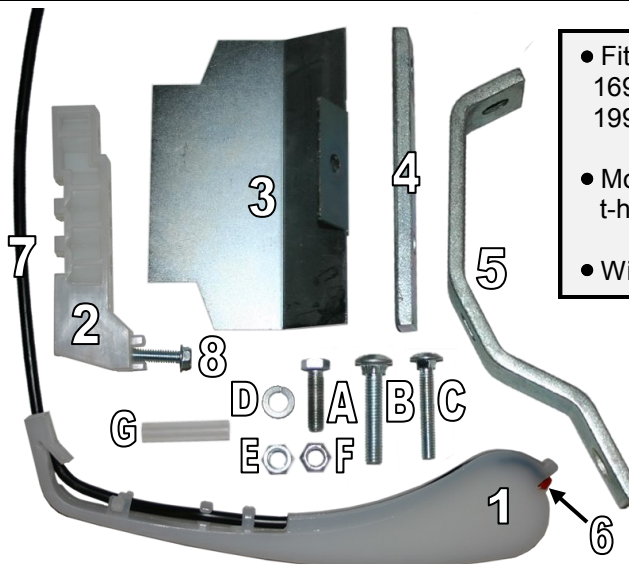


Mounting Instructions for a John Deere Drill

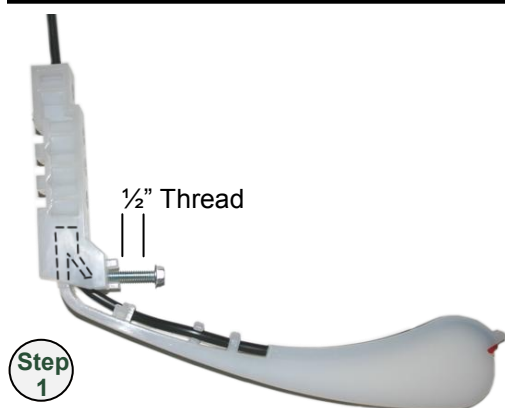
Parts List

1. Firmer Tail, (120820)
 2. Poly Mounting Bracket,
 3. Metal Stalk Shield, (150045)
 4. Metal Mounting Bracket, (150040)
 5. Metal Mounting Bracket, (150039)
 6. Liquid Splitter, (125006)
 7. Tubing, (129BXT814)
 8. Tension Screw, (32411)
- Hardware Kit Includes (160031)
- A) 1 - $\frac{3}{8}$ x $1\frac{1}{4}$ " Bolt, (13107)
 - B) 1 - $\frac{3}{8}$ x 2" Carriage Bolt, (21361)
 - C) 1 - $\frac{5}{16}$ x 2" Carriage Bolt, (21361)
 - D) 1 - $\frac{3}{4}$ " Lock Washer, (33622)
 - E) 1 - $\frac{3}{8}$ " Nut, (36306)
 - F) 1 - $\frac{3}{8}$ " Lock nut, (37264)
 - G) 1 - 2" $\frac{1}{4}$ x $\frac{3}{8}$ " Splice Piece, (900107)



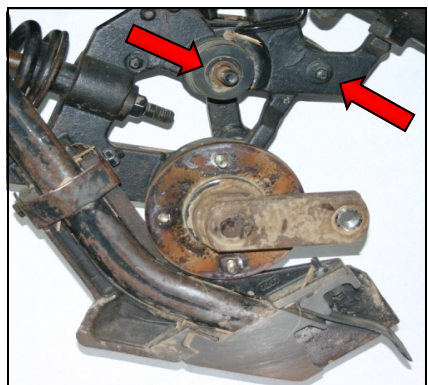
- Fits JD 1560, 1590, 1690, 1860, 1890 & 1990 Drills
- Mounts onto back of t-handle slotted bracket
- Will receive liquid tail.

Installation Instructions



Step 1

Assemble 2-piece liquid firmer by inserting the Tail into the Poly Mounting Bracket as shown above. Make sure tension screw is below the tab on Tail section. Then tighten the tension screw leaving a $\frac{1}{2}$ " of thread showing between the bracket and the head of the tension screw.



Step 3



Step 2

Next, assemble the two metal brackets and stalk shield onto the firmer as shown. Use the $\frac{3}{8}$ " x 2" carriage bolt, lock washer and nut to fasten the stalk shield, straight metal bracket and firmer together. Use the $\frac{3}{4}$ " x $1\frac{1}{4}$ " bolt and lock nut to fasten the two metal brackets together.

Remove the $\frac{5}{8}$ x $3\frac{3}{4}$ " bolt and locknut that attaches the press wheel arm. Remove press wheel arm and spring. (These items will not be used but will be retained to return unit to original specifications.) Remove $\frac{5}{16}$ x 1" carriage bolt and locknut that fastens the back of the T-handle slotted bracket.

Questions? Check the website: www.precisionplanting.com or call us at 309-925-5050.

Continued Installation Instructions

Step 4

Replace the 5/16 x 1" bolt with 5/16 x 2" carriage bolt. (Locknut will be reused) Firmer assembly will be mounted to this bolt. Mount the Firmer assembly onto the row unit reusing the original locknuts.



Step 4



Note: Brackets can be reversed for assembly on right hand side or left hand side!



After mounting the first unit on the drill, measure the height from the Firmer's tension screw to the ground. That distance should be approximately 4" to 4-1/2". Repeat the procedures for each unit.

Step 5

Liquid Firmer Tubing Connections: Liquid Firmers include 1/4" tubes and splicer's. These splicer's are provided so you can splice the provided tubes into the supply line from your manifold. If you are NOT using liquid, simply remove the black tube by snipping the tie strap that secures the tube to the firmer. Then remove the red splitter which is attached to the tube at the end of the firmer tail.

Step 6

Reinstall disk openers: Check your planter manual for proper shimming and contact of your double disk openers. Replace the disks and gauge wheels and tighten all bolts.

Step 7

Adjusting Firmer tension: Ideal firmer tension is 12-20 ounces of force when set on a hard level surface. To determine if the tension is correct, lower the planter to the ground. Attach a small hanging scale (i.e. fish scale) to the firmer near the end. Lift until the firmer just comes off the ground. Tighten the tension screw until it takes 20 ounces or 1 1/4 lbs to raise the firmer. Tension should be checked before every season and if tension is weak, tighten screw. For additional information, see Keeton Seed Firmer:Preparation for Planting (955665).

Note: Trim the length of the tail if it is making contact with the Press wheel.



Backing Up tractor while drill is not fully raised can result in damage to the Keeton Seed Firmers.

Storage: Installed Firmers should not be stored touching the ground between planting seasons.

Questions? Check the website: www.precisionplanting.com or call us at 309-925-5050.

Maximum Liquid Capacity

Method	PSI At Firmer	GPM	GPA for 20" Rows				GPA for 30" Rows				GPA for 36" Rows			
			4 mph	5 mph	6 mph	7 mph	4 mph	5 mph	6 mph	7 mph	4 mph	5 mph	6 mph	7 mph
On Seed	5 psi	.47	35	28	23	20	23	19	16	13	19	16	13	11
	10 psi	.73	54	43	36	31	36	29	24	21	30	24	20	17
	Squeeze Pump	.5	37	30	25	21	25	20	16	14	21	16	14	12
Splitter	5 psi	.30	22	18	15	13	15	12	10	9	12	10	8	7
	10 psi	.46	34	27	23	20	23	18	15	13	19	15	13	11
	Squeeze Pump	.33	24	20	16	14	16	13	11	9	14	11	9	8

- ▶ This chart is for reference to maximum flow rates using starter fertilizer (11 lb. per gallon).
- ▶ It is recommended that flow be distributed through an orifice system to ensure equal flow to each row.
- ▶ Pump pressure can be run higher if an orifice is used to regulate flow.

Troubleshooting Guide

Problem	Solution
Firmer not centered in trench.	1 ▶ Check to see if row unit is trailing straight.
Groove worn on side of firmer.	2 ▶ Verify that mounting bracket is installed correctly.
	3 ▶ Check to see that disc openers are shimmed equally.
	4 ▶ Check to see if firmer is bent or damaged.
Starter leaking on closing wheel or firmer.	1 ▶ Make sure hose is connected directly to barb on firmer.
	2 ▶ Check hose for splits at barb or damage from pinching or rubbing.
Uneven starter flow.	1 ▶ Check tubes for kinks or plugs.
	2 ▶ Use manifold with orifice to ensure even distribution.
Dirt builds up on firmers.	1 ▶ Some build-up on firmers is acceptable as long as it is on the sides and top of the firmer, and does not get wider than the V-trench sidewalls.
	2 ▶ If build-up happens on the bottom of the firmer, check for proper tension.
	3 ▶ Check for damage or rough spots on the bottom of the firmer.
Uneven wear on bottom.	1 ▶ Check opener disk contact and shim if necessary.
	2 ▶ Make sure firmer tail is trailing down center of trench.

Warranty: Precision Planting®, Inc. warrants this product to be free from defects in material or workmanship during the first year of service. Our obligation under this warranty shall be limited to repairing or replacing, free of charge to the original purchaser, any part that in our judgment shall show evidence of such defect, provided further that such part shall be returned within thirty (30) days from the date of failure – routed through the dealer from whom the purchase was made. Shipping charges prepaid.

Precision Planting® shall have no obligation or liability of any kind on account of any of its equipment and shall not be liable for special or consequential damages. This warranty does not extend to loss of crops, loss because of planting delays or any expense or loss incurred for labor, supplies, substitute machinery, rental or for any other reason. Precision Planting makes no other warranty, express or implied.

Questions? Check the website: www.precisionplanting.com or call us at 309-925-5050.