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Single-Auger Grain Carts



MODEL 1142 CORNER-AUGER GRAIN CART MAINTENANCE

MODEL 1042 CORNER-AUGER GRAIN CART MAINTENANCE

MODEL 842 & 742 CORNER-AUGER GRAIN CART MAINTENANCE

MODEL 642 CORNER-AUGER GRAIN CART MAINTENANCE

Unverferth®
Manufacturing Company, Inc.

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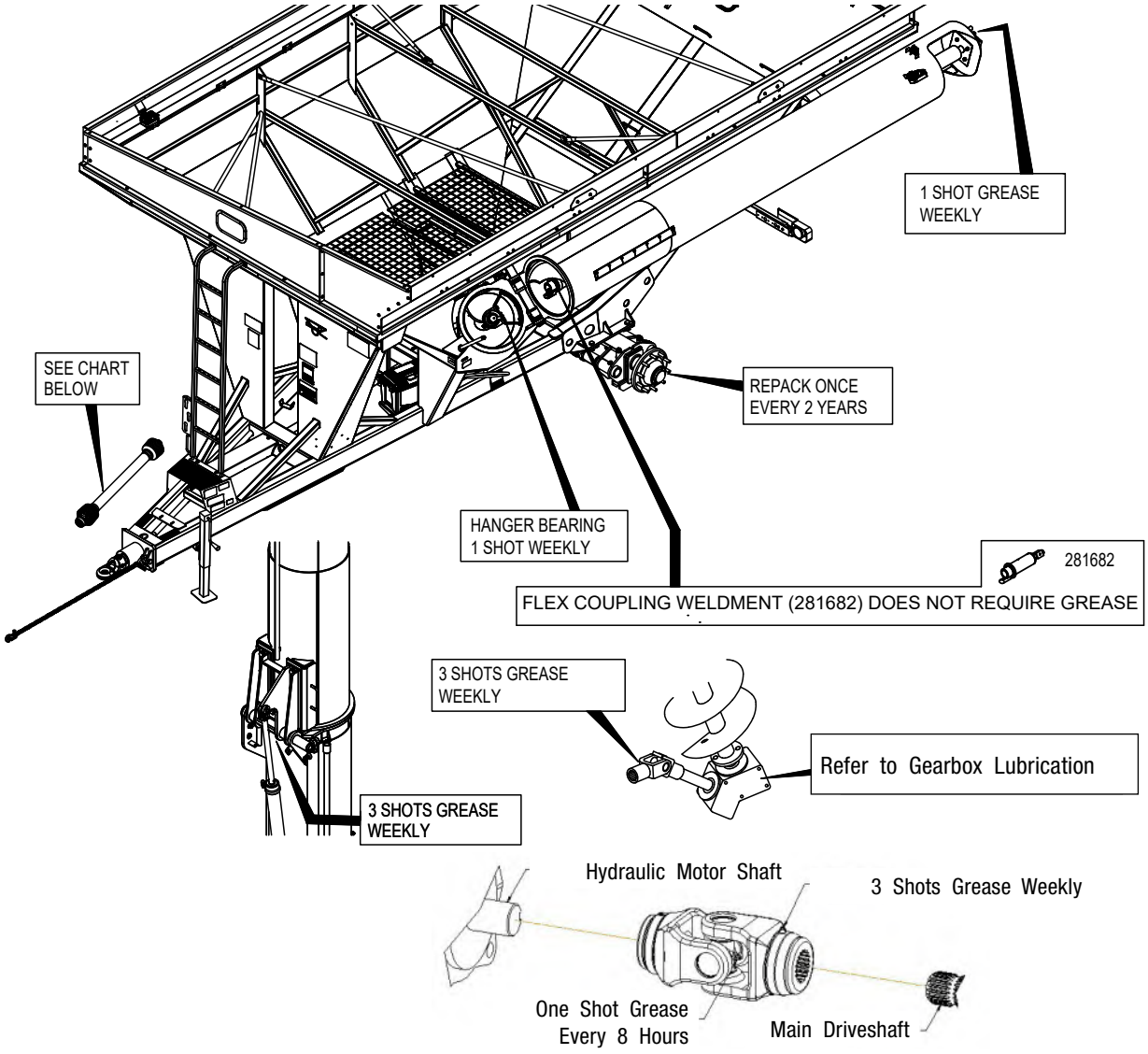
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Maintenance

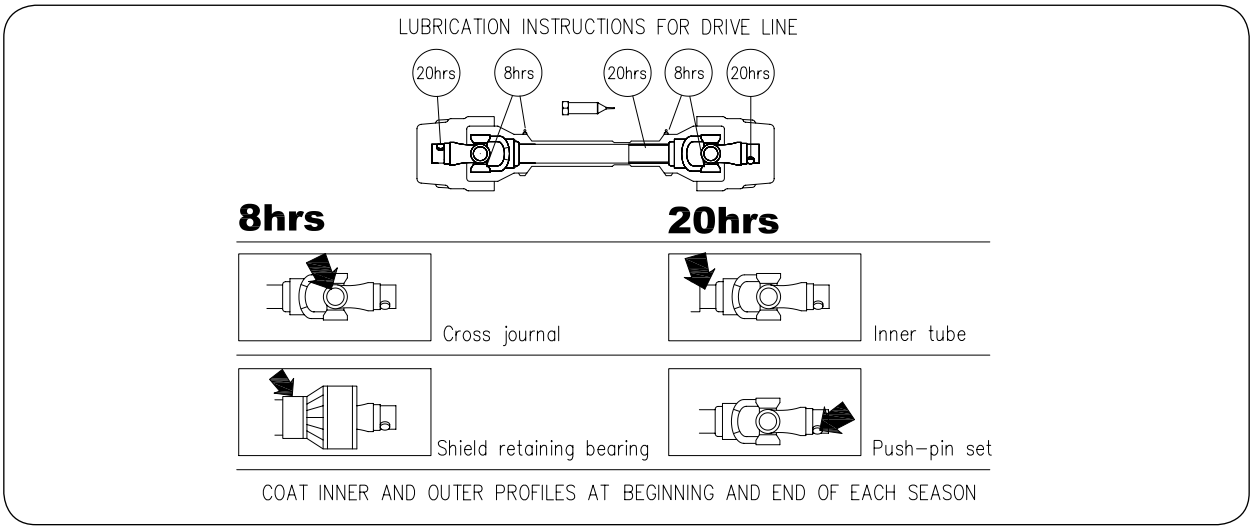
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FOR TRACK INFORMATION, PLEASE REFER TO YOUR TRACK MANUAL.
FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR HYDRAULIC DRIVE INFORMATION, PLEASE REFER TO YOUR HYDRAULIC DRIVE MANUAL.

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.





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	3	EP-2	1 Shot	See Chart
Gearbox -- Remove Cover - Check oil level every 2 weeks. Replace oil every season. Refer to Gearbox in MAINTENANCE section for instructions.	1	EP80W90	Approx. 55 oz.	Once Every Season
Hanger Bearing - Vertical Lower Auger *See note below.	1	EP-2	3 Shots	Daily
Auger Hanger Bearing - U-Joint Cross Bearing	1	EP-2	2 Shots	Weekly
Splined Yoke - Vertical Lower Auger	1	EP-2	1 Shot	Weekly
Top Bearing - Vertical Upper Auger	1	EP-2	1 Shot	Each Season
Auger Pivot Rings	2	EP-2	2 Shots	Weekly
Auger Pivot Pins	2	EP-2	3 Shots	Daily
Slide Plate	1	EP-2	1 Shot	Each Season
Drive Bearings	3	EP-2	1 Shot	Weekly

*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.

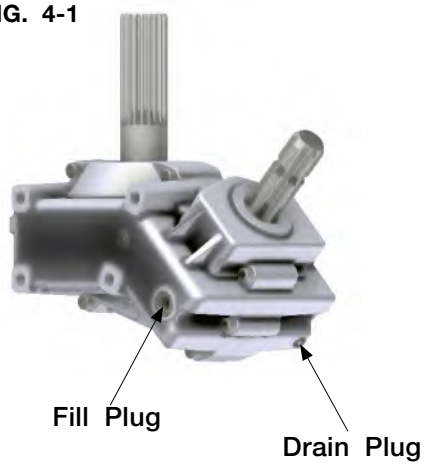
Gearbox Lubrication

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 approximately 55 fl. oz. of 80W90 EP gear lubricant.

FIG. 4-1



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.

Hydraulic System (continued)

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 hydraulic 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.

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 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 Disassembly

1. Park the empty cart on a firm, level surface. Block the wheels or tracks on the cart 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.

2. Remove the three 3/8”-16UNC x 1 1/4” capscrews (9390-056), six flat washers 3/8” (9405-076), three lock washers 3/8” (9404-021) and hex nuts 3/8”-16UNC (9394-006) which secures the hanger bearing weldment (281502B) to the auger tube (FIG. 4-3).

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

4. Remove the two 5/8”-11UNC x 6” capscrews (9390-136) and locknuts 5/8”-11UNC (9801) which secures the drive dog to the auger as shown in FIG. 4-3.

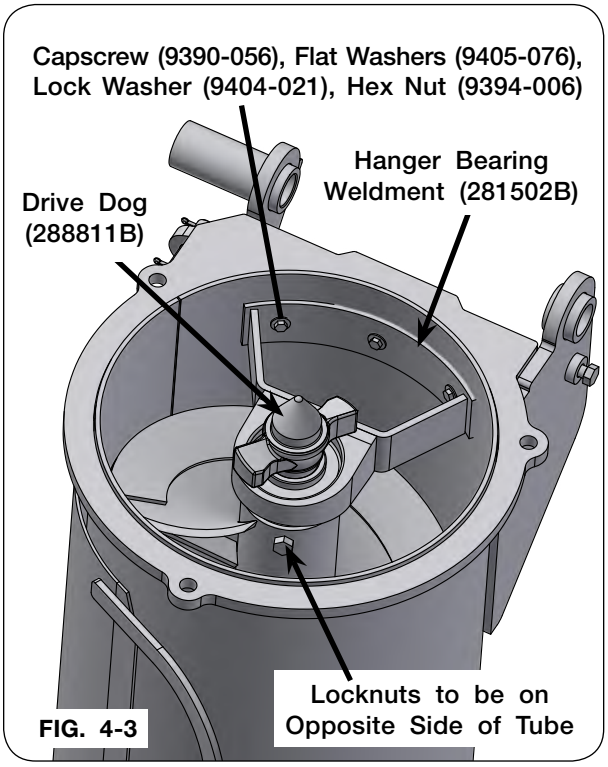


FIG. 4-3

Lower Auger Replacement With Double Lobe Drive Dog

1. Slide drive dog assembly out of old flighting.

2. The replacement auger is factory balanced. Using a safe lifting device rated at least 700 lbs., 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. Insert 5/8”-11UNC hardware into hanger bearing assembly and the auger tube.

5. Torque 5/8”-11UNC hardware to 120 ft.-lbs.

6. 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.

NOTE: Lower auger service kit (281578-SER), comes with an adapter to assure a better fitment between auger and adapter. (FIG. 4-4)

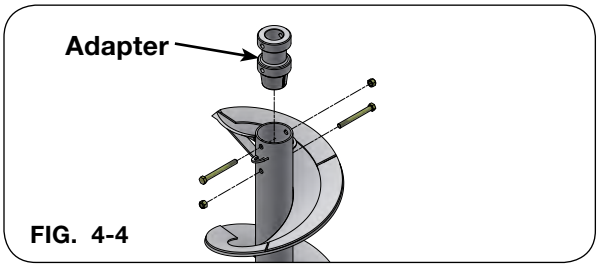


FIG. 4-4

Auger System (continued)

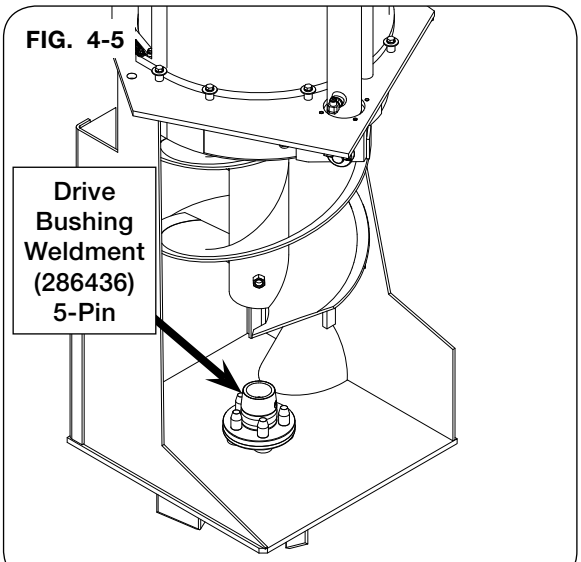
Lower Auger Replacement With Double Lobe Drive Dog (continued)

7. Align auger end with the five pin drive bushing and securely engage together, see FIG. 4-5 and 4-6. 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.

8. 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. 4-5



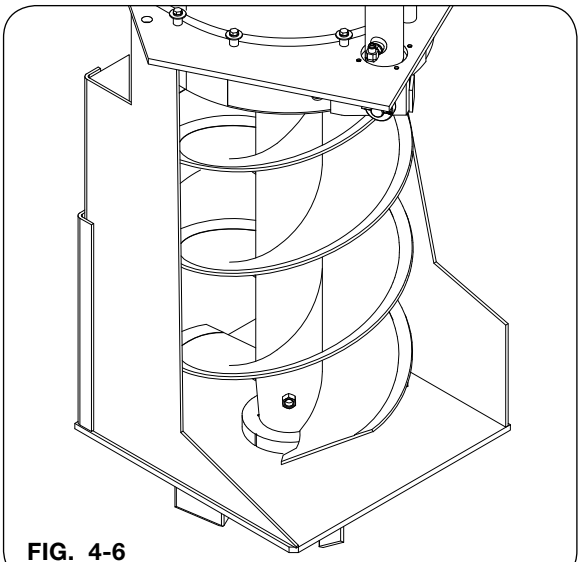


FIG. 4-6

9. Lower the upper auger assembly, turn off tractor and remove key. Slowly turn lower auger by hand while applying grease to the hanger bearing. Torque hanger bearing hardware. 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. 4-7)

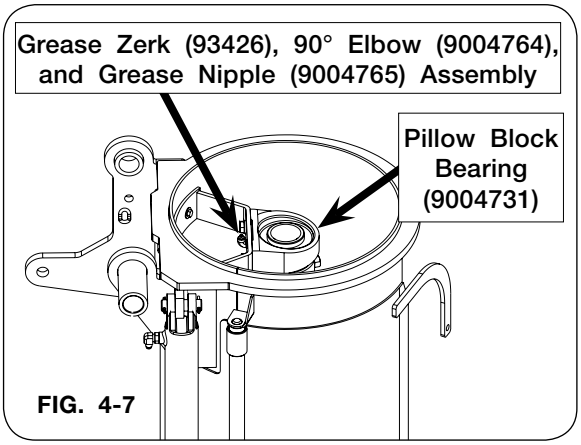


FIG. 4-7

Auger System (continued)

Lower Auger Replacement With Double Lobe Drive Dog (continued)

10. 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.

Lower Auger Replacement With Single Lobe Drive Dog

1. Slide drive dog assembly out of old flighting.

2. The replacement auger is factory balanced. Using a safe lifting device rated at least 700 lbs., remove entire auger from shipping crate and secure from rolling.

3. Coat the drive dog with anti-seize and slide into new auger flighting.

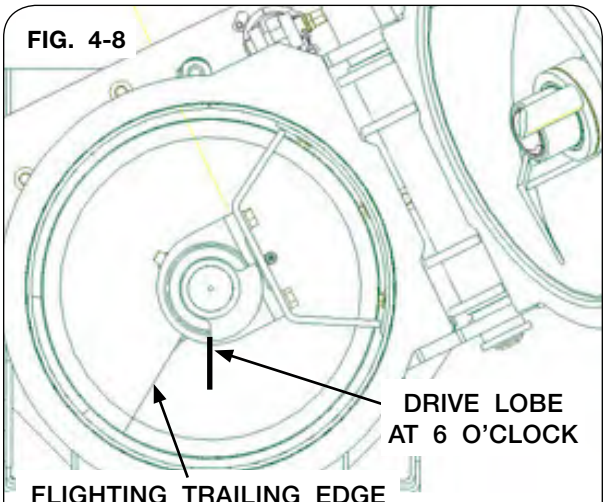
4. Rotate the drive dog so the driving edge is at 6 o'clock position when the finishing edge of the flighting is at 7 o'clock position. See FIG. 4-8.

5. Insert 5/8"-11UNC hardware into hanger bearing assembly and the auger tube.

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.

FIG. 4-8



LOOKING DOWN INTO THE LOWER AUGER FLIGHTING

Auger System (continued)

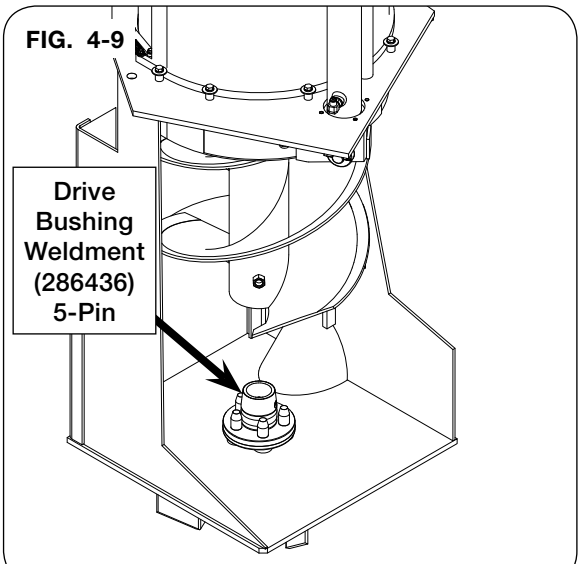
Lower Auger Replacement With Single Lobe Drive Dog (continued)

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



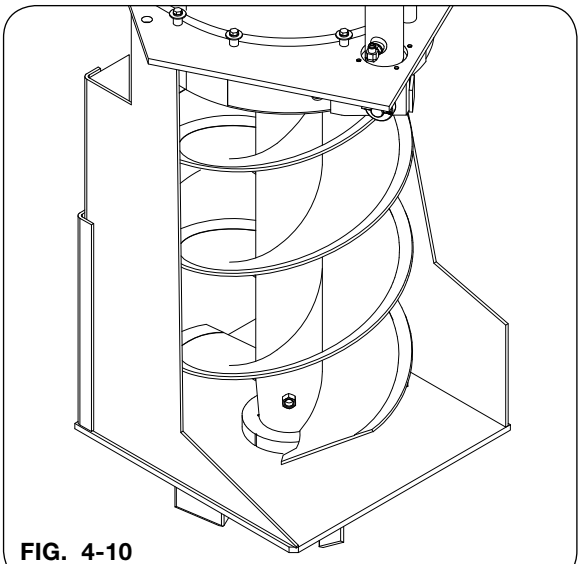


FIG. 4-10

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. Torque hanger bearing hardware. 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. 4-11)

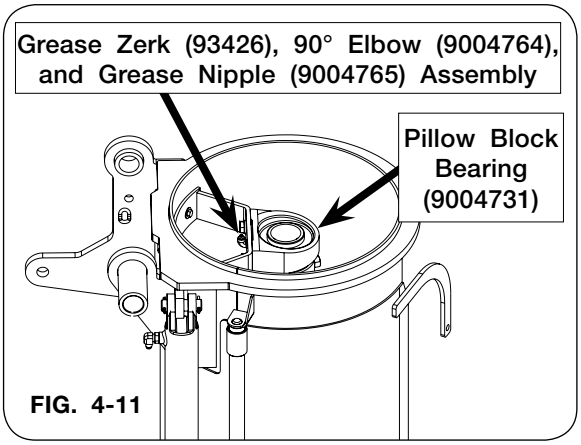


FIG. 4-11

Auger System (continued)

Upper Auger Disassembly

1. Park the empty cart on a firm, level surface. Block the wheels or tracks on the cart 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.

2. Support the upper auger assembly using a 4,000 lbs. hoist and two straps rated for 2000 lbs.

3. Remove auger tube cylinder pin and carefully swing cylinder down without breaking hose connections.

4. Disconnect auger and chute light.

5. Remove chute assembly.

6. Remove auger indicator cable from the bolt on bracket. 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.

7. Lift upper auger assembly from unit. Repair or replace as required.

8. To remove auger from tube, loosen two bearing setscrews and remove 5/16" x 2" machine screw retainer.

9. Inspect upper auger bearing, springs and four 1/2" x 5 1/2" capscrews and locknuts. Replace if necessary.

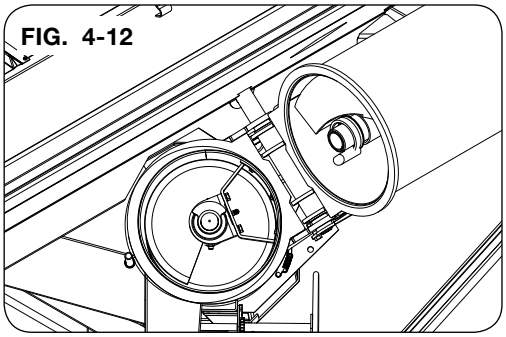


FIG. 4-12

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. Reattach indicator cable.
7. Connect auger and chute light.
8. Reinstall hydraulic cylinder and pivot pins. Clamp hoses into position and recheck connector tightness.

FIG. 4-13

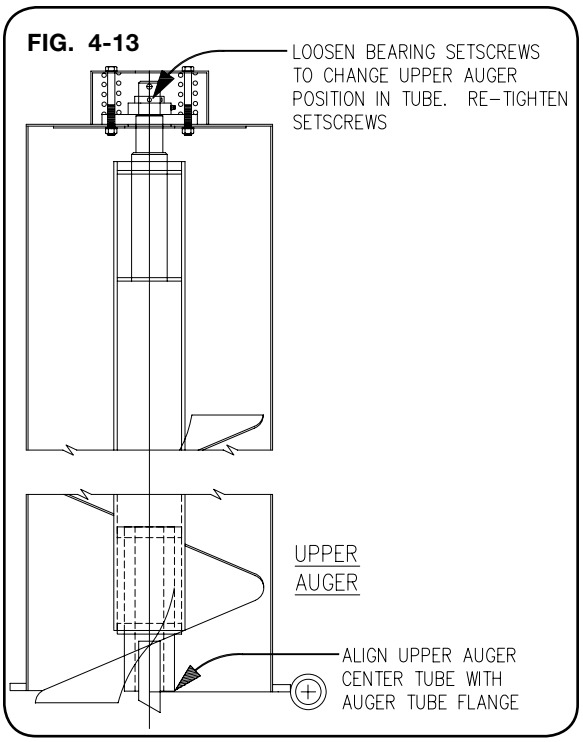




FIG. 4-14

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.**

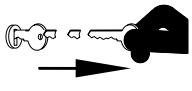


- **RELIEVE THE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE THE HYDRAULIC POWER UNIT OPERATOR'S MANUAL FOR PROPER PROCEDURES.**



- **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.**

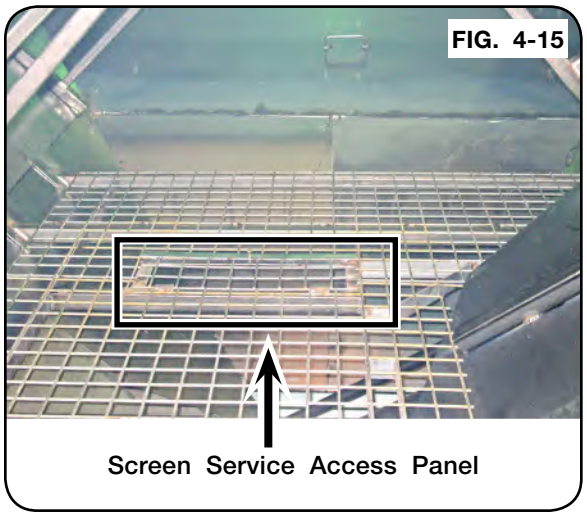
1. Park the empty grain cart on a firm, level surface and extend auger. Block the tires/tracks on the machine to keep it from moving. Unfold upper auger to make the flow door cylinder easier to access. If possible, close the flow door at least 8" from the fully open position. Relieve hydraulic pressure,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



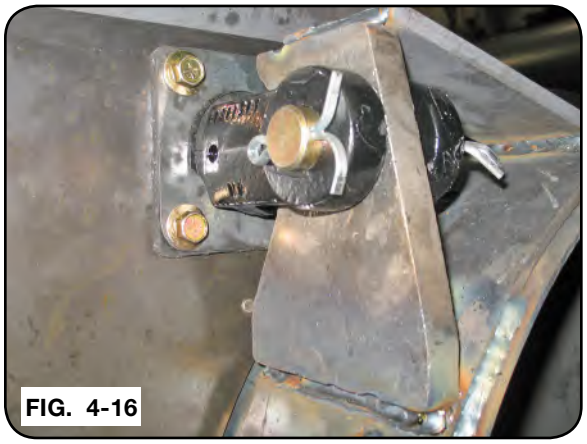
Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

2. On the inside of the cart, open the screen service access panel shown in FIG. 4-15.

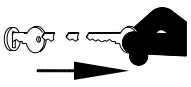


3. Remove the cotter pins from the lower cylinder pin then remove the pin. Then remove the four 3/8-1" flange bolts holding on the gasket and gasket plate, shown in FIG. 4-16.



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. 4-17).

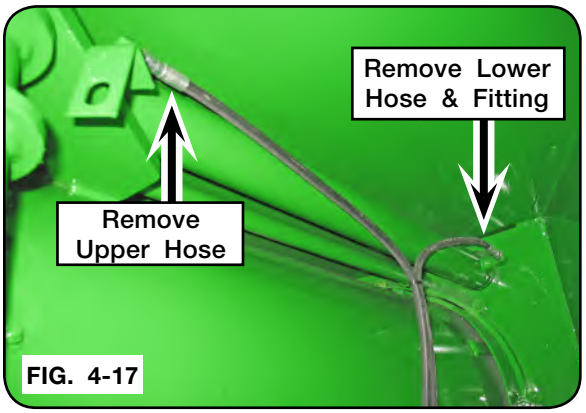
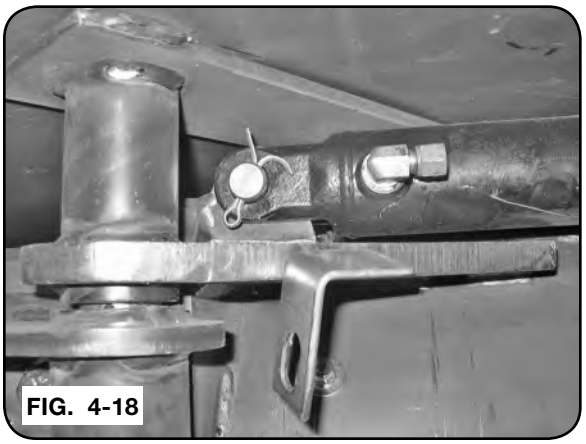


FIG. 4-17

7. Remove the cotter pins from the upper cylinder pin and remove pin (FIG. 4-18).


FIG. 4-18

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. Purge air from hydraulic system. Refer to “Purge Hydraulic System” in this section.

Auger Driveline

Bearings

It is important to periodically check set screws in all bearings at either end of the driveline for tightness.

Gearbox

Fluid level/fill plug is in front of the axle on the right side of the gearbox (standing behind the grain cart looking toward the tractor). The oil fluid level should be at the bottom thread of plug hole. See photo.

Maximum gearbox life:
Check oil level every 2 weeks.

Replace oil every season with approximately 55 fl. oz. of 80W90 EP gear lubricant.

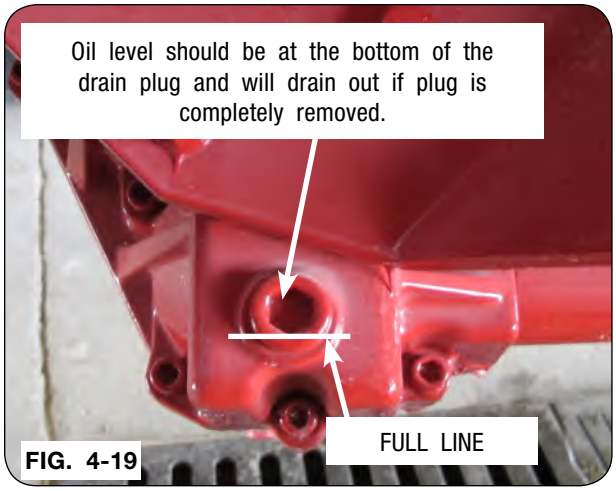


FIG. 4-19

Driveline Replacement

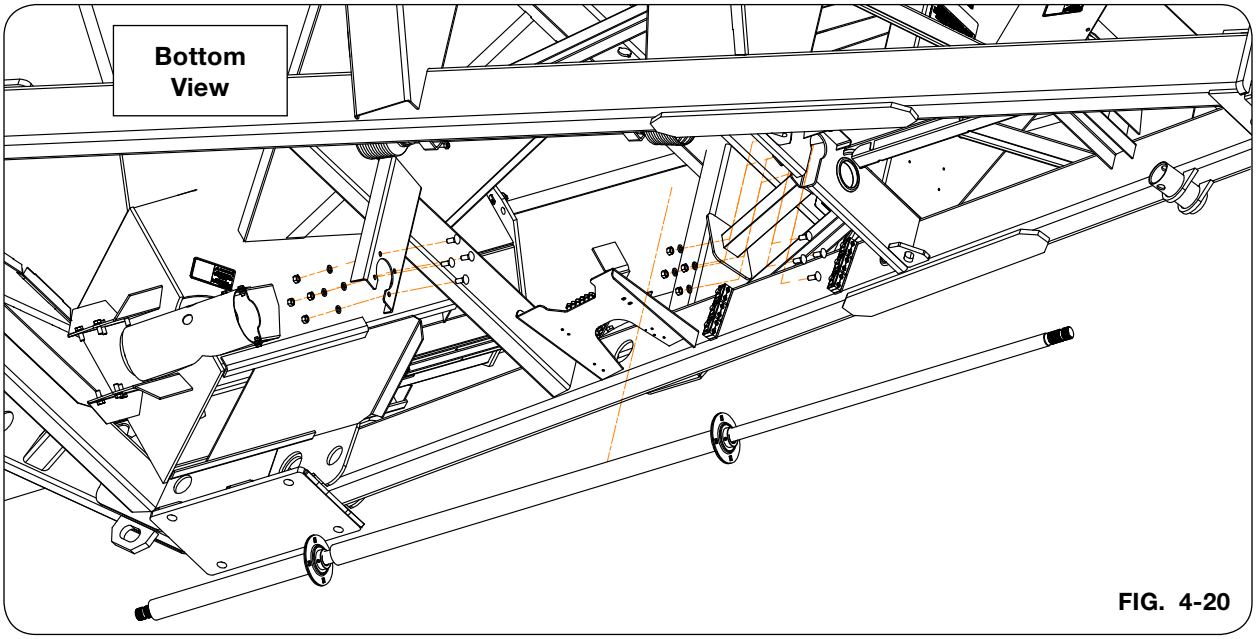


FIG. 4-20

1. Park the empty cart on a firm, level surface. Block the wheels or tracks on the cart 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.

2. Loosen the setscrews on the three flangette bearings (9005061) (FIG. 4-20).

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. 4-20).

Auger Driveline (continued)

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.

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

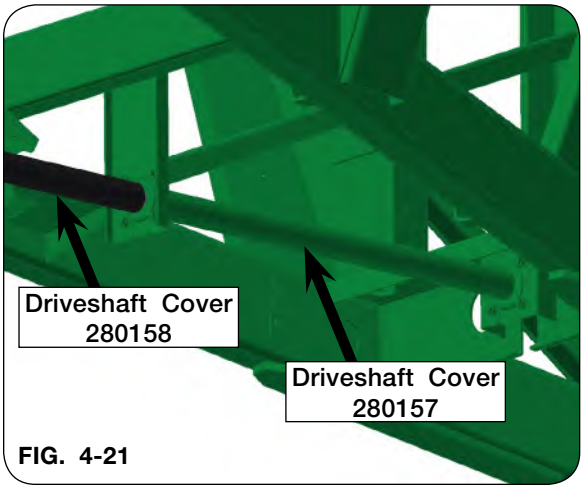


FIG. 4-21

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. 4-22 and 4-23)

8. Drive the pin towards the retaining washer to force the quick disconnect pin assembly out of the complete U-joint assembly. (FIG. 4-23)

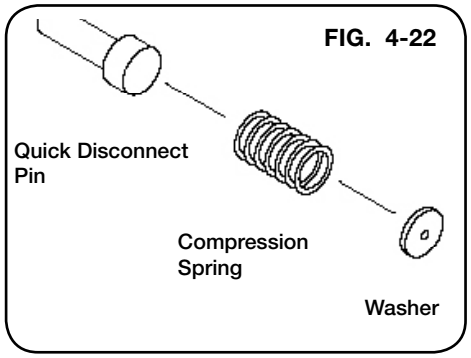
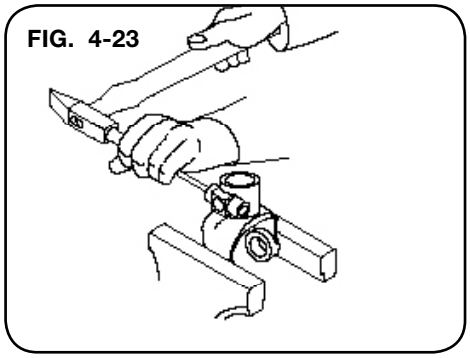
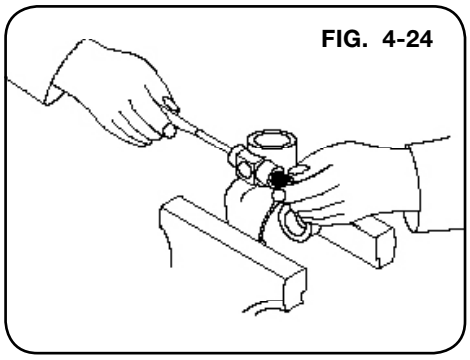


FIG. 4-22


FIG. 4-23

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. 4-24)


FIG. 4-24

Auger Driveline (continued)

U-Joint Quick Disconnect Pin (continued)

10 Insert quick disconnect pin, compression spring and washer into U-joint pin hole. (FIG. 4-25)

11. Holding the washer in place, peen the edges of the bore seat to retain the washer, spring and pin. (FIGS. 4-26 and 4-27)

FIG. 4-25

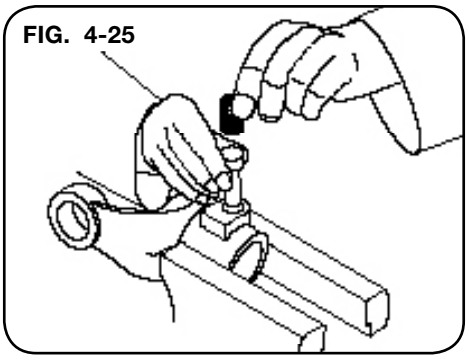
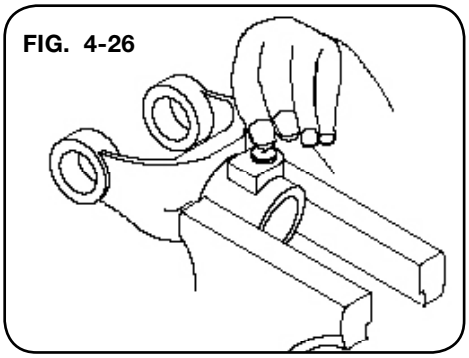


FIG. 4-26



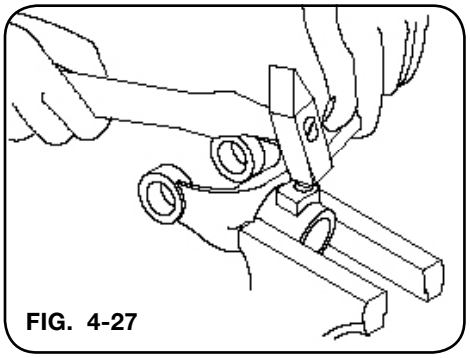


FIG. 4-27

12. Clean and grease the gearbox splined shaft.

13. Attach the quick disconnect pin end of the U-joint assembly to the gearbox splined shaft.

14. Push/Pull U-joint assembly to verify quick disconnect pin is engaged on the gearbox splined shaft.

Auger Driveline (continued)

Driveline Replacement (continued)

15. Slide new two-piece 1 1/2" dia. shaft collars (9008671) to both sides of new bearing (9003920) closest to the U-Joint, when installing bearings onto new driveshaft (Kit 289771).

16. Assemble new PVC driveshaft cover (291558) behind new bearing (9003920) closest to the U-Joint. (FIG. 4-28)

NOTE: Ends of driveshaft are symmetrical.

17. Slide the hitch end of the driveshaft, bearing and hitch driveline cover into the bearing near hitch of the cart.

18. 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.

19. Slide driveshaft down into the universal joint attached to the gearbox until the end of the shaft extends into the universal joint 2 3/8". Ensure universal joint and driveshaft splines completely engage. Verify the hitch end for adequate length for driveline assembly to connect. (FIG. 4-29)

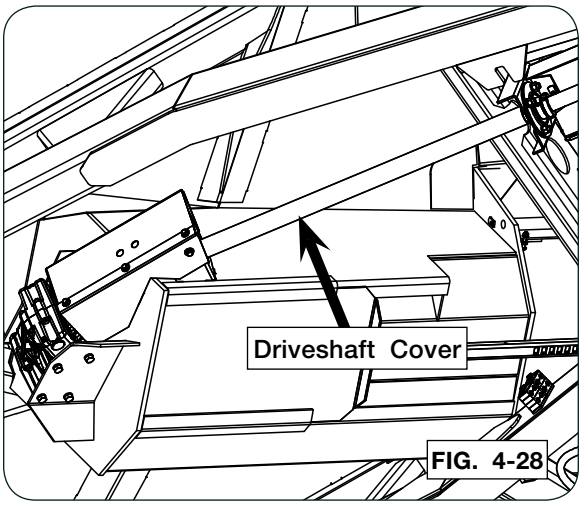
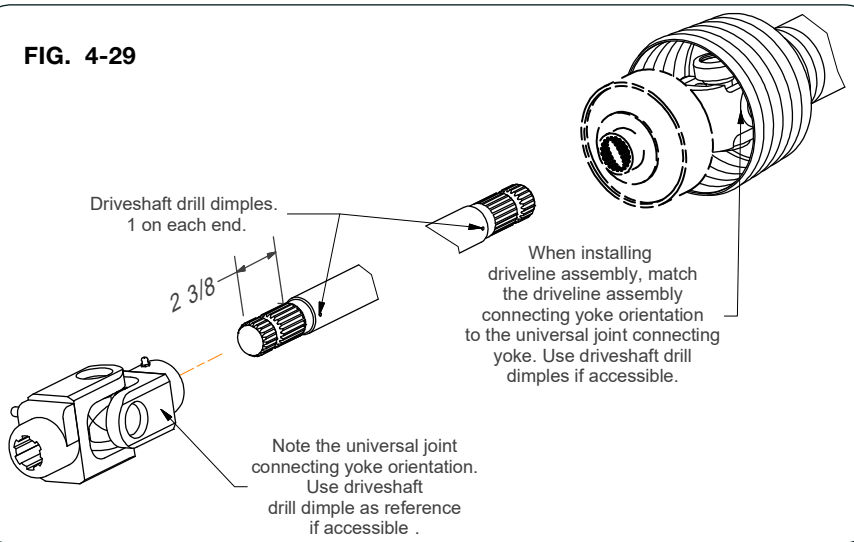


FIG. 4-28

FIG. 4-29



Auger Driveline (continued)

Driveline Replacement (continued)

20. Tighten all flangette mounting hardware.

NOTE: The driveshaft has a dimple to aid in aligning the yokes on both ends of the driveline. (FIG. 4-30 and 4-31)

21. Apply blue thread lock on flangette bearing setscrews and tighten.

22. Tighten shaft collars (9008671) to driveshaft. Torque shaft collar set screws to 170 inch-lbs.

NOTE: Check/fill gearbox and grease universal joint before installing universal joint cover assembly (296801B). See “Gearbox Lubrication” for oil specifications.

23. Attach universal joint cover assembly to the bearing mount in front of the gearbox using original 3/8”-16UNC capscrews and weld nuts, and 5/16” hardware to cover plates (296802B & 296803B). Review to ensure PVC driveshaft covers and driveline cover, located behind the ladder, are in place and hardware tightened prior to operation.

24. Test run driveline. Verify smooth driveline operation.

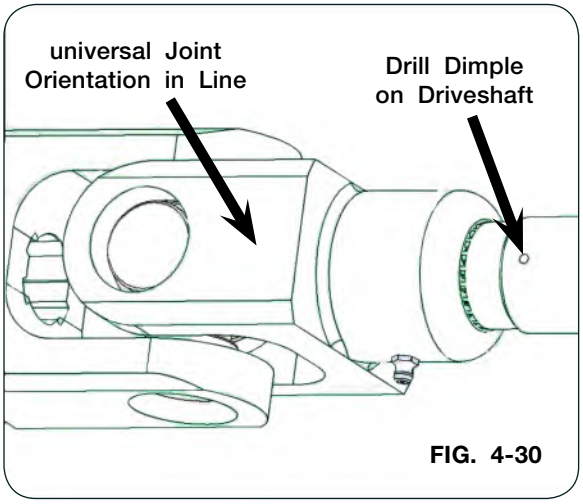


FIG. 4-30

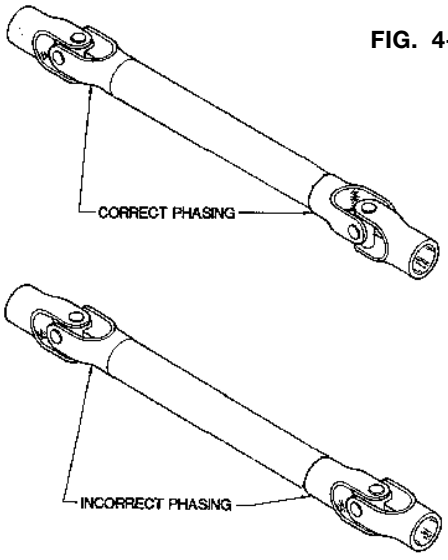


FIG. 4-31

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.**

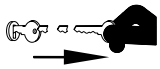
⚠ CAUTION

- **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

- **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. 4-2) 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.

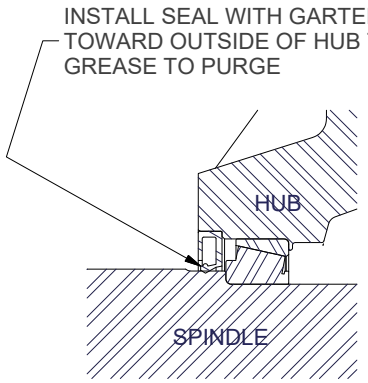


FIG. 4-2

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

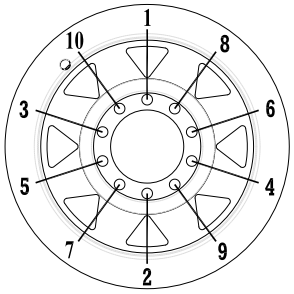
⚠ CAUTION

- **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
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 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
	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

*__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.

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

Verify Telescoping PTO Shaft Length - GKN Walterscheid PTO

⚠ 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 tractor dealer for recommended drawbar and PTO set up.

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

NOTE: Do not exceed 10 degrees beyond a straight pull line while operating the PTO.

To verify proper extended and collapsed lengths, use the following procedure:

1. Fully collapse PTO shaft and measure length "L" (FIG. 4-37).

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

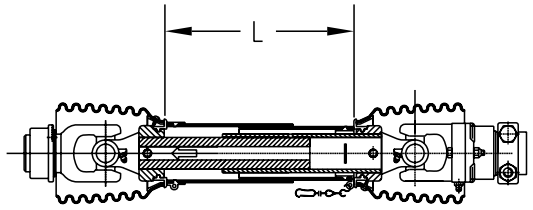


FIG. 4-37

2. Pull apart PTO telescoping shaft ends and measure lengths "T" & "C" (FIG. 4-38).

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

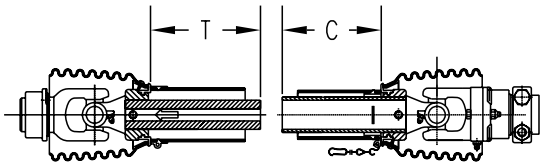


FIG. 4-38

Verify Telescoping PTO Shaft Length - GKN Walterscheid PTO (continued)

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)

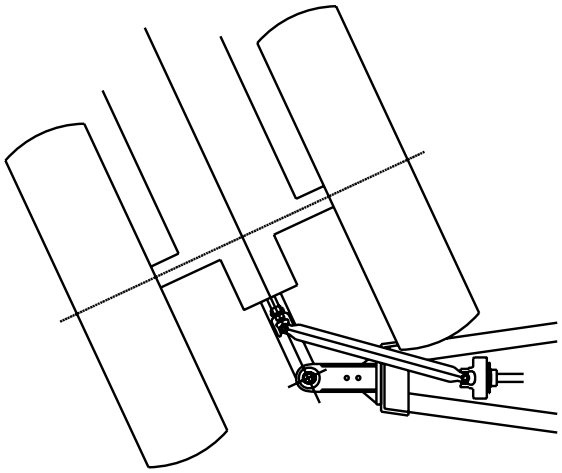
This is the maximum recommended extended length (LB).

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.

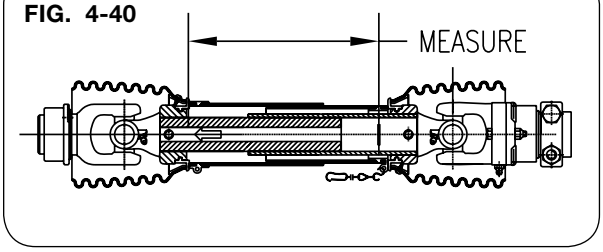
6. Position the tractor to obtain tightest turning angle, relative to the cart.

FIG. 4-39



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. 4-40



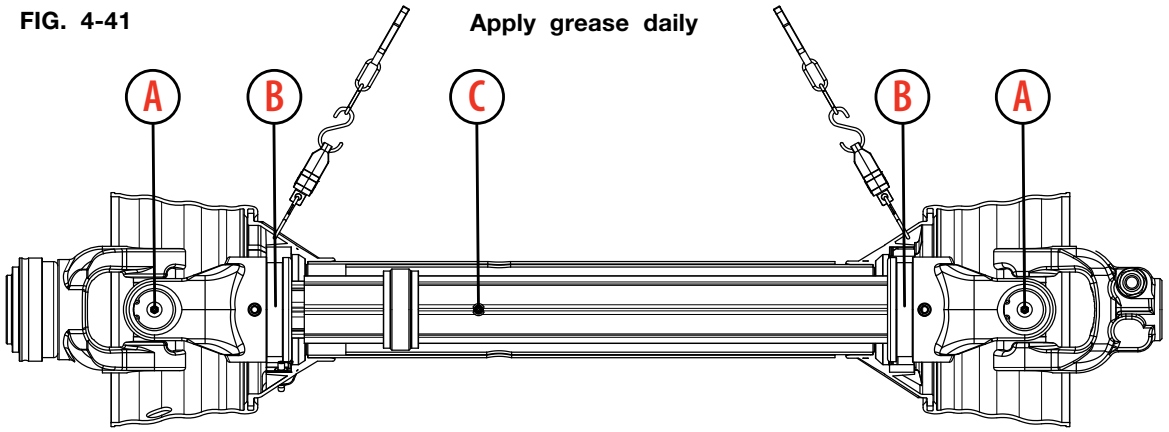
PTO Shaft and Clutch - Benzi PTO

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.

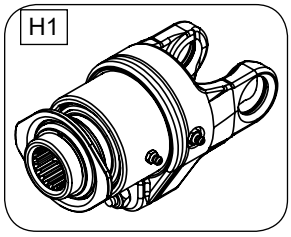
FIG. 4-41 Apply grease daily

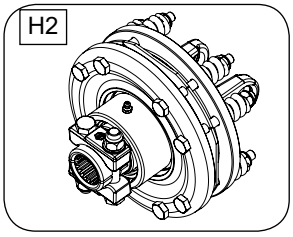


PTO Shaft and Clutch - Benzi PTO (continued)

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

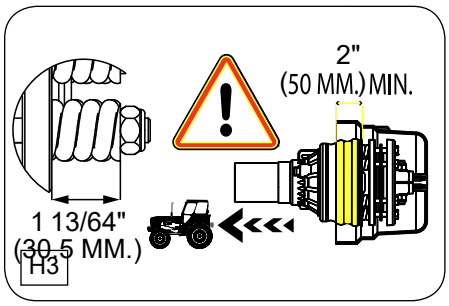
1. **Shear bolt clutches:**
   When the set torque value is exceeded, power flow is interrupted due to the bolt shearing. The torque is re-established by replacing the broken shear bolt. Use only the bolt specified in the PARTS section for replacement. (FIG. H1)





   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 50 mm. (FIG. H3)



   If friction disks need to be replaced, measure spring height "H" before unscrewing the spring nuts. When the friction disks have been replaced, screw the spring nuts to the spring height "H" value. 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)

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)

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)

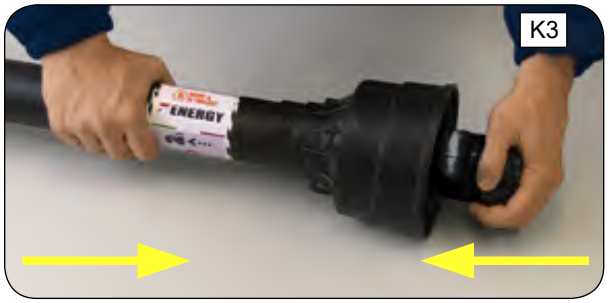
3. Slip on half-guard by aligning the holes on the cone with three bearing ring tabs and the cone inner key with the cut of the bearing ring. (FIG. K2)



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)

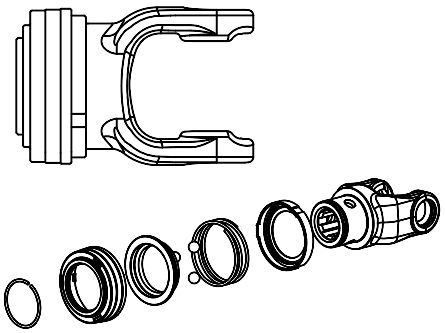


PTO Locking Systems - Benzi PTO

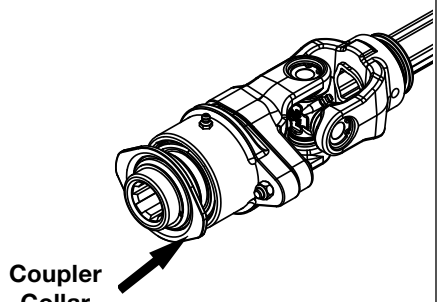
Ball-Type Collar Coupling

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



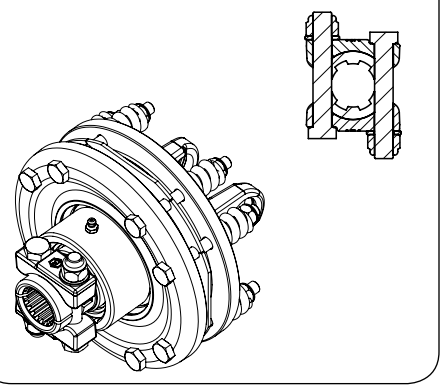
Clamp Bridge Coupling For Friction Clutch

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

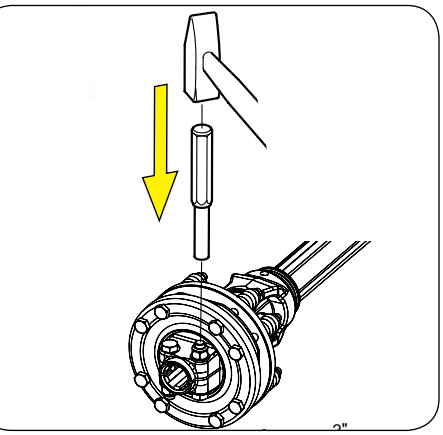
- **CHECK TO ENSURE ALL THE LOCKS ARE SECURELY ENGAGED BEFORE STARTING WORK WITH THE PTO DRIVESHAFT.**

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.

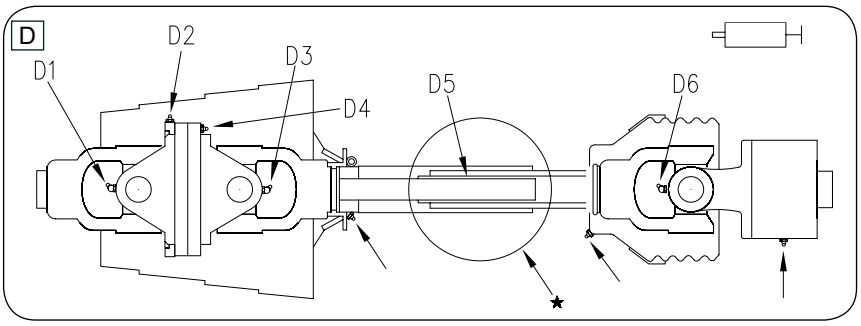


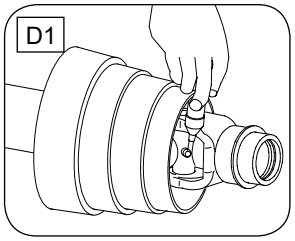
PTO Shaft and Clutch - GKN Walterscheid PTO

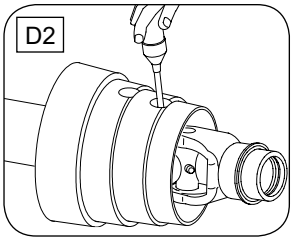
Lubrication (Figs. D1 - D6)

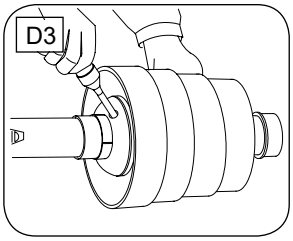
Lubricate with quality grease before starting work and every 8 operating hours. Clean and grease PTO driveshaft before each prolonged period of non-use. Molded nipples on the shield near each shield bearing are intended as grease fittings and should be lubricated every 8 hours of operation! Check and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

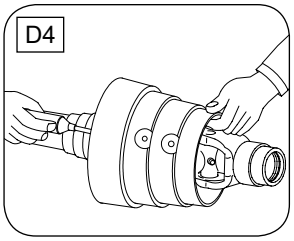
NOTE: Telescoping members must have lubrication to operate successfully regardless of whether a grease fitting is provided for that purpose! Telescoping members without fittings should be pulled apart and grease should be added manually.

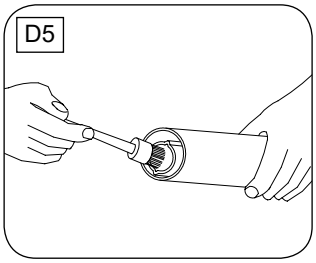


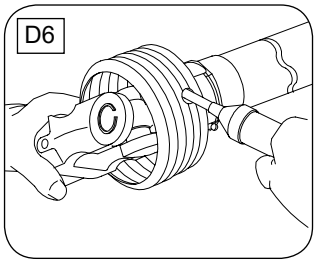












PTO Shaft and Clutch - GKN Walterscheid PTO (continued)

Coupling the PTO driveshaft (Figs. E1 - E2)

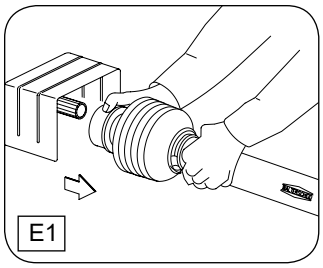
Clean and grease the PTO and implement input connection (IIC)

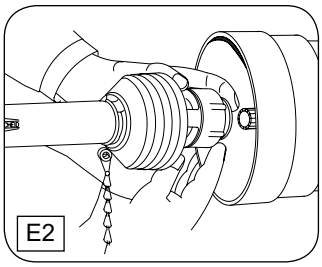
AS-Lock

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.





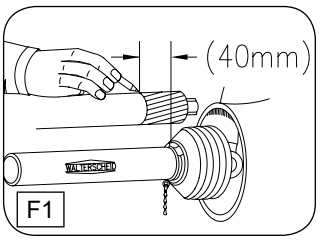
⚠ WARNING

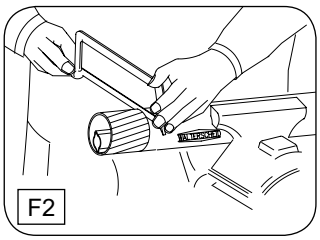
- **CHECK TO ENSURE ALL THE LOCKS ARE SECURELY ENGAGED BEFORE STARTING WORK WITH THE PTO DRIVESHAFT.**

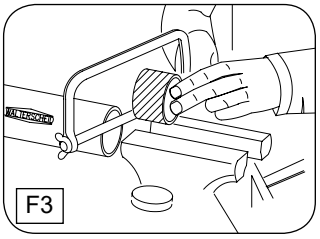
Length Adjustment (Figs. F1 - F4)

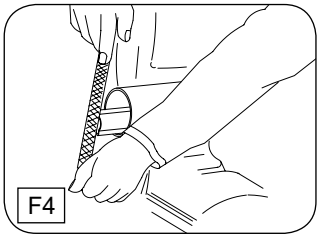
NOTE: Maximum operating length LB. (Refer to "Verify Telescoping PTO Shaft Length" for LB length.)

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.**

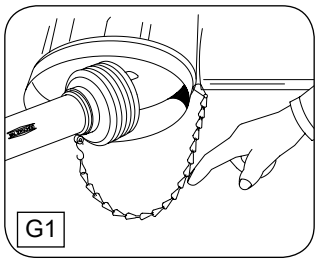
PTO Shaft and Clutch - GKN Walterscheid PTO (continued)

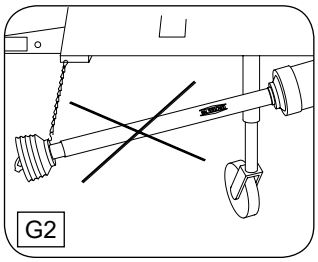
Chains (Figs. G1 - G3)

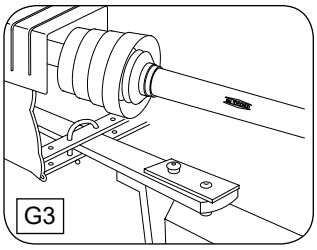
NOTE: The chain is intended to prevent the shield from rotating against non-moving parts and thereby preventing shield damage. A properly installed chain will increase the service life of the shield.

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

2. The PTO driveshaft must not be suspended from the chain.

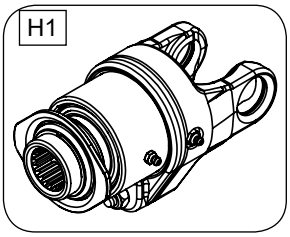


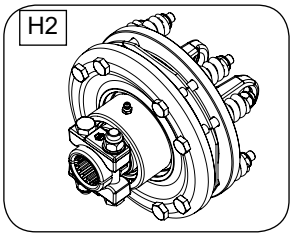




Shear-Bolt and Friction Clutches (Figs. H1 - H3)

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)

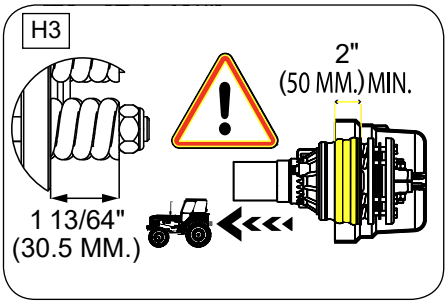




Friction clutches:
When overload occurs, the torque is limited and transmitted constantly during the period of slipping. Short-duration torque peaks are limited. (FIG. H2)

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

When 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.

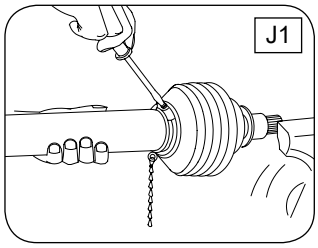
IMPORTANT

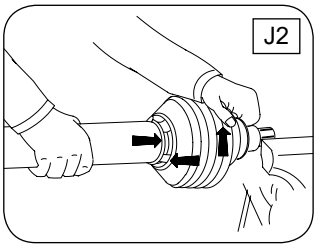
- *Avoid extended and frequent slippage of over-load clutches.*

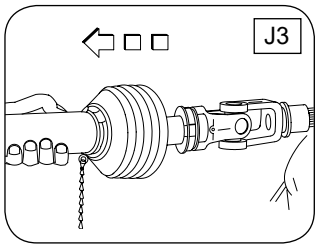
PTO Shaft and Clutch - GKN Walterscheid PTO (continued)

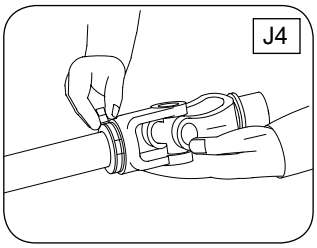
To Dismantle Guard (Figs. J1 - J4)

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



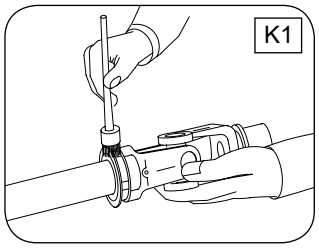


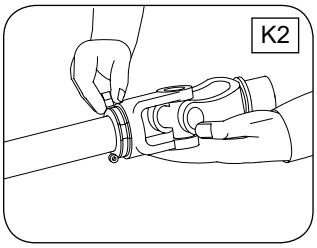


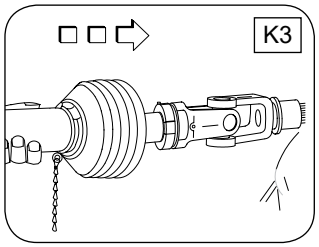


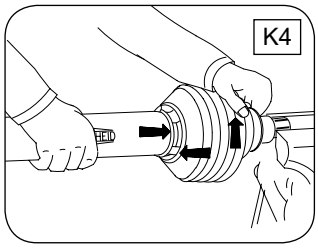
To Assemble Guard (Figs. K1 - K5)

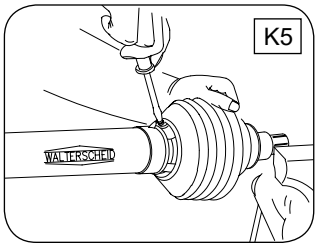
1. Grease yoke groove and inner profile tube.
2. Fit bearing ring in groove with recesses facing profile tube.
3. Slip on half-guard.
4. Turn cone until it engages correctly.
5. Install locking screw.











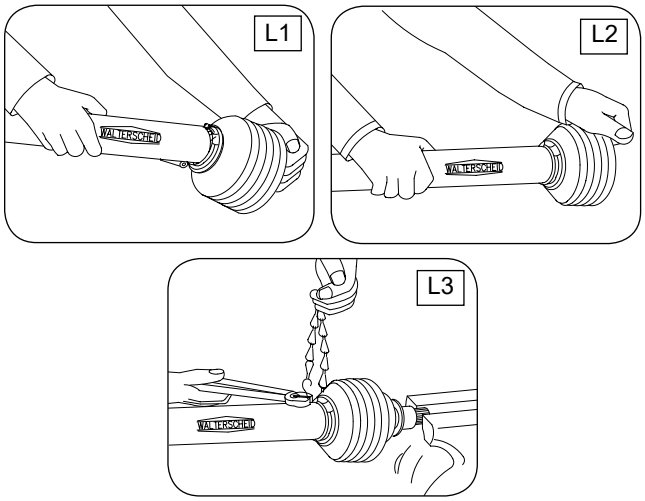
PTO Shaft and Clutch - GKN Walterscheid PTO (continued)

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).

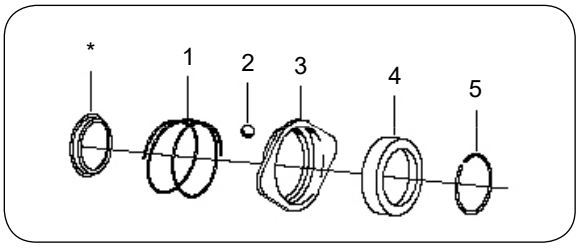
3. Reconnect chain if required (FIG. L3).



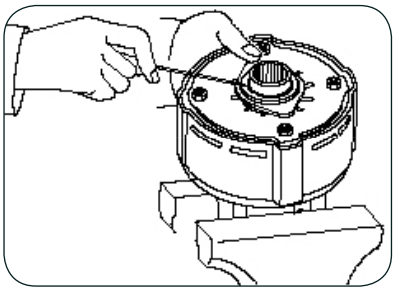
PTO Quick Disconnect - GKN Walterscheid PTO (continued)

Quick Disconnect Disassembly

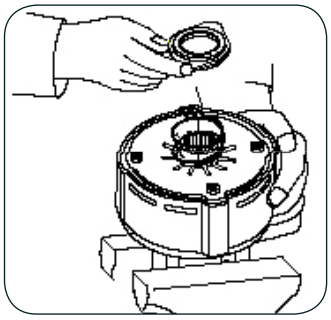
1. Compression Spring
2. Ball
3. Lock Collar
4. Back-up ring
5. Snap ring
   * Back-up ring
   * (For some clutch types, place additional back up ring first).



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

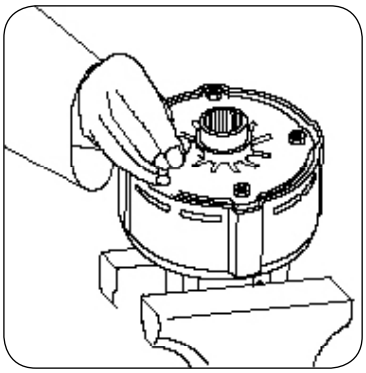


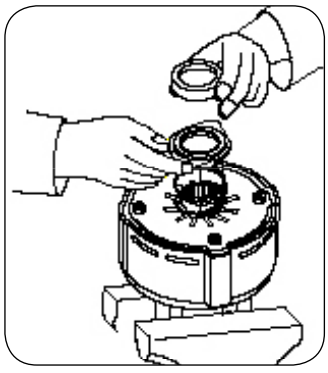
Remove back-up ring, lock collar, compression spring and balls.

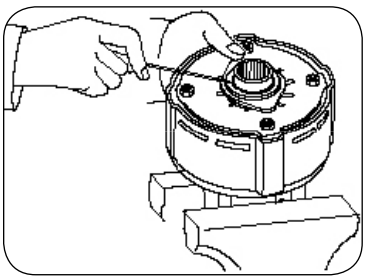


Quick Disconnect Assembly

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



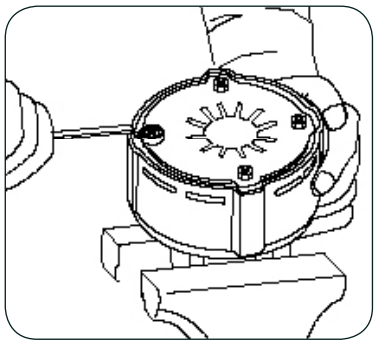
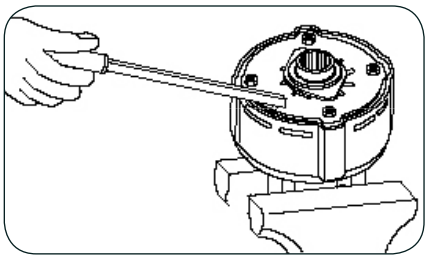
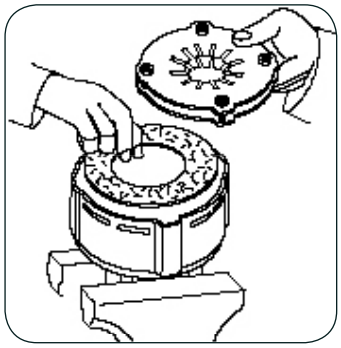




PTO Quick Disconnect - GKN Walterscheid PTO (continued)

Clutch Disassembly

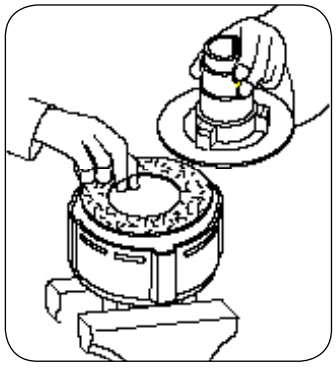
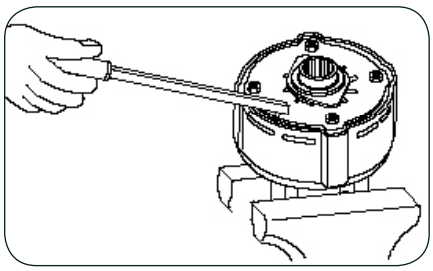
Tighten the four hex nuts (12) uniformly until the clutch pack and hub are loose. Use special tool 9002007 to bend all four retaining lugs back on the edge of the clutch housing. Remove the thrust plate with Belleville springs to get at the friction disks, drive plates and hub for inspection and service.

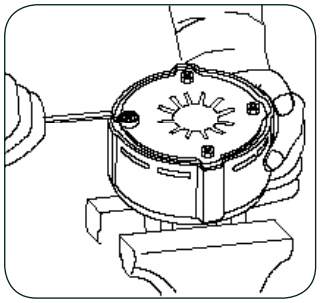
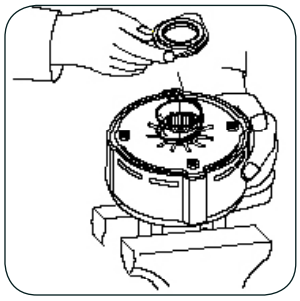
Clutch Assembly

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.

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. If equipped, close the tarp to keep debris out of the hopper.



FIG. 4-32

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 that may prevent the door from shutting completely. (FIG. 4-33)

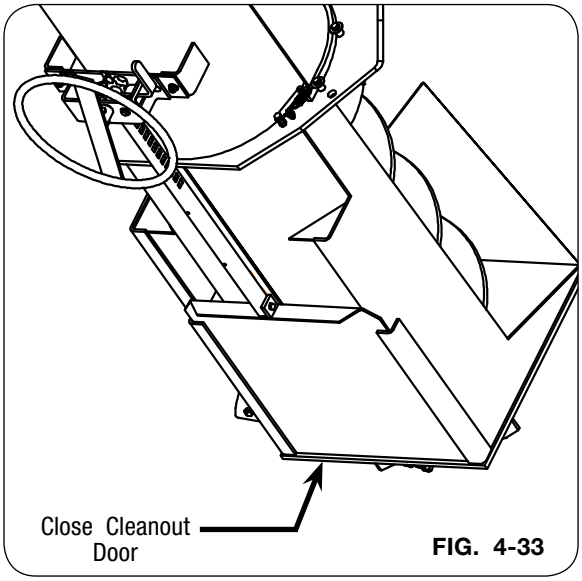


FIG. 4-33

3. Move handle weldment (281109) to lock position. (FIG. 4-34)

4. Loosen mounting hardware. (FIG. 4-34)

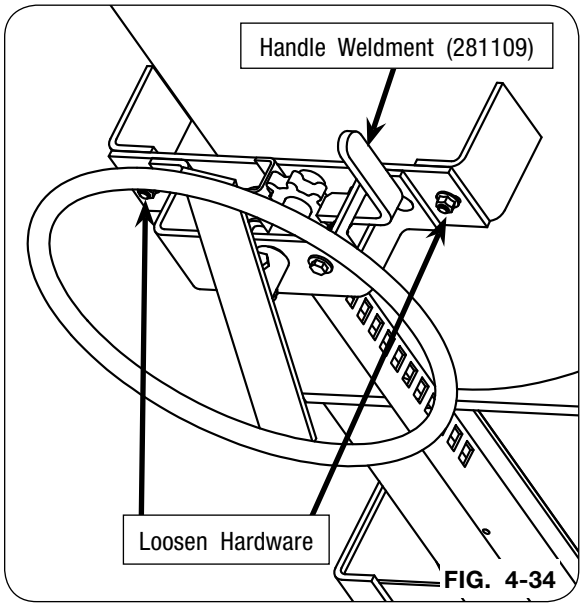


FIG. 4-34

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. 4-35)

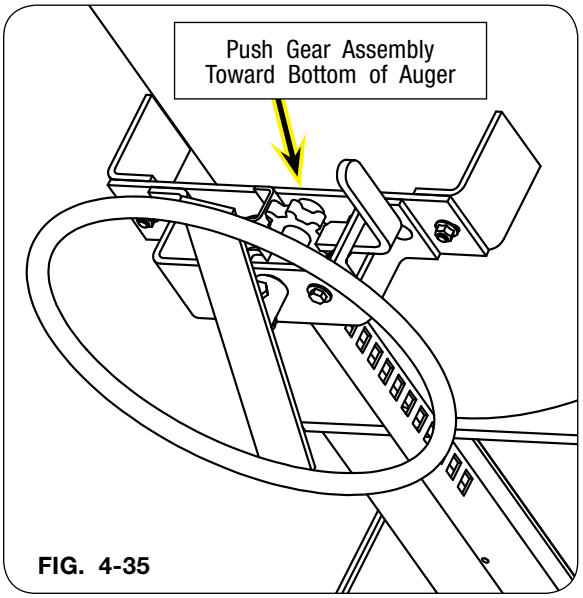
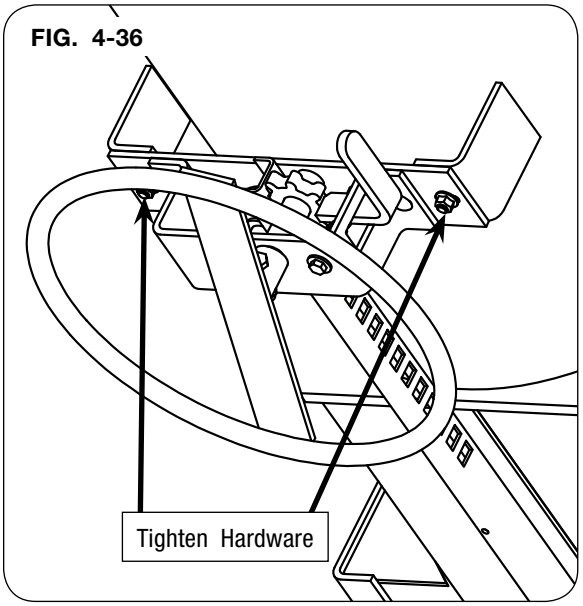


FIG. 4-35

5. Tighten hardware loosened in step 4. (FIG. 4-36)

6. Check door operation. Lock the handle weldment into position. (FIG. 4-36)

FIG. 4-36



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

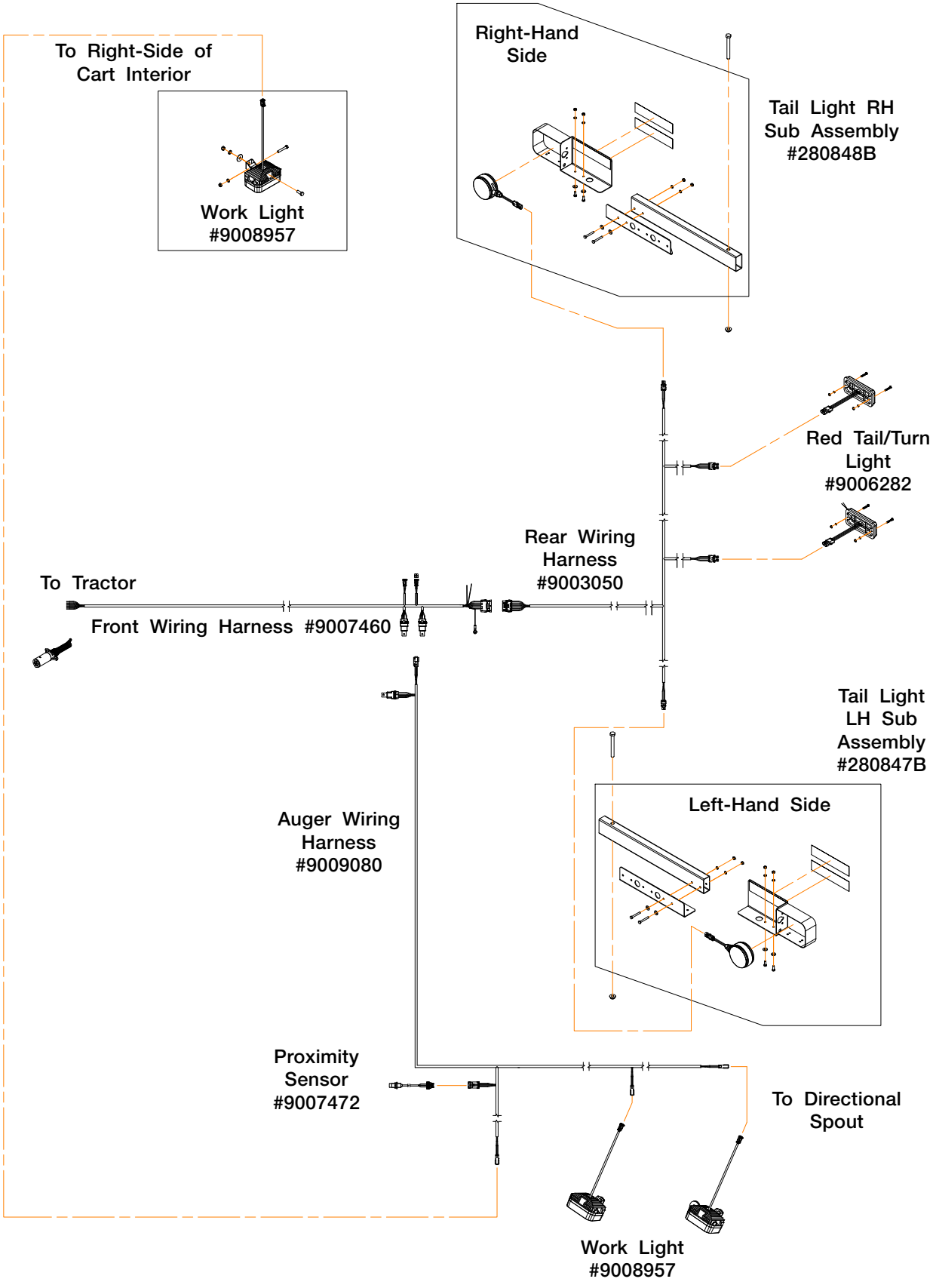
- *Do not open or close tarp while moving or in high wind conditions. Damage to the tarp may occur.*
- *Tarp should not be used if it is torn or the bungee cords are frayed or show damage. If water pools on the tarp adjust tension of tarp cables and/or arm springs as required.*

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.

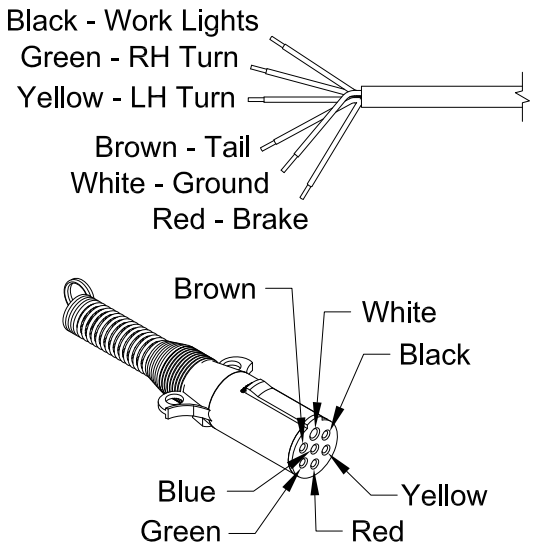
Tears in tarp should addressed before further tarp operation. If water pools on tarp, adjust tension of tarp cables and/or arm springs.

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 Diagram — Overall



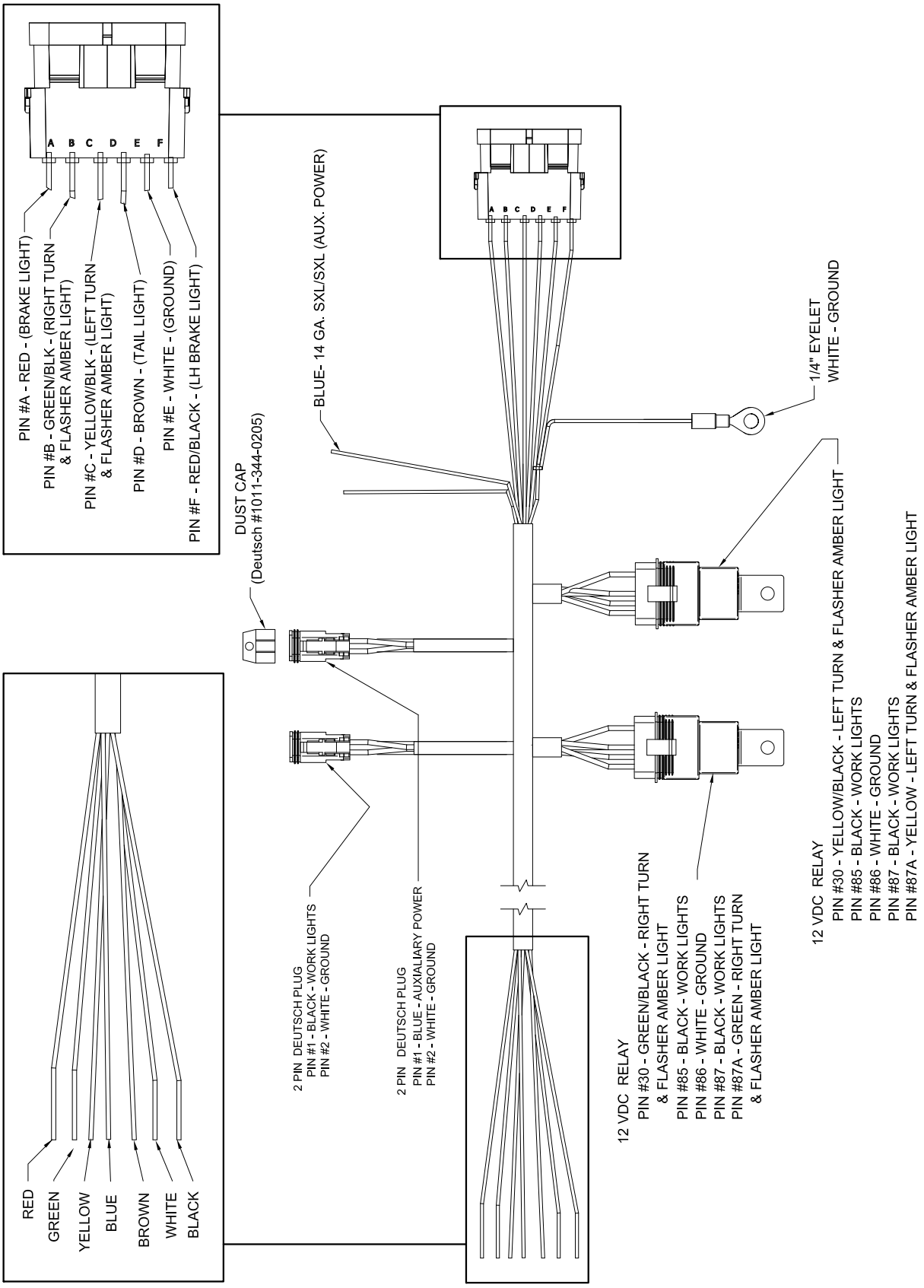
Electrical System Diagram — Plug #92450



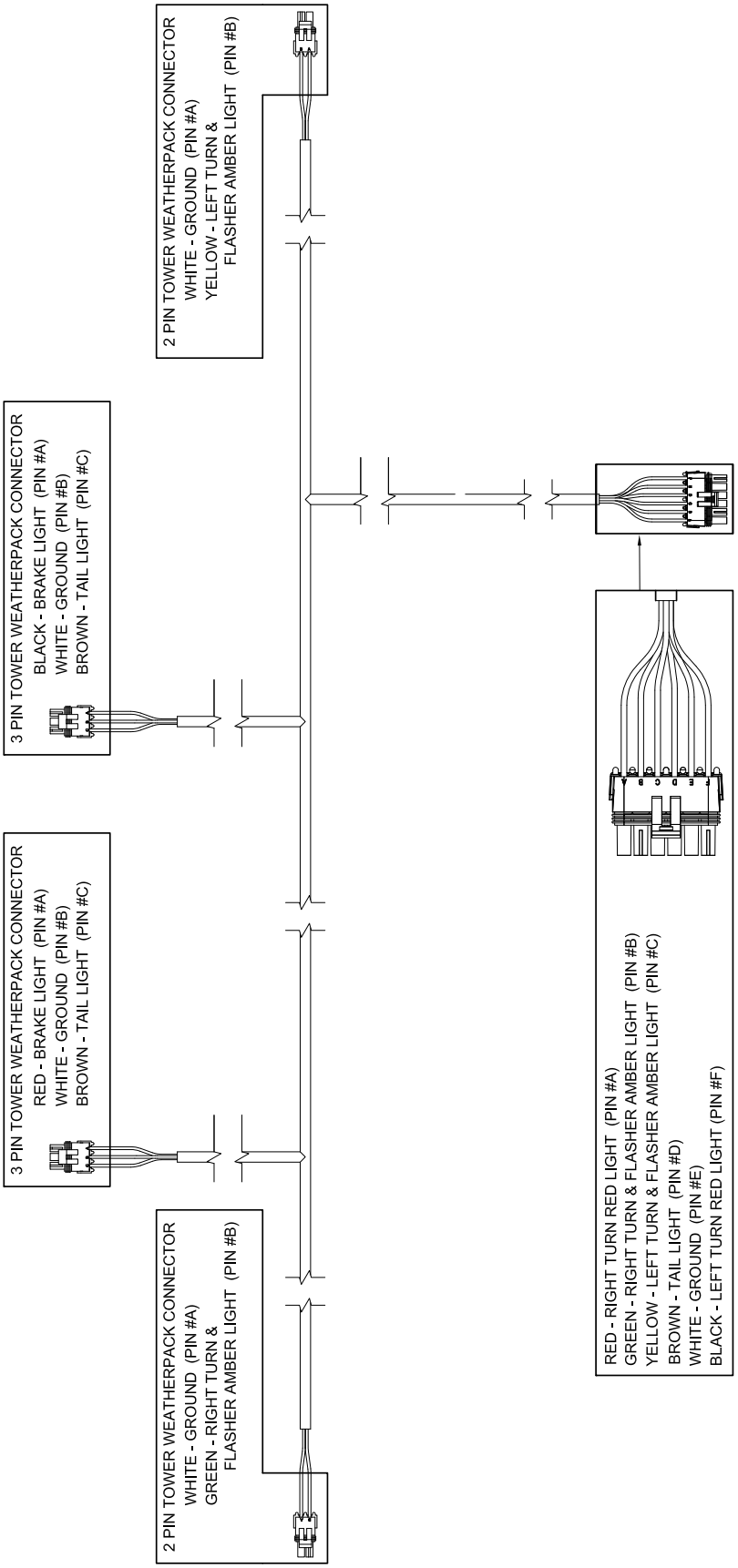
GRAIN CART WIRES

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

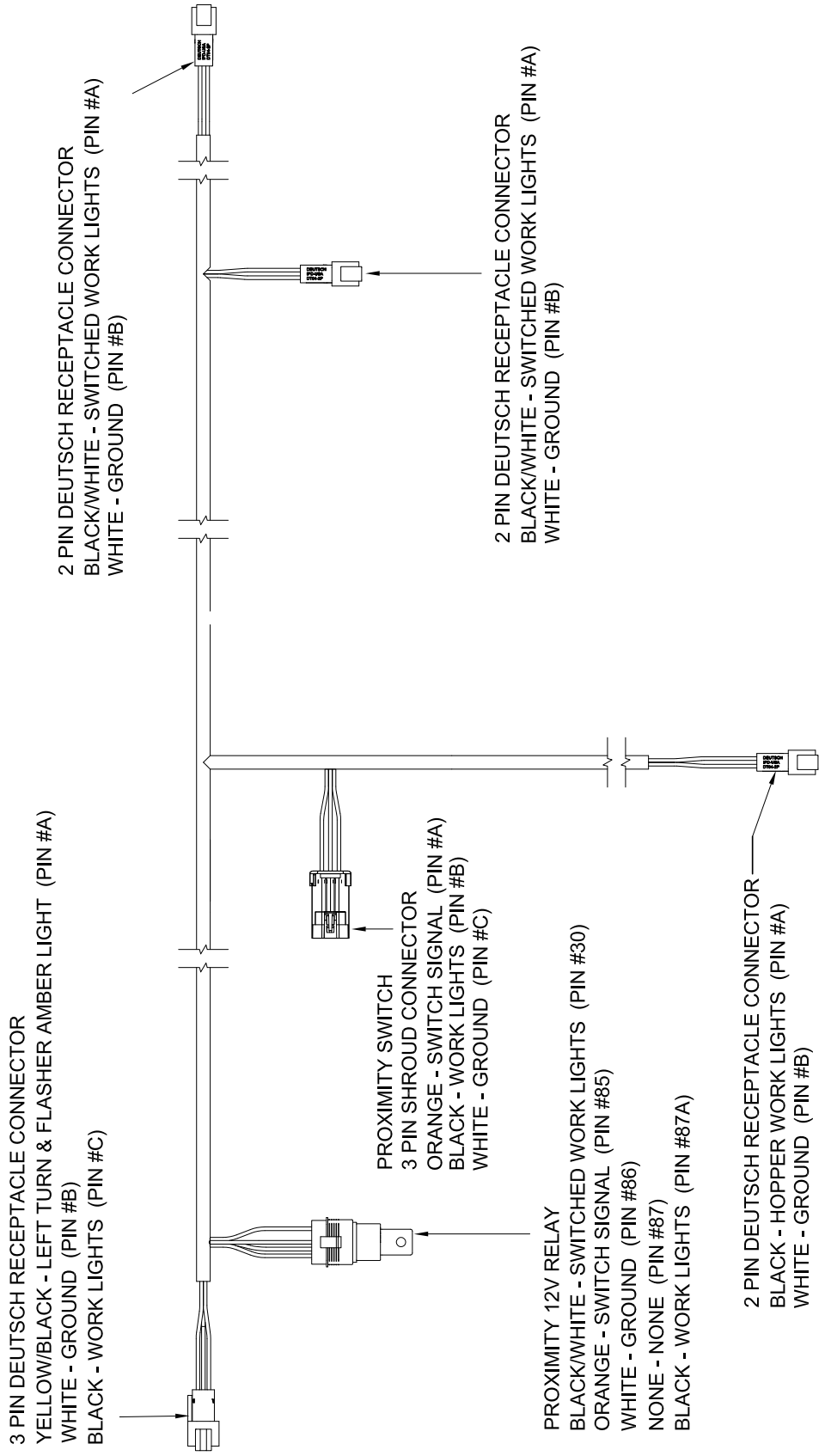
Electrical Diagram — Front Wiring Harness #9007460



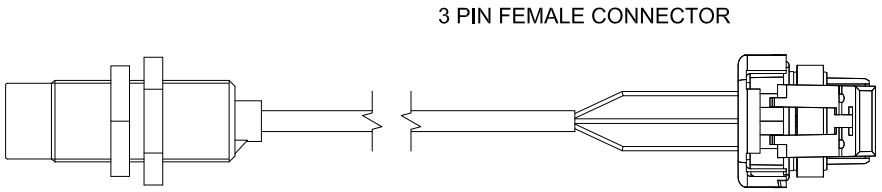
Electrical Diagram — Rear Wiring Harness #9003050



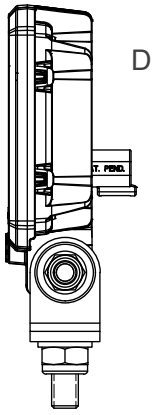
Electrical Diagram — Auger Wiring Harness
#9009080 - Serial Number B41380100 & Up
#9007461 - Serial Number B41380099 & Lower



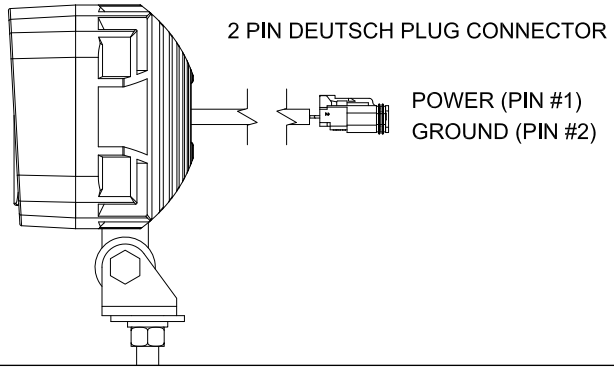
Electrical Diagram — Proximity Sensor #9007472



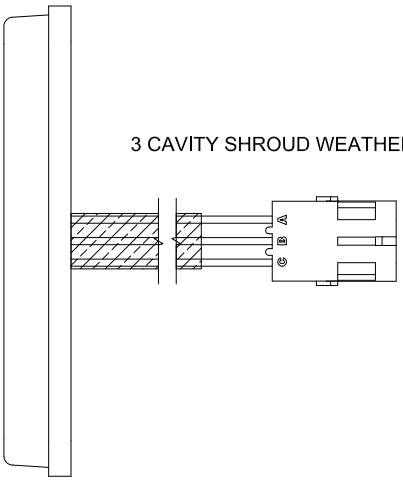
Electrical Diagram — Work Light #9008957 Serial Number B41380100 & Up



Electrical Diagram — Work Light #9007186 Serial Number B41380099 & Lower

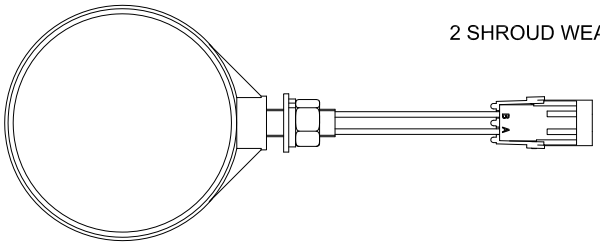


Electrical Diagram — Red Tail/Turn Light #9006282



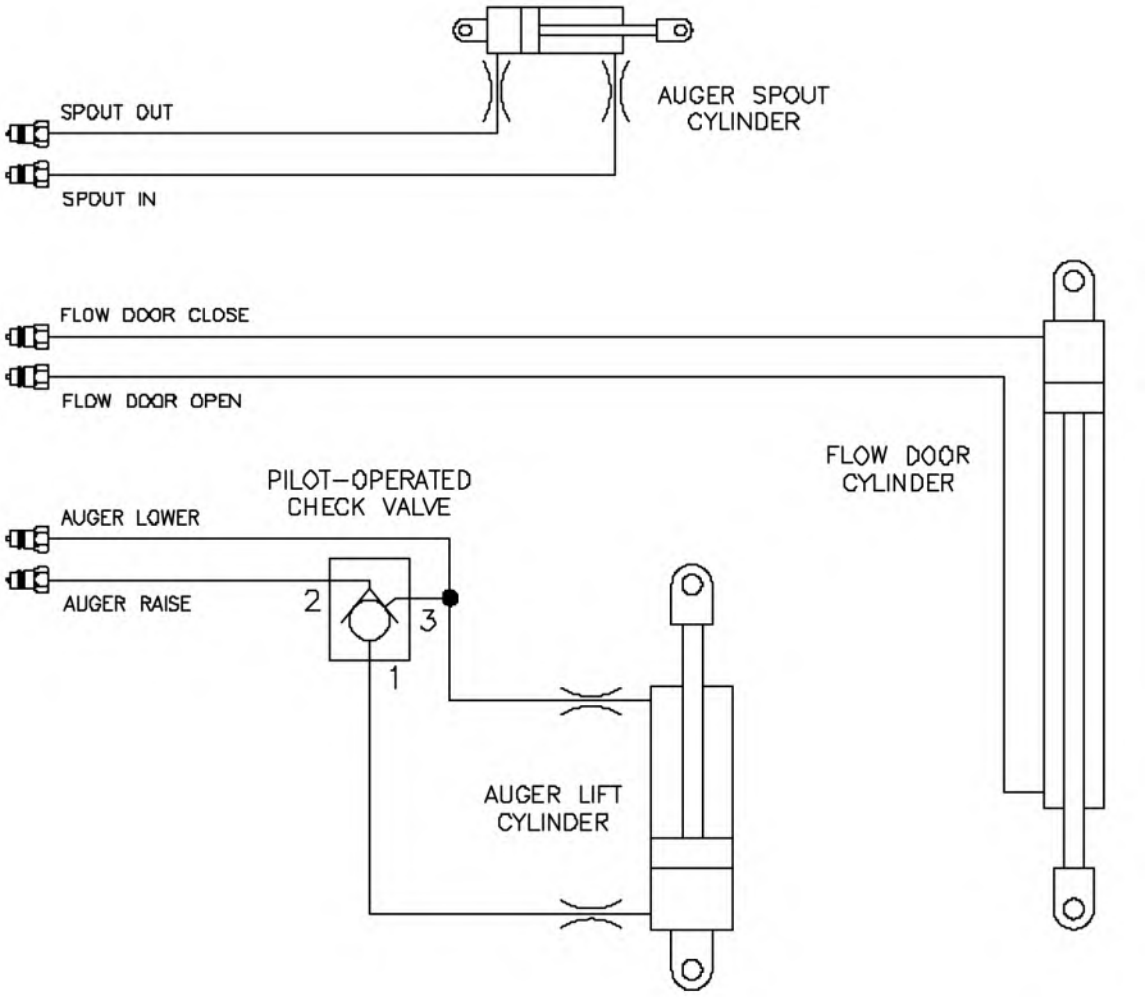
RED - HIGH (PIN #A)
WHITE - GROUND (PIN #B)
BROWN - LOW (PIN #C)

Electrical Diagram — Amber Lamp Double Face #9005142



TURN AND FLASHER AMBER LIGHT (PIN #B)
GROUND (PIN #A)

Hydraulic System 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

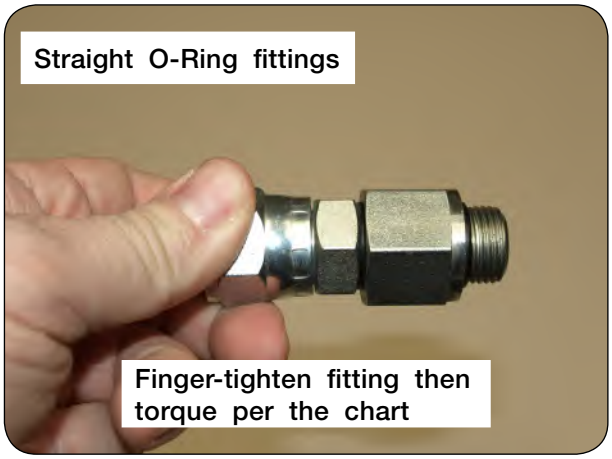
Tightening O-Ring Fittings

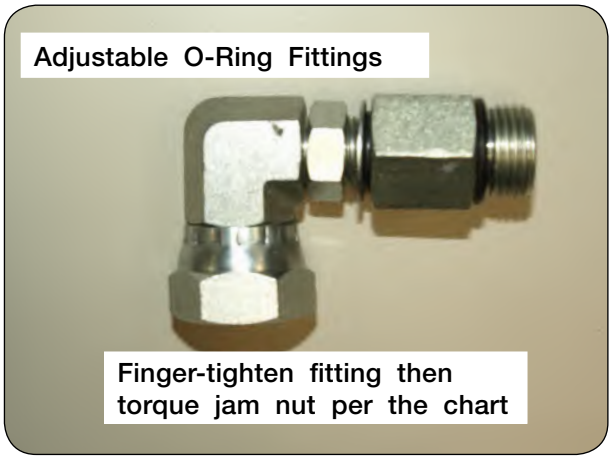
1. Inspect components for damage or contamination. Do not connect any other type of fitting to an O-ring fitting.
2. For adjustable fittings, insure the jam nut and washer are fully backed up.
3. Lubricate the O-ring and threads on the fitting.
4. Turn the fitting into the port until it is finger tight.
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







Hydraulic Fittings – Torque and Installation

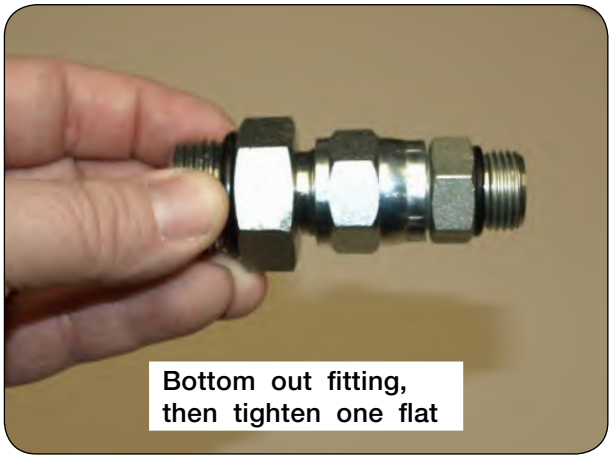
Tightening JIC Fittings

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



Bottom out fitting, then tighten one flat

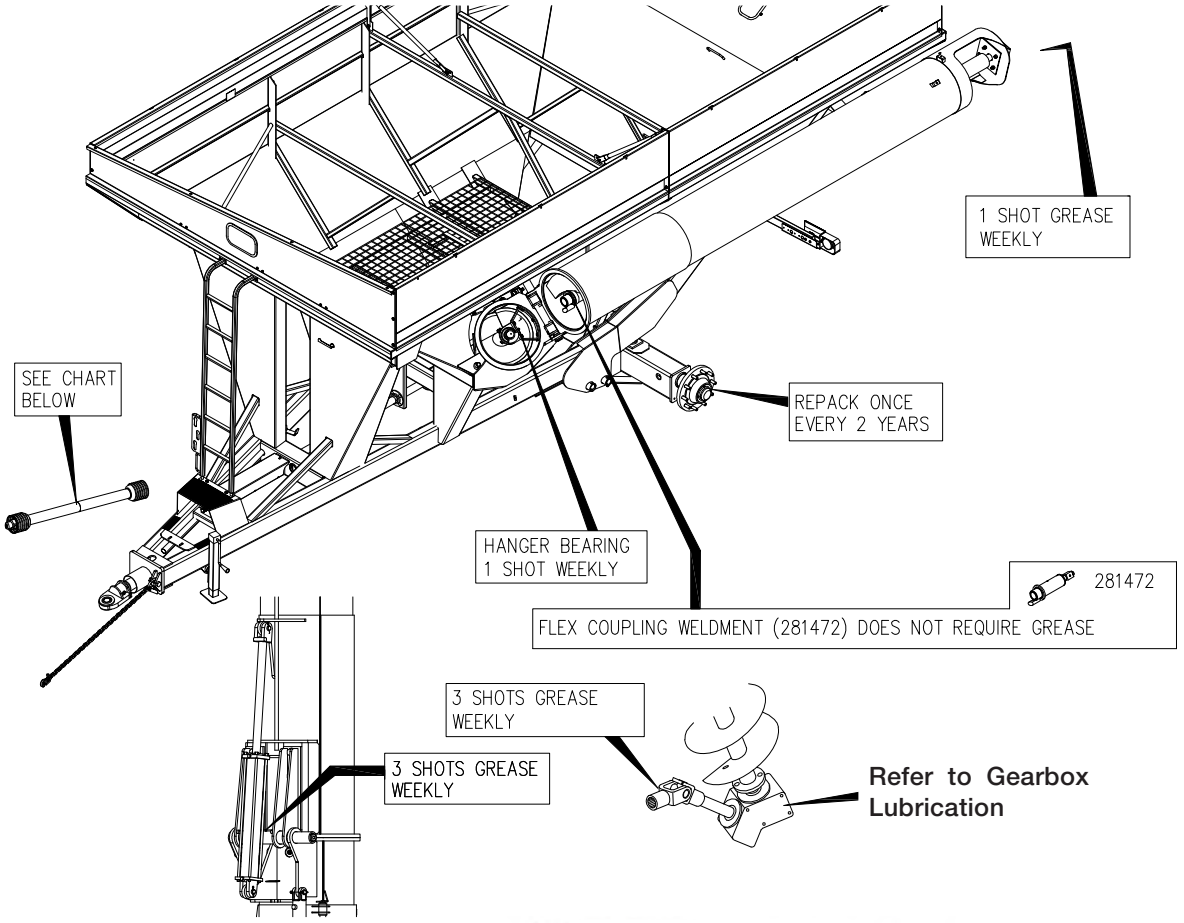
Section IV
Maintenance

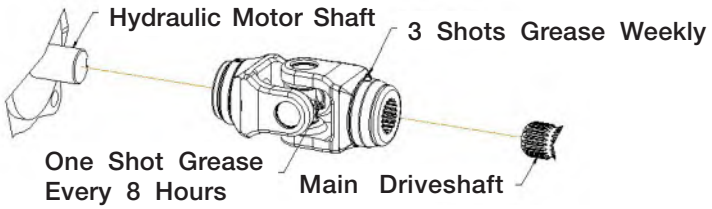
Lubrication 4-2
Gearbox Lubrication 4-3
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    Bearings 4-6
    Driveline Replacement 4-6
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Torque Chart - Hydraulic Fittings 4-35

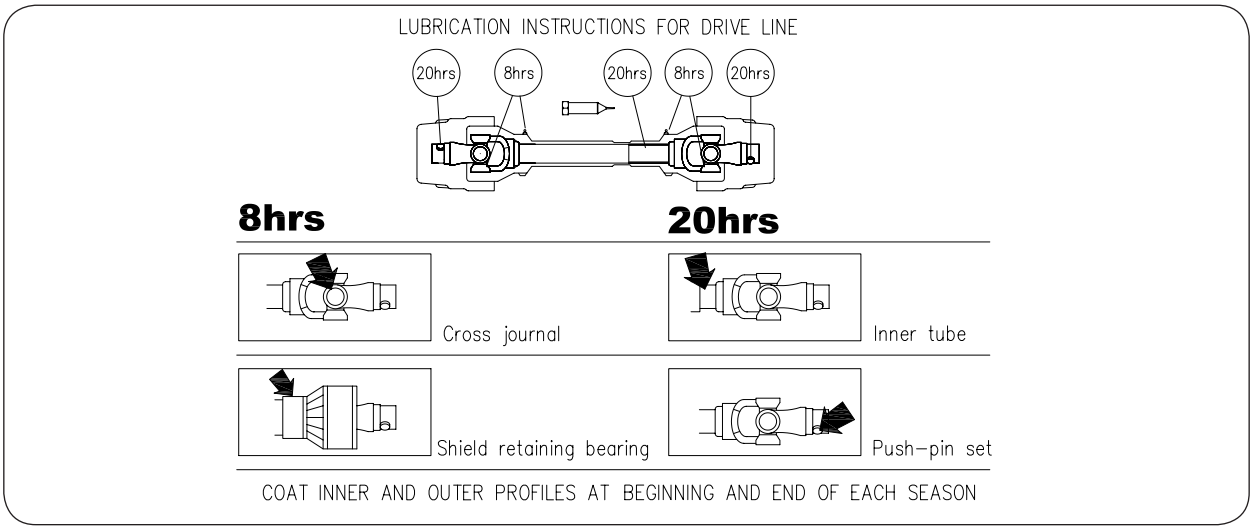
FOR TRACK INFORMATION, PLEASE REFER TO YOUR TRACK MANUAL.
FOR TARP (KIT #2009047) INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.
FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.
FOR HYDRAULIC DRIVE INFORMATION, PLEASE REFER TO YOUR HYDRAULIC DRIVE MANUAL.

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

Gear box 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 gear box life:
Check oil level every 2 weeks.
Replace oil every season with 32 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.



Adjusting Cleanout Door

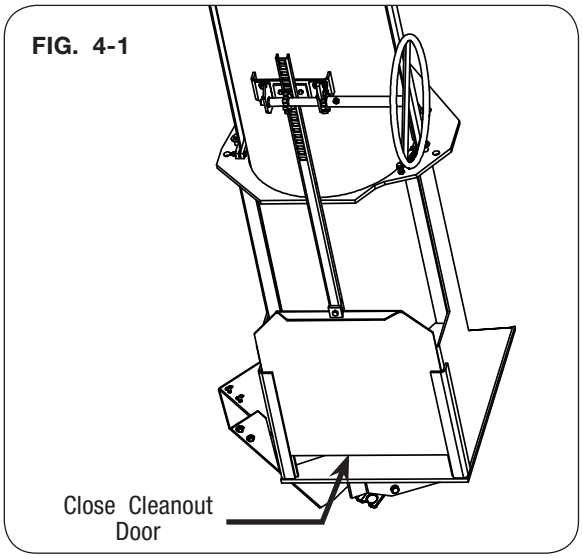
WARNING

- **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. 4-1)

FIG. 4-1



3. Engage the locking plate (268313B). (FIG. 4-2)

4. Loosen mounting hardware. (FIG. 4-2)

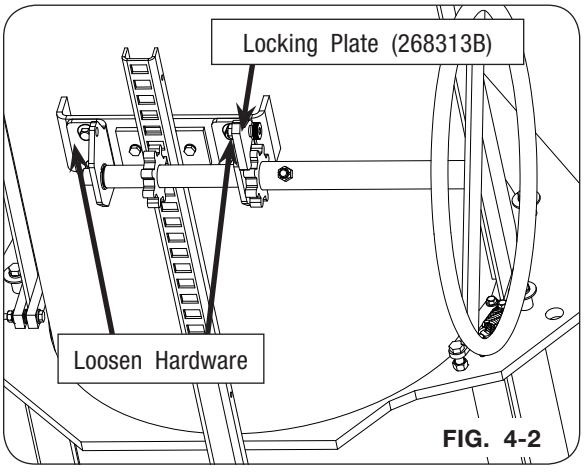


FIG. 4-2

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. 4-3)

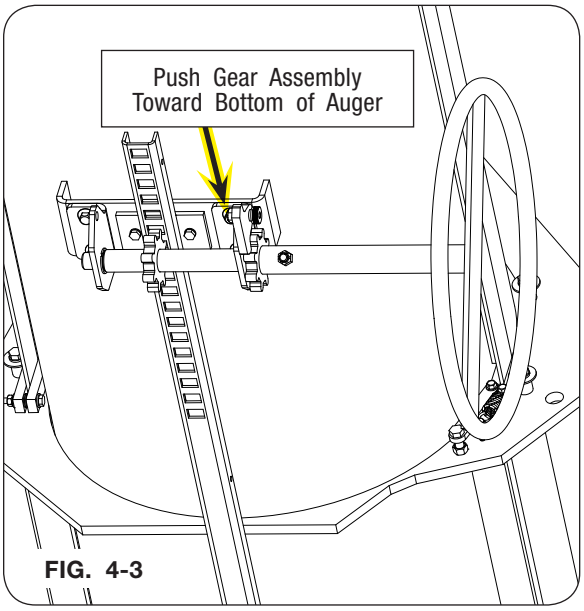
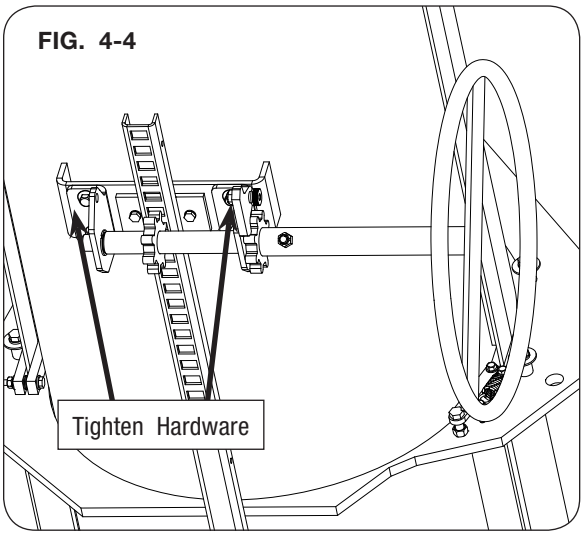


FIG. 4-3

5. Tighten hardware loosened in step 4. (FIG. 4-4)

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

FIG. 4-4



Auger Driveline

Bearings

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

Driveline Replacement

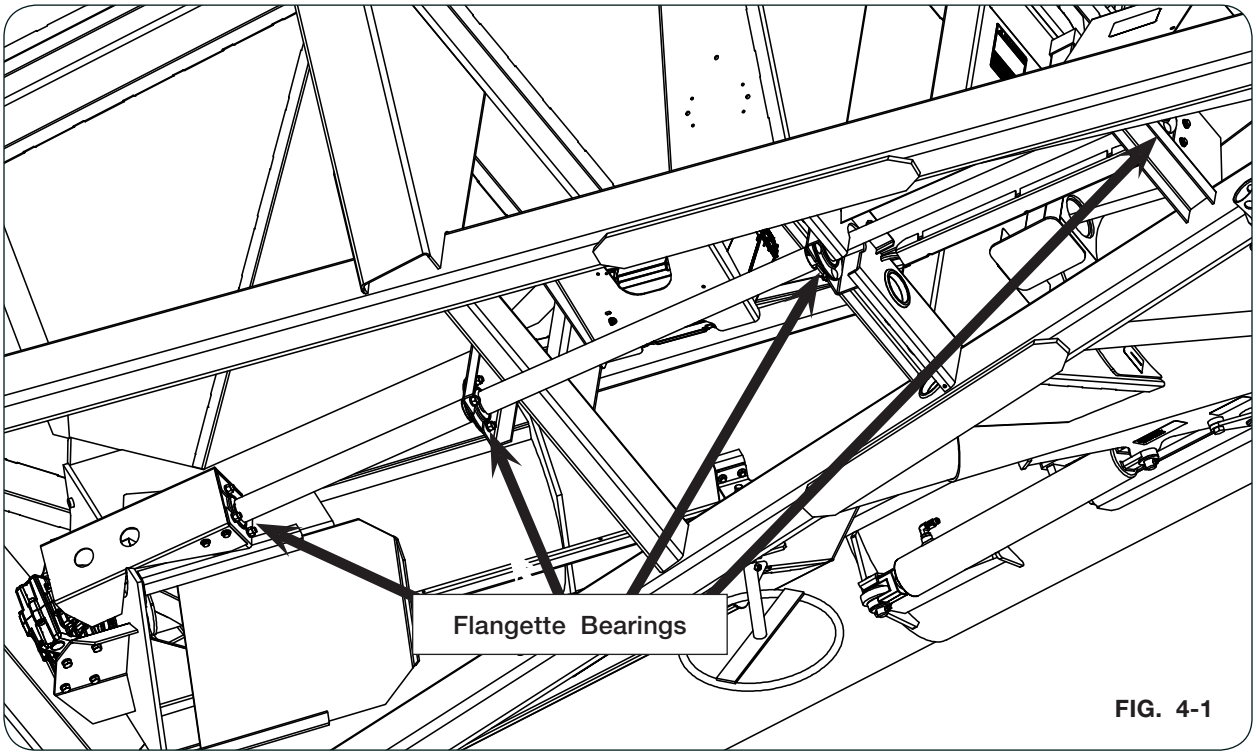


FIG. 4-1

1. Park the empty cart on a firm, level surface. Block the wheels or tracks on the cart 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.

2. Loosen the setscrews (9399-071) on all flangette bearings (9003920) (Fig. 4-1).

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. 4-2).

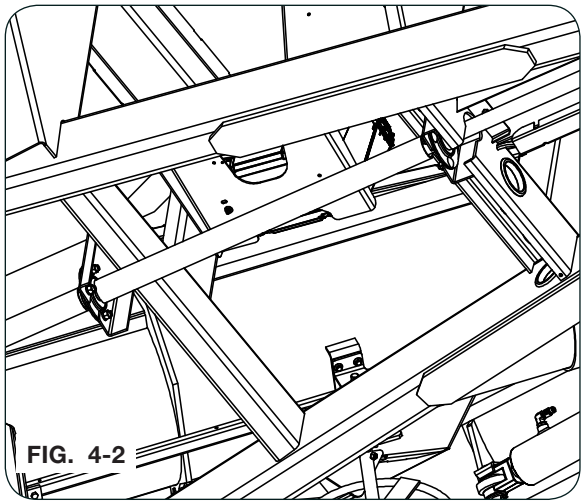


FIG. 4-2

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.

Auger Driveline (continued)

Driveline Replacement (continued)

6. Remove bearings, bearing mounts, universal joint cover, PVC driveshaft covers, and driveline cover, located behind the ladder, off the current driveshaft.

7. When installing new bearings (9003920) onto new driveshaft (9007718), assemble new 25” PVC driveshaft cover (291555) between bearings near the gearbox, and new 36” PVC driveshaft cover (291554) between bearings behind the hitch driveline cover. (FIG. 4-3)

NOTE: Ends of driveshaft are symmetrical.

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

9. 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.

10. 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)

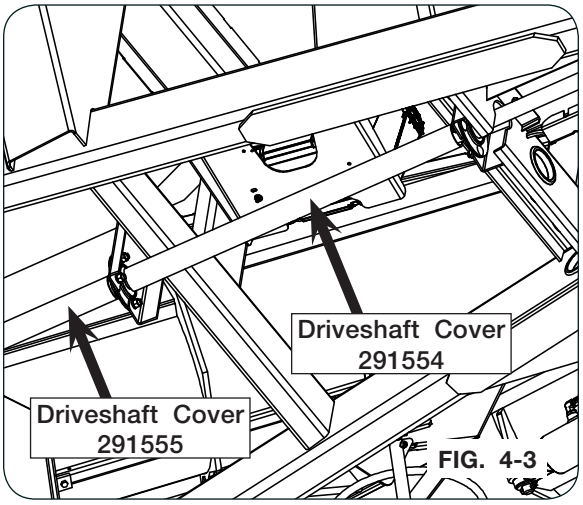
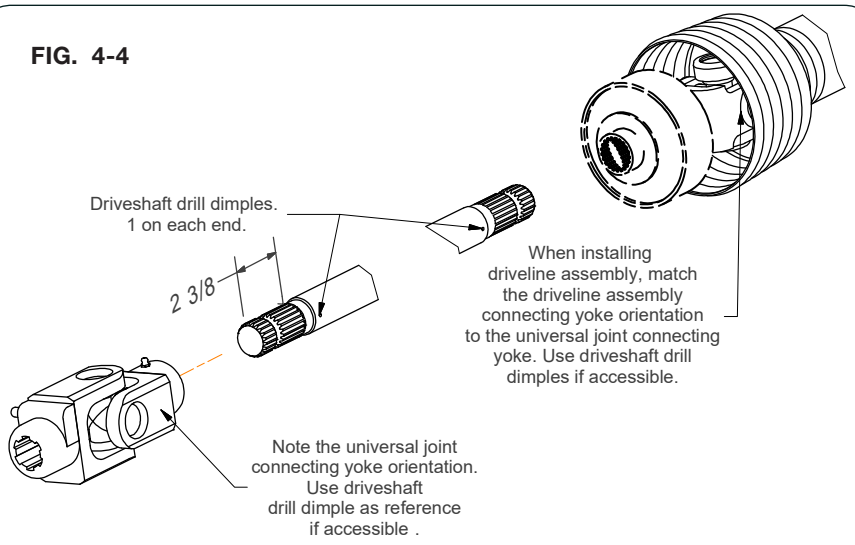


FIG. 4-3

FIG. 4-4



Auger Driveline (continued)

Driveline Replacement (continued)

11. Tighten all flangette mounting hardware.

12. With bearing mounting hardware loosely 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)

13. 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: Grease gearbox and universal joint before installing universal joint cover.

14. Attach new universal joint cover (290720B) to the bearing mount in front of the gearbox using original 3/8”-16UNC capscrews and 5/16”-18UNC weld nuts. Review to ensure PVC driveshaft covers and driveline cover, located behind the ladder, are in place and hardware tightened prior to operation.

15. Apply thread lock on bearing setscrews and tighten.

16. Test run driveline. Check for noise and/or vibration and address immediately.

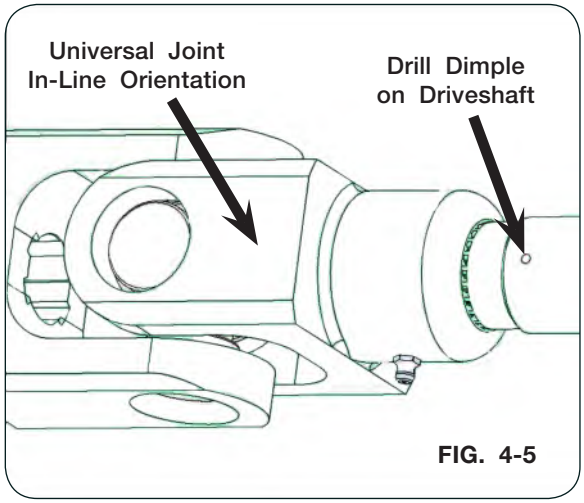


FIG. 4-5

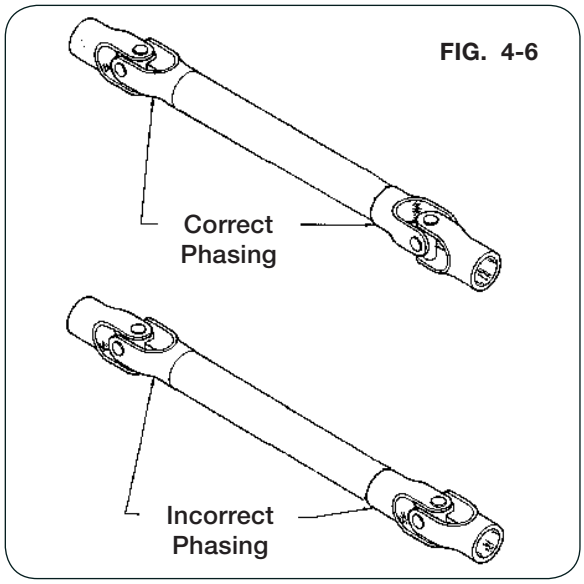


FIG. 4-6

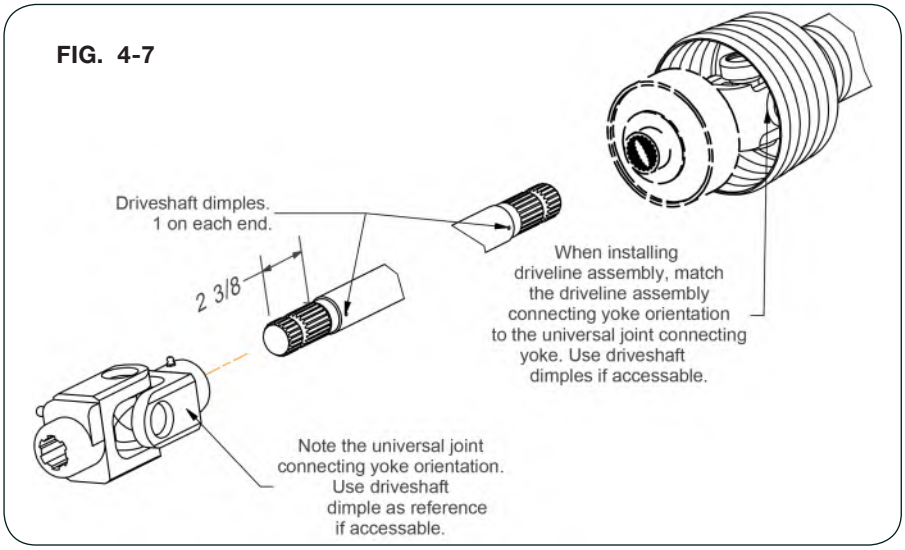


FIG. 4-7

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 flat washers 3/8” (9405-076), three lock washers 3/8” (9404-021) and hex nuts 3/8”-16UNC (9394-006) which secures the hanger bearing weldment (281502B) 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), lock washers 5/8” (9404-029) and hex nuts 5/8”-11UNC (9394-014) which secures the drive dog to the auger as shown in Fig. 18.

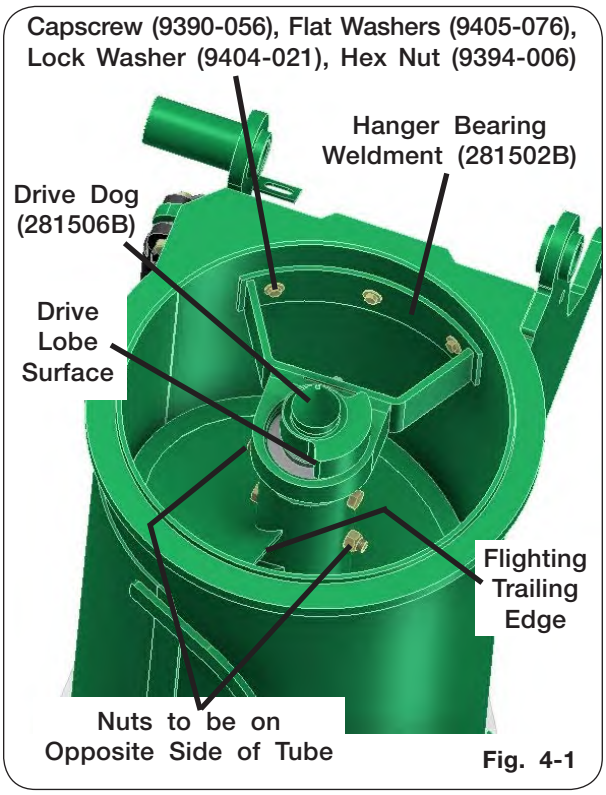


Fig. 4-1

Auger System (continued)

Lower Auger Assembly

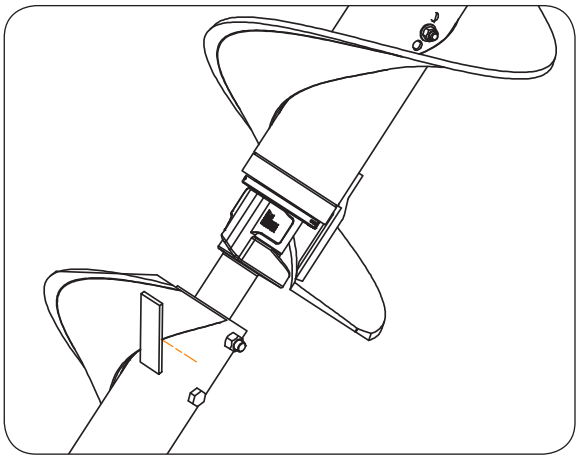
1. When installing the coupler into the auger pipe, the lower auger flighting should be set with the driving surface of the drive lobe at a 11:00 position and the flighting edge at a 12:00 position when looking from the top down towards the gearbox, see figure 4-2. The upper auger flighting should be set with the drive pin at a 9:00 position and the end flighting will be at an approximate 12:00 position when looking into the upper auger, see figure 4-3.

   Lower Auger: Assemble the drive dog weldment (281506B) and hanger bearing weldment (281502B) 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), lock washers (9404-029) and hex nuts 5/8"-11UNC (9394-014), installed opposite of each other, as shown in Fig. 4-1.

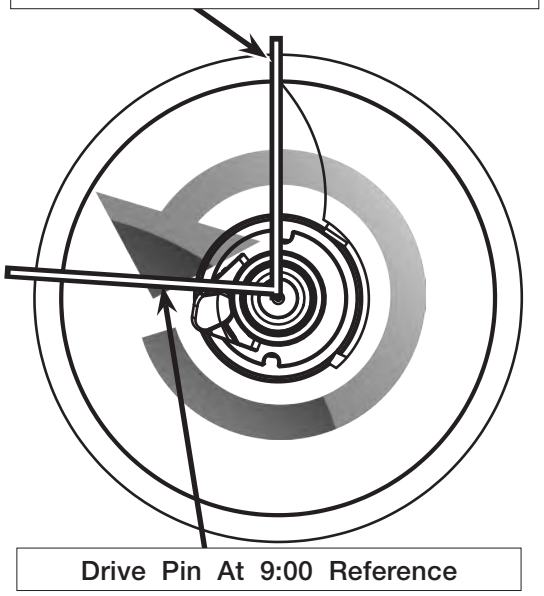
NOTE: Position of the drive dog weldment maintains correct timing and efficiencies of the upper and lower auger flightings.

2. Using a safe lifting device rated for a minimum of 700 lbs., install the lower auger sub-assembly 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 flat washers (9405-076), three lock washers (9404-021) and hex nuts 3/8"-16UNC (9394-006) (Fig. 4-1).

3. Once secure, tighten hanger bearing weldment hardware.

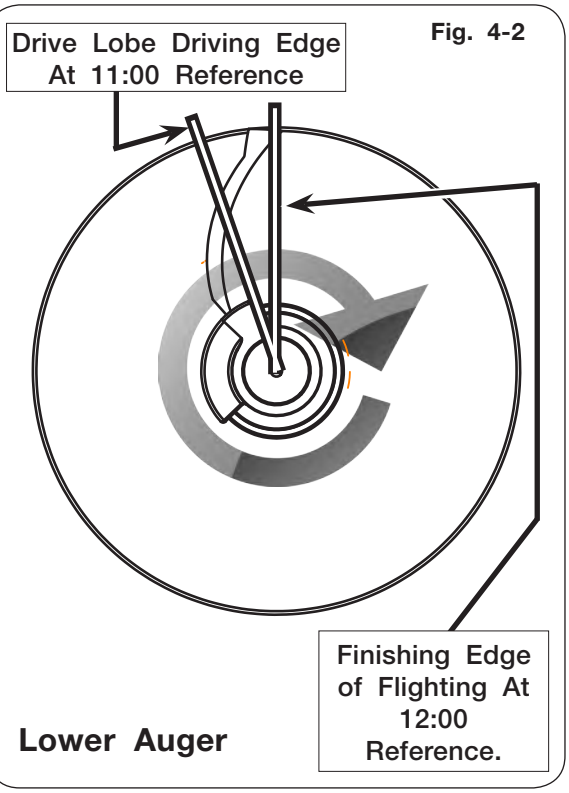


Upper Auger Fig. 4-3



LOOKING UP INTO THE UPPER AUGER FLIGHTING

Fig. 4-2



Lower Auger

Auger System (continued)

Lower Auger Assembly (continued)

4. 5-Pin Drive Bushing Weldment:
   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. 4-4 & Fig. 4-5)

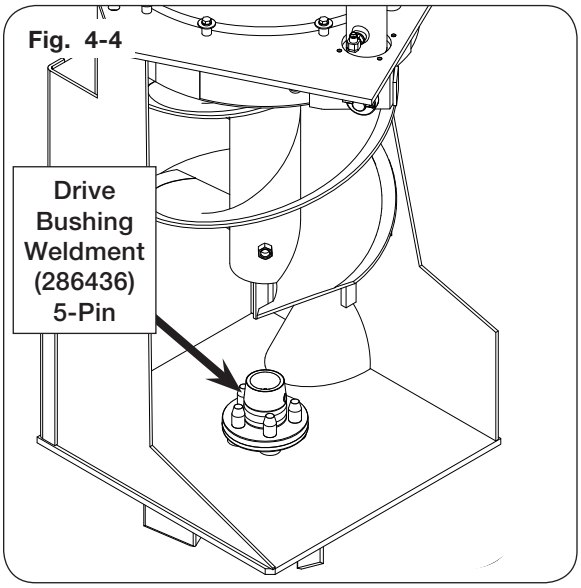
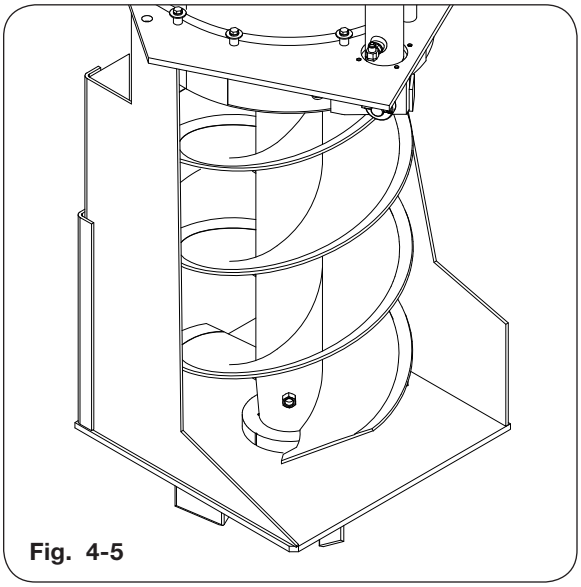


Fig. 4-4


Fig. 4-5

5. Raise the upper auger into position, checking upper drive dog engagment with lower auger drive dog.

6. Lower the upper auger. Lubricate the pillow block bearing (9004731) (Fig. 4-6). Check and remove any loose parts in the auger tube interior prior to start-up.

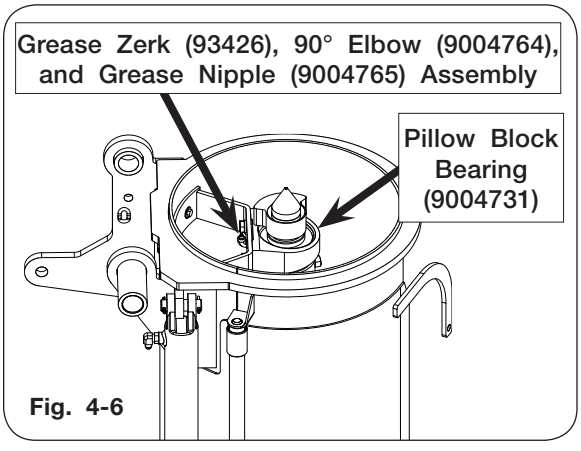


Fig. 4-6

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. Remove auger indicator cable from the bolt on bracket. 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.

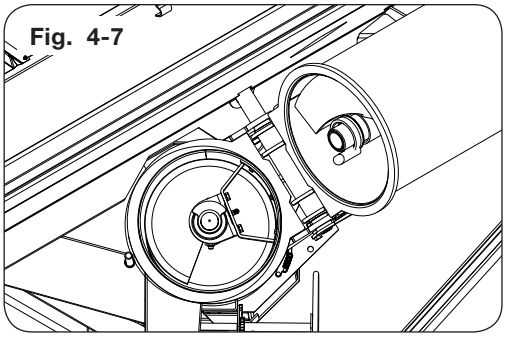


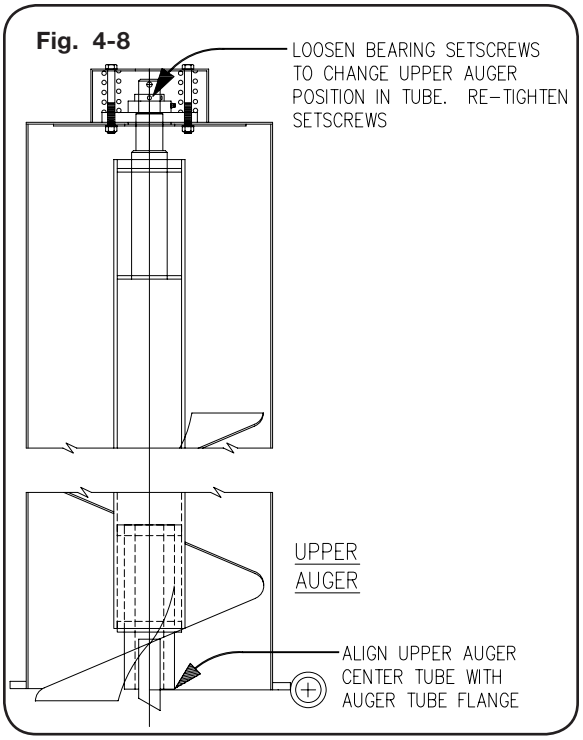
Fig. 4-7

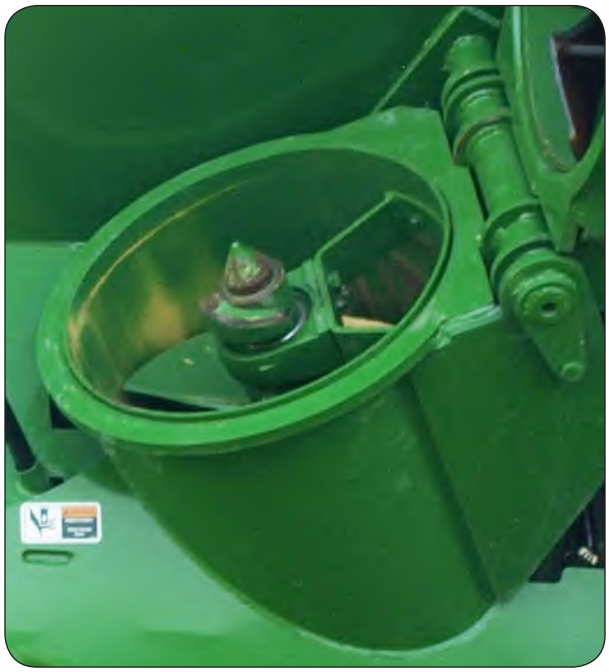
Auger System (continued)

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. Reattach indicator cable.
7. Connect auger and chute light.
8. Reinstall hydraulic cylinder and pivot pins. Clamp hoses into position and recheck connector tightness.

Fig. 4-8





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.**

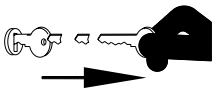


- **RELIEVE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE TRACTOR OPERATOR'S MANUAL FOR PROPER PROCEDURES.**
- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY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



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

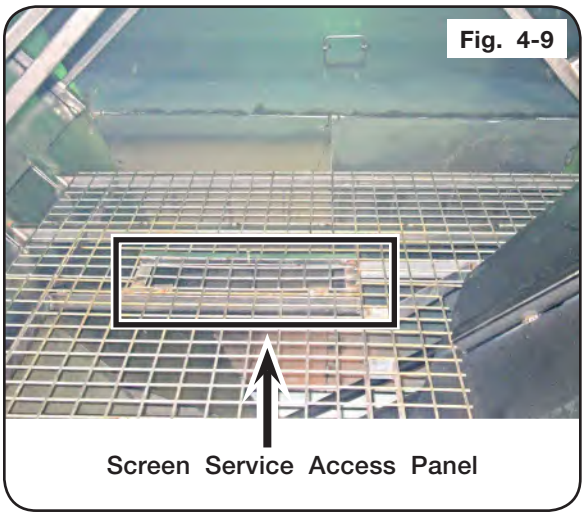
1. Park the empty grain cart on a firm, level surface and extend auger. Block the tires/tracks on the machine to keep it from moving. Unfold upper auger to make the flow door cylinder easier to access. If possible, close the flow door at least 8” from the fully open position. Relieve hydraulic pressure,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



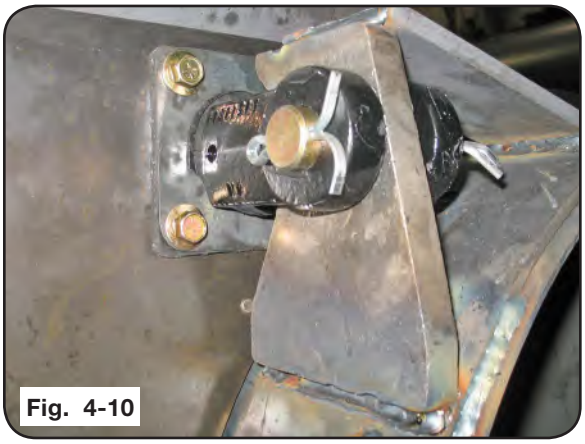
Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

2. On the inside of the cart, open the screen service access panel shown in Fig. 4-9.

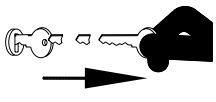


3. Remove the cotter pins from the lower cylinder pin then remove the pin. Then remove the four 3/8”-16UNC x 1” flange bolts holding on the gasket and gasket plate, shown in Fig. 4-10.



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. 4-11).

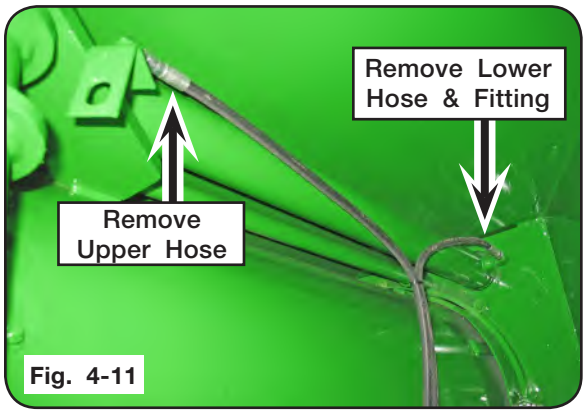
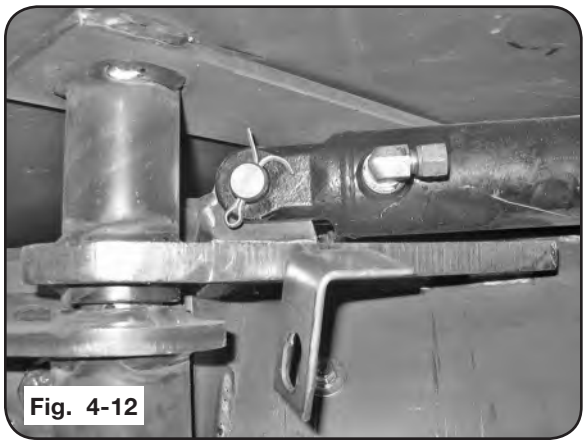


Fig. 4-11

7. Remove the cotter pins from the upper cylinder pin and remove pin (Fig. 4-12).


Fig. 4-12

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. 4-13).

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

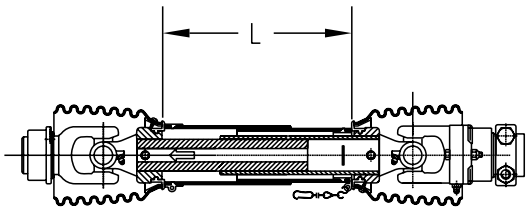


Fig. 4-13

2. Pull apart PTO telescoping shaft ends and measure lengths "T" & "C" (Fig. 4-14).

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

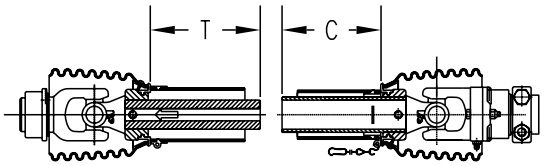


Fig. 4-14

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)

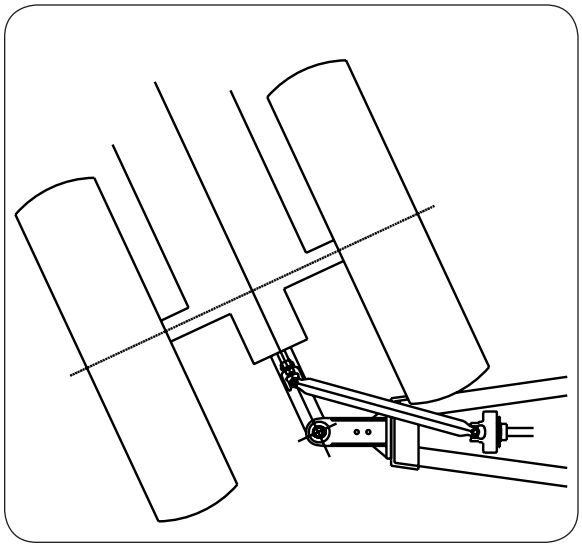
This is the maximum recommended extended length (LB).

Verify Telescoping PTO Shaft Length (continued)

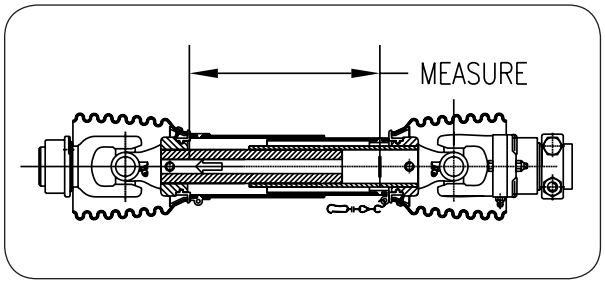
4. Hitch tractor drawbar to cart, ensuring that tractor and cart are on level ground and coupled as straight as practical.

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.



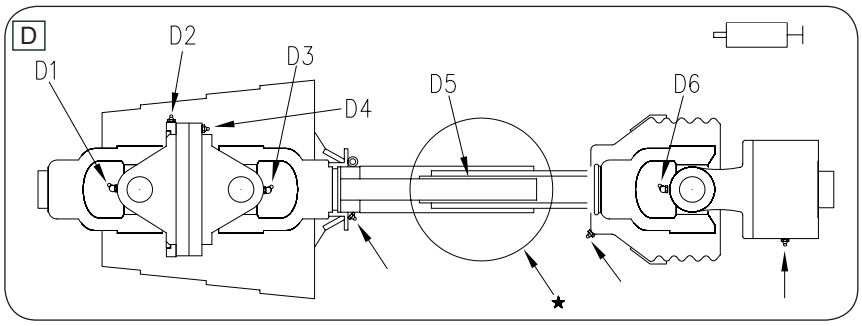
7. Measure length "L" from same points as used in step 1. This distance must be at least 1.5 inches greater than the distance measured in step 1. If necessary, adjust length of PTO shaft by cutting inner and outer plastic guard tubes and inner and outer sliding profiles by the same length. Round off all sharp edges and remove burrs before greasing and reassembling shaft halves.

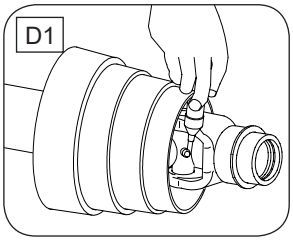


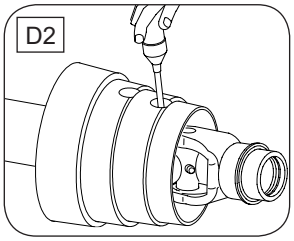
PTO Shaft and Clutch

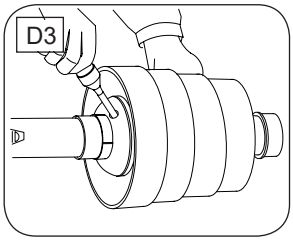
Lubrication (Figs. D1 - D6)

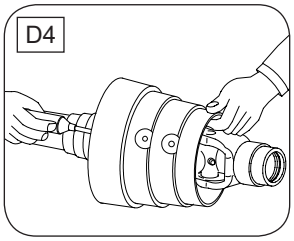
Lubricate with quality grease before starting work and every 8 operating hours. Clean and grease PTO driveshaft before each prolonged period of non-use. Molded nipples on the shield near each shield bearing are intended as grease fittings and should be lubricated every 8 hours of operation! Telescoping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

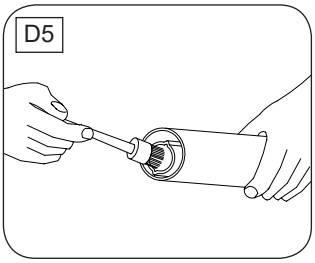


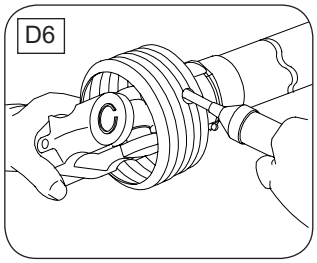












PTO Shaft and Clutch (continued)

Coupling the PTO Driveshaft (Figs. E1 - E2)

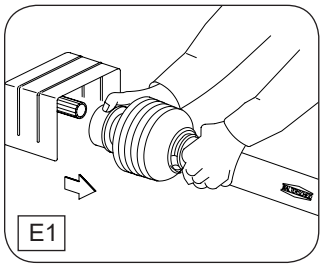
Clean and grease the PTO and implement input connection (IIC)

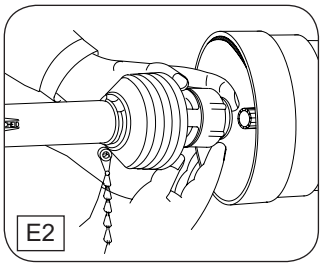
AS-Lock

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.





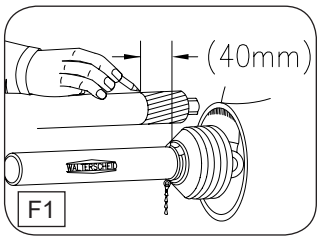
⚠ WARNING

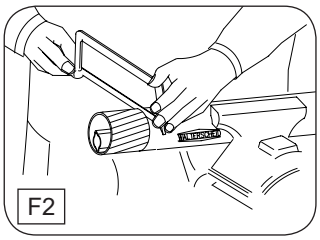
- **CHECK TO INSURE ALL THE LOCKS ARE SECURELY ENGAGED BEFORE STARTING WORK WITH THE PTO DRIVESHAFT.**

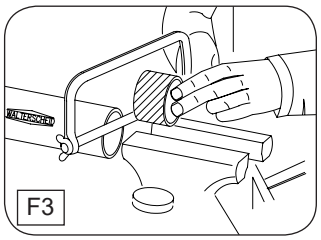
Length Adjustment (Figs. F1 - F4)

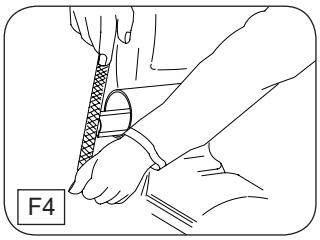
NOTE: Maximum operating length LB. (Refer to "Verify Telescoping PTO Shaft Length" for LB length.)

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.









⚠ WARNING

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

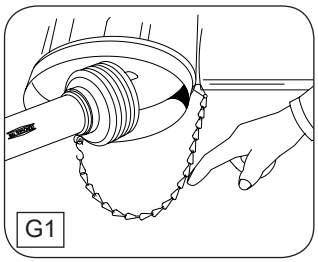
PTO Shaft and Clutch (continued)

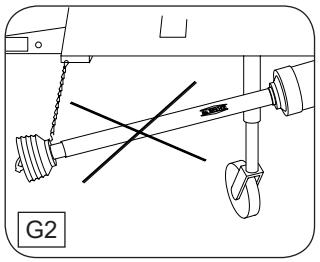
Chains (Figs. G1 - G3)

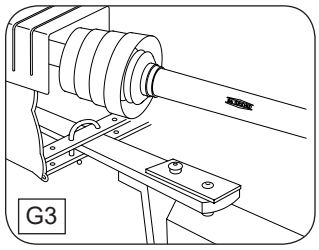
NOTE: The chain is intended to prevent the shield from rotating against non-moving parts and thereby preventing shield damage. A properly installed chain will increase the service life of the shield.

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

2. The PTO driveshaft must not be suspended from the chain.







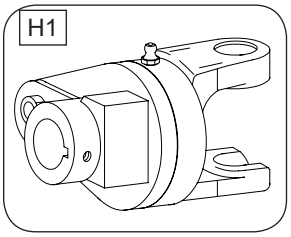
Shear Bolt and Friction Clutches (Figs. H1 - H2)

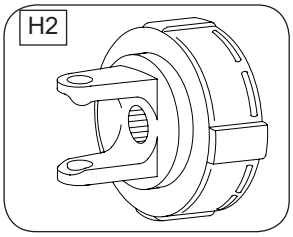
1. **Shear bolt clutches:**
   When the torque is exceeded, power flow is interrupted due to the bolt shearing. The torque is re-established by replacing the broken shear bolt. Use only the bolt specified in the Operator's Manual for replacement. Remove locking screw.

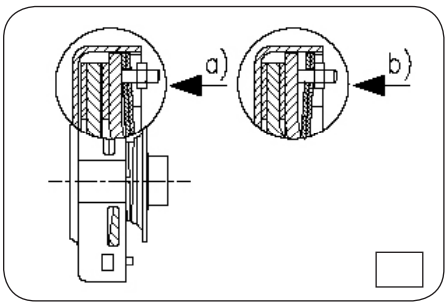
   Friction clutches:
   When overload occurs, the torque is limited and transmitted constantly during the period of slipping. Short-duration torque peaks are limited.

   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.







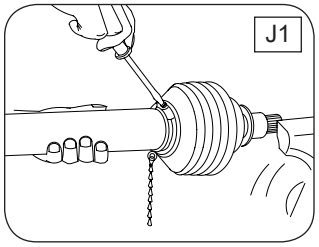
IMPORTANT

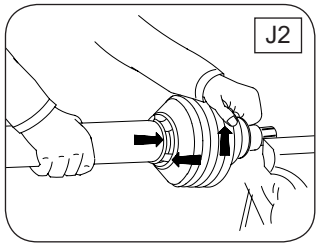
- *Avoid extended and frequent slippage of overload clutches.*

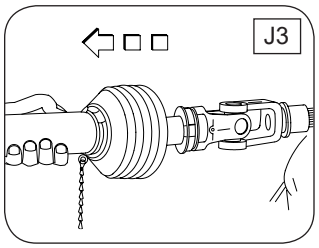
PTO Shaft and Clutch (continued)

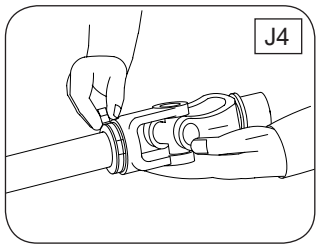
To Dismantle Guard (Figs. J1 - J4)

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



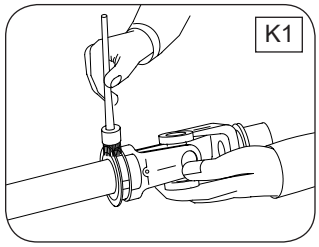


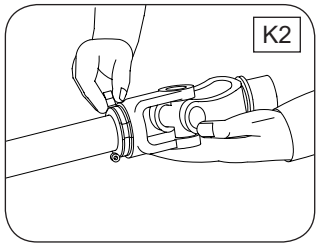


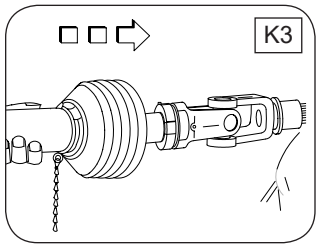


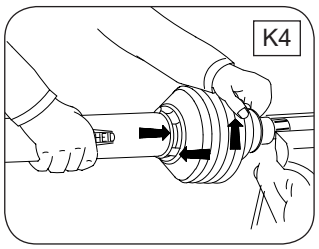
To Assemble Guard (Figs. K1 - K5)

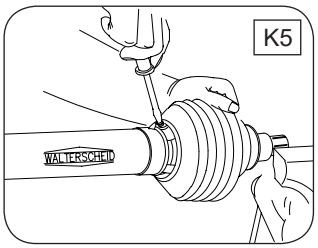
1. Grease yoke groove and inner profile tube.
2. Fit bearing ring in groove with recesses facing profile tube.
3. Slip on half-guard.
4. Turn cone until it engages correctly.
5. Install locking screw.







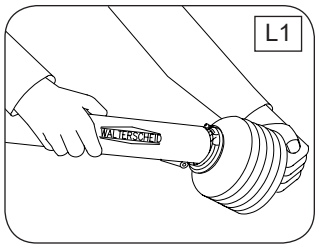


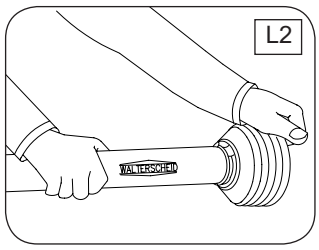


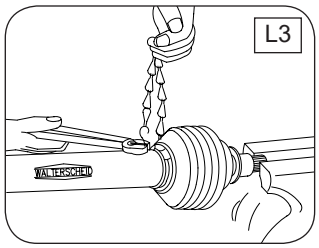
PTO Shaft and Clutch (continued)

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).



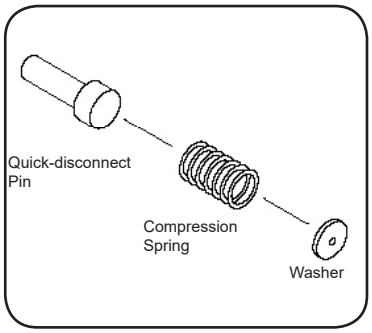


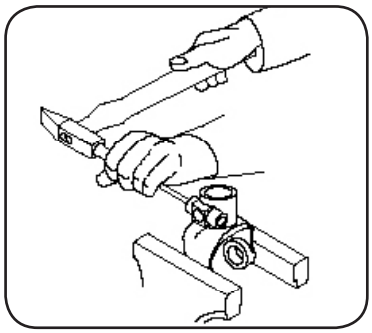


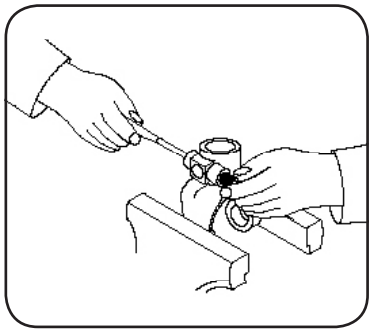
PTO Quick Disconnect

Quick Disconnect Pin

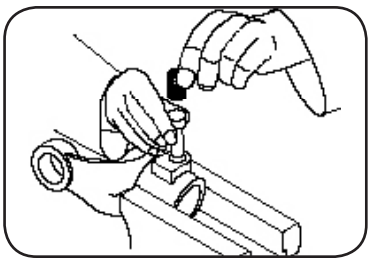
Using a drift punch and hammer, drive the pin towards the retaining washer to force the complete assembly out. Clear the edges of the retaining washer bore to accept the new one by removing the deformed metal from the last peening operation to hold the washer in place.

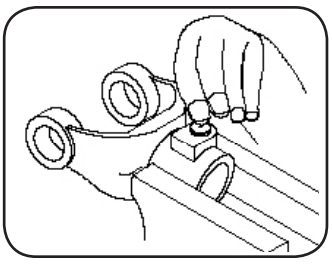


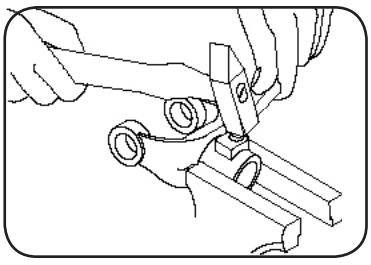




Insert quick-disconnect pin, compression spring and washer into hole, Holding the washer in place, peen the edges of the pore seat to retain the washer, spring and pin.



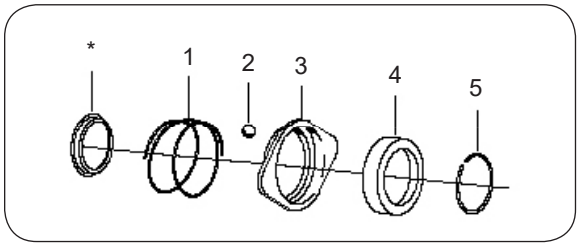




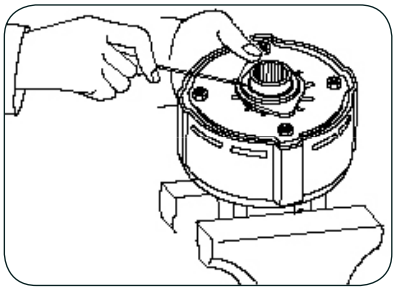
PTO Quick Disconnect (continued)

Quick Disconnect Disassembly

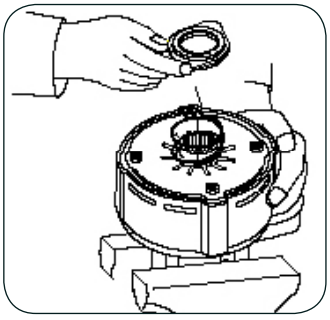
1. Compression Spring
2. Ball
3. Lock Collar
4. Back-up ring
5. Snap ring
   * Back-up ring
   * (For some clutch types, place additional back up ring first).



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

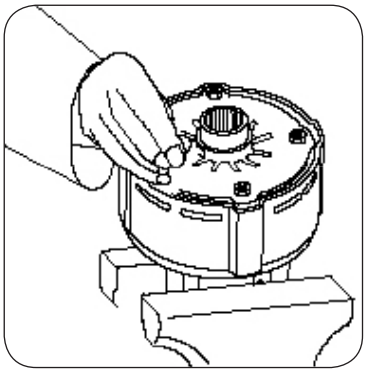


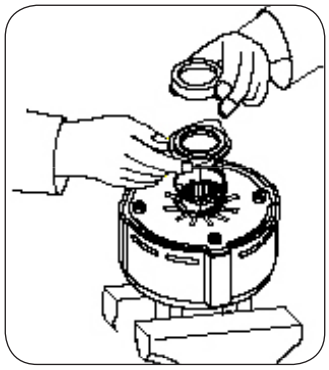
Remove back-up ring, lock collar, compression spring and balls.

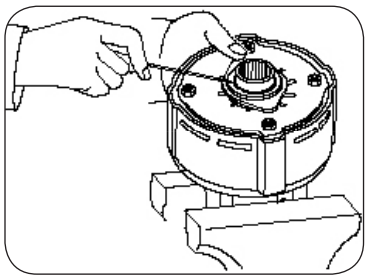


Quick Disconnect Assembly

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



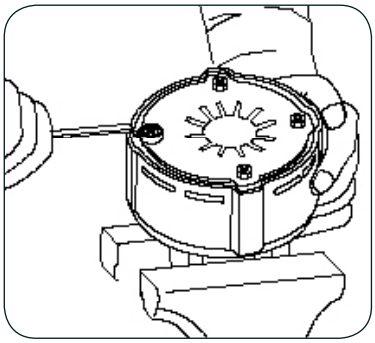


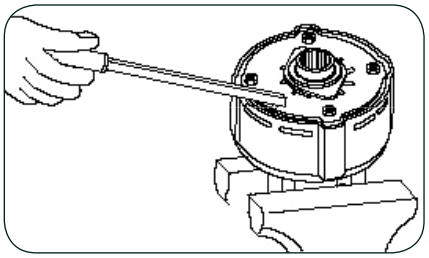


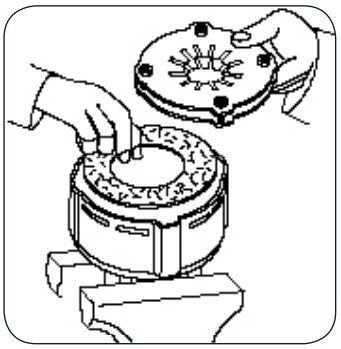
PTO Quick Disconnect (continued)

Clutch Disassembly

Tighten the four hex nuts (12) 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.



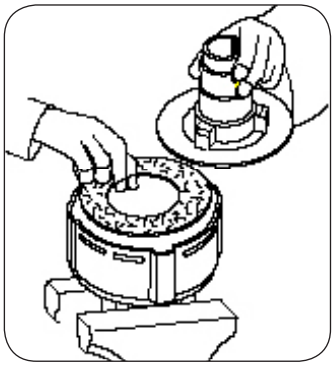


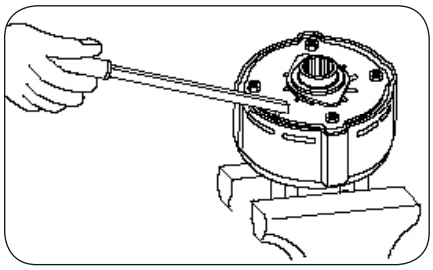


Clutch Assembly

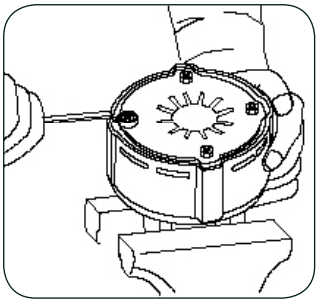
Place hub and friction disks into the clutch housing. Note: some items are only used in the four plate clutch. Next, compress the Belleville spring(s) to the pressure plate by tightening the four hex nuts and placing them into the clutch housing as illustrated.

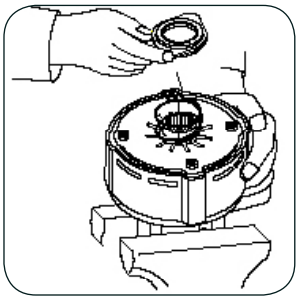
Use special tool #9002007 to bend the retaining lugs inward over the Belleville spring edges to secure the springs when you back the four hex nuts off. (Note: Wide lugs for one (1) Belleville spring, narrow lugs for two (2) Belleville springs).



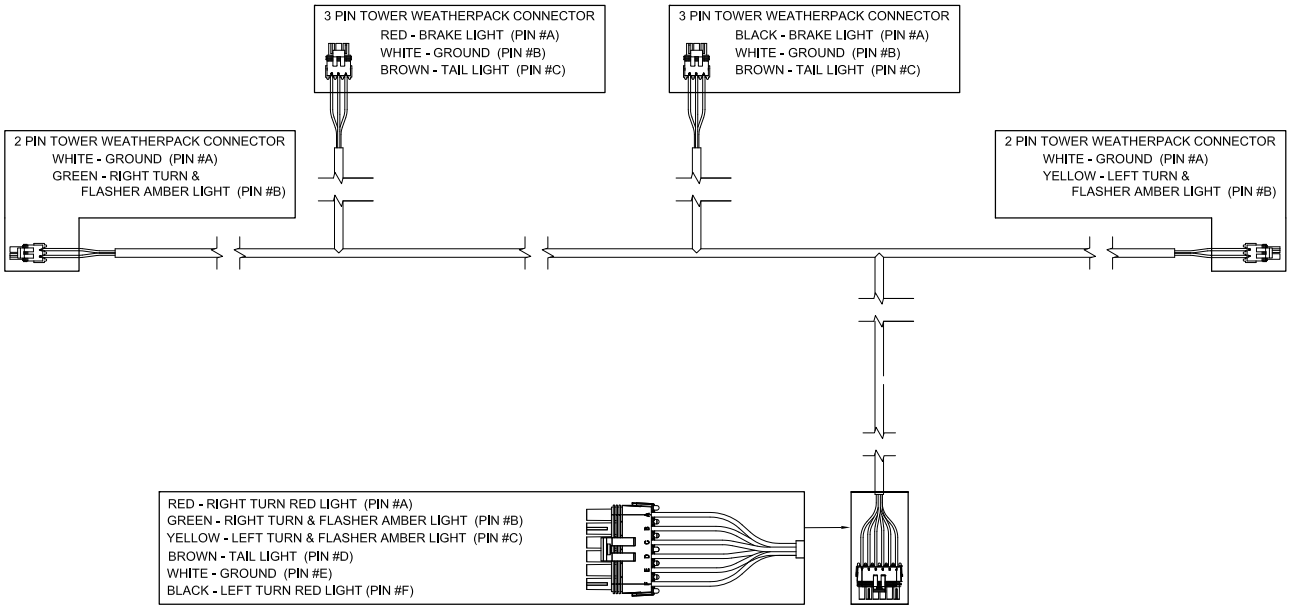


With the lugs in place, loosen the four hex nuts completely to the end of the threaded studs. Replace the quick-disconnect assembly.

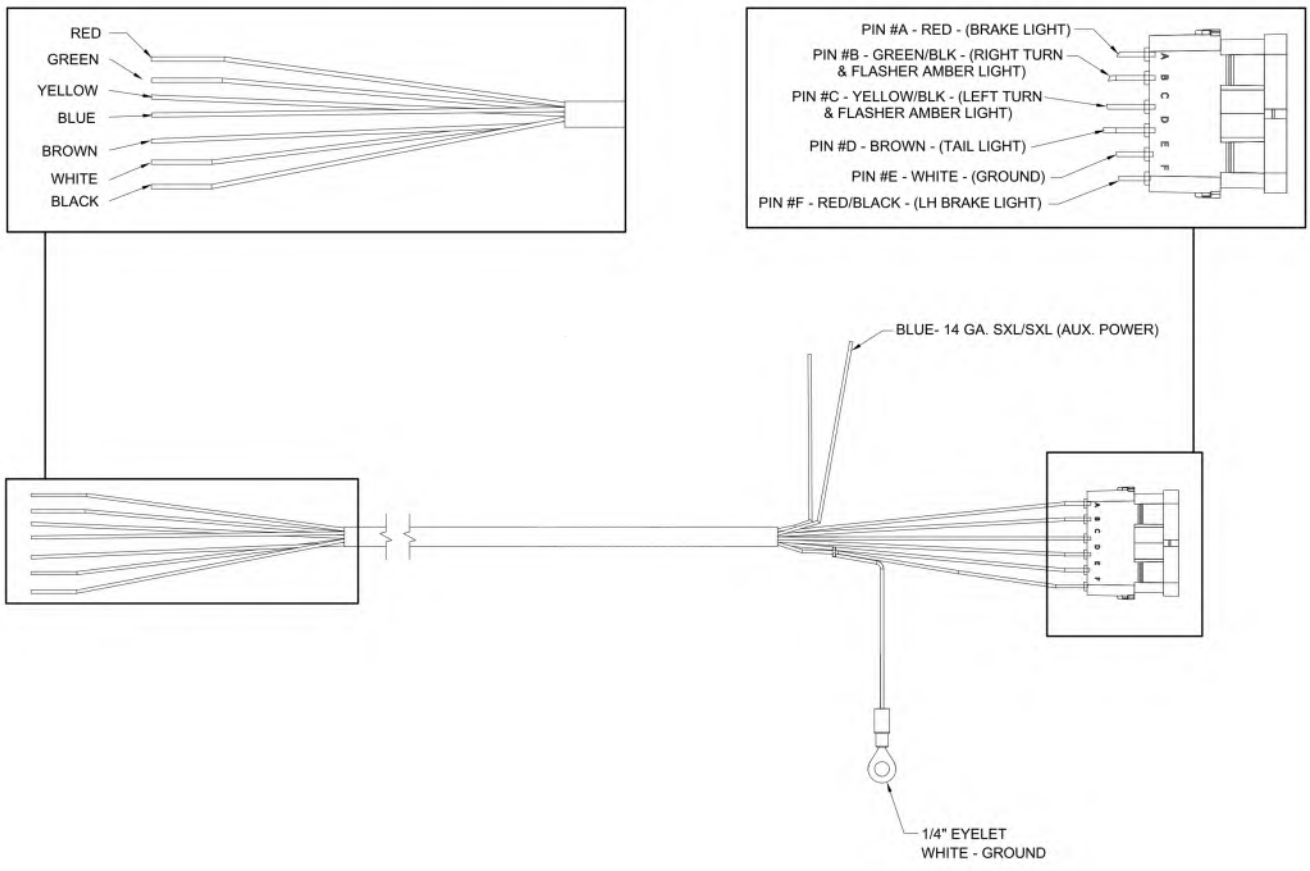




Electrical Schematic - Rear Wiring Harness #9003050

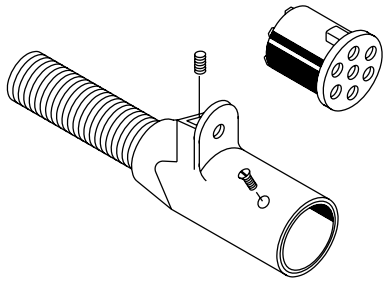


Electrical Schematic - Front Wiring Harness #9003981

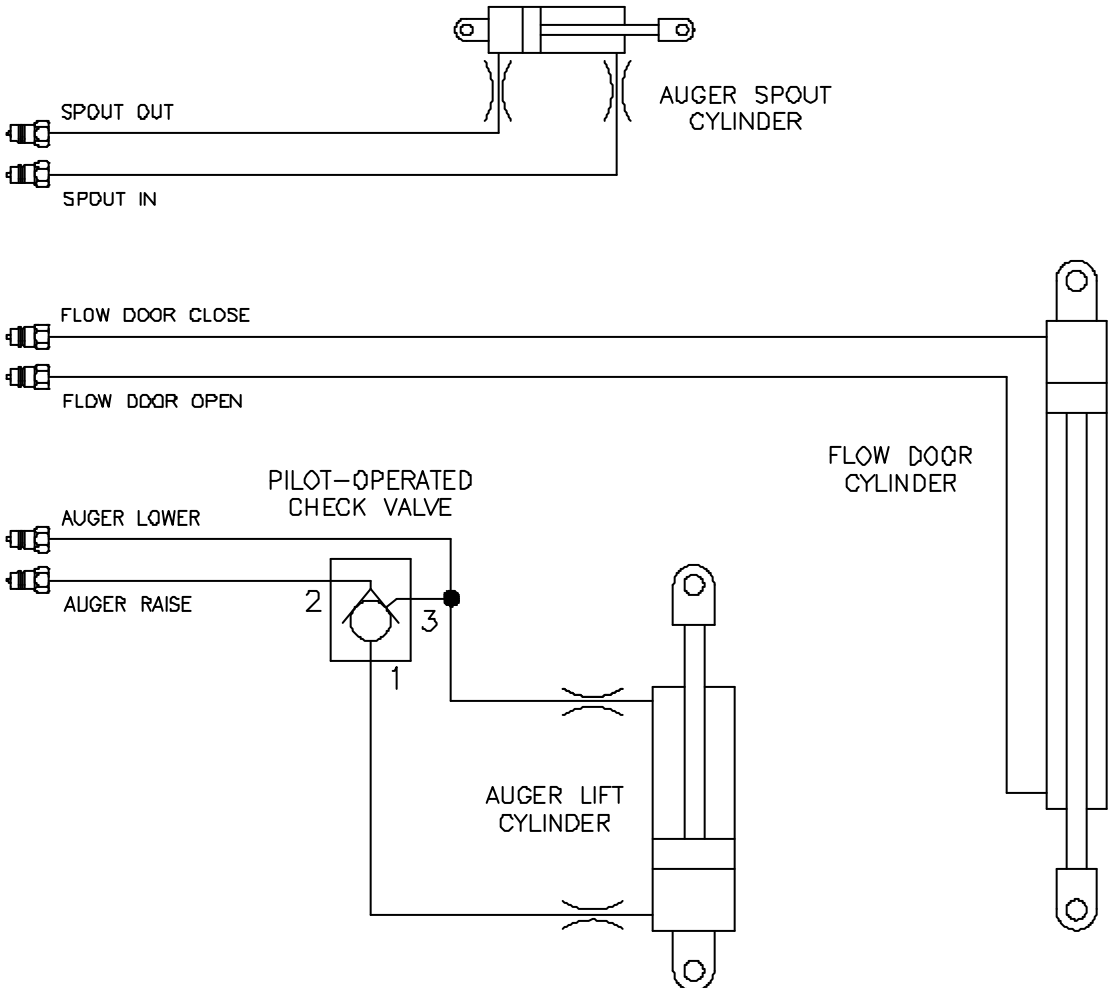


Electrical Schematic - Coupler #92450

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

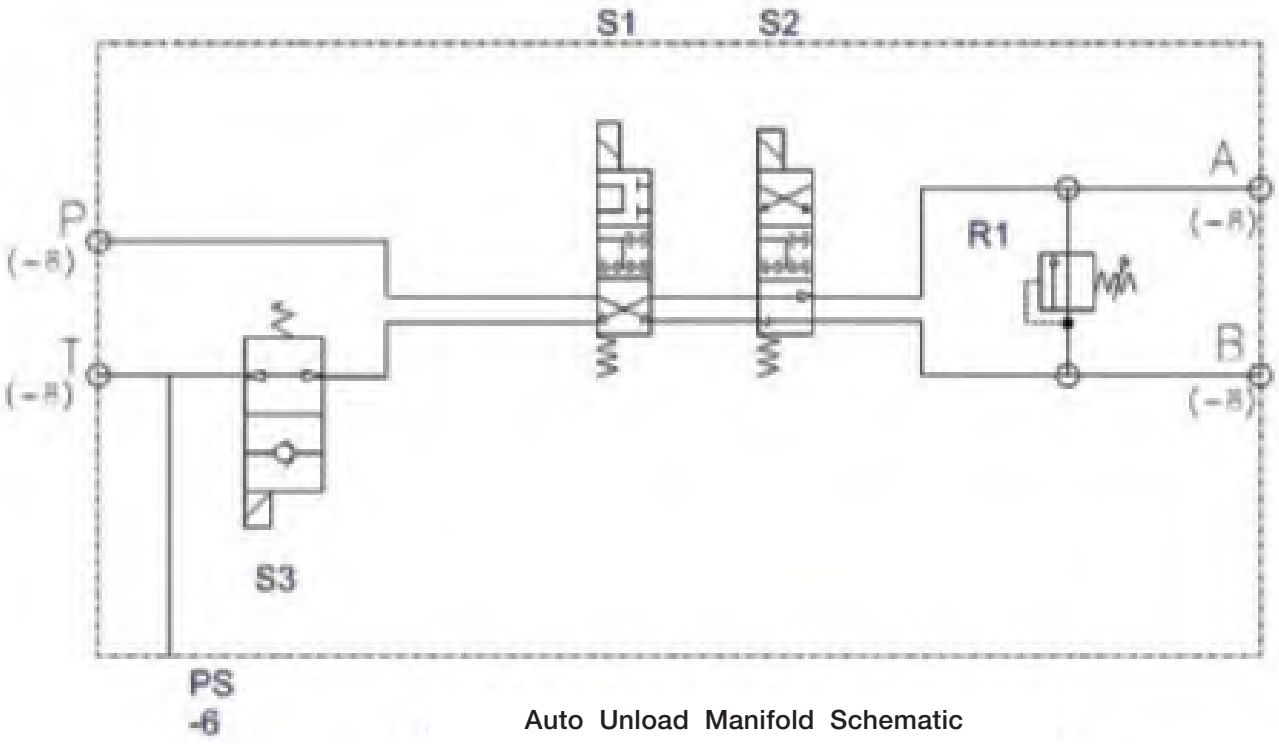


Hydraulic System Schematic



UM 520 Auto Unload Manifold Schematic

P	Hydraulic pressure from tractor
T	Hydraulic return to tractor tank
A	Flow door cylinder end that closes flow door when pressurized
B	Flow door cylinder end that opens flow door when pressurized
PS	Pressure switch
R1	Relief
S1	Solenoid 1
S2	Solenoid 2
S3	Solenoid 3



Auto Unload Manifold Schematic

Wheels and Tires

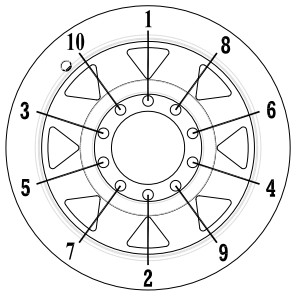
Wheel Nut Torque Requirements

⚠ 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

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

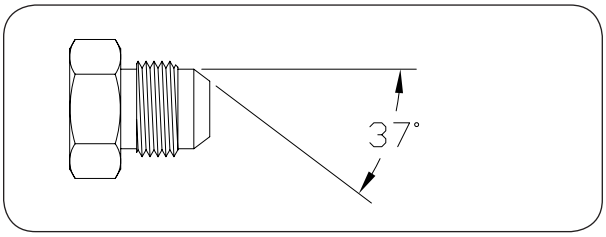
IMPORTANT

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

Hydraulic Fittings – Torque and Installation

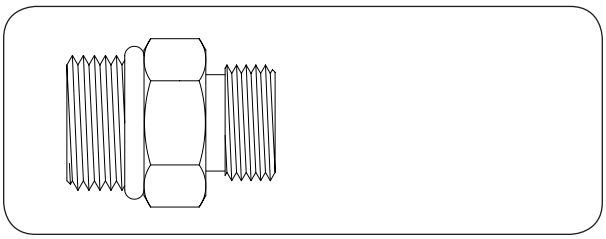
SAE Flare Connection (J. I. C.)

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.



Section IV
Maintenance

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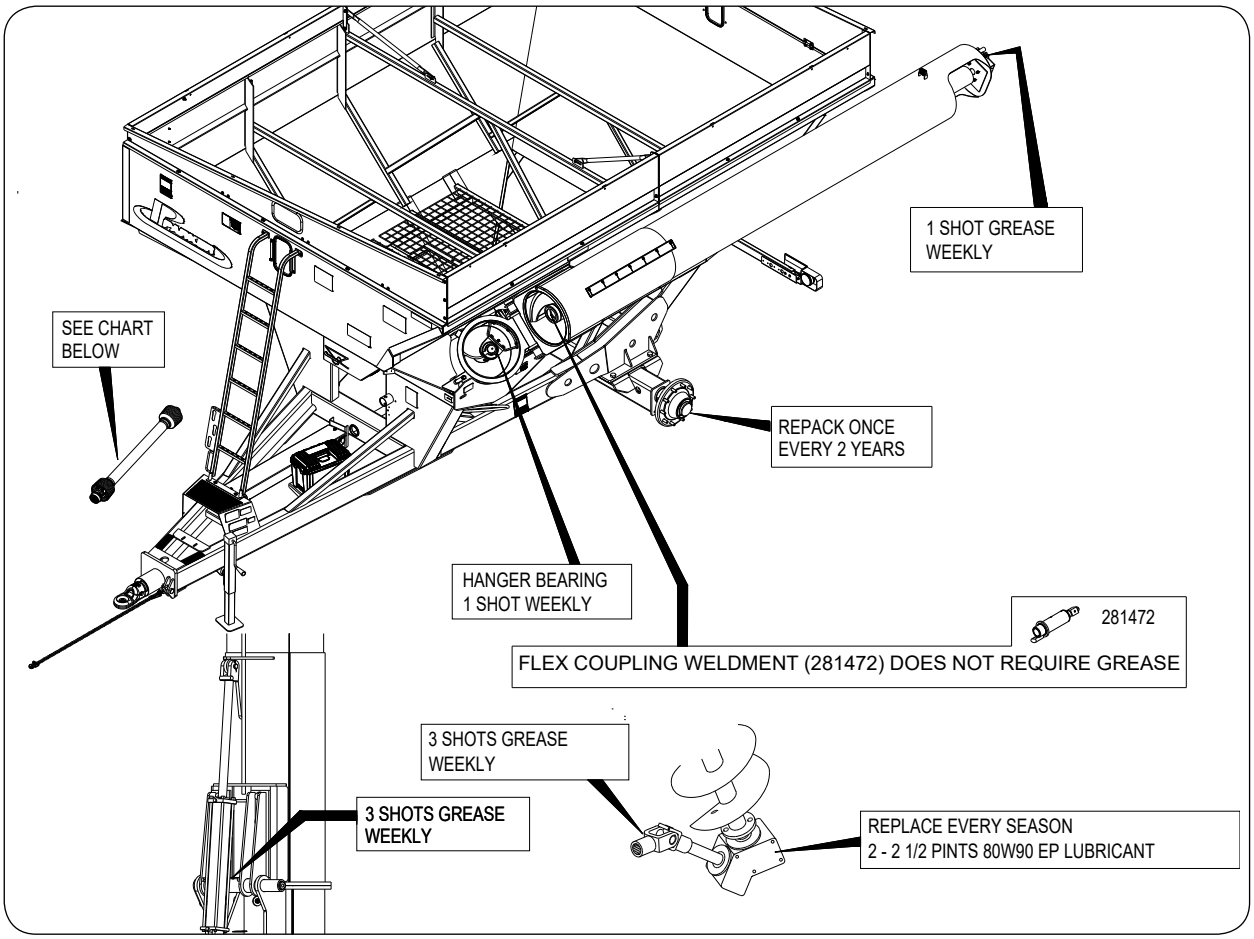
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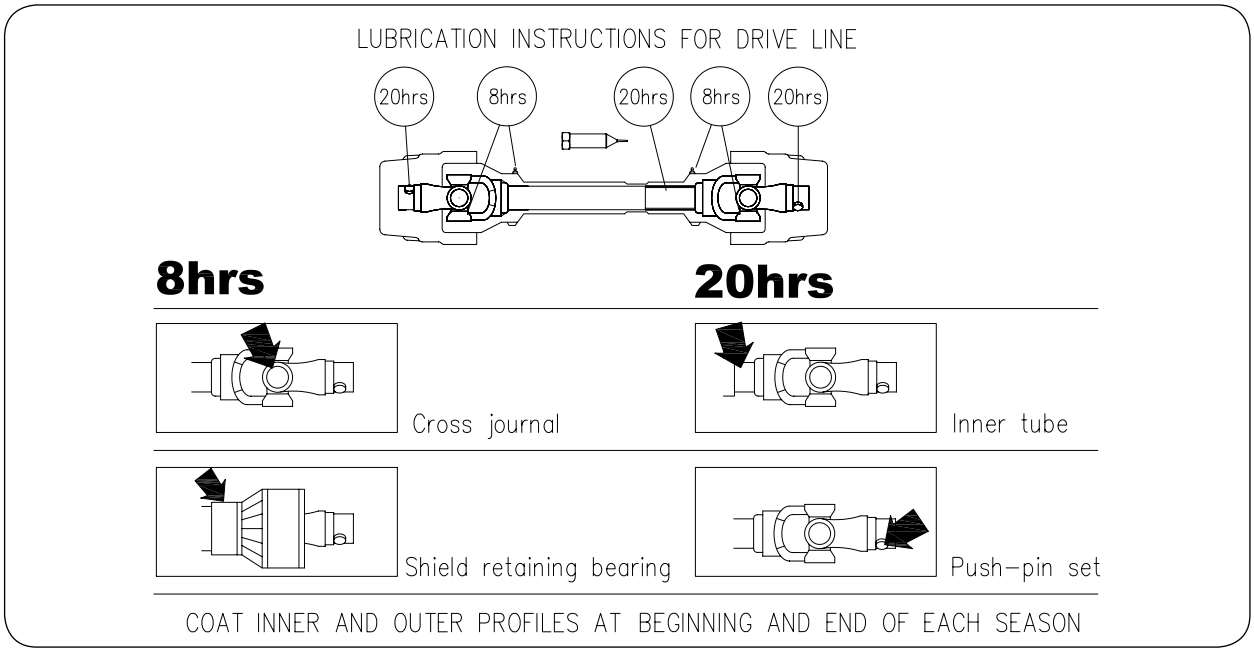
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FOR TARP INFORMATION, PLEASE REFER TO YOUR TARP MANUAL.
FOR SCALE INFORMATION, PLEASE REFER TO YOUR SCALE MANUAL.

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.





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 32-40 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.

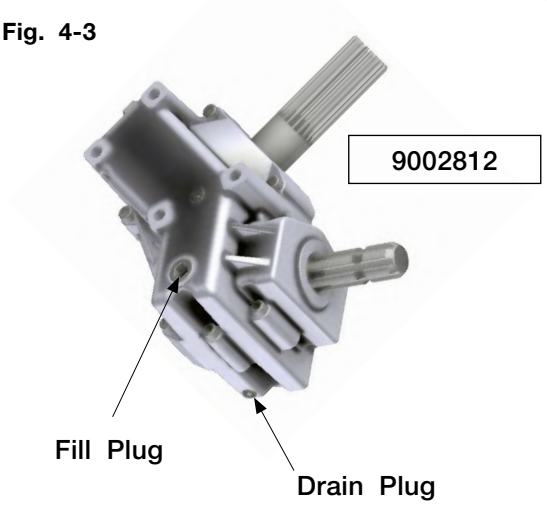
Gearbox Lubrication

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. 4-3



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.

Hydraulic System (continued)

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.

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.**

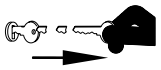
⚠ CAUTION

- **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

- **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. 4-4) 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.

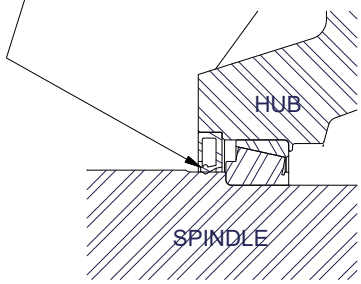


FIG. 4-4

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

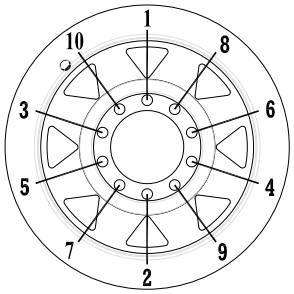
⚠ CAUTION

- **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 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 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
	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

*__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.

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

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 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 flat washers 3/8” (9405-076), three lock washers 3/8” (9404-021) and hex nuts 3/8”-16UNC (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), lock washers 5/8” (9404-029) and hex nuts 5/8”-11UNC (9394-014) securing the drive dog to the auger as shown in FIG. 4-5.

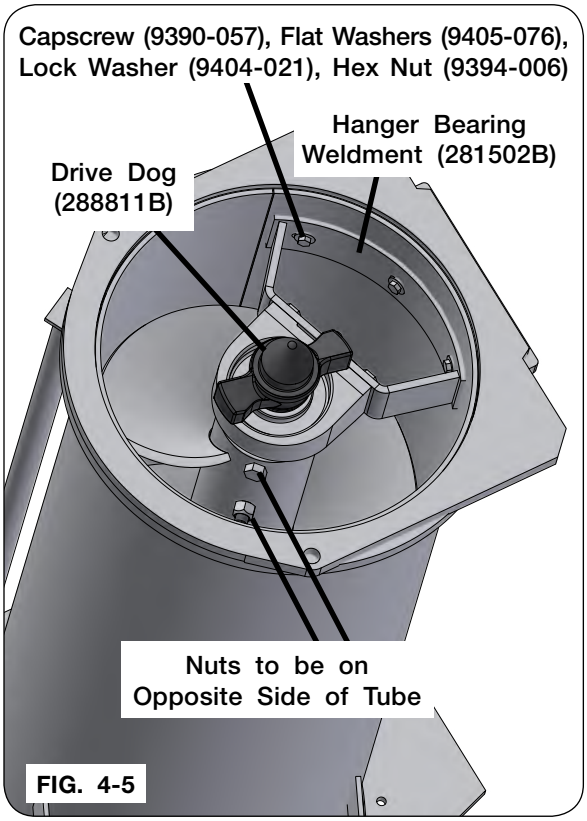


FIG. 4-5

Lower Auger Replacement With Double Lobe Drive Dog

1. Slide drive dog assembly out of old flighting.

2. The replacement auger is factory balanced. Using a safe lifting device rated at least 700 lbs., 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. Insert 5/8”-11UNC hardware into hanger bearing assembly and the auger tube.

5. Torque 5/8”-11UNC hardware to 120 ft.-lbs.

6. 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.

Auger System (continued)

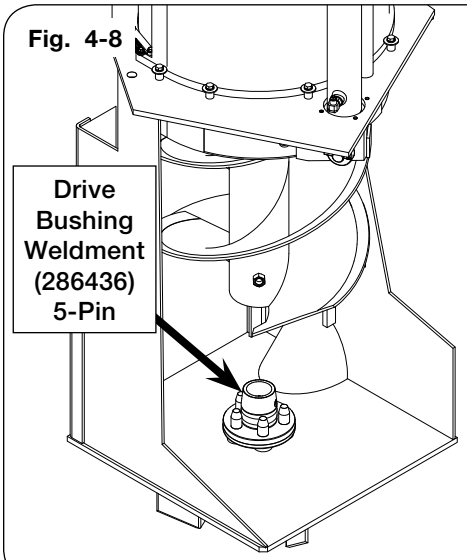
Lower Auger Replacement With Double Lobe Drive Dog (continued)

7. Align auger end with the five pin drive bushing and securely engage together, see FIG. 4-8 and 4-9. 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.

8. 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. 4-8



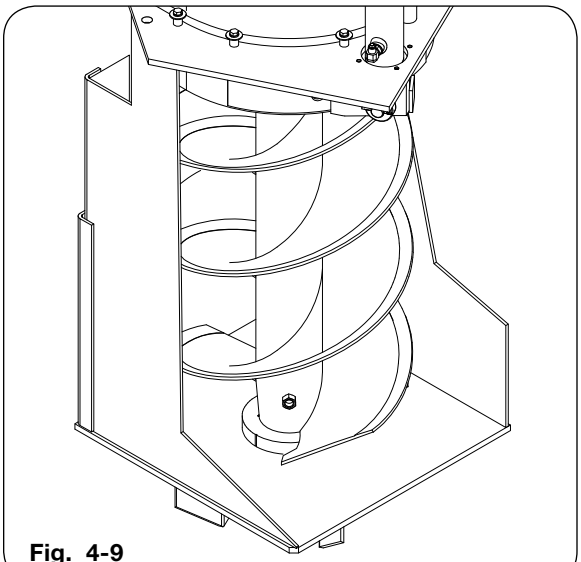


Fig. 4-9

9. Lower the upper auger assembly, turn off tractor and remove key. Slowly turn lower auger by hand while applying grease to the hanger bearing. Torque hanger bearing hardware. 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. 4-10)

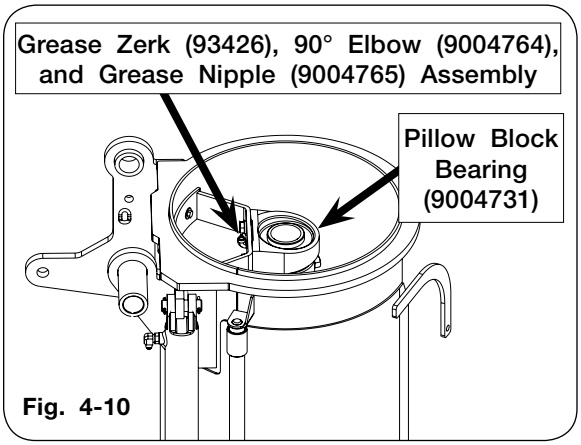
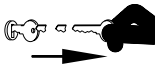


Fig. 4-10

Auger System (continued)

Lower Auger Replacement With Double Lobe Drive Dog (continued)

10. 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.



Lower Auger Replacement With Single Lobe Drive Dog

1. Slide drive dog assembly out of old flighting.

2. The replacement auger is factory balanced. Using a safe lifting device rated at least 700 lbs., 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. (FIG. 4-6 and 4-7)

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.

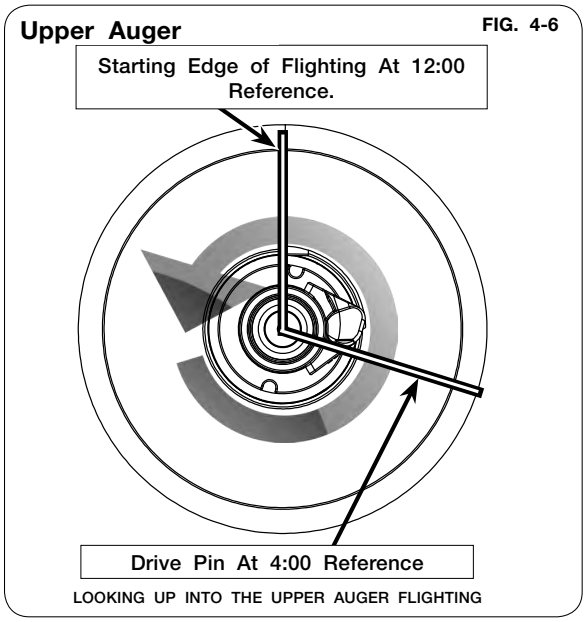


FIG. 4-6

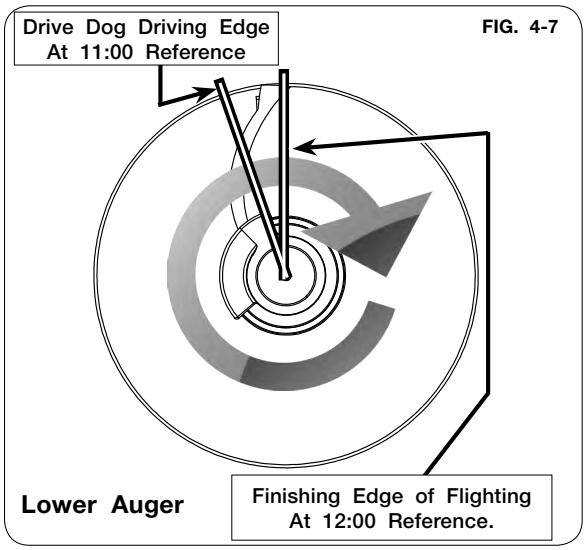


FIG. 4-7

Auger System (continued)

Lower Auger Replacement With Single Lobe Drive Dog (continued)

8. Align auger end with the five pin drive bushing and securely engage together, see FIG. 4-8 and 4-9. 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.

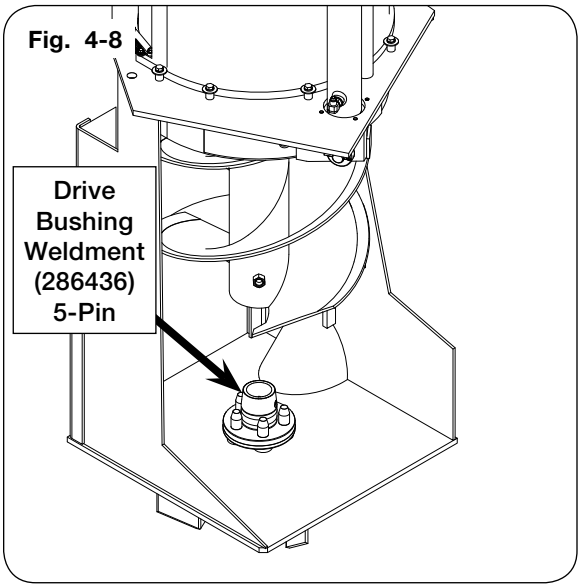
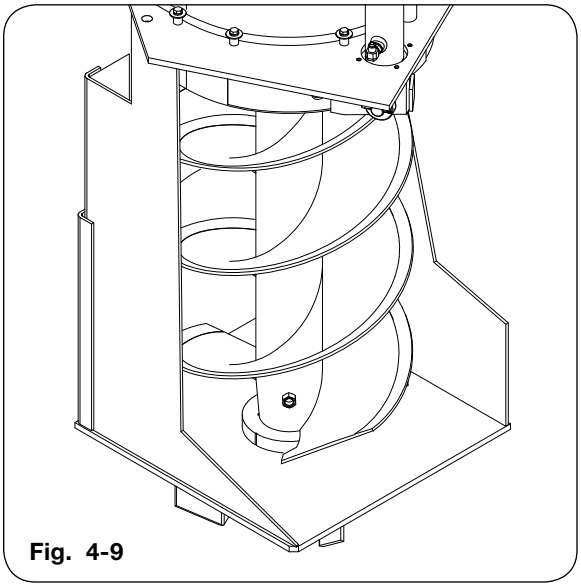
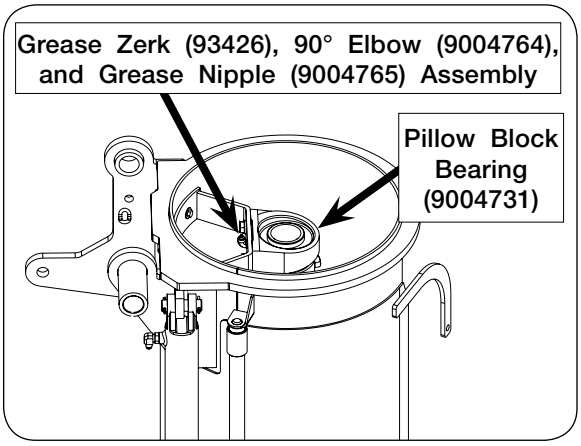


Fig. 4-8


Fig. 4-9

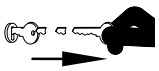
10. Lower the upper auger assembly, turn off tractor and remove key. Slowly turn lower auger by hand while applying grease to the hanger bearing. Torque hanger bearing hardware. Grease until the grease purges out and around the drive dog housing. Apply a light coat of surface grease to drive dog conical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



Auger System (continued)

Lower Auger Replacement With Single Lobe Drive Dog (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.



Upper Auger Disassembly

1. Using a safe lifting device rated at a minimum of 2,000 lbs. and two 1,000 lbs. straps, support the upper auger assembly.

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. Remove auger indicator cable from the bolt on bracket. 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.

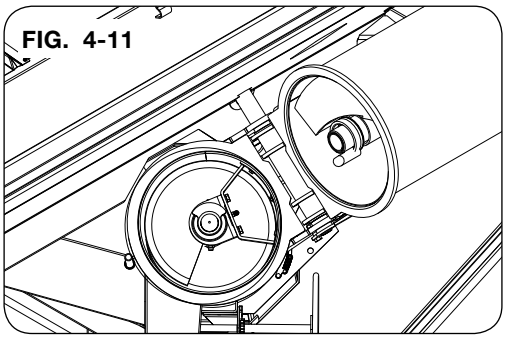


FIG. 4-11

Auger System (continued)

Upper Auger Assembly

1. Install upper bearing and spring assembly if previously removed.

2. Using a safe lifting device rated at a minimum of 2,000 lbs. and two 1,000 lbs. straps, 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. Tighten bearing setscrews and 5/16" x 2" machine screw

4. Lift upper auger assembly into position using a safe lifting device 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. Reattach indicator cable.

7. Connect auger and chute light.

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

FIG. 4-12

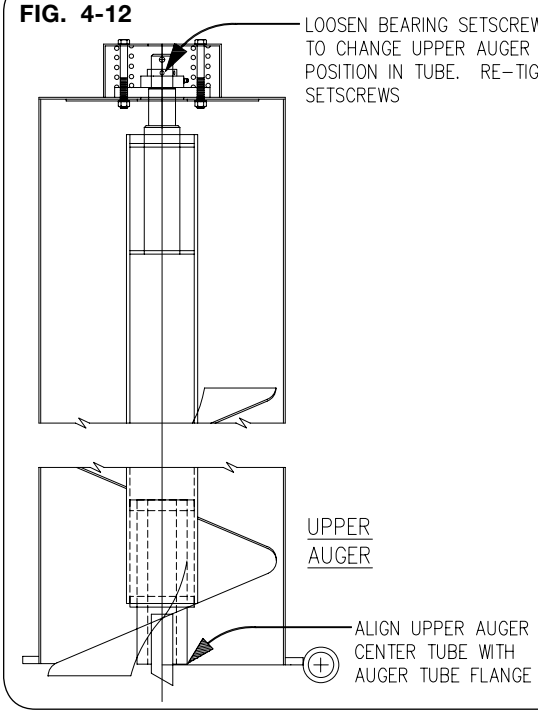
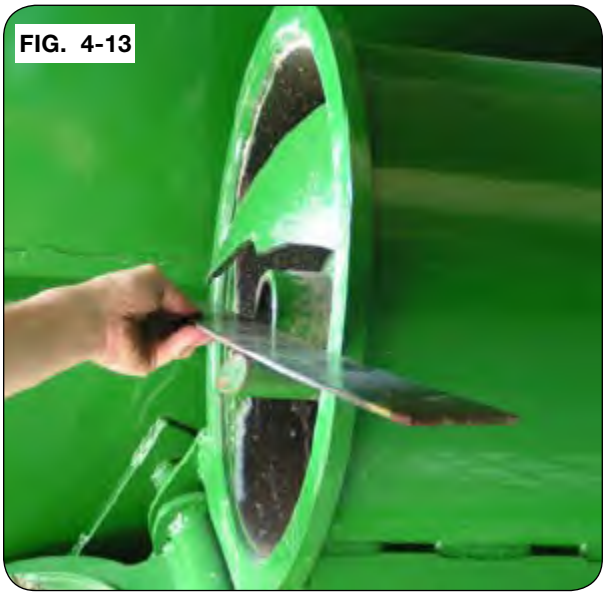


FIG. 4-13



Auger System (continued)

Upper Auger Assembly Timing For Single Lobe Drive Dog

Fully extend the upper auger and engage PTO to ensure both lower and upper augers are engaged. Allow the auger assembly to stop completely, then lower the upper auger approximately 45 degrees, shut off the tractor, remove the keys from the ignition. View the positions of the lower auger flighting trailing edge and upper auger flighting leading edge. After noting each flighting position, lower the upper auger assembly to its rest position. Again, shut off the tractor and remove the keys from the ignition.

When the lower & upper augers are coupled together correctly, the leading edge of the upper auger flighting is to be indexed approximately 180 degrees from the trailing edge of the lower auger flighting. If these trailing/leading flighting edges are out of position then the lower auger drive dog must be indexed 180 degrees. Do not remove or index the hanger bearing or lower auger. Index only the drive dog in the lower auger by partially removing the two 5/8" capscrews from the drive dog shaft, turning the drive dog 180 degrees, and reassembling the capscrews. Partial removal of the capscrews will retain the drive collar from dropping down inside the auger tube.



FIG. 4-14

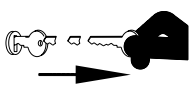
Auger System (continued)

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 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. 415.

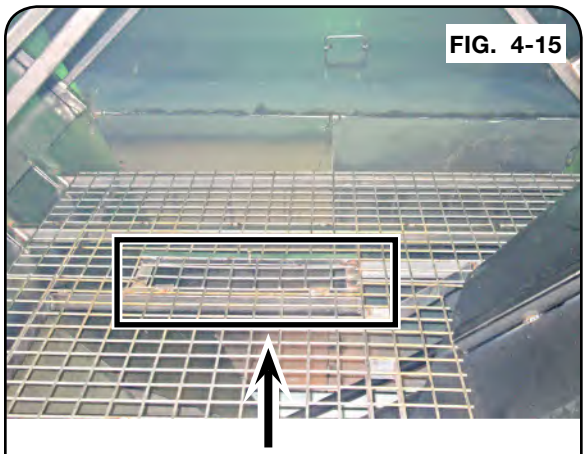


FIG. 4-15

Screen Service Access Panel

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

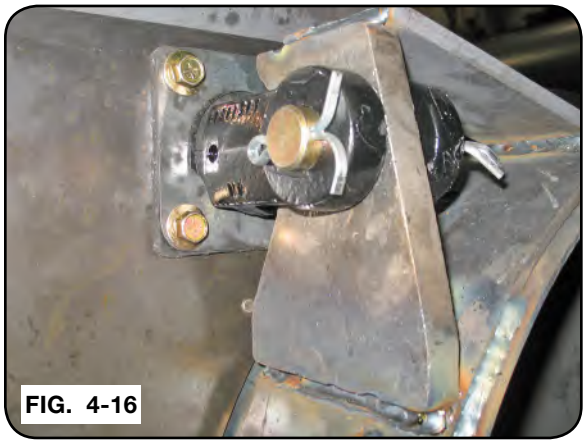
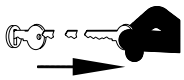


FIG. 4-16

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. Shut-off the engine, remove the ignition key, and relieve 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. 4-17).

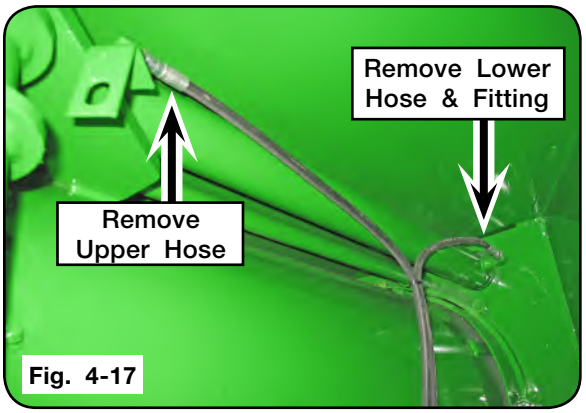
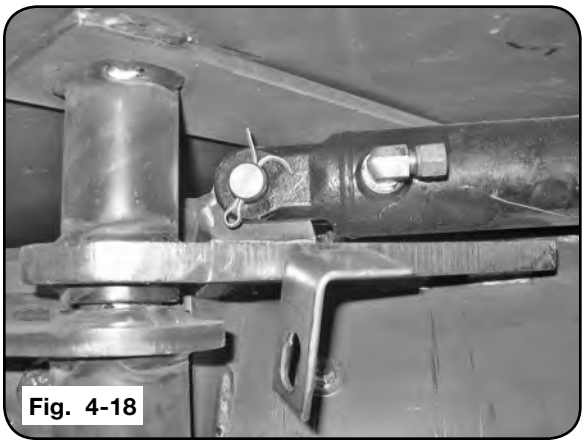


Fig. 4-17

7. Remove the cotter pins from the upper cylinder pin and remove pin (Fig. 4-18).


Fig. 4-18

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. Refer to “Purge Hydraulic System” in this section

Auger Driveline

Bearings

It is important to periodically check set screws in all bearings at either end of the driveline for tightness.

Gearbox

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.

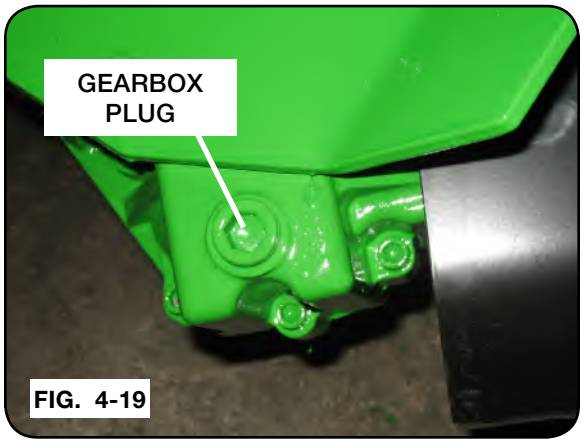


FIG. 4-19

For maximum gear box life:
Check oil level every 2 weeks.

Replace oil every season, using 32 oz. of 80W90 EP gear lubricant.

Driveline Replacement

1. Park the empty cart on a firm, level surface. Block the wheels or tracks on the cart 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.
2. Loosen the setscrews (9399-071) on two flangette bearings (9003920) (Fig. 4-20).
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. 4-20).
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.
6. Remove bearings, bearing mounts, universal joint cover, driveshaft lock collars (if lock collars are attached to driveshaft), PVC driveshaft covers, and driveline cover off the current driveshaft.

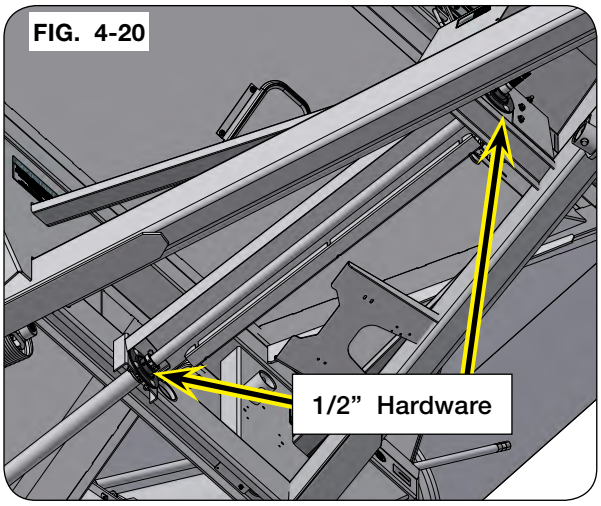


FIG. 4-20

Auger Driveline (continued)

Driveline Replacement (continued)

7. Slide new two-piece 1 1/2" dia. shaft collars (9008671) to both sides of new bearing (9003920) closest to the U-Joint, when installing bearings onto new driveshaft (Kit 289771).

8. Assemble new PVC driveshaft cover (291558) behind new bearing (9003920) closest to the U-Joint. (FIG. 4-27)

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.

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 into the universal joint attached to the gearbox until the end of the shaft extends into the universal joint 2 3/8". Ensure universal joint and driveshaft splines completely engage. Verify the hitch end for adequate length for driveline assembly to connect. (FIG. 4-28)

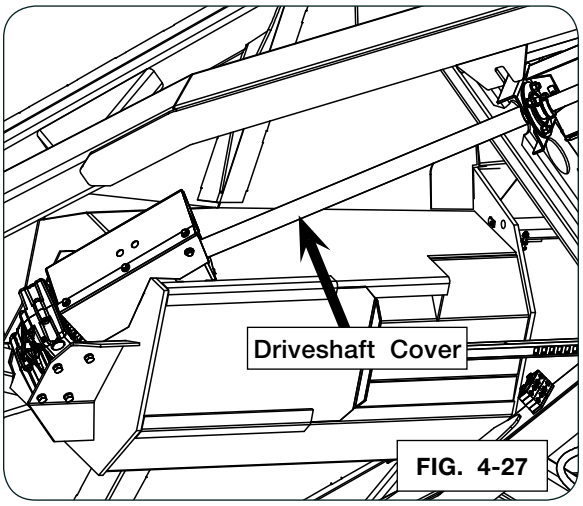
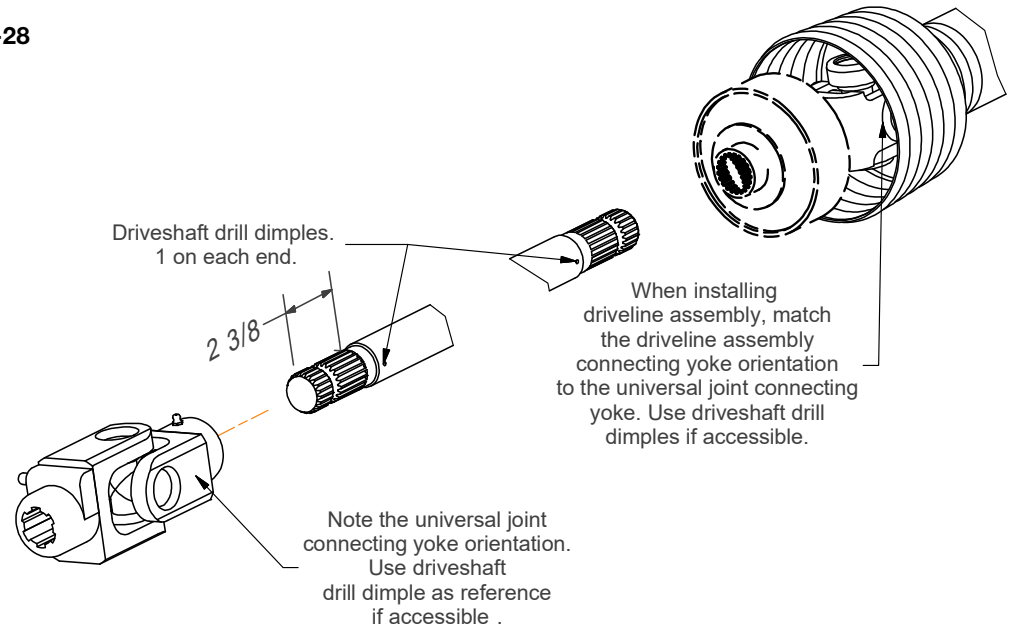


FIG. 4-27

FIG. 4-28



Auger Driveline (continued)

Driveline Replacement (continued)

12. Tighten all flangette mounting hardware.

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. 4-29, 4-30, and 4-31)

15. 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. 4-29)

NOTE: Check gearbox oil level and grease universal joint before installing universal joint cover.

16. Attach new universal joint cover to the bearing mount in front of the gearbox using original 3/8”-16UNC capscrews and 5/16”-18UNC weld nuts. Review to ensure PVC driveshaft covers and driveline cover, located behind the ladder, are in place and hardware tightened prior to operation.

17. Apply thread lock on bearing setscrews and tighten.

18. Test run driveline. Verify smooth driveline operation.

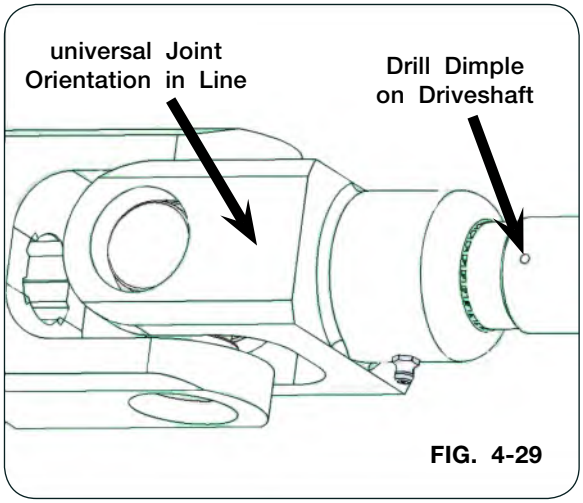


FIG. 4-29

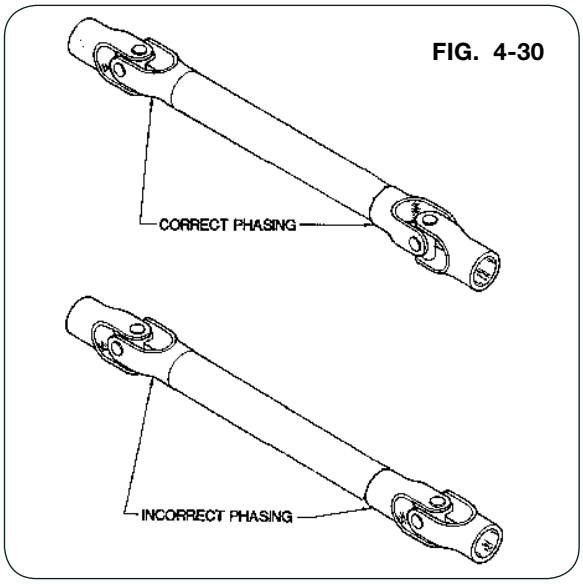


FIG. 4-30

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. 4-31

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. 4-32)

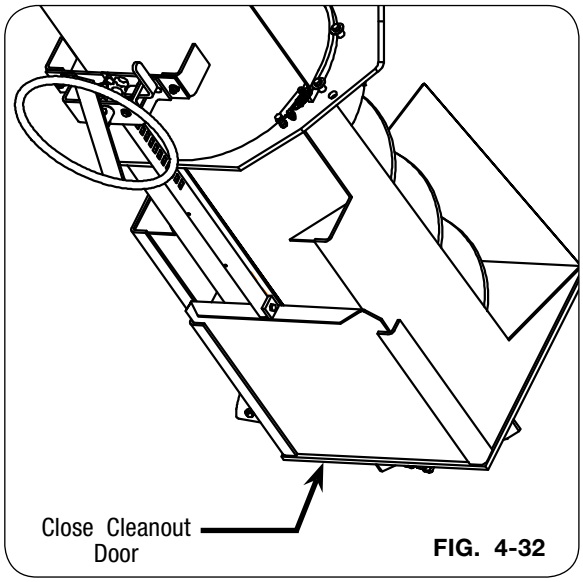


FIG. 4-32

3. Engage the locking plate (268313B). (FIG. 4-33)

4. Loosen mounting hardware. (FIG. 4-33)

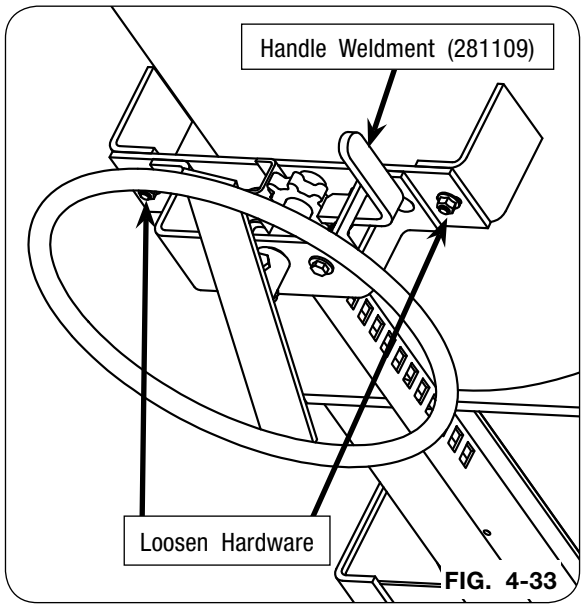


FIG. 4-33

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. 4-34)

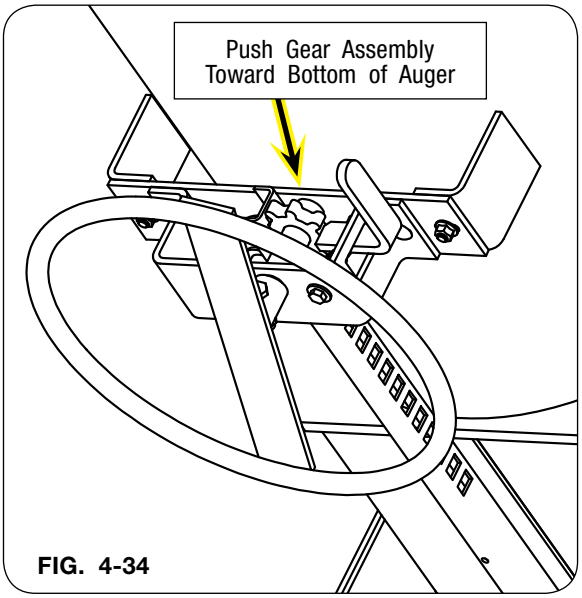
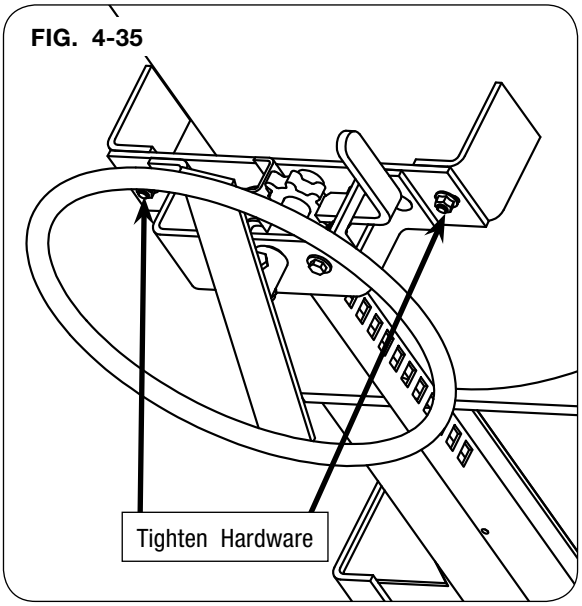


FIG. 4-34

6. Torque hardware loosened in step 4. (FIG. 4-35)

7. Check door operation. Lock the handle weldment into position. (FIG. 4-35)

FIG. 4-35



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 4-36).

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

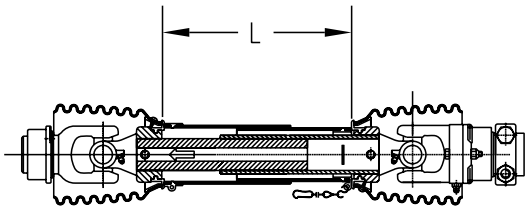


Fig. 4-36

2. Pull apart PTO telescoping shaft ends and measure lengths "T" & "C" (Figure 4-37)

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

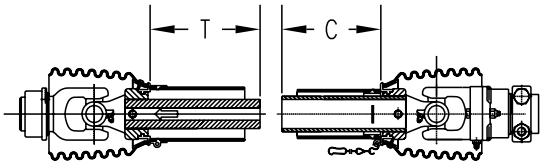


Fig. 4-37

Verify Telescoping PTO Shaft Length (continued)

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)

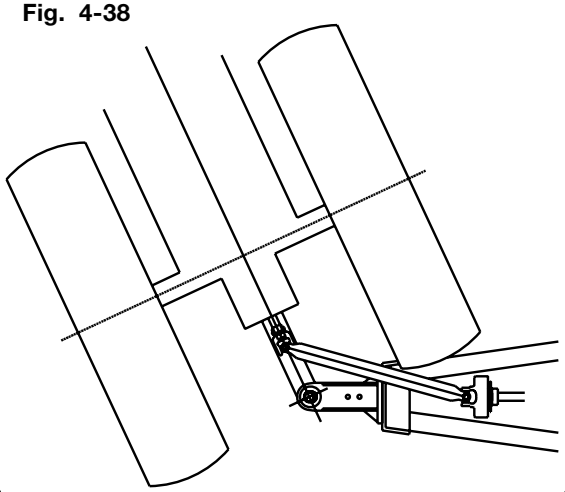
This is the maximum recommended extended length.

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.

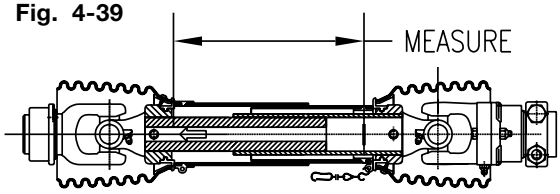
6. Position the tractor to obtain tightest turning angle, relative to the cart. (Fig. 4-38)

Fig. 4-38



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. 4-39)

Fig. 4-39



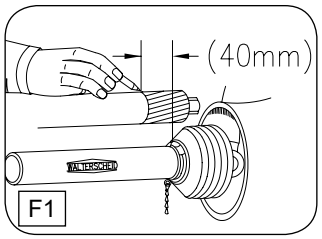
PTO Shaft Length Adjustment

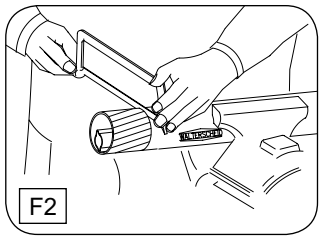
WARNING

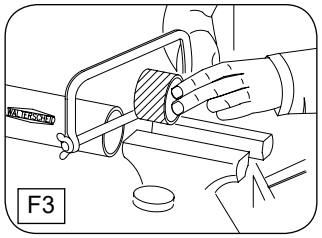
- **CHECK THE LENGTH OF THE TELESCOPING MEMBERS TO ENSURE THE DRIVELINE WILL NOT BOTTOM OUT OR SEPARATE WHEN TURNING AND/OR GOING OVER ROUGH TERRAIN.**

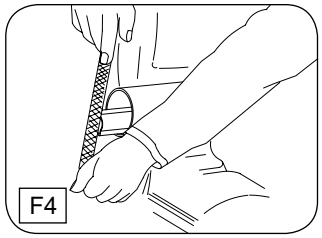
NOTE: Maximum operating length LB. (Refer to "Verify Telescoping PTO Shaft Length" in this section for LB length.)

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.





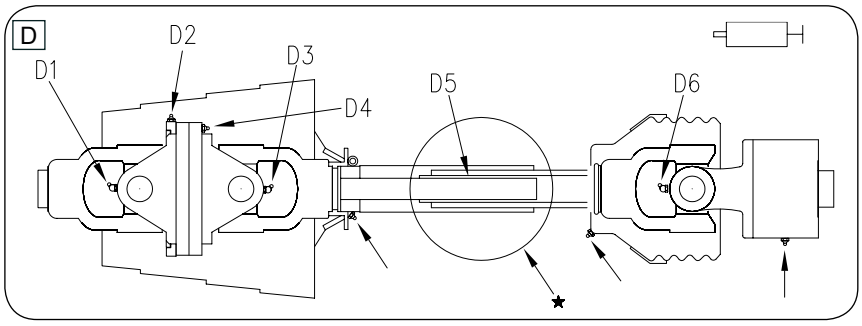


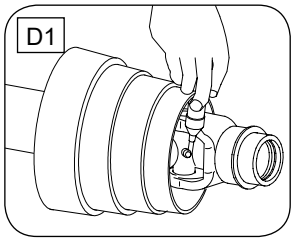


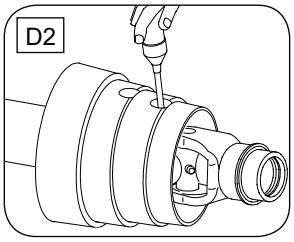
PTO Shaft and Clutch

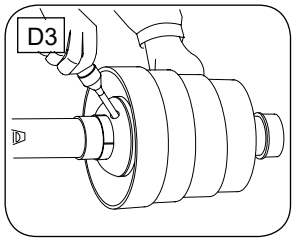
Lubrication (Figs. D1 - D6)

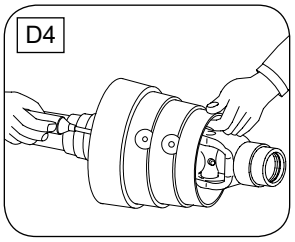
Lubricate with quality grease before starting work and every 8 operating hours. Clean and grease PTO drive shaft before each prolonged period of non-use. Molded nipples on the shield near each shield bearing are intended as grease fittings and should be lubricated every 8 hours of operation! Telescoping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

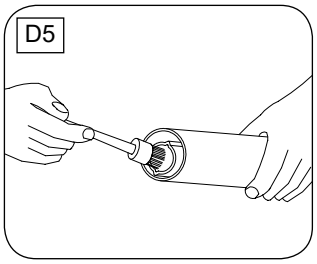


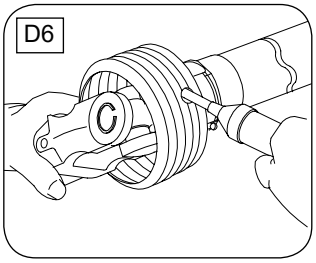












PTO Shaft and Clutch (continued)

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

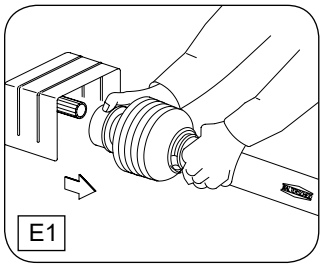
Clean and grease the PTO and implement input connection (IIC)

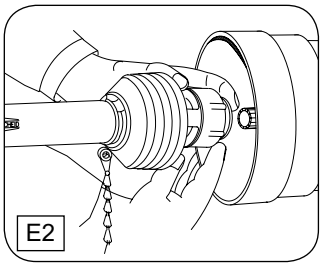
AS-Lock

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

Push-Pull Lock

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





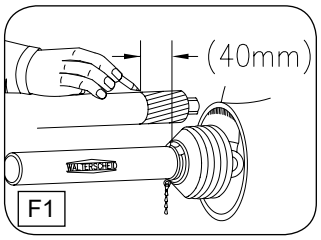
⚠ WARNING

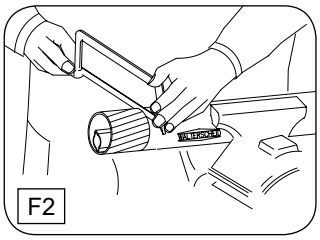
- **CHECK TO INSURE ALL THE LOCKS ARE SECURELY ENGAGED BEFORE STARTING WORK WITH THE PTO DRIVESHAFT.**

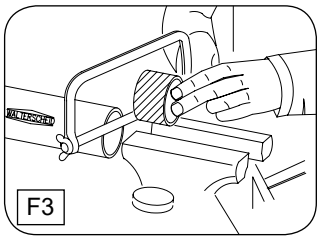
Length Adjustment (Figs. F1 - F4)

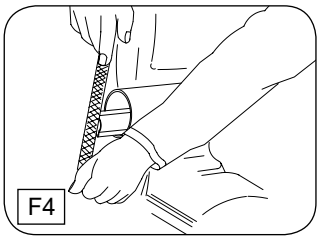
NOTE: Maximum operating length LB. (Refer to "Verify Telescoping PTO Shaft Length" for LB length.)

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 INSURE THE DRIVELINE WILL NOT BOTTOM OUT OR SEPARATE WHEN TURNING AND/OR GOING OVER ROUGH TERRAIN.**

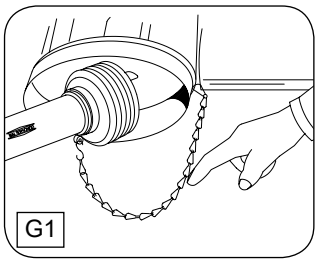
PTO Shaft and Clutch (continued)

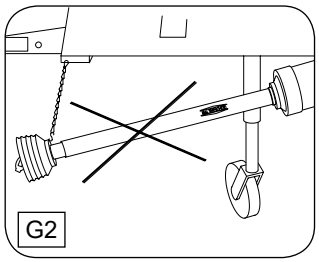
Chains (Figs. G1 - G3)

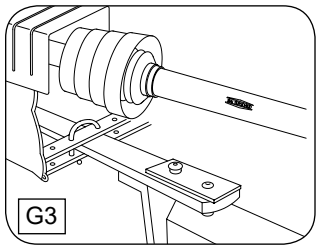
NOTE: The chain is intended to prevent the shield from rotating against non-moving parts and thereby preventing shield damage. A properly installed chain will increase the service life of the shield.

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

2. The PTO drive shaft must not be suspended from the chain.


G1


G2


G3

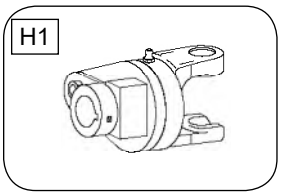
Shear Bolt and Friction Clutches (Figs. H1 - H2)

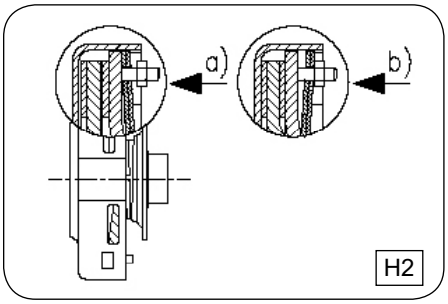
1. **Shear bolt clutches:**
   When the torque is exceeded, power flow is interrupted due to the bolt shearing. The torque is re-established by replacing the broken shear bolt. Use only the bolt specified in the Operator's Manual for replacement. Remove locking screw.

   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. H2 shown.


H1

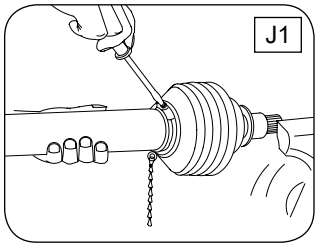


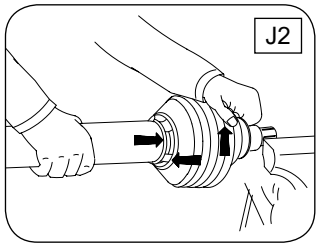
H2

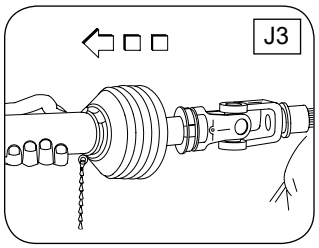
PTO Shaft and Clutch (continued)

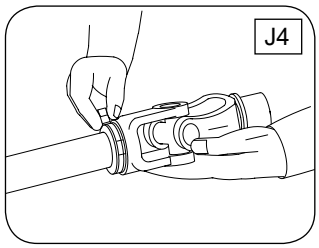
To Dismantle Guard (Figs. J1 - J4)

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



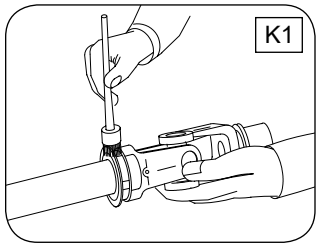


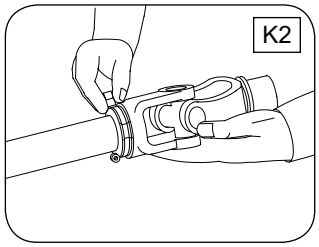


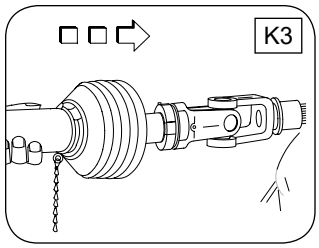


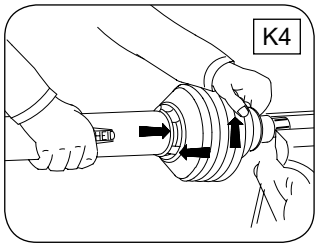
To Assemble Guard (Figs. K1 - K5)

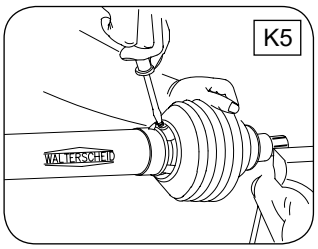
1. Grease yoke groove and inner profile tube.
2. Fit bearing ring in groove with recesses facing profile tube.
3. Slip on half-guard.
4. Turn cone until it engages correctly.
5. Install locking screw.











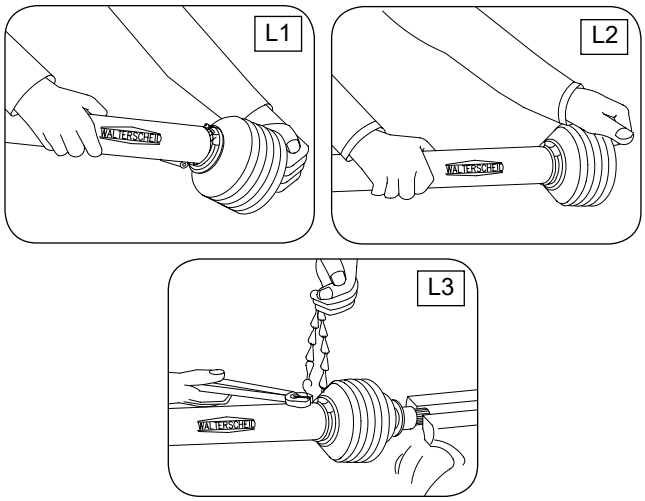
PTO Shaft and Clutch (continued)

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).



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

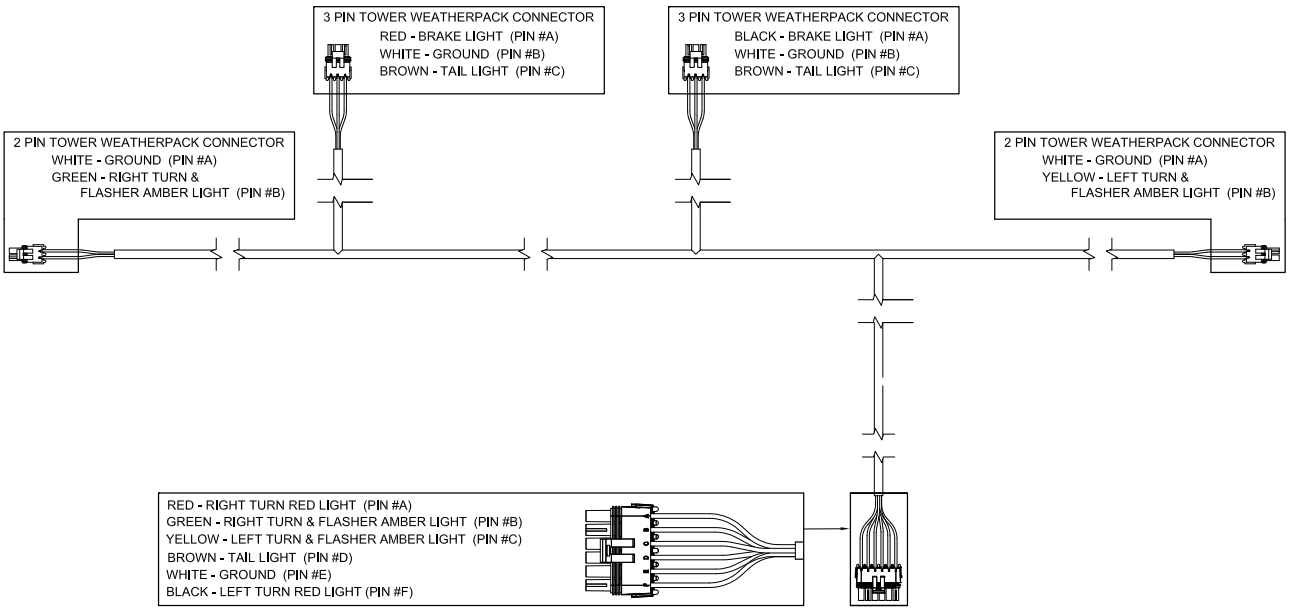
- *Do not open or close tarp while moving or in high wind conditions. Damage to the tarp may occur.*
- *Tarp should not be used if it is torn or the bungee cords are frayed or show damage. If water pools on the tarp, adjust tension of tarp cables or re-tension tarp with crank handle.*

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.

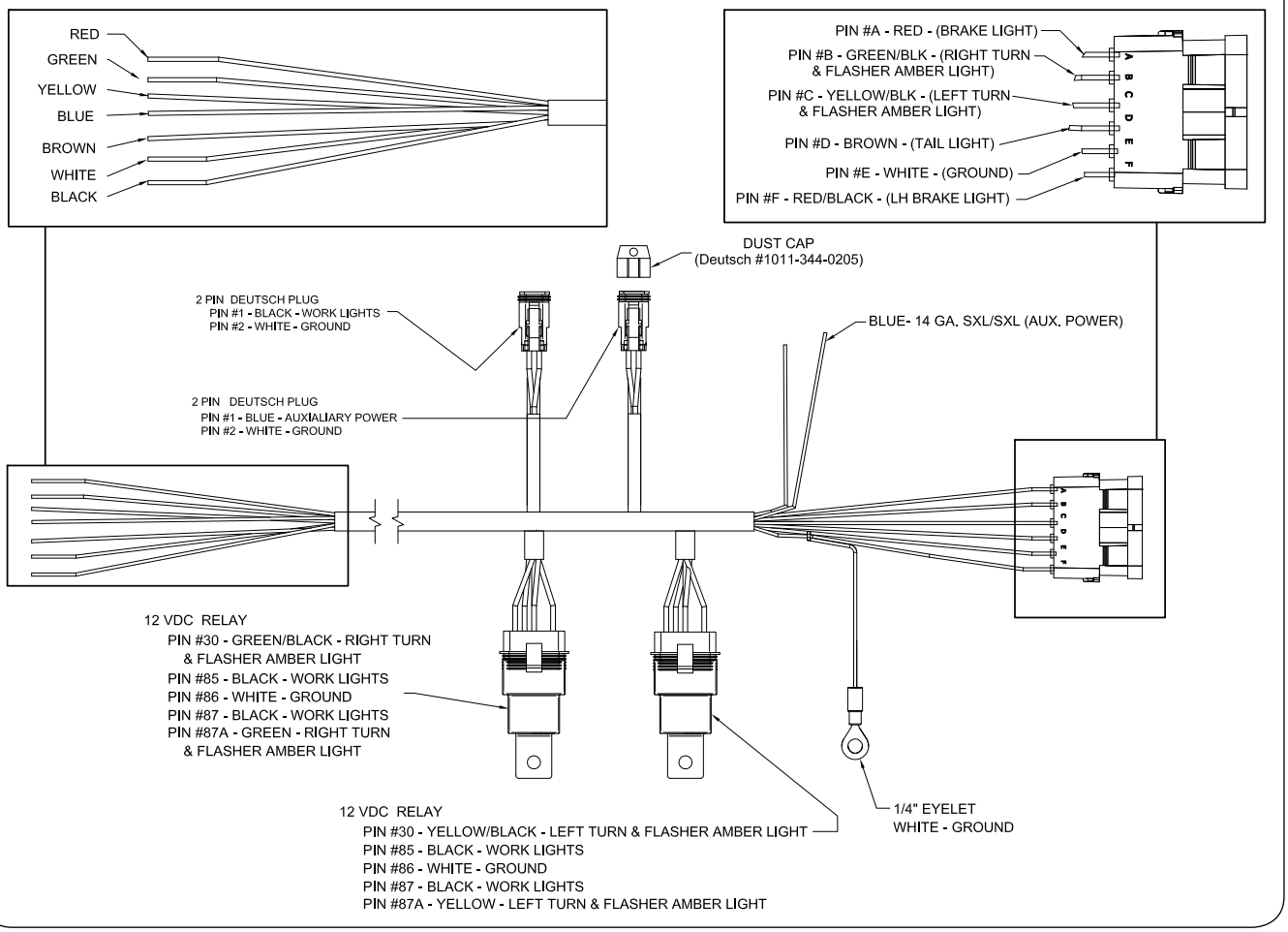
Tears in tarp should addressed before further tarp operation. If water pools on tarp, adjust tension of tarp cables and/or arm springs.

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 Schematic - Rear Wiring Harness #9003050

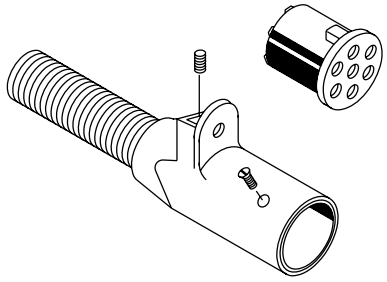


Electrical Schematic - Front Wiring Harness #9007460

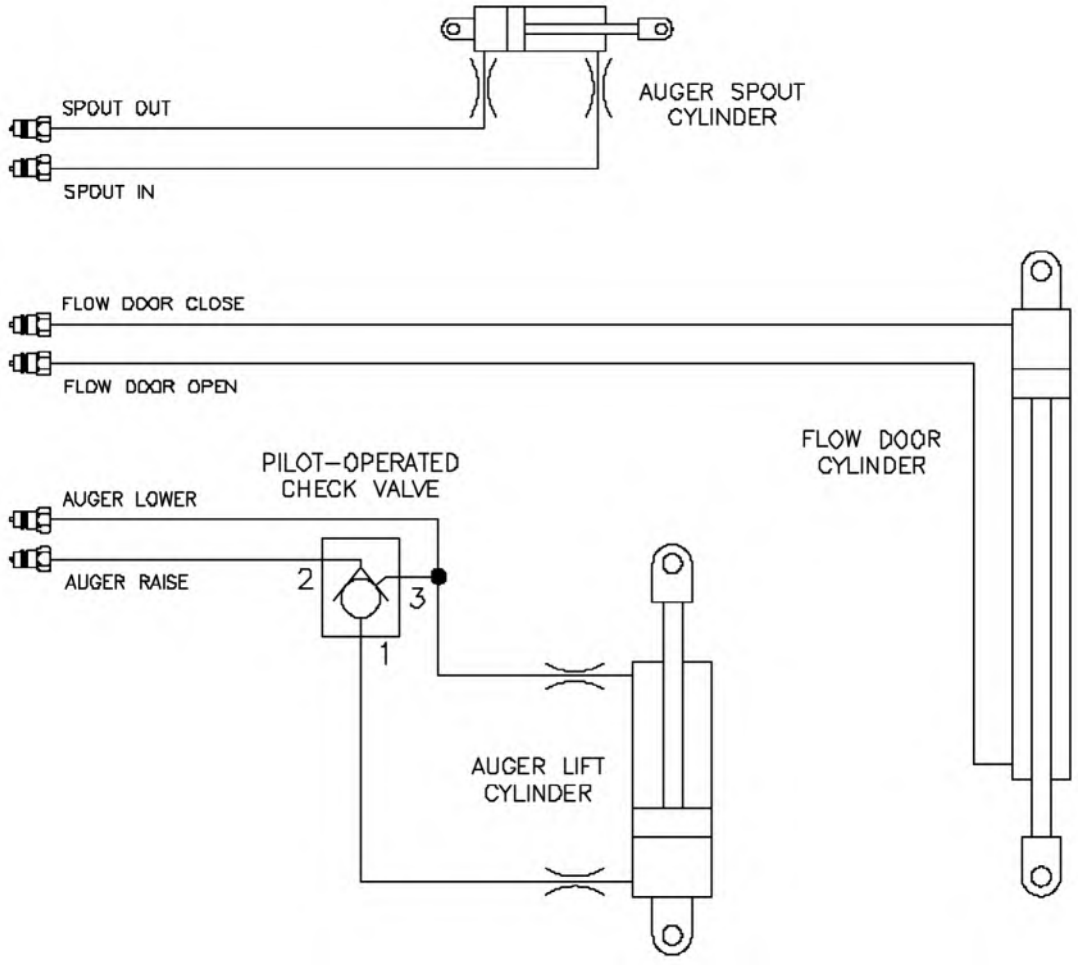


Electrical Schematic - Coupler #92450

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



Hydraulic System Schematic



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

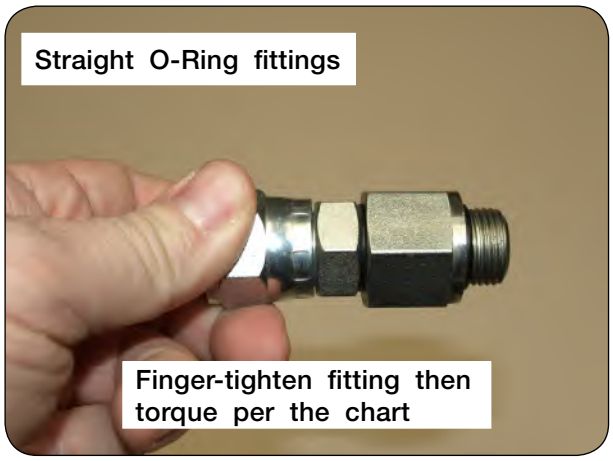
Tightening O-Ring Fittings

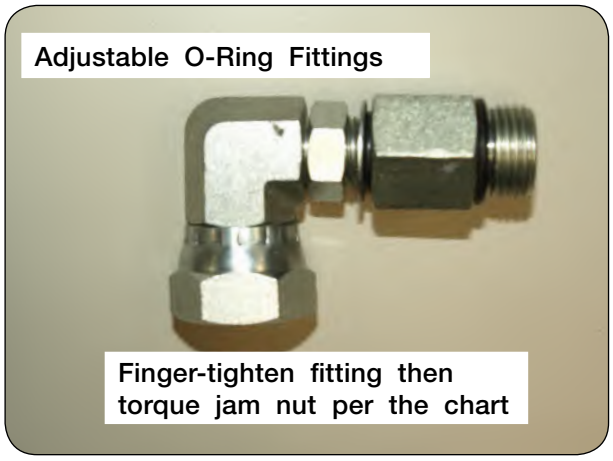
1. Inspect components for damage or contamination. Do not connect any other type of fitting to an O-ring fitting.
2. For adjustable fittings, insure the jam nut and washer are fully backed up.
3. Lubricate the O-ring and threads on the fitting.
4. Turn the fitting into the port until it is finger tight.
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.

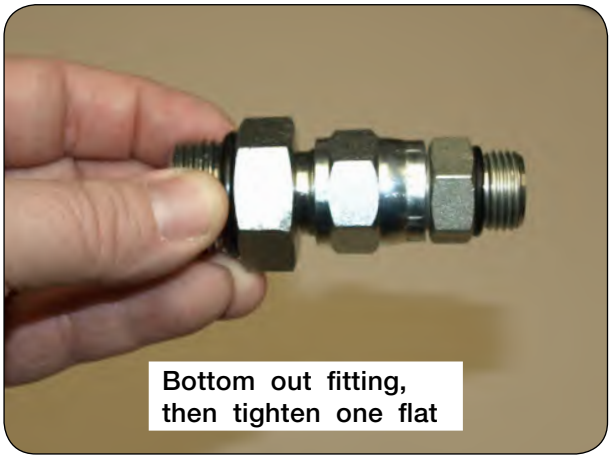
3. Turn the fitting into the port until it bottoms out.

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



Bottom out fitting, then tighten one flat

Section IV
Maintenance

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- Lower Auger Assembly 4-5
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- Inspection & Maintenance 4-20

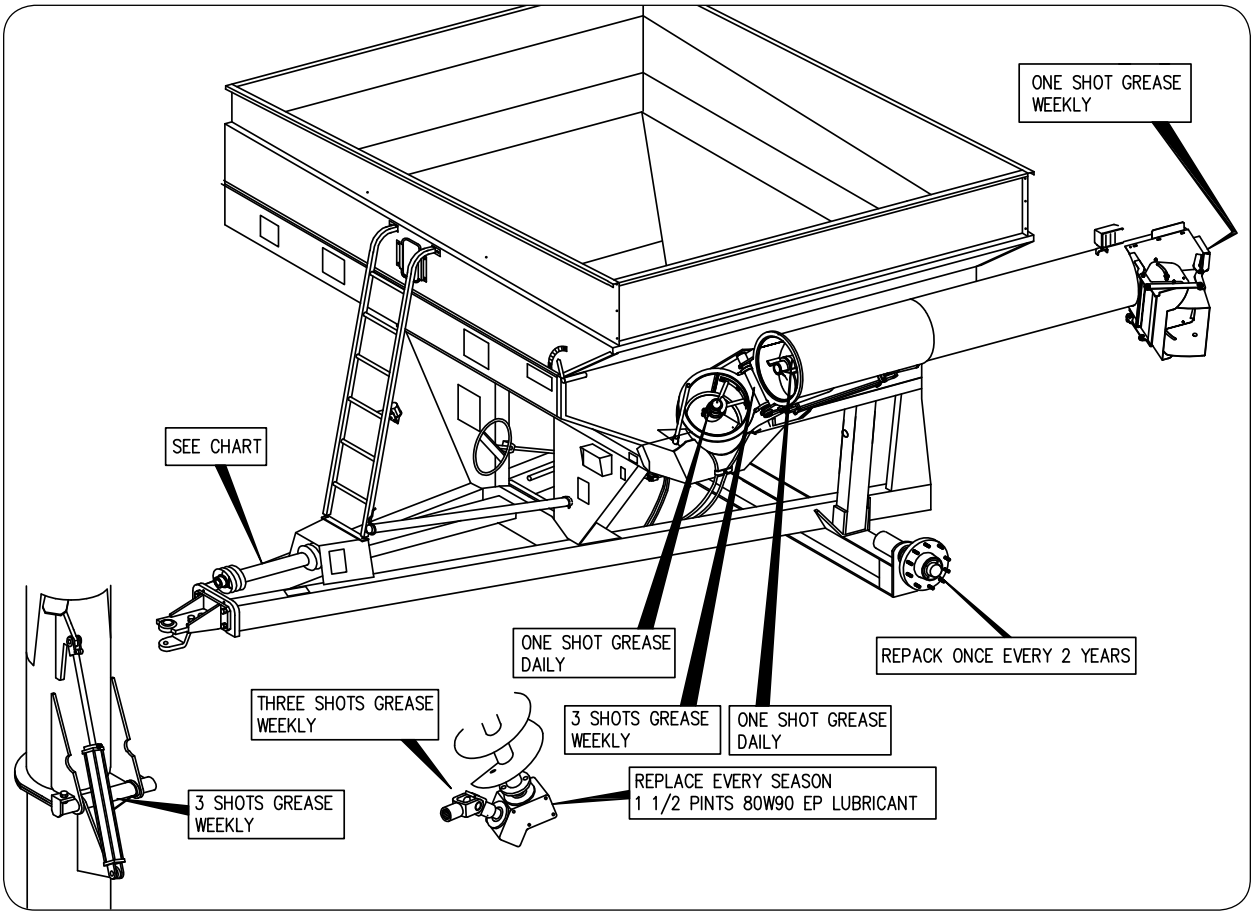
Electrical System Schematic 4-21
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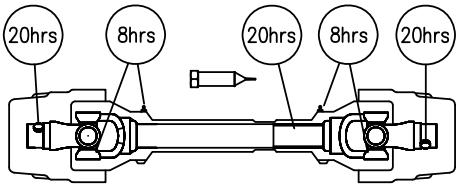
FOR TORQUE INFORMATION, PLEASE REFER TO THE MAINTENANCE SECTION.
FOR SCALE, HYDRAULIC DRIVE OR WEATHER GUARD TARP INFORMATION,
PLEASE REFER TO THAT SPECIFIC MANUAL.

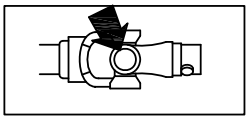
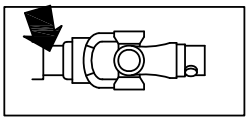
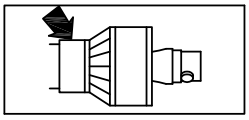
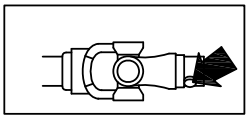
Lubrication

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.



LUBRICATION INSTRUCTIONS FOR DRIVE LINE



8hrs		20hrs	
	Cross journal		Inner tube
	Shield retaining bearing		Push–pin set

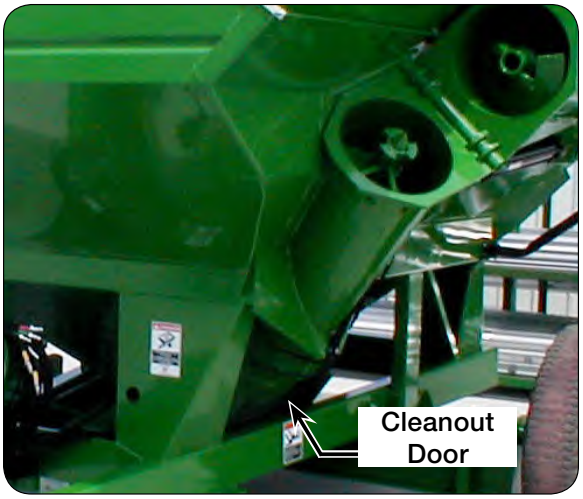
COAT INNER AND OUTER PROFILES AT BEGINNING AND END OF EACH SEASON

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 corrosion.
2. Repaint any chipped or scraped areas.
3. Lubricate points on pages 4-2.
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.



Hub Assembly

1. Pack the bearings with approved grease and assemble the inner bearing into the hub. Install the seal. Garter spring to the inside.
2. Assemble the hub on the spindle, install the outer bearing and retain using the spindle washer and nut.
3. Tighten the spindle nut with a wrench to remove any play between the bearing cone and cups. Do not use an impact!
4. Back off the castle nut and then hand tighten without a wrench.
5. Spin the hub and tighten the spindle nut slowly by wrench until the tightening of the spindle nut stops the rotation.
6. Back off the spindle nut to the closest next slot of the nut that aligns with the cross hole in the spindle. Install the cotter pin. Do not bend the ends.
7. Spin the hub while checking for drag and/or play. If play exists, tighten the castle nut. Back off and then repeat the above steps. If drag exists, back off the spindle nut to the next hole. Spin and check again.
8. Once set, bend the cotter pin ends around the nut and fill the hub cap with approved grease. Attach the new gasket maker to the bottom of the hub cap and attach with hardware. Tighten in an alternating manner.

Auger System

⚠ WARNING

- **TURNING AUGER AND OTHER MOVING PARTS CAN CRUSH AND CUT. DISENGAGE PTO AND SHUT-OFF ENGINE BEFORE SERVICING MACHINE OR ENTERING GRAIN TANK, OR OPENING CLEAN-OUT DOOR(S).**



- **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 1,600 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

- **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.**

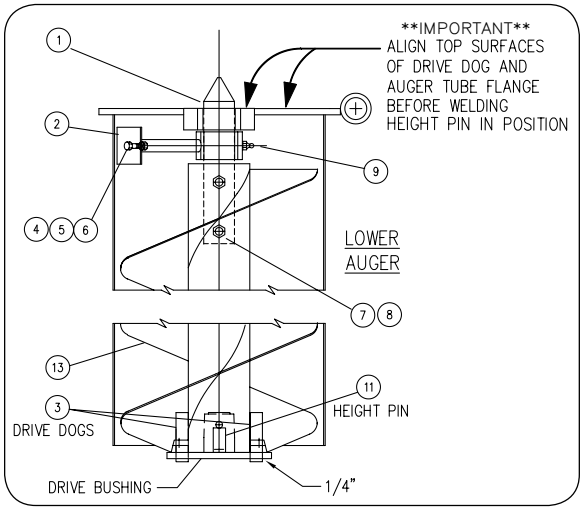
- **TO PREVENT PERSONAL INJURY OR DEATH, ALWAYS ENSURE THAT THERE ARE PEOPLE WHO REMAIN OUTSIDE THE CART TO ASSIST THE PERSON WORKING INSIDE THE CART, AND THAT ALL SAFE WORKPLACE PRACTICES ARE FOLLOWED. THERE IS RESTRICTED MOBILITY AND LIMITED EXIT PATHS WHEN WORKING INSIDE THE CART.**

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

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

Lower Auger Disassembly

1. Remove three 3/8” x 1 1/4” capscrews (4), lock washers (5) and nuts (6) which secure hanger bearing to auger tube.
2. Using a safe lifting device rated for 500 lbs., remove auger from auger tube and perform required repair or replacement.
3. Remove two 5/8” x 6” capscrews (7) and locknuts (8) which trap hanger bearing and secure drive dog to auger. Missile shaft/coupler sleeve bolt and nut should be at 180° apart from opposite bolt to neutralize their effect on auger balance.



Auger System (continued)

Lower Auger Assembly

1. Assemble drive dog (1) and hanger bearing (2) to auger and secure with two 5/8" x 6" capscrews (7), lock washers and nuts (8).

2. Install auger, drive dog, and hanger bearing into lower housing and secure with three 3/8" x 1 1/4" capscrews (4), lock washers (5) and nuts (6). Do not tighten.

3. Align the top surfaces of drive dog and auger tube flange. Do not align with tube sleeve. Tighten hanger bearing fasteners (4, 5 & 6).

4. Rotate and align center auger tube until drive plate holes are centered between flightings.

IMPORTANT

- *Disconnect the cart completely from the tractor before welding on the equipment. Damage may occur to the electrical system.*

5. Position height pin against top of drive plate and weld to auger tube.

NOTE: Height pin can be located adjacent to one of drive pins and both pins welded together in Step 6.

6. Insert two lower drive dogs 1/4" through drive bushing and weld to auger center tube (and to height pin if applicable).

7. Using a safe lifting device rated for 1,200 lbs., raise upper auger into position, checking upper drive dog engagement with lower auger drive dog.

8. Lower upper auger. Lubricate hanger bearing. Check and remove any loose parts in auger tube interior prior to start-up.

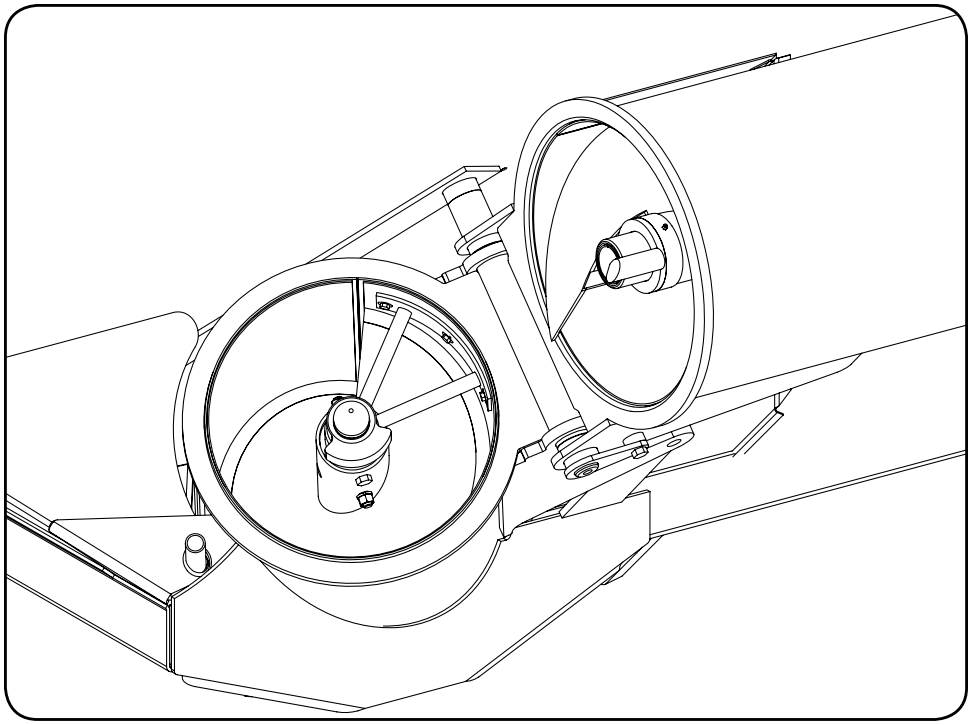
NOTE: If replacing lower auger, rotate flighting 360°, checking for interference or binding. A portion of flighting may have to be removed from the lower end of auger.

9. Re-attach PTO to tractor and slowly rotate auger to ensure engagement and operation.

Auger System (continued)

Upper Auger Disassembly

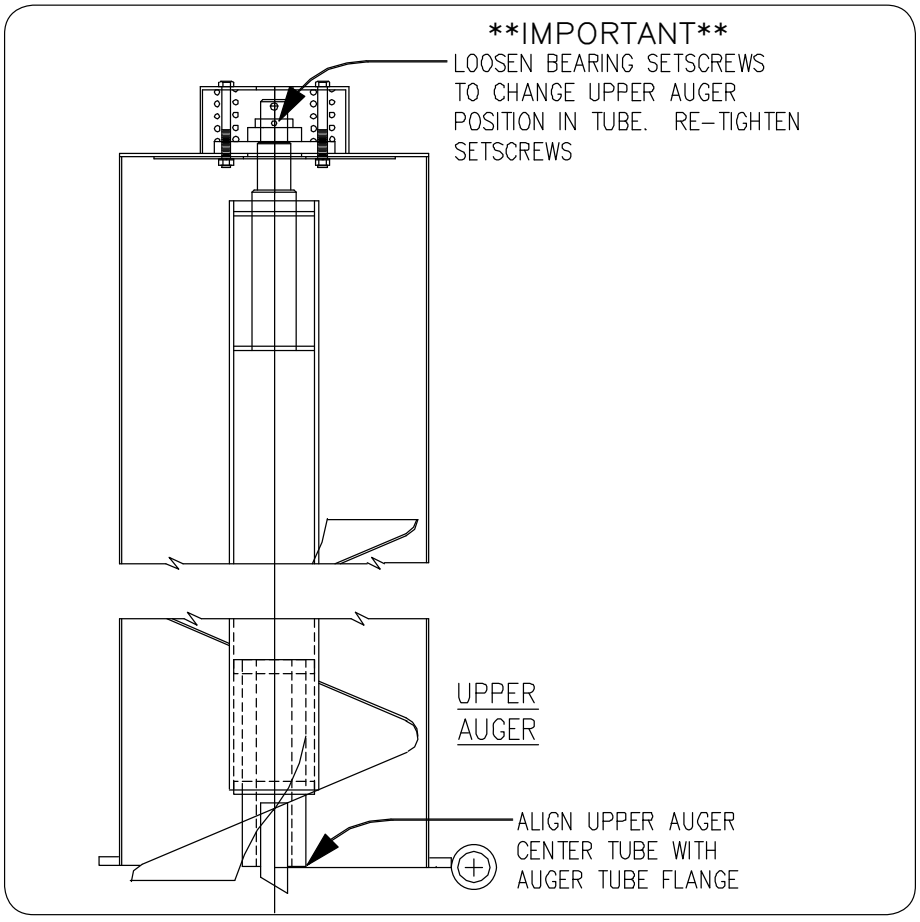
1. Support the upper auger assembly with a 2 ton hoist and two 1000 lb. straps.
2. Remove auger tube cylinder pin and carefully swing cylinder down without breaking hose connections.
3. Disconnect auger and chute light.
4. Remove chute assembly.
5. Remove auger indicator hose and extension shaft from pivot pin, located on inside of cart. With auger tube fully supported, remove pivot pin, retainer bolt\nut and hinge pin. Hinge pin end is center threaded to allow attachment of removal tool (ie: slide hammer).
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.



Auger System (continued)

Upper Auger Assembly

1. Install upper bearing and spring assembly if previously removed.
2. Using a safe lifting device rated for 600 lbs., 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 a 2 ton hoist and two 1000 lb. straps to support the upper auger. Install pivot pin. Align retainer holes and install bolt and nut.
5. Install chute assembly.
6. Reattach indicator hose and extension shaft.
7. Connect auger and chute light.
8. Reinstall hydraulic cylinder and pivot pins. Clamp hoses into position and recheck connector tightness.



Auger System (continued)

Upper Auger Assembly Timing

Fully extend the upper auger and rotate the auger assembly to ensure both lower & upper augers are engaged. allow the auger assembly to stop completely, then lower the upper auger approximately 45 degrees, shut off the tractor, remove the keys from the ignition. View the positions of the lower auger flighting trailing edge and upper auger flighting leading edge. After noting each flighting position, lower the upper auger assembly to its rest position. Again, shut off the tractor and remove the keys from the ignition.



When the lower & upper augers are coupled together correctly, the leading edge of the upper auger flighting is to be indexed approximately 180 degrees from the trailing edge of the lower auger flighting. If these trailing/leading flighting edges are out of position then the lower auger drive dog must be indexed 180 degrees. Do not remove or index the hanger bearing or lower auger. Index only the drive dog in the lower auger by partially removing the two 5/8" capscrews from the drive dog shaft, turning the drive dog 180 degrees, and reassembling the capscrews. Partial removal of the capscrews will retain the drive collar from dropping down inside the auger tube.

Auger System (continued)

Auger Flow Door Cylinder Replacement

⚠ WARNING

- **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.**

- **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.**

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

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



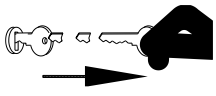
- **RELIEVE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE TRACTOR OPERATOR'S MANUAL FOR PROPER PROCEDURES.**

- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. 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.**

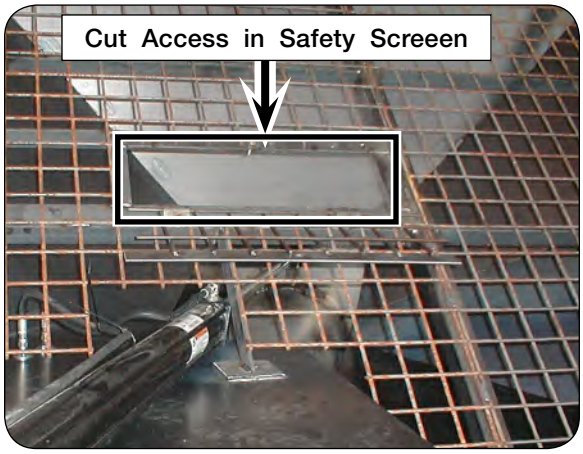
1. Park the empty grain cart on a firm, level surface and extend auger. Block the tires on the machine to keep it from moving. Unfold upper auger to make the flow door cylinder easier to access. If possible, close the flow door at least 8" from the fully open position. Set the tractor's parking brake,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



Auger System (continued)

Auger Flow Door Cylinder Replacement (continued)

2. On the inside of the cart, the safety screen will need to be cut in order to access flow door/cylinder lug

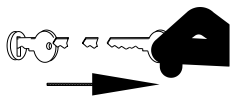


3. Remove the cotter pins from the lower cylinder pin, then remove cylinder pin.



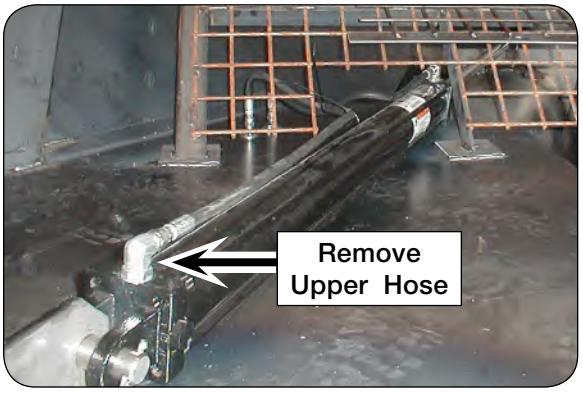
4. Remove all tools and hardware from grain cart. Make sure all personnel are outside of the hopper. Then, retract the cylinder so that there is about 8” of clearance between the cylinder clevis and the lug.

5. Shut-off the engine, remove the ignition key, relieve and disconnect the hydraulic hoses from the tractor and cart.

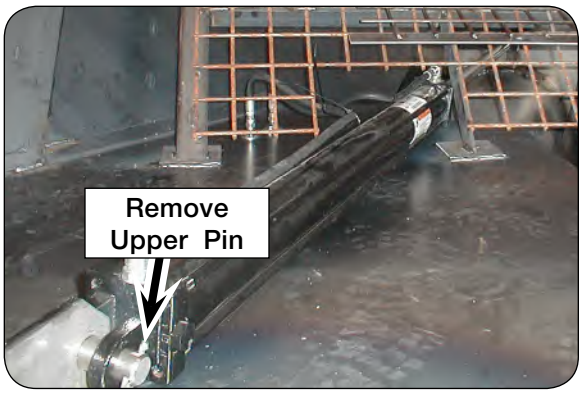


Auger System (continued)

6. Label the hydraulic hoses to indicate upper and lower. Disconnect them from the cylinder.



7. Remove the cotter pins from the upper cylinder pin and remove pin.



8. 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 connections according to directions in the Torque Specifications at the end of the maintenance section.

10. Re-secure the safety screen and weld back into place.

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 at the end of the MAINTENANCE section.

    E. Repeat process 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.

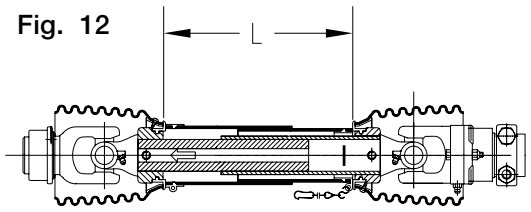
NOTE: Do not exceed 10 degrees beyond a straight pull line while operating the PTO.

To verify proper extended and collapsed lengths, use the following procedure:

1. Fully collapse PTO shaft and measure length "L" (Fig. 12).

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

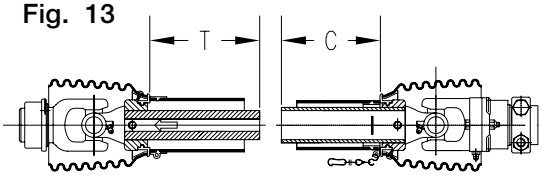
Fig. 12



2. Pull apart PTO telescoping shaft ends and measure lengths "T" & "C" (Fig. 13).

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

Fig. 13



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).

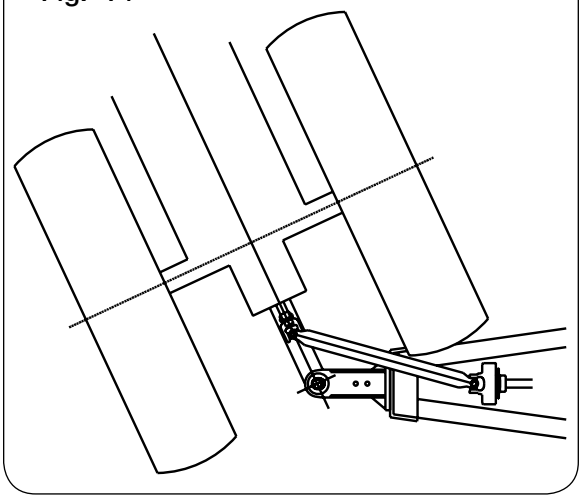
Verify Telescoping PTO Shaft Length (continued)

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.

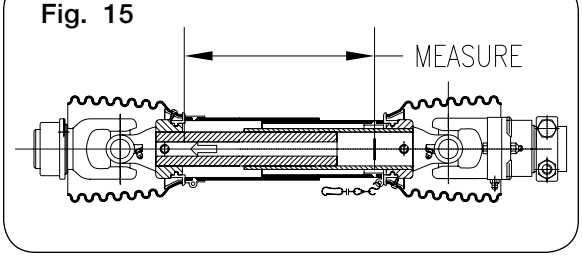
6. Position the tractor to obtain tightest turning angle, relative to the cart.

Fig. 14



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. 15



PTO Shaft and Clutch

Lubrication (Figs. D1 - D6)

Lubricate with quality grease before starting work and after every 8 operating hours.

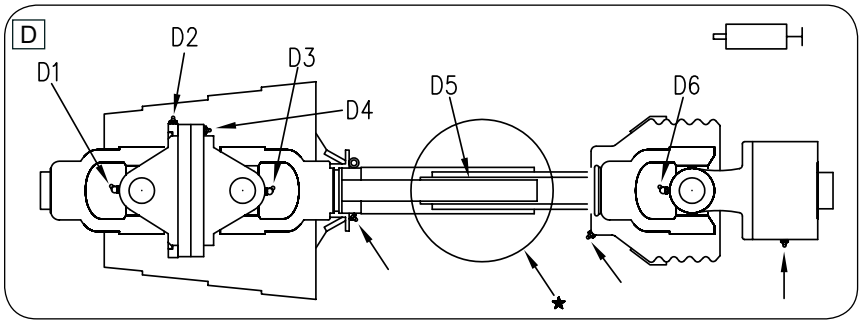
Clean and grease PTO driveshaft before each prolonged period of non-use.

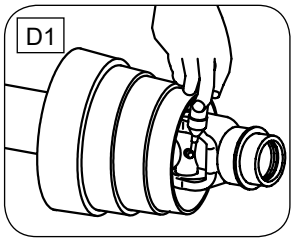
Molded nipples on the shield near each shield bearing are intended as grease fittings and should be lubricated every 8 hours of operation!

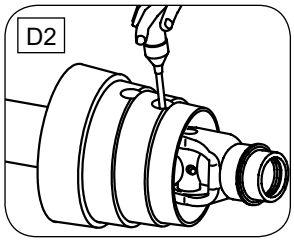
Telescoping members must have lubrication to operate successfully regardless if a grease fitting is provided for that purpose!

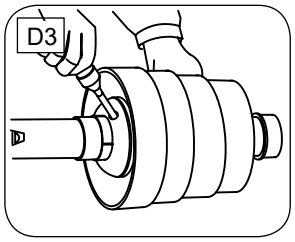
Telescoping members without fittings should be pulled apart and grease should be added manually.

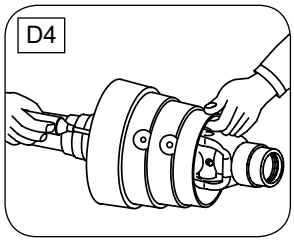
Check and grease the guard tubes in winter to prevent freezing.

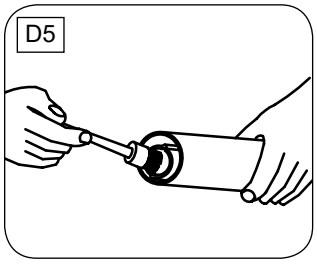


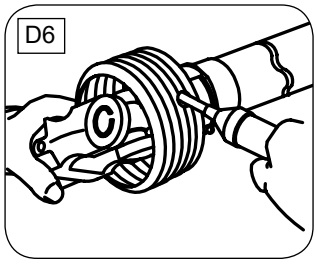










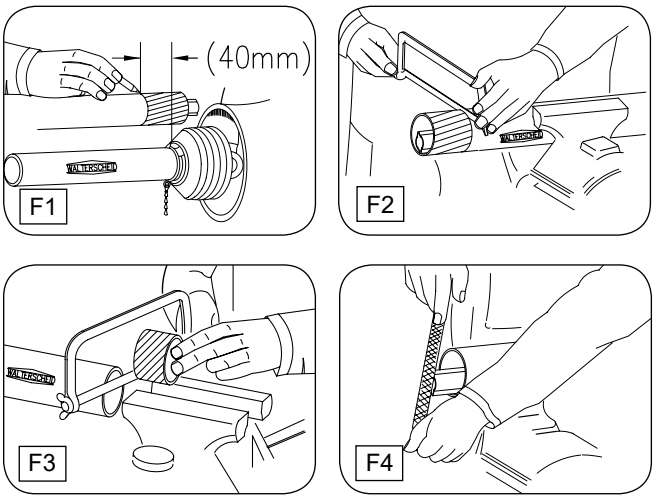


PTO Shaft and Clutch (continued)

Length Adjustment (Figs. F1 - F4)

NOTE: Maximum operating length LB.

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



⚠ WARNING

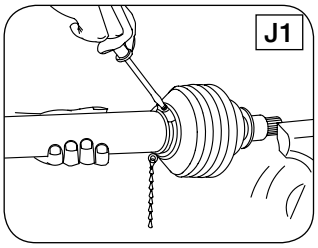
- **CHECK THE LENGTH OF THE TELESCOPING MEMBERS TO INSURE THE DRIVELINE WILL NOT BOTTOM OUT OR SEPARATE WHEN TURNING AND/OR GOING OVER ROUGH TERRAIN.**

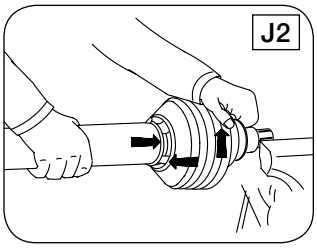
- **PROPER EXTENDED AND COLLAPSED LENGTHS OF THE TELESCOPING PTO SHAFT MUST BE VERIFIED BEFORE THE FIRST OPERATION WITH EACH AND EVERY TRACTOR. IF THE EXTENDED LENGTH OF THE PTO SHAFT IS INSUFFICIENT, IT MAY BECOME UNCOUPLED DURING OPERATION AND CAUSE SERIOUS INJURY OR DEATH FROM CONTACT WITH UNCONTROLLED FLAILING OF THE PTO SHAFT ASSEMBLY COMPONENTS.**

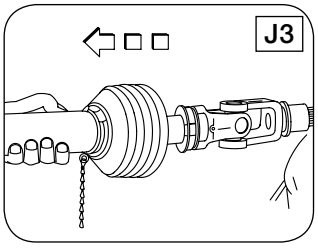
PTO Shaft and Clutch (continued)

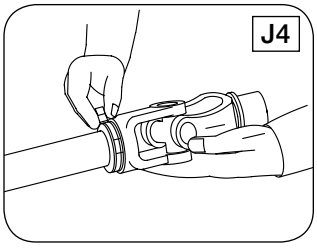
To Dismantle Guard (Figs. J1 - J4)

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



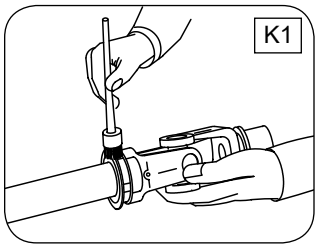


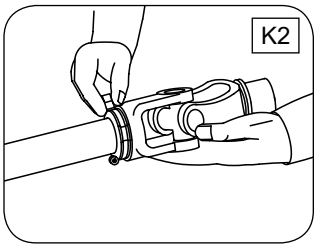


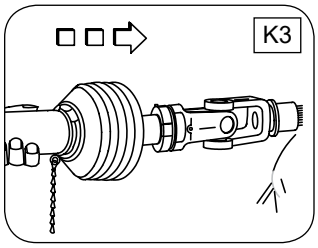


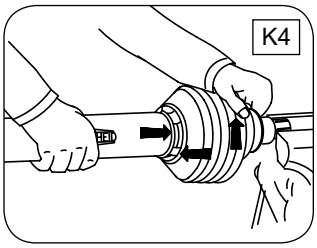
To Assemble Guard (Figs. K1 - K5)

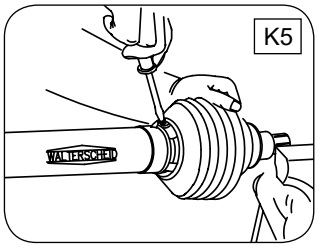
1. Grease yoke groove and inner profile tube.
2. Fit bearing ring in groove with recesses facing profile tube.
3. Slip on half-guard.
4. Turn cone until it engages correctly.
5. Install locking screw.











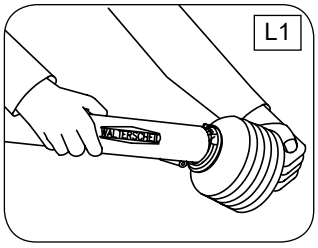
PTO Shaft and Clutch (continued)

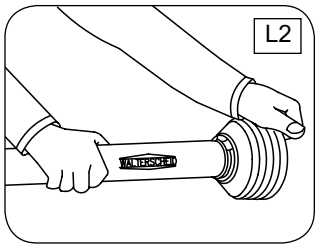
To Assemble Cone (Figs. L1 - L3)

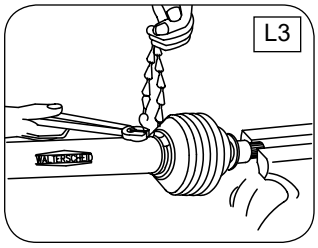
1. Dismantle guard (Fig. L1 - L3). Remove the old cone (e.g. cut open with knife). Take off chain. Place the neck of the new cone in hot water (approx. 80°C/180°F) and pull onto the bearing housing (Fig. L1).

2. Turn guard cone into assembly position (Fig. L2). Further assembly instructions for guard (Figs. K1 - K5).

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



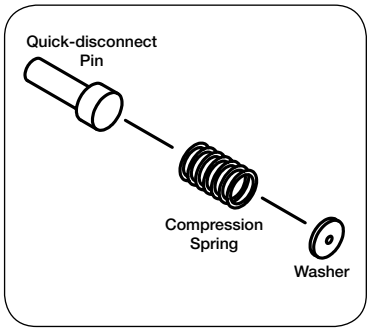


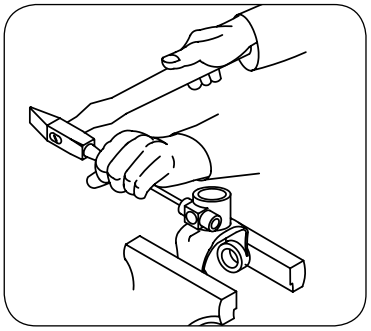


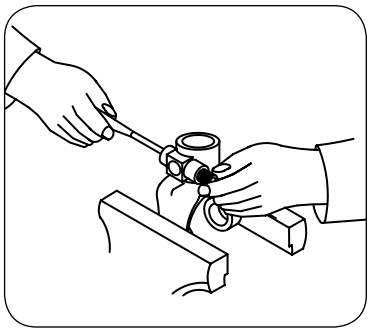
PTO Quick Disconnect

Quick Disconnect Pin

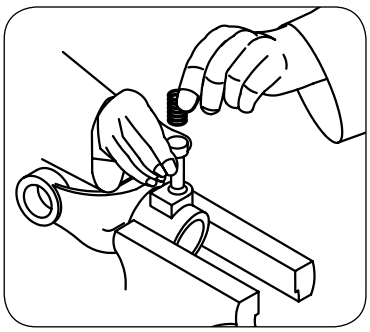
Using a drift punch and hammer, drive the pin towards the retaining washer to force the complete assembly out. Clear the edges of the retaining washer bore to accept the new one by removing the deformed metal from the last peening operation to hold the washer in place.

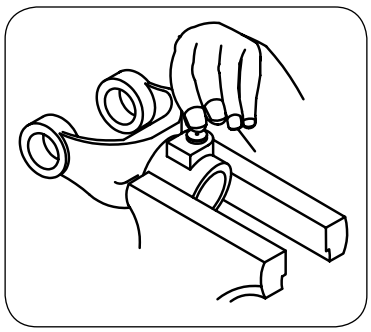


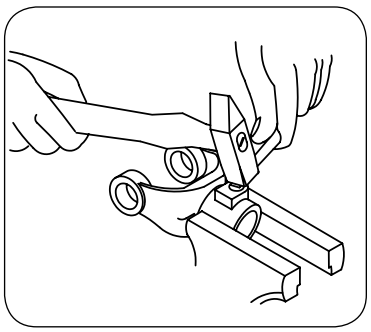




Insert quick-disconnect pin, compression spring and washer into hole, Holding the washer in place, peen the edges of the pore seat to retain the washer, spring and pin.







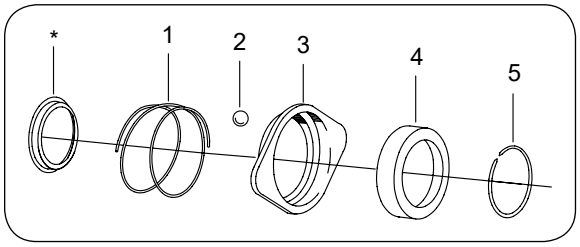
PTO Quick Disconnect (continued)

Quick Disconnect Disassembly

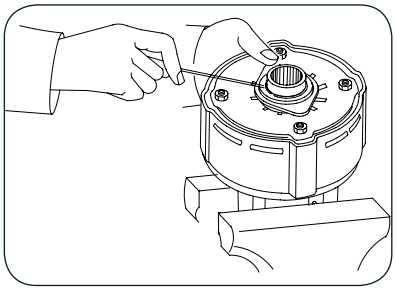
1. Compression Spring
2. Ball
3. Lock Collar
4. Back-up ring
5. Snap ring

* Back-up ring

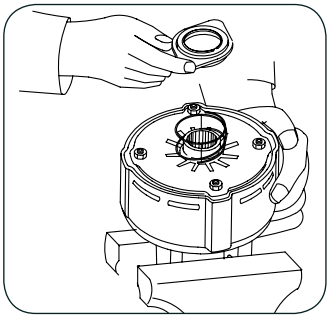
* For some clutch types, place additional back up ring first.



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

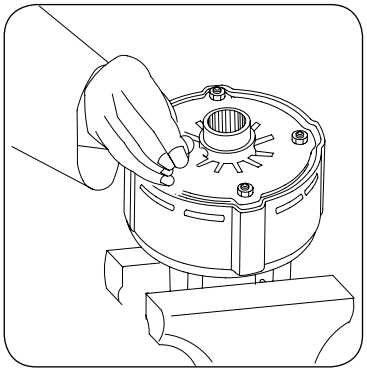


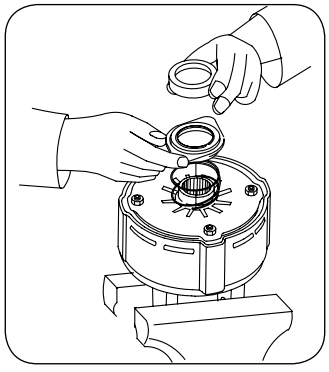
Remove back-up ring, lock collar, compression spring and balls.

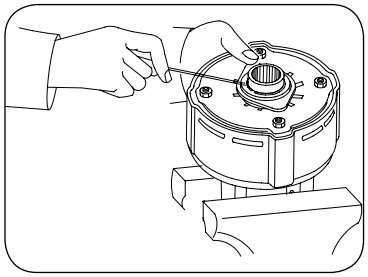


Quick Disconnect Assembly

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



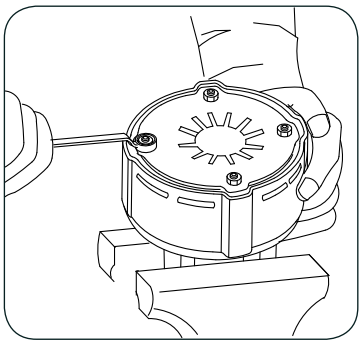
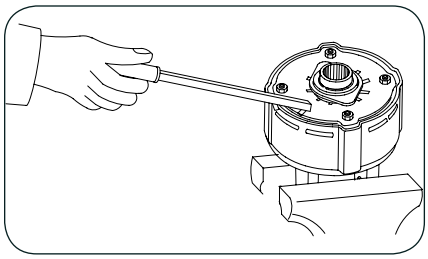
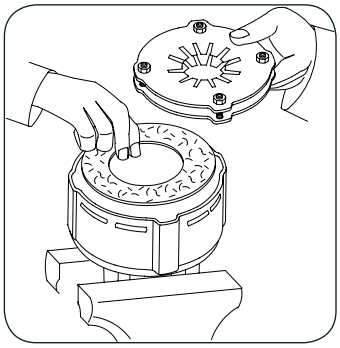




PTO Quick Disconnect (continued)

Clutch Disassembly

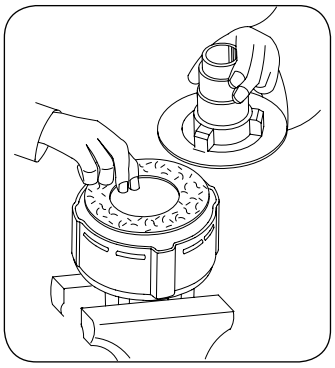
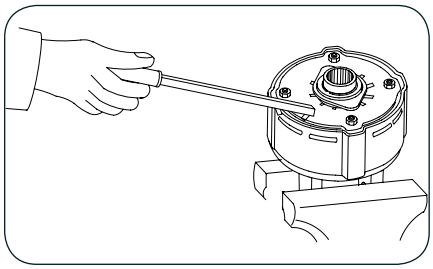
Tighten the four hex nuts (12) uniformly until the clutch pack and hub are loose. Use special tool 9002007 to bend all four retaining lugs back on the edge of the clutch housing. Remove the thrust plate with Belleville springs to get at the friction disks, drive plates and hub for inspection and service.

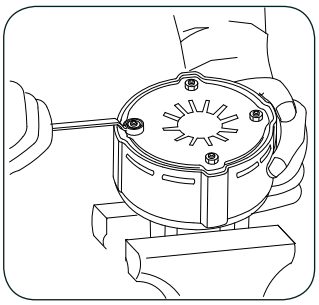
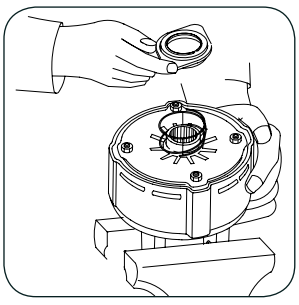
Clutch Assembly

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.

Weather Guard Tarp Troubleshooting

PROBABLE CAUSE	CORRECTION
Tarp sags in middle areas	1. Bows may be bent or adjusted too low.
	2. Missing or loose ridge strap. Replace or retighten.
	3. U-joint may need to be adjusted on spindle 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.*

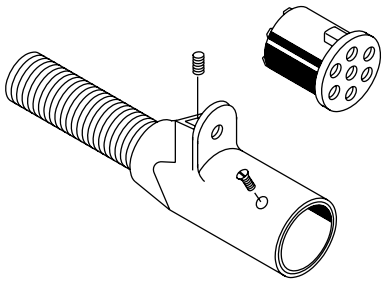
Periodic preventive maintenance should be practiced. Inspect tarp and hardware often for abrasions or loosened bolts that may need adjustment and/or repair. Check bungee cords for wear and adjust tension at the beginning of the season and again half way through the season.

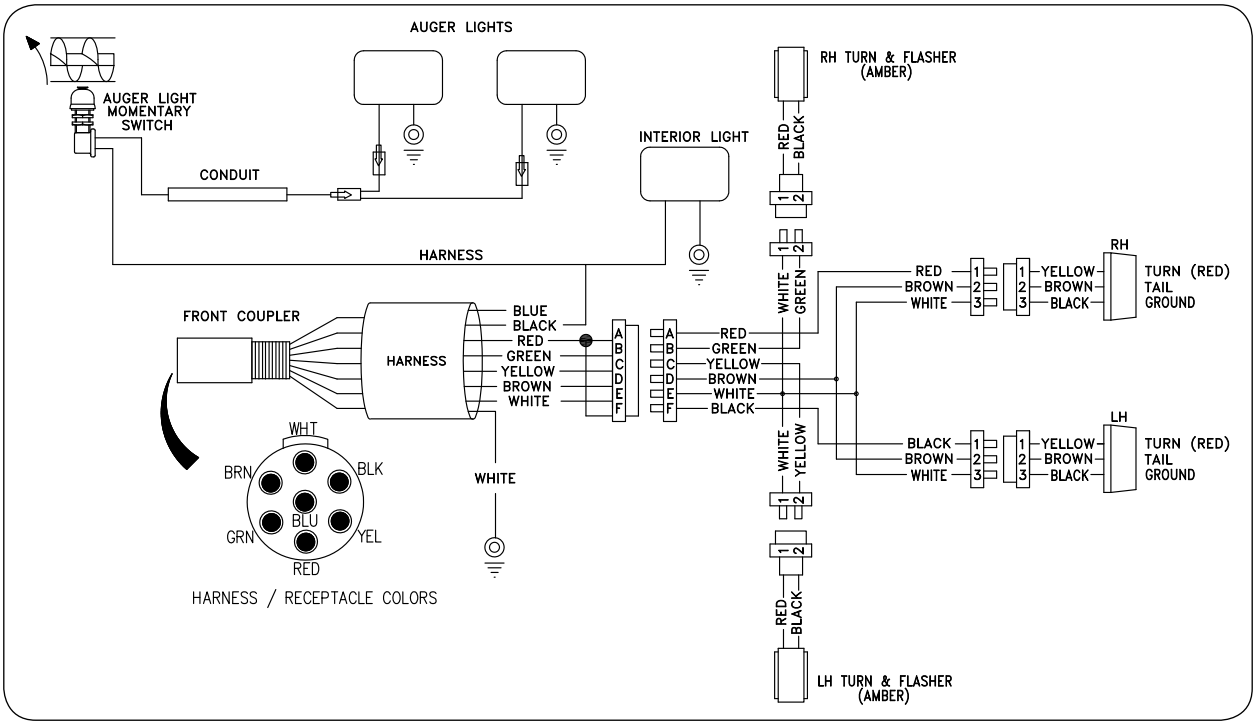
Tears in tarp should addressed before further tarp operation. If water pools on tarp, adjust tension of tarp cables and/or arm springs.

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.

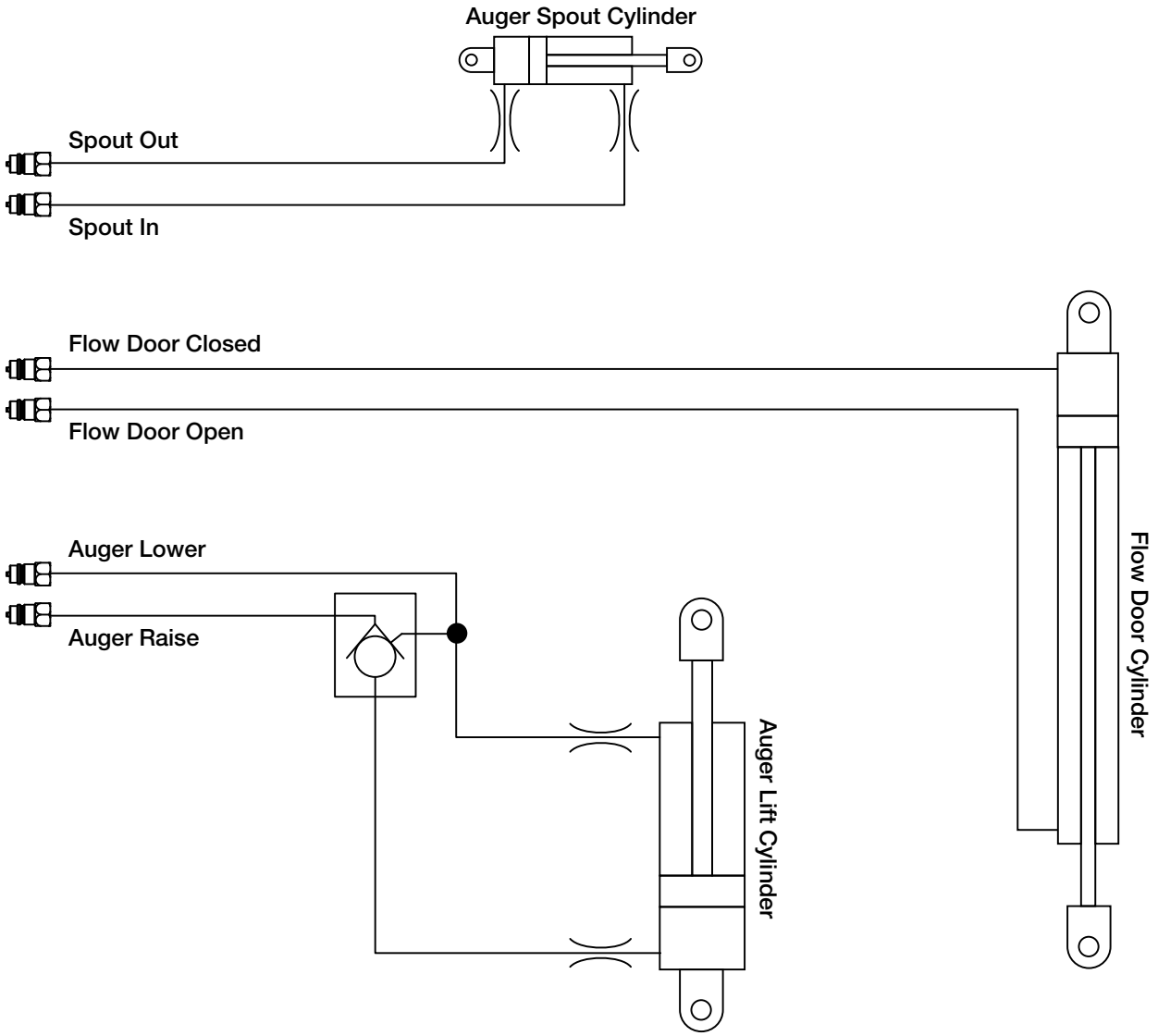
Electrical System Schematic

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





Hydraulic System Schematic



Wheels and Tires

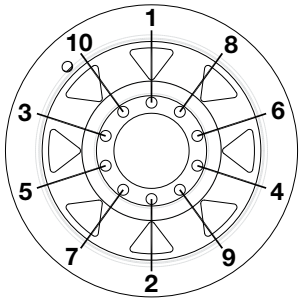
Wheel Nut Torque Requirements

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.



10 BOLT

DIAGRAM 1

Nut/Bolt Location:	
3/4”-16 (UNF)	Single Wheels
7/8”-14 (UNF)	Dual Wheels

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
	IF1100/50R42 CFO R-1W	197B	46
	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
	800/65R32 R-1W	172D	34
	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

****All tire pressures are listed in psi****

Wheels and Tires (continued)

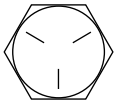
Tire Warranty

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.

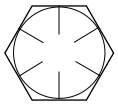
SIZE	FOOT POUNDS	NEWTON METERS
1/4-20 1/4-28	8-10 9-11	11-13 12-15
5/16-18 5/16-24	15-17 17-19	20-23 23-26
3/8-16 3/8-24	25-28 28-31	34-38 38-42
7/16-14 7/16-20	40-45 45-50	54-61 61-68
1/2-13 1/2-20	62-68 68-75	84-92 92-102
9/16-12 9/16-18	90-98 100-110	122-133 134-148
5/8-11 5/8-18	120-135 124-137	162-183 168-186
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 (continued)

Capscrews - Grade 8



NOTE:

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

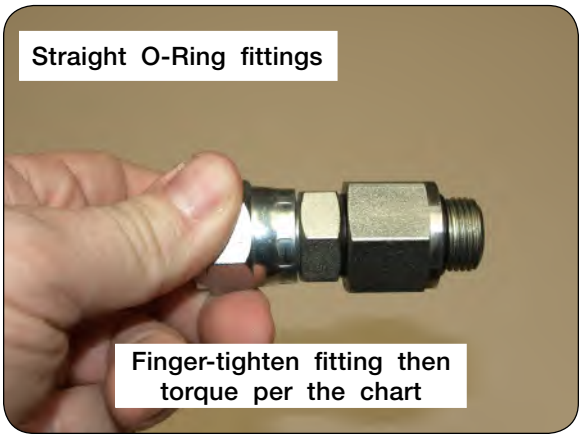
Tightening O-Ring Fittings

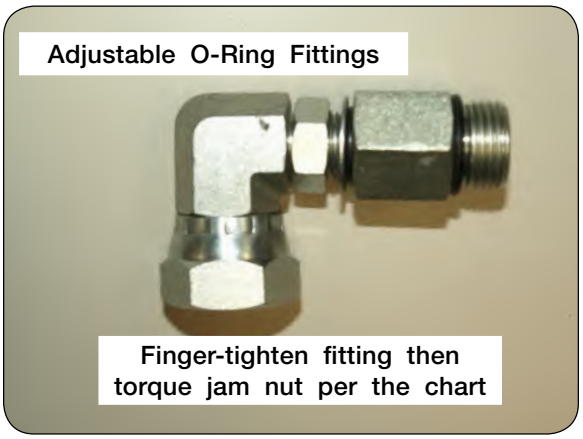
1. Inspect components for damage or contamination. Do not connect any other type of fitting to an O-ring fitting.
2. For adjustable fittings, insure the jam nut and washer are fully backed up.
3. Lubricate the O-ring and threads on the fitting.
4. Turn the fitting into the port until it is finger tight.
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

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.

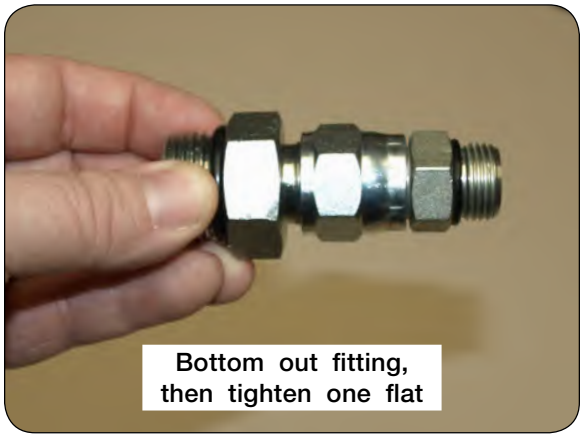
3. Turn the fitting into the port until it bottoms out.

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



Bottom out fitting, then tighten one flat