Padded sliding-jaw bench-grafting holder

Hold a dormant rootstock horizontally between replaceable padded jaws while wrapping or aligning a graft, using two sliding bolts to prevent the moving jaw from twisting.

Capacity and fit

Selected straight rootstock 1/4 to 3/4 in (6.4 to 19.1 mm) diameter. Sixteen-inch jaws support the stock behind the graft area. The fixture does not guide a knife or establish cambium alignment.

Limits

Keep the grafting knife outside the jaws and cut away from hands; remove the stock for cuts if the fixture obstructs a safe blade path.

Use compatible, healthy plant material and a crop-specific grafting protocol. Do not squeeze bark hard enough to indent it; no graft-success claim.

Finished component envelope

20 x 10 x 1 1/2 in / 508.0 x 254.0 x 38.1 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 / Base / 1	20 x 10 x 3/4 in / 508.0 x 254.0 x 19.0 mm. Exterior plywood, measured actual thickness as listed; seal cut edges outside plant-contact surfaces
P02 / Fixed jaw / 1	16 x 1 1/2 x 3/4 in / 406.4 x 38.1 x 19.0 mm. Untreated pine; nominal 1x.
P03 / Moving jaw / 1	16 x 1 1/2 x 3/4 in / 406.4 x 38.1 x 19.0 mm. Untreated pine; nominal 1x.

Hardware and consumables

- Four #8 x 1 1/4 in screws for fixed jaw
- Two 1/4-20 x 2 1/2 in carriage bolts, four wide washers and two threaded hand knobs
- Two 16 x 3/4 x 1/8 in closed-cell rubber jaw pads; removable double-sided mounting tape
- Two bench clamps with at least 2 in capacity

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; Router with 5/16 in straight bit or jigsaw plus file; 9/32 and 5/16 in bits.

Fastener direction and joint schedule

- Fixed jaw screws cross 3/4 in base and enter jaw 1/2 in. Moving jaw bolts pass through base and jaw (1 1/2 in total), plus washers and knobs; confirm full knob engagement before use.

Build sequence

01. Cut the base and both jaws. Check both jaw contact faces are straight along their 16 in length.

02. Mark two slot centerlines x = 4 and 16 in on the base; their end centers are y = 5 1/4 and 6 1/4 in.

03. Drill the four 5/16 in slot-end holes, then connect each pair with a straight, 5/16 in-wide slot. File smooth without widening the ends.

04. Drill two 9/32 in holes through the moving jaw at local (2,3/4) and (14,3/4) in. Their assembly centers are x = 4 and 16 in.

05. Fasten the fixed jaw at x = 2, y = 3 in with four screws upward through the base. Use x = 3, 7, 13 and 17 in along y = 3 3/4 in.

06. Apply rubber pads to the facing vertical jaw edges. Keep adhesive below the pad perimeter so it cannot touch the stock.

07. Insert carriage bolts from below through the base slots and moving-jaw holes. Fit wide washers and knobs above; retain a washer under each bolt head if needed for the slot.

08. Clamp the base to the bench at its two ends. Slide the moving jaw parallel to the fixed jaw, checking that the two knobs do not bind.

09. Place a clean wooden dowel matching the intended stock diameter between the pads. Tighten alternately until it is retained without a visible dent.

10. Replace the dowel with dormant rootstock. Keep the intended graft area clear of the left jaw end; loosen immediately if bark marks appear during alignment or wrapping.

Acceptance checks

- Both bolts travel freely through their complete 1 in slot-center range. Jaws remain parallel when tightened.

- Pads cover all wood contact surfaces; stock is not pinched at a jaw corner.

- The base is clamped; no knife movement is directed toward a knob, clamp or hand.

Use

- Use for supported alignment and wrapping. Loosen the knobs before removing or rotating the rootstock; never drag bark through closed jaws.

Care

- Remove plant debris, renew dirty pads and keep slots free of hardened sap. Separate clean and suspect plant lots according to local nursery hygiene guidance.

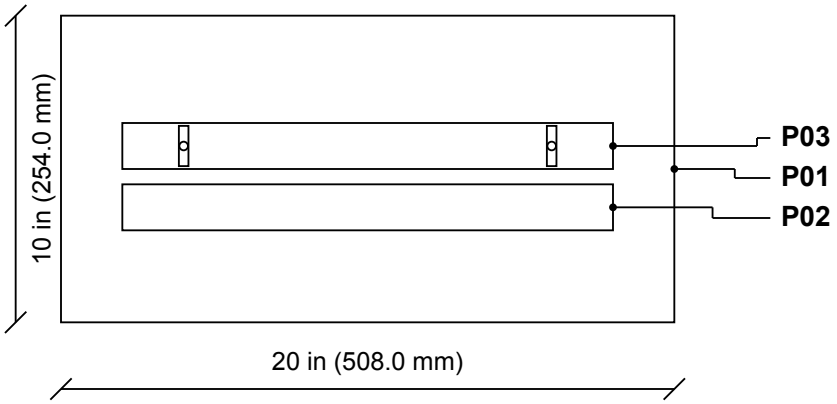
Primary context sources

Penn State Extension: Fruit Tree Propagation - Bench Grafting. Dormant material, alignment and crop-specific aftercare context; original fixtures are not Extension plans.

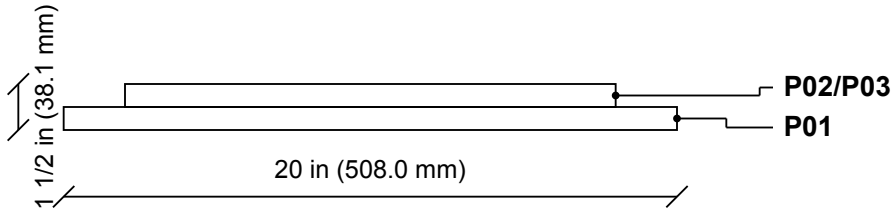
OR-001 / ASSEMBLY VIEWS

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

PLAN / x-y



FRONT / x-z

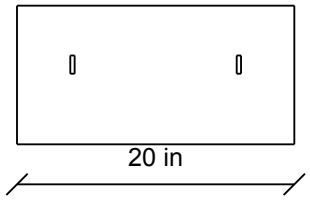


Geometry is schematic orthographic projection. Working clearances and fastener directions are specified in the text.

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

OR-001 / CUT AND MACHINING 1

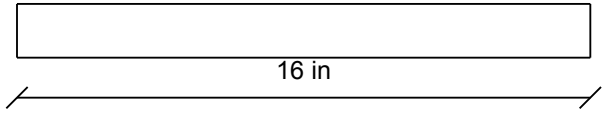
Face view: length horizontal, width vertical. T = actual thickness. Square cuts unless stated.



P01 Base / qty 1

20 x 10 x 3/4 in / 508.0 x 254.0 x 19.0 mm

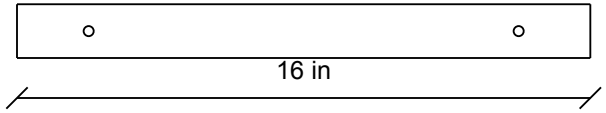
Two 5/16 in-wide slots on x=4,16; center ends y=5 1/4,6 1/4 in.



P02 Fixed jaw / qty 1

16 x 1 1/2 x 3/4 in / 406.4 x 38.1 x 19.0 mm

No openings or angled cuts; break exposed edges with sandpaper.

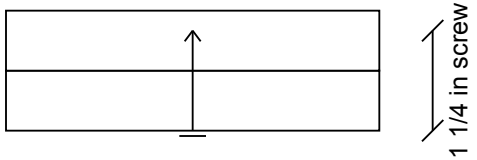


P03 Moving jaw / qty 1

16 x 1 1/2 x 3/4 in / 406.4 x 38.1 x 19.0 mm

Two 9/32 in vertical holes at face (2,3/4),(14,3/4) in.

FASTENER SECTION / Fixed jaw to base



First member crossed: 3/4 in (19.0 mm)

Screw penetration into mating member: 1/2 in (12.7 mm)

Full mating-member dimension along screw: 3/4 in (19.0 mm)

Section direction: up through base into fixed jaw.

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