

Fertilizer Spreader Accessory

**Pro-Force
Multi Bin Systems**

Models 1250, 1350, 1450, 1650, 1850,
2050, 2250 & 2650

Includes: Duo-Force, Tri-Force and Quad-Force

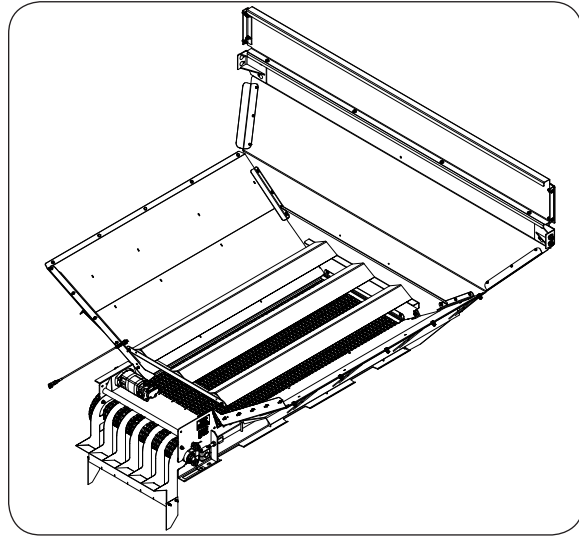
Serial Number B39840300 & Higher

Part No. 414343

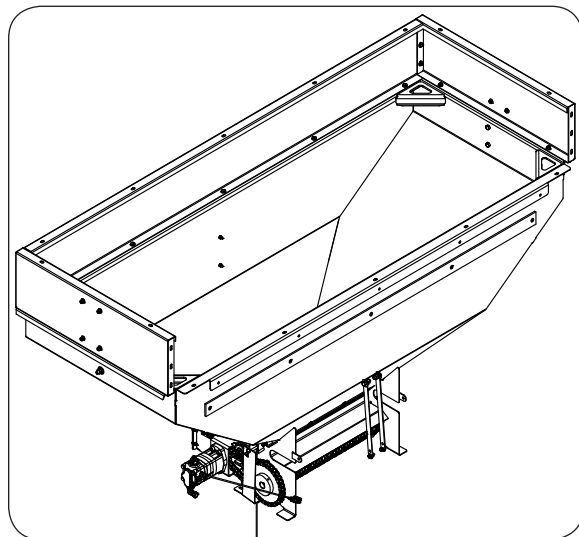
Product Scope

The Duo-Force system is designed to attach to Pro-Force models 1250, 1350, 1450, 1650, 1850, 2050, 2250 and 2650 made for SN B39840100 & higher.

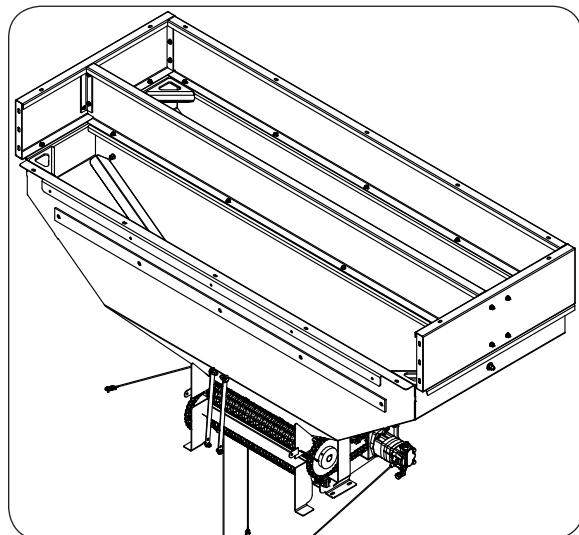
The Duo-Force hopper can be installed in TWO positions: the front panel position gives the Duo-Force hopper a capacity of 175 cu. ft. The rear panel position decreases the Duo-Force hopper bin capacity.




The Tri-Force system is designed to attach to Duo-Force systems made for SN B39840300 & higher. This can only attach to 26' to 13' hoppers. The Tri-Force system **REQUIRES** the Duo-Force system. The Tri-Force **CANNOT** be attached without Duo-Force.



The Quad-Force system is designed to attach to Tri-Force system made for SN B39840300 & higher. The Quad-Force system **REQUIRES** the Tri-Force system. The Quad-Force **CANNOT** be attached without Tri-Force.



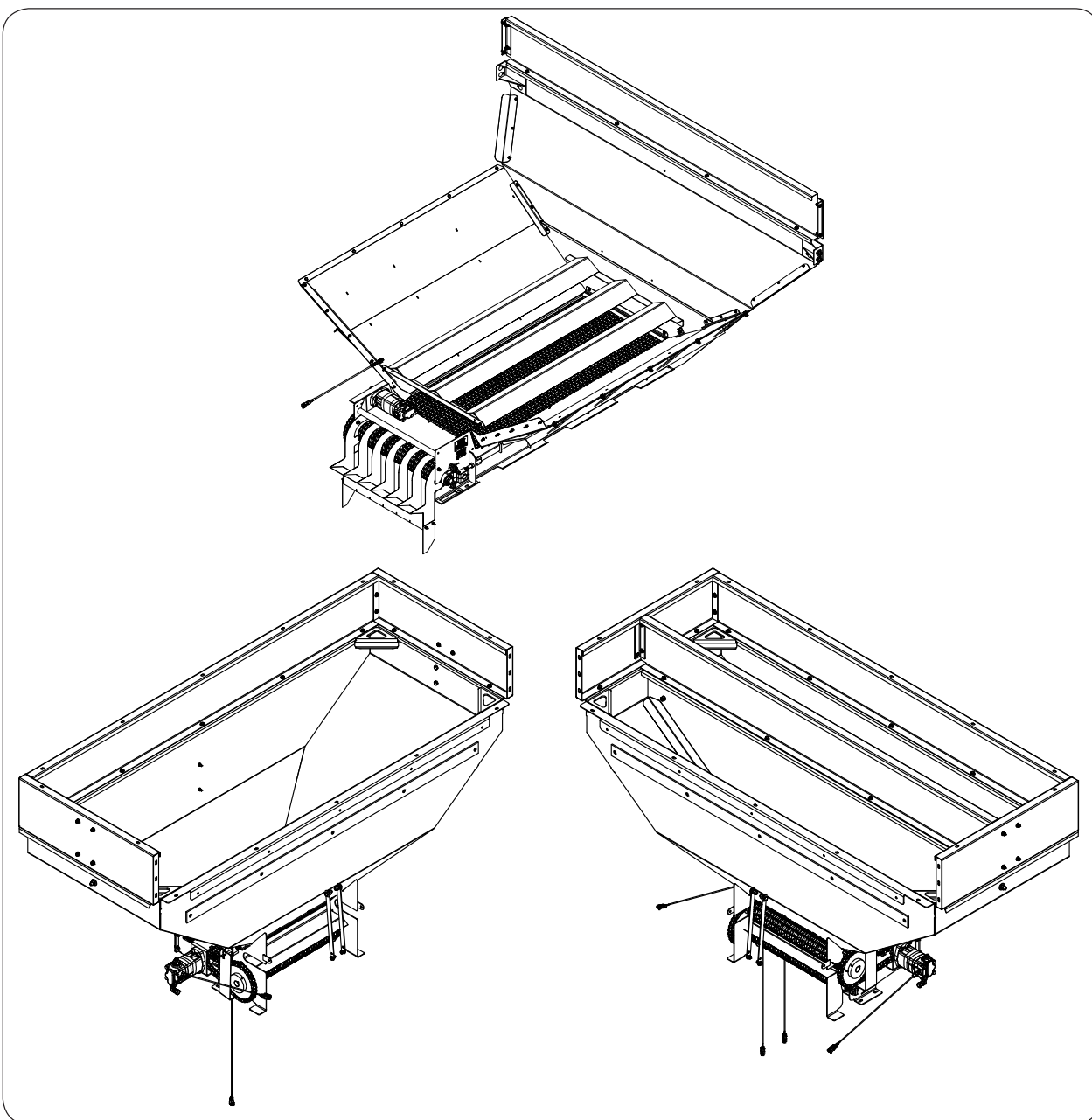
Foreword

 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

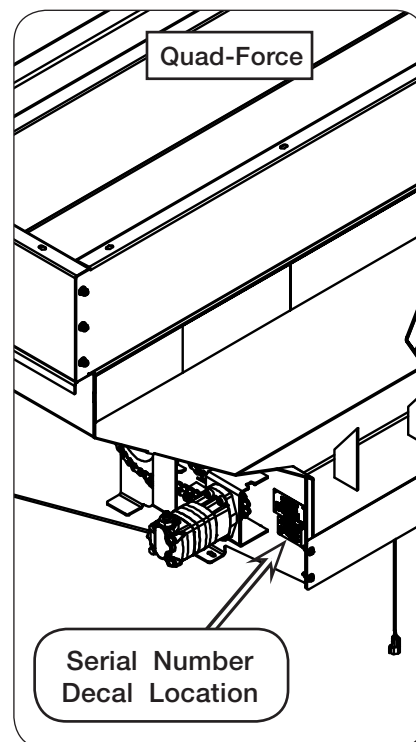
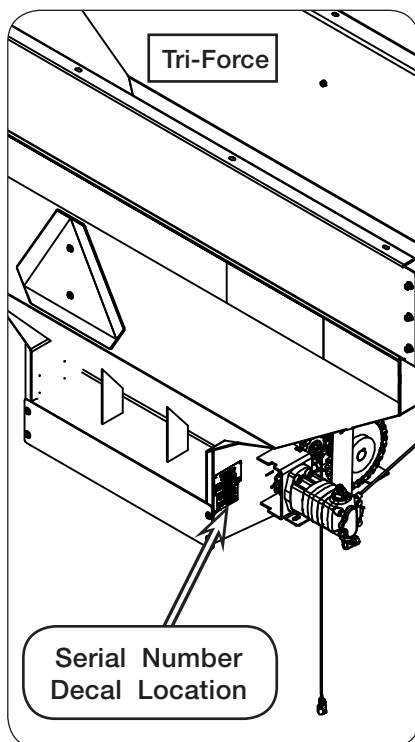
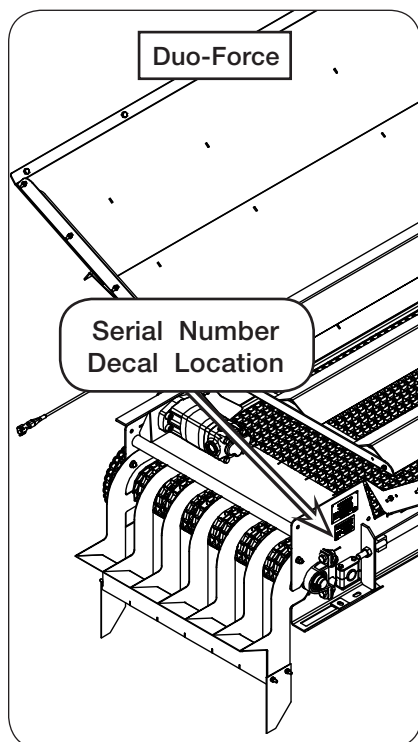
All products manufactured by Unverferth Mfg. Co., Inc. are warranted to be free from material and workmanship defects for one full year from time of consumer delivery. Your local dealer will gladly assist you with any warranty questions.

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

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General Hazard Information

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

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

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

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



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

SIGNAL WORDS



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



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



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



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

Safety Decals

⚠ WARNING

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

Duo-Force Locations



IMPORTANT
When removing DUOTRIQUAD-FORCE bin(s) from unit, hydraulic hoses must be hooked together. Refer to Operator's Manual for details.

Part No. 9008839

Quad-Force Locations



Left-Hand Side

IMPORTANT
When removing DUOTRIQUAD-FORCE bin(s) from unit, hydraulic hoses must be hooked together. Refer to Operator's Manual for details.

Part No. 9008839

⚠ WARNING
MOVING PART CAN CRUSH OR CUT.
1. KEEP ALL SHIELDS IN PLACE.
2. DISCONNECT POWER SOURCE TO ADJUST OR SERVICE.
FAILURE TO HEED MAY RESULT IN SERIOUS INJURY OR DEATH.
TA1-906109-0

Part No. TA1-906109-0

⚠ WARNING
HIGH PRESSURE FLUID CAN CAUSE SERIOUS INJURY OR DEATH. KEEP AWAY FROM LEAKS. RELIEVE PRESSURE BEFORE SERVICING. SEEK IMMEDIATE MEDICAL TREATMENT IF INJURED BY HIGH PRESSURE FLUIDS. 95445

Part No. 95445

Tri-Force Locations



Right-Hand Side

IMPORTANT
When removing DUOTRIQUAD-FORCE bin(s) from unit, hydraulic hoses must be hooked together. Refer to Operator's Manual for details.

Part No. 9008839

⚠ WARNING
HIGH PRESSURE FLUID CAN CAUSE SERIOUS INJURY OR DEATH. KEEP AWAY FROM LEAKS. RELIEVE PRESSURE BEFORE SERVICING. SEEK IMMEDIATE MEDICAL TREATMENT IF INJURED BY HIGH PRESSURE FLUIDS. 95445

Part No. 95445

⚠ WARNING
MOVING PART CAN CRUSH OR CUT.
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2. DISCONNECT POWER SOURCE TO ADJUST OR SERVICE.
FAILURE TO HEED MAY RESULT IN SERIOUS INJURY OR DEATH.
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Part No. TA1-906109-0

Following Safety Instructions

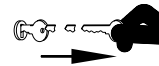
- Read and understand this operator's manual before operating.



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

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

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



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

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



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



Before Operating

- Always make certain everyone and everything is clear of the machine before beginning operation.

- Ensure that all applicable safety decals are installed and legible.


- When working around the implement, be careful not to be cut by sharp edges.

- Ensure that the towing vehicle drawbar has sufficient strength to support the draft and vertical tongue load of a fully-loaded dry spreader.

- Add sufficient ballast to tractor to maintain steering and braking control at all times. Do not exceed tractor's lift capacity or ballast capacity.

- This spreader is intended to apply only agricultural fertilizers. Attempting to apply other fertilizers may cause equipment damage and introduce unexpected personal hazards.

Before Servicing

- Avoid working under an implement; however, if it becomes absolutely unavoidable, make sure the implement is safely blocked. 

- Ensure that all applicable safety decals are installed and legible.

- When working around the implement, be careful not to be cut by sharp edges.

- To prevent personal injury or death, always ensure that there are people who remain outside the dry spreader to assist the person working inside, and that all safe workplace practices are followed. There are restricted mobility and limited exit paths when working inside the implement.

- Check equipment for leaks. Repair any leaks before beginning or resuming operation.

During Operation

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


Before Transporting

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

During Transport

- Comply with all laws governing highway safety when moving machinery.
- Use transport lights as required by all laws to adequately warn operators of other vehicles.
- Use good judgment when transporting equipment on highways. Regulate speed to road conditions and maintain complete control.
- Maximum transport speed of the dry spreader should never exceed 20 mph 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 mph during off-highway travel.
- Slow down before making sharp turns to avoid tipping. Drive slowly over rough ground and side slopes.
- It is probable that this implement is taller, wider and longer than the towing vehicle. Become aware of and avoid all obstacles and hazards in the travel path of the equipment, such as power lines, ditches, etc.

Pressurized Oil

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

Chemical Hazards

- 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.
- Pro-Force dry spreader may contain residual toxic chemicals. **DO NOT ENTER SPREADER FOR ANY REASON WITHOUT WEARING PROPER VENTILATION EQUIPMENT.** Failure to do so may result in asphyxiation and death.
- Seek and receive fertilizer and/or chemical product training prior to using agricultural fertilizers and/or chemicals.
- Read and understand the entire label of every fertilizer and/or chemical being applied with this dry spreader.
- Wash hands before eating, drinking, chewing gum, or using the toilet.
- Remove clothing immediately if fertilizers and/or chemicals penetrate clothing and contact skin. Wash thoroughly and put on clean clothing.
- Dispose of unused fertilizer and/or chemical in accordance with fertilizer and/or chemical label directions and local/national regulations.

Preparing for Emergencies

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



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



Wearing Protective Equipment

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



- Wear steel-toed shoes when operating.



- Wear hearing protection when exposed to loud noises.



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



Section II

Set Up

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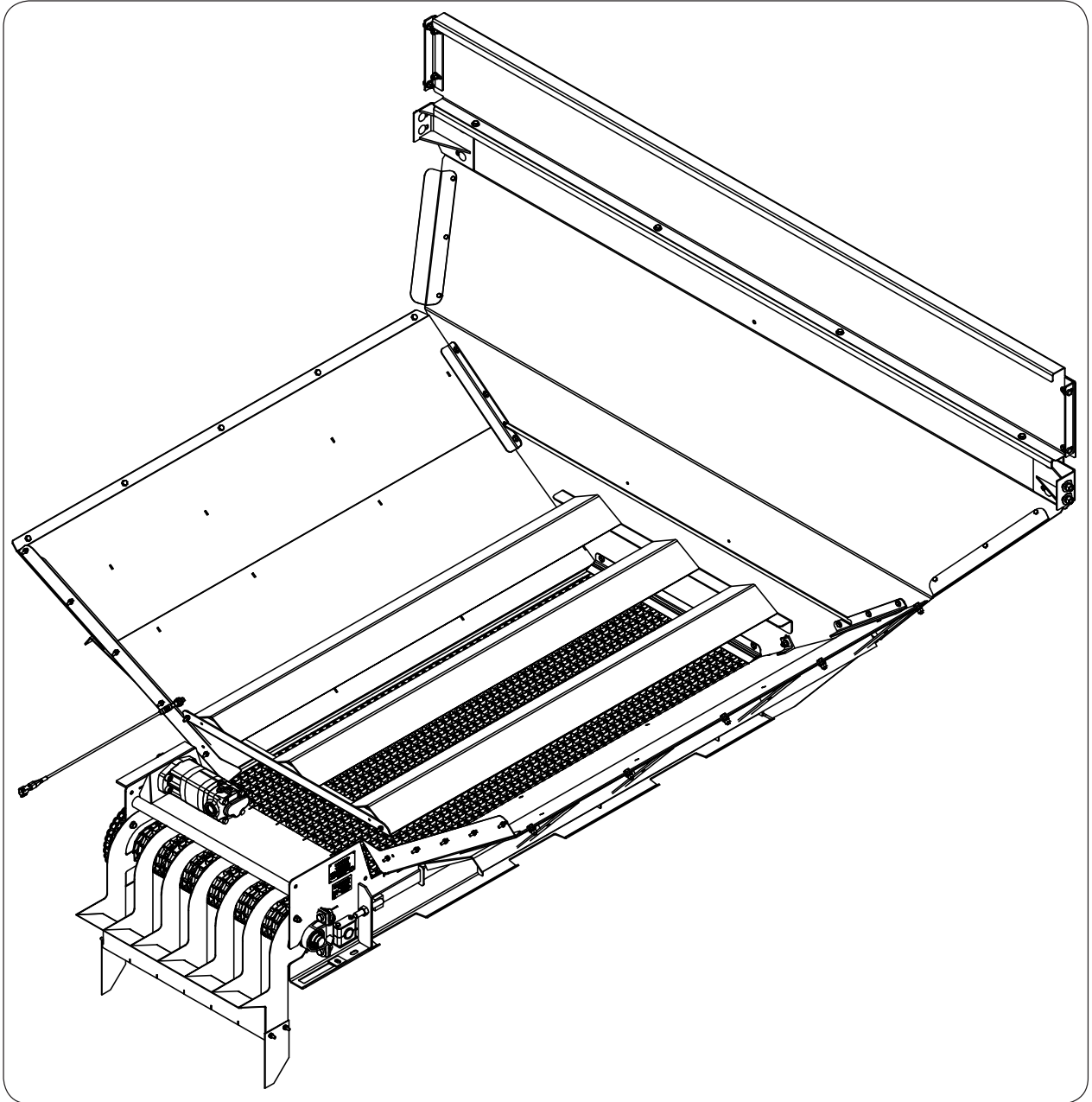
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Pre-Delivery Checklist

- Power wash any road salt off this unit to help prevent corrosion.
- All stainless steel capscrews have been lubricated with anti-seize compound.
- Torque stainless steel capscrews as specified in MAINTENANCE section.
- All grease fittings have been lubricated.
- Verify all safety decals are correctly located and legible. Replace if damaged.
- Verify all reflective decals are correctly located.
- Verify transport lights are working properly.
- Install spinner deflectors, if removed.
- Check hydraulic components for leaks.
- Check all plumbing components for leaks.
- Paint all parts scratched during shipment and dealer set up.

Duo-Force Set Up

Duo-Force Assembly



Duo-Force Set Up (continued)

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. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.
- 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 400 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.

CAUTION

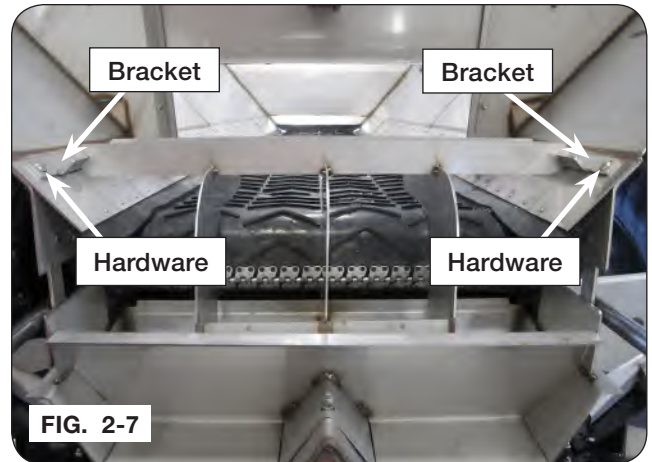
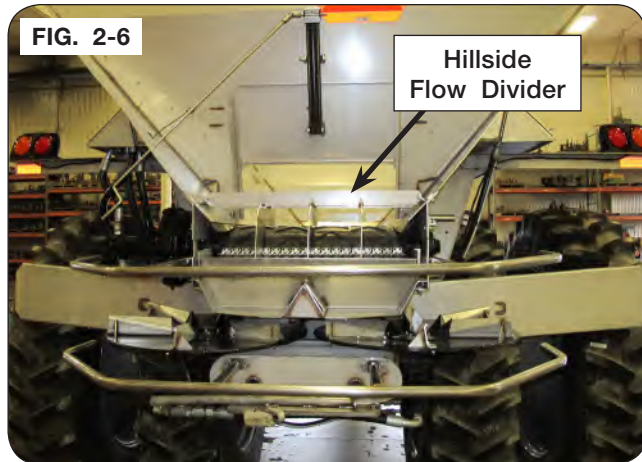
- ENSURE THE MAIN CONVEYOR RUBBER BELT HUMP DOES NOT CATCH THE BOTTOM OF THE MANUAL FEEDGATE ON THE DUO-FORCE CONVEYOR. DAMAGE TO MANUAL FEEDGATE AND/OR BELT CAN OCCUR.

IMPORTANT

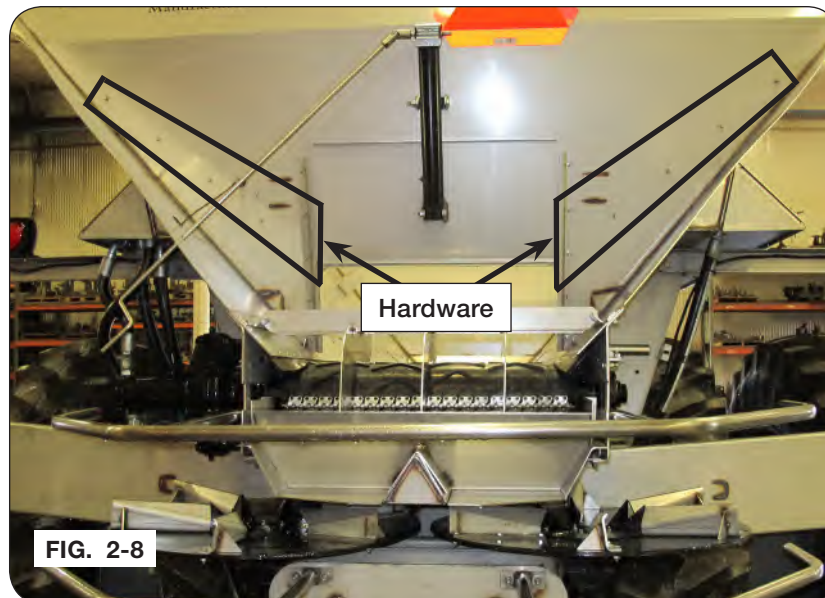
- *It is highly recommended to use a lubricant such as graphite-based anti-seize, molybdenum disulfide based anti-seize, or other commercially available anti-galling compounds and assemble hardware with a slow and continuously applied torque to avoid galling.*
1. Park the empty dry spreader on a firm, level surface. Block the tires to keep the machine from moving. Relieve hydraulic pressure, see tractor operator's manual. Set the tractor's parking brake, shut-off the engine, and remove the ignition key. Completely disconnect the tractor from the dry spreader.
 2. Completely open the feedgate to make the conveyor easier to install.



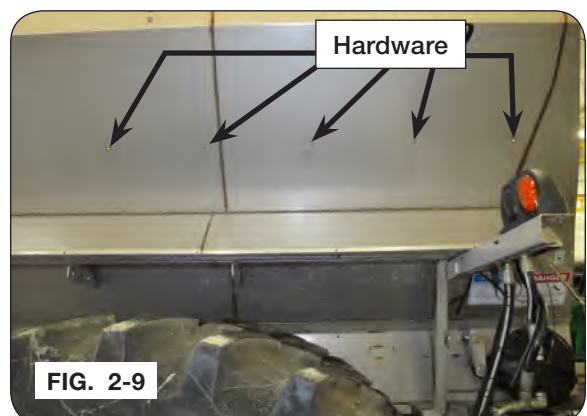
Duo-Force Set Up (continued)



3. Remove current hillside flow divider (PF1236-451), brackets (PF1234-452 and PF1234-452L), and hardware. Retain these for future single-bin use, if needed. Duo-Force uses different hillside flow divider, brackets, and hardware. (FIG. 2-6 and 2-7)
4. Remove rear spreader box and feedgate hardware only as shown in FIG. 2-8. Retain hardware.



5. Remove spreader box hardware as shown in FIG. 2-9 for each side. Retain hardware.



Duo-Force Set Up (continued)

NOTE: Determine if the internal box divider panels (PFDPF-100 and PFDPF-200) are to be installed in front or rear position. Front position increases Duo-Force hopper bin capacity. Rear position increases main hopper bin capacity. (FIG. 2-10)

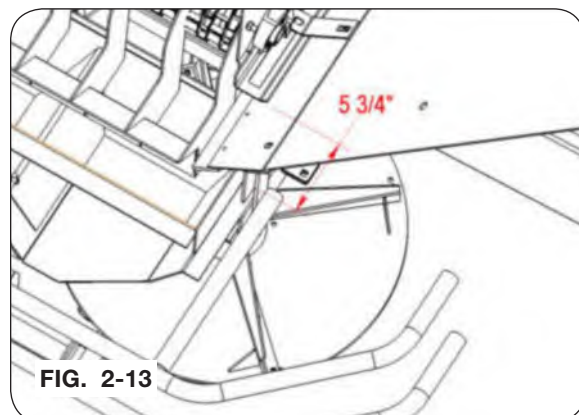
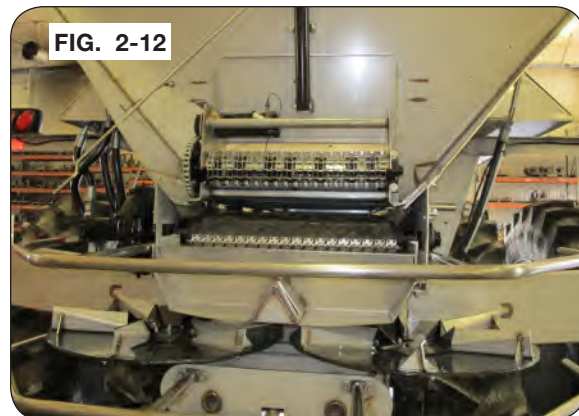
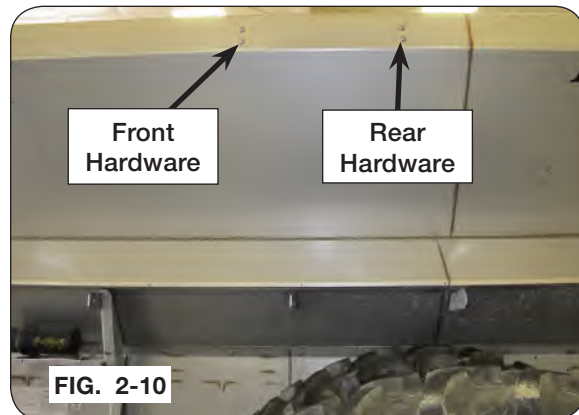
- Remove front or rear left-hand capscrews as shown in FIG. 2-10 according to desired position of upper and lower box divider panels (PFDPF-100 and PFDPF-200). Repeat for right-hand side. Keep removed hardware. Do not remove unused set of hardware.

IMPORTANT

- When installing hardware, it is highly recommended to use a lubricant such as graphite-based anti-seize, molybdenum disulfide based anti-seize, or other commercially available anti-galling compounds and assemble hardware with a slow and continuously applied torque to avoid galling.
- Loosely attach the mounting straps (PFT-100B) using 3/8"-UNC x 1" SS carriage bolt (PF1200-302SS), 3/8" SS flat washer (PF1209-41), 3/8" SS lock washer (PF1209-43), and 3/8" UNC SS hex nut (PF1205-27) to both sides of Duo-Force conveyor (414459). (FIG. 2-11)

CAUTION

- ENSURE THE MAIN CONVEYOR RUBBER BELT HUMP DOES NOT CATCH THE BOTTOM OF THE MANUAL FEEDGATE ON THE DUO-FORCE CONVEYOR. DAMAGE TO MANUAL FEEDGATE AND/OR BELT CAN OCCUR.**
- Using a safe lifting device rated at a minimum of 400 lbs., lift conveyor level with the feedgate opening and slide under the feedgate into the spreader box as shown. (FIG. 2-12)
 - Measurement from end of Duo-Force conveyor insert to end of Pro-Force chain shield must be 5-3/4". (FIG. 2-13)



Duo-Force Set Up (continued)

10. Align conveyor mounting straps with the second chain shield bolt holes. (FIG. 2-14)
11. Attach the mounting straps to left-hand and right-hand chain shield using 3/8"-UNC x 1" SS carriage bolts, 3/8" SS flat washers, 3/8" SS lock washers, and 3/8" UNC SS hex nuts. Tighten all hardware. (FIG. 2-14)
12. Insert hardware and tighten the first chain shield bolt holes for each side. (FIG. 2-14)

NOTE: It is recommended to use a safe lifting device rated at a minimum of 150 lbs. to install hinged panels (PF1233-104 & PF1233-104LH) and box gusset panels (PF1233-102 & PF1233-102LH) inside the spreader box.

NOTE: It is also recommended to assemble hinged panels and box gusset panels outside the spreader.

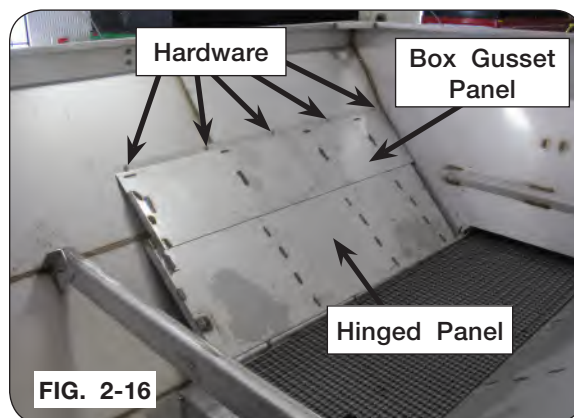
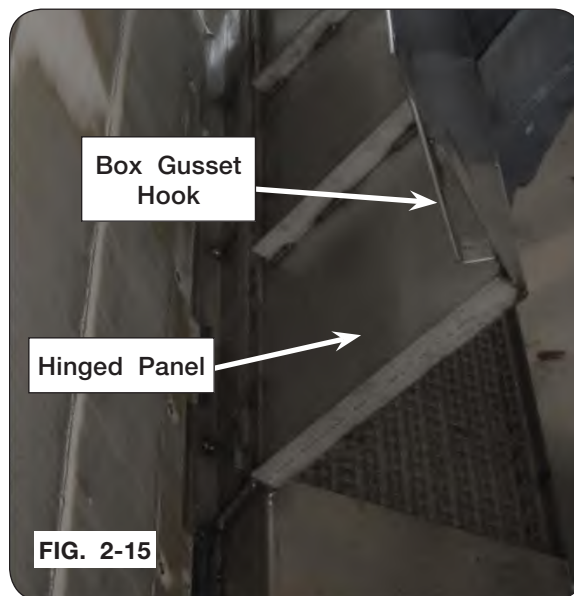
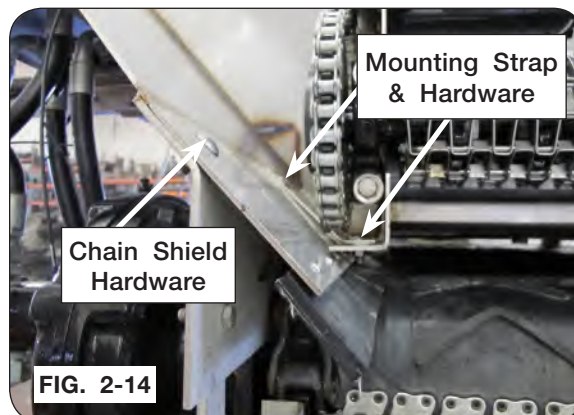
13. Clip the bent flange of the hinged panel under the hooks on the back side of the box gusset panel as shown in FIG. 2-15.
14. Using a safe lifting device rated at a minimum of 150 lbs., place assembled hinged panel and box gusset panel inside the spreader box.

15. Align front edges of box gusset panel and hinged panel, and unfold against the spreader box sides. (FIG. 2-16)

16. Using hardware removed from step 5, loosely affix box gusset panel to spreader box. (FIG. 2-16)

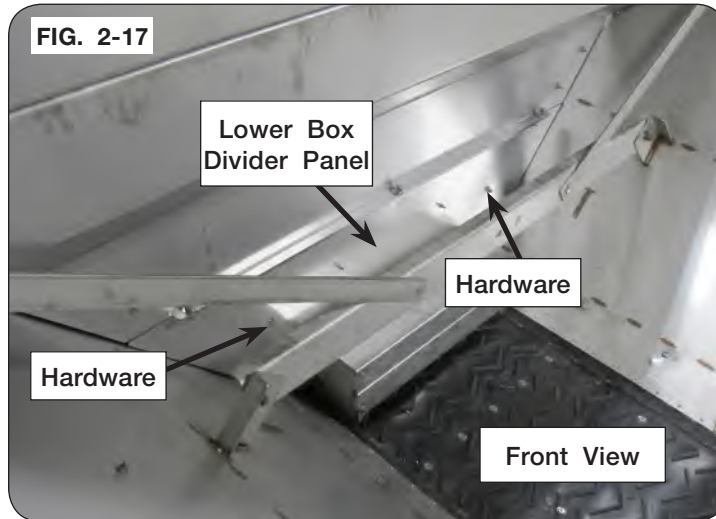
17. Repeat steps 12 through 15 for opposite side of spreader box.

NOTE: Do not tighten any hardware until all panels, dividers and sealers have been installed.



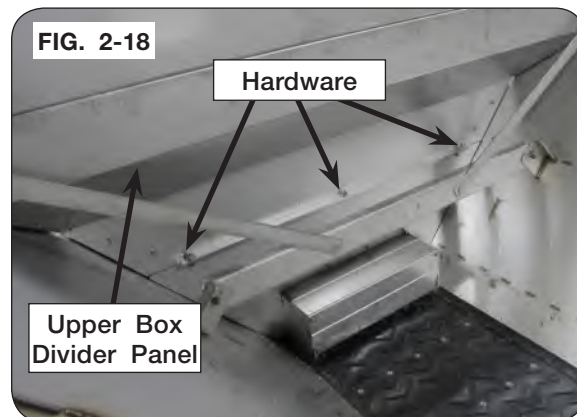
Duo-Force Set Up (continued)

18. Loosely attach lower box divider panel (PFDPF-200) to the hinged panels using 3/8"-16UNC x 1" SS carriage bolt (9007908-051), 3/8" SS flat washer (900902-037), 3/8" SS lock washer (900903-021), and 3/8"-16UNC SS hex nut (900901-006) for each side. (FIG. 2-17)

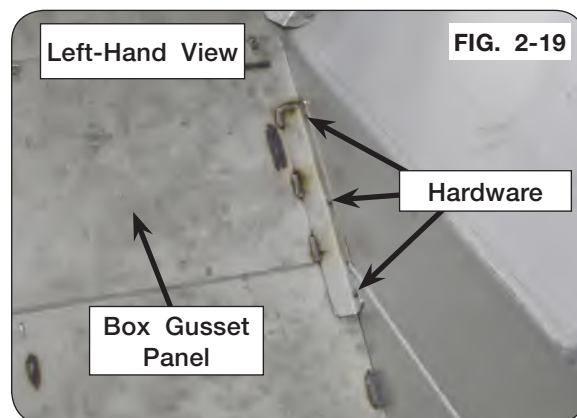


19. Using a safe lifting device rated at a minimum of 150 lbs., place upper box divider panel inside the spreader box.

20. When installing upper box divider panel (PFDPF-100) to the lower box divider panel, insert three 1/2"-13UNC x 1" SS carriage bolts (9007908-102) through the lower panel and loosely attach to the upper panel using three 1/2" flat washers (900902-044), three 1/2" SS lock washers (900903-025), and three 1/2"-13UNC SS hex nuts (900901-010). (FIG. 2-18)



21. Loosely attach the box gusset panels to the upper and lower box divider panels using three 1/4"-20UNC x 1" SS capscrews (900900-005), 1/4" SS flat washers (900902-032), 1/4" SS lock washers (900903-017), and 1/4"-20UNC SS hex nuts (900901-002). Repeat for right-hand side. (FIG. 2-19)



Duo-Force Set Up (continued)

NOTE: If the internal box divider panels (PFDPF-100 and PFDPF-200) are installed in the rearward position, the divider brackets (PF1236-103 and PF1236-103L) are attached to the opposite sides of the spreader box. (FIG. 2-20)

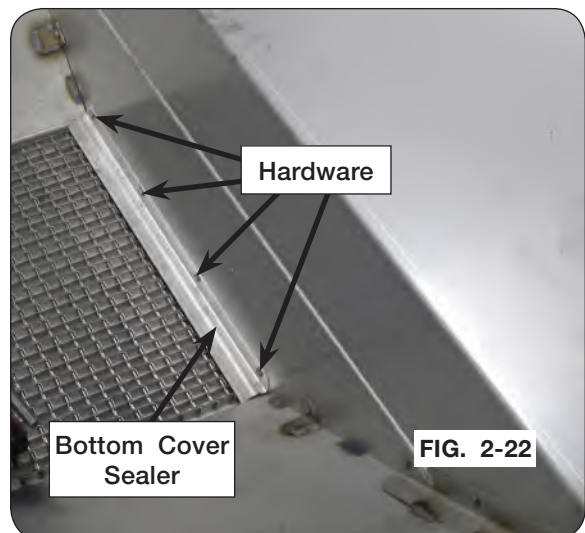
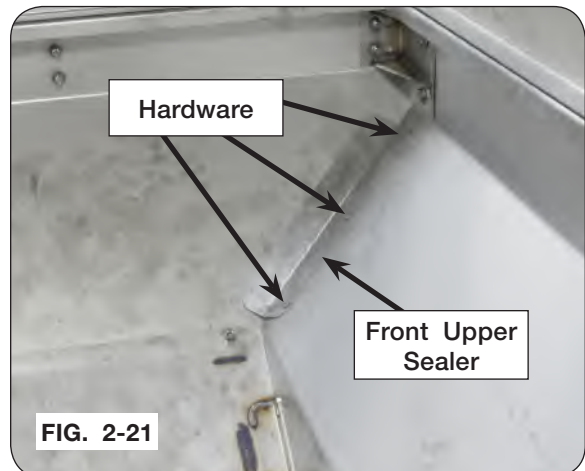
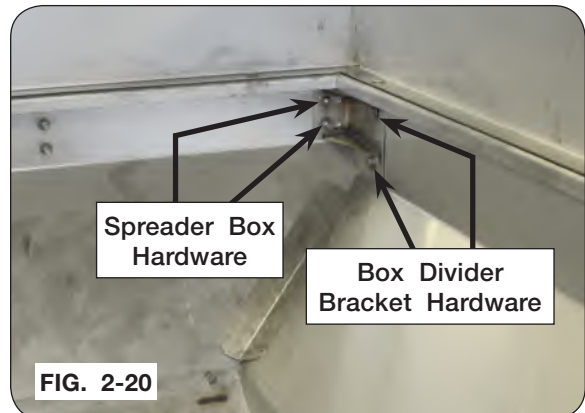
22. Loosely attach the right-hand and left-hand box divider brackets (PF1236-103 and PF1236-103L) to the spreader box according to position of upper box divider panel. Reuse hardware from step 5. (FIG. 2-20)

23. Loosely attach the box divider brackets to the upper box divider panel using two 1/2"-13UNC x 1" SS carriage bolts (9007908-102), two 1/2" flat washers (900902-044), two 1/2" SS lock washers (900903-025), and two 1/2"-13UNC SS hex nuts (900901-010) for each side. (FIG. 2-20)

NOTE: Sealers are intentionally under bent. When properly attached, the sealer fits tightly against the spreader box side.

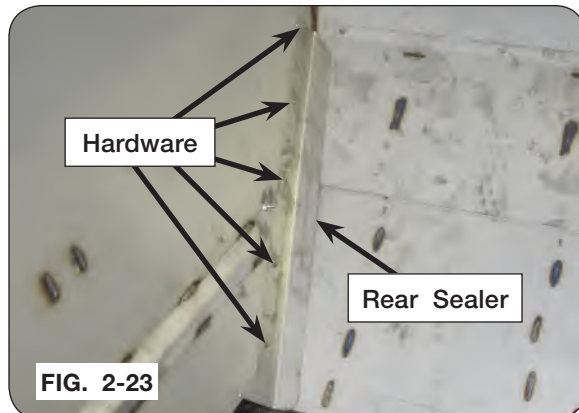
24. Loosely connect the front upper sealers (PFDFP-201-2) to the upper box divider panel using three 1/4"-20UNC x 1" SS capscrews (900900-005), three 1/4" SS lock washers (900903-017), and 1/4"-20UNC SS hex nuts (900901-002) for each side. (FIG. 2-21)

25. Loosely connect the bottom cover sealer (PFDFP-204-2) to the lower box divider panel using four 1/4"-20UNC x 1" SS capscrews (900900-005), four 1/4" SS flat washers (900902-032), four 1/4" SS lock washers (900903-017), and four 1/4"-20UNC SS hex nuts (900901-002). (FIG. 2-22)

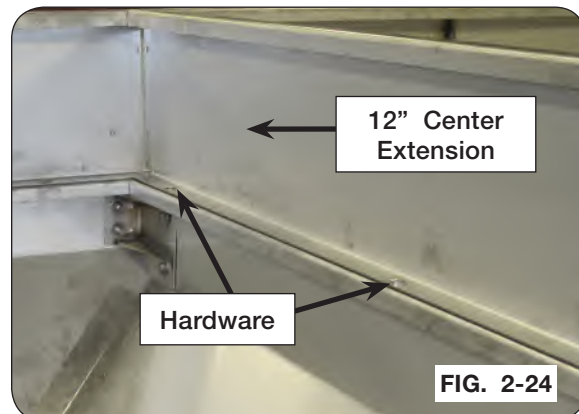


Duo-Force Set Up (continued)

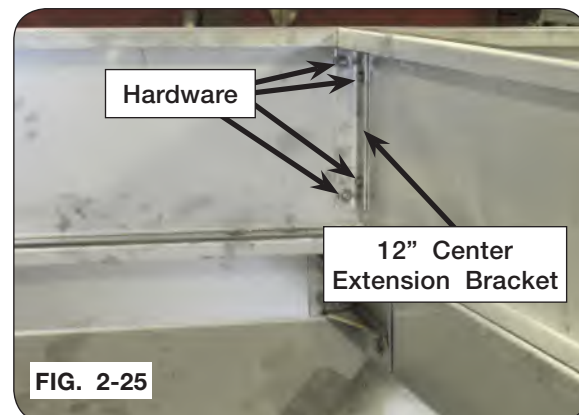
26. Loosely attach the right-hand and left-hand rear sealers (PF1233-202 and PF1233-202L) to the feedgate reusing hardware from step 4 for each side. (FIG. 2-23)



27. Loosely attach the 12" center extension (PF1234-1520) to the top of the upper box divider panel using four 3/8"-16UNC x 1" SS capscrews (900900-055), four 3/8" SS flat washers (900902-037), four 3/8" SS lock washers (900903-021), and four 3/8"-16UNC SS hex nuts (900901-006). (FIG. 2-24)

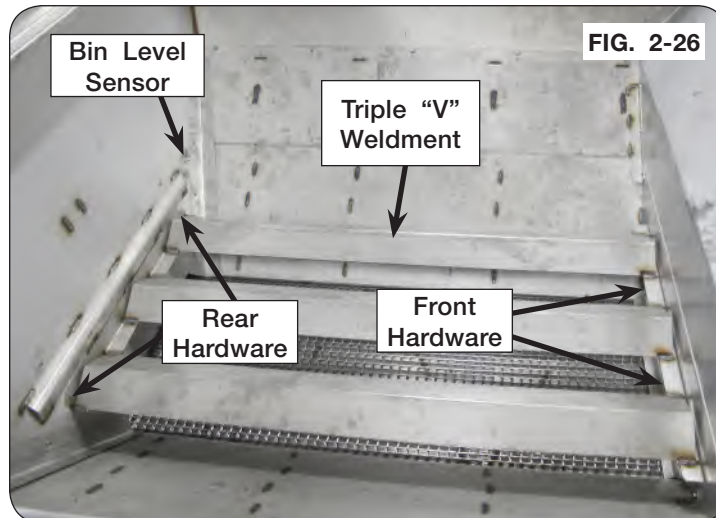


28. Loosely attach the 12" center extension brackets (PF1234-1530) to the spreader box and 12" center extension using four 3/8"-16UNC x 1" SS capscrews (900900-055), four 3/8" SS flat washers (900902-037), four 3/8" SS lock washers (900903-021), and four 3/8"-16UNC SS hex nuts (900901-006) to each side. (FIG. 2-25)



Duo-Force Set Up (continued)

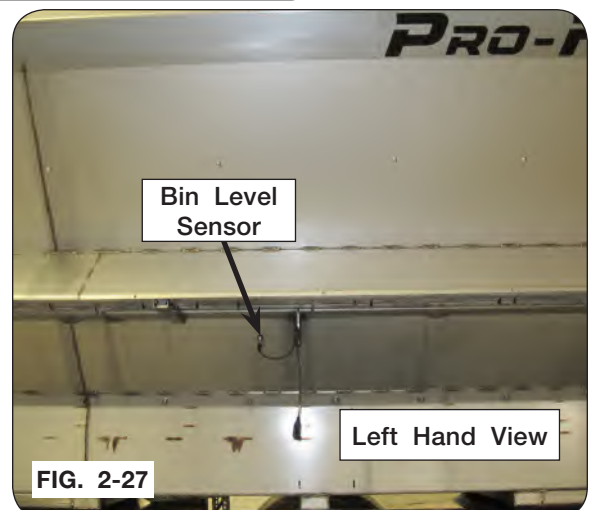
29. Using a safe lifting device rated at a minimum of 150 lbs., place triple “V” weldment (414497) inside the rear spreader box with the short mounting flange rearwards. (FIG. 2-26)



30. Loosely secure triple “V” weldment to the rear spreader box and lower box divider panels using two 1/4”-20UNC x 1” SS capscrews (900900-005), two 1/4” SS lock washers (900903-017), and two 1/4”-20UNC SS hex nuts (900901-002) for rear and front. (FIG. 2-26)

NOTE: Refer to “Duo-Force Bin Level Sensor Replacement” in MAINTENANCE section for proper sensor replacement and installation.

31. Attach one bin level sensor (9009180) to rear panel and remaining sensor to left-hand panel for the main bin. (FIGS. 2-26 & 2-27)

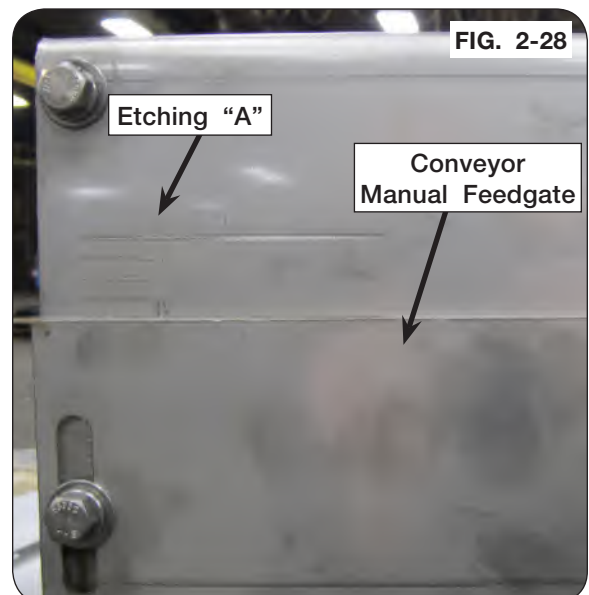


32. Tighten all hardware from the previous steps. Refer to the stainless steel torque chart in the MAINTENANCE section for each hardware torque specifications.

33. Caulk around gaps between sealers and/or panels as necessary.

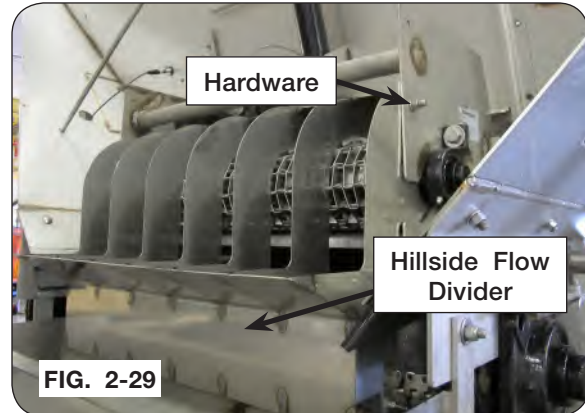
34. Adjust the manual feedgate to desired position. Ensure the feedgate is level side-to-side and tighten capscrews. (FIG. 2-28)

NOTE: The Duo-Force conveyor frame is etched with A-B-C in 1/4” increments to assist positioning. (FIG. 2-28)

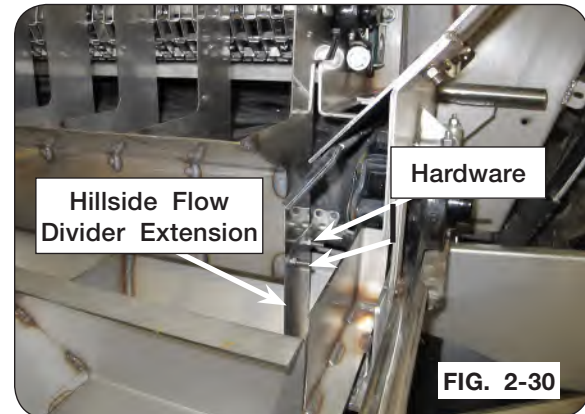


Duo-Force Set Up (continued)

35. Slide Duo-Force hillside flow divider (414475) slotted holes onto conveyor pegs. Secure to conveyor with 3/8" x 3/4" capscrew (PF1200-300), 3/8" flat washer SS (PF1209-41), 3/8" SS lock washer (PF1029-43), and 3/8" SS hex nut (PF1205-27) for each side. (FIG. 2-29)



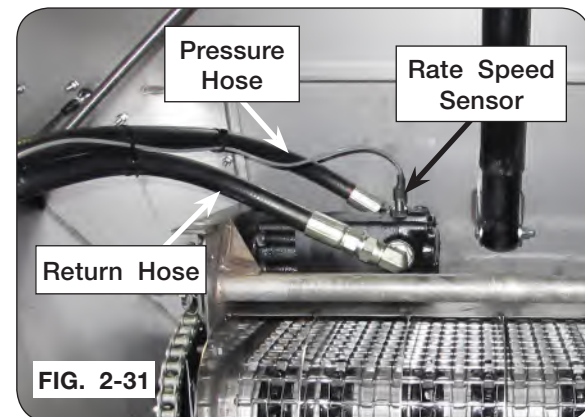
36. Attach the hillside flow divider extensions (414556) to both sides of the conveyor using two 1/4"-20UNC x 1" SS capscrews (900900-005), two 1/4" SS lock washers (900903-017), and two 1/4"-20UNC SS hex nuts (900901-002). (FIG. 2-30)



37. Plug in electrical connector for rate speed sensor (PF1223-600) and for bin level sensor (9008806), if equipped. (FIG. 2-31)

38. Disconnect Duo-Force pressure and return hoses from each other. (pressure hose: PF1207-15 for 12'; PF1207-16 for 13'; PF1207-17 for 14') (return hose: PF1207-18 for 18'). (FIG. 2-31)

39. Connect pressure hose to elbow adapter (PF1202-202) and return hose to elbow adapter (PF1202-2095) on Duo-Force conveyor motor (PF1213-145). (FIG. 2-31)



Duo-Force Set Up (continued)

40. Connect other end of pressure hose to hose assembly (PF1207-606) and return hose to straight adapter (PF1202-1035). (FIG. 2-32)
41. Test run the Duo-Force conveyor. Verify smooth conveyor operation and chain turns rearward.

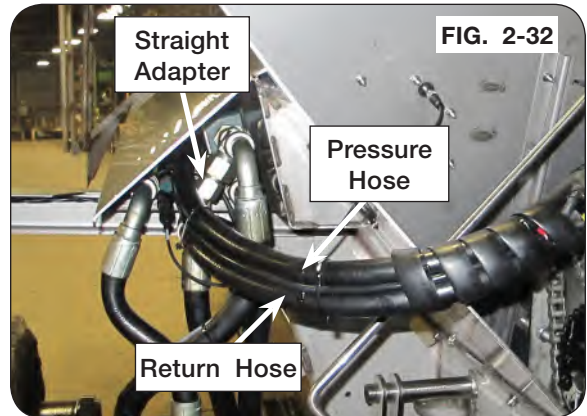
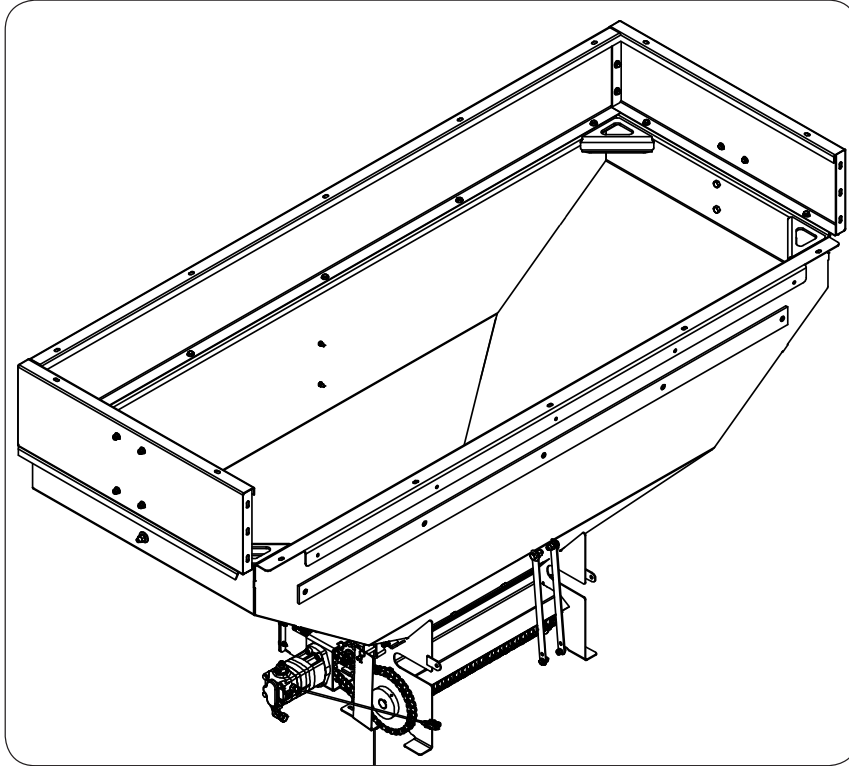


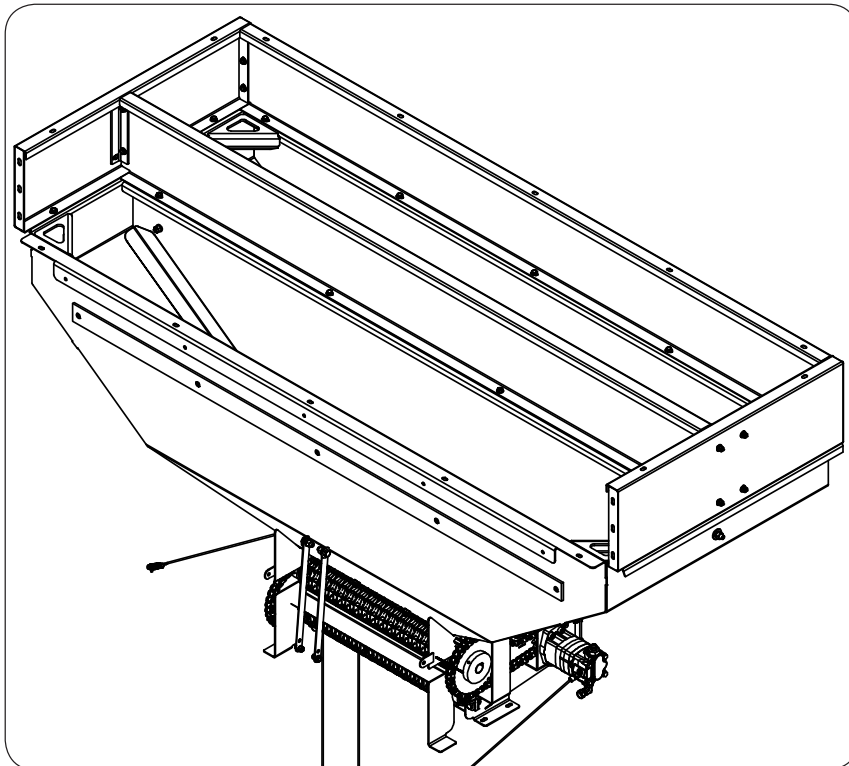
FIG. 2-32

Tri-Force & Quad-Force Set Up

Tri-Force Assembly



Quad-Force Assembly



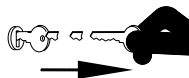
Tri-Force & Quad-Force Set Up (continued)

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. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.
- 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 1,000 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.

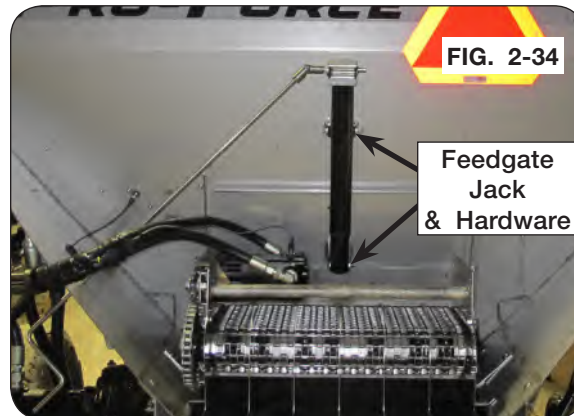
IMPORTANT

- *It is highly recommended to use a lubricant such as graphite-based anti-seize, molybdenum disulfide based anti-seize, or other commercially available anti-galling compounds and assemble hardware with a slow and continuously applied torque to avoid galling.*
1. Park the empty dry spreader on a firm, level surface. Block the tires to keep the machine from moving. Relieve hydraulic pressure, see tractor operator's manual. Set the tractor's parking brake, shut-off the engine, and remove the ignition key. Completely disconnect the tractor from the dry spreader.



Tri-Force & Quad-Force Set Up (continued)

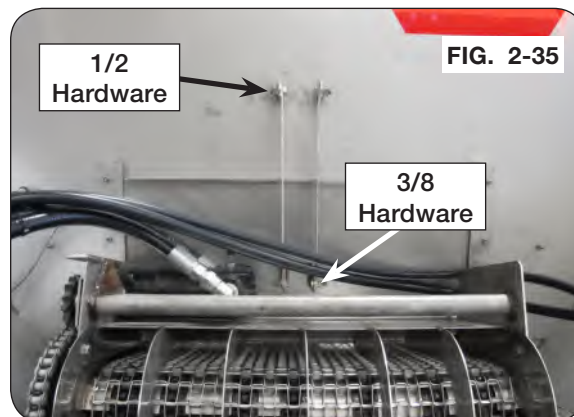
Initial Tri-Force & Quad-Force Install



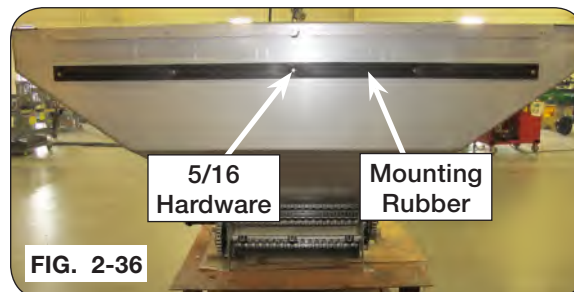
2. Remove current rear 12" sideboard extension (PF1234-148) and 3/8" hardware. Retain these parts. (FIG. 2-33)

3. Remove feedgate jack and hardware. Retain these for future Duo-Force or single-bin use, if needed. (FIG. 2-34)

4. Attach feedgate hold bars (PF90-151) to the rear spreader box and feedgate door using two 1/2-13UNC x 1 1/4 (SS) capscrews (900900-100), two 1/2 (SS) flat washers (900902-044), two 1/2 (SS) lock washers (900903-025) and two 1/2 (SS) hex nuts (900901-010) for top of hold bars. Then, two 3/8-16UNC x 3/4 (SS) capscrews (900900-053), two 3/8 (SS) flat washers (900902-037), two 3/8 (SS) lock washers (900903-021) and two 3/8 (SS) hex nuts (900901-006) for bottom of hold bar. (FIG. 2-35)



5. On the Tri/Quad weldment, attach mounting rubber (PF90-1000-37) to front panel using five 5/16-18UNC x 3/4 (SS) flat head screws (9502318-146), five 5/16 (SS) lock washers and five 5/16-18UNC (SS) hex nuts. (FIG. 2-36)



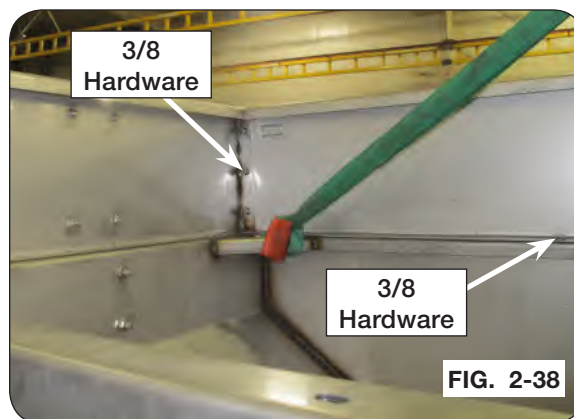
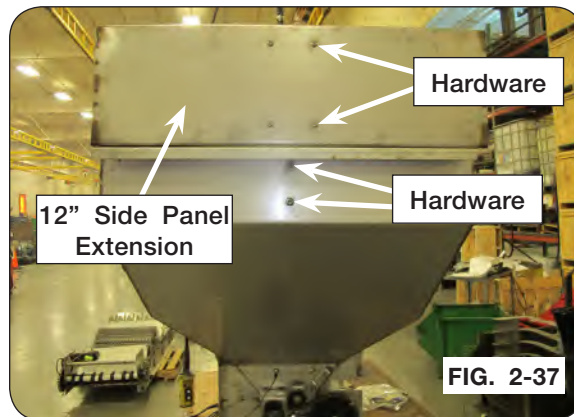
Tri-Force & Quad-Force Set Up (continued)

Initial Tri-Force & Quad-Force Install (continued)

NOTE: It is recommended to assemble 12" sideboard extensions (PFFES-EXT-1-12 rear panel; PF1239-15505 side panels; PF1234-1520 center panel), 12" center extension brackets (PF1234-1530) and hardware before the Tri/Quad assembly is attached to the rear spreader hopper.

6. If installing Quad-Force, ensure hardware is removed from 12" extension side panels and left and right-hand Tri/Quad panels as shown. Keep removed hardware. (FIG. 2-37)
7. Attach 12" side panel extensions using two sets 3/8-16UNC x 3/4 (SS) capscrews, 3/8 (SS) flat washers, 3/8 (SS) lock washers and 3/8 (SS) hex nuts on each side. (FIG. 2-37)
8. Attach 12" rear panel extension to Tri/Quad rear panel and 12" side panel extensions using 3/8-16UNC x 3/4 (SS) capscrews, 3/8 (SS) flat washers, 3/8 (SS) lock washers and 3/8 (SS) hex nuts. (FIG. 2-38)

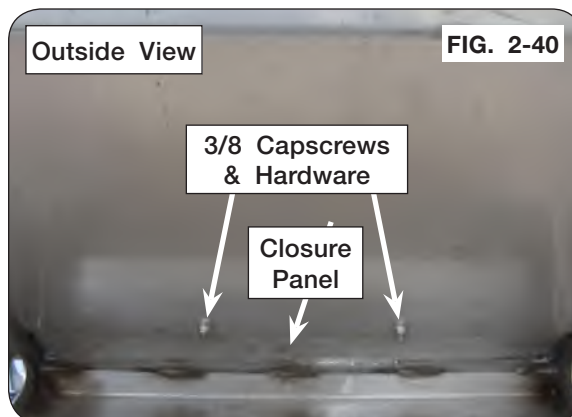
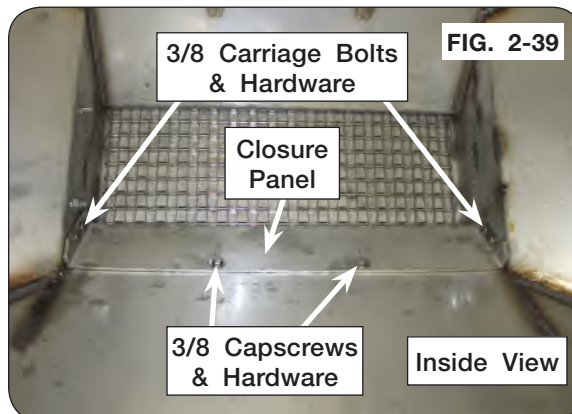
NOTE: If installing Tri-Force assembly, go to step 9. If installing Quad-Force assembly, go to step 28.



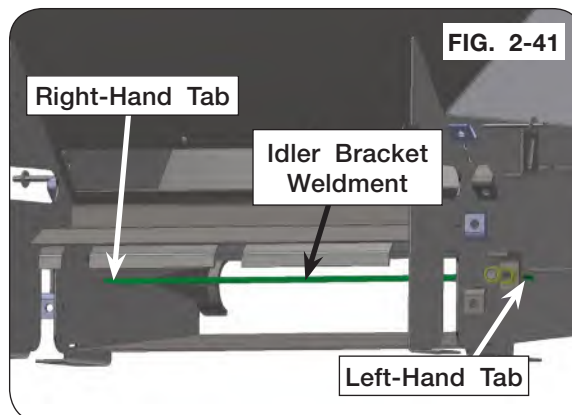
Tri-Force & Quad-Force Set Up (continued)

Tri-Force Install

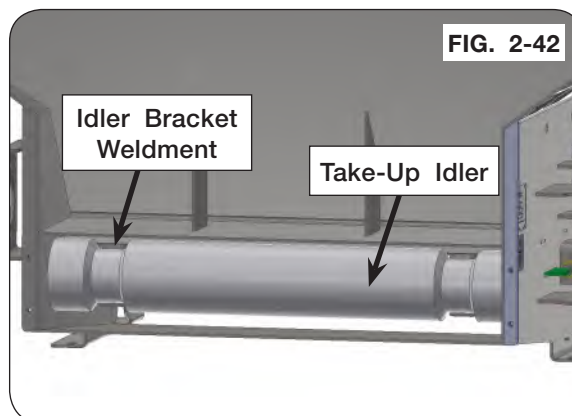
9. Attach closure panel (414534) to the inside front Tri-Force panel by using two sets 3/8 UNC x 1 (SS) carriage bolts (9007908-051), 3/8 (SS) lock washers (900903-021) and 3/8 (SS) hex nuts (900901-006) and two 3/8-16UNC x 3/4 (SS) capscrews (900900-053), two 3/8 (SS) flat washers (900902-037), two 3/8 (SS) lock washers (900903-021) and two 3/8 (SS) hex nuts (900901-006). (FIG. 2-39 & FIG. 2-40)



10. Install Tri-Force idler bracket weldment (PF1239-39P) through the front of the Tri-Force weldment and into the tabs on the left and right-hand panels as shown. (FIG. 2-41)



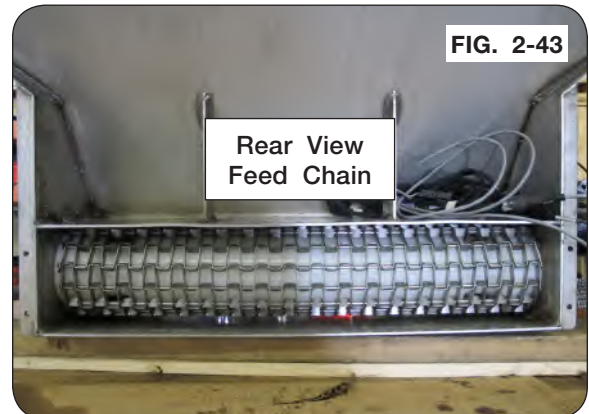
11. Insert Tri-Force take-up idler (414474) through the rear of the Tri-Force weldment and onto the idler bracket weldment. (FIG. 2-42)



Tri-Force & Quad-Force Set Up (continued)

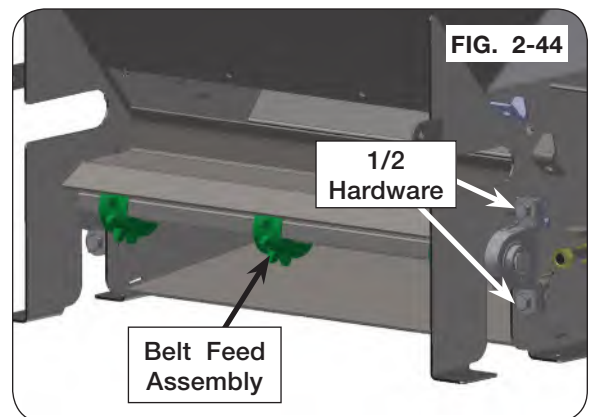
Tri-Force Install (continued)

12. Slide end of feed chain assembly (414518) through the rear of the Tri weldment above the take-up idler and idler bracket weldment. Then, slide opposite end of feed chain assembly below take-up idler and idler bracket. (FIG. 2-43)

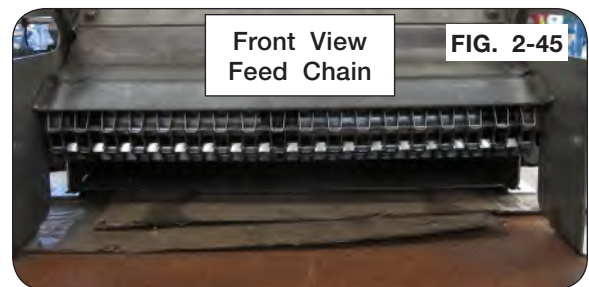


NOTE: For FIG. 2-44, feed chain assembly is removed for clarity.

13. Attach Tri-Force belt feed assembly (414515) to the front using two sets 1/2-13UNC x 1 1/4 (SS) capscrews (900900-100), 1/2 (SS) flat washers (900902-044), 1/2 (SS) lock washers (900903-025) and 1/2 (SS) hex nuts (900901-010) on each side. (FIG. 2-44)



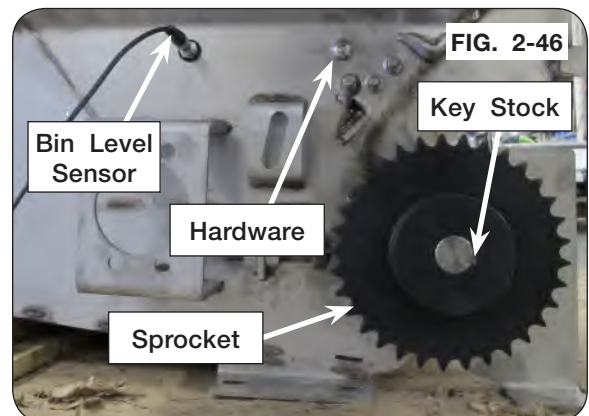
14. Attach both ends of feed chain assembly around the belt feed assembly as shown. (FIG. 2-45)



NOTE: Ensure hardware plugs Quad-Force bin level sensor hole. (FIG. 2-46)

NOTE: Refer to “Tri-Force & Quad-Force Bin Level Sensor Replacement” in MAINTENANCE section for proper sensor replacement and installation.

15. Attach bin level sensor (9009180) to the right-hand panel. (FIG. 2-46)



16. Slide key stock (PF1220-144) and sprocket (PF1217-993) flush onto the belt feed assembly. (FIG. 2-46)

Tri-Force & Quad-Force Set Up (continued)

Tri-Force Install (continued)

NOTE: The following installation procedure in steps 17 to 27 is identical for Tri-Force & Quad-Force assembly. Tri-Force is right-hand side assembly and Quad-Force is left-hand side assembly.

17. Attach hydraulic motor (PF1213-18B) to bracket using four 1/2-13UNC x 1 1/2 socket head capscrews (PF1200-403), four 1/2 (SS) lock washers (900903-025) and four 1/2 (SS) hex nuts (900901-010). (FIG. 2-47)

18. Ensure stepped key (9008854) is in the notch located on hydraulic motor sprocket (PF1217-960).

19. Insert sprocket and stepped key onto the hydraulic motor shaft. (FIG. 2-48)

NOTE: Refer to “Conveyor Speed Sensor Replacement” in MAINTENANCE section for proper sensor replacement and installation.

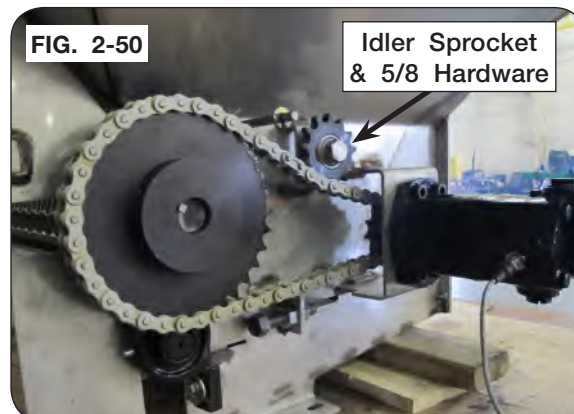
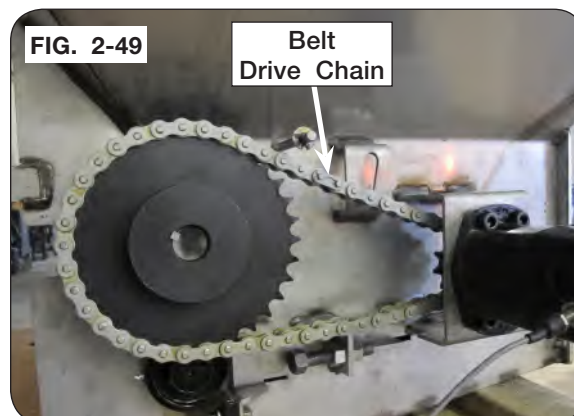
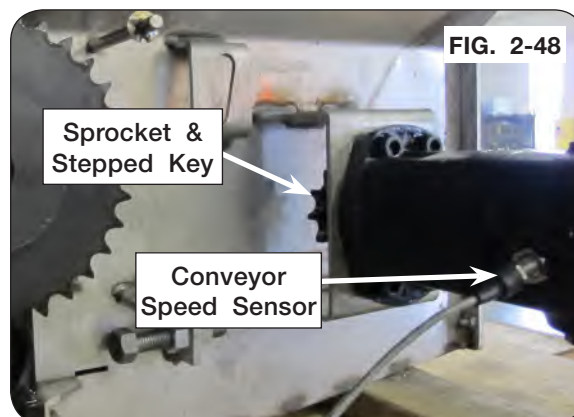
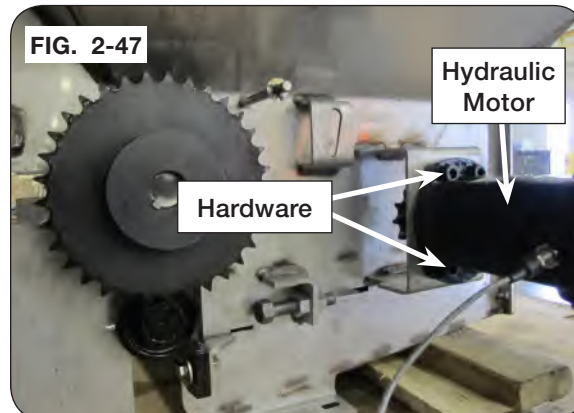
20. Attach conveyor speed sensor (PF1223-600) to the hydraulic motor. (FIG. 2-48)

21. Attach Tri-Force belt drive chain (414519) around sprocket (PF1217-993) and hydraulic motor sprocket (PF1217-960). (FIG. 2-49)

NOTE: Before attaching idler sprocket (PF1217-995), use 5/8” (SS) flat washers (900902-049), as required, between the idler and bracket to ensure alignment with belt drive chain. (FIG. 2-50)

22. Align idler sprocket to the belt drive chain as shown. (FIG. 2-50)

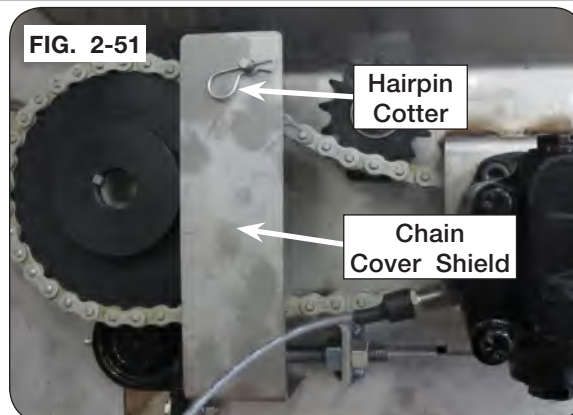
23. Loosely attach idler sprocket to the bracket using 5/8”-11UNC x 2” (SS) capscrew, 5/8” (SS) flat washers and 5/8”-11UNC (SS) hex jam nut (900911-014). (FIG. 2-50)



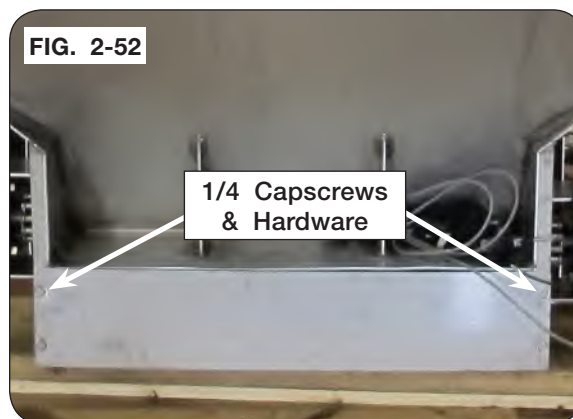
Tri-Force & Quad-Force Set Up (continued)

Tri-Force Install (continued)

24. Insert chain cover shield (PF90-152) tab into the side panel and secure with hairpin cotter (9514). (FIG. 2-51)



25. Attach Tri-Force cover (414516) to the rear of the assembly using four 1/4"- UNC x 1" (SS) capscrews (900900-005), four 1/4" (SS) flat washers (900902-032), four 1/4" (SS) lock washers (900903-017) and four 1/4" (SS) hex nuts (900901-002). (FIG. 2-52)



26. Tighten all hardware from the previous steps. Refer to the stainless steel torque chart in the MAINTENANCE section for each hardware torque specifications.

27. Caulk around gaps, between sealers and/or panels as necessary.

NOTE: For Tri/Quad assembly box mounting, go to step 53. If installing Quad-Force assembly, go to step 30 on the next page.

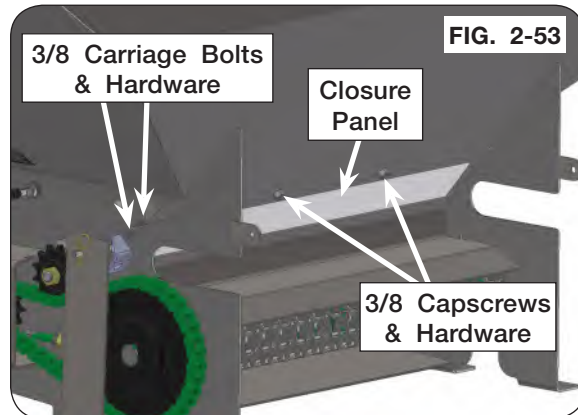
Tri-Force & Quad-Force Set Up (continued)

Quad-Force Install

NOTE: If going from Tri-Force to the Quad-Force conversion, steps 28 and 29 must be completed. Otherwise, go to step 30.

28. Remove two sets 3/8 UNC x 1 (SS) carriage bolts (9007908-051), two sets 3/8 (SS) lock washers (900903-021) and two sets 3/8 (SS) hex nuts (900901-006) on each side. Keep hardware for step 30. (FIG. 2-53)

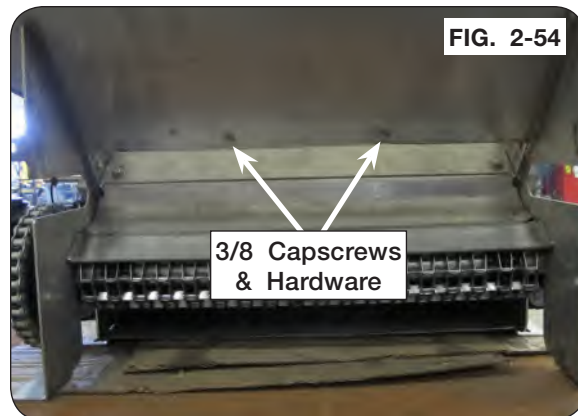
29. Slide out Tri-Force closure panel (414534) by removing two 3/8-16UNC x 3/4 (SS) capscrews (900900-053), two 3/8 (SS) flat washers (900902-037), two 3/8 (SS) lock washers (900903-021) and two 3/8 (SS) hex nuts (900901-006) on the front panel. Retain hardware for next step. Keep closer panel for future Tri-Force use, if needed. (FIG. 2-53)



IMPORTANT

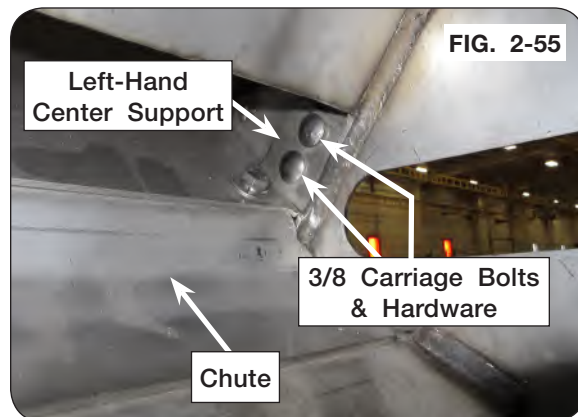
- When installing hardware, it is highly recommended to use a lubricant such as graphite-based anti-seize, molybdenum disulfide based anti-seize, or other commercially available anti-galling compounds and assemble hardware with a slow and continuously applied torque to avoid galling.

30. Loosely attach two 3/8-16UNC x 3/4 (SS) capscrews (900900-053), two 3/8 (SS) flat washers (900902-037), two 3/8 (SS) lock washers (900903-021) and two 3/8 (SS) hex nuts (900901-006) to the front panel. (FIG. 2-54)



NOTE: Quad-Force left-hand and right-hand center support weldments (414526 and 414524) and Quad-Force chute (414558) must be in place before the Quad-Force center divider panel (414517) is inserted.

31. Loosely attach Quad-Force left-hand and right-hand center support weldments to the inside Tri/Quad weldment using two sets 3/8 UNC x 1 (SS) carriage bolts (9007908-051), 3/8 (SS) lock washers (900903-021) and 3/8 (SS) hex nuts (900901-006). (FIG. 2-55)



32. Loosely place Quad-Force chute over left-hand and right-hand center support weldments. (FIG. 2-55)

Tri-Force & Quad-Force Set Up (continued)

Quad-Force Install (continued)

33. Using a safe lifting device rated at a minimum of 150 lbs., place Quad-Force center divider panel (414517) inside the Tri/Quad weldment with the short mounting flange forwards. (FIG. 2-56)

34. Loosely attach Quad-Force center divider panel to Quad-Force chute using two 3/8-16UNC x 3/4 (SS) capscrews (900900-053), two 3/8 (SS) flat washers (900902-037) and two 3/8 (SS) lock washers (900903-021). (FIG. 2-56)

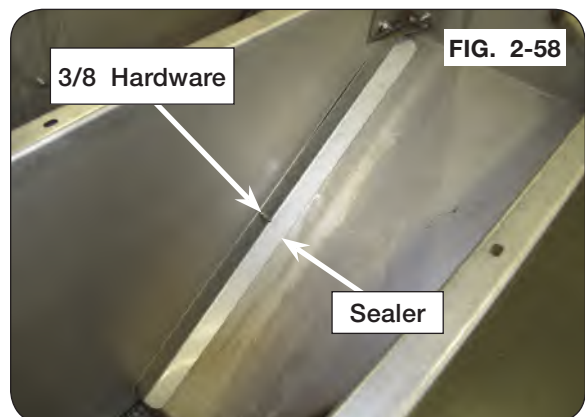
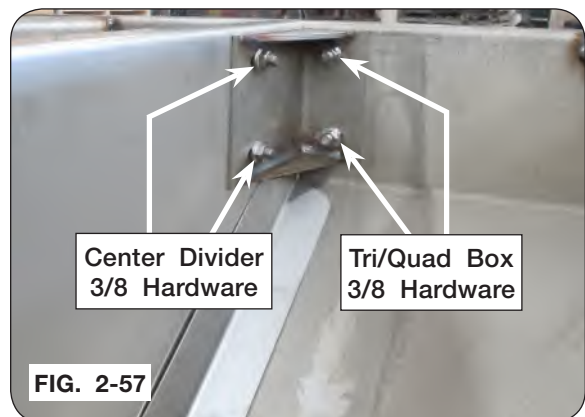
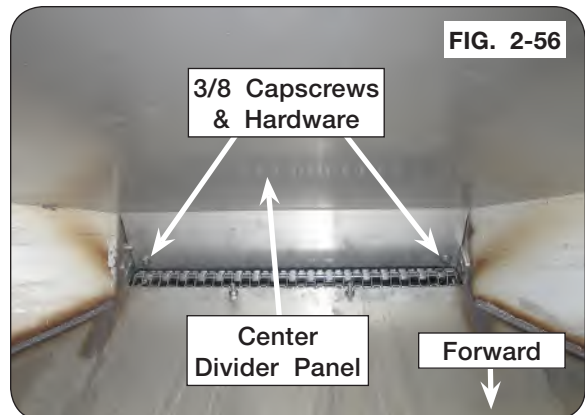
35. Loosely connect one bracket weldment (PF1233-103) to inside right-hand panel and rear side of center divider panel reusing 3/8 hardware from step 6 and using two 1/2-13UNC x 1 1/4 (SS) capscrews (900900-100), two 1/2 (SS) flat washers (900902-044), two 1/2 (SS) lock washers (900903-025) and two 1/2 (SS) hex nuts (900901-010). (FIG. 2-57)

NOTE: Sealers are intentionally under bent. When properly attached, the sealer fits tightly against the Tri/Quad weldment side.

36. Loosely connect one Quad-Force sealer strip (414559) to inside right-hand panel and rear side of center divider panel using 3/8-16UNC x 3/4 (SS) capscrew (900900-053), 3/8 (SS) flat washer (900902-037), 3/8 (SS) lock washer (900903-021) and 3/8 (SS) hex nut (900901-006). (FIG. 2-58)

37. Repeat steps 35 and 36 for left-hand side of Tri/Quad weldment.

NOTE: Do not tighten any hardware until all panels, dividers and sealers have been installed.

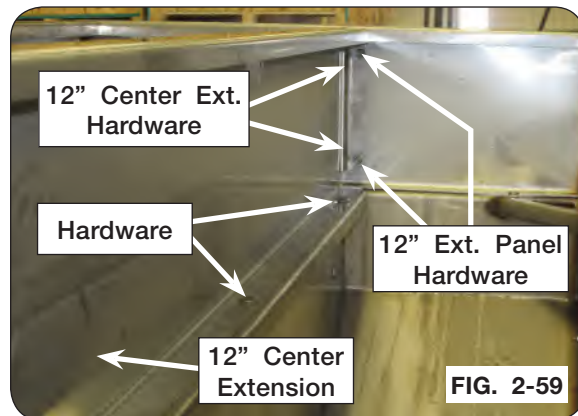


Tri-Force & Quad-Force Set Up (continued)

Quad-Force Install (continued)

38. Loosely attach the 12" center extension (PF1234-1520) to the top of the center divider panel using four 3/8-16UNC x 3/4 (SS) capscrews (900900-053), eight 3/8 (SS) flat washers (900902-037), four 3/8 (SS) lock washers (900903-021) and four 3/8 (SS) hex nuts (900901-006). (FIG. 2-59)

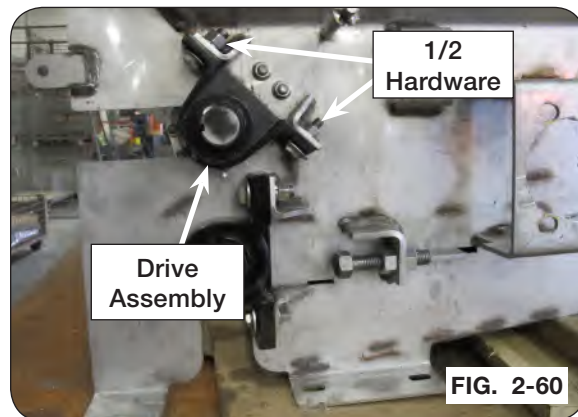
39. Loosely attach the 12" center extension brackets (PF1234-1530) to the 12" extension side panels and 12" center extension reusing hardware from step 6 and for each side two 3/8-16UNC x 3/4 (SS) capscrews (900900-053), two 3/8 (SS) flat washers (900902-037), two 3/8 (SS) lock washers (900903-021) and two 3/8" (SS) hex nuts (900901-006). (FIG. 2-59)



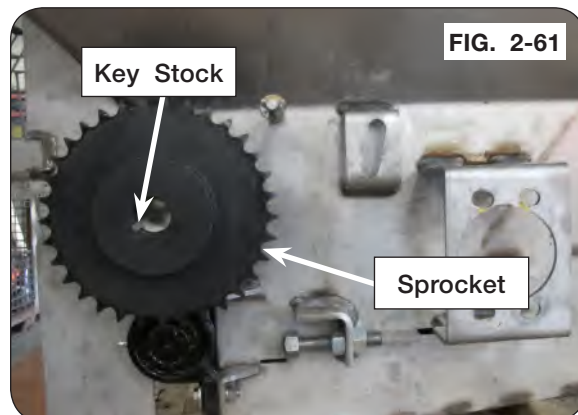
40. Tighten all hardware from the previous steps. Refer to the stainless steel torque chart in the MAINTENANCE section for each hardware torque specifications.

41. Caulk around gaps, between sealers and/or panels as necessary.

42. Attach Quad-Force drive assembly (414521) to the front using two sets 1/2-13UNC x 1 1/4 (SS) capscrews (900900-100), 1/2 (SS) flat washers (900902-044), 1/2 (SS) lock washers (900903-025) and 1/2 (SS) hex nuts (900901-010) on each side. (FIG. 2-60)



43. Slide key stock (PF1220-144) and sprocket (PF1217-993) flush onto the Quad-Force drive assembly. (FIG. 2-61)



Tri-Force & Quad-Force Set Up (continued)

Quad-Force Install (continued)

44. Attach hydraulic motor (PF1213-18B) to bracket using four 1/2-13UNC x 1 1/2 socket head capscrews (PF1200-403), four 1/2 (SS) lock washers (900903-025) and four 1/2 (SS) hex nuts (900901-010). (FIG. 2-62)

45. Ensure stepped key (9008854) is in the notch located on hydraulic motor sprocket (PF1217-960).

46. Insert sprocket and stepped key onto the hydraulic motor shaft. (FIG. 2-63)

NOTE: Refer to “Conveyor Speed Sensor Replacement” in MAINTENANCE section for proper sensor replacement and installation. (FIG. 2-62)

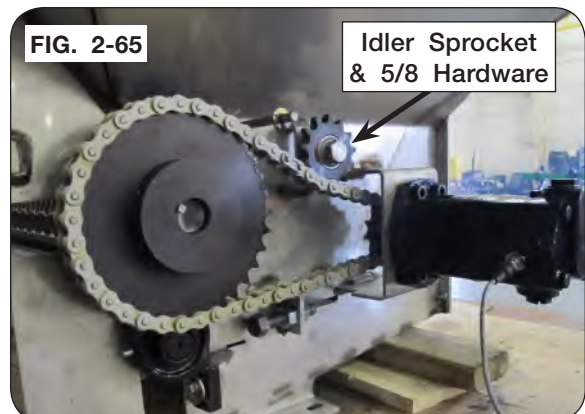
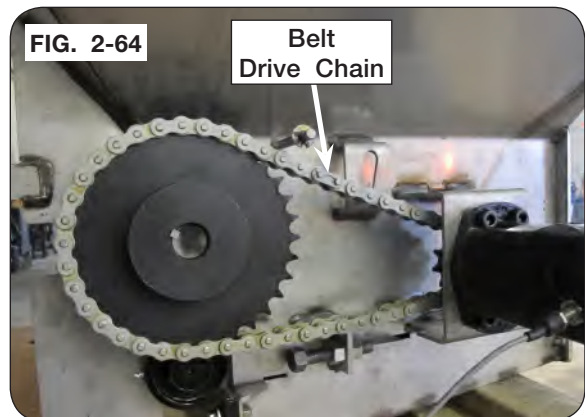
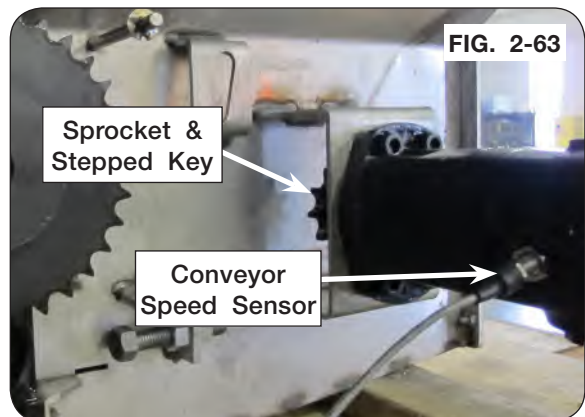
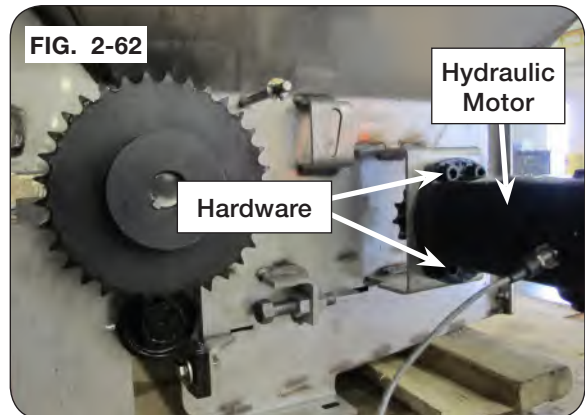
47. Attach conveyor speed sensor (PF1223-600) to the hydraulic motor. (FIG. 2-63)

48. Attach Quad-Force belt drive chain (414520) around sprocket (PF1217-993) and hydraulic motor sprocket (PF1217-960). (FIG. 2-64)

NOTE: Before attaching idler sprocket (PF1217-995), use 5/8” (SS) flat washers (900902-049), as required, between the idler and bracket to ensure alignment with belt drive chain. (FIG. 2-65)

49. Align idler sprocket to the belt drive chain as shown. (FIG. 2-65)

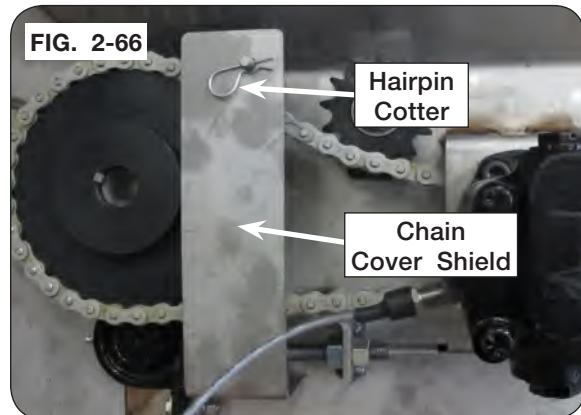
50. Loosely attach idler sprocket to the bracket using 5/8”-11UNC x 2” (SS) capscrew, 5/8” (SS) flat washers and 5/8”-11UNC (SS) hex jam nut (900911-014). (FIG. 2-65)



Tri-Force & Quad-Force Set Up (continued)

Quad-Force Install (continued)

51. Insert chain cover shield (414528) tab into the side panel and secure with hairpin cotter (9514). (FIG. 2-66)
52. Tighten all hardware from the previous steps. Refer to the stainless steel torque chart in the MAINTENANCE section for each hardware torque specifications.



Tri-Force & Quad-Force Set Up (continued)

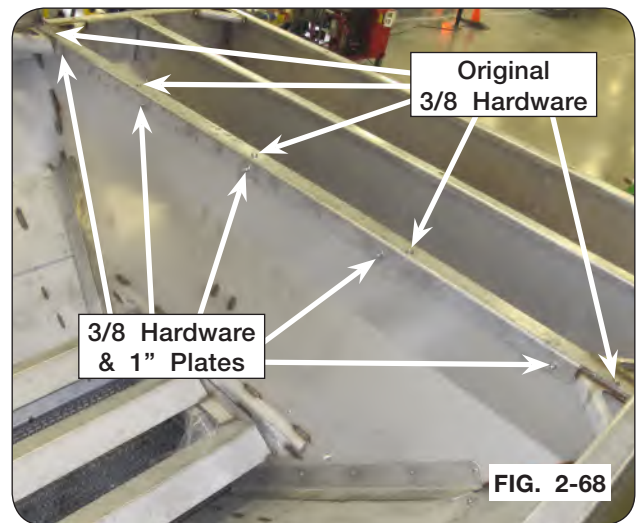
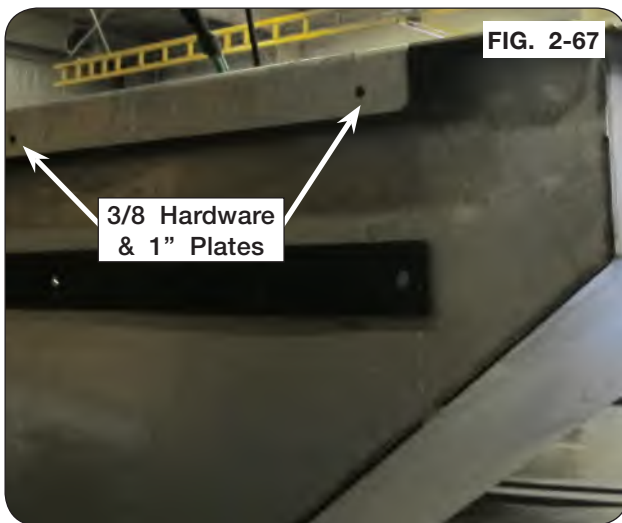
Box Mounting

NOTE: It is recommended to loosely attach five 10 gauge x 1" square plates with 1/8" center holes to the Tri/Quad inside front panel lip using 3/8 hardware before attaching the Tri/Quad assembly to the rear spreader box for top mounting. (FIG. 2-67 & 2-68)

53. Using a safe lifting device rated at a minimum of 1,000 lbs., lift Tri/Quad weldment level with the spreader box and align Tri/Quad front panel lip with the rear panel sideboard extension mounting holes as shown. (FIG. 2-68)

54. Position the five 1" square plates behind the rear spreader panel lip and tighten the 3/8 hardware to clamp the top of Tri/Quad assembly to the rear spreader box as shown. (FIG. 2-68)

55. Reusing 3/8 hardware from step 2, insert hardware into the five top mounting holes and tighten. (FIG. 2-68)



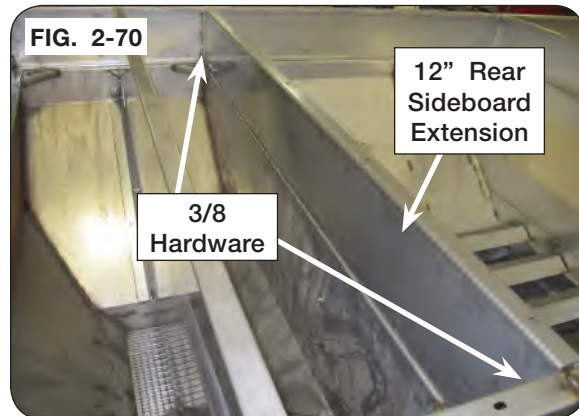
56. Attach the bottom of the Tri/Quad assembly to the Duo-Force by inserting 3/8 hardware into the left-hand and right-hand tabs. Tighten hardware. (FIG. 2-69)



Tri-Force & Quad-Force Set Up (continued)

Box Mounting (continued)

57. Remove original 3/8" hardware and reattach current 12" rear sideboard extension (PF1234-148) to the rear spreader box reusing 3/8" hardware. (FIG. 2-70)
58. Attach Tri/Quad 12" side panel extensions using 3/8-16UNC x 3/4 (SS) capscrews, 3/8 (SS) flat washers, 3/8 (SS) lock washers and 3/8 (SS) hex nuts on each side. (FIG. 2-70)
59. Tighten all hardware from the previous steps. Refer to the stainless steel torque chart in the MAINTENANCE section for each hardware torque specifications.



Hydraulic Connections: Tri- & Quad-Force Set Up

WARNING

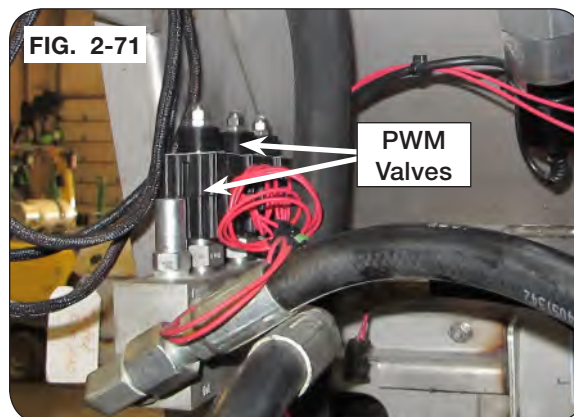
- TO PREVENT PERSONAL INJURY OR DEATH ALWAYS ENSURE THAT THERE ARE PEOPLE WHO REMAIN OUTSIDE THE DRY SPREADER TO ASSIST THE PERSON WORKING INSIDE, AND THAT ALL SAFE WORKPLACE PRACTICES ARE FOLLOWED. THERE IS RESTRICTED MOBILITY AND LIMITED EXIT PATHS WHEN WORKING INSIDE THE IMPLEMENT.
- NEVER ENTER DRY 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. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.

1. Park the empty dry spreader on a firm, level surface. Block the tires to keep the machine 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, remove two valve plug cartridges (PF1211-081) from the top of multi-bin valve block (PF1211-001). (FIG. 2-71)

3. Attach two PWM valves (PF1211-079A) to the top of multi-bin valve block (PF1211-001). (FIG. 2-71)



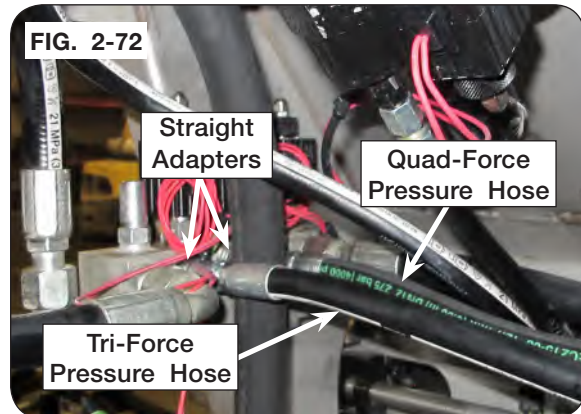
Hydraulic Connections: Tri- & Quad-Force Set Up (continued)

4. Connect straight adapter (PF1202-1076) for Tri-Force to port CF3 on the multibin valve block. (FIG. 2-72)
5. Connect straight adapter (PF1202-1076) for Quad-Force to port CF2 on the multibin valve block. (FIG. 2-72)

NOTE: For Tri-Force and Quad-Force pressure hose assembly spreader box length part numbers, refer to PARTS section.

6. Connect Tri-Force and Quad-Force pressure hose assembly to straight adapters as shown. (FIG. 2-72)
7. Route Tri-Force pressure hose to the rear of the spreader, over the Duo-Force and to the right-hand side of the spreader as shown. (FIG. 2-73)

NOTE: For Quad-Force pressure hose routing, go to next step. Otherwise, go to step 9.

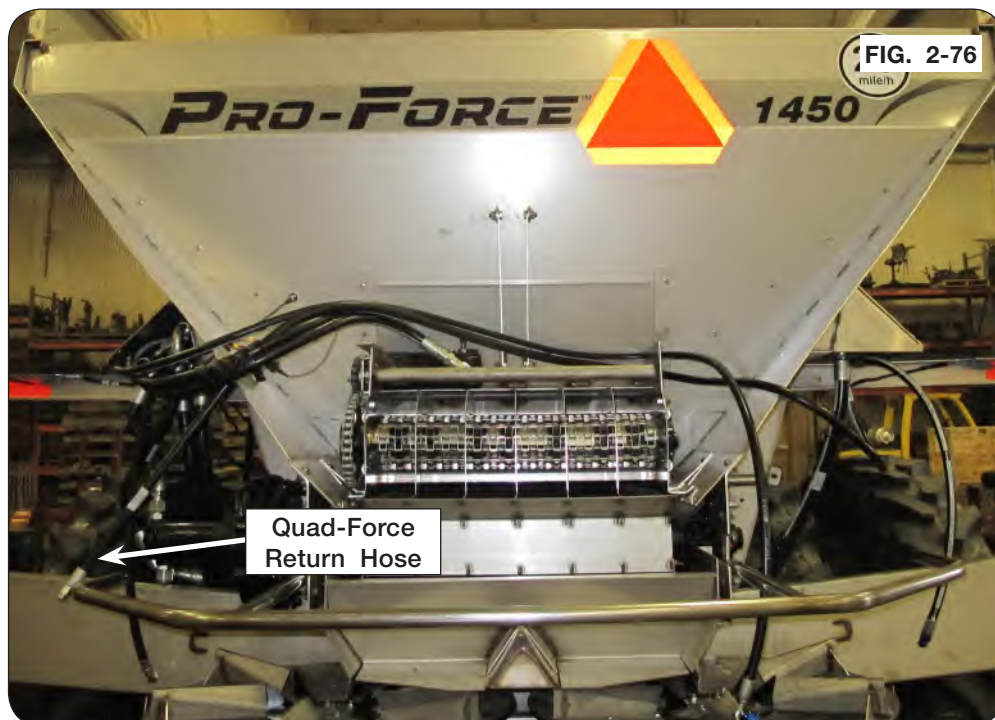
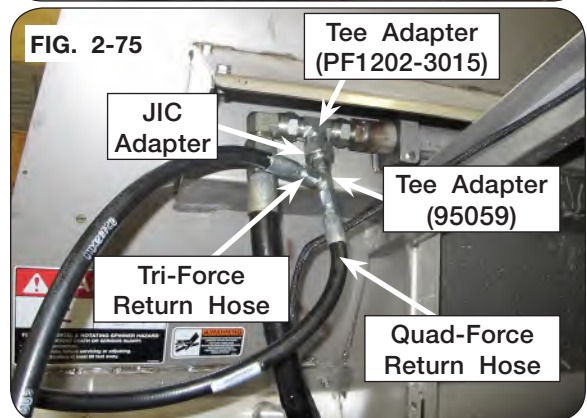
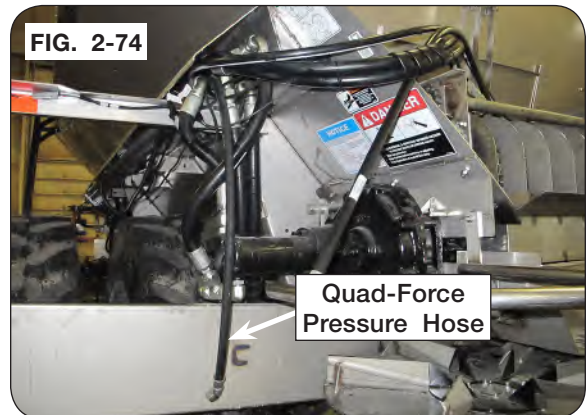


Hydraulic Connections: Tri- & Quad-Force Set Up (continued)

- Route Quad-Force pressure hose to the rear left-hand side of the spreader. (FIG. 2-74)
- At the right-hand side of the spreader, attach tee adapter (PF1202-3015) to the conveyor hydraulic motor return hose. (FIG. 2-75)
- Attach JIC reducer/expander adapter (PF1202-1033) to tee adapter (PF1202-3015) as shown. (FIG. 2-75)

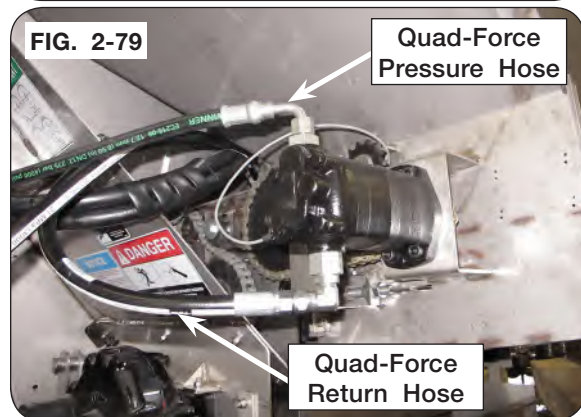
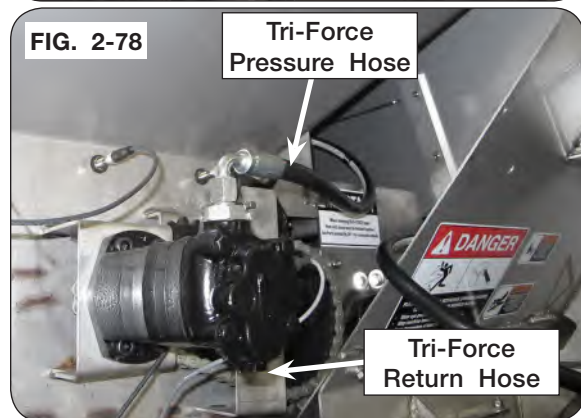
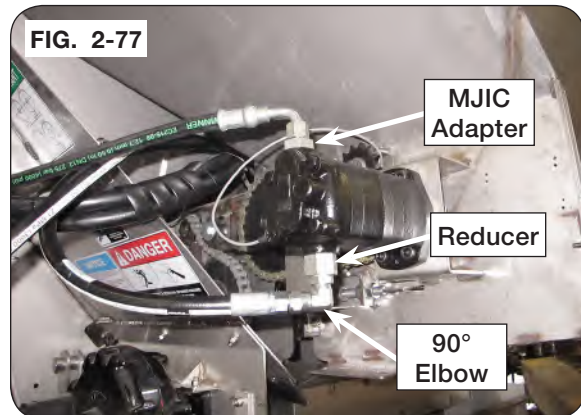
NOTE: If installing Tri-Force, go to step 11. If installing Quad-Force, go to steps 12 to 14.

- Connect Tri-Force return hose (PF1207-605) to JIC reducer/expander adapter. Go to next page.
- Attach swivel nut run tee adapter (95059) to JIC reducer/expander adapter as shown. (FIG. 2-75)
- Connect Tri-Force and Quad-Force return hoses (PF1207-605 and PF1207-905) to tee adapter as shown. (FIG. 2-75)
- Route Quad-Force return hose over the Duo-Force and to the rear left-hand side of the spreader. (FIG. 2-76)



Hydraulic Connections: Tri & Quad-Force Set Up (continued)

15. Attach 3/4-16 MJIC x 1 1/16-12 ORB adapters (PF1202-1080) to the top of the Tri and Quad hydraulic motors. (FIG. 2-77)
16. Attach 1 1/16-12 MORB x 3/4-16 FORB reducer (9004465) and 3/4-16 ORB x 3/4-16 JICF 90° elbow (95811) to the bottom of the Tri and Quad hydraulic motors. (FIG. 2-77)
17. Connect the Tri-Force pressure hose to the MJIC adapter on the top of the motor. (FIG. 2-78)
18. Connect the Tri-Force return hose to the 90° elbow on the bottom of the motor. (FIG. 2-78)
19. Connect the Quad-Force pressure hose to the MJIC adapter on the top of the motor. (FIG. 2-79)
20. Connect the Quad-Force return hose to the 90° elbow on the bottom of the motor. (FIG. 2-79)
21. Tighten all adapters and hose connections before operation.
22. Test run the Tri/Quad assembly. Verify smooth conveyor operation and chains turn forward.



Spreader Constant for Duo-Force Gate Setting

Calibrating the Spread Rate:

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

Control Valve Settings – Raven Controllers:

Servo Valve:

Granular, C-FC and a Valve Cal of 743. (FIG. 2-80)



FIG. 2-80

PWM Valve:

Granular, PWM Close Valve, Freq of 50hz, Valve Cal of 23, Min Pw = 35, Pre Set Pw = 253 (FIG. 2-81v)

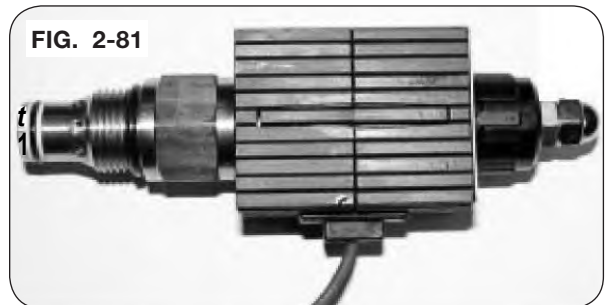


FIG. 2-81

RCM Spreader Set Up

Whenever the tractor is turned off or the ECU for the spreader loses power, refer to Pro-Force Dry Spreader manual - 414342 - and “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.

Notes

Section III

Operation

Preparing Dry Spreader	3-2
Hardware	3-2
Hydraulic System.....	3-2
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FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR AUTO GREASE INFORMATION, PLEASE REFER TO YOUR AUTO GREASE MANUAL.
FOR TARP INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.

Preparing Dry Spreader

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

Hardware

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

Hydraulic System

WARNING

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

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

IMPORTANT

- *When removing Duo/Tri/Quad-Force bin(s) from unit, hydraulic hoses must be hooked together. Refer to "Hydraulics with Multibin Valve Block Components" in the PARTS section for specific hoses.*

HYDRAULIC PUMP REQUIREMENTS:

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

IMPORTANT

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

Lubrication

Lubricate the dry spreader as outlined in the MAINTENANCE section.

Transporting

WARNING

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

WARNING

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

CAUTION

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

IMPORTANT

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

See towing vehicle manual for towing and towing capacity. Never tow a loaded dry spreader over public roads. 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 mph during off-highway travel.

Secure transport chain to tractor chain support or truck chassis chain support before transporting. Use good judgment when transporting equipment on highways. Regulate speed to road conditions and maintain complete control.

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

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

Duo-Force Spreading Operation

⚠ WARNING

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

⚠ CAUTION

- DO NOT SPREAD LIME WITH THE DUO-FORCE, TRI-FORCE OR QUAD-FORCE SPREADER BINS. USE ONLY GRANULAR FERTILIZERS FOR PRODUCT APPLICATION.

IMPORTANT

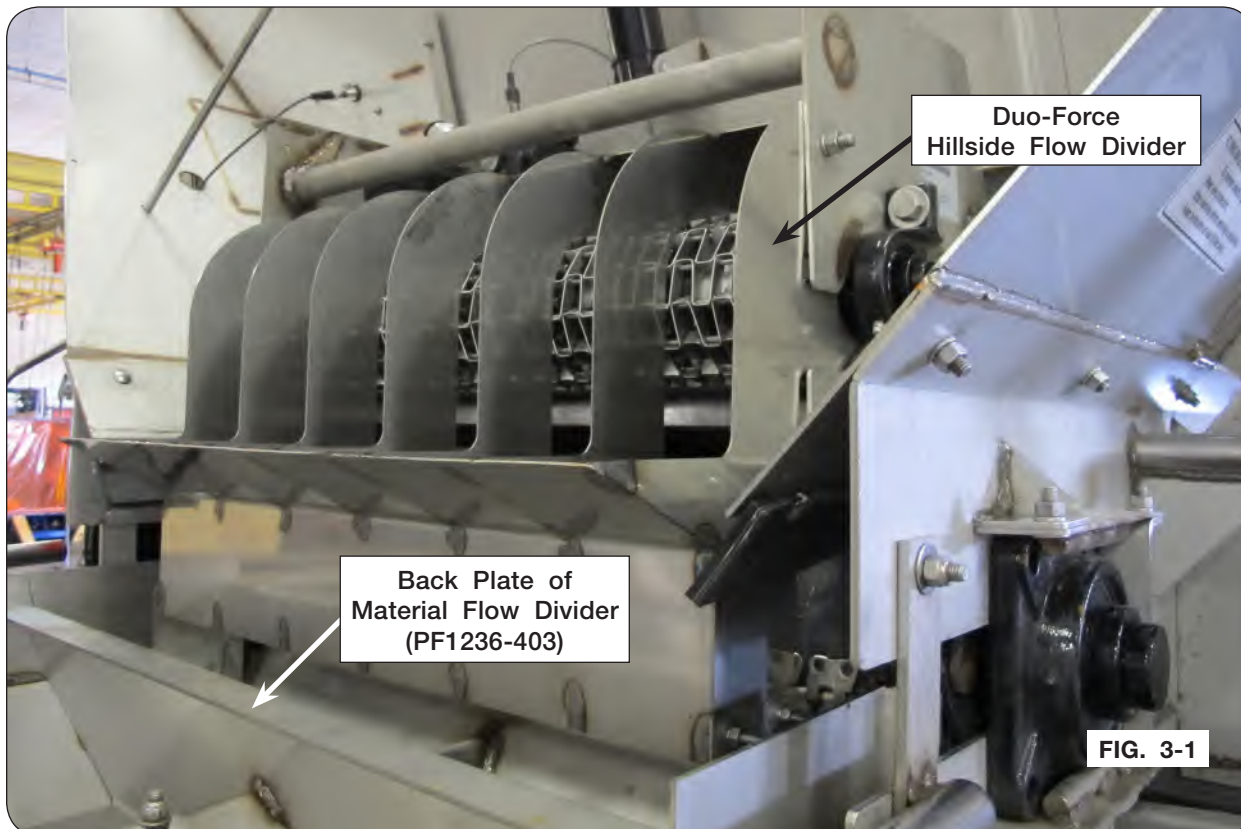
- Before loading product into the main spreader bin, ensure the Duo-Force conveyor manual feedgate is at the desired location. There is no access to manual feedgate once main spreader bin is full.

NOTE: Duo-Force hillside flow divider has a height of 3". Do not open the rear feedgate higher than 3". If opened higher than 3", material will build on the hillside flow divider and screed off the unit.

1. Open the Duo-Force rear feedgate at the desired location.

NOTE: Each spreader bin can be loaded independently.

2. Load product into the main bin and Duo-Force bin.



Duo-Force Spreading Operation (continued)

3. Ensure the spinner is located at the “F” (fertilizer) position for product application. (FIG. 3-2)
4. Adjust spreader constant for the new gate setting. See “RCM Spreader Set Up” in the SET UP section.
5. Refer to Dry Spreader manual for “Spinner Disc Operation” in the OPERATION section for spinner speed setting & spread pattern info.

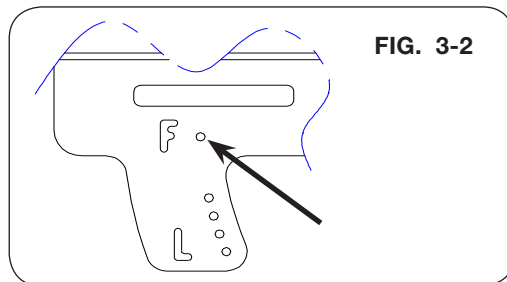


FIG. 3-2

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

Notes

Section IV

Maintenance

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

Duo-Force Chain Tension

WARNING

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

IMPORTANT

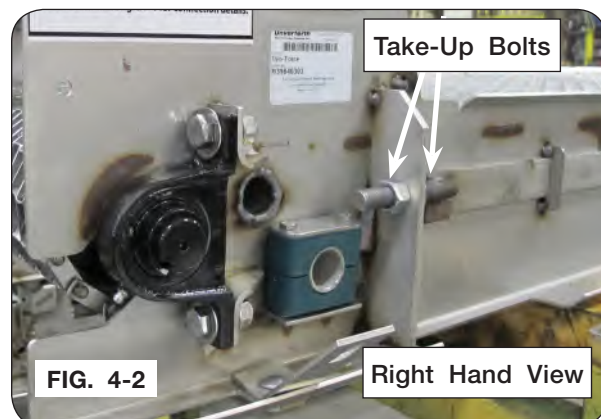
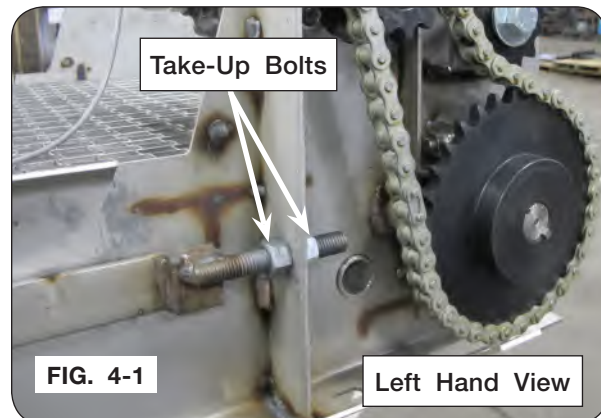
- *Disconnect from the towing vehicle and all load cells, if equipped.*
- *Straighten or replace bent or distorted crossbars immediately.*
- *Proper chain tension is an essential factor in chain & sprocket life.*
- *Chains that are TOO TIGHT tend to stretch & will cause excess sprocket wear & eventually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

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

1. Tighten left-hand and right-hand take-up bolts to tighten Duo-Force conveyor chain. (FIG. 4-1 & 4-2)
2. Pull the center of the chain 1" to 1 1/2" off the conveyor bed to verify chain tension.

NOTE: Check chain tension daily for the first week of operation and then weekly.

3. See the "Lubrication" section located on the following pages for chain lubrication.



Tri-Force and Quad-Force Chain Tension

WARNING

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

IMPORTANT

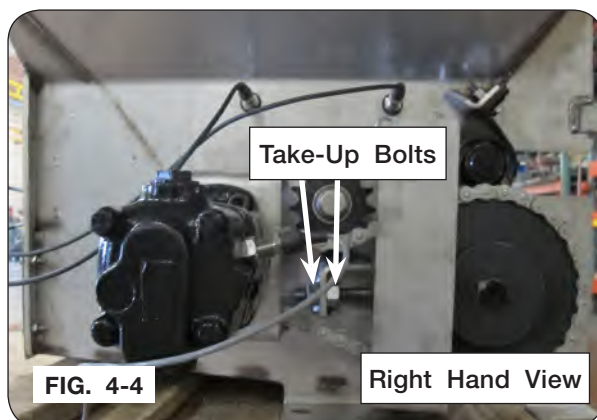
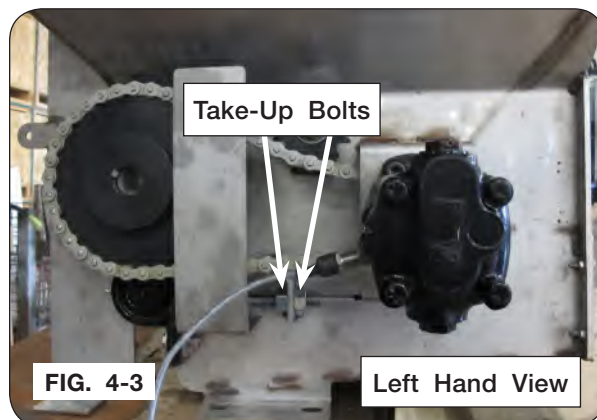
- *Disconnect from the towing vehicle and all load cells, if equipped.*
- *Straighten or replace bent or distorted crossbars immediately.*
- *Proper chain tension is an essential factor in chain & sprocket life.*
- *Chains that are TOO TIGHT tend to stretch & will cause excess sprocket wear & eventually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

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

1. Tighten left-hand and right-hand take-up bolts to tighten Tri-Force and Quad-Force feed chains. (FIG. 4-3 & 4-4)
2. Pull the center of the Tri-Force chain 1/4" to 1/2" to verify Tri-Force chain tension.
3. If equipped with Quad-Force, pull and check the Quad-Force chain. Ensure chain is tight around the drive assembly.

NOTE: Check chain tension daily for the first week of operation and then weekly.

4. See the "Lubrication" section located on the following pages for chain lubrication.

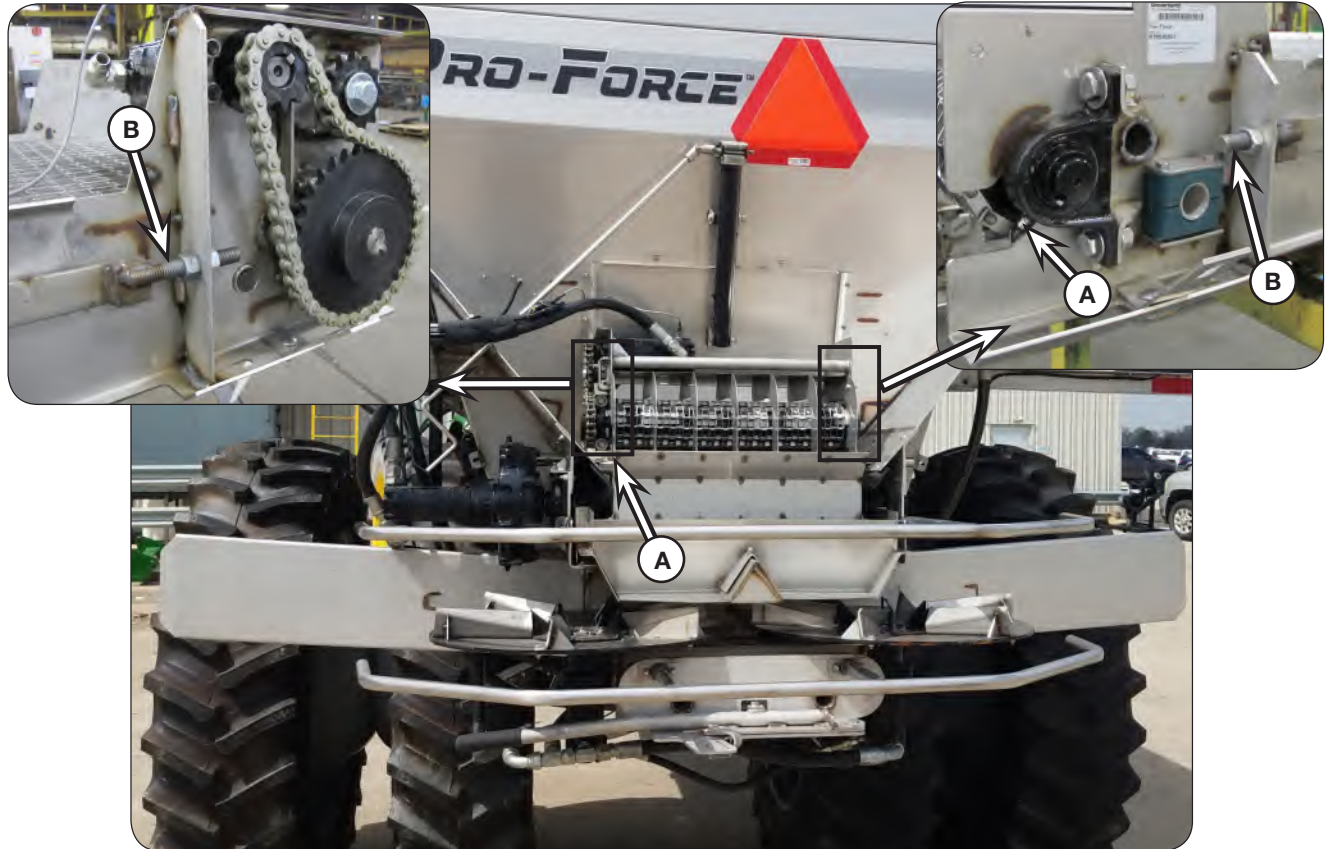


Lubrication

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

The lubrication locations and recommended schedule are as follows:

Duo-Force Locations

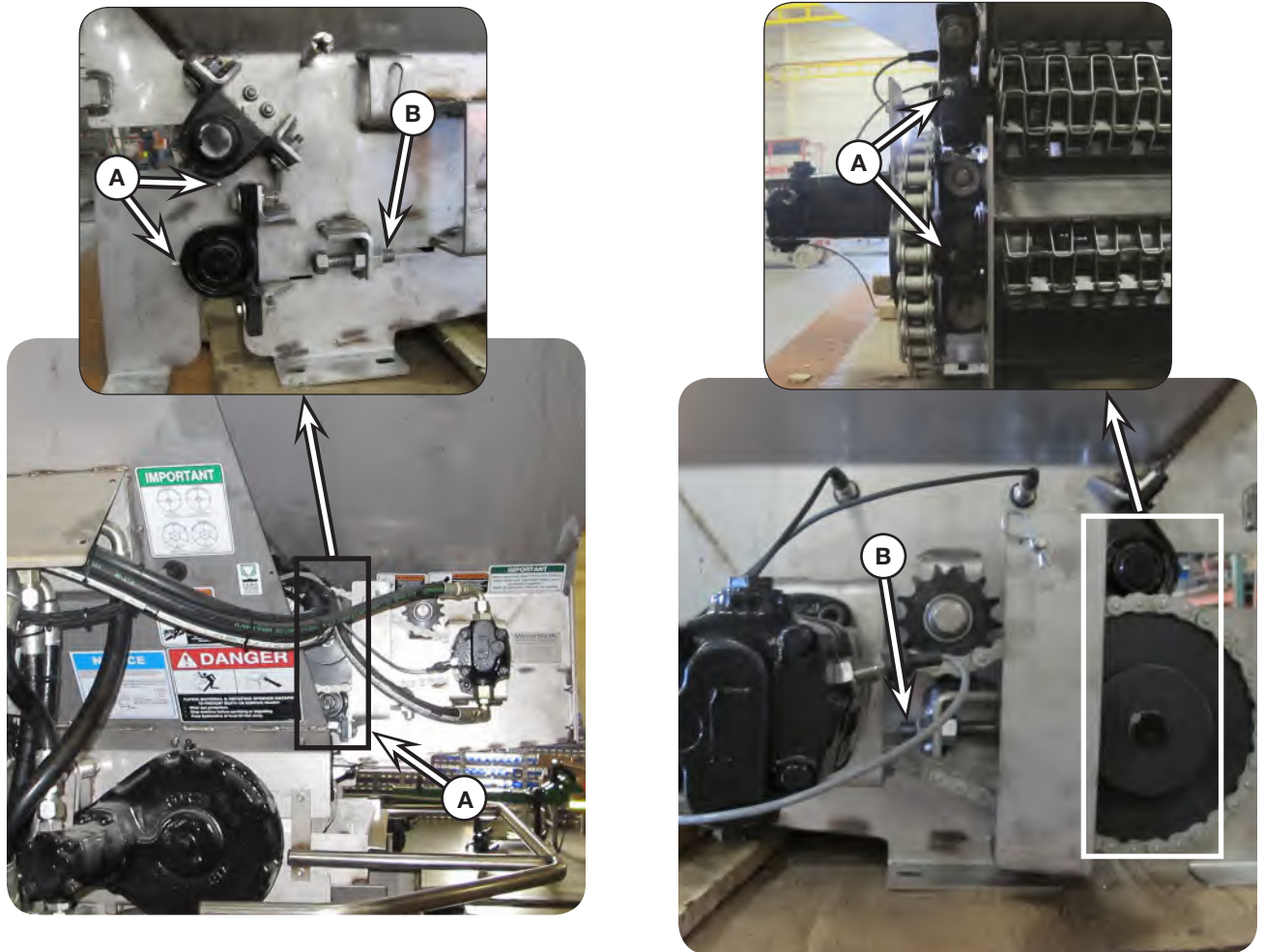


Lubrication (continued)

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

The lubrication locations and recommended schedule are as follows:

Tri-Force & Quad-Force Locations



(Continued on next page)

Lubrication (continued)

ITEM	DESCRIPTION	POINT	LUBRICANT	QTY.	HOURS
A	Bearings - Duo/Tri/Quad-Force Conveyor Drive	2	NLGI No. 2	Shots	Weekly
B	Bolt, Take-Up	4	Never Seize	Recoat	Annually

HYDRAULIC PUMP REQUIREMENTS:

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

IMPORTANT

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

CONVEYOR CHAIN:

Always pressure wash to clean conveyor chain first. 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.

NOTE: Grease Bearings until grease purges.

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

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.

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 the 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 and electrical connections.

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

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

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

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

Check hydraulic hoses for weather cracks and replace accordingly.

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

Keep the tarp open, if equipped.

Dry Spreader Maintenance (continued)

Purging Hydraulic System

WARNING

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

1. Purge air from system as follows:

- A. Pressurize the spinner system hydraulics and maintain system at full pressure for at least 1 minute.
- B. Check hydraulic oil reservoir in hydraulic power source and re-fill as needed.
- C. Check for hydraulic leaks using cardboard or wood. Tighten connections according to directions in Torque Specifications in MAINTENANCE section.
- D. De-pressurize spinner hydraulic system.

Duo-Force Conveyor Replacement

WARNING

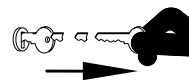
- TO PREVENT PERSONAL INJURY OR DEATH ALWAYS ENSURE THAT THERE ARE PEOPLE WHO REMAIN OUTSIDE THE DRY SPREADER TO ASSIST THE PERSON WORKING INSIDE, AND THAT ALL SAFE WORKPLACE PRACTICES ARE FOLLOWED. THERE IS RESTRICTED MOBILITY AND LIMITED EXIT PATHS WHEN WORKING INSIDE THE IMPLEMENT.
- NEVER ENTER DRY SPREADER WITH CONVEYOR 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 HYDRAULIC POWER UNIT OPERATOR'S MANUAL FOR PROPER PROCEDURES.
- HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.
- HYDRAULIC SYSTEM MUST BE PURGED OF AIR BEFORE OPERATING TO PREVENT SERIOUS INJURY OR DEATH.
- 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 400 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.

CAUTION

- ENSURE THE MAIN CONVEYOR RUBBER BELT HUMP DOES NOT CATCH THE BOTTOM OF THE MANUAL FEEDGATE ON THE DUO-FORCE CONVEYOR. DAMAGE TO MANUAL FEEDGATE AND/OR BELT CAN OCCUR.

IMPORTANT

- *It is highly recommended to use a lubricant such as graphite-based anti-seize, molybdenum disulfide based anti-seize, or other commercially available anti-galling compounds and assemble with a slow and continuously applied torque to avoid galling.*
1. Park the empty dry spreader on a firm, level surface. Block the tires to keep the machine from moving. Relieve hydraulic pressure, see tractor operator's manual. Set the tractor's parking brake, shut-off the engine, and remove the ignition key. Completely disconnect the tractor from the dry spreader.
 2. Ensure the feedgate is completely open to allow for easier conveyor removal.



Duo-Force Conveyor Replacement (continued)

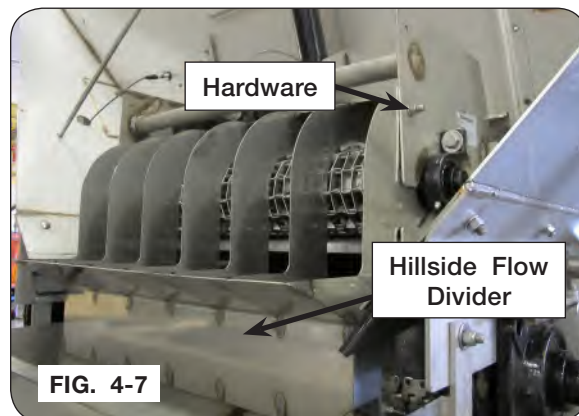
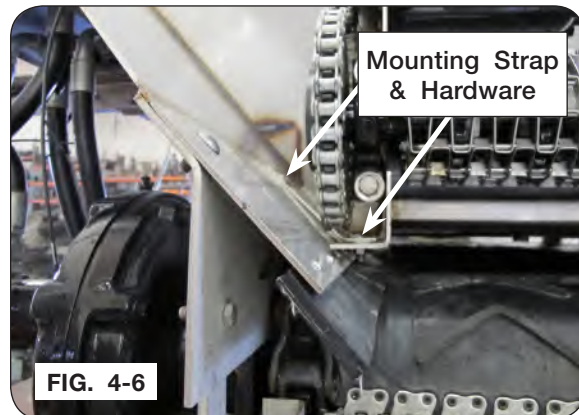
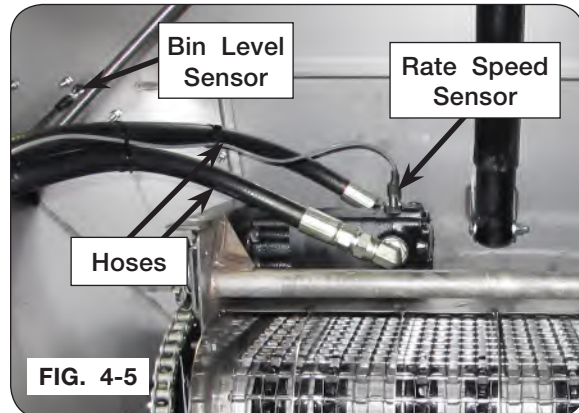
3. Unplug electrical connector for rate speed sensor (PF1223-600) and for bin level sensor (9008806), if equipped. (FIG. 4-5)

NOTE: Do not plug the hoses after disconnecting them.

NOTE: When removing Duo-Force bin from the dry spreader, hydraulic hoses must be hooked together.

4. Disconnect Duo-Force hoses from each fitting on Duo-Force conveyor motor (PF1213-145), and connect the hoses together. (FIG. 4-5)
5. Remove hardware retaining both mounting straps and Duo-Force conveyor (414459). (FIG. 4-6)
6. Remove mounting straps from each side of the Duo-Force conveyor. (FIG. 4-6)

7. Remove Duo-Force hillside flow divider (414475) by removing the hardware at the rear of the hillside flow divider. (FIG. 4-7)
8. Slide out the hillside flow divider from the Duo-Force conveyor.



Duo-Force Conveyor Replacement (continued)

9. Loosen four sets of hardware retaining the bottom cover sealer (PFDFP-204-2) to the lower box divider panel (PFDFP-200) to release tension on the Duo-Force conveyor. (FIG. 4-8)

NOTE: Triple “V” weldment (414497) removed for clarity. (FIG. 4-8)

NOTE: Ensure the manual feedgate on the Duo-Force conveyor does not catch the rubber belt hump of main conveyor.

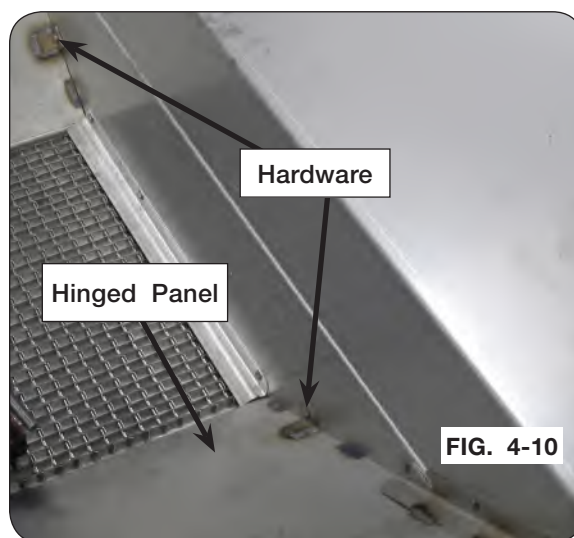
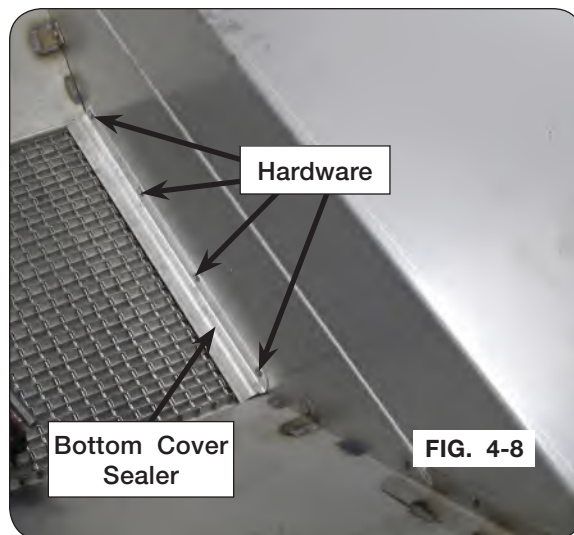
10. Using a safe lifting device rated at a minimum of 400 lbs., carefully slide out Duo-Force conveyor from spreader box. (FIG. 4-9)

11. Remove hardware to allow hinged panels (PF1233-104 & PF1233-104LH) to lay on the sides of the Pro-Force spreader box. (FIG. 4-10)

NOTE: It is not required to remove the box dividers or the triple “V” weldment. If more flow is desired, the lower box divider can be removed.

NOTE: Hinged panels must be re-fastened to the lower box divider panel before reinstalling the Duo-Force conveyor.

NOTE: Refer to “Duo-Force Set Up” in the SET UP section for more installation details.

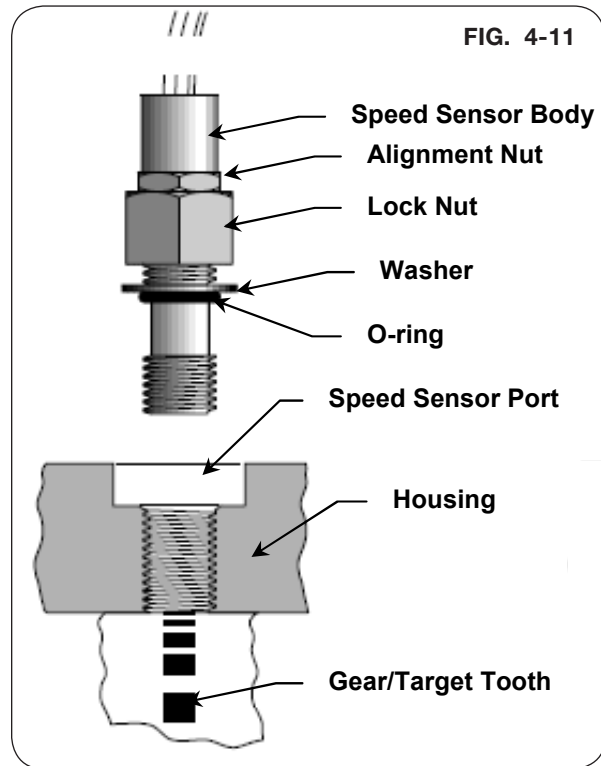
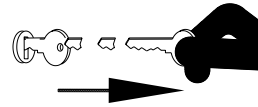


Conveyor Speed Sensor Replacement

1. Park the empty dry spreader on a firm, level surface. Block the tires to keep the machine from moving. Set the vehicle's parking brake, shut off engine, ignition remove 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. (FIG. 4-11)

2. Disconnect previous speed sensor cable from the speed sensor and the other end of the cable from the wiring harness.
3. Remove the previous speed sensor body and hardware from the housing.
4. Position the lock nut against the alignment nut as shown in FIG. 4-11.
5. Move the washer and the o-ring up against the speed sensor body threads as shown in FIG. 4-11.



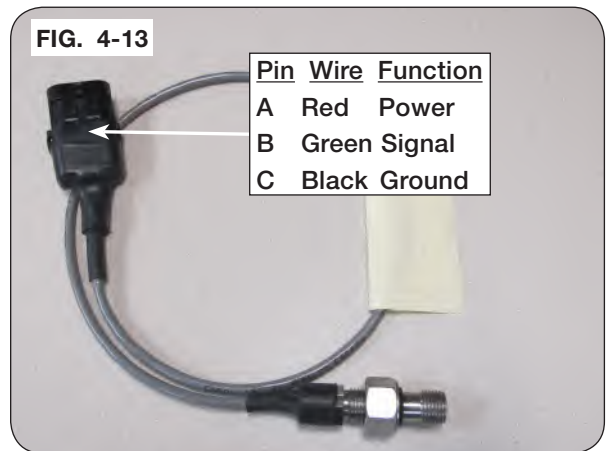
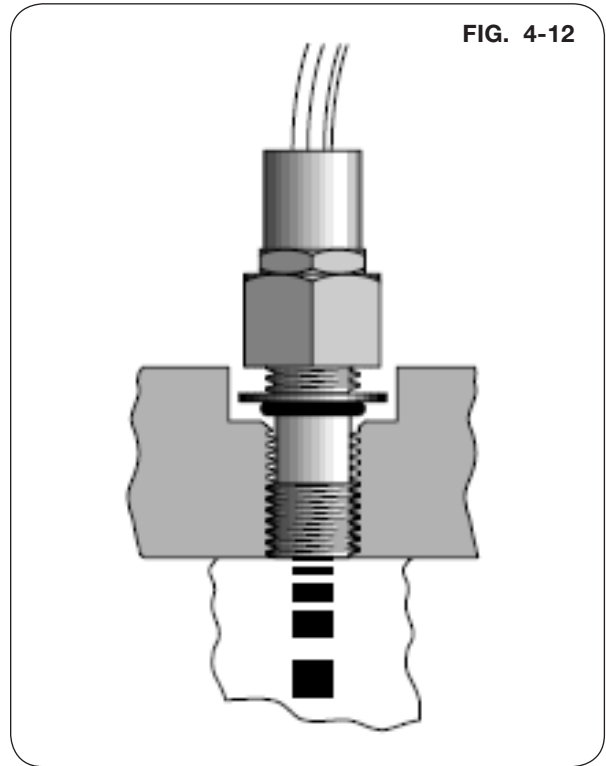
Conveyor Speed Sensor Replacement (continued)

IMPORTANT

- Do not force the sensor against the gear/target tooth, damage may occur.
6. By hand, lightly thread the speed sensor body into the housing until the sensor touches against the motor (gear/target) tooth.
 7. Ensure the o-ring or the washer do not touch the housing. See FIG. 4-12.

NOTE: Torque values are for clean dry threads.

8. Turn the speed sensor body out $\frac{3}{8}$ to $\frac{1}{2}$ turn (CCW) and tighten the lock nut to 75-125 lb-in.
9. Connect speed sensor cable to the speed sensor, and attach other end of cable to the wiring harness. (FIG. 4-13)



Duo-Force Bin Level Sensor Replacement

⚠ WARNING

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

NOTE: Fiber washer (9008810) is not shown in Figure 4-12.

1. Disconnect previous bin level sensor cable from the bin level sensor and other end from the wiring harness.
2. Remove previous bin level sensor body and hardware from the spreader box. (FIG. 4-12 and 4-13)
3. Inside the spreader box, insert new bin level sensor (9008806) through the rear panel with connector end out of the spreader box. (FIG. 4-14)
4. Attach bin level sensor to the inside of the rear panel using one hex nut (9008808).
5. Outside of the spreader box, attach bin level sensor to rear panel using fiber washer (9008810) and remaining hex nut. (FIG. 4-14)
6. Plug bin level sensor cable (9009180) into bin level sensor and connect other end of cable to wiring harness. (FIGS. 4-14 & 4-15)

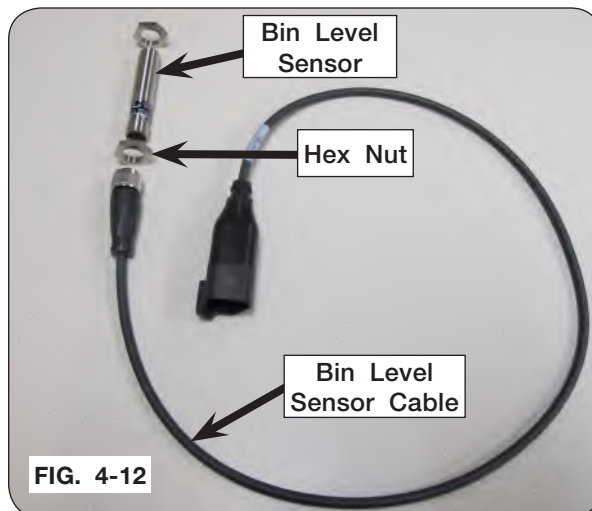


FIG. 4-12

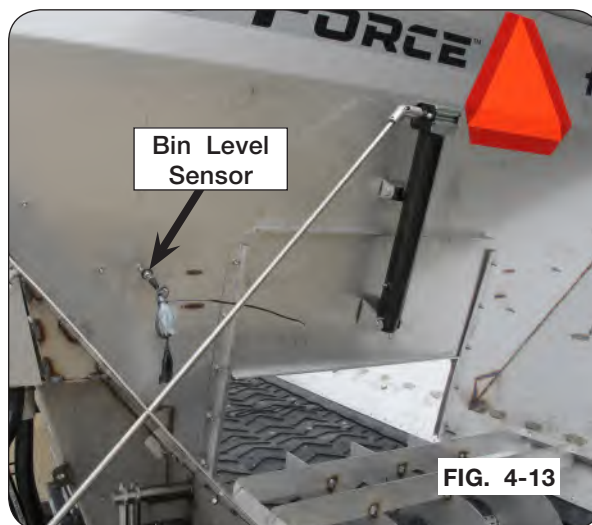


FIG. 4-13

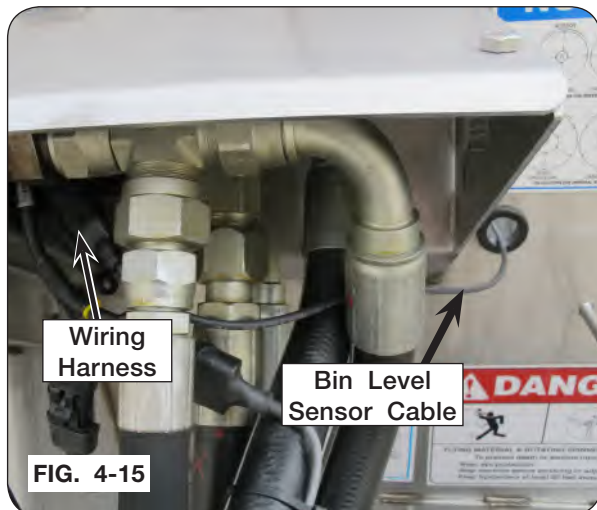


FIG. 4-15

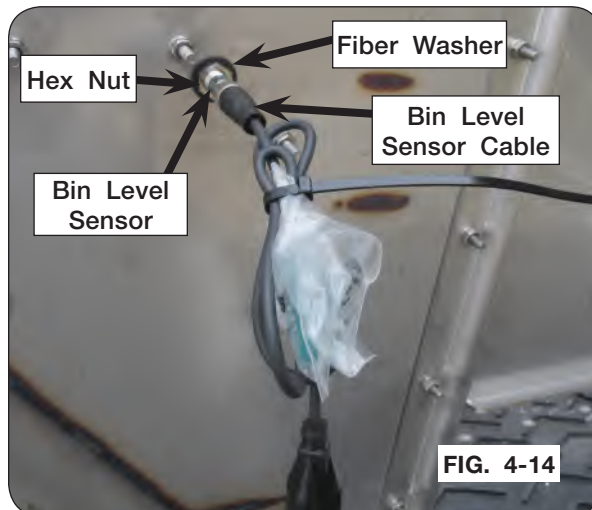


FIG. 4-14

Duo-Force Bin Level Sensor Replacement (continued)

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

7. Disconnect previous bin level sensor cable from the bin level sensor and other end from the wiring harness.
8. Remove previous bin level sensor body and hardware from the spreader box. (FIG. 4-16 and 4-17)

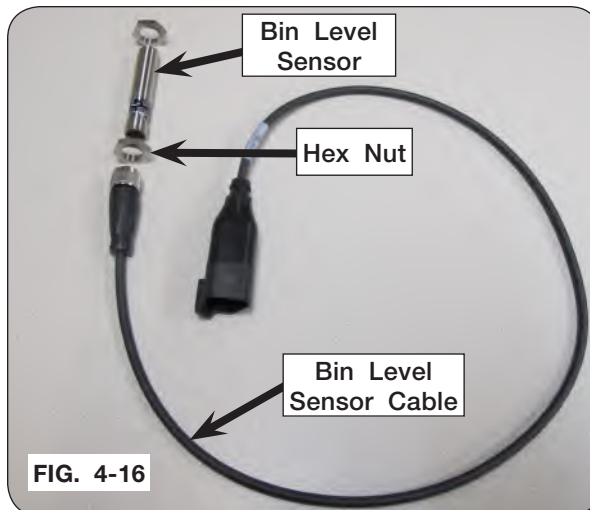


FIG. 4-16

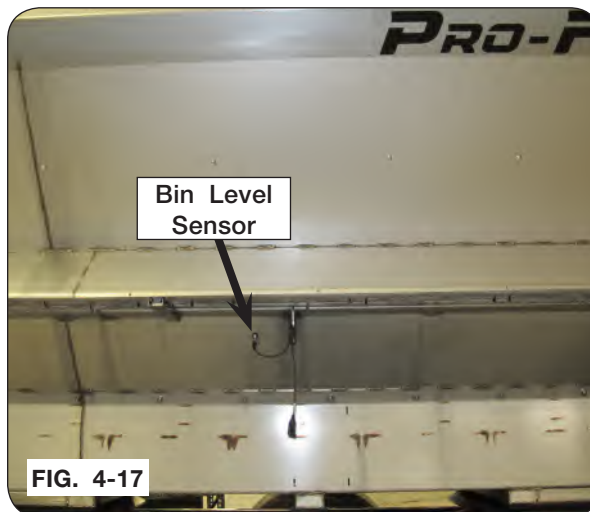


FIG. 4-17

9. Inside the spreader box, insert new bin level sensor (9008806) through the left-hand panel with connector end out of the spreader box. (FIG. 4-18)
10. Attach bin level sensor to the inside of the left-hand panel using one hex nut (9008808).
11. Outside of the spreader box, attach bin level sensor to left-hand panel using fiber washer (9008810) and remaining hex nut. (FIG. 4-18)
12. Plug bin level sensor cable (9009180) into bin level sensor and connect other end of cable to wiring harness. (FIG. 4-18)

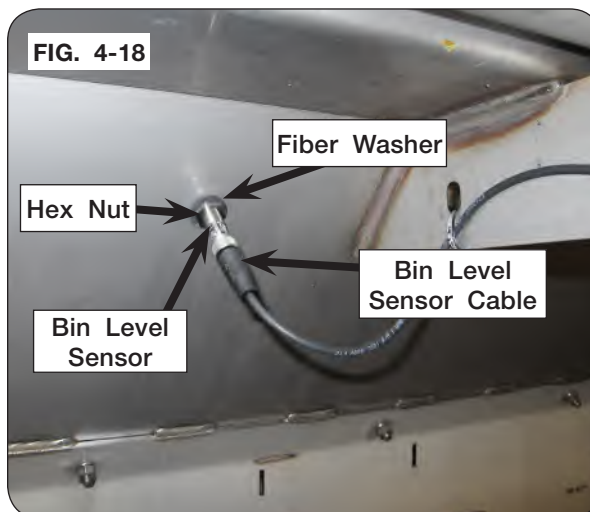


FIG. 4-18

Tri-Force Bin Level Sensor Replacement

⚠ WARNING

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

NOTE: Fiber washer (9008810) is not shown in Figure 4-19.

1. Disconnect previous bin level sensor cable from the bin level sensor and other end from the wiring harness.
2. Remove previous bin level sensor body and hardware from the Tri-Force/Quad-Force box. (FIG. 4-19)
3. Inside the box, insert new bin level sensor (9008806) through the rear hole on the right-hand panel with connector end out of the box. (FIG. 4-20)
4. Attach bin level sensor to the inside of the right-hand panel using one hex nut (9008808). (FIG. 4-20)
5. Outside of the box, attach bin level sensor to the panel using fiber washer (9008810) and remaining hex nut. (FIG. 4-21)
6. Plug bin level sensor cable (9009180) into bin level sensor and connect other end of cable to wiring harness. (FIG. 4-21)

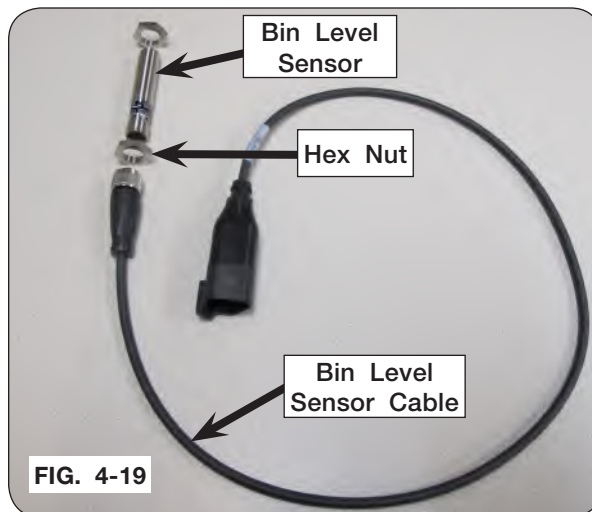


FIG. 4-19

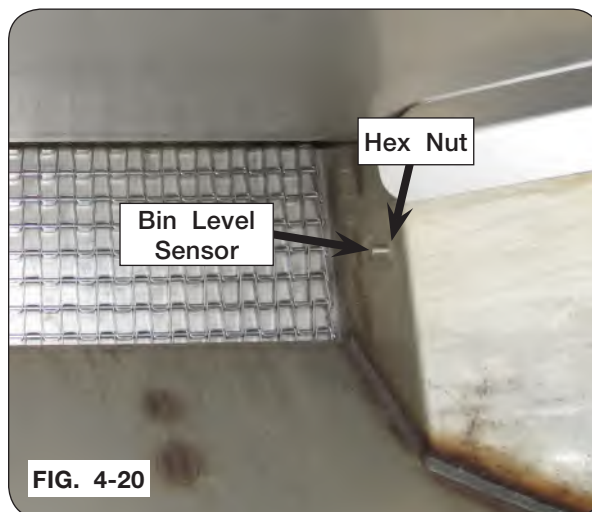


FIG. 4-20

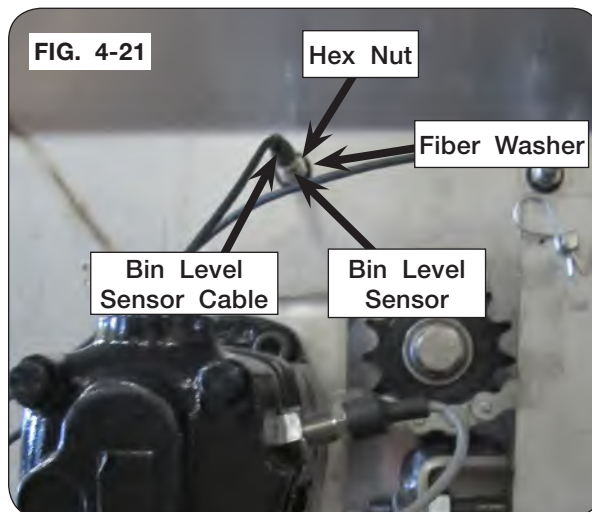


FIG. 4-21

Quad-Force Bin Level Sensor Replacement

WARNING

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

NOTE: Fiber washer (9008810) is not shown in Figure 4-22.

1. Disconnect previous bin level sensor cable from the bin level sensor and other end from the wiring harness.
2. Remove previous bin level sensor body and hardware from the Tri-Force/Quad-Force box. (FIG. 4-22)
3. Inside the box, insert new bin level sensor (9008806) through the front hole on the right-hand panel with connector end out of the box. (FIG. 4-23)
4. Attach bin level sensor to the inside of the right-hand panel using one hex nut (9008808). (FIG. 4-23)
5. Outside of the box, attach bin level sensor to the panel using fiber washer (9008810) and remaining hex nut. (FIG. 4-24)
6. Plug bin level sensor cable (9009180) into bin level sensor and connect other end of cable to wiring harness. (FIG. 4-24)

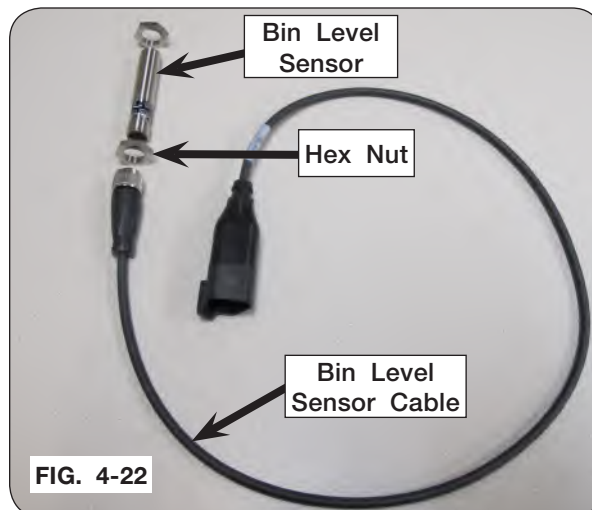


FIG. 4-22

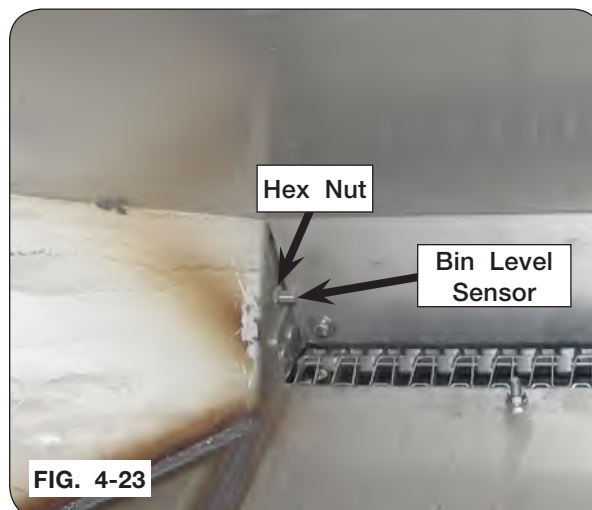


FIG. 4-23

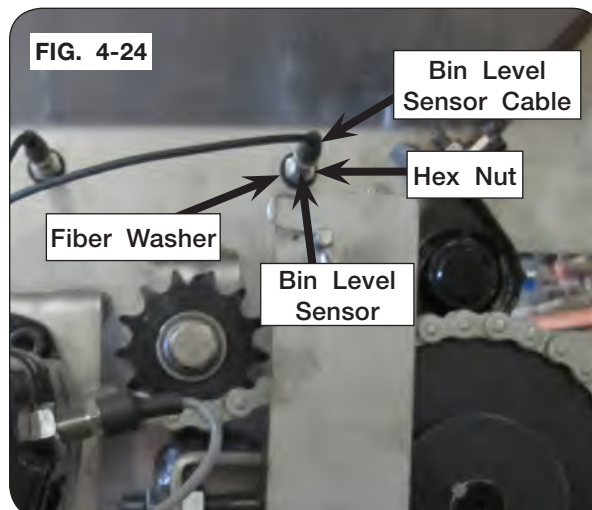


FIG. 4-24

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:

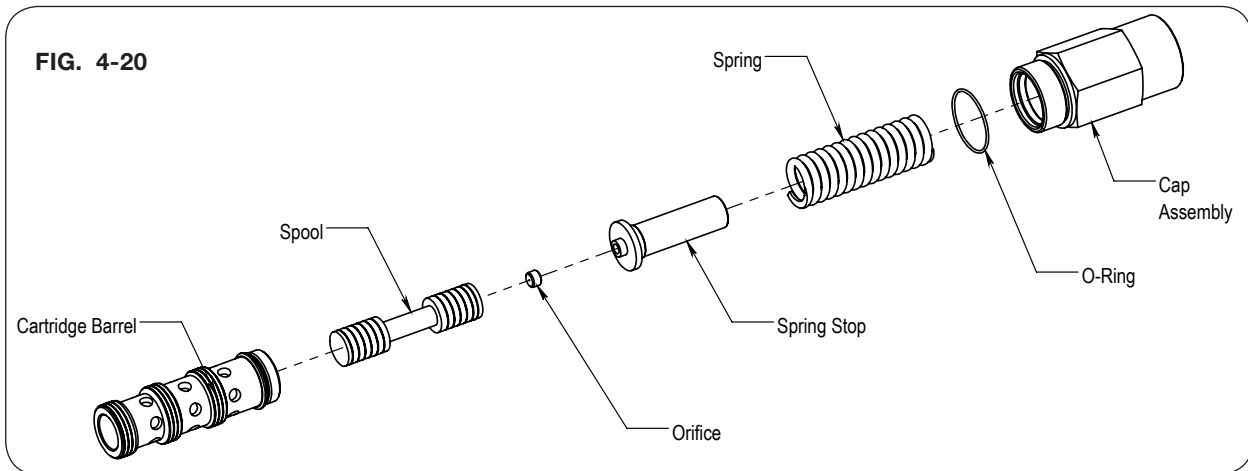
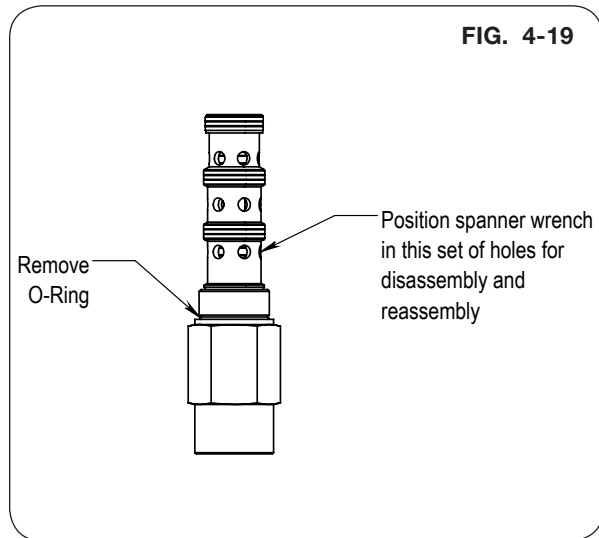
1. Remove as much water, debris, fertilizer and chemicals from the Tri/Quad hopper as possible.
2. Wash Tri/Quad hopper thoroughly inside and out with a high-pressure washer and maintain an adequate distance so not to blast water into bearings, hydraulic seals and electrical connections.
3. After washing the machine, spray chain with oil mixture. Refer to “Lubrication” outlined in MAINTENANCE section.

Pressure Compensator Cartridge Valve Disassembly

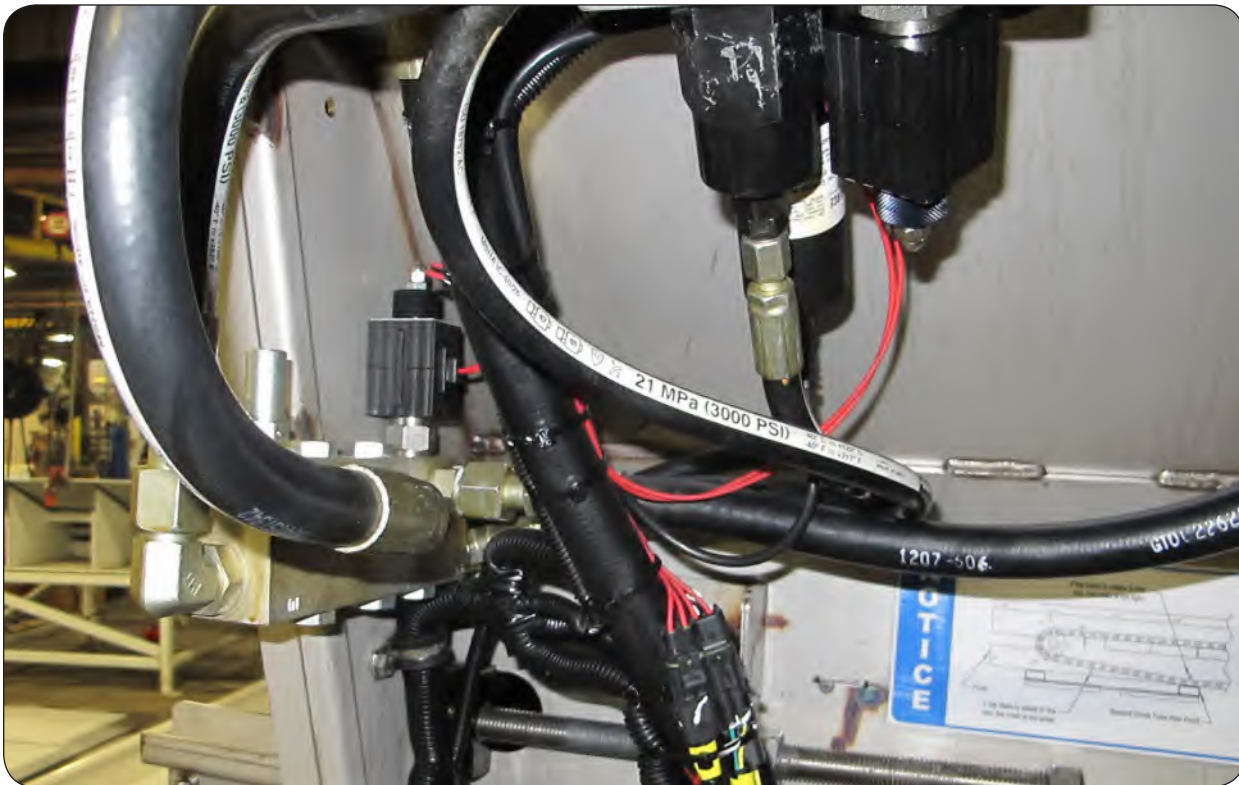
TOOLS REQUIRED:

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

1. Remove O-ring from cap assembly. (Fig. 4-19)
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. 4-19)
3. Disassemble cartridge valve as shown (FIG. 4-20). Clean and inspect all parts thoroughly. Once clean, reassemble cartridge as shown in Figure 4-20.



**Main Valve Block & Multibin Valve Block Assembly
Duo-Force Spinner & Conveyor**



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

See “Hydraulics with Multibin Valve Block Components” in the PARTS section for more details.

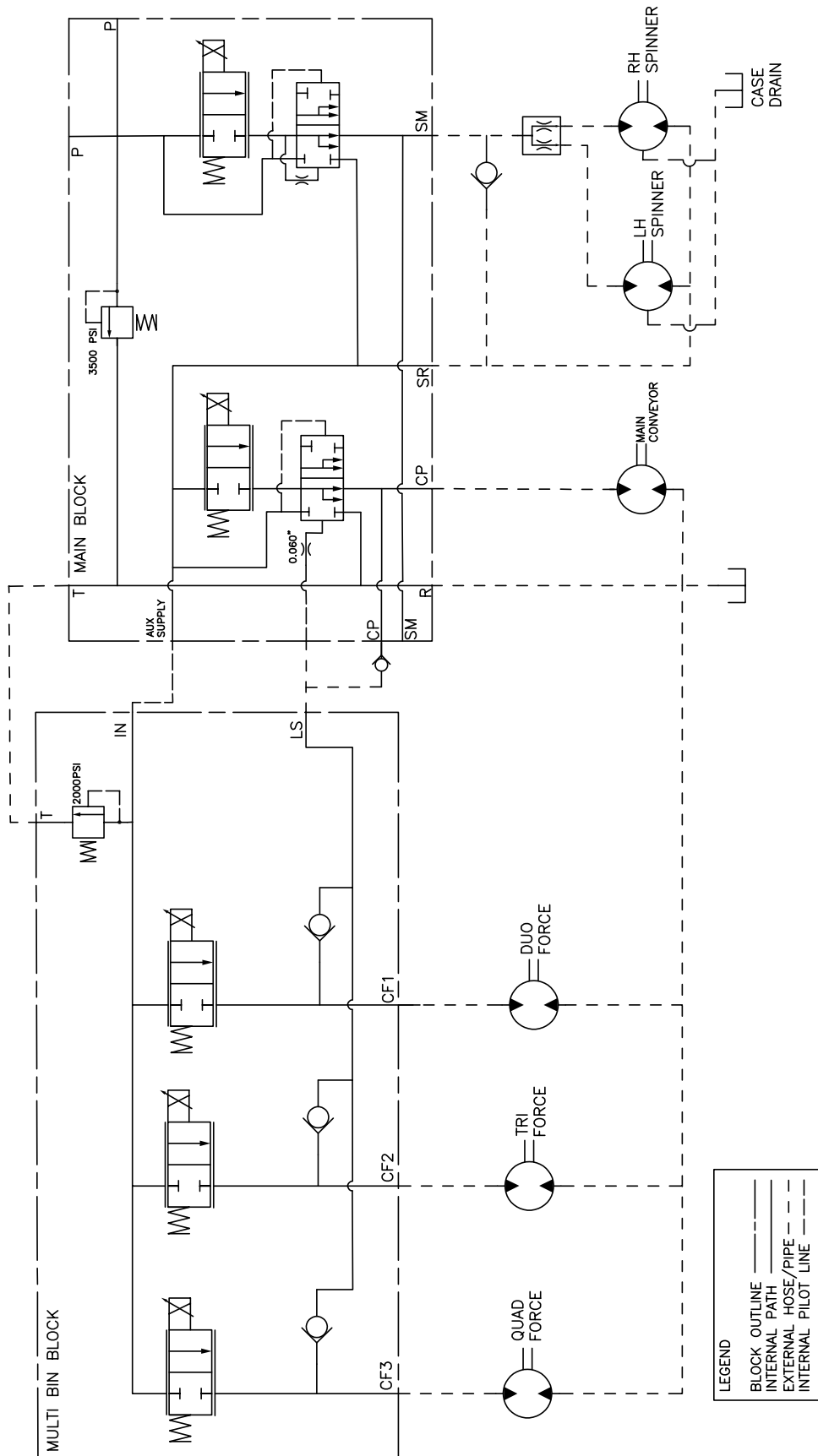
**Multibin Valve Block Assembly
Tri-Force and Quad-Force Conveyor**



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

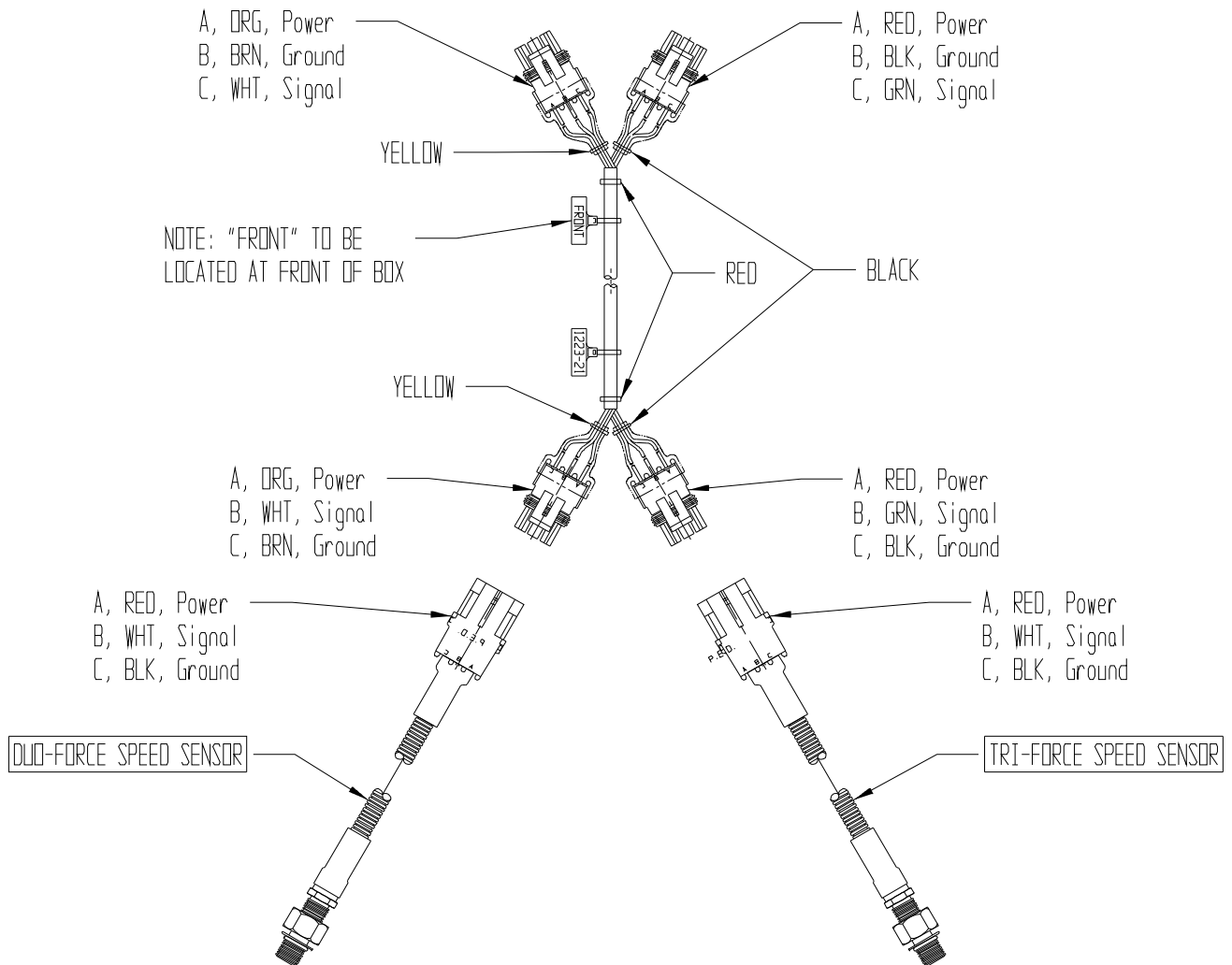
See “Hydraulics with Multibin Valve Block Components” in the PARTS section for more details.

Schematics - Spinner & Conveyor Hydraulics



Schematic — Electrical — Troubleshooting Duo & Tri-Force Speed Sensor Wiring Harness

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



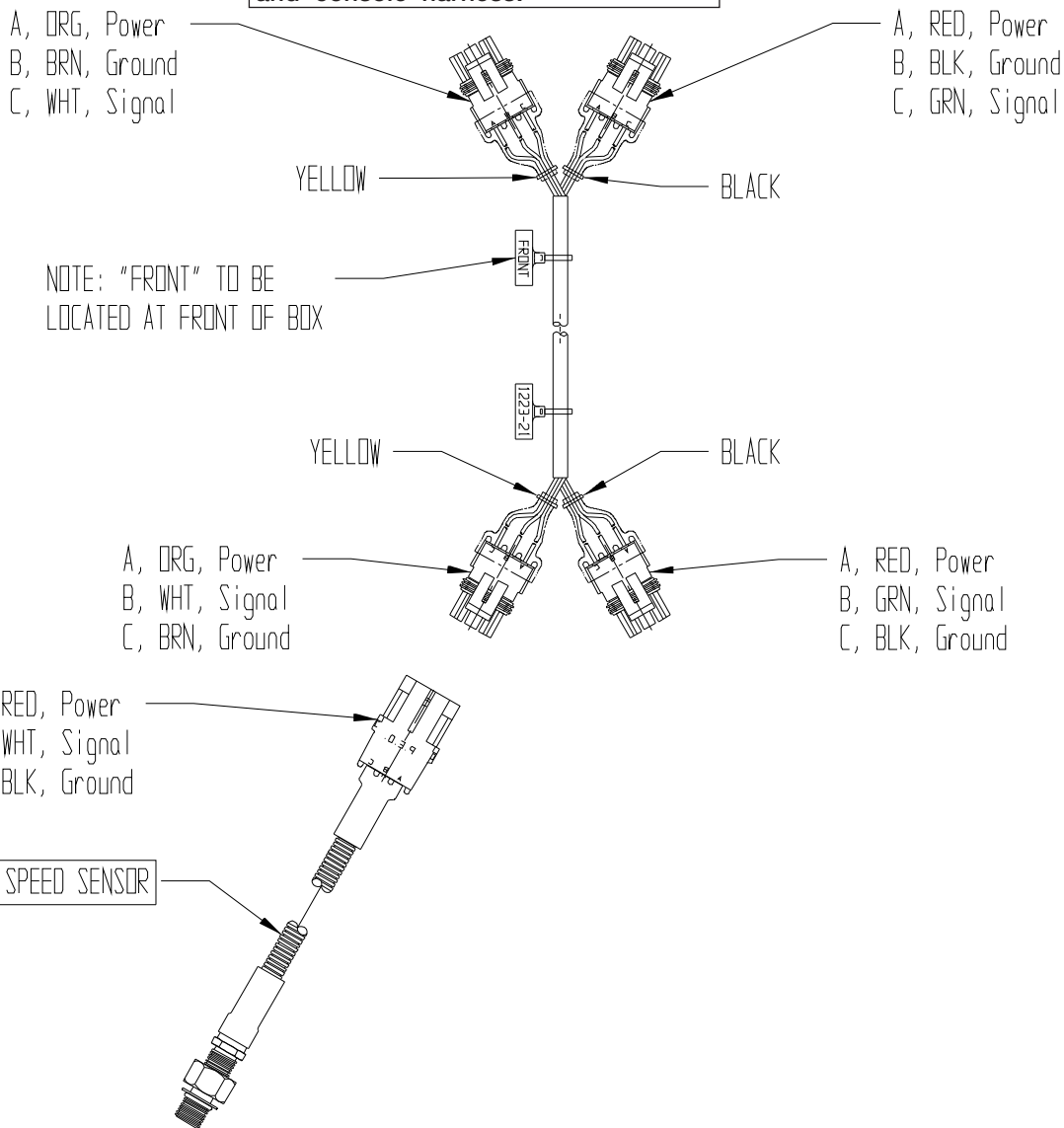
If console loses rate or spinner speed and the function is moving, the connectors shown on this page can be swapped at the rear of the spreader to troubleshoot the system.

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

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

**Schematic — Electrical — Troubleshooting
Quad-Force Speed Sensor Wiring Harness**

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



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

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

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

Fertilizer Density Chart

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

Complete Torque Chart

Stainless Steel Capscrews - ASTM F593

IMPORTANT

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

IMPORTANT

- The torque recommendations below are for lubricated stainless steel hardware.

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

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

Complete Torque Chart (continued)

Capscrews - Grade 5

NOTE:

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



SIZE	FOOT POUNDS	NEWTON METERS
1/4-20 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.

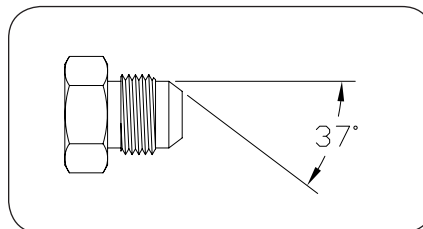
IMPORTANT

- Check the size of the U-bolt.
- Tighten U-bolts evenly and equally to have the same number of threads exposed on each end.
- Axle U-bolt torque: Front axle U-bolts, 7/8" U-bolt, 450 to 510 Foot Pounds.
Rear axle U-bolts, 7/8" U-bolt, 450 to 510 Foot Pounds.

Hydraulic Fittings - Torque and Installation

SAE Flare Connection (J. I. C.)

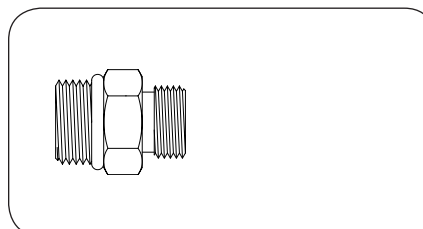
1. Tighten nut with finger until it bottoms the seat.
2. Using a wrench, rotate nut to tighten. Turn nut 1/3 turn to apply proper torque.



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

SAE Straight Thread O-Ring Seal

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



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

Hydraulic System Valves & Steel Pipe Adapters - Torque

Hydraulic System Valves

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

Steel Pipe Adapters

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

Notes

Section V Parts

Decals	5-3
Duo-Force Conveyor Drive Components	5-4
Hydraulics with Multibin Valve Block Components - Duo-Force	5-6
Hydraulics with Multibin Valve Block Components - Tri-Force and Quad-Force.....	5-8
Duo-Force Assembly Components.....	5-10
Tri-Force Assembly Components.....	5-12
Quad-Force Assembly Components.....	5-14

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

Notes

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

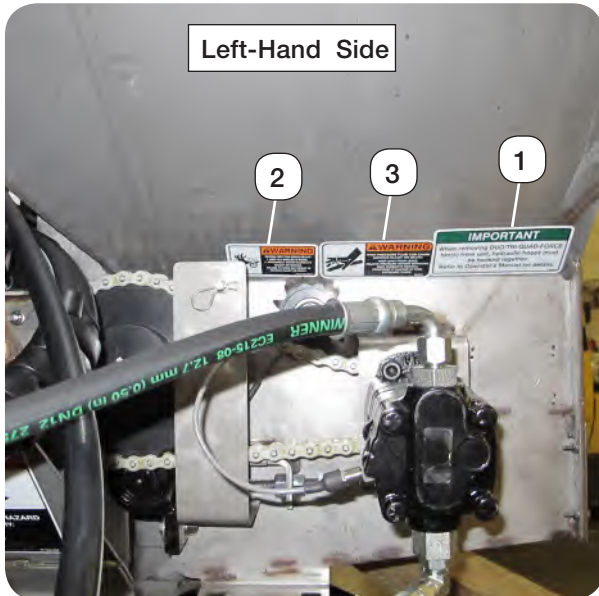
Decals

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

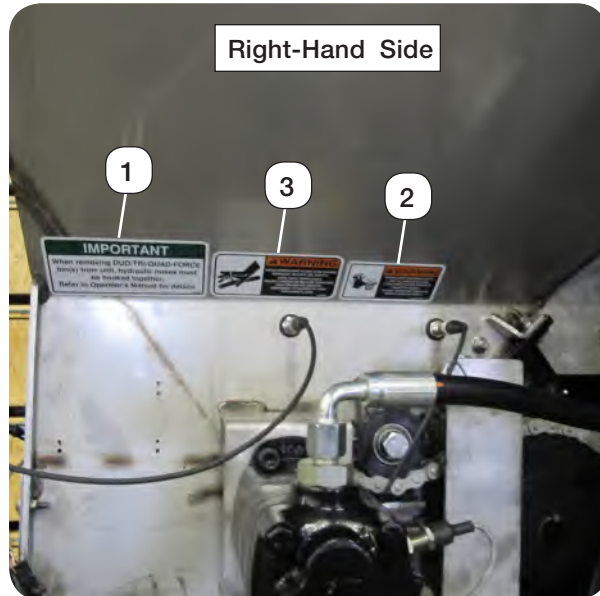
Duo-Force Decal Location



Quad-Force Decal Location



Tri-Force Decal Location

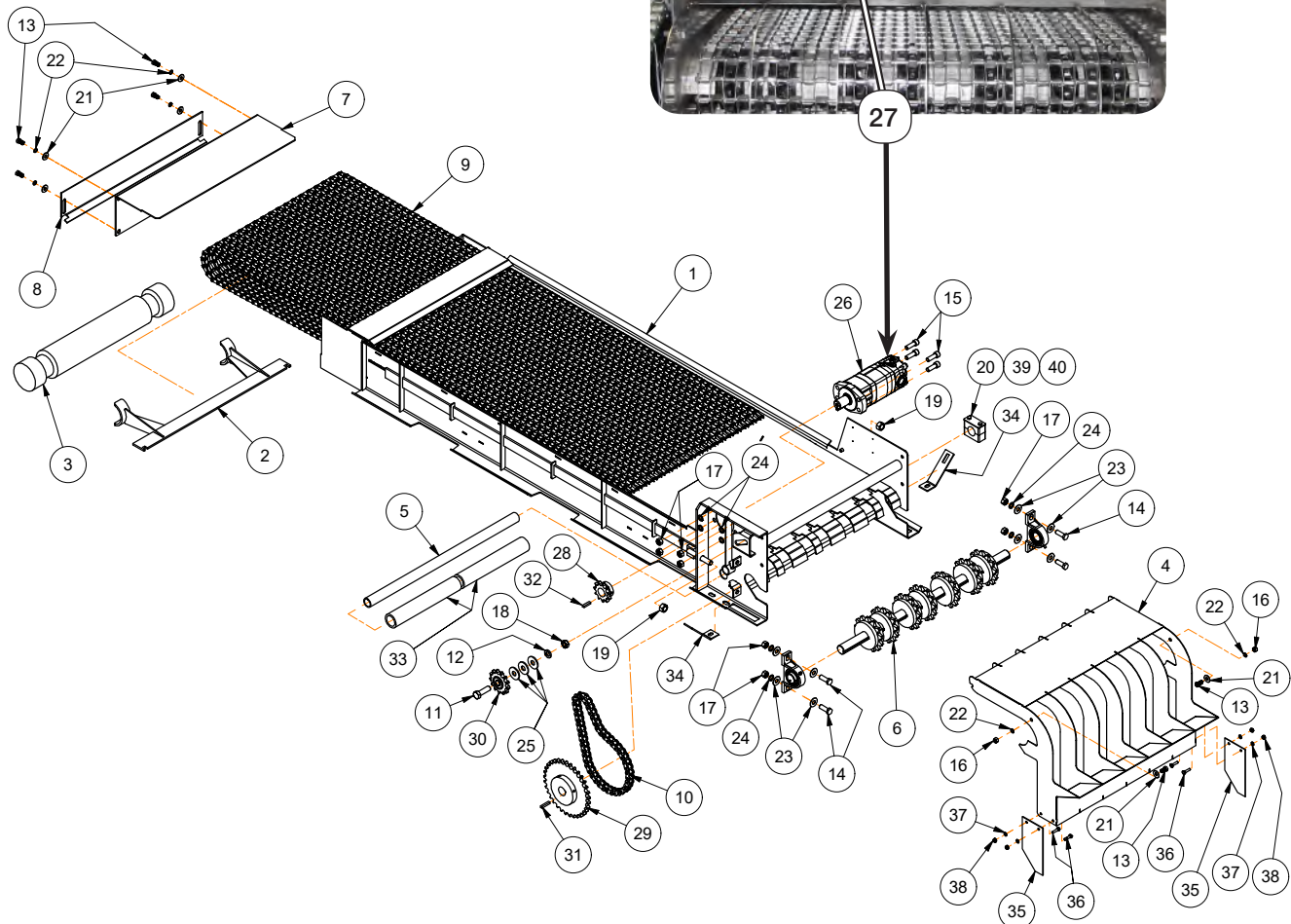
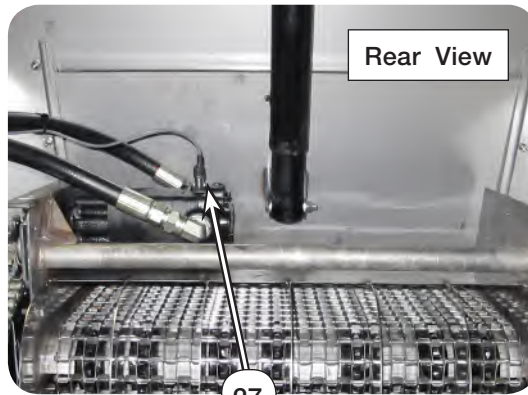


ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	9008839	Decal, IMPORTANT "Bin Removal"	1	For Duo-Force
2	TA1-906109-0	Decal, WARNING (Moving Parts Crush/Cut)	2	For Tri-Force and Quad-Force
3	95445	Decal, DANGER (Do Not Use Hands)	2	For Tri-Force and Quad-Force

Duo-Force Conveyor Drive Components

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

NOTE: Refer to “Duo-Force Conveyor Replacement” in MAINTENANCE section for more details.



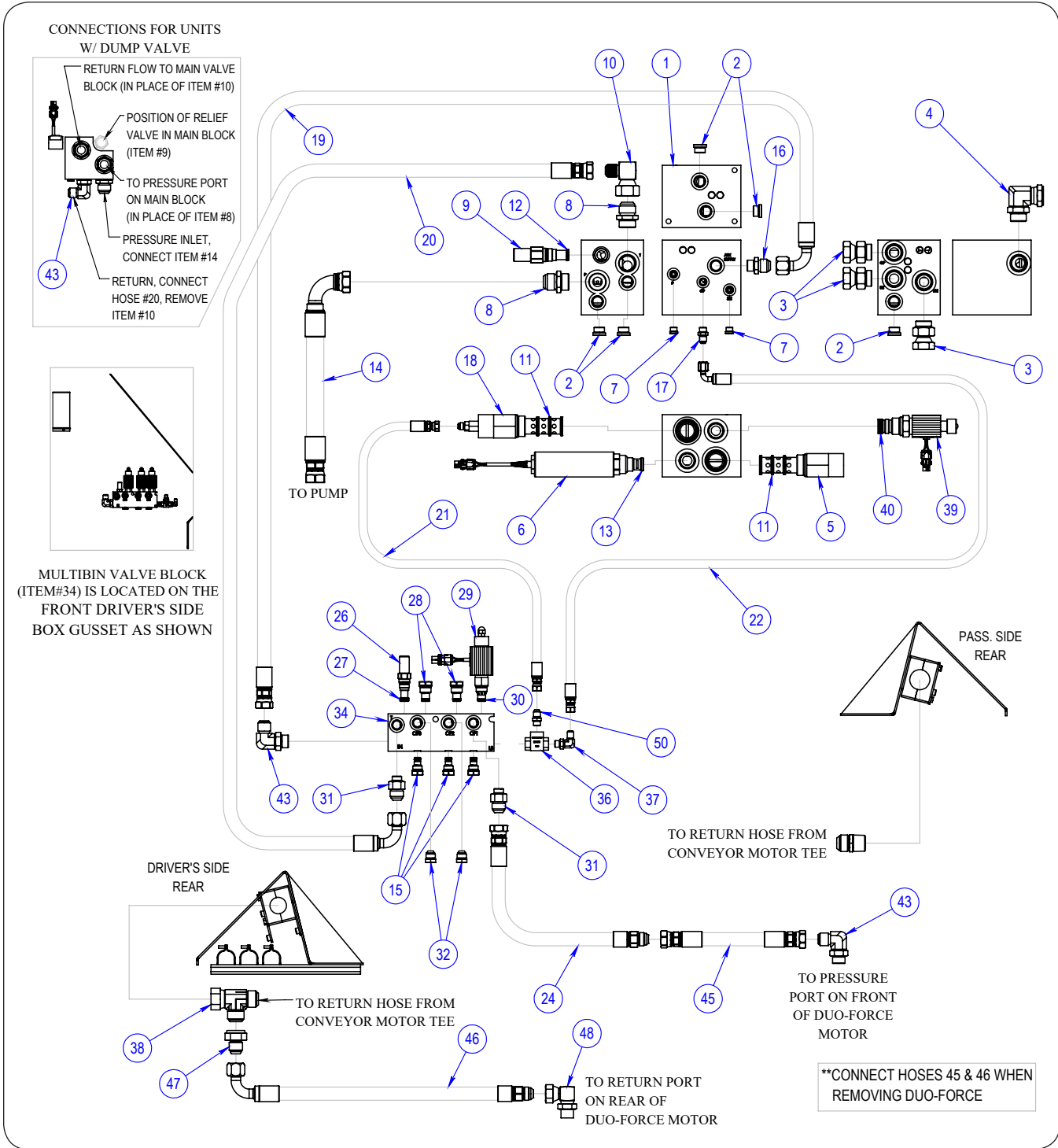
Duo-Force Conveyor Drive Components

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414459	DUO-FORCE ASSEMBLED INSERT	1	Includes Items 1-34, 39 & 40
1	414472	DUO-FORCE CONVEYOR WELDMENT	1	
2	414473	DUO-FORCE IDLER ROLLER BRACKET	1	
3	414474	DUO-FORCE TAKEUP IDLER	1	
4	414475	DUO-FORCE HILLSIDE FLOW DIVIDER WELDMENT	1	
5	414476	DUO-FORCE SNUB ROLLER PIPE	1	
6	414477	DUO-FORCE DRIVE SHAFT ASSEMBLY	1	
7	414478	DUO-FORCE REAR COVER	1	
8	414479	DUO-FORCE FLOW CONTROL GATE	1	
9	414502	DUO-FORCE FEED BELT CHAIN ASSEMBLY	1	
10	414503	DUO FORCE BELT DRIVE CHAIN	1	
11	900900-124	Capscrew 5/8" X 2" UNC 18-8 (SS)	1	
12	900903-029	LOCK WASHER 5/8"	1	
13	900900-055	Capscrew 3/8" X 1" UNC 18-8 (SS)	6	
14	900900-101	Capscrew 1/2" UNC x 1 1/2" 18-8 (SS)	4	
15	PF1200-403	SOCKET HEAD BOLT- 1/2" UNC X 1-1/2"	4	
16	900901-006	Hex Nut - 3/8" UNC SS	2	
17	900901-010	Hex Nut - 1/2" UNC SS	8	
18	900911-014	Hex Jam Nut 5/8" UNC	1	
19	900901-014	Hex Nut 5/8"-11UNC SS	4	
20	900900-011	Capscrew 1/4" X 2 1/2" UNC 18-8 (SS)	2	
21	900902-037	Flat Washer - 3/8" SS	6	
22	900903-021	Lock Washer - 3/8" SS	6	
23	900902-044	Flat Washer - 1/2"	8	
24	900903-025	Lock Washer- 1/2" SS	8	
25	900902-049	Flat Washer - 5/8" SS	3	
26	PF1213-145	MOTOR-HYDRAULIC, 24 CID	1	
27	415182	CONVEYOR SPEED SENSOR REPLACEMENT KIT	1	
28	PF1217-960	SPROCKET	1	
29	PF1217-993	60B33 SPROCKET	1	
30	PF1217-995	SPROCKET - IDLER	1	
31	PF1220-144	KEY STOCK 1/4" X 1/4" X 1-1/2"	1	
32	9008854	KEY - 1/4" X 5/16" X 1 1/4"	1	
33	PF1233-41	DUO-FORCE SNUB ROLLER	2	
34	PFTB-100B	DUO-FORCE MOUNTING STRAP SS	2	
35	414556	Duo-Force HILLSIDE FLOW DIVIDER Extension	2	Items 35-38 Optional
36	900900-005	Capscrew 1/4" X 1" UNC 18-8 (SS)	4	
37	900903-017	Lock Washer- 1/4" SS	4	
38	900901-002	HEX NUT 1/4" UNC	4	
39	414701	Hose Clamp Top	1	
40	9008883	Single Hose Clamp	1	

Hydraulics with Multibin Valve Block Components Duo-Force

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



Pro-Force Multi Bin Systems — Parts

Hydraulics with Multibin Valve Block Components Duo-Force

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

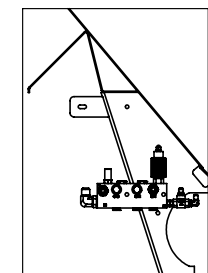
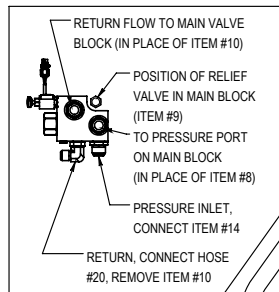
ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1211-00	BLOCK, VALVE, HYD., MAIN	1	Requires Items: 1-1, 1-2
2	PF1202-119	ADAPTER, O-RING HOLLOW HEX PLUG H10	5	
3	PF1202-117	ADAPTER, MALE O-RING TO FJIC SWIVEL 16-1	3	
4	PF1202-210	ADAPTER, MALE O-RING TO FM JIC SWIVEL EL	1	
5	PF1211-80	VALVE, HYD., PSI COMPENSATOR	2	
6	PF1211-01A	VALVE, SERVO, HYD., SAE16 50GPM W/CONNECTOR	1	
7	PF1202-118	ADAPTER, O-RING HOLLOW HEX PLUG H06	3	
8	PF1202-116	ADAPTER, MJIC TO O-RING 16-16	1	
9	PF1211-945	VALVE, RELIEF, HYD., 3500 PSI	1	
10	PF1202-1800	Adapter - Elbow	1	
11	PF1211-80K	KIT, SEAL, HYD., COMPENSATOR CARTRIDGE	AR	
12	PF1211-95K	SEAL KIT, RELIEF VALVE	AR	
13	PF1211-01K	KIT, SEAL, HYD., F1650B SERVO	AR	
14	PF1207-131	Hose Assembly	1	
15	PF1211-0820	Check Valve	3	
16	PF1202-109	Adapter - Straight	1	
17	PF1211-605	Check Valve	1	
18	PF1211-801	Modified Cartridge - PSI Compensator	1	
19	PF1207-601	Hose Assembly	1	
20	PF1207-602	Hose Assembly	1	
21	PF1207-603	Hose Assembly	1	
22	PF1207-604	Hose Assembly	1	
24	PF1207-606	Hose Assembly	1	
26	PF1211-94	Valve - Hydraulic Relief	1	
27	PF1211-94K	Seal Kit	AR	
28	PF1211-081	Valve Plug Cartridge	2	
29	PF1211-08A	Proportional Valve	1	
30	PF1211-08K	Seal Kit	AR	
31	PF1202-1090	Adapter - Straight	2	
32	PF1202-1180	Plug	2	
34	PF1211-001	Multi-Bin Valve Block - Hydraulic	1	Requires Items: 34-1, 34-2, 34-3, 34-4
34-1	PF1200-310	Hex Head Bolt - 3/8" UNC x 3" MS	2	
34-2	PF1209-40	Flat Washer - 3/8" MS	6	
34-3	PF1209-42	Lock Washer - 3/8" MS	2	
34-4	PF1205-21	Hex Nut - 3/8" UNC MS	2	
36	PF1202-3011	Adapter - Run Tee, MOR to FOR to FOR	1	
37	PF1202-2056	Adapter - Elbow	1	
38	PF1202-3015	Adapter - Tee	1	
39	PF1211-011A	VALVE, PWM, HYD., PROP -16-12DL, 36GPM W	1	
40	-	WEATHER PACK PWM SEAL 18-20	AR	
43	PF1202-202	Adapter - Elbow	2	
45	PF1207-15	Hose Assembly (12' Box)	1	
	PF1207-16	Hose Assembly (13' Box)		
	PF1207-17	Hose Assembly (14' Box)		
	PF1207-170	Hose Assembly (16' Box)		
	PF1207-175	Hose Assembly (18' Box)		
46	PF1207-18	Hose Assembly	1	
47	PF1202-1035	Adapter - Straight	1	
48	PF1202-2095	Adapter - Elbow	1	
50	PF1202-1074	Adapter - Straight	1	

Pro-Force Multi Bin Systems — Parts

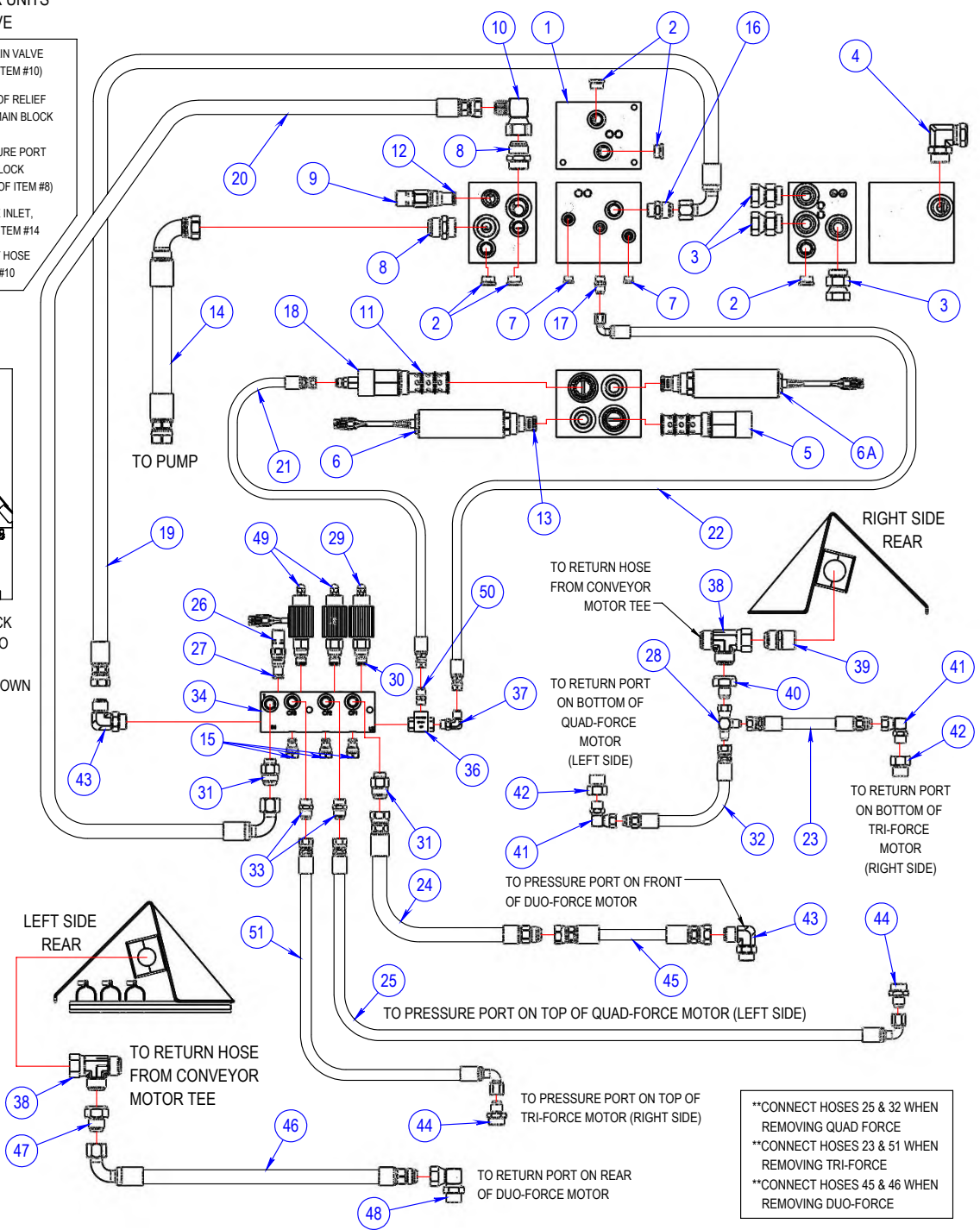
Hydraulics with Multibin Valve Block Components Tri-Force & Quad Force

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

CONNECTIONS FOR UNITS W/ DUMP VALVE



MULTIBIN VALVE BLOCK (ITEM #34) MOUNTS TO THE FRONT LEFT SIDE BOX GUSSET AS SHOWN



ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	PF1211-00	BLOCK, VALVE, HYD., MAIN	1	
2	PF1202-119	ADAPTER, O-RING HOLLOW HEX PLUG H10	5	
3	PF1202-117	ADAPTER, MALE O-RING TO FJIC SWIVEL 16-1	3	
4	PF1202-210	ADAPTER, MALE O-RING TO FM JIC SWIVEL EL	1	
5	PF1211-80	VALVE, HYD., PSI COMPENSATOR	2	
6	PF1211-01A	VALVE, SERVO, HYD., SAE16 50GPM W/CONNECTOR	1	
7	PF1202-118	ADAPTER, O-RING HOLLOW HEX PLUG H06	3	

Pro-Force Multi Bin Systems — Parts

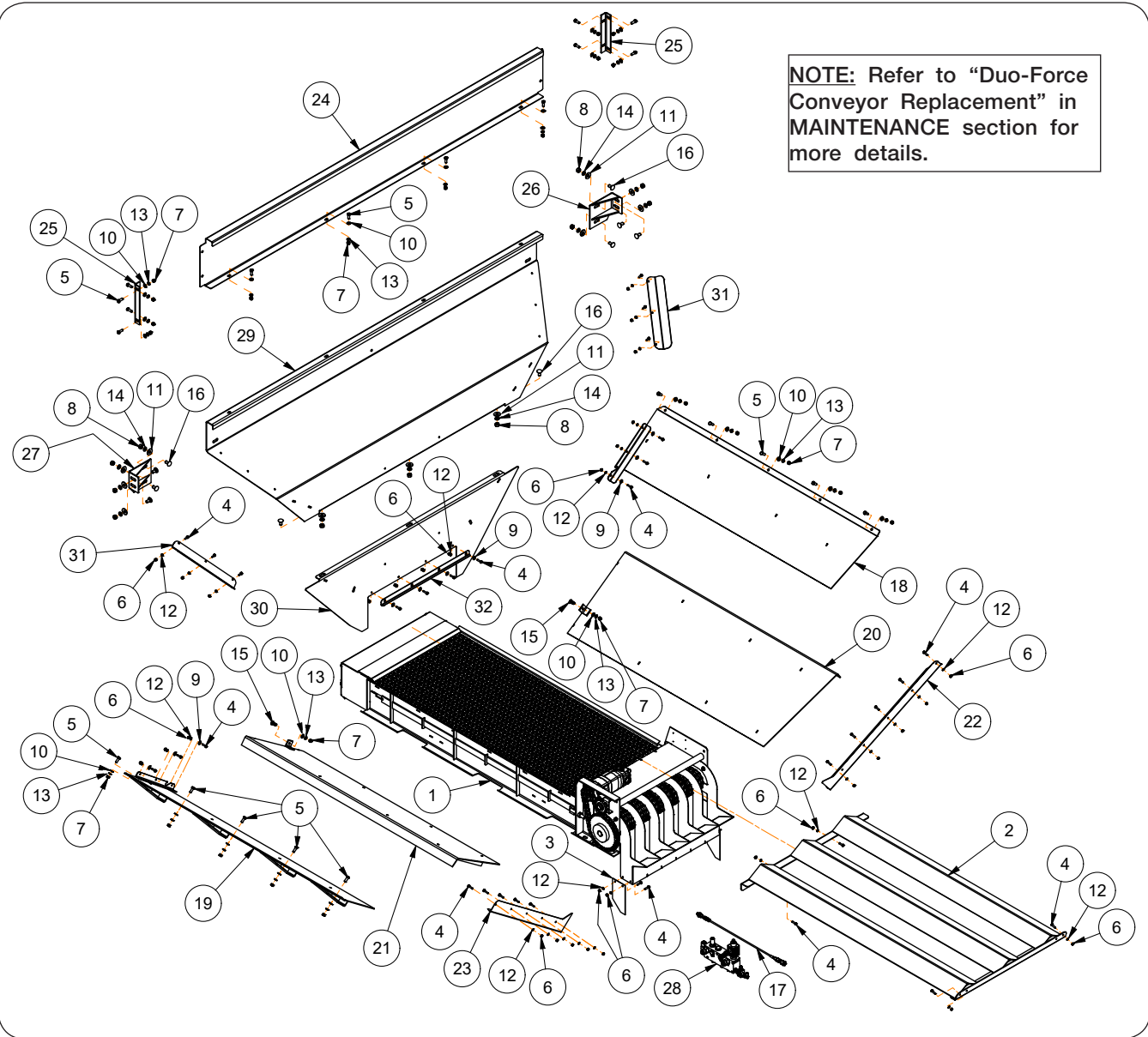
Hydraulics with Multibin Valve Block Components Tri-Force & Quad Force

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
8	PF1202-116	ADAPTER, MJIC TO O-RING 16-16	1	
9	PF1211-945	VALVE, RELIEF, HYD., 3500 PSI	1	
10	PF1202-1800	Adapter - Elbow	1	
11	PF1211-80K	KIT, SEAL, HYD., COMPENSATOR CARTRIDGE	AR	
12	PF1211-95K	SEAL KIT, RELIEF VALVE	AR	
13	PF1211-01K	KIT, SEAL, HYD., F1650B SERVO	AR	
14	PF1207-131	Hose Assembly	1	
15	PF1211-0820	Check Valve	3	
16	PF1202-109	Adapter - Straight	1	
17	PF1211-605	Check Valve	1	
18	PF1211-801	Modified Cartridge - PSI Compensator	1	
19	PF1207-601	Hose Assembly	1	
20	PF1207-602	Hose Assembly	1	
21	PF1207-603	Hose Assembly	1	
22	PF1207-604	Hose Assembly	1	
23	PF1207-605	Hose Assembly	1	Connect Hose When Removing Quad-Force
24	PF1207-606	Hose Assembly	1	
25	PF1207-607	Hose Assembly (12' Box)	1	Connect Hose When Removing Quad-Force
	PF1207-608	Hose Assembly (13' Box)	1	
	PF1207-609	Hose Assembly (14' Box)	1	
26	PF1211-94	Valve - Hydraulic Relief	1	
27	PF1211-94K	Seal Kit	AR	
28	PF1211-081	Valve Plug Cartridge	1	For Tri-Force
	PF1202-3014	Adapter - Tee	1	For Quad-Force
29	PF1211-08A	Proportional Valve	1	
30	PF1211-08K	Seal Kit	AR	
31	PF1202-1090	Adapter - Straight	2	
32	PF1202-1180	Plug	1	For Tri-Force
	PF1207-905	Hose Assembly	1	Connect Hose When Removing Tri-Force (For Quad-Force)
33	PF1202-1076	Adapter - Straight	1	
34	PF1211-001	Multi-Bin Valve Block - Hydraulic	1	Requires Items: 34-1, 34-2, 34-3, 34-4
34-1	PF1200-310	Hex Head Bolt - 3/8" UNC x 3" MS	2	
34-2	PF1209-40	Flat Washer - 3/8" MS	6	
34-3	PF1209-42	Lock Washer - 3/8" MS	2	
34-4	PF1205-21	Hex Nut - 3/8" UNC MS	2	
36	PF1202-3011	Adapter - Run Tee, MOR to FOR to FOR	1	
37	PF1202-2056	Adapter - Elbow	1	
38	PF1202-3015	Adapter - Tee	1	
39	PF1202-102	Adapter - Straight	1	
40	PF1202-1033	Adapter - JIC Reducer / Expander	1	
41	PF1202-2094	Adapter - Elbow Male O-Ring to Female JIC Swivel	2	For Tri and Quad Force
42	PF1202-130	Adapter - Male O-Ring to Female O-Ring	2	
43	PF1202-202	Adapter - Elbow	2	
44	PF1202-1080	Adapter - Male JIC to O-Ring	1	
45	PF1207-15	Hose Assembly (12' Box)	1	Connect Hoses When Removing Duo-Force
	PF1207-16	Hose Assembly (13' Box)		
	PF1207-17	Hose Assembly (14' Box)		
46	PF1207-18	Hose Assembly	1	
47	PF1202-1035	Adapter - Straight	1	
48	PF1202-2095	Adapter - Elbow	1	
49	PF1211-079A	PWM Valve	2	
50	PF1202-1074	Adapter - Straight	1	
51		Hose Assembly	1	Connect Hose When Removing Tri-Force
52	PF1211-011A	VALVE, PWM, HYD., PROP -16-12DL, 36GPM W	1	
53	-	WEATHER PACK PWM SEAL 18-20	AR	

Duo-Force Assembly Components

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



Pro-Force Multi Bin Systems — Parts

Duo-Force Assembly Components

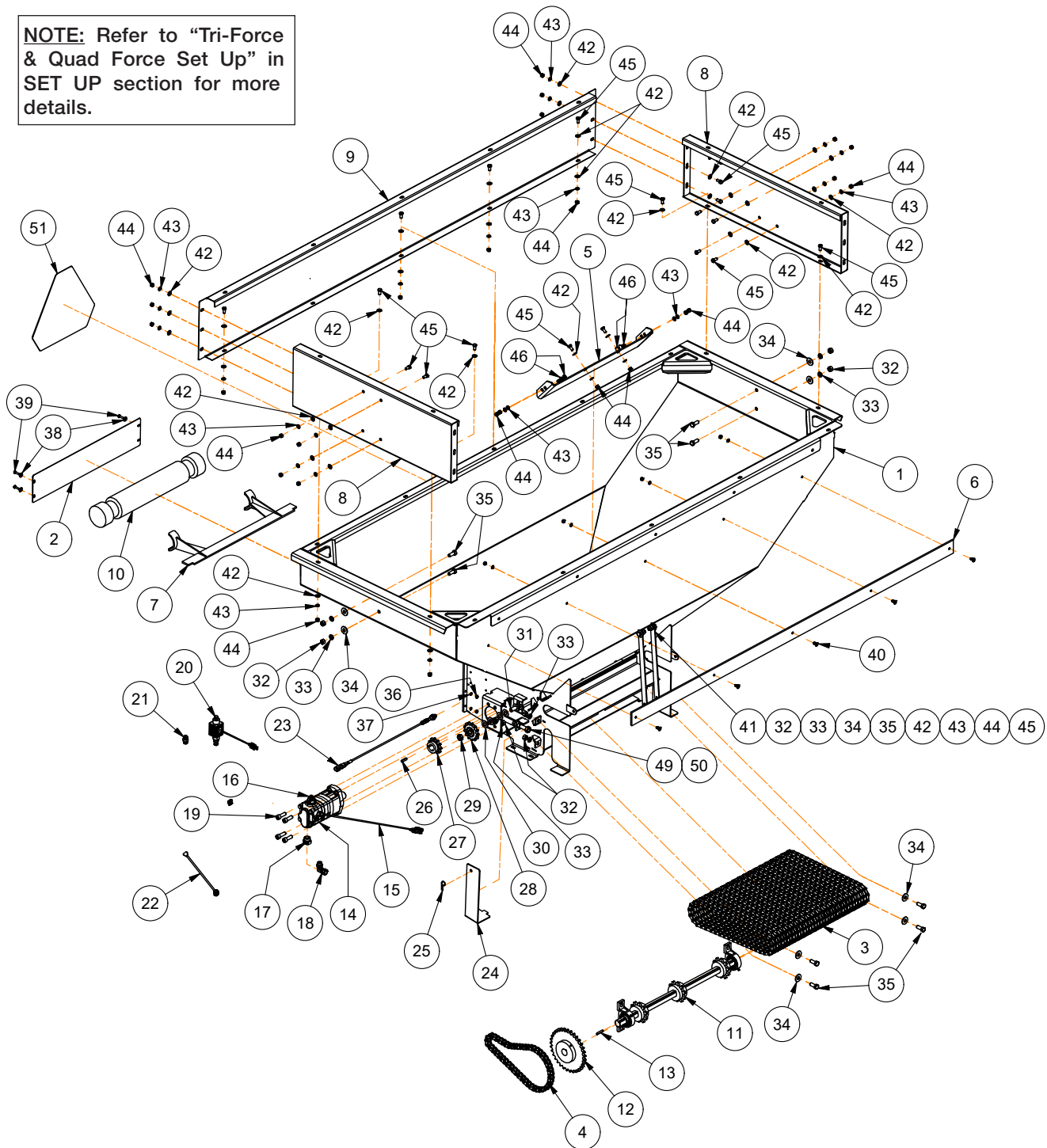
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414400	DUO-FORCE ASSEMBLY	1	Includes All Items
1	414459	DUO-FORCE ASSEMBLED CONVEYOR	1	
2	414497	DUO-FORCE TRIPLE "V" WELDMENT	1	
3	414556	HILLSIDE FLOW DIVIDER EXTENSION - DUO-FORCE	2	
4	900900-005	Capscrew 1/4"X 1" UNC 18-8 (SS)	34	
5	900900-055	Capscrew 3/8" X 1" UNC 18-8 (SS)	22	
6	900901-002	HEX NUT 1/4" UNC 18-8 (SS)	34	
7	900901-006	HEX NUT 3/8" UNC 18-8 (SS)	24	
8	900901-010	HEX NUT 1/2" UNC 18-8 (SS)	11	
9	900902-032	FLAT WASHER 1/4" (SS)	10	
10	900902-037	FLAT WASHER 3/8" (SS)	25	
11	900902-044	FLAT WASHER 1/2" (SS)	11	
12	900903-017	LOCK WASHER 1/4" (SS)	34	
13	900903-021	LOCK WASHER 3/8" (SS)	24	
14	900903-025	LOCK WASHER 1/2" (SS)	11	
15	9007908-051	CARRIAGE BOLT 3/8" X 1" UNC 18-8 (SS)	2	
16	9007908-102	CARRIAGE 1/2" X 1" UNC SS	11	
17	9009180	ASSEMBLY - SENSOR, LEVEL, BIN	1	
18	PF1233-102	DUO-FORCE GUSSET FOR HINGED PANEL RH	1	
19	PF1233-102 LH	DUO-FORCE GUSSET FOR HINGED PANEL LH	1	
20	PF1233-104	DUO-FORCE HINGE PANEL WELDMENT RH	1	
21	PF1233-104 LH	DUO-FORCE HINGE PANEL WELDMENT LH	1	
22	PF1233-202	DUO-FORCE RH REAR SEALER	1	
23	PF1233-202L	DUO-FORCE LH REAR SEALER	1	
24	PF1234-1520	12" HIGH CENTER EXTENSION	1	
25	PF1234-1530	12" HIGH EXTENSIONS BRACKET	2	
26	PF1236-103	DUO-FORCE BOX DIVIDER BRACKET RH	1	
27	PF1236-103-L	DUO-FORCE BOX DIVIDER BRACKET LH	1	
28	PF1237-090	Multi Bin Block Assembled - 2 Bin Unit	1	
29	PFDFP-100	UPPER BOX DIVIDER	1	
30	PFDFP-200	DUO-FORCE LOWER DIVIDER PANEL	1	
31	PFDFP-201-2	DUO-FORCE FRONT UPPER SEALER	2	
32	PFDFP-204-2	DUO-FORCE FRONT BOTTOM SEALER STRIP	1	
33	9008830	Bin Level Extension Cable	1	Not Shown
34	PF1207-18	Hose 3/4" x 46 1/2" SAE12 FJ90 & Male	1	
35	PF1209-075	4" Red Cable Tie	1	
36	PF1214-46	3 Pin Shroud Weather Pack Connector	1	
37	PF1214-51	Green Cavity Plug	1	
38	PF1223-21	Box Conveyor Spinner Cable	1	

Tri-Force Assembly Components

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

NOTE: Refer to “Tri-Force & Quad Force Set Up” in SET UP section for more details.



Pro-Force Multi Bin Systems — Parts

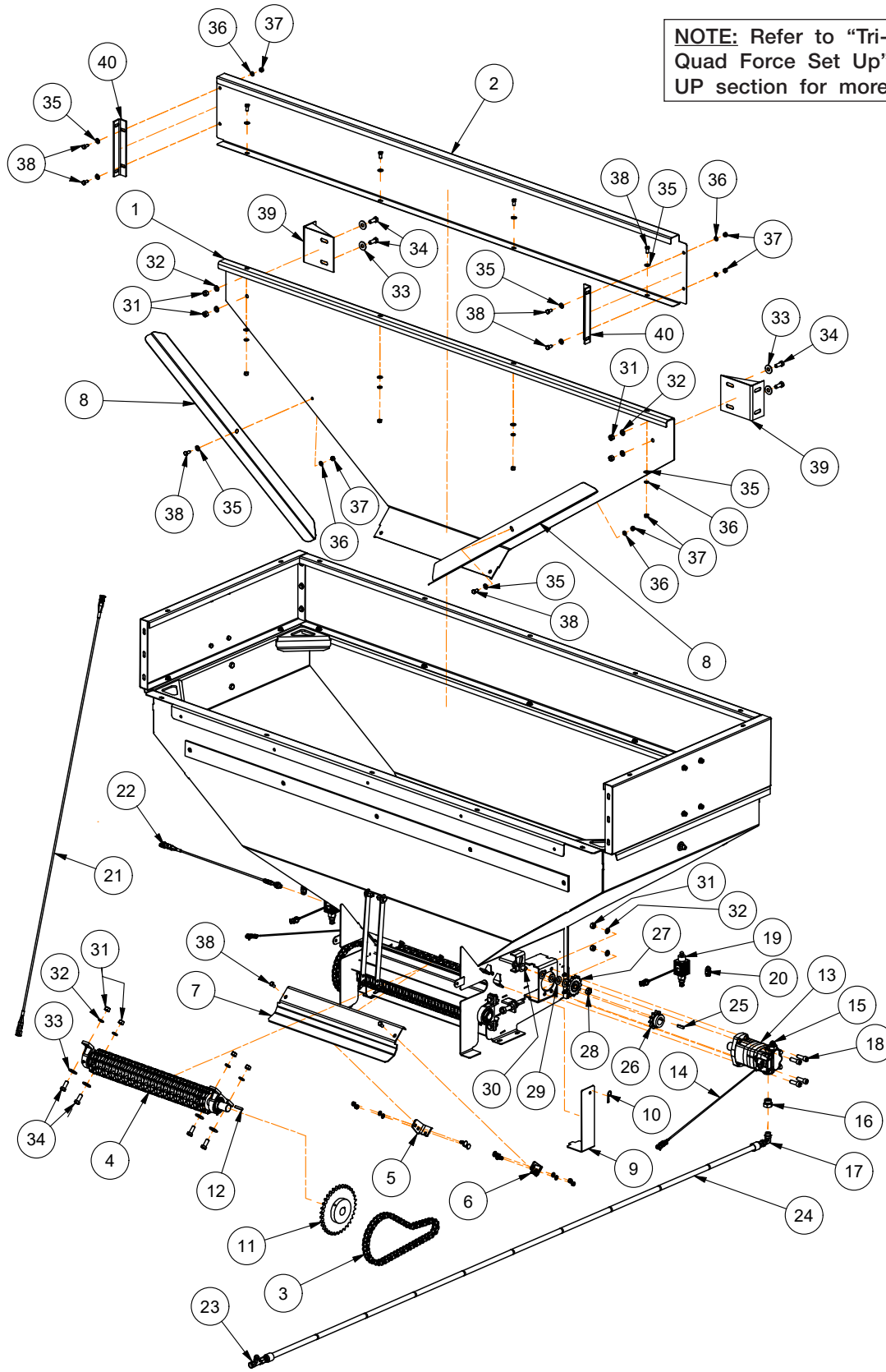
Tri-Force Assembly Components

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414401	TRI-FORCE ASSEMBLY	1	Includes All Items
1	414504	TRI-FORCE BOX WELDMENT	1	
2	414516	TRI-FORCE COVER	1	
3	414518	TRI-FORCE FEED CHAIN ASSEMBLY	1	
4	414519	TRI FORCE BELT DRIVE CHAIN	1	
5	414534	TRI-FORCE CLOSURE PANEL	1	
6	PF90-1000-37	TRI-FORCE MOUNTING RUBBER	1	
7	PF1239-39P	TRI-FORCE PRO IDLER BRACKET WELDMENT	1	
8	PF1239-15505	12" TRI-FORCE BIN EXTENSION SIDE PANEL	2	
9	PFES-EXT-1-12	12" EXTENSION FRONT & REAR BOARD	1	
10	414474	DUO-FORCE TAKEUP IDLER	2	
11	414515	QUAD FORCE BELT FEED ASSEMBLY	1	
12	PF1217-993	SPROCKET - 6033 X 1 1/4"	1	
13	PF1220-144	KEY STOCK 1/4" X 1/4" X 1 1/2"	1	
14	PF1213-18B	HYDRAULIC MOTOR	1	
15	415182	CONVEYOR SPEED SENSOR REPLACEMENT KIT	1	
16	PF1202-1080	ADAPTER - 3/4-16 MJIC X 1 1/16-12 ORB	1	
17	9004465	REDUCER 1 1/16-12 MORB X 3/4-16 FORB	1	
18	95811	90° ELBOW 3/4-16 ORB X 3/4-16 JICF	1	
19	PF1200-403	SOCKET HEAD CAPSCREW - 1/2-13 X 1-1/2	4	
20	PF1211-079A	PROPORTIONAL VALVE CARTRIDGE W/ CONNECTOR	1	
21	9864	ADAPTER 3/4-16 JIC MALE	1	
22	9008830	BIN LEVEL SENSOR EXTENSION CABLE	1	
23	9009180	BIN LEVEL SENSOR ASSEMBLY	1	
24	PF90-152	SHIELD, CHAIN COVER	1	
25	9514	HAIRPIN COTTER	1	
26	9008854	STEPPED KEY - 1/4" X 5/16" X 1-1/4"	1	
27	PF1217-960	SPROCKET - 6011 X 1-1/4	1	
28	PF1217-995	SPROCKET - IDLER	1	
29	900911-014	HEX JAM NUT 5/8" UNC (SS)	1	
30	900902-049	FLAT WASHER 5/8" SAE (SS)	6	
31	900900-124	Capscrew 5/8" X 2" UNC 18-8 (SS)	1	
32	900901-010	HEX NUT 1/2" UNC 18-8 (SS)	14	
33	900903-025	LOCK WASHER 1/2" (SS)	14	
34	900902-044	FLAT WASHER 1/2" (SS)	10	
35	900900-100	Capscrew 3/8" X 1" UNC 18-8 (SS)	10	
36	900901-002	HEX NUT 1/4" UNC 18-8 (SS)	6	
37	900903-017	LOCK WASHER 1/4" (SS)	4	
38	900902-032	FLAT WASHER 1/4" (SS)	10	
39	900900-005	Capscrew 1/4" X 1" UNC 18-8 (SS)	10	
40	9502318-146	FLAT HEAD MACHINE SCREW 5/16-18 X 3/4 (SS)	5	
41	PF90-151	HOLD BAR, FEED GATE	2	
42	900902-037	FLAT WASHER 3/8" (SS)	46	
43	900903-021	LOCK WASHER 3/8" (SS)	31	
44	900901-006	HEX NUT 3/8" UNC 18-8 (SS)	24	
45	900900-053	Capscrew 3/8" X 3/4" UNC 18-8 (SS)	27	
46	9007908-051	CARRIAGE BOLT 3/8" X 1" UNC 18-8 (SS)	4	
47	900901-004	HEX NUT 5/16 UNC 18-8 (SS)	5	
48	900903-019	LOCK WASHER 5/16 (SS)	5	
49	PF1239-02	TAKE UP BOLT	2	
50	900901-014	HEX NUT 5/8" UNC G5 (SS)	4	
51	TA510514	SMV Emblem	1	

Quad-Force Assembly Components

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



NOTE: Refer to "Tri-Force & Quad Force Set Up" in SET UP section for more details.

Quad-Force Assembly Components

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

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
	414402	QUAD-FORCE ASSEMBLY	1	Includes All Items
1	414517	QUAD-FORCE CENTER DIVIDER PANEL	1	
2	PF1234-1520	QUAD-FORCE 12" CENTER EXTENSION PANEL	1	
3	414520	QUAD FORCE DRIVE CHAIN	1	
4	414521	QUAD-FORCE DRIVE ASSY	1	
5	414524	QUAD FORCE RH CENTER SUPPORT WELDMENT	1	
6	414526	QUAD FORCE LH CENTER SUPPORT WELDMENT	1	
7	414558	QUAD FORCE CHUTE	1	
8	414559	QUAD FORCE SEALER STRIP	2	
9	414528	SHIELD, CHAIN COVER	1	
10	9514	HAIRPIN COTTER	1	
11	PF1217-993	SPROCKET - 6033 X 1 1/4"	1	
12	PF1220-144	KEY STOCK 1/4" X 1/4" X 1 1/2"	1	
13	PF1213-18B	HYDRAULIC MOTOR	1	
14	415182	CONVEYOR SPEED SENSOR REPLACEMENT KIT	1	
15	PF1202-1080	ADAPTER - 3/4-16 MJIC X 1 1/16-12 ORB	1	
16	9004465	REDUCER 1 1/16-12 MORB X 3/4-16 FORB	1	
17	95811	90° ELBOW 3/4-16 ORB X 3/4-16 JICF	1	
18	PF1200-403	SOCKET HEAD CAPSCREW - 1/2-13 X 1-1/2	4	
19	PF1211-079A	PROPORTIONAL VALVE CARTRIDGE W/ CONNECTOR	1	
20	9864	ADAPTER 3/4-16 JIC MALE	1	
21	9008830	BIN LEVEL SENSOR EXTENSION CABLE	1	
22	9009180	BIN LEVEL SENSOR ASSEMBLY	1	
23	95059	SWIVEL NUT RUN TEE	1	
24	PF1207-905	HYD HOSE 1/2" X 121" (3/4 JICF X 3/4 JICM)	1	
25	9008854	STEPPED KEY - 1/4" X 5/16" X 1-1/4"	1	
26	PF1217-960	SPROCKET - 6011 X 1-1/4	1	
27	PF1217-995	SPROCKET - IDLER	1	
28	900911-014	HEX JAM NUT 5/8" UNC (SS)	1	
29	900902-049	FLAT WASHER 5/8" SAE (SS)	6	
30	900900-124	Capscrew 5/8" X 2" UNC 18-8 (SS)	1	
31	900901-010	HEX NUT 1/2" UNC 18-8 (SS)	12	
32	900903-025	LOCK WASHER 1/2" (SS)	12	
33	900902-044	FLAT WASHER 1/2" (SS)	8	
34	900900-100	Capscrew 3/8" X 1" UNC 18-8 (SS)	8	
35	900902-037	FLAT WASHER 3/8" (SS)	14	
36	900903-021	LOCK WASHER 3/8" (SS)	10	
37	900901-006	HEX NUT 3/8" UNC 18-8 (SS)	10	
38	900900-053	Capscrew 3/8" X 3/4" UNC 18-8 (SS)	12	
39	PF1233-103	BOX DIVIDER BRACKET WELDMENT	2	
40	PF1234-1530	12" CENTER EXTENSION BRACKET	2	



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