

955 Benton Ave., Winslow, ME 04901 • Home Garden: 207-861-3901, Fax: 800-437-4290 • Comm: 800-854-2580, Fax: 800-738-6314
Email: staff@johnnyseeds.com • Web Site: www.johnnyseeds.com

PARTS LIST

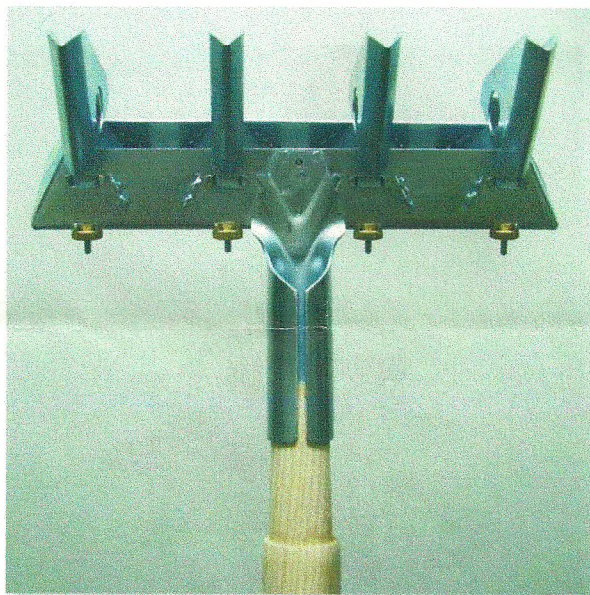
Seeder body, two wheels, shaft, oiled ashwood handle, and self-tapping #4 x 1/2" round-head woodscrew

TOOLS NEEDED

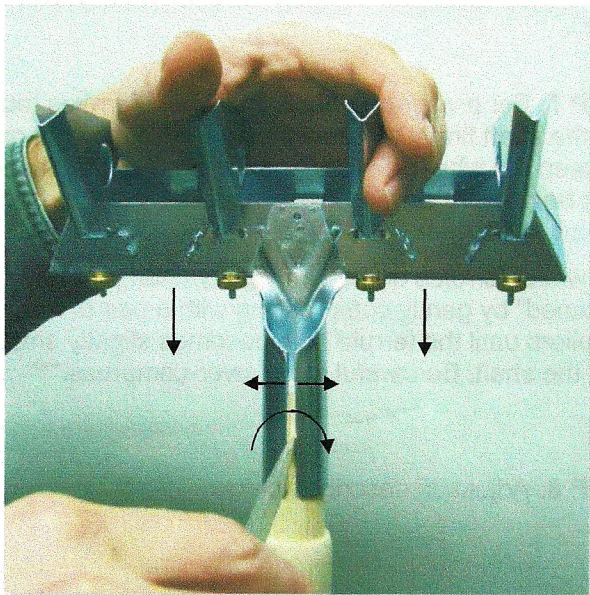
Large flat screwdriver, #1 Phillips screwdriver, round-jaw pliers

ASSEMBLY INSTRUCTIONS

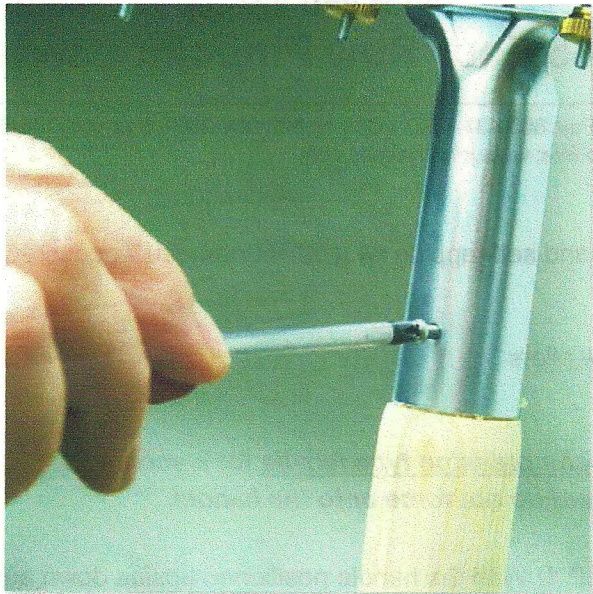
***** Note: The handle for this seeder mounts in a compression type ferrule for a secure fit. Please follow directions carefully below and do not force onto the handle. *****



STEP 1: With the handle positioned upside down and resting on the floor or ground, gently insert the tapered "tenon" end of the handle into the "ferrule" of the seeder body as far as it will easily go by hand, without forcing. Since Johnny's logo should be facing up during use, rotate handle until the logo is on the same side of the expansion ferrule as the pre-drilled set screw hole.



STEP 2: Insert a large flat screwdriver in ferrule slot as shown and while gently pushing down on seeder body, twist the screwdriver to expand the sides of the expansion ferrule just enough to allow full insertion of the tenon.

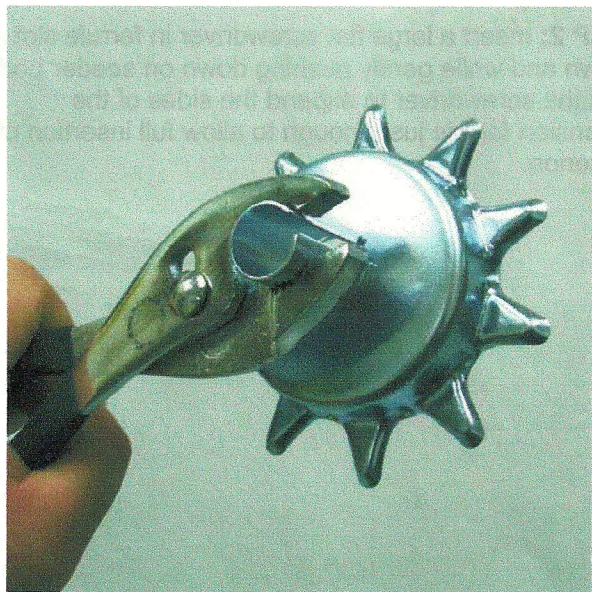
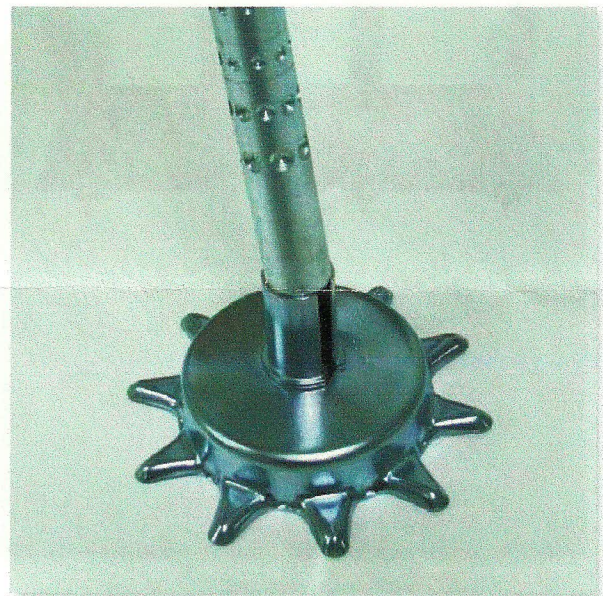


STEP 3: Using a #1 Phillips screwdriver, secure the seeder body onto the handle with the #4 x 1/2" wood screw provided.

STEP 4: Somewhat forcefully, insert seeder shaft into the ferrule of one wheel at a slight angle as shown to the right, so that the compression ferrule expands to receive the shaft.

STEP 5: Slide the shaft into the seeder body.

STEP 6: Repeat step 4 to install the second wheel onto the opposite end of the shaft.



STEP 7: For proper operation, the wheel ferrules must grip the shaft firmly without slippage. Also, a slight gap between the wheel ferrules and the body of the seeder must be present so the wheels and axle will turn freely without friction.

If wheel ferrules do not grip tightly enough, they may be "tuned" by gently compressing with a pair of round-jaw pliers until the ferrule hole becomes slightly smaller than the shaft. Be careful to not over-compress.

STEP 8: Adjust as described below.

USING THE FOUR ROW PINPOINT SEEDER – *One Grower's Experience*, by Eliot Coleman

These are extremely accurate and precise seeders. They are tools; however, not machines. The effectiveness of a tool depends on the care taken by the tool user. Here are some suggestions from my experience.

I store the seeders in a closet at my house. I do that not only to keep them dry and prevent rust, but also because I want them dry and clean when I need to use them. If the seeder surfaces are wet, seeds will stick, and the seeder won't work properly.

The seeder has one axle with a choice of four hole sizes. The axle should be positioned so the desired seed hole size is centered under the hopper. When you slide the wheels back on to hold the axle in place, leave a slight gap between them and the body of the seeder so the wheels and axle will turn easily without friction.

Spend some time before sowing any seed to determine the ideal hole size and brush setting. I use a letter code to identify the hole sizes, A to D with A being the smallest hole and D being the largest. Another letter code, T – tight, N – normal, L – loose identifies the brush setting. For example, I fill one hopper and turn the wheel one turn a number of times, counting how many seeds to drop per turn. Since the rolling circumference of the wheel is about 9 inches, and there are 9 holes for each turn of the axle for sizes A, B and C, an ideal match will drop one seed per inch. When you find what works best, write it on the seed packet and/or in a notebook. The table below gives some suggested hole sizes; some experimentation will be necessary to determine the correct hole size for each seed lot. The designation "heavy" indicates the hole is too big for ideal sowing. You will want to determine the brush setting yourself based on the specific cultivar.

HOLE SIZE GUIDELINES:

A (small) - 9 holes; B (med) - 9 holes; C (large) - 9 holes; D (largest) - 7 holes

Seed spacing: A thru C = 1"; D = 1-1/4" between drops

Arugula	A	Minutina	A (heavy)
Carrot	C (pelleted), A (naked)	Radicchio	A
Claytonia	A (heavy)	Radish	C
Endive	A	Scallion	B
Lettuce	C (pelleted), A (naked)	Spinach	D
Mache	A or B (@ 2 seeds per)	Sylvetta	A (heavy)

These seeders are precision tools and should be used in finely prepared soil. Rocks, chunks of not yet decomposed manure and compost, or stringy weed and root residues will give you fits. The extra production per square foot that you will gain with precision seeding more than justifies the extra care in seed bed preparation.

This seeder is designed to be pulled. I use a bed system and walk backwards down the path next to the bed I am sowing in order to watch the seeder operation as I pull it along. If for some reason the wheels are not turning and/or the seeds are not dropping, I want to know immediately so I can fix whatever is amiss. If there is an occasional rock or clump of compost that might knock the seeder off line or gum up the furrow openers, I can stop and remove it.

The seed beds need to be firm. Freshly rototilled ground needs to be packed down to ensure proper operation of the seeder.

The depth of sowing is adjusted by changing the angle of the handle to the ground. Raising the handle plants the seeds more deeply; dropping the handle plants seeds more shallow. With practice this becomes second nature, but you need to think about whether a new depth is required each time you change to a different seed.

The furrow openers are designed so the soil falls back quickly following the seed drop. Irrigation after sowing will wash slightly more soil over the seeds if you wish. Or, you can tamp the bed lightly with the back of a rake to firm the seeds. I use a lightweight

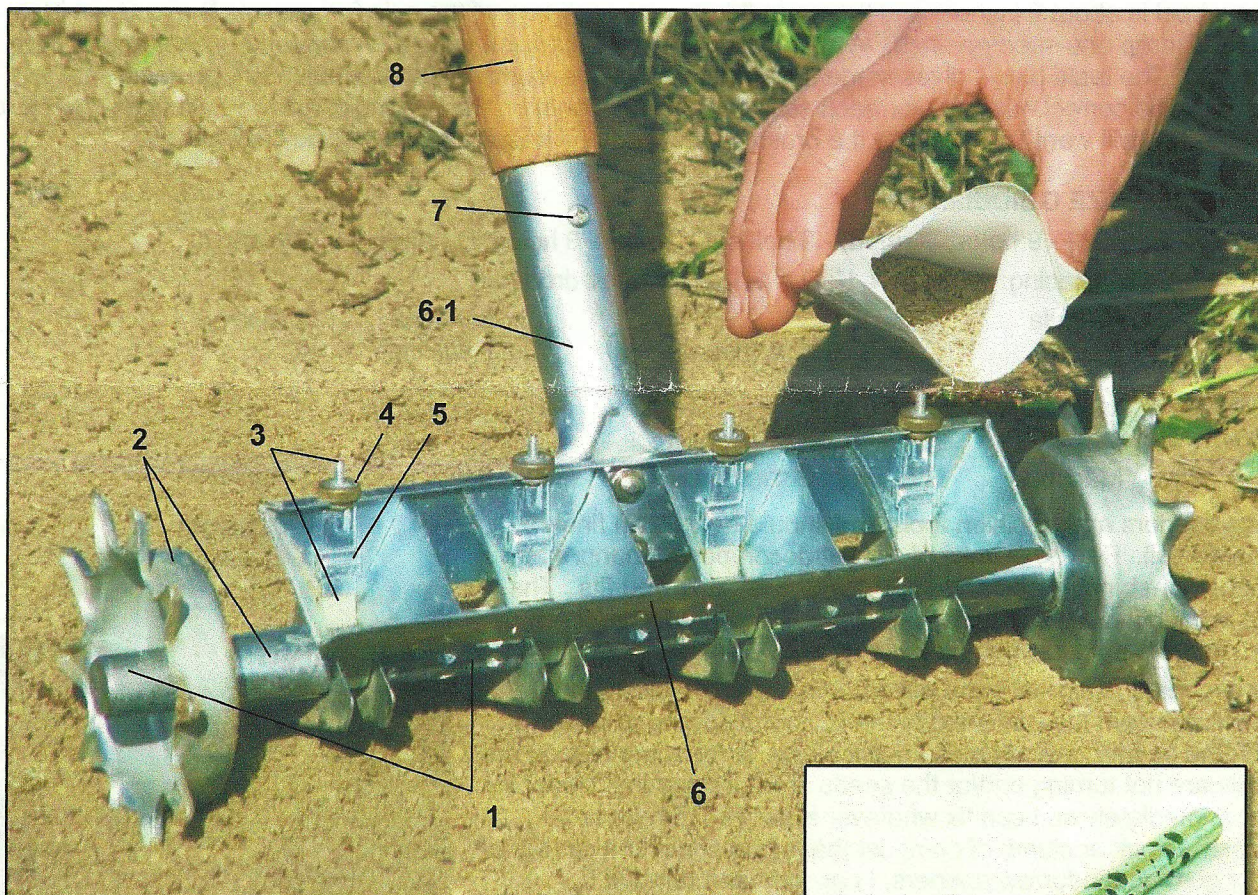


mesh roller for firming after sowing because it also creates a smooth soil surface which facilitates the close cutting of mesclun salad crops at harvest.

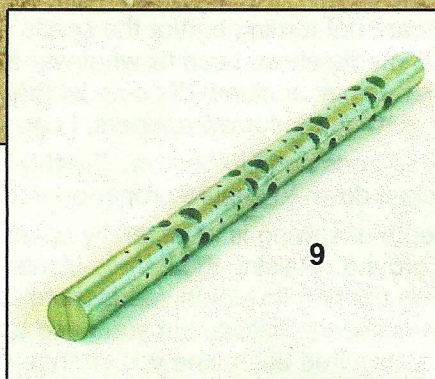
The tooth marks left by the seeder wheels are useful for lining up the next row. There is 2 ¼ inch spacing between each row. The wheel tooth marks are 2 ¼ inches beyond the outside rows. Thus when sowing multiple sets of four rows, the wheel teeth will run directly over a previously sown row when you space the next four rows at an even spacing from the previous four. I have never found that to be a problem. This seeder will plant 12 rows on a 30 inch wide bed and 20 on a 48 inch bed. The 2 ¼ inch row spacing may seem close but it is common for intensive planting in European greenhouses, not only of baby leaf salad crops but also of radishes at 2 square inch per plant and carrots at four square inches.

Emptying the remaining seeds from the hopper is simple. I tip the seeds from all four hoppers into a 9 inch wide baking pan and then I can pour them back into the seed packet. If you use the seeder with the brushes set down tightly, return them to a loose setting before storing the seeder so they will not become deformed.

REPLACEMENT PARTS:



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| 1. | 9285.400 | Standard Shaft |
| 2. | 9284.200 | Wheel (and attached Wheel Ferrule) |
| 3. | 9285.100 | Brush |
| 4. | 9285.300 | Knurl Brush Adjustment Nut |
| 5. | 9285.200 | Brush Clamp |
| 6. | 9285.700 | Seeder Body Frame (and 6.1 Exp. Ferrule) |
| 7. | | Set Screw (#4 x ½" round head) |
| 8. | 9281 | Oiled Ashwood Handle |
| 9. | 9861 | Extended Range Shaft (optional) – two smaller and two larger seed hole sizes extend the seeder's range of operation. |



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For further information or pricing, call 877-564-6697 or visit Johnnyseeds.com.