

It's a breeze!

Get your garden in a spin with this fun windmill, perfect for adding a touch of timeless movement among the mulch.



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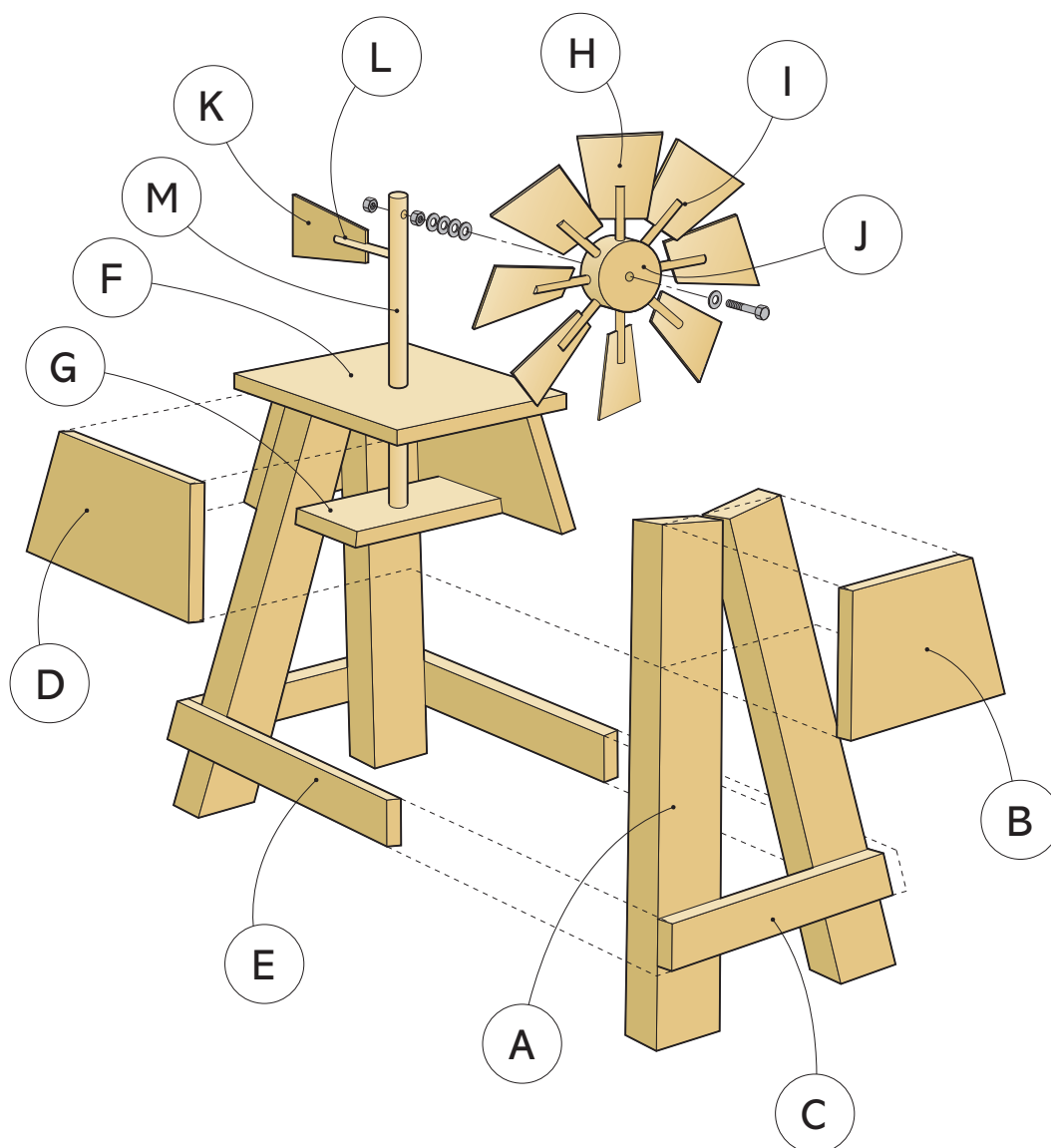
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Forget the frumpy garden gnome! Set your front yard apart from the rest of the street with a miniature windmill – made from timber offcuts and moving with the gentlest breeze, it's a novel way to add interest to your garden.

blowin' *in the wind*

Your easy-to-follow windmill project sheet

Windmill Diagram



WINDMILL

Gather your supplies

- A** Leg (4) 540 x 70 x 35mm Treated pine
- B** Side plate (2) 188 x 148 x 18mm Marine Plywood
- C** Side brace (2) 264 x 50 x 18mm Marine Plywood
- D** Front plate (2) 220 x 148 x 18mm Marine Plywood
- E** Front brace (2) 304 x 50 x 18mm Marine Plywood
- F** Top 215 x 215 x 18mm Marine Plywood
- G** Mast base 190 x 80 x 19mm Marine Plywood
- H** Blade (8) 100 x 80 x 4mm Marine Plywood
- I** Blade spoke (8) 80 x 9.5mm dia. Tasmanian Oak Dowel
- J** Hub 83 (dia.) x 25mm Tasmanian Oak
- K** Vane 100 x 190 x 4mm Marine Plywood
- L** Vane spoke 80 x 9.5mm dia. Tasmanian Oak Dowel
- M** Mast 400 x 22mm dia. Tasmanian Oak Dowel

You'll also need

Mitre saw or power saw (see Note); cordless drill; 3mm drill bit; exterior PVA wood glue; 30mm galvanised button head screws; 22mm spade bit; sandpaper; hand saw; 12mm nails; pincers; 89mm hole saw; 9 & 10mm drill bits; M8 x 75mm galvanised hex head bolt; M8 galvanised washers (5); M8 galvanised nuts (2); Dulux Design Rust Paint (2 parts)

Notes

1. Angled cuts are best done using a mitre saw but can be set out and cut carefully with standard power saw.
2. All joints are glued and screwed unless otherwise indicated. Check all components against actual unit as it is being built before cutting to size.
3. All screws are predrilled. Screws are spaced so they appear even when in place.
4. All measurements given are the longest side for pieces with angled cuts.

steps



Here's how

STEP 1 Using mitre saw or power saw, make a compound cut at 1 end of 1 leg (A) that goes 8 degrees across timber and 8 degrees through thickness. Make other end of leg square. Repeat to cut 3 other legs.

STEP 2 Cut side plates (B), which are trapeziums with angles of 8 degrees on each side.

STEP 3 Place a pair of legs flat on bench so short edge of square ends meet. Make sure angled cuts at other end of legs are going in same direction. Place side plate on square ends of legs so top corners of plate meet outside corners of legs. Make side edge of legs flush with angled edge of plate so legs become splayed. Use drill and 30mm screws to screw side plate to legs.

STEP 4 Cut 50mm wide strips of plywood for side braces (C). Cut to length with ends at an 8 degree angle. Place on legs so angled cuts are flush

with side of legs. Screw through brace into leg. Repeat Steps 3 and 4 to create second leg assembly.

STEP 5 Cut front plates (D), which are trapeziums with angles of 8 degrees on each side.

STEP 6 Place front plate on side of leg assembly so top does not protrude past top edge of side plate. Make angled edge flush with side plate and screw to leg.

STEP 7 Cut 50mm wide strips of plywood for front braces (E). Cut to length with ends at an 8 degree angle. Place on side of leg assembly so they align with, and angled cut is flush to, side brace. Screw through brace into leg.

STEP 8 Place other leg assembly under other side of front plate and front brace so their angled edges are flush with side plate and side brace on that assembly. Screw in place.



steps

STEP 9 Repeat Steps 6 and 7 to attach second face plate and face brace to opposite side of leg assembly.

STEP 10 Place top (F) on legs and screw through into legs to secure. Determine centre by drawing diagonals. Using a 22mm spade bit, drill a hole through the centre.

STEP 11 Cut mast base (G) to size with 8 degree-angled cuts going through the timber at each end. Using 22mm spade bit, drill a hole 10mm deep in the centre of the shortest face. Turn windmill over and place mast base between front plates so the hole is facing towards the top. Screw through front plates to secure.

STEP 12 Cut blades (H), which are trapeziums with angles of 11 degrees on each side. Use sandpaper to round corners.

STEP 13 Use handsaw to cut a 4mm wide slot 40mm long in 1 end of blade spoke (I). Apply PVA wood glue to slot and insert short end of blade. Insert a 12mm nail into drill and use to predrill through spoke into blade. Using pincers, cut 4mm off end of a 12mm nail. Drive nail through predrilled hole. Set aside for glue to dry. Repeat to create 7 more blade assemblies.

STEP 14 Use 89mm hole saw to cut hub (J). Around centre of edge, mark out holes for blade spokes, equally spaced around hub. Drill 10mm holes 15mm deep at these points. Drill out hole in centre of hub to 9mm in diameter.

STEP 15 Apply PVA glue to hole in edge of hub and insert blade spoke. Make sure blade is angled slightly so it isn't in line with hub. Repeat to insert rest of blades, ensuring that they are all angled in same direction.



STEP 9



STEP 10



STEP 11



STEP 13



STEP 15

STEP 16 Cut vane (K), which is a trapezium with angles of 11 degrees on each side. Use sandpaper to round corners. Cut vane spoke (L) to size, then repeat Step 13 to create vane assembly.

STEP 17 Cut mast (M) to length. 25mm from 1 end, drill a 9mm hole through mast for the hub and blade assembly. Drill a second hole, slightly angled, 75mm from same end for vane.

STEP 18 Apply PVA glue and insert vane spoke into hole in mast. Make sure vane is in line with mast.

STEP 19 To attach hub to mast, thread the 8mm coach bolt through each item in the following order: M8 washer, hub, 4 x washers, M8 nut, mast, nut. Do not over-tighten this assembly, ensuring the hub can still rotate on the bolt.

STEP 20 Thread mast through the top so it sits in the hole drilled in the mast base. Predrill and screw through underside of mast base into mast. Don't drive the screw all the way in so the mast can still rotate.

STEP 21 Apply 2 coats of Dulux Design Rust paint finish following product instructions, allowing to dry between coats.



STEP 18

STOCKISTS
Bunnings: 70 x 35mm treated pine, \$2.99/metre. 12220 x 610 x 18mm marine plywood, \$50. 22mm Tasmanian Oak dowel, \$15.25/2.4m. 9.5mm Tasmanian Oak dowel, \$1.77/900mm. 1220 x 810 x 4mm marine plywood, \$17. 30mm galvanised button head screws, \$3.97/pk25. M8 x 75mm galvanised bolts nuts and washers, \$6.25 /pk4. **Bosch Australia:** Power tools **Dulux:** Design Rust base paint (Step 1), \$56.05/500ml. Design Rust rust solution (Step 2), \$34.80.



STEP 19



STEP 21