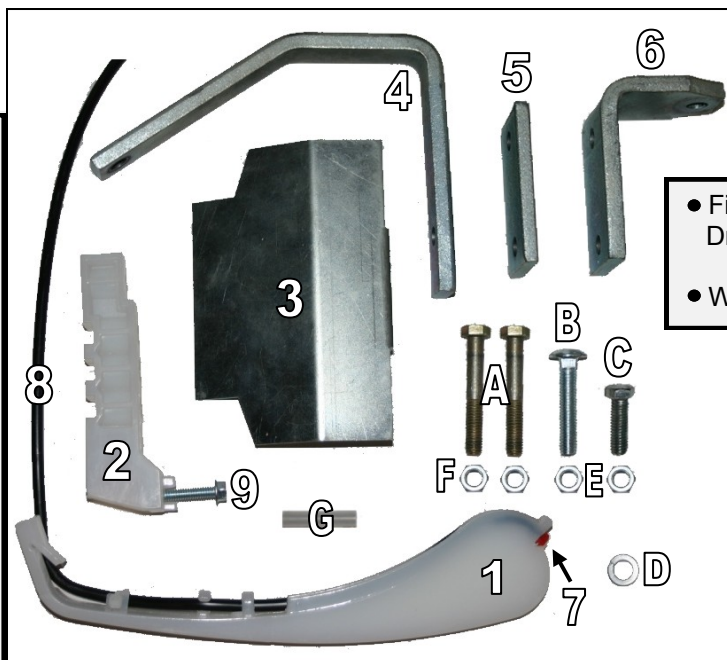


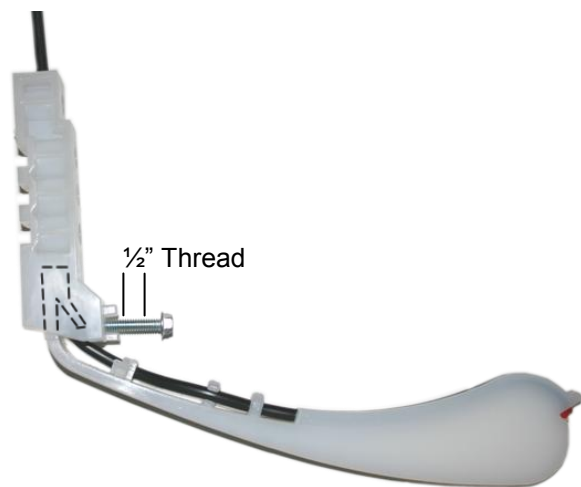
Mounting Instructions for a John Deere Drill

Parts List

1. Firmer Tail, (120820)
 2. Poly Mounting Bracket,
 3. Stalk guard, (150045)
 4. Metal Mounting Bracket, (150044)
 5. Metal Mounting Bracket, (150043)
 6. Metal Mounting Bracket, (150042)
 7. Liquid Splitter, (125006)
 8. Tubing, (129BXT814)
 9. Tension Screw, (32411)
- Hardware Kit Includes (160028)**
- A) 2 - $\frac{3}{8}$ x 2 $\frac{1}{2}$ " Bolt, (15113)
 - B) 1 - $\frac{3}{8}$ x 2" Carriage Bolt, (21361)
 - C) 1 - $\frac{3}{8}$ x 1 $\frac{1}{4}$ " Bolt, (13107)
 - D) 1 - $\frac{3}{8}$ " Lock Washer, (33622)
 - E) 1 - $\frac{3}{8}$ " Hex nuts, (36306)
 - F) 3- $\frac{3}{8}$ " Lock nuts, (37264)
 - G) 1 - $\frac{1}{4}$ x $\frac{3}{8}$ " Splice Piece, (900107)



Installation Instructions

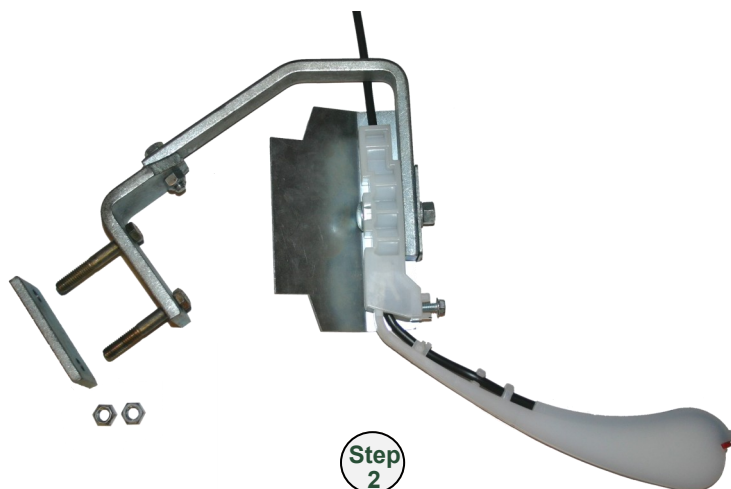


Step 1

First, route the tube through the hose channel. Make sure the tubes are clear of the tension screw.

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.

Tighten the tension screw leaving 1/2" of thread showing between the bracket and the head of the tension screw.



Attach the metal bracket and stalk shield to the poly mounting bracket with the $\frac{3}{8}$ x 2" carriage bolt, lock washer and nut.

Use the $\frac{3}{8}$ x 1 $\frac{1}{4}$ " bolt and lock nut to attach the two metal brackets

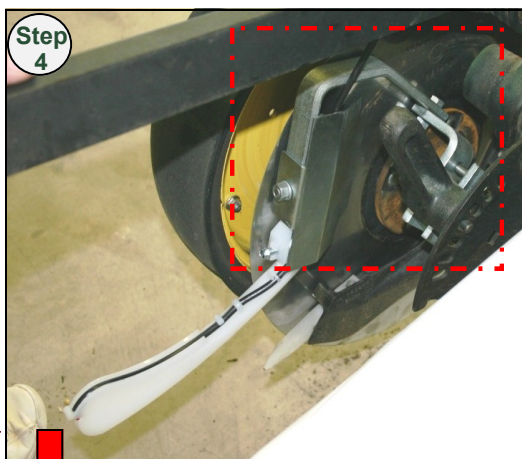
Bracket can be reversed to left hand side of drill.

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

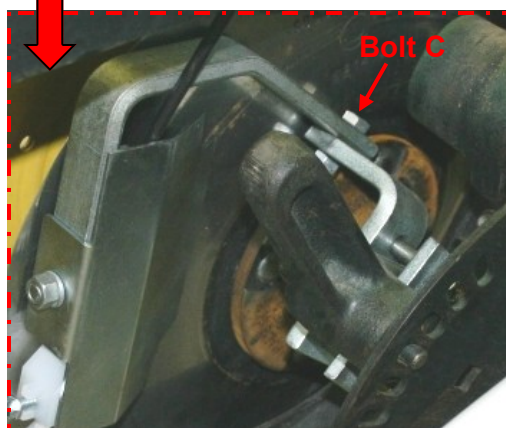
Continued Installation Instructions



Remove the Press wheel. (This Item will not be used but will be retained to return unit to original specifications.) The press wheel arm can either be removed or tied to the closing wheel arm with heavy duty wire. (Remove spring pressure if tying to closing wheel arm)



Use the short metal bracket, two - $\frac{3}{8}$ " x $2\frac{1}{2}$ " bolts, and two – lock nuts to assemble the firmer assembly to the row unit casting



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 - $\frac{1}{2}$ ". Repeat the procedures for each unit.

Step 5 Before tightening the 2 bracket bolts, cock the upper part of the bracket (with the 90° angle) as far forward as possible

Step 6 When bolting piece 6 and 4 together do not tighten bolt C completely. When all firmers are installed, drop the drill to the ground and pull planter forward 1-2 feet. This will align the firmer properly in the seed trench. Then tighten bolt C firmly on all brackets.

Step 7 **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.

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 drill 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.

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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.

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