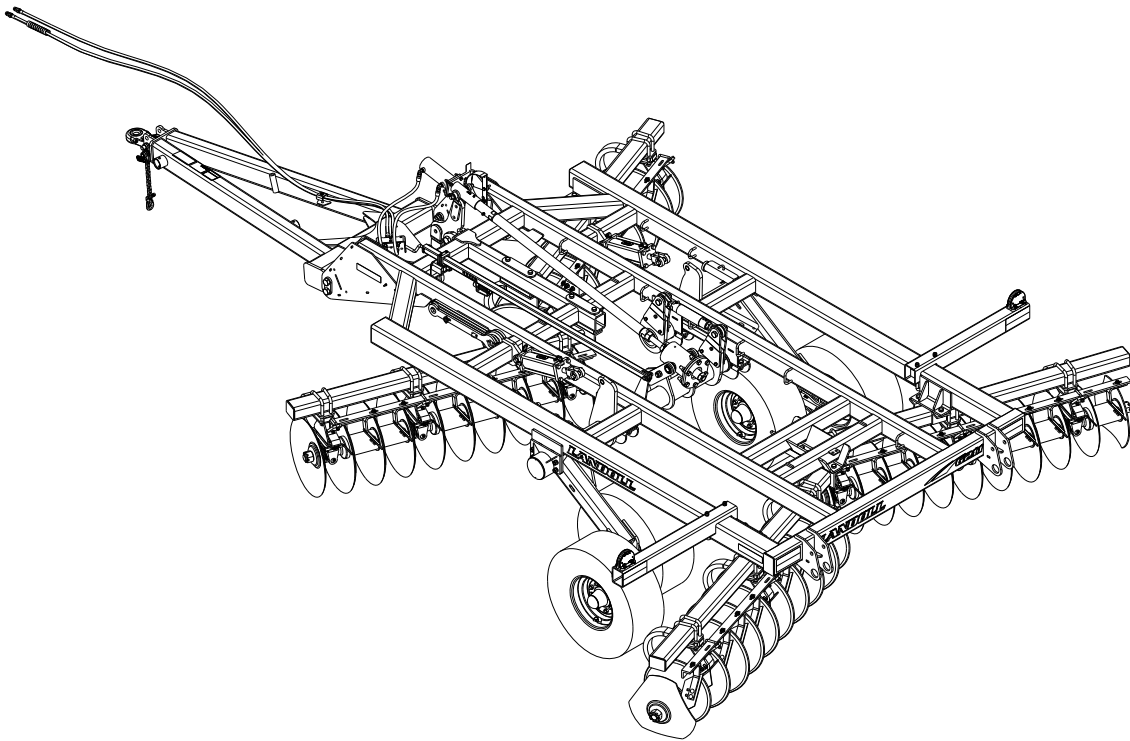




Model 6211 Disc Operator's Manual



LANDOLL CORPORATION

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Introduction and Safety Information

Introduction

The Landoll Model 6211 Disc is a quality product designed to give years of trouble free performance. By following each section of this manual, your system will perform as designed for you and your operation.

- CHAPTER 1** Gives basic instructions on the use of this manual and understanding the safety statements.
- CHAPTER 2** Gives product specifications for the equipment. These specifications supply lengths and measures for your equipment. A Standard Bolt Torque Table is provided to give guidelines for bolt torques to be used when servicing this product.
- CHAPTER 3** Contains assembly instructions for your 6211 Disc. When these procedures are correctly followed, your equipment should provide you years of trouble-free operation and service.
- CHAPTER 4** Instructs how to operate your equipment before using it, and describes adjustments needed. Gives practical advice for the care and maintenance of your Landoll equipment. Drawings in this section locate adjustment points on the equipment.

IF YOU HAVE ANY QUESTIONS CONTACT:

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- CHAPTER 5** Is a troubleshooting guide to aid in diagnosing and solving problems with the 6211 Disc.
- PARTS MANUAL** Is a separate manual showing the various assemblies, subassemblies, and systems. Refer to that manual when ordering Landoll replacement parts. Order parts from your Landoll dealer.
- WARRANTY** The Warranty Registration form is included with the product documents. Fill it out and mail it within 15 days of purchase.
NOTE: IMPROPER ASSEMBLY, MODIFICATION, OR MAINTENANCE OF YOUR LANDOLL MACHINE CAN VOID YOUR WARRANTY.
- COMMENTS** Address comments or questions regarding this publication to:

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ATTENTION: PUBLICATIONS - DEPT. 55**

Understanding Safety Statements

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



The Safety Alert Symbol means **ATTENTION! YOUR SAFETY IS INVOLVED!**

NOTE

Means that failure to follow these instructions could cause damage to the equipment or cause it to operate improperly.

NOTICE

Special notice - read and thoroughly understand



CAUTION

Caution means serious equipment or other property damage can occur if instructions on this label are not properly followed.



WARNING

Warning means serious injury or death can occur if safety measures or instructions on this label are not properly followed.



DANGER

Danger means a life-threatening situation exists. Death can occur if safety measures or instructions on this label are not properly followed.

NOTE

Make sure you read and understand the information contained in this manual and on the machine signs (decals) before you attempt to operate or maintain this vehicle.

The safety statements contained in this manual relate to the operation of the Model 6211 Disc.

Decal Safety

1. Examine safety decals and be sure you have the correct safety decals for the implement.
2. 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.
3. 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.
4. 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.

1. 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.



2. Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of the towing vehicle.
3. Carry reflectors or flags to mark the tractor and implement in case of breakdown on the road.

4. 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.
5. 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.
6. Use caution when towing behind articulated steering tractors; fast or sharp turns may cause the implement to shift sideways.
7. Keep clear of overhead power lines and other obstructions when transporting. Know the transport height and width of your implement.

Attaching, Detaching, and Storage

1. Do not stand between the tractor and implement when attaching or detaching implement unless both are not moving.
2. Block implement so it will not roll when unhitched from the tractor.
3. Store in an area where children normally do not play.

Maintenance Safety

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

High Pressure Fluid Safety

1. 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.
2. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.
3. Avoid the hazard by relieving pressure before disconnecting hydraulic lines.

Protective Equipment

1. Wear protective clothing and equipment.
2. Wear clothing and equipment appropriate for the job. Avoid loose fitting clothing.



3. Because prolonged exposure to loud noise can cause hearing impairment or hearing loss, wear suitable hearing protection, such as earmuffs or earplugs.

Chemical Safety

1. Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil and property.
2. Read chemical manufacture's instructions and store or dispose of unused chemicals as specified.
3. Handle chemicals with care and avoid inhaling smoke from any type of chemical fire.
4. Store or dispose of unused chemicals as specified by the chemical manufacturer.

Prepare for Emergencies

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

Tire Safety

1. Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.
2. 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.
3. When removing and installing wheels use wheel-handling equipment adequate for the weight involved.

Safety Chain

1. Use a chain with a strength rating equal to or greater than the gross weight of towed machinery, which is 10,100 pounds minimum in accordance with ASAE S338.2 specifications. If two or more implements are pulled in tandem, a larger chain may be required. Chain capacity must be greater than the TOTAL weight of all towed implements.
2. A second chain should be used between each implement.
3. Attach the chain to the tractor drawbar support or specified anchor location. 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.
4. Replace the chain if any links or end fittings are broken, stretched or damaged.
5. Do not use a safety chain for towing.

Standard Specifications

Model Specifications

6211 Disc										
Model Number	Working Width	Transport Width	Transport Height	Blade Diameter	No. of Blades	No. of Bearings	Tire Size & Ply	Spindle & Size	Wheel Bolt Pattern	Estimated
6211-12	12'-3"	13'-0"	5'-8"	24"	16/18	4/4	12.5L x 15 12 PLY	3"	8 Bolt	7,472
6211-14	13'-7"	14'-7"	5'-8"	24"	18/20	6/6	12.5L x 15 12 PLY	3"	8 Bolt	8,717
6211-15	15'-1"	15'-10"	5'-8"	24"	20/22	6/6	12.5L x 15 12 PLY	3"	8 Bolt	9,028

NOTE: Specifications Are Subject To Change Without Prior Notification

Tire Inflation			
Tire Size	Tire Manufacturer	Ply/Load Rating	Inflation Pressure (Psi) (Max.)
12.5L x 15 SL	Firestone	12 PLY/3860 LBS.	52 psi.

Recommended Torque Specification For Lug Bolts and Nuts	
Bolt Size	Torque (FT. LBS.)
5/8-18 (Heavy Duty Disc)	85 - 100 FT. LBS.

General Torque Specifications (rev. 4/97)

TORQUE SPECIFIED IN FOOT POUNDS - 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.

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]
1-3/4-5	736 [920]	1651 [2063]	2678 [3347]	1-3/4-12	920 [1150]	2063 [2579]	3347 [4183]

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]	-----	-----	-----

Table 2-1: General Torque Specifications

Hydraulic Fitting Torque Specifications

TORQUE IS SPECIFIED IN FOOT POUNDS- 37° 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.			
Parker Brand Fittings			
Dash Size	37 Degree JIC	O-Ring (ORS)	O-Ring Boss (ORB)
-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 Degree JIC	O-Ring (ORS)	O-Ring Boss (ORB)
-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 Degree JIC	O-Ring (ORS)	O-Ring Boss (ORB)
-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
-32	245-258	-----	-----

Table 2-2: Hydraulic Fitting Torque Specifications

Wing Stabilizer & Light Bracket Placement

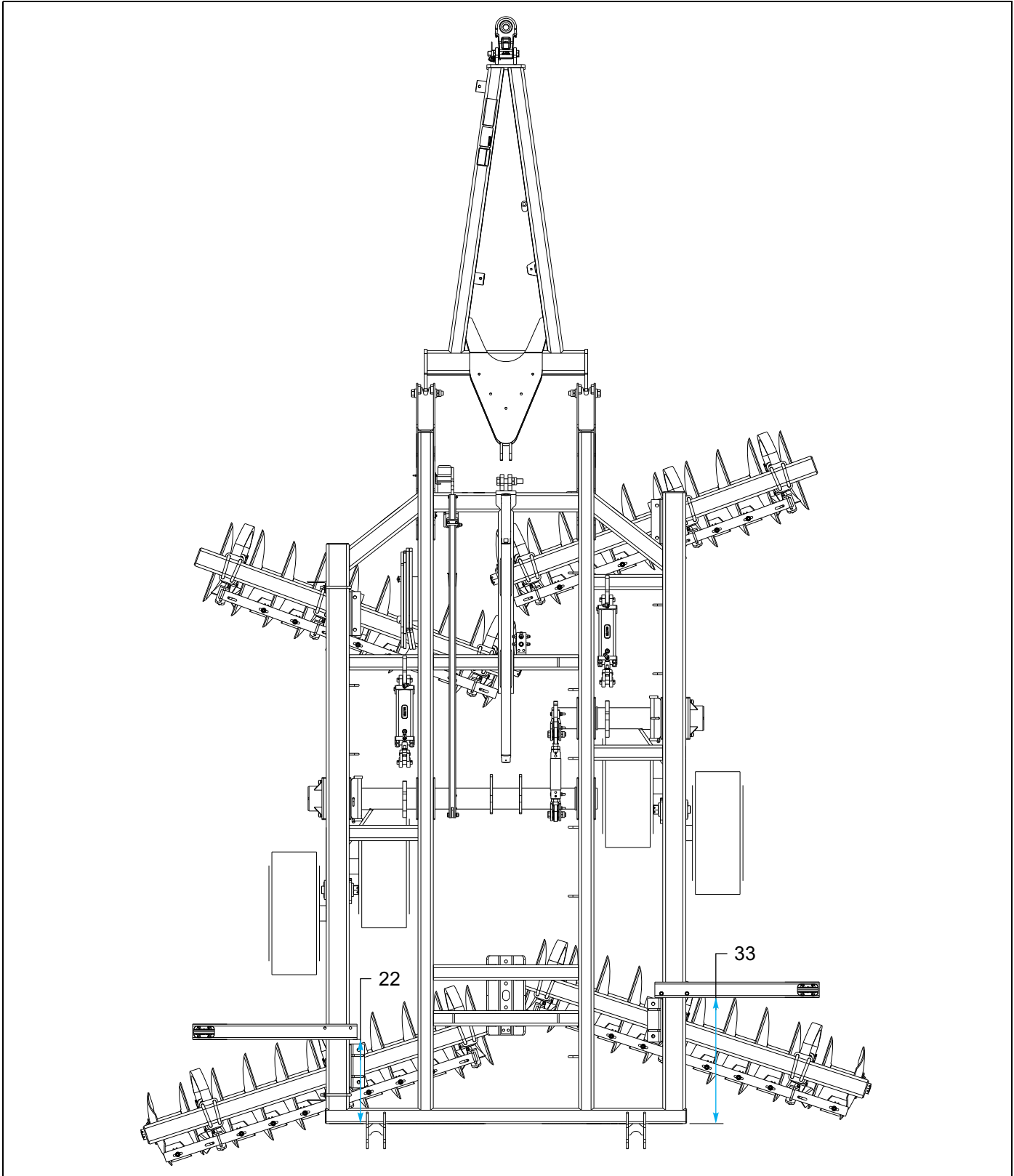


Figure 2-1: Wing Stabilizer and Light Bracket Placement 12'-15'

3 Row Coil Tine Harrow Placement

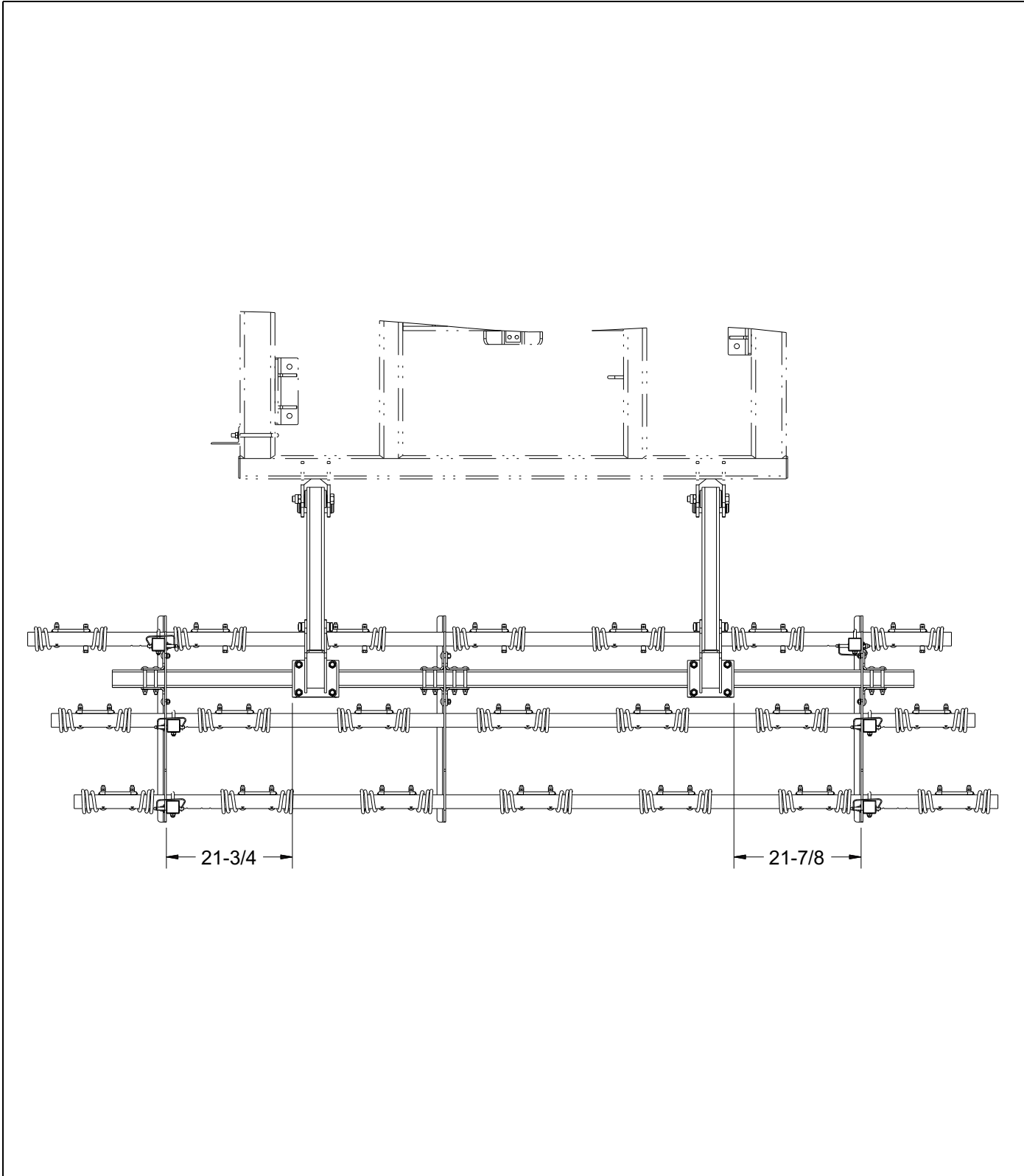


Figure 2-2: 3 Row Coil Tine Harrow Placement - 12'

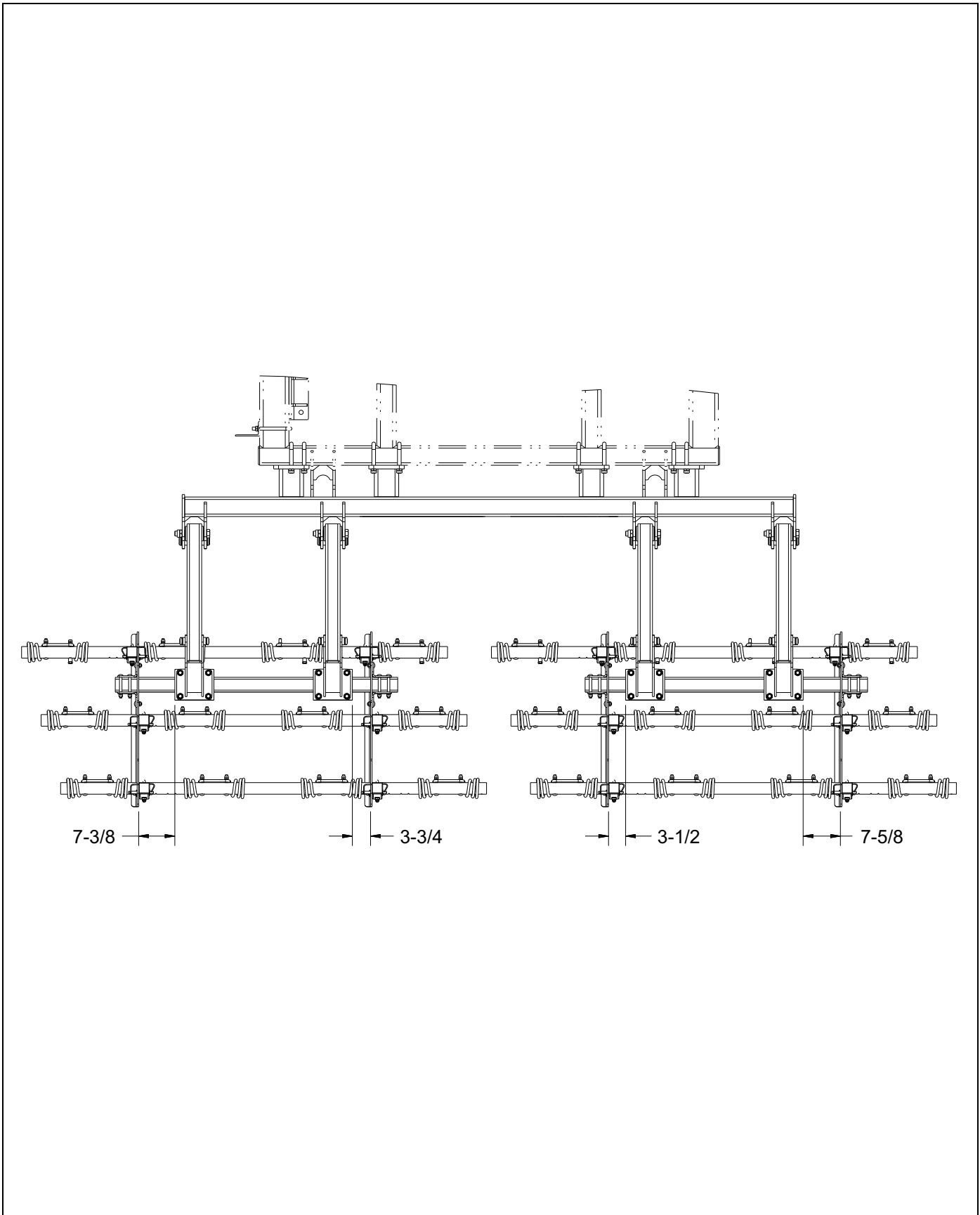


Figure 2-3: 3 Row Coil Tine Harrow Placement - 14' & 15'

Conditioner Reel Placement

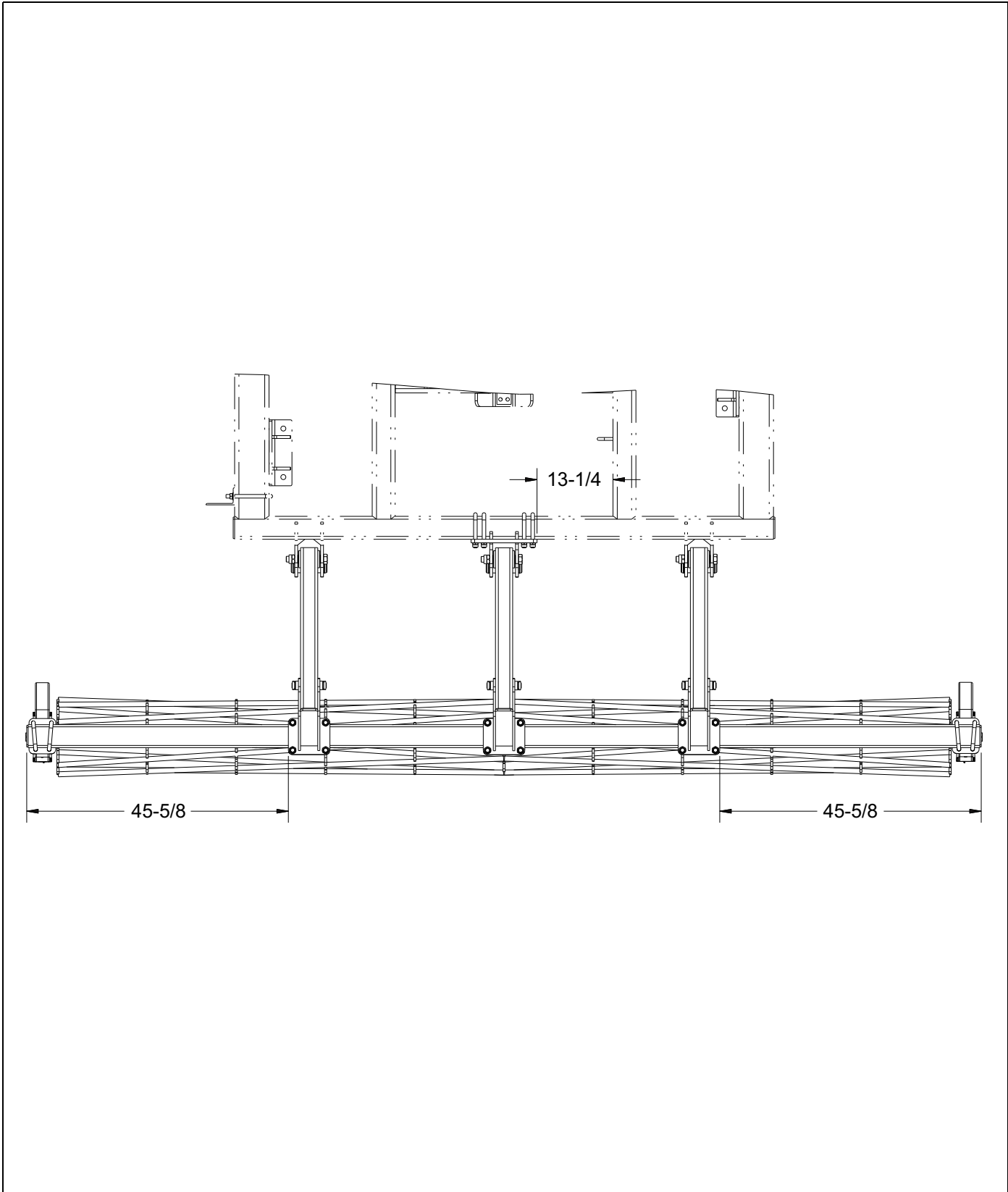


Figure 2-4: Conditioner Reel Placement - 12'

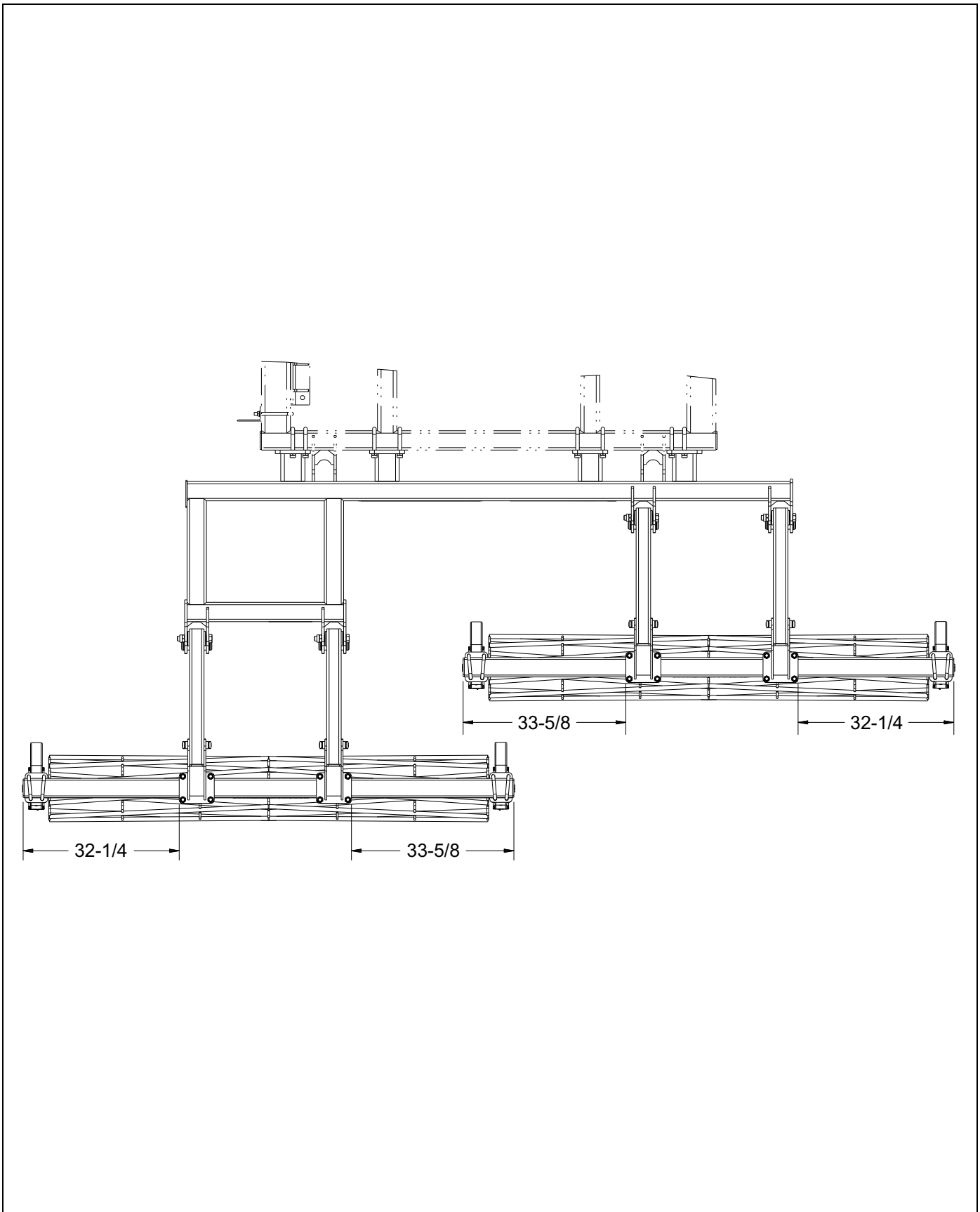


Figure 2-5: Conditioner Reel Placement - 14'

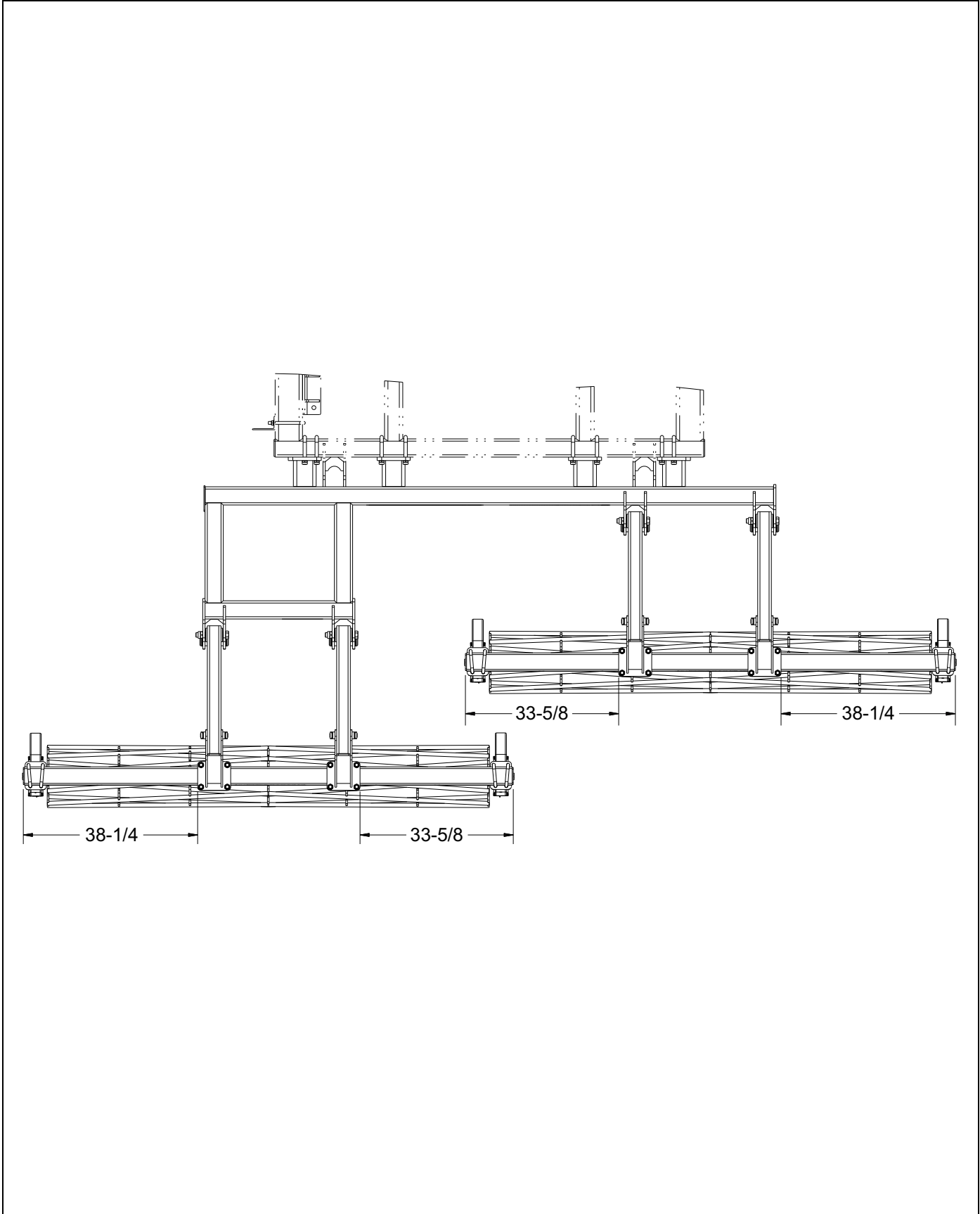


Figure 2-6: Conditioner Reel Placement - 15'

Assembly Instructions

It is very important that your new 6211 Disc be properly assembled, adjusted and lubricated before use.

Illustrations to assist with the assembly process are provided in “**Standard Specifications**” on page 2-1. They show proper disc gang, wing stabilizer bracket, and light mounting bracket spacing. Illustrations in this section show proper assembly procedures. Remove paint from grease fittings. Replace any grease fittings that are damaged or missing. Be sure to return screws, clips, etc., to their original locations.

To insure 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 shown in **Table 2-1**.



DANGER

Disc blades are extremely sharp. Exercise extreme care when working on or near disc blades. Do not allow discs to roll over or fall onto any bodily part. Do not allow wrenches to slip when working near disc blades. Never push wrenches toward disc blades. Do not climb over machine above disc blades. Failure to stay clear of disc blade edges can cause serious personal injury or death.



WARNING

Do not attempt to lift heavy parts (such as the frame, disc gangs, rock shaft, and pull hitch) manually. Use a hoist or a fork lift to move these parts into position.



DANGER

To prevent accidental lowering:

1. All hydraulically elevated equipment must be locked out using the cylinder lockouts.
2. Lower equipment to the ground while servicing or when it is idle.

Failure to take measures to prevent accidental lowering may result in serious personal injury or death.



CAUTION

Be sure to bleed the hydraulic system of all air in lines after installation. Failure to bleed the system of all air can result in improper machine operation.



CAUTION

Incorrect adjustment of disc adjust rods will cause permanent equipment damage.

6211 Disc Frame and Hitch Assembly

IMPORTANT

Read all safety precautions at the front of the section before attempting any of the following procedures.

1. Place the center frame assembly on stands approximately 36" high. The assembly area should be a large level area of sufficient size to accommodate the disc when fully assembled.



WARNING

Do not attempt to lift heavy parts (such as the frame, disc gangs, rock shaft, and pull hitch) manually. Use a hoist or a fork lift to move these parts into position.

2. Attach the hitch weldment to the front of the center frame using 1-1/8-7 x 7-1/2 hex head cap screws, machine bushings, hitch mounting plates, and hex lock nuts (**See Figure 3-1.**) Machine bushings are provided to remove the slack on each side of the ball joints and center the hitch. Use bushings as required.

NOTE

The hitch may be assembled in the upper or lower position depending on matching tractor drawbar height. See "Hitch Adjustment" on page 4-10 for proper adjustment.

3. Move the tongue jack to the forward mounting tube and rotate to parking position to support the front of the hitch.
4. Insert a 3/4-10 x 7 hex head cap screw into the hose holder tube on the right side of the hitch from the bottom side so the threads point upward. Hold in place with a 3/4 prevailing torque flange nut with the flange pointing upward as well. Do not tighten this cap screw, so the hose holder bracket may pivot freely in this joint.
5. Slide the hose holder bracket over the screw and secure with another 3/4 prevailing torque flange nut.
6. Install a 3/8-16 x 3-1/2 all-thread screw in the front of the hose holder bracket and secure with a 3/8-16 hex nut.
7. Slide the hose holder clamp over the 3/8 screw and loosely start the wing nut on top of the clamp. Hydraulic hoses will be routed through the clamp after assembly.

NOTE

The clamp has two sides, so that extend hoses can be located on one side and retract hoses can be located on the other side for reference.

8. Install hose holder clamp at rear of hitch with 1/2-13 x 11 hex head cap screws and hex lock nuts.

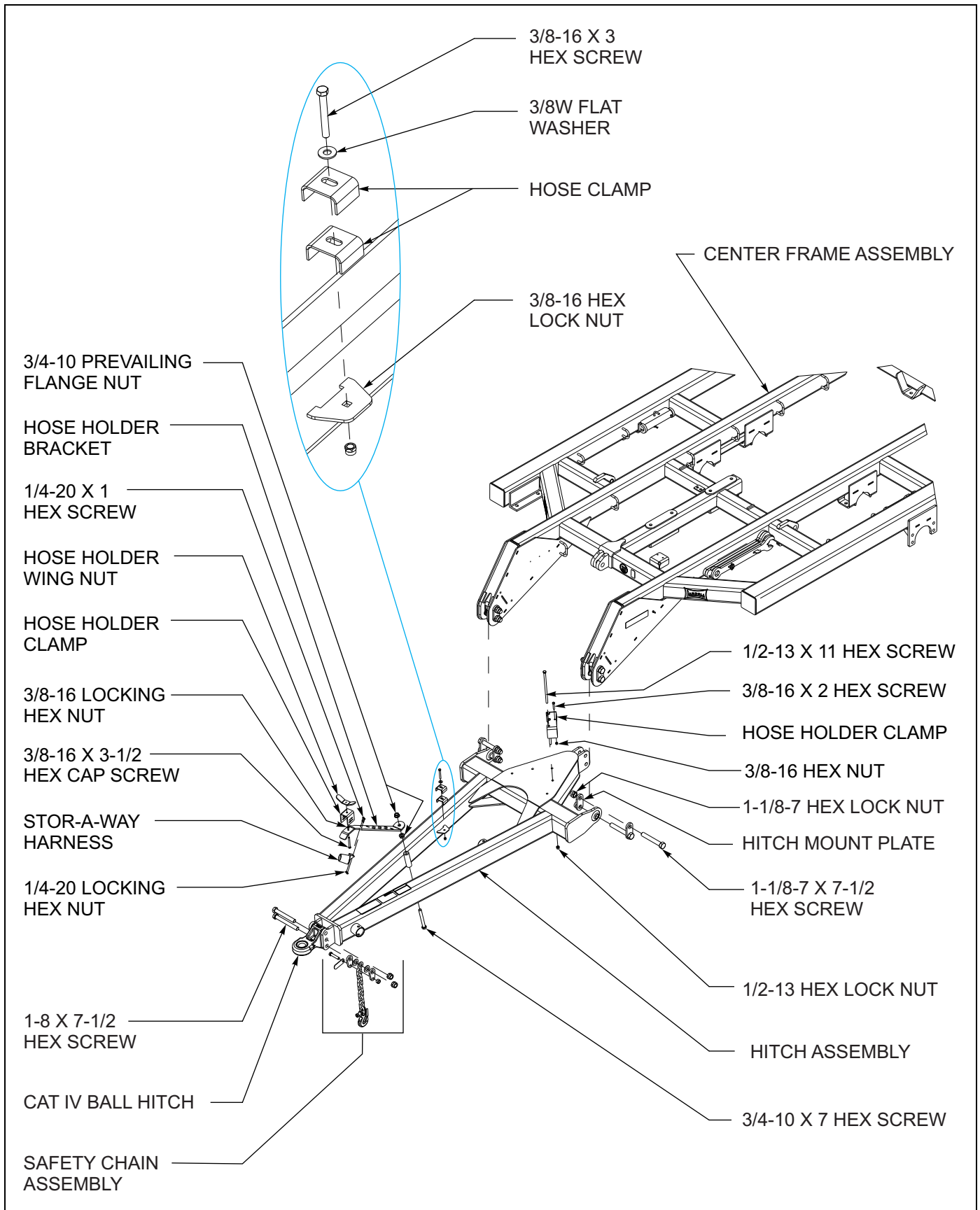


Figure 3-1: Frame and Hitch Assembly

Leveler Assembly

1. Install a hardened steel wear bushing in the leveler L link (**See Figure 3-2.**)
2. Attach the leveler L link to the front mount of the center frame with a 1-1/4-7 x 6 hex head cap screw and hex lock nut.
3. With a 1-8 x 4-1/2 hex head cap screw and hex lock nut attach the leveler ball joint link to the leveler L link.
4. Connect the bottom end of the leveler ball joint link to the rear mounting holes of the hitch using a 1-8 x 4-1/2 hex head cap screw and hex lock nut.

NOTE

*When the hitch is in the upper mounting position, the leveler ball joint link is mounted in the lower holes. When the hitch is in the lower position, the link is mounted in the top mounting holes. See “**Hitch Adjustment**” on **page 4-10** for proper adjustment.*

5. Slide a 1-1/2 Thrust Washer over each side Trunnion of the leveler spring assembly.
6. Slide a leveler spring mount over each side Trunnion of the leveler spring assembly.

NOTE

The plastic bearing flange should install towards the center of the disc against the 1-1/2 thrust washer.

7. Install the leveler spring assembly and mounts to the ears of the main lift, using 1 x 2-1/2 hex head cap screws and hex lock nuts. Install the screws so the nuts are on the outside.
8. Attach the other end of the leveler spring mount with 3/4 x 2-1/2 hex head cap screws and hex lock nuts. Install the capscrews in the lower (closest to the pipe) bolt holes.

NOTE

*If using a harrow attachment, see “**Variable Ratio Adjustment**” on **page 4-9** on which mounting hole to use.*

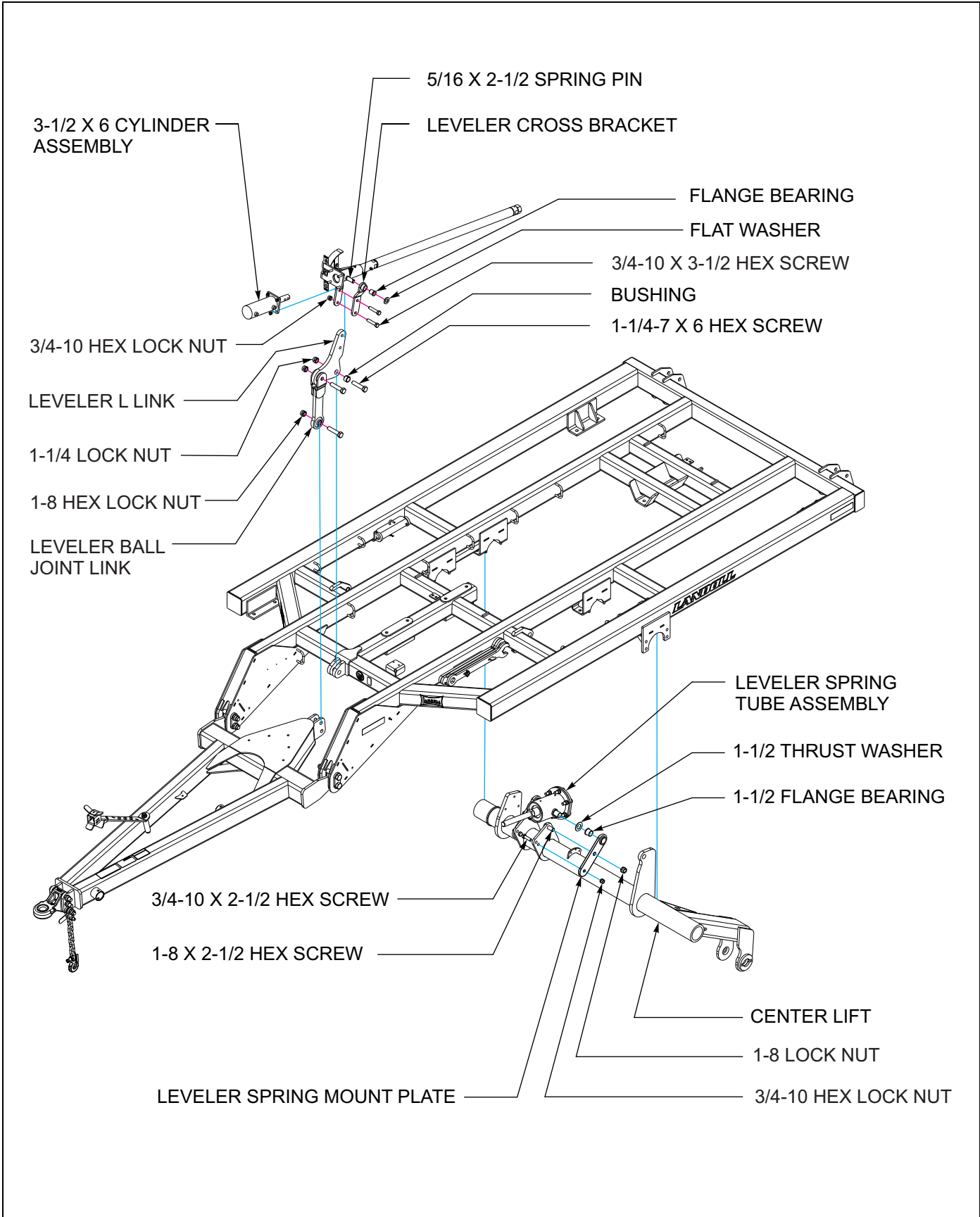


Figure 3-2: Leveler Assembly Installation

Manual Leveler

- Using the manual leveler, screw the leveler tube onto the leveler screw assembly (See Figure 3-3.) Initially leave approximately 3" of threads visible, further adjustment may be required. Rotate the tube so that the zerk hole in the threaded end is pointing upward.
- Install the manual leveler handle assembly into the front end of the leveler tube and fasten with two 5/8-11 x 3-1/2 hex head cap screws and hex lock nuts. Insert a plastic wear flange bearing into the flat side of each leveler cross bracket. Slide the brackets over each side of the manual leveler cross and secure with washers and 5/16 x 2-1/2 spring slotted pins.
- Attach the leveler cross brackets to the top of the leveler L link using 3/4-10 x 3-1/2 hex head cap screws and hex lock nuts.
- Install a grease zerk in the threaded end of the leveler tube.

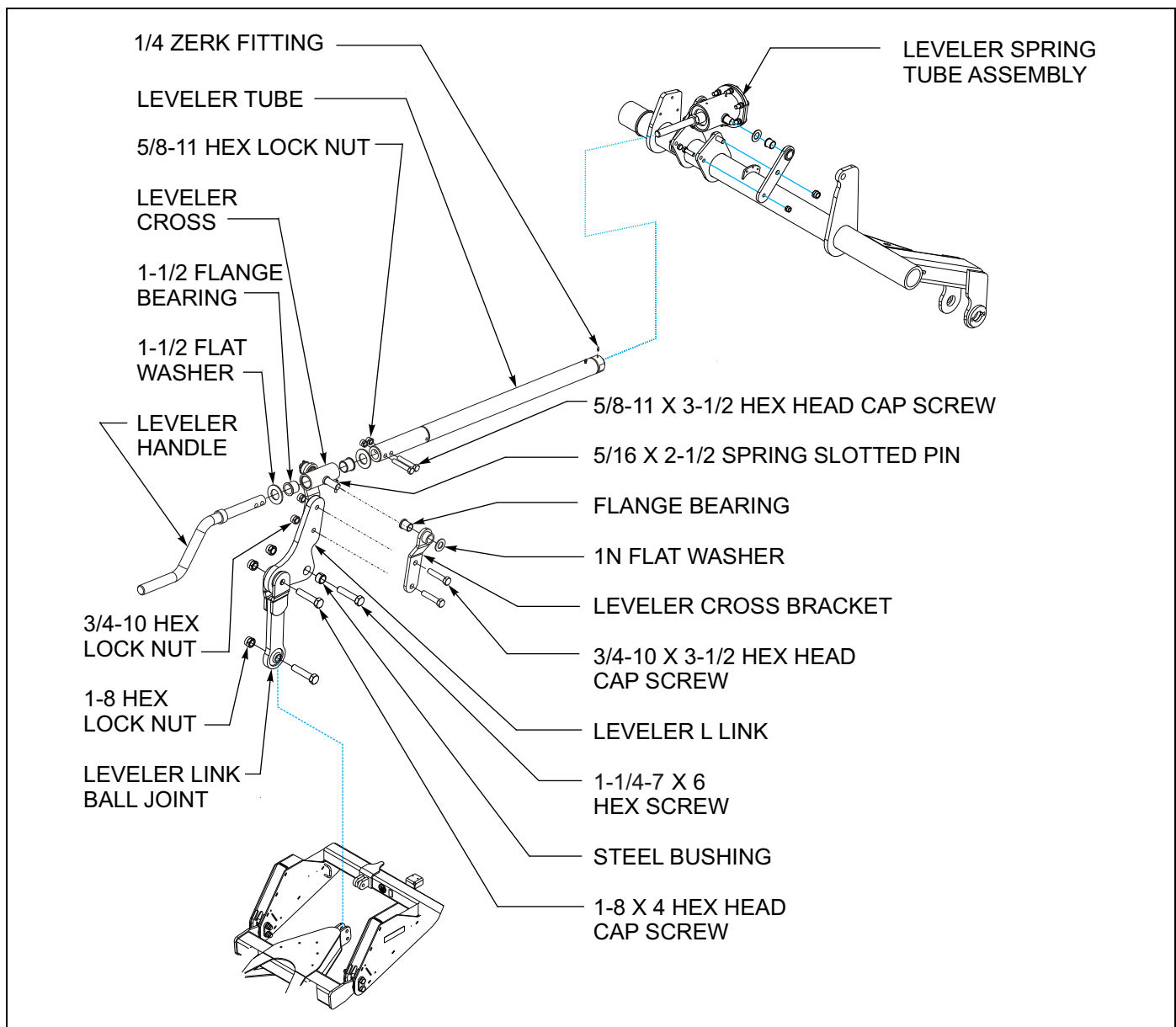


Figure 3-3: Manual Leveler Installation

Hydraulic Leveler (Option)

1. Thread a 1-1/2-6 hex nut onto the leveler screw assembly (**See Figure 3-5.**) Initially leave approximately 5" of threads visible between the 1-1/2-6 hex nut and the leveler spring nut. Further adjustment may be required.
2. Thread the leveler tube onto the leveler screw assembly until it contacts the 1-1/2-6 hex nut. Rotate the tube so the grease zerk hole in the threaded end points upward.
3. Slide the leveler cross over the front end of the leveler tube.
4. Insert the 3-1/2 x 6 hydraulic leveler cylinder into the front end of the leveler tube and pin using two 5/8 steel leveler pins. Rotate the cylinder so the hydraulic ports point to the left side of the implement.
5. Slide the leveler cylinder cross up to the cylinder and secure with 1/2-13 x 2 hex head cap screws and hex lock nuts. Install the screws from the back of the leveler cylinder cross, pointing forward for proper operating clearance. The indicator window of the leveler cylinder cross should point to the right side of the implement.
6. Insert a plastic wear flange bearing in each leveler cross bracket. Install the plastic wear flange bearing from the tube side of the bracket.
7. Slide the leveler cross brackets onto the leveler cylinder cross and secure with washers and 5/16 x 2-1/2 spring slotted pins.
8. Attach the leveler cross brackets to the top of the leveler L link using 3/4-10 x 3-1/2 hex head cap screws and hex lock nuts.
9. Install grease zerks in the threaded end of the leveler tube and the leveler cylinder cross.
10. With a 1/2-13 x 2 hex head cap screw and hex lock nut, attach the leveler indicator gauge to the leveler cylinder cross. Do not over tighten this screw, as the indicator gauge must be free to pivot about this joint.
11. Rotate the leveler tube so the cross-hole for the level indicator rod is horizontal. Wrench-flats are provided at the threaded end of the leveler tube to make this adjustment. Secure the 1-1/2-6 hex lock nut to prevent the leveler tube from rotating further.
12. Insert the threaded end of the leveler indicator rod through the leveler tube cross-hole and the other rod end through the bottom leveler indicator hole. Secure the indicator rod with a 3/8-16 hex lock nut.
13. Install 1/32 restrictor fittings in the leveler cylinder.

NOTE

*These are smaller restrictor fittings than those used in the fold system, and **red** in color.*

14. Install adapters into each port of check valve (**See Figure 3-5.**)
15. Install check valve to hose clamp holder on hitch using 3/8-16 x 2 hex head cap screws and hex lock nuts. Note that ports C1/C2 go to the 3-1/2 x 6 cylinder and ports V1/V2 go to the tractor (**See Figure 3-4.**)
16. Assemble 58" and 67" hoses from the 3-1/2 x 6 cylinder to the check valve.
17. Attach (2) 150" hoses from the check valve to the tractor.

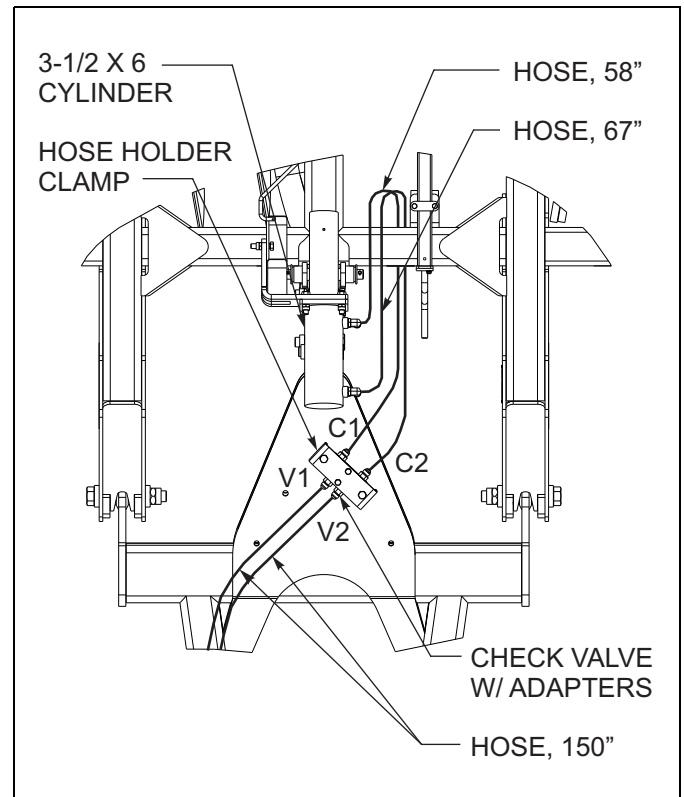


Figure 3-4: Check Valve Placement

ASSEMBLY INSTRUCTIONS

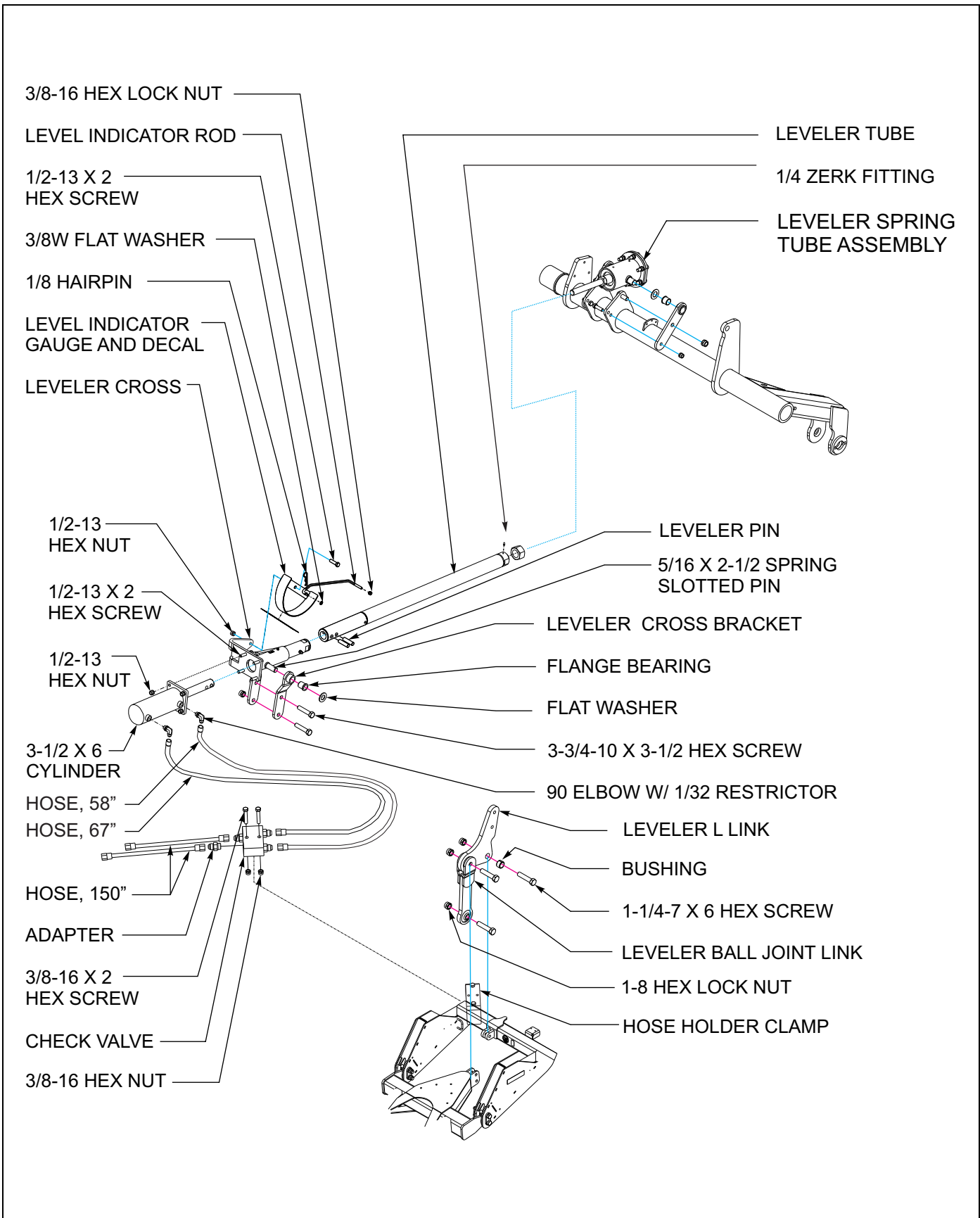


Figure 3-5: Hydraulic Leveler Installation

Center Frame Tires

Install the tire and wheel assemblies on the center section.

Disc Gangs



DANGER

Disc blades are extremely sharp. Exercise extreme care when working on or near disc blades. Do not allow discs to roll over or fall onto any bodily part. Do not allow wrenches to slip when working near disc blades. Never push wrenches toward disc blades. Do not climb over machine above disc blades. Failure to stay clear of disc blade edges can cause serious personal injury or death.

1. Attach the disc gang assemblies to the center section using 3/4-10 x 2 grade 8 hex head cap screws and hex lock nuts (**See Figure 3-6.**) Use a 3/4-10 x 2-1/2 grade 8 hex head cap screw, lubrication bracket and hex lock nut on each center front screws of the left and right front disk gangs.
2. Install 3/4-10 x 8 grade 8 hex head cap screw, and hex lock nut at the center of the front gangs.

NOTE: MOST RIGHT DISC GANG ASSEMBLIES NOT SHOWN FOR CLARITY.

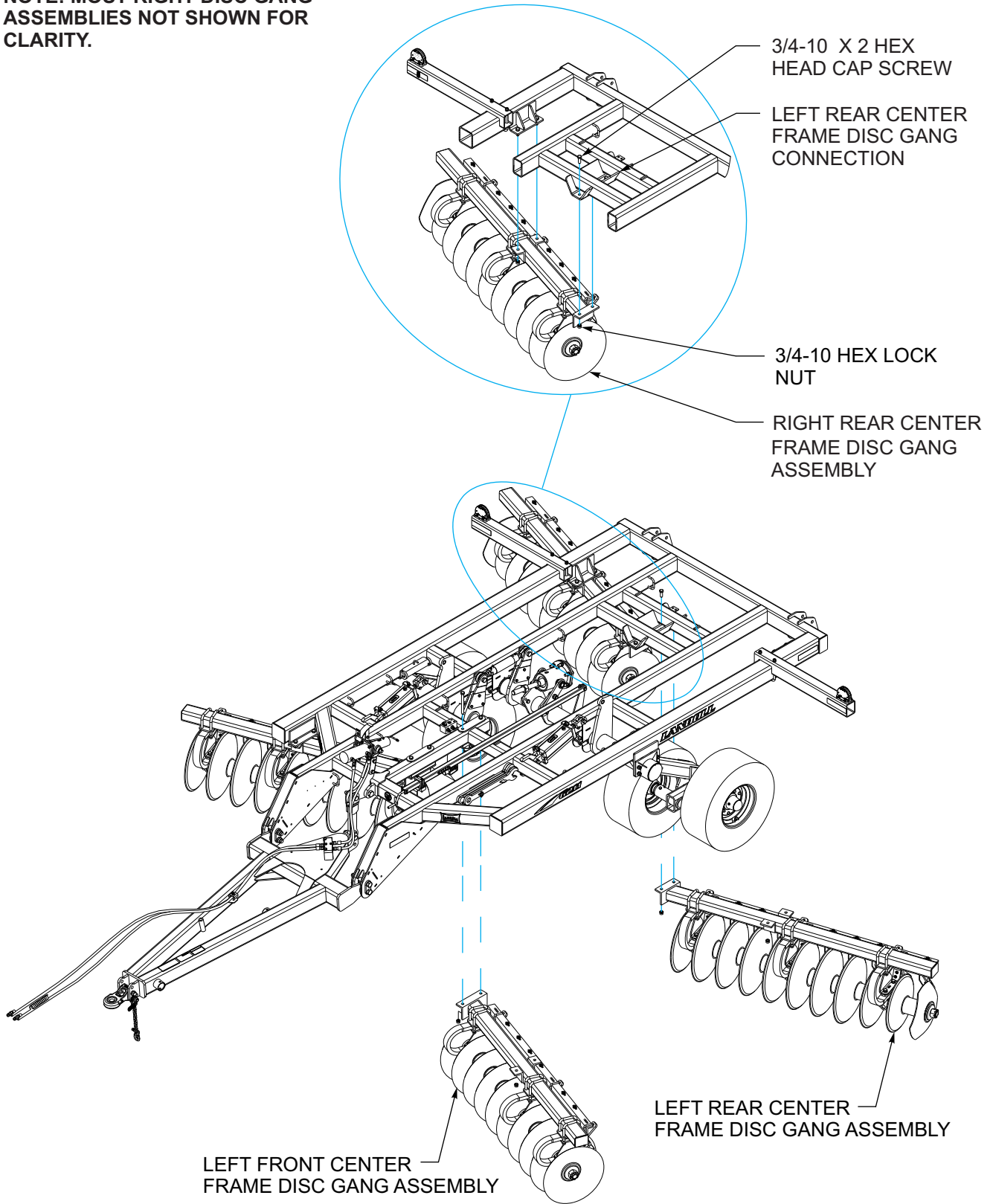


Figure 3-6: Disc Gang Installation

6211 Coil Tine Assembly

See Figures 2-2 and 2-3 for harrow placement dimensions.

1. On 14' and 15' units, install the tine harrow mount assembly to the back of the frame using u-bolts and 3/4 nuts.
2. Install the 2-1/2 dia adjustment pin in the lower hole of each harrow mount. Secure with snap rings on each side of the mount. Insert a 1-8 x 9 adjusting bolt through the 2-1/2 dia pin and loosely secure with a lock washer and hex nut. Loosely install a second 1" hex nut onto each adjusting bolt.
3. Thread a spring assembly onto each 1-8 x 9 adjusting bolt of each of the harrow mounts.
4. Insert the plastic wear bushings into each side of the reel arms.
5. Insert the steel pivot bushing thru the plastic wear bushings of each reel arm.
6. Attach each reel arm to the harrow mounts on the back of the disc using 1-8 x 6-1/2 bolts and locknuts.
7. Connect the other end of the spring assembly to the reel arm using 1 dia pivot pins, 1" ID machine bushings, and 5/16 x 1-1/2 spring pins.
8. Turn the 1-8 x 9 adjusting bolts to set the reel to the desired operating height. Initially set the top of the reel arm level with the top of the frame (**see 20-3/4" spring setting.**) Secure the 1" nut and lock washer against the 2-1/2 dia pin. Lock the other 1" nut again the front end of the spring. Repeat for each conditioner reel arm and set all spring lengths the same for even reel heights.
9. Mount the harrow sections to the bottom of the reel arms using gangbar mount plates, clamp tubes, 3/4-10 x 7 screws, and 3/4-10 locknuts. Install a second 3/4" locknut on the mounting bolts to secure the clamps (**See Figure 3-7.**)

6211 Conditioner Reel Assembly

1. Attach the 3rd harrow arm mounts to the 12' center frames. Attach the conditioner reel mount to the rear of the 14' and 15' models. Use u-bolts and 3/4 locknuts.
2. Install the 2-1/2 dia adjustment pin in the lower hole of each harrow mount. Secure with snap rings on each side of the mount. Insert a 1-8 x 9 adjusting bolt through the 2-1/2 dia pin and loosely secure with a lock washer and hex nut. Loosely install a second 1" hex nut onto each adjusting bolt.
3. Thread a spring assembly onto each 1-8 x 9 adjusting bolt of each of the harrow mounts.
4. Insert the plastic wear bushings into each side of the reel arms.
5. Insert the steel pivot bushing thru the plastic wear bushings of each reel arm.
6. Attach each reel arm to the harrow mounts on the back of the disc using 1-8 x 6-1/2 bolts and locknuts.
7. Connect the other end of the spring assembly to the reel arm using 1" dia pivot pins, 1" ID machine bushings, and 5/16 x 1-1/2 spring pins.
8. Turn the 1-8 x 9 adjusting bolts to set the reel to the desired operating height. Secure the 1" nut and lock washer against the 2-1/2 dia pin. Lock the other 1" nut again the front end of the spring. Repeat for each conditioner reel arm and set all spring lengths the same for even reel heights (**See Figure 3-7.**)

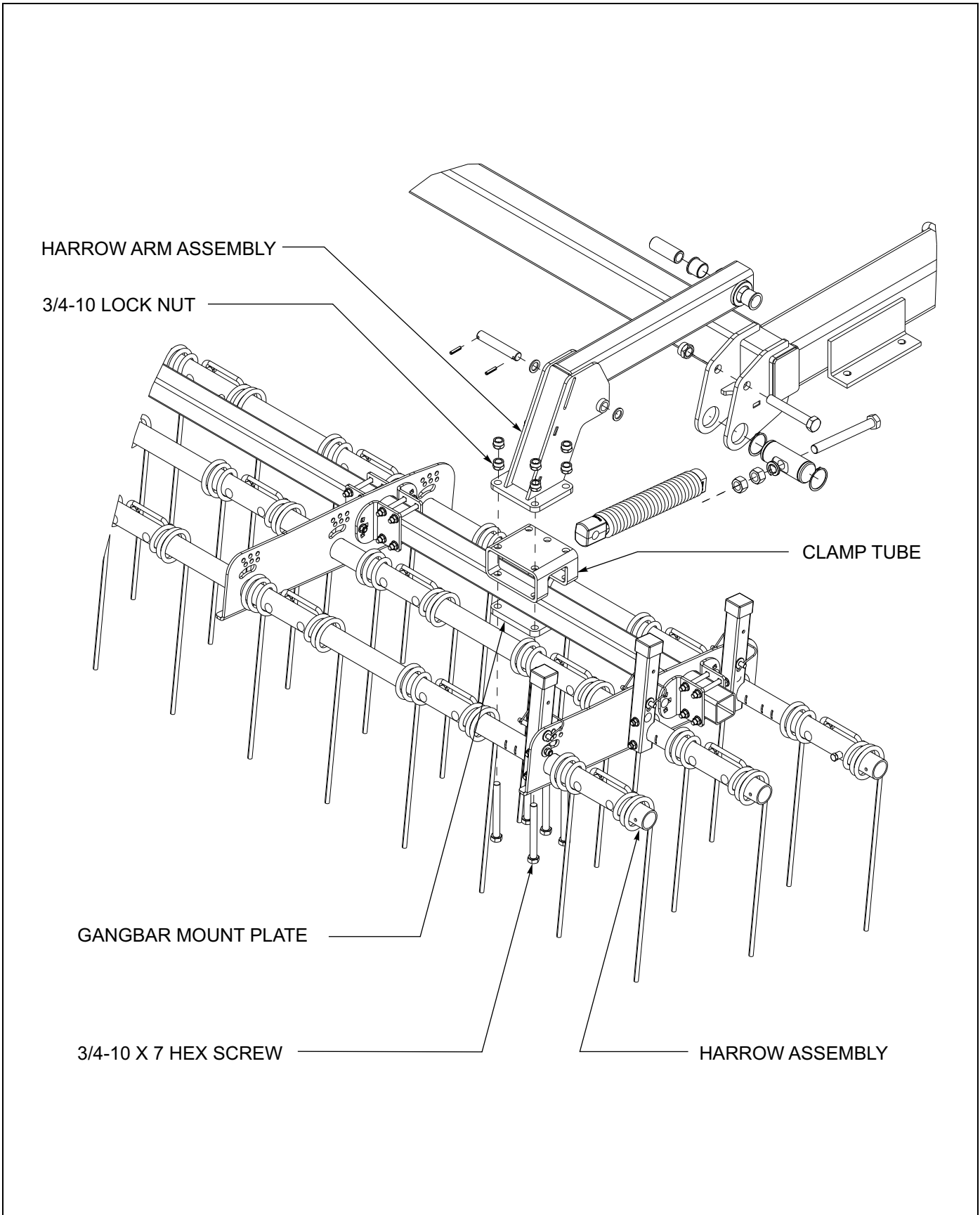


Figure 3-7: Coil Tine Harrow Installation

6211 Hydraulic Conditioner Reel Assembly

1. Attach the 3rd harrow arm mounts to the 12' center frames.
2. For 3rd arm mounts on 12' units, install the 2-1/2 dia adjustment pin in the lower hole of each 3rd arm mount. Secure with snap rings on reach side of the mount. Insert a 1-8 x 9 adjusting bolt through the 2-1/2 dia pin and loosely secure with a lock washer and hex nut. Loosely install a second 1" hex nut onto each adjusting bolt.
3. Attach conditioner reel mount assembly to the rear of the 14' and 15' models. Use u-bolts and 3/4 locknuts.
4. Thread a 1" nut onto each hydraulic reel cylinder shaft, leaving approximately 3-1/2 of threads showing between the end of the cylinder shaft and the nut.
5. Thread the spring assembly onto each cylinder shaft down to the previously installed 1-8 nut.
6. Insert the plastic wear bushings into each side of the reel arms.
7. Insert the steel pivot bushing thru the plastic wear bushings of each reel arm.
8. Attach each reel arm to the mounting brackets and mounts on the back of the disc using 1-8 x 6-1/2 bolts and locknuts.
9. Connect the spring end of the spring & cylinder assembly to the reel arm using 1" dia pivot pins, 1" ID machine bushings, and 5/16 x 1-1/2 spring pins.
10. Connect the cylinder end of the spring & cylinder assembly to the harrow mounts using trunnion mount assemblies, 1-2-13 x 2 screws and lock washers.
11. 3rd arm harrow mounts on 12' units do not use hydraulic cylinders, only the outer reel arms use cylinders. Thread a spring assembly onto each 1-8 x 9 adjusting bolt of each of the 3rd reel arm mounts. Connect the other spring end to the reel arm using 1" dia pivot pins, 1" ID machine bushings, and 5/16 x 1-1/2 spring pins.
12. **See Figures 3-9 and 3-10** for hydraulics assembly.
13. Attach the bulkhead plates to the outer center frame tubes, and inner wings frame tubes with hose clamps.
14. Install the bulkhead fittings in the bulkhead plates.
15. Install the hydraulic fittings in all cylinders as shown on **Pages 3-14 thru 3-16**.
16. Install all hydraulic hoses as shown on **Pages 3-14 thru 3-16**.
17. Use hose brackets, hose clamps and 3/8-16 x 1-1/2 screws, flat washers, and locknuts to secure the hoses on each side of the wing hinge joint.
18. Route outer wing hoses along the wing gang bars and secure with hose clamps.
19. Secure center frame hose to the rear gang bar and outer frame tubes with hose clamps.
20. Route lead hoses from the manifold along the inside right frame thru the hose loops with the other hoses to the front of the machine.
21. Remove the existing 3/8 bolt through the front of the hose holder bracket on the front of the hitch. Install a longer 3/8-16 x 4-1/2 bolt to accept the additional hoses.
22. Install hose wrap on hose ends to pair the hydraulic reel hoses.
23. Attach the reels to the bottom of the reel arms, using gangbar mounting plates, 3/4-10 x 6 bolts, and locknuts. Install the bolts from the bottom so the threads point upward. Add second locking nut to secure the bolts.
24. Turn the cylinder shaft using the wrench flats on the shaft, in or out to the desired reel height. Lock the 1" nut against the front end of the spring. Repeat for each conditioner reel arm and set all spring lengths the same for even reel heights.
25. For 3rd reel arm mounts, adjust the 1-8 x 9 adjusting bolt in or out to match the spring length to springs on the hydraulic cylinder mounts. Lock the 1" nut and lock washer against the 2-1/2 pivot pin. Secure the other 1" nut against the front of the spring assembly.

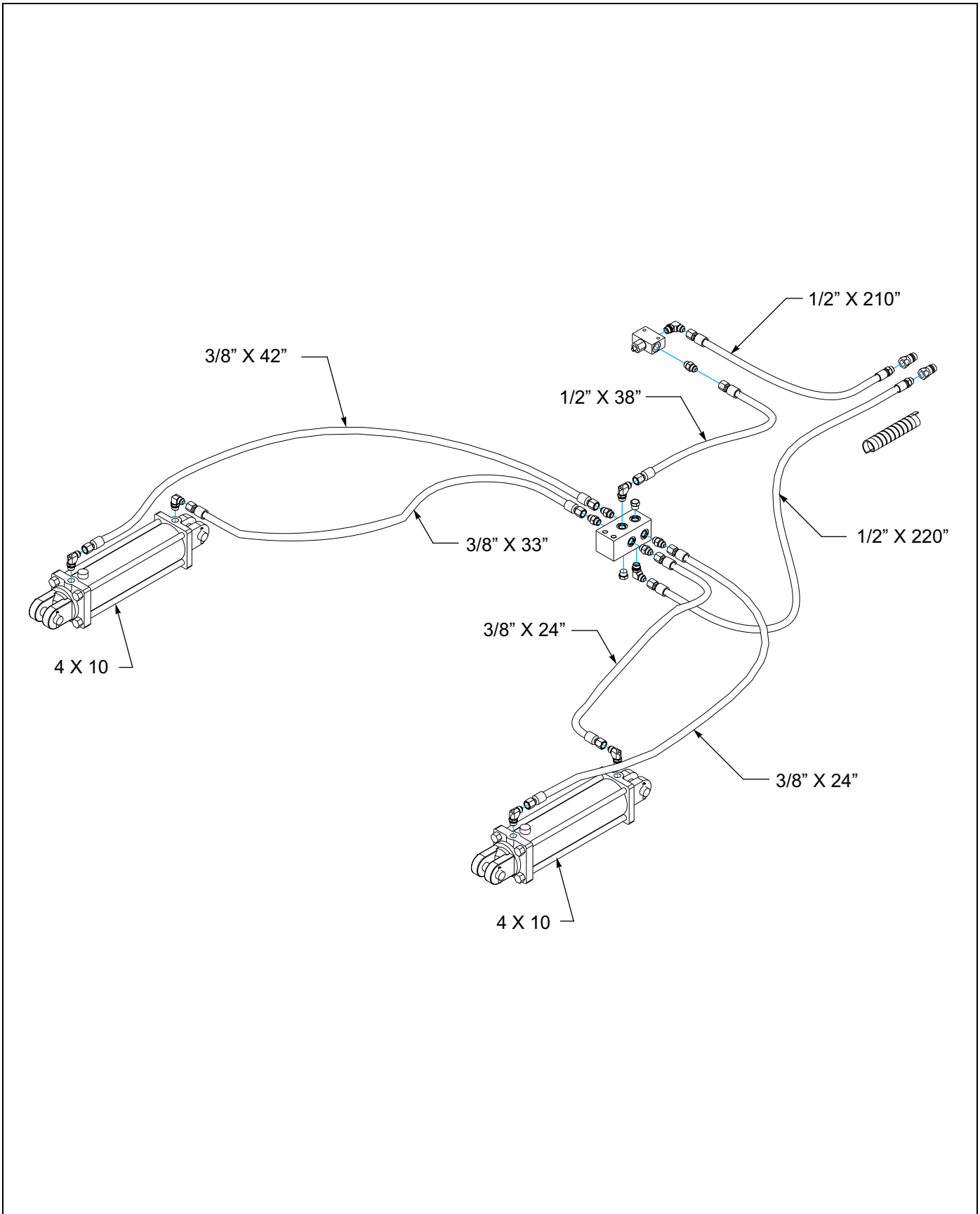


Figure 3-8: Lift Hydraulic Installation 12'-15'

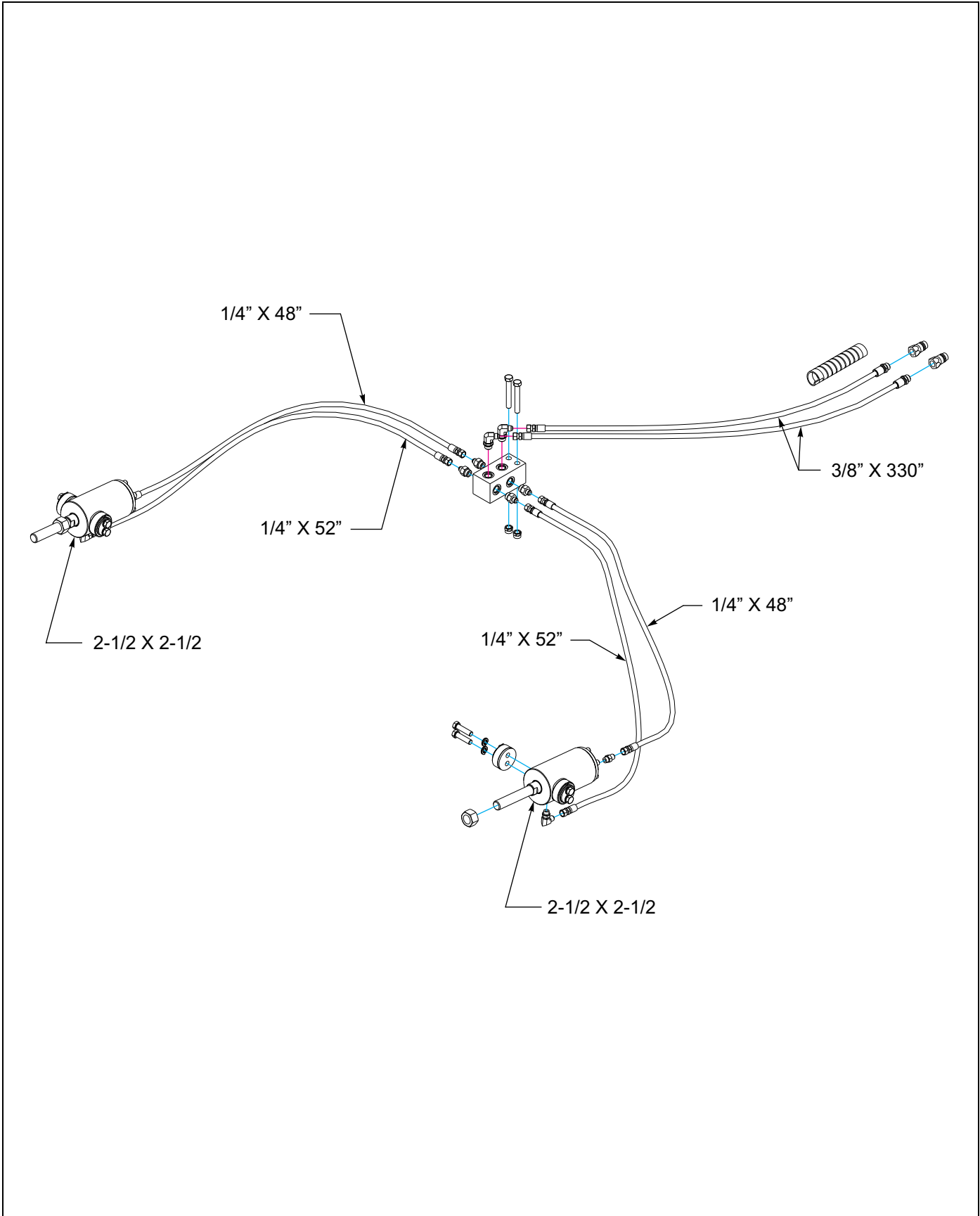


Figure 3-9: Hydraulic Reel Installation - 12'

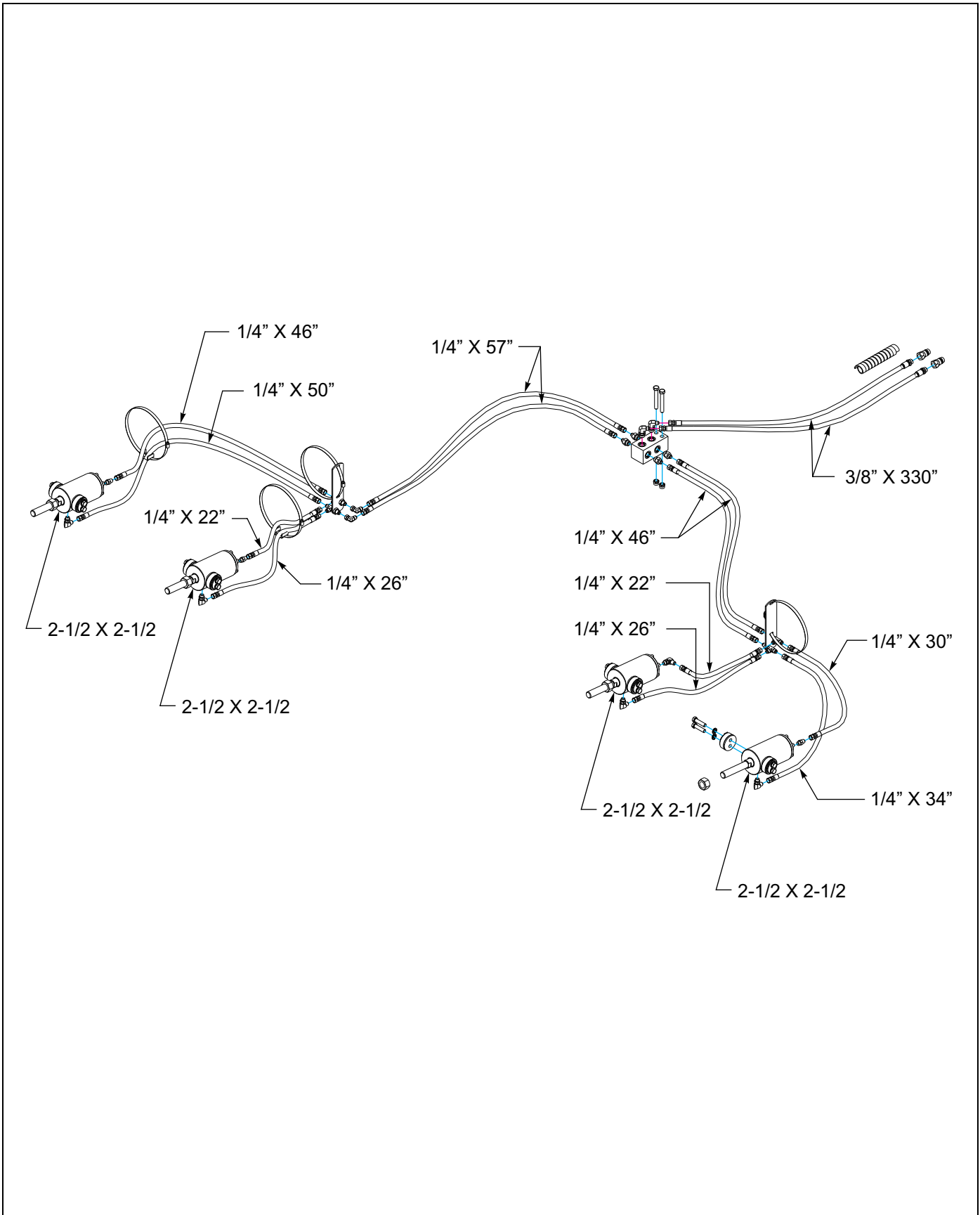


Figure 3-10: Hydraulic Reel Installation - 14' & 15'

LED Light and SMV Bracket Installation

NOTE

Refer to pages 2-4 thru 2-9 for light bracket placements.

1. Attach left and right light brackets with reflectors to center frame using u-bolts and hex lock nuts (See Figure 3-12.)
2. Attach ag amber single LED lamps to light brackets using 1/4-20 x 1-1/4 hex head cap screws and hex lock nuts.
3. Attach left tail light mount to frame assembly using u-bolt and 5/8-11 flange head serrated nuts.
4. Attach right tail light mount and ag flasher control module to frame assembly using u-bolt and 5/8-11 flange head serrated nuts. Be sure that the control module is set so that the 6 pin connector faces the right side of the machine.
5. Attach the ag red single LED lamps to tail light mounts using 1/4-20 x 1-1/4 hex head cap screws and hex lock nuts.

IMPORTANT

Make sure lights are positioned for maximum visibility from the rear.

6. Install the rear warning light harness to the frame. Connect 2 pin and 3 pin ends to each of the warning lights. Connect 6 pin to the ag flasher control module. **See Figure 3-11 for LED harness wire designations.**
7. Attach front warning harness to frame. Connect 4 pin end to the ag flasher control module.
8. Insure that the harnesses are clear of any moving parts and secure the harnesses with tie wraps provided.
9. Install the stor-away holder to hose holder on hitch with 1/4-20 x 1 hex head cap screws and hex lock nuts.
10. Attach SMV emblem and mounting bracket to rear center frame bar using u-bolt, 1/4-20 x 1 hex head cap screws, and hex lock nuts. The SMV sign should be centered on the back bar of the frame.

7-PIN CONN	4-PIN TOWER	CIRCUIT	WIRE COLOR			
1	D	GROUND	GROUND			
2		WORK LAMPS	BLACK			
3	B	LEFT FLASHING & TURN	YELLOW			
4		STOP LAMPS	RED			
5	A	RIGHT FLASHING & TURN	GREEN			
6	C	TAIL LAMPS	BROWN			
7		SWITCHED POWER (12V)	BLUE			

FRONT WARNING HARNESS

	1	2	3	4	5
	2-PIN TOWER	3-PIN TOWER	6-PIN SHROUD	3-PIN TOWER	2-PIN TOWER
BLACK LEFT TURN			A	C	
WHITE GROUND	A	A	B	A	A
BROWN TAIL LIGHT		B	C	B	
YELLOW LEFT TURN			D		B
GREEN RIGHT TURN	B		E		
RED RIGHT TURN		C	F		

REAR WARNING HARNESS

Figure 3-11: LED Light and SMV Harness Wire Designations

ASSEMBLY INSTRUCTIONS

NOTE: LED LIGHTS, HARNESS, AND MODULE DO NOT INTERCHANGE WITH PREVIOUS LIGHTING SYSTEM.

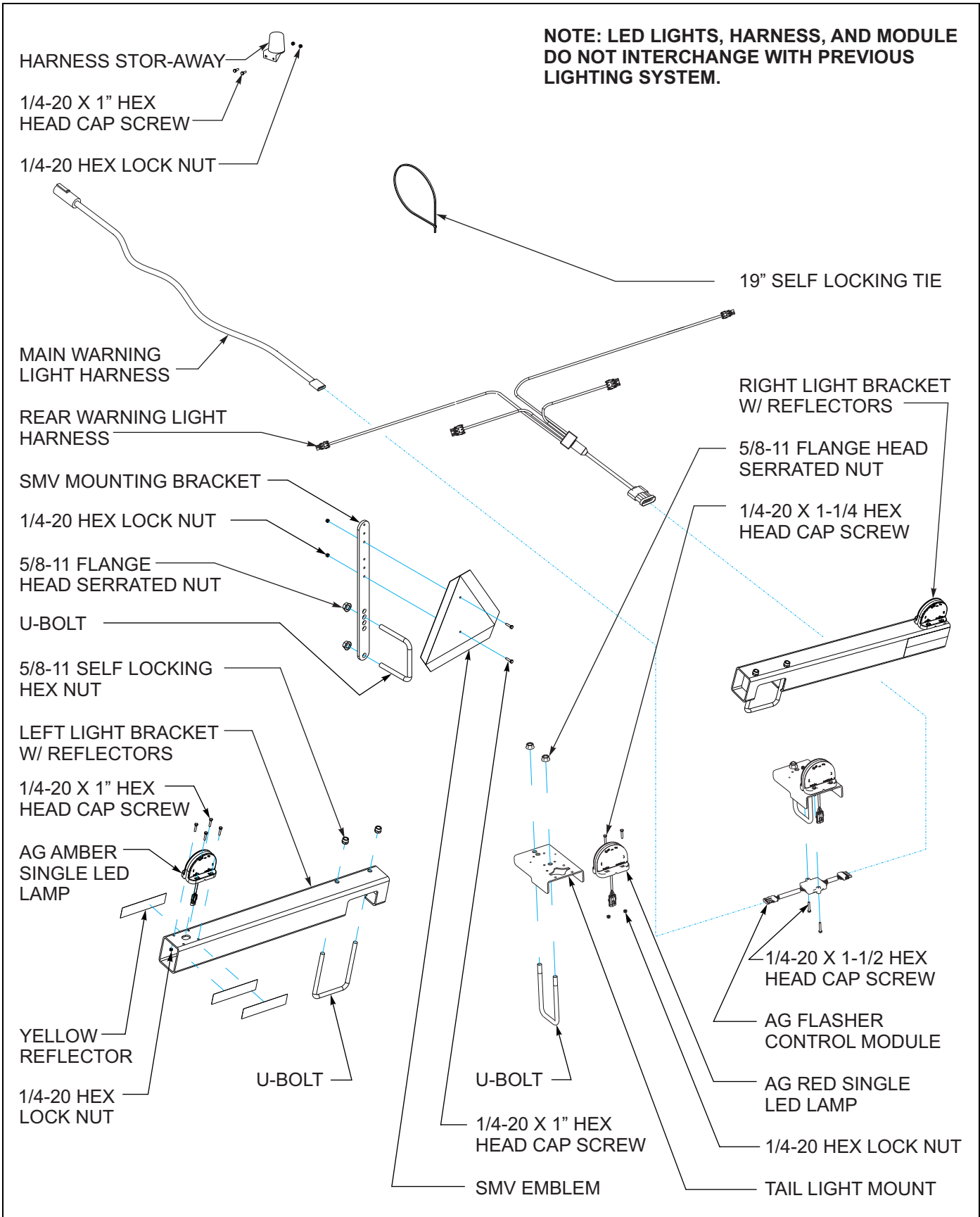


Figure 3-12: LED Light and SMV Bracket Installation

Rear Tow Hitch (Option)

1. Attach the rear tow hitch assembly to the rear bar of the center frame using rear tow hitch clamp plates, 3/4-10 x 6-1/2 hex head cap screws, and hex lock nuts (See Figure 3-13.) The tow hitch should be centered on the back bar of the frame.
2. Attach coupler mount bracket to the left side of the rear tow hitch plate using 1/2-13 x 1-1/4 hex head cap screws and hex lock nuts (See Figure 3-14.)
3. Pull tandem adapter harness through coupler mount bracket and attach with 5/16-18 x 1 hex head cap screws and hex lock nuts.
4. Connect female couplers, coupler dust plugs, 3/8 x 120" and 270" hose assemblies, and male couplers. Attach hose assemblies between coupler mount bracket and coupler plate using 3/8-16 x 2-1/2 hex head cap screws and hex lock nuts.
5. Connect tandem adapter harness to the main warning light harness and the enhanced lighting module.
6. The hydraulic hoses will route along the left side of the rear tow hitch, over the top of the back frame tube on the disc and then follow the rest of the hoses and hose loops to the front of the disc so they can plug directly into the tractor.

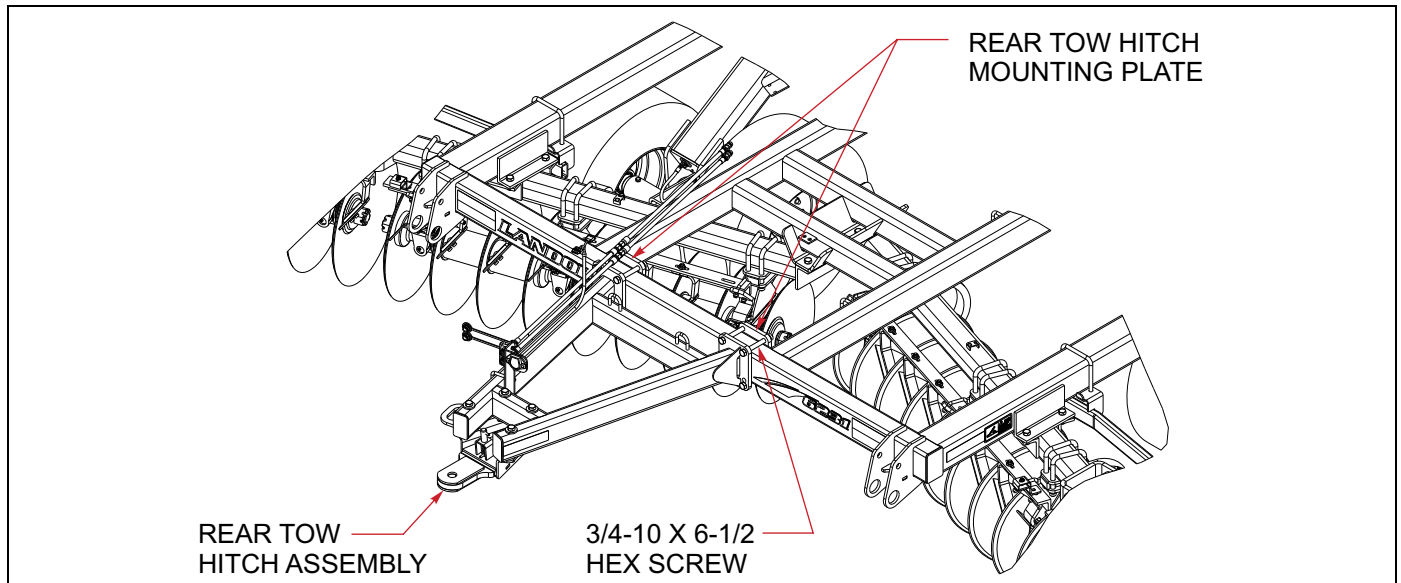


Figure 3-13: Rear Tow Hitch Installation

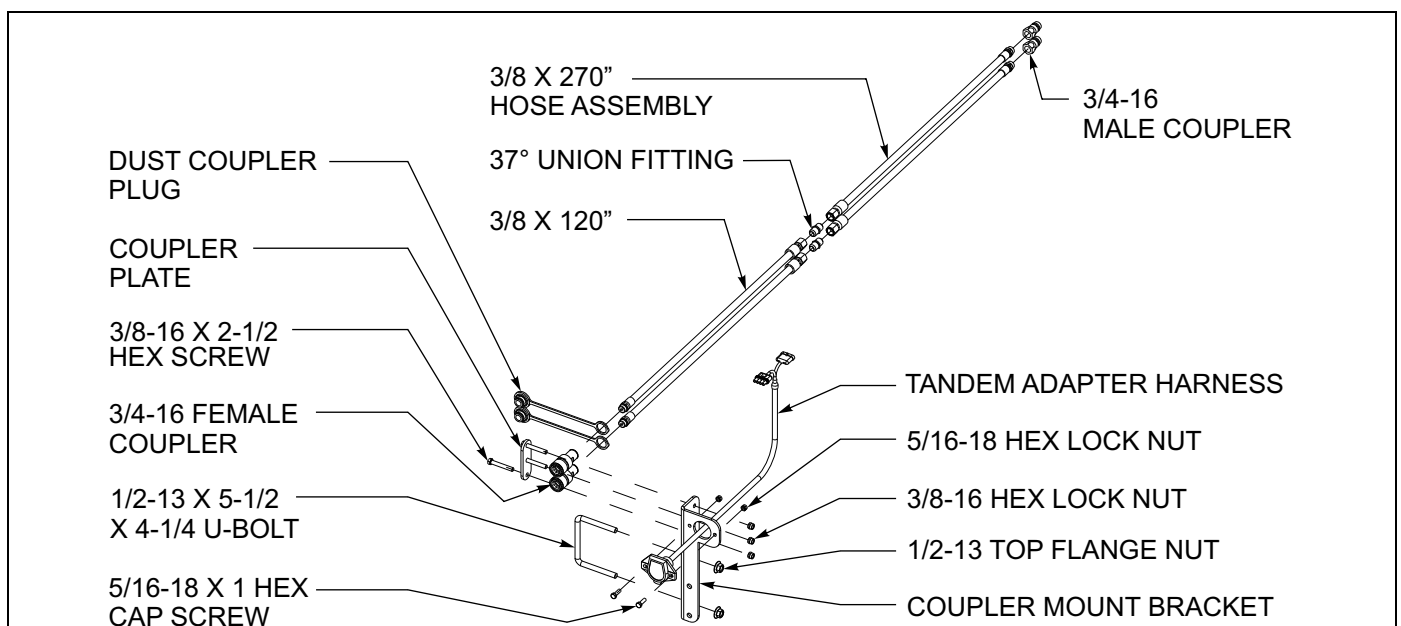


Figure 3-14: Rear Tow Hitch Hydraulic Installation

Final Assembly

1. Attach a tractor to the implement and charge the lift system hydraulics as described in (**“Hydraulic Lift System” on page 4-3.**)
2. Install the transport locks on both 4 x 10 master cylinders on the center frame.
3. Connect the hydraulic hoses on the optional hydraulic leveler to the tractor (if equipped). Fully extend and retract the hydraulic leveler several times to remove any air. (**“See Hydraulic Leveler Gauge Adjustment” on page 4-8**) for any further adjustments.
4. Connect lights to the tractor and verify operation.
5. Check tires for proper inflation.
6. Level the disc from side to side as described in (**“Leveling (Side To Side)” on page 4-6.**)
7. Inspect the final implement assembly, and verify that all bolts have been tightened, cotter pins spread, and that there are no leaking hydraulic connections.
8. Rotate each disc gang to verify that each gang rotates freely. Adjust any scrapers that may have shifted during shipment or assembly.
9. Lubricate the disc at all locations as shown in (**“Lubrication Maintenance” on page 4-21.**)
10. Touch up with paint any areas that may have been scratched during moving, handling, or assembly.
11. Thoroughly read and understand the operating section before using the disc.

Operation and Maintenance



DANGER

Never allow anyone to ride on the 6211 Disc 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.



DANGER

Disc blades are extremely sharp. Exercise extreme care when working on or near disc blades. Do not allow discs to roll over or fall onto any bodily part. Do not allow wrenches to slip when working near disc blades. Never push wrenches toward disc blades. Do not climb over machine above disc blades. Failure to stay clear of disc blade edges can cause serious personal injury or death.



DANGER

When transporting the unit, place cylinder lockouts in the transport lock position after fully extending the cylinders. Insert the lockout pins to secure the cylinder lockouts. Failure to lockout the cylinders can cause the unit to settle during transport, which 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.



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 Landoll 6211 Disc is designed to be pulled by tractor equipped with a double lip or clevis type hitch. If your tractor is not equipped as such, you need to purchase the hitch from your local tractor dealer. Before attaching the Disc, prepare the tractor as follows:

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

Disc Preparation

1. Prior to operating the 6211 Disc, 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.
5. Check disc scrapers for proper adjustment to the disc blade (**See Figure 4-1.**)
6. Lubricate the machine (**See Figure 4-19**) (**Also refer to "Lubrication Maintenance" on page 4-21.**)

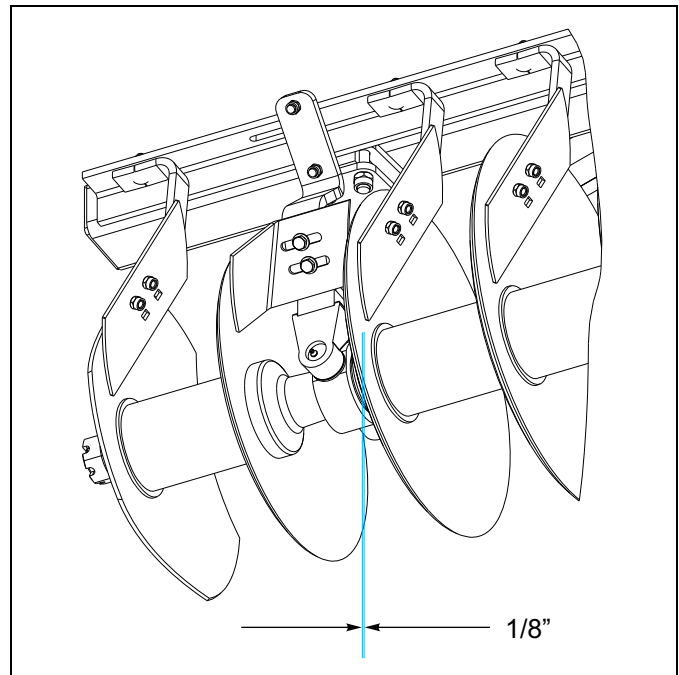


Figure 4-1: Disc Scraper Adjustment to Disc Blade

Attaching To The Tractor

1. Align the tractor drawbar with the machine. Raise or lower the disc ring hitch, as needed, using the swivel jack. Attach the unit with proper size hitch pin.
2. Always place the swivel jack on the interior mount before setting the machine in motion.
3. Clean all hydraulic couplings and attach to the tractor.
4. Fully extend the hydraulic lift wheel cylinders, and place the cylinder lockouts in the transport lock position over the cylinder rods. Secure the lockouts with the lockout pins.
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.
6. Plug in the 7-pin connector for the lights.
 - a. The tractor should have a good clean receptacle, free of dirt and corrosion.
 - b. Make sure the 7-pin connector is inserted all the way in, and allows the cover to latch over the keyway to secure it in place.

NOTE

The lighting system requires a good ground connection and if the lights do not seem to work right check the installation of the 7-pin connector and the condition of the pins.

Hydraulic Lift System

The disc is equipped with a rephasing hydraulic lift system to raise and lower the unit in the field.

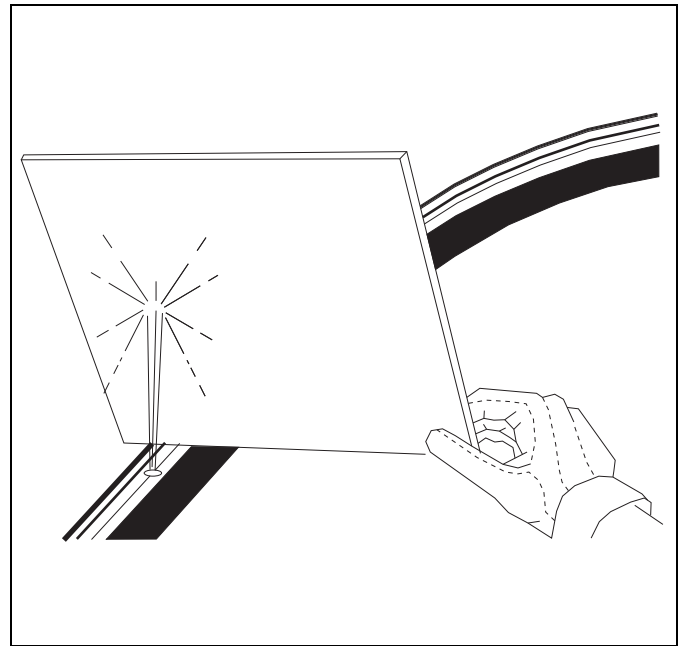


Figure 4-2: Hydraulic Leak Detection



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 4-2.) Keep all components (cylinders, hoses, fittings, etc.) in good repair.

1. When the cylinders are fully extended and held in this position, oil is able to flow through the cylinders (or rephase) and allow the cylinders to operate in sync. This also allows the system to purge any air that may enter the system without having to loosen or crack hydraulic lines.

OPERATION AND MAINTENANCE

- The hydraulic system is not filled with oil and should be purged of air before transporting and field operations. Carefully hitch the disc to the tractor and connect the hydraulic lift hoses.
- Check to make sure the tractor hydraulic reservoir is full of the manufacturer's recommended oil. Slowly raise the machine, and continue to hold the hydraulic lever until all lift cylinders are fully extended.
- With all cylinders fully extended, remove the 1-3/8 x 10 transport lockouts (See Figure 4-3.)

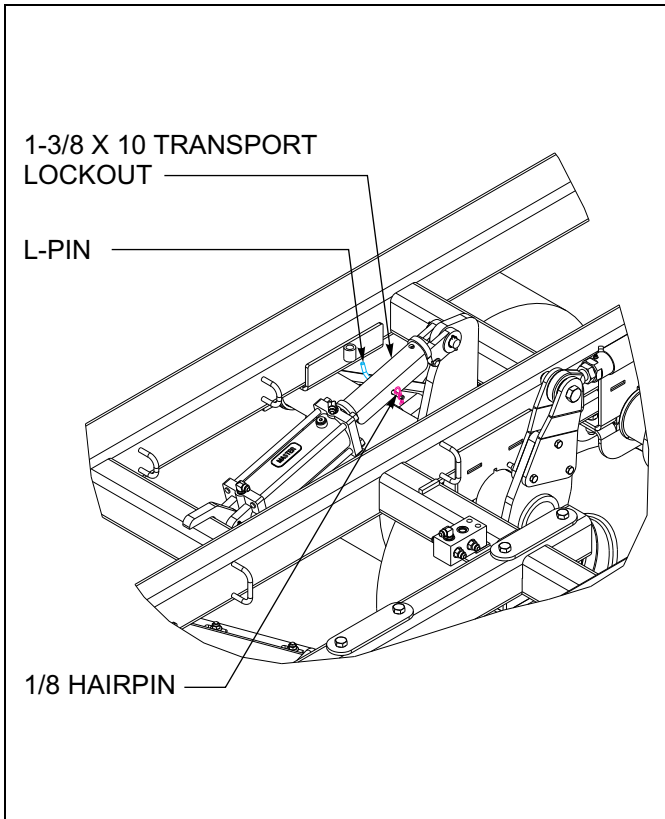


Figure 4-3: Installed Transport Locks

- Store transport lockouts as shown in Figure 4-4.
- Lower and raise the unit to verify that all cylinders are working simultaneously throughout the stroke. If the cylinders are not working evenly or together, fully extend the lift cylinders and continue to hold the lever to purge any remaining air. Do not loosen any hoses or fittings. Recheck tractor reservoir to make sure it is within operating limits.
- Always fully extend the cylinders and hold the lever to ensure the cylinders are rephased before starting any field operation. This will keep all cylinders in time and level when operating.

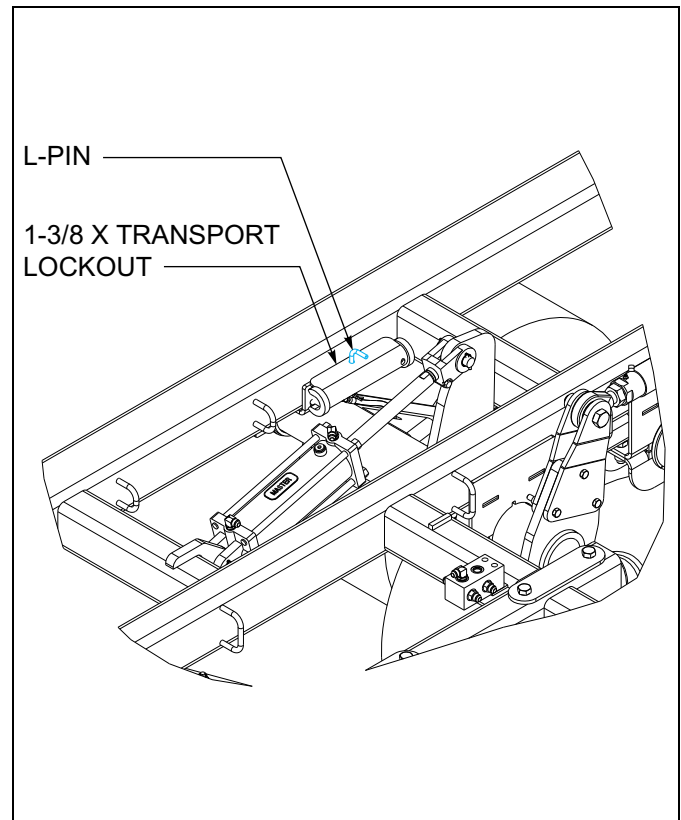


Figure 4-4: Stored Transport Locks

General Operation

1. The horsepower requirements are typically 8-10 horsepower per foot of cut. This will vary widely due to speed, depth, moisture, residue and types of soils. Local dealers can help in making recommendations for your areas.
2. Operating speed is typically 4.5-6 mph. Excessive speed can cause the unit to bounce, uneven depth, and create a ridge on the outside edges. Too low of speed may not allow the unit to properly fill in the center furrow.
3. Lift wheels must always be in contact with the ground and carrying some implement weight. Lift wheels are used to gauge the depth of each frame section and to control the leveling feature. Maximum discing depth can not be achieved by raising the lift wheels off the ground. Little or no weight on the lift wheels will cause the frame sections to gouge, side-draft, and buckle producing inconsistent cutting depth.
4. Do not turn with the disc in the ground, this can put excessive side load on the gangs and hitch. Raise the unit slightly when making turns to prevent gouging and pushing a ridge.

Field Operation

1. Raise the unit to take the weight off of the transport locks. Remove the transport locks from the lift cylinders (on the main frame only.) Store the transport locks on the retainers above the main lift **(See Figure 4-4.)**

Leveling (Side To Side)

Leveling the disc from side-to-side, involves leveling the center section side-to-side. This will insure the frames are operating evenly and consistent depth. The unit should be level side-to-side when operating in the field.

NOTE

Do not attempt to level the center frame by only adjusting the radius rod.

1. To level the center section, lower the unit to the ground, and remove the adjustable radius rod between the main lifts on the center section.
2. Fully raise the implement and hold the hydraulic lever for approximately 1 minute to rephase all lift cylinders. Then lower the implement to the ground and fully retract the cylinders. (Note: The depth stop will need to be adjusted out of the way to allow the cylinders to fully retract.) The two master cylinders on the center frame should measure 22-1/4" at the pin centers, and should not be any visible plated shaft showing.
3. Lay a straight edge across the top of the frame and measure from the top of the frame to the top of the walking beam spindle of both center frame axles. If the measurements are more than 1/4" different, the cylinders will need adjusted (See Figure 4-5.)

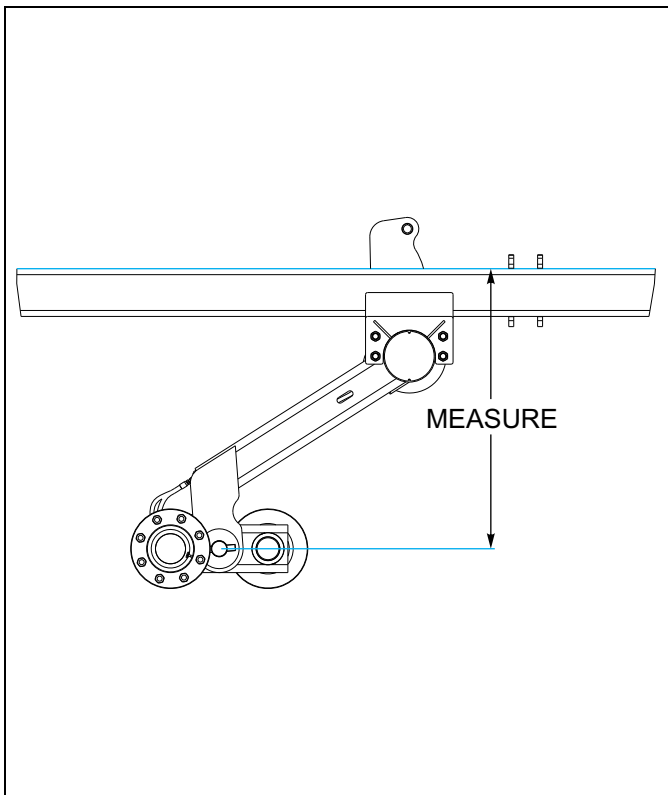


Figure 4-5: Leveling from Side to Side

4. To adjust the cylinders, loosen the locking bolts through the end of the cylinder clevises. Use a wrench (on the flats behind the cylinder clevis) to turn the cylinder rod thus extending/retracting the cylinder clevis. Adjust the clevises equally. By turning one cylinder out one turn and turning the other cylinder rod in one turn will change the lift wheel measurement approximately 1/4".
5. Verify that the cylinders are still fully retracted and check the measurement from the walking beam spindle to the top of the frame. Adjust the cylinder rods until the measurement is within 1/4".
6. Retighten the locking bolts through the ends of both cylinder clevises.
7. With the cylinders still fully retracted, install the adjustable radius rod between the two main lifts. This will insure the lifts are properly timed and not binding. The radius rod centers will be approximately 21" long (See Figure 4-6.)

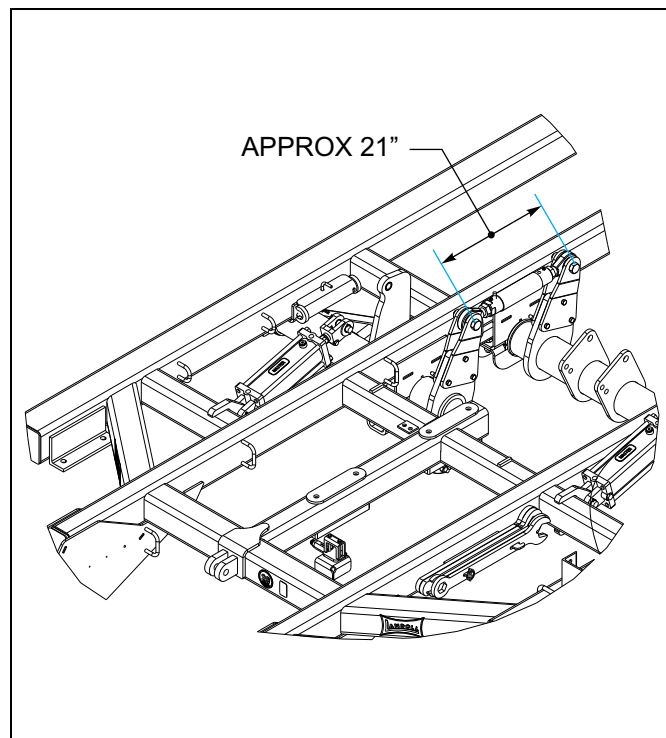


Figure 4-6: Radius Rod Measurement

Leveling (Front-to-Rear)

1. The leveling feature on the disc is used to keep the disc level when raising the unit from a working position to a transport position. The leveling feature is also used to level the unit from front-to-rear to perform a level discing operation in the field.
2. The unit should be level from front to rear and the soil behind the disc should be level without furrows or ridges. If there is a presence of a center ridge from the rear gangs, the rear gangs are too deep. If there is a furrow left from the rear gangs the front gangs are too deep.
3. On machines with manual leveler adjustment, turn the leveler handle in or out to adjust the front-to-rear level (**See Figure 4-7.**) By turning the leveler handle in (clockwise) will lower the rear gangs in deeper. By turning the leveler screw out (counter-clockwise) will raise the rear gangs.
4. Implements with the optional hydraulic leveler, can make adjustments on-the-go from the tractor. A reference gauge is provided on the implement for a guide.

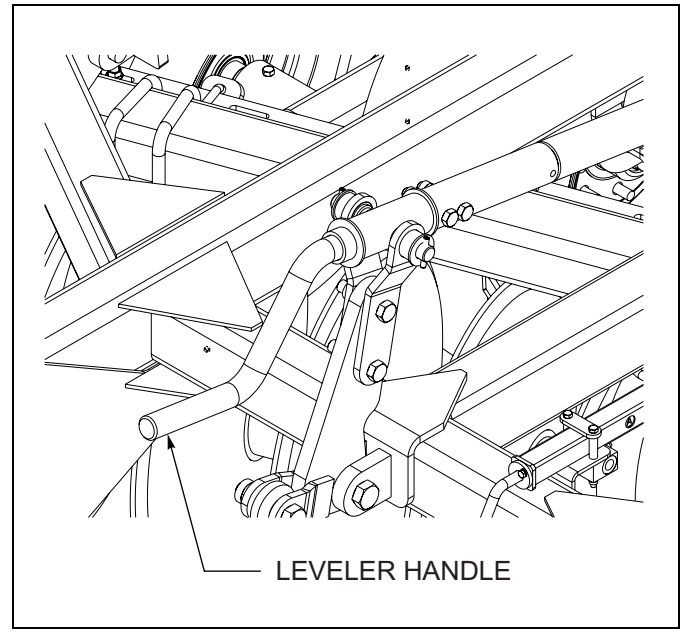


Figure 4-7: Manual Leveler Adjustment

Hydraulic Leveler Gauge Adjustment

If a unit is equipped with an optional hydraulic leveler, and the unit is level in the field, but the reference gauge is not in the middle of the adjustment range, the gauge may be adjusted.

1. Lower the disc to the ground to remove the load on the leveler assembly.
2. Remove the level indicator rod from the leveler tube (See Figure 4-8.)
3. Loosen the 1-1/2-6 hex lock nut at the rear of the leveler tube (an adjustment wrench is provided for this.)
4. Screw the leveler tube in or out. Insert the indicator rod to check if the reference gauge is centered. Adjust as required to center the reference gauge. Make sure the hole for the indicator rod is horizontal and tighten the locking nut on the leveler screw.
5. Install the level indicator rod in the leveler tube and level indicator gauge.

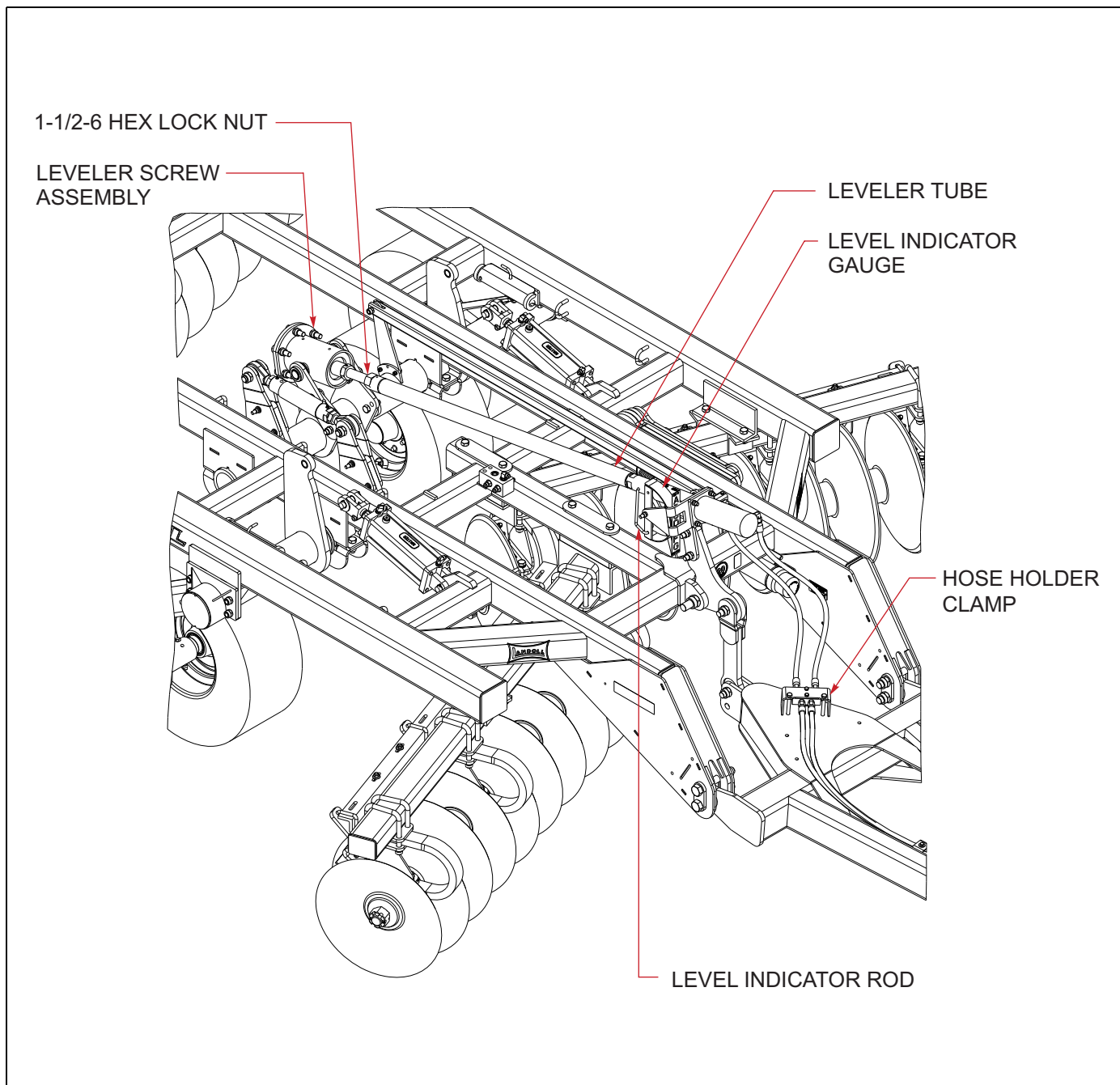


Figure 4-8: Hydraulic Leveler Gauge Adjustment

Variable Ratio Adjustment

The leveler is also equipped with a variable ratio adjustment. This is located at the rear of the leveler and above the center lift. Connect the leveler spring mount to the lower holes of the center lift mount for normal discing operations. The upper holes on the center lift are for a reduced leveler ratio. This is useful when attaching heavy harrows to the rear of the disc. The reduced leveling action helps to pickup the heavier attachments quicker and provides more transport height when traveling.

1. To change the variable ratio adjustment, lower the implement to the ground and relieve the load on the lift system.
2. Extend or retract the leveler assembly (manual or hydraulic), until the load is removed from the leveler assembly (**See Figure 4-9.**)
3. Loosen, but do not remove the 1 x 2-1/2 bolts in the leveler spring mount. Remove the 3/4 x 2-1/2 bolts.
4. Reinstall the 3/4 x 2-1/2 bolts with the leveler spring mounts in the desired position. The leveler (manual or hydraulic) assembly will require some adjustment to connect to the new position.

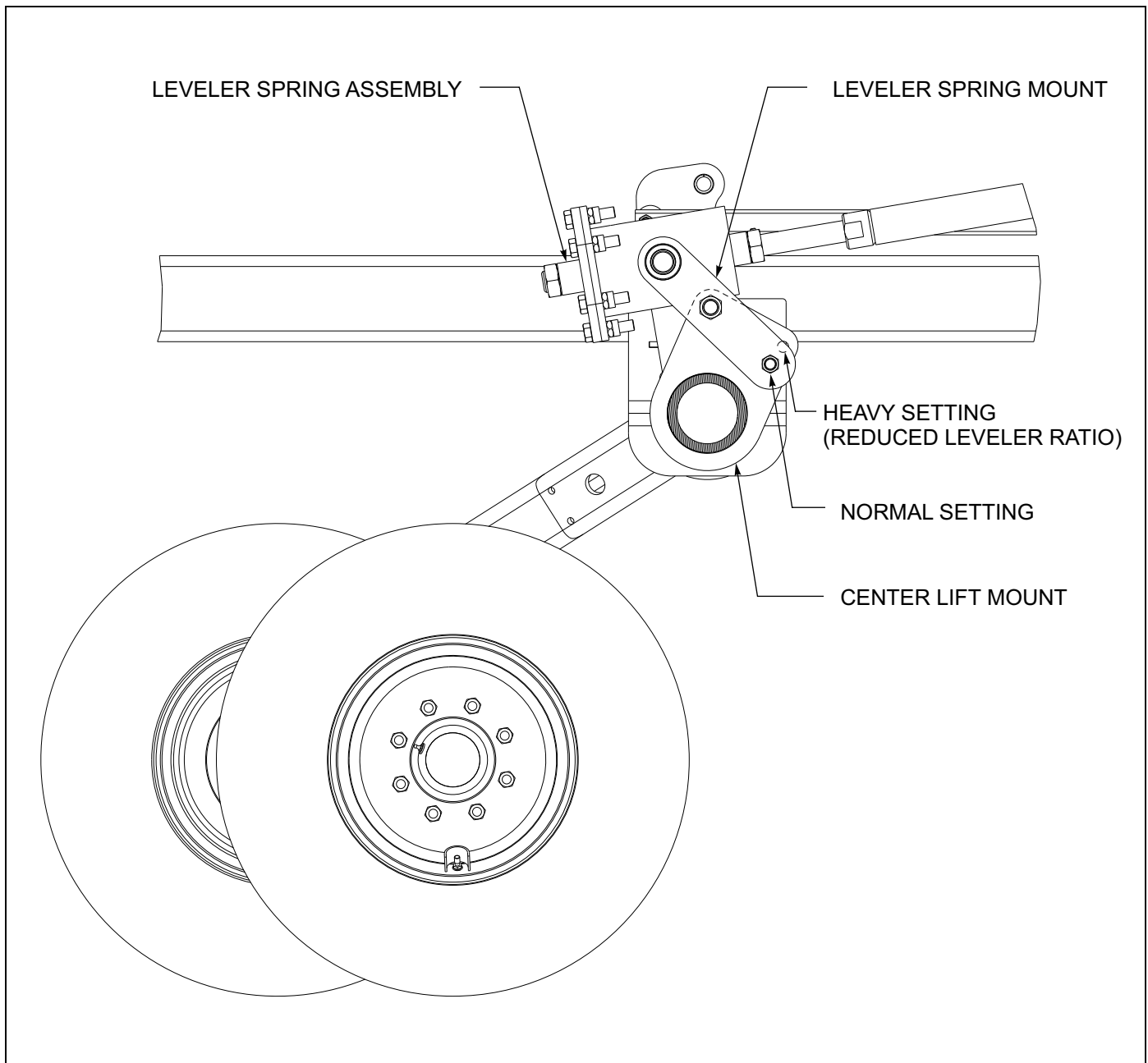


Figure 4-9: Variable Ratio Leveler Adjustment

Hitch Adjustment

1. It is important for the disc to maintain a proper draft line with the tractor to do a level job of discing. The draft line will vary depending on soil conditions and tractor drawbar height. The disc is equipped with an adjustable hitch to help insure a proper draft line with the tractor.
2. Generally tractor drawbars greater than 20" tall will require the hitch to be in the upper position. Drawbars 20" and below should be in the lower position. Operating conditions may also influence the hitch adjustment.
3. A hitch adjustment that is too high will leave a center furrow, as the front of the disc will operate too deep. A low hitch adjustment can cause a center ridge, regardless of leveler setting.
4. To adjust the hitch (**See Figure 4-10.**)
 - a. Lower the disc to the ground.
 - b. Adjust the leveler screw (manual or hydraulic) in or out until the pressure is relieved on the leveling system. (**See "Leveling (Front-to-Rear)" on page 4-7 and "Variable Ratio Adjustment" on page 4-9.**)
 - c. Remove the 1-8 x 4 -1/2 hex head cap screw and hardware from the leveler ball joint link at the center rear of the hitch weldment.
 - d. Loosen, but do not remove the bolts that pass through the ball joint connections at the outer rear connections of the hitch.
 - e. Remove the bolt through the two hole clamp plates (above or below) the rear connections of the hitch ball joint.
 - f. Vertically raise or lower the hitch to the desired operating position.
 - g. Reinstall the bolt through the two-hole clamp plates to secure the hitch in the new position.
 - h. Retighten all hitch bolts.
 - i. Install the bolt in the leveler ball joint link in the new position at the rear of the hitch and retighten.

IMPORTANT

When the hitch is in the lower position, the leveler ball joint link will be in the upper mounting hole at the rear of the tongue. If the hitch is in the raised mounting position, the leveler ball joint link will be in the lower hole at the rear of the tongue.

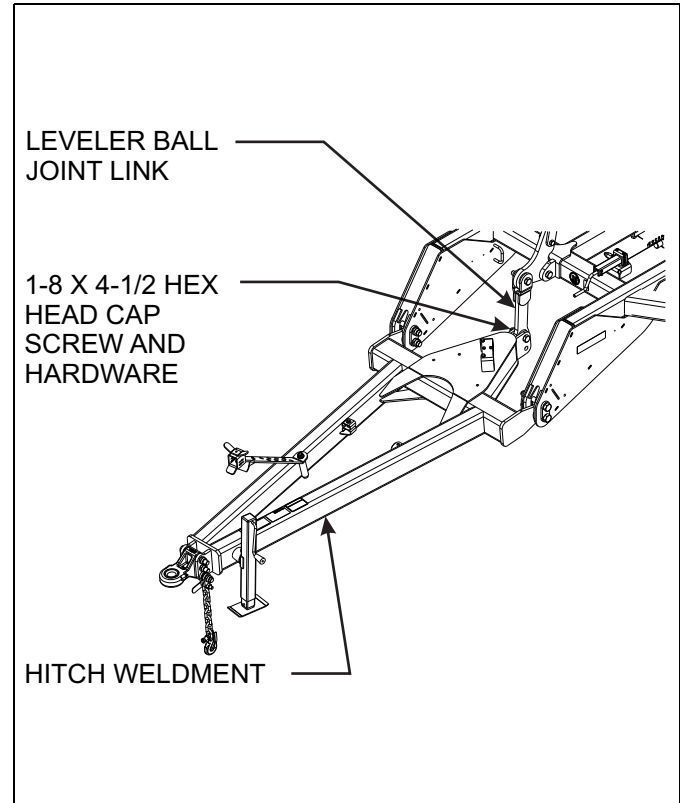


Figure 4-10: Hitch Adjustment

Scraper Adjustment

The disc is equipped with rigid scrapers at regular spoons with dual scrapers at the disc bearings.

1. Rigid scrapers should be set initially as close to the disc blade as possible without rubbing approximately 1/8" (See Figure 4-11.) A slotted hole at the top of each scraper is provided for individual adjustment. Adjustments may be made for entire gangs, by loosening the u-bolts around the angle-iron scraper bars and sliding the whole bar. Scraper arms are made of spring steel. In wet conditions, the scraper may be set against the disc blade and will function as a spring-loaded scraper.

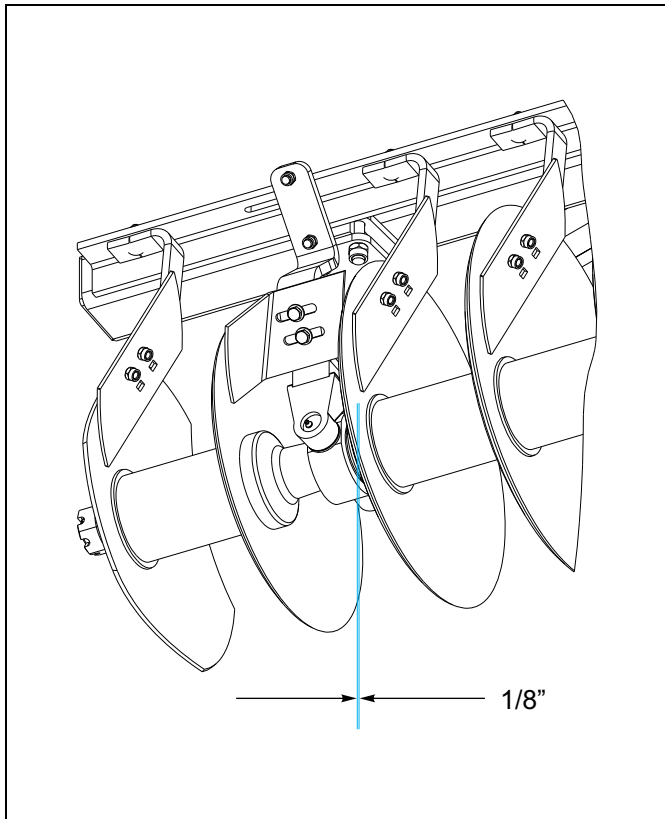


Figure 4-11: Scraper Adjustment

2. Scraper blades have two positions and are reversible. The blades are initially set in the forward position to position scraper closer to the disc spool. This position will perform better in wet and heavier residue conditions. The blade may be moved rearward for conditions and climates to scrape the outer edge.
3. Dual scrapers are provided at the bearing locations to scrape the disc blade and to limit the amount of soil and residue carried into the bearing hanger. Scrapers can be individually adjusted in or out from the concave side of the disc blade.



CAUTION

Tighten all 1-3/4 nuts to 1,250 foot-pounds of torque (See Figure 4-12.)

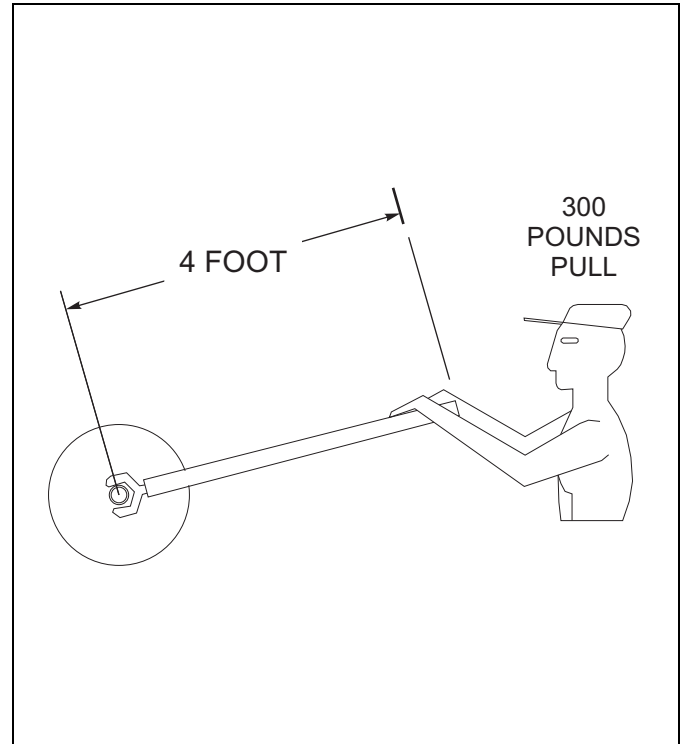


Figure 4-12: 1,250 Foot-Pounds of Torque

Coil Tine Harrow

The coil tine harrow is an optional attachment used for additional soil and residue leveling. It features 3 rows of 1/2" x 22" spring steel tines on 12" centers with 4" overall spacing. Tine rows are spaced 14" between bars with individual angle adjustment per row. Each tine tooth is individually mounted for flexibility and backup protection. All harrow sections have two mounting arms with spring-loaded down pressure.



CAUTION

The coil tine harrow adds significant amount of weight to the rear of implement and can create negative hitch weight. Be careful when unhitching the implement, as the implement hitch may rise suddenly. Before unhitching the implement, lower any rear jack stands to support the rear of the implement. Do not straddle or lean over the hitch when unpinning implement from the tractor drawbar.



WARNING

Know and verify the actual implement height and width before transporting. Attachments may increase the overall transport height and width of the implement. Use caution when operating near power lines. Electrocution can occur without direct contact.

Operation/Adjustment

1. When adding an attachment to the rear of the Landoll disc, the leveler linkage on the disc may need to be repositioned to the upper hole above the center lift. This will help the disc to better carry the additional weight of the harrow and maintain transport height **(See "Variable Ratio Adjustment" on page 4-9.)**
2. In general the harrow should run level front to rear behind the disc. The tines depth should be adjusted so the tips are approximately even with the bottom of the disc blades at the desired tine angle.

NOTE

The tines will hang straight down when the implement is raised and be slightly lower than the disc blades.

3. Adjust the harrow gang bar plate (p/n 154993) angle by removing 1/2-13 x 1-1/4 round head square neck screws as shown in **Figure 4-13**. Rotate the harrow section to the desired level position and reinstall the bolts in the appropriate mounting holes to hold the harrow section level.
4. Entire harrow sections may be leveled for height and side-to-side. Sections heights may be leveled for all sections across the back of the implement, or individually for side-to-side levelness. To adjust the section heights **(See Figure 4-13.)** Loosen the locking nuts on the 1 x 9 spring bolt, and then rotate the bolt head to raise or lower the section. Retighten the bolts when finished.
5. The tine tooth angle may be adjusted for a steeper more aggressive tooth angle or for a lower or flatter tooth angle. Use steeper tooth angles for clean or minimal residue conditions. A flatter tooth angle will allow the harrow to clear heavier and/or wetter residue. The tine tooth angle is set for each row by removing the spring clip pin at each tine angle adjustment handle and positioning to the desired hole.

IMPORTANT

In some conditions it may be desirable to run the tine rows at slightly different tine angles.

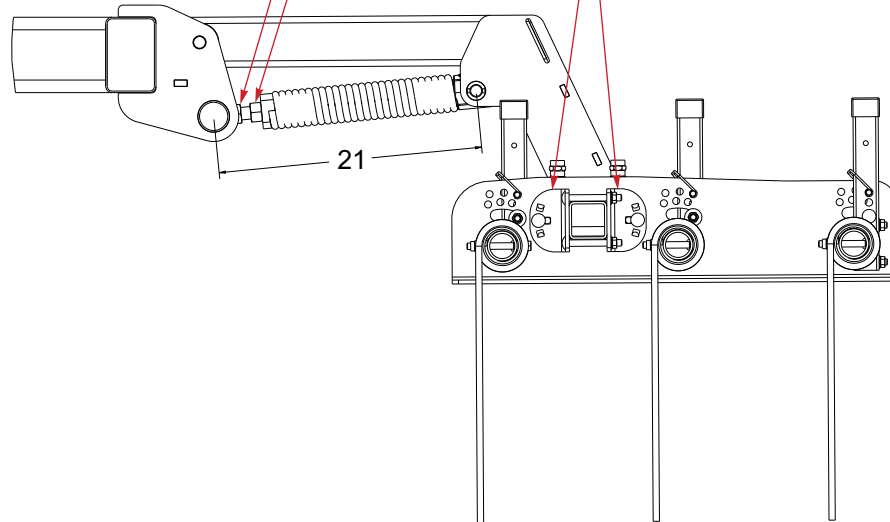
Example: Lower tine angle on the front row may help to start heavy residue under the harrow.

6. For initial harrow settings for the disc, refer to **Figure 4-13**. These are initial settings to get started. Actual field conditions (soil types, residue, moisture, etc.) may require additional adjustment. For best results, adjust one section until the desired finish is obtained. Then set the rest of the harrow sections to match.

1-8 HEX NUT

HEAVY SPRING ASSEMBLY
(1 X 9 ADJ SPRING BOLTS
RUNS THROUGH CENTER)

RECOMMENDED HARROW
SETTINGS



HARROW ADJUSTMENT
HOLES

ANGLE ADJUSTMENT
PLATE

HARROW GANGBAR
PLATE

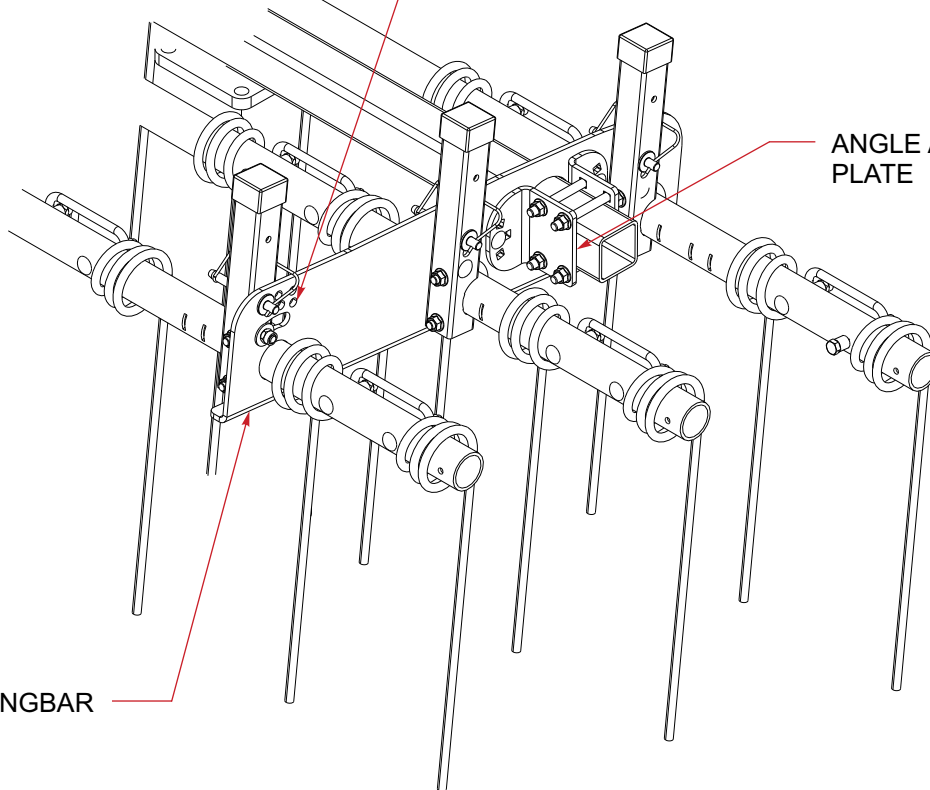


Figure 4-13: Harrow Adjustment and Settings

Conditioner Reels

The 6211 disc may be equipped with optional conditioner reel attachment. The conditioner reels will help to firm the soil profile, while mixing and breaking up soil clods. It can create excellent seed beds in finishing passes, and help anchor residue in primary operations.

1. Initially set the depth of the conditioner reel with the bottom of the reel approximately 1" above the bottom of the disc gang blades. This will be approximately 20-3/4" spring centers (for 24" disc blades)
(See Figure 4-14.)
2. To adjust the reel height, loosen the locking 1" hex nut at the front of the spring assembly. Also loosen the 1" nut on the back side of the 2-1/2 diameter front spring pin.

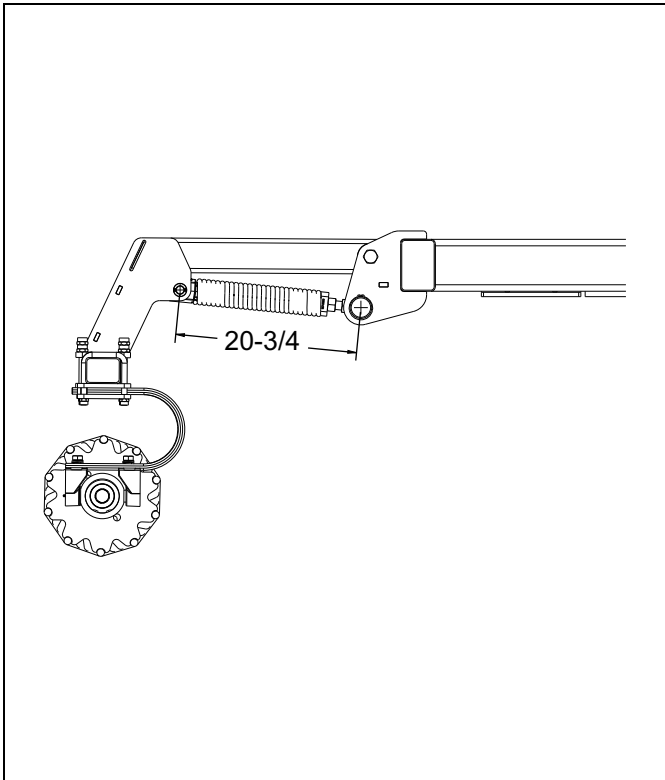


Figure 4-14: Conditioner Reel Setting

3. Turn the 1 x 9 adjusting bolt in or out to the desired height, then retighten both locking nuts. Repeat for each conditioner reel arm, and set all spring lengths the same.
4. Use a shallower depth setting when operating in lighter soils or wetter conditions. This will avoid plugging of the conditioner reel. Raising of the entire disc when working in a wet spot will reduce reel plugging as well. For heavier or dryer soils, an increased reel depth may be used
(See Figure 4-15.)

NOTE

Excessive reel down pressure will try to roll the disc over on the front gangs causing the front to dip.

5. Level the disc front-to-rear after changes in reel depth or field conditions. Avoid lower operating speeds when working in wet conditions. Conditioner reels will clean out better at 5-6 mph vs 4 mph.

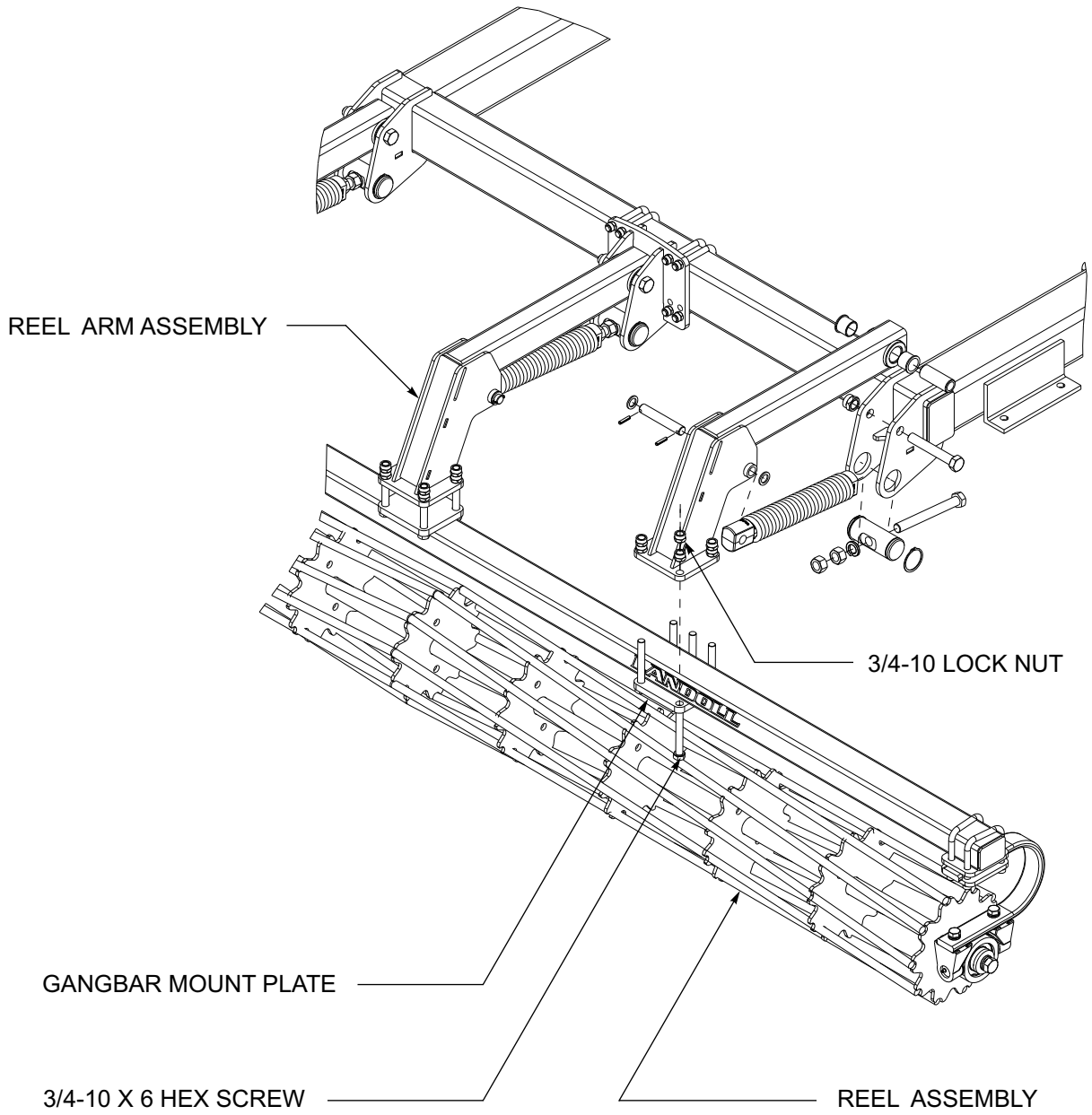


Figure 4-15: Conditioner Reel Installation

Hydraulic Conditioner Reels

An optional hydraulic controlled conditioner reel is available for the 6211 disc. The hydraulic reel functions similar to the non-hydraulic reel. (See “**Conditioner Reels**” on page 4-14) for recommended depth settings.

The hydraulic conditioner reel operates on a separate hydraulic circuit. The reels may be raised or lowered hydraulically from the operator seat. This can be very useful when working around a wet area to prevent plugging. The reels may be operated all the way up, or all the way down. There is no intermediate working depth.

1. Maximum reel working depth is set by adjusting the spring on each reel arm. To adjust the conditioner reel spring, with the disc raised, lower the hydraulic reels, and relieve any reel system pressure.
2. Loosen the 1” locking hex nut at the front of the spring assembly.
3. Using the flats on the rod end of the hydraulic cylinder, turn the cylinder shaft in or out to the desired spring setting.
4. Retighten the locking hex nut, and repeat for each conditioner reel arm.
5. If operating the conditioner reels in the raised position for extended lengths of time, the disc front-to-rear level may need to be adjusted to account for the extra weight now being carried by the rear of the disc. Likewise excessive reel down pressure will try to roll the disc over on the front disc gangs, requiring the disc to be leveled.

Coil Tine Maintenance

1. The coil tine harrow does not have any lubrication points. Harrow arms pivot on maintenance-free bearings. Keep the harrow clean from residue and excess soil. Thoroughly clean the entire harrow before long term storage.



CAUTION

Coil tine teeth wear very sharp. Use caution when working near the coil tine harrow attachment.

Disc Blades

1. Standard disc blades for the 6211 are 24" diameter, 4ga, and 3" concavity disc blades on both front and rear. The 6211 disc has a variety of disc blade options, for particular operations.
2. **Sharpening** – In some cases there is a desire to sharpen disc blades for improved cutting. There are several people who roll-sharpen disc blades. Most disc blades used today are made of chrome-boron steel. The chrome-boron steel has a higher hardness than traditional carbon-steel blades for increased wear. Higher hardness makes roll sharpening more difficult often with mixed results, and is not covered by warranty. Disc blade manufacturers will not cover any alterations to blades other than the place of manufacture. Results from roll-sharpening damage may not be immediate, and may take more than a season to be noticeable. If you choose to sharpen disc blades, check with local dealers for reputable experienced sharpeners that will stand behind their work.



DANGER

Disc blades are extremely sharp. Exercise extreme care when working on or near disc blades. Do not allow discs to roll over or fall onto any bodily part. Do not allow wrenches to slip when working near disc blades. Never push wrenches toward disc blades. Do not climb over machine above disc blades. Failure to stay clear of disc blade edges can cause serious personal injury or death.

3. Disc blades may be either "rollable" or "non-rollable". Rollable disc blades will be stamped as "Rollable" Landoll does not recommend blade sharpening "non-rollable blades".

Depth Stop Adjustment (Manual)

The operating depth of the disc is controlled by a single-point depth stop. The stop is located at the center front of the machine.

1. Adjust the depth stop by turning the handle in (clockwise) to increase operating depth (**See Figure 4-16.**) Turn the handle out (counter-clockwise) to decrease operating depth. One turn will equal approximately 3/16 adjustment in depth.

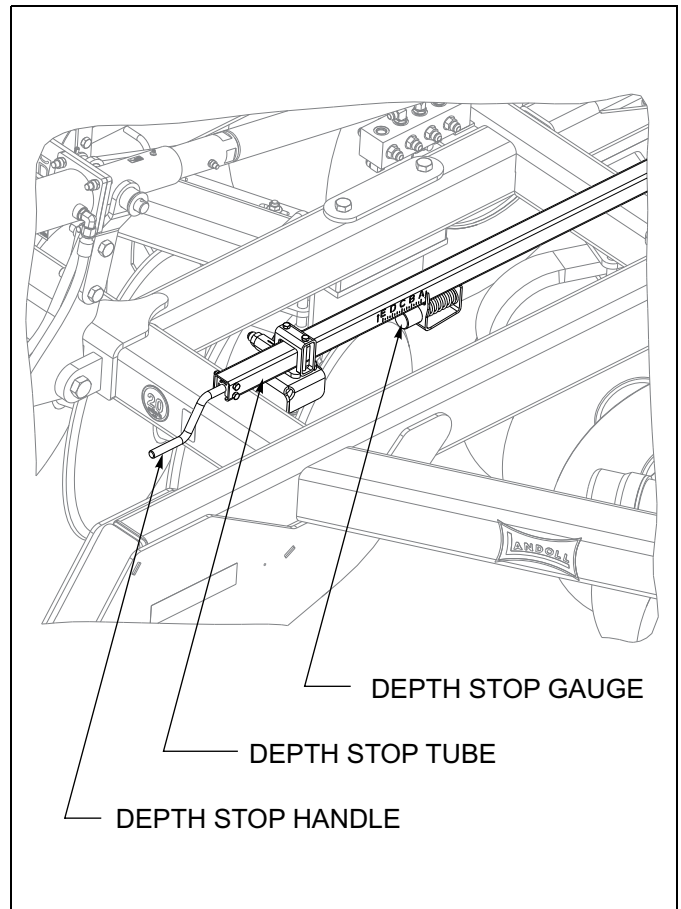


Figure 4-16: Depth Stop Adjustment (Manual)

2. The gauge on the side of the depth stop tube gives a reference for depth setting. The "A" setting refers to maximum operating depth.

IMPORTANT

For maximum operating depth, the lift wheels must be in contact with the ground and carry some of the machine weight. Raising the lift wheels off the ground, permits uncontrolled depth of each frame section and does not allow the leveler to function properly.

Wheel 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 triple-lip seal onto the spindle. Do not install the seal into the hub.
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 triple-lip seal to the hub and install the seal in the hub.

NOTE

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

11. Install a new cotter pin and replace the hub cap.

Hydraulic Maintenance

1. Check the tractor hydraulic fluid level per tractor owners manual and after any leakage. Check fluid level with the cylinders in the retracted position.
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 Landoll dealer.
3. Check all hydraulic hoses weekly. Look for binding or cracking. Replace all worn or defective parts immediately.

IMPORTANT

Lower the unit to the ground, and relieve hydraulic pressure before attempting to service any hydraulic component.

4. Transport locks are 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 locks. 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. **(See “Hydraulic Lift System” on page 4-3)** on how to purge the hydraulic systems.

Transport

1. Check and follow all federal, state, and local requirements before transporting the disc.
2. The disc 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 Disc is 20 mph for the implement and is designated on the speed identification symbol located on the front of the implement (See Figure 4-17.)



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.
 - a. 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.
 - b. Attach the safety chain to the tractor drawbar (See Figure 4-17.) 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.
 - c. 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.
 - d. 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.
7. Check that tires are of proper size, load rating, and inflated to manufacture specifications before transporting. Check wheel lug bolts to insure tightness.
8. Know the transport heights and widths of the unit before transporting. Attachments such as leveling harrows can increase the transport dimensions of the implement. Use caution when transporting near bridges and power lines.

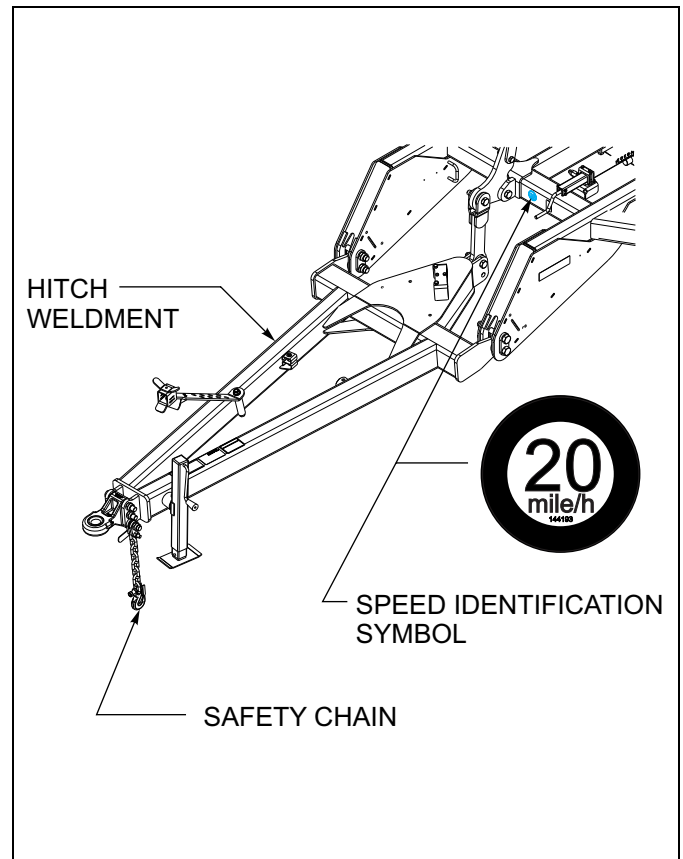


Figure 4-17: Hitch, Speed Identification Symbol, and Safety Chain



WARNING

Electrocution can occur without direct contact.

9. Raise the unit to full transport height.
10. Install transport locks on lift systems. Do not depend solely on implement hydraulics for transport. (See **Figure 4-18.**)

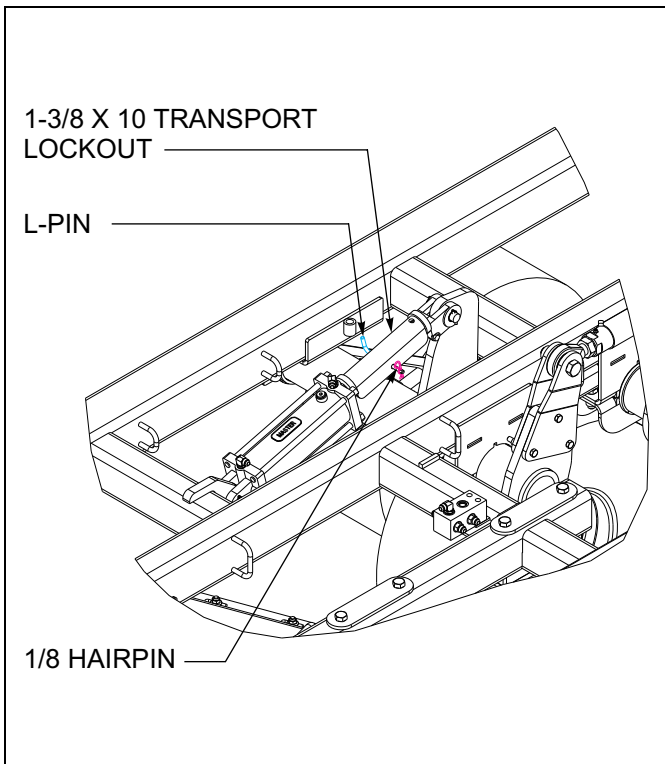


Figure 4-18: Installed Transport Locks



WARNING

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

11. 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.

Lubrication Maintenance

1. **Table 4-1** specifies the number and the period of lubrication points on the 6211 Disc. Proper maintenance of your machine will, under normal operating conditions, help to keep it operating at or near its peak performance for an extended period of time. Proper maintenance is also a condition of keeping your warranty in good status **(See Figure 4-19.)**
2. When lubricating the disc, SAE multi-purpose EP grease, or EP grease with 3-5% molybdenum sulfide is recommended. Wipe soil from fittings before greasing. Replace any lost or broken fittings immediately.
3. Disc gang bearings are equipped with triple-lip seals that will let grease pass and not harm the seal. Regular lubrication will maintain a full grease cavity and help purge any contaminants. Grease the bearings before long periods of storage to prevent moisture buildup within the bearing cavity.
4. Wheel seals and walking tandem seals, when properly installed, will allow grease to pass without harm to seals. Regular lubrication will extend service life, particularly in severe operating conditions.

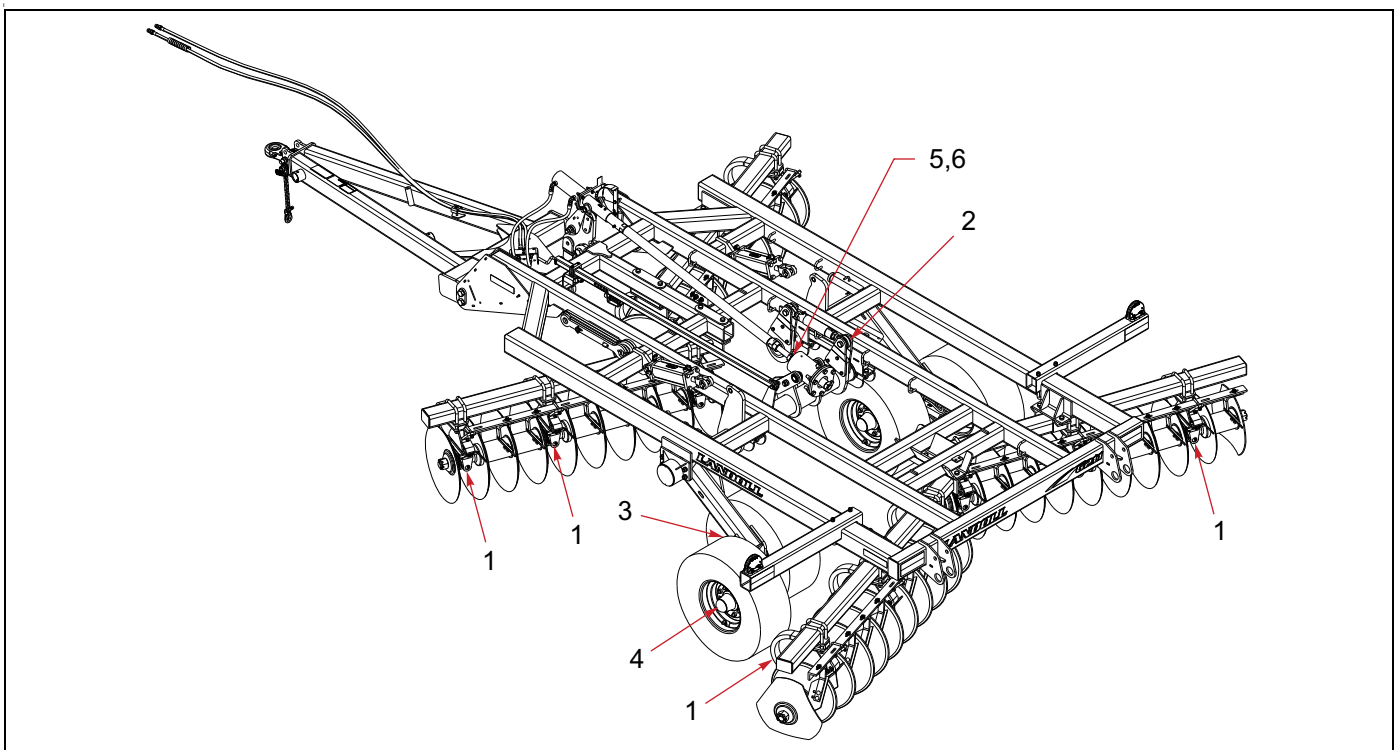


Figure 4-19: Lubrication Schedule

LUBRICATION TABLE			
ITEM	DESCRIPTION	NO. OF LUBE POINTS	INTERVAL (Hours Unless Stated)
1	Disc Gang Bearings	1 each	10
2	Radius Rod	1	50
3	Walking Tandem Hubs (Greaseable)	1 each	50
4	Wheel Hubs	1 each	50
5	Manual Leveler Tube	1	50
6	Hydraulic Leveler Tube (Optional)	1	50

Table 4-1: Lubrication Table

Storage

1. The service life of the Disc 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, points and discs.
 - 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 4-21.)**
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.

Troubleshooting Guide

The Troubleshooting Guide, shown below, is included to help you quickly locate problems that can happen using your 6211 Disc. Follow all safety precautions stated in the previous when making any adjustments to your machine.

PROBLEM	PROBABLE CAUSE	SOLUTION
UNIT NOT LEVEL, LEAVING CENTER RIDGE	Leveler not adjusted properly	Adjust leveler, lower front gang
	Hitch adjustment too low	Raise implement hitch point
UNIT NOT LEVEL, LEAVING CENTER FURROW	Leveler not adjusted properly	Adjust leveler, raise front gang
	Hitch adjustment too high	Lower implement hitch point
UNIT NOT LEVEL, LEAVING RIDGE ON OUTSIDE OF UNIT	Unit not level front to rear, front running too deep	Adjust unit to be level
	Operating speed too fast, front gang moving soil past rear gang	Slow down to proper operating speed for field conditions
	Hitch adjustment too high	Lower implement hitch point
UNEVEN DEPTH	Frame not level side to side	Level center frame side to side
	Lift cylinders not in phase	Fully extend lift cylinders and hold hydraulic lever until all cylinders are fully extended
	Lift wheels not carrying enough weight	Adjust depth stop and raise implement
	Tire pressure too low	Check inflation
	Unit not level front to rear	Adjust unit to be level
UNIT SIDE DRAFTS OR MOVES SIDE TO SIDE	Lift wheels not carrying enough weight	Adjust depth stop and raise implement
	Unit not level front to rear	Adjust unit to be level
	Level unit side to side	Level center frame side to side
WHEEL BEARING FAILURE	Triple-lip seals not installed correctly	Install seals with the lips pointing outward away from the hub
HYDRAULIC - LIFT CYLINDERS NOT FULLY EXTENDING	Lift cylinders not in phase	Fully extend cylinders and hold hydraulic lever until all cylinders are fully extended
	Hoses not properly connected	Check hose routing
HYDRAULIC - ENTIRE UNIT SETTLING	Depth stop valve not working	Repair valve
DISC GANG PLUGGING	Scrapers set too far from disc blade	Adjust scrapers to meet disc blade closer and evenly
	Operating depth too deep	Raise unit
	Conditions too wet	Wait until conditions more favorable
	*In drier conditions, set scraper farther away from disc blade to improve residue flow	
DISC GANG WILL NOT TURN OR PUSHES SOIL	Scrapers set too tight	Readjust scrapers
	Depth set too deep for loose or wet conditions	Raise implement or wait until conditions are more favorable
	Gang bearing failure	Replace bearing

TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	SOLUTION
DISC GANG BEARING SNAP RING POPS OUT	Gang bearings installed incorrectly	Install bearings with snap ring away from concave side of disc blade
SCRAPERS BUILD UP WITH EXCESSIVE SOIL/RESIDUE	Scrapers set too far from disc blade	Readjust scrapers
DISC BLADES LOOSE AND/OR SHEARING ROLL PIN	Gang not tightened properly	Retighten gang shafts to 1250-1500 ft-lbs. If gangs have ran loose, gangs may require disassembly to remove soil to properly torque gang shafts. Replace any worn components, shafts/spools, etc.
HARROW PLUGGING	Harrow height set too low	Raise harrow height
	Tine angle too steep	Use lower tine tooth angle
HARROW BUNCHING RESIDUE	Harrow too aggressive	Use lower tine tooth angle and/or raise harrow
HARROW DRAGS GROUND WHEN TRANSPORTING	Operating depth set too low	Raise harrow height
	Disc leveler linkage not set correctly	Reposition in upper leveler hole
LIGHTS DO NOT WORK	Harness or lamp connection unplugged	Check all harness/lamp connections to verify that everything is properly connected
	7 prong Connector	Fully Insert on clean connection
CONDITIONER REELS PLUGGING	Excessive Down pressure	Raise Reel

Document Control Revision Log:

Date	Revision	End Item #	Improvement(s) Description and Comments
05/04/16	F-841-0516	6211	Initial Release
11/0818	F-841-1118	6211	Update lube table



Intertek

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Model 6211 Disc Operator's Manual

Re-Order Part Number F-841-1118

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