

**KEETON®  
SEED FIRMER**

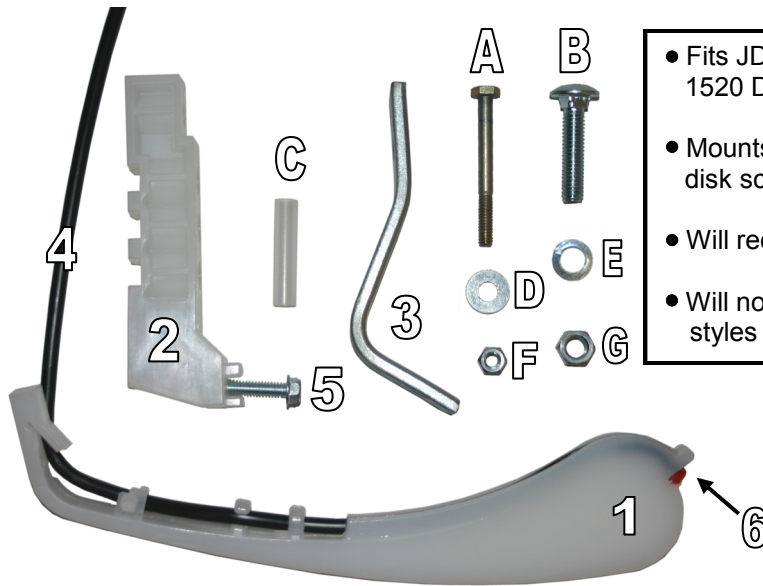
## Mounting Instructions for a John Deere Drill

### Parts List

1. Firmer Tail, (120820)
2. Poly Mounting Bracket,
3. Metal Mounting Bracket, (150041)
4. Tubing, (129BXT814)
5. Tension Screw, (32411)
6. Liquid Splitter, (125006)

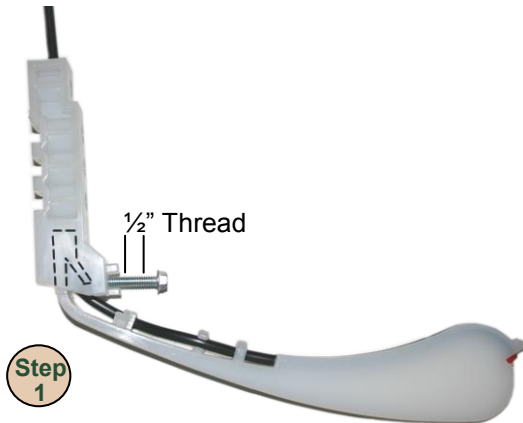
#### Hardware Kit Includes (160026)

- A) 1 - 1/4 x 2 1/2" Bolt, (15013)
- B) 1 - 3/8 x 2" Carriage Bolt, (21361)
- C) 1 - 1/4 x 3/8" Splice Piece, (900107)
- D) 1 - 1/4" Flat Washer, (33004)
- E) 1 - 3/8" Lock washer, (33622)
- F) 1 - 1/4" Lock nut, (37018)
- G) 1 - 3/8" Nut, (36306)



- Fits JD 450, 455, and 1520 Drills
- Mounts onto the seed disk scraper
- Will receive liquid tail
- Will not fit all opener styles

### Installation Instructions



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



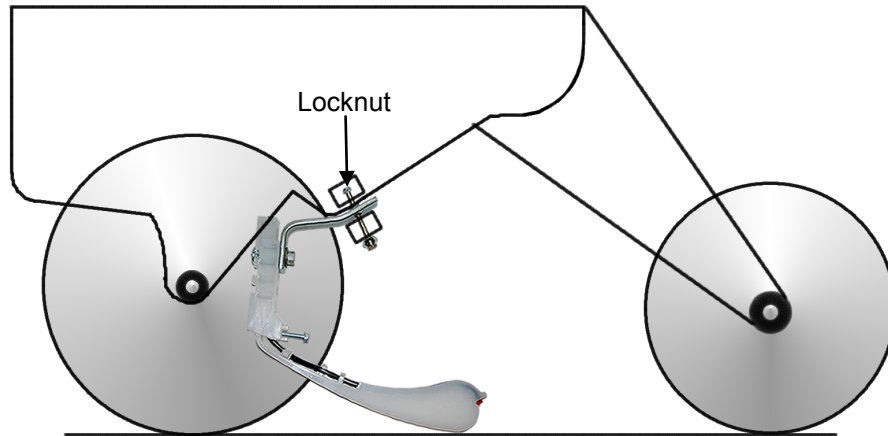
Bolt the Steel Bracket to the top hole of the Firmer using the carriage bolt provided. The head of the bolt should seat into the slot on the front side of the Firmer. Tighten with lock washer and nut.

- Step 3** Remove the outside disk openers from the row unit. Lower the drill so that the opening disks rest on a flat surface or on the shop floor.

Questions? Check the website: [www.precisionplanting.com](http://www.precisionplanting.com) or call us at 309-925-5050.

## Continued Installation Instructions

- Step 4** Remove the T-bolt that holds the disk scrapers. This will be replaced with the 1/4" machine bolt provided. Push the top of the base of the firmer into the fertilizer opening of the drill. The long end of the mounting bracket should fit between the drill frame and the scraper bracket. Feed the 1/4" bolt with washer up into the scraper hole and tighten with lock nut positioned in the small opening in the drill frame.



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. A quick check for down pressure is to lift the firmer tail 2" off the ground and release. If the firmer does not "smack" the ground it needs to be tightened or replaced.

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

**Warning:** 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.

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