

Safety First

Circular saw

On a circular saw, the blade must keep its guards at all times. The upper guard covers the whole blade. The lower guard covers the teeth except where the blade meets the work. The lower guard must return on its own when you pull the saw back. Never remove a guard while the tool is in use. Clamp the work before you cut. Keep both hands on the saw: your second hand goes on the front handle or the motor housing, never on the board. Keep your hands away from the cutting area and the blade. Never hold the board in your hand or across your leg while you saw. Stand to one side of the blade, never in line with it, so a kickback does not throw the saw at you. Never reach under the board while the saw runs: the guard cannot protect you from the blade below the work. Support the board and the cut-off. An unsupported end can drop, pinch the blade, and kick the saw back at you. Lay a sacrificial board under the cut line. Clamp the guide square clear of the blade path. Do not clamp across the line you are about to cut. Cut each part from the end of a longer clamped board. That keeps your hand clear of the blade.

(Sources: OSHA's Hand and Power Tools guide, the safety rules in a circular saw operator's manual, and the Power Tool Institute.)

Drill/driver

Take the battery out of the drill (or unplug a corded drill) before you change a bit or do any servicing. Clamp the work so both hands can operate the tool. Avoid accidental starting. Do not carry the tool with your finger on the switch. Wear proper apparel for the task. Keep loose clothing, ties, and jewelry away from moving parts. Keep gloves off while a bit is turning. A glove that catches can pull your hand in with it.

(Source: OSHA's Hand and Power Tools guide.)

Protect your eyes, ears, and lungs

Use the personal protective equipment for the hazard. OSHA lists gloves for hand tools. With a power tool, keep gloves off whenever a bit or a blade is turning. Wear eye protection. Use hearing protection around noisy tools. Wear a dust mask when you saw or sand.

(Source: OSHA's Hand and Power Tools guide.)

Anchor tall furniture

Anchor tall furniture that has drawers, doors, or shelves to the wall. In this book, every project that needs it has an anchoring step and an anti-tip kit on its shopping list. Attach a bracket to the wall. Move the furniture close. Attach the bracket or plate to the furniture. Connect the strap to both brackets. Tighten the strap and tug it to confirm it is secure. Anchor to a wall stud, not just drywall. A stud finder helps you locate the stud.

(Source: the U.S. Consumer Product Safety Commission's Anchor It! campaign.)

Finish rags can catch fire by themselves

Rags, steel wool, and sanding residue soaked with finish can catch fire on their own if thrown away incorrectly. Place them right away in a sealed, water-filled, metal container. Store oily and solvent-wet rags in a tightly sealed metal container, then discard them. Keep them away from heat and open flame. Use fresh air during application and drying.

(Source: the label on a can of oil-based wipe-on polyurethane finish, and the U.S. Fire Administration.)

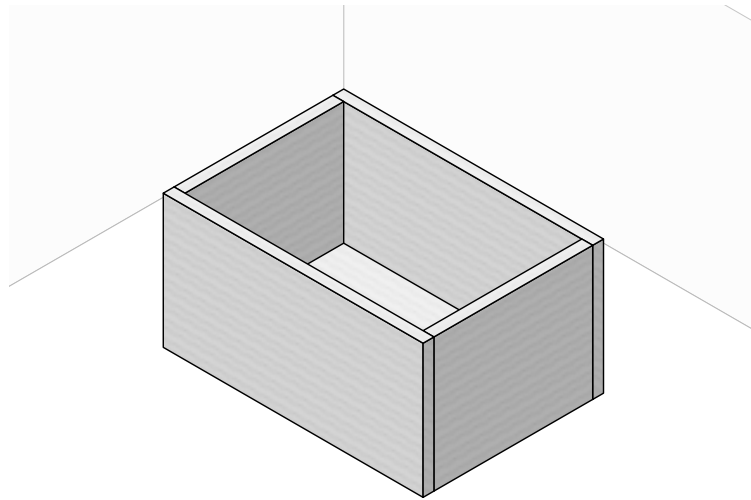
Build it square, and let the glue cure

Measure both diagonals of the frame. Push the longer diagonal until the two readings match. Clamp the frame there before you drive a screw. Measure the diagonals again after the fasteners are in, while the glue can still move. Let the glue cure before you put weight or a workpiece on the piece. Do not rock or lean on the piece while the glue is wet.

(This is the Editorial's own house rule, not a government or manufacturer source.)

Storage Crate

A wooden storage crate is satisfying to build because every part is a straight cut and the assembly is simple. The finished crate is 18" wide, 12-1/2" deep, and 9-1/4" tall. You can use it in any room to keep everyday items tidy.



Finished size: 18" wide × 12-1/2" deep × 9-1/4" tall

Shopping list

- 1 × 1x10 common board, 6 ft
- 1 × 1x6 common board, 6 ft
- medium sandpaper, 120 grit
- fine sandpaper, 220 grit (also between coats)
- oil-based wipe-on polyurethane finish
- clean, soft, lint-free cloths
- metal can with a tight-fitting lid, to hold the used cloths under water

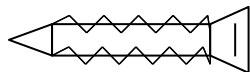
Hardware

- 6 × #8 x 1-1/4" Phillips flat head zinc-plated wood screw
- 20 × #9 x 2-1/2" star flat-head wood screw
- interior/exterior wood glue, 8 oz.

Tools

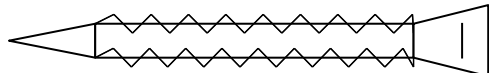
- Circular saw with a crosscut blade
- Clamps (2 to 4) that open to at least 18"
- Countersink pilot bit
- Cordless drill/driver
- Phillips driver bit, to fit the Phillips screws
- Star driver bit, to fit the star screws
- Pencil
- Safety glasses, hearing protection and a dust mask
- Sacrificial board to cut on (a scrap board)
- Sanding block
- Sawhorses (a pair)
- Speed square, 12 in (the large size)
- Tape measure

#8 x 1-1/4" Phillips flat head zinc-plated wood screw



1-1/4"

#9 x 2-1/2" star flat-head wood screw



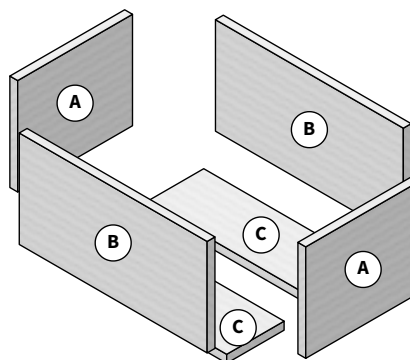
2-1/2"

1"

Actual size in the printed book. Hold a screw against its drawing to check that you bought the right one.

Cut list

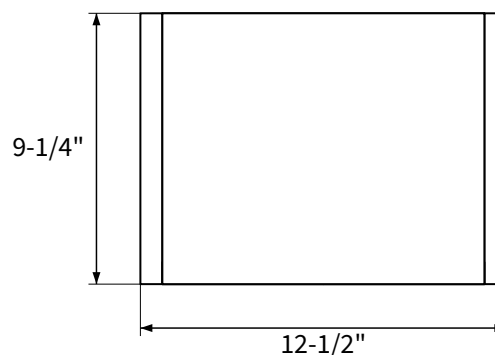
Part	Name	Qty	Board	Length	Thickness × width
A	End	2	1x10	11"	3/4" × 9-1/4"
B	Side	2	1x10	18"	3/4" × 9-1/4"
C	Bottom board	2	1x6	16-1/2"	3/4" × 5-1/2"



1x10 6 ft	A 11"	A 11"	B 18"	B 18"	offcut
1x6 6 ft	C 16-1/2"	C 16-1/2"	offcut		



Front view



Side view

Safety

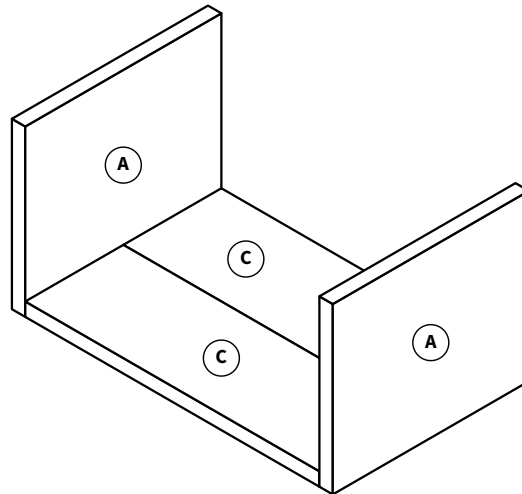
- **Build it square, and let the glue cure.** A frame with no diagonal brace is still a parallelogram: it can lean until the top is fastened down. Measure both diagonals of the frame and push the longer one until the two readings match, then clamp it there before you drive a screw. Measure the diagonals again once the fasteners are in, while the glue can still move. Let the glue cure overnight before you put weight, or a workpiece, on the finished piece. Do not rock or lean on the piece while the glue is still wet.
- **Circular saw.** "Portable circular saws having a blade greater than 2 inches (5.08 centimeters) in diameter must be equipped at all times with guards." "An upper guard must cover the entire blade of the saw. A retractable lower guard must cover the teeth of the saw, except where it makes contact with the work material." "The lower guard must automatically return to the covering position when the tool is withdrawn from the work material." "Safety guards must never be removed when a tool is being used." "Secure work with clamps or a vise, freeing both hands to operate the tool." (OSHA 3080, p. 4) "Keep hands away from cutting area and blade. Keep your second hand on auxiliary handle, or motor housing." (circular saw operator's manual, safety rules) "Keep your body positioned to either side of the saw blade, but not in line with the saw blade." (circular saw operator's manual, safety rules) "Do not reach underneath the work. The guard can not protect you from the blade below the work." (circular saw operator's manual, safety rules) "Always have both hands on the saw, never hold a workpiece in your hand or across your leg when sawing." (Power Tool Institute, Circular Saw Safety) Support the whole board on sawhorses before you cut, and support both halves: the piece you keep and the cut-off. An unsupported end drops, pinches the blade and kicks the saw back at you. Lay a sacrificial board under the cut line so the blade passes all the way through the work without reaching a sawhorse or the floor. Clamp the speed square you guide the saw against, and keep every clamp clear of the blade's path. Do not clamp across the line you are about to cut. Cut each part off the end of a longer board that stays clamped and supported. Never clamp and cut a part that is already short: there is nothing left to hold it by that keeps your hand clear of the blade.
- **Drill/driver.** "Disconnect tools when not using them, before servicing and cleaning them, and when changing accessories such as blades, bits, and cutters." (OSHA 3080, p. 4) With a cordless drill, that means taking the battery out. "Secure work with clamps or a vise, freeing both hands to operate the tool." "Avoid accidental starting. Do not hold fingers on the switch button while carrying a plugged-in tool." "Wear proper apparel for the task. Loose clothing, ties, or jewelry can become caught in moving parts." Do not wear gloves while a bit is turning: a glove that catches on the bit or the chuck pulls your hand in with it. OSHA's "safety goggles and gloves" sentence (OSHA 3080, p. 4) is written for hand tools, not for rotating power tools.
- **Protect your eyes, ears and lungs.** "Employees who use hand and power tools and are exposed to the hazards of falling, flying, abrasive, and splashing objects, or to harmful dusts, fumes, mists, vapors, or gases must be provided with the appropriate personal protective equipment." (OSHA 3080, p. 1) "Appropriate personal protective equipment such as safety goggles and gloves must be worn to protect against hazards that may be encountered while using hand tools." (OSHA 3080, p. 4) That sentence is about hand tools. Keep gloves off whenever a drill bit or a saw blade is turning. Wear safety glasses whenever you saw, drill or sand (flying chips are one of the hazards the OSHA passage above names), and wear hearing protection while the saw runs. Wear a dust mask when sawing or sanding: sawdust is a listed hazard ("harmful dusts") the same OSHA passage requires PPE against.
- **Finish rags can catch fire by themselves.** "Rags, steel wool, other waste soaked with this product, and sanding residue may spontaneously catch fire if improperly discarded." (label on a can of oil-based wipe-on polyurethane) "Immediately place rags, steel wool, other waste soaked with this product, and sanding residue in a sealed, water-filled, metal container. Dispose of in accordance with local fire regulations." (label on a can of oil-based wipe-on polyurethane) "Store oily and solvent-wet rags in a tightly sealed metal container and then discard them." (U.S. Fire Administration) "Contents are COMBUSTIBLE. Keep away from heat and open flame." (label on a can of oil-based wipe-on polyurethane) "Use only with adequate ventilation. To avoid overexposure, open windows and doors or use other means to ensure fresh air entry during application and drying." (label on a can of oil-based wipe-on polyurethane)

Step 1 • Cut the parts

Cut in the order of the cutting diagram. The list below says what to cut, part by part; it is not the cutting order. On each board, cut the parts in the order the diagram shows, shortest first, so every cut leaves a long board to hold and the last cut leaves the longest part.

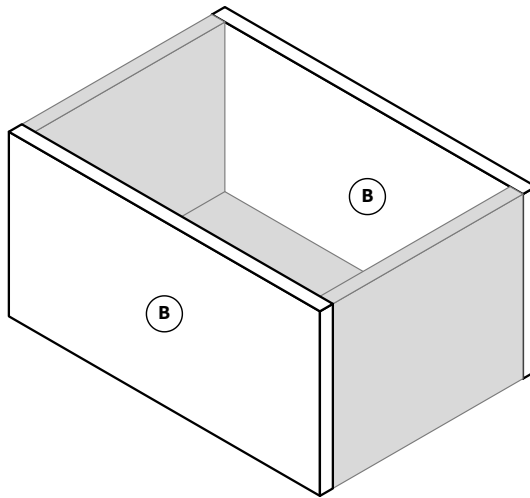
Before you make the first cut, review the Safety box. Cut every part off the end of a longer board, in the order the cutting diagram shows, while the rest of the board stays clamped and supported. Mark a line at 11" from the end of the board for the End pieces, as shown in the cutting diagram. Mark a line at 18" for the Side pieces. Mark a line at 16-1/2" for the Bottom board pieces. Set the saw on the board with the blade just on the waste side of the pencil line. Slide the speed square along the board until its lip hooks the board's edge and its side touches the saw's base plate. Clamp the square there. Cut on the waste side of the line. Repeat the marking, setting, and cutting for each remaining part in the diagram order.

Step 2 • Add the Ends and the Bottom boards



Spread glue on the inner faces of the left End and right End where they will touch the Bottom boards. Spread glue on each end of the front Bottom board and each end of the back Bottom board. Stand the left End and the right End on their bottom edges. Set the front Bottom board and the back Bottom board between the Ends. Line up the top face of the front Bottom board with the top face of the back Bottom board. Line up the front edge of the front Bottom board with the front ends of the Ends. Line up the back edge of the back Bottom board with the back ends of the Ends. Line up the right ends of the front Bottom board and the back Bottom board. Adjust the left End and right End so their bottom edges line up with the underside of the front Bottom board. Adjust the left End and right End so their back ends line up with the back edge of the back Bottom board. Clamp the assembly. Measure the diagonals of the assembly. If a diagonal is longer, push on that corner until the diagonals match. Center every pilot hole on the thickness of the Bottom board it reaches. Drill pilot holes through the left End into the front Bottom board. Drive 2 wood screws (2-1/2") through the left End into the front Bottom board. Drill pilot holes through the left End into the back Bottom board. Drive 2 wood screws (2-1/2") through the left End into the back Bottom board. Drill pilot holes through the right End into the front Bottom board. Drive 2 wood screws (2-1/2") through the right End into the front Bottom board. Drill pilot holes through the right End into the back Bottom board. Drive 2 wood screws (2-1/2") through the right End into the back Bottom board.

Step 3 • Add the Sides



Spread glue on the faces of the left End, right End, and front Bottom board that will touch the front Side. Set the front Side in place. Line up its top edge with the top edge of the left End. Line up its right end with the right face of the right End. Clamp the front Side in place. Spread glue on the faces of the left End, right End, and back Bottom board that will touch the back Side. Set the back Side in place. Line up its top edge with the top edge of the left End. Line up its right end with the right face of the right End. Clamp the back Side in place. Check the diagonals again. Center every pilot hole on the thickness of the End or the Bottom board it reaches. Drill pilot holes through the front Side into the left End. Drive 3 wood screws (2-1/2") through the front Side into the left End. Drill pilot holes through the front Side into the right End. Drive 3 wood screws (2-1/2") through the front Side into the right End. Drill pilot holes through the front Side into the front Bottom board. Drive 3 wood screws (1-1/4") through the front Side into the front Bottom board. Drill pilot holes through the back Side into the left End. Drive 3 wood screws (2-1/2") through the back Side into the left End. Drill pilot holes through the back Side into the right End. Drive 3 wood screws (2-1/2") through the back Side into the right End. Drill pilot holes through the back Side into the back Bottom board. Drive 3 wood screws (1-1/4") through the back Side into the back Bottom board.

Step 4 • Sand with 120-grit, then 220-grit sandpaper

Sand every face and every edge with the sanding block. Wipe away the sanding residue with a clean cloth.

Step 5 • Finish

Follow the directions on the can of wipe-on polyurethane. Wipe on thin coats with a clean, lint-free cloth. Sand lightly between coats with the fine sandpaper from the shopping list. Keep the windows open while the finish is wet. Put the used cloths in the metal can with water, as the Safety box says.

Use and care

Use the crate for blankets, pantry goods, or workshop supplies. Keep it on a level surface and do not load it past the rim. Wipe spills right away. The crate is built to hold things, not people. Do not sit or stand on it.