

FORCE FEED SEED HOPPER

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The seed sowing machine used here at Vallonia Nursery is a Planet Junior 156 seeder with a homemade force feed hopper substituted for the original gravity feed hoppers. Before we made this modification we had to use absolutely clean seed; otherwise bits of gum, needles, wings, and other trash would often plug the cups and cause uneven sowings and skipped spots. The modified machine does our job very well indeed.

The force feed seed hopper is essentially a row of force feed cups mounted underneath a flat-bottomed U-shaped box 4' long, 10' high and 6-10" wide. It is mounted in front of the seeder frame in order to clear the lift arms and shoe hold-down bracket rods and springs; resting on 1/8" x 3" x 8" plates welded to the front seeder tongue braces. A double run feed cup for each drill row desired in the bed (in our case, 8) is fastened to the bottom of the hopper.

These cups are powered by a 5/8" square shaft connected by a chain to the original gravity feed shaft (from which the gravity feed hoppers and sprockets have been removed). The speed of this new shaft, and hence the rate of seed flow, is governed by placing the proper two of eighteen sizes of sprockets on the end of these shafts. The double run feed cups flow the seed via tubes to the seeder shoes in the conventional manner. The bill of material describes these various special parts.

Chain tension is maintained by 1 1/2 slotted (elongated) holes in base of seed hopper foot, below the single end bearing.

The gravity feed shaft behind the frame is kept to mount the seed flow shut-off clutch, and to receive the power train sprockets and #32 chain from the seeder drive wheel sprocket. The upper, 7-tooth, clutch mounted sprocket is usable, but in our case we had to discard the large bottom (wheel) sprocket and replace it with a 10-tooth, #32 sprocket (John Deere Y-1644 BG-\$1.10).

In addition to the seed density adjustment provided by pair combinations of the 18 sprockets the general flow of seed is controlled by leaving all 8 pairs of holes in hopper floor open, or by plugging, either the right or left hand one of each pair. Normally only eight holes (those for the "narrow" side) are needed. However, white pine and larger seed require the eight "wide" side holes, and all sixteen may be needed when sowing such large seeds as soybeans, pin oak, or corn..

We have found that this machine is well adapted to large scale nursery work but when sowing loose or sandy soil particular attention must be given to its shoe adjustment for depth, otherwise it will sow too deeply. We feel that the importance of shallow sowing (1/4"-3/8") cannot be overstressed and when sowing a dry seedbed surface we set the opening plows very shallow. Also, we remove or discard the shoe tension springs and raise or remove entirely the covering devices since the packing wheels will cover small seeds sufficiently without them.

Fractional, or small amounts of seed may be sown by setting funnels in 8 holes in box. Divide seed into 8 parts and place equal parts in each of the 8 funnels.

Bill of Material

From: International Harvester Co. dealer, or from

International Harvester Company 180
N. Michigan Avenue Chicago 1, Illinois

"Standard McCormick-Deering Double-Run Feed,
Grain Drill Parts"

Double-run feed cup and wheel, assembled - - 8 ea.

(Double-run feed cup and wheel,
assembled complete, part numbers NA 610, NB
611 (or N-12444) plus feed wheels)

Seed tubes, spiral-steel ribbon, approx.
30 inches long, complete; with single delivery
hole, tube top cups, to fit above;
collars, pins, etc. included. - - 8 ea.

Feed shaft, square, 5/8" x 60" to fit
above set of double-run feed cups - - 1 ea.

Estimated cost - \$40

From: McMaster-Carr Supply Co. or Link-Belt Company
 640 West Lake Street Chicago, Illinois
 Chicago, Illinois

Sprocket wheels, cast or wrought-steel, center hole 3/4", round, no keyseat, with setscrew. - - 1 ea. of the following sizes
 Size #25 sprockets for implement chain #25, pitch diameter 1":

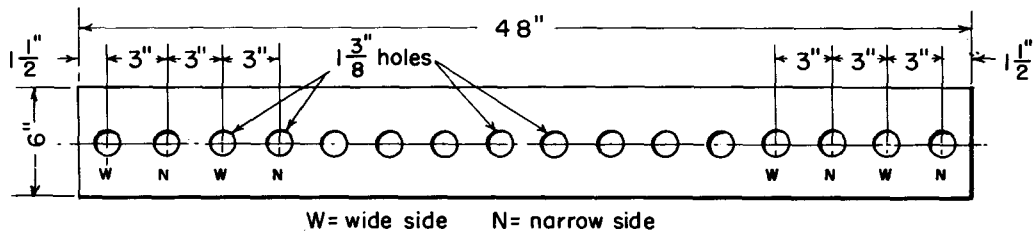
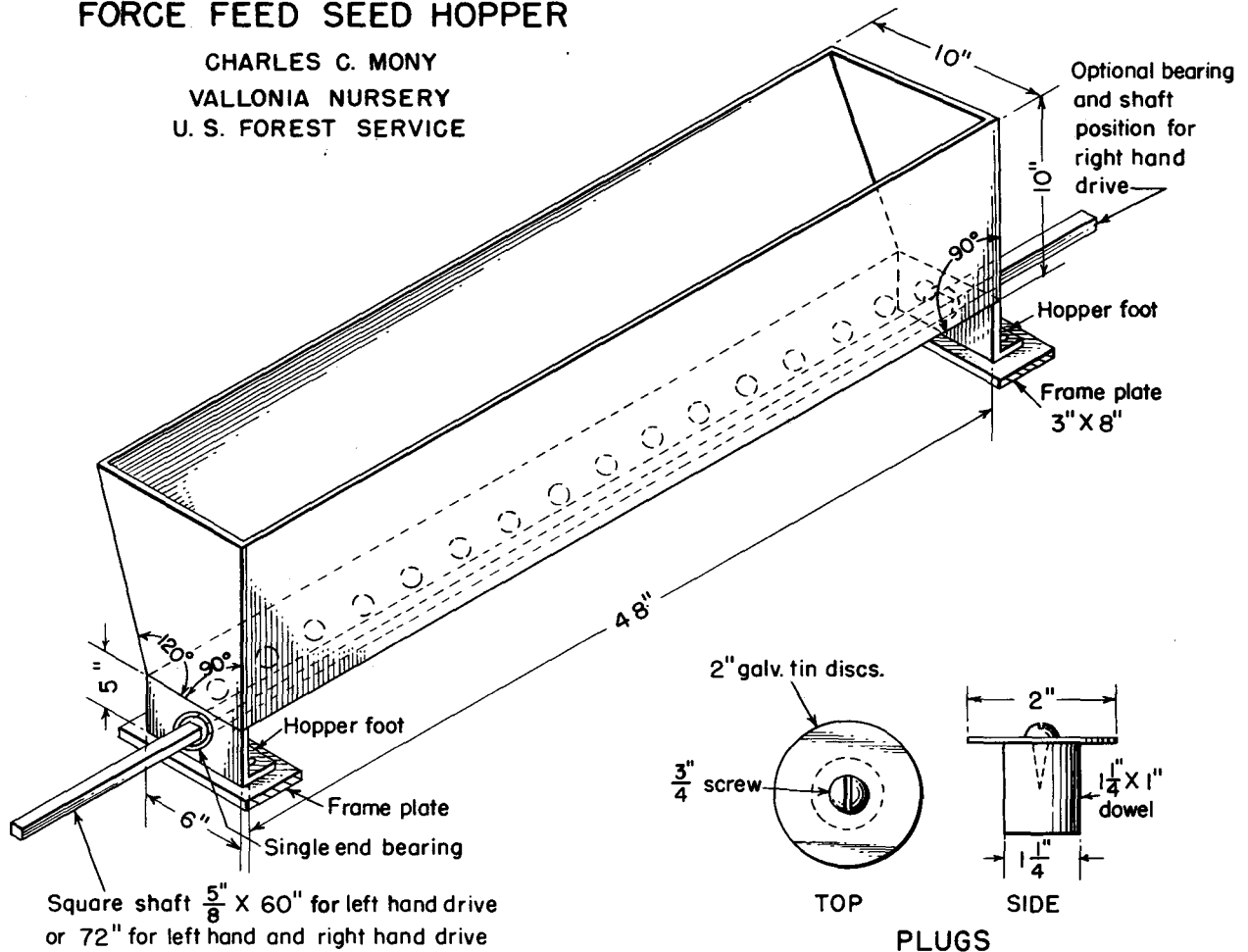
<u>Teeth</u> (number)	<u>Approx. diam.</u> (inches)	<u>Teeth</u> (number)	<u>Approx. diam.</u> (inches)
6	2	20	5 3/4
7	2 3/8	22	6 1/4
8	2 5/8	24	7
9	2 3/4	26	7 1/2
10	3 1/4	28	8
12	3 1/2	30	8 3/4
14	4 1/4	32	9
16	4 3/4	34	10
18	5 1/4	36	10 1/2

Note: Either 3/4" round hole or 5/8" square hole will work OK on 5/8" square shaft.

Estimated cost - \$50

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VALLONIA NURSERY
U. S. FOREST SERVICE



DETAILS OF HOPPER FLOOR

Sixteen holes, $1\frac{3}{8}$ " in diameter are drilled in the hopper floor, one directly above each side of the 8 double run feed cups. These are spaced about 3" apart, center to center.