



Our Business is *BOOMING*

Boyd Boom™ Extension Installation Guide

Questions about installation please call:
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www.boydag.com / www.superspraybooms.com



Extensions Set Serial # _____

Tools Required for Installation:

- 1/2" Socket, Ratchet and Wrench**
 - 9/16" Socket, Ratchet and Wrench**
 - 15/16" Socket, Ratchet and Wrench**
 - 30mm Socket and Wrench**
 - 15mm Socket and Wrench**
 - 10mm Socket and Wrench**
 - 7/8" Wrench**
 - 3/4" Wrench**
 - 1 1/8" Wrench**
 - 7/16" Wrench**
 - Hose Cutters**
 - Allen Wrench (size may vary)**
 - Snap Ring Pliers**
 - For plumbing: Tools will vary**
-

Remove Applicable Hardware

Remove or disconnect all delivery hoses, fence row hoses, leveling sensors (John Deere or Norac), all plumbing, foam air mix chambers, foam drop hoses and brackets as applicable.

Remove Original Secondary and Breakaway

At the hinge point, remove retaining pin for cylinders and **Scissor Arms (F:1 & F:2)**. Retract the cylinders. Remove the two 30mm bolts, nuts and hinge and boom scissor arms.

Very Important: Mark Top and Bottom Scissor Arms before removing. These must be reinstalled in the same location. Set aside scissor arms to reinstall later.

Warning: Failure to reinstall in the same location may cause binding and damage to the retaining pins. Use the spacers supplied with grease fittings at the center to permit access to the scissor arm grease fittings.



F:1 Scissor Arm – “S” Shaped Arm



F:2 Scissor Arm - Location

Remove and store the Secondary and Breakaway tip. Use stands, barrels etc. to support the boom on the opposite side while installing extensions on either side.

Install New Hydraulic Cylinders

Remove the two hydraulic lines on the **Hydraulic Cylinders (F:3)** and all fittings. Use two wrenches when taking lines off to prevent damaging O-Rings on the ends of the cylinder's hydraulic fittings. Remove the sensor from the back side of the cylinder and install it on the new cylinder. Remove cylinder retaining pin and bolt using a 10mm socket and 10mm wrench. Remove old cylinder and install the new cylinder. Replace pin and retaining bolt, sensor hydraulic fittings and hoses. Proceed to install scissor arms.

When installing the hydraulic cylinder rod end there are two ways to place the hydraulic fittings: the hydraulic fitting can be tightened at a slight angle (**F:4**) to avoid hitting the cross member on the secondary or the hydraulic fittings can be facing the boom (turn 180°).



F:3 Hydraulic Cylinder



F:4 Hydraulic fitting at angle

NOTE: When installing new cylinders use the hydraulic fittings off the existing cylinders. The new cylinders come with new orifices in the hydraulic fittings holes to restrict flow.

Very Important: If no orifices are in the new cylinders, use the orifices from the existing cylinders and install them on the new cylinders.

Warning: If orifices are not installed, the extensions may be damaged or destroyed. They will open and close too quickly and will cause severe damage to the cylinders and booms.

Install Secondary Section

Loosen all four **Set Screws (F:5)** on each the new extension **Hinge Plates (F:6)** before mounting the secondary to the John Deere Primary boom.

Install Secondary boom extension to Primary John Deere boom. Use bolts supplied with extension kit. Place eccentrics in loosely then slide bolts through. Bottom bolt comes up from bottom of boom and top bolt comes down from the top of boom. Snug bolts and nuts and check boom for fit and level. If boom is level and straight with Primary boom (looking from end of section just installed) tighten the 30mm bolts and all set screws on the hinge lip (**F:7**). This will keep bushings and eccentrics from rotating.



F:5 Hinge Plates



F:6 Set Screws



F:7 Tighten 30mm Bolts

Leveling Boom with Extensions

If sections are not level, use **Eccentric Bushings (F:8 & F:9)** to raise or lower the boom section as needed (take weight off boom while turning eccentrics). In some cases you will need to remove lower hinge bushings and install eccentric bushings in top and bottom hinge mounts. Line up dots on top and bottom of eccentric bushings. On top hinge mount turn both eccentrics keeping dots lined up (top and bottom). Turn as needed to level boom with primary boom. There is a **Boom Stop Bolt (F:10)** adjustment on the bottom corner. The boom stop may require readjustment while leveling the new extensions. The boom stop adjustment bolt moves the outer wing front and back with an upward and downward slant.



F:8 Eccentric Bushing (top view)



F:9 Eccentric Bushing (bottom view)



F:10 Stop Bolt Adjustment

Install Breakaway

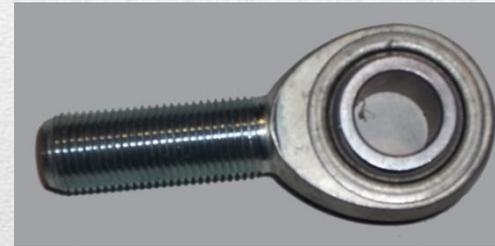
Do not fold boom sections until the Breakaway tip and its hardware are installed.

Most of the **Breakaway Hinge System (F:11)** should be already installed. There are four **Rod Ends (F:12)** in installed on new extensions (4 on each extension breakaway hinge system area). If so, install the 5/8" dia. rod with spacer and washer in proper places (**F:13**). Install nuts to the top and bottom of the rod and tighten

Note: The four rod ends (2 on 2nd Section and 2 on Breakaway tip) are also used to level breakaway tip up and down and front to rear to align with Primary and Secondary sections.



**F:11 Breakaway
Hinge System**



F:12 Breakaway Rod End



**F:13 Rod End &
Washer Location**

Install Breakaway Tension Cable

Install the **Breakaway Tension Cable** (if not already installed) **(F:14)**. Hook the clevis end of the breakaway tip tab using the 3/8" bolt and nut; do not tighten completely, tighten enough to allow cable end to move without binding **(F:15)**. Install the **Spring** **(F:16)** and **Adjustment Rod** **(F:17)**. To adjust the spring, stretch to 4 inches longer than the un-stretched spring and then tighten the lock nut.



F:14 Breakaway Tension Cable



F:15 Cable Connection Location



F:16 Breakaway Spring



F:17 Adjustment Rod

Install Center Section Bumpers

Install the Center section **Rear Bumpers (F:18 & F:19)**. The rear bumper mounts between the two hydraulic fittings on the top of the center section and need to be installed before folding extensions to transport position to prevent hitting the rear shut off valves. When installing the bumpers, the bolts (**F:20**) are to be installed from bottom up. Place 2 washers on inner bolt. Also, reposition the lights by removing the $\frac{3}{4}$ " bolt and "flip" the light. See (**F:19**) for the correct position of light. The extension should slightly touch the bumper when folded (**F:21**).



F:18 Rear Bumper



F:19 Rear Bumper & Light- Location



F:20 Bolts



F:21 Extension slightly touching the bumper

Adjusting John Deere Centre Cack Spring Tension

Adjust both sets of JD centre rack self levelling springs so that 10mm-20mm of thread is showing on the tight side of the adjustment rod . Picture **(F22)** shows the RHS centre rack springs prior to adjustment which has approximately 60mm of thread showing below the lock nut.



F:22 John Deere centre rack adjustment springs

Install Secondary Transport Shelves

Install the **Secondary Transport Shelves (F:23)**. The transport shelves attach to the Primary boom where the boom mounts to the center section and 1st upright support. After bolting to the bottom two boom tubes, begin to fold boom. When folding the new extensions in, stop just as boom comes in contact with rear bumper and adjust the top half of the secondary transport shelves as required. They have up and down adjustments as needed **(F:24)**.



F:23 Secondary Transport Shelves



F:24 Adjustable Plate

Reinstalling Scissor Arms

Install the scissor arms on the new boom sections using the pin and spacer supplied with the kit. These were marked at the time of removal to match where they go.

Cycle the cylinder in and out several times to remove all the air from inside the cylinder. Ensure the new cylinder is fully extended to about 13" of stroke (**F:25**). With the cylinder fully extended, install all four scissor arms. The new cylinders have a **Square Retaining Block (F:26)** and when adjusted correctly, the retaining pin will slide through all four scissor arms and square rod end (**F:27**). Tighten 1½" locking nut after retaining pin and clip is installed.



F:25 Cylinder Fully Extended



F:26 Square Retaining Block with Pin



F:27 Square Retaining Block Location

JD Sensor Cable Connection

Install the JD Sensor Cable connections accordingly.



Install all plumbing

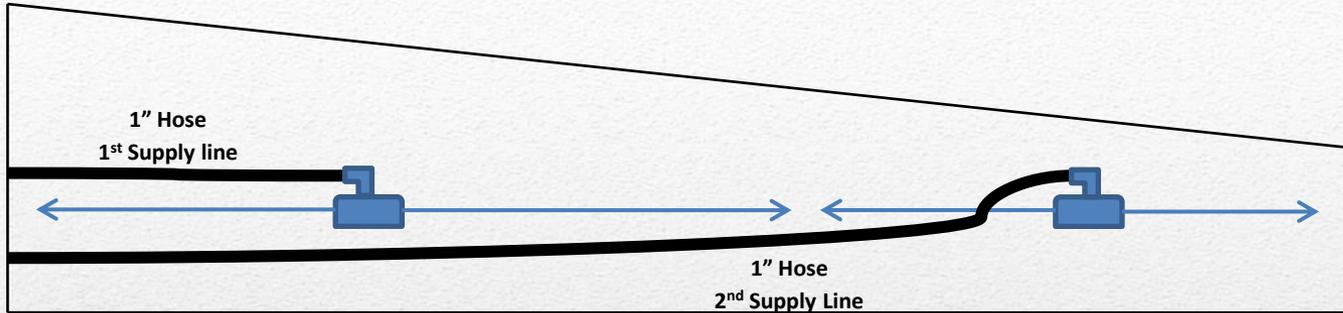
Install the plumbing and bracket mounts onto the new extensions. Nozzle bodies may be split or installed in any configuration required. Below are examples of completed plumbing installed.



Plumbing Set Up: Rearrangement of Hoses on JD Primary

There should be two hoses supplying the primary boom (John Deere).

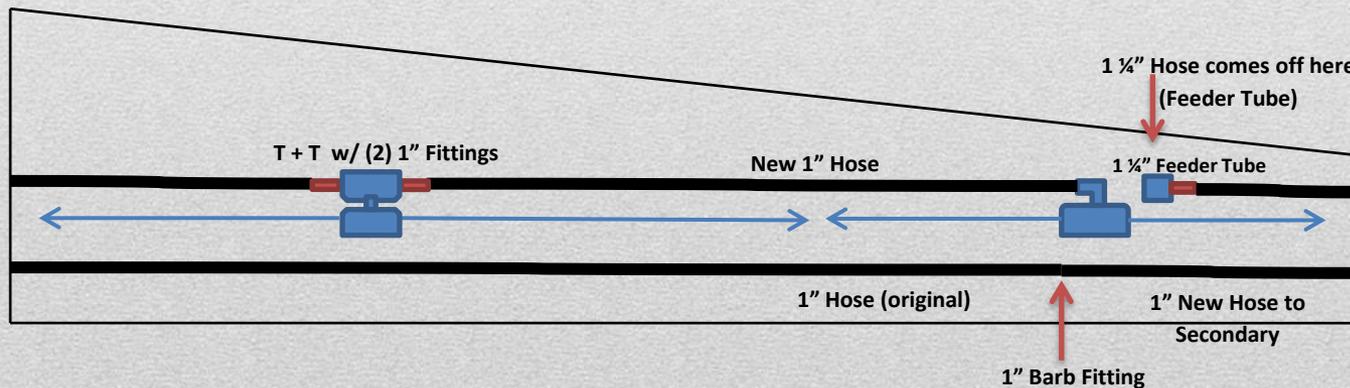
Diagram (I) JD Primary-Stock: Original arrangement of Plumbing Hoses



The first supply line; take it off and remove the 90° elbow and put another union with a T with two 1" fittings.
The second supply line; take it off and put a 1" barb fitting in it.

Connect the hose previously removed off the first feed line to the T and two 1" fitting previously installed. Run a 1" hose from the same T to the second feed 90° elbow where you took the hose off. This first supply hose will supply the whole stock primary John Deere boom.

Diagram (II) JD Primary: Completed rearrangement of plumbing hoses to accommodate the Boyd Extensions



Plumbing Set Up: 20" Off Center

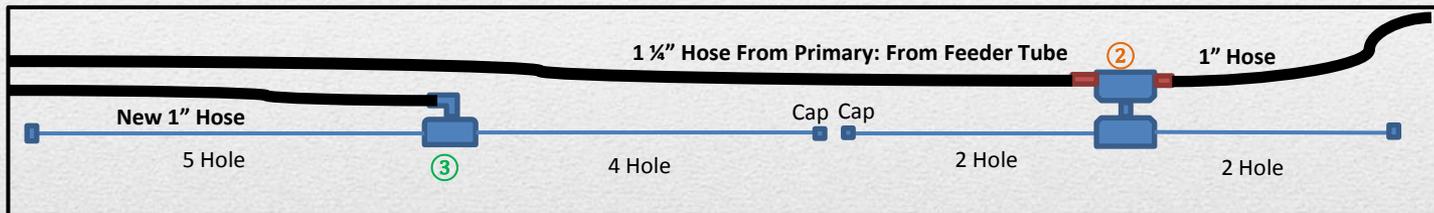
Install SS Pipe to Secondary

On the Secondary, starting closest to the machine, put together a 5 hole tube and a 4 hole tube (5+4) with a T and 90° elbow. Then put a 2 hole tube and another 2 hole tube (2+2) with a T plus a union plus another T. The T that you connected to the other T will have a 1¼" fitting facing the machine and a 1" fitting facing the break away tip.

Install Hoses to Secondary

To feed the extension, run the hoses in the loop like it was stock. Run a 1¼" hose from the (2+2) to the 1¼" feeder tube. Next, run a 1" hose from the (5+4) to the second feed tube on the John Deere side that you took off and put a barb fitting in.

Diagram (III) Secondary: 20" Off Center Plumbing Layout



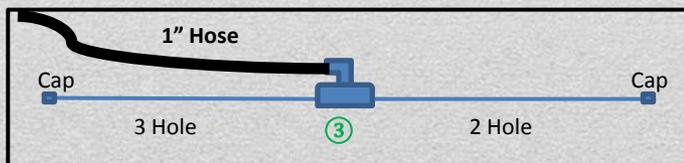
Install SS Pipe to Breakaway

The breakaway tip has a 3 hole tube and a 2 hole tube (3+2) with a T and a 90° elbow.

Install Hoses to Breakaway

To feed breakaway tip you will run a hose from the (3+2) to the (2+2) at the end of the extension.

Diagram (IV) Breakaway: 20" Off Center Plumbing Layout



Reference Table

② T + T W/ 1 ¼" Fitting & 1" Fitting

③ T + 1" 90° Elbow

Note: If you look at the stainless tubes, the holes closest to the threads will ALWAYS have the block off caps on them and the side where the holes are farther from the threads will be where you connect the T.

Plumbing Set Up: 15" On Center

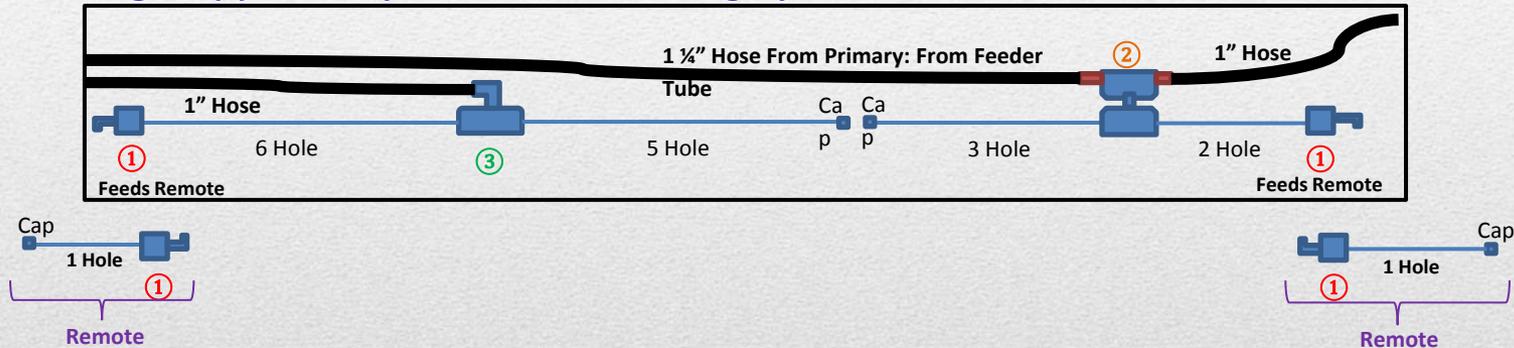
Install SS Pipe to Secondary

On the Secondary, starting closest to the machine, put together a 6 hole tube and a 5 hole tube (6+5) with a T and 90° elbow. Then put a 3 hole tube and another 2 hole tube (3+2) with a T plus a union plus another T. The T that you connected to the other T will have a 1¼" fitting facing the machine and a 1" fitting facing the break away tip.

Install Hoses to Secondary

To feed the extension, run the hoses in the loop like it was stock. Run a 1¼" hose from the (3+2) to the 1¼" feeder tube. Next, run a 1" hose from the (6+5) to the second feed tube on the John Deere side that you took off and put a barb fitting in.

Diagram (V) Secondary: 15" On Center Plumbing Layout



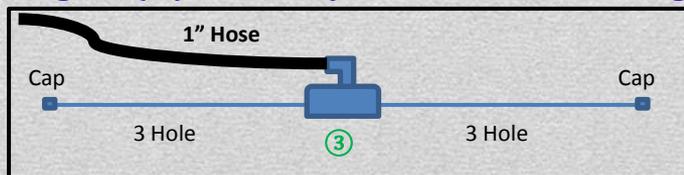
Install SS Pipe to Breakaway

The breakaway tip has a 3 hole tube and a 3 hole tube (3+3) with a T and a 90° elbow.

Install Hoses to Breakaway

To feed breakaway tip you will run a hose from the (3+2) to the (3+3) at the end of the extension.

Diagram (VI) Breakaway: 20" On Center Plumbing Layout



Reference Table

- ① Barrel Valve + ½" 90° elbow
- ② T + T W/ 1 ¼" Fitting & 1" Fitting
- ③ T + 1" 90° Elbow

Note: If you look at the stainless tubes, the holes closest to the threads will ALWAYS have the block off caps on them and the side where the holes are farther from the threads will be where you connect the T.

P-Clamp Location



Running Foam

To install foam, bolt the soap and air mixing chamber to the mounting plate. Install a longer hose to your foam drop tube if required.



Fence Row Nozzle

The end plate at the end of the Breakaway tip may be used to mount a Fence Row Nozzle. A Foam Drop (if used) may also be mounted on the outer part of the 1"x1¼" square tube.



End Plate

Square Tube

Adjusting Extension to Primary Transport Shelf

To Adjust:

Loosen the four set screws on the eccentric bushing (pin) on the main hinge (60' Point). This will take pressure off the eccentric bushing.

Slowly turn the nut on top which rotates the eccentric bushing. When the boom rises tighten one set screw on each eccentric bushing.

Recommendation: (F:28-F:30)

Take a small 3/16" drill bit through the set screw hole (carefully do this without destroying threads in set screw hole) and put an indentation in the eccentric bushing and then replace set screw. Tighten in the set screw with an 8th inch Allen wrench. Use a hard setting Lock Tight Sealant. Do this for all 4 eccentric bushings.



F:28 Drill to top eccentric bushings



F:29 Drill to bottom eccentric bushings



F:30 Tighten set screw with an Allen Wrench

Install Primary Transport Shelves

To install the Primary Transport Shelves (F:31 & F:32), fold outer wing extension to the transport position just as the breakaway tip comes in contact with the rear bumpers. Slide primary transport shelves at 4th or 5th brace on top of tube extension and clamp onto the upright. The transport shelf should have a little pressure against the top tube. Clamp shelves in place and mark holes. Swing outer wing out and drill the four 5/16" bolt holes for each shelf (bolt as needed). Install shelves with the hardware provided with the kit. When folded into transport position, the extension should slightly rest over the transport shelf (F:33). If your boom extensions does not rest on the transport it is not properly aligned, see [**Adjusting Extension to Primary Transport Shelf**](#).



F:31 Transport Shelf



F:32 Transport Shelf



F:3 Extension properly sitting on transport shelf