



Installation Manual

**Wide Swing Drawbar Controller
JD 9000T – 9030T Tracked Tractors**

**AJ Equipment L.L.C.
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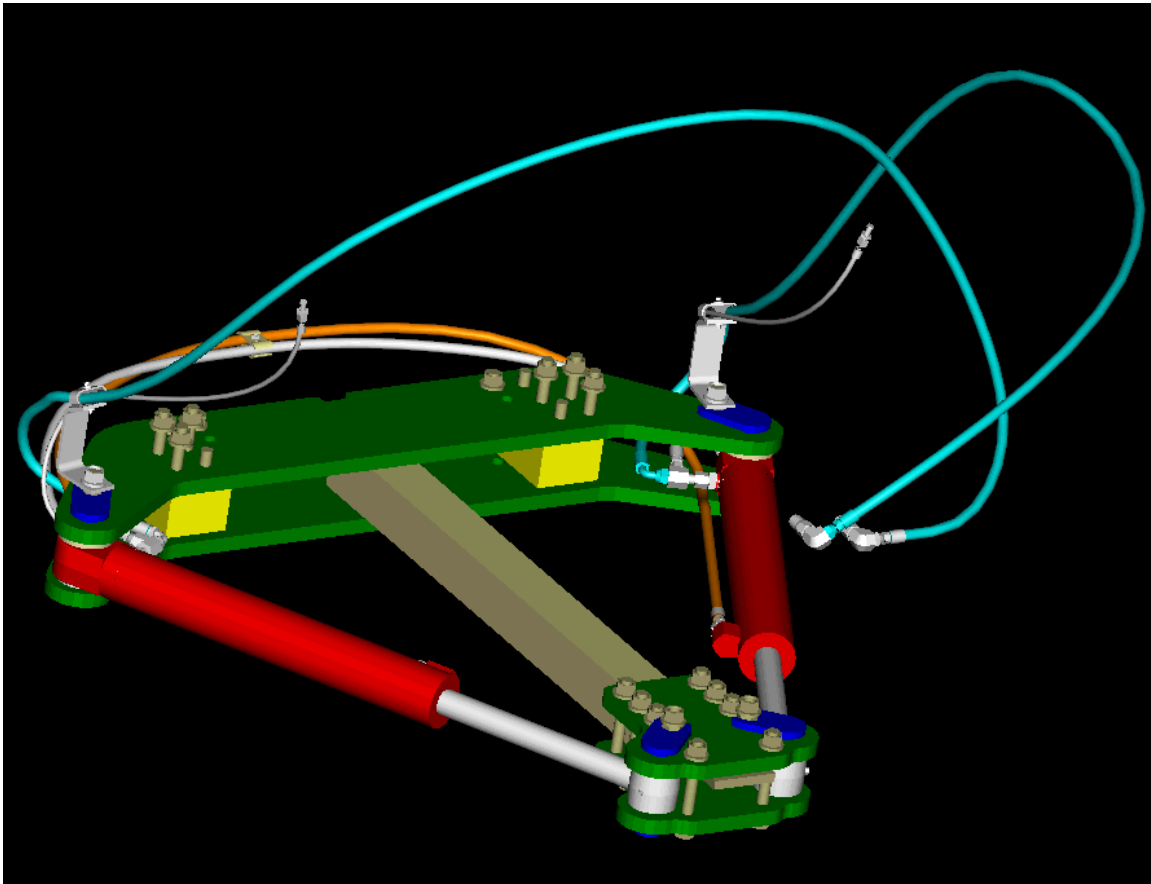
AJE9Mar09 issue

Introduction

Thank you for purchasing the AJ1 Wide Swing Drawbar Controller for your 9000T - 9030T track type tractor. The following pages will instruct you on how to securely install your drawbar attachment for long life and peak performance. ***Failure to fully follow installation instructions will reduce performance and void any implied warranty of the attachment.***

Much of the drawbar has been pre-assembled to reduce installation time and assure proper orientation of key components. Some components have not been tightened or assembled due to necessary interfaces with the tractor. Please follow the steps below to efficiently install your AJ1 Wide Swing Drawbar Controller;

Assembly as Received



Please insure that all parts have arrived in good order per the packing slip before you attempt assembly

Installation Overview

Estimated installation time 3 hours

The general approach you will take to install the AJ1 Wide Swing Drawbar Controller is as follows;

- Park the tractor in a suitable location in which to work on it
- Gather the required installation tools identified
- Partially remove the drawbar from the tractor, then apply the templates provided with the AJ1 Wide Swing Drawbar Controller to identify paint removal areas and mark drill holes
- Drill (6) holes in the tractor frame
- Install the AJ1 Wide Swing Drawbar Controller into place on the tractor, re-install drawbar, and secure all screws.
- Hook up the hydraulic hoses, start the engine, check for leaks, clearance, and drawbar function

Your AJ1 Wide Swing Drawbar Controller will then be ready for the field

Tools Required

You will require the following tools for the un-crating and installation of the AJ1 Wide Swing Drawbar Controller.

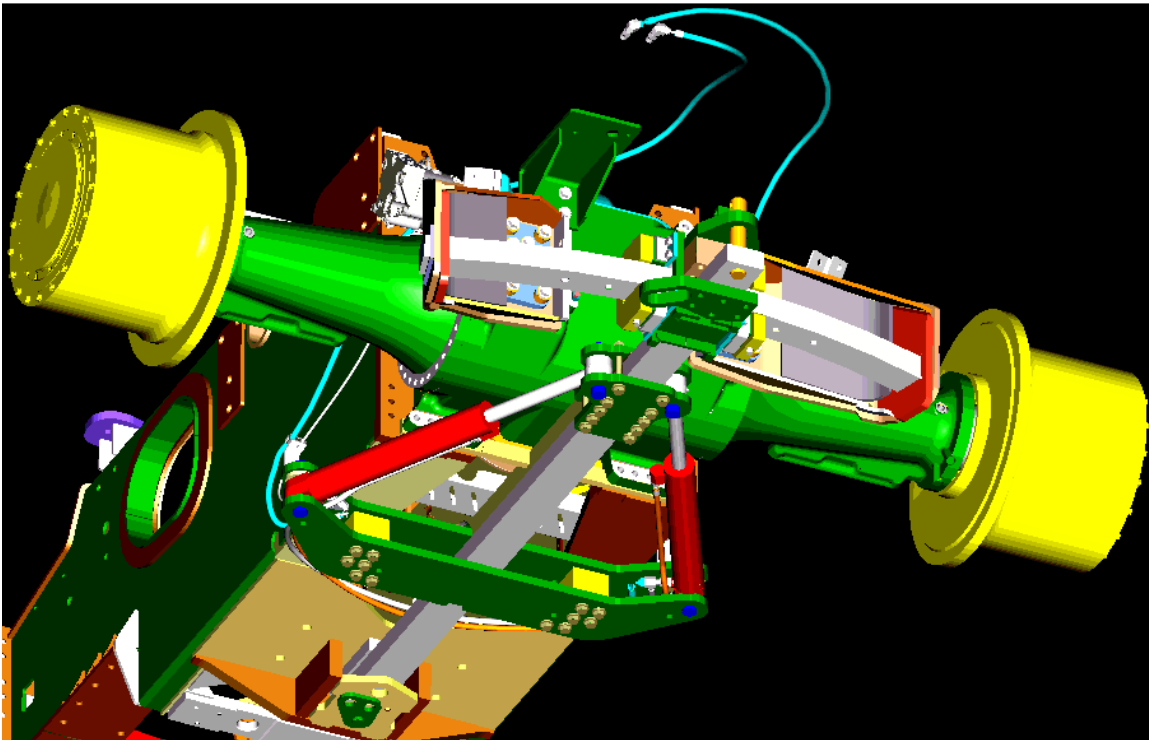
- Side cutting pliers
- Hammer
- Center punch
- Floor Jacks
- Suitable support stands or timbers
- M-30 Wrench (combination preferred to keep screw from turning)
- M-30 socket
- Torque wrench -capable of 610 Nm torque (450 ft-lbs.)
- ½” open end or combination wrench
- 11/16” combination wrench
- M-24 socket or Combination wrench
- Magnetic Base Drill (recommended but not required)
- 7/16” drill bit
- 7/8” drill bit
- 3/8” drill bit
- Sandpaper and preferably a sander
- Cleaning fluid
- Lawson Cool Tool “spray” drill lubricant or equivalent

Notice

Strict attention to assembly instructions will assure reliable function and wear of all components and satisfaction with your purchase for years to come.

Reference to the Parts manual may assist you in the installation of the AJ1 Wide Swing Drawbar Controller assembly if part descriptions are not clear to the assembler.

The following picture depicts the proper orientation of the AJ1 Wide Swing Drawbar Controller on the tractor.



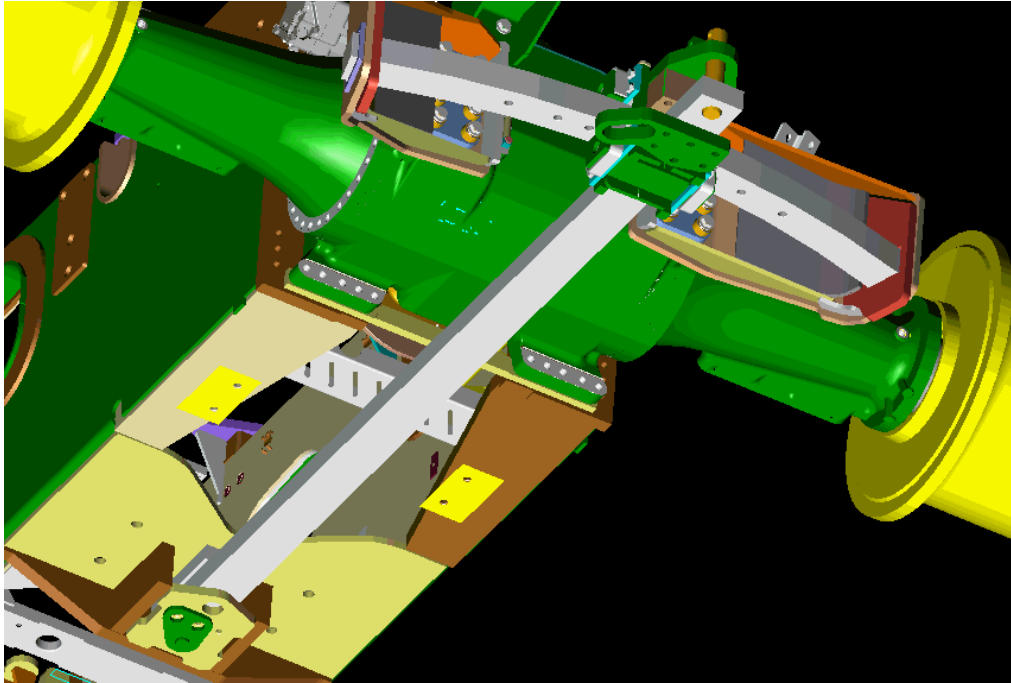
Damped and Powered Drawbar for 9000T-9030T Tractors

Preparation

- 1.) Remove protective wrap and cut banding to free assembly from pallet
- 2.) Inspect shipment to assure all parts have been received
- 3.) Procure Installation Manual and review completely before beginning
- 4.) Collect Required tools as listed
- 5.) Move tractor to a clear and level area upon which it is preferable to work

Installation

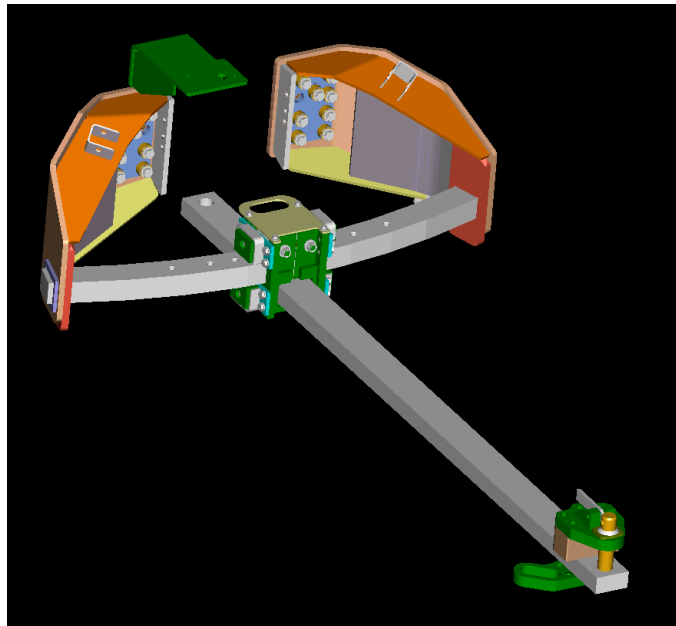
- 6.) Take the AJE002 templates from enclosed pack in the shipment. Noting the description on the template, pin the templates in the appropriate location on the bottom of the tractor frame. (4) # 8x Caplugs are provided to place through the template and into the M-20 threaded holes in the gussets forward of the rear axle on the bottom of the tractor frame.



- 7.) Mark around perimeter of templates to identify the area to be sanded off to create a bare metal surface for a better friction joint
- 8.) Center punch at marked cross hairs to identify hole centers for drilling (***assure the AJE Templates are well centered with no slop to the caplugs. Assure the template is flat on surface. Very little clearance is allowed for the capscrews relative to other screws.***) If there is doubt, use the dimensions on the template and another means to mark the holes. ***“An alternate method would be to lift and bolt the drawbar assembly into place with the four existing holes and drill the holes using the AJ1 Wide Swing Drawbar Controller assembly as a fixture.”***
- 9.) Drill the three holes per side where marked. The plate through which you are drilling is 1 $\frac{3}{4}$ ” thick. It is recommended to drill a $\frac{7}{8}$ ” clearance hole. A Magnetic based drill is recommended to make this job much easier. If no Magnetic based drill is available at your location or a local

rental shop, a hand drill may be used. A pre-drill may make the job easier regardless of using a Magnetic based drill or a hand drill. A 1/4" to 3/8" pre-drill will facilitate the larger drill. (Use of a spray type drill lubricant is highly recommended in order to defy the effects of gravity when drilling from underneath. **–drill dulling and breakage may result if this recommendation is not followed.**

- 10.) Sand the area within the area scribed around the template to bare metal to improve the frictional interface of the joint between the AJ1 Wide Swing Drawbar Controller assembly and the tractor frame. Clean the surface to be free of oil as well when finished.
- 11.) Assure the (4) capscrew holes in the tractor frame have been cleaned and are free of all contaminates and corrosion to assure a strong joint.
- 12.) Remove tractor drawbar pivot pin at front of drawbar. ***(An M-24 wrench or socket is required to remove the retaining screw for the drawbar pivot pin prior to pulling the drawbar rearward)*** Pull the drawbar rearward until about 1 foot remains in front of drawbar hanger. Support rear of drawbar.

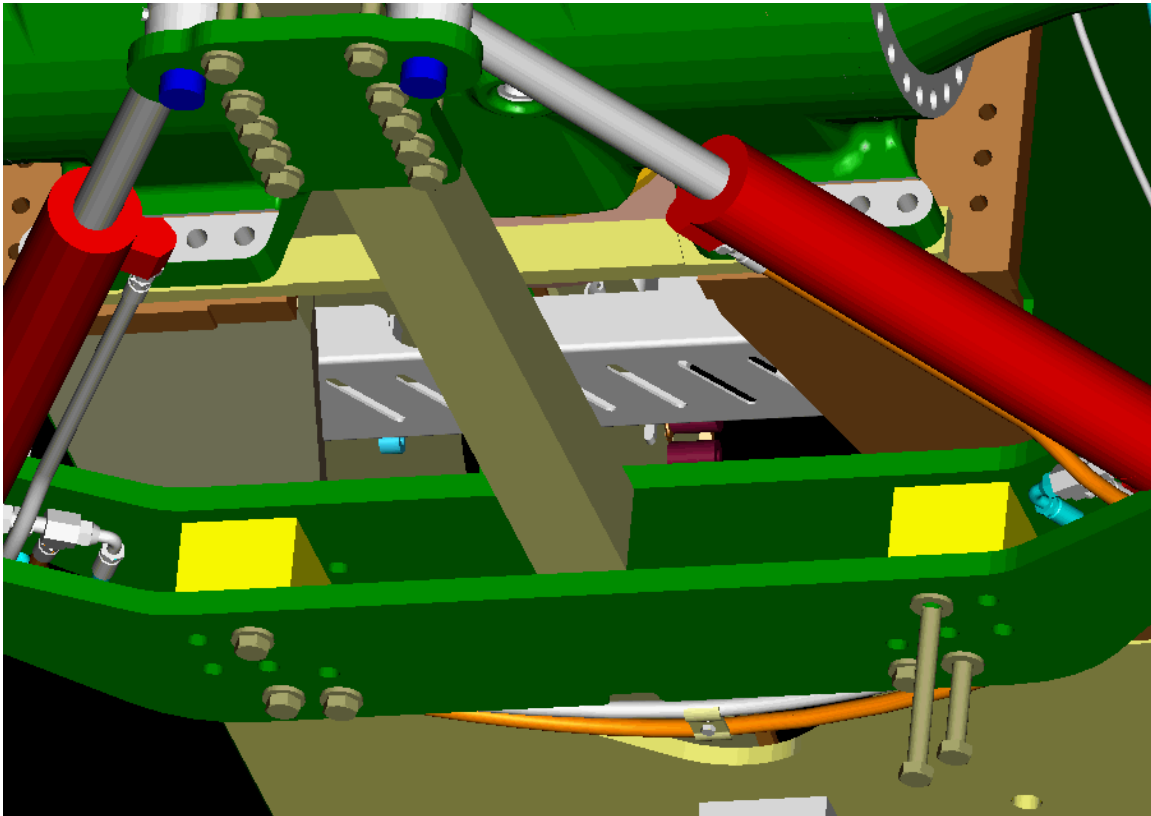


(Make sure hanger roller assembly for the tractor drawbar is pinned to center position during this step. -It is easier “not” to pull drawbar completely out of roller hanger assembly on wide-swing drawbar for this installation)

- 13.) Place the AJ1 Wide Swing Drawbar Controller assembly “as received” under the tractor on a suitable jack to lift into position. Identify the

correct placement of holes to secure the assembly to the tractor frame. The two holes in the drawbar assembly are marked that need to line up with the two threaded holes that were originally in the tractor frame.

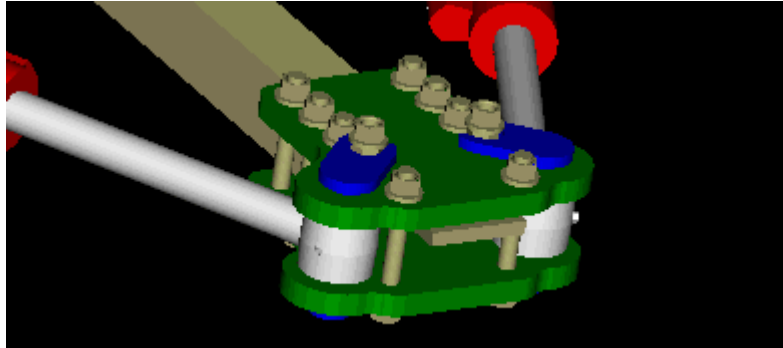
- 14.) Lift the assembly into place and secure with (4) screws into the threaded holes in the tractor frame.



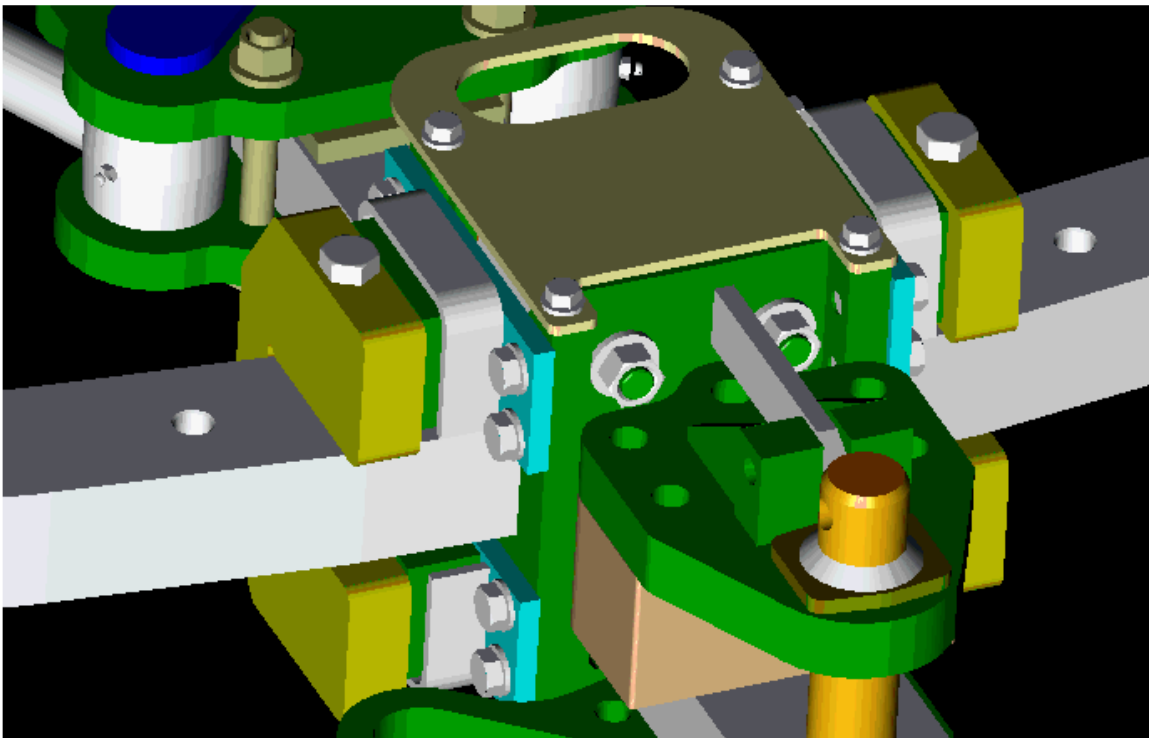
- 15.) Place the remaining (6) M20x2.5x220 capscrews in the through holes of the AJ1 Wide Swing Drawbar Controller support and holes just drilled in the tractor frame on either side of the tractor. Place the threads "up" to reduce potential to damage threads. Place a hardened washer under the head of the screw and under the nut. **(Very Important!)** When all the hardware in this step is in the AJ1 Wide Swing Drawbar Controller assembly and tractor frame, tighten all the M20mm screws to 610 Nm (450 ft-lb) torque. **It is recommended that a re-torque of this hardware occur after 10 hours of operation.**

- 16.) **"Loosen"** - **but do not remove** the 10 Capscrews in the drawbar plate at the rod end of the cylinders. It will be necessary to loosen the nut

holding the pin flag down to achieve this step. Remove the flat steel plate and the piece of wood supplied taking care not to damage the piece of wood supplied as it will be used as an assembly tool. It will be necessary to remove only the nut retaining the cylinder pivot pin until that screw can be properly re-torqued.

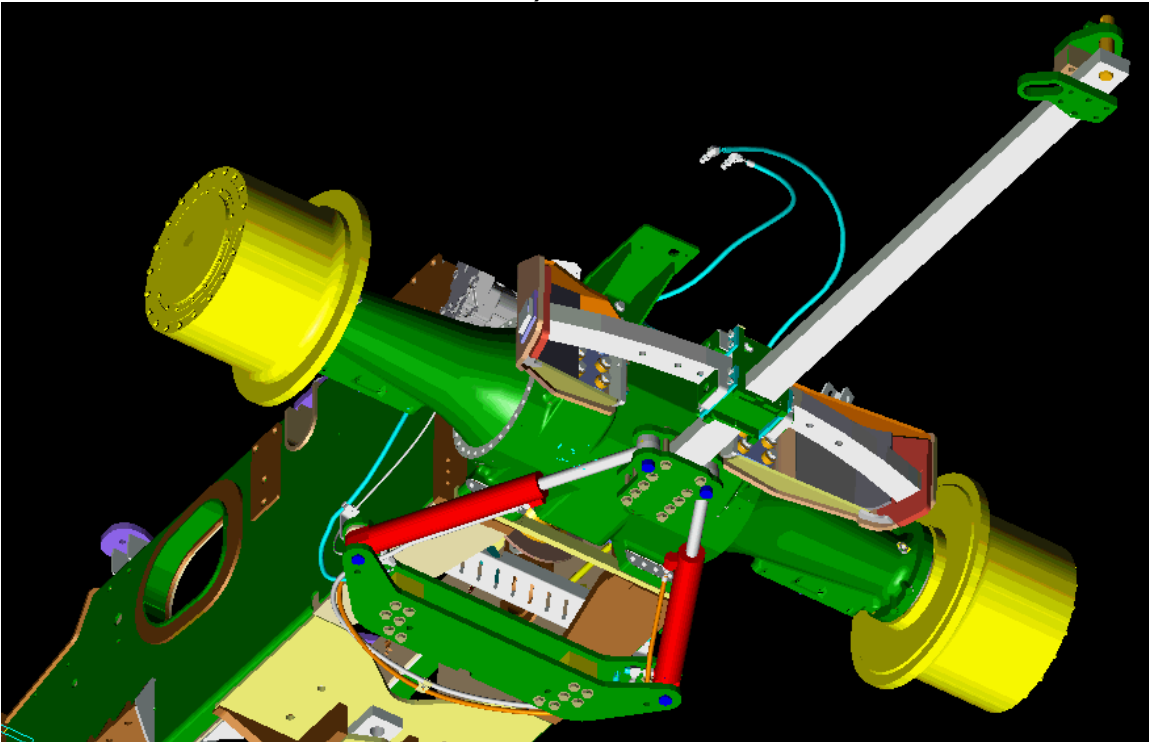


- 17.) Verify the drawbar is pinned in the center or neutral position before proceeding.

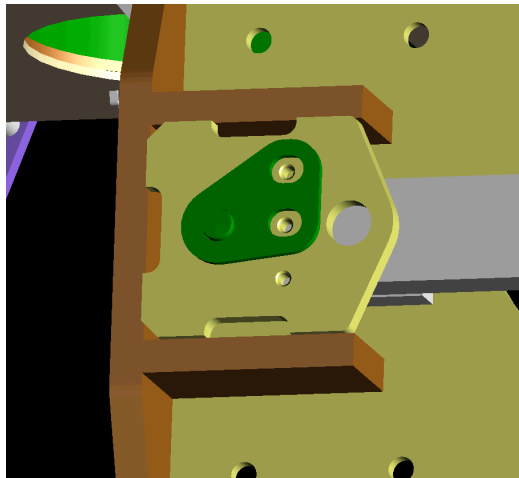


- 18.) Re-install the tractor drawbar between the AJ1 assembly drawbar plates and between the AJ1 drawbar rear frame plates. ***(Make sure to lift the***

AJE drawbar assembly hydraulic cross-over hoses above the drawbar as it is re-installed).

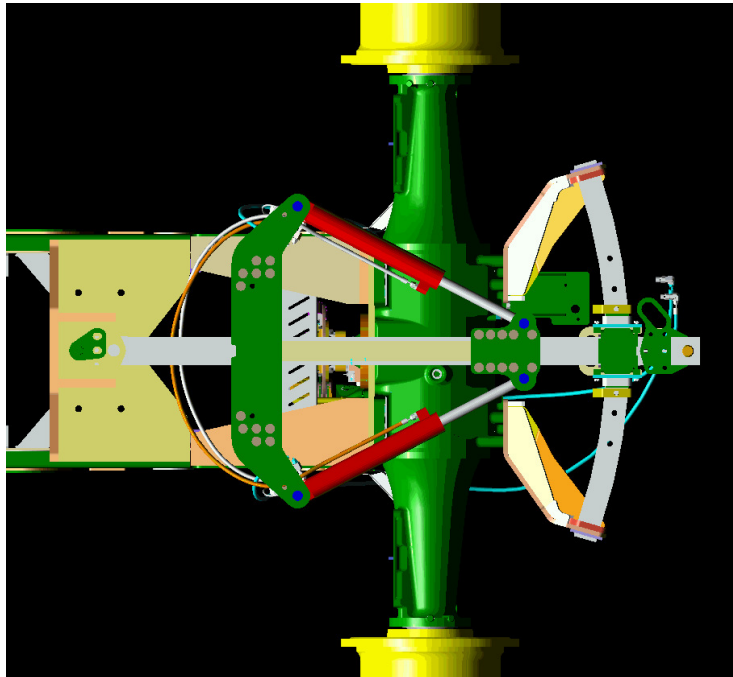


- 19.) Place the tractor drawbar front pivot pin in the “**Front**” hole of the drawbar support “(**short position**)” and re-install the retaining hardware. Torque to 310 Nm (230 ft-lb) (The short position is preferred for best geometry of the drawbar control)

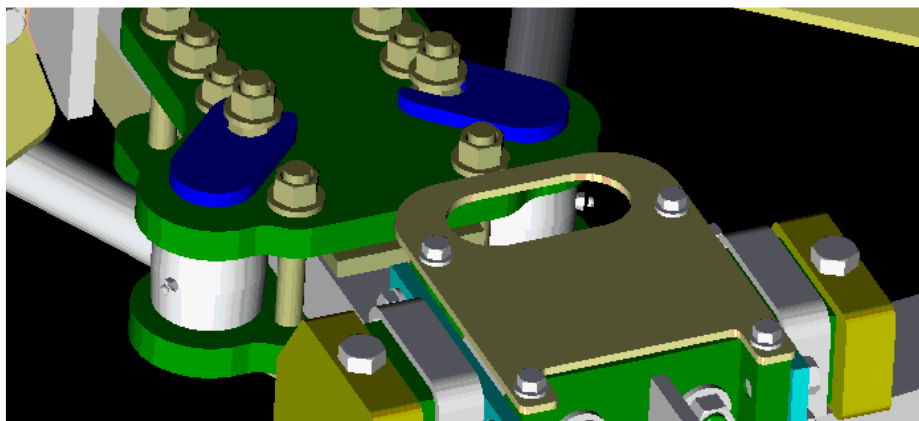


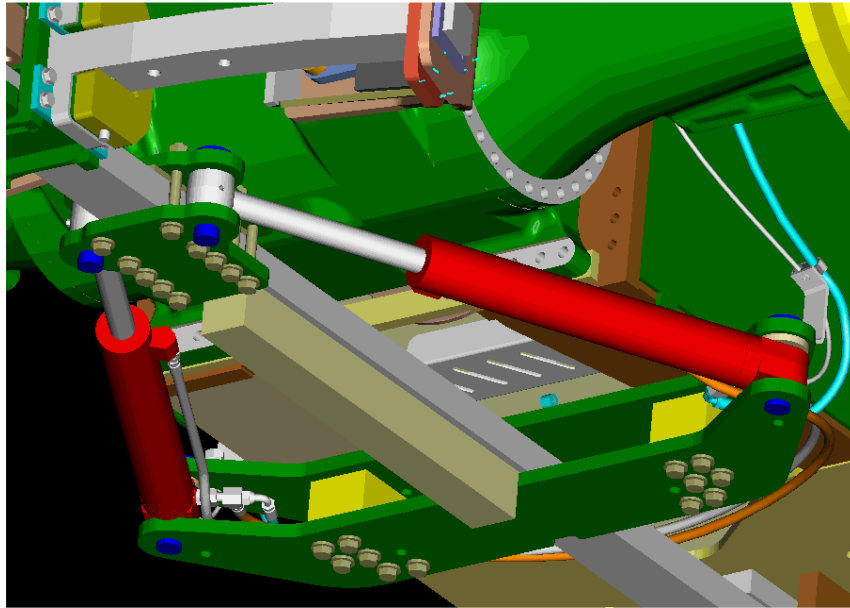
- 20.) Secure the hydraulic cross-over hoses approximately 1 inch above the drawbar by using the heavy nylon tie strap provided. Install the tie band

around the hoses at the clamp point and to an appropriate point just overhead of the hoses.



- 21.) Place the rectangular flat steel plate removed with the piece of wood supplied on top of the drawbar and under the top plate of the AJ1 Wide Swing Drawbar Controller assembly. Leave the front edge flush with the front edge of the drawbar plates. Place the piece of wood supplied between the AJ1 drawbar frame plate and drawbar plates as a spacer. Push the drawbar plates until the piece of wood supplied touches the front of the drawbar plates and rear of the frame plates or measure 32 & 11/32". (This provides the **required** and appropriate geometry for best function of the drawbar controller.) **The hydraulic hose couplers will have to be opened to allow air in to easily accomplish this step!**



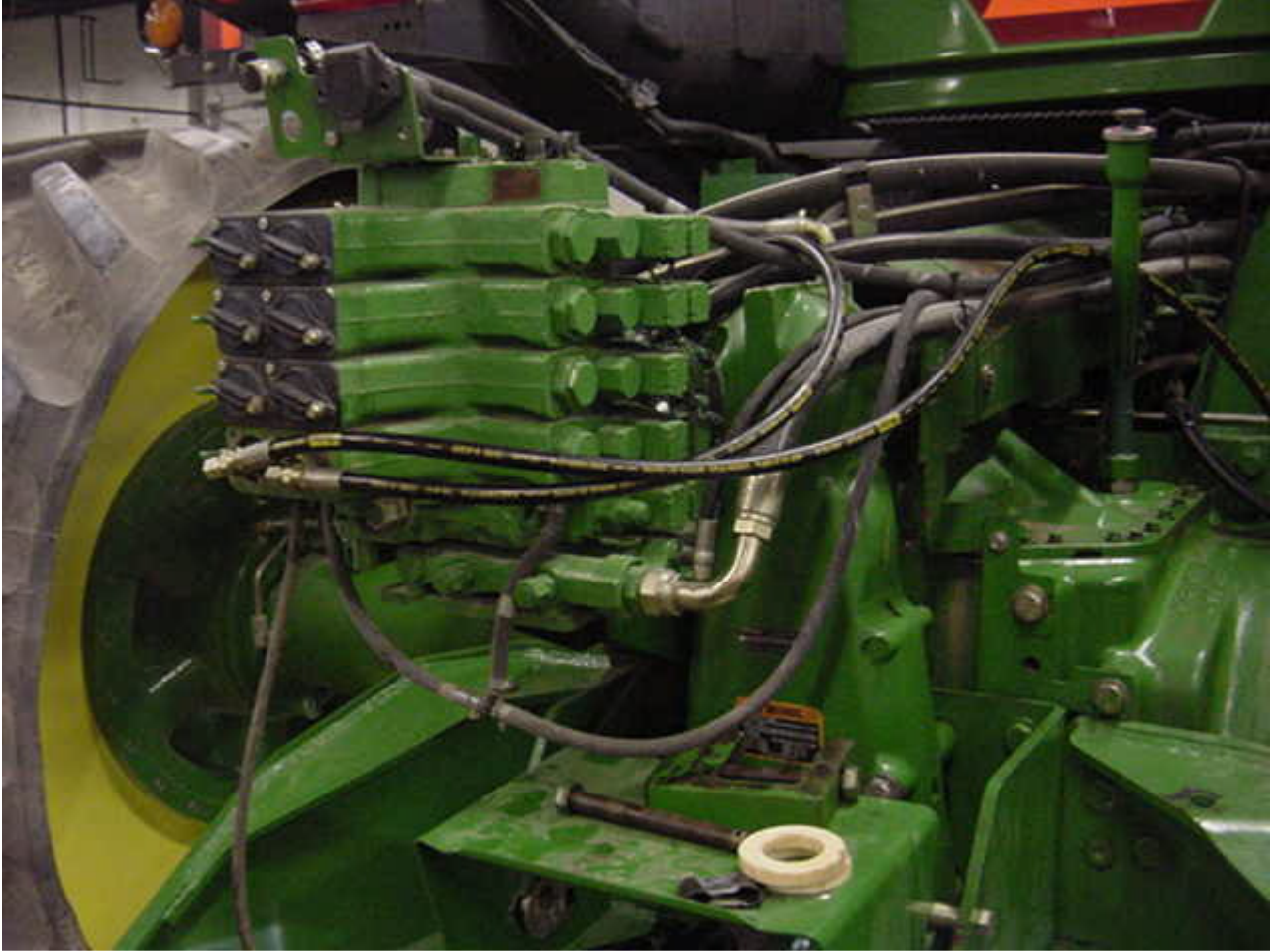


- 22.) Tighten the screws in the drawbar plates assuring the rectangular plate is still in the proper position and the cylinder rod end pins are in proper position. (Torque to 610 Nm (450 ft-lb)) Assure there are hardened washers under the screw heads and under the screw nuts. The threads should be on top to prevent damage in the field.
- 23.) Re-install and (or) tighten the nut on top of the hydraulic cylinder pin flag. (Torque to 610 Nm (450 ft-lb.))

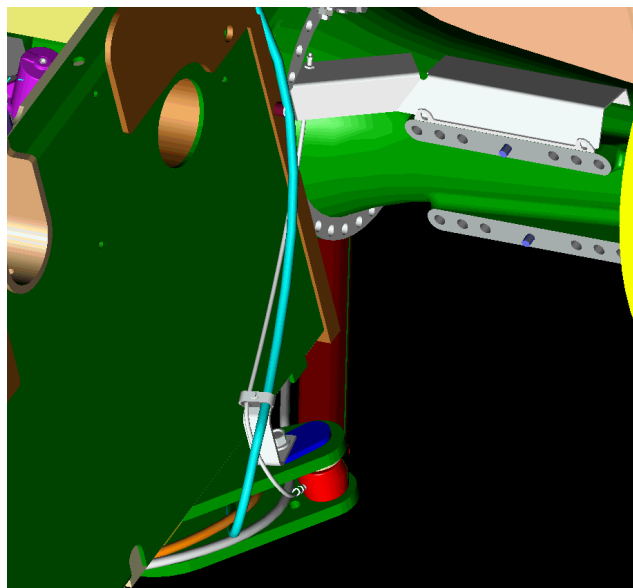
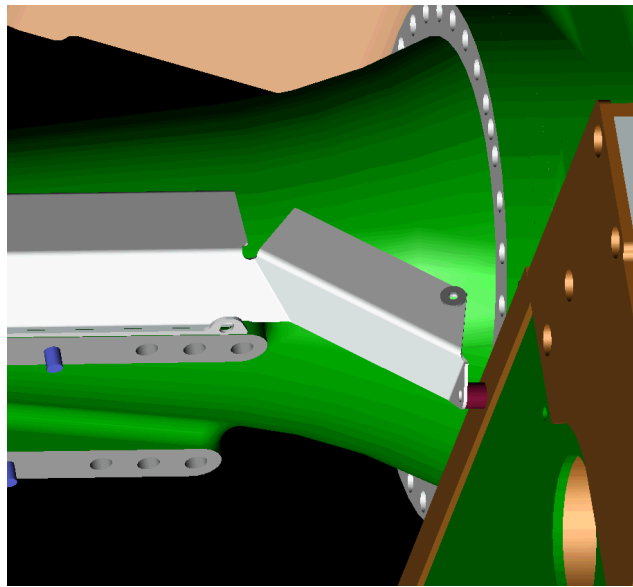


- 24.) Remove the piece of wood supplied.
- 25.) Cut the tie bands on the hydraulic cylinder hose bundles and stretch along side of the chassis.
- 26.) Plug the hydraulic hoses into the SCV of the customer's preference.

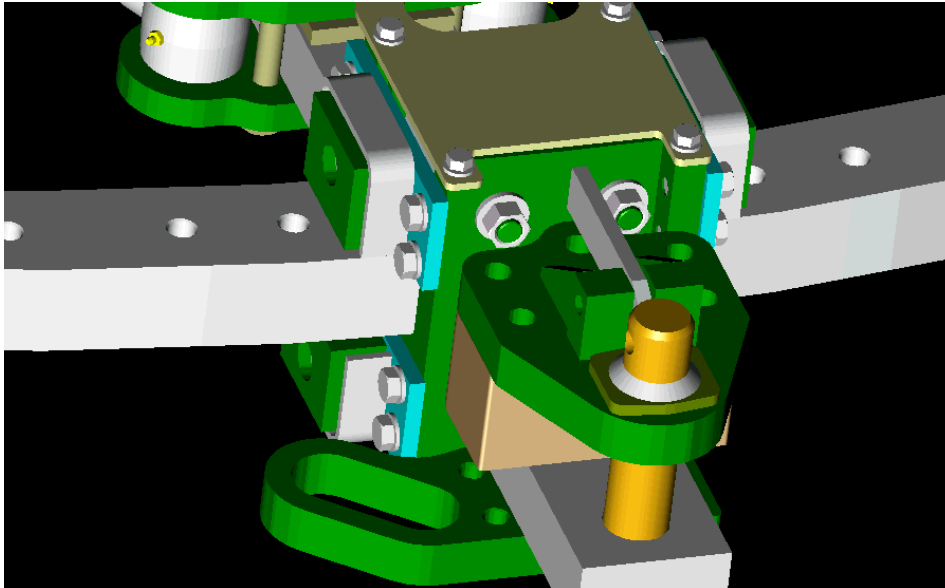
Recommended hose routing at SCV



27.) The Grease hoses may be attached to the inner edge of the brake line shields. A 3/8" hole may be drilled through the top inner edge of the brake shield to insert the bulkhead fitting to secure the line. ***It is imperative that care be taken not to damage the brake lines.*** It is recommended that a thin steel plate be placed below the brake shield as the hole is being drilled to prevent damage. (As an aid to drill hole placement in the tractor brake shield, place the washer provided (24H1311) tangent to the two edges of the shield and clamp in place with **TWO** locking pliers to accurately and safely drill the hole.) The washer is painted yellow and found on one of the bulkhead fittings. This washer may be disposed of once the left hand and right hand holes have been drilled.



- 28.) Remove the drawbar stops and stow in the proper storage position on the tractor



- 29.) Assure all hoses, connections, and mechanical parts are secured. Start the tractor and set the engine speed to idle. Set the SCV with the actuation hoses for the AJ1 Wide Swing Drawbar Controller assembly to the lowest flow mode. Slowly actuate the drawbar and observe the assembly as it is moved throughout its range for mechanical interferences and hose clearance.
- 30.) Several full range swings may be required to purge air from the system and provide smooth operation.
- 31.) After proper operation is assured, re-install the stops and actuate the drawbar against the stops to assure the system is mechanically sound. Assembly Capscrews should be checked for proper torque after several full pressure cycles against the stops.
- 32.) The Stops may now be removed. The AJ1 Wide Swing Drawbar Controller assembly is ready for field operation at any SCV setting and any engine RPM.

Installation Complete

Quick Check List Review

- Inspect shipment to assure all parts have been received
- Collect Required tools as listed below
- Remove protective wrap and cut banding to free assembly from pallet
- Move tractor to a clear and level area upon which it is preferable to work
- Procure AJE002 templates from enclosed pack in shipment
- Mark around templates and center punch hole centers for drilling at crosshairs
- Drill the three holes per side where marked
- Sand the area under the template to bare metal and clean capscrew holes
- Remove tractor drawbar pivot pin at front of drawbar and pull drawbar rearward until about 1 foot remains in front of drawbar hanger and support rear of drawbar. (Make sure hanger roller assembly is pinned to center position during installation -It is easier not to pull drawbar completely out of roller hanger assembly on wide-swing drawbar for this installation)
- Place AJE drawbar assembly under tractor on a suitable jack to lift into position. The identified holes in the AJE drawbar assembly should line up with existing tractor frame holes so four screws can be assembled into the AJE drawbar assembly to tractor frame to secure it.
- Place the other 6 capscrews into the drilled holes loosely
- Tighten all 10 screws to specified torque
- Loosen the screws in the plate that goes around the drawbar to remove the 4x4 and flat steel plate
- Insert the tractor drawbar between the plates and through the main AJE drawbar attachment.
Make sure the hydraulic cross-over hoses are on top of the drawbar.
- Re-insert the drawbar pivot pin making sure the pivot pin is in the rearward hole of the drawbar receiver and replace retention hardware. Re-torque to appropriate level.
- Using tie strap provided, loop around cross over hoses at clamp assembly and hang from fitting on bottom of transmission in a manner that allows the hoses to clear the drawbar by about 1 inch.
- Place the piece of wood supplied on top of the tractor drawbar between the AJE assembly frame plate and AJE assembly drawbar plates. This is to properly space the hydraulic cylinders for best geometry.
- Place the flat steel plate on top of the tractor drawbar under the top drawbar plate and make sure it is flush with the front edge of the top drawbar plate.
- Torque the screws to the specified torque
- Cut the tie band on the bundle of hoses on either side of assembly and un-roll to the rear of the tractor.
- Plug in the SCV hoses to the appropriate couplers of customers preference
- Grease hoses should be attached to brake-line shields. A 3/8" hole may be drilled near the edge of the shield on the inner top edge or the washers may be used as a clamp to pinch around the shield. (It is recommended to drill a hole but be careful not to damage the brake lines.)
- Remove the drawbar stops and place in the storage holders on the tractor
- Start the tractor and have someone actuate the proper SCV at idle in the lowest flow mode while someone inspects for proper function and clearance of parts.
- Several full left to right swings of the drawbar assembly may be requires to purge all air from the system.
- After verifying all torques are correct and the system clears all component the system is ready for field operation at any flow control setting and engine speed.