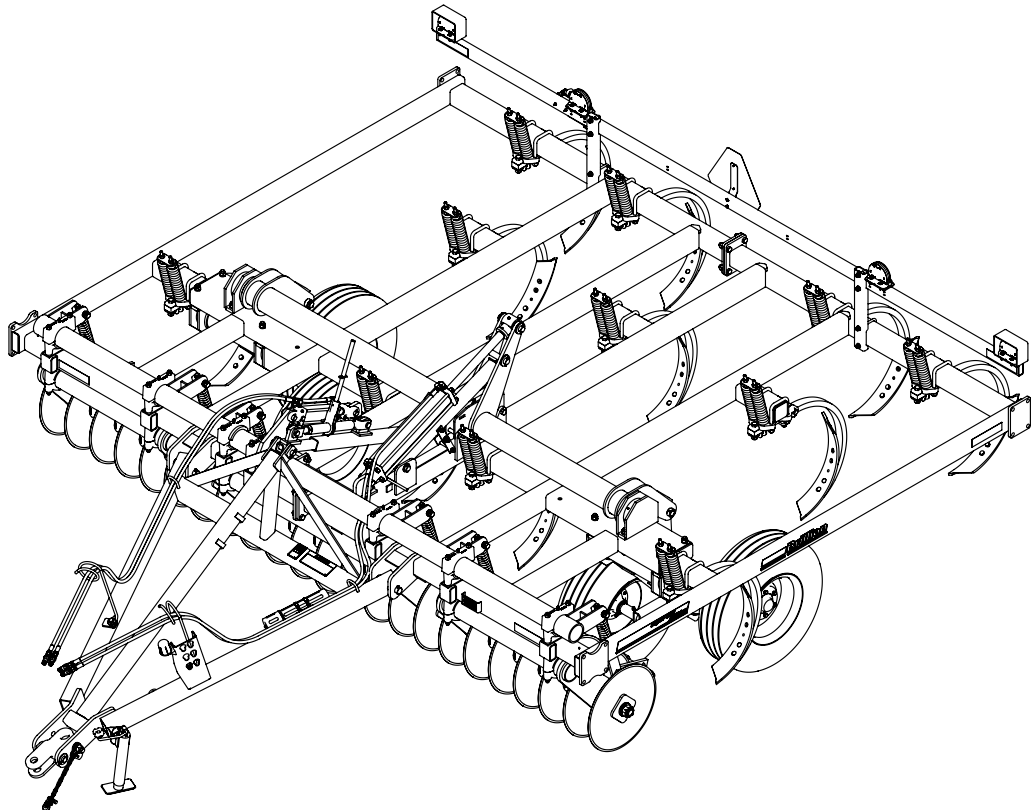




SUPER SOIL BUILDER
Coulter Chisel - Extended Frame
Models: SB71-1, HSB71-1 through 131-1
Operator's Manual



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5 General Reference and Specifications

Introduction and 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 and maintenance will provide you with satisfactory use for seasons to come.



DANGER

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

Description of Unit

The Super Soil Builder is designed to accommodate higher yields and more residue. Hydraulically actuated Front Cutting Coulters, cut and size the residue along with “adjust on the go” feature for a quick change to match field conditions. Three rows of Dual Nested Spring Chisel Shanks, positioned on a weighted frame, maintain a true 15” spacing for exceptional trash flow and superior soil movement. Walking Tandem Axles, provide for a smooth ride and more uniform depth control at higher operating speeds. These features leave the finished field surface ridged and very well blended for faster warm up and dry down of the seedbed. Super Soil Builder is available in 7, 9, 11 and 13 Shank Models.

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 have changed to assure top performance.
- Location reference: Right and Left designations in this manual are determined by facing the direction the implement 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 implement’s parts should only be replaced with Brillion parts. If items covered in this manual are not understood, contact your local Brillion Dealer.

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 _____

Refer to the ID plate as shown. **See Figure 1-1.**



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 implement decals (signs) attached to the implement. 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 implement decals before you attempt to operate or maintain this equipment.

- Examine safety decals and be sure you have the correct safety decals for the implement. **See Figure 1-4.**
- 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 implement. Wash with soap and water or a cleaning solution as required.

- Replace decals that become damaged or lost. Also, be sure that any new implement components installed during repair include decals which are assigned to them by the manufacturer.
- When applying decals to the implement, 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 anyone to ride on the tractor or implement. Riders could be struck by foreign objects or thrown from the implement.**
- **Never allow children to operate equipment.**
- **Keep bystanders away from implement during operation.**

Transporting Safety

IMPORTANT

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

- When transporting the implement 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 the 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 implement may cause the operator to lose control of the tractor. Use a tractor heavier than the implement.
- Use caution when towing behind articulated steering tractors; fast or sharp turns may cause the implement to shift sideways.
- Keep clear of overhead power lines and other obstructions when transporting. Know the transport height and width of your implement.

Attaching, Detaching and Storage

- Do not stand between the tractor and implement when attaching or detaching implement unless both are blocked from moving.
- Block implement so it will not move when unhitched from the tractor.

Maintenance Safety

- Block the implement so it will not move when working on or under it to prevent injury.
- Do not make adjustments or lubricate the machine while it is in motion.
- Make sure all moving parts have stopped.
- Understand the procedure before doing the work. Use proper tools and equipment.

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.

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 the weight involved.

Chemical Safety

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

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

Prepare for Emergencies

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

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 the control lever to the float position with engine running. Refer to tractor's operator's manual. The implement should be lowered to the ground, this will put the weight on the shanks and coulters.

Wear protective gloves and safety glasses or goggles when working with hydraulic systems.

Safety Chain

Use a safety chain to help control towed 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.
- Replace chain if any links or end fittings are broken, stretched or damaged.
- Do not use a safety chain for towing.

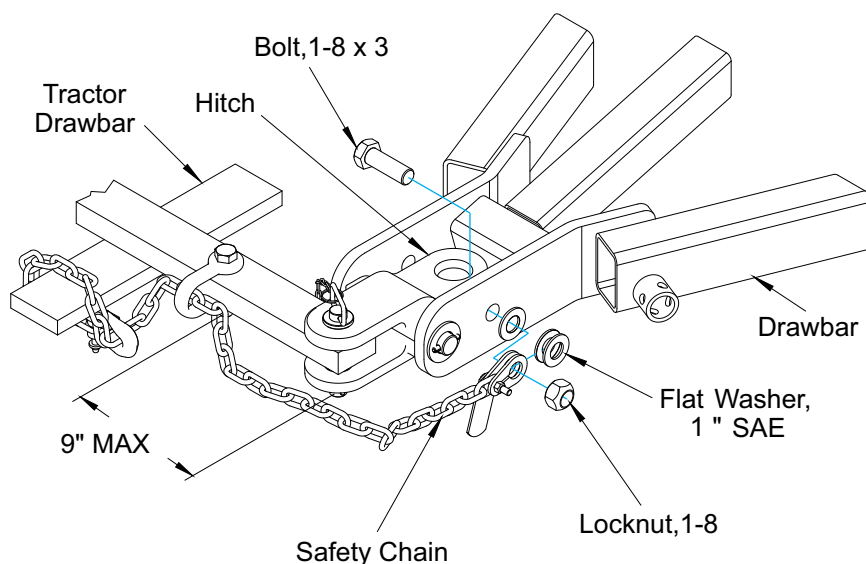


Figure 1-2: CAT2 Straight Drawbar

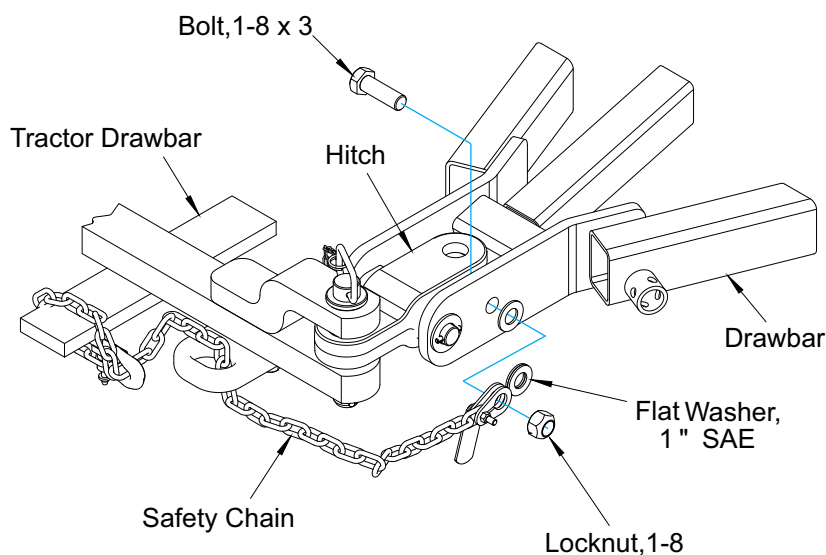


Figure 1-3: CAT3 Drawbar with Hammer Strap

Decals

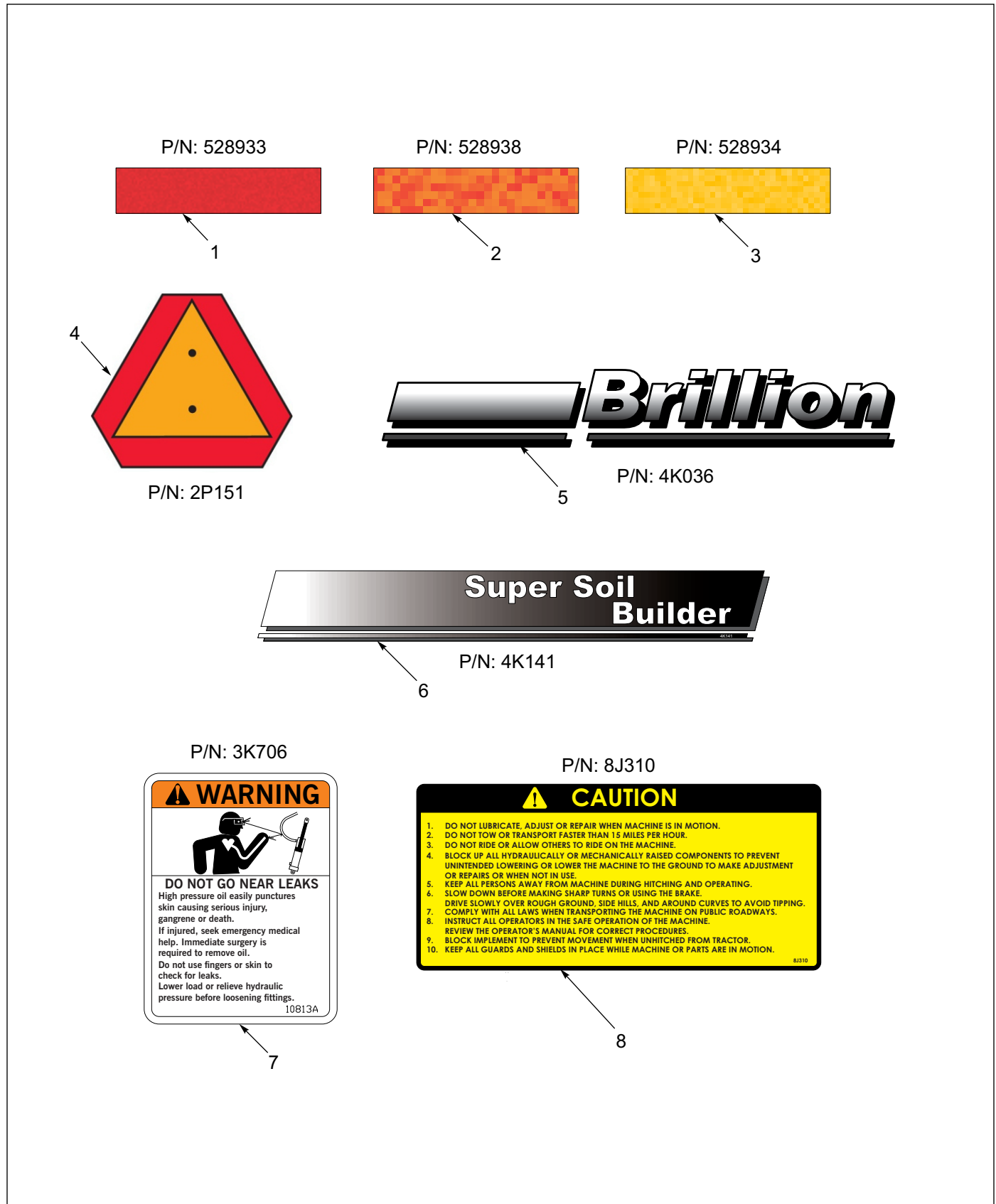


Figure 1-4: Decals

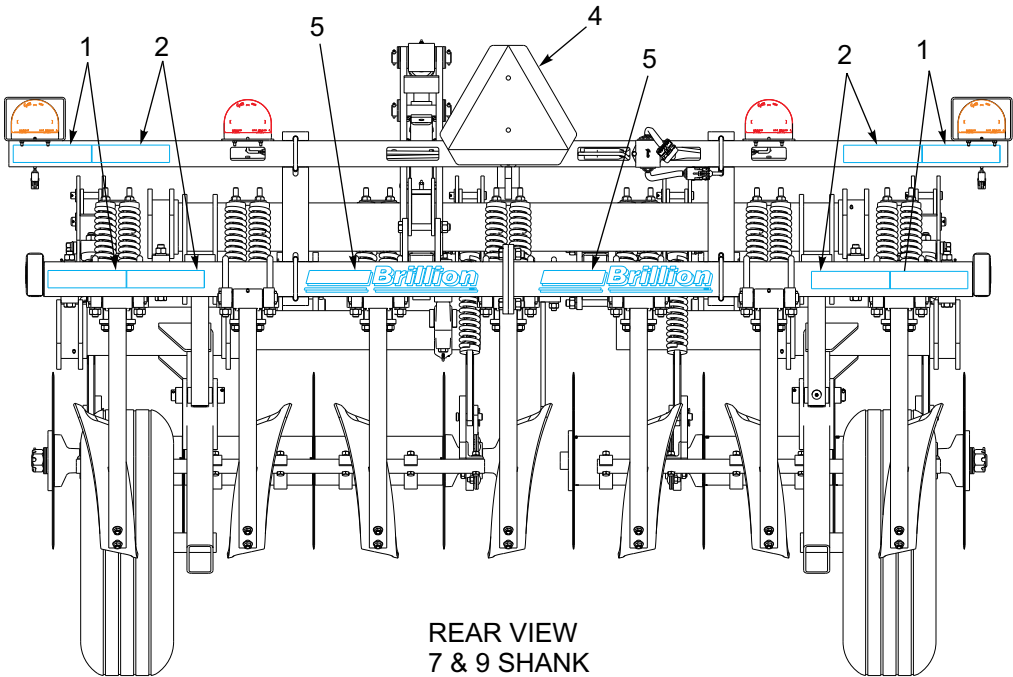
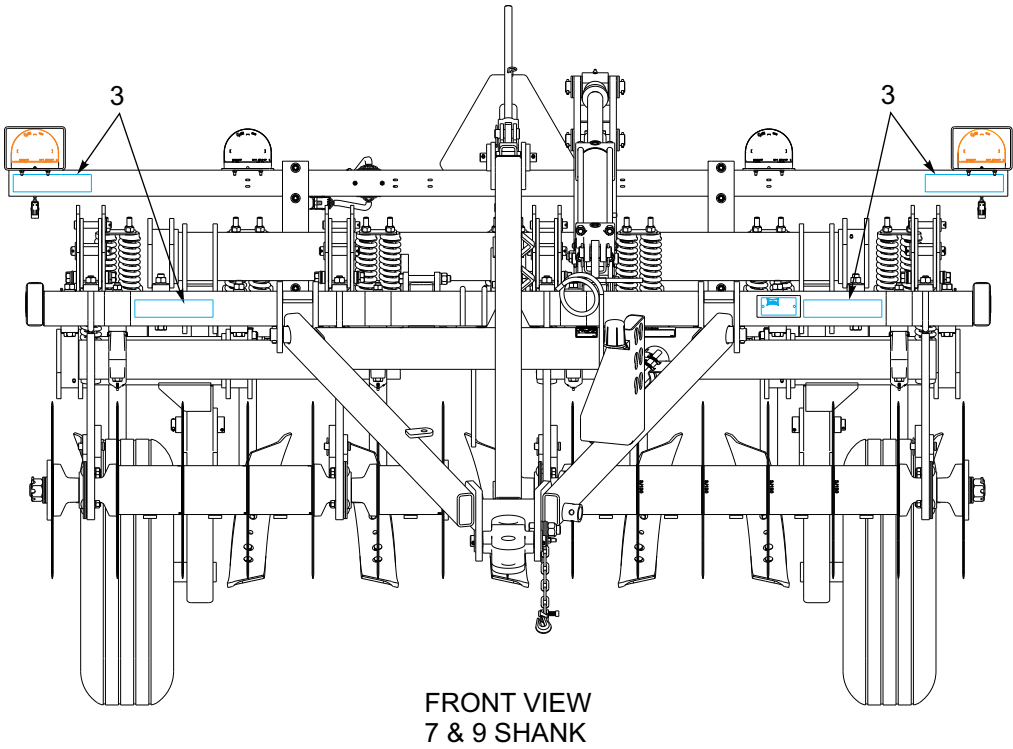
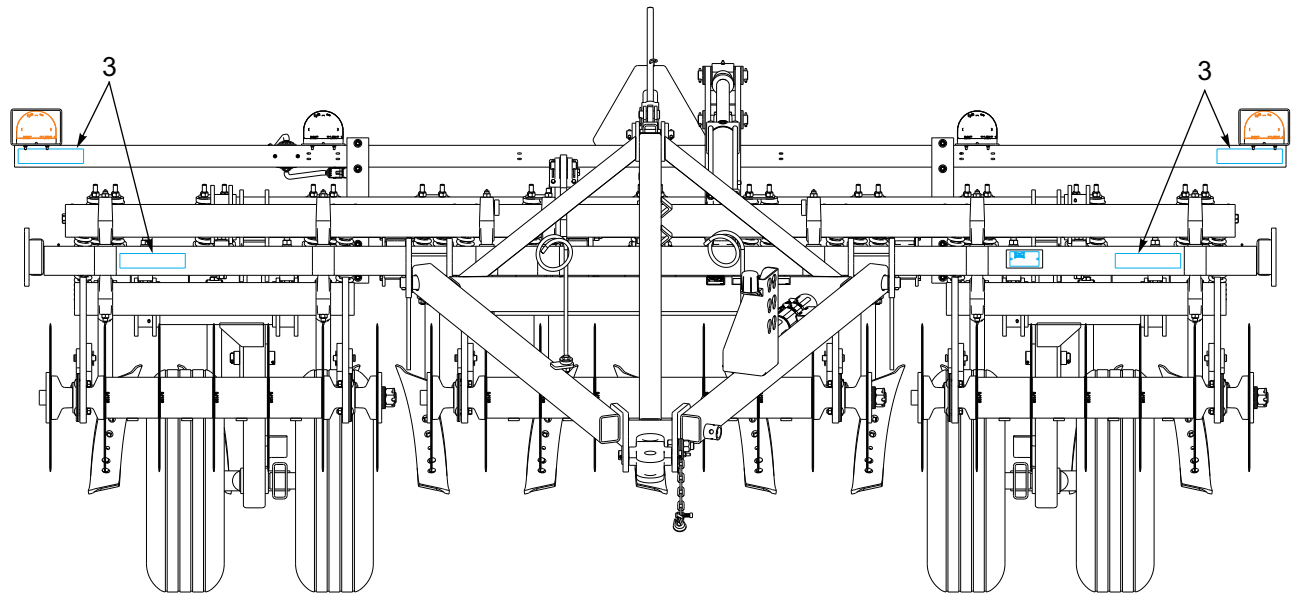
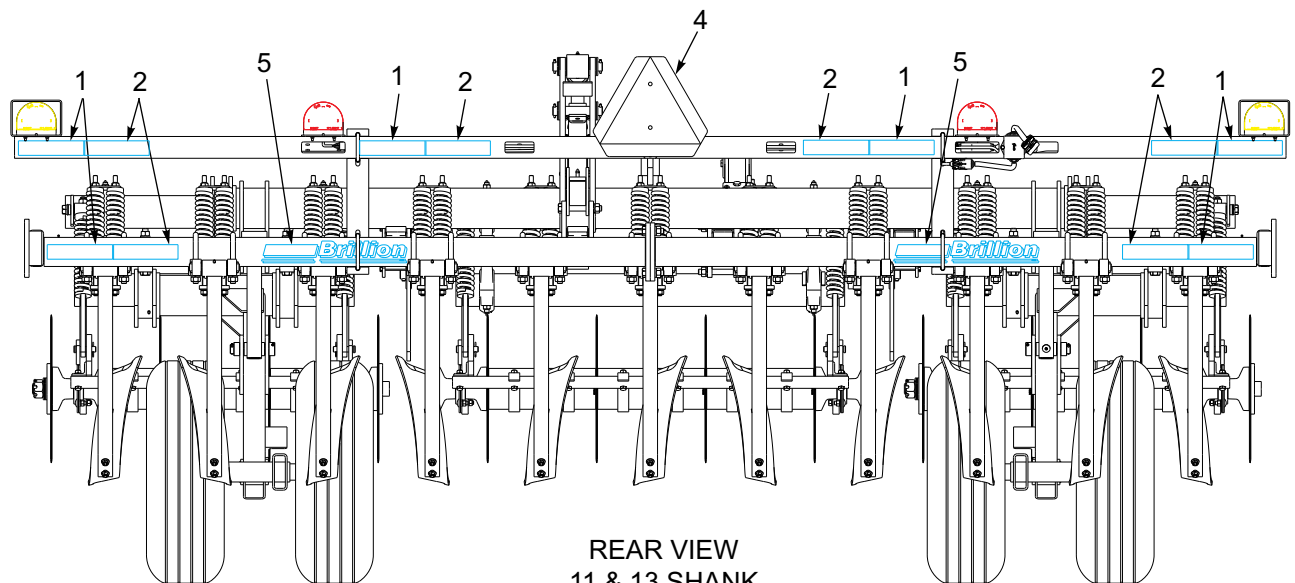


Figure 1-5: Decal Locations, 7 and 9 Shank (1 of 4)



FRONT VIEW
11 & 13 SHANK



REAR VIEW
11 & 13 SHANK

Figure 1-6: Decal Locations, 11 and 13 Shank (2 of 4)

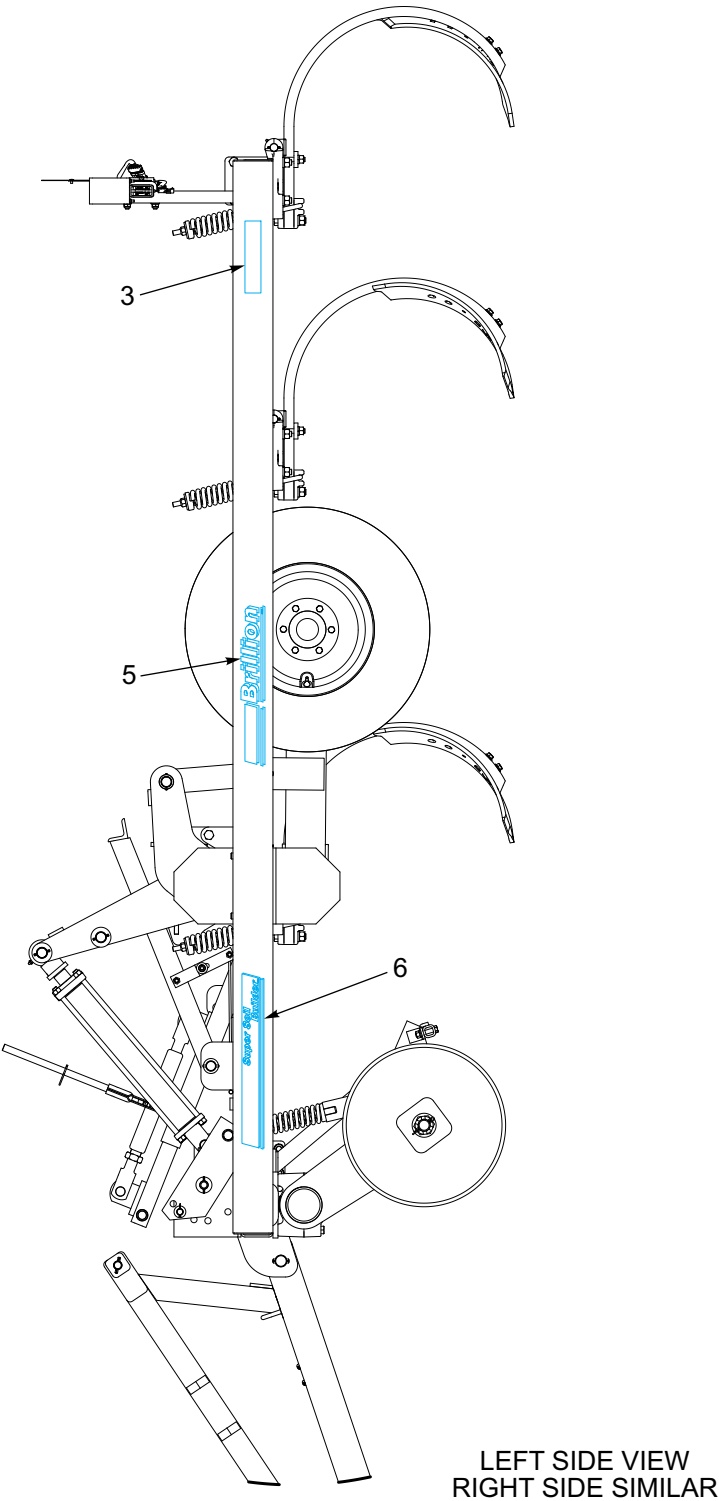


Figure 1-7: Decal Locations, Side View (3 of 4)

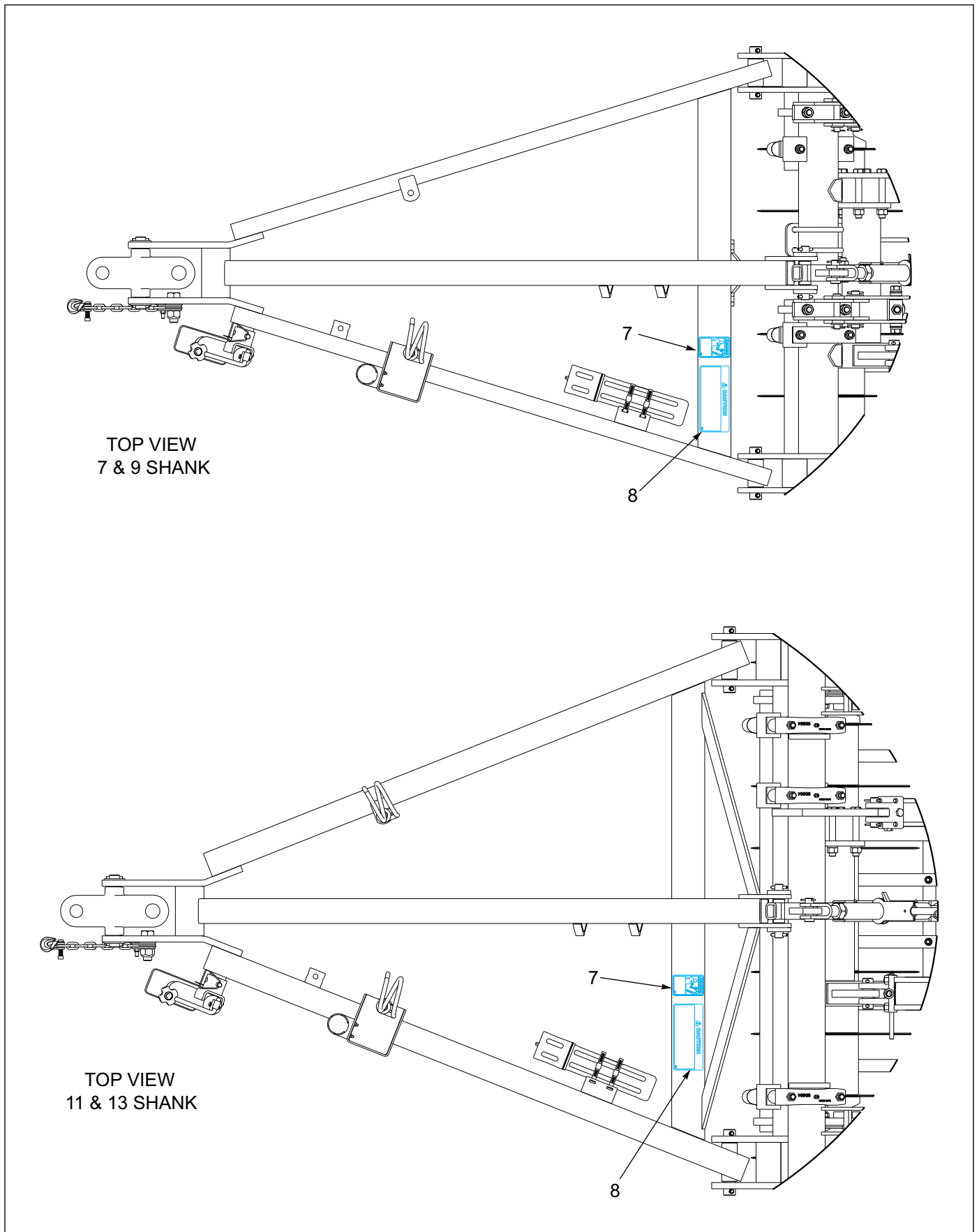


Figure 1-8: Decal Locations, Drawbar (4 of 4)

INTRODUCTION AND SAFETY INFORMATION

Table provided for general use.

NOTES:

Chapter 2

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 (such as the frame, rock shaft, and pull hitch) manually. Use a hoist or a fork lift to move these parts into position.

NOTE

Refer to the repair parts manual 1K704 for identification of parts and for the approximate relationship of the parts in assembly.

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 lock nuts. **See Page 4-1.**

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

Frame Installation

1. Using blocks or other supports, block up the RH and LH Frames approximately 36". Be sure that it is secure and cannot topple.
2. Attach the RH and LH Frames together with 3/4-10 x 2-1/2 Bolts, Lockwashers and Hex Nuts. Assemble the front LH Frame Stand off to the RH Frame with 4-Hole Plate and 3/4-10 x 5-1/2 Bolts, Lockwashers and Hex Nuts. **See Figures 2-2 and 2-3.**
3. 9 and 13 Shank Machines, attach on each side of the Frame, a Coulter Extension on the Front Frame Plates and a Shank Extension on the Rear Frame Plates with 3/4-10 x 2-1/2 Bolts, Lockwashers and Hex Nuts. Make sure that the Shank Extension is the same height as the rear frame tube. **See Figure 2-1.**

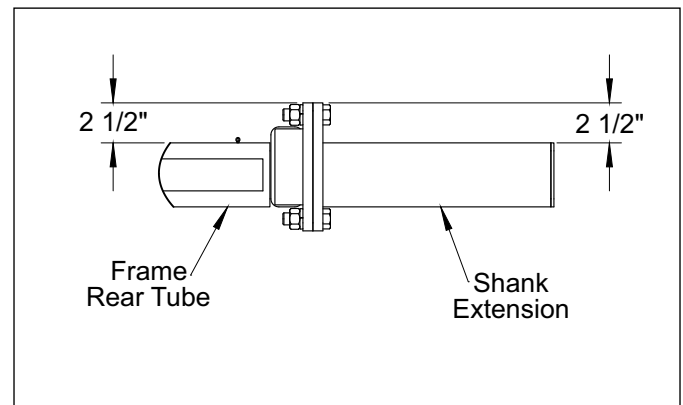


Figure 2-1: Shank Extension

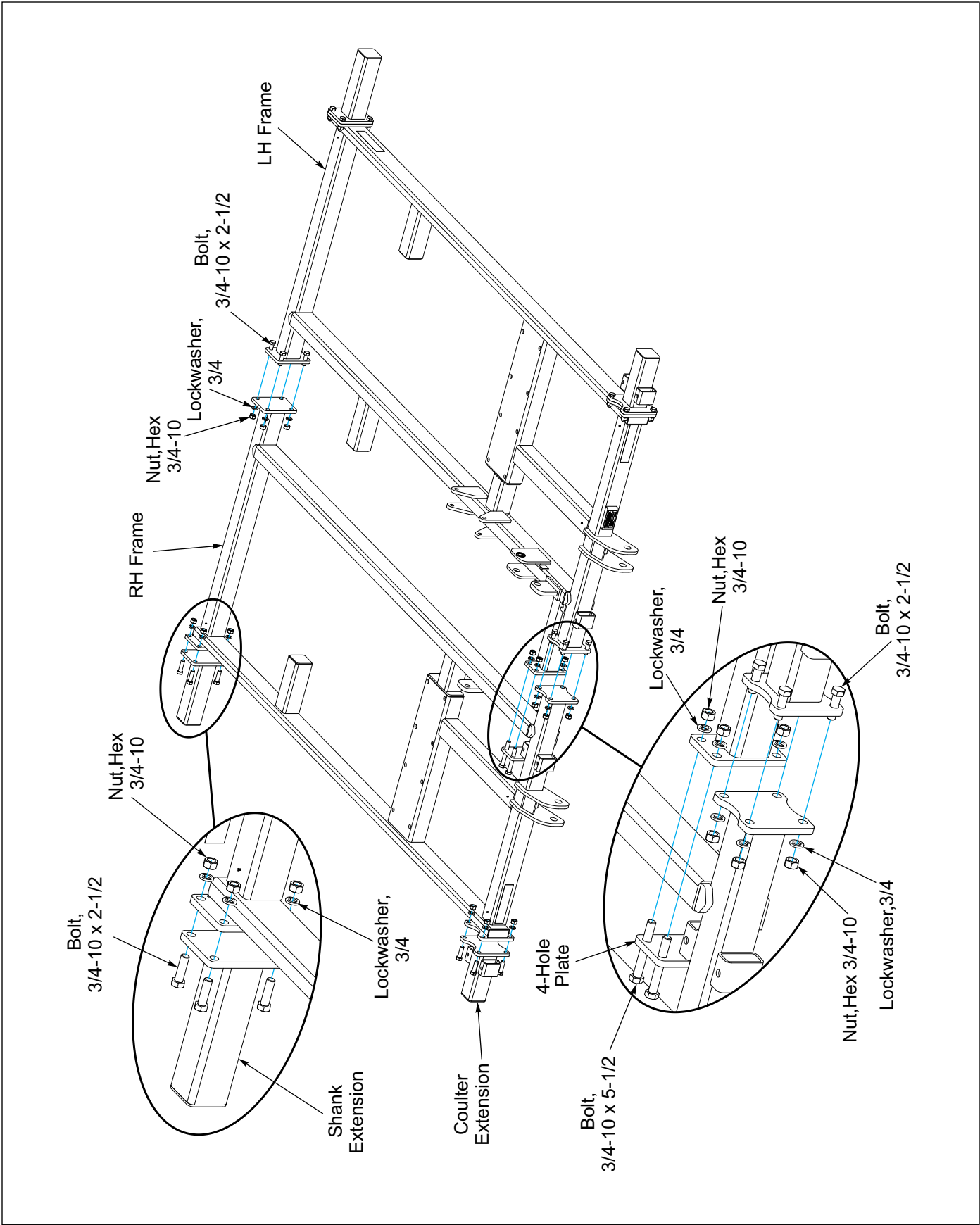


Figure 2-2: Frame 7 and 9 Shank

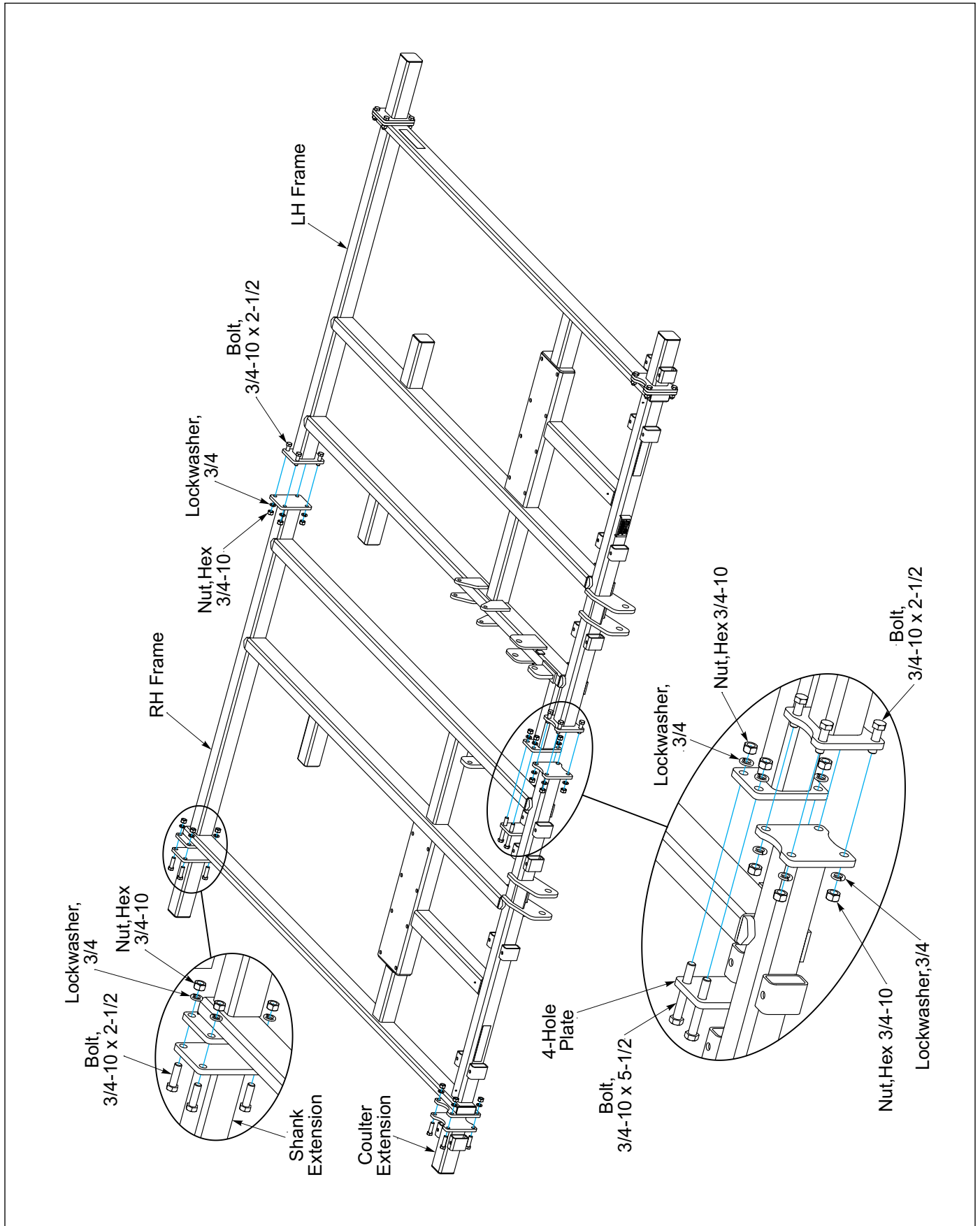


Figure 2-3: Frame 11 and 13 Shank

Transport Axle Installation

1. Position Wheel Arm Assemblies or Walking Beam Assemblies under the frame per Machine Model. **See Figures 2-5, 2-6 and 2-7.** Note the position of the Wheel Hubs and the longer end of the Wheel Arm Assemblies or Walking Beam Assemblies Pivot Tube are different per model.
2. Coat the inside bearing surface of the Bearings with grease.
3. Place a Bearing on each end of the Wheel Arm Assembly or Walking Beam Assembly Pivot Tube and attach it to the 10 x 4 Frame Tube with 3/4-10 x 6 Bolts, Lockwashers and Hex Nuts.
4. With Rockshaft Link Lugs facing rearward, center the Rockshaft on top of the Frame directly above the Wheel Arm Assemblies or Walking Beam Assemblies. Place a Bearing on each end of the Rockshaft and attach it to the 10 x 4 Frame Tube with 3/4-10 x 6 Bolts, Lockwashers and Hex Nuts. **See Figures 2-5 and 2-7.**
5. 9 Shank Tandem Models are assembled a little differently. The Rockshaft End Bearings and each Wheel Arm Pivot Tube End Bearing will be on top of the other and attached to the 10 x 4 Frame Tube with 3/4-10 x 6-1/2 Bolts, Lockwashers and Hex Nuts. Also, the RH Walking Beam Assembly will be assembled on the left side of the machine and the LH Walking Beam Assembly will be on the right side of the machine. **See Figure 2-6.**
6. Coat the center Bearing Assembly with grease. Orient the Bearing Assembly so the chamfer end is towards the front of the machine and install it between the Rockshaft Cylinder Arms. Insert 3/4-10 x 5-1/2 Bolts with the head on the left side and secure with Lockwashers and Hex Nuts, which will be on the right side. **See Figure 2-4.**

NOTE

The Cast Bearing inside the Bearing Assembly should be exposed and viewable from the front of the machine.

NOTE

The head of the Bolt must be on the left side for proper clearance between the Bolt head and the Spring Clamp Assembly.

7. Orient the Links with the grease fittings accessible rearward and install Links between the Rockshaft Link Lugs and Wheel Arm Lugs with 1-1/4 x 6-1/8 Pin and secure with 1/4 x 2 Roll Pins through the Lug Collars.

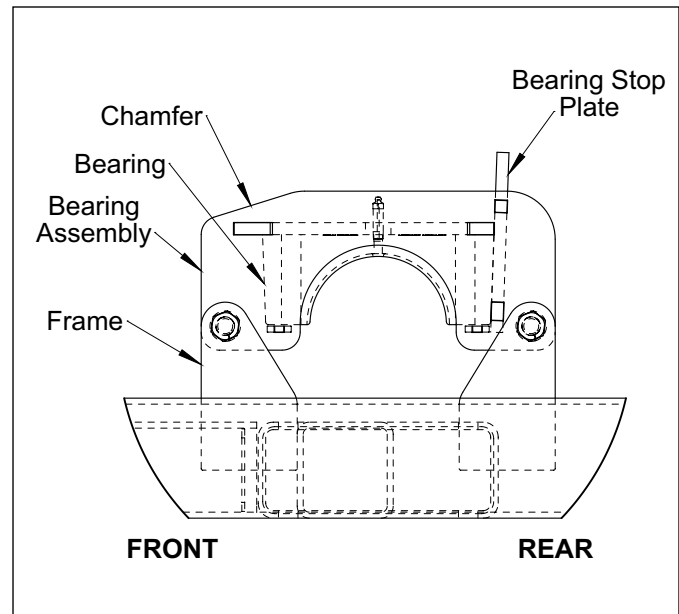


Figure 2-4: Center Bearing Assembly

Single Wheel Transport Axle Assembly 7 and 9 Shank Models

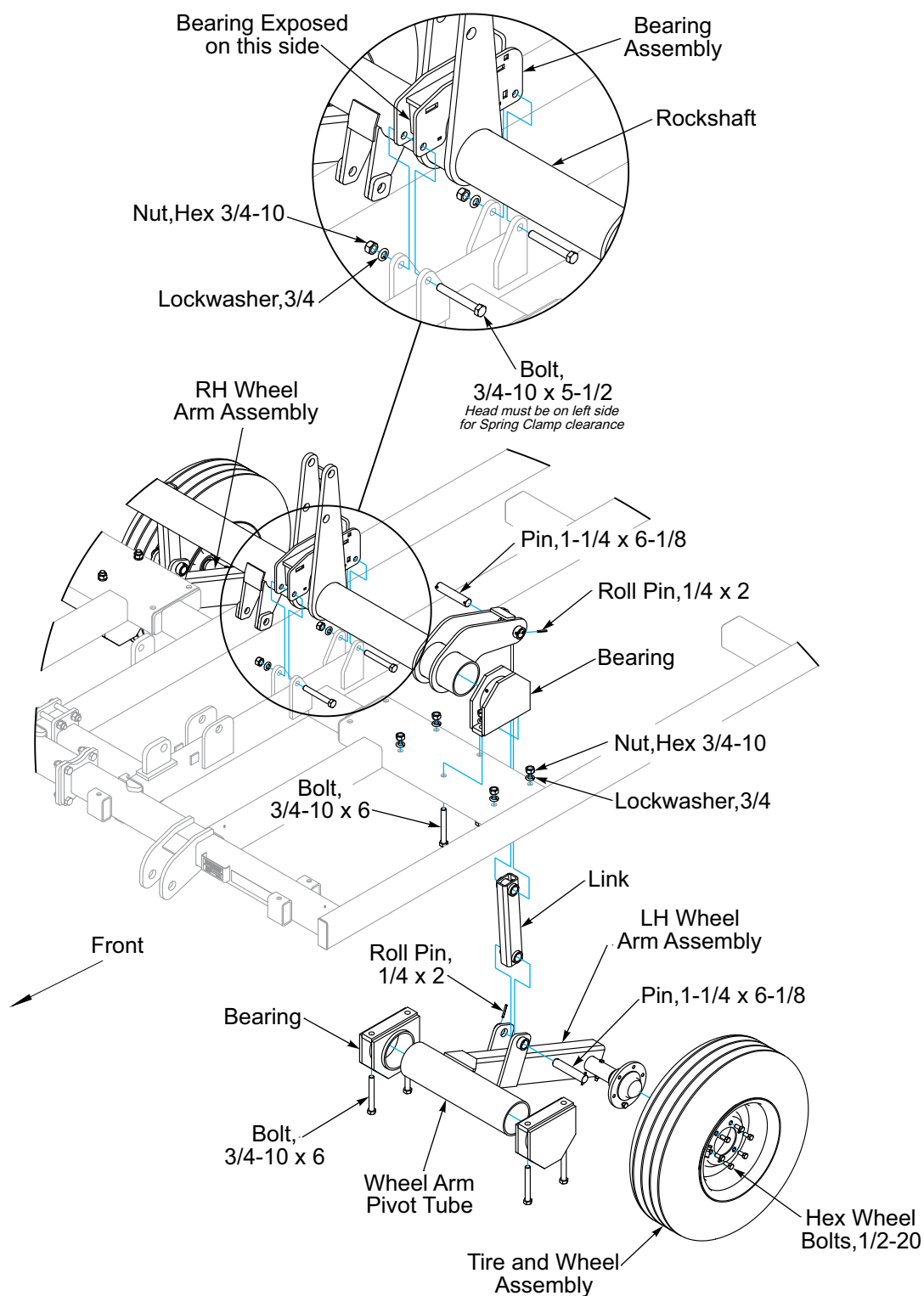


Figure 2-5: Single Wheel Transport Axle Assembly 7 and 9 Shank Models

Tandem Wheel Transport Axle Assembly 9 Shank Models

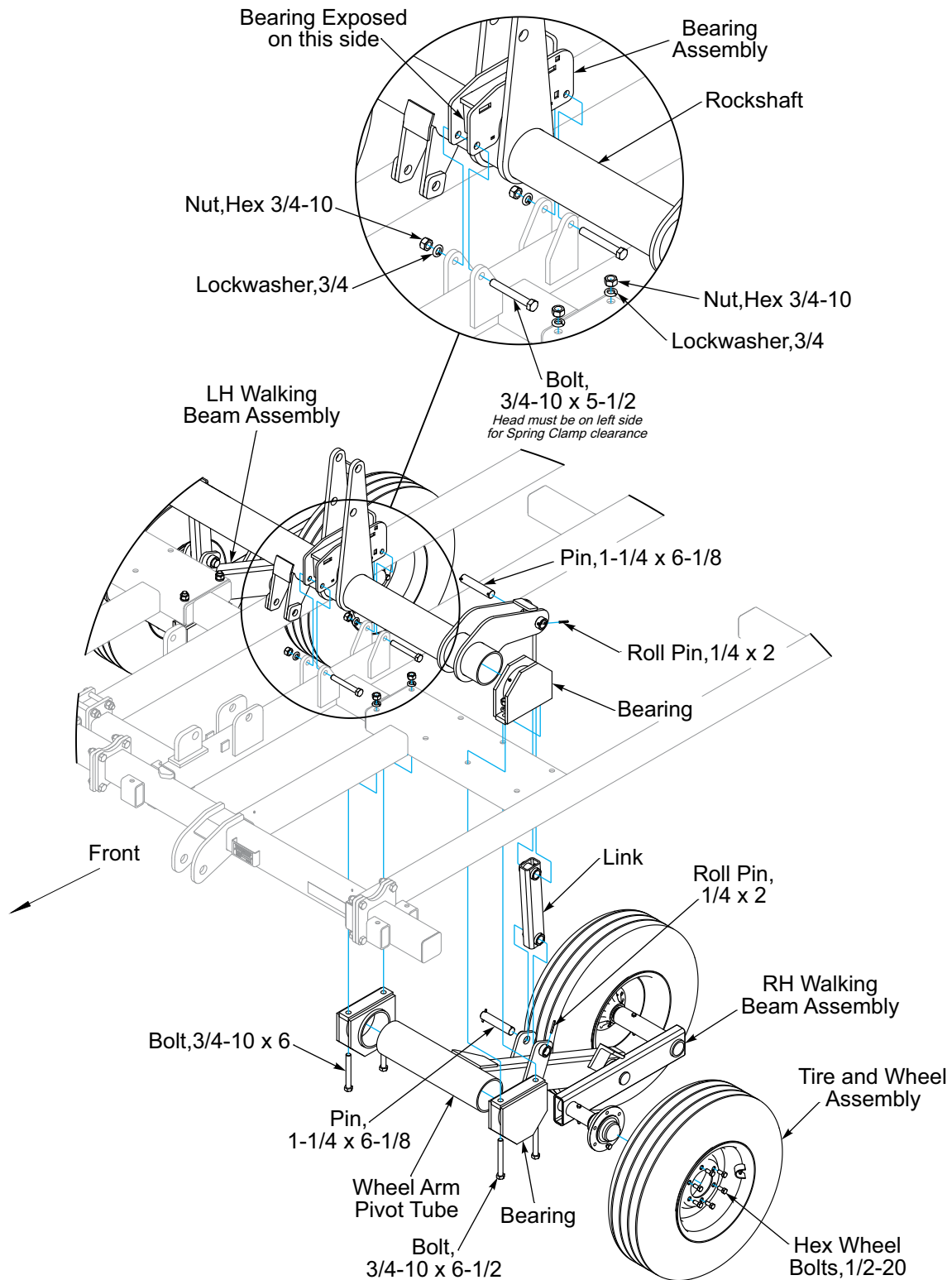


Figure 2-6: Tandem Wheel Transport Axle Assembly 9 Shank Models

Tandem Wheels Transport Axle Assembly 11 and 13 Shank Models

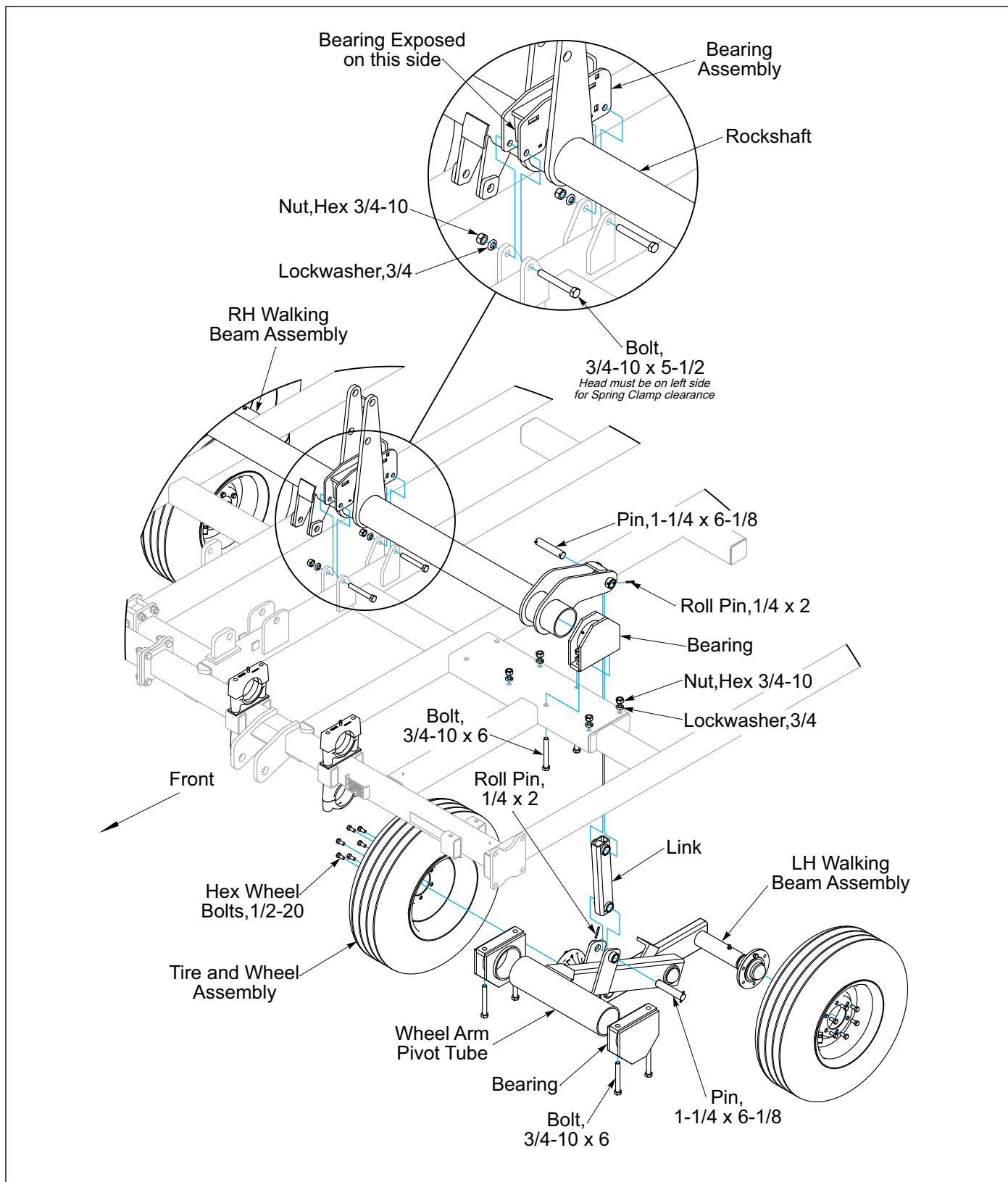


Figure 2-7: Tandem Wheel Transport Axle Assembly 11 and 13 Shank Models

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 stress the studs and strip the threads.

NOTE

All tire/wheel assemblies are mounted with the valve stem facing outward from Hub and Spindle.

NOTE

Block machine wheels securely so they will not roll while working on or under it.

Soil Builder uses 11L x 15 - 12 ply Tires and should be inflated to 52 PSI.

Install a Tire and Wheel Assembly onto each Hub and Spindle Assembly with 1/2-20 Wheel Bolts. Tighten Bolts to 50 ft-lbs using sequence in **Figure 2-8**. Then tighten to full torque of 80-85 ft-lbs.

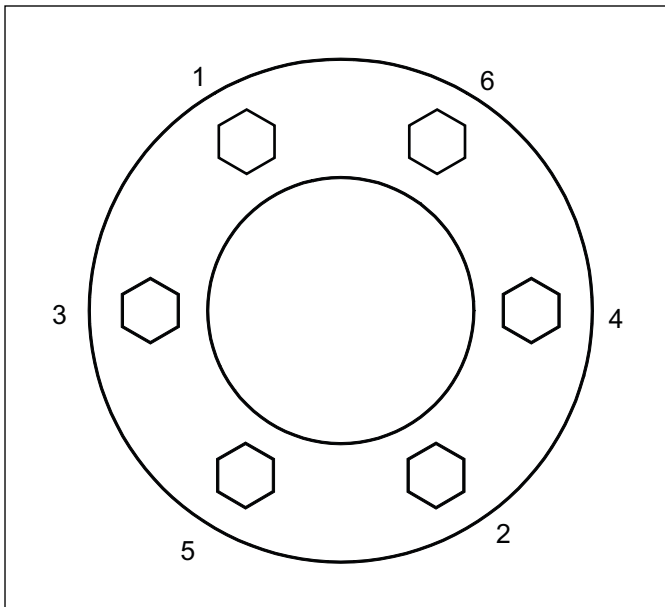


Figure 2-8: Stud Tightening Sequence

NOTE

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

Transport Axle Hydraulic Cylinder Installation

1. With 3-1/2 x 16 Hydraulic Cylinder ports up, assemble the base end to the Cylinder Anchor on the front of the frame with the vendor supplied hardware. **See Figure 2-9.**
2. Put a 1-1/4 Flat Washer on each side of the Cylinder Rod Clevis and swing the Clevis between the Rockshaft Lugs top hole. Insert 1-1/4 x 6-13/16 Pin through them. Place two 1-1/4 Flat Washers on each side against the Rockshaft Lugs and secure with 1/4 x 2 Roll Pins.
3. Insert another 1-1/4 x 6-13/16 Pin into the Rockshaft Lugs bottom hole. Place two 1-1/4 Flat Washers on each side against the Rockshaft Lugs and secure with 1/4 x 2 Roll Pins. This Pin is used for the Transport Lock.
4. Install the appropriate Cylinder depth Stops onto the Cylinder Rod.

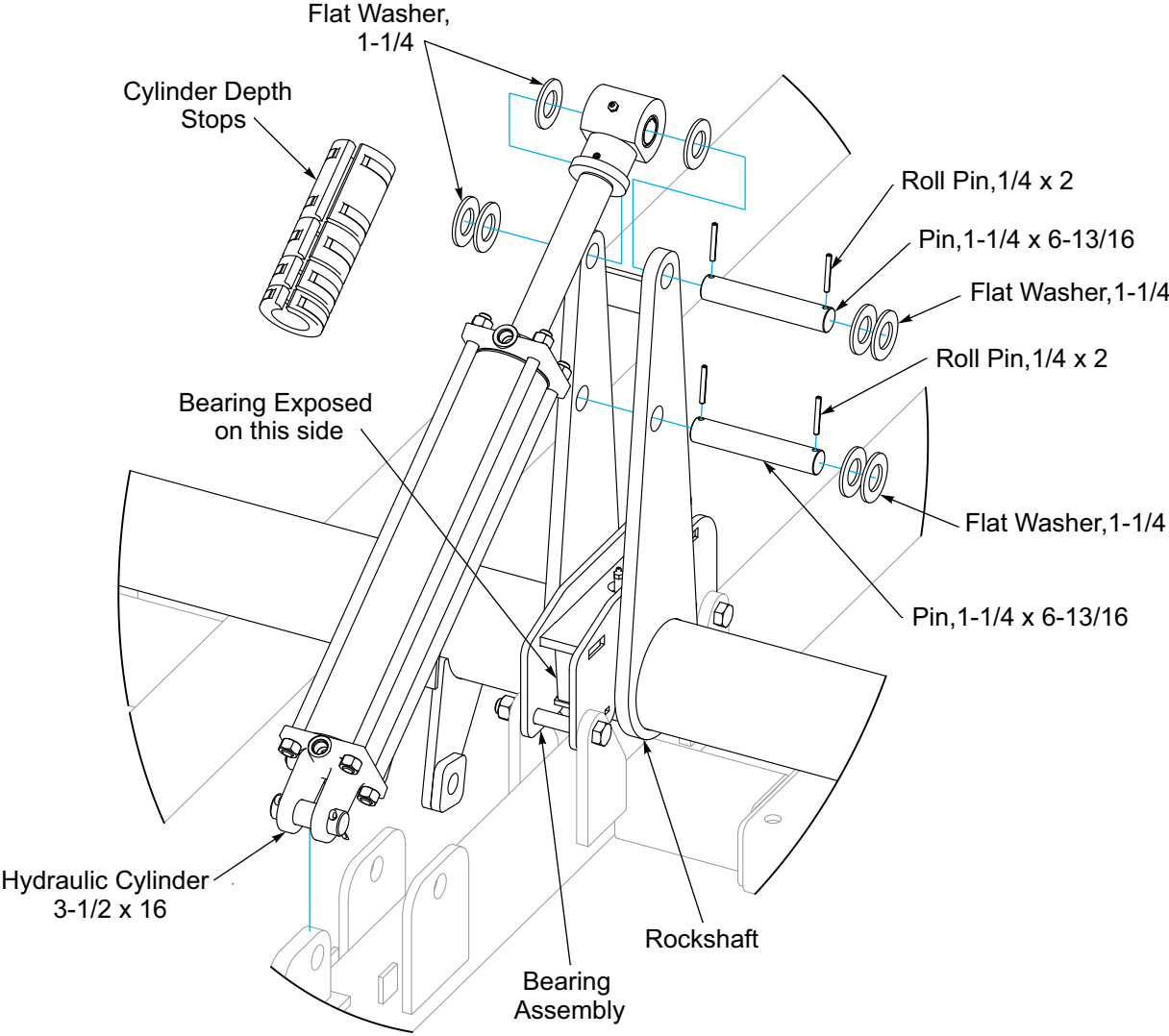


Figure 2-9: Rockshaft Cylinder

Transport Lock Installation

1. Orient the Transport Lock Handle solid round longer end towards the left and the front of the machine. Place Handle between the LH Frame Lugs underneath the Hydraulic Cylinder so that it lays flat on the frame tube and the solid round end rests against the Frame Stops. **See Figure 2-10.**
2. Assemble the round hole of a Strap on each side of the Transport Lock Handle Bushing with 1/2-13 x 4-1/2 Bolt and Locknut. **Do Not** draw tight as it must be free to pivot.
3. Orient the Transport Lock so the stop angle on the end is down. Place a 1-1/4 x 1-7/8 x 14ga Washer on each side of the Transport Lock Bushing and put it between the LH Frame Lugs under the Hydraulic Cylinder, insert 1-1/4 x 5-3/8 Pin. Place two 1-1/4 x 1-7/8 x 14ga Washers on each side of the Frame Lugs and secure with 1/4 x 2 Roll Pins.
4. Assemble the round hole of another two Straps on each side of the Transport Lock with 1/2-13 x 4 Bolt and Locknut. **Do Not** draw tight as it must be free to pivot.
5. The slotted ends of the Straps should overlap. Fasten each pair of Straps together with 1/2-13 x 1-1/2 Bolts, Flat Washers, Lockwashers and Hex Nuts. Adjust the Straps so that the Transport Lock Angle will catch the Rockshaft Lower Pin securely when the Hydraulic Cylinder is extended. Once this has been accomplished, tighten the 1/2-13 x 1-1/2 Bolts. **See Figure 2-12.**

NOTE

*When the Transport Lock Handle is moved to the Unlocked or Field position, the Transport Lock Angle should clear the Rockshaft Lower Pin. **See Figure 2-11.***

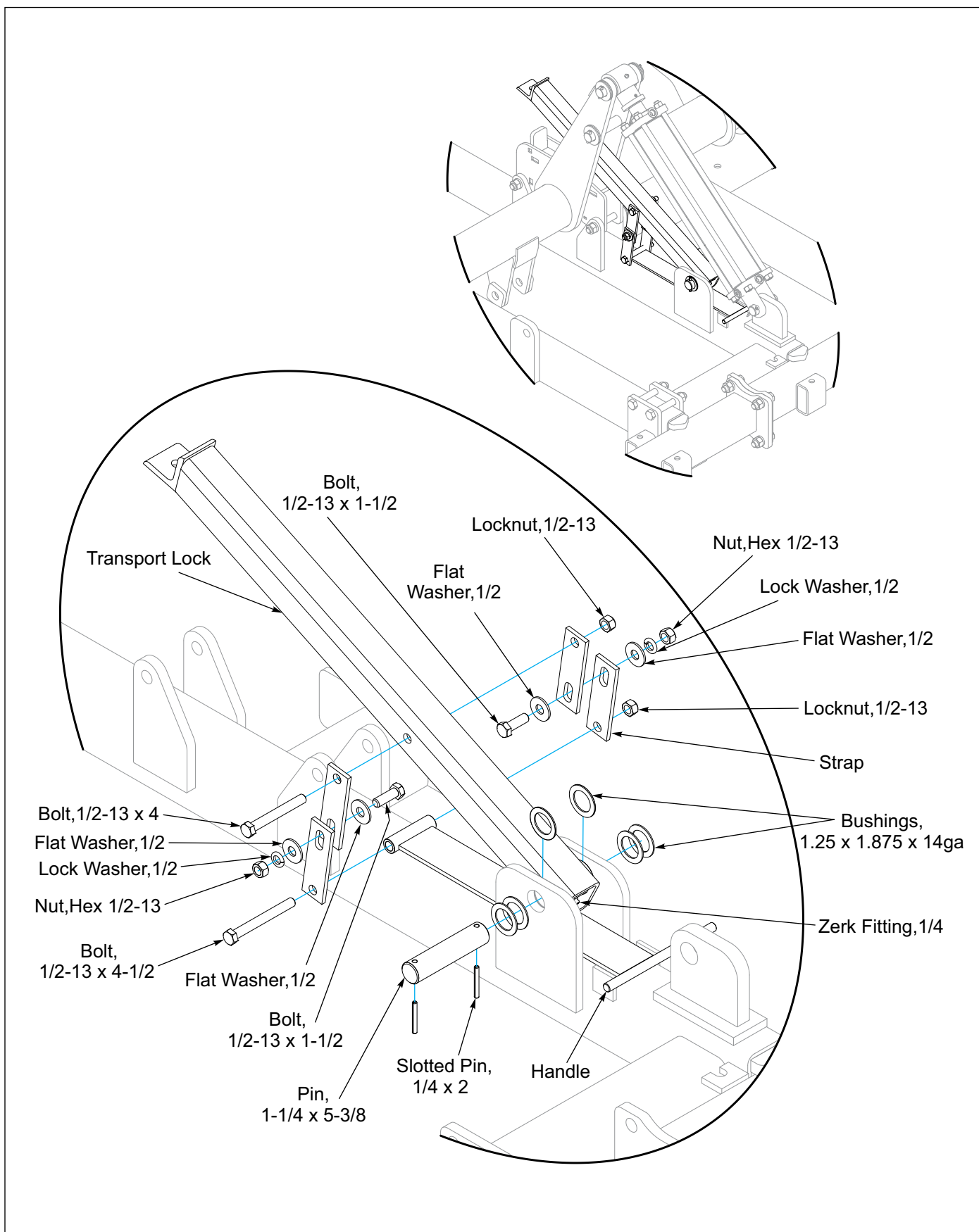


Figure 2-10: Transport Lock

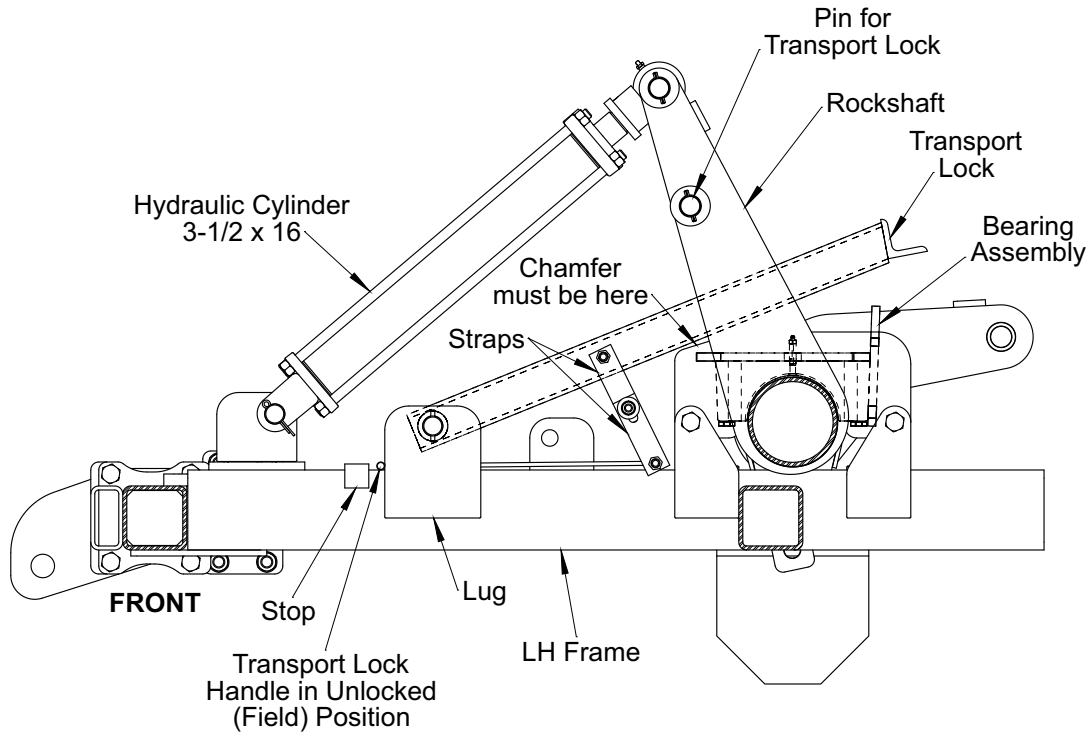


Figure 2-11: Transport Lock - Field Position

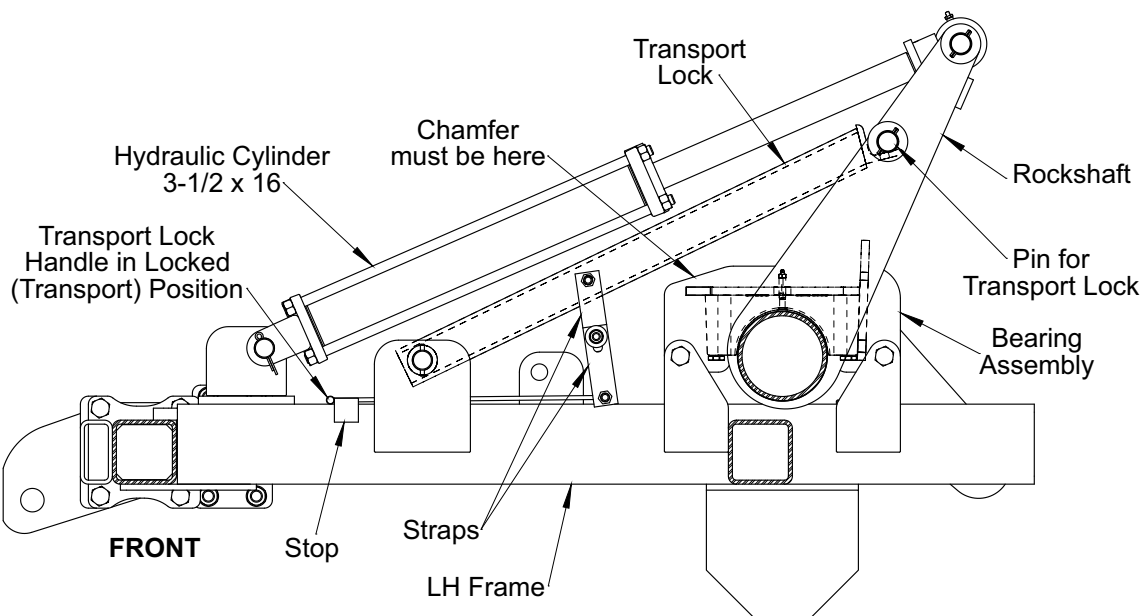


Figure 2-12: Transport Lock - Transport Position

Table provided for general use.

[illegible]

Manual Coulter Gang Assembly Installation

1. Coat Axle Bearing Bores with grease before installing.
2. Mount Coulter Gang Assembly to the Frame by placing an Axle Bearing half without the grease fitting on top of the Coulter Gang Assembly Rockshaft ends, one Axle Bearing must be between the Key Stops. **See Figures 2-13 and 2-15.**

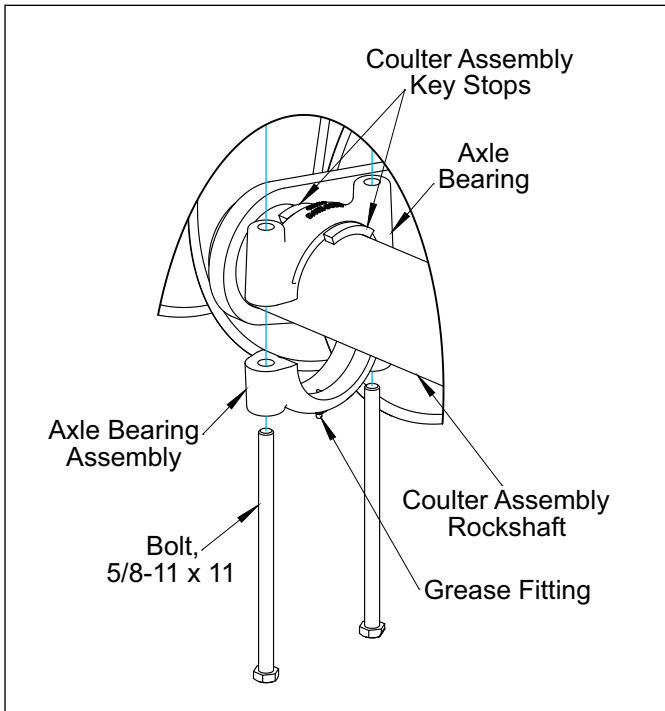


Figure 2-13: Manual Coulter Bearing Installation

3. Place the Axle Bearing Assembly with the grease fitting under the top Axle Bearing and raise the Coulter Gang Assembly. Put a 2 x 8-1/4 x 5/8 Strap on top of each Axle Bearing so that it will be between the Frame and the Axle Bearing. Only on the inside LH Frame Coulter Bearing Mounts place a 2 x 8 x 1/4 Strap on top of the Frame. **See Figure 2-14.**

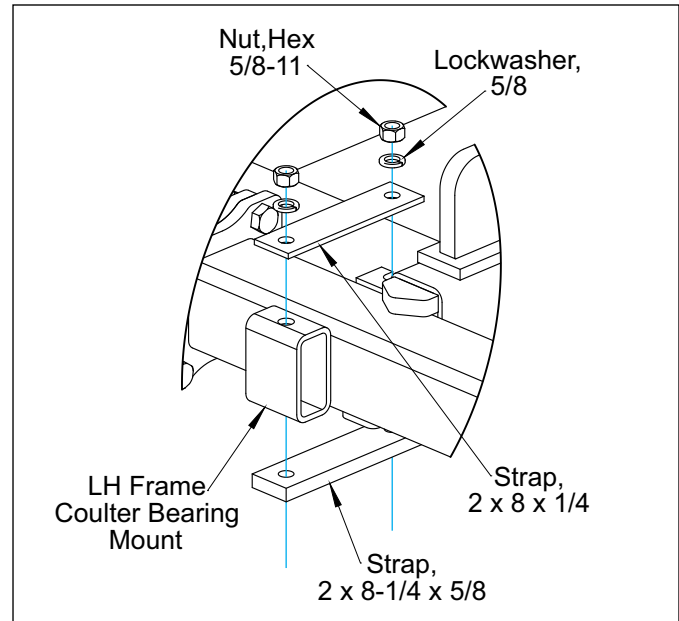


Figure 2-14: Strap Installation

4. Fasten the Coulter Gang Assembly to the Frame with 5/8-11 x 11 Bolts, Lockwashers and Hex Nuts.
5. Install Spring Rod Assembly flat end between the Coulter Gang Assembly Lugs, secure with 3/4 x 2-3/4 Clevis Pin and 5/32 x 1-1/2 Cotter Pin. **See Figure 2-15.**
6. Based on each Coulter Gang Assembly, place the Spring Holder Assemblies onto the front frame tube centering each one of the Spring Rod Assembly between. Fasten each Spring Holder Assembly to the front frame tube with 3/4-10 U-Bolt, Lockwashers and Hex Nuts.
7. Align the Spring Rod Assembly with the Spring Holder Assembly top hole. Attach by placing on each 3/4-10 X 1-3/4 Bolt, in this order; a Lockwasher, Flat Washer and Bushing. Turn a bolt into each side of the Spring Holder Assembly until tight.

NOTE

The Spring Rod Assembly is tapped.

8. Double check Spring Rod Assembly and Spring Holder Assembly alignment and tighten U-Bolts

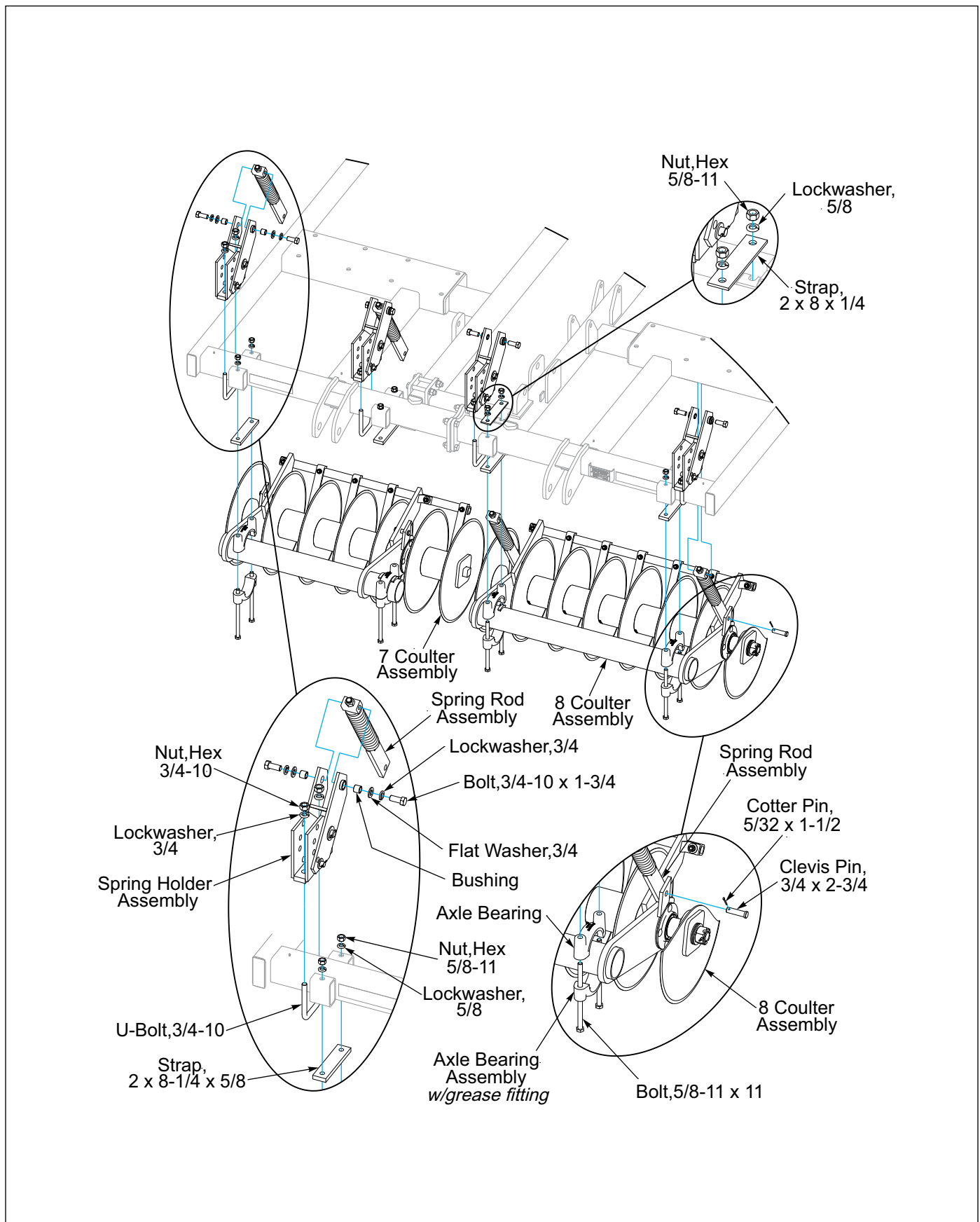


Figure 2-15: Manual Coulter Gang Installation

Hydraulic Coulter Gang Assembly Installation

1. Coat Axle Bearing Bores with grease before installing.
2. Thread a 5/8-11 Locknut onto one end of each 5/8-11 x 18 Stud and set aside.
3. Mount the Spring Rockshaft to the top of the front frame tube by placing an Axle Bearing half without the grease fitting under the Spring Rockshaft. Put a 2 x 8 x 1/4 Strap between the Axle Bearing and the Frame. Place an Axle Bearing Assembly with a tall grease fitting on top and insert 5/8-11 x 18 Studs through Bearings and Frame. Position the Spring Rockshaft so that the Inner Bearings are against the Spring Rockshaft Stops. **See Figures 2-18 through 2-21.**
4. Only 11 and 13 Shank Machines, on top of the frame by the Spring Rockshaft Cylinder Lug, one set of Axle Bearings are assembled onto the Frame with 5/8-11 x 12 Bolts and Locknuts. **See Figures 2-16, 2-20 and 2-21.**

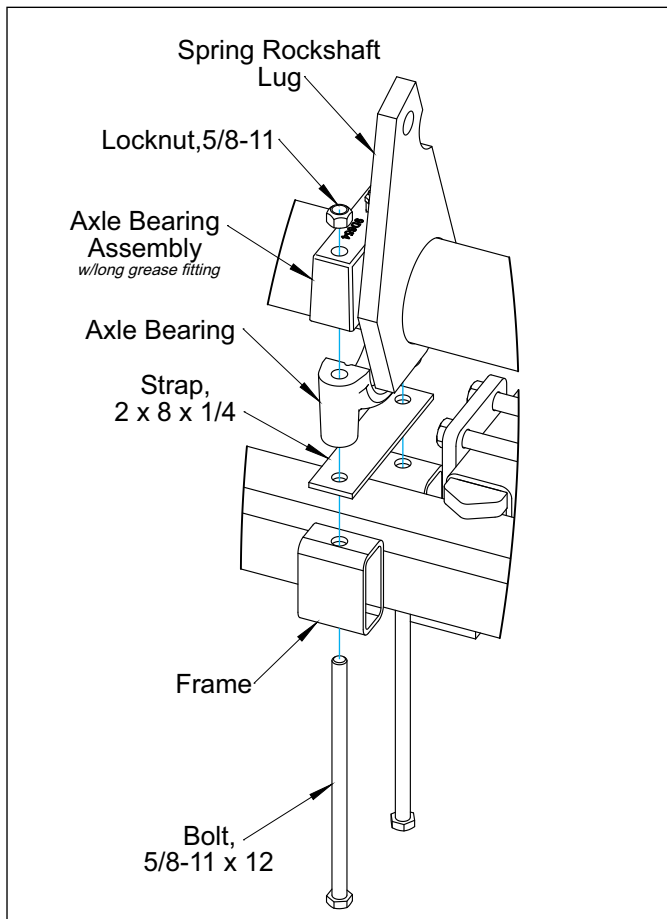


Figure 2-16: Axle Bearings 11 & 13 Shank Machines Only

5. Mount Coulter Gang Assembly under the Front Frame by placing an Axle Bearing half without the grease fitting on top of the Coulter Gang Assembly Rockshaft ends, one Axle Bearing must be between the Key Stops. **See Figure 2-17.**

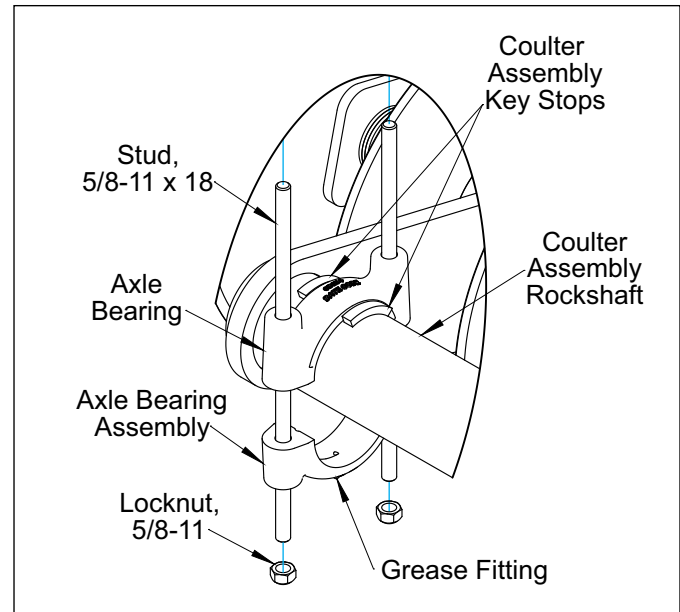


Figure 2-17: Hydraulic Coulter Gang Axle Bearing Installation

6. Place the Axle Bearing Assembly with the short grease fitting under the Axle Bearing and raise each Coulter Gang Assembly so that the Long Studs go through these Axle Bearings as well. Fasten with 5/8-11 Locknut, **Do Not** tighten at this time. **See Figures 2-18 through 2-21.**
7. Install Spring Rod Assembly flat end between the Coulter Gang Assembly Lugs, secure with 3/4 x 2-3/4 Clevis Pin and 5/32 x 1-1/2 Cotter Pin.
8. Based on each Coulter Gang Assembly, center each one of the Spring Rod Assemblies between each pair of Spring Rockshaft Straps. Attach by placing on each 3/4-10 X 1-3/4 Bolt, in this order; a Lockwasher, Flat washer and Bushing. Turn a bolt into each side of the Spring Rockshaft Strap until tight.

NOTE

The Spring Rod Assembly is tapped.

9. Install 3 x 8 Hydraulic Cylinder to the Spring Rockshaft and Frame Lugs with vendor supplied hardware.
10. Double check Spring Rod Assembly and Spring Rockshaft alignment and tighten 5/8-11 x 18 Studs.

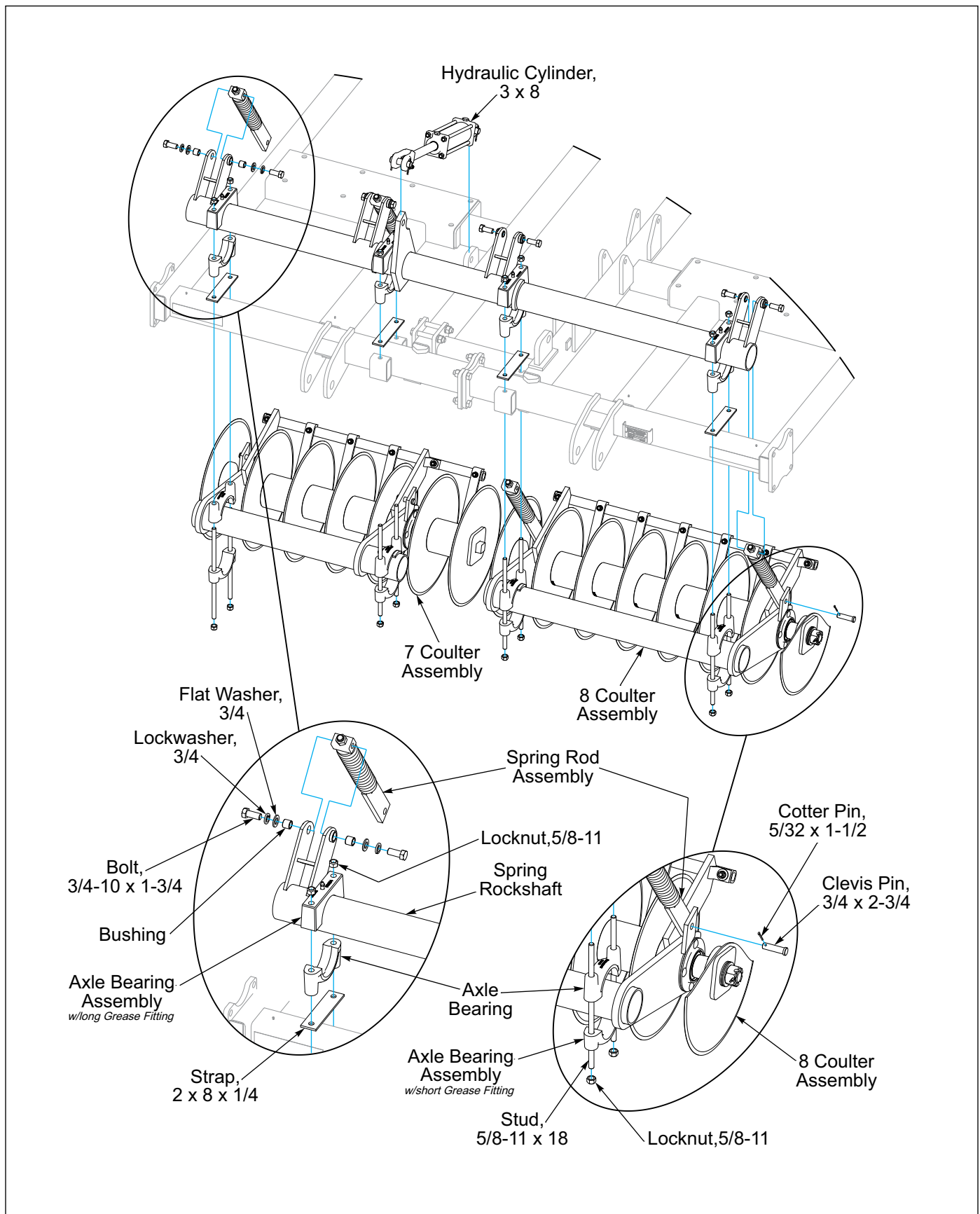


Figure 2-18: Hydraulic Coulter 7

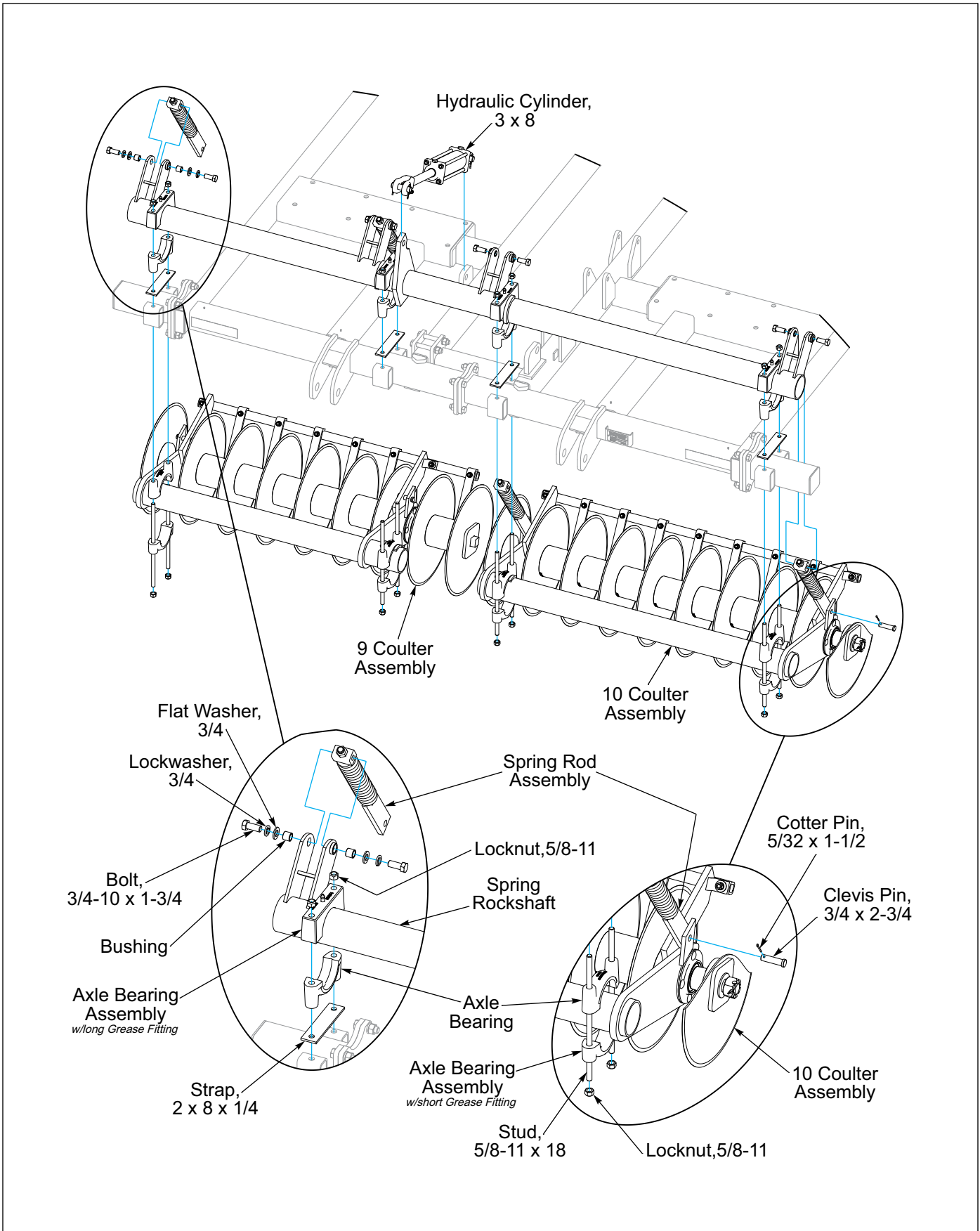


Figure 2-19: Hydraulic Coupler 9

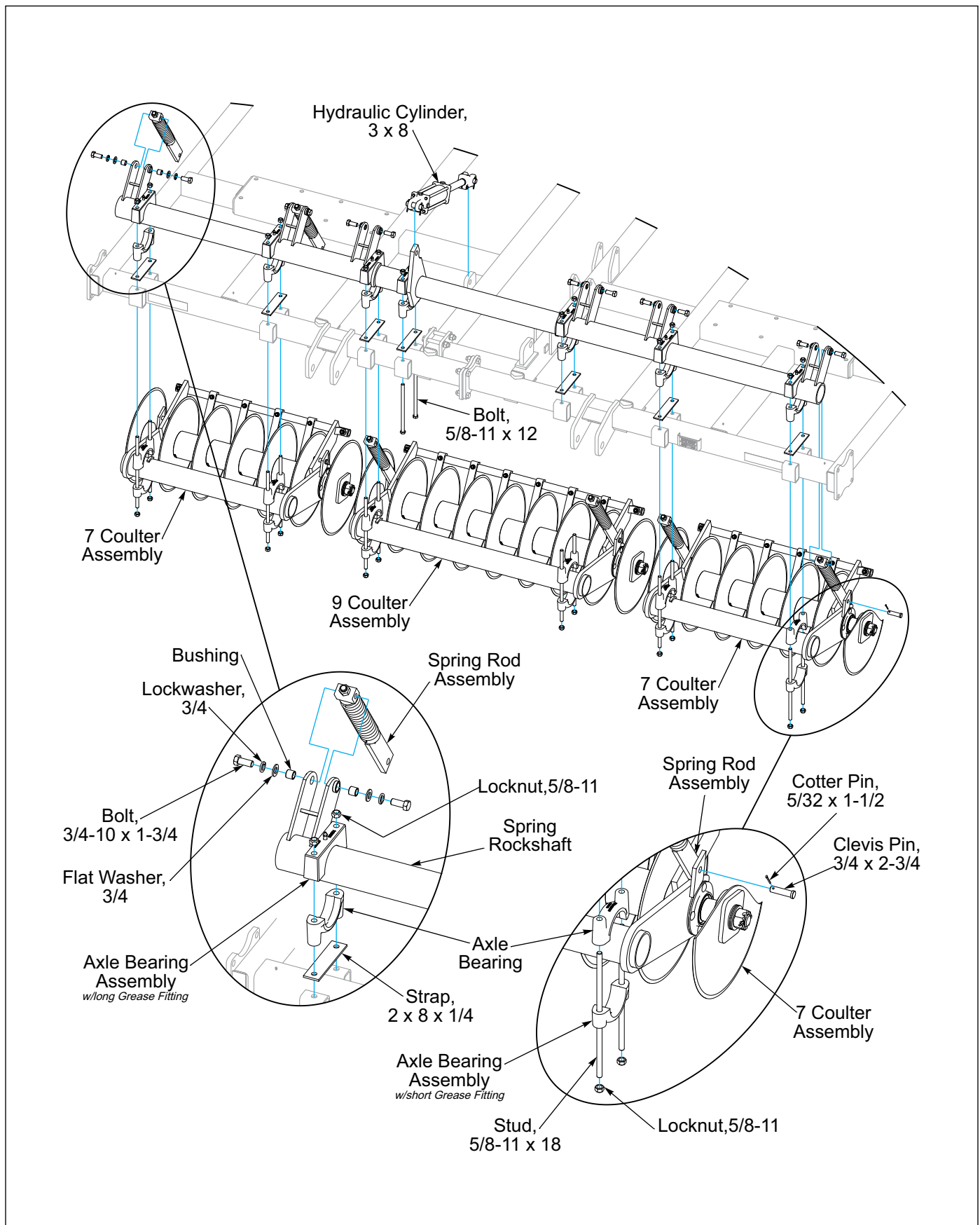


Figure 2-20: Hydraulic Coulter 11

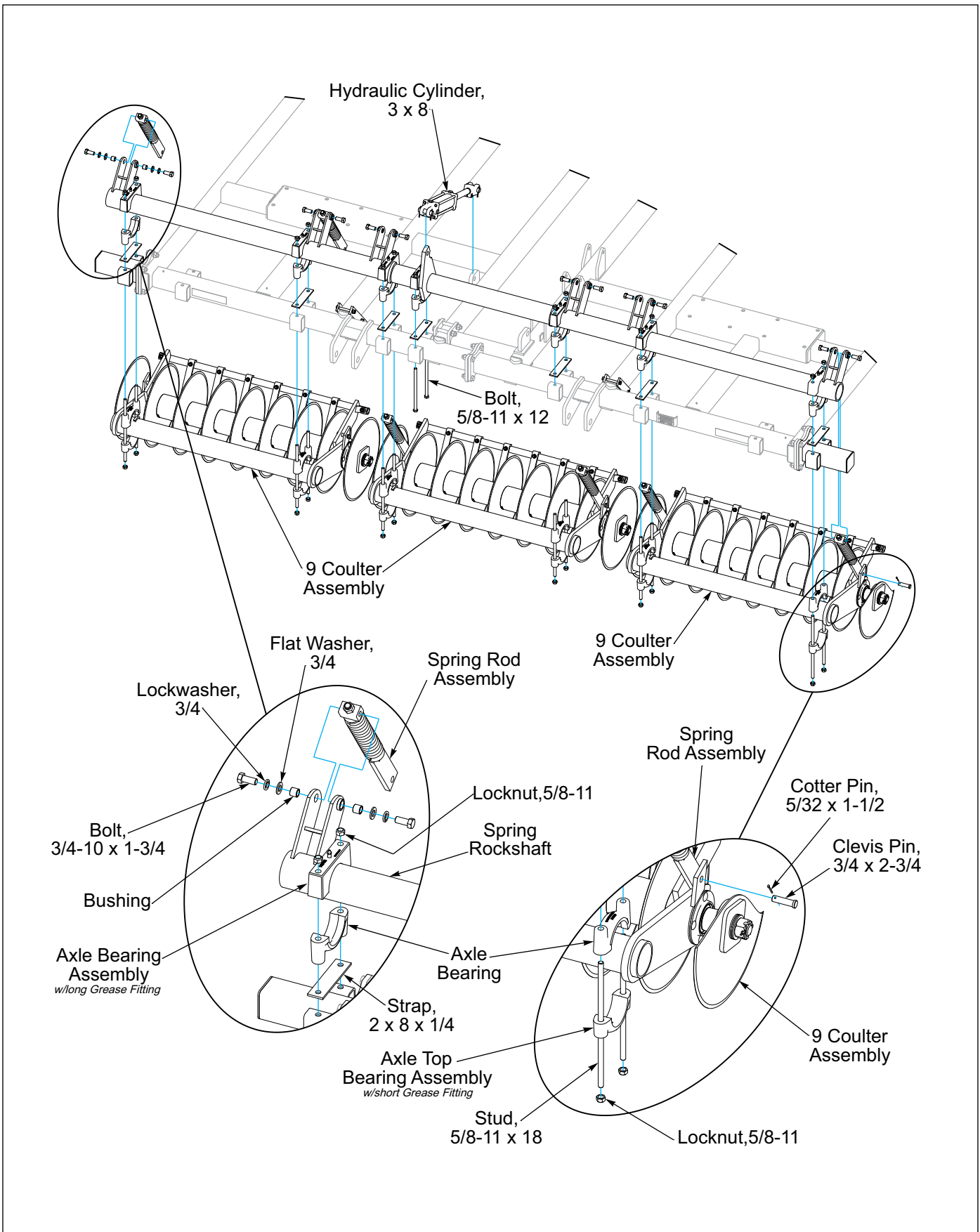


Figure 2-21: Hydraulic Coulter 13

Table provided for general use.

[illegible]

Scrapers Between Coulter Gang Assemblies

7 and 9 Shank Models

Install Scraper Bracket, to the bottom of the front frame tube where the Coulter Gang Assemblies meet, with 5/8-11 U-Bolts, Lockwashers and Hex Nuts. See Figures 2-22 and 2-23.

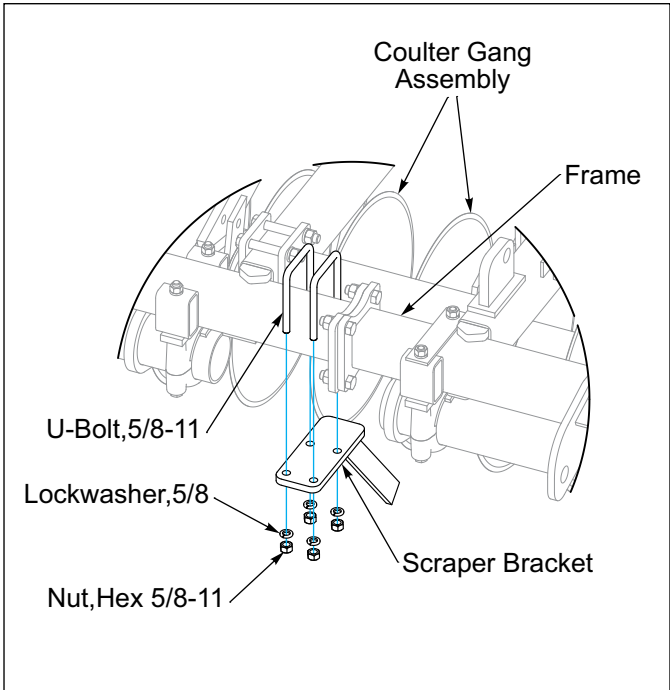


Figure 2-22: 7 & 9 Shank Machine Scraper Between Coulter Gang Assemblies

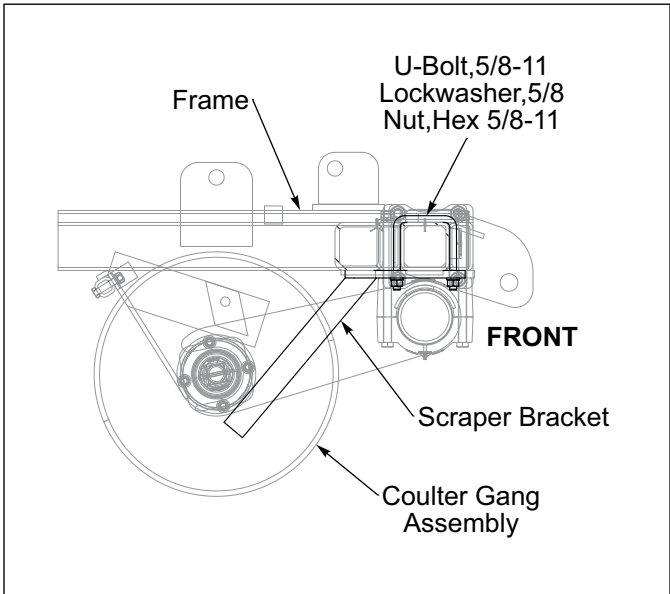


Figure 2-23: 7 & 9 Shank Machine Scraper Side View

11 and 13 Shank Models

Install Straps that will function as a Scraper between Coulter Gang Assemblies, to the front of the frame tube that runs front to rear where the Coulter Gang Assemblies meet, with 1/2-13 x 4-1/2 Bolts, Lockwashers and Hex Nuts. See Figures 2-24 and 2-25.

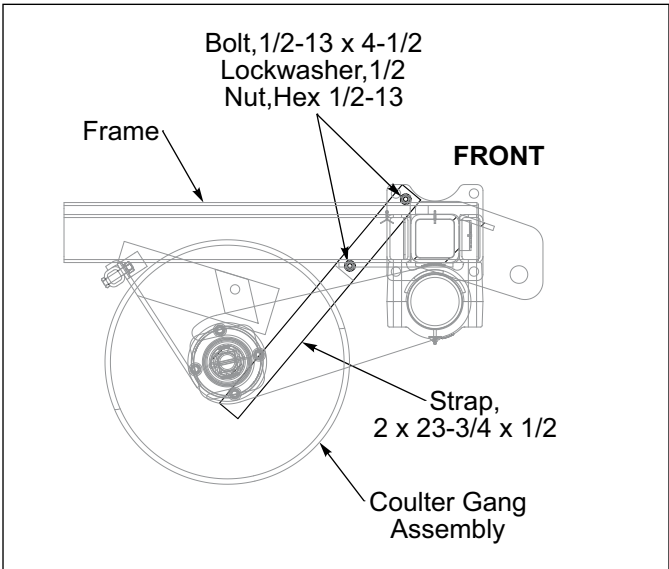


Figure 2-24: 11 & 13 Shank Machine Scraper Side View

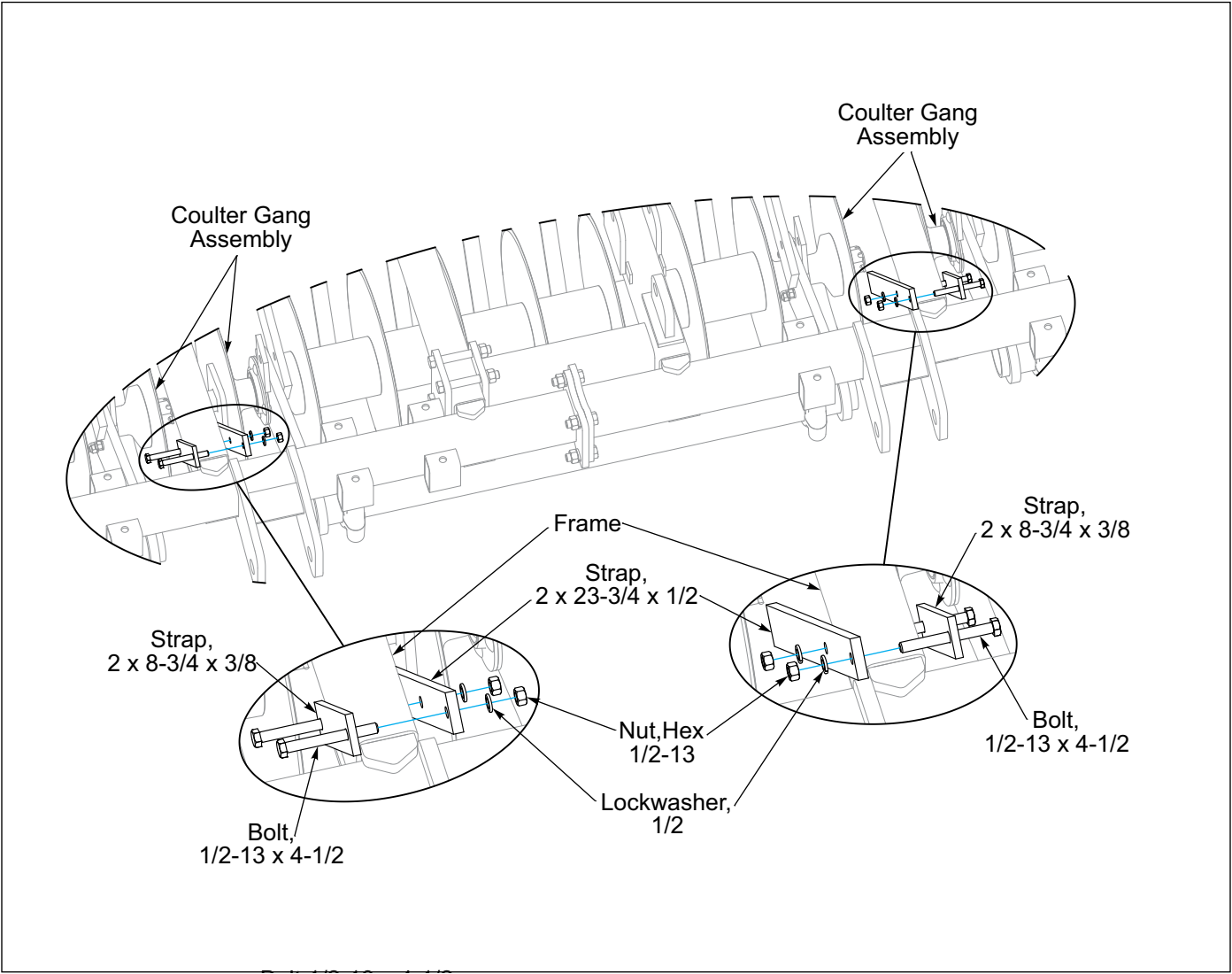


Figure 2-25: 11 & 13 Shank Machine Scraper between Coulter Gang Assemblies

Drawbar Installation, 7 and 9 Shank Machines

1. Attach the Drawbar Assembly to the Frame Front Lugs with 1-7/16 x 6-3/8 Pins and secure with 1/2 x 2 Roll Pins. **See Figure 2-29.**
2. With the lugs up, slide the Upper and Lower Brace Tubes together. Install the Lower Brace Tube between the Rockshaft Lugs and Upper Brace Tube between the Drawbar Mast Plates with 1 x 6-1/2 Pins and secure with 5/16 x 2 Roll Pins. **See Figure 2-29.**
3. Attach the Ratchet Jack between the Upper and Lower Brace Tubes Lugs with 1 x 2-1/2 Clevis Pins and secure with 3/16 x 2 Cotter Pins. Insert Handle into Ratchet Jack and insert Hair Pin Cotter into Handle. When Handle is not in use it is stored in the angles on the side of the Drawbar. **See Figure 2-26.**

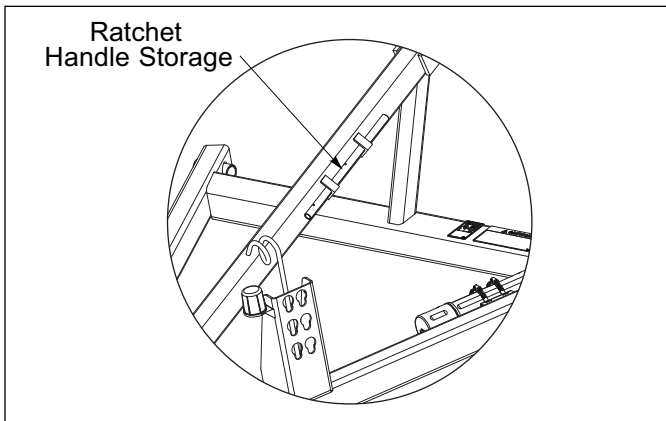


Figure 2-26: Handle Storage

IMPORTANT

Remove the Handle from the Ratchet Jack before raising or lowering the machine to prevent bending the Handle. Store the Handle on the side of the Drawbar.

4. Attach the Jack to the drawbar front outside sleeve when the machine is parked. **See Figure 2-27.** When the machine is in use, move the Jack to the drawbar front inside sleeve. **See Figure 2-28.**

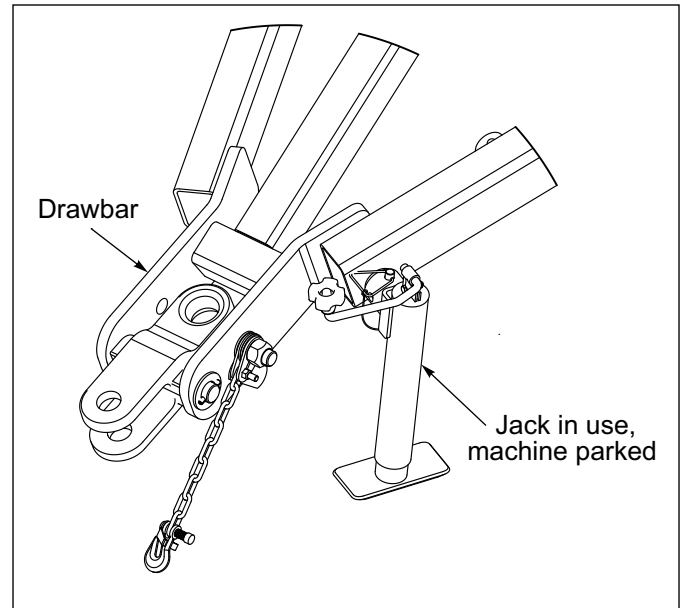


Figure 2-27: Jack in Use

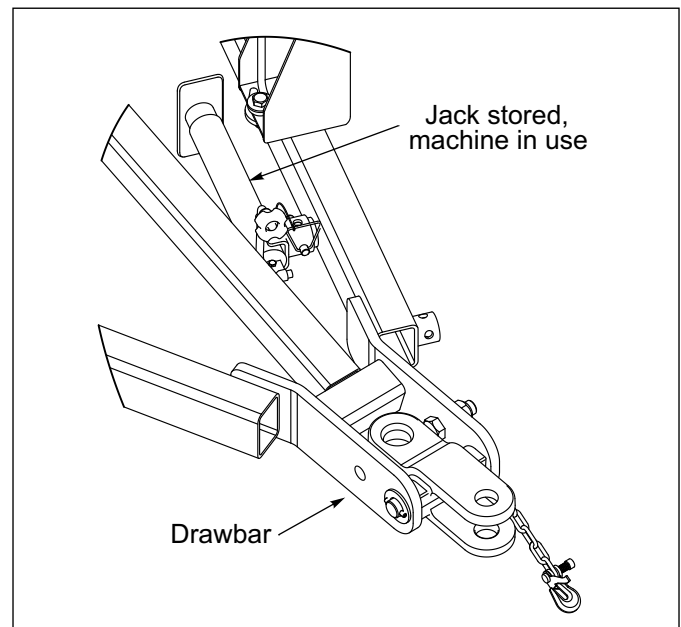


Figure 2-28: Jack Stored

5. Only Machines with Hydraulic Coulters, attach a Hose Support on top of the Drawbar Right Side Lug with 5/8-11 x 2 Bolt, Flat Washer, Lockwasher and Hex Nut.
6. Attach the Hose Holder and other Hose Support on top of the Drawbar Left Side Lug with 5/8-11 x 2-1/4 Bolt, Flat Washer, Lockwasher and Hex Nut.
7. Attach the Connector Holder to the Hose Holder with 1/4-20 x 3/4 Bolts and Locknuts.
8. Attach the Manual Holder to the Drawbar Bracket located on the left inside tube, near the rear of the drawbar, with 4-1/2 Hose Clamps.

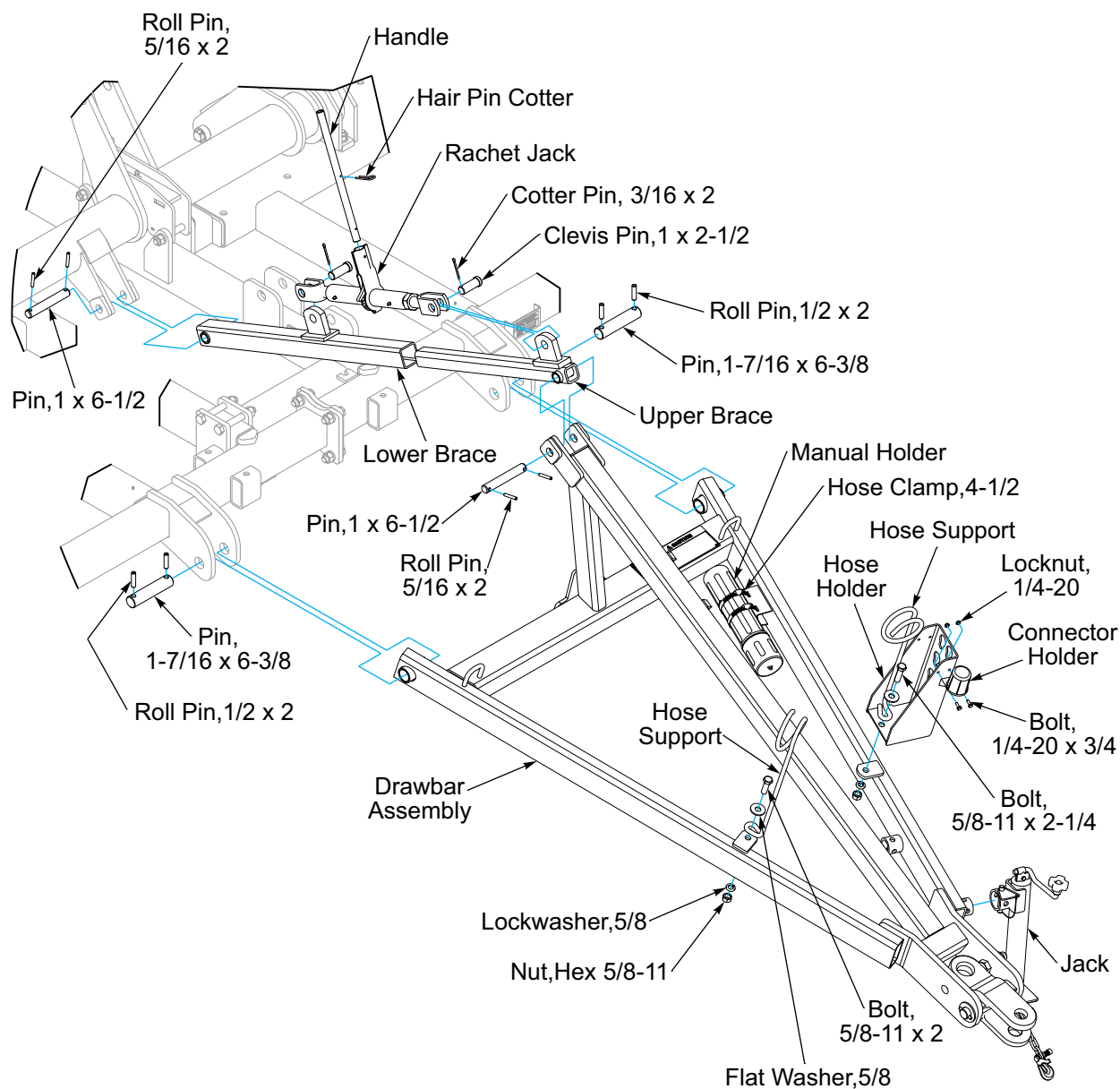


Figure 2-29: Drawbar Installation, 7 and 9 Shank Machines

Drawbar Installation, 11 and 13 Shank Machines

1. Attach the Drawbar Assembly to the Frame Front Lugs with 1-7/16 x 8 Pin and secure with 1/2 x 2 Roll Pins. **See Figure 2-33.**
2. With the lugs up, slide the Upper and Lower Brace Tubes together. Install the Lower Brace Tube between the Rockshaft Lugs and Upper Brace Tube between the Drawbar Mast Plates with 1 x 6-1/2 Pins and secure with 5/16 x 2 Roll Pins. **See Figure 2-33.**
3. Attach the Ratchet Jack between the Upper and Lower Brace Tubes Lugs with 1 x 2-1/2 Clevis Pins and secure with 3/16 x 2 Cotter Pins. Insert Handle into Ratchet Jack and insert Hair Pin Cotter into Handle. When Handle is not in use it is stored in the angles on the side of the Drawbar. **See Figure 2-30.**

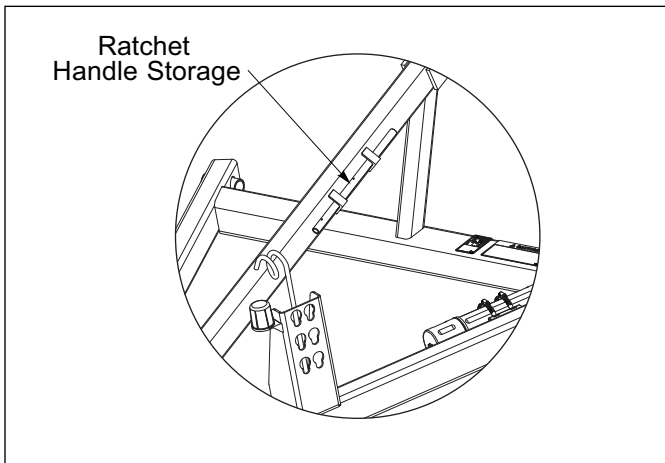


Figure 2-30: Handle Storage

IMPORTANT

Remove the Handle from the Ratchet Jack before raising or lowering the machine to prevent bending the Handle. Store the Handle on the side of the Drawbar.

4. Attach the Jack to the drawbar front outside sleeve when the machine is parked. **See Figure 2-31.** When the machine is in use, move the Jack to the drawbar front inside sleeve. **See Figure 2-32.**

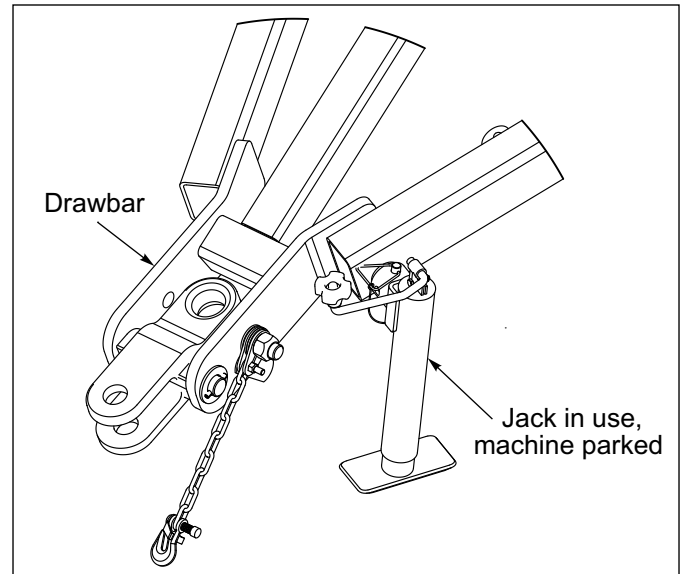


Figure 2-31: Jack in Use

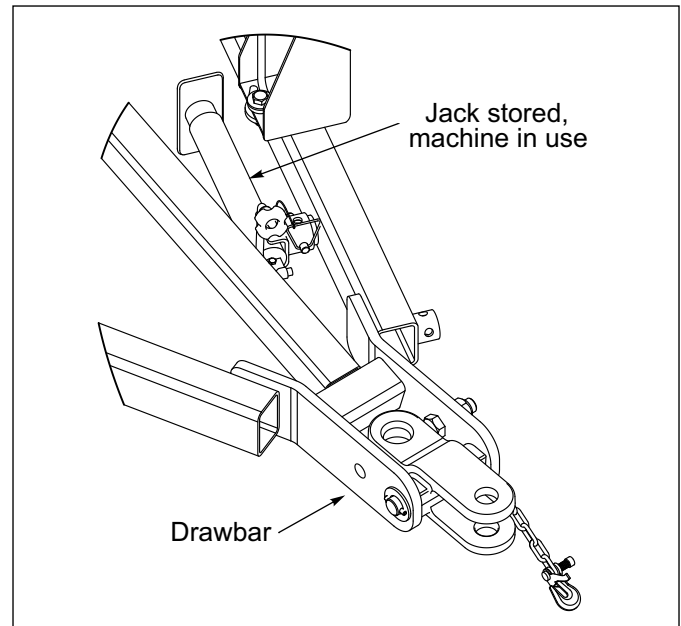


Figure 2-32: Jack Stored

5. Attach a Hose Support on top of the Drawbar Right Side Lug with 5/8-11 x 2 Bolt, Flat Washer, Lockwasher and Hex Nut.
6. Attach the Hose Holder and other Hose Support on top of the Drawbar Left Side Lug with 5/8-11 x 2-1/4 Bolt, Flat Washer, Lockwasher and Hex Nut.
7. Attach the Connector Holder to the Hose Holder with 1/4-20 x 3/4 Bolts and Locknuts.
8. Attach the Manual Holder to the Drawbar Bracket located on the left inside tube, near the rear of the drawbar, with 4-1/2 Hose Clamps.

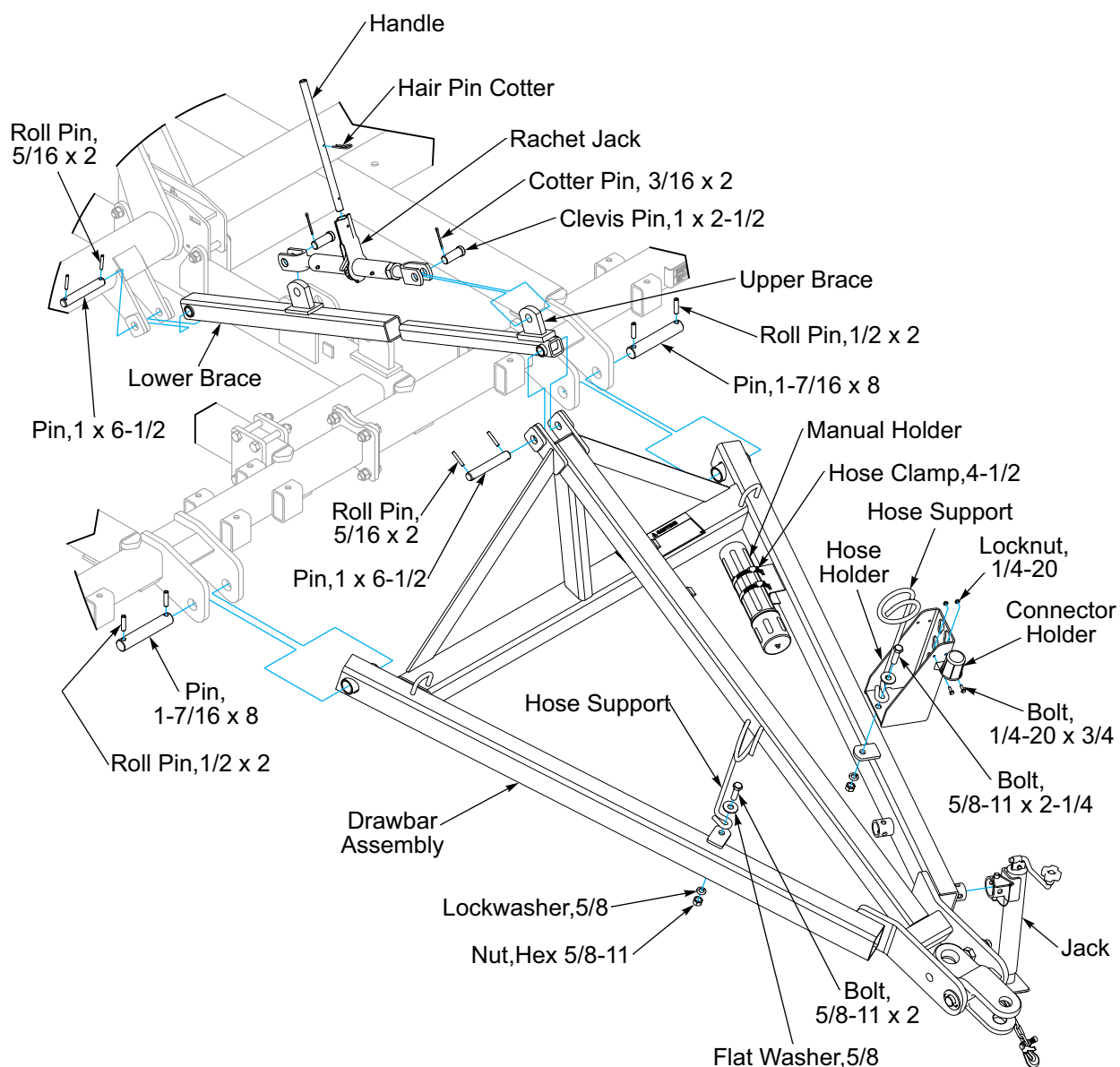


Figure 2-33: Drawbar Installation, 11 and 13 Shank Machines

Shank Points and Shovels Installation

NOTE

It is easier to bolt the Shovels and Points to the shanks before mounting them onto the machine.

The “R”(right) and “L”(left) on the Shank Layouts indicate which direction that the Shovel will throw the dirt. **See Figures 2-41 through 2-45.** On all machine sizes you will have one more right hand Shovel than left hand.

16” Sweep

Assemble a 16” Sweep onto each Shank with 1/2-13 x 2-1/2 Plow Bolts, a Flat Washer and Flanged Locknuts. **See Figures 2-34 and 2-35.**

NOTE

The position of the Flat Washer is based on the Shank.

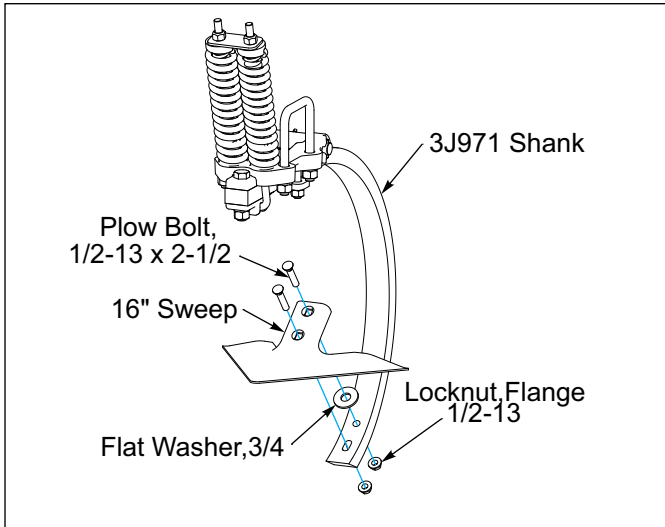


Figure 2-34: 16” Sweep on 3J971 Shank

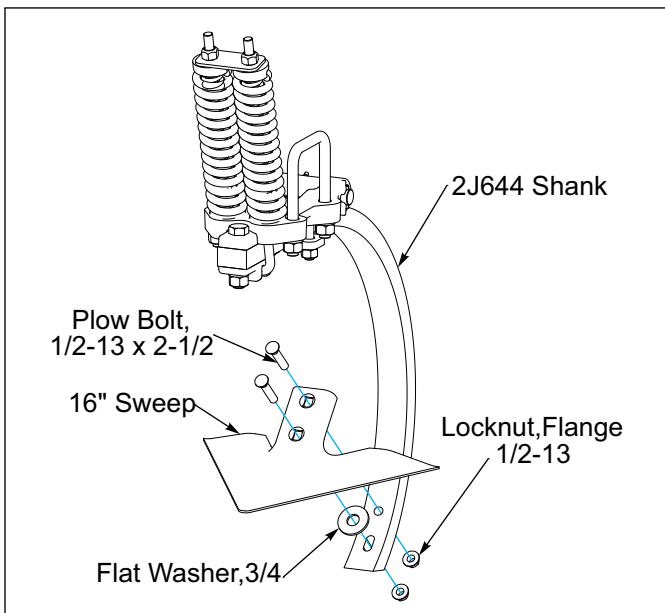


Figure 2-35: 16” Sweep on 2J644 Shank

Twisted Shovel

Assemble a Twisted Shovel onto each Shank with 1/2-13 x 3 Plow Bolts and Flanged Locknuts. **See Figure 2-36.**

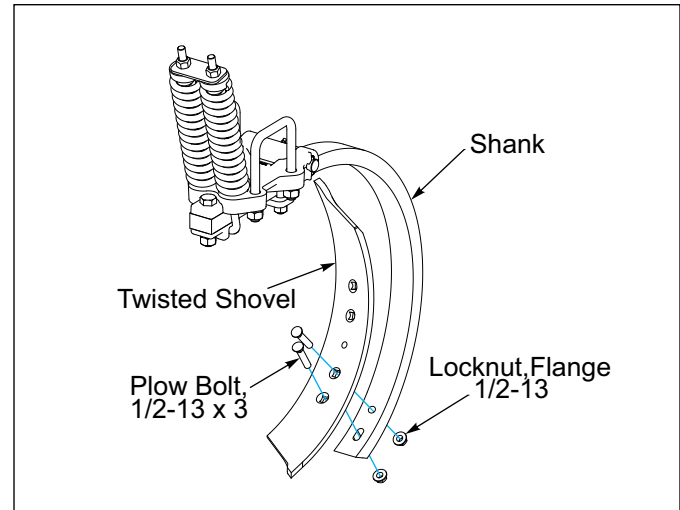


Figure 2-36: Twisted Shovel

3-Piece Moldboard

Assemble a 3-Piece Moldboard onto each Shank with 1/2-13 x 3 Plow Bolts and Flanged Locknuts. Install Point onto Frog with 1/2-13 x 1-1/2 Plow Bolt and Flanged Locknut **See Figure 2-37.** The components are stamped “R” or “L” for identification.

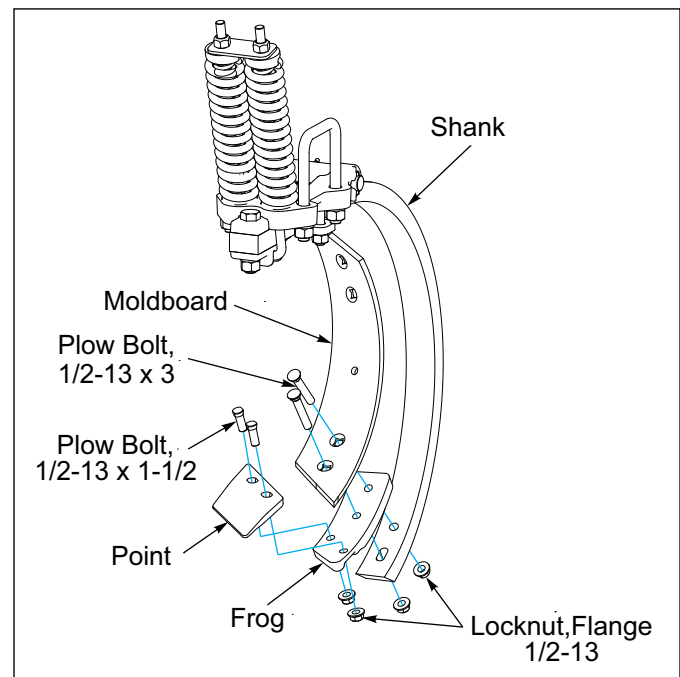


Figure 2-37: 3-Piece Moldboard

Shank Installation

Engage Transport Lock. **See Figure 2-12.**

Spring Clamp Shank Assemblies

1. Orient the Spring Clamp Assemblies so that the Springs are to the front of the machine. Install Spring Clamp Assemblies onto the Frame in the positions indicated per Machine Shank Layout with 3/4-10 U-Bolts, Lockwashers and Hex Nut. **See Figure 2-38.** Be sure that the Spring Clamp Assembly by the Center Rockshaft Bearing clears the bolt head. **See Figures 2-41 through 2-45.**
2. Remove 3/4-10 x 3-1/2 Bolt, Lockwasher and Hex Nut from the Spring Clamp Assembly. Slide Shank into the Spring Clamp Assembly between the Shank Holder and both the Strap and the U-Bolt Clip. It may be necessary to loosen the double nested springs to install the Shank. Re-insert the 3/4-10 x 3-1/2 Bolt through the Shank Holder, Shank and U-Bolt Clip and secure with Lockwasher and Hex Nut. Tighten Shank U-Bolt. **See Figure 2-39.**

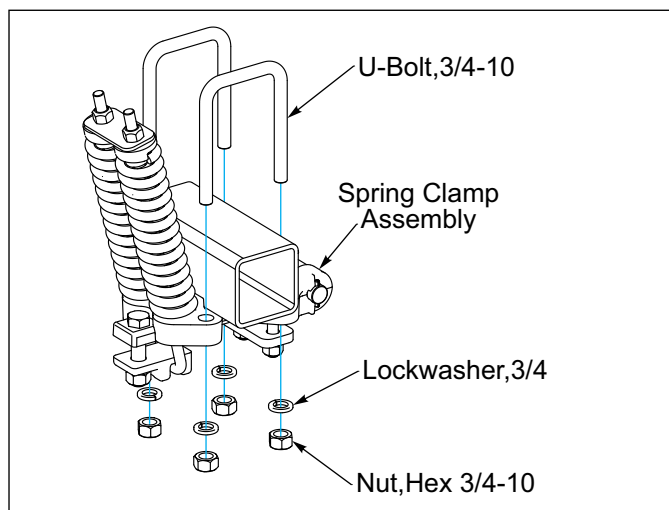


Figure 2-38: Spring Clamp Assembly

3. Check the Spring Clamp Assembly Double Nested Spring pre-load. For normal operation, the Locknut on the end of the Spring U-Bolt should be tightened so that one inch of thread is exposed. **See Figure 2-39.**

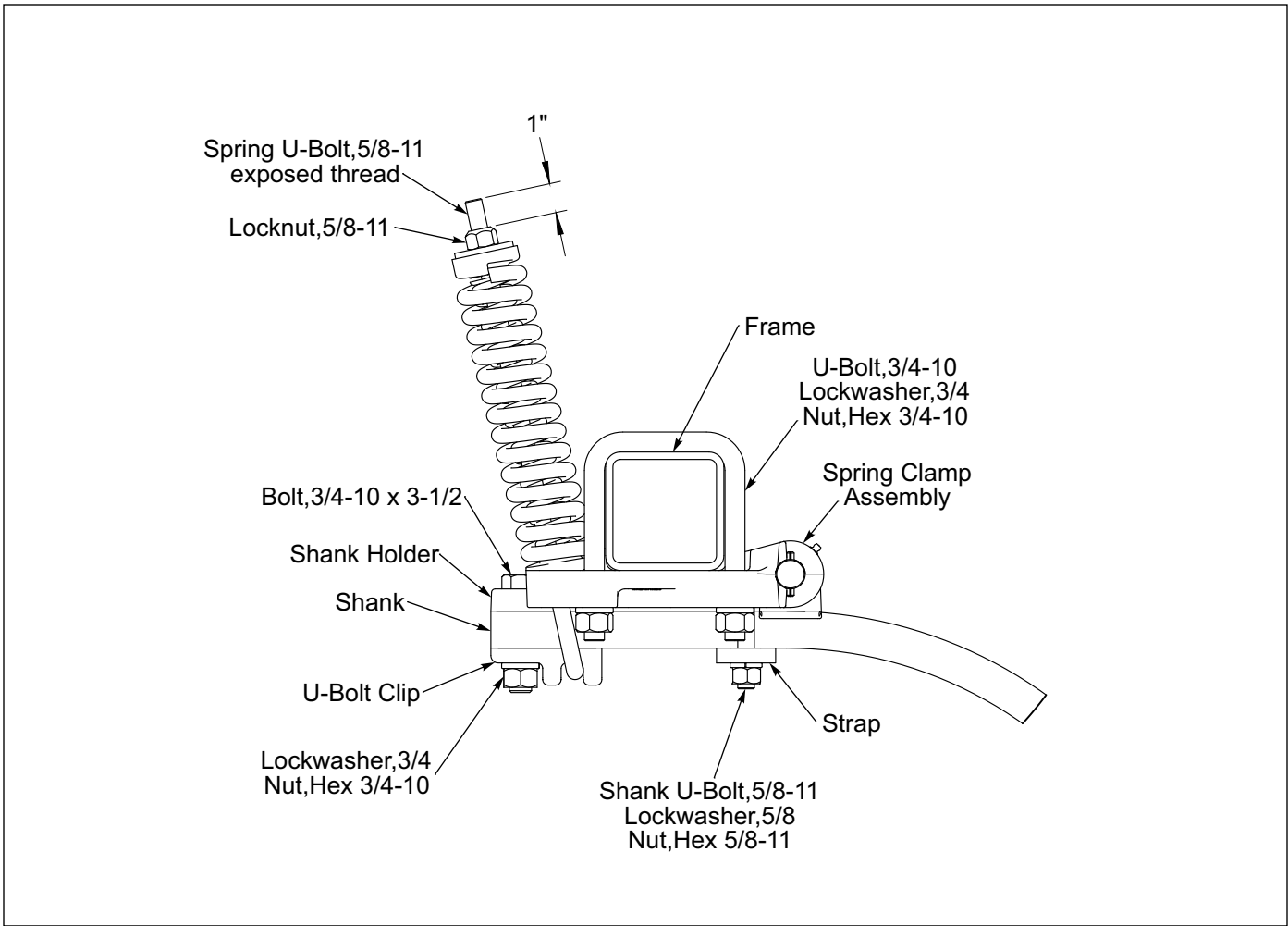


Figure 2-39: Shank Assembly, Side View

Rigid Clamp Shank Assembly

1. Place 3-Hole Plate on the top and Shank Support on the bottom of the Frame Tube in the positions indicated per Machine Shank Layout, single holes to the front of the machine. **See Figures 2-41 through 2-45.**
2. Place 2-Hole Plate under the Shank Support and fasten it all together with 5/8-11 x 8 Bolts, Lockwashers and turn Hex Nuts flush with the Bolt to allow for Shank installation. **See Figure 2-40.**
3. Slide Shank between the Shank Support and 2-Hole Plate. Insert 3/4-10 x 7-1/2 Bolt through 3-Hole Plate, Shank Support and Shank, secure with Lockwasher and Hex Nut.
4. Tighten 5/8-11 Hardware.

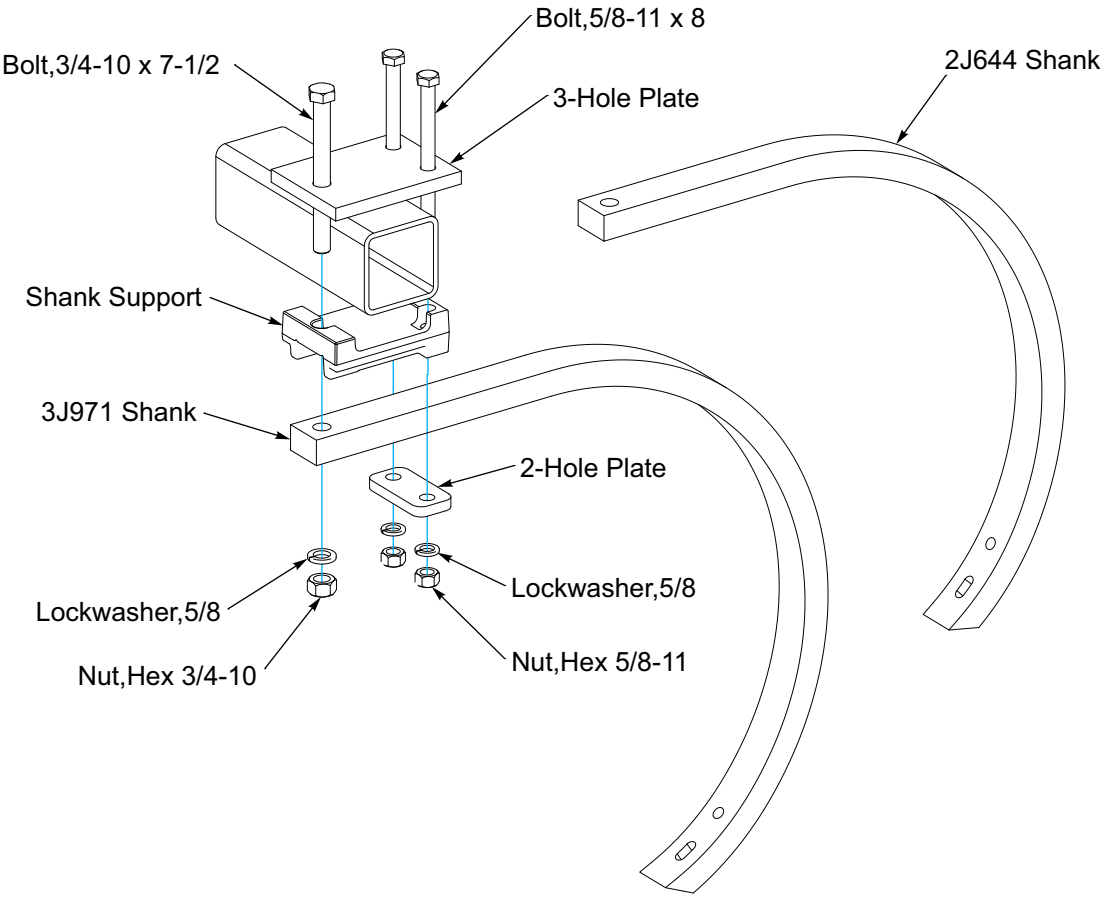


Figure 2-40: Rigid Shank Clamp Assembly

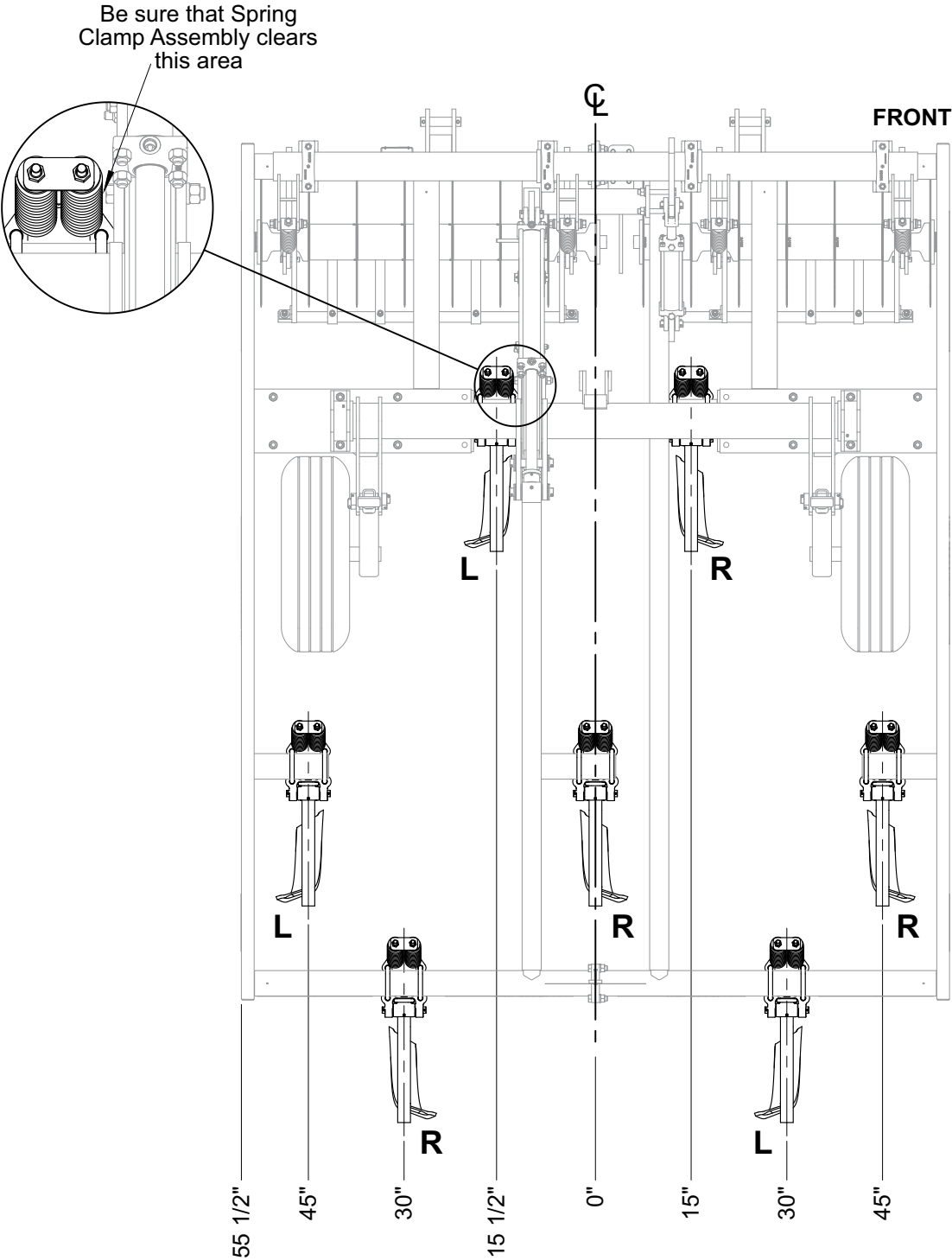


Figure 2-41: 7 Shank, Single Wheel Machine, Top View

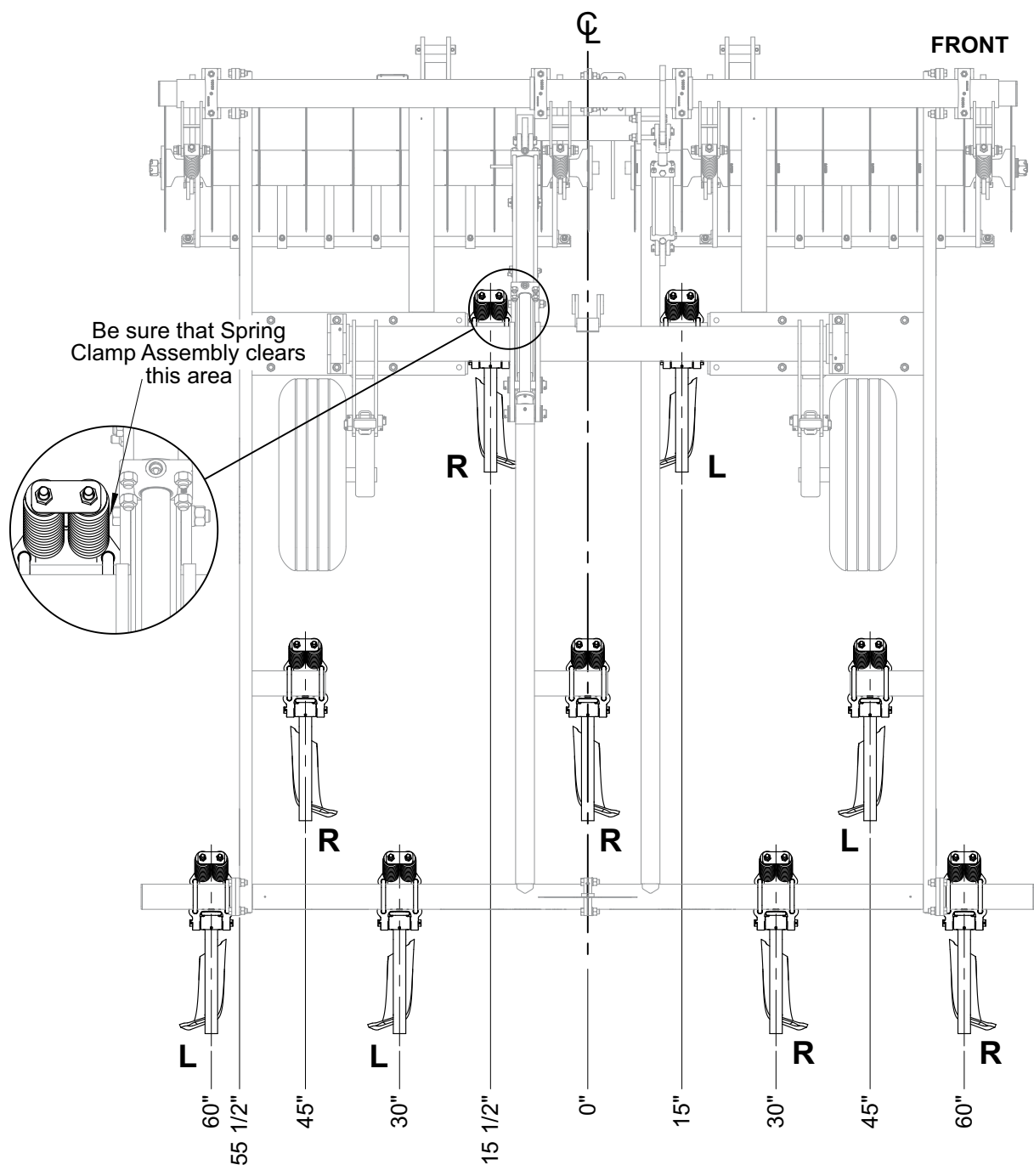


Figure 2-42: 9 Shank, Single Wheel Machine, Top View

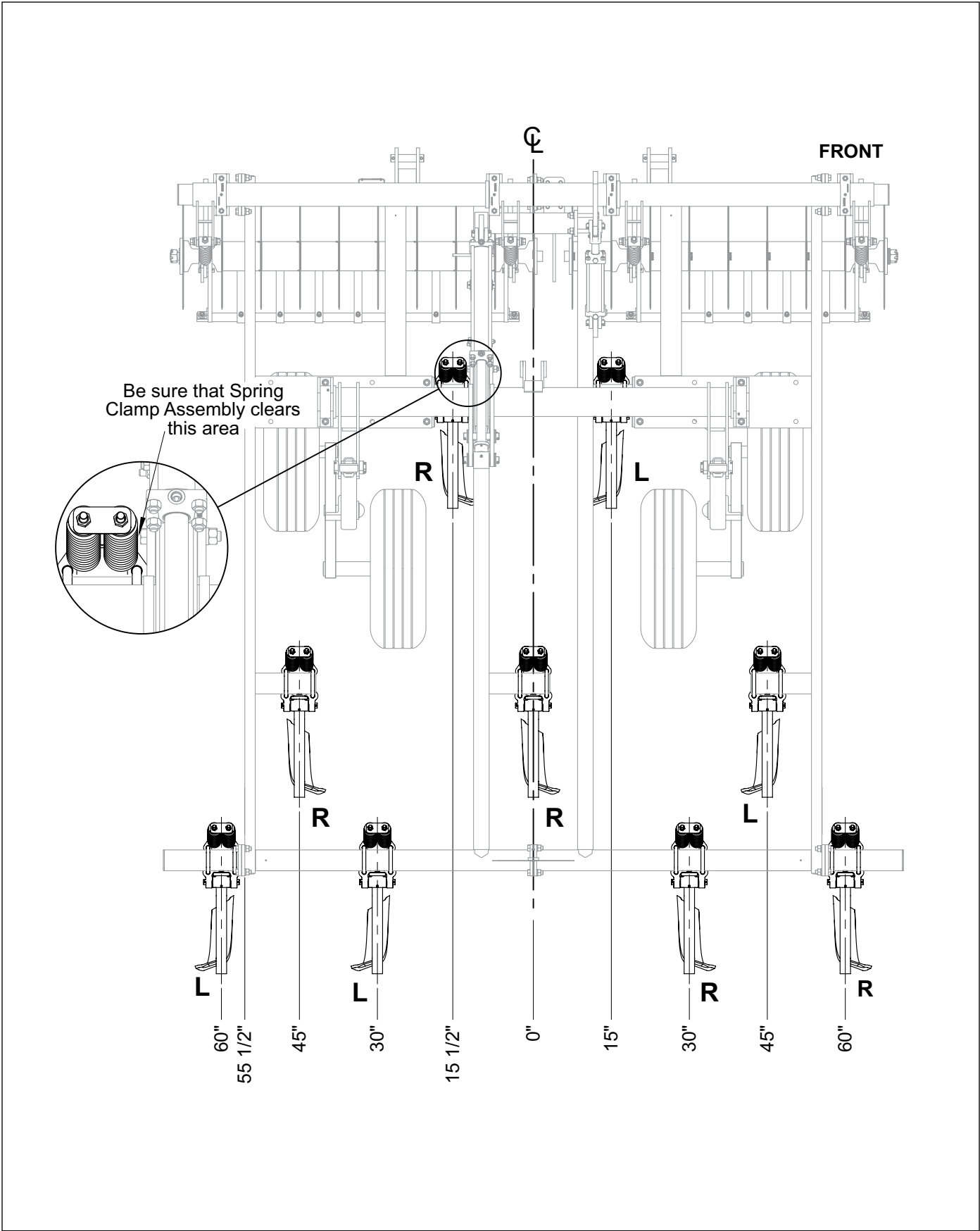


Figure 2-43: 9 Shank, Tandem Wheel Machine, Top View

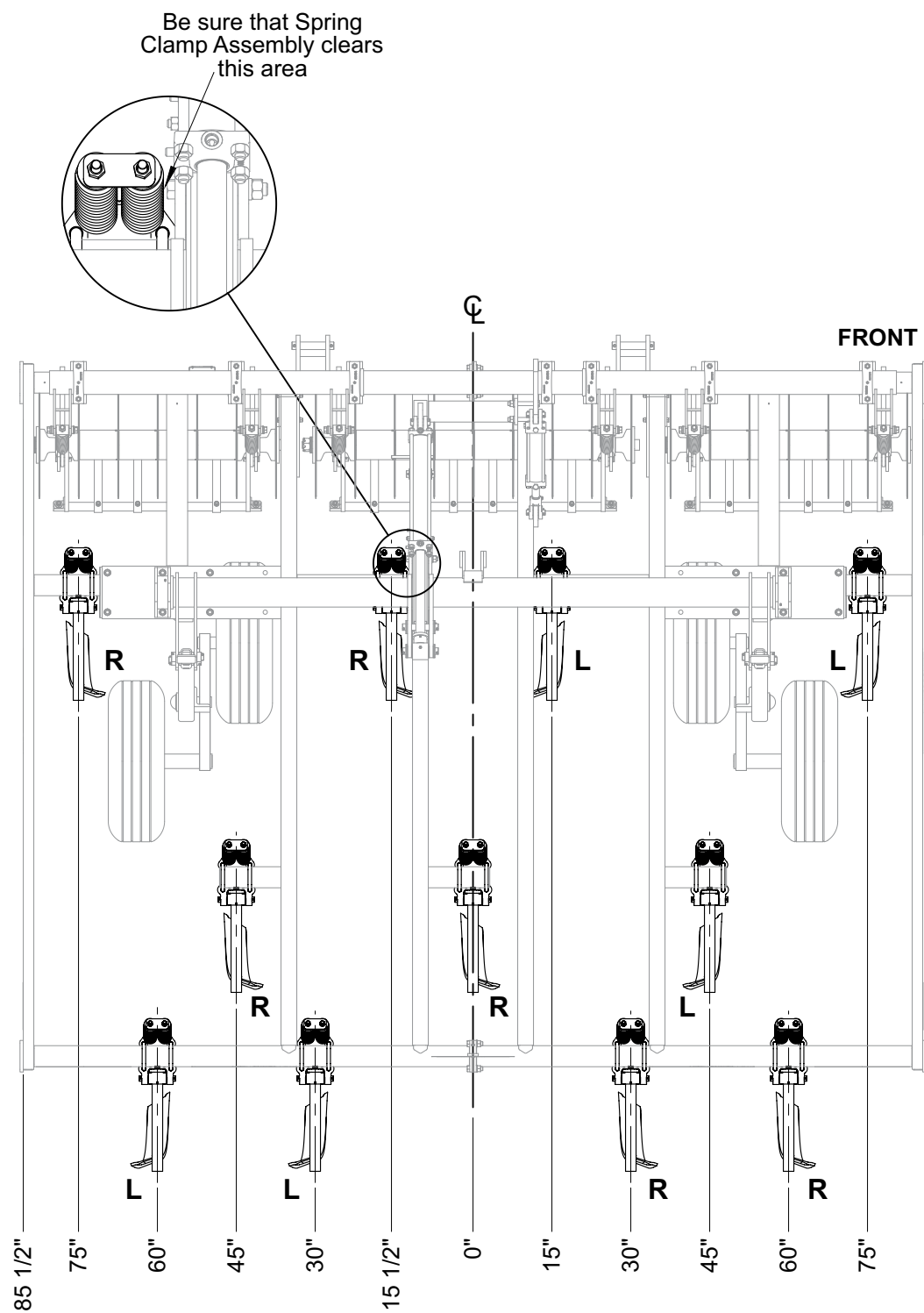


Figure 2-44: 11 Shank, Tandem Wheel Machine, Top View

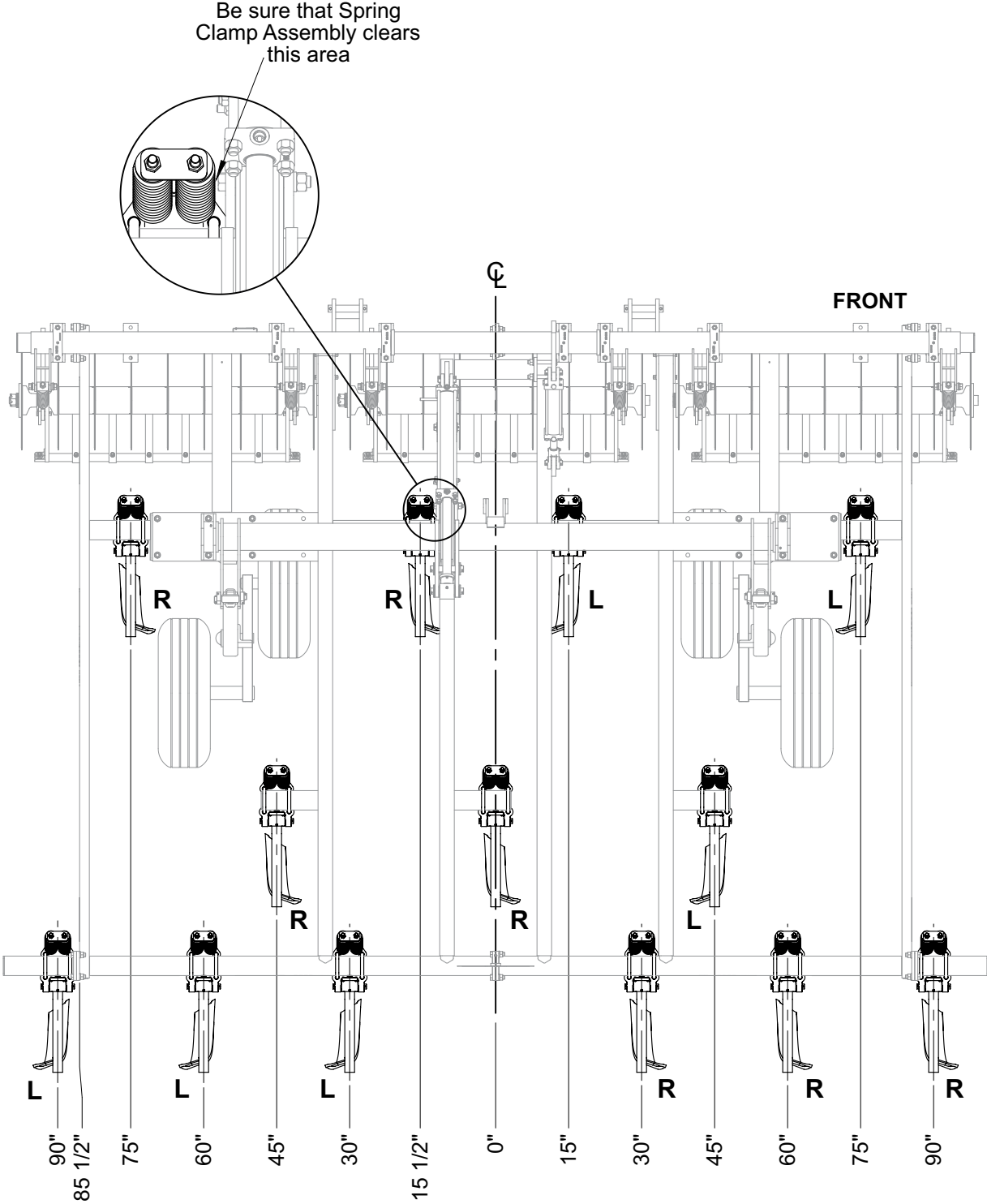


Figure 2-45: 13 Shank, Tandem Wheel Machine, Top View

Hydraulics

The hydraulic system consists of a Lift Circuit and if equipped an Adjustable Coulter Circuit. **See Figure 2-46.**

1. The Lift Circuit with machine raised requires approximately 0.8 gallons of hydraulic oil and with machine lowered requires approximately 0.7 gallons of hydraulic oil.
2. The Adjustable Coulter Circuit with Coulters raised requires approximately 0.4 gallons of hydraulic oil and with coulters lowered requires approximately 0.3 gallons of hydraulic oil.



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 your hands, to search for suspected leaks. Wear protective gloves & safety glasses or goggles when working with hydraulic systems.

Tightening Procedure For JIC 37° Swivel Female Nuts

1. Check flare and seat for defects.
2. Lubricate the connection.
3. Install hoses without twists.
4. Hand tighten until connection 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 (1/6 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 lock nut using 50-60 foot pounds torque.
- (See “Hydraulic Fitting Torque Specifications” on page 4-2.)**

Plumb Lift Circuit

1. Install Elbow Fittings into 3-1/2 x 16 Hydraulic Cylinder. **See Figure 2-46.**
2. Attach 3/8 x 161 Hoses to Elbow Fittings and route hoses down the left side of the drawbar through the Hose Support to the tractor.
3. Install an Adapter Fitting and Male Coupler into the end of each Hose.
4. Secure hoses with Tie Straps and Tywraps.

Plumb Adjustable Coulter Circuit, if equipped

1. Install Elbow Fittings into 3 x 8 Hydraulic Cylinder. **See Figure 2-46.**
2. Attach 3/8 x 161 Hoses to Elbow Fittings and route hoses down the right side of the drawbar through the Hose Support to the tractor.
3. Install an Adapter Fitting and Male Coupler into the end of each Hose.
4. Secure hoses with Tie Straps and Tywraps.

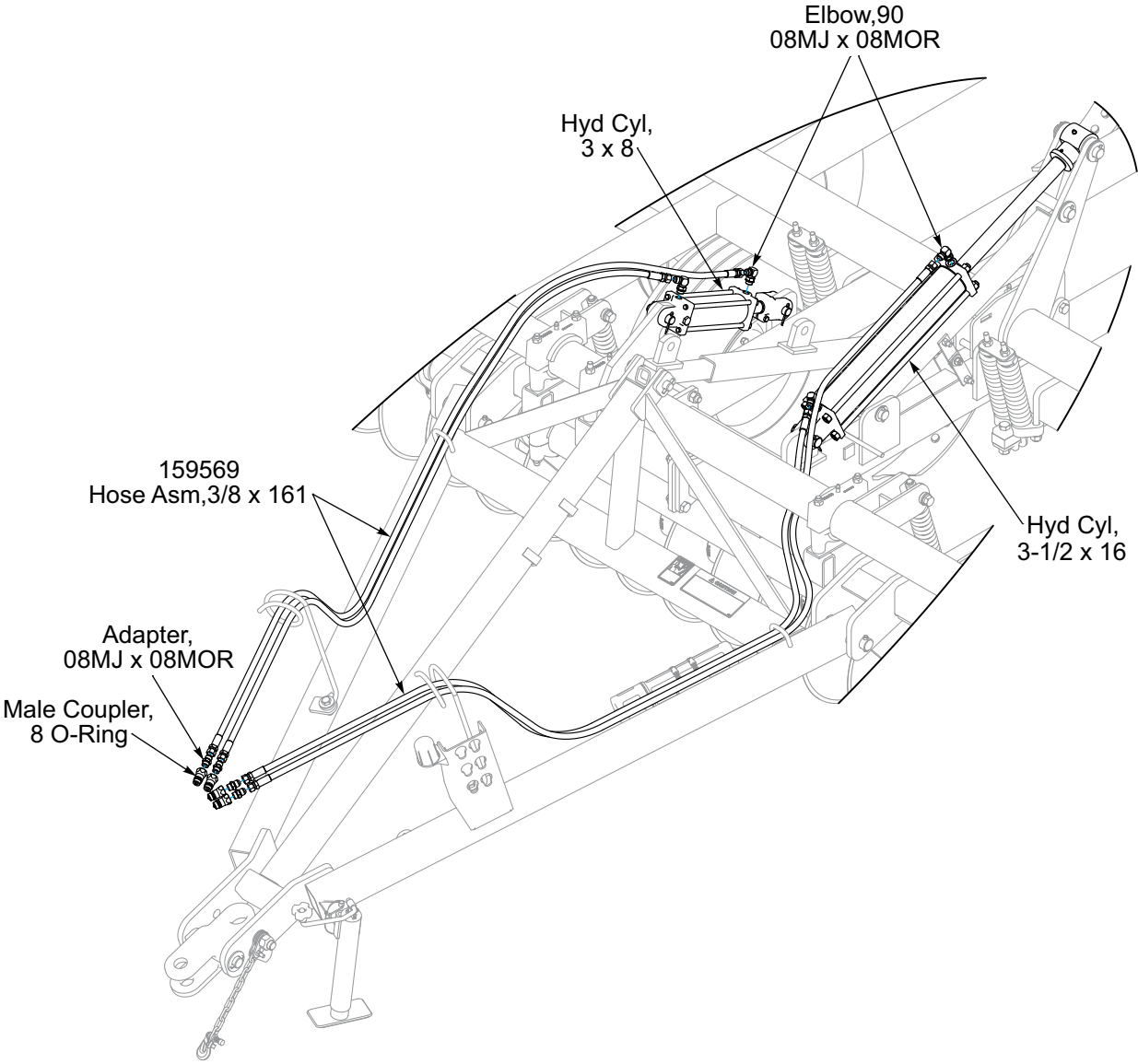


Figure 2-46: Hydraulic Layout

LED Warning Lights Installation

1. Attach a light Bracket Tube to the left front side of the rear frame tube at a distance per Machine Model. **See Figure 2-49.** Secure with a longer 1/2-13 U-bolt and Flanged Locknuts.
2. Route the 7 Pin Harness flat 4 Pin Plug End through the other Light Bracket Tube's larger bottom cutout to the smaller top cutout. **See Figure 2-48 and 2-49.** Mount the Light Bracket Tube onto the right front side of the rear frame tube at a distance per Machine Model. **See Figure 2-50.** Secure with longer 1/2-13 U-Bolt and Flanged Locknuts.

NOTE

On the right side, the 7-Pin Harness cord should rest on top of the U-bolt.

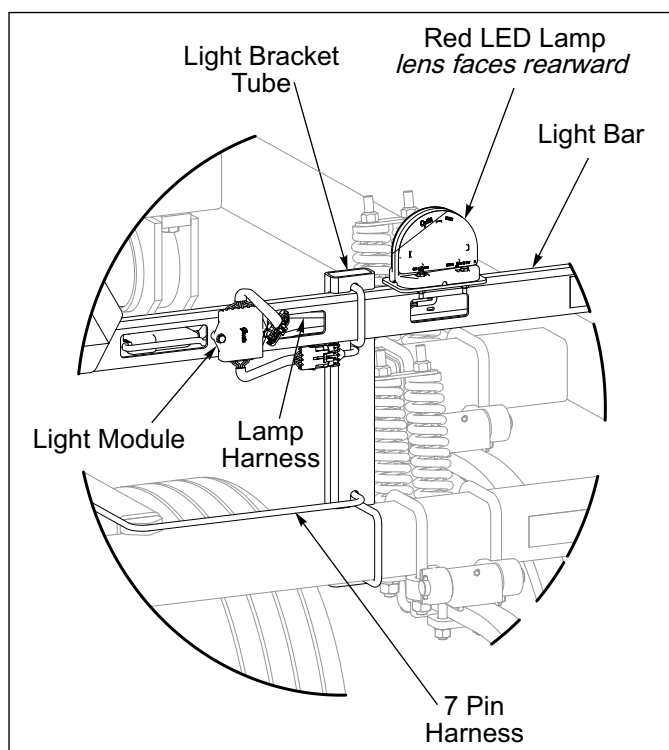


Figure 2-47: LED Light Bracket Tube Installation

3. Mount the Light Bar, with the light Module opening to the rear right of center, to Light Bracket Tubes. **See Figure 2-48 and 2-49.** Secure with shorter 1/2-13 U-Bolts and Flanged Locknuts.

NOTE

On the right side the 7 Pin Harness 4 Pin end should be below the U-bolt.

4. Lay out the Lamp Harness, noting that the connectors marked with Green Tape is for the Right Side and Yellow Tape is Left Side.
5. Route the Lamp Harness through the Light Bar opening next to where the Light Module is mounted. Run the 3 Pin Ends for the Red Lamps to the inside opening and the 2 Pin Ends for the Amber Lamps to the outside opening, so the ends can come through the light bar cutout on top of the tube where the lamps get mounted.

NOTE

Be sure when assembling Lamps onto Light Bar that the wires are not pinched when tightening hardware.

6. Plug Lamps into Lamp Harness and mount Lamps to Light bar with 1/4-20 x 1-1/2 Bolts and Locknuts. Red lens must face rearward. **See Figure 2-48.**
7. Mount Light Module to Light Bar with 1/4-20 x 3 Bolts and Locknuts.
8. Plug Lamp Harness and 7 Pin Harness into the Light Module.
9. Route the 7 Pin Harness along the right frame center tube towards the front of the machine to where the two frame halves come together. Run the cord across the frame to the left side so that the cord can run along the left side of the Drawbar along with the Hydraulic Hoses. Ensure that the cord clears all moving parts.
10. Bundle and secure excess cord to the Light Bar, Frame and Hydraulic Hoses with tie straps.

NOTE

All wires must be firmly attached to machine frame so they do not sag or become torn loose by field debris.

SMV Sign and Connector Holder Installation

1. Attach SMV sign to Light Bar with 5/16-1/8 x 2 Screws, Flat Washers and Locknuts. **See Figure 2-48.**
2. Attach plug Holder to Hose Support with 1/4-20 x 3/4 Screws and Locknuts.

The Harness with 7-Pin Plug connects to the tractor socket when in use. When not in use, it should be stored in the Connector Holder which is mounted to the Hose Holder on the Drawbar. Allow enough Harness length to reach the tractor socket and secure excess to the hydraulic hoses with tie straps.

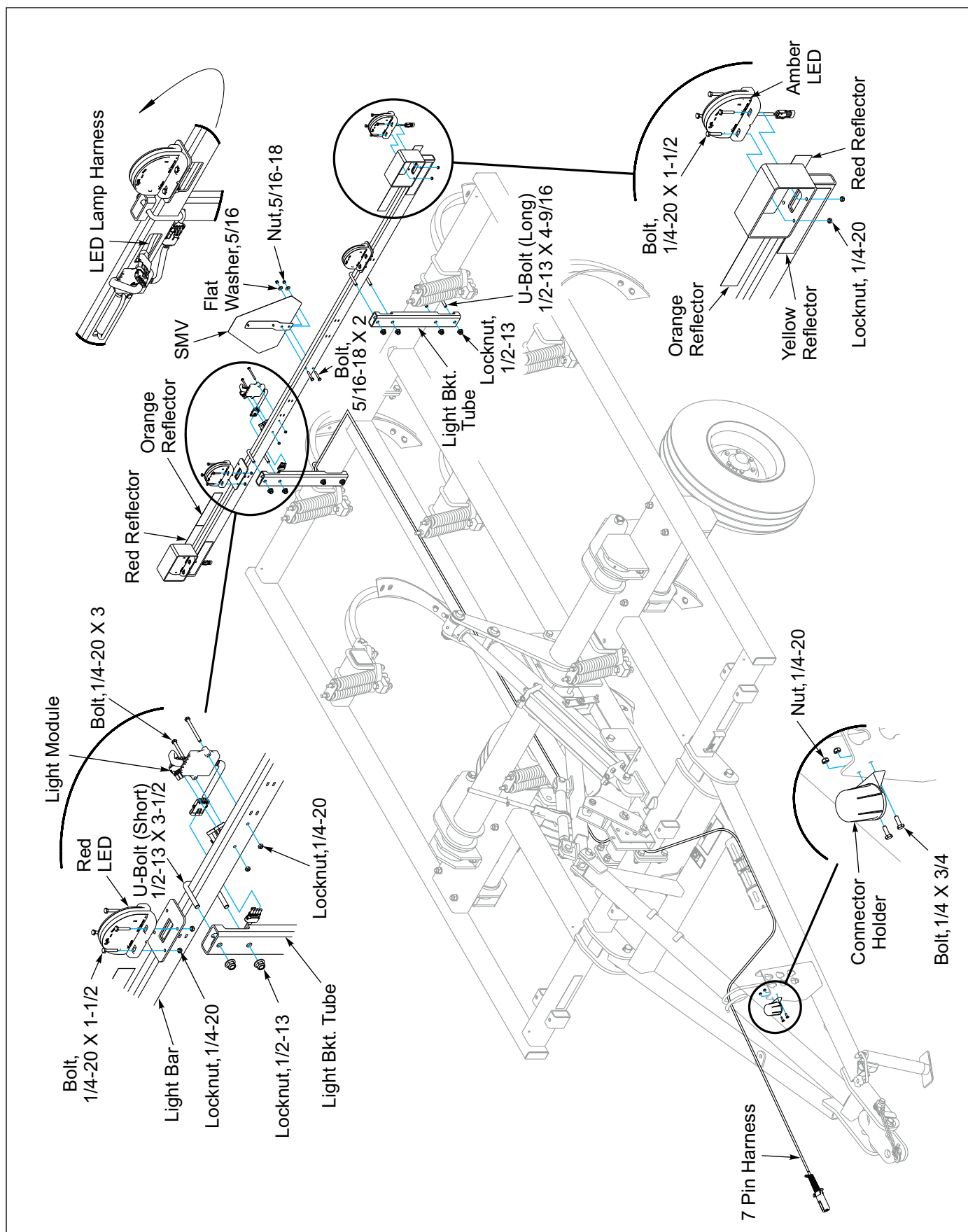


Figure 2-48: LED Layout

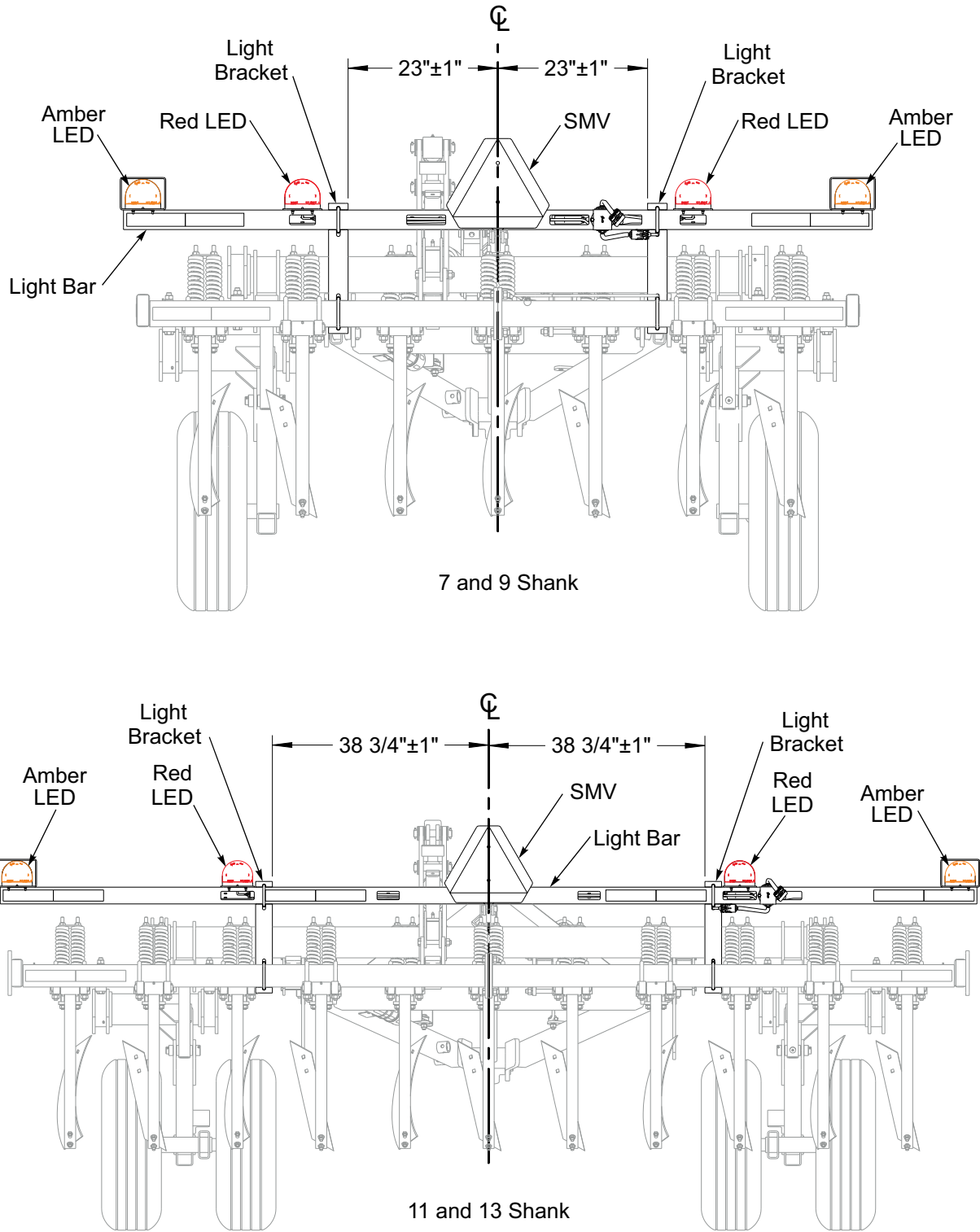


Figure 2-49: LED Installation Dimensions

Chapter 3

Operation



DANGER

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



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 equipment.



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 preventive measures against accidental lowering can result in serious personal injury.



DANGER

When transporting the unit, engage Transport Lock. Failure to lockout the cylinder 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.

Tractor Preparation

The Brillion Super Soil Builder is designed to be pulled by tractor equipped with a CAT 2 Straight Drawbar or CAT 3 Drawbar with Hammer Strap. If your tractor is not equipped as such, you need to purchase the hitch from your local tractor dealer.

Before attaching the implement, prepare the tractor as follows:

1. Inflate the tractor tires and add ballast according to the tractor operator's manual.
2. Lock the tractor drawbar in the center position.

Super Soil Builder Preparation

1. Prior to operating the Super Soil Builder, inspect it thoroughly for good operating condition.
2. Replace worn or missing parts.
3. When the machine is new, check the bolt tightness after a few hours of operation. Tighten any loose nuts or bolts. Check the lift wheel lug bolts daily.
4. Check the lift wheel tire inflation. Inflate all tires equally to avoid side draft. Follow the tire manufacturer's recommended pressures listed on the sidewall of the tires.

Attaching to the Tractor

1. Align the tractor drawbar with the machine. Raise or lower the hitch, as needed, using the jack. Attach the unit with proper size hitch pin. **See Table 3-1.**
2. If applicable, always move the jack to the interior mount before setting the machine in motion. **See Figure 3-1.**
3. Clean all hydraulic couplings and attach to the tractor.
4. Fully extend the Transport Axle Hydraulic Cylinder and engage the Transport Lock. **See Figure 3-6.**
5. 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 Figures 1-2 or 1-3.**
6. Plug in the 7 pin connector for the lights.
 - 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.

Table 3-1: Hitch Pin Size

DRAWBAR CAT	Min Pin Size	Max PTO HP
2	1-1/4" (30mm)	154 (115 Kw)
3	1-1/2" (38mm)	248 (185 Kw)

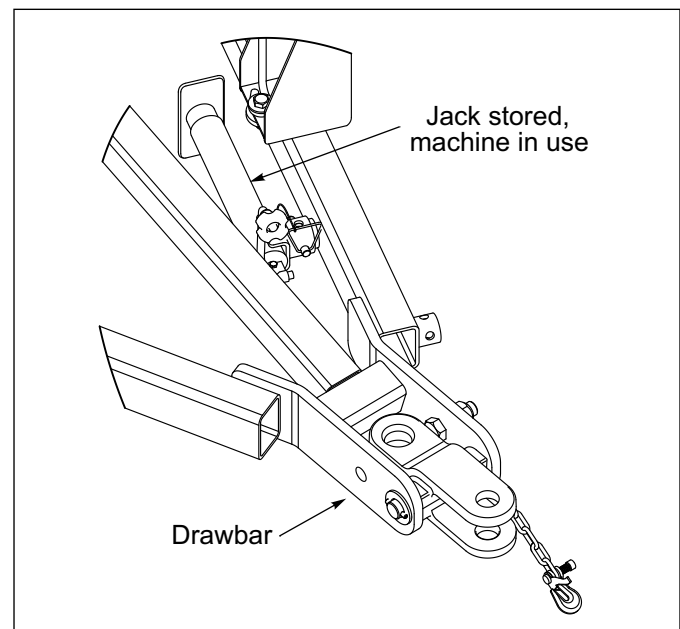


Figure 3-1: Jack Stored



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 3-2.) Keep all components (cylinders, hoses, fittings, etc.) in good repair.



Figure 3-2: Hydraulic Leak Detection

Hydraulic Lift System

The Super Soil Builder is equipped with a hydraulic lift system to raise and lower the unit in the field.

1. The hydraulic system is not factory filled with oil and should be purged of air before transporting and field operations. Carefully hitch the Super Soil Builder to the tractor and connect the hydraulic lift hoses.
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 unit to verify that the cylinder is working simultaneously throughout the stroke. Fully extend the Lift Cylinder and continue to hold the lever until the cylinder rod movement stops. Raise/Lower machine 5 times to purge air from the system.
4. Do not loosen any hoses or fittings. Recheck tractor reservoir to make sure it is within operating limits.
5. To relieve pressure put circuit in float and machine should remain raised. Be sure to use the Transport Lock. **See Figure 3-6.**

The Lift Circuit with machine raised, requires approximately 0.8 gallons of hydraulic oil and with machine lowered, requires 0.7 gallons of hydraulic oil.

Hydraulic Adjustable Coulter System

1. The Super Soil Builder may be equipped with a Hydraulically Adjustable Coulter System to change the depth of the front Coulter Gangs at any time during operation.

NOTE

A more controlled Coulter Gang Assembly depth be achieved by using Depth Control Segments on the 3 x 8 Cylinder Rod.

2. Carefully hitch the Super Soil Builder to a tractor and check the tractor hydraulic fluid level to make sure that it is full of the manufacturer's recommended hydraulic fluid.
3. Connect the Cylinder hoses to the tractor.
4. Fully extend and retract the Coulter Cylinder several times. The cylinder rod travel should be smooth and positive when all the air has been purged from the system.
5. **Do Not** loosen any hoses or fittings. Recheck the tractor fluid level to make sure it is within proper operating limits.

The Adjustable Coulter System requires approximately 0.3 gallons of hydraulic oil with Coulter Gangs lowered and 0.4 gallons of hydraulic oil with the Coulter Gangs raised.

General Operation

1. The recommended horsepower requirements are typically 15-20 horsepower per Shank. This will vary widely due to speed, depth, moisture, residue and types of soils. Local dealers can help in making recommendations for your area.
2. Recommended operating speed is 5-6.5 mph. Reduce speed when approaching the end of the field.
3. Shank Depth is controlled by the Transport Axle. Install the appropriate depth stops on the Lift Cylinder Rod. Maximum shank working depth is approximately 10 inches. A good starting point is to set the Shanks 8" deep by adding 3" of Depth Stops to the Lift Cylinder and to set the Coulter Gangs 3" deep. **See Figure 3-4.**
4. When turning or backing up, always raise the machine clear of the ground to prevent damage to the Shanks and Coulter Gang Assemblies.

Road to Field

1. Release Transport Lock by extending the Lift Cylinder to full length and pushing the Transport Lock Handle to the rear so that it rests between the LH Frame Lugs and Frame Stops. **See Figure 3-5.**
2. Lower the machine to the desired working depth and install the appropriate Depth Stops onto the Lift Cylinder Rod. Maximum shank working depth is approximately 10 inches. A good starting point is to set the Shanks 8" deep by adding 3" of Depth Stops to the Lift Cylinder. **See Figure 3-4.**
3. Set the Adjustable Coulter Gangs to the desired depth by hydraulically operating the Coulter Gang Cylinder or by manually moving the pins to the proper holes in the Spring Holder Assembly. A good starting point is to set the Coulter Gangs 3" deep. **See Figure 3-4.**

Do Not set the Coulter Gangs deeper than necessary to cut the surface residue. Setting the Coulter Gangs too deep in firm soil may prevent the Shanks from properly penetrating the soil.

4. Check to make sure that the Frame is parallel to the ground from front to back. If not adjust the Ratchet Jack on the Drawbar Brace.

IMPORTANT

Remove the Handle from the Ratchet Jack before raising or lowering the machine to prevent bending the Handle. Store the Handle on the side of the Drawbar.

Field to Road

1. Extend the Lift Cylinder to full length and lift the Transport Lock Hand while pulling it forward so the Handle rests in front of the Frame Stops. **See Figure 3-6.**
2. Retract the Lift Cylinder until the weight is taken up by the Transport Lock. The machine is now ready for transport.

Spring Shank Tension Adjustment

For normal operation, the Lock Nuts on the Spring mounting should be tightened so that one inch of thread is exposed. **See Figure 3-3.**

In tougher soil you may want to increase the Spring tension or compress the spring more. Keep in mind that when this is done, the shank will not pass over as great of obstruction.

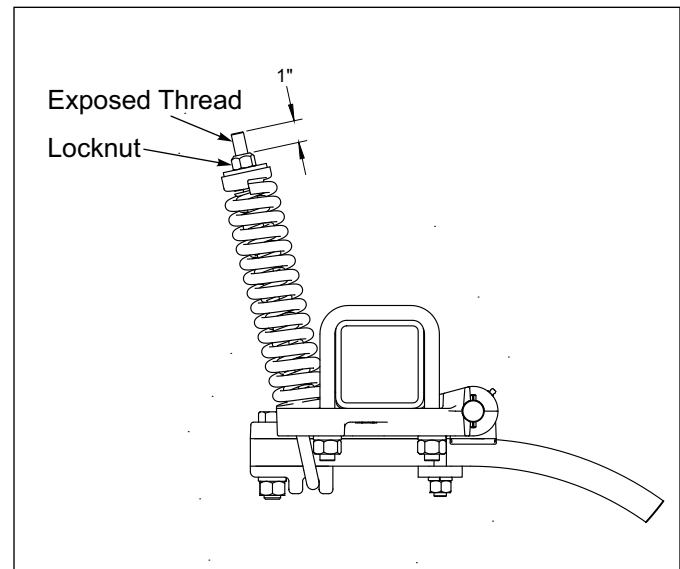


Figure 3-3: Spring Tension

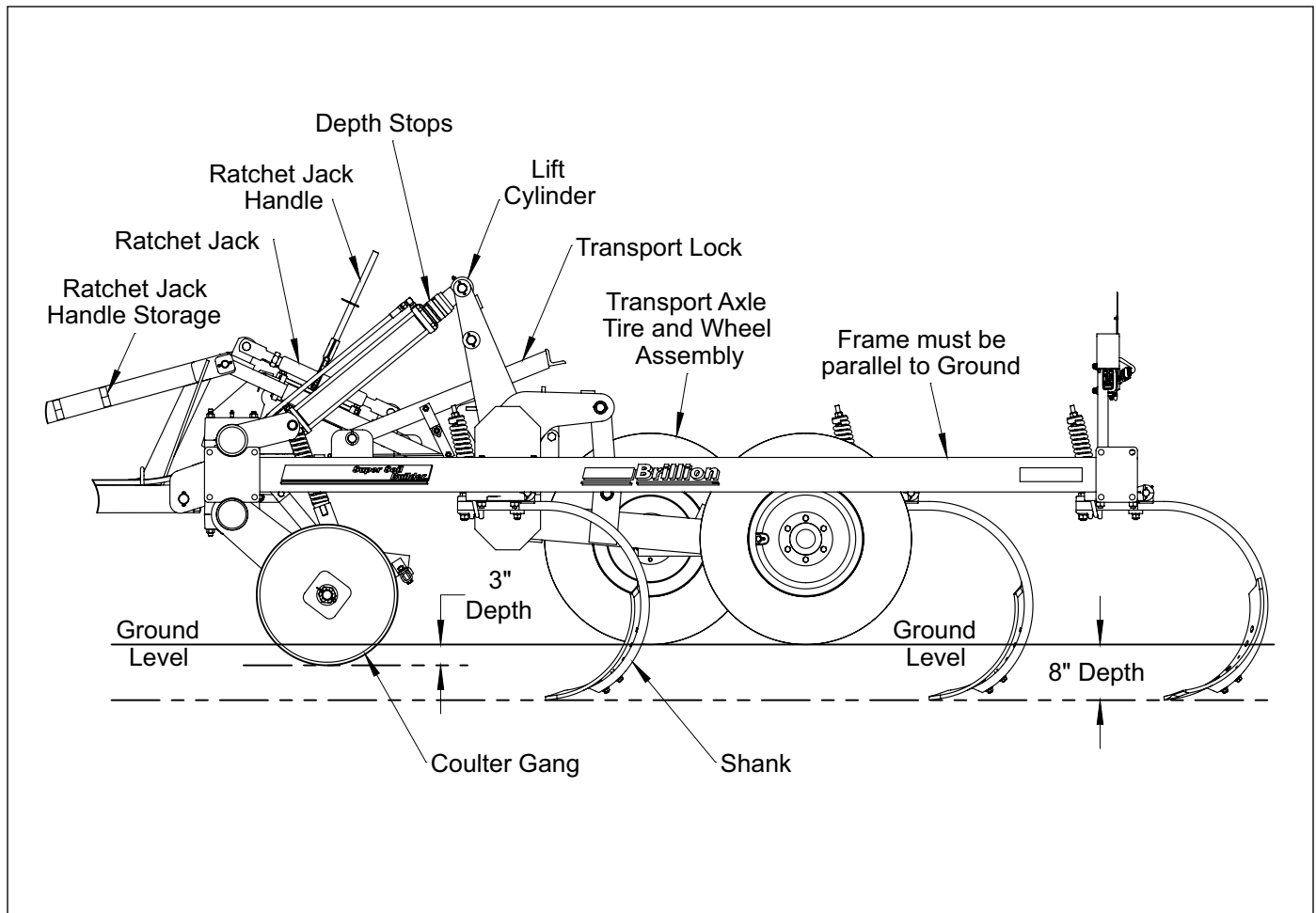


Figure 3-4: Shank depth

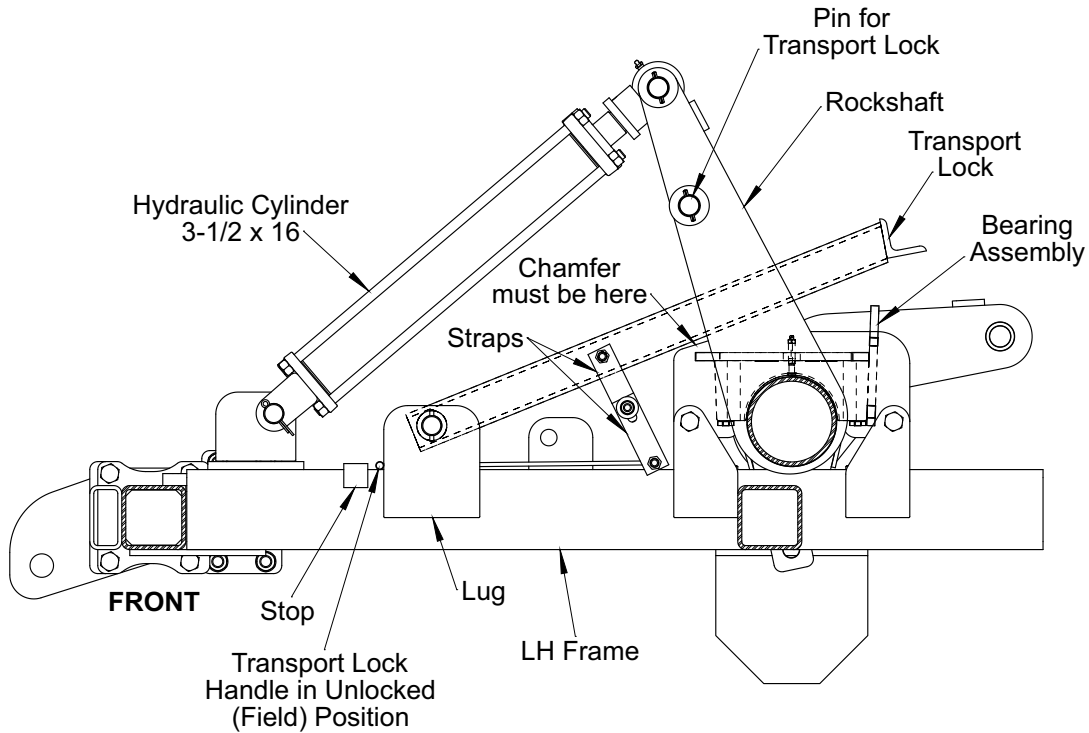


Figure 3-5: Transport Lock - Field Position

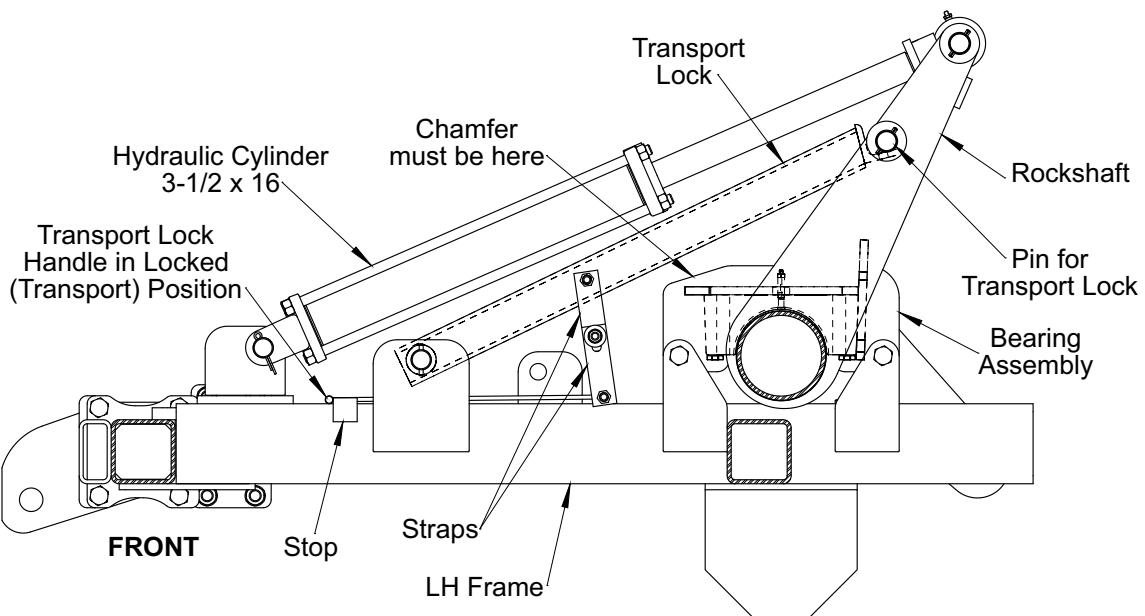


Figure 3-6: Transport Lock - Transport Position

Transport

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



CAUTION

Excessive speed may result in loss of control of the tractor and implement, reduced braking ability, or failure of the implement tire or structure. Do not exceed the implement 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 implements.
4. 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.
5. 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 implement load carrying capabilities.
6. A safety chain is provided with the implement to insure safe transport. **See Page 1-4.**
 - 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 Figures 3-7 and 3-8.** 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.

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.

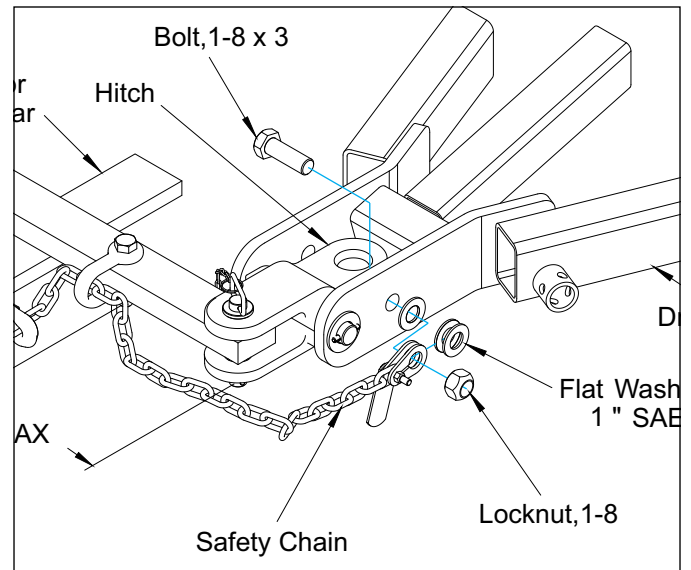


Figure 3-7: CAT2 Straight Drawbar

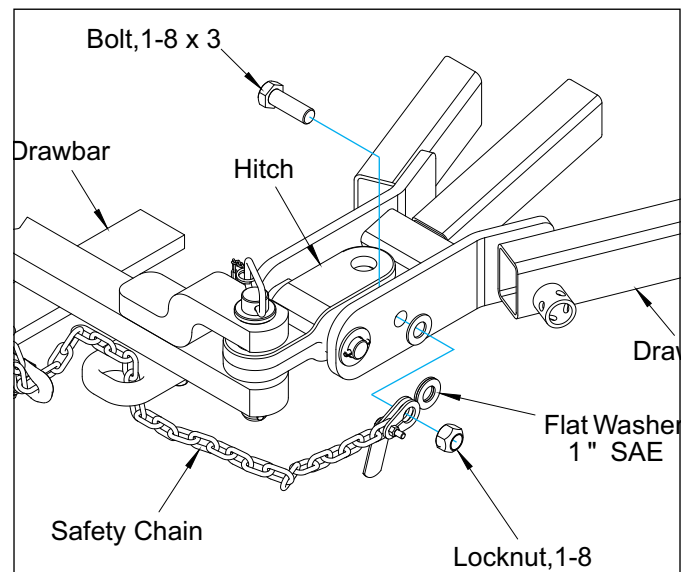


Figure 3-8: CAT3 Drawbar with Hammer Strap

7. Check that tires are of proper size, load rating, and inflated to manufacture specifications before transporting. Check wheel lug bolts to ensure tightness.
8. Know the transport heights and widths of the unit before transporting. Use caution when transporting near bridges and power lines.
9. Raise the machine to full transport height.
10. Install transport lock on lift system. Do not depend solely on implement hydraulics for transport. **See Figure 3-6.**



WARNING

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

11. Transport during daylight hours when ever 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.

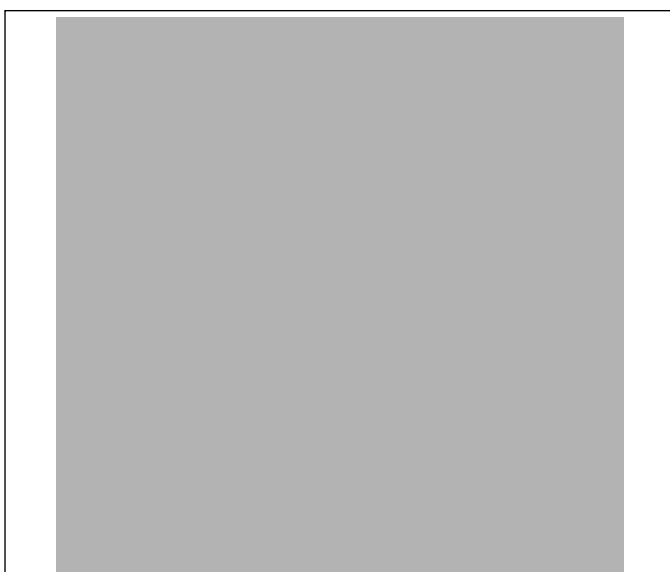


Figure 3-9: SMV Sign

Maintenance

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	UNF 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

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

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	-----	-----

Fasteners

Before operating your Brillion machine, check all hardware for tightness. Use the Tightening Torque Table as a guide. **page 4-1.**

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 sizes are 11L x 15 – 12 Ply and should be inflated to 52PSI.

When Re-installing 1/2-20 Wheel Bolts, tighten to 50 ft-lbs using the sequence shown in **Figure 4-1**. Then tighten to full torque of 80-85 ft-lbs.

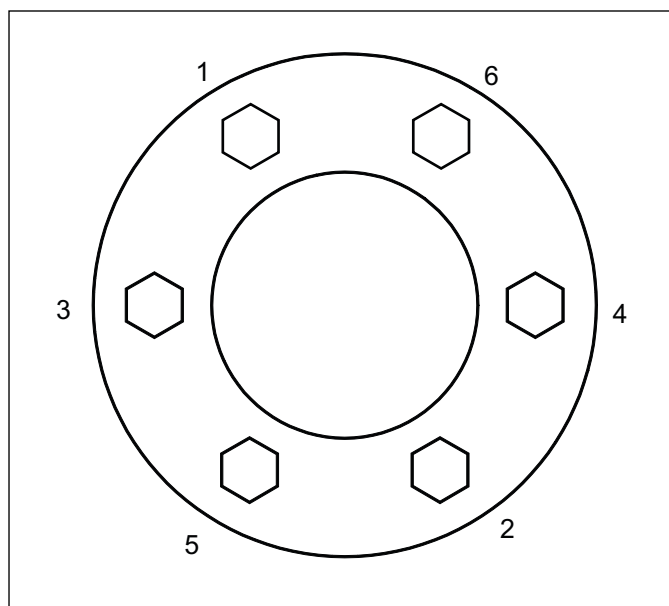


Figure 4-1: Wheel Bolt Tightening Sequence

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, slotted nut and washer.
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. Slide the double lip seal onto the spindle. Do not install the seal into the hub.

NOTE

The double lip seals should point away from the hub to keep contaminants out and allow grease to pass.

7. Slide the inner bearing cone and hub onto the spindle.
8. Install the outer bearing cone, washer 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. Slide the double lip seal to the hub and install the seal in the hub.
11. Install a new cotter pin and re-install the hub cap.

Lubrication Maintenance

Grease Shank Spring Clamps, Rockshaft Center Bearing, Rockshaft Bearings, Wheel Arm Links, Lift Hydraulic Cylinder, Transport Lock and Coulter Axle Bearing Assemblies every 8 hours. **See Figures 4-2 and 4-3.**

Grease Wheel Hubs every 50 hours. **See Figure 4-3.**

Grease the Ratchet Jack Annually or as needed to prevent rusting. **See Figure 4-2.**

Hydraulic Maintenance

IMPORTANT

Relieve hydraulic pressure before attempting to service any hydraulic components.

1. Check the hydraulic fluid level per tractors owner's manual and after any leakage. Check Hydraulic fluid level when machine is raised and Coulters Gangs are lowered.
2. If a cylinder or valve leaks, disassemble the parts to determine the cause of the leak. Any time a 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. **See Figure 3-6.** Do not attempt to perform any service work under the implement without first installing the transport lock. Before servicing any hydraulic component, lower the implement to the ground and 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.

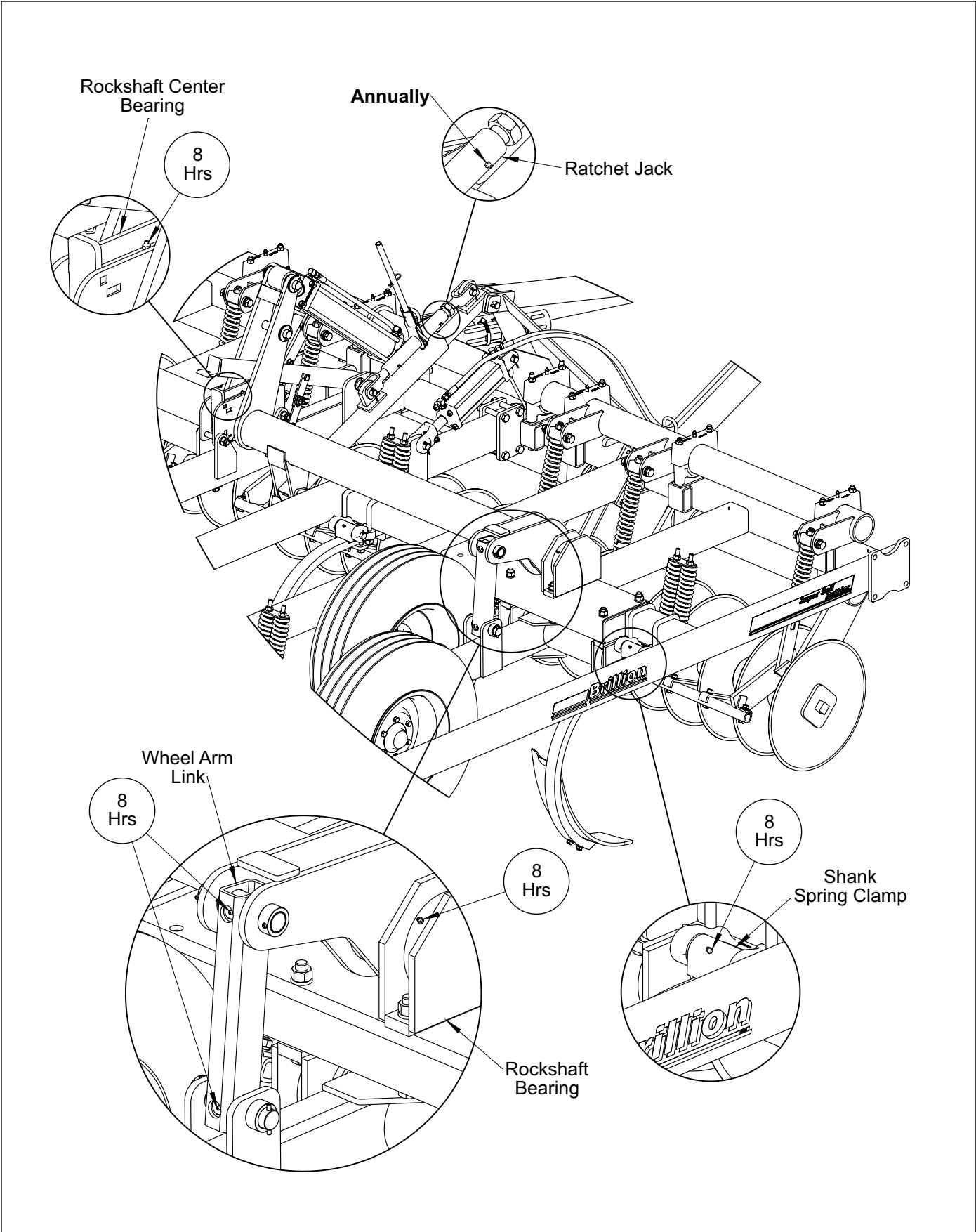


Figure 4-2: Lubrication Points - 1 of 2

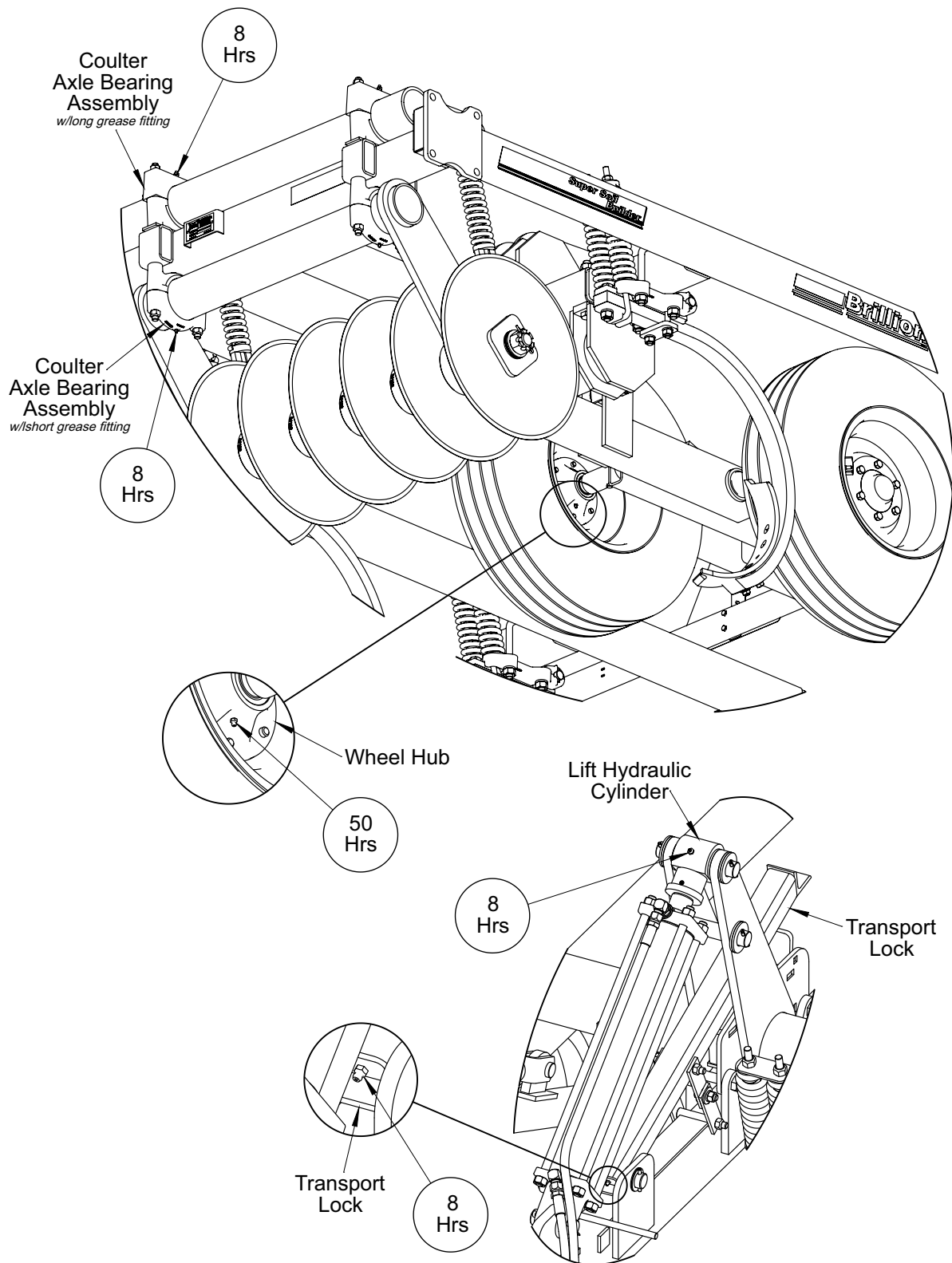


Figure 4-3: Lubrication Points - 2 of 2

LED Warning Lamps

When plugging in the LED 7-pin 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.

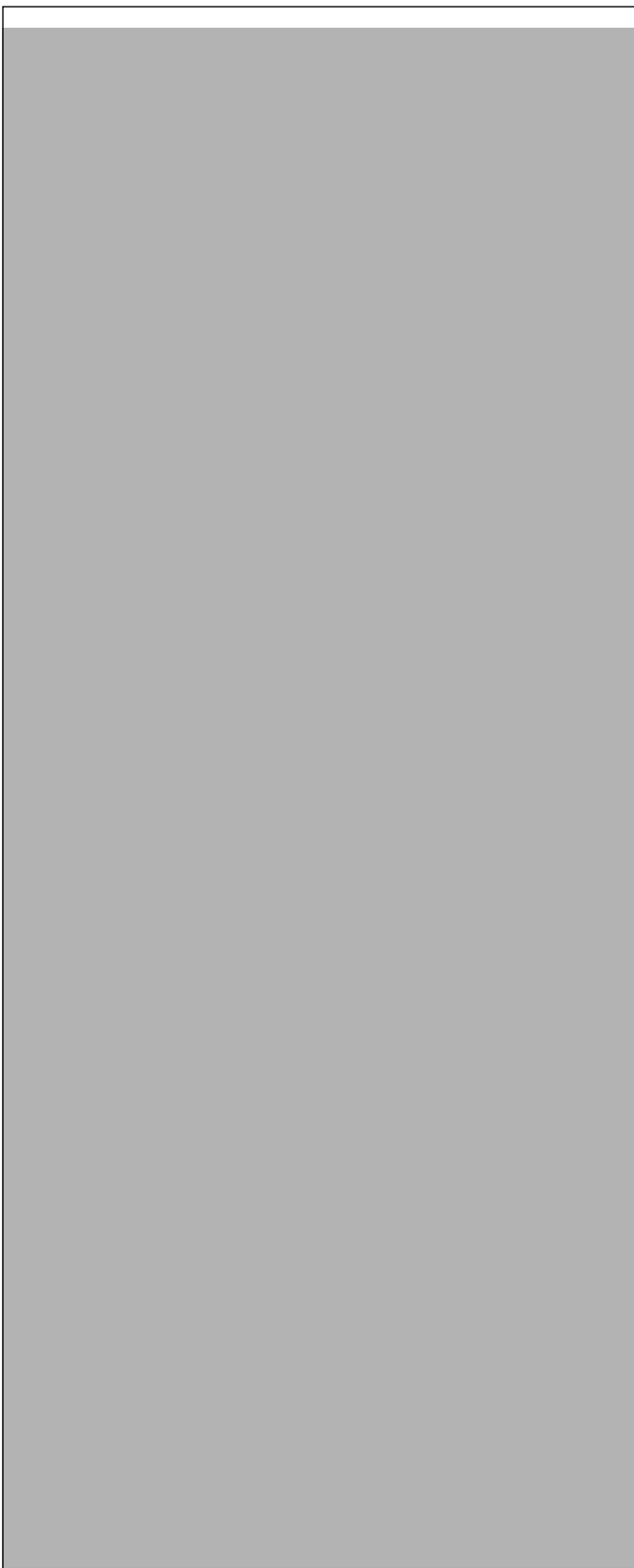


Figure 4-4: LED Warning Lamps

Storage

1. The service life of the Super Soil Builder will be extended by proper off-season storage practices. Prior to storing the unit, complete the following procedures:
 - a. Completely clean the unit.
 - b. Inspect the machine for worn or defective parts. Replace as needed.
 - c. Repaint all areas where the original paint is worn off.
 - d. Grease all exposed metal surfaces of shanks and points.
 - e. Apply a light coating of oil or grease to exposed cylinder rods to prevent them from rusting.
 - f. 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. The ground tools and tires should rest on boards, or some other object, to keep them out of the soil.
3. If the unit is stored in the folded position, make sure the transport lock is installed to prevent settling.
4. Relieve Hydraulic Pressure in hoses after lock is installed.
5. Block wheels before unhitching from tractor.

MAINTENANCE

Table provided for general use.

NOTES:

General Reference and Specifications

	SBA71-1	HSBA71-1
Approximate Weight	4,814 lbs. (2,188 kg)	4,879 lbs. (2,213 kg)
Working Width	8 ft. 9 in. (2.67 m)	8 ft. 9 in. (2.67 m)
Transport Width	9 ft. 3 in. (2.82 m)	9 ft. 3 in. (2.82 m)
Transport Height	5 ft. 7 in. (1.70 m)	5 ft. 7 in. (1.70 m)
Overall Length	19 ft. 3 in. (5.87 m)	19 ft. 3 in. (5.87 m)
Number of Coulter Blades	15	15
Coulter Blade Diameter	20 in. (508 mm)	20 in. (508 mm)
Coulter Blade Thickness	7 ga.	7 ga.
Coulter Blade Spacing	7.5 in. (191 mm)	7.5 in. (191 mm)
Coulter Bearings	Self-Aligning Flange Type	Self-Aligning Flange Type
Coulter Protection	Compression Coil Spring	Compression Coil Spring
Coulter Gang Bolt	1.5 in. (38 mm) Square	1.5 in. (38 mm) Square
Number of Shanks	7	7
Shank Mount	Dual Nested Spring	Dual Nested Spring
Shank Type	Parabolic	Parabolic
Shank Spacing	15 in. (381 mm)	15 in. (381 mm)
Shank Working Depth	Maximum of 10 in. (254 mm)	Maximum of 10 in. (254 mm)
Spring Pressure/Trip Resistance	550 lbs. to 825 lbs. (248 kg to 371 kg)	550 lbs. to 825 lbs. (248 kg to 371 kg)
Chisel Points Available	4 in. (102 mm) Twisted Shovels	4 in. (102 mm) Twisted Shovels
Under Frame Clearance	29 in. (737 mm)	29 in. (737 mm)
Frame Structure	4 in. x 4 in. x .25 in. (102 x 102 x 6.35 mm)	4 in. x 4 in. x .25 in. (102 x 102 x 6.35 mm)
Rockshaft Pivot Bearings	Two Piece Cast Iron	Two Piece Cast Iron
Transport Axle Type	Single Tire	Single Tire
Main Frame Cylinders	3.5 in. x 16 in. (89 x 406 mm)	3.5 in. x 16 in. (89 x 406 mm)
Main Frame Cylinder Control	External Depth Stop	External Depth Stop
Coulter Depth Cylinders	N/A	3 in. x 8 in. (76 x 203 mm)
Coulter Depth Cylinder Control	N/A	Depth Control Segments
Tires	(2) 11L x 15-12 Ply	(2) 11L x 15-12 Ply
Hitch Pin Hole Diameter	1.563 in. (40 mm) Flip-Flop Style Hitch	1.563 in. (40 mm) Flip-Flop Style Hitch
Safety Warning Lights & SMV Emblem	Standard	Standard
Safety Chain	Standard	Standard
Powder Coat Paint, Red	Standard	Standard
Horsepower Requirements	15 to 20 HP (11 to 15 kW) per Shank	15 to 20 HP (11 to 15 kW) per Shank
Recommended Operating Speed	5 to 6.5 MPH (8 to 10.5 km/h)	5 to 6.5 MPH (8 to 10.5 km/h)

Figure 5-1: Model Specifications 1 of 3

GENERAL REFERENCE AND SPECIFICATIONS

	HSBA91-1	HSBAW91-1
Approximate Weight	5,590 lbs. (2,5240kg)	5,574 lbs. (2,528 kg)
Working Width	11 ft. 3 in. (3.61 m)	11 ft. 3 in. (3.61 m)
Transport Width	11 ft. 10 in. (3.61 m)	11 ft. 10 in. (3.61 m)
Transport Height	5 ft. 7 in. (1.70 m)	5 ft. 7 in. (1.70 m)
Overall Length	19 ft. 3 in. (5.87 m)	19 ft. 3 in. (5.87 m)
Number of Coulter Blades	19	19
Coulter Blade Diameter	20 in. (508 mm)	20 in. (508 mm)
Coulter Blade Thickness	7 ga.	7 ga.
Coulter Blade Spacing	7.5 in. (191 mm)	7.5 in. (191 mm)
Coulter Bearings	Self-Aligning Flange Type	Self-Aligning Flange Type
Coulter Protection	Compression Coil Spring	Compression Coil Spring
Coulter Gang Bolt	1.5 in. (38 mm) Square	1.5 in. (38 mm) Square
Number of Shanks	9	9
Shank Mount	Dual Nested Spring	Dual Nested Spring
Shank Type	Parabolic	Parabolic
Shank Spacing	15 in. (381 mm)	15 in. (381 mm)
Shank Working Depth	Maximum of 10 in. (254 mm)	Maximum of 10 in. (254 mm)
Spring Pressure/Trip Resistance	550 lbs. to 825 lbs. (248 kg to 371 kg)	550 lbs. to 825 lbs. (248 kg to 371 kg)
Chisel Points Available	4 in. (102 mm) Twisted Shovels	4 in. (102 mm) Twisted Shovels
Under Frame Clearance	29 in. (737 mm)	29 in. (737 mm)
Frame Structure	4 in. x 4 in. x .25 in. (102 x 102 x 6.35 mm)	4 in. x 4 in. x .25 in. (102 x 102 x 6.35 mm)
Rockshaft Pivot Bearings	Two Piece Cast Iron	Two Piece Cast Iron
Transport Axle Type	Single Tire	Walking Tandem
Main Frame Cylinders	3.5 in. x 16 in. (89 x 406 mm)	3.5 in. x 16 in. (89 x 406 mm)
Main Frame Cylinder Control	External Depth Stop	External Depth Stop
Coulter Depth Cylinders	3 in. x 8 in. (76 x 203 mm)	3 in. x 8 in. (76 x 203 mm)
Coulter Depth Cylinder Control	Depth Control Segments	Depth Control Segments
Tires	(4) 11L x 15-12 Ply	(4) 11L x 15-12 Ply
Hitch Pin Hole Diameter	1.563 in. (40 mm) Flip-Flop Style Hitch	1.563 in. (40 mm) Flip-Flop Style Hitch
Safety Warning Lights & SMV Emblem	Standard	Standard
Safety Chain	Standard	Standard
Powder Coat Paint, Red	Standard	Standard
Horsepower Requirements	15 to 20 HP (11 to 15 kW) per Shank	15 to 20 HP (11 to 15 kW) per Shank
Recommended Operating Speed	5 to 6.5 MPH (8 to 10.5 km/h)	5 to 6.5 MPH (8 to 10.5 km/h)

Figure 5-2: Model Specifications 2 of 3

	HSBAW111-1	HSBAW131-1
Approximate Weight	7,523 lbs. (3,412 kg)	8,110 lbs. (3,679 kg)
Working Width	13 ft. 9 in. (4.19 m)	16 ft. 3 in. (4.95 m)
Transport Width	14 ft. 4 in. (4.37 m)	16 ft. 10 in. (5.13 m)
Transport Height	5 ft. 7 in. (1.70 m)	5 ft. 7 in. (1.70 m)
Overall Length	19 ft. 3 in. (5.87 m)	19 ft. 3 in. (5.87 m)
Number of Coulter Blades	23	27
Coulter Blade Diameter	20 in. (508 mm)	20 in. (508 mm)
Coulter Blade Thickness	7 ga.	7 ga.
Coulter Blade Spacing	7.5 in. (191 mm)	7.5 in. (191 mm)
Coulter Bearings	Self-Aligning Flange Type	Self-Aligning Flange Type
Coulter Protection	Compression Coil Spring	Compression Coil Spring
Coulter Gang Bolt	1.5 in. (38 mm) Square	1.5 in. (38 mm) Square
Number of Shanks	11	13
Shank Mount	Dual Nested Spring	Dual Nested Spring
Shank Type	Parabolic	Parabolic
Shank Spacing	15 in. (381 mm)	15 in. (381 mm)
Shank Working Depth	Maximum of 10 in. (254 mm)	Maximum of 10 in. (254 mm)
Spring Pressure/Trip Resistance	550 lbs. to 825 lbs. (248 kg to 371 kg)	550 lbs. to 825 lbs. (248 kg to 371 kg)
Chisel Points Available	4 in. (102 mm) Twisted Shovels	4 in. (102 mm) Twisted Shovels
Under Frame Clearance	29 in. (737 mm)	29 in. (737 mm)
Frame Structure	4 in. x 4 in. x .25 in. (102 x 102 x 6.35 mm)	4 in. x 4 in. x .25 in. (102 x 102 x 6.35 mm)
Rockshaft Pivot Bearings	Two Piece Cast Iron	Two Piece Cast Iron
Transport Axle Type	Single Tire	Walking Tandem
Main Frame Cylinders	3.5 in. x 16 in. (89 x 406 mm)	3.5 in. x 16 in. (89 x 406 mm)
Main Frame Cylinder Control	External Depth Stop	External Depth Stop
Coulter Depth Cylinders	3 in. x 8 in. (76 x 203 mm)	3 in. x 8 in. (76 x 203 mm)
Coulter Depth Cylinder Control	Depth Control Segments	Depth Control Segments
Tires	(4) 11L x 15-12 Ply	(4) 11L x 15-12 Ply
Hitch Pin Hole Diameter	1.563 in. (40 mm) Flip-Flop Style Hitch	1.563 in. (40 mm) Flip-Flop Style Hitch
Safety Warning Lights & SMV Emblem	Standard	Standard
Safety Chain	Standard	Standard
Powder Coat Paint, Red	Standard	Standard
Horsepower Requirements	15 to 20 HP (11 to 15 kW) per Shank	15 to 20 HP (11 to 15 kW) per Shank
Recommended Operating Speed	5 to 6.5 MPH (8 to 10.5 km/h)	5 to 6.5 MPH (8 to 10.5 km/h)

Figure 5-3: Model Specifications 3 of 3

GENERAL REFERENCE AND SPECIFICATIONS

Table provided for general use.

[illegible]

Document Control Revision Log:

Date	Revision	Improvement(s) Description and Comments	Team Member
07/07/08	rev0708	Latest Release	
05/2014	rev0514	Added LED Warning Lights, Updated Drawings	WML
03/2019	rev0319	Improved Drawings	WML



Intertek

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

SUPER SOIL BUILDER

Coulter Chisel Extended Frame

Models: SB71-1, HSB71-1 through 131-1

Operator's Manual

Re-Order Part Number 1K705-0319

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