

LEADERS IN THE FIELD



SUBTILLER 4
PULL-TYPE



SUBTILLER II

SUBTILLER 4 IN-LINE DEEP-TILLAGE RIPPER MAINTENANCE MANUAL

SUBTILLER II IN-LINE DEEP-TILLAGE RIPPER MAINTENANCE MANUAL

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Lubrication

IMPORTANT

- *Do not use a high pressure grease gun to lubricate these bearings. Damage to bearing seals could occur.*

To keep your implement 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.

Use EP-2 lubricant at the locations described in the chart.

All exposed cylinder rods should be coated with grease before seasonal storage to prevent rusting. Remove depth collars and lubricate exposed cylinder rods.

The lubrication locations and recommended schedule are as follows:

ITEM	DESCRIPTION	POINT	QTY.	HOURS
A	Auto-Reset Shank	2	2 Shots	Weekly
B	Pull-Type Option Turnbuckle*	2	2 Shots	Once Every Season
C	Hitch (CAT4)	2	2 Shots	Weekly
D	Wheel Hubs	2	Repack	Once Every Season
E	Coulter Hub	-	10 Shots	Once Every Season
F	Coulter Swivel	2	2 Shots	Weekly
G	Wing Hinge	5	5 Shots	Weekly
H	Main Frame Wheel Pivot	8	5 Shots	Weekly
I	Gauge Wheel Turnbuckle*	2	2 Shots	Weekly

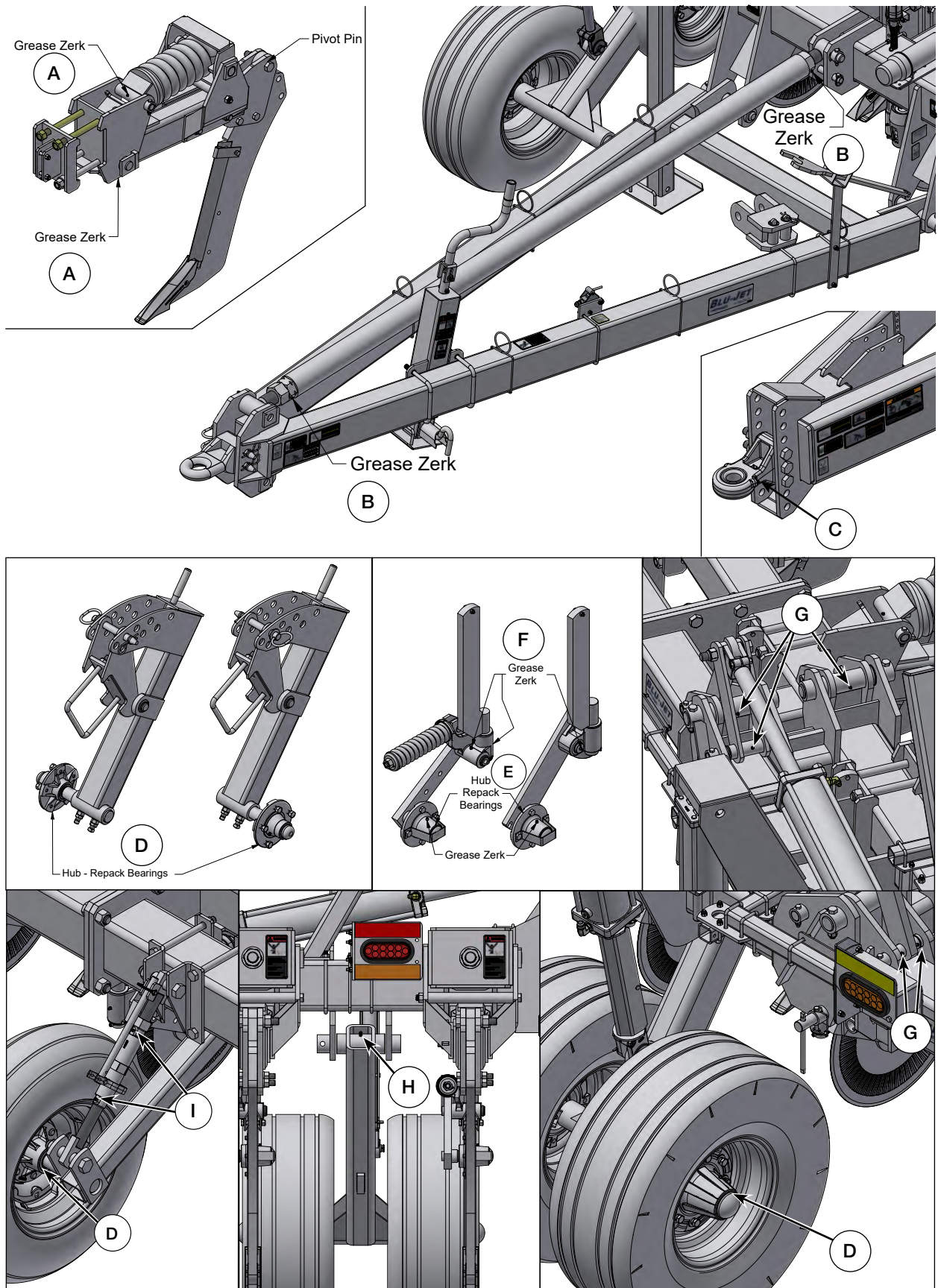
***NOTE - ITEM A:** Turn adjustable link two full turns in each direction to ensure threads do not seize.

Wheel Bearings

Lubricate with an SAE multi-purpose grease. All fittings must be free from dirt and paint to insure entry of lubrication inside bearing.

The gauge wheel bearings should be cleaned, repacked and adjusted once per season. Use a NLGI #2 EP grease to repack the bearings and adjust per the Hub Assembly instructions in this section.

Lubrication (continued)



Daily Service

Beginning of Day

NOTE: Before initial use, ensure all lubrication points have been greased.

Check all U-bolts and bolts for tightness. This is especially important during the first days of operation. See “Torque Chart” in this section.

IMPORTANT

- *Inspect mast pins for any wear or damage. Replace any worn or damaged pins.*

Perform any daily lubrication outlined in “Lubrication” in this section.

Check tire air pressure and inflate to correct pressure, if necessary.

IMPORTANT

- *To assure level penetration of shanks, both tires must be inflated to the same pressure.*

End of Day

Clean off dirt and residue which may have accumulated on implement during operation.

Check implement for damage which could have occurred during operation, and repair.

Shank Wear Bar & Point Replacement

The shanks have a replaceable wear bar and point which, after a period of time, will need to be replaced. To replace these components on your machine, refer to the following guidelines:

⚠ WARNING

- TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE MACHINE IS SECURELY BLOCKED.
- CHANGE ONLY ONE SHANK AT A TIME. IF PRESSURE IS RELIEVED ON ALL SHANKS THE UNIT COULD TIP OVER BACKWARDS.

⚠ CAUTION

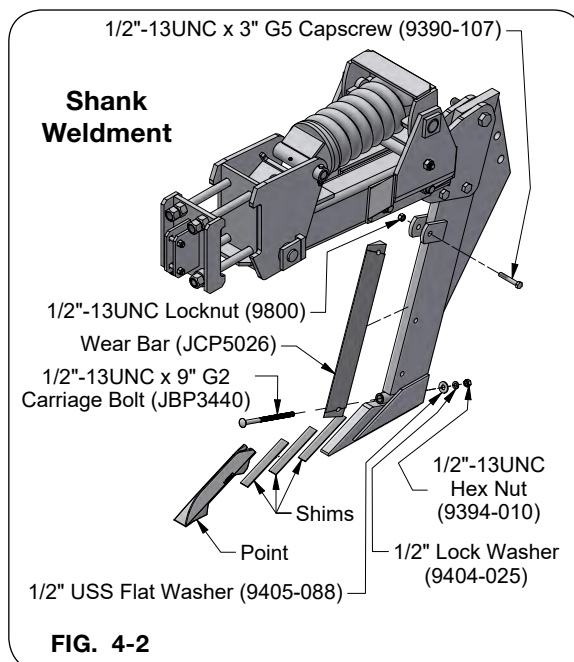
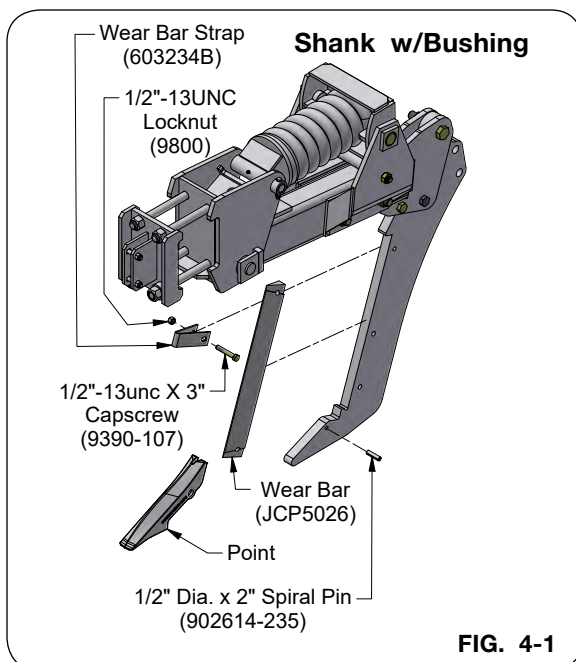
- WEAR BAR IS RETAINED TO THE SHANK BY THE POINT. KEEP HOLD OF WEAR BAR AS POINT IS REMOVED TO PREVENT PERSONAL INJURY.

With implement attached to a tractor, find a firm level surface. Lower the unit's jack stands until they are 1-2 inches below the points, and lower machine to the ground so that the stands support the entire implement and all points are off the ground. Shut off tractor engine, set parking brake, and remove the ignition key.

Wear Bar Replacement

1. Remove the hardware and point.
2. Remove the capscrew (9390-107) and locknut (9800) in order to remove the wear bar.
3. Replace with new wear bar (JCP5026) and secure with previously removed hardware.

NOTE: The wear bars are reversible and should be rotated or replaced often for maximum life of shank.



Shank Wear Bar & Point Replacement (continued)

Point Replacement

1. Remove the retaining hardware and point.
2. Hook the point over the end of the shank and position "Vee" over wear bar end.

SHANK WELDMENT ONLY

Insert the head of 1/2"-13UNC x 9" grade 2 carriage bolt (JBP3440) into notch in new point. Start carriage bolt through hole in shank (FIG. 4-4).

3. **SHANK W/BUSHING ONLY**
Retain into position with spiral pin. (FIG. 4-3)

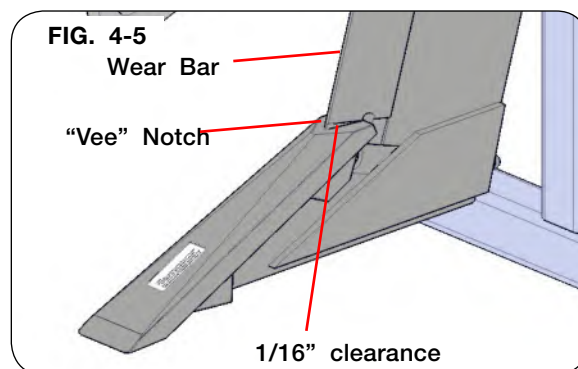
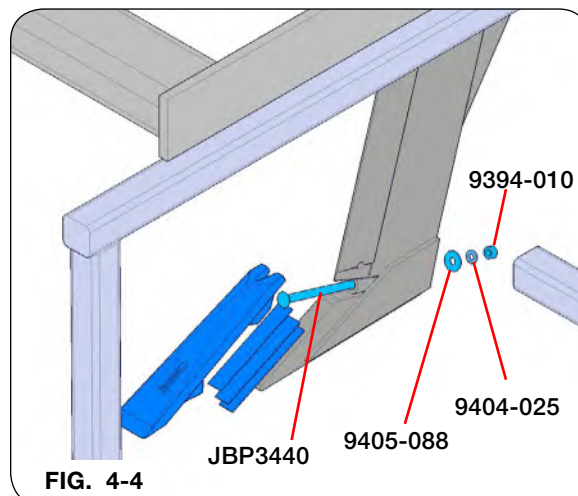
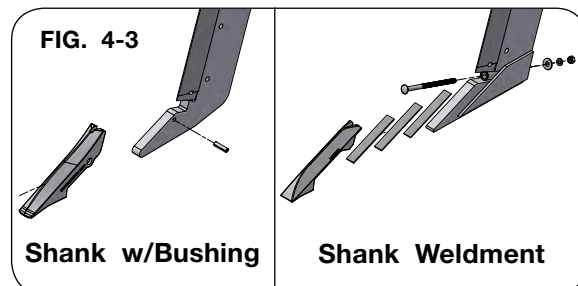
SHANK WELDMENT ONLY

Place 1/2" flat washer (9405-088) and 1/2" lock washer (9404-025) on carriage bolt. Secure with 1/2"-13UNC hex nut (9394-010). (Torque 1/2" hex nut to 45-52 ft.-lbs.) (FIG. 4-4)

4. Allow 1/16" clearance between point "Vee" notch and wear bar. (FIG. 4-5)
5. **SHANK WELDMENT ONLY**
If wear bar touches Vee notch, or clearance is less than 1/16", loosen 1/2"-13UNC x 9" grade 2 carriage bolt (JBP3440) and pull point back and install one shim or a combination of shims. Tighten carriage bolt to 45 ft.-lbs. and reverify 1/16" clearance (FIG. 4-5). Repeat procedure if wear bar is still tight in "Vee" notch.

IMPORTANT

- Periodically check the lower half of the shank for wear - excessive shank wear will occur if point and wear bar are not replaced (or reversed).



Shear-Bolt Replacement

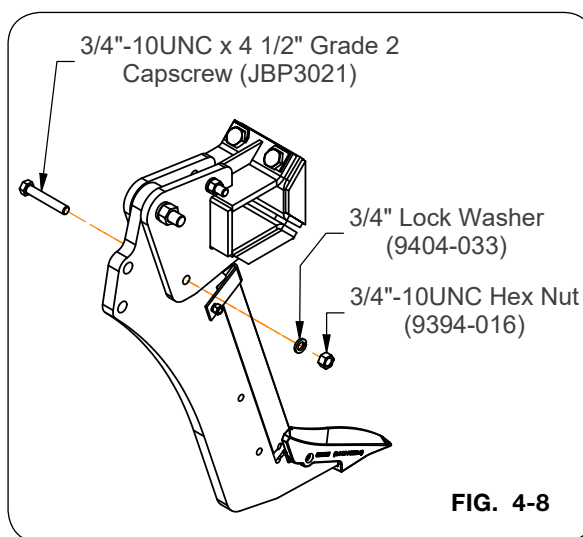
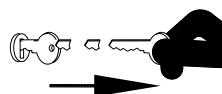
The shear-bolt should shear only when the shank encounters an obstacle.

WARNING

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

1. With implement attached to a tractor, find a firm level surface. Lower the unit's jack stands until they are 1-2 inches below the points, and lower machine to the ground so that the stands support the entire implement and all points are off the ground. Shut off tractor engine, set parking brake, and remove the ignition key.
2. Remove any remaining portions of the shear-bolt from the shank assembly. Inspect shear-bolt holes in the shank. Severely distorted holes will result in shorter shear-bolt life and should be repaired or replaced.
3. Align the holes and install UNVERFERTH 3/4"-10UNC x 4 1/2" grade 2 capscrew/shear-bolt (JBP3021), 3/4" lock washer (9404-033) and 3/4"-10UNC hex nut (9394-016). Do not use a different size or different grade of shear-bolt; unsatisfactory performance and or shank damage may occur. Tighten the nut to 150 ft.-lbs.

NOTE: Additional shear-bolt, lock washer, and hex nut are stored in the front of the shank.



Horizontal Spring Coulter Replacement

The following guidelines are for replacing the spring on the coulter.

WARNING

- TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE MACHINE IS SECURELY BLOCKED.
- KEEP HANDS CLEAR OF PINCH POINT AREAS.

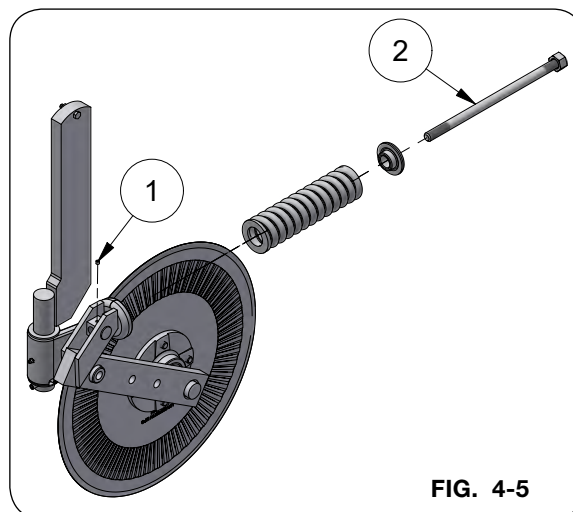
CAUTION

- SHARP EDGES ON COULTER BLADES CAN CAUSE INJURY. BE CAREFUL WHEN WORKING AROUND COULTER BLADES.

IMPORTANT

- *The spring should only be adjusted when repairs are being made. The springs have been preset before leaving the factory.*

1. Loosen the set screw retaining the spring bolt on the coulter arm (FIG. 4-5).
2. Slowly unscrew the spring bolt which will relieve spring pressure (FIG. 4-5).
3. Once the bolt is removed, replace with new spring and re-insert bolt.

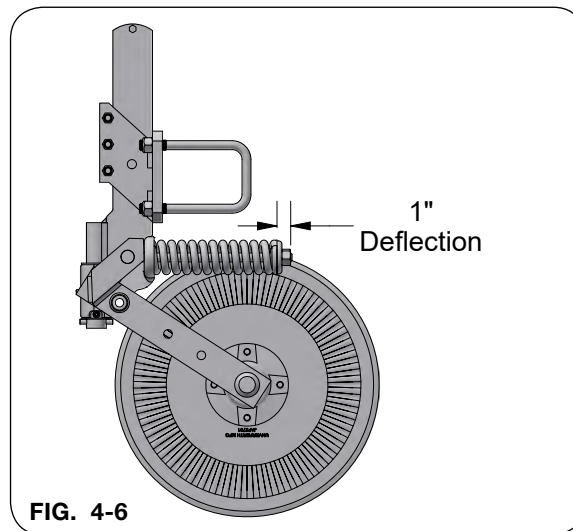


4. Tighten bolt until a deflection of 1" is obtained on spring (FIG. 4-6).

The coulter springs are preset at the factory to 9 3/8". This measurement is the total amount of exposed spring.

NOTE: Adjusting the spring below 9 3/8" could cause premature part failure and void any warranty considerations.

5. Tighten set screw to secure bolt.



Hub Assembly

1. Use grease to lubricate the seal lip.
2. Place the hub onto the spindle.

NOTE: Make sure the bearing is seated in the cone before the seal is put in place.

3. Rotate the hub while doing this so that the seal lip does not fold under as the lip goes on the seal lip of the spindle.
4. Be sure the outer cone slides on the spindle and into the cup.
5. Assemble the washer and the nut onto the spindle and tighten the nut to 20-25 Ft.-Lbs. Rotate the hub while tightening the nut.
6. Back off the nut until it becomes loose.
7. While rotating the hub, retighten the nut to remove all clearance.
8. Line up the next slot in the nut with the hole in the spindle, insert the cotter pin and bend the cotter pin.
9. Install the hub cap.

Annual Service

Beginning of Season



- **READ AND UNDERSTAND SAFETY RULES BEFORE OPERATING OR SERVICING THIS MACHINE. REVIEW "SAFETY" SECTION IN THIS MANUAL IF NECESSARY.**
-

Check all bolts, U-bolts, and wheel bolts for tightness. Refer to “Torque Chart” in this section.

Lubricate implement (see “Lubrication” in this section).

Check air pressure in tires and inflate to correct pressure if necessary (see “Daily Service” in this section).

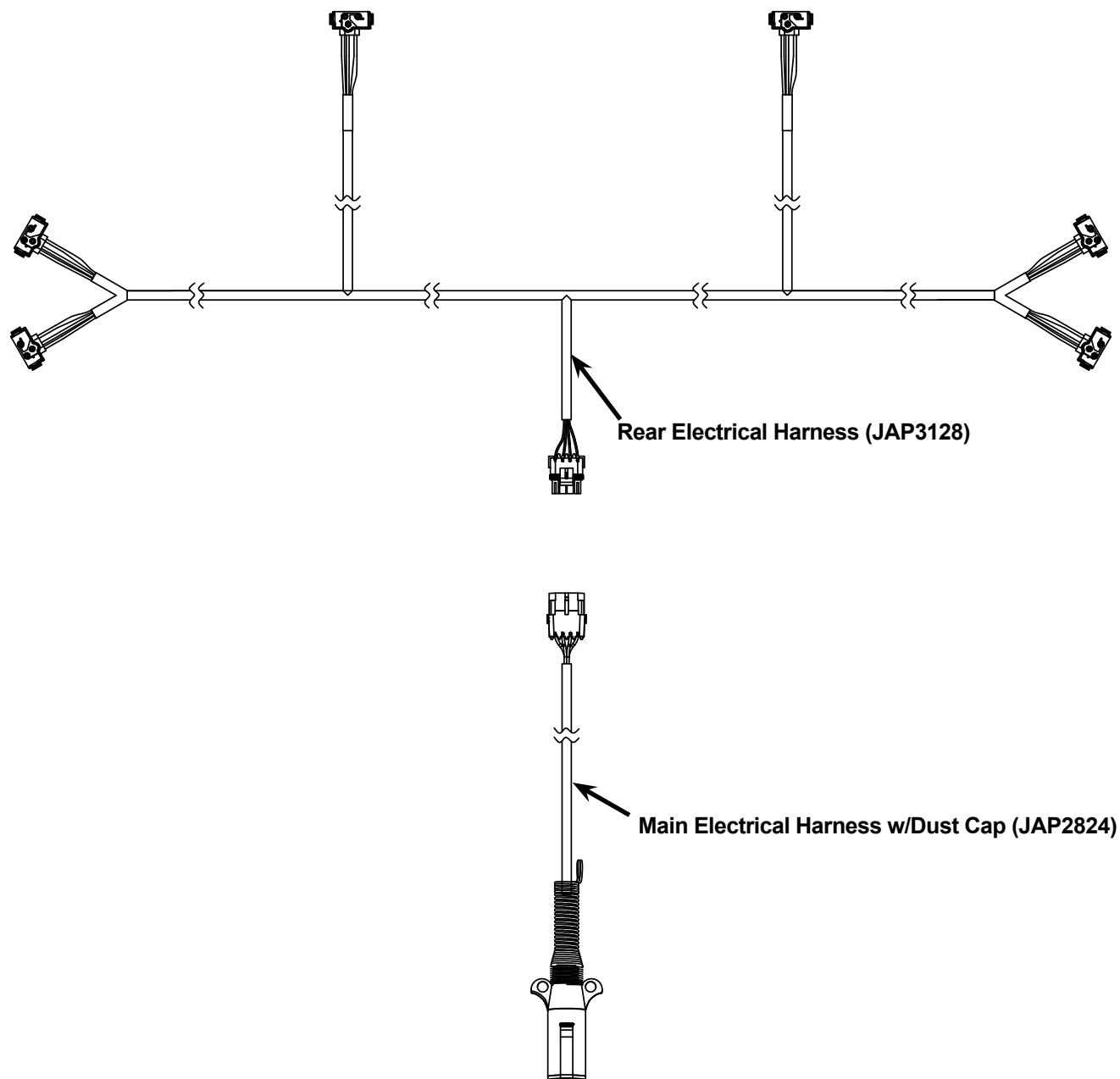
End of Season

Your implement 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.

Perform the following before placing the implement in storage:

1. Remove dirt and residue which could cause rusting.
2. Repaint any chipped or scraped areas.
3. Lubricate implement (see “Lubrication” in this section).
4. Coat all earth moving surfaces with grease or suitable rust preventatives.
5. Inspect for damaged parts. Replace before next season.
6. Store implement inside, away from livestock.
7. Use blocking to keep implement tires and points up off bare ground.
8. Replace all worn, torn or faded decals and reflectors.

Electrical Schematic



Wheels and Tires

Wheel Hardware Torque

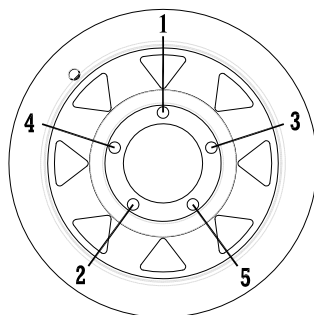
CAUTION

- 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 INITIAL USE, AFTER ONE HOUR OF USE, AND EACH HOUR UNTIL WHEEL NUTS/BOLTS MAINTAIN TORQUE VALUE. CHECK TORQUE EVERY 10 HOURS OF USE THEREAFTER. AFTER EACH WHEEL REMOVAL START TORQUE PROCESS FROM BEGINNING. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS.

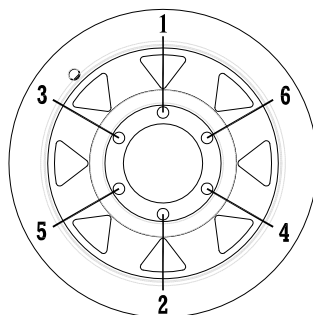
Failure to check torque before first use may damage wheel nut/bolt seats. Once seats are damaged, it will become impossible to keep nuts/bolts tight. Tighten nuts/bolts to the applicable torque value shown below. Start all nuts/bolts by hand to prevent cross threading. Torque nuts/ bolts in the recommended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

WHEEL HARDWARE	
SIZE	FOOT-POUNDS
1/2"-20 (UNF)	75 Ft.-Lbs.
9/16"-18 (UNF)	110 Ft.-Lbs.

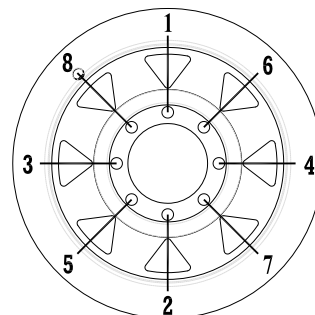
Diagram 1



5 Bolt



6 Bolt



8 Bolt

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.

For used tires recommended.....65 PSI maximum.

For new tires consult tire side wall for PSI information.

Wheels and Tires (continued)

Tire Warranty

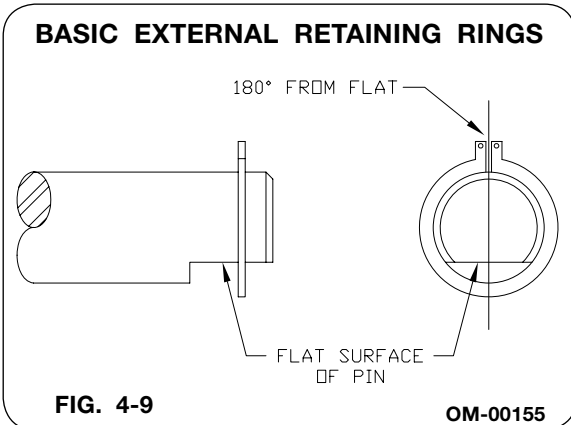
For questions regarding new tire warranty, please contact your local original equipment tire dealer. Used tires carry no warranty. Following are phone numbers and Websites for your convenience:

Carlisle

www.carlisletire.com
Phone 800-260-7959
Fax 800-352-0075

Installing Retaining Rings

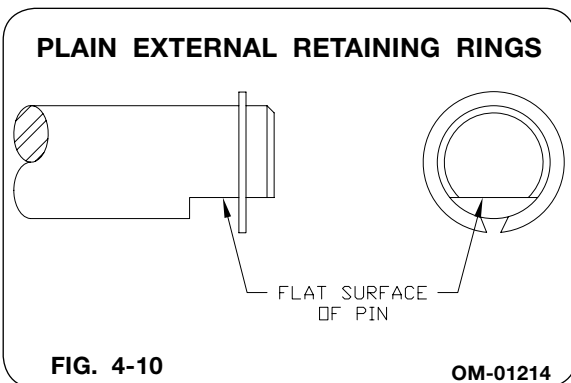
1. USE PROPER TOOLS for assembling rings onto pins (for plain external retaining rings use a flat-blade retaining ring pliers).
2. Before inserting pins, be sure the GROOVE IS FREE FROM ALL FOREIGN MATERIAL (paint, dirt, etc.), to ensure a proper seating.
3. DO NOT OVERSTRETCH RING during assembly. Install ring into groove so that it is securely seated and will not rotate around the pin.
4. **BASIC EXTERNAL RETAINING RINGS**
On "D" shaped pins, the retaining ring OPENING SHOULD BE APPROXIMATELY 180° FROM FLAT of the pin (Fig. 4-9).



PLAIN EXTERNAL RETAINING RINGS

On "D" shaped pins, the retaining ring OPENING SHOULD BE OVER THE FLAT of the pin (Fig. 4-10).

NOTE: The retaining rings should fit tightly once released and should not rotate freely.



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.

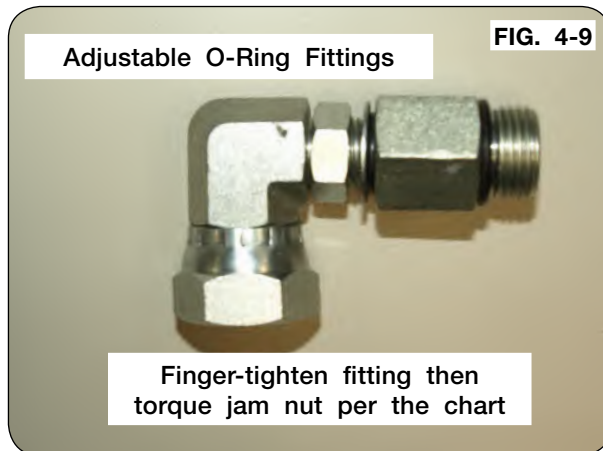
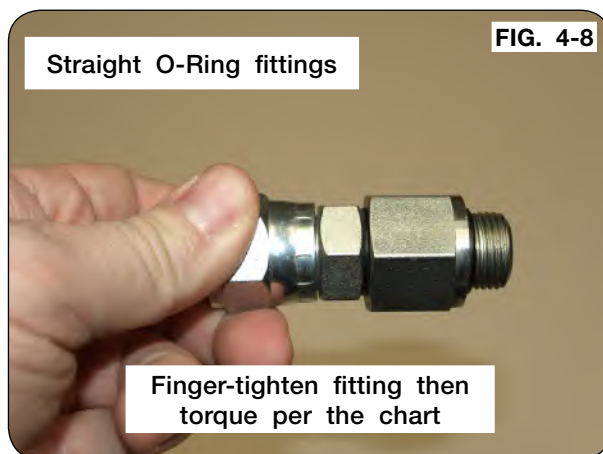
Hydraulic Fittings - Torque and Installation

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

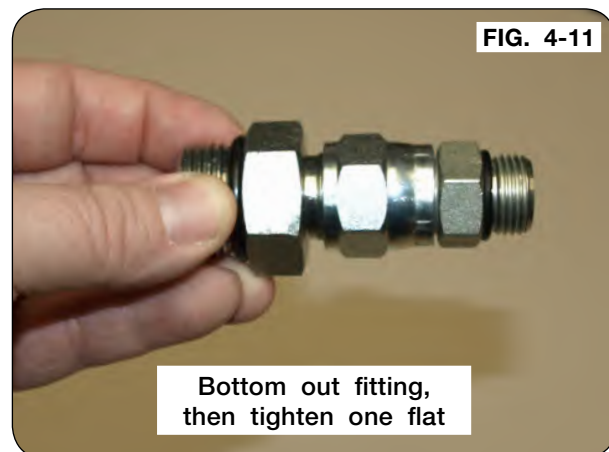
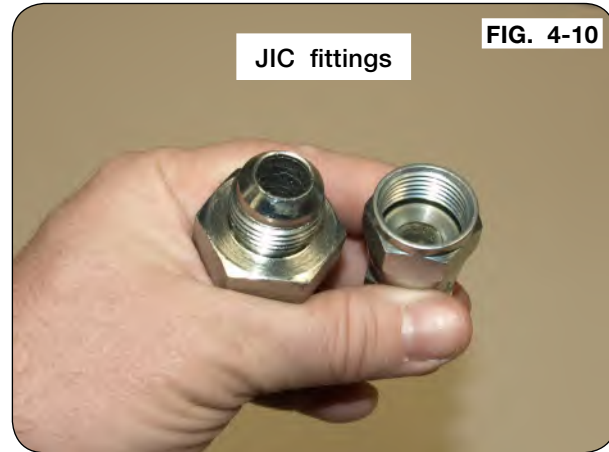


Hydraulic Fittings - Torque and Installation (continued)

Tightening JIC Fittings

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



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Lubrication

IMPORTANT

- *Do not use a high pressure grease gun to lubricate these bearings. Damage to bearing seals could occur.*

Wheel Bearings

Lubricate with an SAE multi-purpose grease. All fittings must be free from dirt and paint to insure entry of lubrication inside bearing.

The gauge wheel bearing should be cleaned, repacked and adjusted once per season. Use a number 2 wheel bearing grease to repack the bearings and adjust per the Hub Assembly instructions in this section.

Daily Service

Beginning of Day

NOTE: Before initial use, ensure all lubrication points have been greased.

Check all U-bolts and bolts for tightness. This is especially important during the first days of operation. See “Torque Chart” in this section.

IMPORTANT

- *Inspect mast pins for any wear or damage. Replace any worn or damaged pins.*

Perform any daily lubrication outlined in “Lubrication” in this section.

Check tire air pressure and inflate to correct pressure, if necessary.

IMPORTANT

- *To assure level penetration of shanks, both tires must be inflated to the same pressure.*

End of Day

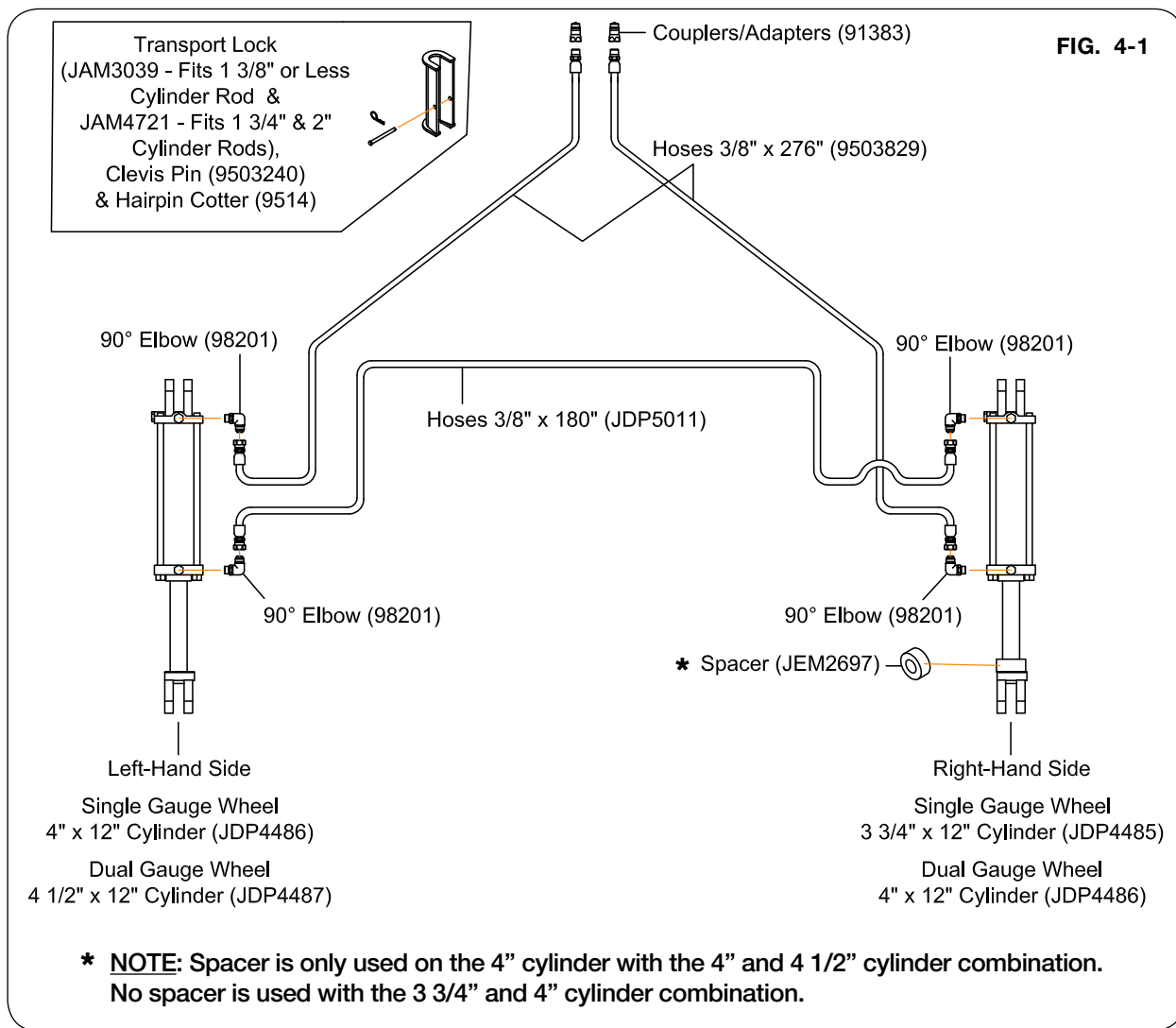
Clean off dirt and residue which may have accumulated on implement during operation.

Check implement for damage which could have occurred during operation, and repair.

Hydraulic System

MODELS WITH OPTIONAL PULL-TYPE CONVERSION KIT

NOTE: For plumbing diagram - refer to images below. Refer to PARTS Section for hydraulic components detailed listing.



Shank Wear Bar & Point Replacement

The shanks have a replaceable wear bar and point which, after a period of time, will need to be replaced. To replace these components on your machine, refer to the following guidelines:

WARNING

- **CHANGE ONLY ONE SHANK AT A TIME. IF PRESSURE IS RELIEVED ON ALL SHANKS THE UNIT COULD TIP OVER BACKWARDS.**

CAUTION

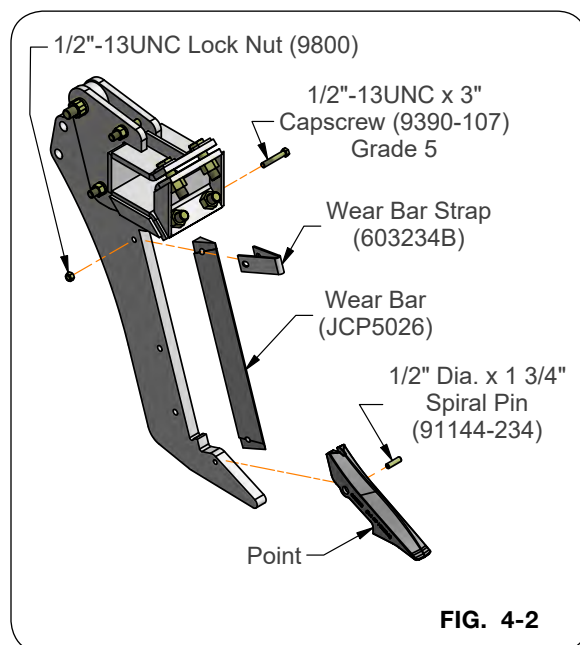
- **WEAR BAR IS RETAINED TO THE SHANK BY THE POINT. KEEP A HOLD OF WEAR BAR AS POINT IS REMOVED TO PREVENT PERSONAL INJURY.**

With implement attached to a tractor, find a firm level surface. Lower the unit's jack stands until they are 1-2 inches below the points, and lower machine to the ground so that the stands support the entire implement and all points are off the ground. Shut off tractor engine, set parking brake, and remove the ignition key.

Wear Bar Replacement

1. Remove the hex nut (9394-010), lock washer (9404-025), and flat washers (9405-088). Remove carriage bolt and point.
2. Remove the capscrew (9390-107) and lock nut (9800) in order to remove the wear bar.
3. Replace with new wear bar (JCP5026) and secure with previously removed hardware.

NOTE: The wear bars are reversible and should be rotated or replaced often for maximum life of shank.

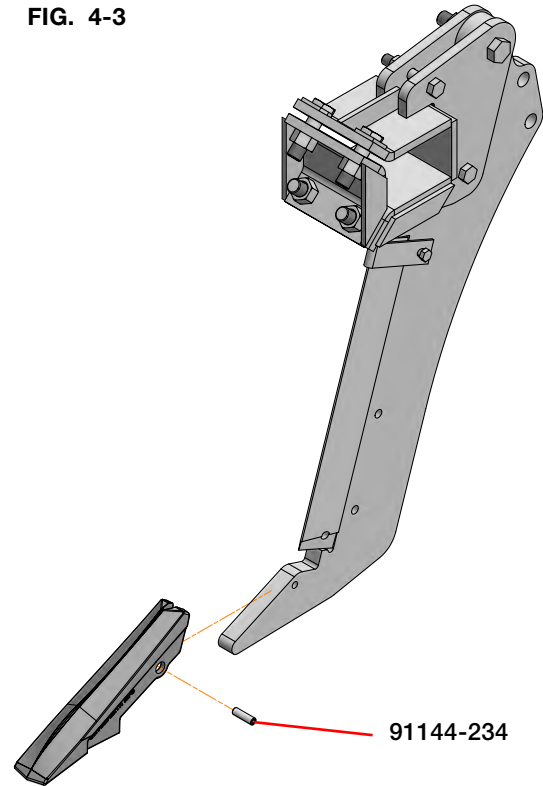


Shank Wear Bar & Point Replacement (continued)

Point Replacement

1. Remove and save the 1/2" Dia. x 1 3/4" spiral pin (91144-234).
2. Hook the point over the end of the shank and position "Vee" over wear bar end.
3. Secure with 1/2" Dia. x 1 3/4" spiral pin (91144-234).

FIG. 4-3



IMPORTANT

- Periodically check the lower half of the shank for wear - excessive shank wear will occur if point and wear bar are not replaced (or reversed).

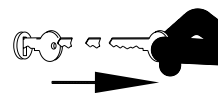
Shear-Bolt Replacement

The shear-bolt should shear only when the shank encounters an obstacle.

WARNING

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

1. With implement attached to a tractor, find a firm level surface. Lower the unit's jack stands until they are 1-2 inches below the points, and lower machine to the ground so that the stands support the entire implement and all points are off the ground. Shut off tractor engine, set parking brake, and remove the ignition key.



2. Remove any remaining portions of the shear-bolt from the shank assembly. Inspect shear-bolt holes in the shank. Severely distorted holes will result in shorter shear-bolt life and should be repaired or replaced.
3. Align the holes and install UNVERFERTH 3/4"-10UNC x 4 1/2" grade 2 capscrew/ shear-bolt (JBP3021), 3/4" lock washer (9404-033) and 3/4"-10UNC hex nut (9394-016). Do not use a different size or different grade of shear-bolt; unsatisfactory performance and or shank damage may occur. Tighten the nut to 150 ft.-lbs.

NOTE: Additional shear-bolt, lock washer, and hex nut are stored in the front of the shank.

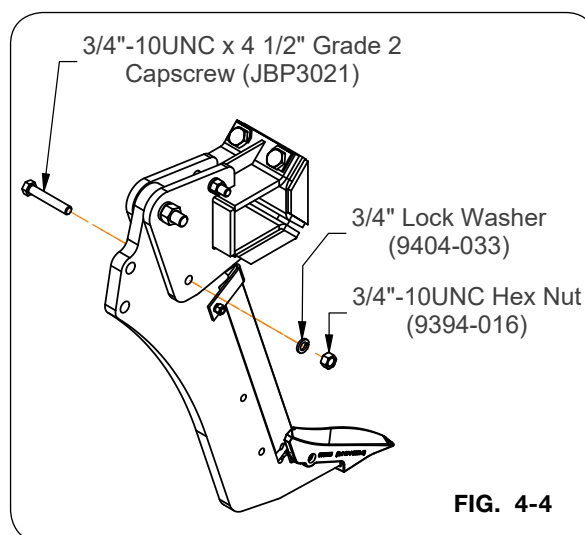


FIG. 4-4

Horizontal Spring Coulter Replacement

The following guidelines are for replacing the spring on the coulters.

WARNING

- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE MACHINE IS SECURELY BLOCKED.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

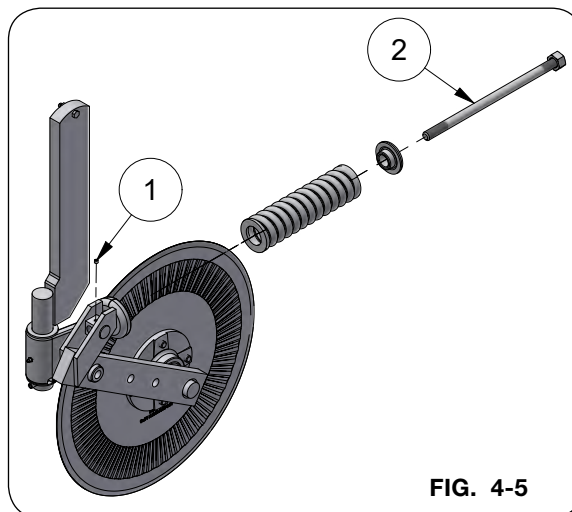
CAUTION

- **SHARP EDGES ON COULTER BLADES CAN CAUSE INJURY. BE CAREFUL WHEN WORKING AROUND COULTER BLADES.**

IMPORTANT

- *The spring should only be adjusted when repairs are being made. The springs have been preset before leaving the factory.*

1. Loosen the set screw retaining the spring bolt on the coulter arm (FIG. 4-5).
2. Slowly unscrew the spring bolt which will relieve spring pressure (FIG. 4-5).
3. Once the bolt is removed, replace with new spring and re-insert bolt.

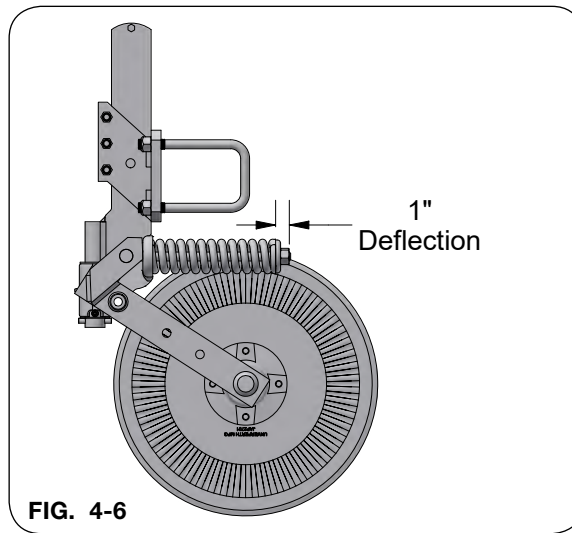


4. Tighten bolt until a deflection of 1" is obtained on spring (FIG. 4-6).

The coulter springs are preset at the factory to 9 3/8". This measurement is the total amount of exposed spring.

NOTE: Adjusting the spring below 9 3/8" could cause premature part failure and void any warranty considerations.

5. Tighten set screw to secure bolt.



Hub Assembly

1 Use grease to lubricate the seal lip.

2 Place the hub onto the spindle.

NOTE: Make sure the bearing is seated in the cone before the seal is put in place.

3 Rotate the hub while doing this so that the seal lip does not fold under as the lip goes on the seal lip of the spindle.

4 Be sure the outer cone slides on the spindle and into the cup.

5 Assemble the washer and the nut onto the spindle and tighten the nut to 20-25 Ft.-Lbs. Rotate the hub while tightening the nut.

6 Back off the nut until it becomes loose.

7 While rotating the hub, retighten the nut to remove all clearance.

8 Line up the next slot in the nut with the hole in the spindle, insert the cotter pin and bend the cotter pin.

9 Install the hub cap.

Annual Service

Beginning of Season



- **READ AND UNDERSTAND SAFETY RULES BEFORE OPERATING OR SERVICING THIS MACHINE. REVIEW "SAFETY" SECTION IN THIS MANUAL IF NECESSARY.**

Check all bolts, U-bolts, and wheel bolts for tightness. Refer to "Torque Chart" in this section.

Lubricate implement (see "Lubrication" in this section).

Check air pressure in tires and inflate to correct pressure if necessary (see "Daily Service" in this section).

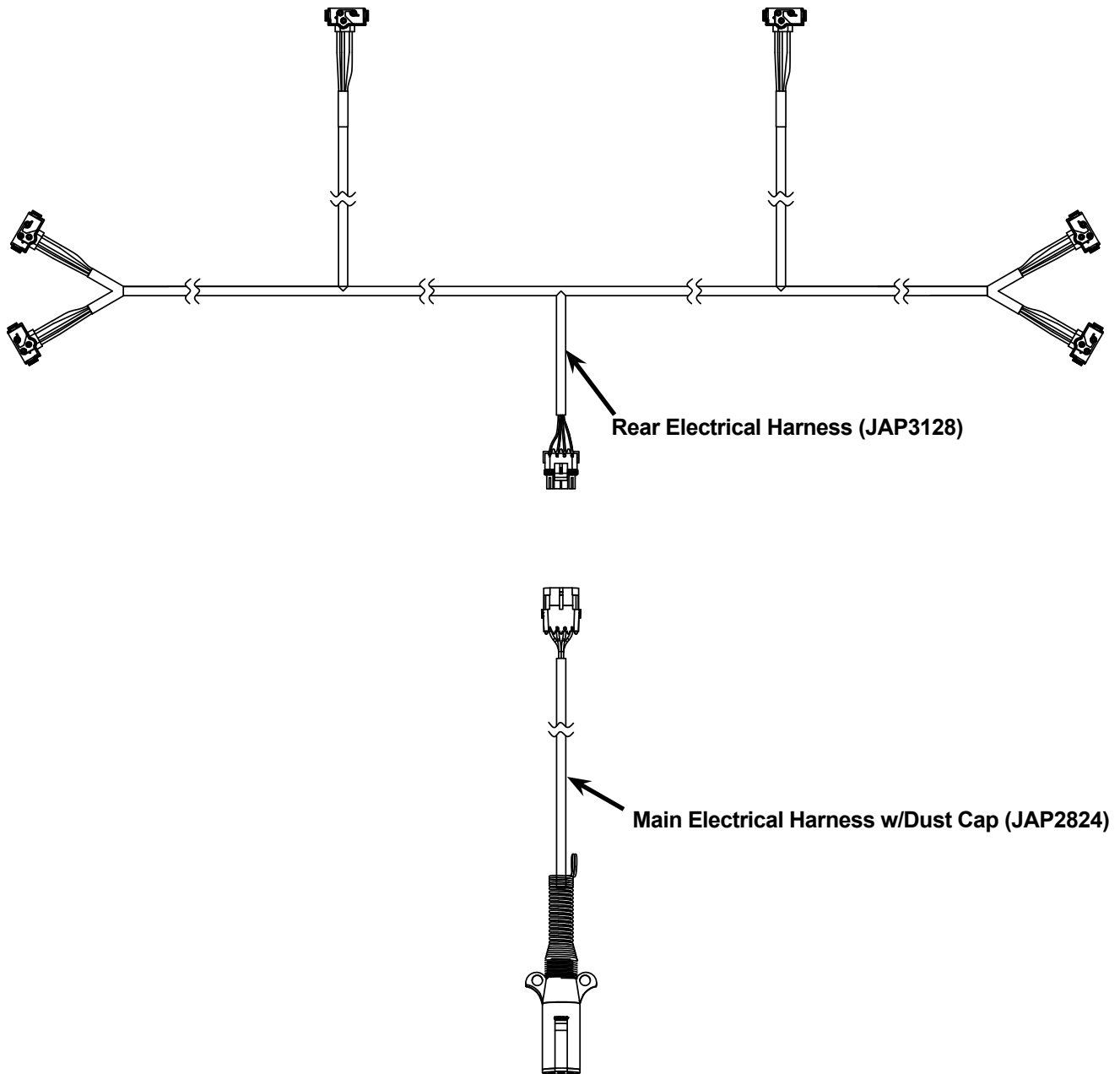
End of Season

Your implement 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.

Perform the following before placing the implement in storage:

1. Remove dirt and residue which could cause rusting.
2. Repaint any chipped or scraped areas.
3. Lubricate implement (see "Lubrication" in this section).
4. Coat all earth moving surfaces with grease or suitable rust preventatives.
5. Inspect for damaged parts. Replace before next season.
6. Store implement inside, away from livestock.
7. Use blocking to keep implement tires and points up off bare ground.
8. Replace all worn, torn or faded decals and reflectors.

Electrical Schematic



Wheels and Tires

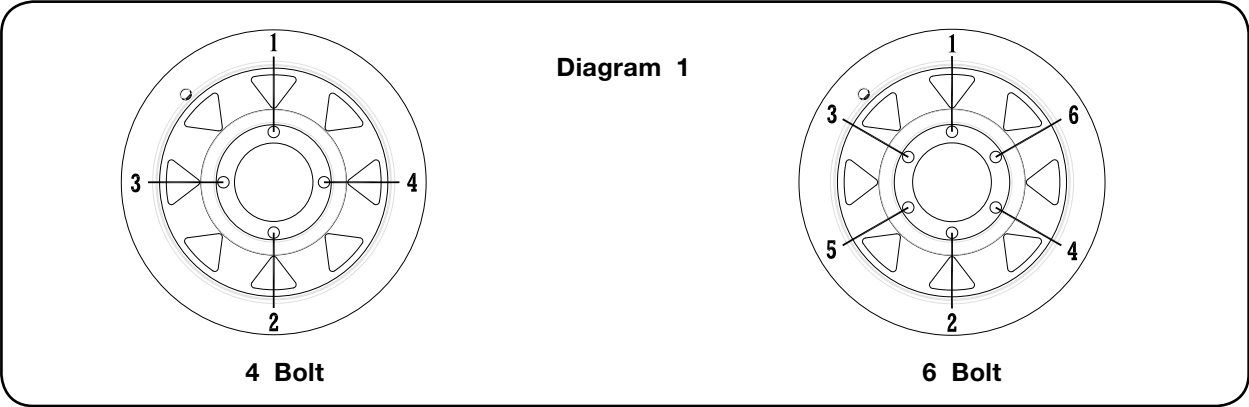
Wheel Hardware Torque

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 INITIAL USE, AFTER ONE HOUR OF USE, AND EACH HOUR UNTIL WHEEL NUTS/BOLTS MAINTAIN TORQUE VALUE. CHECK TORQUE EVERY 10 HOURS OF USE THEREAFTER. 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 use may damage wheel nut/bolt seats. Once seats are damaged, it will become impossible to keep nuts/bolts tight. Tighten nuts/bolts to the applicable torque value shown below. 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
1/2-20 (UNF)	75 Ft.-Lbs.



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.

For new tires consult tire side wall for PSI information.

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:

Carlisle

www.carlisletire.com
Phone 800-260-7959
Fax 800-352-0075

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.

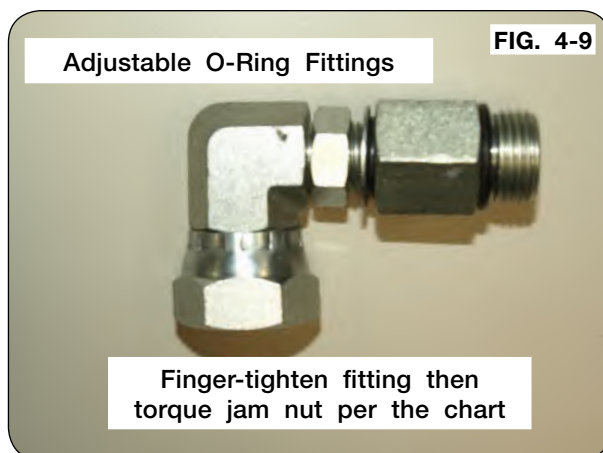
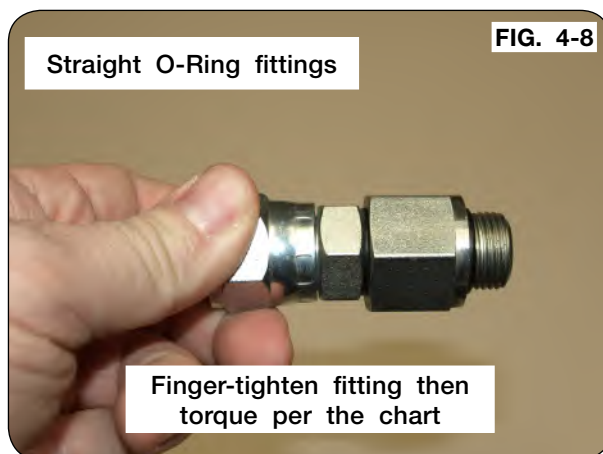
Hydraulic Fittings - Torque and Installation

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 (continued)

Tightening JIC Fittings

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

