CL-008 Rigid nonpowered hand-fanning paddle

Make a light hand-operated air-moving paddle for ordinary comfortable indoor conditions, without a motor, battery or finger-accessible mechanism.

US customary dimensions control. Metric equivalents use 1 in = 25.4 mm. Original bounded design, not a prototype-tested or load-certified plan. Read limits and checks before cutting.

Application and limits

Adult household air movement only; not a toy, striking tool, fire fanning tool or heat-illness treatment.

Materials and finished cuts

Part / quantity	Finished size	Stock and orientation
P01 Paddle blade | 1	8 x 6 x 1/8 in 203.2 x 152.4 x 3.175 mm	measured 1/8 in plywood. smooth lightweight plywood without splintered edges; not treated or unknown salvaged panel
P02 Handle | 1	12 x 1 1/2 x 3/8 in 304.8 x 38.1 x 9.525 mm	3/8 in hardwood strip. clear straight-grained poplar or equivalent smooth hardwood, finished actual size

Fasteners, purchased components and consumables

2 smooth solid brass or aluminum rivets 1/8 in diameter, with actual grip selected for the 1/2 in blade/handle stack

Two small backing washers compatible with the selected rivets; use the maker matched setting tool

Fine abrasive and a plain water-based wood finish if desired; allow full cure

Tools and cutting allowance

Tape measure and steel rule; pencil and square; clamps; Saw suited to the stated wood stock; eye and hearing protection; Fine abrasive and a smooth sanding block; Drill/driver, scrap backing, drill bits and pilot bits matched to the stated joints; Rivet-setting tool matched to the selected rivets

Keep saw kerf outside every finished cut. Allow 1/8 in per saw pass in the stock purchase; measured blade kerf controls. Ordinary cut target is +/-1/16 in. Product-specific mounting holes are trial-fitted before drilling.

Step-by-step assembly

01 Inspect sound stock and a stable work surface. In the drawings x runs left to right, y front to rear and z upward.

02 Measure actual stock before cutting; nominal board names are not finished cross sections. Match each part to its label and material in the cut schedule.

03 Mark each finished cut separately, leaving saw kerf outside the line. Label parts, target +/-1/16 in and ease all hand-contact edges.

04 Cut the 8 x 6 in blade with grain or stronger face direction along its 8 in width. Inspect both faces for voids and loose plies; thin rough construction sheathing is not an acceptable substitute for this hand-contact part.

05 Cut the 12 x 1-1/2 x 3/8 in handle. Ease all grip edges and corners until a cloth wipes across them without snagging. Leave the upper 2 in flat for the blade joint; do not carve a thin neck at that joint.

06 Mark the blade vertical centerline 4 in from either side. Align the handle centerline to it, with the handle top 2 in above the blade lower edge. The shown overall length is 16 in; exposed grip below the blade is 10 in.

07 Clamp the joint over scrap backing. Mark the two rivet centers on the handle centerline, 1/2 and 1-1/2 in above the blade lower edge (drawing z=10-1/2 and 11-1/2 in). Check the actual rivet specification before selecting the drill.

08 Drill the two matched rivet clearance holes through the clamped 1/2 in total stack. Back the exit face to prevent tearing thin plywood. Deburr holes by hand without enlarging them until the rivet can rock.

09 Set both rivets with compatible backing washers and the maker tool. Support the opposite head. Stop when the joint is tight; excessive setting force that crushes the 1/8 in blade is a failed joint and requires a new blade.

10 Sweep the paddle slowly through clear air and check the joint with the other hand. The blade must not slip relative to the handle, and no rivet burr may touch skin. Keep the broad blade away from faces and nearby objects.

11 Use light hand strokes without fatigue; store the paddle flat and dry. This tool only moves air. It has no rated cooling effect and is not a treatment for dangerous heat or heat illness; follow current local heat-health instructions rather than relying on it in a crisis.

12 Complete the listed acceptance checks before use. Record changes to stock or fittings; retain this sheet with the finished assembly.

Acceptance checks

Blade 8 x 6 in (203.2 x 152.4 mm); handle overlap 2 in; overall length 16 in (406.4 mm).

Both rivets grip the actual 1/2 in stack without crushed plywood or exposed burrs.

No movement at the joint under a gentle empty hand check.

Use and maintenance

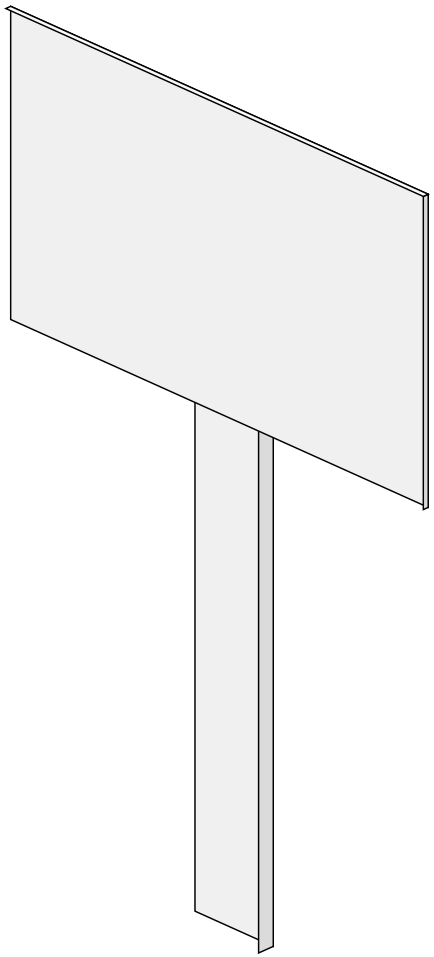
Wipe dry and inspect the joint before use. Replace cracked plywood or a loose riveted joint rather than adding more force.

Primary context

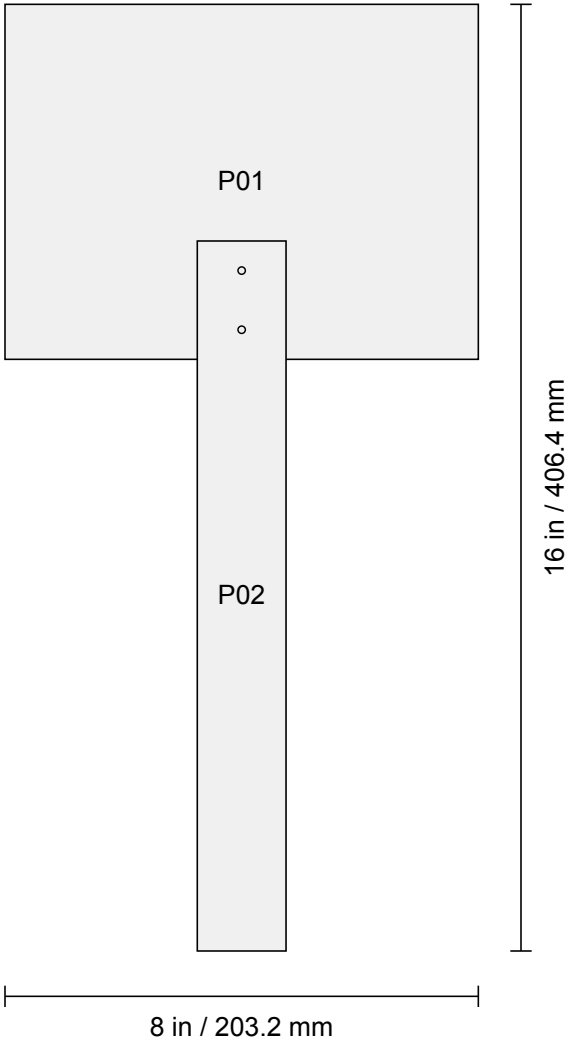
US Department of Energy, Building Science Education: Natural Ventilation and Cooling

CL-008 | Assembly and dimension reference

ISOMETRIC: assembly orientation



FRONT: projected part positions



Blade 8 x 6 in (203.2 x 152.4 mm); handle overlap 2 in; overall length 16 in (406.4 mm). Both rivets grip the actual 1/2 in stack without crushed plywood or exposed burrs.

Use the written dimensions and construction sequence. Do not take dimensions from the drawing scale.