Faceted slit-square pinwheel

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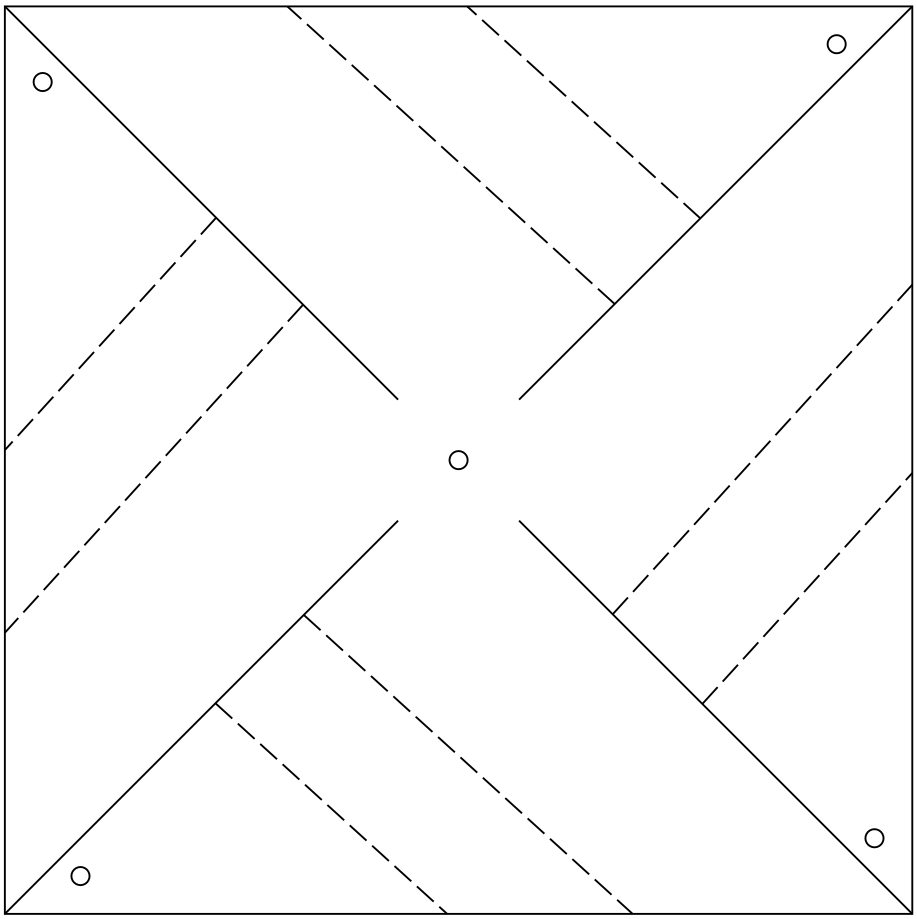
P1 | cut 1
120.00 x 120.00 mm



Solid: cut | Dashed: valley | Dash-dot: mountain | Dotted: glue

50 mm calibration

Print at 100% / Actual size. Do not fit to page. Original paper craft template.

Faceted slit-square pinwheel

pinwheel / 1.0.0 / A4 / Assembly instructions

Finished size: Paper rotor within 120 x 120 x 16.75 mm; external handle and axle not included

Materials: One sheet of 90-120 gsm paper; scissors; ruler; blunt scoring tool; Adult-operated 2.4 mm hole punch or awl with a protective cutting mat; External attachment: headed straight pin / axle about 35 mm long, shaft 0.8-1.0 mm, head wider than 3 mm; External internal spacer: drinking-straw sleeve cut to about 15 mm; bore wider than the axle; External rear spacer: smooth bead about 3 mm, bore wider than the axle; External handle: wooden stick with a firmly attached thick cork axle socket; adhesive for the cork only; Display option: removable tape to immobilize the rotor at its rear hub

Original one-piece construction. All four diagonal slits stop at the corners of the uncut 16 x 16 mm hub; five 2.4 mm holes are actual removed material.

The same flat triangles form the assembled mesh with exact rigid-panel edge lengths. Each blade has two 90-degree valley bends, rather than a simulated smooth curl. Slit banks are topologically separated.

Four tip holes align above the center hole at z=16, 16.25, 16.5 and 16.75 mm. Quarter-millimetre offsets approximate a paper stack; paper thickness and crease radii are not simulated. Fit the sleeve and stack gently rather than stretching the sheet.

Only the paper rotor appears in 3D. Pin, internal straw sleeve, rear bead, cork and handle are external hardware, not hidden paper parts. The axle bridges the raised tips and rear central hub.

A taped mount is a fixed display, not a working spinner. Optional spinning needs a loose captured stack, clearance from the handle, and a smooth axle; rotation and aerodynamic performance are unverified.

Adult assembly and supervision: sharp pin, awl and small bead are puncture/choking hazards. Keep away from young children; bury the entire sharp tip in the secured cork, check retention, and never aim at faces or run with it.

Automated geometry checks do not prove collision-free folding, durability or rotation. Screen inspection and actual 100% printing, cutting, assembly and spin testing remain pending.

Part inventory (cut each instance once):

P1: Slit-square rotor

1. Print and cut one square [P1]: Print at 100% actual size; measure the 50 mm ruler and 120 mm square. Cut P1 perimeter, then the four solid diagonal slits from each corner only as far as the inner endpoint, 8 mm from each center axis. Keep the central 16 mm square intact.

2. Punch five holes and score [P1]: An adult punches all five 2.4 mm holes over a protective mat. There is one center hole and one selected tip hole beside each slit. Lightly score all eight dashed valley lines with a blunt tool; do not cut these lines.

3. Return the first tip [P1]: Keep the printed face upward. Start with the hole at (50,55) mm relative to the square center. Lift its outer blade at the inner dashed line by 90 degrees, then turn the tip inward another 90 degrees at the outer dashed line, with the printed face inside both bends. The short panel stands up and the tip panel lies parallel above the hub; align its hole over the center without pulling.

4. Stack the other three tips [P1]: Repeat counterclockwise from the first blade, viewed from the printed side. Bring only the punched tips to the center; leave the other four corners out. Place each new tip above the previous one. Follow the slightly different crease spacing on each blade; the four holes should share one axle line about 16-17 mm above the rear center hole.

5. Fit the external axle [P1]: Adult only: pass the headed pin from the front through all four stacked tip holes, through a roughly 15 mm straw sleeve in the gap, then through the rear center hole and a 3 mm bead. Seat the sharp end fully inside a thick cork secured to the handle. Leave about 0.5-1 mm running play rather than clamping the paper. Adjust sleeve length to the actual gap; no glue in holes or on the axle. The head must retain the tips and the bead must keep the rotor clear of the handle.

6. Choose display or test rotation [P1]: For a fixed display, tape the rear hub to the mount. For an optional working spinner, omit that tape and check gently by hand that the rotor turns freely without wobbling off, scraping the handle or exposing the pin point. Test with a gentle fan, keeping hands and faces clear; adjust clearance if it binds. Do not claim working status until a real build rotates reliably. Store safely away from small children.