

10/9/2018

Date Modified

Gramlow LTD

Planter Track System Installation Instructions



Phone: 701-375-6330

Fullerton, ND

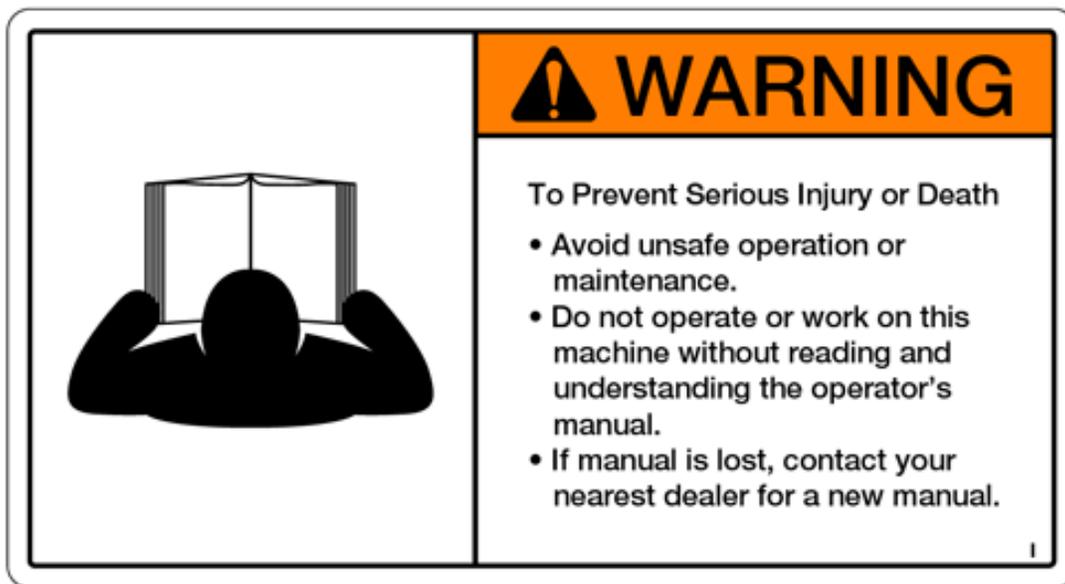
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Table of Contents

	Page
1.0 Warning and General Safety Information	2
1.1 Introduction.....	2
1.2 Warranty	3
1.3 Safety	3
1.4 Hydraulic Fluid and Equipment Safety	5
1.5 Personal Protective Equipment.....	6
1.6 Highway and Transportation Operations.....	6
1.7 Maintenance Safety	7
1.8 Performing Maintenance	8
2.0 Axle Removal.....	9
3.0 New Axle Installation	13
3.1 Steerable Axle Hydraulic Hose Installation.....	19
4.0 New Axle Pin Installation	20
5.0 Track Installation	22
6.0 Row Unit & Row Tip Installation	24
6.1 Chain Drive Installation.....	29
7.0 Row Lifters	33
8.0 Speed Sensor	34
8.1 Speed Sensor Reinstallation.....	34
9.0 Dump Valve Installation	36
10.0 System Checkout	38
11.0 Very Important Final Check	39

1.0 Warning and Safety Information

Planter track system installation instructions are to be used as a guide when installing the new track system on your planter. This manual contains the proper installation method to be used as well as information to keep you and your track system safe during installation, operation, and maintainace. This manual serves as a guideline that provides important information to follow when working on or around your planter track system. It is very important to pay close attention to what is around you and your planter track system to ensure no injuries or death occurs. Please Read Carefully.



1.1 Introduction

Here at Gramlow Ltd we strive to farm more efficiently and planter track systems is one track closer to effective and efficient farming practices by lessening our foot print in the dirt. You have now joined an elite farming group with your newest track system purchase. We hope you will get many seasons of productivity out of your planter track system. Proper understanding and maintainace of this system will need to be in place to achieve maximum life. All users must read and understand the manual prior to installation and operation of equipment. Failure to follow the recommended procedures may result in personal injury, death or equipment damage.

Information listed in this manual is intended to help guide the installation process and proper use of the track system. If there is any information that you do not fully understand call Gramlow Ltd with questions and we will gladly help you properly understand your new planter track system.

Thank you

1.2 Warranty

Camso offers a 24 month limited warranty on the track and a 12 month limited warranty on the undercarriage from date of purchase.

See Camso's Operation and Maintenance Manual for more details.

Gramlow Ltd offers a 24 month limited warranty of coverage from the date of purchase for systems that have become damaged or unusable due to a defect in the metal, welding and/or the workmanship of the lift frame or axle which is to be determined by Gramlow Ltd. Defective systems will be assessed and repaired or replaced at the decision of Gramlow Ltd. In the event that a part of the planter track assembly gets damaged or is unusable, proper replacement parts will be mailed out to fix the issue. Gramlow Ltd will decide billing where necessary based on case by case.

For additional details or questions about warranty coverage and/or claims contact Gramlow Ltd.

1.3 Safety

Please read and understand this manual and all safety precautions before beginning installation, operation, and maintenance of the planter track system. Safety is our number one concern and we want it to be yours as well. Take note of your surrounding area when working with farm machinery. Follow all safety signs, rules, and warnings that are labeled on equipment.

Take note to what is around you, have a clean and clear working area when you begin to install your planter track system.

Ensure the correct tools and lifting devices are utilized properly to avoid possible injury or in severe cases death.

Using the proper tools for the job is critical in the installation process in order to achieve the correct fit of the lift frame, axle and tracks to allow the installation process to run smoothly and safely.

Stand clear when lifting your planter to remove the original factory equipped frame and wheels. Use proper lifting devices and jack stands when removing and replacing the original planter lift frame and axle.

Clear the area of small children and any bystanders before moving the machinery.

When the new planter track system is installed double check to see proper installation before moving. Ensure all tools and lifting devices are put away in a safe place prior to moving planter. Once everything is clear and working area is cleaned up, it is now safe to move your planter.

For their safety small children should not be allowed on or around the equipment.

Do not allow anyone to ride on any part of the equipment for any reason.

Assure that all workers and bystanders are at a safe distance before operation or maintainace of the equipment.

If adjustments need to be made, properly shut down all moving parts and make sure hydraulic cylinders are in the safe lock position before crawling under the planter to make adjustments or required maintainace.

1.4 Hydraulic Fluid and Equipment Safety

Adequately trained and qualified persons should work on hydraulic systems. Always have transport locks in place and the frame blocked up when working on or servicing the planter track hydraulic system. You may be severely injured or killed from being crushed under a falling planter.

Check to see that all hydraulic connections are tight and all hydraulic hoses are in good working condition before applying pressure to the system.



Hydraulic fluid that is escaping under pressure can have sufficient force to cause injury. Confirm all hoses and connections are always in good working order by looking over daily. Failure to do so may result in serious personal injury or death. Escaping hydraulic fluid under pressure may have enough pressure to penetrate skin causing serious injury. Avoid this hazard by relieving the pressure before disconnecting lines or servicing the system.

DO NOT HESITATE! If an accident occurs, see a doctor familiar with this type of bodily injury immediately. Any fluid that is injected into the skin or eyes must be treated within a few hours or gangrene may result.

Always secure equipment with a solid support system before working on or under the planter track system. Never work under a planter track system that is only supported by hydraulics. Hydraulics can drop the planter track system if controls are activated, a hydraulic line bursts, or if pressure is lost while disconnecting lines. These situations can drop the planter track system instantly even when power to hydraulics is off. Do not attempt to disconnect a hydraulic cylinder or hose while the system is under pressure.

Frequently check hydraulic hoses and fittings. Hoses and fittings can be damaged by wear and debris. Inspect and maintain your planer track system daily. Loose, broken, and missing hardware can result in equipment failure and lead to serious injury or death.

Keep body and body extremities away from areas such as pivot points and hydraulic cylinders. Always secure planter pivot points to assure they will not move when working on or near them.

1.5 Personal Protective Equipment

Wear the proper protective clothing and equipment that is suitable for the job, make your safety the number one concern when using power tools, lifting devices, etc.

Ex: Safety glasses, face shields, long sleeves, jeans, boots, gloves and ear plugs should be worn for protection when appropriate.

Operating equipment requires the operator's full attention.



When working, verify small children, bystanders, and other workers are at a safe distance to not be harmed by loud noised and/or flying objects.

1.6 Highway and Transportation Operations

Abide by proper and safe driving practices.

Always drive at safe speeds relative to road conditions.

Plan your route to avoid heavy traffic areas.

Watch for obstructions overhead and to the side when transporting.

Be sure to know the load rating for your track system and maintain a safe speed to allow tracks to stay cool and not prematurely be worn out because of excessive heat during transportation. If carrying seed and/or fertilizer during transportation be sure to significantly reduce speed. We advise to have minimal seed and fertilizer in the tanks during transportation when possible.

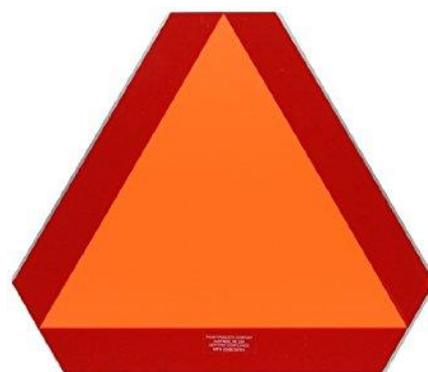
Know the crown of the road, always drive on flat ground when possible. Crowned gravel roads, pavement and long transportation trips can cause tracks to heat up quickly if proper speed limits are not followed.

Checking for hot tracks: Travel a half mile down the road then stop and feel the inside of the small bogie wheel and guild blocks located in the middle of the track. This wheel makes the most rotations and can rub on the guild lugs if tracks are not properly adjusted. If bogie wheel or guild blocks feel hot, lower speed and if necessary make the proper track adjustments. If not, you are good to go.

Make track adjustments when necessary. See Camso's Operation and Maintenance Manual for information on track adjustments.

Comply with all state and local laws governing highway safety and movement of farm machinery on public roads.

Ensure Slow Moving Vehicle (SMV) emblem is viable and appropriate lights and flashers are utilized when in transport.



1.7 Maintenance Safety

Proper servicing and adjustments are key in keeping your planter track system running at peak performance. Along with careful inspection and routine maintenance, costly downtime and unwanted repairs could be avoided.

Before unfastening any part of the planter track system, move supports properly under the planter to prevent system from falling, tipping or moving in any way that could injure someone or damage the planter.

Always use lifting equipment that is adequately rated for the job. Do not lift equipment over people or go under equipment that is not properly supported.

Always use the proper tools and equipment for the job.

When servicing is finished, be sure all tools, parts, and equipment is removed from the working area and safely put away.

If equipment is altered in any way from the original design, Gramlow LTD does not accept any liability for injury or warranty.

1.8 Preforming Maintenance

*Grease Daily or every 10 hours of operation

As pictured below on the left: Grease each pin, top and bottom. Do the same for both sides of the plater axle. In the right photo, grease both pivot points.



*Grease each row tip cylinder once a week or every 50 hours.



***Follow Camso Manual for Undercarriage Maintenance.

2.0 Axle Removal

1. Remove the first row unit on each wing closest to the folding pivot.

*If your axle kit comes with a double row tip remove two rows on each wing.



2. With planter weight supported on jack stands begin removal of the existing axle assembly.



3. If you are using John Deere's Seedstar monitor to control the hydraulic drives on your planter you will need to have a wheel motion sensor. If you are using an aftermarket monitor to control your hydraulic you need to check with the manufacture of your monitor system but you most likely don't need a wheel speed sensor and can disregard this step. TTS undercarriages build since January 2017 may already have a sensor installed if your undercarriage has a wire harness coming from the front idlers it has a sensor already installed just connect this sensor to the factory harness you unplugged when removing the factory axle. Harness is shown in the photo below.



If you do not have a harness coming from your front idlers you will need to remove speed sensor from the wheeled axle assembly. Sensor will be installed in new tone wheel assembly on the right front idler wheel of the track undercarriage.

4. Disconnect work height sensor linkage (if equipped) and cylinder safety transport stops for use on new axle assembly.

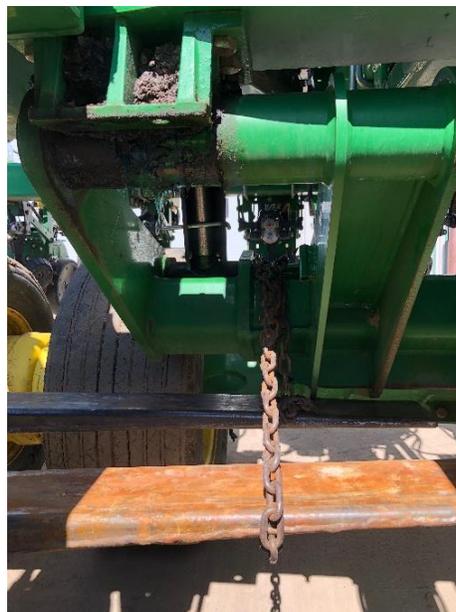
5. Remove flag pins from lift ears on rod end of hydraulic cylinders.



6. With axle assembly properly supported, remove lower axle mount castings on both sides. (See illustration)



7. Lower assembly to the floor with proper restraint or lifting/lowering device.



8. Axle assembly can now be removed from underneath the planter. A forklift with forks spaced to carry the outside tire works well for sliding the assembly out from underneath the planter.



3.0 New Axle Installation

1. Place axle assembly on wood pallet to aid sliding underneath the planter. Various methods such as lifting and pushing with hand trucks, pallet jacks, fork lifts etc. will aid in positioning the new axle assembly.

Illustration shows center tool bar extensions removed for instruction purposes only it is not necessary to remove the extension of the center section.



2. Begin installation of tracked axle assembly in reverse order of disassembly.

3. Raise front mounting beam into position using suitable lifting method and device.



4. Align side to side to be sure lift cylinders line up with mounting tabs on axle assembly.

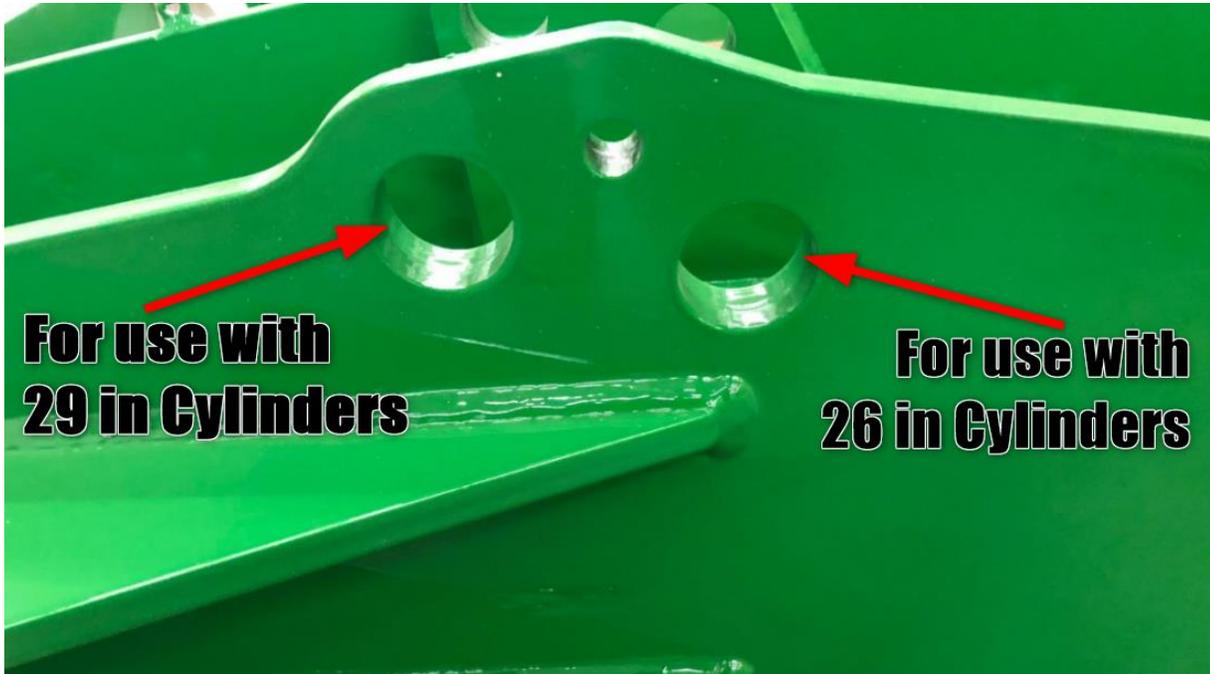
5. Install cast axle pivot mounts (removed earlier) on both sides. Do not tighten pivot mounts until lift cylinders are aligned with mounting tabs on new axle assembly.



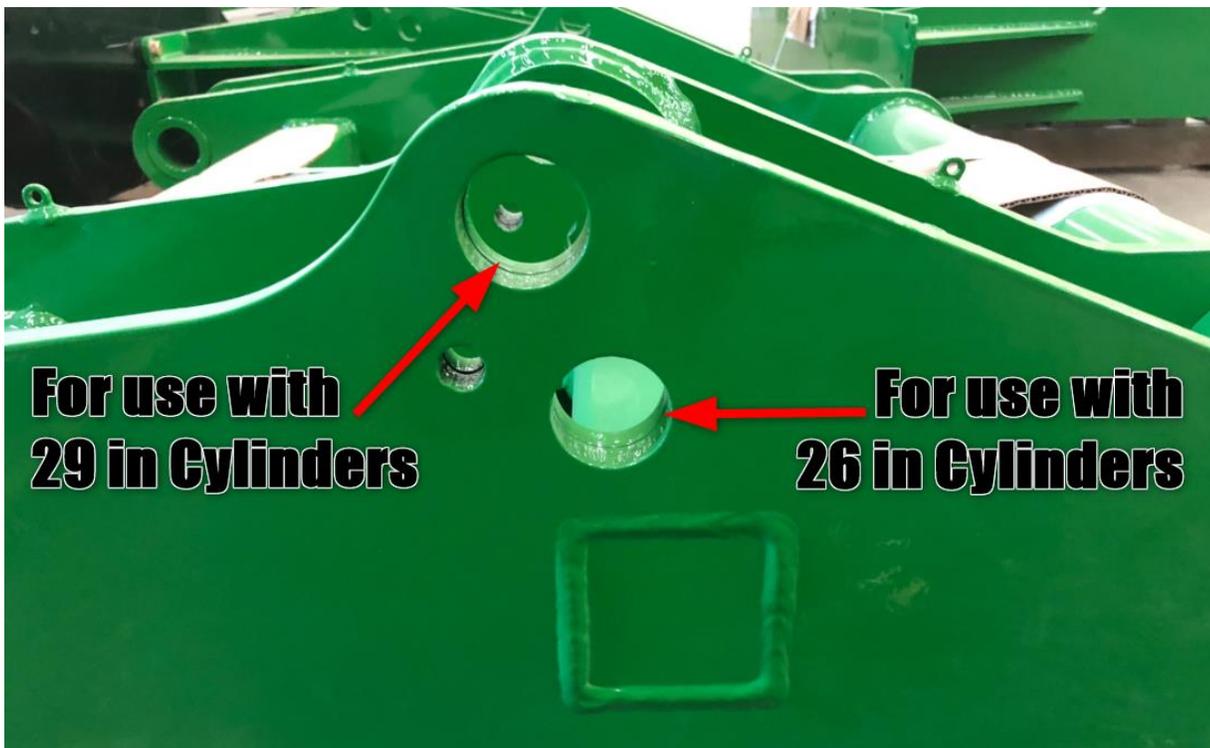
6. Insert flag pin through cylinder lift eyes and fasten retaining bolt on flag. On older DB planters the factory pin is too short, if your pin is not 10 inches of effective length a new one should have been included with your kit. **MAKE SURE YOUR PIN IS LONG ENOUGH TO GO THROUGH ALL THE PLATES ON THE LIFT ARM!!!** On a DB44 planter we use a plain pin and trunnion blocks bolted into the lift arm on the track axle instead of a flag pin.



Non Steer Axle:



Steerable Axle:



Measuring for Cylinder Barrel Length:

The dimensions referred to in the photos above are the length of the barrel as shown below is an example of a 26 inch cylinder barrel.

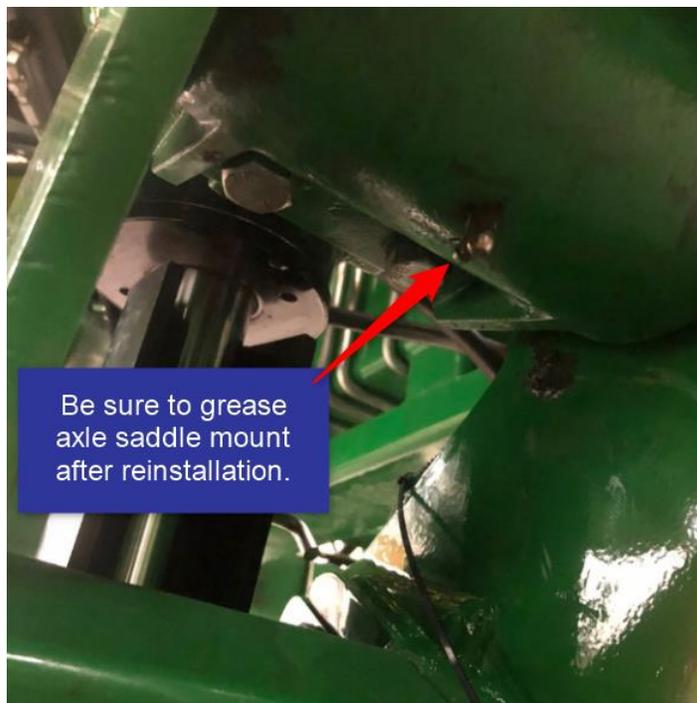


Note: Floor jack can aid in re-alignment of the pin hole of cylinder rod to axle ears.

7. Fasten planter work height sensor (if equipped) to axle linkage using existing. Check operation of switch and adjust length as needed to allow full travel of the switch arm with no binding.

8. Check all fasteners, installed links etc. for proper installation and torque.

10. Grease the axle saddle mounts with recommended Deere grease.



Be sure to grease axle saddle mount after reinstallation.

11. Your DB Track Axle assembly installation is now complete.

Generally the upper cylinder pin needs to be in the upper hole on these planters as shown in the picture below. But a final check when the planter is unfolded should be performed to make sure the toolbar in the center is at recommended height.



When lifting the planter for the first time after installing or changing any pins using the “translift” function use caution and watch the area in the red oval as the barrel of the lift cylinder may contact here. If this happens double check which holes you used for your cylinder pins on the top and bottom of the lift cylinders.



3.1 Steerable Axle Hydraulic Hose Installation

Install the hoses as they are marked in the photos below:

Red hose (rod end of small rock cylinder) tee's into to the hose for the base end of the main lift cylinder.

Yellow hose (base end of small rock cylinder) Tee's into the hose on the rod end of the main lift cylinder.



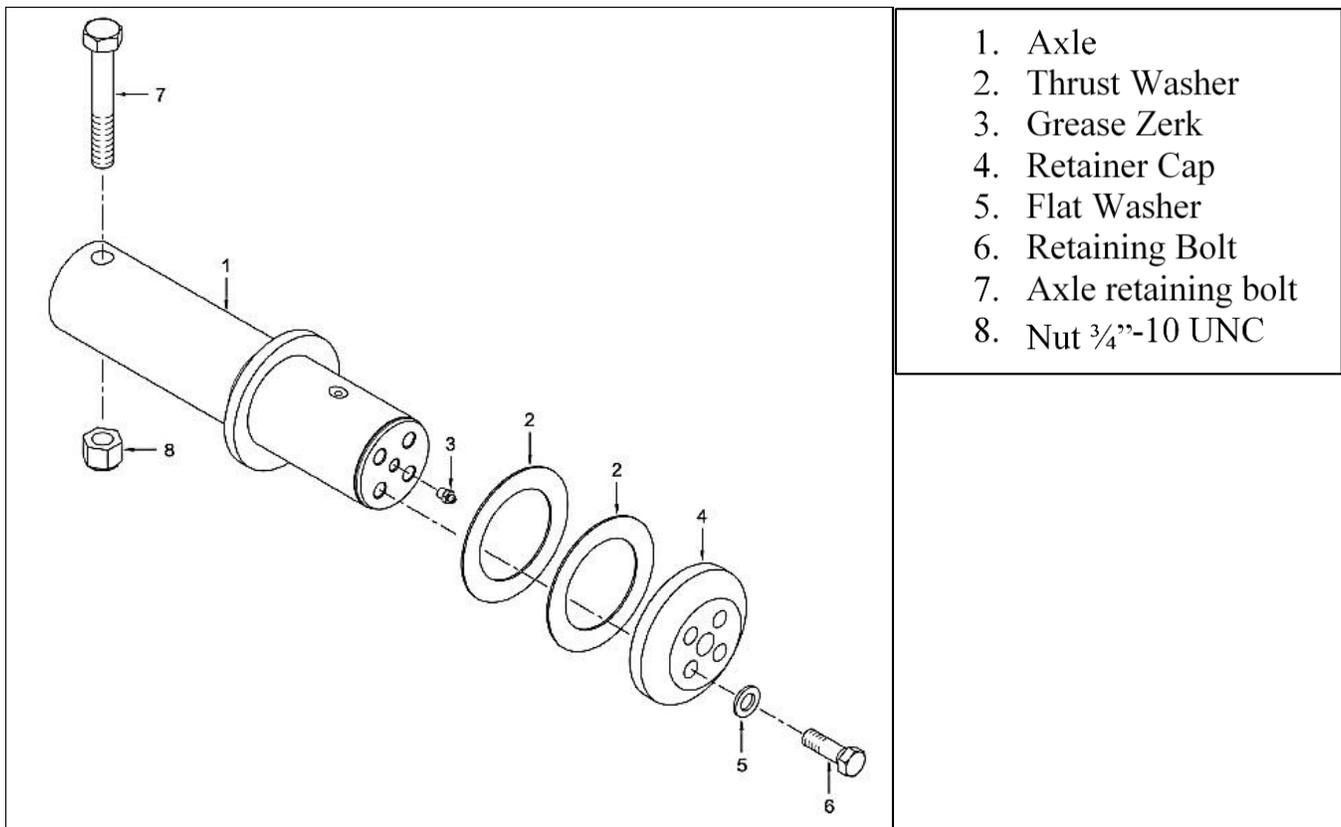
Picture to the left is the left side main lift cylinder, pictured to the right is the small rock cylinder located on the lift arm.

Make sure to release the pressure on the cylinder before removing the hydraulic lines and have the planter properly supported on stands.

Remember to double check the axle alignment once you have everything mounted on the planter, adjust the gold hex adjustment bolt, you want perfect square alignment zero toe in or toe out. Then check the track alignment as per instructions in the Camso manual.

4.0 New Axle Pin Installation

1. TTS undercarriages utilize a center pivot mount consisting of sintered bushings and lip seals allowing for ease of maintenance and smooth operation. Installing the axle pin into the undercarriage prior to undercarriage installation on the axle minimizes possible damage to the lip seals.
2. Refer to the drawing below for a pictorial representation of the pin to undercarriage mount configuration.



3. Slide 1 inner thrust washer (2) onto the axle pin (1) against the machined shoulder.
4. Insert the grease zerk (3) onto the end of the axle shaft and tighten.
5. Lightly grease the outer surface of the axle pin using Camso approved grease (NLGI GC-LB) or equivalent. Slide axle pin into the center mounting hole of the TTS undercarriage from the inside. Note: Always position the undercarriage tension mechanism to the rear when installing u/c's. Serial # plates are located on the outside of each undercarriage for ease of

identification. Track treads are in a non-traction application condition and mounted backwards by design.

6. Install the second thrust washer (2) on the outside of the pin and mount the retaining cap (4) using bolts and washers (5, 6). Tighten to 320 N-m +/- 64 N-m (236 ft-lbs +/- 64 ft-lbs). Grease the center pin zerk with Camso recommended grease, initially 8 pumps and 2 pumps weekly during field operation.

7. Repeat this procedure on the opposite side main pivot pin.

8. Installation of the main pivot pin in the TTS undercarriage is complete.

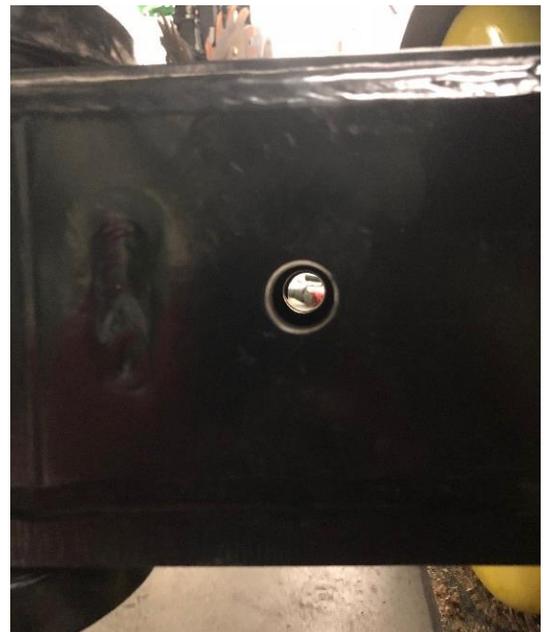
5.0 Track Installation

1. After the lift frame and axle are installed along with the axle pin. The installation of the tracks can begin.

Note: Be sure to carefully watch and properly line up axle pin with axle tube. This should be an easy process and the track should easily slide into place. Prior to installation it can be beneficial to spray some lubricant to aid in the sliding of the track axle pin onto axle assembly.



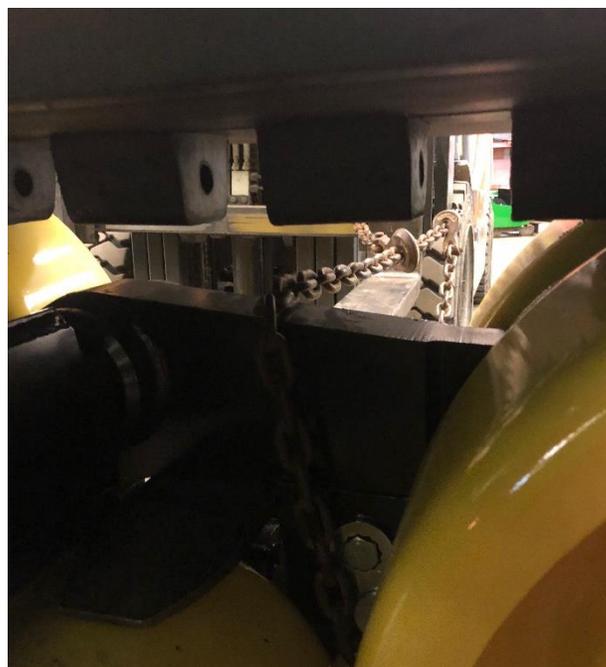
2. Line the axle pin and the slot in the axle up and slide the track onto the axle assembly. Be sure the bolt holes are lined up for easy installation of the bolt.



3. Slide bolt into hole and tighten provided lock nut to secure tracks to axle assembly.



Note: In the event of the track and axle pin sliding past the bolt hole, the use of a chain to slide the track back some may be necessary.



6.0 Row Unit & Row Tip Installation

*This first section applies to double row tip ONLY!!

Skip to number 1 for single row tips.

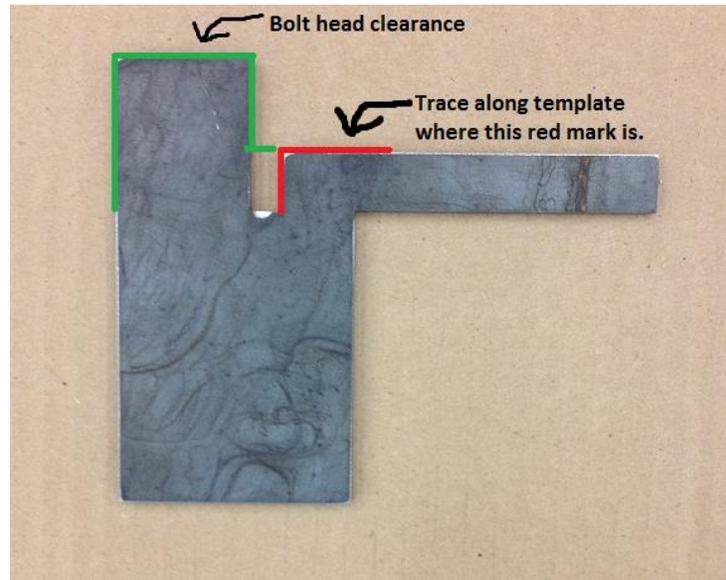
Locate the template and cut as shown in the pictures below.



We have found some of the newer DB planter frames have less clearance in the bracket that mounts a roller. Use the gauge to see if your planter has enough clearance for the row tip to fit. With the planter folded up hold the template up to your roller brackets resting the long narrow part on top of the 7x7 tube and holding the template tight to the front side of the tube, see photos below.



As indicated in the photo below, trace along the corner on the template shown with a red mark in the photo, this is the area where you will need to cut or grind away. The possibility of the tip bracket lining up with a bolt right at the roller mount isn't very likely but if happens to be the case then the green line in the template photo indicates the additional amount you will have to cut.



The photo below is showing the area marked out to be cut and ground off.



1. First begin by removing the top plate of the row tip. Remove the bolts, sprigs, and small cylinder in order to slide the row tip into place on the planter.

*Note: With the double row tips there are two places to install the small cylinder. When reinstalling the top plate to secure row tip to planter choose the section that allows for the most clearance of the small cylinder.

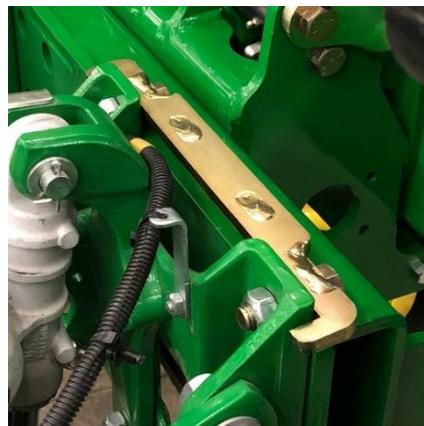
2. Begin the reinstallation of the row units. First install the row unit tip up to the frame of the planter. Be sure to check for proper fit of tip up unit.

Note: It is easiest to install row tips and row units when the planter is partly or completely unfolded.



3. Mount the row unit to the row tip up.

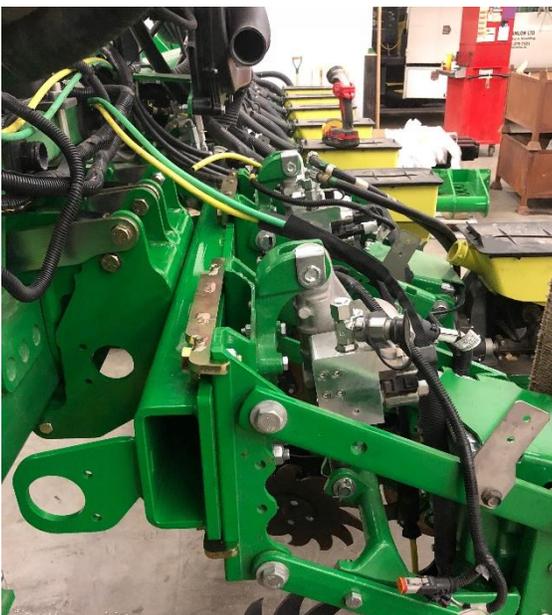
Note: Loosely bolt top mounting bracket onto the row tip prior to lifting unit into place for easier mounting.



4. Once unit is in place, install bottom mounting bracket and leave a little slack to allow side to side movement of unit for proper placement. Be sure to measure row width to achieve proper row unit placement before tighten bolts.



5. Once desired placement is achieved. Tighten all bolts on the mounting brackets starting with the top bolts and lock nuts.



6. When tightening the fittings shown in the picture below ensure not to over tighten them as they may break. Tighten them to a snug fit to ensure no leaks.



7. When installing the small cylinder ensure to install it on the side that has the most clearance.



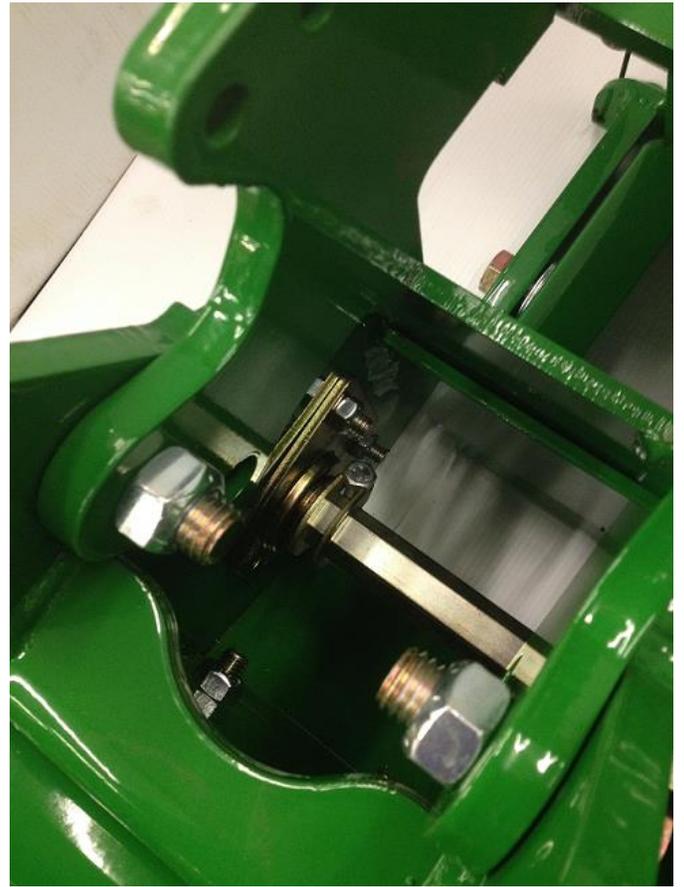
8. After mounting the row tip on the planter wing, and adjusting the proper spacing to the row beside it, lock the set screws and jam nuts located on the underside of the assembly to keep the unit from sliding side to side. Jam nuts are shown in the bottom view.



9. Once the bracket bolts, set screws and jam nuts are tightened down, row unit and row tip installation is completed.

6.1 Chain Drive Installation (if needed)

1. Re-Install the hex shaft and drive dog as shown in the picture below to the left. Make sure to keep the clamps loose, re-use one clamp and use one clamp provided in the kit to keep the hex shaft in place. Use caution to keep the drive dog pushed into the row unit as far as possible until unfolding the planter then position the shaft so the drive dog engages with the rear center section drive dog. In some instances the shaft or sliding coupler need to be shortened to make the row tip up and down smoothly always check everything out before shortening.



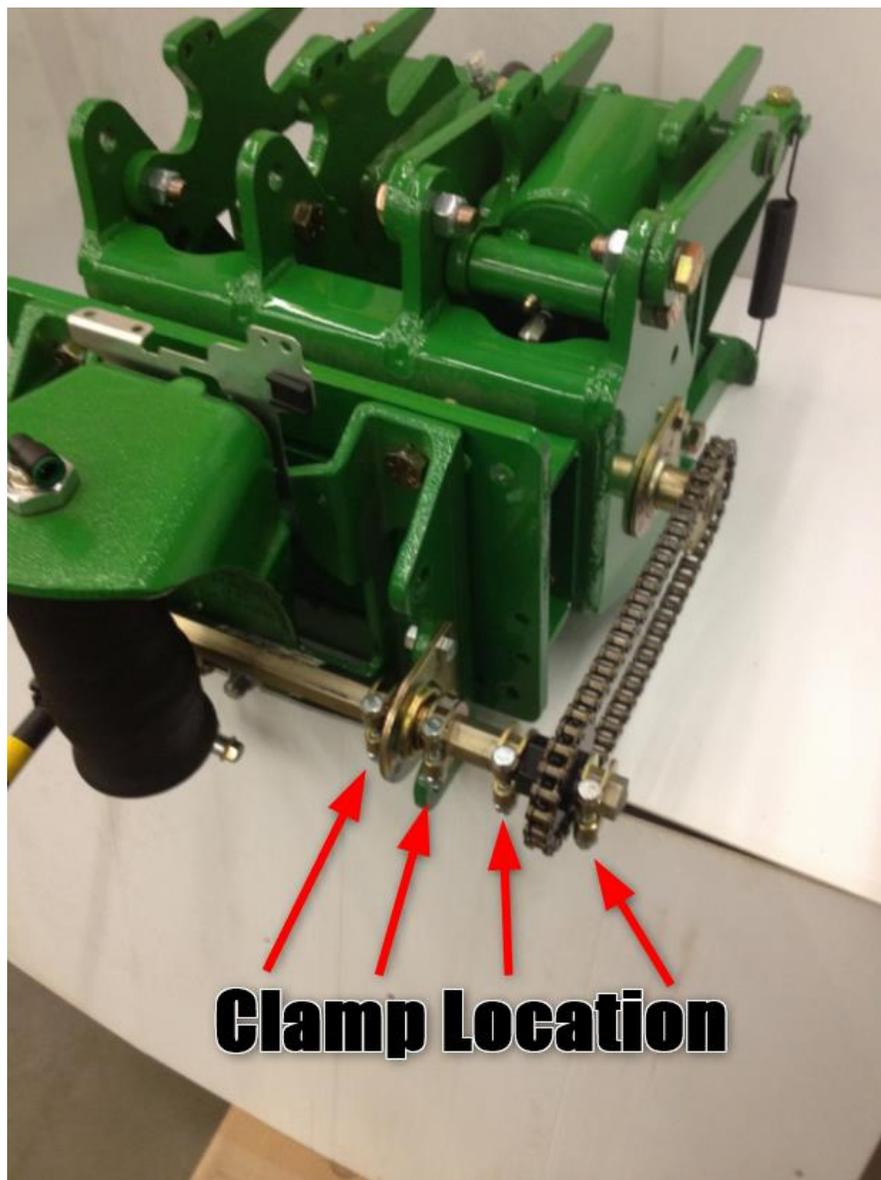
In order to retract the drive dog close enough to the row on narrow row planters, it may be necessary to mount the hex bearing on the inside as shown in the photo above to the right. If that is the case put the clamp on the inside as shown in the picture to the right.

Mount the planter row unit to the row tip.

(Planter unit removed from “W” mounting plate for illustration purposes).

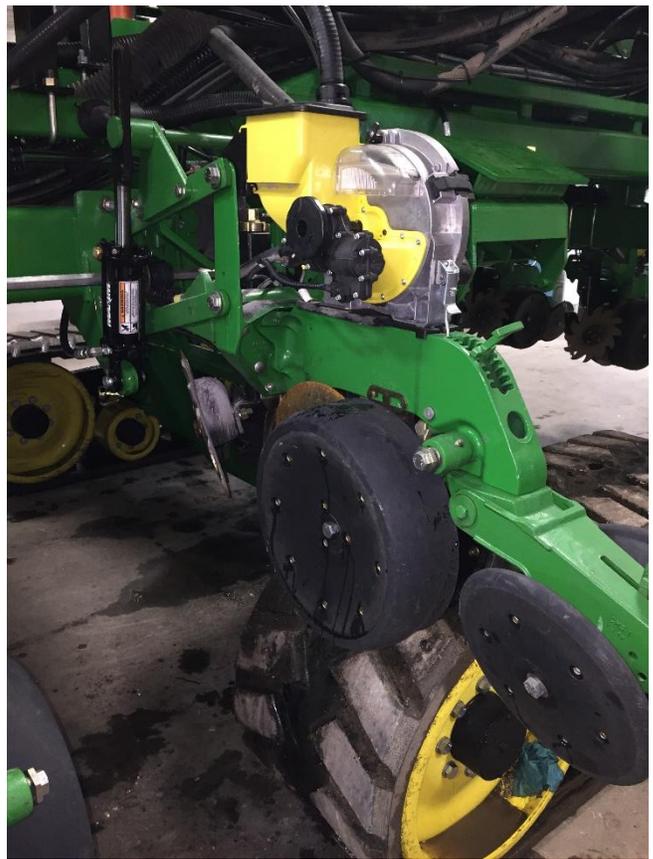


Another view of sprocket and clamps:



7.0 Row Lifters

1. Reuse the factory U bolts when mounting lifter. Bolt the mounting bracket to the tool bar.
2. Bolt the triangle, as shown in the pictures, to upper parallel arm as illustrated.
3. Use three lock collars to hold support cylinder in place during transportation.



8.0 Speed Sensor

If you are using an aftermarket monitor such as a Precision Planting monitor you can skip this speed sensor reinstallation and proceed to the next step.

As shown to the Right →

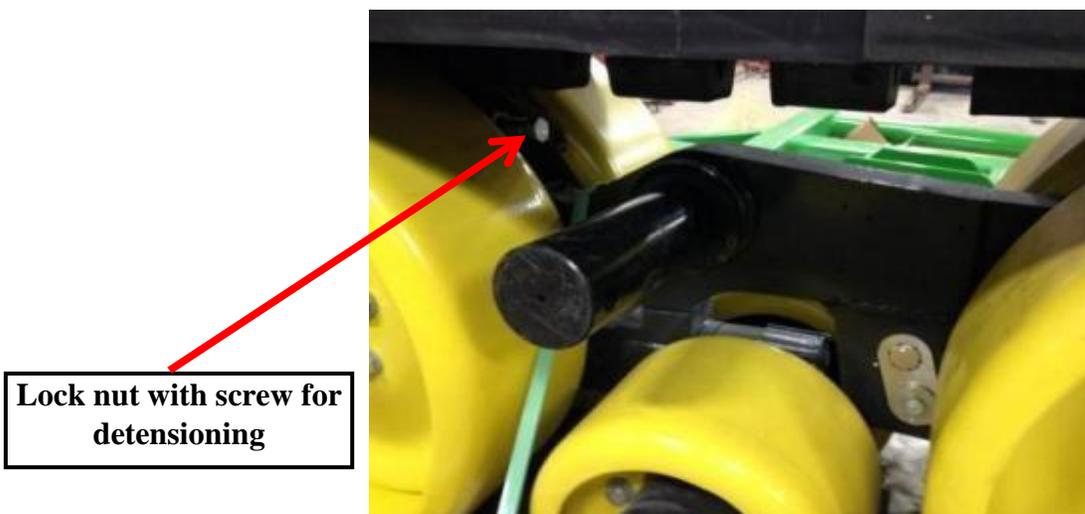
If your track undercharge is equipped with this speed sensor then you can skip to the next step.



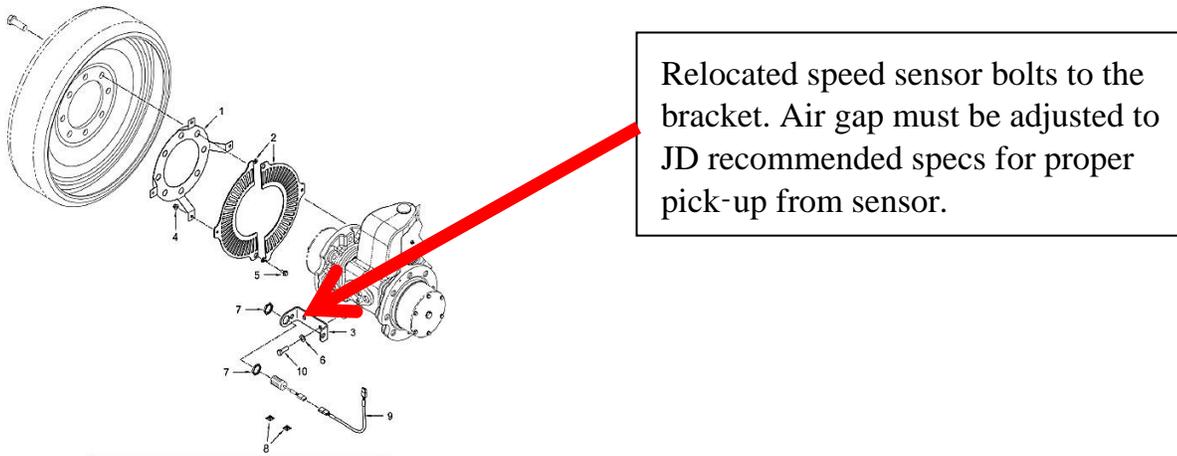
8.1 Speed Sensor Reinstallation (if needed)

The speed sensor removed from wheeled axle assembly earlier will need to be installed in the outer RH front TTS undercarriage assembly. Before this can be done, the tension on the system must be removed so the idler can be removed.

1. Locate the track detensioning bolt and lock nut. This mechanism is at the top of the rear tension link assembly between the idler wheels.



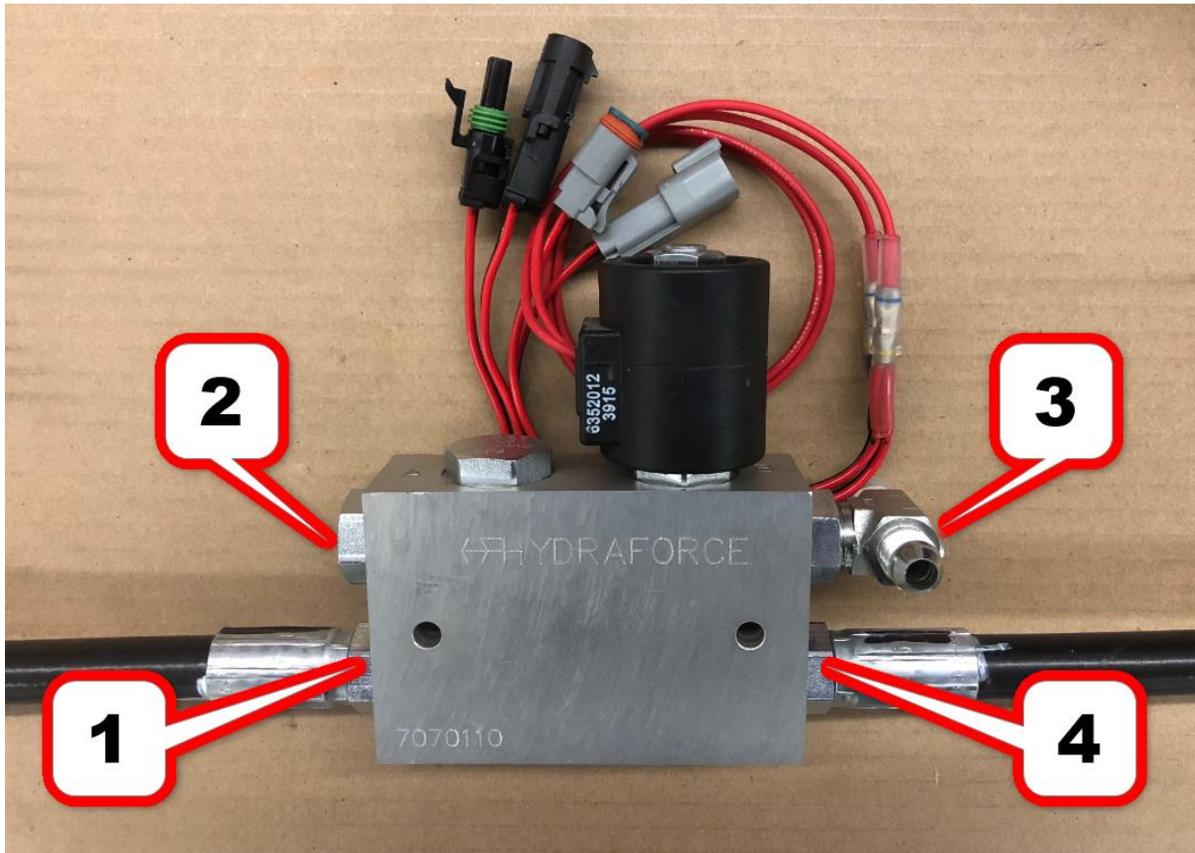
2. Loosen the lock nut using a 42 mm deep well socket (or similar). Compress the spring to detension the track by tightening screw (clockwise). Tighten the screw only far enough to loosen the track and allow for removal of the right front outside idler wheel. Do not over tighten.
3. Remove the (8) M20 x 60 bolts and washers holding the RH front outer idler wheel to the hub. Then remove the idler.



4. Install the original speed sensor removed from the tire assembly into the saddle bracket and tighten with jamb nuts. Gap sensor to tone wheel per JD planter specs (normally 1-1.5 mm).
5. Attach wiring harness and route wires out of undercarriage assembly to the inside to attach to the original planter sensor harness wire from the planter upright. This will be done after installation of the u/c to the axle.
6. Reinstall the idler wheel to the front idler hub. Torque the (8) hub bolts to 620 N-m+/- 124 N-m (457 ft. lbs. +/- 91 ft. lbs.).
7. Retention the track assembly by retracting the jack screw on the tension link assembly. Rotate the screw counterclockwise, extending the spring until there is no load on the screw. The spring is now fully extended and the track has maximum tension. Turn the screw in/clockwise until it touches the tension link and back off 1/4 turn. Secure the jamb nut.
8. The speed sensor is now installed and the RH track assembly is now properly tensioned. Refer to Operators manual provided with this installation kit for further details if needed.

9.0 Dump Valve Installation

The dump valve will have hoses connected to only allow connection one way. The correct Y harness (Black or Grey) will be supplied with your kit. The dump valve is plumbed as follows:



- Port #1: Will “tee” into the rod end of either main fold cylinder. (6 foot hose)
- Port #2: Will be plugged.
- Port #3: Will go out to each row tip. (12 foot hoses)
- Port #4: Will “tee” into the CCS Fan Case drain (7 foot hoses)

Note: Always be sure to have case drain line connected to tractor when folding and unfolding planter or possible damage to fan motor seal may occur!

Connect the “Y” harness for the solenoid to the wire marked with a #14 or “Field” on the main hydraulic valve stack under the CCS tanks.



Dump Valve Installation Complete.

10.0 System Checkout

1. Remove all lifting devices and supports. Recheck all hardware, hydraulic lines (if applicable), air bag lines, seed and vacuum lines. Move planter to suitable surface to test fold and unfold the main bars.
2. Perform operational check of planter by cycling the fold, unfold and plant cycles.
3. DB Planter row lifts will begin to raise when the hydraulic remote which folds the wings forward is engaged.
4. Row Lift units will lower when wings are fully unfolded to the plant position and the Planter monitor in the cab is switched to “plant” this relieves the pressure on the one way lift cylinders and allows oil to flow to the case drain circuit of the tractor.
5. Check for hydraulic leaks and correct if needed.
6. Instruct operators on proper procedure for break in, alignment and maintenance of undercarriages. It is critical to pre-condition/season the tracks prior to any road transport of the track system. See the break-in section of the Camso Manual that you received with your track undercarriage.

11.0 Very Important Final Check

When lifting the planter for the first time using the “translift” function use caution and watch the area in the red oval as the barrel of the lift cylinder may contact here. If this happens double check which holes you used for your cylinder pins on the top and bottom of the lift cylinders.

