Fertilizer Spreader

Pro-Force® Dry Spreader
Models 1150, 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

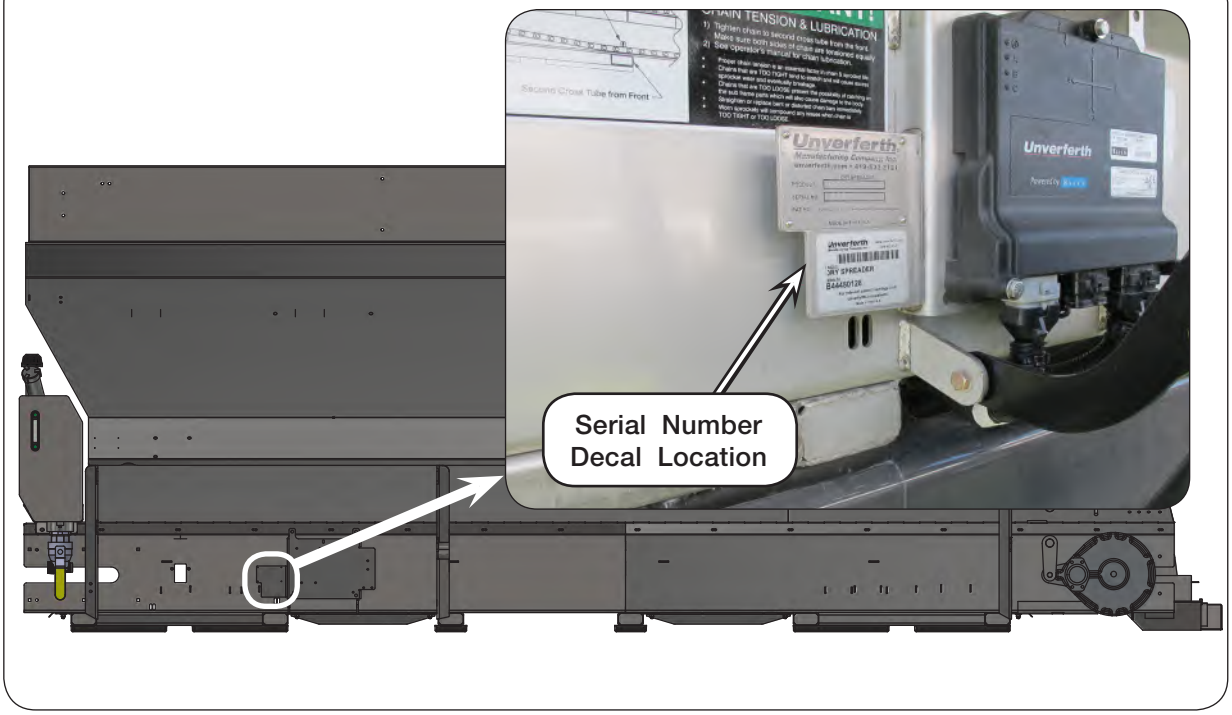
All products manufactured by Unverferth Mfg. Co., Inc. are warranted to be free from material and workmanship defects for one full year from time of consumer delivery. Your local dealer will gladly assist you with any warranty questions.

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.*

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FOR SCALE, AUTO GREASER, AND / OR TARP INFORMATION, PLEASE REFER TO THE INDIVIDUAL MANUALS.

Section I
Safety

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

DANGER

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

WARNING

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

CAUTION

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

IMPORTANT

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.**

Part No. 9009170

Part No. 9003476

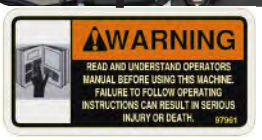
Part No. 95445

Part No. 95008

Part No. 901256

Part No. 9009453

Part No. 9008838



Part No. 97961

Part No. PF1234-055

Part No. PF1234-054

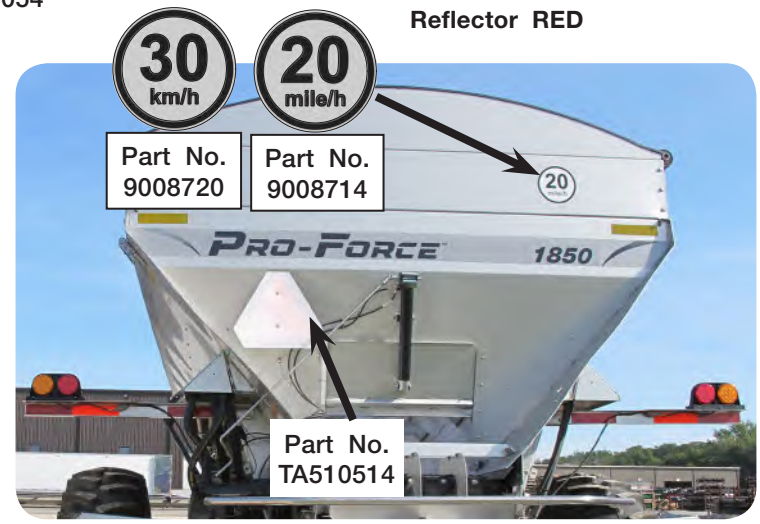
Part No. 9003125
Fluorescent Strip

Part No. 9003127
Reflector AMBER

Part No. 9003126
Reflector RED

Part No. 9008721

Part No. 9008715



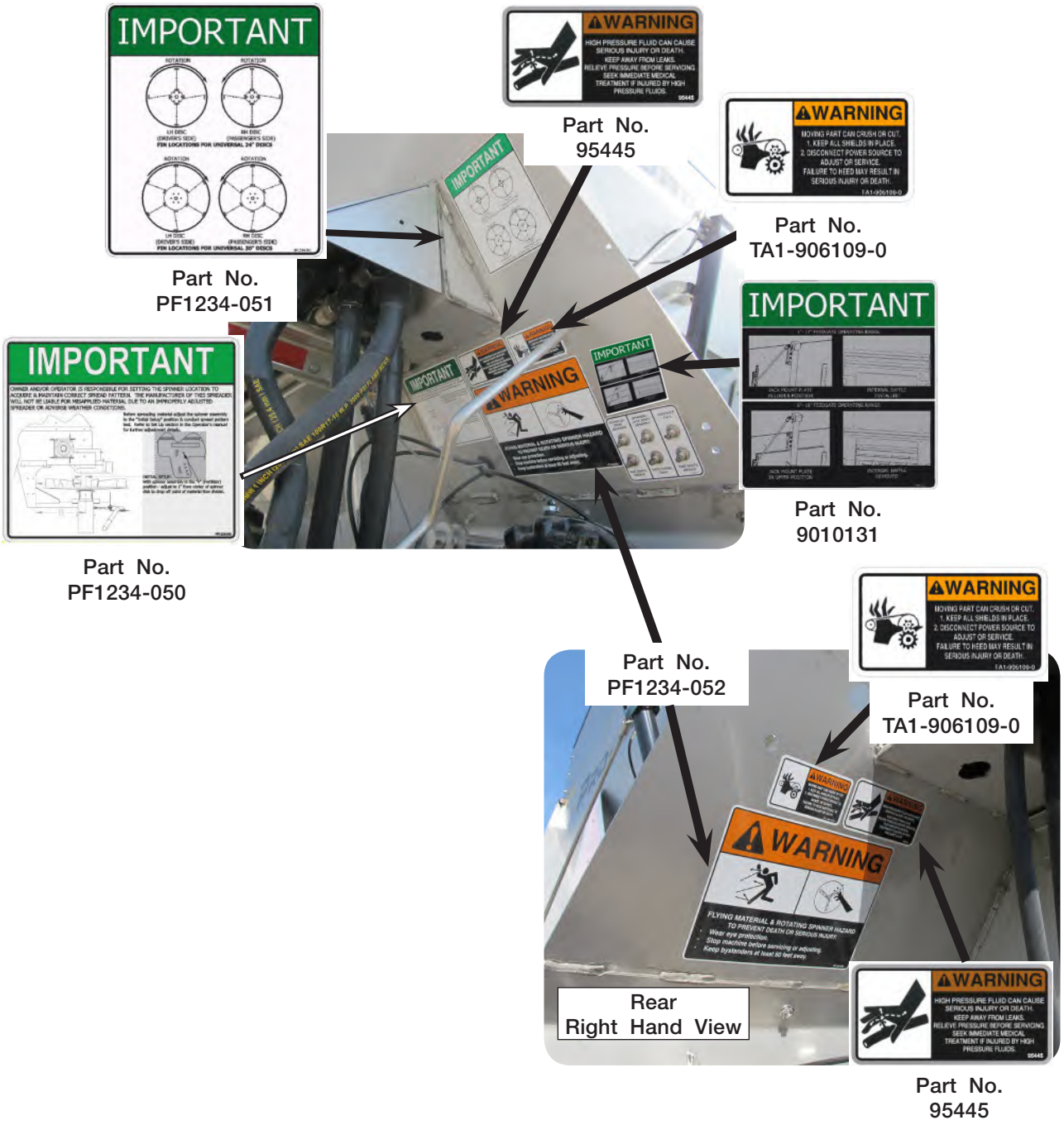
Part No. 9008720

Part No. 9008714

Part No. TA510514

(Continued on next page)

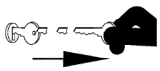
Safety Decals (continued)



Following Safety Instructions

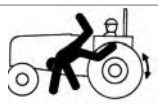
- Read and understand this operator's manual before operating.

- 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 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.



- Never enter a spreader containing granular material. Flowing granular material traps and suffocates victims in seconds.

Before Servicing or Operating

- 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.
- Always make certain everyone and everything is clear of the machine before beginning operation.
- This spreader is intended to apply only agricultural materials. Attempting to apply other materials may cause equipment damage and introduce unexpected personal hazards.

During Operation

- Comply with all laws and product label directions governing safe product application.
- Regulate speed to working 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.
- The dry spreader chassis mount box is not equipped with brakes. Ensure that the towing vehicle has adequate weight and braking capacity to tow this implement.
- 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.
- 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 the hydraulic system of all pressure before adjusting or servicing. See chassis operator's manual for procedure to relieve pressure.

- High-pressure fluids can penetrate the skin and cause serious injury or death. Leaks of high-pressure fluids may not be visible. Use cardboard or wood to detect leaks in hydraulic system. 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.

- 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

FOR SCALE, AUTO GREASER, AND / OR TARP
INFORMATION, PLEASE REFER TO THE INDIVIDUAL MANUALS.

Pre-Delivery Checklist

After the cart has been completely assembled, use the following checklist and inspect the cart. Check off each item as it is found satisfactory or after proper adjustment is made.

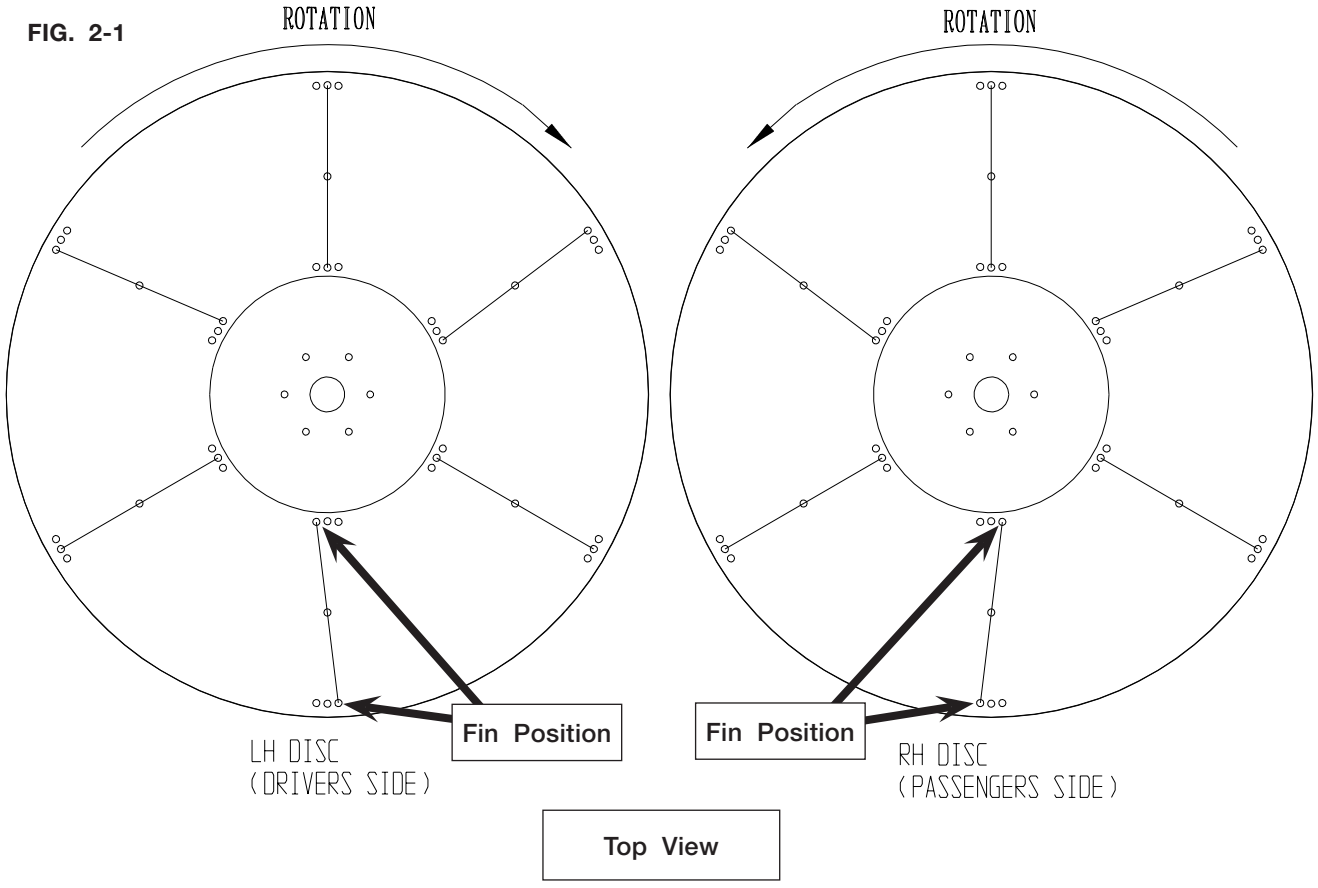
- ☐ Check toolbox for controller, if ordered. See “Rate Control Module (RCM) Spreader Set Up” in this section.
- ☐ Power wash any road salt off this unit to help prevent corrosion.
- ☐ Complete sideboards, fenders and tarp set up, if equipped. Remove tarp/sideboard shipping brackets.
- ☐ Lubricate all stainless steel capscrews with anti-seize compound.
- ☐ Torque stainless steel capscrews as specified in MAINTENANCE section.
- ☐ Lubricate all grease fittings and check gearbox oil level.
- ☐ Check hydraulic level in reservoir is centered on the sight gauge.
- ☐ Complete hydraulic oil cooler install, if equipped.
- ☐ Verify all safety decals are correctly located and legible. Replace if damaged.
- ☐ Verify all reflective decals are correctly located.
- ☐ Check SMV emblem and SIS decals are in place, clean and visible.
- ☐ Verify transport lights are working properly.
- ☐ Install ladder, if removed, as specified in OPERATION section.
- ☐ Install spinner deflectors, if removed.
- ☐ Install tail lights, if removed.
- ☐ Align and properly tension conveyor chain. See “Chain Tension” in MAINTENANCE section.
- ☐ 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.
- ☐ Test run the conveyor and spinner. See “Spreader Constant For Gate Setting” and “Spinner Disc Operation” in OPERATION section.
- ☐ Check hydraulic components for leaks and check hose routing.

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. 2-1.

FIG. 2-1



Spinner Disc Set Up

⚠ WARNING

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

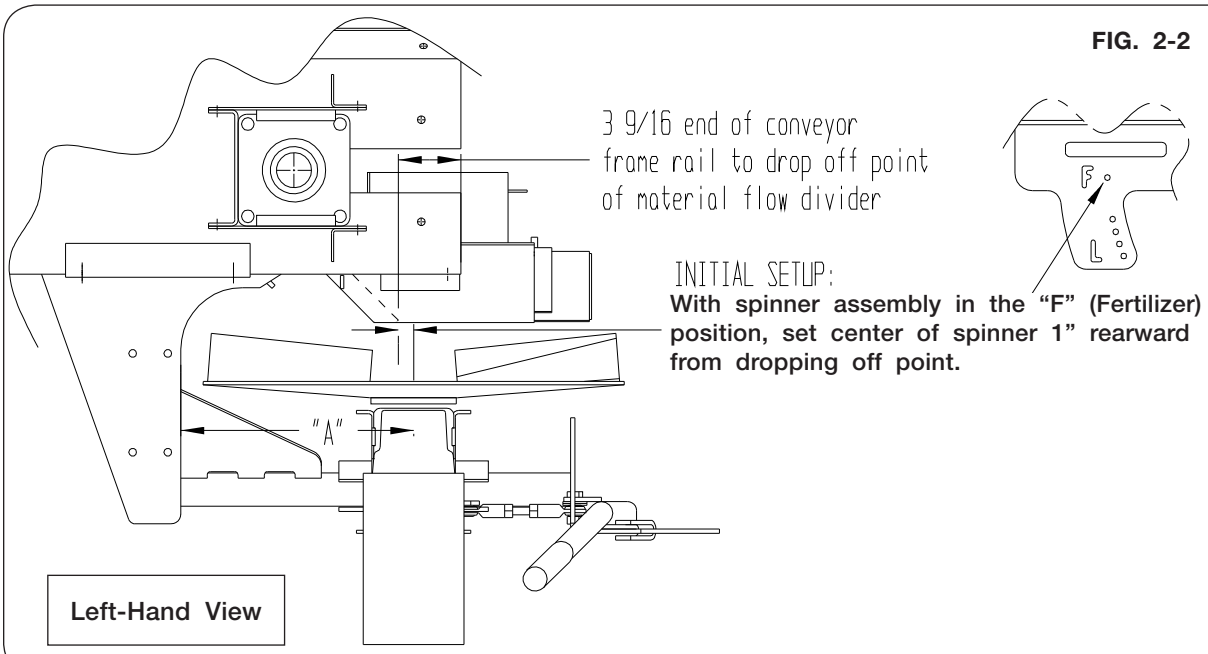
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

- **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.*

FIG. 2-2



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, set center of spinner 1" rearward from dropping off point of material flow divider.

2. Verify dimension "A" is the same for both spinner motors. Verify both spinner motors are level to the frame. (FIG. 2-2)

Dealer Set Up

1450 Pull-Type Sideboards Installation

⚠ WARNING

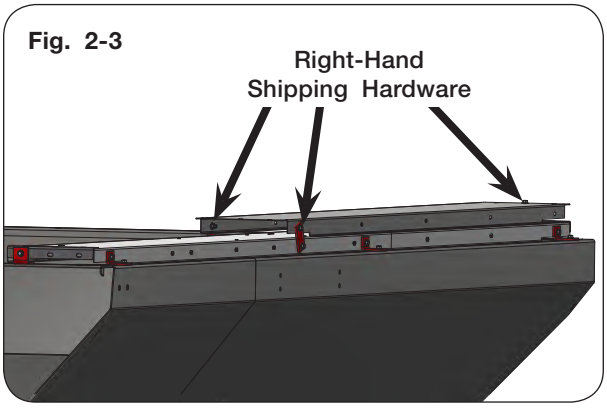
- **TO PREVENT PERSONAL INJURY OR DEATH ALWAYS ENSURE THAT THERE ARE PEOPLE WHO REMAIN OUTSIDE THE DRY SPREADER TO ASSIST THE PERSON WORKING INSIDE, AND THAT ALL SAFE WORKPLACE PRACTICES ARE FOLLOWED. THERE IS RESTRICTED MOBILITY AND LIMITED EXIT PATHS WHEN WORKING INSIDE THE IMPLEMENT.**
- **NEVER ENTER DRY SPREADER WITH CHASSIS RUNNING. SERIOUS OR FATAL INJURY CAN OCCUR DUE TO ENTANGLEMENT WITH ROTATING COMPONENTS. ALWAYS STOP ENGINE AND REMOVE KEY BEFORE ENTERING THE DRY SPREADER.**
- **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.**
- **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 150 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

IMPORTANT

- *Stainless steel hardware has a natural tendency to cold weld/gall when installed/uninstalled at high speeds and/or high torques. It is recommended to apply a thread lubricant approved for stainless steel such as graphite-based anti-seize or molybdenum disulfide based anti-seize when performing an assembly/disassembly of stainless steel hardware. Unverferth PN 9504206 or equivalent.*

1. Park empty dry spreader on firm, level surface. Block the machine to keep it from moving. Set vehicle's parking brake, shut off the engine, remove the ignition key and disable all hydraulics to the dry spreader.
2. If equipped with a tarp, use a safe lifting device rated at 150 lbs., remove shipping bundle which includes front and rear end caps along with the crank handle and crank handle holder from inside the spreader.
3. Remove and discard both sides shipping hardware and red shipping brackets retaining front and rear sideboards as shown. (FIG. 2-3)
4. Remove front and rear sideboards from the spreader.

Fig. 2-3



Dealer Set Up (continued)

5. Remove and discard right-hand shipping hardware and red shipping brackets. (FIG. 2-4)

6. Lift the right-hand sideboards (416422 - front; 416420 - rear) into position and loosely secure sideboards into place using 3/8" stainless steel capscrews, flat washers and elastic stop nuts along sideboard bottom edge. (FIG. 2-5)

Fig. 2-4

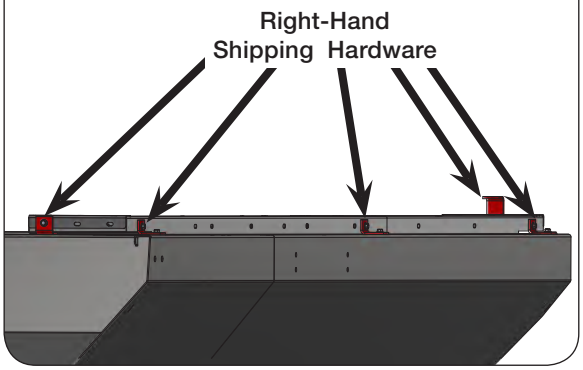
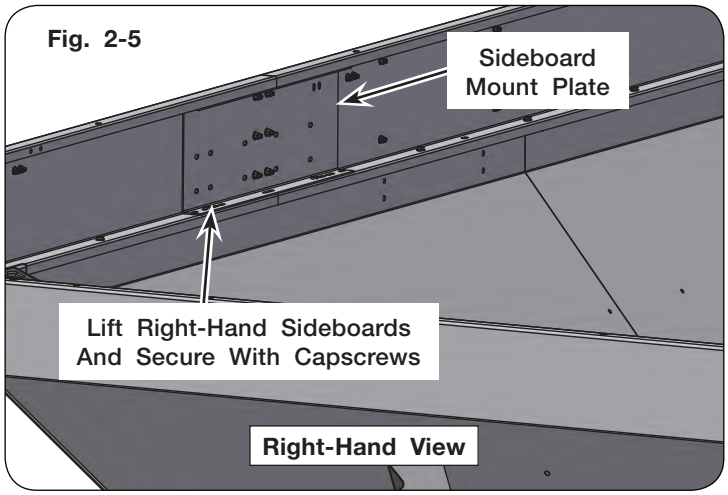


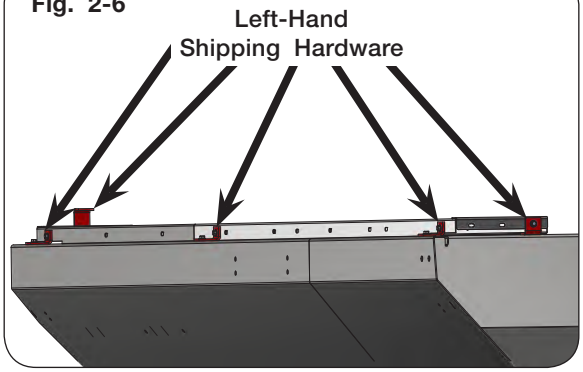
Fig. 2-5



NOTE: Sideboard mount plates (416406) stay installed between the right-hand and left-hand front and rear sideboards when sideboards are in upright position. (FIGS. 2-5 and 2-7)

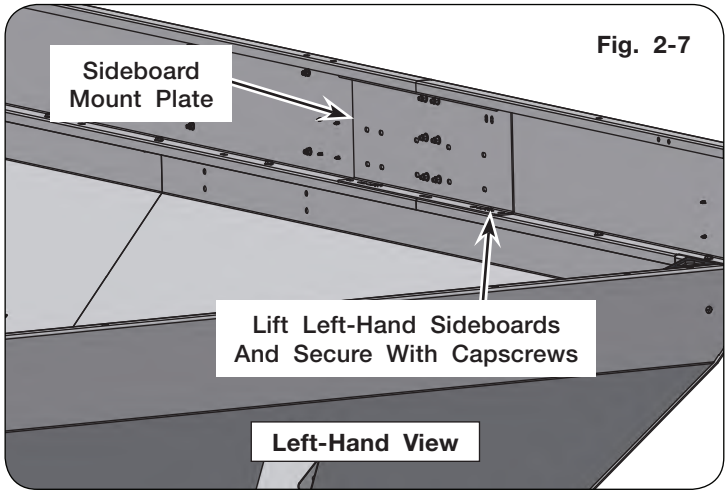
7. Remove and discard left-hand shipping hardware and red shipping brackets. (FIG. 2-6)

Fig. 2-6



8. Lift the left-hand sideboards into position (416421 - front; 416418 - rear) and loosely secure left-hand sideboards with 3/8" stainless steel capscrews, flat washers and elastic stop nuts along the bottom. (FIG. 2-7)

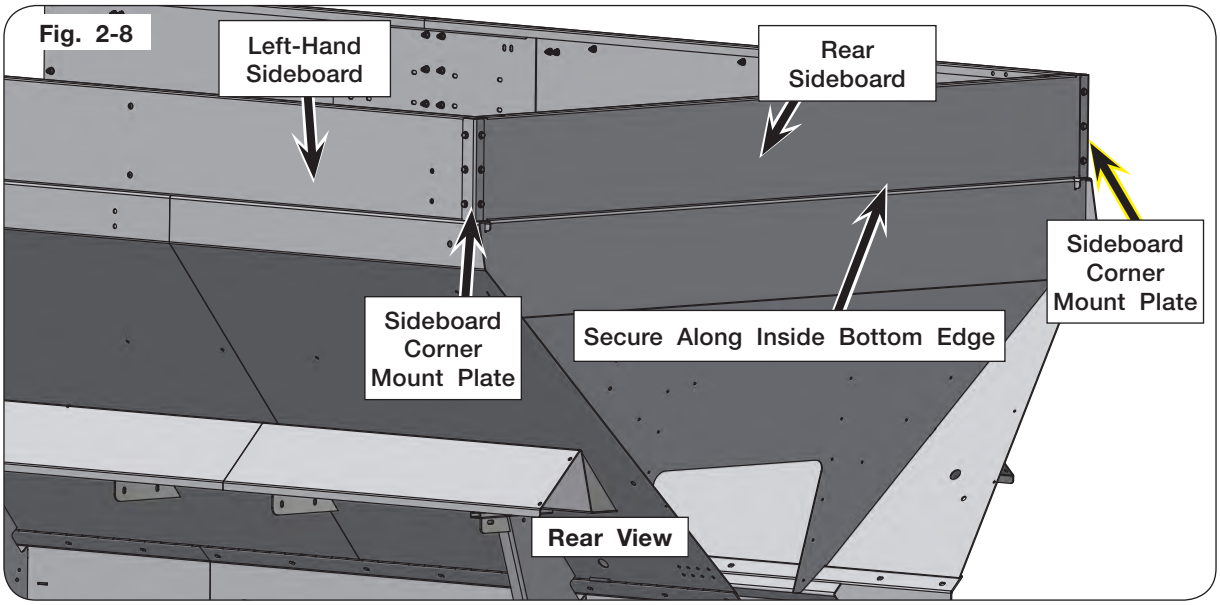
Fig. 2-7



Dealer Set Up (continued)

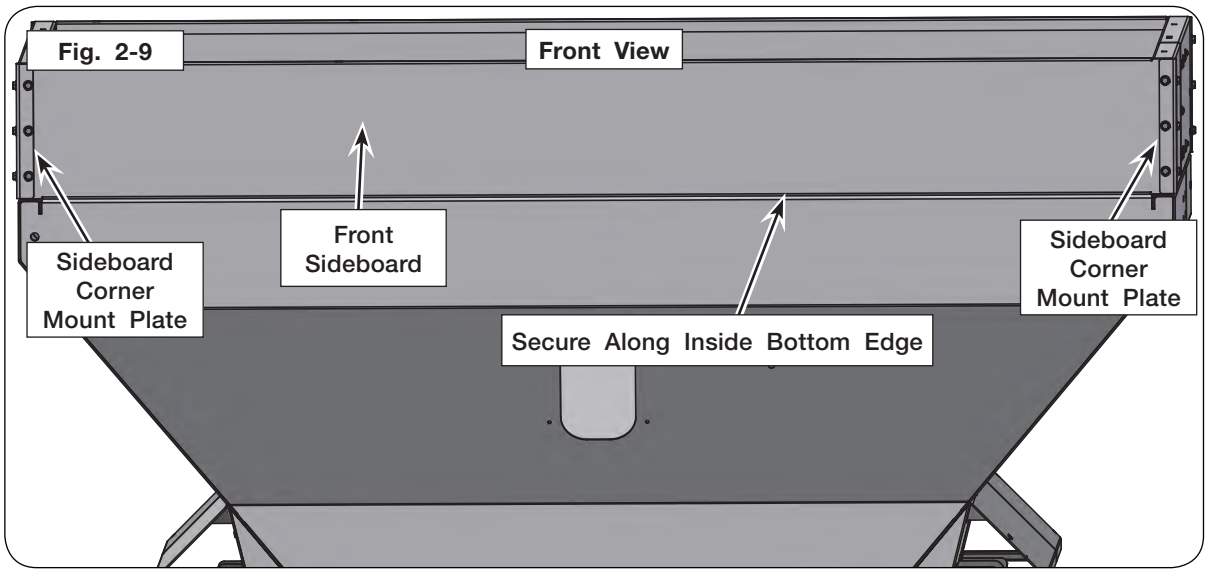
9. Lift rear sideboard (PFFES-EXT-1-12) into position and loosely secure with 3/8" stainless steel capscrews, flat washers and elastic stop nuts along inside bottom edge. (FIG. 2-8)

10. Connect rear sideboard to right-hand and left-hand sideboard using two sideboard corner mount plates (416409). Loosely secure using 3/8" stainless steel hardware. (FIG. 2-8)



11. Lift front sideboard (PFFES-EXT-1-12) into position and loosely secure with 3/8" stainless steel capscrews, flat washers and elastic stop nuts along inside bottom edge. (Fig. 2-9)

12. Connect front sideboard to right-hand and left-hand sideboard using two sideboard corner mount plates (416409). Loosely secure using 3/8" stainless steel hardware. (FIG. 2-9)



Dealer Set Up

Fenders Installation (Optional)

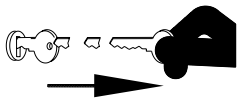
⚠ WARNING

- **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.**
- **NEVER ENTER DRY SPREADER WITH CHASSIS RUNNING. SERIOUS OR FATAL INJURY CAN OCCUR DUE TO ENTANGLEMENT WITH ROTATING COMPONENTS. ALWAYS STOP ENGINE AND REMOVE KEY BEFORE ENTERING THE DRY SPREADER.**
- **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.**
- **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 150 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

IMPORTANT

- *Stainless steel hardware has a natural tendency to cold weld/gall when installed/uninstalled at high speeds and/or high torques. It is recommended to apply a thread lubricant approved for stainless steel such as graphite-based anti-seize or molybdenum disulfide based anti-seize when performing an assembly/disassembly of stainless steel hardware. Unverferth PN 9504206 or equivalent.*

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



NOTE: The 1850 spreader is shown in the following figures. See "Fender, Mudflap and Handrail Components" in PARTS section for additional information on other units.

Dealer Set Up (continued)

2. Attach angle mounting fender (PF50-026) to the left-hand side of the spreader using stainless steel 3/8" hardware. (FIG. 2-10)

NOTE: DO NOT tighten hardware at this time. Wait until fenders and mounts are in place before torquing hardware.

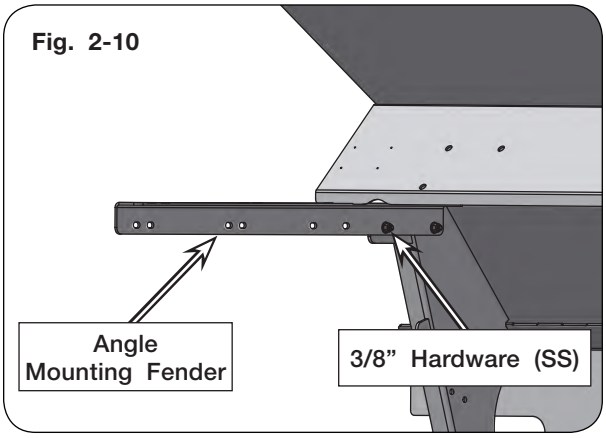


Fig. 2-10

3. Attach left-hand middle fender bracket using stainless steel 3/8" hardware. (FIG. 2-11)

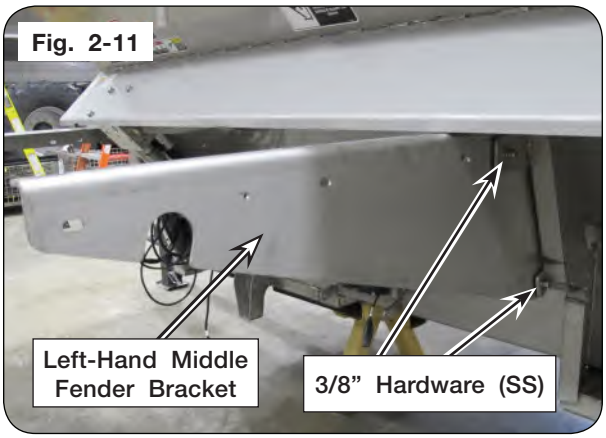


Fig. 2-11

4. Attach left-hand fender mount weldment using stainless steel 3/8" hardware. (FIG. 2-12)

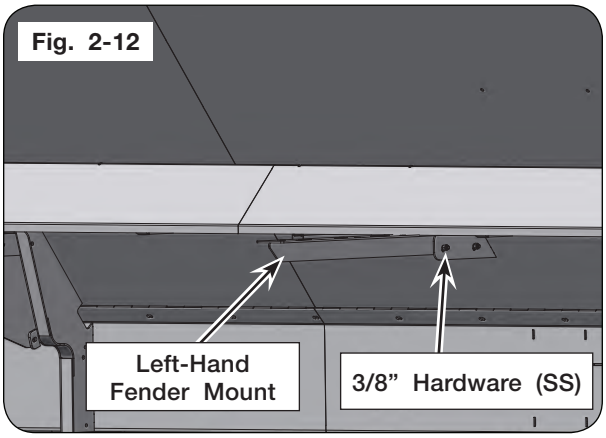


Fig. 2-12

5. Attach left-hand rear fender bracket (PF50-057-L) using stainless steel 3/8" hardware. (FIG. 2-13)

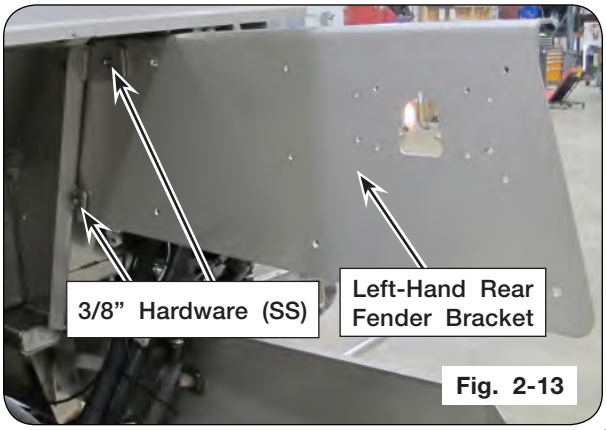


Fig. 2-13

Dealer Set Up (continued)

NOTE: The 1350 unit has only right-hand and left-hand fenders. 1450 to 2250 units have front and rear right-hand and left-hand fenders. 2650 has front, middle and rear right-hand and left-hand fenders.

6. Using a safe lifting device rated at 150 lbs., install front left-hand fender to angle mounting fender, middle fender bracket and fender mount weldment using 3/8" stainless steel hardware. (FIG. 2-14)

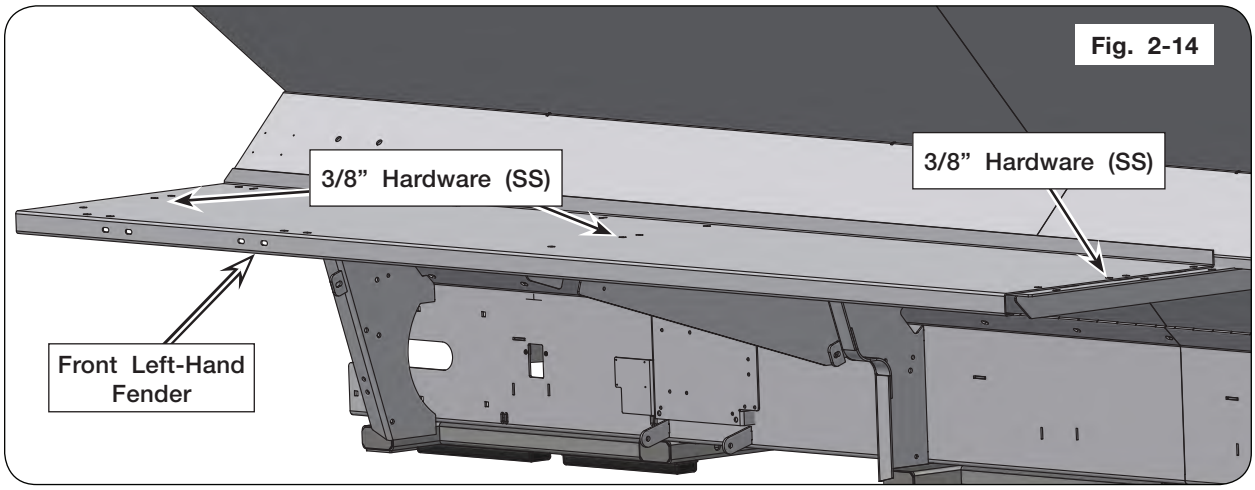


Fig. 2-14

7. Using a safe lifting device rated at 150 lbs., install rear left-hand fender to fender mount weldment and rear fender bracket using 3/8" stainless steel hardware. (FIG. 2-15)

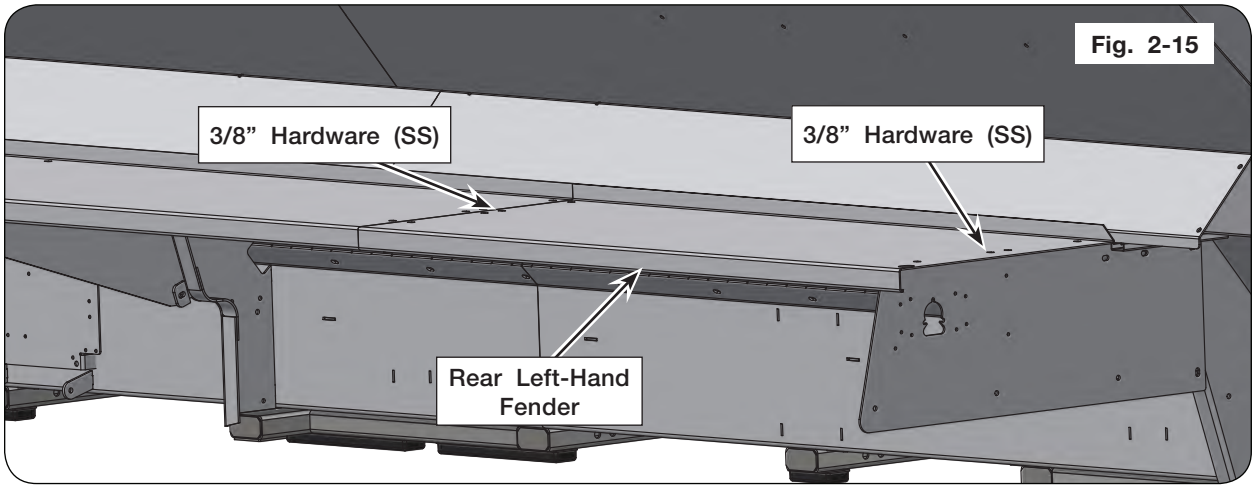


Fig. 2-15

8. Repeat steps 2 through 7 for the right-hand side of the spreader.

9. Tighten all hardware on angle mounting fenders, middle fender brackets, fender mount weldments, rear fender brackets, and fenders.

10. Attach anti slip tape (PF1234-702) to the left-hand fenders. (FIG. 2-16)

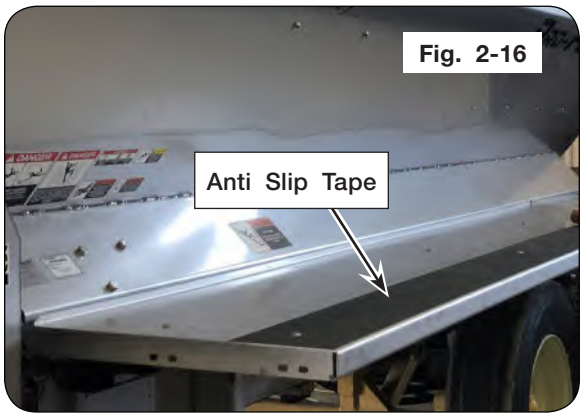


Fig. 2-16

Lift Lug Procedure & Box Mounting Locations

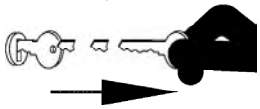
⚠ WARNING

- **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.**
- **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 14,000 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

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, jump starting or fast charging. Damage may occur to the indicator and load cells.*

1. Park the empty unit on a firm, level surface. Block 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 and/or hydraulic damage.

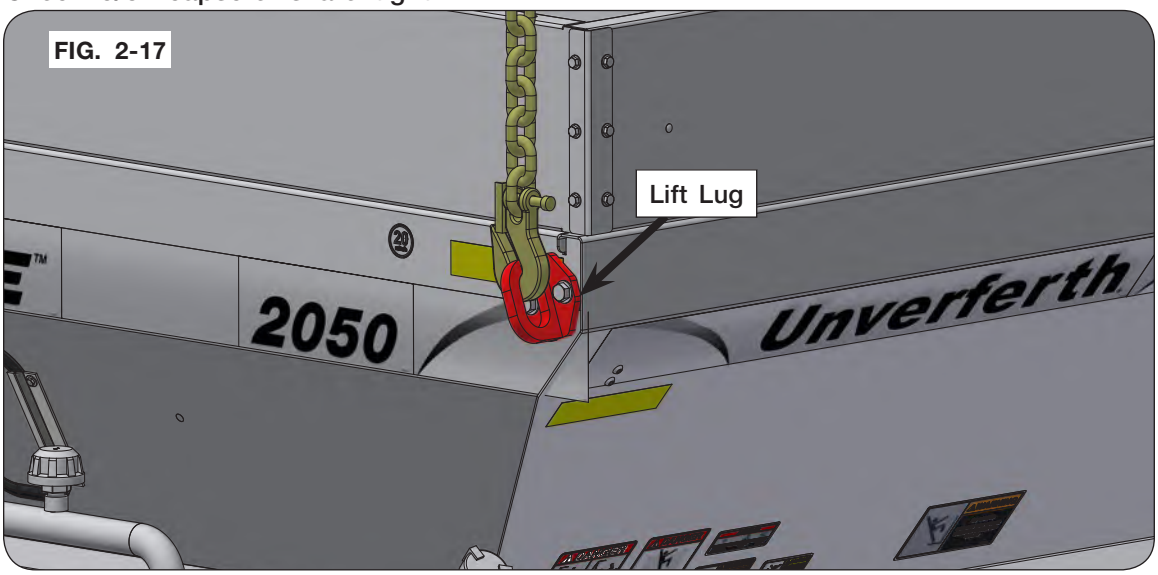


NOTE: Steps 2 through 4 are for chassis mounted units.

2. Make sure four lift lugs (416178R) are fastened to the unit with 5/8"-11UNC x 2" (SS) capscrews (900900-124), 5/8" (SS) flat washers (900902-049), 5/8" (SS) lock washers (900903-029), and 5/8"-11UNC (SS) hex nuts. (FIG. 2-17)

3. Check 5/8" capscrews are tight.

FIG. 2-17



Lift Lug Procedure & Box Mounting Locations (continued)

4. Use a safe lifting device rated at 3,500 lbs. for each corner lift lug. (FIG. 2-18)
5. For undercarriage units, use a safe lifting device rated at 3,500 lbs. for each top hopper corner.
6. Lift unit and mount as far forward as possible.
7. Locate the box mounts (PF1236-80) to the undercarriage/chassis frame cross member tubes on the bottom of the box.
8. Position the front box mount centered under front notches below take-up bolt on each side of the unit. (FIG. 2-18)

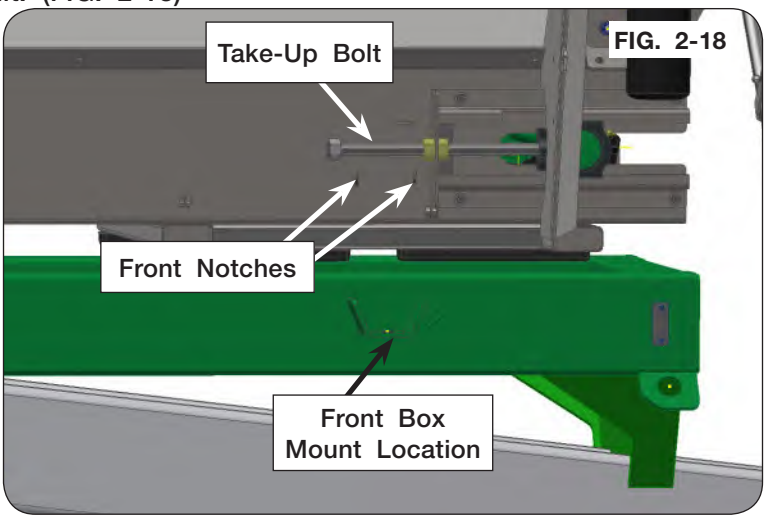


FIG. 2-18

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

9. Weld the box mount to the box and box cross tubes on each side of the unit as shown. (FIG. 2-19)

(Continued on next page)

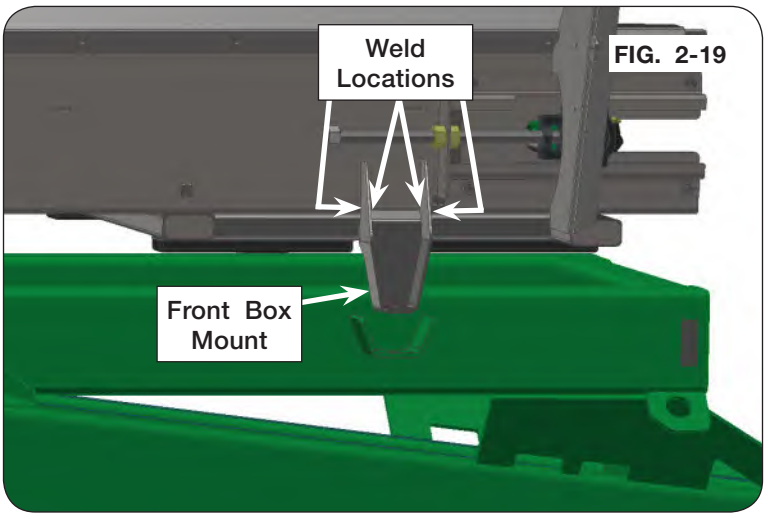
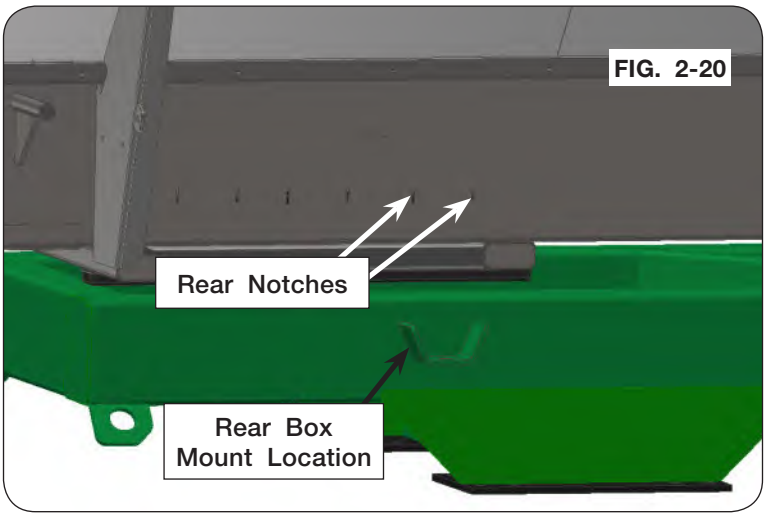


FIG. 2-19

Lift Lug Procedure & Box Mounting Locations (continued)

10. Align box mount to the rear notches on side of the box with undercarriage/chassis mount plate slots on each side of the unit as shown. (FIG. 2-20)



11. Weld the box mount to the box and box cross tubes at the same locations as the front box mounts on each side of the unit.

12. Insert 3/4"-10UNC x 2 1/4" capscrews (9503634-146) through 3/4" flat washer (9503636-104), box mount bolt holes and, undercarriage/chassis mount plate slots.

13. Torque to 280 ft.-lbs. using 3/4"-10UNC top locknut (9503653-037).

14. Remove safe lifting device from the hopper.

15. Once chassis unit is mounted, lift lugs can be removed and discarded. Keep hardware.

16. Reinstall hardware to plug the holes in the hopper.

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

Hydraulic Connections Set Up

⚠ 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.**
- **NEVER ENTER DRY SPREADER WITH CHASSIS OR TRACTOR RUNNING. SERIOUS OR FATAL INJURY CAN OCCUR DUE TO ENTANGLEMENT WITH ROTATING COMPONENTS. ALWAYS STOP ENGINE AND REMOVE KEY BEFORE ENTERING THE DRY SPREADER.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **RELIEVE THE 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. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.**

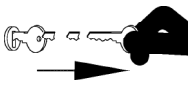
IMPORTANT

- *Catch all hydraulic oil in approved container(s). Avoid hydraulic oil spills that may cause contamination.*
- *Clean and dispose of hydraulic oil in accordance with product label directions and local/national regulations.*

For chassis units, the Pro Force hydraulic system operates as follows: Supply oil goes to the main valve block, then to the spinners. The return oil from the spinners goes to a second valve block that turns the conveyor motor(s). The hydraulic connections include supply, return, and load sense.

1. Park the empty dry spreader on a firm, level surface. Block the machine to keep it from moving. Relieve hydraulic pressure, see tractor operator's manual for proper method of relieving pressure. Set the tractor's parking brake, shut-off the engine, and remove the ignition key. Completely disconnect the tractor from the dry spreader.

2. At the spreader front left-hand side, attach hydraulic hose (PF1207-733) to spinner supply port "P" on the front of the main valve block (PF1211-00). (FIG. 2-21)



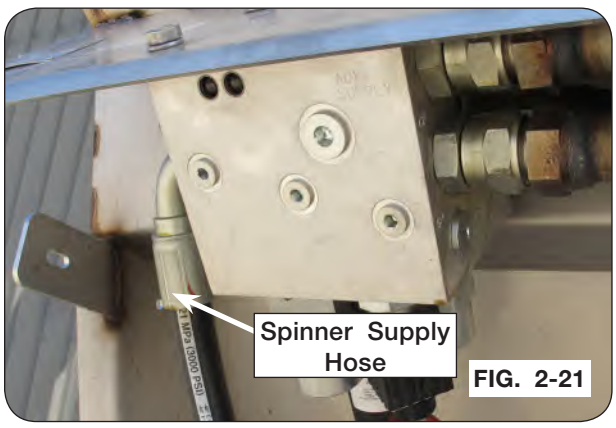
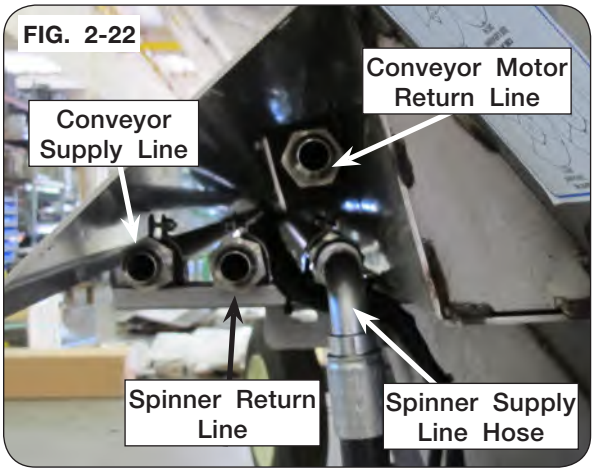


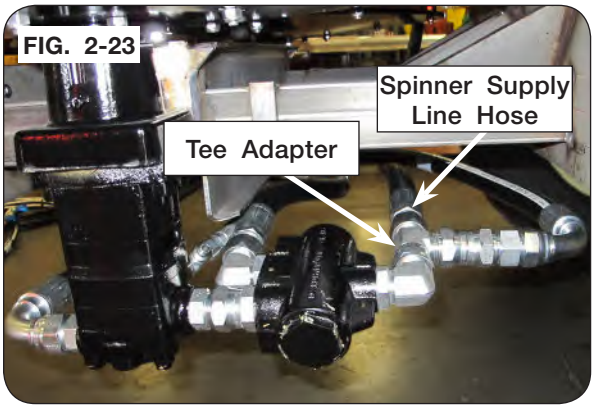
FIG. 2-21

Hydraulic Connections Set Up (continued)

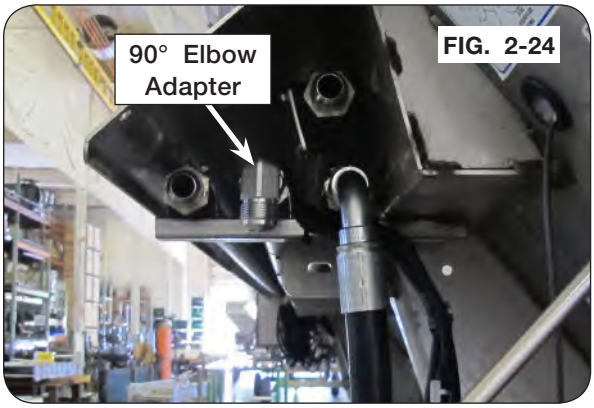
3. At the spreader rear left-hand side, attach hydraulic hose (PF1207-055) to spinner supply hydraulic pipe. (FIG. 2-22)



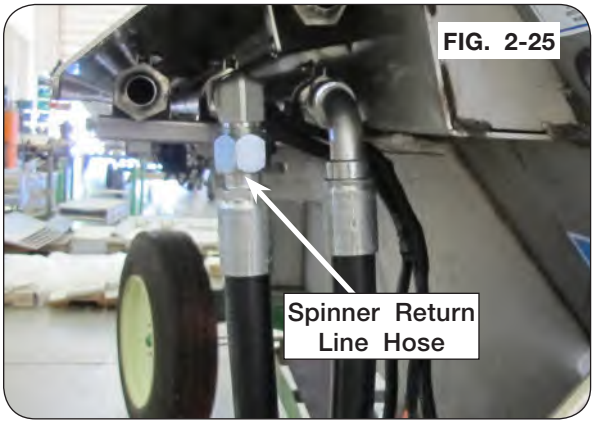
4. Connect other end of hydraulic hose (PF1207-055) under the spinners to right-hand tee adapter (98200) as shown. (FIG. 2-23)



5. Attach 90° elbow adapter (99631) to the spinner return line hydraulic pipe. (FIG. 2-24)

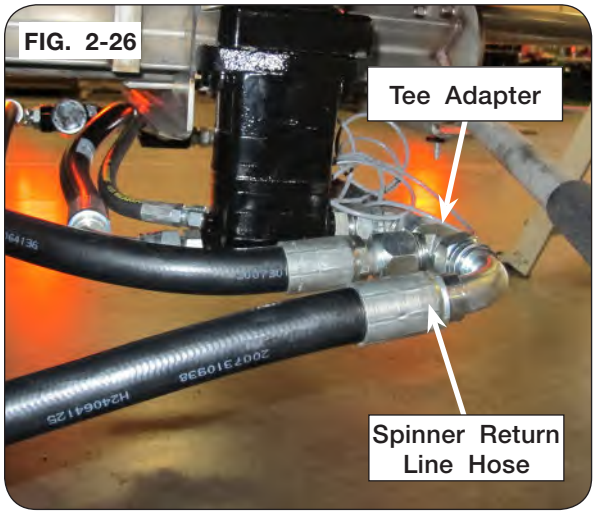


6. Connect hydraulic hose (PF1207-075) to elbow adapter. (FIG. 2-25)



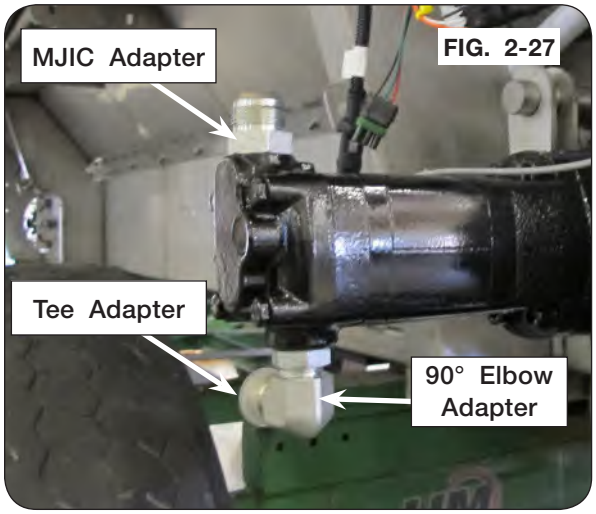
Hydraulic Connections Set Up (continued)

7. Connect other end of hydraulic hose (PF1207-075) to tee adapter (98200) by left-hand spinner motor. (FIG. 2-26)

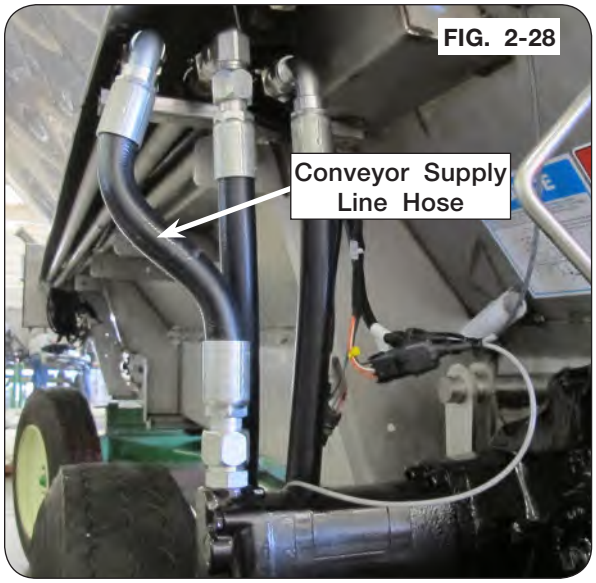


8. Attach adapter (9004628) to the top of conveyor motor. (FIG. 2-27)

NOTE: 90° elbow adapter (TAWC15325 - 1350 & larger units; PF1202-204 - 1250 unit) and tee adapter (98200) on the bottom of conveyor motor are assembled at the factory.



9. Attach hydraulic hose (PF1207-04) to conveyor supply line hydraulic pipe and conveyor motor adapter as shown. (FIG. 2-28)



Hydraulic Connections Set Up (continued)

10. Attach hydraulic hose (PF1207-03) to conveyor motor return line hydraulic pipe and conveyor motor tee adapter as shown. (FIG. 2-29)

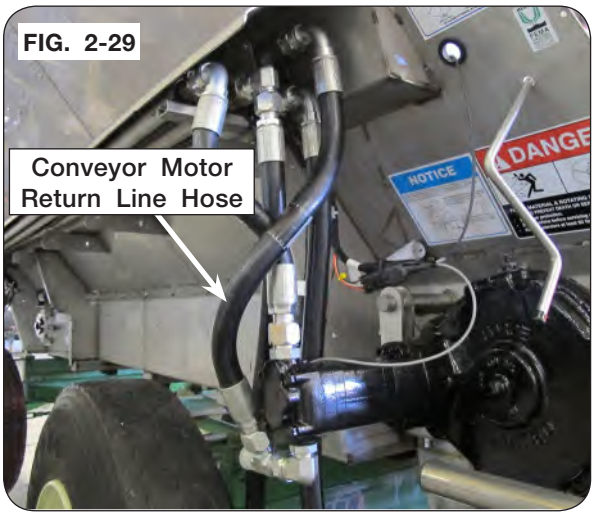


FIG. 2-29

11. At the spreader rear right-hand side, attach 90° elbow adapter (99631) to the conveyor return line hydraulic pipe. (FIG. 2-30)

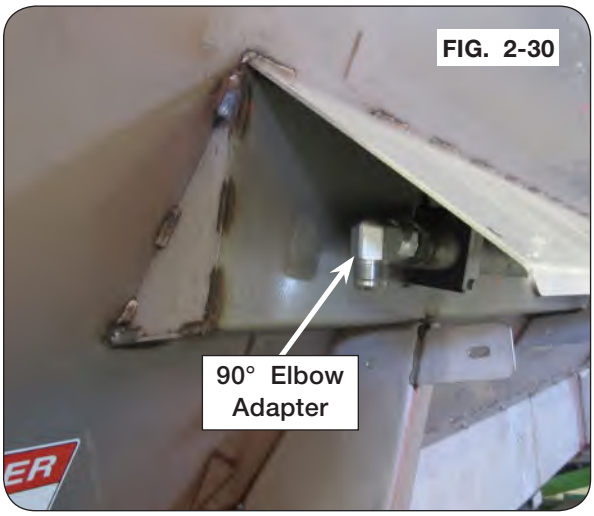


FIG. 2-30

12. Attach hydraulic hose (PF1207-065) to conveyor return line hydraulic pipe. (FIG. 2-31)

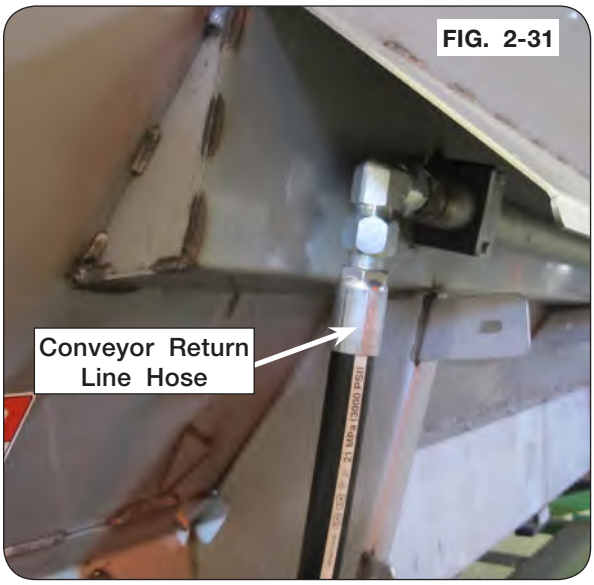


FIG. 2-31

Hydraulic Connections Set Up (continued)

13. Route conveyor return line hydraulic hose behind spinner weldment (PF1236-301) to the left-hand side of the spreader. (FIG. 2-32)

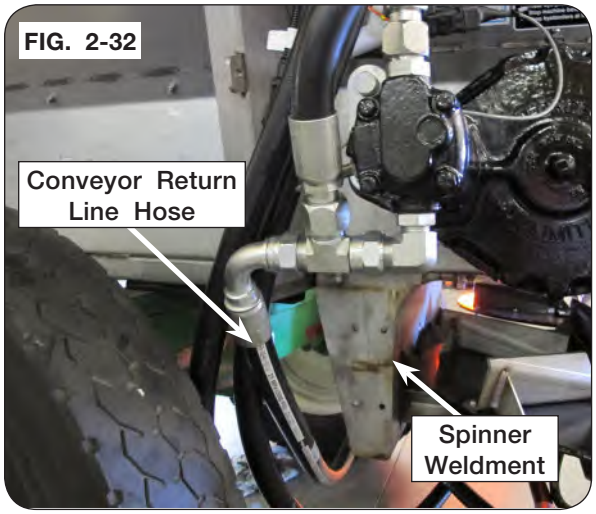
NOTE: Left-hand and right-hand deflector weldments (PF1234-108LH and PF1234-108RH) removed for illustration only. (FIG. 2-32)

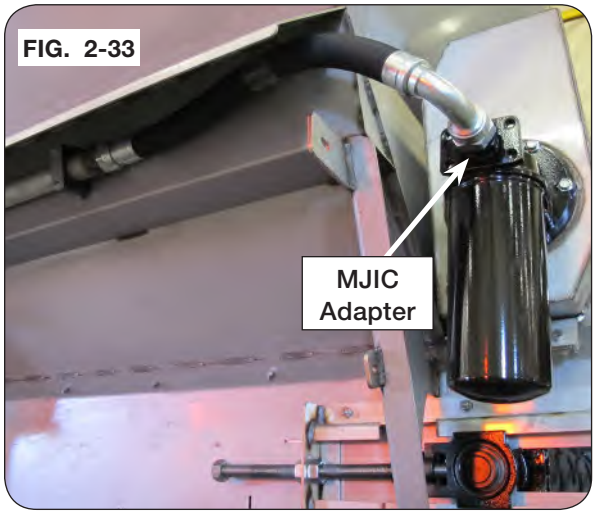
14. Attach conveyor return line hydraulic hose to the conveyor motor tee adapter. (FIG. 2-32)

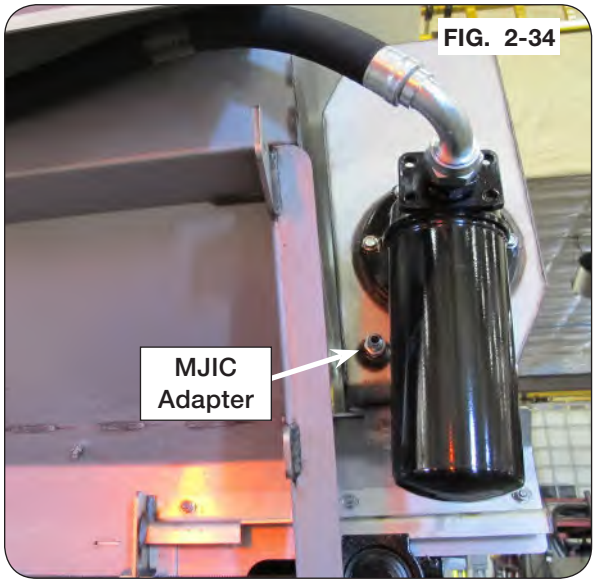
NOTE: Steps 15 through 19 are for chassis mounted units equipped with reservoir tank (PF1236-021).

15. At the spreader front right-hand side, attach hydraulic hose (PF1207-027) to conveyor return line hydraulic pipe and filterhead adapter (PF1202-1027). (FIG. 2-33)

16. Attach adapter (93600) to bottom of the reservoir tank. (FIG. 2-34)







Hydraulic Connections Set Up (continued)

17. Attach hydraulic hose to adapter. (FIG. 2-35)

NOTE: For hydraulic hose box length part number, refer to "Spinner & Conveyor Drive Hydraulic Components - For Chassis Mounted Units" in PARTS section & item 25.

18. Route hydraulic hose along the hydraulic pipe to the rear righ-hand side of the spreader.

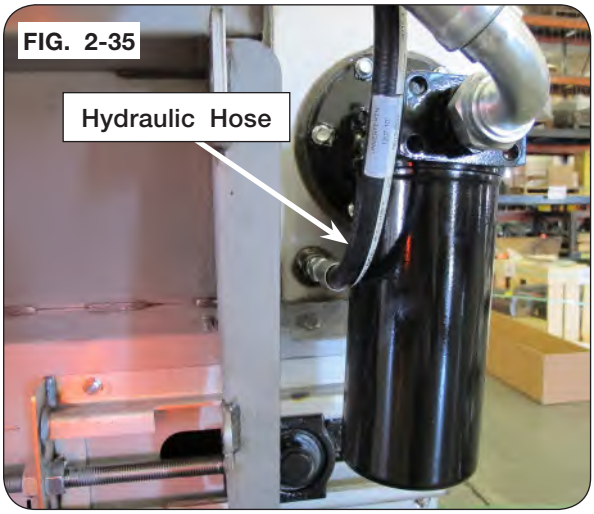


FIG. 2-35

19. Connect other end of hydraulic hose to tee adapter (95059) by right-hand spinner motor. (FIG. 2-36)

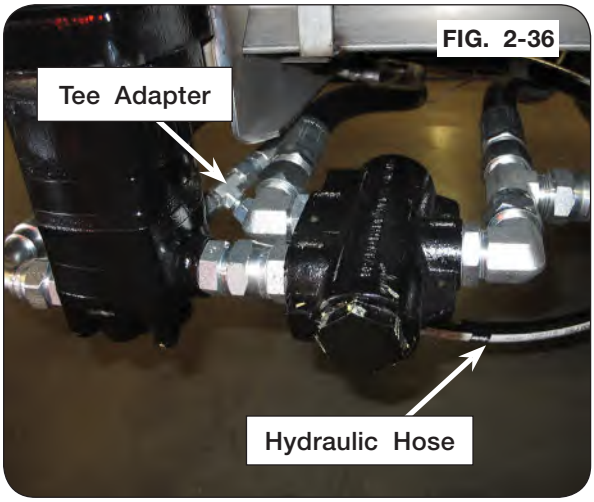


FIG. 2-36

20. Connect conveyor and spinner speed sensor and bin level sensor cables to the wiring harness. (FIG. 2-37)

21. Connect RCM and lighting wiring harnesses.

22. Test run conveyor and spinners for smooth operation.

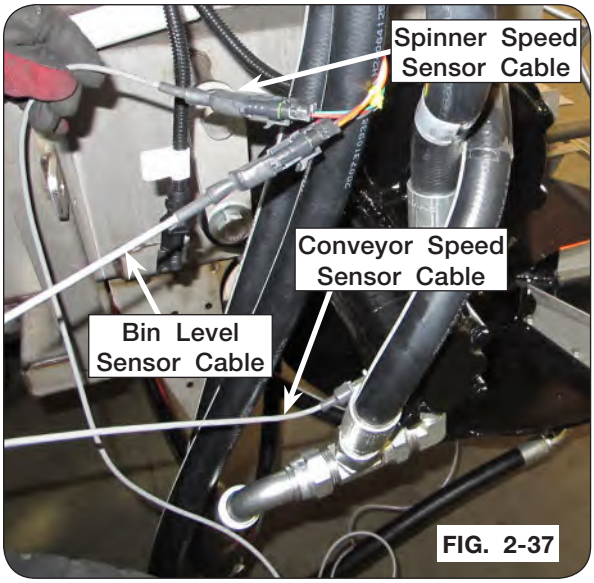


FIG. 2-37

Tarp Installation

End Caps, Ratchet Straps and Bows Installation

⚠ WARNING

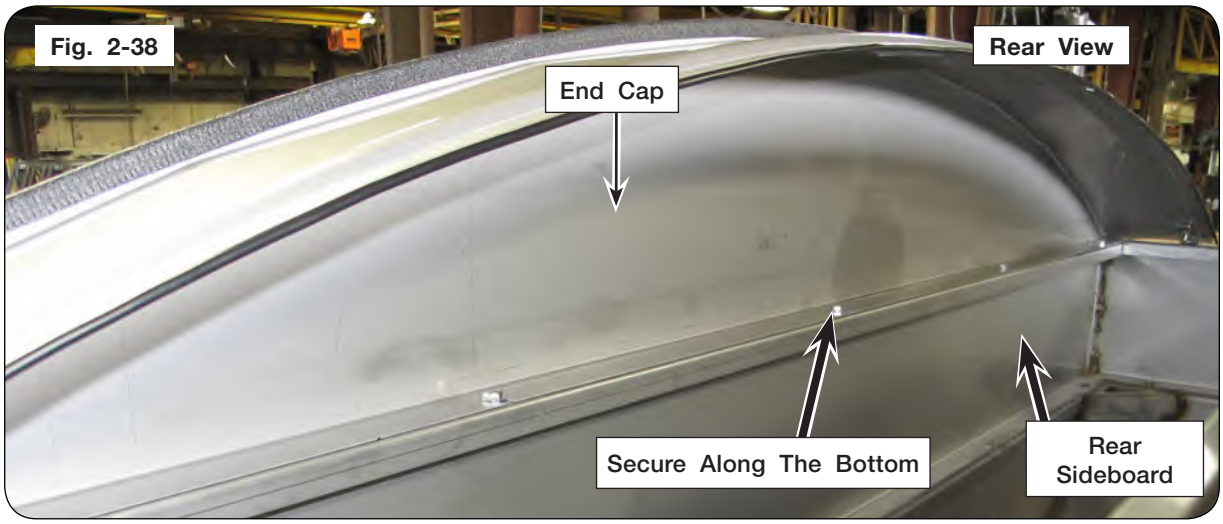
- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE MACHINE IS SECURELY BLOCKED.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **FALLING OBJECTS CAN CAUSE 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 250 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

IMPORTANT

- *Stainless steel hardware has a natural tendency to cold weld/gall when installed/uninstalled at high speeds and/or high torques. It is recommended to apply a thread lubricant approved for stainless steel such as graphite-based anti-seize or molybdenum disulfide based anti-seize when performing an assembly/disassembly of stainless steel hardware. Unverferth PN 9504206 or equivalent.*

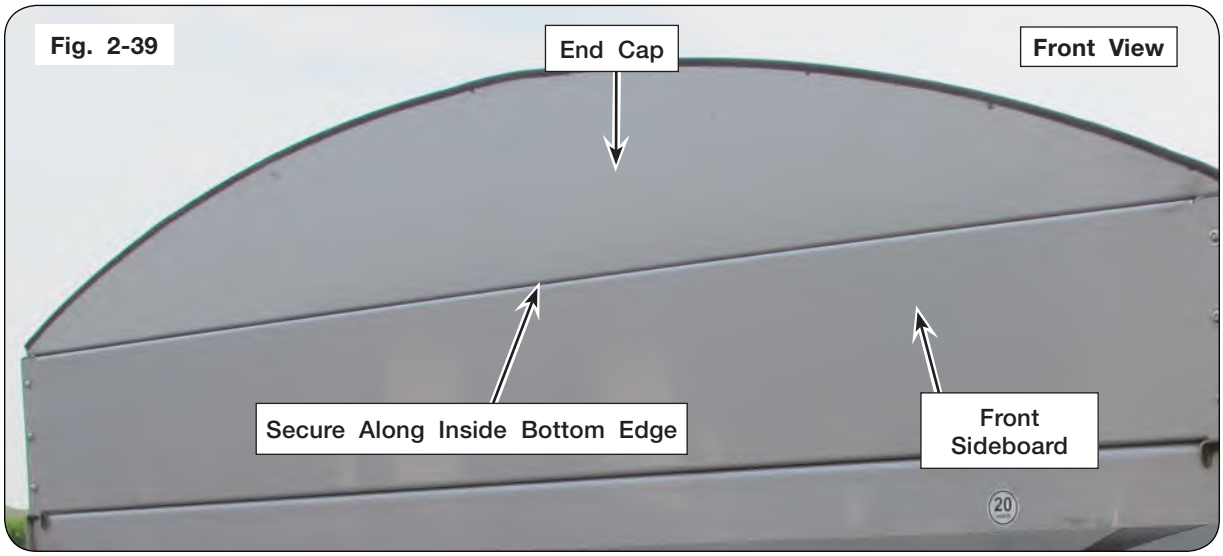
1. Using a safe lifting device rated at 100 lbs., attach end cap (PFF2444) on top of rear sideboard using 3/8" stainless steel hardware along inside bottom edge. (FIG. 2-38)

Fig. 2-38



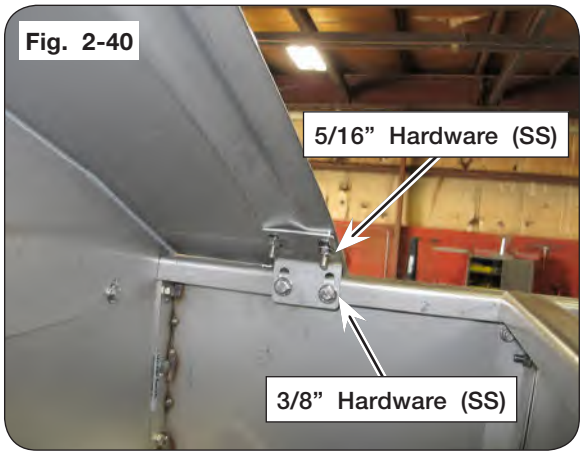
Tarp Installation (continued)

2. Using a safe lifting device rated at 100 lbs., attach end cap (PFF2444) on top of front sideboard using 3/8" stainless steel hardware along inside bottom edge. (FIG. 2-39)



3. Attach four end cap brackets (9009554) to end caps using stainless steel 5/16" button head screws (9009195), flat washers (900902-035), lock washer (900903-019), and hex nuts (900901-004) and to front and rear right-hand and left-hand sideboards using stainless steel 3/8" capscrews (900900-055), lock washers (900903-021) and hex nuts (900901-006). (FIG. 2-40)

NOTE: DO NOT tighten hardware at this time. Wait until mount bows are in place before torquing hardware.



Tarp Installation (continued)

4. Install two ratchet strap assemblies (PFF2608) to left-hand side of hopper using 3/8" stainless steel hardware. (FIG. 2-41)

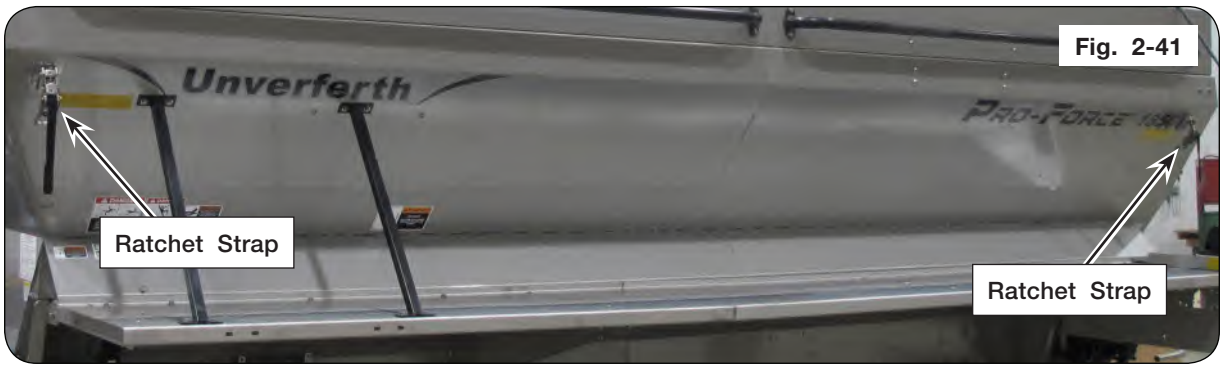


Fig. 2-41

5. Install three tarp stop assemblies (9009140) to right-hand side of hopper using 3/8" stainless steel hardware. (FIG. 2-42)

6. Keep tarp stops open to accept the tarp fixed tube. (FIG. 2-42)

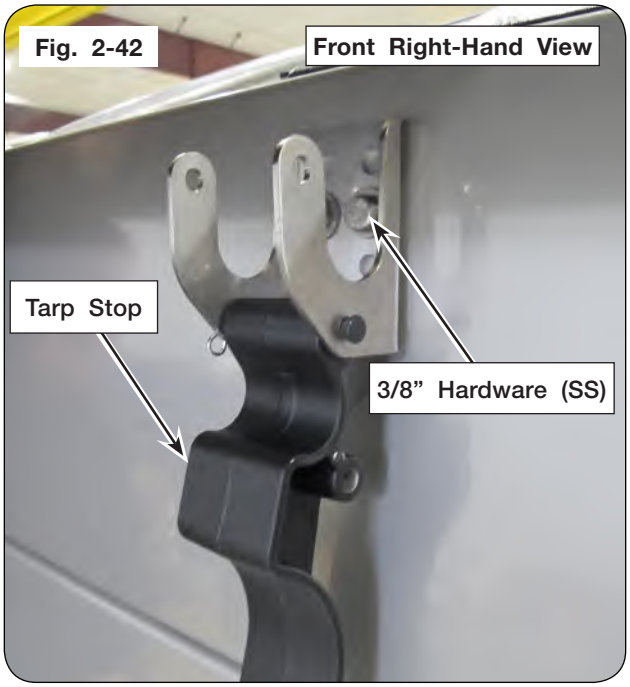
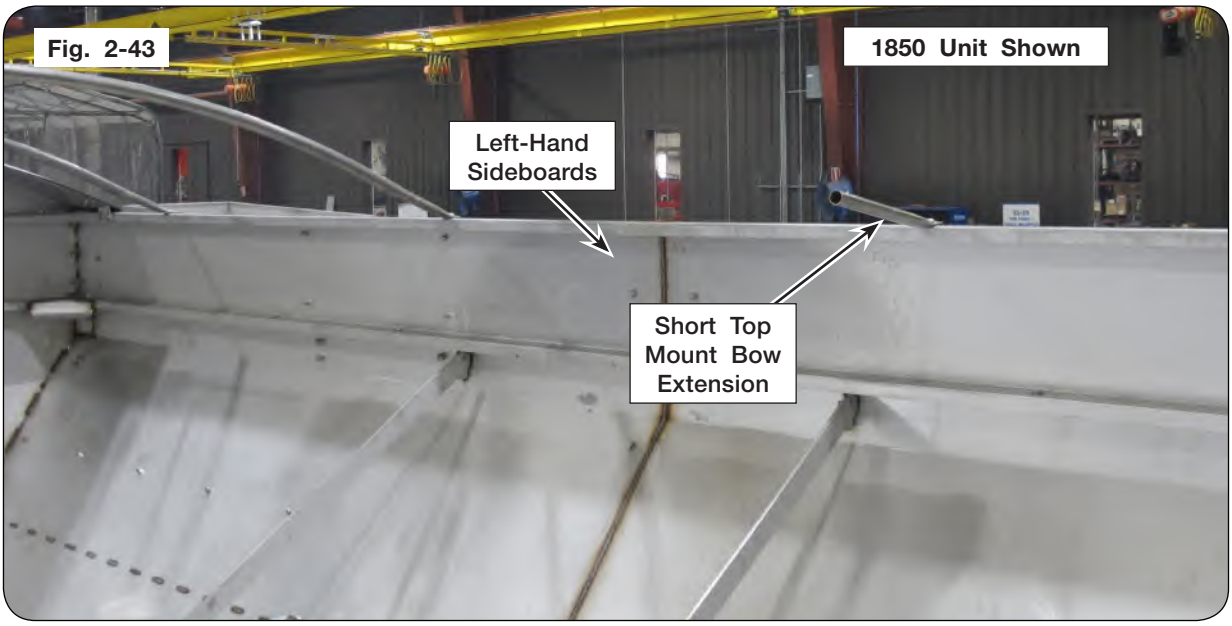


Fig. 2-42

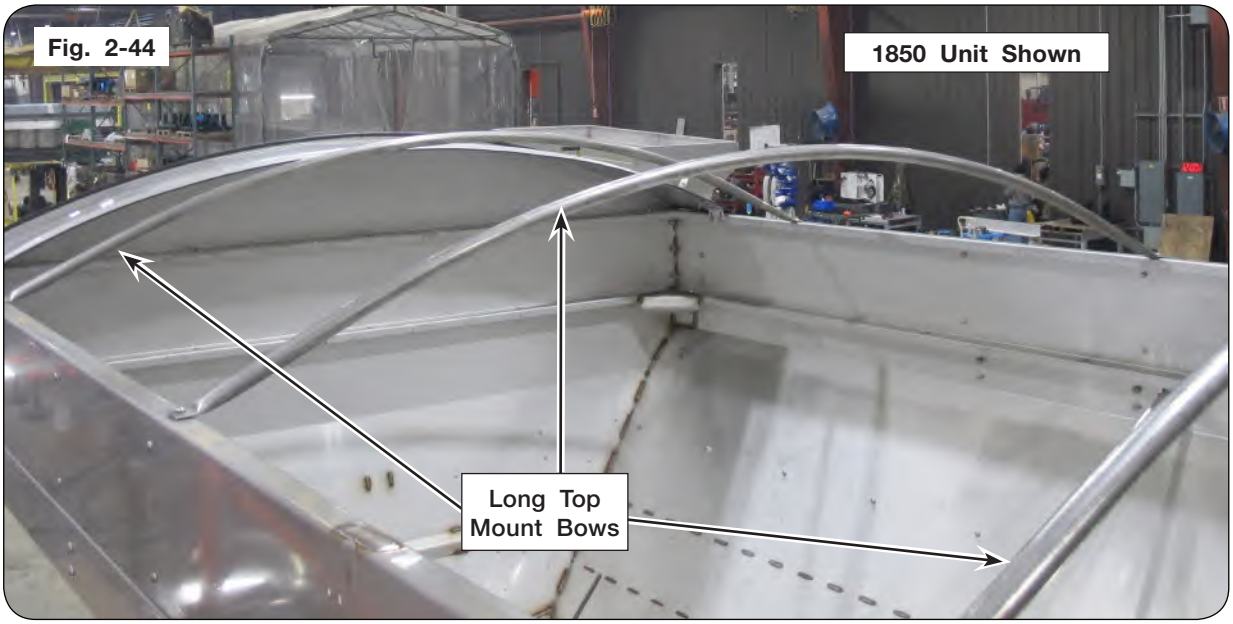
Tarp Installation (continued)

4. Install short top mount bow extensions (PFF8624) along top of the left-hand sideboards using stainless steel 3/8" hardware. (FIG. 2-43)



5. Install long top mount bows (PFF9622) along top of the right-hand sideboards using stainless steel 3/8" hardware. (FIG. 2-44)

6. Insert long top mount bows into short top mount bow extensions. (FIG. 2-44)



Tarp Installation (continued)

7. Insert ridge strap through buckle as shown in figure 2-46.

8. Hook ridge strap to top center of end caps and across the top of mount bows as shown in figures 2-45 and 2-46.

NOTE: DO NOT tighten strap at this time. Wait until tarp bows are fastened before tightening strap.

Fig. 2-45

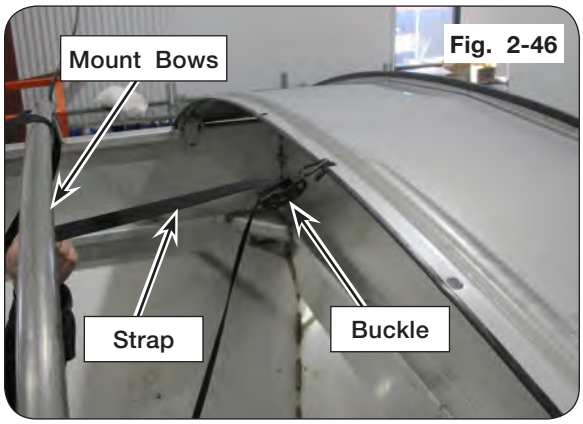


Fig. 2-46

9. Use 5/16” drill bit to set mount bow height, drill through hole in long mount bow as shown in figure 2-47.

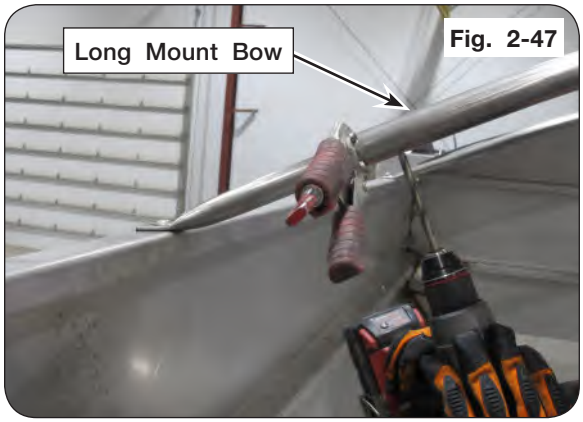


Fig. 2-47

10. Attach stainless steel 3/8” capscrew (900900-055) into hole to secure mount bows. (FIG. 2-48)

11. Repeat steps 9 and 10 for remaining mount bows.

12. Tighten all hardware on sideboards, end caps, mount bows, ratchet straps, and tarp stops.

13. Tighten ridge strap on the top of mount bows.

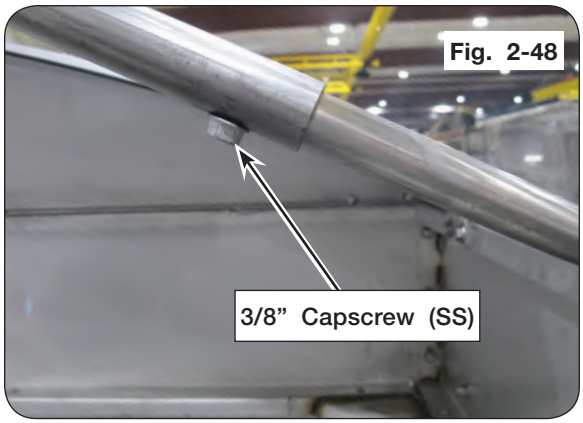


Fig. 2-48

Tarp Installation (continued)

Roll Tube and Tarp Installation

14. Using a safe lifting device rated at 250 lbs., lift tarp roll tube onto tarp stops. (FIG. 2-49)

15. Ensure the tarp fixed tube is set 4 5/8" inches from the front of the fixed tube to the front of the hopper. (FIG. 2-49)

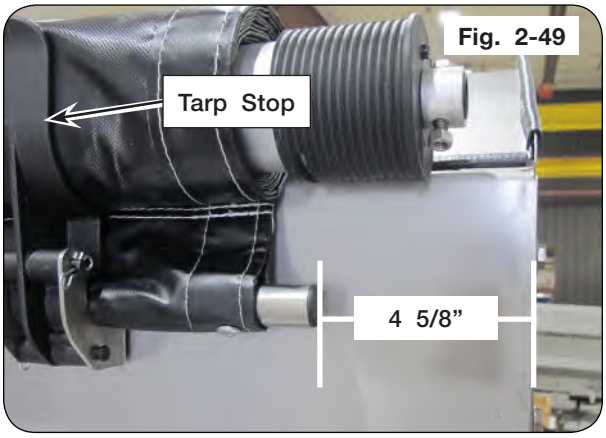


Fig. 2-49

16. Clamp fixed tube into the tarp stops. (FIG. 2-50)

17. Secure tarp stops using pins and cotter pins. (FIG. 2-50)

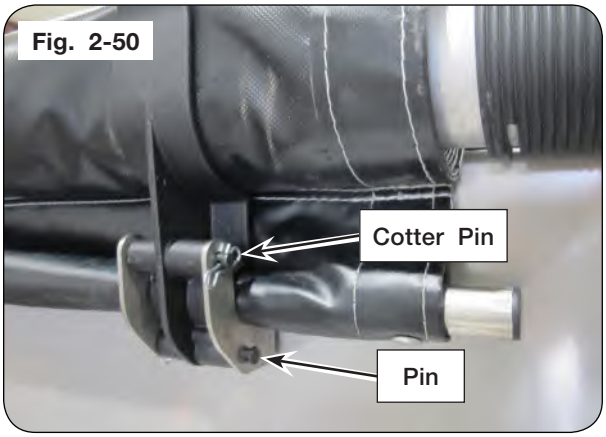


Fig. 2-50

18. Using 3/16" drill bit, drill two holes on both sides of the middle tarp stop into the tarp and fixed tube as shown in figure 2-51.

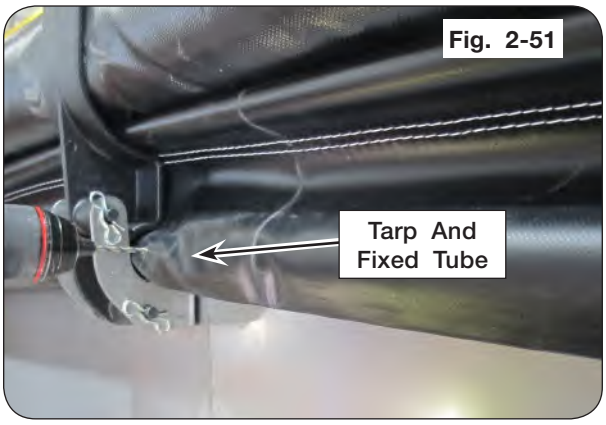


Fig. 2-51

19. Attach two 1/4"-20UNC x 3/4" self-drilling screws (9004978) and two 1/4" poly washers (9009199) into holes to secure tarp to tube. (FIG. 2-52)

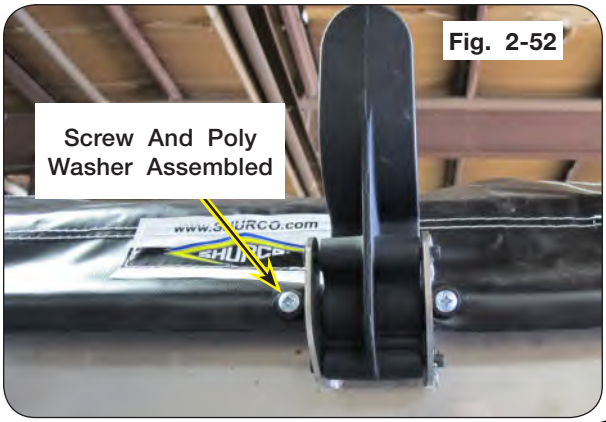


Fig. 2-52

Tarp Installation (continued)

NOTE: There are two different ends on the tarp spool cable (PFF5280). Ensure the tarp cables are installed to the front and rear ends of the roll tube as shown in figure 2-53.

20. With the tarp across the spreader and the roll tube hanging over the left-hand side, wind tarp cables around the front and the rear ends of the roll tube. (FIG. 2-53)

21. Secure tarp cables to ratchet straps. (FIG. 2-53.

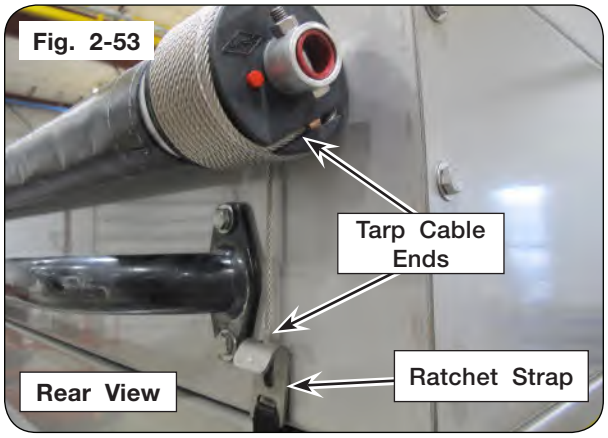
22. Tighten ratchet straps. (FIG. 2-54)

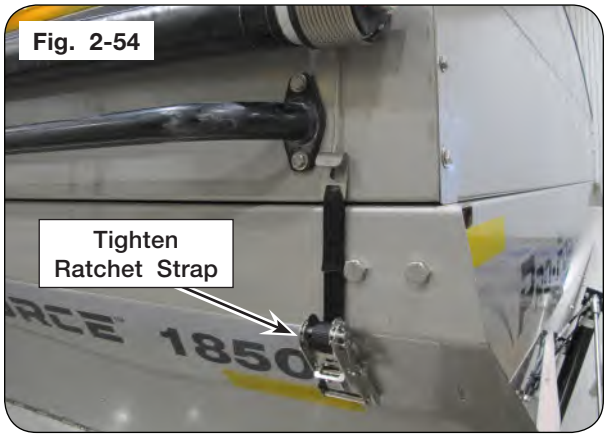
NOTE: For chassis units, install crank arm (PFF3809) and brackets on the rear. Steps 23 and 24 are for pull-type units. (FIG. 2-55)

23. Attach the crank arm to the front tarp roll tube. Once secure, roll tarp across the spreader to the open position. (FIG. 2-55)

24. If not already affixed, attach the crank arm to brackets underneath on the front of the spreader. (FIG. 2-55)

25. Test tarp for proper working motion. (FIG. 2-55)





Hydraulic Oil Cooler Installation (Optional)

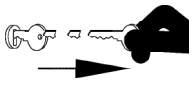
⚠ WARNING

- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **RELIEVE THE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE CHASSIS OPERATOR'S MANUAL FOR PROPER PROCEDURES.**
- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.**

IMPORTANT

- *Stainless steel hardware has a natural tendency to cold weld/gall when installed/uninstalled at high speeds and/or high torques. It is recommended to apply a thread lubricant approved for stainless steel such as graphite-based anti-seize or molybdenum disulfide based anti-seize when performing an assembly/disassembly of stainless steel hardware. Unverferth PN 9504206 or equivalent.*

1. Park the empty dry spreader on a firm, level surface. Block the machine to keep it 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. Attach two mounting brackets (415505) to the front right-hand side brackets using six 3/8"-16UNC x 1 1/4" capscrews (900900-056) (SS), twelve 3/8" flat washers (900902-038) (SS), six 3/8" lock washers (900903-021) (SS), and six 3/8" hex nuts (9000901-006) (SS). (FIG. 2-56)

NOTE: DO NOT tighten hardware at this time. Wait until hydraulic oil cooler is in place before torquing hardware.

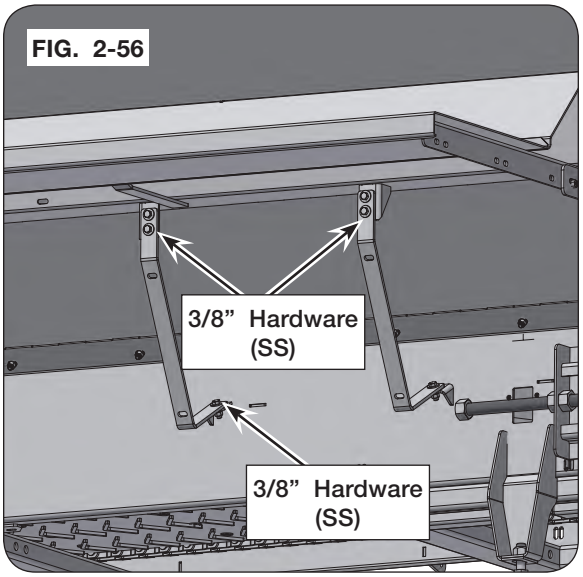


FIG. 2-56

Hydraulic Oil Cooler Installation (Optional) (continued)

3. Install hydraulic oil cooler (9009177) to the mounting brackets using four 3/8”-16UNC x 1 1/4” capscrews (900900-056) (SS), eight 3/8” flat washers (900902-038) (SS), four 3/8” lock washers (900903-021) (SS), and four 3/8” hex nuts (9000901-006) (SS). (FIG. 2-57)

4. Tighten all hardware on mounting brackets and oil cooler.

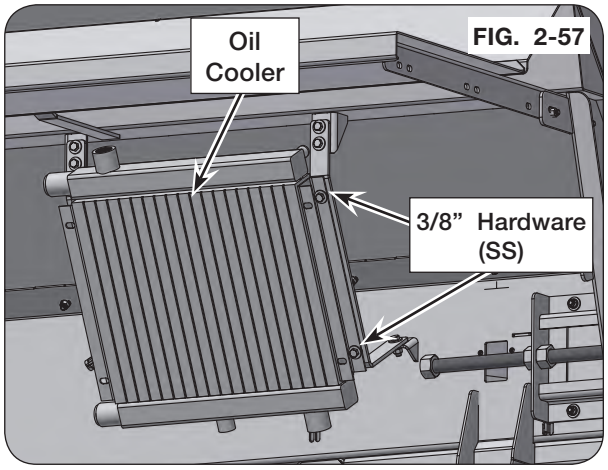


FIG. 2-57

5. Insert and tighten adapters (9009365) to the top and bottom of the oil cooler. (FIG. 2-58)

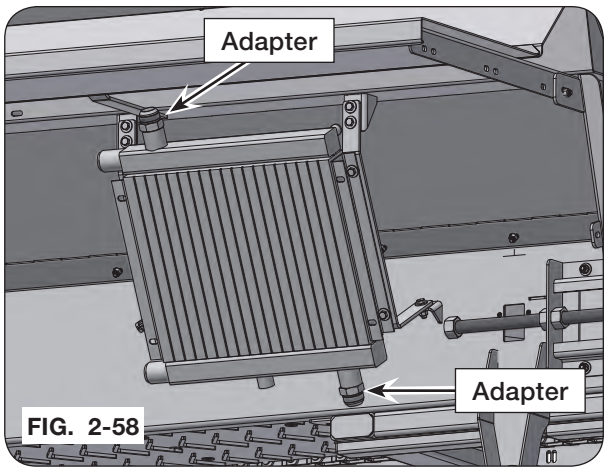


FIG. 2-58

6. Attach hydraulic hose (PF1207-0285) 90° elbow end to the adapter on top of the oil cooler. (FIG. 2-59)

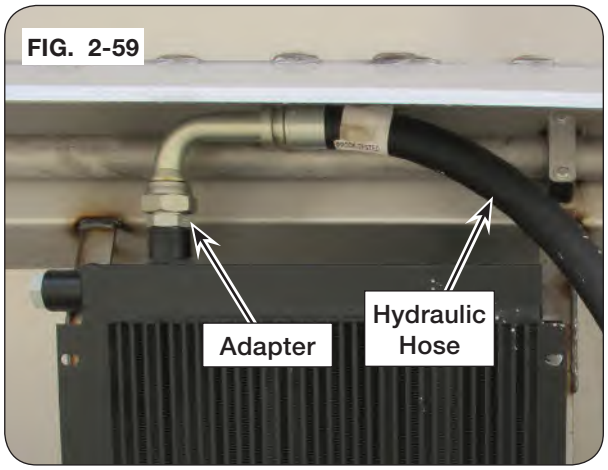


FIG. 2-59

Hydraulic Oil Cooler Installation (Optional) (continued)

7. Route other end of hydraulic hose (PF1207-0285) as shown to the oil filter. (FIG. 2-60)

8. Attach 90° elbow adapter (PF1202-66) to hydraulic hose and adapter on oil filter. (FIG. 2-60)

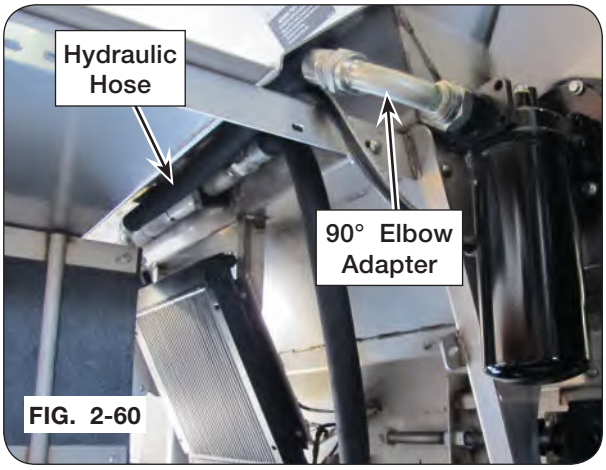


FIG. 2-60

9. Attach hydraulic hose (PF1207-029) 90° elbow end to the adapter on bottom of the oil cooler. (FIG. 2-61)

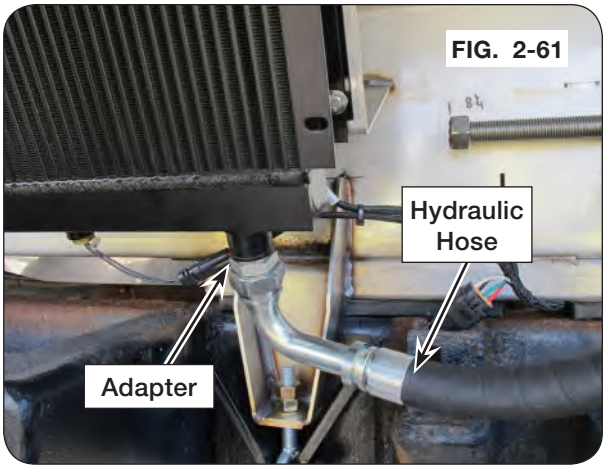


FIG. 2-61

10. Attach other end of hydraulic hose (PF1207-029) to the hydraulic steel pipe as shown. (FIG. 2-62)

(Continued on next page)

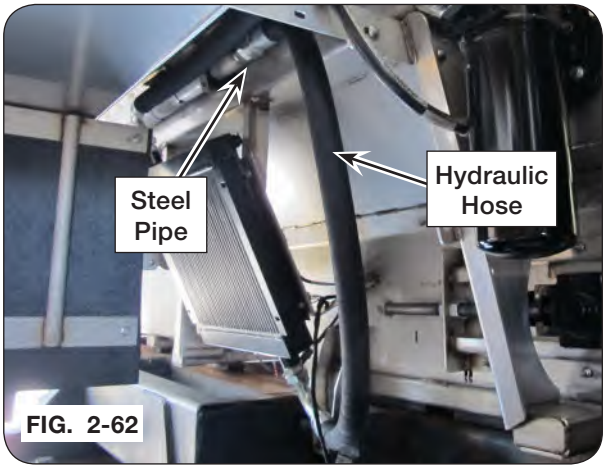


FIG. 2-62

Hydraulic Oil Cooler Installation (Optional) (continued)

11. Connect 120°F temperature switch (9009169) to bottom of oil cooler. (FIG. 2-63)

12. Attach other end of temperature switch to the spreader wiring harness as shown. (FIG. 2-63)

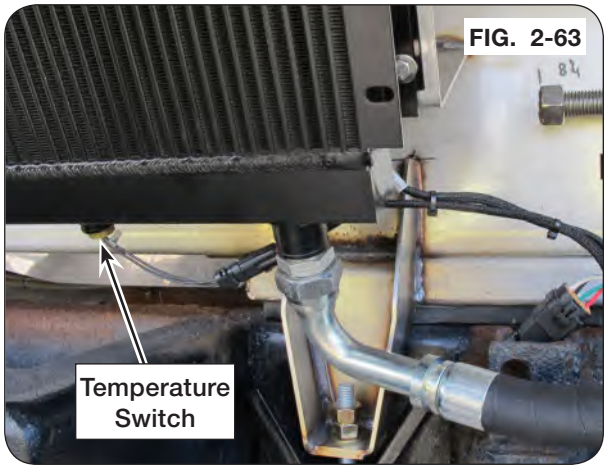


FIG. 2-63

13. Connect oil cooler 12V fan wire harness (PF1223-544A) to spreader wiring harness. (FIG. 2-64)

14. Enable hydraulics to the dry spreader and test for smooth operation.

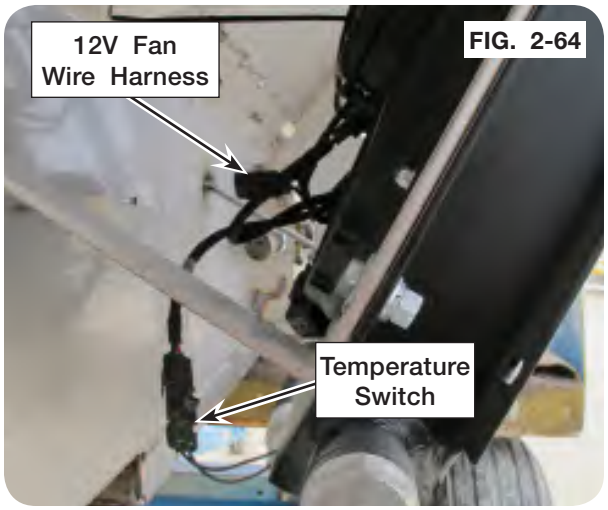


FIG. 2-64

SMV Emblem & SIS Decals

⚠ WARNING

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

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. 2-65)

2. When reinstalling the SMV, make sure that it is placed with the wide part of the SMV at the bottom. (FIG. 2-65)

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. 2-66)

For 20 M.P.H SIS decals, order 9008715 for the front & 9008714 for the rear.

For 30 K.P.H SIS decals, order 9008721 for the front & 9008720 for the rear.

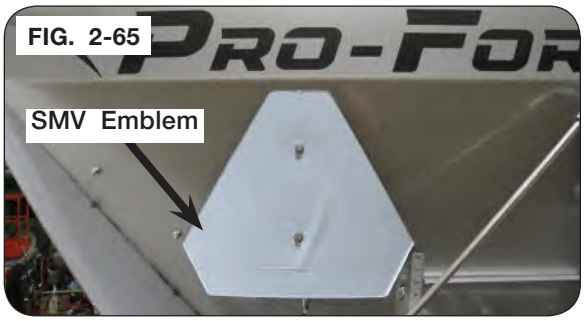


FIG. 2-65

FIG. 2-66

Video System (Optional)

The video system includes its own installation instruction sheet. Reference the provided instruction sheet.

Rate Control Module (RCM) Spreader Set Up

When turning on the RCM for the first time, 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.

NOTE: This set up guide uses the latest RCM software at the time of printing.

1. Connect RCM to +12VDC battery power.

2. 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. 2-67)

NOTE: Highest value for "Application Width" is 90 FT.

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

3. Default for "ECU" box is 1. Click "Number of Products" box and enter the number of product compartments on the spreader. If there are 2 product compartments, enter 2, etc. Click next page icon. (FIG. 2-68)

4. Default for "Number of Spinner RPM Sensors" box is 1. Ensure "Enable Spinner RPM Control" box is checked. Click next page icon. (FIG. 2-69)

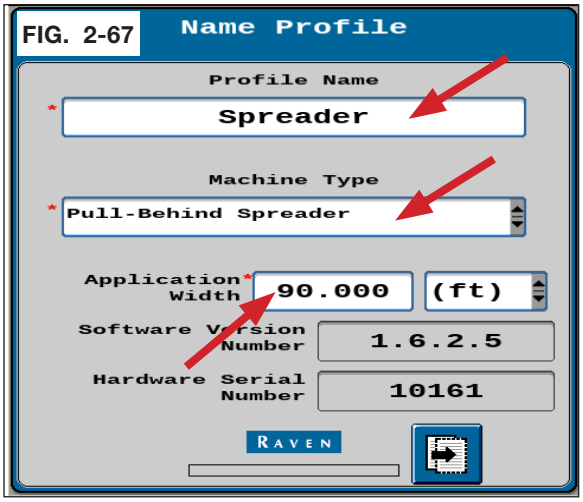


FIG. 2-67

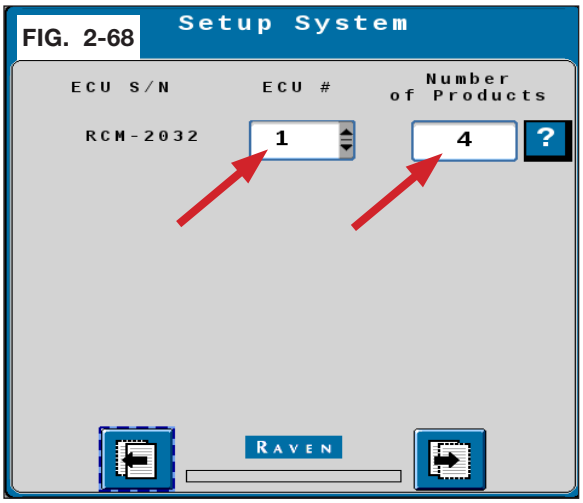


FIG. 2-68

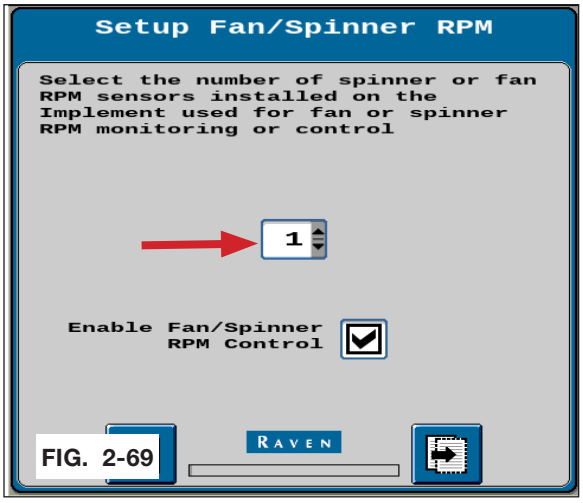


FIG. 2-69

RCM Spreader Set Up (continued)

5. Under “Application Type”, select “Granular Fertilizer” for product type. The number of products selected correlates with the number of products in figure 2-70. Click next page icon. (FIG. 2-70)

NOTE: A quad-force spreader with four products is shown figure 2-70. The final entry is always RPM Spinner/Fan. For example, if a single product is spread, RPM Spinner/Fan is the second line.

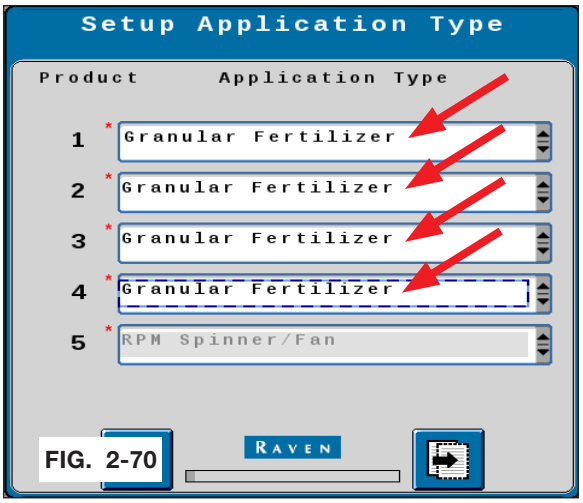


FIG. 2-70

6. Under “Product 1 Granular Application Mode”, select “Granular Full Width”. Click next page icon. (FIG. 2-71)

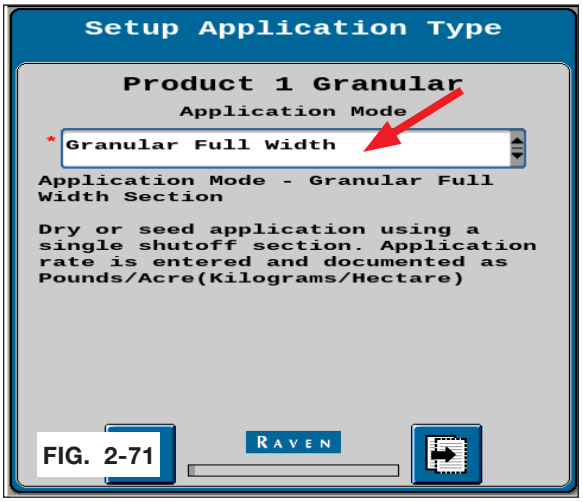


FIG. 2-71

NOTE: This screen will not be displayed if using one product. (FIG 2-72)

NOTE: If using one product, skip to step 10.

7. Under “Product 2 Granular Application Mode”, select “Granular Full Width”. Click next page icon and continue with next bins, if equipped. (FIG. 2-72)

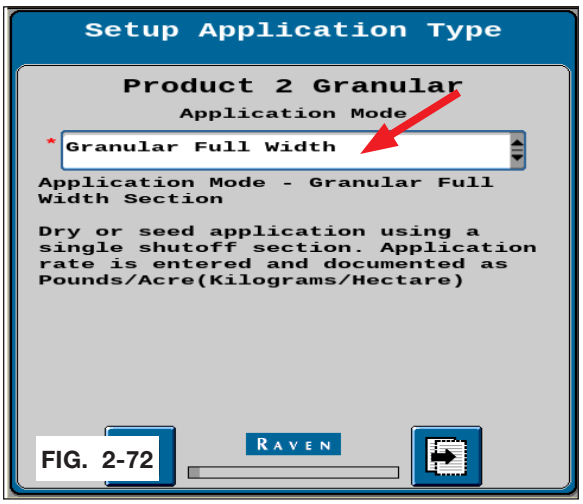


FIG. 2-72

RCM Spreader Set Up (continued)

8. Under "Product 3 Granular Application Mode", select "Granular Full Width". Click next page icon. (FIG. 2-73)

NOTE: If using three products, skip to step 10.

FIG. 2-73

9. Under "Product 4 Granular Application Mode", select "Granular Full Width". Click next page icon and continue with next bins, if equipped. (FIG. 2-74)

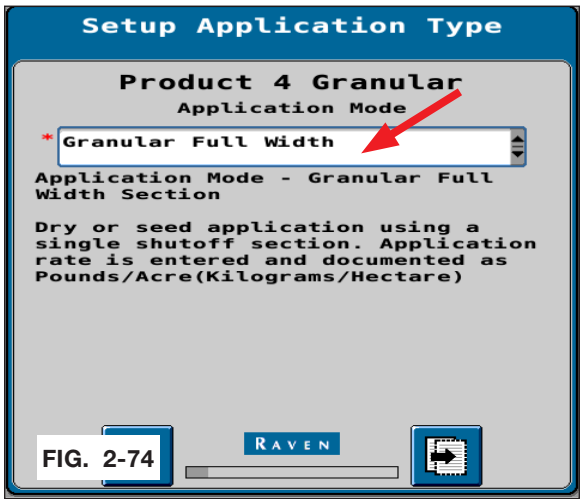


FIG. 2-74

RCM Spreader Set Up (continued)

10. Ensure “AUX-N Enabled” box is unchecked. Click next page icon. (FIG. 2-75)

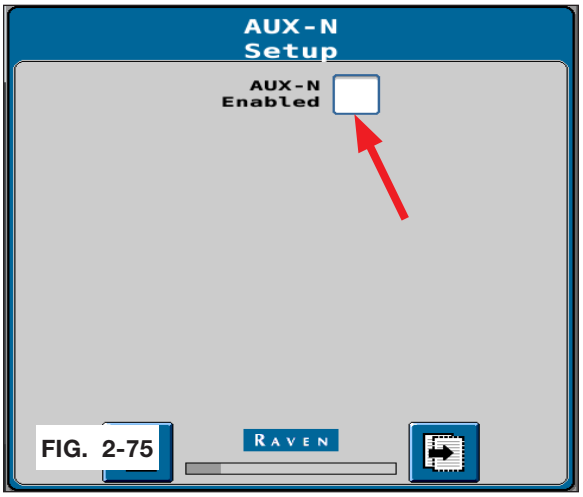


FIG. 2-75

11. Make sure this box is YES. Click next page icon. (FIG. 2-76)

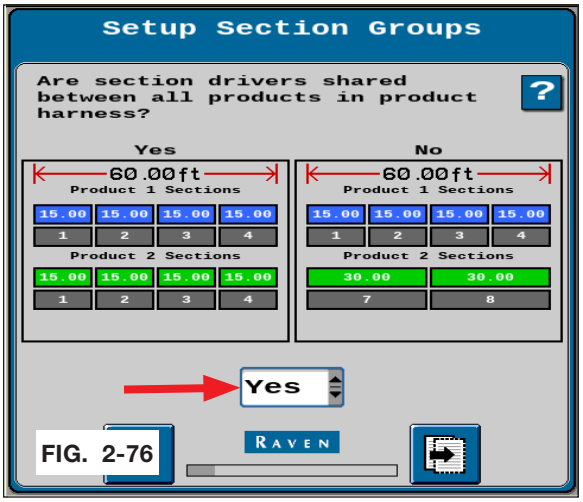


FIG. 2-76

12. Next to “Auxiliary Driver 1”, select “Aux Driver 4”. (FIG. 2-77)

NOTE: Aux Driver 4 is for the boundary control feature.

13. Ensure “Auxiliary Driver 2-6” boxes are selected as “None”. Click next page icon. (FIG. 2-77)

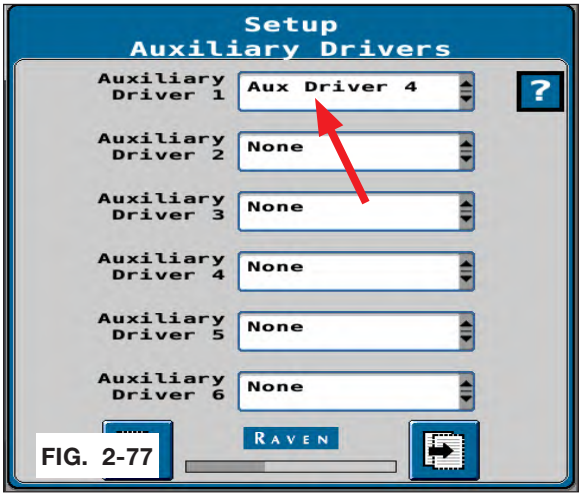


FIG. 2-77

RCM Spreader Set Up (continued)

14. Ensure “Auxiliary Driver 7-12” boxes are selected as “None”. Click next page icon. (FIG. 2-78)

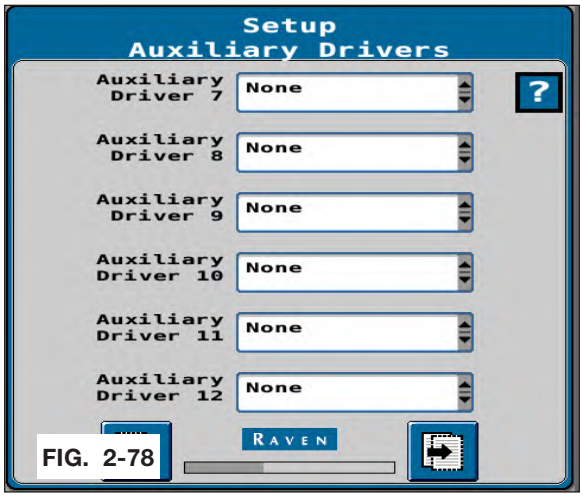


FIG. 2-78

15. Ensure “Latched Aux Output 1” box is checked. Click next page icon. (FIG. 2-79)

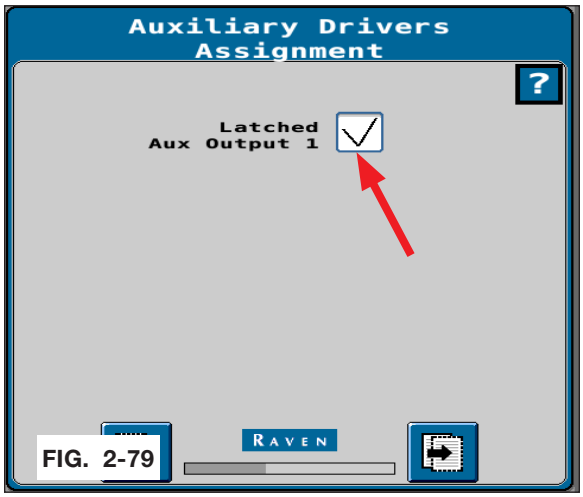


FIG. 2-79

NOTE: FIG. 2-80 shows how many bins are equipped.

16. No action required on this screen. Shows product width summary. Continue to next page. (FIG. 2-80)

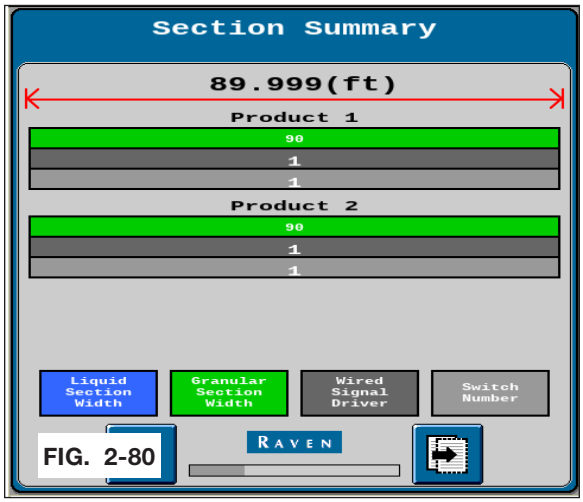


FIG. 2-80

RCM Spreader Set Up (continued)

17. If the unit is equipped with a scale and is single bin, select “Product Scale” box. (FIG. 2-81)

18. Ensure only “Product Scale 1” box is checked. Click next page icon. (FIG 2-19)

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

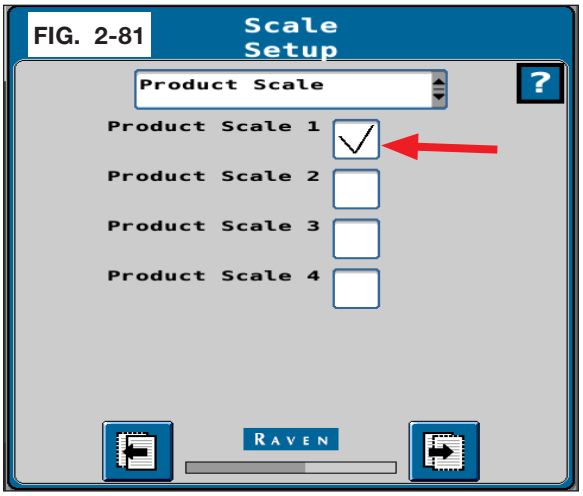


FIG. 2-81

19. If the unit is equipped with a scale and multiple bins, select “Gen. Purpose Scale” box. (FIG. 2-82)

20. Ensure only “Scale 1” box is checked. Click next page icon. (FIG. 2-82)

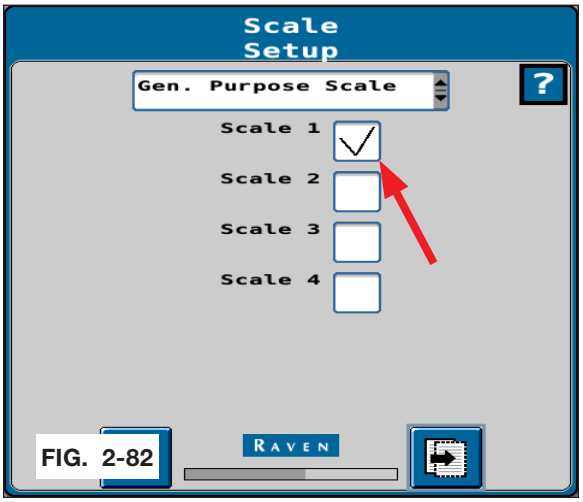


FIG. 2-82

21. Enter “32000” for Calibration Number for 4-point scale spreader models 1250 through 1450. Enter “48000” for 6-point scale spreader models 1650 through 2650. Click next page icon. (FIG. 2-83)

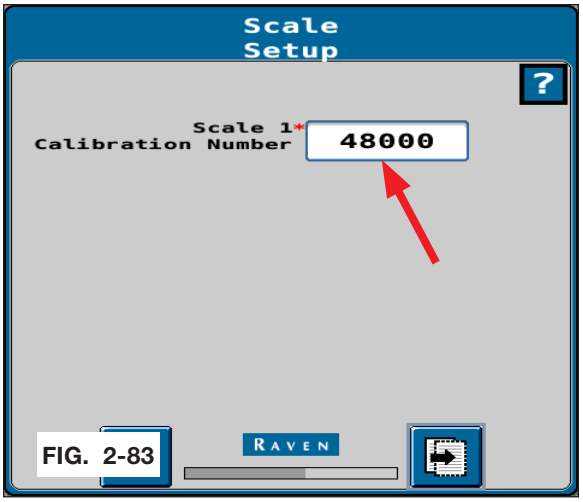


FIG. 2-83

RCM Spreader Set Up (continued)

22. Ensure all the “Pressure Sensor” boxes are selected as “None”. Click next page icon. (FIG. 2-84)

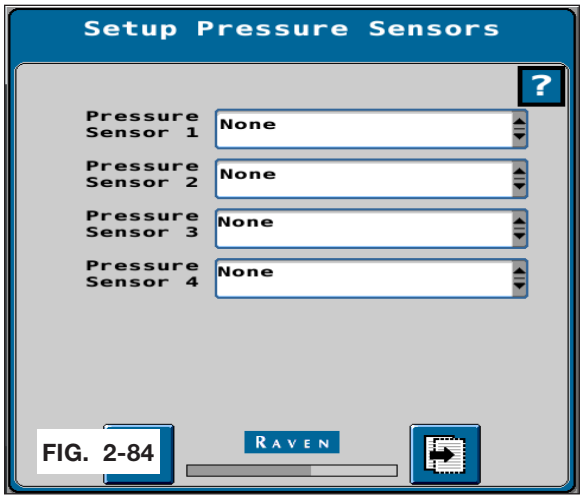


FIG. 2-84

23. Ensure “Oil Level Sensor Installed” box is unchecked. Click next page icon. (FIG. 2-85)

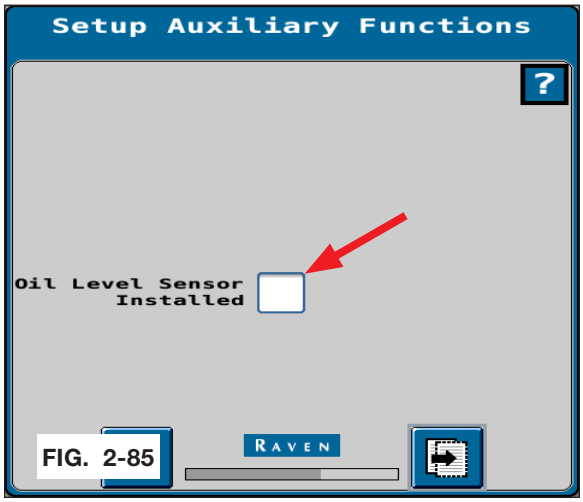


FIG. 2-85

RCM Spreader Set Up (continued)

NOTE: The question mark provides additional information and outlines what happens when adjusting each value setting.

24. Ensure each box is checked for all products. The number of products will correspond to the number of compartments on the spreader. Click next page icon. (FIG. 2-86)

25. "Product 1" is the set up for the main conveyor. For "Control Valve Type", if spreader model is 2650 only, select "Fast Close" for main conveyor. If spreader model is 2250 & shorter select "PWM Close" for main conveyor. (FIG. 2-87)

NOTE: Model 2650 spreader uses 2 servo valves on the main hydraulic valve block. (FIG. 2-88)

NOTE: Model 2250 & shorter spreaders use 1 servo valve and 1 PWM valve on the main hydraulic valve block. (FIG. 2-89)

NOTE: If valve type is "Fast Close", skip to step 30.

26. If valve type is "PWM Close", set "Valve Response Rate" at 45. This is how fast the valve responds. (FIG. 2-87)

NOTE: If valve is hunting, reduce rate 2%. Repeat as needed. If valve is not responding quickly, increase rate 2%. Repeat as needed.

27. Ensure "Control Deadband %" box is 2.

28. "Valve Delay" box remains at 0.

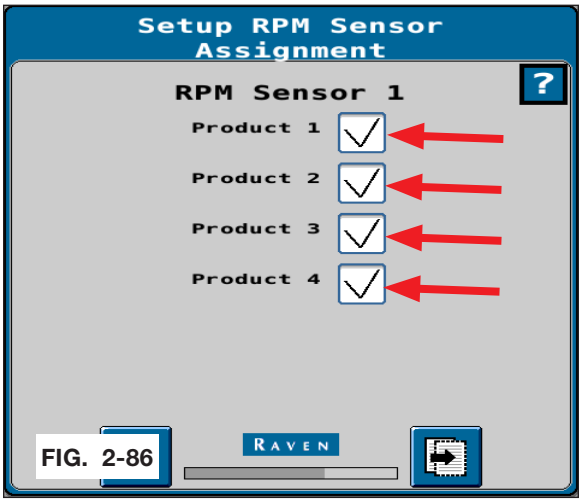


FIG. 2-86

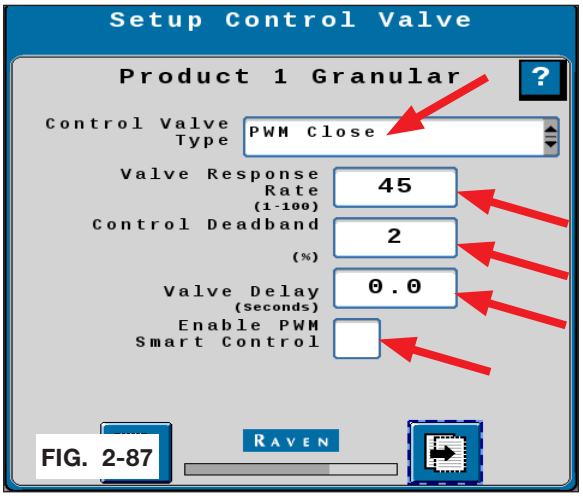


FIG. 2-87

29. Ensure "Enable PWM Smart Control" box is unchecked. Click next page icon. (FIG. 2-87)

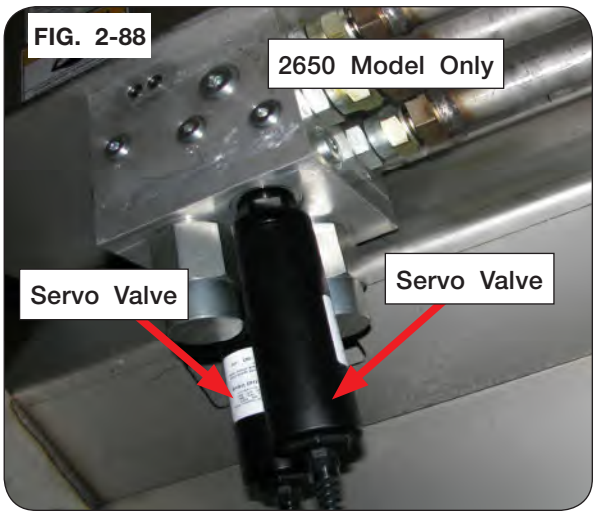


FIG. 2-88

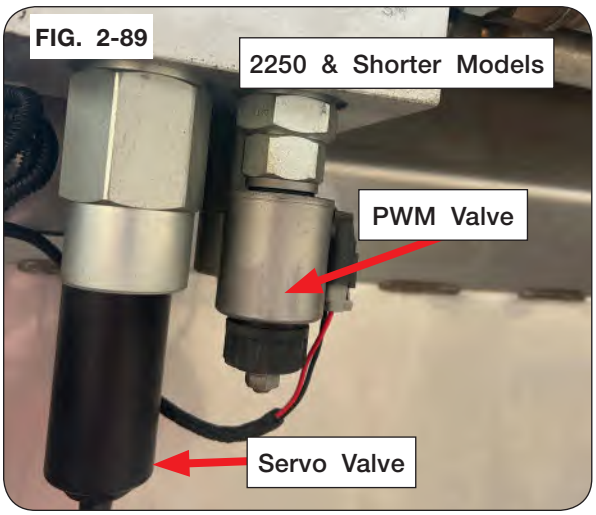


FIG. 2-89

RCM Spreader Set Up (continued)

30. If valve type is "Fast Close", set "Valve Response Rate" at 50. This is how fast the valve responds. (FIG. 2-90)
31. Ensure "Control Deadband %" box is 3.
32. "Control Effort" box is at 14. Click next page icon. (FIG. 2-90)
33. For the PWM valve (9009773) "Coil Frequency", this value defaults to 60. Ensure value is set at 100. (FIG. 2-91)
34. Set "PWM High Limit" at 100, "PWM Low Limit" at 5 and "PWM Startup" at 0. Click next page icon. (FIG. 2-91)
35. Use Density Scale in spread pattern kit 414542R to determine material product density. Enter this value. For quick setup, enter "Product Density" to 80 lbs./cu.ft. This value can be changed later. (FIG. 2-92)
36. Enter recommended "Spreader Constant" and desired "Gate Height". These values are only used for product 1 on main conveyor. Ensure "Gate Height Sensor Enable" box is unchecked. See single and Duo-Force tables below. (FIG. 2-92)

NOTE: Perform catch test calibration to achieve proper spreader constant.

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
13 INCH	48
14 INCH	44
15 INCH	41
16 INCH	39
17 INCH	36
18 INCH	34

Primary Bin with Duo-Force	
Gate Setting	Spreader Constant
0.5 INCH (A)	1382
1.5 INCH (B)	461
2.5 INCH MAX (C)	276

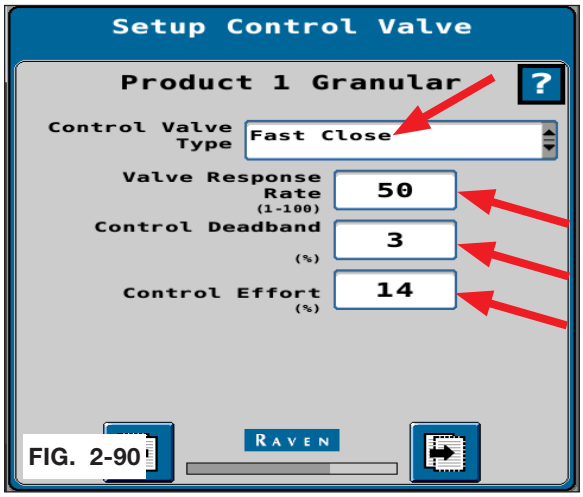


FIG. 2-90

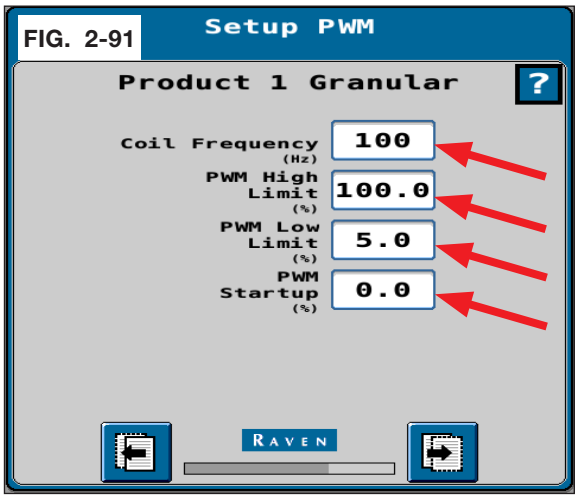


FIG. 2-91

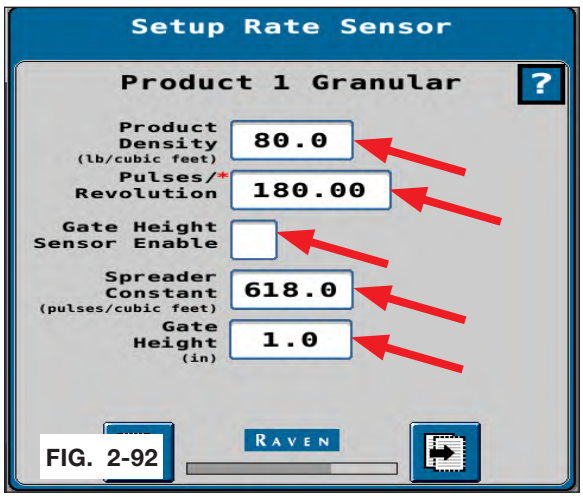


FIG. 2-92

37. Enter 180 for "Pulses/Revolution". This value is only used for product 1 on main conveyor motor. Click next page icon. (FIG. 2-92)

RCM Spreader Set Up (continued)

38. "Tank Capacity" of primary bin depends on whether this is a single or two bin system. Also depends on size of spreader. For testing purposes, entering 15000 is recommended. Multiply product density by struck capacity determines tank capacity. (FIG. 2-93)

39. "Current Tank Level" box remains at 0.

40. "Low Tank Level" is the value an alarm is set off for a low bin level. This setting remains at 0 and ensure the "Alarm" box is unchecked.

41. Ensure "Low Bin Level Sensor" box is checked and "Bin Level Sensor Type" is Default.

42. Ensure "Mid Bin Level Sensor" box is unchecked and "Mid Tank Level" is 0. Click next page icon. (FIG. 2-93)

43. "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. 2-94)

44. Enter "Rate Bump" value in an increment as desired.

45. For "Rate Selection", manually input a selection or select "Predefined or Rx". This enables selection of rate from the preset value choices or from a prescription map that is imported from a Universal Terminal.

46. "Display Smoothing" needs to be checked and "Decimal Shift" remains at 0. Click next page icon. (FIG. 2-94)

47. Enter 20 for "Off Rate Alarm" and check "Alarm" box. (FIG. 2-95)

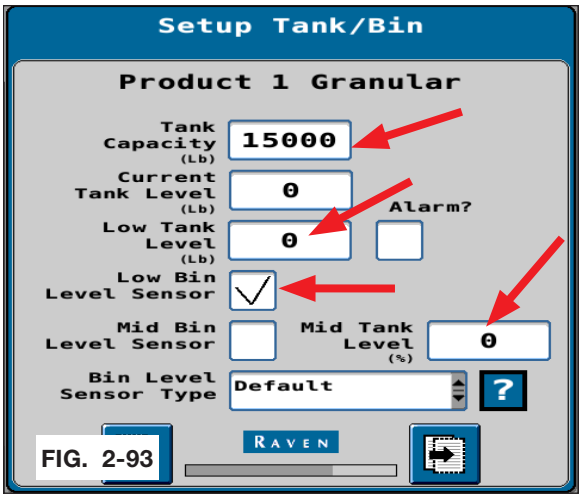


FIG. 2-93

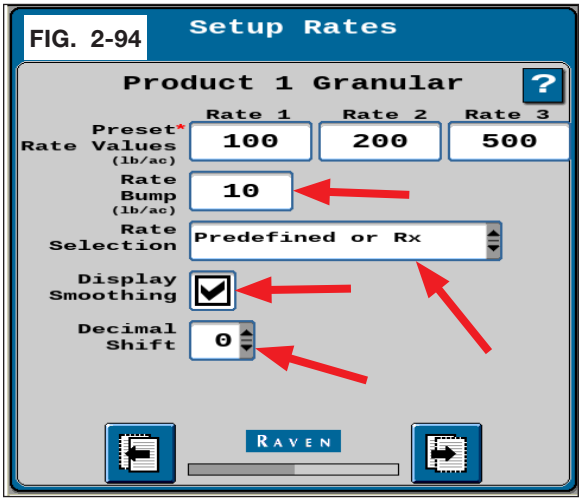


FIG. 2-94

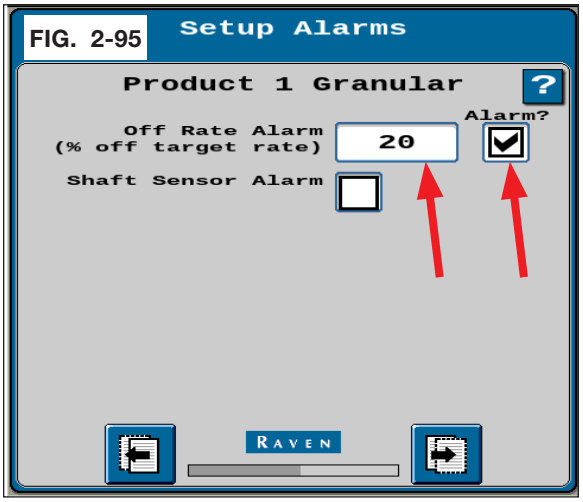


FIG. 2-95

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

48. Do not check "Shaft Sensor Alarm" box. Click next page icon. (FIG. 2-95)

RCM Spreader Set Up (continued)

NOTE: The question mark provides additional information and outlines what happens when adjusting each value setting.

NOTE: If equipped with a single bin, skip to step 109.

49. "Product 2" is the set up for the Duo-Force conveyor. For "Control Valve Type", always select "PWM Close" for conveyor. (FIG. 2-96)

50. Set "Valve Response Rate" at 45.

51. Ensure "Control Deadband %" box is 2.

52. "Valve Delay" box remains at 0.

53. Ensure "Enable PWM Smart Control" box is unchecked. Click next page icon. (FIG. 2-96)

54. For the PWM valve "Coil Frequency", this value defaults to 60. Ensure the value is set at 100. (FIG. 2-97)

55. Set the "PWM High Limit" at 100, "PWM Low Limit" at 5 and "PWM Startup" at 0. Click next page icon. (FIG. 2-97)

56. Use Density Scale in spread pattern kit 414542R to determine material product density. Enter this value. For quick setup, enter "Product Density" to 80 lbs./cu.ft. This value can be changed later. (FIG. 2-98)

57. Enter recommended "Spreader Constant" and desired "Gate Height". These values are only used for product 2 on Duo-Force conveyor. Ensure "Gate Height Sensor Enable" box is unchecked. See table below. (FIG. 2-98)

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

58. Enter 90 for "Pulses/Revolution". This value is only used for product 2 on Duo-Force conveyor motor. Click next page icon. (FIG. 2-98)

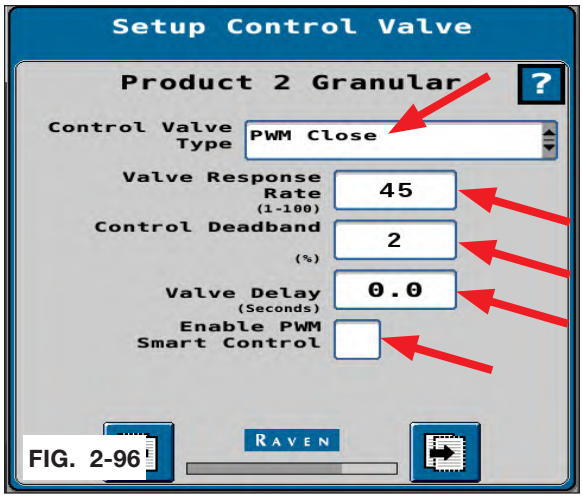


FIG. 2-96

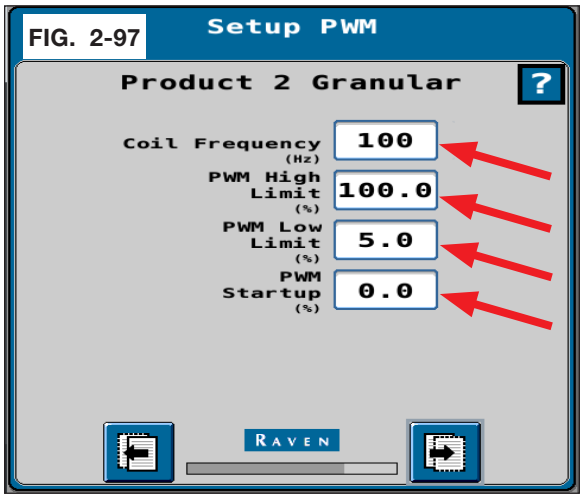


FIG. 2-97

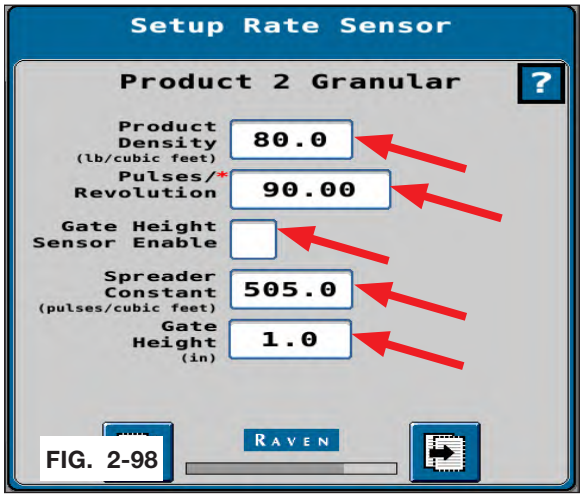


FIG. 2-98

RCM Spreader Set Up (continued)

59. "Tank Capacity" of the secondary bin will depend on product density and spreader configuration. For testing purposes, entering 15000 is recommended. (FIG. 2-99)

60. "Current Tank Level" box remains at 0.

61. "Low Tank Level" is the value an alarm is set off for a low bin level. This setting remains at 0 and ensure the "Alarm" box is unchecked.

62. 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. 2-99)

63. "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. 2-100)

64. Enter "Rate Bump" value in an increment as desired.

65. For "Rate Selection", manually input a selection or select "Predefined or Rx". This enables selection of rate from the preset value choices or from a prescription map that is imported from a Universal Terminal.

66. "Display Smoothing" needs to be checked and "Decimal Shift" remains at 0. Click next page icon. (FIG. 2-100)

67. Enter 20 for "Off Rate Alarm" and check "Alarm" box. (FIG. 2-101)

68. Do not check "Shaft Sensor Alarm" box. Click next page. (FIG. 2-101)

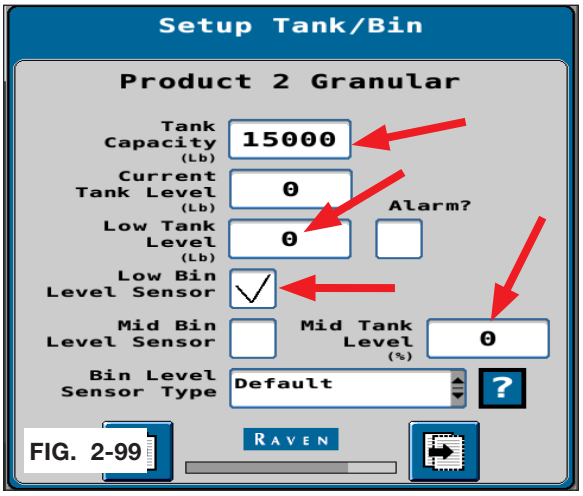
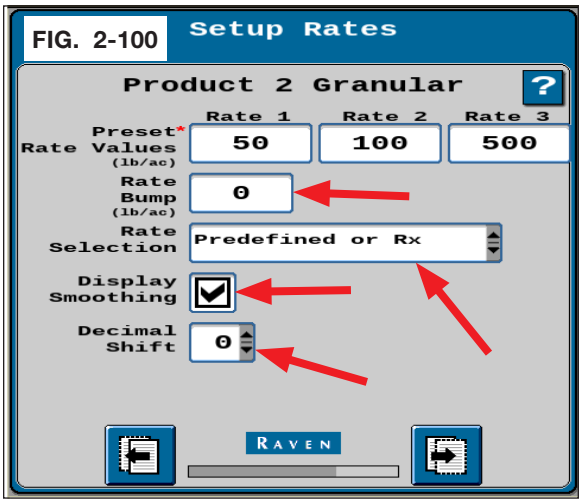
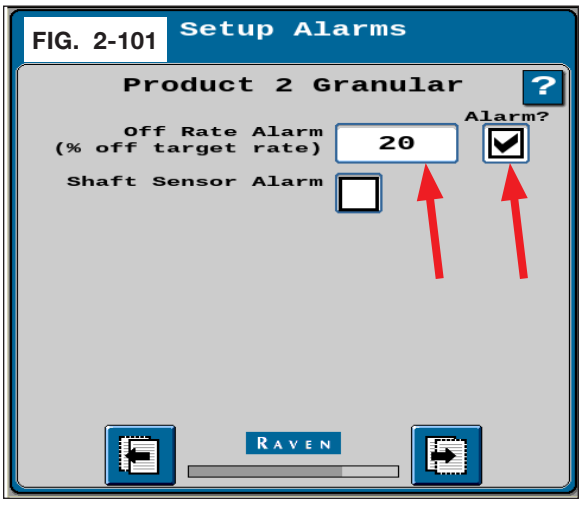


FIG. 2-99





RCM Spreader Set Up (continued)

NOTE: The question mark provides additional information and outlines what happens when adjusting each value setting.

NOTE: If equipped with Duo-Force only, skip to step 109.

69. "Product 3" is the set up for the Tri-Force conveyor. For "Control Valve Type", always select "PWM Close" for conveyor. (FIG. 2-102)

70. Set "Valve Response Rate" at 45.

71. Ensure "Control Deadband %" box is 2.

72. "Valve Delay" box remains at 0.

73. Ensure "Enable PWM Smart Control" box is unchecked. Click next page icon. (FIG. 2-102)

74. For the PWM valve "Coil Frequency", this value defaults to 60. Ensure the value is set at 100. (FIG. 2-103)

75. Set the "PWM High Limit" at 100, "PWM Low Limit" at 5 and "PWM Startup" at 0. Click next page icon. (FIG. 2-103)

76. Use Density Scale in spread pattern kit 414542R to determine material product density. Enter this value. For quick setup, enter "Product Density" to 80 lbs./cu.ft. This value can be changed later. (FIG. 2-104)

77. Enter 1498 for "Spreader Constant" and 0.6 for desired "Gate Height". These values are only used for product 3 on Tri-Force conveyor. Ensure "Gate Height Sensor Enable" box is unchecked. (FIG. 2-104)

78. Enter 90 for "Pulses/Revolution". This value is only used for product 3 on Tri-Force conveyor motor. Click next page icon. (FIG. 2-104)

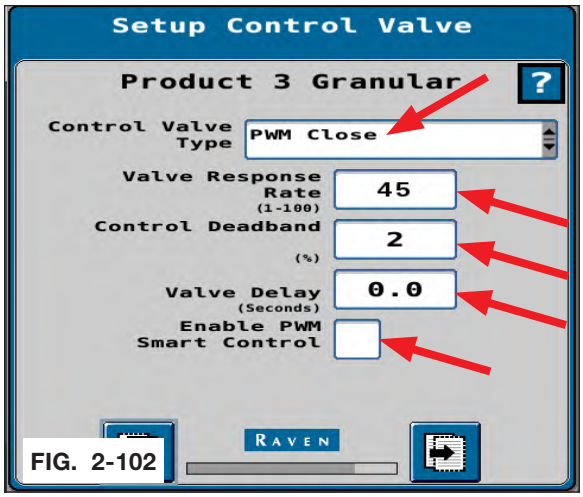


FIG. 2-102

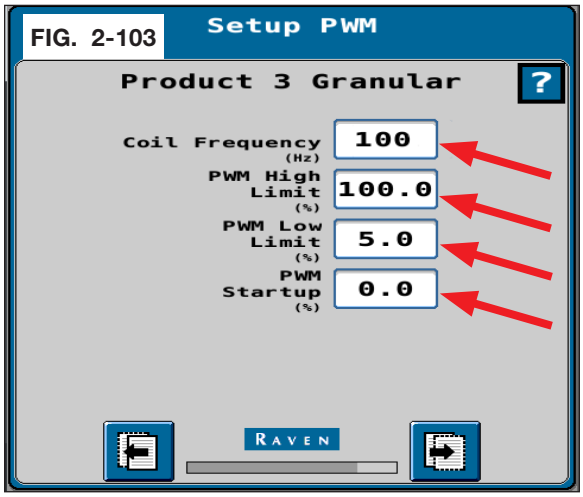


FIG. 2-103

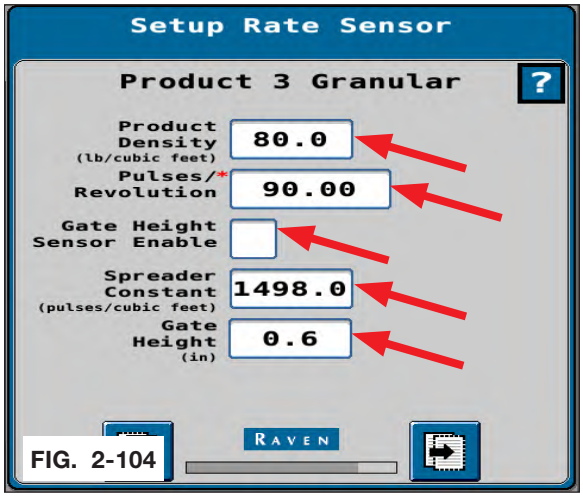


FIG. 2-104

RCM Spreader Set Up (continued)

79. "Tank Capacity" of the third bin will depend on product density and spreader configuration. For testing purposes, entering 2100 is recommended. (FIG. 2-105)

80. "Current Tank Level" box remains at 0.

81. "Low Tank Level" is the value an alarm is set off for a low bin level. This setting remains at 0 and ensure the "Alarm" box is unchecked.

82. 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. 2-105)

83. "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. 2-106)

84. Enter "Rate Bump" value in an increment as desired.

85. For "Rate Selection", manually input a selection or select "Predefined or Rx". This enables selection of rate from the preset value choices or from a prescription map that is imported from a Universal Terminal.

86. "Display Smoothing" needs to be checked and "Decimal Shift" remains at 0. Click next page icon. (FIG. 2-106)

87. Enter 20 for "Off Rate Alarm" and check "Alarm" box. (FIG. 2-107)

88. Do not check "Shaft Sensor Alarm" box. Click next page icon. (FIG. 2-107)

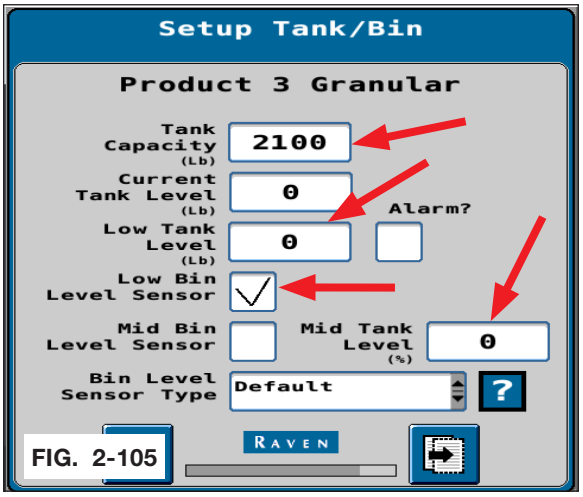


FIG. 2-105

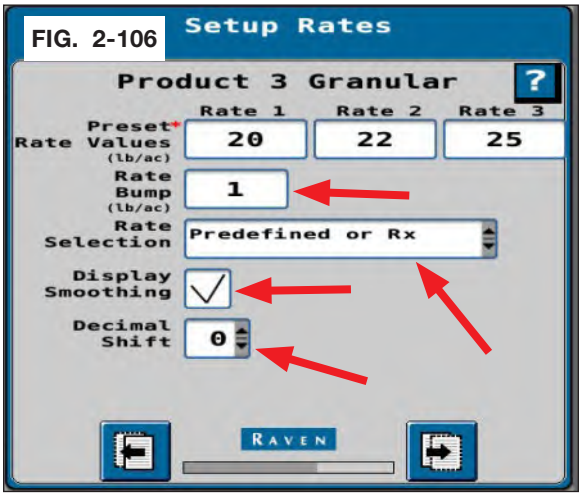


FIG. 2-106

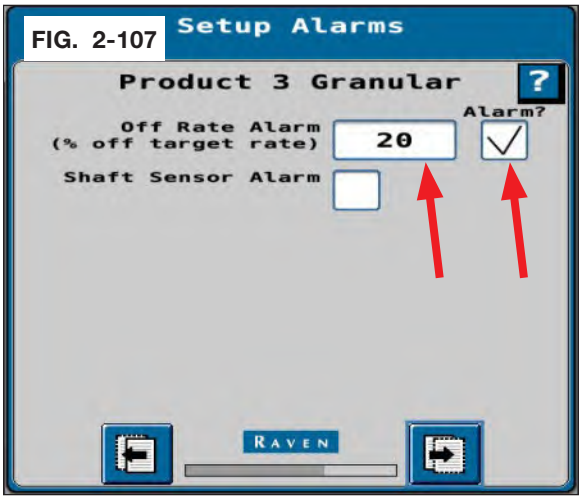


FIG. 2-107

RCM Spreader Set Up (continued)

NOTE: If equipped with Tri-Force only, skip to step 109.

89. "Product 4" is the set up for the Quad-Force conveyor. For "Control Valve Type", always select "PWM Close" for conveyor. (FIG. 2-108)

90. Set "Valve Response Rate" at 45.

91. Ensure "Control Deadband %" is 2.

92. "Valve Delay" box remains at 0.

93. Ensure "Enable PWM Smart Control" box is unchecked. Click next page icon. (FIG. 2-108)

94. For the PWM valve "Coil Frequency", this value defaults to 60. Ensure the value is set at 100. (FIG. 2-109)

95. Set the "PWM High Limit" at 100, "PWM Low Limit" at 5 and "PWM Startup" at 0. Click next page icon. (FIG. 2-109)

96. Use Density Scale in spread pattern kit 414542R to determine material product density. Enter this value. For quick setup, enter "Product Density" to 80 lbs./cu.ft. This value can be changed later. (FIG. 2-110)

97. Enter 1498 for "Spreader Constant" and 0.6 for desired "Gate Height". These values are used for product 4 on Quad-Force conveyor. Ensure "Gate Height Sensor Enable" box is unchecked. (FIG. 2-110)

98. Enter 90 for "Pulses/Revolution". This value is used for product 4 on Quad-Force conveyor motor. Click next page icon. (FIG. 2-110)

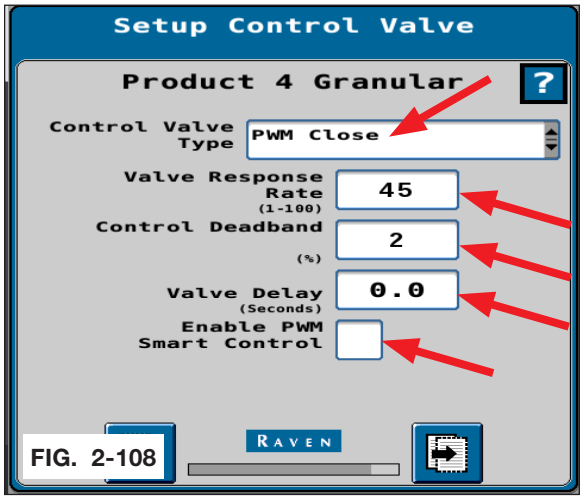


FIG. 2-108

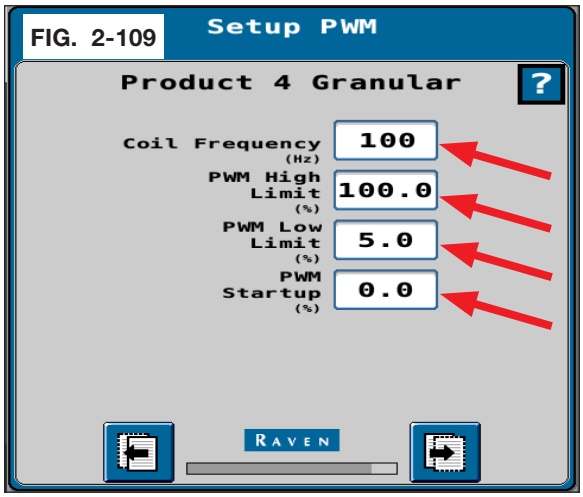


FIG. 2-109

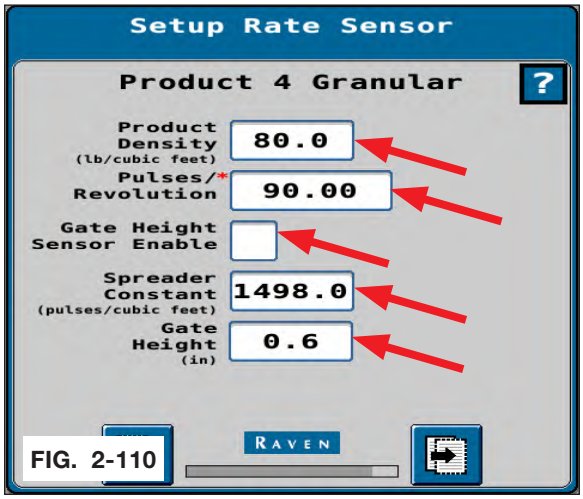


FIG. 2-110

RCM Spreader Set Up (continued)

99. "Tank Capacity" of the fourth bin will depend on product density and spreader configuration. For testing purposes, entering 2100 is recommended. (FIG. 2-111)

100. "Current Tank Level" box remains at 0.

101. "Low Tank Level" is the value an alarm is set off for a low bin level. This setting remains at 0 and ensure the "Alarm" box is unchecked.

102. 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. 2-111)

103. "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. 2-112)

104. Enter "Rate Bump" value in an increment as desired.

105. For "Rate Selection", manually input a selection or select "Predefined or Rx". This enables selection of rate from the preset value choices or from a prescription map that is imported from a Universal Terminal.

106. "Display Smoothing" needs to be checked and "Decimal Shift" remains at 0. Click next page icon. (FIG. 2-112)

107. Enter 20 for "Off Rate Alarm" and check "Alarm" box. (FIG. 2-113)

108. Do not check "Shaft Sensor Alarm" box. Click next page icon. (FIG. 2-113)

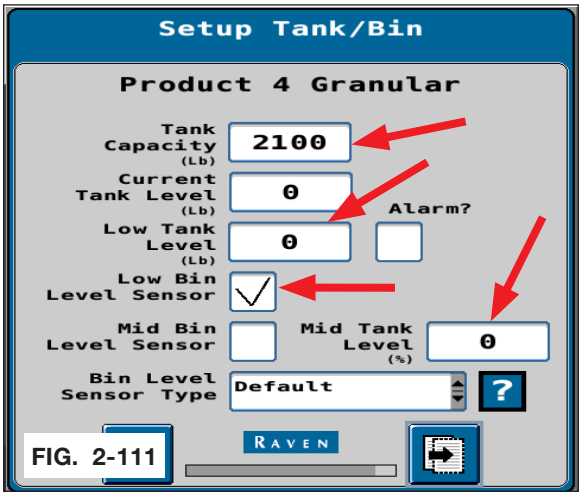


FIG. 2-111

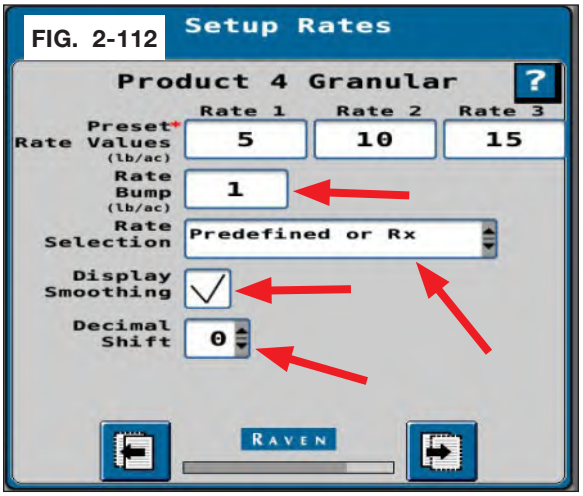


FIG. 2-112

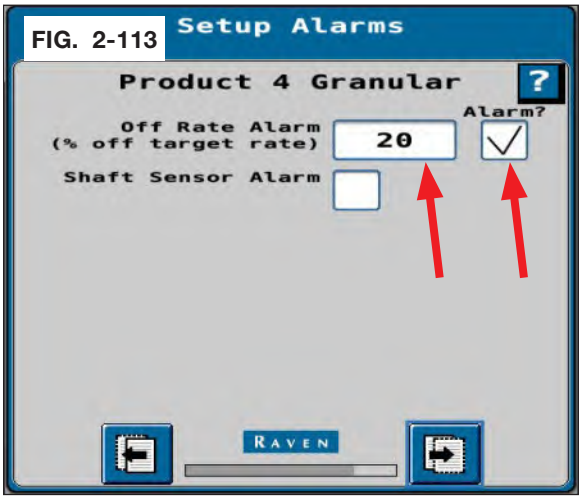


FIG. 2-113

RCM Spreader Set Up (continued)

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.

109. "Product 5 RPM" is the set up for spinner speed. For "Control Valve Type", always select "Fast Close" for spinners. (FIG. 2-114)

110. For "Valve Response Rate", enter 50 to start. If spinners overshoot, then enter lower value as desired.

111. 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" until spinner speed control is achieved up to a maximum of 70. Click next page icon. (FIG. 2-114)

112. Enter 4 for "RPM Cal". Click next page icon. (FIG. 2-115)

113. Enter "Preset Rate Values" for spinner target speed, as desired. For less dense products, lower RPM is recommended. For denser products, higher RPM, up to 650 is recommended. (FIG. 2-116)

114. For "Rate Bump" enter 0 for rates to run in manual mode or enter 10 if a rate bump is desired. (FIG. 2-116)

115. "Display Smoothing" needs to be checked. Click next page icon. (FIG. 2-116)

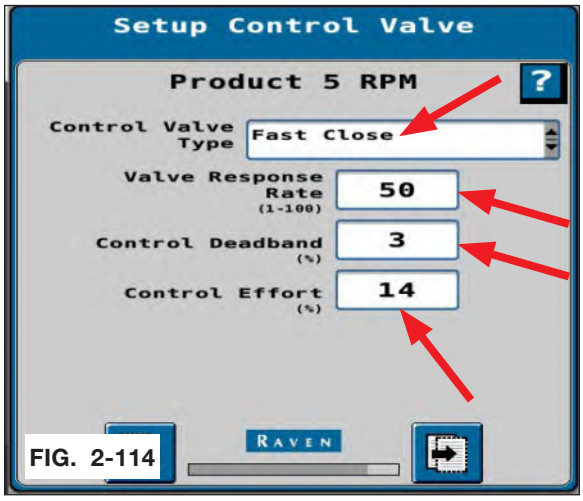


FIG. 2-114

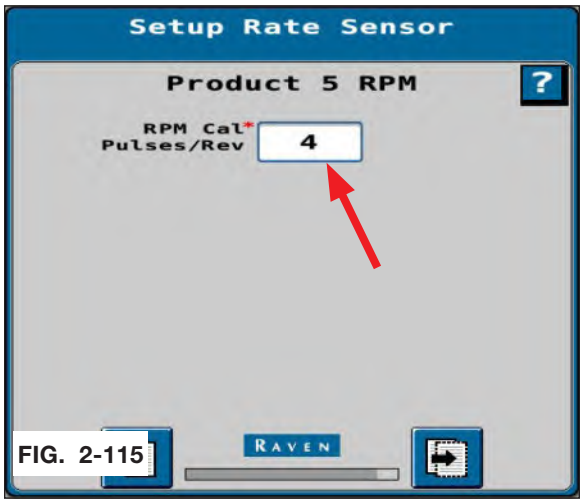


FIG. 2-115

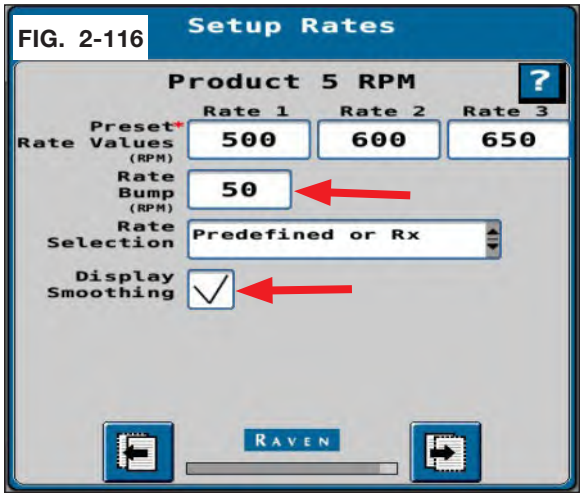


FIG. 2-116

RCM Spreader Set Up (continued)

116. Enter 20 for “Off Rate Alarm” and check “Alarm” box. Click next page icon. (FIG. 2-117)

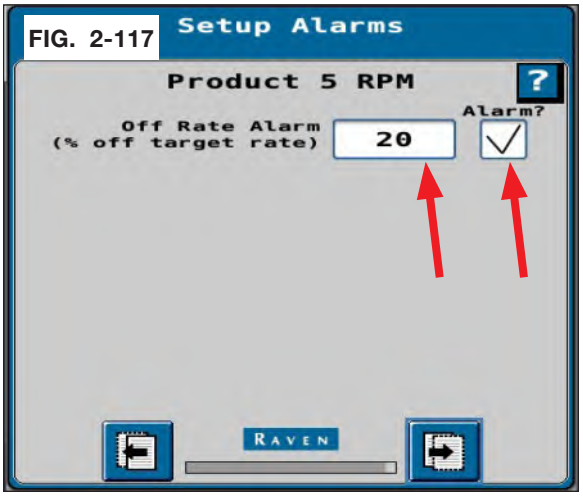


FIG. 2-117

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. 2-118)

117. No action required on this screen. Shows the set up summary. Continue to next page and then click the next page icon to finish the RCM set up. (FIG 2-118)

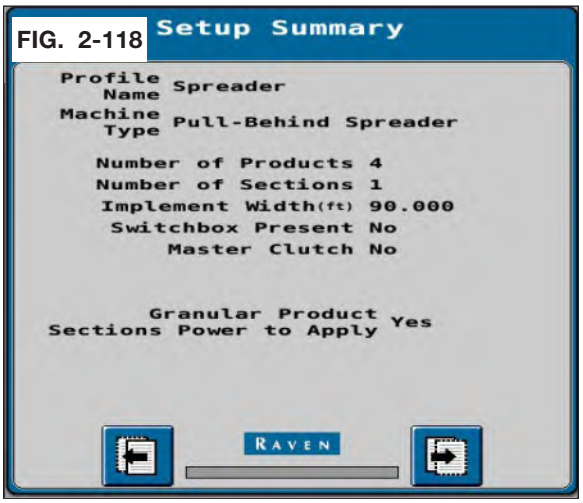


FIG. 2-118

RCM Spreader Set Up (continued)

Scale Calibration Procedure

1. Go to the Main Home Screen shown. (FIG. 2-119).

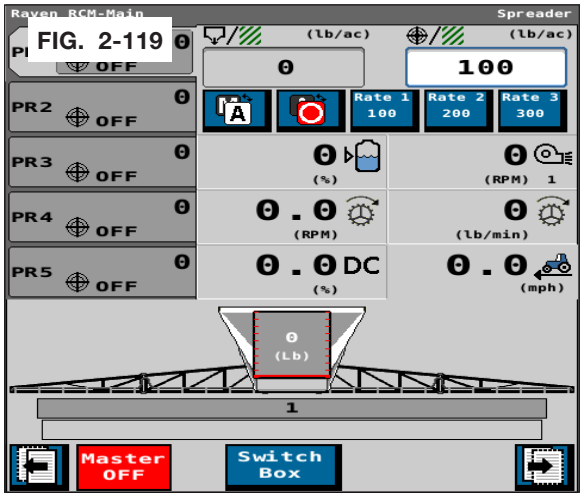


FIG. 2-119

2. To set scale calibration, go to Settings page - the 3 gears tab. (FIG. 2-120)

3. In the Settings page, select the “System Settings” tab. (FIG. 2-120)

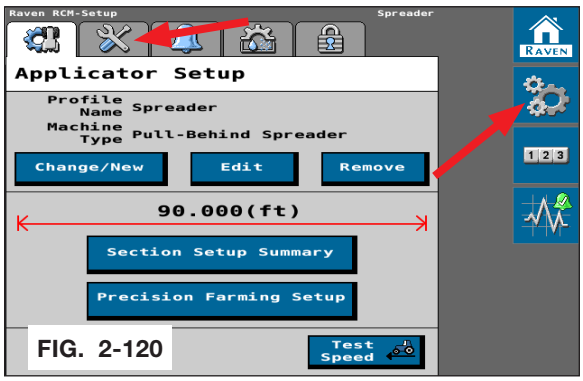


FIG. 2-120

4. In the “System Settings” page, click the “Scale Setup” button shown. (FIG. 2-121)

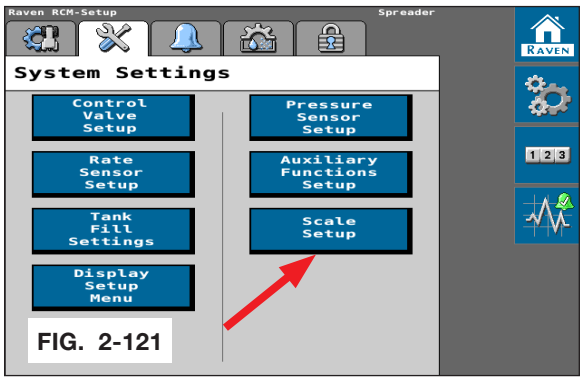


FIG. 2-121

RCM Spreader Set Up (continued)

5. Click “Scale Increment” and set to 20 lbs. (FIG. 2-122)

6. Click the “Scale Calibration” button. (FIG. 2-122)

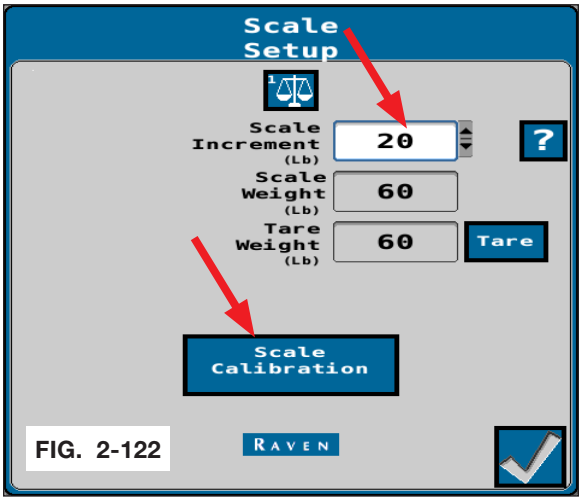


FIG. 2-122

NOTE: If dashes are displayed for “Current Scale Weight”, skip to step 10. If a numerical value is displayed for “Current Scale Weight”, the scale can be calibrated without going to zero. (FIG. 2-123)

7. Enter the certified weight into the “Actual Weight” box. (FIG. 2-123)

8. Enter the “Current Scale Weight” into the “Prev. Weight” box. (FIG. 2-123)

9. Click “Calibrate” box to accept the changed calibration number. (FIG. 2-123)

10. If the scale becomes inaccurate as the unit empties, click “Zero” button to zero the scale when empty. Continue to step

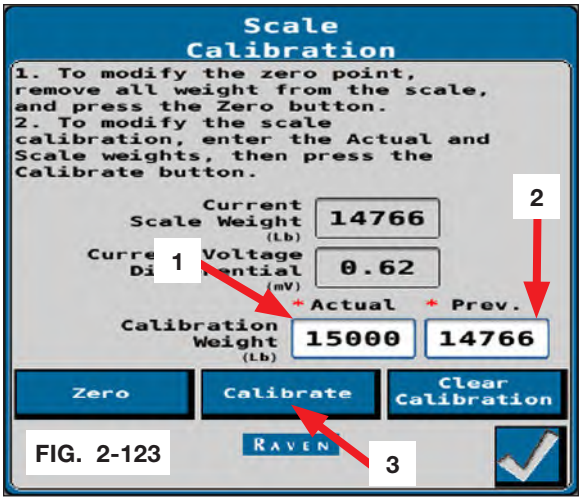


FIG. 2-123

RCM Spreader Set Up (continued)

NOTE: If dashes are displayed for "Current Scale Weight", follow steps 11 to 16. (FIG. 2-124)

11. Ensure the spreader is completely empty.
12. Click the "Zero" button to zero the scale. (FIG. 2-124)
13. Load the spreader with a known weight of product.
14. Enter the known weight into the "Actual Weight" box. (FIG. 2-124)
15. Click "Calibrate" box to accept the changed calibration number. (FIG. 2-124)
16. Repeat the calibration process if an unacceptable weight is displayed.

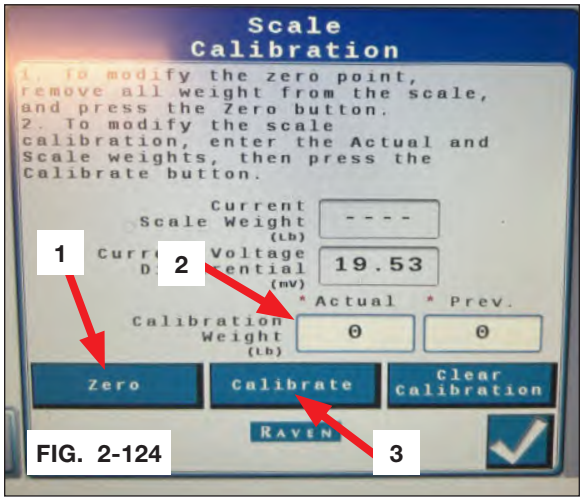


FIG. 2-124

RCM Spreader Set Up (continued)

Catch Test Calibration Chute Install

⚠ WARNING

- **UNEXPECTED SPINNER MOVEMENT CAN CAUSE SERIOUS INJURY OR DEATH. BEFORE PERFORMING CATCH TEST, ENSURE SPINNER CONTROL VALVE IS DISCONNECTED AND EVERYONE IS AWAY FROM MACHINE.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

IMPORTANT

- *Catch all product in approved spread pattern pan(s) (PF1218-9991). Avoid product spills that may cause contamination.*
- *Clean and dispose of any product in accordance with product label directions and local/national regulations.*

NOTE: Complete a catch test for each product bin.

1. Unplug the spinner control valve connector (PF1211-01A) as shown. (FIG. 2-125)
2. Turn on spinner controls to verify spinners do not spin. **Do not proceed until this step is complete!**
3. Turn off spinner controls after verifying spinners do not spin.
4. Remove current hillside flow divider (PF1236-451), brackets (PF1234-452 and PF1234-452L) and hardware. Retain these parts for future use. Duo-Force uses different hillside flow divider, brackets and hardware. (FIG. 2-126 and 2-127)

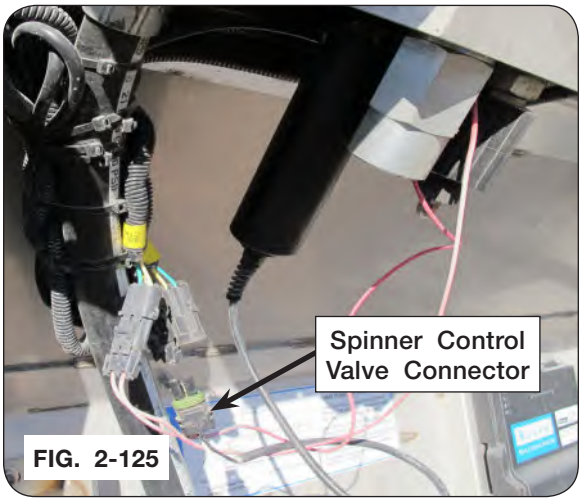


FIG. 2-125

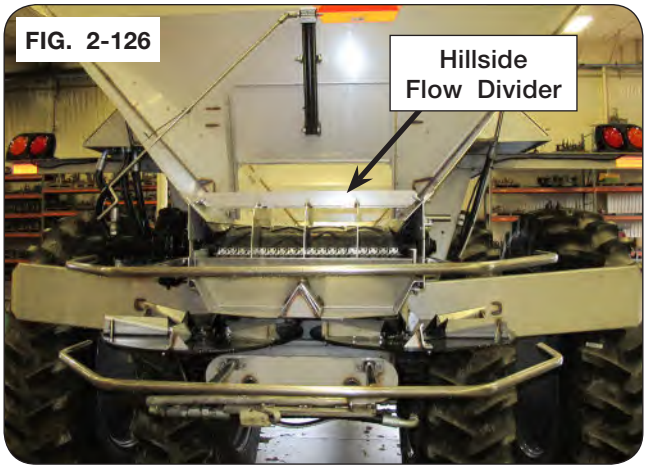


FIG. 2-126

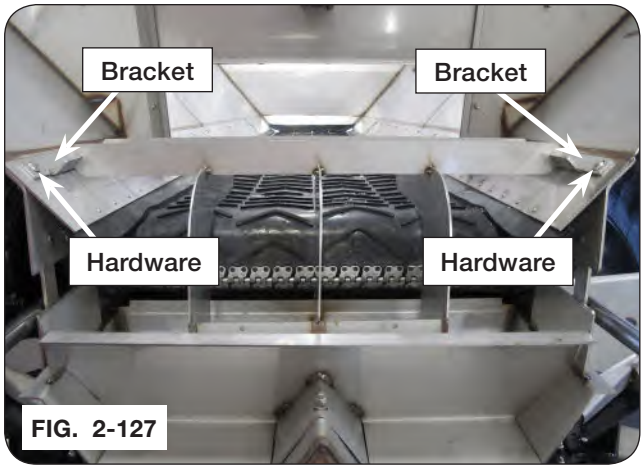


FIG. 2-127

RCM Spreader Set Up (continued)

NOTE: Ensure spinner assembly is in the "F" position before starting catch test calibration. (FIG. 2-128 & FIG. 2-129)

5. For the catch test calibration chute (415543R) to fit, spinner dishes (PF1218-350R and PF1218-350L; for 2650 to 1350 units) (414884B - right-hand and 414883B - left-hand; for 1250 units) must be rotated until the fins (PF1218-701 - right-hand and PF1218-711 - left-hand) are aligned across the width of the machine. (FIG. 2-128)

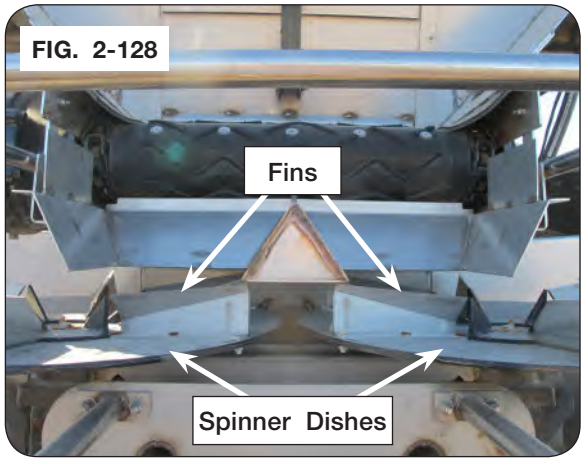


FIG. 2-128

6. Slide the catch test calibration chute onto the front plate flow divider (PF1236-402) and on top of lower spinner guard (PF1236-308). (FIG. 2-129)

7. Position the spread pattern pan (PF1218-9991) under the catch test calibration chute.

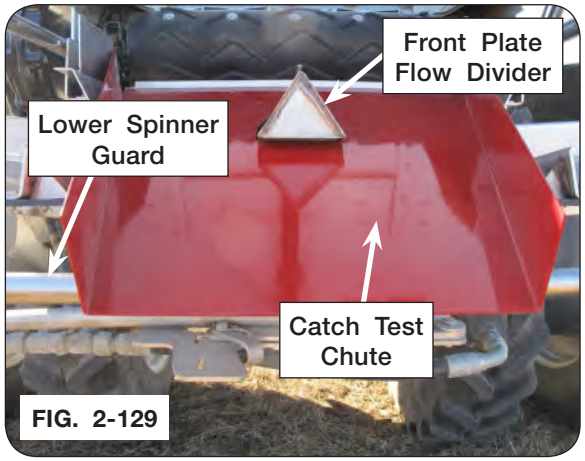


FIG. 2-129

RCM Spreader Set Up (continued)

Catch Test Procedure

1. Complete “Catch Test Calibration Chute Install” in the previous section before starting catch test procedure.

NOTE: If using the spreader scale to determine unloaded weight, record the current scale reading before beginning catch test. (FIG. 2-133)

2. From the home screen, go to Settings page - the 3 gears tab. Select “System Settings” tab.

3. In the “System Settings” page, click the “Rate Sensor Setup” button shown. (FIG. 2-130)

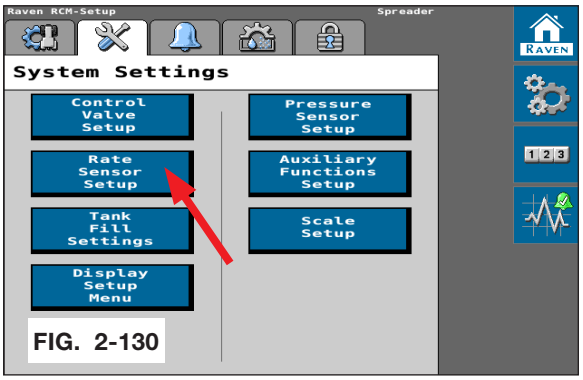


FIG. 2-130

NOTE: Complete a catch test for each product bin.

4. Click the product bin button “PR1”, “PR2”, etc. that corresponds to the catch test being performed. (FIG. 2-131)

5. Verify the product density and the gate height are correct and set up for the product bin. (FIG. 2-131)

6. Click “Catch Test Calibration” button. (FIG. 2-131)

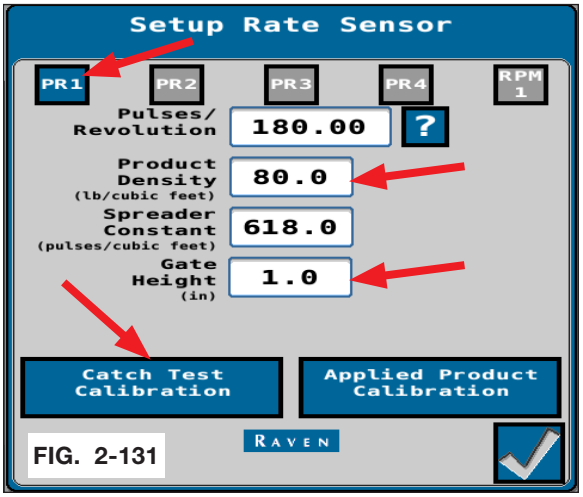


FIG. 2-131

7. Enter a “Test Speed” close to in-field operation. (FIG. 2-132)

8. Enter a “Rate” related to in-field operation. (FIG. 2-132)

NOTE: Recommended to collect at least 500 lbs. of product. Catch test is more accurate using a larger sample.

9. Enter a “Desired Weight” the catch container can hold. Click next page icon. (FIG. 2-132)

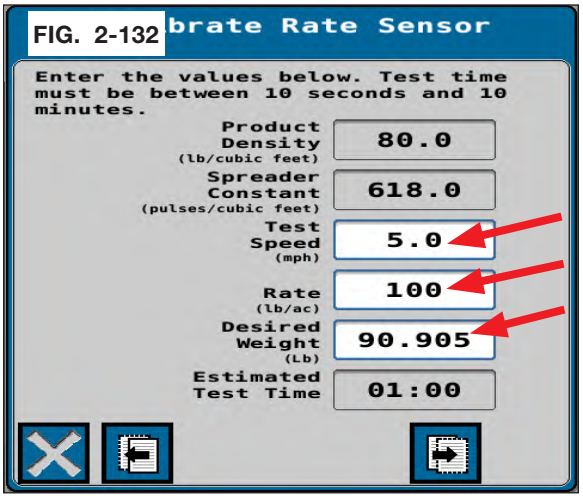


FIG. 2-132

RCM Spreader Set Up (continued)

10. Turn on the “Master Switch”. Click “Start” to begin the catch test. (FIG. 2-133)

NOTE: Initial test is to prime the conveyor belt.

11. Cancel the catch test after product begins to collect into the container.

12. Return the contents in the catch container to the product bin.

13. Repeat steps 2 through 10.

14. Once the catch test is finished, weigh the collected sample using a certified scale.

NOTE: If using the spreader scale to determine unloaded weight, take scale reading and subtract it from the reading recorded from before the test.

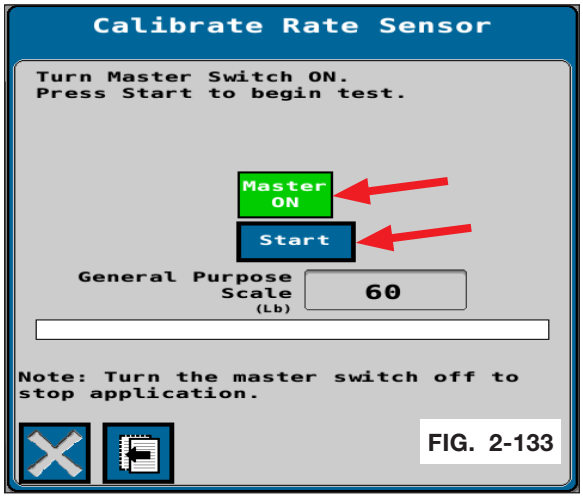


FIG. 2-133

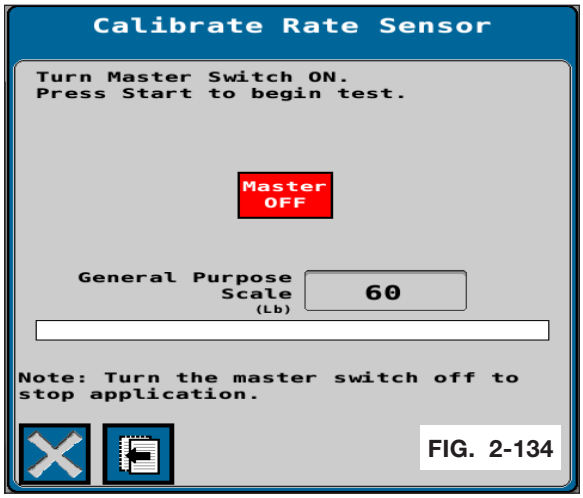


FIG. 2-134

RCM Spreader Set Up (continued)

Applied Test Procedure

1. Ensure pulses/revolution, product density, spreader constant, and gate height values are as shown in figure 2-135. Click “Applied Product calibration”. (FIG. 2-135)

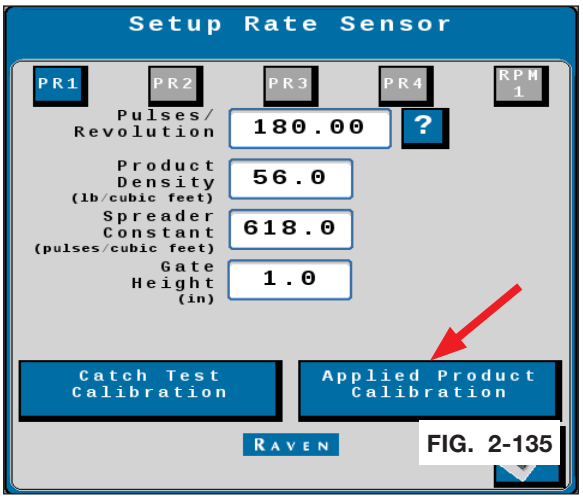


FIG. 2-135

2. Click check mark to accept. (FIG. 2-136)

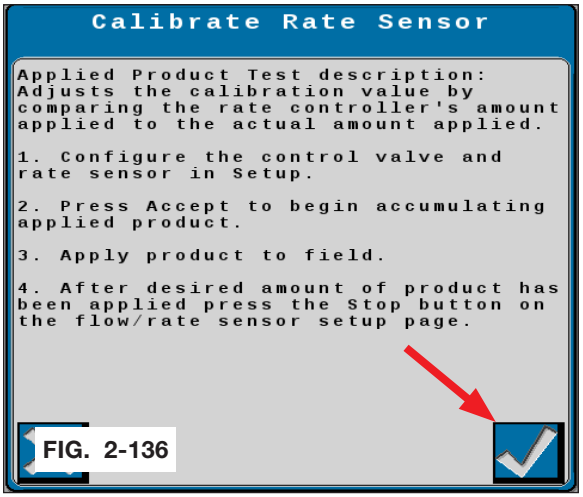


FIG. 2-136

3. Verify product density is correct for current product and gate height is appropriate. (FIG. 2-137)
4. Apply approximately 1,500 lbs. of product to the field.
5. Click stop accumulating. (FIG. 2-137)
6. New spreader constant value is shown. Click check mark to accept new spreader constant.

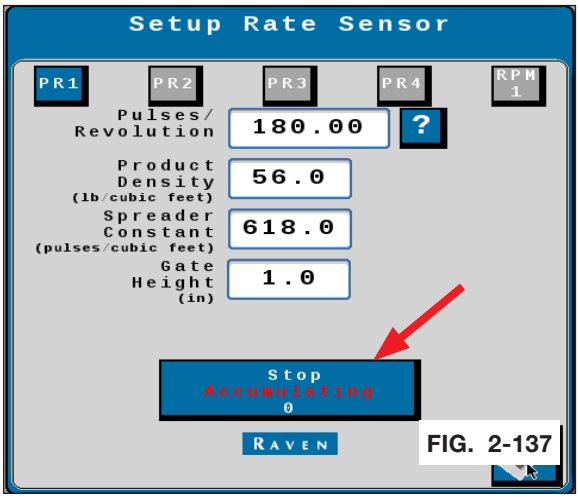


FIG. 2-137

RCM Spreader Set Up (continued)

Test Speed Procedure

Test speed procedure is a test for conveyor function. Entering a test speed value ensures the belt moves. Changing test speed value up or down ensures the belt speeds up or slows down.

NOTE: The hydraulic system must be connected and function properly to perform test speed procedure, refer to "Hydraulic Connections Set Up" in this section.

1. To set spreader test speed, go to Settings page - the 3 gears tab. (FIG. 2-138)

2. In the Settings page, select the "Applicator Setup" tab and then click the "Test Speed" button at the bottom of the screen. (FIG. 2-138)

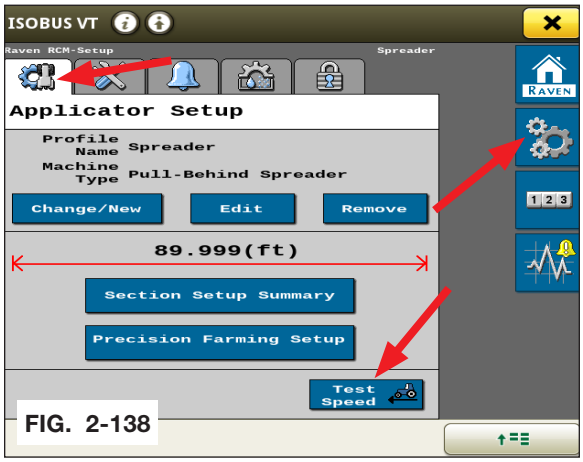


FIG. 2-138

3. Enter test speed value as desired. Click check box. (FIG. 2-139)

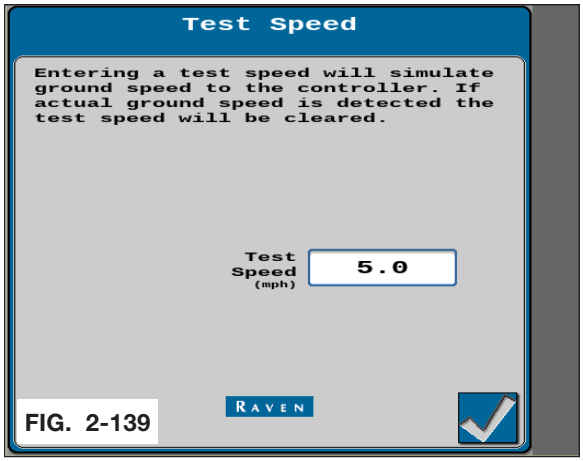


FIG. 2-139

RCM Spreader Set Up (continued)

Tuning Control Valve Response

1. To change control valve settings, go to Settings (Gear), "System Settings" (Screwdriver/Wrench), and click the "Control Valve Setup" button. (FIG. 2-140)

NOTE: For product bins, go to step 2. For spinner control valve, go to step 3.

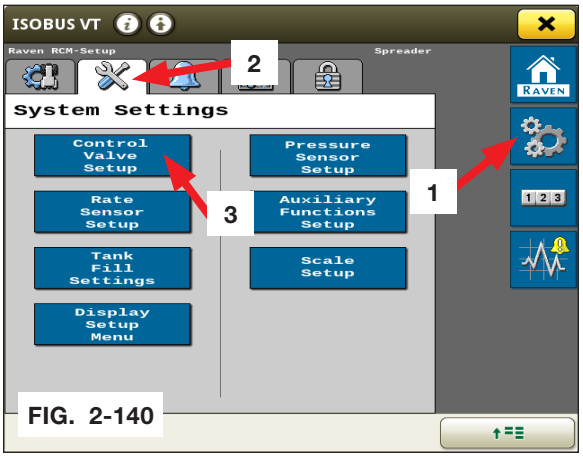


FIG. 2-140

2. Change the valve settings as desired. For product bins, the "Valve Type" is "PWM Close". For "Valve Response Rate", this is how fast the valve responds. If flow is slow to reach the target value, consider increasing the flow. For "Control Deadband %", is the percent target rate for the control valve. If 2% is entered, rate controller will adjust the flow rate until the actual rate is within 2% of the target rate. For "Valve Delay", is amount of time in seconds between when the first section is turned on and the rate controller starts the flow rate. (FIG. 2-141)

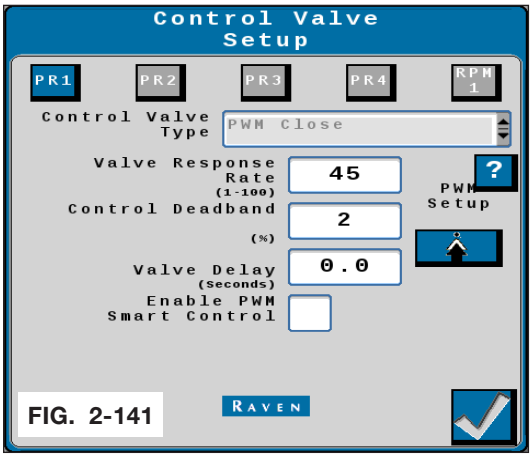


FIG. 2-141

3. Change the valve settings as desired. For spinner control valve, the "Valve Type" is "Fast Close". For "Valve Response Rate", this is how fast the valve responds. If flow is slow to reach the target value, consider increasing the flow. For "Control Deadband %", is the percent target rate for the control valve. If 2% is entered, rate controller will adjust the flow rate until the actual rate is within 2% of the target rate. For "Control Effort", enter minimum percent needed for control valve to change position. (FIG. 2-142)

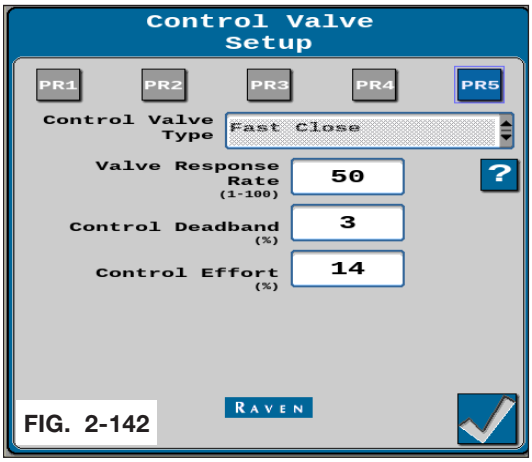


FIG. 2-142

RCM Spreader Set Up (continued)

Add Boundary Control Button to Home Page

1. Go to the Main Home Screen shown. (FIG. 2-143).

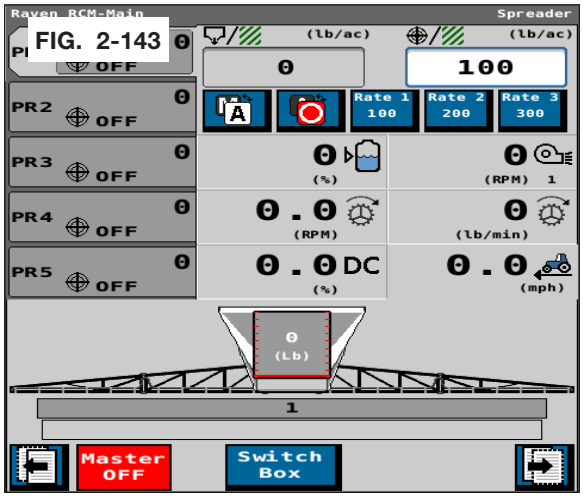


FIG. 2-143

2. To add boundary control button, go to Settings page - the 3 gears tab. (FIG. 2-144)

3. In the Settings page, select the "System Settings" tab. (FIG. 2-144)

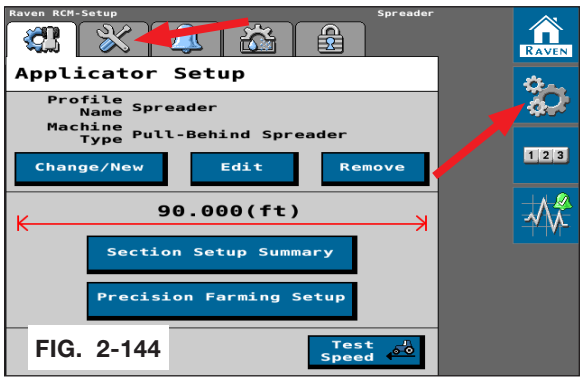


FIG. 2-144

4. In the "System Settings" page, click the "Display Setup Menu" button shown. (FIG. 2-145)

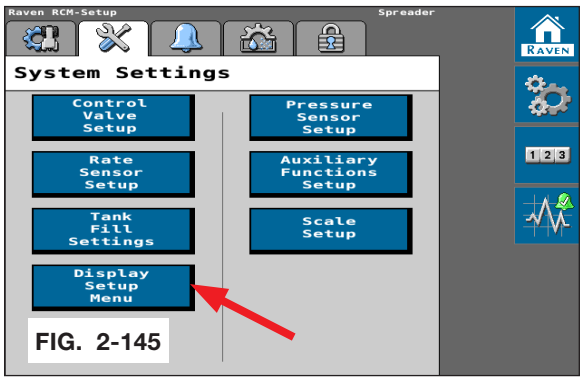


FIG. 2-145

RCM Spreader Set Up (continued)

5. After selecting “PR1”, click any gray box labelled “Press To Select” and the box changes to “Selected Readout”. This is where the boundary control button appears on the Main Home Screen. (FIG. 2-146)

6. Click drop down box. (FIG. 2-146)

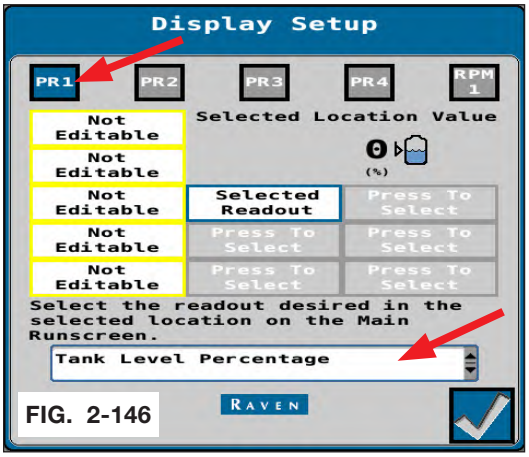


FIG. 2-146

7. Select “Auxiliary Driver 1” from the list. (FIG. 2-147)

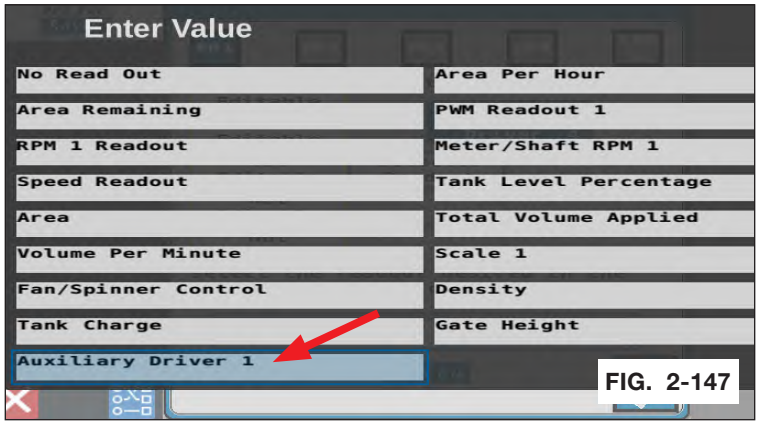


FIG. 2-147

8. Click the check box. (FIG. 2-148)

9. Click the “Home” button and return to the Main Home Screen. (FIG. 2-149)

10. The boundary control button appears. When engaged, button background turns green. (FIG. 2-149)

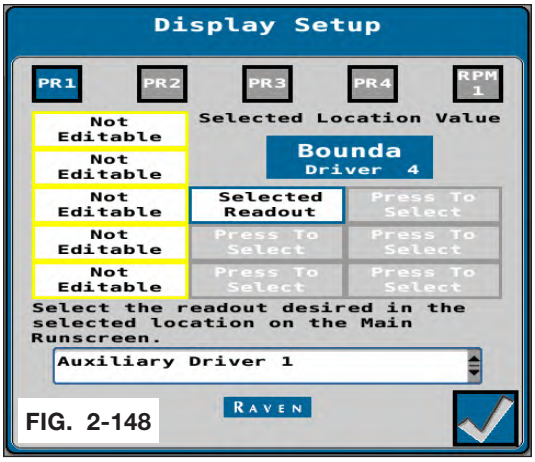


FIG. 2-148

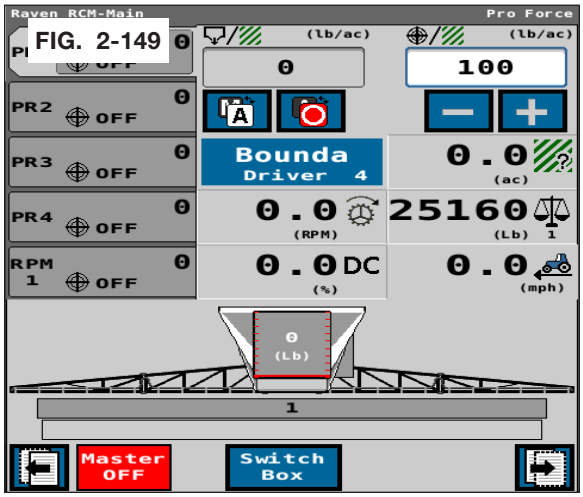


FIG. 2-149

Single Product Node/Raven 660 Set Up Information

NOTE: For calibration chute (415552R) install and catch test procedure, refer to SET UP section "RCM Spreader Set Up - Catch Test Calibration Chute Install" and "Catch Test Procedure".

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. 2-150)

FIG. 2-150

PWM Valve (9009773):
Granular, PWM Close Valve, Freq of 100 Hz, Valve Cal of 23, Min Pw = 35, Pre Set Pw = 253 (FIG. 2-151)


FIG. 2-151

PWM Valve (PF1211-011A):
Granular, PWM Close Valve, Freq of 50 Hz, Valve Cal of 23, Min Pw = 35, Pre Set Pw = 253 (FIG. 2-152)

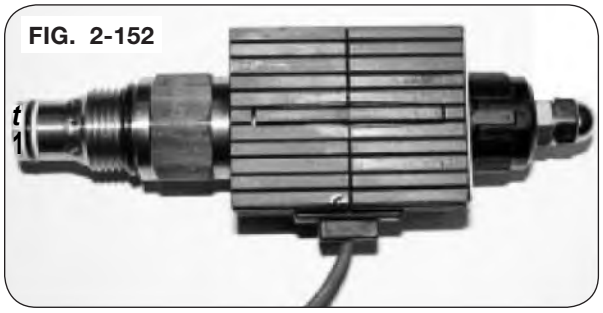


FIG. 2-152

Rear Feedgate Door Set Up - For SN B45470100 & Higher

Setting Feedgate Door to 6”–18” High-Range

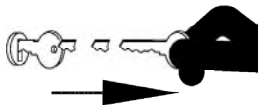
⚠ WARNING

- **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.**

IMPORTANT

- *Stainless steel hardware has a natural tendency to cold weld/gall when installed/uninstalled at high speeds and/or high torques. It is recommended to apply a thread lubricant approved for stainless steel such as graphite-based anti-seize or molybdenum disulfide based anti-seize when performing an assembly/disassembly of stainless steel hardware. Unverferth PN 9504206 or equivalent.*

1. Park the empty dry spreader on a firm, level surface. Block the machine to keep it 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. Disconnect grease hoses (9009895) from feedgate jack (PF1218-80). (FIG. 2-153)

3. Remove roll pin (900909-097) from feedgate u-joint (PF1218-85). Keep roll pin. (FIG. 2-154)

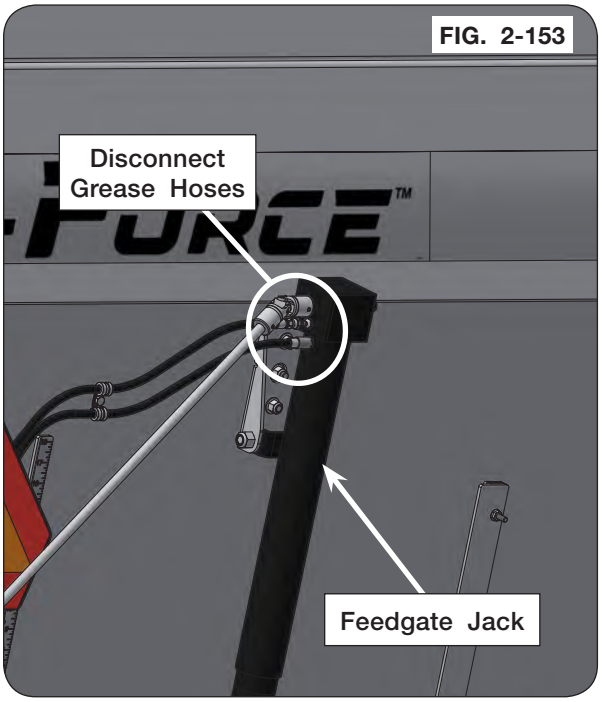


FIG. 2-153

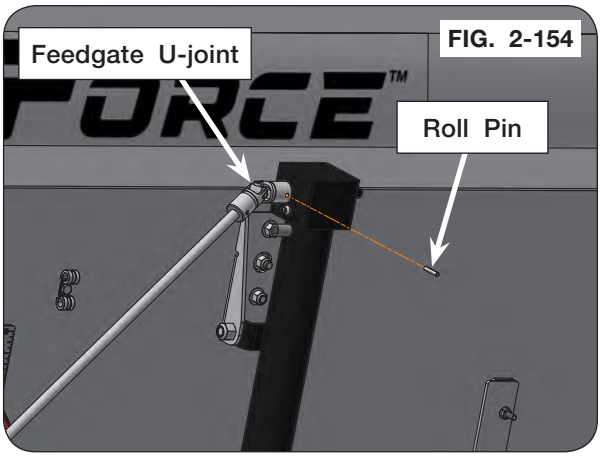


FIG. 2-154

Rear Feedgate Door Set Up (continued)
For SN B45470100 & Higher

NOTE: Feedgate u-joint and feedgate handle (PF1218-81LTD) are removed in figures 2-155 through 2-159 for illustration only.

4. Support feedgate door with blocking, remove and retain 1/2" hardware from feedgate jack upper mount. (FIG. 2-155)

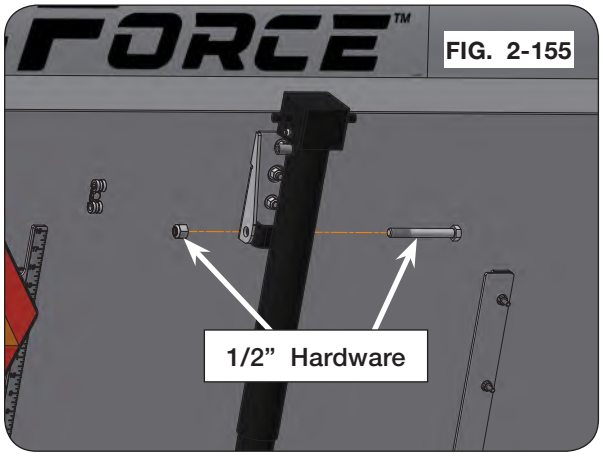


FIG. 2-155

5. Remove and retain top and bottom 3/8" hardware from feedgate jack mount (416671). (FIG. 2-156)

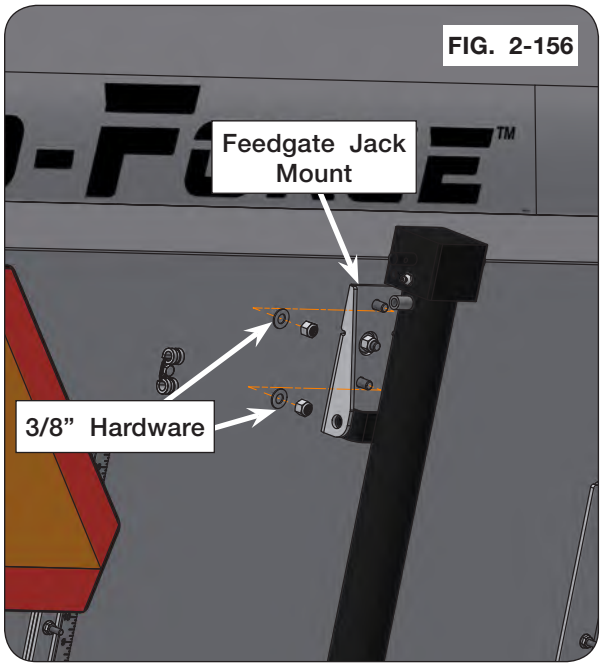


FIG. 2-156

6. Rotate feedgate jack mount 180° so the mounting holes for jack are at top position. (FIG. 2-157)

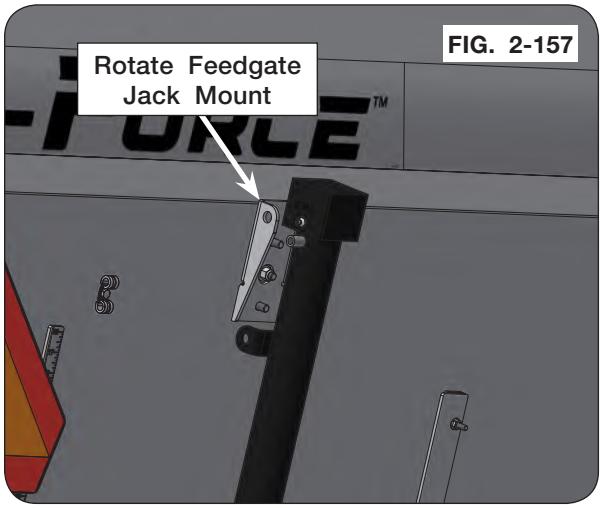


FIG. 2-157

Rear Feedgate Door Set Up (continued)
For SN B45470100 & Higher

7. Reattach 3/8" hardware to feedgate jack mount. (FIG. 2-158)

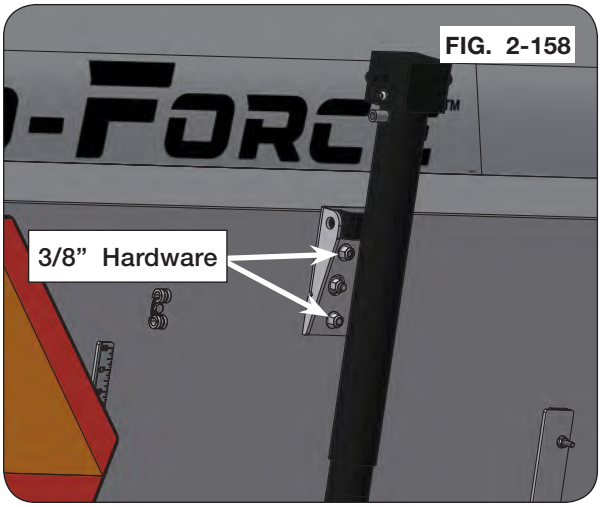


FIG. 2-158

8. Reattach feedgate jack to feedgate jack mount using 1/2" hardware. (FIG. 2-159)

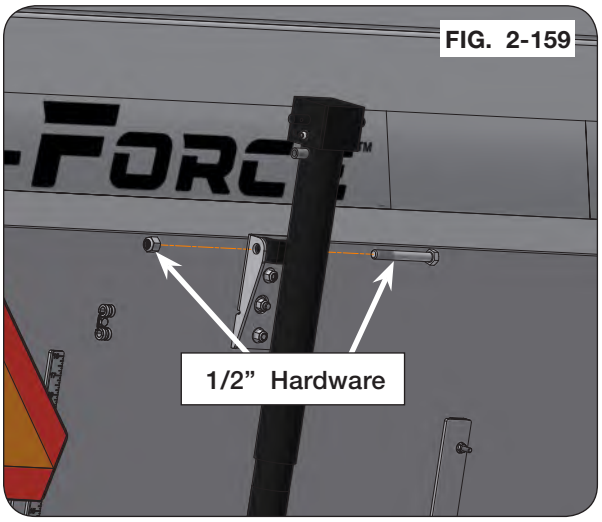


FIG. 2-159

9. Reinstall roll pin for feedgate u-joint and grease hoses (FIG. 2-160)

(Continued on next page.)

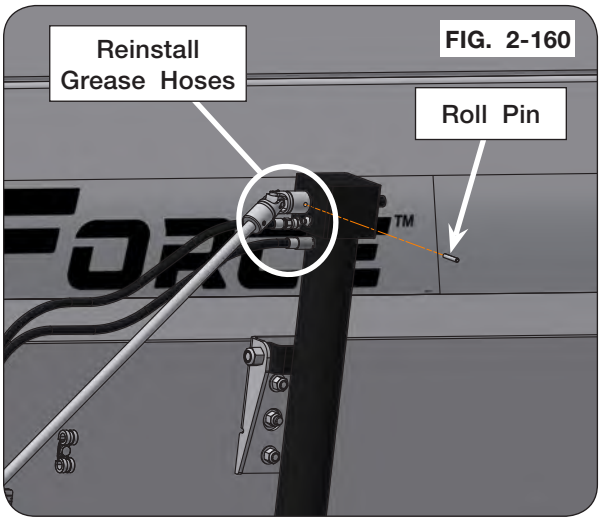


FIG. 2-160

Rear Feedgate Door Set Up (continued)
For SN B45470100 & Higher

10. From inside the spreader box, remove and retain middle sets of 1/4" hardware attached to feedgate guide plates (416670). (FIG. 2-161)

11. Remove and retain internal feedgate baffle (416673) for future use. (FIG. 2-161)

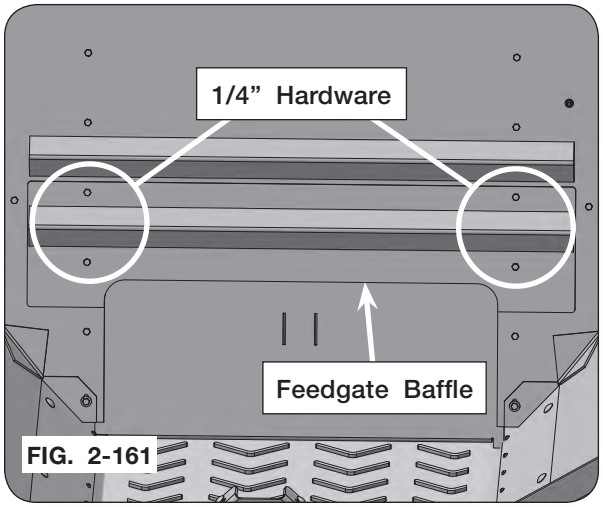


FIG. 2-161

12. Reinstall feedgate guide plate hardware. (FIG. 2-162)

13. Torque all hardware to specification. Refer to "Torque Chart" in MAINTENANCE section.

14. If spreading fertilizer, feedgate door starting height is 2".

    If spreading lime, feedgate door starting height is 7".

15. If desired spread rate is not achieved, adjust the feedgate door.

16. Once feedgate door is adjusted, change spreader constant for the new feedgate setting. See "RCM Spreader Set Up" in this section.

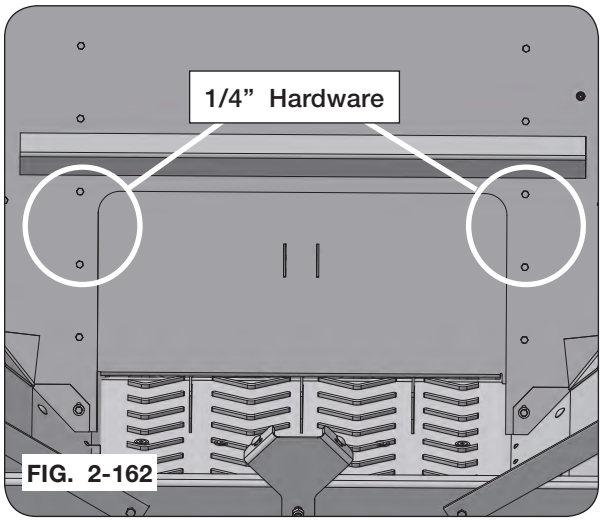


FIG. 2-162

Section III
Operation

FOR SCALE, AUTO GREASER, AND / OR TARP INFORMATION, PLEASE REFER TO THE INDIVIDUAL MANUALS.

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 CHASSIS OPERATOR'S MANUAL FOR PROPER PROCEDURES.**

- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. 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.

CHASSIS HYDRAULIC REQUIREMENTS:
Recommended chassis-supplied hydraulic pressure is 2900-3300 psi.

STANDARD HYDRAULIC SYSTEM PUMP REQUIREMENTS:
38 - 45 gpm @ 3500 psi. If more than 45 gpm is used, it must be done with a "load sensing" variable displacement pump.

OPTIONAL SPLIT HYDRAULIC SYSTEM PUMP REQUIREMENTS:
76 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 CHASSIS MOUNT BOX IS NOT EQUIPPED WITH BRAKES. ENSURE THAT THE TOWING VEHICLE HAS ADEQUATE WEIGHT AND BRAKING CAPACITY TO TOW THIS IMPLEMENT.**

IMPORTANT

- *Chassis must be rated for applied loads. Rated capacity is for the spreader box only.*

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.

Regulate speed to road conditions and maintain complete control.

It is probable that this implement is taller, wider, and longer than the towing chassis. 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 Start Up Procedure

⚠ WARNING

- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **RELIEVE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE CHASSIS OPERATOR'S MANUAL FOR PROPER PROCEDURES.**
- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.**
- **MOVING OR ROTATING COMPONENTS CAN CAUSE SERIOUS INJURY OR DEATH. ENSURE FEEDGATE DOOR, CHAIN/BELT COVERS AND SERVICE COVERS ARE IN PLACE BEFORE OPERATING THE DRY SPREADER.**

1. Start vehicle / power unit and keep the key in the ON position.
2. On the ISO product control screen, ensure the master is OFF and all products are OFF.
3. Engage vehicle / power unit hydraulics and bring engine RPMs to operating range.
4. Turn spinner RPM ON.
5. Turn Product 1 ON.
6. Begin driving forward (or input a test speed for stationary / test operation).
7. To get the spinners running, quickly cycle the Master Switch ON then OFF. The spinners continue to spin but the conveyor will stop.
   a. NOTE: Spinner will hold speed at the time master switch cycled to OFF and may be lower than operation target speed.
8. If the spreader is equipped with multiple bins, turn those products to ON.
9. Move to the area of operation and cycle the Master Switch to ON to begin spreading.

Spinner Disc Adjustments

⚠ WARNING

- **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.**

1. Verify the spinner and material flow divider are in position according to “Spinner Disc Set Up” in SET UP section.

Spread Test Procedure

2. Lay out 110 feet of rope (415242) in a straight line.

3. On the rope, there are tape marks every 5 feet. Place a pan (PF1218-9991) at each tape mark.

4. Set 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

5. Set RCM to target rate.

6. Do a test run: while applying product at target ground speed, drive an additional 50 feet before the rope/pans.

7. Once the rear of the machine is at least 50 feet past the rope/pans, slow down the unit and stop.

NOTE: Only perform a single-pass spread test. Do not turn around and repeat spread test.

8. Put test tubes (PF1218-999) in a line using test tube platform (PF1218-9994).

9. Empty the pans into the tubes to volumetrically measure the difference in pans.

10. If equipped with Duo, Tri, or Quad-Force, perform a spread test for each product individually. The spread test may need to be repeated four times.

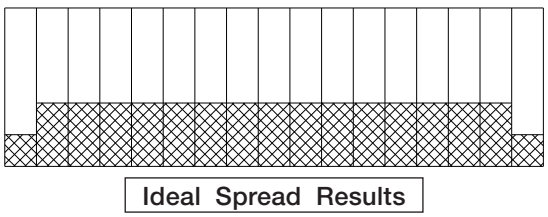
(Continued on next page.)

Spinner Disc Adjustments (continued)

Spinner Fore/Aft Adjustment

11. After spread test, adjust spinner assembly frontwards or rearwards according to spread pattern test results from the spread test procedure. See Figure 3-1.

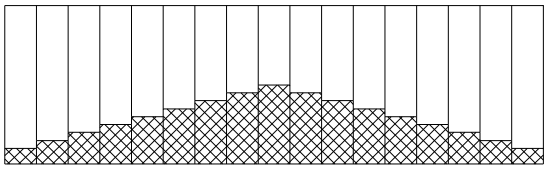
FIG. 3-1



Ideal Spread Results

- Ideal Spread Test Results

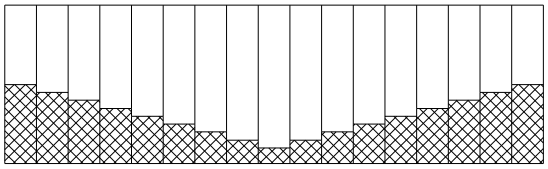
  Flat and taper off towards the outside 5 to 10 ft.



Heavy in Center Spread Results

- Heavy in the Center Spread Test Results

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



Light in Center Spread Results

- Light in the Center Spread Test Results

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

12. After adjustments are made, repeat spread test.

NOTE: Repeat spread test when products change.

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”.

Spreading Operation

Lime Spreading

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. 3-2)

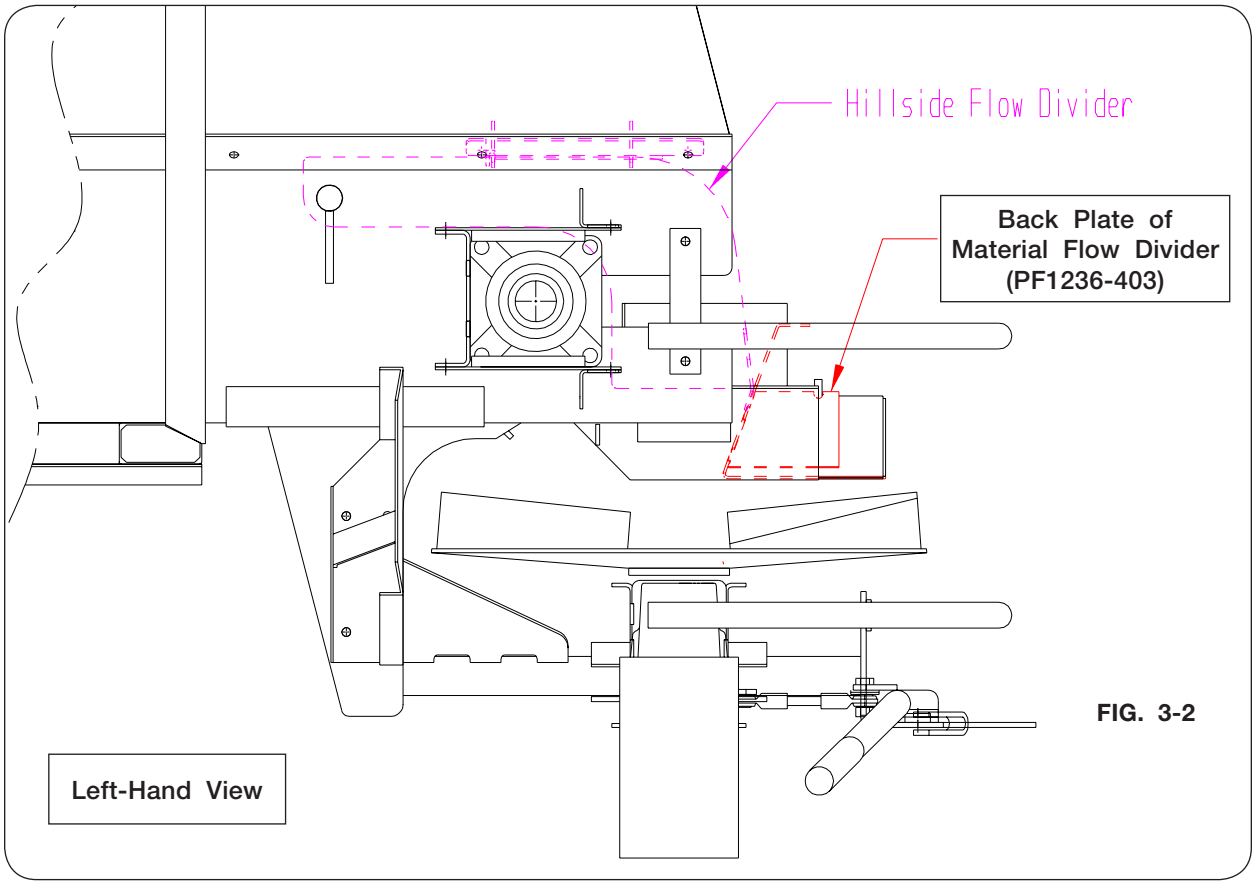


FIG. 3-2

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. 3-3)

NOTE: The lower the hole, the farther back the spinner assembly is positioned. See "Spinner Disc Set Up" in SET UP section

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

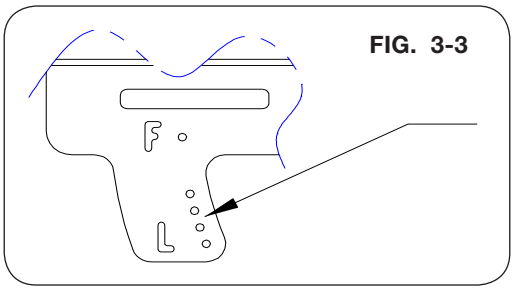


FIG. 3-3

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 SET UP section.

7. See "Spinner Disc Adjustments" section for spread test, spinner speed setting & spread pattern info.

Fertilizer Spreading

NOTE: The hillside flow divider must be installed when the rear feedgate is set to a height 2" or lower. If hillside flow divider is removed, material will not flow evenly off the unit to the spinners.

NOTE: If going from spreading lime to fertilizer, follow the next steps.

1. Reinstall the back plate of material flow divider (PF1236-403) and slide the hillside flow divider onto the rails. (FIG. 3-2)

2. Screw the lock nut back in place after the back plate is reinstalled.

3. Reattach the back plate of material flow divider (PF1236-403) by screwing the single lock nut.

4. Open the feedgate to 2 inches or lower.

5. Adjust the spinner to the "F" (fertilizer) position. (FIG. 3-4)

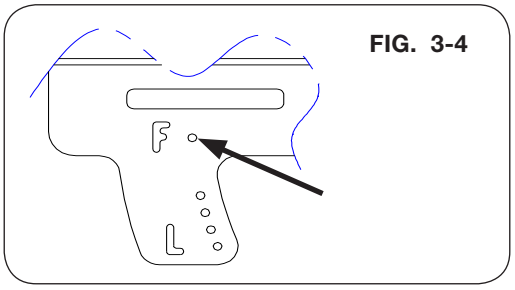


FIG. 3-4

NOTE: When the spinner is in the "F" position, the closest forward the spinner assembly is positioned. See "Spinner Disc Set Up" in SET UP section.

Spreading Operation (continued)

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

7. See “Spinner Disc Adjustments” section for spread test, 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

Boundary Control Operation - For SN B44470100 & Higher

The Pro Force dry spreader is delivered from the factory with a boundary control assembly. The spreader has either Raven RCM components or less-ISOBUS Raven RCM components. This feature is controlled by either the RCM or stand-alone rocker switchbox (9009814). See "Rate Control Module (RCM) Wiring Harness Components" or "Less ISOBUS Rate Control Wiring Harness Components" in PARTS section.

For Raven RCM:
Turn RCM to "ON" and ensure the ECU for the speader powers on. To turn boundary control "ON" or "OFF", press the boundary control icon on the main home screen. (FIG. 3-5)

NOTE: If boundary control button is not on the main home screen, refer to "RCM Spreder Set Up - Add Boundary Control Button to Home Page" in SET UP section.

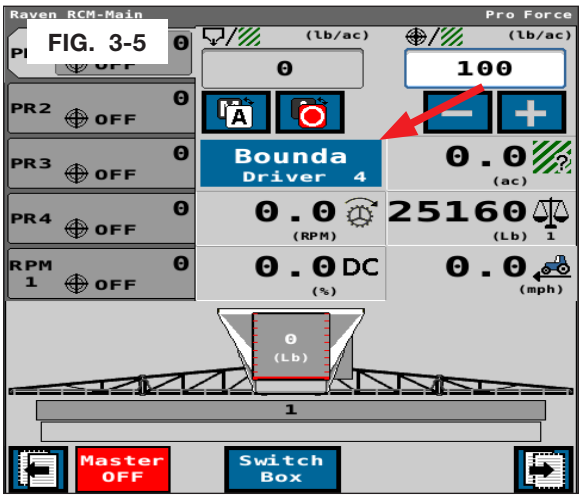


FIG. 3-5

For Less-ISOBUS Raven RCM:
Turn RCM to "ON" and turn "ON/OFF" boundary control rocker switch (9009814) to "ON". (FIG. 3-6)

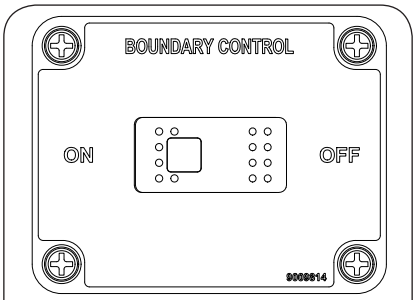


FIG. 3-6

Rate Control Module (RCM) Spreader Reset

When turning on the RCM for the first time, 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 With Fenders - For Pull-Type Units

⚠ WARNING

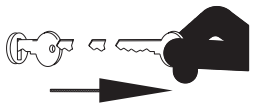
- **FALLING OR LOWERING EQUIPMENT CAN CAUSE SERIOUS INJURY OR DEATH. KEEP EVERYONE AWAY FROM EQUIPMENT WHEN SUSPENDED, RAISING, OR LOWERING.**
- **DO NOT ALLOW ANYONE TO RIDE ON THE LADDER. MAKE SURE EVERYONE IS CLEAR BEFORE OPERATING MACHINE OR TOWING VEHICLE.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **TO PREVENT PERSONAL INJURY OR DEATH WHILE SERVICING, 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.**
- **NEVER ENTER A DRY SPREADER CONTAINING FERTILIZER. FLOWING FERTILIZER TRAPS AND SUFFOCATES VICTIMS IN SECONDS.**

NOTE: Ensure ladder and steps are free from snow/debris before changing ladder positions and climbing.

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

Storage to Working Position

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



2. While holding ladder handle, remove rubber latch from holder. (FIG. 3-7)

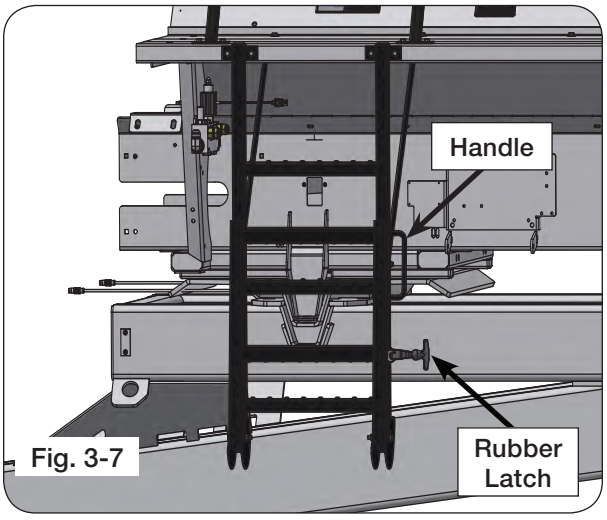


Fig. 3-7

Ladder Operation With Fenders - For Pull-Type Units (continued)

3. Slowly swing the lower ladder section completely down to working position. (FIG. 3-8)

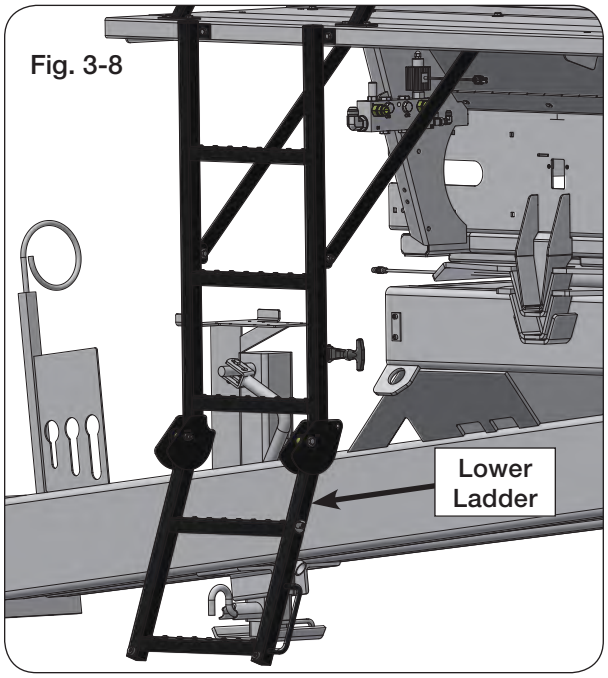


Fig. 3-8

Working to Storage Position

1. Slowly lift and swing the lower ladder section up to storage position. (FIG. 3-8)

2. While holding ladder handle, attach rubber latch into holder to lock ladder in storage position. (FIG. 3-9)

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.

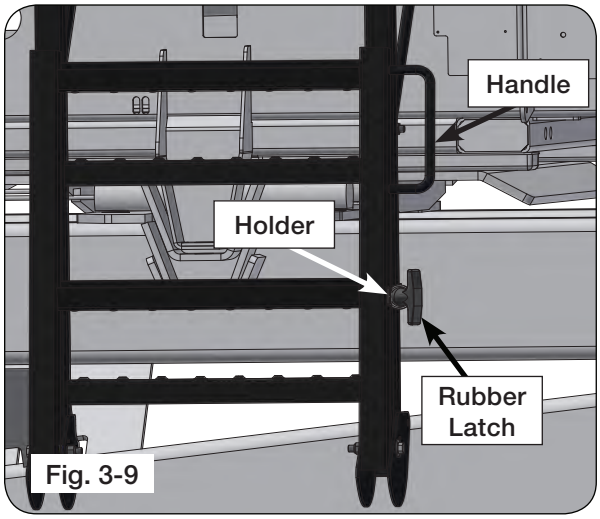


Fig. 3-9

Video System (Optional)

IMPORTANT

- *Do not operate video system below 15°F. Damage to video system can occur.*

The video system kit includes its own operation instruction sheet.

Tarp Operation

⚠ WARNING

- **TO PREVENT PERSONAL INJURY OR DEATH, DO NOT ALLOW ANYONE ON A CLOSED TARP. TARP SYSTEM IS NOT DESIGNED TO SUPPORT A PERSON.**
- **FALLING OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH. REMOVE ACCUMULATED WATER/SNOW/ICE OR ANY OTHER OBJECTS FROM TARP BEFORE OPENING TARP.**

IMPORTANT

- *Do not open or close tarp while moving or in high wind conditions. Damage to the tarp may occur.*
- *Tarp should not be used if it is torn or the bungee cords are frayed or show damage. Fully close tarp with tension on the latch plate to prevent water from pooling.*

Always use adequate caution when operating tarp.

If equipped, refer to electric roll tarp manual for operation details.

Open and close the tarp evenly.

Make sure tarp is open before unloading or loading.

Make sure all persons are clear of the tarp system before and during operating.

Do not operate tarp with cart hoisted in an elevated position.

If tarp is covered with snow, it is important to remove snow before operating.

End caps must be free from fertilizer that may be piled on them. Fertilizer should not be heaped higher than the end caps or tarp bows.

Tarp may be fully opened or completely closed while in transit. However, the closed position is recommended.

Ensure everyone who operates the tarp is familiar with the correct procedures outlined in this manual.

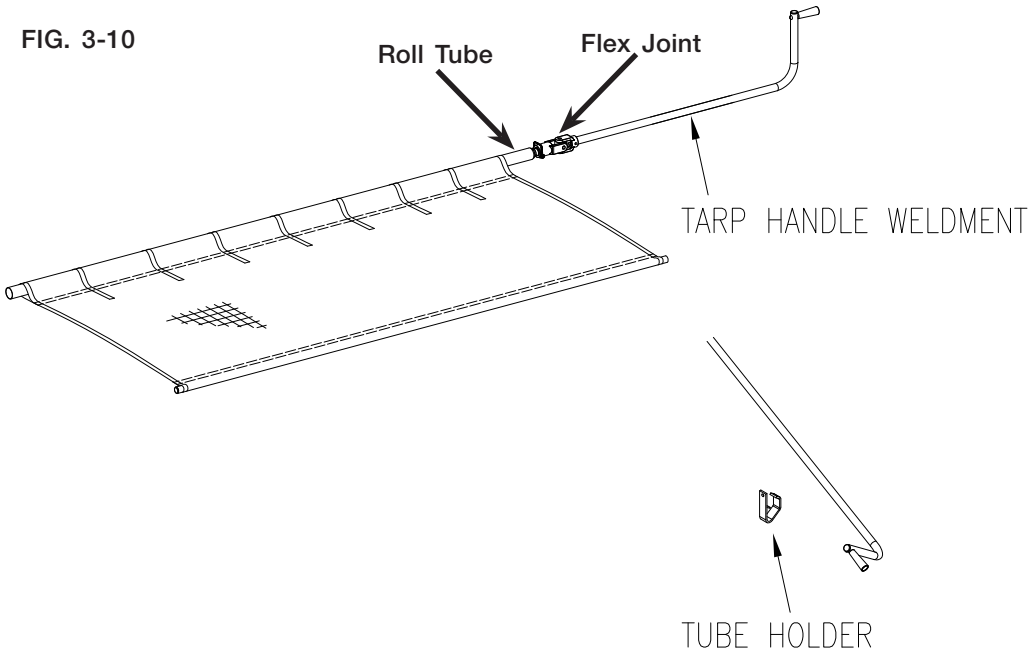
Tarp Operation (continued)

1. Using both hands, carefully remove the tarp handle weldment from the tube holder. (FIG. 3-10)
2. Roll tarp to the desired location, choosing either a fully open or fully closed position.
3. To close the tarp, rotate the roll tube counter-clockwise to left-hand sideboards.
4. Make sure tarp is positioned evenly along front and rear ratchet straps.
5. Bring the tarp handle weldment down perpendicular to the ground. Continue by lifting it up into the tube holder.

NOTE: Tarp handle weldment flex joint may need to be re-indexed on roll tube to achieve correct tension.

6. To open tarp, turn the roll tube clockwise until the tarp is fully open. Place tarp handle weldment in tube holder.

FIG. 3-10



Section IV
Maintenance

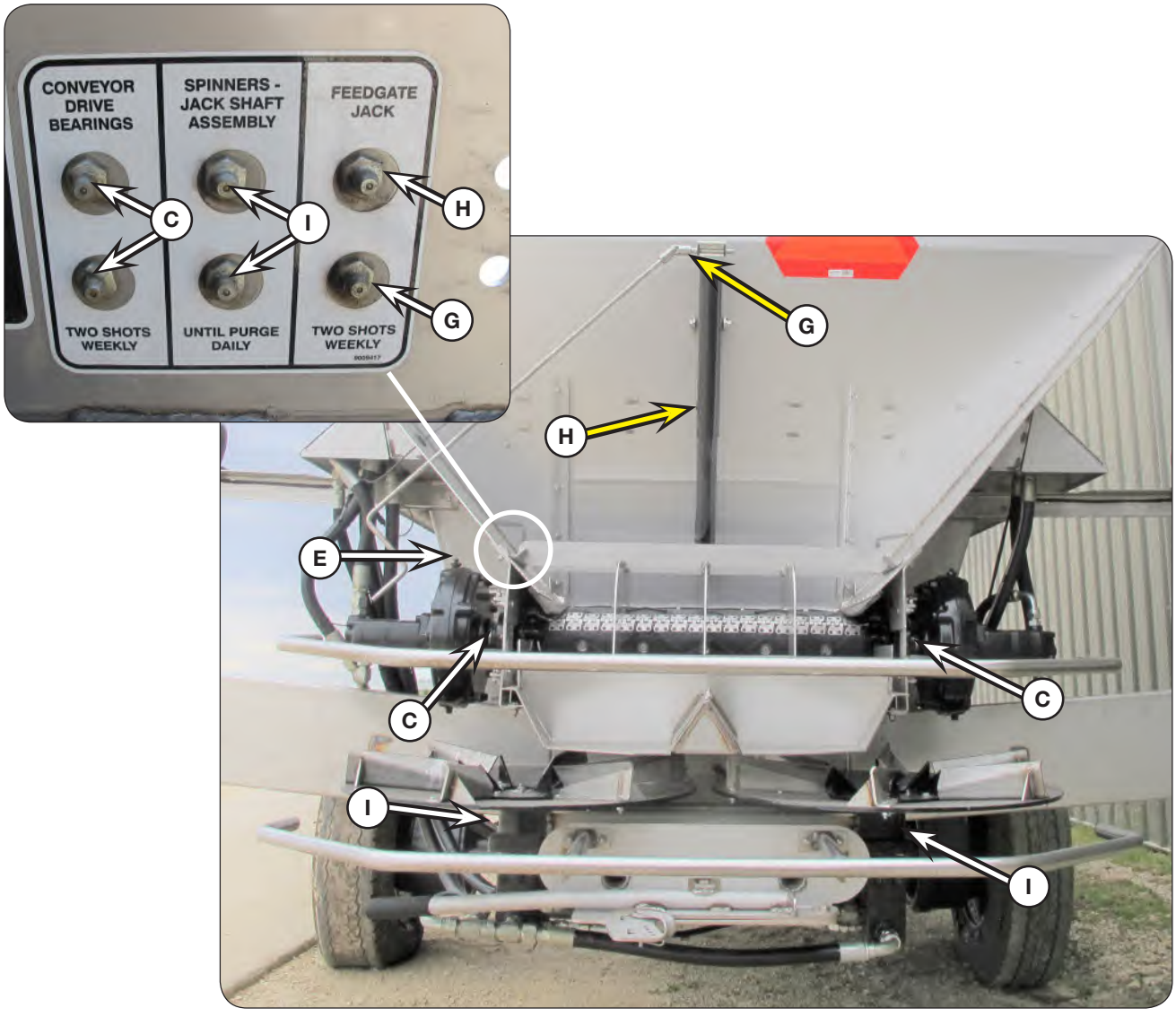
FOR SCALE, AUTO GREASER, AND / OR TARP INFORMATION, PLEASE REFER TO THE INDIVIDUAL MANUALS.

Lubrication

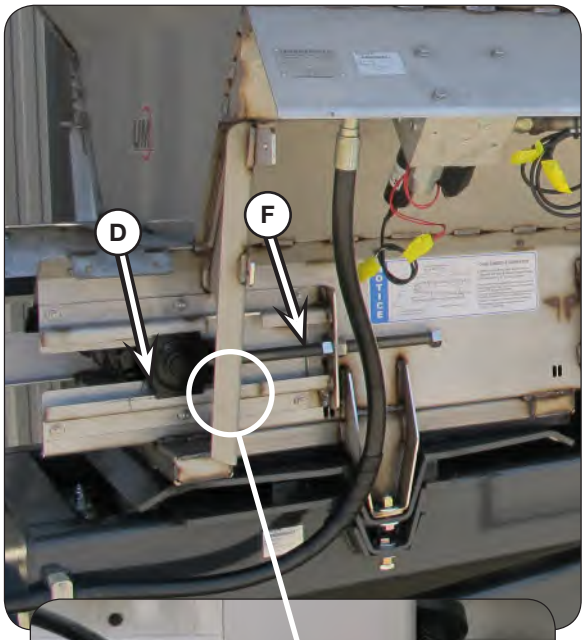
To keep your dry spreader in top operating condition and to assure its proper performance and reliability for a long period of time, periodic inspection and lubrication is a must.

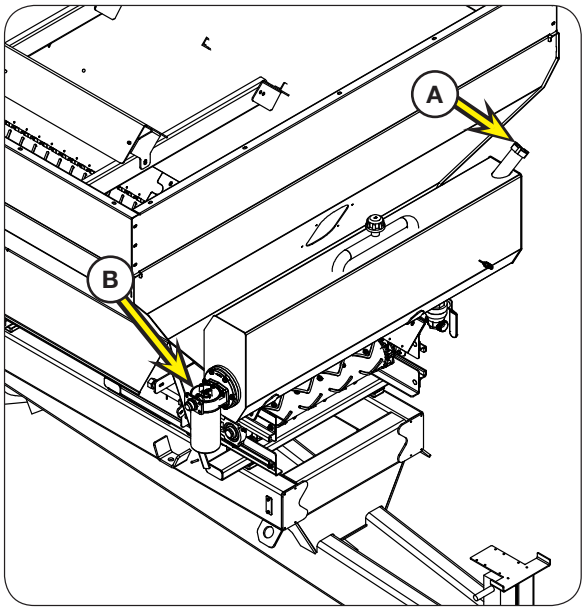
Unverferth Mfg. recommends use of NLGI #2 Extreme Pressure grease.

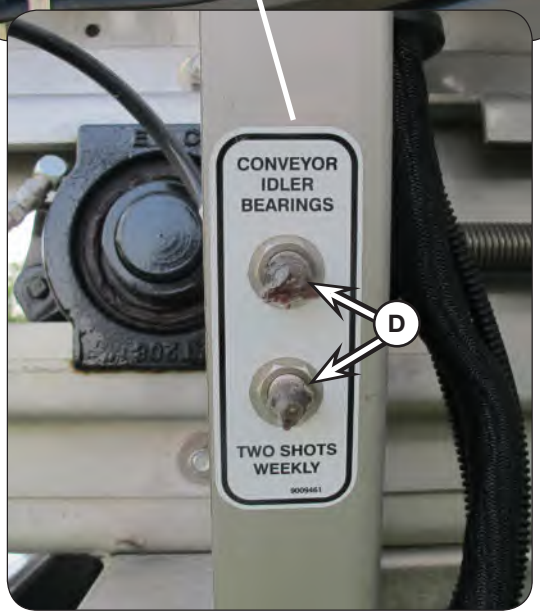
The lubrication locations and recommended schedule are as follows:



Lubrication (continued)







(Continued on next page)

Lubrication (continued)

ITEM	DESCRIPTION	POINT	LUBRICANT	QTY.	INTERVAL
A	Reservoir Tank	1	Hydraulic Oil SAE 15W-40 (For Chassis Units) Hydraulic Oil (For Pull-Type Units)	Tank Capacity 36 1/2 gal.	Check Daily, Change Every 2-3 years
B	Filter	1			Check Weekly, See Below
C	Grease Bank For Bearings - Conveyor Drive	2	EP-2	2 Shots	Weekly
D	Grease Bank For Bearings - Conveyor Idler	2	EP-2	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	Grease Bank For Gears - Feedgate Jack	1	EP-2	2 Shots	Weekly
H	Grease Bank For Tube - Feedgate Jack	1	EP-2	2 Shots	Weekly
I	Grease Bank For Spinner - Jack Shaft Assembly	2	EP-2	Until Purge	Daily

NOTE: Low viscosity hydraulic oils 10W and lower are not recommended.

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)

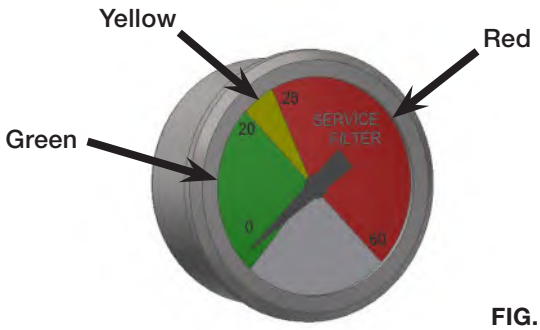


FIG. 4-1

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: After any period of unused time, unit should be greased and operated to check function of conveyor drive bearings, spinners - jack shaft assembly, and feedgate jack.

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

Lubrication (continued)

FILLING RESERVOIR TANK (If equipped):

1. Remove cap (PF1220-475). (FIG. 4-2)

NOTE: The reservoir tank capacity is 36 1/2 gal. Check hydraulic oil daily and change every 2-3 years.

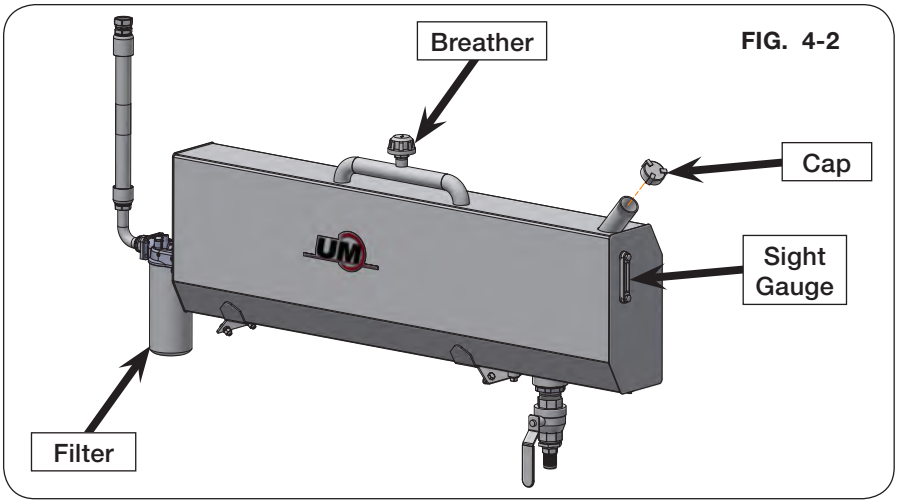


FIG. 4-2

2. Fill reservoir tank centered on sight gauge with SAE 15W-40 hydraulic oil or equivalent. (FIG. 4-3)
3. Reattach cap.
4. Refill as required.

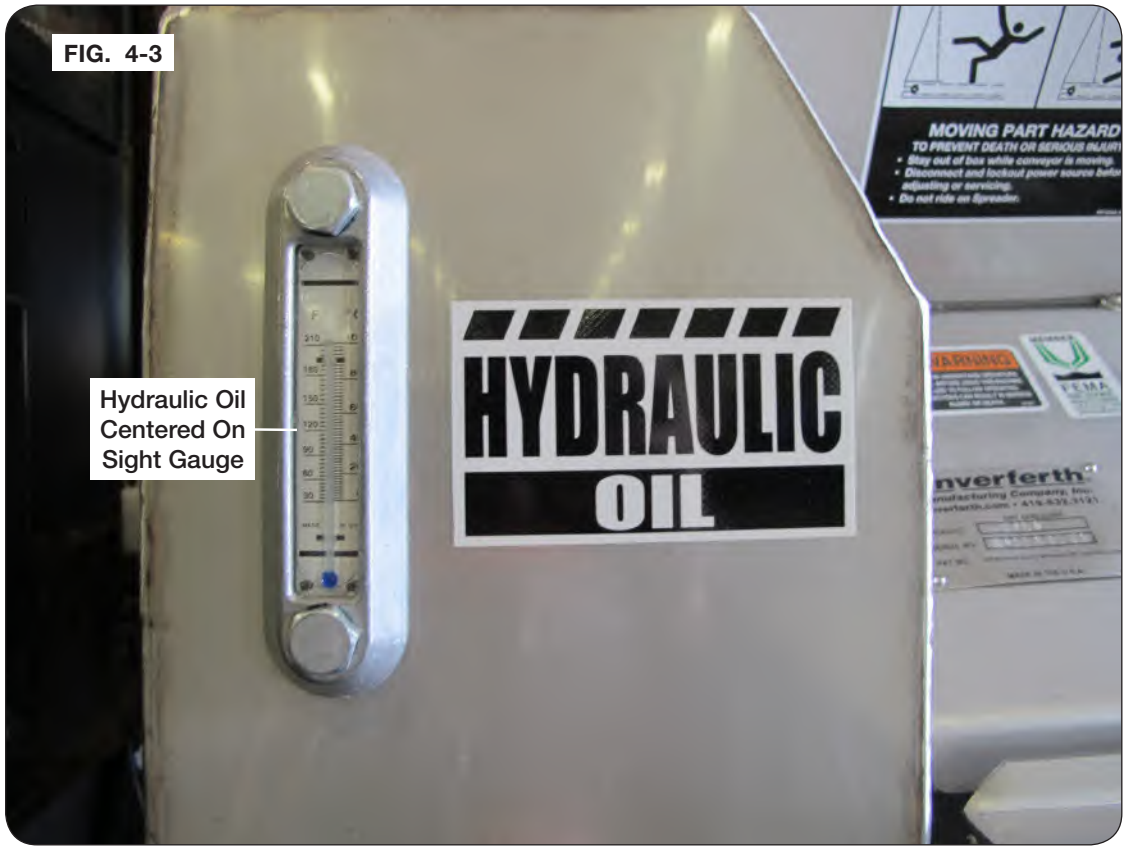


FIG. 4-3

Chain Tension

WARNING

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

IMPORTANT

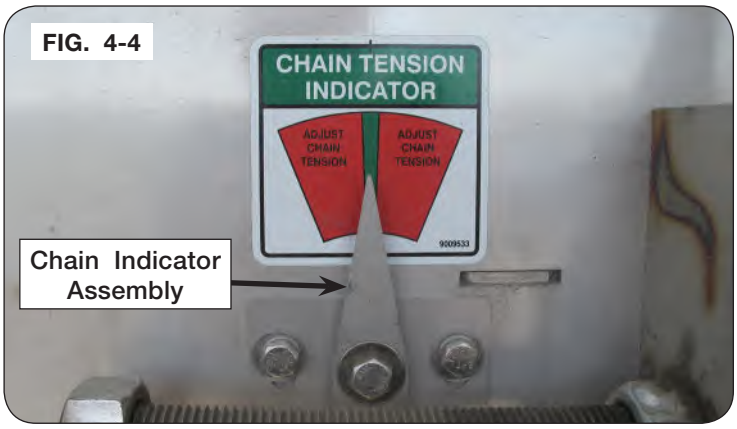
- *Straighten or replace bent or distorted crossbars immediately.*
- *Proper chain tension is an essential factor in chain & sprocket life.*
- *Chains that are TOO TIGHT tend to stretch & will cause excess sprocket wear & eventually breakage.*
- *Chains that are TOO LOOSE present the possibility of catching 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.

NOTE: See the "Lubrication" section located on the previous pages for chain lubrication.

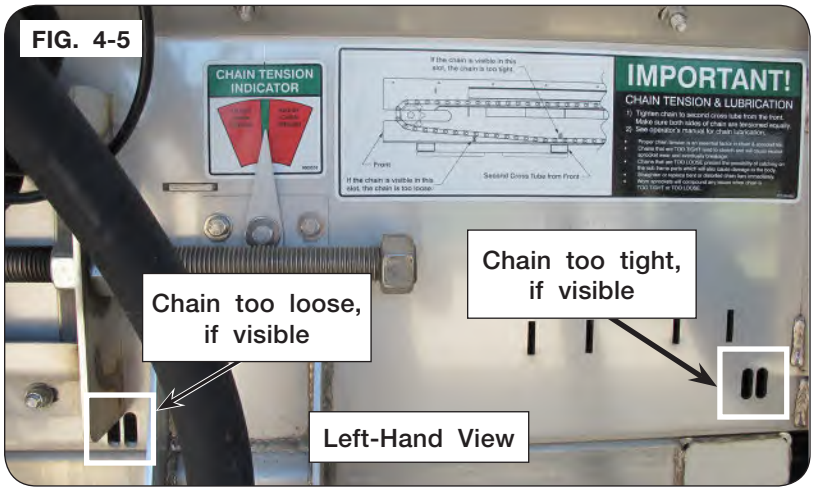
1. Adjust the chain to align the chain indicator assembly (416057 - left-hand; 416058 - right-hand) with the middle of the chain tension indicator decal (9009533). (FIG. 4-4)

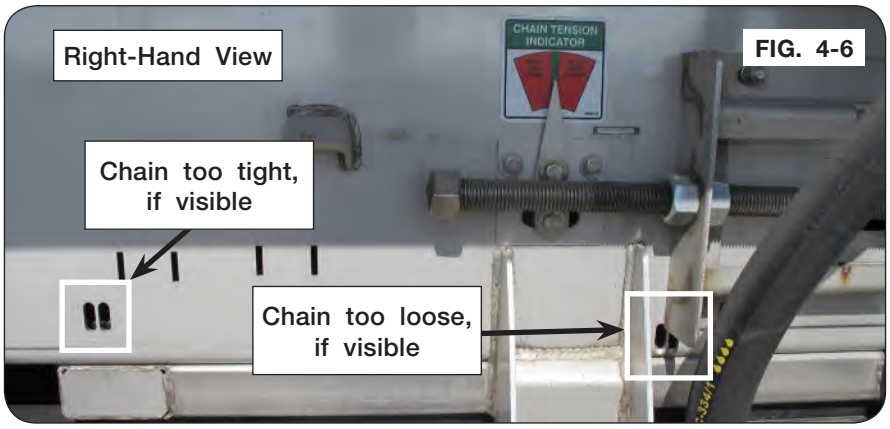
FIG. 4-4



Chain Tension (continued)

2. If the chain tension indicator decal is not present, not illegible, or is inoperable, use the slots to perform a visual check of the chain tension as shown in figures 4-5 and 4-6.



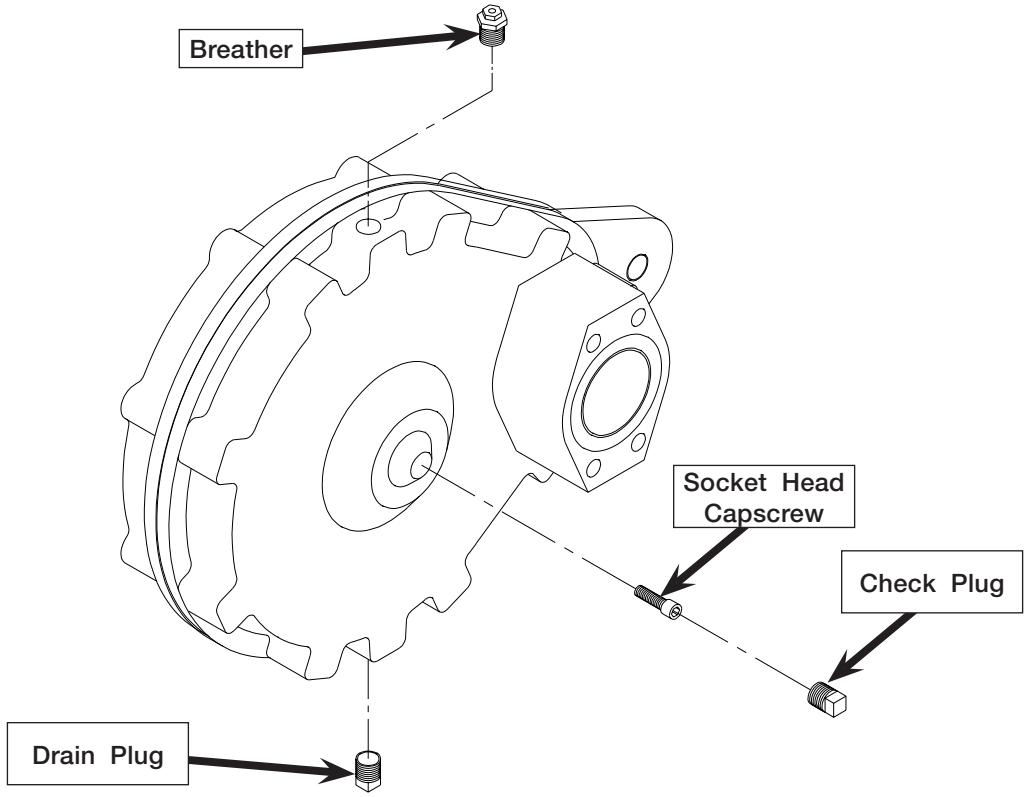


3. After adjusting chain, verify chain tension using visible slots as indicated on FIG. 4-5 and 4-6.

4. Check for possible feedgate interference with belt/chain before operation.

Gearbox Removal & Oil Change

FIG. 4-7



GEARBOX REMOVAL:

1. Remove check plug (95826). (FIG. 4-7)
2. Using 1/4" allen wrench, remove socket head capscrew (99888-034). (FIG. 4-7)
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. 4-7)

CHANGING GEARBOX OIL:

1. Remove drain plug (PF1201-238M) & breather (9003453). (FIG. 4-7)
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.

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 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.

Ensure ladder is latched and in storage position.

Keep tarp open, if equipped.

Dry Spreader Maintenance (continued)

Purging Hydraulic System

⚠ WARNING

- **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 CHASSIS OPERATOR'S MANUAL FOR PROPER PROCEDURES.**
- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. 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 SCVs that have spinner and conveyor GREEN and ORANGE 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 oil leaks using cardboard or wood. Tighten connections according to directions in Torque Specifications in MAINTENANCE section.
   F. De-pressurize hydraulic system.

Setting Hydraulic System Flow

1. Set system flow as follows:

   A. Set spinner speed to 650 RPM.
   B. Reduce SCV flowrate equally between the two SCV remotes.
   C. Once spinner speed starts to decrease below 650 RPM, increase SCV flowrate slightly until spinners maintain 700 RPM.
   D. Check for hydraulic oil leaks using cardboard or wood. Tighten connections according to directions in Torque Specifications in MAINTENANCE section.

Jack Shaft Disassembly and Replacement

NOTE: Replace jack shaft (414860) by removing jack shaft assembly (PF1218-732B) from dry spreader.

1. Remove jack shaft assembly from the spinner assembly weldment and spinner dish. (FIG. 4-8)

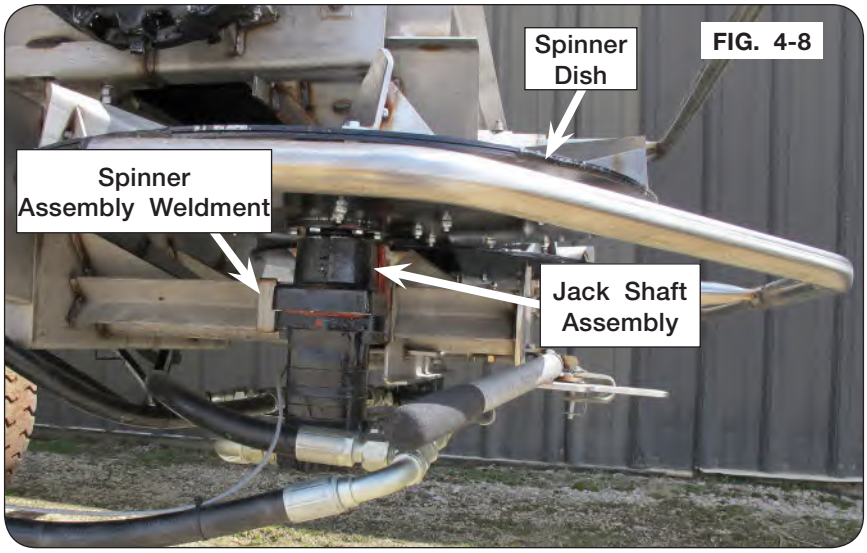
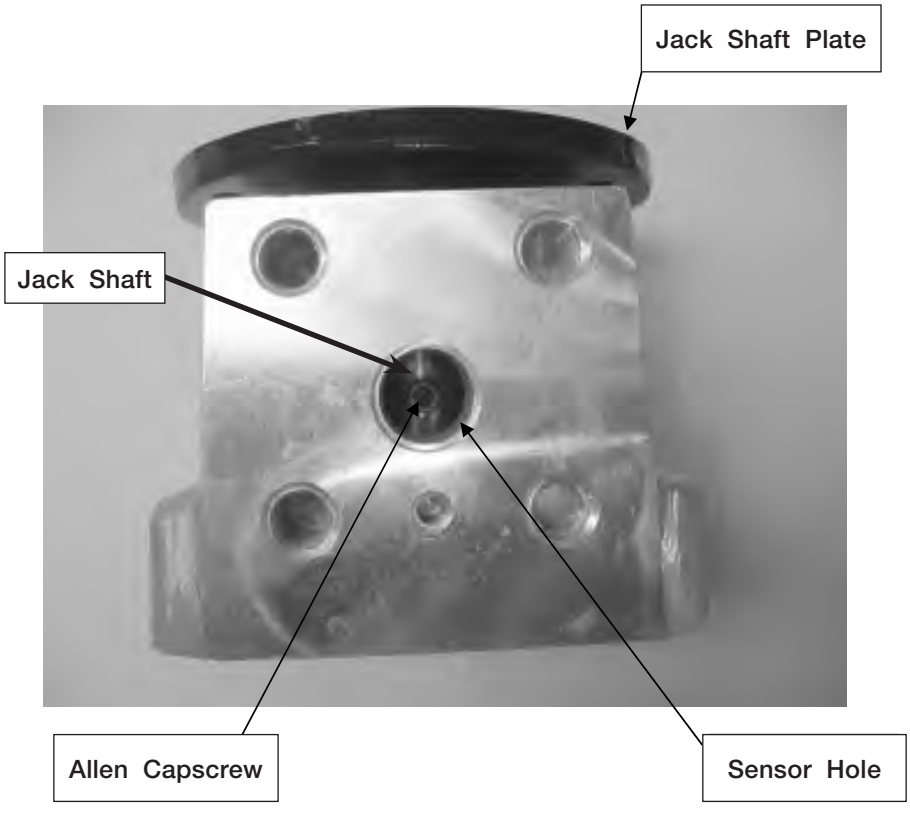


FIG. 4-8

2. To disassemble jack shaft assembly, remove four allen capscrews (PF1200-245) from jack shaft by rotating jack shaft plate until the allen capscrew can be seen through sensor hole. (FIG. 4-9)

3. Once four allen capscrews are removed from the jack shaft, add blue thread locker to the allen capscrews.

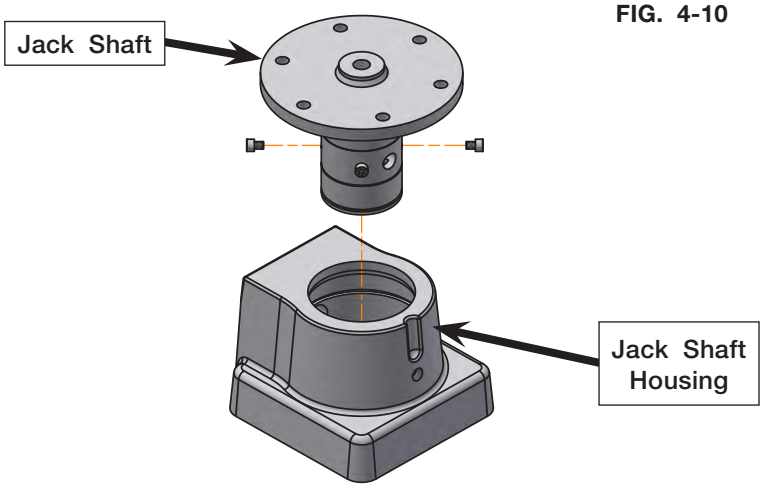
FIG. 4-9



Jack Shaft Disassembly and Replacement (continued)

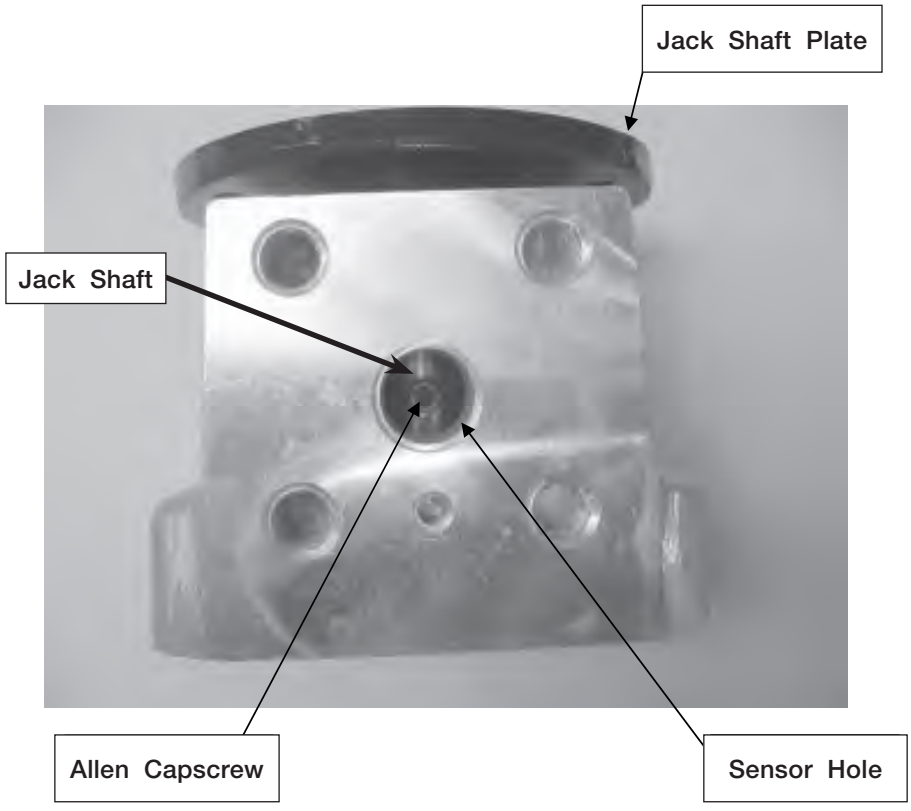
4. Remove and discard jack shaft from jack shaft housing (PF1218-732H). (FIG. 4-10)

FIG. 4-10



5. Insert new jack shaft into jack shaft housing. (FIG. 4-10)
6. Reinsert four allen capscrews with blue thread locker to jack shaft by rotating jack shaft plate until the allen capscrew hole can be seen through sensor hole. (FIG. 4-11)
7. Tighten allen capscrews.
8. Reattach jack shaft assembly to the spinner assembly weldment and spinner dish using 1/2" hardware.
9. Torque hardware to specification.

FIG. 4-11



Adjustable Depth Conveyor Speed Sensor Replacement

NOTE: The following instructions are for adjustable depth sensors (PF1223-600). For fixed depth sensors (9009645), continue to page 4-15.

1. Park the empty dry spreader on a firm, level surface. Block the machine to keep it 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. 4-12.

3. Move the washer and the o-ring up against the speed sensor body threads as shown in FIG. 4-12.

4. Tighten lock nut while holding the sensor body in place. (FIG. 4-12)

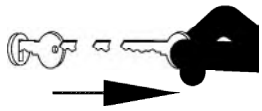
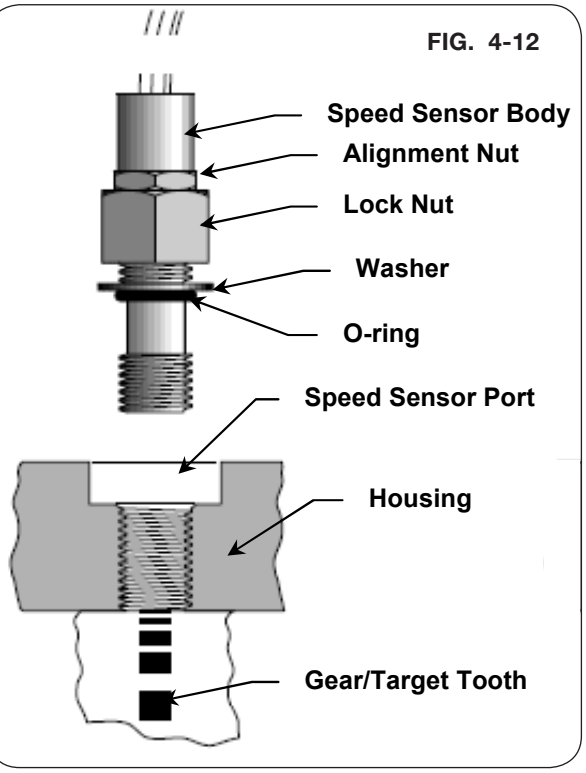


FIG. 4-12



Adjustable Depth Conveyor Speed Sensor Replacement (continued)

IMPORTANT

- *Do not force the sensor against the gear/target tooth, damage may occur.*

5. By hand, lightly thread the conveyor speed sensor body into the housing until the sensor touches against the motor (gear/target) tooth.

6. Ensure the o-ring or the washer do not touch the housing. See FIG. 4-13.

NOTE: Torque values are for clean dry threads.

7. Turn the speed sensor body out 3/8 to 1/2 turn (CCW) and tighten the lock nut to 75-125 in-lb.

8. Connect speed sensor cable to the speed sensor, and attach other end of cable to the wiring harness. (FIG. 4-14 and FIG. 4-15)

FIG. 4-13

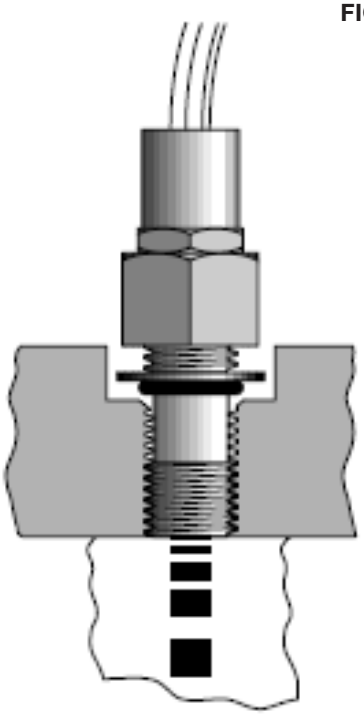
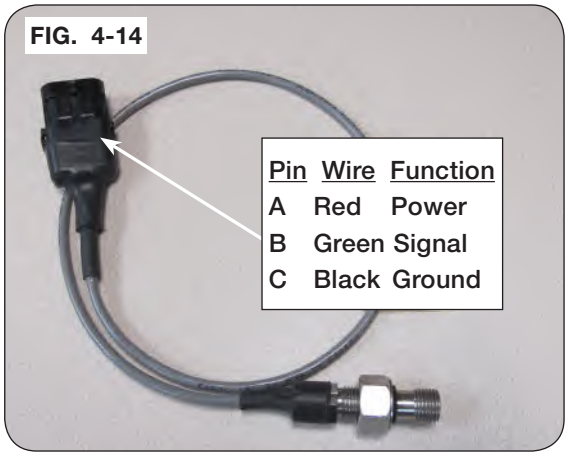


FIG. 4-14



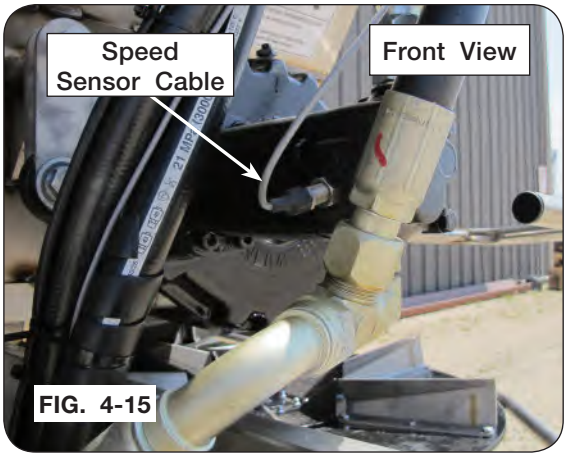
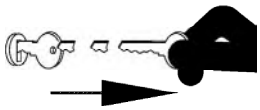


FIG. 4-15

Fixed Depth Conveyor Speed Sensor Replacement

NOTE: The following instructions are for fixed depth sensors (9009645). For adjustable depth sensors (PF1223-600), see page 4-13.

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



NOTE: Torque values are for clean dry threads.

2. Install sensor into conveyor motor housing by hand. See FIG. 4-16.

3. Once sensor is hand tight, torque sensor to 75-125 in-lb.

4. Connect speed sensor cable to the speed sensor, and attach other end of cable to the wiring harness. See FIG. 4-17.

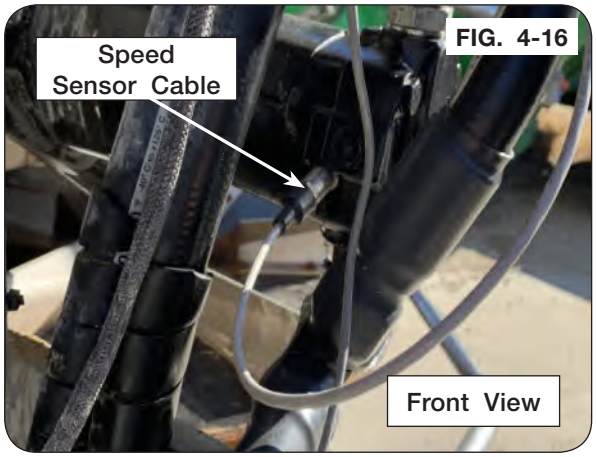


FIG. 4-16

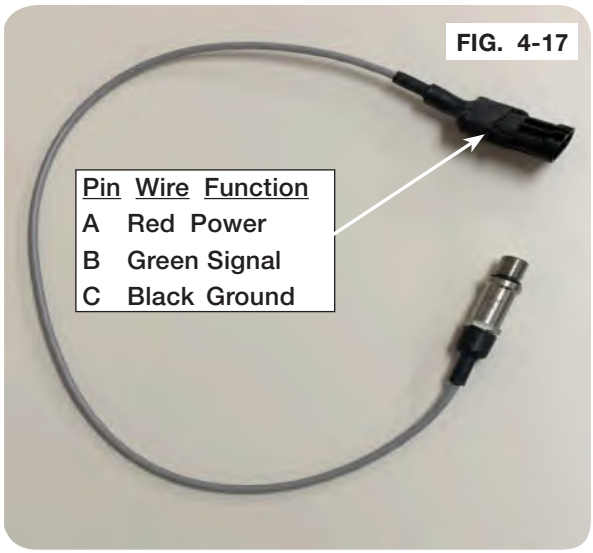
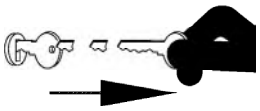


FIG. 4-17

Spinner Motor Speed Sensor Replacement

1. Park the empty dry spreader on a firm, level surface. Block the machine to keep it 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 flange as shown in FIG. 4-18.

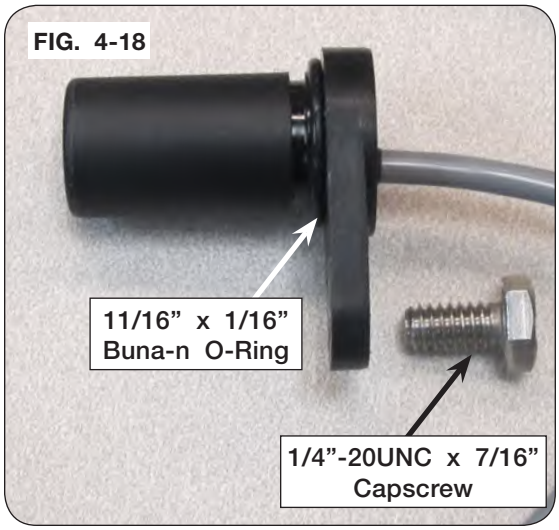


FIG. 4-18

FIG. 4-19

Spinner Motor Speed Sensor Replacement (continued)

IMPORTANT

- Do not force the sensor against the gear/target tooth, damage may occur.

3. Gently 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. 4-20)
4. Apply anti-seize to provided 1/4”-20UNC x 7/16” capscrew (SS).
5. Attach spinner speed sensor to the jack shaft assembly using provided 1/4”-20UNC x 7/16” capscrew (SS). (FIG. 4-20)
6. Connect speed sensor cable to the wiring harness. (FIG. 4-21)

FIG. 4-20

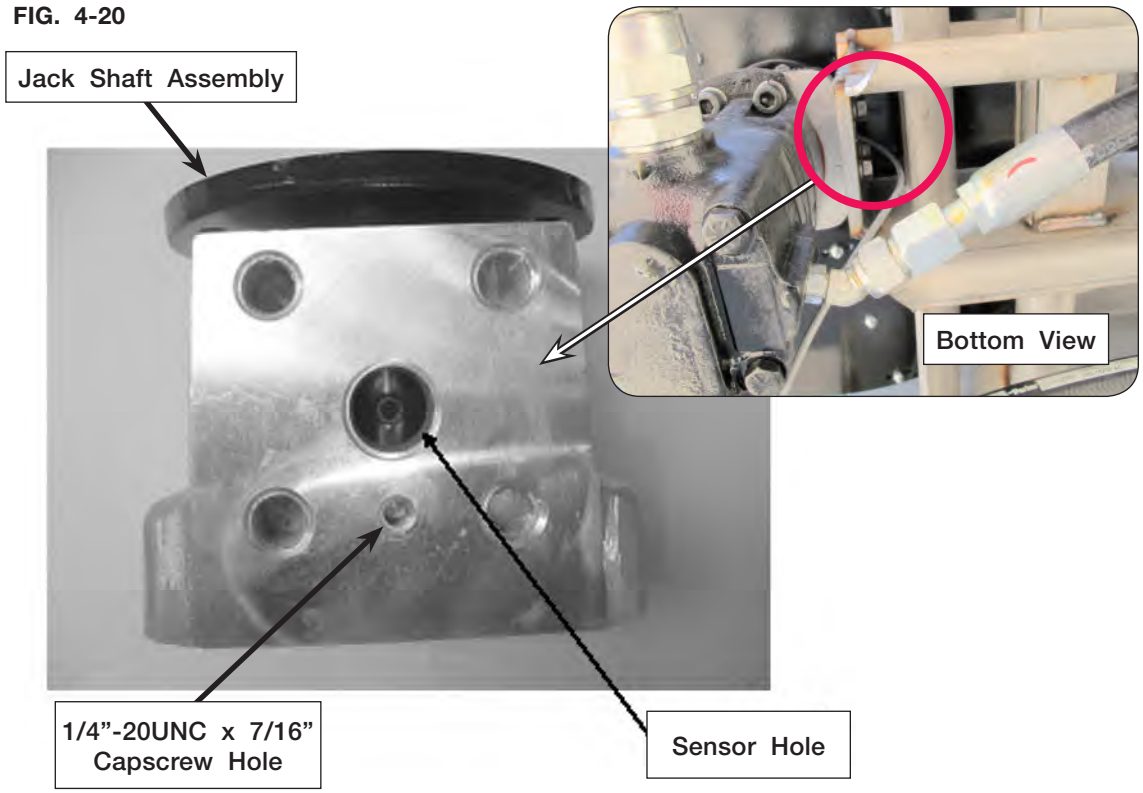
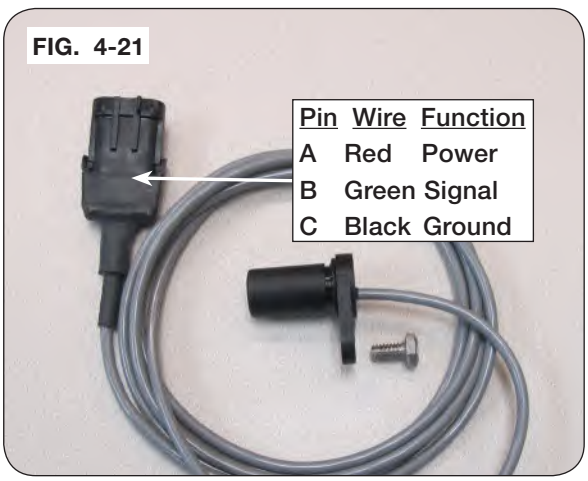


FIG. 4-21



Pressure Compensator Cartridge Valve Disassembly

TOOLS REQUIRED:

- Spanner wrench
- Vise
- 1/4" Allen Wrench
- Red Thread Lock
- Thread Sealant

1. Remove O-ring from cap assembly. (Fig. 4-22)

2. Secure the cartridge in vise by the hex on cap and remove cartridge barrel using spanner wrench. Position spanner wrench on cartridge barrel in hole set closest to cap (FIG. 4-22)

3. Disassemble cartridge valve as shown (FIG. 4-20). Clean and inspect all parts thoroughly. Once clean, reassemble cartridge as shown in Figure 4-23.

FIG. 4-22

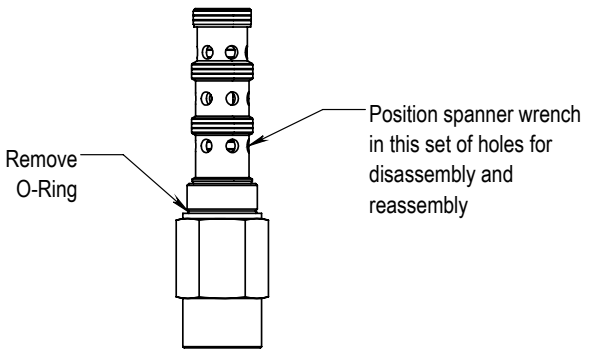
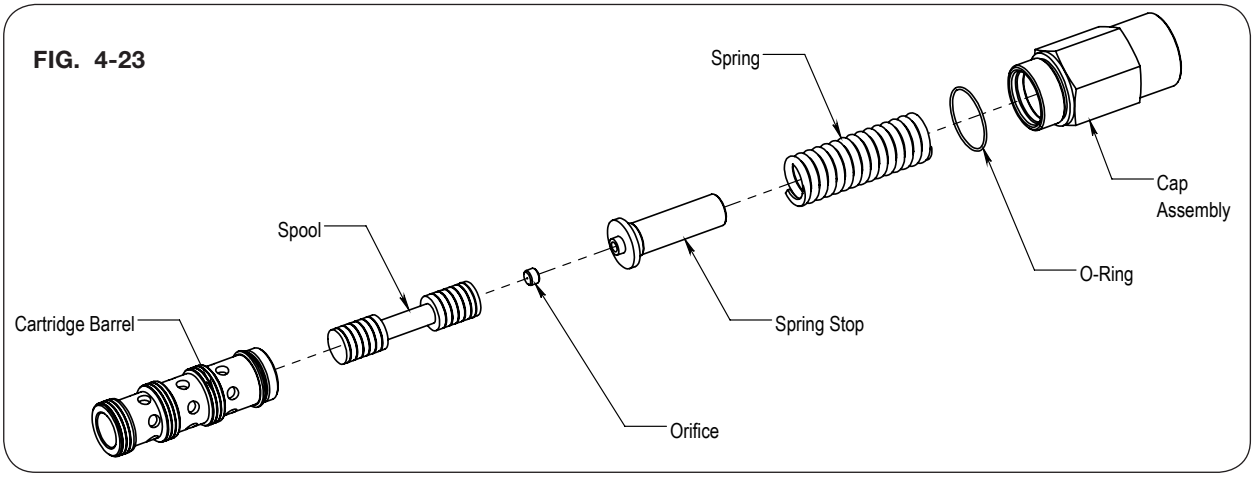


FIG. 4-23



Hydraulic Servo Valve Manual Override & Timing

⚠ WARNING

- **MOVING CONVEYOR OR ROTATING SPINNER COMPONENTS CAN CAUSE SERIOUS INJURY OR MACHINE DAMAGE. BEFORE OPERATING MANUAL OVERRIDE(S), ENSURE EVERYONE IS AWAY FROM THE DRY SPREADER.**

- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.**

NOTE: Manual override operation is intended for emergency use ONLY and is not intended for continuous operation.

NOTE: Servo valve (PF1211-01A) 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. (FIG. 4-24)

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

2. Unplug and locate locking collar on valve. (FIG. 4-24)

FIG. 4-24

3. Draw a line on valve and lock collar. This allows the valve to be returned to the proper location. (FIG. 4-25)

4. Loosen hex head bolt on lock collar using 3/16" hex wrench. (FIG. 4-25)

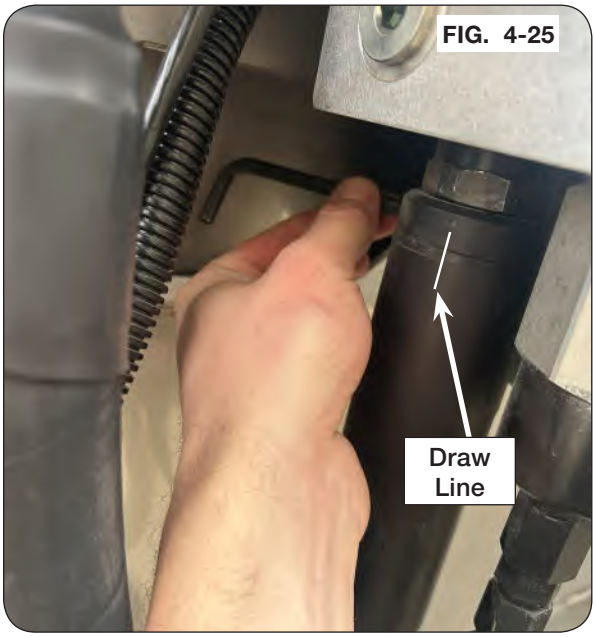


FIG. 4-25

Hydraulic Servo Valve Manual Override & Timing (continued)

5. Run engine at desired RPM and engage hydraulics.

6. Hold the valve motor housing by hand and slowly turn the body clockwise to the deslred flow setting. (FIG. 4-26)

7. Tighten lock collar to hold position.

8. If further adjustments are necessary, repeat steps 3 through 6 as required.

9. Re-time the valve after manual adjustments before returning to automated operation.

10. To re-time valve, turn off control switch and adjust valve motor housing slowly counter clockwise until conveyor or fans stop.

11. To manually override and operate the conveyor for cleanout, in the Raven system there is a “cleanout” function under the test screen. This function runs the conveyor only. Turn on the spinner by entering a “test speed” into the rate controller. Refer to “RCM Spreader Set Up” in SET UP section for more information.

FIG. 4-26

Hydraulic PWM Valve Manual Override
For 1350 To 2250 Units With 9009773 PWM Valve

⚠ WARNING

- **MOVING CONVEYOR OR ROTATING SPINNER COMPONENTS CAN CAUSE SERIOUS INJURY OR MACHINE DAMAGE. BEFORE OPERATING MANUAL OVERRIDE(S), ENSURE EVERYONE IS AWAY FROM THE DRY SPREADER.**

- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.**

NOTE: The following instructions are for round PWM valve (9009773). For square PWM valve (PF1211-011A), continue to page 4-22.

NOTE: Manual override operation is intended for emergency use ONLY and is not intended for continuous operation.

To Manually Override PWM Valve (9009773):

1. Park the empty dry spreader on a firm, level surface. Block the machine to keep it from moving. Set the vehicle's parking brake and shut off engine.
2. Locate PWM valve on valve block. (FIG. 4-27)
3. Run engine at desired RPM and engage hydraulics.
4. Loosen jam nut using 1/2" wrench. (FIG. 4-28)
5. Turn in 5/32" hex head stem until flow starts (up to 4 turns). (FIG. 4-28)

NOTE: As hex head stem is turned in, the controlled function starts to receive oil and operates.

To Reset:

1. Turn out 5/32" hex head stem until flow stops. (FIG. 4-28)
2. While holding the 5/32" hex head stem in place, tighten the jam nut. (FIG. 4-28)

FIG. 4-27

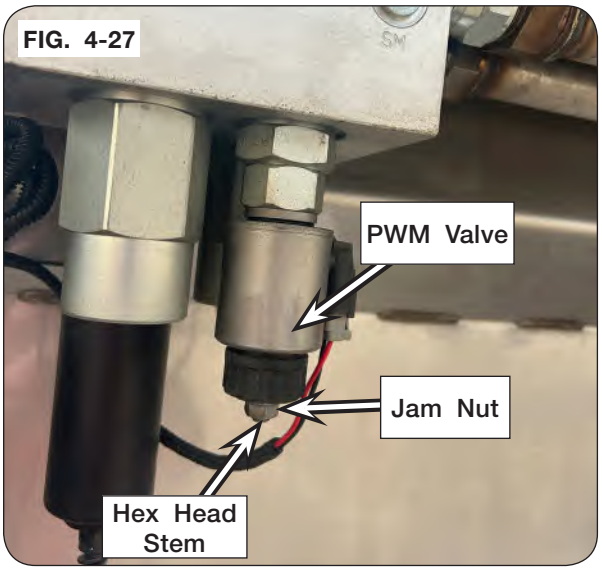


FIG. 4-28

Hydraulic PWM Valve Manual Override
For 1350 To 2250 Units With PF1211-011A PWM Valve

⚠ WARNING

- **MOVING CONVEYOR OR ROTATING SPINNER COMPONENTS CAN CAUSE SERIOUS INJURY OR MACHINE DAMAGE. BEFORE OPERATING MANUAL OVERRIDE(S), ENSURE EVERYONE IS AWAY FROM THE DRY SPREADER.**

- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.**

NOTE: The following instructions are for square PWM valve (PF1211-011A). For round PWM valve (9009773), see page 4-21.

NOTE: Manual override operation is intended for emergency use ONLY and is not intended for continuous operation.

To Manually Override PWM Valve (PF1211-011A):

1. Park the empty dry spreader on a firm, level surface. Block the machine to keep it from moving. Set the vehicle's parking brake and shut off engine.
2. Locate PWM valve and remove acorn nut using 1/2" wrench. Keep acorn nut. (FIG. 4-29)
3. Run engine at desired RPM and engage hydraulics.
4. Loosen jam nut. (FIG. 4-30)
5. Turn in 5/32" hex head stem until flow starts (up to 4 turns). (FIG. 4-30)

NOTE: As hex head stem is turned in, the controlled function starts to receive oil and operates.

To Reset:

1. Turn out 5/32" hex head stem until flow stops. (FIG. 4-30)
2. While holding the 5/32" hex head stem in place, tighten the jam nut. (FIG. 4-30)
3. Reattach acorn nut.

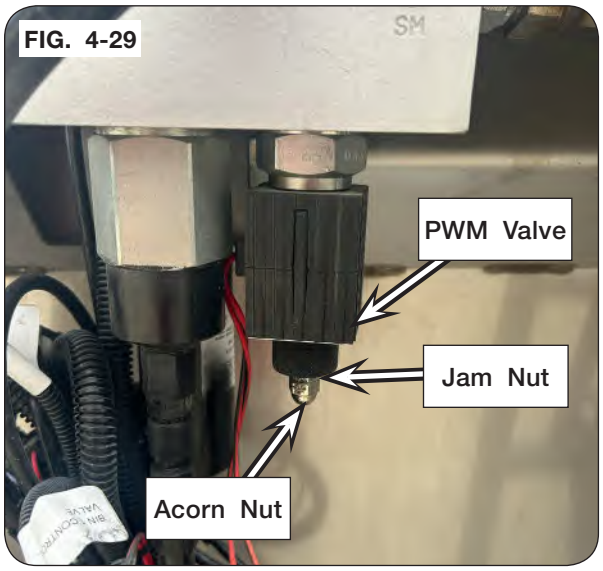


FIG. 4-29

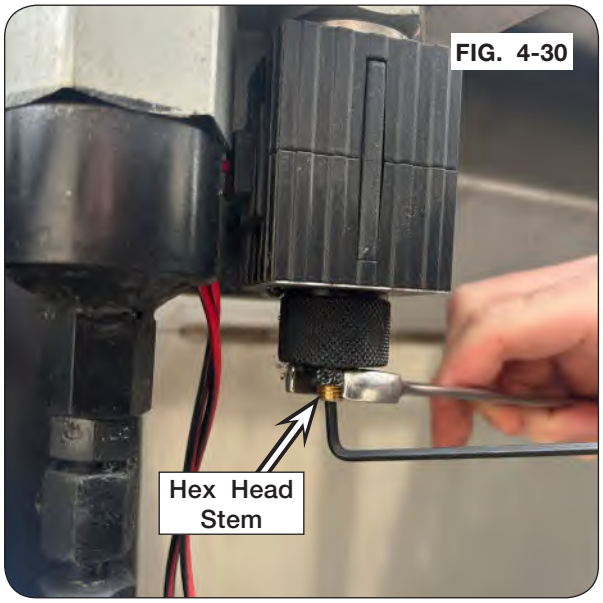


FIG. 4-30

Hydraulic PWM Valve Manual Override - For 1150 & 1250 Units

To Manually Override PWM Valve (9009589):

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

2. Remove cap and locate knurled nut on PWM valve. Keep cap. (FIG. 4-31)

3. Run engine at desired RPM and engage hydraulics.

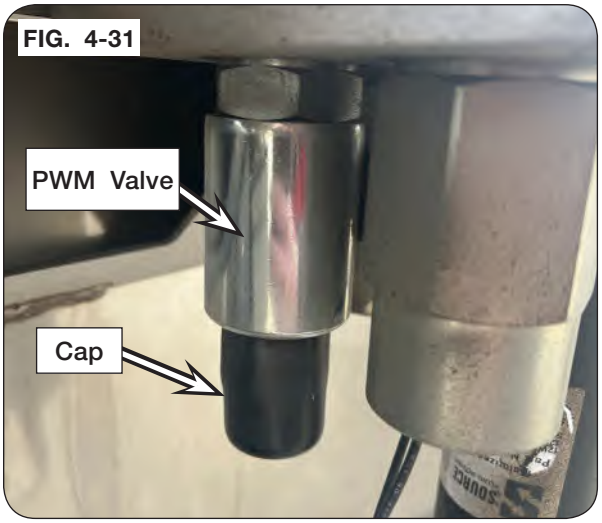


FIG. 4-31

4. Turn in knurled nut stem until flow starts. (FIG. 4-32)

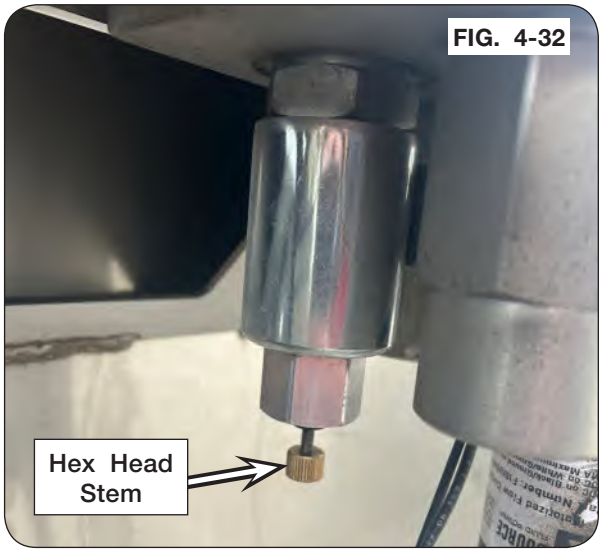


FIG. 4-32

NOTE: As knurled nut stem is turned in, the controlled function starts to receive oil and operates. (FIG. 4-33)

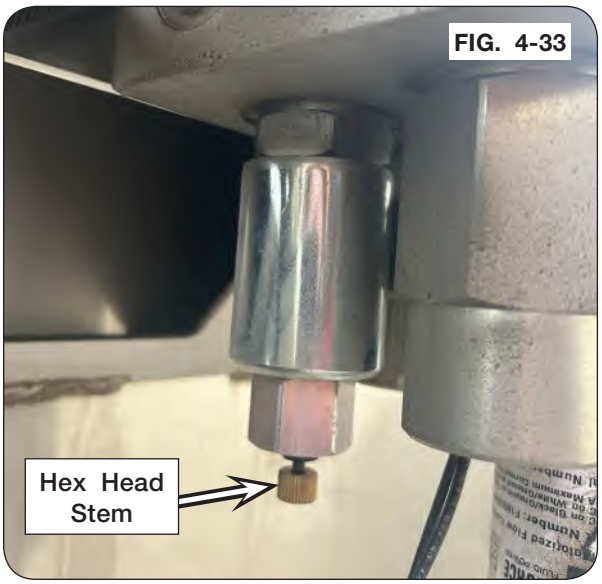


FIG. 4-33

To Reset:

1. Turn out knurled nut stem until flow stops.

2. Reattach cap.

Chain Shield Seal Strip Replacement

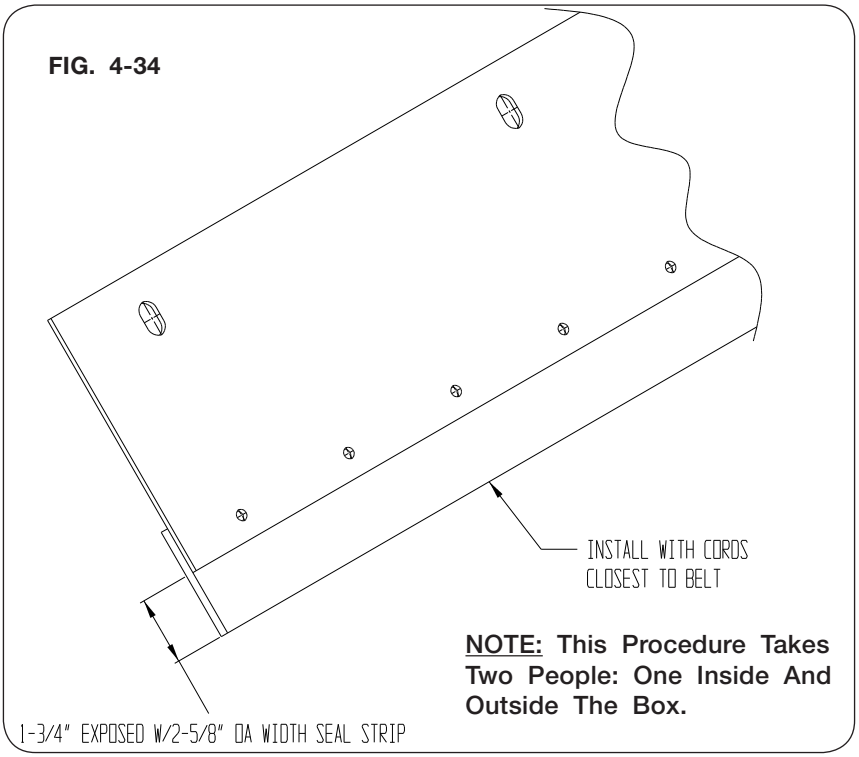
⚠ WARNING

- **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.**

IMPORTANT

- *Stainless steel hardware has a natural tendency to cold weld/gall when installed/uninstalled at high speeds and/or high torques. It is recommended to apply a thread lubricant approved for stainless steel such as graphite-based anti-seize or molybdenum disulfide based anti-seize when performing an assembly/disassembly of stainless steel hardware. Unverferth PN 9504206 or equivalent.*

FIG. 4-34



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. Remove and discard seal strips.
2. Ensure the new seal strips are exposed 1 3/4" as shown in FIG 4-34.
3. Inside the spreader box, insert 3/8"16UNC x 1" SS carriage bolts (9007908-051) through the slotted holes on the chain shield and the holes on the spreader box.
4. 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).
5. Attach the seal strip to the chain shield with tee prong nuts (PF1205-86).
6. Repeat steps 1 through 5 for the other side of the spreader box.
7. Outside of the spreader box, attach the chain shields with 3/8" SS lock washers (900903-021) and 3/8"-16UNC SS nuts (9005640) 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.**

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 and hardware from the spreader box. Discard bin level sensor and hardware. (FIG. 4-35)
3. Outside of the spreader box, slide one hex nut (9008808) onto new bin level sensor (9009180). (FIGS. 4-35 & 4-36)
4. Insert bin level sensor through the rear panel with connector end out of the spreader box. (FIG. 4-36)
5. Inside the spreader box, attach bin level sensor to the inside rear panel using remaining hex nut (9008808).
6. Route bin level sensor cable as shown in figures 4-36 and 4-37 and connect to wiring harness.

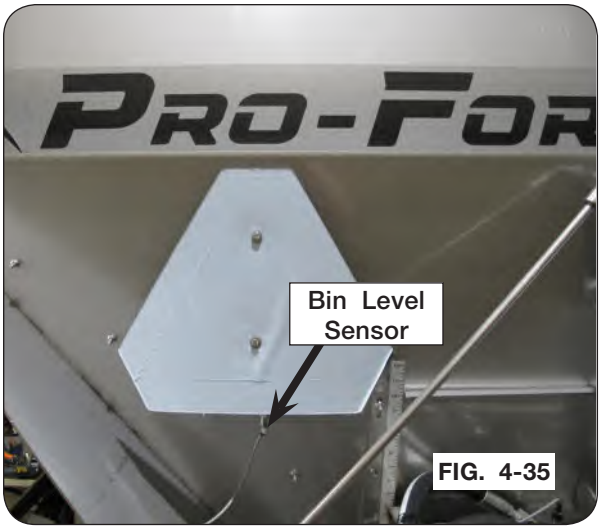


FIG. 4-35

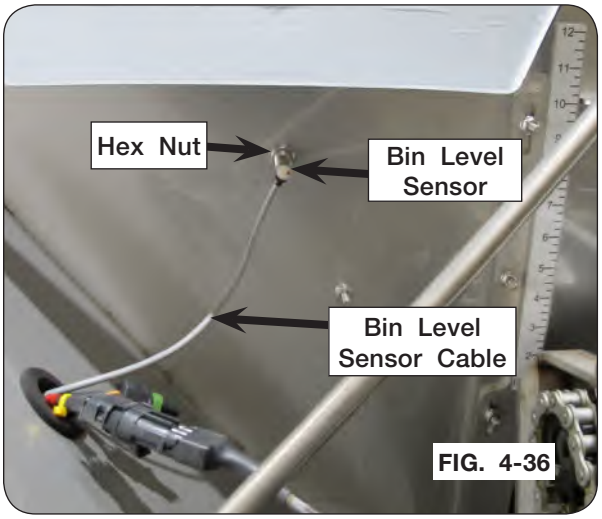


FIG. 4-36

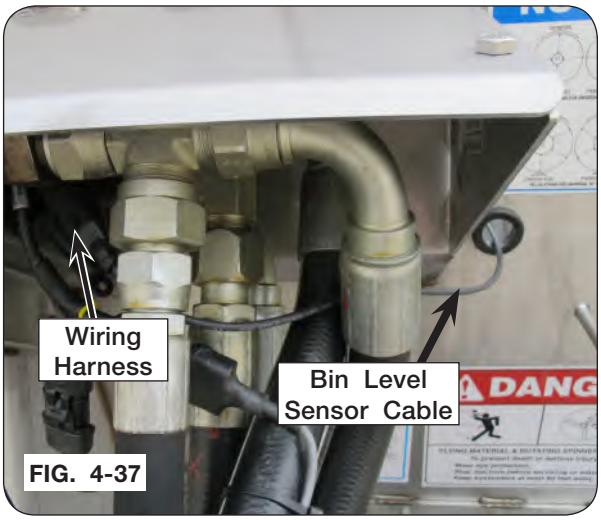


FIG. 4-37

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.

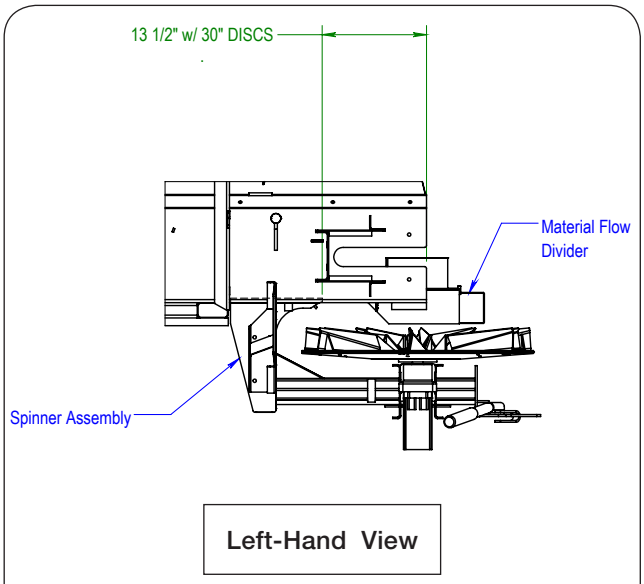


FIG. 4-38

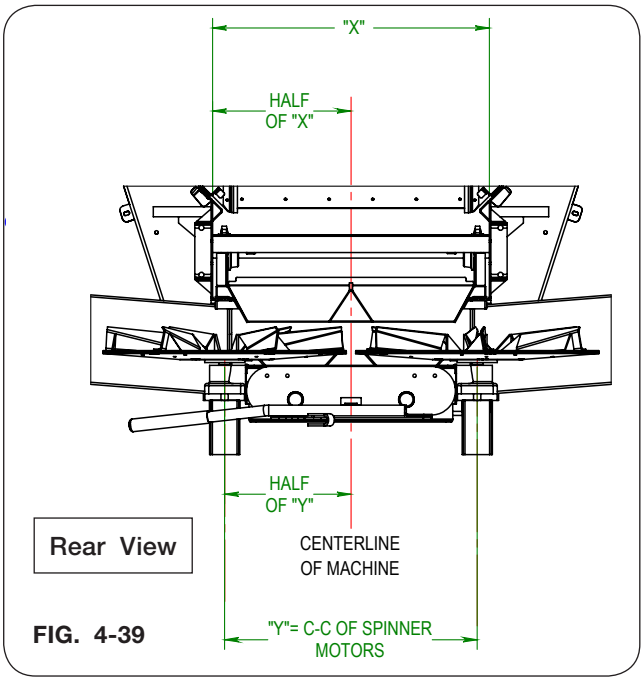


FIG. 4-39

1. Measure from rear edge of spinner frame to end of conveyor frame rail to verify correct spinner location. (FIG. 4-38)
2. Verify that dimension is the same on both the driver's side and the passenger's side to ensure squareness. (FIG. 4-39)

Rear Feedgate Door Replacement

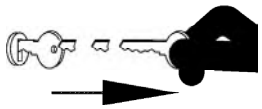
⚠ WARNING

- **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.**

IMPORTANT

- *Stainless steel hardware has a natural tendency to cold weld/gall when installed/uninstalled at high speeds and/or high torques. It is recommended to apply a thread lubricant approved for stainless steel such as graphite-based anti-seize or molybdenum disulfide based anti-seize when performing an assembly/disassembly of stainless steel hardware. Unverferth PN 9504206 or equivalent.*

1. Park the empty dry spreader on a firm, level surface. Block the machine to keep it 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 and discard the 1/4" hardware from the feedgate slides. (FIG. 4-40)

3. For SN B45470100 & higher, remove and retain internal feedgate baffle (416673). (FIG. 4-41)

4. Remove and discard the 3/8" hardware attaching the feedgate jack to the gate. (FIG. 4-40)

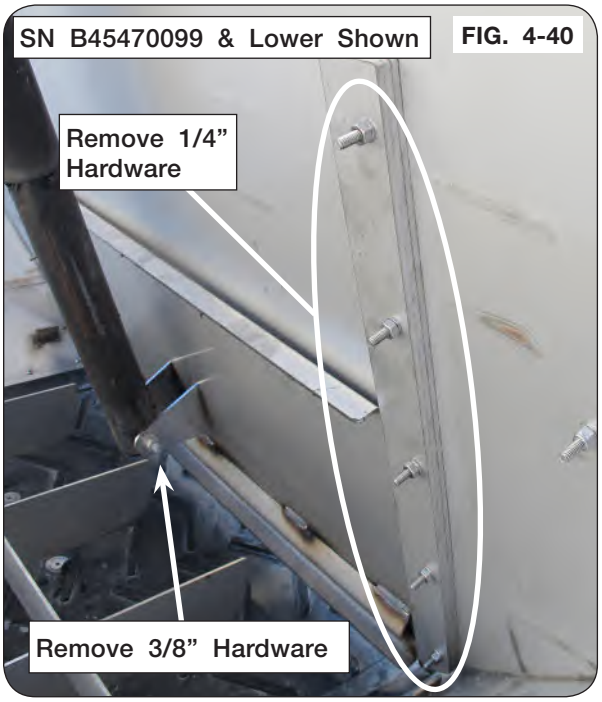


FIG. 4-40

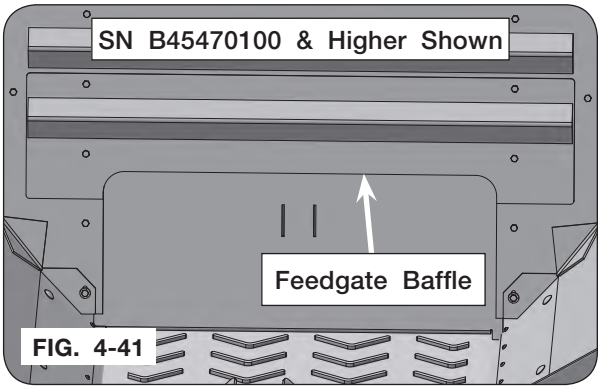


FIG. 4-41

Rear Feedgate Door Replacement (continued)

5. Remove and discard the current feedgate door (416608 for SN B45470100 & higher; PF1236-350 for SN B45470099 & lower) from the spreader. (FIG. 4-42)

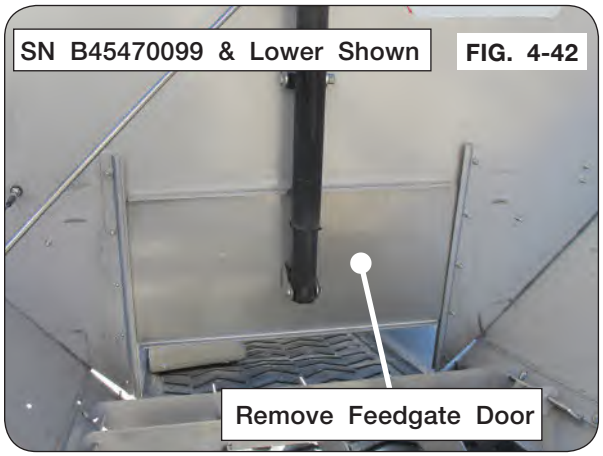


FIG. 4-42

6. Align 2 feedgate guide spacer plates (416669 for SN B45470100 & higher; 415162 SN B45470099 & lower) against the hopper and 1 feedgate guide plate (416670 for SN B45470100 & higher; 415163 for SN B45470099 & lower) against the spacer plates on both sides of the door. (FIG. 4-43)

NOTE: Do not install capscrews in the bottom position on both sides and do not install bolts in the top and middle positions of the left-hand side.

NOTE: For SN B45470100 & higher, reattach internal feedgate baffle for step 7. See FIG. 4-41.

7. 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 1/4"-20UNC hex nuts. (FIG. 4-43)

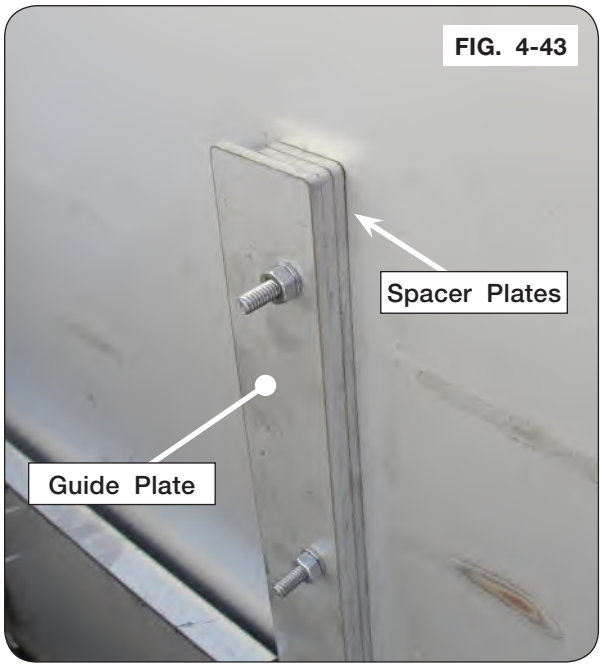


FIG. 4-43

8. 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. 4-44) 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.

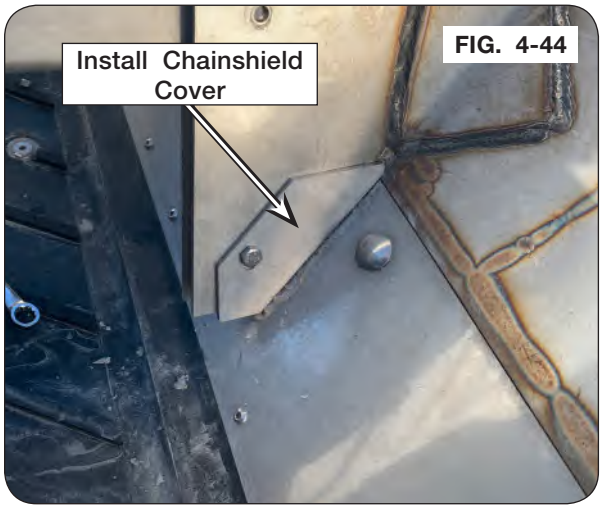


FIG. 4-44

Rear Feedgate Door Replacement (continued)

9. Slide the new feedgate weldment (416608 for SN B45470100 & higher; PF1236-350 for SN B45470099 & lower) into position between the hopper and the guide plates. (FIG. 4-45)

10. Attach feedgate weldment to the bottom of feedgate jack using the provided 3/8" hardware.

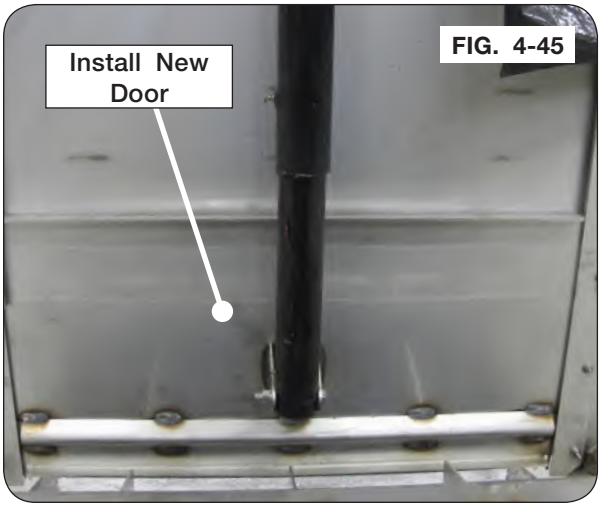


FIG. 4-45

11. On the outside of the spreader, position the indicator plate (413828 for SN B45470100 & higher; 415185 for SN B45470099 & lower) 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. (FIGS. 4-46 & 4-47)

12. Measure from the top of the conveyor belt to the bottom of the feedgate. Make sure the feedgate indicator decal ruler (9010124 for SN B45470100 & higher; 9009074 for SN B45470099 & lower) at the top of the feedgate matches that measurement. Once the ruler is properly adjusted, secure using the provided 1/4" hardware. (FIGS. 4-46 & 4-47)

13. Torque the 1/4" hardware to 8-10 ft. lbs. and the 3/8" hardware to 25-28 ft. lbs.

14. Test feedgate for proper working motion.

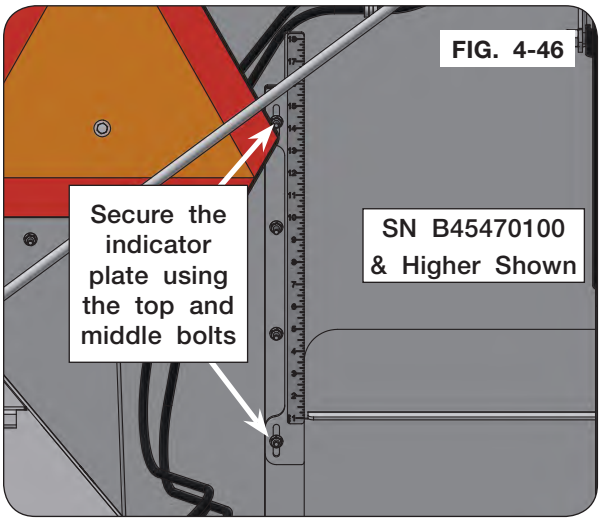


FIG. 4-46

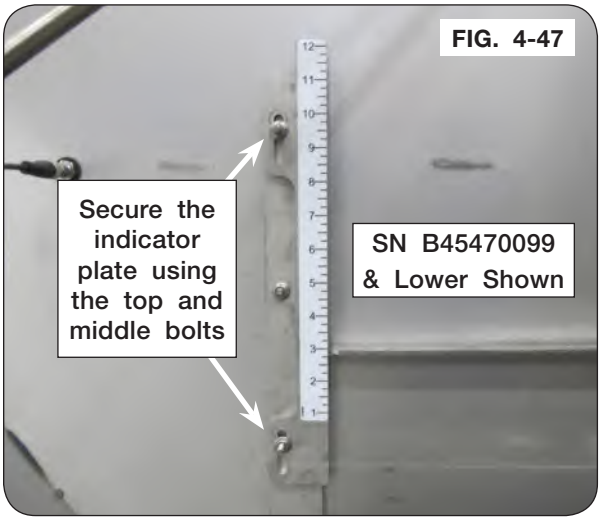


FIG. 4-47

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.

Troubleshooting

Problem	Possible Cause	Corrective Action
Spinner will not run	Incorrect start up sequence	Refer to “Spreader Start Up Procedure” section in OPERATION.
	No hydraulic flow	Verify hydraulic connectors are fully engaged into the SCVs. Verify flow is in constant and the pressure side is on the hoses marked “+”. Pressure check if necessary.
	Faulty speed signal	Swap spinner and conveyor speed sensor connections on the harness. If the issue now shows up on the conveyor, replace spinner speed sensor and return wiring to original. If the issue remains with the spinner, inspect harness and repair or replace.
	Servo valve not responding	Manually override servo valve. Refer to the “Hydraulic Servo Valve Manual Override & Timing” section in MAINTENANCE. If the spinners spin when valve is overridden, issue is electrical. If the spinners do not spin, issue is hydraulic.
	Faulty control valve	Replace valve.
	No voltage at control valve	Verify spinner RPM control is ON and master switch is ON.
		Verify spinner RPM target is entered.
		Verify valve type and settings are correctly configured.
		Verify harness is in good working condition.
Spinners not achieving target speed	Master Switch OFF	Cycle Master Switch to ON. Allow 3–4 seconds for the spinners to achieve target speed.
	Oil flow too low	Flow requirement for a combined hydraulic system (2 SCV sets used) is 46 GPM. Flow requirement for a split hydraulic system (4 SCV sets used) is 76 GPM.
	Control valve settings incorrect	Manually override servo valve to verify. Refer to the “Hydraulic Servo Valve Manual Override & Timing” section in MAINTENANCE. If the spinners operate smoothly, issue is in electronics. Verify valve type and settings are correctly configured. NOTE: Verify Control Effort and Response Rate settings. If spinners continue to operate erratically, issue is in hydraulics.
	Conveyor hydraulic demand too high	Lower conveyor hyd. requirements by opening feedgate 1” and re-calibrating flow. See “RCM Spreader Set Up” section.
		If combined hydraulic system is in use and vehicle hydraulics are capable of 76 GPM, install split system hydraulic kit.
	Faulty speed signal	Ensure retaining bolt is properly holding sensor in place.
		Verify there are 4 screws installed in the jack shaft assembly for the speed sensor to read.
		Swap spinner and conveyor speed sensor connections on the harness. If the issue now shows up on the conveyor, replace spinner speed sensor and return wiring to original. If the issue remains with the spinner, inspect harness and repair or replace.
	Faulty control valve	Replace valve.
Spinners running separate RPMs	Boundary Control ON	Turn Boundary Control OFF.
	50/50 valve malfunction	Disassemble valve and clean out any debris. Replace if necessary.
	Fault in jack shaft assembly	Inspect jackshaft assembly. Grease or replace bearings.
Spinners will not turn off	Valve is manually overridden or out of time	Re-time valve. See “Hydraulic Servo Valve Manual Override & Timing” in MAINTENANCE.
	Faulty control valve	Replace valve.

(Continued on next page)

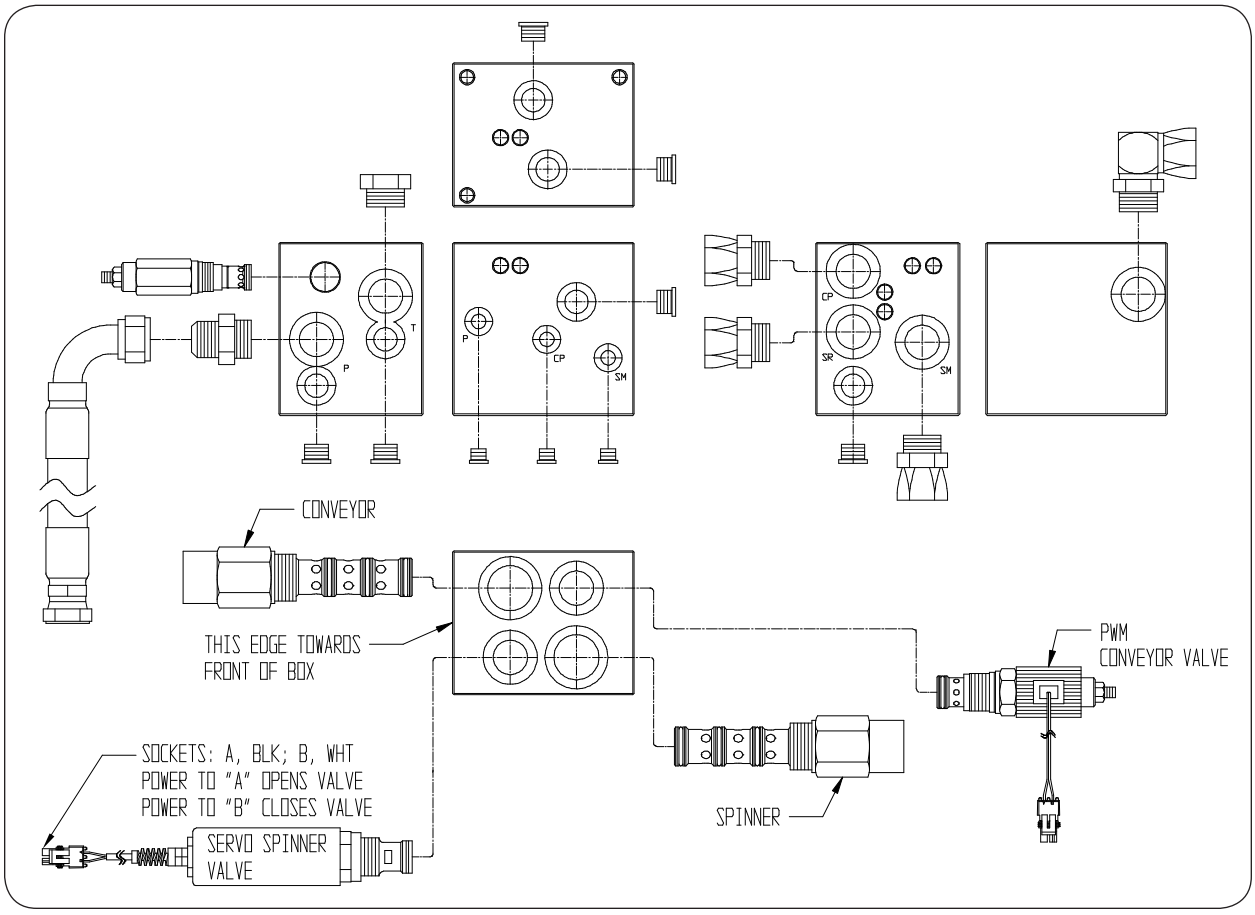
Troubleshooting (continued)

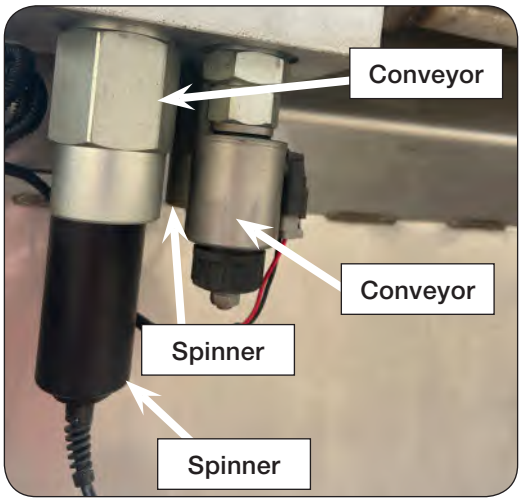
Problem	Possible Cause	Corrective Action
Spinners running erratic	Oil flow too high	Flow requirement for a combined hydraulic system (2 SCV sets used) is 46 GPM. Flow requirement for a split hydraulic system (4 SCV sets used) is 76 GPM.
	Control valve settings incorrect	Manually override servo valve to verify. Refer to the "Hydraulic Servo Valve Manual Override & Timing" section in MAINTENANCE. If the spinners operate smoothly, issue is in electronics. Verify valve type and settings are correctly configured. NOTE: Verify Control Effort and Response Rate settings. If spinners continue to operate erratically, issue is in hydraulics.
	Faulty speed signal	Ensure retaining bolt is properly holding sensor in place.
		Verify there are 4 screws installed in the jackshaft assembly for the speed sensor to read.
		Swap spinner and conveyor speed sensor connections on the harness. If the issue now shows up on the conveyor, replace spinner speed sensor and return wiring to original. If the issue remains with the spinner, inspect harness and repair or replace.
Conveyor will not run	Incorrect start up sequence	Refer to "Spreader Start Up Procedure" section in OPERATION.
	No hydraulic flow	Verify hydraulics are hooked up correctly and engaged in the proper direction. Pressure check if necessary.
	No travel speed present	Ensure machine is moving or a test speed is entered.
	Swath control boundary or applied area	Ensure machine is within a boundary and not in a previously applied area.
	Prescription rate	Ensure machine is within a boundary and not in a 0-rate area.
	PWM valve not responding	Manually override PWM valve to verify. Refer to the "Hydraulic Servo Valve Manual Override & Timing" section in MAINTENANCE. If the conveyor operates smoothly, issue is in electronics. Verify valve type and settings are correctly configured. If conveyor does not operate smoothly, issue is in hydraulics.
	Conveyor hydraulic demand too high	Lower conveyor hyd. requirements by opening feed gate 1" and re-calibrating flow. See "RCM Spreader Set Up" section.
		If combined hydraulic system is in use and vehicle hydraulics are capable of 76 GPM, install split system hydraulic kit.
Conveyor not achieving target rate	Incorrect spreader set up	Perform a product density test and verify setting.
		Measure gate height and verify setting.
		Verify spreader constant setting.
	Faulty speed signal	Ensure retaining bolt is properly holding sensor in place.
		Swap spinner and conveyor speed sensor connections on the harness. If the issue now shows up on the spinner, replace conveyor speed sensor and return wiring to original. If the issue remains with the conveyor, inspect harness and repair or replace.
	Faulty control valve	Replace valve.
	Conveyor hydraulic demand too high	Slow down application speed
		Lower conveyor hyd. requirements by opening feed gate 1" and re-calibrating flow. See "RCM Spreader Set Up" section.
		If combined hydraulic system is in use and vehicle hydraulics are capable of 76 GPM, install split system hydraulic kit.

Troubleshooting (continued)

Problem	Possible Cause	Corrective Action
Conveyor running erratic	Control valve settings incorrect	Manually override servo valve to verify. Refer to the "Hydraulic Servo Valve Manual Override & Timing" section in MAINTENANCE. If the spinners operate smoothly, issue is in electronics. Verify valve type and settings are correctly configured. NOTE: Verify Control Effort and Response Rate settings. If spinners continue to operate erratically, issue is in hydraulics.
	Faulty speed signal	Ensure retaining bolt is properly holding sensor in place.
		Swap spinner and conveyor speed sensor connections on the harness. If the issue now shows up on the spinner, replace conveyor speed sensor and return wiring to original. If the issue remains with the conveyor, inspect harness and repair or replace.
	Faulty control valve	Replace valve.
Conveyor will not shut off	Servo valve installed and manual overridden or out of time	Re-time valve. See "Hydraulic Servo Valve Manual Override & Timing" section in MAINTENANCE.
	Faulty control valve	Replace valve.

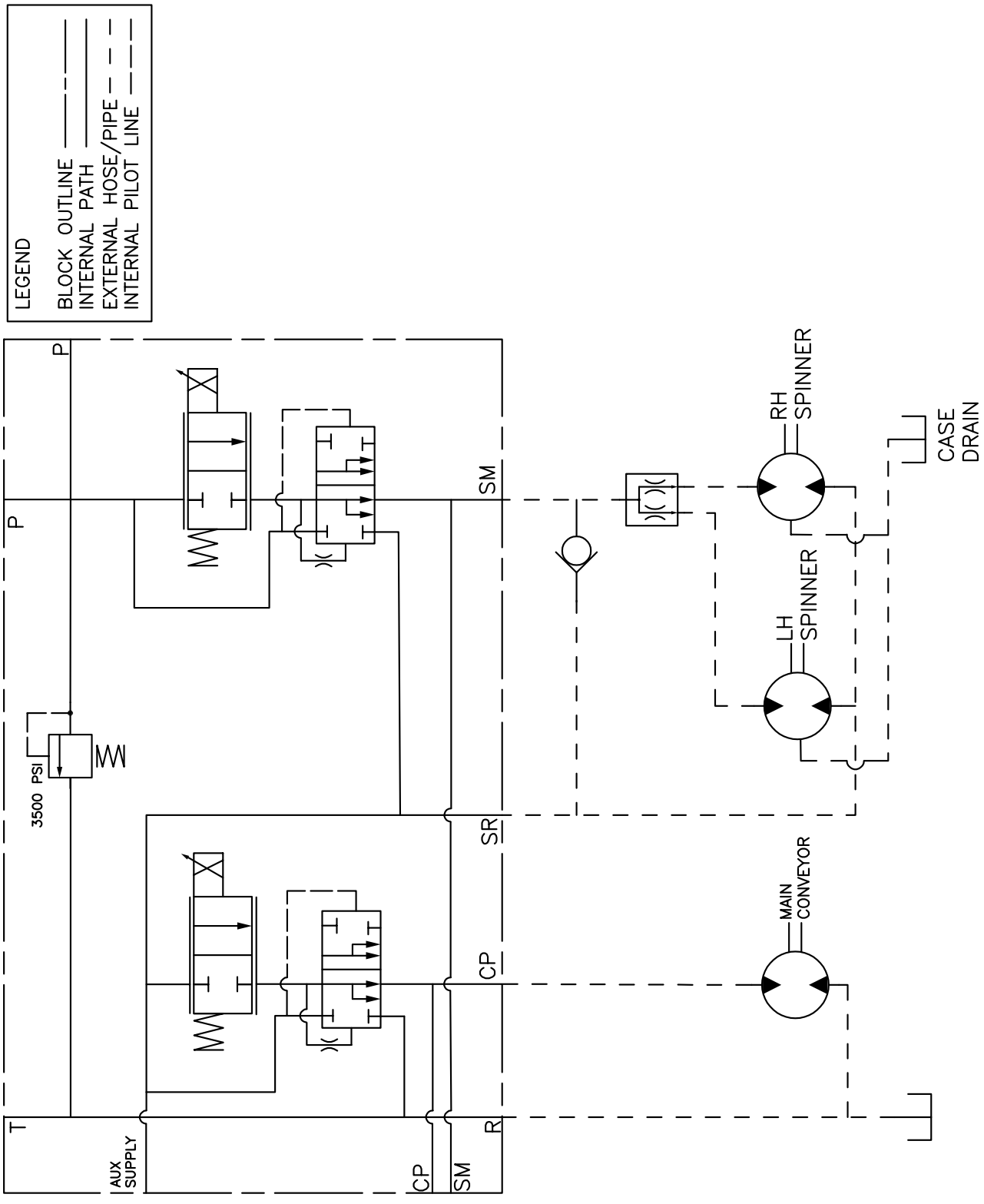
Main Valve Block Assembly - Spinner & Conveyor



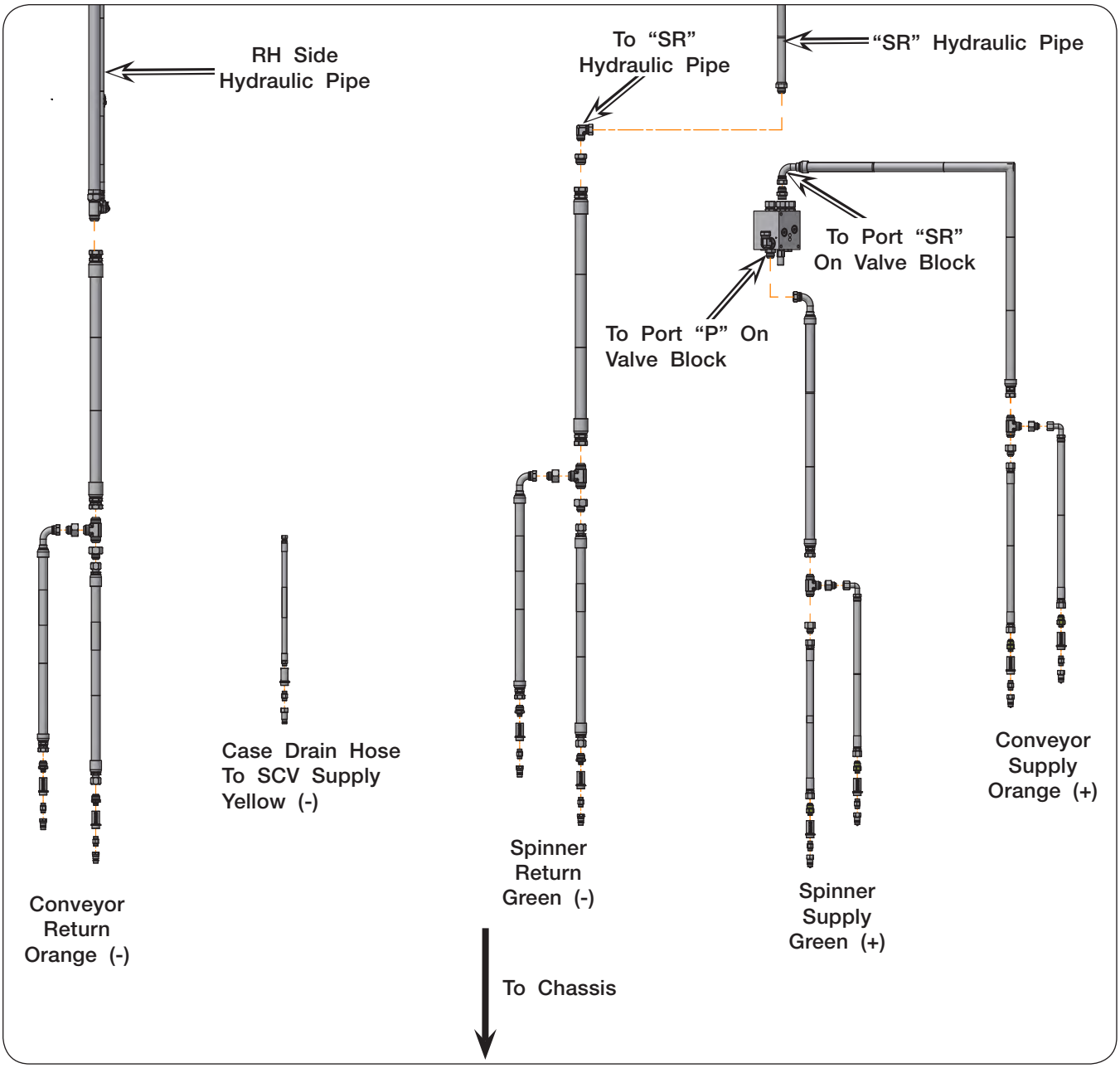


See "Hydraulic Fittings" and "Hydraulic System Valves & Steel Pipe Adapters" in the MAINTENANCE section for torque specifications.

Schematics - Spinner & Conveyor Hydraulics

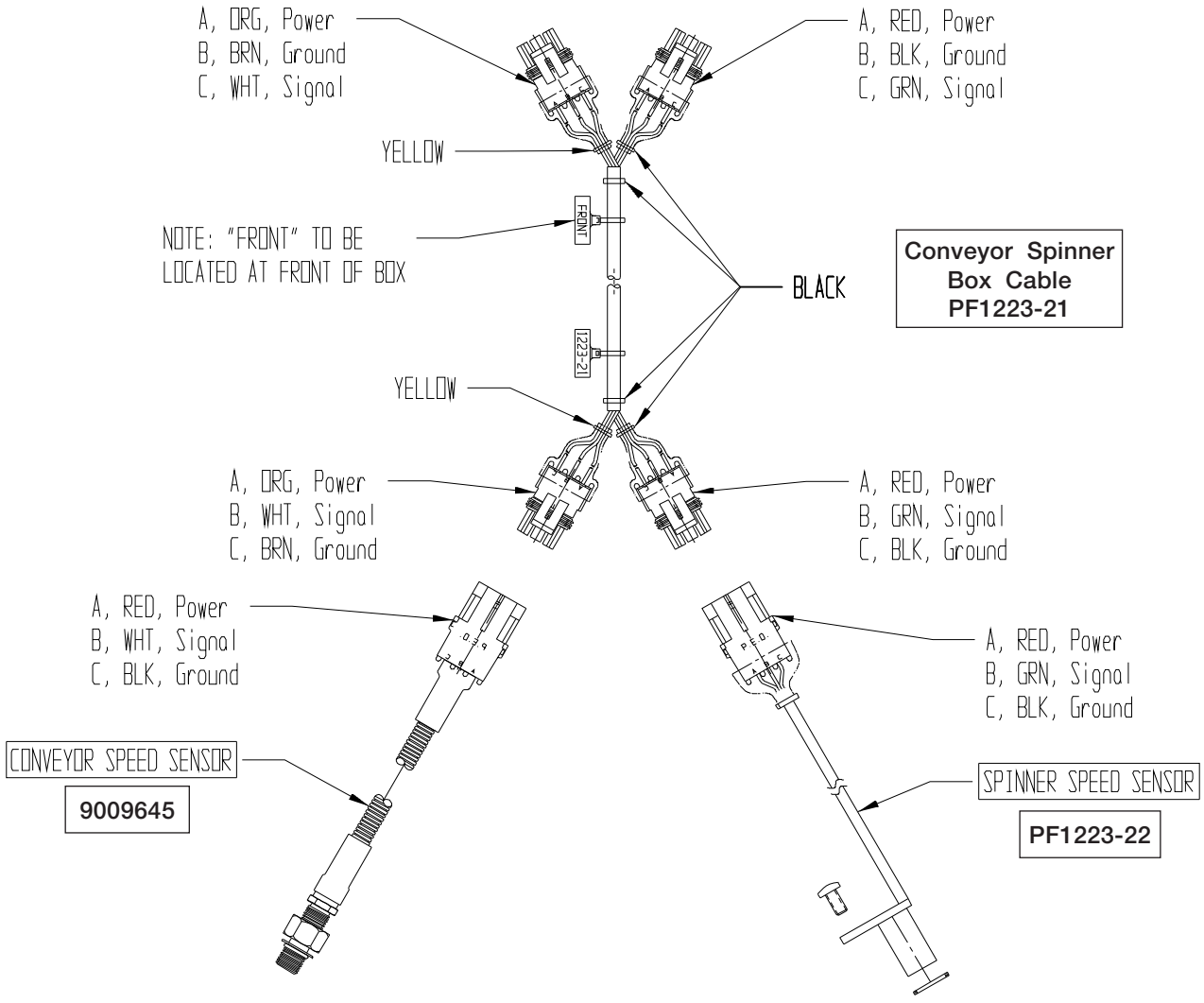


Schematic — Split Hydraulics
For Undercarriage Mounted Units - SN B45470100 & Higher



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

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

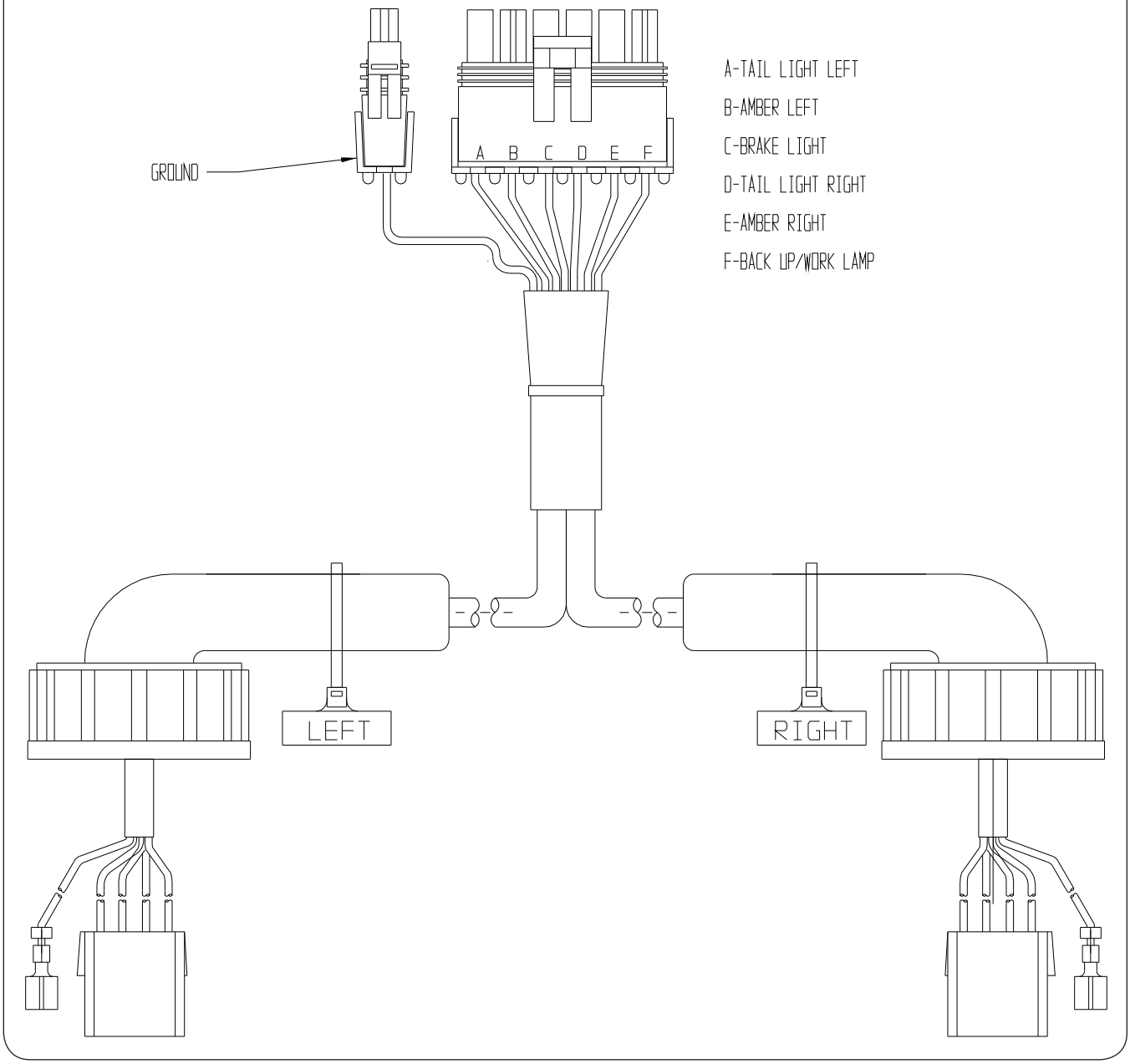


If console looses rate or spinner speed and the function is moving, the connectors shown on this page can be swapped at the rear of the spreader to troubleshoot the system.

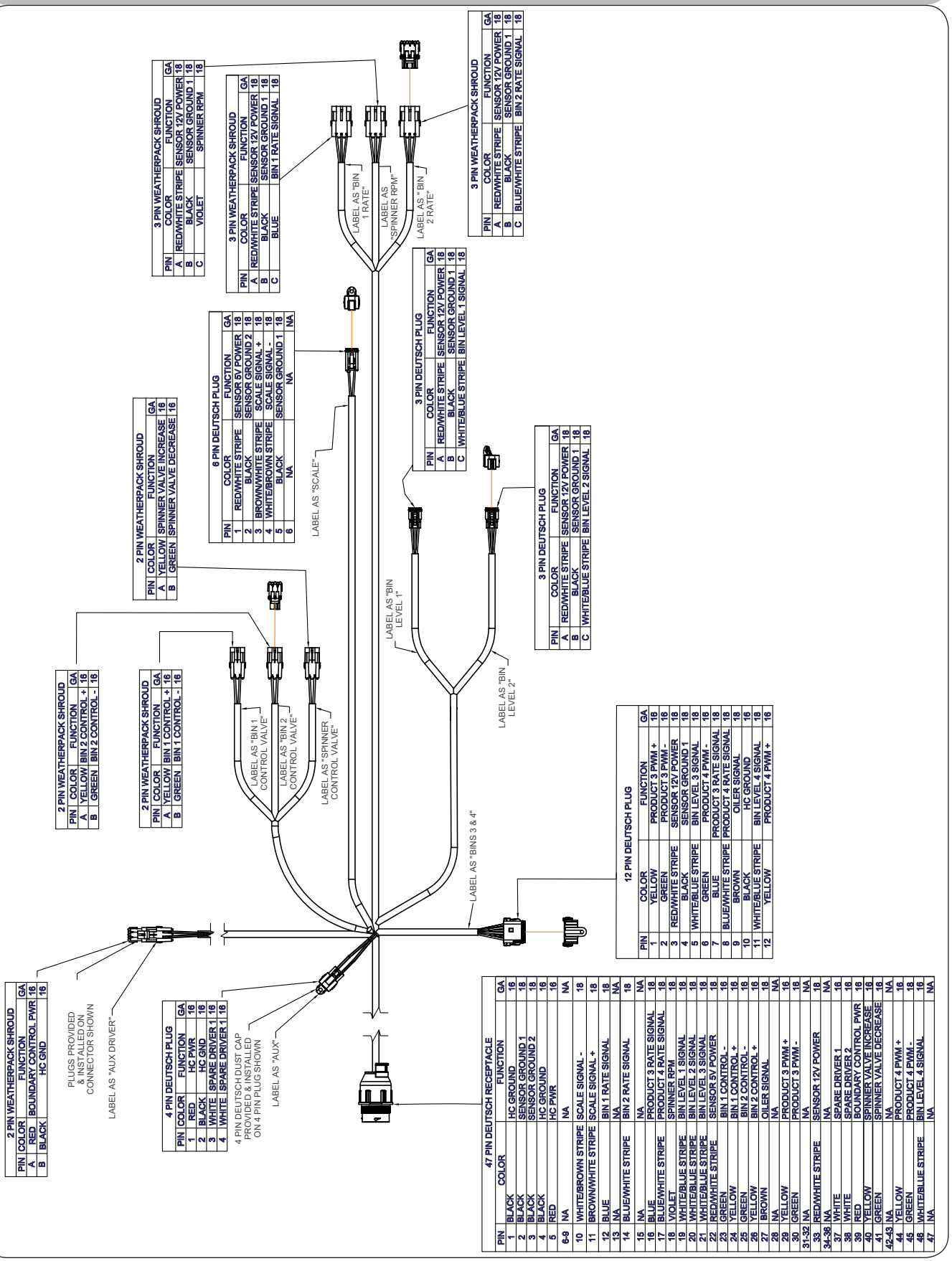
EXAMPLE: If the spinner's speed is working and the connectors are switched, the spinners should show up as an application rate. If the application rate still is not reading, there is a controller or cable problem. Check the programming numbers and cables. If a rate reading is received, the sensor could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

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

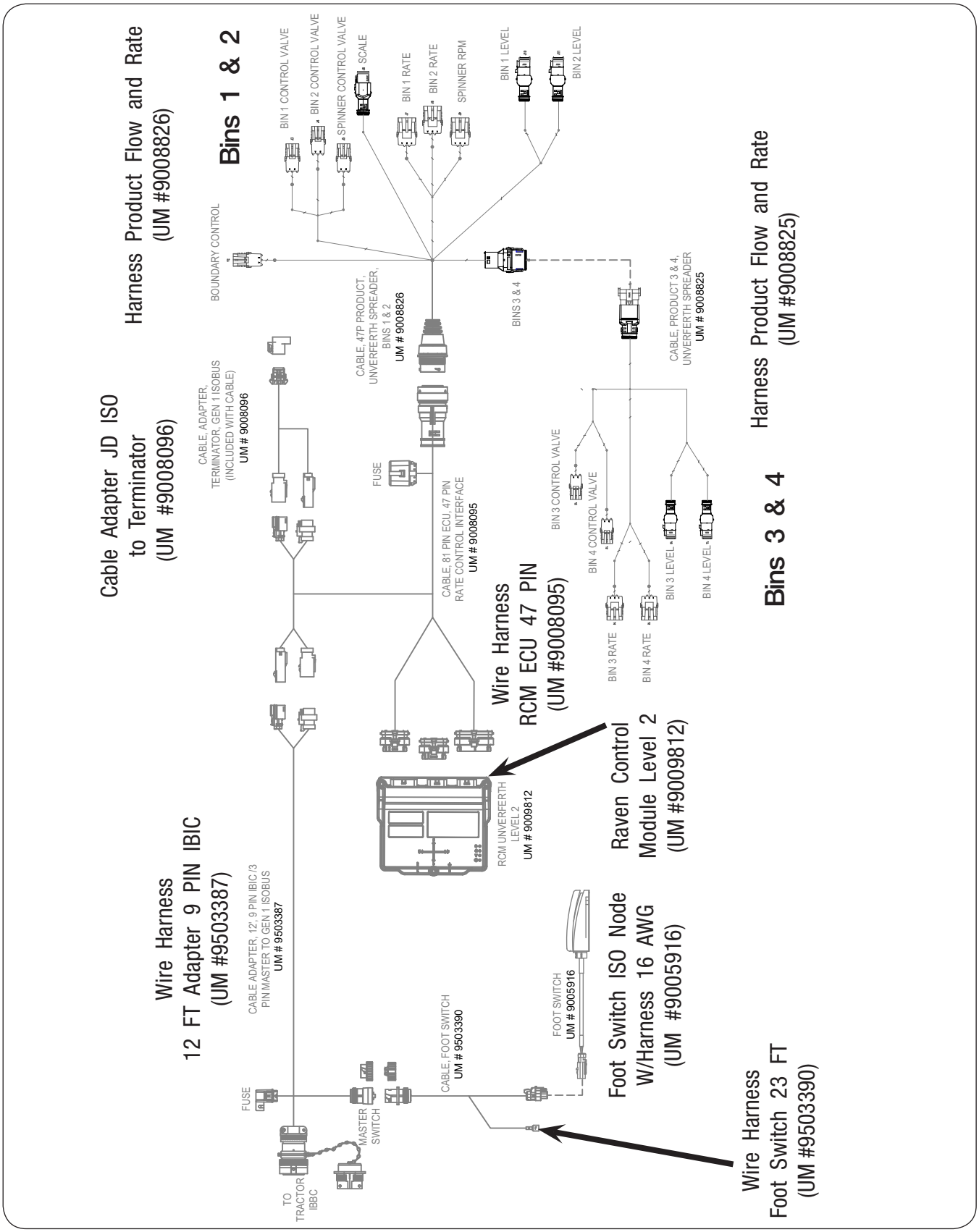
Schematic — Electrical — Chassis Mounted Unit
Tail Light Wiring Harness (PF1223-752)



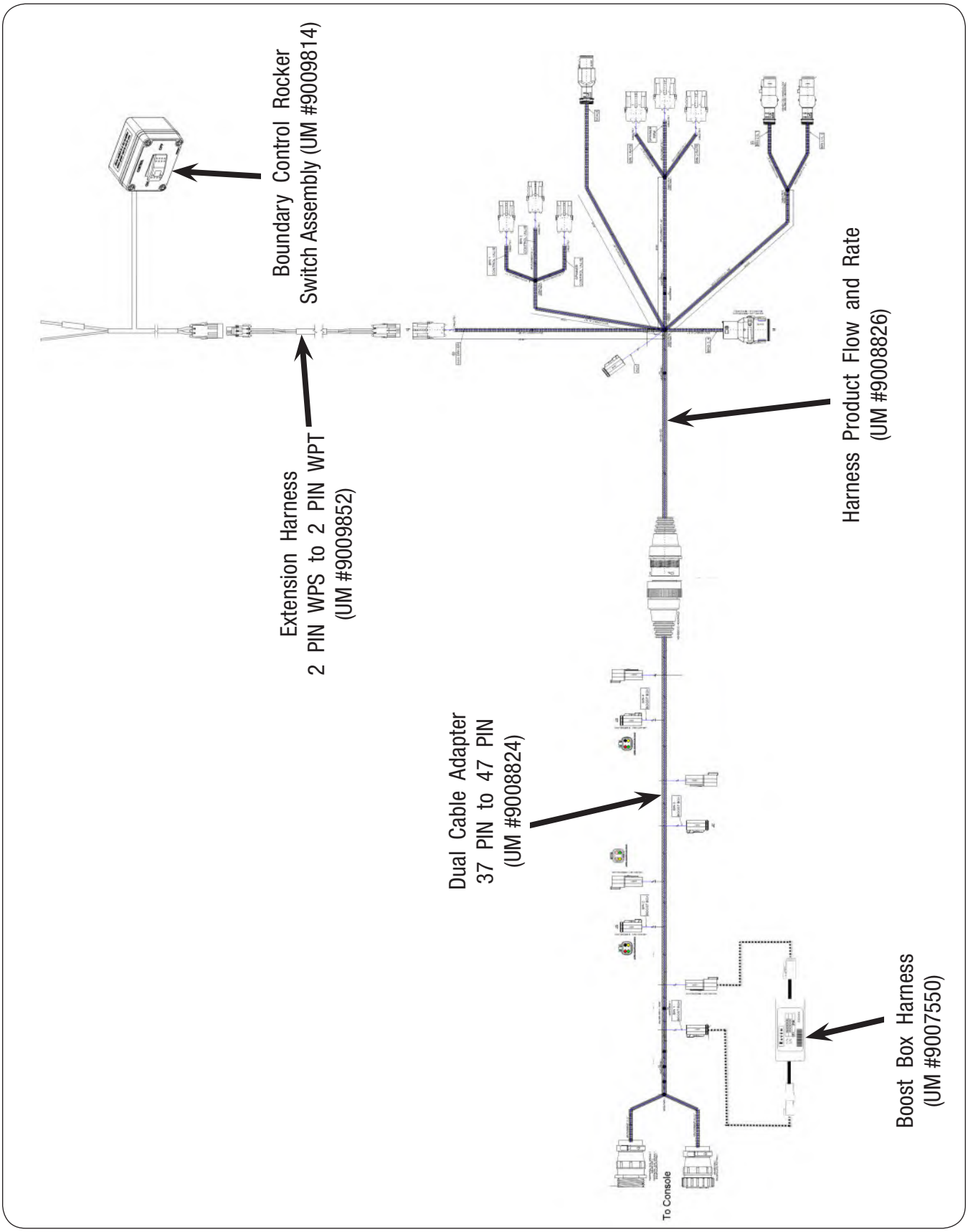
Schematic — Product Flow & Rate Harness (9008826)



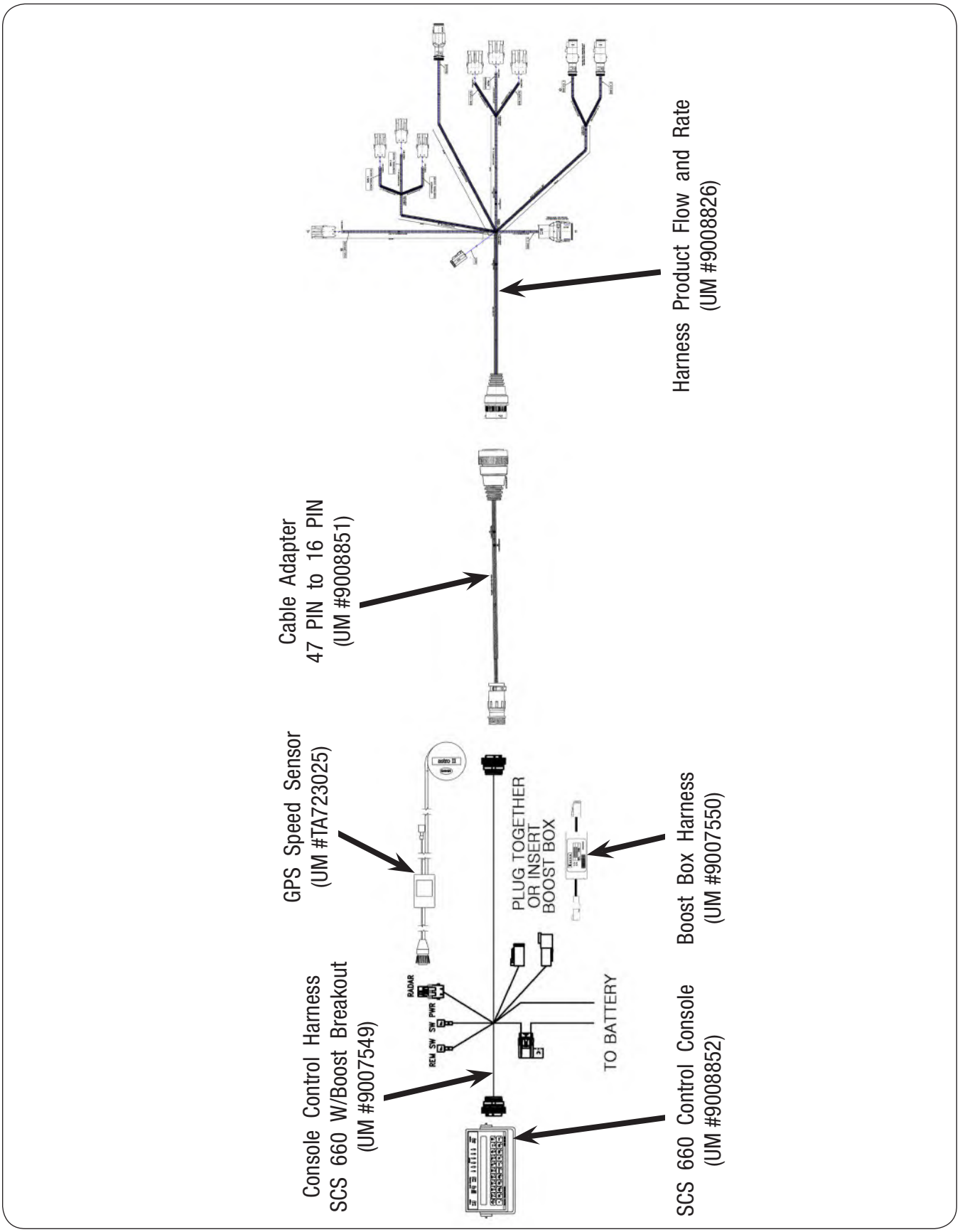
Schematic — RCM Wiring Harness



Schematic — Less Raven ISOBUS Rate Control Wiring Harness



Schematic — Raven 660 Monitor Rate Control 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 hardware has a natural tendency to cold weld/gall when installed/uninstalled at high speeds and/or high torques. It is recommended to apply a thread lubricant approved for stainless steel such as graphite-based anti-seize or molybdenum disulfide based anti-seize when performing an assembly/disassembly of stainless steel hardware. Unverferth PN 9504206 or equivalent.*
- *The torque recommendations below are for lubricated stainless steel hardware.*

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

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

Complete Torque Chart (continued)

Capscrews - Grade 5

NOTE:

- Grade 5 capscrews can be identified by three radial dashes on the head.
- Capscrews have a yellow or clear appearance.

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

IMPORTANT

- *Follow these torque recommendations except when specified in text.*

Complete Torque Chart (continued)

Capscrews - Grade 5 MagniCoated SAE J429

NOTE:

- Grade 5 capscrews can be identified by three radial dashes on the head.
- Capscrews have a black appearance.
- Capscrews have a K value of 0.15

SIZE	INCH POUNDS	NEWTON METERS
1/4-20 1/4-28	76 87	9 10
5/16-18 5/16-24	157 174	18 20

SIZE	FOOT POUNDS	NEWTON METERS
3/8-16 3/8-24	23 26	32 36
7/16-14 7/16-20	37 41	51 56
1/2-13 1/2-20	57 64	78 87
9/16-12 9/16-18	82 91	112 124
5/8-11 5/8-18	113 127	154 173
3/4-10 3/4-16	200 223	272 303
7/8-9 7/8-14	322 355	437 482
1-8 1-14	483 542	655 735
1 1/4-7 1 1/4-12	840 930	1139 1261
1 3/8-6 1 3/8-12	1102 1254	1495 1701
1 1/2-6 1 1/2-12	1462 1645	1983 2231

IMPORTANT

- *Follow these torque recommendations except when specified in text.*

Complete Torque Chart (continued)

Capscrews - Grade 8

NOTE:

- Grade 8 capscrews can be identified by six radial dashes on the head.
- For wheel torque requirements, refer to Wheels and Tires.

SIZE	FOOT POUNDS	NEWTON METERS
5/16-18 5/16-24	20-22 21-23	27-30 28-31
3/8-16 3/8-24	35-39 36-41	47-53 49-55
7/16-14 7/16-20	54-58 55-60	73-78 75-80
1/2-13 1/2-20	82-88 94-99	110-120 125-135
9/16-12 9/16-18	127-134 147-155	170-180 199-210
5/8-11 5/8-18	160-170 165-175	215-230 225-235
3/4-10 3/4-16	280-295 330-365	380-400 445-495
7/8-9 7/8-14	410-430 420-440	555-580 570-595
1-8 1-14	630-650 680-700	850-880 920-950
1 1/8-7 1 1/8-12	900-930 930-950	1220-1260 1260-1290
1 1/4-7 1 1/4-12	1250-1300 1280-1320	1695-1760 1735-1790

IMPORTANT

- *Follow these torque recommendations except when specified in text.*

Complete Torque Chart (continued)

Capscrews - Grade 8 MagniCoated SAE J429

NOTE:

- Grade 8 capscrews can be identified by six radial dashes on the head.
- Capscrews have a black appearance.
- Capscrews have a K value of 0.15

SIZE	INCH POUNDS	NEWTON METERS
1/4-20 1/4-28	107 123	13 14
5/16-18 5/16-24	221 245	25 28

SIZE	FOOT POUNDS	NEWTON METERS
3/8-16 3/8-24	33 37	45 51
7/16-14 7/16-20	52 58	71 79
1/2-13 1/2-20	80 90	109 123
9/16-12 9/16-18	115 128	156 174
5/8-11 5/8-18	159 180	216 245
3/4-10 3/4-16	282 315	383 428
7/8-9 7/8-14	455 502	617 681
1-8 1-14	681 765	924 1038
1 1/4-7 1 1/4-12	1363 1509	1848 2046
1 3/8-6 1 3/8-12	1786 2034	2422 2758
1 1/2-6 1 1/2-12	2371 2668	3215 3618

IMPORTANT

- *Follow these torque recommendations except when specified in text.*

Complete Torque Chart (continued)

Capscrews - Grade 9 EcoGuard Fine Thread

NOTE:

- Grade 9 capscrews can be identified by nine radial dashes on the head.
- For wheel torque requirements, refer to Wheels and Tires.

SIZE	FOOT POUNDS	NEWTON METERS
3/8-24	33-38	44-51
7/16-20	54-59	73-79
1/2-20	86-91	116-123
9/16-18	125-130	170-176
5/8-18	178-183	241-248
3/4-16	315-320	427-433
7/8-14	504-509	683-690
1-14	772-777	1046-1053
1 1/4-12	1528-1533	2071-2078
1 3/8-12	2061-2066	2794-2801
1 1/2-12	2705-2710	3667-3674

IMPORTANT

- *Follow these torque recommendations except when specified in text.*

Hydraulic Fittings – Torque and Installation

Tightening O-Ring Fittings

1. Inspect components for damage or contamination. Do not connect any other type of fitting to an O-ring fitting.
2. For adjustable fittings, ensure the jam nut and washer are fully backed up.
3. Lubricate the O-ring and threads on the fitting with hydraulic oil.
4. Turn the fitting into the port until it is finger tight.
5. For adjustable fittings, set in the desired position.
6. Using a wrench, torque the fitting to the value in the below table. For adjustable fittings the jam nut will be tightened.

NOTE: Never use a power tool to install a fitting.

Dash Size	Thread Size	Straight Stud Torque (Ft-Lbs)	Adjustable Stud Torque (Ft-Lbs)
-5	1/2-20	14-19	10-14
-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

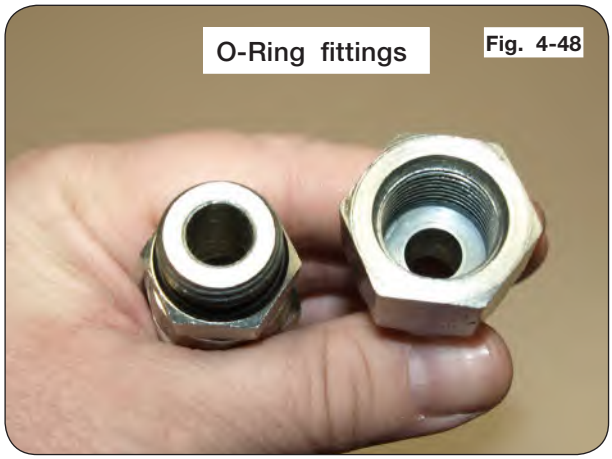


Fig. 4-48

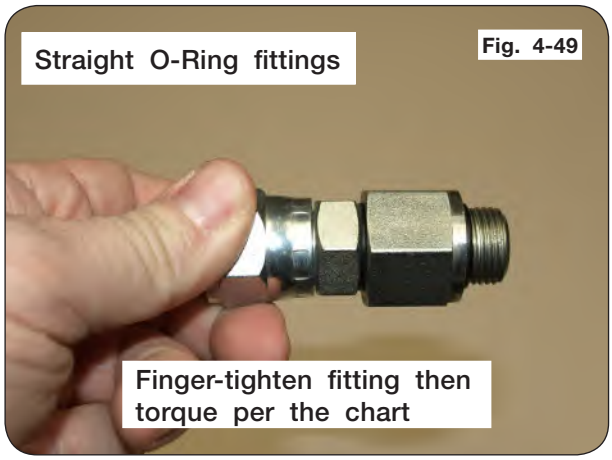


Fig. 4-49

Hydraulic Fittings – Torque and Installation (continued)

Tightening JIC Fittings

1. Inspect all components for damage or contamination. Do not connect any other type of fitting to a JIC fitting.

2. Lubricate the threads with hydraulic oil.

3. Turn the fitting into the port until it bottoms out.

4. Use one wrench on the fixed hex on the hose to prevent twisting and a second on the swivel. Tighten the fitting another 60 degrees (or one flat)

NOTE: Never use a power tool to install a fitting

Fig. 4-50

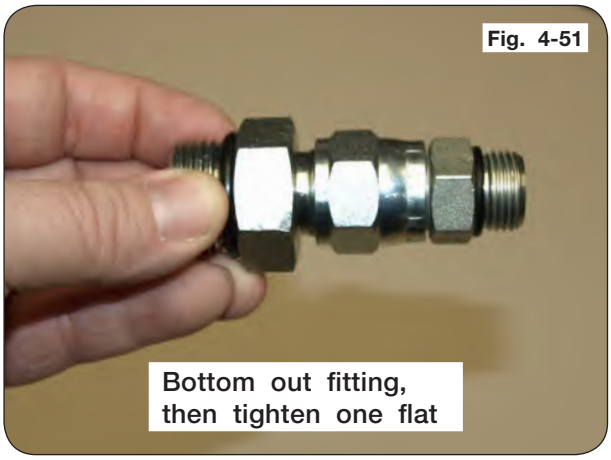


Fig. 4-51

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

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
416452 (Proportional Valve - 16 NC)	70-75	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

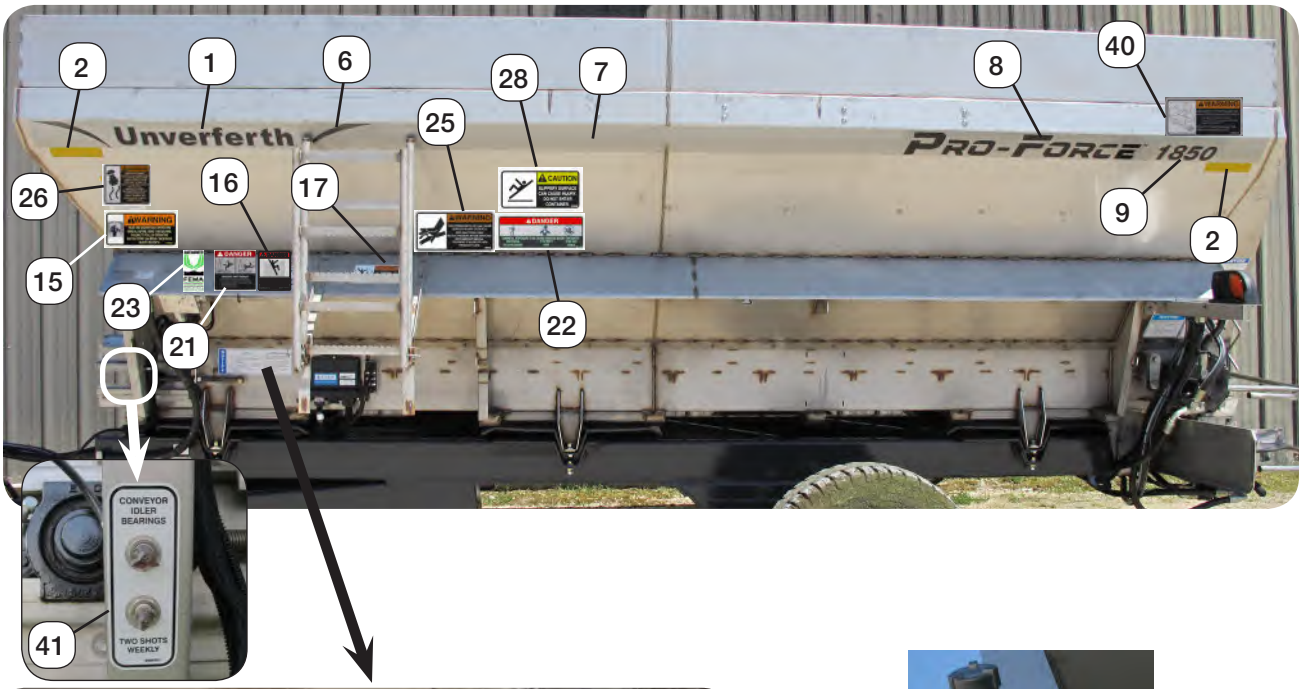
Section V
Parts

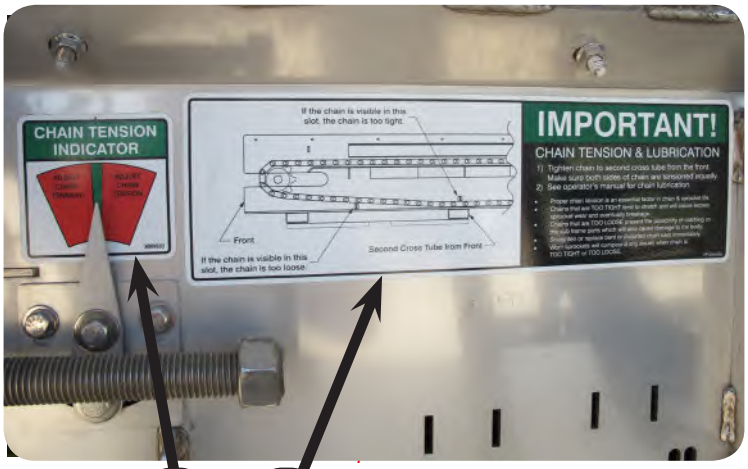
Please visit www.unverferth.com/parts/ for the most current parts listing.

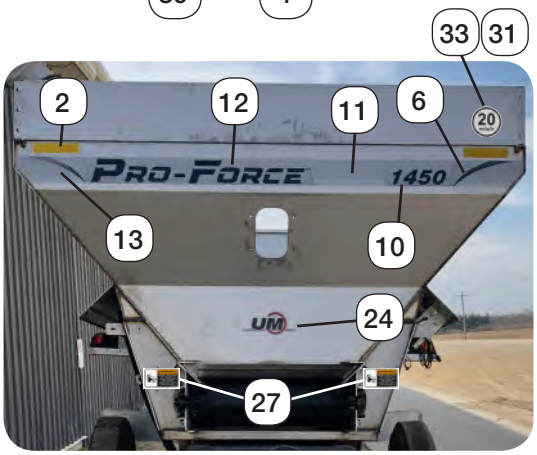
FOR SCALE, AUTO GREASER, AND / OR TARP INFORMATION, PLEASE REFER TO THE INDIVIDUAL MANUALS.

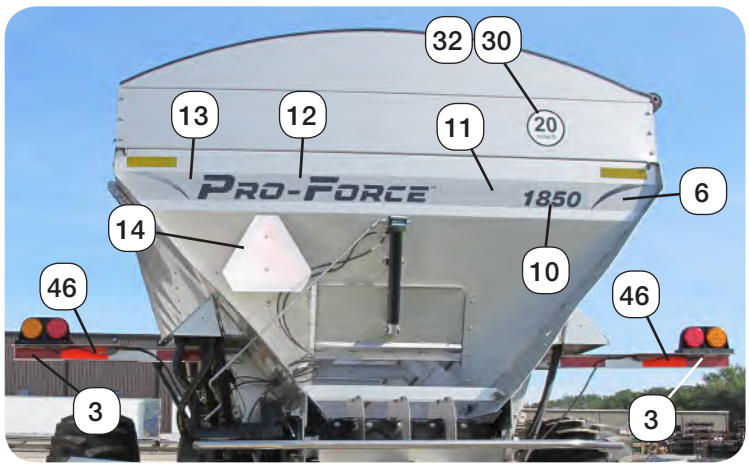
Decals

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









Decals

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

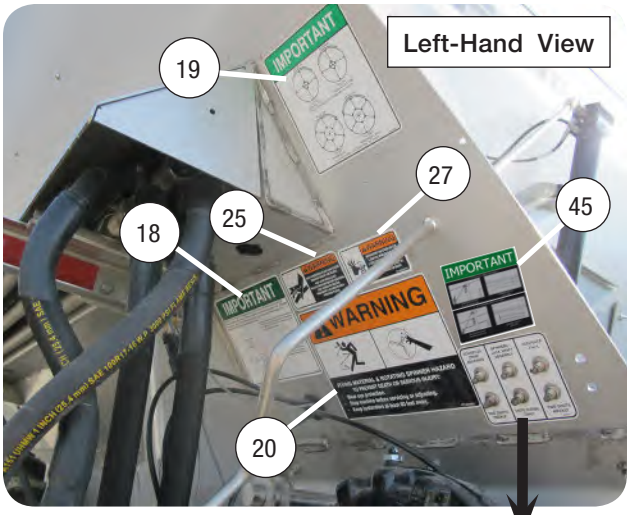
ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	9004298	DECAL, Unverferth Logo	2	
2	9003127	Reflector 2x9 =AMBER=	6	
3	9003126	Reflector 2x9 =RED=	4	
4	PF1234-055	Decal, IMPORTANT Chain Tension 14.5" W x 5" H	1	
5	PF1234-056	DECAL, HYD. OIL 3" H X 5" W	1	
6	9004213	Decal, Unverferth Logo Tail	4	
7	9004035	Decal, 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		
	9008986	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	TA510514	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	
23	91605	Decal, FEMA	1	
24	901607	Decal, UM Oval	1	
25	95445	Decal, WARNING "High-Pressure Fluid"	3	
26	9009170	Decal, WARNING "Gross 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	
34	415318	SMV Mount SS	1	Used On Item #14 For SN B40850100 & Higher (Not Shown)
35	900903-017	Lock Washer 1/4" SS	2	
36	900900-005	Capscrew 1/4"-20UNC x 1" SS	2	
37	900901-002	Hex Nut 1/4"-20UNC SS	2	
38	900902-032	Flat Washer 1/4" SS	4	
39	9009533	Decal, Chain Tension Indicator	2	
40	9009453	Decal, WARNING "Follow Proper Lifting Procedure"	1	
41	9009461	Decal, Grease Bank Conveyor Idler Bearings	1	
46	9003125	Decal, Fluorescent Orange	2	

(Continued on next page)

Decals (continued)

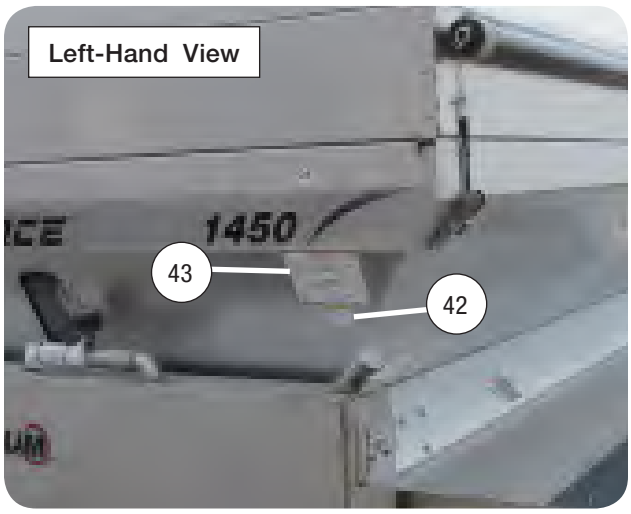
Please visit www.unverferth.com/parts/ for the most current parts listing.

Left-Hand View



Right-Hand View

Left-Hand View

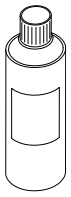


Decals (continued)

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”	1	
25	95445	Decal, WARNING "High-Pressure Fluid"	3	
27	TA1-906109-0	Decal, WARNING “Moving Parts Crush/Cut”	4	
42	9009210	DECAL, CABLE LOCK RATCHET SET-UP	1	
43	9009211	DECAL, OPERATING INSTRUCTIONS	1	
44	9009417	Decal, Grease Bank	1	
45	9010131	DECAL, IMPORTANT “FEEDGATE JACK POSITION”	1	

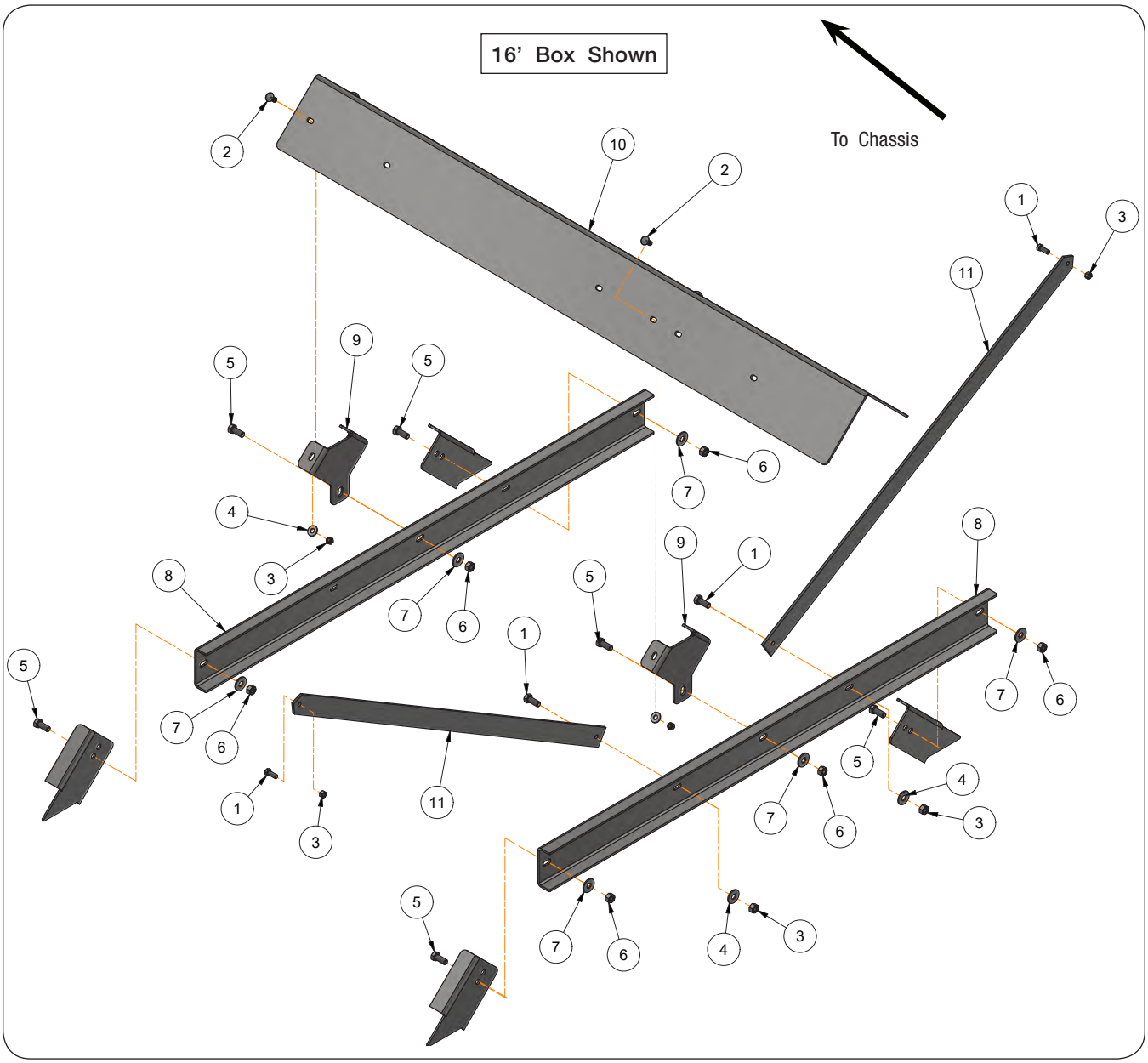
Touch-Up Paint



PAINT	SPRAY
CE Gray	9008955
Primer, Gray	9500082
Black	97013

Inverted "V" & Cross Brace Assembly Components

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



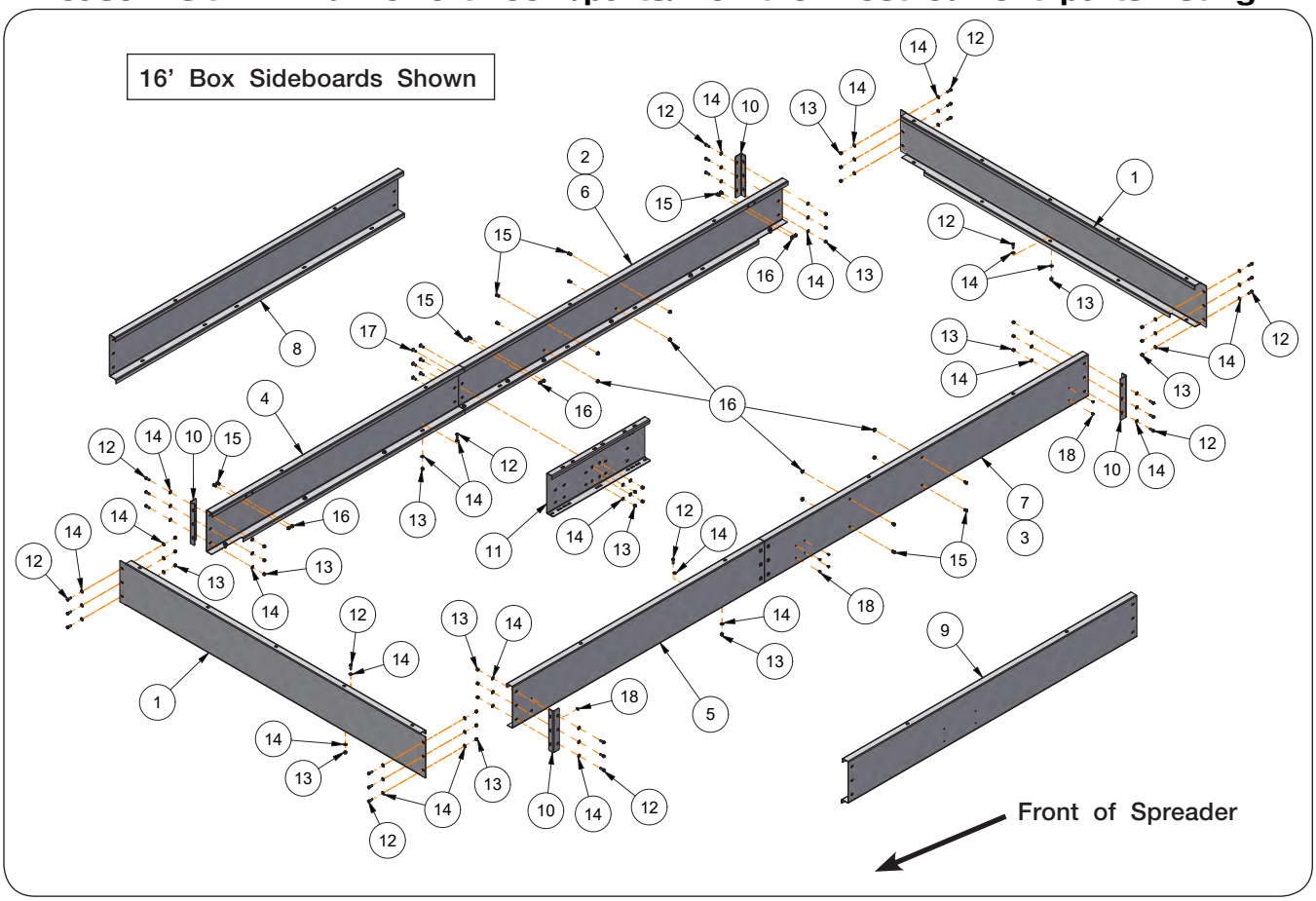
Inverted "V" & Cross Brace Assembly Components

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

ITEM	PART NUMBER	DESCRIPTION	11' BOX QTY	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
	PF1234-105ASSY	INVERTED VEE ASSEMBLY SS	-	1	1	1	1	-	-	-	-	Includes Items 8 - 10
	PF1236-105ASSY		-	-	-	-	-	1	1	1	1	Includes Items 8 - 10
1	900900-056	CAPSCREW, 3/8"-16UNC X 1 1/4" SS	-	-	-	-	4	8	8	8	8	
2	9007908-051	CARRIAGE BOLT, 3/8"-16UNC X 1" SS	4	4	4	4	4	4	8	8	8	
3	900905-012	ELASTIC STOP NUT, 3/8"-16UNC SS	4	4	4	4	8	8	16	16	16	
4	900902-038	FLATWASHER, 3/8" SS	4	4	4	4	6	8	12	12	8	
5	PF1200-401	CARRIAGE BOLT, 1/2"-13UNC X 1 1/4" SS	6	6	6	6	6	8	12	12	14	
6	900905-016	ELASTIC STOP NUT, 1/2"-13UNC SS	6	6	6	6	6	6	12	12	14	
7	900902-044	FLATWASHER, 1/2" SS	6	6	6	6	6	8	12	12	14	
8	PF50-069	BOX CROSS BRACE SS	2	2	2	2	2	3	4	4	4	
9	PF50-071	INVERTED VEE CROSS BRACE BRACKET SS	2	2	2	2	2	2	4	4	4	
10	PF50-072	INVERTED VEE 40 3/4" SS	1	1	1	1	-	-	-	-	-	
	PF70-072	INVERTED VEE 72" SS	-	-	-	-	1	1	2	2	2	
11	PF1236-106	INVERTED VEE BRACKET SS	-	-	-	-	2	4	4	4	4	

Stainless Steel Box Sideboard Extension Components

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



ITEM	PART NUMBER	DESCRIPTION	11' BOX QTY	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
	415418	13 3/4" Sideboard Extension Assembly	1	-	-	-	-	-	-	-	-	
	415419	8" Sideboard Extension Assembly	1	-	-	-	-	-	-	-	-	
	414529	4" Sideboard Extension Assembly	-	1	-	-	-	-	-	-	-	
	PF1234-15049ASSY	12" Sideboard Extension Assembly	-	-	1	-	-	-	-	-	-	
	PF1234-15047ASSY		-	-	-	1	-	-	-	-	-	
	PF1234-150475ASSY		-	-	-	-	1	-	-	-	-	
	PF1234-15045ASSY		-	-	-	-	-	1	-	-	-	
	PF1234-15050ASSY		-	-	-	-	-	-	1	-	-	
	PF1234-15051ASSY		-	-	-	-	-	-	-	1	-	
	PF1234-15056ASSY		-	-	-	-	-	-	-	-	1	
1	415405	13 3/4" EXT. x 93 3/4" FRONT / REAR SS	2	-	-	-	-	-	-	-	-	
	415420	8" EXT. x 93 3/4" FRONT / REAR SS	2	-	-	-	-	-	-	-	-	
	414614	4" EXT. x 101 3/4" FRONT / REAR SS	-	2	-	-	-	-	-	-	-	
	PFFES-EXT-1-12	12" EXT. x 101 3/4" FRONT / REAR SS	-	-	2	2	2	2	2	2	2	
2	416923	13 3/4" High Sideboard Ext., 11 FT RH SS	1	-	-	-	-	-	-	-	-	
	416920	8" High Sideboard Ext., 11 FT RH SS	1	-	-	-	-	-	-	-	-	
	416917	4" High Sideboard Ext., 12 FT RH SS	-	1	-	-	-	-	-	-	-	
3	416922	13 3/4" High Sideboard Ext., 11 FT LH SS	1	-	-	-	-	-	-	-	-	
	416919	8" High Sideboard Ext., 11 FT LH SS	1	-	-	-	-	-	-	-	-	
	416916	4" High Sideboard Ext., 12 FT LH SS	-	1	-	-	-	-	-	-	-	

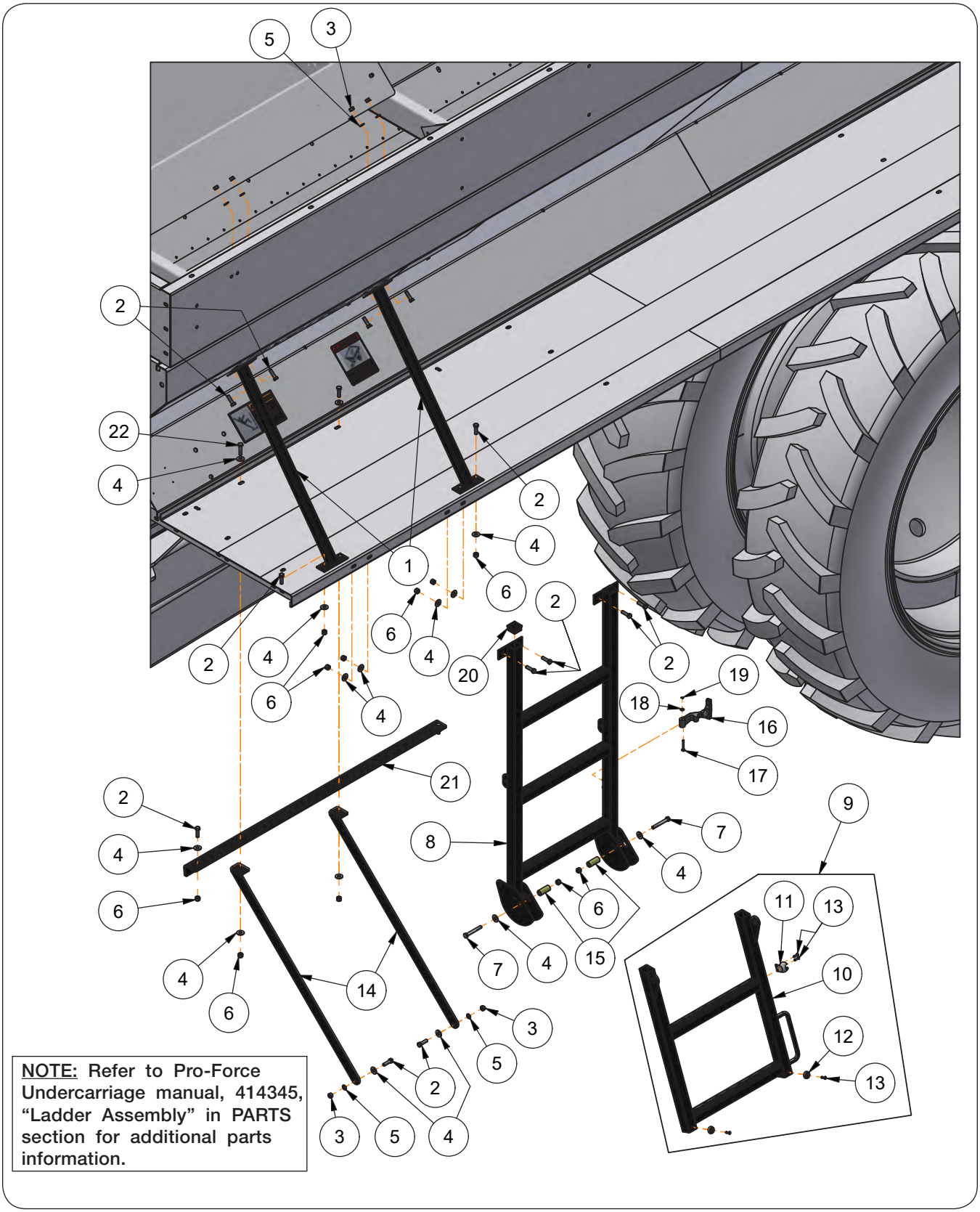
Stainless Steel Box Sideboard Extension Components

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

ITEM	PART NUMBER	DESCRIPTION	11' BOX QTY	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
4	416419	12" High Sideboard, 13' BOX RH Front SS	-	-	1	-	-	-	-	-	-	
	416422	12" High Sideboard, 14' BOX RH Front SS	-	-	-	1	-	-	-	-	-	
	416424	12" High Sideboard, 16' BOX RH Front SS	-	-	-	-	1	-	-	-	-	
	416411	12" High Sideboard, 18' BOX RH Front SS	-	-	-	-	-	1	-	-	-	
	416831	12" High Sideboard, 20' BOX RH Front SS	-	-	-	-	-	-	1	-	-	
	416835	12" High Sideboard, 22' BOX RH Front SS	-	-	-	-	-	-	-	1	-	
	416838	12" High Sideboard, 26' BOX RH Front SS	-	-	-	-	-	-	-	-	1	
5	416417	12" High Sideboard, 13' BOX LH Front SS	-	-	1	-	-	-	-	-	-	
	416421	12" High Sideboard, 14' BOX LH Front SS	-	-	-	1	-	-	-	-	-	
	416423	12" High Sideboard, 16' BOX LH Front SS	-	-	-	-	1	-	-	-	-	
	416410	12" High Sideboard, 18' BOX LH Front SS	-	-	-	-	-	1	-	-	-	
	416830	12" High Sideboard, 20' BOX LH Front SS	-	-	-	-	-	-	1	-	-	
	416834	12" High Sideboard, 22' BOX LH Front SS	-	-	-	-	-	-	-	1	-	
	416837	12" High Sideboard, 26' BOX LH Front SS	-	-	-	-	-	-	-	-	1	
6	416420	12" High Sideboard, 13' BOX RH Rear SS	-	-	1	-	-	-	-	-	-	
		12" High Sideboard, 14' BOX RH Rear SS	-	-	-	1	-	-	-	-	-	
	416413	12" High Sideboard, 16' BOX RH Rear SS	-	-	-	-	1	-	-	-	-	
		12" High Sideboard, 18' BOX RH Rear SS	-	-	-	-	-	1	-	-	-	
	416833	12" High Sideboard, 20' BOX RH Rear SS	-	-	-	-	-	-	1	-	-	
		12" High Sideboard, 22' BOX RH Rear SS	-	-	-	-	-	-	-	1	-	
	416840	12" High Sideboard, 26' BOX RH Rear SS	-	-	-	-	-	-	-	-	1	
7	416418	12" High Sideboard, 13' BOX LH Rear SS	-	-	1	-	-	-	-	-	-	
		12" High Sideboard, 14' BOX LH Rear SS	-	-	-	1	-	-	-	-	-	
	416425	12" High Sideboard, 16' BOX LH Rear SS	-	-	-	-	1	-	-	-	-	
	416412	12" High Sideboard, 18' BOX LH Rear SS	-	-	-	-	-	1	-	-	-	
	416832	12" High Sideboard, 20' BOX LH Rear SS	-	-	-	-	-	-	1	-	-	
	416836	12" High Sideboard, 22' BOX LH Rear SS	-	-	-	-	-	-	-	1	-	
	416839	12" High Sideboard, 26' BOX LH Rear SS	-	-	-	-	-	-	-	-	1	
8	416842	12" High Sideboard, RH Middle SS	-	-	-	-	-	-	-	-	1	
9	416841	12" High Sideboard, LH Middle SS	-	-	-	-	-	-	-	-	1	
10	416924	13 3/4" Sideboard Corner Mount Plate	4	-	-	-	-	-	-	-	-	
	416921	8" High Sideboard Corner Mount Plate	4	-	-	-	-	-	-	-	-	
	416918	4" High Sideboard Corner Mount Plate	-	4	-	-	-	-	-	-	-	
	416409	12" High Sideboard Corner Mount Plate	-	-	4	4	4	4	4	4	4	
11	416406	12" High Sideboard Mount Plate	-	-	2	2	2	2	2	2	4	
12	900900-055	Capscrew, 3/8"-16UNC x 1" SS	46	-	-	-	-	-	-	-	-	13 3/4" EXT.
			38	-	-	-	-	-	-	-	-	8" EXT.
			-	38	46	50	54	54	58	60	64	
13	900905-012	Elastic Lock Nut 3/8"-16UNC SS	46	-	-	-	-	-	-	-	-	13 3/4" EXT.
			38	-	-	-	-	-	-	-	-	8" EXT.
			-	38	58	62	66	66	70	72	88	
14	900902-037	Flat Washer 3/8" SAE SS	92	-	-	-	-	-	-	-	-	13 3/4" EXT.
			76	-	-	-	-	-	-	-	-	8" EXT.
			-	76	104	112	120	120	128	132	152	
15	9008066	Button Head Screw, 3/8"-16UNC x 3/4" SS	14	14	14	14	14	14	16	16	16	
16	9005640	Serrated Flange Nut, 3/8"-16UNC SS	14	14	14	14	14	14	16	16	16	
17	9009190	Button Head Screw, 3/8"-16UNC x 1" SS	-	-	12	12	12	12	12	12	24	
18	9007570	Plug 0.20" Dia.	-	-	8	8	8	8	12	12	16	

Ladder Assembly With Full Float Fenders

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



NOTE: Refer to Pro-Force Undercarriage manual, 414345, "Ladder Assembly" in PARTS section for additional parts information.

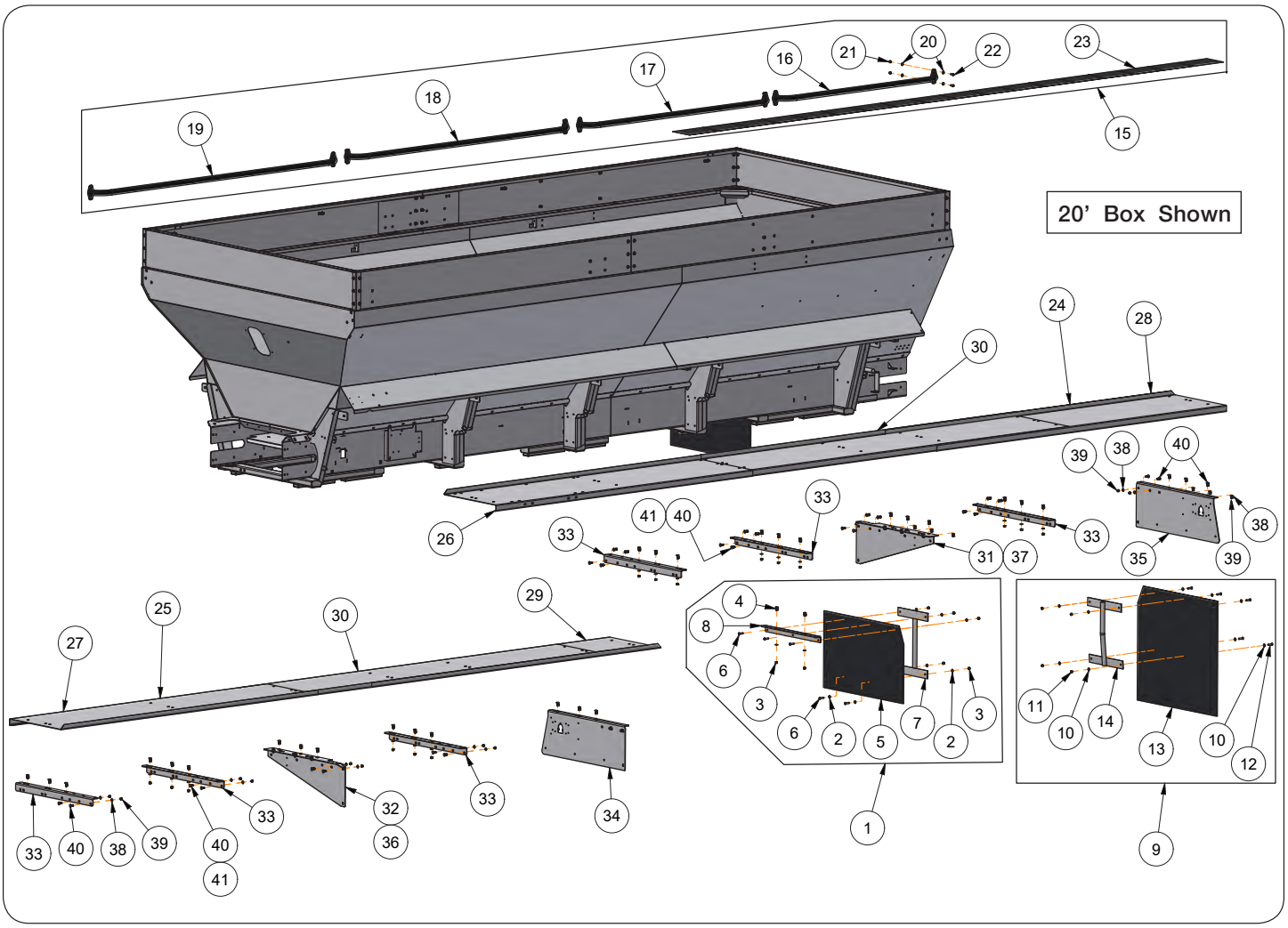
Ladder Assembly With Full Float Fenders

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 All Items
1	415891B	Ladder Handle Weldment =Black=	2	
2	900900-056	Capscrew 3/8"-16UNC x 1 1/4" SS	16	
3	900901-006	Hex Nut 3/8"-16UNC SS	6	
4	900902-038	Flat Washers 3/8" SS	20	
5	900903-021	Lock Washers 3/8" SS	6	
6	900905-012	Elastic Stop Nut 3/8"-16UNC SS	14	
7	900900-062	Capscrew 3/8"-16UNC x 2 3/4" SS	2	
8	415889B	Upper Ladder Weldment =Black=	1	
9	415888B	Lower Ladder Assembly with Bumpers =Black=	1	Includes Items 10-13
10	415890B	Lower Ladder Weldment =Black=	1	
11	900059	Keeper R Style for Draw Latch	1	
12	9003850	Bumper	2	
13	TA0-908386-0	Rivet	4	
14	415897B	Ladder Support Bracket =Black=	2	
15	295137	Ladder Pivot Bushing	2	
16	900060	Handle	1	
17	900066	Draw Latch Pin	1	
18	900067	Washer	1	
19	900068	External E-Ring	1	
20	9001645	Square Plug 1 1/2"	2	
21	416448B	Support Fender Plate =Black=	1	
22	900900-057	Capscrew 3/8"-16UNC x 1 1/2" SS	2	

Fender, Mudflap & Handrail Components (Optional)

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



Fender, Mudflap & Handrail Components (Optional)

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

ITEM	PART NUMBER	DESCRIPTION	13' BOX QTY	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	22' BOX QTY	26' BOX QTY	NOTES
	414432	STAINLESS STEEL FENDER KIT	1	-	-	-	-	-	-	Also Includes Item 15 Pro-Force Handrail Kit
	414408		-	1	-	-	-	-	-	
	414431		-	-	1	-	-	-	-	
	414407		-	-	-	1	-	-	-	
	414430		-	-	-	-	1	-	-	
	414406		-	-	-	-	-	1	-	
	414979		-	-	-	-	-	-	1	
1	414428	Front Mud Flap Kit	1	1	1	1	1	1	1	Includes Items: 2 - 8
2	900902-037	FLAT WASHER, 3/8" SS (SAE)	18	18	18	18	18	18	18	
3	900905-012	Elastic Stopnut, 3/8"-16UNC SS	14	14	14	14	14	14	14	
4	9007908-051	Carriage Bolt, 3/8"-16UNC x 1 1/2" SS	4	4	4	4	4	4	4	
5	PF1200-3047	Bolt, 3/8"-16UNC x 1 1/2" SS	10	10	10	10	10	10	10	
6	9009172	FRONT MUD FLAP, 38" X 24"	2	2	2	2	2	2	2	
7	PFF3238PB	MUD FLAP BRACKET FRONT (REAR) SS	2	2	2	2	2	2	2	
8	PFF3238PBA	FRONT MUD FLAP BRACKET PLATE	2	2	2	2	2	2	2	
9	414429	Rear Mud Flap Kit	1	1	1	1	1	1	1	Includes Items: 10 - 14
10	900902-037	FLAT WASHER, 3/8" SS (SAE)	20	20	20	20	20	20	20	
11	900905-012	Elastic Stopnut, 3/8"-16UNC SS	10	10	10	10	10	10	10	
12	PF1200-3047	Bolt, 3/8"-16UNC x 1 1/2" SS	10	10	10	10	10	10	10	
13	9009173	REAR MUD FLAP, 38" X 36"	2	2	2	2	2	2	2	
14	PFF3844PB	MUD FLAP BRACKET REAR	2	2	2	2	2	2	2	
15	414955B	Pro-Force Handrail Kit =Black=	1	-	-	-	-	-	-	Items: 16, 17, 20-23
	414950B		-	1	-	-	-	-	-	Items: 17, 20-23
	414951B		-	-	1	-	-	-	-	Items: 18, 20-23
	414952B		-	-	-	1	-	-	-	Items: 19, 20-23
	414953B		-	-	-	-	1	-	-	Items: 16, 18, 20-23
	414954B		-	-	-	-	-	1	-	Items: 17, 18, 20-23
	414977B		-	-	-	-	-	-	1	Items: 16, 17, 20-23
16	415086B	64" Handrail Weldment =Black=	1	-	-	-	2	-	2	
17	415084B	75" Handrail Weldment =Black=	1	2	-	-	-	2	2	
18	415082B	88" Handrail Weldment =Black=	-	-	2	-	1	1	-	
19	414911B	98" Handrail Weldment =Black=	-	-	-	2	-	-	-	
20	900902-037	FLAT WASHER, 3/8" SS (SAE)	16	16	16	16	24	24	32	
21	900905-012	Elastic Stopnut, 3/8"-16UNC SS	8	8	8	8	12	12	16	
22	900900-055	Capscrew, 3/8"-16UNC x 1" SS	8	8	8	8	12	12	16	
23	PF1234-702	Anti Slip Tape 8"	11.4	12.4	14.4	16.4	18.4	20.4	24.4	Specify In Feet

(Continued on next page)

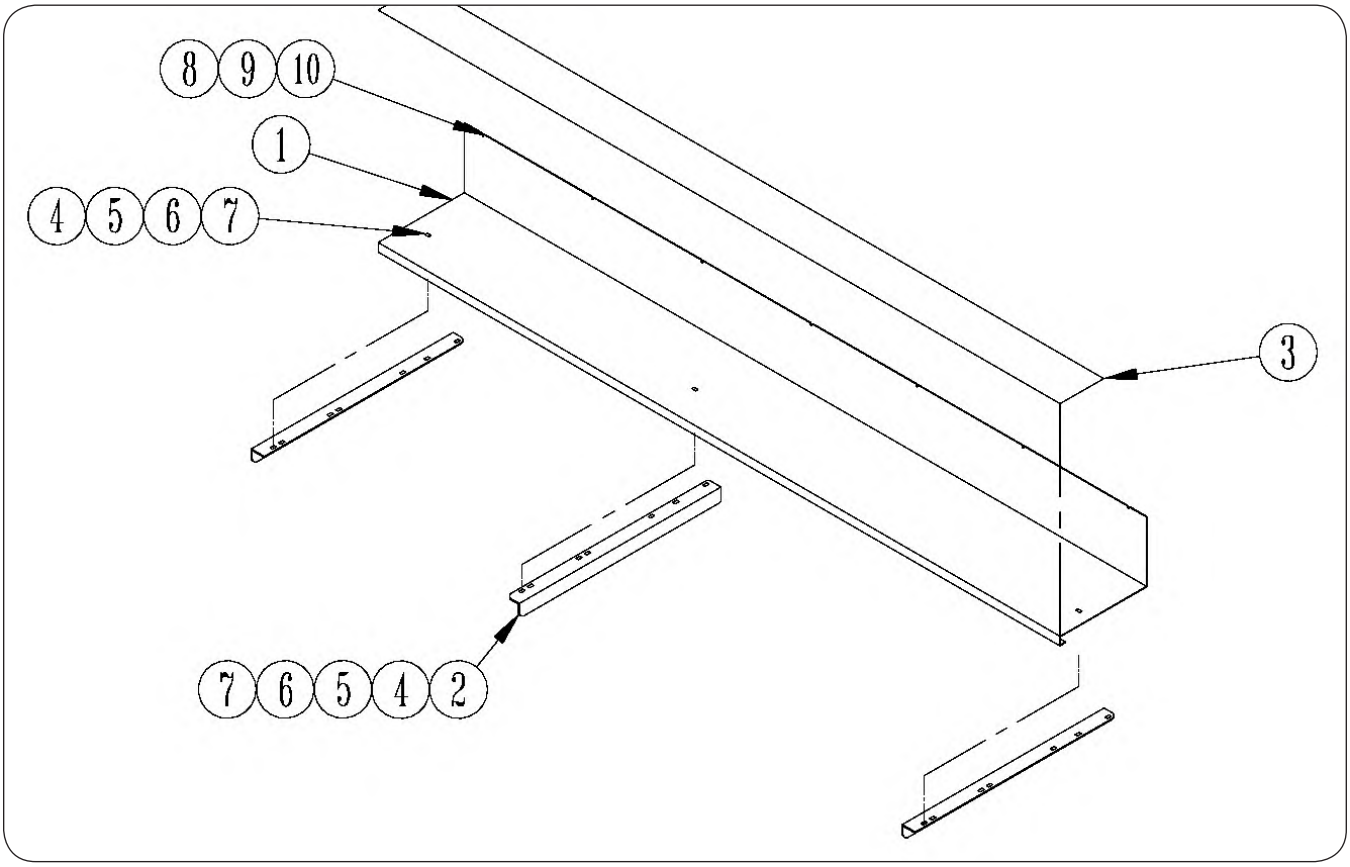
Fender, Mud Flap & Handrail Components (Optional) (continued)

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

ITEM	PART NUMBER	DESCRIPTION	13' BOX QTY	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	22' BOX QTY	26' BOX QTY	NOTES
24	PF1234-613LH	Left-Hand Fender SS	1	-	-	-	-	-	-	
25	PF1234-613RH	Right-Hand Fender SS	1	-	-	-	-	-	-	
26	416713	Left-Hand Front Fender SS	-	1	-	-	-	-	-	
	416709		-	-	1	-	-	-	-	
	416705		-	-	-	1	-	-	1	
	416685		-	-	-	-	1	-	-	
	416697		-	-	-	-	-	1	-	
27	416712	Right-Hand Front Fender SS	-	1	-	-	-	-	-	
	416708		-	-	1	-	-	-	-	
	416704		-	-	-	1	-	-	-	
	416684		-	-	-	-	1	-	1	
	416696		-	-	-	-	-	1	-	
28	416715	Left-Hand Rear Fender SS	-	1	-	-	-	-	-	
	416711		-	-	1	-	-	-	-	
	416707		-	-	-	1	-	-	-	
	416703		-	-	-	-	1	-	-	
	416700		-	-	-	-	-	1	-	
	416691		-	-	-	-	-	-	1	
29	416714	Right-Hand Rear Fender SS	-	1	-	-	-	-	-	
	416710		-	-	1	-	-	-	-	
	416706		-	-	-	1	-	-	-	
	416702		-	-	-	-	1	-	-	
	416699		-	-	-	-	-	1	-	
	416690		-	-	-	-	-	-	1	
30	416687	Middle Fender SS	-	-	-	-	-	-	2	
31	416693	Left-Hand Fender Mount Weld't SS	-	1	-	1	-	-	2	
	416695		-	-	1	-	1	1	-	
32	416692	Right-Hand Fender Mount Weld't SS	-	1	-	1	-	-	2	
	416694		-	-	1	-	1	1	-	
33	PF50-026	Fender Mounting Angle	6	4	6	2	6	6	4	
34	PF50-057	Right-Hand Rear Fender Bracket	1	1	1	1	1	1	1	
35	PF50-057-L	Left-Hand Rear Fender Bracket	1	1	1	1	1	1	1	
36	PF50-058	Right-Hand Middle Fender Bracket	1	1	-	1	-	-	1	
37	PF50-058-L	Left-Hand Middle Fender Bracket	1	1	-	1	-	-	1	
38	900902-037	FLAT WASHER, 3/8" SS (SAE)	66	72	72	62	80	80	104	
39	900905-012	Elastic Stopnut, 3/8"-16UNC SS	58	64	64	54	68	68	88	
40	9007908-051	Carriage Bolt, 3/8"-16UNC x 1 1/2" SS	50	56	56	46	56	48	62	
41	900900-069	Capscrew, 3/8"-16UNC x 5" SS	-	-	-	-	-	8	10	

Semi Float Fender Components

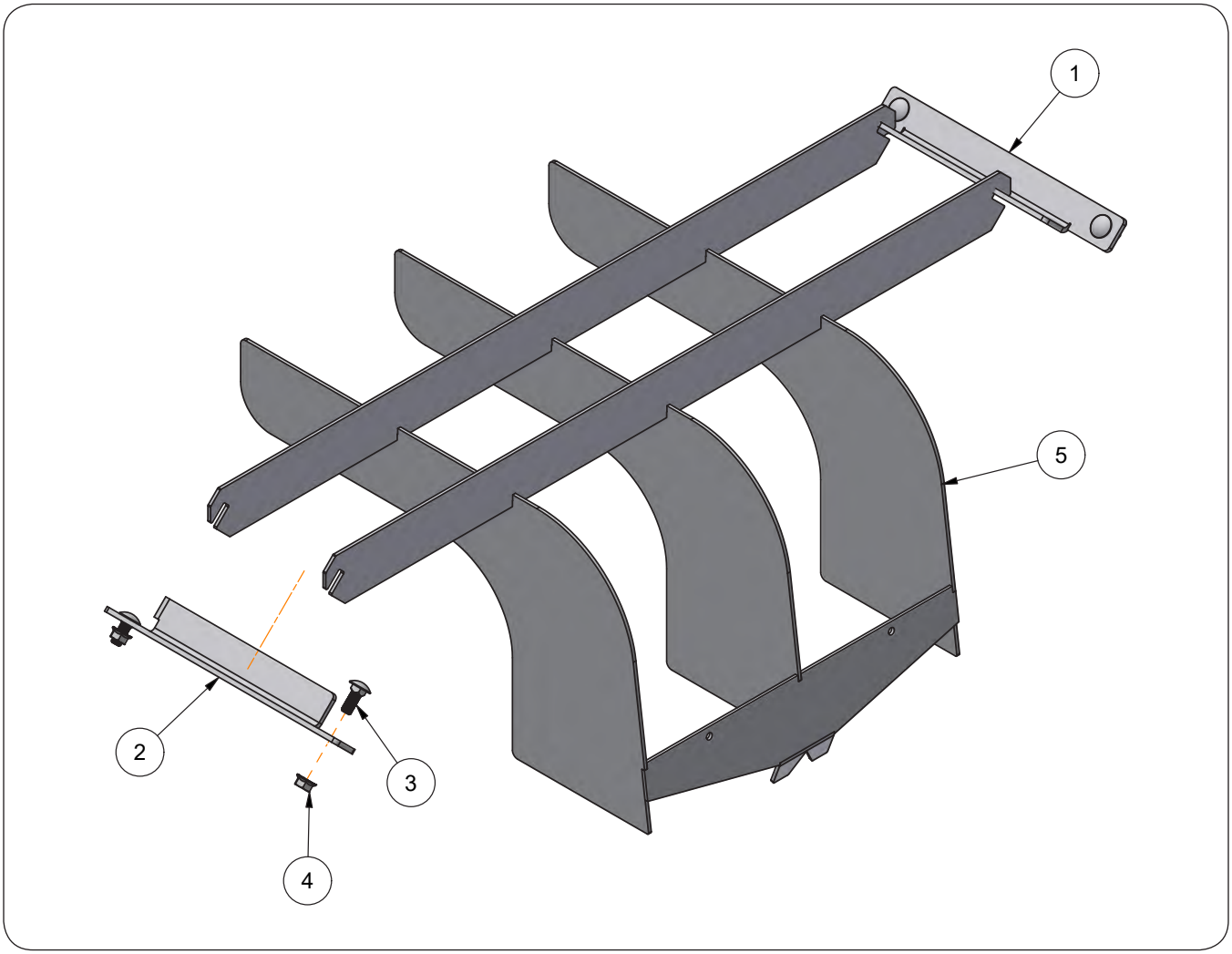
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1234-712	WELDMENT, SEMI-FLOAT FENDER, RH - SS 12’	1	
1	PF1234-712LH	WELDMENT, SEMI-FLOAT FENDER, LH - SS 12’	1	
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	900903-021	LOCKWASHER, 3/8" SS	AR	
5	900901-006	HEX NUT, 3/8"-16UNC SS	AR	
6	9007908-051	BOLT, CARRIAGE 3/8"-16UNC X 1" SS	AR	
7	900902-037	FLATWASHER, 3/8" SS	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	

Hillside Flow Divider

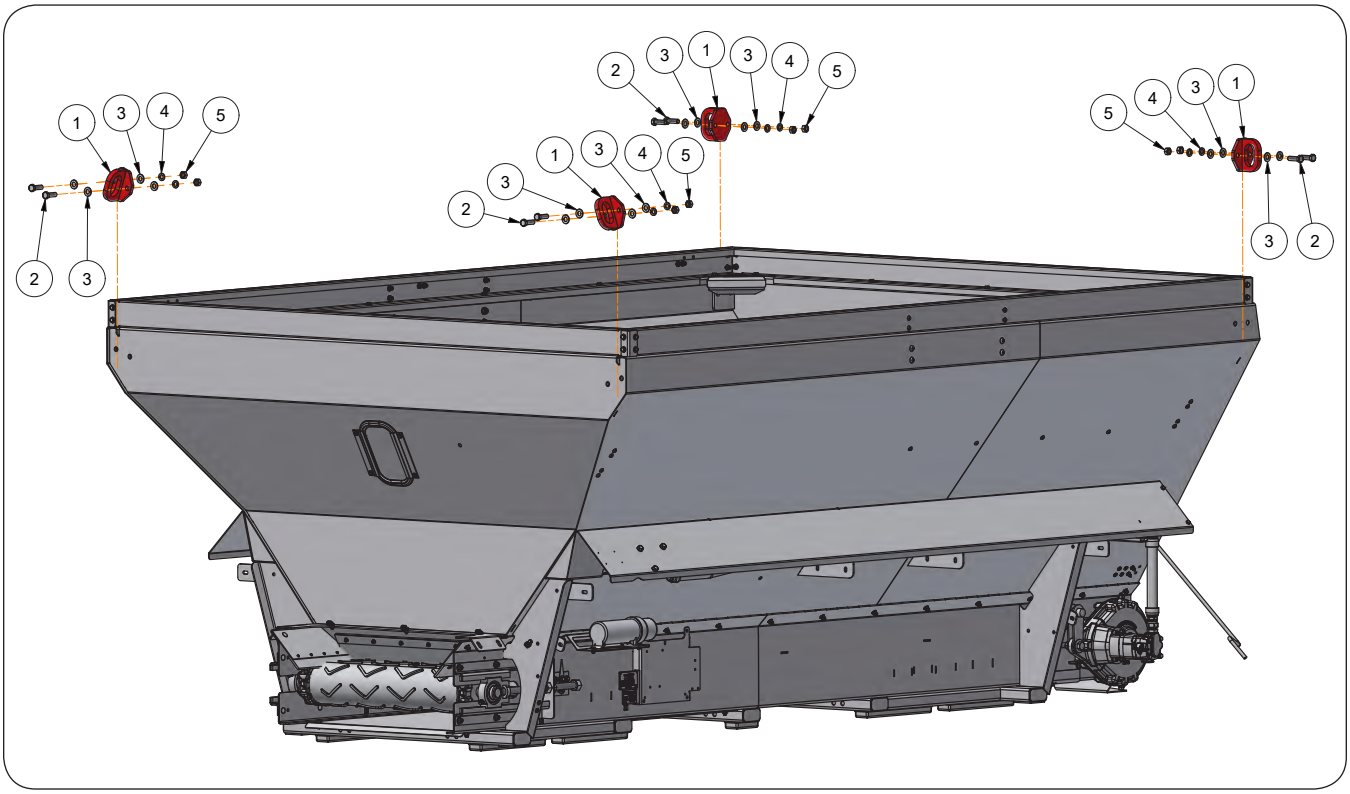
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PFHFD-104	BRACKET, HILLSIDE FLOW DIVIDER, RH SS	1	
2	PFHFD-104L	BRACKET, HILLSIDE FLOW DIVIDER, LH SS	1	
3	9007908-051	BOLT, CARRIAGE 3/8"-16UNC X 1" SS	4	
4	9005640	SERRATED FLANGE NUT, 3/8"-16UNC SS	4	
5	PF1236-453	HILLSIDE FLOW DIVIDER WELDMENT, SS	1	

Lift Lug Components
For Chassis Mounted Units

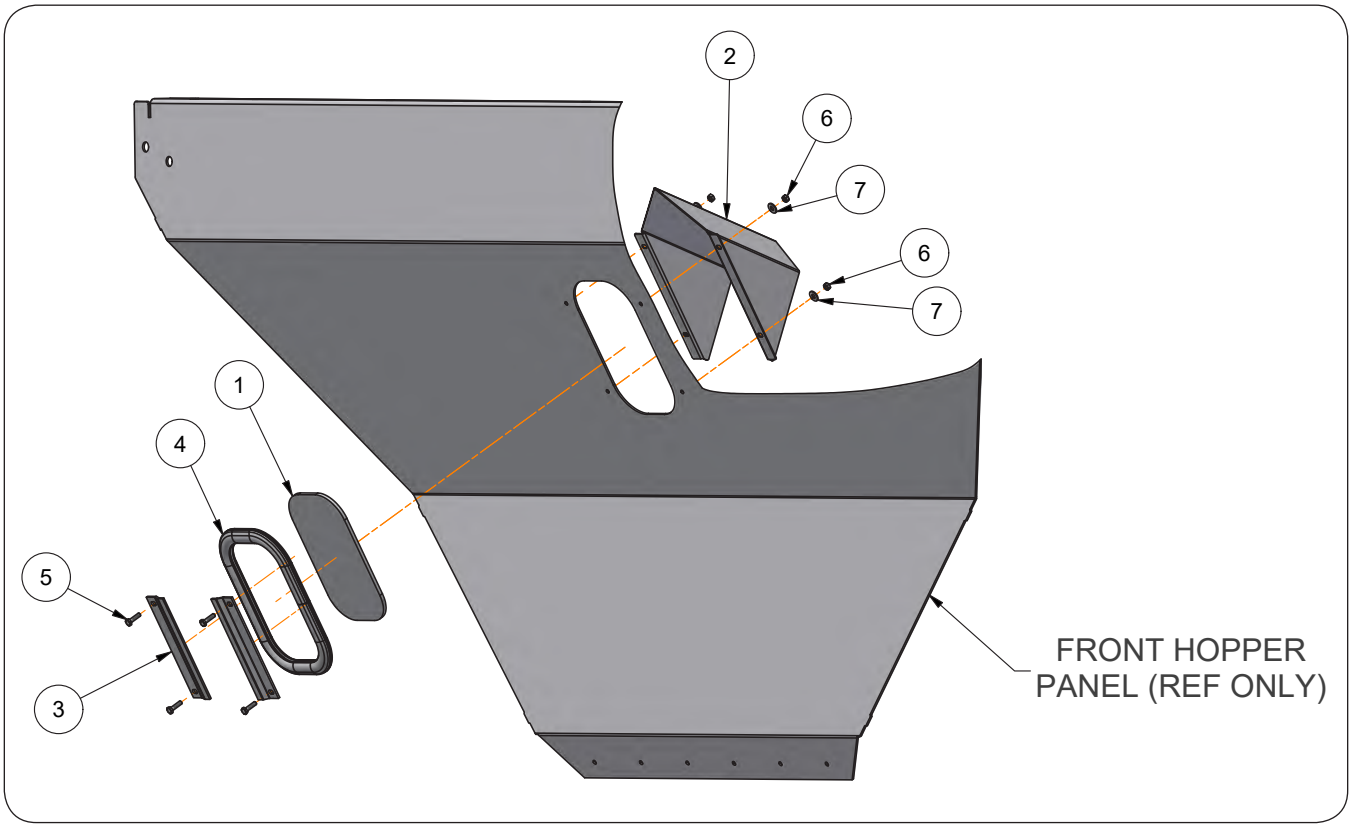
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	416178R	Lift Lug Weldment =Red=	4	
2	900900-124	Capscrew, 5/8”-11UNC x 2” SS	8	
3	900902-049	Flat Washer, 5/8” SAE SS	16	
4	900903-029	LOCK WASHER, 5/8" SS	8	
5	900901-014	HEX NUT, 5/8”-11UNC SS Grade 5	8	

Box Window

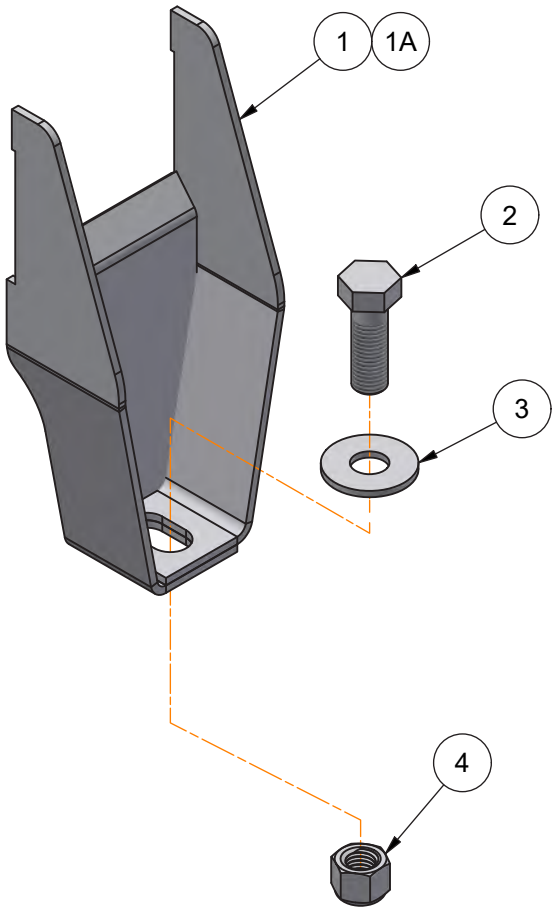
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414449	Window Kit	1	Includes Items 1-7 and Instruction Sheet
1	102608	Window Glass	1	
2	414446	Window Guard Panel	1	For 1250 & Larger Units
	415514		1	For 1150 Units
3	414448	Window Bracket	2	
4	271951	Window Molding	1	
5	900900-005	Capscrew 1/4"-20UNC x 1" SS	4	
6	9004720	Serrated Flange Nut 1/4"-20UNC SS	4	
7	900902-032	Flat Washer 1/4" SS	4	

Box Mount

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

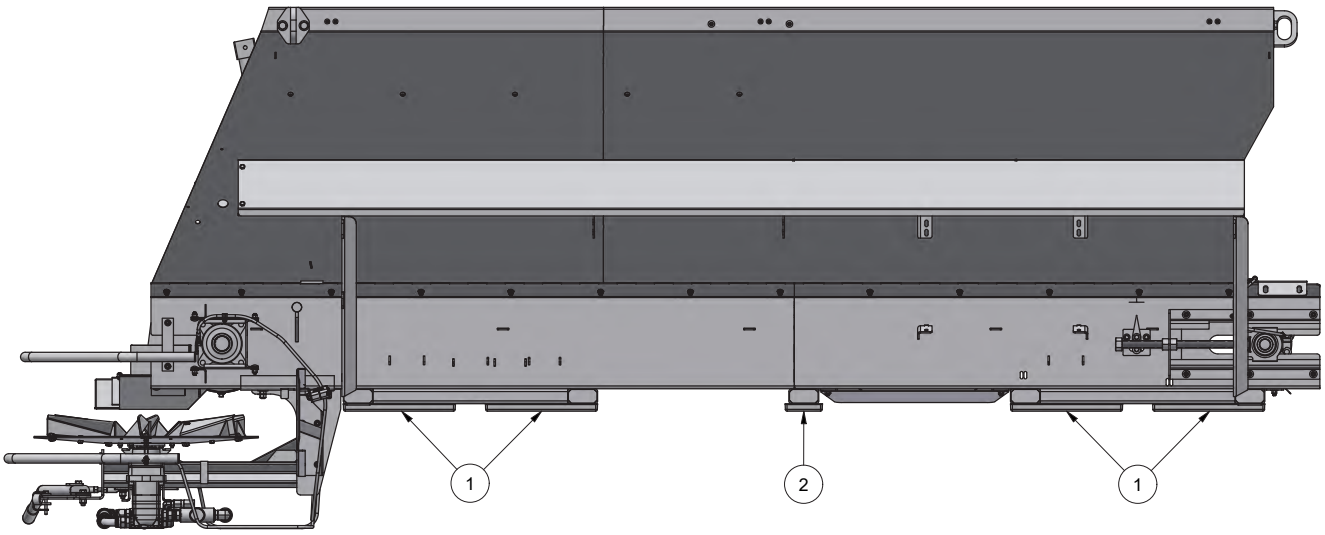


ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	415498	16 FT AG CO MOUNT KIT (SS)	1	1650 Units-Includes Item 1
	415497	14 FT AG CO MOUNT KIT (SS)	1	1450 Units-Includes Item 1
1	PF1236-80	Box Mount Weldment	6	1850 and 2650 Units
			4	1450 and 2250 Units
				1650 AG CO Units
			2	1450 AG CO Units
1A	415114	Center Box Mount Weldment	2	2250 Units
2	9503634-146	Capscrew 3/4"-10UNC X 2 1/4" Gr. 8	6	1850, 2250 and 2650 Units
			4	1450 Units
				1650 AG CO Units
			2	1450 AG CO Units
3	9503636-104	FLATWASHER, 3/4" SAE Gr. 8	6	1850, 2250 and 2650 Units
			4	1450 Units
				1650 AG CO Units
			2	1450 AG CO Units
4	9503653-037	LOCKNUT, 3/4"-10UNC Gr. 8	6	1850, 2250 and 2650 Units
			4	1450 Units
				1650 AG CO Units
			2	1450 AG CO Units

Conveyor Mounting Rubber

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

11' Box Shown

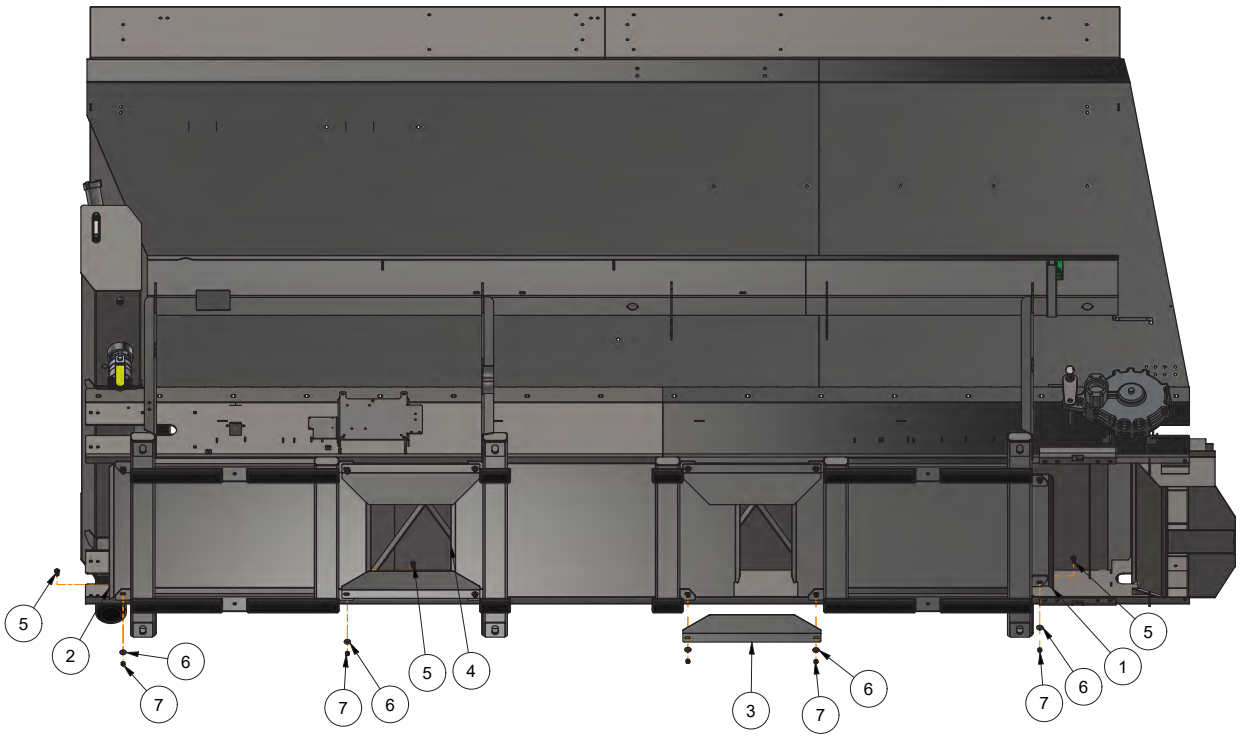


ITEM	PART NUMBER	DESCRIPTION	11' BOX QTY	12' BOX QTY	13' BOX QTY	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	22' BOX QTY	26' BOX QTY	NOTES
1	PF1000-265	Mounting Rubber - 2 1/2" x 15"	8	8	8	8	12	12	12	12	12	
2	PF1000-26	Mounting Rubber - 2 1/2" x 5"	2	2	4	4	4	2	4	4	-	

Chassis Cover Components

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

14' Box Bottom View Shown

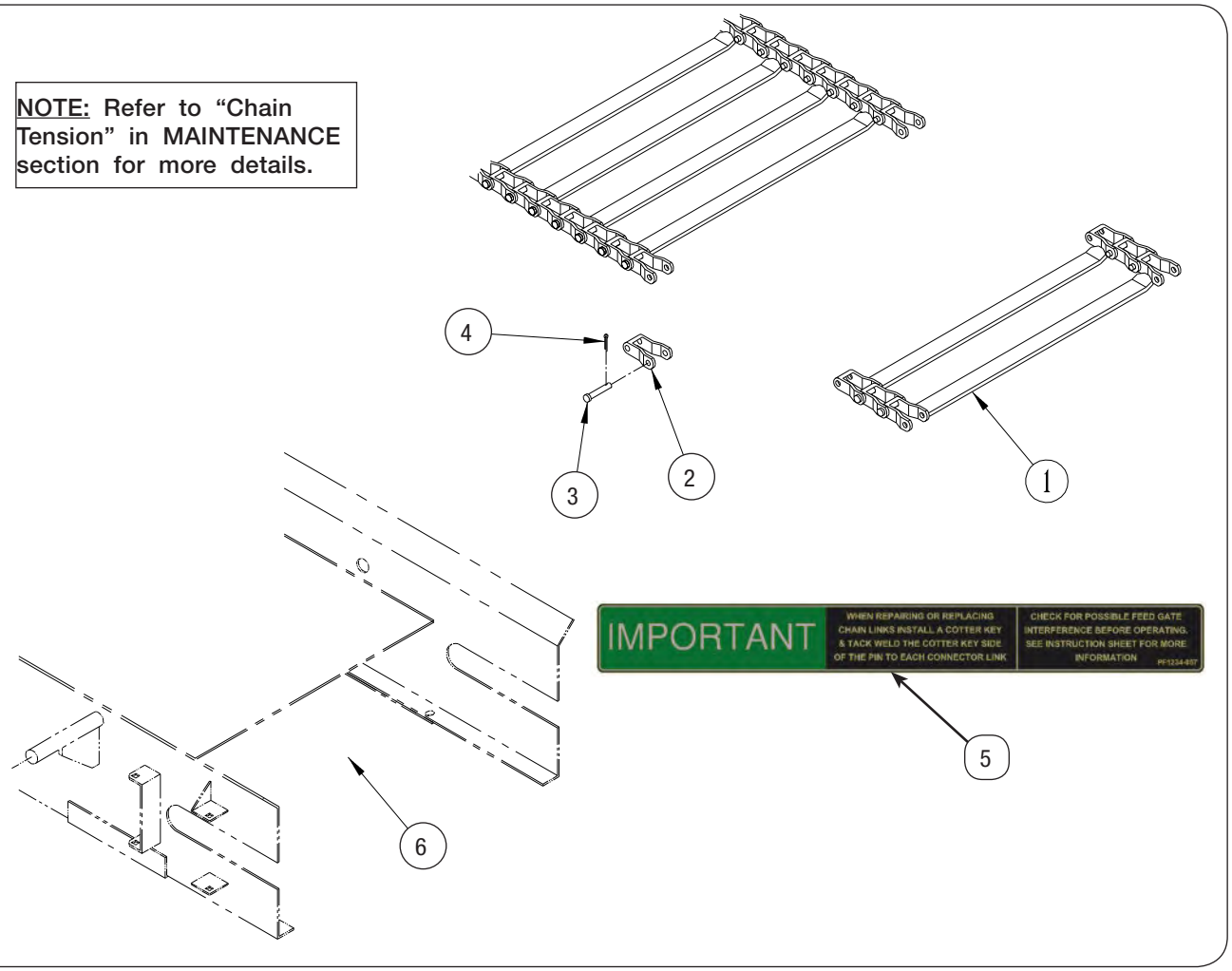


ITEM	PART NUMBER	DESCRIPTION	11' BOX QTY	12' BOX QTY	13' BOX QTY	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	NOTES
1	414960	REAR COVER PANEL 30 3/4 X 70 SS	1	1	-	-	-	-	-	
	415116	REAR COVER PANEL 30 3/4 X 70 3/4 SS	-	-	1	-	-	-	-	
	414974	REAR COVER PANEL 30 3/4 X 43 1/4 SS	-	-	-	1	1	1	1	
2	415061	FRONT COVER PANEL 30 3/4 X 43 1/4 SS	1	1	-	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	
3	415049	SIDE DEFLECTOR PANEL 13 X 25 SS	2	2	-	-	-	-	-	
	415346	SIDE DEFLECTOR PANEL 8 x 15 13/16 SS	-	-	2	-	-	-	-	
	415117	SIDE DEFLECTOR PANEL 8 x 25 5/32 SS	-	-	-	4	-	-	-	
	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	415589	MIDDLE COVER PANEL 30 3/4 X 47 3/4 SS	-	-	-	1	-	-	-	
	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	8	8	12	12	12	12	
6	900902-038	Flat Washer 3/8" SS	8	8	8	12	12	12	12	
7	900905-012	Elastic Stop Nut 3/8"-16UNC SS	8	8	8	12	12	12	12	

Straight Chain Components (Optional)

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

NOTE: Refer to "Chain Tension" in MAINTENANCE section for more details.



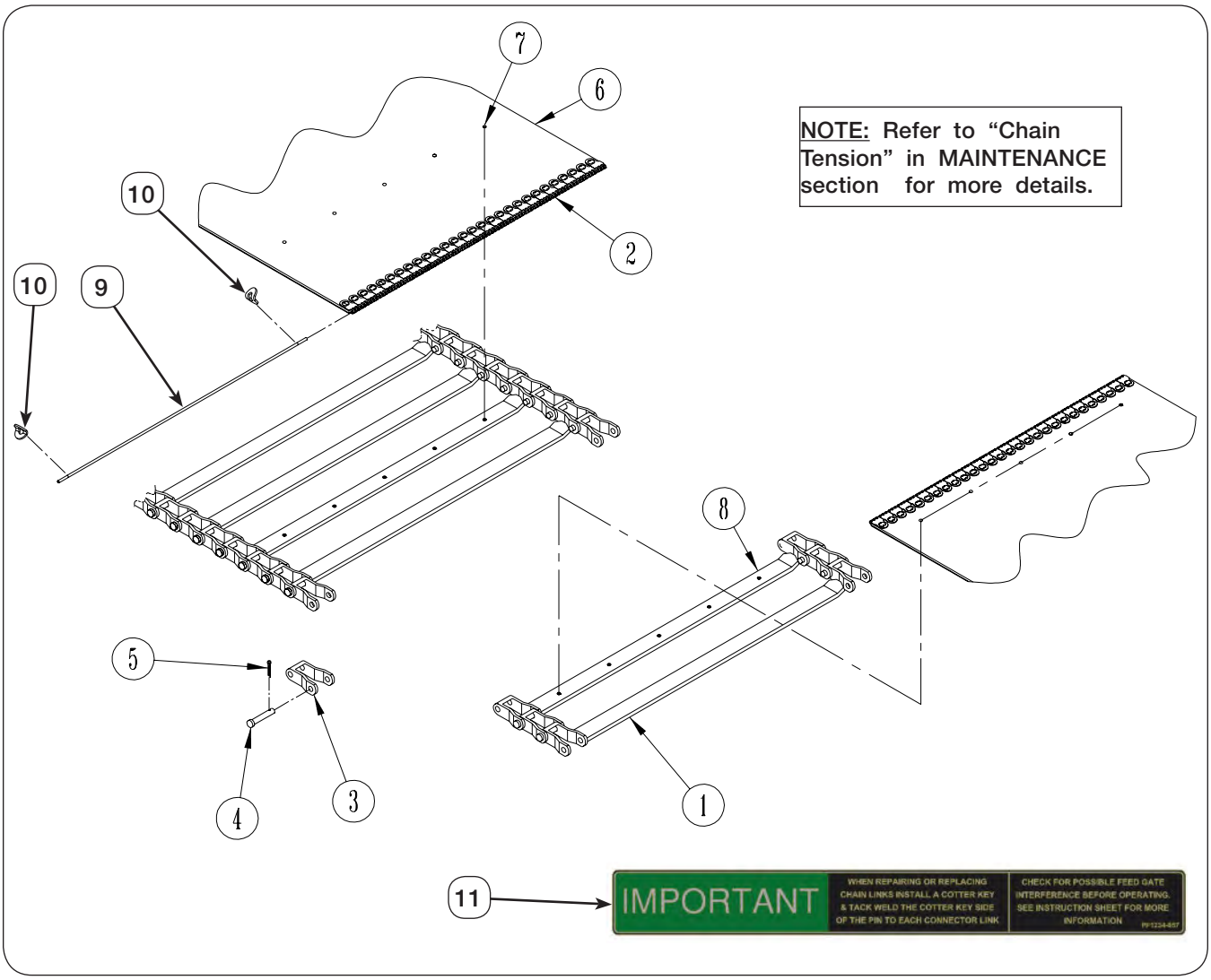
Straight Chain Components (Optional)

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	22' BOX QTY	NOTES
1	415593B	22' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	-	-	-	-	-	1	
	PF1236-9520S	20' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	-	-	-	-	1	-	
	PF1236-958S	18' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	-	-	-	1	-	-	
	PF1236-956S	16' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	-	-	1	-	-	-	
	PF1236-954S	14' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	-	1	-	-	-	-	
	PF1236-953S	13' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	-	1	-	-	-	-	-	
	PF1236-952S	12' #2 CHAIN CONVEYOR IN-LIEU OF BELT OVER CHAIN	1	-	-	-	-	-	-	
2	PF1234-901	PINTLE CHAIN LINK, 667XH w/PIN & COTTER-NO PAINT	264	284	304	348	388	432	472	
3	PF1234-902	Pintle Chain w/Cotter Pin 1/2" x 2"	2	2	2	2	2	2	2	Includes Item 4
4	9391-023	Cotter Pin 1/8" x 1"	2	2	2	2	2	2	2	
5	PF1234-057	Decal, Repairing / Replacing Chain	1	1	1	1	1	1	1	
6	PF1236-904AR	Conveyor Bed Extension Abbrasive Resistant Material	1	1	1	1	1	1	1	
	PF1236-904SS	EXTENSION, FLOOR, STRAIGHT CHAIN, SS PRO	1	1	1	1	1	1	1	

Belt Over Pintle Chain Components

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



NOTE: Refer to "Chain Tension" in MAINTENANCE section for more details.

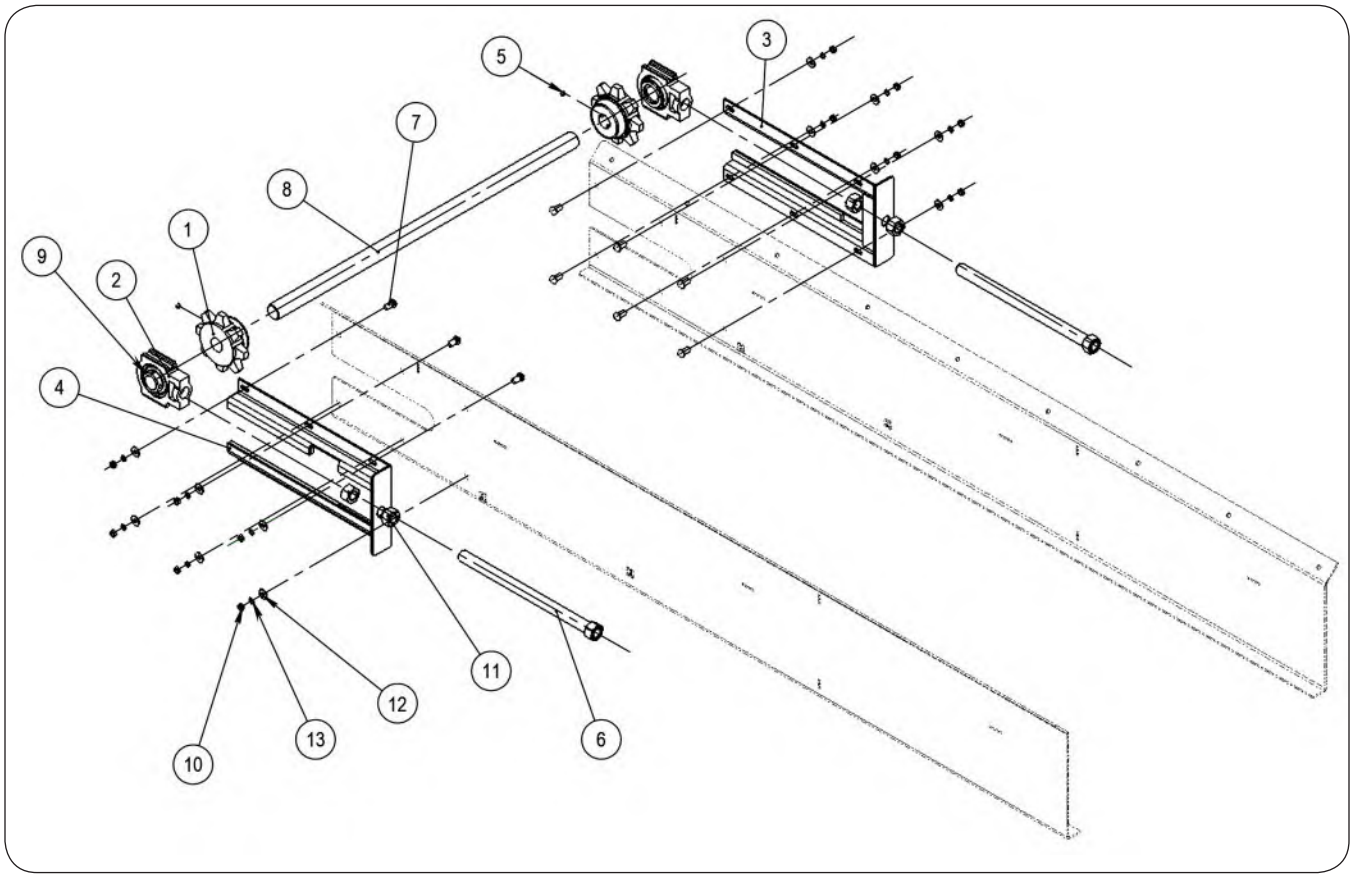
Belt Over Pintle Chain Components

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	26' BOX QTY	NOTES
1	415716	26' BOX Cleated BOC 34" Wide - Service Kit	-	-	-	-	-	-	-	1	
	415712	22' BOX Cleated BOC 34" Wide - Service Kit	-	-	-	-	-	-	1	-	
	415710	20' BOX Cleated BOC 34" Wide - Service Kit	-	-	-	-	-	1	-	-	
	415708	18' BOX Cleated BOC 34" Wide - Service Kit	-	-	-	-	1	-	-	-	
	415706	16' BOX Cleated BOC 34" Wide - Service Kit	-	-	-	1	-	-	-	-	
	415704	14' BOX Cleated BOC 34" Wide - Service Kit	-	-	1	-	-	-	-	-	
	415703	13' BOX Cleated BOC 34" Wide - Service Kit	-	1	-	-	-	-	-	-	
	415702	12' BOX Cleated BOC 34" Wide - Service Kit	1	-	-	-	-	-	-	-	
2	PF1000-4530	Splice Assembly, SS MS35, 30" Wide Belt	1	1	1	1	1	1	1	1	
3	PF1234-899	PINTLE CHAIN 667XH Stranded No Paint	264	286	304	348	388	434	474	550	
4	PF1234-902	Pintle Chain w/Cotter Pin 1/2" x 2"	2	2	2	2	2	2	2	2	Includes Item 5
5	9391-023	Cotter Pin 1/8" x 1"	2	2	2	2	2	2	2	2	
6	PF1000-29V	BELTING, V-Cleat, 2-PLY, 29" WIDE	25	27	29	34	37	41	45	54	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	225	
	9502318-146	BOLT, FLAT SOCKETHEAD 5/16" X 3/4" SS	110	120	125	150	160	180	195	225	
8	PFBOC3424-1A	Crossbar - 29 5/8" Apron Chain With Holes	22	24	25	30	32	36	39	45	
9	9009071	SPLICE CABLE 1/4" Dia. x 30" SS	1	1	1	1	1	1	1	1	Also Order Item 10
10	PF1000-45RW	Retaining Washer	2	2	2	2	2	2	2	2	
11	PF1234-057	Decal, Repairing / Replacing Chain	1	1	1	1	1	1	1	1	

Conveyor Idler Components

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



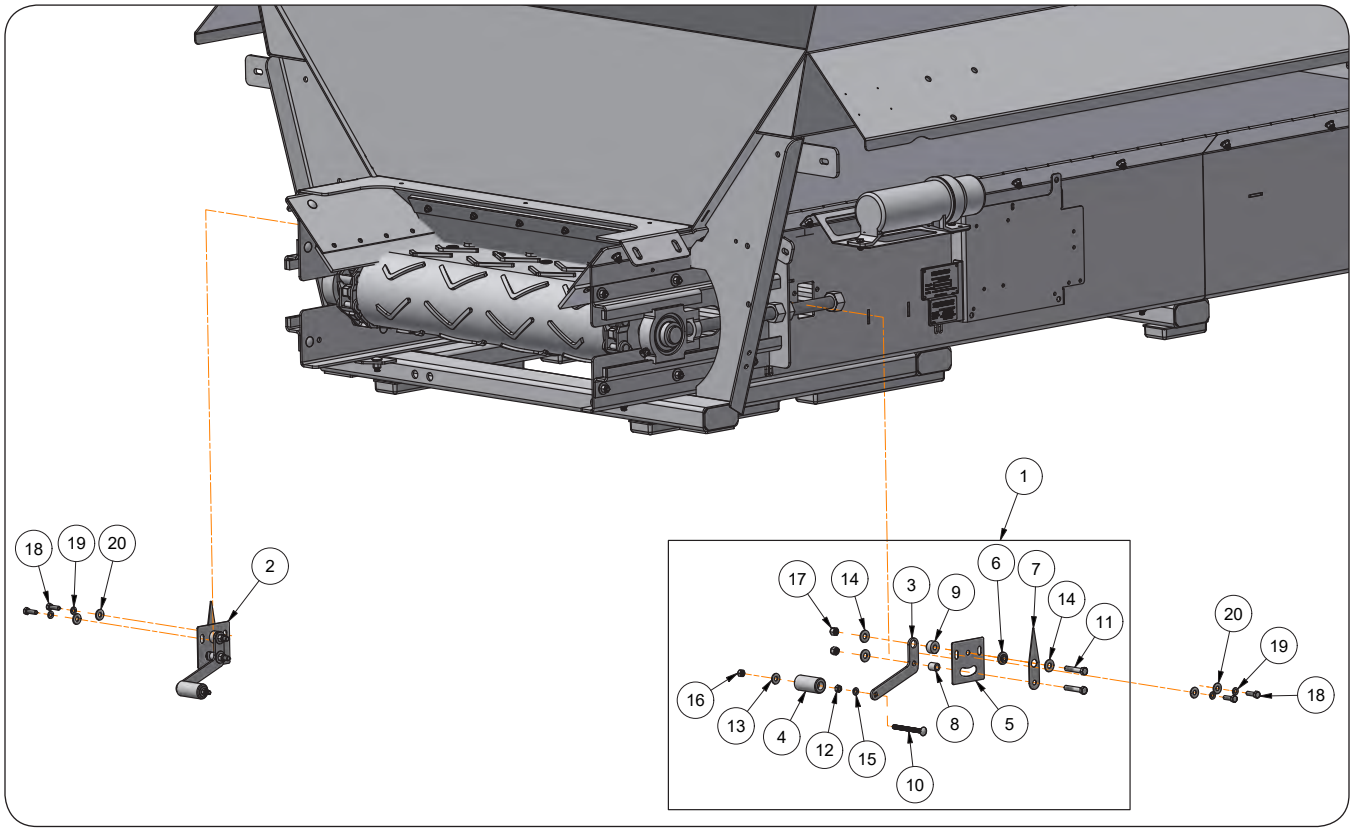
Conveyor Idler Components

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	

Chain Tension Indicator Assembly

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



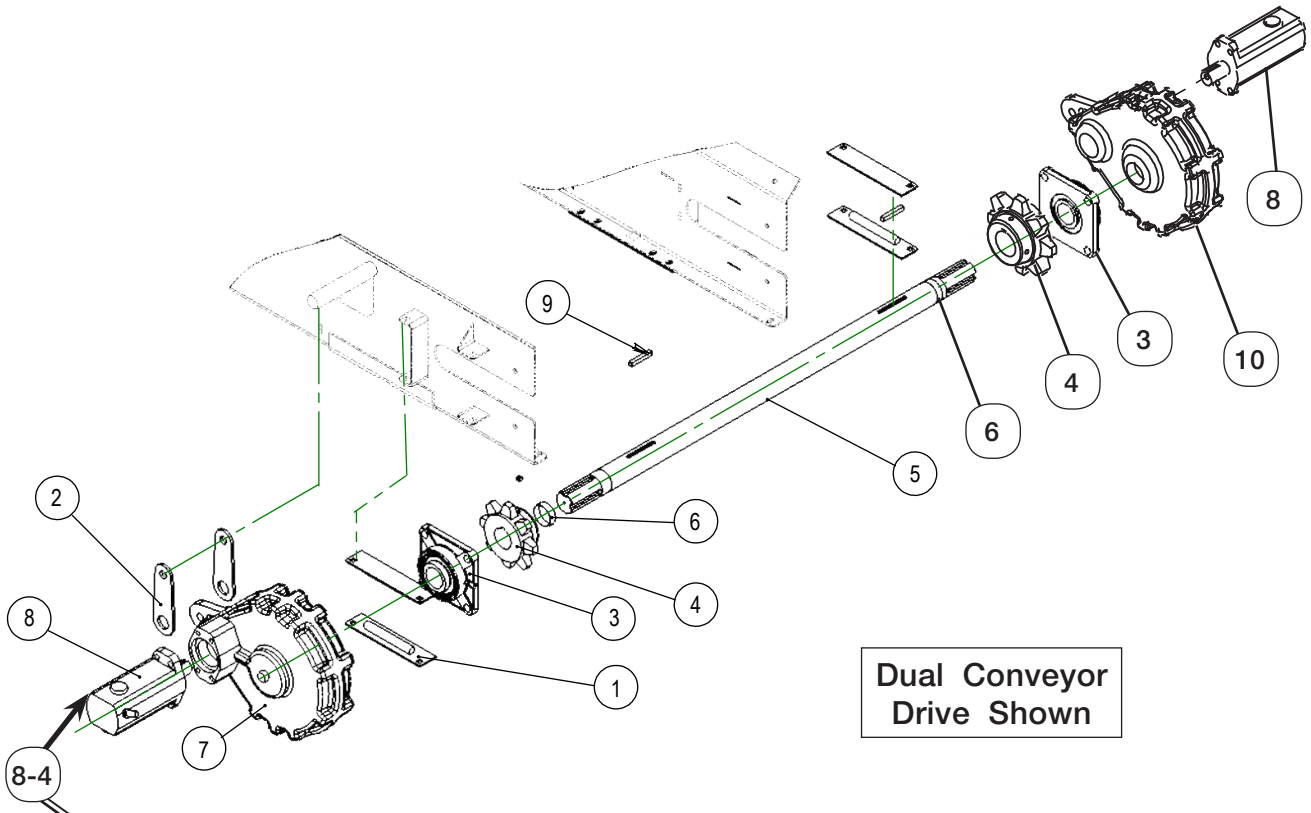
Chain Tension Indicator Assembly

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

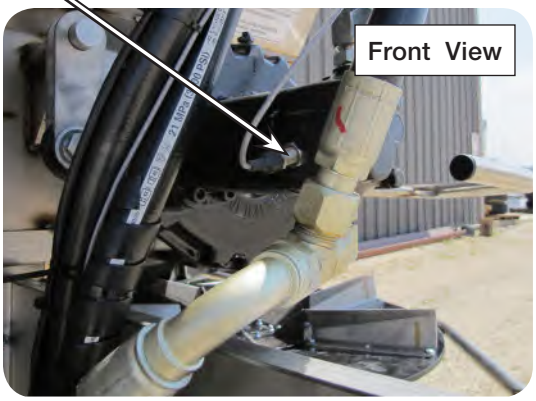
ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	416057	Chain Tension Indicator Assembly, Left-Hand	1	Includes Items 3-17
2	416058	Chain Tension Indicator Assembly, Right-Hand	1	
3	416012	Indicator Link Plate	1	
4	416013	Indicator Roller	1	
5	416014	Indicator Cover Plate	1	
6	416015	Indicator Linkage Bushing, 1.00" OD X 0.406" ID X 0.231"	1	
7	416031	Indicator Plate	1	
8	416032	Indicator Linkage Bushing, 0.625" OD X 0.406" ID X 0.715"	1	
9	416039	Indicator Linkage Bushing, 1.00" OD X 0.406" ID X 0.703"	1	
10	9007908-035	Carriage Bolt, 5/16"-18UNC X 3 1/2" SS	1	
11	900900-059	Capscrew, 3/8"-16UNC X 2" SS	2	
12	900901-004	Hex Nut, 5/16"-18UNC SS	1	
13	900902-035	Flat Washer, 5/16" SS	1	
14	900902-038	Flat Washer, 3/8" SS	3	
15	900903-019	Lock Washer, 5/16" SS	1	
16	900905-010	Elastic Stop Nut, 5/16"-18UNC SS	1	
17	900905-012	Elastic Stop Nut, 3/8"-16UNC SS	2	
18	900900-030	Capscrew, 5/16"-18UNC X 1" SS	4	
19	900903-019	Lock Washer, 5/16" SS	4	
20	900902-035	Flat Washer, 5/16" SS	4	

Conveyor Drive Components

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



Dual Conveyor Drive Shown



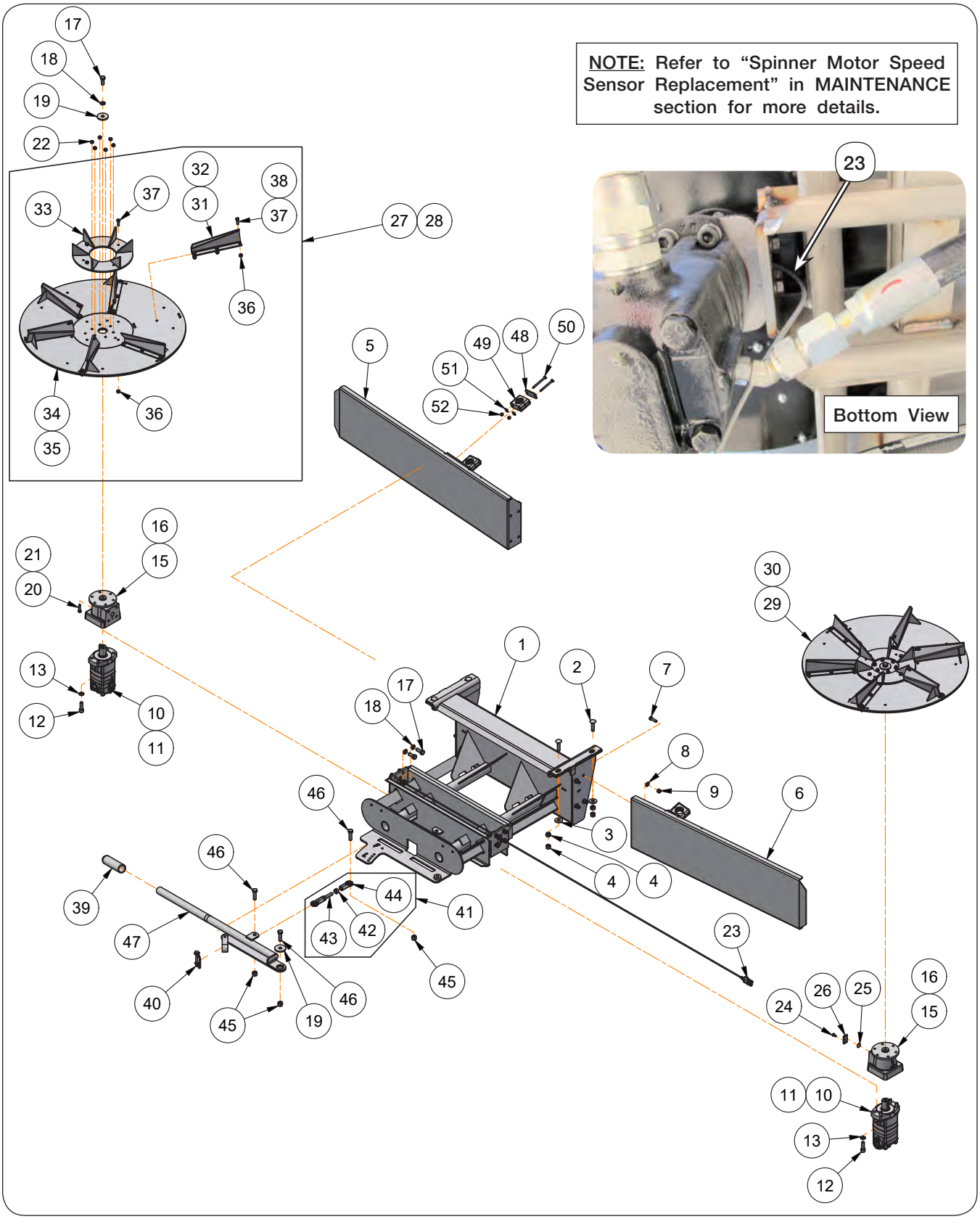
Conveyor Drive Components

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	9007908-051	Carriage Bolt, 3/8"-16UNC 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	900900-147	Capscrew 3/4"-10UNC x 2 1/2" SS	1	2	
2-2	900905-021	Elastic Locknut 3/4"-10UNC SS	1	2	
2-3	900902-053	Flat Washer 3/4" SS	2	4	
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	PF1220-50MB	Left-Hand Gearbox (Black)	1	1	Requires Items: 7-1 See "Gearbox & Hydraulic Motor Assembly" For Parts
7-1	PF1220-495	Square Key 1/2" x 2 1/4"	2	2	
8	PF1213-145B	Hydraulic Motor w/Sensor (Black) **(Single Gearbox Option)**	1	-	Requires Items: 8-1, 8-2, 8-3, 8-4, 8-5
	PF1213-143B				Requires Items: 8-1, 8-2, 8-3, 8-4, 8-5 For 1150 & 1250 Chassis Mounted Units
	PF1213-18B	Hydraulic Motor w/Sensor (Drivers Side) (Black) **(Double Gearbox Option)**	-	1	Requires Items: 8-1, 8-2, 8-3, 8-4, 8-5
	PF1213-19B	Hydraulic Motor w/o Sensor (Passengers Side) **(Double Gearbox Option)** (Black)	-	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	
10	415519B	Right-Hand Gearbox (Black)	-	1	

Spinner Assembly Components

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



Spinner Assembly Components

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1218-002	Spinner Assembly	1	For 2650 to 1350 Chassis Mounted Units
	414882B	Spinner Assembly 30" Single Dish =Black=		Includes Items 1-10, 12-19, 21-26, 28, 30 for 1250 & 1150 Chassis Mounted Units
1	PF1236-301	Spinner Weldment SS	1	
2	9007908-106	Carriage Bolt, 1/2"-13UNC x 2" SS	4	
3	900902-044	Flat Washer 1/2" SS	4	
4	900901-010	Hex Nut 1/2"-13UNC SS	8	
5	PF1234-108LH	Wide Deflector Weldment Left-Hand SS	1	
6	PF1234-108RH	Wide Deflector Weldment Right-Hand SS	1	
7	900900-056	Capscrew 3/8"-16UNC x 1 1/4" SS	16	
8	900902-037	Flat Washer 3/8" SS	16	
9	900905-012	Elastic Stop Nut 3/8"-16UNC	16	
10	PF1213-206B	Hydraulic Motor	2	For 2650 to 1350 Chassis Mounted Units
11	9008923B			For 1250 & 1150 Chassis Mounted Units
12	PF1200-403	Socket Head Capscrew 1/2"-13UNC x 1 1/2"	8	
13	9404-025	Lock Washer 1/2"	8	
14	PF1213-145SK	Seal Kit	1	Not Shown
15	PF1218-732B	Jackshaft w/Sensor	2	For SN B42940100 & Higher (Both Sides)
			1	For SN B42940099 & Lower (Only)
16	PF1218-722B	Jackshaft w/o Sensor, Right-Hand Spinner	1	For SN B42940099 & Lower
17	900900-100	Capscrew 1/2"-13UNC x 1 1/4" SS	10	
18	900903-025	Lock Washer 1/2" SS	10	
19	PF1218-06	Washer, Spinner Arm 2" Dia. SS	3	
20	900900-031	Capscrew 5/16"-18UNC x 1 1/4" SS	12	For 2650 to 1350 Chassis Mounted Units
21	900900-030	Capscrew 5/16"-18UNC x 1" SS	12	For 1250 & 1150 Chassis Mounted Units
22	900905-010	Elastic Stop Nut 5/16"-18UNC	12	
23	415184	Spinner Speed Sensor Replacement Kit	1	
24	900900-001	Capscrew, 1/4"-20UNC x 1/2" SS	1	For SN B42940100 & Higher
25	9009604	O-Ring 0.816" OD	1	For SN B42940100 & Higher
26	PF1218-735C	Sensor Cover Plate	1	For SN B42940100 & Higher
27	PF1218-350L	30" Spinner Dish LH W/Fins	1	Includes Items 31, 33, 34, 36 & 37 For 2650 to 1350 Chassis Mounted Units
28	414883B	30" Spinner Dish LH	1	Includes Items 31, 33, 35-38 For 1250 Chassis Mounted Units
29	PF1218-350R	30" Spinner Dish RH W/Fins	1	Includes Items 32-34, 36 & 37 For 2650 to 1350 Chassis Mounted Units
30	414884B	30" Spinner Dish RH	1	Includes Items 32, 33, 35-38 For 1250 Chassis Mounted Units
31	415294	Fin Weldment Left Hand	6	For Item #27 & #28 Only
32	415295	Fin Weldment Right Hand	6	For Item #29 & #30 Only
33	PF1218-351B	30" Spinner Dish Ring Weldment =Black=	1	
34	PF1218-350WB	30" Spinner Dish Weldment =Black=	1	For 2650 to 1350 Chassis Mounted Units
35	PF1218-350B	Universal 30" Spinner Dish Weldment =Black=	1	For 1250 Chassis Mounted Units
36	900905-010	Elastic Stop Nut 5/16"-18UNC	22	
37	900900-030	Capscrew 5/16"-18UNC x 1 1/4" SS	22	For 2650 to 1350 Chassis Mounted Units
			4	For 1250 Chassis Mounted Units
38	900900-028	Capscrew 5/16"-18UNC x 3/4" SS	18	For 1250 Chassis Mounted Units

(Continued on next page)

Spinner Assembly Components

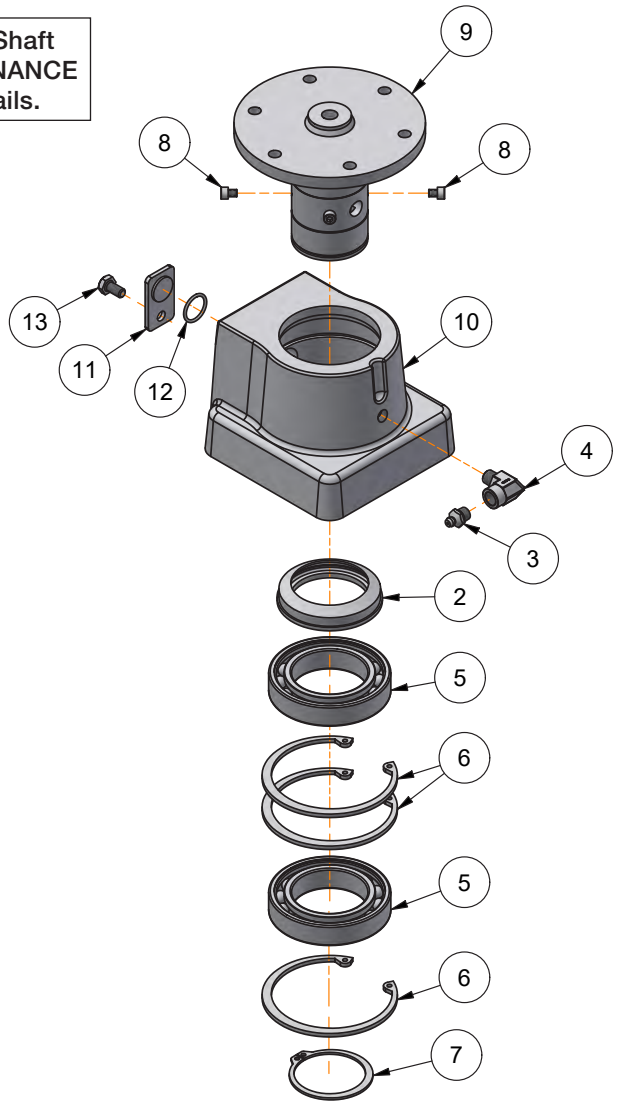
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
39	PF1218-01	Foam Grip	1	
40	PF1218-04	Safety Pin SS	1	
41	414891	Spinner Adjuster Rod Assembly	1	
42	9394-009	Hex Nut 1/2"-20UNF G5	2	
43	414892	Threaded Rod 1/2"Dia. x 3" x 1/2"-20UNF SS	1	
44	PF1218-02	Ball Joint Rod End, 1/2"-20UNF SS	2	
45	900905-016	Elastic Stop Nut 1/2"-13UNC	3	
46	900900-102	Capscrew 1/2"-13UNC x 1 3/4" SS	3	
47	PF1218-03	Spinner Adjustment Handle Weldment	1	
48	414701	Top Plate Hose Clamp	3	
49	9009026	Single Hose Clamp 1 1/2" Dia.	3	
50	900900-013	Capscrew, 1/4"-20UNC x 3" SS	6	For SN B44470100 & Higher
51	900902-032	Flat Washer 1/4" SS	6	
52	900905-007	Elastic Stop Nut, 1/4"-20UNC SS	6	

Jack Shaft Assembly Components

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

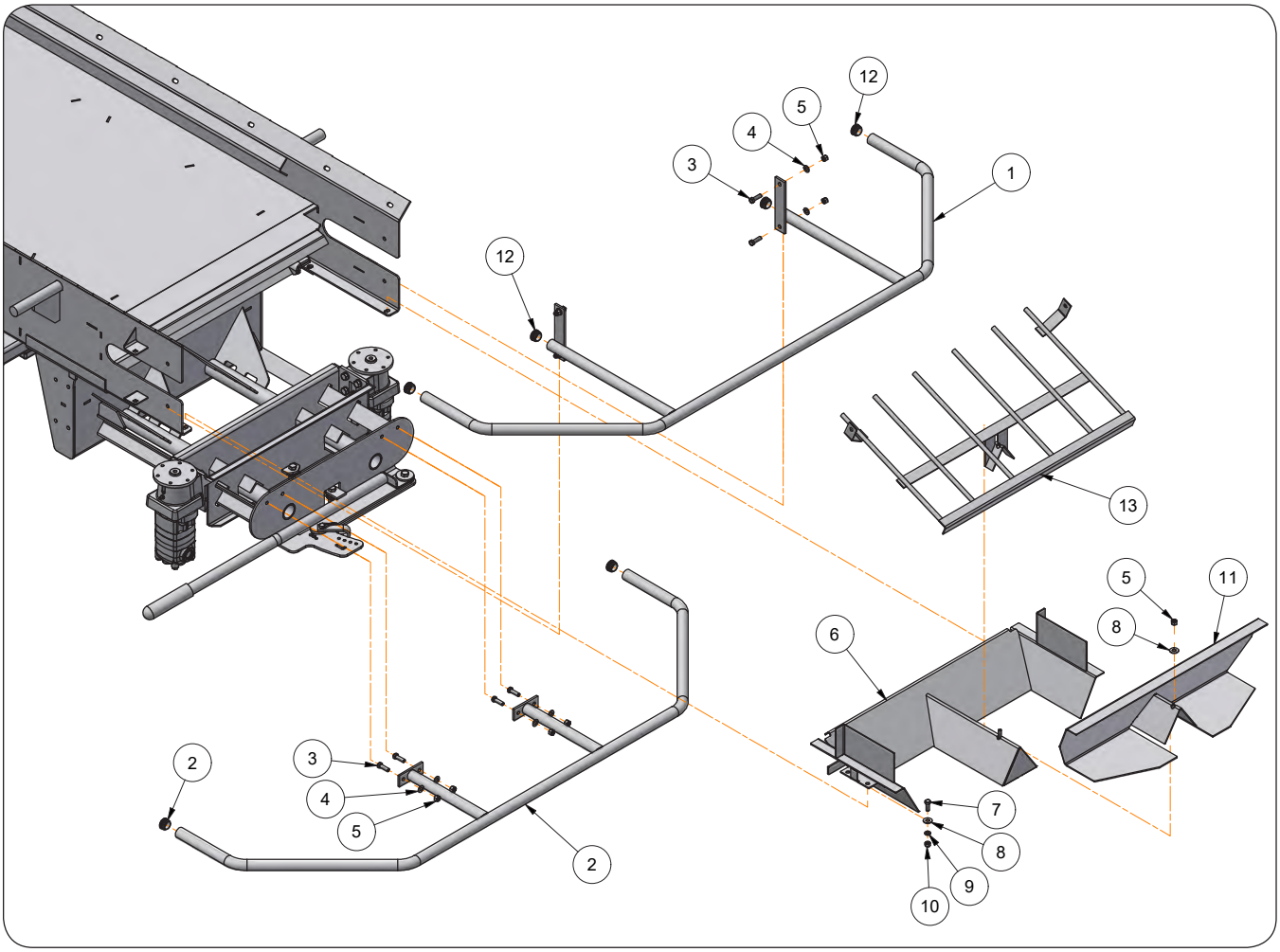
NOTE: Refer to "Jack Shaft Disassembly" in MAINTENANCE section for more details.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1218-732B	Jack Shaft w/Sensor Mount =Black=	1	Includes Items 2 - 10
2	PF1204-06	Jack Shaft Oil Seal	1	
3	93426	Grease Zerk	1	
4	9006817	90 Deg. Elbow Street Adapter, 1/8"-27 NPTM	1	
5	PF1217-104	Ball Bearing	2	
6	PF1208-05	Internal Snap Ring, 3 1/8" Bore Dia.	3	
7	PF1208-06	External Snap Ring, 2" OD	1	
8	PF1200-245	Socket Head Capscrew 10-24 x 1/4"	4	
9	414860	Jack Shaft Hub, 30" Disk	1	
10	PF1218-732H	Jack Shaft Machined Housing w/Sensor Mount	1	
11	PF1218-735C	Sensor Cover Plate	1	
12	9009604	O-Ring	1	
13	900900-001	Capscrew 1/4"-20 x 1/2" SS	1	

Spinner Guards, Flow Divider, & Chunk Deflector Components

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



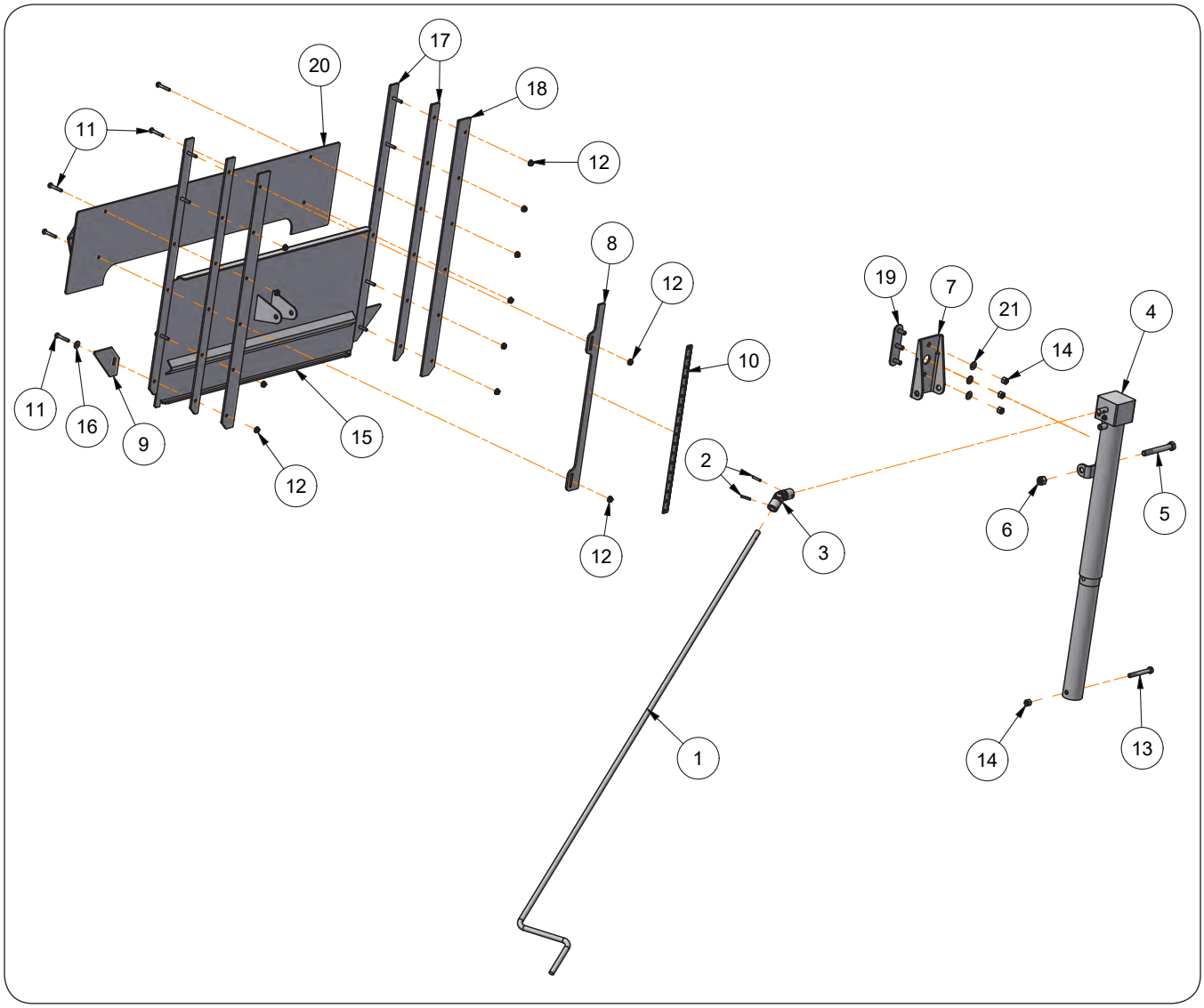
Spinner Guards, Flow Divider, & Chunk Deflector Components

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	Includes Item 13
2	PF1236-308	Spinner Guard Lower Weldment	1	
3	900900-056	Capscrew 3/8"-16UNC x 1 1/4" SS	8	
4	900902-037	Flat Washer 3/8" SS	8	
5	900905-012	Elastic Stop Nut 3/8"-16UNC SS	9	
6	PF1236-402	Front Plate Flow Divider Weldment	1	
7	900900-055	Capscrew 3/8"-16UNC x 1" SS	2	
8	900902-038	Flat Washer 3/8" SS	3	
9	900903-021	Lock Washer 3/8" SS	2	
10	900901-006	Hex Nut 3/8"-16UNC SS	2	
11	PF1236-403	Back Plate Flow Divider Weldment	1	
12	PF1218-05	Poly Tube Plug 1 1/4" OD	6	
13	PF1236-303	Chunk Deflector Weldment	1	For 1450 and Larger Units

Feedgate Assembly Components - For SN B45470100 & Higher

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



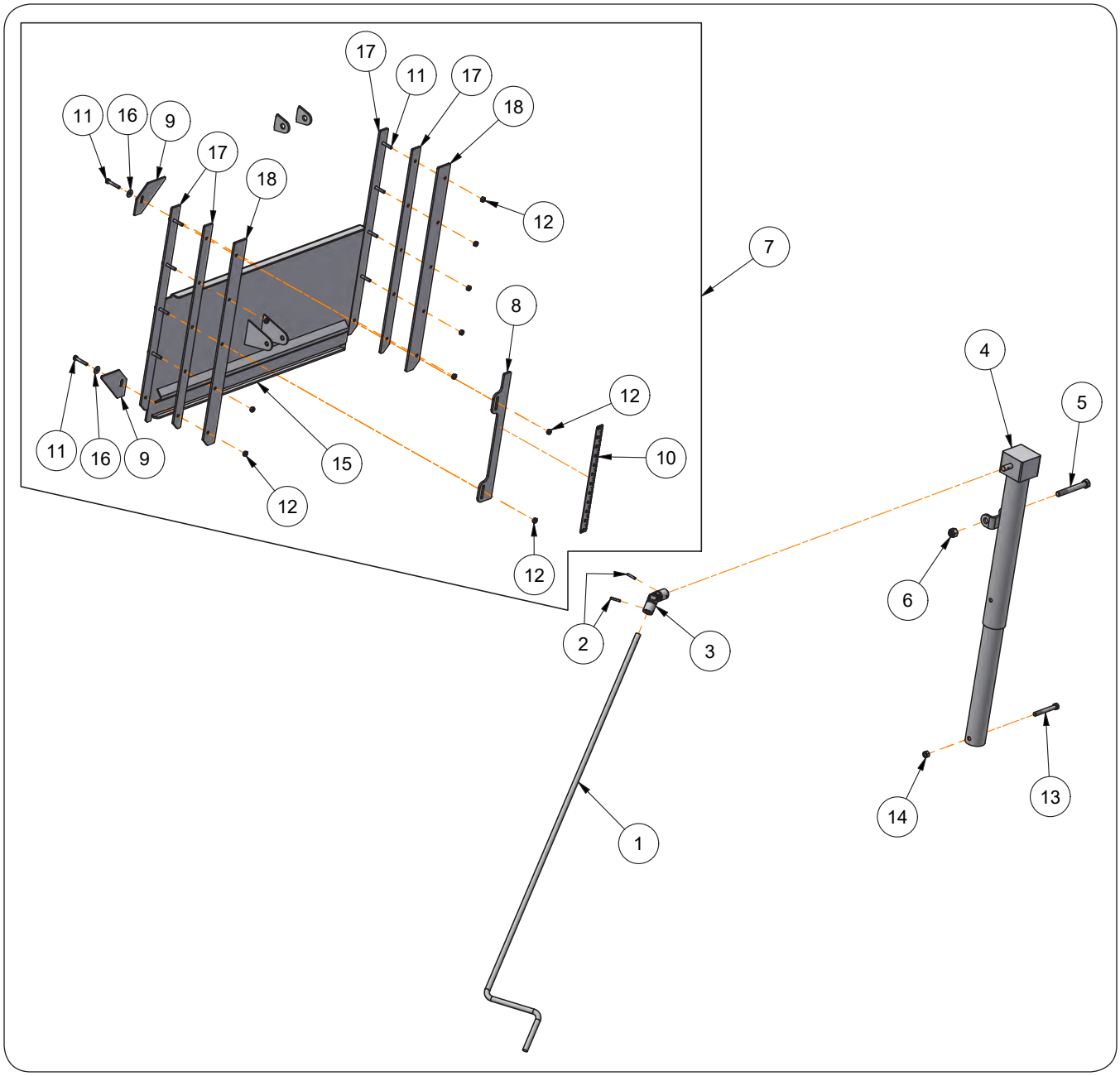
Feedgate Assembly Components - For SN B45470100 & Higher

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1218-81LTD	FEEDGATE JACK HANDLE, 1/2" RD x 58 1/2" 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	416671	JACK MOUNT	1	
8	413828	FEEDGATE INDICATOR PLATE	1	
9	415236	CHAINSHIELD COVER PLATE	2	
10	9010124	FEEDGATE INDICATOR DECAL 18"	1	
11	900900-007	CAPSCREW, 1/4"- 20UNC X 1 1/2" SS	12	
12	9004720	SERRATED FLANGE NUT, 1/4"-20UNC SS	12	
13	900900-063	CAPSCREW, 3/8"-16UNC X 3" SS	1	
14	900905-012	ELASTIC STOP NUT, 3/8"-16UNC SS	4	
15	416608	FEEDGATE WELDMENT, SS	1	
16	900902-032	FLAT WASHER, 1/4" SS	2	
17	416669	FEEDGATE GUIDE SPACER	4	
18	416670	FEEDGATE GUIDE	2	
19	416995	JACK MOUNT WELDMENT	1	
20	416673	FEEDGATE BAFFLE WELDMENT	1	
21	900902-037	FLAT WASHER, 3/8" SS	3	

Feedgate Assembly Components - For SN B45470099 & Lower

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



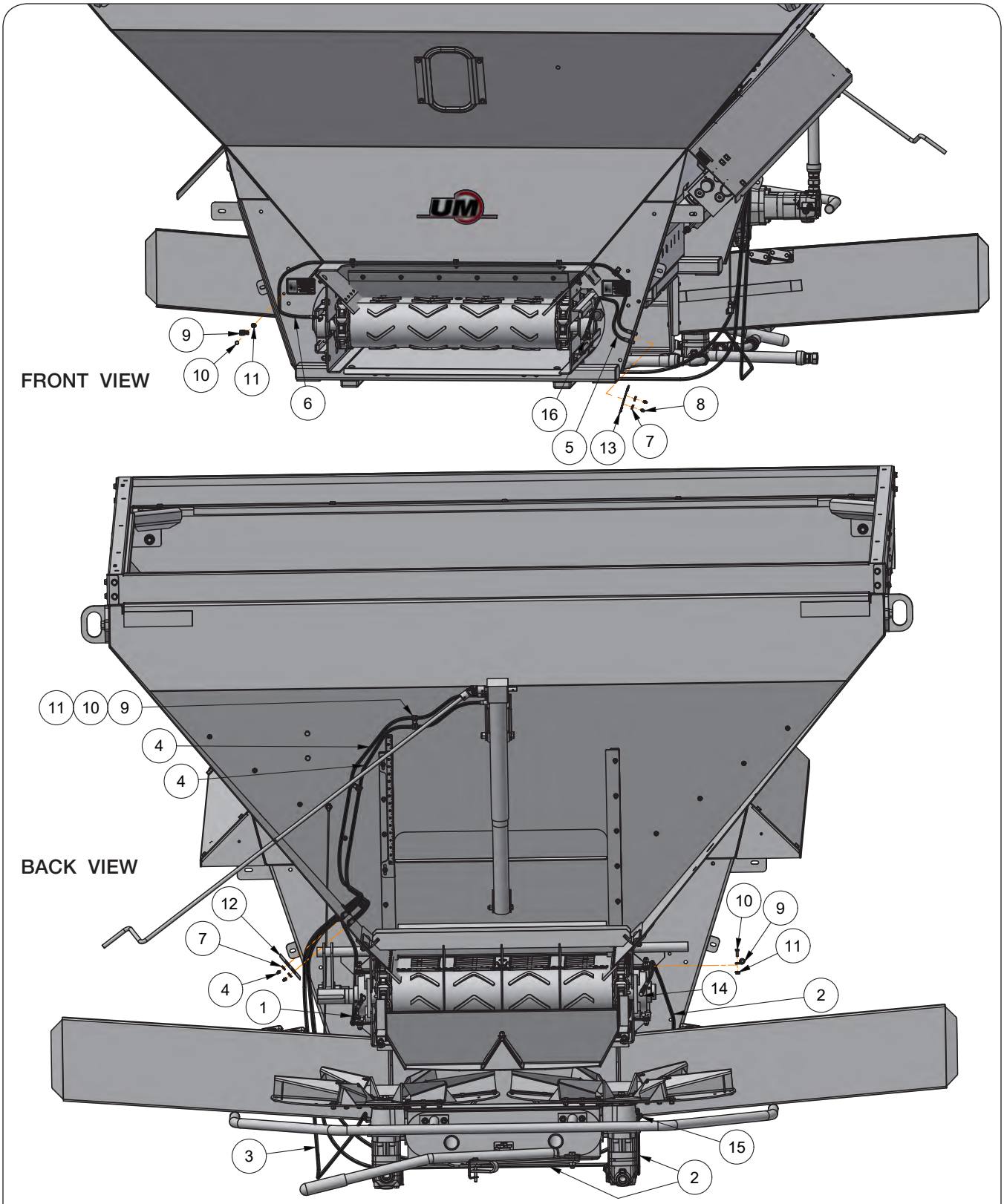
Feedgate Assembly Components - For SN B45470099 & Lower

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 46" 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 - 18
8	415185	FEEDGATE INDICATOR PLATE	1	
9	415236	CHAINSHIELD COVER PLATE	2	
10	9009074	FEEDGATE INDICATOR DECAL 12"	1	
11	900900-007	CAPSCREW, 1/4"- 20UNC X 1 1/2" SS	10	
12	9004720	SERRATED FLANGE NUT, 1/4"-20UNC SS	10	
13	900900-063	CAPSCREW, 3/8"-16UNC X 3" SS	1	
14	900905-012	ELASTIC STOP NUT, 3/8"-16UNC SS	1	
15	PF1236-350	FEEDGATE SOLID REAR PANEL WELDMENT, SS	1	
16	900902-032	FLAT WASHER, 1/4" SS	2	
17	415162	FEEDGATE GUIDE SPACER	4	
18	415163	FEEDGATE GUIDE	2	

Conveyor, Spinners, Jack Shaft, Feedgate Jack Grease Bank Components

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



NOTE: For more grease bank details, refer to "Lubrication" in the MAINTENANCE section.

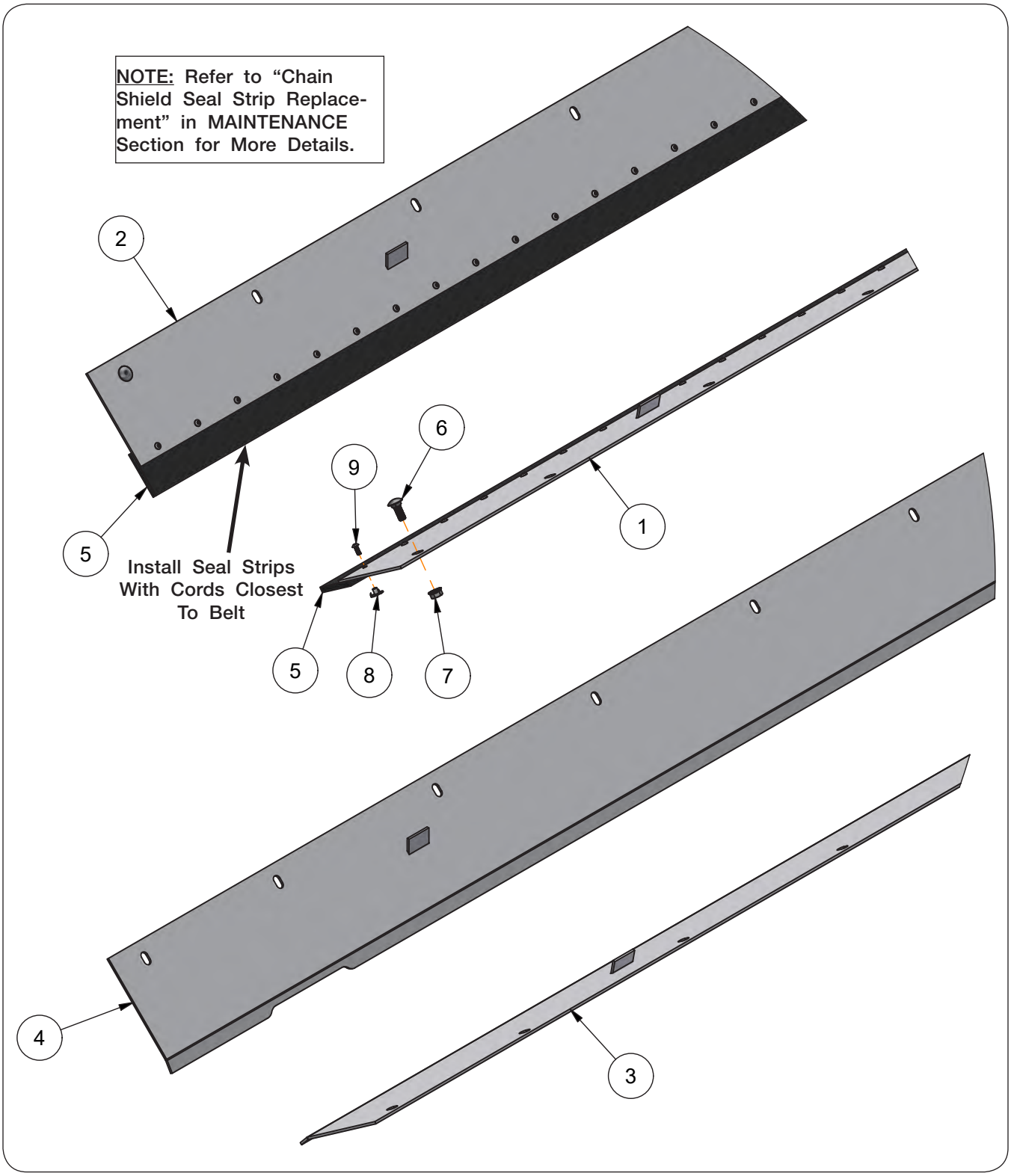
Conveyor, Spinners, Jack Shaft, Feedgate Jack Grease Bank Components

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	9009894	Grease Hose w/Grease Zerk 1/8" x 44" (1/8" NPT) (SS)	1	Left-Hand Conveyor Drive Bearing
2	9009899	Grease Hose w/Grease Zerk 1/8" x 132" (1/8" NPT) (SS)	2	Right-Hand Conveyor Drive Bearing And Right-Hand Spinner-Jack Shaft
3	9009898	Grease Hose w/Grease Zerk 1/8" x 90" (1/8" NPT) (SS)	1	Left-Hand Spinner-Jack Shaft
4	9009895	Grease Hose w/Grease Zerk 1/8" x 50" (1/8" NPT) (SS)	2	Feedgate Jack Gears And Tube
5	9009891	Grease Hose w/Grease Zerk 1/8" x 20" (1/8" NPT) (SS)	1	Left-Hand Conveyor Idler Bearing
6	9009897	Grease Hose w/Grease Zerk 1/8" x 74" (1/8" NPT) (SS)	1	Right-Hand Conveyor Idler Bearing
7	9009900	Hex Panel Nut, 1/8"-27 NPT (SS)	8	
8	9501603	Grease Zerk (SS)	8	
9	9009473	Cable Clamp, 3/8" Dia. x 1/2" (SS)	11	
10	900900-003	Capscrew, 1/4"-20UNC x 3/4" (SS)	9	
11	9004720	Hex Flange Nut, 1/4"-20UNC (SS)	9	
12	9009417	Decal, Grease Bank	1	
13	9009461	Decal, Grease Bank Conveyor Idler Bearings	1	
14	9006785	90° Adapter 1/8" NPT	2	
15	9006817	90° Street Elbow Adapter 1/8" NPT	2	
16	9009913	90° Elbow Adapter 1/8" NPTF x 1/4" UNFM	2	

Chain Shield

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



Chain Shield

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

ITEM	PART NUMBER	DESCRIPTION	11' BOX QTY	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
	PF1234-912ASSY	CHAIN SHIELD ASSEMBLY, RH (Belt Over Chain)	1	1	-	-	-	-	-	-	-	
	PF1234-913ASSY		-	-	1	-	-	-	-	-	-	
	PF1234-914ASSY		-	-	-	1	-	-	-	-	-	
	PF1236-916ASSY		-	-	-	-	1	-	-	-	-	
	PF1234-918ASSY		-	-	-	-	-	1	-	-	-	
	PF1236-920ASSY		-	-	-	-	-	-	1	-	-	
	PF1236-922ASSY		-	-	-	-	-	-	-	1	-	
	PF1236-926ASSY		-	-	-	-	-	-	-	-	1	
	414594	CHAIN SHIELD ASSEMBLY, LH (Belt Over Chain)	1	1	-	-	-	-	-	-	-	
	415349		-	-	1	-	-	-	-	-	-	
	414391		-	-	-	1	-	-	-	-	-	
	414592		-	-	-	-	1	-	-	-	-	
	414577		-	-	-	-	-	1	-	-	-	
	415352		-	-	-	-	-	-	1	-	-	
	414627		-	-	-	-	-	-	-	1	-	
	415003		-	-	-	-	-	-	-	-	1	
1	PF1234-912	WELDMENT, CHAIN SHIELD, SS, RH (Belt Over Chain)	1	1	-	-	-	-	-	-	-	
	PF1234-913		-	-	1	-	-	-	-	-	-	
	PF1234-914		-	-	-	1	-	-	-	-	-	
	PF1236-916		-	-	-	-	1	-	-	-	-	
	PF1236-918		-	-	-	-	-	1	-	-	-	
	PF1236-920		-	-	-	-	-	-	1	-	-	
	PF1236-922		-	-	-	-	-	-	-	1	-	
	PF1236-926		-	-	-	-	-	-	-	-	1	
2	414593	WELDMENT, CHAIN SHIELD, SS, LH (Belt Over Chain)	1	1	-	-	-	-	-	-	-	
	415348		-	-	1	-	-	-	-	-	-	
	414390		-	-	-	1	-	-	-	-	-	
	414591		-	-	-	-	1	-	-	-	-	
	414576		-	-	-	-	-	1	-	-	-	
	415351		-	-	-	-	-	-	1	-	-	
	414626		-	-	-	-	-	-	-	1	-	
	415002		-	-	-	-	-	-	-	-	1	
3	PF1234-932	WELDMENT, SS CHAIN SHIELD RH (Chain Only)	1	1	-	-	-	-	-	-	-	
	PF1234-933		-	-	1	-	-	-	-	-	-	
	PF1234-934		-	-	-	1	-	-	-	-	-	
	PF1236-936		-	-	-	-	1	-	-	-	-	
	PF1236-938		-	-	-	-	-	1	-	-	-	
	PF1236-940		-	-	-	-	-	-	1	-	-	
	415585		-	-	-	-	-	-	-	1	-	
	PF1236-946		-	-	-	-	-	-	-	-	1	
4	PF1234-932-L	WELDMENT, SS CHAIN SHIELD LH (Chain Only)	1	1	-	-	-	-	-	-	-	
	PF1234-933-L		-	-	1	-	-	-	-	-	-	
	PF1234-934LH		-	-	-	1	-	-	-	-	-	
	PF1236-936-L		-	-	-	-	1	-	-	-	-	
	PF1236-938-L		-	-	-	-	-	1	-	-	-	
	PF1236-940-L		-	-	-	-	-	-	1	-	-	
	415584		-	-	-	-	-	-	-	1	-	
	PF1236-946-L		-	-	-	-	-	-	-	-	1	

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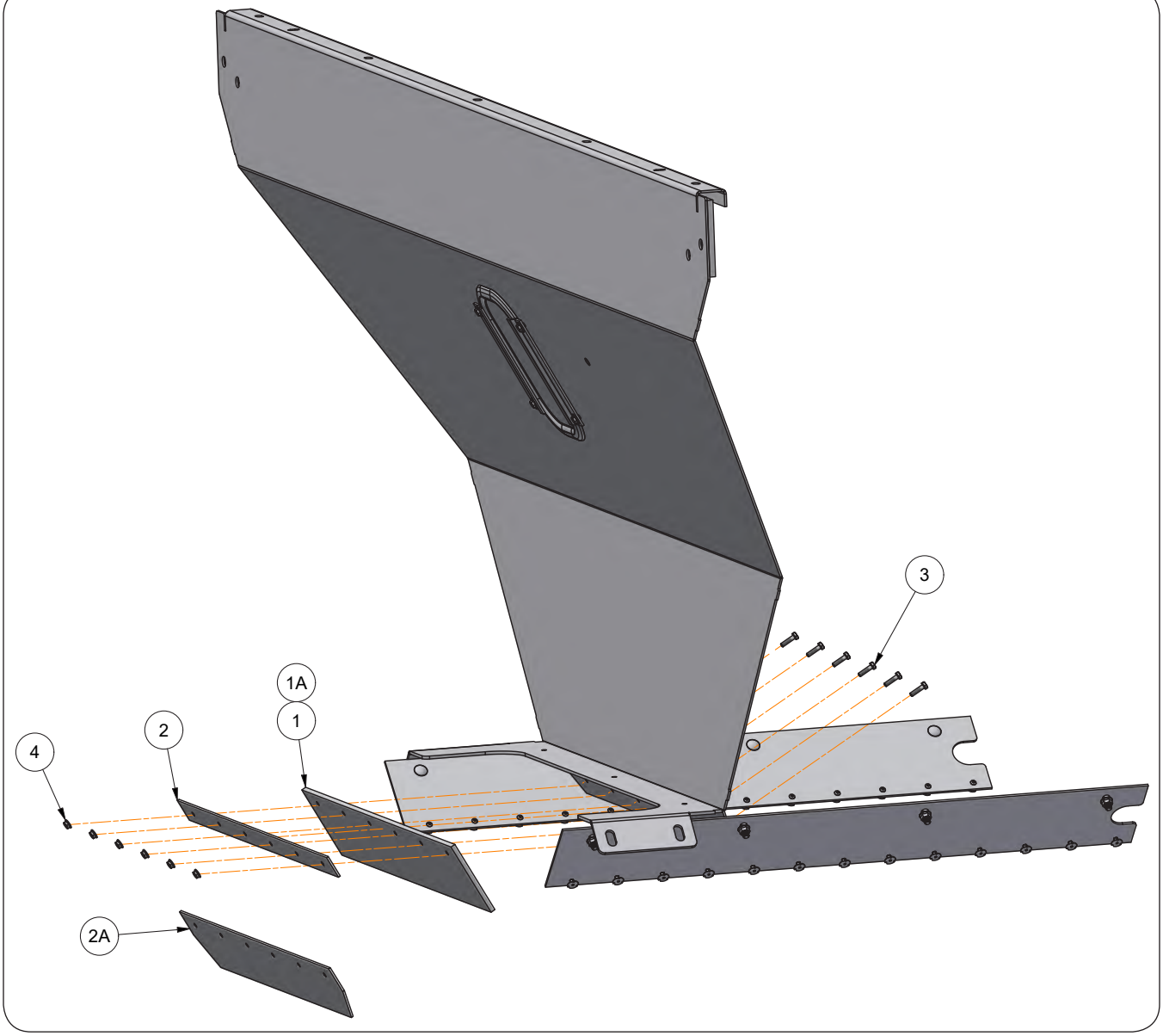
Chain Shield (continued)

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

ITEM	PART NUMBER	DESCRIPTION	11' BOX QTY	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
5	414845	Standard Seal Strips, 2 5/8" x 12'	2	2	-	-	-	-	-	-	-	
	415347	Standard Seal Strips, 2 5/8" x 13'	-	-	2	-	-	-	-	-	-	
	414846	Standard Seal Strips, 2 5/8" x 14'	-	-	-	2	-	-	-	-	-	
	414847	Standard Seal Strips, 2 5/8" x 16'	-	-	-	-	2	-	-	-	-	
	414848	Standard Seal Strips, 2 5/8" x 18'	-	-	-	-	-	2	-	-	-	
	415350	Standard Seal Strips, 2 5/8" x 20'	-	-	-	-	-	-	2	-	-	
	414849	Standard Seal Strips, 2 5/8" x 22'	-	-	-	-	-	-	-	2	-	
	414850	Standard Seal Strips, 2 5/8" x 26'	-	-	-	-	-	-	-	-	2	
6	9007908-051	BOLT, CARRIAGE 3/8"-16UNC X 1" SS	28	28	30	32	36	40	44	48	56	
7	9005640	FLANGE NUT 3/8"-16UNC (SS)	28	28	30	32	36	40	44	48	56	
8	PF1205-86	Tee Prong Nut 10-24 X 5/16"	104	104	112	120	136	152	168	184	216	For Belt Over Chain
9	PF1200-086SS	Button Head Socket Capscrew, 10-24 X 1/2" SS	104	104	112	120	136	152	168	184	216	

Front Belt Sealer

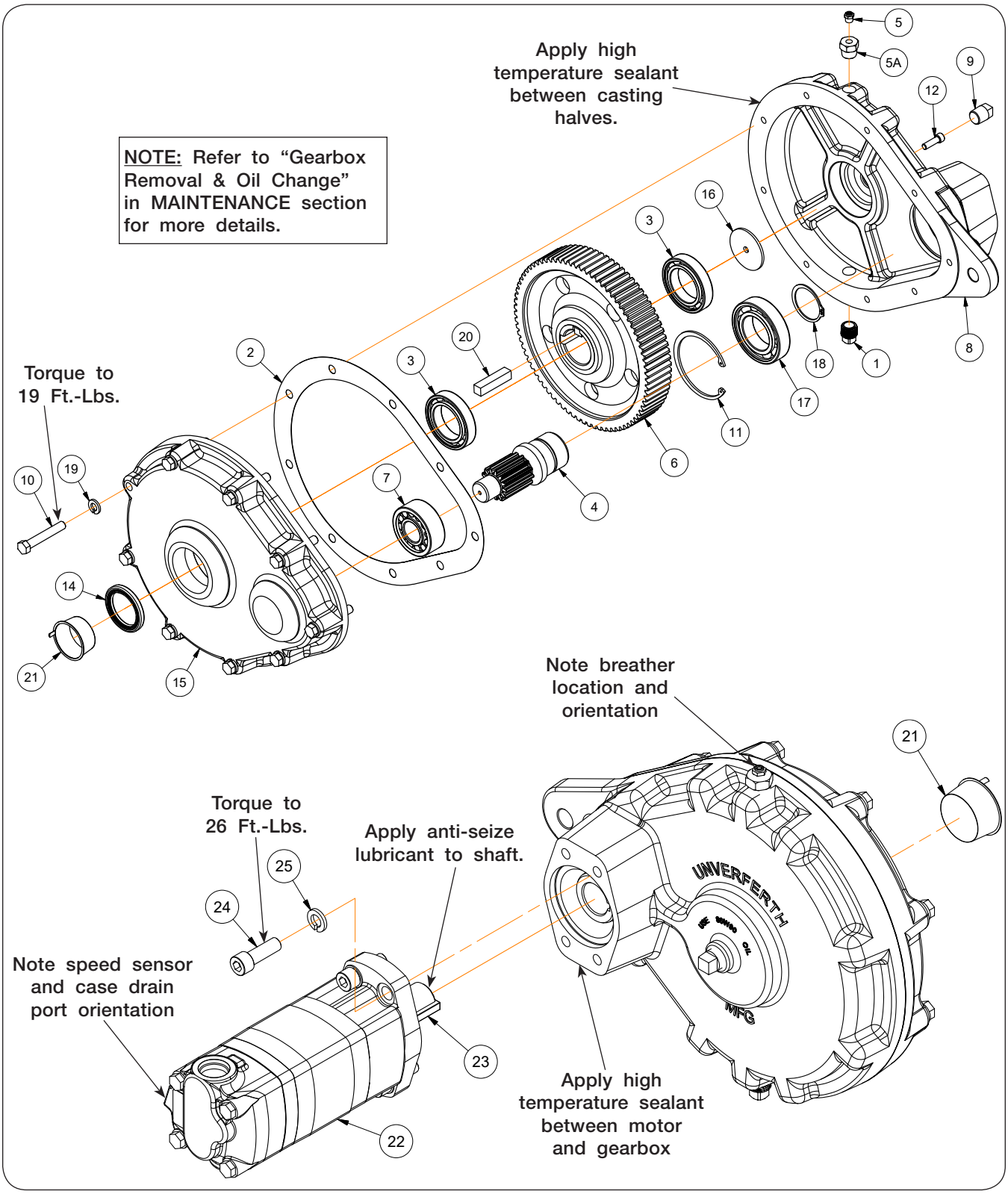
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF70-053	Front Belt Sealer Strip - For Units w/Belt Over Chain	1	
1A	PF70-053-2	Front Belt Sealer Strip - For Units w/Straight Chain	1	
2	PF70-089	Back Plate For Units w/Belt Over Chain	1	
2A	PF70-089-1	Back Plate For Units w/Straight Chain	1	
3	900900-005	Capscrew, 1/4"- 20UNC X 1" SS	6	
4	9004720	Serrated Flange Nut, 1/4"-20UNC SS	6	

Gearbox & Hydraulic Motor Assembly

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



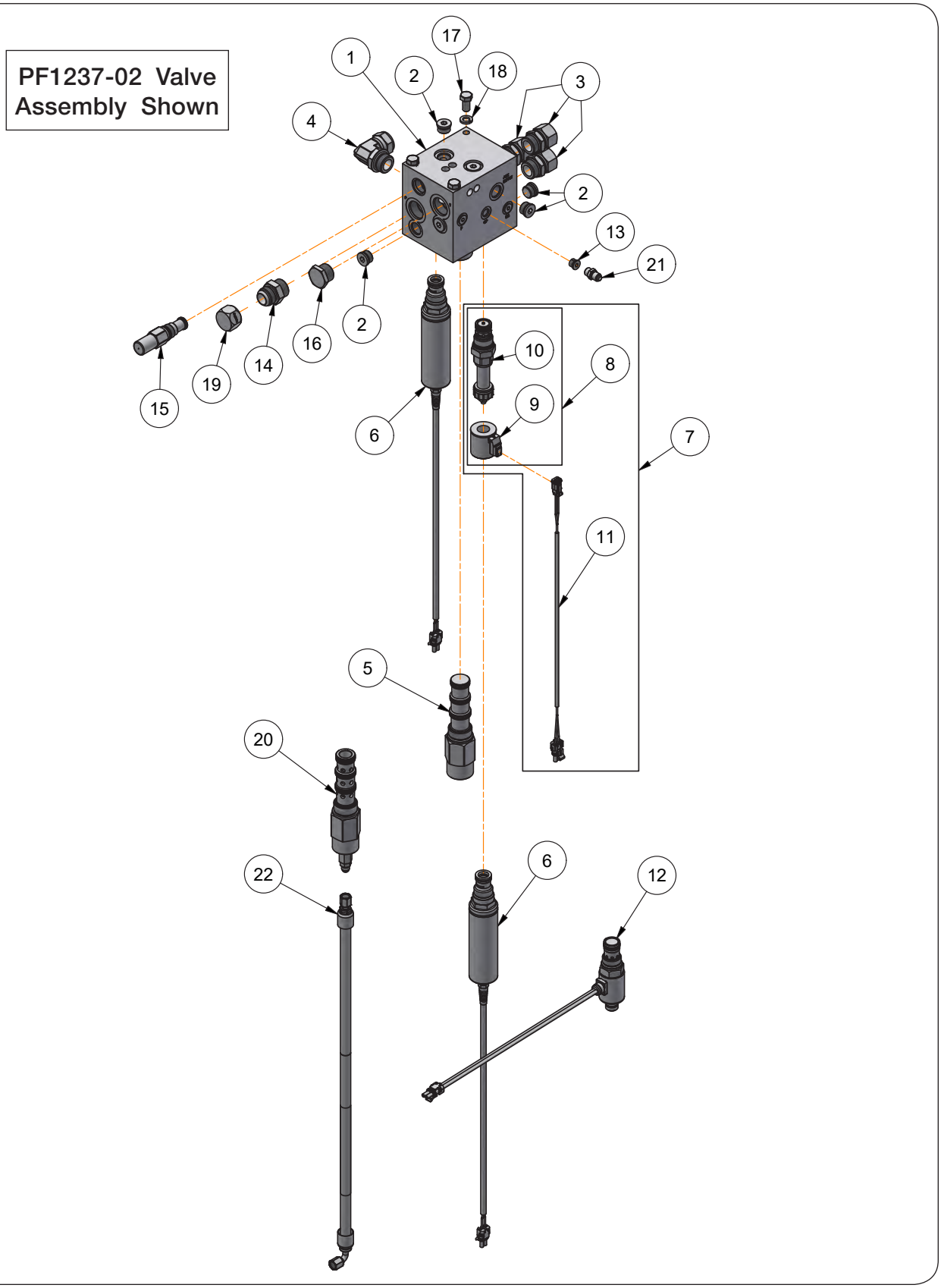
Gearbox & Hydraulic Motor Assembly

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1220-50MB	Left-Hand Gearbox (Black)	1	Includes Items 1 - 21 (Single and Dual Drive)
	415519B	Right-Hand Gearbox (Black)	1	Includes Items 1 - 21 (Dual Drive Only)
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	PF1220-50O	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	PF1220-495	Square Key 1/2" x 2 1/4"	2	For Each Gearbox
21	9008837	Tapered Plastic Plug	1	
22	PF1213-145B	Hydraulic Motor w/Sensor **(Single Gearbox Option)**	1	Requires Items: 23 - 27 (Refer to Conveyor Drive Section)
	PF1213-143B			Requires Items: 23 - 27 For 1150 & 1250 Chassis Mounted Units (Refer to Conveyor Drive Section)
	PF1213-18B	Hydraulic Motor w/Sensor (Drivers Side) **(Double Gearbox Option)**	1	Requires Items: 23 - 27
	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	415182	Conveyor Speed Sensor Kit	1	Not Shown
27	PF1213-145SK	Seal Kit	AR	
28	9006374	Gear Lube SAE 80W90	AR	Not Shown (Refer to "Gearbox Removal & Oil Change" in Maintenance Section)

Main Valve Block Assembly Components
Spinner & Conveyor Set Up

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



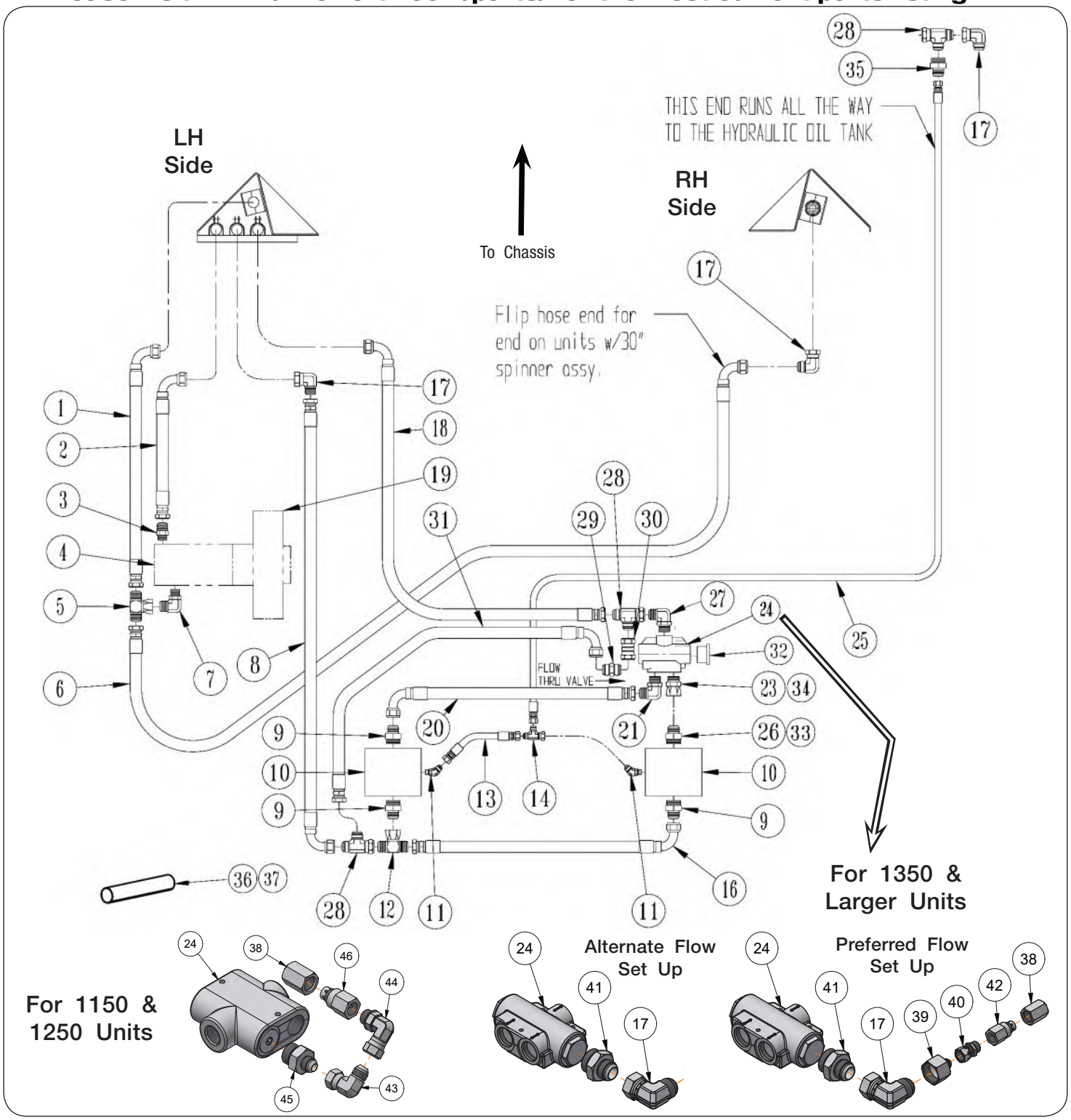
Main Valve Block Assembly Components
Spinner & Conveyor Set Up

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	416292	Pro-Force Valve Assembly	1	For 2650 Units Includes Items 1-6 and 13-16
	417005		1	For 1850 & 2250 Units Includes Items 1-7 and 13-16
	PF1237-02		1	For 1350 to 1650 & 2050 Units Includes Items 1-7 and 13-16
	416175	Pro-Force Row Crop Valve Assembly	1	For 1150 & 1250 Units Includes Items 1-6 and 12-16
1	PF1211-00	BLOCK, VALVE, HYD., MAIN	1	
2	99878	PLUG 7/8"-14UNF O-RM BOSS	6	
3	98243	ADAPTER, 1 5/16"-12 O-RM TO FJIC SWIVEL	3	For 1150-1650, 2050 & 2650 Units
			2	For 1850 & 2250 Units
4	98207	ELBOW 90°, 1 5/16"-12 O-RM TO FM JIC SWIVEL	1	
5	PF1211-80	VALVE, HYD., PSI COMPENSATOR	2	For SN B43580100 & Higher
			1	For SN B42940100-B43580099
6	PF1211-01A	VALVE, SERVO, HYD., SAE16 50GPM W/CONNECTOR	2	For 2650 Units
			1	For 1150 to 2250 Units
7	416452	Proportional Valve (PWM) Replacement Kit	1	For 1350 to 2250 Units Includes Items 8-11 and Instruction Sheet 416453
8	9009773	Proportional Valve (PWM) (Normally Closed)	1	Includes Items 9 and 10
9	9009317	Proportional Coil, 12 VDC	1	
10	9009316	Proportional Cartridge (Normally Closed)	1	
11	9009774	24" Adapter Cable, 2 Pin Deutsch to 2 Pin WP	1	
12	9009589	Proportional Valve (PWM) - 2 Way, 2 Position	1	For 1150 and 1250 Units
13	9003423	O-Ring Hollow Hex Plug 9/16"-18	3	
14	97618	Adapter, 1 5/16"-12 MJIC to 1 5/16"-12 O-Ring	1	For 1150-1650, 2050 & 2650 Units
			2	For 1850 & 2250 Units
15	PF1211-945	VALVE, RELIEF, HYD., 3500 PSI	1	
16	PF1202-120	ADAPTER, O-RING HEX PLUG 16	1	
17	900900-099	Capscrew, 1/2"-13UNC X 1" SS	3	
18	900903-025	LOCKWASHER, 1/2" SS	3	
19	98469	Cap, 1 5/16"-12 JICF	1	
20	PF1211-801	Modified Pressure Compensator Valve Cartridge	1	For SN B42940100-B43580099 Refer to Instruction Sheet 416243 to Install Items 14-16
21	PF1211-605	Hyd. Check Valve, 5000 PSI	1	
22	PF1207-604	Hydraulic Hose, 3/8" x 31" - 3000 PSI	1	

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	
2	PF1207-04	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	98200	TEE 1 5/16"-12 MJIC x 1 5/16"-12 FS JIC x 1 5/16"-12 MJIC	1	

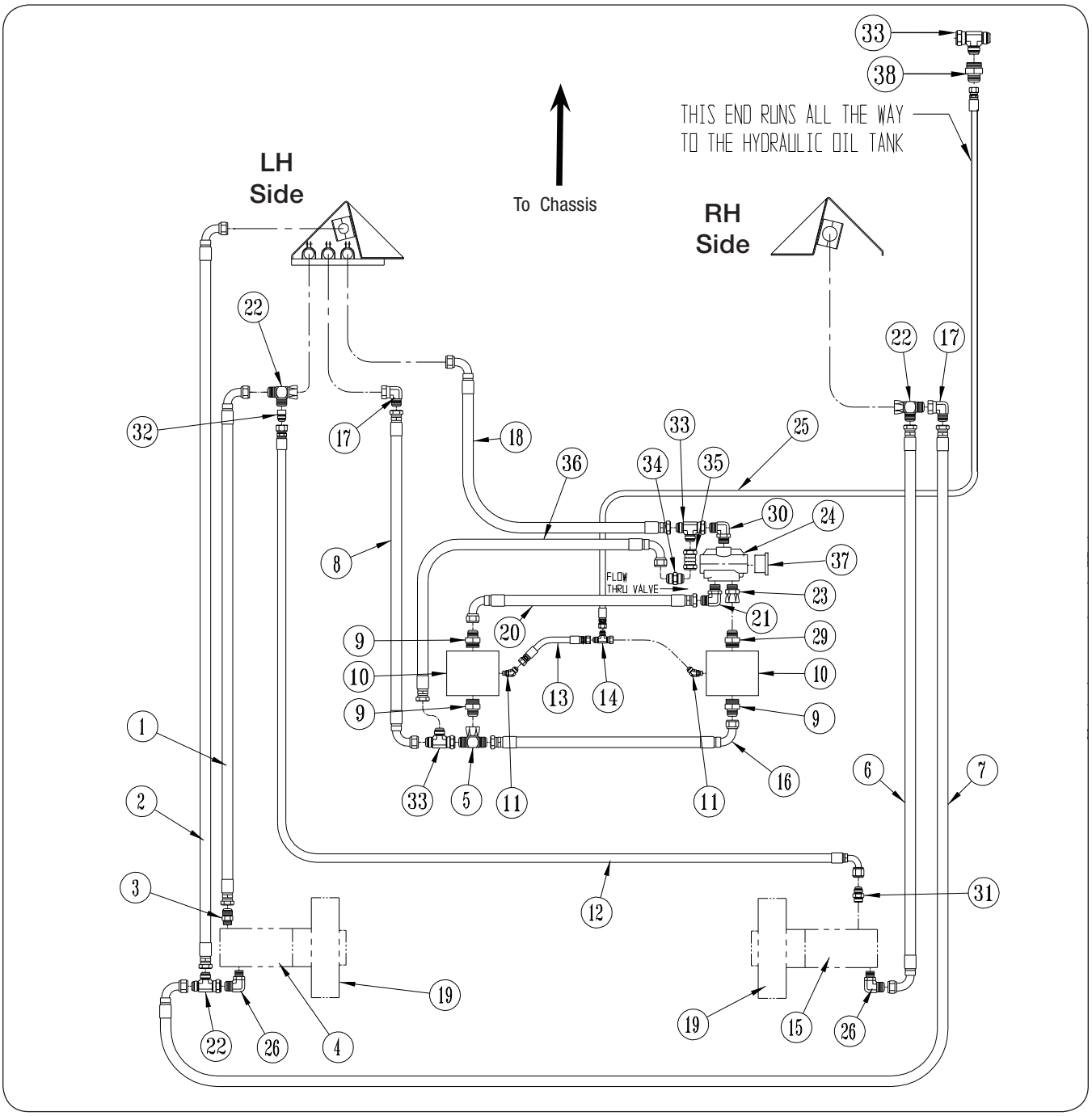
Spinner & Conveyor Drive Hydraulic Components
For Chassis Mounted Units

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
6	PF1207-065	HOSE, HYD. 1" X 103" SAE16 FJ90 & FJ STRAIGHT	1	
7	TAWC15325	ADAPTER, MJIC TO MALE ELBOW 90°	1	
	PF1202-204			1250 Chassis Mounted Units
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	95059	TEE 3/4"-16 MJIC X 3/4"-16 F SWIVEL NUT RUN X 3/4"-16 MJIC	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 SWIVEL	3	
18	PF1207-055	HOSE, HYD. 1" X 79 1/2" SAE16 FJ90 & FJ	1	
19	See Gearbox	GEARBOX	-	
20	9008971	HOSE, HYD. 1" X 32" FJIC X FJIC 90	1	For 1150 & 1250 Chassis
	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	
	TAWC15325	ADAPTER, MJIC TO MALE ELBOW 90°	1	For 1150 & 1250 Chassis
23	98243	ADAPTER, 1 5/16"-12 MO-R TO FJIC SWIVEL	1	
24	PF1211-18SPB	Hydraulic Flow Divider Assy. 50/50 W/SPOOL STOPS	1	For 1350 & Larger Chassis
	PF1211-181SPB	=Black=	1	For 1150 & 1250 Chassis
25	9008975	HOSE, HYD. 1/2" X 80" SAE08 FJIC SWIVEL	1	12' BOX For SN B40290100 & Higher
	9003414	HOSE, HYD. 1" X 76" SAE FJIC Swivel		
	PF1207-09	HOSE, HYD. 1/2" X 237" SAE08 FJ STRAIGHT		13' BOX
	PF1207-10	HOSE, HYD. 1/2" X 249" SAE08 FJ STRAIGHT		14' BOX
	PF1207-102	HOSE, HYD. 1/2" X 273" SAE08 FJ STRAIGHT		16' BOX
	PF1207-104	HOSE, HYD. 1/2" X 297" SAE08 FJ STRAIGHT		18' BOX
	PF1207-106	HOSE, HYD. 1/2" X 321" SAE08 FJ STRAIGHT		20' BOX
	9008945	HOSE, HYD. 1/2" X 350" SAE08 FJIC SWIVEL		22' BOX
	9009238	HOSE, HYD. 1/2" X 397" SAE08 FJIC SWIVEL		26' BOX
26	9004628	ADAPTER, 1 5/16"-12 MJIC TO O-RING	1	
27	98898	ADAPTER, MJIC TO ELBOW 90° 1 5/16"-12 JIC	1	
	9004628	ADAPTER, 1 5/16"-12 MJIC TO 1 1/16"-12 O-RING	1	For 1150 & 1250 Chassis
28	98200	TEE 1 5/16"-12 MJIC x 1 5/16"-12 FS JIC x 1 5/16"-12 MJIC	3	For SN B40290100 & Higher
29	PF1211-603	VALVE, CHECK, HYD., 16 JIC	1	
30	PF1202-6516	ADAPTER, FJIC SWIVEL UNION 16-16	1	
31	PF1207-132	HOSE, HYD. 1" X 42" SAE16 FJ90 & FJ STRAIGHT	1	
32	PF1211-1811	Spool Stop, 1 1/4" O.D x 9/16" I.D.	2	Item 24 - PF1211-18SPB
	PF1211-1810	Spool Stop, 1" O.D x 5/8" I.D.	2	Item 24 - PF1211-181SPB
33	9001068	ADAPTER 1 1/16"-12 JICM x MORB	1	1250 Chassis Mounted Units
34	9008980	ADAPTER 1 1/16"-12 JICF x MORB	1	
35	98591	Reducer 1 5/16"-12 JICF x 3/4"-16 JICM	1	
36	9009630	2" Shrink Wrap	AR	3:1 Shrink Ratio
37	9009629	1" Shrink Wrap	AR	
38	9852	ADAPTER, 3/4"-16 FO-R (BOTH ENDS)	1	
39	98591	Reducer 1 5/16"-12 JICF x 3/4"-16 JICM	1	For 1350 & Larger Chassis & SN B44470100 & Higher
40	96935	ADAPTER SWIVEL, 3/4"-16 MO-R TO F SWIVEL	1	
41	9009838	ADAPTER, 1 5/16"-12 MJIC TO 1 5/8"-12 MO-RING	1	
42	9009827	FLOW CONTROL VALVE FIXED 4 GPM	1	
43	93683	90 Elbow 3/4"-16 MJIC x 3/4"-16 F SWIVEL	1	For 1150 & 1250 Chassis & SN B44470100 & Higher
44	95811	90 Elbow 3/4"-16 MO-R x 3/4"-16 F SWIVEL	1	
45	PF1202-1080	ADAPTER, 3/4"-16 MJIC TO 1 1/16-12 MO-RING	1	
46	9009859	FLOW CONTROL VALVE FIXED 1 1/2 GPM	1	

Spinner & Dual Conveyor Drive Hydraulic Components
For Chassis Mounted Units

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



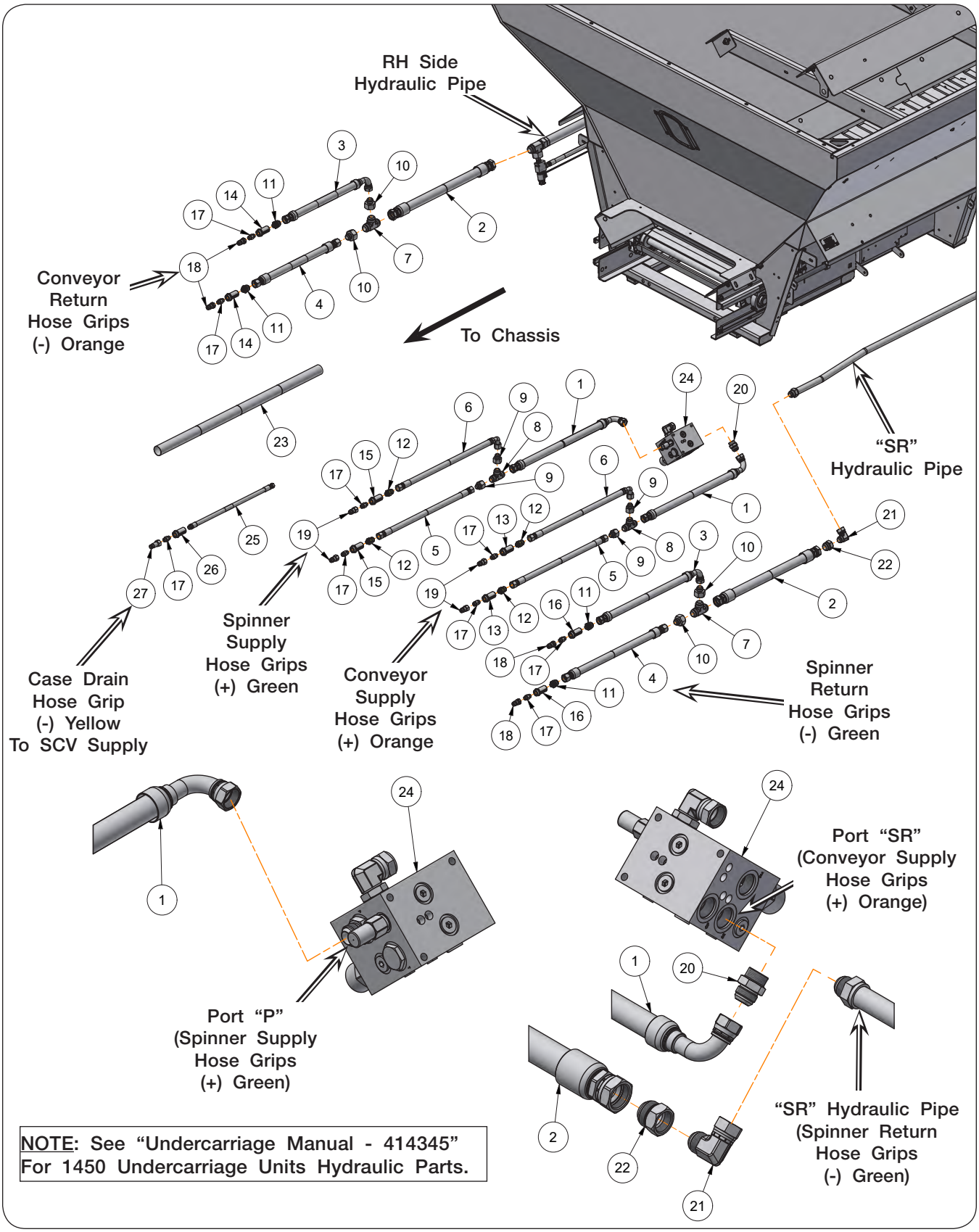
Spinner & Dual Conveyor Drive Hydraulic Components
For Chassis Mounted Units

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1207-04	HOSE, HYD. 1" X 16 1/2" FJ90 & FJ STRAIGHT	1	
2	PF1207-03	HOSE, HYD. 1" X 27" FJ90 & FJ STRAIGHT	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 STRAIGHT	1	
7	PF1207-065	HOSE, HYD. 1" X 103" SAE16 FJ90 & FJ STRAIGHT	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 STRAIGHT	1	
14	95059	TEE 3/4"-16 MJIC X 3/4"-16 F SWIVEL NUT RUN X 3/4"-16 MJIC	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 F 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	PF1211-18SPB	Hydraulic Flow Divider Assy. 50/50 W/SPOOL STOPS	1	For 1350 & Larger Chassis
	PF1211-181SPB	=Black=	1	For 1150 & 1250 Chassis
25	9008975	HOSE, HYD. 1/2" X 80" SAE08 FJ STRAIGHT	1	12' BOX For B40290100 & Higher
	PF1207-08	HOSE, HYD. 1/2" X 225" SAE08 FJ STRAIGHT		12' BOX For SN B40290099 & Lower
	PF1207-09	HOSE, HYD. 1/2" X 237" SAE08 FJ STRAIGHT		13' BOX
	PF1207-10	HOSE, HYD. 1/2" X 249" SAE08 FJ STRAIGHT		14' BOX
	PF1207-102	HOSE, HYD. 1/2" X 273" SAE08 FJ STRAIGHT		16' BOX
	PF1207-104	HOSE, HYD. 1/2" X 297" SAE08 FJ STRAIGHT		18' BOX
	PF1207-106	HOSE, HYD. 1/2" X 321" SAE08 FJ STRAIGHT		20' BOX
	9008945	HOSE, HYD. 1/2" X 350" SAE08 FJIC SWIVEL		22' BOX
	9009238	HOSE, HYD. 1/2" X 397" SAE08 FJIC SWIVEL		26' 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	
			3	12' BOX For B40290100 & Higher
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 STRAIGHT	1	
37	PF1211-1811	Spool Stop, 1 1/4" O.D x 9/16" I.D.	2	For Item 24 - PF1211-18SPB
	PF1211-1810	Spool Stop, 1" O.D x 5/8" I.D.	2	For Item 24 - PF1211-181SPB
38	98591	Reducer 1 5/16"-12 JICF x 3/4"-16 JICM	1	12' BOX For B40290100 & Higher

Split Hydraulic Components - SN B45470100 & Higher
For Undercarriage Mounted Units

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



NOTE: See "Undercarriage Manual - 414345" For 1450 Undercarriage Units Hydraulic Parts.

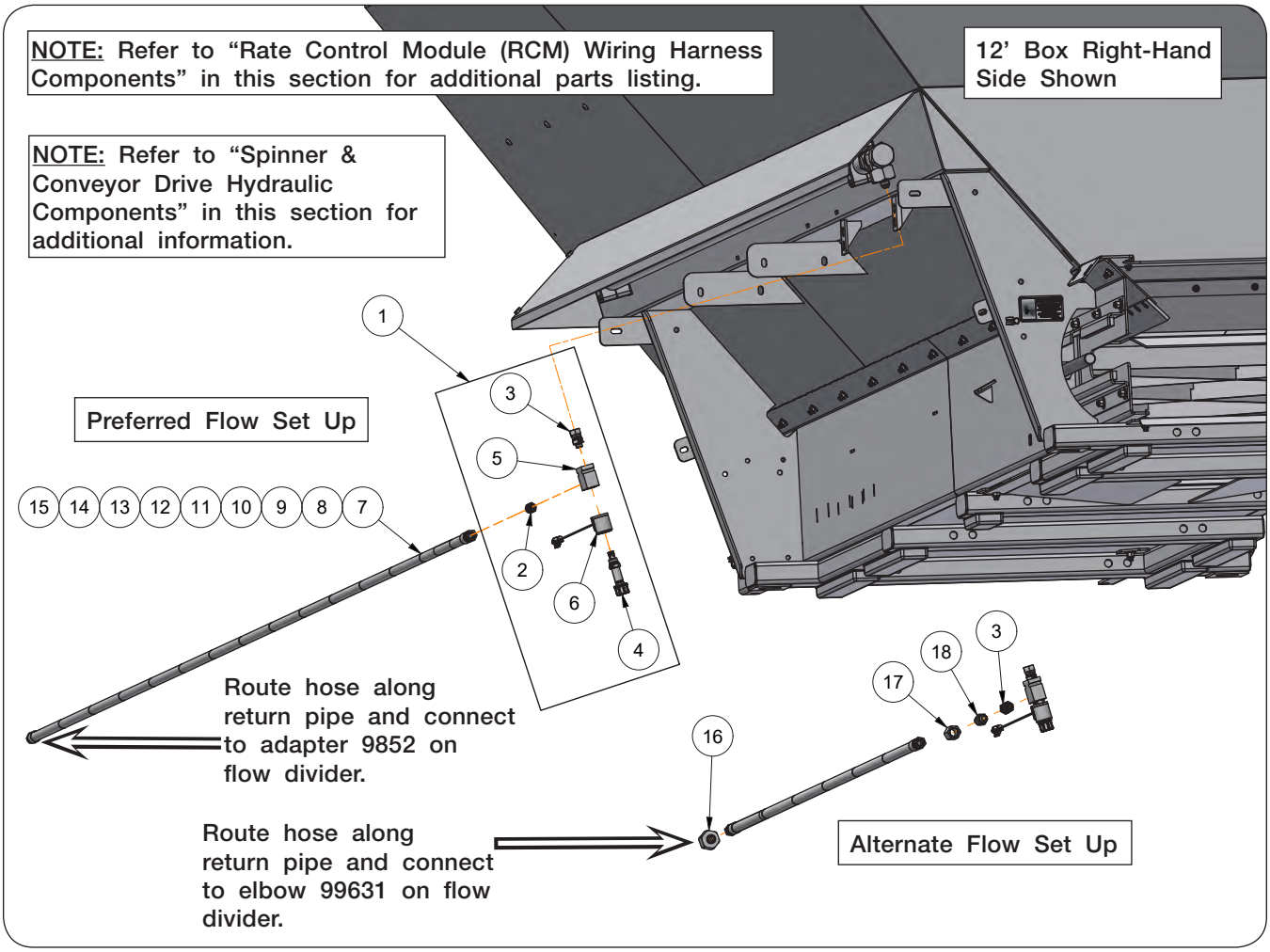
Split Hydraulic Components - SN B45470100 & Higher
For Undercarriage Mounted Units

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	416862	Pro-Force Split Hydraulics Kit	-	Standard For 1850, 2250, 2650 Units Optional For 1450 Units Includes Items 1-23 and Instruction Sheet
1	PF1207-733	Hydraulic Hose, 1" x 102" 3,000 PSI SAE	2	
2	PF1207-732	Hydraulic Hose, 1 1/4" x 108" 3,000 PSI SAE	2	
3	9008872	Hydraulic Hose, 1" x 84" 3,000 PSI SAE	2	
4	9008873	Hydraulic Hose, 1" x 84" 3,000 PSI SAE	2	
5	9009309	Hydraulic Hose, 3/4" x 80" 3,000 PSI SAE	2	
6	9009308	Hydraulic Hose, 3/4" x 82" 3.000 PSI SAE	2	
7	PF1202-2604	Tee Fitting, 1 5/8"-12 JIC Male	2	
8	900252	Tee Fitting, 1 5/16"-12 JIC Male	2	
9	PF1202-1035	Reducer, 1 5/16"-12 JIC Male to 1 1/16"-12 JIC Male	4	
10	PF1202-10350	Reducer, 1 5/8"-12 JIC Female to 1 5/16"-12 JIC Male	2	
11	PF1202-1100	Adapter, 1 5/16"-12 JIC Male to 3/4"-16 O-Ring Male	4	
12	103347	Adapter, 1 1/16-12 JIC Male to 3/4"-16 O-Ring Male	4	
13	9009761	Aluminum Hose Grip, Orange (+) Conveyor Supply	2	Increase Conveyor Speed
14	9009762	Aluminum Hose Grip, Orange (-) Conveyor Return	2	Decrease Conveyor Speed
15	9009751	Aluminum Hose Grip, Green (+) Spinner Supply	2	Increase Spinner Rotation
16	9009752	Aluminum Hose Grip, Green (-) Spinner Return	2	Decrease Spinner Rotation
17	98508	Adapter, O-Ring 3/4"-16 Male to O-Ring 3/4"-16 Male	9	
18	PF1202-8434	Quick Connect Fitting, 3/4"-16 O-Ring Male	1	
19	91383	Male Coupler Tip, 3/4"-16 O-Ring Female	4	
20	97618	Adapter, 1 5/16"-12 JIC Male to 1 5/16"-12 O-Ring Male	1	
21	99631	90° Elbow, 1 5/16"-12 JICM to 1 5/16"-12 JICF Swivel	1	
22	9010025	Reducer, 1 5/16"-12 JIC Female to 1 5/8"-12 JIC Male	1	
23	9009630	2" Shrink Wrap, Black	10	Specify In Feet
24	416292	Pro-Force Valve Assembly	1	For 2650 Units
	PF1237-02		1	For 1850 and 2250 Units
25	9008989	Hydraulic Hose, 1/2" x 480" 3,000 PSI SAE	1	2650 Undercarriage Units
	9008982	Hydraulic Hose, 1/2" x 432" 3,000 PSI SAE	1	2250 Undercarriage Units
	9008988	Hydraulic Hose, 1/2" x 394" 3,000 PSI SAE	1	1850 Undercarriage Units
26	9009760	Aluminum Hose Grip, Yellow (-) Case Drain	1	
27	9006048	Male Coupler Tip, 3/4"-16 Male Flat Face	1	

Boundary Control Valve Assembly - SN B44470100 & Higher

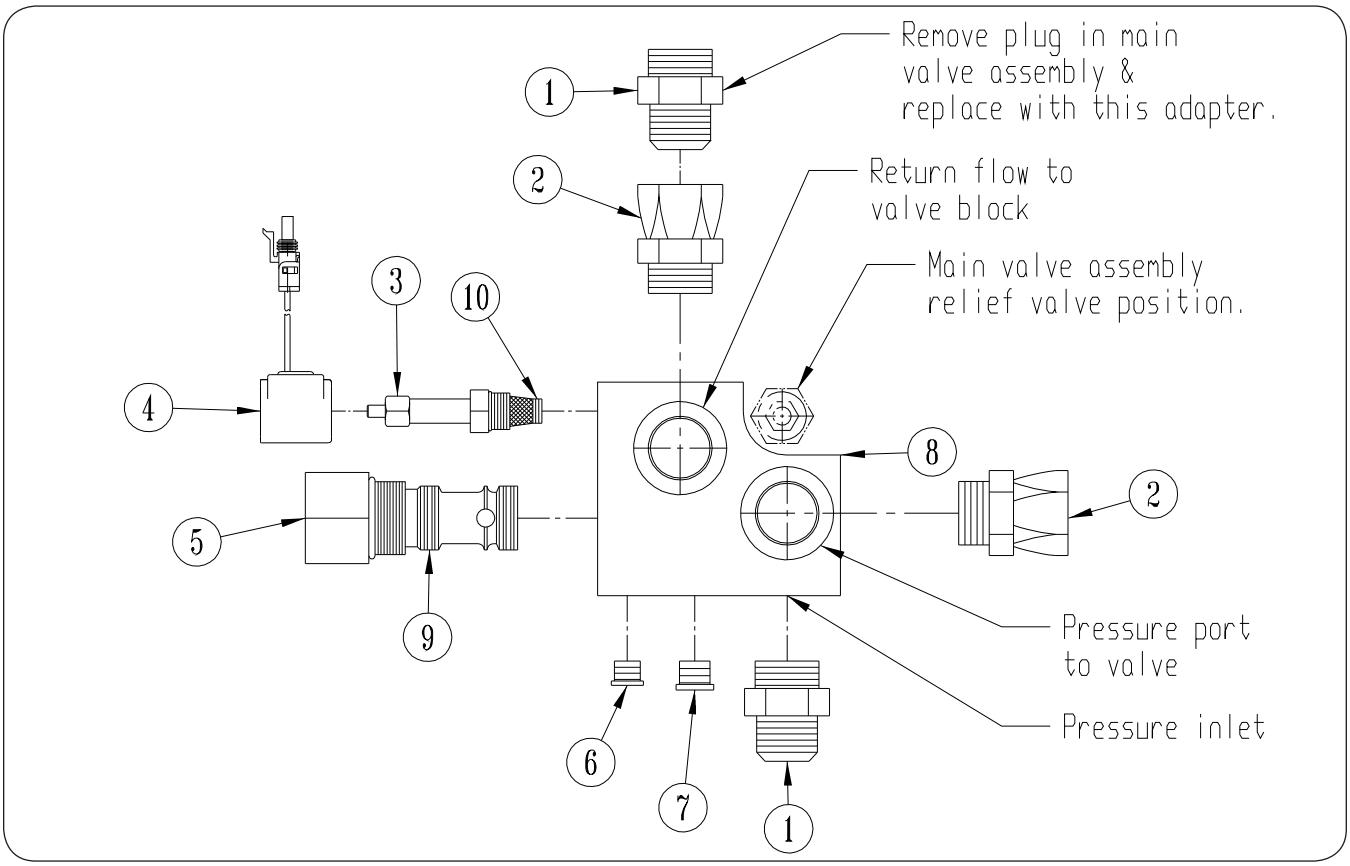
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	416465	Boundary Control Shutoff Valve Assembly	-	Includes Items 2 - 6
2	95475	Adapter, 3/4"-16UNF JICM x 9/16"-18UNF ORM	1	
3	97664	Adapter, 9/16"-18 ORM x 3/4"-16 JICF Swivel	1	
4	9007284	Cartridge Valve - 2 Way, 2 Position - Normally Closed w/Manual Override Free Reverse Flow	1	
5	9009833	Valve Block - FC08-2	1	
6	9009835	Coil, 12V DC, DL-40	1	
7	9009840	Hyd. Hose 1/2" x 164", 3/4"-16 ORM x 3/4"-16 JICF	1	11" Box
8	9003456	Hyd. Hose 1/2" x 176", 3/4"-16 ORM x 3/4"-16 JICF	1	12" Box
9	9009839	Hyd. Hose 1/2" x 188", 3/4"-16 ORM x 3/4"-16 JICF	1	13" Box
10	9009624	Hyd. Hose 1/2" x 200", 3/4"-16 ORM x 3/4"-16 JICF	1	14" Box
11	9009841	Hyd. Hose 1/2" x 224", 3/4"-16 ORM x 3/4"-16 JICF	1	16" Box
12	9009660	Hyd. Hose 1/2" x 248", 3/4"-16 ORM x 3/4"-16 JICF	1	18" Box
13	97194	Hyd. Hose 1/2" x 270", 3/4"-16 ORM x 3/4"-16 JICF	1	20" Box
14	9009837	Hyd. Hose 1/2" x 296", 3/4"-16 ORM x 3/4"-16 JICF	1	22" Box
15	9003027	Hyd. Hose 1/2" x 343 1/2", 3/4"-16 ORM x 3/4"-16 JICF	1	26" Box
16	98591	Reducer 1 5/16"-12 JICF x 3/4"-16 JICM	1	Alternate Flow Set Up For 1350 & Larger Chassis SN B44470100 & Higher
17	9852	Adapter 3/4"-16 FO-R (Both Ends)	1	
18	9009996	Alternate Flow Control Valve Fixed 4 GPM	1	

Dump Valve - For Chassis Mounted Units

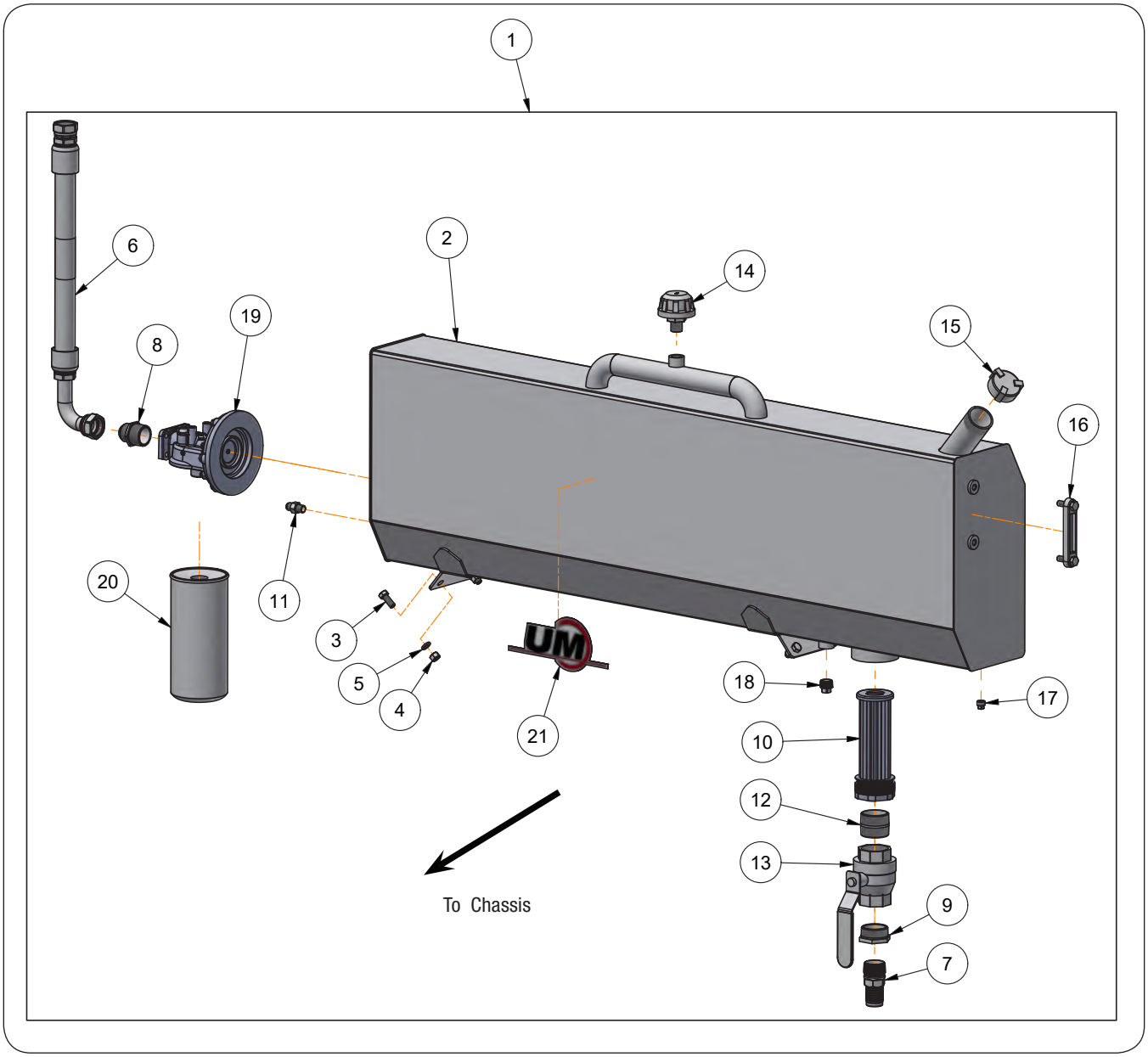
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1211-176	Dump Valve Assembly	1	Includes Items 1, 2, 3, 4, 5 & 8
1	97618	Adapter, 1 5/16"-12 MJIC to 1 5/16"-12 O-Ring	2	
2	98243	ADAPTER, 1 5/16"-12 MO-R TO FJIC SWIVEL	2	
3	PF1222-1090	Solenoid Valve (Normally Open)	1	With Manual Override
4	PF1222-109CA	Solenoid Coil, 12 V DC w/Connector	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	

Hydraulic Reservoir / Pump Hydraulic Components For Chassis Mounted Units

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



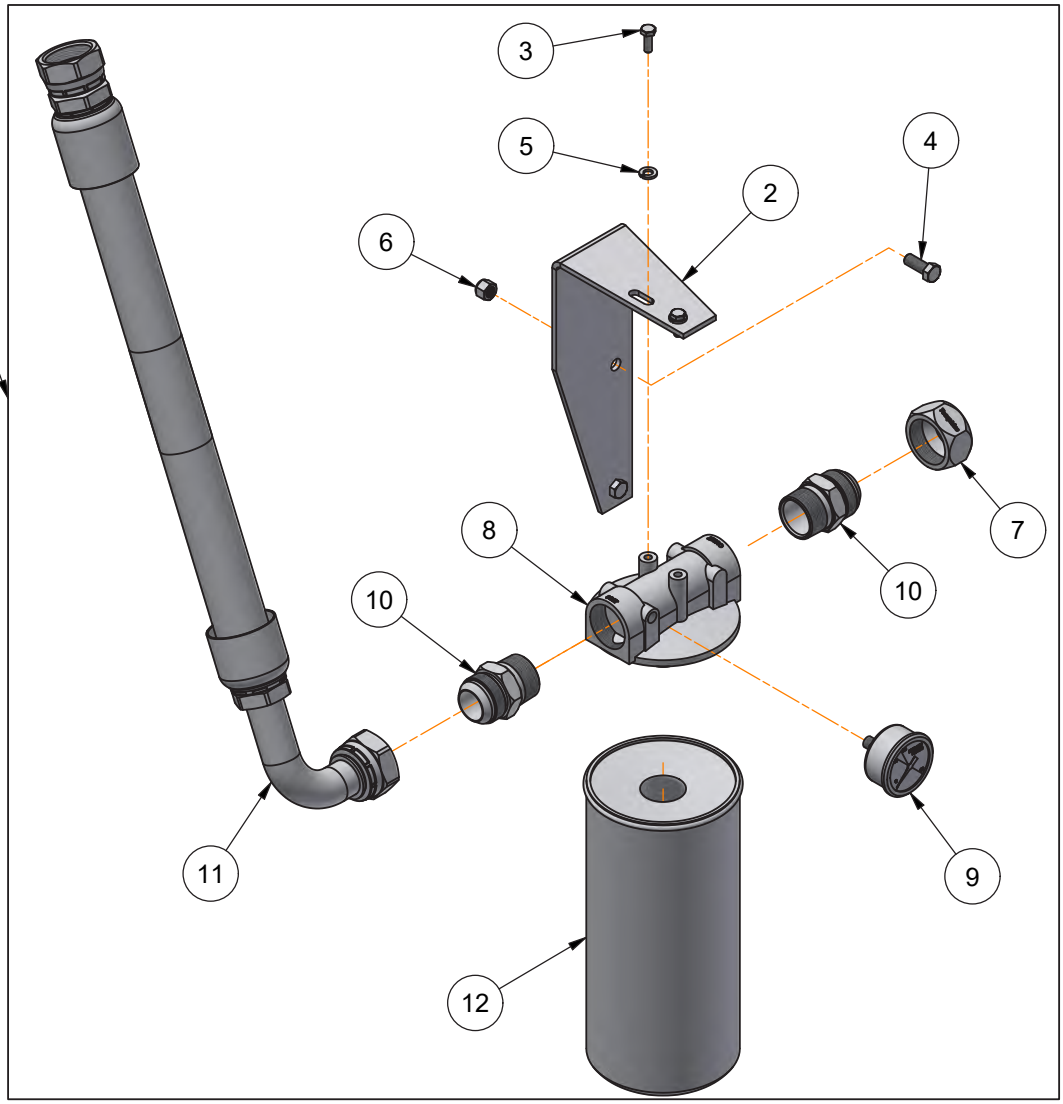
Hydraulic Reservoir / Pump Hydraulic Components For Chassis Mounted Units

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1237-040	Hydraulic Reservoir Assembly	1	Includes All Items
2	PF1236-201	RESERVOIR TANK WELDMENT SS, 36 1/2" Gal.	1	
3	900900-100	CAPSCREW, 1/2"-13UNC X 1 1/4" SS	4	
4	900901-010	HEX NUT, 1/2"-13UNC SS	4	
5	900903-025	LOCKWASHER, 1/2" SS	4	
6	PF1207-027	HOSE, HYD. 1 1/4" X 27" SAE20 FJ90 & FJ	1	
7	PF1201-189	NIPPLE, PIPE KING 1 1/2" SS	1	
8	PF1202-1027	ADAPTER, 1 5/8"-12 MJIC x 1 1/2"-11 1/2 MNPT	1	
9	PF1201-296	BUSHING, 2" MNPT X 1 1/2" FNPT SS	1	
10	PF1220-36	STRAINER, 3" X 2" EXT. MOUNT	1	
11	93600	ADAPTER, 3/4"-16 MJIC x 1/2"-14 NPTF MALE PIPE	1	
12	PF1201-288	NIPPLE, PIPE CLOSE 2" SS	1	
13	PF1211-13	VALVE, BALL, 2" 316 SS FULL PORT	1	
14	PF1220-34	BREATHER, RESERVOIR	1	
15	PF1220-475	CAP, FUEL NON-VENTED, DIESEL	1	
16	PF1221-9	GAUGE, SIGHT AND TEMPERATURE 5"	1	Includes Hollow Mounting Bolts
17	PF1201-239	PLUG, PIPE 1/2" SQUARE HEAD SS	1	
18	9009291	PLUG, PIPE 3/4" SQUARE HEAD SS	1	
19	PF1100-195	ASSY., FILTERHEAD, HYD.	1	Includes One Way Valve, O-Ring, Weld Collar, Mount Bolts, and Gasket
20	PF1220-37	FILTER, OIL, LONG SPIN-ON	1	
21	901607	UM OVAL DECAL	1	
22	PF1100-195K	KIT, SEAL, FILTER HOUSING	1	Not Shown

In-Line Hydraulic Filter

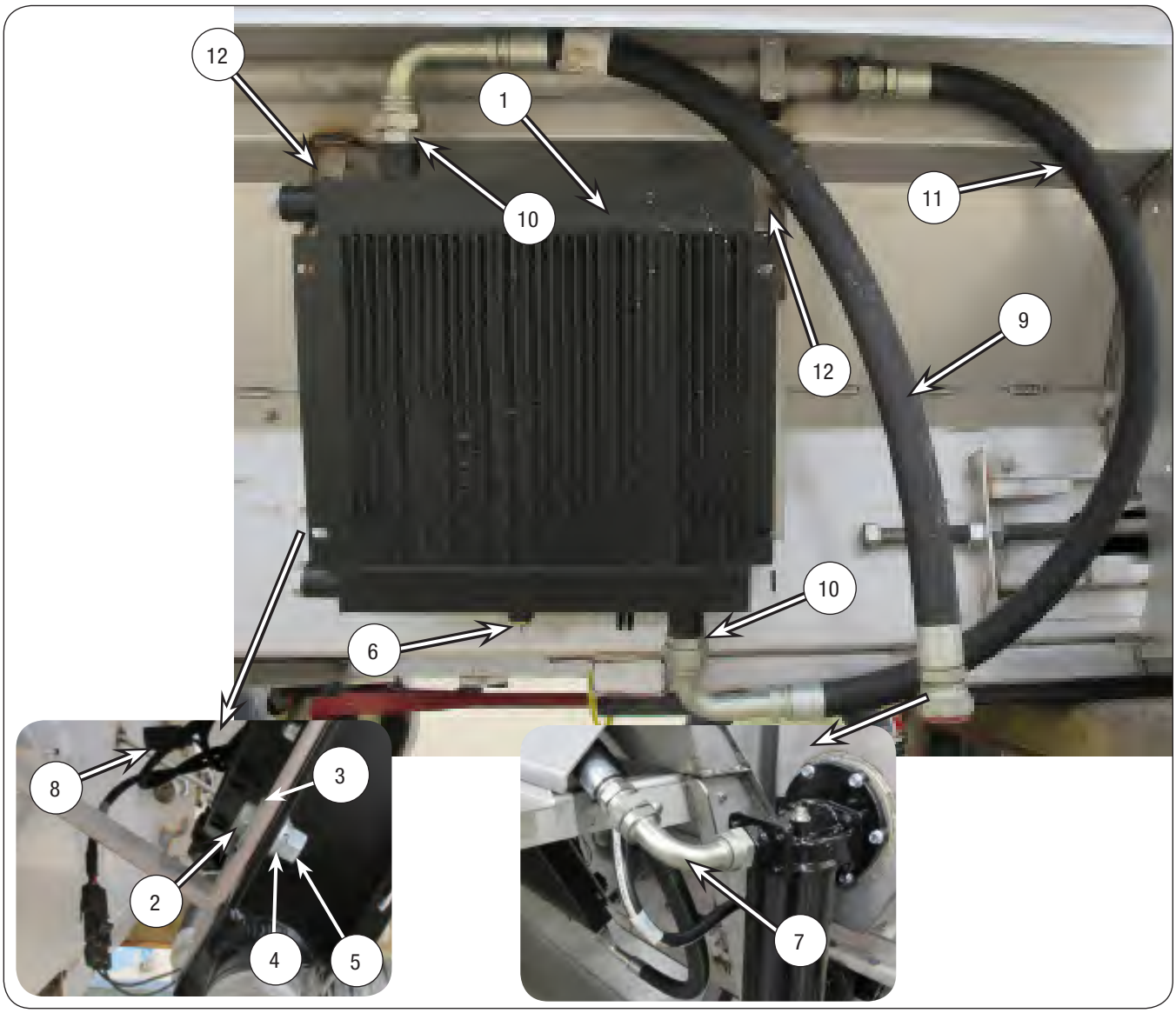
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	415337	Hydraulic In-Line Filter Kit	1	Includes All Items
2	415353	HYDRAULIC FILTER MOUNT (SS)	1	
3	900900-003	CAPSCREW 1/4"-20UNC X 3/4" 18-8 (SS)	2	
4	900900-055	CAPSCREW 3/8"-16UNC X 1" 18-8 (SS)	2	
5	900903-019	LOCK WASHER 5/16" (SS)	2	
6	900905-012	ELASTIC STOP NUT 3/8"-16UNC (SS)	2	
7	9009015	CAP NUT - 1 5/8"-12 JICF	1	
8	PF1100-19	SPIN-ON FILTER HEAD	1	
9	PF1100-197	HYDRAULIC FILTER INDICATOR GAUGE	1	
10	PF1202-10265	ADAPTER 1 5/8"-12 JICM X 1 1/4"-11 1/2 MNPT	2	
11	PF1207-027	HYDRAULIC HOSE, 1 1/4" X 27" (1 5/8" JICF 90° X 1 5/8" JICF STRAIGHT)	1	
12	PF1220-37	LONG SPIN-ON OIL FILTER	1	

Oil Cooler Components (Optional)

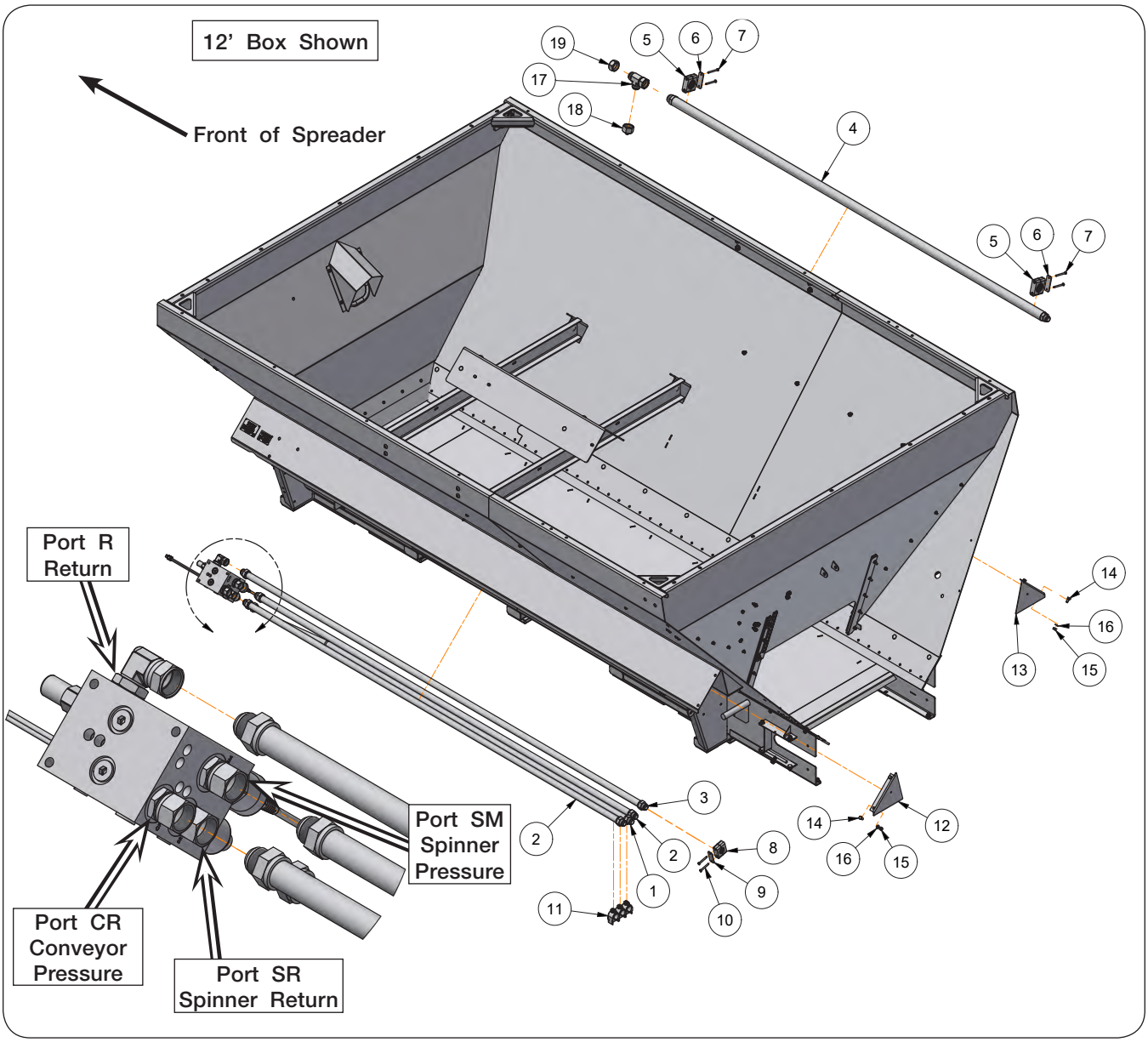
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	415511	Oil Cooler Assembly Kit	1	Includes All Items
1	9009177	OIL COOLER WITH 12V FAN	1	
2	900900-056	CAPSCREW, 3/8"-16UNC X 1 1/4" SS	10	
3	900902-038	FLATWASHER, 3/8" SS	20	
4	900903-021	LOCKWASHER, 3/8" SS	10	
5	900901-006	HEX NUT, 3/8"-16UNC SS	10	
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	9009365	ADAPTER, MALE JIC TO MALE O-RING	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	415505	Oil Cooler Mounting Bracket SS	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 NO.	DESCRIPTION	11' BOX QTY	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	PF1234-532	PIPE, HYD., 110 3/16", 11' & 12' BOX	1	1	-	-	-	-	-	-	-	All Item 1 For Port SR (Spinner Return)
	PF1234-533	PIPE, HYD., 122 3/16", 13' BOX	-	-	1	-	-	-	-	-	-	
	PF1234-534	HYDRAULIC PIPE, 134 3/16", 14' Box	-	-	-	1	-	-	-	-	-	
	PF1236-536	PIPE, HYD., 158 3/16", 16' BOX	-	-	-	-	1	-	-	-	-	
	PF1236-537	HYDRAULIC PIPE, 170 3/16", 18' Box	-	-	-	-	-	1	-	-	-	For SN B45470100-Up
	PF1236-538	HYDRAULIC PIPE, 182 3/16", 18' Box	-	-	-	-	-	1	-	-	-	For SN B45470099-Low
	PF1236-530	PIPE, HYD., 206 3/16", 20' BOX	-	-	-	-	-	-	1	-	-	
	417008	PIPE, HYD., 218 3/16", 22' BOX	-	-	-	-	-	-	-	1	-	For SN B45910100-Up
	PF1236-532	PIPE, HYD., 230 3/16", 22' BOX	-	-	-	-	-	-	-	1	-	For SN B45910099-Low
	417006	PIPE, HYD., 267 3/16", 26' BOX	-	-	-	-	-	-	-	-	1	For SN B46030100-Up
	PF1236-5346	PIPE, HYD., 278 3/16", 26' BOX	-	-	-	-	-	-	-	-	1	For SN B46030099-Low
2	PF1234-522	PIPE, HYD., 109 5/8", 11' & 12' BOX	2	2	-	-	-	-	-	-	-	For Port CP (Conveyor Pressure) and SM (Spinner Pressure)
	PF1234-523	PIPE, HYD., 121 5/8", 13' BOX	-	-	2	-	-	-	-	-	-	
	PF1234-524	HYDRAULIC PIPE, 133 5/8", 14' Box	-	-	-	2	-	-	-	-	-	
	PF1236-526	PIPE, HYD., 157 5/8", 16' BOX	-	-	-	-	2	-	-	-	-	
	PF1236-528	HYDRAULIC PIPE, 181 5/8", 18' Box	-	-	-	-	-	2	-	-	-	
	PF1236-520	PIPE, HYD., 205 5/8", 20' BOX	-	-	-	-	-	-	2	-	-	
	PF1236-522	PIPE, HYD., 229 5/8", 22' BOX	-	-	-	-	-	-	-	2	-	
	PF1236-5246	PIPE, HYD., 277 5/8", 26' BOX	-	-	-	-	-	-	-	-	2	
3	PF1234-552	PIPE, HYD., 116 5/8", 11' & 12' BOX	1	1	-	-	-	-	-	-	-	For Port R (Return)
	PF1234-553	PIPE, HYD., 128 5/8", 13' BOX	-	-	1	-	-	-	-	-	-	
	PF1234-554	HYDRAULIC PIPE, 140 5/8", 14' Box	-	-	-	1	-	-	-	-	-	
	PF1236-556	PIPE, HYD., 164 5/8", 16' BOX	-	-	-	-	1	-	-	-	-	
	PF1236-558	HYDRAULIC PIPE, 188 5/8", 18' Box	-	-	-	-	-	1	-	-	-	
	PF1236-550	PIPE, HYD., 212 5/8", 20' BOX	-	-	-	-	-	-	1	-	-	
	PF1236-552	PIPE, HYD., 236 5/8", 22' BOX	-	-	-	-	-	-	-	1	-	
	PF1236-5546	PIPE, HYD., 284 5/8", 26' BOX	-	-	-	-	-	-	-	-	1	
4	PF1234-542	PIPE, HYD., 109 3/8", 11' & 12' BOX	1	1	-	-	-	-	-	-	-	
	PF1234-543	PIPE, HYD., 121 3/8", 13' BOX	-	-	1	-	-	-	-	-	-	
	PF1234-544	HYDRAULIC PIPE, 133 3/8", 14' Box	-	-	-	1	-	-	-	-	-	
	PF1236-546	PIPE, HYD., 157 3/8", 16' BOX	-	-	-	-	1	-	-	-	-	
	PF1236-548	HYDRAULIC PIPE, 181 3/8", 18' Box	-	-	-	-	-	1	-	-	-	
	PF1236-540	PIPE, HYD., 205 3/8", 20' BOX	-	-	-	-	-	-	1	-	-	
	PF1236-542	PIPE, HYD., 229 3/8", 22' BOX	-	-	-	-	-	-	-	1	-	
	PF1236-5446	HYD. PIPE, 277 7/16" 26' BOX	-	-	-	-	-	-	-	-	1	
5	9008884	Single Hose Clamp, 1.90" Dia.	2	2	2	2	2	3	3	3	3	
6	414702	Top Plate Hose Clamp 1 3/16" x 3 3/8" SS	2	2	2	2	2	3	3	3	3	
7	900900-012	Capscrew, 1/4"-20UNC x 2 3/4" SS	4	4	4	4	4	6	6	6	6	
8	9008883	Single Hose Clamp, 1.33" Dia.	1	1	1	1	2	2	2	2	2	

(Continued on next page)

Hydraulic Pipe Components (continued)

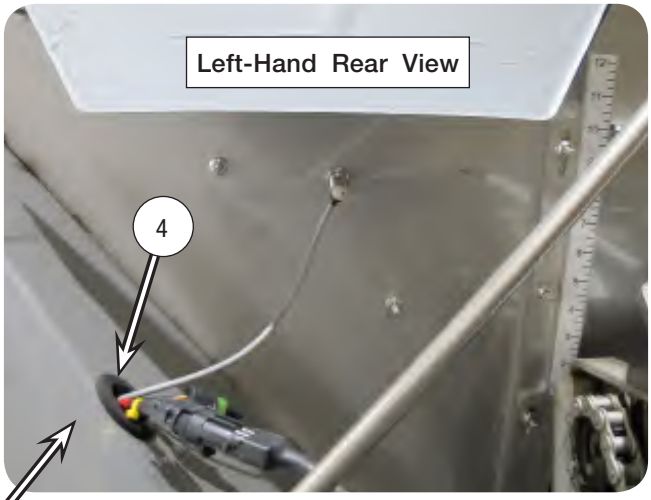
Please visit www.unverferth.com/parts/ for the most current parts listing.

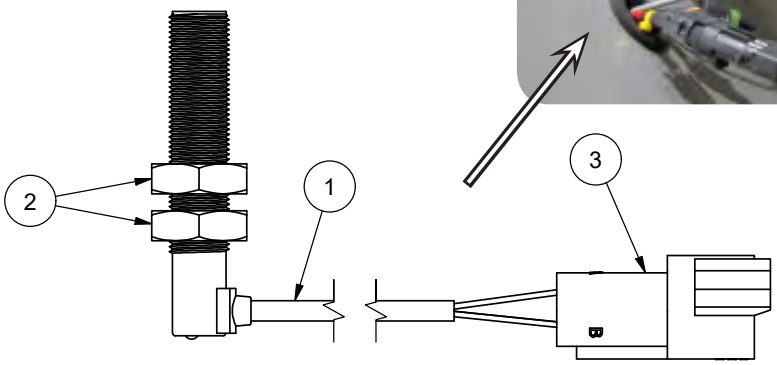
ITEM	PART NO.	DESCRIPTION	11' BOX QTY	12' BOX QTY	13' BOX QTY	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	22' BOX QTY	26' BOX QTY	NOTES
9	414701	Top Plate Hose Clamp 1 3/16" x 2 25/32" SS	1	1	1	1	2	2	2	2	2	
10	900900-010	Capscrew, 1/4"-20UNC x 2 1/4" SS	2	2	2	2	4	4	4	4	4	
11	PF1208-96	CLAMP, CUSHION 1" PIPE SS	-	-	-	-	-	7	-	7	10	For SN B45470100-Up
			3	3	3	3	6	6	6	6	9	For SN B45470099-Low
12	PF1234-559LH	COVER, END CAP LH SS	1	1	1	1	1	1	1	1	1	
13	PF1234-559RH	COVER, END CAP RH SS	1	1	1	1	1	1	1	1	1	
14	900900-053	CAPSCREW, 3/8"-16UNC X 3/4" SS	4	4	4	4	4	4	4	4	4	
15	900901-006	HEX NUT, 3/8"-16UNC SS	4	4	4	4	4	4	4	4	4	
16	900903-021	LOCKWASHER, 3/8" SS	4	4	4	4	4	4	4	4	4	
17	9009591	Swivel Nut Run Tee, 1 5/8"-12 x 1 5/8"-12JIC	1	1	1	1	1	1	1	1	1	For SN B44470100-Up
18	9009836	Reducer, 1 5/8"-12JICF x 3/4"-16JICM	1	1	1	1	1	1	1	1	1	
19	9009015	Cap Nut, 1 5/8"-12 JICF	1	1	1	-	-	-	-	-	-	

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.

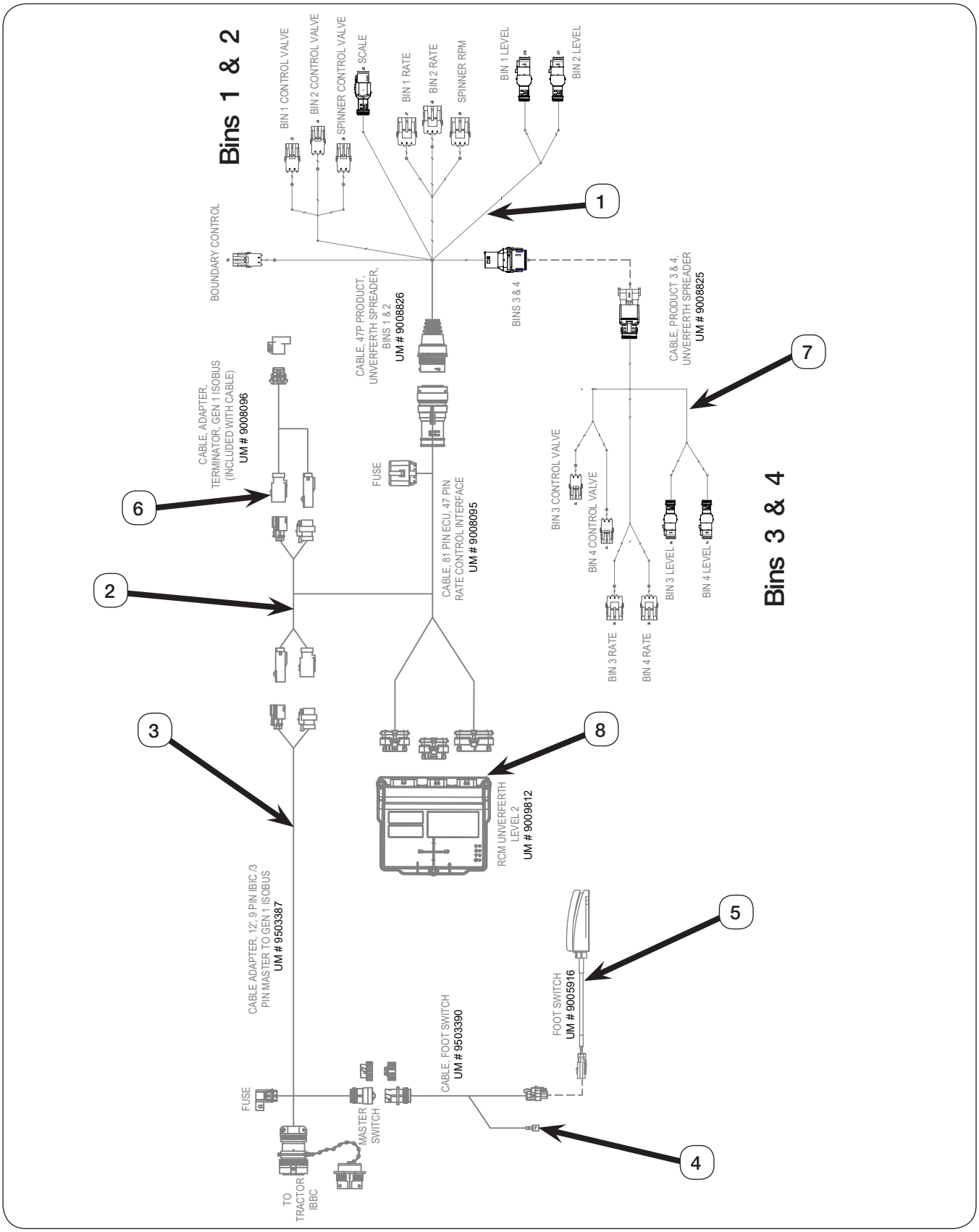




ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	9009180	Bin Level Sensor	1	
2	9008808	Hex Nut M12 x 1" SS	2	
3	98908	3 Pin Deutsch Connector	1	
4	9005466	Rubber Grommet, 1 3/4" OD x 1 1/8" ID	1	

Rate Control Module (RCM) Wiring Harness Components

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



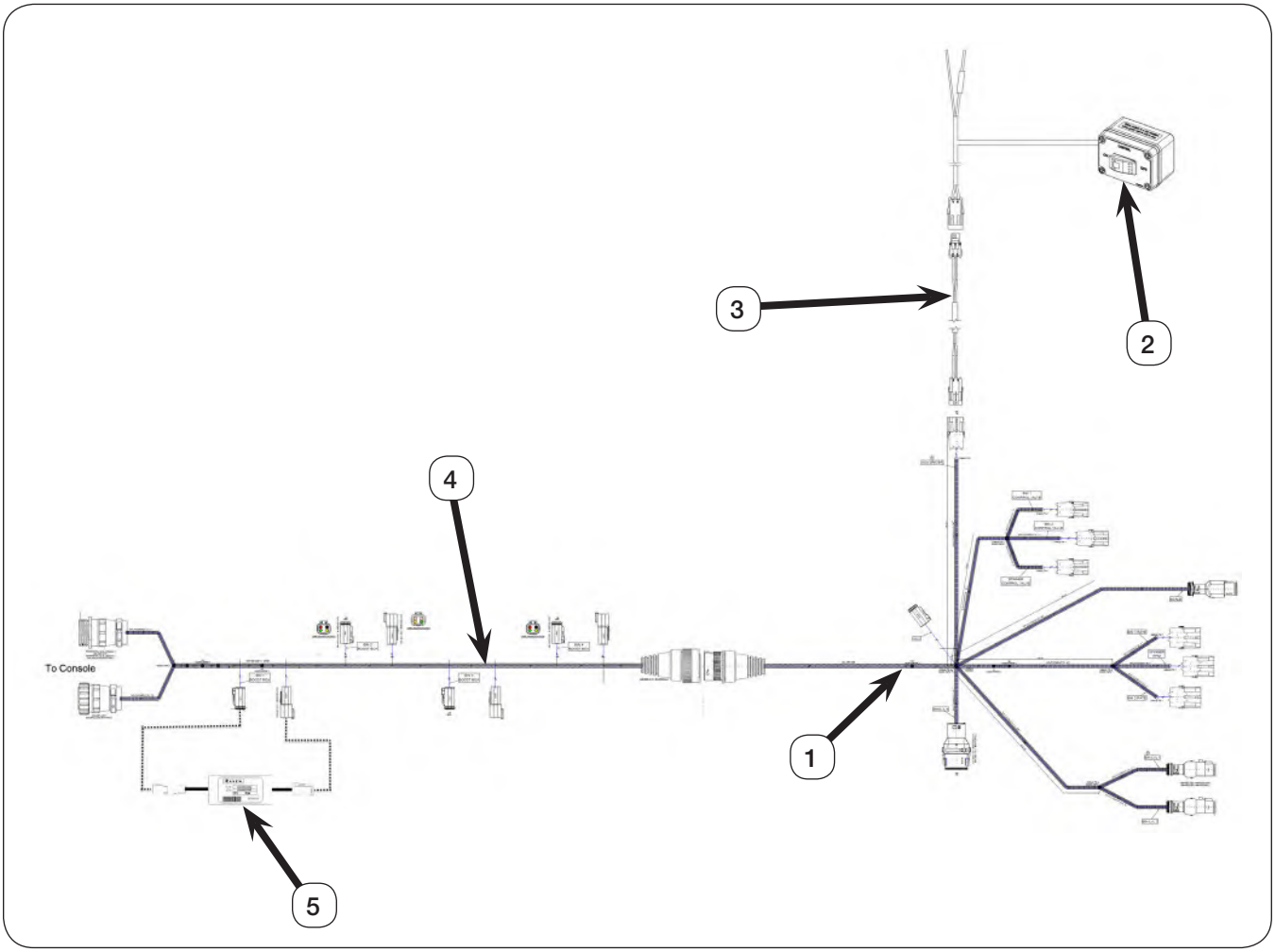
Rate Control Module (RCM) Wiring Harness Components

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	
8	9009812	NODE - RAVEN CONTROL MODULE, LEVEL 2	1	

Less Raven ISOBUS Rate Control Wiring Harness Components

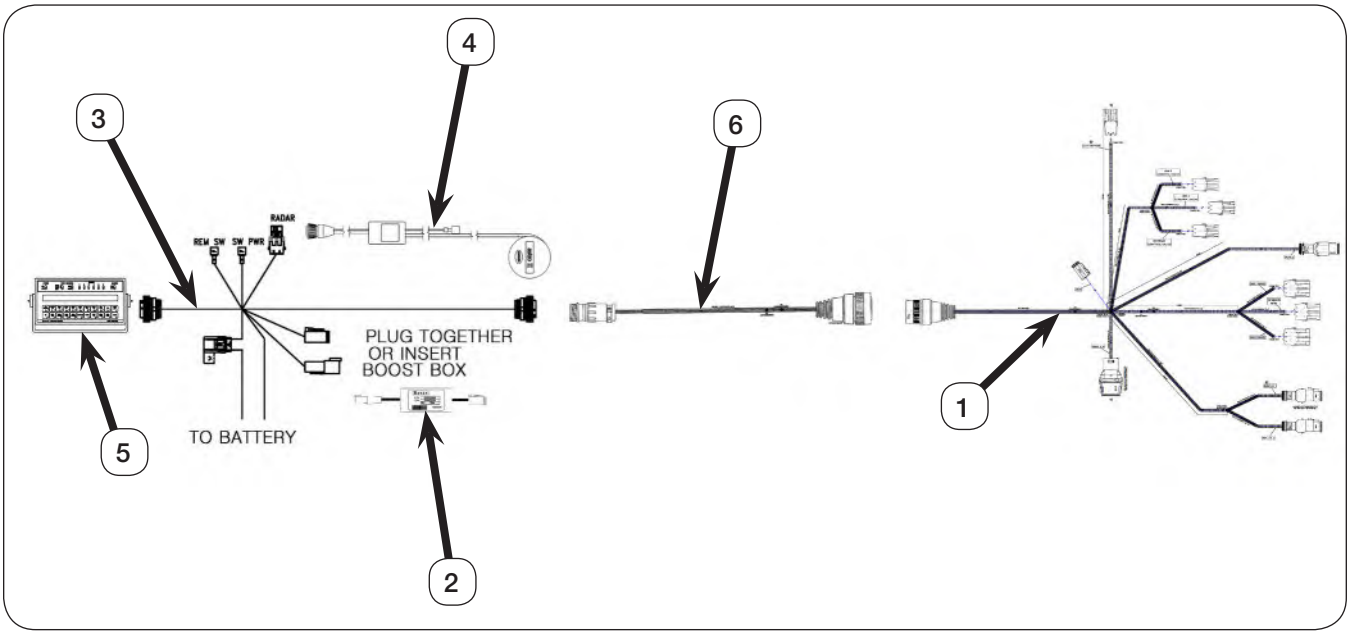
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	9008826	HARNESS - PRODUCT FLOW AND RATE 1 & 2 BINS	1	
2	9009814	BOUNDARY CONTROL ROCKER SWITCH ASSEMBLY	1	
3	9009852	EXTENSION HARNESS, 2 PIN WPS TO 2 PIN WPT	1	
4	9008824	Dual Cable Adapter, 37 Pin to 47 Pin	1	For 1450, 1850, 2250, 2650 Units With John Deere Dry Rate Controller
5	9007550	Boost Box Harness	1	
6	900900-055	Capscrew, 3/8”16UNC x 1” (SS)	1	(Not Shown)
7	900901-006	Hex Nut, 3/8”16UNC (SS)	1	
8	9007556	Cable Clamp, 1 1/8” x 3/4” Wide (SS)	1	

Raven 660 Monitor Rate Control Wiring Harness Components

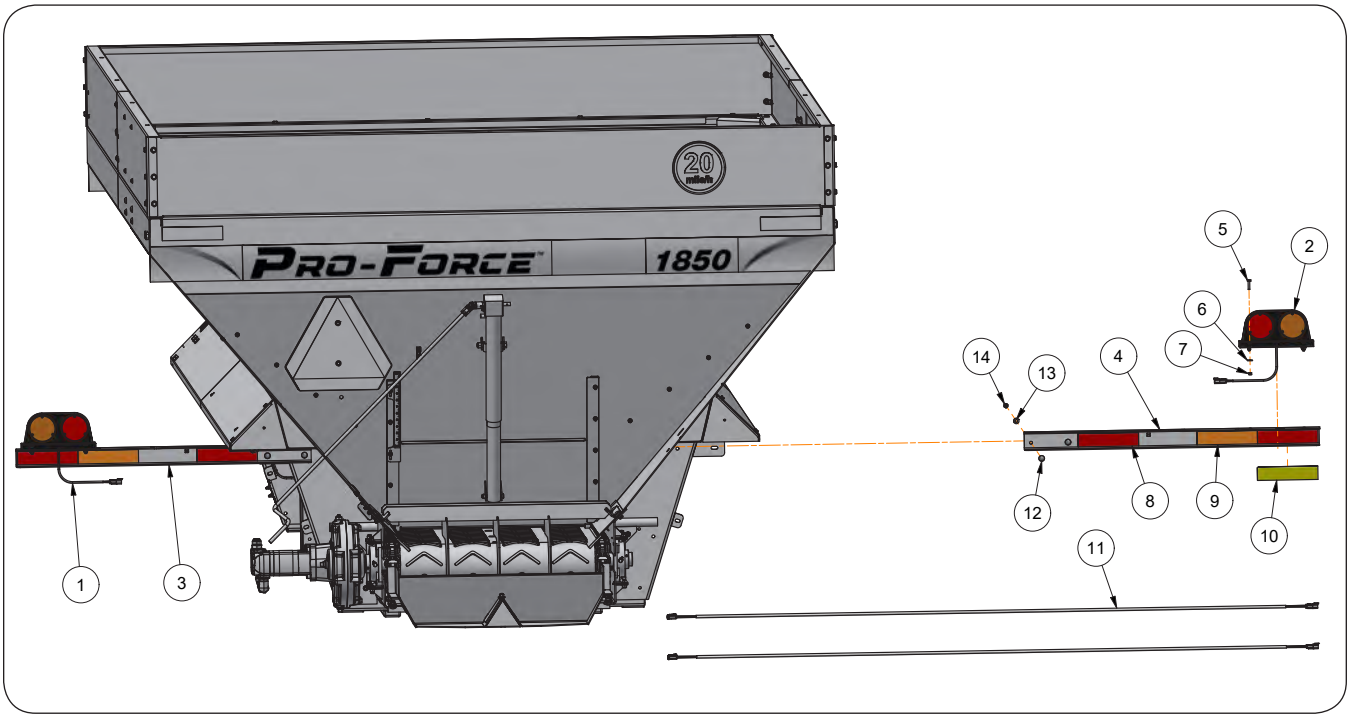
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	9008826	HARNESS - PRODUCT FLOW AND RATE 1 & 2 BINS	1	
2	9007550	Boost Box Harness	1	
3	9007549	Console Control Harness	1	
4	TA723025	GPS Speed Sensor	1	
5	9008852	SCS 660 Control Console	1	
6	9008851	CABLE - ADAPTER, 47 PIN TO 16 PIN	1	
7	900900-055	Capscrew, 3/8"16UNC x 1" (SS)	1	(Not Shown)
8	900901-006	Hex Nut, 3/8"16UNC (SS)	1	
9	9007556	Cable Clamp, 1 1/8" x 3/4" Wide (SS)	1	

Tail Light Assembly Components Without Fenders

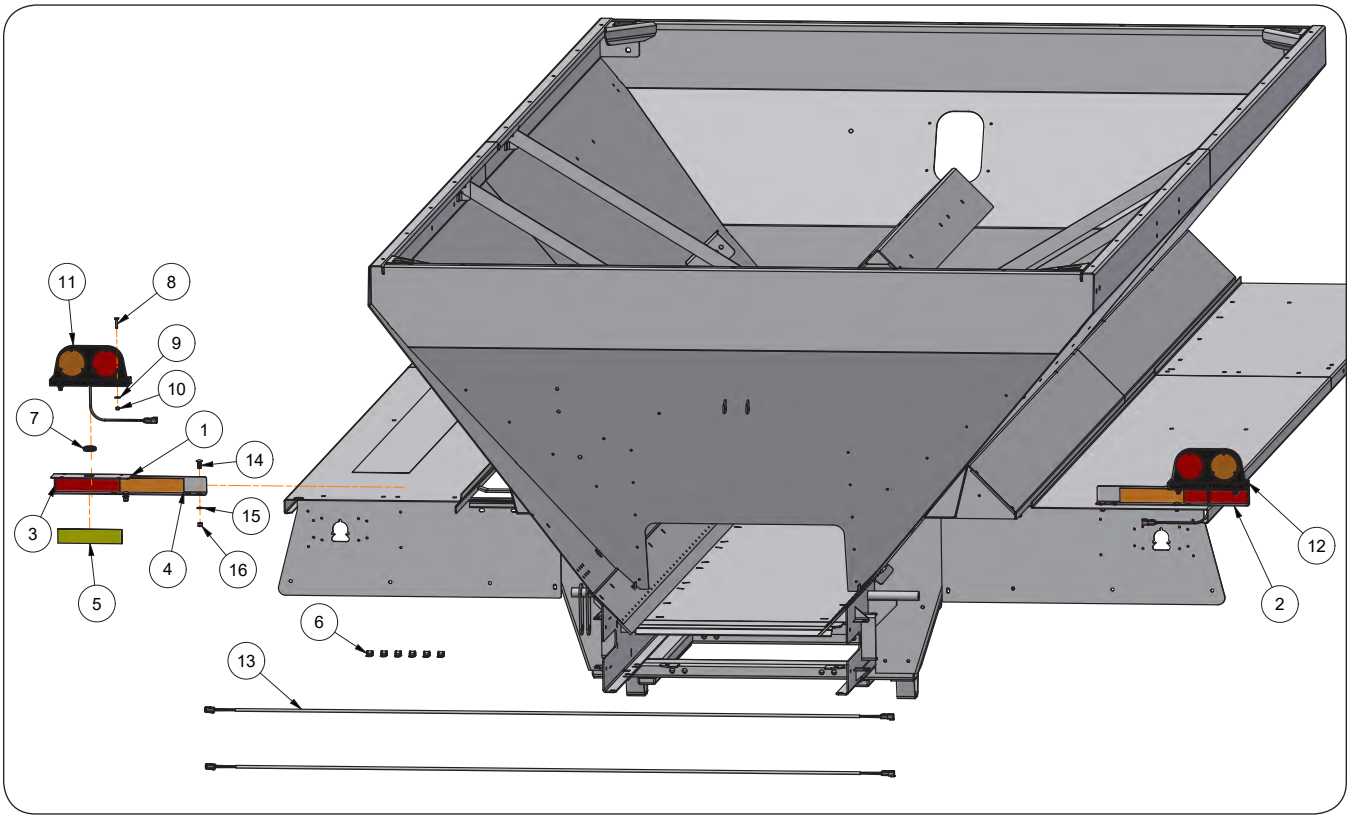
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1238-80-522	Tail Light Assembly Without Fenders	1	Includes Items 1 - 11 For 1150, 1250, 1450, 1850, 2250 and 2650
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	900900-006	Capscrew, 1/4"-20UNC x 1 1/4" SS	8	
6	900902-032	FLAT WASHER, 1/4" SS	8	
7	900905-007	Elastic Lock Nut, 1/4" SS	8	
8	9003126	REFLECTOR 2" X 9" =RED=	4	
9	9003125	Decal, Fluorescent 2" X 9"	2	
10	9003127	REFLECTOR 2" X 9" =AMBER=	2	
11	9008736	LIGHT HARNESS	2	
12	9007908-051	Carriage Bolt, 3/8"-16UNC x 1" SS	4	For 1150, 1250, 1450, 1850
	900900-069	Capscrew, 3/8"-16UNC x 5" SS	2	For 2250 and 2650
13	900902-037	Flat Washer, 3/8" SAE SS	4	
14	900905-012	Elastic Stop Nut, 3/8"-16UNC SS	4	

Tail Light Assembly Components With Fenders

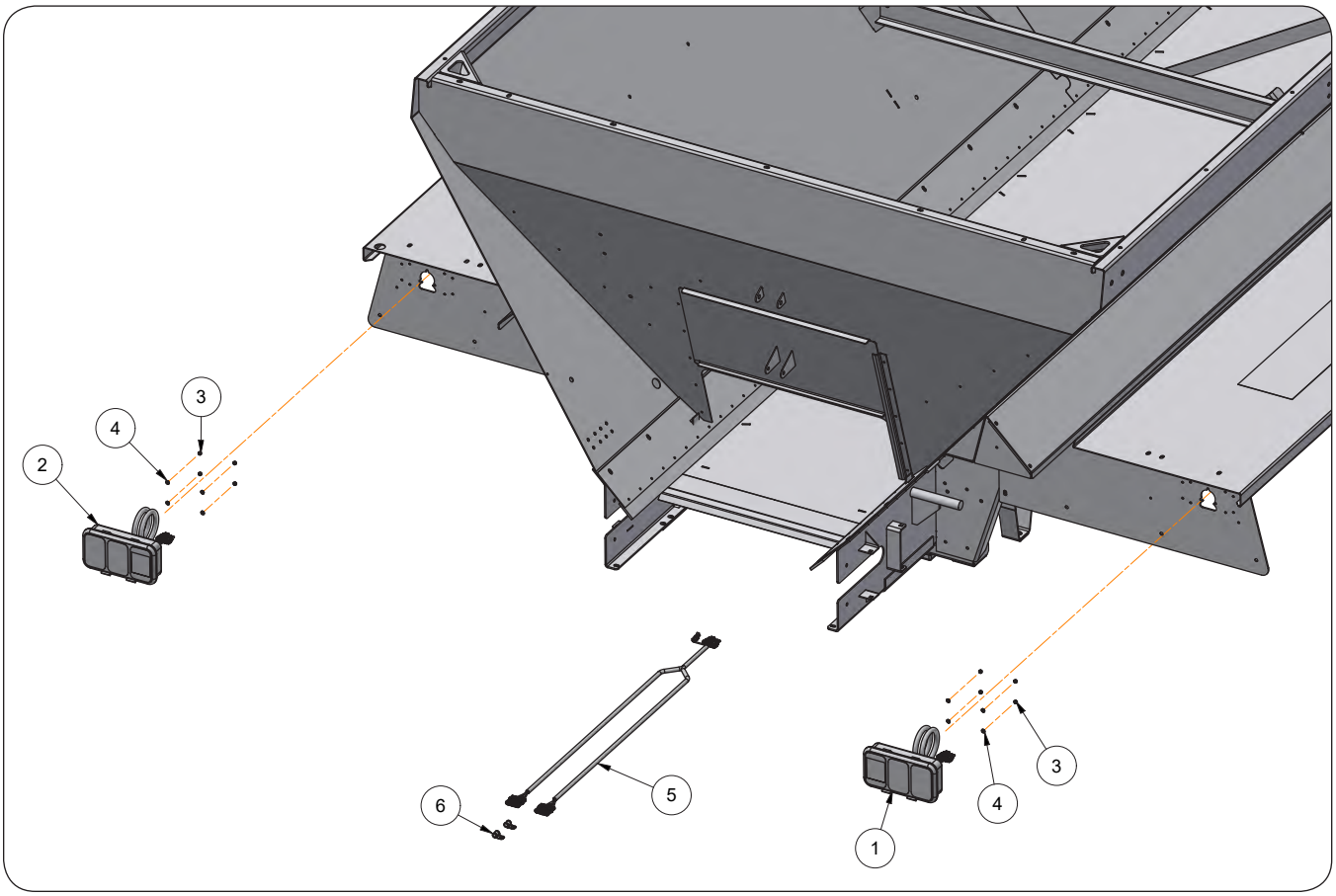
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	415104	Tail Light Assembly With Fenders	1	Includes Items 1 - 7 For 1350, 1450, 1650, 1850, 2050, 2250, 2650
1	415105	FENDERS LIGHT MOUNT LH	1	
2	415106	FENDERS LIGHT MOUNT RH	1	
3	9003126	REFLECTOR 2" X 9" =RED=	2	
4	9003125	Decal, Fluorescent 2" X 9"	2	
5	9003127	REFLECTOR 2" X 9" =AMBER=	2	
6	TA0-903850-0	CABLE CLAMP 1/2" OD	6	
7	9005466	Grommet, 1 3/4" OD x 1 1/8" ID	2	
8	900900-006	Capscrew, 1/4"-20UNC x 1 1/4" SS	8	
9	900902-032	FLAT WASHER, 1/4" SS	8	
10	900905-007	Elastic Lock Nut, 1/4" SS	8	
11	415089	Tail Light - LH Assembly	1	
12	415088	Tail Light - RH Assembly	1	
13	9008736	LIGHT HARNESS	2	
14	9007908-051	Carriage Bolt, 3/8"-16UNC x 1" SS	4	
15	900902-037	Flat Washer, 3/8" SAE SS	4	
16	900905-012	Elastic Stop Nut, 3/8"-16UNC SS	4	

Transport Lighting Components

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



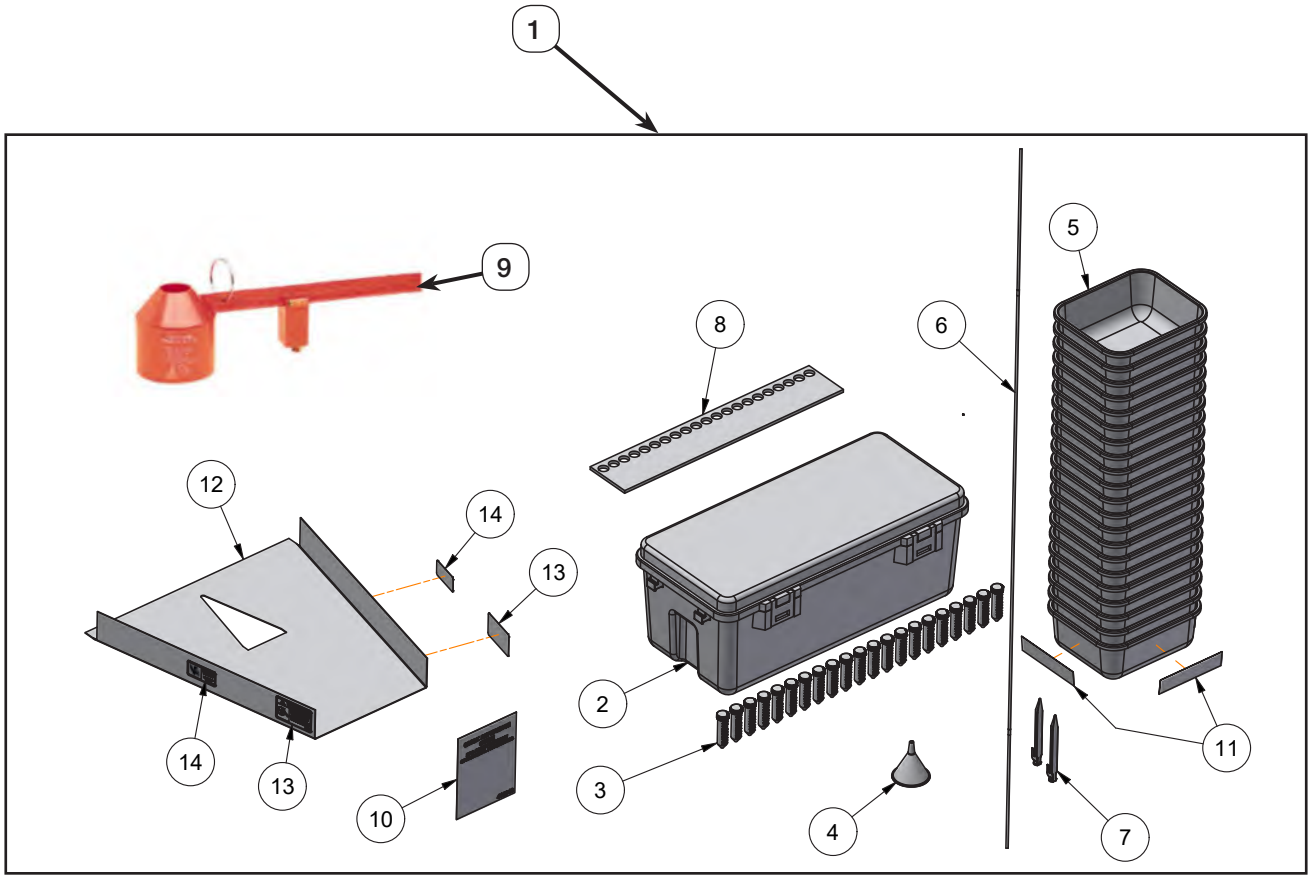
ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414486	Chassis Mounted Lighting Package	1	Includes Items 1 through 6
1	414552	RH Tail Light Assembly	1	
2	414553	LH Tail Light Assembly	1	
3	9002573	Hex Nut - M6 x 1"	8	
4	9004981	Lock Washer - 1/4"	8	
5	9008829	Mounted Spreader Harness	1	
6	TA0-903850-0	Cable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

Notes

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

Spread Test Components

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



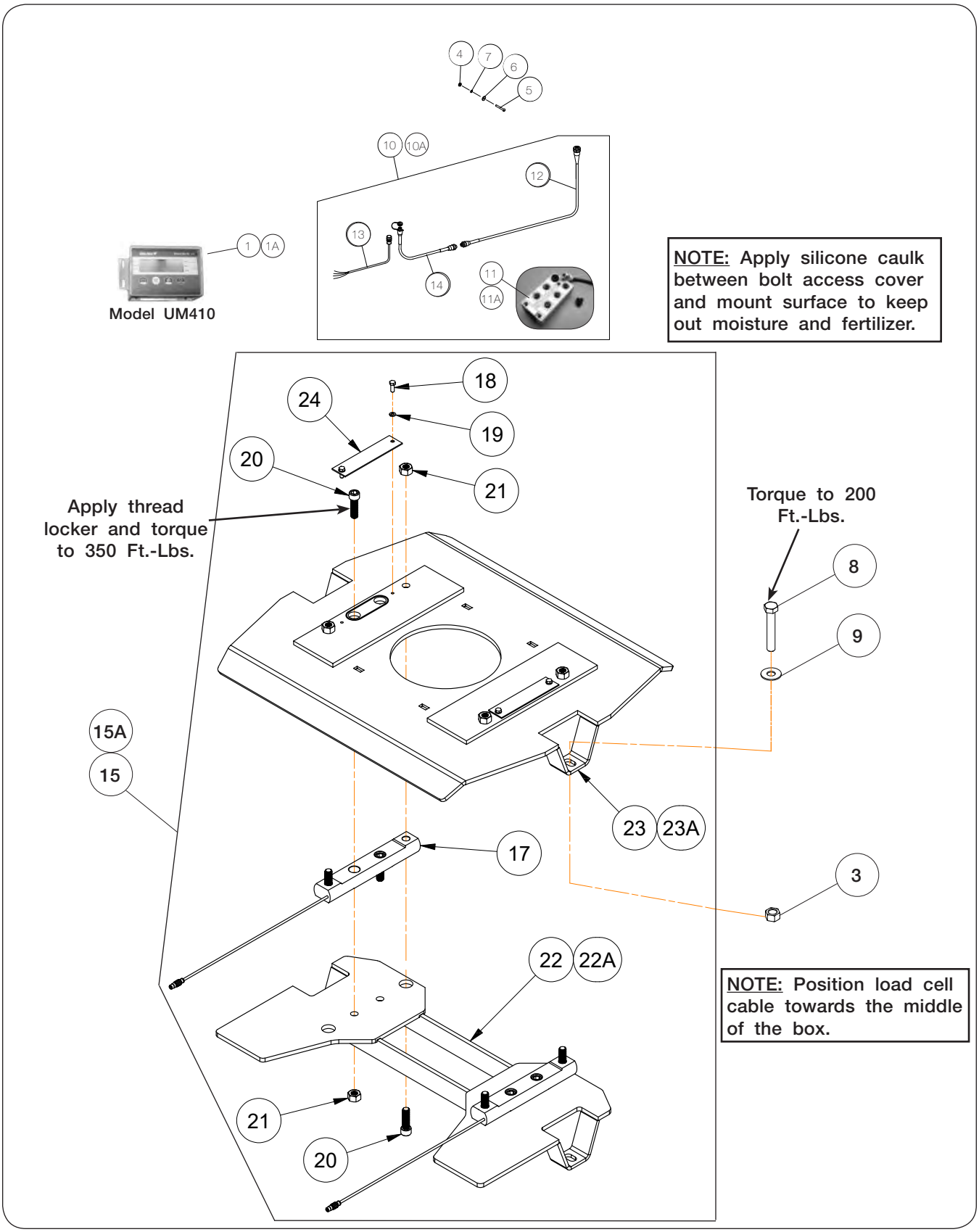
Spread Test Components

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	414542R	Spread Pattern Kit =Red=	1	Includes Items 2 through 14
2	9008822	Storage Box	1	
3	PF1218-999	Spread Pattern Test Tube	21	
4	PF1218-9990	Spread Pattern Funnel	1	
5	PF1218-9991	Spread Pattern Pan	21	
6	415242	Spread Pattern Rope	1	
7	PF1218-9993	Spread Pattern Stake	2	
8	PF1218-9994	Spread Pattern Test Tube Platform	1	
9	9009065	Fertilizer Density Scale	1	
10	416346	Quick Reference Guide	1	
11	9003125	Fluorescent Orange Decal	4	
12	415552R	Calibration Chute =Red=	1	Includes Items 13 and 14
13	9009320	Decal, WARNING “Calibration Chute”	2	
14	95839	Decal, WARNING “Pinch Point”	2	

Point Scale System Assembly Components

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



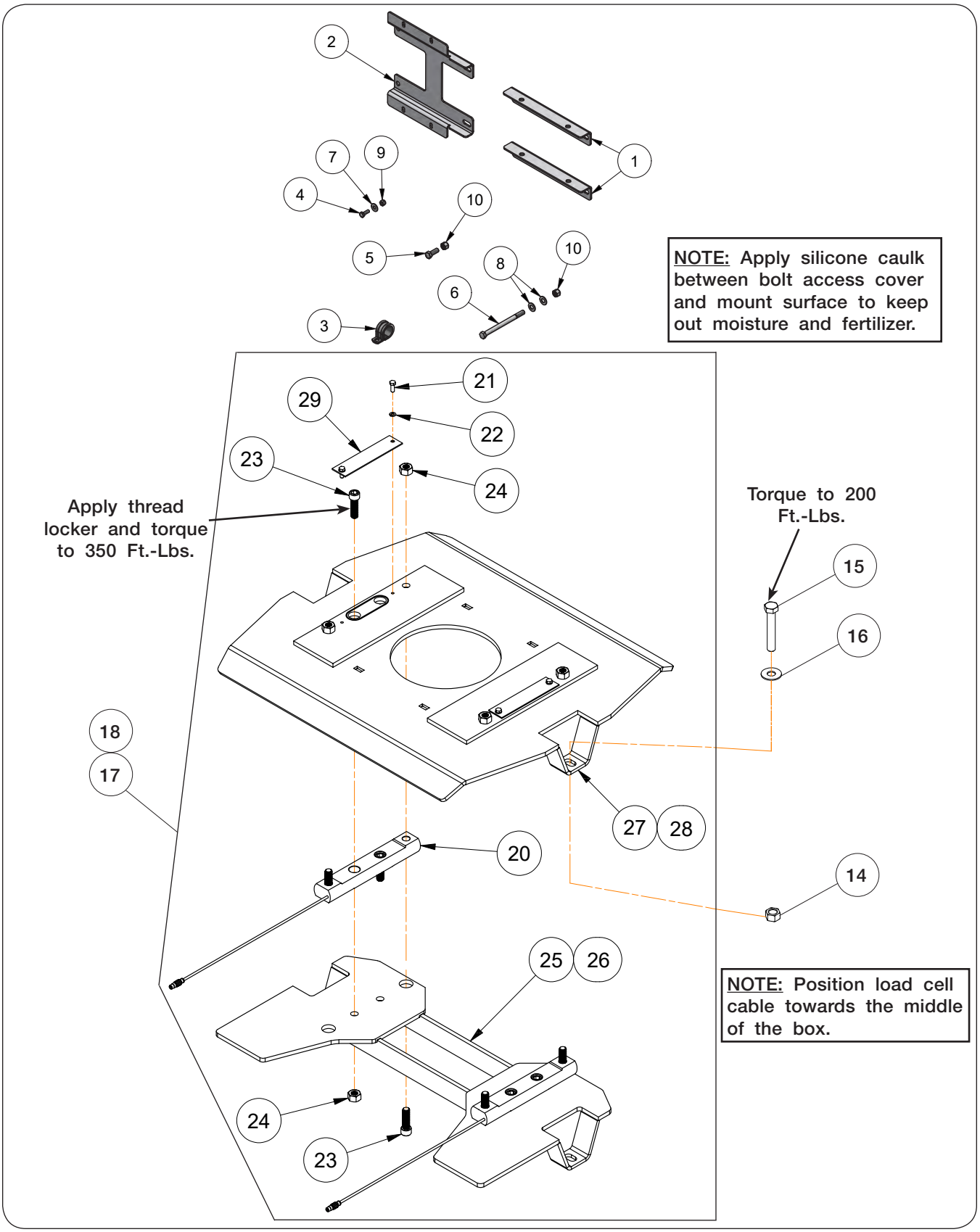
Point Scale System Assembly Components

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	16' & Longer Boxes Items 1, 3-10, 15
	414410	4 Point Scale System with 410 Monitor		13' & 14' Boxes Items 1A, 3-10A, 15 & 15A
	414411	6 Point Scale System ISOBUS		16' & Longer Boxes Items 2-9, 11, 15
	414412	4 Point Scale System ISOBUS		13' & 14' Boxes Items 2-9, 11A, 15 & 15A
1	414587	UM410 Indicator/Scale Box	1	16' & Longer Boxes
1A	414586			13' & 14' Boxes
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	16' & Longer Boxes For SN B40850100 & Higher
			4	13' & 14' Boxes 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	16' & Longer Boxes For SN B40850100 & Higher Torque to 200 Ft.-Lbs.
			4	13' & 14' Boxes For SN B40850100 & Higher Torque to 200 Ft.-Lbs.
9	9503636-104	Flat Washer 3/4"	12	16' & Longer Boxes For SN B40850100 & Higher
			8	13' & 14' Boxes For SN B40850100 & Higher
10	9008848	Kit Universal EZ Mate	1	16' & Longer Boxes (Items 11-14)
10A	9006049			13' & 14' Boxes (Items 11A-14)
11	9008828	Junction Box, 9 Port	1	
11A	9004925	J-Block, 6 Port		As Shown
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	16' & Longer Boxes (Items 16-24)
			1	13' & 14' Boxes (Items 16-24)
15A	PF1250-02-000-14	Load Cell Assembly - Rear	1	13' & 14' Boxes (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	9501438-053	Capscrew, 3/8"-16UNC x 3/4" Gr. 5	4	
19	9501440-021	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	9503638-044	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 WELDMNT =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

Less ISOBUS Rate Control Point Scale System Components

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



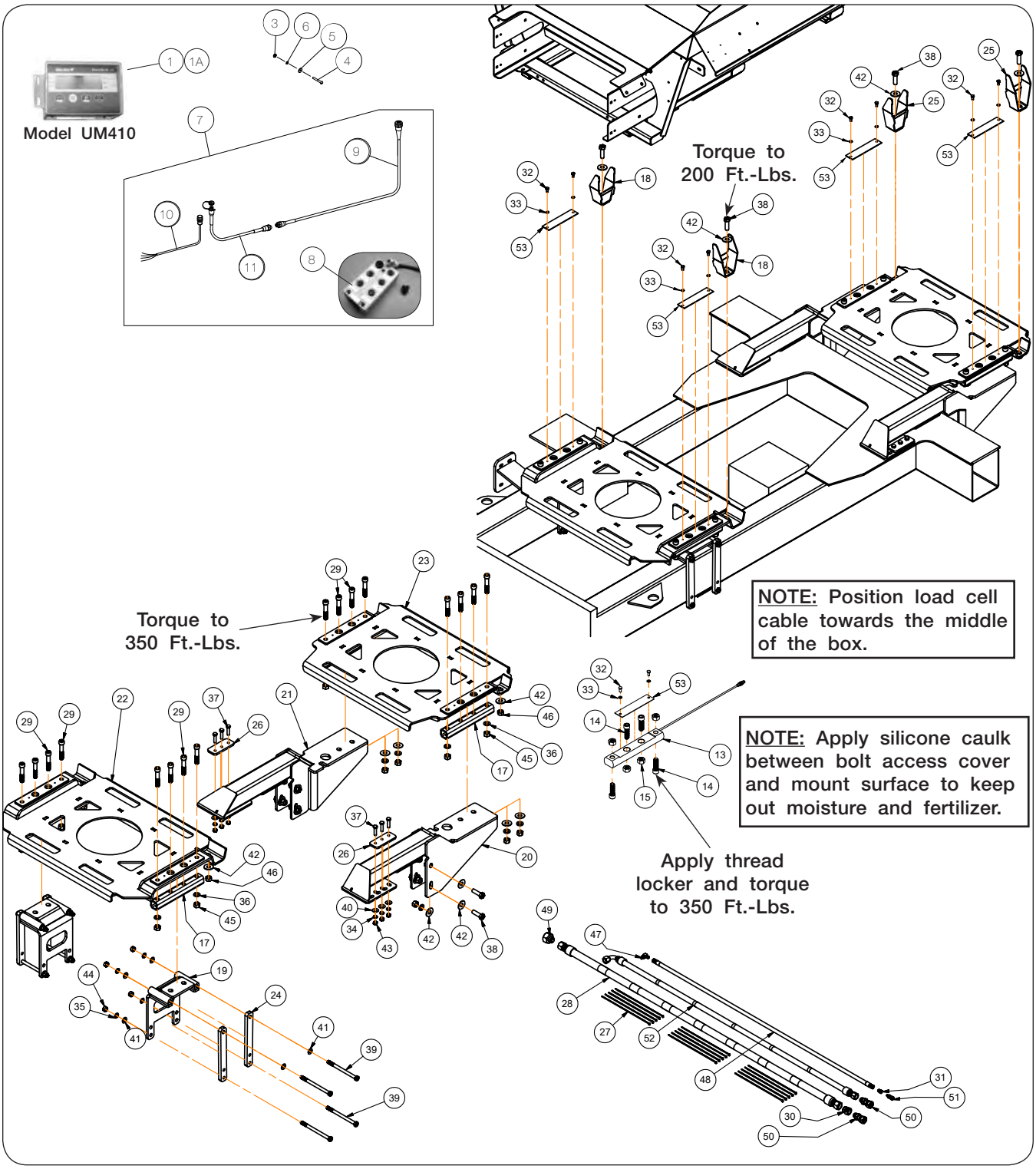
Less ISOBUS Rate Control Point Scale System Components

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
	416193	6 Point Topcon ISOBUS Scale System	1	18', 22' & 26' Boxes Includes Items 1-17
	416194	4 Point Topcon ISOBUS Scale System		14' Boxes Includes Items 1-18
1	416403	Mount Plate	2	
2	416404	Junction Box Mount Plate	1	
3	9007556	Cable Clamp, 1 1/8" x 3/4" Wide (SS)	1	
4	900900-003	Capscrew, 1/4"-20UNC x 3/4" (SS)	4	
5	900900-055	Capscrew, 3/8"-16UNC x 1" (SS)	1	
6	900900-069	Capscrew, 3/8"-16UNC x 5" (SS)	4	
7	900902-032	Flat Washer 1/4" (SS)	4	
8	900902-037	Flat Washer 3/8" (SS)	8	
9	900905-007	Elastic Stop Nut, 1/4"-20UNC (SS)	4	
10	900905-012	Elastic Stop Nut, 3/8"-16UNC (SS)	5	
11	9009634	CABLE EZ MATE 2M/M	1	Not Shown
12	9009635	Junction Box - 8 Port, ISO	1	
13	9009637	JD ISOBUS Harness	1	
14	9503653-037	Nylon Lock Nut 3/4"-10UNC Gr. 8	6	18', 22' & 26' Boxes For SN B40850100 & Higher
			4	14' Boxes For SN B40850100 & Higher
15	9503634-146	Capscrew, 3/4"-10UNC x 2 1/4" Gr. 8	6	18', 22' & 26' Boxes For SN B40850100 & Higher Torque to 200 Ft.-Lbs.
			4	14' Boxes For SN B40850100 & Higher Torque to 200 Ft.-Lbs.
16	9503636-104	Flat Washer 3/4"	12	18', 22' & 26' Boxes For SN B40850100 & Higher
			8	14' Boxes For SN B40850100 & Higher
17	PF1250-02-000	Load Cell Assembly	3	18', 22' & 26' Boxes (Items 16-24)
			1	14' Boxes (Items 16-24)
18	PF1250-02-000-14	Load Cell Assembly - Rear	1	14' Boxes (Items 16-22A, 23A, 24)
19	9005013	CABLE 21' EZ MATE	2	Not Shown
20	9008823	LOAD CELL, 2' CABLE W/ EZ CONNECTOR	2	See Note On Previous Page
21	9501438-053	Capscrew, 3/8"-16UNC x 3/4" Gr. 5	4	
22	9501440-021	Lock Washer 3/8"	4	
23	PF1200-6041	CAPSCREW SOCKET HEAD 3/4-10UNC x 2 1/2	8	Apply thread locker & torque to 350 Ft.-Lbs.
24	9503638-044	HEAVY HEX NUT 3/4"-10UNC	8	
25	PF1250-02-100B	LOAD CELL, LOWER MOUNT WELDMENT =Black=	1	
26	PF1250-02-100-14B	REAR LOAD CELL, LOWER MOUNT WELDMNT =Black=	1	
27	PF1250-02-200B	LOAD CELL, TOP MOUNT WELDMENT =Black=	1	
28	PF1250-02-200-14B	REAR LOAD CELL, TOP MOUNT WELDMENT =Black=	1	
29	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.



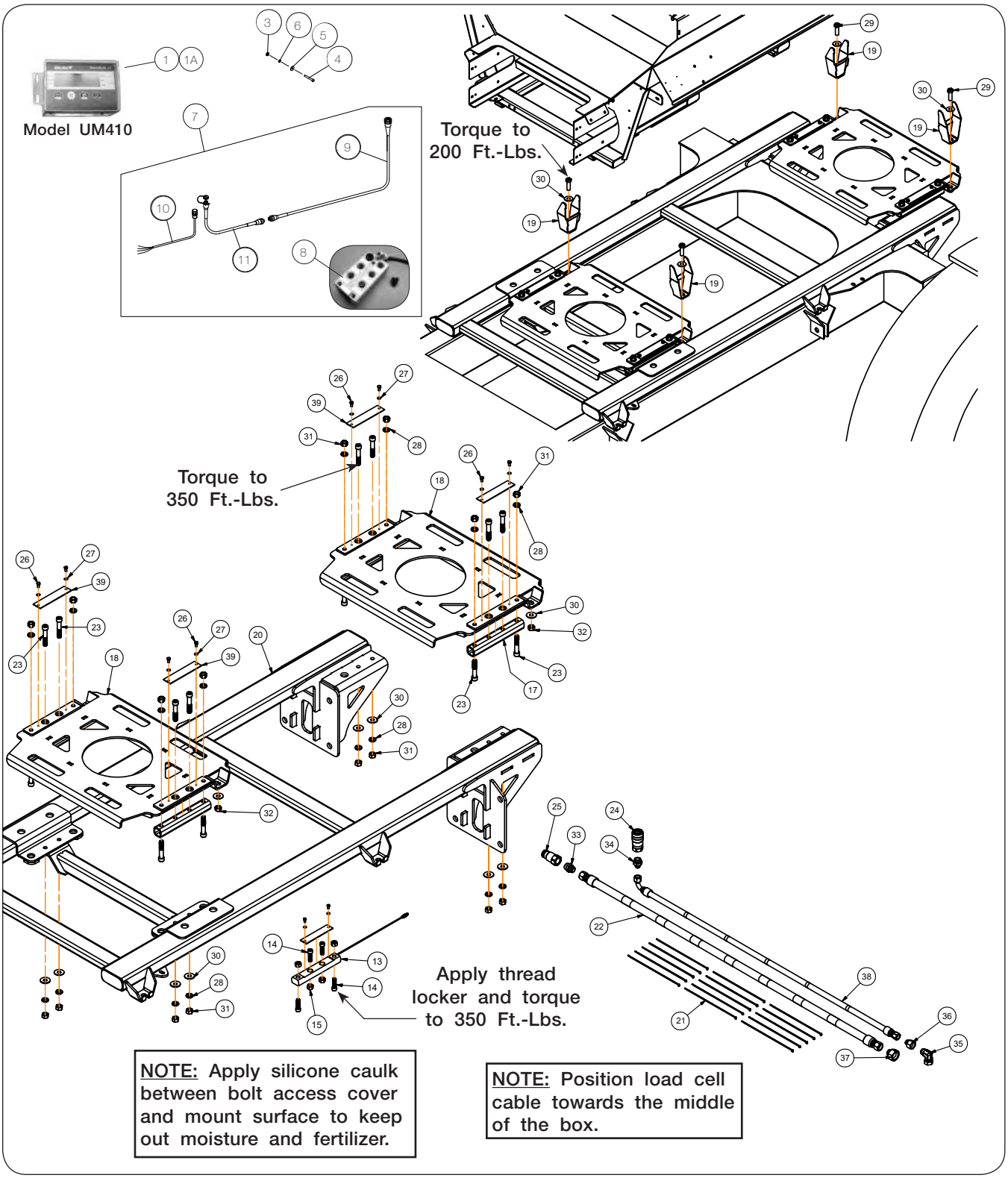
John Deere Chassis Scale System Assembly Components

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		Items 2-6, 8, 12-15
1	414586	UM410 Indicator/Scale Box (410 Monitor Only)	1	14' & Shorter Boxes
1A	414587			16' & Longer Boxes
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 (Black)	1	Items 17-53
17	414744B	HOPPER MOUNT TUBE =Black=	4	For Non-Scale Chassis Units
18	414757	FRONT BOX MOUNT	2	
19	414822B	FRONT FRAME MOUNT WELDMENT =Black=	2	
20	414823B	LH MOUNT WELDMENT =Black=	1	
21	414824B	RH MOUNT WELDMENT =Black=	1	
22	414836B	FRONT MOUNT WELDMENT =Black=	1	
23	414837B	REAR MOUNT WELDMENT =Black=	1	
24	414962B	CLAMP PLATE =Black=	4	
25	415090	REAR BOX MOUNT	2	
26	415268B	BOLT DOUBLER PLATE =Black=	2	
27	9000107	CABLE TIE 14 1/2" X 0.19"	15	
28	9008873	HYD HOSE 1" Dia. 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	Torque to 200 Ft.-Lbs.
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" Dia. 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.



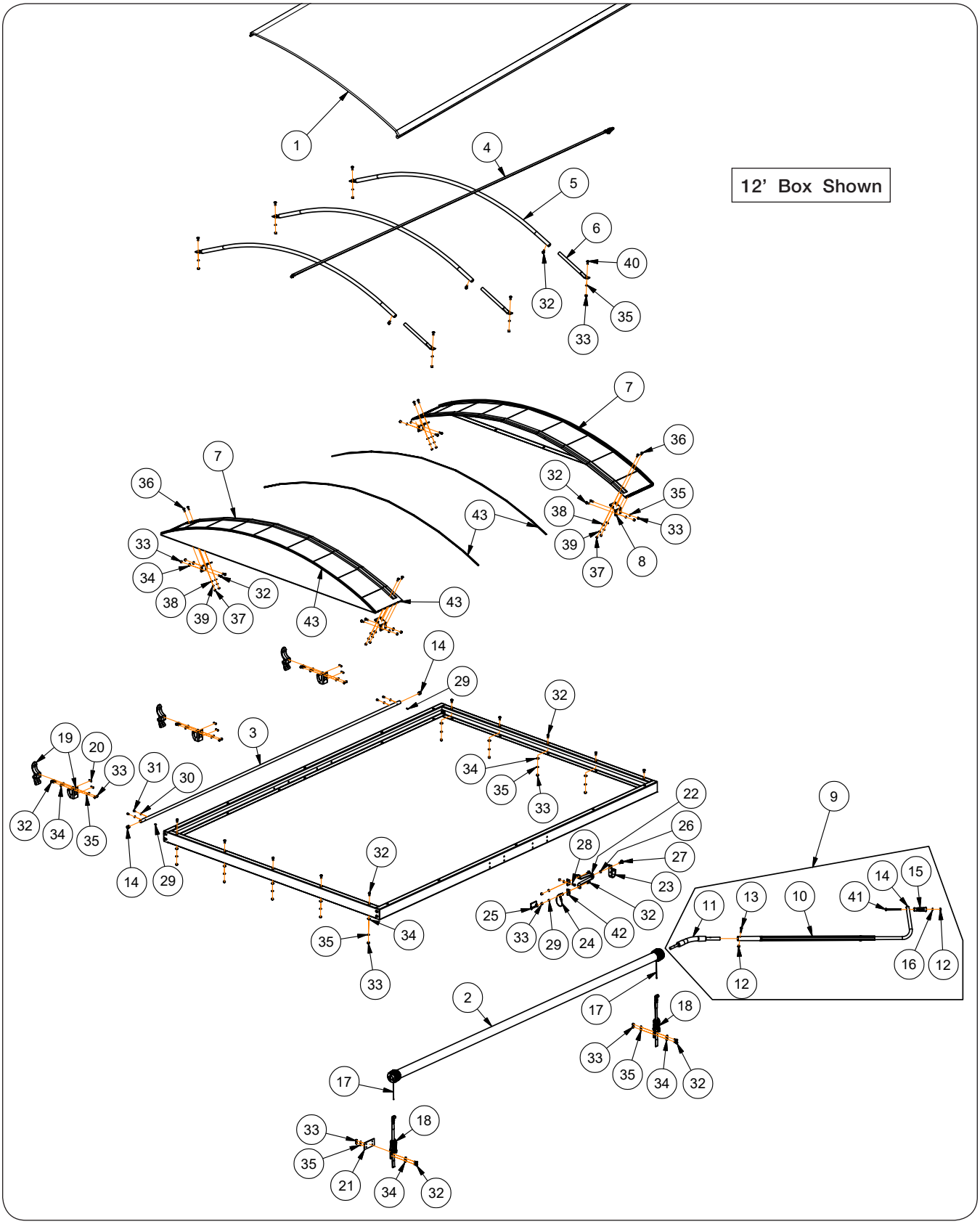
CNH Trident Chassis Scale System Assembly Components

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 (410 Monitor Only)	1	14' & Shorter Boxes
1A	414587			16' & Longer Boxes
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 =Black=	4	For Non-Scale Chassis Units
18	414837B	REAR MOUNT WELDMENT =Black=	2	
19	415090	REAR BOX MOUNT	4	
20	415227B	CHASSIS MOUNT WELDMENT =Black=	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	Torque to 200 Ft.-Lbs.
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

Tarp Assembly Components

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



Tarp Assembly Components

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

ITEM	PART NO.	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
	9009576	26' Box - 102" x 25' Lg. Tarp Kit (SS)	-	-	-	-	-	-	-	1	
	PFF96220	22' Box - 102" x 21' Lg. Tarp Kit (SS)	-	-	-	-	-	-	1	-	
	PFF96200	20' Box - 102" x 19' Lg. Tarp Kit (SS)	-	-	-	-	-	1	-	-	
	PFF96180	18' Box - 102" x 17' Lg. Tarp Kit (SS)	-	-	-	-	1	-	-	-	
	PFF96160	16' Box - 102" x 15' Lg. Tarp Kit (SS)	-	-	-	1	-	-	-	-	
	PFF96140	14' Box - 102" x 13' Lg. Tarp Kit (SS)	-	-	1	-	-	-	-	-	
	PFF96130	13' Box - 102" x 12' Lg. Tarp Kit (SS)	-	1	-	-	-	-	-	-	
	PFF96120	12' Box - 102" x 11' Lg. Tarp Kit (SS)	1	-	-	-	-	-	-	-	
	9009557	Tarp - 118" x 300"	-	-	-	-	-	-	-	1	
	9009559	Tarp - 118" x 252"	-	-	-	-	-	-	1	-	
	9009268	Tarp - 118" x 204"	-	-	-	-	1	1	-	-	
1	9009275	Tarp - 118" x 180"	-	-	-	1	-	-	-	-	
	9009242	Tarp - 118" x 156"	-	-	1	-	-	-	-	-	
	9009260	Tarp - 118" x 144"	-	1	-	-	-	-	-	-	
	9009135	Tarp - 118" x 132"	1	-	-	-	-	-	-	-	
	9009556		-	-	-	-	-	-	-	1	
	9009560		-	-	-	-	-	-	1	-	
	9009273		-	-	-	-	-	1	-	-	
	9009269		-	-	-	-	1	-	-	-	See Roll Tube, Spring & Spool Assembly Section
2	9009276	Roll Tube, Spring & Spool Assembly	-	-	-	1	-	-	-	-	
	9009243		-	-	1	-	-	-	-	-	
	9009259		-	1	-	-	-	-	-	-	
	9009414		1	-	-	-	-	-	-	-	
	9009558	Fixed Tube - 1" Dia. x 302 1/4" (SS)	-	-	-	-	-	-	-	1	
	9009561	Fixed Tube - 1" Dia. x 254 1/4" (SS)	-	-	-	-	-	-	1	-	
	9009274	Fixed Tube - 1" Dia. x 230 1/4" (SS)	-	-	-	-	-	1	-	-	
3	9009270	Fixed Tube - 1" Dia. x 206 1/4" (SS)	-	-	-	-	1	-	-	-	
	9009277	Fixed Tube - 1" Dia. x 182 1/4" (SS)	-	-	-	1	-	-	-	-	
	9009435	Fixed Tube - 1" Dia. x 158 1/4" (SS)	-	-	1	-	-	-	-	-	
	9009244	Fixed Tube - 1" Dia. x 146 1/4" (SS)	-	1	-	-	-	-	-	-	
	9009137	Fixed Tube - 1" Dia. x 134 1/4" (SS)	1	-	-	-	-	-	-	-	
	9009555		-	-	-	-	-	-	-	1	
	9009267		-	-	-	-	-	1	1	-	
4	9009266	Ridge Strap Kit	-	-	-	1	1	-	-	-	
	PFF8515		1	1	1	-	-	-	-	-	
5	PFF9622	TOP MOUNT BOW - 12" RISE (SS)	3	3	3	4	4	5	5	6	
6	PFF8624	TOP MOUNT BOW EXTENSION - 12" RISE (SS)	3	3	3	4	4	5	5	6	
7	PFF2444	END CAP WELDMENT - 12" RISE (SS)	2	2	2	2	2	2	2	2	

(Continued on next page)

Tarp Assembly Components (continued)

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

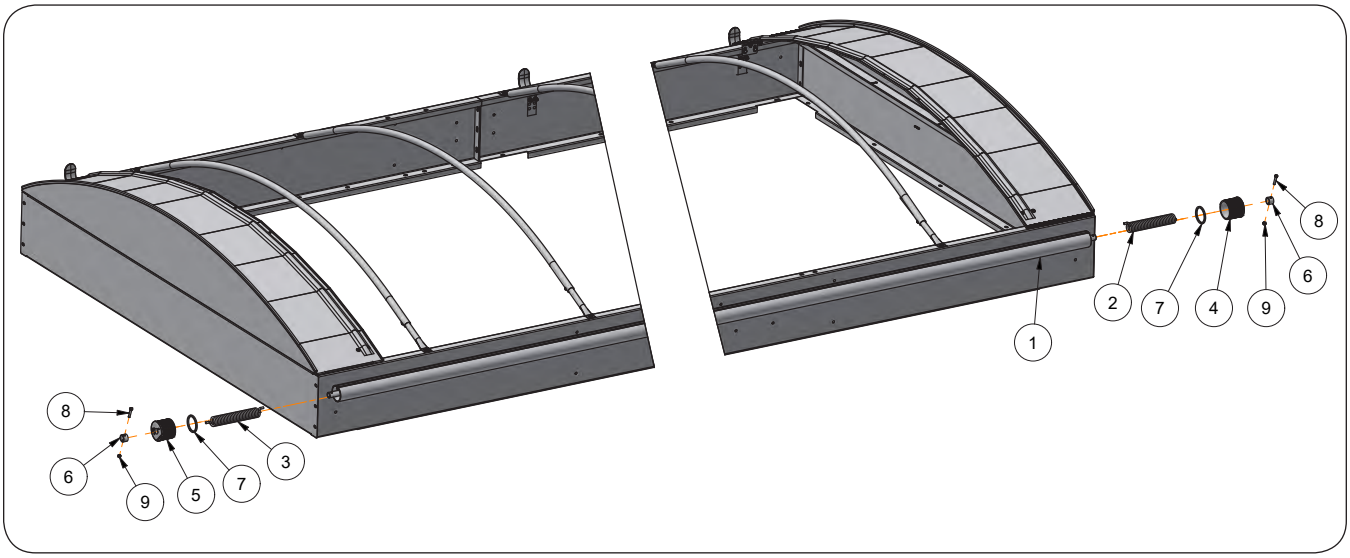
ITEM	PART NO.	DESCRIPTION	12' BOX QTY	13' BOX QTY	14' BOX QTY	16' BOX QTY	18' BOX QTY	20' BOX QTY	22' BOX QTY	26' BOX QTY	NOTES
8	9009554	FACE MOUNT END CAP BRACKET (SS)	4	4	4	4	4	4	4	4	
9	PFF3809	TELESCOPING CRANK ARM ASSEMBLY W/FLEX JOINT	1	1	1	1	1	1	1	1	
10	9009426	TELESCOPING CRANK ARM ASSEMBLY	1	1	1	1	1	1	1	1	
11	9009428	FLEX JOINT	1	1	1	1	1	1	1	1	
12	902875	LOCKNUT 3/8"-16UNC	2	2	2	2	2	2	2	2	
13	9390-058	CAPSCREW 3/8"-16UNC x 1 3/4" Gr.5	1	1	1	1	1	1	1	1	
14	9009208	PLASTIC PLUG 1"	3	3	3	3	3	3	3	3	
15	9009420	RUBBER CRANK HANDLE	1	1	1	1	1	1	1	1	
16	9405-074	FLAT WASHER 3/8" SAE	1	1	1	1	1	1	1	1	
17	PFF5280	TARP SPOOL CABLE - 139" (SS)	2	2	2	2	2	2	2	2	
18	PFF2608	RATCHET STRAP ASSEMBLY - 18" LG. (SS)	2	2	2	2	2	2	2	2	
19	9009140	EASY OFF TARP STOP ASSEMBLY	3	3	3	3	3	3	4	4	
20	9009205	BOWTIE COTTER PIN 1 3/8"	6	6	6	6	6	6	8	8	
21	9009129	RATCHET MOUNTING BRACKET (SS)	1	-	-	-	-	-	-	-	12' Box Only
22	9009433	CRANK RETAINER WELDMENT (SS)	1	1	1	1	1	1	1	1	
23	9009213	J-HOOK CRANK RETAINER	1	1	1	1	1	1	1	1	
24	9009217	SNAP INTERLOCK CABLE (SS)	1	1	1	1	1	1	1	1	
25	96571	LYNCH PIN 3/8" DIA. X 2 1/2"	1	1	1	1	1	1	1	1	
26	9009215	RETAINER BUSHING	1	1	1	1	1	1	1	1	
27	91266	FLANGE SCREW 1/2"-13UNC x 1 1/4" Gr.5	1	1	1	1	1	1	1	1	
28	900900-056	CAPSCREW 3/8"-16UNC x 1 1/4" (SS)	1	1	1	1	1	1	1	1	
29	9501110	POP RIVET 3/16"	2	2	2	2	2	2	2	2	
30	9009199	POLY WASHER 1/4" - BLACK	4	4	4	4	4	4	4	4	
31	9004978	SELF DRLLING PAN HEAD SCREW 1/4"-20UNC x 3/4"	4	4	4	4	4	4	4	4	
32	900900-055	CAPSCREW 3/8"-16UNC x 1" (SS)	24	24	24	24	24	24	24	24	
33	900901-006	HEX NUT 3/8-16UNC (SS)	31	31	31	31	33	35	35	37	
34	900902-038	FLAT WASHER 3/8" (SS)	18	18	18	18	18	18	22	22	
35	900903-021	LOCK WASHER 3/8" (SS)	27	27	27	29	29	31	35	37	
36	9009195	BUTTON HEAD SCREW 5/16"-18UNC x 1" (SS)	8	8	8	8	8	8	8	8	
37	900901-004	HEX NUT 5/16"-18UNC (SS)	8	8	8	8	8	8	8	8	
38	900902-035	FLAT WASHER 5/16" (SS)	8	8	8	8	8	8	8	8	
39	900903-019	LOCK WASHER 5/16" (SS)	8	8	8	8	8	8	8	8	
40	9009190	BUTTON HEAD SCREW 3/8"-16UNC x 1" (SS)	6	6	6	8	8	10	10	12	
41	9009421	CARRIAGE BOLT 3/8"-16UNC x 5 3/8" GR.5	1	1	1	1	1	1	1	1	
42	414584	TARP BRACKET (SS)	2	2	2	2	2	2	2	2	Not Included With Tarp Kit
43	9000787	EDGE TRIM	24	24	24	24	24	24	24	24	Specify in Feet
44	9009209	PRO FORCE TARP KIT - OPERATOR'S MANUAL	1	1	1	1	1	1	1	1	Not Shown

Notes

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

Roll Tube, Spring & Spool Assembly

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



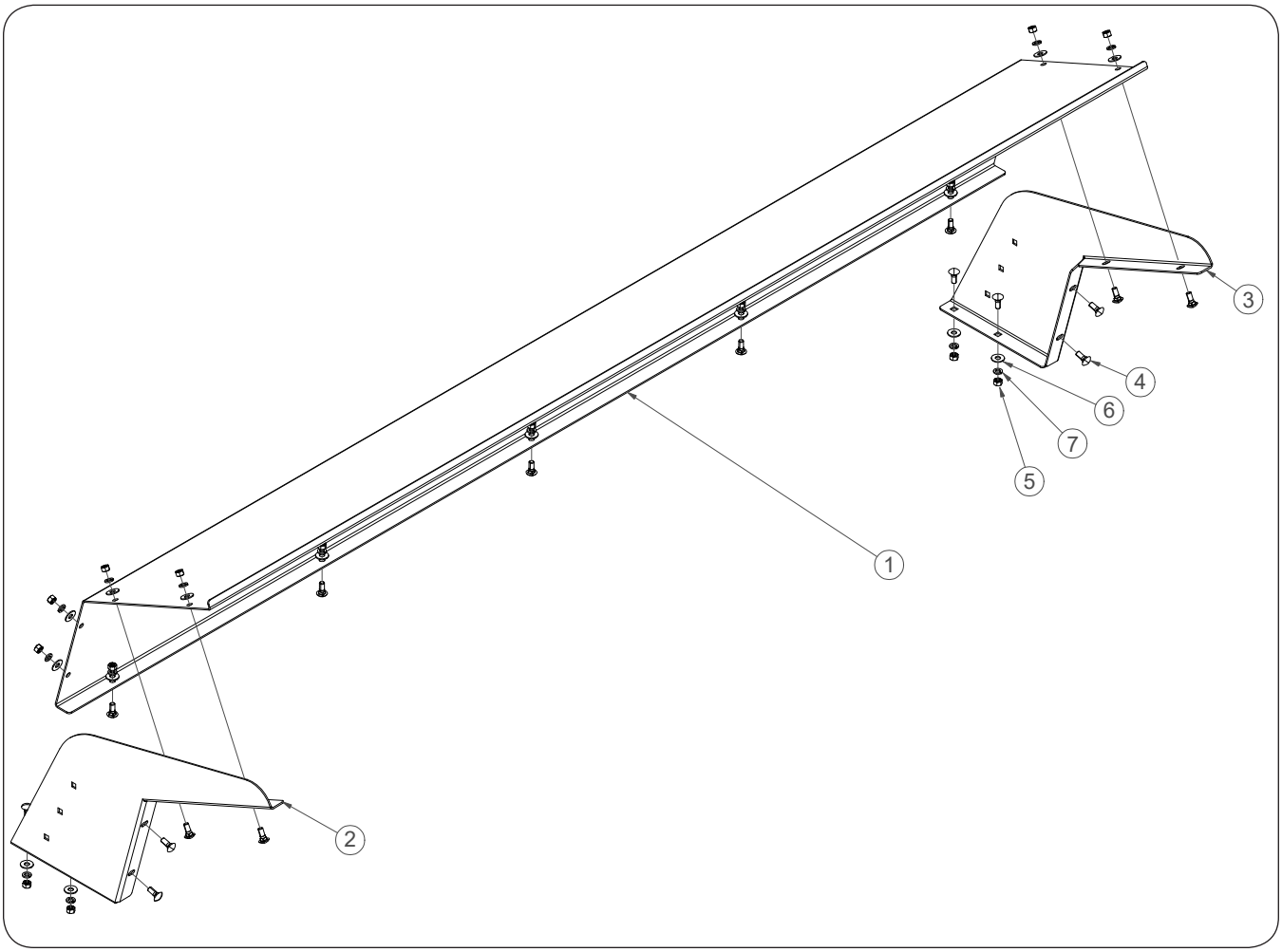
Roll Tube, Spring & Spool Assembly

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

ITEM	PART NO.	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
	9009556	Roll Tube, Spring & Spool Assembly	-	-	-	-	-	-	-	1	Includes all items
	9009560		-	-	-	-	-	-	1	-	
	9009273		-	-	-	-	-	1	-	-	
	9009269		-	-	-	-	1	-	-	-	
	9009276		-	-	-	1	-	-	-	-	
	9009243		-	-	1	-	-	-	-	-	
	9009259		-	1	-	-	-	-	-	-	
	9009414		1	-	-	-	-	-	-	-	
1	9009563	ROLL TUBE ASSEMBLY - 3" x 306"	-	-	-	-	-	-	-	1	
	9009564	ROLL TUBE ASSEMBLY - 3" x 258"	-	-	-	-	-	-	1	-	
	9009441	ROLL TUBE ASSEMBLY - 3" x 234"	-	-	-	-	-	1	-	-	
	9009440	ROLL TUBE ASSEMBLY - 3" x 210"	-	-	-	-	1	-	-	-	
	9009448	ROLL TUBE ASSEMBLY - 3" x 186"	-	-	-	1	-	-	-	-	
	9009437	ROLL TUBE ASSEMBLY - 3" x 162"	-	-	1	-	-	-	-	-	
	9009439	ROLL TUBE ASSEMBLY - 3" x 150"	-	1	-	-	-	-	-	-	
	9009136	ROLL TUBE ASSEMBLY - 3" x 138"	1	-	-	-	-	-	-	-	
2	PFF8230	FRONT SPRING - BLACK	1	1	1	1	1	1	1	1	
3	PFF8229	REAR SPRING - RED	1	1	1	1	1	1	1	1	
4	PFF4372	FRONT CABLE SPOOL	1	1	1	1	1	1	1	1	
5	PFF4373	REAR CABLE SPOOL	1	1	1	1	1	1	1	1	
6	PFF8228	CARTRIDGE SPACER	2	2	2	2	2	2	2	2	
7	9009198	RUBBER O-RING	2	2	2	2	2	2	2	2	
8	900900-033	CAPSCREW 5/16"-18UNC X 1 3/4" SS	2	2	2	2	2	2	2	2	
9	900906-004	LOCKNUT 5/16"-18UNC SS	2	2	2	2	2	2	2	2	
10	9009197	TEFLON GREASE - 3/4 OZ. TUBE	1	1	1	1	1	1	1	1	Not Shown

Cab Shield Components (Optional)

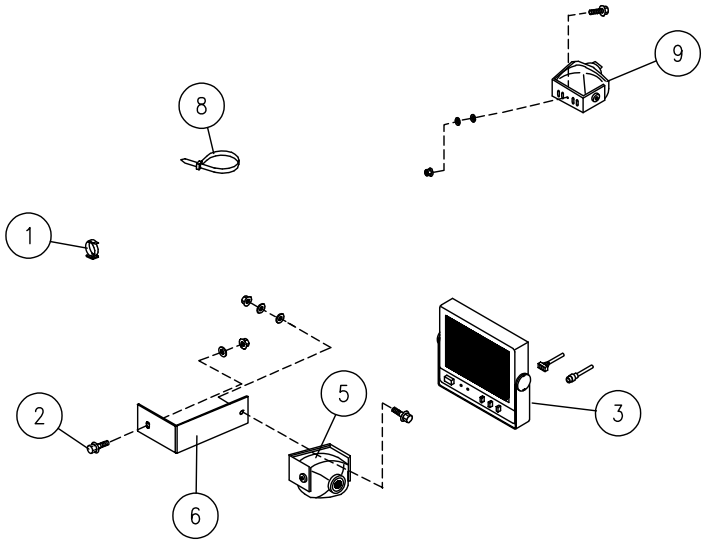
Please visit www.unverferth.com/parts/ for the most current parts listing.

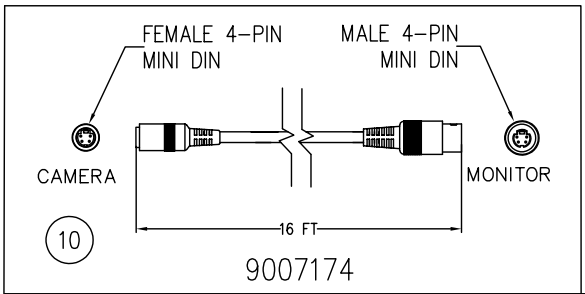


ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	PF1234-500	Cab Shield Assembly SS	-	Fits Class 8 Converted Chassis
1	PF1234-501	Cab Shield - Center SS	1	
2	PF1234-502	Cab Shield - RH Side SS	1	
3	PF1234-502L	Cab Shield - LH Side SS	1	
4	9007908-051	Carriage Bolt - 3/8"-16UNC x 1" SS	17	
5	900901-006	Hex Nut - 3/8"-16UNC SS	17	
6	900902-037	Flat Washer - 3/8" SS	17	
7	900903-021	Lock Washer - 3/8" SS	17	

Video System (Optional)

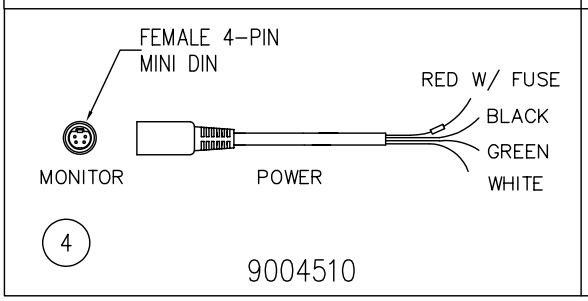
Please visit www.unverferth.com/parts/ for the most current parts listing.

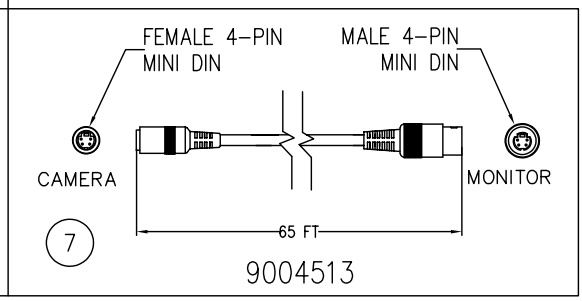




9004510 CABLE W/FUSE WIRES
Red -- Key Switched Power
Black -- Ground
Green -- **NOT USED**
White -- **NOT USED**

IMPORTANT ! Do not operate Video System below 15˚ F.





ITEM	PART NO.	DESCRIPTION	QTY	NOTES
	265770	Video System Kit with Single Camera	1	Includes Items 1 - 8 and own Instruction Sheet
	9004506	Additional Video System Kit	1	Includes Items 6 & 7
1	TAAU14007	Snap Clip, Adhesive	10	
2	9512	Self-Drilling Screw 1/4"-14 x 1"	10	
3	9006273	Monitor, 7" LCD/LED	1	
4	9004510	Cable w/Fuse	1	
5	9006274	Camera	1	
6	265771B	Bracket	1	
7	9004513	Cable, 65'	1	
8	9000106	Cable Tie	AR	
9	9004506	Camera Kit for Rear View with 65' Cable	1	
10	9007174	Extension Cable 16 ft. For CH Series Camera	1	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