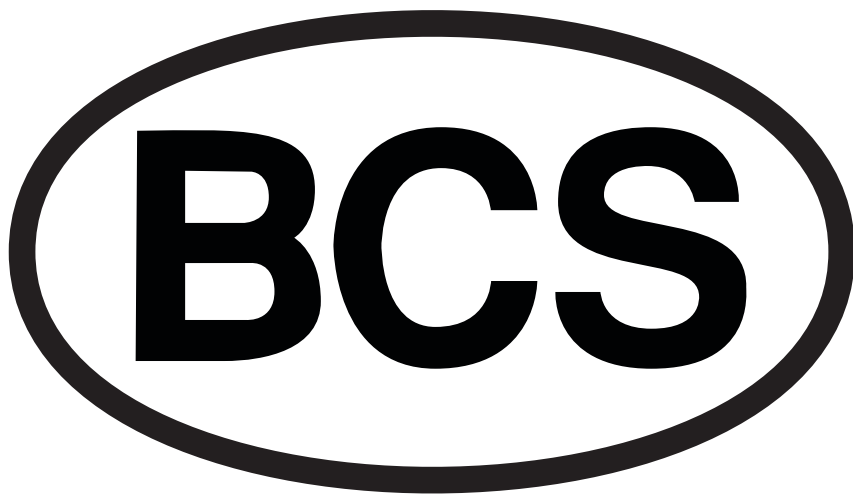


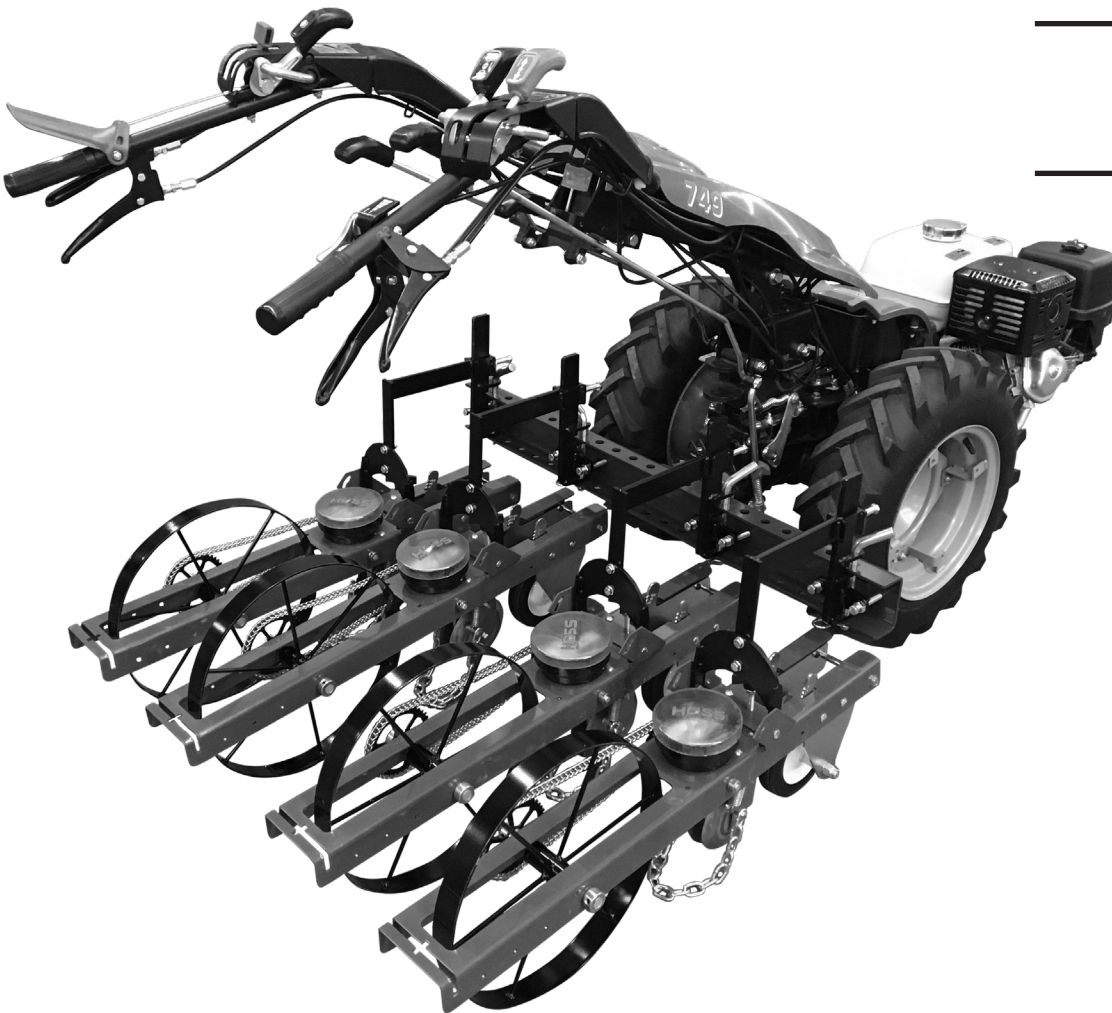


OWNER OPERATOR'S MANUAL

Vegetable Seeder 922HS000

Version: 10/2018

Distributed by:
BCS America, LLC
5001 N Lagoon Avenue
Portland, OR 97217
info@bcsamerica.com



Please read and understand this manual and all instructions prior to operating or servicing this attachment.

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Warranty

Your seeder attachment represents a collaborative effort between BCS America and Hoss Tools. Consequently, there are two warranties:

1. Hoss Seeder Assembly - One Year Warranty
 - The one year warranty covers any defects in materials or workmanship.
 - The warranty lasts one year from the date of purchase.
 - The warranty does not cover discoloration caused by exposure to sunlight or chemicals.
2. BCS Assembly Attaching Seeder to Tractor - Three Year Warranty

For all warranty issues, please contact your BCS dealer.

Replacement Parts

Replacement parts can be ordered through your BCS dealer. To locate your nearest dealer, please call BCS America at 1-800-543-1040 or visit www.bcsamerica.com/find-a-dealer.

Parts for the seeder, including seed plates, can be ordered directly from Hoss Tools by calling 1-888-672-5536.

Vegetable Seeder Assembly

Vegetable Seeder Details

The Vegetable Seeder has a rolling coulter or “double disk” opener which creates a furrow for the seeds that will be planted. The rolling Coulter opener consists of two concave disks that meet in front of the seed drop tube. Just in front of the furrow opener and seed drop tube is a press wheel to assist in making a consistent pathway for the seeds to be planted. Behind the furrow opener and seed drop tube is a drag chain that will help cover the seed by pulling soil over the top of the planted seed.

The rear wheel of the Vegetable Seeder then packs the seed bed to ensure adequate seed to soil contact.



To assemble the BCS vegetable seeder, you will need the following tools:

- 19mm wrench
- 10mm wrench
- 9/16" wrench
- 11/16" wrench
- two 1/2" wrenches

Vegetable Seeder Assembly

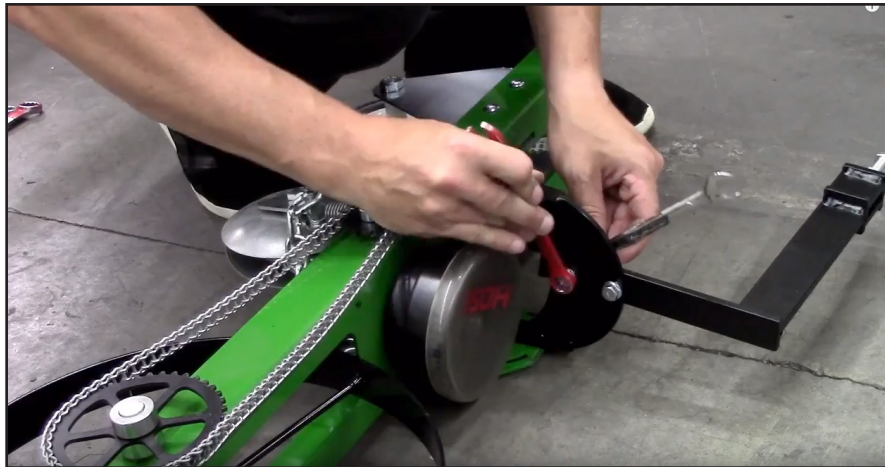
Use with BCS Quick Hitch

If you are using a quick hitch system, first fasten your male tang (part #92257851) to the standard Drawbar (part #922DH000) with the drawbar in the upper position and the hole of the male tang on top. Pass the two allen-head bolts through the male tang and the drawbar, and secure with the wavy washers and nylock nuts.



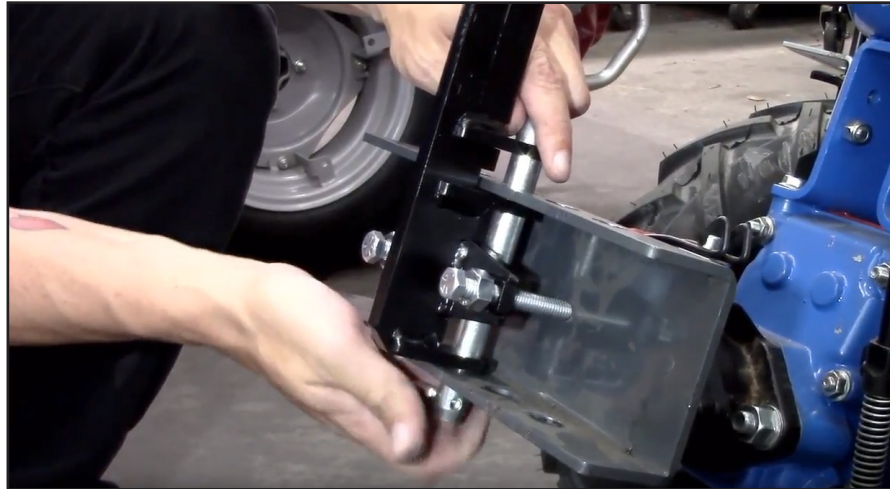
Tighten the hardware just enough so that it can be adjusted if needed, and refer to the quick hitch installation video (www.bcsamerica.com/pages/how-to-videos) to properly align the quick hitch tang. When you're done, add a bit of silicone-based lubricant to the male tang and female bushing.

Next, install the leveling bracket on the seeder. Secure it with the two 5/16 x 1" bolts and flange nuts, placing the top bolt in the centermost position of the slotted top hole. Snug both bolts using your two 1/2" wrenches, but do not tighten completely.



Vegetable Seeder Assembly

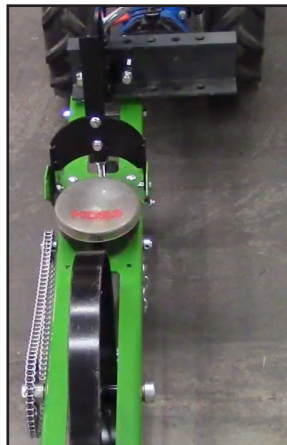
Then, install the vertical bracket to the drawbar by aligning the three holes in the vertical bracket with the two center holes in the drawbar, like so, and sliding the provided drop pin through all five holes. Secure with the provided hairpin. Leave the two side stabilizer bolts and jam nuts on the vertical bracket slightly loose. We are attaching the seeder to the center hole of the drawbar in these photos, but it can be offset to any of the other four holes, if desired.



The standard drawbar can only accommodate a single seeder.



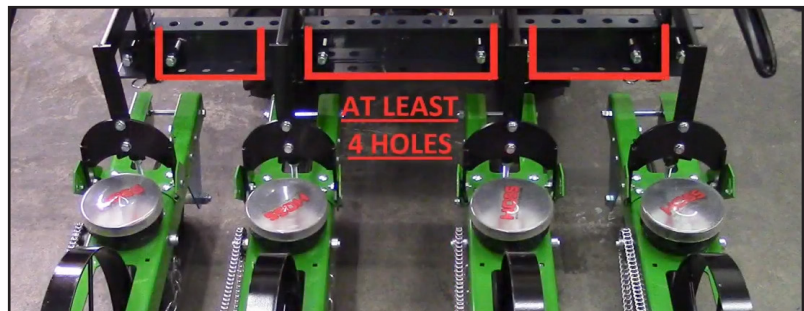
922DHB00
(sold separately)



The 1-meter drawbar can accommodate up to four seeders, provided they have at least four empty holes between them.



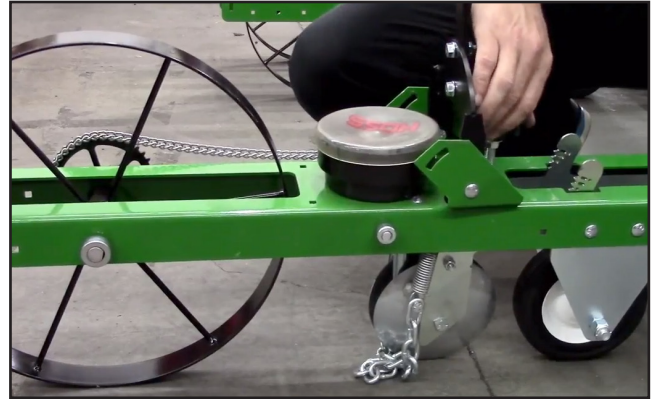
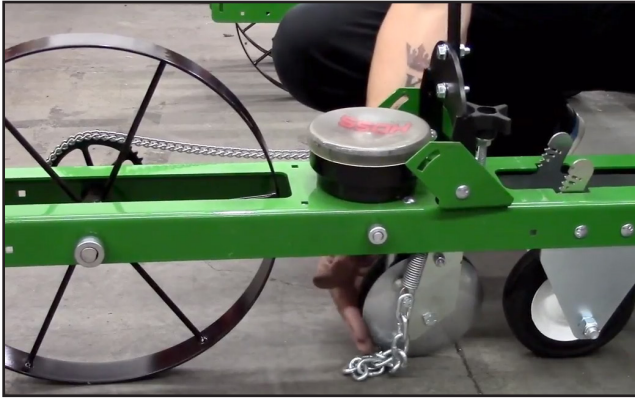
922DB040
(sold separately)



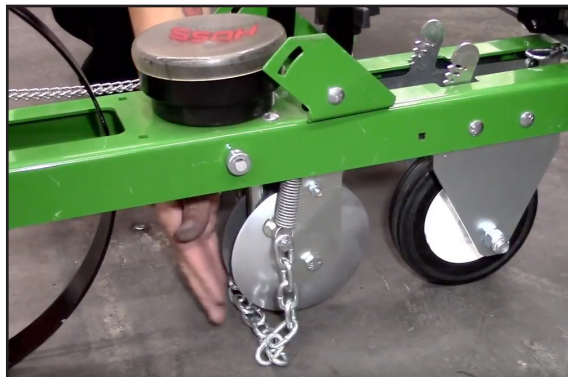
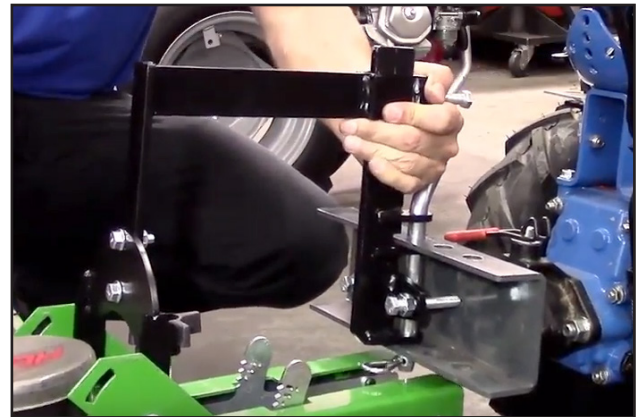
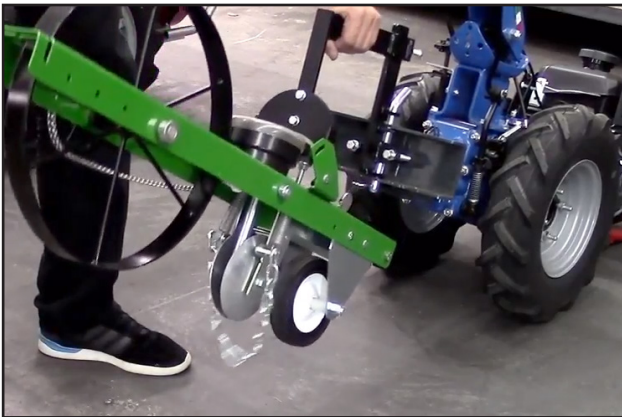
5

Vegetable Seeder Assembly

Prior to installing the seeder assembly to the draw bar, confirm that the two disc wheels are at their highest position by holding the seeder upright and checking for free spin.

**6**

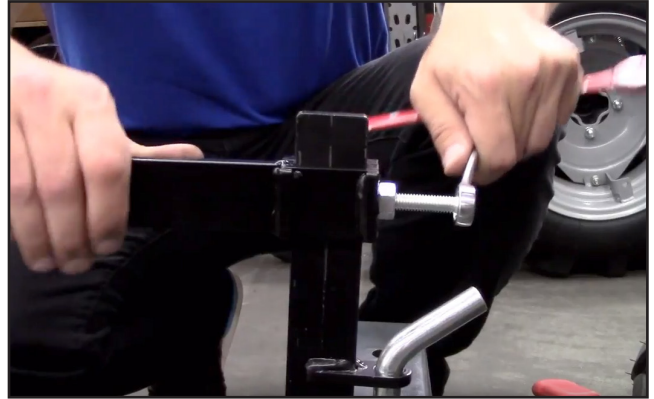
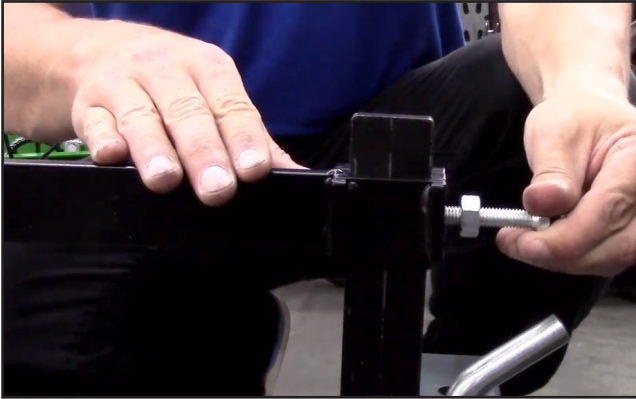
Slide the seeder assembly over the stem of the vertical bracket on the drawbar until both of the seeder's wheels make contact with the ground with the disc wheels rotating freely. It may be necessary to move the leveling bracket up or down on the stem of the vertical bracket to achieve the desired position. It should be close to the top of the shaft but may rest slightly lower, depending on your tractor's wheel size.



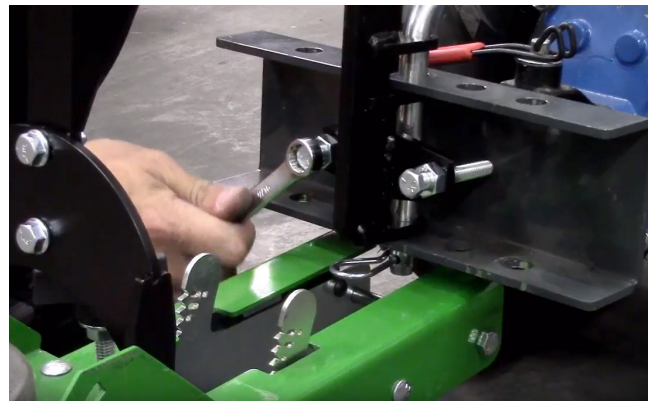
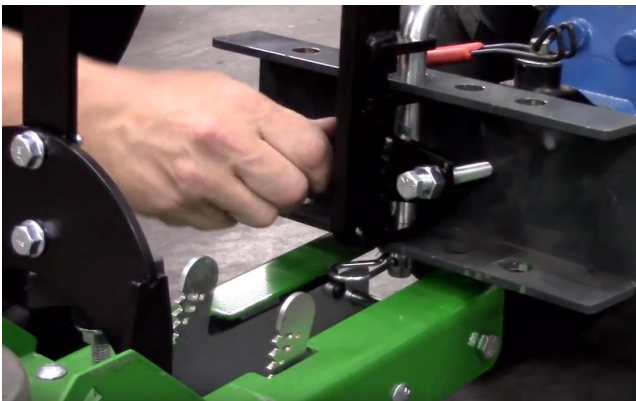
7

Vegetable Seeder Assembly

Tighten the jam bolt on the leveling bracket using your 9/16" wrench, then secure it by rotating the jam nut clockwise using your 11/16" wrench until it is about finger tight, then give it another quarter to half turn.

**8**

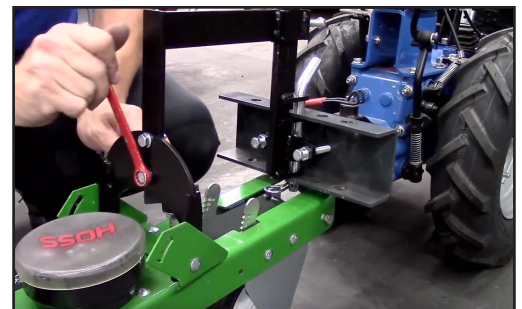
To set the seeder tracking behind the tractor you will need the 9/16" wrench to adjust and tighten the two side stabilizer bolts on the vertical bracket. If you're not seeding perfectly straight rows, you may want to leave a small amount of play in the bracket so the seeder can float side to side just a little.



Tighten each jam nut with the 11/16" wrench to about finger tight, then give each one an additional quarter to a half turn.

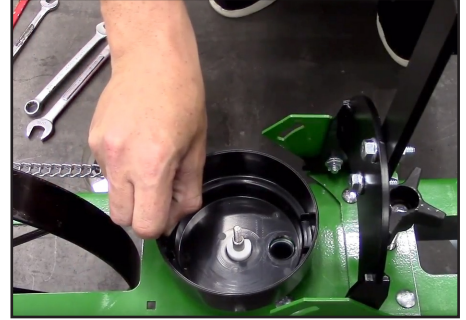
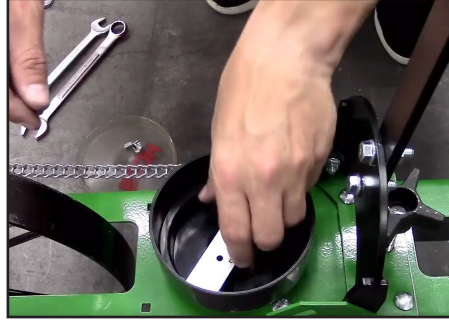
9

Make any necessary fine adjustments to level the seeder on the leveling bracket, and follow up by tightening the two 5/16 x 1" bolts and nuts using two 1/2" wrenches.



Vegetable Seeder Assembly

Remove the clear cover from the seed hopper. Then remove the nylock wing nut, the brush assembly, and the cone-shaped spacer leaving the lower black hopper assembly in place. Be careful not to rotate the hopper so that the seed release hole remains aligned with the hole in the frame beneath.



Insert the appropriate seed plate into the lower part of the hopper, making sure to align the plate with the D Shaft, and place the cone shaped spacer on top. Insert the brush assembly, brush down, with the steel plate aligned to fit inside the slots on the lower portion of the hopper. Then, re-install the nylock wing nut, but do not overtighten.

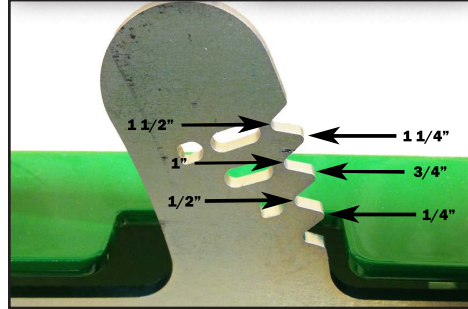


Confirm the brush assembly is not overtightened by lifting the rear of the seeder and rotating the rear wheel in the direction of the tractor. Make sure that the seed plate is rotating unimpeded by any excess resistance from the brush assembly. If you do encounter resistance, alleviate it by rotating the wing nut counter-clockwise.

Vegetable Seeder Instructions

Planting Depth Adjustment

- The Planting depth knob is located in front of the hopper on the Vegetable Seeder.
- Turn the knob clockwise to increase the planting depth.



- The depth gauges are located on both sides on top of the seeder just above the press wheel.
- The depth gauges have indentions and ticks that correspond with planting depths that change 1/4" increments
- When the first tick from the bottom is level with the top of the Vegetable Seeder frame the planting depth is set at 1/4"

Selecting the Right Seed Plate

- Seed Plates # 1-6 are included standard with every Vegetable Seeder. Seed plates # 7-10 are sold separately, available from Hoss Tools.
- Note that the recommended crops for each Seed Plate are only a reference for the type of seeds that one should be able to plant based on the size of hole in the Seed Plate and the general size for that crop.
- Before planting, ALWAYS check your seed with the hole in the Seed Plate. If the hole is too small, your seed will not be able to pass through the hole. If the hole is too large, multiple seeds may get stuck and lodge in the hole.
- First, lay the Seed Plate flat on the table and place a few seeds on the plate to see if the seeds are able to sit in the hole of the seed plate comfortably.
- Second, pour seeds in the assembled hopper and spin the back wheel with your hand towards the tractor to begin dispensing seeds. If the back wheel frequently jams, this is an indication that you will need to modify the seed plate. You can place the hopper cover under the seed drop tube to catch the falling seeds.



Vegetable Seeder Instructions

Seed Plate Recommendations

- Below are 10 Popular varieties of bean seed.
- Notice the variation in size and shape among these 10 varieties. For crops like beans, peas and corn this type of seed size variation among varieties is very normal.
- Even with really small seed like kale, cabbage, and greens, you will see some slight differences in seed size between varieties.
- For this reason, It is very important to test and modify (if necessary) your seed plates before planting see pages 10-11 for instructions on modifying seed plates



Seed Plate #	Crop	Hole Diameter	Plate Thickness	# of Holes	Stock Spacing	Optional Spacing
1	Broccoli, Cauliflower, Cabbage, Turnips, Mustard, Rutabaga, fine seeds	3/32"	3/32"	8	2 3/8"	4 3/4", 9 1/2", 19"
2	Onion, small coated seeds	11/64"	3/32"	6	3 1/8"	6 3/8", 9 1/2", 19"
3	Okra, pelleted: Carrots, Lettuce, Chard, Beets	1/4"	3/16"	6	3 1/8"	6 3/8", 9 1/2", 19"
4	Small Sweet Corn, Popcorn	1/2"	3/16"	4	4 3/4"	9 1/2", 19"
5	Small Beans and Peas	3/8"	1/4"	6	3 1/8"	6 3/8", 9 1/2", 19"
6	Medium Beans, Peas, Large Sweet Corn, Field Corn	9/16"	1/4"	4	4 3/4"	9 1/2", 19"
7	Spinach, Radish, Leek, Asparagus	5/32"	3/32"	6	3 1/8"	6 3/8", 9 1/2", 19"
8	Cucumber, Watermelon	13/32"	3/32"	2	9 1/2"	19"
9	Large Beans, Butterbeans, Lima Beans	19/32"	3/16"	2	9 1/2"	19"
10	Squash, Pumpkin	21/32"	3/16"	1	19"	-

Vegetable Seeder Instructions

Seed Spacing

- In one rotation of the seed plate inside the hopper, the Vegetable seeder will travel 19". Thus, to calculate seed spacing, divide 19" by the number of holes in the seed plate.
- Seed spacing can be easily modified. To decrease seed spacing and plant closer together, simply drill more holes in the seed plate. Just make sure the holes are equidistant from one another. To increase seed spacing and plant farther apart, you can use masking tape to cover the holes on the bottom of the seed plate. Make sure the holes covered are opposite one another, so that the desired spacing is equal among the remaining holes.

Seed Plate Modification



Seed Plate # 6 with Greencrop Bush Beans. Notice the bean seeds will not lay flat in the holes. Thus the holes in the plate are too small and will need to be made larger.



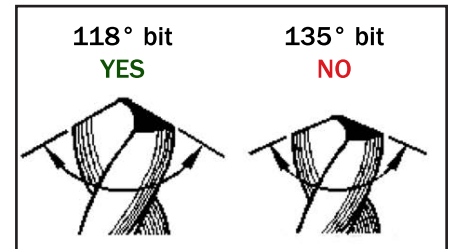
Modified Seed Plate # 6 with Greencrop Bush Beans. The holes have been made larger so that the bean seeds lay flat in the holes and can easily fall through the plate.

- Due to the variation in seed sizes among varieties of the same crop, it's impossible to design a "one size fits all" seed plate for each crop.
- As a result it's ALMOST ALWAYS necessary to modify the Seed Plate to fit the variety you're trying to plant.
- You can modify one of the predrilled plates included with your Vegetable Seeder or you can create your own plate using a blank, customizable plate on page ????
- These Seed Plate modifications can be done easily done with a drill. If the Seed Plate hole is too small, use a drill to make hole larger. If the Seed Plate is too large, try a plate with smaller holes or use a blank plate and drill the appropriate hole size for your seed.
- If you plant multiple varieties of the same crop (peas, corn, beans etc.) you will likely need a separate plate for each variety.

Vegetable Seeder Instructions

Seed Plate Modification continued

- When modifying plates for smaller seeds like greens, increase the size of the hole in 1/32" increments. At each increment, check the seed with the hole size before making the hole larger.
- Remember that you can always make the seed plate holes larger, but you can't make them smaller. So it's important not to drill them too large for the seed you're planting.
- Use only 118° drill bits. The common 135° bits will not work safely! The more pointy 118° bits will drill a better hole in the plastic seed plates. The flatter 135° bits will gouge into the plastic & tear the seed plates and not leave a nice clean hole.



- For larger seeds like beans and corn we recommend using a Step Drill Bit to modify your seed plate. Step Drill bits are commonly available online and at most hardware stores
- The Step Drill Bit allows you to incrementally increase the size of the hole without having to change bits. It's also ideal for drilling larger diameter holes approaching 1/2", for which standard bits may not be as common.
- When using the Step drill Bit, drill the plate from both sides. This will help to ensure that the holes are drilled equally on each side, especially with the thicker 1/4" seed plates.
- Be sure to check the seed with the seed plate hole at each step. This will ensure that you don't drill the hole too large.
- Once the appropriate hole size is obtained, use a pocket knife to clean and smooth the edges of the holes.



Step
Drill Bit

Vegetable Seeder Instructions

Drilling Blank Seed Plates

Select the Seed Plate Thickness

- We have three different thicknesses of blank seed plates: 3/32" (G), 3/16" (N), 1/4" (U). Choose a thickness equal or slightly thicker than your seeds.
- For small seeds like greens, kale, cabbage, etc., use the black 3/32" blank plate with the lip on the sides. For medium to large seeds like okra, peas, beans, and corn, use either the 3/16" (N) or the 1/4" (U) blank plates.
- If your seeds are much thicker than the plate, then the brush will likely kick the seeds out of the hole.
- If your seeds are much thinner than your plate, multiple seeds will be able to fit into a single hole.



Choose a Drill Size

- Measure the longest dimension of your seeds as they lay on a table. An inexpensive set of dial calipers is handy for this step.
- Select a drill size equal or slightly larger than the longest dimension of the seeds. For example, if you measure .24", then use a 1/4" drill bit.
- You want the seed to be able to comfortably lay flat inside the seed plate hole without touching any of the sides.

Mark the Hole Location on the Blank Plate

- To mark the hole locations on blank seed plates, you can use an existing predrilled plate or our Metal Drill Template.
- To use a predrilled plate, lay the predrilled plate over the blank plate. Make sure the D holes in the center of the plates are aligned. Mark the location of the holes with a marker or the tip of a drill bit. Then drill the holes to the appropriate size based on your seed.
- To use the Metal Drill Template, position the Metal Drill Template on the blank plate so the D holes in the center are aligned. See page 13 for instructions on how to determine the correct hole spacing.
- If your desired hole size is less than 3/32", then use a drill bit that matches your desired hole size to drill the appropriate holes through the template and into the blank plate.
- If your desired hole size is larger than 3/32", use a 3/32" bit to drill a starter hole. Then use a larger bit to increase the hole to the desired size.

Vegetable Seeder Instructions

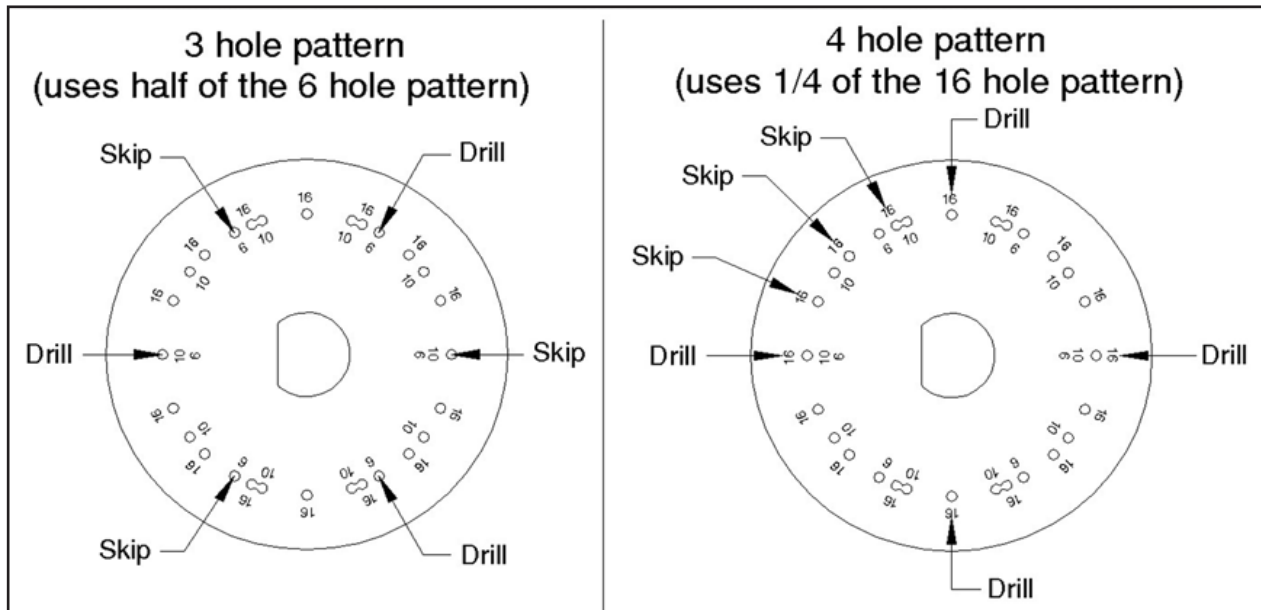
Drilling Blank Seed Plates continued



Metal Drill Template

Seed Spacing	# of holes	Pattern to Use
19"	1	6 hole
9 1/2"	2	6 hole
6 3/8"	3	6 hole
4 3/4"	4	16 hole
3 3/4"	5	10 hole
3 1/8"	6	6 hole
2 3/8"	8	16 hole
1 7/8"	10	10 hole
1 3/16"	16	16 hole

- The metal Drill template includes 6, 10 and 16 hole patterns. Using these patterns, you can obtain any of the seed spacings listed in the table above.
- To drill a 3 hole pattern, drill every other hole in the 6 hole pattern.
- To drill a 4 hole pattern, drill every fourth hole in the 16 hole pattern.
- To drill a 5 hole pattern, drill every other hole in the 10 hole pattern.
- To drill a 8 hole pattern, drill every other hole in the 16 hole pattern.



Vegetable Seeder Instructions

Installing a Seed Plate

- Remove the wing nut along with the brush and cone shaped spacer.
- Make sure the circular hole in the hopper is aligned with the seed drop tube.
- Place the appropriate seed plate into the hopper. Make sure the D-ring on the seed plate aligns with the “D” shaft extending through the hopper.
- Install the cone shaped spacer in first followed by the brush. The brush should sit in the designed groove in the hopper and will always sit parallel to the frame of the Vegetable Seeder.
- Fasten the brush in place with the wing nut. The wing nut does not have to be tight at all, just tight enough so that the brush can not pop out of the groove in the hopper. If the brush is too tight, the rear drive wheel on the Vegetable Seeder will not turn freely and the bristles will prevent seeds from passing over the seed drop tube.

Emptying the Hopper

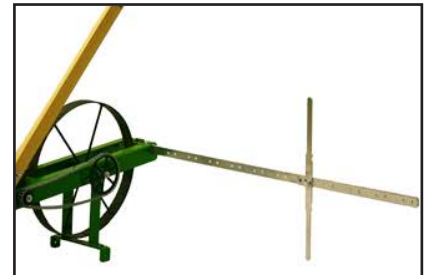
- Remove the wing nut.
- Lift the hopper and all of its contents from the seeder frame.
- While holding down the brush with your thumb, dump the remaining seeds.
- Turn brush over and remove any seeds that are stuck in the brush.
- It is completely normal for some seeds to get stuck in the brush.



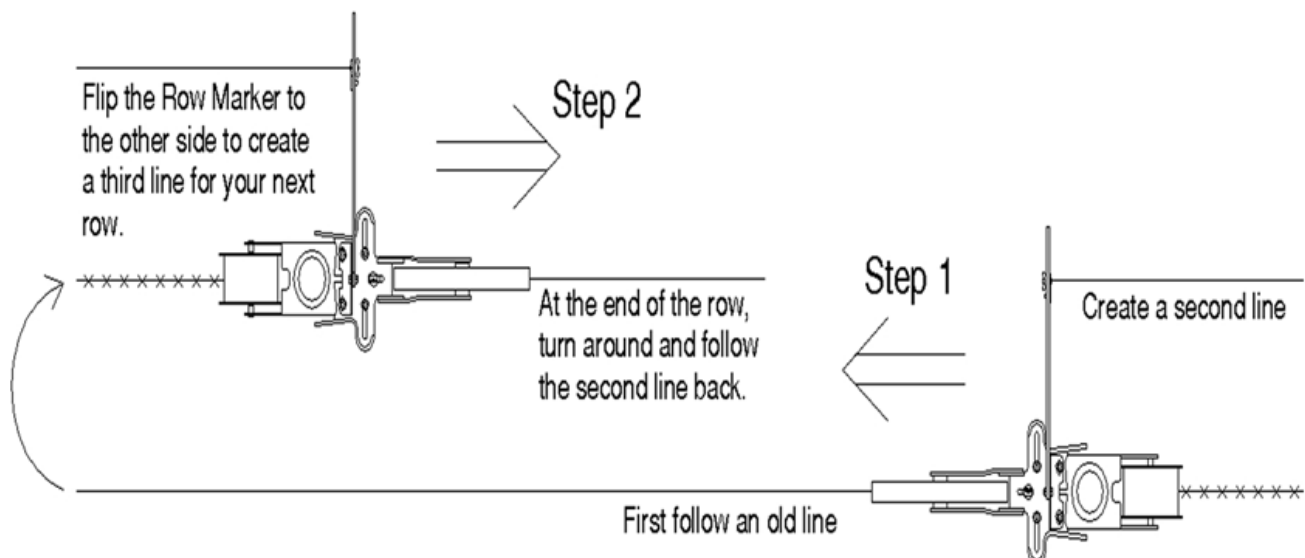
Vegetable Seeder Instructions

Vegetable Seeder Row Marker

- The row Marker is an optional accessory used to mark a line in the soil parallel to the row you are currently planting, providing parallel spacing between rows.
- To attach the Row Marker, Insert the large end down to the corner slot on the back of the Vegetable Seeder Frame. The Row Marker should slide easily across the groove on the back of the frame. Then pull the row Marker up and over the frame to use on either side of the Vegetable Seeder.
- To use the Row Marker, first determine the desired distance between rows. The Vegetable Seeder row Marker has holes that are 3" apart and range from 6" to 3'.
- To change the marking distance, remove the wing nut from the Row Marker blade to disconnect the marking blade from the arm. Insert the blade into the holes for the desired marking distance. The pin on the Row Marker blade fits into the round hole while the carriage bolt fits in the square hole.



Follow the steps shown in the picture below to simultaneously plant one row while marking the location of the next row.



Troubleshooting Tips

Vegetable Seeder Troubleshooting Tips

Clean and sort your seeds.

- If you're using heirloom-type seeds or if you save your own seeds, be sure to clean and sort your seeds before loading into the hopper of the Vegetable Seeder. It is impossible to design a mechanical seeder that will plant a batch of seeds that are not all relatively the same size. Remove the larger seeds from the batch through sorting, and clean the seeds to remove any excess dust or dirt that could get between the seed plate and the hopper of your Vegetable Seeder

Use pelleted seed for carrots, beets, lettuce, and chard.

- For these seed types, you must use the coated/pelleted versions of these seeds in your Vegetable Seeder. Due to lack of size uniformity and irregular shape with the native seeds of these crops, it is necessary to use uniform, pelleted versions. Pelleted seed can be easily found online for all the above mentioned crops.

Test your Vegetable Seeder before planting.

- We recommend that you do some preliminary tests with each new batch of seed to ensure you receive accurate results in the field. This can be done by simply loading a small amount of seed in the hopper and making sure the seed is being metered at the correct rate. You can set the Vegetable Seeder on the ground and spin the back wheel towards the tractor by hand to test the seed metering, or set the depth on the shallowest setting and push the seeder along a flat surface with your BCS tractor in a neutral drive position and no engine running.

Don't Keep pushing the Vegetable seeder if it jams.

- If your Vegetable Seeder jams, this is because seeds have become stuck in the seed plate. Either a large seed is not able to pass through the hole, or two small seeds are stuck in a seed plate hole. When planting large seeds like corn, beans and some peas varieties, this is not unusual. To clear rogue seeds, simply lift the back wheel of the Vegetable Seeder off the ground and spin the rear wheel of the Vegetable Seeder backwards or away from the tractor by hand or with your foot. This will dislodge the rogue seed(s) without causing any damage to the Vegetable Seeder itself. If you continue to push the Vegetable Seeder or try to drive the Vegetable Seeder with tractor while the seed plate is jammed, you will potentially damage the seed plate gears and or stretch the drive chain.

Plant in loose, but firm soil.

- Freshly roto-tilled soils tend to be very fluffy and have lots of air space within them. If you use a roto tiller, we recommend watering or waiting a few days between tilling and planting. This will ensure you get the best seed to soil contact when planting.



NOTES: _____

BCS Vegetable Seeder (921HS000)