Two-knob telescoping branch spreader

Set a short spreader length using two sliding bolts and broad padded end notches. The two-knob connection resists twisting better than a single pivot while allowing removal without cutting a tie.

Capacity and fit

Adjustable tip-to-tip length 15 to 18 in (381 to 457.2 mm), for selected young flexible branches that fit the 3/4 in-wide padded V notches. It is not a prop for fruit-laden limbs.

Limits

Choose training angle and timing for the tree. Do not force a stiff branch or use the device where falling could strike a person.

Check bark contact frequently and remove after the training period; pads do not prevent girdling or pressure injury if ignored.

Finished component envelope

18 x 1 1/2 x 3/4 in / 457.2 x 38.1 x 19.0 mm (x, y, z). Solid-part envelope; operating sweep and loose purchased accessories excluded. Axes: x left-right, y front-back, z up.

Cut list - actual dimensions

Part / quantity	Finished L x W x T / material
P01 / Slotted bar / 1	12 x 1 1/2 x 3/8 in / 304.8 x 38.1 x 9.5 mm. Untreated wood lattice actual 3/8 x 1 1/2 in
P02 / Moving bar / 1	12 x 1 1/2 x 3/8 in / 304.8 x 38.1 x 9.5 mm. Untreated wood lattice actual 3/8 x 1 1/2 in

Hardware and consumables

- Two 1/4-20 x 1 1/2 in bolts, four broad washers and two hand knobs

- Two 1 1/2 x 1 1/2 x 1/8 in closed-cell rubber pads, slit to follow V-notches; replaceable adhesive tape

Tools

Tape measure and combination square; Pencil, clamps and safety glasses; Saw with wood blade; drill/driver and piloting bits; 120- and 180-grit abrasive; 5/16 and 9/32 in bits; coping saw; small file.

Fastener direction and joint schedule

- Bolts pass through two 3/8 in bars (3/4 in wood total), washers and knobs. Two fasteners 2 in apart lock translation and twisting; there is no screw into end grain.

Build sequence

01. Cut both bars to 12 in and inspect the grain. Reject knots, short grain or splits near either end notch.

02. Mark the slot on the first bar at y = 3/4 in. Drill 5/16 in end holes centered x = 3 1/4 and 9 3/4 in.

03. Connect the end holes with a straight slot, keeping its width 5/16 in throughout. File off burrs without tapering the slot.

04. Mark and drill the moving-bar holes at local x = 1 and 3 in, both y = 3/4 in. Clamp over backing wood to keep the exits clean.

05. Cut a V at the left tip of the slotted bar and right tip of the moving bar: depth 3/8 in, opening 3/4 in centered across each 1 1/2 in width.

06. Round both V edges and apply the rubber pads. Keep the pads loose enough to conform without exposing a sharp wooden corner.

07. Stack bars face-to-face, with the moving bar starting at x = 6 in. Insert both bolts upward through the slot and matching moving-bar holes; fit washers and knobs.

08. Slide from 15 to 18 in overall length. Mark both limits on the bar and confirm both bolts remain within the slot with washers fully bearing.

09. Tighten both knobs by hand and test gently between two padded scrap blocks. Reject a device that shortens, twists or splits under this modest hand check.

10. Fit only to an appropriate flexible young branch with minimal pressure. Mark placement separately and inspect the bark frequently; remove the spreader at the end of training. Use only where a falling spreader cannot strike a person.

Acceptance checks

- Two knobs engage several full threads and washers bridge the slot at every allowed setting.
- Neither padded V has a sharp edge or contacts a graft union.
- A suitable branch accepts the selected angle without cracking, bark indentation or forced bending.

Use

- Select the shortest useful setting first; lengthen gradually with the branch supported by hand. Never climb or stand below an unstable spreader.

Care

- Remove and dry after the training period, renew pads and inspect slot ends for cracks before each season.

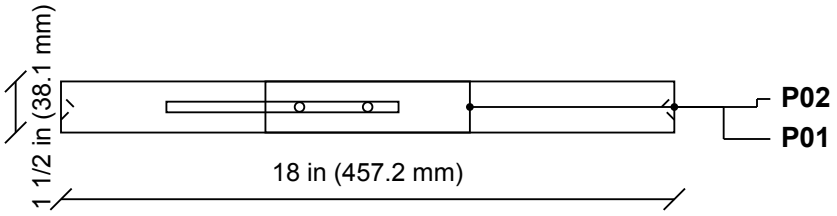
Primary context sources

University of Minnesota Extension: Pruning and training apple trees. Young flexible-branch training and removal of spreaders; original hardware is not an Extension-approved device.

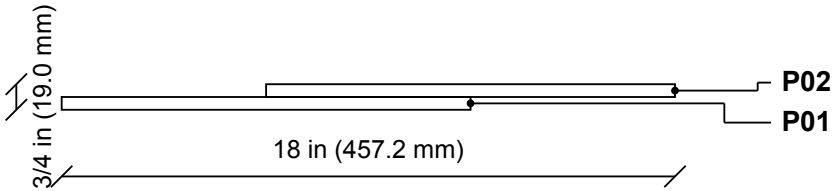
OR-003 / ASSEMBLY VIEWS

Combined tags mark coincident profiles. Repeated members share one callout. P-numbers match the cut list.

PLAN / x-y



FRONT / x-z

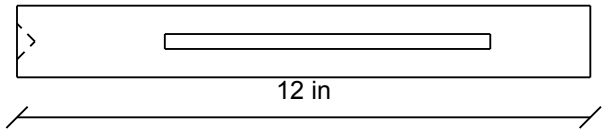


Geometry is schematic orthographic projection. Working clearances and fastener directions are specified in the text.

No scale measurement from this sheet. Use written dimensions. Unbuilt original design.

OR-003 / CUT AND MACHINING 1

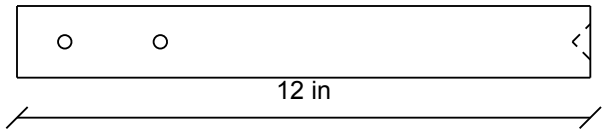
Face view: length horizontal, width vertical. T = actual thickness. Square cuts unless stated.



P01 Slotted bar / qty 1

12 x 1 1/2 x 3/8 in / 304.8 x 38.1 x 9.5 mm

5/16 in slot on width center; end-hole centers x=3 1/4,9 3/4 in. Left V notch depth 3/8,width 3/4 in.



P02 Moving bar / qty 1

12 x 1 1/2 x 3/8 in / 304.8 x 38.1 x 9.5 mm

Two 9/32 in holes at (1,3/4),(3,3/4) in. Right V notch depth 3/8,width 3/4 in.

Dimensions in inches control; metric equivalents are in the cut list. Hole locations are measured from the stated face corner.