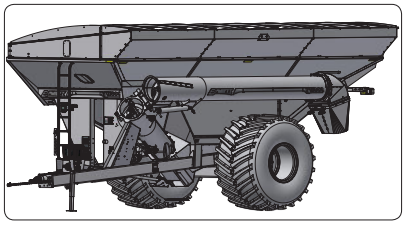
Grain Cart Maintenance



Grain Handling

CORNER-AUGER GRAIN CART
MODELS V1300 / V1500

Serial Number B45580100 & Higher

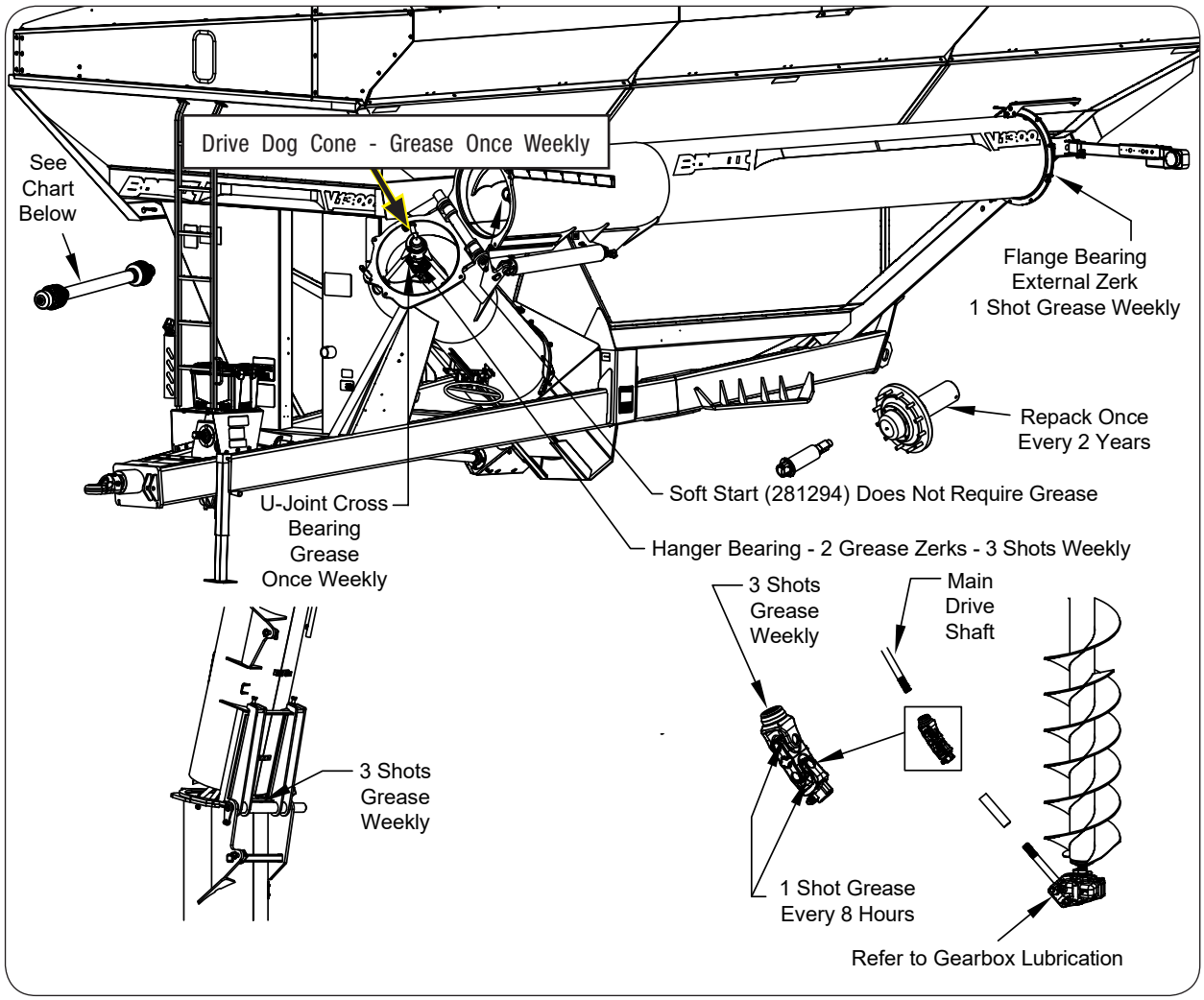
Part Number 297936

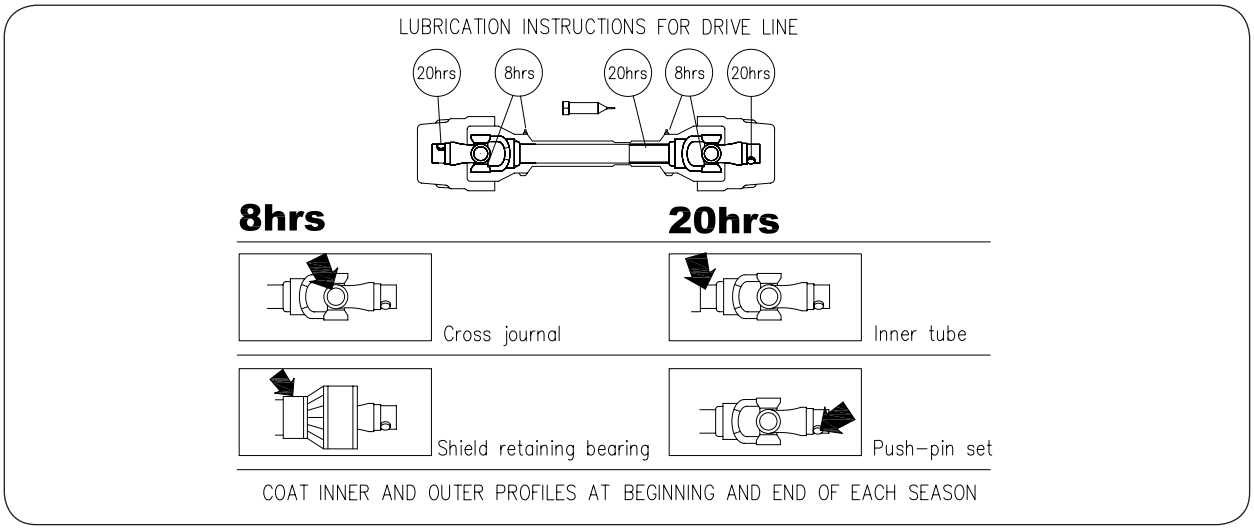
Section IV
Maintenance

FOR SCALE, TRACK, UHARVEST, HYDRAULIC DRIVE, ELECTRIC TARP, AND / OR WATER DELIVERY SYSTEM INFORMATION, PLEASE REFER TO THE INDIVIDUAL MANUALS.

Lubrication

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. Make sure to use NLGI-2 high quality EP grease.

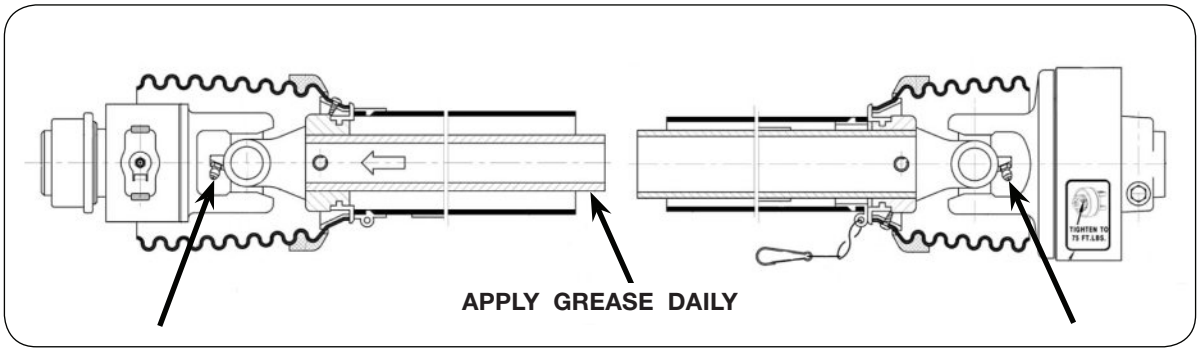




Lubrication (continued)

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.

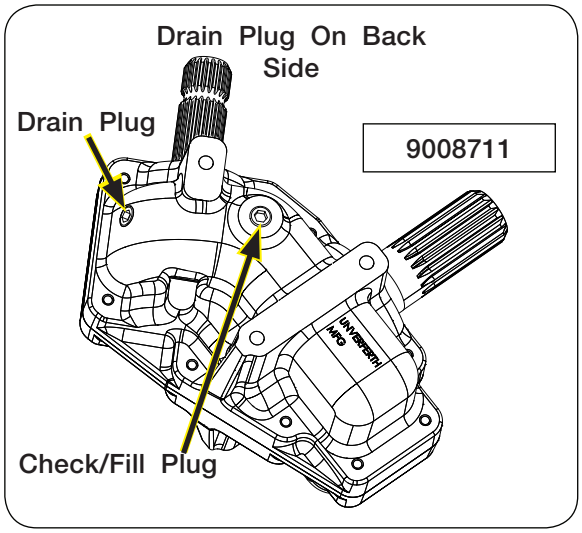
NOTE: Telescoping members must have lubrication to operate successfully regardless of whether a grease fitting is provided for that purpose! Telescoping members without fittings should be pulled apart and grease should be added manually.



Gearbox Lubrication

Gearbox 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.

For Maximum gearbox life:
Check oil level every 2 weeks.
Replace oil every season with 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" 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

- **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.**

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.

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.

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: 7-pin connector must be plugged into the tractor in order for the EOH system to operate.

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

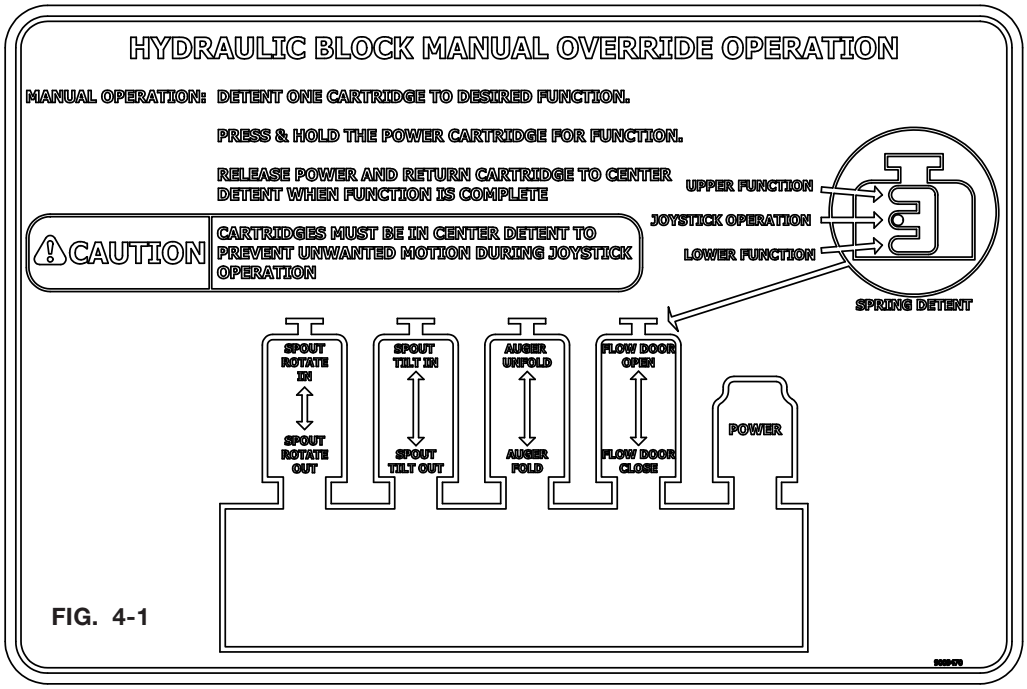


FIG. 4-1

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.

(Continued on next page)

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 postion. (FIG 4-2 & 4-3)

4. Locate desired function on valve (9008416) then move cartridge to top/bottom detent, as desired, and lock in position. (FIG. 4-2)

5. Push and hold the power cartridge on valve (9008438). (FIG. 4-4)

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. 4-2 & 4-3)

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, auger and/or rotating spout issues in the MAINTENANCE section.

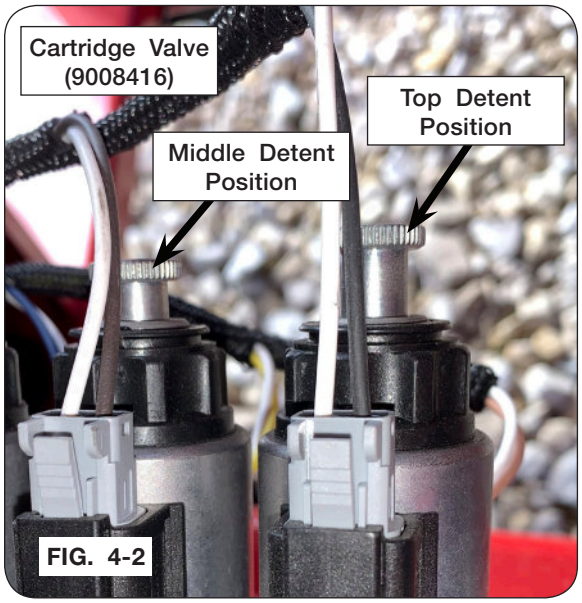


FIG. 4-2

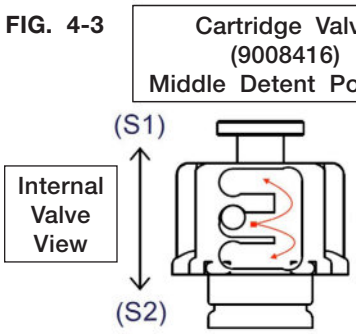


FIG. 4-3

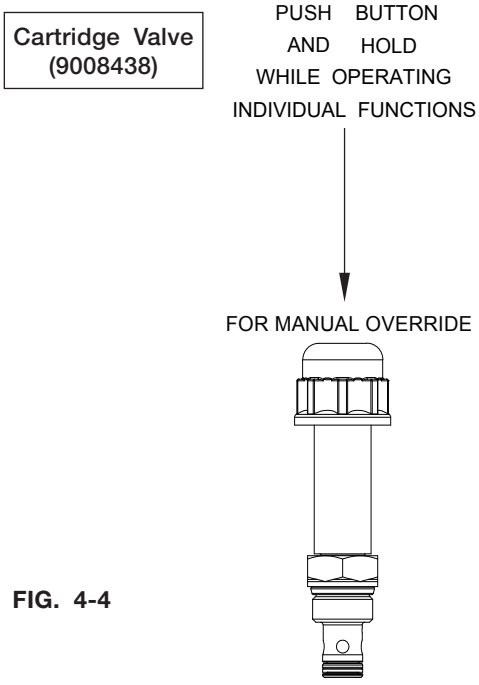


FIG. 4-4

Auger System

⚠ WARNING

- **TO PREVENT PERSONAL INJURY OR DEATH, 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.**

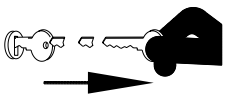
- **FALLING OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT WORK UNDER THE MACHINE AT ANY TIME WHILE BEING HOISTED. BE SURE ALL LIFTING DEVICES AND SUPPORTS ARE RATED FOR THE LOADS BEING HOISTED. THESE ASSEMBLY INSTRUCTIONS WILL REQUIRE SAFE LIFTING DEVICES UP TO 1,000 LBS. SPECIFIC LOAD RATINGS FOR 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)

Lower Auger

1. Hitch cart to tractor. Fully open auger flow door. Fold auger to transport 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 lock nuts (9003398) and shims that secure the hanger bearing bracket to the auger tube. (Fig. 4-5)

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.

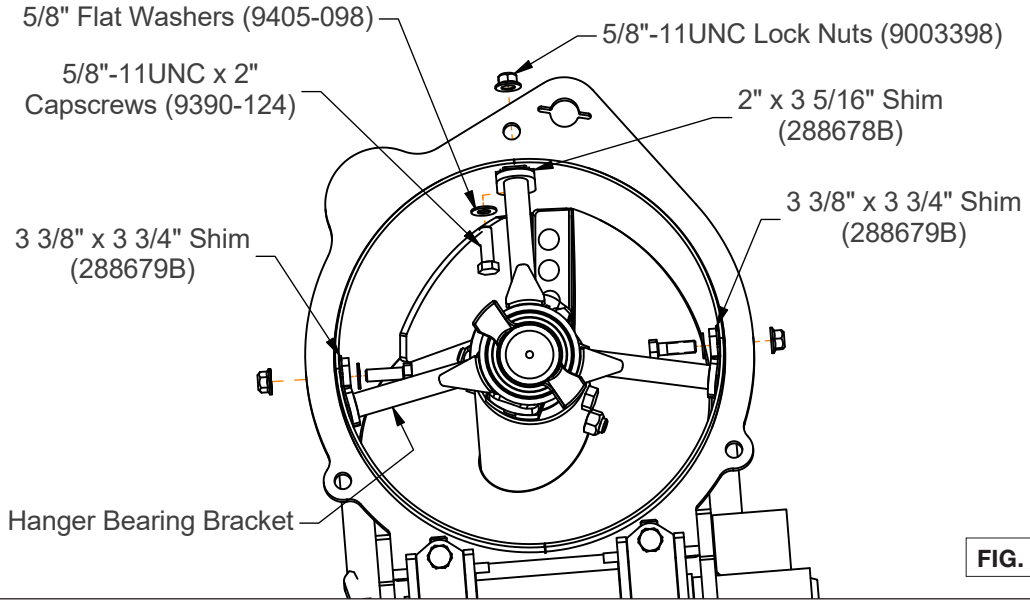


FIG. 4-5

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 4-6 for reference.

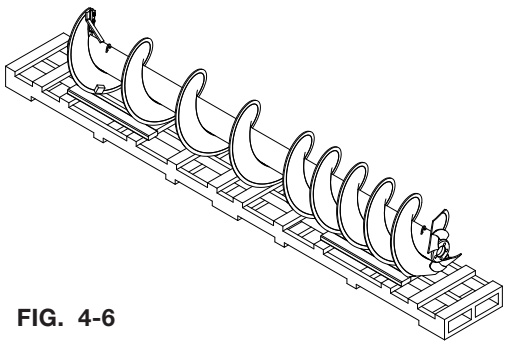


FIG. 4-6

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

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

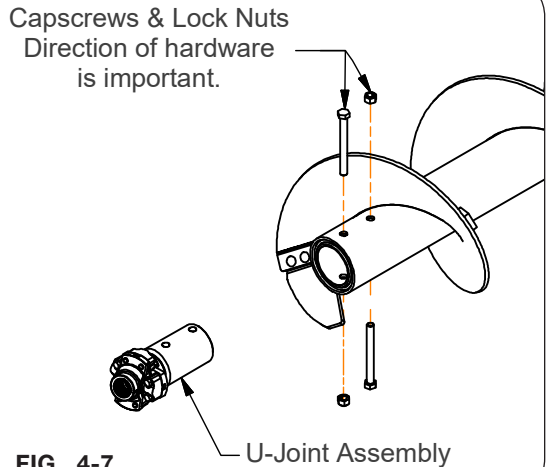


FIG. 4-7

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. 4-8)

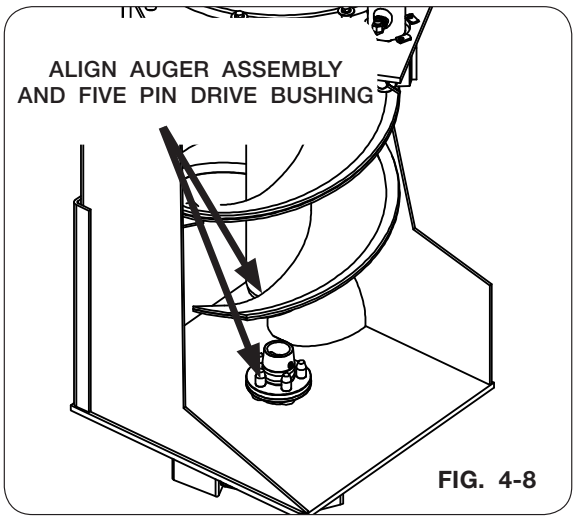
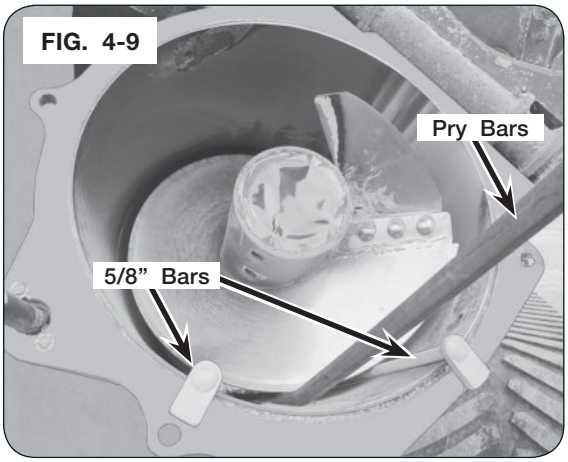


FIG. 4-8

Auger System (continued)

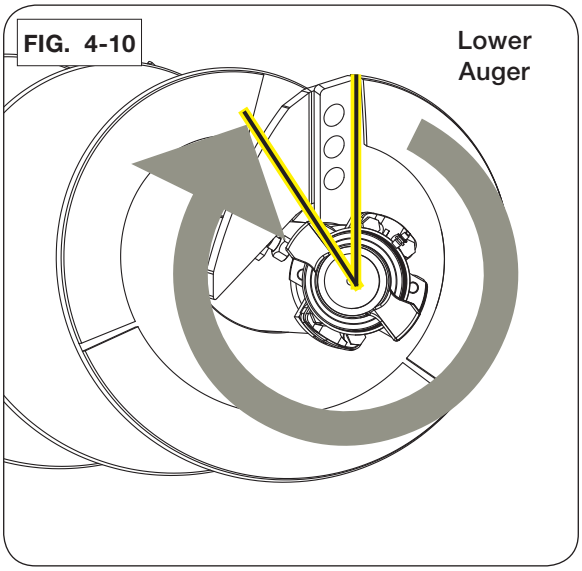
Hanger Bearing Centering

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. 4-9)



Lower Auger Timing

9. Apply anti-seize to the splines before sliding the drive dog through the hanger bearing and into the u-joint. Time the drive dog (Fig. 4-10) 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.

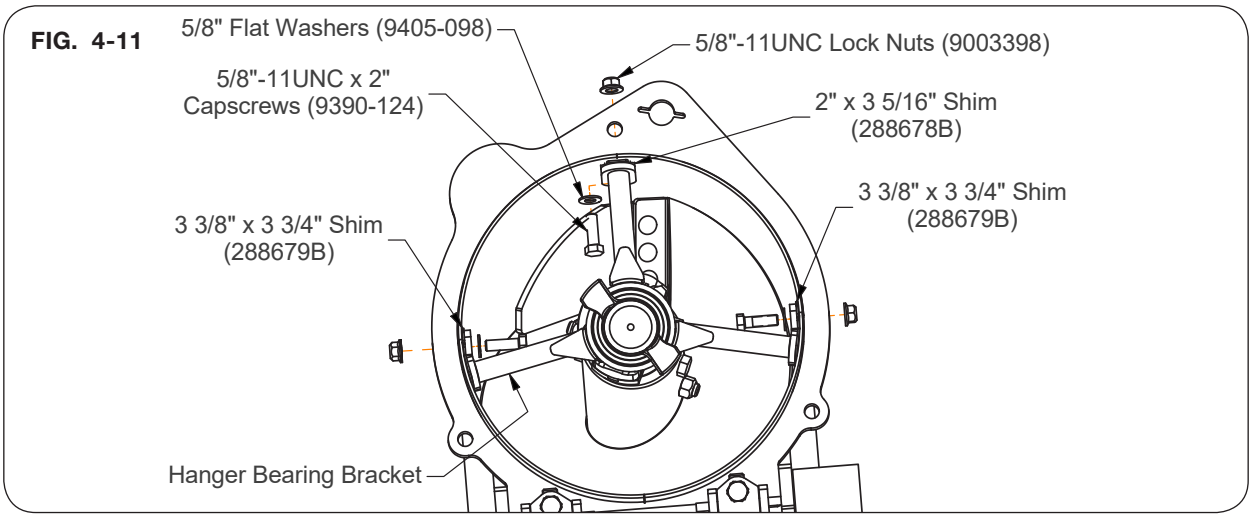


NOTE: When looking down at the lower flighting (Fig. 4-10) the auger rotation will be clockwise.

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 one 3” x 3 9/16” left-hand shim (288679B), one 3” x 3 9/16” right-hand shim (288679B), three 5/8”-11UNC x 2” capscrews (9390-124), three 5/8” flat washers (9405-098), and three 5/8”-11UNC lock nuts (9003398). (Fig. 4-11)



U-Joint Spline Gap

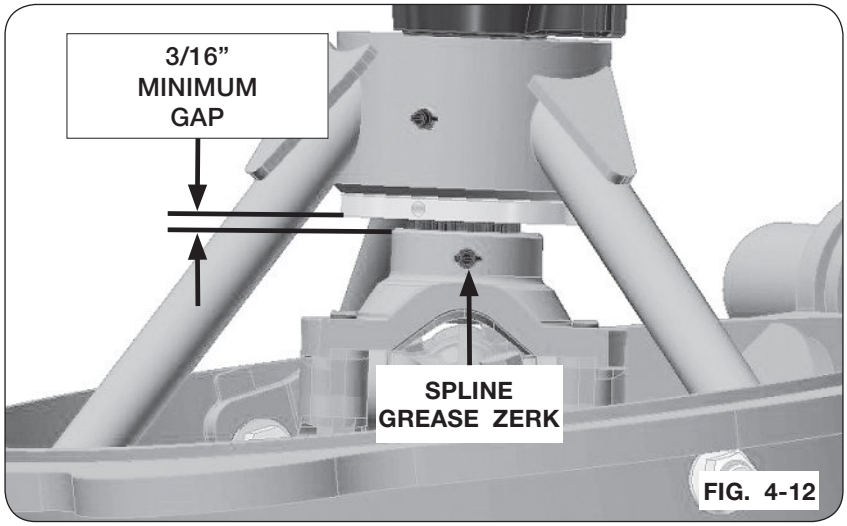
11. Verify spline gap before tightening hanger bearing hardware. Spline gap should be a minimum of 3/16”. Using a lifting device rated for 250 pounds, raise the hanger bearing in the holes so the proper minimum spline gap is achieved. (Fig. 4-12)

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. 4-12)

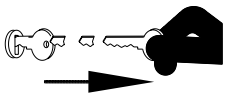
14. Fold upper auger to unload position and have a second user visually check for auger engagement. Test run augers at slow speed.



Auger System (continued)

Upper Auger

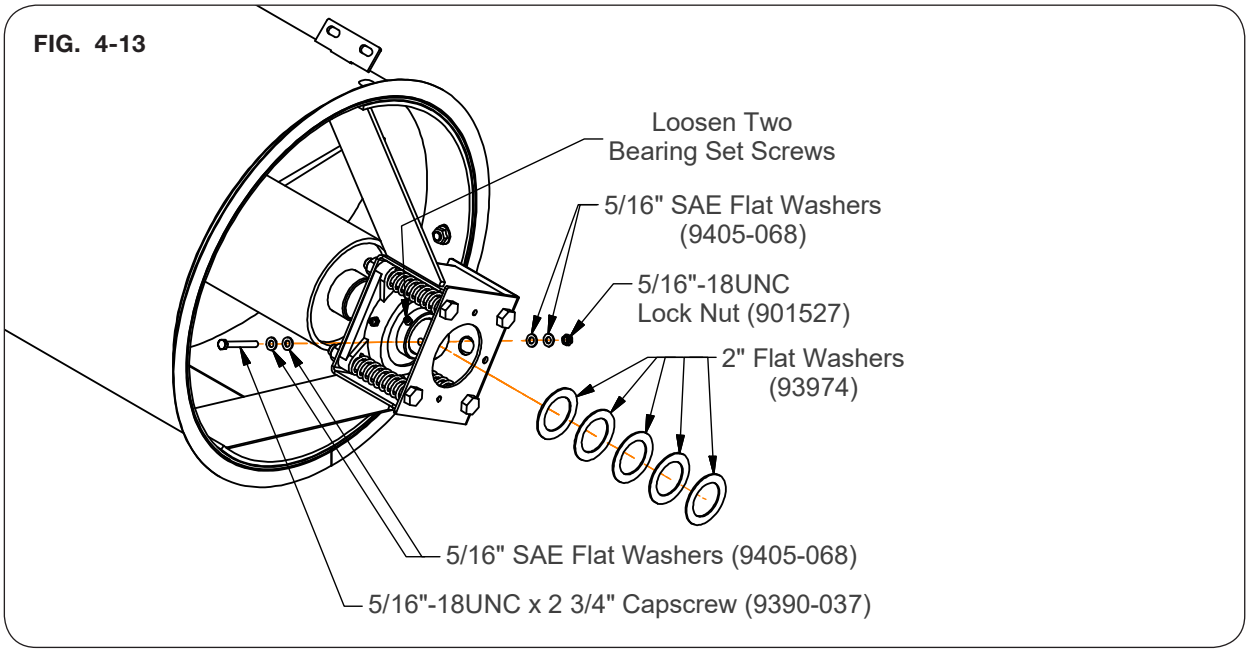
1. Hitch cart to tractor, then fold upper auger to the transport position. Park the empty grain cart on a firm, level surface. Set the tractor's parking brake, shut-off the engine and remove the ignition key. Block the machine to keep it from from moving.



Upper Auger Removal

2. Loosen the two bearing set screws. Remove and save the 5/16"-18UNC x 2 3/4" cap-screw (9390-037), four 5/16" SAE flat washers (9405-068) 5/16"-18UNC lock nut (901527) and 2" flat washers (93974). (Fig. 4-13)

FIG. 4-13



Auger System (continued)

Soft Start Replacement

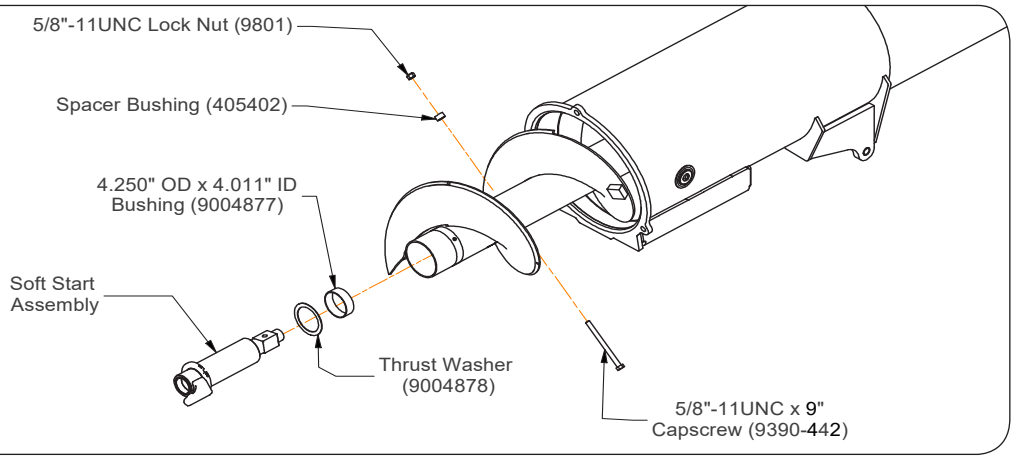
3. Use a safe lifting device rated at a minimum of 2,000 lbs. to support the upper auger, remove auger flighting from tube.

4. Remove the 5/8”-11UNC x 9” capscrew (9390-442), 5/8”-11UNC lock nut (9801), soft start assembly, spacer bushing (405402), thrust washer (9004878), and bushing (9004877). Discard 5/8”-11UNC capscrew (9390-442), 5/8”-11UNC lock nut (9801), and spacer bushing (405402). (Fig. 4-14)

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

5. 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. 4-14)

FIG. 4-14



Upper Auger Timing

6. Time the drive pin (as in Fig. 4-15) with the finished edge of the flighting at 12:00. Position the drive pin at 7:00.

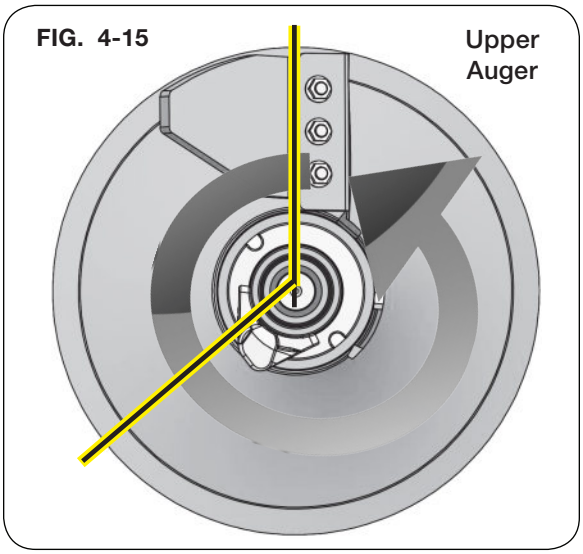
NOTE: Looking up at the upper flighting (FIG. 18) the auger rotation will be counter clockwise.

NOTE: Grain leaving the lower auger flighting should be captured by the upper auger flighting within 1/2 revolution of the augers.

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 (288932Y).

FIG. 4-15



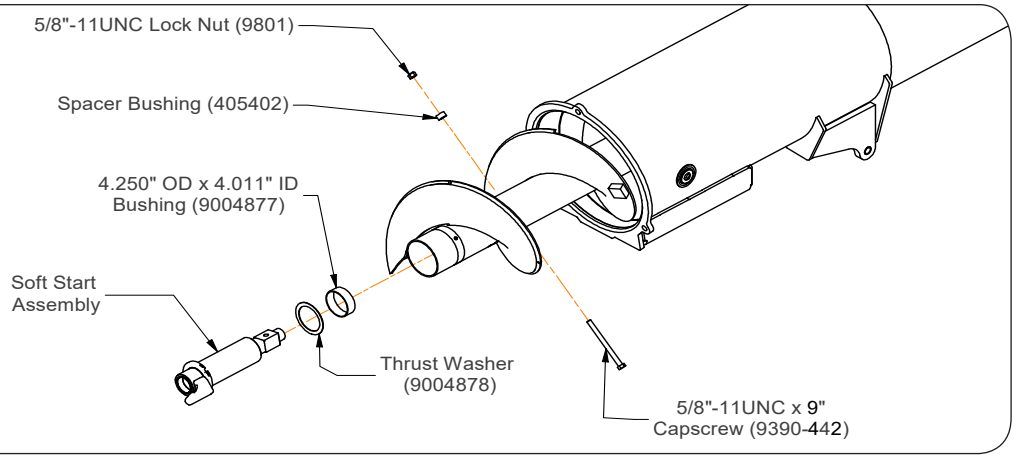
Auger System (continued)

Soft Start Replacement (continued)

7. Insert the 5/8”-11UNC x 9” capscrew (9390-442) through auger center-tube and soft start. Place spacer bushing (405402) over threads and retain with locknut (9801). (Fig. 4-16)

NOTE: Verify that the spacer bushing is on the locknut side of the auger center tube.

FIG. 4-16



NOTE: The replacement auger flighting is factory balanced. Remove entire auger from shipping crate and secure from rolling. The upper auger flighting assembly is pictured in figure 4-17 for reference.

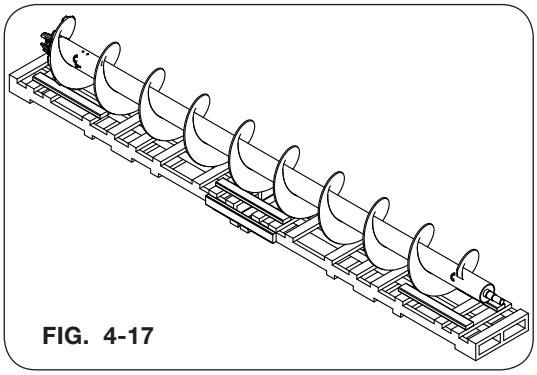


FIG. 4-17

8. Using an adequate hoist and slings with a minimum capacity of 2,000 lbs. to support the upper auger, install upper auger flighting into the tube and through top flange bearing.

Auger System (continued)

Upper Auger Height

9. Set upper auger in-set of 4". With the upper auger in the folded/transport, ensure the face of the soft start bushing that sits on the top of the drive dog should be 4" back from the square cut face of the auger housing tube. (Fig. 4-18)

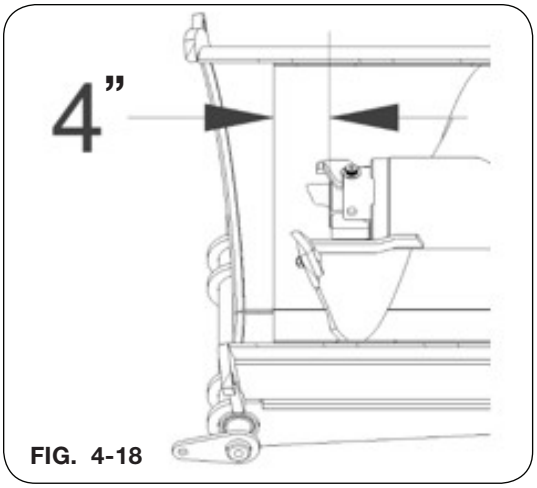
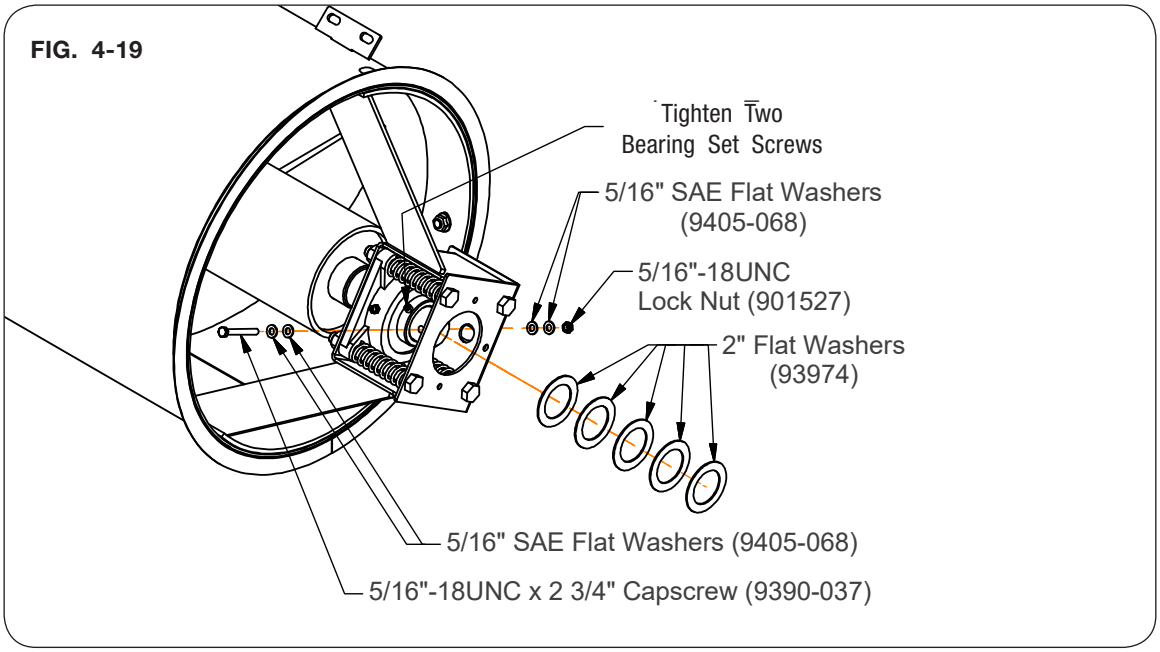


FIG. 4-18

10. Make sure the 4 bolt flange bearing is sitting tightly 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" crossbolt (9390-037), four 5/16" SAE flat washers (9405-068) 5/16"-18UNC lock nut (901527) and as many 2" flat washers (93974) as required to fill the gap between the bearing and the cross bolt. (Fig. 4-19)

FIG. 4-19



Auger System (continued)

Upper Auger Bearing Gap

11. Engage PTO and test run augers to ensure drive dogs are engaged. Stop PTO, shut off tractor and remove key.

12. Verify the upper auger bearing height by inspecting the upper auger bearing in operating position. There must be a 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. (Fig. 4-20) If gap is present, no action is needed, proceed to next step. If no gap or gap is too large, Re-adjust the upper auger placement to achieve a 1/16-1/8" gap. If there is no gap, the upper auger will need to be moved ahead. If there is too large of a gap, move it backwards in the upper auger housing. The number of washers (93974) will also need to be adjusted to eliminate any gap between the bearing and the cross bolt. (Fig. 4-21)

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

14. 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.

15. Remove upper auger tube plug and visually verify upper and lower auger engament. (Fig. 4-22)

17. If upper and lower auger engagment is good, install upper auger tube plug

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

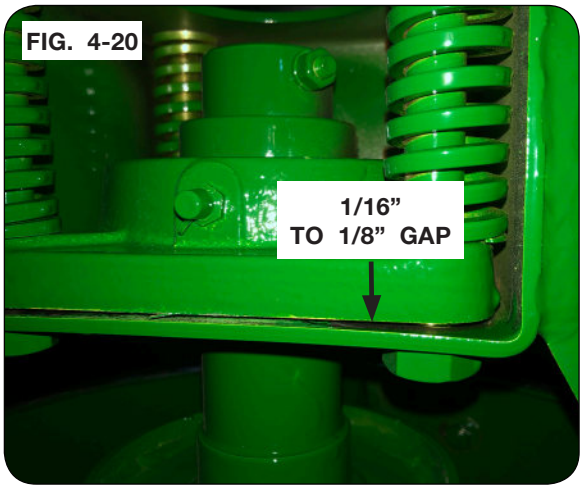


FIG. 4-20

FIG. 4-21

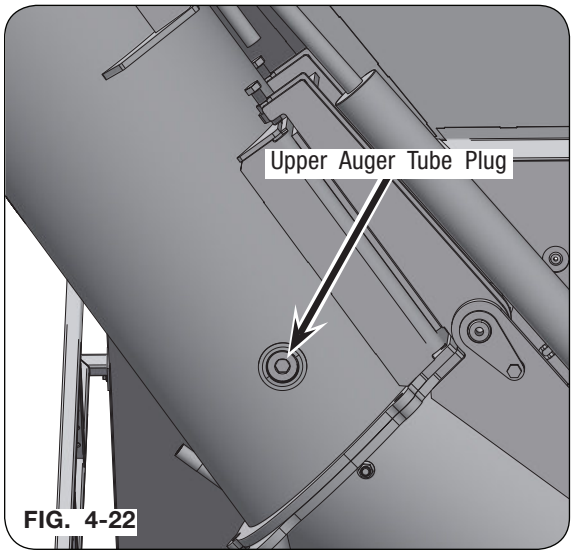


FIG. 4-22

Auger System (continued)

Auger Flow Door Cylinder Replacement

WARNING

- **TO PREVENT PERSONAL INJURY OR DEATH, 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.**

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

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

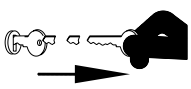
- **RELIEVE THE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE THE HYDRAULIC POWER UNIT OPERATOR'S MANUAL FOR PROPER PROCEDURES.**

- **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.**

- **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 5000 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

1. Park the empty grain cart on a firm, level surface and extend auger. Block the machine to keep it from moving. Unfold upper auger to make the flow door cylinder easier to access. Close the flow door, relieve hydraulic pressure, see tractor operator's manual. Set the tractor's parking brake, shut-off the engine, remove the ignition key and disconnect the PTO shaft.



Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

2. On the inside of the cart, open the screen service access panel. (Fig. 4-23)

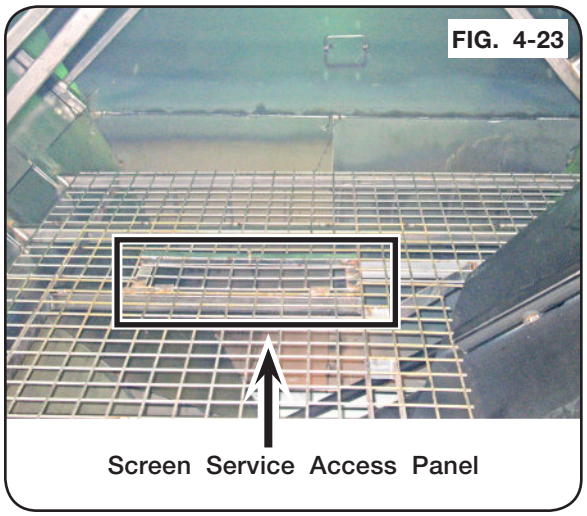


FIG. 4-23

3. Remove the cotter pins from the lower cylinder pin then remove the pin. Then remove the four 3/8"-16UNC x 1" flange bolts holding on the gasket and gasket plate. (Fig. 4-24)

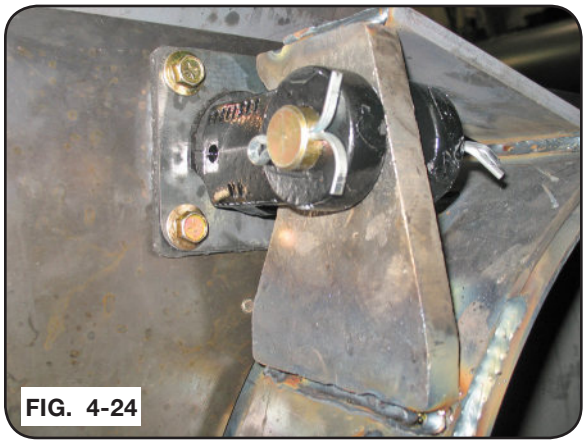
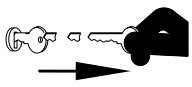


FIG. 4-24

4. Remove all tools and extra hardware from the grain cart. Make sure all personnel are outside of the hopper. Then, retract the cylinder so that there is about 8" of clearance between the cylinder clevis and the lug.

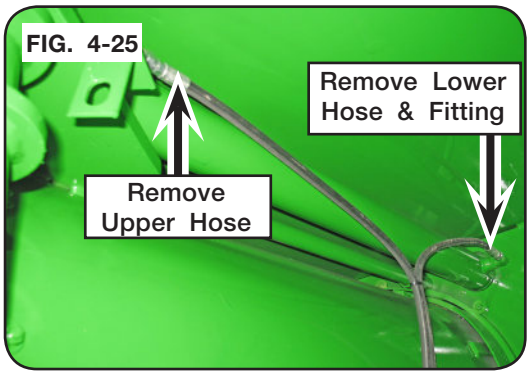
5. Relieve hydraulic pressure, shut off the engine, remove the ignition key, and disconnect the hydraulic hoses from the tractor and cart.



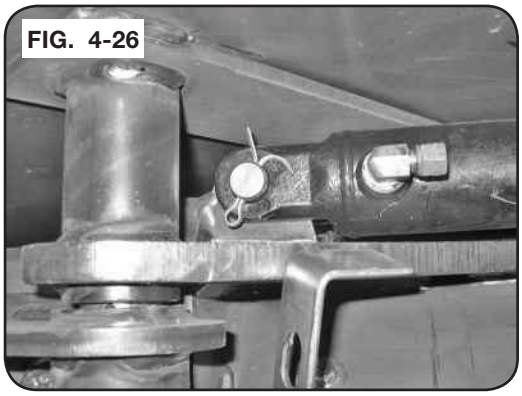
Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

6. Label the hydraulic hoses to indicate upper and lower. Disconnect them from the cylinder, along with the lower hydraulic fitting. (Fig. 4-25)



7. Remove the cotter pins from the upper cylinder pin and remove pin. (Fig. 4-26)



8. Slide the flow door cylinder through the hole in the junction box until the upper cylinder clevis clears the lug, then raise the top of the cylinder above the auger fold bushing. Using a safe lfiting device rated for 200 lbs. remove the cylinder.

9. Replace with the new cylinder and insert the upper cylinder pin. Remove the cylinder port plugs. Manually extend the cylinder until the lower clevis lines up with the door lug and assemble the pin and cotter pins. Assemble hydraulic fittings and attach hoses.

10. Replace rubber gasket and gasket plate with 3/8”-16UNC x 1” flange screws, shut and secure the screen service access panel.

11. Remove all tools and extra hardware from the grain cart. Make sure all personnel are outside of the hopper. After the hydraulic components have been tightened, 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.

Auger System (continued)

Auger Floor 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 ENTANGLED IN A ROTATING DRIVELINE.**

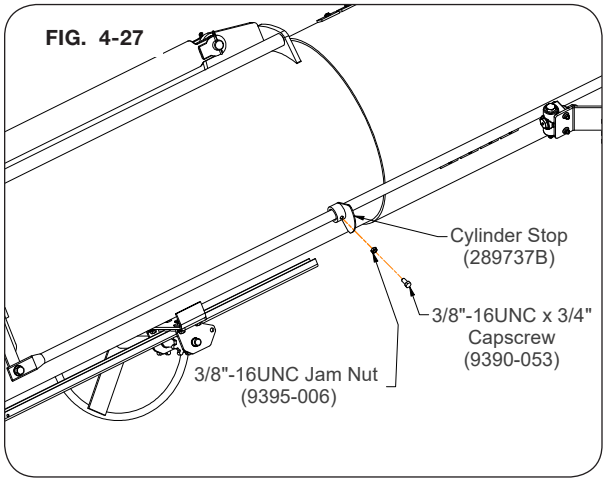
1. Before loading cart or operating auger, verify that the flow control door is closed.
2. Choose an area free from obstructions and unfold auger into unloading position. Allow sufficient time for the cylinder to fully engage the two augers.
3. Locate the cylinder stop on the flow door indicator rod. (Fig. 4-27)
4. Loosen the capscrew and jam nut retaining the cylinder stop.

NOTE: Ensure the cylinder stop is centered on the flow control valve plunger and will not contact hoses during movement of the flow door.

5. Move the cylinder stop along the indicator rod to desired flow door opening setting, and tighten retaining screw and jam nut.

NOTE: In order to increase grain flow to the maximum bushels per minute, cylinder stop (289737B) can be adjusted further down on the indicator rod. (Fig. 4-27)

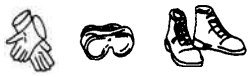
FIG. 4-27



Auger Driveline

⚠ WARNING

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



- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE MACHINE IS SECURELY BLOCKED.**

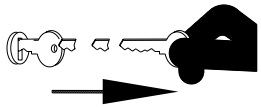
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

- **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.**

- **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 2000 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

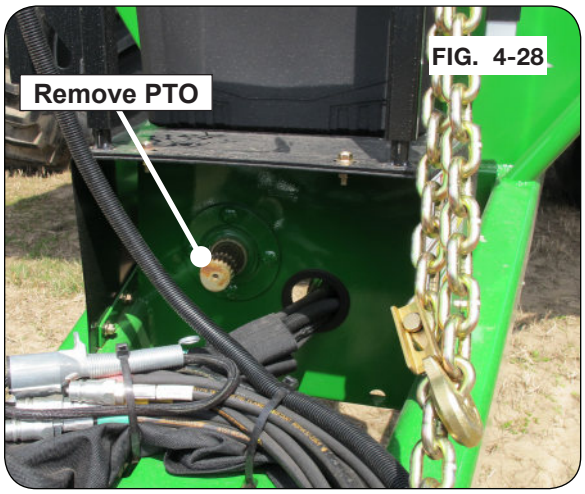
Auger Driveline

Disassembly

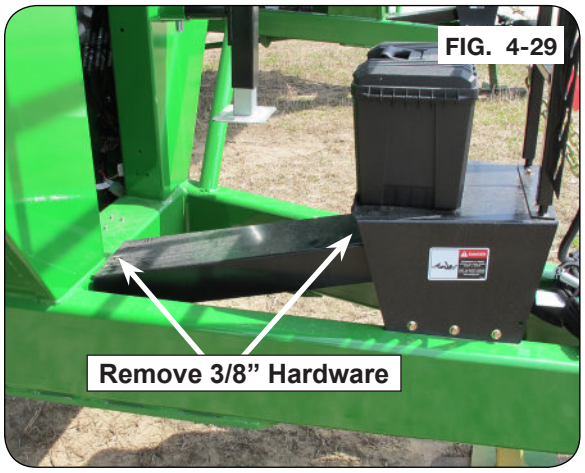


1. Park the empty unit on a firm, level surface. Block the machine to keep it from moving. Set the tractor parking brake, shut off the engine, and remove the ignition key from the tractor before disconnecting driveline assembly and bearing hardware. Completely disconnect the unit from the towing vehicle.

2. Remove the PTO from the driveshaft. (Fig. 4-28) See PTO Drivleine - Uncoupling in this section.



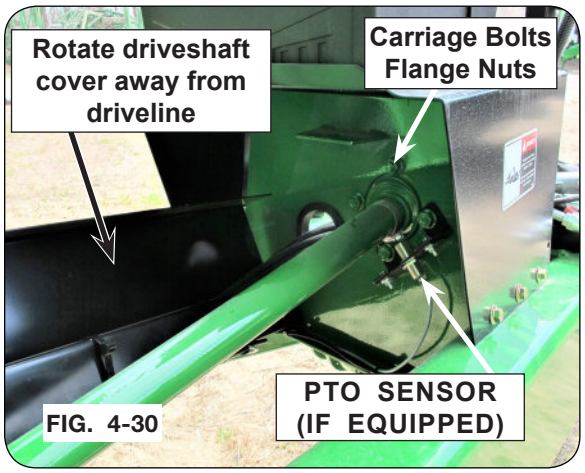
3. Remove 3/8” hardware from the hitch driveshaft cover. Rotate the hitch driveshaft cover, electrical routing and hydraulic lines away from the driveline. Keep the 3/8” hardware. (Fig. 4-29 & 4-30)



4. Loosen the 5/16” set screws from the 4 original flangette bearings (9005061).

5. Remove the 1/2” carriage bolts and flange nuts retaining the front flangette bearing. Discard 1/2” hardware. (Fig. 4-30)

NOTE: If a PTO sensor is installed on this grain cart, remove it from the front flangette bearing.



Auger Driveline (continued)

6. Remove universal joint covers from the driveshaft. Keep hardware and universal joint covers. (Fig. 4-31)

7. Remove driveshaft lock collars (if lock collars are attached to driveshaft).

8. Remove the 3 rear original bearings and 1/2" carriage bolts and flange nuts retaining the 3 flangette bearings from the grain cart. Discard the 3 bearings and 1/2" hardware. (Fig. 4-32)

9. Mark front and rear positions of driveline covers.

10. Slide driveshaft forward until the rear spline is out of the universal joint connected to the gearbox. Discard rear poly driveshaft cover. (Fig. 4-32)

11. Drop the gearbox end of driveshaft down and slide driveshaft out of the flangette bearing on the hitch end of the driveshaft.

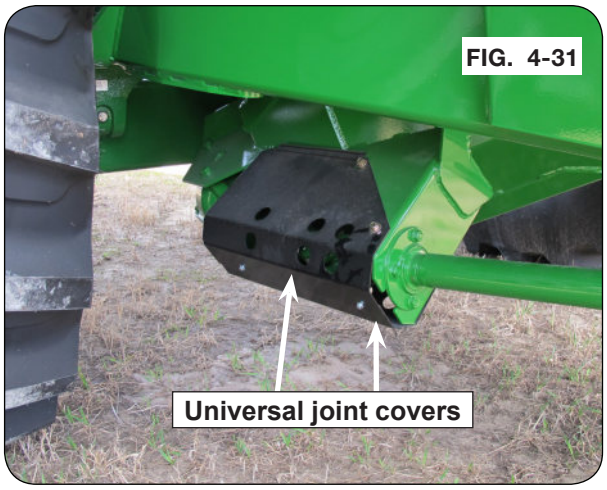


FIG. 4-31

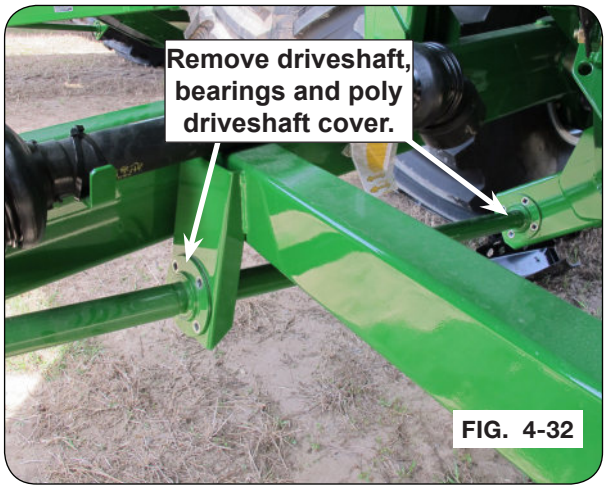


FIG. 4-32

Reassembly

NOTE: Before reassembly, put a line on the dimples of the driveshaft to make dimples easier to locate when assembling.

NOTE: Ends of the driveshaft are symmetrical.

12. Attach new 1 3/4" dia. two-piece lock collars (9008674) to both sides of new bearing (9005061) closest to the U-Joint, when installing bearing onto new 144 5/8" driveshaft (289819).

13. When installing 3 new bearings (9005061) onto new driveshaft (289819), assemble 52" PVC driveshaft cover (293380) between bearings near the gearbox, and 41 1/2" PVC driveshaft cover (288762) between bearings behind the hitch driveline cover. Install flange bearings (9005061) on the driveshaft with the lock collars forward. (Fig. 4-33)

14. Slide the hitch end of the driveshaft assembly into the bearing near hitch of the cart. Attach the flangette bearing using new 1/2" carriage bolts (9388-104) and new flange nuts (91267) into the bracket mount. Loosely tighten the hardware on the bearing. (Fig. 4-32)

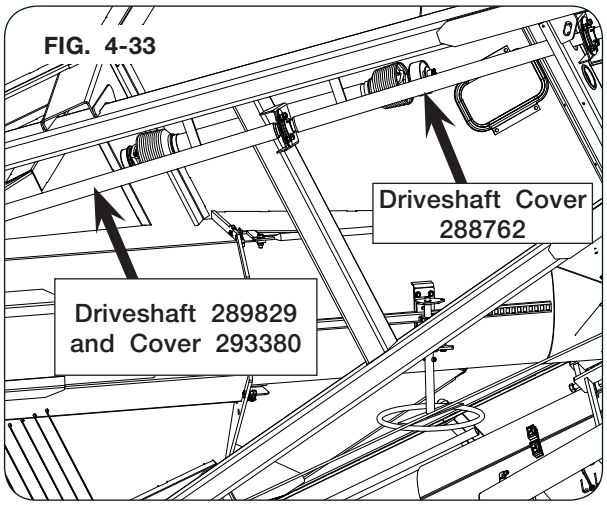


FIG. 4-33

Auger Driveline (continued)

15. Lift the driveshaft into the rear mounting bracket. Attach the flangette bearings to the mounting brackets using new 1/2" hardware. Tighten all flangette bearing hardware, but do not tighten lock collars at this time. (Fig. 4-34 & 4-35)

16. Align driveshaft dimple with u-joint (See Fig. 4-34 and 4-35)

17. Slide the driveshaft into the universal joint until the end of the shaft extends into the universal joint about 2 3/8". Ensure universal joint and driveshaft splines completely engage. Verify the hitch end has adequate length for driveline assembly to connect. (Fig. 4-34 & 4-35)

18. Remove the 5/16" setscrews from the lock collars on the bearings. Drill one setscrew recess on both ends of the driveshaft by going through the setscrew threaded hole and recess the driveshaft being careful to not damage threads. Drill the recess to a depth that setscrews are flush with the bearing. (Fig. 4-34)

19. Apply thread locker on bearing setscrews. Reinstall setscrews to lock collars on bearings and tighten.

20. Torque lock collars to 325 inch-lbs., if lock collars are attached to driveshaft.

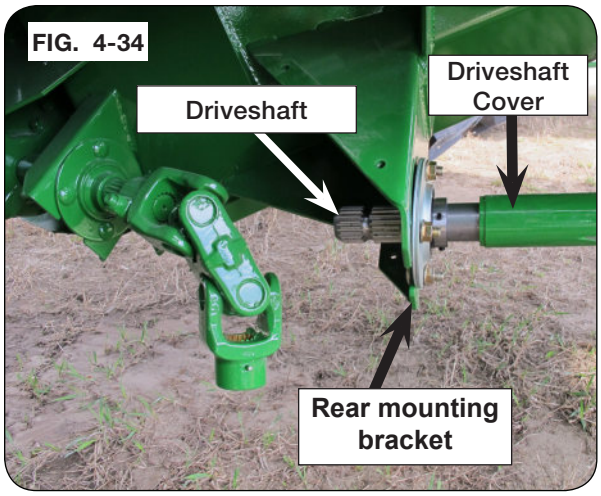


FIG. 4-34

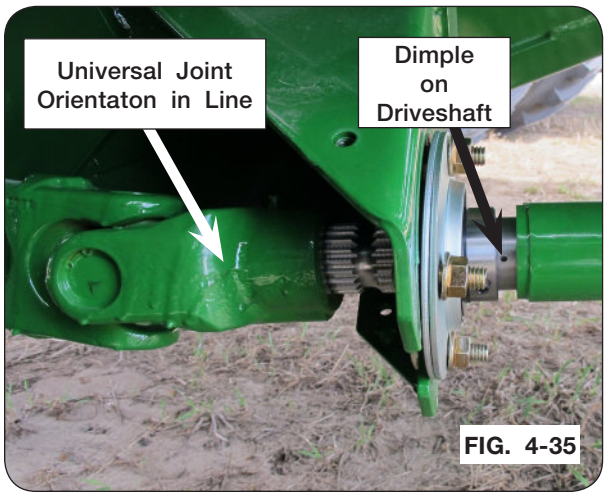
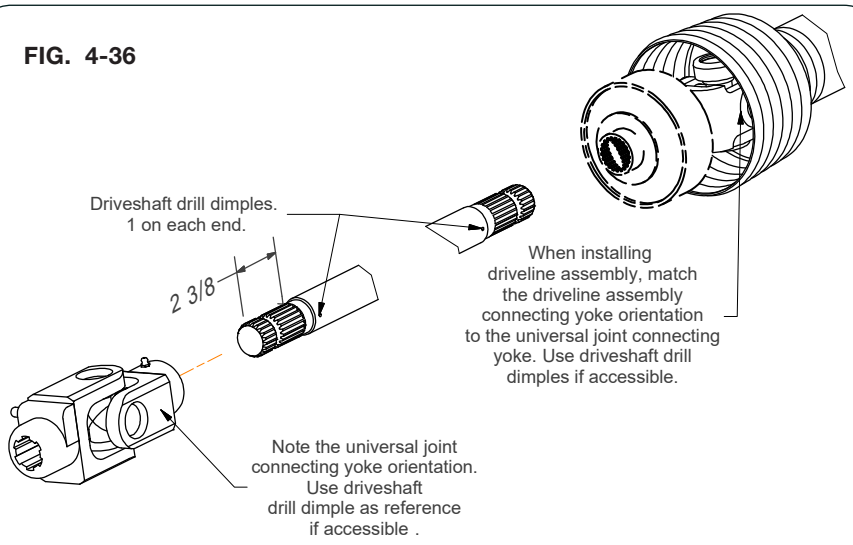


FIG. 4-35

FIG. 4-36



Auger Driveline (continued)

21. Install new flangette bearing (9005061) onto the front bracket mount under the right-hand standard with the lock collar on the front side of the bracket mount toward the PTO. Insert four new 1/2" carriage bolts (9388-104) and (91267) flange nuts into the bracket mount. Loosely tighten the hardware on the bearing. (Fig. 4-37)

22. Remove existing front flangette bearing and install new flangette bearing (9005061) onto the front support under the ladder with the lock collar toward the PTO. Insert four new 1/2" carriage bolts (9388-104) and four new flange nuts (91267) into the bearing. Loosely tighten the hardware on the bearing. (Fig. 4-38)

NOTE: If a PTO sensor is installed on this grain cart, install it onto the front flange bearing.

23. Torque the 1/2" hardware on the 4 new bearings to 62-68 ft. lbs.

(continued on next page)

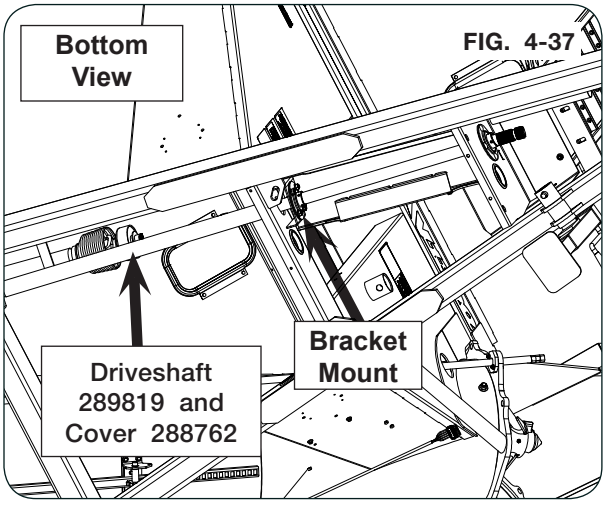


FIG. 4-37

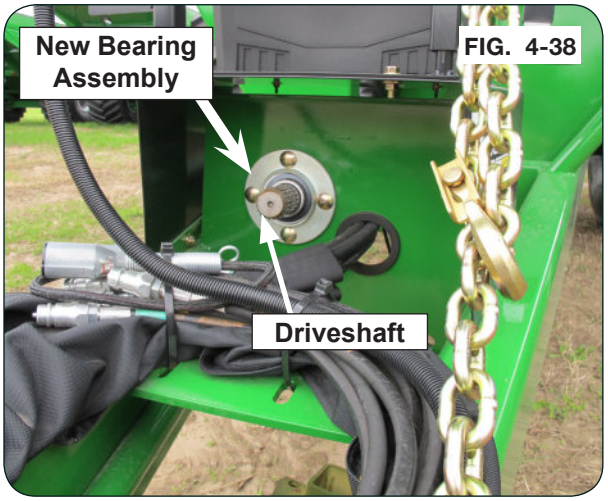


FIG. 4-38

Auger Driveline (continued)

24. For alignment of the yoke, the orientation of the universal joint at the gearbox must be in line with the driveshaft drill dimple when the driveline assembly is attached. Use the driveshaft dimple for reference, if accessable. (Fig. 4-39)

25. Align the PTO yoke with the front driveshaft dimple and install the PTO into the driveshaft. (Fig. 4-40)

NOTE: Check/fill gearbox oil and grease universal joints before installing universal joint covers.

26. Reattach original u-joint covers using original hardware from Step 6.

27. Reattach hitch driveshaft cover, located behind the ladder, using original hardware from Step 3.

28. Test run driveline. Check for smooth driveline operation.

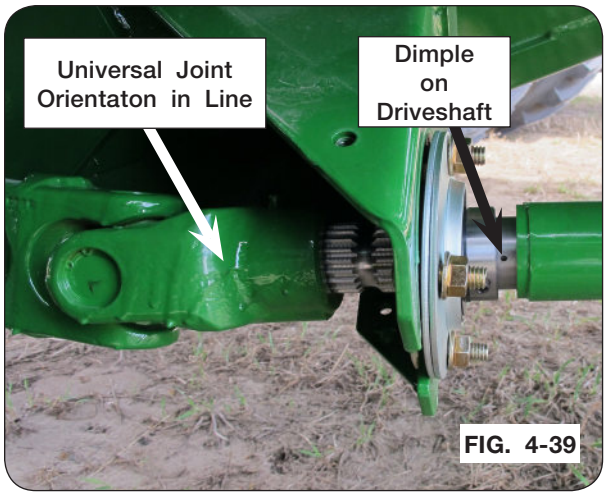


FIG. 4-39

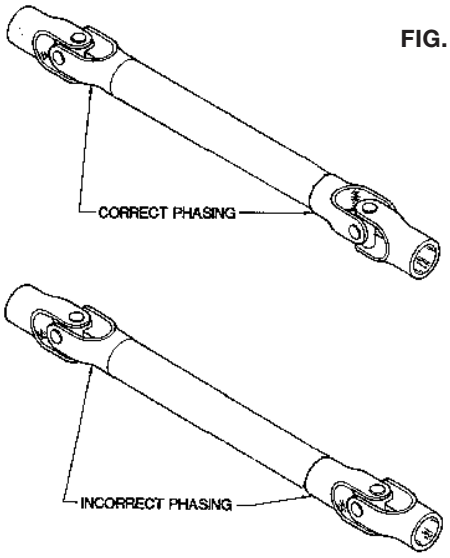


FIG. 4-40

Adjusting Cleanout Door

WARNING

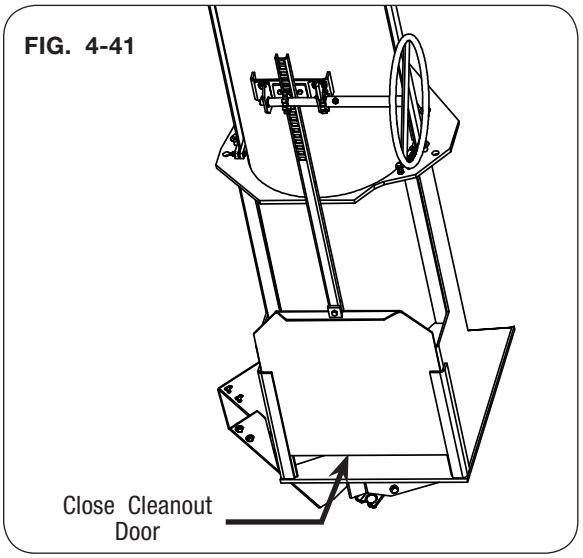
- **MOVING PARTS CAN CRUSH AND CUT. KEEP AWAY FROM MOVING PARTS.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING THE IMPLEMENT.**

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. (Fig. 4-41)

3. Completely close cleanout door.

FIG. 4-41



4. Engage the locking plate (268313B). (Fig. 4-42)

5. Loosen mounting hardware. (Fig. 4-42)

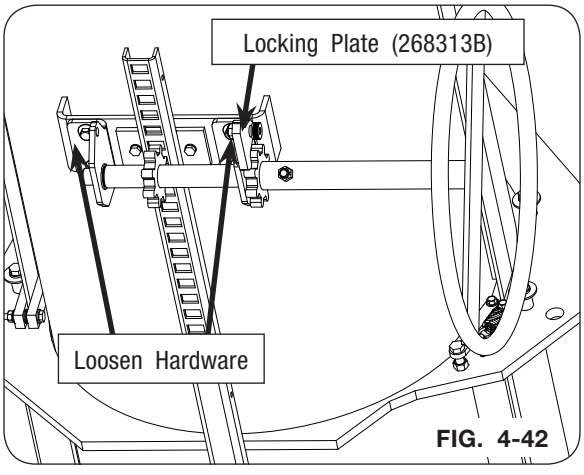


FIG. 4-42

Adjusting Cleanout Door (continued)

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. 4-43)

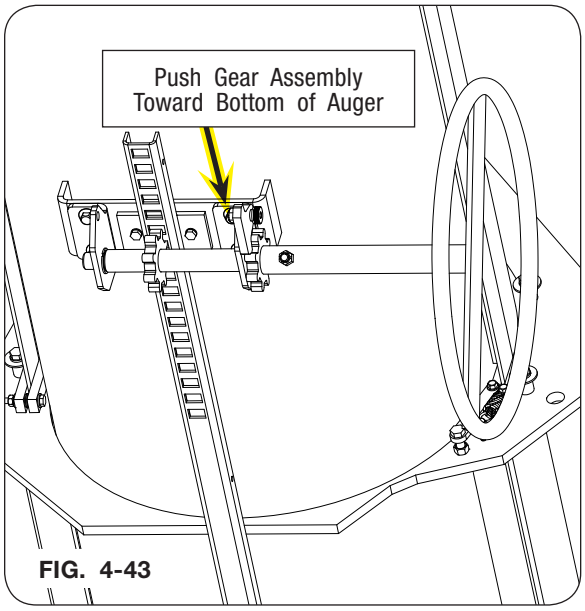
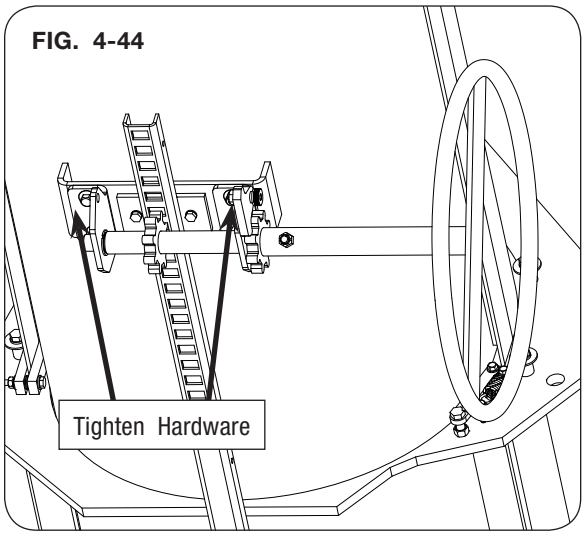


FIG. 4-43

5. Tighten hardware loosened in step 4. (Fig. 4-44)

6. Check door operation. Lock the handle weldment into position. (Fig. 4-44)

FIG. 4-44



Verify Telescoping PTO Shaft Length

⚠ WARNING

- **PROPERLY EXTENDED AND COLLAPSED LENGTHS OF THE TELESCOPING PTO SHAFT MUST BE VERIFIED BEFORE FIRST OPERATION WITH EACH AND EVERY DIFFERENT 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.**

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. 4-45).

   Enter here:_____(1)
   (Verify that outer tube does not bottom out on surrounding plastic shield components).

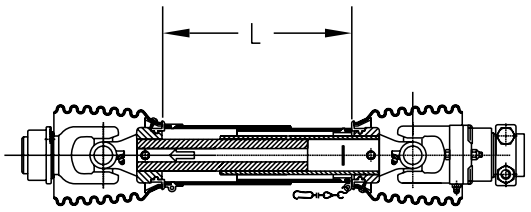


FIG. 4-45

2. Pull apart PTO telescoping shaft ends and measure lengths "T" & "C" (Fig. 4-46).

   Add "T" &"C" measurements together
   Enter total here:_____(2)

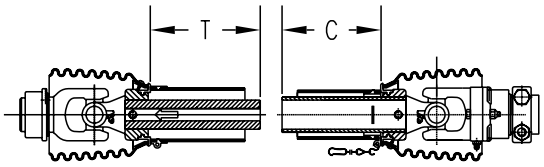


FIG. 4-46

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 (LB).

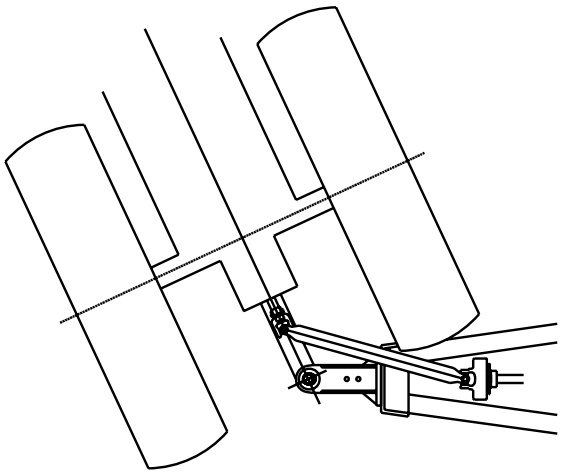
Verify Telescoping PTO Shaft Length (continued)

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 or drawbar before operating cart.

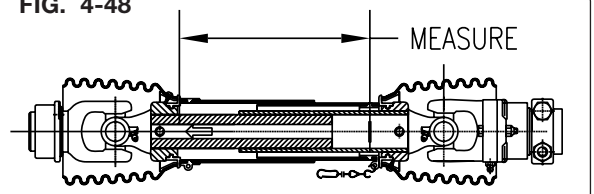
6. Disconnect PTO shaft from tractor. Position the tractor to obtain tightest turning angle, relative to the cart. (Fig. 4-47)

FIG. 4-47



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. 4-48)

FIG. 4-48



PTO Shaft and Clutch

Coupling the PTO driveshaft (Figs. E1 - E2)

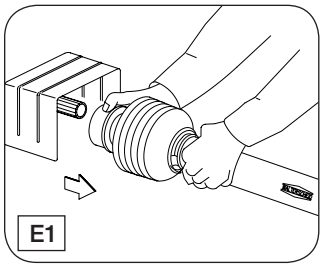
Clean and grease the PTO and implement input connection (IIC)

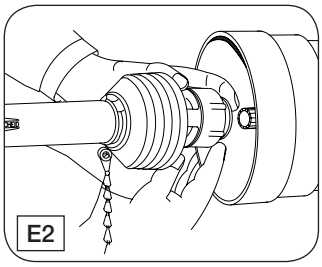
AS-Lock

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

Push-Pull Lock

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





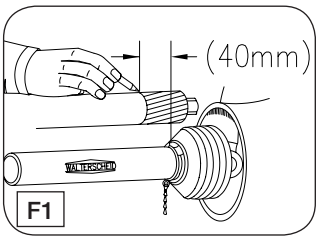
⚠ WARNING

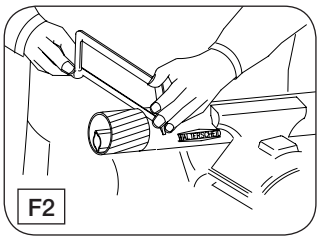
- **CHECK TO ENSURE ALL THE LOCKS ARE SECURELY ENGAGED BEFORE STARTING WORK WITH THE PTO DRIVESHAFT.**

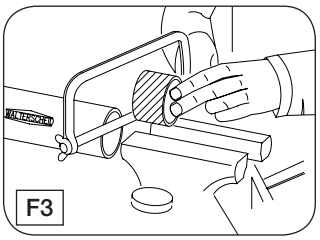
Length Adjustment (Figs. F1 - F4)

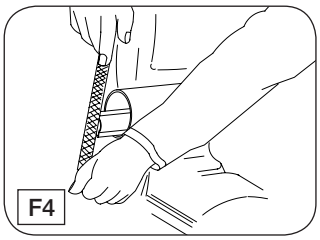
NOTE: Maximum operating length LB. (Refer to "Verify Telescoping PTO Shaft Length" for LB length.)

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.









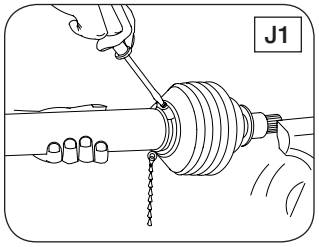
⚠ WARNING

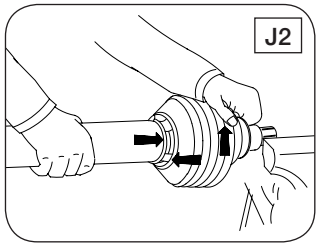
- **CHECK THE LENGTH OF THE TELESCOPING MEMBERS TO ENSURE THE DRIVELINE WILL NOT BOTTOM OUT OR SEPARATE WHEN TURNING AND/OR GOING OVER ROUGH TERRAIN.**

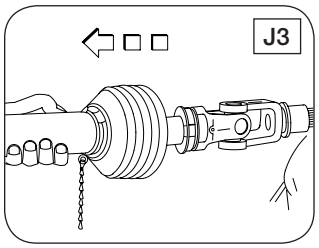
PTO Shaft and Clutch (continued)

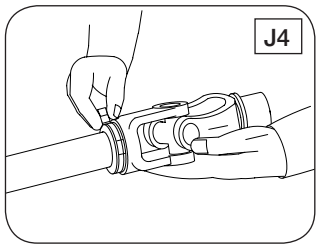
To Dismantle Guard (Figs. J1 - J4)

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



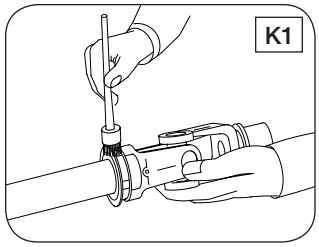


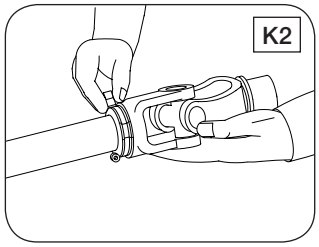


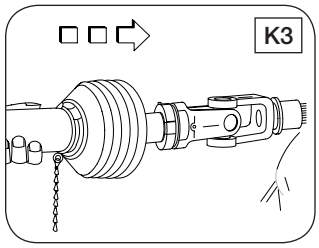


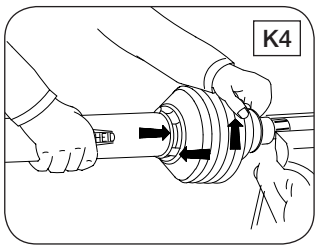
To Assemble Guard (Figs. K1 - K5)

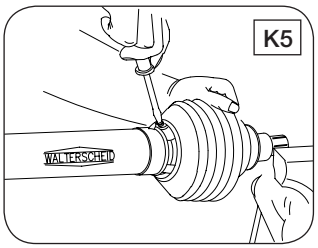
1. Grease yoke groove and inner profile tube.
2. Fit bearing ring in groove with recesses facing profile tube.
3. Slip on half-guard.
4. Turn cone until it engages correctly.
5. Install locking screw.











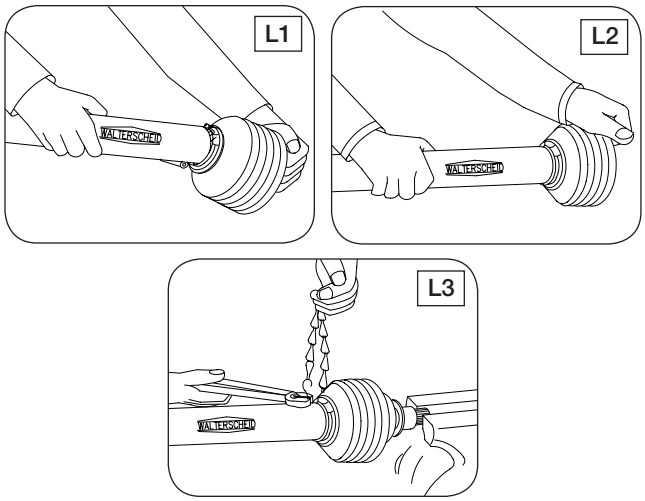
PTO Shaft and Clutch (continued)

To Assemble Cone (Figs. L1 - L3)

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).

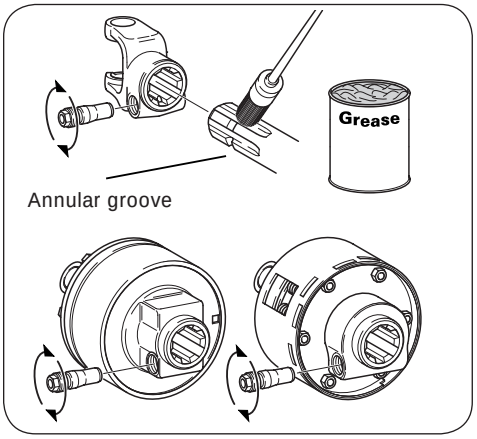
3. Reconnect chain if required (Fig. L3).

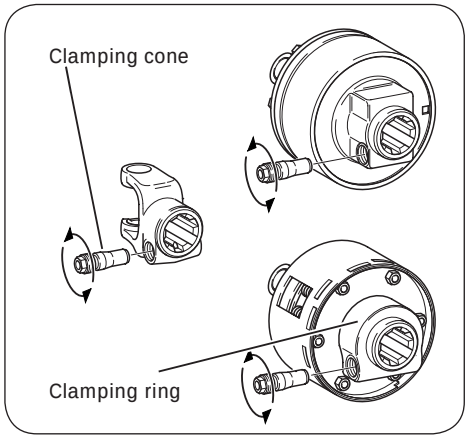


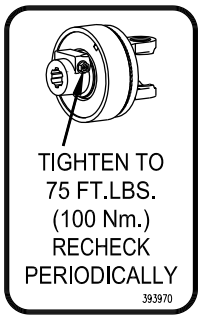
PTO Quick Disconnect

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/pin as necessary. Torque pin down to 75 ft.-lbs.

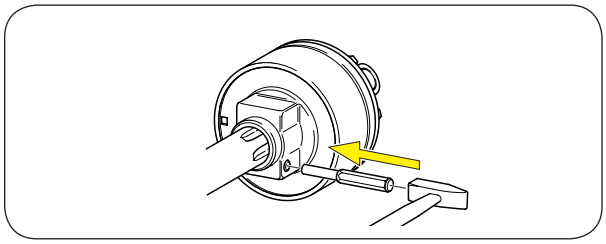






Uncoupling

Unscrew the pin a partial turn. Use the punch and hammer to help alleviate the torque resistance on the wrench if necessary. After a few cycles the pin will move freely with low torque resistance for the removal process.



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 20,000 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

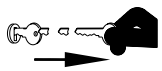
⚠ CAUTION

- **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 in 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, use safe lifting and load holding devices rated at 15,000 lbs. to support the weight of your grain cart. Place the safe lifting device under the axle closest to the tire.

3. Use a 3,000 lbs. safe lifting device to support the wheel and tire during removal.

4. If only changing wheel and tire, skip to Step 8; otherwise continue with Step 4.

   Remove the hardware retaining the hubcap. Next, remove the hubcap, gasket, cross bolt, castle nut and spindle washer. Remove hub with bearings from old spindle using a safe lifting device rated for at least 200 lbs.

Wheel, Hub and Spindle Disassembly and Assembly (continued)

5. Inspect the spindle and replace if necessary. If spindle does not need to be replaced, skip to Step 6; otherwise continue with Step 5.

   Remove the bolt and lock nut that retains the spindle to the axle. Using a safe lifting device rated for 150 lbs., replace the old spindle with a new spindle. Coat spindle shaft with anti-seize lubricant prior to installation. Reuse bolt and lock nut to retain spindle to axle. Tighten as outlined in Maintenance Section.

6. Remove seal and inspect bearings, spindle washer, castle nut and cotter pin. Replace if necessary. Pack both bearings with NLGI#2 EP approved grease and reinstall inner bearing. Install new seal with garter spring toward the outside of the hub to allow grease to purge. Using a safe lifting device rated for 200 lbs., install hub assembly onto spindle. Install outer bearing, spindle washer and castle nut. (Fig. 4-49)

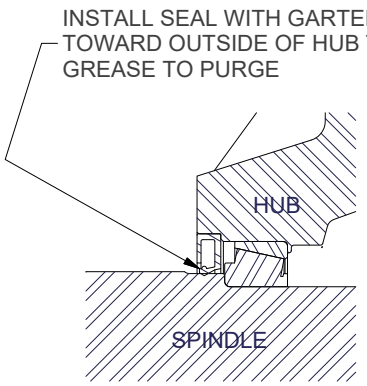


FIG. 4-49

7. 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 cotter pin. Clean face for hub cap gasket and install gasket, grease filled hub cap and retain hubcap 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 the Wheel and Tire section of this manual.

9. Raise cart, remove safe load holding devices and lower tire to the ground.

Wheels and Tires

Wheel Nut Torque Requirements

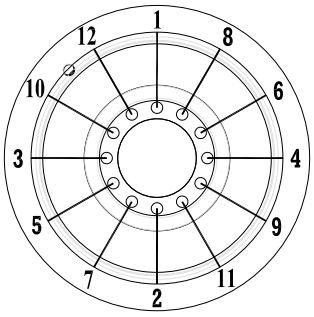
⚠ CAUTION

- **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	TORQUE
M22x1.5	475 ft.-lbs.



12 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 indicated. 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 the tire's max PSI when mounting.

Tire Pressure for Grain Carts

Tire Make	Tire Size	Load Index / Ply Rating	Max. PSI
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 Pressure for Grain Carts

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
	1100/45R46 F-1W	195D	35
Mitas	650/75R32 R-1W	172A8	58
	650/75R32 R-1	176A8	41
	800/65R32 R-1W	172A8	46
	900/60x32 R-1W	176A8	41
	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:

Firestone	www.firestoneag.com Phone 800-847-3364
Titan or Goodyear	www.titan-intl.com Phone 800-USA-BEAR Fax 515-265-9301
Trelleborg	www.trelleborg.com Phone 866-633-8473
Continental/Mitas	www.mitas-tires.com Phone 704-542-3422 Fax 704-542-3474
Alliance	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. Remove dirt and trash which could cause rusting.
2. Repaint any chipped or scraped areas.
3. Lubricate points as shown on previous page.
4. Inspect for damage or worn parts, replace before next season.
5. Store cart inside, away from livestock.
6. Replace all worn, torn or faded decals and reflectors.
7. Fully open flow door and auger cleanout door to remove any remaining grain and to allow moisture to drain.
8. Close the tarp to keep debris out of the hopper.

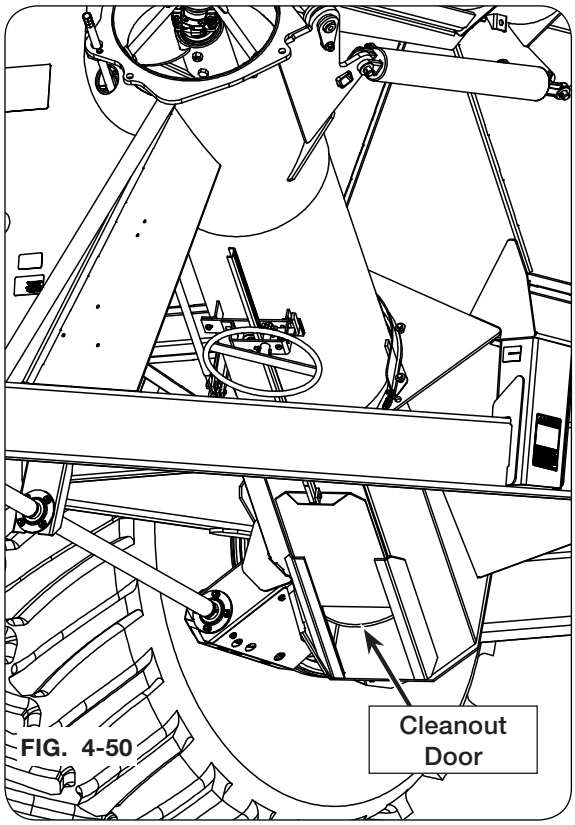


FIG. 4-50

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 CARDBOARD 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.**

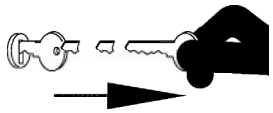
- **UNHITCHING A LOADED CART CAN CAUSE SERIOUS INJURY OR DEATH DUE TO TONGUE RISING OR FALLING. ALWAYS HAVE A LOADED CART ATTACHED TO A TRACTOR. THE JACK IS INTENDED TO SUPPORT AN EMPTY CART ONLY.**

- **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. 4-51)

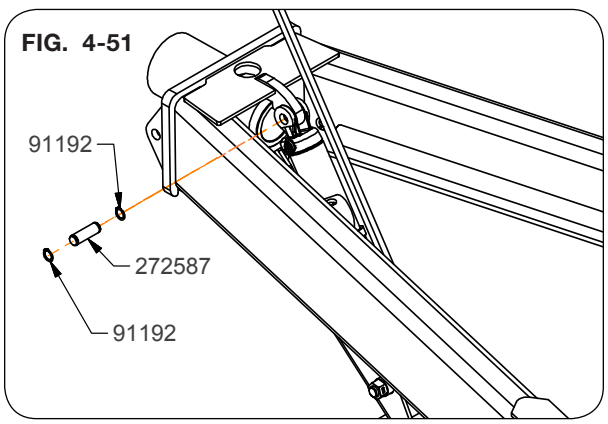


FIG. 4-51

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. 4-52)

10. Remove hydraulic jack assembly from the tongue. (Fig. 4-52)

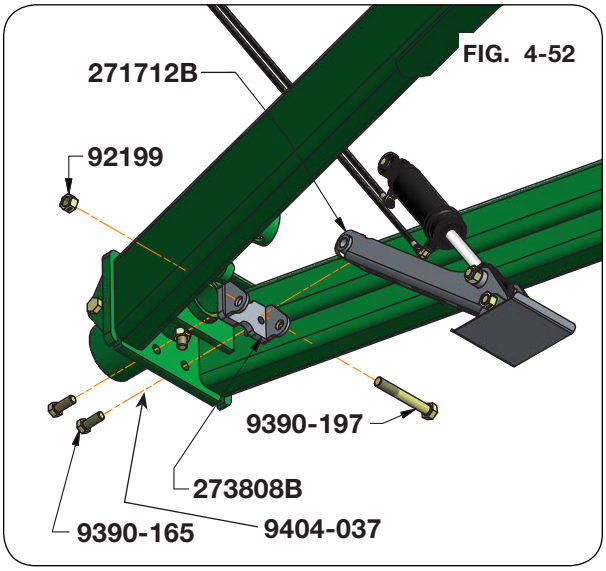


FIG. 4-52

11. On new hydraulic assembly (273849B), 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.

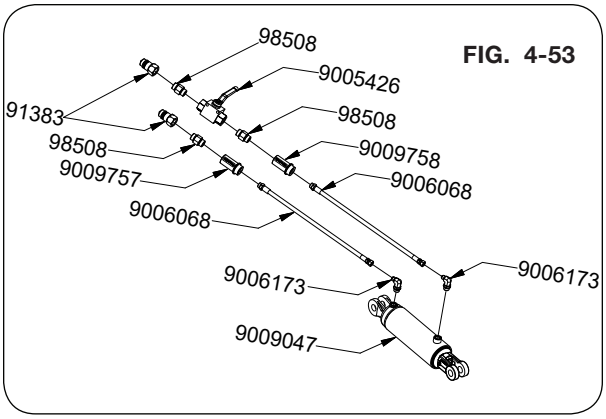


FIG. 4-53

Troubleshooting

Problem	Possible Cause	Corrective Action
No Electric Over Hydraulic (EOH) Functions work	Not getting 12 Volt power supply to the power harness in the tractor	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. Make sure the joystick and 7-pin connector are plugged into the same power source. If plugged into different power sources, the spout rotate and auger fold functions WILL NOT operate properly.
	Not getting good connection at Deutch 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, but won't fold back in to transport position	Rotating Spout is not in the folding position	Rotate the spout so it is positioned straight down or forward in order to fold the auger into transport position.
	Rotating spout switch is faulty or out of adjustment	Make sure the spout is in the centered position. Refer to the manual override sections in order to fold the auger back into transport position. The clearance between the end of the proximity switch and the barrel of the rotating spout cylinder must not exceed 1/4".
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.
	Rotating Spout switch is out of adjustment or has been activated.	With the auger folded in to the transport rest, have someone depress and hold the switch at the vertical auger hinge plate. Use any means necessary to depress the switch without placing your hands or other body parts near the pinch points. With the switch depressed, rotate the spout to the folding position.

Troubleshooting

Problem	Possible Cause	Corrective Action
Rotating spout will not function	7 pin connector is not plugged into tractor.	Plug in 7 pin connector to same power source as the 5 function controller.
	Proximity Switch at the auger hinge is not getting Power or Ground.	Check power and ground to the proximity switch harness on the vertical auger.
	Proximity Switch at the hinge plate is not adjusted correctly	This proximity switch has a 1/4" effective operating range. The upper auger hinge plate needs to be within that range when it is unfolded in to the operating position. Adjust the proximity switch in or out in order for the sensor to activate when it is in the operating position.
	Switch located at the hinge plate of the vertical auger is not getting power, ground or is defective	Check the ground wire on the top plate of the lower vertical auger and on the left hand standard just behind the front plate of the harness. Unplug the 3 pin connector on the hinge plate proximity switch. With a multi-meter or test light, confirm that the pin in socket B has +12V constant power and socket A has +12V when the sensor is activated.
	Cartridge valve(s) on the EOH valve block are not locked in center position.	Check the cartridge valve(s) on the EOH valve block are locked in center position. Remove any debris on the cartridge valve(s). Refer to "Manual Override for Opt. Electric Over Hydraulic System" in MAINTENANCE section.
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 & Maintenance

PROBLEM	SOLUTION
TARP SAGS IN MIDDLE AREAS	1. BOWS MAY BE BENT OR ADJUSTED TOO LOW 2. MISSING OR LOOSE RIDGE STRAP REPLACE OR RETIGHTEN 3. TENSION MAY BE TOO LOOSE. 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 REPAIR 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

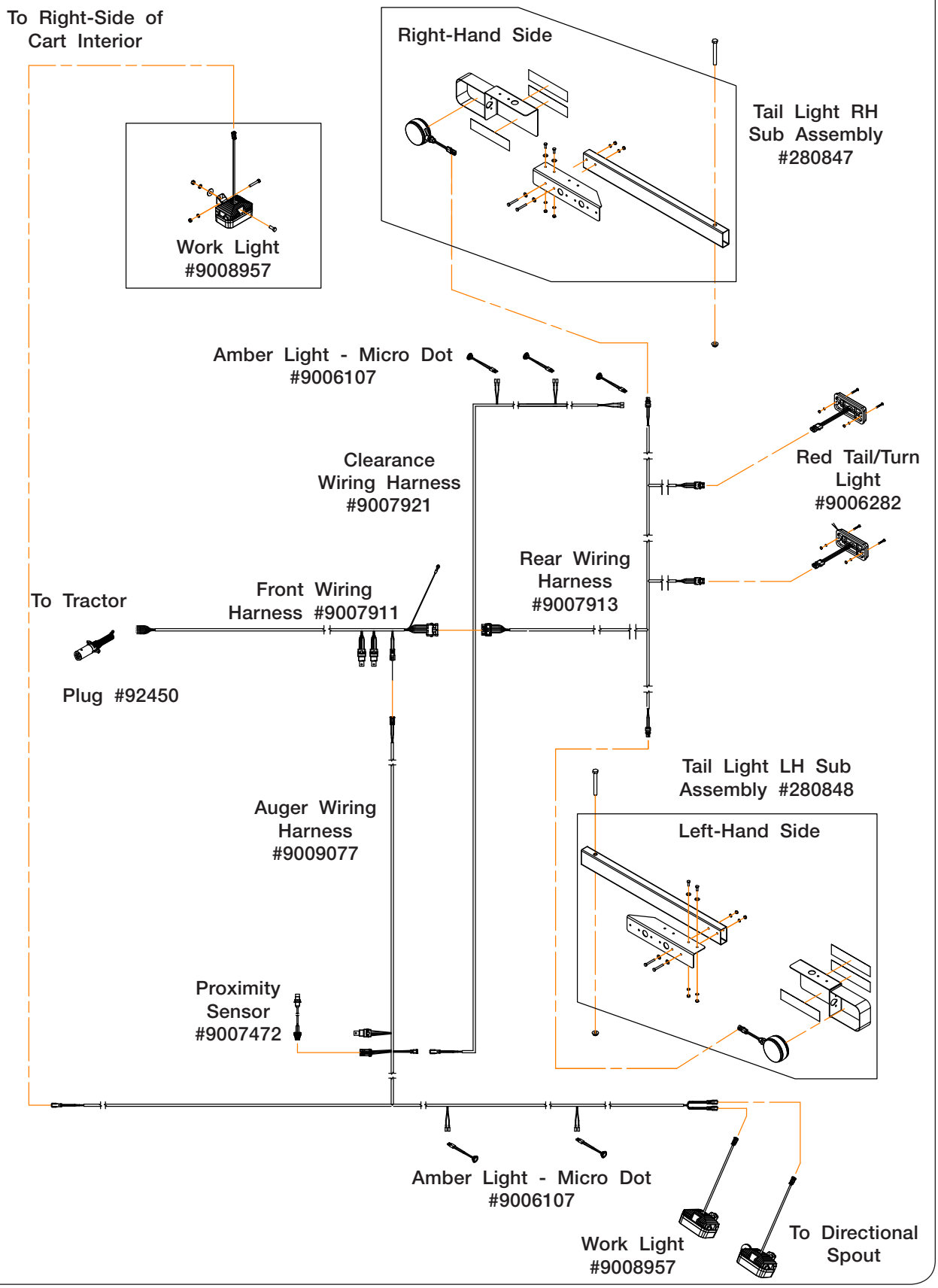
- *Do not open or close tarp while moving or in high wind conditions. Damage to the tarp may occur.*
- *Tarp should not be used if it is torn or the bungee cords are frayed or show damage. Fully close tarp with tension on the latch plate to prevent water from pooling.*

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.

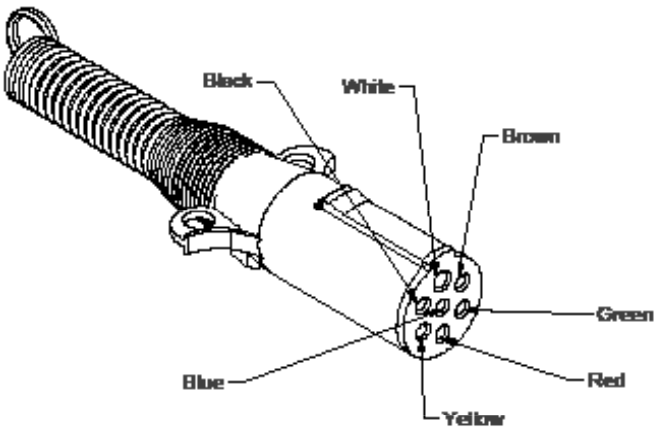
Tears in tarp should be addressed before further tarp operation. If water pools on tarp, adjust tension of tarp cables and/or crank handle tension.

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 System Diagram



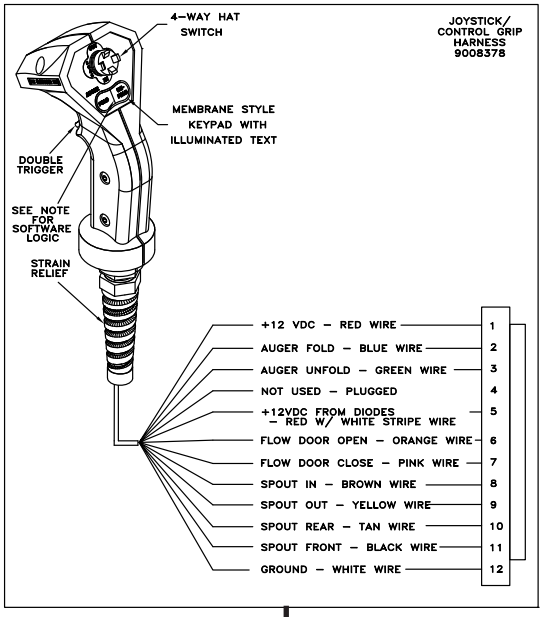
Electrical System Diagram — Plug #92450

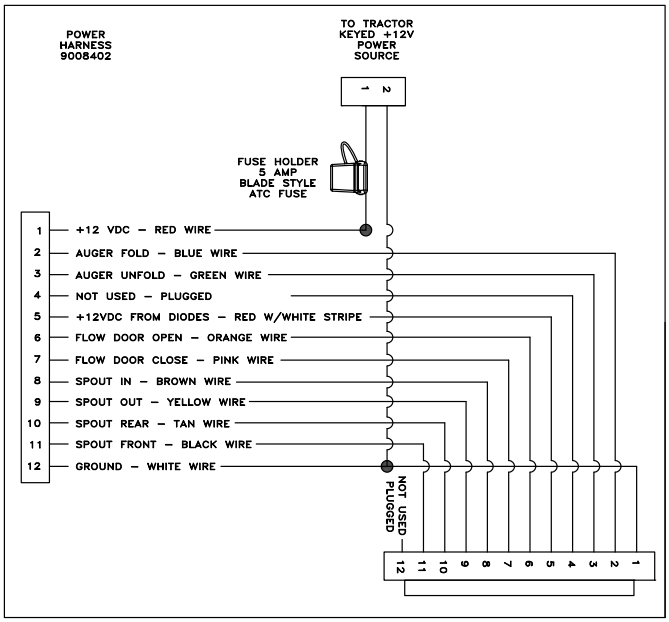


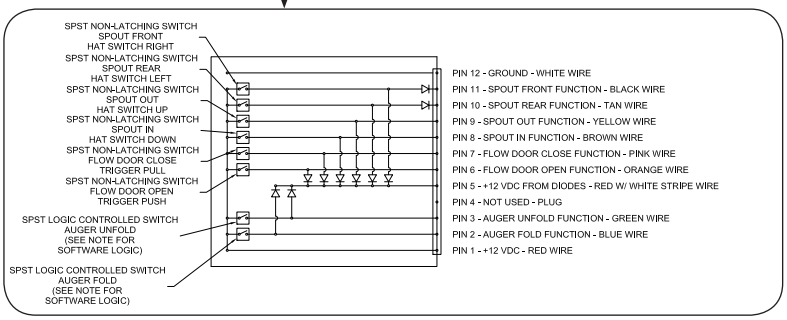
GRAIN CART WIRES
White - Ground
Green - Right amber flashing lamp
Yellow - Left amber flashing lamp
Brown - Tail light
Black - Interior & Auger Lights
Red - Brake Lights
Blue - (Not Used)

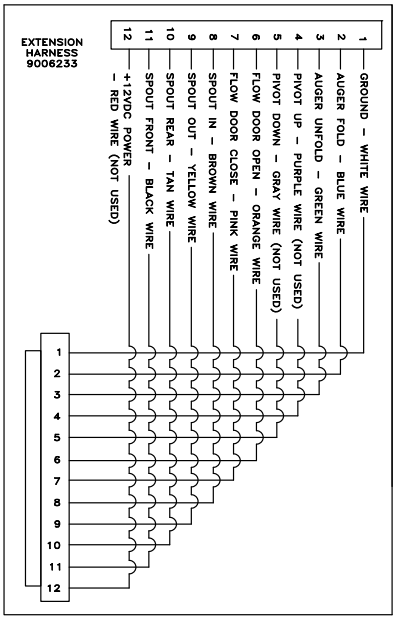
Electric Over Hydraulic (EOH) System Schematic 4 Function Optional

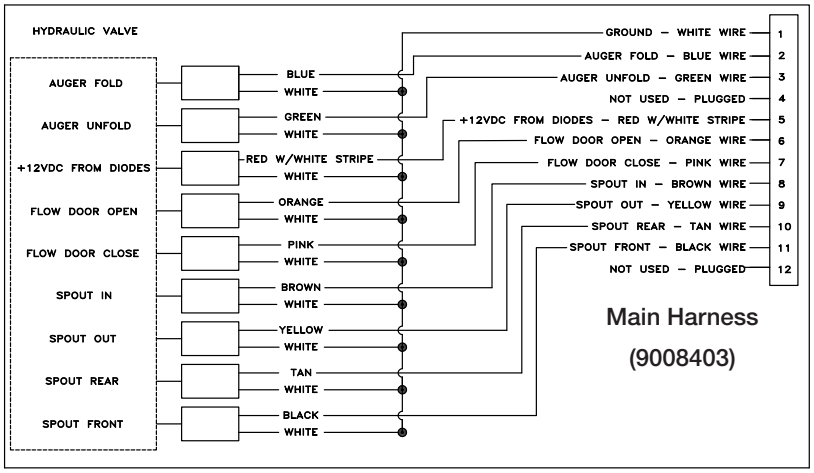
NOTE: The joystick and 7-pin connector MUST be plugged into the same power source. If plugged into different power sources, the spout rotate and auger fold functions WILL NOT operate normally.



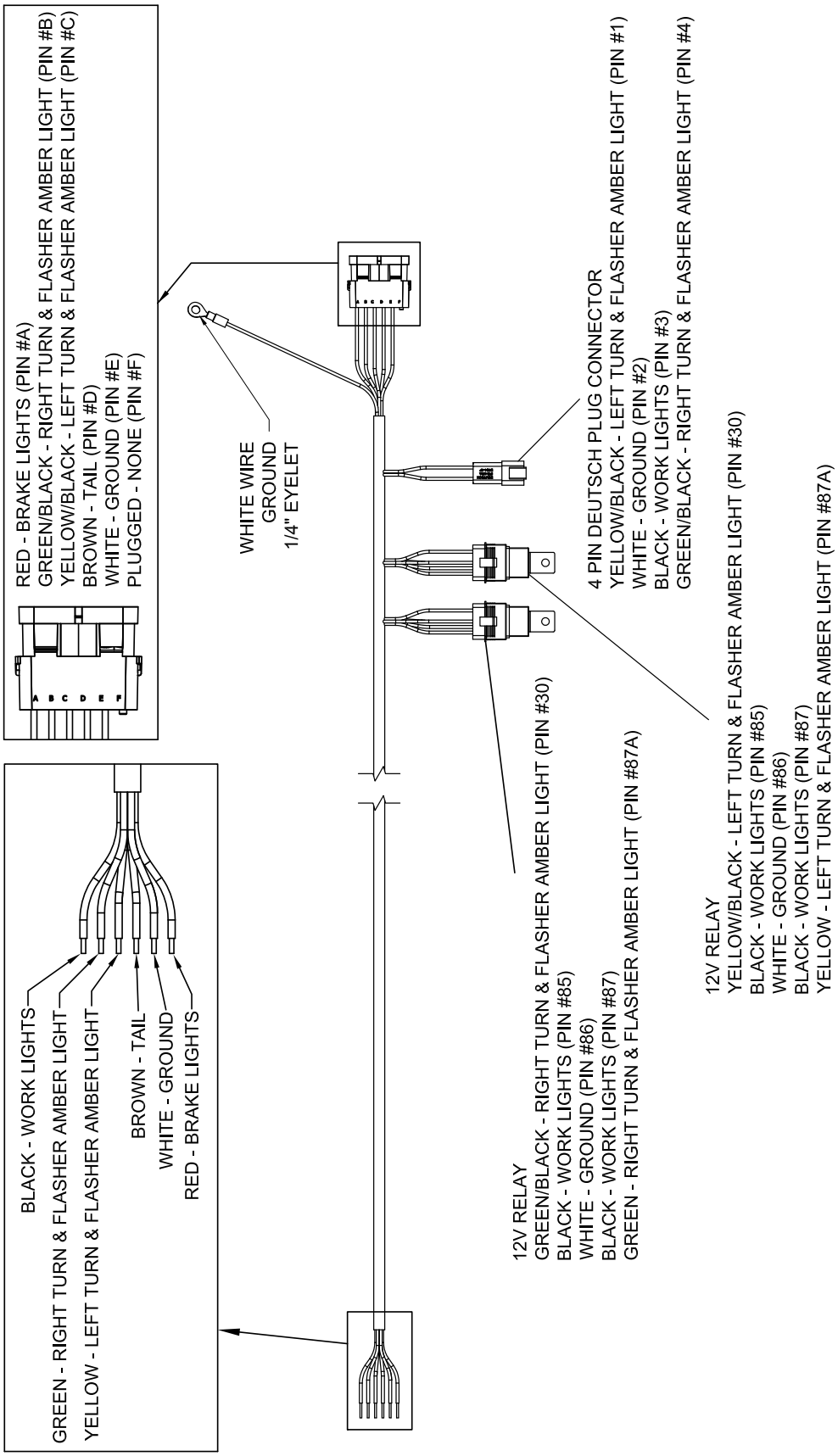




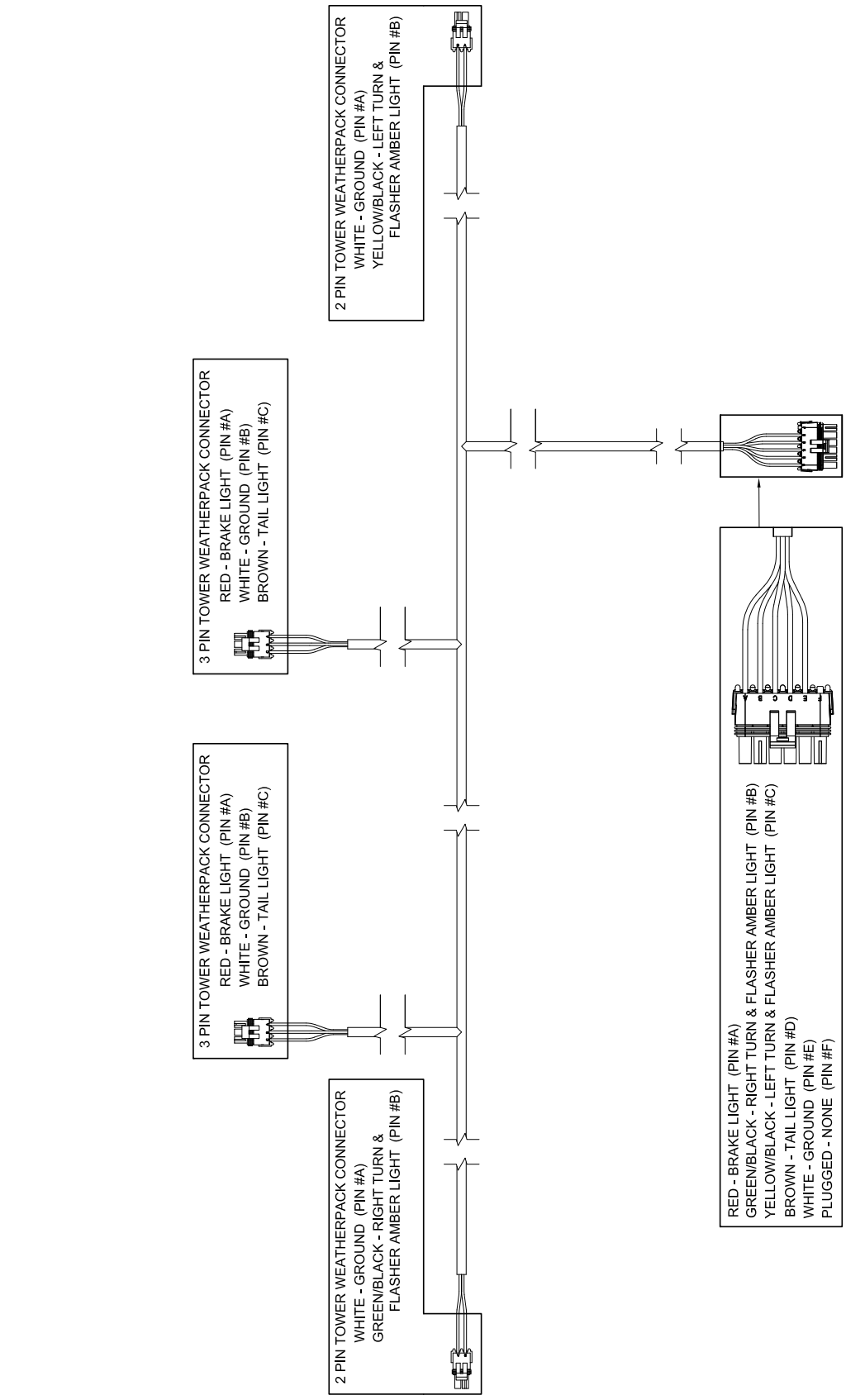




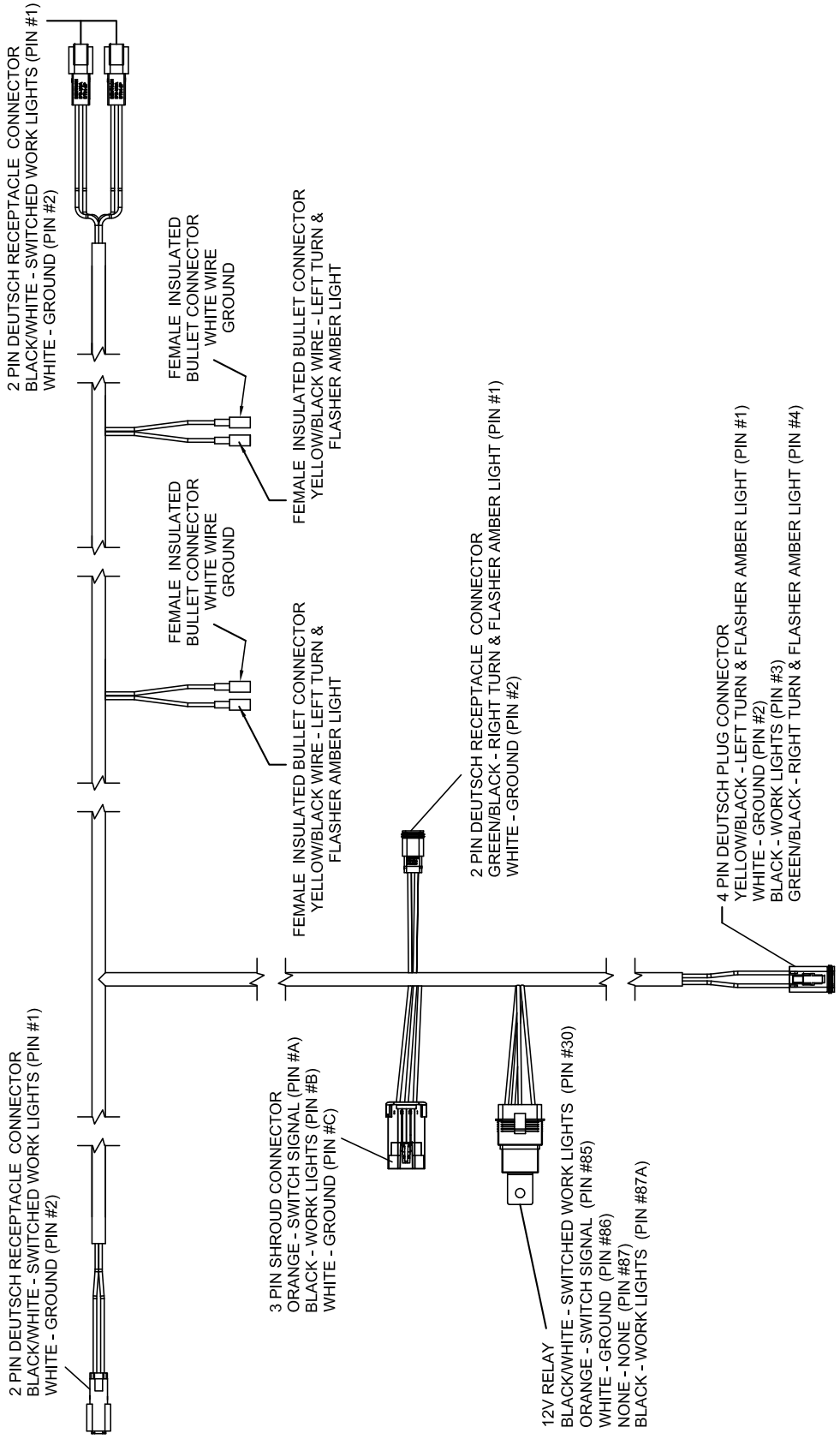
Electrical Diagram — Front Wiring Harness #9007911



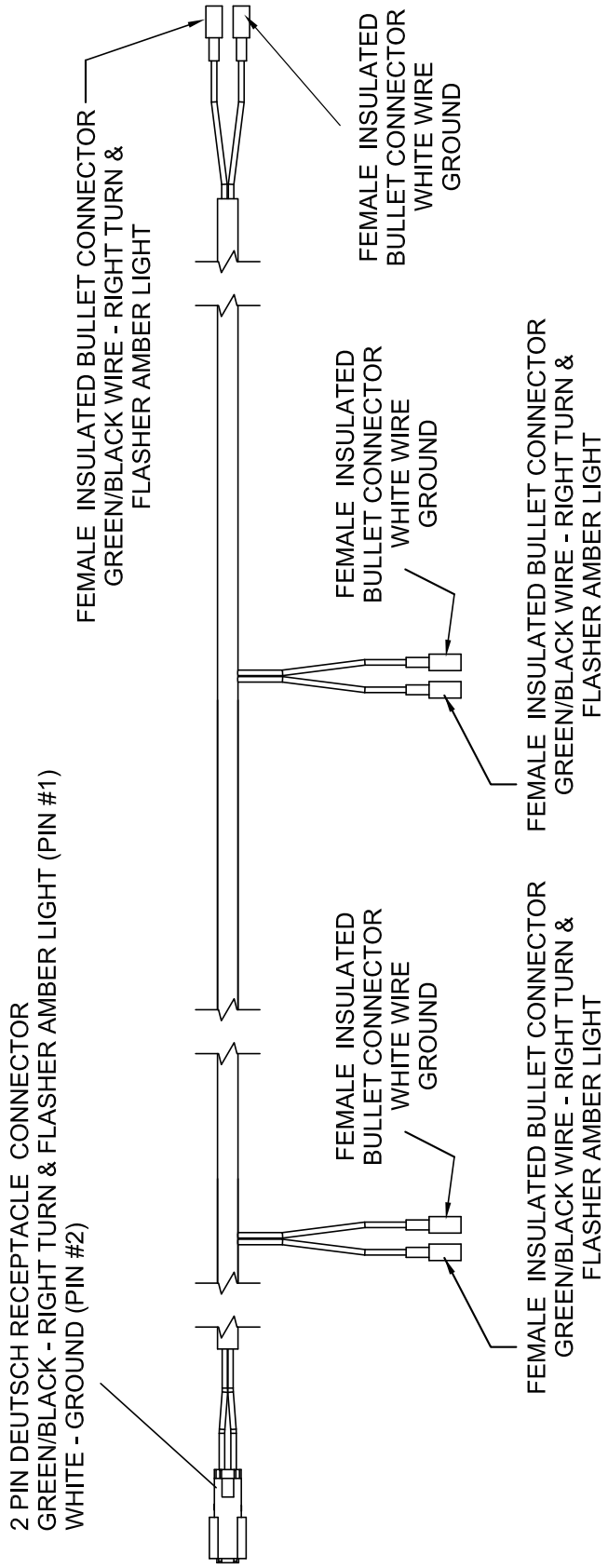
Electrical Diagram — Rear Wiring Harness #9007913



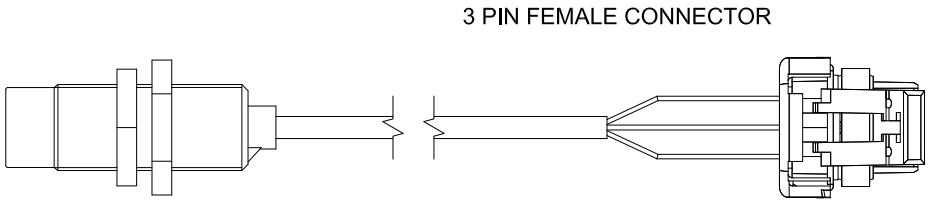
Electrical Diagram — Auger Wiring Harness #9009077



Electrical Diagram — Clearance Wiring Harness #9007921

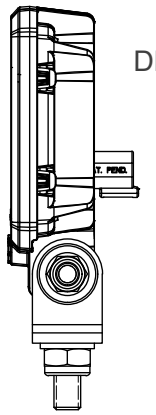


Electrical Diagram — Proximity Sensor #9007472



BLACK - SIGNAL (PIN #A)
BROWN - +12 V DC (PIN #B)
BLUE - GROUND (PIN #C)

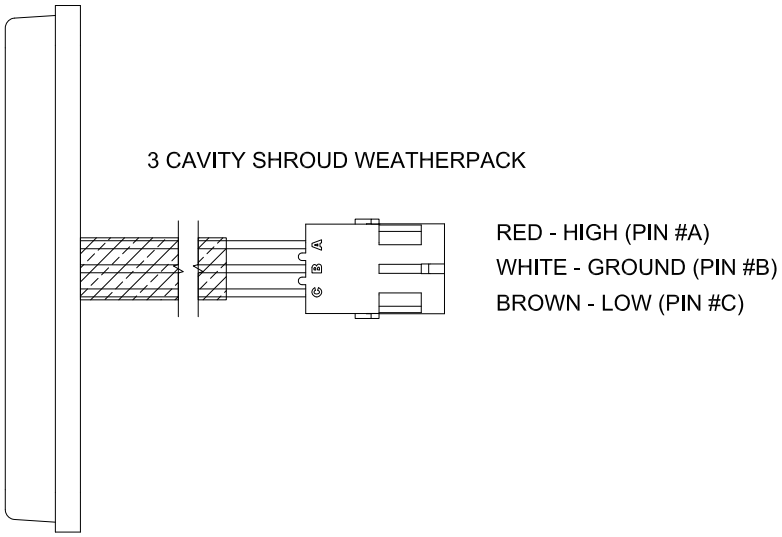
Electrical Schematic — Work Light #9008957



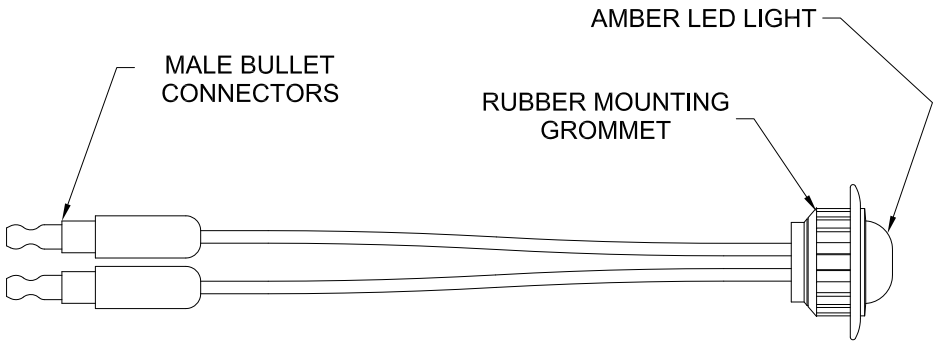
2 PIN INTEGRATED
DEUTSCH CONNECTOR

POWER (PIN #1)
GROUND (PIN #2)

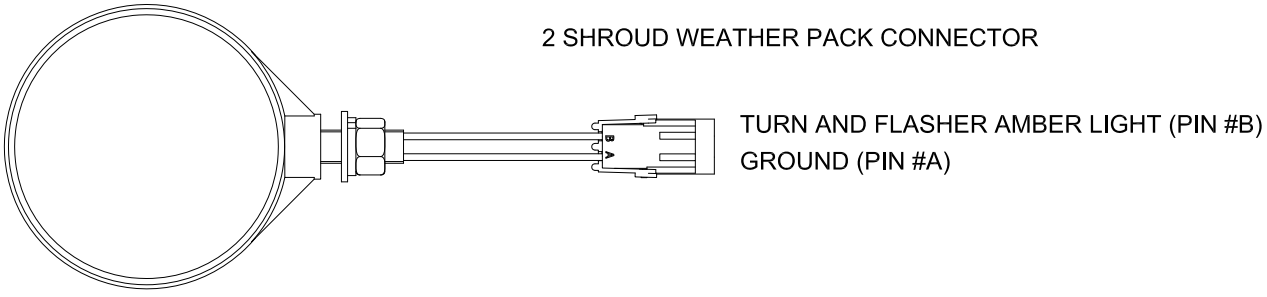
Electrical Diagram — Red Tail/Turn Light #9006282



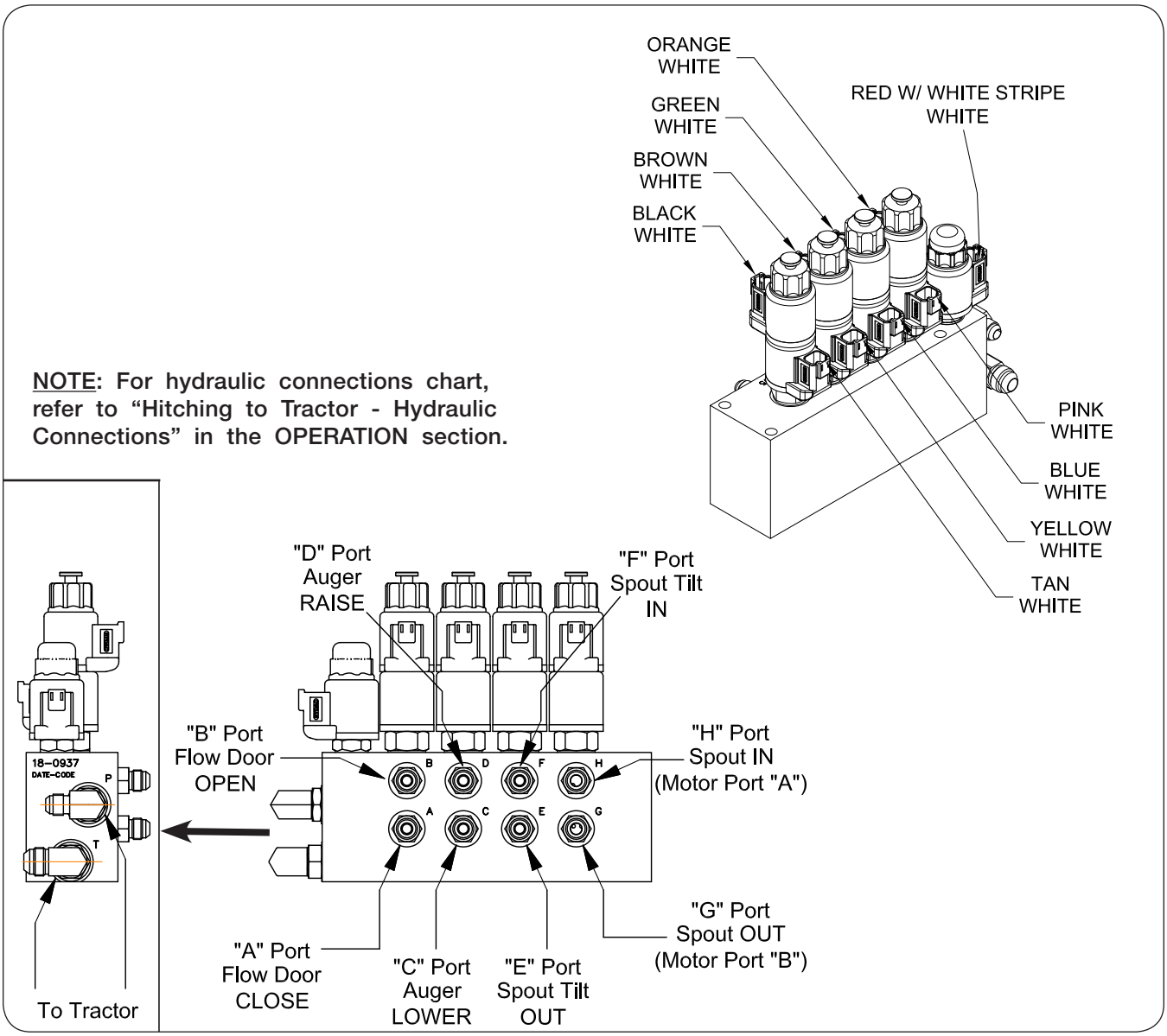
Electrical Diagram — Amber Light - Round Side Marker #9006107



Electrical Diagram — Amber Lamp Double Face #9005142



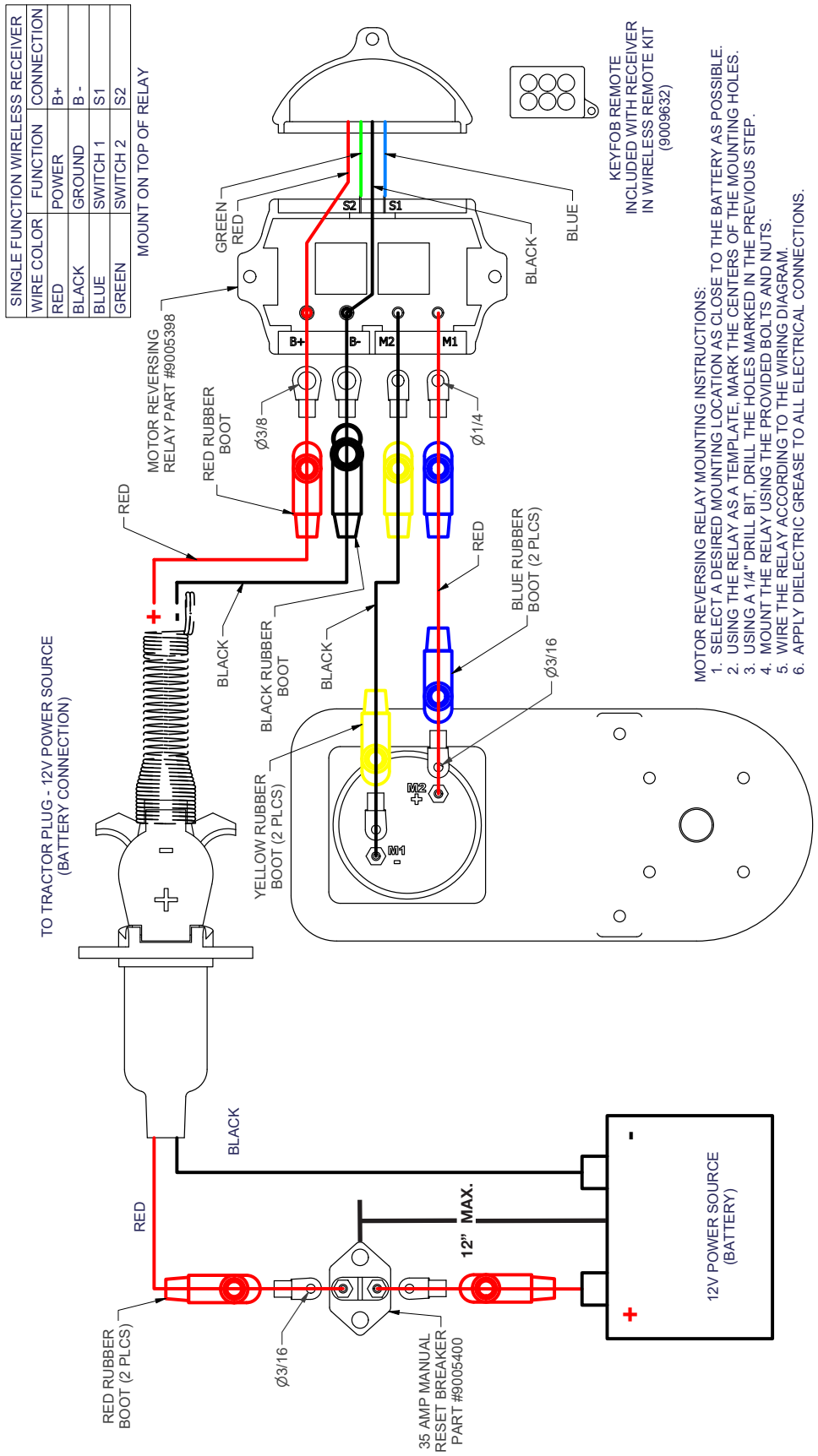
EOH Valve Functions and Wire Locations 4 Spool (Optional)



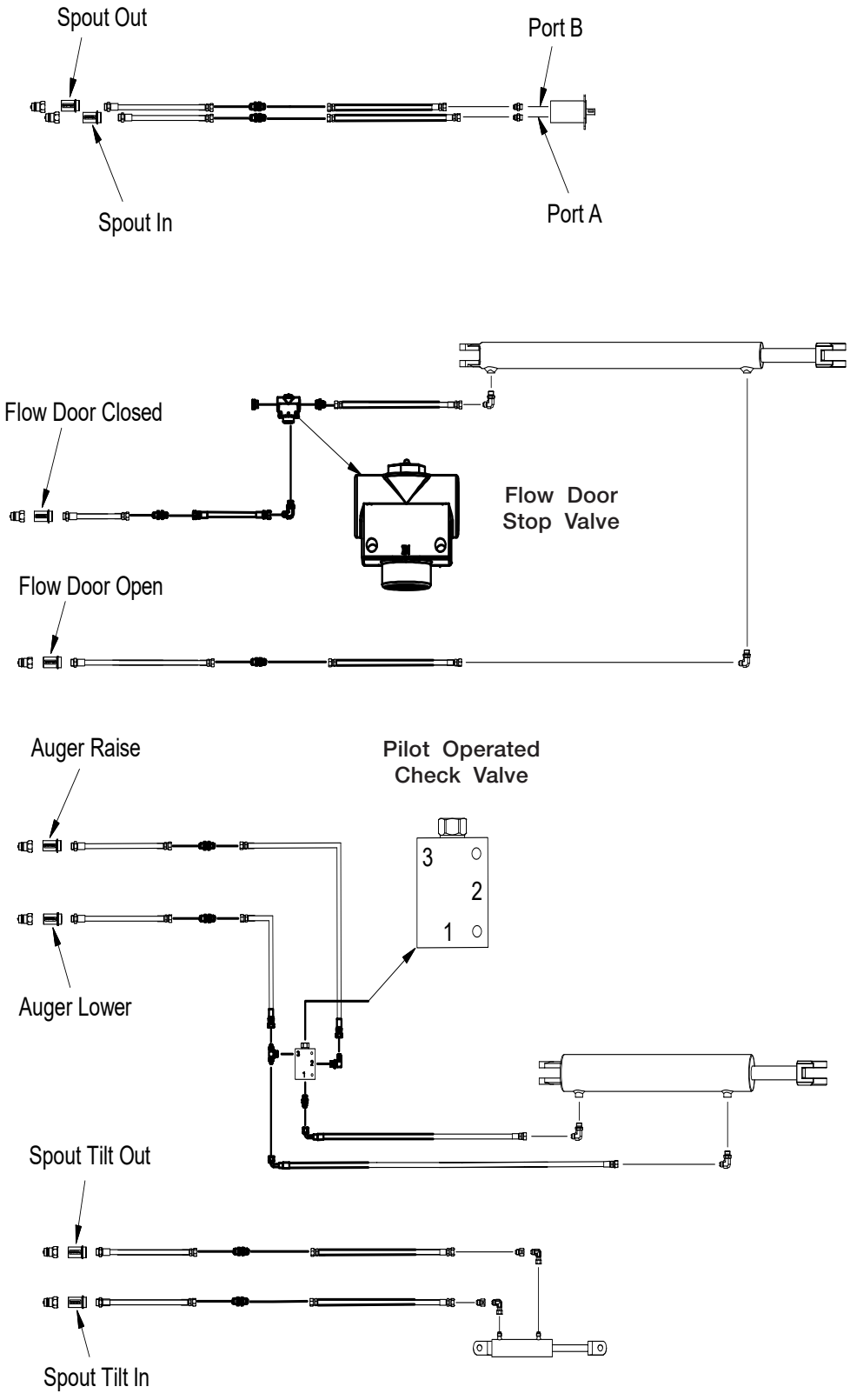
NOTE: For hydraulic connections chart, refer to "Hitching to Tractor - Hydraulic Connections" in the OPERATION section.

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	RAM END	Spout OUT
H	BUTT END	Spout IN
P		Tractor Pressure
T		Tractor Return

Electrical System Schematic - Optional Wireless Electric Tarp



Hydraulic System Plumbing Diagram



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

IMPORTANT

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

Complete Torque Chart

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

IMPORTANT

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

Hydraulic Fittings – Torque and Installation

Tightening O-Ring Fittings

1. Inspect components for damage or contamination. Do not connect any other type of fitting to an O-ring fitting.
2. For adjustable fittings, insure 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

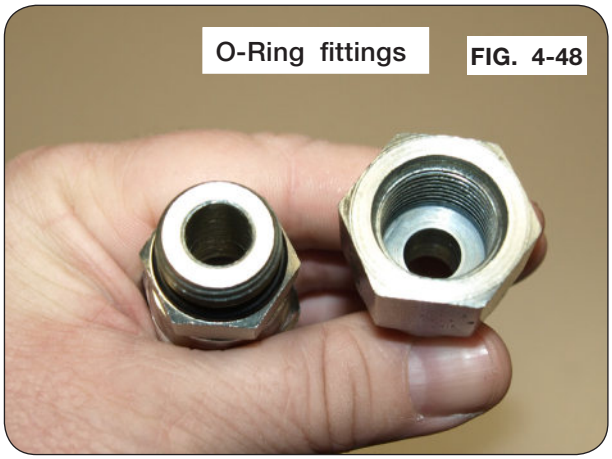


FIG. 4-48

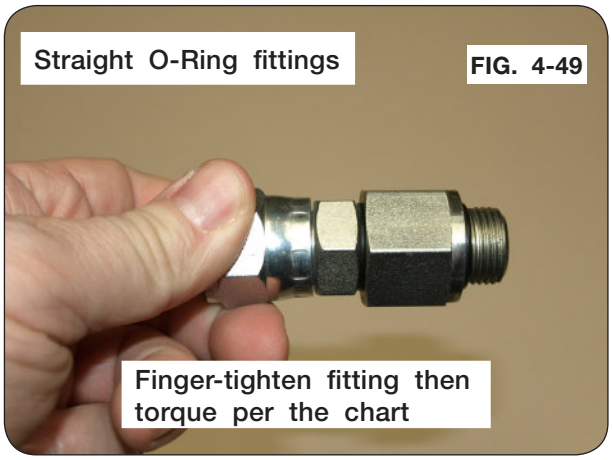


FIG. 4-49

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

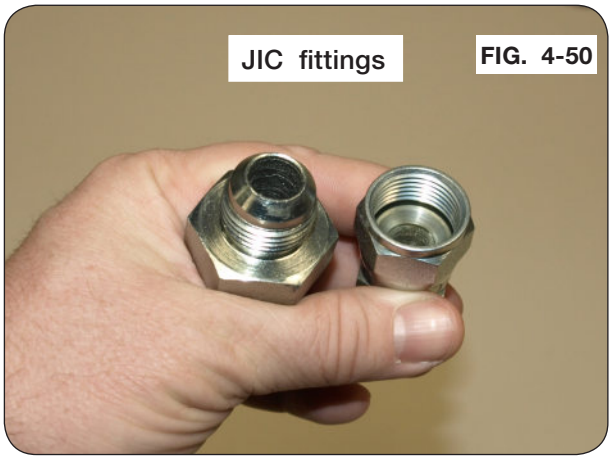


FIG. 4-50

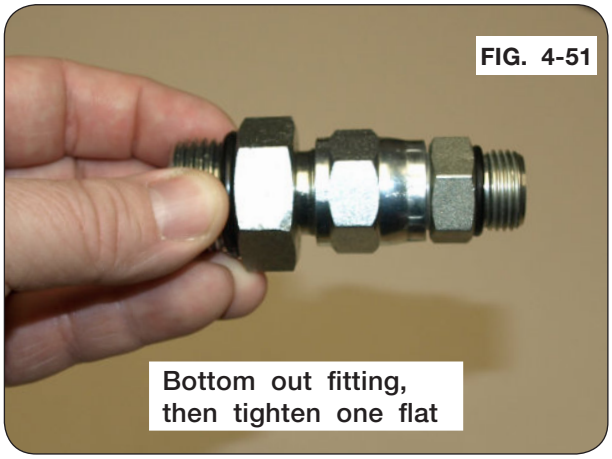
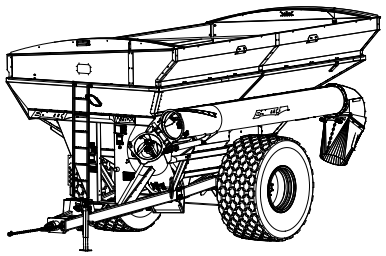


FIG. 4-51



BRENT **Grain Handling**

CORNER-AUGER GRAIN CART
MODEL V1100

Serial Number B45710100 & Higher

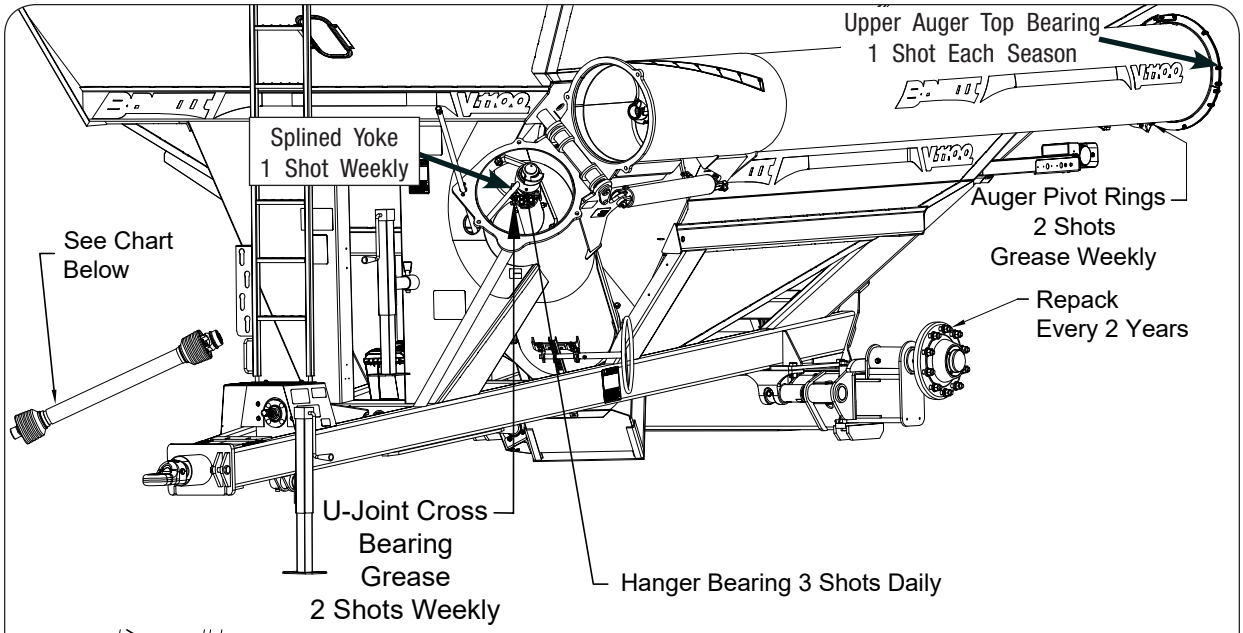
Part Number 297935

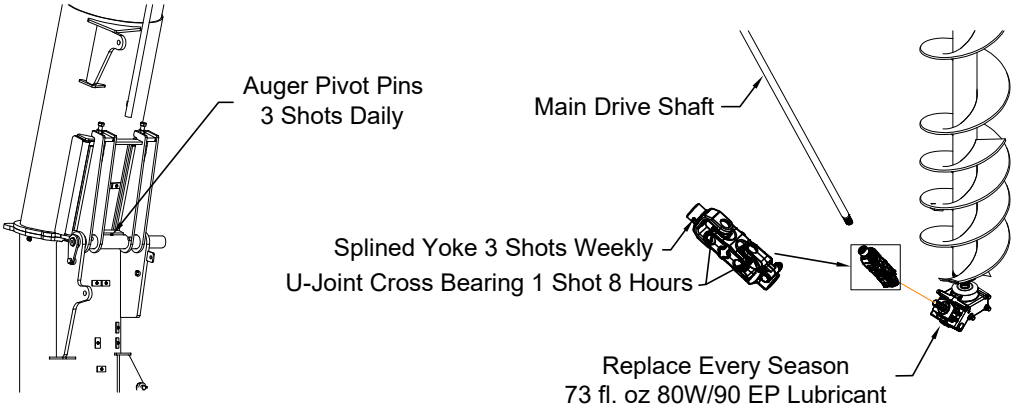
Section IV
Maintenance

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

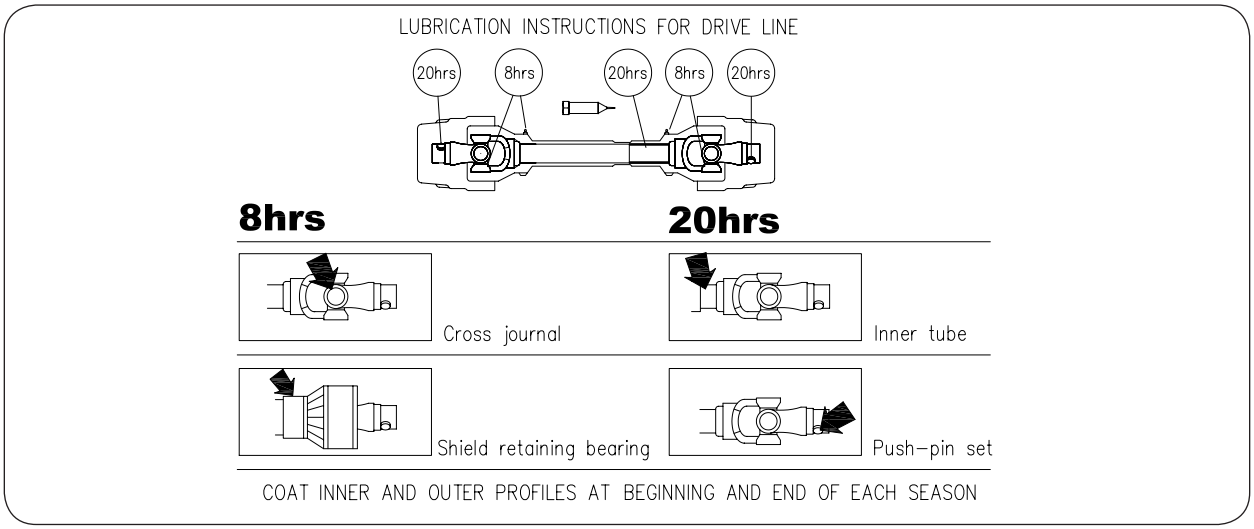
Lubrication

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





NOTE: FOR TRACK LUBRICATION, PLEASE REFER TO APPROPRIATE TRACK MANUAL.



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.

The lubrication locations and recommended schedule are as follows:

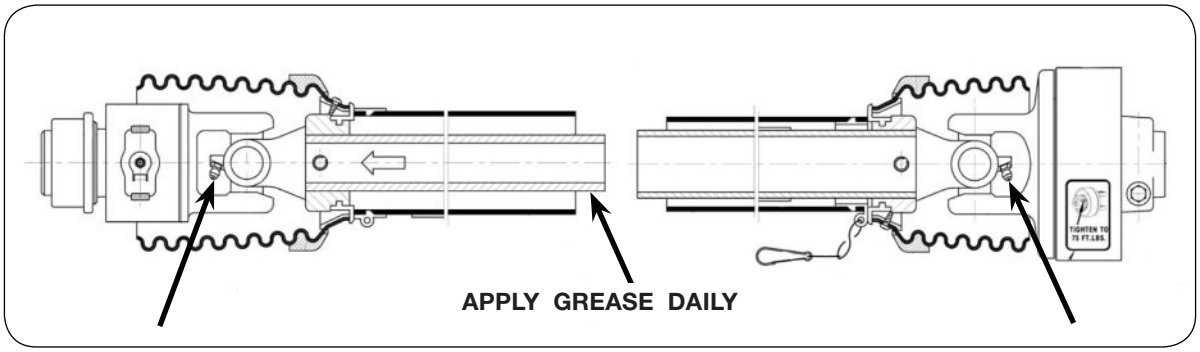
DESCRIPTION	POINT	LUBRICANT	QTY.	HOURS
PTO Driveshaft	7	EP-2	1 Shot	See Previous Page
Gearbox -- Remove Cover - Check oil level every 2 weeks. Replace oil every season. Refer to Gearbox in MAINTENANCE section for instructions.	1	EP80W90	73oz	Once Every Season
U-Joint Cross Bearing - Driveline	2	EP-2	1 Shots	8 Hours
Splined Yoke - Driveline U-Joint	1	EP-2	3 Shots	Weekly
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
Upper Auger Top Bearing	1	EP-2	1 Shot	Each Season
Upper Auger Pivot Rings	4	EP-2	2 Shots	Weekly
Lower Auger Pivot Pins	1	EP-2	3 Shots	Daily
Hubs	2	EP-2	Repack	2 Years

*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.

PTO Driveshaft Lubrication

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.



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 the 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.

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.

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.

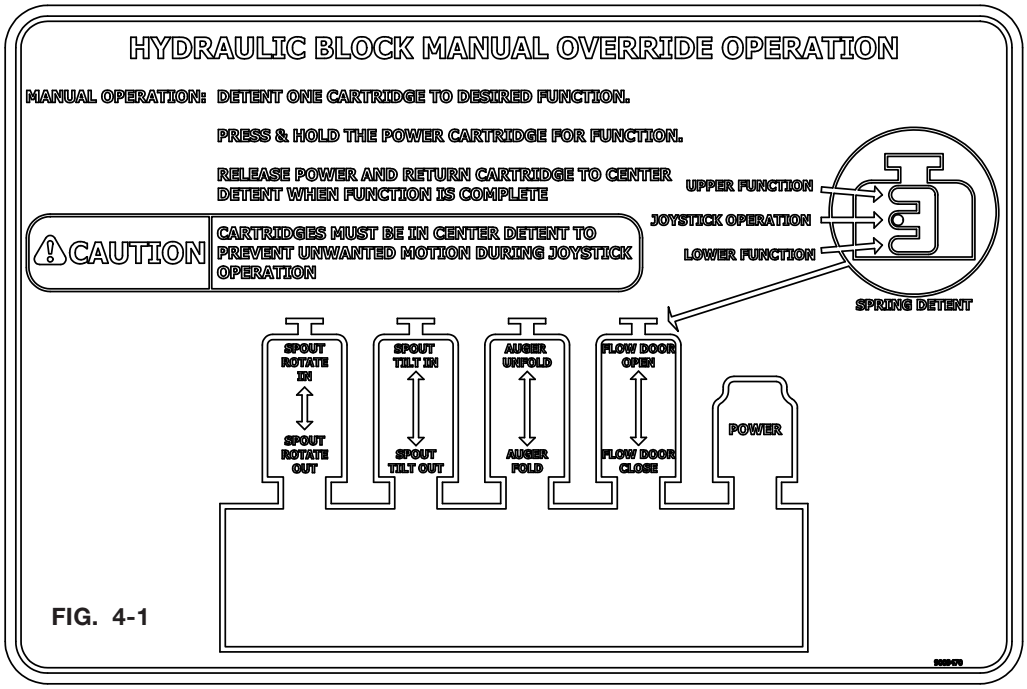


FIG. 4-1

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 postion. (FIG 4-2 & 4-3)

4. Locate desired function on valve (9008416) and move cartridge to top/bottom detent, as desired, and lock in position. (FIG. 4-1)

5. Push and hold the power cartridge on valve (9008438). (FIG. 4-4)

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. 4-2 & 4-3)

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, auger and/or rotating spout issues in the OPERATION section.

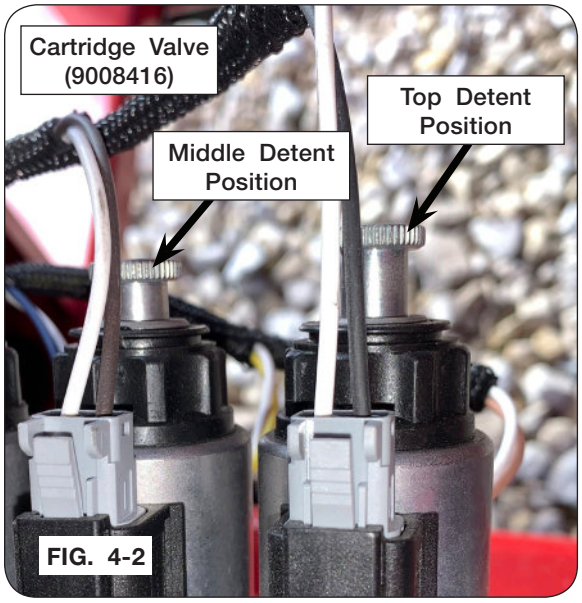


FIG. 4-2

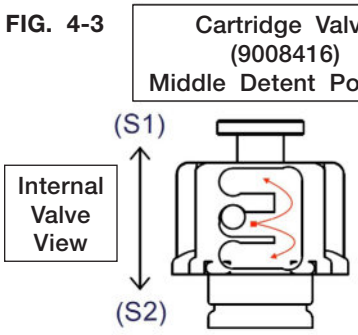


FIG. 4-3

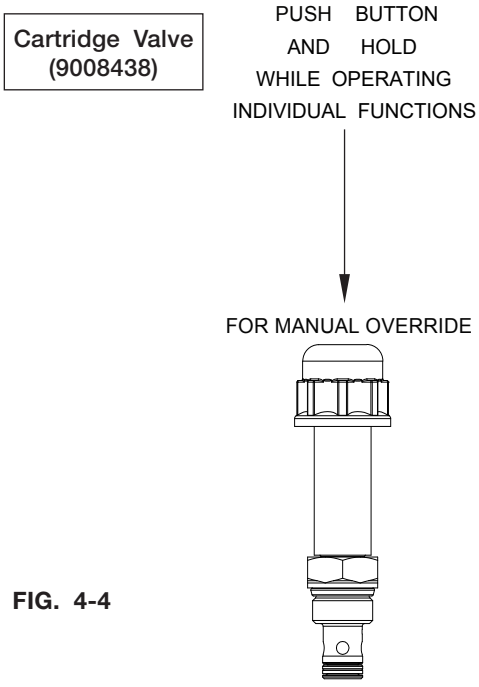


FIG. 4-4

Bleeding Procedure For Braking System (Optional)

⚠ WARNING

- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **RELIEVE THE 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.**
- **PLACE TRACTOR IN PARK. TRACTOR MUST IN PARK DURING ENTIRE PROCEDURE.**

NOTE: System is intended for tractors with hydraulic trailer brakes. If your tractor does not have hydraulic trailer brakes, contact your dealer for support.

NOTE: This procedure is a **two-person** process. With responsible operator behind controls, one person operates the brake pedal while the second person loosens the bleeder screw on the brake caliper.

1. Block tires to prevent movement. Set tractor parking brake, but leave tractor engine on throughout procedure. Attach hydraulic brake coupler on the cart to implement brake port at rear of the tractor.
2. Apply and hold pressure to brake pedal.
3. Attach 1/4" hose to bleeder screw. Put hose in an approved container. Loosen the bleeder screw, at the top of the brake caliper, on caliper of the closest wheel located in the hydraulic circuit. If necessary, pump the brake pedal to extract all air from the system. Once air bubbles are no longer present, tighten the bleeder screw. (Fig. 4-5)
4. Repeat steps 2 and 3 to the next brake caliper in the brake circuit. Repeat until all brakes are bled.
5. Do a final tightness check of all caliper bleed screws before beginning cart operation. Check that both brakes actuate and release properly with tractor brake pedal.

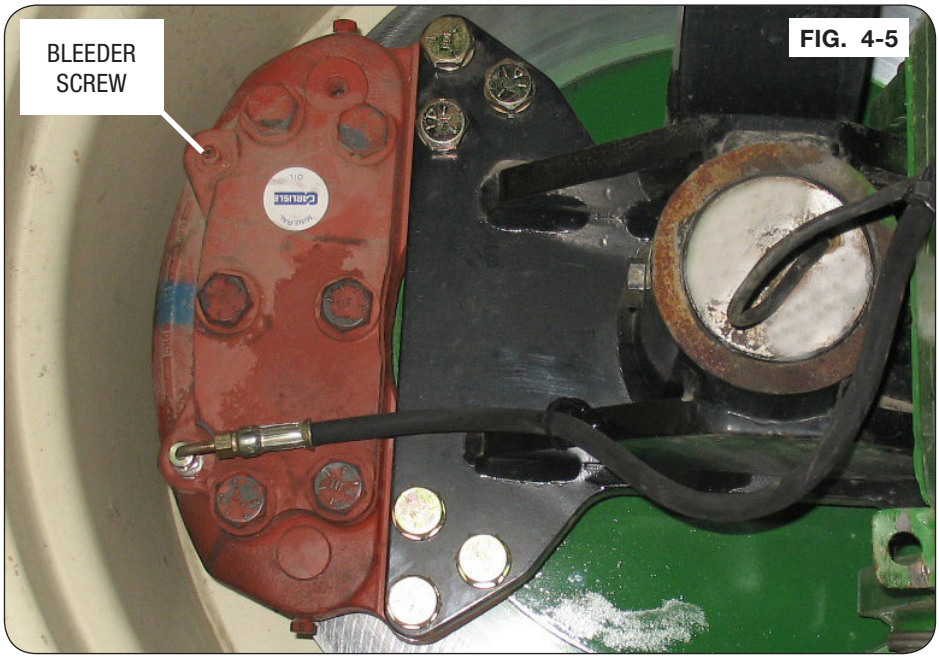


FIG. 4-5

Gearbox Lubrication

Gearbox 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.

For maximum gearbox life:
Check oil level every 2 weeks.
Replace oil every season with 73 fl. oz. of 80W90 EP gear lubricant.

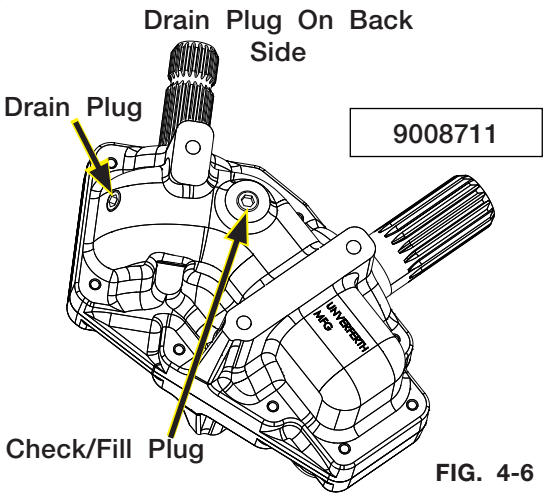


FIG. 4-6

Auger System

⚠ WARNING

- **TO PREVENT PERSONAL INJURY OR DEATH, 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 ARE 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 2,000 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

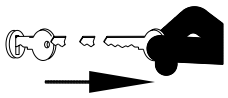
- **MOVING OR ROTATING COMPONENTS CAN CAUSE SERIOUS INJURY OR DEATH. ALWAYS DISCONNECT POWER SOURCE BEFORE SERVICING. ENSURE SERVICE COVERS, CHAIN/BELT COVERS AND CLEAN-OUT DOOR(S) ARE IN PLACE AND SECURELY FASTENED BEFORE OPERATING MACHINE.**

- **SHARP EDGES ON THE MACHINE CAN CAUSE INJURY. BE CAREFUL WHEN WORKING AROUND THE MACHINE.**

Auger System (continued)

Lower Auger Removal

1. Park the empty grain cart on a firm, level surface. Use tractor SCV to open flow door completely and fold auger to transport position. Set the tractor's parking brake, shut-off the engine, remove the ignition key, and disconnect PTO shaft. Block the machine to keep it from moving.



2. Remove the three 5/8"-11UNC x 2" capscrews (9390-124), 5/8" flat washers (9405-098), 5/8"-11UNC lock nuts (9003398) and shims that secure the hanger bearing bracket to the auger tube. (FIG. 4-7)

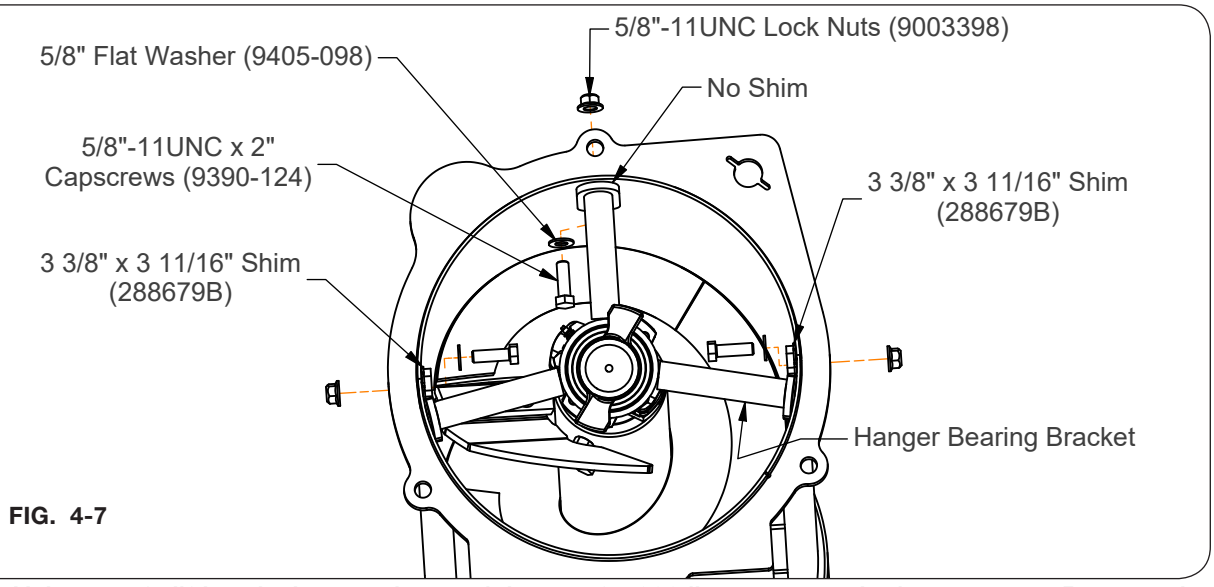


FIG. 4-7

3. Using a safe lifting device rated at a minimum of 1,000 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 Removal

4. The replacement auger is factory balanced. Remove entire auger from shipping crate and secure from rolling. The lower auger assembly is pictured in FIG. 4-8 for reference.

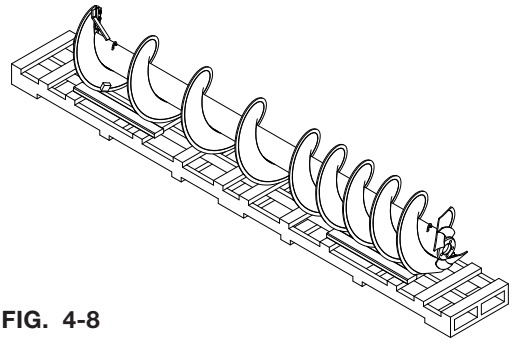


FIG. 4-8

5. Remove the u-joint assembly from the old lower auger.

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. Attach the u-joint assembly to the new lower auger flighting by placing 5/8"-11UNC x 7" capscrews (9390-138) and 5/8"-11UNC lock nuts (9801) into the auger from opposite directions as shown in FIG. 4-9.

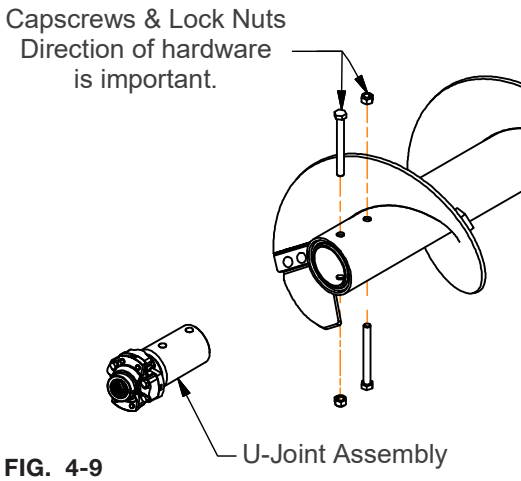


FIG. 4-9

7. Open cleanout door.

8. Using a safe lifting device rated at a minimum of 1,000 lbs., lift the auger and assembly. Slowly lower the auger down through the auger plate opening to engage with the drive bushing.

9. Align auger end with the five pin auger drive plate assembly and securely engage together, see FIG. 4-10.

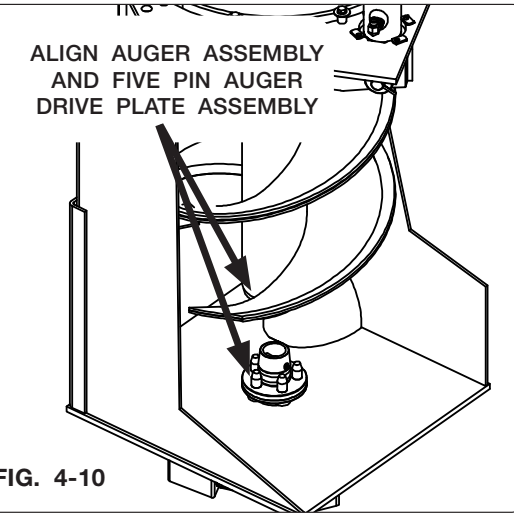


FIG. 4-10

Auger System (continued)

Hanger Bearing Centering

10. 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 wedged near the auger hinge plate. (FIG. 4-11)

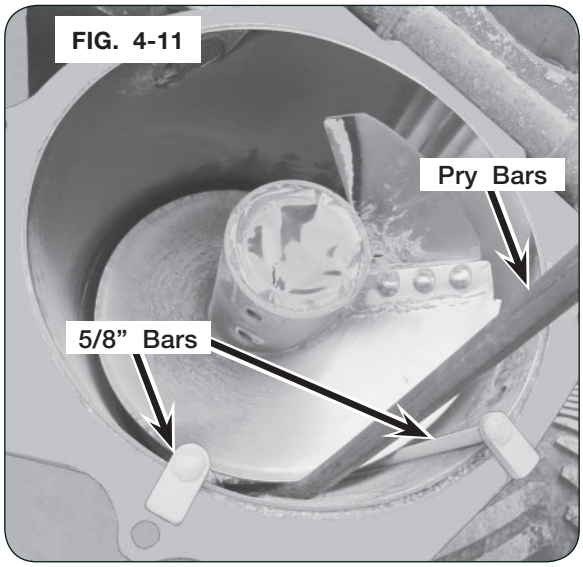


FIG. 4-11

Lower Auger Timing

11. Apply anti-seize to the splines before sliding the drive dog into the u-joint. Time the drive dog (as in Fig. 4-12) with the finished edge of the flighting at 12 o'clock reference. Position the drive dog so the driving edge is at 11 o'clock position.

NOTE: When looking down at the lower flighting (FIG. 4-12) the auger rotation will be clockwise.

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

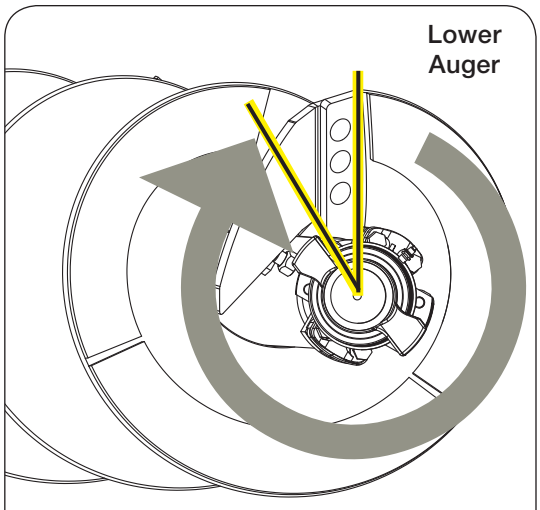


FIG. 4-12

Auger System (continued)

12. Loosely secure the hanger bearing using two 3 3/8" x 3 11/16" shims (288679B), three 5/8"-11UNC x 2" capscrews (9390-124), three 5/8" flat washers (9405-098), and three 5/8"-11UNC lock nuts (9003398) as shown in FIG. 4-13.

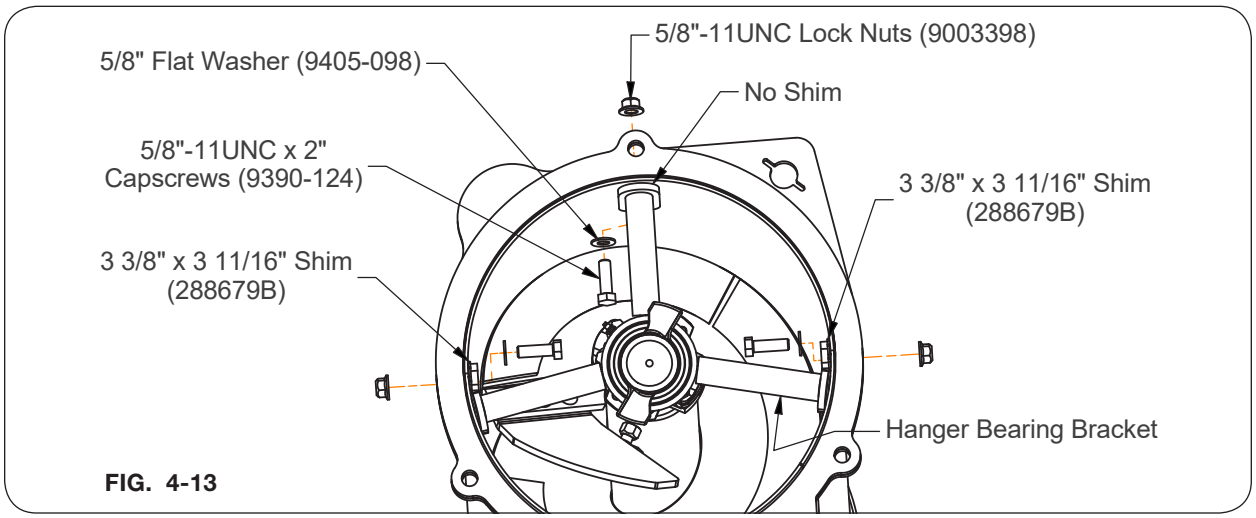


FIG. 4-13

U-Joint Spline Gap

13. Verify spline gap before tightening hanger bearing hardware. Spline gap must be a minimum of 3/16". Using a safe lifting device rated for 250 lbs., raise the hanger bearing in the holes so the proper minimum spline gap is achieved. (FIG. 4-14)

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 safe lifting device to achieve the proper spline gap.

14. Tighten the retaining hardware to the appropriate torque values listed in the MAINTENANCE section.

15. Grease the spline grease zerk. (FIG. 4-14)

16. Test run the auger. Verify smooth auger operation and re-verify spline gap.

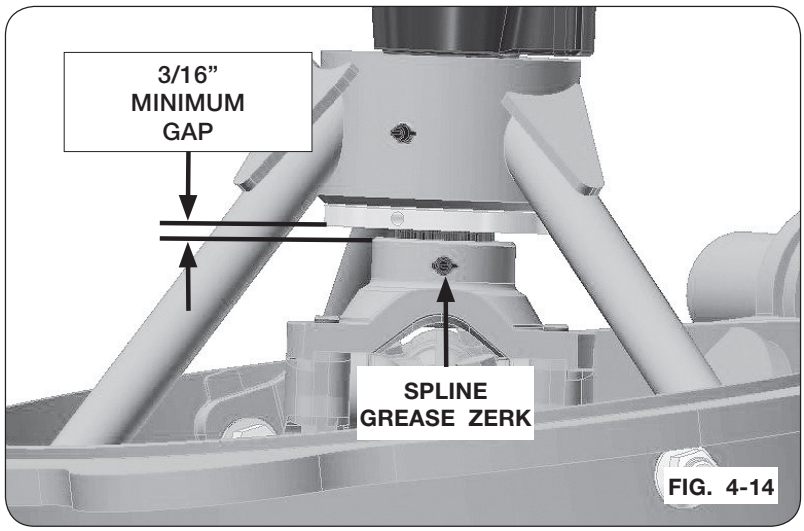
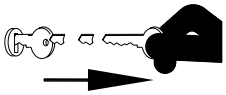


FIG. 4-14

Auger System (continued)

Upper Auger

1. Hitch cart to tractor. 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. 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 lock nut (901527) and 2" flat washers (93974). (FIG. 4-15)

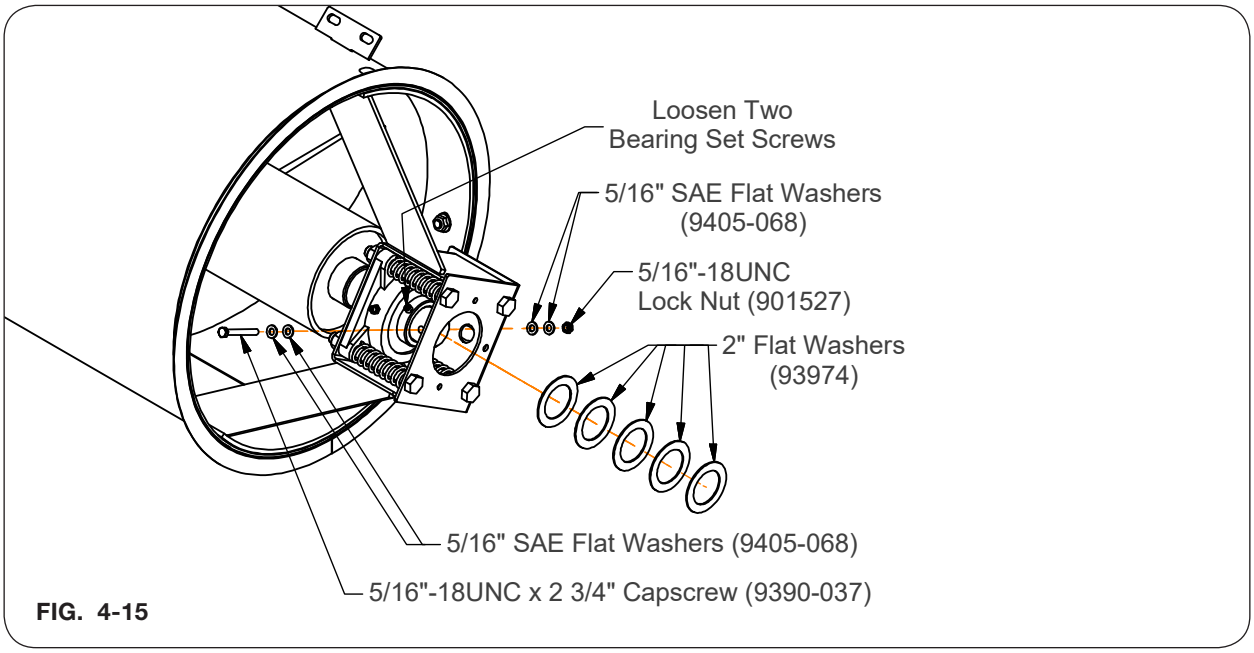


FIG. 4-15

Auger System (continued)

Soft Start Replacement

3. Use a safe lifting device rated at a minimum of 2,000 lbs. to support the upper auger, remove auger from tube.

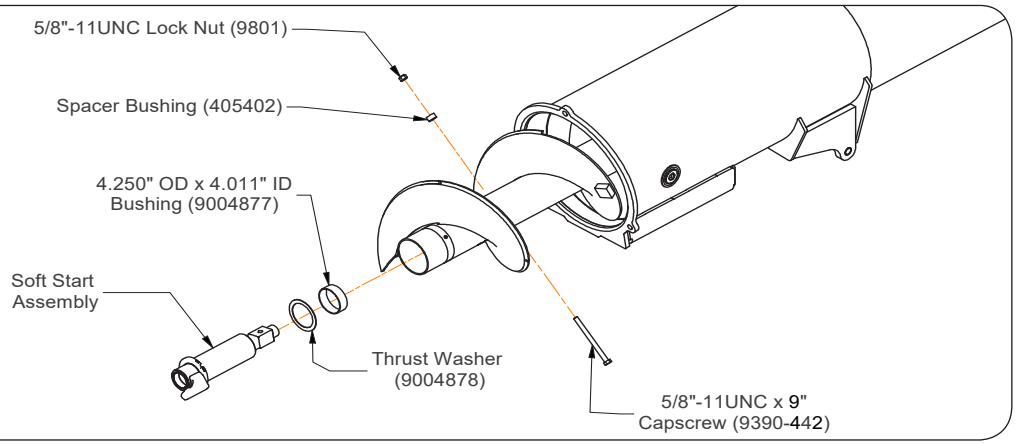
4. Remove the 5/8”-11UNC x 9” capscrew (9390-442), spacer bushing (405402), and 5/8”-11UNC lock nut (9801), soft start assembly, thrust washer (9004878), and bushing (9004877). Discard 5/8”-11UNC capscrew (9390-442), 5/8”-11UNC lock nut (9801), and spacer bushing (405402). (FIG. 4-16)

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.

NOTE: Before soft start reassembly, ensure the spacer bushing (405402) is on the same side as lock nut (9801).

5. 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. 4-16)

FIG. 4-16



Upper Auger Assembly and Timing

6. Time the drive pin (as in FIG. 4-17) with the finished edge of the flighting at 12:00. Position the drive pin at 7:00.

NOTE: Looking up at the upper flighting (FIG. 17) the auger rotation will be counter clockwise.

NOTE: Grain leaving the lower auger flighting will be captured by the upper auger flighting within 1/2 revolution of the augers.

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

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

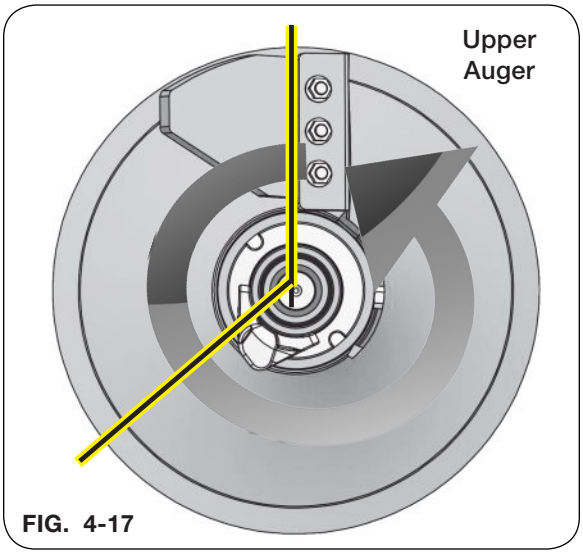


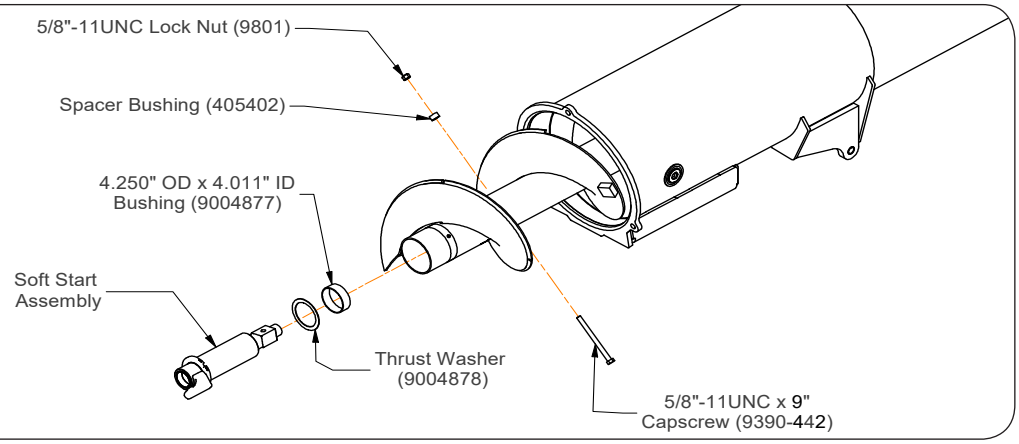
FIG. 4-17

Auger System (continued)

7. Retain the soft start into position with 5/8”-11UNC x 9” capscrew (9390-442), spacer bushing (405402), and 5/8”-11UNC lock nut (9801). (FIG. 4-18)

NOTE: Verify that the spacer bushing is on the locknut side of the auger center tube.

FIG. 4-18



8. The replacement auger is factory balanced. Remove entire auger from shipping crate and secure from rolling.

9. Using an adequate safe lifting device with a minimum capacity of 2,000 lbs. to support the upper auger, install upper auger into the tube.

Upper Auger Inset

10. Set upper auger in-set of 4”. With the upper auger unfolded, ensure the height of the upper auger is set correctly. The face of the soft start bushing that sits on the top of the drive dog should be 4” back from the square cut face of the auger housing tube. (FIG. 4-19)

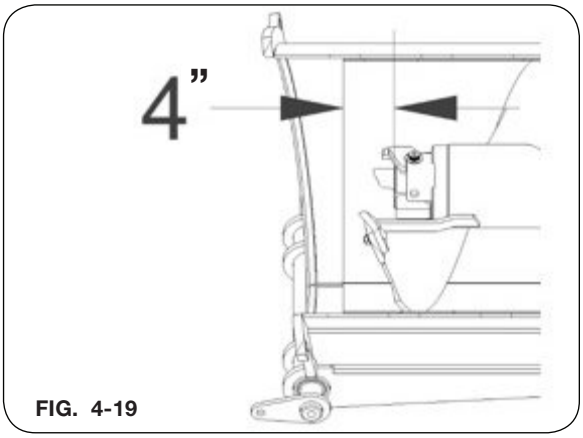


FIG. 4-19

Auger System (continued)

Upper Auger Assembly (continued)

11. Make sure that the 4 bolt flange bearing is sitting tight against the mounting plate and then tighten the two bearing set screws. Attach the 5/16”-18UNC x 2 3/4” capscrew (9390-037), four 5/16” SAE flat washers (9405-068) 5/16”-18UNC lock nut (901527) and as many 2” flat washers (93974) as required to fill the gap between the bearing and the cross bolt. (FIG. 4-20)

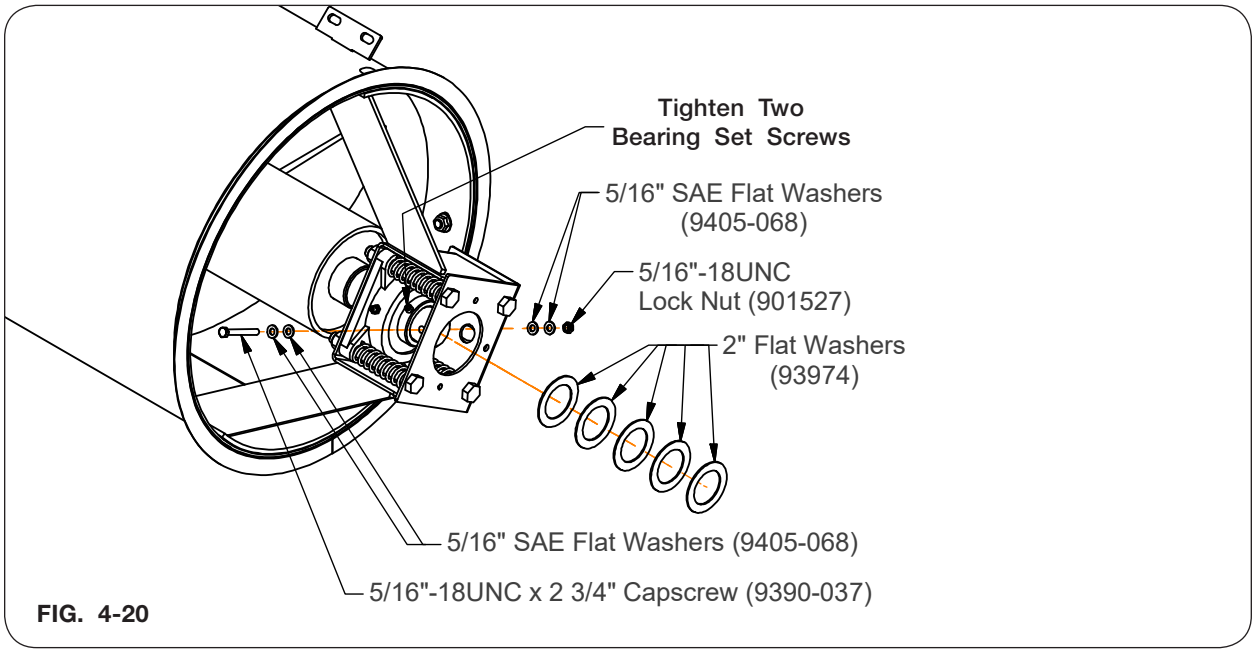


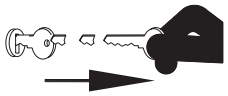
FIG. 4-20

Auger System (continued)

Upper Auger Bearing Gap

12. Unfold the auger to the unload position.

13. Engage PTO and test run augers to ensure drive dogs are engaged. Stop PTO, shut off tractor and remove key.



14. Remove upper auger tube plug and visually verify upper and lower auger engagement. (Fig. 4-23)

15. 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. (FIG. 4-21) If gap is present, no action is needed, go to step 14. If no gap or gap is too large, Re-adjust the upper auger placement to achieve a 1/16-1/8" gap. If there is no gap, the upper auger will need to be moved ahead. If there is too large of a gap, move it backwards in the upper auger housing. The number of washers (93974) will also need to be adjusted to eliminate any gap between the bearing and the cross bolt. (FIG. 4-22)

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

17. 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.

18. If upper and lower auger engagment is good, install upper auger tube plug. (FIG. 4-23)

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

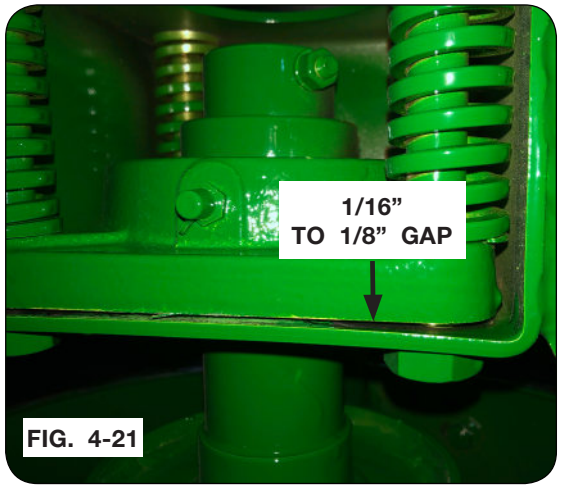


FIG. 4-21

FIG. 4-22

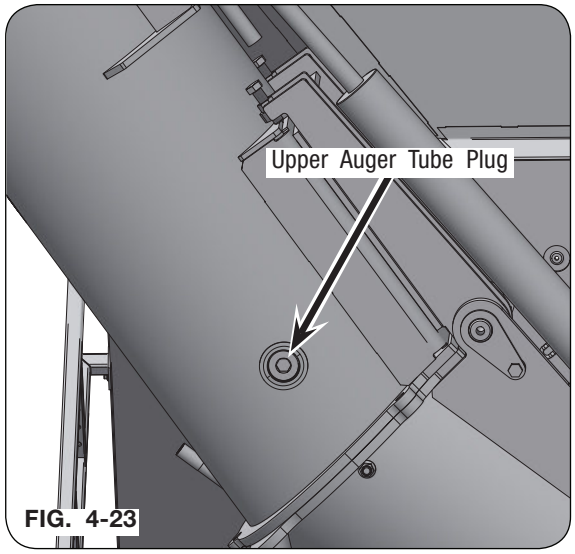


FIG. 4-23

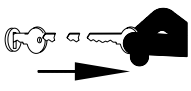
Auger System (continued)

Auger Flow Door Cylinder Replacement

WARNING

- **TO PREVENT PERSONAL INJURY OR DEATH 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 ARE 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.**
- **SLIPPERY SURFACES ARE PRESENT INSIDE THE CART. USE EXTREME CAUTION WHEN ENTERING AND WORKING INSIDE THE CART.**
- **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 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.**
- **HYDRAULIC SYSTEM MUST BE PURGED OF AIR BEFORE OPERATING TO PREVENT SERIOUS INJURY OR DEATH.**

1. Park the empty grain cart on a firm, level surface and extend auger. Block the machine to keep it from moving. Unfold upper auger to make the flow door cylinder easier to access. If possible, close the flow door at least 8" from the fully open position. Relieve hydraulic pressure, see tractor operator's manual. Set the tractor's parking brake, shut-off the engine, remove the ignition key and disconnect the PTO shaft.



Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

2. On the inside of the cart, open the screen service access panel shown in FIG. 4-24.

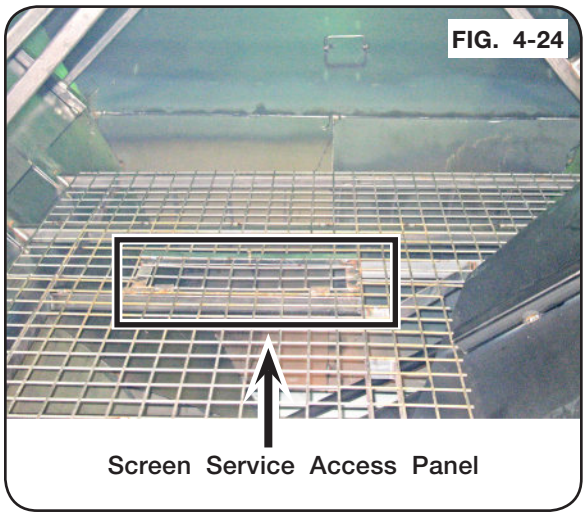


FIG. 4-24

3. Remove the cotter pins from the lower cylinder pin then remove the pin. Then remove the four 3/8”-16UNC x 1” flange bolts holding on the gasket and gasket plate, shown in FIG. 4-25.

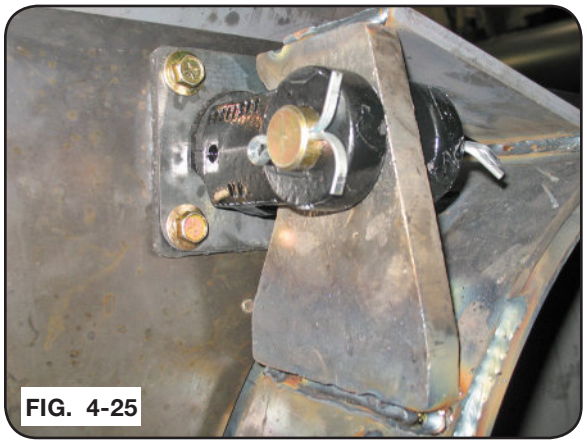
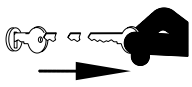


FIG. 4-25

4. Remove all tools and extra hardware from the grain cart. Make sure all personnel are outside of the hopper. Then, retract the cylinder so that there is about 8” of clearance between the cylinder clevis and the lug.

5. Relieve hydraulic pressure, shut off the engine, remove the ignition key, and disconnect the hydraulic hoses from the tractor and cart.



Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

6. Label the hydraulic hoses to indicate upper and lower. Disconnect them from the cylinder, along with the lower hydraulic fitting (Fig. 4-26).

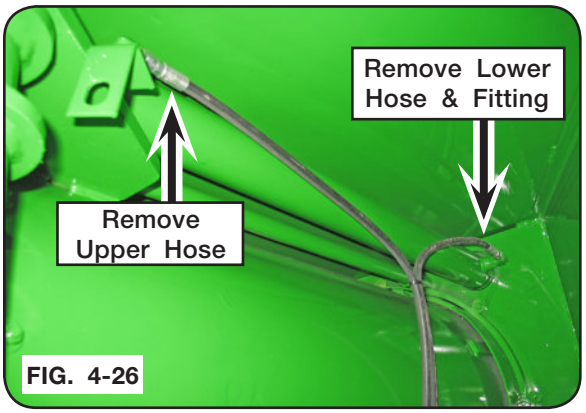


FIG. 4-26

7. Remove the cotter pins from the upper cylinder pin and remove pin (Fig. 4-27).

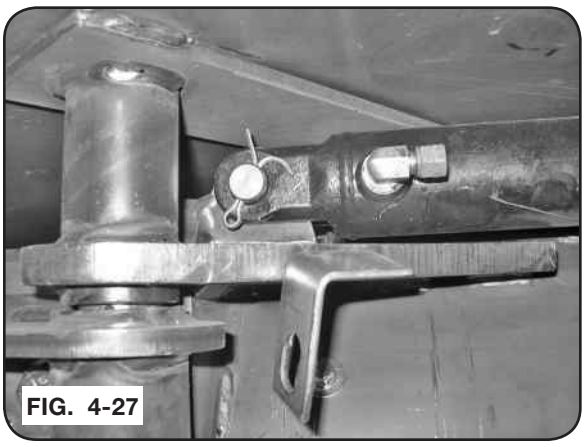


FIG. 4-27

8. Slide the flow door cylinder through the hole in the junction box until the upper cylinder clevis clears the lug, then raise the top of the cylinder above the auger fold bushing and remove the cylinder.

9. Replace with the new cylinder and insert the upper cylinder pin. Remove the cylinder port plugs. Manually extend the cylinder until the lower clevis lines up with the door lug and assemble the pin and cotter pins. Assemble hydraulic fittings and attach hoses.

10. Replace rubber gasket and gasket plate with 3/8”-16UNC x 1” flange screws, shut and secure the screen service access panel.

11. Remove all tools and extra hardware from the grain cart. Make sure all personnel are outside of the hopper. **After the hydraulic components have been tightened**, purge air from system as follows:

    A. Pressurize the system and maintain system at full pressure for at least 5 seconds after cylinder rods stop moving. Check that all cylinders have fully extended or retracted.
    B. Check oil reservoir in hydraulic power source and re-fill as needed.
    C. Pressurize system again to reverse the motion of step A. Maintain pressure on system for at least 5 seconds after cylinder rods stop moving. Check that cylinders have fully extended or retracted.
    D. Check for hydraulic leaks using cardboard or wood. Tighten connections according to directions in the Torque Specifications in your Operator’s Manual.
    E. Repeat steps A, B, C and D three or four times.

Auger System (continued)

Auger 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 ENTANGLED IN A ROTATING DRIVELINE.**

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. 4-28)

NOTE: In order to increase grain flow to the maximum bushels per minute, cylinder stop (289737B) can be adjusted further down on flow door indicator rod. (FIG. 4-28)

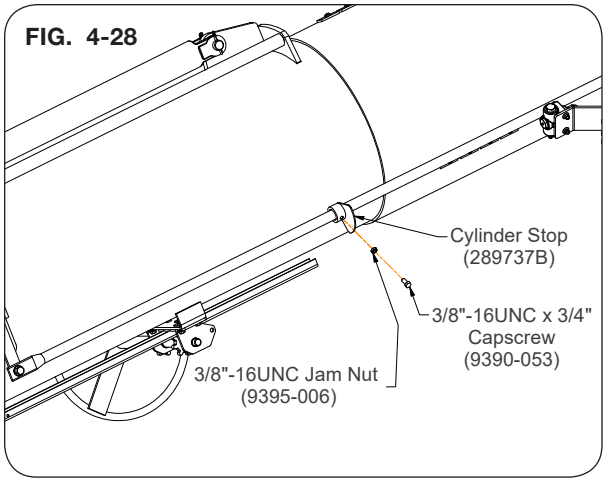
1. Park the empty grain cart on a firm and level surface. Block the machine to keep it from moving. Set the tractor's parking brake. Leave the tractor on throughout procedure.

2. Before loading cart or operating auger, verify that the flow control door is closed.

3. Choose an area free from obstructions and unfold auger into unloading position. Allow sufficient time for the cylinder to fully engage the two augers.

4. Locate the cylinder stop on the flow door indicator rod. (FIG. 4-28)

FIG. 4-28



5. Loosen the capscrew and jam nut retaining the cylinder stop.

NOTE: Ensure the cylinder stop is centered on the flow control valve plunger and will not contact hoses during movement of the flow door.

6. Move the cylinder stop along the indicator rod to desired flow door opening setting, and tighten retaining capscrew and jam nut.

Adjusting Auger Rest

⚠ WARNING

- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING THE IMPLEMENT.**
- **FALLING OR LOWERING EQUIPMENT CAN CAUSE SERIOUS INJURY OR DEATH. KEEP EVERYONE AWAY FROM EQUIPMENT WHEN SUSPENDED, RASING, OR LOWERING.**

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. Loosen auger rest bracket bolts and move the rest bracket to the highest position. (Fig. 4-29)
3. Slowly fold the auger until it touches the auger rest bracket.
4. If the auger rest does not fit into the radius of the auger rest bracket, unfold the auger, loosen the auger rest bracket bolts and move the auger rest bracket down.
5. Slowly fold the auger in and check the auger rest and rest bracket fitment.

   NOTE: For proper auger rest fitment, the auger rest should fit tightly in the radius of the auger rest bracket. (Fig. 4-30)
6. Repeat steps 3, 4, and 5 until a proper fit is achieved.

FIG. 4-29

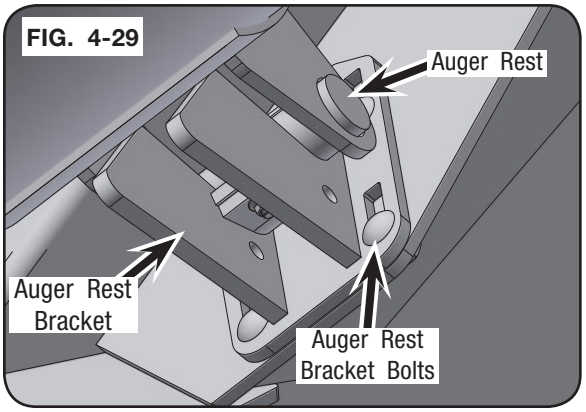
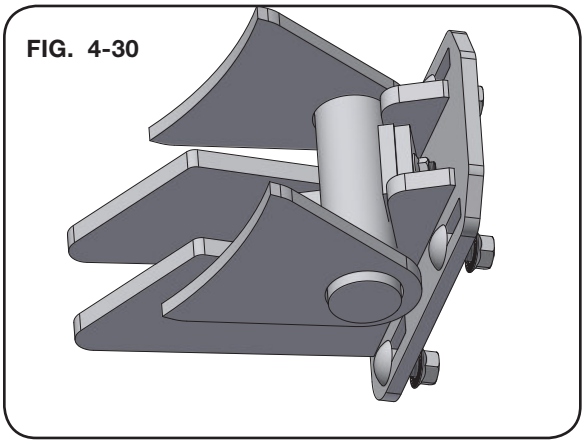


FIG. 4-30



Adjusting Cleanout Door

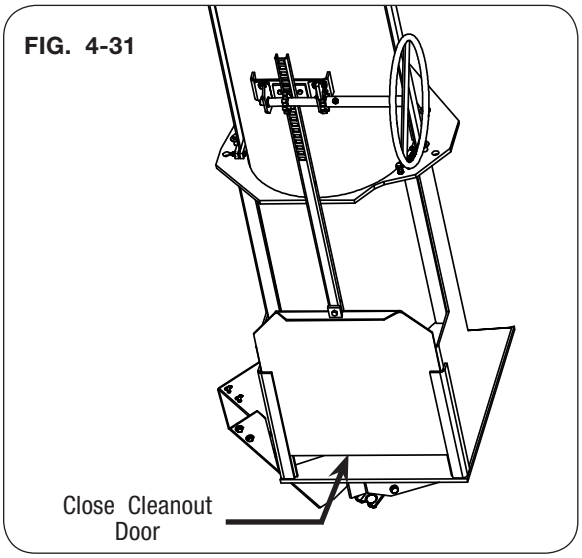
⚠ WARNING

- **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. 4-31)

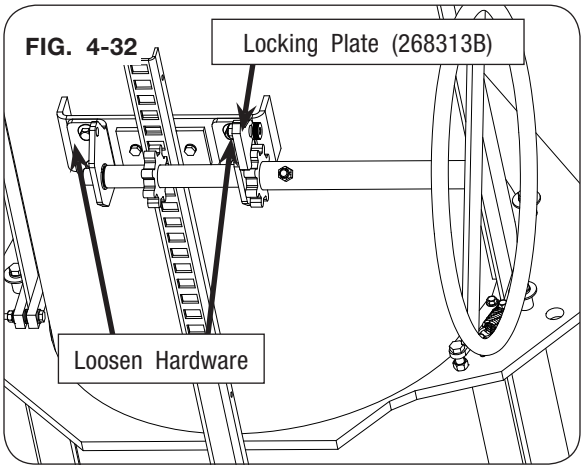
FIG. 4-31



3. Engage the locking plate (268313B). (FIG. 4-32)

4. Loosen mounting hardware. (FIG. 4-32)

FIG. 4-32



Adjusting Cleanout Door (continued)

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. 4-33)

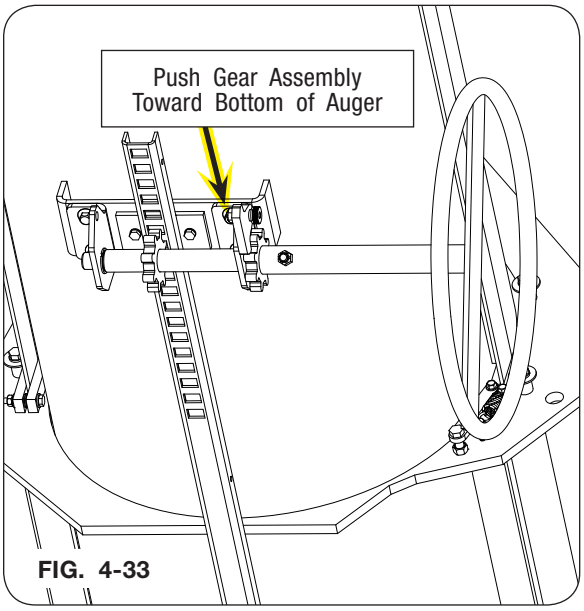


FIG. 4-33

6. Tighten hardware loosened in step 4. (FIG. 4-34)

7. Check door operation. Lock the handle weldment into position. (FIG. 4-34)

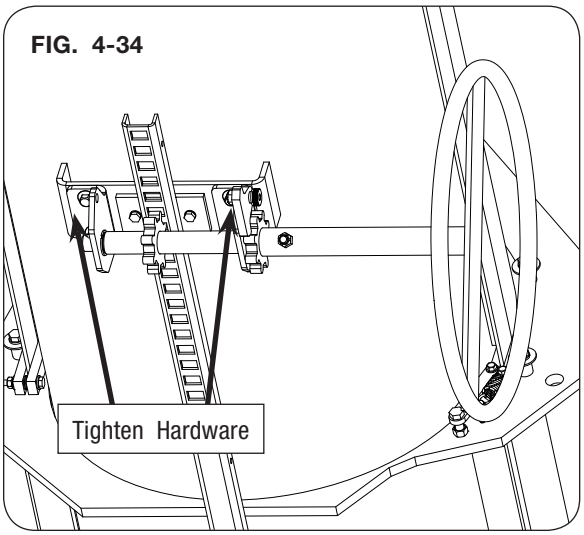


FIG. 4-34

Verify Telescoping PTO Shaft Length

⚠ WARNING

- **PROPER EXTENDED AND COLLAPSED LENGTHS OF THE TELESCOPING PTO SHAFT MUST BE VERIFIED BEFORE FIRST OPERATION WITH EACH 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 ensure 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" (Figure 4-35).

   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" (Figure 4-36)

   Add "T" + "C" measurments 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)

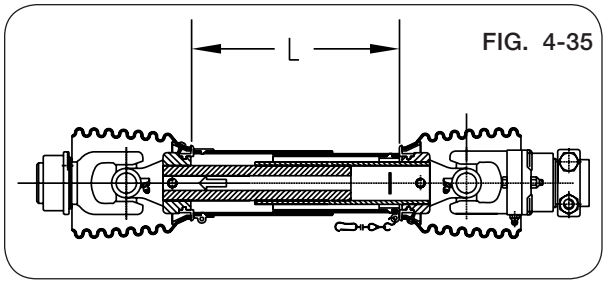


FIG. 4-35

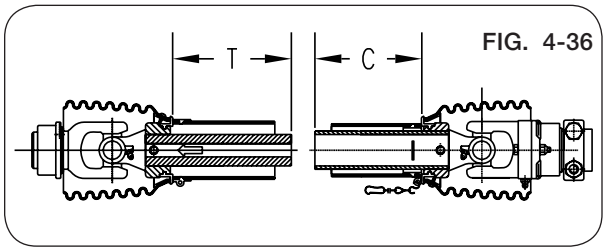


FIG. 4-36

This is the maximum recommended extended length.

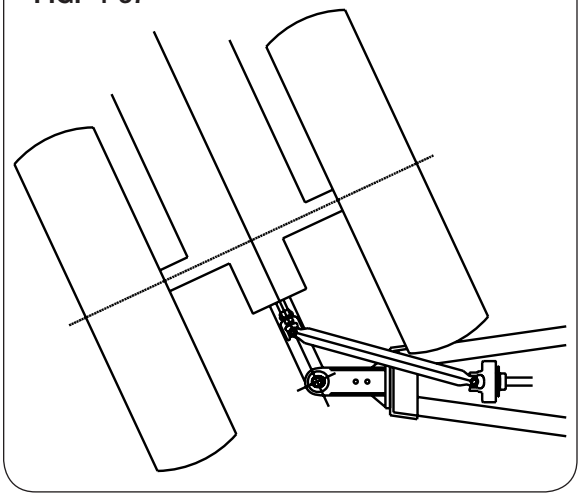
Verify Telescoping PTO Shaft Length (continued)

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, obtain a longer PTO shaft assembly before operating cart.

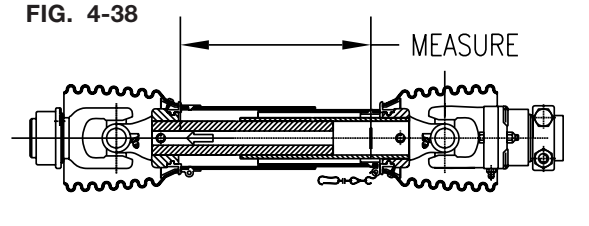
6. Position the tractor to obtain tightest turning angle, relative to the cart. (Fig. 4-37)

FIG. 4-37



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. 4-38)

FIG. 4-38



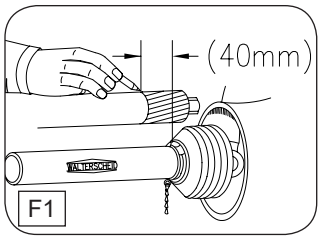
PTO Shaft Length Adjustment

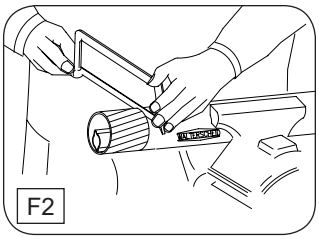
WARNING

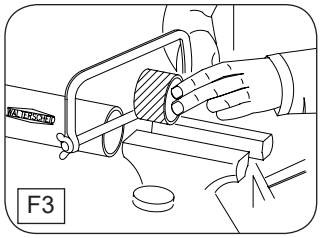
- **CHECK THE LENGTH OF THE TELESCOPING MEMBERS TO ENSURE THE DRIVELINE WILL NOT BOTTOM OUT OR SEPARATE WHEN TURNING AND/OR GOING OVER ROUGH TERRAIN.**

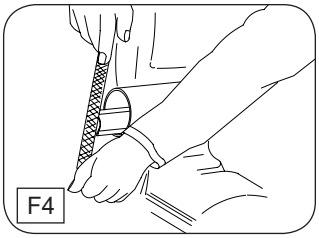
NOTE: Maximum operating length LB. (Refer to "Verify Telescoping PTO Shaft Length" in this section for LB length.)

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.





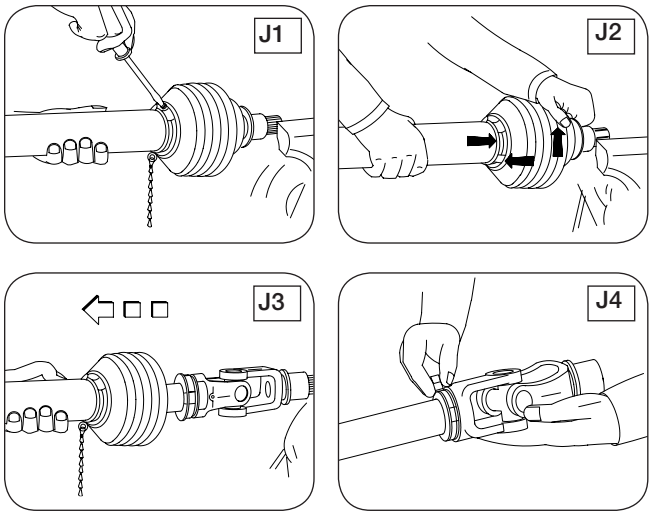




PTO Shaft and Clutch

To Dismantle Guard (Figs. J1 - J4)

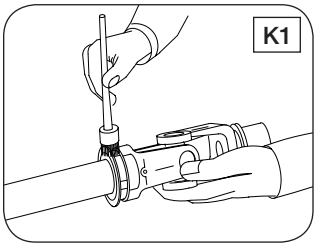
1. Remove locking screw.
2. Align bearing tabs with cone pockets.
3. Remove half-guard.
4. Remove bearing ring.

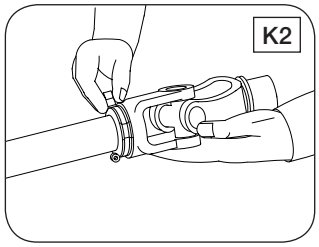


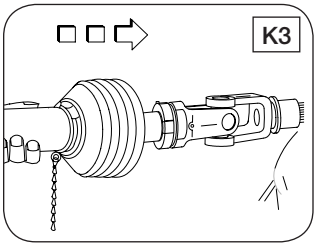
PTO Shaft and Clutch (continued)

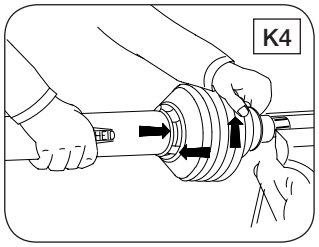
To Assemble Guard (Figs. K1 - K5)

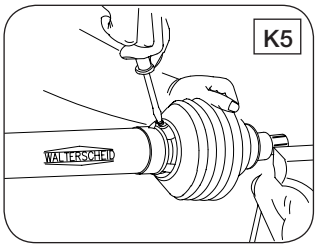
1. Grease yoke groove and inner profile tube.
2. Fit bearing ring in groove with recesses facing profile tube.
3. Slip on half-guard.
4. Turn cone until it engages correctly.
5. Install locking screw.





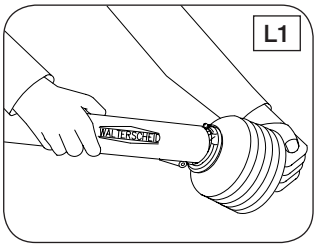


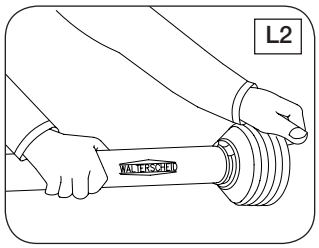


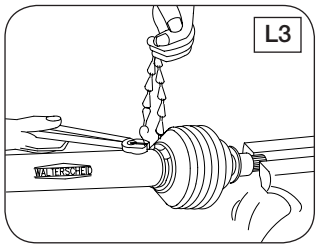


To Assemble Cone (Figs. L1 - L3)

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).







Auger Driveline

Bearings

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

Driveline Replacement

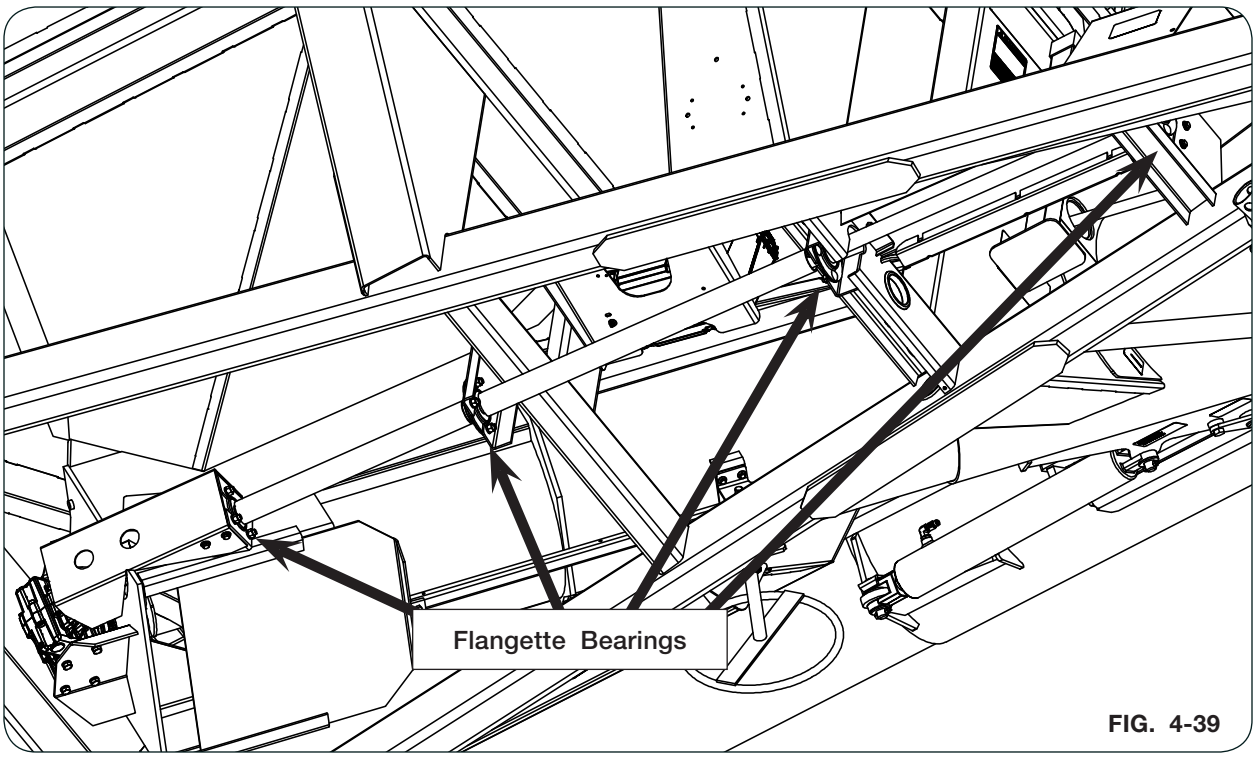


FIG. 4-39

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 and bearing hardware.

2. Loosen the setscrews (9399-071) on all flangette bearings (9003920) (Fig. 4-39).

3. Remove the 1/2" carriage bolts (9388-103), flange nuts (9394-010), and lock washers (9404-025) holding the flangette bearings. Keep hardware. (Fig. 4-40).

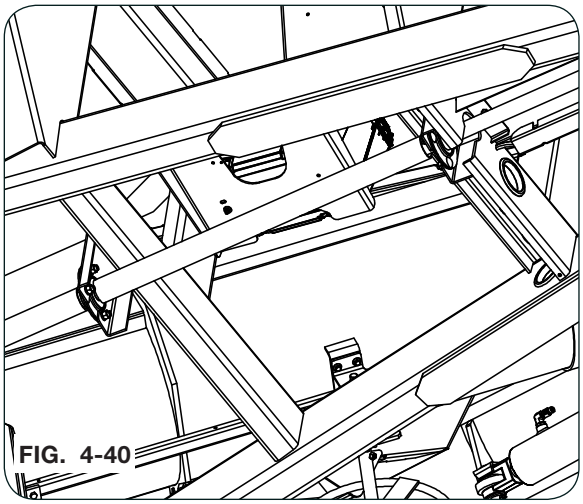


FIG. 4-40

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 driveshaft down and slide driveshaft out of the flangette bearing on the hitch end of the driveshaft.

Auger Driveline (continued)

Driveline Replacement (continued)

6. Remove bearings, bearing mounts, universal joint cover, PVC driveshaft covers, driveshaft lock collars (if lock collars are attached to driveshaft), and driveline cover, located behind the ladder, from the current driveshaft.

7. Slide new 1 1/2" dia. two-piece lock collars (9008671) to both sides of new bearing (9003920) closest to the U-Joint, when installing bearings onto new driveshaft (9008809).

8. Assemble new 26" PVC driveshaft cover (293391) between bearings near the gearbox, and new 36" PVC driveshaft cover (291554) between bearings behind the hitch driveline cover. (FIG. 4-41)

NOTE: Ends of driveshaft are symmetrical.

9. Slide the hitch end of the driveshaft, bearing and hitch driveline cover into the bearing near hitch of the cart. (FIG. 4-41)

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 about 2 3/8". Ensure universal joint and driveshaft splines completely engage. Verify the hitch end for adequate length for driveline assembly to connect. (FIG. 4-42)

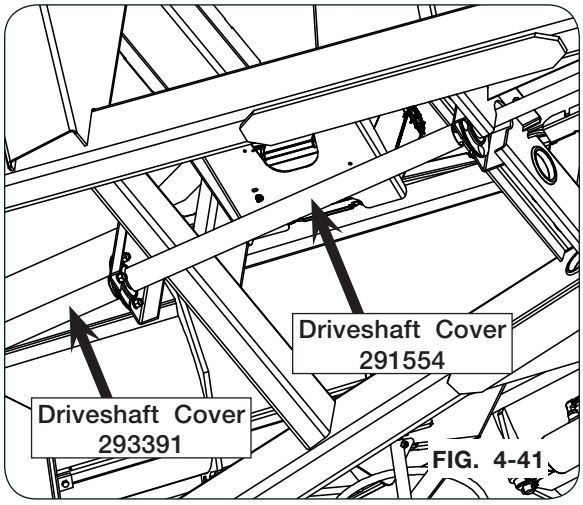
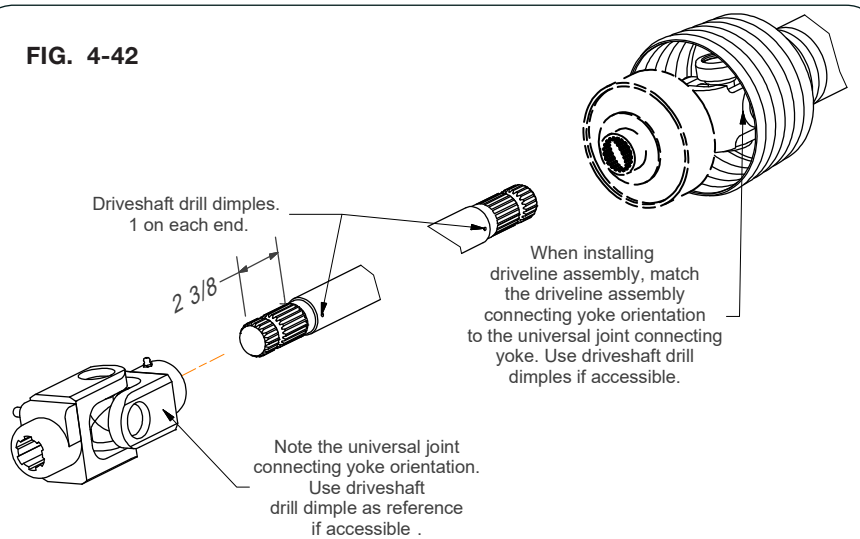


FIG. 4-41

FIG. 4-42



Auger Driveline (continued)

Driveline Replacement (continued)

12. Tighten all flangette mounting hardware.

13. With flangette 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 a depth that setscrews are flush with the bearing prior to applying blue thread locker and installing setscrews. (FIG. 4-43)

14. For alignment of the yoke, the orientation of the universal joint at the gearbox must be in line with the driveshaft drill dimple when the driveline assembly is attached. (FIG. 4-43 and 4-44)

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 (293392B) to the bearing mount in front of the gearbox using original 3/8”-16UNC capscrews. Verify PVC driveshaft covers and driveline cover, located behind the ladder, are in place and hardware tightened prior to operation.

18. Test run driveline. Verify smooth driveline operation.

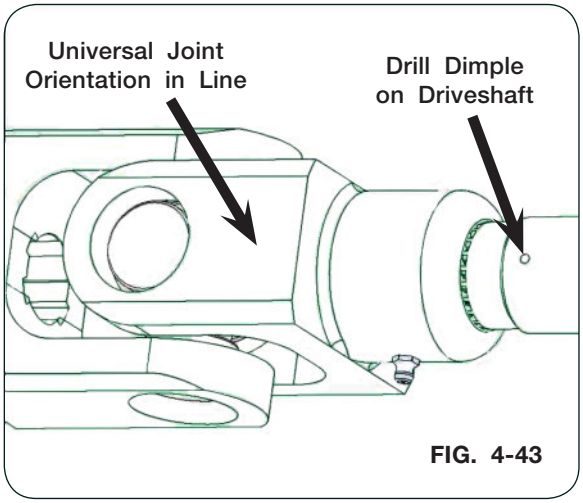


FIG. 4-43

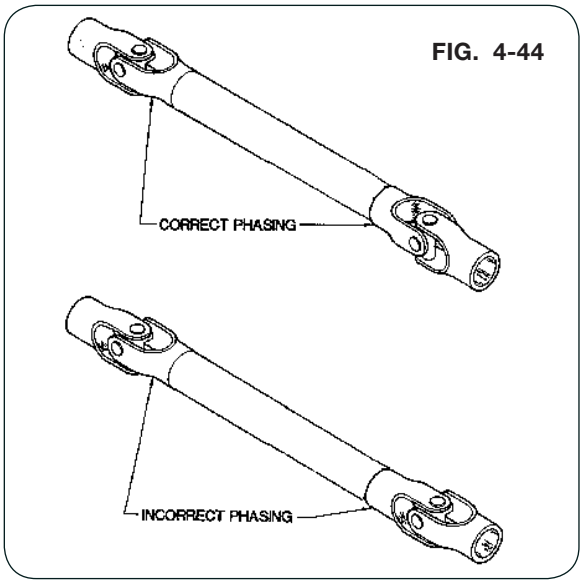


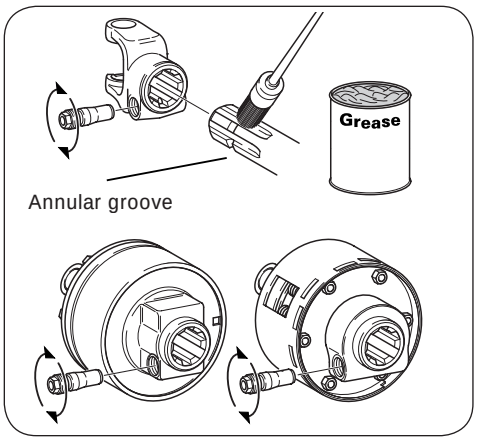
FIG. 4-44

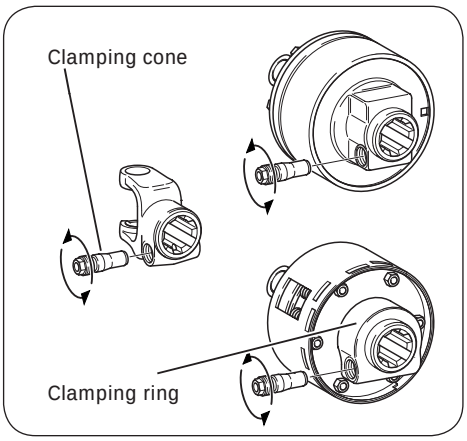
PTO Quick Disconnect

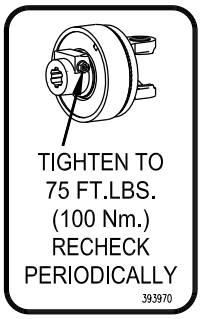
Coupling

Slide clamp yoke or cut-out 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-fro 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 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.

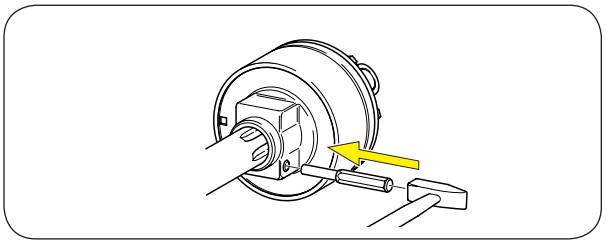






Uncoupling

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 again 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.



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 24,000 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

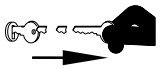
⚠ CAUTION

- **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 in 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, use safe lifting and load holding devices rated at 24,000 lbs. to support the weight of your grain cart. Place the safe lifting device under the axle closest to the tire.

3. Use a 3,000 lbs. safe lifting device to support the wheel and tire during removal.

4. If only changing wheel and tire, skip to Step 8; otherwise continue with Step 4.

   Remove the hardware retaining the hubcap. Next, remove the hubcap, gasket, cotter pin, castle nut and spindle washer. Remove hub with bearings from old spindle using a 200 lb. safe lifting device.

Wheel, Hub and Spindle Disassembly and Assembly

5. Inspect the spindle and replace if necessary. If spindle does not need to be replaced, skip to Step 6; otherwise continue with Step 5.

   Remove the bolt and lock nut 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 bolt and lock nut to retain spindle to axle. Tighten as outlined in MAINTENANCE section.

6. Remove seal and inspect bearings, spindle washer, castle nut and cotter pin. Replace if necessary. Pack both bearings with approved grease and reinstall inner bearing. Install new seal in hub with garter spring facing the outside of hub by tapping on flat plate that completely covers seal while driving it square to hub. (FIG. 4-45) Install until flush with back face of hub. Using a safe lifting device rated for 200 lbs., install hub assembly onto spindle. Install outer bearing, spindle washer and castle nut.

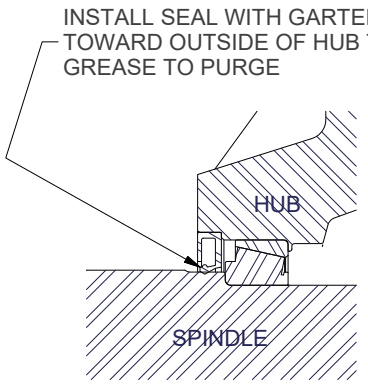


FIG. 4-45

7. 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 cotter pin. Clean face for hub cap gasket and install gasket, grease-filled hub cap and retain hubcap with hardware removed. Tighten hubcap hardware in alternating pattern.

8. Attach the wheel(s) and tire(s) to the hub using the same rated safe lifting device for removal. Tighten wheel nuts to appropriate requirements and recheck as outlined in the Wheel and Tire section of this manual.

9. Raise cart, remove safe load holding devices and lower tire to the ground.

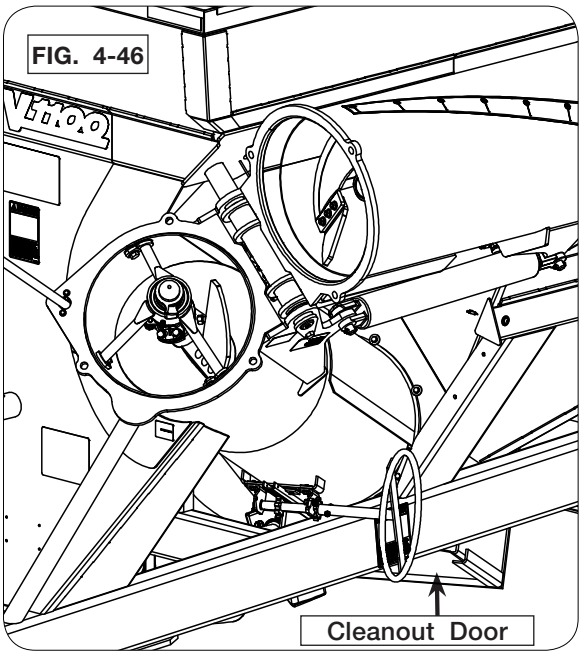
Seasonal Storage

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 rear of the cart.
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.

FIG. 4-46



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, if equipped.

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 Deutch 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 & Maintenance

PROBLEM	SOLUTION
TARP SAGS IN MIDDLE AREAS	1. BOWS MAY BE BENT OR ADJUSTED TOO LOW 2. MISSING OR LOOSE RIDGE STRAP REPLACE OR RETIGHTEN 3. TENSION MAY BE TOO LOOSE. 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 REPAIR 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

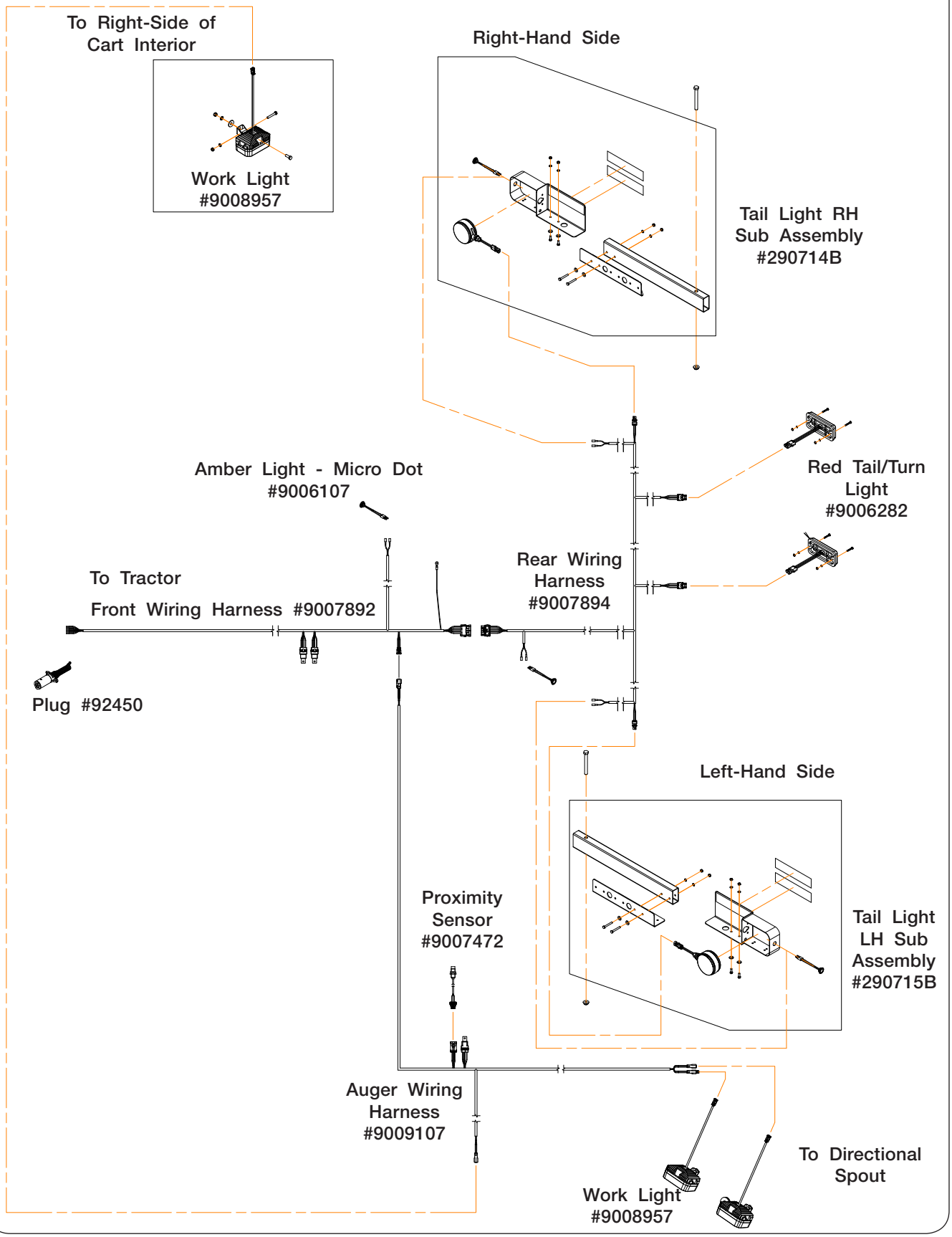
- *Do not open or close tarp while moving or in high wind conditions. Damage to the tarp may occur.*
- *Tarp should not be used if it is torn or the bungee cords are frayed or show damage. Fully close tarp with tension on the latch plate to prevent water from pooling.*

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.

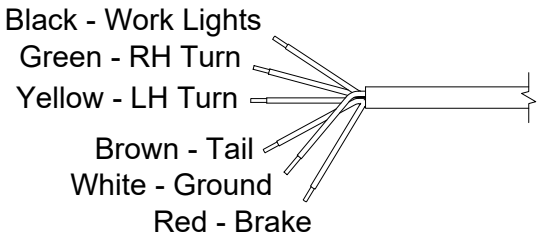
Tears in tarp should addressed before further tarp operation. If water pools on tarp, adjust tension of tarp cables and/or crank handle tension.

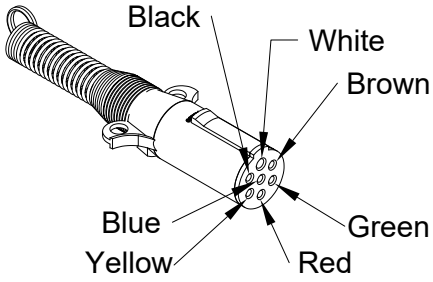
If installed correctly, tarp should always operate as well as when first installed. If tarp does not pass this simple inspection, make all appropriate repairs or adjustments immediately before serious damage occurs.

Electrical System Diagram



Electrical System Diagram — Plug #92450

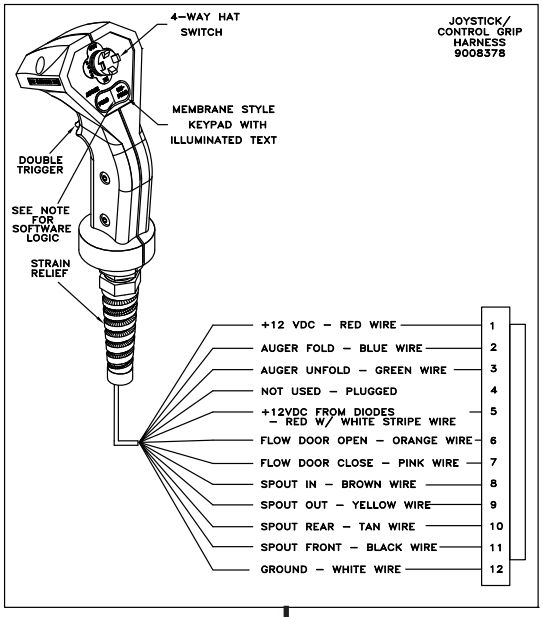




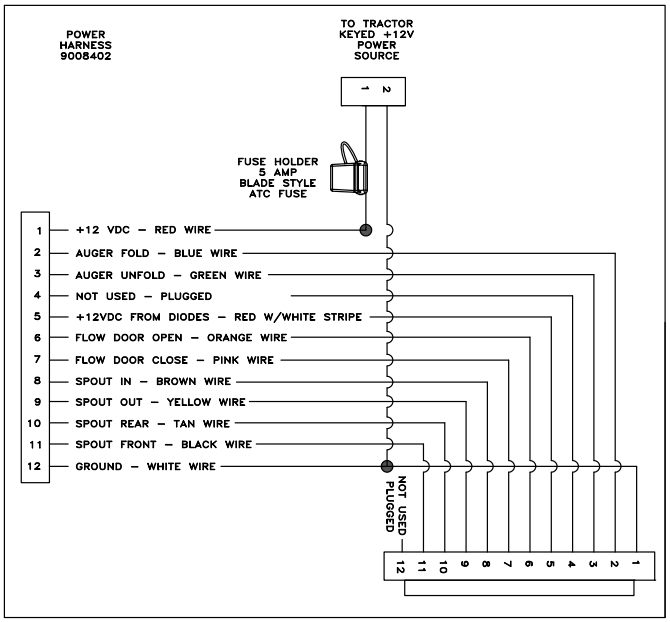
GRAIN CART WIRES

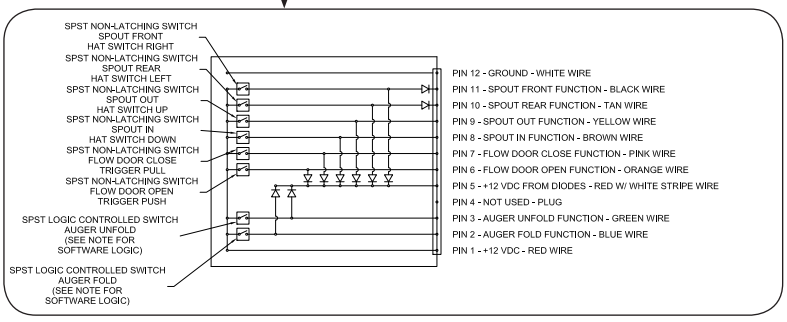
White -- Ground
Green -- Right amber flashing lamp
Yellow -- Left amber flashing lamp
Brown -- Tail light
Black -- Work Lights
Red -- Brake Lights
Blue -- NOT USED

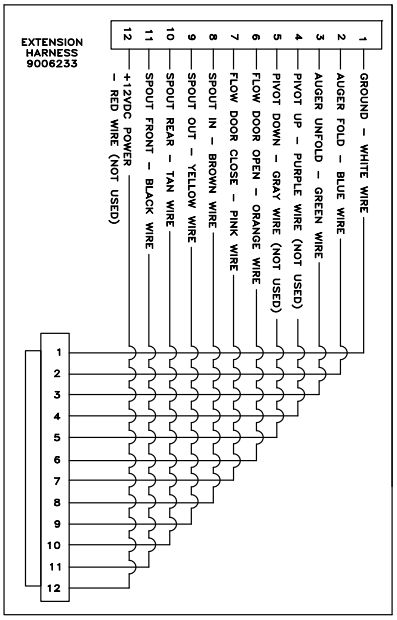
Electric Over Hydraulic (EOH) System Schematic 4 Function Optional

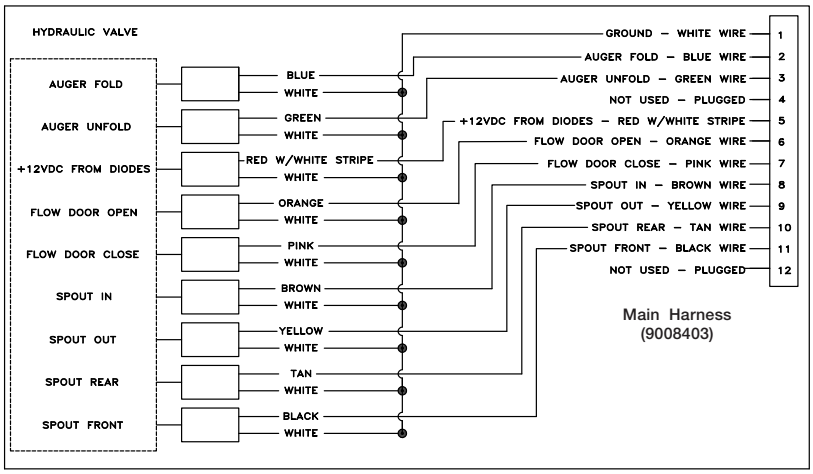


NOTE: It is recommended the joystick and 7-pin connector be plugged into the same power source.

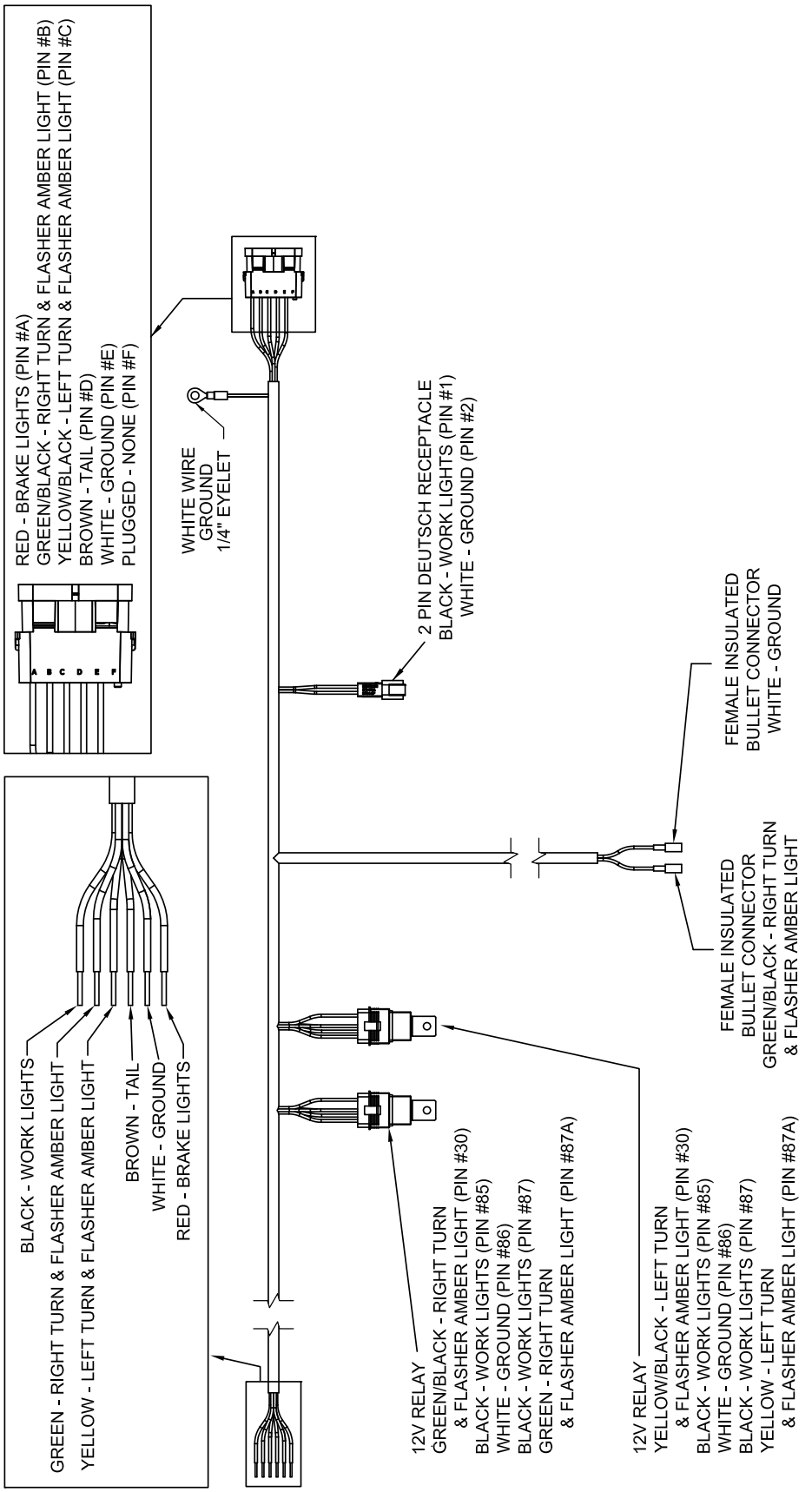




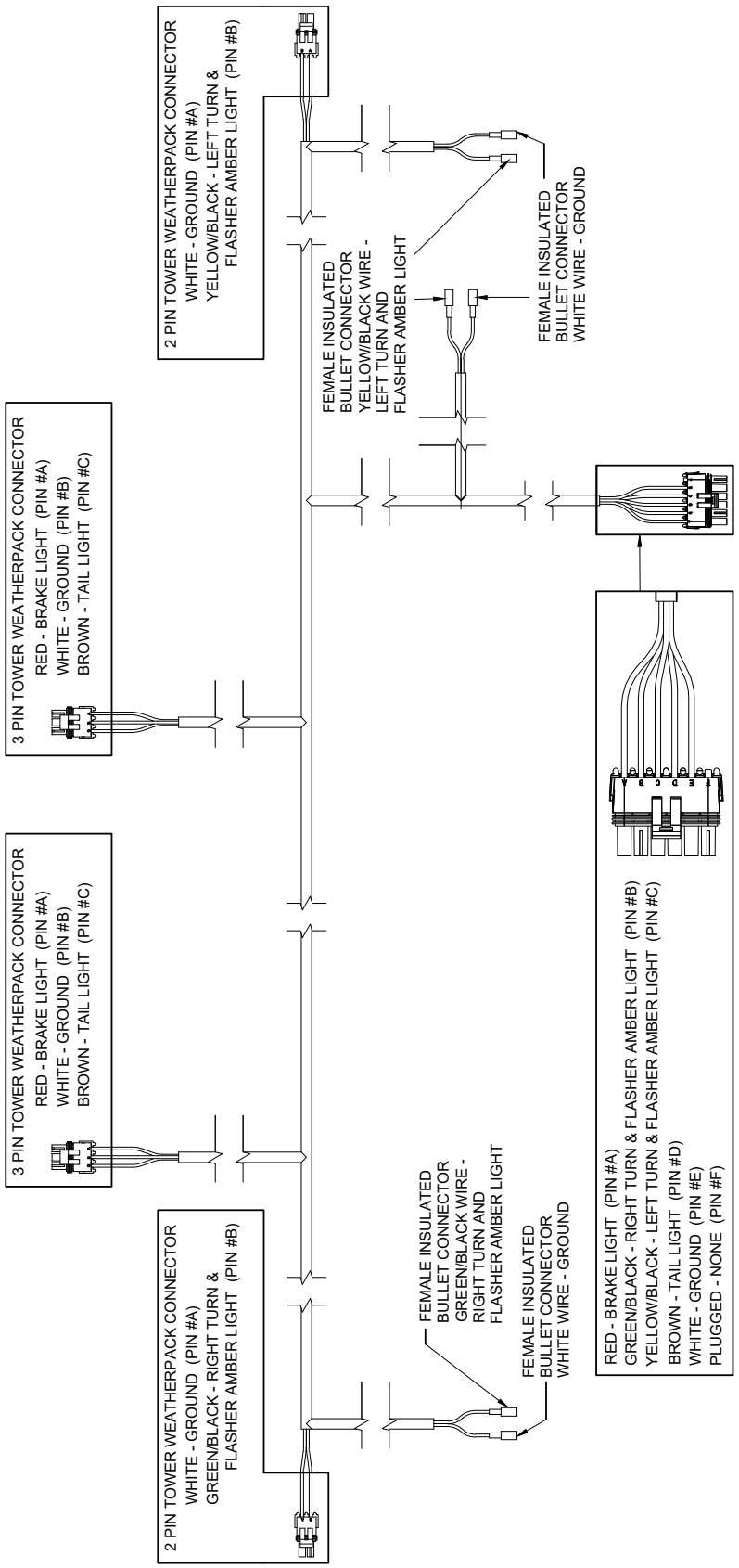




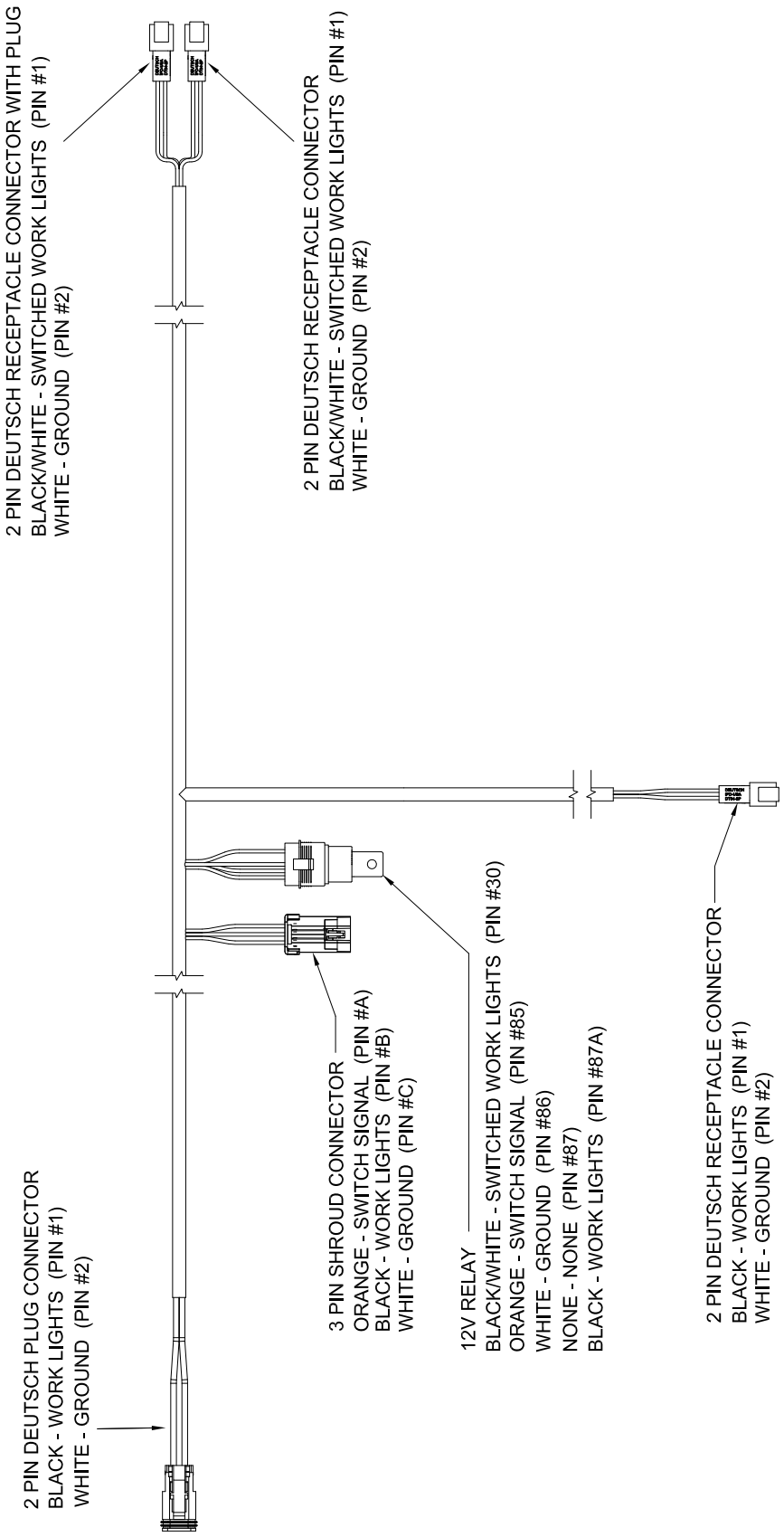
Electrical Diagram — Front Wiring Harness #9007892



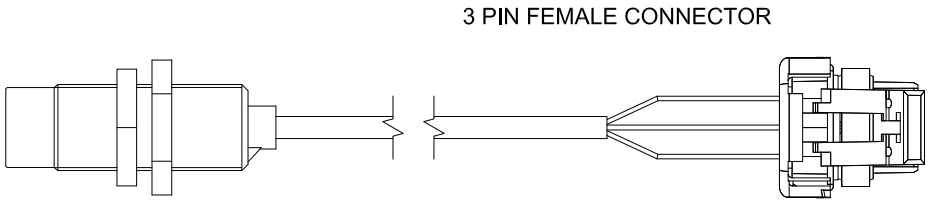
Electrical Diagram — Rear Wiring Harness #9007894



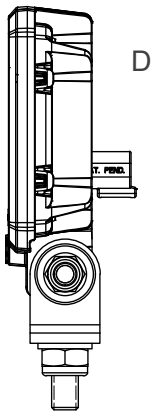
Electrical Schematic — Auger Wiring Harness #9009107



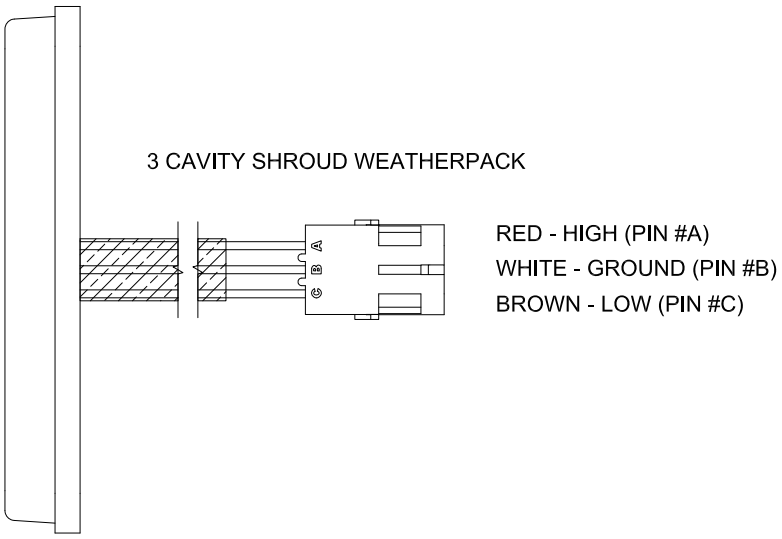
Electrical Diagram — Proximity Sensor #9007472



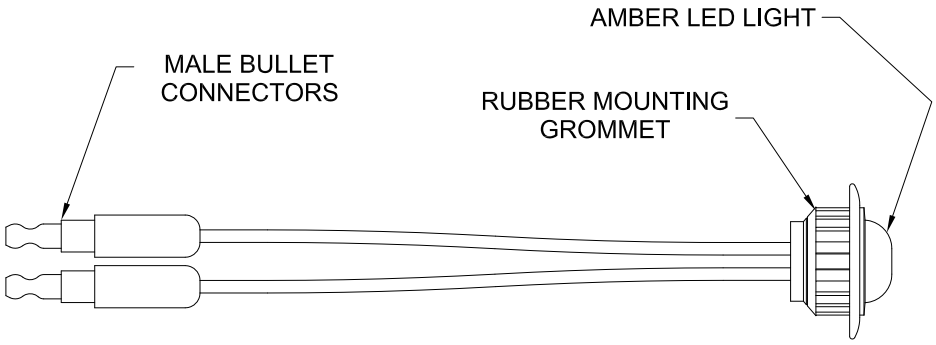
Electrical Schematic — Work Light #9008957



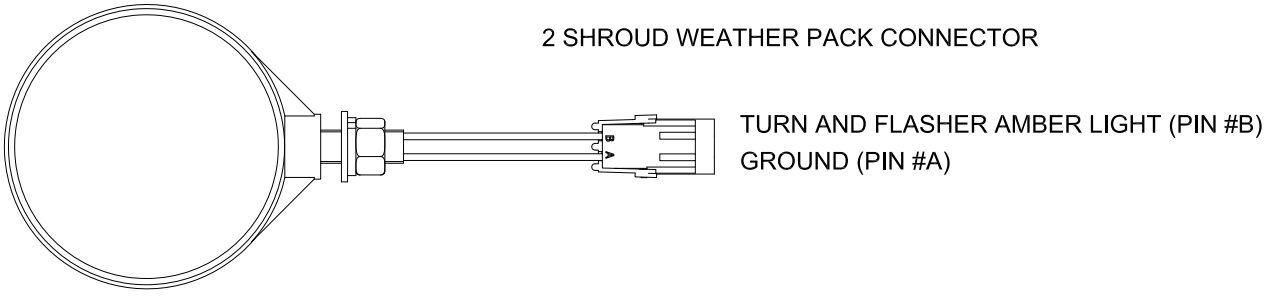
Electrical Diagram — Red Tail/Turn Light #9006282



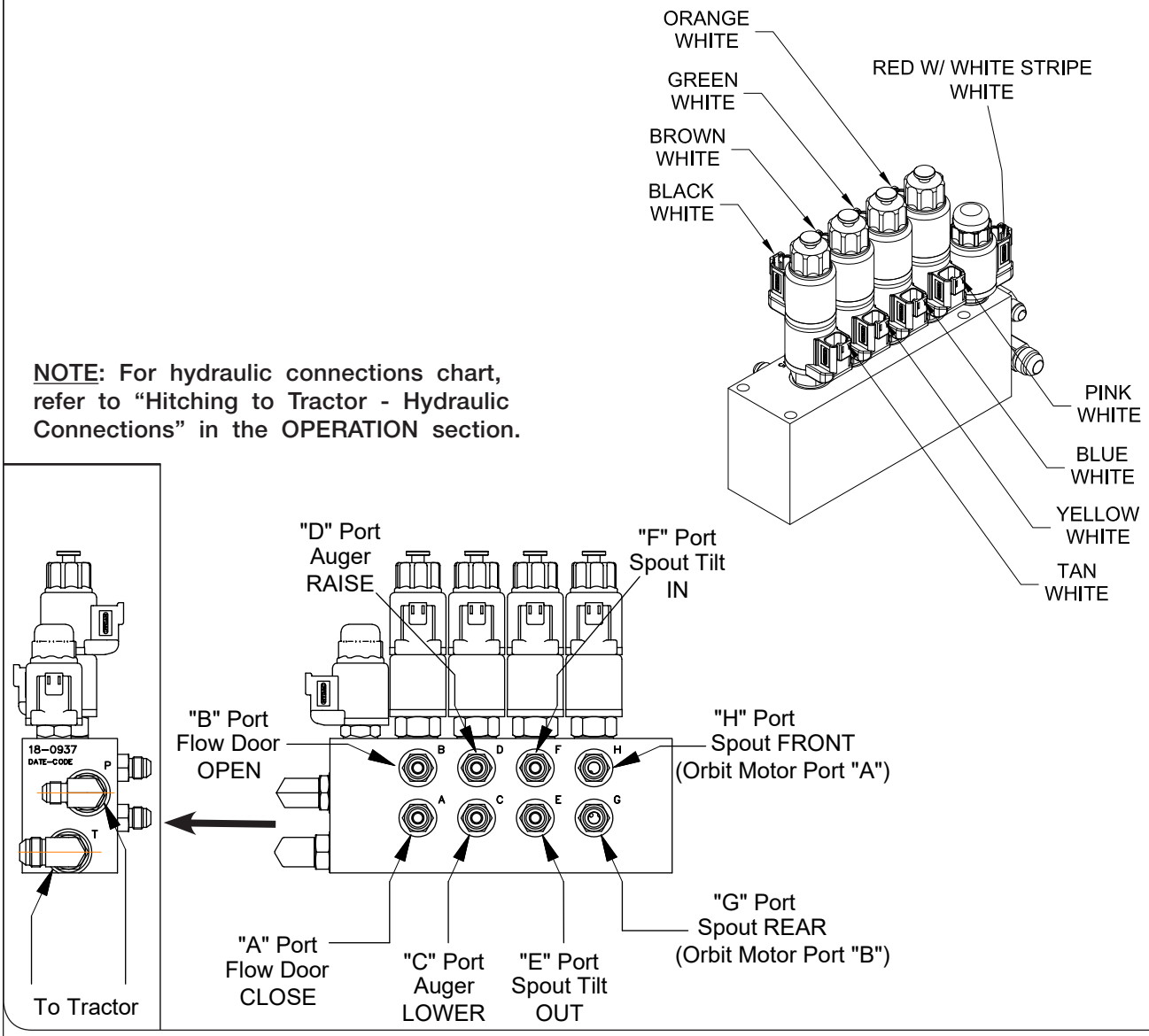
Electrical Diagram — Amber Light - Micro Dot #9006107



Electrical Diagram — Amber Lamp Double Face #9005142



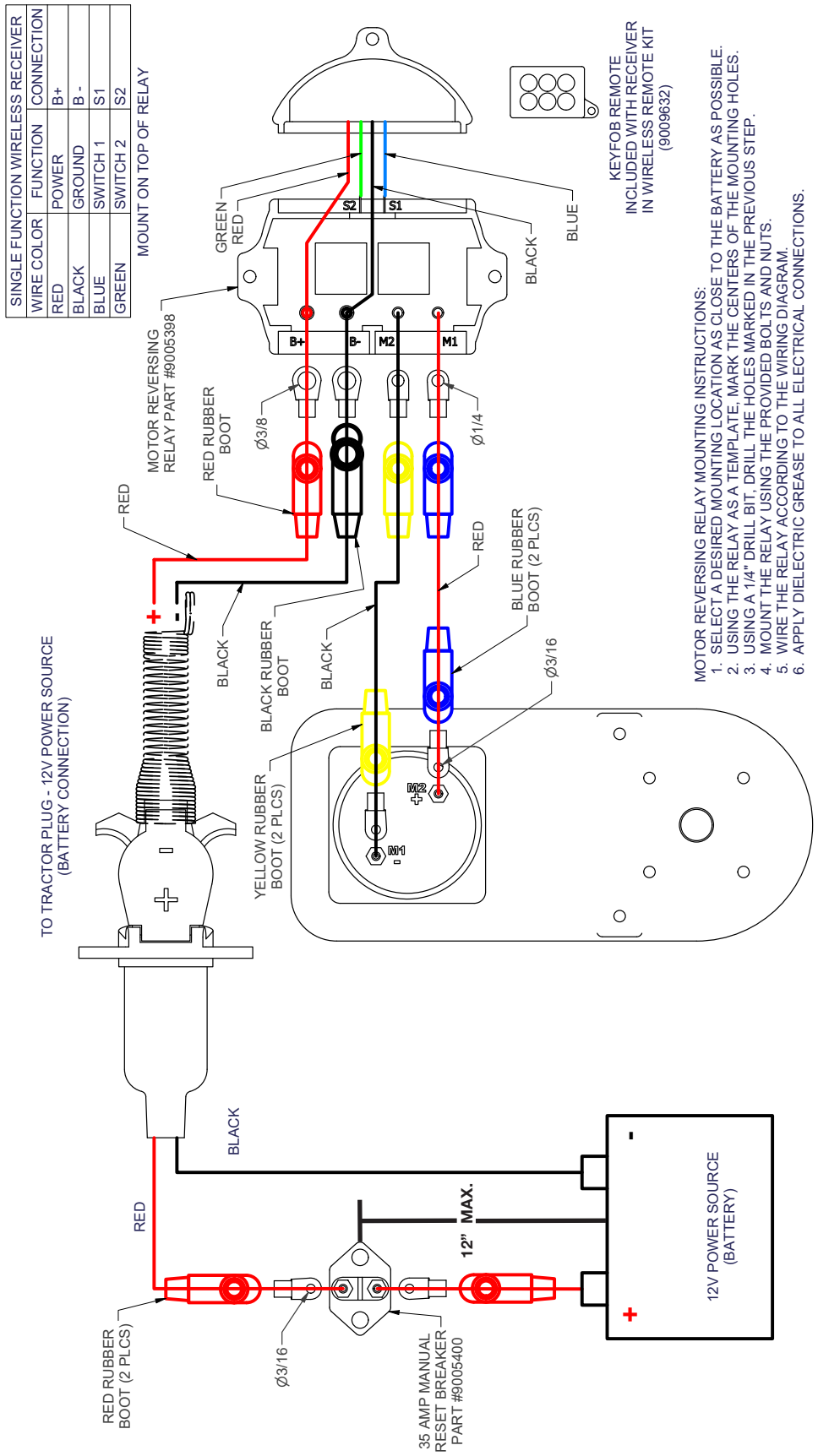
Optional Electric Over Hydraulic Valve Electric Schematic 4 Spool



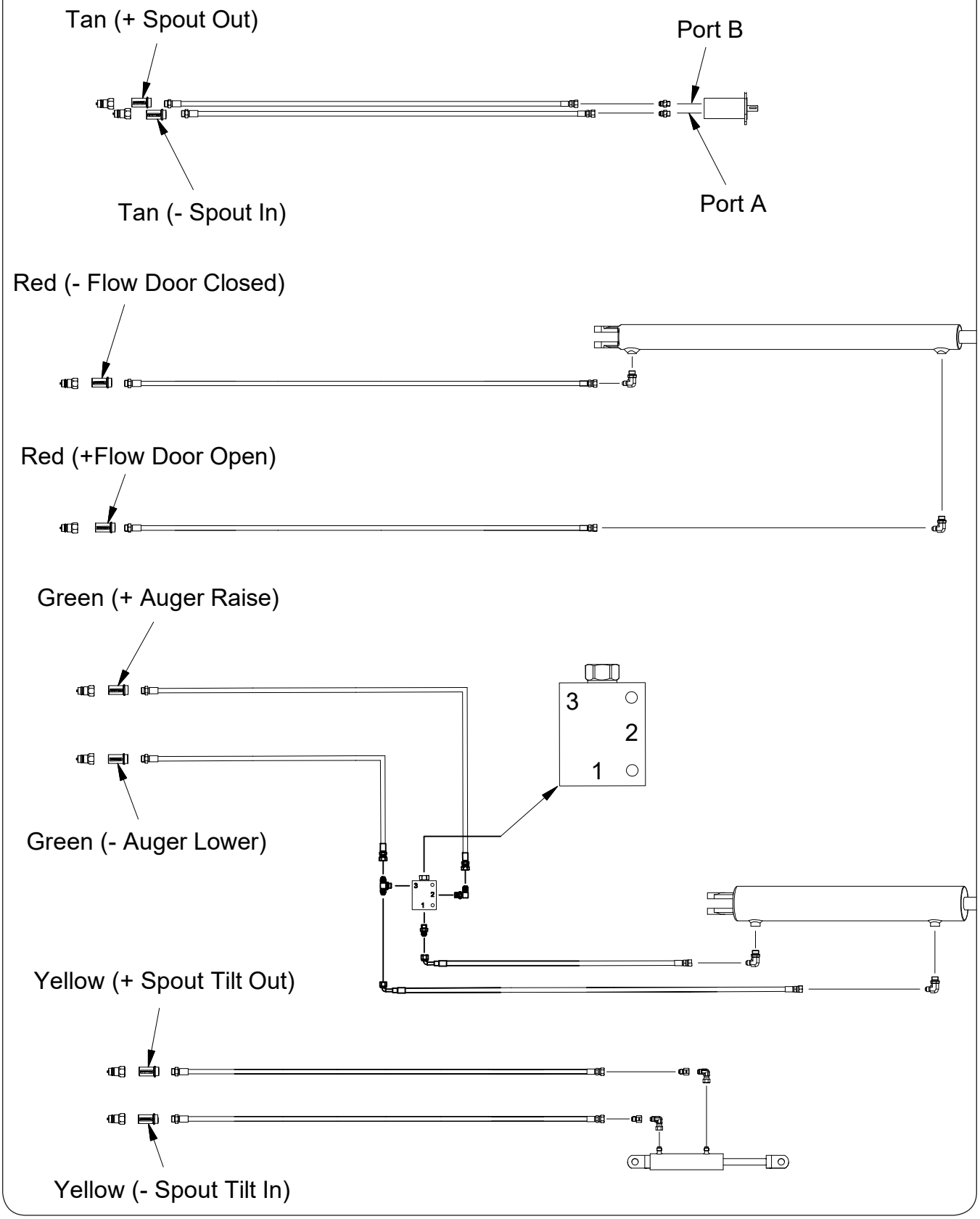
NOTE: For hydraulic connections chart, refer to "Hitching to Tractor - Hydraulic Connections" in the OPERATION section.

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 B	SPOUT OUT
H	ORBIT MOTOR PORT A	SPOUT IN
P		TRACTOR PRESSURE
T		TRACTOR RETURN

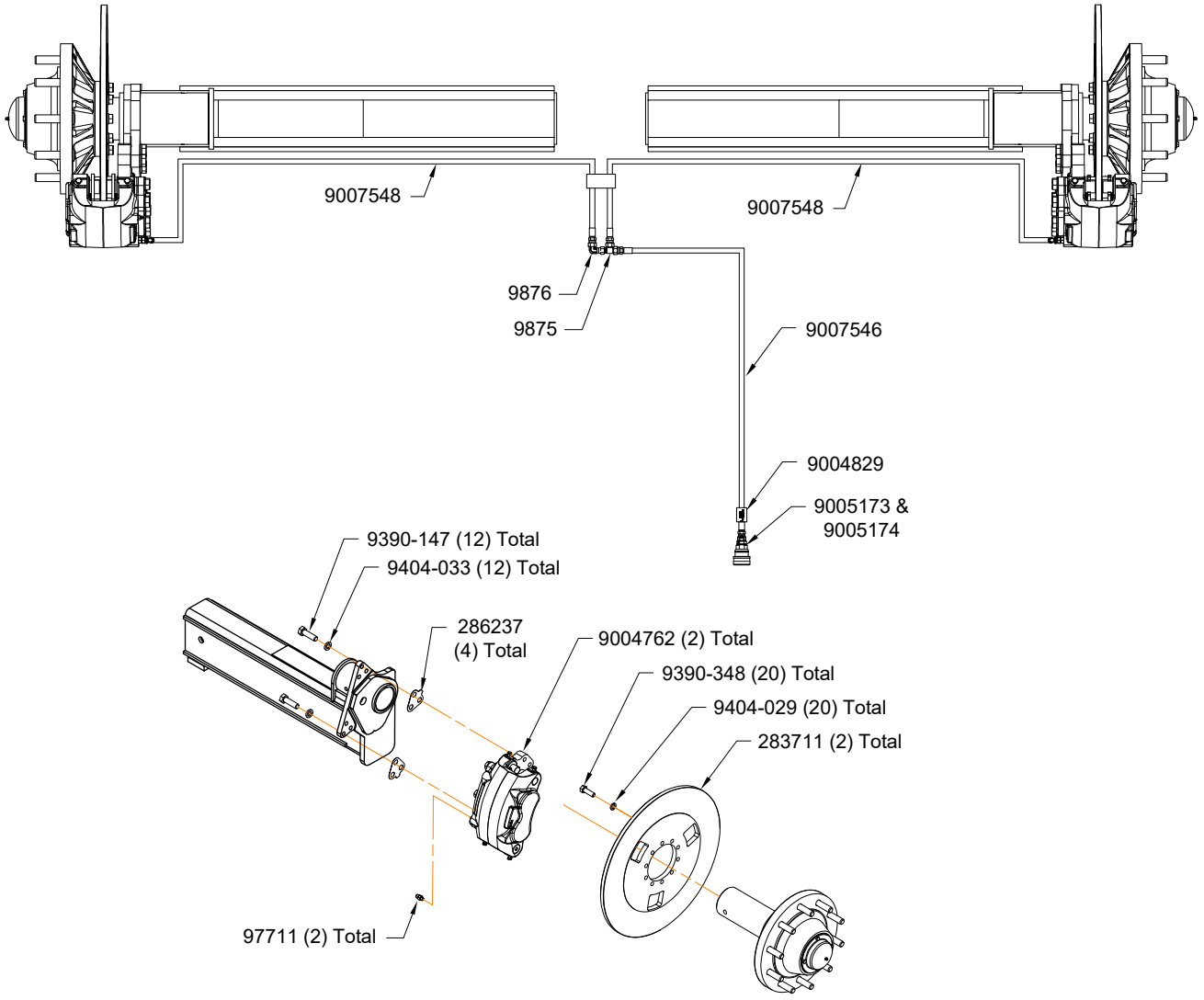
Electrical System Schematic - Optional Wireless Electric Tarp



Hydraulic System Plumbing Diagram



Braking System Schematic (Optional)



Wheels and Tires

Wheel Nut Torque Requirements

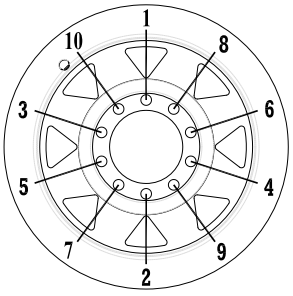
⚠ CAUTION

- **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.



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 recommended by tire manufacturer. 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 max PSI to seat the beads, deflated to 5-10 PSI, then reinflated to recommended minimum pressure.

Tire Pressure for Grain Carts

Tire Make	Tire Size	Load Index / Ply Rating	Max. PSI
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 Pressure for Grain Carts

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
	1100/45R46 F-1W	195D	35
Mitas	650/75R32 R-1W	172A8	58
	650/75R32 R-1	176A8	41
	800/65R32 R-1W	172A8	46
	900/60x32 R-1W	176A8	41
	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:

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

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

IMPORTANT

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

Complete Torque Chart

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

IMPORTANT

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

Hydraulic Fittings – Torque and Installation

Tightening O-Ring Fittings

1. Inspect components for damage or contamination. Do not connect any other type of fitting to an O-ring fitting.
2. For adjustable fittings, insure 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

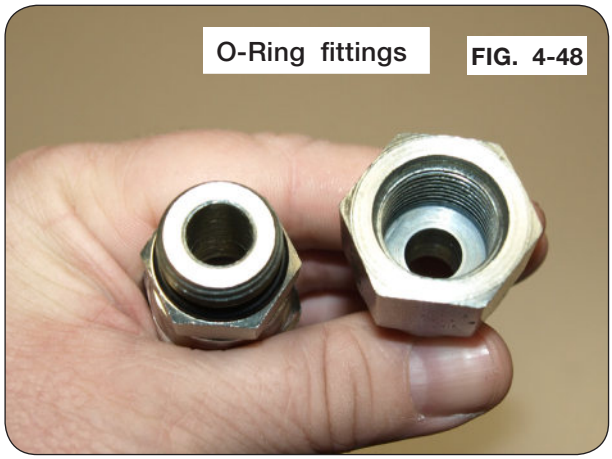


FIG. 4-48

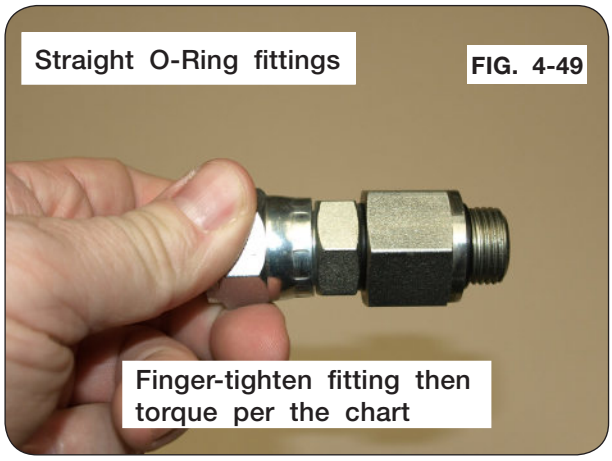


FIG. 4-49

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

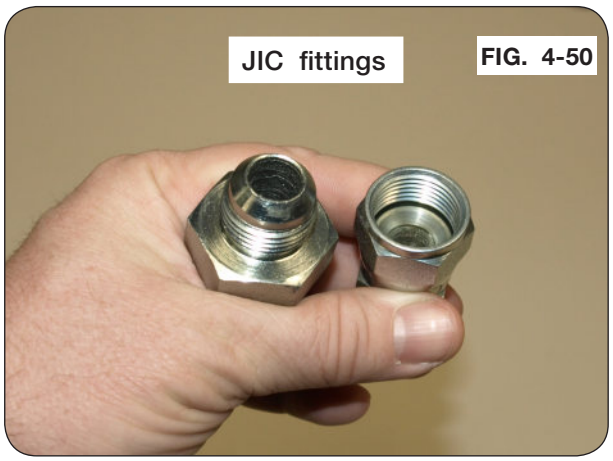


FIG. 4-50

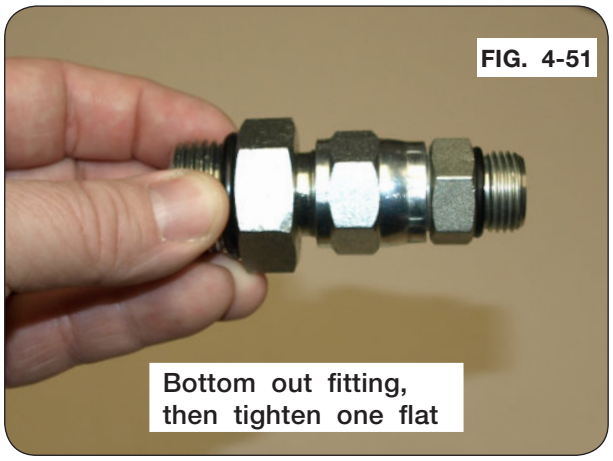


FIG. 4-51

Notes

Grain Handling

CORNER-AUGER GRAIN CART
MODELS V800 & V1000

Serial Number B44450100 & Higher

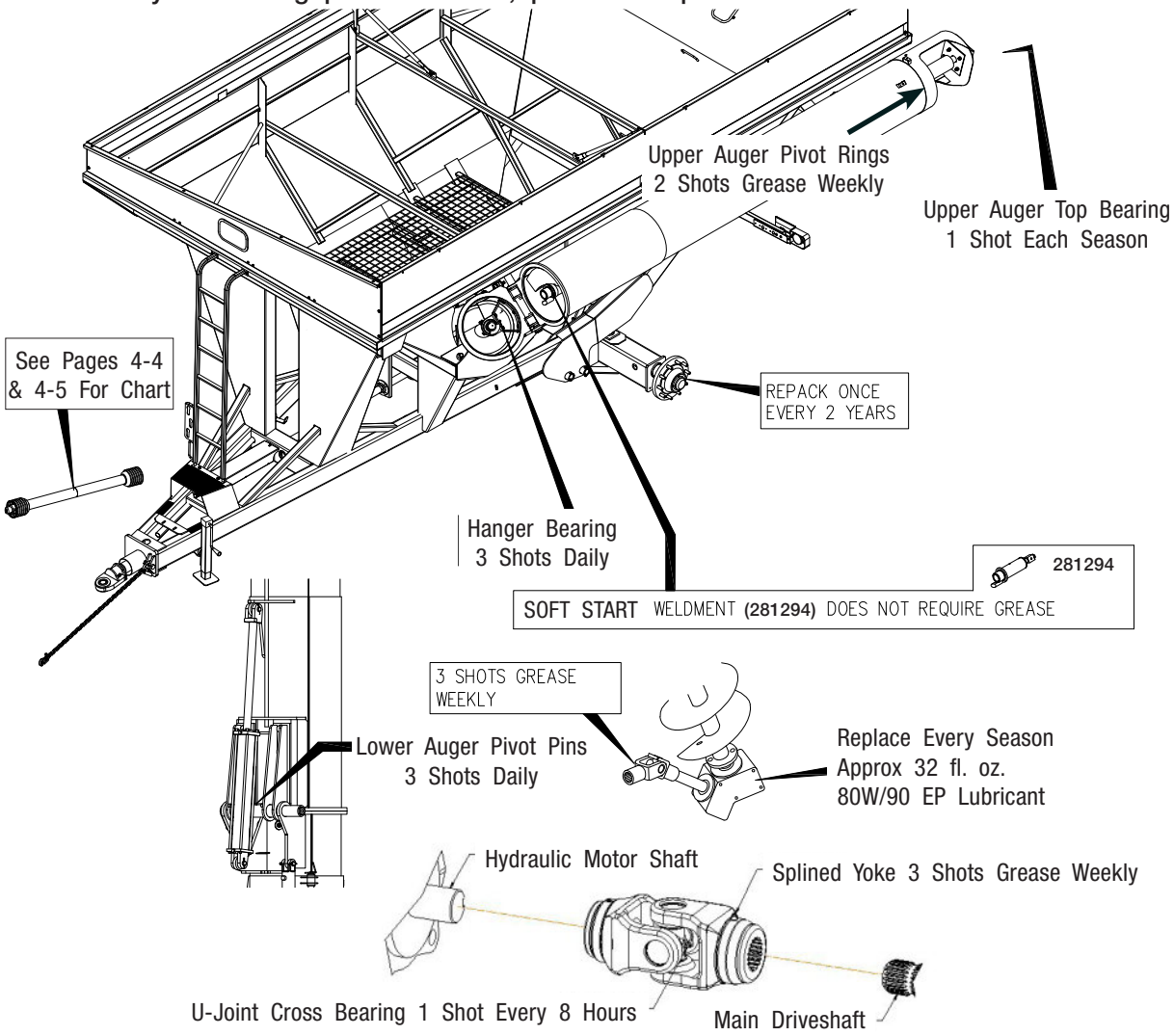
Part Number 297411

Section IV
Maintenance

FOR SCALE, TRACK, UHARVEST, HYDRAULIC DRIVE, ELECTRIC TARP, AND VIDEO SYSTEM OPTIONS, PLEASE REFER TO THE INDIVIDUAL MANUALS.

Lubrication

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.



NOTE: FOR TRACK LUBRICATION, PLEASE REFER TO APPROPRIATE TRACK MANUAL.

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.

The lubrication locations and recommended schedule are as follows:

DESCRIPTION	POINT	LUBRICANT	QTY.	HOURS
PTO Driveshaft - Benzi	-	EP-2	1 Shot	See Next Pages
Gearbox -- Remove Cover - Check oil level every 2 weeks. Replace oil every season. Refer to Gearbox in MAINTENANCE section for instructions.	1	EP80W90	Approx 32 oz	Once Every Season
U-Joint Cross Bearing - Driveline	2	EP-2	1 Shot	8 Hours
Splined Yoke - Driveline U-Joint	1	EP-2	3 Shots	Weekly
Hanger Bearing - Lower Auger *See note below.	1	EP-2	3 Shots*	Daily
Upper Auger Top Bearing	1	EP-2	1 Shot	Each Season
Upper Auger Pivot Rings	4	EP-2	2 Shots	Weekly
Lower Auger Pivot Pins	1	EP-2	3 Shots	Daily
Hubs	2	EP-2	Repack	2 Years

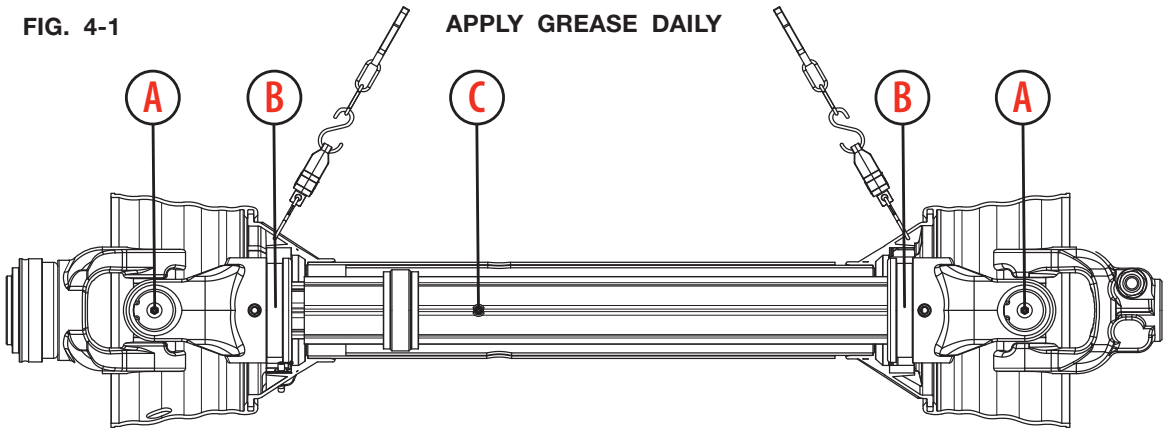
*NOTE: Hanger bearing contains hydraulic shut-off grease zerk (9005240) with pressure relief to prevent over-greasing that could push bearing seals out. If grease is coming out of the relief on the zerk this is normal and the bearing contains enough grease.

PTO Driveshaft Lubrication

Lubricate with NLGI grade 2 grease before starting work and every 8 operating hours. Clean and grease PTO driveshaft 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: Inner & outer profile tubes must have lubrication to operate successfully regardless of whether a grease fitting is provided for that purpose! Inner & outer profile tubes without fittings should be pulled apart and grease should be added manually.

FIG. 4-1 APPLY GREASE DAILY



ITEM	DESCRIPTION	POINT	LUBRICANT	QTY.	HOURS
A	U-Joint Cross Kit	1	EP-2	1 Shot	8 Hours
B	Inner & Outer Yoke Groove	1	EP-2	Add Manually	8 Hours
C	Inner & Outer Profile Tube	1	EP-2	Add Manually	Start and End of Each Season

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.**

- **FALLING OR LOWERING EQUIPMENT CAN CAUSE SERIOUS INJURY OR DEATH. KEEP EVERYONE AWAY FROM EQUIPMENT WHEN SUSPENDED, RASING, OR LOWERING.**

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.
B. Pressurize the system and maintain system at full pressure for at least 5 seconds after cylinder rods stop moving. Check that all cylinders have fully extended or retracted.
C. Check oil reservoir in hydraulic power source and refill as needed.
D. Pressurize system again to reverse the motion of step B. Maintain pressure on system for at least 5 seconds after cylinder rods stop moving. Check that all cylinders have fully extended or retracted.
E. Check for hydraulic leaks using cardboard or wood. Tighten connections according to directions in "Torque Specifications" in the MAINTENANCE section.
F. Repeat steps B, C, D, and E 10-12 times.

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.

Hydraulic System (continued)

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.

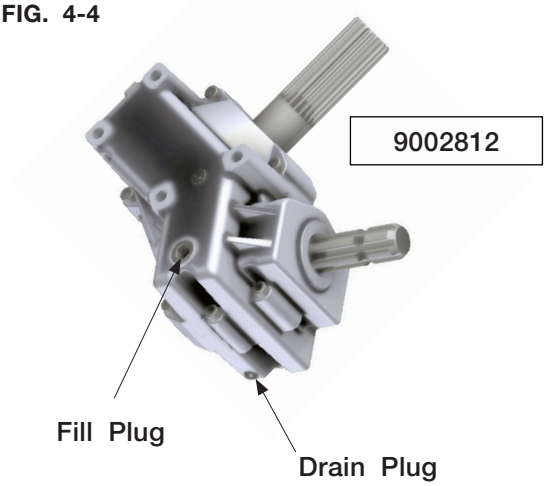
Gearbox Lubrication

The 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 or approximately 5/8" below the outside gearbox surface.

For Maximum gearbox life:
Check oil level every 2 weeks.
Replace oil every season with approx. 32 fl. oz. of 80W90 EP gear lubricant.

FIG. 4-4



Auger System

⚠ WARNING

- **TO PREVENT PERSONAL INJURY OR DEATH, 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 ARE 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 4,000 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.**

- **WHEN WORKING AROUND THE IMPLEMENT, BE CAREFUL NOT TO BE CUT BY SHARP EDGES.**

Auger System (continued)

Lower Auger Removal

1. Remove the three 3/8”-16UNC x 1 1/2” capscrews (9390-057), six 3/8” flat washers (9405-076), three 3/8” lock washers (9404-021) and 3/8”-16UNC hex nuts (9394-006) which secures the hanger bearing weldment (281502B) to the auger tube (FIG. 4-5).

2. Using a safe lifting device rated for a minimum of 700 lbs., remove auger from auger tube and perform required repair or replacement.

3. Remove the two 5/8”-11UNC x 6” capscrews (9390-136), 5/8” lock washers (9404-029) and 5/8”-11UNC hex nuts (9394-014) which secures the drive dog to the auger as shown in FIGS. 4-7 and 4-8.

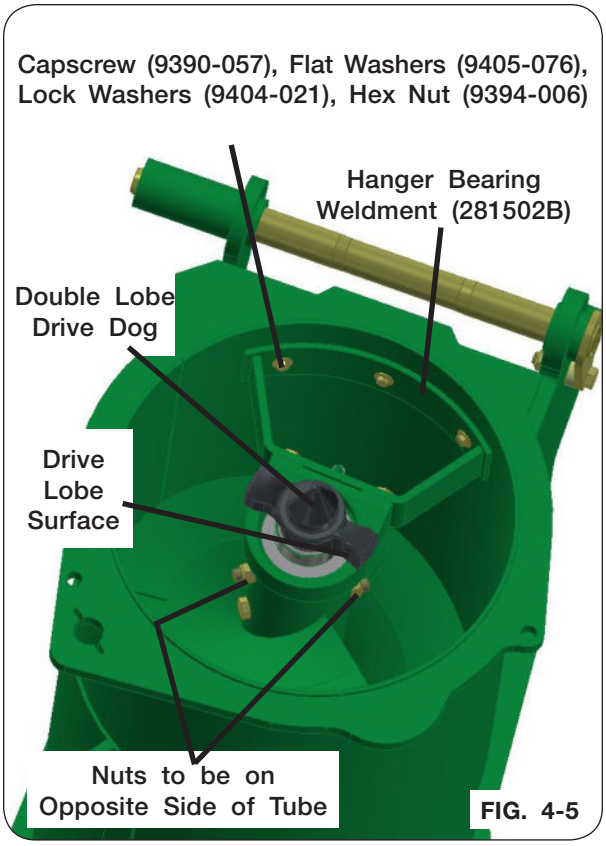


FIG. 4-5

Auger System (continued)

Lower Auger Replacement

1. Slide drive dog assembly out of old flighting.
2. The replacement auger is factory balanced. Remove entire auger from shipping crate and secure from rolling.
3. Coat the drive dog with anti-seize and slide into new auger flighting.
4. Rotate the drive dog so the driving edge is at 11 o'clock position when the finishing edge of the flighting is at 12 o'clock position. See FIG. 4-6.
5. Insert 5/8"-11UNC hardware into hanger bearing assembly and the auger tube. (FIGS. 4-9 and 4-10)
6. Torque 5/8"-11UNC hardware to 120 ft.-lbs.
7. Using a safe lifting device rated at least 700 lbs., lift the auger and hanger bearing assembly up. Slowly lower the auger down through the auger plate opening to intersect with the drive bushing.

(Continued on next page)

LOOKING DOWN INTO THE LOWER AUGER FLIGHTING

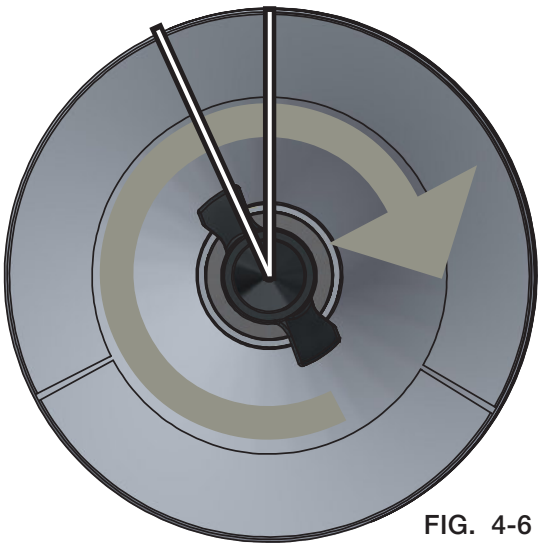


FIG. 4-6

Auger System (continued)

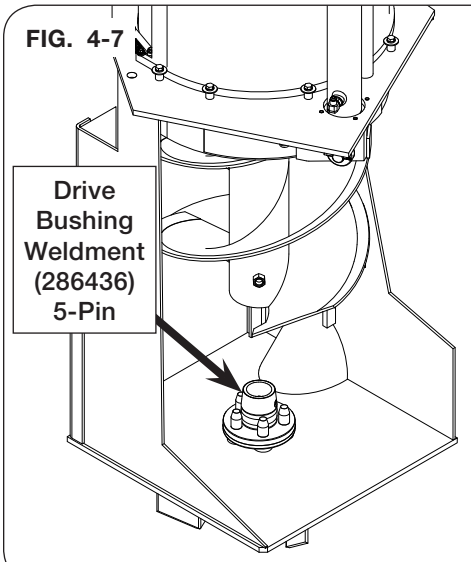
Lower Auger Replacement (continued)

8. Align auger end with the five pin drive bushing and securely engage together, see FIGS. 4-7 and 4-8. Secure hanger bearing to auger housing tube wall with original three 3/8"-16UNC x 1 1/2" capscrews and three 3/8"-16UNC flange nuts. Do not tighten.

9. Start tractor and slowly raise the upper auger tube into position and check for engagement between the upper auger drive dog with the lower auger drive dog as the auger rises.

NOTE: If the lower and upper auger are not properly positioned for full engagement, refer to "Upper Auger Replacement" section in MAINTENANCE for upper auger positioning and adjustment information.

FIG. 4-7



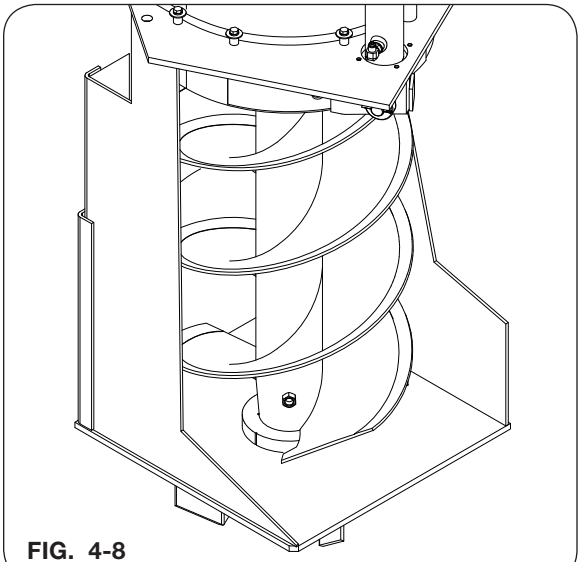


FIG. 4-8

10. Lower the upper auger assembly, turn off tractor and remove key. Slowly turn lower auger by hand while applying grease to the hanger bearing. Grease until the grease purges out and around the drive dog housing. Apply a light coat of surface grease to drive dog conical shaft. Wipe off excess purged grease from hanger bearing top seal area. (FIG. 4-9)

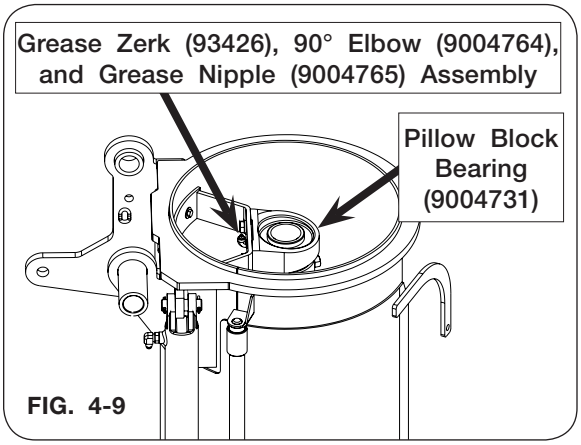


FIG. 4-9

Auger System (continued)

Lower Auger Replacement (continued)

11. Perform a final inspection of auger and lower collector box to ensure all debris and tools have been removed. Close the clean-out door completely and lock the position. Connect PTO to tractor. Fully extend the upper auger assembly into full vertical locked position. Slowly engage PTO and rotate to ensure both lower and upper augers are engaged. Allow auger assembly to stop completely. Once stopped, lower the upper auger approximately 45 degrees, shut off tractor engine and remove keys. View the distance between the lower auger flighting trailing edge and upper auger flighting leading edge. Verify the upper auger flighting follows the lower auger flighting, then lower the upper auger assembly to the rest position. Shut off tractor engine and remove key.

Auger System (continued)

Auger Timing

1. For the lower auger, use the finishing edge of the flighting as a 12 o'clock reference. Position the drive dog so the driving edge is at 11 o'clock position.

NOTE: Looking down at the lower flighting (as in Fig. 4-10) the auger rotation will be clockwise. When looking up at the upper flighting (as in Fig. 4-11), the auger rotation will be counter-clockwise.

Lower Auger

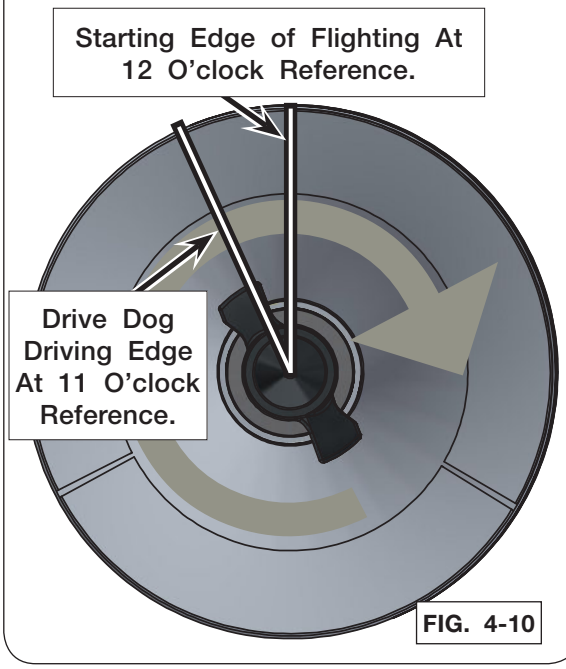


FIG. 4-10

Upper Auger

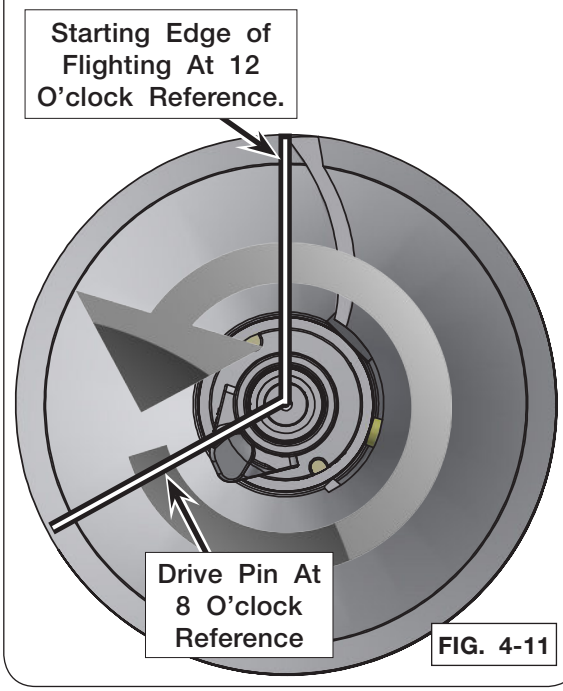


FIG. 4-11

2. For the upper auger, use the bottom edge of the flighting as a 12 o'clock reference. Postion the driving edge of the drive pin at the 8 o'clock position. (Fig. 4-12)

3. When engaged, the top flighting should immediately follow the bottom flighting as pictured in figure 4-12.

NOTE: Upper flighting should trail the lower flighting from minimum of 10 degrees to a maximum of 90 degrees.

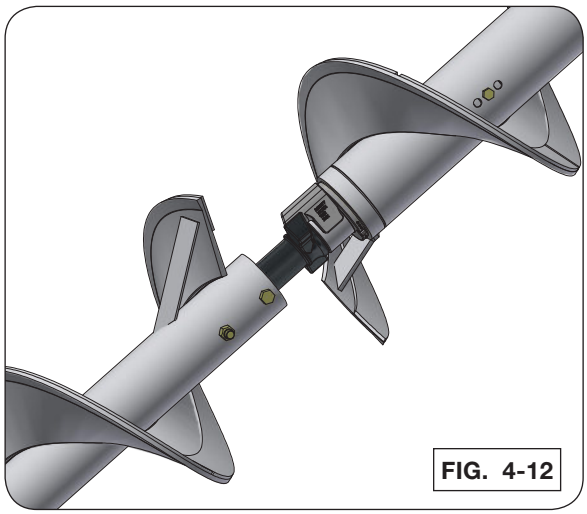


FIG. 4-12

Auger System (continued)

Upper Auger Removal

1. Support the upper auger assembly using a safe lifting device rated at 4,000 lbs. and two straps rated for 2,000 lbs.
2. Remove auger tube cylinder pin and carefully swing cylinder down without breaking hose connections.
3. Disconnect auger and spout light.
4. Disconnect spout assembly from the upper auger assembly.
5. Using a safe lifting device rated at 200 lbs., lift the spout assembly from the upper auger assembly.
6. With auger tube fully supported, loosen two 3/4”-10UNC x 3” capscrews and remove 7/8”-9UNC x 2” capscrews (9390-164) and flat washers (97041) from the upper auger pivot bracket. (FIG. 4-13)
7. Lift upper auger assembly from unit. Repair or replace as required.
8. To remove auger from tube, use a safe lifting device rated at a minimum capacity of 600 lbs. loosen two upper auger bearing setscrews and remove 5/16”-18UNC x 2 3/4” capscrew (9390-037), 5/16” washers (9405-068), 5/16”-18UNC lock nut (901527), and 2” flat washers (93974). (FIG. 4-14)
9. Inspect upper auger bearing, springs, four 5/8” x 6” capscrews, and 5/8” locknuts. Replace if necessary. (FIG. 4-14)

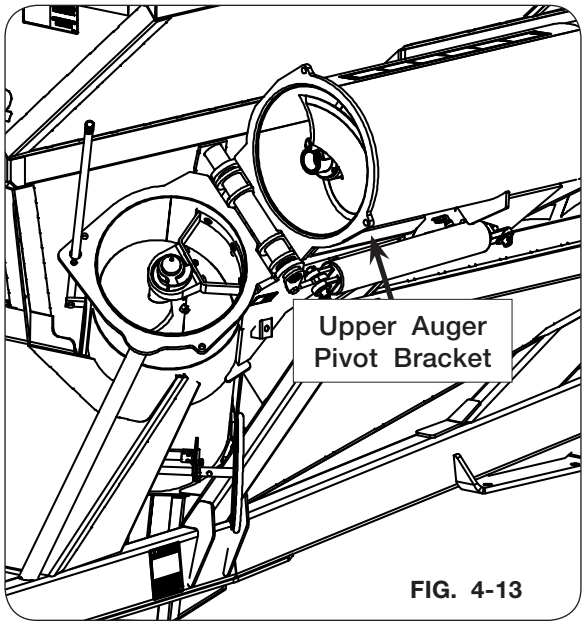


FIG. 4-13

10. Remove safe lifting and support devices.

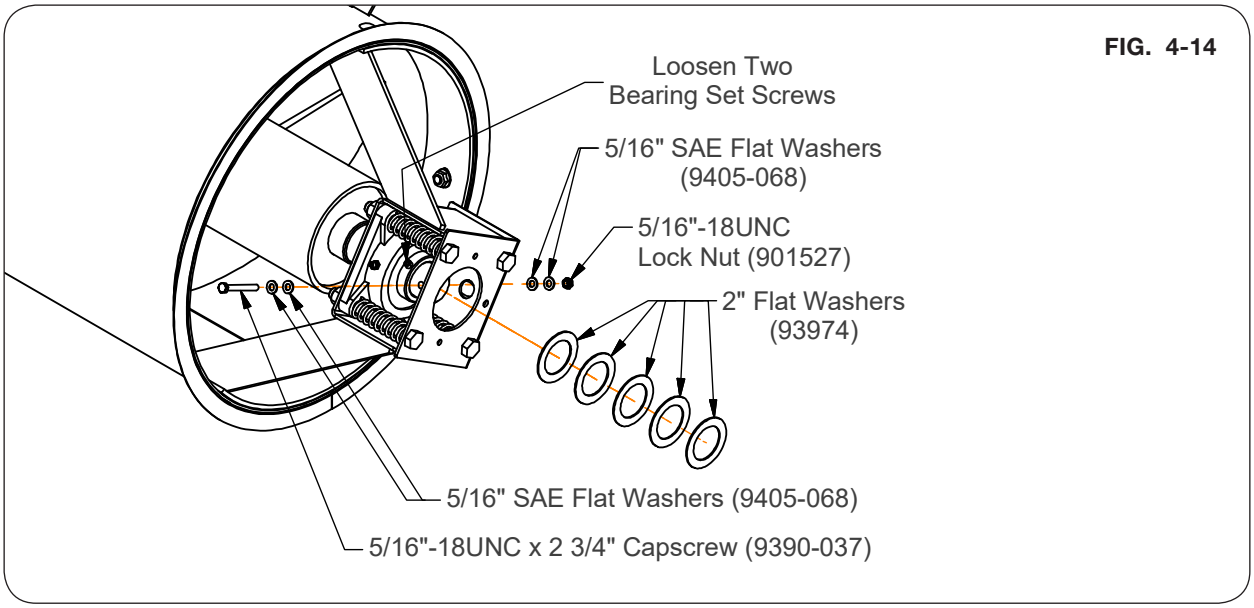


FIG. 4-14

Auger System (continued)

Soft Start Replacement

11. Remove the 1/2”-13UNC x 7” capscrew (9390-117), 1/2”-13UNC lock nut (9800), soft start assembly, thrust washer (9004878), and bushing (9004877). Discard capscrew only. (FIG. 4-15)

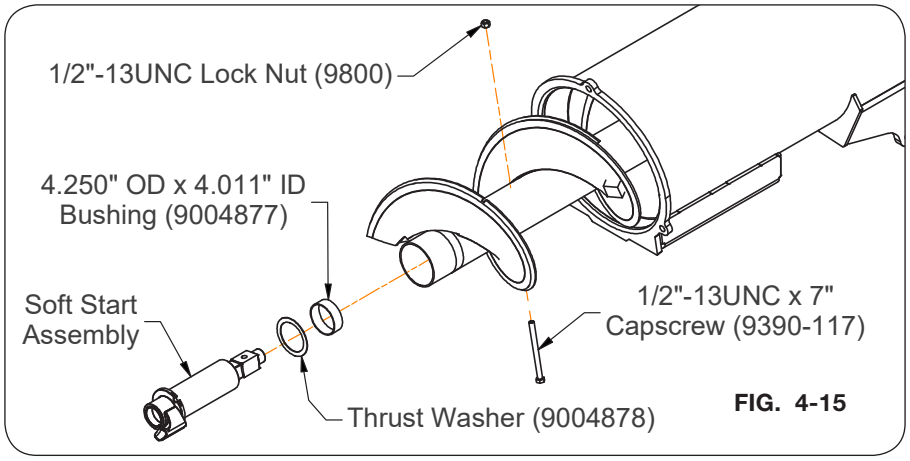


FIG. 4-15

NOTE: Before soft start reassembly, ensure the spacer bushing (410511) is on the same side as lock nut (9800).

12. 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. (FIGS. 4-15 and 4-16)

13. Time the drive pin (as in FIG. 4-16) with the bottom edge of the flighting at 12 o’clock. Position the drive pin at 8 o’clock.

NOTE: Looking up at the upper flighting (FIGS. 4-15 and 4-16) the auger rotation will be counter clockwise.

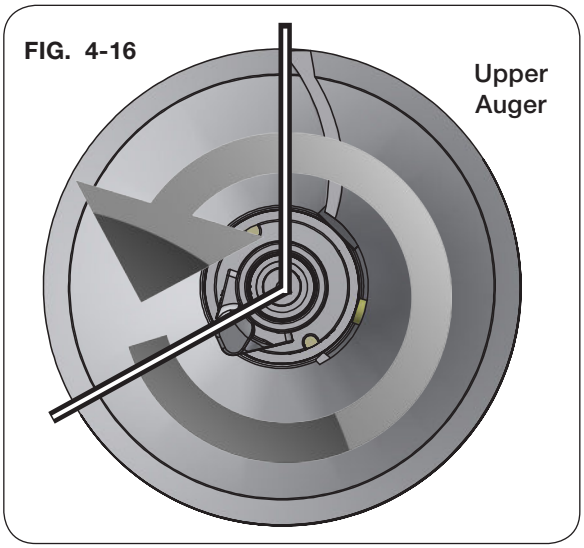


FIG. 4-16

(Continued on next page)

Auger System (continued)

15. Retain the soft start into position with 1/2”-13UNC x 8” capscrew (9390-119), spacer bushing (410511), and 1/2”-13UNC lock nut (9800). (FIG. 4-17)

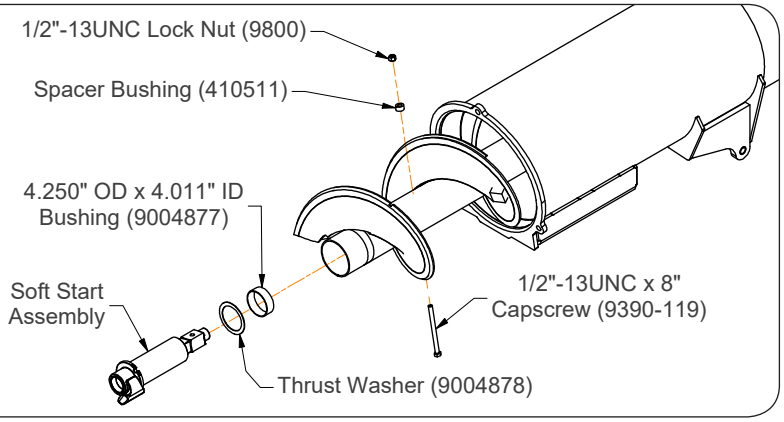


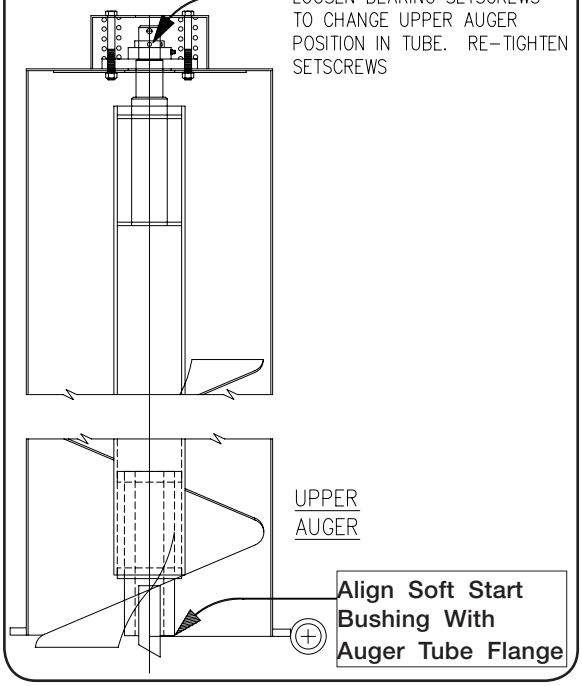
FIG. 4-17

16. The replacement auger is factory balanced. Remove entire auger from shipping crate and secure from rolling.

Upper Auger Replacement

1. Install upper auger bearing and spring assembly, if previously removed.
2. Ensure the upper auger bearing setscrews are loosened.
3. Using safe lifting device rated at a minimum capacity of 600 lbs., insert upper auger into upper auger tube. (FIG. 4-18)
4. Ensure the upper auger is set correctly. The face of the soft start bushing that sits on top of the drive dog must be flush with auger tube flange. (FIG. 4-18)

FIG. 4-18



Auger System (continued)

Upper Auger Replacement (continued)

5. Insert auger stub shaft through upper auger bearing. Make sure that the 4 bolt flange bearing is sitting tight against the mounting plate and then tighten the two bearing set screws. Attach the 5/16”-18UNC x 2 3/4” capscrew (9390-037), four 5/16” SAE flat washers (9405-068), 5/16”-18UNC lock nut (901527), and as many 2” flat washers (93974) as required to fill the gap between the bearing and the cross bolt. (FIG. 4-19)

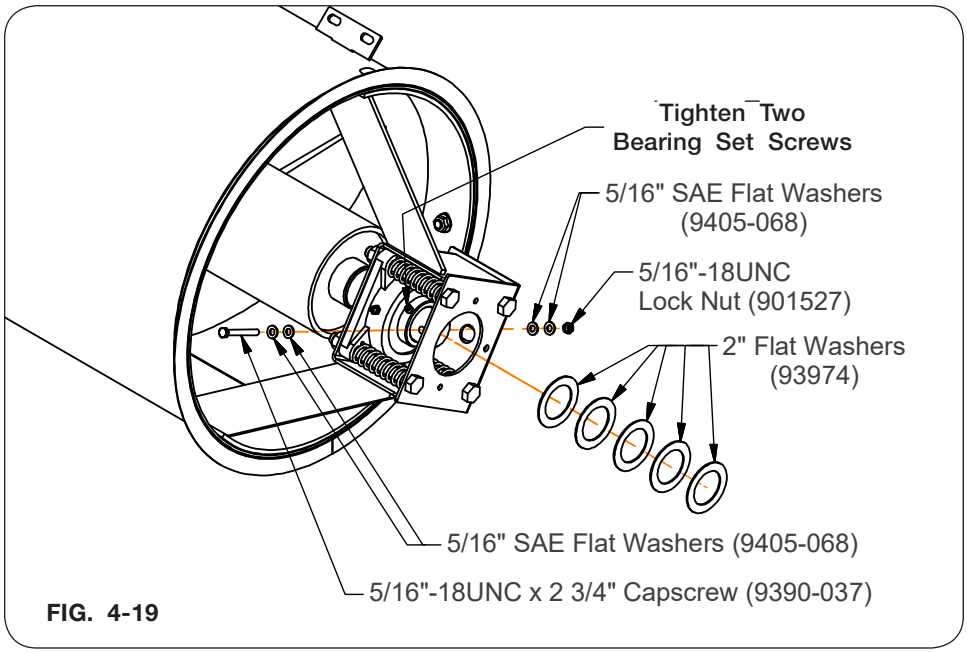


FIG. 4-19

6. Using safe lifting device rated at a minimum capacity of 4,000 lbs., lift upper auger assembly onto upper auger pivot bracket. Align retainer holes on upper auger assembly and upper auger pivot bracket.

7. Torque two 3/4”-10UNC x 3” capscrews to 200 ft.-lbs.

8. Attach 7/8”-9UNC x 2” capscrews (9390-164) and flat washers (97041) to the upper auger pivot bracket.

9. Torque 7/8” hardware to 340 ft.-lbs.

10. Using safe lifting device rated at 200 lbs., attach the spout assembly to the upper auger assembly.

11. Connect auger and spout light.

12. Reinstall hydraulic cylinder and pivot pins. Clamp hoses into position and recheck connector tightness.

13. Remove safe lifting devices.

Auger System (continued)

Upper Auger Bearing Gap

14. Unfold the auger to the unload position.

15. Verify the upper auger bearing height by inspecting the upper auger bearing in operating position. There should 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. (FIG. 4-20) If gap is present, no action is needed, go to step 14. If no gap or gap is too large, Re-adjust the upper auger placement to achieve a 1/16-1/8” gap. If there is no gap, the upper auger will need to be moved ahead. If there is too large of a gap, move it backwards in the upper auger housing. The number of washers (93974) will also need to be adjusted to eliminate any gap between the bearing and the cross bolt. (FIG. 4-21)

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

17. 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 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.

18. Test run auger driveline. Verify smooth driveline operation.

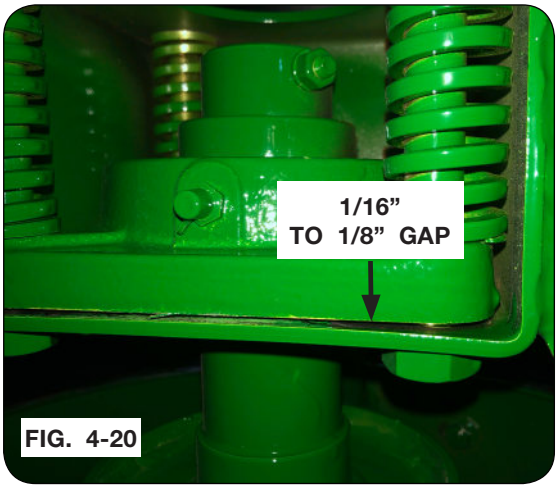


FIG. 4-20

FIG. 4-21

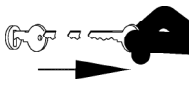
Auger System (continued)

Auger Flow Door Cylinder Replacement

⚠ WARNING

- **TO PREVENT PERSONAL INJURY OR DEATH, 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 ARE 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.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREA.**
- **RELIEVE THE 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.**
- **HYDRAULIC SYSTEM MUST BE PURGED OF AIR BEFORE OPERATING TO PREVENT SERIOUS INJURY OR DEATH.**

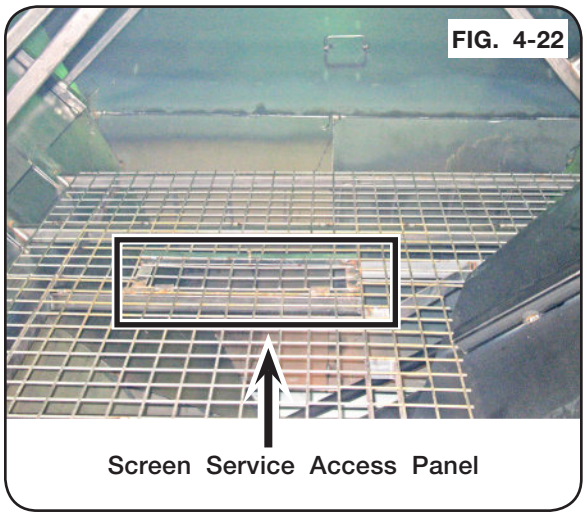
1. Park the empty grain cart on a firm, level surface and extend auger. Block the machine to keep it from moving. Unfold upper auger to make the flow door cylinder easier to access. If possible, close the flow door at least 8" from the fully open position. Relieve hydraulic pressure, see tractor operator's manual. Set the tractor's parking brake, shut-off the engine, remove the ignition key and disconnect the PTO shaft.



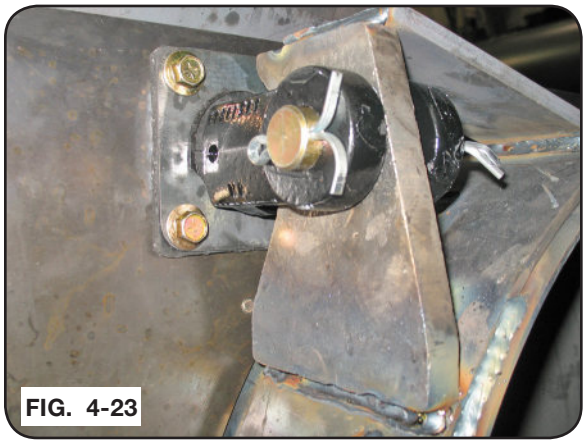
Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

2. On the inside of the cart, open the screen service access panel shown in Fig. 4-22.

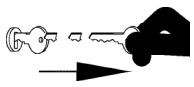


3. Remove the cotter pins from the lower cylinder pin then remove the pin. Then remove the four 3/8"-16UNC x 1" flange bolts holding on the gasket and gasket plate, shown in Fig. 4-23.



4. Remove all tools and extra hardware from the grain cart. Make sure all personnel are outside of the hopper. Then, retract the cylinder so that there is about 8" of clearance between the cylinder clevis and the lug.

5. Relieve hydraulic pressure, shut off the engine, remove the ignition key, and disconnect the hydraulic hoses from the tractor and cart.



Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

6. Label the hydraulic hoses to indicate upper and lower. Disconnect them from the cylinder, along with the lower hydraulic fitting (Fig. 4-24).

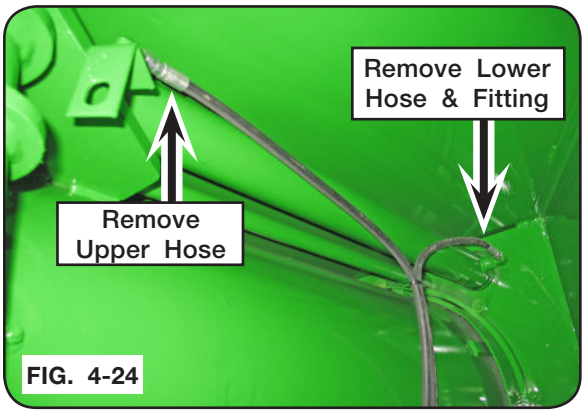


FIG. 4-24

7. Remove the cotter pins from the upper cylinder pin and remove pin (Fig. 4-25).

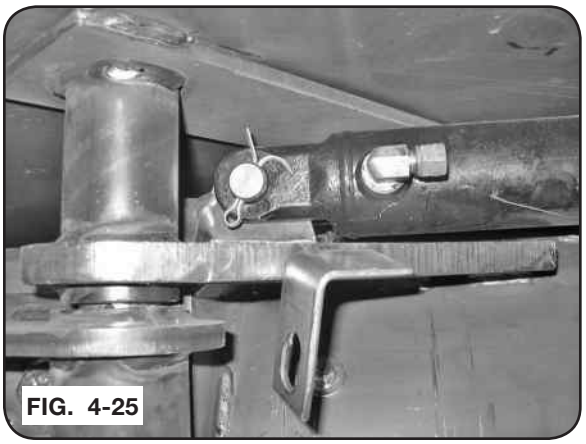


FIG. 4-25

8. Slide the flow door cylinder through the hole in the junction box until the upper cylinder clevis clears the lug, then raise the top of the cylinder above the auger fold bushing and remove the cylinder.

9. Replace with the new cylinder and insert the upper cylinder pin. Remove the cylinder port plugs. Manually extend the cylinder until the lower clevis lines up with the door lug and assemble the pin and cotter pins. Assemble hydraulic fittings and attach hoses. Tighten hydraulic lines to specification. See torque chart in this section.

10. Replace rubber gasket and gasket plate with 3/8”-16UNC x 1” flange screws, shut and secure the screen service access panel.

11. Remove all tools and extra hardware from the grain cart. Make sure all personnel are outside of the hopper. Purge air from hydraulic system.

Auger Driveline

Bearings

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

Driveline Replacement

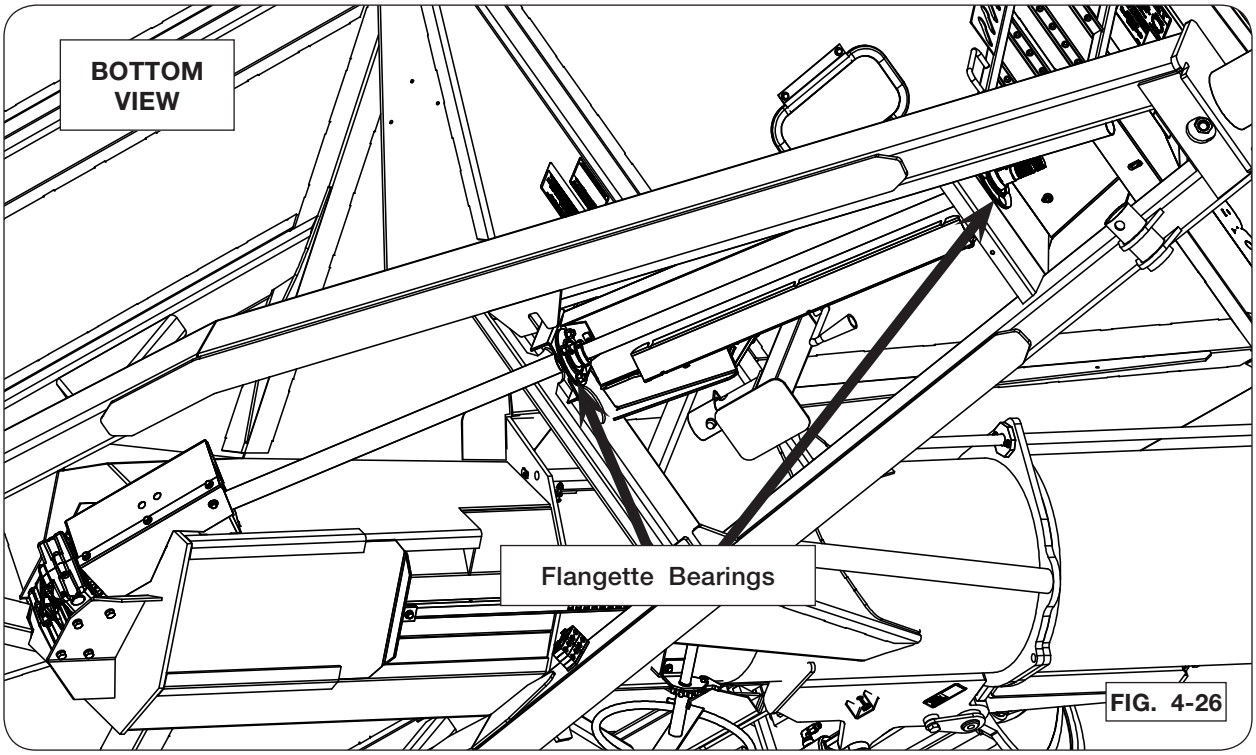
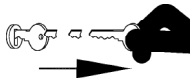


FIG. 4-26

1. Park the empty cart on a firm, level surface. Block the wheels or tracks on the cart to keep it from moving. Set tractor parking brake, shut off engine, and remove ignition key from tractor before disconnecting driveline assembly and bearing hardware.



2. Loosen the setscrews (9399-071) on two flangette bearings (9003920) (Fig. 4-26).
3. Remove the 1/2" carriage bolts (9388-103), flange nuts (9394-010), and lock washers (9404-025) holding the flangette bearings. Keep hardware. (Fig. 4-27).
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 driveshaft down and slide driveshaft out of the two flangette bearings.

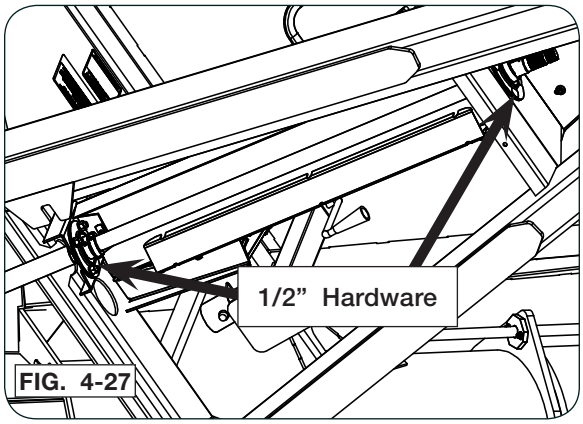


FIG. 4-27

Auger Driveline (continued)

Driveline Replacement (continued)

6. Remove bearings, bearing mounts, universal joint cover, PVC driveshaft cover, driveshaft collars (if collars are attached to driveshaft), and driveline cover, located behind the ladder, off the current driveshaft.

U-Joint Quick Disconnect Pin

7. Remove U-joint assembly (95012) on the gearbox by using a drift punch and hammer on the quick disconnect pin. (92362 - quick disconnect pin kit) (FIGS. 4-28 and 4-29)

8. Drive the pin towards the retaining washer to force the complete U-joint assembly out. (FIG. 4-29)

FIG. 4-28

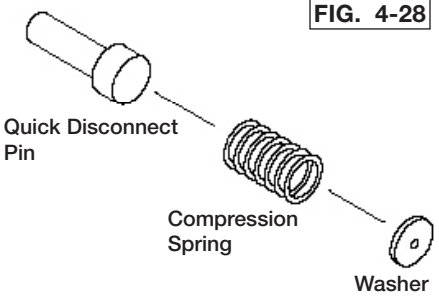
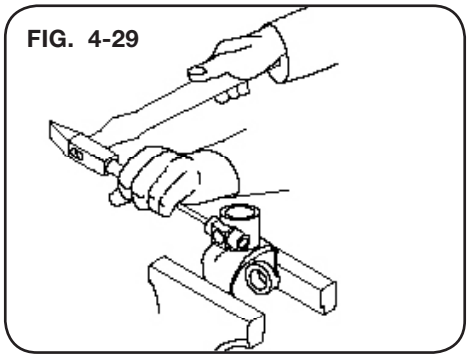


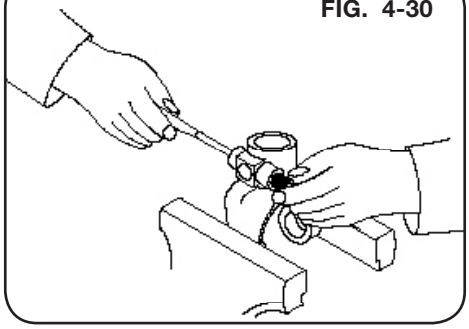
FIG. 4-29



9. Clear the edges of the retaining washer bore to accept the new one by removing the deformed metal from the last peening operation to hold the washer in place. (FIG. 4-30)

(Continued on next page)

FIG. 4-30



Bleeding Procedure For Braking System (Optional)

⚠ WARNING

- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **RELIEVE THE 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.**
- **PLACE TRACTOR IN PARK. TRACTOR MUST IN PARK DURING ENTIRE PROCEDURE.**

NOTE: System is intended for tractors with hydraulic trailer brakes. If your tractor does not have hydraulic trailer brakes, contact your dealer for support.

NOTE: This procedure is a **two-person** process. With responsible operator behind controls, one person operates the brake pedal while the second person loosens the bleeder screw on the brake caliper.

1. Block tires to prevent movement. Set the tractor parking brake, but leave tractor engine on throughout the procedure. Attach hydraulic brake coupler on the cart to the implement brake port at the rear of the tractor.
2. Apply and hold pressure to brake pedal.
3. Attach 1/4" hose to bleeder screw. Put hose in an approved container. Loosen the bleeder screw, at the top of the brake caliper, on caliper of the closest wheel located in the hydraulic circuit. If necessary, pump the brake pedal to extract all air from the system. Once air bubbles are no longer present, tighten the bleeder screw. (Fig. 4-2)
4. Repeat steps 2 and 3 to the next brake caliper in the brake circuit. Repeat until all brakes are bled.
5. Do a final tightness check of all caliper bleed screws before beginning cart operation. Check that both brakes actuate and release properly with tractor brake pedal.

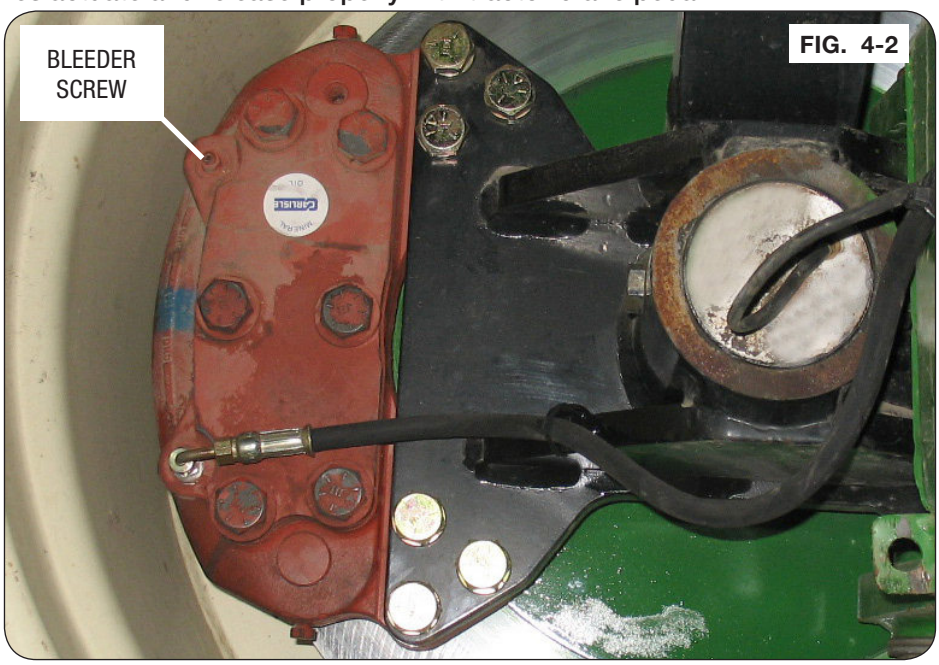


FIG. 4-2

Bleeding Procedure For Braking System (Optional) (continued)

Brake Pressure Manual Release

NOTE: System is intended for tractors with hydraulic trailer brakes. If your tractor does not have hydraulic trailer brakes, contact your dealer for support.

1. Set tractor parking brake. Block tires to prevent cart from moving. Shut off tractor and remove ignition key.

2. Attach 1/4" hose to bleeder screw fitting. Put hose in an approved container. Loosen the bleeder screw to relieve pressure and drain oil. Once pressure is relieved, close bleeder screw. (Fig. 4-4)

3. Repeat step 2 for the remaining brake calipers. Repeat until all brakes are relieved of pressure.

4. Perform a final tightness check of all caliper bleed screws.

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 16,000 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 in 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, support the weight of your grain cart using a safe lifting and load holding devices rated at 16,000 lbs. Place the safe lifting device under the axle closest to the tire.

3. Use a 3,000 lbs. safe lifting device to support the wheel and tire during removal.

NOTE: For straddle duals, first remove the outer wheel and tire.

⚠ WARNING

- **FOR DUAL WHEELS, INNER WHEEL AND TIRE MAY FALL FROM HUB CAUSING SERIOUS INJURY OR DEATH. ALWAYS SUPPORT INNER WHEEL WHEN REMOVING OUTER WHEEL.**

4. If only changing wheel and tire, skip to Step 8; otherwise continue with Step 4.

   Remove the hardware retaining the hubcap. Next, remove the hubcap, gasket, cotter pin, castle nut and spindle washer. Remove hub with bearings from old spindle using a 200 lbs. safe lifting device.

Wheel, Hub and Spindle Disassembly and Assembly (continued)

5. Inspect the spindle and replace if necessary. If spindle does not need to be replaced, skip to Step 6; otherwise continue with Step 5.

   Remove the bolt and lock nut 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 bolt and lock nut to retain spindle to axle. Tighten as outlined in MAINTENANCE section.

6. Remove seal and inspect bearings, spindle washer, castle nut and cotter pin. Replace if necessary. Pack both bearings with approved grease and reinstall inner bearing. Install new seal in hub with garter spring facing the outside of hub by tapping on flat plate that completely covers seal while driving it square to hub. (FIG. 4-3) Install until flush with back face of hub. Using a safe lifting device rated for 200 lbs., install hub assembly onto spindle. Install outer bearing, spindle washer and castle nut.

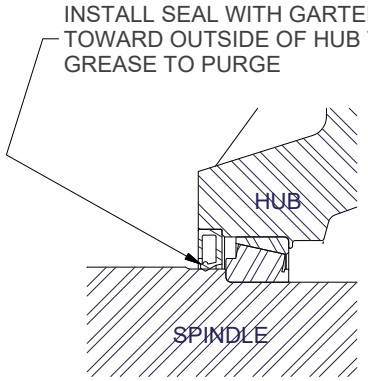


FIG. 4-3

7. 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 cotter pin. Clean face for hub cap gasket and install gasket, and retain hubcap with hardware removed. Tighten hubcap hardware in alternating pattern.

8. Attach the wheel(s) and tire(s) to the hub using the same rated safe lifting device for removal. Tighten wheel nuts to appropriate requirements and recheck as outlined in the Wheel and Tire section of this manual.

9. Raise cart, remove safe load holding devices and lower cart to the ground.

Wheels and Tires

Wheel Nut Torque Requirements

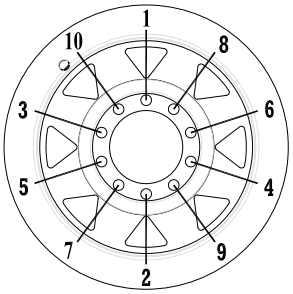
⚠ CAUTION

- **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
3/4-16 (UNF)	365 ft.-lbs.
7/8-14 (UNF)	440 ft.-lbs.
M22x1.5	475 ft.-lbs.



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 indicated by tire manufacturer. 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 max PSI to seat the beads, deflated to 5-10 PSI, then reinflated to recommended minimum pressure.

Tire Pressure for Grain Carts

Tire Make	Tire Size	Load Index / Ply Rating	Max. PSI
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:

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

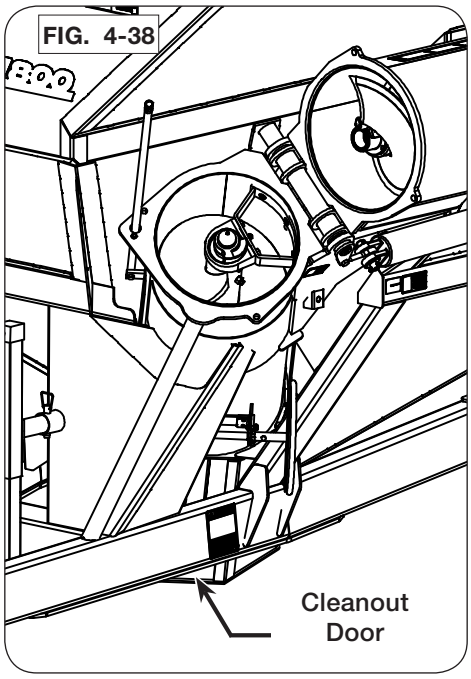
Seasonal Storage

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 to remove dirt and debris which could cause rusting. When using pressure washers, maintain an adequate distance so not to force water into bearings.
2. Store PTO on the rest brackets at the rear of the cart.
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 machine for parts that may need to be replaced so they may be ordered in the offseason.

FIG. 4-38



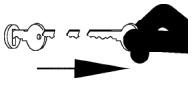
7. Replace all worn, torn or faded decals and reflectors.
8. Fully open and keep open the flow door and auger cleanout door to remove any remaining grain and to allow moisture to dry.
9. If unit is equipped with a scale indicator or electric hydraulic controls, store these indoors in a dry location.
10. Close the tarp to keep debris out of the hopper.

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 tires/tracks on 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. Completely close cleanout door. Inspect and verify that all the grain dust and filings are removed that may prevent the door from shutting completely. (FIG. 4-39)

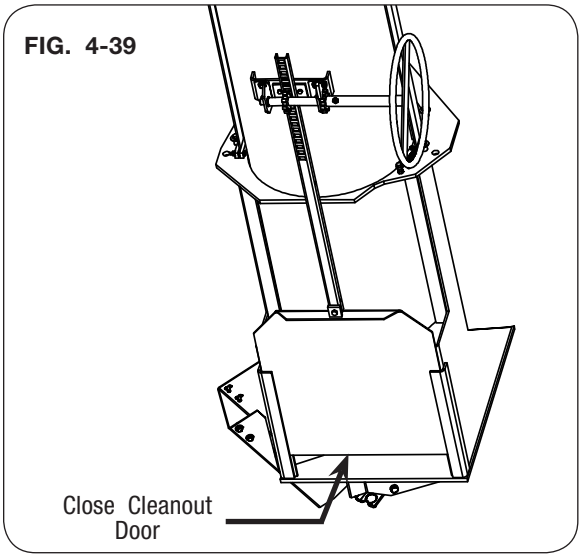


FIG. 4-39

3. Engage the locking plate (268313B). (FIG. 4-40)

4. Loosen mounting hardware. (FIG. 4-40)

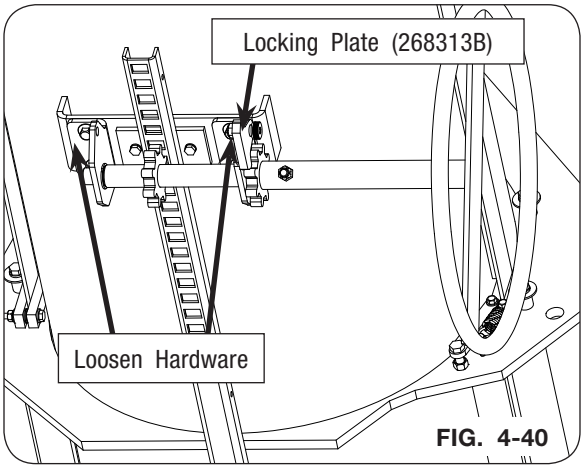


FIG. 4-40

Adjusting Cleanout Door (continued)

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. 4-41)

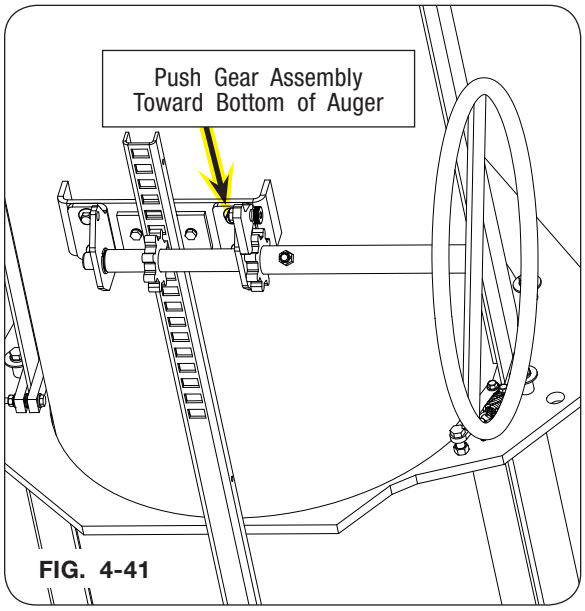


FIG. 4-41

6. Tighten hardware loosened in step 4. (FIG. 4-42)

7. Check door operation. Lock the handle weldment into position. (FIG. 4-42)

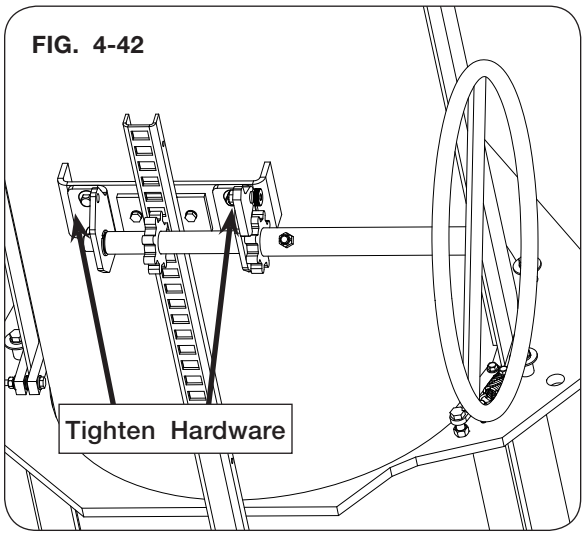


FIG. 4-42

Verify Telescoping PTO Shaft Length

⚠ WARNING

- **PROPERLY EXTENDED AND COLLAPSED LENGTHS OF THE TELESCOPING PTO SHAFT MUST BE VERIFIED BEFORE FIRST OPERATION WITH EACH AND EVERY DIFFERENT 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 ensure 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.

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

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" (Figure 4-43).

   Enter here:_____(1)
   (Verify that outer tube does not bottom out on surrounding plastic shield components).

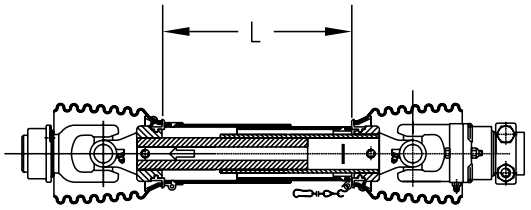


FIG. 4-43

2. Pull apart PTO telescoping shaft ends and measure lengths "T" & "C" (Figure 4-52)

   Add "T" + "C" measurments together
   Enter total here:_____(2)

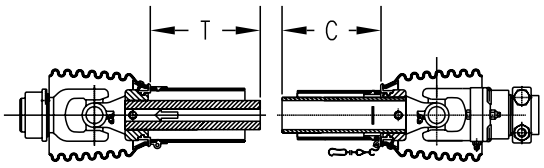


FIG. 4-44

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.

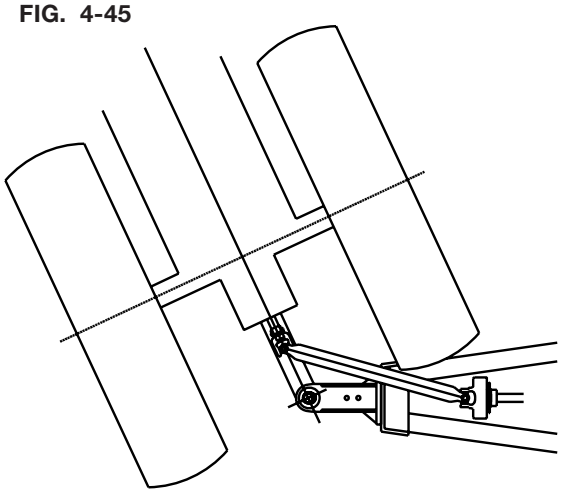
Verify Telescoping PTO Shaft Length (continued)

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, obtain a longer PTO shaft assembly before operating cart.

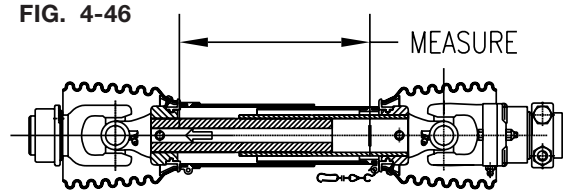
6. Position the tractor to obtain tightest turning angle, relative to the cart. (Fig. 4-45)

FIG. 4-45



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. 4-46)

FIG. 4-46



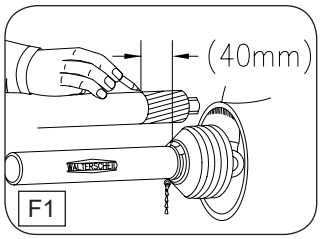
PTO Shaft Length Adjustment

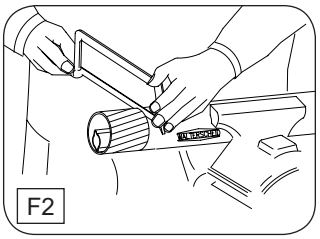
WARNING

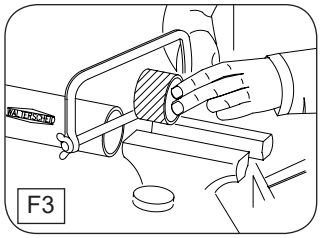
- **CHECK THE LENGTH OF THE TELESCOPING MEMBERS TO ENSURE THE DRIVELINE WILL NOT BOTTOM OUT OR SEPARATE WHEN TURNING AND/OR GOING OVER ROUGH TERRAIN.**

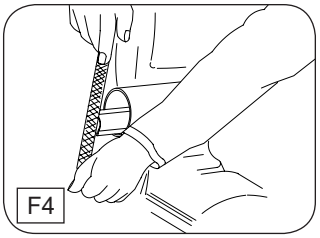
NOTE: Maximum operating length LB. (Refer to "Verify Telescoping PTO Shaft Length" in this section for LB length.)

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.





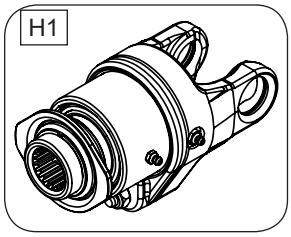


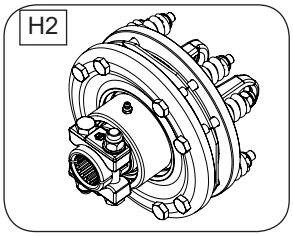


PTO Shaft and Clutch

Shear-Bolt and Friction Clutches (Figs. H1 - H3)

1. **Shear bolt clutches:**
   When the set torque value is exceeded, power flow is interrupted due to the bolt shearing. The torque is re-established by replacing the broken shear bolt. Use only the bolt specified in the PARTS section for replacement.
   (FIG. H1)





   Friction clutches:
   When overload occurs, the torque is limited and transmitted constantly during the period of slipping. Short-duration torque peaks are limited. (FIG. H2)

   Verify the overlap between the implement guard cone and PTO driveshaft is at least 2” (50 mm).

   When properly tightened, all springs will exert a total of 1210 NM on the disks, pressing them together. The nuts need to be tightened to the 1 13-64” or 30.5mm height only.

   Prior to first utilization and after long periods out of use, check working of disk clutch:

   a. Loosen spring nuts by unscrewing two complete turns. Rotate clutch fully to unlock device.
   b. Tighten nuts two complete turns. Now the clutch is ready for use.

IMPORTANT

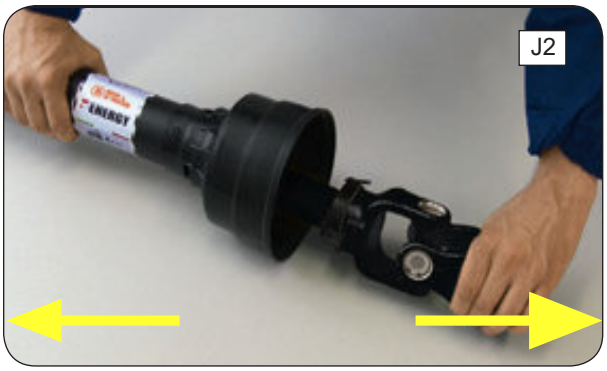
- *Avoid extended and frequent slippage of over-load clutches.*

PTO Shaft and Clutch (continued)

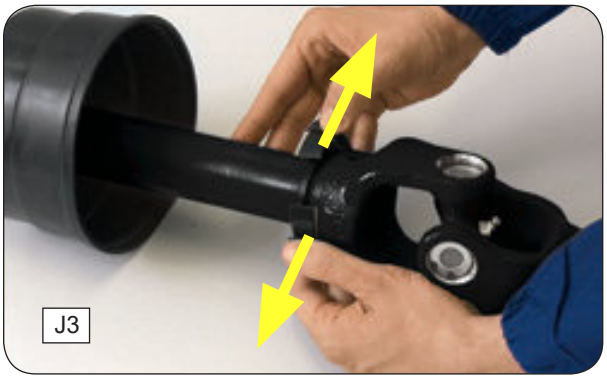
To Dismantle Guard (Figs. J1 - J3)

1. Pull the guard tube backwards and, using a screwdriver, disengage the three bearing ring tabs by pushing them inward. (FIG. J1)

2. Remove half-guard. (FIG. J2)



3. Open the bearing ring and remove from the yoke groove. (FIG. J3)



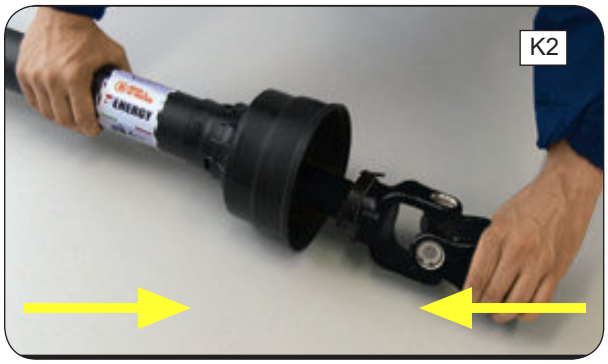
PTO Shaft and Clutch (continued)

To Assemble Guard (Figs. K1 - K3)

1. Clean and grease the bearing ring, yoke groove and inner profile tube. (FIG. K1)

2. Fit bearing ring in groove with three bearing ring tabs positioned as shown. (FIG. K2)

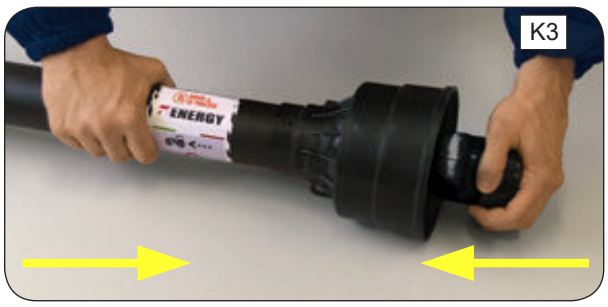
3. Slip on half-guard by aligning the holes on the cone with three bearing ring tabs and the cone inner key with the cut of the bearing ring.
(FIG. K2)



4. Push half-guard and yoke together causing the half-guard to engage. (FIG. K3)

NOTE: Ensure the three bearing ring tabs are positioned inside the grooves.

5. Confirm half-guard engagement by pulling backwards on the half-guard. (FIG. K3)

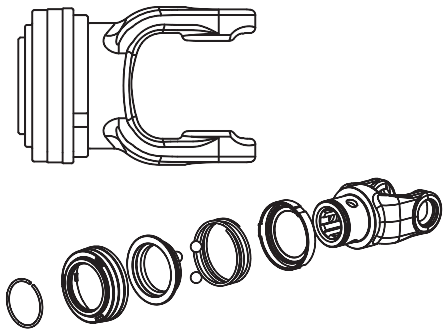


PTO Locking Systems

Ball-Type Collar Coupling

Slide clamp yoke or clutch onto gearbox driveline splined shaft. Pull in the coupler collar to release the balls and simultaneously push PTO driveshaft into the gearbox splined shaft until the coupler collar locks onto the driveline grooves. Push/Pull the driveline to verify coupler collar is engaged on PTO driveshaft. Continue to check at regular intervals.

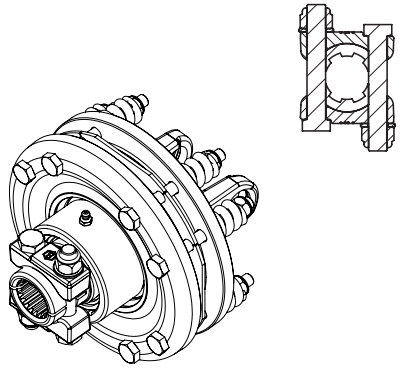
L1 END YOKE



Clamp Bridge Coupling For Friction Clutch

The capscrews must be removed before installing. When slid onto the gearbox driveline splined shaft, insert capscrews into driveline grooves of the shaft.
Torque capscrews to 70 ft.-lbs.

L2 CLAMP BRIDGE LOCK



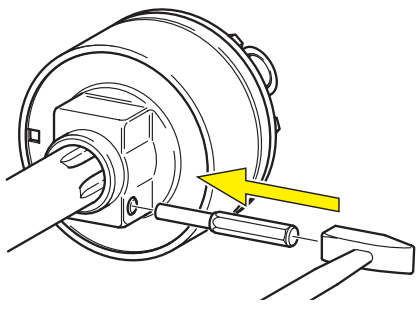
⚠ WARNING

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

Clamp Bridge Uncoupling

Unscrew the bolts a partial turn. Use the punch and hammer to help alleviate the torque resistance on the wrench, if necessary. After a few cycles, the bolts will move freely with low torque resistance for the removal process.

L3



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. Make sure the joystick and 7-pin connector are plugged into the same power source. If plugged into different power sources, the spout rotate and auger fold functions WILL NOT operate properly.
	Not getting good connection at Deutch 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 & Maintenance

PROBLEM	SOLUTION
TARP SAGS IN MIDDLE AREAS	1. BOWS MAY BE BENT OR ADJUSTED TOO LOW 2. MISSING OR LOOSE RIDGE STRAP REPLACE OR RETIGHTEN 3. TENSION MAY BE TOO LOOSE. 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 REPAIR 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

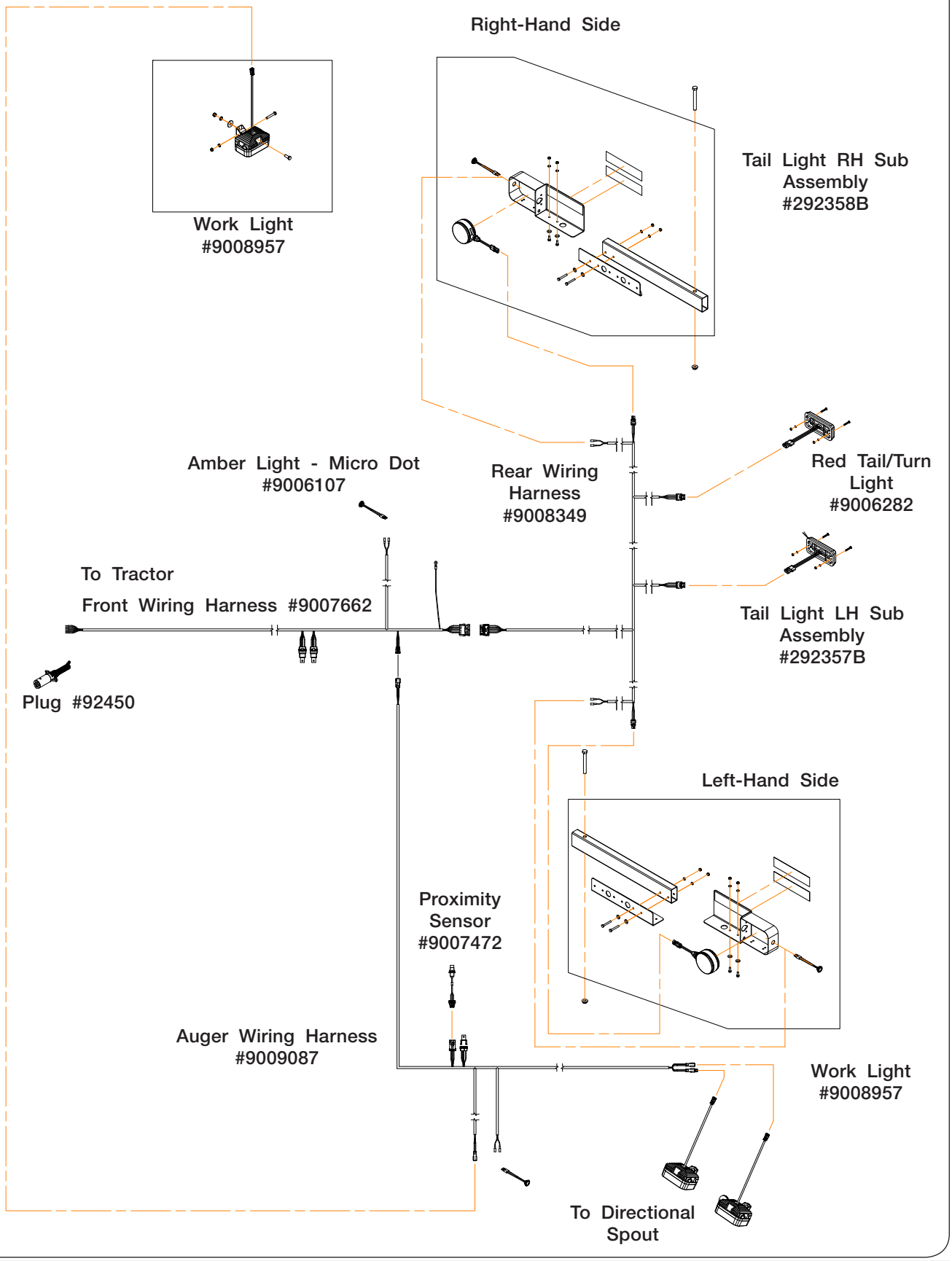
- *Do not open or close tarp while moving or in high wind conditions. Damage to the tarp may occur.*
- *Tarp should not be used if it is torn or the bungee cords are frayed or show damage. If water pools on the tarp, adjust tension of tarp cables or re-tension tarp with crank handle.*

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.

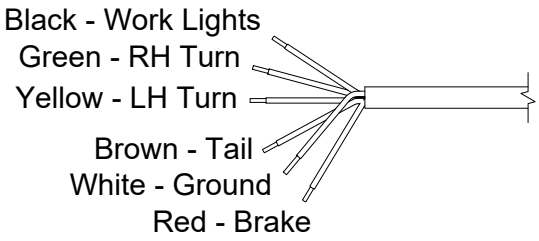
Tears in tarp should addressed before further tarp operation. If water pools on tarp, adjust tension of tarp cables and/or arm springs.

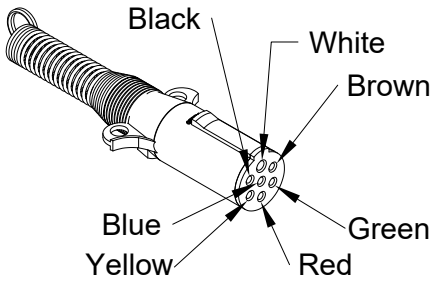
If installed correctly, tarp should always operate as well as when first installed. If tarp does not pass this simple inspection, make all appropriate repairs or adjustments immediately before serious damage occurs.

Electrical System Diagram — Overall



Electrical System Diagram — Plug #92450

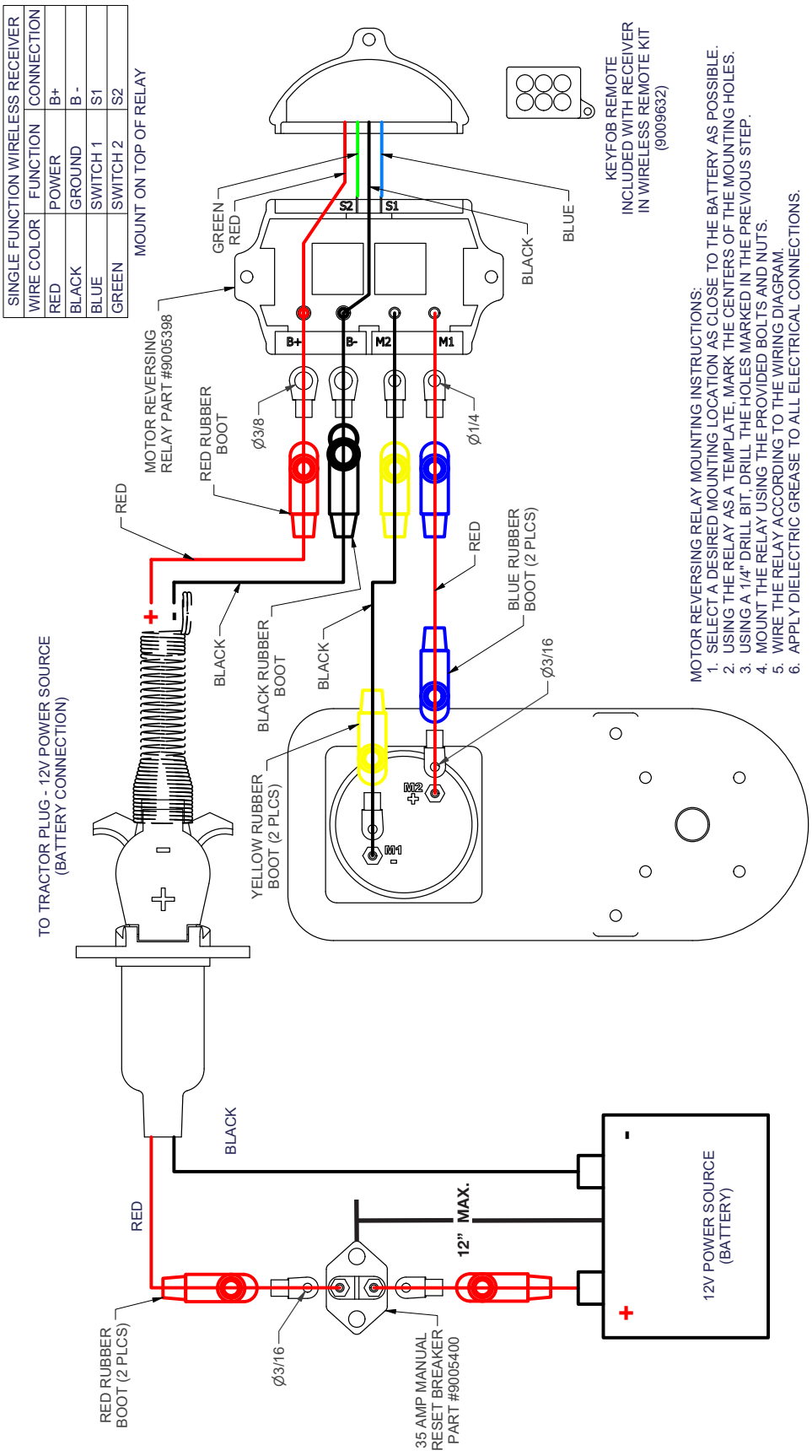




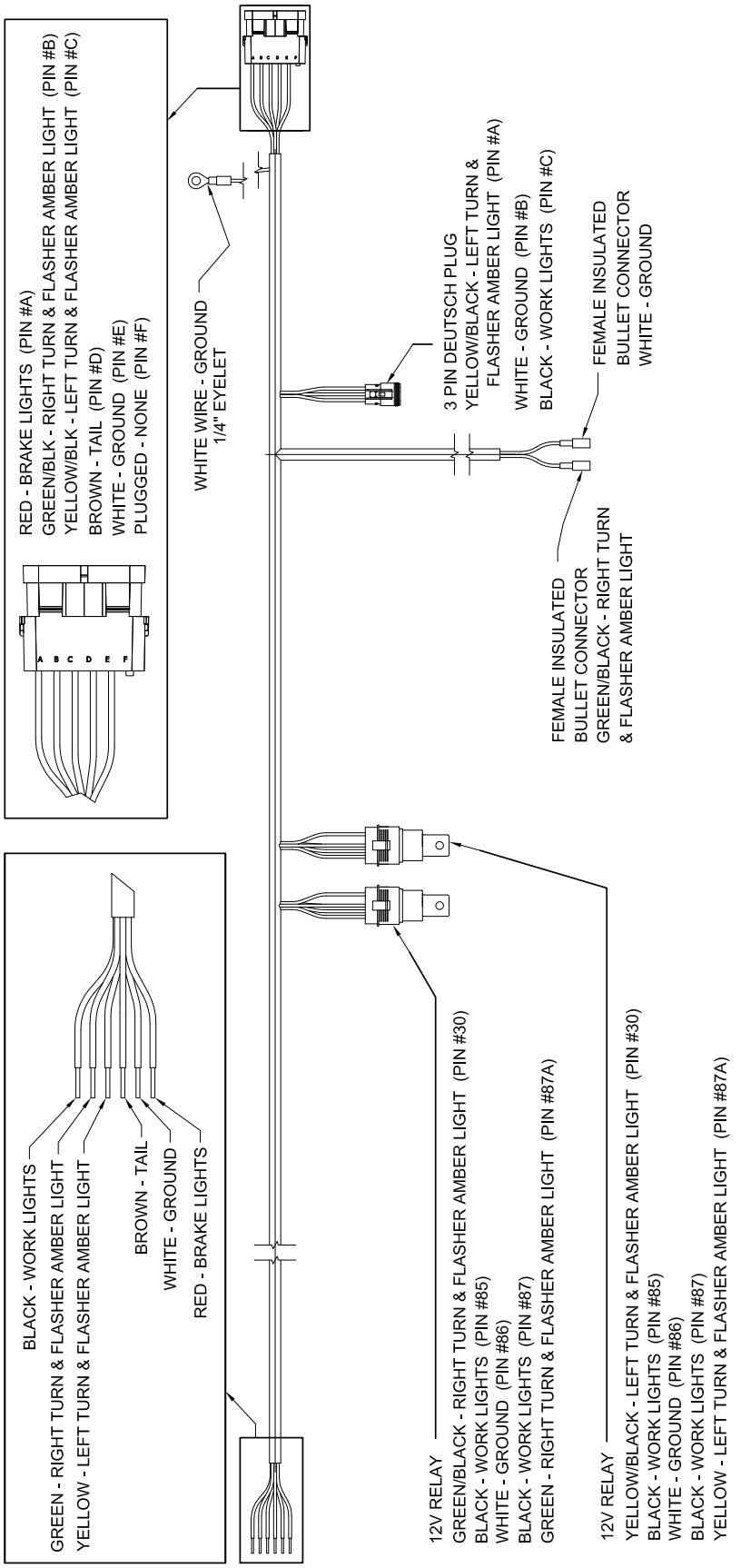
GRAIN CART WIRES

White -- Ground
Green -- Right amber flashing lamp
Yellow -- Left amber flashing lamp
Brown -- Tail light
Black -- Work Lights
Red -- Brake Lights
Blue -- NOT USED

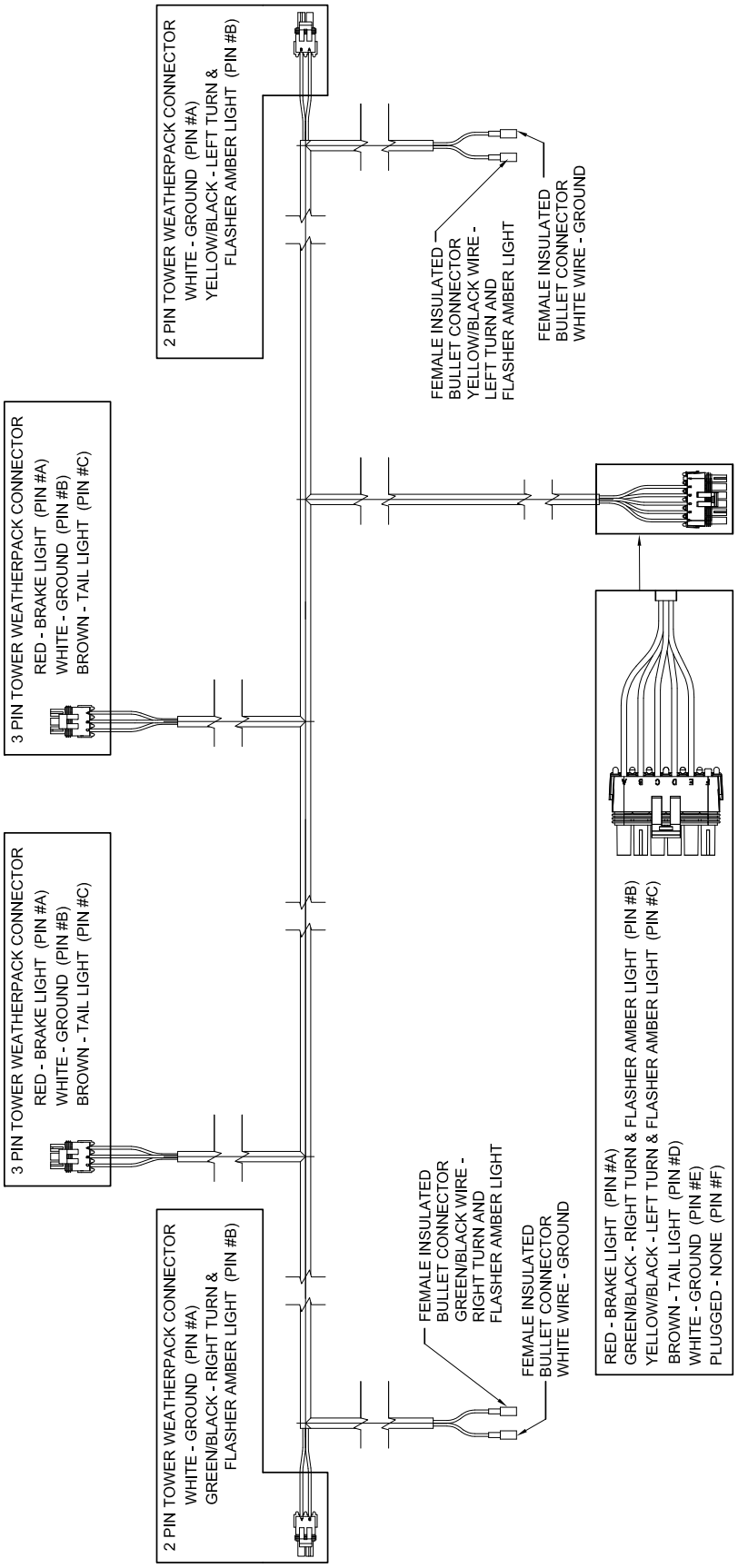
Electrical System Schematic - Optional Wireless Electric Tarp



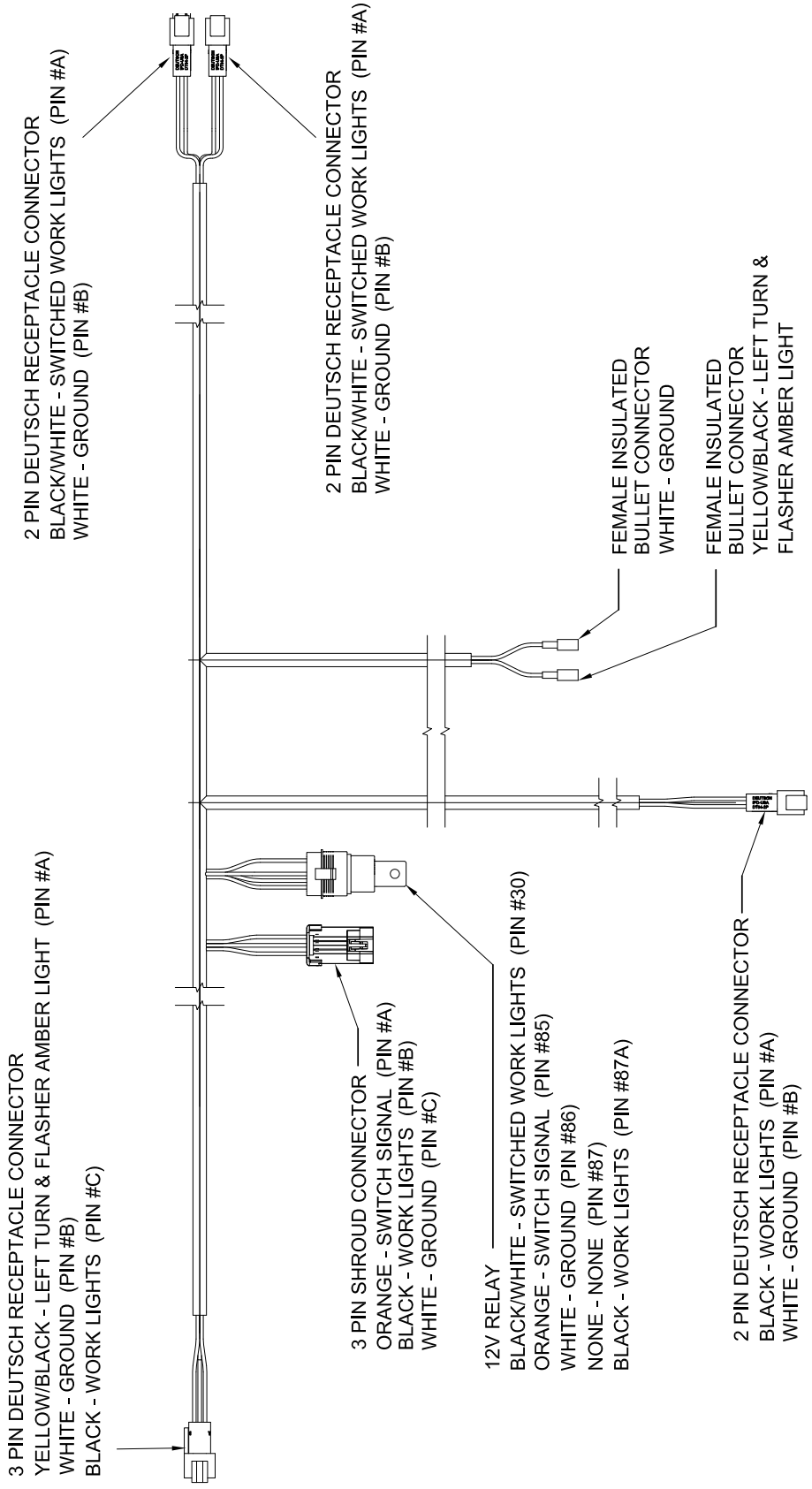
Electrical Diagram — Front Wiring Harness #9007662



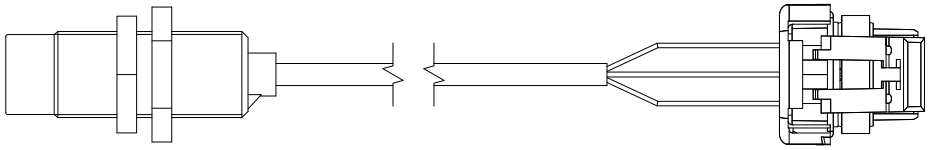
Electrical Diagram — Rear Wiring Harness #9008349



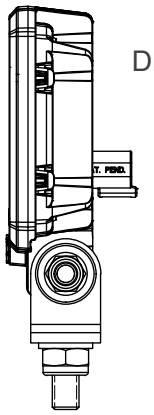
Electrical Diagram — Auger Wiring Harness #9009087



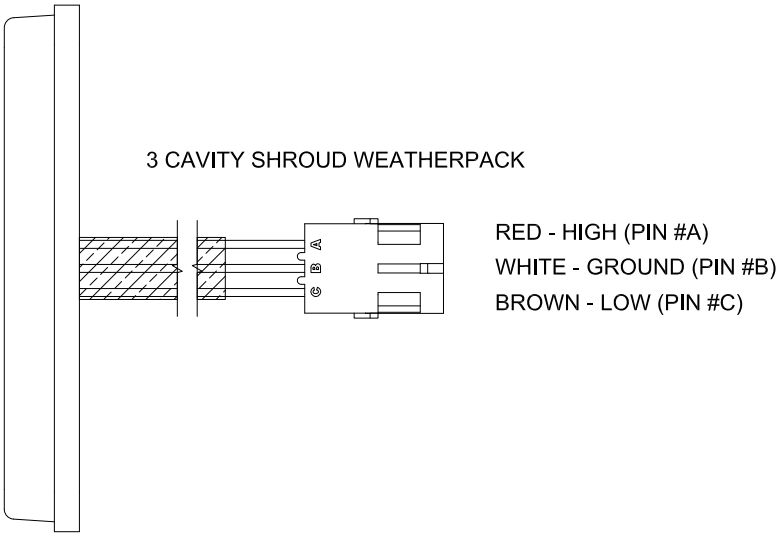
Electrical Diagram — Proximity Sensor #9007472



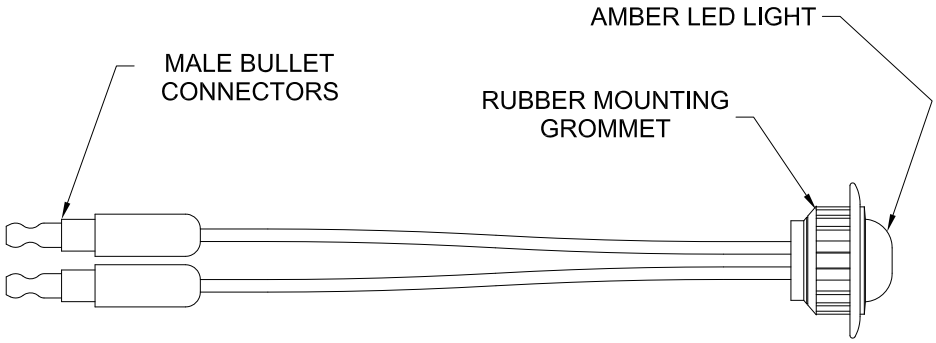
Electrical Diagram — Work Light #9008957



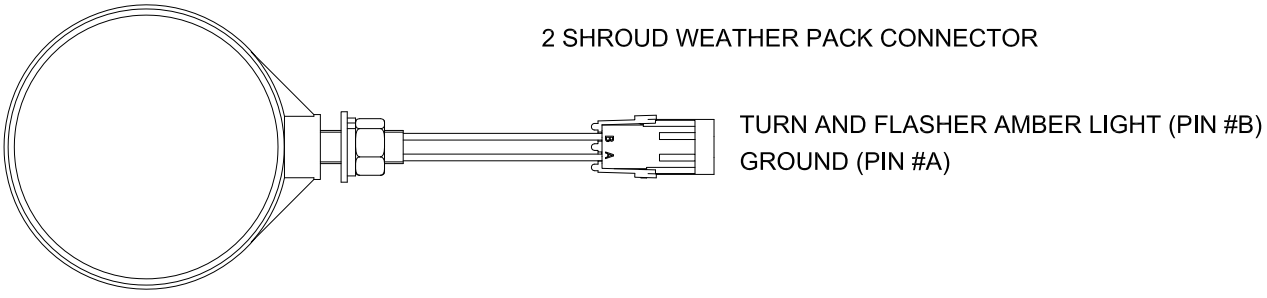
Electrical Diagram — Red Tail/Turn Light #9006282



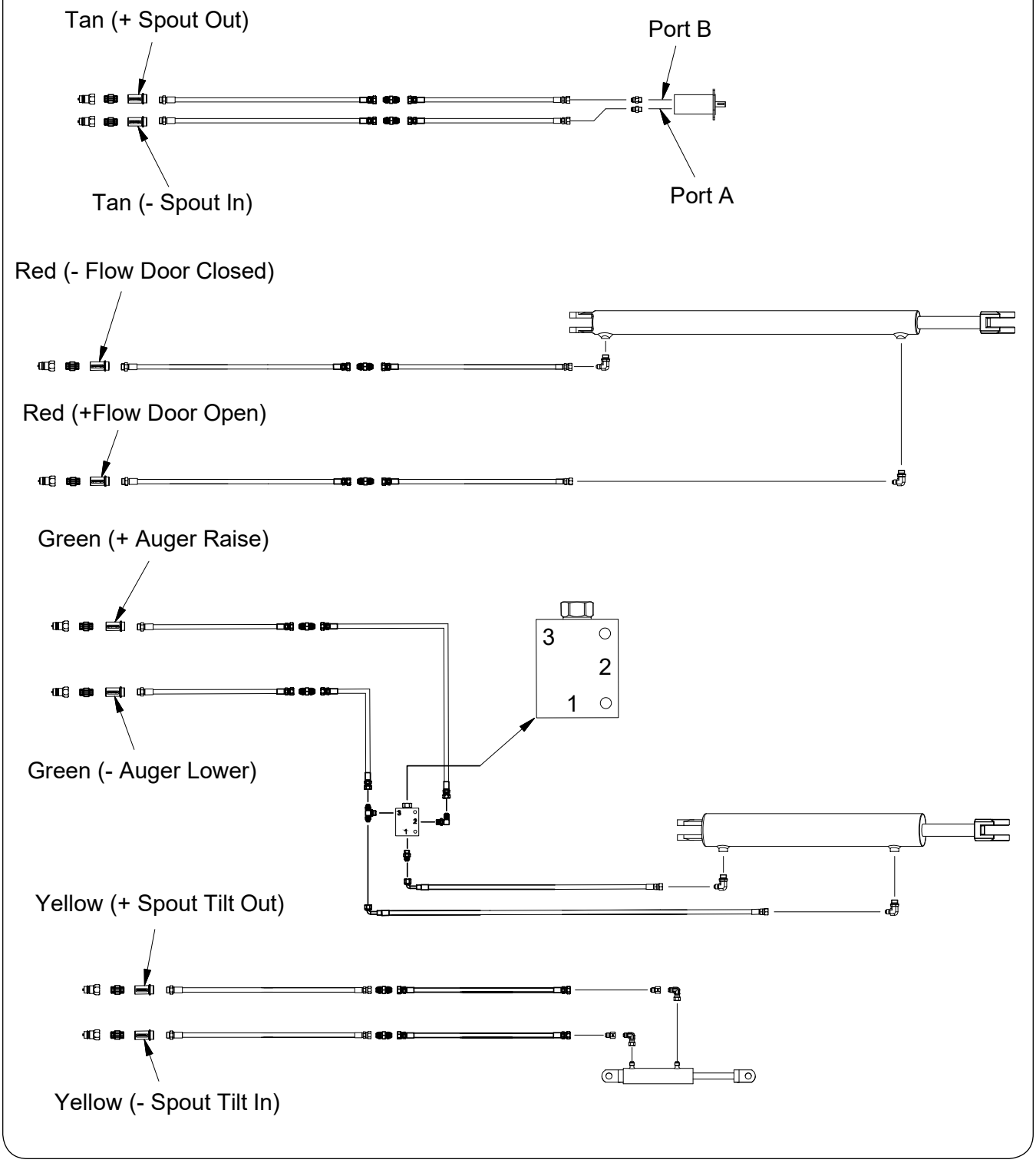
Electrical Diagram — Amber Light - Micro Dot #9006107



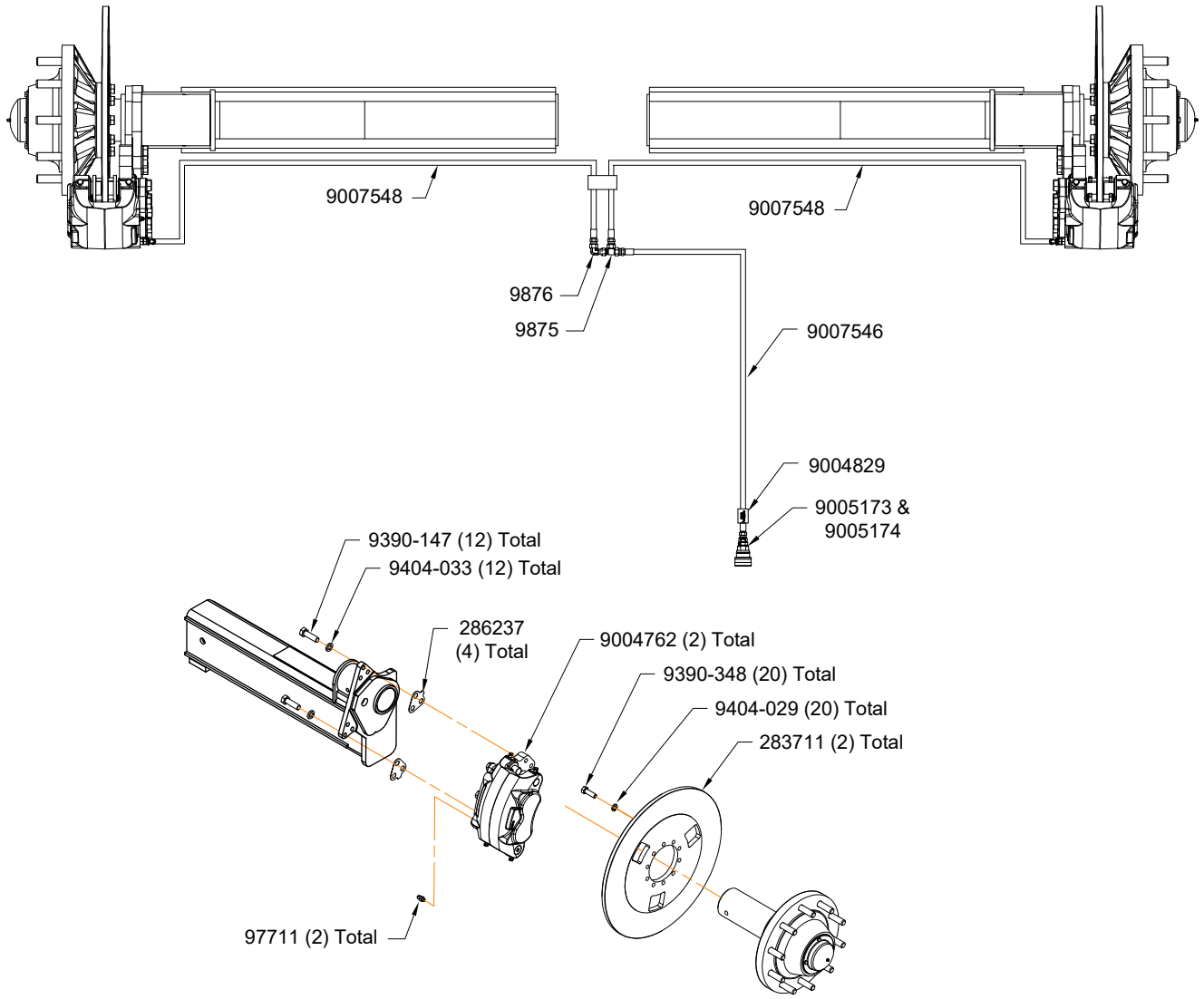
Electrical Diagram — Amber Lamp Double Face #9005142



Hydraulic System Diagram



Braking System Schematic (Optional) — Model V1000



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

IMPORTANT

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

Complete Torque Chart

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

IMPORTANT

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

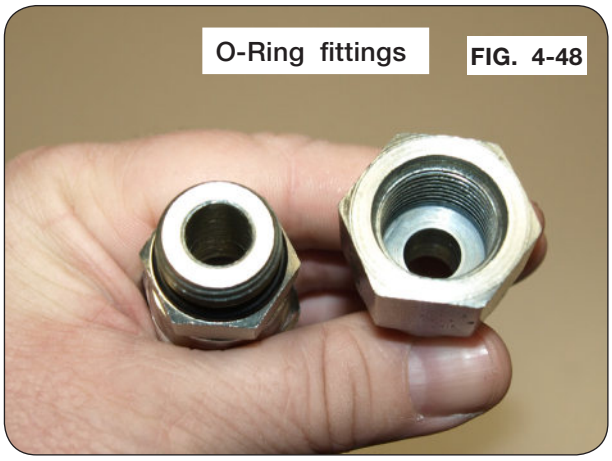
Hydraulic Fittings – Torque and Installation

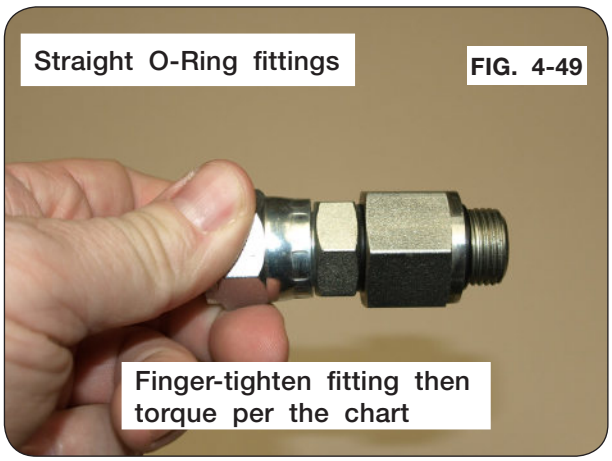
Tightening O-Ring Fittings

1. Inspect components for damage or contamination. Do not connect any other type of fitting to an O-ring fitting.
2. For adjustable fittings, insure 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





Hydraulic Fittings – Torque and Installation

Tightening JIC Fittings

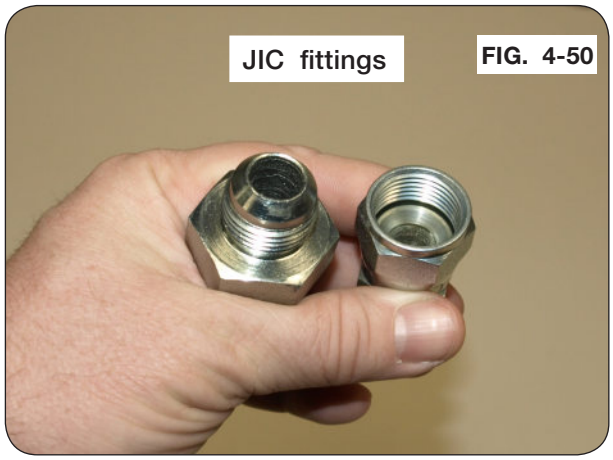
1. Inspect all components for damage or contamination. Do not connect any other type of fitting to a JIC fitting.

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



JIC fittings

FIG. 4-50

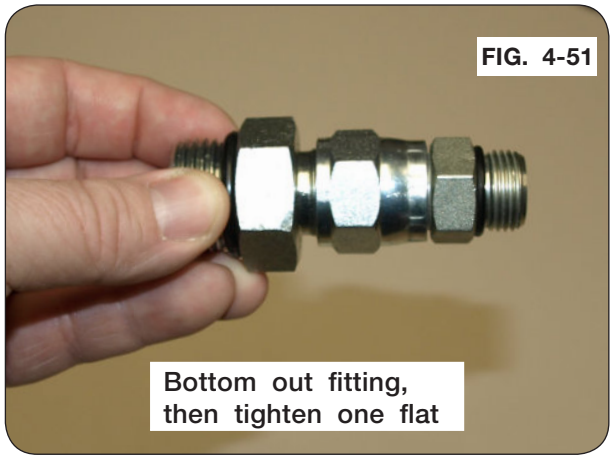
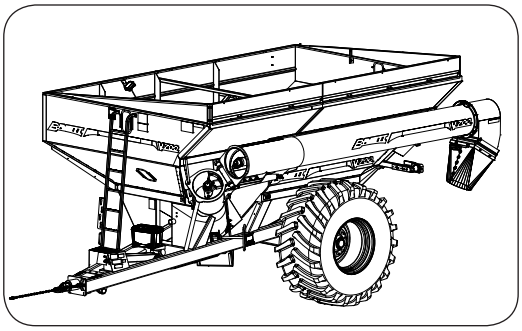


FIG. 4-51

Bottom out fitting, then tighten one flat



BRENT **Grain Handling**

CORNER-AUGER GRAIN CART
MODEL V700

Serial Number B36120100 & Higher

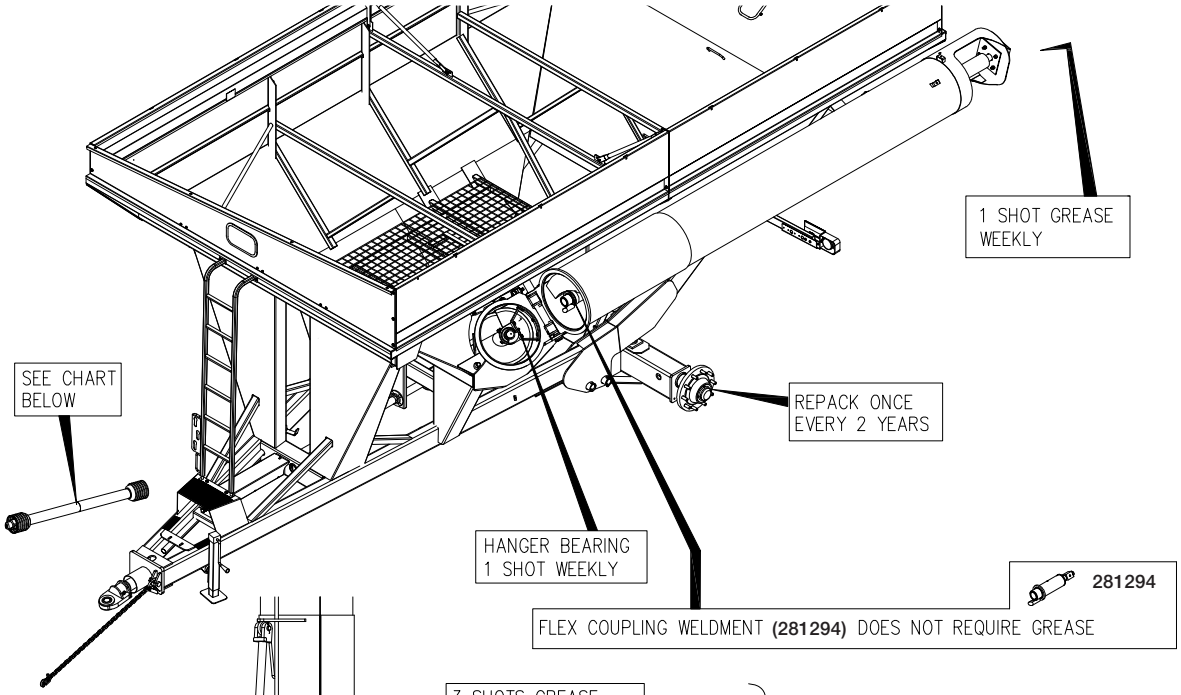
Part Number 272867

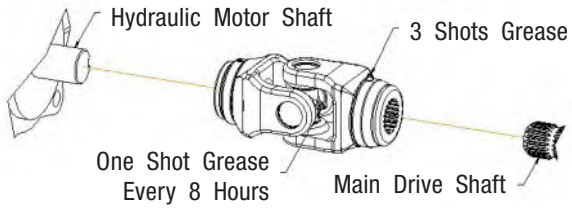
Section IV
Maintenance

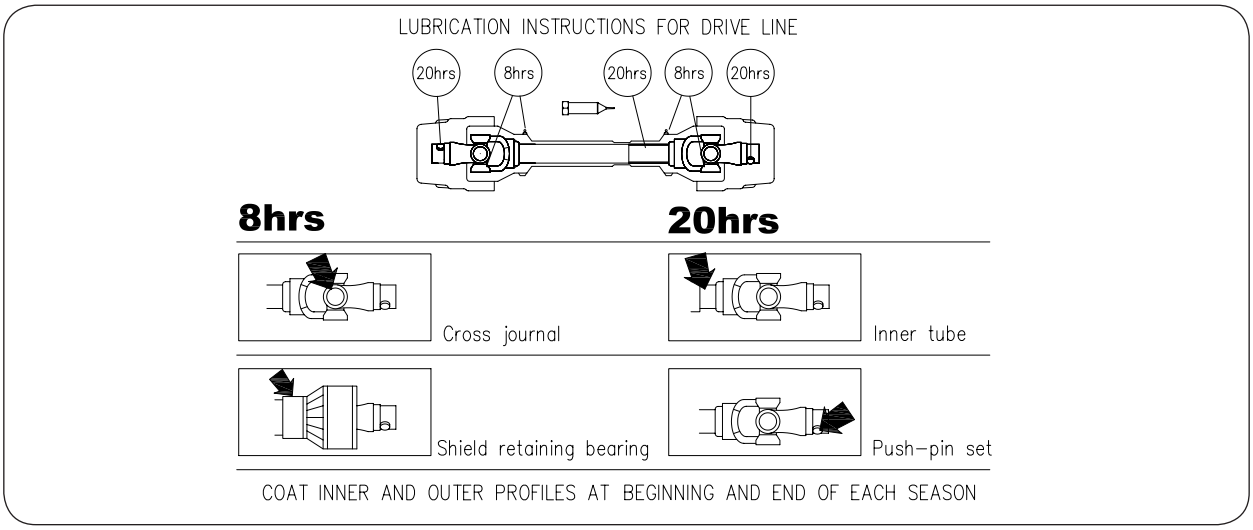
FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR HYDRAULIC DRIVE INFORMATION, PLEASE REFER TO YOUR HYDRAULIC DRIVE MANUAL.

Lubrication

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.



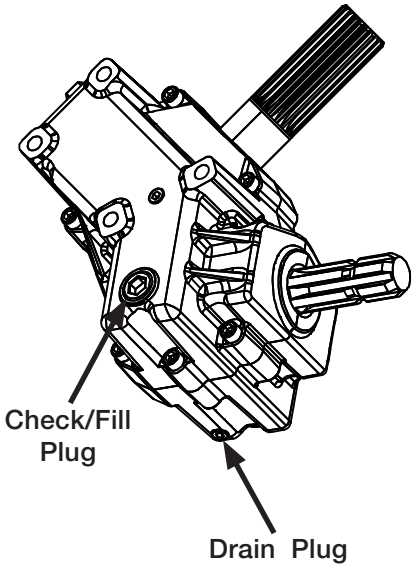




Gearbox Lubrication

Gearbox 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 or approximately 5/8" below the outside gearbox surface.

For Maximum gearbox life:
Check oil level every 2 weeks.
Replace oil every season with a minimum of 32 fl. oz. to 52 fl. oz. of 80W90 EP gear lubricant.

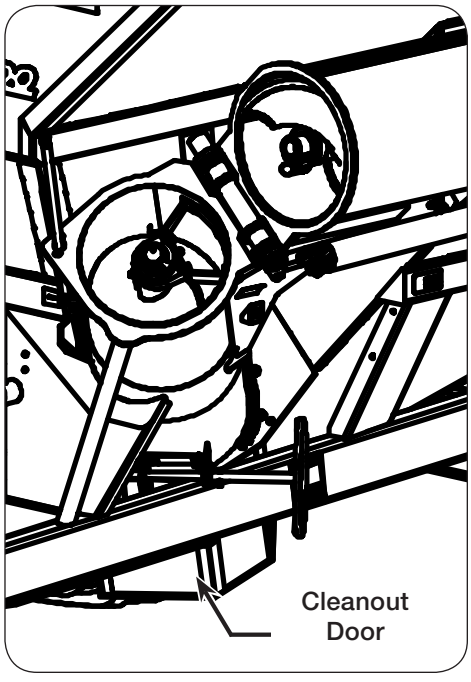


Seasonal Storage

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. Remove dirt and trash which could cause rusting.
2. Repaint any chipped or scraped areas.
3. Lubricate points as shown on previous page.
4. Inspect for damage or worn parts, replace before next season.
5. Store cart inside, away from livestock.
6. Replace all worn, torn or faded decals and reflectors.
7. Fully open flow door and auger cleanout door to remove any remaining grain and to allow moisture to drain.
8. Close the tarp to keep debris out of the hopper.



Auger Driveline

Bearings

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

Driveline Replacement

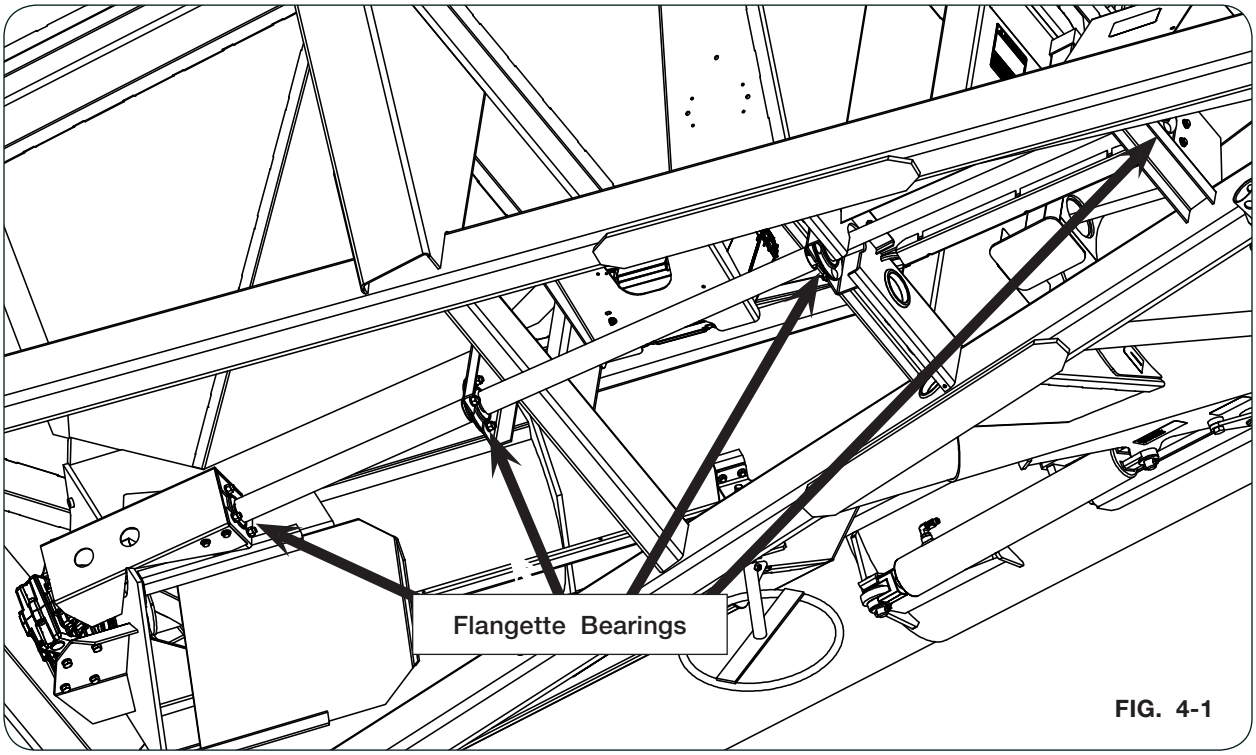


FIG. 4-1

1. Shut off engine and apply parking brake before disconnecting driveline assembly and bearing hardware.
2. Loosen the setscrews (9399-209) on all flangette bearings (92916) (Fig. 4-1).
3. Remove the 3/8" hex bolts (9390-055), flange nuts (9394-006), and lock washers (9404-021) holding the flangette bearings. Keep hardware. (Fig. 4-2).
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 driveshaft down and slide driveshaft out of the flangette bearing on the hitch end of the driveshaft.

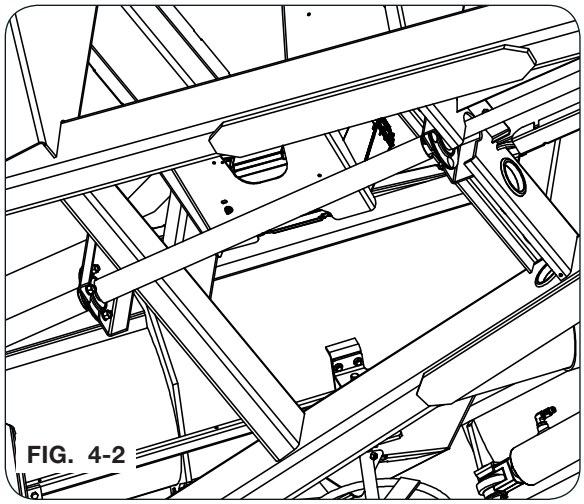


FIG. 4-2

6. Remove bearings, bearing mounts, universal joint cover, PVC driveshaft covers, driveshaft collars (if collars are attached to driveshaft), and driveline cover, located behind the ladder, off the current driveshaft.

Auger Driveline (continued)

Driveline Replacement (continued)

7. Slide new 1 3/8” dia. shaft collars (9008675) to both sides of new bearing (92916) closest to the U-Joint, when installing bearings onto new driveshaft (9007640).

8. Assemble new PVC driveshaft cover (286848) between new bearings (92916), when installing bearings onto new driveshaft (9007640).

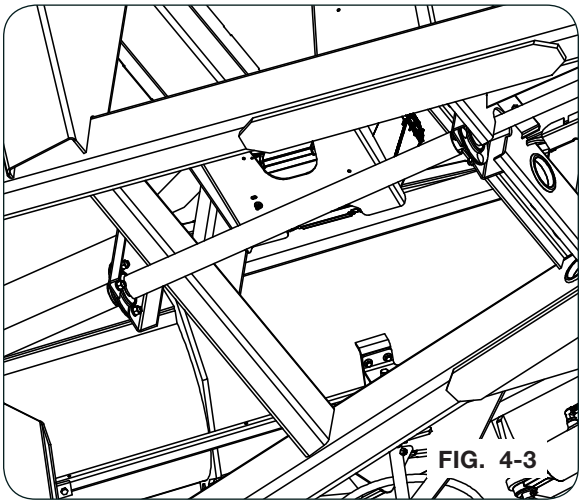


FIG. 4-3

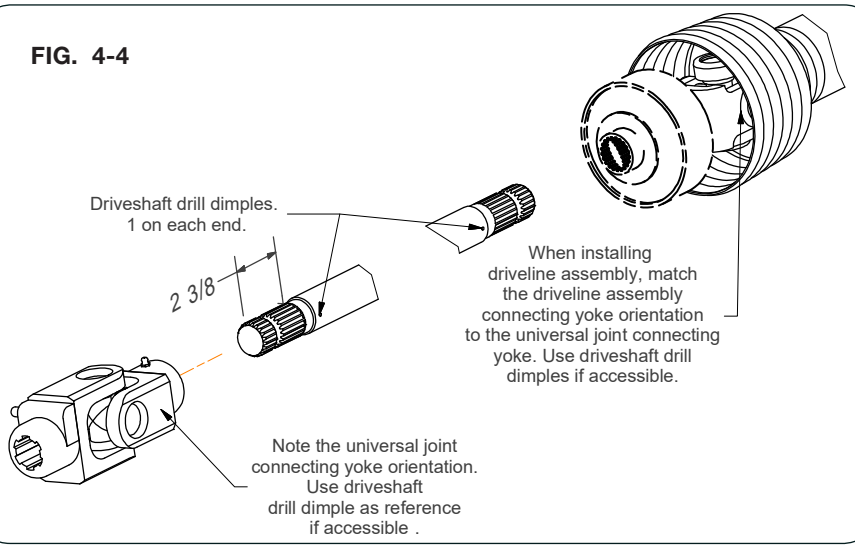
NOTE: Ends of driveshaft are symmetrical.

9. Slide the hitch end of the driveshaft, bearing and hitch driveline cover into the bearing near hitch of the cart. (FIG. 4-3)

10. Raise the gearbox end of the drive shaft up and insert the original 3/8” hex 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 about 2 3/8”. Ensure universal joint and driveshaft splines completely engage. Verify the hitch end for adequate length for driveline assembly to connect. (FIG. 4-4)

FIG. 4-4



Auger Driveline (continued)

Driveline Replacement (continued)

12. Tighten all flangette 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 a depth that setscrews are flush with the bearing prior to applying thread locker and installing setscrews. (FIG. 4-5)

14. For alignment of the yoke, the orientation of the universal joint at the gearbox must be in line with the driveshaft drill dimple when the driveline assembly is attached. (FIG. 4-5, 4-6, and 4-7)

NOTE: Check/fill gearbox and grease universal joint before installing universal joint cover.

15. Attach original universal joint cover to the bearing mount in front of the gearbox using original 3/8"-16UNC capscrews and 3/8"-16UNC flange nuts. Review to ensure PVC driveshaft covers and driveline cover, located behind the ladder, are in place and hardware tightened prior to operation.

16. Apply thread lock on bearing setscrews and tighten.

17. Test run driveline. Verify smooth driveline operation.

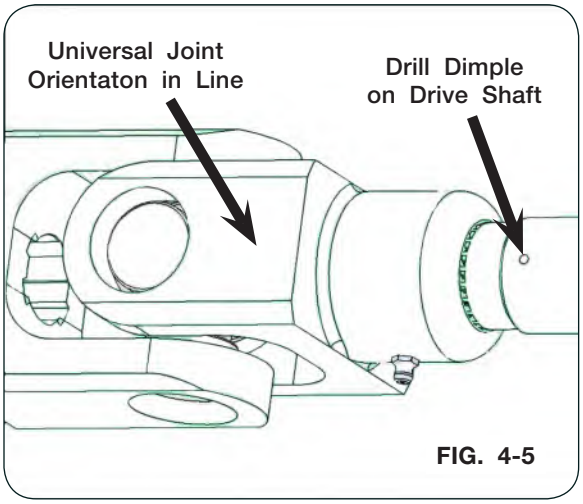


FIG. 4-5

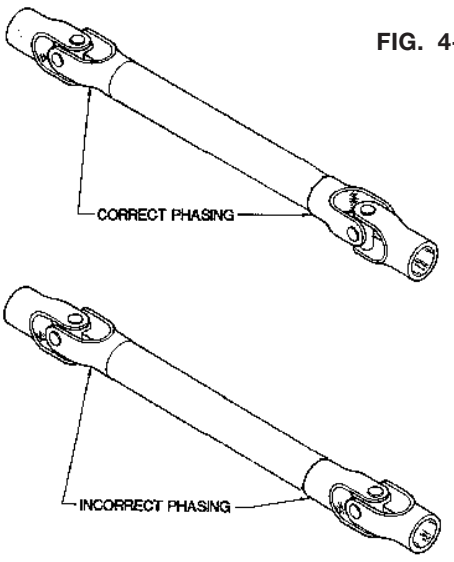
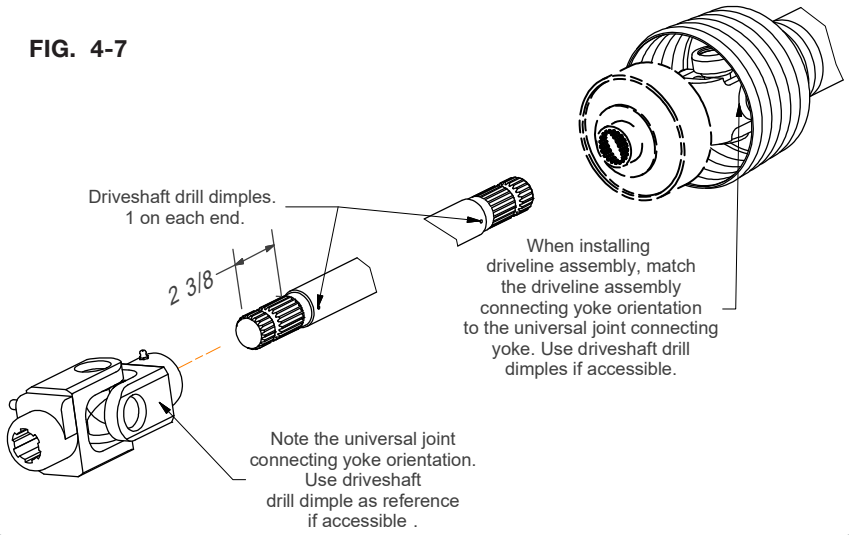


FIG. 4-6

FIG. 4-7



Auger System

⚠ WARNING

- **TO PREVENT PERSONAL INJURY OR DEATH, 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.**
- **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 4,000 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.**

Lower Auger Disassembly

1. Remove the three 3/8”-16UNC x 1 1/4” capscrews (9390-056), six 3/8” flat washers (9405-076), three 3/8” lock washers (9404-021) and 3/8”-16UNC hex nuts (9394-006) which secures the hanger bearing weldment (281620B) to the auger tube (Fig. 4-1).

2. Using a safe lifting device rated for a minimum of 700 lbs., remove auger from auger tube and perform required repair or replacement.

3. Remove the two 5/8”-11UNC x 6” capscrews (9390-136), 5/8” lock washers (9404-029) and 5/8”-11UNC hex nuts (9394-014) which secures the drive dog to the auger as shown in FIG 4-1.

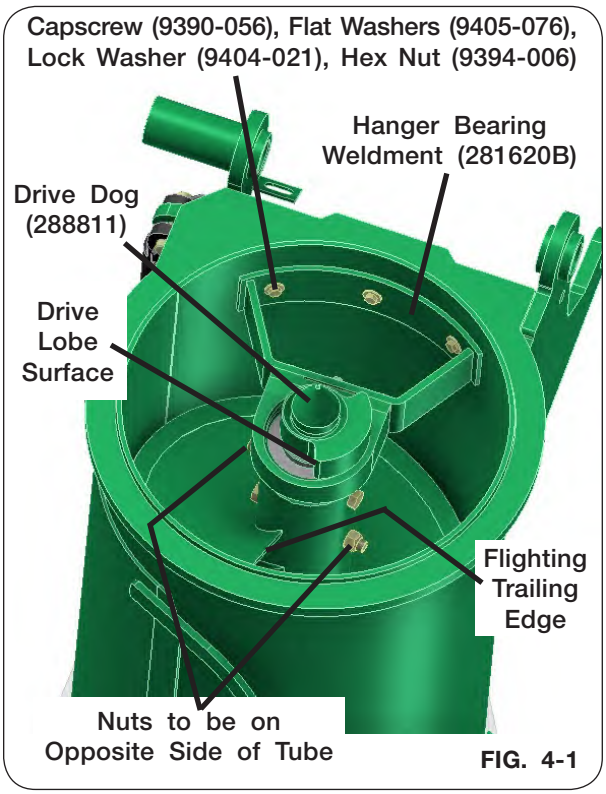


FIG. 4-1

Auger System (continued)

Lower Auger Assembly

1. For the lower auger, use the top edge of the flighting as a 12 o'clock reference. Position the drive dog so the driving edge is at the 5 o'clock position. (FIG. 4-2)

   Lower Auger: Assemble the drive dog weldment (288811) and hanger bearing weldment (281620B) to the auger making sure the drive dog weldment contact surface (for upper auger pin) is located approximately 30 degrees behind the lower auger flighting trailing edge. Secure with two 5/8"-11UNC x 6" capscrews (9390-136), 5/8" lock washers (9404-029) and 5/8"-11UNC hex nuts (9394-014), installed opposite of each other, as shown in Fig. 4-1.

NOTE: Looking down at the lower flighting (as in Fig. 4-2) the auger rotation will be clockwise. When looking up at the upper flighting (as in Fig. 4-3) the auger rotation will be counter-clockwise.

2. For the top auger, use the bottom edge of the flighting as a 12 o'clock reference. Position the driven edge of the drive pin at the 7 o'clock position. (Fig. 4-3)

FIG. 4-2

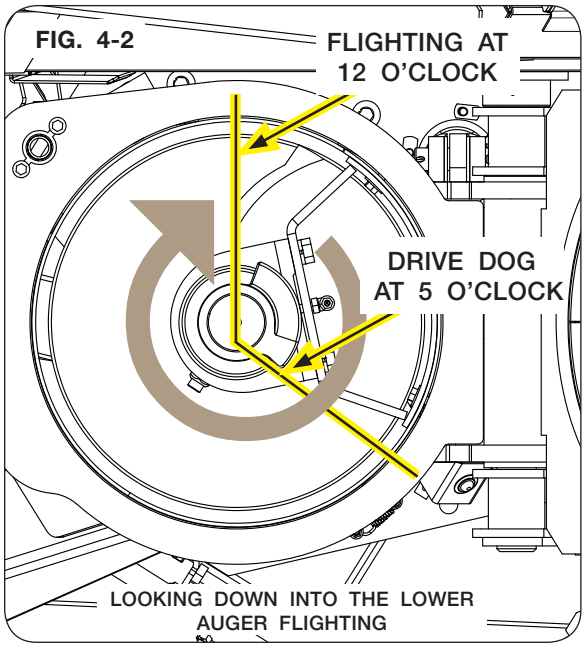
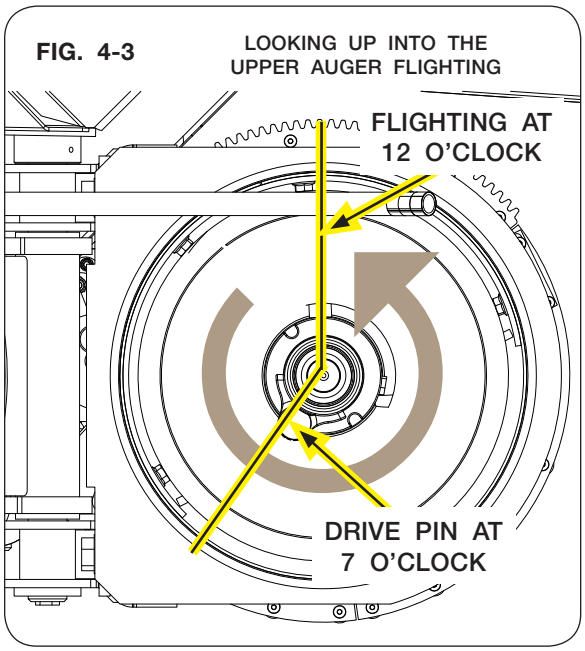


FIG. 4-3



Auger System (continued)

Lower Auger Assembly

3. When engaged, the top flighting should immediately follow the bottom flighting as pictured in (Fig. 4-4).

FIG. 4-4

4. Using a safe lifting device rated for a minimum of 700 lbs., install the lower auger subassembly into the lower auger housing. Align auger end with the three pin drive bushing and securely engage together. Secure hanger bearing to housing wall with three 3/8”-16UNC x 1 1/4” capscrews (9390-056), six 3/8” flat washers (9405-076), three 3/8” lock washers (9404-021) and 3/8”-16UNC hex nuts (9394-006) (Fig. 4-5).

5. Once secure, tighten hanger bearing weldment hardware.

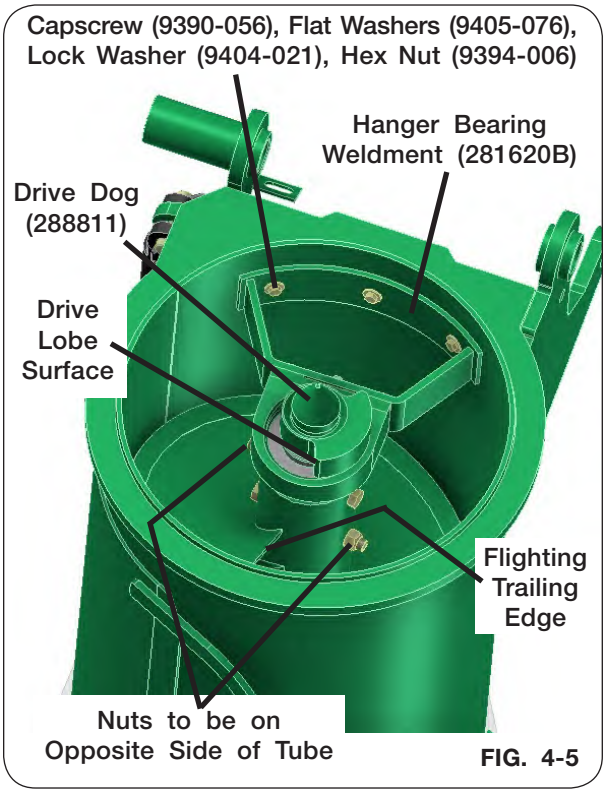


FIG. 4-5

Auger System (continued)

Lower Auger Assembly (continued)

6. Rotate auger 360 degrees to ensure it is centered on the drive bushing weldment (286436) and the five pins are engaged with auger end. Check for flighting interference or binding along housing and at lower end. A portion of flighting may need to be removed from lower end of auger to ensure operational clearances. (Fig. 4-6 & Fig. 4-7)

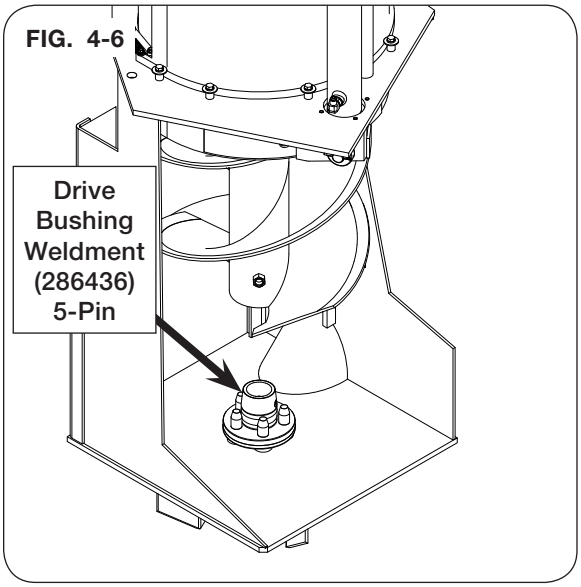


FIG. 4-6

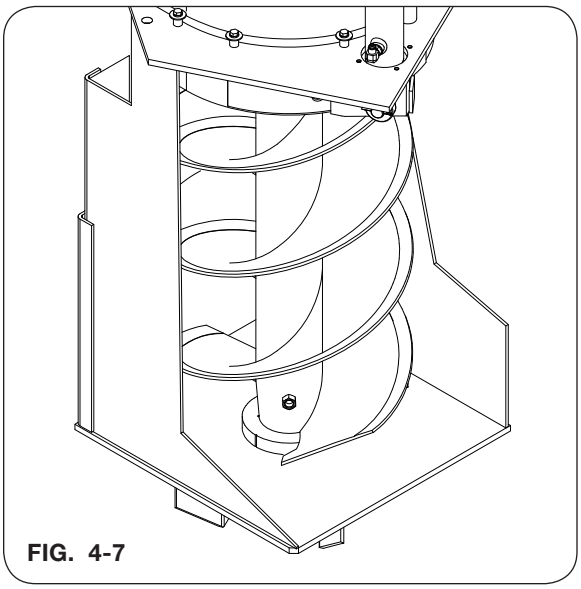


FIG. 4-7

7. Raise the upper auger into position, checking upper drive dog engagement with lower auger drive dog.

8. Lower the upper auger. Lubricate the pillow block bearing (9004731) (Fig. 4-8). Check and remove any loose parts in the auger tube interior prior to start-up.

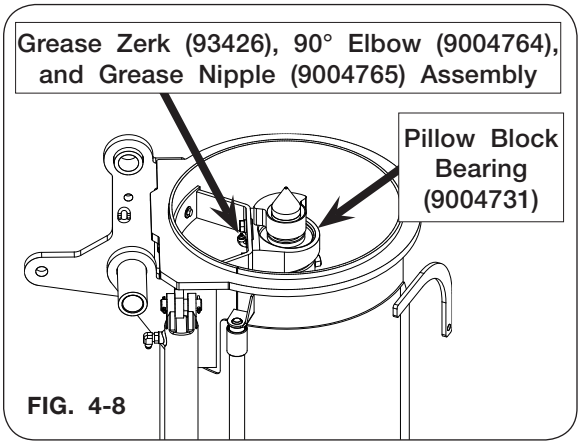


FIG. 4-8

Auger System (continued)

Upper Auger Disassembly

1. Support the upper auger assembly using a 2-ton hoist and two straps rated for 2000 lbs.
2. Remove auger tube cylinder pin and carefully swing cylinder down without breaking hose connections.
3. Disconnect auger and chute light.
4. Remove chute assembly.
5. With auger tube fully supported, remove the 7/8”-9UNC x 2” capscrews (9390-164) and flat washers (97041) from the upper auger pivot bracket.
6. Lift upper auger assembly from unit. Repair or replace as required.
7. To remove auger from tube, loosen two bearing setscrews and remove 5/16” x 2” machine screw retainer.
8. Inspect upper auger bearing, springs and four 1/2” x 5 1/2” capscrews and locknuts. Replace if necessary.

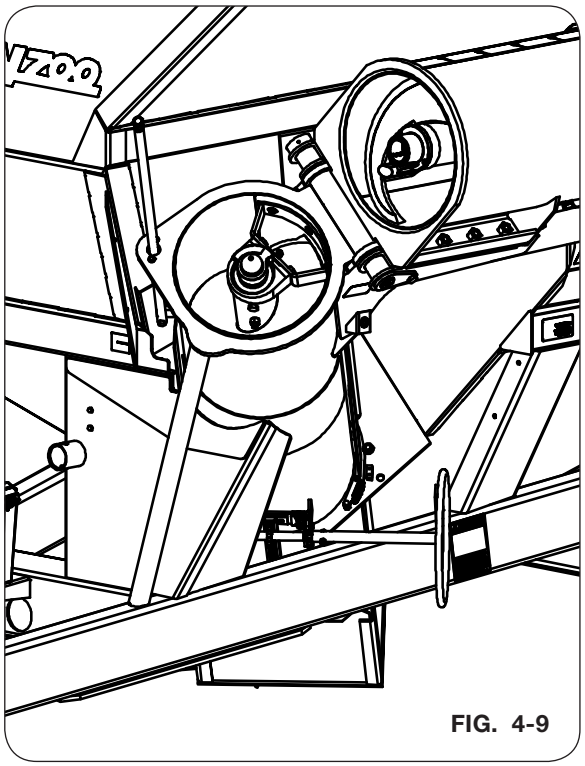


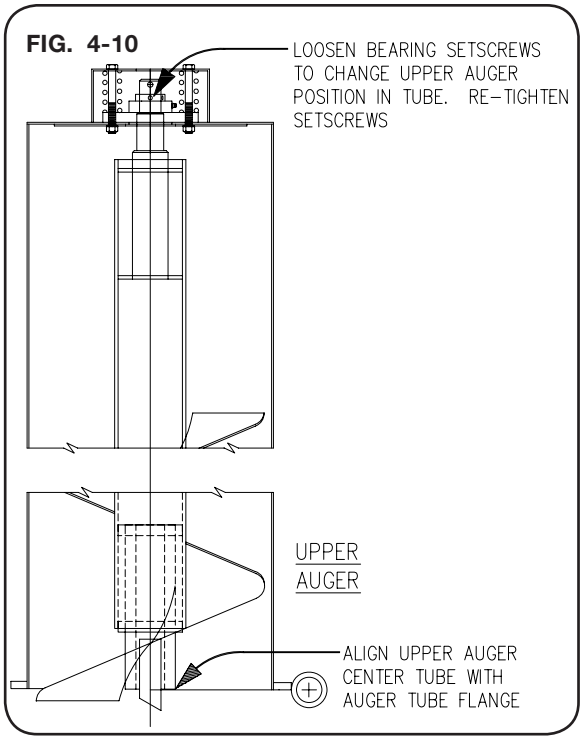
FIG. 4-9

Auger System (continued)

Upper Auger Assembly

1. Install upper bearing and spring assembly if previously removed.
2. Insert auger in auger tube. Back out bearing setscrews and insert auger stub shaft through bearing. Retain auger with 5/16” x 2” machine screw and nut.
3. Position opposite auger end flush with auger tube flange and tighten bearing setscrews and 5/16” x 2” machine screw
4. Lift upper auger assembly into position using and adequate hoist and slings with a minimum capacity of 600 lbs. to support the upper auger. Install pivot pin. Align retainer holes and install bolt and nut.
5. Install chute assembly.
6. Connect auger and chute light.
7. Reinstall hydraulic cylinder and pivot pins. Clamp hoses into position and recheck connector tightness.

FIG. 4-10



Auger System (continued)

Auger Flow Door Cylinder Replacement

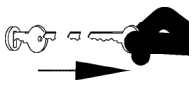
WARNING

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

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

- **HYDRAULIC SYSTEM MUST BE PURGED OF AIR BEFORE OPERATING TO PREVENT SERIOUS INJURY OR DEATH.**

1. Park the empty grain cart on a firm, level surface and extend auger. Block the tires on the machine to keep it from moving. Unfold upper auger to make the flow door cylinder easier to access. If possible, close the flow door at least 8” from the fully open position. Relieve hydraulic pressure, see tractor operator’s manual. Set the tractor’s parking brake, shut-off the engine, remove the ignition key and disconnect the PTO shaft.



Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

2. On the inside of the cart, open the screen service access panel shown in Fig. 4-11.

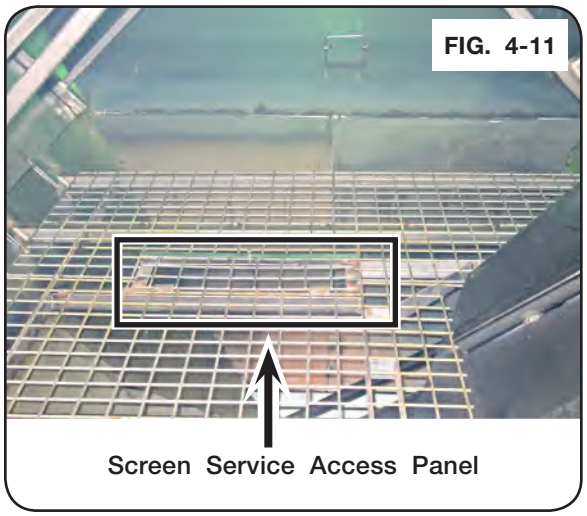


FIG. 4-11

Screen Service Access Panel

3. Remove the cotter pins from the lower cylinder pin then remove the pin. Then remove the four 3/8"-16UNC x 1" flange bolts holding on the gasket and gasket plate, shown in Fig. 4-12.

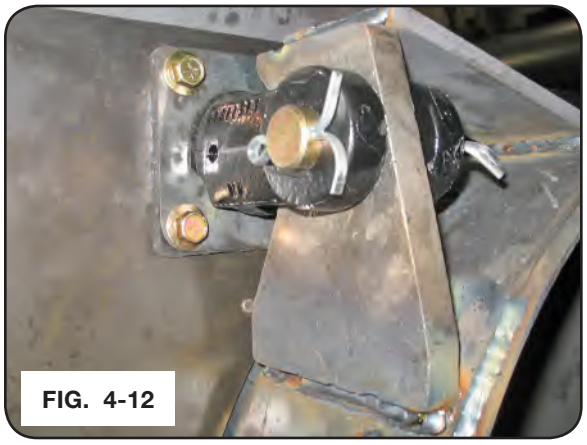
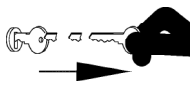


FIG. 4-12

4. Remove all tools and extra hardware from the grain cart. Make sure all personnel are outside of the hopper. Then, retract the cylinder so that there is about 8" of clearance between the cylinder clevis and the lug.

5. Relieve hydraulic pressure, shut off the engine, remove the ignition key, and disconnect the hydraulic hoses from the tractor and cart.



Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

6. Label the hydraulic hoses to indicate upper and lower. Disconnect them from the cylinder, along with the lower hydraulic fitting (Fig. 4-13).

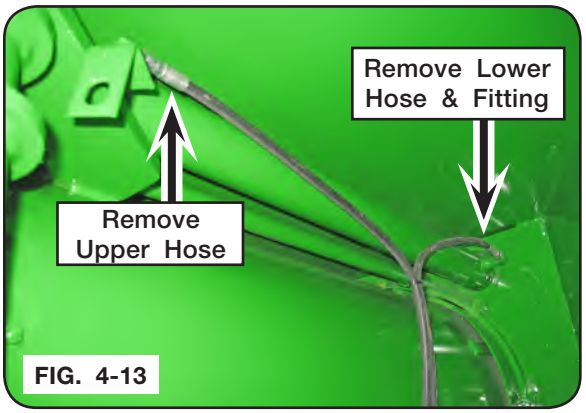


FIG. 4-13

7. Remove the cotter pins from the upper cylinder pin and remove pin (Fig. 4-14).

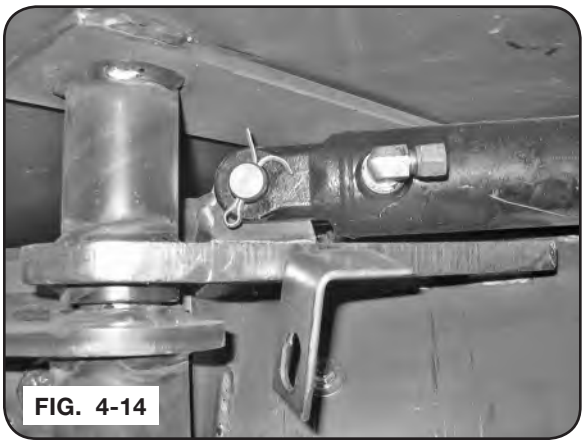


FIG. 4-14

8. Slide the flow door cylinder through the hole in the junction box until the upper cylinder clevis clears the lug, then raise the top of the cylinder above the auger fold bushing and remove the cylinder.

9. Replace with the new cylinder and insert the upper cylinder pin. Remove the cylinder port plugs. Manually extend the cylinder until the lower clevis lines up with the door lug and assemble the pin and cotter pins. Assemble hydraulic fittings and attach hoses.

10. Replace rubber gasket and gasket plate with 3/8”-16UNC x 1” flange screws, shut and secure the screen service access panel.

11. Remove all tools and extra hardware from the grain cart. Make sure all personnel are outside of the hopper. **After the hydraulic components have been tightened**, purge air from system as follows:

    A. Pressurize the system and maintain system at full pressure for at least 5 seconds after cylinder rods stop moving. Check that all cylinders have fully extended or retracted.
    B. Check oil reservoir in hydraulic power source and re-fill as needed.
    C. Pressurize system again to reverse the motion of step A. Maintain pressure on system for at least 5 seconds after cylinder rods stop moving. Check that cylinders have fully extended or retracted.
    D. Check for hydraulic leaks using cardboard or wood. Tighten connections according to directions in the Torque Specifications in your Operator’s Manual.
    E. Repeat steps A, B, C and D three or four times.

Verify Telescoping PTO Shaft Length

⚠ WARNING

- **PROPERLY EXTENDED AND COLLAPSED LENGTHS OF THE TELESCOPING PTO SHAFT MUST BE VERIFIED BEFORE FIRST OPERATION WITH EACH AND EVERY DIFFERENT 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.**

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. 4-15).

   Enter here:_____(1)
   (Verify that outer tube does not bottom out on surrounding plastic shield components).

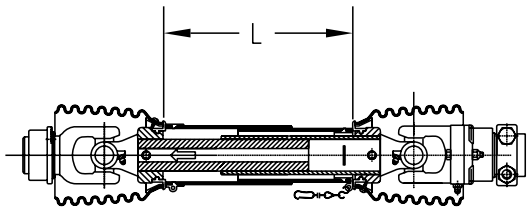


FIG. 4-15

2. Pull apart PTO telescoping shaft ends and measure lengths "T" & "C" (Fig. 4-16).

   Add "T" &"C" measurements together
   Enter total here:_____(2)

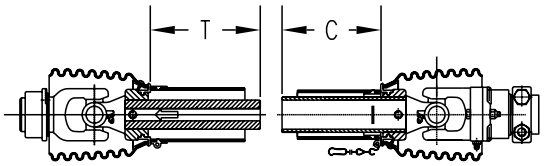


FIG. 4-16

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 (LB).

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.

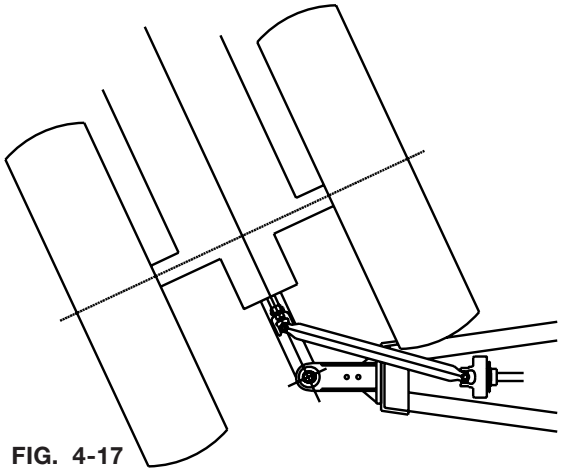


FIG. 4-17

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.

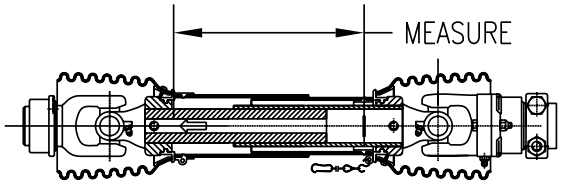


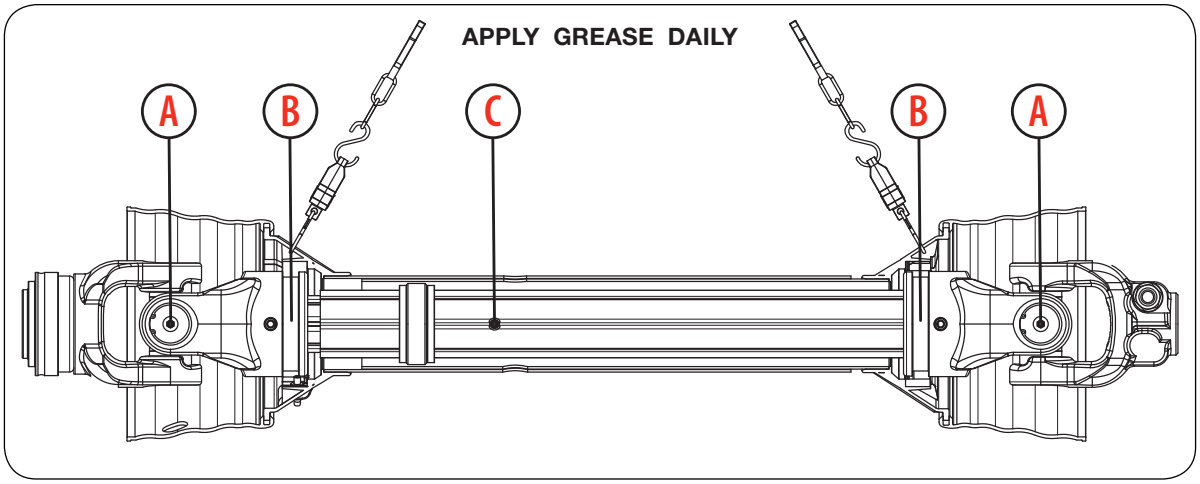
FIG. 4-18

PTO Shaft and Clutch - Benzi PTO
For SN B41980100 & Higher

Lubrication

Lubricate with NLGI grade 2 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.

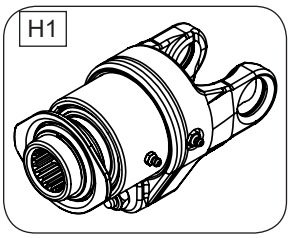
NOTE: Telescoping members must have lubrication to operate successfully regardless of whether a grease fitting is provided for that purpose! Telescoping members without fittings should be pulled apart and grease should be added manually.

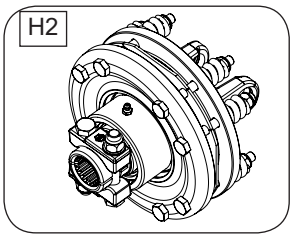


PTO Shaft and Clutch - Benzi PTO (continued)
For SN B41980100 & Higher

Shear-Bolt and Friction Clutches (Figs. H1 - H3)

1. **Shear bolt clutches:**
When the set torque value is exceeded, power flow is interrupted due to the bolt shearing. The torque is re-established by replacing the broken shear bolt. Use only the bolt specified in the PARTS section for replacement.
(FIG. H1)

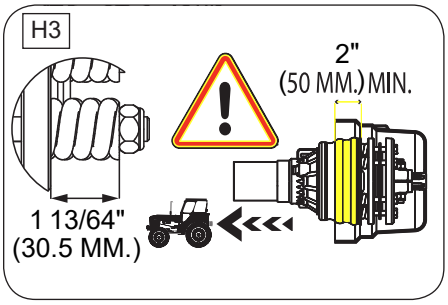




Friction clutches:
When overload occurs, the torque is limited and transmitted constantly during the period of slipping. Short-duration torque peaks are limited. (FIG. H2)

Verify the overlap between the implement guard cone and PTO driveshaft is at least 2” (50 mm). (FIG. H3)

When replacing the friction disks, screw spring nuts to height of 1 13/64” (30.5 mm) and torque to 892.5 ft.-lbs. (1210 NM). See FIG. H3 shown.



Prior to first utilization and after long periods out of use, check working of disk clutch.

a. Loosen spring nuts by unscrewing in two complete turns. Rotate clutch fully to unlock device.
b. Tighten nuts in two complete turns. Now the clutch is ready for use.

IMPORTANT

- *Avoid extended and frequent slippage of over-load clutches.*

PTO Shaft and Clutch - Benzi PTO (continued)
For SN B41980100 & Higher

To Dismantle Guard (Figs. J1 - J3)

1. Pull the guard tube backwards and, using a screwdriver, disengage the three bearing ring tabs by pushing them inward. (FIG. J1)

2. Remove half-guard. (FIG. J2)

3. Open the bearing ring and remove from the yoke groove. (FIG. J3)

PTO Shaft and Clutch - Benzi PTO (continued)
For SN B41980100 & Higher

To Assemble Guard (Figs. K1 - K3)

1. Clean and grease the bearing ring, yoke groove and inner profile tube. (FIG. K1)

2. Fit bearing ring in groove with three bearing ring tabs positioned as shown. (FIG. K2)

3. Slip on half-guard by aligning the holes on the cone with three bearing ring tabs and the cone inner key with the cut of the bearing ring. (FIG. K2)

4. Push half-guard and yoke together causing the half-guard to engage. (FIG. K3)

NOTE: Ensure the three bearing ring tabs are positioned inside the grooves.

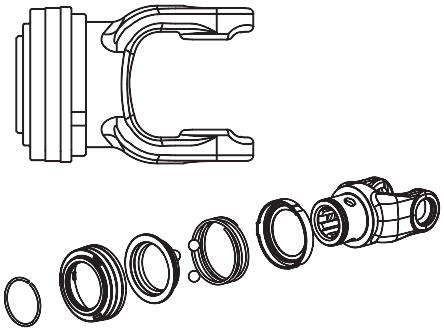
5. Confirm half-guard engagement by pulling backwards on the half-guard. (FIG. K3)

PTO Locking Systems - Benzi PTO
For SN B41980100 & Higher

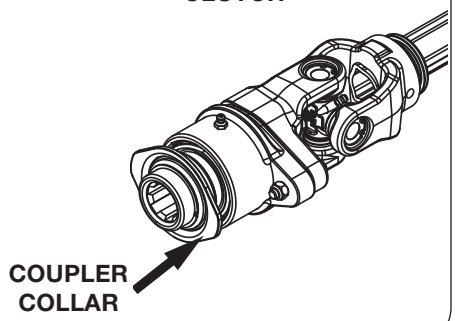
Ball-Type Collar Coupling

Slide clamp yoke or clutch onto connecting shaft. Pull in the coupler collar to release the balls and simultaneously push PTO driveshaft into the connecting shaft until the coupler collar locks onto the connecting shaft annular grooves. 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.

END YOKE



SHEARBOLT CLUTCH WITH OVERRUNNING CLUTCH



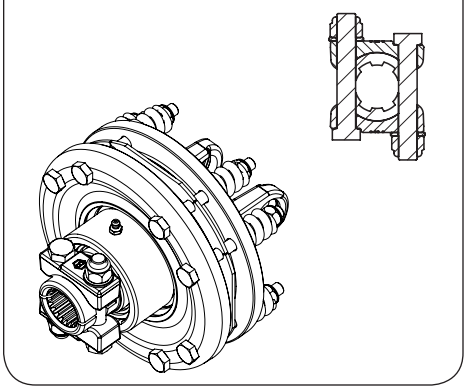
Clamp Bridge Coupling For Friction Clutch

Remove the bolts from the yoke hub. Insert the yoke hub onto the connecting shaft. Ensure the holes for the clamping bridge and hub are above the annular grooves of the connecting shaft. Insert the bolts, position the washers and tighten to recommended torque: M12 = 70 ft.-lbs.; M14 = 107 ft.-lbs.; M16 = 154 ft.-lbs.

⚠ WARNING

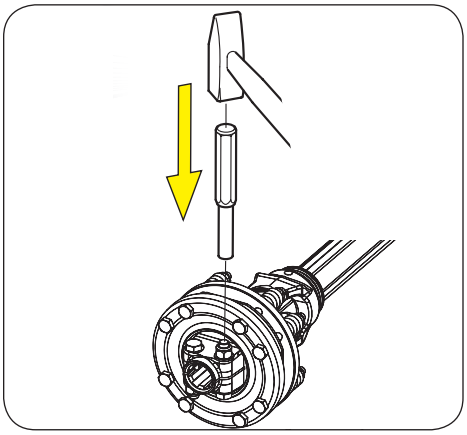
- **CHECK TO ENSURE ALL THE LOCKS ARE SECURELY ENGAGED BEFORE STARTING WORK WITH THE PTO DRIVESHAFT.**

CLAMP BRIDGE LOCK



Clamp Bridge Uncoupling

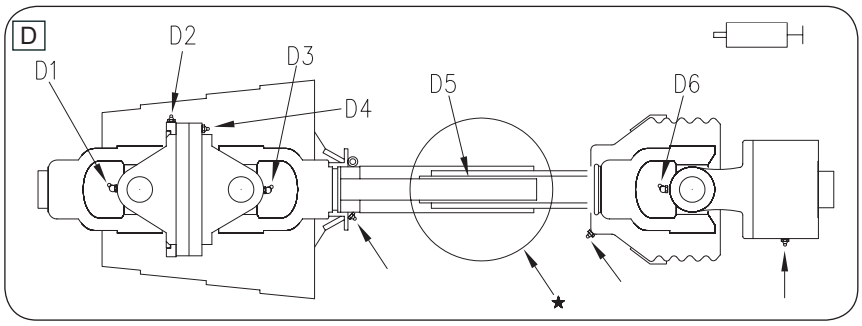
Unscrew the bolts a partial turn. Use the punch and hammer to help alleviate the torque resistance on the wrench, if necessary. After a few cycles, the bolts will move freely with low torque resistance for the removal process.

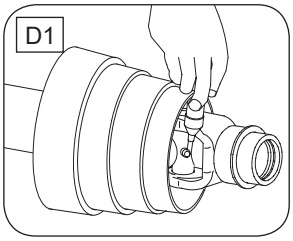


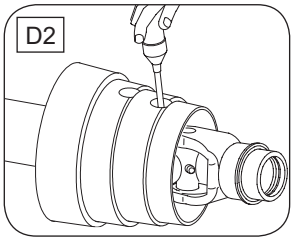
PTO Shaft and Clutch - GKN Walterscheid PTO
For SN B41980099 & Lower

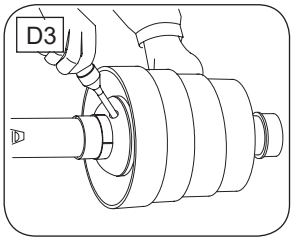
Lubrication (Figs. D1 - D6)

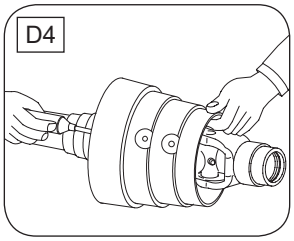
Lubricate with quality grease before starting work and every 8 operating hours. Clean and grease PTO drive shaft before each prolonged period of non-use. Molded nipples on the shield near each shield bearing are intended as grease fittings and should be lubricated every 8 hours of operation! Telescoping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

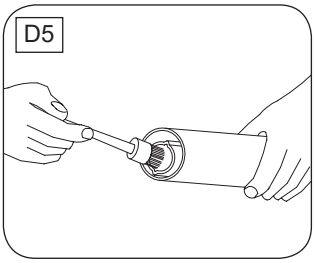


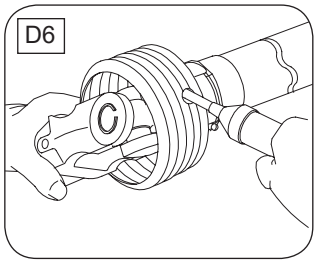












PTO Shaft and Clutch - GKN Walterscheid PTO (continued)
For SN B41980099 & Lower

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

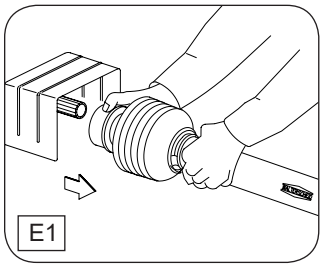
Clean and grease the PTO and implement input connection (IIC)

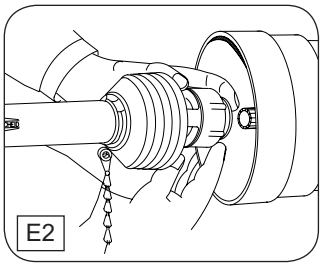
AS-Lock

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.


E1


E2

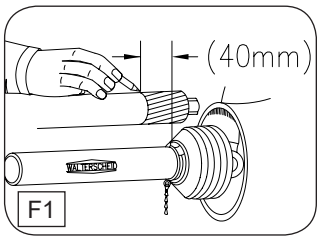
⚠ WARNING

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

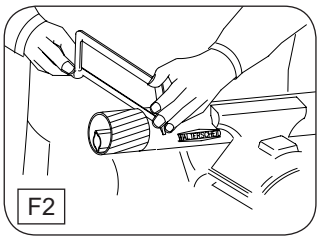
Length Adjustment (Figs. F1 - F4)

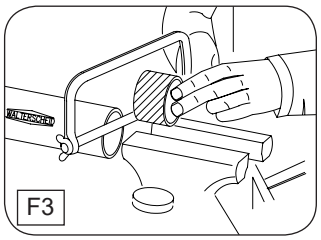
NOTE: Maximum operating length LB. (Refer to "Verify Telescoping PTO Shaft Length" for LB length.)

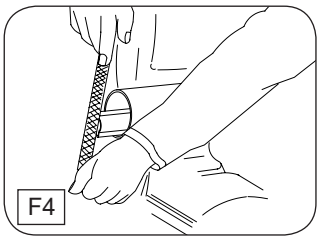
1. To adjust length, hold the half-shafts next to each other in the shortest working position and mark them.
2. Shorten inner and outer guard tubes equally.
3. Shorten inner and outer sliding profiles by the same length as the guard tubes.
4. Round off all sharp edges and remove burrs. Grease sliding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



F1


F2


F3


F4

⚠ 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.**

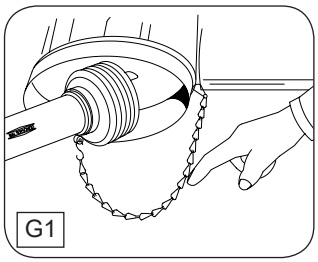
PTO Shaft and Clutch - GKN Walterscheid PTO (continued)
For SN B41980099 & Lower

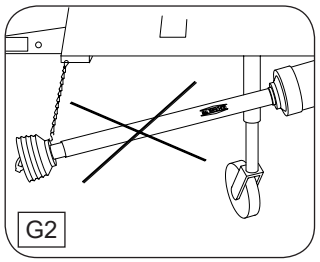
Chains (Figs. G1 - G3)

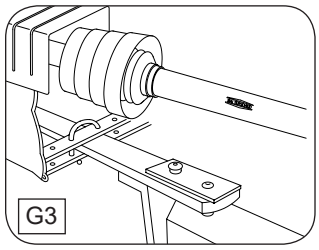
NOTE: The chain is intended to prevent the shield from rotating against non-moving parts and thereby preventing shield damage. A properly installed chain will increase the service life of the shield.

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.


G1


G2


G3

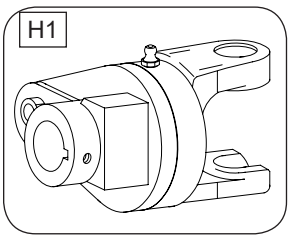
Shear-Bolt and Friction Clutches (Figs. H1 - H3)

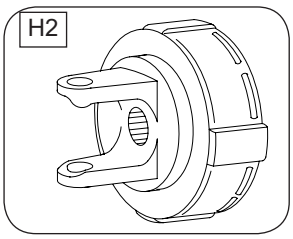
1. **Shear-bolt clutches:**
   When the torque is exceeded, power flow is interrupted due to the bolt shearing. The torque is re-established by replacing the broken shear-bolt. Use only the bolt specified in the Operator's Manual for replacement. Remove locking screw.

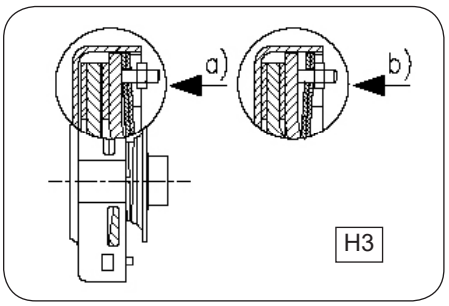
   Friction clutches:
   When overload occurs, the torque is limited and transmitted constantly during the period of slipping. Short-duration torque peaks are limited.

   Prior to first utilization and after long periods out of use, check working of disk clutch.

   a. Tighten nuts until friction disks are released. Rotate clutch fully.
   b. Turn nuts fully back. Now the clutch is ready for use. Fig. H3 shown.


H1


H2



H3

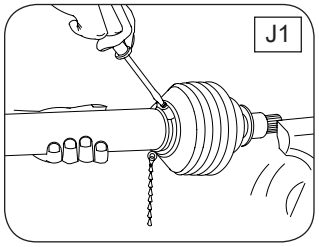
IMPORTANT

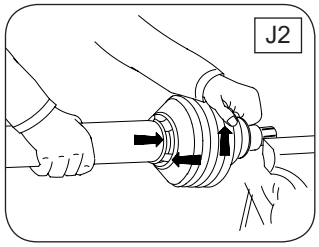
- *Avoid extended and frequent slippage of overload clutches.*

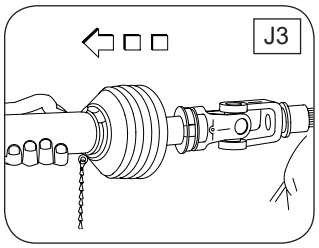
PTO Shaft and Clutch - GKN Walterscheid PTO (continued)
For SN B41980099 & Lower

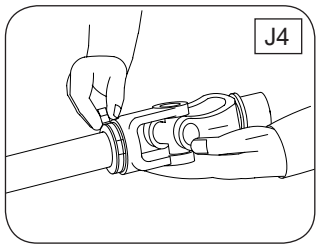
To Dismantle Guard (Figs. J1 - J4)

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



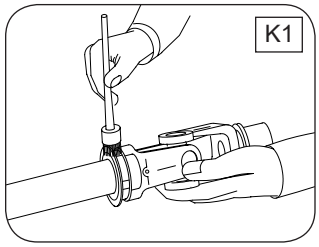


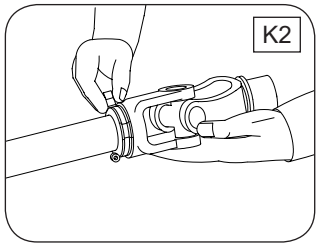


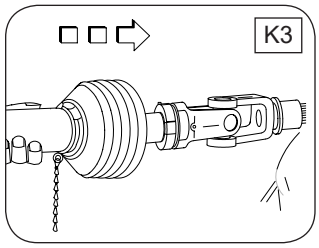


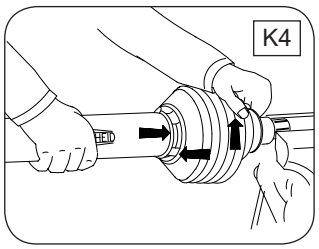
To Assemble Guard (Figs. K1 - K5)

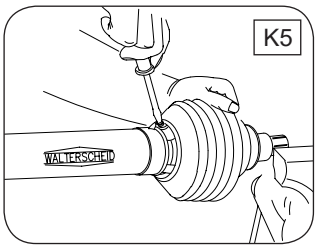
1. Grease yoke groove and inner profile tube.
2. Fit bearing ring in groove with recesses facing profile tube.
3. Slip on half-guard.
4. Turn cone until it engages correctly.
5. Install locking screw.







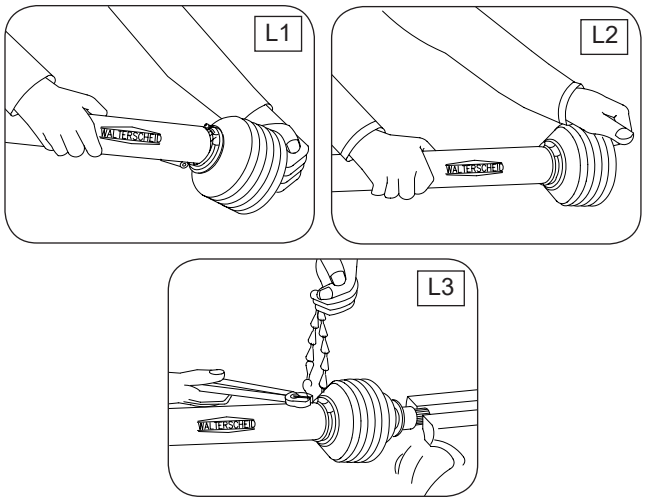




PTO Shaft and Clutch - GKN Walterscheid PTO (continued)
For SN B41980099 & Lower

To Assemble Cone (Figs. L1 - L3)

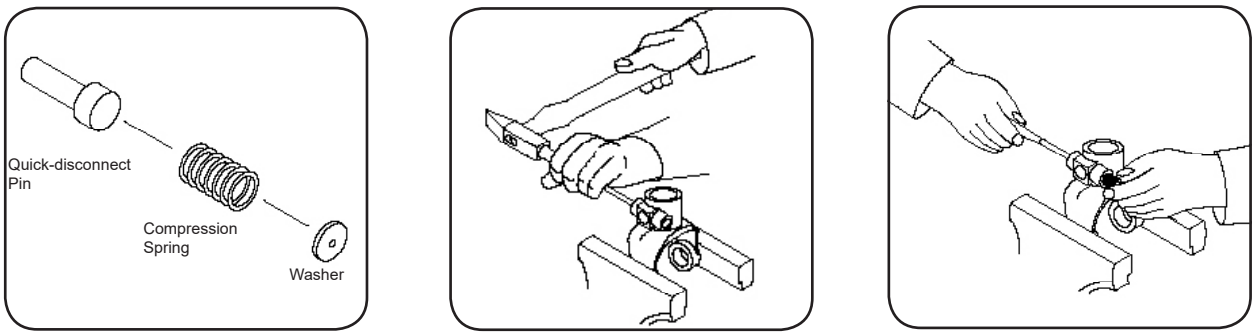
1. Dismantle guard (Figs. J1 - J3). Remove old cone (e.g. cut open with knife). Take off chain. Place neck of new cone in hot water (approx 80° C / 180° F) and pull onto bearing housing (Fig. L1).
2. Turn guard cone into assembly position (Fig. L2). Further assembly instructions for guard (Figs. K1 -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



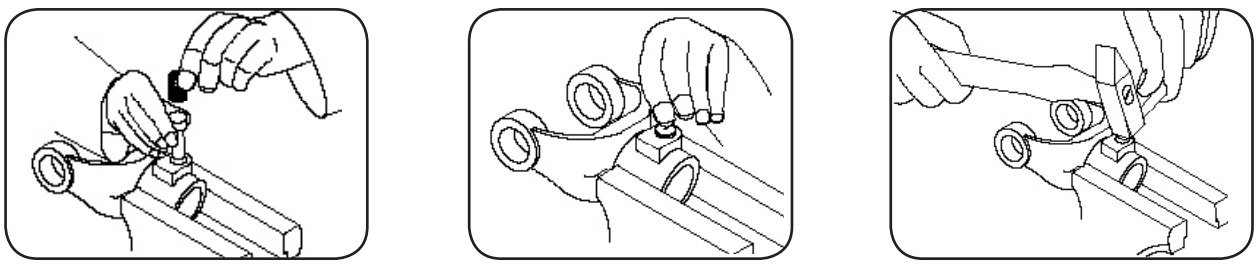
PTO Quick Disconnect - GKN Walterscheid PTO
For SN B41980099 & Lower

Quick Disconnect Pin

Using a drift punch and hammer, drive the pin towards the retaining washer to force the complete assembly out. Clear the edges of the retaining washer bore to accept the new one by removing the deformed metal from the last peening operation to hold the washer in place.



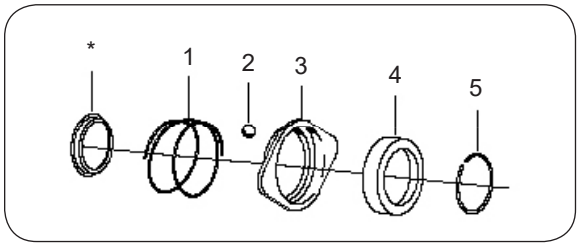
Insert quick-disconnect pin, compression spring and washer into hole, Holding the washer in place, peen the edges of the pore seat to retain the washer, spring and pin.



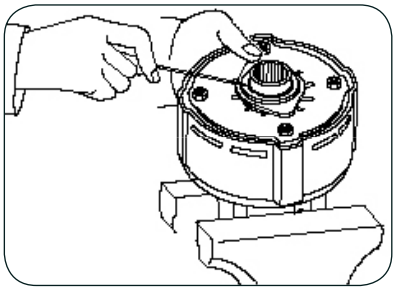
PTO Quick Disconnect - GKN Walterscheid PTO (continued)
For SN B41980099 & Lower

Quick Disconnect Disassembly

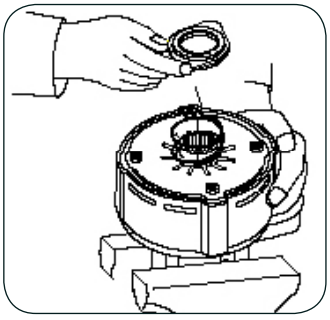
1. Compression Spring
2. Ball
3. Lock Collar
4. Back-up ring
5. Snap ring
   * Back-up ring
   * (For some clutch types, place additional back up ring first).



Compress lock collar (#3) and remove snap right (#5).

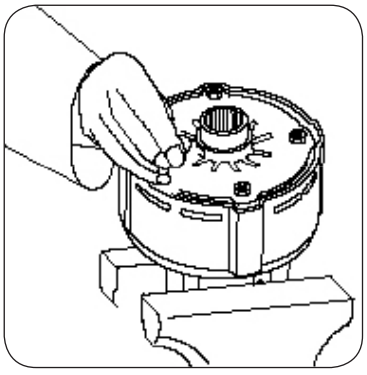


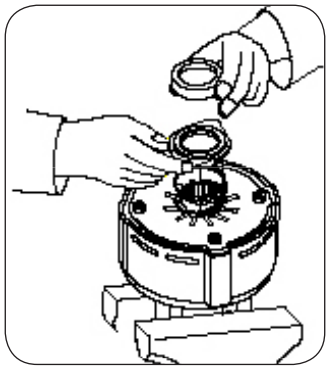
Remove back-up ring, lock collar, compression spring and balls.

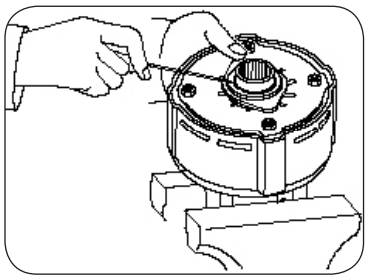


Quick Disconnect Assembly

Insert balls. Place compression spring, lock collar and back-up ring onto the hub. Remove back-up ring, lock collar, compression spring and balls.



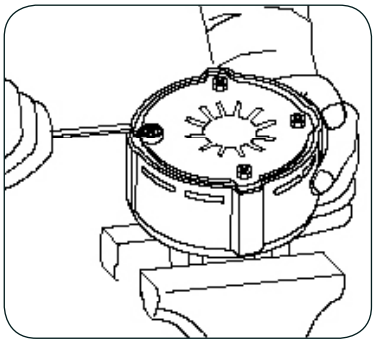
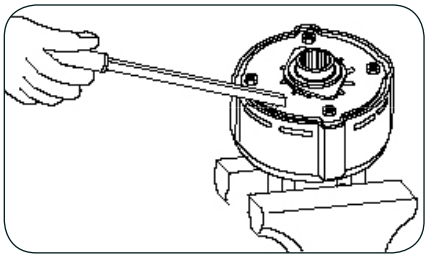
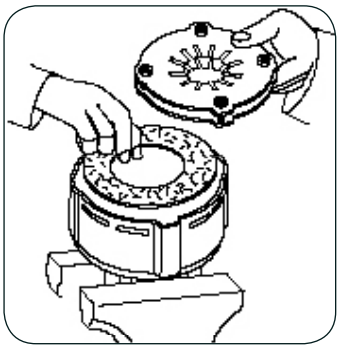




PTO Quick Disconnect - GKN Walterscheid PTO (continued)
For SN B41980099 & Lower

Clutch Disassembly

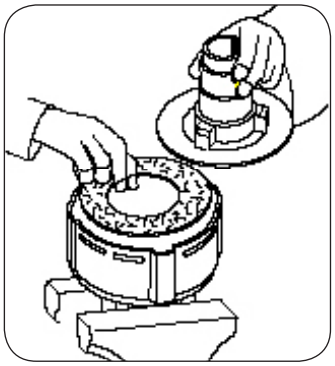
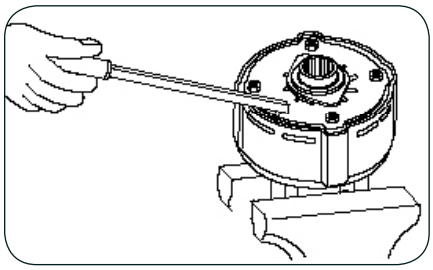
Tighten the four hex nuts uniformly until the clutch pack and hub are loose. Use special tool 9002007 to bend all four retaining lugs back on the edge of the clutch housing. Remove the thrust plate with Belleville springs to get at the friction disks, drive plates and hub for inspection and service.

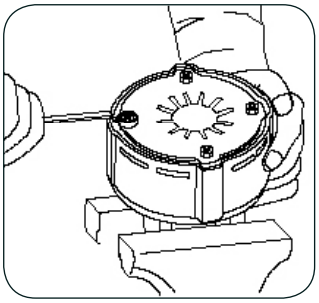
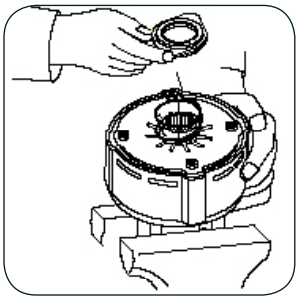
Clutch Assembly

Place hub and friction disks into the clutch housing. Note that items #8 and (are only used in the four plate clutch. Next, compress the Belleville spring(s) to the pressure plate by tightening the four hex nuts and placing them into the clutch housing as illustrated.

Use special tool #9002007 to bend the retaining lugs inward over the Belleville spring edges to secure the springs when you back the four hex nuts off. (Note: Wide lugs for one (1) Belleville spring, narrow lugs for two (2) Belleville springs).

With the lugs in place, loosen the four hex nuts completely to the end of the threaded studs. Replace the quick-disconnect assembly.

Tarp Troubleshooting Inspection & Maintenance

PROBLEM	SOLUTION
TARP SAGS IN MIDDLE AREAS	1. BOWS MAY BE BENT OR ADJUSTED TOO LOW 2. MISSING OR LOOSE RIDGE STRAP REPLACE OR RETIGHTEN 3. TENSION MAY BE TOO LOOSE. 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 REPAIR 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

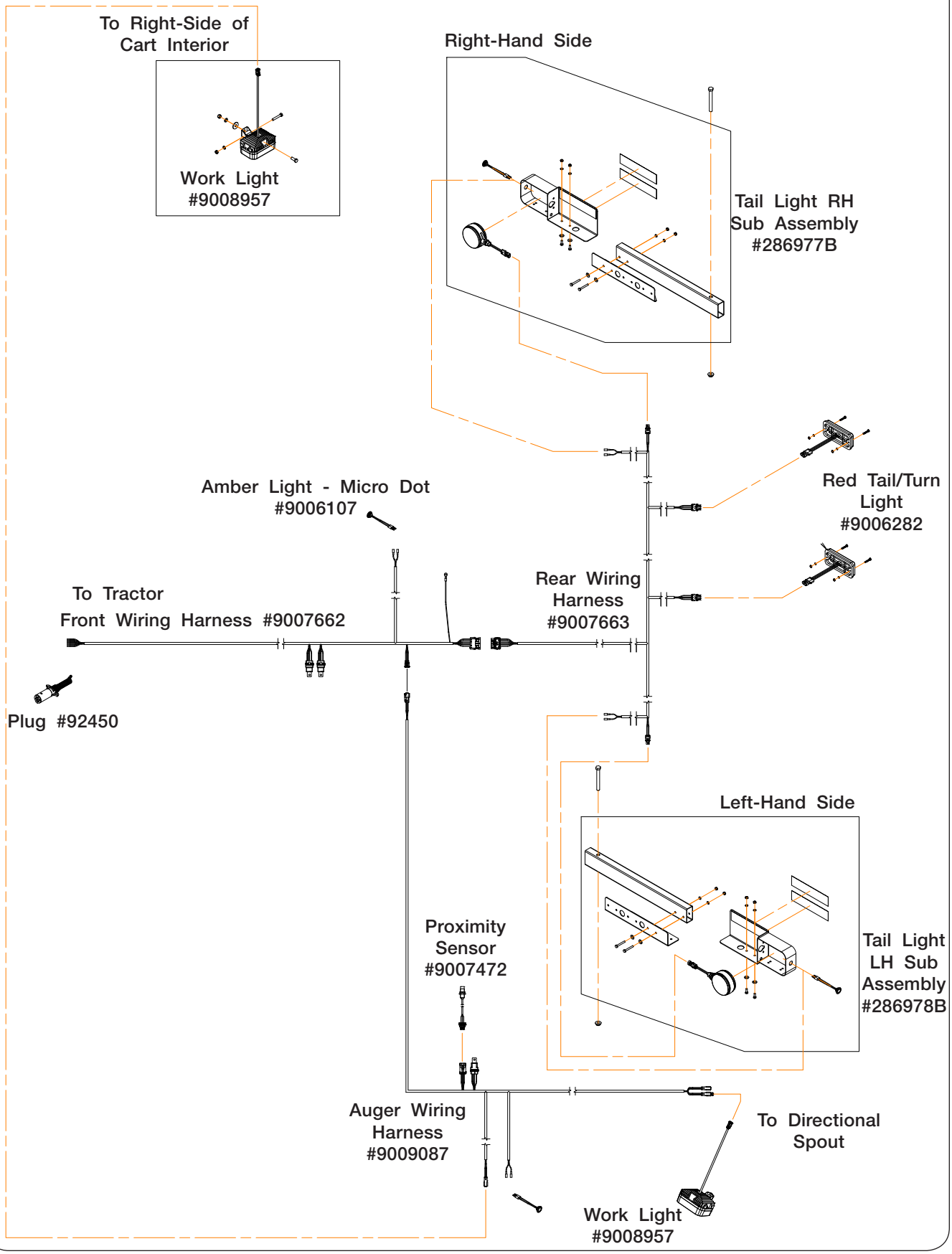
- *Do not open or close tarp while moving or in high wind conditions. Damage to the tarp may occur.*
- *Tarp should not be used if it is torn or the bungee cords are frayed or show damage. If water pools on the tarp, adjust tension of tarp cables and/or arm springs as required.*

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.

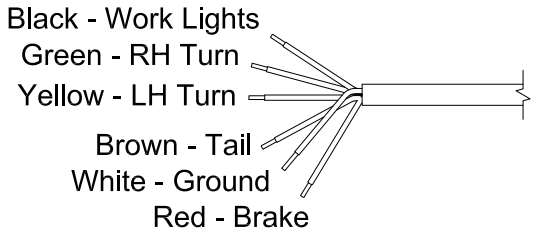
Tears in tarp should addressed before further tarp operation. If water pools on tarp, adjust tension of tarp cables and/or arm springs.

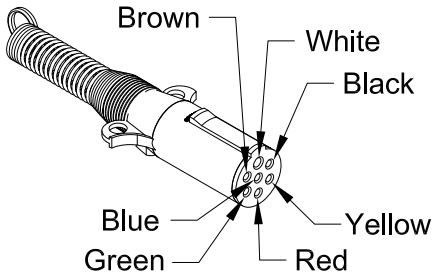
If installed correctly, tarp should always operate as well as when first installed. If tarp does not pass this simple inspection, make all appropriate repairs or adjustments immediately before serious damage occurs.

Electrical System Schematic — Overall



Electrical System Schematic — Plug #92450

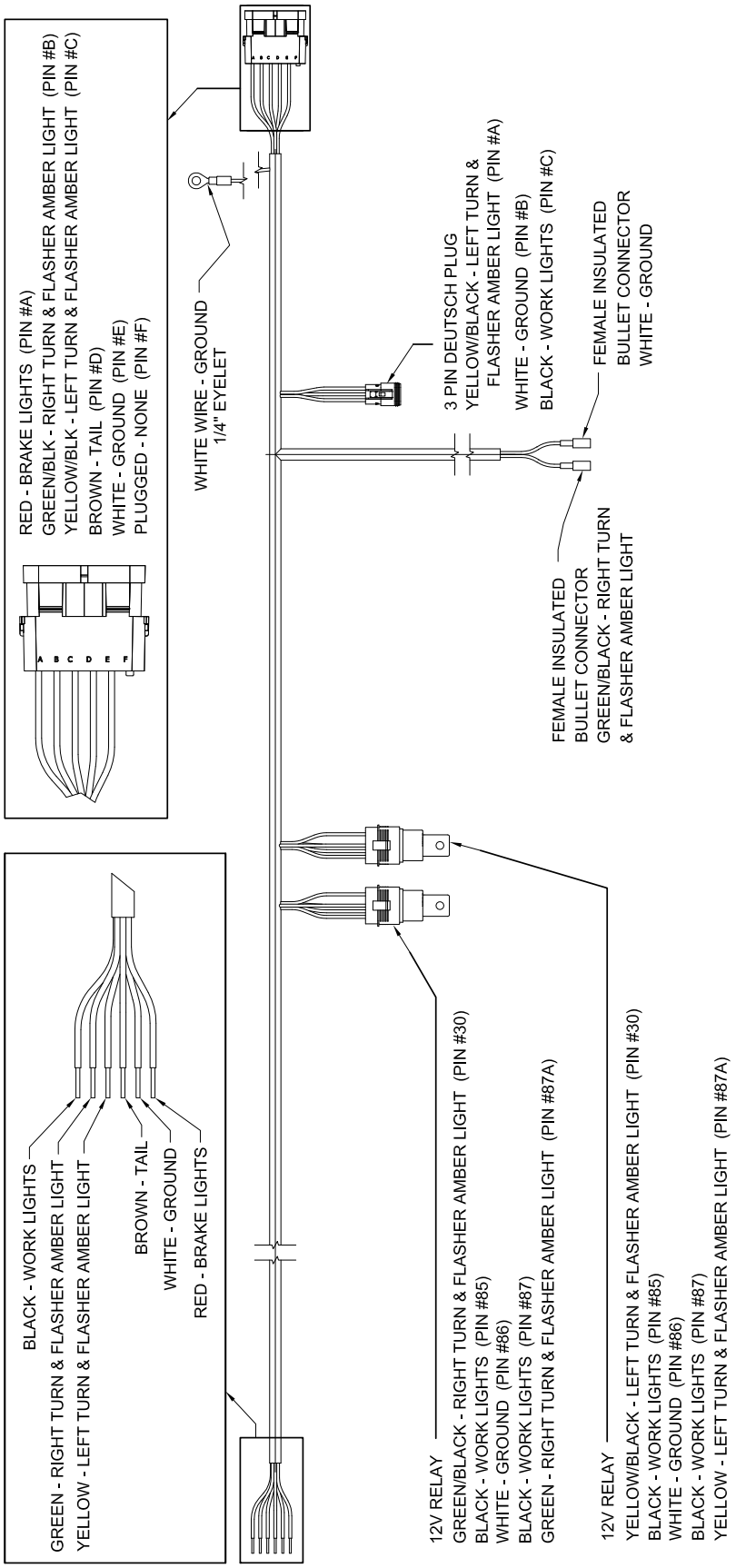




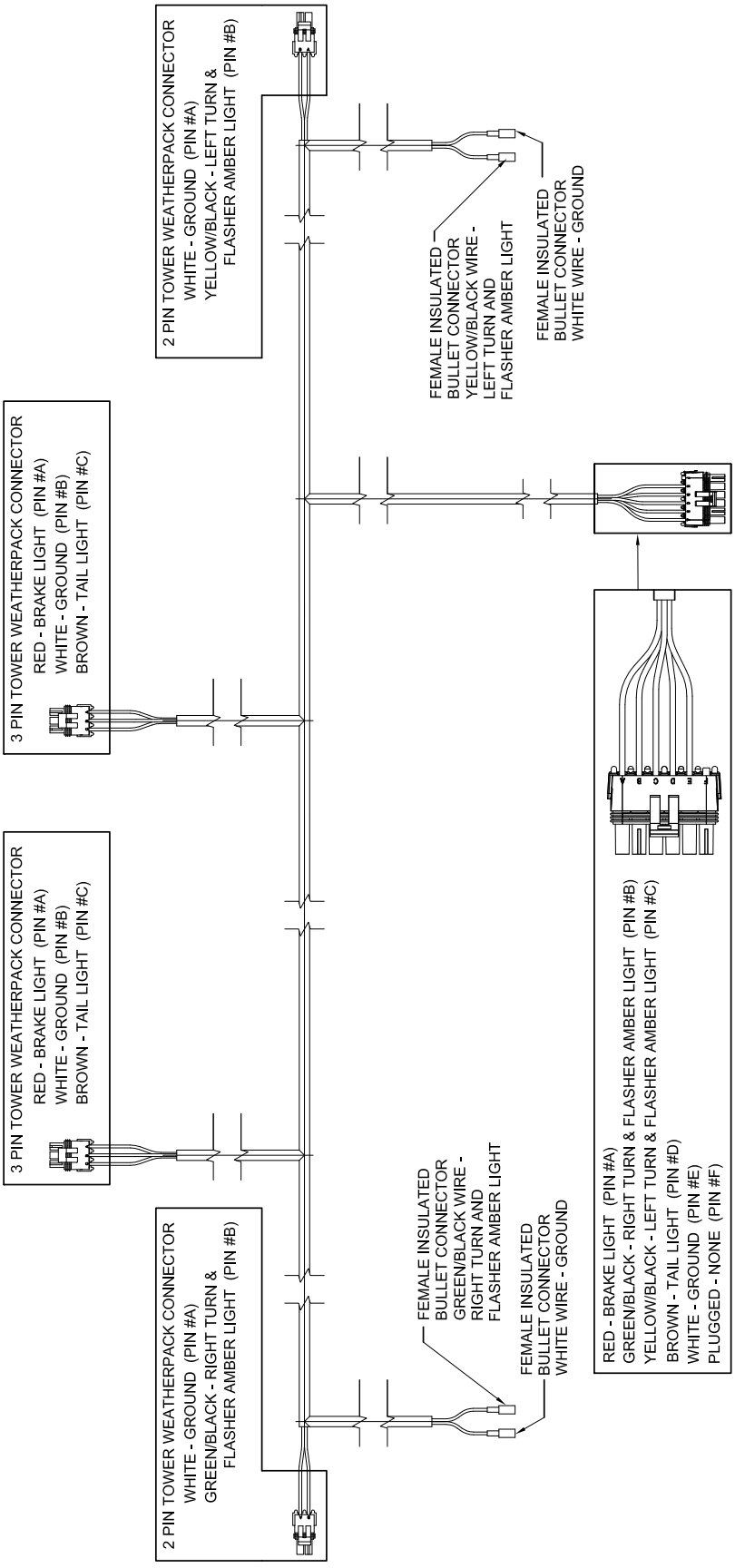
GRAIN CART WIRES

White -- Ground
Green -- Right amber flashing lamp
Yellow -- Left amber flashing lamp
Brown -- Tail light
Black -- Interior & Auger Lights
Red -- Brake Lights

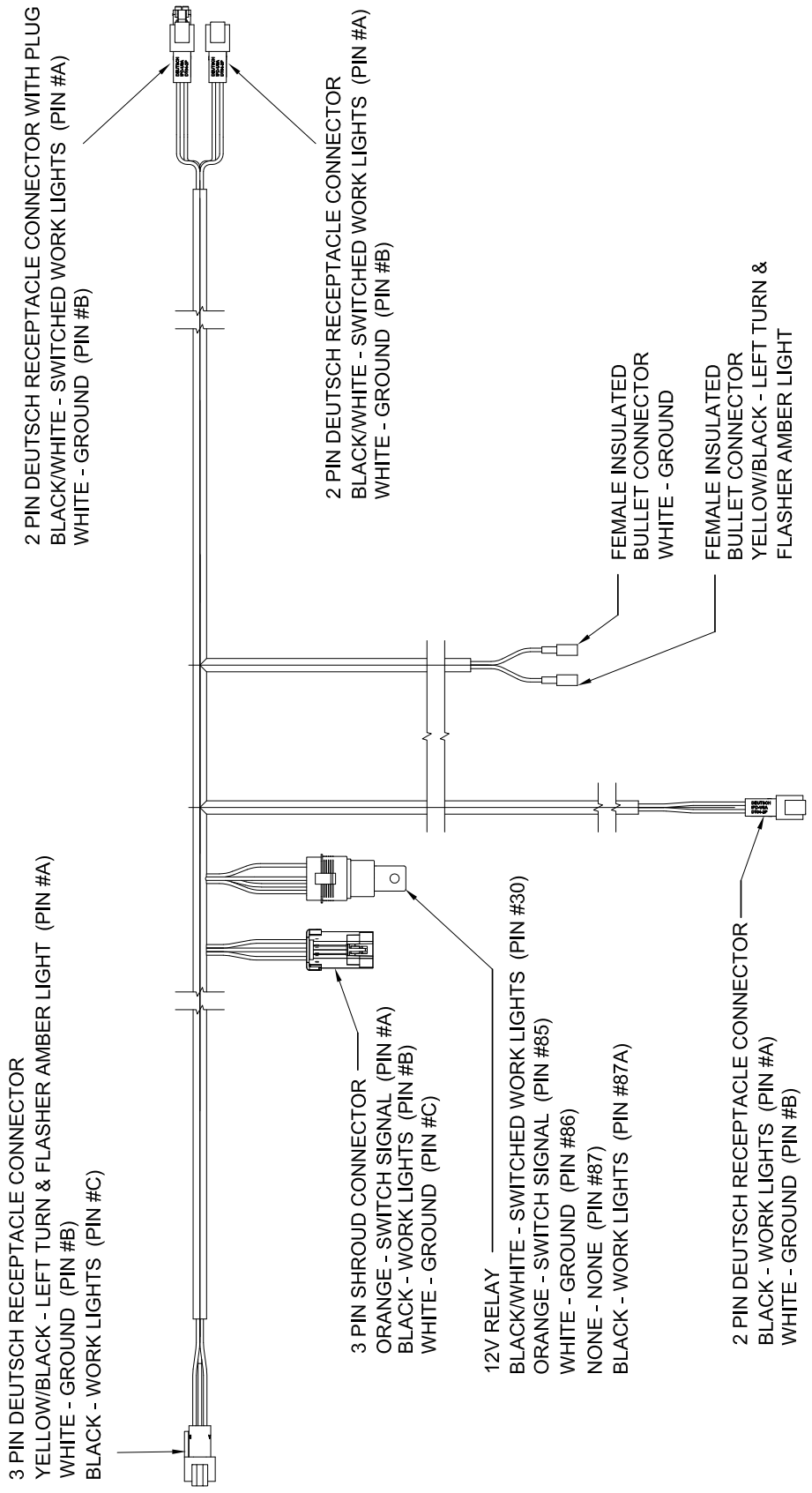
Electrical Schematic — Front Wiring Harness #9007662



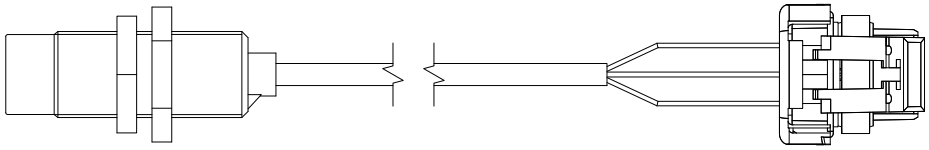
Electrical Schematic — Rear Wiring Harness #9007663



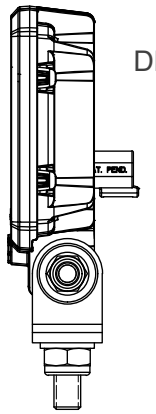
Electrical Schematic — Auger Wiring Harness
#9009087 - For SN B40910100 & Higher
#9007664 - For SN B40910099 & Lower



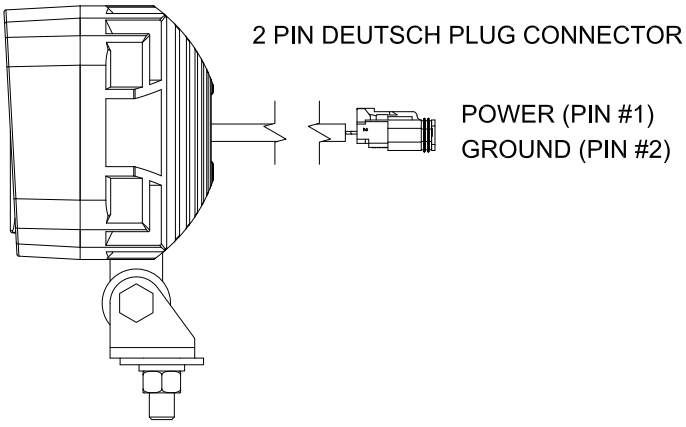
Electrical Schematic — Proximity Sensor #9007472



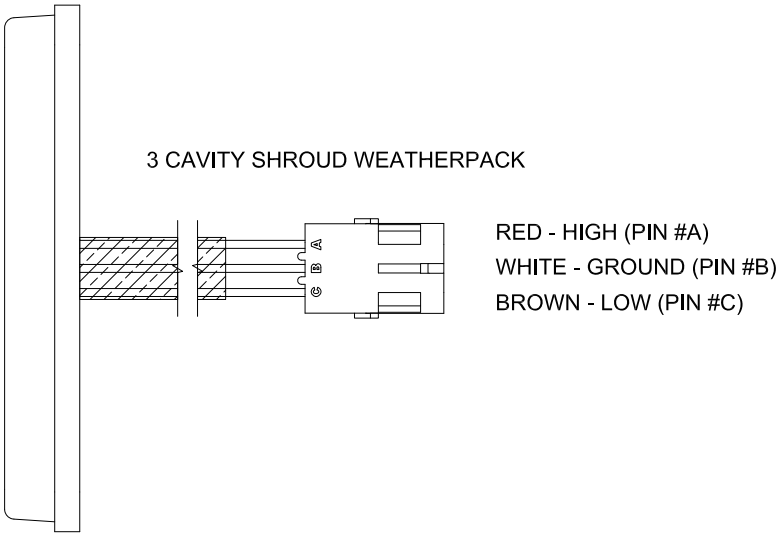
Electrical Schematic — Work Light #9008957 For SN B40910100 & Higher



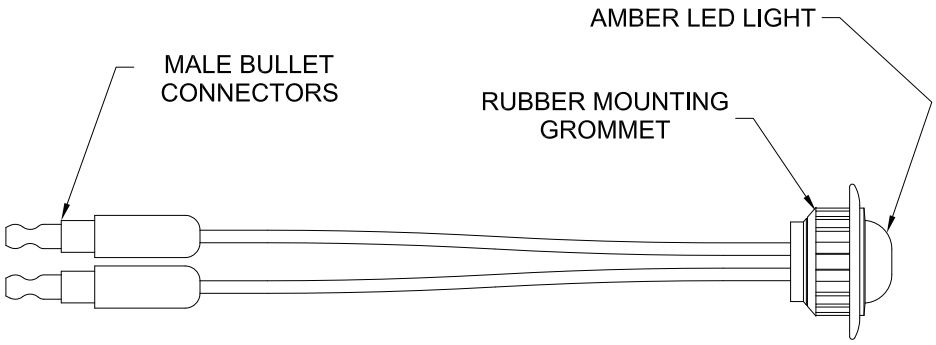
Electrical Schematic — Work Light #9007186 For SN B40910099 & Lower



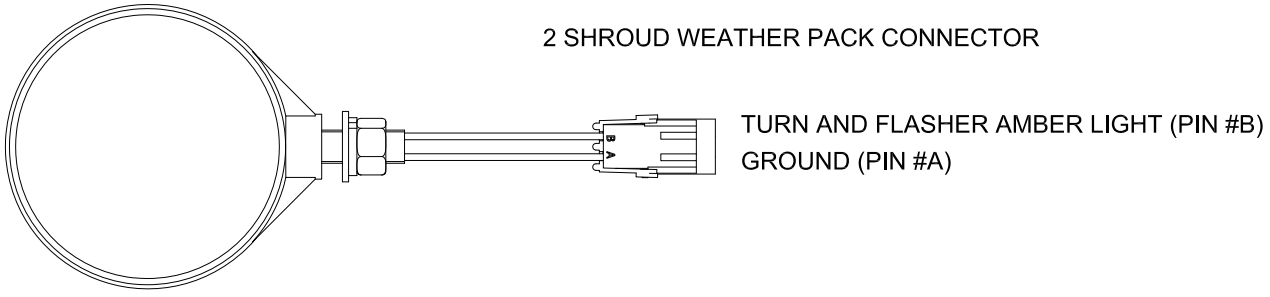
Electrical Schematic — Red Tail/Turn Light #9006282



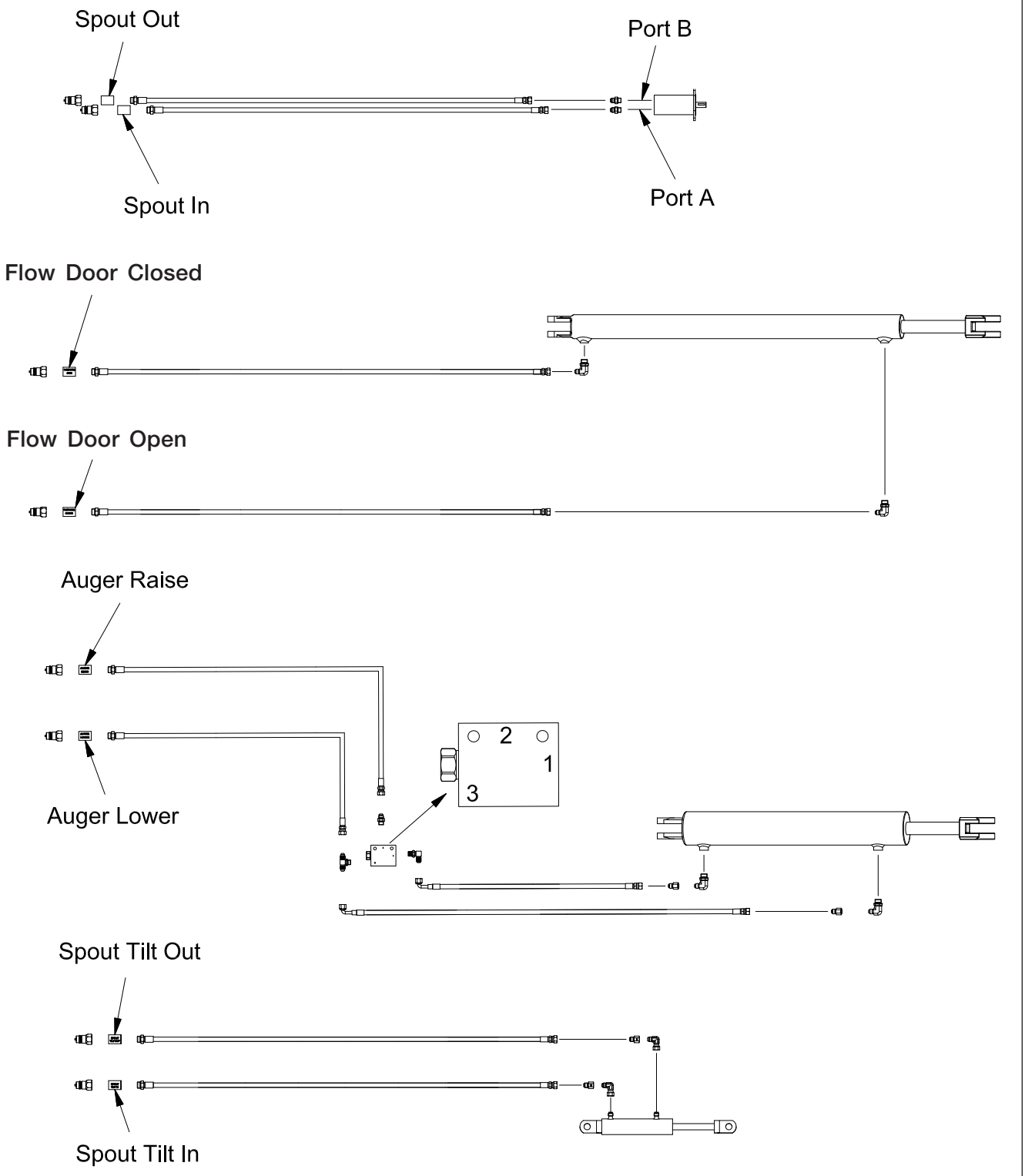
Electrical Schematic — Amber Light - Micro Dot #9006107



Electrical Schematic — Amber Lamp Double Face #9005142



Hydraulic System Schematic



Wheels and Tires

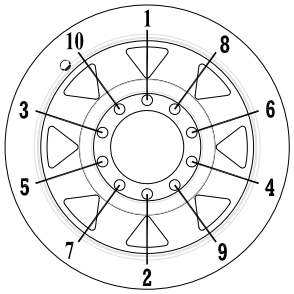
Wheel Nut Torque Requirements

⚠ 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.

WHEEL HARDWARE	
SIZE	FOOT-POUNDS
3/4-16 (UNF)	365 ft.-lbs.
7/8-14 (UNF)	440 ft.-lbs.
M22x1.5	475 ft.-lbs.



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 indicated. 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 the tire's max PSI when mounting.

Tire Pressure for Grain Carts

Tire Make	Tire Size	Load Index / Ply Rating	Max. PSI
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	172A8	44
	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
	520/85R42 R-1W	169B	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
	1100/45R46 F-1W	195D	35
Mitas	650/75R32 R-1W	172A8	58
	900/60x32 R-1W	176A8	41
	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	35.5LR32	193A8	44
	900/60R32 R-1W	192D	46
	1050/50R32 R-1W	185A8	63
	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:

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

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

IMPORTANT

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

Complete Torque Chart

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

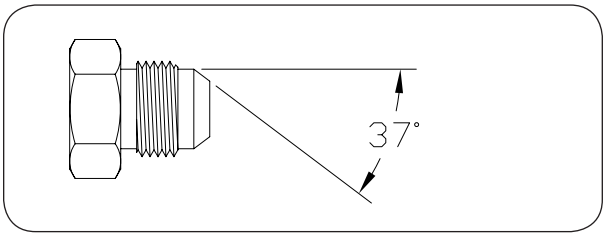
IMPORTANT

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

Hydraulic Fittings – Torque and Installation

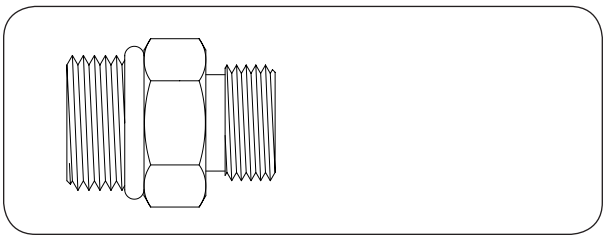
SAE Flare Connection (J. I. C.)

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.



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.



Notes