



X-SERIES

CORNER-AUGER GRAIN CARTS



MODEL X1500, X1300 & X1100

CORNER-AUGER GRAIN CART MAINTENANCE

**INNOVATING
THE FUTURE OF
AGRICULTURE**

GRAIN HANDLING

UNVERFERTH MFG. CO., INC.
P.O. BOX 357 KALIDA, OH 45853 • UNVERFERTH.COM • 419.532.3121

SECTION III

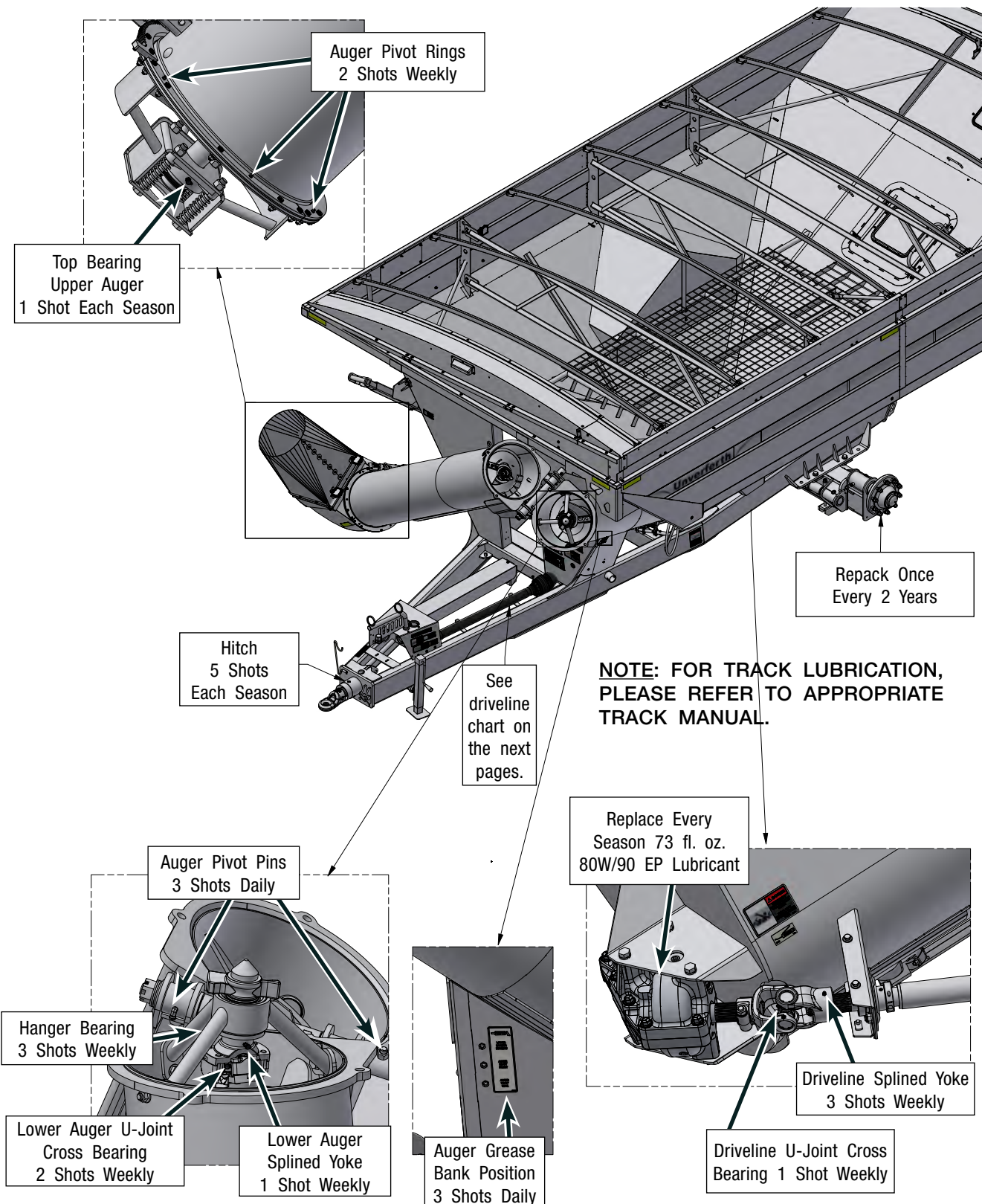
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FOR SCALE, TRACK, UHARVEST, HYDRAULIC DRIVE, ELECTRIC TARP, VIDEO SYSTEM OPTIONS, AND / OR WATER DELIVERY SYSTEM INFORMATION, PLEASE REFER TO THE SPECIFIC MANUAL.

Lubrication

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



Lubrication (continued)

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

Unverferth Mfg. recommends use of NLGI #2 Extreme Pressure grease. Grease U-Joint with a lithium base grease that does not contain a moly disulfide additive.

The lubrication locations and recommended schedule are as follows:

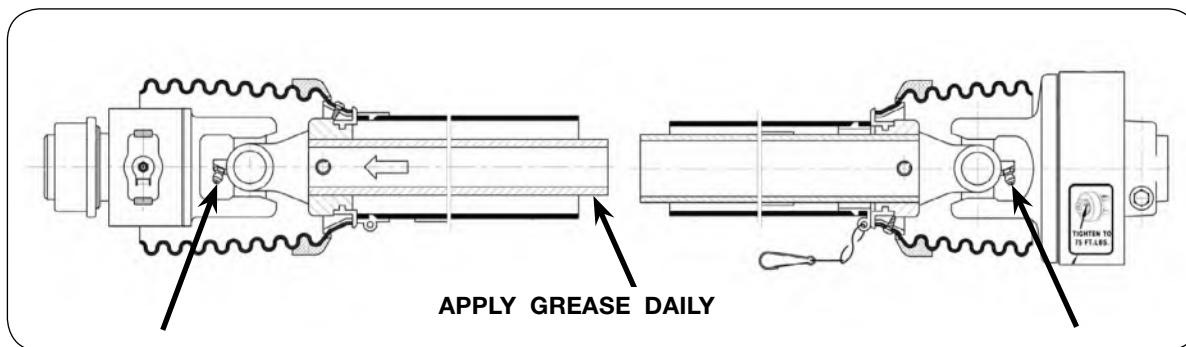
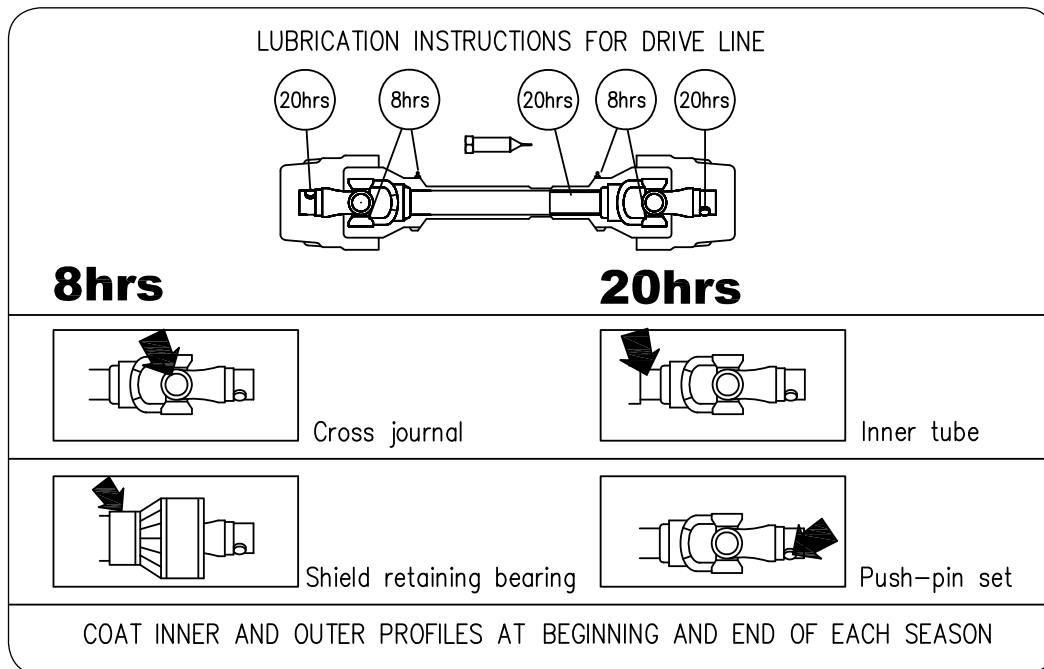
DESCRIPTION	POINT	LUBRICANT	QTY.	HOURS
PTO Driveshaft	7	EP-2	1 Shot	See Next Page
Gearbox - Check oil level every 2 weeks. Replace oil every season. Refer to Gearbox in MAINTENANCE section for instructions.	1	EP80W90	73 oz.	Once Every Season
U-Joint Cross Bearing - Driveline	1	EP-2	1 Shots	Weekly
Splined Yoke - Driveline U-Joint	1	EP-2	3 Shots	Weekly
Grease Bank Hanger Bearing - Lower Auger *See note below.	1	EP-2	3 Shots*	Daily
U-Joint Cross Bearing - Lower Auger	1	EP-2 Lithium Base w/o Moly	2 Shots	Weekly
Splined Yoke - Lower Auger	1	EP-2	1 Shot	Weekly
Top Bearing - Upper Auger	1	EP-2	1 Shot	Each Season
Pivot Rings - Upper Auger	4	EP-2	2 Shots	Weekly
Grease Bank Auger Pivot Pins - Front and Rear	2	EP-2	3 Shots	Daily
Hubs	2	EP-2	Repack	2 Years
Hitch	1	EP-2	5 Shots	Each Season

***NOTE:** Hanger bearing contains hydraulic shut-off grease zerk (9005240) with pressure relief to prevent over-greasing that could push bearing seals out. If grease is coming out of the relief on the zerk this is normal and the bearing contains enough grease.

Lubrication (continued)

Lubricate with quality grease before starting work and every 8 operating hours. Clean and grease PTO drive shaft before each prolonged period of non-use. Molded nipples on the shield near each shield bearing are intended as grease fittings and should be lubricated every 8 hours of operation. Check and grease the guard tubes in winter to prevent freezing.

NOTE: Telescoping members must have lubrication to operate successfully regardless of whether a grease fitting is provided for that purpose. Telescoping members without fittings should be pulled apart and grease should be added manually.



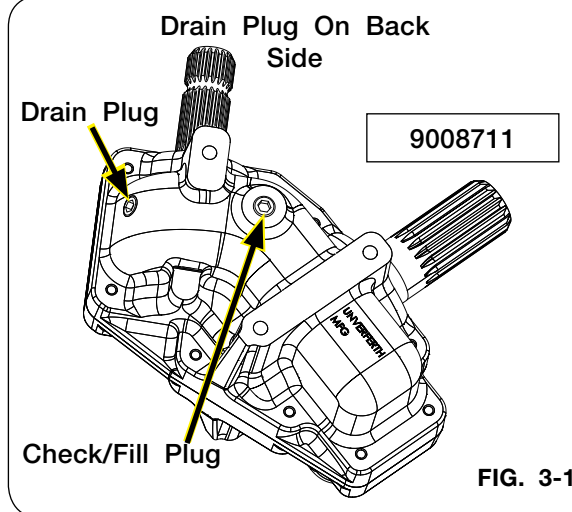
Gearbox Lubrication

For gearbox (9008711), the check/fill plug is located on the right-hand front side of the housing. To check oil fluid level, place cart on a level surface with the tongue elevated to hitch height and remove the plug. Oil level should be at the bottom thread. (FIG. 3-1)

For Maximum gearbox life:

Check oil level every 2 weeks.

Replace oil every season with a minimum of 73 fl. oz. of 80W90 EP gear lubricant.



Hydraulic System

Refer to parts section for hydraulic component detail listing.

When properly assembled and maintained, the hydraulic system of the grain cart requires little maintenance.

Replacing Hoses/Fittings/Cylinders:

1. Use replacement hoses, fittings, and cylinders from your Unverferth Manufacturing dealer which are rated for 3000 psi.
2. Do not use hoses, fittings and cylinders that have pipe threads.
3. Do not use Teflon tape or thread sealant on JIC or O-ring fittings. Tighten fittings according to "Torque Chart - Hydraulic Fittings" in this section.
4. When replacing hoses, always allow sufficient slack to permit hoses to move through the full range of motion of the cylinders.
5. Always purge the hydraulic system after servicing.

Purge Hydraulic System

WARNING

- **HYDRAULIC SYSTEM MUST BE PURGED OF AIR BEFORE OPERATING TO PREVENT SERIOUS INJURY OR DEATH.**
- **RELIEVE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE THE HYDRAULIC POWER UNIT OPERATOR'S MANUAL FOR PROPER PROCEDURES.**
- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.**
- **KEEP CLEAR OF PINCH POINT AREAS.**



Purge air from system as follows:

- A. Clear all personnel and objects from the area, including where the machine will have full range of motion during the hydraulic movement. Remove transport locks from the machine.
- B. Pressurize the system and maintain the system at full pressure for at least 5 seconds after the cylinder rods stop moving, or hydraulic motors have completed the required movement. Check that all movements are fully completed.
- C. Check oil reservoir in the hydraulic power source and refill as needed.
- D. Pressurize the system again to reverse the motion of step B. Maintain pressure on the system for at least 5 seconds after the cylinder rods stop moving, or hydraulic motors have completed the required movement. Check that all movements are fully completed.
- E. Check for hydraulic oil leaks using cardboard or wood. Tighten connections according to directions in the Torque Specifications in the MAINTENANCE section.
- F. Repeat steps in B, C, D, and E 10-12 times.

Hydraulic System (continued)

IMPORTANT

- *Machine damage will occur if the cylinder is incorrectly installed.*

Check for and correct any leaks. Make sure hoses are not kinked, stretched, or twisted. Secure hoses to prevent cuts or chafing during operation.

Relieving Hydraulic Pressure

To relieve hydraulic pressure in the system, be sure hydraulic motor is disengaged and/or hydraulic cylinder is not exerting force on the system. Next, consult tractor operators manual for procedure to relieve pressure.

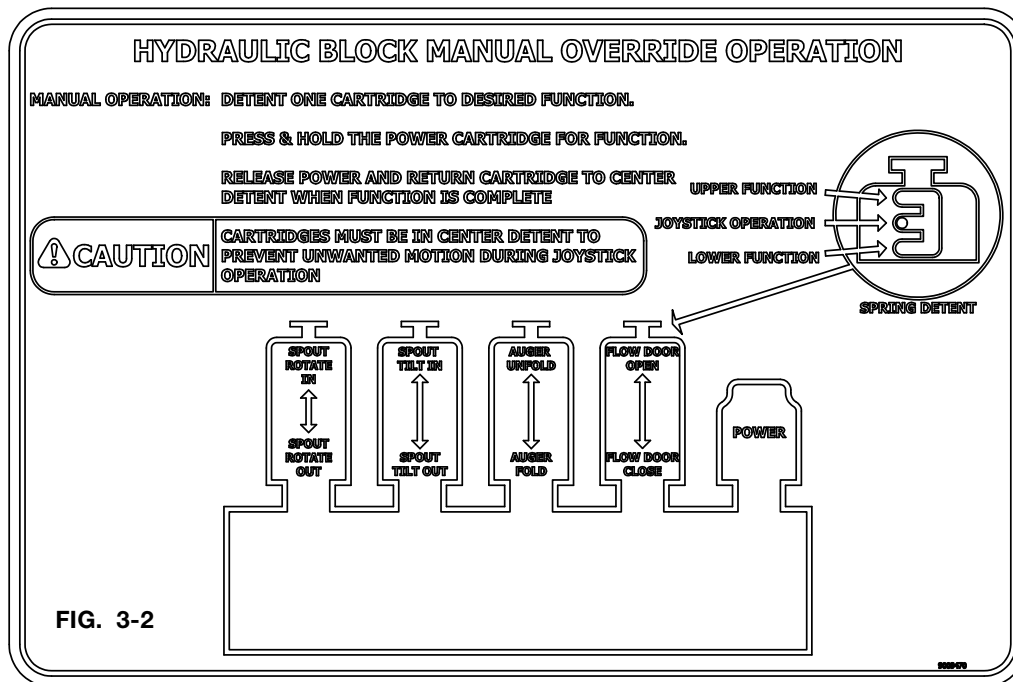
Manual Override for Optional Electric Over Hydraulic System

WARNING

- MOVING OR ROTATING AUGER COMPONENTS CAN CAUSE SERIOUS INJURY OR MACHINE DAMAGE. BEFORE OPERATING MANUAL OVERRIDE(S), ENSURE EVERYONE IS AWAY FROM THE SPOUT AND THAT THE SPOUT WILL NOT CONTACT ANY OTHER PARTS OF THE GRAIN CART.
- MOVING OR ROTATING PTO COMPONENTS CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT OPERATE PTO WHILE UTILIZING MANUAL OVERRIDE(S).
- ALL SAFETY SWITCHES ARE DEACTIVATED WHILE UTILIZING MANUAL OVERRIDE(S).

NOTE: It is recommended the joystick and 7-pin connector be plugged into the same power source.

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



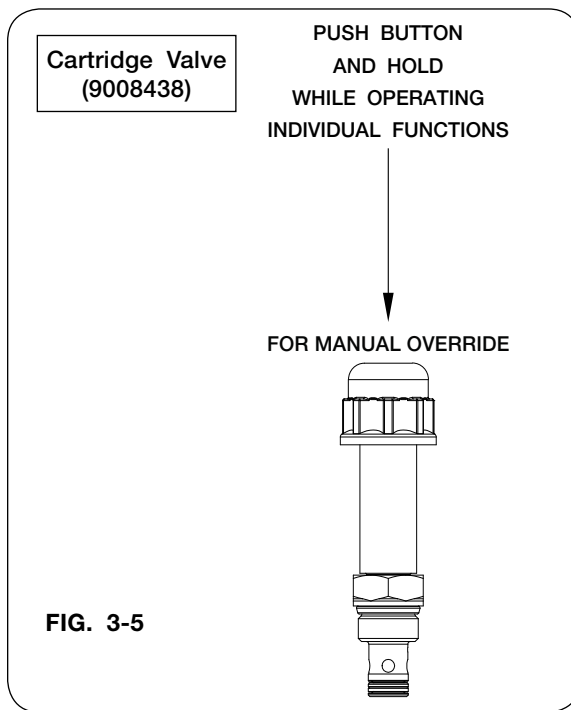
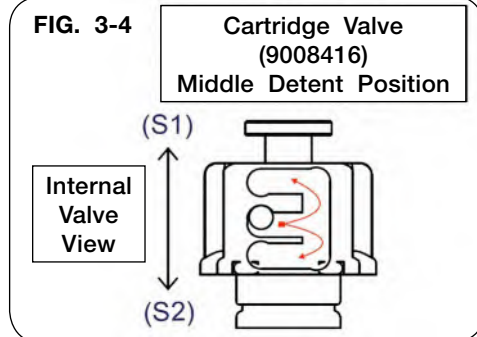
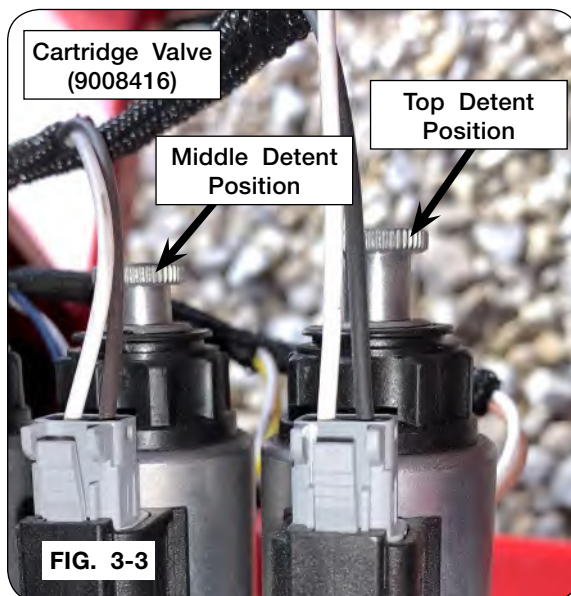
1. Park the empty grain cart on a firm and level surface. Block the machine to keep it from moving. Set the tractor's parking brake.
2. Connect the Hydraulic Pressure and Return hoses to the tractor SCV remote so that the Pressure line is able to be put in continuous detent.
3. To operate the manual override functions, place the tractor SCV remote in continuous detent so that the Hydraulic Pressure hose is pressurized.

Manual Override for Optional Electric Over Hydraulic System (continued)

NOTE: Only one cartridge valve (9008416) may be in the top or bottom detent position at a time to function properly. All other valves must be in the middle detent position. (FIG 3-3 & 3-4)

4. Locate desired function on valve (9008416) and move cartridge to top/bottom detent, as desired, and lock in position. (FIG. 3-5)
5. Push and hold the power cartridge on valve (9008438). (FIG. 3-5)
6. Once the desired position is reached, release manual override button on valve (9008438).
7. Return cartridge to center and lock valve (9008416) in position. (FIG. 3-3 & 3-4)
8. Turn off hydraulic circuit when done. Correct electric/hydraulic system before continued use. Consult your dealer for service and parts.

NOTE: Refer to “Troubleshooting” for EOH and auger issues in the MAINTENANCE section.



Auger System

Flow Door Cylinder Stop

DANGER

- ELECTROCUTION WILL CAUSE SERIOUS INJURY OR DEATH. ELECTROCUTION CAN OCCUR WITHOUT DIRECT CONTACT. KEEP AWAY FROM ALL ELECTRICAL LINES AND DEVICES.
- ENTANGLEMENT WITH THE DRIVELINE WILL CAUSE SERIOUS INJURY OR DEATH. KEEP ALL GUARDS AND SHIELDS IN GOOD CONDITION AND PROPERLY INSTALLED AT ALL TIMES. AVOID PERSONAL ATTIRE SUCH AS LOOSE FITTING CLOTHING, SHOE STRINGS, DRAWSTRINGS, PANTS CUFFS, LONG HAIR, ETC. THAT CAN BECOME EN-TANGLED IN A ROTATING DRIVELINE.



WARNING

- TO PREVENT PERSONAL INJURY OR DEATH WHILE SERVICING, ALWAYS ENSURE THAT THERE ARE PEOPLE WHO REMAIN OUTSIDE THE CART 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 CART WITH AUGER OR TRACTOR RUNNING. SERIOUS OR FATAL INJURY CAN OCCUR DUE TO ENTANGLEMENT WITH ROTATING COMPONENTS. ALWAYS STOP ENGINE AND REMOVE KEY BEFORE ENTERING CART.
- KEEP HANDS CLEAR OF PINCH POINT AREAS.
- EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.
- 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.
- MOVING OR ROTATING COMPONENTS CAN CAUSE SERIOUS INJURY OR DEATH. ALWAYS DISCONNECT POWER SOURCE BEFORE SERVICING. ENSURE SERVICE COVERS, CHAIN/BELT COVERS AND CLEAN-OUT DOOR(S) ARE IN PLACE AND SECURELY FASTENED BEFORE OPERATING MACHINE.



Auger System (continued)

The floor door has been set with a stop to limit the maximum opening. The factory stop position provides full auger fill in most crops and conditions. For extra-difficult flowing crops, more auger opening may be required.

NOTE: Opening the auger flow door past the factory setting will increase power consumption, auger wear, and shorten driveline life. (FIG. 4-26)

1. Park the empty grain cart on a firm and level surface. Block the machine to keep it from moving. Set the tractor's parking brake. Leave the tractor on throughout procedure.
2. Before loading cart or operating auger, verify that the flow control door is closed.
3. Choose an area free from obstructions and unfold the auger into the unloading position. Allow sufficient time for the cylinder to fully engage the two augers.
4. Rotate spout to the most forward position to engage the spout cylinder stroke bracket, then rotate the spout to the desired operating position.

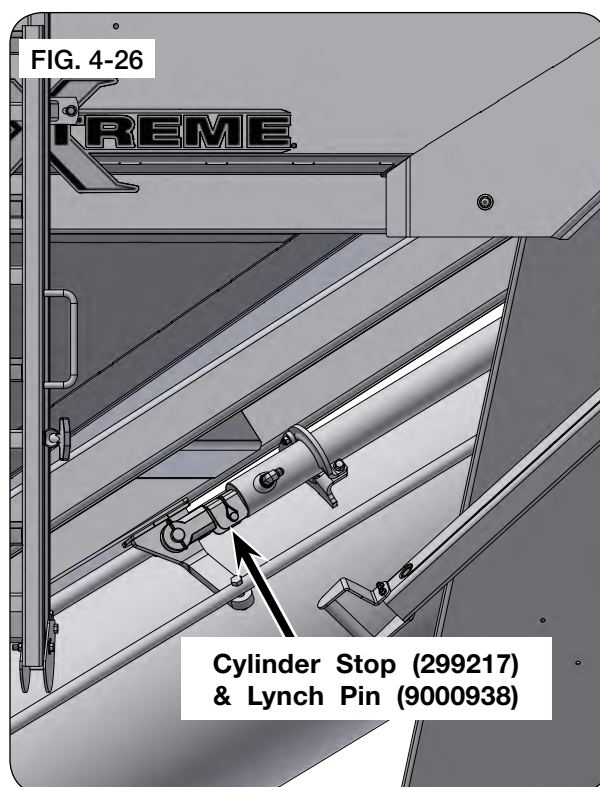
NOTE: In order to increase grain flow to the maximum bushels per minute, cylinder stop (299217B) can be removed from the flow door cylinder. (FIG. 4-26)

5. Locate the cylinder stop on the end of the flow door cylinder. (FIG. 4-26)
6. Remove the lynch pin retaining the cylinder stop.
7. Remove the cylinder stop from the flow door cylinder rod and keep for future use.

NOTE: Upon removal of the cylinder stop, a minimum of 1000 PTO RPM **MUST** be maintained when operating the flow door at the maximum setting.

IMPORTANT

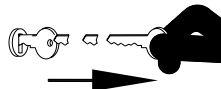
- *Operating the PTO at less than 1,000 RPM can result in damage to the PTO and driveline components in addition to excessive auger wear and cart vibration.*



Auger System (continued)

Lower Auger

1. Hitch cart to tractor, connect hoses for flow door and upper auger hydraulic cylinders and fully open flow door. Keep upper auger in the folded position. Park the empty grain cart on a firm, level surface. Set the tractor's parking brake, shut-off the engine and remove the ignition key. Block the machine to keep it from moving.



Lower Auger Removal

2. Remove the three 5/8"-11UNC x 2" capscrews (9390-124), 5/8" flat washers (9405-098), 5/8"-11UNC locknuts (9003398) and shims that secure the hanger bearing bracket to the auger tube. (FIG. 4-8)

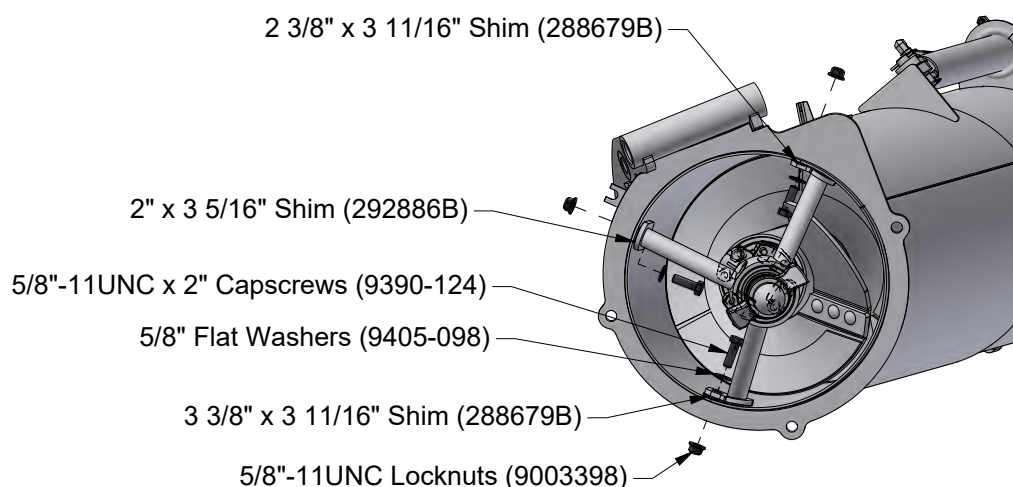


FIG. 4-8

3. Using a safe lifting device rated at a minimum of 1000 lbs., support the lower auger. Remove the hanger bearing assembly. Then remove the lower auger through the auger hinge opening.

Auger System (continued)

Lower Auger Assembly

4. The replacement auger flighting is factory balanced. Remove entire auger from shipping crate and secure from rolling. The lower auger assembly is pictured in figure 4-2 for reference.

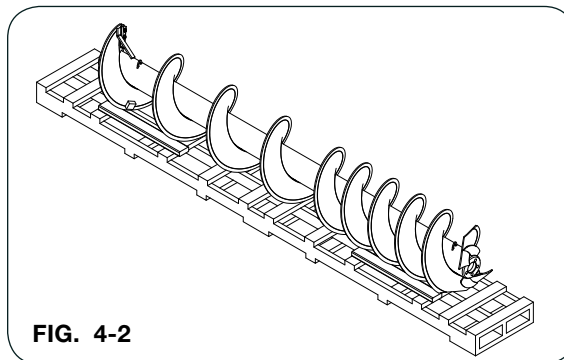


FIG. 4-2

5. Attach the u-joint assembly to the lower auger flighting by placing 3/4"-10UNC x 7" cap-screws (9390-159) and 3/4"-10UNC locknuts (9802) into the auger from opposite directions. (FIG. 4-3)

NOTE: If removing flighting extension hardware, replace with new hardware. Do not reuse old flighting extension hardware.

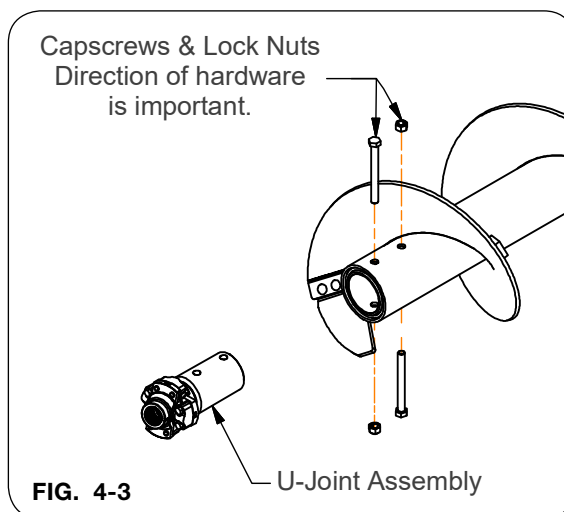


FIG. 4-3

6. Using a safe lifting device rated at a minimum of 1000 lbs., lift the auger into position. Slowly lower the auger flighting down through the auger hinge opening to intersect with the five pin drive bushing.
7. Align auger end with the five pin drive bushing and securely engage together. (FIG. 4-4)

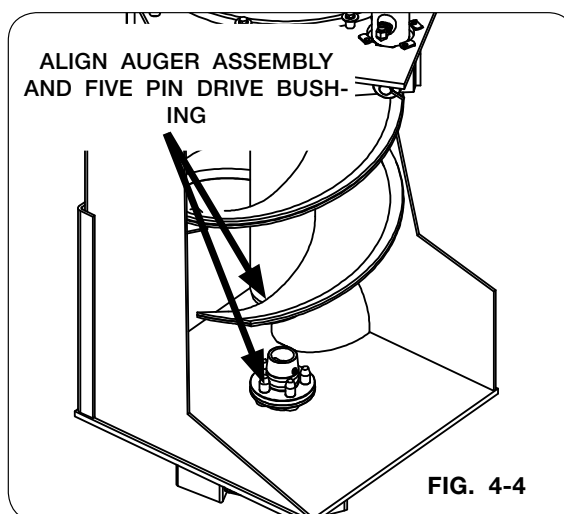
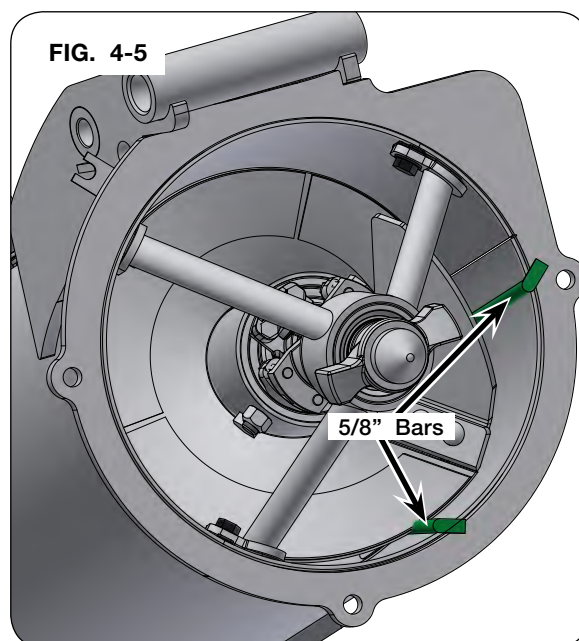


FIG. 4-4

Auger System (continued)

Hanger Bearing Centering

8. Once the lower auger is inserted into the auger tube, center the lower auger in the tube and support with two 5/8" thick bars/wedges near the auger hinge plate. (FIG. 4-5)

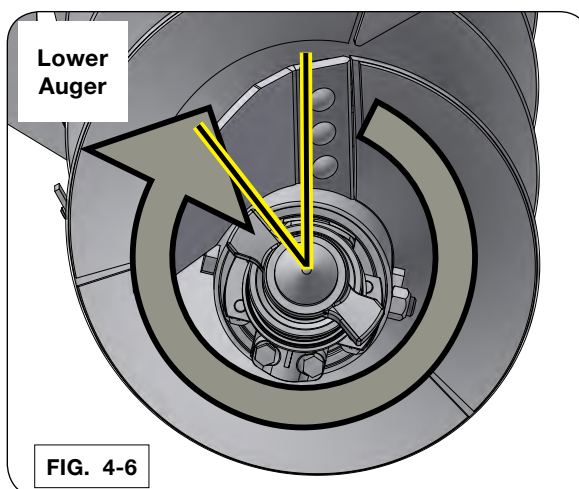


Lower Auger Timing

9. Apply anti-seize to the splines before sliding the drive dog through the hanger bearing and into the u-joint. Using a safe lifting device rated for a minimum of 500 lbs, time the drive dog (FIG. 4-6) with the finished edge of the flighting at 12:00 o'clock. Position the drive dog at 11:00 o'clock. then install the hanger bearing.

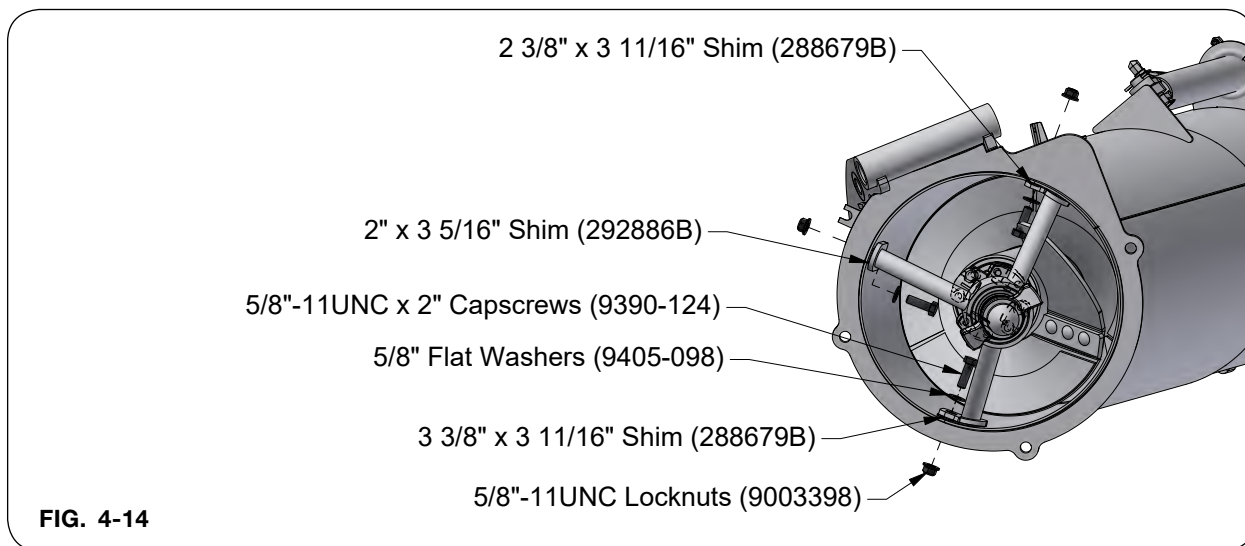
NOTE: When looking down at the lower flighting (FIG. 4-6) the auger rotation will be clockwise.

NOTE: For additional auger timing assistance, refer to your dealer for a timing fixture kit (288932Y).



Auger System (continued)

10. Loosely secure the hanger bearing using two 3" x 3 9/16" shims (292423B), one 2" x 3 5/16" shim (292886), three 5/8"-11UNC x 2" capscrews (9390-124), three 5/8" flat washers (9405-098), and three 5/8"-11UNC locknuts (9003398) as shown in FIG. 4-14.

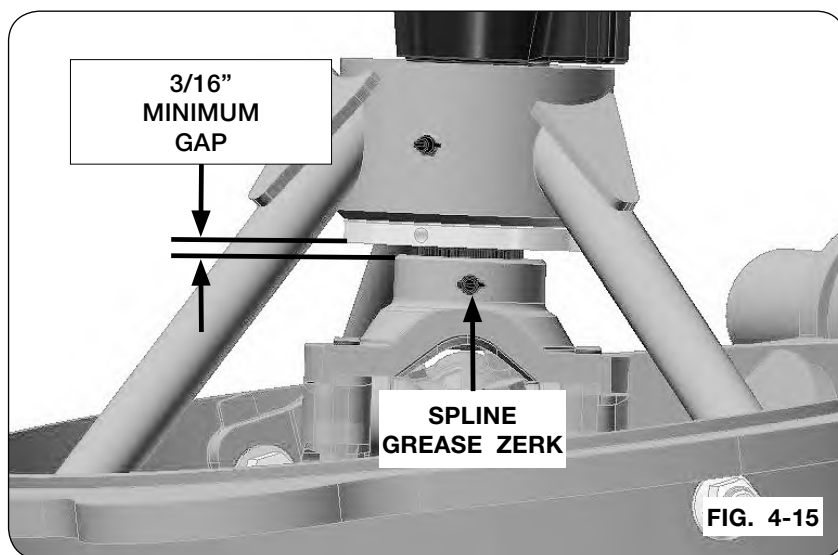


Auger System (continued)**U-Joint Spline Gap**

11. Verify spline gap before tightening hanger bearing hardware. Spline gap must be a minimum of 3/16". Using a lifting device rated for 250 pounds, raise the hanger bearing in the holes so the proper minimum spline gap is achieved. (FIG. 4-15)

NOTE: When auger components have been replaced or serviced, proper spline gap **MUST** be verified. It may be necessary to loosen the hanger bearing hardware and use the lifting device to achieve the proper spline gap.

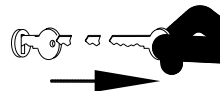
12. Tighten the retaining hardware to the appropriate torque values listed in the MAINTENANCE section.
13. Grease the spline and hanger bearing grease zerks. (FIG. 4-15)
14. Fold upper auger to unload position and have a second user visually check for auger engagement. Test run augers at slow speed.



Auger System (continued)

Upper Auger

1. Hitch cart to tractor, connect hoses for flow door and upper auger hydraulic cylinders and fully open flow door. Keep upper auger in the folded position. Park the empty grain cart on a firm, level surface. Set the tractor's parking brake, shut-off the engine and remove the ignition key. Block the machine to keep it from moving.



Upper Auger Removal

2. Loosen the two bearing set screws.
3. Remove and save the 5/16"-18UNC x 2 3/4" capscrew (9390-037), four 5/16" SAE flat washers (9405-068), 5/16"-18UNC locknut (901527), and 2" flat washers (93974). (FIG. 4-16)
4. Use a safe lifting device rated at a minimum of 2,000 lbs. to support the upper auger, remove auger from tube.

NOTE: If replacing the soft start, continue to step 5. If replacing the upper auger, continue to step 9.

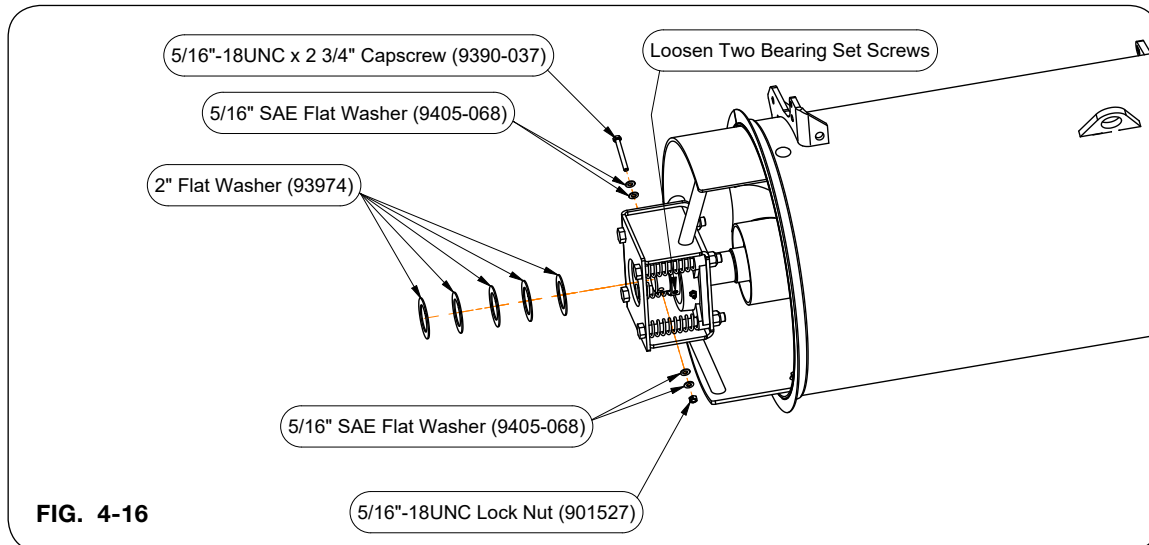


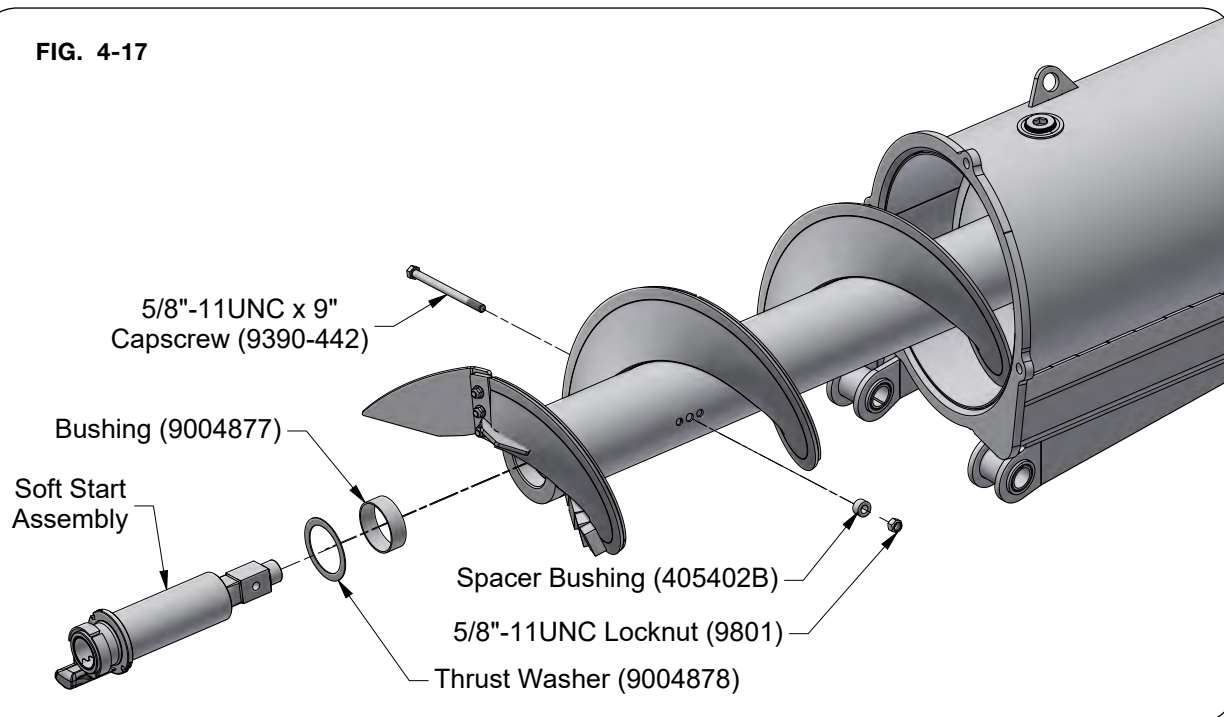
FIG. 4-16

Auger System (continued)**Soft Start Replacement**

5. Remove the 5/8"-11UNC x 9" capscrew (9390-442), spacer bushing (405402B), 5/8"-11UNC locknut (9801), soft start assembly, thrust washer (9004878), and bushing (9004877). Discard 5/8" hardware and spacer bushing. (FIG. 4-17 and 4-18)

NOTE: If reusing flighting extension, replace with new hardware and apply anti-seize to hardware before installing to auger flighting. Do not reuse old flighting extension hardware.

6. Insert the bushing (9004877) into the end of the upper auger. Attach the thrust washer (9004878) and apply anti-seize to the soft start and insert into the auger tube. (FIG. 4-17 and 4-18)

FIG. 4-17

Auger System (continued)

Upper Auger Timing

7. Time the drive pin (as in FIG. 4-19) with the finished edge of the flighting at 12:00. Position the drive pin at 6:00.

NOTE: Looking up at the upper flighting (FIG. 4-19) the auger rotation will be counter clockwise.

NOTE: There is only one way the soft-start will go in.

NOTE: For additional auger timing assistance, refer to your dealer for a timing fixture kit (293329Y).

NOTE: Before soft start final assembly, ensure the spacer bushing (405402B) is on the same side as the locknut (9801). (FIG. 4-17 and FIG. 4-18)

8. Retain the soft start into position with the 5/8-11UNC x 9" capscrew (9390-442), spacer bushing (405402B), 5/8"-11UNC locknut (9801). Torque according to torque chart in this section. (FIG. 4-17 and FIG. 4-18)

NOTE: The replacement auger is factory balanced. Remove entire auger from shipping crate and secure from rolling. The upper auger assembly is pictured in FIG. 4-20 for reference.

9. Using an adequate hoist and slings with a minimum capacity of 2,000 lbs. to support the upper auger, install upper auger into the tube. (FIG. 4-20)

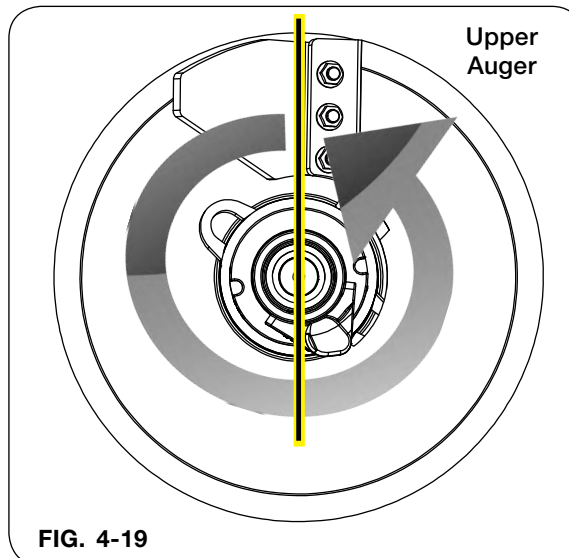


FIG. 4-19

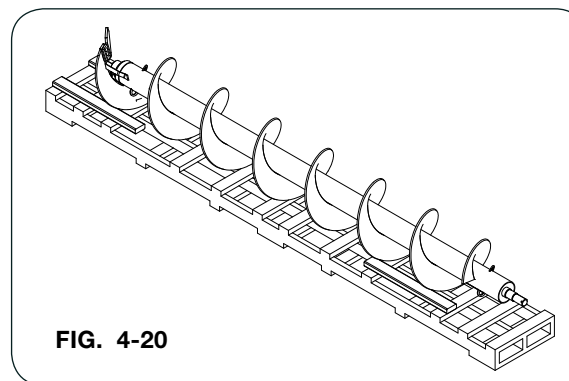


FIG. 4-20

Upper Auger Height

11. Place a straight edge across the center of the auger housing tube. Measure the distance between the center of the face of the soft start bushing that sits on the top of the drive dog and the straight edge. Verify the upper auger in-set of approximately 7 5/8". With the upper auger folded, ensure the height of the upper auger is set correctly. Make sure the auger engages. If this dimension is not correct, loosen the set screws in the flange bearing at the top of the upper auger and slide the auger through the bearing to this correct position. Tighten the bearing set screws. (FIG. 4-21)

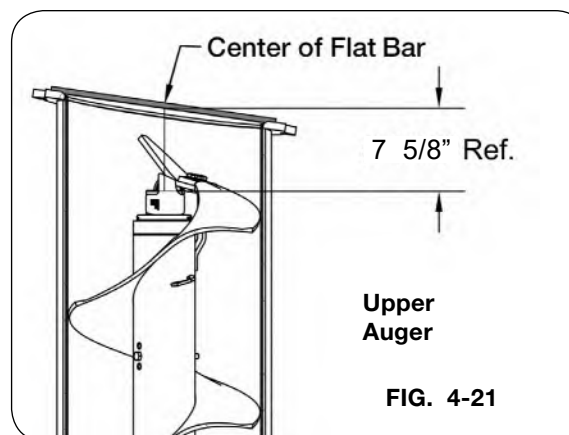
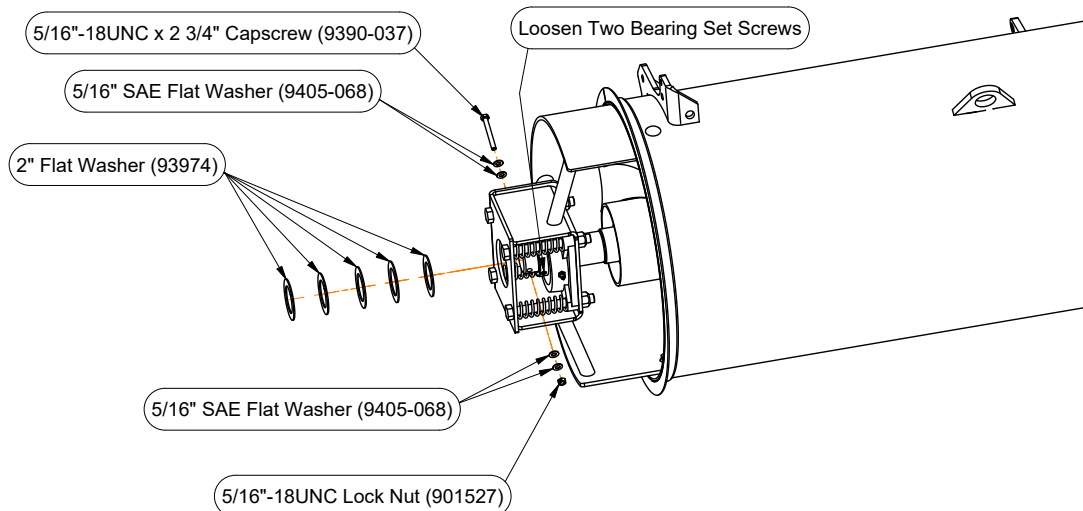


FIG. 4-21

Auger System (continued)

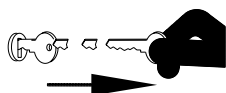
12. Make sure the 4 bolt flange bearing is sitting tight against the mounting plate and then tighten the two bearing set screws. Attach the upper auger with the 5/16"-18UNC x 2 3/4" capscrew (9390-037), four 5/16" SAE flat washers (9405-068), 5/16"-18UNC locknut (901527), and as many 2" flat washers (93974) as required to fill the gap between the bearing and the cross bolt. (FIG. 4-22)

**FIG. 4-22**

Auger System (continued)

Upper Auger Bearing Gap

13. Unfold the auger to the operating position.
14. Engage PTO and test run augers to ensure drive dogs are engaged. Stop PTO, shut off tractor and remove key.



15. Remove upper auger tube plug and visually verify upper and lower auger engagement. (FIG. 4-25)

16. Verify the upper auger bearing height by inspecting the upper auger bearing in operating position. There must be minimum 1/16" to 1/8" gap between the bearing and mount plate with the upper auger in operating position and the drive dog completely engaged.

17. If gap is present, no action is needed, go to step 18. If no gap or gap is too large, Re-adjust the upper auger placement to achieve a 1/16"–1/8" gap by adding or removing washer shims. FIG. 4-24.

18. Place upper auger in the folded/transport position.

19. Once the upper auger height has been verified, remove the upper bearing set screws one at a time, and dimple the stud shaft with a 1/4" diameter drill bit. Apply TL-42 blue thread locker to the set screws, and reinstall the set screws into the flange bearing and into the dimples on the stud shaft. Tighten set screws. Tighten all hardware according to torque chart in this section.

20. If upper and lower auger engagement is good, reinstall upper auger tube plug. (FIG. 4-23)

21. Test run auger driveline to verify smooth driveline operation. Check for noise and/or vibration and address immediately.

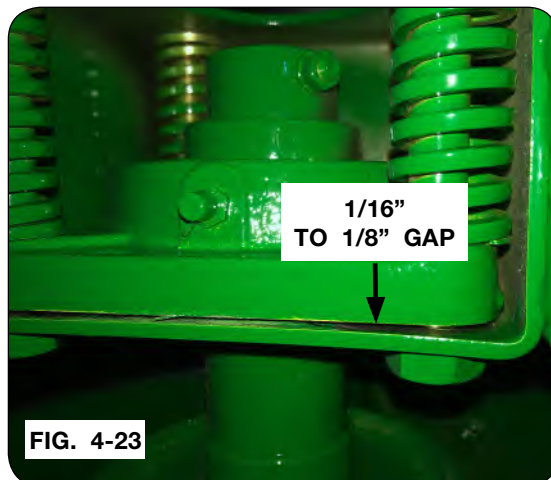


FIG. 4-23



FIG. 4-24

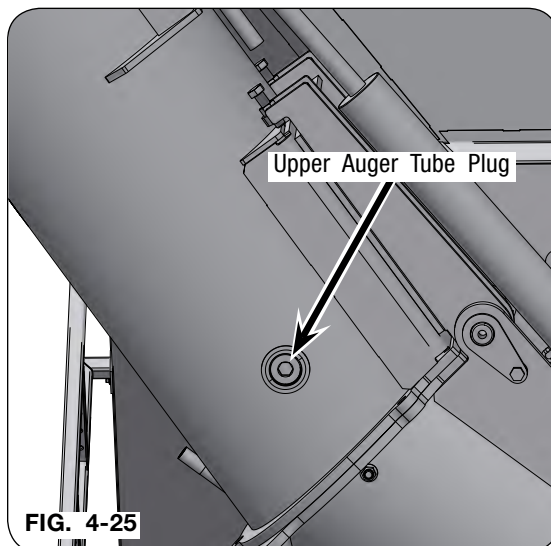


FIG. 4-25

Auger Driveline

Bearings

It is important to periodically check setscrews in all bearings of the driveline for tightness.

Driveline Replacement

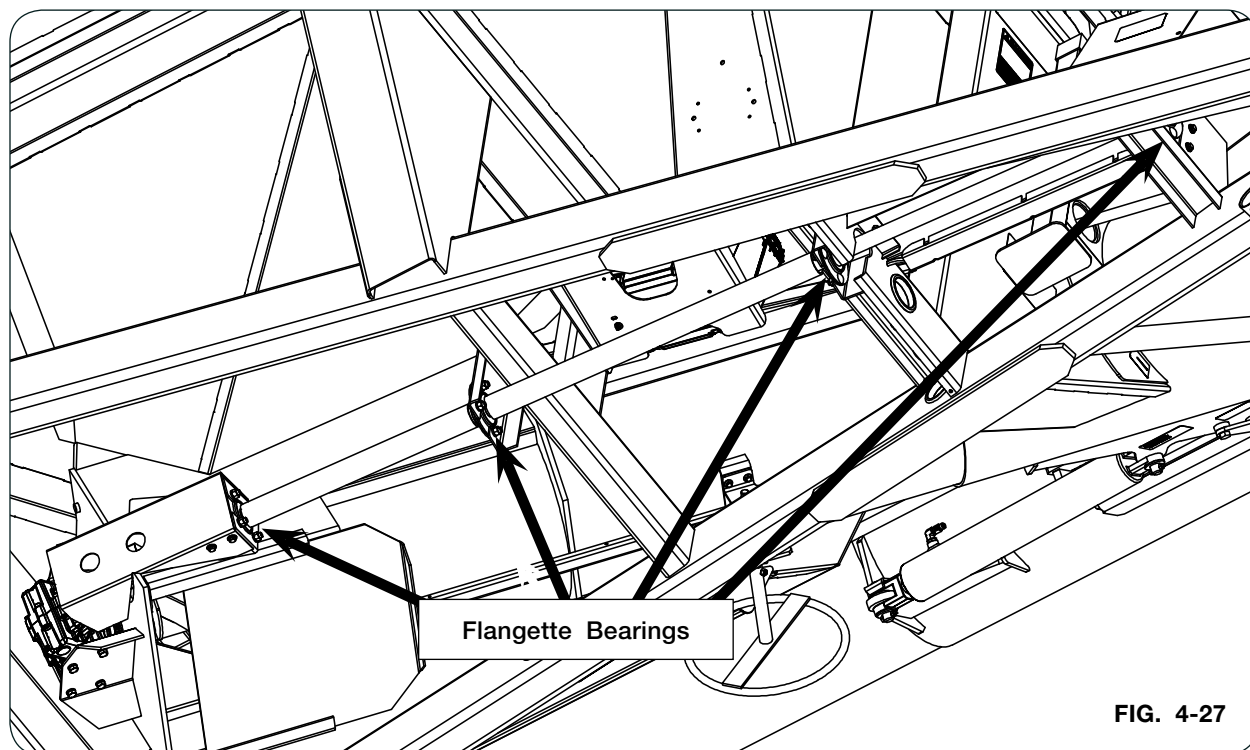


FIG. 4-27

1. Park the empty cart on a firm, level surface. Block the machine to keep it from moving. Set the tractor parking brake, shut off the engine, and remove the ignition key from the tractor. Completely disconnect driveline assembly.
2. Loosen the setscrews (9399-210) on all flange bearings (9005061) (FIG. 4-27).
3. Remove the 1/2" carriage bolts (9388-102) and flange nuts (91267) holding the flange bearings. Keep hardware. (FIG. 4-28).
4. Remove paint on driveshaft to allow for easier movement. Slide driveshaft forward until the rear spline is out of the universal joint connected to the gearbox.
5. Drop the gearbox end of drive shaft down and slide driveshaft out of the flange bearing on the hitch end of the driveshaft.

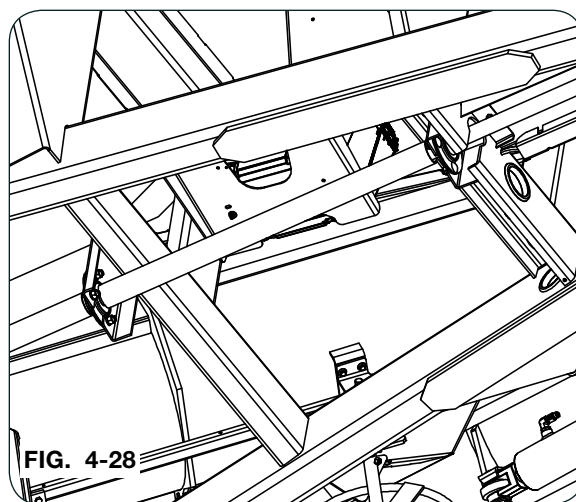
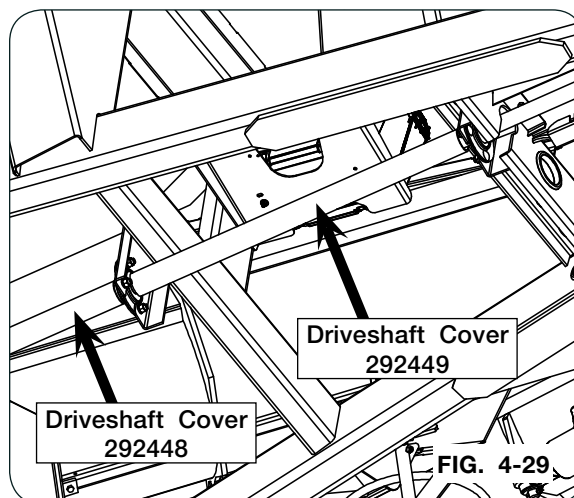


FIG. 4-28

Auger Driveline (continued)

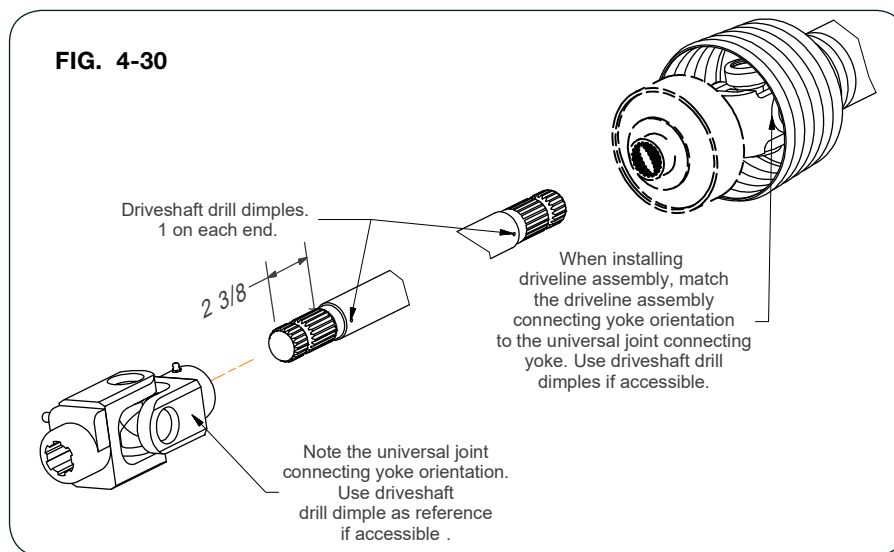
Driveline Replacement (continued)

6. Remove bearings, bearing mounts, universal joint cover, driveshaft lock collars (if lock collars are attached to driveshaft), PVC driveshaft covers, and driveline cover off the current driveshaft.
7. Slide new 1 3/4" dia. two-piece lock collars (9008677) to both sides of new bearing (9005061) closest to the U-Joint near the gearbox.
8. When installing new bearings (9005061) onto new 1 3/4" dia. driveshaft, assemble new PVC driveshaft cover (292448) between bearings near the gearbox and new PVC driveshaft cover (292449) between bearings behind the hitch driveline cover. (FIG. 4-29)



NOTE: Ends of driveshaft are symmetrical.

9. Slide the hitch end of the driveshaft assembly into the bearing near hitch of the cart. (FIG. 4-29)
10. Raise the gearbox end of the driveshaft up and insert the original 1/2" carriage bolts, flange nuts, and lock washers into the mounting flanges making sure that the bearing flanges are both on the front side of the mounting brackets. Only loosely tighten the hardware.
11. Slide driveshaft down into the universal joint attached to the gearbox until the end of the shaft extends into the universal joint 2 3/8". Ensure universal joint and driveshaft splines completely engage. Verify the hitch end for adequate length for driveline assembly to connect. (FIG. 4-30)



Auger Driveline (continued)

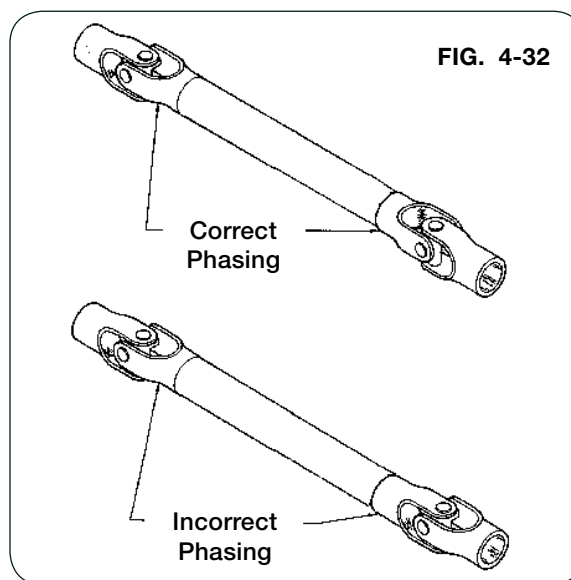
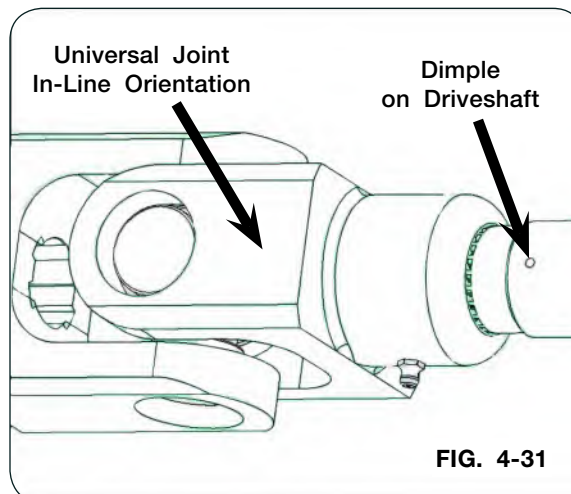
Driveline Replacement (continued)

12. Tighten all flange mounting hardware.
13. With bearing mounting hardware completely tightened, drill a setscrew dimple in the driveshaft by going through the bearing setscrew threaded hole to dimple the driveshaft being careful to not damage threads. Drill the dimple to approximately 1/8" so that setscrews are flush with the bearing prior to applying thread locker and installing setscrews. (FIG. 4-31)
14. For alignment of the yoke, the orientation of the universal joint at the gearbox must be in line with the driveshaft drilled dimple when the driveline assembly is attached. (FIG. 4-31 and 4-32)
15. Apply blue thread locker on bearing setscrews and tighten.
16. Torque lock collars to 170 inch-lbs.

NOTE: Check/fill gearbox oil and grease universal joint before installing new universal joint cover. See "Gearbox Lubrication" for oil specifications.

17. Attach new universal joint cover (295296B) to the bearing mount in front of the gearbox using original 3/8"-16UNC x 3/4" flange screws (95585) and 3/8"-16UNC flange nuts. Review to ensure PVC driveshaft covers and driveline cover are in place and hardware tightened prior to operation.

18. Test run driveline. Verify smooth driveline operation.



Verify Telescoping PTO Shaft Length

WARNING

- **PROPER EXTENDED AND COLLAPSED LENGTHS OF THE TELESCOPING PTO SHAFT MUST BE VERIFIED BEFORE FIRST OPERATION WITH EACH AND EVERY TRACTOR. IF THE EXTENDED LENGTH OF THE PTO SHAFT IS NOT SUFFICIENT, IT MAY BECOME UNCOUPLED IN OPERATION AND CAUSE SERIOUS INJURY OR DEATH FROM CONTACT WITH UNCONTROLLED FLAILING OF PTO SHAFT ASSEMBLY COMPONENTS.**

IMPORTANT

- *Check the length of the telescoping members to insure the driveline will not bottom out or separate when turning and/or going over rough terrain.*

Consult your OEM dealer for recommended drawbar and PTO set up.

An excessive collapsed length can result in damage to the PTO driveline and attached components. This is most likely to occur during extreme turning angles and/or travel over rough terrain. Conditions are amplified on tractors with tracks operating in uneven terrain, particularly rice levies. Damaged driveline components can result in unsafe operation and severely reduced driveline component life.

NOTE: Do not exceed 10 degrees beyond a straight pull line while operating the PTO. To verify proper extended and collapsed lengths, use the following procedure:

1. Fully collapse PTO shaft and measure length "L" (FIG. 4-33).

Enter here: _____ (1)

(Verify that outer tube does not bottom out on surrounding plastic shield components).

2. Pull apart PTO telescoping shaft ends and measure lengths "T" & "C" (FIG. 4-34)

Add "T" + "C" measurements together

Enter total here: _____ (2)

3. Calculate maximum recommended extended length:

- a. Subtract line 1 from line 2

Enter here: _____ (a)

- b. Divide line (a) by 2

Enter here: _____ (b)

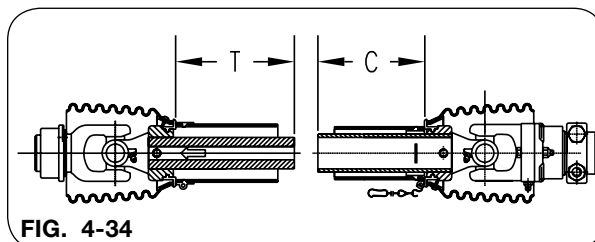
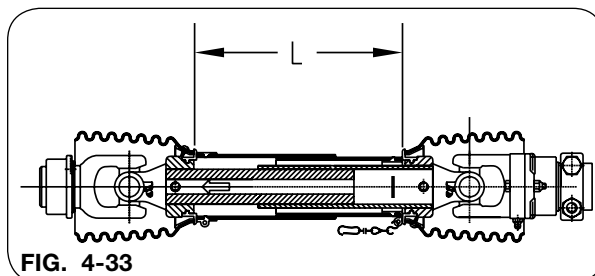
- c. Add line (b) to line 1.

Enter here: _____ (c)

- d. Subtract 3 inches from line (c)

Enter here: _____ (d)

This is the maximum recommended extended length.



Verify Telescoping PTO Shaft Length (continued)

4. Hitch tractor drawbar to cart, ensuring that tractor and cart are on level ground and coupled as straight as practical.
5. Connect PTO shaft to tractor, and measure length “L” from same points as used in step 1. **Ensure that this measurement does not exceed the maximum recommended extended length calculated in step 3 above.** If necessary, choose a shorter drawbar position, or obtain a longer PTO shaft assembly before operating cart.
6. Position the tractor to obtain tightest turning angle, relative to the cart. (FIG. 4-35)
7. Measure length “L” from same points as used in step 1. **This distance must be at least 1.5 inches greater than the distance measured in step 1** If necessary, adjust length of PTO shaft by cutting inner and outer plastic guard tubes and inner and outer sliding profiles by the same length. Round off all sharp edges and remove burrs before greasing and reassembling shaft halves. (FIG. 4-36)

FIG. 4-35

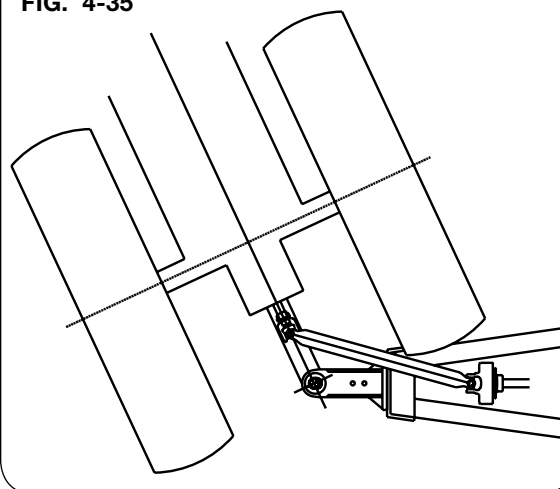
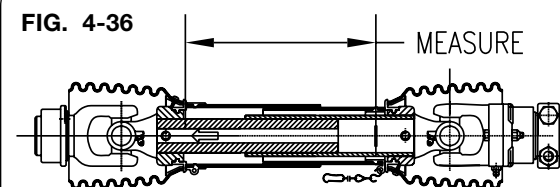


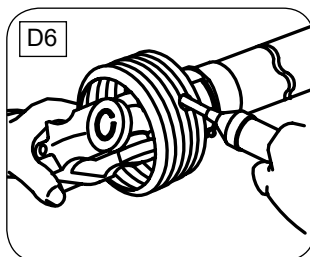
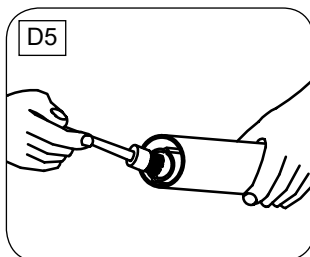
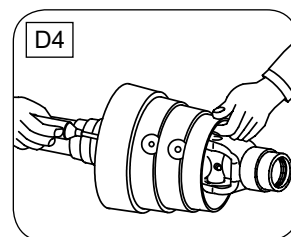
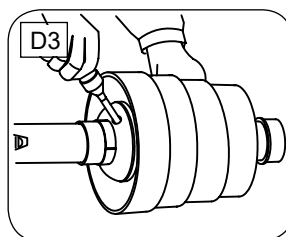
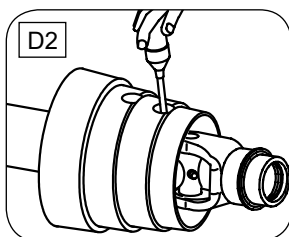
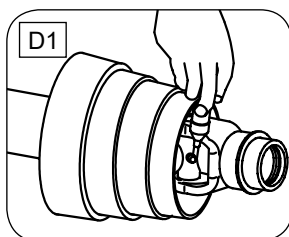
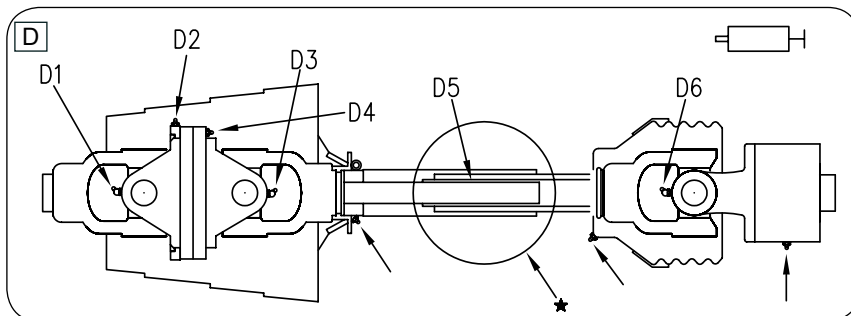
FIG. 4-36



PTO Shaft and Clutch

Lubrication (Figs. D1 - D6)

Lubricate with quality grease before starting work and every 8 operating hours. Clean and grease PTO drive shaft before each prolonged period of non-use. Molded nipples on the shield near each shield bearing are intended as grease fittings and should be lubricated every 8 hours of operation! Telescoping members must have lubrication to operate successfully regardless of whether a grease fitting is provided for that purpose! Telescoping members without fittings should be pulled apart and grease should be added manually. Check and grease the guard tubes in winter to prevent seizing.



PTO Shaft and Clutch (continued)

Coupling the PTO drive shaft (Figs. E1 - E2)

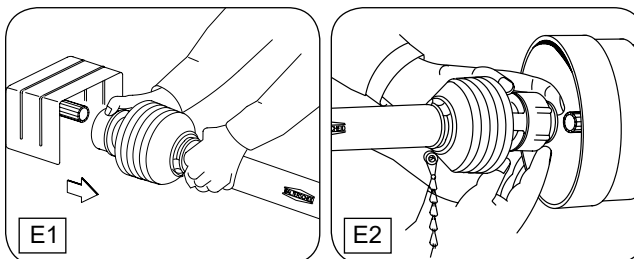
Clean and grease the PTO and implement input connection (IIC)

AS-Lock

1. Pull locking collar and simultaneously push PTO drive shaft onto PTO shaft until the locking device engages.

Push-Pull Lock

2. Pull locking collar and simultaneously push PTO drive shaft onto PTO shaft until the locking device engages.



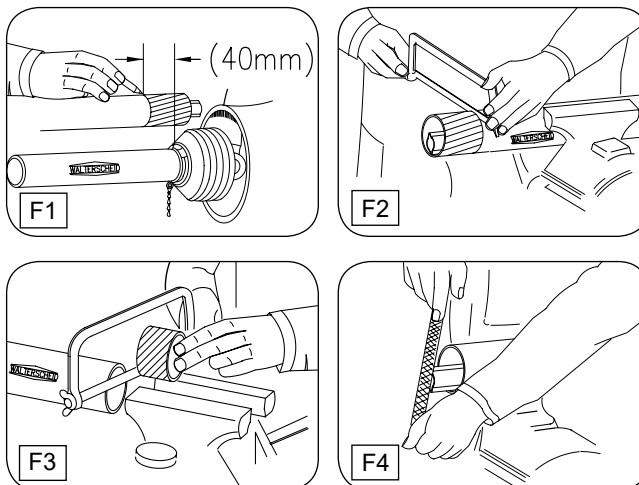
WARNING

- CHECK TO INSURE ALL THE LOCKS ARE SECURELY ENGAGED BEFORE STARTING WORK WITH THE PTO DRIVESHAFT.

Length Adjustment (Figs. F1 - F4)

NOTE: Maximum operating length LB.

1. To adjust length, hold the half-shafts next to each other in the shortest working position and mark them.
2. Shorten inner and outer guard tubes equally.
3. Shorten inner and outer sliding profiles by the same length as the guard tubes.
4. Round off all sharp edges and remove burrs. Grease sliding profiles.



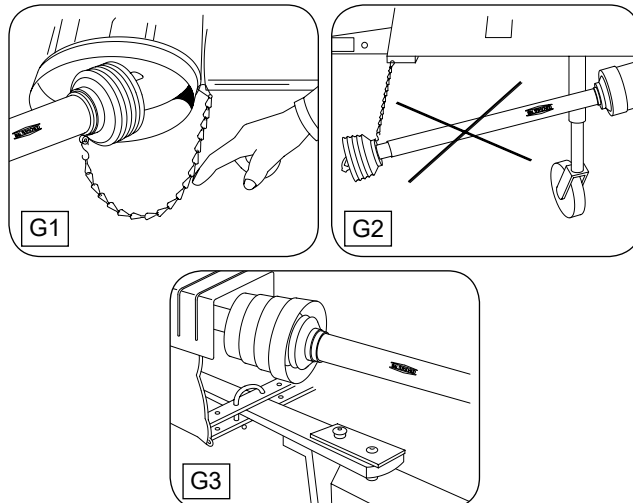
WARNING

- CHECK THE LENGTH OF THE TELESCOPING MEMBERS TO INSURE THE DRIVELINE WILL NOT BOTTOM OUT OR SEPARATE WHEN TURNING AND/OR GOING OVER ROUGH TERRAIN.

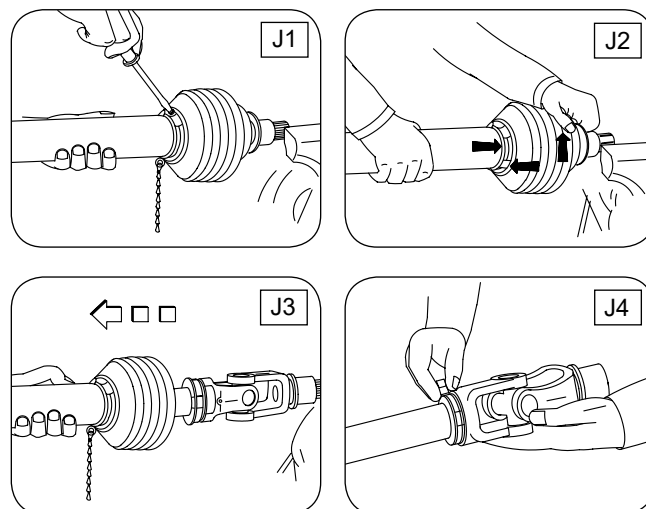
PTO Shaft and Clutch (continued)
Chains (Figs. G1 - G3)

NOTE: The chain is intended to prevent the shield from rotating against non-moving parts and thereby preventing shield damage. A properly installed chain will increase the service life of the shield.

1. Chains must be fitted so as to allow sufficient articulation of the shaft in all working positions. Care must be taken to be sure that chain does not become entangled with drawbar hitch or other restrictions during operation or transport of machine.
2. The PTO drive shaft must not be suspended from the chain.

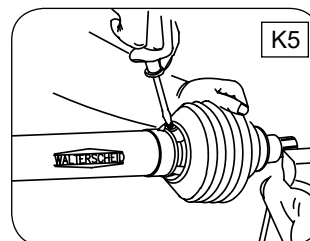
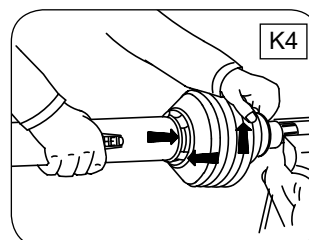
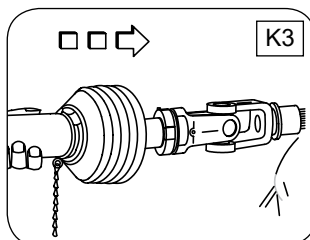
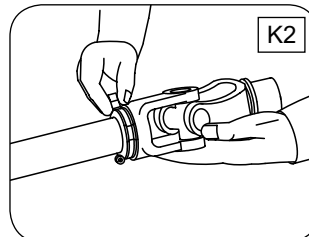
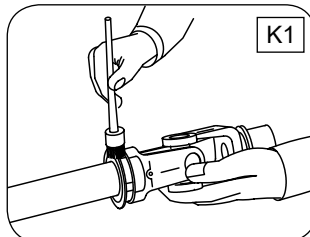

To Dismantle Guard (Figs. J1 - J4)

1. Remove locking screw.
2. Align bearing tabs with cone pockets.
3. Remove half-guard.
4. Remove bearing ring.

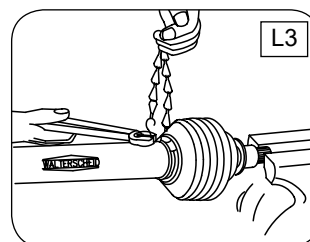
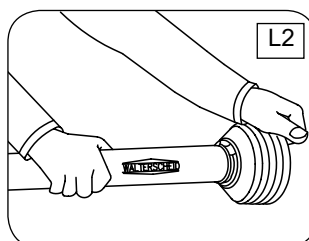
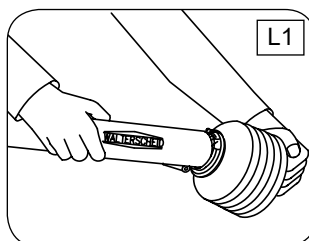


PTO Shaft and Clutch (continued)
To Assemble Guard (Figs. K1 - K5)

1. Grease yoke groove and inner profile tube.
2. Fit bearing ring in groove with recesses facing profile tube.
3. Slip on half-guard.
4. Turn cone until it engages correctly.
5. Install locking screw.


To Assemble Cone

1. Dismantle guard (Figs. J1 - J3). Remove old cone (e.g. cut open with knife). Take off chain. Place neck of new cone in hot water (approx 80°C/180°F) and pull onto bearing housing (FIG. L1).
2. Turn guard cone into assembly position (FIG. L2). Further assembly instructions for guard (Figs. K1 - K5).
3. Reconnect chain if required (FIG. L3).

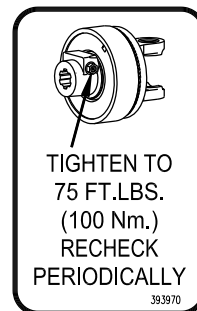
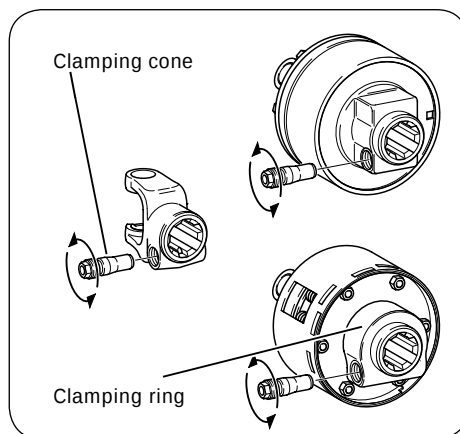
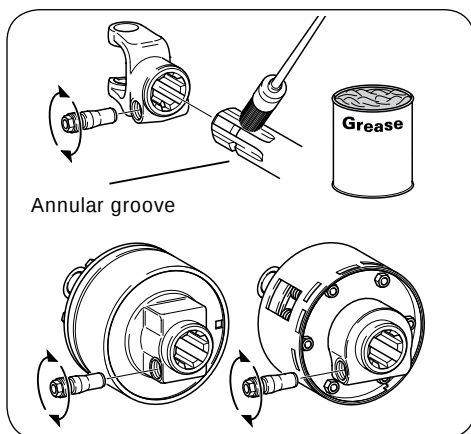


PTO Quick Disconnect

Coupling

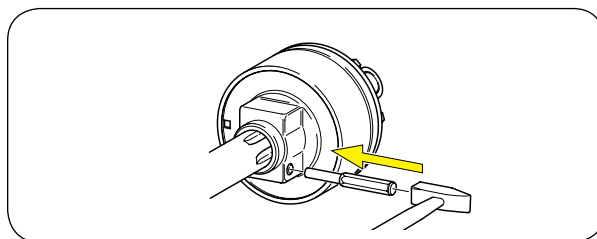
Slide clamp yoke or clutch onto connecting shaft. Make sure the location hole for the clamping cone is positioned above the annular groove of the connecting shaft. Screw appropriate clamping cone into the location hole. Slightly moving the clamp yoke or clutch to and from in the axial direction will help drive in the clamping cone. Check the clamp yoke or clutch for a tight and safe fit and continue to check at regular intervals. Retighten the clamping cone as necessary. Torque clamping cone down to 75 ft.-lbs.

When over loading occurs, the clutch disengages and will repeatedly attempt to reset. The clutch will create a repeated “clicking” noise when resetting. Torque demand must decrease for clutch to reset.



Uncoupling

First dislodge the clamping cone with a punch and hammer from its current position. Unscrew the clamping cone a partial turn. Use the punch and hammer to help alleviate the torque resistance on the wrench if necessary. After a few cycles the clamping cone will move freely with low torque resistance for the removal process.



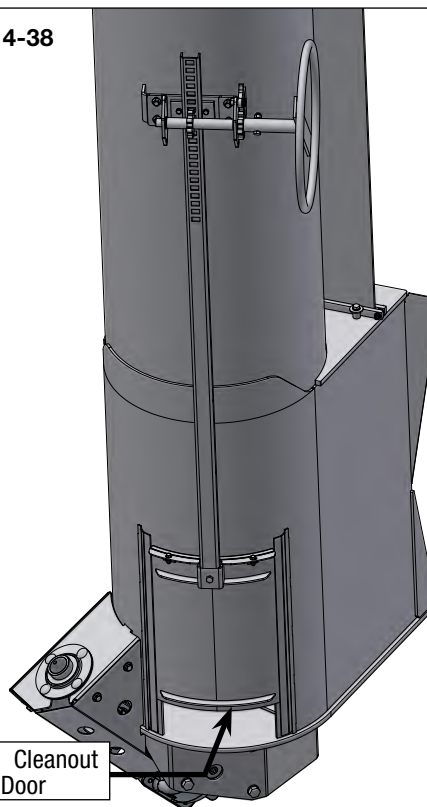
Adjusting Cleanout Door**⚠ WARNING**

- **MOVING PARTS CAN CRUSH AND CUT. KEEP AWAY FROM MOVING PARTS.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING THE IMPLEMENT.**

1. Park the empty grain cart on a firm and level surface. Block the machine to keep it from moving. Set the tractor's parking brake, shut-off the engine, remove the ignition key and disconnect the PTO shaft.



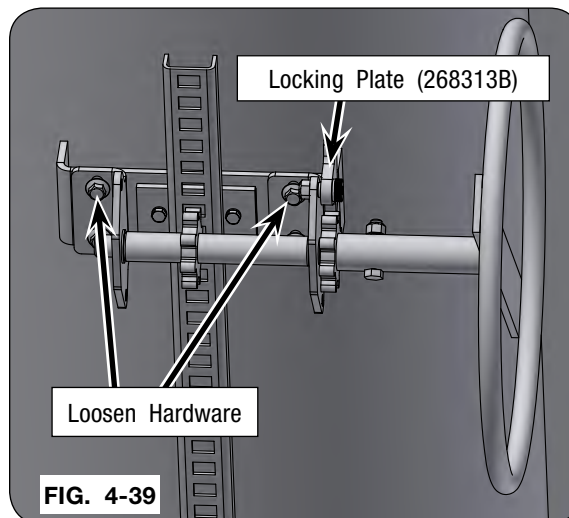
2. Inspect and verify that all the grain dust and filings are removed that may prevent the door from shutting completely. Completely close cleanout door. (FIG. 4-38)

FIG. 4-38

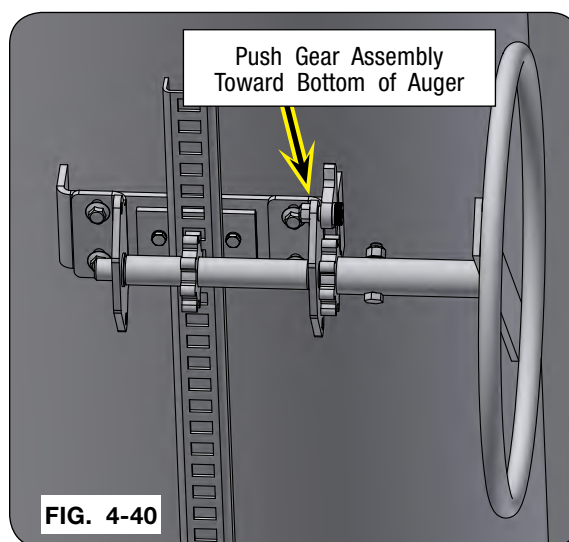
Close Cleanout
Door

Adjusting Cleanout Door (continued)

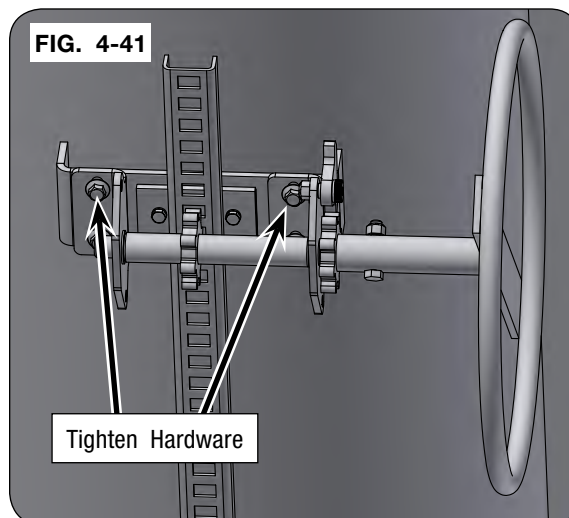
3. Engage the locking plate (268313B). (FIG. 4-39)
4. Loosen mounting hardware. (FIG. 4-39)



5. Push the gear assembly toward bottom of auger to remove excess movement and prevent the door from moving upward when unloading the cart. (FIG. 4-40)



6. Tighten hardware loosened in step 4. (FIG. 4-41)
7. Check door operation. Lock the handle weldment into position. (FIG. 4-41)



Wheel, Hub and Spindle Disassembly and Assembly

WARNING

- TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE MACHINE IS SECURELY BLOCKED.
- 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 32,000 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.

CAUTION

- IMPROPERLY TORQUED WHEEL NUTS/BOLTS CAN CAUSE A LOSS OF IMPLEMENT CONTROL AND MACHINE DAMAGE. TORQUE WHEEL NUTS/BOLTS TO VALUES IN TABLE. CHECK TORQUE BEFORE USE, AFTER ONE HOUR OF UNLOADED USE OR AFTER FIRST LOAD, AND EACH LOAD UNTIL WHEEL NUTS/BOLTS MAINTAIN TORQUE VALUE. CHECK TORQUE EVERY 10 HOURS OF USE THERE-AFTER. AFTER EACH WHEEL REMOVAL START TORQUE PROCESS FROM BEGINNING. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS.

IMPORTANT

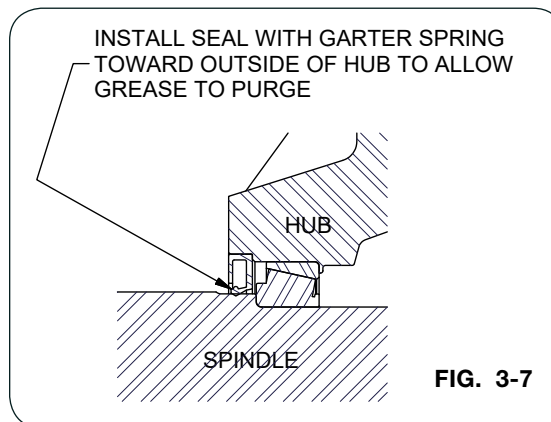
- *Remove only one wheel and tire from a side at any given time using the following procedure.*
1. Hitch cart to tractor. Park the empty cart on a firm, level surface. Set the tractor's parking brake, shut off engine and remove key.
 2. With cart empty, place 32,000 lbs. safe lifting and load holding devices rated at 32,000 lbs. to support the weight of your grain cart. Place the safe lifting device under the axle closest to the tire/track.
 3. Use a 3,000 lbs. safe lifting device to support the wheel and tire then remove hardware.
 4. Remove the hardware retaining the hubcap. Next, remove the hubcap, gasket, capscrew, locknut, castle nut and spindle washer. Remove hub with bearings from old spindle using a 250 lb. lifting device.
 5. Inspect the spindle and replace if necessary. If spindle does not need to be replaced, skip to Step 6; otherwise continue.



Remove the capscrew and locknut that retains the spindle to the axle. Using a safe lifting device rated for 200 lbs., replace the old spindle with a new spindle. Coat axle contact length of spindle shaft (scale or non-scale) with anti-seize lubricant prior to installation. If installing scale spindle, install with 'top' decal facing upwards. Reuse capscrew and locknut to retain spindle to axle. Torque as outlined in MAINTENANCE section.

Wheel, Hub and Spindle Disassembly and Assembly (continued)

6. For Hub disassembly: Remove seal and inspect bearings, spindle washer, castle nut, capscrew and locknut. Replace if necessary. Pack both bearings with approved grease and reinstall inner bearing. Install new seal in hub with garter spring facing the hub by tapping on flat plate that completely covers seal while driving it square to hub. (FIG. 3-7) Install until flush with back face of hub. Using a 250 lb. rated lifting device, install hub assembly onto spindle. Install outer bearing, spindle washer and castle nut.



7. For Hub adjustment: Slowly tighten castle nut while spinning the hub until drag causes the hub to stop freely spinning. Do not use an impact! Turn castle nut counterclockwise until the hole in the spindle aligns with the next notch in castle nut. Hub should spin smoothly with little drag and no end play. If play exists, tighten to next notch of castle nut. If drag exists, then back castle nut to next notch of castle nut. Spin and check again. Install capscrew and locknut. Clean face for hub cap gasket and install gasket, grease-filled hub cap and retain hub cap with hardware removed. Tighten hubcap hardware in alternating pattern.
8. Attach the wheel(s) and tire(s) to the hub using the same rated lifting device for removal. Tighten wheel nuts to appropriate requirements and recheck as outlined in "Wheel and Tire" in the **MAINTENANCE** section.
9. Raise cart, remove load holding devices and lower cart to the ground.

Wheels and Tires

Wheel Nut Torque Requirements



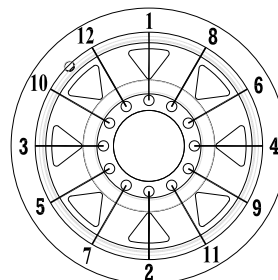
CAUTION

- IMPROPERLY TORQUED WHEEL NUTS/BOLTS CAN CAUSE A LOSS OF IMPLEMENT CONTROL AND MACHINE DAMAGE. TORQUE WHEEL NUTS/BOLTS TO VALUES IN TABLE. CHECK TORQUE BEFORE USE, AFTER ONE HOUR OF UNLOADED USE OR AFTER FIRST LOAD, AND EACH LOAD UNTIL WHEEL NUTS/BOLTS MAINTAIN TORQUE VALUE. CHECK TORQUE EVERY 10 HOURS OF USE THERE-AFTER. AFTER EACH WHEEL REMOVAL START TORQUE PROCESS FROM BEGINNING. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS.

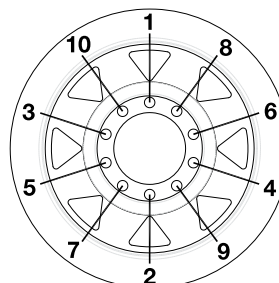
Failure to check torque before first load may damage wheel nut/bolt seats. Once seats are damaged, it will become impossible to keep nuts/bolts tight. Tighten nuts/bolts to applicable torque value shown in table. Start all nuts/bolts by hand to prevent cross threading. Torque nuts/bolts in the recommended sequence as shown in Diagram 1.

Note: Do not use anti-seize on wheel hardware.

WHEEL HARDWARE	
SIZE	FOOT-POUNDS
M22x1.5	475 ft.-lbs.



12 BOLT



10 BOLT

DIAGRAM 1

Wheels and Tires (continued)
Tire Pressure

The following is to be used as a general guide for tire inflation and figures can vary depending on specific brand of tire used. **It is important that tires are inspected after unit is loaded.** Start with minimum pressure. The tire should stand up with no side-wall buckling or distress as tire rolls. Record the pressure needed to support the full load and maintain this pressure to achieve proper tire life. **Do not exceed maximum recommended tire pressure.** Each tire must be inflated to 35 PSI max to seat the beads, deflated to 5-10 PSI, then reinflated to to recommended minimum pressure.

Tire Pressure for Grain Carts

Tire Make	Tire Size	Load Index / Ply	Max. PSI
		Rating	
Firestone	23.1x26 R-3	12	32
	23.1x26 R-1	12	32
	28Lx26 R-3	12	26
	24.5x32 R-3	12	32
	24.5x32 R-1	12	32
	30.5x32 R-1	14	28
	30.5x32 R-3	14	28
	30.5x32 R-3	16	34
	30.5x32 R-1	16	26
	35.5x32 R-3	20	36
	76x50.00x32 HF-3	16	40
	76x50.00x32 HF-3	20	50
	800/65R32 R-1W	172D	41
	800/60R32 R-3	181B	46
	900/65R32 R-3	191B	46
	900/60R32 R-1	176A8	44
	1250/50R32F IF/CFO R-1WNP	201D	46
	1250/50R32F IF/CFO R-1W	188B	30
	520/85R38 R-1	155A8	29
	520/85R38 R-1	173A8	64
	480/80R42 R-1	151A8	36
	520/85R42 R-1	157A8	29
	520/85R42 R-1	165A8	51
	520/85R42 IF/CFO R-1	169A8/B	35
	IF520/85R42 R-1W	169B	35
	VF520/85R42 R-1W	177B	35
	420/80R46 R-1	151A8	44
	480/80R46 R-1	158A8	44
	380/90R46 R-1	152B	51

Wheels and Tires (continued)
Tire Pressure (continued)

Tire Make	Tire Size	Load Index / Ply Rating	Max. PSI
Titan/Goodyear	23.1x26 R-3	10	26
	23.1x26 R-1	10	26
	24.5R32 R-1	169A8/B (5-Star)	48
	24.5x32 R-3	12	32
	24.5x32 R-1	12	32
	30.5x32 R-3	16	26
	30.5x32 R-3	14	22
	30.5x32 R-1	14	22
	480/80x42 R-1	166A8	23
	900/60R32 R-1W	185A	49
	1050/50R32 R-1	196D	52
	1100/45R46 R-1W	195D	35
	IF1250/50R32 R-1W	201D	46
Mitas	650/75R32 R-1W	172A8	58
	650/75R32 R-1	176A8	41
	800/65R32 R-1W	172A8	46
	900/60x32 R-1W	181A8	58
	900/60x32 CHO R-1W	181A8	46
	900/70R32 R-1W	188A8	53
	1050/50x32 R-1W	178A8	41
	1250/50R32 R-1W	188A8	41
	900/60x38 R-1W	181A8	44
	520/85x42 R-1W	162A8	44
	650/65x42 R-1W	168A8	44
Alliance	30.5B32	18-Ply	36
	35.5LR32	193A8	44
	900/60R32 R-1W	192D	46
	1050/50R32 R-1W	185A8	52
	1250/50R32 R-1W	201B	46
Trelleborg	VF1050/50R32 R-1	198D	52
	900/50R32 R-1W	181A8	55
	900/60x32	176LI	44
	850/55R42 R-1W	161A8	32

Wheels and Tires (continued)**Tire Warranty**

For questions regarding new tire warranty, please contact your local original equipment tire dealer. **USED TIRES CARRY NO WARRANTY.** Following are phone numbers and Websites for your convenience:

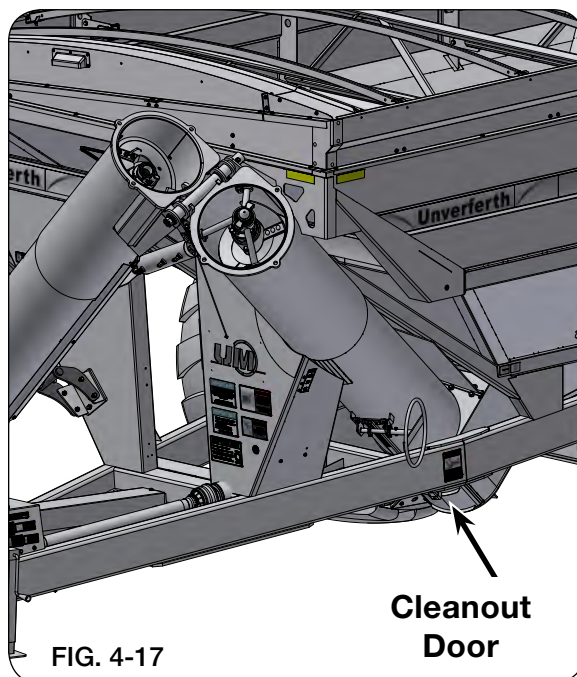
<u>Firestone</u>	www.firestoneag.com Phone 800-847-3364
<u>Titan</u> or <u>Goodyear</u>	www.titan-intl.com Phone 800-USA-BEAR Fax 515-265-9301
<u>Trelleborg</u>	www.trelleborg.com Phone 866-633-8473
<u>Continental/Mitas</u>	www.mitas-tires.com Phone 704-542-3422 Fax 704-542-3474
<u>Alliance</u>	www.atgtire.com Phone 781-325-3801

Seasonal Storage

Your cart is an important investment. Spend a little time to protect it from destructive rust and corrosion. You will be repaid in longer service life and better performance.

Do the following before placing the cart in storage:

1. Wash machine inside and out before storing to remove dirt and debris that can draw and collect moisture. When using pressure washers, maintain an adequate distance so not to force water into bearings.
2. Using safe lifting device rated at 100 lbs., store PTO on the rest brackets at the side of the frame rail.
3. Repaint all areas where paint has been removed to keep rust from developing. Rust will affect grain flow.
4. Coat exposed cylinder piston rods with rust preventative material if applicable.
5. Lubricate machine at all points outlined.
6. Inspect for damage or worn parts, replace before next season.
7. Store cart inside, away from livestock.
8. Replace all worn, torn or faded decals and reflectors.
9. If unit is equipped with a scale indicator or electric hydraulic controls, store these indoors in a dry location.
10. Fully open flow door and auger cleanout door to remove any remaining grain and to allow moisture to dry.
11. Close the tarp to keep debris out of the hopper.



EOH Troubleshooting

Problem	Possible Cause	Corrective Action
No Electric Over Hydraulic (EOH) Functions work	7 Pin connector not supplying good ground to cart.	Check the connections to the main power harness in the tractor cab, and check the 5 AMP fuse in the fuse holder of the main power harness. Replace fuse if necessary.
	Not getting good connection at Deutsch connectors in the harnesses	Unplug the Deutsch connectors at the hitch point and in the extension harness (if used). Clean up the connectors with electrical contact cleaner. Make sure the connectors are aligned correctly and re-connect them.
	Not pressurizing the correct hydraulic hose	Make sure the quick couplers are properly connected to the tractor SCV and the Hydraulic Pressure line is being pressurized when engaging the tractor SCV.
Auger unfolds part way and stops	Debris in the EOH block on the auger fold cylinder	Fold auger, remove the Coil and the cartridge valve on the EOH valve block. Remove any debris and reinstall cartridge and coil.
One single function will not work	Defective coil on the EOH valve for that function	Loosen the cap for the coils associated with that function on the EOH valve. Depress the button on the remote, and determine if the coils are getting magnetized. Inspect the wiring connectors to these coils, and replace the coil if necessary.
	Defective valve on the EOH valve for that function	Remove the coil and the cartridge valve on the EOH valve block for that function. Replace the valve if it doesn't operate when the coil is magnetized.
	Debris in the EOH block at the base of the vertical auger	Remove the coil and the cartridge valve on the EOH valve block. Remove any debris and reinstall cartridge and coil.
Functions continue to operate after the button on the remote is released	Tractor hydraulic flow is set too high	Turn tractor hydraulic flow down so that flow doesn't exceed 6 gallons per minute.
	Defective valve on the EOH valve for that function	Remove the coil and the cartridge valve on the EOH valve block for that function, and replace the cartridge.

Tarp - Troubleshooting Inspection and Maintenance

PROBABLE CAUSE	CORRECTION
Tarp sags in middle areas	1. Bows may be bent or adjusted too low.
	2. Missing or loose ridge strap. Replace or retighten.
	3. U-joint may need to be adjusted on splined shaft to provide more tension.
Holes or tears in tarp	1. Consult your local dealer for repairs.
	2. Order tarp repart kit from dealer.
	3. When new tarp or parts are needed always replace with original parts.

Inspection and Maintenance

WARNING

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

IMPORTANT

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

Periodic preventive maintenance should be practiced. Inspect tarp and hardware often for abrasions or loosened bolts that may need adjustment and/or repair. Check bungee cords for wear and adjust tension at the beginning of the season and again half way through the season.

Tears in tarp should addressed before further tarp operation. If water pools on tarp, adjust tension of tarp cables and/or arm springs.

If installed correctly, tarp should always operate as well as when first installed. If tarp does not pass this simple inspection, make all appropriate repairs or adjustments immediately before serious damage occurs.

Electrical Diagram — Plug #92450

GRAIN CART WIRES

White	--	Ground
Green	--	Right Amber Flashing Lamp
Yellow	--	Left Amber Flashing Lamp
Brown	--	Tail Light
Black	--	Work Lights
Red	--	Brake Lights
Blue	--	NOT USED

Black - Work Lights

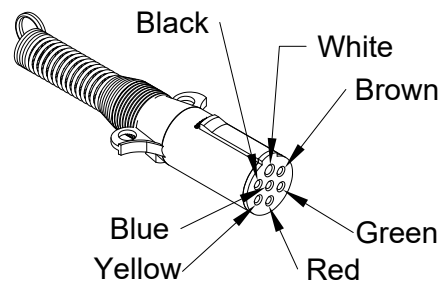
Green - RH Turn

Yellow - LH Turn

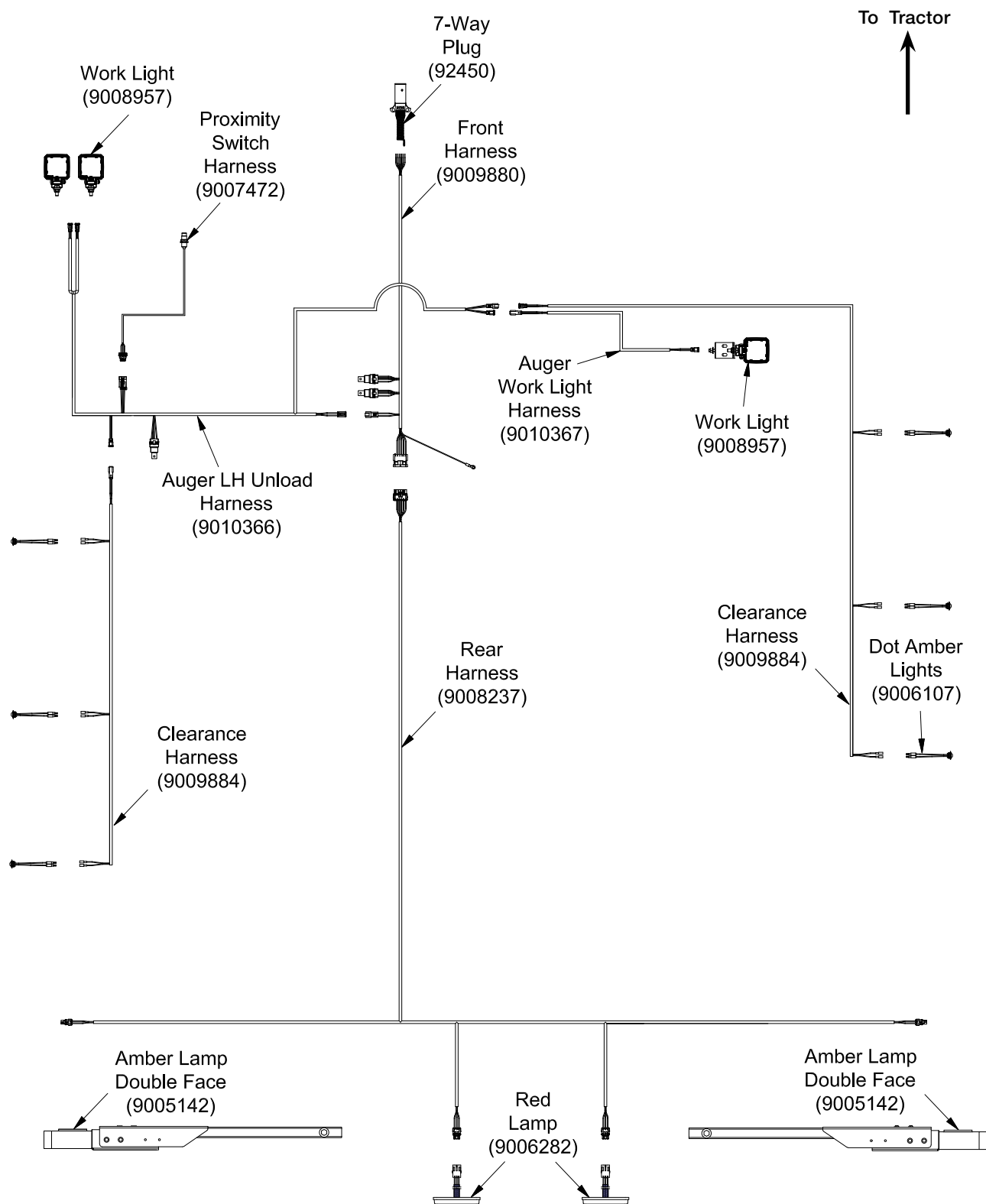
Brown - Tail

White - Ground

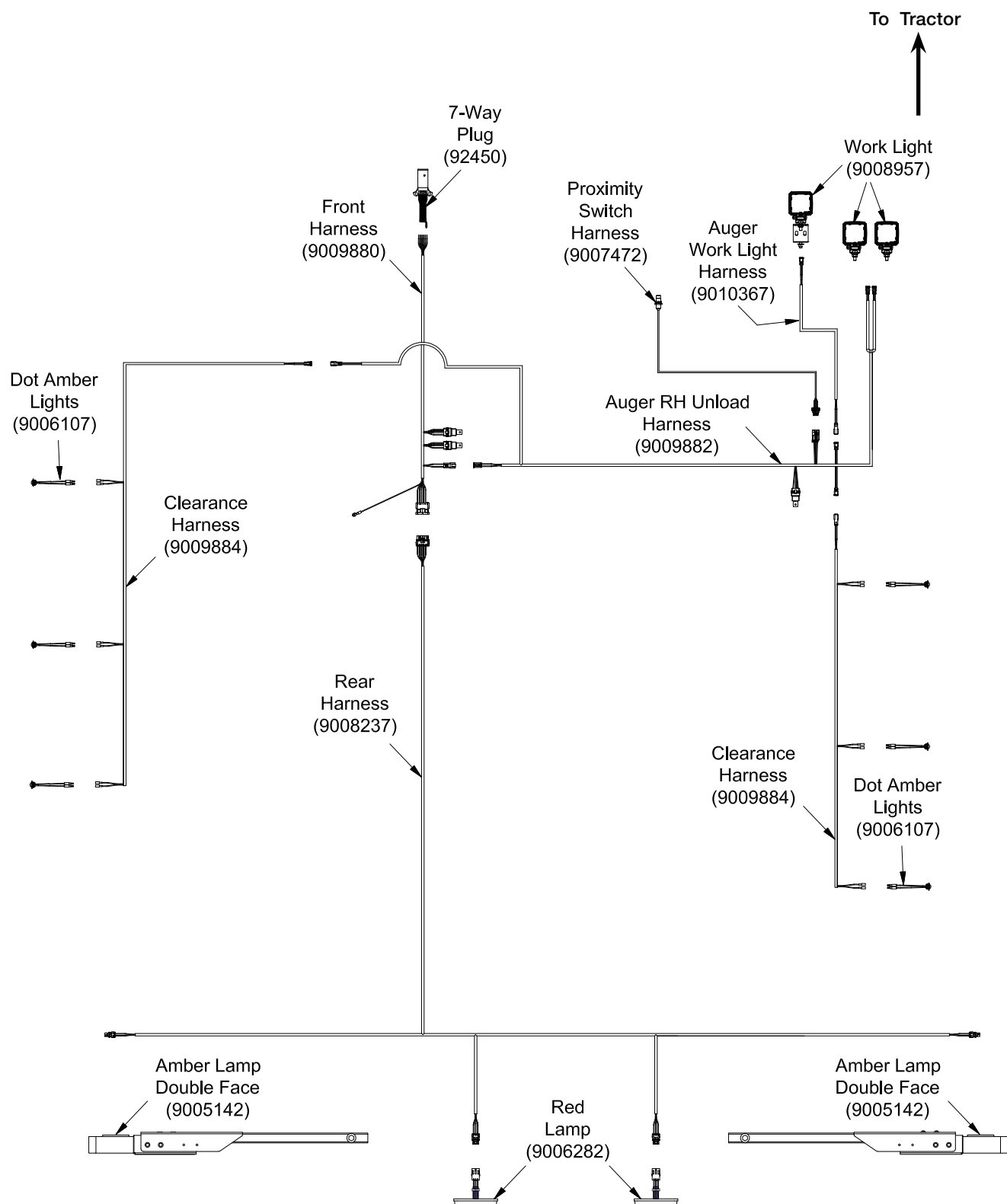
Red - Brake



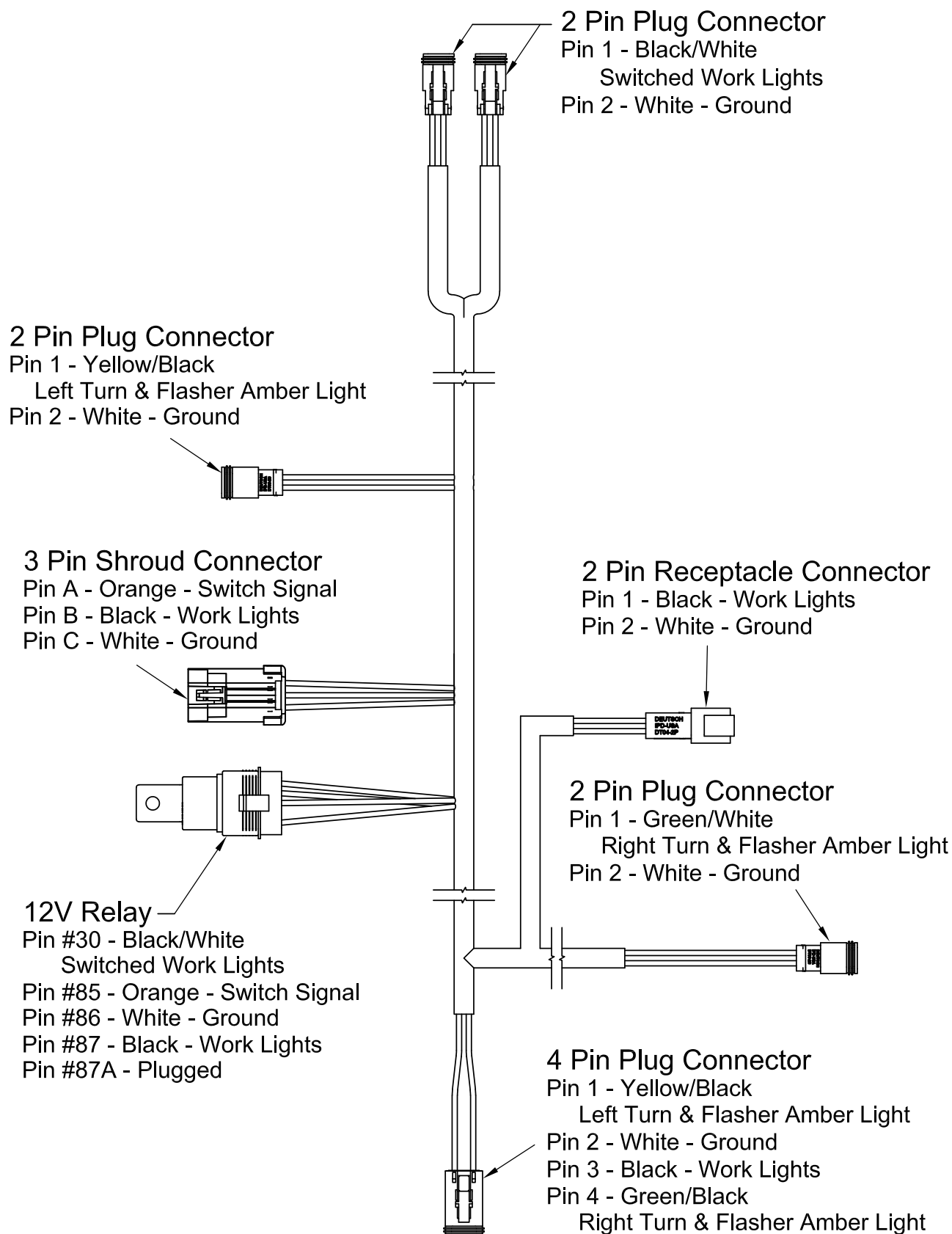
Electrical Diagram - Left-Hand Unload



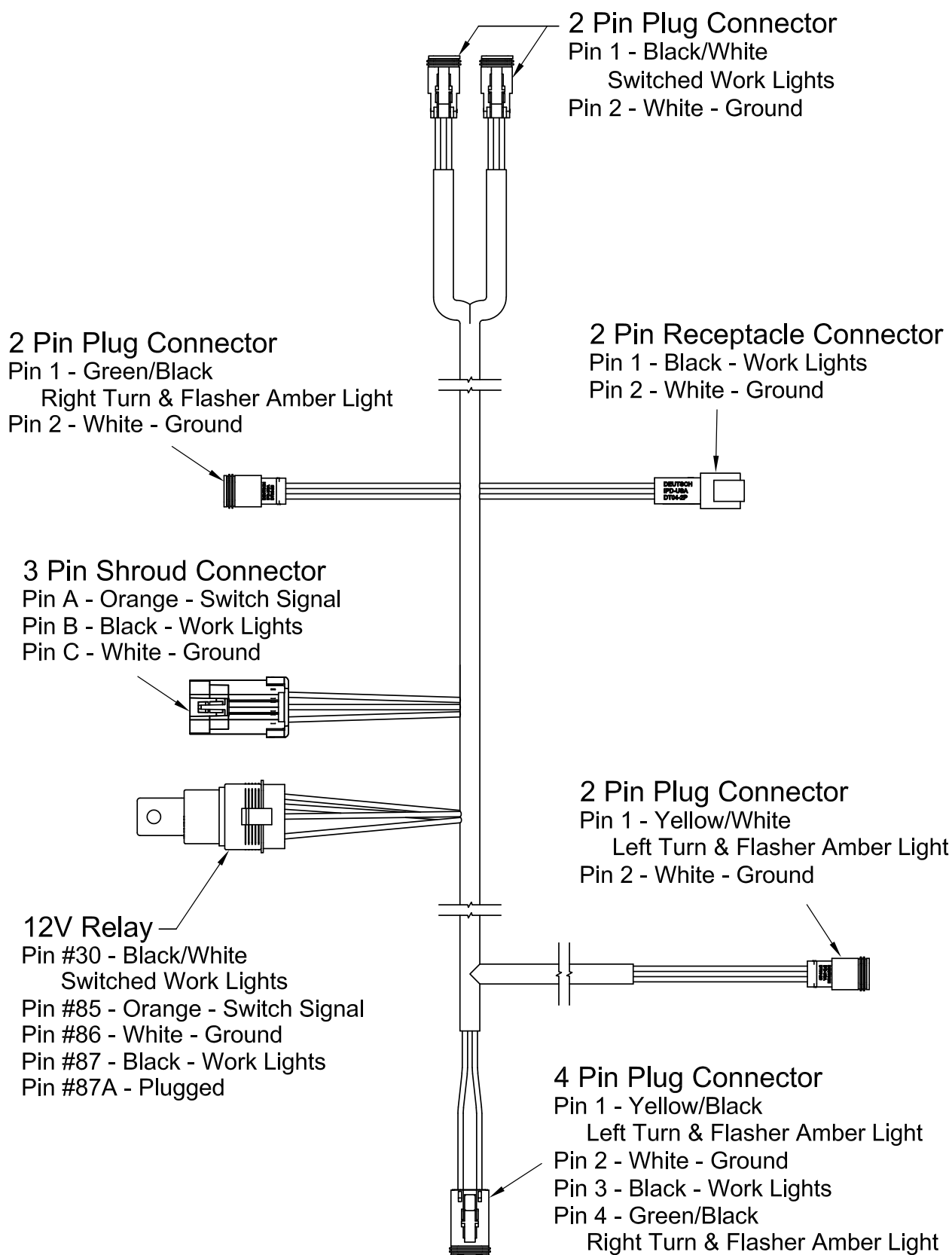
Electrical Diagram - Right-Hand Unload



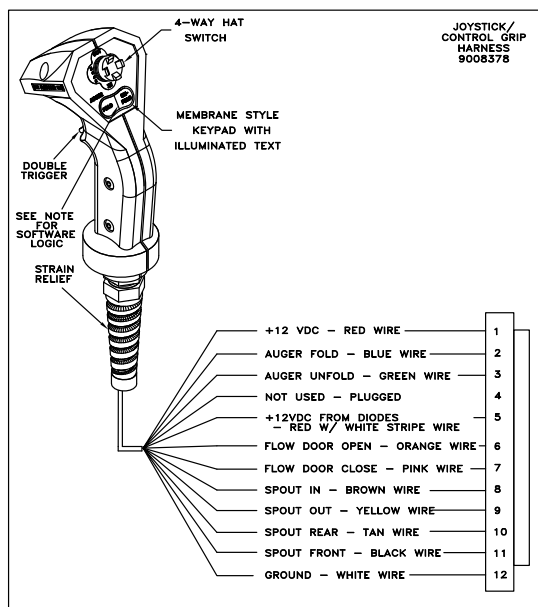
Electrical Diagram — LH Unload Auger Wiring Harness #9010366



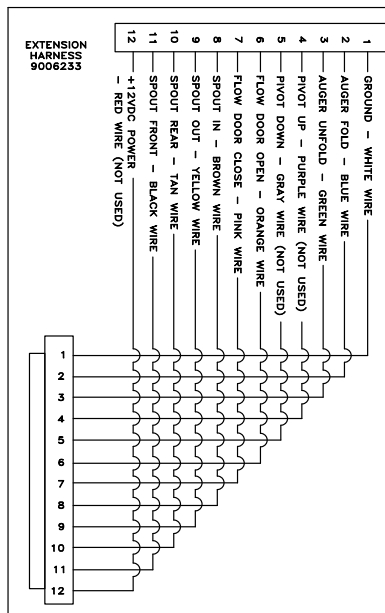
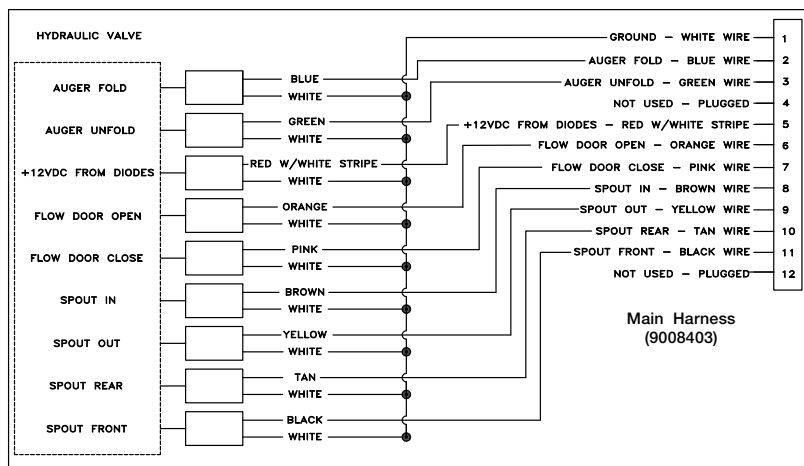
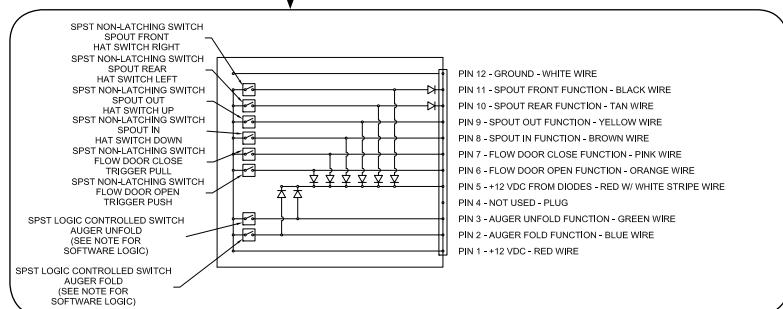
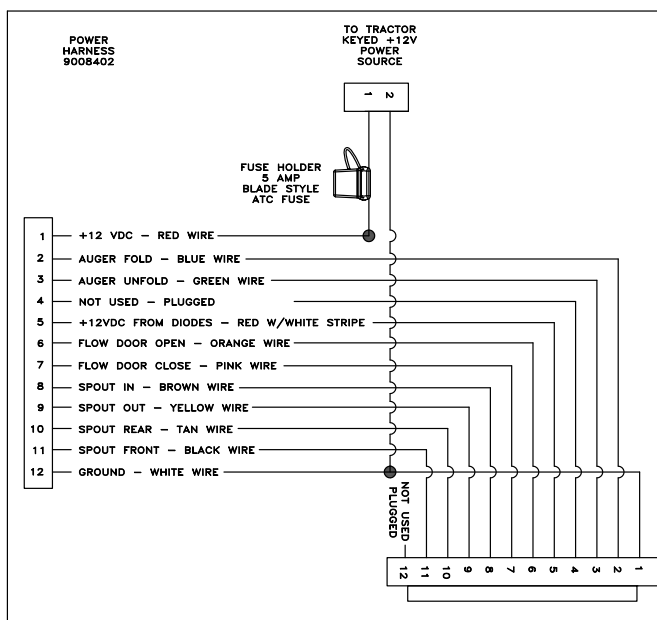
Electrical Diagram — RH Unload Auger Wiring Harness #9009882



Electrical Over Hydraulic (EOH) System Schematic 4 Function Optional

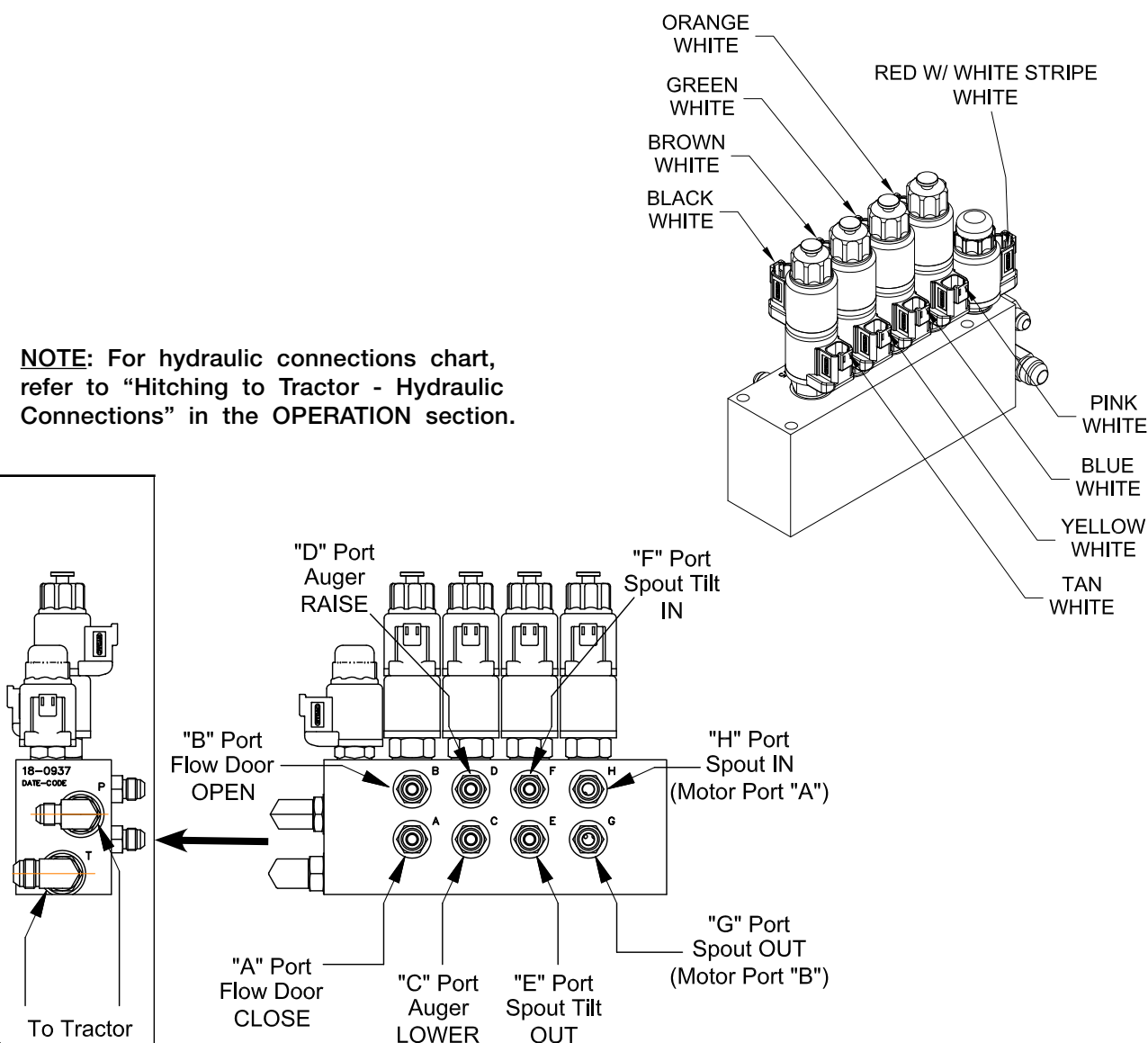


NOTE: It is recommended the joystick and 7-pin connector be plugged into the same power source.



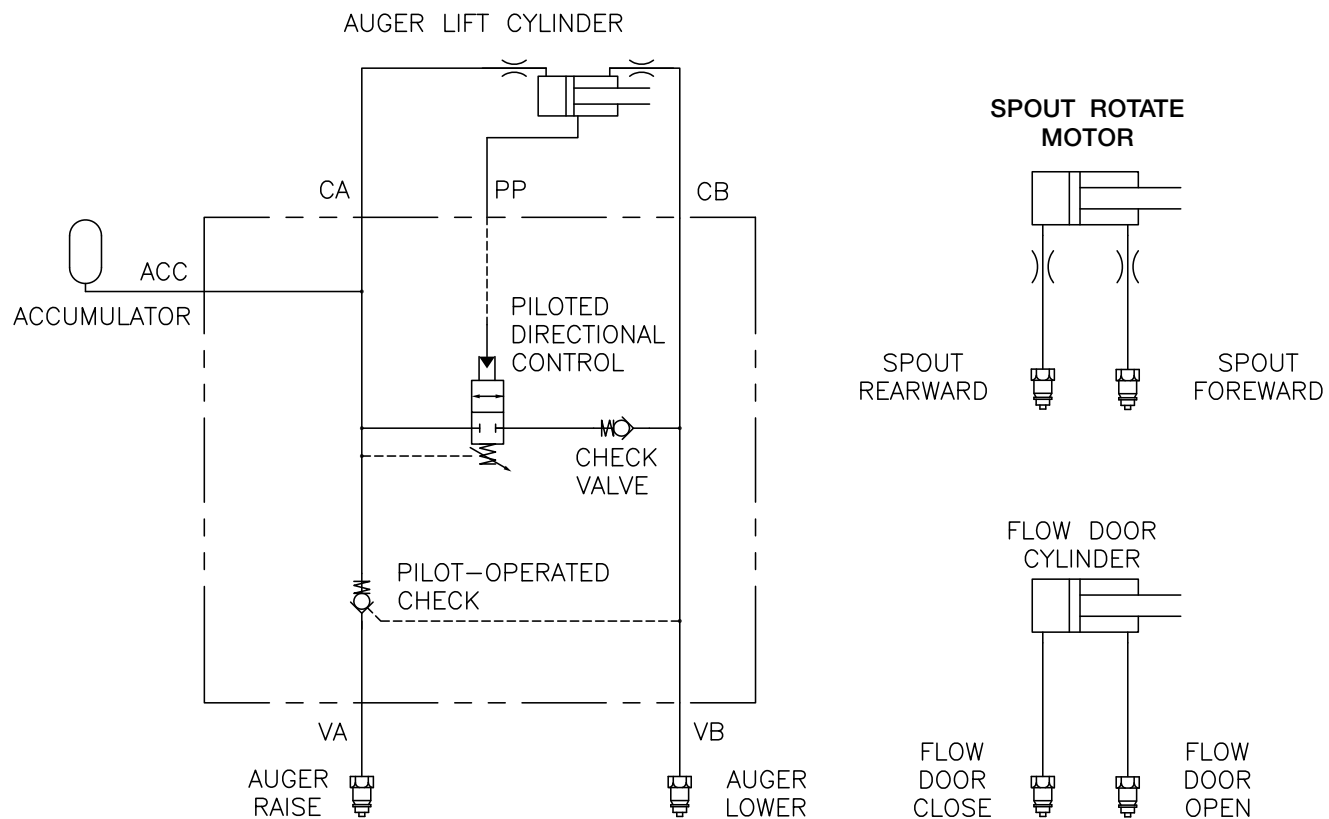
Optional Electric Over Hydraulic Valve Electric Schematic 4 Spool

NOTE: For hydraulic connections chart, refer to "Hitching to Tractor - Hydraulic Connections" in the OPERATION section.



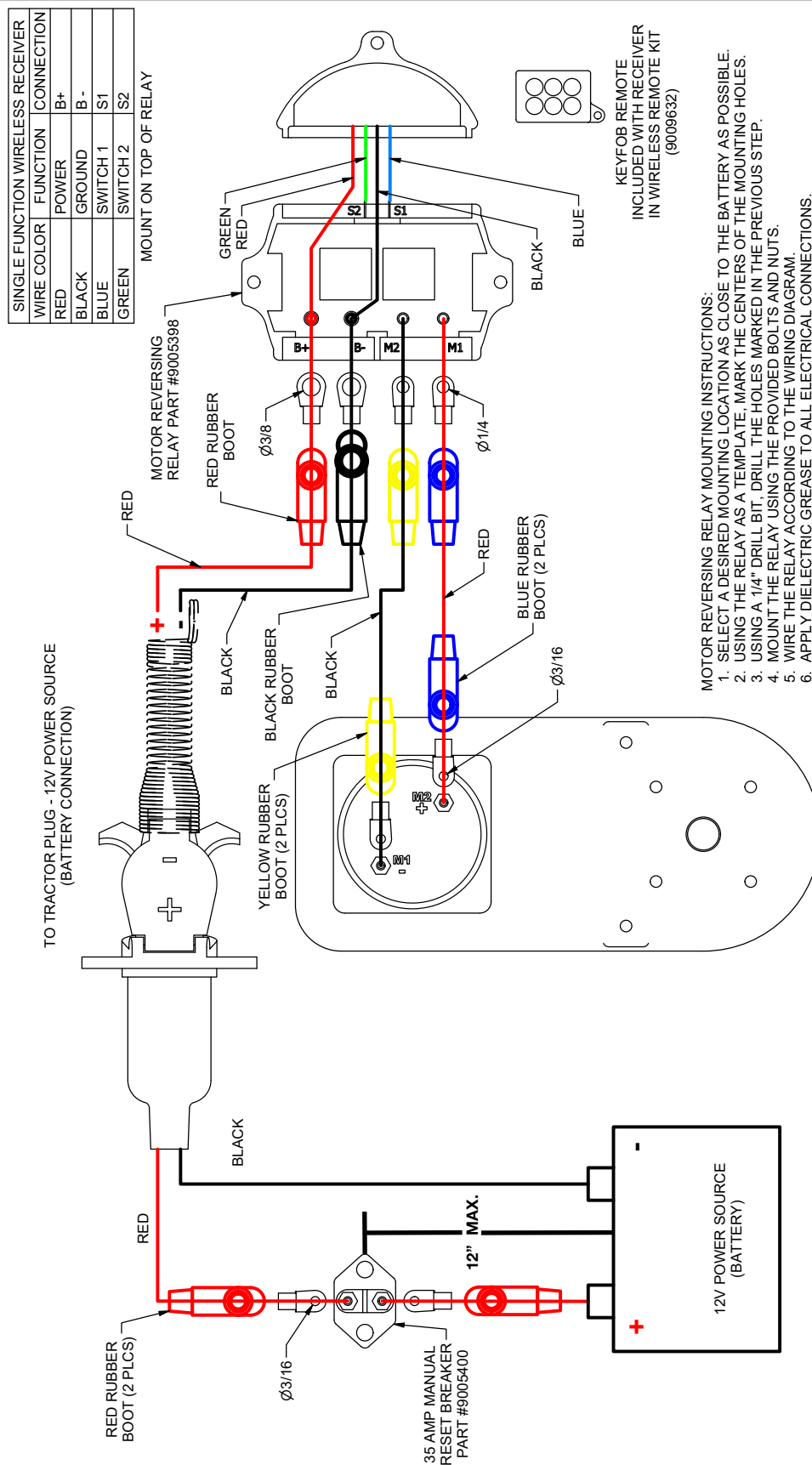
PORT	END OF CYLINDER	FUNCTION
A	BUTT END	FLOW DOOR CLOSE
B	RAM END	FLOW DOOR OPEN
C	RAM END	AUGER FOLD LOWER
D	BUTT END	AUGER FOLD RAISE
E	RAM END	SPOUT TILT OUT
F	BUTT END	SPOUT TILT IN
G	ORBIT MOTOR PORT A	SPOUT ROTATE OUT
H	ORBIT MOTOR PORT B	SPOUT ROTATE IN
P		TRACTOR PRESSURE
T		TRACTOR RETURN

Hydraulic System



ACC	HYDRAULIC ACCUMULATOR
CA	TO AUGER LIFT CYLINDER - CLEVIS END
CB	TO AUGER LIFT CYLINDER - ROD END
PP	TO AUGER LIFT CYLINDER - MIDDLE PORT
VA	PRESSURE TO EXTEND AUGER LIFT CYLINDER
VB	PRESSURE TO RETRACT AUGER LIFT CYLINDER

Electrical System Schematic - Optional Wireless Electric Tarp



NOTE: See separate electric tarp manual for additional information.

WIRELESS ELECTRIC TARP

Hydraulic Jack Cylinder Replacement

WARNING

- HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. USE CARD-BOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.
- RELIEVE THE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE THE HYDRAULIC POWER UNIT OPERATOR'S MANUAL FOR PROPER PROCEDURES.
- HYDRAULIC SYSTEM MUST BE PURGED OF AIR BEFORE OPERATING TO PREVENT SERIOUS INJURY OR DEATH.
- MOVING OR ROTATING COMPONENTS CAN CAUSE SERIOUS INJURY OR DEATH. ENSURE SERVICE COVERS, CHAIN/BELT COVERS AND CLEAN-OUT DOOR ARE IN PLACE AND SECURELY FASTENED BEFORE OPERATING UNIT.
- UNHITCHING A LOADED CART CAN CAUSE SERIOUS INJURY OR DEATH DUE TO TONGUE RISING OR FALLING. ALWAYS HAVE A LOADED CART ATTACHED TO A TRACTOR. THE JACK IS INTENDED TO SUPPORT AN EMPTY CART ONLY.
- 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 100 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.

1. Park the empty unit on a firm, level surface. Block tractor and machine to keep it from moving. Set the tractor parking brake, shut off the engine and remove the ignition key. Completely disconnect the PTO from the cart and tractor.
2. Attach hydraulic jack hoses to tractor SCV.
3. Open valve and lower jack leg to ground. DO NOT raise tongue.
4. Relieve pressure on hydraulic jack circuit. See tractor operator manual for procedure.
5. Close valve.
6. Support the hydraulic jack assembly with a safe lifting device rated for a minimum of 100 lbs.
7. Remove hydraulic jack hoses from tractor SCV.
8. Remove cylinder pin (272587) and snap rings (91192) from the base end of the cylinder at the lug on top of the tongue. (FIG. 4-42)

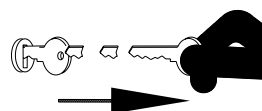
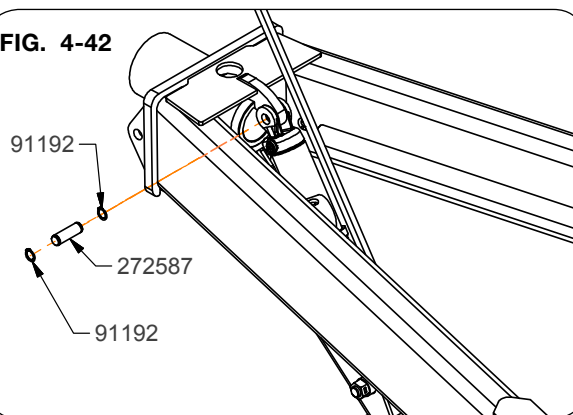
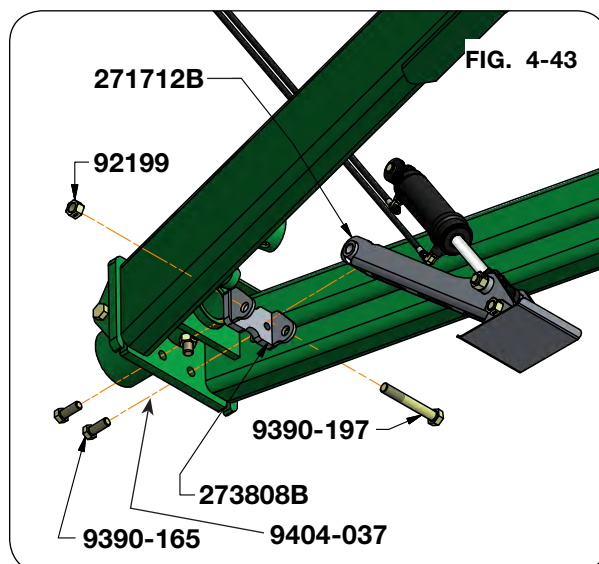


FIG. 4-42

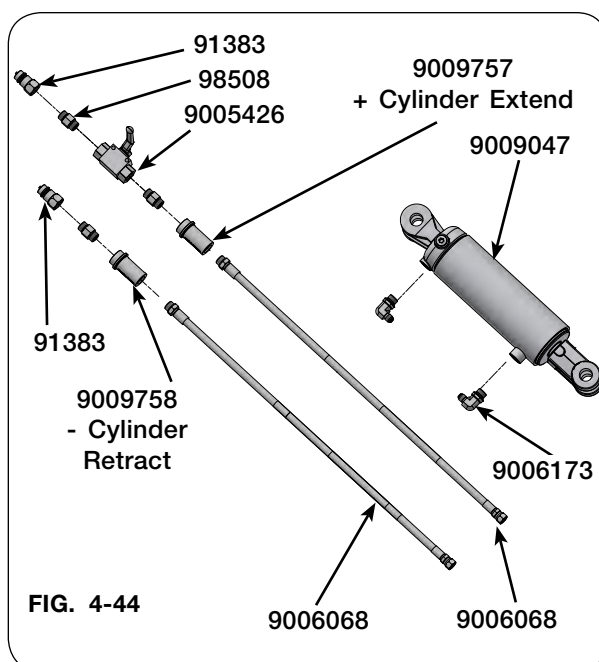


Hydraulic Jack Cylinder Replacement (continued)

9. Remove two 7/8"-9UNC x 2 1/4" capscrews (9390-165) and 7/8" lock washers (9404-037) from mounting bracket (273808B). (FIG. 4-43)
10. Remove hydraulic jack assembly from the tongue. (FIG. 4-43)



11. On new hydraulic assembly (294143B), attach hoses (9006068) and fittings to cylinder (9009047). (FIG. 4-53) The valve needs to be assembled to the hose on the base end of the cylinder. Assemble the fittings on the cylinder so they face each other, then store the hydraulic hoses on the hose caddy.
12. To reassemble hydraulic jack, see "Optional Hydraulic Jack" in SET UP section.



Complete Torque Chart

Capscrews - Grade 5

NOTE:

- Grade 5 capscrews can be identified by three radial dashes on the head.
- For wheel torque requirements, refer to Wheels and Tires.
- Tighten U-bolts evenly and equally to have the same number of threads exposed on each end.



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

IMPORTANT

- Follow these torque recommendations except when specified in text.

Complete Torque Chart

Capscrews - Grade 8

NOTE:

- Grade 8 capscrews can be identified by six radial dashes on the head.
- For wheel torque requirements, refer to Wheels and Tires.
- Tighten U-bolts evenly and equally to have the same number of threads exposed on each end.



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

IMPORTANT

- Follow these torque recommendations except when specified in text.

Hydraulic Fittings – Torque and Installation

⚠ WARNING

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



Tightening O-Ring Fittings

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

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

Dash Size	Thread Size	Straight Stud Torque (Ft-Lbs)	Adjustable Stud Torque (Ft-Lbs)
-5	1/2-20	14-19	10-14
-6	9/16-18	18-24	12-16
-8	3/4-16	27-43	20-30
-10	7/8-14	36-48	30-36
-12	1-1/16-12	65-75	44-54
-14	1-3/16-12	75-99	53-70
-16	1-5/16-12	85-123	59-80
-20	1-5/8"-12	115-161	75-100
-24	1-7/8"-12	125-170	105-125

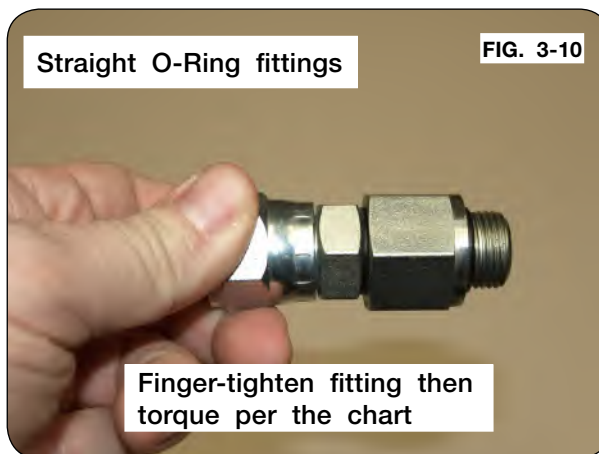
O-Ring fittings

FIG. 3-9



Straight O-Ring fittings

FIG. 3-10



Finger-tighten fitting then torque per the chart

Hydraulic Fittings - Torque and Installation

Tightening JIC Fittings

1. Inspect all components for damage or contamination. Do not connect any other type of fitting to a JIC fitting.
2. Lubricate the threads.
3. Turn the fitting into the port until it bottoms out.
4. Use one wrench on the fixed hex on the hose to prevent twisting and a second on the swivel. Tighten the fitting another 60 degrees (or one flat)

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

