

WHIRLYBIRD ON A STRING



Action toys have always held a fascination for youngsters, and this project continues that tradition in fine style. As the child pulls the toy forward, a drive wheel at the bottom of the rotor shaft spins the main rotor. That special someone will love you even more when you surprise him or her with this great little $6\frac{1}{2} \times 9\frac{1}{2}$ " gift.

Let's start with the body

1. Rip and crosscut a $1\frac{1}{2}$ "-thick pine block to $3\frac{1}{2} \times 9\frac{1}{2}$ " for the whirlybird body (A). (We cut ours from a scrap 2×4 .) Cut a second $1\frac{1}{2}$ "-thick block to $3\frac{1}{2} \times 4$ "

for the angled-support block shown *opposite*.

2. Lay carbon paper and the body's Side View pattern (see *page 59*) on the larger block, align it, and trace the body pattern, including the hole center-points. Using the dimensions on the Front View drawing (also *page 59*), mark the centerpoint of the $\frac{1}{2}$ " hole for the pull cord. Measure and mark the dowel hole centerpoints and the main rotor shaft hole centerpoint on the whirlybird bottom, referring to the Body Block *drawing opposite, top right*.

3. Referring to the Making and Using the Angled-Support Block

drawing *opposite*, lay out the location of the block's angled notch. To do this, strike a horizontal line $\frac{1}{8}$ " down from the top face of the support. Measure in $1\frac{1}{2}$ " along the line, and mark a point. Mark a second point near the top lefthand corner of the block where shown. Hold a square to the points, with the inside corner of the square directly over the lower point. Now, strike a line along the square's inside edge. Using a band saw, cut the $\frac{1}{8}$ "-deep notch.

4. Rest the body block (A) upside down in the angled support on a drill press table. Using a $\frac{1}{8}$ " bit, drill the four $\frac{1}{8}$ "-deep holes in the body. Remove the support, and drill a $\frac{1}{8}$ "-deep hole for the rear rotor, and a $\frac{1}{8} \times 1$ "-deep hole for the pull-cord pin. Change to a $\frac{3}{16}$ " bit, and drill the vertical hole through the whirlybird body for the main rotor shaft. Switch to a $1\frac{1}{2}$ " hole saw or bit, and cut out the window. Back the body with scrap wood to prevent chip-out.

5. Cut the body to shape, following the pattern line. Sand off any saw marks as well as splinters around the holes.

And now for the landing skids

1. Rip and crosscut two $\frac{3}{4} \times 1 \times 6\frac{1}{2}$ " pine blocks for the skids (B).

2. Referring to the Landing Skid drawing *opposite*, lay out the hole center points for both skids. You'll need $\frac{3}{16}$ " holes $\frac{1}{2}$ " deep for the wheel axles, angled $\frac{1}{8}$ " holes $\frac{1}{2}$ " deep for the dowels connecting the skids to the body, and, on the inside left skid only, a centered $\frac{3}{16}$ " hole $\frac{1}{2}$ " deep for the drive-wheel axle. Drill the angled holes, using the angled support block. Sand the skids smooth.

3. Paint the $1\frac{1}{2}$ "-diameter wheels (see the Buying Guide for our source of toy parts). While the paint is drying, cut four $\frac{1}{8}$ " dowels to 2" long. Apply glue to the dowel ends, and insert them into the body block. Now, add the landing

skids, checking that the bottoms are parallel.

4. Thread the axle pegs through the five skid wheels, apply glue to their tips, and insert in the skids' remaining holes. (Be careful not to pinch the wheels between the pegs and skids; this would prevent the wheels from turning freely.)

Here's how to make and install the rotors and pull cord

1. Using the full-size half patterns on page 59, trace the tail and main rotors (C, D)—including the dowel hole centerpoints—onto $\frac{1}{2}$ " stock, and cut them to shape on a band-saw. Sand the two rotors smooth. (We drum-sanded the curved surfaces and hand-sanded the rest.)

Drill a $\frac{1}{8}$ " hole in the tail rotor and a $\frac{3}{8}$ " hole in the main rotor.

2. Paint the rotors and the 2"-diameter main rotor-drive wheel. And while these dry, cut the $\frac{3}{8}$ " main rotor shaft dowel to 5 inches long.

3. For a smooth-rotating main rotor, apply paraffin to the sections of the rotor shaft dowel that will be in contact with the whirlybird body. Apply glue to one end of the main rotor shaft, and insert it into the hole in the large rotor. Fit the shaft through the vertical hole in the body, add glue to the lower end, and slip on the 2"-diameter wheel.

4. Insert the tail rotor's axle through the $\frac{1}{8}$ " hole in the tail rotor, and glue and insert its tip into the appropriate hole in the whirlybird body.

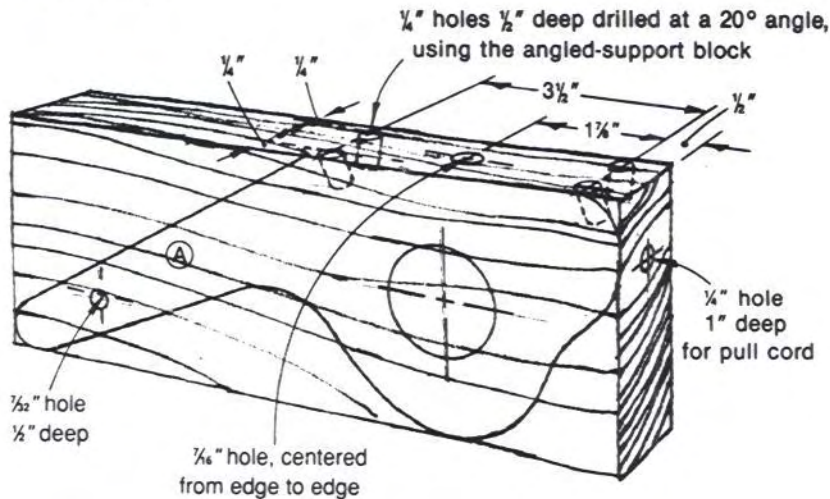
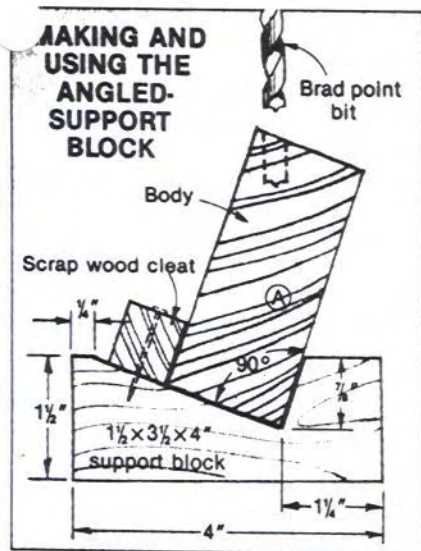
5. Clamp a 1" wooden ball in a wood handscrew, and drill a $\frac{1}{4}$ " hole $\frac{1}{2}$ " deep in it. (We did this on a drill press.) Insert one end of the pull cord in the ball's hole, and secure it with an axle peg glued in place. Secure the cord's other end in the body the same way.

Buying Guide

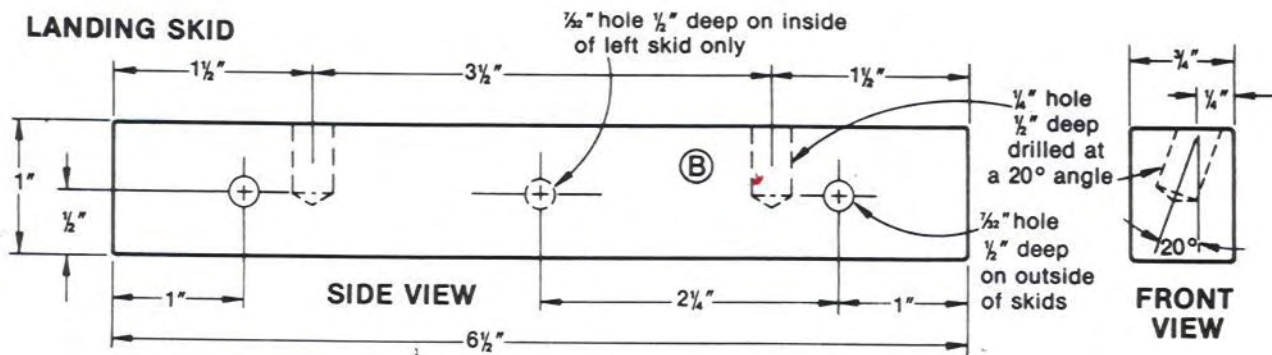
•Whirlybird kit. Catalog no. 3401. Includes enough wooden wheels, balls, axle pegs, dowel stock, and cord to make four toys. For current prices, contact Meisel Hardware Specialties, P.O. Box 70, Mound, MN 55364-0700, or call 800-441-9870.

continued

BODY BLOCK

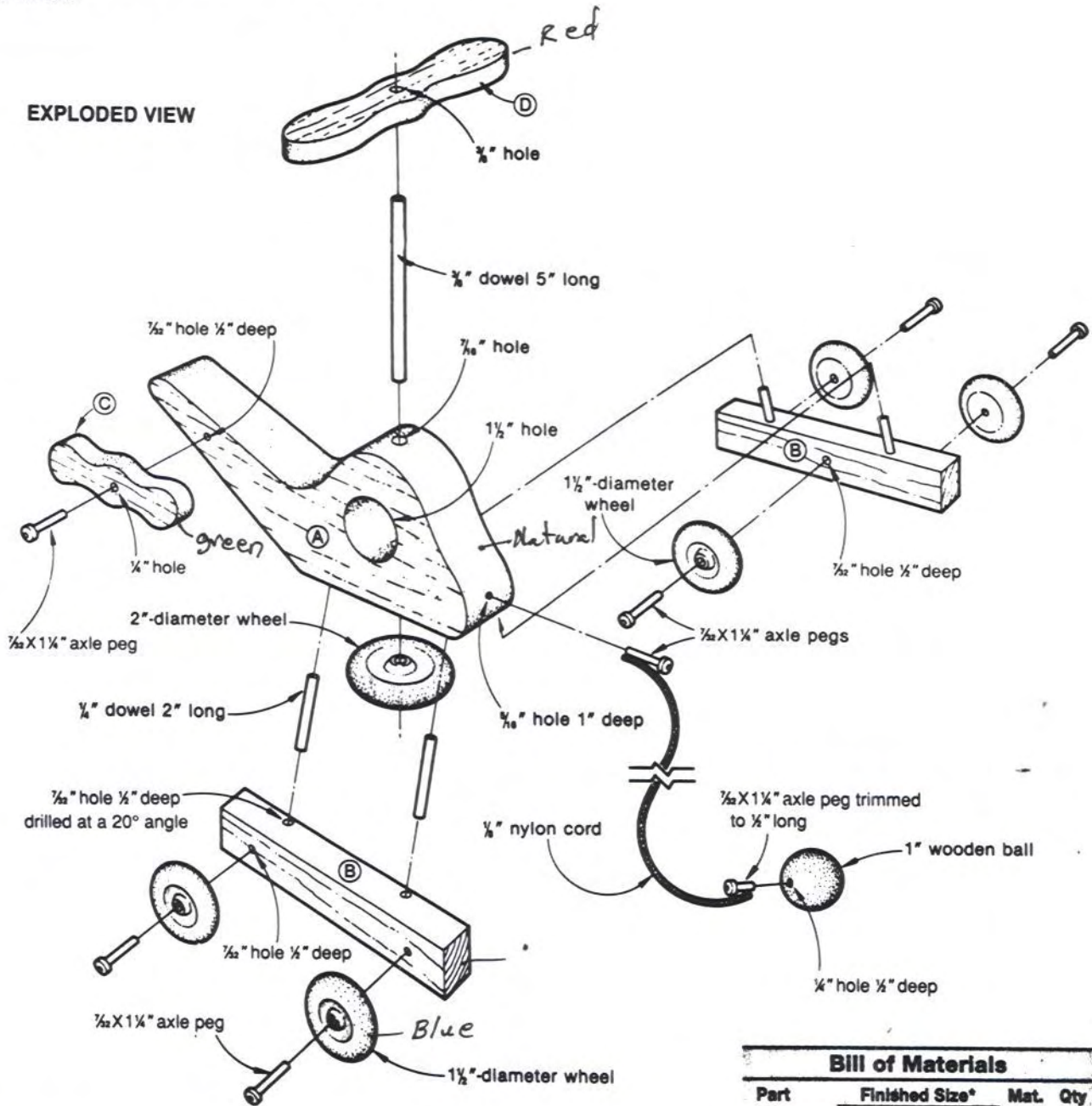


LANDING SKID



WHIRLYBIRD ON A STRING

continued



Project Tool List

- Tablesaw
- Bandsaw
- Drill press
- Sanding drum
- 1 1/2" holesaw
- Bits: 1/4", 5/16", 3/8", 7/16"
- Finishing sander

Note: We built the project using the tools listed. You may be able to substitute other tools or equipment for listed items you don't have. Additional common tools and clamps may be required to complete the project.

Bill of Materials

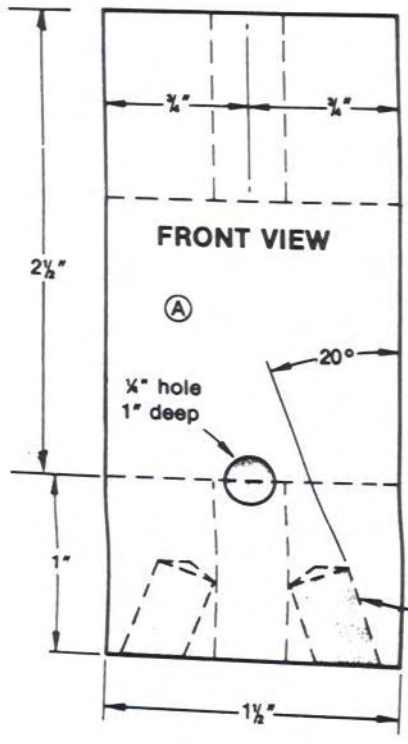
Part	Finished Size*			Mat.	Qty
	T	W	L		
A body*	1 1/2"	3 1/2"	9 1/2"	P	1
B skids	3/4"	1"	6 1/2"	P	2
C tail rotor	1/2"	1 1/4"	3 3/4"	P	1
D main rotor	1/2"	1 1/4"	7"	P	1

* Cut part larger initially, and then trim to finished size. Please read the instructions before cutting.

Material Key: P-pine

Supplies: carbon paper, 1/4x16x1/4 nylon cord, nontoxic paint or dyes, 1/4" and 3/8" dowel stock

FULL-SIZED PATTERNS



SIDE VIEW
FULL-SIZE PATTERN

