

Daytripper Chair

This two-part chair is made up of two interlocking and removable substructures that nestle one inside the other for easy storage or portability. When set up, it is as handsome as it is sturdy and comfortable. This chair will be equally at home on your deck, on the sidelines of the soccer field or in your living room, if you're ever in need of extra seating.



See pages 318-325 for plans on how to build a matching table to accompany this Daytripper Chair project. The table folds down to nearly flat for storage and transport.

Vital Statistics: Daytripper Chair



TYPE: Daytripper chair

OVERALL SIZE: 23W by 30L by 30½H

MATERIAL: Red oak, pressure-treated pine

JOINERY: Butt joints reinforced with galvanized deck screws

CONSTRUCTION DETAILS:

- Back and seat supports built from treated lumber for strength
- Oak plugs conceal screws in slats
- Handle integrated into top two back slats
- Chair disassembles for ease of storage and transport

FINISHING OPTIONS: Danish oil or a penetrating UV protectant sealer, exterior latex paint

Daytripper Chair



Building time



PREPARING STOCK
0 hours



LAYOUT
1-2 hours



CUTTING PARTS
1-2 hours



ASSEMBLY
4-6 hours



FINISHING
2-3 hours

TOTAL: 8-13 hours

Tools you'll use

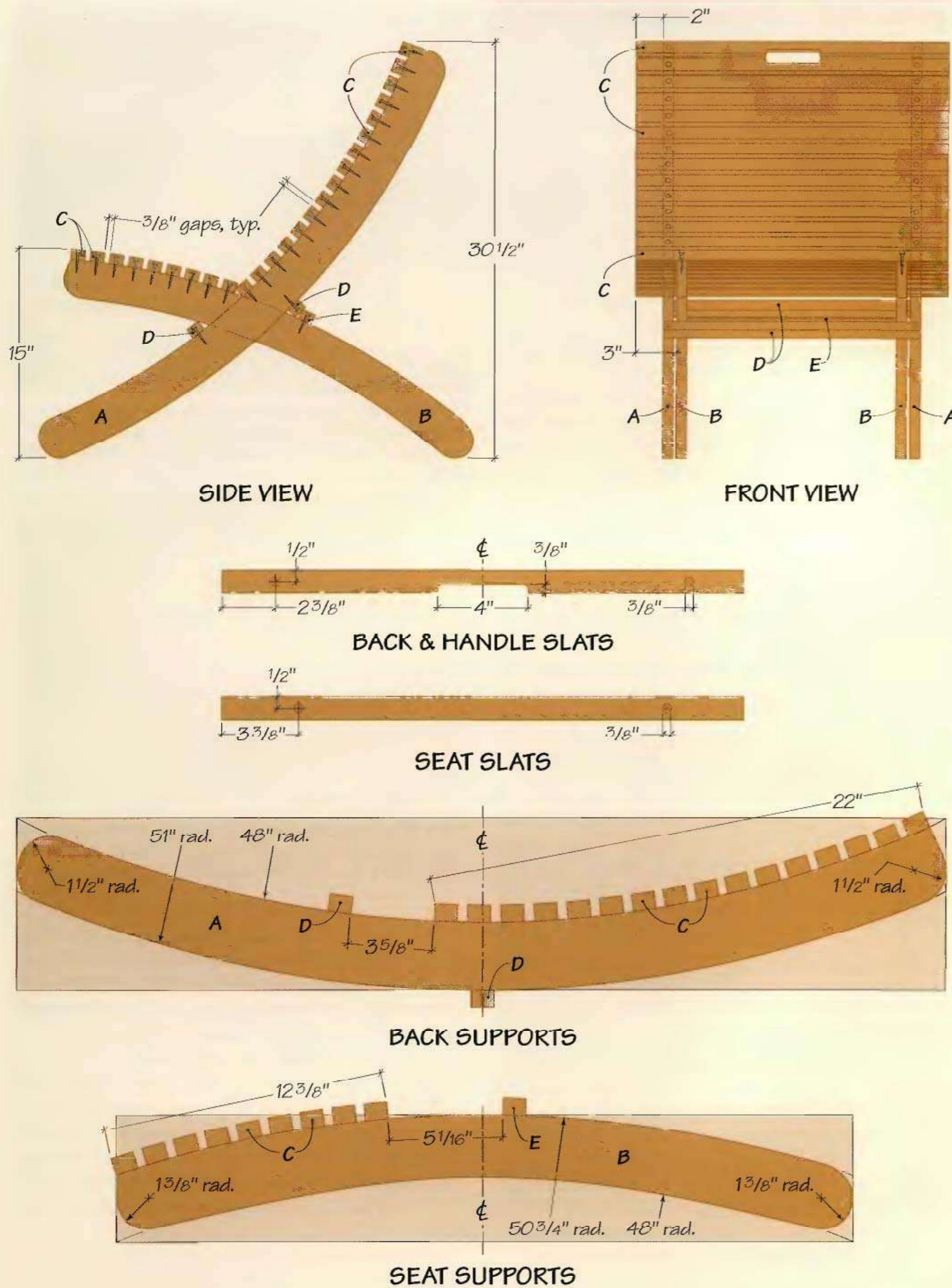
- Band saw or jig saw
- Circular saw or power miter saw
- Router with 1/8-in. roundover bit, 1/2-in. straight bit
- Drill/driver
- Drill press
- 3/8-in. plug cutter
- Compass
- Mallet
- Clamps

Shopping list

- (1) 3/4 × 10 in. × 8 ft. pressure-treated pine
- (1) 3/4 × 8 in. × 8 ft. pressure-treated pine
- (2) 3/4 × 4 3/4 in. × 8 ft. red oak
- Galvanized deck screws (1 1/2-in.)
- Moisture-resistant wood glue
- Danish oil or penetrating UV protectant sealer
- Latex primer
- Exterior latex paint

Daytripper Chair Cutting List

Part	No.	Size	Material
A. Back supports	2	3/4 × 7 5/8 × 41 in.	Treated pine
B. Seat supports	2	3/4 × 5 5/8 × 32 1/2 in.	"
C. Slats	25	3/4 × 1 × 23 in.	Red oak
D. Inner crossbar	2	3/4 × 2 × 19 in.	"
E. Outer crossbar	1	3/4 × 1 × 17 in.	"
F. Short crossbar	1	3/4 × 1 × 17 in.	"



Daytripper Chair: Step-by-step

CUT OUT THE PARTS

1 Cut two back supports and two seat supports to size and shape. To ensure identical pairs, use templates made from 1/4-in. hardboard to trace profiles onto the workpieces (See **Photo A**). Follow the dimensions shown in the *Back Supports* and *Seat Supports* drawings, page 315. Before cutting out the back supports, measure and mark the centerline to use later as a reference line for crossbar installation.

2 Paint the supports. Sand the surfaces and edges well. Apply a coat of latex primer, then two coats of exterior latex paint. Transfer the centerline reference mark on the back supports to the painted surfaces.

3 Make the slats and crossbars. Cut blanks to length from 3/4-in. oak stock. Set the fence on your table saw to rip the 1-in.-wide slats and crossbars. Re-set the fence to cut the 2-in.-wide, inner long crossbar.

4 Drill counterbored pilot holes in the back slats and seat slats for attaching these parts to the supports later. Designate 16 slats as the back slats and the remaining nine slats for the seat. Drill a pilot hole 2 3/8 in. from each end of the back slats, so the counterbore portion of each hole is 3/8 in. deep. This is easiest to do using a depth setting on a drill press. At the same drill press depth setting, drill a pilot hole 3 3/8 in. from each end of the seat slats.

5 Make the crossbars. Crosscut the two long crossbars and the short crossbar to length from the 1-in. stock you ripped in Step 3. Drill counterbored pilot holes for screws 3/8 in. from each end.

6 Rout a 1/8-in. roundover on the edges and ends of one face of the slats and crossbars (See **Photo B**). The proportions of these parts are too narrow to rout "freehand" with a router, so shape these parts on a router table with a pin-style guide installed.

7 Rout a "handle" in the adjoining edges of two back slats (See *Back & Handle Slats*, page 315), using a 1/2-in. straight bit in the router table and cutting a 3/8 x 4-in. centered notch in both slats (See **Photo C**).



PHOTO A: Create seat and back support templates from hardboard, and use these templates to draw the profiles on the back and seat support workpieces (use treated lumber, not plywood as shown). Cut out the parts with a jig saw.

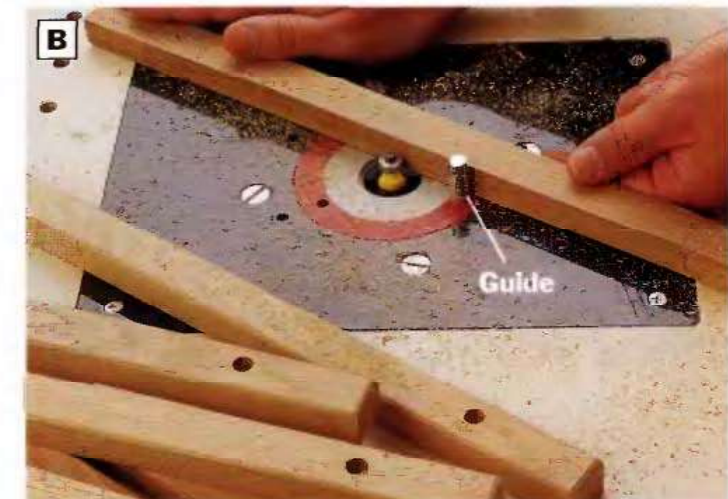


PHOTO B: Ease the edges and ends of the slats and crossbars with a 1/8-in. roundover bit in the router table. Use a pin-style guide on the router table to help control the workpieces as you machine them.

ASSEMBLE THE BACK

8 Cut two 17 1/2-in.-long spacers from scrap, and clamp them between the back supports to hold the supports in place. Use a carpenter's square to verify that the ends of the supports are even with one another. Set the assembly concave-side-up.

9 Attach the back slats. Screw the top slat in place, holding the upper edge flush with the top corners of the back supports and the handle profile facing inward. Measure from the attached slat (See *Back Supports* drawing, page 315) and mark the location of the lowest back slat. Screw this slat in place.

10 Verify the spacing of the remaining back slats



PHOTO C: Make handle cutouts in two back slats using a router table and straight bit. Install start- and stopblocks to limit the length of cut when routing these recesses.

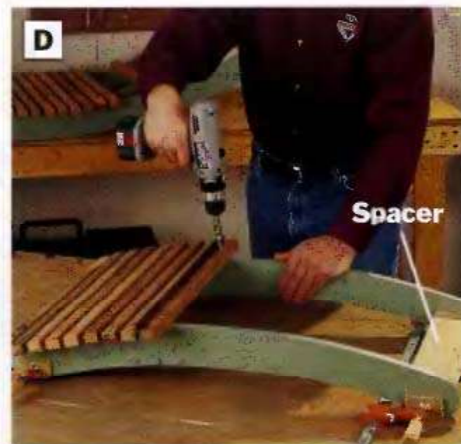


PHOTO D: When installing the back and seat slats to the supports, clamp scrap spacers between the supports to keep them aligned.



PHOTO E: Cover exposed screw heads on the slats and crossbars with oak plugs. Glue and insert the plugs, trim them and sand smooth.

between the top and bottom slats (about 1/2 in.). Attach these 15 back slats with 1 1/2-in. galvanized deck screws, starting from the top with the slat that completes the handle cutout.

11 Install the inner long crossbar. Measure 3 5/8 in. from the lowest back slat to position the crossbar. Screw the crossbar in place.

ASSEMBLE THE SEAT

12 Follow the same procedure as for the back assembly. Cut two spacers 15 1/2 in. long, and clamp them between the seat supports.

13 Screw the front seat slat in place, with the edge flush with the top corners of the seat supports.

14 Measure 12 3/8 in. from the attached seat slat, and mark the location of the last seat slat. Screw this slat in place.

15 Verify the spacing of the remaining seat slats (approximately 3/8 in.), and attach the rest of the slats with 1 1/2-in. galvanized deck screws (See **Photo D**).

ASSEMBLE THE CHAIR

16 Plug all of the screw holes. Cut 3/8-in.-dia. oak plugs with a plug cutter. Glue and tap the plugs into place (See **Photo E**). Trim and sand the plugs flush.

17 Attach the outer long crossbar in place on the back support centerline you drew in Step 1.

18 Slide the seat into position between the back supports. Use C-clamps at the intersections of the

supports to hold the two assemblies in place. Mark the correct locations for the short crossbar (See **Photo F**). It should rest against the outer long crossbar. Attach the crossbar with galvanized deck screws. Then plug, trim and sand the crossbar screw holes.

FINISHING TOUCHES

19 Break all edges on the raw oak parts thoroughly with sandpaper. Mask off the painted surfaces of the supports, and cover the slats with Danish oil or a UV protectant sealer.



PHOTO F: Slide the seat assembly into the back assembly and use C-clamps to hold the chair together. Set the short crossbar against the lower long crossbar, mark its position, and install it with screws.

Daytripper Table

This folding table goes anywhere and stores easily, yet it has the look of fine furniture. Its contrasting base and top and its neatly plugged screw holes highlight both stylishness in conception and craftsmanship in construction. You can easily alter this versatile design to suit your decor by simply changing the species of wood for the top slats, the color of paint on the table subassembly or both.



See pages 312-317 for plans on how to build a matching chair to complement this Daytripper Table project. The chair pulls apart into two sections that nest one inside the other for storage.

Vital Statistics: Daytripper Table



TYPE: Folding table

OVERALL SIZE: 16W by 22L by 16H

MATERIAL: Red oak, exterior plywood

JOINERY: Butt joints reinforced with galvanized deck screws

CONSTRUCTION DETAILS:

- Legs made of plywood for strength
- Screws concealed with matching wood plugs on oak parts
- Table folds flat by way of pivot dowels on the stretchers and legs

FINISHING OPTIONS: Penetrating UV protectant sealer, exterior latex paint

Building time



PREPARING STOCK
0 hours



LAYOUT
2-3 hours



CUTTING PARTS
2-3 hours



ASSEMBLY
2-3 hours



FINISHING
2-3 hours

TOTAL: 8-12 hours

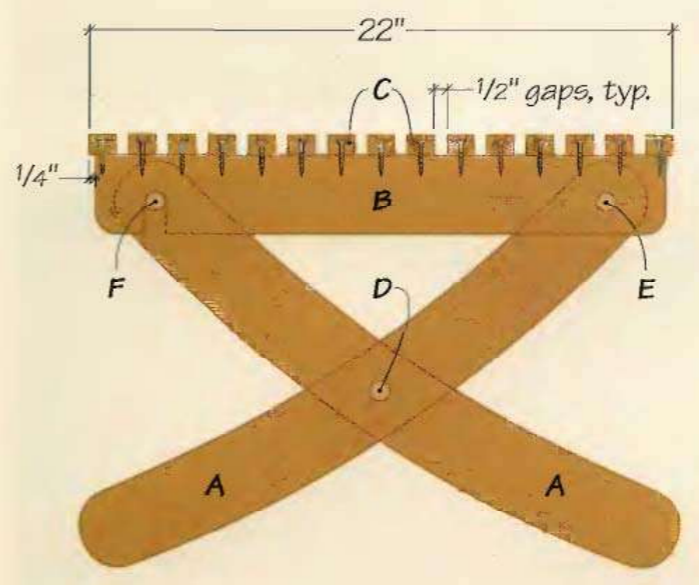
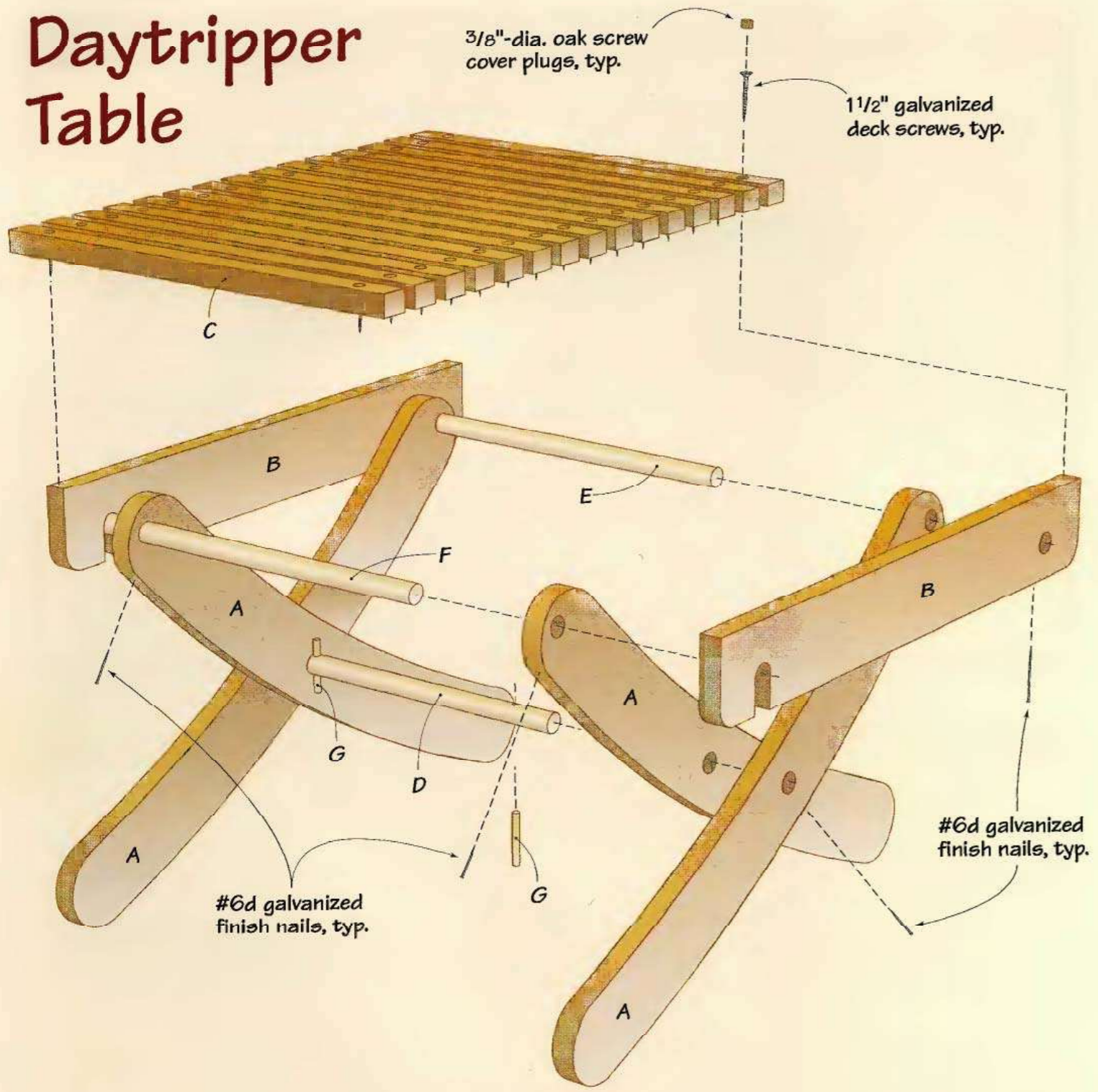
Tools you'll use

- Band saw or jig saw
- Drill press
- Table saw
- Circular saw or power miter saw
- Compass
- Drill/driver
- Clamps

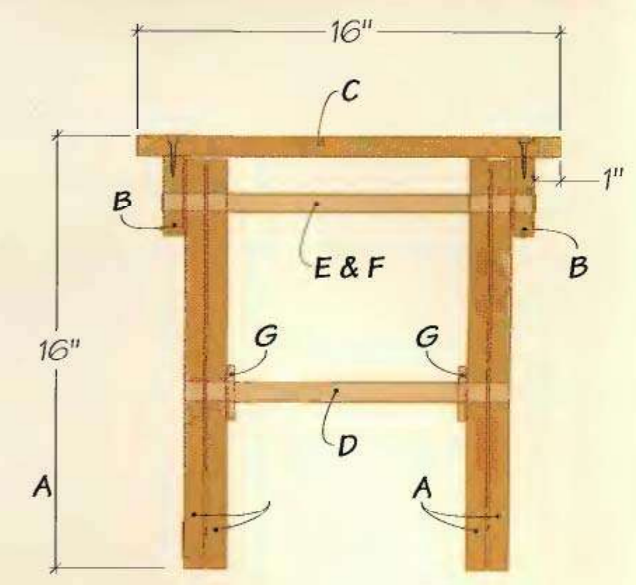
Shopping list

- (1) 3/4 in. x 4 x 4 ft. exterior plywood
- (1) 3/4 x 3 1/2 in. x 8 ft. red oak
- (2) 3/4-in.-dia. x 36-in. hardwood dowel
- (1) 1/4-in.-dia. x 36-in. hardwood dowel
- Galvanized deck screws (1 1/2-in.)
- #6d galvanized finish nails
- UV protectant sealer
- Latex primer
- Exterior latex paint

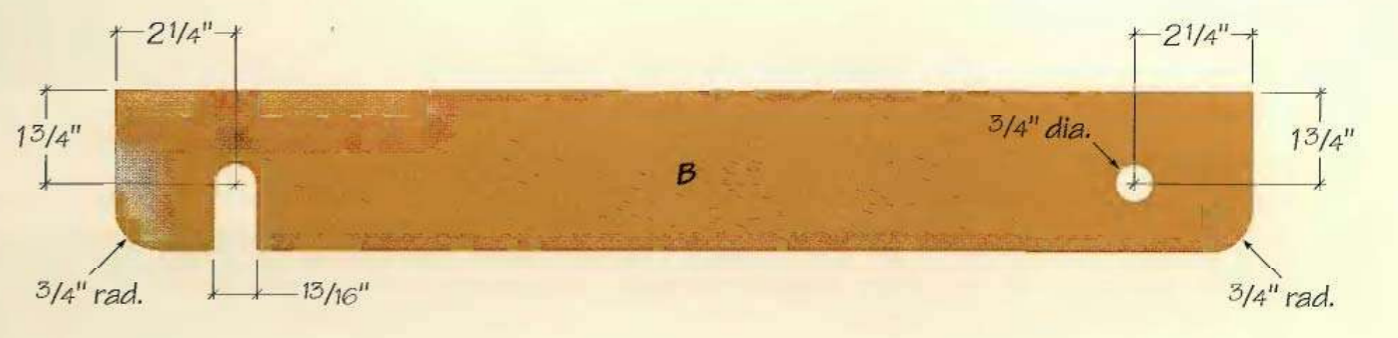
Daytripper Table



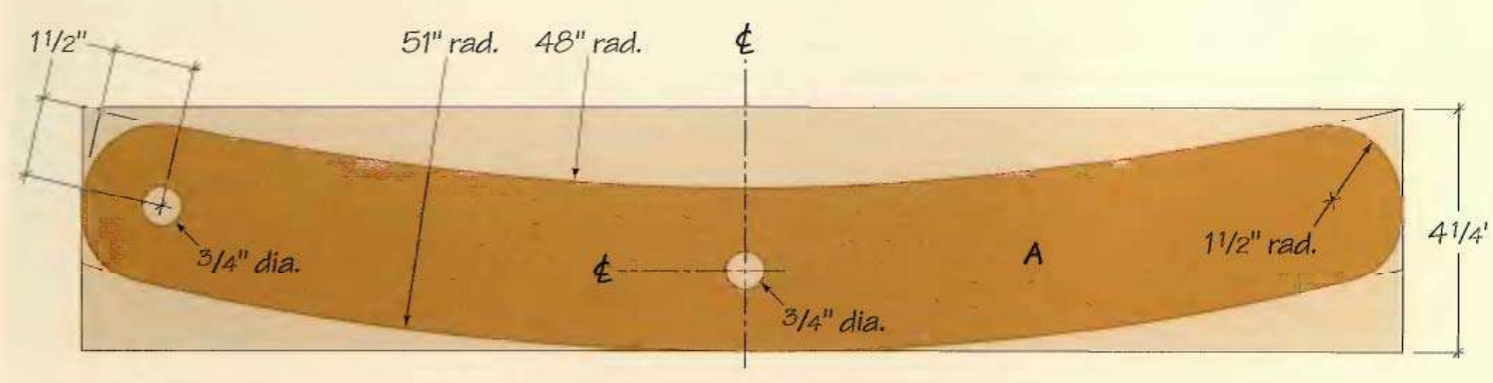
SIDE VIEW



END VIEW



STRETCHERS



LEGS

Daytripper Table Cutting List			
Part	No.	Size	Material
A. Legs	4	3/4 x 4 1/4 x 25 in.	Exterior plywood
B. Stretchers	2	3/4 x 3 x 21 1/2 in.	"
C. Slats	15	3/4 x 1 x 16 in.	Oak
D. Leg pivot dowel	1	3/4 dia. x 12 7/16 in.	Hardwood
E. Table pivot dowel	1	3/4 dia. x 14 1/8 in.	"
F. Table lock dowel	1	3/4 dia. x 14 1/8 in.	"
G. Lock dowels	2	1/4 dia. x 1 1/4 in.	"

Daytripper Table: Step-by-step

MAKE THE LEGS

1 Lay out one leg on a piece of $\frac{3}{4}$ -in. exterior plywood, cut it to shape, and use it as a template for the other three legs. To lay out the leg, draw two 3-in.-dia. circles with their centerpoints 22 in. apart. Mark the midpoint between the circles with a perpendicular line, for use later in locating the hole for the leg pivot dowel. Clamp the workpiece to your workbench and extend the perpendicular line you just drew onto the benchtop. Use this line as the pivot point for connecting the circles with a 48-in.-radius arc for the inner curve of the leg and a 51-in.-radius arc for the outer curve (See the *Legs* drawing, page 321). Drill a $\frac{1}{16}$ -in. locator hole through the centerpoints of the two dowel holes in the leg. Cut out the leg and sand the cut edges smooth.

2 Trace the leg template onto three plywood leg blanks. Mark the centerpoints of the leg dowel holes by drilling through the locator holes in the template.

3 Cut out the legs (See **Photo A**), and sand the profiles smooth.

4 Drill the dowel holes in the legs (See **Photo B**). It is important that these holes be bored straight, so use a drill press or right-angle drill guide.

MAKE THE STRETCHERS & SLATS

5 Cut the stretchers to size and shape. Start by cutting two plywood blanks to length and width. Mark the centerpoints of the



PHOTO A: Lay out and cut the four table legs on the band saw or with a jig saw. Since the profiles of the legs match, mark and cut one to serve as a template for tracing the profiles onto the other three leg blanks.



PHOTO B: Bore the $\frac{3}{4}$ -in.-dia. leg pivot and lock dowel holes in the legs. These holes must be drilled straight through the legs, or the dowels will be difficult to align during assembly. Bore the holes with a drill press, or mount your drill/driver in a right-angle drill guide. Set a backer board beneath each workpiece before you drill, to keep the bit from tearing out the wood as it exits.

pivot dowel hole and the hole that will form the base of the lock dowel slot on each stretcher (See *Stretchers* drawing, page 321). Draw the $\frac{3}{4}$ -in. radiused corners and cut them with your jig saw.

6 Drill the dowel holes. Note that the diameter of the hole that will become the slot for the table lock dowel is $\frac{13}{16}$ in., so that the lock dowel can move freely in and out of the slot. Use a drill press or right-angle drill guide to bore these holes as straight as possible.

7 Cut the lock dowel slots in the stretchers (See **Photo C**). Use a combination square to draw lines from the outer edges of the $\frac{13}{16}$ -in. lock dowel hole to the edge of the stretcher with the curved corners. Clamp the stretcher to your work surface, and cut along the lines to make the slots.

8 Finish the legs and stretchers. Fill any voids in the edges of the plywood with wood putty or auto body filler. Sand the parts smooth. Prime the legs and stretchers with a high-quality latex primer. After the primer dries, apply two coats of exterior latex paint.

9 Make the slats. Crosscut six 16-in.-long blanks from red oak stock. Set the fence on your table saw 1 in. from the blade, and rip the 15 slats to width.

10 Drill counterbored pilot holes in the slats. Make a right-angle jig for your drill press to index placement of the screw holes. Clamp the jig in place so the pilot holes are centered on the slats and inset $1\frac{3}{8}$ in. from the ends (See **Photo D**). Set the depth stop on the drill press so



PHOTO C: Connect the lock dowel hole with straight lines to the edge of each stretcher, forming the lock dowel slots. Clamp the legs to your work surface and cut along these lines. The width of the slots should be $\frac{13}{16}$ in., to provide a loose fit for the $\frac{3}{4}$ -in.-dia. lock dowel.



PHOTO D: Build a right-angle jig from scrap to help index placement of the counterbored holes in the ends of the slats. Clamp the jig to the drill press table so each slat is exactly aligned for drilling when you lay it in the jig. This way, there's no need to measure and mark each slat hole.



PHOTO E: Attach the first tabletop slat to the stretchers with screws. Lay the outer legs between the stretchers, and slide the table pivot dowel through the stretchers and outer legs. Pin the dowel in place with glue and finish nails driven into the dowel through the stretchers. Do not glue or nail the outer legs to the table pivot dowel.



PHOTO F: Install the inner legs between the outer legs, and insert the leg pivot dowel through the center dowel holes in the legs. Cut and insert the table lock dowel through the inner legs. Pin the table lock dowel to the inner legs and the leg pivot dowel to the outer legs with finish nails.

the counterbored portion of the holes is 1/4 in. deep, to allow for inserting wood plugs later.

11 Round over the edges and ends on one face of all the slats. The quickest method for doing this is to use a 1/8-in. piloted roundover bit in the router table. Or, you could ease these edges and ends with a sander instead.

ASSEMBLE THE TABLE

12 Attach the first slat to the stretchers to help establish their alignment during assembly. Start at the end with the lock dowel slot. Position the slat so it overhangs the outside faces of the stretchers by 1 in. and the ends of the stretchers by 1/4 in. Fasten the slat in place with 1 1/2-in. galvanized deck screws.

13 Install the table pivot dowel. Cut the dowel to length, and slip it through the end holes in the outer legs and stretchers. Assemble the parts so the concave profiles of the outer legs will face the tabletop slats. Fasten the dowel with glue and a #6d galvanized finish nail driven through each stretcher (See **Photo E**). Drill 1/16-in. pilot holes before driving the nails. Once fastened, the pivot dowel holds the tabletop frame in shape.

14 Attach the remaining table slats with screws. Start with the other end slat, overhanging it 1/4 in. beyond the ends of the stretchers. Space the 13 intermediate slats 1/2 in. apart, with all ends lined up. Use spacers to help establish even gaps as you attach the slats.

15 Install the inner legs. With the table facedown on your work surface, position the inner legs

by setting them concave-side-down between the outer legs and sliding the leg pivot dowel through the center dowel holes in the legs.

16 Cut and fasten the table lock dowel to the inner legs. Space the inner legs by sliding them lightly against the inner faces of the outer legs. Insert the lock dowel through the end holes in the inner legs and position it so there is an equal overhang on each side. Fasten the lock dowel by drilling a pilot hole through the end of each leg and driving a finish nail into the dowel.

17 Fasten the leg pivot dowel. Drill a pilot hole into each outer leg, and drive a finish nail through the pilot hole into the dowel (See **Photo F**).

18 Install lock dowels through the leg pivot dowel. The lock dowels hold the inner legs in place against the outer legs. It's important to leave enough space between the two pairs of legs for easy movement when the legs are opened or closed. With the assembled table facedown on your work surface, drill 1/4-in.-dia. pilot holes through the pivot dowel (See **Photo G**). Cut the lock dowels to length, coat them with glue, and insert them.

FINISHING TOUCHES

19 Insert oak plugs with glue into the screw holes in the slats, let dry, and sand the plugged areas smooth. You could use wood filler instead of plugs, but the result will be less visually appealing.

20 Mask off painted surfaces of the table, and apply Danish oil or another clear exterior finish to the dowels and slats (See **Photo H**).



PHOTO G: Lock the inner legs in place by drilling and inserting 1/4-in.-dia. dowels through the leg pivot dowel. Position the lock dowels to leave a slight bit of room between the legs, so they can move easily past one another without damaging the painted finish of the parts.

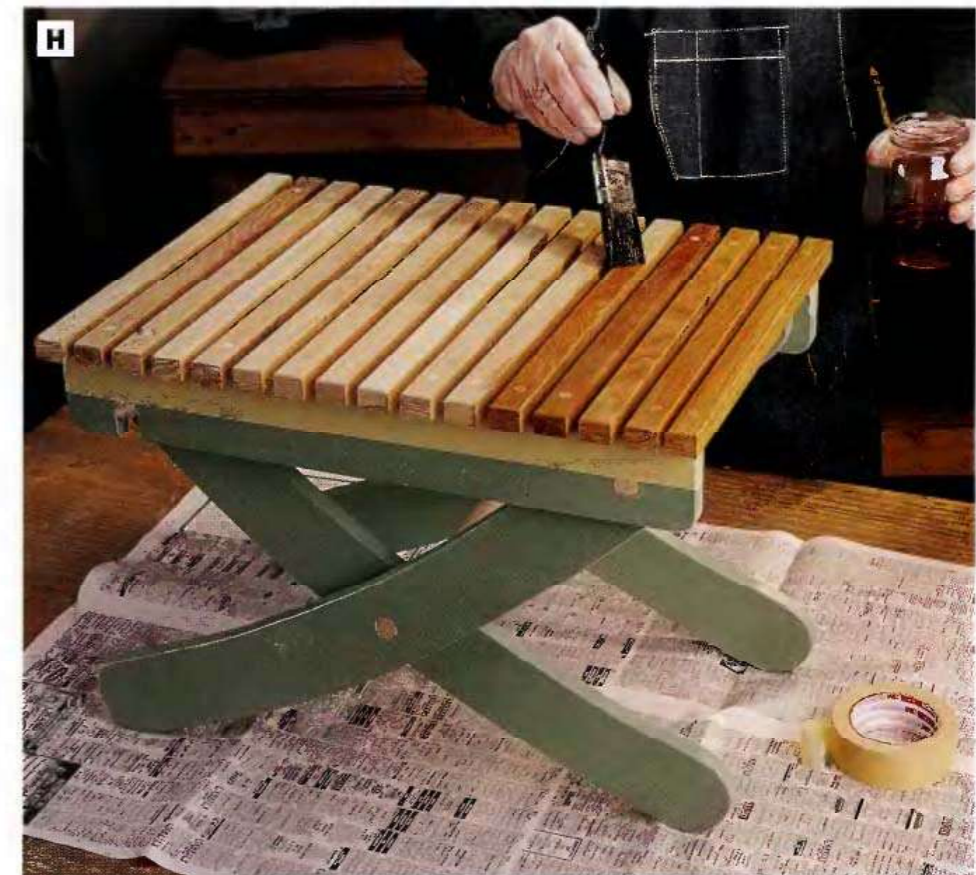


PHOTO H: Coat all raw wood, including the dowels, with Danish oil or another clear exterior-rated wood finish to protect the wood from UV rays and moisture exposure. Use masking tape to keep painted surfaces clean when you brush the slats and dowels with wood finish.

by setting them concave-side-down between the outer legs and sliding the leg pivot dowel through the center dowel holes in the legs.

16 Cut and fasten the table lock dowel to the inner legs. Space the inner legs by sliding them lightly against the inner faces of the outer legs. Insert the lock dowel through the end holes in the inner legs and position it so there is an equal overhang on each side. Fasten the lock dowel by drilling a pilot hole through the end of each leg and driving a finish nail into the dowel.

17 Fasten the leg pivot dowel. Drill a pilot hole into each outer leg, and drive a finish nail through the pilot hole into the dowel (See Photo F).

18 Install lock dowels through the leg pivot dowel. The lock dowels hold the inner legs in place against the outer legs. It's important to leave enough space between the two pairs of legs for easy movement when the legs are opened or closed. With the assembled table facedown on your worksurface, drill $\frac{1}{4}$ -in.-dia. pilot holes through the pivot dowel (See Photo G). Cut the lock dowels to length, coat them with glue, and insert them.

FINISHING TOUCHES

19 Insert oak plugs with glue into the screw holes in the slats, let dry, and sand the plugged areas smooth. You could use wood filler instead of plugs, but the result will be less visually appealing.

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PHOTO H: Coat all raw wood, including the dowels, with Danish oil or another clear exterior-rated wood finish to protect the wood from UV rays and moisture exposure. Use masking tape to keep painted surfaces clean when you brush the slats and dowels with wood finish.



Full-shelter Doghouse

Keep a canine friend warm and dry in this sturdy doghouse. Our design features a dividing wall that provides complete shelter from wind and rain, and the shingled roof is removable for easier cleaning. In colder climates, you can even install sheet foam insulation beneath the floor for added warmth.

Full-shelter Doghouse

Vital Statistics

TYPE: Doghouse

OVERALL SIZE: 48L by 40W by 44H

MATERIAL: Exterior plywood, roofing materials

JOINERY: Butt joints reinforced with glue and screws

CONSTRUCTION DETAILS:

• Gussets beneath the roof panels strengthen the roof so it can be lifted off

• Roof sealed against weather with 15-pound building paper and asphalt shingles

FINISH: Exterior primer and paint

BUILDING TIME: 8-10 hours

Shopping List

- (3) 3/4 in. x 4 ft. x 8 ft. exterior plywood
- (1) 3/4 in. x 4 ft. x 4 ft. exterior plywood
- 2-in. deck screws
- Moisture-resistant wood glue
- 15-pound building paper
- Asphalt shingles
- Galvanized staples
- Roofing nails
- Finishing materials

Full-shelter Doghouse: Step-by-step

The proportions of this doghouse project are intended for housing medium to large dog breeds. Contact a dog breeder or your local branch of the Humane Society for information on suitable doghouse sizes for smaller dogs.

MAKE THE DOGHOUSE PARTS

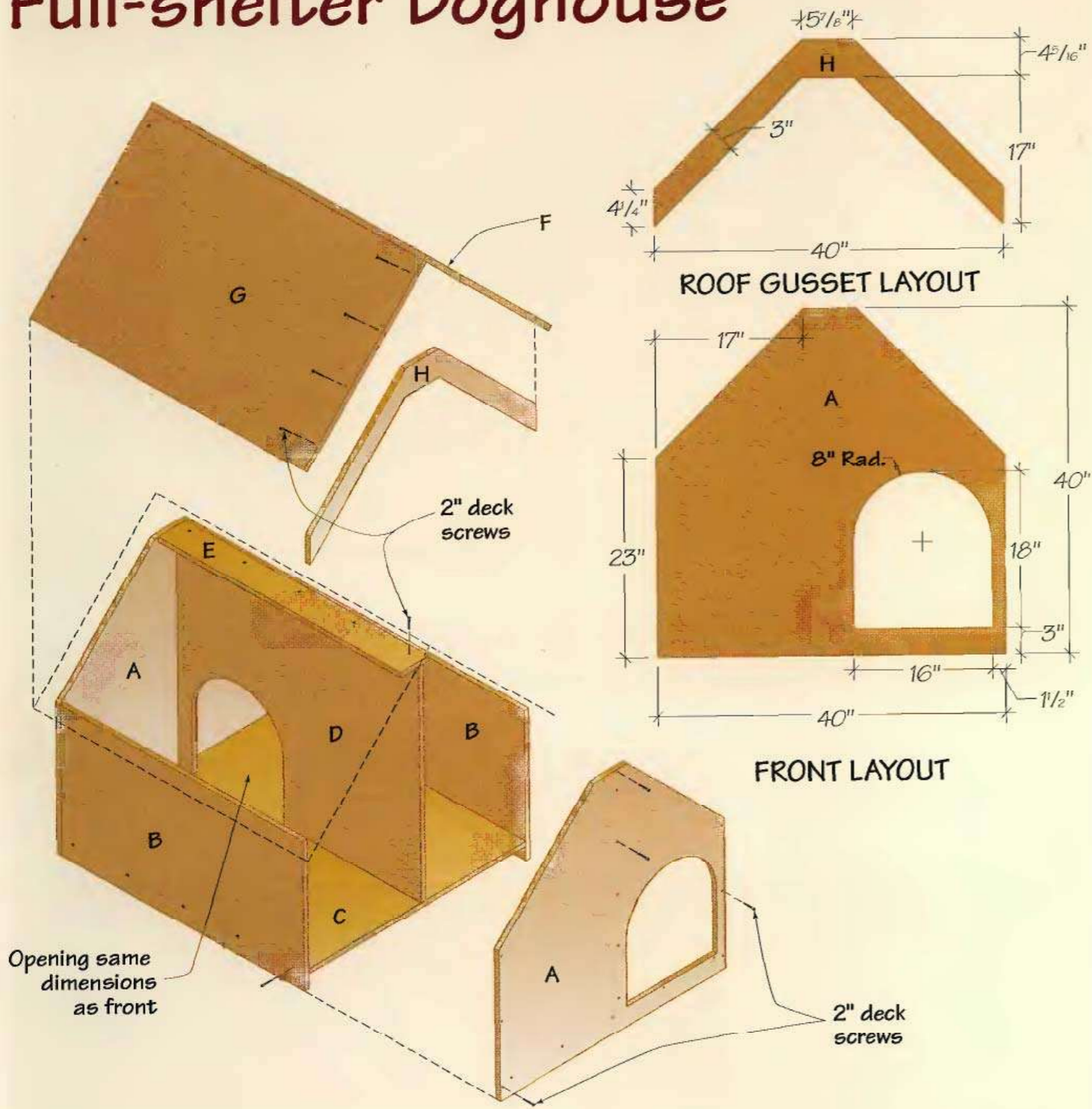
1 Cut two 40 x 40-in. pieces of plywood for the front and back panels. Follow the *Front Layout* drawing, page 364, to draw the angled roof profiles as well as the arch-top door opening. Cut the roof angles.

2 Cut the door opening in the front with a jig saw. Start the cut by drilling a pilot hole in one corner of the door layout area, large enough to insert the saw blade for starting the cut (See **Photo A**).



PHOTO A: Draw the arch-top door opening on the doghouse front panel, and cut out the opening with a jig saw. Drill a starter hole in the cutout area first, so you can insert the saw blade to begin the cut.

Full-shelter Doghouse



Full-shelter Doghouse Cutting List

Part	No.	Size	Material	Part	No.	Size	Material
A. Front/back	2	3/4 x 40 x 40 in.	Exterior plywood	E. Interior brace	1	3/4 x 5 x 42 1/2 in.	Exterior plywood
B. Sides	2	3/4 x 42 1/2 x 23 in.	"	F. Roof (long)	1	3/4 x 48 x 31 in.	"
C. Bottom	1	3/4 x 38 1/2 x 42 1/2 in.	"	G. Roof (short)	1	3/4 x 48 x 30 1/4 in.	"
D. Interior divider	1	3/4 x 36 1/4 x 42 1/2 in.	"	H. Roof gussets	2	3/4 x 21 5/16 x 40 in.	"

- Rip and crosscut the two side panels, bottom and the interior brace to size.
- Make the interior divider: Cut a plywood workpiece to size, following the *Cutting List* dimensions on page 364. Lay the doghouse front panel on the divider workpiece and use the front door opening as a template for drawing a door on the divider. Locate the door so it's flush with the bottom edge of the divider and 2 in. in from the end. Trace the door on the divider and cut the opening.

ASSEMBLE THE DOGHOUSE

- Fasten the front and back panels to the sides. Arrange the parts so the front and back overlap the ends of the side panels. Spread moisture-resistant wood glue on the ends of the sides and clamp the four parts together. *TIP: If you don't have clamps long enough to hold these parts together, stretch duct tape over the joints instead.* Drill countersunk pilot holes through the front and back and into the ends of the sides. Attach the parts with 2-in. deck screws.
- Install the bottom: Draw a reference line 3 in. up from the bottom edges of the doghouse assembly all the way around the inside of the structure. This line represents the top face of the doghouse bottom panel; it should align with the flat bottom edge of the front door. Slip the bottom panel into position and attach it with countersunk deck screws driven through the front, back and sides (**See Photo B**).

- Attach the interior divider: Draw vertical reference lines on the front and back panels for locating the divider inside the doghouse. Measure and mark these lines 20 in. in from the left side of the doghouse (when viewed from the front). Slide the interior divider into position so the divider door is positioned near the back of the doghouse. Secure the divider by driving 2-in. countersunk deck screws through the front, back and bottom panels.

- Install the interior brace: Set the interior brace so it caps the top edge of the divider and is centered on the short, flat top edges of the front and back panels. Drive 2-in. deck screws down through the brace into the divider as well as through the front and back panels to fasten the brace in place (**See Photo C**).

BUILD THE ROOF STRUCTURE

The doghouse roof is designed to be a removable



PHOTO B: Fasten the bottom panel in place between the front, back and side pieces with countersunk deck screws. Position the bottom 3 in. up from the bottom edges of the parts and so the top face is flush with the bottom of the door opening.



PHOTO C: Install the interior brace on the top edge of the divider and so it is centered on the short, flat top edges of the doghouse front and back. Fasten the parts with screws.

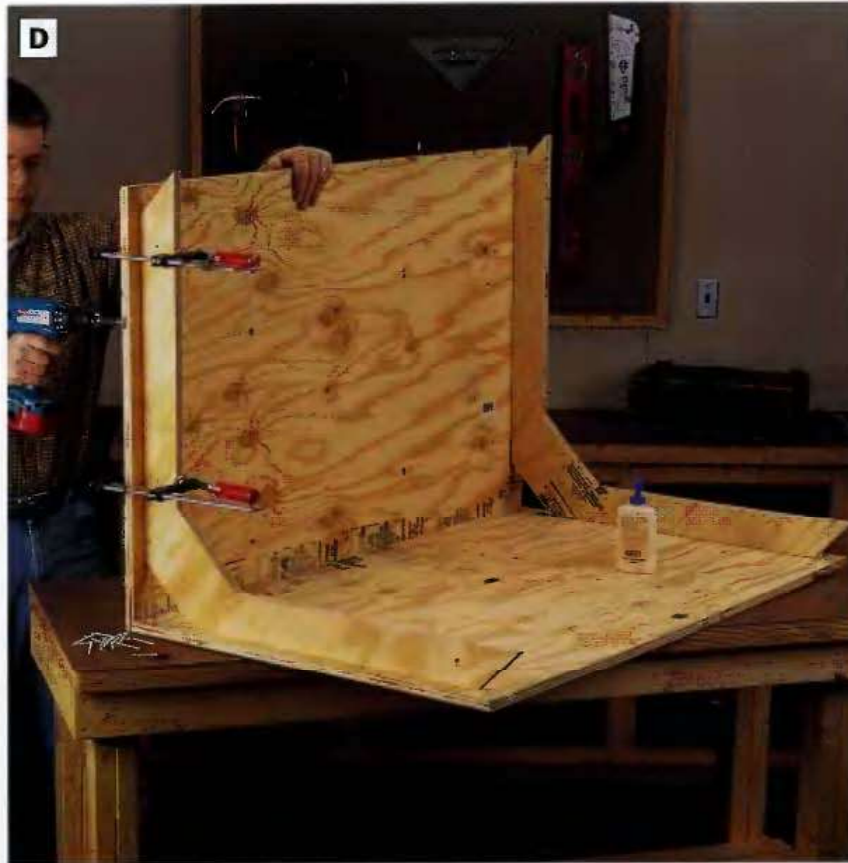


PHOTO D: Assemble the roof panels and gussets to form the roof structure. Allow for a 1-in. overhang between the ends of the roof and the gussets. Fasten the parts with glue and countersunk deck screws.

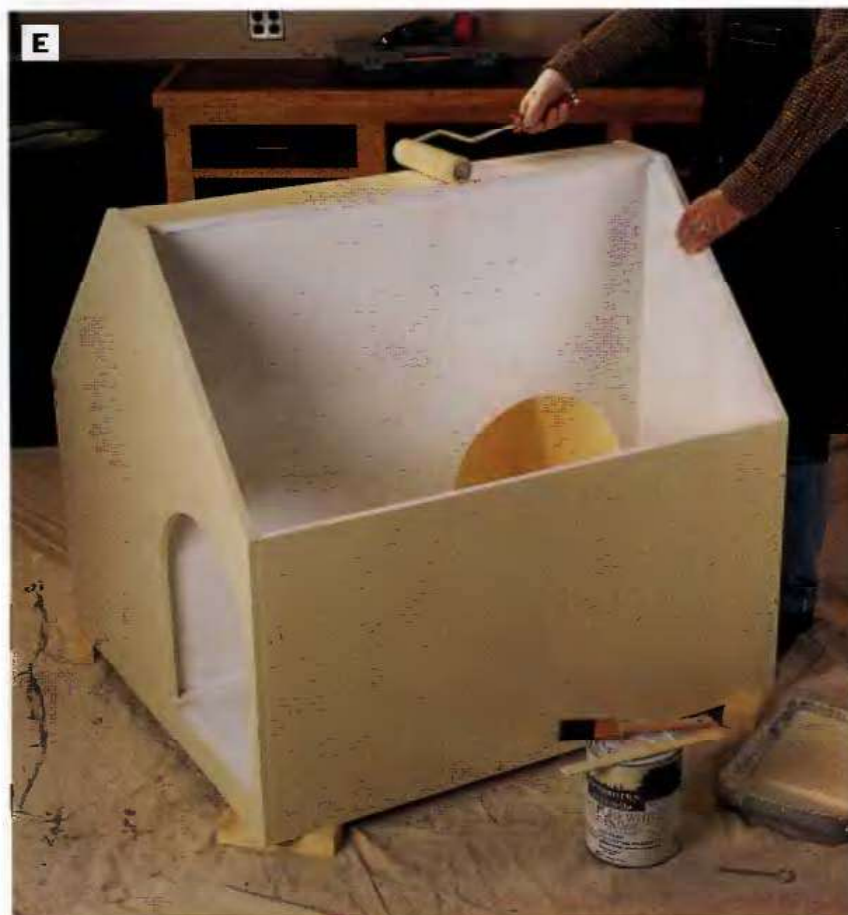


PHOTO E: Prime and paint the doghouse surfaces, inside and out. Seal the bottom edges with primer and paint, to keep the plywood from wicking up ground moisture.

unit, to make cleaning out the interior of the house easier. A pair of gussets beneath the roof panels stiffen the structure and hold the roof panels at 90° to one another.

9 Rip and crosscut the two roof sections. Follow the *Cutting List* dimensions carefully—the roof panels differ in width so one panel can overlap the other at the roof peak, once installed.

10 Make the roof gussets: To lay out the gusset shape, mark a 20 × 40-in. rectangle on a plywood sheet, and follow the *Roof Gusset Layout* drawing, page 364, to draw the shape within this rectangle. Cut out the gusset with a jig saw or circular saw. Use the first gusset as a template for drawing the second gusset shape, then cut out the second gusset.

11 Assemble the roof panels: Spread glue along one long edge of the narrower roof panel, and set the wider roof panel against the first so it overlaps the glued edge and the parts meet at 90°. Drive countersunk 2-in. deck screws through the joint to fasten the roof panels together.

12 Install the gussets: Mark the inside faces of the roof panels with layout lines for gussets. The roof should overhang each gusset by 1 in. Spread moisture-resistant glue along the top long edges of the gussets, and clamp each gusset in place on the roof panels. Drive countersunk 2-in. deck screws through the roof panels and into the gussets (See **Photo D**).

APPLY FINISH

13 Sand the doghouse inside and out, as well as ease any sharp cut edges, especially around the doors.

14 Prepare the plywood for paint with a coat of exterior primer. Prime all surfaces, including the bottom edges of the doghouse that will come in contact with the ground. Topcoat with exterior paint (See **Photo E**).

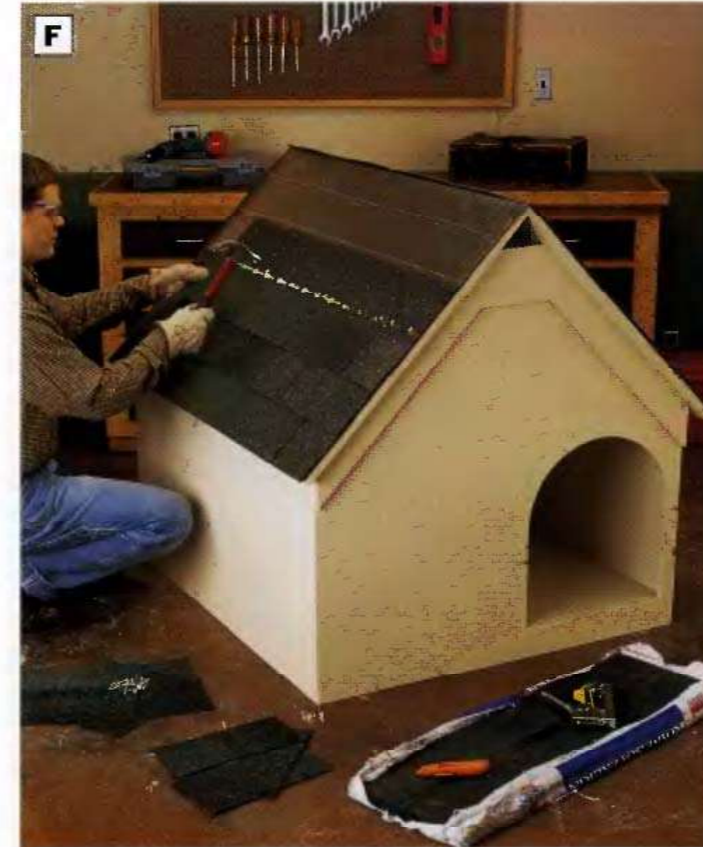


PHOTO F: Staple a layer of building paper over the roof panels, then shingle the roof, starting from the bottom and working up to the peak.

SHINGLE THE ROOF

15 Cut and staple 15-pound building paper over the outer faces of the roof panels. Be sure the seams overlap at least 6 in. in the peak area to seal out leaks.

16 Install asphalt shingles over the building paper with roofing nails, just as you would shingle any roof. Start at the bottom and work your way up the roof, overlapping each course of shingles and staggering the shingle slots (See **Photo F**). Protect the roof peak with a row of overlapped shingle “ridge caps” nailed in place.

FINISHING TOUCHES

17 Stencil the dog’s name on the project if you like, to add a personal touch (See **Photo G**).

18 In cold climates, install rigid foam insulation beneath the bottom panel (See *Adding insulation*, right).



PHOTO G: We stenciled the name of our project’s future resident on the doghouse front.

Adding insulation



This doghouse project was designed to accept a sheet of 1-in.-thick rigid foam insulation below the bottom panel. Rigid foam is a good choice because it is relatively inexpensive and unaffected by ground moisture. Measure and cut the insulation with a utility knife. Glue it in place with construction adhesive.



Jewelry Box

Add this jewelry box to your list of must-build projects for gift giving, and surprise a special person in your life. Our compact maple jewelry box features walnut accents to highlight the beauty of contrasting wood tones and features a removeable tray with compartments to store many precious trinkets and jewelry. The raised-panel lid and tapered feet and handle give the design a clean, contemporary look.

Vital Statistics: Jewelry Box

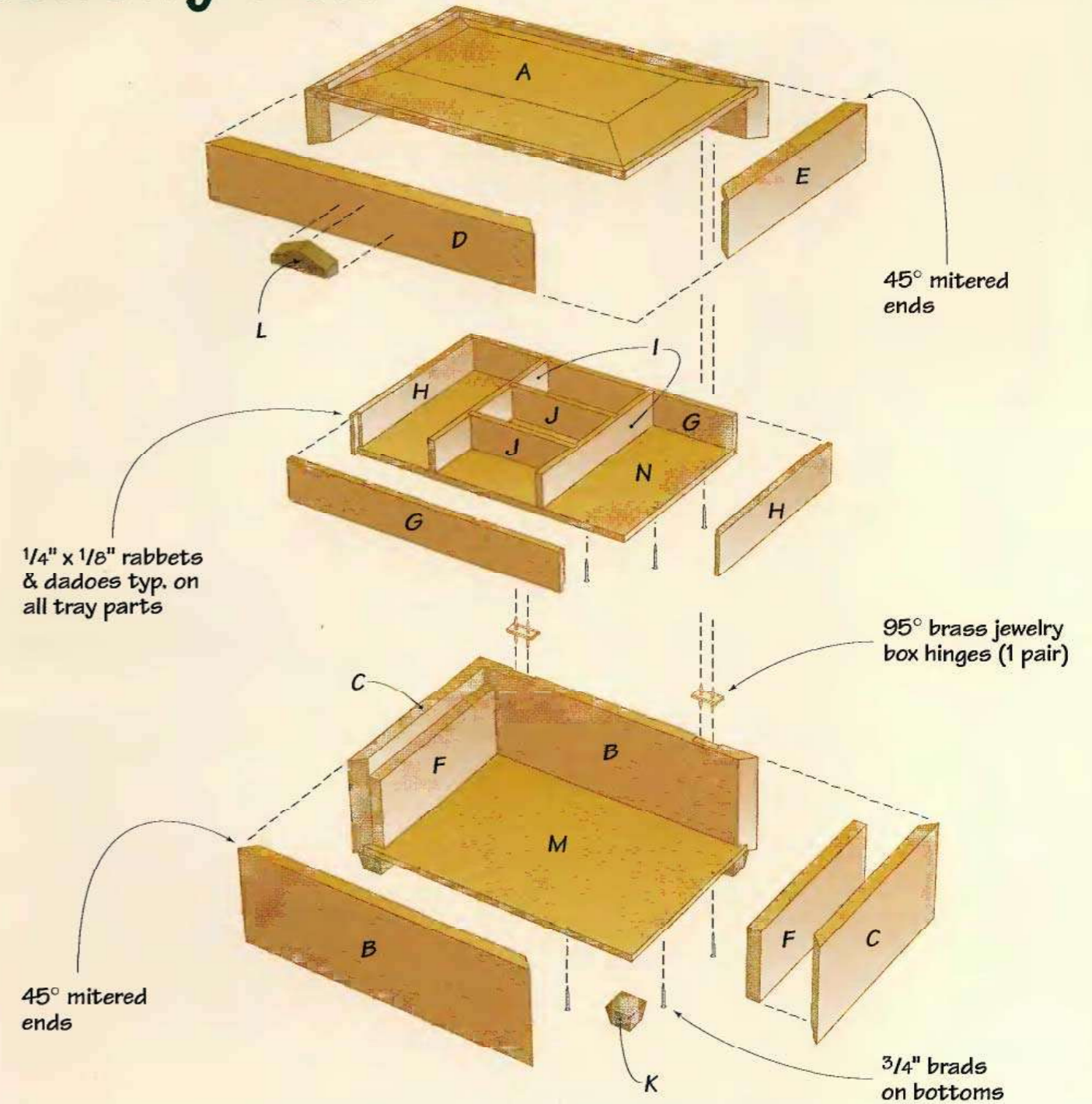


TYPE: Jewelry box
OVERALL SIZE: 12W by 7H by 8D
MATERIAL: Maple
JOINERY: Miter, dado, rabbet joints
CONSTRUCTION DETAILS:

- Corner grain matches all around box sides
- Raised-panel lid
- Tray rests on the top edges of tray supports. When lid is opened, tray protrudes above box and can be lifted out
- Divided tray compartment
- Walnut feet and handle details

FINISHING OPTIONS: A clear finish, like Danish oil or varnish, is recommended to bring out depth of the maple wood grain, particularly if curly maple stock is used

Jewelry Box



Building time



PREPARING STOCK
2-3 hours



LAYOUT
2-3 hours



CUTTING PARTS
2-4 hours



ASSEMBLY
2-3 hours



FINISHING
1-2 hours

TOTAL: 9-15 hours

Tools you'll use

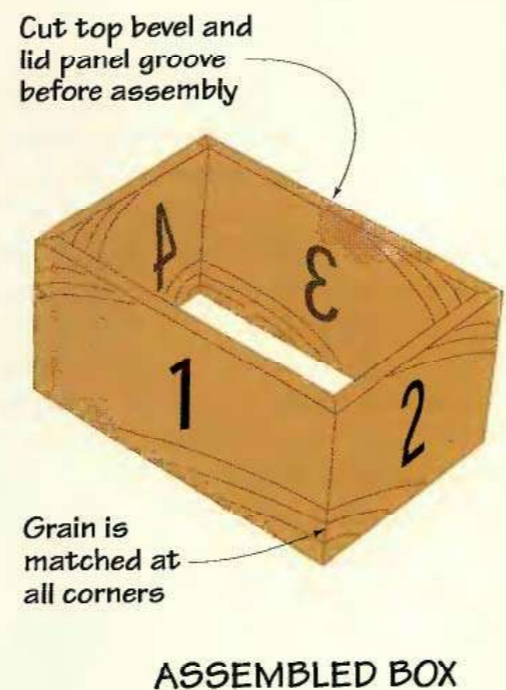
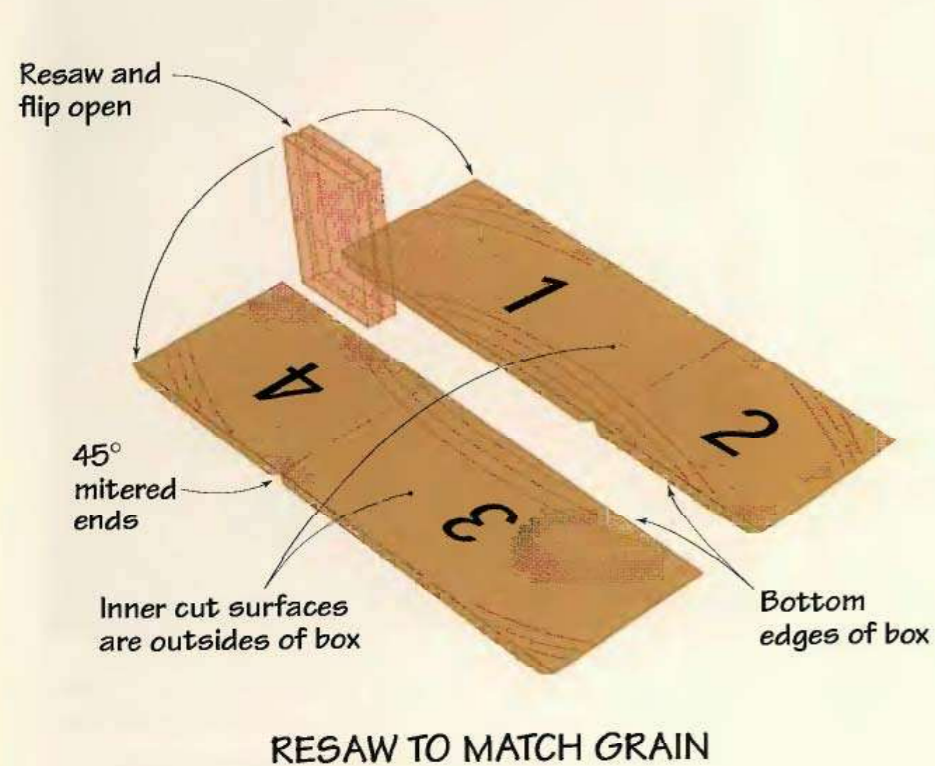
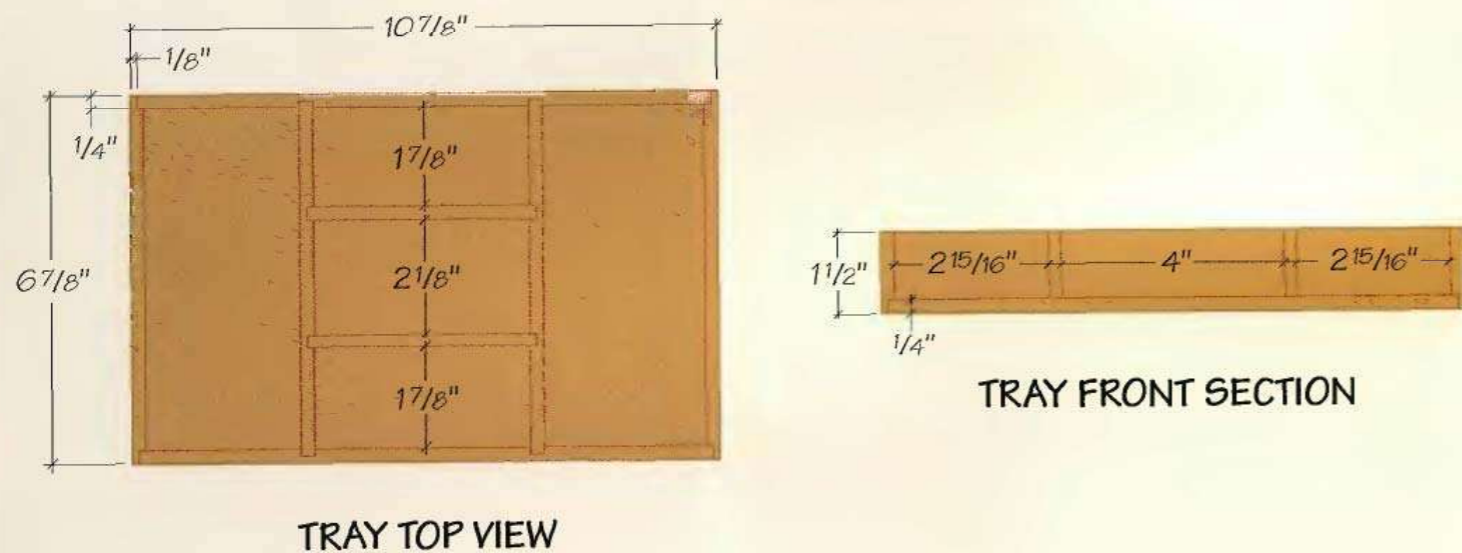
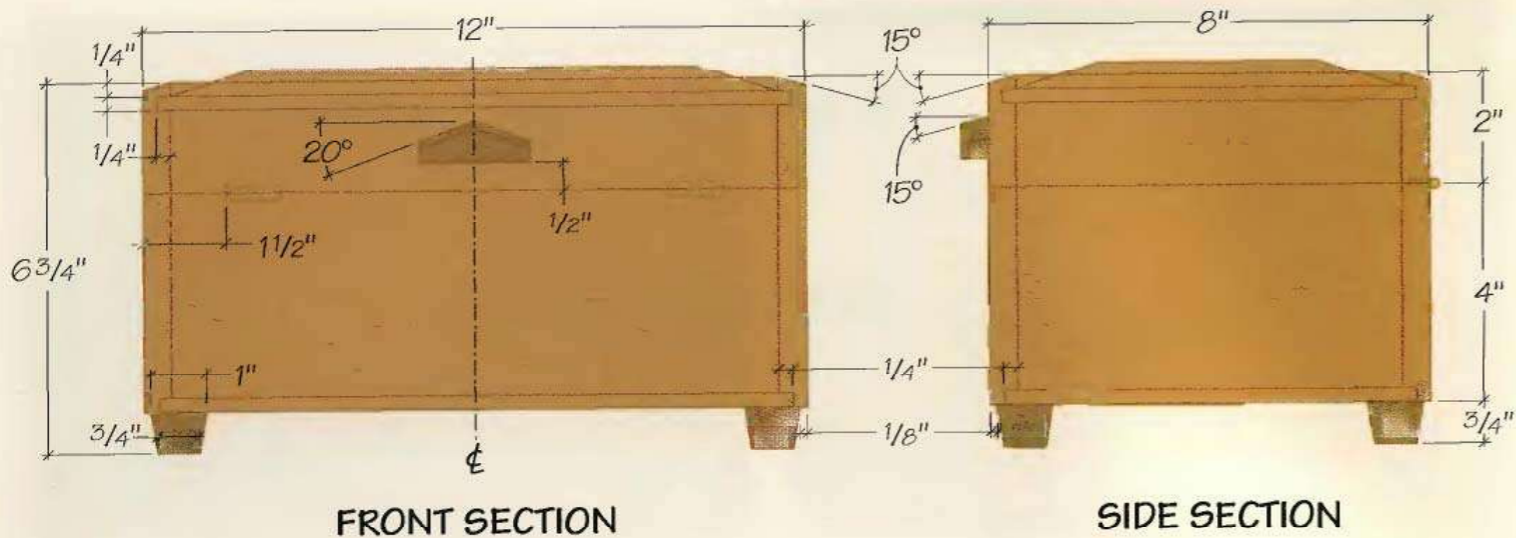
- Jointer
- Planer
- Router table with auxiliary fence and featherboard
- Raised-panel router bit
- Band saw
- Table saw
- Dado-blade set
- Bar clamps
- Spring clamps
- Sanding station
- Wood chisels
- Combination square

Shopping list

- (1) 6/4 x 6 1/2 in. x 2 ft. maple
- (1) 3/4 x 8 in. x 4 ft. maple
- (1) 1/4 in. x 2 ft. x 2 ft. maple or birch plywood
- 1 x 1 in. x 2 ft. walnut scrap
- (2) 95° solid-brass jewelry box hinges
- Wood glue
- 3/4-, 1/2-in. brads
- Wide masking tape or plastic packing tape
- Finishing materials

Jewelry Box Cutting List

Part	No.	Size	Material	Part	No.	Size	Material
A. Lid	1	3/4 x 7 3/8 x 11 1/2 in.	Maple	H. Tray ends	2	1/4 x 1 1/2 x 6 7/8 in.	Maple
B. Box sides	2	1/2 x 4 x 12 in.	"	I. Tray dividers	2	1/4 x 1 1/4 x 6 3/8 in.	"
C. Box ends	2	1/2 x 4 x 8 in.	"	J. Tray dividers	2	1/4 x 1 1/4 x 4 1/4 in.	"
D. Lid sides	2	1/2 x 2 x 12 in.	"	K. Feet	4	1 x 1 x 3/4 in.	Walnut
E. Lid ends	2	1/2 x 2 x 8 in.	"	L. Handle	1	1/2 x 2 x 3/4 in.	"
F. Tray supports	2	1/2 x 3 x 7 in.	"	M. Box bottom	1	1/4 x 7 1/2 x 11 1/2 in.	Maple plywood
G. Tray sides	2	1/4 x 1 1/2 x 10 5/8 in.	"	N. Tray bottom	1	1/4 x 6 5/8 x 10 5/8 in.	"



Jewelry Box: Step-by-step

MAKE AND ASSEMBLE THE BOX

The box and lid sides and ends are resawn and cut from one piece of maple to give a four-corner grain match (two sides have continuous grain and two are butt- or end-matched). A prominent grain pattern will show off the four-way match better than an all-over pattern like bird's-eye, but a bit of figure or curl to the wood will add a richness that is welcome in just about any woodworking project.

- 1 Cut the lid panel to size, according to the dimensions given in the *Cutting List*, page 206.
- 2 Install a vertical-style panel raising router bit in the router table. Fasten a tall auxiliary fence to the router table. If you have an adjustable-speed router, set the speed to about 13,000 rpm. Using a featherboard to secure the lid panel, rout the shape, removing about 1/8 in. of material with each pass until you reach the desired profile. The finished panel should have a 1/4 x 1/4-in. lip around the edge that will fit into the groove in the lid (See **Photo A**). **NOTE:** Using a panel raising bit in a router table is an easy and safe way to cut a raised panel. The tall auxiliary fence provides a secure bearing surface for the panel, and the featherboard keeps the panel tight against the fence as it passes the cutter.

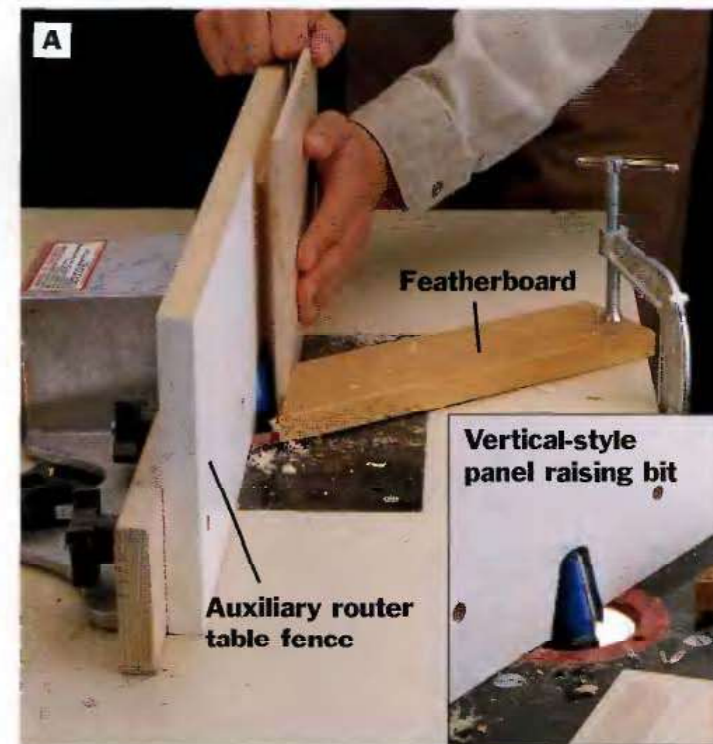


PHOTO A: Rout the raised-panel face of the lid, taking off only about 1/8 in. at a time. Do this by starting with the router fence nearly flush to the edge of the bit, and move the fence further into the bit for each pass. Removing too much material in one pass could burn the lid panel or prematurely dull the router bit.

- 3 Plane the 3/4 stock for the box sides and ends to 1 1/4 in. thick. Joint one long edge and rip the stock to 6 1/4 in., then cross-cut to 21 in. in length. (This piece comprises the box sides and ends and the lid sides and ends, which will be cut apart later after the box is assembled.)
- 4 Mark a centerline along the ripped edge, dividing the board in two. With the jointed edge riding on the saw table, resaw the board on a band saw (See **Photo B**). Use a resaw jig to guide the workpiece.
- 5 Plane the two resawn board halves to 1/2 in. thick. It is important to label the four lid and four box parts on the two boards at this point. Use the illustrations on the bottom of page 207 as a guide.



PHOTO B: Resaw the maple stock in half for the sides and ends of the box, using a marked centerline as a guide for the blade. A shop-made resaw jig clamped to the saw table will help square the board to the table and keep the blade tracking along the cutting line.



PHOTO C: Cut a 15° bevel into the top edges of the two resawn box boards. Use a featherboard and pushstick for accuracy and safety.



PHOTO D: Cut the bottom rabbet into the lower edge of the box sides. Attach an auxiliary wood fence if you use a table saw and dado-blade set to cut these rabbets.



PHOTO E: Cut the sides to length on the table saw, mitering the ends at the same time. Use a miter gauge set to exactly 90° to feed the stock through the blade.

6 Set your table saw blade to 15° and cut a bevel on the lid edges of both resawn workpieces (See **Photo C**).

7 Cut a 1/4 × 1/4-in. dado along the edge of both resawn boards, 1/4 in. down from the top of the beveled edge. Then cut a 1/4-in.-deep rabbet for the box bottom along the opposite long edge of each board (See **Photo D**). To do this, first fasten an auxiliary wood fence to the saw fence to keep the dado blade from damaging the metal fence.

8 Install a combination table saw blade and tilt it to 45°. Test the angle cut on some scrap stock to be sure it is exact. Then use a miter gauge to feed the workpieces as you cut the four sides to length, with a 45° miter at each end (See **Photo E**).



PHOTO F: Apply glue to the mitered faces and use tape to hold the corner joints together while the glue sets. Tack the box bottom panel into its rabbet. The lid panel dado gets no glue.

9 Cut the plywood bottom to size. Set the bottom panel into the rabbets on the box ends and sides, and the lid panel in the groove near the bevel. Check the fit of the mitered corners. **NOTE:** *The lid panel is narrower than the bottom panel to allow the lid to expand across the grain.* Disassemble the box, and sand the inside faces of all the parts, as well as the top surface of the lid panel.

10 Arrange the box side and end pieces end-to-end, with their outside faces up and the grain aligned. With the mitered edges pressed tightly together, run a strip of wide masking tape or clear plastic packing tape along each of the three corner joints and burnish it. Flip the assembly over and spread wood glue into both members of each miter joint (use no glue for the lid or bottom panels to allow

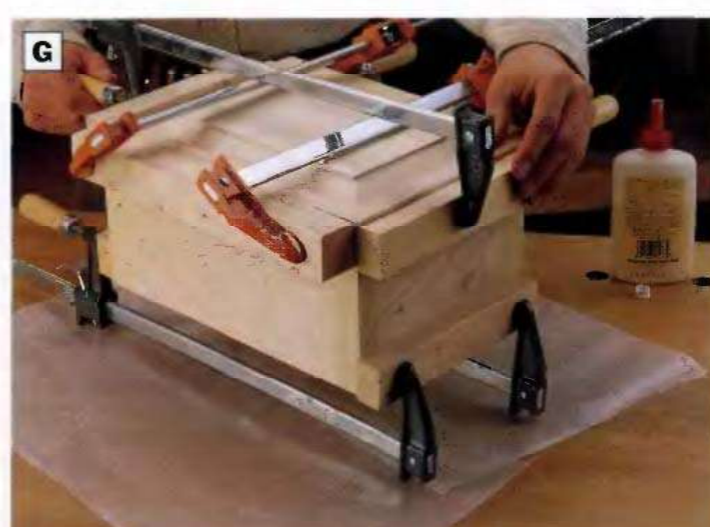


PHOTO G: Apply bar clamps across the box length and width to ensure tight miter joints. Wood cauls between the box and the clamp jaws will help distribute clamping pressure.



PHOTO I: Glue the tray supports to the inside ends of the box. Butt them against the box bottom and hold them tight with spring clamps.

for wood movement). Roll the assembly into a box with the bottom panel and lid in place, and tape the last joint closed (See **Photo F**).

11 Use bar clamps clamped across the width and length of the jewelry box to further close the miters (See **Photo G**). Allow the glue to dry, remove the clamps and tack the bottom panel into the rabbet with 3/4-in. brads.

12 Remove the tape, working carefully to avoid tearing away the wood grain at the corners. If it's difficult to do this, soften the adhesive with a heat gun. Apply mineral spirits with a rag to remove any tape adhesive residue.

13 With the box bottom against the table saw

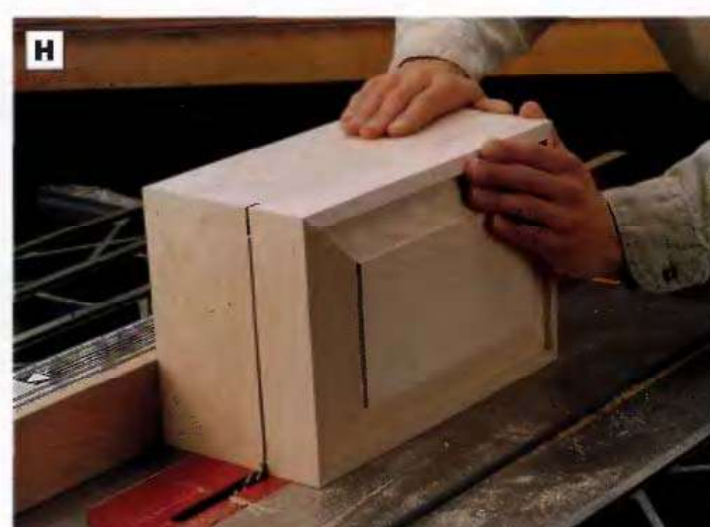


PHOTO H: Rip the box and lid into two pieces on the table saw, with the box bottom against the saw fence. Raise the blade to 5/8 in. and cut one end, then cut adjacent sides, working your way around the box.

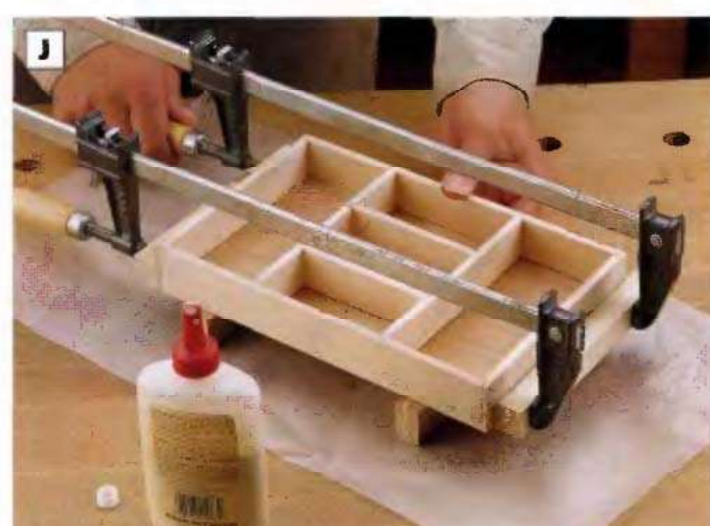


PHOTO J: After the tray dividers are assembled, glue up the tray sides and ends and tack the tray bottom in place with brads.

fence, rip the lid from the box, starting on an end and cutting clockwise around the box side panels (See **Photo H**). **CAUTION:** *Be sure to support the lid on the last cut, but be careful not to pinch the blade between the lid and the box as you make the cut, which could cause the saw to kick back.*

14 Cut the two tray supports to size. Sand the inside face and top edge of each support, and glue the supports to the inside faces of the box ends with the lower edges butted against the bottom panel (See **Photo I**).

ASSEMBLE THE TRAY

15 Surface-plane 3/4-in. stock down to 1/4 in. for the tray parts. Rip- and cross-cut the tray sides, ends, dividers and bottom to size. **CAUTION:** *Use care*

when cutting these small workpieces to size, especially if you cut them on a table saw. If you make the cuts on a table saw, start with stock that is long enough to keep your hands a safe distance away from the blade.

16 Cut ¼-in.-wide × ⅛-in.-deep dados in the long tray dividers and the tray sides, as shown in the *Tray (Top View)* illustration, page 207. Then, cut ⅛-in.-deep, ¼-in.-wide rabbets in the ends of both tray ends. Cut ⅛-in.-deep, ¼-in.-wide rabbets along the bottom inside edges of the tray ends and sides to accept the tray bottom. Sand all the tray parts smooth with 150- to 180-grit sandpaper.

17 Glue and clamp the center tray divider unit together and let the glue dry. Then glue and clamp the tray sides and ends to the assembled dividers with the divider ends set in the dado grooves (See **Photo J**). Drill pilot holes and use ½-in. brads to fasten the tray bottom in place.

ADD THE HINGES, FEET & HANDLE

18 Cut a 1 × 1 × 12-in. blank of walnut for the jewelry box feet. Cross-cut one end square and mark a line around it, ¾ in. from the end. Starting at this line, bevel the four faces of the foot so they taper to ¾ in. square at the end of the blank. Sand the foot tapers on a stationary disk sander (See **Photo K**), then cut off the foot. Repeat this procedure for the remaining three feet.

19 Cut a piece of walnut to ½ in. thick × ¾ in. wide × 2 in. long for the handle and square the ends. Divide one long edge in half and draw 20° beveled lines from this point to either short end of the handle blank. Cut along these angle lines with a band saw to create a five-sided shape that matches the handle on the *Front View* illustration, page 207. Designate a front face to the handle and bevel the edges from the back face toward the front to give the handle a sleeker profile and mimic the leg tapers.

20 Finish-sand the feet, handle, outsides of the box and tray with 180-grit sandpaper. Because maple is dense and closed-grained, the maple box needs to be sanded with fine paper—220-grit—to remove fine scratches; otherwise they'll show up in the finish. This finishing step is particularly important if you plan to apply a wood stain to the jewelry box.



PHOTO K: For safety and to maintain control over the workpiece, sand the tapers on a long walnut blank, then cut off a foot and repeat for the other three feet.



PHOTO L: Measure and cut the hinge mortises with a wood chisel, then install the brass jewelry box hinges to attach the lid to the box.

21 Mark out the hinge leaf mortises on the lid and box, and cut the mortises with a sharp wood chisel. Install the hinges, drilling pilot holes for the screws first (See **Photo L**).

22 Glue and clamp the feet to the bottom of the box, ⅛ in. in from the corners. Glue and clamp the handle onto the lid (See *Front Section*, page 207).

FINISHING TOUCHES

23 Apply a clear finish to show off the natural beauty of the maple and walnut—we used three coats of Danish oil.



Kid-size Picnic Table

Children are sure to enjoy this piece of picnic furniture built especially for them. Made of cedar, the project is sized so four children can sit comfortably. Whether you put the table outdoors or bring it inside, it may well become the kids' favorite spot for lunch and dinner. And with no sharp corners or free-standing, tippy benches to cause injuries, you can rest easily, too.

Kid-size Picnic Table

Vital Statistics

TYPE: Picnic table with attached benches

OVERALL SIZE: 44W by 26H by 48L

MATERIAL: Cedar

JOINERY: Butt joints reinforced with screws

CONSTRUCTION DETAILS:

- Rounded corners are scribed with a compass and cut with a jig saw
- Use scrap spacers between the top slats to separate them evenly during installation

FINISH: None (See Editor's Note, page 303)

BUILDING TIME: 4-6 hours

Shopping List

- (4) 1 × 6 in. × 8 ft. cedar
- (4) 2 × 4 in. × 8 ft. cedar
- Deck screws (2-, 2½-, 3-in.)
- Finishing materials (sandpaper)

Kid-size Picnic Table: Step-by-step

LAY OUT & CUT THE FRAME PARTS

1 Crosscut the legs, top and seat stringers and stretcher to length. Cedar is easy to cut with a jig saw, but you'll get straighter cuts using a circular saw.

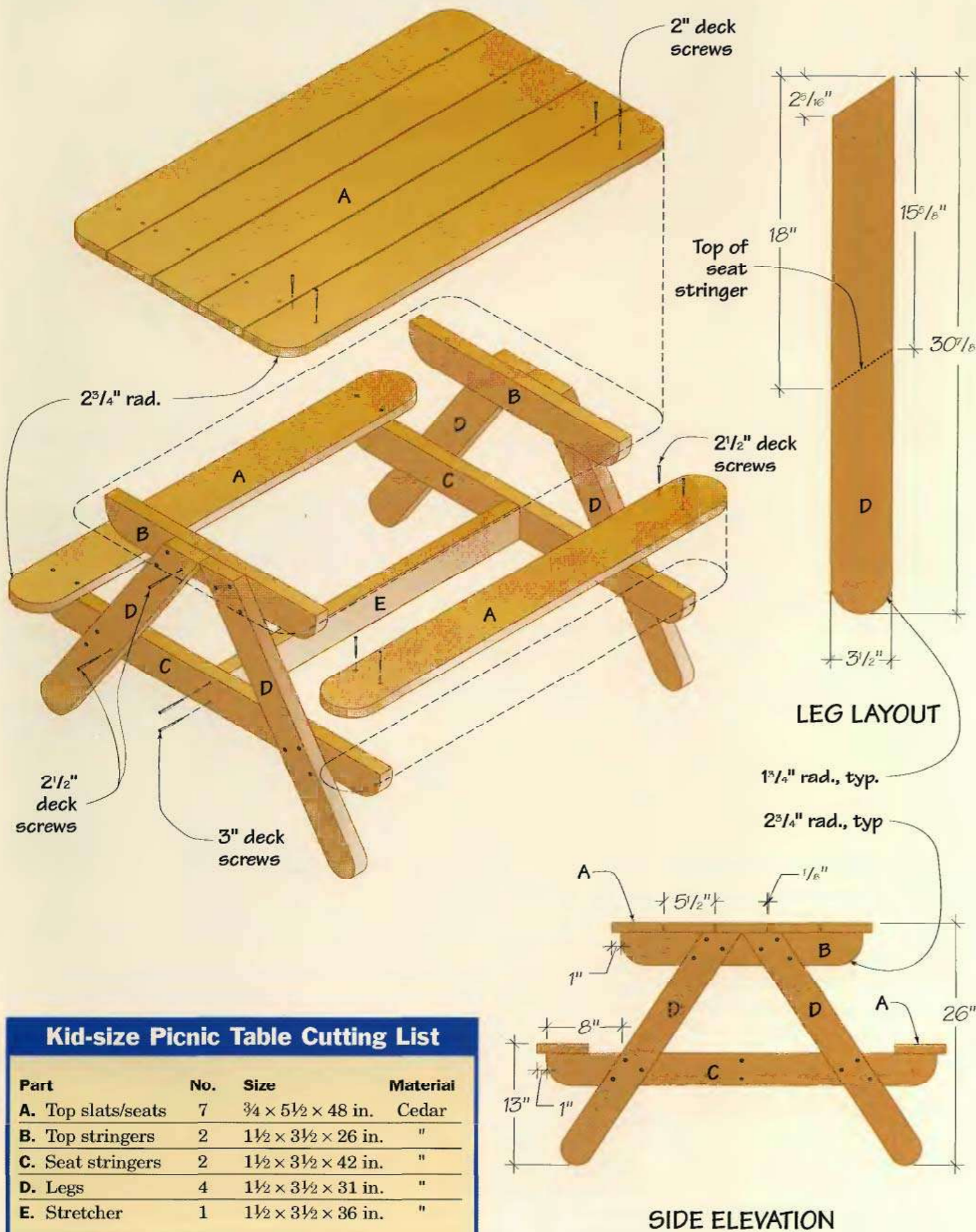
2 Lay out the legs: Refer to the *Leg Layout* drawing, page 300, to mark one end of each leg for cutting the top angle. To mark the legs for curved feet, set your compass to a 1¾-in. radius, and determine the centerpoint of the arc on all four legs. Draw the curved feet.

3 Lay out the top stringers and seat stringers. Like the legs, these pieces also receive rounded ends. However, only the bottom corners of the stringers are curved—the top corners remain



PHOTO A: Lay out the legs and stringers. Scribe the curved end of the legs and the curves on the stringers with a compass, set to the radii given in the technical drawings on page 300.

Kid-size Picnic Table



Kid-size Picnic Table Cutting List			
Part	No.	Size	Material
A. Top slats/seats	7	3/4 x 5 1/2 x 48 in.	Cedar
B. Top stringers	2	1 1/2 x 3 1/2 x 26 in.	"
C. Seat stringers	2	1 1/2 x 3 1/2 x 42 in.	"
D. Legs	4	1 1/2 x 3 1/2 x 31 in.	"
E. Stretcher	1	1 1/2 x 3 1/2 x 36 in.	"

flat to support either the seats or the top slats. Reset your compass to draw a 2 3/4-in. radius, and scribe the curves on the stringers (**See Photo A**).

4 Cut the legs and stringers to shape with a jig saw. Guide the saw against a clamped straight-edge to cut the leg angles.

ASSEMBLE THE FRAME

5 Connect the top stringers and legs. First, find the center along the length of each top stringer, and mark this point on the top flat edge. Then arrange the legs in pairs on your worksurface with the top angled ends forming a straight line and the legs splaying apart in a "V" configuration. Set a top stringer in place on each pair of legs so the top edges of the stringers are flush with the top ends of the legs. Tack the stringer to each leg with a single countersunk 2 1/2-in. deck screw. (You'll drive additional screws into these joints once the seat stringers are positioned and fastened.)

6 Install the seat stringers on the leg assemblies: Mark the seat stringer locations on the legs, according to the *Leg Layout* drawing, page 300. Set the seat stringers on the leg assemblies so the top edges of the stringers align with the leg reference lines. Pivot the legs in or out slightly so the distance from the outside edges of the legs to each end of the seat stringers is 8 in. Secure the top and seat stringers with countersunk 2 1/2-in. deck screws, four screws per joint (**See Photo B**).

7 Complete the frame by joining the leg assemblies to the stretcher: Stand the leg assemblies upside down on your worksurface, and



PHOTO B: Set pairs of legs on your worksurface so they splay outward with their angled ends aligned. Attach the top stringers flush to the tops of the legs, and install the seat stringers so they overhang the legs by 8 in. on each end. Fasten the parts with countersunk 2 1/2-in. deck screws to form two leg assemblies.



PHOTO C: Stand the leg assemblies top-down to attach the stretcher between them. Hold the stretcher in place with clamps so it is centered on the length of the seat stringers. Drive countersunk 3-in. screws through the seat stringers and into the ends of the stretcher.



PHOTO D: Set the frame upright on the floor to secure the seats into position. The ends of the seats should overhang the seat stringers by about 4½ in. Make the outside edges of the seats overhang the ends of the seat stringers by 1 in.



PHOTO E: After setting the slats into position on the top stretchers and marking alignment lines for screw holes, insert spacers between the slats—we used ¼-in.-thick hardboard. Clamp the top slats together to keep them aligned, and fasten them to the top stringers with countersunk 2-in. deck screws.

clamp the stretcher to the seat stringers so it's centered on their lengths. Drive pairs of 3-in. countersunk deck screws through the seat stringers and into the ends of the stretcher to fasten the parts (See Photo C).

PREPARE & ATTACH THE SEATS

8 Crosscut the seats to length.

9 Scribe the rounded ends on the seats with a compass set to draw a 2¾-in. radius.

10 Cut the rounds ends of the seat boards with a jig saw. Smooth the curves with a file.

11 Attach the seats to the frame: The ends of the seats should extend past the seat stringers equal amounts on both sides (about 4½ in.). Let the outside edges of the seat boards overhang the ends of the seat stringers by 1 in. With the seats in position, fasten the parts with countersunk 2½-in. deck screws driven through the seats and into the seat stringers (See Photo D).

INSTALL THE TOP SLATS

12 Cut the five top slats to length and set them in place on the two top stringers so they overhang the stringers evenly. Don't worry about spacing between the slats yet. With a straightedge, draw lines for screw holes across the slats to mark the centerlines of the top stringers.

13 Fasten the slats to the top stringers: Insert scrap spacers between the slats first to provide for even spacing (we used ¼-in. hardboard for spacers). Because not all dimensional lumber is precisely the same width, you may need to determine the spacing

between your slats according to the boards you're using. Clamp the top slats together to hold them in place. Drill pairs of countersunk pilot holes through the slats along the stringer marks, and install the slats with 2-in. deck screws (See Photo E).

14 Set your compass for a 2¾-in. radius, and scribe curves onto the outer four corners of the table top. Cut the corner curves, and file the cut edges smooth (See Photo F).

FINISHING TOUCHES

15 Sand all exposed project surfaces with a random-orbit sander and 150-grit sandpaper (See Photo G).

EDITOR'S NOTE: We left this project bare rather than finishing with an exterior topcoat, because most of these products aren't safe for use on eating surfaces.



PHOTO F: Mark a 2¾-in. radius on each of the four corners of the tabletop, and trim the corners with a jig saw.



PHOTO G: Since cedar is prone to splintering, you'll want to give the table a good sanding to break the edges and smooth the parts. A random-orbit sander is the best tool for the job. It's a good idea to wear a dust mask when sanding cedar; the dust can be a respiratory irritant.