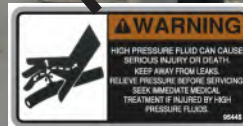
Part No.
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Front
Right-Hand View



Part No.
PF1234-054

Rear
Right Hand View



Part No.
95445

Following Safety Instructions

- Read and understand this operator's manual before operating.



- All machinery should be operated only by trained and authorized personnel.

- To prevent machine damage, use only attachments and service parts approved by the manufacturer.

- Always shut tractor or truck chassis engine off and remove key before servicing.



- Avoid personal attire such as loose fitting clothing, shoestrings, drawstrings, pants cuffs, long hair, etc., that may become entangled in moving parts.

- Do not allow anyone to ride on the implement. Make sure everyone is clear before operating machine or towing vehicle.




- Never attempt to operate implement unless you are in driver's seat.



Before Operating

- Always make certain everyone and everything is clear of the machine before beginning operation.
- Ensure that all applicable safety decals are installed and legible.
- When working around the implement, be careful not to be cut by sharp edges.
- This spreader is intended to apply only agricultural materials. Attempting to apply other materials may cause equipment damage and introduce unexpected personal hazards.

Before Servicing

- Avoid working under an implement; however, if it becomes absolutely unavoidable, make sure the implement is safely blocked. 
- Ensure that all applicable safety decals are installed and legible.
- When working around the implement, be careful not to be cut by sharp edges.
- To prevent personal injury or death, always ensure that there are people who remain outside the dry spreader to assist the person working inside, and that all safe workplace practices are followed. There are restricted mobility and limited exit paths when working inside the implement.
- Add sufficient ballast to vehicle to maintain steering and braking control at all times. Do not exceed vehicle's lift capacity or ballast capacity.
- Check equipment for leaks. Repair any leaks before beginning or resuming operation.

During Operation

- Comply with all laws and product label directions governing safe product application.
- Regulate speed to field conditions. Maintain complete control at all times.
- Never service or lubricate equipment when in operation.
- Use extreme care when operating close to ditches, waterways, fences, or on hillsides.
- Do not leave towing vehicle unattended with engine running.


Before Transporting

- Check for proper function of all available transport lights. Make sure that all reflectors are clean and in place on machine. Make sure the SMV emblem and SIS decals are visible to approaching traffic.
- Do not exceed the gross vehicle weight rating (GVWR). Improper chassis loading can cause loss of control or machine damage resulting in injury or death.

During Transport

- Comply with all laws governing highway safety when moving machinery.
- Use transport lights as required by all laws to adequately warn operators of other vehicles.
- Use good judgment when transporting equipment on highways. Regulate speed to road conditions and maintain complete control.
- Maximum transport speed of the dry spreader should never exceed 20 m.p.h. as indicated on the machine. Maximum transport speed of any combination of implements must not exceed the lowest specified speed of the implements in combination. Do not exceed 10 m.p.h. during off-highway travel.
- Slow down before making sharp turns to avoid tipping. Drive slowly over rough ground and side slopes.
- It is probable that this implement is taller, wider and longer than the towing vehicle. Become aware of and avoid all obstacles and hazards in the travel path of the equipment, such as power lines, ditches, etc.

Pressurized Oil

- Relieve pressure before disconnecting hydraulic lines from tractor, loosening any hydraulic fittings or servicing hydraulic system. See hydraulic power unit manual for procedure to relieve pressure.
- High-pressure fluids can penetrate the skin and cause serious injury or death. Use a piece of cardboard or wood to detect leaks of hydraulic fluid under pressure. Seek medical treatment immediately if injured by high-pressure fluids. 
- Hydraulic system must be purged of air before operating to prevent serious injury or death.
- Do not bend or strike high-pressure lines. Do not install bent or damaged tubes or hoses.
- Repair all oil leaks. Leaks can cause fires, personal injury, and environmental damage.
- Route hoses and lines carefully to prevent premature failure due to kinking and rubbing against other parts. Make sure that all clamps, guards and shields are installed correctly.
- Check hydraulic hoses and tubes carefully. Replace components as necessary if any of the following conditions are found:
 - End fittings damaged, displaced, or leaking.
 - Outer covering chafed/cut or wire reinforcing exposed.
 - Outer covering ballooning locally.
 - Evidence of kinking or crushing of the flexible part of a hose.

Fertilizer and Chemical Hazards

- Always wear personal protective equipment when working with or near fertilizers and/or chemicals. This equipment includes, but is not limited to: protective eye wear, gloves, shoes, socks, long-sleeved shirt, and long pants. Additional protection may be required for many types of fertilizers and/or chemicals.
- Pro-Force dry spreader may contain residual toxic fertilizers and/or chemicals. **DO NOT ENTER SPREADER FOR ANY REASON WITHOUT WEARING PROPER VENTILATION EQUIPMENT.** Failure to do so may result in asphyxiation and death.
- Seek and receive fertilizer and/or chemical product training prior to using agricultural fertilizers and/or chemicals.
- Read and understand the entire label of every fertilizer and/or chemical being applied with this dry spreader.
- Wash hands before eating, drinking, chewing gum, or using the toilet.
- Remove clothing immediately if fertilizers and/or chemicals penetrate clothing and contact skin. Wash thoroughly and put on clean clothing.
- Dispose of unused fertilizer and/or chemical in accordance with fertilizer and/or chemical label directions and local/national regulations.

Preparing for Emergencies

- Keep a first aid kit and properly rated fire extinguisher nearby.



- Keep emergency numbers for fire, rescue, and poison control personnel near the phone.



Wearing Protective Equipment

- Wear clothing and personal protective equipment appropriate for the job.



- Wear steel-toed shoes when operating.



- Wear hearing protection when exposed to loud noises.



- Do not wear additional hearing impairing devices such as radio headphones, etc.



Section II

Set Up

Pre-Delivery Checklist	2-2
Dealer Set Up	2-3
SMV Emblem & SIS Decals.....	2-3
Fin Assembly Location.....	2-4
Box Mounting Locations	2-5
Spinner Disc Set Up.....	2-7
Rate Control Module (RCM) Spreader Set Up	2-8
RCM Spreader Test Speed Procedure.....	2-22

FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR AUTO GREASE INFORMATION, PLEASE REFER TO YOUR AUTO GREASE MANUAL.
FOR TARP INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.

Pre-Delivery Checklist

- ☐ Check toolbox for controller, if ordered.
- ☐ Power wash any road salt off this unit to help prevent corrosion.
- ☐ All stainless steel capscrews have been lubricated with anti-seize compound.
- ☐ Torque stainless steel capscrews as specified in MAINTENANCE section.
- ☐ All grease fittings have been lubricated.
- ☐ Verify all safety decals are correctly located and legible. Replace if damaged.
- ☐ Verify all reflective decals are correctly located.
- ☐ Verify SMV emblem and SIS decals are in place and shipping film is removed.
- ☐ Verify transport lights are working properly.
- ☐ Install ladder, if removed.
- ☐ Install spinner deflectors, if removed.
- ☐ Install tail lights, if removed.
- ☐ Check hydraulic components for leaks.
- ☐ Check hydraulic level in reservoir.
- ☐ If equipped with chassis covers on the bottom of the frame, remove chassis covers to prevent material build up.
- ☐ Paint all parts scratched during shipment and dealer set up.

Dealer Set Up

WARNING

- EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.
- KEEP HANDS CLEAR OF PINCH POINT AREAS.

SMV Emblem & SIS Decals

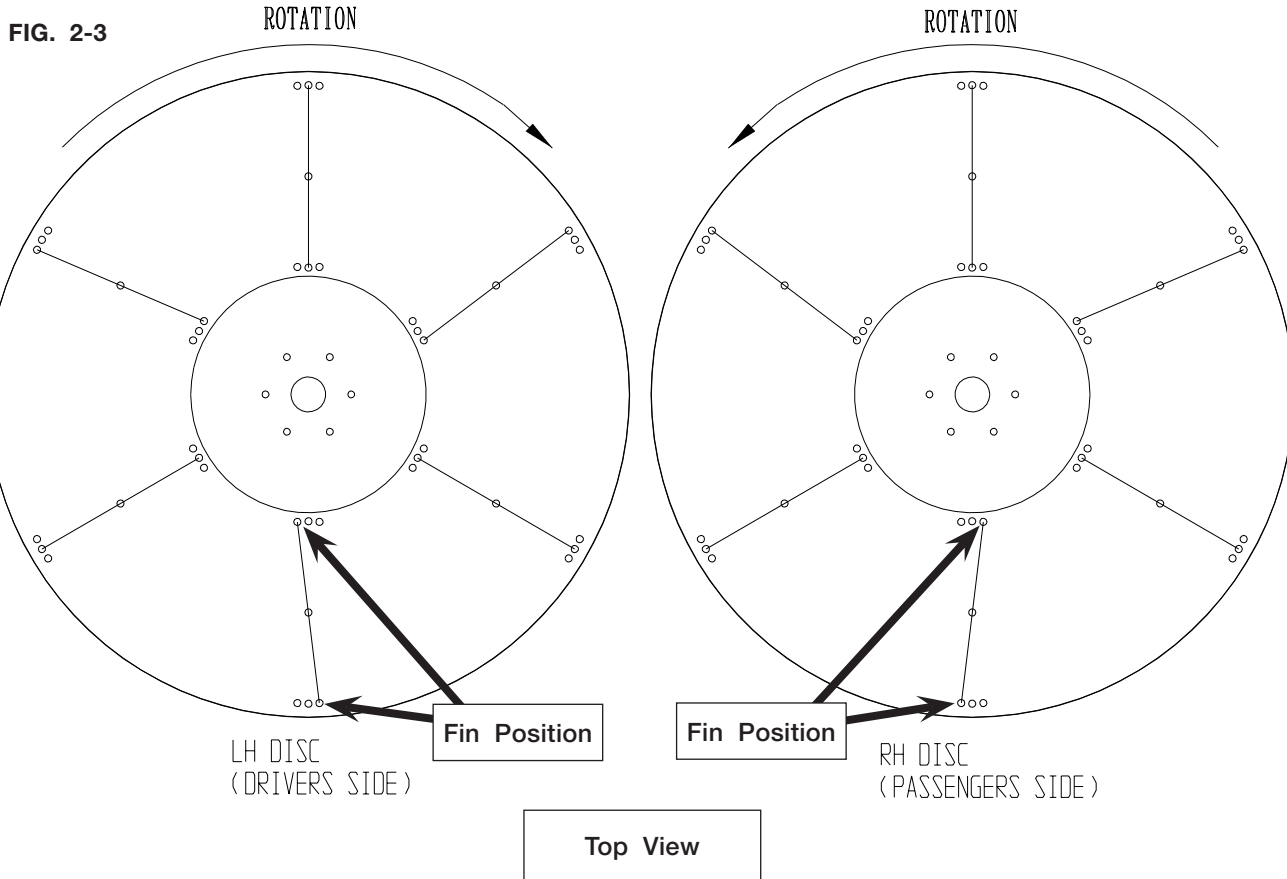
1. Before the spreader is used, the reflective surface of the SMV must face rearward. This may require removal of film protecting the reflective surface or removing and reinstallation of the SMV. (FIG. 2-1)
2. When reinstalling the SMV, make sure that it is placed with the wide part of the SMV at the bottom. (FIG. 2-1)
3. For the SIS decals (one on the front and one on the rear of the dry spreader) make sure both decals are clean and visible. (FIG. 2-2)



Fin Assembly Location

NOTE: Left-hand fins rotate clockwise and right-fins rotate counter-clockwise.

NOTE: Verify the fin position in both the inner and outer three holes as shown in FIG. 2-3.



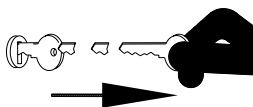
Box Mounting Locations

WARNING

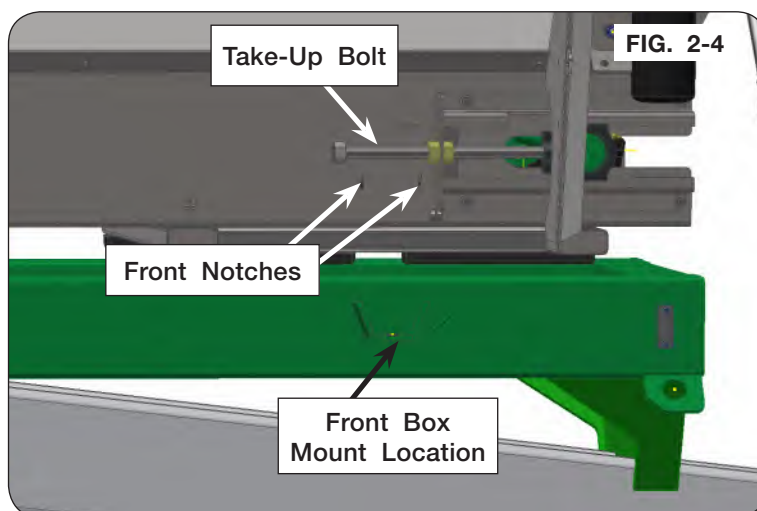
- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE MACHINE IS SECURELY BLOCKED.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

IMPORTANT

- *Disconnect the unit completely from the towing vehicle before welding on the equipment. Damage may occur to the electrical system.*
 - *Disconnect all scale indicator leads, if applicable, before welding on equipment. Damage may occur to the indicator and load cells.*
1. Park the empty unit on a firm, level surface. Block the tires on the machine to keep it from moving. Set the vehicle's parking brake, shut off engine and remove ignition key. Completely disconnect the unit from the vehicle to prevent electrical damage.



2. Locate the box mounts (PF1236-80) to the undercarriage frame cross member tubes on the bottom of the box. Center the box mount bolt holes with the undercarriage mount plate slots.
3. Attach box mount to the front notches on side of the box under the take-up bolt as shown. (FIG. 2-4).

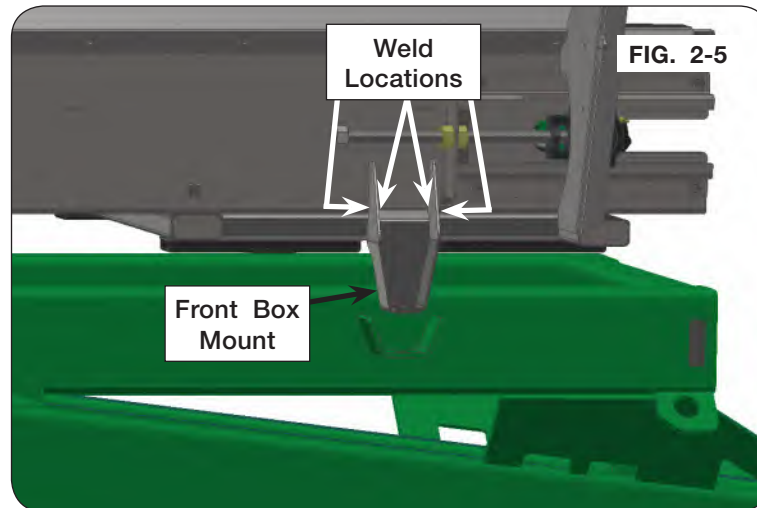


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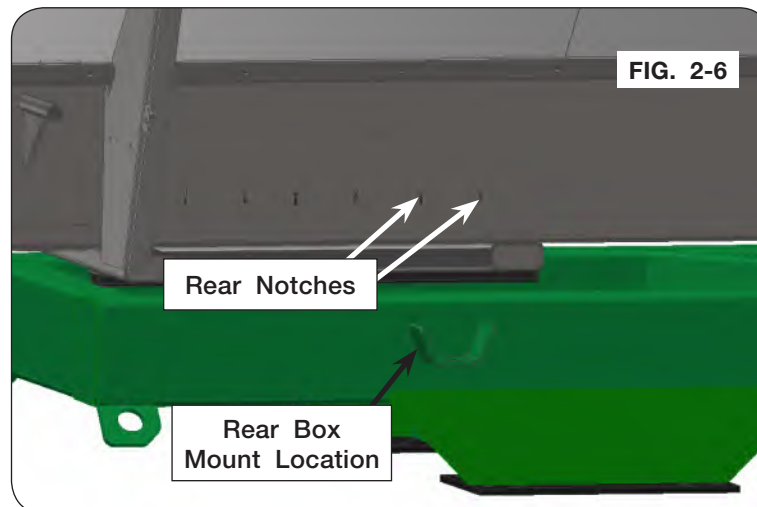
Box Mounting Locations (continued)

NOTE: Do not weld box mounts to the undercarriage frame cross member tubes.

4. Weld the box mount to the box and box cross tubes as shown. (FIG. 2-5)



5. Repeat steps 2 and 3 for the opposite front side.
6. Align box mount to the rear notches on side of the box with undercarriage mount plate slots as shown. (FIG. 2-6)



7. Weld the box mount to the box and box cross tubes at the same locations as the front box mounts.
8. Repeat steps 6 and 7 for the opposite rear side.
9. Insert 3/4"-10UNC x 2 1/4" capscrews (9503634-146) through 3/4" flat washer (9503636-104), box mount bolt holes and, undercarriage mount plate slots.
10. Attach and tighten with 3/4"-10UNC top locknut (9503653-037).

NOTE: Pro-Force Stainless Steel Truck-Style Mount Complete Set Parts (PFF0143SSA).

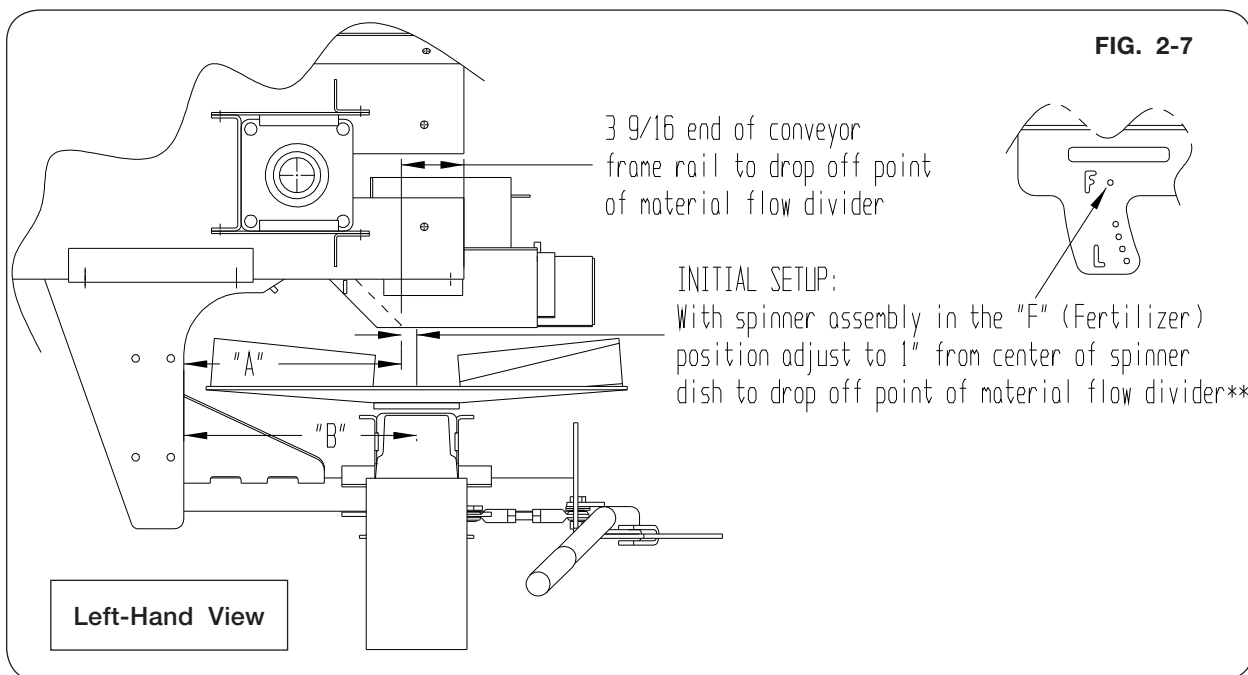
Spinner Disc Set Up

WARNING

- EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.
- KEEP HANDS CLEAR OF PINCH POINT AREAS.
- FALLING OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT WORK UNDER THE MACHINE AT ANY TIME WHILE BEING HOISTED. BE SURE ALL LIFTING DEVICES AND SUPPORTS ARE RATED FOR THE LOADS BEING HOISTED. THESE ASSEMBLY INSTRUCTIONS WILL REQUIRE SAFE LIFTING DEVICES UP TO 300 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.

IMPORTANT

- Owner and/or operator is responsible for setting the spinner location to acquire and maintain correct spread pattern.



Adjust spinner fore/aft with the threaded rod between the lever arm and spinner frame to get the following dimensions:

1. With spinner assembly in the "F" (Fertilizer) position, adjust to 1" from center of spinner dish to drop off point of material flow divider.
2. Verify dimension "B" is the same for both spinner motors. Verify both spinner motors are level to the frame. (FIG. 2-7)
3. To obtain 1 inch from center of spinner dish to drop off point of material flow divider, measure dimension "A" and add 1 inch to get dimension "B". (FIG. 2-7)

Rate Control Module (RCM) Spreader Set Up

When turning on the RCM for the first time, the 12V DC power is turned off, or the ECU for the spreader loses power, the following steps will have to be performed in order for the RCM to function properly right away.

NOTE: Before programming the RCM, ensure the RCM monitor is connected to the battery.

1. Initial start-up screen. At “Profile Name” box, name as “Spreader”. Click “Machine Type” and select “Pull-Behind Spreader” or “Self-Propelled Spreader” depending on spreader type. Next, enter 90 FT. for “Application Width”. Click next page icon. (FIG 2-8)

NOTE: Highest value for “Application Width” is 90 FT.

NOTE: “Application Width” will be changed once a spread pattern test is complete.

2. Default for “ECU” box is 1. Click “Number of Products” box and enter 1 for single conveyor, 2 for Duo-Force, 3 for Tri-Force, 4 for Quad-Force. Click next page icon. (FIG 2-9)

3. Default for “Number of Spinner RPM Sensors” box is 1. Ensure “Enable Spinner RPM Control” box is checked. Click next page icon. (FIG 2-10)

FIG. 2-8 Name Profile

Profile Name
*

Machine Type
*

Application Width (ft)

Software Version Number

Hardware Serial Number




RAVEN 

FIG. 2-9 Setup System

ECU S/N ECU # Number of Products


RCM-10161 ?

 RAVEN 

Setup Fan/Spinner RPM

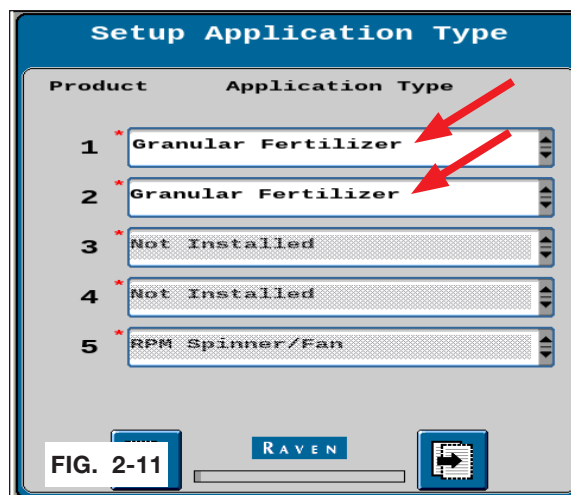
Select the number of spinner or fan RPM sensors installed on the Implement used for fan or spinner RPM monitoring or control

Enable Fan/Spinner RPM Control ☒

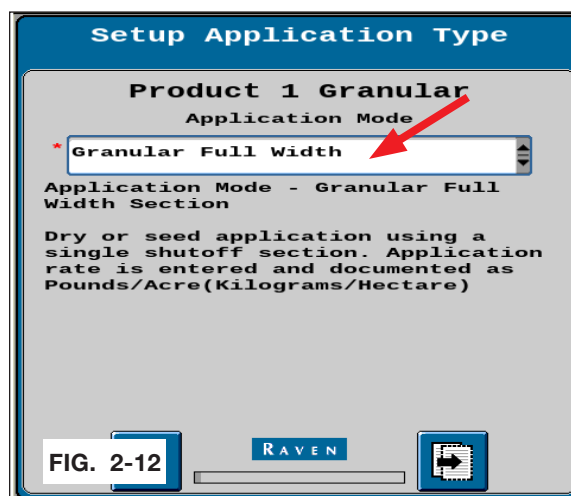
FIG. 2-10 RAVEN 

RCM Spreader Set Up (continued)

4. Under “Application Type”, select “Granular Fertilizer” or “Granular Seed” depending on product type. The number of products selected correlates with the number of products in screen 2. Click next page icon. (FIG 2-11)



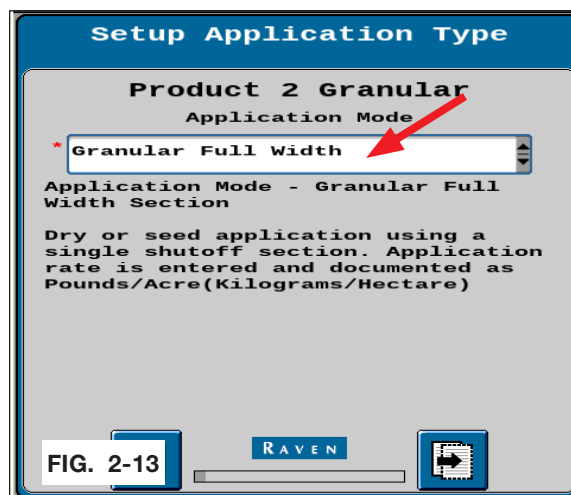
5. Under “Product 1 Application Mode”, select “Granular Full Width”. Click next page icon. (FIG 2-12)



NOTE: This screen will not be displayed if using one product. (FIG 2-13)

NOTE: If using one product, skip to step 7.

6. Under “Product 2 Application Mode”, select “Granular Full Width”. Click next page icon and continue with next bins, if equipped. (FIG. 2-13)



RCM Spreader Set Up (continued)

7. Make sure this box is YES. Click next page icon. (FIG 2-14)

Setup Section Groups

Are section drivers shared between all products in product harness? ?

Yes 60.00ft

Product 1 Sections

15.00	15.00	15.00	15.00
1	2	3	4

Product 2 Sections

15.00	15.00	15.00	15.00
1	2	3	4

No 60.00ft

Product 1 Sections

15.00	15.00	15.00	15.00
1	2	3	4

Product 2 Sections

30.00	30.00
7	8

Yes RAVEN Next Page Icon

FIG. 2-14

8. Ensure all the appropriate boxes are selected as "None". Click next page icon. (FIG 2-15)

Setup Auxiliary Drivers

Auxiliary Driver 1 None ?

Auxiliary Driver 2 None

Auxiliary Driver 3 None

Auxiliary Driver 4 None

Auxiliary Driver 5 None

Auxiliary Driver 6 None

None RAVEN Next Page Icon

FIG. 2-15

NOTE: FIG. 2-16 shows how many bins are equipped.

9. No action required on this screen. Shows product width summary. Continue to next page. (FIG 2-16)

Section Summary

89.999 (ft)

Product 1

90
1
1

Product 2

90
1
1

Liquid Section Width **Granular Section Width** **Wired Signal Driver** **Switch Number**

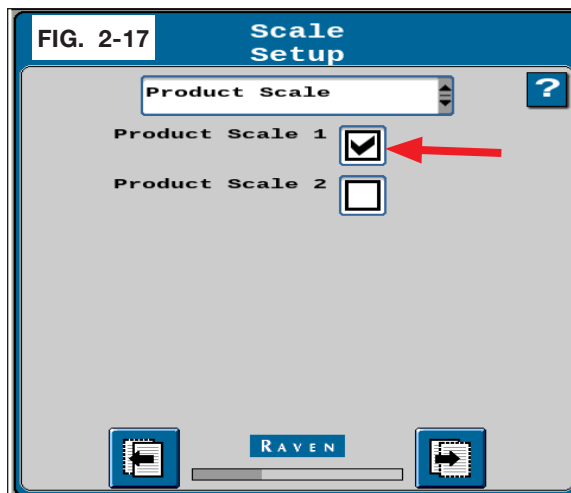
RAVEN Next Page Icon

FIG. 2-16

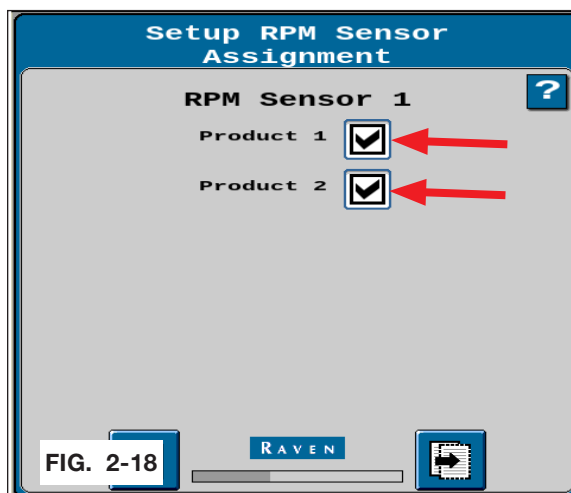
RCM Spreader Set Up (continued)

10. If the unit is equipped with a scale, check “Product Scale 1” box. Even if the unit is equipped with multiple bins, only check “Product Scale 1” box. Click next page icon. (FIG 2-17)

NOTE: Product Scale 1 detects the combined weight of all products.



11. If unit is equipped with one bin, only one box is available to check. Equipped with Duo-Force, check both boxes. Equipped with Tri-Force, check three boxes, etc. Click next page icon. (FIG. 2-18)



NOTE: Values in FIG. 2-19 are generic starting numbers. These values can be adjusted to fit the application.

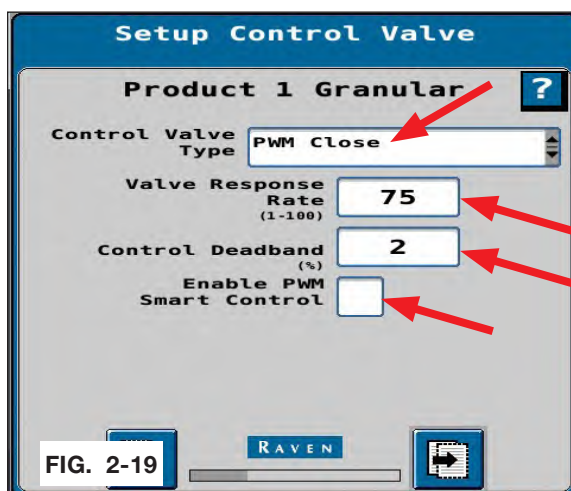
NOTE: The question mark outlines what happens when adjusting each value setting.

12. “Product 1” is the set up for the main conveyor. For “Control Valve Type”, always select “PWM Close” for main conveyor. (FIG. 2-19)

13. For “Valve Response Rate”, enter a value between 75 to 100. This range is recommended. Also this is how fast the valve responds.

14. Default for “Control Deadband %” box is 2.

15. Ensure “Enable PWM Smart Control” box is unchecked. Click next page icon. (FIG. 2-19)



RCM Spreader Set Up (continued)

16. For the PWM valve “Coil Frequency”, this value defaults to 60. Ensure value is set at 50. (FIG. 2-20)
17. Set “PWM High Limit” at 100, “PWM Low Limit” at 5 and “PWM Startup” at 10. Click next page icon. (FIG. 2-20)
18. Use Density Scale in spread pattern kit 414542 to determine material product density. Enter this value. For quick setup, enter “Product Density” to 56 lbs./cu.ft. (FIG. 2-21)
19. Enter recommended “Spreader Constant” and desired “Gate Height”. These values are only used for product 1 on main conveyor. See single and Duo-Force tables below. (FIG. 2-21)

Primary Bin with Single Bin Only	
Gate Setting	Spreader Constant
1 INCH	618
2 INCH	309
3 INCH	206
4 INCH	154
5 INCH	123
6 INCH	103
7 INCH	88
8 INCH	77
9 INCH	69
10 INCH	62
11 INCH	56
12 INCH	51

Primary Bin with Duo-Force	
Gate Setting	Spreader Constant
1 INCH	691
2 INCH	346
2.5 INCH MAX	276

20. Enter 180 for “Pulses/Revolution”. This value is only used for product 1 on main conveyor motor. Click next page icon. (FIG. 2-21)
21. “Tank Capacity” of primary bin depends on whether this is a single or two bin system. Also depends on the size of the spreader. For testing purposes, entering 15000 is recommended. Multiply product density by struck capacity determines tank capacity. (FIG. 2-22)
22. “Low Tank Level” is the value an alarm is set off for a low bin level. Recommended setting is 500 and ensure the “Alarm” box is unchecked.
23. Ensure “Low Bin Level Sensor” box is checked and “Bin Level Sensor Type” is Default. Click next page icon. (FIG. 2-22)

FIG. 2-20 Setup PWM

Product 1 Granular ?

Coil Frequency (Hz) **50**

PWM High Limit (%) **100.0**

PWM Low Limit (%) **5.0**

PWM Startup (%) **10.0**

RAVEN

FIG. 2-21 Setup Rate Sensor

Product 1 Granular ?

Product Density (lb/cubic feet) **56.0**

Spreader Constant (pulses/cubic feet) **618.0**

Pulses/Revolution **180.00**

Gate Height (in) **1.0**

RAVEN

FIG. 2-22 Setup Tank/Bin

Product 1 Granular

Tank Capacity (Lb) **15000**

Low Tank Level (Lb) **500**

Alarm? ☐

Low Bin Level Sensor ☒

Bin Level Sensor Type **Default**

RAVEN

RCM Spreader Set Up (continued)

24. “Set Up Rates” page controls the application rates for main conveyor speed and determines how much product is being applied for “Product 1” and main conveyor. Enter three “Preset Rate Values”, as desired, which can be clicked between on the homescreen. On the homescreen, target rates can be entered as well. (FIG. 2-23)

25. Enter “Rate Bump” value in an increment as desired.

26. For “Rate Selection”, manually input a selection or import an “Rx”. This enables selection of rate from the preset value choices or from a prescription map that is imported from a Universal Terminal.

27. “Display Smoothing” needs to be checked and “Decimal Shift” remains at 0. Click next page icon. (FIG. 2-23)

28. Enter 20 for “Off Rate Alarm” and check box. (FIG. 2-24)

NOTE: Alarm prompts when over 20% off target rate.

29. Do not check “Shaft Sensor Alarm” box. Click next page icon. (FIG. 2-24)

NOTE: If equipped with a single bin, skip to step 84.

30. “Product 2” is the set up for the Duo-Force conveyor. For “Control Valve Type”, always select “PWM Close” for conveyor. (FIG. 2-25)

31. For “Valve Response Rate”, enter a value between 75 to 100. This range is recommended.

32. Default for “Control Deadband %” is 2.

33. Ensure “Enable PWM Smart Control” box is unchecked. Click next page icon. (FIG. 2-25)

FIG. 2-23 Setup Rates

Product 1 Granular ?

	Rate 1	Rate 2	Rate 3
Preset Rate Values (lb/ac)	100	200	500
Rate Bump (lb/ac)	10		
Rate Selection	Predefined or Rx		
Display Smoothing	<input checked="" type="checkbox"/>		
Decimal Shift	0		

RAVEN

FIG. 2-24 Setup Alarms

Product 1 Granular ?

Off Rate Alarm (% off target rate)	20	Alarm? <input checked="" type="checkbox"/>
Shaft Sensor Alarm	<input type="checkbox"/>	

RAVEN

Setup Control Valve

Product 2 Granular ?

Control Valve Type	PWM Close
Valve Response Rate (1-100)	100
Control Deadband (%)	2
Enable PWM Smart Control	<input type="checkbox"/>

FIG. 2-25 RAVEN

RCM Spreader Set Up (continued)

34. For the PWM valve “Coil Frequency”, this value defaults to 60. Ensure the value is set at 50. (FIG. 2-26)
35. Set the “PWM High Limit” at 100, “PWM Low Limit” at 5 and “PWM Startup” at 20. Click next page icon. (FIG. 2-26)

FIG. 2-26 Setup PWM

Product 2 Granular ?

Coil Frequency (Hz) **50**

PWM High Limit (%) **100.0**

PWM Low Limit (%) **5.0**

PWM Startup (%) **20.0**

RAVEN

36. Use Density Scale in spread pattern kit 414542 to determine material product density. Enter this value. For quick setup, enter “Product Density” to 56 lbs./cu.ft. (FIG. 2-27)
37. Enter recommended “Spreader Constant” and desired “Gate Height”. These values are only used for product 2 on Duo-Force conveyor. See table below. (FIG. 2-27)

Gate Setting	Spreader Constant
1 INCH	505
2 INCH	253
3 INCH MAX	210

FIG. 2-27 Setup Rate Sensor

Product 2 Granular ?

Product Density (lb/cubic feet) **56.0**

Spreader Constant (pulses/cubic feet) **505.0**

Pulses/Revolution **90.00**

Gate Height (in) **1.0**

RAVEN

38. Enter 90 for “Pulses/Revolution”. This value is only used for product 2 on Duo-Force conveyor motor. Click next page icon. (FIG. 2-27)
39. “Tank Capacity” of the secondary bin will depend on product density and spreader configuration. For testing purposes, entering 15000 is recommended. (FIG. 2-28)
40. “Low Tank Level” is the value an alarm is set off for a low bin level. Recommended setting is 500 and ensure the “Alarm” box is unchecked.
41. Ensure the “Low Bin Level Sensor” box is checked, the “Mid Bin Level Sensor” is unchecked, “Mid Tank Level” is 0, and “Bin Level Sensor Type” is Default. Click next page icon. (FIG. 2-28)

FIG. 2-28 Setup Tank/Bin

Product 2 Granular ?

Tank Capacity (Lb) **15000**

Current Tank Level (Lb) **0**

Low Tank Level (Lb) **500** Alarm? ☐

Low Bin Level Sensor ☒

Mid Bin Level Sensor ☐ Mid Tank Level (%) **0**

Bin Level Sensor Type **Default** ?

RAVEN

RCM Spreader Set Up (continued)

42. “Set Up Rates” page controls the application rates for Duo-Force conveyor speed and determines how much product is being applied for “Product 2” and Duo-Force conveyor. Enter three “Preset Rate Values”, as desired, which can be clicked between on the homescreen. On the homescreen, target rates can be entered as well. (FIG. 2-29)

43. Enter “Rate Bump” value in an increment as desired.

44. For “Rate Selection”, manually input a selection or import an “Rx”. This enables selection of rate from the preset value choices or from a prescription map that is imported from a Universal Terminal.

45. “Display Smoothing” needs to be checked and “Decimal Shift” remains at 0. Click next page icon. (FIG. 2-29)

46. Enter 20 for “Off Rate Alarm” and check box. (FIG. 2-30)

47. Do not check “Shaft Sensor Alarm” box. Click next page. (FIG. 2-30)

NOTE: If equipped with Duo-Force only, skip to step 84.

48. “Product 3” is the set up for the Tri-Force conveyor. For “Control Valve Type”, always select “PWM Close” for conveyor. (FIG. 2-31)

49. For “Valve Response Rate”, enter a value between 75 to 100. This range is recommended.

50. Default for “Control Deadband %” is 2.

51. Ensure “Enable PWM Smart Control” box is unchecked. Click next page icon. (FIG. 2-31)

FIG. 2-29 Setup Rates

Product 2 Granular ?

	Rate 1	Rate 2	Rate 3
Preset* Rate Values (lb/ac)	50	100	500
Rate Bump (lb/ac)	0		
Rate Selection	Predefined or Rx		
Display Smoothing	<input checked="" type="checkbox"/>		
Decimal Shift	0		

RAVEN

FIG. 2-30 Setup Alarms

Product 2 Granular ?

Off Rate Alarm (% off target rate) 20 ☒ Alarm?

Shaft Sensor Alarm ☐

RAVEN

Setup Control Valve

Product 3 Granular ?

Control Valve Type PWM Close

Valve Response Rate (1-100) 100

Control Deadband (%) 2

Enable PWM Smart Control ☐

FIG. 2-31

RAVEN

RCM Spreader Set Up (continued)

52. For the PWM valve “Coil Frequency”, this value defaults to 60. Ensure the value is set at 50. (FIG. 2-32)

53. Set the “PWM High Limit” at 100, “PWM Low Limit” at 5 and “PWM Startup” at 20. Click next page icon. (FIG. 2-32)

FIG. 2-32 Setup PWM

Product 3 Granular ?

Coil Frequency (Hz)	50
PWM High Limit (%)	100.0
PWM Low Limit (%)	5.0
PWM Startup (%)	20.0

RAVEN

54. Use Density Scale in spread pattern kit 414542 to determine material product density. Enter this value. For quick setup, enter “Product Density” to 56 lbs./cu.ft. (FIG. 2-33)

55. Enter 1498 for “Spreader Constant” and 0.6 for desired “Gate Height”. These values are only used for product 3 on Tri-Force conveyor. (FIG. 2-33)

56. Enter 90 for “Pulses/Revolution”. This value is only used for product 3 on Tri-Force conveyor motor. Click next page icon. (FIG. 2-33)

FIG. 2-33 Setup Rate Sensor

Product 3 Granular ?

Product Density (lb/cubic feet)	56.0
Spreader Constant (pulses/cubic feet)	1498.0
Pulses/Revolution	90.00
Gate Height (in)	0.6

RAVEN

57. “Tank Capacity” of the third bin will depend on product density and spreader configuration. For testing purposes, entering 2100 is recommended. (FIG. 2-34)

58. “Low Tank Level” is the value an alarm is set off for a low bin level. Recommended setting is 200 and ensure the “Alarm” box is unchecked.

59. Ensure the “Low Bin Level Sensor” box is checked, the “Mid Bin Level Sensor” is unchecked, “Mid Tank Level” is 0 and “Bin Level Sensor Type” is Default. Click next page icon. (FIG. 2-34)

FIG. 2-34 Setup Tank/Bin

Product 3 Granular

Tank Capacity (Lb)	2100
Current Tank Level (Lb)	0
Low Tank Level (Lb)	200
Low Bin Level Sensor	<input checked="" type="checkbox"/>
Mid Bin Level Sensor	<input type="checkbox"/>
Mid Tank Level (%)	0
Bin Level Sensor Type	Default

Alarm? ☐

RAVEN

RCM Spreader Set Up (continued)

60. “Set Up Rates” page controls the application rates for Tri-Force conveyor speed and determines how much product is being applied for “Product 3” and Tri-Force conveyor. Enter three “Preset Rate Values”, as desired, which can be clicked between on the homescreen. On the homescreen, target rates can be entered as well. (FIG. 2-35)

61. Enter “Rate Bump” value in an increment as desired.

62. For “Rate Selection”, manually input a selection or import an “Rx”. This enables selection of rate from the preset value choices or from a prescription map that is imported from a Universal Terminal.

63. “Display Smoothing” needs to be checked and “Decimal Shift” remains at 0. Click next page icon. (FIG. 2-35)

64. Enter 20 for “Off Rate Alarm” and check box. (FIG. 2-36)

65. Do not check “Shaft Sensor Alarm” box. Click next page icon. (FIG. 2-36)

NOTE: If equipped with Tri-Force only, skip to step 84.

66. “Product 4” is the set up for the Quad-Force conveyor. For “Control Valve Type”, always select “PWM Close” for conveyor. (FIG. 2-37)

67. For “Valve Response Rate”, enter a value between 75 to 100. This range is recommended.

68. Default for “Control Deadband %” is 2.

69. Ensure “Enable PWM Smart Control” box is unchecked. Click next page icon. (FIG. 2-37)

FIG. 2-35 Setup Rates

Product 3 Granular ?

	Rate 1	Rate 2	Rate 3
Preset Rate Values (lb/ac)	20	22	25
Rate Bump (lb/ac)	1		
Rate Selection	Predefined or Rx		
Display Smoothing	<input checked="" type="checkbox"/>		
Decimal Shift	0		

RAVEN

FIG. 2-36 Setup Alarms

Product 3 Granular ?

Off Rate Alarm (% off target rate)	20	Alarm? <input checked="" type="checkbox"/>
Shaft Sensor Alarm	<input type="checkbox"/>	

RAVEN

FIG. 2-37 Setup Control Valve

Product 4 Granular ?

Control Valve Type	PWM Close
Valve Response Rate (1-100)	100
Control Deadband (%)	2
Enable PWM Smart Control	<input type="checkbox"/>

RAVEN

RCM Spreader Set Up (continued)

70. For the PWM valve “Coil Frequency”, this value defaults to 60. Ensure the value is set at 50. (FIG. 2-37)

71. Set the “PWM High Limit” at 100, “PWM Low Limit” at 5 and “PWM Startup” at 20. Click next page icon. (FIG. 2-37)

FIG. 2-37 Setup PWM

Product 4 Granular ?

Coil Frequency (Hz)	50
PWM High Limit (%)	100.0
PWM Low Limit (%)	5.0
PWM Startup (%)	20.0

RAVEN

72. Use Density Scale in spread pattern kit 414542 to determine material product density. Enter this value. For quick setup, enter “Product Density” to 56 lbs./cu.ft. (FIG. 2-38)

73. Enter 1498 for “Spreader Constant” and 0.6 for desired “Gate Height”. These values are used for product 4 on Quad-Force conveyor. (FIG. 2-38)

74. Enter 90 for “Pulses/Revolution”. This value is used for product 4 on Quad-Force conveyor motor. Click next page icon. (FIG. 2-38)

Setup Rate Sensor

Product 4 Granular ?

Product Density (lb/cubic feet)	56.0
Spreader Constant (pulses/cubic feet)	1498.0
Pulses/Revolution	90.00
Gate Height (in)	0.6

FIG. 2-38 RAVEN

75. “Tank Capacity” of the fourth bin will depend on product density and spreader configuration. For testing purposes, entering 2100 is recommended. (FIG. 2-39)

76. “Low Tank Level” is the value an alarm is set off for a low bin level. Recommended setting is 200 and ensure the “Alarm” box is unchecked.

77. Ensure the “Low Bin Level Sensor” box is checked, the “Mid Bin Level Sensor” is unchecked, “Mid Tank Level” is 0 and “Bin Level Sensor Type” is Default. Click next page icon. (FIG. 2-39)

Setup Tank/Bin

Product 4 Granular

Tank Capacity (Lb)	2100
Current Tank Level (Lb)	0
Low Tank Level (Lb)	200
Low Bin Level Sensor	<input checked="" type="checkbox"/>
Mid Bin Level Sensor	<input type="checkbox"/>
Mid Tank Level (%)	0
Bin Level Sensor Type	Default

FIG. 2-39 RAVEN

RCM Spreader Set Up (continued)

78. “Set Up Rates” page controls the application rates for Quad-Force conveyor speed and determines how much product is being applied for “Product 4” and Quad-Force conveyor. Enter three “Preset Rate Values”, as desired, which can be clicked between on the homescreen. On the homescreen, target rates can be entered as well. (FIG. 2-40)

79. Enter “Rate Bump” value in an increment as desired.

80. For “Rate Selection”, manually input a selection or import an “Rx”. This enables selection of rate from the preset value choices or from a prescription map that is imported from a Universal Terminal.

81. “Display Smoothing” needs to be checked and “Decimal Shift” remains at 0. Click next page icon. (FIG. 2-40)

82. Enter 20 for “Off Rate Alarm” and check box. (FIG. 2-41)

83. Do not check “Shaft Sensor Alarm” box. Click next page icon. (FIG. 2-41)

NOTE: Spinner control is numbered as a product. The number is 1 more than the bin(s) equipped.

NOTE: Four products were selected during initial set up. Fifth product is spinner control.

84. “Product 5 RPM” is the set up for spinner speed. For “Control Valve Type”, always select “Fast Close” for spinners. (FIG. 2-42)

85. For “Valve Response Rate”, enter 50 to start. If spinners overshoot, then enter lower value as desired.

86. Default for “Control Deadband %” is 3 and “Control Effort” range is 10 to 15. If spinner speed does not change when changing desired speed, increase “Control Effort” up to 60 to 70 or until spinner speed control is achieved. Click next page icon.

FIG. 2-40 Setup Rates

Product 4 Granular ?

	Rate 1	Rate 2	Rate 3
Preset Rate Values (lb/ac)	5	10	15
Rate Bump (lb/ac)	1		
Rate Selection	Predefined or Rx		
Display Smoothing	<input checked="" type="checkbox"/>		
Decimal Shift	0		

RAVEN

FIG. 2-41 Setup Alarms

Product 4 Granular ?

	Alarm?
Off Rate Alarm (% off target rate)	20 <input checked="" type="checkbox"/>
Shaft Sensor Alarm	<input type="checkbox"/>

RAVEN

Setup Control Valve

Product 5 RPM ?

Control Valve Type	Fast Close
Valve Response Rate (1-100)	50
Control Deadband (%)	3
Control Effort (%)	14

FIG. 2-42 RAVEN

RCM Spreader Set Up (continued)

87. Enter 4 for “RPM Cal”. Click next page icon. (FIG. 2-43)

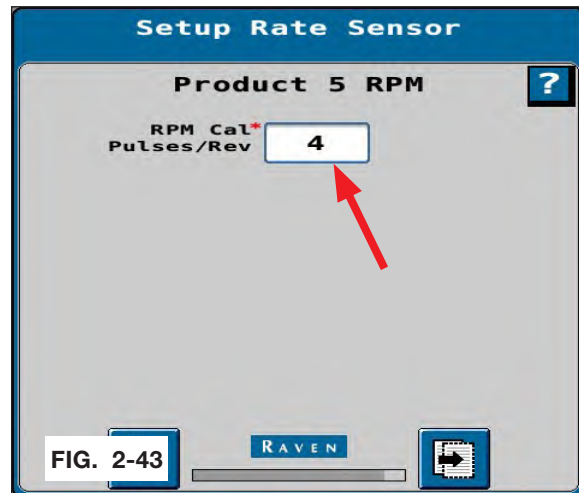


FIG. 2-43

Setup Rate Sensor

Product 5 RPM

RPM Cal*
Pulses/Rev 4

RAVEN

Next page icon

A red arrow points to the input field for 'RPM Cal* Pulses/Rev' which contains the value '4'.

88. Enter “Preset Rate Values” 500, 600, and 650 for spinner rates. (FIG. 2-44)

89. For “Rate Bump” enter 0 for rates to run in manual mode or enter 10 if a rate bump is desired. (FIG. 2-44)

90. “Display Smoothing” needs to be checked. Click next page icon. (FIG. 2-44)

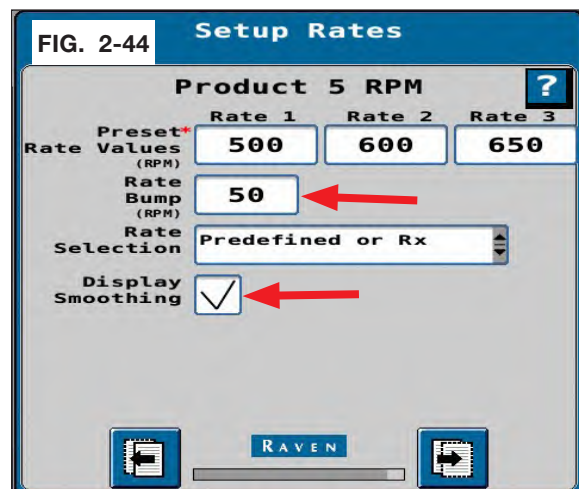


FIG. 2-44

Setup Rates

Product 5 RPM

	Rate 1	Rate 2	Rate 3
Preset* Rate Values (RPM)	500	600	650
Rate Bump (RPM)	50		
Rate Selection	Predefined or Rx		
Display Smoothing	<input checked="" type="checkbox"/>		

RAVEN

Next page icon

Red arrows point to the 'Rate Bump (RPM)' field (value 50) and the 'Display Smoothing' checkbox (checked).

91. Enter 20 for “Off Rate Alarm” and check box. Click next page icon. (FIG. 2-45)

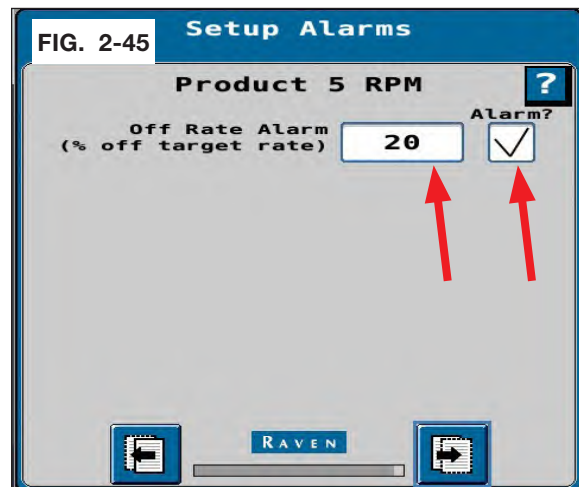


FIG. 2-45

Setup Alarms

Product 5 RPM

Off Rate Alarm
(% off target rate) 20

Alarm? ☒

RAVEN

Next page icon

Red arrows point to the 'Off Rate Alarm' input field (value 20) and the 'Alarm?' checkbox (checked).

RCM Spreader Set Up (continued)

NOTE: “Number of Products” corresponds to bins. 1 for single bin, 2 for Duo-Force, 3 for Tri-Force, and 4 for Quad-Force. (FIG. 2-46)

92. No action required on this screen. Shows the set up summary. Continue to next page and then click the check box. (FIG 2-46)

FIG. 2-46 Setup Summary

Profile	Spreader
Name	
Machine	Pull-Behind Spreader
Type	
Number of Products	4
Number of Sections	1
Implement Width (ft)	90.000
Switchbox Present	No
Master Clutch	No
Granular Product	Yes
Sections Power to Apply	

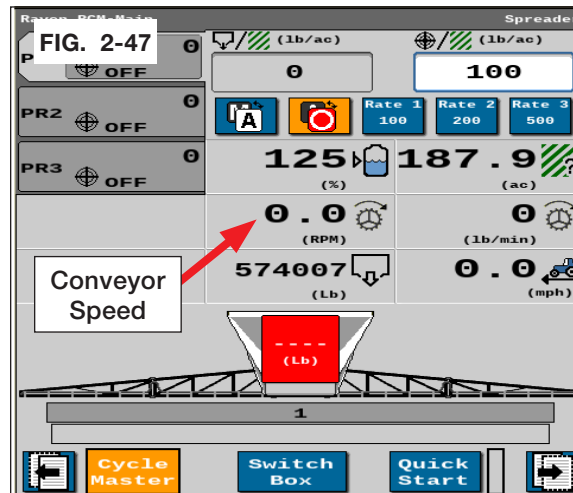
RAVEN

RCM Spreader Set Up (continued)

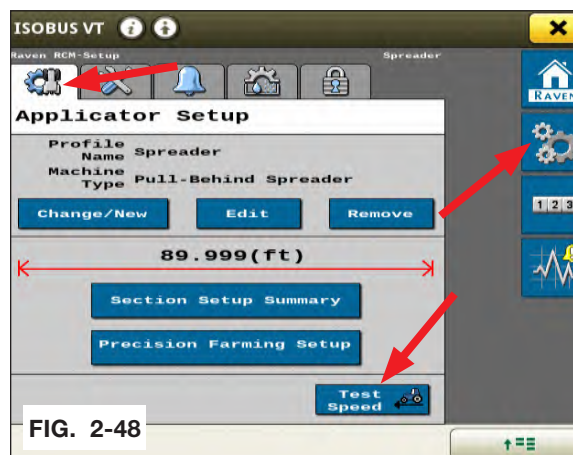
RCM Spreader Test Speed Procedure

1. Go to the Main Home Screen shown. (FIG. 2-47).

NOTE: Conveyor speed will reach 50+ RPM when conveyors are running.

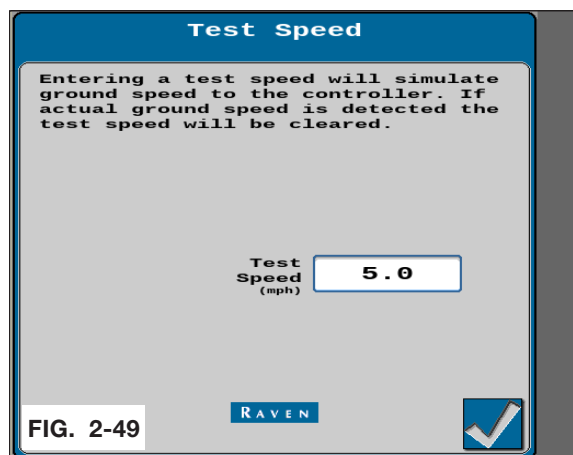


2. To set spreader test speed, go to Settings page - the 3 gears tab. (FIG. 2-48)
3. In the Settings page, select the “Applicator Setup” tab and then click the “Test Speed” button at the bottom of the screen. (FIG. 2-48)

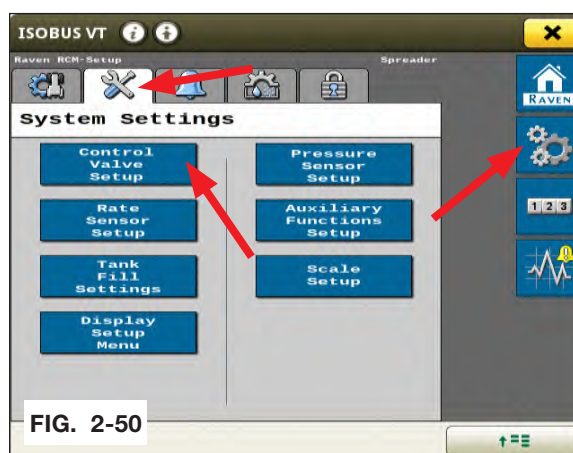


RCM Spreader Set Up (continued)

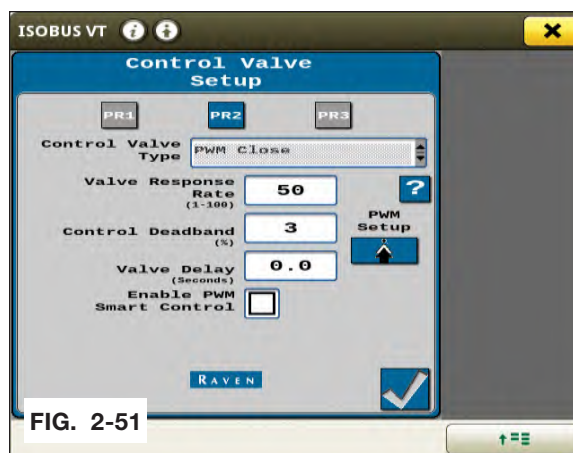
4. Enter test speed value as desired. Click check box. (FIG. 2-49)



5. To change control valve settings, go to Settings (Gear), “System Settings” (Screwdriver/Wrench), and click the “Control Valve Setup” button. (FIG. 2-50)



6. At this screen, change the valve settings as desired. (FIG. 2-51)



Notes

Section III

Operation

Preparing Dry Spreader	3-2
Hardware	3-2
Hydraulic System.....	3-2
Lubrication	3-2
Transporting.....	3-3
Spreader Constant for Gate Setting	3-4
Spinner Disc Operation.....	3-5
Lime Spreading Operation	3-6
Hydraulic PWM Valve Manual Override	3-8
Rate Control Module (RCM) Spreader Reset.....	3-8
Ladder Operation.....	3-9

FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR AUTO GREASE INFORMATION, PLEASE REFER TO YOUR AUTO GREASE MANUAL.
FOR TARP INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.

Preparing Dry Spreader

Perform the service checks as outlined below. Repair or replace any damaged or worn parts before operating.

Hardware

Check for loose bolts and nuts, and tighten as needed. Check again after the first half-day of operation.

Hydraulic System

WARNING

- RELIEVE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE TRACTOR OPERATOR'S MANUAL FOR PROPER PROCEDURES.
- HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.

Check all hoses and cylinders for signs of leakage. Hoses should not be kinked, twisted or rubbing against sharp edges. Re-route or repair hoses as necessary. Refer to SAFETY section for additional information on safe repair and inspection of hydraulic components.

TRACTOR HYDRAULIC REQUIREMENTS:

Recommended tractor-supplied hydraulic pressure is 2250-3500 psi.

HYDRAULIC PUMP REQUIREMENTS:

40 - 45 gpm @ 3500 psi. If more than 45 gpm is used, it must be done with a "load sensing" variable displacement pump.

IMPORTANT

- *Warranty is void if this requirement is not followed.*

Lubrication

Lubricate the dry spreader as outlined in the MAINTENANCE section.

Transporting

WARNING

- USE EXCEPTIONAL CARE WHEN OPERATING DRY SPREADER EQUIPPED WITH SINGLE TIRES. THE POSSIBILITY OF TIPPING OVER DURING TURNS OR TRAVEL ON ROUGH ROADS IS INCREASED UNDER THESE CONDITIONS.

WARNING

- DO NOT EXCEED THE GROSS VEHICLE WEIGHT RATING (GVWR). IMPROPER CHASSIS LOADING CAN CAUSE LOSS OF CONTROL OR MACHINE DAMAGE RESULTING IN INJURY OR DEATH.

CAUTION

- THE DRY SPREADER FLOATER CHASSIS MOUNT IS NOT EQUIPPED WITH BRAKES. ENSURE THAT THE TOWING VEHICLE HAS ADEQUATE WEIGHT AND BRAKING CAPACITY TO TOW THIS IMPLEMENT.

IMPORTANT

- *Hydraulic brakes are optional for dry spreader pull type units equipped with the undercarriage.*

See towing vehicle manual for towing and towing capacity. Regulate speed to road conditions. Maximum transport speed of dry spreader should never exceed 20 m.p.h. as indicated on the machine. Do not exceed 10 m.p.h. during off-highway travel.

Use good judgment when transporting equipment on highways. Regulate speed to road conditions and maintain complete control.

It is probable that this implement is taller, wider, and longer than the towing tractor. Become aware of and avoid all obstacles and hazards in the travel path of the equipment, such as power lines, ditches, etc.

Slow down before making sharp turns to avoid tipping. Drive slowly over rough ground and side slopes.

Spreader Constant for Gate Setting

Calibrating the Spread Rate:

1. Run material through the gate and measure its depth to determine gate setting.
2. Spread a known amount of product to fine tune the gate opening.
3. Mark both the box and tailgate so you can find this setting in the future.

Control Valve Settings – Raven Controllers:

Servo Valve:

Granular, C-FC and a Valve Cal of 743. (FIG. 3-1)



FIG. 3-1

PWM Valve:

Granular, PWM Close Valve, Freq of 50hz, Valve Cal of 23, Min Pw = 35, Pre Set Pw = 253 (FIG. 3-2)

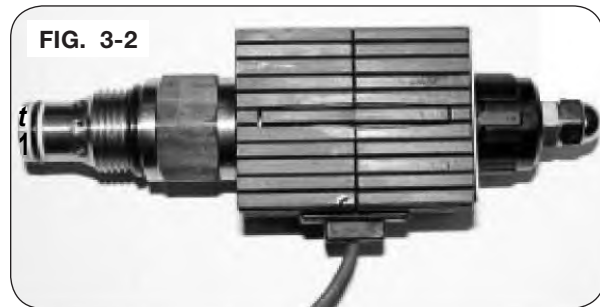


FIG. 3-2

Spinner Disc Operation

Spinner Pattern Test

1. Verify the spinner and material flow divider are in position according to set up instructions.
2. Adjust spinner speed to obtain desired spread width.

NOTE: Do not operate spinners faster than necessary to obtain the required material spread width. Materials have limitations to spread width. Particle size affects how far material can be spread.

	Spinner
Fertilizer (100' Pattern)	650 RPM
Lime (50' to 60' Pattern)	550 RPM

3. After setting spinner speed, adjust spinner assembly frontwards or rearwards according to spread pattern test results. See Figure 3-3.

- Ideal Spread Test Results

Flat and taper off towards the outside 5 to 10 ft.

- Heavy in the Center Spread Test Results

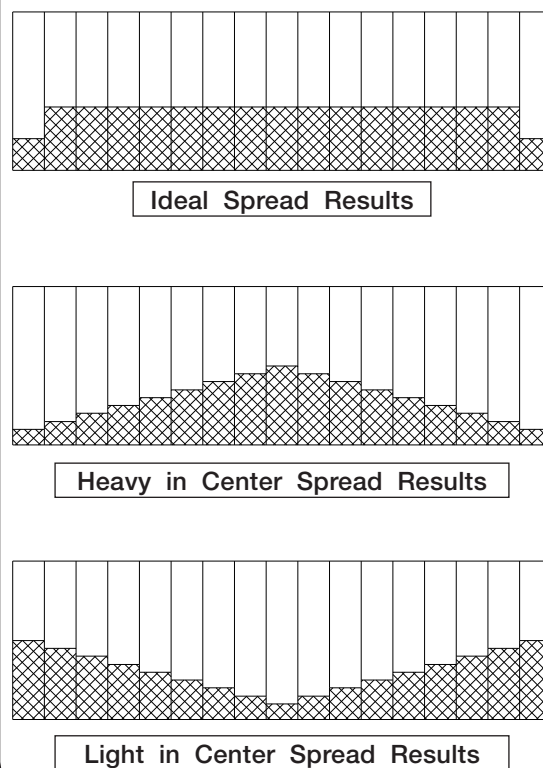
To correct, increase spinner speed and adjust spinner assembly forward.

- Light in the Center Spread Test Results

To correct, decrease spinner speed and adjust spinner assembly rearwards.

NOTE: If the previous adjustments have been made and the spread pattern still is not desirable, refer to MAINTENANCE section "Spinner and Material Flow Divider".

FIG. 3-3



Lime Spreading Operation

WARNING

- ALWAYS WEAR PERSONAL PROTECTIVE EQUIPMENT WHEN WORKING WITH OR NEAR CHEMICALS. THIS EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO: PROTECTIVE EYE WEAR, GLOVES, SHOES, SOCKS, LONG-SLEEVED SHIRT, AND LONG PANTS. ADDITIONAL PROTECTION MAY BE REQUIRED FOR MANY TYPES OF CHEMICALS.
- KEEP HANDS CLEAR OF PINCH POINT AREAS.

NOTE: The hillside flow divider must be removed when the rear feedgate is set to a height higher than 3". If hillside flow divider is not removed, material will build on the hillside flow divider and screed off the unit.

1. Remove the back plate of material flow divider (PF1236-403) by unscrewing the single lock nut.
2. Screw the lock nut back in place after the back plate is removed.
3. Remove the back plate of material flow divider (PF1236-403) and slide the hillside flow divider off the rails. (FIG. 3-4)

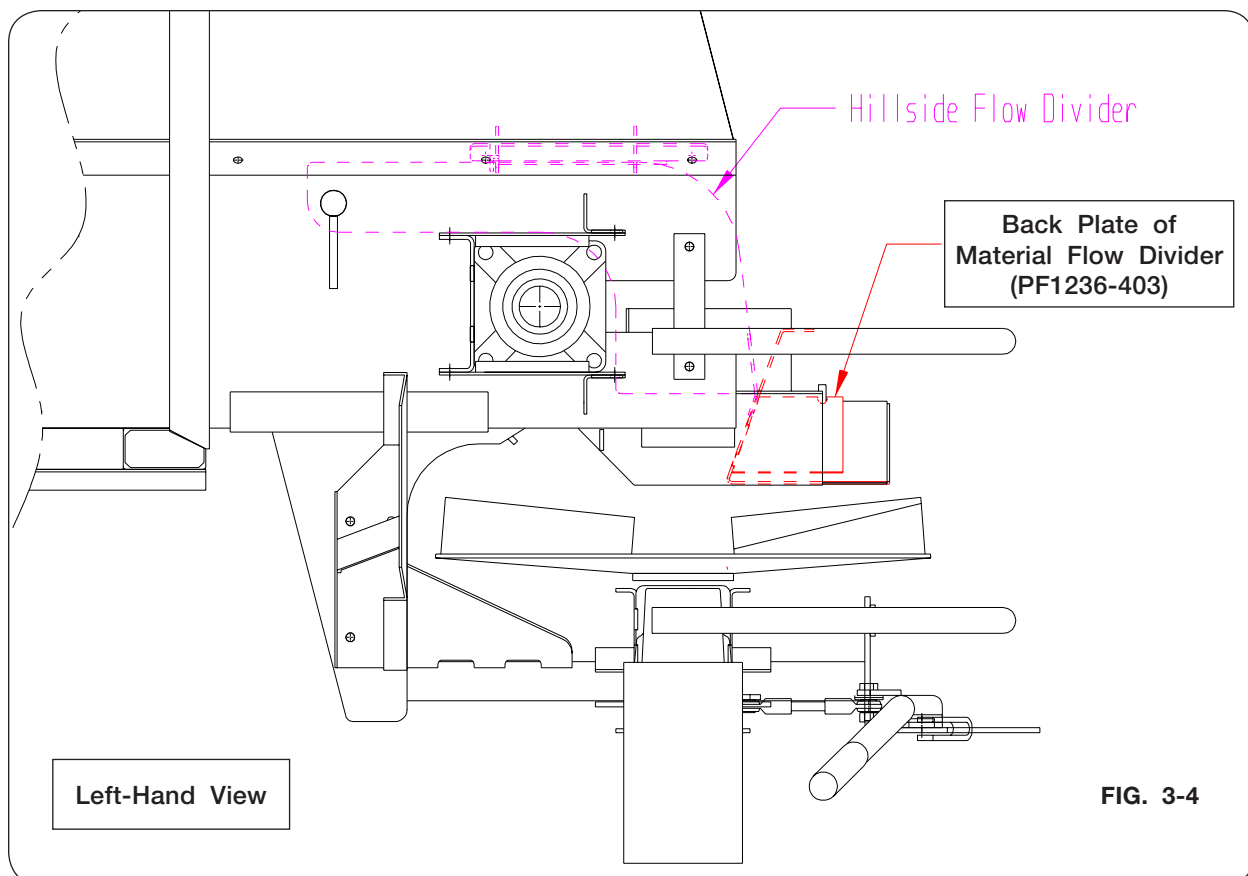


FIG. 3-4

Lime Spreading Operation (continued)

4. Open the feedgate to at least 7 inches.

NOTE: The four “L” positions can also be use for litter, gypsum and compost. (FIG. 3-5)

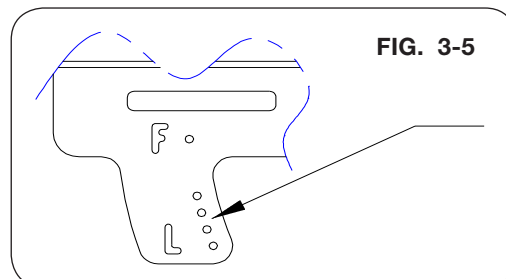
5. Adjust the spinner to one of the four “L” (lime) positions depending on spread pattern test results. (FIG. 3-5)

NOTE: Lime DENSITY and PARTICLE SIZE varies greatly. When adjusting DENSITY, do not adjust the spreader constant or gate.

6. Adjust spreader constant for the new gate setting. See “RCM Spreader Set Up” in the SET UP section.

7. See “Spinner Disc Operation” section for spinner speed setting & spread pattern info.

NOTE: The chart below lists common fertilizer densities.



Fertilizer	Density (Lbs./Cu.Ft.)
Prilled Urea	45-51
Granular Urea	45-51
Prilled Ammonium Nitrate	53-61
Crystalline Ammonium Sulfate	62-69
Ammonium Sulfate	49-65
Diammonium Phosphate (DAP)	54-66
Granular Monoammonium Phosphate (MAP)	54-66
Powdered Monoammonium Phosphate (MAP)	53-62
Granular Triple Superphosphate (TSP)	59-75
Ammonium Phosphate	56-75

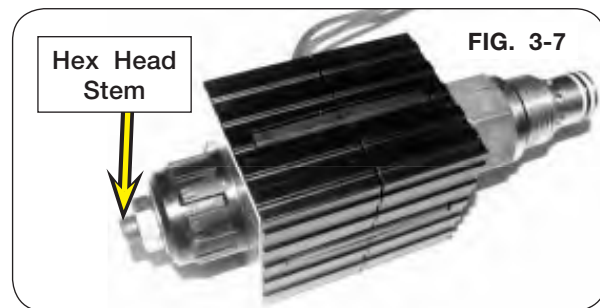
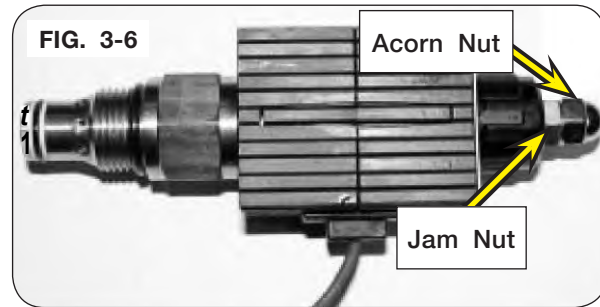
Hydraulic PWM Valve Manual Override

To Manually Override:

1. Using 1/2" wrench, remove acorn nut. (FIG. 3-6)
2. Loosen jam nut. (FIG. 3-6)
3. Turn in 5/32" hex head stem until flow starts (up to 4 turns). (FIG. 3-7)

To Reset:

1. Turn out 5/32" hex head stem until flow stops.
2. While holding the 5/32" hex head stem in place, tighten the jam nut.
3. Reattach acorn nut.



Rate Control Module (RCM) Spreader Reset

Whenever the 12V DC is turned off or the ECU for the spreader loses power, refer to “Rate Control Module (RCM) Spreader Set Up” in the SET UP section. The procedure in this section will have to be performed in order for the RCM to function properly right away.

Ladder Operation

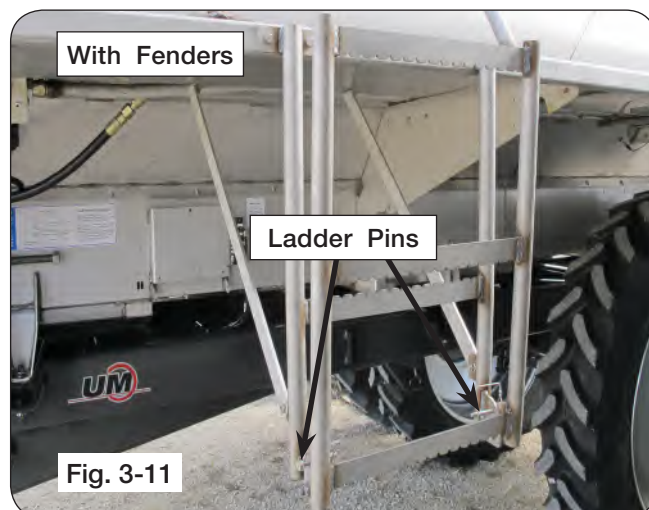
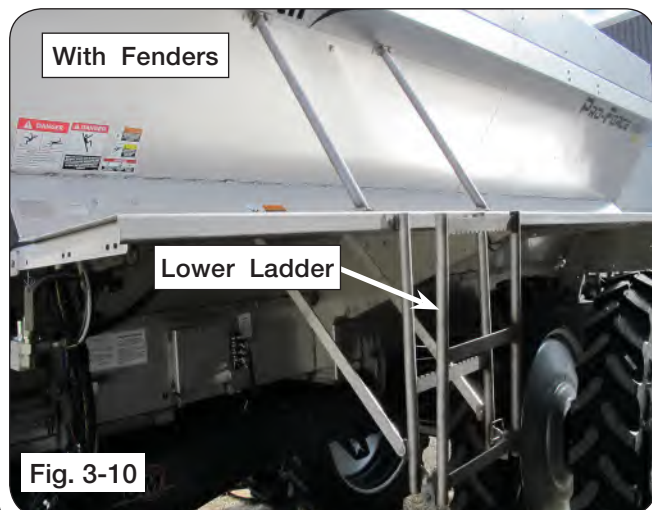
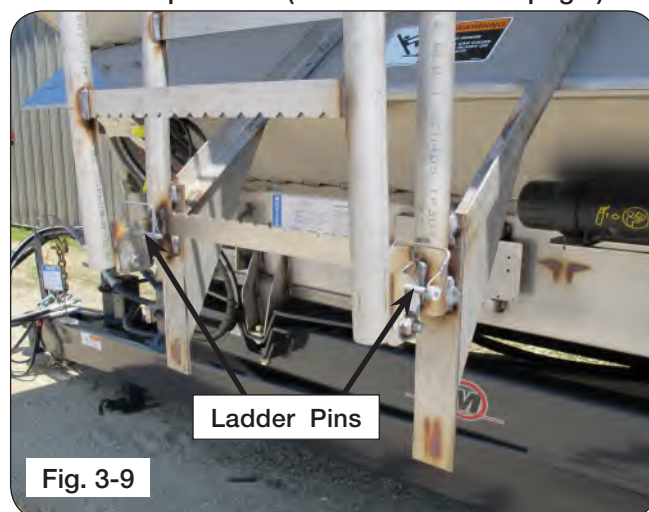
WARNING

- FALLING OR LOWERING EQUIPMENT CAN CAUSE SERIOUS INJURY OR DEATH. KEEP EVERYONE AWAY FROM EQUIPMENT WHEN SUSPENDED, RAISING, OR LOWERING.
- DO NOT ALLOW ANYONE TO RIDE ON THE LADDER. MAKE SURE EVERYONE IS CLEAR BEFORE OPERATING MACHINE OR TOWING VEHICLE.

If ladder steps are covered with snow/debris, it is important to remove snow/debris before unfolding lower ladder section.

NOTE: The lower ladder section must be locked in the folded position when not used.

1. Hold the lower ladder section. (FIG. 3-8 & 3-10)
2. Carefully unhook the ladder pins from the lower ladder section. Keep ladder pins. (FIG. 3-9 & 3-11)
3. Slowly lower and swing the lower ladder section completely down.
4. When the ladder is not in use, lift and walk the lower ladder section up towards the upper ladder section to lock the lower ladder into position with the ladder pins. (Continued on next page.)



Ladder Operation (continued)

For the undercarriage ladder operation and parts information, refer to Pro-Force Undercarriage manual - 414345 - “Ladder Operation” in the OPERATION section and “Ladder Assembly” in the PARTS section for more details.

Section IV

Maintenance

Dry Spreader Maintenance	4-2
Seasonal Storage.....	4-2
Purging Hydraulic System	4-3
Lubrication.....	4-4
Gearbox Removal and Oil Change	4-7
Jack Shaft Disassembly.....	4-8
Conveyor Speed Sensor Replacement.....	4-9
Spinner Motor Speed Sensor Replacement.....	4-11
Hydraulic Servo Valve Manual Override & Timing	4-13
Chain Tension.....	4-14
Chain Shield Seal Strip Replacement.....	4-15
Bin Level Sensor Assembly	4-16
Spinner and Material Flow Divider Assembly	4-17
Rear Feedgate Door Replacement	4-18
Winterizing.....	4-21
Main Valve Block Assembly - Spinner and Conveyor	4-22
Schematics	4-23
Fertilizer Density Chart	4-27
Complete Torque Chart	4-28
Hydraulic Fittings - Torque and Installation	4-30
Hydraulic System Valves and Steel Pipe Adapters	4-31

FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR AUTO GREASE INFORMATION, PLEASE REFER TO YOUR AUTO GREASE MANUAL.
FOR TARP INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.

Dry Spreader Maintenance

WARNING

- TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE MACHINE IS SECURELY BLOCKED.
- EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.
- KEEP HANDS CLEAR OF PINCH POINT AREAS.
- ALWAYS WEAR PERSONAL PROTECTIVE EQUIPMENT WHEN WORKING WITH OR NEAR CHEMICALS. THIS EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO: PROTECTIVE EYE WEAR, GLOVES, SHOES, SOCKS, LONG-SLEEVED SHIRT, AND LONG PANTS. ADDITIONAL PROTECTION MAY BE REQUIRED FOR MANY TYPES OF CHEMICALS.
- AVOID BREATHING CHEMICALS AND FUMES.
- WASH HANDS BEFORE EATING, DRINKING, CHEWING GUM, OR USING TOILET.
- NEW HYDRAULIC SYSTEMS OR SYSTEMS THAT HAVE BEEN MAINTAINED MUST BE PURGED OF AIR BEFORE OPERATING OR MOVING MACHINE TO PREVENT SERIOUS INJURY OR DEATH.
- HYDRAULIC COOLER RADIATOR AND OIL MUST BE COOL BEFORE DISCONNECTING ELECTRICAL COMPONENTS AND CLEANING TO PREVENT SERIOUS INJURY.

CAUTION

- SHARP EDGES ON DRY SPREADER CAN CAUSE SERIOUS INJURY. BE CAREFUL WHEN WORKING AROUND DRY SPREADER.

Seasonal Storage

Before storing the dry spreader in freezing climates, refer to “Winterizing” outlined in MAINTENANCE section.

After season is finished, completely wash machine thoroughly to remove corrosive fertilizer/chemicals inside and out before storing. When using pressure washers, maintain an adequate distance so not to blast water into bearings, hydraulic seals or electrical connections.

After washing machine, spray an oil/diesel mixture inside hopper to avoid corrosion.

Clean debris from hydraulic cooler radiator and fan.

Repaint all areas where paint has been removed to keep rust from developing.

Inspect machine for parts that may need to be replaced so they may be ordered in the off season. Perform seasonal cleaning of strainer located on the reservoir / pump hydraulics.

See the “Lubrication” section located on the following pages for machine lubrication.

Check hydraulic hoses for weather cracks and replace accordingly.

After any period of unused time, unit should be operated to check function of hydraulic system.

Keep tarp open, if equipped.

Dry Spreader Maintenance (continued)

Purging Hydraulic System



- EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.
- RELIEVE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE TRACTOR OPERATOR'S MANUAL FOR PROPER PROCEDURES.
- HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.

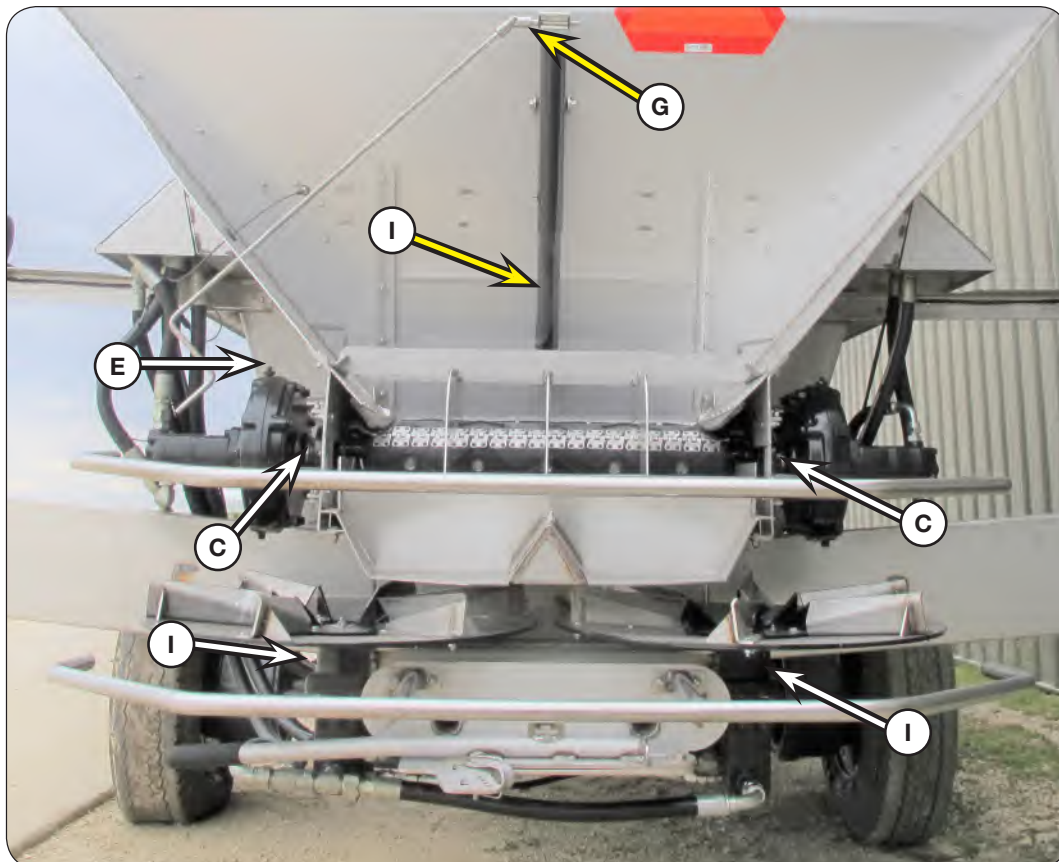
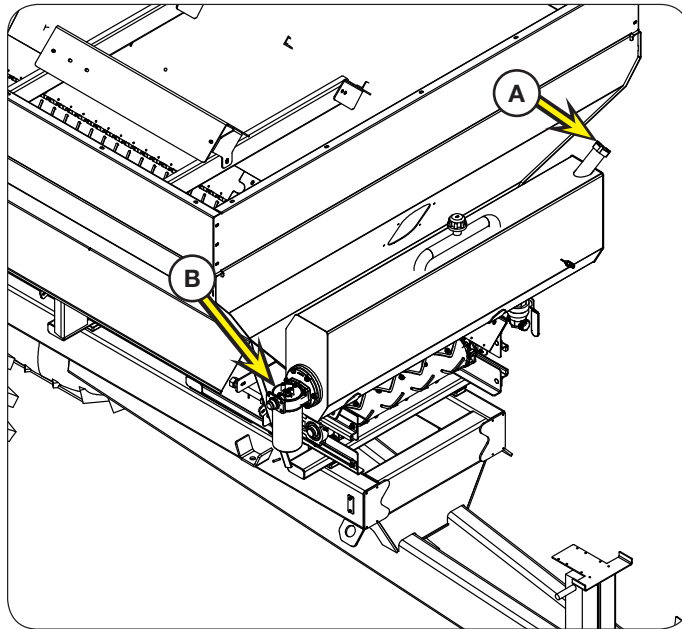
1. Purge air from system as follows:

- A. Turn on two SCVs for the BLUE supply lines with engine at low idle. Allow 1 minute for oil to fill the spreader hydraulic system.
- B. Turn on the spinner and conveyor. Check that all hydraulic valves have opened.
- C. Start hydraulic system and run for 1 minute or until hydraulic motor starts turning.
- D. Check oil reservoir in hydraulic power source and re-fill as needed.
- E. Check for hydraulic leaks using cardboard or wood. Tighten connections according to directions in Torque Specifications in MAINTENANCE section.
- F. De-pressurize hydraulic system.

Lubrication

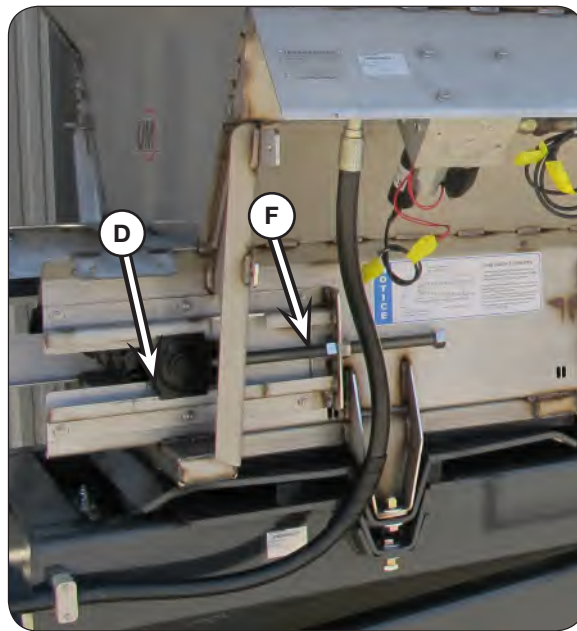
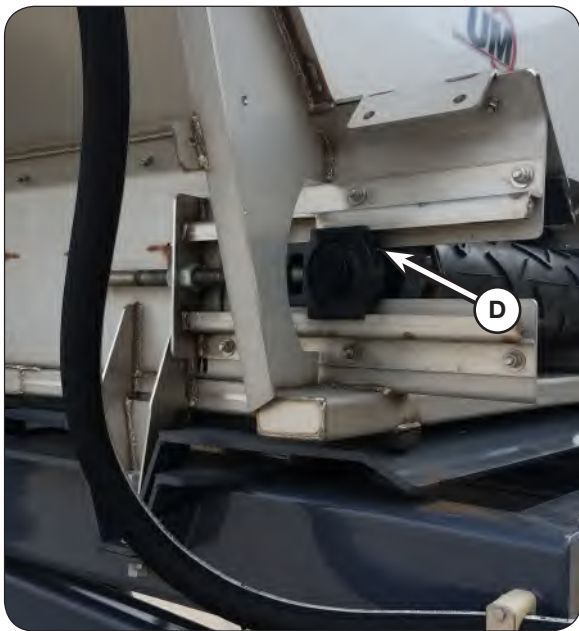
To keep your dry spreader in top operating condition and to assure its proper performance and reliability for a long period of time, periodic inspection and lubrication is a must. Make sure to use NLGI-2 high quality EP grease.

The lubrication locations and recommended schedule are as follows:



(Continued on next page)

Lubrication (continued)



(Continued on next page)

Lubrication (continued)

ITEM	DESCRIPTION	POINT	LUBRICANT	QTY.	HOURS
A	Reservoir	1	SAE 15W-40	System Fill Approx. 46 gal.	Check Daily, Change Every 2-3 years
B	Filter	1			Check Weekly, See Below
C	Bearings - Conveyor Drive	2	NLGI No. 2	Shots	Weekly
D	Bearings - Conveyor Idler	2	NLGI No. 2	Shots	Weekly
E	Gearbox	1	Synthetic SAE 80W90	Approx. 46 oz.	Check Monthly, Change Annually
F	Bolt, Take-Up	2	Never Seize	Recoat	Annually
G	Gears - Feedgate Jack	1	NLGI No. 2	Shots	Monthly
H	Tube - Feedgate Jack	1	NLGI No. 2	Repack	Monthly
I	Spinner - Jack Shaft Assembly	2	NLGI No. 2	Shots	Monthly

HYDRAULIC PUMP REQUIREMENTS:

40 - 45 gpm @ 3500 psi. If more than 45 gpm is used, it must be done with a “load sensing” variable displacement pump.

IMPORTANT

- Warranty is void if this requirement is not followed.

CHECKING RESERVOIR FILTER (If equipped):

Check filter indicator with hydraulic system warm and equipment running at full RPM. Indicator will show RED if filter needs to be changed. (FIG. 4-1)

RESERVOIR/SYSTEM FILL (If equipped):

Fill reservoir to top bold black line on sight gauge with SAE 15W-40 or equivalent. Refill as required.

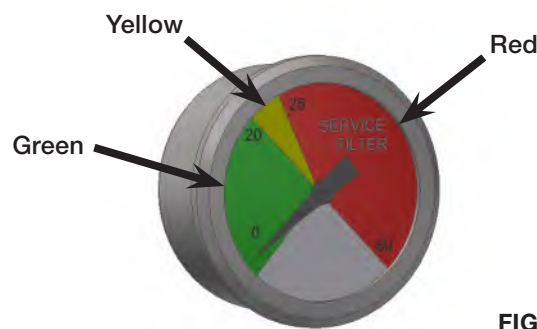


FIG. 4-1

CONVEYOR CHAIN:

Pressure wash to clean chain, then oil the conveyor chain monthly and at the end of the season.

A mixture of 50% used motor oil and diesel fuel is recommended. Use a hand sprayer and do not get the mixture on the belt.

CHANGING GEARBOX OIL:

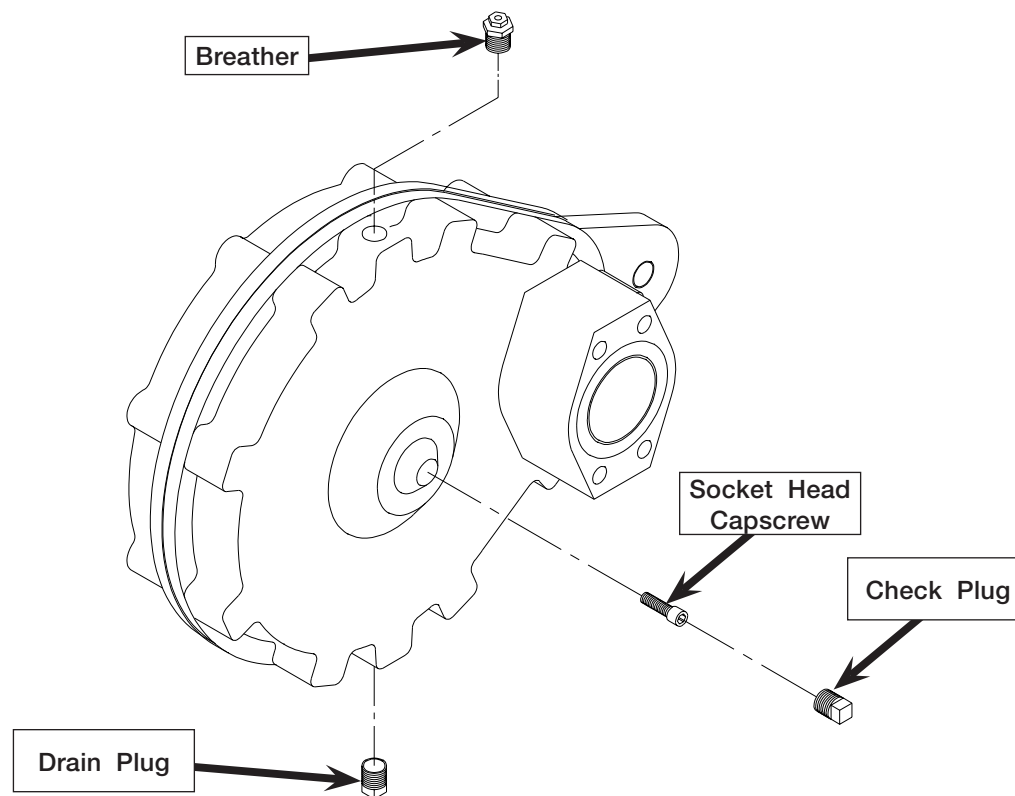
Refer to “Gearbox Removal and Oil Change” in the next section for details.

NOTE: Grease Bearings, Feedgate Jack & Jack Shaft Assembly until grease purges.

NOTE: Completely lubricate all locations and check oil levels at the end of the season.

Gearbox Removal & Oil Change

FIG. 4-2



GEARBOX REMOVAL:

1. Remove check plug (95826). (FIG. 4-2)
2. Using 1/4" allen wrench, remove socket head capscrew (99888-034). (FIG. 4-2)
3. Gearbox should slide off with minimal resistance.

GEARBOX INSTALL:

NOTE: When installing gearbox, ensure keys are in the down position.

1. Slide gearbox onto shaft.
2. Insert socket head capscrew into gearbox. Tighten capscrew with 1/4" allen wrench and attach check plug. (FIG. 4-2)

CHANGING GEARBOX OIL:

1. Remove drain plug (PF1201-238M) & breather (9003453). (FIG. 4-2)
2. Clean any metal shavings off of magnetic square head plug.
3. After oil has drained, reattach drain plug.
4. Remove check plug.

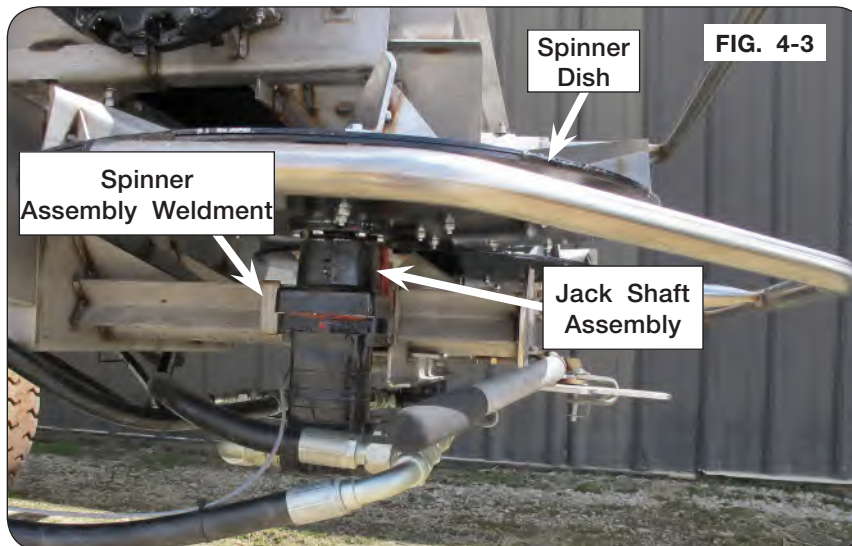
NOTE: The gearbox capacity is approx. 46 oz. Check oil monthly and change oil annually.

5. Fill gearbox through breather hole with synthetic SAE 80W90 oil until the oil starts to run out of the check plug hole.
6. Reattach check plug & breather.

Jack Shaft Disassembly

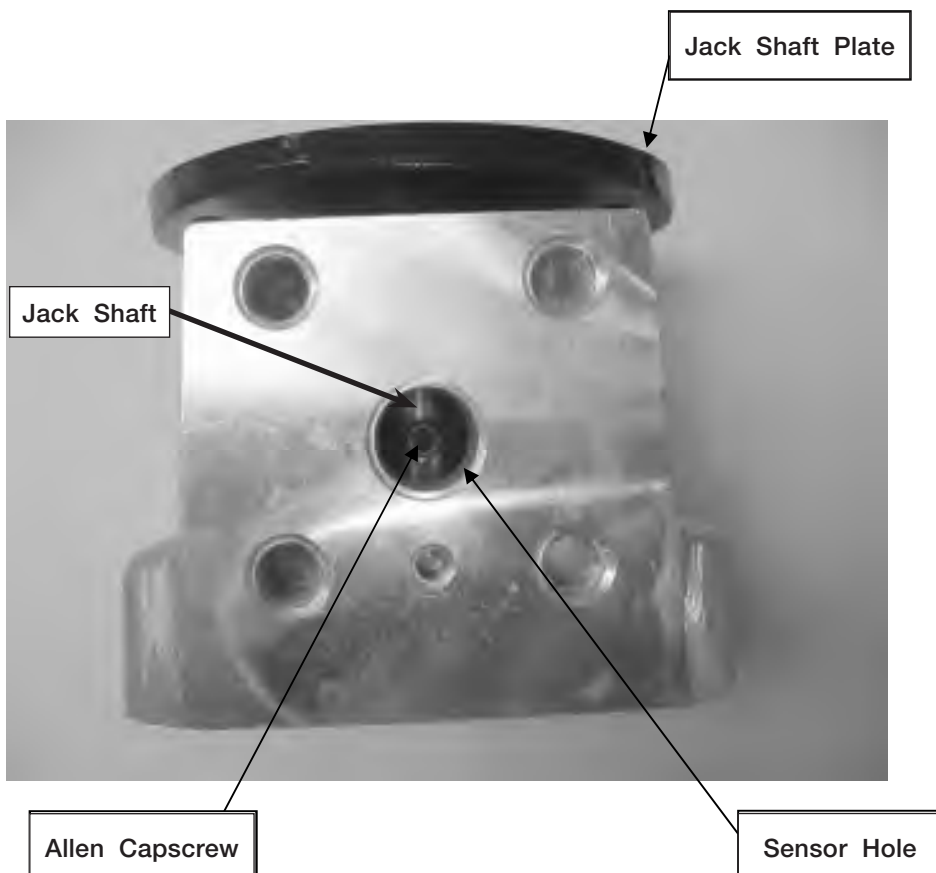
NOTE: Replace jack shaft bearings by removing jack shaft assembly from dry spreader.

1. Remove jack shaft assembly from the spinner assembly weldment and spinner dish. (FIG. 4-3)



2. To disassemble the jack shaft assembly, remove (4) allen capscrews from jack shaft by rotating jack shaft plate until the allen capscrew can be seen through sensor hole. (FIG. 4-4)

FIG. 4-4



Conveyor Speed Sensor Replacement

1. Park the empty dry spreader on a firm, level surface. Block the tires to keep the machine from moving. Set the vehicle's parking brake, shut off engine, remove ignition key, and disconnect hydraulics from the vehicle and dry spreader.

NOTE: Ensure the lock nut and lock nut threads are clean and dry for the proper torque.

2. Position the lock nut against the alignment nut as shown in FIG. 4-5.
3. Move the washer and the o-ring up against the speed sensor body threads as shown in FIG. 4-5.

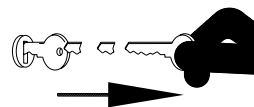
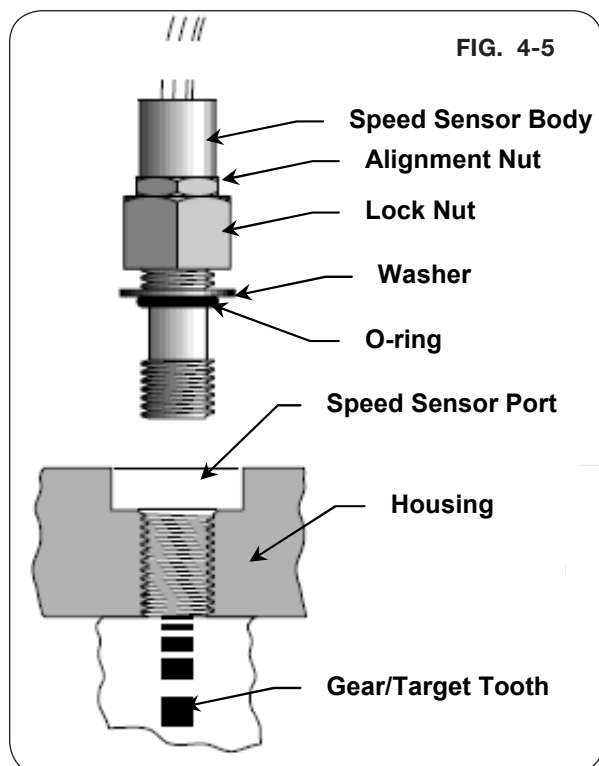


FIG. 4-5



Conveyor Speed Sensor Replacement (continued)

IMPORTANT

- Do not force the sensor against the gear/target tooth, damage may occur.
4. By hand, lightly thread the conveyor speed sensor body into the housing until the sensor touches against the motor (gear/target) tooth.
 5. Ensure the o-ring or the washer do not touch the housing. See FIG. 4-6.

NOTE: Torque values are for clean dry threads.

6. Turn the speed sensor body out 3/8 to 1/2 turn (CCW) and tighten the lock nut to 75-125 lb-in.
7. Connect speed sensor cable to the speed sensor, and attach other end of cable to the wiring harness. (FIG. 4-7 and FIG. 4-8)

FIG. 4-6

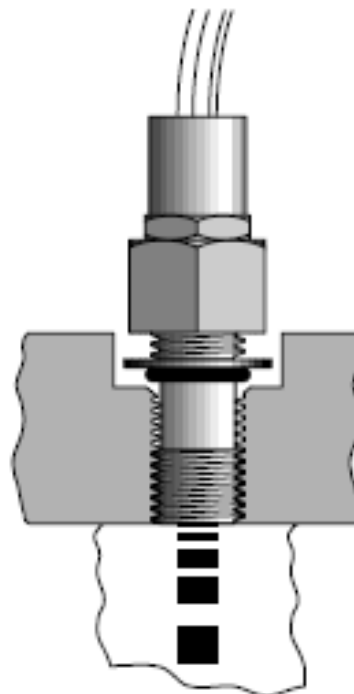
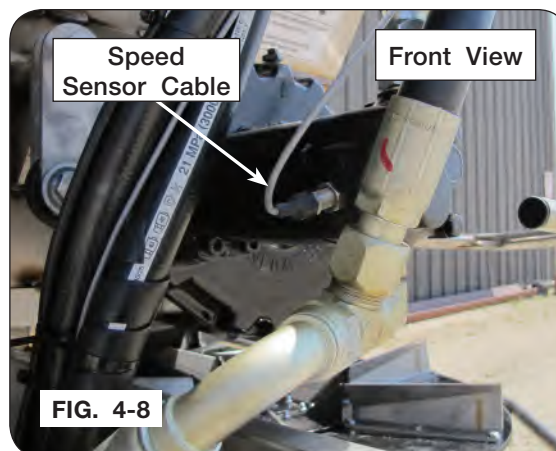
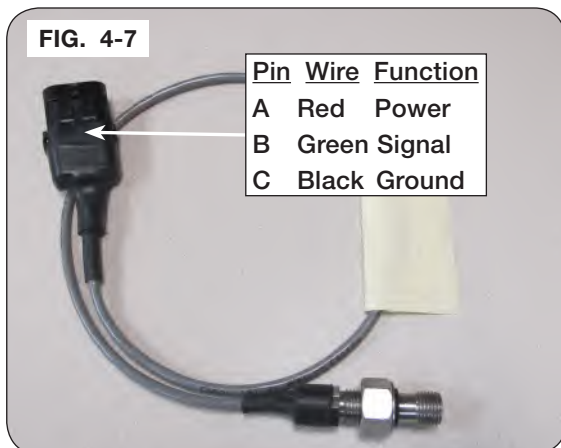
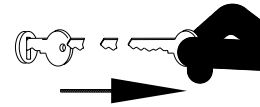


FIG. 4-7

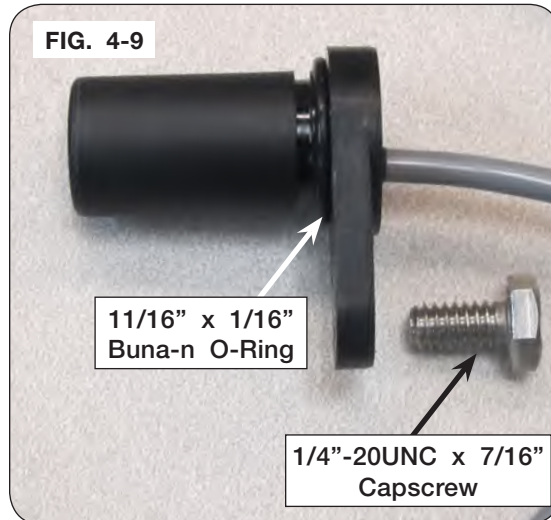


Spinner Motor Speed Sensor Replacement

1. Park the empty dry spreader on a firm, level surface. Block the tires to keep the machine from moving. Set the vehicle's parking brake, shut off engine, ignition remove key, and disconnect hydraulics from the vehicle and dry spreader.



2. Move the o-ring flush against the speed sensor flanged housing as shown in FIG. 4-9.



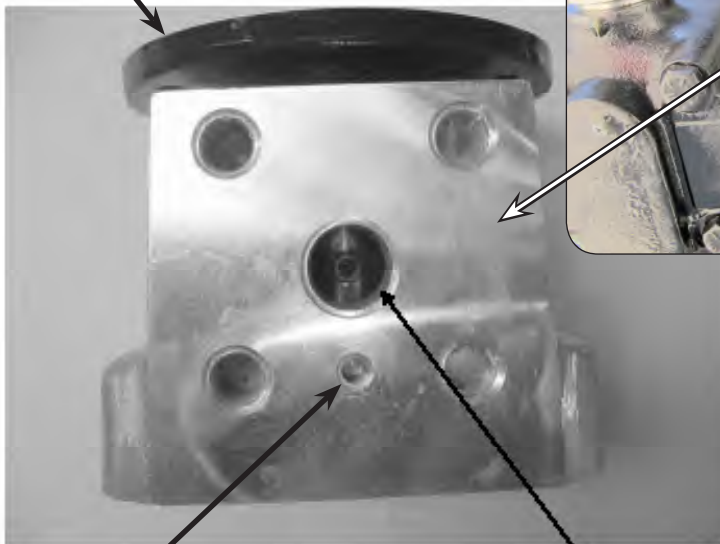
Spinner Motor Speed Sensor Replacement (continued)

IMPORTANT

- Do not force the sensor against the gear/target tooth, damage may occur.
3. Lightly insert the spinner speed sensor body into the sensor hole of the jack shaft assembly until the sensor touches against the motor (gear/target) tooth. (FIG. 4-11)
 4. Attach spinner speed sensor to the jack shaft assembly using provided 1/4"-20UNC x 7/16" capscrew (SS). (FIG. 4-11)
 5. Connect speed sensor cable to the wiring harness. (FIG. 4-12)

FIG. 4-11

Jack Shaft Assembly

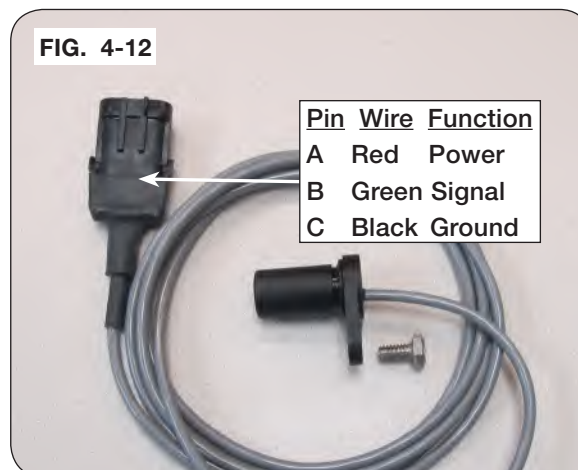


1/4"-20UNC x 7/16"
Capscrew Hole

Sensor Hole

Bottom View

FIG. 4-12

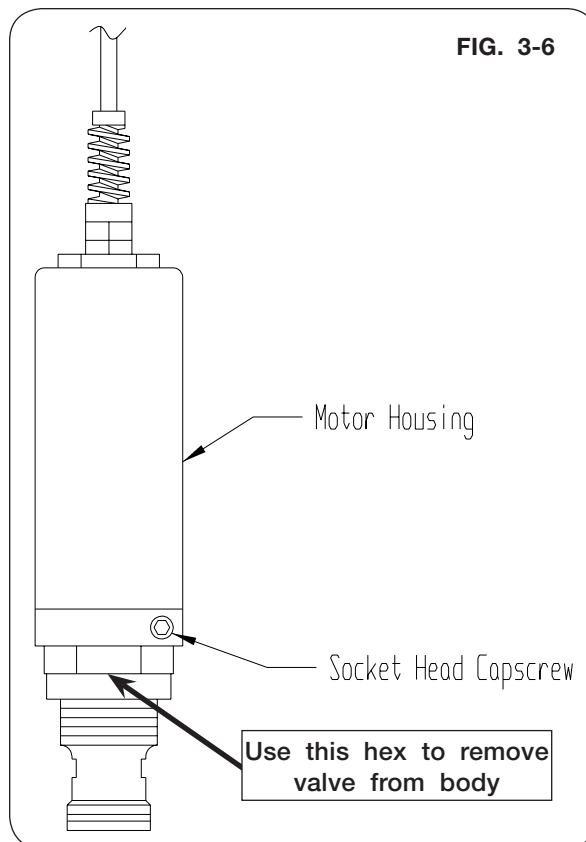


Hydraulic Servo Valve Manual Override & Timing

NOTE: Valve adjusts through full range in 90° rotation. Never turn more than a total of 1 turn counter clockwise.

NOTE: Never remove valve by the electrical wiring hex. This can damage the valve electrical wiring.

1. Loosen socket head capscrew on lock collar using 3/16" hex wrench. (FIG. 3-6)
2. Run engine at desired RPM.
3. Hold the motor housing by hand and turn the body clockwise to the desired flow setting. (FIG. 3-6)
4. Tighten lock collar to hold position.
5. If further adjustments are necessary, repeat steps 1 through 4 as required.
6. Re-time the valve after manual adjustments before returning to automated operation.
7. To re-time valve, turn off control switch and adjust motor housing slowly counter clockwise until conveyor or fans stop.



Chain Tension

WARNING

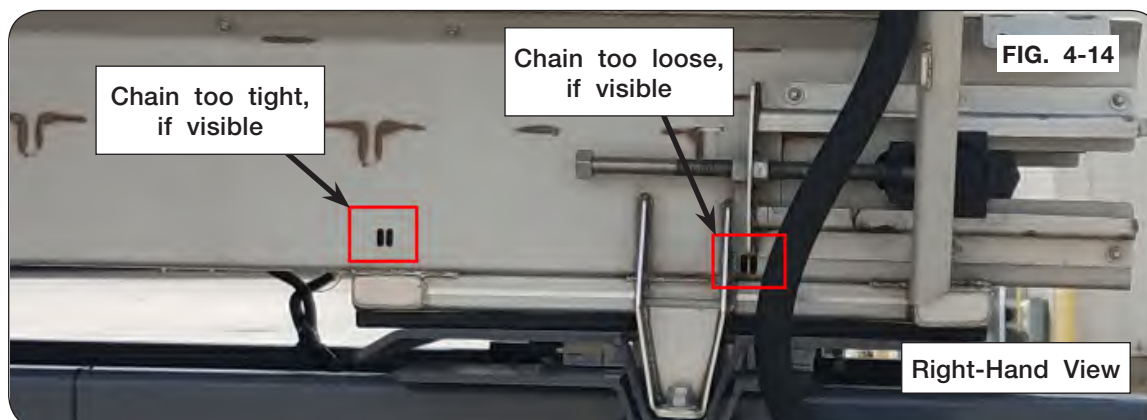
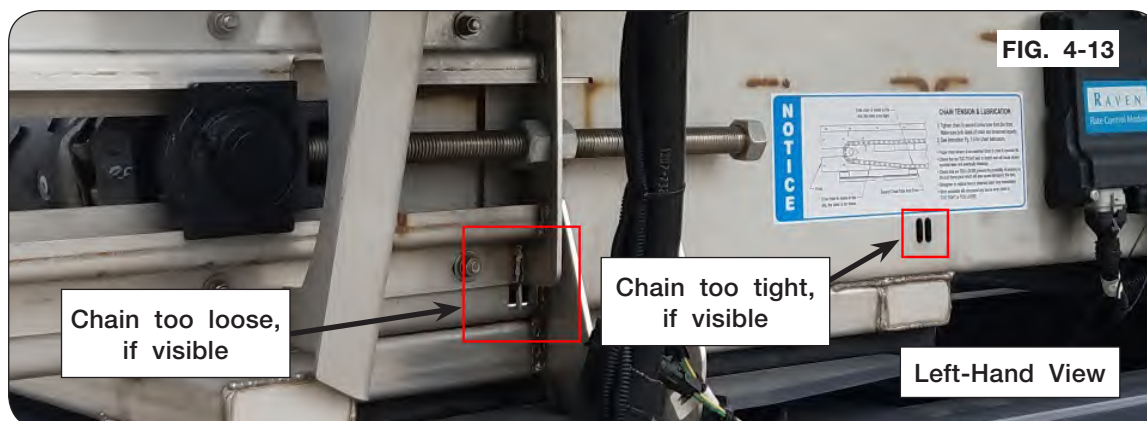
- EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.

IMPORTANT

- Disconnect from the towing vehicle and all load cells, if equipped.
- Straighten or replace bent or distorted crossbars immediately.
- Proper chain tension is an essential factor in chain & sprocket life.
- Chains that are TOO TIGHT tend to stretch & will cause excess sprocket wear & eventually breakage.
- Chains that are TOO LOOSE present the possibility of catching on the subframe parts which will cause damage to the chain and body.
- Worn sprockets will cause excessive chain wear, skipping, and chain hooking.

NOTE: When repairing or replacing chain links, install a cotter key & tack weld the cotter key side of the pin to each connector link.

1. Verify chain tension using visible slots as indicated on FIG. 4-13 and 4-14.
2. See the “Lubrication” section located on the following pages for chain lubrication.



Chain Shield Seal Strip Replacement

WARNING

- TO PREVENT PERSONAL INJURY OR DEATH, ALWAYS ENSURE THAT THERE ARE PEOPLE WHO REMAIN OUTSIDE THE DRY SPREADER TO ASSIST THE PERSON WORKING INSIDE, AND THAT ALL SAFE WORKPLACE PRACTICES ARE FOLLOWED. THERE IS RESTRICTED MOBILITY AND LIMITED EXIT PATHS WHEN WORKING INSIDE THE IMPLEMENT.

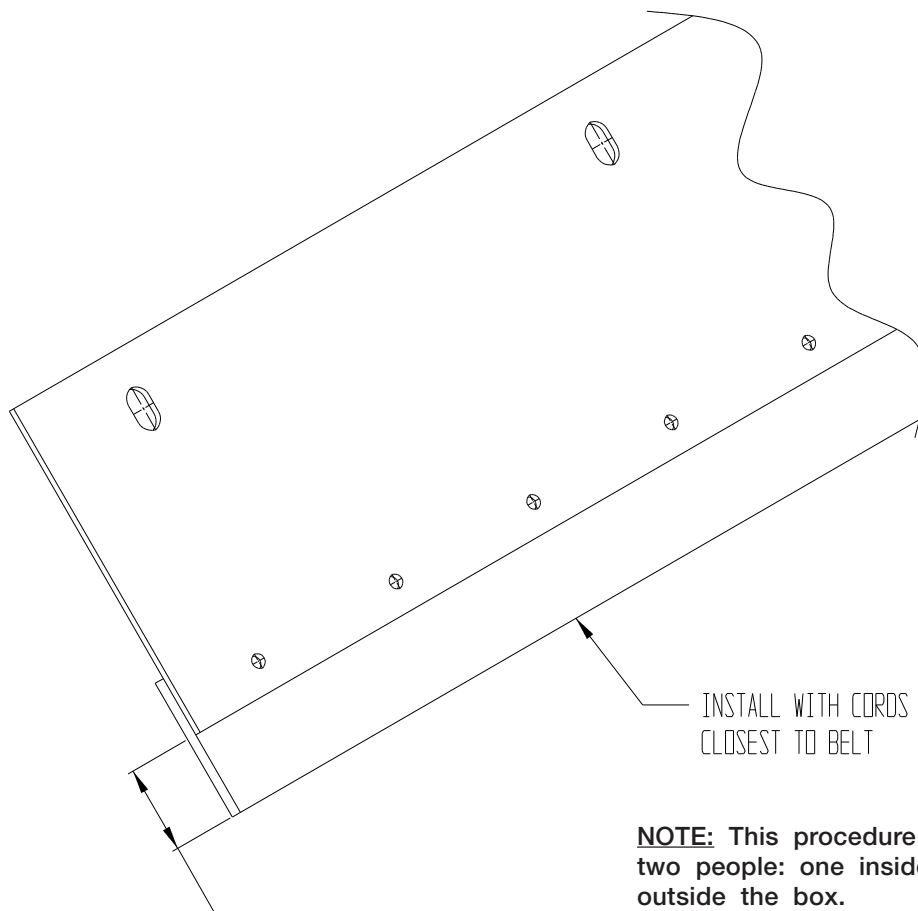


FIG. 4-15

1-3/4" EXPOSED W/2-5/8" O.A. WIDTH SEAL STRIP

NOTE: This procedure takes two people: one inside and outside the box.

NOTE: Refer to "Chain Shield" in "PARTS" section for chain shield box length part numbers.

1. Ensure the seal strips are exposed 1 3/4" as shown in FIG 4-15.
2. Inside the spreader box, insert 3/8" x 1" SS carriage bolts (PF1200-302SS) through the slotted holes on the chain shield and the holes on the spreader box.
3. Insert button head socket capscrews (PF1200-086SS) through the chain shield and the seal strip (standard seal strip PF1000-37 or high temperature seal strip PF1000-38).
4. Attach the seal strip to the chain shield with tee prong nuts (PF1205-86SS).
5. Repeat steps 1 through 3 for the other side of the spreader box.
6. Outside of the spreader box, attach the chain shields with 3/8" SS lock washers (PF1209-43) and 3/8" SS nuts (PF1205-27) to both sides of the spreader box.

Bin Level Sensor Replacement

WARNING

- TO PREVENT PERSONAL INJURY OR DEATH, ALWAYS ENSURE THAT THERE ARE PEOPLE WHO REMAIN OUTSIDE THE DRY SPREADER TO ASSIST THE PERSON WORKING INSIDE, AND THAT ALL SAFE WORKPLACE PRACTICES ARE FOLLOWED. THERE IS RESTRICTED MOBILITY AND LIMITED EXIT PATHS WHEN WORKING INSIDE THE IMPLEMENT.

NOTE: Fiber washer (9008810) is not shown in Figure 4-16.

1. Disconnect previous bin level sensor cable from the bin level sensor and other end from the wiring harness.
2. Remove previous bin level sensor body and hardware from the spreader box. (FIG. 4-16 and 4-17)
3. Outside of the spreader box, slide fiber washer (9008810) and hex nut (9008808) onto new bin level sensor (9009180). (FIG. 4-17 & 4-18)
4. Insert bin level sensor through the rear panel with connector end out of the spreader box. (FIG. 4-18)
5. Inside the spreader box, attach bin level sensor to the inside rear panel using remaining hex nut (9008808).
6. Plug bin level sensor cable (9008807) into bin level sensor and connect other end of cable to wiring harness. (FIGS. 4-18 & 4-19)

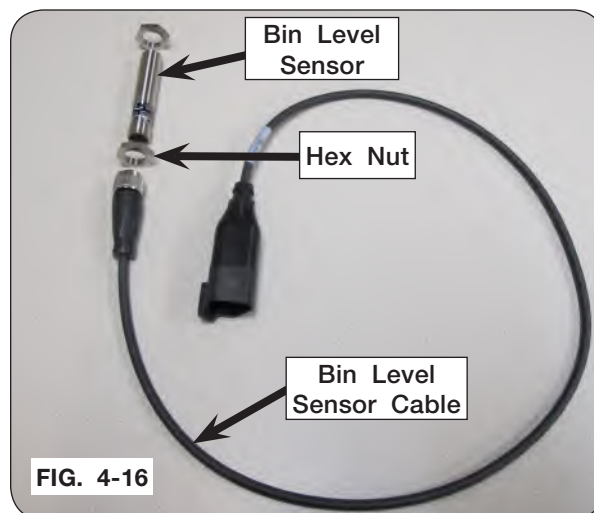


FIG. 4-16

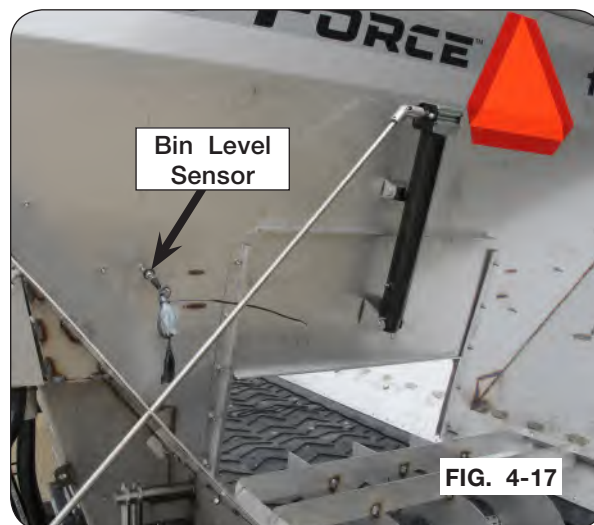


FIG. 4-17

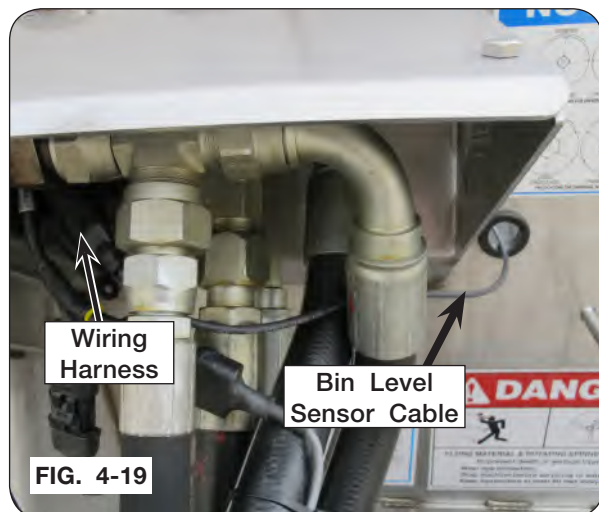


FIG. 4-19

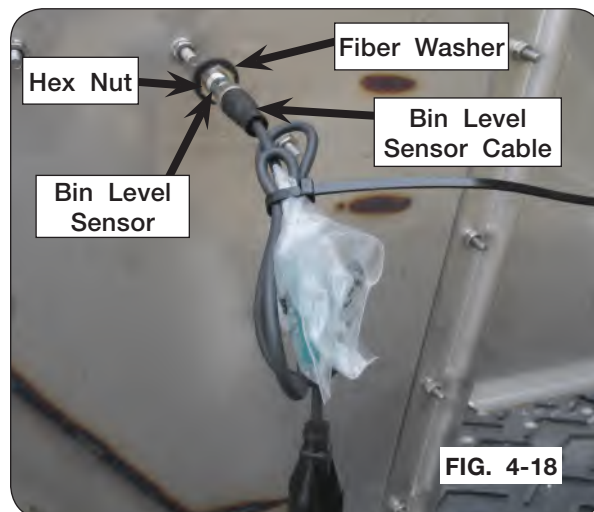


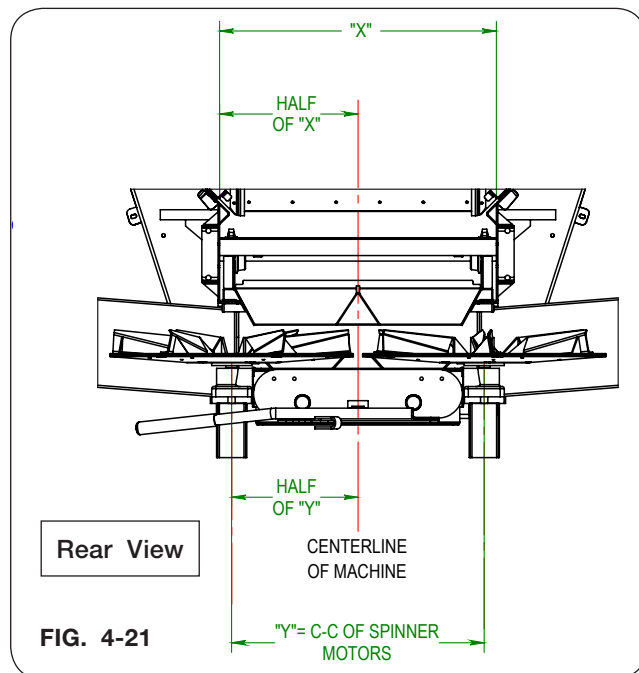
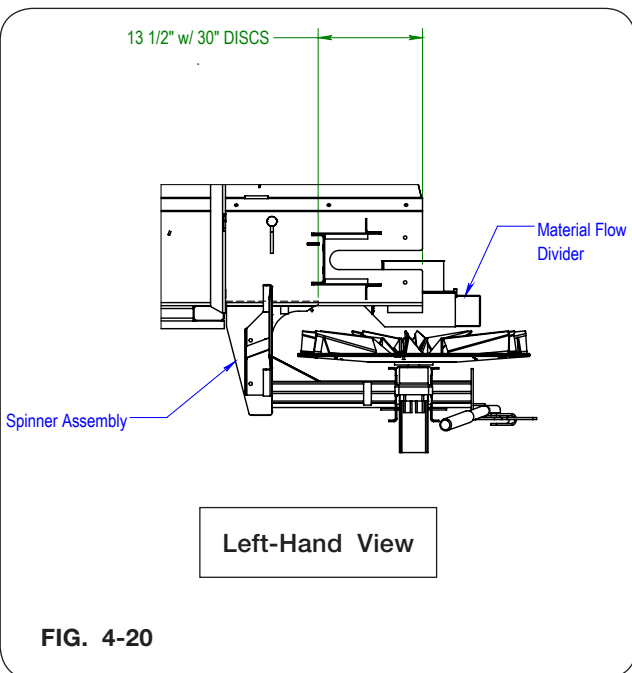
FIG. 4-18

Spinner and Material Flow Divider Assembly

WARNING

- TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE MACHINE IS SECURELY BLOCKED.
- KEEP HANDS CLEAR OF PINCH POINT AREAS.
- FALLING OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT WORK UNDER THE MACHINE AT ANY TIME WHILE BEING HOISTED. BE SURE ALL LIFTING DEVICES AND SUPPORTS ARE RATED FOR THE LOADS BEING HOISTED. THESE ASSEMBLY INSTRUCTIONS WILL REQUIRE SAFE LIFTING DEVICES UP TO 300 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.

NOTE: Verify all dimensions to ensure squareness of spinner assembly and material flow divider. If these items are not located properly, the spread pattern will be affected. The material flow divider and spinner assembly **MUST** be centered in the flow of material to get an adequate spread pattern.



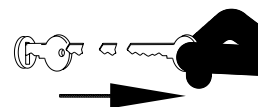
1. Measure from rear edge of spinner frame to end of conveyor frame rail to verify correct spinner location. (FIG. 4-20)
2. Verify that dimension is the same on both the driver's side and the passenger's side to ensure squareness. (FIG. 4-21)

Rear Feedgate Door Replacement

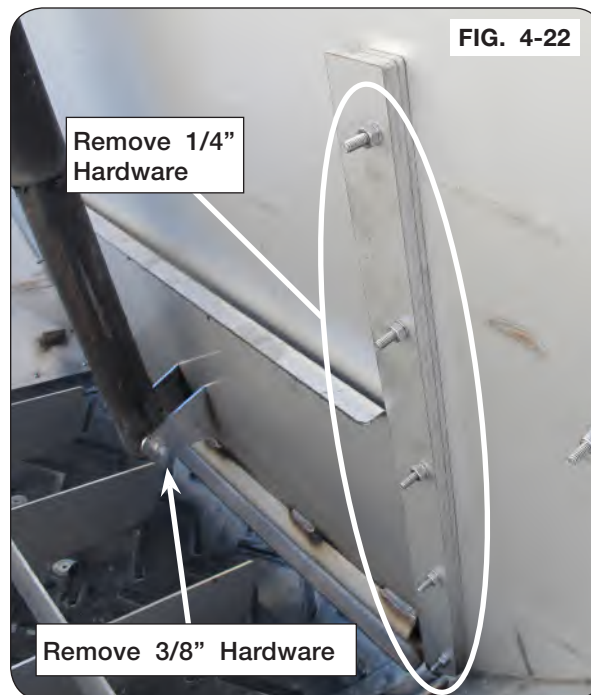
WARNING

- TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE MACHINE IS SECURELY BLOCKED.
- KEEP HANDS CLEAR OF PINCH POINT AREAS.
- ALWAYS WEAR PERSONAL PROTECTIVE EQUIPMENT WHEN WORKING WITH OR NEAR CHEMICALS. THIS EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO: PROTECTIVE EYEWEAR, GLOVES, SHOES, SOCKS, LONG-SLEEVED SHIRT AND LONG PANTS. ADDITIONAL PROTECTION MAY BE REQUIRED FOR MANY TYPES OF CHEMICALS.
- TO PREVENT PERSONAL INJURY OR DEATH, ALWAYS ENSURE THAT THERE ARE PEOPLE WHO REMAIN OUTSIDE THE MACHINE TO ASSIST THE PERSON WORKING INSIDE, AND THAT ALL SAFE WORKPLACE PRACTICES ARE FOLLOWED. THERE IS RESTRICTED MOBILITY AND LIMITED EXIT PATHS WHEN WORKING INSIDE THE IMPLEMENT.

1. Park the empty dry spreader on a firm, level surface. Block the tires to keep the machine from moving. Set the vehicle's parking brake, shut off the engine, remove the ignition key and disable all hydraulics to the dry spreader.

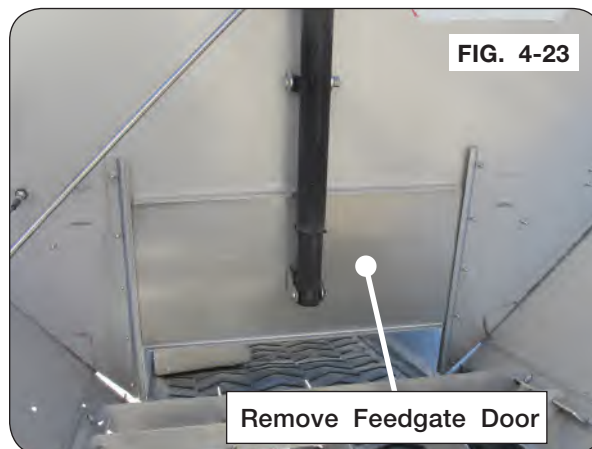


2. Remove the 1/4" hardware from the feed gate slides. The hardware can be discarded. (FIG. 4-22)
3. Remove the 3/8" hardware attaching the feedgate jack to the gate. The hardware can be discarded. (FIG. 4-22)

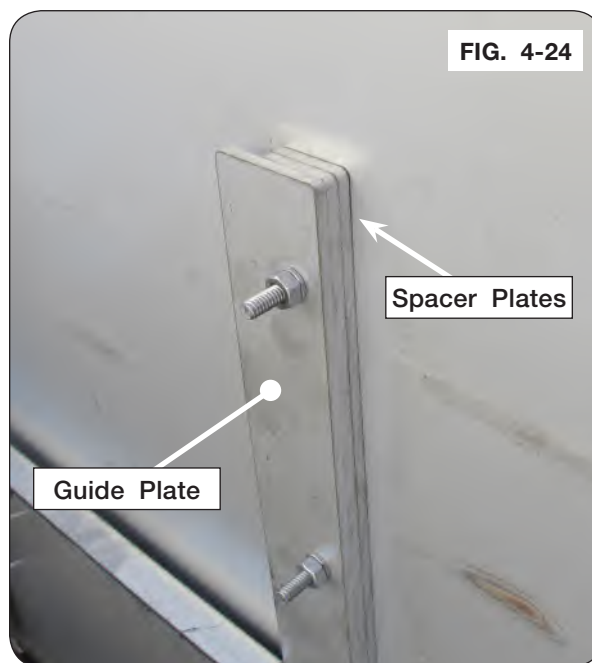


Rear Feedgate Door Replacement (continued)

4. Remove the current feedgate door from the spreader. The door can be discarded. (FIG. 4-23)



5. Align 2 feedgate guide spacer plates (415162) against the hopper and 1 feedgate guide plate (415163) against the spacer plates on the right-hand and left-hand sides of the door. (FIG. 4-24)



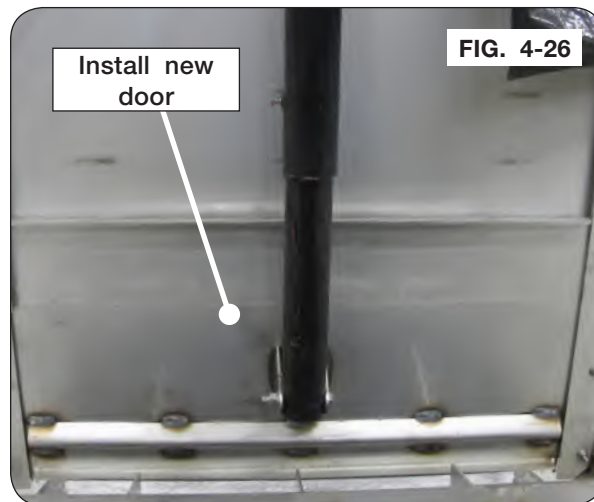
6. From inside the spreader box, insert 1/4-20UNC x 1-1/2" SS capscrews (900900-007) through the holes on the spreader box, feedgate guide spacer plates and feedgate guide plate to the right-hand and left-hand sides. Secure the plates to the hopper by using the 1/4" lock washers and 1/4" hex nuts. (FIG. 4-24). Do not install bolts in the bottom position on both sides and do not install bolts in the top and middle positions of the left-hand side.

7. On the inside of the spreader, position a chainshield cover (415236) at a lower corner of the feed gate opening. The cover should take up any gap between the rear wall and the chain shield. Use the provided 1/4" hardware to secure the cover to the rear wall. (FIG. 4-25) Repeat the process for the other side. The silicone seal in this area may need to be removed and re-applied once the cover is installed.

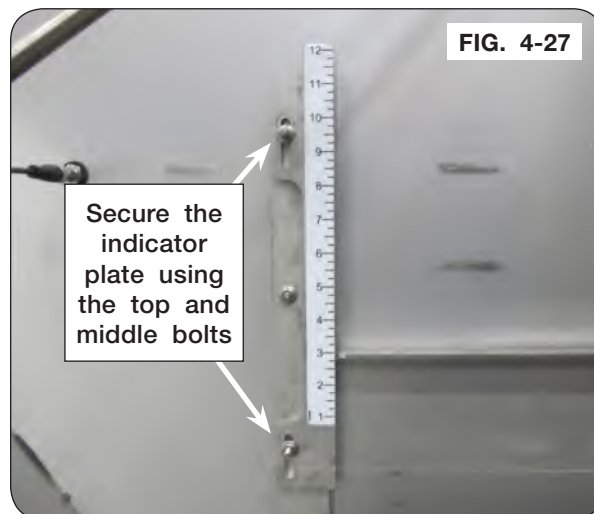


Rear Feedgate Door Replacement (continued)

8. Slide the new feedgate weldment (PF1236-350) into position between the hopper and the guide plates. (FIG. 4-26)
9. Attach feedgate weldment to the bottom of feedgate jack using the provided 3/8" x 3" capscrew (900900-063), 3/8" lock washer (900903-021) and 3/8" hex nut (900901-006).



10. On the outside of the spreader, position the indicator plate (415185) so the slotted holes are over the top and middle bolt holes on the left-hand side. The ruler edge of the plate will be near the rear feedgate door. (FIG. 4-27)



11. Measure from the top of the conveyor belt to the bottom of the feedgate. Make sure the feedgate indicator decal ruler (9009074) at the top of the feedgate matches that measurement. Once the ruler is properly adjusted, secure using the provided 1/4" hardware. (FIG. 4-27)
12. Torque the 1/4" hardware to 8-10 ft. lbs. and the 3/8" hardware to 25-28 ft. lbs.

Winterizing

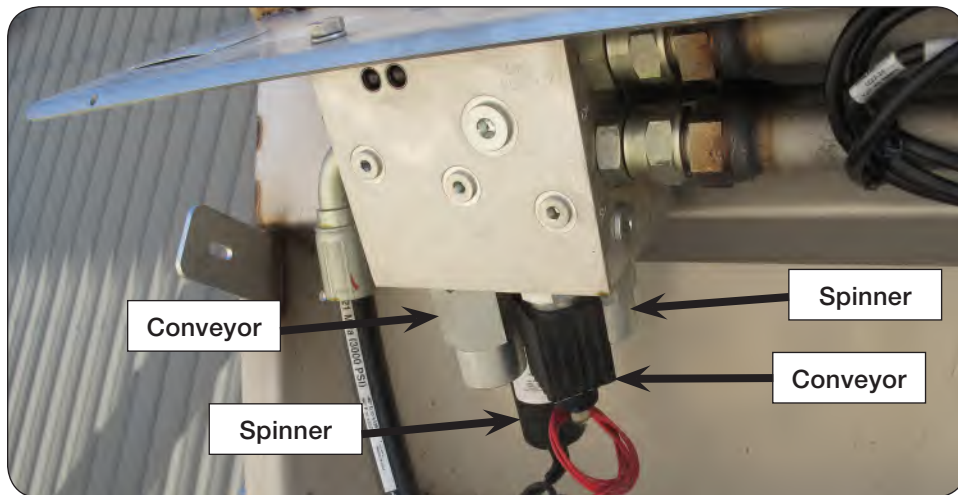
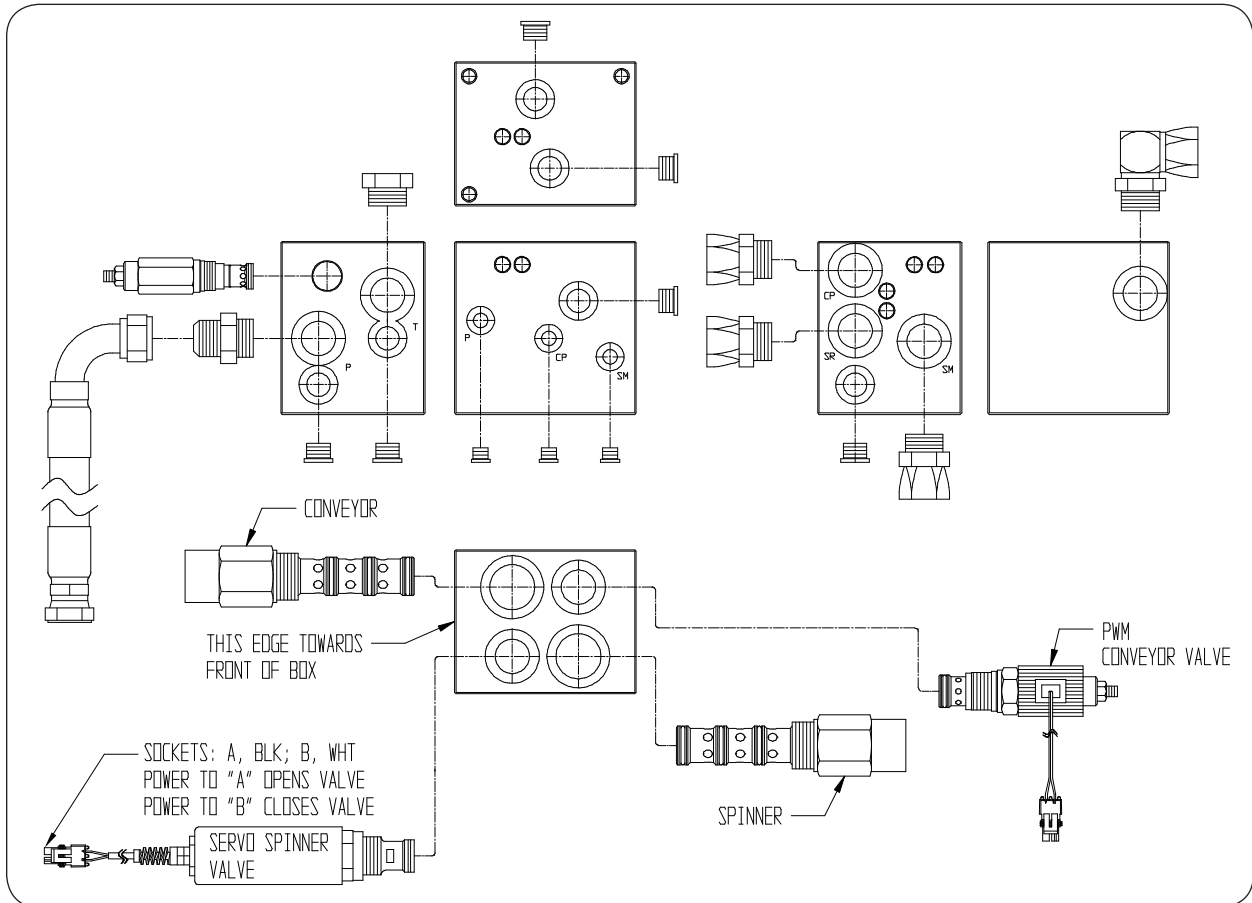
WARNING

- ALWAYS WEAR PERSONAL PROTECTIVE EQUIPMENT WHEN WORKING WITH OR NEAR FERTILIZERS AND/OR CHEMICALS. THIS EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO: PROTECTIVE EYE WEAR, GLOVES, SHOES, SOCKS, LONG-SLEEVED SHIRT, AND LONG PANTS. ADDITIONAL PROTECTION MAY BE REQUIRED FOR MANY TYPES OF FERTILIZERS AND/OR CHEMICALS.

Before storing the dry spreader in freezing climates, perform the following winterizing procedure:

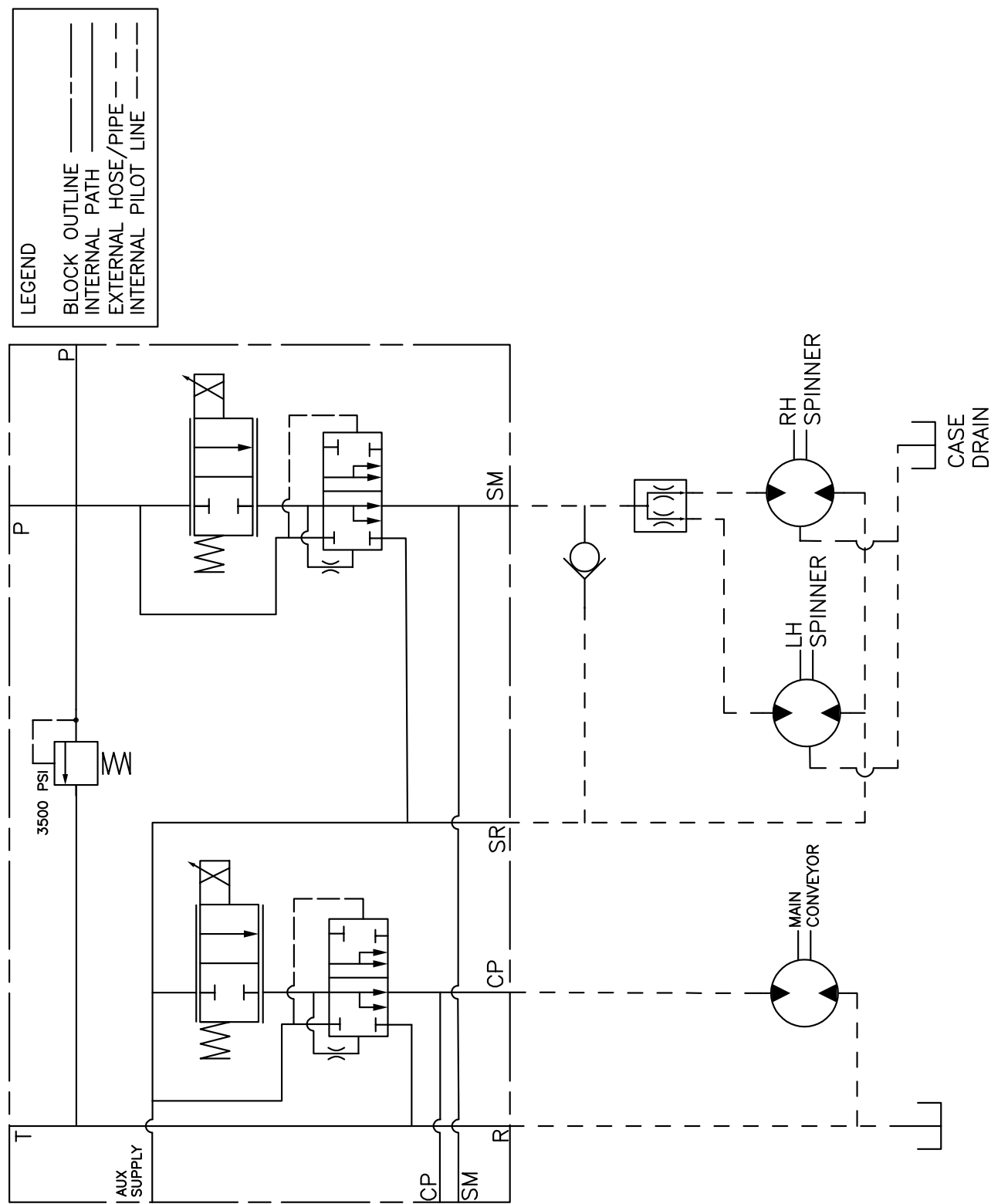
1. Remove as much water, debris, fertilizer and chemicals from the hopper as possible.
2. Wash the dry spreader thoroughly inside and out with a high-pressure washer. When using pressure washers, maintain an adequate distance so not to force water into bearings, hydraulic connections or electrical connections.
3. After washing machine, spray an oil/diesel mixture inside hopper and on conveyor chain to avoid corrosion. Refer to “Lubrication” outlined in “MAINTENANCE” section.

Main Valve Block Assembly - Spinner & Conveyor



See “Hydraulic Fittings” and “Hydraulic System Valves & Steel Pipe Adapters” in the **MAINTENANCE** section for torque specifications.

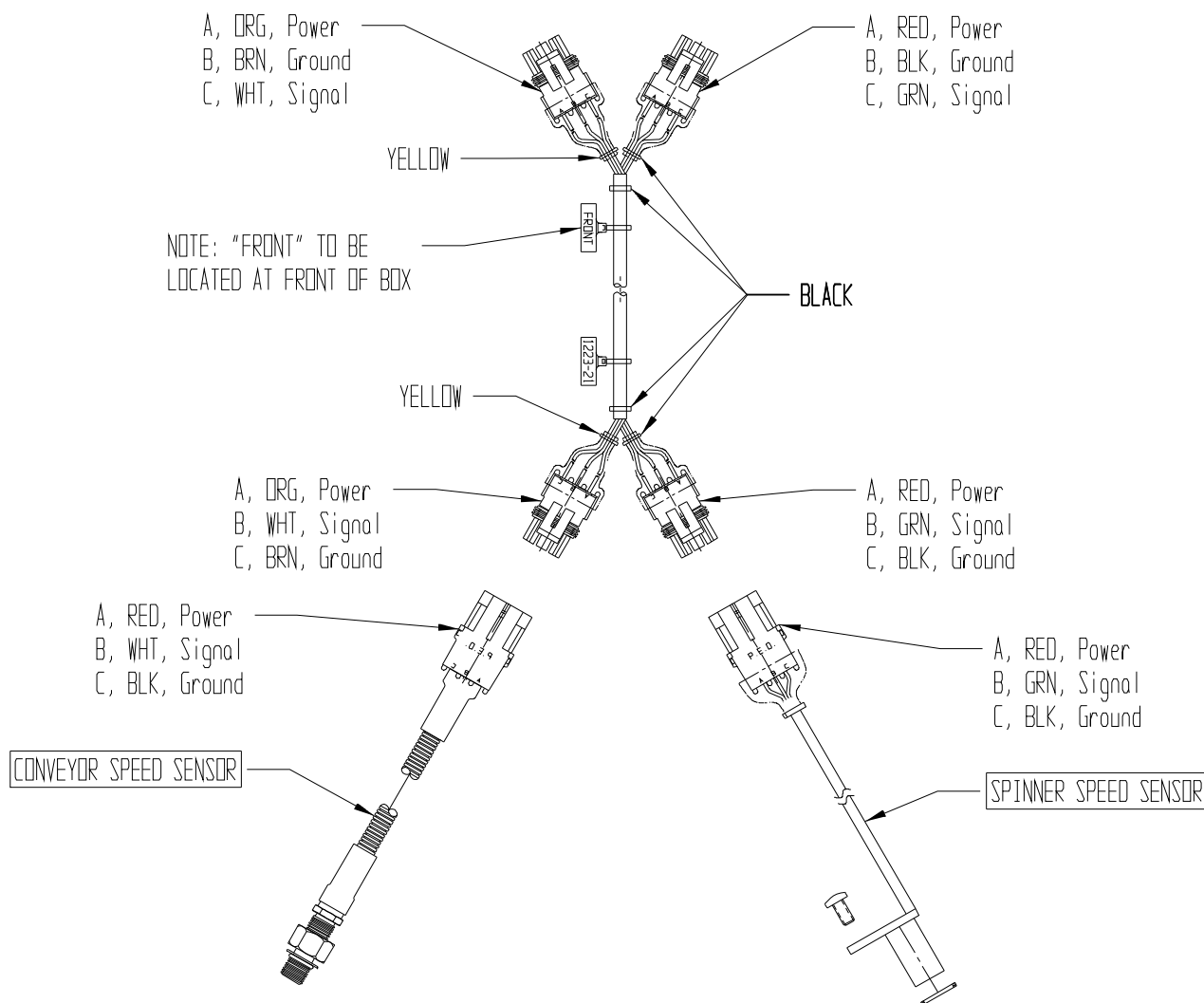
Schematics - Spinner & Conveyor Hydraulics



Schematic — Electrical — Troubleshooting Spinner & Conveyor Speed Sensor Wiring Harness

NOTE:

For operating set up, maintain tie strap color coding between sensors and console harness.

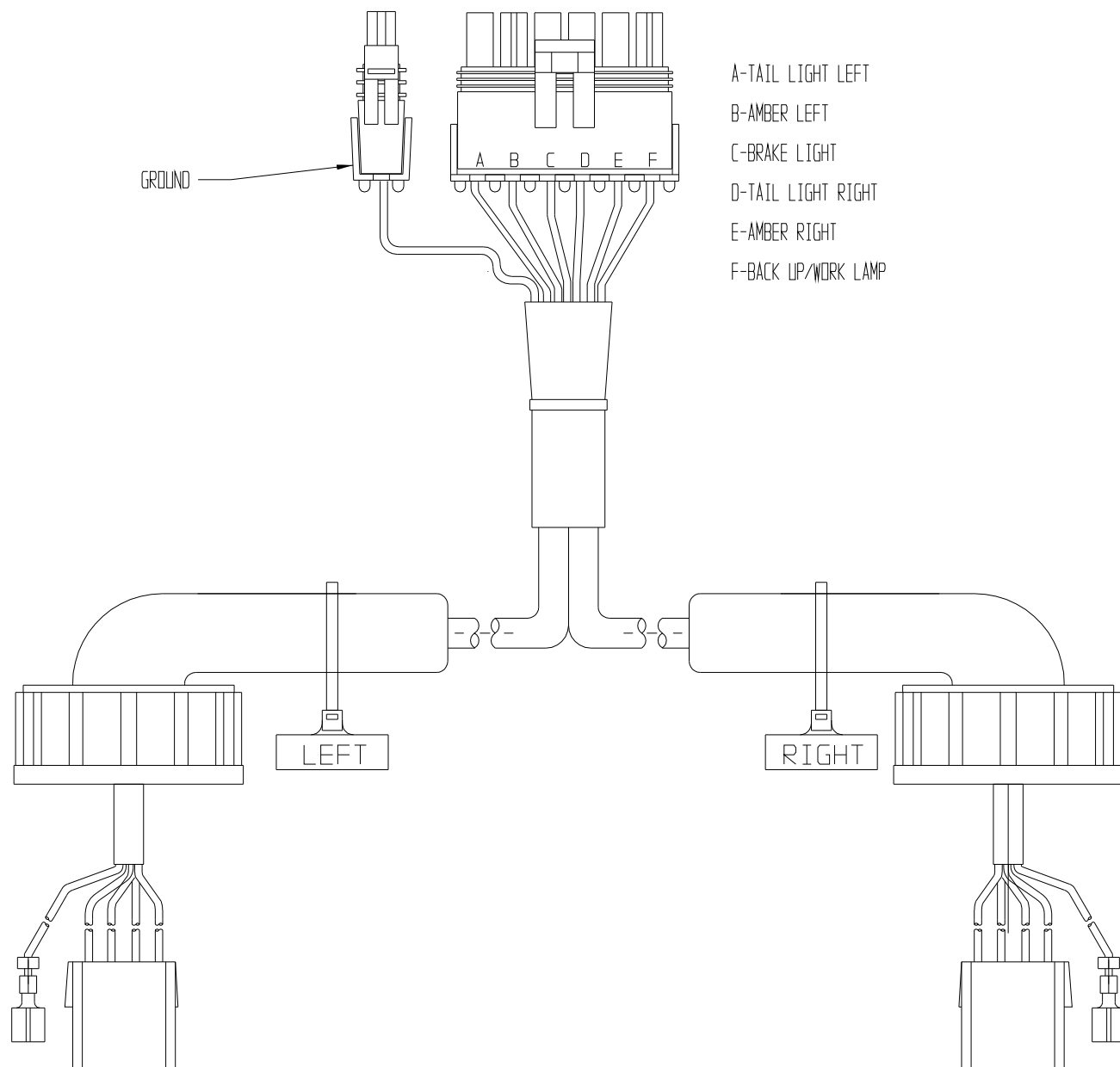


If console loses rate or spinner speed and the function is moving, the connectors shown on this page can be swapped at the rear of the spreader to troubleshoot the system.

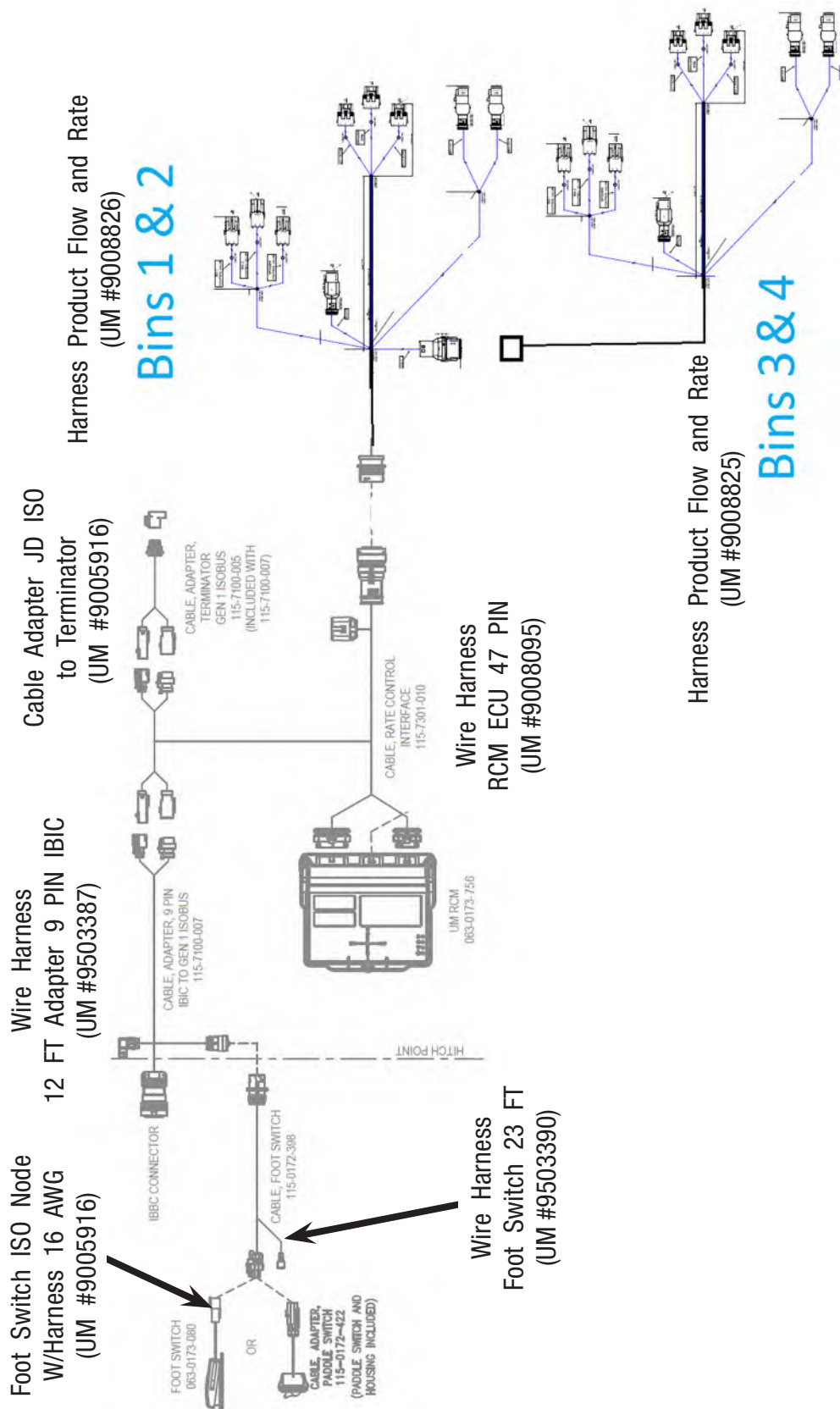
EXAMPLE: If the spinner's speed is working and the connectors are switched, the spinners should show up as an application rate. If the application rate still is not reading, there is a controller or cable problem. Check the programming numbers and cables. If a rate reading is received, the sensor could be bad.

Different controllers supply different voltages. There should be at least 5 volts on the power and signal leads

**Schematic — Electrical — Chassis Mounted Unit
Tail Light Wiring Harness (PF1223-752)**



Schematic — RCM Wiring Harness



Fertilizer Density Chart

Fertilizer	Density (Lbs./Cu.Ft.)
Prilled Urea	45-51
Granular Urea	45-51
Prilled Ammonium Nitrate	53-61
Crystalline Ammonium Sulfate	62-69
Ammonium Sulfate	49-65
Diammonium Phosphate (DAP)	54-66
Granular Monoammonium Phosphate (MAP)	54-66
Powdered Monoammonium Phosphate (MAP)	53-62
Granular Triple Superphosphate (TSP)	59-75
Ammonium Phosphate	56-75

Complete Torque Chart

Stainless Steel Capscrews - ASTM F593

IMPORTANT

- Stainless steel fasteners tend to gall, especially with long run downs, prevailing torque fasteners, impact drivers, and lack of lubrication. It is highly encouraged to use a lubricant such as graphite-based anti-seize or molybdenum disulfide based anti-seize or other commercially available anti-galling compounds and assemble with a slow and continuously applied torque to avoid galling.

SIZE	INCH POUNDS	NEWTON METERS
1/4-20	62	7
1/4-28	71	8
5/16-18	128	15
5/16-24	142	16

SIZE	FOOT POUNDS	NEWTON METERS
3/8-16	19	26
3/8-24	21	29
7/16-14	30	41
7/16-20	34	46
1/2-13	46	63
1/2-20	52	71
9/16-12	67	91
9/16-18	74	100
5/8-11	92	125
5/8-18	104	141
3/4-10	113	153
3/4-16	126	171
7/8-9	182	247
7/8-14	201	273
1-8	273	370
1-14	306	415
1 1/4-7	545	739
1 1/4-12	604	819
1 3/8-6	715	970
1 3/8-12	813	1102
1 1/2-6	949	1287
1 1/2-12	1067	1447

Complete Torque Chart (continued)

Capscrews - Grade 5

NOTE:

- Grade 5 capscrews can be identified by three radial dashes on the head.



SIZE	FOOT POUNDS	NEWTON METERS
1/4-20	8-10	11-13
1/4-28	9-11	12-15
5/16-18	15-17	20-23
5/16-24	17-19	23-26
3/8-16	25-28	34-38
3/8-24	28-31	38-42
7/16-14	40-45	54-61
7/16-20	45-50	61-68
1/2-13	62-68	84-92
1/2-20	68-75	92-102
9/16-12	90-98	122-133
9/16-18	100-110	134-148
5/8-11	120-135	162-183
5/8-18	124-137	168-186
3/4-10	200-220	270-300
3/4-16	210-230	285-310
7/8-9	330-350	425-475
7/8-14	360-380	460-515
1-8	500-525	675-710
1-14	540-560	730-760
1 1/8-7	600-635	815-860
1 1/8-12	665-700	920-950
1 1/4-7	850-895	1150-1215
1 1/4-12	940-990	1275-1340
1 3/8-6	1125-1175	1525-1590
1 3/8-12	1280-1335	1735-1810
1 1/2-6	1500-1560	2035-2115
1 1/2-12	1685-1755	2285-2380

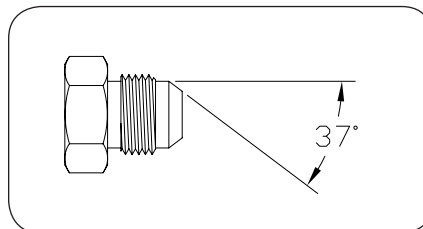
IMPORTANT

- Follow these torque recommendations except when specified in text.

Hydraulic Fittings - Torque and Installation

SAE Flare Connection (J. I. C.)

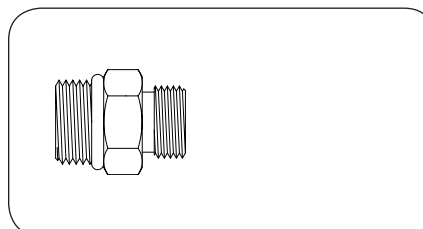
1. Tighten nut with finger until it bottoms the seat.
2. Using a wrench, rotate nut to tighten. Turn nut 1/3 turn to apply proper torque.



Steel 37° JIC Adapters		
DASH SIZE	FLARED THREAD SIZE	TORQUE FT.-LBS
-6	9/16"-18	18-20
-8	3/4"-16	27-39
-10	7/8"-14	36-63
-12	1 1/16"-12	65-88
-14	1 3/16"-12	75-103
-16	1 5/16"-12	85-113
-20	1 5/8"-12	115-133
-24	1 7/8"-12	125-167

SAE Straight Thread O-Ring Seal

1. Insure jam nut and washer are backed up to the back side of smooth portion of elbow adapter.
2. Lubricate o-ring.
3. Thread into port until washer bottoms onto spot face.
4. Position elbows by backing up adapter.
5. Tighten jam nut.



Steel SAE O-Ring Adapters J514 & J1926/3 Torque Values			
DASH SIZE	STRAIGHT THREAD SIZE	STRAIGHT STUD TORQUE FT.-LBS	ADJUSTABLE STUD TORQUE FT.-LBS
-6	9/16"-18	18-24	12-16
-8	3/4"-16	27-43	20-30
-10	7/8"-14	36-48	30-36
-12	1 1/16"-12	65-75	44-54
-14	1 3/16"-12	75-99	53-70
-16	1 5/16"-12	85-123	59-80
-20	1 5/8"-12	115-161	75-100
-24	1 7/8"-12	125-170	105-125

Hydraulic System Valves & Steel Pipe Adapters - Torque

Hydraulic System Valves

Hydraulic System Valves		
PART NUMBER	TORQUE FT.-LBS.	COIL NUT TORQUE
PF1211-01 (Valve - Hyd Servo)	46-54	
PF1211-08 (Proportional Valve - 10 NC)	55-60	Hand Tighten
PF1211-011 (Proportional Valve - 16 NC)	95-100	Hand Tighten
PF1211-80 (Cartridge - PSI Compensator)	65-75	
PF1211-945 (3500 PSI Relief Valve)	45-50	9 Ft.-Lbs.
PF1211-95 (4000 PSI Relief Valve)	45-50	9 Ft.-Lbs.
PF1222-108 (Valve - Cartridge, Logic Element)	65-75	
1222-109 (Solenoid Valve)	18-20	4-5 Ft.-Lbs.

Steel Pipe Adapters

Steel Pipe Adapters		
DASH SIZE	FLARED THREAD SIZE	TORQUE FT.-LBS
-4	1/4"-18	25
-6	3/8"-18	40
-8	1/2"-14	54
-12	3/4"-14	78
-16	1"-11 1/2	112
-20	1 1/4"-11 1/2	154
-24	1 1/2"-11 1/2	211

Notes

Section V

Parts

Please visit www.unverferth.com/parts/ for the most current parts listing.

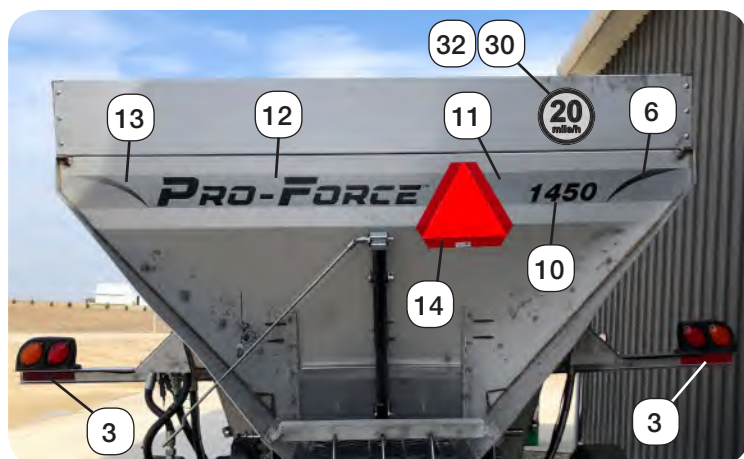
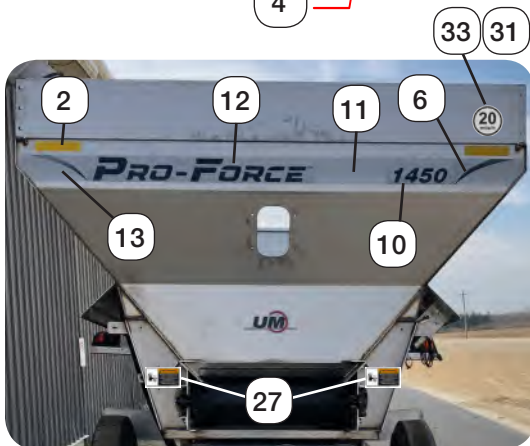
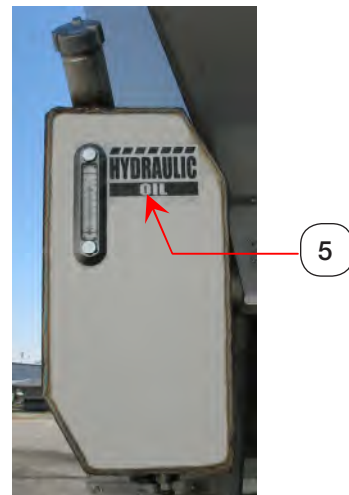
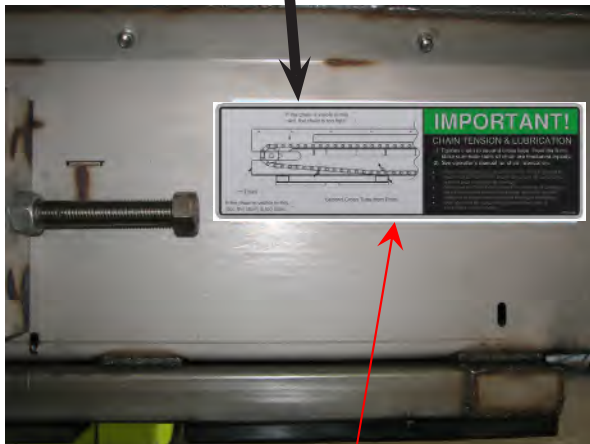
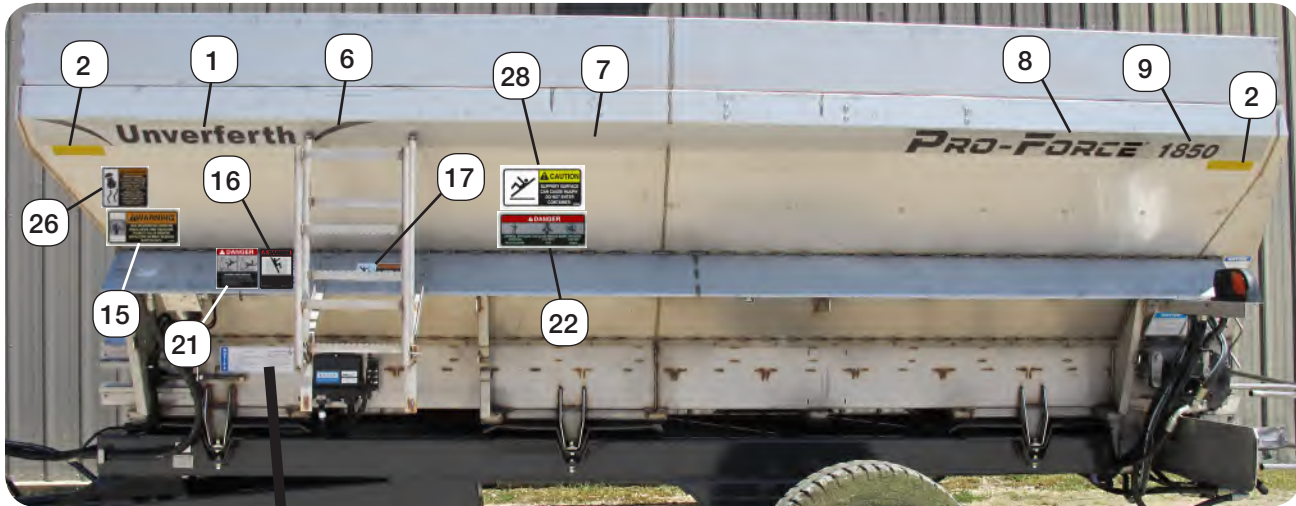
Decals	5-2
Touch-Up Paint.....	5-5
Ladder Assembly Without Fenders.....	5-6
Ladder Assembly With Full Float Fenders.....	5-7
Point Scale System Assembly Components.....	5-8
John Deere Chassis Scale System Assembly Components	5-10
CNH Trident Chassis Scale System Assembly Components.....	5-12
Conveyor Drive.....	5-14
Conveyor Idler.....	5-16
Spinner Assembly Components.....	5-18
Spinner Guards & Flow Divider Components.....	5-22
Main Valve Block Assembly Components - Spinner & Conveyor Set Up	5-24
Jack Shaft Assembly Components.....	5-26
Dump Valve - For Chassis Mounted Units	5-27
Spinner & Conveyor Drive Hydraulic Components - For Chassis Mounted Units.....	5-28
Spinner & Dual Conveyor Drive Hydraulic Components - For Chassis Mounted Units	5-30
Hydraulic Reservoir Components - For Chassis Mounted Units.....	5-32
Reservoir / Pump Hydraulic Components - For Chassis Mounted Units	5-33
In-Line Hydraulic Filter	5-34
Oil Cooler (Optional).....	5-35
Full Float Fender & Mudflap Components (Optional).....	5-36
Semi Float Fender Components.....	5-38
Inverted “V” & Cross Brace Assembly Components	5-40
Bin Level Sensor Assembly Components	5-42
RCM Wiring Harness Components	5-44
Gearbox & Hydraulic Motor Components	5-46
Straight Chain Components (Optional).....	5-48
Belt Over Pintle Chain Components	5-50
Chain Shield.....	5-52
Conveyor Mounting Rubber.....	5-54
Chassis Cover Components.....	5-55
Front Belt Sealer Components.....	5-56
Feedgate Assembly Components.....	5-58
Hydraulic Pipe Components	5-60
12” SS Box Sideboard Extension Components	5-62
Sideboard Extensions Handrail (Optional)	5-64
Cab Shield (Optional).....	5-65
Tail Light Assembly Components Without Fenders.....	5-66
Tail Light Assembly Components With Fenders	5-67
Transport Lighting Components	5-68
Box Window	5-69
Hillside Flow Divider	5-70
Box Mount.....	5-71

FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR AUTO GREASE INFORMATION, PLEASE REFER TO YOUR AUTO GREASE MANUAL.
FOR TARP INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.

Pro-Force Dry Spreader — Parts

Decals

Please visit www.unverferth.com/parts/ for the most current parts listing.



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Pro-Force Dry Spreader — Parts

Decals

Please visit www.unverferth.com/parts/ for the most current parts listing.

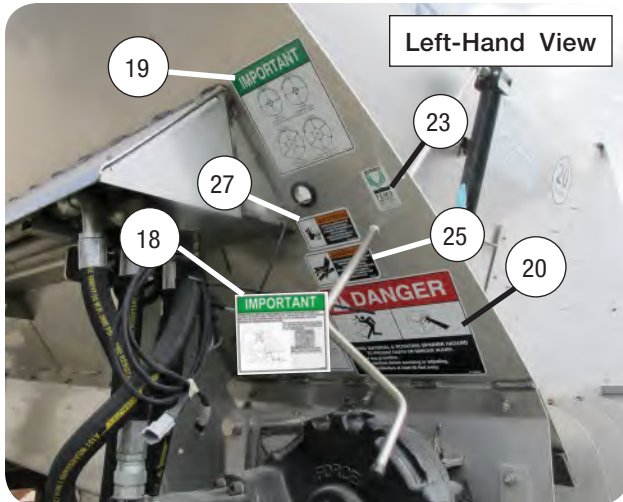
ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	9004298	DECAL, Unverferth Logo	2	
2	9003127	Reflector 2x9 =AMBER=	6	
3	9003126	Reflector 2x9 =RED=	2	
4	PF1234-055	Decal, IMPORTANT Chain Tension 14.5" W x 5" H	1	
5	PF1234-056	DECAL, HYD. OIL 3" H X 5" W	1	
6	9004213	Decal, Unverferth Logo Tail	4	
7	9004035	Decal, Stripe	2	
8	9008742	Decal, Pro-Force Logo Side	2	
9	9008744	Decal, 1250 Side	2	
	9008745	Decal, 1350 Side		
	9008746	Decal, 1450 Side		
	9008747	Decal, 1650 Side		
	9008748	Decal, 1850 Side		
	9008749	Decal, 2050 Side		
	9008750	Decal, 2250 Side		
	9008985	Decal, 2650 Side		
10	9008761	Decal, 1250 Front/Rear	2	
	9008762	Decal, 1350 Front/Rear		
	9008763	Decal, 1450 Front/Rear		
	9008764	Decal, 1650 Front/Rear		
	9008765	Decal, 1850 Front/Rear		
	9008766	Decal, 2050 Front/Rear		
	9008767	Decal, 2250 Front/Rear		
	9008966	Decal, 2650 Front/Rear		
11	9008760	Decal, Fade Stripe	2	
12	9008759	Decal, Pro-Force Logo Front/Rear	2	
13	9008769	Decal, Left Hand Swoosh	2	
14	PF1238-50	SMV Emblem	1	
15	97961	Decal, WARNING "Read & Understand Operator Manual"	1	
16	9008838	Decal, DANGER "Never Play"	1	
17	9003476	Decal, WARNING "No-Riders"	1	
21	PF1234-054	DECAL, DANGER "MOVING PART HAZARD 6.25" W X 6" H"	2	
22	901256	Decal, DANGER "Chemical Exposure"	1	
26	9009170	Decal, WARNING "Grosse Vehicle Weight"	1	
27	TA1-906109-0	Decal, WARNING "Moving Parts Crush/Cut"	4	
28	95008	Decal, CAUTION "Slippery Surface"	1	
30	9008714	Decal, Rear SIS 20 MPH	1	
31	9008715	Decal, Front SIS 20 MPH	1	
32	9008720	Decal, Rear SIS 30 KPH	1	
33	9008721	Decal, Front SIS 30 KPH	1	

(Continued on next page)

Pro-Force Dry Spreader — Parts

Decals (continued)

Please visit www.unverferth.com/parts/ for the most current parts listing.



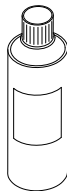
Pro-Force Dry Spreader — Parts

Decals (continued)

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
18	PF1234-050	DECAL, IMPORTANT "SPINNER DISC LOCATION - 7.5" W"	1	
19	PF1234-051	DECAL, IMPORTANT "FIN LOCATION ON UNIVERSAL DISC"	1	
20	PF1234-052	DECAL, DANGER 'FLYING MATERIAL - 9.5" W X 7" H"	2	
21	PF1234-054	DECAL, DANGER "MOVING PART HAZARD 6.25" W X 6" H"	2	
23	91605	Decal, FEMA	1	
25	95445	Decal, WARNING "High-Pressure Fluid"	2	
27	TA1-906109-0	Decal, WARNING "Moving Parts Crush/Cut"	4	

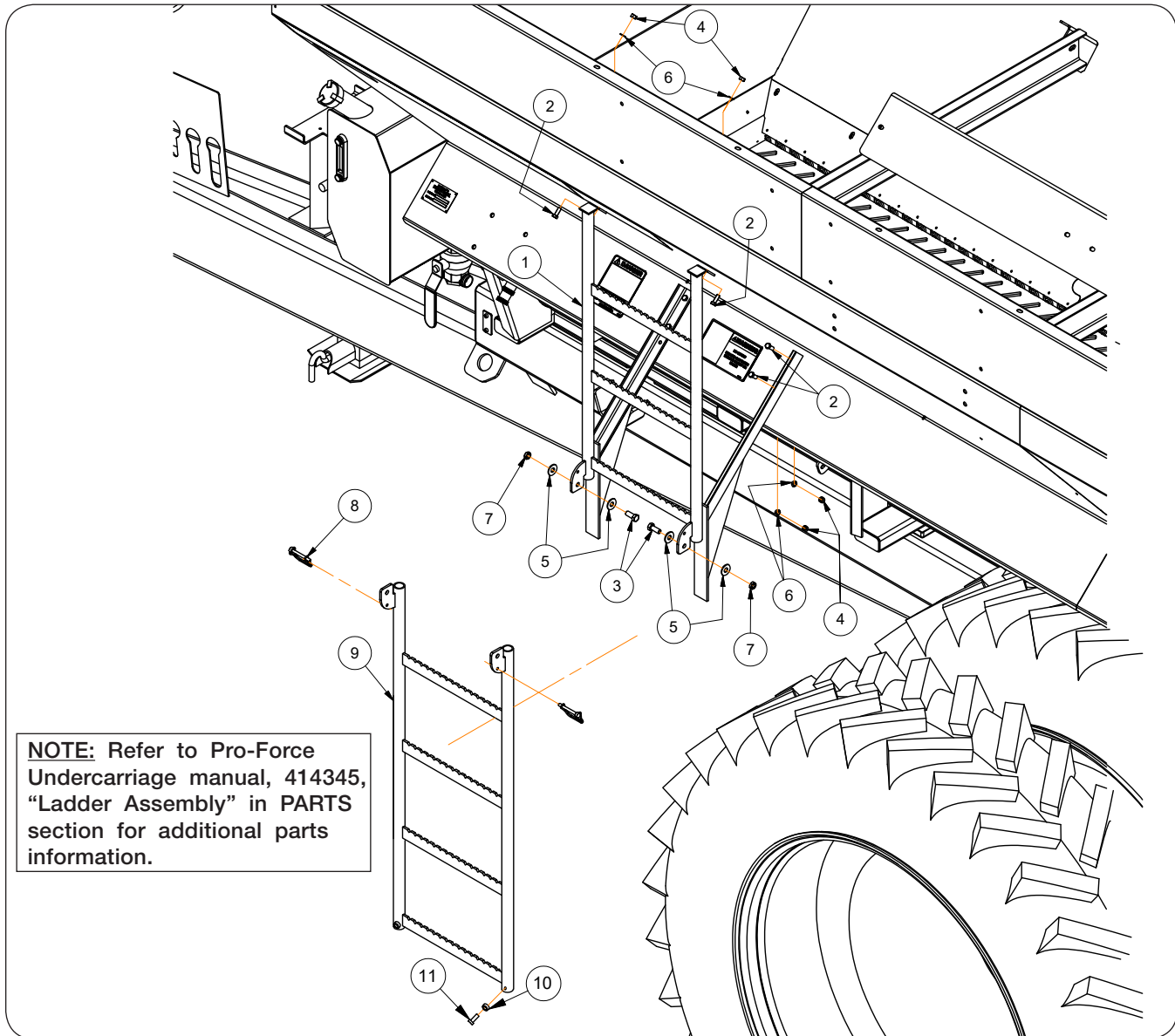
Touch-Up Paint



PAINT	SPRAY
Gray	9008955
Primer, Gray	9500082
Black	97013

Ladder Assembly Without Fenders

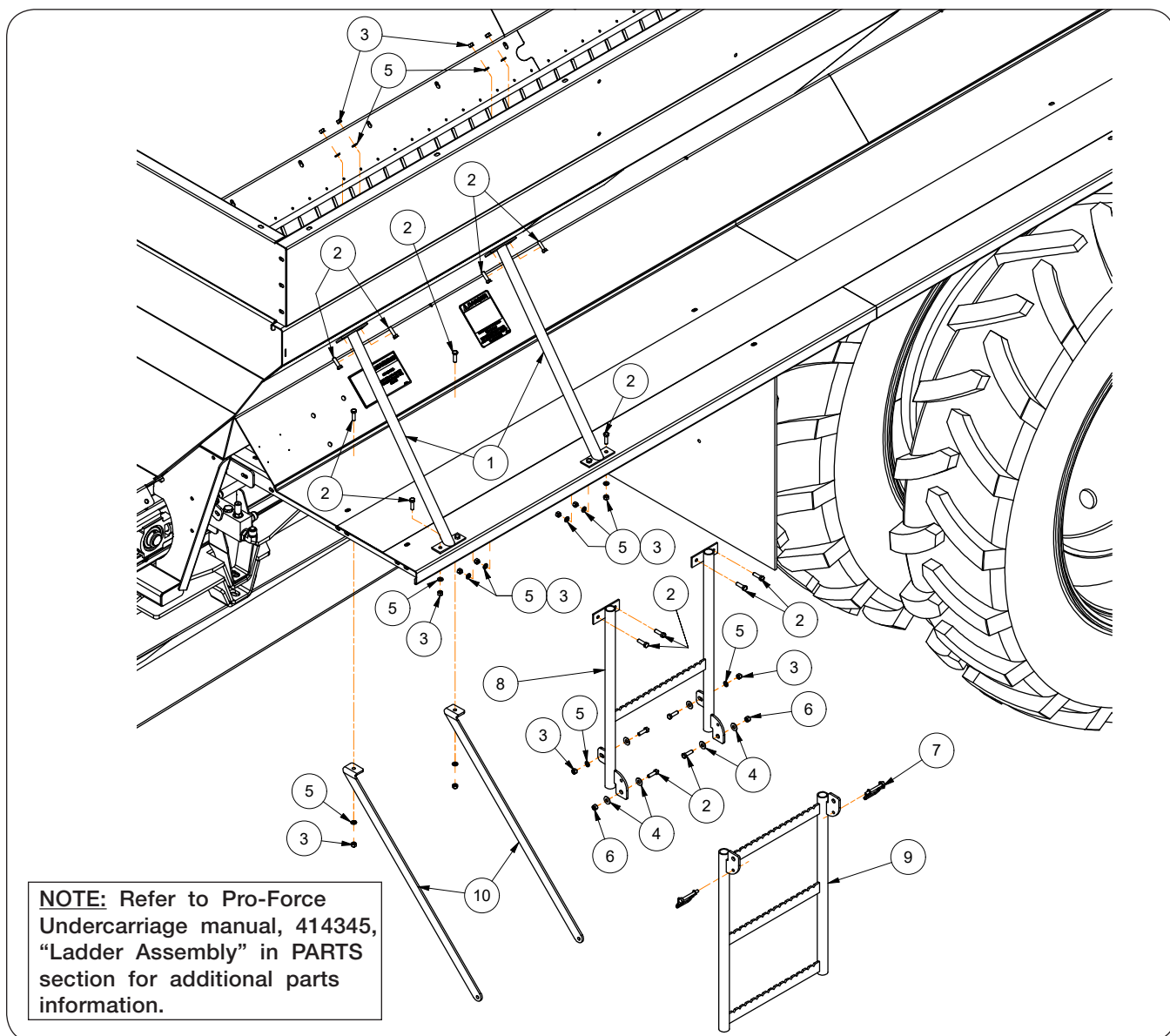
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414566	Ladder Assembly Without Fenders	1	Includes Items 1-11
1	414567	Upper Ladder Weldment	1	
2	900900-055	Capscrew 3/8"-16UNC x 1" SS	6	
3	900900-100	Capscrew 1/2"-13UNC x 1 1/4" SS	2	
4	900901-006	Hex Nut 3/8"-16UNC SS	6	
5	900902-044	Flat Washers 1/2" SS	4	
6	900903-021	Lock Washers 3/8" SS	6	
7	PF1205-39	Nylon Lock Nut 1/2"-13UNC SS	2	
8	PF1218-04	Lynch Pin SS	2	
9	PF1238-80-012	Lower Ladder Weldment	1	
10	9003850	Bumper	2	
11	TA0-908386-0	Rivet	2	

Ladder Assembly With Full Float Fenders

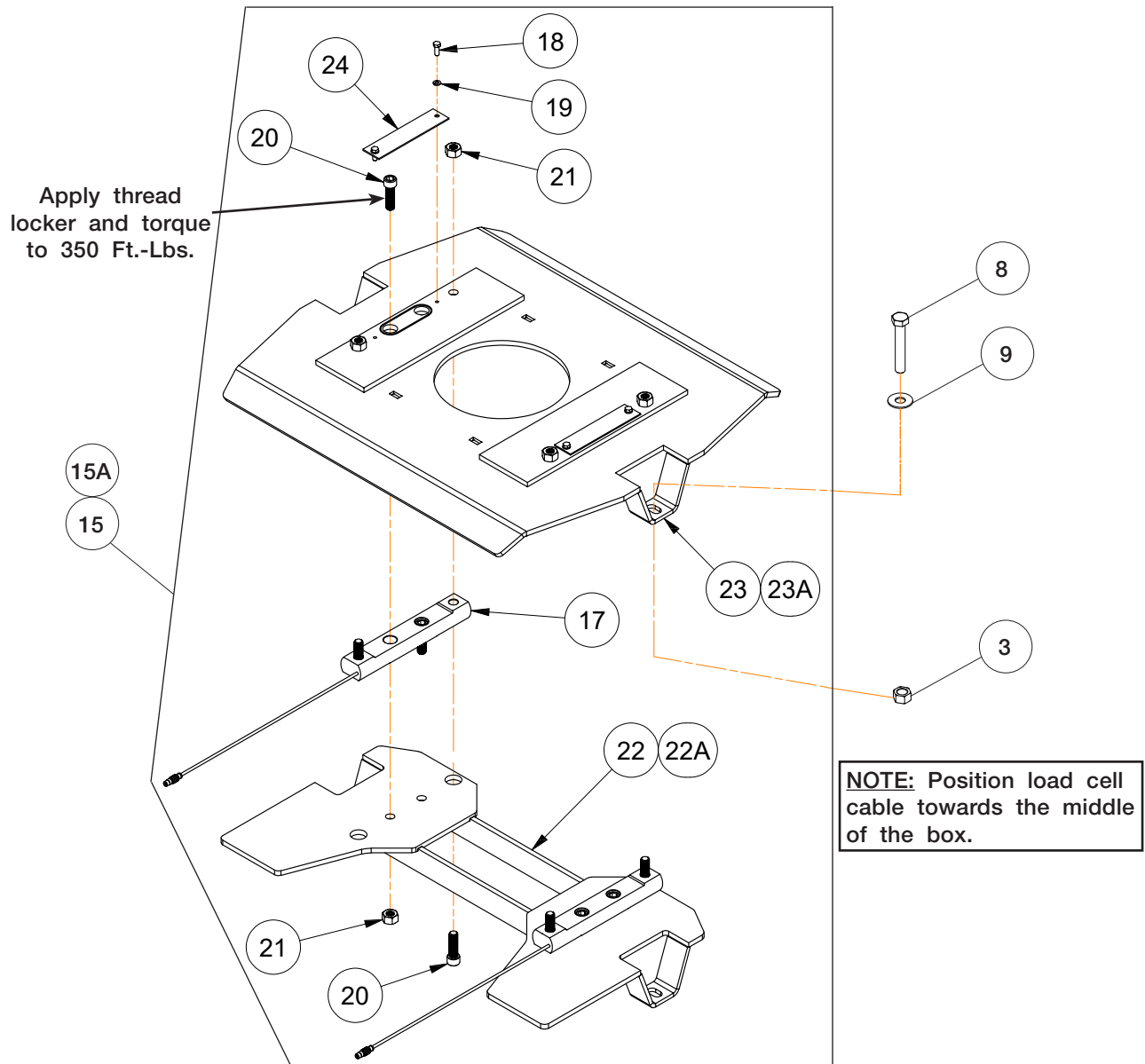
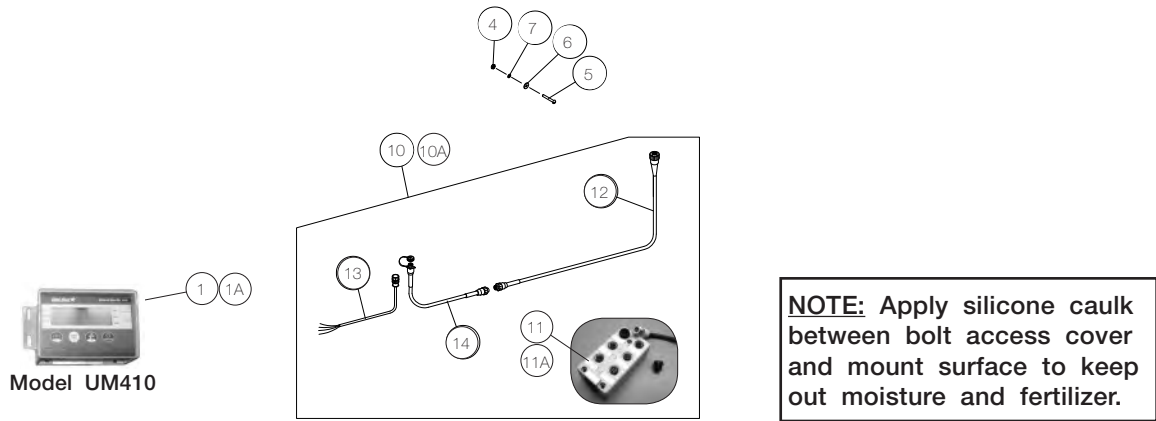
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414564	Ladder Assembly With Fenders	1	Includes Items 1-10
1	414625	Ladder Handle Weldment	2	
2	900900-056	Capscrew 3/8"-16UNC x 1 1/4" SS	18	
3	900901-006	Hex Nut 3/8"-16UNC SS	16	
4	900902-038	Flat Washers 3/8" SS	6	
5	900903-021	Lock Washers 3/8" SS	16	
6	900905-012	Elastic Stop Nut 3/8"-16UNC SS	2	
7	PF1218-04	Lynch Pin SS	2	
8	PF1238-GE-100-FF	Upper Ladder Weldment	1	
9	PF1238-GE-200-FF	Lower Ladder Weldment	1	
10	PF1238-GE-401-FF	Ladder Support Bracket	2	

Point Scale System Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



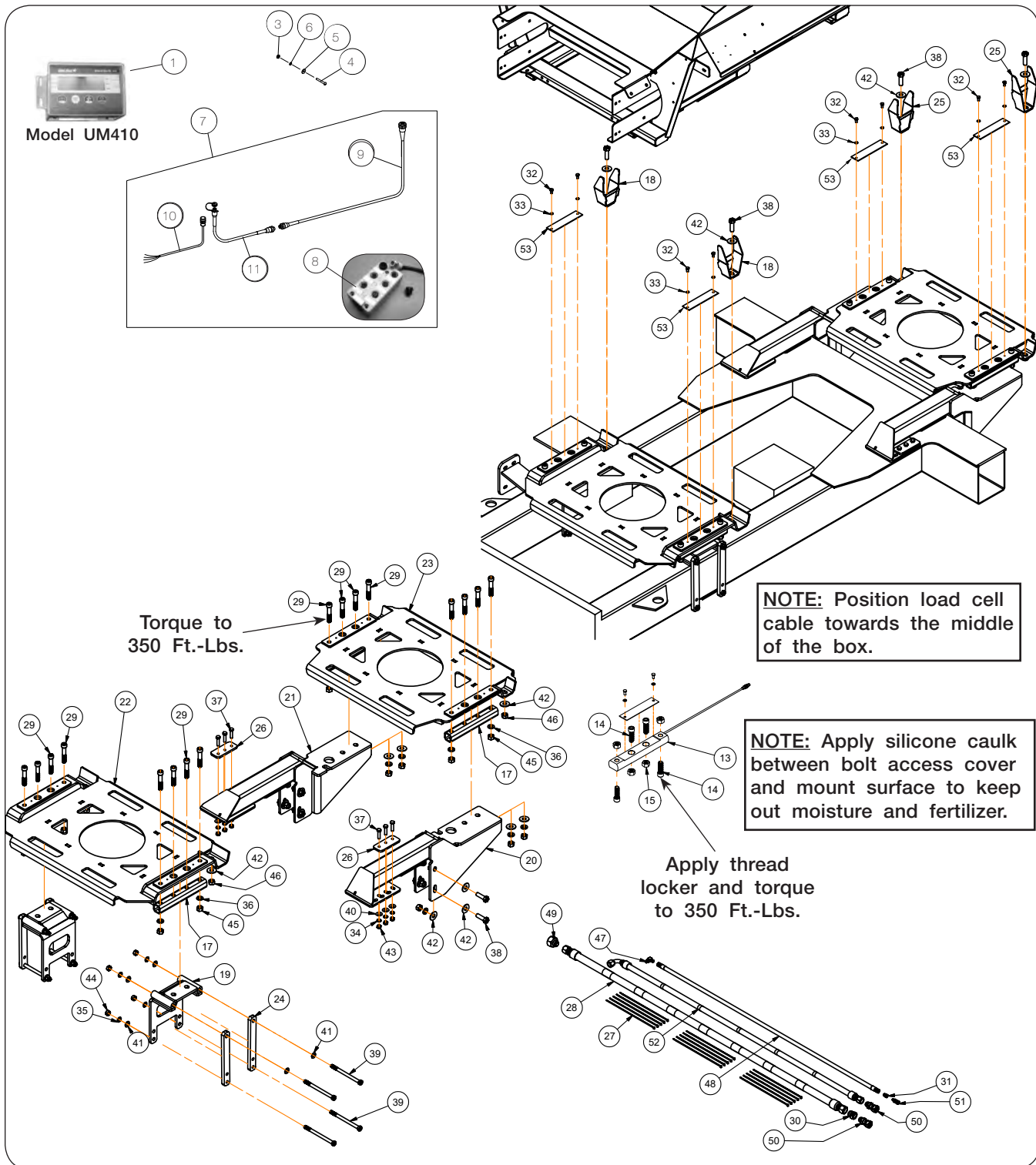
Point Scale System Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
	414409	6 Point Scale System with 410 Monitor	1	18' & 22' Boxes Items 1, 3-10, 15
	414410	4 Point Scale System with 410 Monitor		14' Box Items 1A, 3-10A, 15 & 15A
	414411	6 Point Scale System ISOBUS		18' & 22' Boxes Items 2-9, 11, 15
	414412	4 Point Scale System ISOBUS		14' Box Items 2-9, 11A, 15 & 15A
1	414587	UM410 Indicator/Scale Box	1	18' & 22' Boxes
1A	414586			14' Box
2	9008827	Adapter Cable 6 Pin to M12	1	For ISOBUS Only (Not Shown)
3	9503653-037	Nylon Lock Nut 3/4-10UNC Gr. 8	6	18' & 22' Boxes For SN B40850100 & Higher
			4	14' Box For SN B40850100 & Higher
4	9008845	Hex Nut #8-32 (SS)	3	
5	9008846	Pan Head #8-32UNC x 1 1/4" Phillips (SS)	3	
6	900902-022	Flat Washer #8 (SS)	3	
7	900903-011	Lock Washer #8 (SS)	3	
8	9503634-146	Capscrew, 3/4-10UNC x 2 1/4 Gr. 8	6	18' & 22' Boxes For SN B40850100 & Higher
			4	14' Box For SN B40850100 & Higher
9	9503636-104	Flat Washer 3/4"	12	18' & 22' Boxes For SN B40850100 & Higher
			8	14' Box For SN B40850100 & Higher
10 10A	9008848	Kit Universal EZ Mate	1	18' & 22' Boxes (Items 11-14)
	9006049			14' Box (Items 11A-14)
11	9008828	Junction Box, 9 Port	1	As Shown
11A	9004925	J-Block, 6 Port		
12	9006047	Cable - 50' Long	1	
13	92452	Scale Power Cord 10' Long	1	
14	92453	Cable J-Block Extension	1	
15	PF1250-02-000	Load Cell Assembly	3	18' & 22' Boxes (Items 16-24)
			1	14' Box (Items 16-24)
15A	PF1250-02-000-14	Load Cell Assembly - Rear	1	14' Box (Items 16-22A, 23A, 24)
16	9005013	CABLE 21' EZ MATE	2	Not Shown
17	9008823	LOAD CELL, 2' CABLE W/ EZ CONNECTOR	2	See Note On Previous Page
18	9390-055	Capscrew, 3/8-16UNC x 1 Gr. 5	4	
19	9404-021	Lock Washer 3/8	4	
20	PF1200-6041	CAPSCREW SOCKET HEAD 3/4-10UNC x 2 1/2	8	Apply thread locker & torque to 350 Ft.-Lbs.
21	PF1205-531	HEAVY HEX NUT 3/4-10UNC	8	
22	PF1250-02-100B	LOAD CELL, LOWER MOUNT WELDMENT =Black=	1	
22A	PF1250-02-100-14B	REAR LOAD CELL, LOWER MOUNT WELDMENT =Black=	1	
23	PF1250-02-200B	LOAD CELL, TOP MOUNT WELDMENT =Black=	1	
23A	PF1250-02-200-14B	REAR LOAD CELL, TOP MOUNT WELDMENT =Black=	1	
24	PF1250-02-203	BOLT ACCESS COVER PLATE	2	See Note On Previous Page

John Deere Chassis Scale System Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



Pro-Force Dry Spreader — Parts

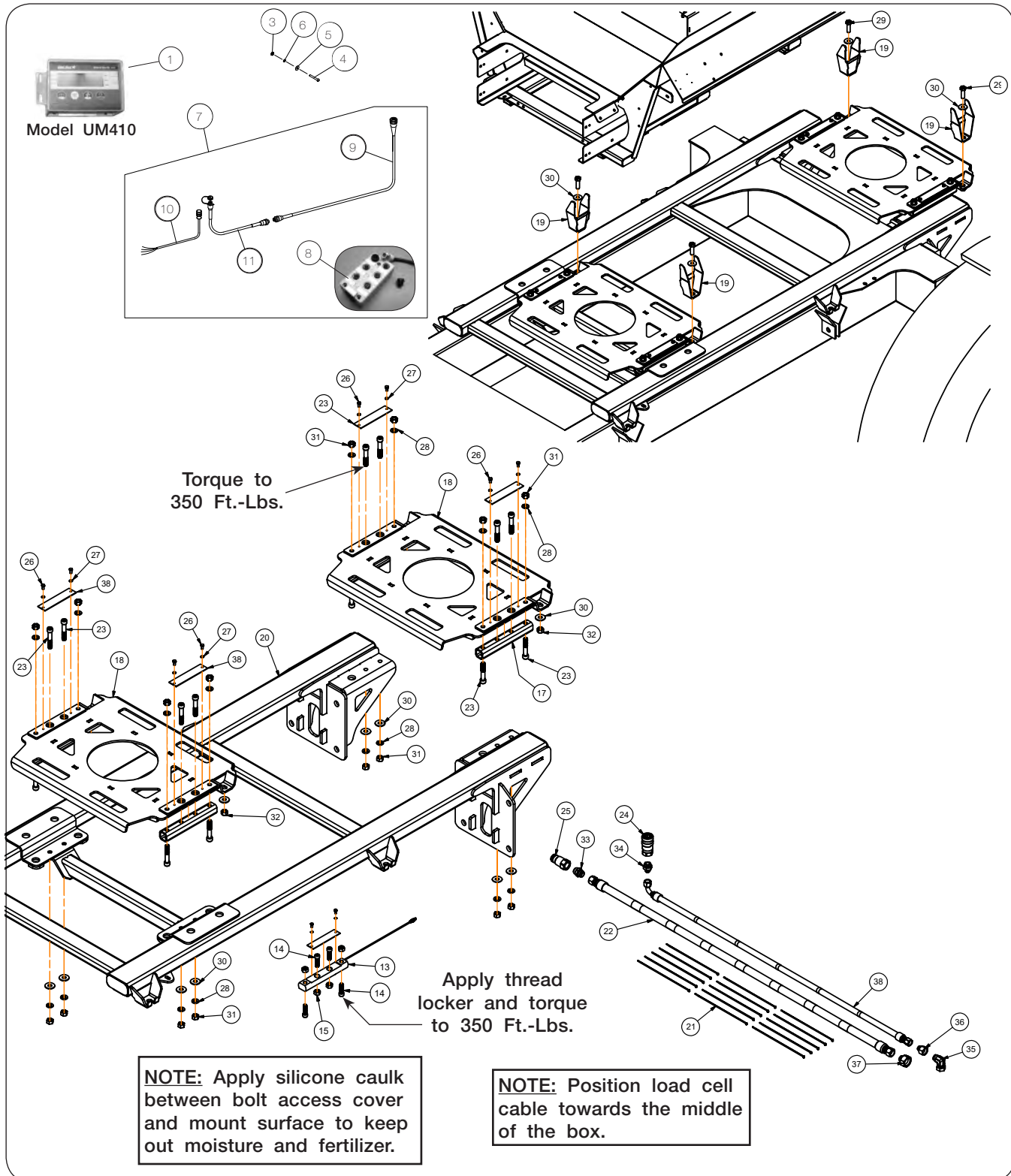
John Deere Chassis Scale System Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
	415035	Chassis Mount Scale System with 410 Monitor	1	Items 1, 3-15
	415036	Chassis Mount Scale System ISOBUS	1	Items 2-6, 8, 12-15
1	414586	UM410 Indicator/Scale Box	1	For 410 Monitor Only
2	9008827	Adapter Cable 6 Pin to M12	1	For ISOBUS Only (Not Shown)
3	9008845	Hex Nut #8-32 (SS)	3	
4	9008846	Pan Head #8-32UNC x 1 1/4" Phillips (SS)	3	
5	900902-022	Flat Washer #8 (SS)	3	
6	900903-011	Lock Washer #8 (SS)	3	
7	9006049	Kit Universal EZ Mate	1	For 410 Monitor Only (Items 8-11)
8	9004925	J-Block, 6 Port	1	For All Scale Systems
9	9006047	Cable - 50' Long	1	
10	92452	Scale Power Cord 10' Long	1	
11	92453	Cable J-Block Extension	1	
12	9005013	CABLE 21' EZ MATE	4	For 410 Monitor (Not Shown)
			1	For ISOBUS Only (Not Shown)
13	9008823	LOAD CELL, 2' CABLE W/ EZ CONNECTOR	4	See Note On Previous Page
14	PF1200-6041	CAPSCREW SOCKET HEAD 3/4-10UNC x 2 1/2 Gr. 8	16	Apply thread locker & torque to 350 Ft.-Lbs.
15	9503638-044	HEAVY HEX NUT 3/4-10UNC	16	Grade 2-H
-	415062B	John Deere Chassis 12' Mount Assembly	1	Items 17-53
17	414744B	HOPPER MOUNT TUBE	4	
18	414757	FRONT BOX MOUNT	2	
19	414822B	FRONT FRAME MOUNT WELDMENT	2	
20	414823B	LH MOUNT WELDMENT	1	
21	414824B	RH MOUNT WELDMENT	1	
22	414836B	FRONT MOUNT WELDMENT	1	
23	414837B	REAR MOUNT WELDMENT	1	
24	414962B	CLAMP PLATE	4	
25	415090	REAR BOX MOUNT	2	
26	415268B	BOLT DOUBLER PLATE	2	
27	9000107	CABLE TIE 14 1/2 X 0.19	15	
28	9008873	HYD HOSE 1" 1 5/16 JICF X 1 5/16 JICF X 84"	1	
29	9009090	CAPSCREW-SOCKET HEAD, 3/4-10 X 4	16	Torque to 350 Ft.-Lbs.
30	9009111	REDUCER/EXPANDER 1 1/16 FJIC X 1 5/16 MJIC	1	
31	9009112	REDUCER/EXPANDER 9/16-18 JICM X 7/16-20 JICF	1	
32	9501438-053	CAPSCREW 3/8-16UNC X 3/4 GR5 - BLACK	8	
33	9501440-021	LOCK WASHER 3/8	8	
34	9501440-026	LOCK WASHER 1/2	6	
35	9501440-030	LOCK WASHER 5/8	8	
36	9501440-034	LOCK WASHER 3/4	24	
37	9503634-103	CAPSCREW 1/2-13UNC X 2 GR8	6	
38	9503634-147	CAPSCREW 3/4-10UNC X 2 1/2 GR8	12	
39	9503634-248	CAPSCREW 5/8-11UNC X 8 1/2 UNC GR8	8	
40	9503636-088	FLAT WASHER 1/2 USS	6	
41	9503636-098	FLAT WASHER 5/8 SAE GR8	12	
42	9503636-106	FLAT WASHER 3/4 USS GR8	32	
43	9503638-010	HEX NUT 1/2-13UNC G8	6	
44	9503638-014	HEX NUT 5/8-11UNC G8	8	
45	9503638-016	HEX NUT 3/4-10UNC G8	24	
46	9503653-037	LOCKNUT 3/4-10UNC GR8	4	
47	97445	90° ELBOW 9/16 JICM X 9/16 ORM	1	
48	9880	HYD HOSE 3/8" 9/16 JICF X 9/16 JICF X 66	1	
49	PF1202-10350	REDUCER/EXPANDER 1 5/8-12 JICF X 1 5/16-12 JICM	1	
50	PF1202-302	ADAPTER 1 1/16-12 MJIC X 1 3/16-12 FFSS	2	
51	PF1202-3020	ADAPTER, 7/16 MJIC X 9/16 FFS	1	
52	PF1207-400	HYD HOSE 3/4" 1 1/16 JICF X 1 1/16 JICF X 73 1/4	1	
53	PF1250-02-203	BOLT ACCESS COVER PLATE	4	See Note On Previous Page

CNH Trident Chassis Scale System Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



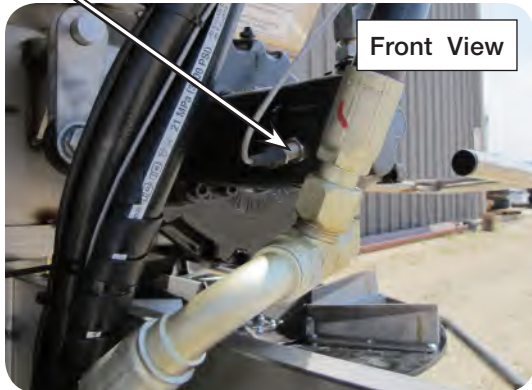
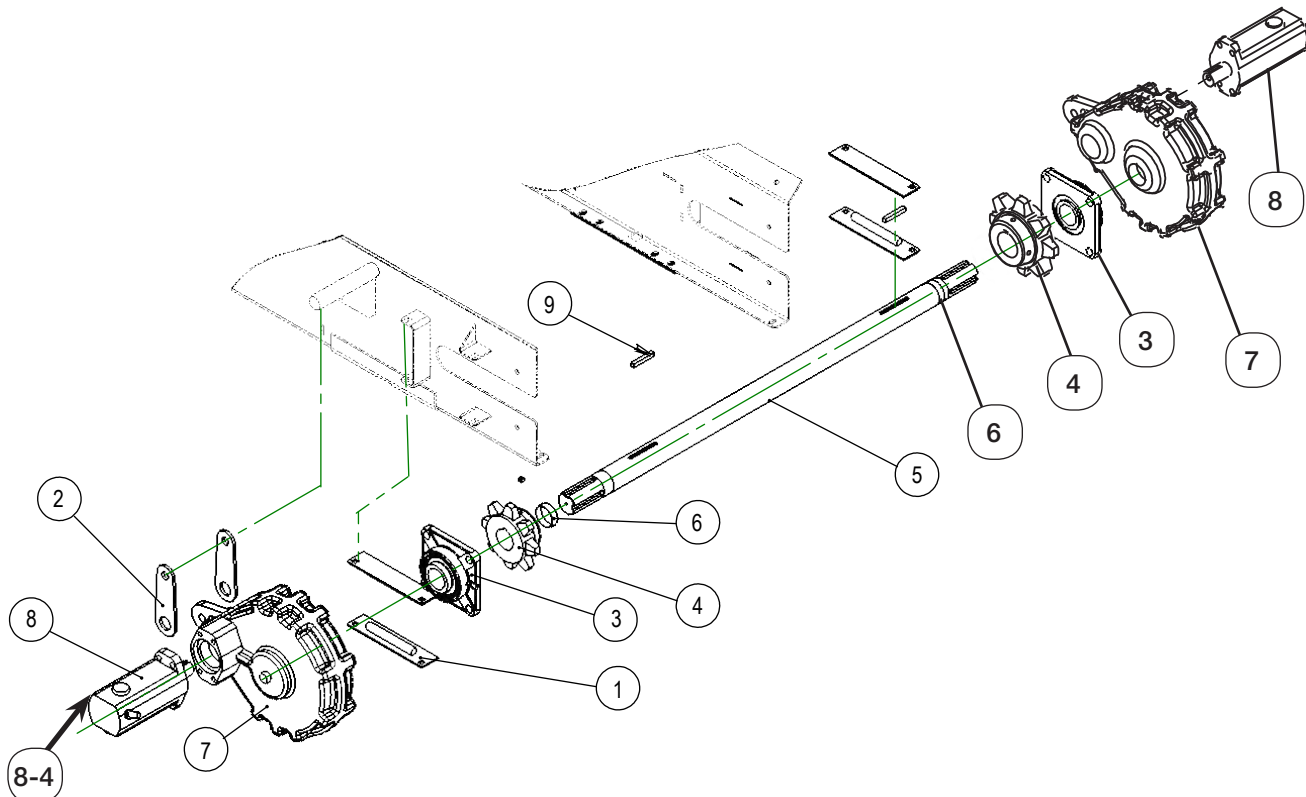
CNH Trident Chassis Scale System Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
	415035	Chassis Mount Scale System with 410 Monitor	1	Items 1, 3-15
	415036	Chassis Mount Scale System ISOBUS		Items 2-6, 8, 12-15
1	414586	UM410 Indicator/Scale Box	1	For 410 Monitor Only
2	9008827	Adapter Cable 6 Pin to M12	1	For ISOBUS Only (Not Shown)
3	9008845	Hex Nut #8-32 (SS)	3	
4	9008846	Pan Head #8-32UNC x 1 1/4" Phillips (SS)	3	
5	900902-022	Flat Washer #8 (SS)	3	
6	900903-011	Lock Washer #8 (SS)	3	
7	9006049	Kit Universal EZ Mate	1	For 410 Monitor Only (Items 8-11)
8	9004925	J-Block, 6 Port	1	For All Scale Systems
9	9006047	Cable - 50' Long	1	
10	92452	Scale Power Cord 10' Long	1	
11	92453	Cable J-Block Extension	1	
12	9005013	CABLE 21' EZ MATE	4	For 410 Monitor (Not Shown)
			1	For ISOBUS Only (Not Shown)
13	9008823	LOAD CELL, 2' CABLE W/ EZ CONNECTOR	4	See Note On Previous Page
14	PF1200-6041	CAPSCREW SOCKET HEAD 3/4-10UNC x 2 1/2 Gr. 8	16	Apply thread locker & torque to 350 Ft.-Lbs.
15	9503638-044	HEAVY HEX NUT 3/4-10UNC	16	Grade 2-H
-	415062B	CNH Trident Chassis 12' Mount Assembly	1	Items 17-53
17	414744B	HOPPER MOUNT TUBE	4	
18	414837B	REAR MOUNT WELDMENT	2	
19	415090	REAR BOX MOUNT	4	
20	415227B	CHASSIS MOUNT WELDMENT	1	
21	9000107	CABLE TIE 14 1/2 X 0.19	15	
22	9008873	HYD HOSE 1" 1 5/16 JICF X 1 5/16 JICF X 84"	1	
23	9009090	CAPSCREW-SOCKET HEAD, 3/4-10 X 4	16	Torque to 350 Ft.-Lbs.
24	9009092	Coupler Female 1 5/16 Dia. - 12 Female Thread	1	
25	9009093	Coupler Male 1 5/16 Dia. - 12 Female Thread	1	
26	9501438-053	CAPSCREW 3/8-16UNC X 3/4 GR5 - BLACK	8	
27	9501440-021	LOCK WASHER 3/8	8	
28	9501440-034	LOCK WASHER 3/4	16	
29	9503634-147	CAPSCREW 3/4-10UNC X 2 1/2 GR8	4	
30	9503636-106	FLAT WASHER 3/4 USS GR8	16	
31	9503638-016	HEX NUT 3/4-10UNC G8	16	
32	9503653-037	LOCKNUT 3/4-10UNC GR8	4	
33	97618	Adapter 1 5/16-12 JICM x 1 5/16-12 ORMB	1	
34	98255	Adapter 1 1/16-12 JICM x 1 5/16-12 ORMB	1	
35	99631	90° Elbow 1 5/16-12 JICM x 1 5/16-12 JICF	1	
36	PF1202-1035	REDUCER/EXPANDER 1 5/16-12 JICF X 1 1/16-12 JICM	1	
37	PF1202-10350	REDUCER/EXPANDER 1 5/8-12 JICF X 1 5/16-12 JICM	1	
38	PF1207-400	HYD HOSE 3/4" 1 1/16 JICF X 1 1/16 JICF X 73 1/4	1	
39	PF1250-02-203	BOLT ACCESS COVER PLATE	4	See Note On Previous Page

Conveyor Drive Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



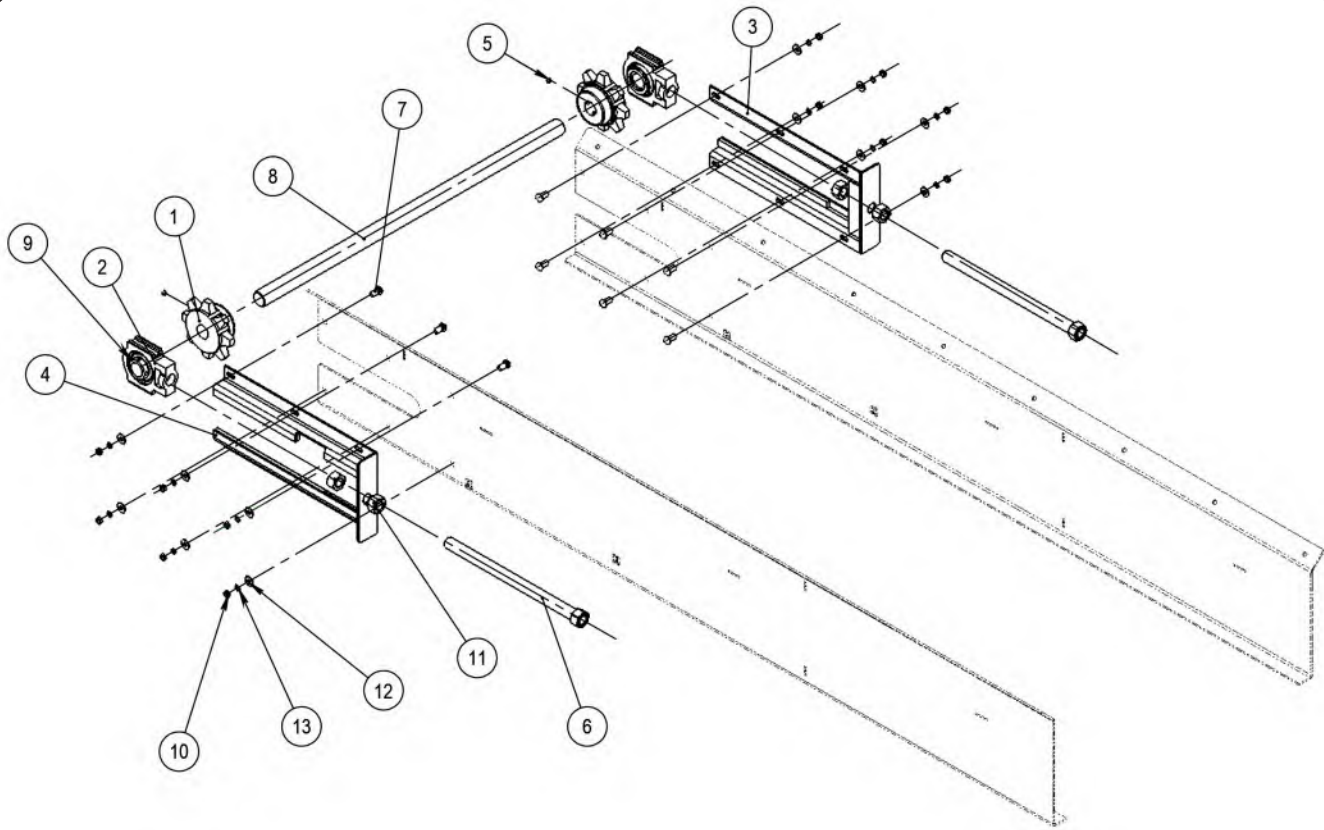
Conveyor Drive Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	SINGLE DRIVE QTY	DOUBLE DRIVE QTY	NOTES
1	414588	Rear Bearing Slide Weldment SS	4	4	Requires Items: 1-1, 1-2, 1-3
1-1	PF1200-302SS	Carriage Bolt, 3/8" x 1" SS	2	2	
1-2	900903-021	Lock Washer 3/8" SS	2	2	
1-3	900901-006	Nut 3/8"-16UNC SS	2	2	
2	PFFL3024IA	Idler Arm	2	4	Requires Items: 2-1, 2-2
2-1	PF1200-605SS	Capscrew 3/4" x 3 1/2" SS	1	1	
2-2	PF1205-56	Locknut 3/8" SS	1	1	
3	414590	2" DRIVE BEARING REPLACEMENT KIT	2	2	Requires Items: 3-1
3-1	-	Set Screw 3/8"-24UNF x 3/8"	2	2	
4	PF1217-20	Sprocket	2	2	Requires Items: 4-1
4-1	9399-088	Set Screw 3/8"-16UNC x 3/4"	2	2	
5	PFFL3424DS	Single Drive Shaft	1	-	
	PFFL3424DS-2	Double Drive Shaft	-	1	
6	PFF99198	Drive Shaft Speed Sleeve SS	1	2	
7	PF1220-50M	Gearbox	1	2	Requires Items: 7-1
7-1	PF1220-495	Square Key 1/2" x 2 1/4"	2	4	
8	PF1213-145	Hydraulic Motor w/Sensor (Single Gearbox Option)	1	-	Requires Items: 8-1, 8-2, 8-3, 8-4, 8-5
	PF1213-18B	Hydraulic Motor w/Sensor (Drivers Side) (Double Gearbox Option)	-	1	
	PF1213-19B	Hydraulic Motor w/o Sensor (Passengers Side) (Double Gearbox Option)	-	1	
8-1	PF1220-146	Square Key 5/16" x 1 1/4"	1	2	
8-2	99888-122	Sockethead Capscrew 1/2"-13UNC x 1 1/2"	4	8	
8-3	9404-025	Lock Washer 1/2"	4	8	
8-4	415182	Conveyor Speed Sensor Kit	1	1	
8-5	PF1213-145SK	Seal Kit	AR	AR	
9	PF1220-525	Square Key 3/8" x 2 1/2"	2	2	

Conveyor Idler Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



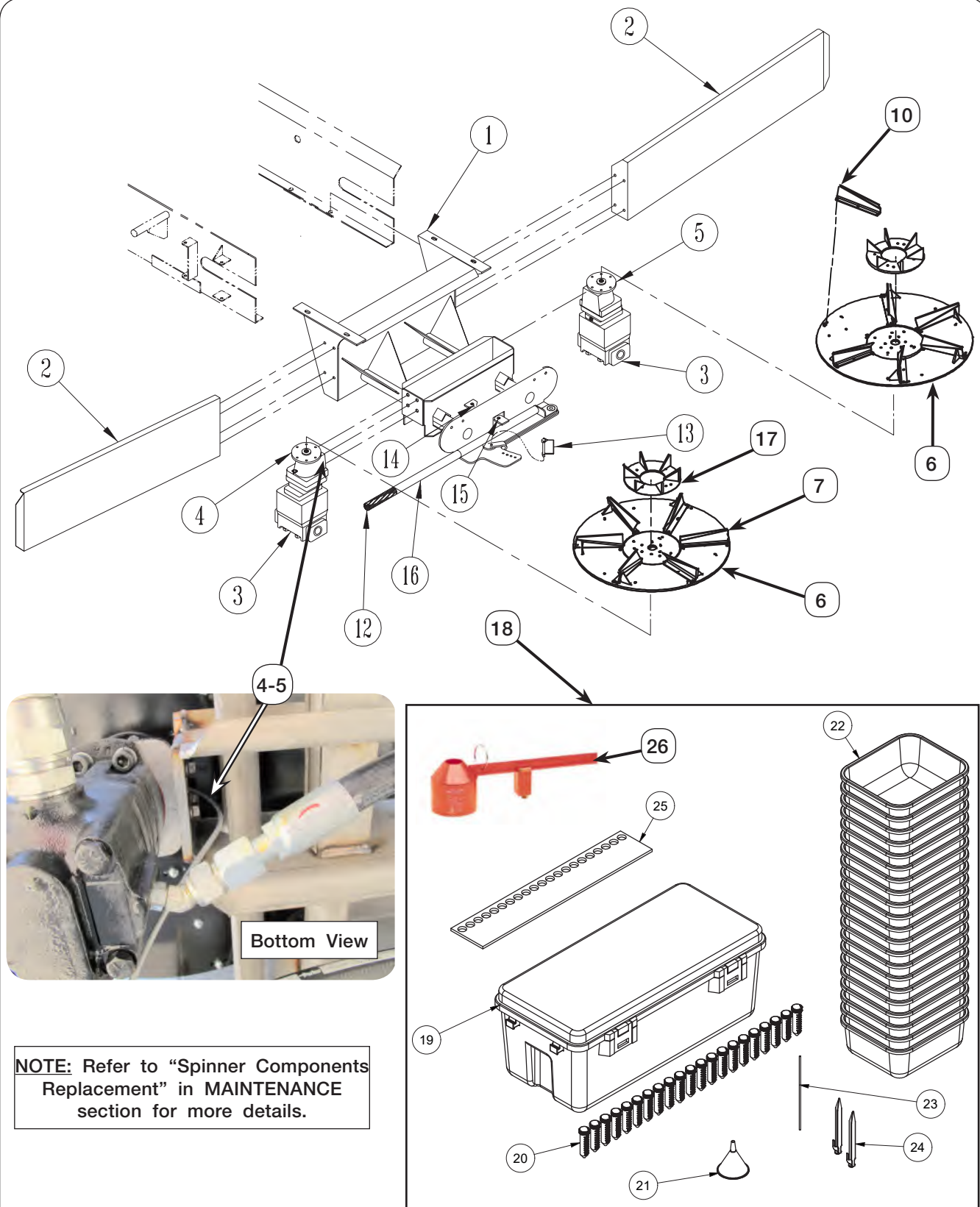
Conveyor Idler Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1217-15	Idler Sprocket	2	
2	PF1217-103	Bearing - Take Up	2	
3	PF50-011	RH Take Up Weldment	1	
4	PF50-011-L	LH Take Up Weldment	1	
5	9399-084	Set Screw 3/8"-16UNC x 3/8"	4	
6	PF1225-02	Take Up Bolt	2	
7	9007908-051	Carriage Bolt, 3/8" x 1" SS	12	
8	PF1220-515	Idler Shaft	1	
9	9399-070	Set Screw 5/16"-18UNC x 5/16"	4	
10	900901-006	Hex Nut 3/8"-16UNC	12	
11	9394-020	Hex Nut 1"-8UNC	4	
12	900902-038	Flat Washer 3/8"	12	
13	900903-021	Lock Washer 3/8"	12	

Spinner Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



Pro-Force Dry Spreader — Parts

Spinner Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414882B	Spinner Single Dish Assembly	1	
1	PF1236-301	Spinner Weldment SS	1	Requires Items: 1-1, 1-2, 1-3
1-1	900900-103	Capscrew, 1/2"UNC x 2" SS	4	
1-2	900902-044	Flat Washer 1/2" SS	8	
1-3	900901-010	Hex Nut 1/2"-13UNC SS	8	
2	PF1234-108LH	Wide Deflector Weldment Left-Hand SS	1	Requires Items: 2-1, 2-2, 2-3
	PF1234-108RH	Wide Deflector Weldment Right-Hand SS	1	For Each Deflector
2-1	900900-056	Capscrew 3/8"-16UNC x 1 1/4" SS	4	
2-2	900902-037	Flat Washer 3/8" SS	4	
2-3	900905-012	Elastic Stop Nut 3/8"-16UNC	4	
3	PF1213-206B	Hydraulic Motor	2	Requires Items: 3-1, 3-2, 3-3 For Each Hydraulic Motor
	9008923			Requires Items: 3-1, 3-2, 3-3 For 1250 Chassis Mounted Units
3-1	99888-122	Socket Head Capscrew 1/2"UNC-13UNC x 1 1/2"	4	
3-2	PF1213-155	Square Key 5/16" x 1 1/2"	1	
3-3	PF1213-145SK	Seal Kit	1	
4	PF1218-732B	Jackshaft w/Sensor, Left-Hand Spinner	1	Requires Items: 4-1, 4-2, 4-3, 4-4, 4-5
5	PF1218-722B	Jackshaft w/o Sensor, Right-Hand Spinner	1	
4-1	900900-100	Capscrew 1/2"UNC x 1 1/4" SS	1	
4-2	PF1218-06	Washer, Spinner Arm SS	1	
4-3	900900-100	Capscrew 1/2"UNC x 1 1/4" SS	4	
4-4	900903-025	Lock Washer 1/2" SS	1	
4-5	415184	Spinner Speed Sensor Replacement Kit	1	
6	PF1218-350L	30" Spinner Dish LH W/Fins	1	Requires Items: 6-1, 6-2
	PF1218-350R	30" Spinner Dish RH W/Fins	1	For 2650 to 1350 Chassis Mounted Units
	414883B	30" Spinner Dish LH	1	Requires Items: 6-1, 6-2
	414884B	30" Spinner Dish RH	1	For 1250 Chassis Mounted Units
6-1	900900-031	Capscrew 5/16 UNC x 1 1/4" SS	6	
6-2	900905-010	Elastic Stop Nut 5/16-18UNC	6	
7	PF1218-711	Fin Weldment Left Hand	6	Requires Items: 7-1, 7-2 For Each Fin
10	PF1218-701	Fin Weldment Right Hand		
7-1	PF1200-251	Capscrew 5/16"UNC x 3/4"	3	For 1250 Chassis Mounted Units
	900900-030	Capscrew 5/16 UNC x 1" SS		
7-2	PF1205-17	Top Lock Nut 5/16"UNC	3	For 1250 Chassis Mounted Units
	900905-010	Elastic Stop Nut 5/16-18UNC		
12	PF1218-01	Foam Grip	1	
13	PF1218-04	Safety Pin SS	1	
14	414891	Spinner Adjuster Rod Assembly	1	Requires Item: 14-1, 14-2, 14-3
14-1	9394-009	Hex Nut 1/2"-20UNF G5	2	
14-2	414892	Threaded Rod 1/2"Dia. x 3" x 1/2"-20UNF SS	1	
14-3	PF1218-02	Ball Joint Rod End, 1/2"-20UNF SS	2	
15	PF1218-02	Ball Joint Rod End, 1/2"-20UNF SS	2	Requires Items: 15-1, 15-2 For Each Rod End
15-1	900905-016	Elastic Stop Nut 1/2-13UNC	2	
15-2	900900-102	Capscrew 1/2"UNC x 1 3/4" SS	2	

(Continued on next page)

Pro-Force Dry Spreader — Parts

Spinner Assembly Components (continued)

Please visit www.unverferth.com/parts/ for the most current parts listing.

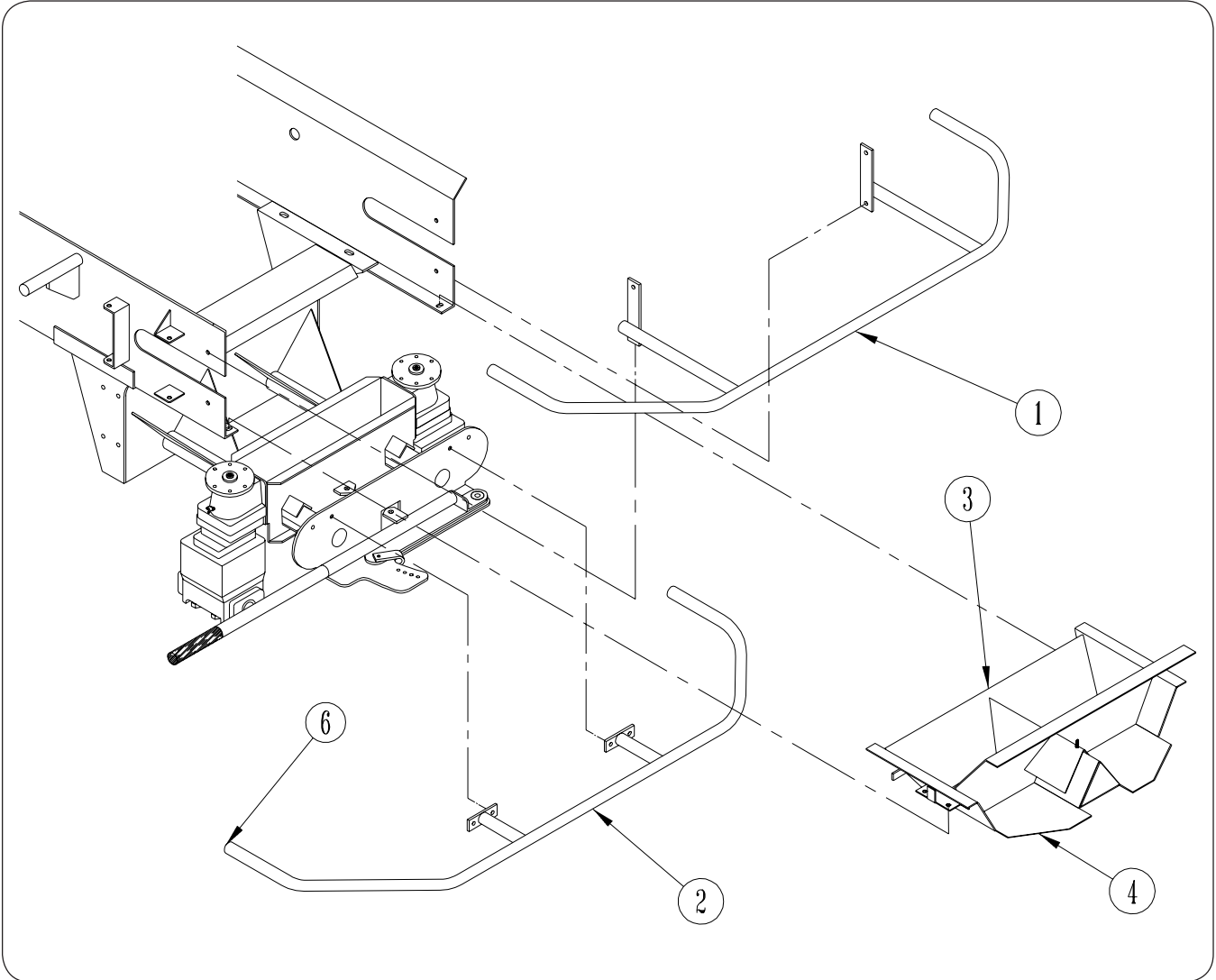
ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
16	PF1218-03	Spinner Handle Weldment	1	Requires Items: 16-1, 16-2, 16-3
16-1	PF1218-06	Washer, Spinner Arm SS	1	
16-2	900900-101	Capscrew 1/2"UNC x 1 1/2" SS	1	
16-3	900905-016	Elastic Stop Nut 1/2"-13UNC	1	
17	PF1218-351B	Spinner Dish Ring Weldment	2	
18	414542	Spread Pattern Kit	1	Includes Items 19 through 25
19	9008822	Storage Box	1	
20	PF1218-999	Spread Pattern Test Tube	21	
21	PF1218-9990	Spread Pattern Funnel	1	
22	PF1218-9991	Spread Pattern Pan	21	
23	415242	Spread Pattern Rope	1	
24	PF1218-9993	Spread Pattern Stake	2	
25	PF1218-9994	Spread Pattern Test Tube Platform	1	
26	9009065	Fertilizer Density Scale	1	

Notes

Please visit www.unverferth.com/parts/ for the most current parts listing.

Spinner Guards & Flow Divider Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



Spinner Guards & Flow Divider Components

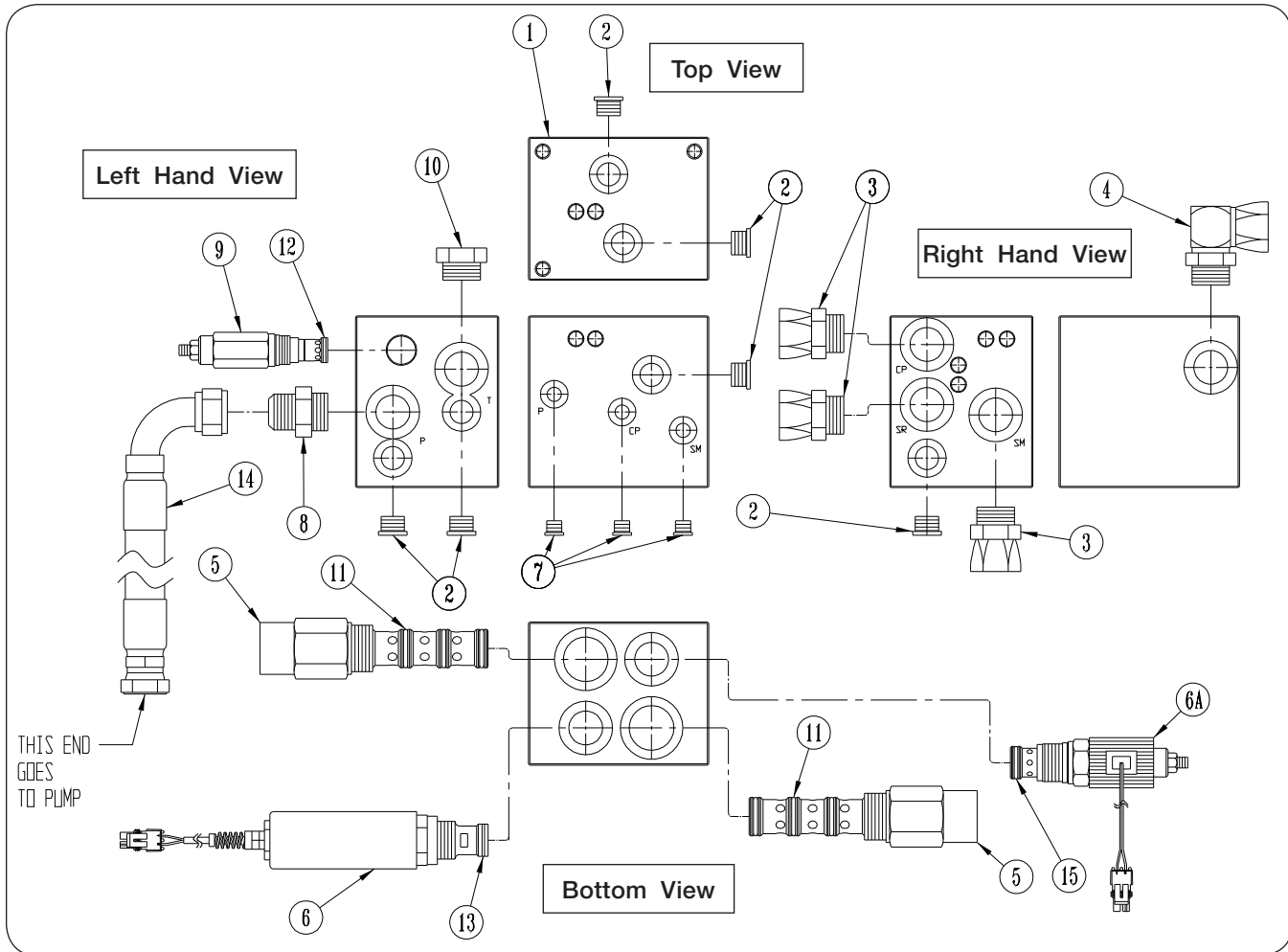
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1236-307	Spinner Guard Upper Weldment	1	Requires Items: 1-1, 1-2, 1-3
2	PF1236-308	Spinner Guard Lower Weldment	1	
1-1	PF1200-303SS	Capscrew 3/8"UNC x 1 1/4" SS	4	
	900900-056	Capscrew 3/8"-16UNC x 1 1/4" SS		For 1250 Chassis Mounted Units
1-2	PF1209-41	Flat Washer 3/8"	8	
	900902-037	Flat Washer 3/8" SS	4	For 1250 Chassis Mounted Units
1-3	PF1205-26	Lock Nut 3/8" SS	4	
	900905-012	Elastic Stop Nut 3/8"-16UNC		For 1250 Chassis Mounted Units
3	PF1236-402	Front Plate Flow Divider Weldment	1	Requires Items: 3-1, 3-2, 3-3, 3-4
3-1	PF1200-3011	Capscrew 3/8"UNC x 1" SS	2	For Each Adapter
3-2	PF1209-41	Flat Washer 3/8" SS	2	
3-3	PF1209-43	Lock Washer 3/8" SS	2	
3-4	PF1205-27	Nut 3/8" SS	2	
4	PF1236-403	Back Plate Flow Divider Weldment	1	Requires Items: 4-1, 4-2
4-1	PF1209-41	Flat Washer 3/8" SS	1	
4-2	PF1205-26	Lock Nut 3/8" SS	1	
6	PF1218-05	Poly Tube Plug	1	

Pro-Force Dry Spreader — Parts

Main Valve Block Assembly Components Spinner & Conveyor Set Up

Please visit www.unverferth.com/parts/ for the most current parts listing.



Pro-Force Dry Spreader — Parts

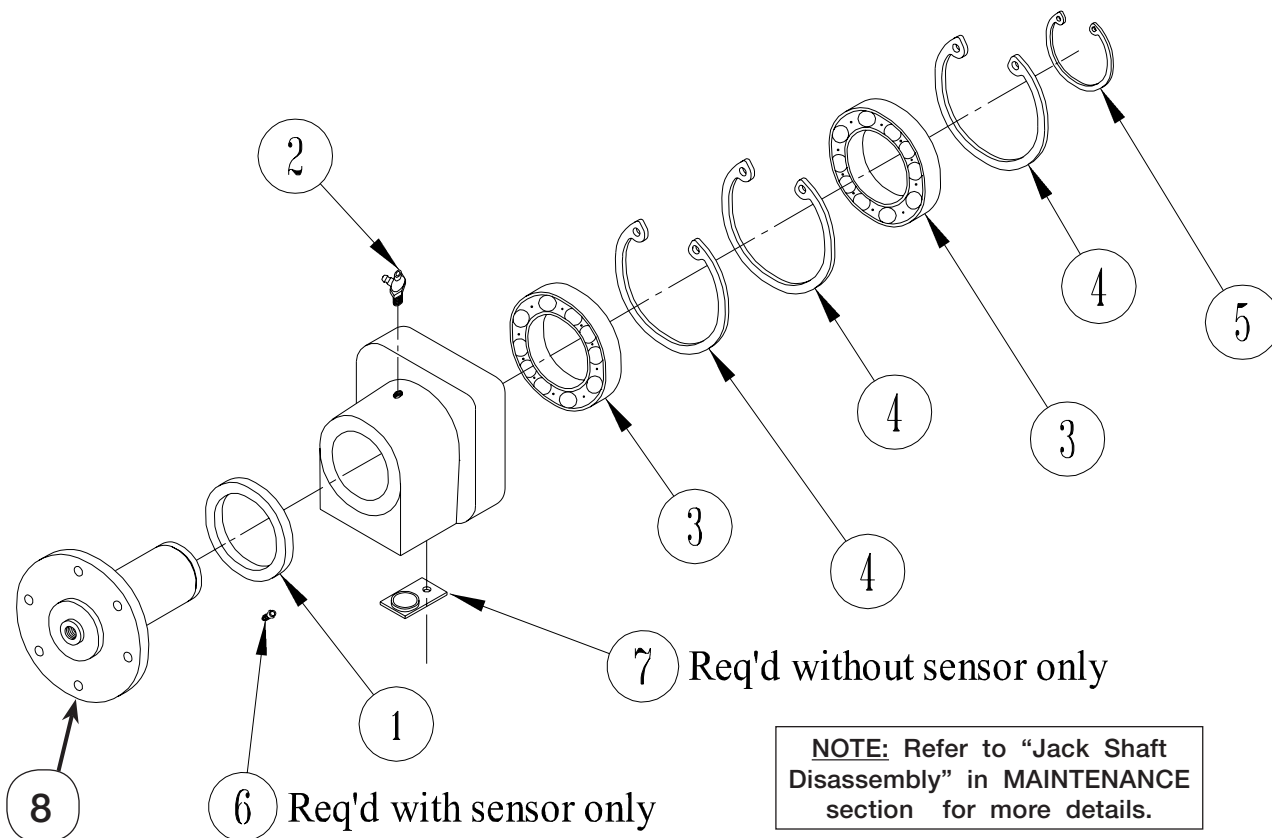
Main Valve Block Assembly Components Spinner & Conveyor Set Up

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1211-00	BLOCK, VALVE, HYD., MAIN	1	Requires Items: 1-1, 1-2
1-1	PF1200-400SS	BOLT, 1/2" X 1" SS	3	
1-2	PF1209-63	LOCKWASHER, 1/2" SS	3	
2	99878	PLUG 7/8-14UNF O-R MALE BOSS	6	
3	98243	ADAPTER, 1 5/16-12 MALE O-R TO FJIC SWIVEL	3	
4	98207	ELBOW 90°, 1 5/16-12 O-R MALE TO FM JIC SWIVEL	1	
5	PF1211-80	VALVE, HYD., PSI COMPENSATOR	2	
6	PF1211-01A	VALVE, SERVO, HYD., SAE16 50GPM W/CONNEC	1	
6A	PF1211-011A	VALVE, PWM, HYD., PROP -16-12DL, 36GPM W	1	
7	9003423	O-Ring Hollow Hex Plug 9/16-18	3	
8	97618	Adapter, 1 5/16-12 Male JIC to 1 5/16-12 O-Ring	1	
9	PF1211-945	VALVE, RELIEF, HYD., 3500 PSI	1	
10	PF1202-120	ADAPTER, O-RING HEX PLUG 16	1	
11	PF1211-80K	KIT, SEAL, HYD., COMPENSATOR CARTRIDGE	AR	
12	PF1211-95K	SEAL KIT, RELIEF VALVE	AR	
13	PF1211-01K	KIT, SEAL, HYD., F1650B SERVO	1	
14	PF1207-733	HOSE, HYD. 1" X 102" SAE16 FJ90 & FJ STRAIGHT	1	
15	PF1211-011SK	SEAL KIT, PWM -16 NC, 36GPM	1	

Jack Shaft Assembly Components

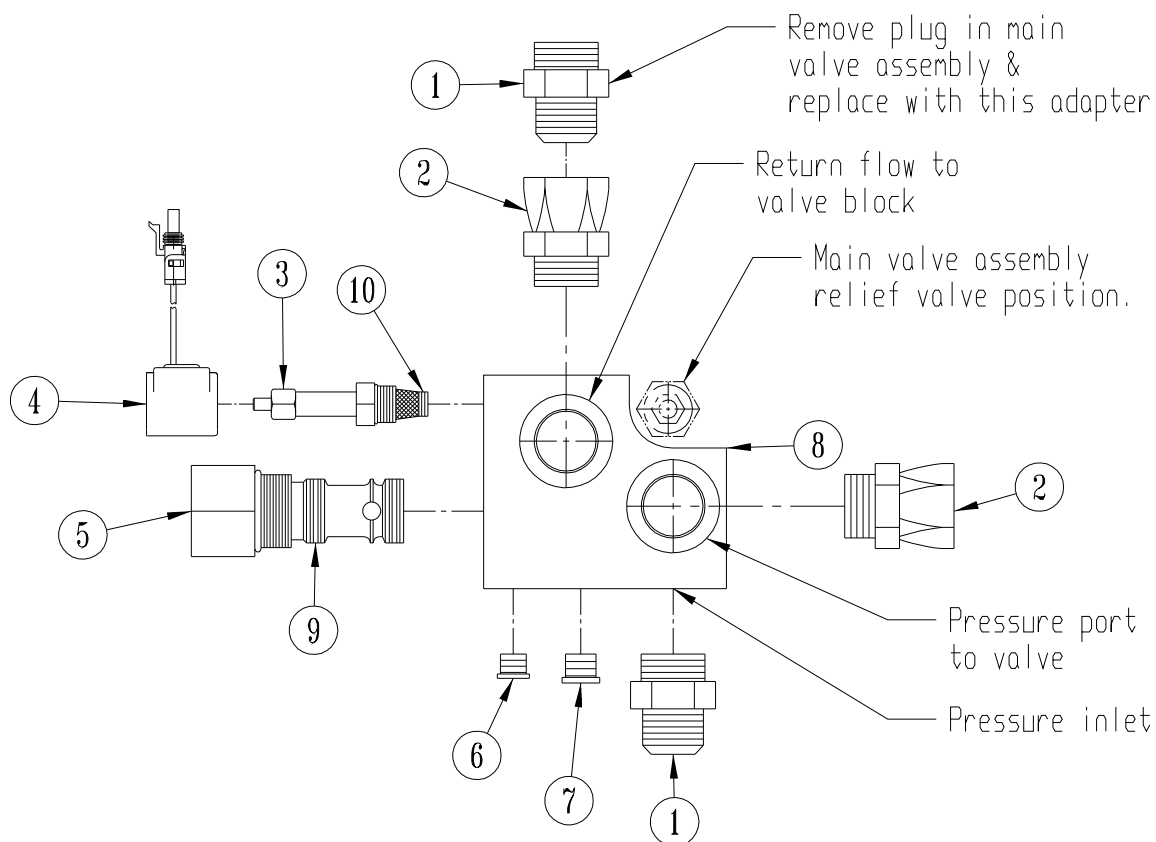
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1218-722	Jack Shaft w/o Sensor, Right-Hand Spinner	1	
	PF1218-732	Jack Shaft w/Sensor, Left-Hand Spinner	1	
1	PF1204-06	Oil Seal	1	
2	93426	Grease Zerk	1	
2-1	9006849	Grease Zerk Cap	1	
3	PF1217-104	Ball Bearing	2	
4	PF1208-05	Internal Snap Ring	3	
5	PF1208-06	External Snap Ring	1	
6	PF1200-245	Allen Head Capscrew 10-24 x 1/4"	4	
7	PF1218-735	Sensor Hole Plug Kit	AR	Includes Items 7-1, 7-1, 7-3
7-1	-	Plug Plate	1	
7-2	-	O-Ring	1	
7-3	-	Phillips Pan Head Screw 1/4"-20 x 1/2" SS	1	
8	414860	Jackshaft Hub. 30" Disk	1	
9	PF1213-206	Hydraulic Motor	2	Requires Items: 9-1, 9-2, 9-3, 9-4 (Refer to Spinner Assembly Section)
9-1	99888-122	Socket Head Capscrew 1/2"-13UNC x 1 1/2"	4	For Each Hydraulic Motor
9-2	9404-025	Lock Washer 1/2"	4	
9-3	PF1213-155	Square Key 5/16" x 1 1/2"	1	
9-4	PF1213-145SK	Seal Kit	1	

Dump Valve - For Chassis Mounted Units

Please visit www.unverferth.com/parts/ for the most current parts listing.

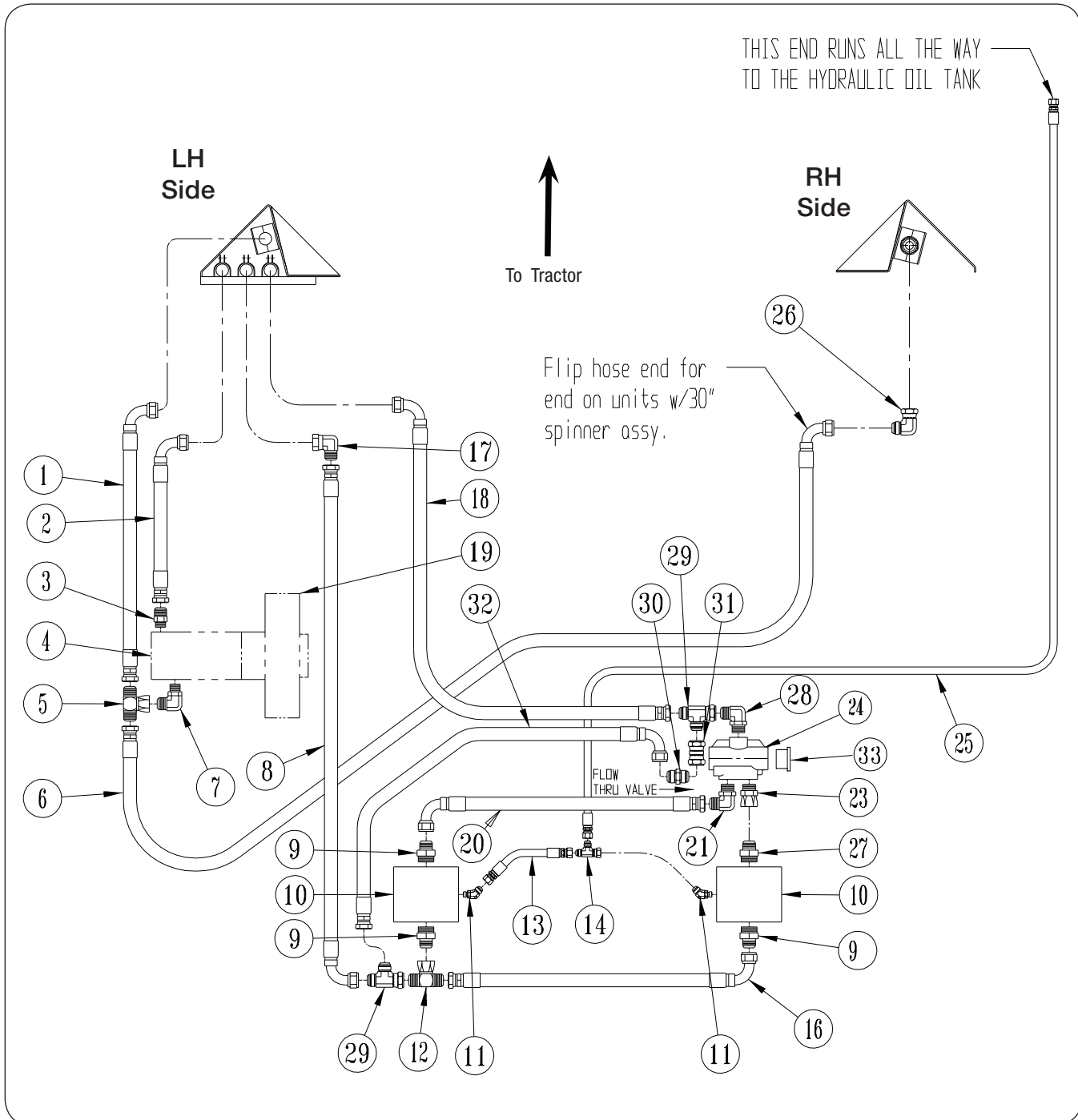


ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1211-176	Dump Valve Assembly	1	Includes Items 1, 2, 3, 4, 5 & 8
	PF1223-176	Dump Valve Switch Cable	1	(Not Shown)
1	97618	Adapter, 1 5/16-12 Male JIC to 1 5/16-12 O-Ring	2	
2	98243	ADAPTER, 1 5/16-12 MALE O-R TO FJIC SWIVEL	2	
3	PF1222-1090	Solenoid Valve (Normally Open)	1	With Manual Override
4	PF1222-109CA	Solenoid Coil	1	
5	PF1222-108	Cartridge Valve	1	
6	9003423	O-Ring Hollow Hex Plug 9/16-18	1	
7	PF1202-1193	O-Ring Hex Plug	1	
8	PF1211-175	Hydraulic System Dump Valve Block	1	
9	-	Valve Seal Kit	1	
10	PF1222-109K	Valve Seal Kit	1	

Pro-Force Dry Spreader — Parts

Spinner & Conveyor Drive Hydraulic Components For Chassis Mounted Units

Please visit www.unverferth.com/parts/ for the most current parts listing.



Pro-Force Dry Spreader — Parts

Spinner & Conveyor Drive Hydraulic Components For Chassis Mounted Units

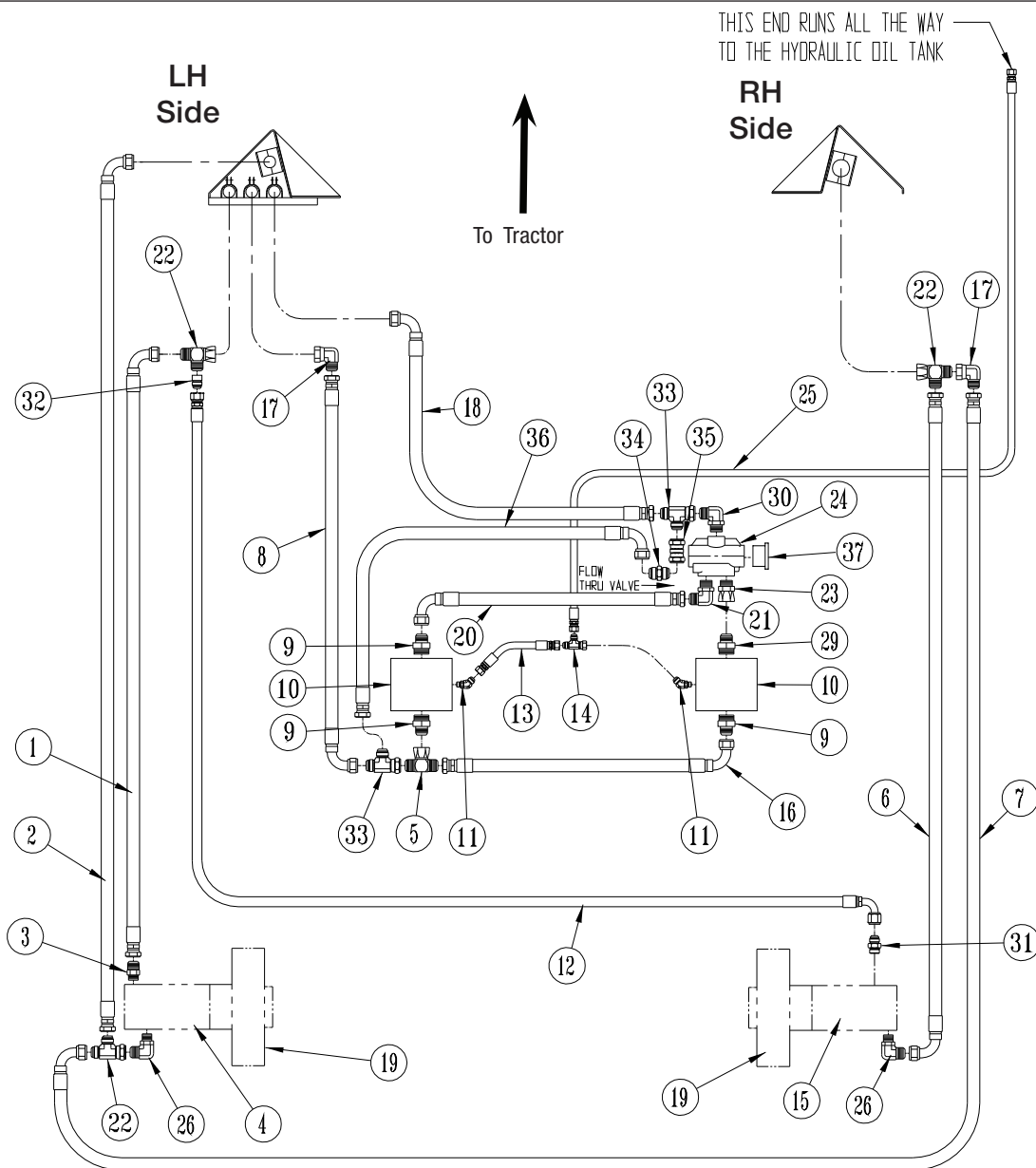
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1207-03	HOSE, HYD. 1" X 27" SAE16 FJ90 & FJ STRAIGHT	1	1250 Chassis Mounted Units
	9003414	HOSE, HYD. 1" X 76" FJIC Swivel		
2	PF1207-04	HOSE, HYD. 1" X 16-1/2" SAE16 FJ90 & FJ	1	1250 Chassis Mounted Units
	9008971	HOSE, HYD. 1" X 32" FJIC X FJIC 90		
3	9004628	ADAPTER, 1 5/16-12 MJIC TO O-RING	1	
4	See Page 5-6	HYDRAULIC MOTOR	-	
5	98200	TEE 1 5/16-12 MJIC x 1 5/16-12 FS JIC x 1 5/16-12 MJIC	1	
6	PF1207-065	HOSE, HYD. 1" X 103" SAE16 FJ90 & FJ STRAIGHT	1	
7	TAWC15325	ADAPTER, MJIC TO MALE ELBOW 90	1	1250 Chassis Mounted Units
	PF1202-204			
8	PF1207-075	HOSE, HYD. 1" X 70-1/2" SAE16 FJ90 & FJ	1	
9	9004628	ADAPTER, 1 5/16-12 MJIC TO O-RING	3	
10	See Spinner Assembly	SPINNER HYDRAULIC MOTOR	-	
11	PF1202-208	ADAPTER ASSEMBLY, MJIC to 45° Elbow MOR	2	Includes Items: 11-1, 11-2
11-1	PF1202-1028	Adapter Reducer/Expander JIC	1	
11-2	PF1202-207	45° Elbow 9/16-18 MJIC x 7/16-20 MOR	1	
12	900253	BRANCH TEE 1 5/16-12 MJIC x 1 5/16-12 MJIC x 1 5/16-12 FS JIC	1	
13	PF1207-111	HOSE, HYD. 1/2" X 24-1/4" SAE08 FJ STRAIGHT	1	
14	PF1202-3014	ADAPTER, JIC SWIVEL, RUN TEE, 08-08-08	1	
16	PF1207-021	HOSE, HYD. 1" X 29-3/4" FJ90 & FJ STRAIGHT	1	
17	99631	ELBOW ADAPTER 90°, 1 5/16-12 MJIC TO FEMALE SWIVEL	1	
18	PF1207-055	HOSE, HYD. 1" X 79-1/2" SAE16 FJ90 & FJ	1	
19	See Gearbox	GEARBOX	-	
20	PF1207-011	HOSE, HYD. 1" X 28" SAE16 FJ90 & FJ STRAIGHT	1	
21	98898	ADAPTER, MJIC TO ELBOW 90° 1 5/16-12 JIC	1	
23	98243	ADAPTER, 1 5/16-12 MALE O-R TO FJIC SWIVEL	1	
24	PF1211-18	VALVE, FLOW DIVIDER, HYD., 50/50 SAE16 P	1	
	PF1211-18SPB	Hydraulic Flow Divider Assy. 50/50 W/SPOOL STOPS	1	1250 Chassis Mounted Units
25	PF1207-08	HOSE, HYD. 1/2" X 225" SAE08 FJ STRAIGHT	1	12' BOX
	PF1207-09	HOSE, HYD. 1/2" X 237" SAE08 FJ STRAIGHT	1	13' BOX
	PF1207-10	HOSE, HYD. 1/2" X 249" SAE08 FJ STRAIGHT	1	14' BOX
26	99631	ELBOW ADAPTER 90°, 1 5/16-12 MJIC TO FEMALE SWIVEL	1	
27	9004628	ADAPTER, 1 5/16-12 MJIC TO O-RING	1	
28	98898	ADAPTER, MJIC TO ELBOW 90° 1 5/16-12 JIC	1	
29	98200	TEE 1 5/16-12 MJIC x 1 5/16-12 FS JIC x 1 5/16-12 MJIC	2	
30	PF1211-603	VALVE, CHECK, HYD., 16 JIC	1	
31	PF1202-6516	ADAPTER, FJIC SWIVEL UNION 16-16	1	
32	PF1207-132	HOSE, HYD. 1" X 42" SAE16 FJ90 & FJ STRAIGHT	1	
33	PF1211-1811	Spool Stop	2	
34	9001068	ADAPTER 1 1/16-12 JICM x MORB	1	1250 Chassis Mounted Units (Not Shown)
35	9008990	ADAPTER 1 1/16-12 JICM x MORB	1	
36	98591	Reducer 1 5/16-12 JICF x 3/4-16 JICM	1	

Pro-Force Dry Spreader — Parts

Spinner & Dual Conveyor Drive Hydraulic Components For Chassis Mounted Units

Please visit www.unverferth.com/parts/ for the most current parts listing.



Pro-Force Dry Spreader — Parts

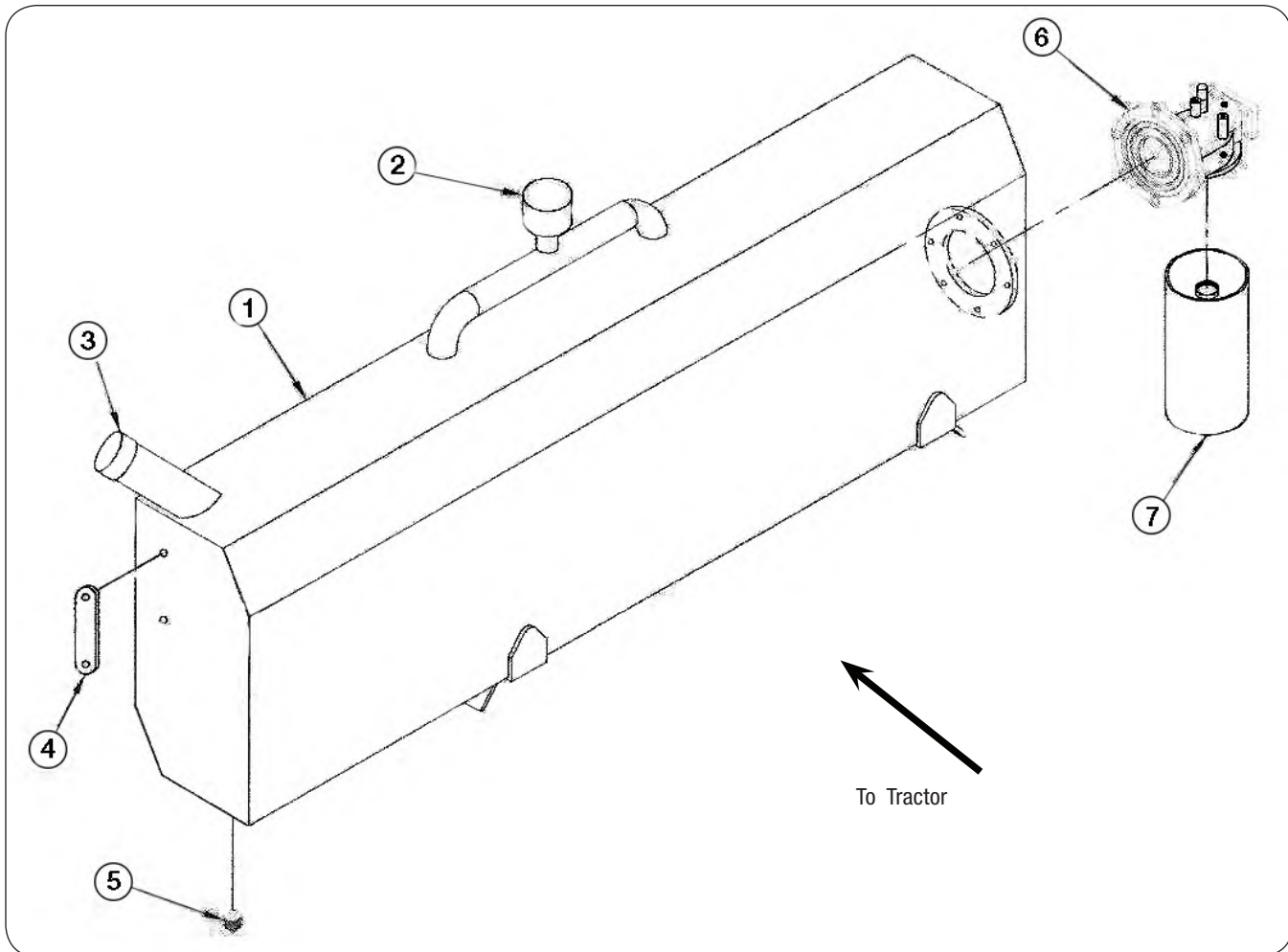
Spinner & Dual Conveyor Drive Hydraulic Components For Chassis Mounted Units

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1207-041	HOSE, HYD. 1" X 27" SAE16 FJ90 & FJ STRAIGHT	1	
2	PF1207-03	HOSE, HYD. 1" X 16-1/2" SAE16 FJ90 & FJ	1	
3	9004628	ADAPTER, 1 5/16-12 MJIC TO O-RING	1	
4	See Conveyor Drive	HYDRAULIC MOTOR	-	
5	900253	BRANCH TEE 1 5/16-12 MJIC x 1 5/16-12 MJIC x 1 5/16-12 FS JIC	1	
6	PF1207-062	HOSE, HYD. 1" X 23" SAE16 FJ90 & FJ STRA	1	
7	PF1207-065	HOSE, HYD. 1" X 103" SAE16 FJ90 & FJ STR	1	
8	PF1207-075	HOSE, HYD. 1" X 70-1/2" SAE16 FJ90 & FJ	1	
9	9004628	ADAPTER, 1 5/16-12 MJIC TO O-RING	3	
10	See Spinner Assembly	SPINNER HYDRAULIC MOTOR	-	
11	PF1202-208	ADAPTER ASSEMBLY, MJIC to 45° Elbow MOR	2	Includes Items: 11-1, 11-2
11-1	PF1202-1028	Adapter Reducer/Expander JIC	1	
11-2	PF1202-207	45° Elbow 9/16-18 MJIC x 7/16-20 MOR	1	
12	PF1207-0425	HOSE, HYD. 3/4" X 113-3/4" SAE12 FJ90 &	1	
13	PF1207-111	HOSE, HYD. 1/2" X 24-1/4" SAE08 FJ STRAI	1	
14	PF1202-3014	ADAPTER, JIC SWIVEL, RUN TEE, 08-08-08	1	
15	See Conveyor Drive	HYDRAULIC MOTOR	-	
16	PF1207-021	HOSE, HYD. 1" X 29-3/4" FJ90 & FJ STRAIGHT	1	
17	99631	ELBOW ADAPTER 90°, 1 5/16-12 MJIC TO FEMALE SWIVEL	2	
18	PF1207-055	HOSE, HYD. 1" X 79-1/2" SAE16 FJ90 & FJ	1	
19	See Gearbox	GEARBOX	-	
20	PF1207-011	HOSE, HYD. 1" X 28" SAE16 FJ90 & FJ STRAIGHT	1	
21	98898	ADAPTER, MJIC TO ELBOW 90° 1 5/16-12 JIC	1	
22	98200	TEE 1 5/16-12 MJIC x 1 5/16-12 FS JIC x 1 5/16-12 MJIC	3	
23	98243	ADAPTER, 1 5/16-12 MALE O-R TO FJIC SWIVEL	1	
24	PF1211-18	VALVE, FLOW DIVIDER, HYD., 50/50 SAE16 P	1	
	PF1211-18SPB	Hydraulic Flow Divider Assy. 50/50 W/SPOOL STOPS	1	
25	PF1207-08	HOSE, HYD. 1/2" X 225" SAE08 FJ STRAIGHT	1	12' BOX
	PF1207-09	HOSE, HYD. 1/2" X 237" SAE08 FJ STRAIGHT	1	13' BOX
	PF1207-10	HOSE, HYD. 1/2" X 249" SAE08 FJ STRAIGHT	1	14' BOX
26	TAWC15325	ADAPTER, MJIC TO MALE ELBOW 90	2	
29	9004628	ADAPTER, 1 5/16-12 MJIC TO O-RING	1	
30	98898	ADAPTER, MJIC TO ELBOW 90° 1 5/16-12 JIC	1	
31	PF1202-110	ADAPTER, MJIC TO O-RING 12-12	1	
32	PF1202-1035	ADAPTER, JIC REDUCER / EXPANDER 16-12	1	
33	98200	TEE 1 5/16-12 MJIC x 1 5/16-12 FS JIC x 1 5/16-12 MJIC	2	
34	PF1211-603	VALVE, CHECK, HYD., 16 JIC	1	
35	PF1202-6516	ADAPTER, FJIC SWIVEL UNION 16-16	1	
36	PF1207-132	HOSE, HYD. 1" X 42" SAE16 FJ90 & FJ STRA	1	
37	PF1211-1811	Spool Stop	2	

Hydraulic Reservoir Components - For Chassis Mounted Units

Please visit www.unverferth.com/parts/ for the most current parts listing.

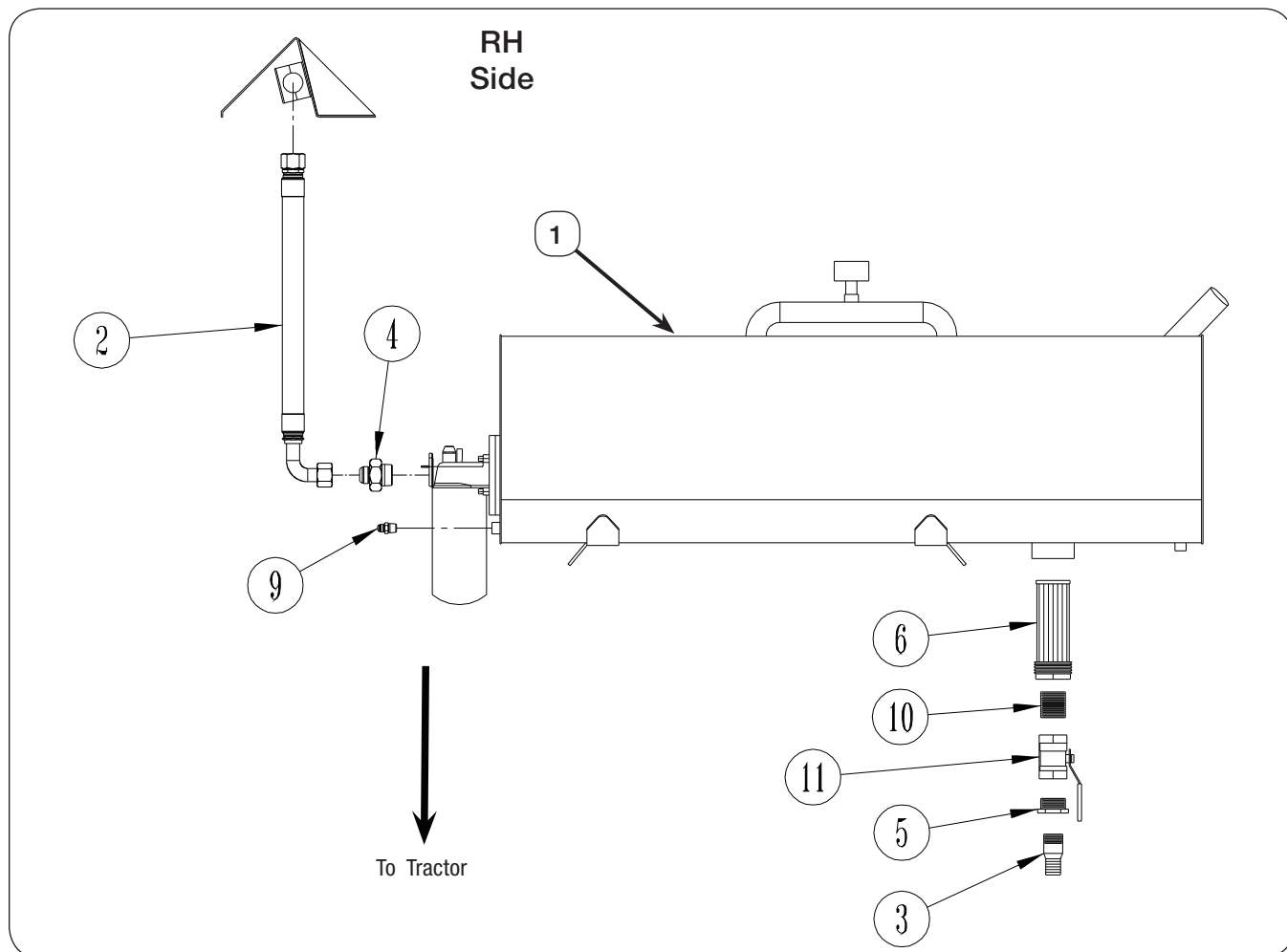


ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1236-201	RESERVOIR TANK WELDMENT SS, 36 1/2" Gal.	1	Requires Items: 1-1, 1-2, 1-3
1-1	900900-100	BOLT, 1/2" X 1-1/4" SS	4	
1-2	900901-010	HEX NUT, 1/2" UNC SS	4	
1-3	900903-025	LOCKWASHER, 1/2" SS	4	
2	PF1220-34	BREATHER, RESERVOIR	1	
3	PF1220-475	CAP, FUEL NON-VENTED, DIESEL	1	
4	PF1221-9	GAUGE, SIGHT 5"	1	
5	PF1201-239	PLUG, PIPE 1/2" SQUARE HEAD SS	1	
6	PF1100-195	ASSY., FILTERHEAD, HYD.	1	
7	PF1220-37	FILTER, OIL, LONG SPIN-ON	1	
8	PF1100-195K	KIT, SEAL, FILTER HOUSING	1	Not Shown

Pro-Force Dry Spreader — Parts

Reservoir / Pump Hydraulic Components For Chassis Mounted Units

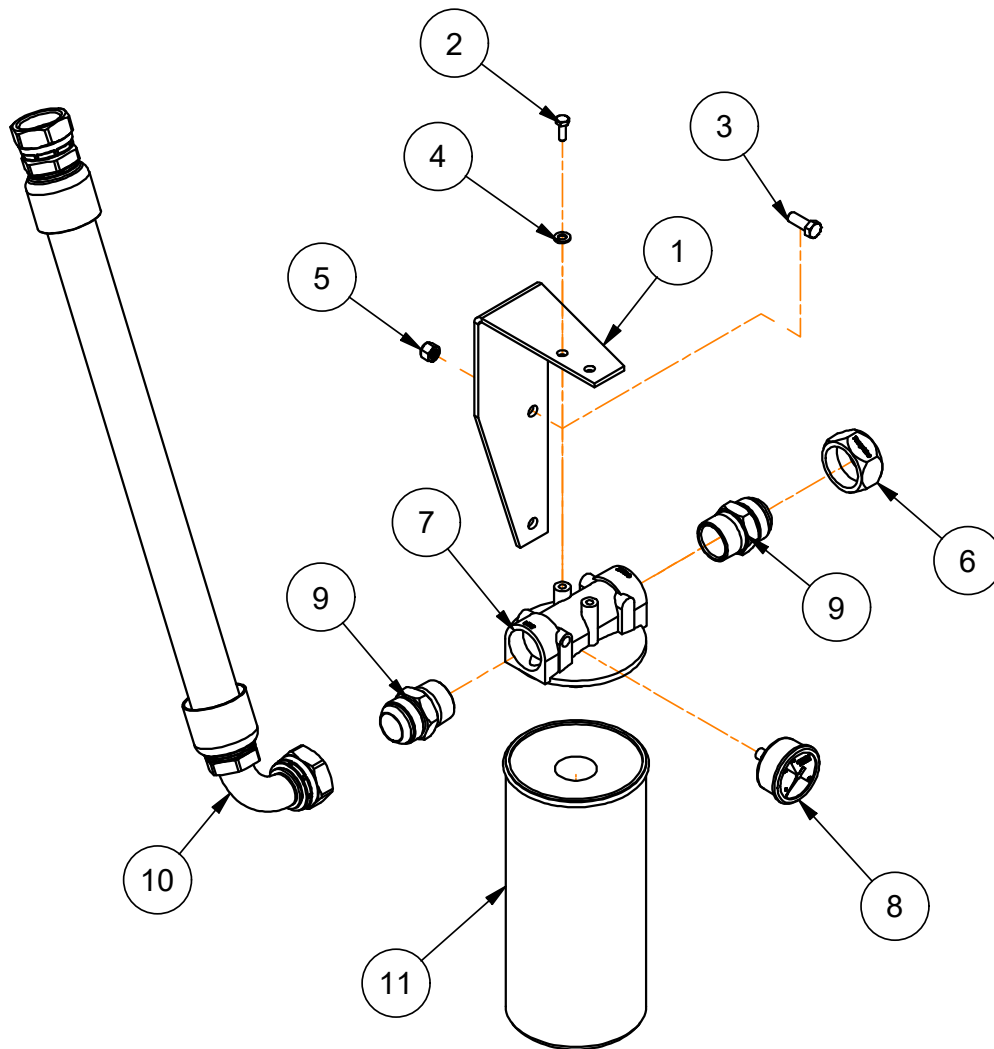
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1236-201	RESERVOIR TANK WELDMENT SS, 36 1/2" Gal.	1	Requires Items: 1-1, 1-2, 1-3
1-1	900900-100	BOLT, 1/2" X 1-1/4" SS	4	
1-2	900901-010	HEX NUT, 1/2" UNC SS	4	
1-3	900903-025	LOCKWASHER, 1/2" SS	4	
2	PF1207-027	HOSE, HYD. 1-1/4" X 27" SAE20 FJ90 & FJ	1	
3	PF1201-189	NIPPLE, PIPE KING 1-1/2" SS	1	
4	PF1202-1027	ADAPTER, MJIC TO MALE PIPE 20-24	1	
5	PF1201-296	BUSHING, PIPE 2" X 1-1/2" SS	1	
6	PF1220-36	STRAINER, 3" X 2" EXT. MOUNT	1	
9	93600	ADAPTER, 3/4-16 MJIC x 1/2-14 NPTF MALE PIPE	1	
10	PF1201-288	NIPPLE, PIPE CLOSE 2" SS	1	
11	PF1211-13	VALVE, BALL, 2" 316 SS FULL PORT	1	

In-Line Hydraulic Filter

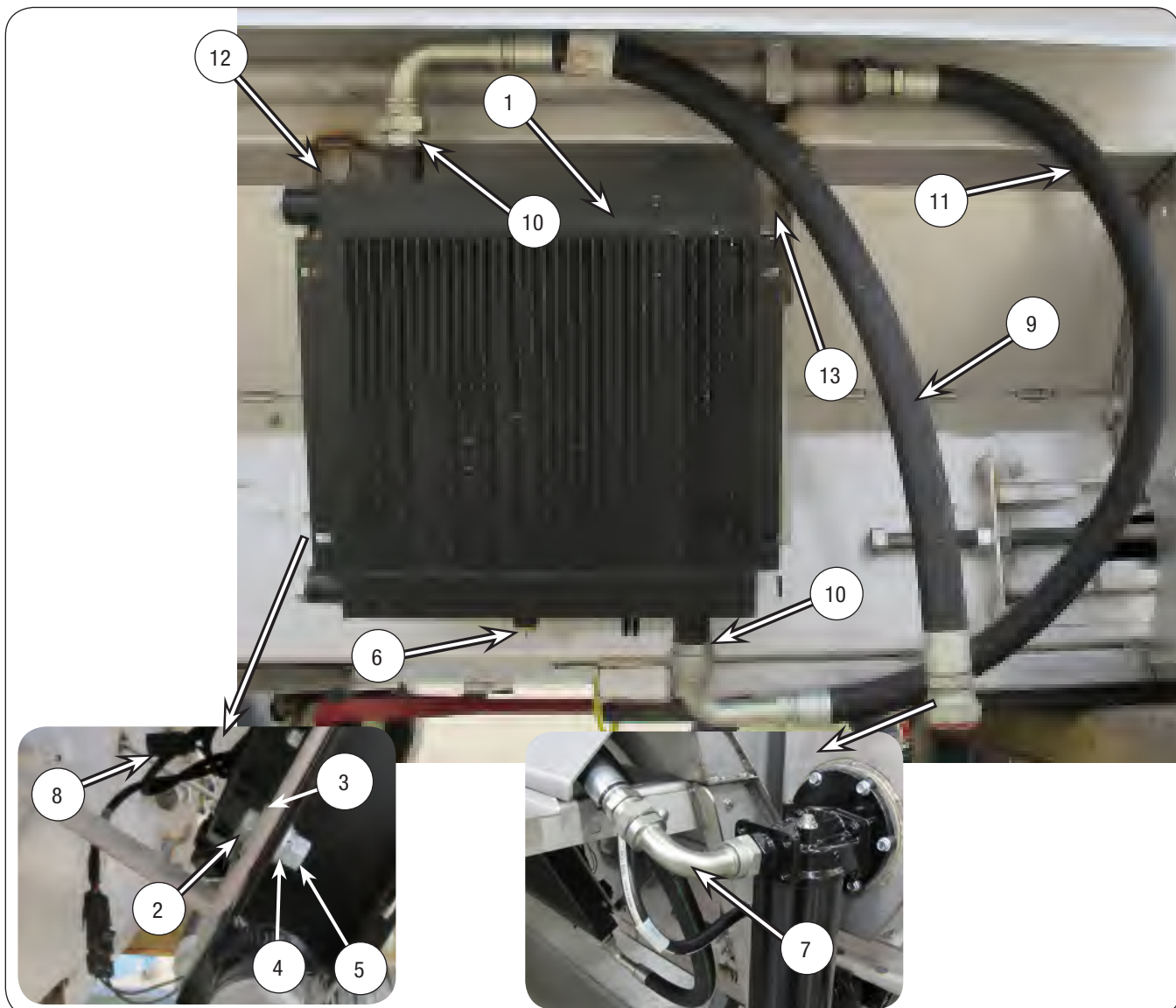
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	415353	HYDRAULIC FILTER MOUNT	1	
2	900900-003	CAPSCREW 1/4"-20UNC X 3/4" 18-8 (SS)	2	
3	900900-055	CAPSCREW 3/8"-16UNC X 1" 18-8 (SS)	2	
4	900903-019	LOCK WASHER 5/16" (SS)	2	
5	900905-012	ELASTIC STOP NUT 3/8"-16UNC (SS)	2	
6	9009015	CAP NUT - 1 5/8"-12 JICF	1	
7	PF1100-19	SPIN-ON FILTER HEAD	1	
8	PF1100-197	HYDRAULIC FILTER INDICATOR GAUGE	1	
9	PF1202-10265	ADAPTER 1 5/8-12 JICM X 1 1/4-11 1/2 MNPT	2	
10	PF1207-027	HYDRAULIC HOSE, 1 1/4 X 27 (1 5/8 JICF 90° X 1 5/8 JICF STRAIGHT)	1	
11	PF1220-37	LONG SPIN-ON OIL FILTER	1	

Oil Cooler Components (Optional)

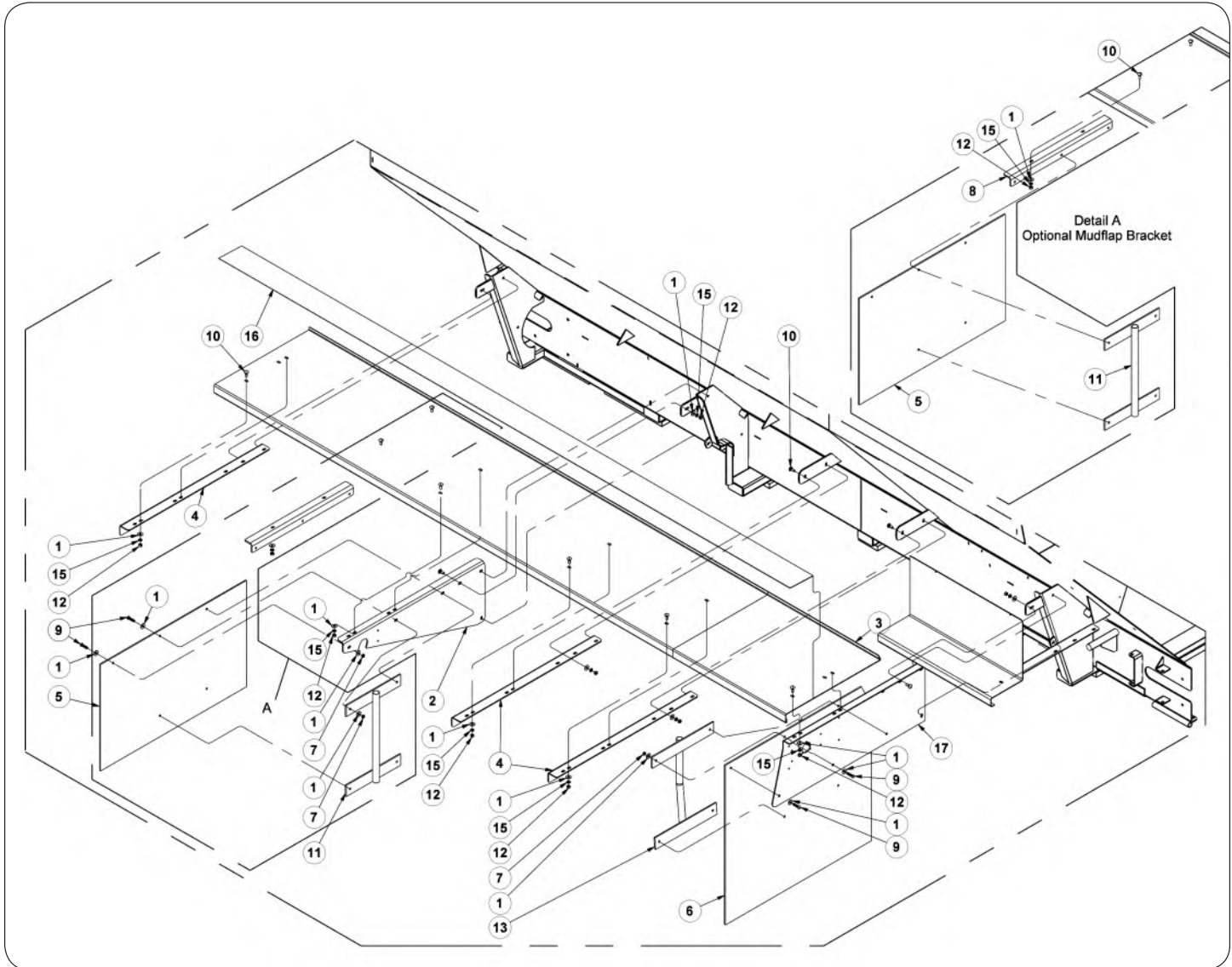
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1222-544ASSY	Oil Cooler Assembly	1	Includes All Items
1	9009177	OIL COOLER WITH 12V FAN	1	
2	PF1200-3040	BOLT, 3/8" X 1-1/2" SS 92338	4	
3	PF1209-41	FLATWASHER, 3/8" SS 93702	4	
4	PF1209-43	LOCKWASHER, 3/8" SS 93779	4	
5	PF1205-27	NUT, 3/8" UNC SS 93611	4	
6	9009169	120° Temperature Switch	1	
7	PF1202-66	90° ELBOW ADAPTER, JIC SWIVEL BENT TUBE	1	
8	PF1223-544A	Oil Cooler Wire Harness 12V Fan	1	
9	PF1207-0285	HOSE, HYD. (1-1/4" X 42") 1 5/8-12 JICF SWIVEL X 1 5/8-12 90° JICF SWIVEL	1	
10	PF1202-10264	ADAPTER, MJIC TO MALE PIPE 20-16	2	
11	PF1207-029	HOSE, HYD. (1-1/4" X 54") 1 5/8-12 JICF SWIVEL X 1 5/8-12 90° JICF SWIVEL	1	
12	PF70-1505	Oil Cooler Mount Weldment Left-Hand	1	
13	PF70-1506	Oil Cooler Mount Weldment Right-Hand	1	

Full Float Fender & Mudflap Components (Optional)

Please visit www.unverferth.com/parts/ for the most current parts listing.



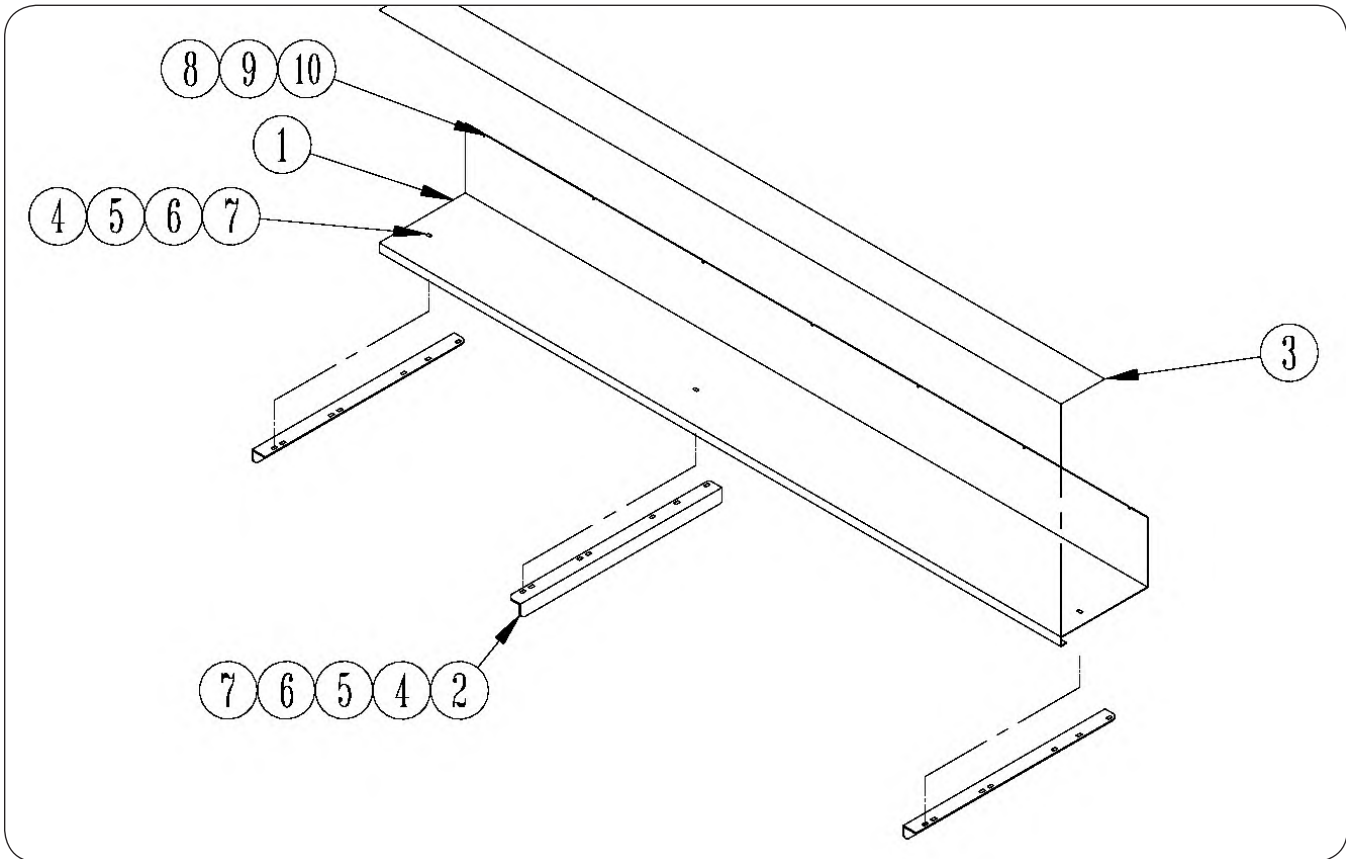
Full Float Fender & Mudflap Components (Optional)

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414428	Front Mud Flap Kit	1	Includes Items: 1, 5, 7-12
	414429	Rear Mud Flap Kit		Includes Items: 1, 6, 7, 9, 12, 13
1	900902-037	FLATWASHER, 3/8" SS (SAE)	AR	
2	PF1234-603LH	BRACKET, FULL FLOAT FENDER, SS, LH, (MID)	1	
	PF1234-603RH	BRACKET, FULL FLOAT FENDER, SS, RH, (MID)	1	
3	414432	FULL FLOAT FENDERS ASSY. KIT, 13', SS	1	
	414408	FULL FLOAT FENDERS ASSY. KIT, 14', SS		
	414431	FULL FLOAT FENDERS ASSY. KIT, 16', SS		
	414407	FULL FLOAT FENDERS ASSY. KIT, 18', SS		
	414430	FULL FLOAT FENDERS ASSY. KIT, 20', SS		
4	PF1234-604	BRACKET, FULL FLOAT FENDER, SS, MOUNTING	AR	
5	9009172	FRONT MUDFLAP, 38 X 36	2	
6	9009173	REAR MUDFLAP, 38 X 36	2	
7	900905-012	ELASTIC STOPNUT, 3/8"-16UNC SS	AR	
8	PFF3238PBA	FRONT MUDFLAP BRACKET PLATE	2	
9	PF1200-3047	BOLT, BUTTON HEAD 3/8"-16UNC X 1-1/2" SS 931	AR	
10	9007908-051	BOLT, CARRIAGE 3/8"-16UNC X 1" SS	AR	
11	PFF3238PB	MUDFLAP BRACKET FRONT (REAR) SS	2	
12	900905-012	ELASTIC STOPNUT, 3/8"-16UNC SS	AR	
13	PFF3844PB	MUDFLAP BRACKET REAR	2	
15	PF1209-43	LOCKWASHER, 3/8" SS 93779	AR	
16	PF1234-702	TAPE, 8" ANTI-SKID	AR	
17	PF1234-602LH	BRACKET, FULL FLOAT FENDER, SS, LH (REAR)	1	
	PF1234-602RH	BRACKET, FULL FLOAT FENDER, SS, RH, (REAR)	1	

Semi Float Fender Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



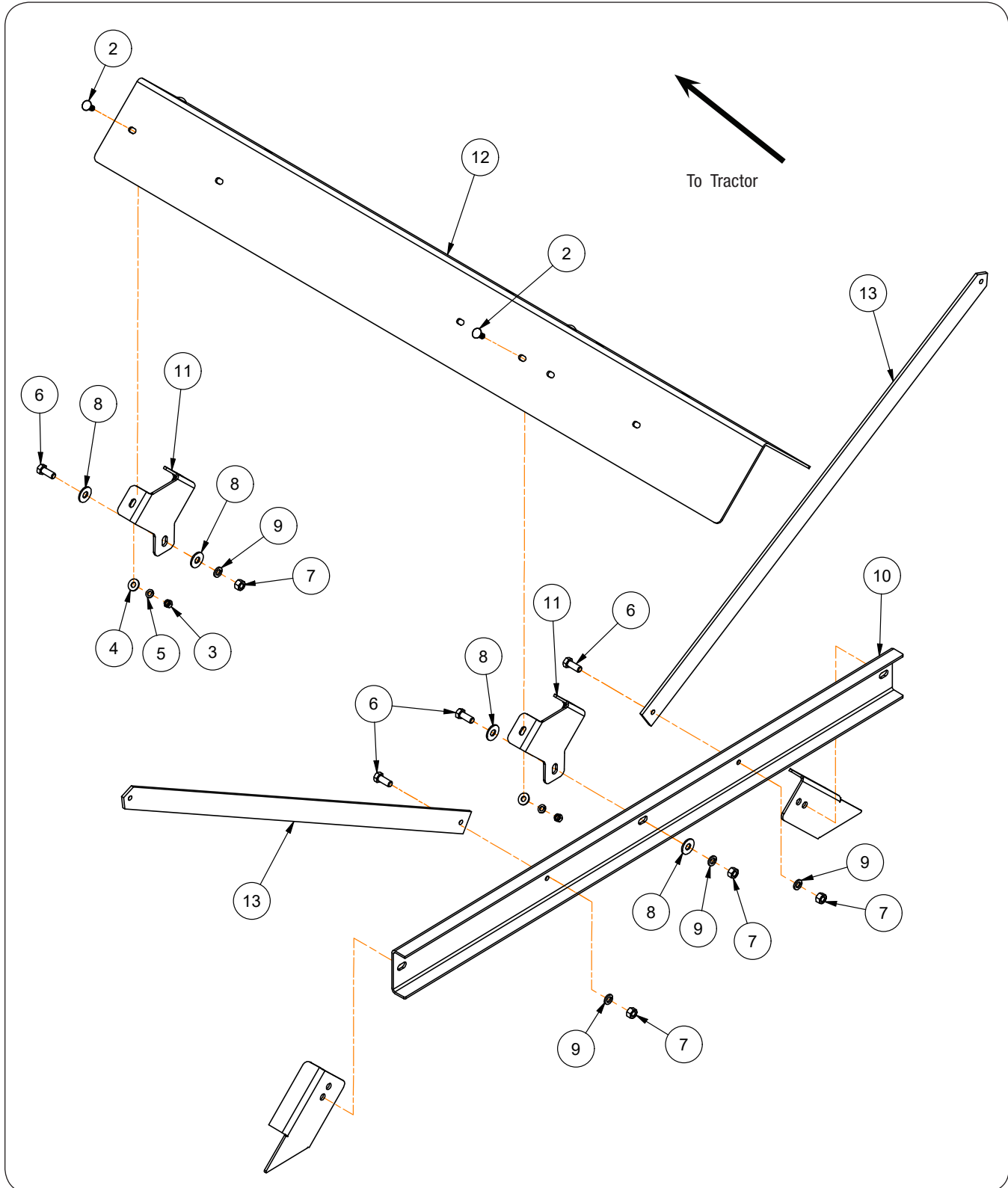
Semi Float Fender Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1234-713	WELDMENT, SEMI-FLOAT FENDER - SS 13'	2	
1	PF1234-714	SEMI-FLOAT FENDER - SS 14'	2	
1	PF1236-716	SEMI-FLOAT FENDER - 16'	2	
1	PF1236-718	SEMI-FLOAT FENDER - 18'	2	
1	PF1236-720	SEMI-FLOAT FENDER - 20'	2	
1	PF1236-722	SEMI-FLOAT FENDER - 22'	2	
2	PF1234-604	BRACKET, FULL FLOAT FENDER, SS, MOUNTING	AR	
3	PF1234-702	TAPE, 8" ANTI-SKID	AR	
4	PF1209-43	LOCKWASHER, 3/8" SS 93779	AR	
5	PF1205-27	NUT, 3/8" UNC SS 93611	AR	
6	PF1200-302SS	BOLT, CARRIAGE 3/8" X 1" SS 93322	AR	
7	PF1209-41	FLATWASHER, 3/8" SS 93702	AR	
8	PF1200-105	BOLT, SS 1/4" X 3/4" 66631	AR	
9	PF1209-25S	FLATWASHER, 1/4" SS 93700	AR	
10	PF1205-501	LOCKNUT, NYLON 1/4" UNC SS 93624	AR	

Inverted “V” & Cross Brace Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



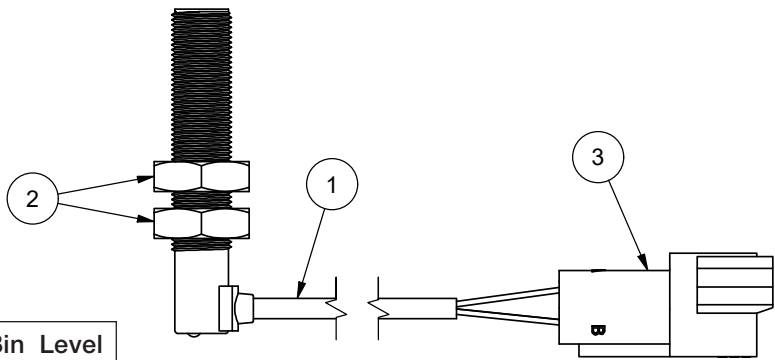
Inverted “V” & Cross Brace Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1234-105ASSY	INVERTED VEE ASSEMBLY SS	1	For 12' through 16' models. Includes Items 1 - 12
	PF1236-105ASSY		1	For 18' through 22' models. Includes Items 1 - 12
1	PF1234-100VF	INVERTED VEE FASTENERS KIT	1	Includes Items: 2 - 9
2	9007908-051	BOLT, CARRIAGE 3/8"-16UNC X 1" SS	4	
3	900901-006	NUT, 3/8"16UNC SS	4	
4	900902-038	FLATWASHER, 3/8" SS	4	
5	900903-021	LOCKWASHER, 3/8" SS	4	
6	900900-100	CAPSCREW 1/2" X 1-1/4" SS NS-933	4	
7	900901-010	NUT, 1/2" UNC SS	4	
8	900902-044	FLATWASHER, 1/2" SS	4	
9	900903-025	LOCKWASHER, 1/2" SS	4	
10	PF50-069	BOX CROSS BRACE SS	1	
11	PF50-071	INVERTED VEE CROSS BRACE BRACKET SS	2	
12	PF50-072	INVERTED VEE SS	1	
13	PF1234-106	INVERTED VEE BRACKET SS	2	

Bin Level Sensor Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



NOTE: Refer to “Bin Level Sensor Replacement” in MAINTENANCE section for more details.

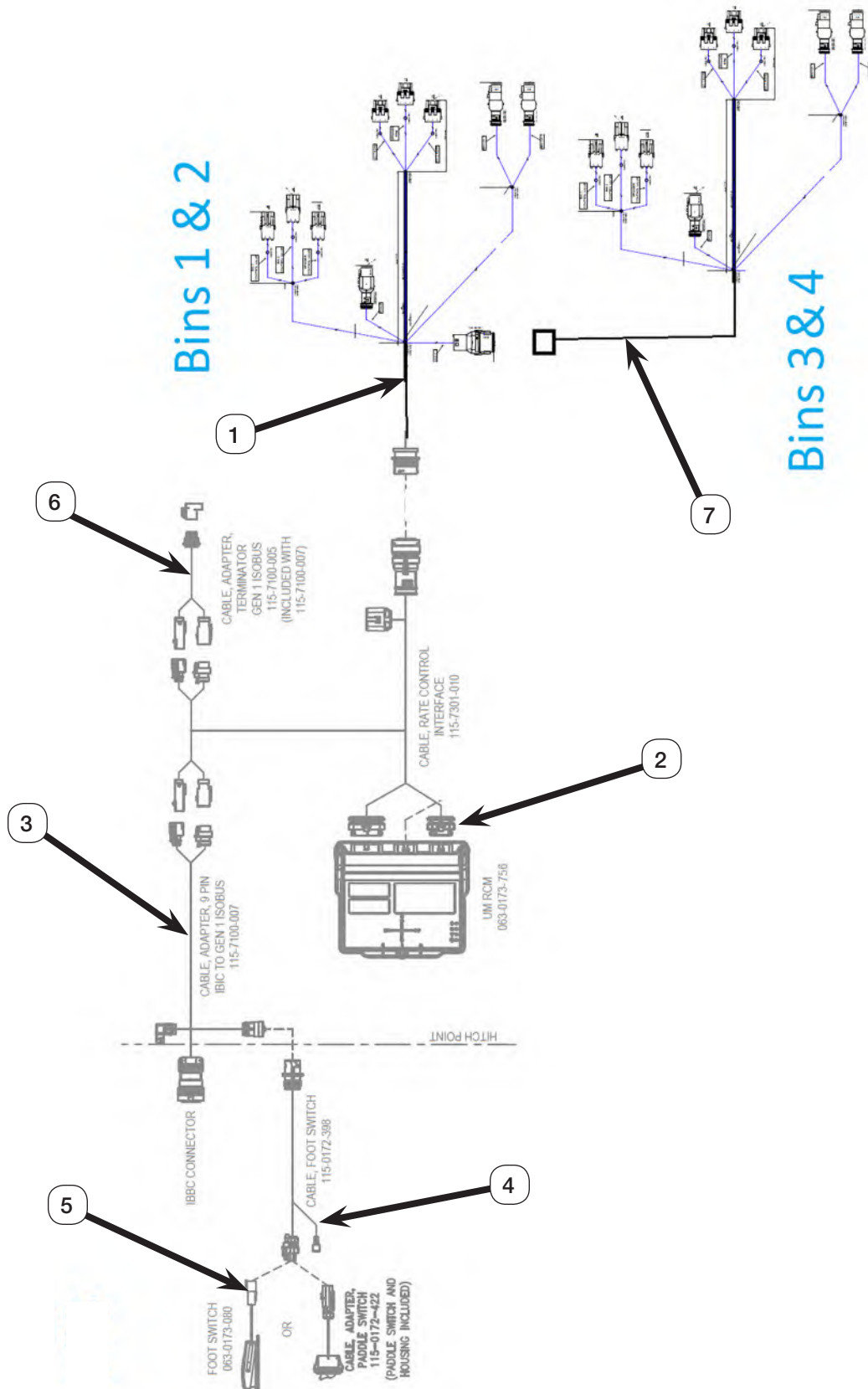
ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	9009180	Bin Level Sensor	1	
2	9008808	Hex Nut M12 x 1” SS	2	
3	98908	3 Pin Deutsch Connector	1	

Notes

Please visit www.unverferth.com/parts/ for the most current parts listing.

RCM Wiring Harness Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



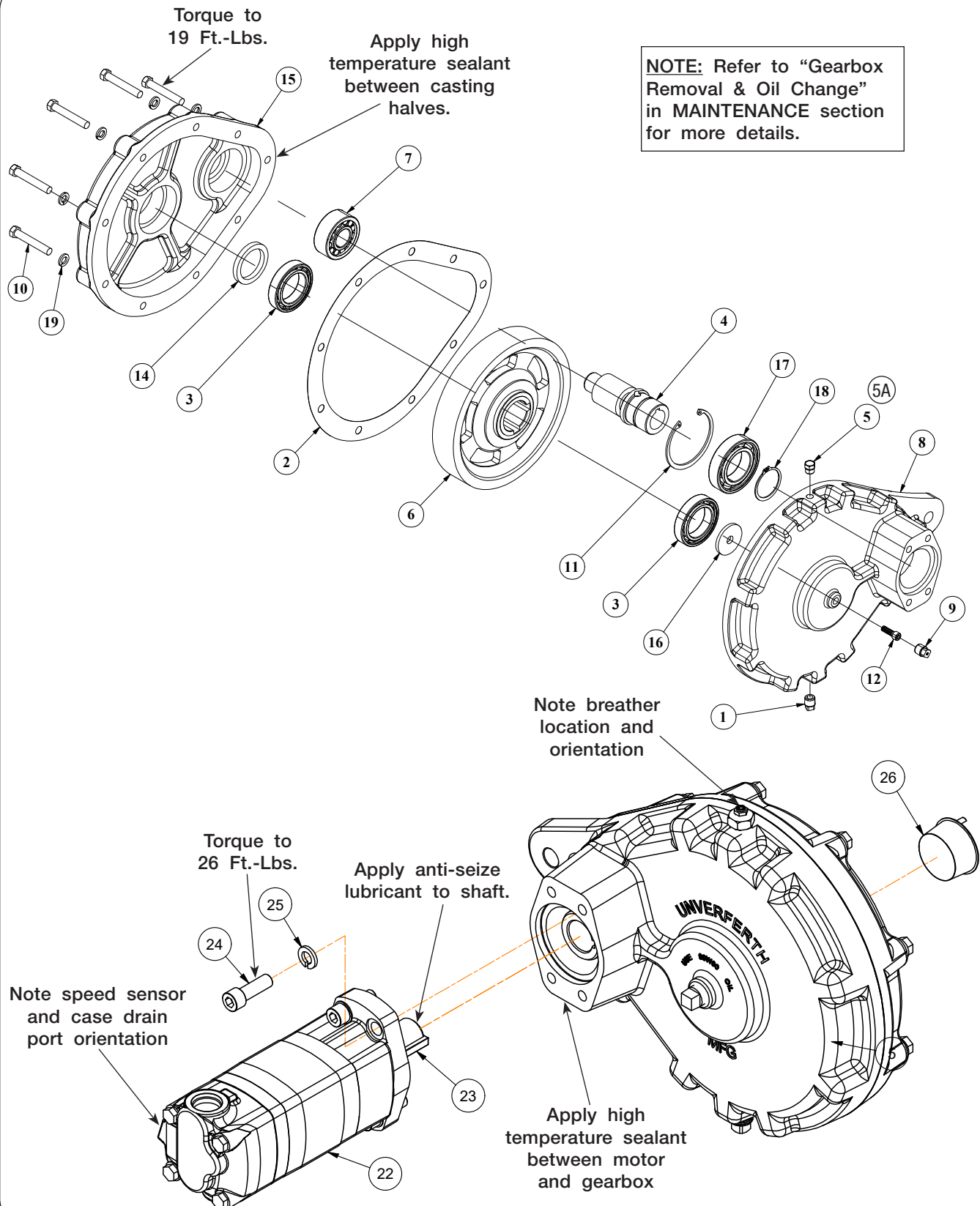
RCM Wiring Harness Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	9008826	HARNESS - PRODUCT FLOW AND RATE 1 & 2 BINS	1	
2	9008095	WIRE HARNESS, RCM ECU 47-PIN RATE	1	
3	9503387	WIRE HARNESS, 12 FT ADAPTER 9 PIN IBIC	1	
4	9503390	WIRE HARNESS, FOOT SWITCH 23FT	1	
5	9005916	FOOT SWITCH, ISO NODE W/HARNESS 16 AWG	1	
6	9008096	CABLE - ADAPTER, JD ISO TO TERMINATOR	1	
7	9008825	HARNESS - PRODUCT FLOW AND RATE 3 & 4 BINS	1	

Gearbox & Hydraulic Motor Assembly

Please visit www.unverferth.com/parts/ for the most current parts listing.



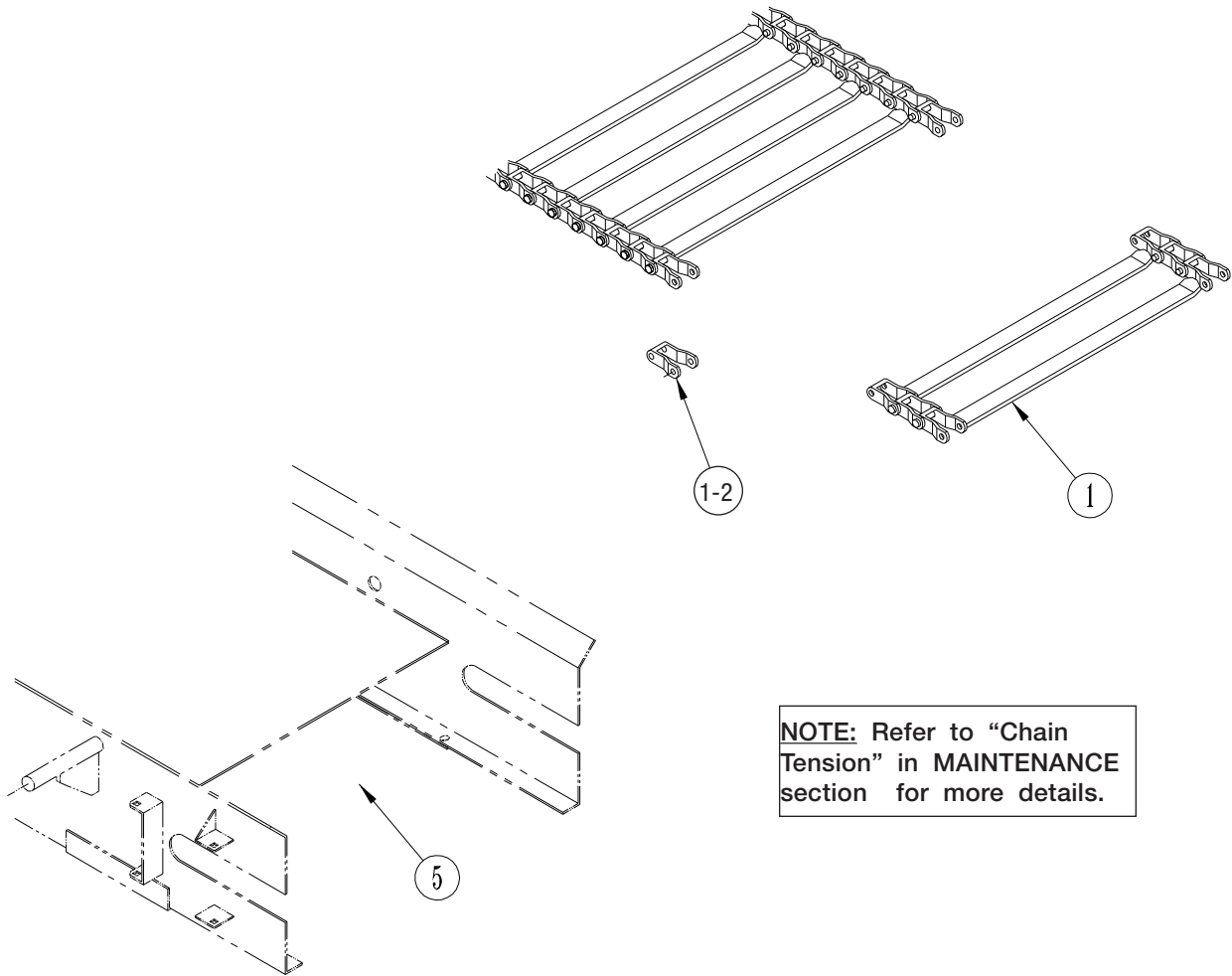
Gearbox & Hydraulic Motor Assembly

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1220-50M	Complete Gearbox	1	Includes Items 1 - 21
1	PF1201-238M	PLUG, Drain 1/2"	1	
2	PF1204-08	GASKET, GEARBOX, 1220-50	1	
3	PF1217-104	BEARING, ROLLER 2"	1	
4	PF1217-110	GEAR, PINION, GEARBOX	1	
5	92352	Vented Breather Plug	1	See note on previous page
5A	9003453	Reducer Bushing	1	
6	PF1217-111	GEAR, DRIVEN, GEARBOX	1	
7	PF1217-105	BEARING, ROLLER, SMALL, PINION NOSE	1	
8	PF1220-500	HOUSING, OUTBOARD GEARBOX	1	See note on previous page
9	95826	Check Plug	1	
10	9390-085	BOLT, 7/16"-14UNC X 2-3/4"	9	Torque to 19 Ft.-Lbs.
11	PF1208-97	SNAP RING, GEARBOX	1	
12	99888-034	BOLT, SOCKETHEAD 5/16" X 1" G8	1	
14	PF1204-07	SEAL, GEARBOX	1	
15	PF1220-50I	HOUSING, INBOARD GEARBOX	1	See note on previous page
16	PF1209-100A	WASHER, GEARBOX RETAINER	1	
17	PF1217-106	BEARING, ROLLER, LARGE, PINION SHAFT	1	
18	PF1208-06	SNAP RING, SMALL EXTERNAL	1	
19	9404-023	LOCKWASHER, 7/16"	9	
20	9006374	Gear Lube SAE 80W90	AR	Not Shown
21	PF1220-495	Square Key 1/2" x 2 1/4"	2	For Each Gearbox (Not Shown)
22	PF1213-145	Hydraulic Motor w/Sensor (Single Gearbox Option)	1	Requires Items: 23 - 28 (Refer to Conveyor Drive Section)
	PF1213-18B	Hydraulic Motor w/Sensor (Drivers Side) (Double Gearbox Option)	1	
	PF1213-19B	Hydraulic Motor w/o Sensor (Passengers Side) (Double Gearbox Option)	1	
23	PF1220-146	Square Key 5/16" x 1 1/4"	1	
24	99888-122	Sockethead Capscrew 1/2"-13UNC x 1 1/2"	4	Torque to 26 Ft.-Lbs.
25	9404-025	Lock Washer 1/2"	4	
26	9008837	Tapered Plastic Plug	1	
27	415182	Conveyor Speed Sensor Kit	1	Not Shown
28	PF1213-145SK	Seal Kit	AR	

Straight Chain Components (Optional)

Please visit www.unverferth.com/parts/ for the most current parts listing.



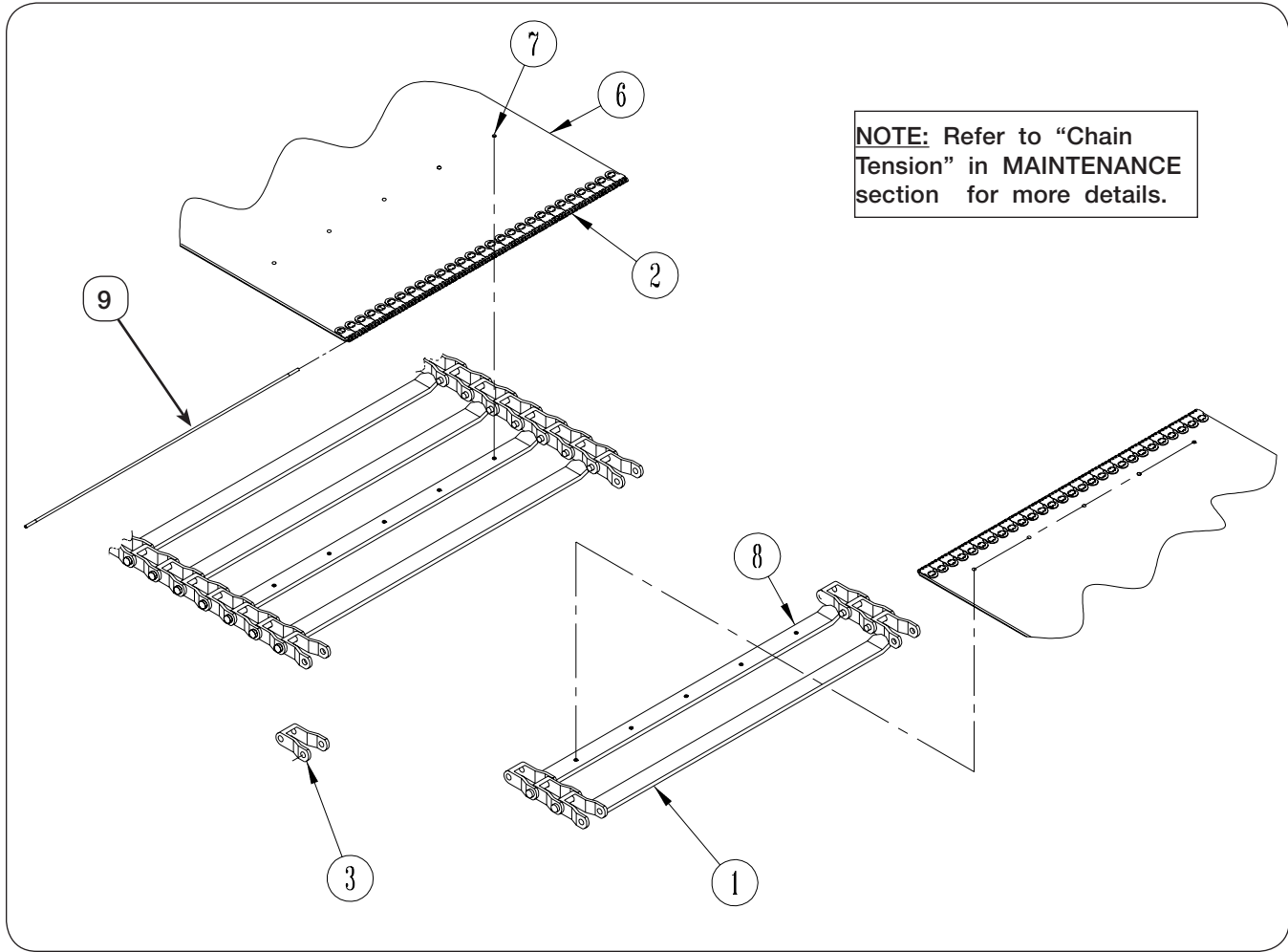
Straight Chain Components (Optional)

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	12' BOX QTY	13' BOX QTY	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	NOTES
1	414435	20' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	-	-	-	-	1	
	414414	18' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	-	-	-	1	-	
	414436	16' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	-	-	1	-	-	
	414415	14' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	-	1	-	-	-	
	414437	13' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	1	-	-	-	-	
	414377B	12' CHAIN CONVEYOR WELDMENT =BLACK=	1	-	-	-	-	-	
1-1	PF1236-907	Crossbar - 29" Apron Chain No Holes	44	71	76	87	97	108	
1-2	PF1234-899	PINTLE CHAIN, 667XH STRANDED - NO PAINT	264	284	304	348	388	432	
1-3	PF1234-057	Decal, Repairing / Replacing Chain	1	>	>	>	>	>	Not Shown
5	PF1236-904AR	Conveyor Bed Extension Abrasive Resistant Material	1	>	>	>	>	>	
	PF1236-904SS	EXTENSION, FLOOR, STRAIGHT CHAIN, SS PRO	1	>	>	>	>	>	

Belt Over Pintle Chain Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



Pro-Force Dry Spreader — Parts

Belt Over Pintle Chain Components

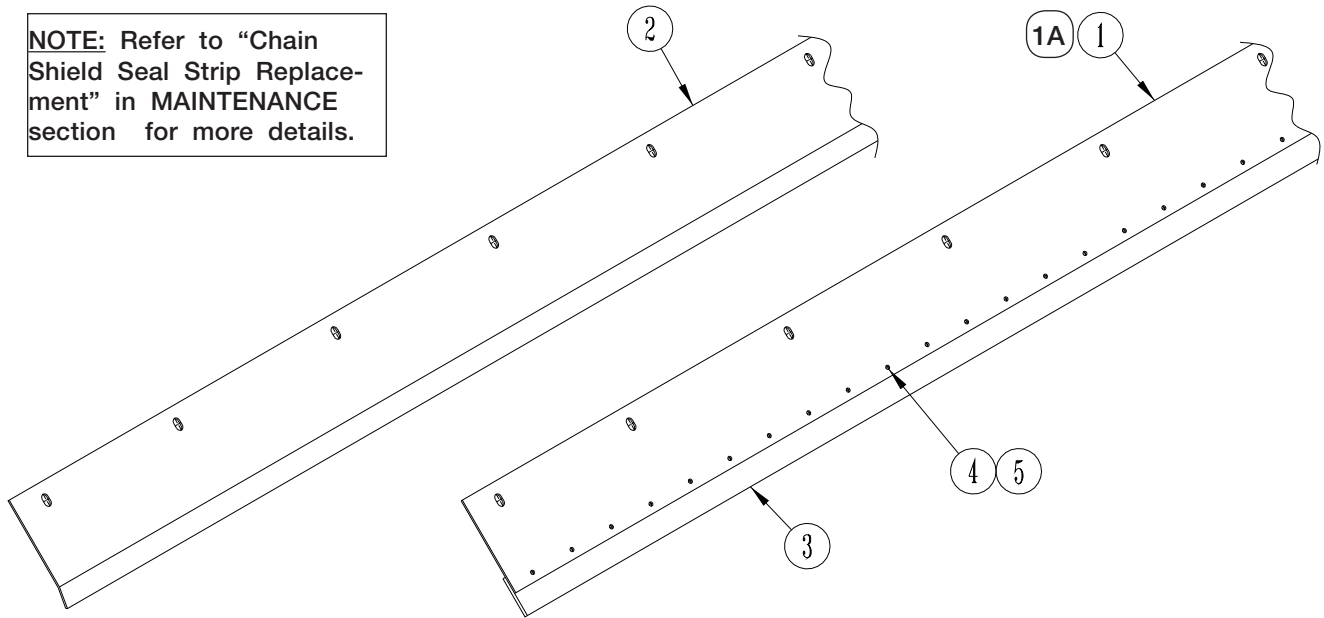
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	12' BOX QTY	13' BOX QTY	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	22' BOX QTY	NOTES
	PF1236-9522CL	APRON CHAIN, BOC, V-Cleat, 29" WIDE, 22' BOX	-	-	-	-	-	-	1	
	PF1236-9520CL	APRON CHAIN, BOC, V-Cleat, 29" WIDE, 20' BOX	-	-	-	-	-	1	-	
	PF1236-958CL	APRON CHAIN, BOC, V-Cleat, 29" WIDE, 18' BOX	-	-	-	-	1	-	-	
	PF1236-958	APRON CHAIN, BOC, Smooth, 29" WIDE, 18' BOX	-	-	-	-	1	-	-	
	PF1236-956CL	APRON CHAIN, BOC, V-Cleat, 29" WIDE, 16' BOX	-	-	-	1	-	-	-	
	PF1236-954CL	APRON CHAIN, BOC, V-Cleat, 29" WIDE, 14' BOX	-	-	1	-	-	-	-	
	PF1236-954	APRON CHAIN, BOC, Smooth, 29" WIDE, 14' BOX	-	-	1	-	-	-	-	
	PF1236-953CL	APRON CHAIN, BOC, V-Cleat, 29" WIDE, 13' BOX	-	1	-	-	-	-	-	
	PF1236-952CL	APRON CHAIN, BOC, V-Cleat, 29" WIDE, 12' BOX	1	-	-	-	-	-	-	
1	PF1236-907	Crossbar - 29" Apron Chain Without Holes	44	47	51	57	66	72	79	
2	PF1000-4530	SPLICE, SS MS35, 29" Wide Belt	1	>	>	>	>	>	>	
3	PF1234-899	PINTLE CHAIN 667XH Stranded No Paint	264	286	304	348	388	434	474	
6	PF1000-29V	BELTING, V-Cleat, 2-PLY, 29" WIDE	25	27	29	34	37	41	45	Specify in FT.
	PF1000-29	BELTING, Smooth, 2-PLY, 29" WIDE	-	-	29	-	37	-	-	
7	PF1209-41C	WASHER, CONICAL SS 3/8"	110	120	125	150	160	180	195	
	9502318-146	BOLT, FLAT SOCKETHEAD 5/16" X 3/4" SS	110	120	125	150	160	180	195	
8	PF1236-908	Crossbar - 29" Apron Chain With Holes	22	24	25	30	32	36	39	
9	9009071	SPLICE CABLE 1/4" Dia. x 30" SS	1	>	>	>	>	>	>	

Chain Shield

Please visit www.unverferth.com/parts/ for the most current parts listing.

NOTE: Refer to “Chain Shield Seal Strip Replacement” in MAINTENANCE section for more details.



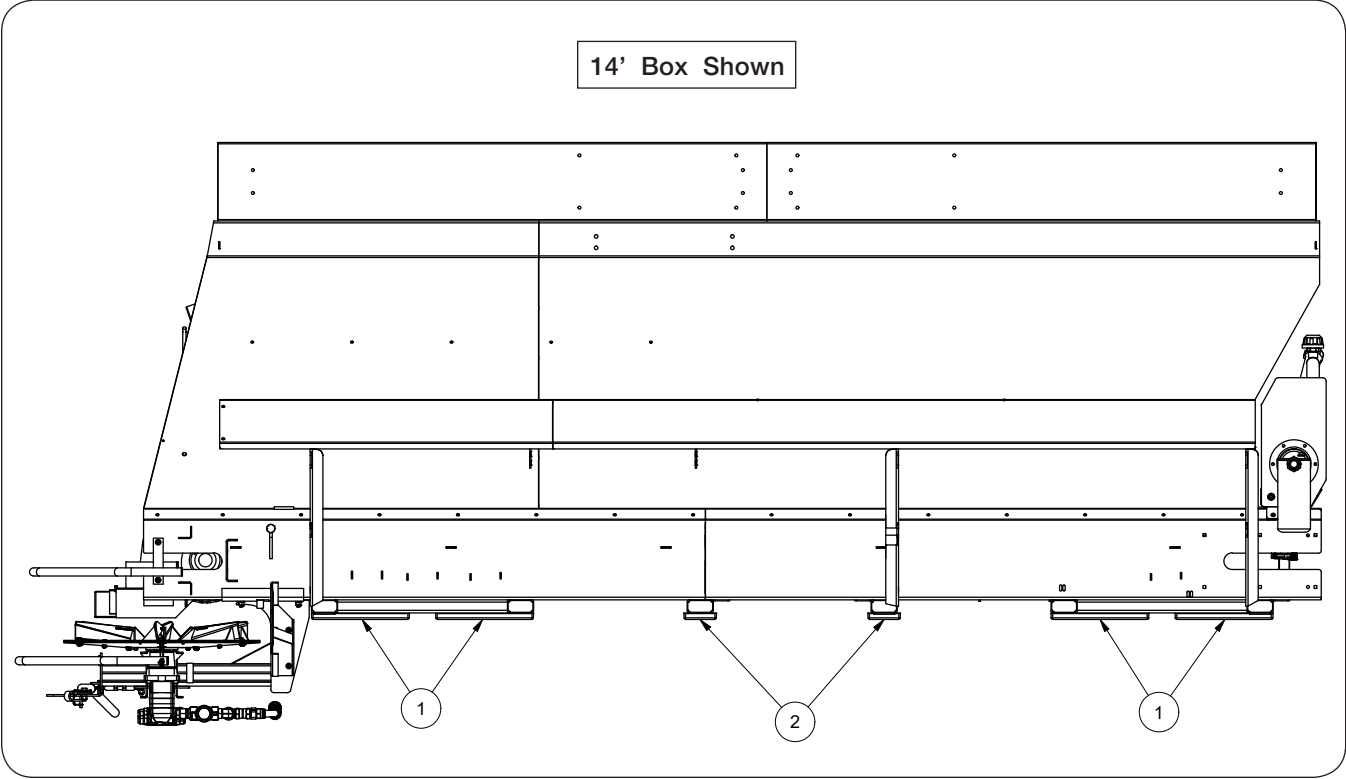
Chain Shield

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1234-912	WELDMENT, CHAINSHIELD, SS, BOC, 12' BOX	2	Requires Items: 1-1, 1-2, 1-3
1	PF1234-913	WELDMENT, CHAINSHIELD, SS, BOC, 13' BOX	2	
1	PF1234-914	CHAINSHIELD WELDMENT SS, RH, BOC, 14' BOX	1	
1A	414390	CHAIN SHIELD WELDMENT, LH 14' BOX	1	
1	PF1236-916	WELDMENT, SS CHAINSHIELD, RH, BOC, 16' BOX	1	
1A	414591	CHAIN SHIELD WELDMENT, LH 16' BOX	1	
1	PF1236-918	CHAINSHIELD WELDMENT SS, RH, BOC, 18' BOX	1	
1A	414576	CHAIN SHIELD WELDMENT, LH 18' BOX	1	
1	PF1236-920	WELDMENT, SS CHAINSHIELD, BOC, 20' BOX	2	
1	PF1236-922	WELDMENT, SS CHAINSHIELD, RH, BOC, 22' BOX	1	
1A	414626	CHAIN SHIELD WELDMENT, LH (SS) 22' BOX	1	
1	PF1236-926	WELDMENT, SS CHAINSHIELD, RH, BOC, 26' BOX	1	
1A	415002	CHAIN SHIELD WELDMENT, LH (SS) 26' BOX	1	
1-1	9007908-051	BOLT, CARRIAGE 3/8" X 1" SS	AR	
1-2	900903-021	LOCKWASHER, 3/8" SS	AR	
1-3	900901-006	HEX NUT 3/8-16UNC (SS)	AR	
2	PF1234-932	WELDMENT, SS CHAINSHIELD RH, CHAIN ONLY, 12' Box	1	Requires Items: 2-1, 2-2, 2-3
	PF1234-932-L	WELDMENT, SS CHAINSHIELD LH, CHAIN ONLY, 12' Box		
	PF1234-933	WELDMENT, SS CHAINSHIELD RH, CHAIN ONLY, 13' Box		
	PF1234-933-L	WELDMENT, SS CHAINSHIELD LH, CHAIN ONLY, 13' Box		
	PF1234-934	WELDMENT, SS CHAINSHIELD RH, CHAIN ONLY, 14' Box		
	PF1234-934LH	WELDMENT, SS CHAINSHIELD LH, CHAIN ONLY, 14' Box		
	PF1236-936	WELDMENT, SS CHAINSHIELD RH, CHAIN ONLY, 16' Box		
	PF1236-936-L	WELDMENT, SS CHAINSHIELD LH, CHAIN ONLY, 16' Box		
	PF1236-938	WELDMENT, SS CHAINSHIELD RH, CHAIN ONLY, 18' Box		
	PF1236-938-L	WELDMENT, SS CHAINSHIELD LH, CHAIN ONLY, 18' Box		
	PF1236-940	WELDMENT, SS CHAINSHIELD RH, CHAIN ONLY, 20' Box		
	PF1236-940-L	WELDMENT, SS CHAINSHIELD LH, CHAIN ONLY, 20' Box		
	PF1236-946	WELDMENT, SS CHAINSHIELD RH, CHAIN ONLY, 26' Box		
	PF1236-946-L	WELDMENT, SS CHAINSHIELD LH, CHAIN ONLY, 26' Box		
2-1	9007908-051	BOLT, CARRIAGE 3/8" X 1" SS	AR	
2-2	900903-021	LOCKWASHER, 3/8" SS	AR	
2-3	900901-006	HEX NUT 3/8-16UNC (SS)	AR	
3	414845	Standard Seal Strips, 2 5/8" x 12'	2	Specify Box Length
	414846	Standard Seal Strips, 2 5/8" x 14'		
	414847	Standard Seal Strips, 2 5/8" x 16'		
	414848	Standard Seal Strips, 2 5/8" x 18'		
	414849	Standard Seal Strips, 2 5/8" x 22'		
	414850	Standard Seal Strips, 2 5/8" x 26'		
	PF1000-38	High Temperature Seal Strips, 2 5/8" x 21'	2	
4	PF1205-86SS	Tee Prong Nut	AR	
5	PF1200-086SS	Button Head Socket Capscrew, 10-24 X 1/2" SS	AR	

Conveyor Mounting Rubber

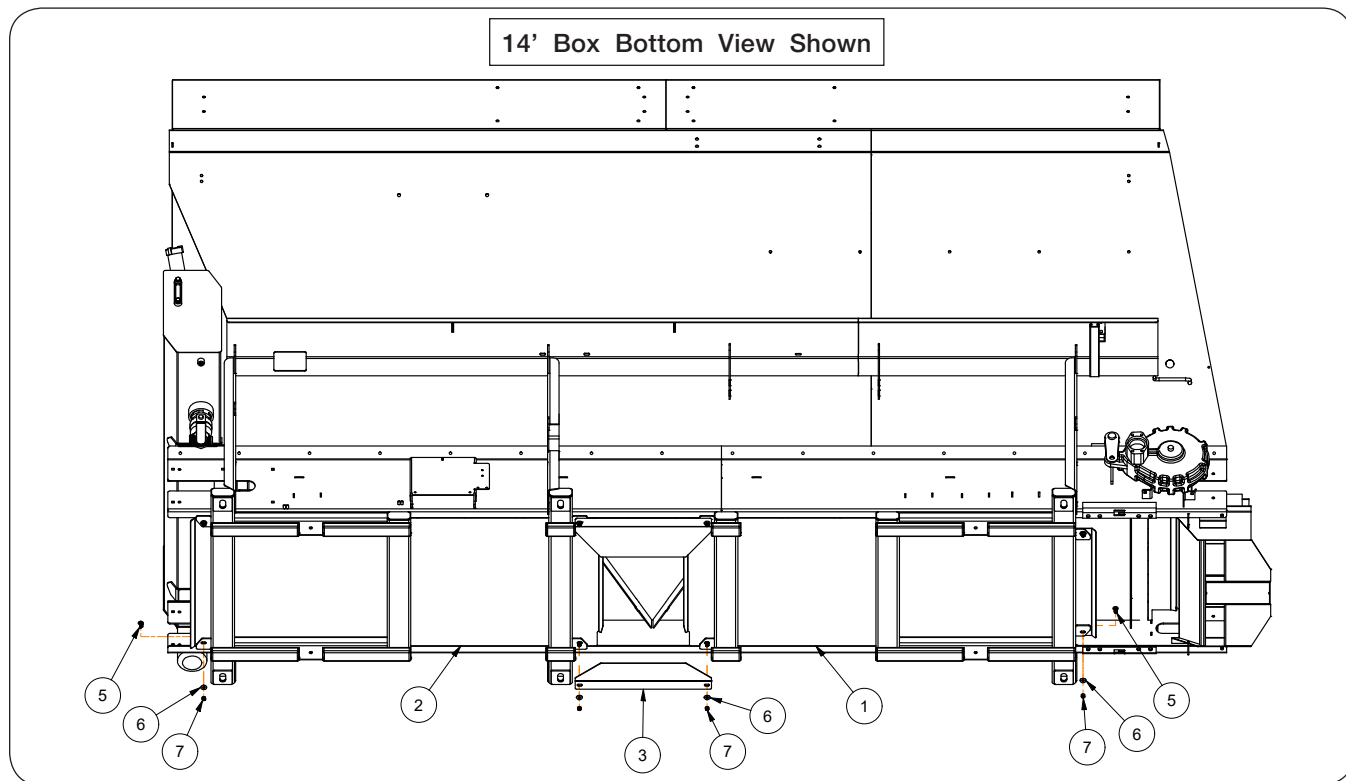
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	12' BOX QTY	13' BOX QTY	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	22' BOX QTY	26' BOX QTY	NOTES
1	PF1000-265	Mounting Rubber - 2 1/2" x 15"	8	>	>	12	12	12	12	12	
2	PF1000-26	Mounting Rubber - 2 1/2" x 5"	2	4	4	4	2	4	4	-	

Chassis Cover Components

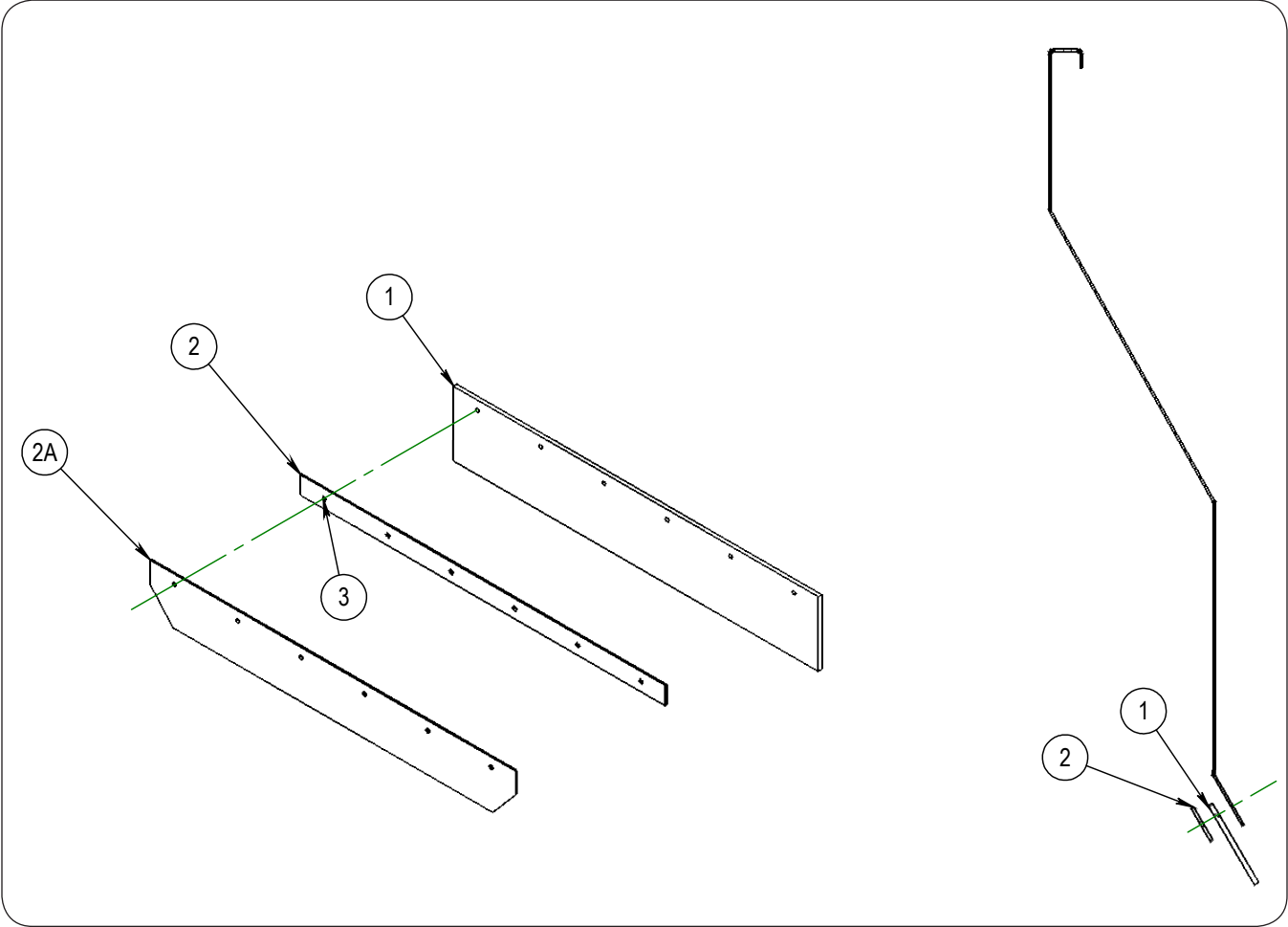
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	12' BOX QTY	13' BOX QTY	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	NOTES
1	414960	REAR COVER PANEL 30 3/4 X 70 SS	1	-	-	-	-	-	
	415116	REAR COVER PANEL 30 3/4 X 70 3/4 SS	-	1	1	-	-	-	
	414974	REAR COVER PANEL 30 3/4 X 43 1/4 SS	-	-	-	1	1	1	
2	415061	FRONT COVER PANEL 30 3/4 X 43 1/4 SS	1	-	-	1	1	-	
	415345	FRONT COVER PANEL 30 3/4 X 66 1/4 SS	-	1	-	-	-	-	
	414959	FRONT COVER PANEL 30 3/4 X 70 25/32 SS	-	-	1	-	-	1	
3	415049	SIDE DEFLECTOR PANEL 13 X 25 SS	2	-	-	-	-	-	
	415346	SIDE DEFLECTOR PANEL 8 x 15 13/16 SS	-	2	-	-	-	-	
	415117	SIDE DEFLECTOR PANEL 8 x 25 5/32 SS	-	-	2	-	-	-	
	414973	SIDE DEFLECTOR PANEL 8 x 26 23/32 SS	-	-	-	2	-	-	
	415119	SIDE DEFLECTOR PANEL 8 x 24 9/16 SS	-	-	-	-	2	2	
	415122	SIDE DEFLECTOR PANEL 8 x 32 7/8 SS	-	-	-	-	2	-	
	415153	SIDE DEFLECTOR PANEL 8 x 29 7/16 SS	-	-	-	-	-	2	
4	414975	MIDDLE COVER PANEL 30 3/4 X 58 7/8 SS	-	-	-	1	-	-	
	415121	MIDDLE COVER PANEL 30 3/4 X 78 11/16 SS	-	-	-	-	1	1	
5	9007908-051	Carriage Bolt, 3/8"-16UNC x 1" SS	8	>	>	12	>	>	
6	900902-038	Flat Washer 3/8" SS	8	>	>	12	>	>	
7	900905-012	Elastic Stop Nut 3/8"-16UNC SS	8	>	>	12	>	>	

Front Belt Sealer

Please visit www.unverferth.com/parts/ for the most current parts listing.



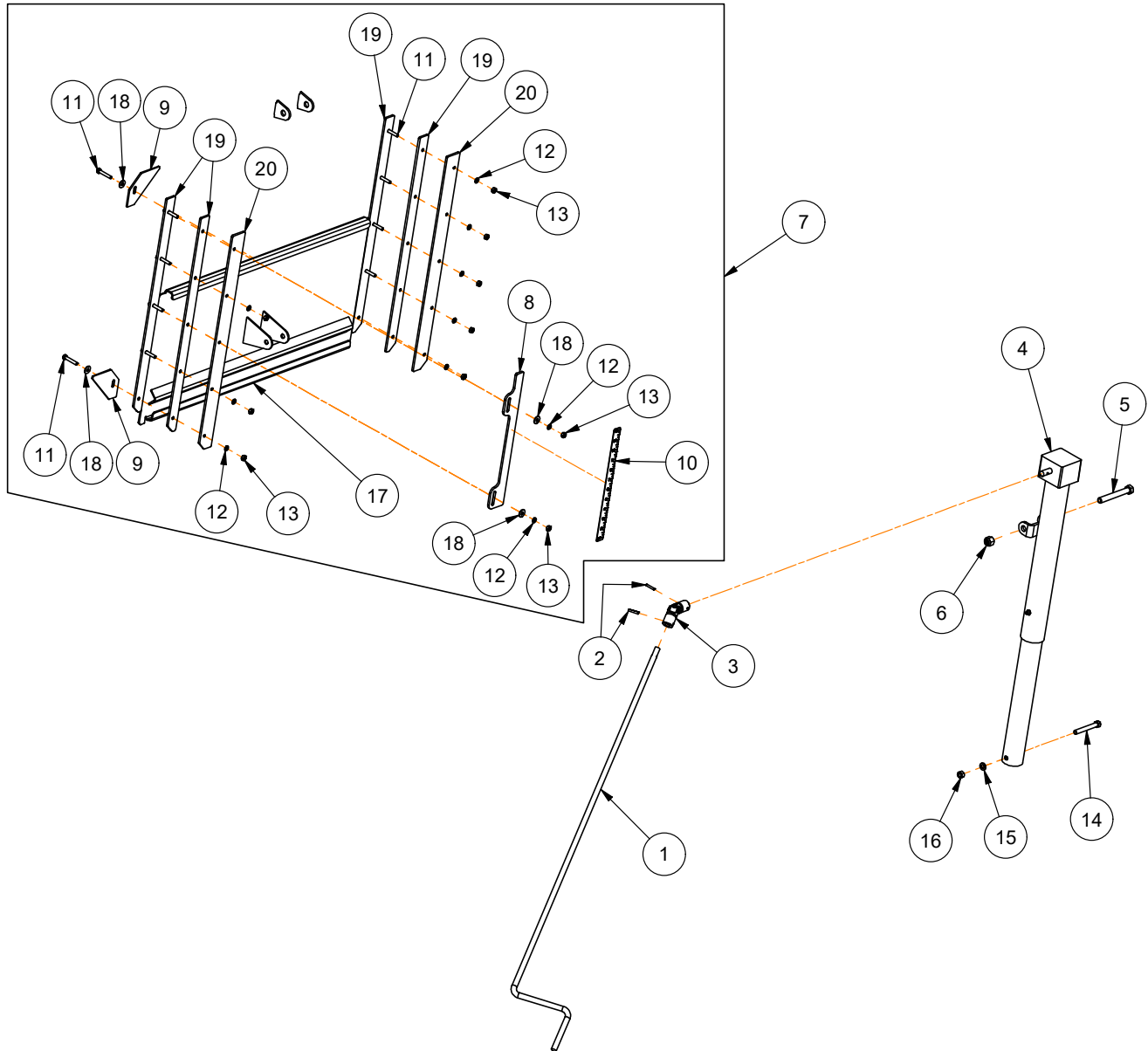
ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF70-053	Front Belt Sealer Strip	1	
	PF70-053-1	Front Belt Sealer Strip - High Temp		
	PF70-053-2	Front Belt Sealer Strip - Straight Chain		
2	PF70-089	Back Plate For Units w/Belt Over Chain	1	
2A	PF70-089-1	Back Plate For Units w/Straight Chain Only	1	
3	PF1200-202	BOLT, 1/4"- 20 X 1" SS 92304	6	
	PF1209-22	LOCKWASHER, 1/4" SS 93777		
	PF1205-11	NUT, 1/4" UNC SS 93606		

Notes

Please visit www.unverferth.com/parts/ for the most current parts listing.

Feedgate Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



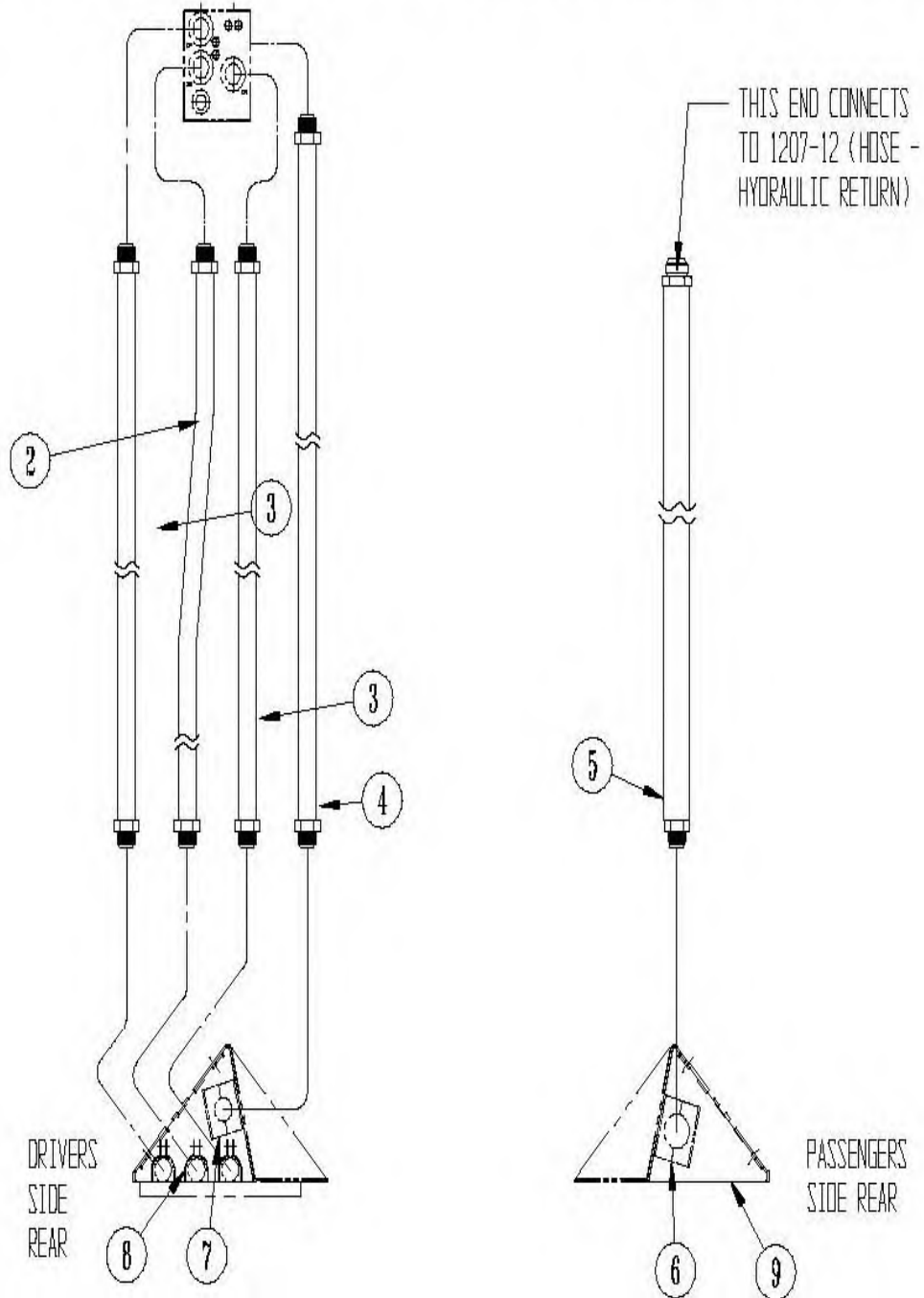
Feedgate Assembly Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1218-81SS	FEEDGATE JACK HANDLE, BAR 1/2" RD x 48" SS	1	
2	900909-097	ROLL PIN 3/16" Dia. X 1" SS	2	
3	PF1218-85	HEAVY-DUTY FEEDGATE U-JOINT SS	1	
4	PF1218-80	JACK, FEEDGATE	1	
5	900900-111	CAPSCREW, 1/2"-13UNC X 4" SS	1	
6	900905-016	ELASTIC STOP NUT, 1/2"-13UNC SS	1	
7	415168	REAR FEEDGATE UPDATE KIT	1	Includes Items 8 - 20
8	415185	FEEDGATE INDICATOR PLATE	1	
9	415236	CHAINSHIELD COVER PLATE	2	
10	9009074	FEEDGATE INDICATOR DECAL	1	
11	900900-007	CAPSCREW, 1/4"- 20UNC X 1 1/2" SS	10	
12	900903-017	LOCKWASHER, 1/4" SS	10	
13	900901-002	HEX NUT, 1/4" UNC SS	10	
14	900900-063	CAPSCREW, 3/8"-16UNC X 3" SS	1	
15	900903-021	LOCKWASHER, 3/8" SS	1	
16	900901-006	HEX NUT, 3/8"-16UNC SS	1	
17	PF1236-350	FEEDGATE SOLID REAR PANEL WELDMENT, SS	1	
18	900902-032	FLAT WASHER, 1/4" SS	4	
19	415162	FEEDGATE GUIDE SPACER	4	
20	415163	FEEDGATE GUIDE	2	

Hydraulic Pipe Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



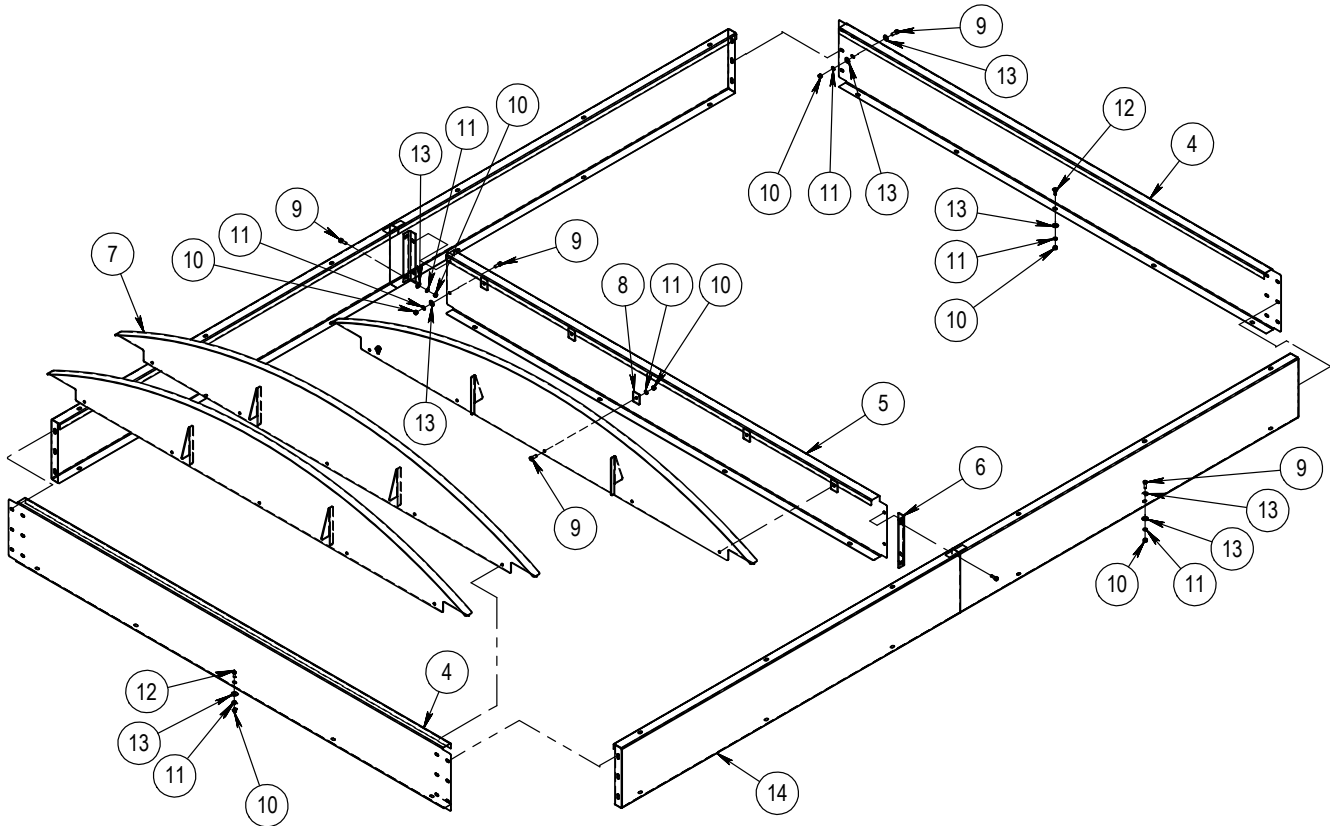
Hydraulic Pipe Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
2	PF1234-533	PIPE, HYD., 13' BOX	1	
	PF1234-534	HYDRAULIC PIPE WELDMENT 133.38" FORMED, 14' Box	1	
	PF1236-536	PIPE, HYD., 16' BOX	1	
	PF1236-538	HYDRAULIC PIPE WELDMENT 181.38" FORMED, 18' Box	1	
	PF1236-530	PIPE, HYD., 20' BOX	1	
	PF1236-532	PIPE, HYD., 22' BOX	1	
3	PF1234-523	PIPE, HYD., 13' BOX	2	
	PF1234-524	HYDRAULIC PIPE WELDMENT 133.38", 14' Box	2	
	PF1236-526	PIPE, HYD., 16' BOX	2	
	PF1236-528	HYDRAULIC PIPE WELDMENT 181.38", 18' Box	2	
	PF1236-520	PIPE, HYD., 20' BOX	2	
	PF1236-522	PIPE, HYD., 22' BOX	2	
4	PF1234-553	PIPE, HYD., 13' BOX	1	
	PF1234-554	HYDRAULIC PIPE WELDMENT 140.38" FORMED, 14' Box	1	
	PF1236-556	PIPE, HYD., 16' BOX	1	
	PF1236-558	HYDRAULIC PIPE WELDMENT 188.38" FORMED, 18' Box	1	
	PF1236-550	PIPE, HYD., 20' BOX	1	
	PF1236-552	PIPE, HYD., 22' BOX	1	
5	PF1234-543	PIPE, HYD., 13' BOX	2	
	PF1234-544	HYDRAULIC PIPE WELDMENT 133.44", 14' Box	2	
	PF1236-546	PIPE, HYD., 16' BOX	2	
	PF1236-548	HYDRAULIC PIPE WELDMENT 181.44", 18' Box	2	
	PF1236-540	PIPE, HYD., 20' BOX	2	
	PF1236-542	PIPE, HYD., 22' BOX	2	
6	9008884	Single Hose Clamp, 1.90" Dia.	2	13'-14' Boxes
			3	16'-20' Boxes
6-1	414702	Top Plate Hose Clamp 1 3/16" x 3 3/8" SS	2	13'-14' Boxes
			3	16'-20' Boxes
6-2	900900-012	Capscrew, 1/4"-20UNC x 2 3/4" SS	4	13'-14' Boxes
			6	16'-20' Boxes
7	9008883	Single Hose Clamp, 1.33" Dia.	1	13'-14' Boxes
			2	16'-20' Boxes
7-1	414701	Top Plate Hose Clamp 1 3/16 x 2 25/32" SS	1	13'-14' Boxes
			2	16'-20' Boxes
7-2	900900-011	Capscrew, 1/4"-20UNC x 2 1/2" SS	2	13'-14' Boxes
			4	16'-20' Boxes
8	PF1208-96	CLAMP, CUSHION 1" PIPE SS	3	
9	PF1234-559LH	COVER, END CAP LH SS	1	Requires Items: 9-1, 9-2, 9-3
	PF1234-559RH	COVER, END CAP RH SS	1	
9-1	PF1200-3011	BOLT, 3/8" X 1" SS 92336	2	
9-2	PF1205-27	NUT, 3/8" UNC SS 93611	2	
9-3	PF1209-43	LOCKWASHER, 3/8" SS 93779	2	

12" SS Box Sideboard Extension Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



12" SS Box Sideboard Extension Components

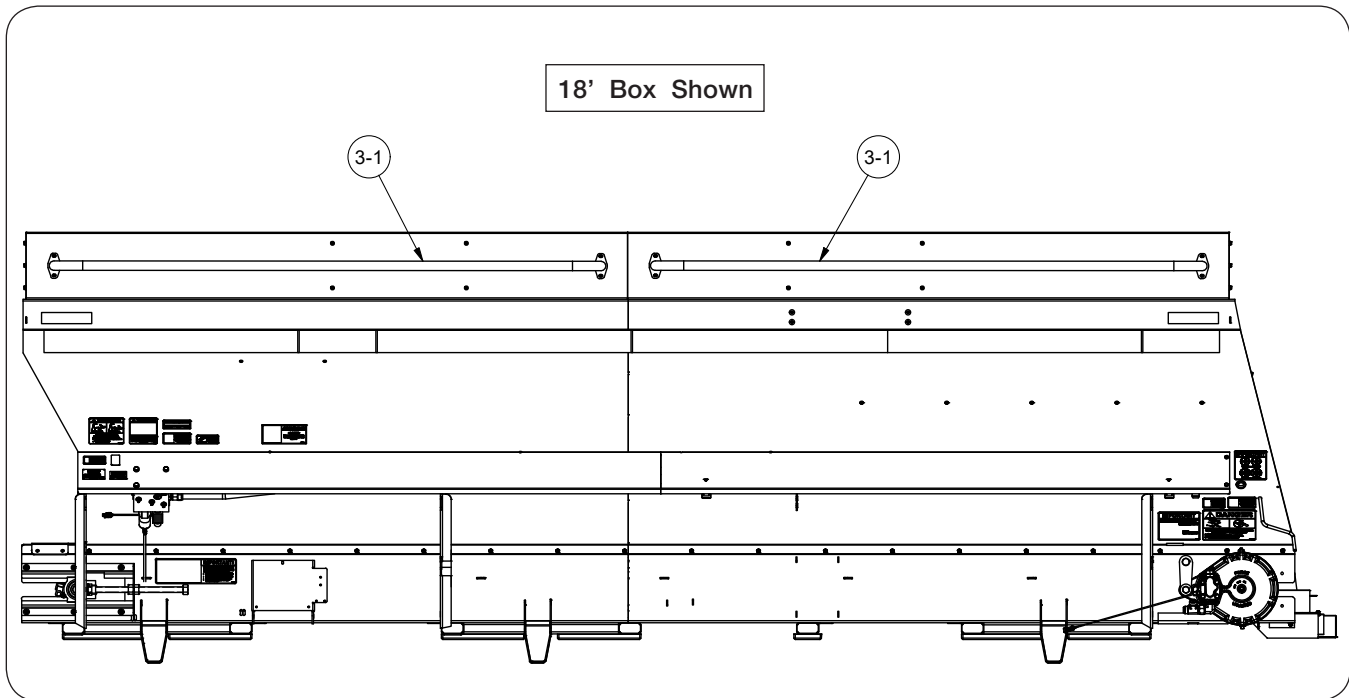
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
4	414614	EXTENSION, SS, 4", 101-3/4" LG FRONT / REAR	2	12' Box Only
	PF1234-148	EXTENSION, SS, 12", 101-3/4" LG FRONT / REAR		
5	PF1234-1520	EXTENSION, SS, 12", 101-1/4" LG. - CENTE	1	For Duo-Force Units Only
6	PF1234-1530	BRACKET, SS 12" CENTER EXTENSION	AR	
7	PF1237-18W	WELDMENT, 12" HIGH SS DIVIDER EXTENSION	AR	
8	PF1234-942	BRACKET, SS, SHORT / PINCH PLATE, BOX BO	AR	
9	PF1200-3011	BOLT, 3/8" X 1" SS 92336	AR	
10	PF1205-27	NUT, 3/8" UNC SS 93611	AR	
11	PF1209-43	LOCKWASHER, 3/8" SS 93779	AR	
12	PF1200-302SS	BOLT, CARRIAGE 3/8" X 1" SS 93322	AR	
13	PF1209-41	FLATWASHER, 3/8" SS 93702	AR	
14	414610	4" High Sideboard Extension (SS)	2	12' Box
	-	12" High Sideboard Extension (SS)	2	Specify Box Length

Pro-Force Dry Spreader — Parts

Sideboard Extensions Handrail (Optional)

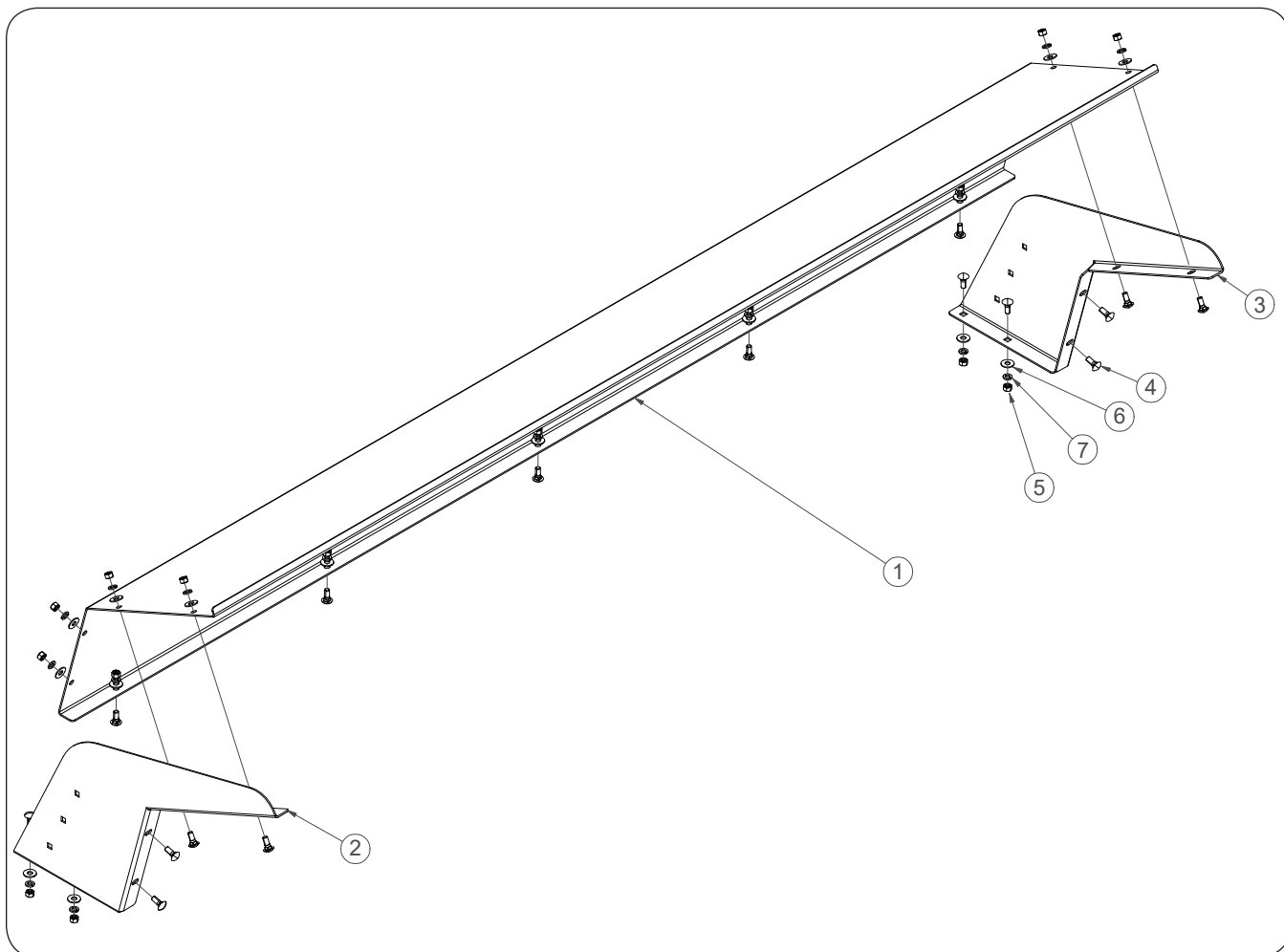
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	22' BOX QTY	26' BOX QTY	NOTES
1	414950B	Pro-Force Handrail Kit =Black=	1	-	-	-	-	-	
1-1	415084B	75" Handrail Weldment =Black=	2	-	-	-	-	-	
2	414951B	Pro-Force Handrail Kit =Black=	-	1	-	-	-	-	
2-1	415082B	88" Handrail Weldment =Black=	-	2	-	-	-	-	
3	414952B	Pro-Force Handrail Kit =Black=	-	-	1	-	-	-	
3-1	414911B	98" Handrail Weldment =Black=	-	-	2	-	-	-	
4	414953B	Pro-Force Handrail Kit =Black=	-	-	-	1	-	-	
4-1	415086B	64" Handrail Weldment =Black=	-	-	-	2	-	-	
4-2	415082B	88" Handrail Weldment =Black=	-	-	-	1	-	-	
5	414954B	Pro-Force Handrail Kit =Black=	-	-	-	-	1	-	
5-1	415084B	75" Handrail Weldment =Black=	-	-	-	-	2	-	
5-2	415082B	88" Handrail Weldment =Black=	-	-	-	-	1	-	
6	414981B	Pro-Force Handrail Kit =Black=	-	-	-	-	-	1	
6-1	415086B	64" Handrail Weldment =Black=	-	-	-	-	-	2	
6-2	415084B	75" Handrail Weldment =Black=	-	-	-	-	-	2	

Cab Shield Components (Optional)

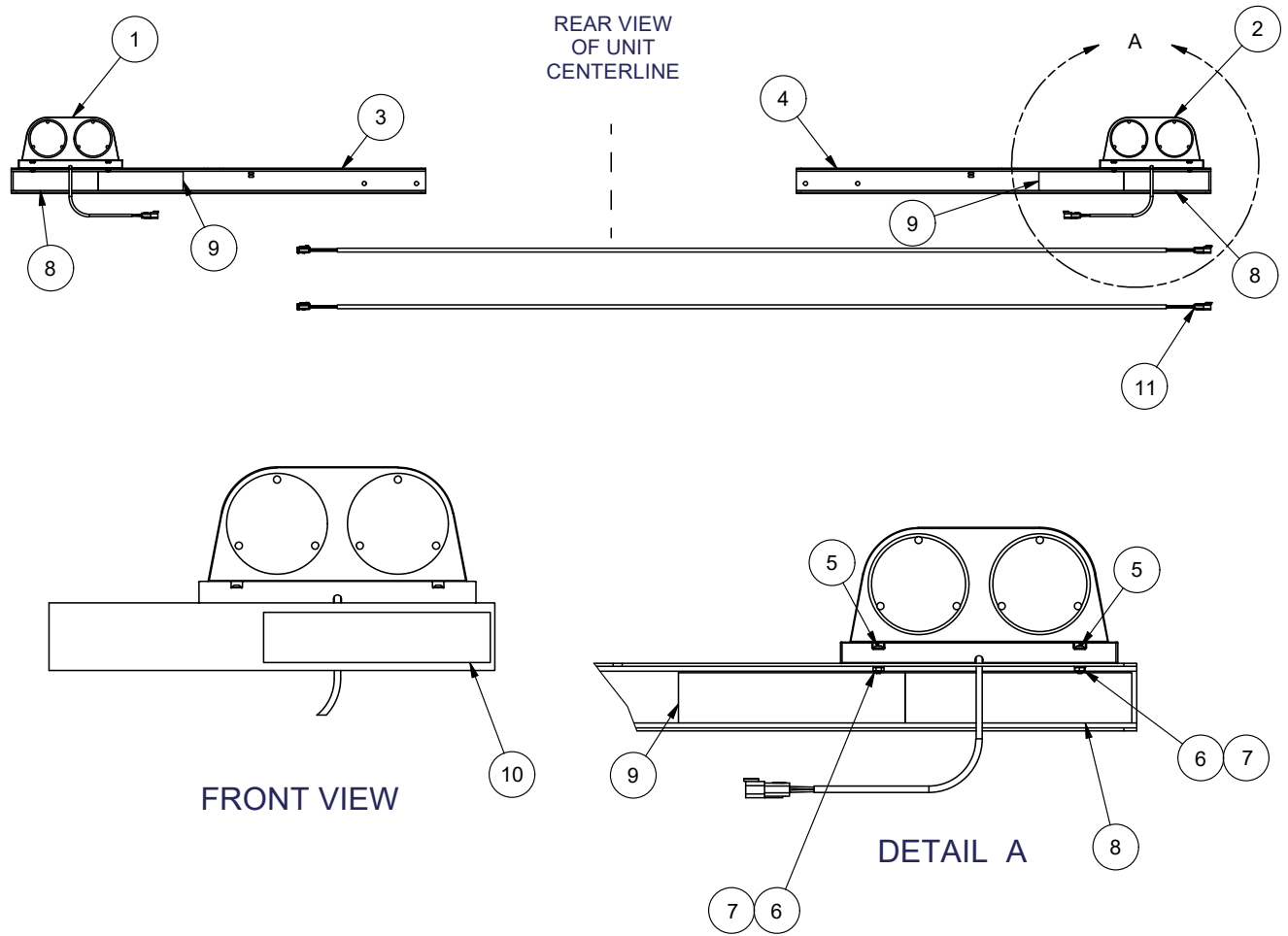
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1234-500	Cab Shield Assembly SS	-	Fits Class 8 Converted Chassis
1	PF1234-501	Cab Shield - Center SS	1	
2	PF1234-502	Cab Shield - RH Side SS	1	
3	PF1234-502L	Cab Shield - LH Side SS	1	
4	PF1200-302SS	Carriage Bolt - 3/8" UNC x 1" SS	17	
5	PF1205-27	Nut - 3/8" UNC SS	17	
6	PF1209-41	Flat Washer - 3/8" SS	17	
7	PF1209-43	Lock Washer - 3/8" SS	17	

Tail Light Assembly Components Without Fenders

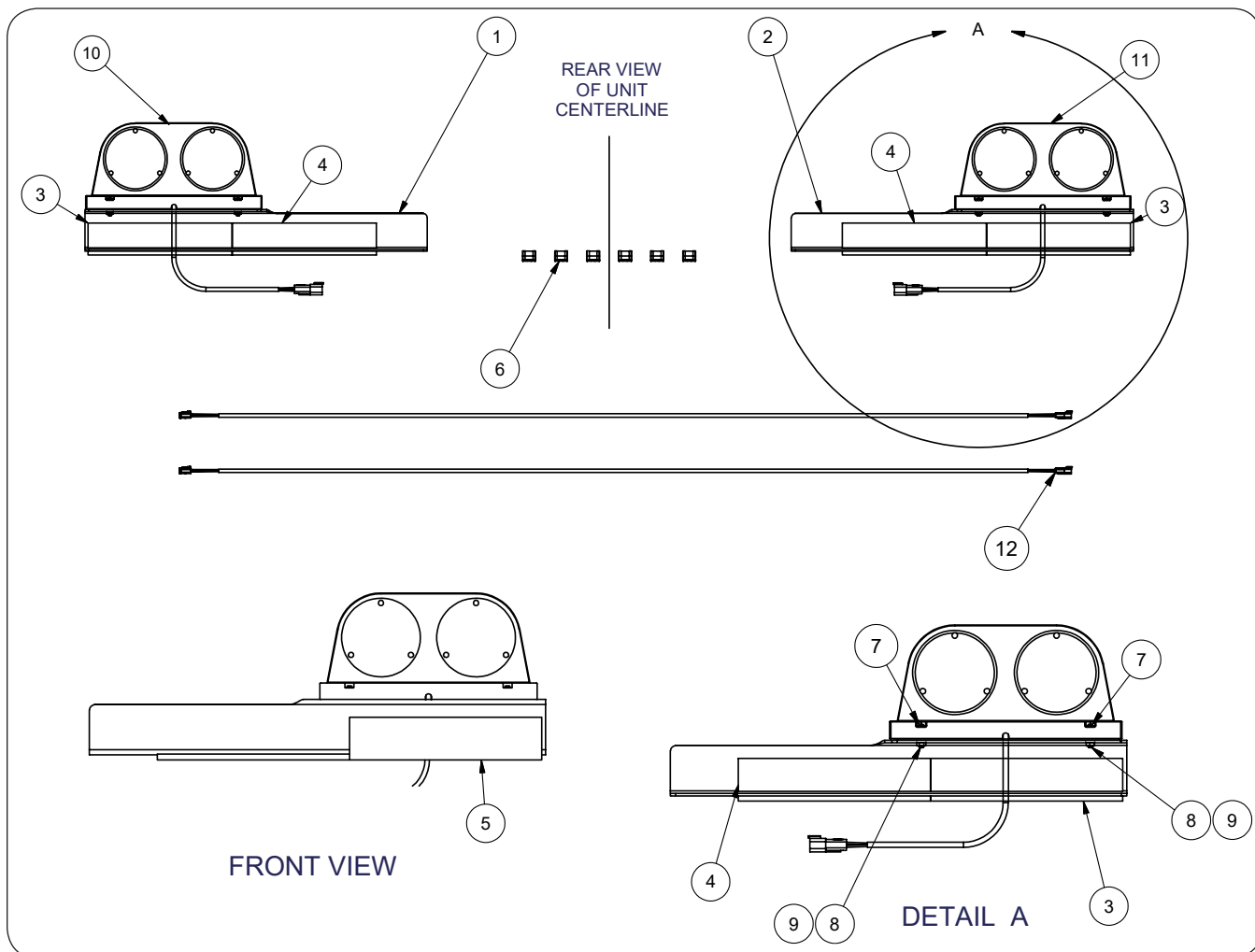
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1238-80-522	Tail Light Assembly Without Fenders	1	Includes All Items
1	415089	Tail Light - LH Assembly	1	
2	415088	Tail Light - RH Assembly	1	
3	415099	TAIL LIGHT BRACKET LH	1	
4	415100	TAIL LIGHT BRACKET RH	1	
5	PF1200-021	SCREW, FLANGE ROUND HEAD, #10-32 X 1"	8	
6	PF1209-19	FLATWASHER, #10-32 SS	8	
7	PF1205-256	NYLON LOCKNUT, #10-32 SS	8	
8	9003126	RED REFLECTOR DECAL	2	
9	9003125	FLUORESCENT ORANGE DECAL	2	
10	9003127	REFLECTOR 2 X 9 =AMBER=	2	
11	9008736	LIGHT HARNESS	2	

Tail Light Assembly Components With Fenders

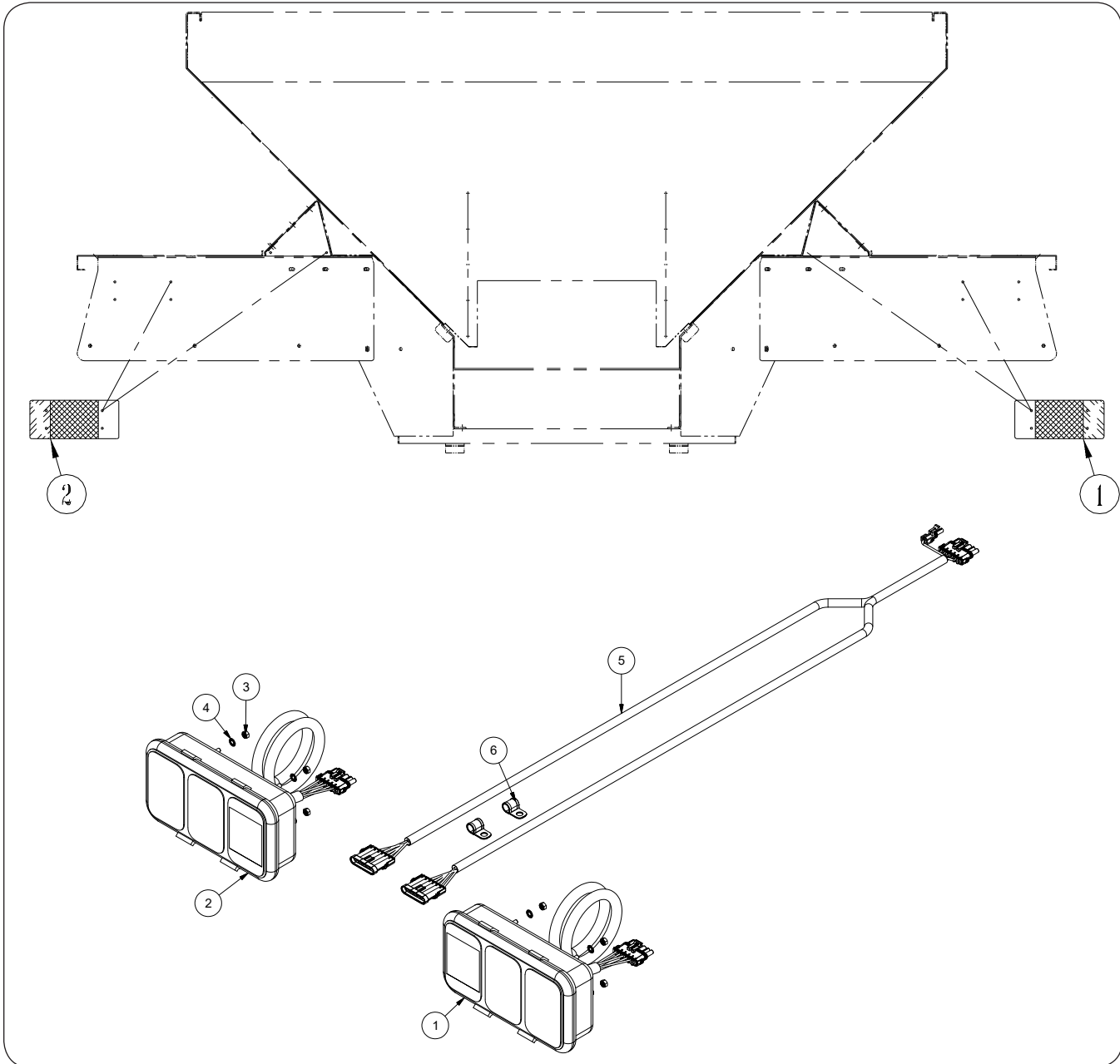
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	415104	Tail Light Assembly With Fenders	1	Includes Items 1 - 6
1	415105	FENDERS LIGHT MOUNT LH	1	
2	415106	FENDERS LIGHT MOUNT RH	1	
3	9003126	RED REFLECTOR DECAL	2	
4	9003125	FLUORESCENT ORANGE DECAL	2	
5	9003127	REFLECTOR 2 X 9 =AMBER=	2	
6	TA0-903850-0	CABLE CLAMP 1/2" OD	6	
7	PF1200-021	SCREW, FLANGE ROUND HEAD, #10-32 X 1"	8	
8	PF1209-19	FLATWASHER, #10-32 SS	8	
9	PF1205-256	NYLON LOCKNUT, #10-32 SS	8	
10	415089	Tail Light - LH Assembly	1	
11	415088	Tail Light - RH Assembly	1	
12	9008736	LIGHT HARNESS	2	

Transport Lighting Components

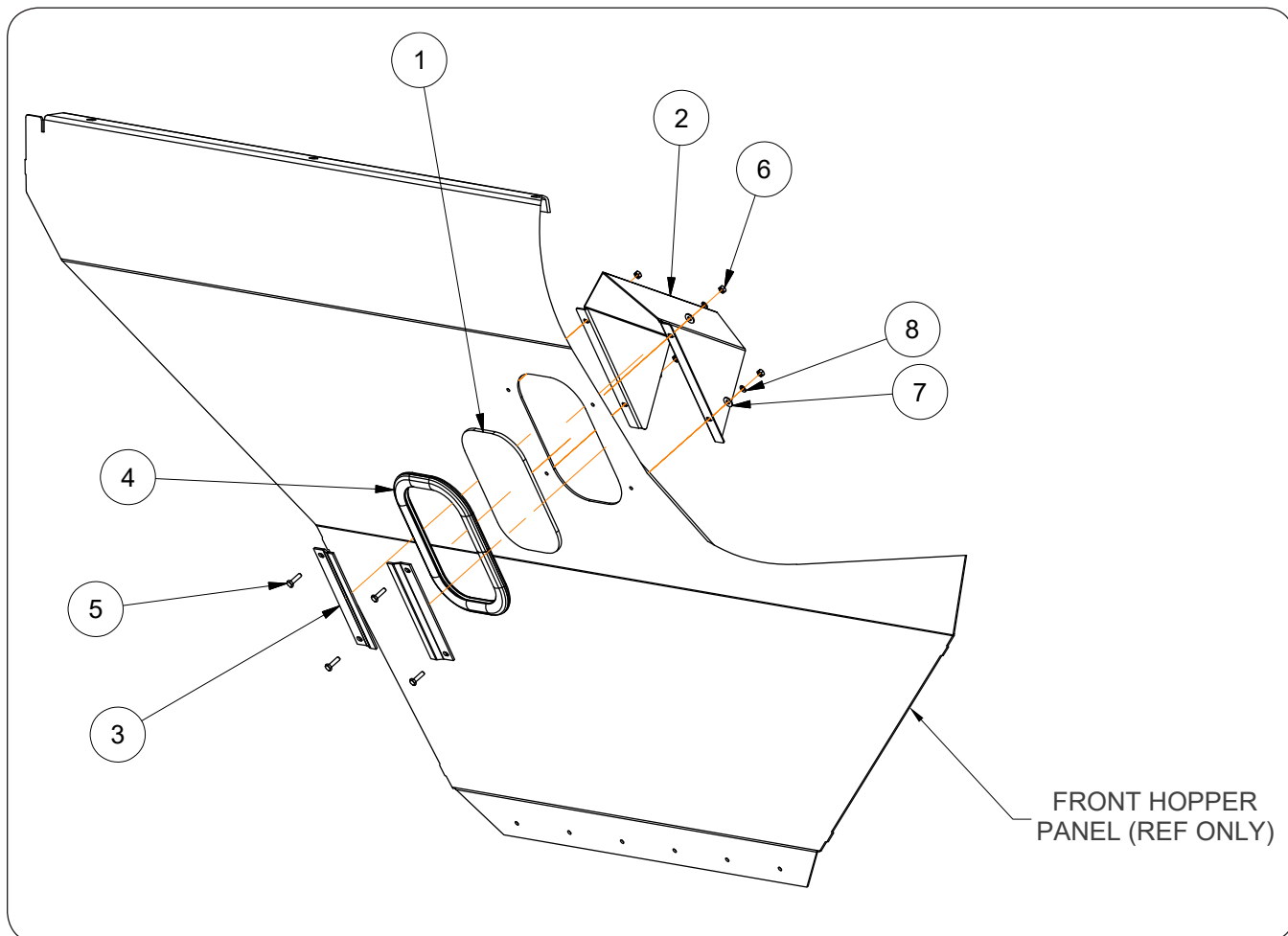
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414486	Chassis Mounted Lighting Package	1	Includes Items 1 through 6
1	414552	RH Tail Light Assembly	1	
2	414553	LH Tail Light Assembly	1	
3	9002573	Hex Nut - M6 x 1	8	
4	9004981	Lock Washer - 1/4"	8	
5	9008829	Mounted Spreader Harness	1	
6	TA0-903850-0	Cable Clamp 1/2" OD	2	

Box Window

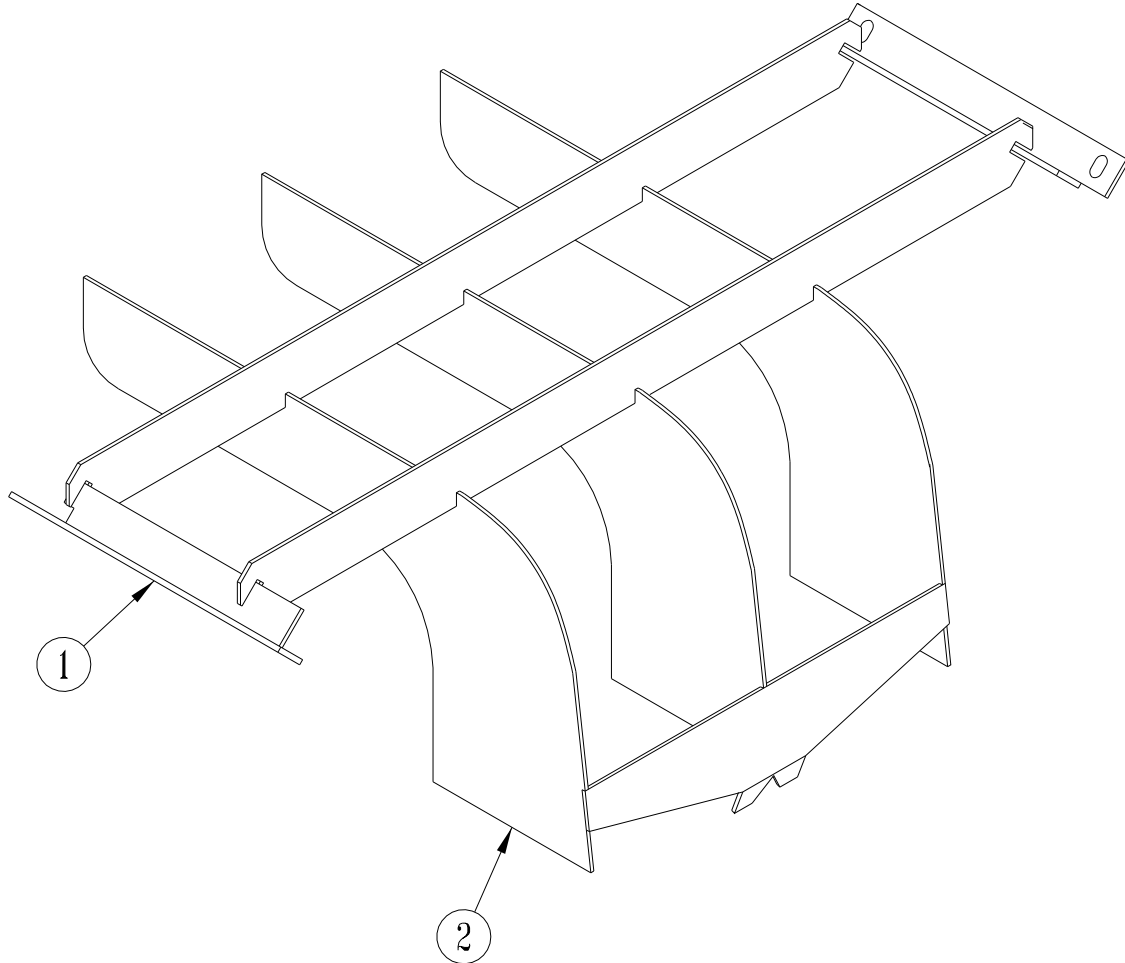
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414449	Window Kit	1	Includes All Items and Instruction Sheet
1	102608	Window Glass	1	
2	414446	Window Guard Panel	1	
3	414448	Window Bracket	2	
4	9007875	Window Molding	1	
5	900900-005	Capscrew 1/4"-20UNC x 1" SS	4	
6	900901-002	Hex Nut 1/4"-20UNC SS	4	
7	900902-032	Flat Washer 1/4" SS	4	
8	900903-017	Lock Washer 1/4" SS	4	

Hillside Flow Divider

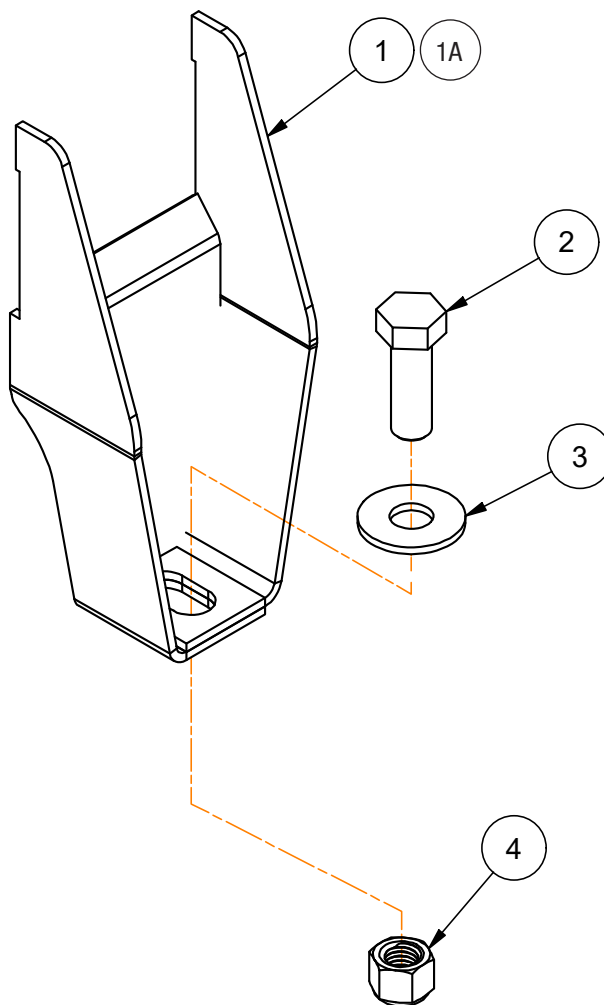
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ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1236-451	ASSY., SS PRO-FORCE HILLSIDE FLOW DIVIDE	-	Includes All Items
1	PF1234-452	BRACKET, SS, HILLSIDE FLOW DIVIDER, RH	1	
	PF1234-452L	BRACKET, SS, HILLSIDE FLOW DIVIDER, LH	1	
	1-1 PF1200-302SS	BOLT, CARRIAGE 3/8" X 1" SS 93322	2	
	1-2 PF1209-41	FLATWASHER, 3/8" SS 93702	2	
	1-3 PF1209-43	LOCKWASHER, 3/8" SS 93779	2	
	1-4 PF1205-27	NUT, 3/8" UNC SS 93611	2	
2	PF1236-453	HILLSIDE FLOW DIVIDER WELDMENT, SS	1	

Box Mount

Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1236-80	Box Mount Weldment	6	1850 and 2650 Units
			4	1450 and 2250 Units
1A	415114	Center Box Mount Weldment	2	2250 Units
2	91299-146	Capscrew 3/4"-10UNC X 2 3/4" Gr. 8	6	1850, 2250 and 2650 Units
			4	1450 Units
3	9405-106	FLATWASHER, 3/8"	6	1850, 2250 and 2650 Units
			4	1450 Units
4	9008840	NYLON LOCKNUT, 3/4"-10UNC	6	1850, 2250 and 2650 Units
			4	1450 Units



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