

HOW TO BUILD AN OFFICE DESK

A comfortable and spacious worksurface with full-size file drawers below.



One of the reasons that home offices are so popular these days is that the term can mean so many different things. We may call it a home office now, but it's not much different from the den, library and study of days gone by. And though the electronic hardware may well have changed, the essential function has remained the same. It's the place to work when you're serious about getting something done. And, as always, the heart of the room is the [desk](#).

The one we've designed here has plenty of storage space--seven drawers in all--and plenty of surface area too, nearly 16 sq. ft. Its cool, clean lines suggest a seriousness of purpose that's good for any work environment. This design is also the starting point for the credenza and wall-unit pieces that follow. All three are based on the same easy-to-build module. On the desk, each module has one file drawer and two utility drawers. On the credenza, each has two file drawers. And on the wall unit, you can choose drawers or doors. Here, we go into great detail about building the modules and the drawers. So be sure to review these instructions even if you plan only to build one of the others.



This desk is loaded with space. Each pedestal has one file and two utility drawers. And, there's a pencil drawer in between.

**Desk
pedestals**

Begin construction by laying out your desk parts on sheets of 3/4-in. birch plywood. Cut them to rough size using a circular saw and a straightedge guide. Then, use a table saw to rip and crosscut the parts to the finished size. The quickest and least expensive way to edge-band the panels is to apply veneer edge tape. This tape comes in strips that are 13/16 in. wide x 8 ft. long, and it has hot-melt adhesive on its back side. To bond the veneer to the edge, just clamp the panel in a vise, then using a household iron -- set on High -- press the tape onto the edge (**Photo 1**). The heat activates the glue.



1--Finish the plywood edges with iron-on veneer tape. Set the iron for high heat and press down to activate the hot-melt glue.

Once the veneer edging has cooled-which takes only a minute or two -- use a sharp chisel to trim the tape flush to the panel's surface (**Photo 2**).



2--Trim the edging tape flush to the panel with a sharp chisel. Cut with the grain direction, not against it, to prevent splitting.

Next, lay out the location of the joining-plate slots on the case bottom, back and top rails. Use the plate joiner to cut the slots (**Photo 3**).

When it's necessary to cut the slots perpendicular to the edge of a panel-at the back of the case bottom, for example-clip the panel to the table-saw rip fence and use the saw table as a registration surface (**Photo 4**). Apply glue to slots and plates, then assemble the bottom-, top- and back-rail joints.



3--After cutting all the case parts to size and applying the edge tape, begin assembly by cutting plate slots in the back rails.



4--Cut the plate slots in the case bottom by clamping the panel to your table-saw fence and sliding the plate joiner across the table.

Lay out and cut the plate slots for the joints between the case bottom assembly and sides, and also between the top rails and sides. Then, assemble the pedestal box by gluing together the case sides, bottom assembly and top rails (**Photo 5**).

Use clamps to pull the joints tight, then compare opposite diagonal measurements to be sure that the assembly is square (**Photo 6**).

Readjust the clamps, if necessary, then let the glue set. Because the desk pedestals are exposed on all sides, the back of the cases must be finished. Fabricate these backs by applying solid wood edging to the two long edges of the plywood panels, as shown in the drawing. Then, lay out and cut the joining-plate slots in the back panels and in the mating edges of the case sides. These plates are not absolutely necessary for structural integrity, but they do make positioning of the back panels automatic during assembly. Glue and clamp the parts in place. Then, cut and edge-band the top edge of the baseboard blocking. These blocks are used to bring out the surface of the baseboard beyond the front surface of the drawer faces. Install the blocks with glue and 4d finishing nails. Use clamps to temporarily hold the modesty panel in place against one of the pedestals. Mark the locations of the joining-plate slots, then do the same for the other pedestal. Cut the plate slots for these joints using a straightedge guide (**Photo 7**).

Then, counterbore screw pilot holes from inside



5--Begin assembly with one side on the bench. Apply glue to plates, slots and edges, then push the second side in place.



6--Draw all joints tight with clamps, then check the case for square by comparing opposite diagonal measurements.

the pedestals to fasten the panel in place. These screws eliminate the need for awkward clamping. Apply glue to slots and plates, then join the modesty panel to the pedestal. Drive 2-in. screws into the panel. Then do the same thing for the other pedestal **(Photo 8)**.

Cut the baseboard stock to size, then use a 30o chamfer bit in a router table to shape the top edge of the molding. Miter the ends and fasten them in place using glue and 4d finishing nails. Then, cut and install the small panel molding around the top of the baseboard, using 1-in. brads **(Photo 9)**.

Mark the position of the large panel molding on the desk sides and front, as shown in the drawing. Again, attach the panel molding to the desk with 1-in. brads.



7--Clamp a straightedge to the case side to guide the joiner. Then, cut slots for the plates used to attach the modesty panel.



8--Apply glue to the modesty panel, plates and slots and push together. Bore pilot holes and drive screws to tighten the joint.



9--Install the baseboard around the desk, then finish the profile by nailing panel molding above the baseboard.

Desktop

Cut the plywood panel to size for the desktop. Then, cut the edging to size, miter the ends and glue and clamp the edging to the top (**Photo 10**).

When the glue is dry, use a router with a 3/8-in.-rad. rounding-over bit to shape the top edge of the desk (**Photo 11**).

These bits have a ball-bearing pilot that rides against the edge of the work. So, when it comes time to shape the underside of the top, the bearing no longer has a proper surface to ride against. Instead, use a router fence to guide the router for the bottom cut. With the desktop upside down, cut and install the build-up strips 1 1/4 in. from the outside edges of the top. Use glue and screws to fasten the strips. Next, cut and install the cove molding against the build-up strips (**Photo 12**).

To provide proper fastening of the top to the pedestals and to provide a place to hang the pencil-drawer slides, install two cross strips as shown in the drawing.



10--Begin the desktop by cutting panel to size and cutting solid wood banding to fit the edges. Miter corners of banding.



11--Glue and clamp the edge banding in place and, when glue is dry, route the top edge with a 3e8-in.-rad. rounding-over bit.



12--After the support strips have been installed on the bottom of the top, miter and nail cove molding to edges of strips.

Drawers

The drawers are constructed of 1/2-in.-thick Baltic birch plywood. Begin by ripping and crosscutting the material to size for drawer sides, fronts and backs. Cut the dados at the front edge of the drawer sides using dado blades in a table or radial-arm saw. Then, cut the dados at the back edge of the sides. Follow this by cutting a rabbet at each end of the front and back panels, again using the dado blades. These rabbets form a tongue on the end of the drawer fronts and backs that fits neatly into the dados in the sides. Cut the same dado on the ends of the pencil-drawer partition. Finish the joinery cuts by making a groove in the sides and front to accept the drawer bottom. The file drawers are designed to accept aluminum rails that support hanging file folders. These rails are cut from 1/8 x 3/4-in. aluminum flat stock, readily available from hardware suppliers. To cut the notches for these rails in the front and back panels, clamp a panel to a table-saw miter gauge in a vertical position. Then, set the saw blade to a 3/4-in. height and make one pass over the blade. Repeat the procedure at the opposite end. Cut the drawer bottoms from 1/4-in.-thick birch plywood, taking care that these pieces are cut square. Next, sand all of the interior drawer parts with 120- and 220-grit sandpaper and dust off thoroughly. Begin the assembly of each drawer by gluing together the front, back and side panels (**Photo 13**).

Drive 1-in. wire nails through the sides and into the ends of the front and back panels. Finally, slide the bottom panel in place (**Photo 14**) and fasten it to the bottom edge of the drawer back with screws (**Photo 15**).

When all drawers have been assembled, finish sand the drawer exteriors with 120- followed by 220-grit sandpaper. Make sure to ease the top edges of the drawer box to prevent cuts and splinters. The pencil-drawer slides that we used have hanger brackets that mount to the bottom of the desktop. Fasten these brackets to the slide, with the screws provided, so the flange points outward. Then, pull the slides apart and attach the other section to the sides of the drawers. Use only the slotted vertical holes for attachment at this time to allow for adjustment of the drawer later.



13--Cut the drawer parts to size and finish sand with 220-grit paper. Dust off, then apply glue to all joints and assemble parts.



14--Cut the drawer bottom to size and sand smooth with 220-grit paper. Then, slide the bottom into the drawer assembly.



15--Once the bottom is completely seated in drawer, bore pilot holes into the drawer back and install screws. Do not use glue.

Push the slides together again and fasten the whole assembly to the desktop by driving screws through the slotted mounting holes **(Photo 16)**.



16--Attach slides to pencil drawer and plane on bottom side of top. Drive mounting screws through slotted holes.

Before installing the drawer slides on the file drawers, make kerf cuts in the drawer front and back pieces to accommodate the aluminum bar stock that supports the hanging files. Then, cut the bar stock to length and file the ends smooth. Next, place a drop of 5-minute epoxy in the kerfs and slide the bars into position **(Photo 17)**.



17--Cut aluminum bars for hanging files to length. Then, apply a dab of epoxy to the support slots and push the bars in place.

The drawer slides we used on the box and file drawers are different in design than the ones used for the pencil drawer. But the basic installation system is the same. Carefully read the instructions that accompany the slides, then lay out the locations of the screw centerlines on the drawer boxes. Fasten one side of each slide to the sides of the boxes, using the vertically slotted holes **(Photo 18)**.



18--Install the slides on the other drawer assemblies. Again, use the slotted holes so you can easily adjust the parts later.

Bore pilot holes for the mounting screws, and hang the other side of each slide on the sides of the pedestals. Once all the drawers are installed, check for proper operation and fit. Make any necessary adjustments, then install the rest of the slide mounting screws. Remove the drawers from the cases and place the desktop in position over the pedestals. Use clamps to temporarily hold the top in place while you screw through the pedestal stretchers into the bottom side of the desktop **(Photo 19)**.

Next, cut and edge-band the drawer face panels. Since aligning these faces can be a slow and painstaking task, we used drawer face adjusters to join the faces and drawer fronts. These adjusters allow for 3/16 in. of movement of the

face in any direction, making alignment easy. To mount the faces, first clamp them to the boxes in their desired position. Bore a 3/16-in.-dia. hole for each adjuster through the drawer box front and just slightly into the back side of the face. This marks the location of the adjuster. Remove the face and use the drill press to bore a 25mm x 1/2-in.-deep recess for each adjuster, centered on the pilot holes. Then, use a hammer to tap an adjuster into each recess (**Photo 20**).

Finally, attach the faces to the drawer boxes with the machine screws provided (**Photo 21**).

Reinstall the drawers in the pedestals and make adjustments as necessary to achieve nice, even margins between all drawers. Finally, lay out and bore pilot holes for the drawer pulls and set all nailheads. Fill any holes with a quality wood filler and when it's dry, sand the entire desk with 220-grit sandpaper. Apply one coat of acrylic latex primer and sand it lightly after it has dried. Then, cover the piece with two more coats of quality latex paint. Install the drawers and the drawer hardware, and you're done.



19--Place top on the desk pedestals and clamp in place. Bore pilot holes through the rails into the top and install screws.



20--Bore holes in the back side of each drawer face for the adjusters. Then, tap adjusters into the holes. No glue needed.



21--Attach the drawer faces to the drawer boxes by driving the screws through the drawer fronts and into the face adjusters.

MATERIALS LIST-OFFICE DESK

Key	No.	Size and description (use)
A	4	3/4 x 27 x 27 1/4" plywood (side)
B	8	3/4 x 4 x 16 1/2" plywood (rail)
C	2	3/4 x 16 1/2 x 27 1/4" plywood (bottom)
D	2	3/4 x 4 1/4 x 18" plywood (blocking)
E	2	3/4 x 18 x 27" plywood (panel)
F	1	3/4 x 27 x 33" plywood (modesty panel)
G	24 ft.	3/4 x 3 3/16" x poplar (base molding)
H	24 ft.	3/8 x 1 1/16" pine (base trim)
I	50 ft.	11/16 x 1 5/8" pine (panel molding)
J1	1	3/4 x 4 x 28 3/4" plywood (support strip)
J2	2	3/4 x 4 x 61" plywood (support strip)
J3	2	3/4 x 4 x 20 3/4" plywood (support strip)
K	1	3/4 x 29 3/4 x 70" plywood (top)
L1	2	3/4 x 3/4 x 71 1/2" poplar (edge band)
L2	2	3/4 x 3/4 x 31 1/4" poplar (edge band)
M	18 ft.	3/4 x 3/4" pine (cove molding)
N1	4	1/2 x 4 1/2 x 15" plywood (drawer front)
N2	2	1/2 x 9 3/4 x 15" plywood (drawer front)
N3	1	1/2 x 3 x 28 1/2" plywood (drawer front)
O1	4	1/2 x 4 x 15" plywood (drawer back)
O2	2	1/2 x 9 1/4 x 15" plywood (drawer back)
O3	2	1/2 x 2 1/2 x 28 1/2" plywood (drawer back, partition)
P1	8	1/2 x 4 1/2 x 20" plywood (drawer side)
P2	4	1/2 x 9 3/4 x 26" plywood (drawer side)
P3	2	1/2 x 3 x 20" plywood (drawer side)
Q1	4	1/4 x 15 x 18 3/4" plywood (drawer bottom)
Q2	2	1/4 x 15 x 24 3/4" plywood (drawer bottom)
Q3	1	1/4 x 18 3/4 x 28 1/2" plywood (drawer bottom)
R1	4	3/4 x 5 9/16 x 18" plywood (drawer face)
R2	2	3/4 x 11 1/8 x 18" plywood (drawer face)
R3	1	3/4 x 3 1/4 x 32 3/4" plywood (drawer face)
S	As reqd.	iron-on veneer tape
T	As reqd.	No. 20 joining plates
U1*	4 pr.	No. 3037 Accuride drawer slide, 20" long

U2*	2 pr.	No. 4034 Accuride drawer slide, 26" long
U3*	1 pr.	No. 2009 Accuride drawer slide, 20" long
V*	14	No. 28936 drawer face adjusters
W	4	1/8 x 3/4 x 19 1/4" aluminum flat stock (file hangers)
X**	7	No. G 18.01 brass drawer pulls
Y	21	5/8" No. 5 rh screws
Z	24	1 1/4" No. 8 fh screws
AA	8	2" No. 8 fh screws
BB	As reqd.	1" brads
CC	As reqd.	4d finishing nails
		Misc: 120- and 220-grit sandpaper, carpenter's glue, epoxy glue, wood filler, latex primer, latex paint
		* Available from The Woodworkers' Store, 4365 Willow Dr., Medina, MN 55346
		** Available from Garrett Wade, 161 Avenue of the Americas, New York, NY 10013

