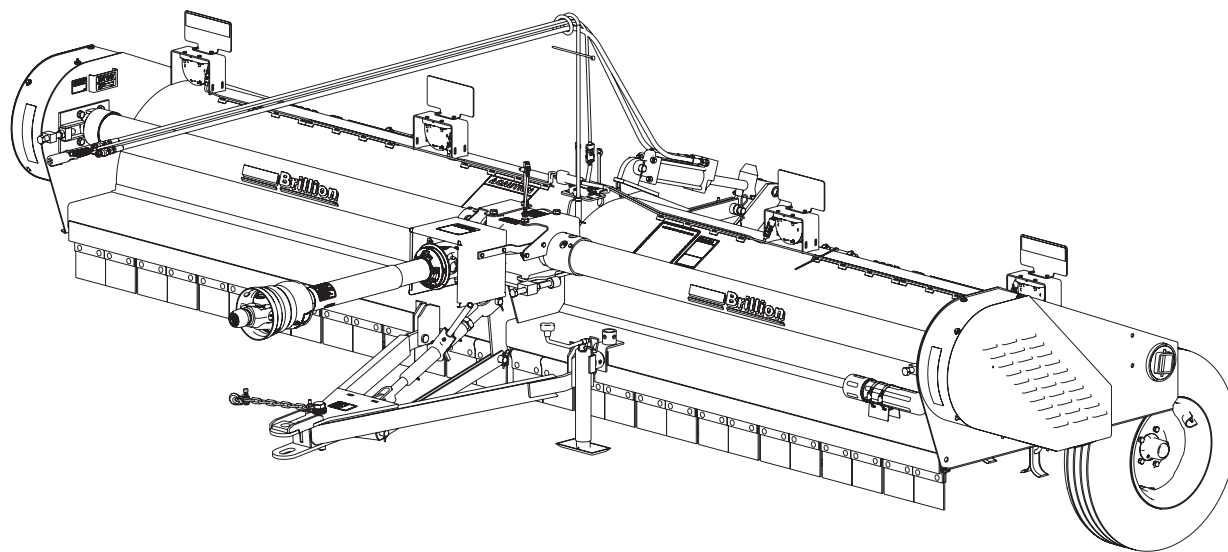




Flail Shredder
Models: 1446, 1446-1, 1806, 1806-1
Series: FS, FSC, FSB
Operator's Manual



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Manuals for Flail Shredder

Manual Number	Manual Type
8J306	Operator's Manual
F-629	Parts Manual



DANGER

DO NOT operate or perform any maintenance tasks on this equipment until you have completed the following:

- 1. Receive proper training to operate this equipment safely.**
- 2. Read and understand the operator's manual.**
- 3. Be thoroughly trained on inspection and repair procedures.**

Failure to comply with this warning may result in serious injury or possibly death.

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Safety Information

Introduction

The implement described in this manual has been designed with care and built by skilled workers using quality materials and processes. Proper assembly, maintenance and safe operation will allow this machine to provide you with satisfactory use for seasons to come.


DANGER

Read this entire manual before attempting to assemble, adjust or operate this machine. Failure to comply with this warning can result in personal injury or death, damage to the machine or its components and inferior operation.

Description of Unit

Brillion 12ft or 15ft Pull-Type Flail Shredders cut and shred residue. The Balanced Rotors are driven by a 540 RPM PTO or 1000 RPM PTO with an Overrunning Clutch and a High Capacity 180 HP Gearbox. Heavy-duty shroud resists wear and dents caused by flowing debris. The Hydraulic Cylinder Stroke Control Plate can be adjusted for cutting height. Hydraulic Transport Wheel Arms are adjustable for Tire Tread spacing. Flexible Rubber Debris Shields keeps debris under the shredder and won't rust.

Using this Manual

This manual will familiarize you with safety, assembly, operation, adjustment, and maintenance. Read this manual and follow the recommendations to help ensure safe and efficient operation.

The information in this manual is current at time of printing. Some parts may change to assure top performance.

Location reference: Right and Left designations in this manual are determined by facing the direction the machine will travel during field operation, unless otherwise stated.

Owner Assistance

If customer service or repairs are needed, contact your Brillion dealer. They have trained personnel, parts and service equipment specially designed for Brillion products. Your machine's parts should only be replaced with Brillion parts. Have the Serial Number and complete Model Number available when ordering parts from your Brillion dealer. **See Figure 1-1.**

Warranty Registration

Brillion Farm Equipment, by Landoll, shall have no warranty obligation unless each product is registered, within 10 days of retail purchase, using the Landoll Company, LLC Ag Products on-line registration process. Please refer to the Ag Products Policy and Procedures Manual, accessible at www.landoll.com for step by step instructions regarding product registration.

Enter your product information below for quick reference.

MODEL NUMBER _____

SERIAL NUMBER _____

DATE OF PURCHASE _____

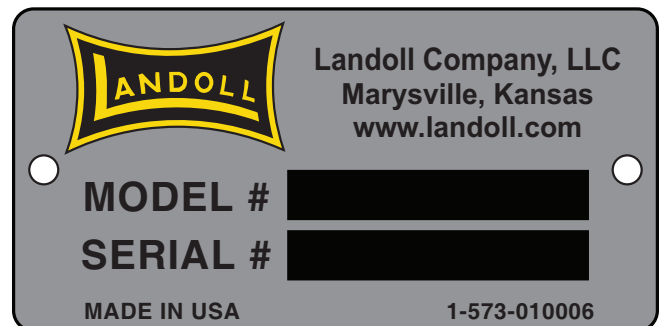


Figure 1-1: ID Plate

Safety

NOTE

Investigation has shown that nearly 1/3 of all farm accidents are caused by careless use of machinery. Insist that all people working with you or for you abide by all safety instructions.

Understanding Safety Statements

You will find various types of safety information on the following pages and on the machine decals (signs) attached to the vehicle. This section explains their meaning.

NOTICE

Special notice - read and thoroughly understand.



CAUTION

Proceed with caution. Failure to heed caution may cause injury to person or damage product.



WARNING

Proceed with caution. Failure to heed warning will cause injury to person or damage product.



DANGER

Proceed with extreme caution. Failure to heed notice will cause injury or death to person and/or damage product.

NOTE

You should read and understand the information contained in this manual and on the machine decals before you attempt to operate or maintain this equipment.

- Examine safety decals and be sure you have the correct safety decals for the machine. **See Figure 1-3.**
- Order replacement decals through your Brillion dealer.
- Keep these signs clean so they can be observed readily. It is important to keep these decals cleaned more frequently than the machine. Wash with soap and water or a cleaning solution as required.
- Replace decals that become damaged or lost. Also, be sure that any new machine components installed during repair include decals which are assigned to them by the manufacturer.
- When applying decals to the machine, be sure to clean the surface to remove any dirt or residue. Where possible, sign placement should protect the sign from abrasion, damage, or obstruction from mud, dirt, oil etc.



DANGER

- **Do not allow extra riders on the tractor or a machine. Riders could be struck by foreign objects or thrown from the machine.**
- **Never allow children to operate equipment.**
- **Keep bystanders away from the machine during operation.**
- **Keep Riders Off Machinery.**

Transporting Safety

IMPORTANT

It is the responsibility of the owner/operator to comply with all state and local laws.

- When transporting the machine on a road or highway, use adequate warning symbols, reflectors, lights and slow moving vehicle sign as required. Slow moving tractors and towed implements can create a hazard when driven on public roads. They are difficult to see, especially at night.
- Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of the towing vehicle.
- Carry reflectors or flags to mark tractor and implement in case of breakdown on the road.
- Do not transport at speeds over 20 MPH under good conditions. Never travel at a speed which does not allow adequate control of steering and stopping. Reduce speed if towed load is not equipped with brakes.
- Avoid sudden stops or turns because the weight of the machine may cause the operator to lose control of the tractor. Use a tractor heavier than the machine.
- Use caution when towing behind articulated steering tractors; fast or sharp turns may cause the machine to shift sideways.
- Keep clear of overhead power lines and other obstructions when transporting. Know transport height and width of your machine. Refer to transport dimensions. **See "Specifications" on page 5-1.**

Protective Equipment

- Wear protective clothing & equipment appropriate for the job. Avoid loose fitting clothing.
- Because prolonged exposure to loud noise can cause hearing impairment or hearing loss, wear suitable hearing protection, such as earmuffs or earplugs.

Rotating Driveline Safety



- Be certain that only properly trained and physically able individuals install and maintain the PTO Drive Shaft.
- Wear close fitting clothing.
- Keep Guards in place at all times. Do not allow use of the PTO Drive Shaft without Guards or with a damaged Guard.
- PTO Drive Shaft Guard must be free to rotate independently of the PTO Drive Shaft. Inspect PTO Drive Shaft before and after use. Worn or defective parts must be repaired or replaced.
- Do not expose guarded parts of the PTO Drive Shaft by cutting or enlarging the grease access openings.
- Tractor Master Shield must overlap the end of the Splined Shaft.
- Absolutely no adapter devices shall be installed between the tractor PTO and the PTO Drive Shaft.
- Do not operate above recommended speeds. Tractor PTO must match PTO Drive Shaft. Overload can cause damage.
- Never step on, over or under a PTO Drive Shaft.
- Always make sure machine is completely shut down and the PTO driveline is stopped before working around, on, or removing blockage from PTO driven equipment. Parts of the PTO Drive Shaft can reach high temperatures after operation, **Do Not touch!**

Safety Instructions for Towing Vehicles

The maximum travel speed is the lesser of

- The limit of the road conditions;
- The maximum specified ground speed;
 - for towing operations as indicated in this manual or SIS;
 - of the towed vehicle as indicated in its operator's manual, SIS, or information sign;
- The maximum ground speed of the towed equipment combination shall be limited to the lowest specified ground speed of any of the towed machines. This speed is the ground speed limitation.

EXAMPLE: If the tractor is capable of 25 mph, the first implement has a SIS for 19 mph, and the last implement's operator's manual states its specified ground speed is 15 mph, the towed equipment combination ground speed limitation is 15 mph.

Attaching, Detaching and Storage

- Do not stand between the tractor and machine when attaching or detaching implement unless both are not moving.
- Before applying pressure to the hydraulic system, be sure all connections are tight and that hydraulic hoses are not damaged.
- Completely raise machine and install Transport Lock Pin when attaching, detaching and storing machine.
- Block machine so it will not roll when unhitched from the tractor.
- Relieve pressure in hydraulic lines before uncoupling hydraulic hoses from tractor.
- Use Safety Chain.

NOTE

To relieve hydraulic pressure: Depending on tractor hydraulic system, some can be relieved by actuating control lever after engine is stopped. If tractor has electric over hydraulic controls, it may be necessary to move control lever to float position with engine running. Refer to tractor's operator's manual. The Transport Lock should be engaged. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.

Maintenance Safety

- Block the machine so it will not move when working on or under it to prevent injury.
- Transport Lock Pin installed.
- Do not make adjustments or lubricate machine while it is in motion.
- Make sure all moving parts have stopped and all system pressure is relieved.
- Understand the procedure before doing the work. Use proper tools and equipment.
- Keep all shields in place. Replace damaged shields.

Prepare for Emergencies

- Keep a First Aid Kit and Fire Extinguisher handy.
- Keep emergency numbers for doctor, ambulance, hospital and fire department near phone.

Chemical Safety

Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil & property.

- Read chemical manufacturer's instructions and store or dispose of unused chemicals as specified. Handle chemicals with care and avoid inhaling smoke from any type of chemical fire.
- Store or dispose of unused chemicals as specified by the chemical manufacturer.

Tire Safety

Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.

- When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side, not in front of or over the tire assembly. Use a safety cage if available.
- When removing and installing wheels, use wheel-handling equipment adequate for weight involved.

High Pressure Fluid Safety

Escaping fluid under pressure can be nearly invisible and have enough force to penetrate the skin causing serious injury. Use a piece of cardboard, rather than hands, to search for suspected leaks.

- Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.
- Avoid the hazard by relieving pressure before disconnecting hydraulic lines.

NOTE

To relieve hydraulic pressure: Depending on tractor hydraulic system, some can be relieved by actuating control lever after engine is stopped. If tractor has electric over hydraulic controls, it may be necessary to move control lever to float position with engine running. Refer to tractor's operator's manual. The Transport Lock should be engaged. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.

Safety Chain

Use a Safety Chain to help control drawn machinery should it separate from the tractor drawbar.

- Use a chain with a strength rating equal to or greater than the gross weight of towed machinery in accordance with ASAE S338.2 specifications. If two or more machines are pulled in tandem, a larger chain may be required. Chain capacity must be greater than the total weight of all towed implements.
- A second chain should be used between each implement.
- Attach the chain to the tractor drawbar support or specified anchor location. Never attach the chain to an intermediate support. Allow only enough slack in the chain to permit turning. The distance from hitch pin to attachment point or intermediate support point should not exceed 9 inches. If the distance from the drawbar pin to either the front or rear chain attachment point exceeds 9 inches, intermediate chain support is required. **See Figure 1-2.**
- Replace chain if any links or end fittings are broken, stretched or damaged.
- Do not use a Safety Chain for towing.

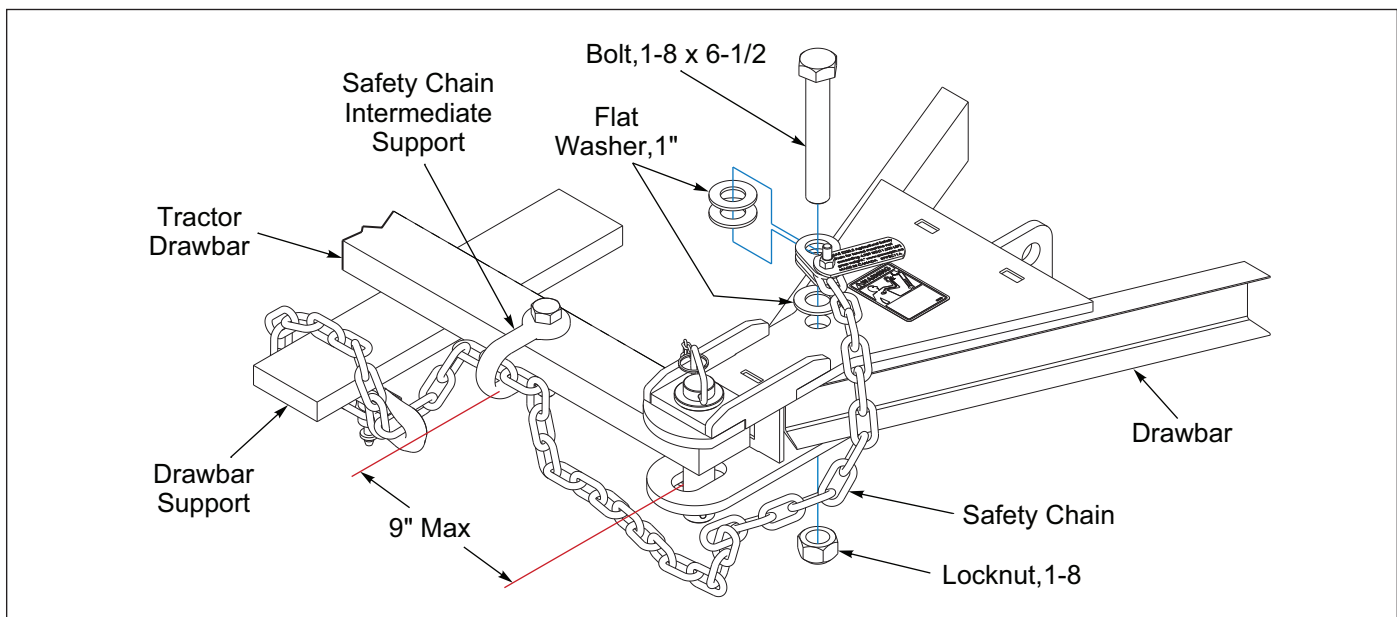
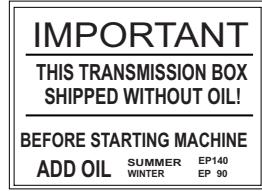


Figure 1-2: Safety Chain

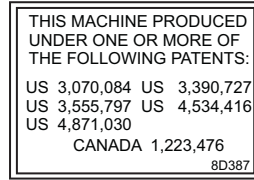
Decals



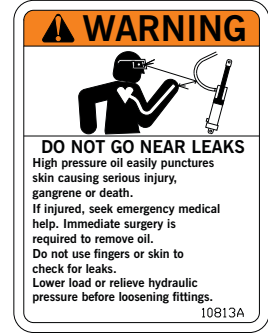
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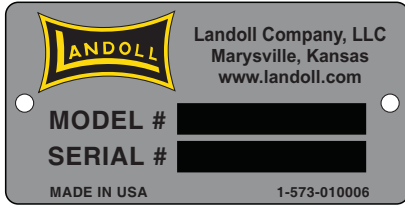
ITEM 2
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ITEM 5
8D387



ITEM 16
3K706



ITEM 3 - 1-573-010006



ITEM 8
5D006



ITEM 15
5D019



ITEM 6 - 4K036



ITEM 17



ITEM 15
5D020



ITEM 7 - 4K039



ITEM 18



ITEM 9
4K031



ITEM 10
8J273



ITEM 14
2J099



ITEM 11
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ITEM 12
528933



ITEM 13
528938

Figure 1-3: Decals

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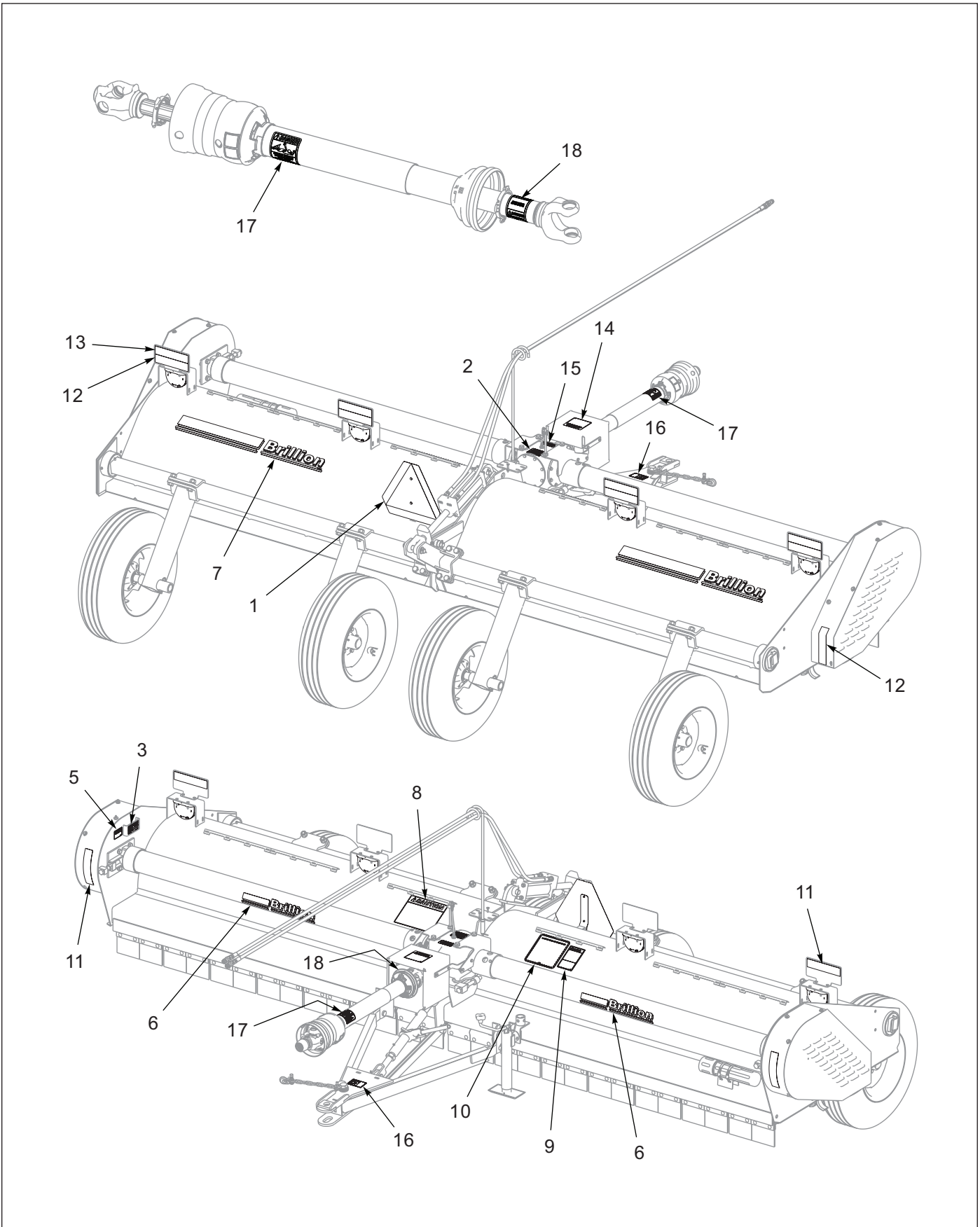


Figure 1-4: Decal Locations

Assembly

**CAUTION**

Do Not Work On Or Under This Machine Unless Securely Blocked And Supported By A Hoist Or Tractor Or By Other Sufficient Means!

**WARNING**

Do not attempt to lift heavy parts manually. Use a hoist or a forklift to move these parts into position.

NOTE

Refer to the repair parts manual F-629 for identification of parts and for the approximate relationship of the parts in assembly. Your exact Flail Shredder Model may vary slightly from the illustration.

To ensure alignment of assemblies, **leave the nuts loose until completion** of final assembly. Use lock washers or flat washers as specified. Spread all cotter pins.

After completion of final assembly, tighten all nuts **evenly** to prevent misalignment, distortion or binding. Tighten all screws and nuts to the recommended torques.

IMPORTANT

- If pre-assembled parts or fasteners are temporarily removed, remember where they go. It is best to keep parts separated.
- Check that all working parts move freely, bolts are tight and cotter pins spread.
- Refer to the Torque Table for proper torque values. Note the different torque requirements for bolts with locknuts.

"Left" and "Right" refer to directions seen as if standing behind the machine and facing in the direction of forward travel.

IMPORTANT

All Harnesses must be firmly attached to machine frame members, so they don't sag or become torn loose by field debris. Use the tie wraps provided.

Check to be sure that the Hoses and Harness at the center of the machine is away at all times from the PTO Assembly and slack enough as to not stretch or interfere while turning.

Frame Debris Skirting Assembly

1. Select a smooth level area that can be reached by a hoist or lift truck.
2. The Flail Shredder should be standing vertical on the shipping stands. On each end of the Shredder, by the Front Frame Tube, remove the Skirt Hanger Rod and install two debris Skirts between each Frame Angle. Secure Skirt Hanger Rods at the ends of the Shredder Frame between the Frame End Angle with Cotter Pins. **See Figure 2-2.**
3. Place the Shredder Assembly down onto 10-12" high blocks at the front end of the hood. The back of the Shredder should be resting on the end of the shipping stands. **See Figure 2-1.**

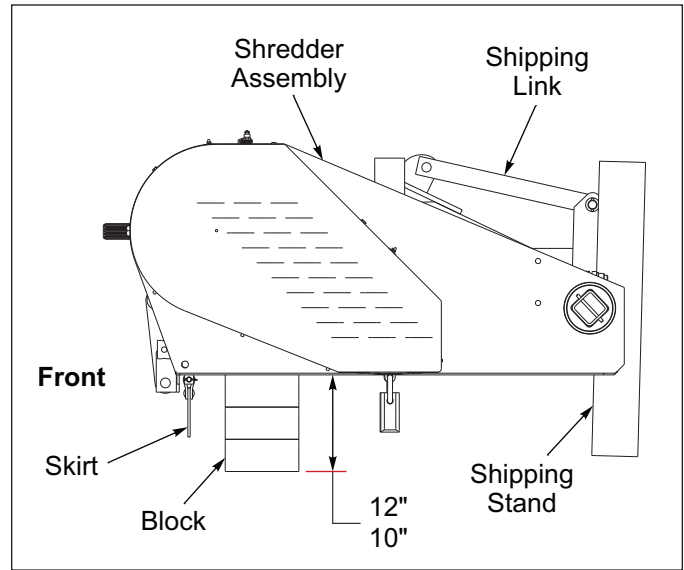


Figure 2-1: Flail Shredder Setup

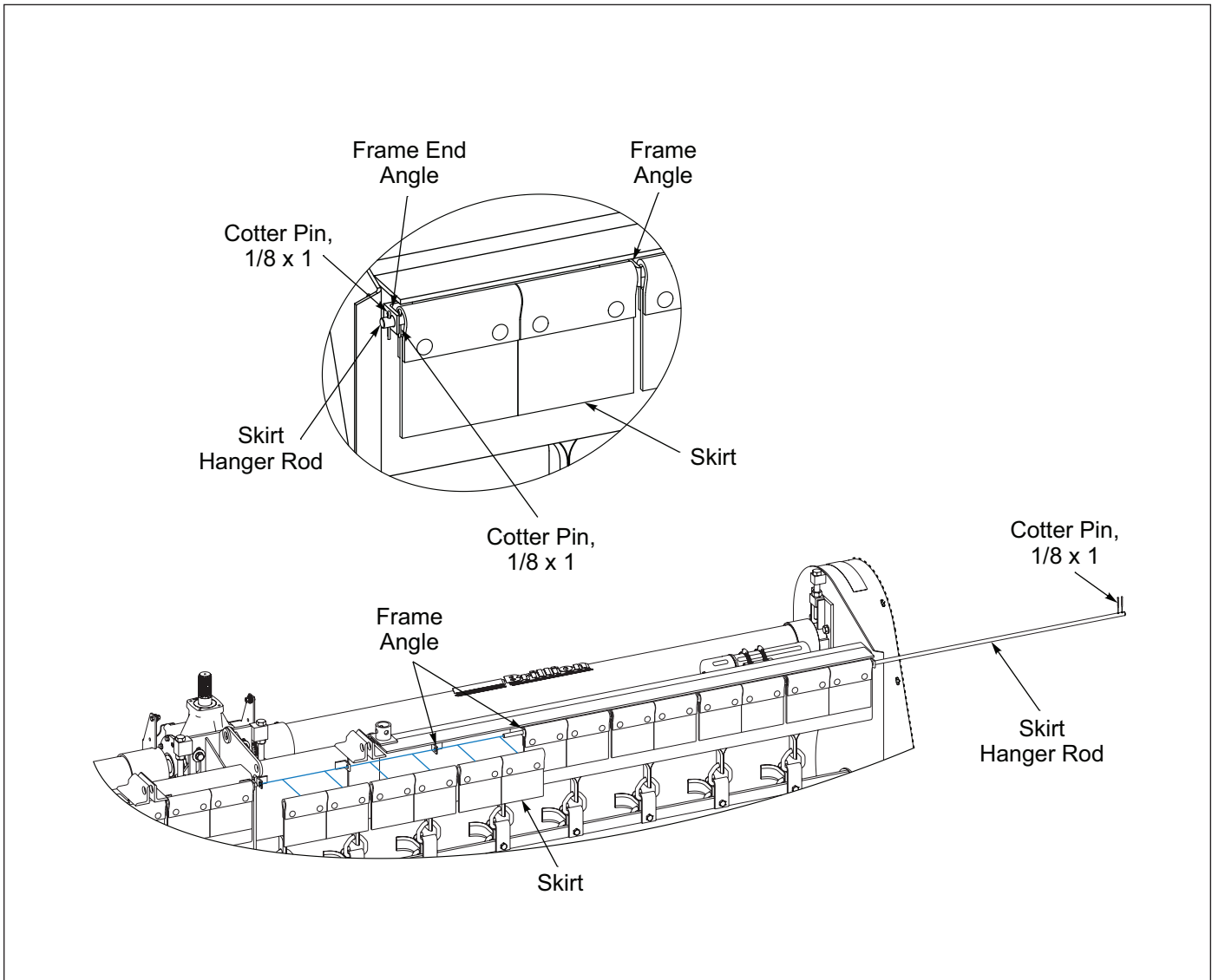


Figure 2-2: Flail Shredder Skirt Installation

Drawbar Installation

NOTE

DO NOT Operate machine unless Front Drawbar Links are installed.

1. Orient the Drawbar with the Hitch Slot on the Bottom. Attach the Drawbar to the Lugs on the front of the Shredder Frame with 1 X 2 Clevis Pins. Secure with 1/4 x 1-1/2 Cotter Pins. **See Figure 2-3.**
2. Install Front Drawbar Links to the Drawbar Center Plate bottom hole and the Frame Center Plate bottom hole with 1 X 2 Clevis Pins. Secure with 1/4 x 1-1/2 Cotter Pins. **DO NOT** Operate machine unless Front Drawbar Links are installed.
3. Mount Ratchet Jack to the Drawbar Center Plate top hole and Frame Center Plate top hole with vendor supplied hardware.
4. Assemble Safety Chain to Drawbar Hitch Plate with 1-8 x 6-1/2 Bolt, Flat Washers and Locknut.
5. Position Jack on the Shredder Frame Side Sleeve and Pin with provided Pin. Extend Jack to the ground for added frame support.

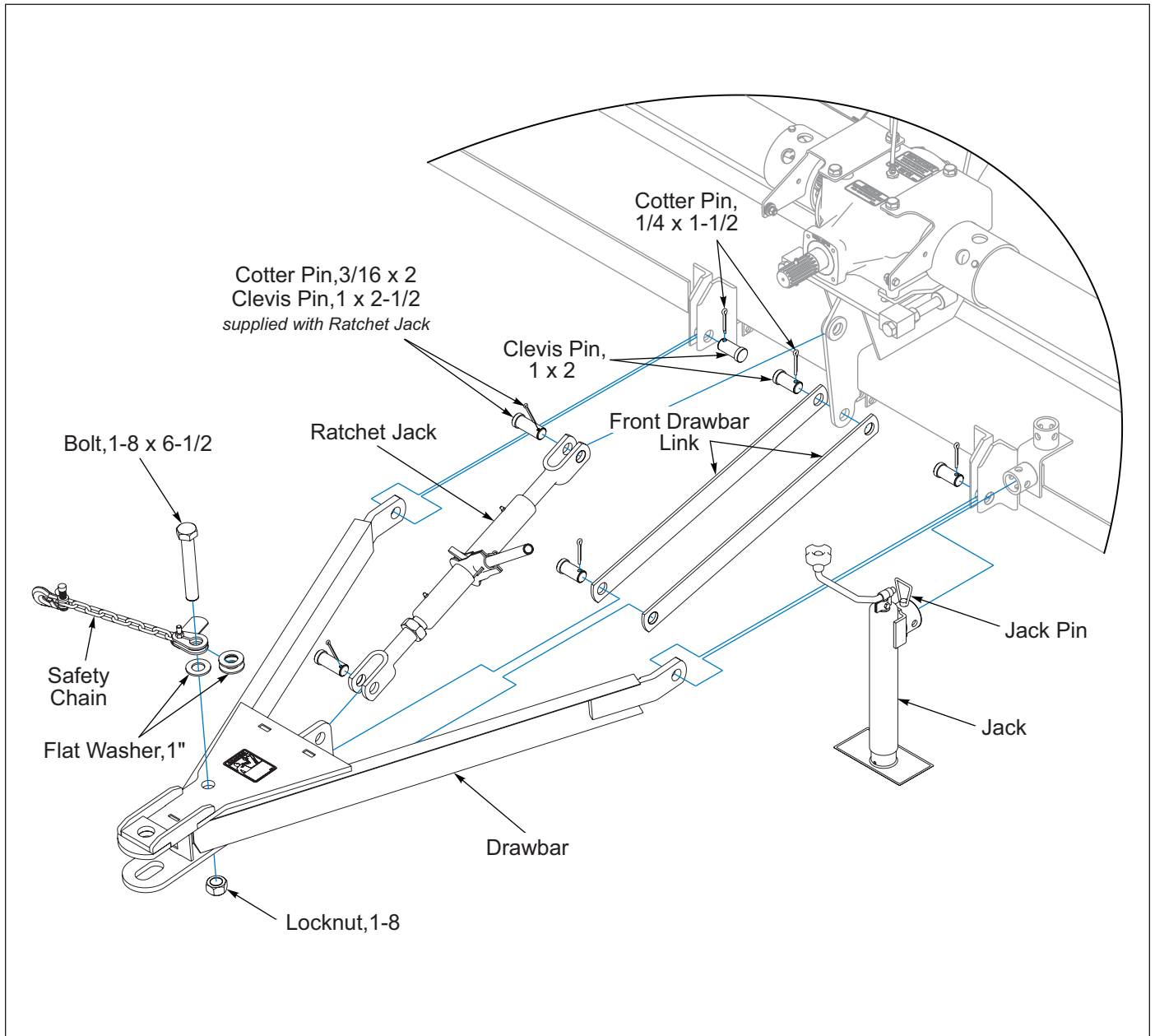


Figure 2-3: Drawbar Installation

PTO Installation

IMPORTANT

The Gearbox is shipped without Gear Oil.

⚠ DANGER

Stay Clear of Rotating Drivelines.
See "Rotating Driveline Safety" on page 1-3.



NOTE

Always double check if the end yokes are securely locked!
PTO Drive Shaft Guard must be free to rotate independently of the PTO Drive Shaft.

1. Raise Gearbox Shield and grease Gearbox Input Shaft.
2. Attach the Overrunning Clutch end of the PTO Assembly onto the Gearbox. The PTO Drive Shaft Guard has a decal indicating which end of the Shaft should be connected to the tractor.
3. Remove one of the grease fittings from the PTO Assembly Overrunning Clutch. **See Figure 2-4.** Align the hole of the Overrunning Clutch and the hole of the Gearbox Input Shaft and insert 5/16 x 2-1/2 Roll Pin. Position slot in 3/16 x 2-1/2 Roll Pin opposite the 5/16 x 2-1/2 Roll Pin and insert 3/16 Roll Pin into 5/16 Roll Pin. **See Figure 2-5.** The Roll Pins must be engaged through the Gearbox Input Shaft and both sides of the PTO Overrunning Clutch to permit rotation of the PTO Overrunning Clutch. Install the removed Grease Fitting.

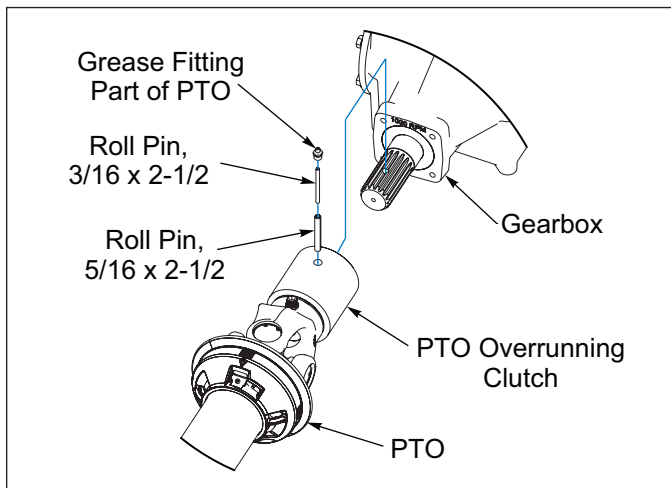


Figure 2-4: PTO Installation

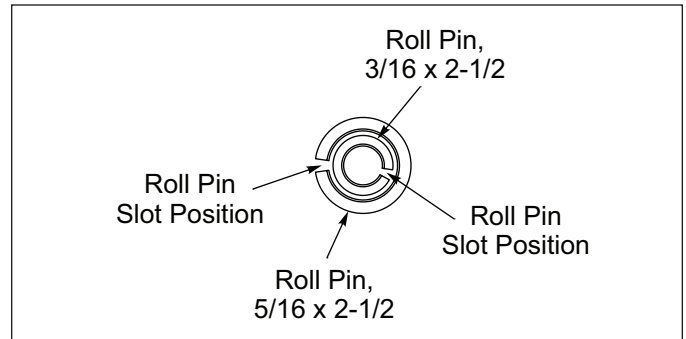


Figure 2-5: Roll Pin Alignment

4. Lubricate PTO Drive Shaft Grease Points. **See "Lubrication Maintenance" on page 4-3.**
5. Lower Gearbox Shield.
6. The Gearbox is shipped without Gear Oil. On the side of the Gearbox you will find a Plug located in the front of the Gearbox Output Shaft. Remove the Plug. Remove Vent Hose Bushing at the top of the Gearbox and fill the Gearbox with proper Gear Oil to the bottom of the Gearbox Plug Hole by the Output Shaft. Do Not overfill with Gear Oil. Install removed side Plug and Top Vent Hose Bushing. **See Figure 2-6.**
 - When temperature is above 32 degrees: use **SAE 140EP gear oil.**
 - When temperature is below 32 degrees: use **SAE 90EP gear oil.**

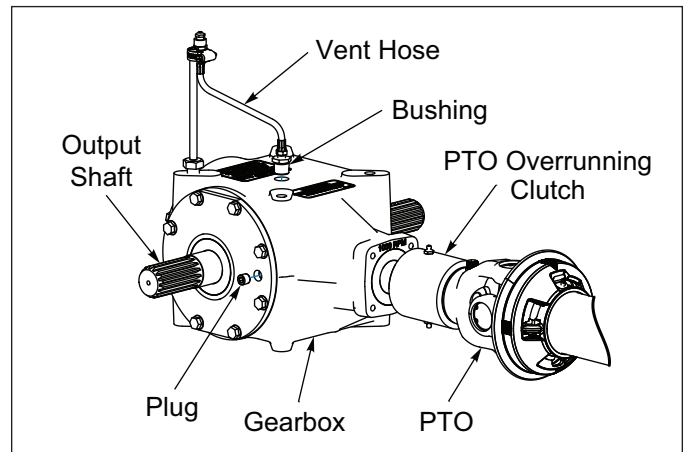


Figure 2-6: Gearbox

Wheel Arm Installation

1. Raise the rear of the Flail Shredder with a lift truck or hoist.
2. The Shipping Link Top Pin with the Spacers is the Transport Lock Pin (1 x 5-1/2 with 5/16 holes on 4-3/4 spacing). Remove Transport Lock Pin and Spacers and place them in the frame Center Plate hole which is the storage position. **See Figure 2-7.**
3. Orient the 3 x 8 Hydraulic Cylinder with the Hydraulic Cylinder Rod End down. Remove the Shipping Link Lower Pin from the Rockshaft Lugs. Discard Shipping Link. Install the Rod End of 3 x 8 Hydraulic Cylinder to the Rockshaft Lugs with the removed 1 x 5-1/2 Pin (1/4 holes on 5 spacing). Secure with Cotter Pin. Attach the base end of the 3 x 8 Hydraulic Cylinder to the Shredder Frame Lug with the vendor supplied hardware. **See Figure 2-12.**
4. The distance between the Wheel Arms is adjustable on the square Rockshaft. **See Figure 2-9** for recommended positioning. Position and install Transport Wheel Arms onto square Rockshaft located at the rear of the Shredder with provided Clamp and Hardware. **See Figure 2-8.**

5. Remove the Shipping Stands from the Square Rockshaft.

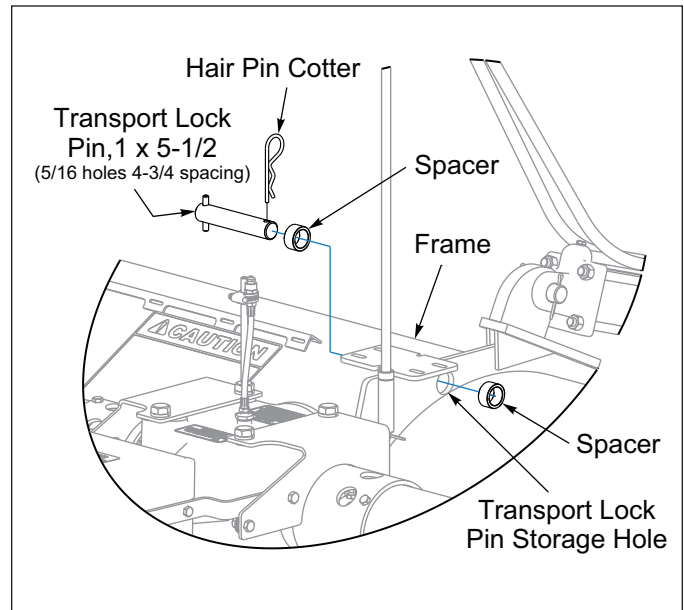


Figure 2-7: Transport Lock Stored

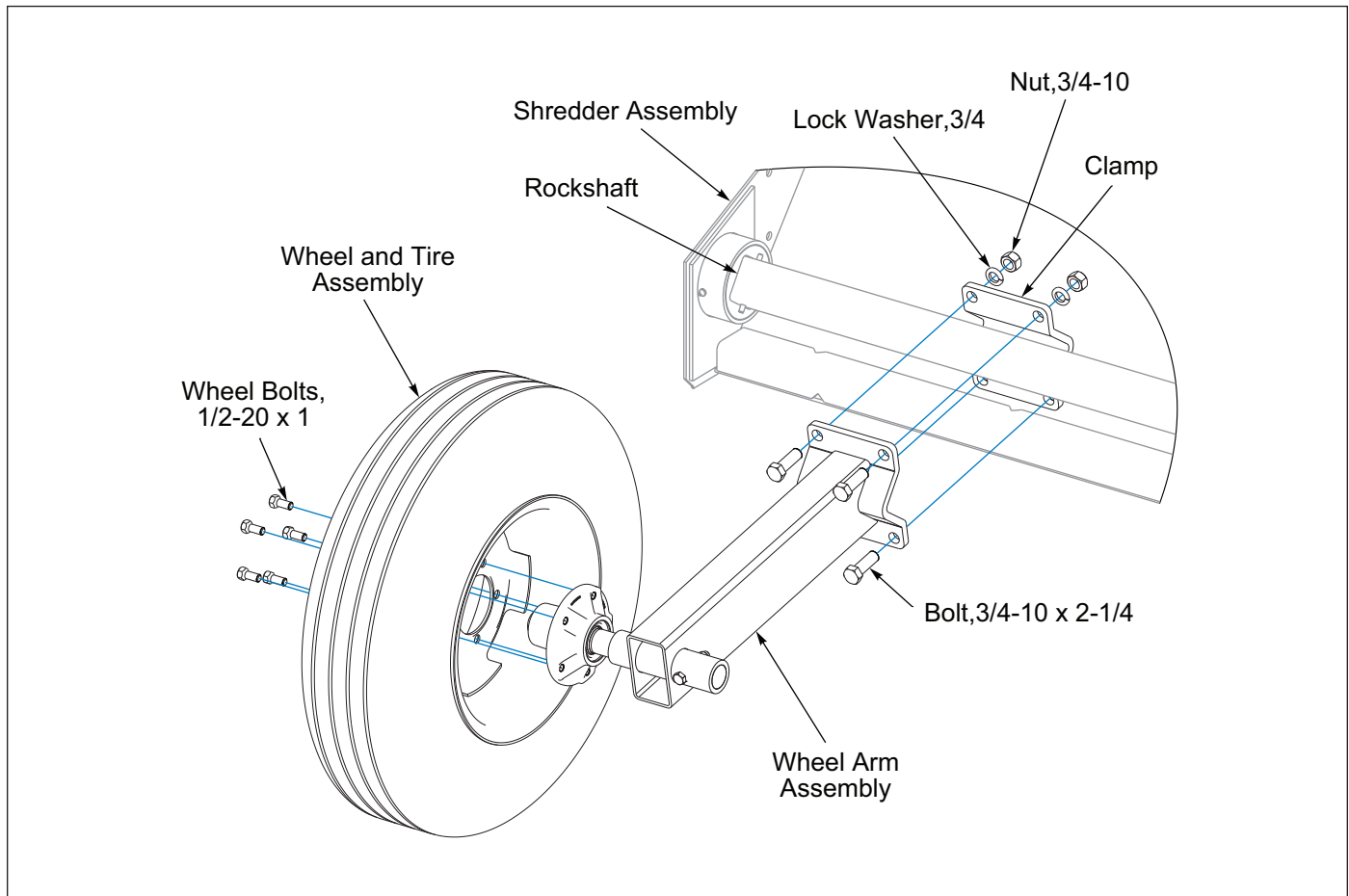


Figure 2-8: Wheel Arm Assembly

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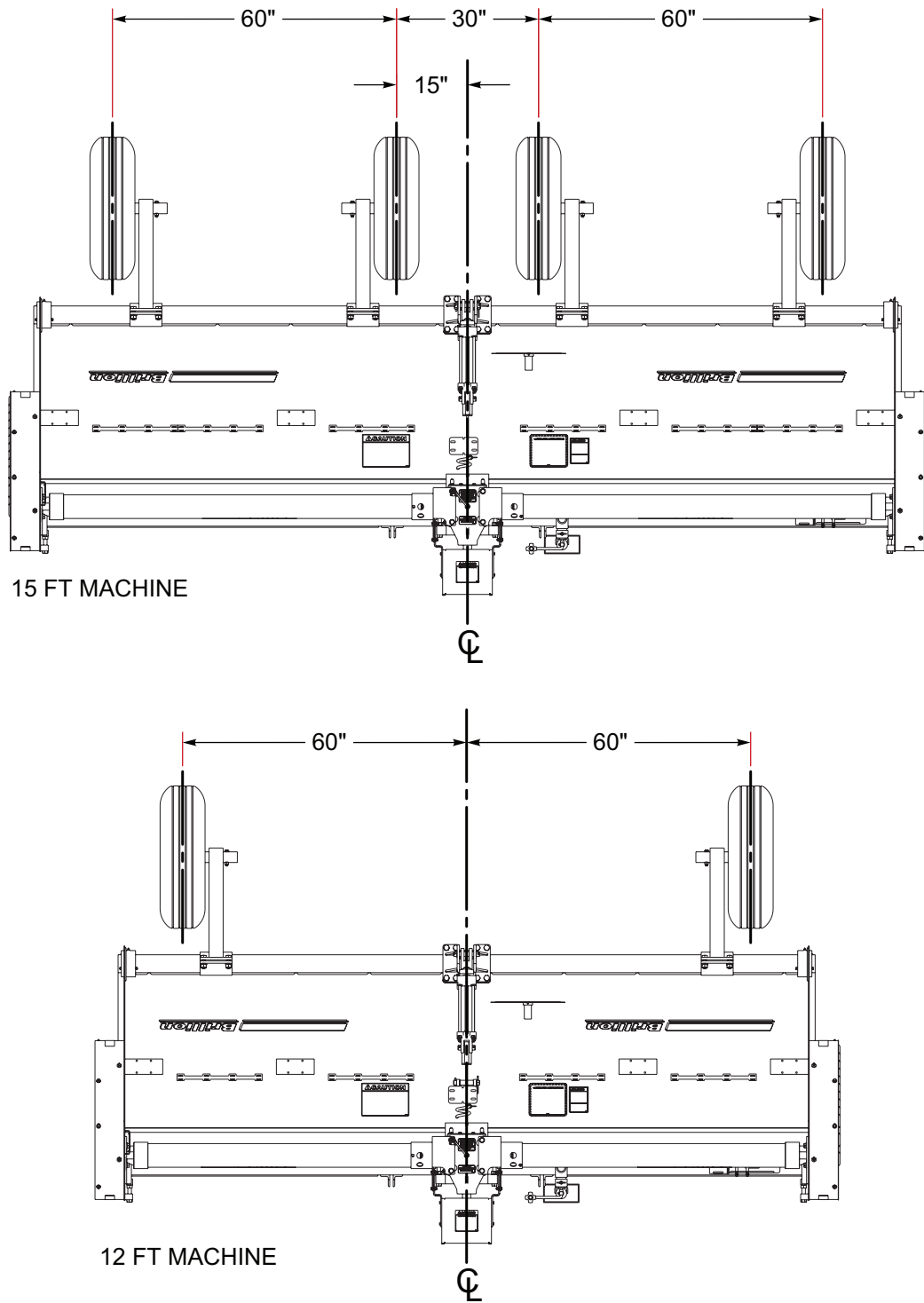


Figure 2-9: Wheel Arm Installation Dimensions

Tire and Wheel Installation

WARNING

Use a torque wrench to assure proper torque. Insufficient torque can cause stud breakage and damage the wheel pilots. Over torque can over stress the studs and strip the threads.

NOTE

The Tire/Wheel Assembly is mounted with the valve stem facing outward for the Hub and Spindle.

IMPORTANT

Torque will drop after the first 10 hours of operation. Check the Wheel Bolts for proper torque after this interval and re-tighten them.

- The Flail Shredder uses 9.5L – 15, 8 Ply Rating Tires and should be inflated to 44 PSI.
- Install a Tire and Wheel Assembly onto each Wheel Arm Hub with 1/2-20 x 1 Wheel Bolts and tighten Wheel Bolts to 50 Ft-Lbs using the sequence in **Figure 2-10**. Then tighten to a full torque of 80-85 Ft-Lbs.
- Lower the Flail Shredder.

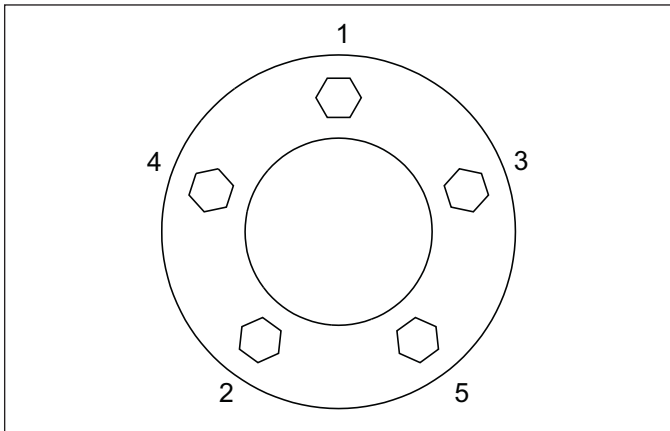


Figure 2-10: Bolt Tightening Sequence

Hydraulic Installation

WARNING

Escaping hydraulic fluid can cause serious personnel injury. Relieve system pressure before repairing, adjusting, or disconnecting. Wear proper hand and eye protection when searching for leaks. Use cardboard instead of hands (See **Figure**) Keep all components (cylinders, hoses, fittings, etc.) in good repair.

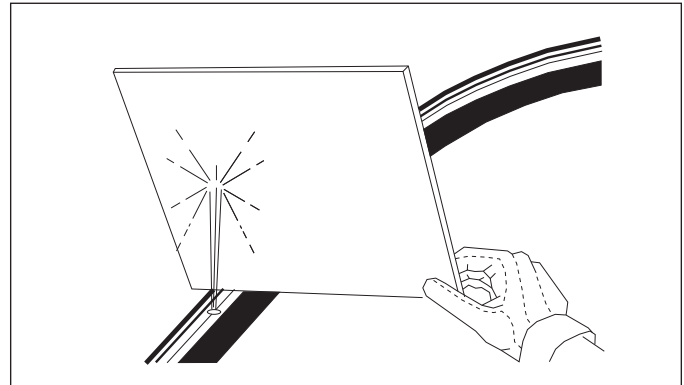


Figure 2-11: Leak Detection

Tightening Procedure for JIC 37 degree Swivel Female Nuts.

1. Check Fitting Flare and seat for defects.
2. Lubricate the connection.
3. Install Hydraulic Hoses without twists.
4. Hand Tighten until connections bottoms.
5. Using 2 wrenches to prevent twisting, rotate the Swivel Nut 2 wrench flats (1/3 turn).
6. For reassembly, follow the same procedure but tighten only 1 wrench flat (1/16 turn).

Tightening Procedure for Swivel O-Ring Fittings.

1. Lubricate O-Ring and install the Fitting until the Metal Washer which backs up the O-Ring contacts the face of the boss.
2. Orient the Fitting by turning counterclockwise up to 1 turn.
3. Tighten the Locknut using 50-60 Ft-Lbs of torque. See "Hydraulic Fitting Torque Specifications" on **page 4-2**.

Hydraulic Lift Circuit

1. Install 08MJ x 08MOR Adapter into 3/8 x 8 Hydraulic Cylinder ports. **See Figure 2-12.**
2. Attach a 3/8 x 136 Hose Assembly to each Adapter.
3. Install Hose Support into Bushing located on the Frame Center Plate. Secure with 1/8 x 1-1/2 Cotter Pin.
4. Route the hoses through the Hose Support towards the tractor.
5. Install 08MJ x 08MOR Adapter and Male Coupler into each hose end.
6. Once the Flail Shredder has been completely assembled, purge the Lift Circuit. **See "Purge the Hydraulic Lift System" on page 2-10.**
7. Extend Hydraulic Cylinder and place Transport Lock Pin, 1 x 5-1/2 with a Spacer on the Roll Pin side in the Frame Lug Bushing by the Rockshaft. Place other Spacer on the end of the Pin. Secure with Hair Pin Cotter. The Transport Lock is now engaged.

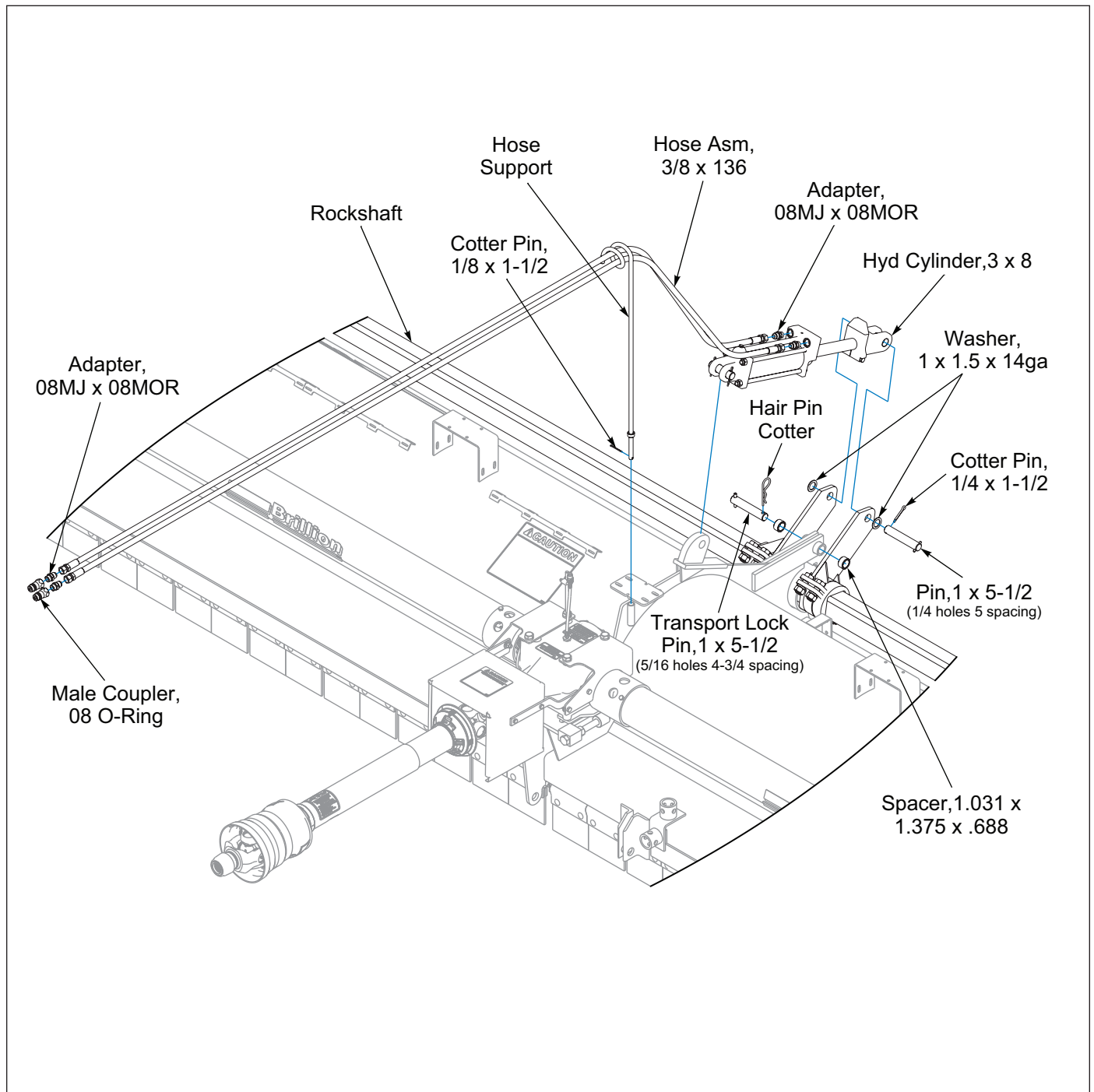


Figure 2-12: Hydraulic Lift Circuit Installation

Purge the Hydraulic Lift System

The Hydraulic system is not filled with oil and should be purged of air before transporting and field operations.

Lift Circuit approximate oil requirement: 0.3 gallons.

1. Carefully attach the Flail Shredder to the tractor. Connect the Hydraulic Hoses and PTO Drive Shaft. **See "Attaching Shredder to Tractor" on page 3-3.**
2. Check to make sure the tractor hydraulic reservoir is full of the manufacturer's recommended oil.
3. Slowly raise the machine until the Lift Cylinder is fully extended. Lower and raise the Shredder to verify that the Cylinder is working throughout the stroke. Fully extend the Lift Cylinder and continue to hold the lever until the Cylinder Rod movement stops. Raise/Lower Shredder 5 times to purge air from the system.
4. Do Not loosen any Hydraulic Hoses or Fittings.
5. Recheck Tractor Reservoir to make sure it is within operating limits.
6. Raise the Flail Shredder and install Transport Lock. **See Figure 2-13.**

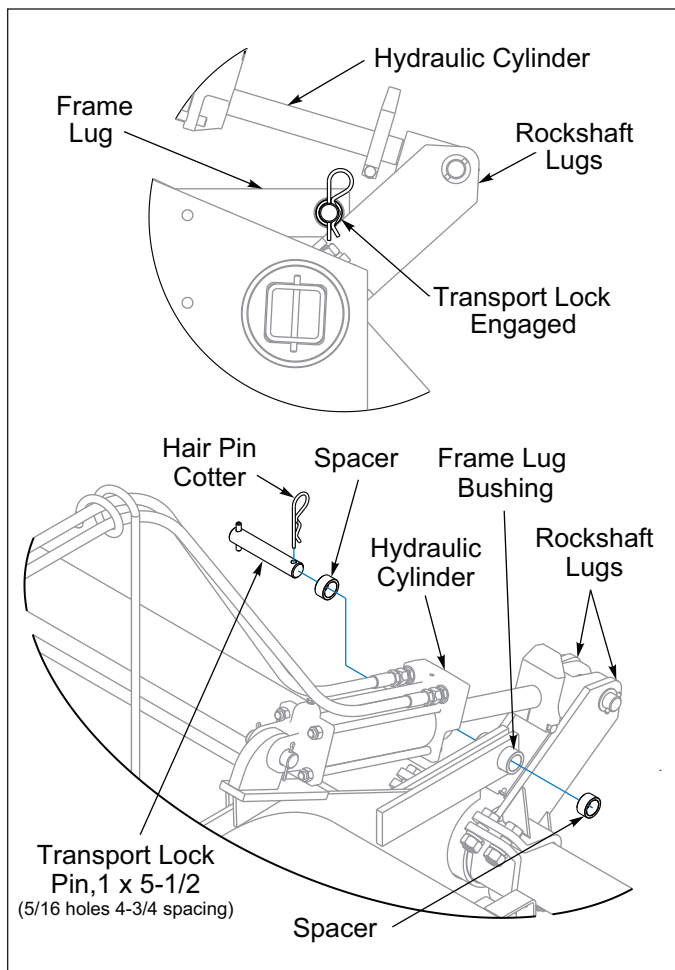


Figure 2-13: Transport Lock Engaged

Warning Lamp Installation

1. Attach the Flasher Control Module onto the Flail Shredder Frame Plate by the Hose Support with 1/4-20 x 1-3/4 Bolts, Flat Washers and Locknuts. **See Figure 2-14.**
2. The Reflective Decal Mounts with the Amber Decals are assembled on the Amber Lamps with the Amber Decal facing forward. The Reflective Rear Decal Mounts with the Red/Orange Decals are assembled on the Red Lamps with the decals facing rearward. Install an Amber Lamp and a Reflective Decal Mount on each of the Shredder Frame Outer Brackets with 1/4-20 x 1-1/2 Bolts and Locknuts. Orient the Red Lamps with the red lens facing rearward and install a Red Lamp and a Reflective Rear Decal Mount on each of the Shredder Frame Inner Brackets with 1/4-20 x 1-1/2 Bolts and Locknuts.

IMPORTANT

Cords are marked Yellow Tape for Left and Green Tape for Right.

3. Lay out the Lamp Harness, Cords with Yellow Tape Left and Cords with Green Tape Right. Connect the Harness to the Flasher Control Module 6-Prong Connector.
4. Route the left and right 3-Prong Connector Cord along the Shredder Shroud and connect to the Red Lamps.
5. Route the left and right 2-Prong Connector Cord along the Shredder Shroud and connect to the Amber Lamps.
6. Connect the 7-Pin Harness 4-Prong Connector to the Flasher Control Module. Route the 7-Pin Harness through the Hose Support and up the Drawbar.
7. Bundle and secure Harnesses to Shredder Frame and Hydraulic Hoses with Tie Wraps.
8. Attach SMV to Shredder Frame Rear Bracket with 5/16-18 x 1 Bolts, Flat Washers and Locknuts.

IMPORTANT

All Harnesses must be firmly attached to machine frame members, so they don't sag or become torn loose by field debris. Use the Tie Wraps provided.

Check to be sure that the Hoses and Harness at the center of the machine is away at all times from the PTO Assembly and slack enough as to not stretch or interfere while turning.

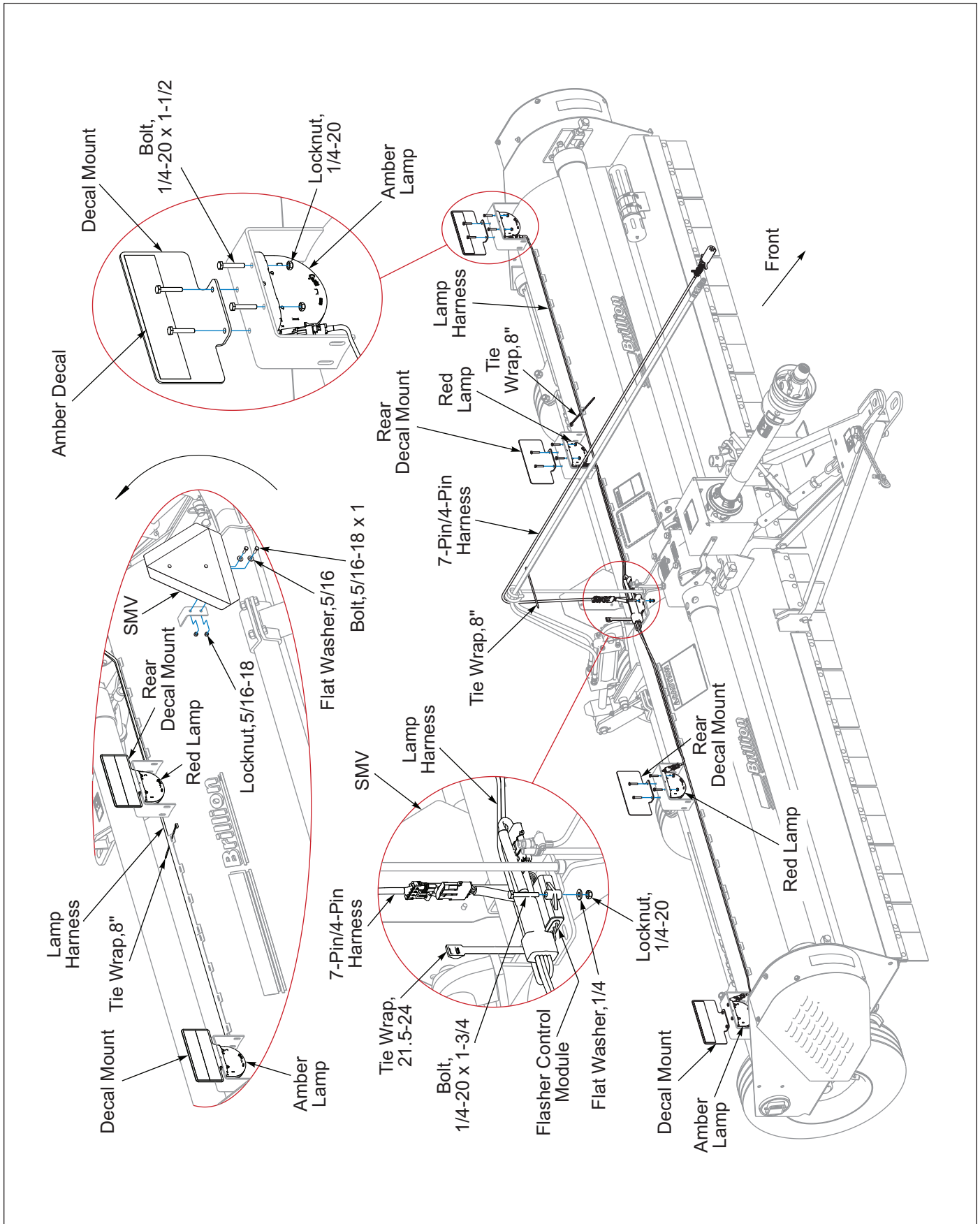


Figure 2-14: Warning Lamp Installation

Operation

! DANGER

Never allow anyone to ride on the Flail Shredder at any time. Allowing a person to ride on the machine can inflict serious personal injury or death to that person.

! WARNING

All hydraulically elevated equipment must have cylinder lockouts installed or be lowered to the ground, when servicing or when equipment is idle. Failure to take preventative measures against accidental lowering can result in serious personal injury.

! DANGER

Always lock the tractor drawbar in the center position when transporting the unit. Failure to do so can result in serious injury or death and cause damage to the machine.

! DANGER

When transporting the unit, place Transport Lock Pins in position after fully extending the Hydraulic Lift Cylinder. Failure to use the Transport Lock can cause the unit to settle during transport, which can result in serious injury or death and cause damage to the equipment.

! CAUTION

When transporting farm implements on public roads, it is the responsibility of the operator to abide by state and local laws concerning wide loads, speed, safety emblems and safety lighting equipment. Drive at safe speeds, particularly when rounding corners, crossing rough ground or driving on hillsides, to prevent tipping the tractor.

! DANGER

Rotating Driveline!
See "Rotating Driveline Safety" on page 1-3.



Tractor Preparation

IMPORTANT

Only run Tractor rated 540 RPM or 1000 RPM. Overspeed causes damage to the drive system.

Never operate a Flail Shredder equipped with a 540 RPM PTO Drive Line using a tractor equipped with 1000 RPM PTO

1. Refer to **Tractor's Operators Manual**.
2. If tractor drawbar is equipped with a hammer strap, remove.
3. Raise Tractor 3-Point Hitch Arms so they clear Tractor PTO Shaft.
4. Vertical "V" distance from top of the tractor drawbar to the tractor PTO Shaft center should be a minimum distance. **See Figure 3-1. See Table 3-1.**
5. Horizontal "H" distance from the end of the Tractor PTO shaft to the Tractor Drawbar hole center should be set at a distance. **See Table 3-1.** If 14" (350mm) is not an option for PTO Type 1, set to 16" (400mm).
6. Make sure that the Tractor PTO Master Shield is in place before operating the machine.

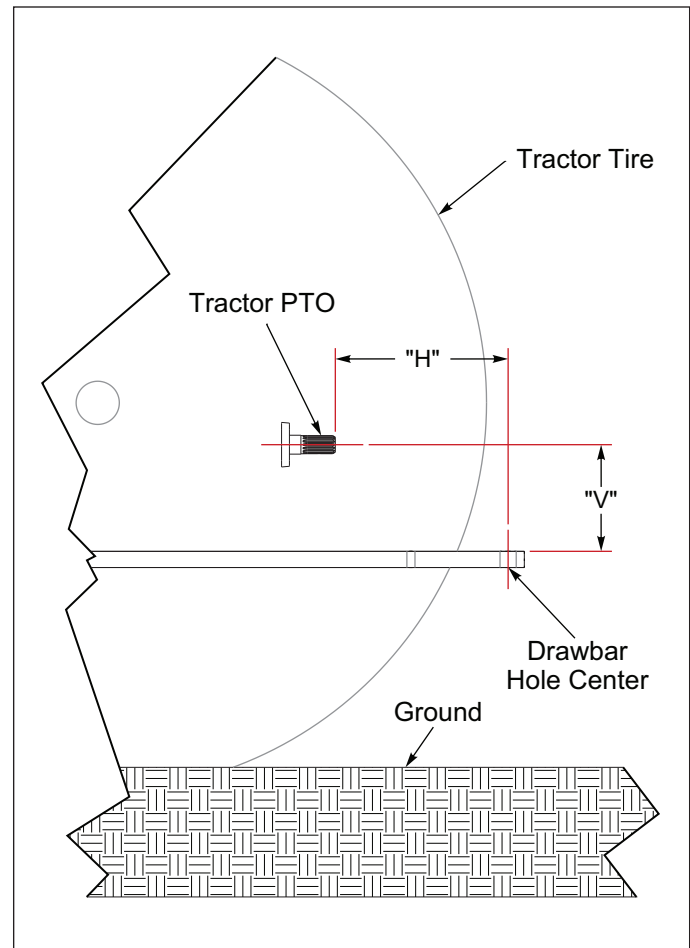


Figure 3-1: Tractor Drawbar Position

Tractor Power Take-Off (PTO) Types					
PTO Type	PTO RPM	PTO Shaft Size	PTO Shaft Splines	"H" Dimension	"V" Minimum Dimension
1	540 RPM	1-3/8" [35mm]	6	14" [350mm]	8-3/4" [220mm]
2	1000 RPM	1-3/8" [35mm]	21	16" [400mm]	9-7/8" [250mm]

Table 3-1: PTO Types

Attaching Shredder to Tractor



Do not allow bystanders to stand between the tractor and the machine while backing up to the machine.



**Rotating Drivelines.
See "Rotating Driveline Safety" on page 1-3.**



IMPORTANT

Always double check both PTO Drive Shaft End Yokes that they are securely locked before operation. Always check PTO Drive Shaft Guarding for damage. Damaged or missing Guards must be replaced before operating the machine.

1. The Flail Shredder is designed to be used with a Category 2 Drawbar Hitch.
2. Align the Tractor Drawbar with the Shredder Drawbar Hitch. Raise or lower the Shredder Drawbar Hitch as needed using the Jack. Attach the unit with proper size Hitch Pin and Safety Clip. **See Table 3-2.**

DRAWBAR CAT	Min Pin Size	Max PTO HP
2	1-1/4" (30mm)	154 (115 Kw)

Table 3-2: Hitch Pin Size

3. Raise Jack. Place and Pin Jack on the Shredder Frame Top Sleeve before setting the machine in motion.
4. Attach Safety Chain to tractor allowing plenty of movement for turning both directions. The Safety Chain should latch securely to prevent it coming loose. **See "Safety Chain" on page 1-4.**
5. Clean Hydraulic Couplings and attach to the tractor.
6. If the Transport Lock Pin is not engaged, fully extend Hydraulic Cylinder and place the Transport Lock Pin, 1 x 5-1/2 with a Spacer on the Roll Pin side in the Frame Lug Bushing by the Rockshaft. Place other Spacer on the end of the Pin. Secure with Hair Pin Cotter. The Transport Lock is now engaged. **See Figure 3-5.**
7. Connect the 7-Pin Connector to Tractor Outlet, routing cable by avoiding pinch points.
 - Make sure the tractor has a good clean receptacle, free of dirt and corrosion.

- Make sure the 7-Pin Connector is inserted ALL the way in. With tighter fitting pins, operator may think the Connector is all the way in, but really isn't.
 - Make sure the tractor receptacle cover latches over the keyway on the 7-Pin Connector to hold the Connector in place.
 - If an operator plugs in the 7-Pin Connector, but the lights do not seem to work right, check the above items to make sure there is a good connection with the 7-Pin Connector.
8. Turn off the tractor completely and remove key from ignition.
 9. Lift Tractor PTO Master Shield. Clean and grease the Tractor PTO.
 10. Attach the PTO Drive Shaft to the Tractor PTO by sliding the Auto-Lok Collar rearward until the collar locks in the rear position. Align the splines and slide the PTO Drive Shaft End Yoke onto the tractor PTO until the Auto-Lok Collar clicks into the locked position. Lower Tractor PTO Master Shield to the operating position.
 - Always double check both PTO Drive Shaft End Yokes that they are securely locked before operation.
 - Always check the PTO Drive Shaft Guarding for damage. Damaged or missing Guards must be replaced before operating the machine.
 11. Secure Harnesses and Hoses to the Shredder Frame and away from the PTO Drive Shaft.
 12. Transport Shredder to the area to be Shredded.
 13. Fully raise the Shredder to disengage the Transport Lock. Remove the Transport Lock Pin, Spacers and Hair Pin Cotter. Place the Spacers on the Transport Lock Pin and insert the Pin in the Frame Center Plate Hole which is the Transport Lock Pin Storage Position. Secure with Hair Pin Cotter. **See Figure 3-6.**
 14. Lower Machine to the set working height. The working height can be adjusted by adjusting the Hydraulic Cylinder Stroke Control Plate and leveling the Shredder with the Drawbar Racket Jack. **See "General Operation" on page 3-4.**

Detaching Shredder from Tractor

1. Raise the Flail Shredder fully to extend the Hydraulic Lift Cylinder.
2. Engage the Transport Lock if not already engaged. Remove Transport Lock Pin from the storage position in the Frame Center Plate. Place the Transport Lock Pin, 1 x 5-1/2 with a Spacer on the Roll Pin side in the Frame Lug Bushing by the Rockshaft. Place the other Spacer on the end of the Pin. Secure with Hair Pin Cotter. **See Figure 3-5.**
3. Relieve pressure from Hydraulic Hoses.

4. Remove Jack from Frame Top Sleeve. Place and Pin Jack on Frame Side Sleeve. Lower Jack to the ground.
5. Turn off tractor completely and remove key from ignition.
6. Lift Tractor PTO Master Shield.
7. Disconnect PTO Drive Shaft from Tractor PTO by sliding the Auto-Lok rearward and pulling PTO Drive Shaft off Tractor PTO. Lower Tractor PTO Master Shield.
8. Disconnect the 7-Pin Connector and Hydraulic Couplers from the tractor.
9. Unhitch Shredder from the tractor.
10. If Shredder will not be used for a while, perform storage procedure. **See "Storage" on page 4-9.**

Hydraulic Lift System

The Flail Shredder is equipped with a Hydraulic Lift System to raise and lower the unit in the field.



WARNING

Escaping hydraulic fluid can cause serious personal injury. Relieve system pressure before repairing, adjusting, or disconnecting. Wear proper hand and eye protection when searching for leaks. Use cardboard instead of hands (See Figure 3-2.) Keep all components (cylinders, hoses, fittings, etc.) in good repair.

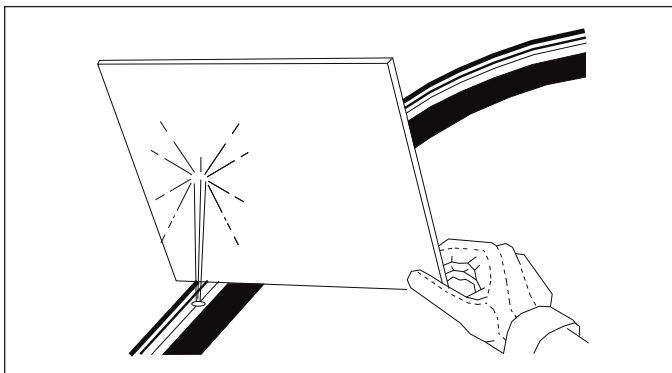


Figure 3-2: Hydraulic Leak Detection

If the Hydraulic System is not filled with oil it should be purged of air before transporting and field operations.

1. Carefully attach the Flail Shredder to the Tractor and connect the Hydraulic Hoses and PTO Drive Shaft. **See "Attaching Shredder to Tractor" on page 3-3.**
2. Check to make sure the Tractor Hydraulic Reservoir is full of the manufacturer's recommended oil.
3. If the Transport Lock is engaged, raise the Shredder and disengage the Transport Lock. **See Figure 3-6.**

4. Slowly raise the machine until the Lift Cylinder is fully extended. Lower and raise the Shredder to verify that the Cylinder is working throughout the stroke. Fully extend the Lift Cylinder and continue to hold the lever until both Cylinder Rods movement stops. Raise/Lower machine 5 times to purge air from the system.
5. Do not loosen any Hoses or Fittings.
6. Recheck Tractor Reservoir to make sure it is within operating limits.
7. Raise the Shredder and install Transport Lock. **See Figure 3-5.**

Lift Circuit approximate oil requirement: .3 gallons.

General Operation

IMPORTANT

Never Operate without a full set of Knives. If one Knife Assembly is replaced with a new one, the closest one 180 degree opposite must also be replaced with a new one to maintain balance.

- The minimum horsepower requirements are typically 5-10 horsepower per foot. This will vary widely due to field residue. Local dealers can help in making recommendations for your areas.
- Operating speed is typically 3-6 mph. Excessive speed can result in the Flail Shredder bouncing or other unpredictable results.
- Run the Flail Shredder at its rated 540 RPM or 1000 RPM. Decal on top of the Gearbox shows the proper speed. **See Figure 3-3.**



Figure 3-3: RPM Decals

- Do not make sharp turns when machine is running. Turning too short will cause vibration and may result in damage to the PTO Drive Shaft Universal Joints and to the machine. When making turns or turning around at the end of the field, skip 8 or 12 rows or turn off the PTO, the PTO Drive Shaft is equipped with an Overrunning Clutch.
- When operating shredder, maintain 2" minimum of ground clearance between the ground and the Flail Knives. Adjust the Hydraulic Cylinder Stroke Control Plate for proper cutting height.
- When changing cutting height, always adjust the Ratchet Jack on the Drawbar to keep the machine as level as possible. When leveling the Flail Shredder, relieve the load on the Ratchet Jack by attaching the Jack to the front of the Shredder frame and using it to raise and lower the machine.

- Store the Jack on the Flail Shredder Frame Top Sleeve when not in use. Jack is out of the way of field debris.
- Never operate machine without a full set of knives. If one knife assembly is replaced with a new one, the closest one, 180 degrees opposite must also be replaced with a new one to maintain balance. **See Figure 3-4.**
- Check to make sure drain plug on the bottom of the Gearbox is tight.
- Check Gearbox Gear Oil level by removing the Gearbox side Plug located in front of the Gearbox Output Shaft.

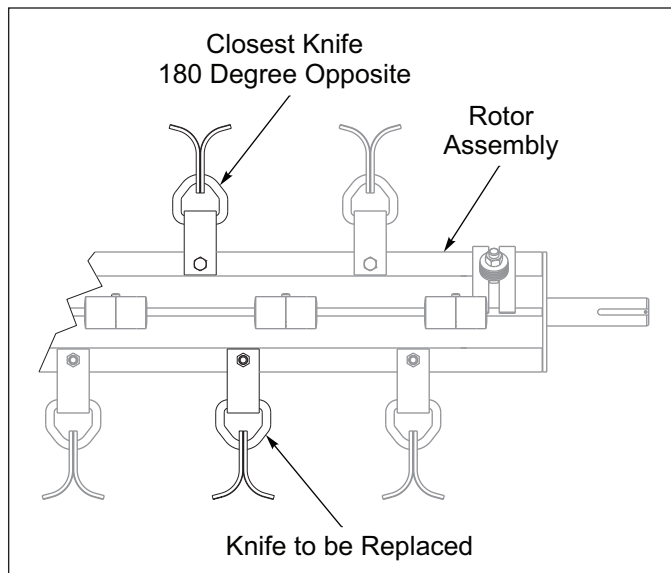


Figure 3-4: Knife Replacement

Transport Lock

Road to Field

1. Raise the machine fully to disengage Transport Lock.
2. Remove Transport Lock Pin, Spacers and Hair Pin Cotter from the Frame Lug Bushing. **See Figure 3-5.**
3. Place the Spacers on the Transport Lock Pin and insert the Pin in the Frame Center Plate Hole which is the Transport Lock Pin Storage Position. Secure with Hair Pin Cotter. **See Figure 3-6.**
4. Lower Flail Shredder to the set working height. The working height can be adjusted by adjusting the Hydraulic Cylinder Stroke Control Plate and leveling the Shredder with the Drawbar Ratchet Jack. **See "General Operation" on page 3-4.**

Field to Road

1. Raise the machine fully.
2. Remove the Transport Lock Pin, Spacers and Hair Pin Cotter from its Storage Position in the Frame Center Plate. **See Figure 3-6.**

3. Insert the Transport Lock Pin with a Spacer on the Roll Pin side in the Frame Lug Bushing by the Rockshaft Lugs. Place the other Spacer on the end of the Pin. Secure with Hair Pin Cotter. **See Figure 3-5.**
4. The Transport Lock is engaged, machine is ready for transport.

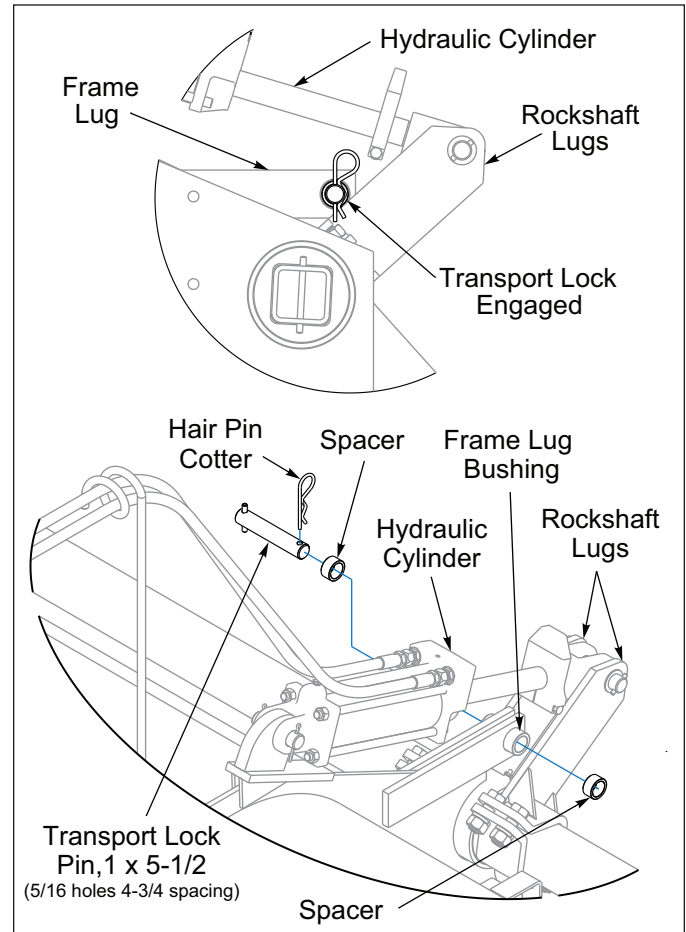


Figure 3-5: Transport Lock Engaged

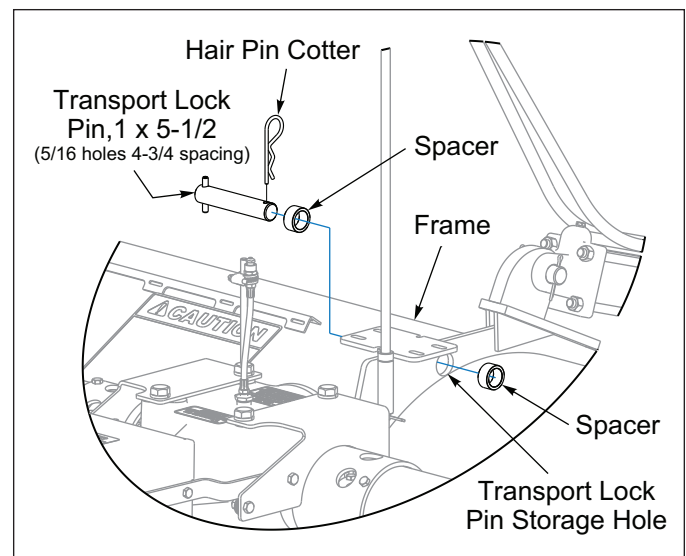


Figure 3-6: Transport Lock Stored

Transporting the Shredder

1. Check and follow all federal, state, and local requirements before transporting the Flail Shredder.
2. The Shredder should be transported only by tractor required for field operation. The machine weight should not exceed more than 1.5 times the tractor weight. Maximum transport speed for the Shredder is 20 mph.

CAUTION

Excessive speed may result in loss of control of the tractor and machine, reduced braking ability, or failure of the machine tire or structure. Do not exceed the machines maximum specified ground speed regardless of the capability of the maximum tractor speed.

3. When towing equipment in combination, the maximum equipment ground speed shall be limited to the lowest specified ground speed of any of the towed machines.

Maximum transport speed shall be the lesser of travel speed specified in the operator's manual, speed identification symbol, information sign of towed equipment, or limit of road conditions.

4. Slow down when driving on rough roads. Reduce speed when turning, or on curves and slopes to avoid tipping. Equipment altered other than the place of manufacture may reduce the maximum transport speed. Additional weight, added tanks, harrowing attachments, etc. may reduce machine load carrying capabilities.
5. A Safety Chain is provided with the implement to ensure safe transport.
 - The Safety Chain should have a tensile strength equal to or greater than the gross weight of the implement. The chain is attached to the lower Hitch Clevis hole with two Flat Washers between the Clamp Plates to assure a tight connection. Always use a 1" diameter Grade 8 bolt for this connection.
 - Attach the Safety Chain to the tractor drawbar. **See Figure 1-2.** Provide only enough slack in the chain for turning. Do not use an intermediate chain support as the attaching point for the chain on the tractor. Do not pull the implement by the Safety Chain
 - When unhitching from the tractor attach the hook end of the chain to a free link close to the hitch clevis for storage. This will keep the hook off the ground, reducing corrosion, and keep the hook functioning properly.
 - Regularly inspect the Safety Chain for worn, stretched, or broken links and ends. Replace the safety chain if it is damaged or deformed in any way.

6. Before transporting:
 - Know the height and width of the implement being towed. Markers, tanks, attachments, etc. can increase the height and width of the implement.

DANGER

Stay away from power lines when transporting, extending implement. Electrocutation can occur without direct contact.

- Use a Hitch Pin that properly fits Implement Hitch.
- Clean all Hydraulic Couplings and attach to tractor remotes.
- Connect the Safety Warning Lights 7-Pin Plug into tractor 7-Pin outlet, routing cord by avoiding pinch points.
- Fully raise the Flail Shredder Hydraulic Lift.
- Make sure Transport Lock Pin is installed and secured with Hair Pin Cotter. **See "Transport Lock Engaged" on Page 2-10.**

WARNING

Failure to use transport lock during transport may result in permanent equipment damage, serious injury, or death.

- Check all tires for proper inflation, and that wheel bolts are properly torque. **See "Tires" on Page 4-3.**
- Verify that all warnings lights, SMV sign, reflectors, and safety decals are clearly visible and functioning properly.
- Transport during daylight hours whenever possible. Always use flashing warning lights, except where such use is prohibited by law. Make sure lights, reflectors and SMV emblem are clearly visible and operating. Remove any obstructions such as dirt, mud, stalks or residue that restricts view before transporting. **See Figure 3-7.**

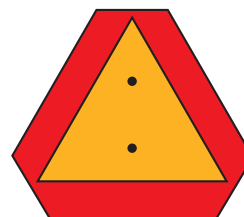


Figure 3-7: SMV Sign

General Torque Specifications

(rev. 4/97)

This chart provides tightening torques for general purpose applications when special torques are not specified on process or drawing. Assembly torques apply to plated nuts and capscrews assembled without supplemental lubrication (as received condition). They do not apply if special graphite moly-disulfide or other extreme pressure lubricants are used. When fasteners are dry (solvent cleaned) add 33% to as received condition torque. Bolt head identification marks indicate grade and may vary from manufacturer to manufacturer. Thick nuts must be used on Grade 8 capscrews. Use value in [] if using prevailing torque nuts.

TORQUE SPECIFIED IN FOOT POUNDS

UNC SIZE	SAE Grade 2	SAE Grade 5	SAE Grade 8	UNC SIZE	SAE Grade 2	SAE Grade 5	SAE Grade 8
1/4-20	4 [5]	6 [7]	9 [11]	1/4-28	5 [6]	7 [9]	10 [12]
5/16-18	8 [10]	13 [13]	18 [22]	5/16-24	9 [11]	14 [17]	20 [25]
3/8-16	15 [19]	23 [29]	35 [42]	3/8-24	17 [21]	25 [31]	35 [44]
7/16-14	24 [30]	35 [43]	55 [62]	7/16-20	27 [34]	40 [50]	60 [75]
1/2-13	35 [43]	55 [62]	80 [100]	1/2-20	40 [50]	65 [81]	90 [112]
9/16-12	55 [62]	80 [100]	110 [137]	9/16-18	60 [75]	90 [112]	130 [162]
5/8-11	75 [94]	110 [137]	170 [212]	5/8-18	85 [106]	130 [162]	180 [225]
3/4-10	130 [162]	200 [250]	280 [350]	3/4-16	150 [188]	220 [275]	320 [400]
7/8-9	125 [156]	320 [400]	460 [575]	7/8-14	140 [175]	360 [450]	500 [625]
1-8	190 [237]	408 [506]	680 [850]	1-14	210 [263]	540 [675]	760 [950]
1-1/8-7	270 [337]	600 [750]	960 [1200]	1-1/8-12	300 [375]	660 [825]	1080 [1350]
1-1/4-7	380 [475]	840 [1050]	1426 [1782]	1-1/4-12	420 [525]	920 [1150]	1500 [1875]
1-3/8-6	490 [612]	1010 [1375]	1780 [2225]	1-3/8-12	560 [700]	1260 [1575]	2010 [2512]
1-1/2-6	650 [812]	1460 [1825]	2360 [2950]	1-1/2-12	730 [912]	1640 [2050]	2660 [3325]

METRIC:

Coarse thread metric class 10.9 fasteners and class 10.0 nuts and through hardened flat washers, phosphate coated, Rockwell "C" 38-45. Use value in [] if using prevailing torque nuts.

Nominal thread diameter (mm)	Newton Meters (Standard Torque)	Foot Pounds (Standard Torque)	Nominal Thread Diameter (mm)	Newton Meters (Standard Torque)	Foot Pounds (Standard Torque)
6	10 [14]	7 [10]	20	385 [450]	290 [335]
7	16 [22]	12 [16]	24	670 [775]	500 [625]
8	23 [32]	17 [24]	27	980 [1105]	730 [825]
10	46 [60]	34 [47]	30	1330 [1470]	990 [1090]
12	80 [125]	60 [75]	33	1790 [1950]	1340 [1450]
14	125 [155]	90 [115]	36	2325 [2515]	1730 [1870]
16	200 [240]	150 [180]	39	3010 [3210]	2240 [2380]
18	275 [330]	205 [245]			

Hydraulic Fitting Torque Specifications

37 degree JIC, ORS, &ORB (REV. 10/97)

This chart provides tightening torques for general purpose applications when special torques are not specified on process or drawing. Assembly torques apply to plated nuts and capscrews assembled without supplemental lubrication (as received condition). They do not apply if special graphite moly-disulfide or other extreme pressure lubricants are used. When fasteners are dry (solvent cleaned) add 33% to as received condition torque. Bolt head identification marks indicate grade and may vary from manufacturer to manufacturer. Thick nuts must be used on Grade 8 capscrews. Use value in [] if using prevailing torque nuts.

TORQUE SPECIFIED IN FOOT POUNDS

PARKER® BRAND FITTINGS

Dash Size	37 Deg. JIC	O-ring (ORS)	O-ring boss
-4	11-13	15-17	13-15
-5	14-16	-----	21-23
-6	20-22	34-36	25-29
-8	43-47	58-62	40-44
-10	55-65	100-110	58-62
-12	80-90	134-146	75-85
-16	115-125	202-218	109-121
-20	160-180	248-272	213-237
-24	185-215	303-327	238-262
-32	250-290	-----	310-340

GATES® BRAND FITTINGS

Dash Size	37 Deg. JIC	O-ring (ORS)	O-ring boss
-4	10-11	10-12	14-16
-5	13-15	-----	-----
-6	17-19	18-20	24-26
-8	34-38	32-40	37-44
-10	50-56	46-56	50-60
-12	70-78	65-80	75-83
-14	-----	65-80	-----
-16	94-104	92-105	111-125
-20	124-138	125-140	133-152
-24	156-173	150-180	156-184
-32	219-243	-----	-----

AEROQUIP® BRAND FITTINGS

Dash Size	37 Deg. JIC	O-ring (ORS)	O-ring boss
-4	11-12	10-12	14-16
-5	15-16	-----	16-20
-6	18-20	18-20	24-26
-8	38-42	32-35	50-60
-10	57-62	46-50	75-80
-12	79-87	65-70	125-135
-14	-----	-----	160-180
-16	108-113	92-100	200-220
-20	127-133	125-140	210-280
-24	158-167	150-165	270-360

Fasteners

Before operating your Brillion machine, check all hardware for tightness. Use the Tightening Torque Table as a guide.

After a few hours of use, check entire machine and tighten any loose nuts or bolts. Daily or periodic checks should be made thereafter.

When replacing bolts, be sure to use fasteners of equal grade.

Tires

Recommended Tire Size: 9.5L-15 - 8 Ply

Tire Inflation Pressure: 44 PSI

When Re-Installing 1/2-20 x 1 Wheel Bolts tighten to 50 Ft-Lbs. using the sequence in **Figure 4-1**. Then tighten to full torque of 80-85 Ft-Lbs.

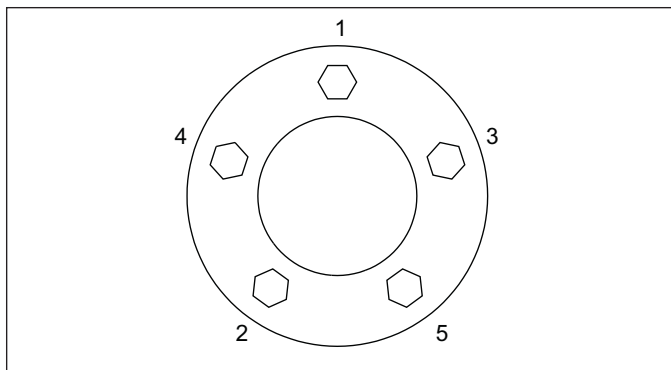


Figure 4-1: Tightening Sequence

Wheel Hub Bearing Maintenance

Wheel Bearing maintenance should be performed at the beginning of every season of use. Check the Wheel Bearings periodically for excessive end play. If needed, adjust or replace them using the following procedure:

1. Place the Frame on blocks or stands sufficient to lift the Tire clear of the ground.
2. Remove the Tire.
3. Remove the Hub Cap, Cotter Pin and Slotted Nut.
4. Remove the Hub. Clean and inspect the Bearings and Hub Cavity. Replace any worn or defective parts.
5. Repack the Bearings using a high-quality Wheel Bearing Grease.
6. Install the inner bearing into the hub and install the grease seal. Use a driver to install the seal, to avoid damaging the outer edge of the seal. Drive the seal squarely into the hub to avoid any seal distortion.

NOTE

The Single Lip Seals should point away from the Hub to keep contaminants out and allow grease to pass.

7. Slide the hub, bearing, and seal onto a clean spindle.
8. Install the Outer Bearing Cone and Slotted Nut.
9. Tighten the Slotted Nut while rotating the Hub until there is a slight resistance to wheel rotation. Then, back the Slotted Nut off one notch, until the wheel rotates freely without end play.
10. Install a new Cotter Pin and re-install the Hub Cap.

Lubrication Maintenance

1. Check Gearbox Gear Oil Level before operation. On the side of the Gearbox you will find a Plug located in the front of the Gearbox Output Shaft. Remove the Plug to check the Gear Oil Level. If Gear Oil needs to be added, remove Vent Hose Bushing at the top of the Gearbox and fill the Gearbox with proper Gear Oil to the bottom of the Gearbox Plug Hole by the Output Shaft. Do Not overfill with Gear Oil. Install removed side Plug and Top Vent Hose Bushing. **See Figure 4-2.**

- When temperature is above 32 degrees: use **SAE 140EP gear oil.**
- When temperature is below 32 degrees: use **SAE 90EP gear oil.**

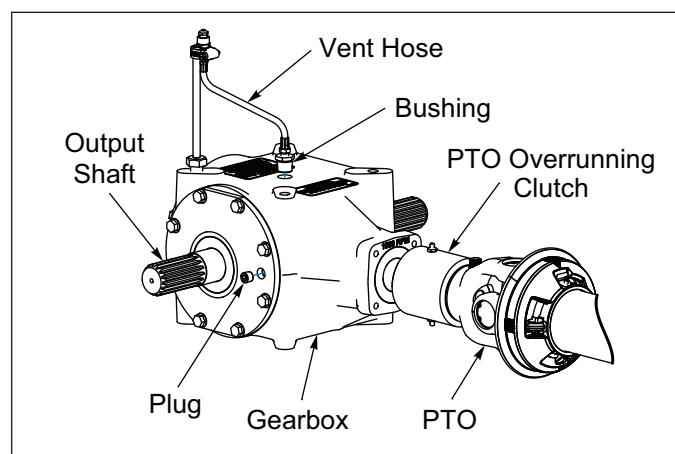


Figure 4-2: Gearbox

2. Grease the Shredder with high quality multi-purpose grease, meeting the National Lubricating Grease Institute (NLGI) Grade 2 (Mobil Mobilux EP2 or equivalent). Always grease the PTO Drive shaft through the Guard Openings. Compress the two halves of the PTO Drive Shaft to expose the Shaft grease fitting through the Inner and Outer Guards Opening.
 - Shredder Rockshaft has 3 grease points, grease every 8 hours of operation. **See Figure 4-3.**
 - Shredder Drive Line has 2 grease points, grease through the Shields every 8 hours of operation. **See Figure 4-4.**
 - 540 RPM PTO Drive Shaft has 3 grease points, grease every 8 hours of operation.
 - 1000 RPM PTO Drive Shaft has 6 grease points, grease every 8 hours of operation.
 - 540 RPM or 1000 RPM PTO Drive Shaft Guarding has 2 grease points, grease annually.
 - 540 RPM or 1000 RPM PTO Drive Shaft Overrunning Clutch has 2 grease points, grease annually.

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- Raise the Shredder and install the Transport Lock Pin. **See Figure 3-5.** Block the Transport Wheels. Grease the Six Rotor and Drive Bearings annually.
 - Grease Wheel Hubs every 50 Hours of operation.
 - Repack Wheel Hub Bearings annually
3. When machine is not used for some time, the exposed portion of the Hydraulic Cylinder Rod must be cleaned and covered with a thick coat of grease to prevent corrosion, which will damage the cylinder seals.

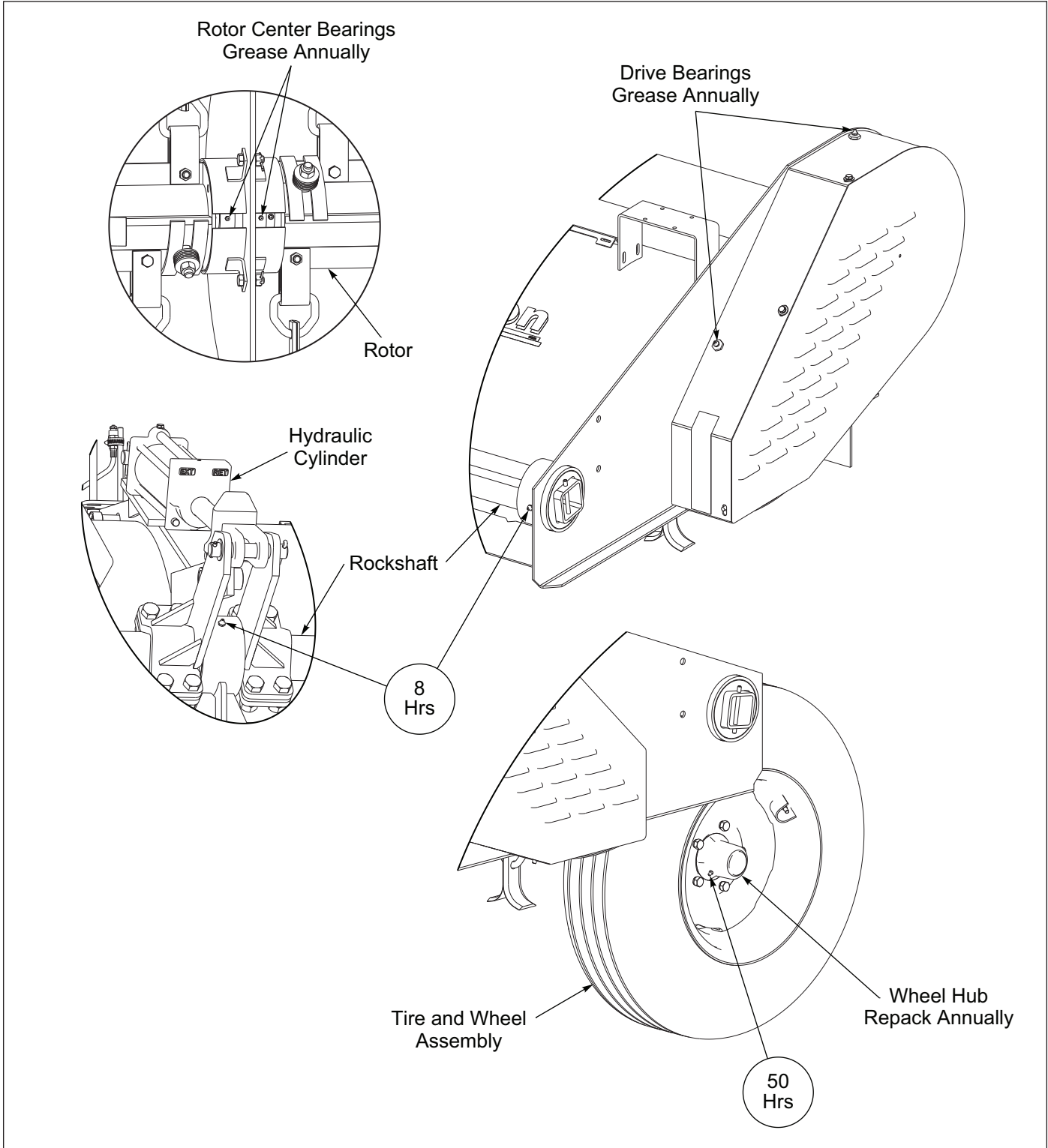


Figure 4-3: Lubrication Maintenance

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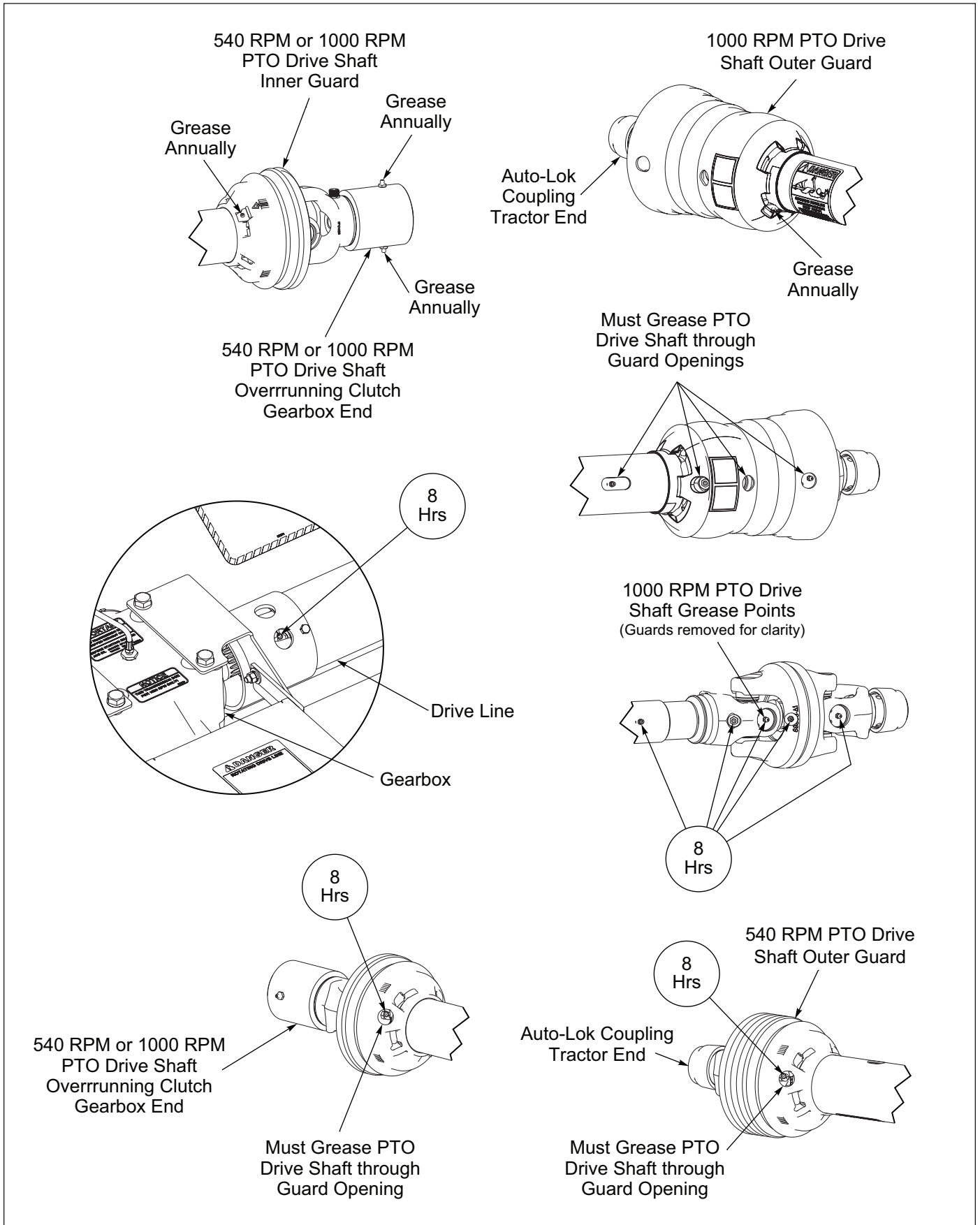


Figure 4-4: Driveline Lubrication Maintenance

Hydraulic Maintenance

IMPORTANT

Raise the Flail Shredder and install Transport Lock. Relieve hydraulic pressure before attempting to service any hydraulic component.



WARNING

Escaping fluid under pressure can be nearly invisible and have enough force to penetrate the skin causing serious injury. Use a piece of cardboard, rather than hands to search for suspected leaks. Wear protective gloves and safety glasses or goggles when working with Hydraulic System.

1. Check the tractor hydraulic fluid level per tractor owner's manual and after any leakage. Check fluid level with the Hydraulic Cylinder in the extended position.
2. If a Hydraulic Cylinder leaks, disassemble the parts to determine the cause of the leak. Any time a Hydraulic Cylinder is opened up, or whenever any Seal replacement is necessary, it is advisable to clean all parts and replace all Seals. Seal Kits are available from your Brillion dealer.
3. Check all Hydraulic Hoses weekly. Look for binding or cracking. Replace all worn or defective parts immediately.
4. Transport Lock is provided to hold the implement in a raised position. Do not attempt to perform any service work under the implement without first installing the Transport Lock Pin. **See Figure 3-5.** Before servicing any hydraulic component, raise the shredder and install Transport Lock Pin. Relieve all system pressure. If a hydraulic component is disconnected, repaired, or replaced, it will be necessary to purge the system of air before operation. See **"Purge the Hydraulic Lift System"** on Page 2-10.

Belt Tension and Pulley Alignment

IMPORTANT

New Belts stretch rapidly in the first few hours of use and frequently thereafter. Check Belt tension.

It is important to maintain Belt Pulley tension and alignment for normal Belt Life.

1. Check Belt tension by using a Spring Scale at right angles to the center of the Belt span. Hook the Spring Scale to one Belt and apply enough force to deflect the Belt 1-1/4". **See Figure 4-5.** Scale reading should be 20 lbs. Adjust tension as required. A new belt initial deflection force should be set at 30 lbs at 1-1/4" of deflection.

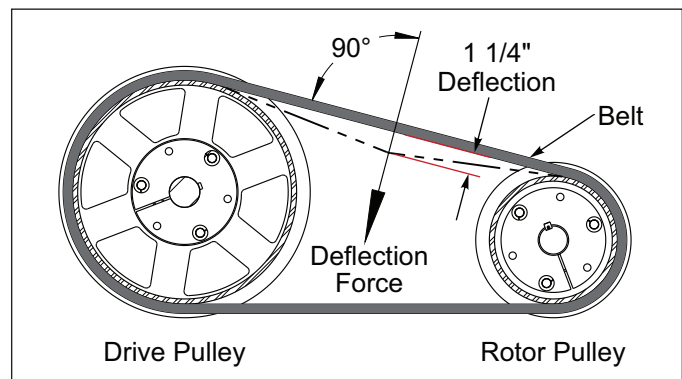


Figure 4-5: Belt Tension

2. To adjust the Belt tension, adjust the Drive Pulley Belt Adjuster Plate on each side of the Shredder as required. **See Figure 4-6.** Loosen the Drive Pulley Bearing Hardware and the Belt Adjuster Plate 3/4-10 Nut. Adjust the Belt tension using the take-up 3/4-10 x 6-1/2 Bolt moving the Drive Pulley until the proper deflection force at 1-1/4" of deflection is achieved. Re-tighten the Belt Adjuster Plate 3/4-10 Nut and Drive Pulley Bearing Hardware. Either too high or too low belt deflection force will shorten Belt Life.

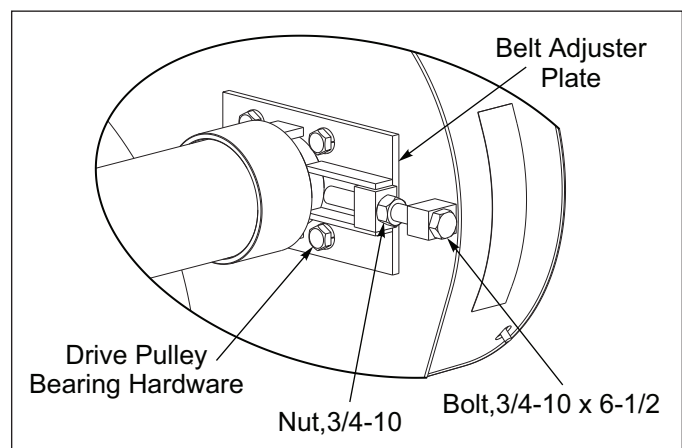


Figure 4-6: Belt Tension Adjustment

3. Check Belt Pulley alignment by laying a straight edge against both Pulleys. **See Figure 4-7.** The straight edge should touch on both edges of each Pulley. If they don't, slide the Pulley in or out on the Shaft, as well as adjusting the Gearbox Support Plate by loosening the Gearbox Mounting Hardware and the 3/4-10 Nuts. Adjust by turning the take-up 3/4-10 x 8 Bolts until the proper Pulley alignment is achieved. **See Figure 4-8.**
4. After 2-4 hours of operation with new Belts, retighten the Belts to the normal deflection force of 20 lbs at 1-1/4" of deflection.
5. Recheck Belt tension after 24-48 hours of operation.

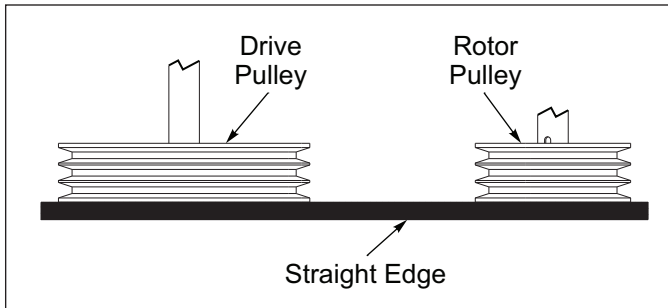


Figure 4-7: Belt Pulley Alignment

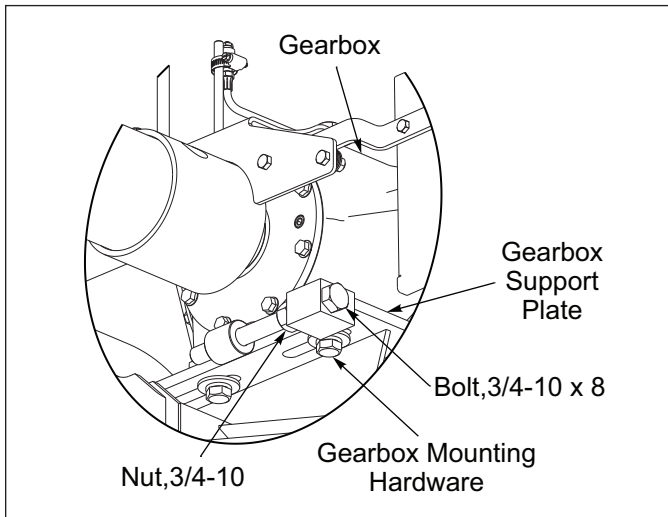


Figure 4-8: Belt Pulley Adjustment

Rotor Knives

IMPORTANT

Never Operate without a full set of Knives. If one Knife Assembly is replaced with a new one, the closest one 180 degree opposite must also be replaced with a new one to maintain balance.

Flail Shredders have primarily been used for chopping corn residue after harvest to help enhance tillage operations and speed up decomposition of residue. It can also be used for mowing grass waterways, clipping pastures, and in some unique cases it can be used as a topping operation in some specialty crops. Different Knife Styles are what provides the different results in different crops. The Rotor Assemblies can have Cup Knife Assemblies, Side Slice Knife Assemblies or a combination of the both Knife Assemblies.

- **Cup Knives** create more suction under the hood to draw crop into the cutting zone. **See Figure 4-9.**
- **Side Slice Knives** are reversible for longer life. These knives have more cutting edge available to the crop for finer cutting. **See Figure 4-10.**

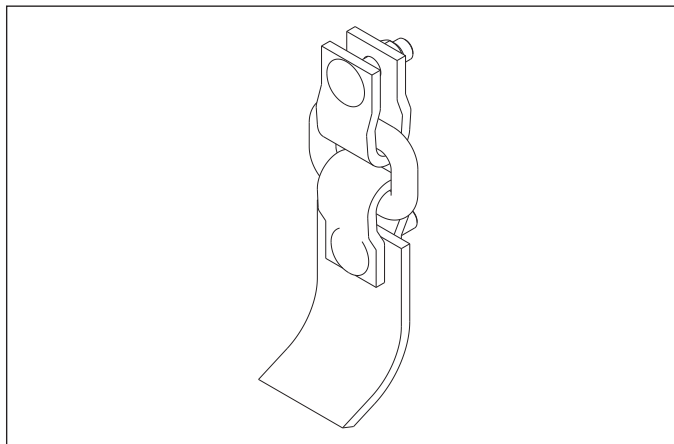


Figure 4-9: Cup Knife Assembly

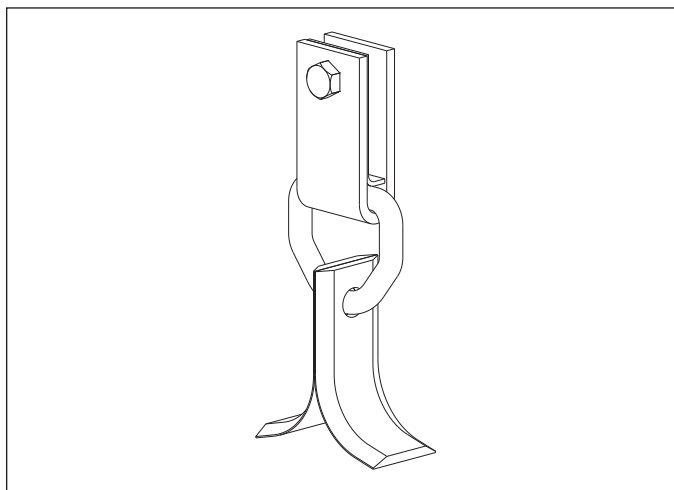


Figure 4-10: Side Slice Assembly

If there seems to be excessive vibration, check to Rotor Knives for breakage. Replaced the Knife Assembly and the closest one, 180 degrees opposite must also be replaced to maintain rotor balance. **See Figure 4-11.**

- When replacing Knife Assemblies, the Bolt Heads should be in the same direction as the existing Knife Assemblies on the Rotor.

The Side Slice Knife Retainer must be installed on the same side of the Rotor Bar throughout the Rotor Assembly. **See Figure 4-12.** The retainer keeps the “D” Ring from turning over.

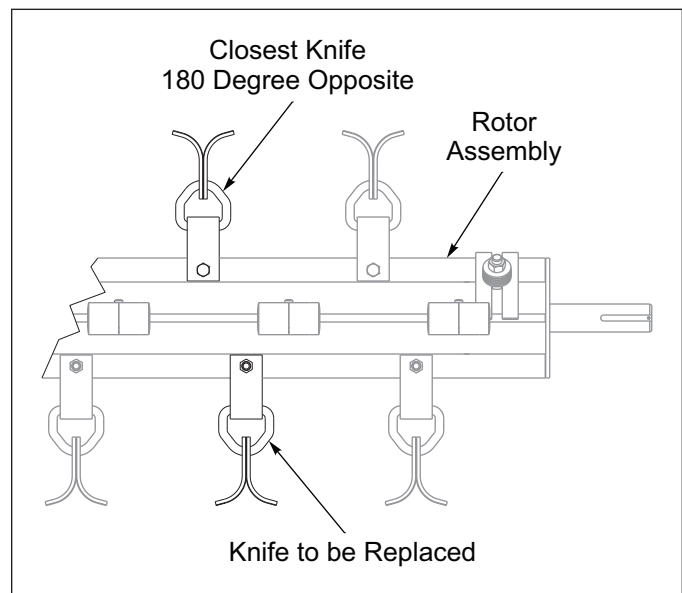


Figure 4-11: Knife Replacement

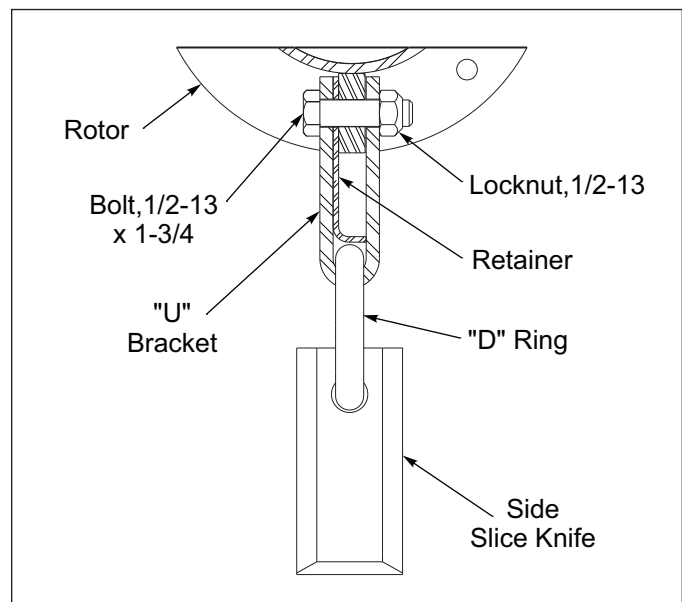


Figure 4-12: Side Slice Knife Installation

Warning Lamps

When plugging in the 7-Pin Warning Lamp Connector.

1. Make sure the tractor has a good clean receptacle, free of dirt and corrosion.
2. Make sure the 7-Pin Connector is inserted ALL the way in. With tighter fitting pins, operator may think the Connector is all the way in, but really isn't.
3. Make sure the tractor receptacle cover latches over the keyway on the 7-Pin Connector to hold the Connector in place.

If an operator plugs in the 7-Pin Connector, but the lights do not seem to work right, check the above items to make sure there is a good connection with the 7-Pin Connector.

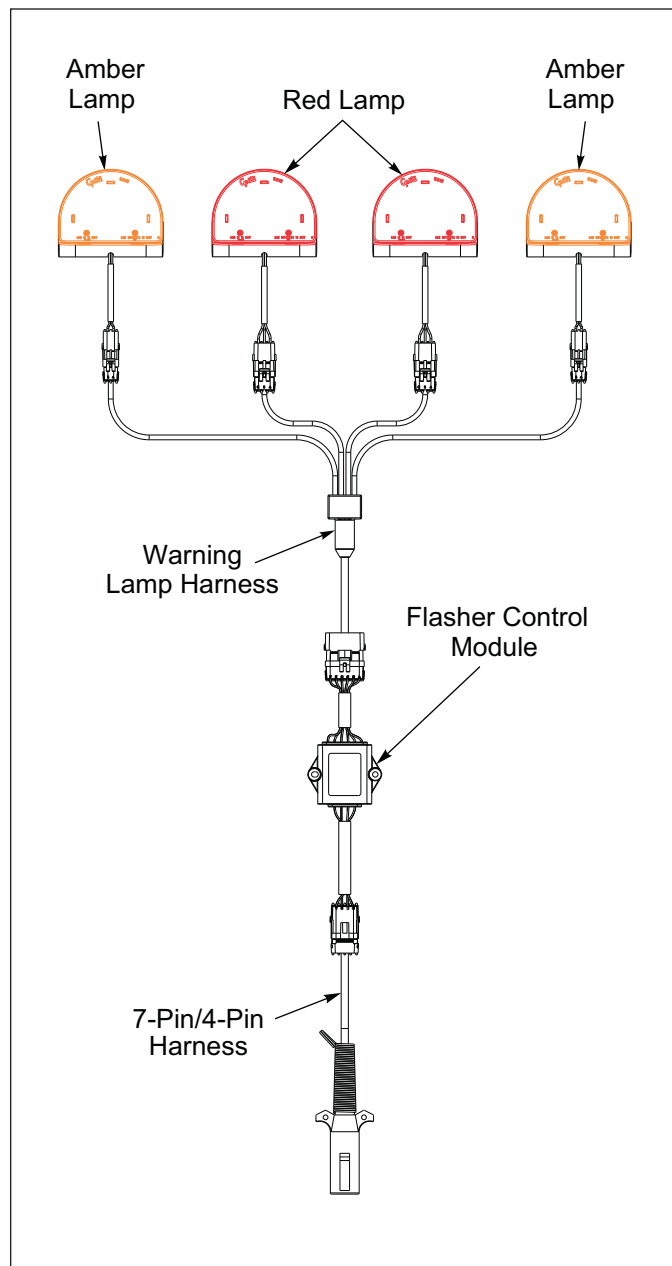


Figure 4-13: Warning Lamps

Storage

1. The service life of the Flail Shredder will be extended by proper off-season storage practices. Prior to storing the unit, complete the following procedures:
 - Completely clean the unit.
 - Inspect the machine for worn or defective parts. Replace as needed.
 - Repaint all areas where the original paint is worn off.
 - Apply a light coating of oil or grease to exposed Cylinder Rod to prevent rusting.
 - Lubricate each point of the machine as stated in **“Lubrication Maintenance” on Page 4-3.**
2. Store the unit in a shed or under a tarpaulin to protect it from the weather. Tires should rest on boards, or some other object, to keep them out of the soil.
3. Raise the machine and install Transport Lock Pin. **See Figure 3-6. Lower Drawbar Jack.**
 - Relieve Hydraulic Pressure in hoses after Transport Lock Pin is installed.
 - Block Transport Wheels before unhitching from Tractor.

Specifications

Product Attributes	FS1446	FS1446-1	FSC1446	FSC1446-1
Approximate Weight	2,511 lbs. (1,130 kg)	2,511 lbs. (1,130 kg)	2,511 lbs. (1,130 kg)	2,511 lbs. (1,130 kg)
Working Width	12 ft. 0 in. (3.6 m)	12 ft. 0 in. (3.6 m)	12 ft. 0 in. (3.6 m)	12 ft. 0 in. (3.6 m)
Transport Width	13 ft. 1 in. (3.93 m)	13 ft. 1 in. (3.93 m)	13 ft. 1 in. (3.93 m)	13 ft. 1 in. (3.93 m)
Transport Height	Dependent on Tractor Hitch Position	Dependent on Tractor Hitch Position	Dependent on Tractor Hitch Position	Dependent on Tractor Hitch Position
Overall Length	9 ft. 8 in. (2.9 m)	9 ft. 8 in. (2.9 m)	9 ft. 8 in. (2.9 m)	9 ft. 8 in. (2.9 m)
Drive Line	540 RPM	1,000 RPM	540 RPM	1,000 RPM
Gearbox	180 HP (138.24 kW)	180 HP (138.24 kW)	180 HP (138.24 kW)	180 HP (138.24 kW)
Over Running Clutch	Standard	Standard	Standard	Standard
Constant Velocity PTO Shaft	N/A	Standard	N/A	Standard
Rotor RPM	1,630 RPM	1,630 RPM	1,630 RPM	1,630 RPM
Rotor SFM (Surface Feet per Minute)	10,300 SFM (3,139 SMM)	10,300 SFM (3,139 SMM)	10,300 SFM (3,139 SMM)	10,300 SFM (3,139 SMM)
Knife Type	Side Slice	Side Slice	Cup Type	Cup Type
Hitch	Pull-Type w/Hydraulic Lift	Pull-Type w/Hydraulic Lift	Pull-Type w/Hydraulic Lift	Pull-Type w/Hydraulic Lift
Tire Size	(2) 9.5L x 15-8 Ply Implement Rib	(2) 9.5L x 15-8 Ply Implement Rib	(2) 9.5L x 15-8 Ply Implement Rib	(2) 9.5L x 15-8 Ply Implement Rib
Hydraulic Equipment	Cylinder with Hoses to Hitch Point	Cylinder with Hoses to Hitch Point	Cylinder with Hoses to Hitch Point	Cylinder with Hoses to Hitch Point
Safety Warning Lights and SMV Emblem	Standard	Standard	Standard	Standard
Safety Chain Kit	Standard	Standard	Standard	Standard
Horsepower Requirements	5 to 10 HP per ft. (3.84 to 7.68 kW)	5 to 10 HP per ft. (3.84 to 7.68 kW)	5 to 10 HP per ft. (3.84 to 7.68 kW)	5 to 10 HP per ft. (3.84 to 7.68 kW)
Recommended Operating Speed	3 to 6 MPH (5 to 10 km/h)	3 to 6 MPH (5 to 10 km/h)	3 to 6 MPH (5 to 10 km/h)	3 to 6 MPH (5 to 10 km/h)

Specifications subject to change with or without notice.

Table 5-1: Model Specifications (1 of 3)

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Product Attributes	FSB1446	FSB1446-1	FS1806	FS1806-1
Approximate Weight	2,511 lbs. (1,130 kg)	2,511 lbs. (1,130 kg)	2,833 lbs. (1,275 kg)	2,833 lbs. (1,275 kg)
Working Width	12 ft. 0 in. (3.6 m)	12 ft. 0 in. (3.6 m)	15 ft. 0 in. (4.5 m)	15 ft. 0 in. (4.5 m)
Transport Width	13 ft. 1 in. (3.93 m)	13 ft. 1 in. (3.93 m)	16 ft. 1 in. (4.83 m)	16 ft. 1 in. (4.83 m)
Transport Height	Dependent on Tractor Hitch Position	Dependent on Tractor Hitch Position	Dependent on Tractor Hitch Position	Dependent on Tractor Hitch Position
Overall Length	9 ft. 8 in. (2.9 m)	9 ft. 8 in. (2.9 m)	9 ft. 8 in. (2.9 m)	9 ft. 8 in. (2.9 m)
Drive Line	540 RPM	1,000 RPM	540 RPM	1,000 RPM
Gearbox	180 HP (138.24 kW)	180 HP (138.24 kW)	180 HP (138.24 kW)	180 HP (138.24 kW)
Over Running Clutch	Standard	Standard	Standard	Standard
Constant Velocity PTO Shaft	N/A	Standard	N/A	Standard
Rotor RPM	1,630 RPM	1,630 RPM	1,630 RPM	1,630 RPM
Rotor SFM (Surface Feet per Minute)	10,300 SFM (3,139 SMM)	10,300 SFM (3,139 SMM)	10,300 SFM (3,139 SMM)	10,300 SFM (3,139 SMM)
Knife Type	Combination	Combination	Side Slice	Side Slice
Hitch	Pull-Type w/Hydraulic Lift	Pull-Type w/Hydraulic Lift	Pull-Type w/Hydraulic Lift	Pull-Type w/Hydraulic Lift
Tire Size	(2) 9.5L x 15-8 Ply Implement Rib	(2) 9.5L x 15-8 Ply Implement Rib	(4) 9.5L x 15-8 Ply Implement Rib	(4) 9.5L x 15-8 Ply Implement Rib
Hydraulic Equipment	Cylinder with Hoses to Hitch Point	Cylinder with Hoses to Hitch Point	Cylinder with Hoses to Hitch Point	Cylinder with Hoses to Hitch Point
Safety Warning Lights and SMV Emblem	Standard	Standard	Standard	Standard
Safety Chain Kit	Standard	Standard	Standard	Standard
Horsepower Requirements	5 to 10 HP per ft. (3.84 to 7.68 kW)	5 to 10 HP per ft. (3.84 to 7.68 kW)	5 to 10 HP per ft. (3.84 to 7.68 kW)	5 to 10 HP per ft. (3.84 to 7.68 kW)
Recommended Operating Speed	3 to 6 MPH (5 to 10 km/h)	3 to 6 MPH (5 to 10 km/h)	3 to 6 MPH (5 to 10 km/h)	3 to 6 MPH (5 to 10 km/h)

Specifications subject to change with or without notice.

Table 5-2: Model Specifications (2 of 3)

TABLE OF CONTENTS

Product Attributes	FSC1806	FSC1806-1	FSB1806	FSB1806-1
Approximate Weight	2,833 lbs. (1,275 kg)	2,833 lbs. (1,275 kg)	2,833 lbs. (1,275 kg)	2,833 lbs. (1,275 kg)
Working Width	15 ft. 0 in. (4.5 m)	15 ft. 0 in. (4.5 m)	15 ft. 0 in. (4.5 m)	15 ft. 0 in. (4.5 m)
Transport Width	16 ft. 1 in. (4.83 m)	16 ft. 1 in. (4.83 m)	16 ft. 1 in. (4.83 m)	16 ft. 1 in. (4.83 m)
Transport Height	Dependent on Tractor Hitch Position	Dependent on Tractor Hitch Position	Dependent on Tractor Hitch Position	Dependent on Tractor Hitch Position
Overall Length	9 ft. 8 in. (2.9 m)	9 ft. 8 in. (2.9 m)	9 ft. 8 in. (2.9 m)	9 ft. 8 in. (2.9 m)
Drive Line	540 RPM	1,000 RPM	540 RPM	1,000 RPM
Gearbox	180 HP (138.24 kW)	180 HP (138.24 kW)	180 HP (138.24 kW)	180 HP (138.24 kW)
Over Running Clutch	Standard	Standard	Standard	Standard
Constant Velocity PTO Shaft	N/A	Standard	N/A	Standard
Rotor RPM	1,630 RPM	1,630 RPM	1,630 RPM	1,630 RPM
Rotor SFM (Surface Feet per Minute)	10,300 SFM (3,139 SMM)	10,300 SFM (3,139 SMM)	10,300 SFM (3,139 SMM)	10,300 SFM (3,139 SMM)
Knife Type	Cup Type	Cup Type	Combination	Combination
Hitch	Pull-Type w/Hydraulic Lift	Pull-Type w/Hydraulic Lift	Pull-Type w/Hydraulic Lift	Pull-Type w/Hydraulic Lift
Tire Size	(4) 9.5L x 15-8 Ply Implement Rib	(4) 9.5L x 15-8 Ply Implement Rib	(4) 9.5L x 15-8 Ply Implement Rib	(4) 9.5L x 15-8 Ply Implement Rib
Hydraulic Equipment	Cylinder with Hoses to Hitch Point	Cylinder with Hoses to Hitch Point	Cylinder with Hoses to Hitch Point	Cylinder with Hoses to Hitch Point
Safety Warning Lights and SMV Emblem	Standard	Standard	Standard	Standard
Safety Chain Kit	Standard	Standard	Standard	Standard
Horsepower Requirements	5 to 10 HP per ft. (3.84 to 7.68 kW)	5 to 10 HP per ft. (3.84 to 7.68 kW)	5 to 10 HP per ft. (3.84 to 7.68 kW)	5 to 10 HP per ft. (3.84 to 7.68 kW)
Recommended Operating Speed	3 to 6 MPH (5 to 10 km/h)	3 to 6 MPH (5 to 10 km/h)	3 to 6 MPH (5 to 10 km/h)	3 to 6 MPH (5 to 10 km/h)

Specifications subject to change with or without notice.

Table 5-3: Model Specifications (3 of 3)

Document Control Revision Log:

Date	Form #	Improvement(s): Description and Comments
07/07/2008	205rev7-7-08	Initial Release
09/2011	987rev0911	Updated
10/2022	8J306-1022	New Template / Revised Chapters and Drawings



Intertek

Equipment from Landoll Company, LLC is built to exacting standards ensured by ISO 9001 registration at all Landoll manufacturing facilities.

**Flail Shredder
Models - 1446, 1806
Series - FS, FSC, FSB
Operator's Manual**

Re-Order Part Number 8J306

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