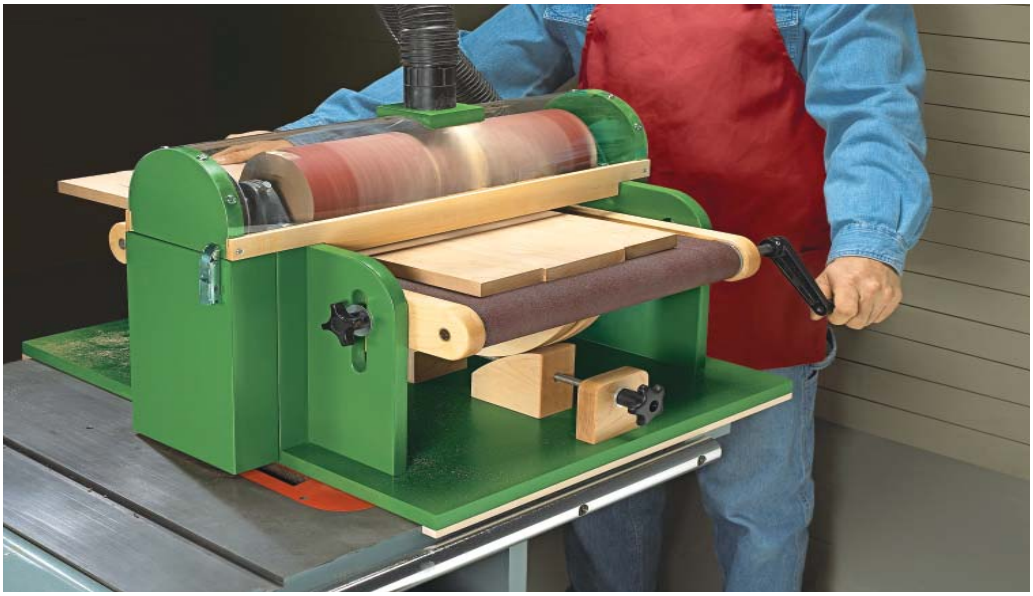


build your own

THICKNESS SANDER

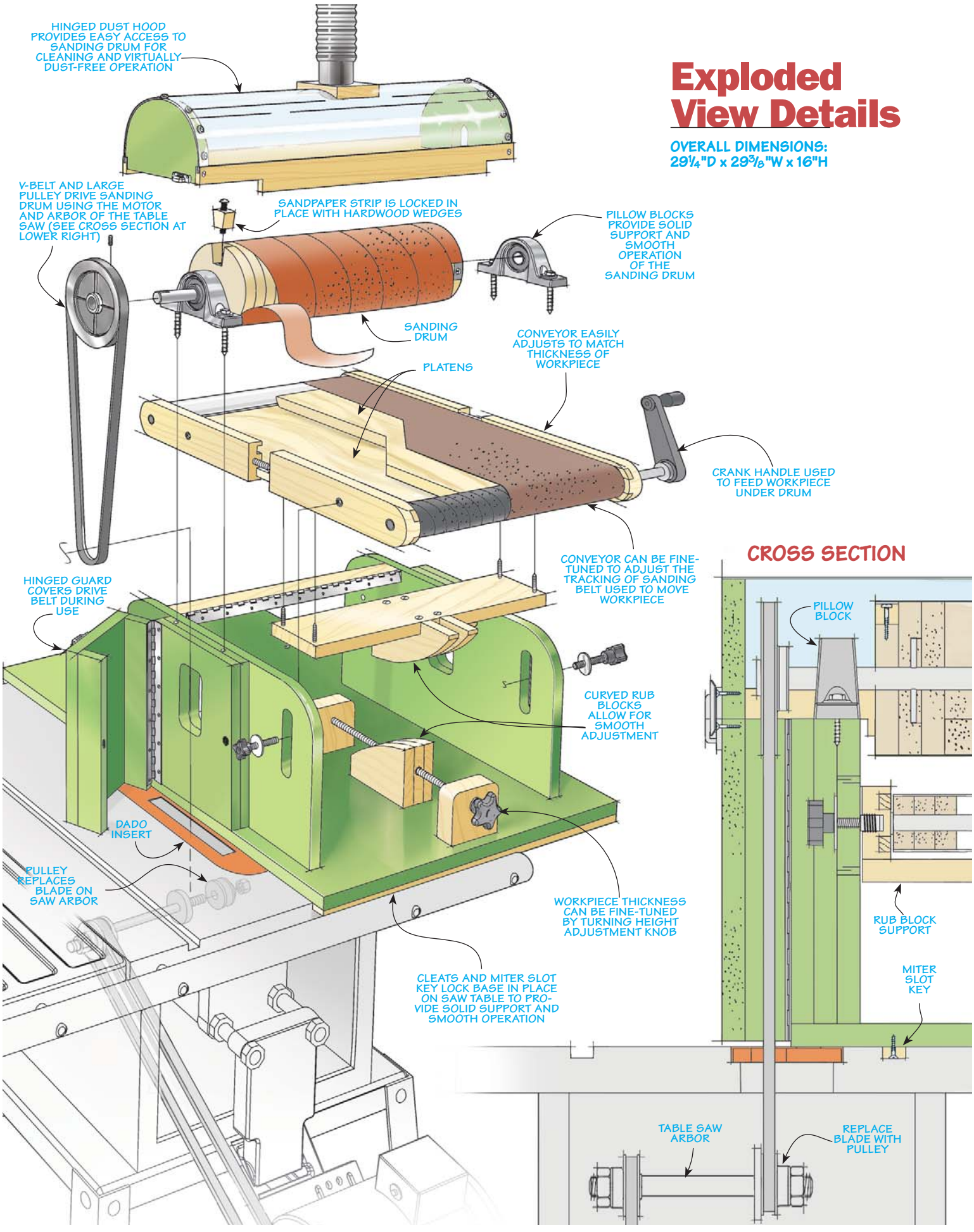
It's not often you can save time and money — this heavy-duty, shop-built project will do both.

Many manufactured thickness sanders can cost three times as much (or more). The one shown above only costs about $200 to build — a big savings. And the time you save smoothing a panel or thicknessing a workpiece can be put to use building more projects.

Powered by the motor on your table saw, this machine can quickly sand panels up to 16" wide so they're flat and smooth — whether it's a 3"-thick workpiece or a strip of veneer only 1/16" thick. A simple handcrank feeds the workpiece through at just the right speed. And you can watch the sanding dust simply disappear through the see-through dust hood mounted on top.

Exploded View Details

OVERALL DIMENSIONS:
29¼"D x 29⅜"W x 16"H



building the Base

The base assembly of the thickness sander provides support for all the other parts, so that's where I started.

The base itself isn't all that complicated as you can see in Figure 1. The overall length of the ¾" MDF base depends on the size of your saw table. To determine this, measure from the front edge of the saw table to the back and then cut the base 1½" longer. Then, you can trim the base to a width of 22¾".

Lock it In. Once you have the base sized, the next step is to make sure it stays in one place as you're using the sander. To accomplish this, you'll need to do two things.

First, the cleats you see in Figures 1 and 1a prevent any front-to-back movement. And the side-to-side movement is stopped by a key that fits the miter slot of your table saw (Figure 1).

The trick is locating the key. If you take a look at Figure 1b, you can see where the saw blade has been replaced with a small pulley that will be used to drive the drum. The the key is screwed in place so the edge of the base is located 1" from the center of the pulley used to drive the sanding drum.

Adding Solid Support. With the base in position, the next step is to add a pair of beefy supports for the drum and conveyor. In Figure 1, you can see that each support is made up of a large inner panel and a pair of smaller outer panels.

Adjustment Holes & Slots. Once you cut the inner support panels to size, you'll need to drill a series of holes at one end. These holes provide a pivot point for the conveyor assembly so you can adjust its height to match the workpiece.

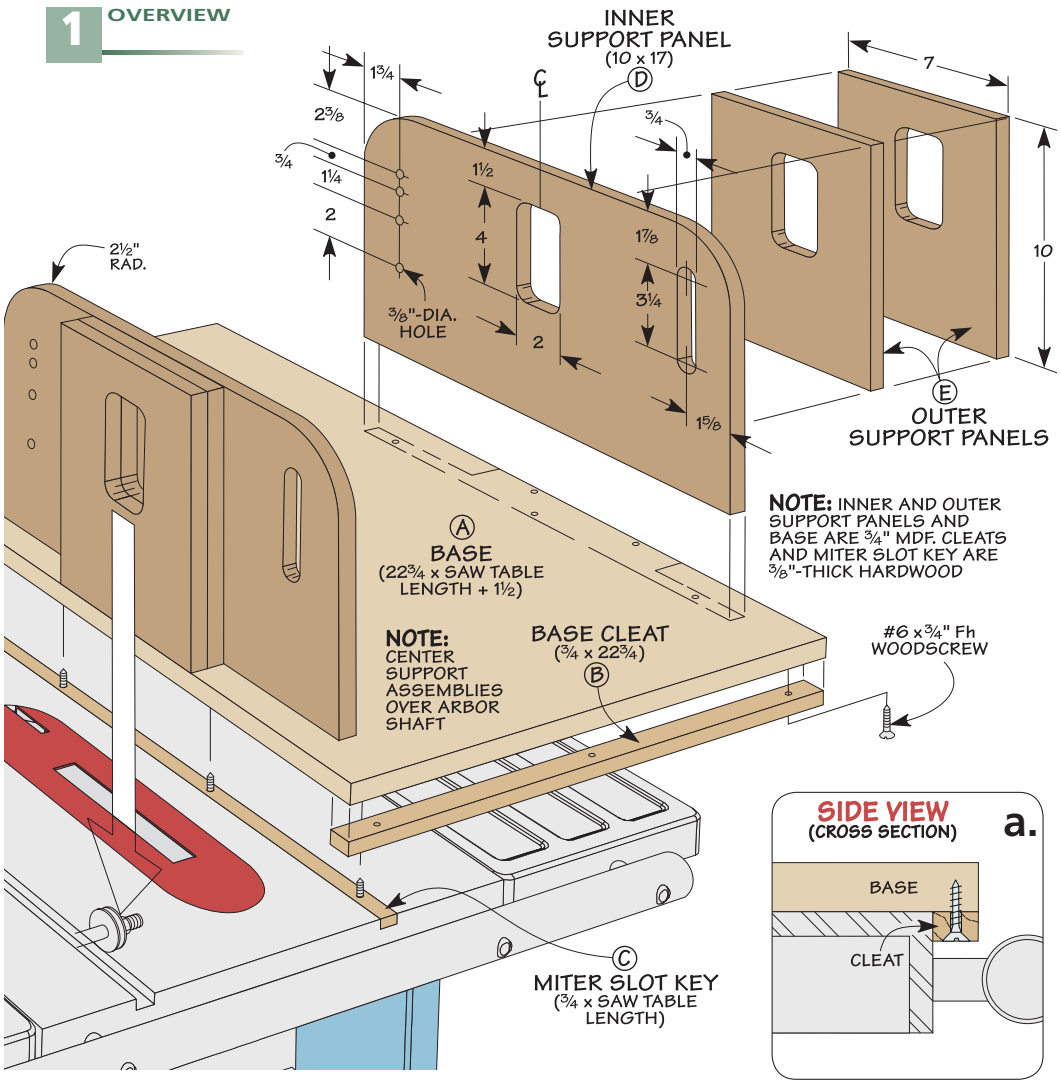
At the opposite end of the panel is a narrow slot. This slot allows the conveyor to move up and down to adjust for the thickness of the workpiece and then be locked in place.

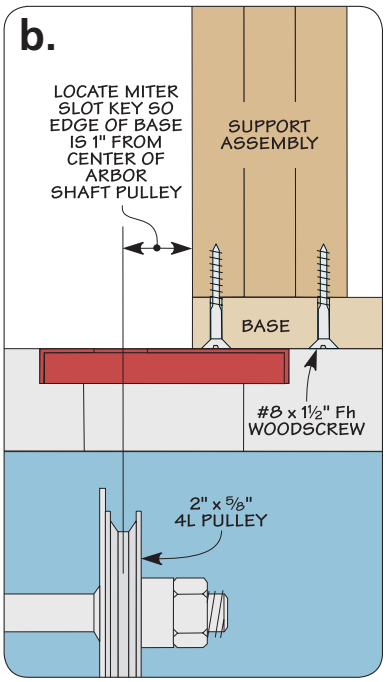
Outer Support Panels. After rounding the outside corners of the inner panel, you're ready to add the outer panels. These panels are glued in place so they're centered on the inner support panel (Figure 1).

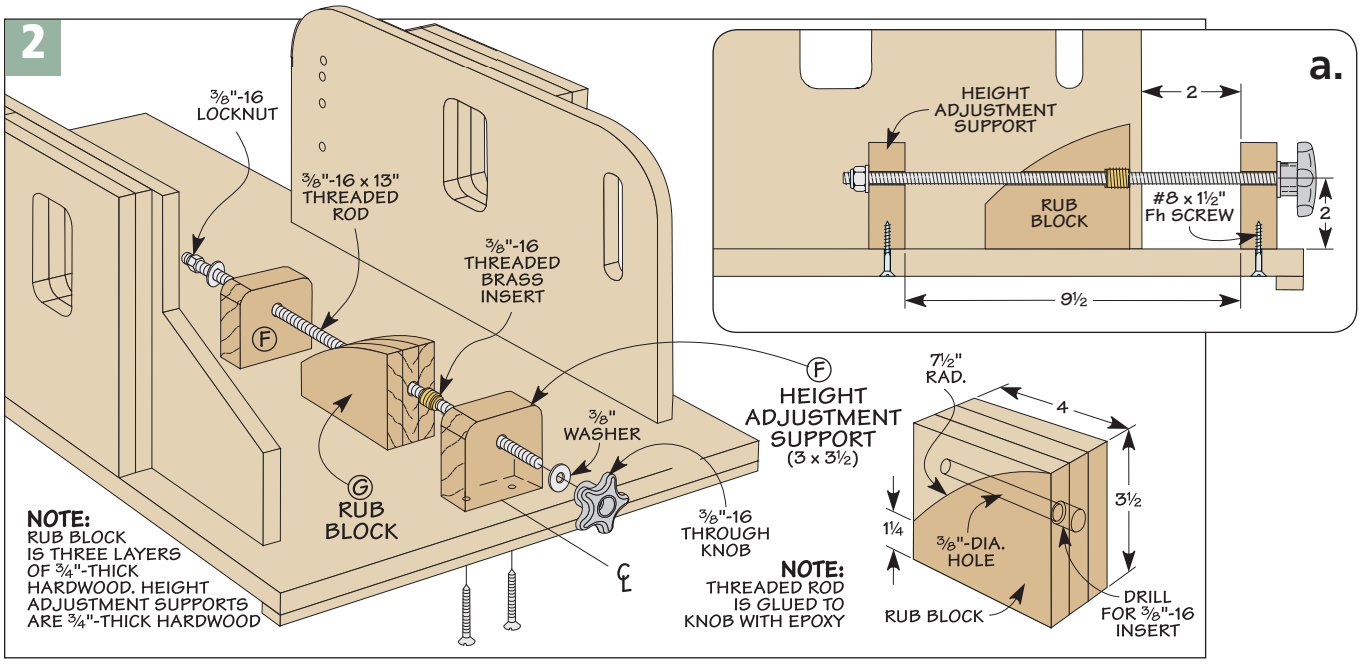
The last step in completing the support assemblies is to cut a large opening in each assembly, as shown in Figure 1. These openings provide access to a lock nut that's used to adjust the tension and tracking of the conveyor belt.

Attach the Supports. At this point, you can screw the support assemblies to the base. To prevent the drive belt from rubbing against the guard (installed later), it's important to align the center of the support assemblies with the arbor shaft of your table saw (Figure 1b). And each support is flush with the edges of the base.

1 OVERVIEW







Painting the Base. If you plan to paint your thickness sander, you'll want to do that now. For more information on getting great results when painting MDF, turn to page 15.

Adjusting the Height. A thickness sander is only as good as the mechanism for fine-tuning the thickness of a workpiece. This height adjustment mechanism is a two-part system. One part is attached to the conveyor (more on this later), while the other half mounts to the base (Figure 2).

The main part of the system attached to the base is a 2¼"-thick hardwood rub block that's curved along the top edge, as illustrated in Figure 2. Later, this block will support a similar pair of blocks that will allow you to fine-tun the height of the conveyor.

A through hole and a counterbore for a threaded insert allows you to use a knob and threaded shaft to move the block back and forth between two hardwood mounts. This movement raises and lowers the conveyor so you can accurately thickness a workpiece.

Once you have the mounts sized and located, as in Figure 2a, you can cut the threaded shaft to length. Then, it's just a matter of gluing the knob in place with epoxy, and installing the rub block.

Materials & Hardware

BASE

A	Base (1)	22¾ x Custom Fit - ¾ MDF
B	Base Cleats (2)	⅜ x ¾ - 22¾
C	Miter Slot Key (1)	⅜ x ¾ - Custom Length
D	Inner Supports (2)	10 x 17 - ¾ MDF
E	Outer Supports (4)	7 x 10 - ¾ MDF
F	Height Adjust Supports (2)	¾ x 3 - 3½
G	Rub Block (1)	2¼ x 3½ - 4

CONVEYOR ASSEMBLY

H	Roller End Plugs (12)	1½ x 1½ - ¾ MDF
I	Platens (2)	17 x 18¾ - ½ Ply.
J	Sides (4)	1 x 2⅜ - 10¾
K	Side Stops (8)	⅜ x ½ - 1⅞
L	Conveyor Rub Blocks (2)	¾ x 3½ - 5½
M	Rub Block Support (1)	¾ x 3½ - 18¼

SANDING DRUM

N	Drum Disks (19)	5⅛-dia. rgh. - ¾ MDF
O	Drum Lock Disks (2)	5⅛-dia. rgh. - ¾ MDF
P	End Disks (2)	5⅛-dia. rgh. - ¾ MDF
Q	Lock Wedges (2)	¾ x 1- 1⅛

BELT GUARD & DUST HOOD

R	Door (1)	7 x 10⅝ - ¾ MDF
S	Back (1)	1⅝ x 10⅝ - ¾ MDF
T	Front (1)	1½ x 10⅝ - ¾ MDF
U	Dust Hood Ends (2)	4⅝ x 6½ - ¾ MDF
V	Dust Hood Front/Back (2)	⅜ x 1¾ - 25
W	Hinge Support (1)	¾ x 1½ - 18¼
X	Vacuum Hose Port (1)	3⅜ x 3⅜ - ¾ MDF

- (28) #8 x 1½" Fh Woodscrews
- (5) ⅜"-16 Threaded Brass Inserts
- (4) ½" x ½" Bronze Sleeve Bearings
- (1) ½" x 21½" Steel Rod
- (1) ½" x 18¼" Steel Rod
- (4) ½" Flat Washers
- (3) ⅜"-16 Lock Nuts
- (8) ⅜" Flat Washers
- (2) ⅜"-16 x 4½" Threaded Rods
- (2) 1½" x 16" Schedule 40 PVC Pipes
- (1) Handle and Set Screw
- (1) 16" x 48" Sanding Belt (100-Grit)
- (4) ⅜"-16 x 2" Studded Knobs
- (2) Pillow Blocks
- (1) ¾" x 24" Steel Rod
- (2) 3/16" x 2¾" Steel Rods
- (4) 5/16" x 2½" Lag Screws
- (4) 5/16" Flat Washers
- (1) 5" x ¾" 4L Pulley
- (1) 2" x ⅝" 4L Pulley
- (1) 4L440 V-Belt (44")
- (2) ¼"-20 x 1½" Rh Machine Screws
- (2) ¼"-20 Threaded Brass Inserts
- (1) ⅜"-16 Through Knob
- (1) ⅜"-16 x 13" Threaded Rod
- (4) #8 x 1" Fh Woodscrews
- (10) #6 x ¾" Fh Woodscrews
- (1) 11⅞" x 25" Polycarbonate Sheet (0.04" Thick)
- (12) #6 Finish Washers
- (12) #6 x ⅝" Fh Woodscrews
- (1) 1½" x 10⅝" Piano Hinge w/screws
- (1) 1½" x 18" Piano Hinge w/screws
- (2) ⅜" x 1½" Fender Washers
- (1) Cloth Electrical Tape
- (2) Latches w/screws
- (1) Magnetic Catch

Also Needed: One sheet of ¾" MDF, one-half sheet of ½" Baltic birch plywood, and approximately 3 bd. ft. of hardwood.

Add Conveyor

With the base complete, the next step is to add the conveyor assembly that both supports and feeds the workpiece under the sanding drum.

The conveyor is just a pair of very similar platen and roller assemblies that slide together, as in Figure 3. This design makes it easy to slip the conveyor belt in place, but still allows you to tighten and adjust the conveyor so the belt tracks smoothly and evenly.

Start with the Rollers. Since the rollers have to be in place before you can glue each platen assembly together, that's where I started.

The rollers are just lengths of PVC pipe with steel rods that act as axles. It's important to note that one of the rods is a bit longer than the other. This allows for the feed handle at one end, as you can see in Figure 3.

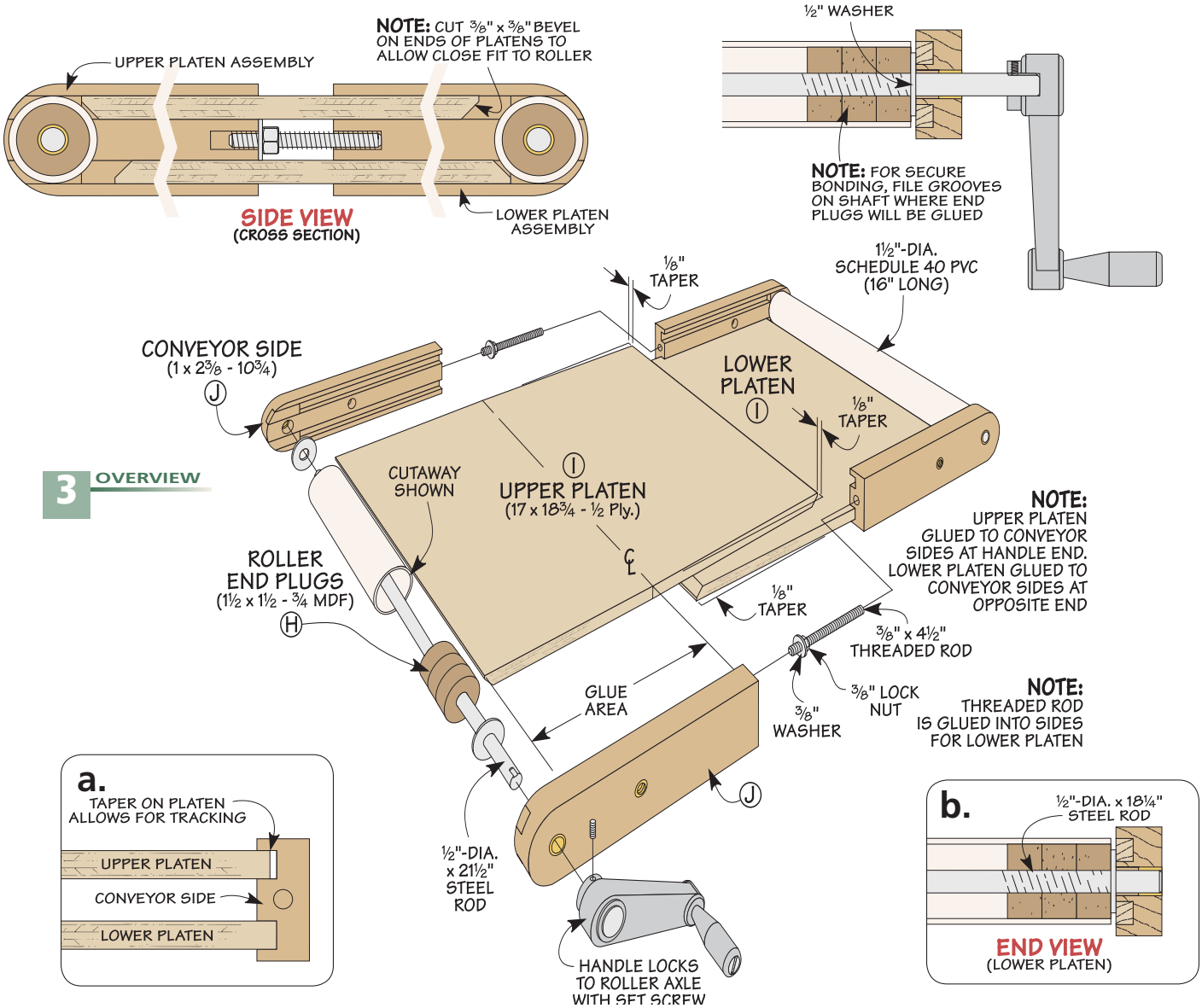
Making the Shaft Plugs. To support the shafts in the center of each roller, there's a set of three MDF plugs at each end (Figure 3b). I used a wing cutter to size the plugs to fit the PVC pipe and then enlarged the holes to fit the shafts. Sse Shop Short Cuts on page 12.

Once you have the plugs made, you can glue them in place. To do this, I scuffed the inside of the pipe and then glued them in place with the outside plug flush with the end of the roller. (Polyurethane glue work best here.)

Fitting the Shafts. The next step is to cut the two shafts to final length and install them. A slight chamfer on each end will make installing the shafts in the roller easier, but you still may find it a challenge. Shop Short Cuts shows a handy way to "press" the shafts in place. Note: To ensure the epoxy bonds the plugs securely to the shaft, it's a good idea to file some grooves in the area where the shafts mate with the plugs.

Turn to the Platens. For right now, you can set the rollers aside and work on the rest of the conveyor parts: the two platens and the four side pieces, as illustrated in Figures 3 and 4.

The platens are just pieces of ½" Baltic birch plywood. If you look closely at Figure 3, you can see that both edges at one end of each platen are tapered slightly. Tapering these edges allows you to adjust the tracking of the conveyor belt once it's installed. And to provide a closer fit around the roller, each end of the platen is beveled, as shown in the Side View of Figure 3.



3 OVERVIEW

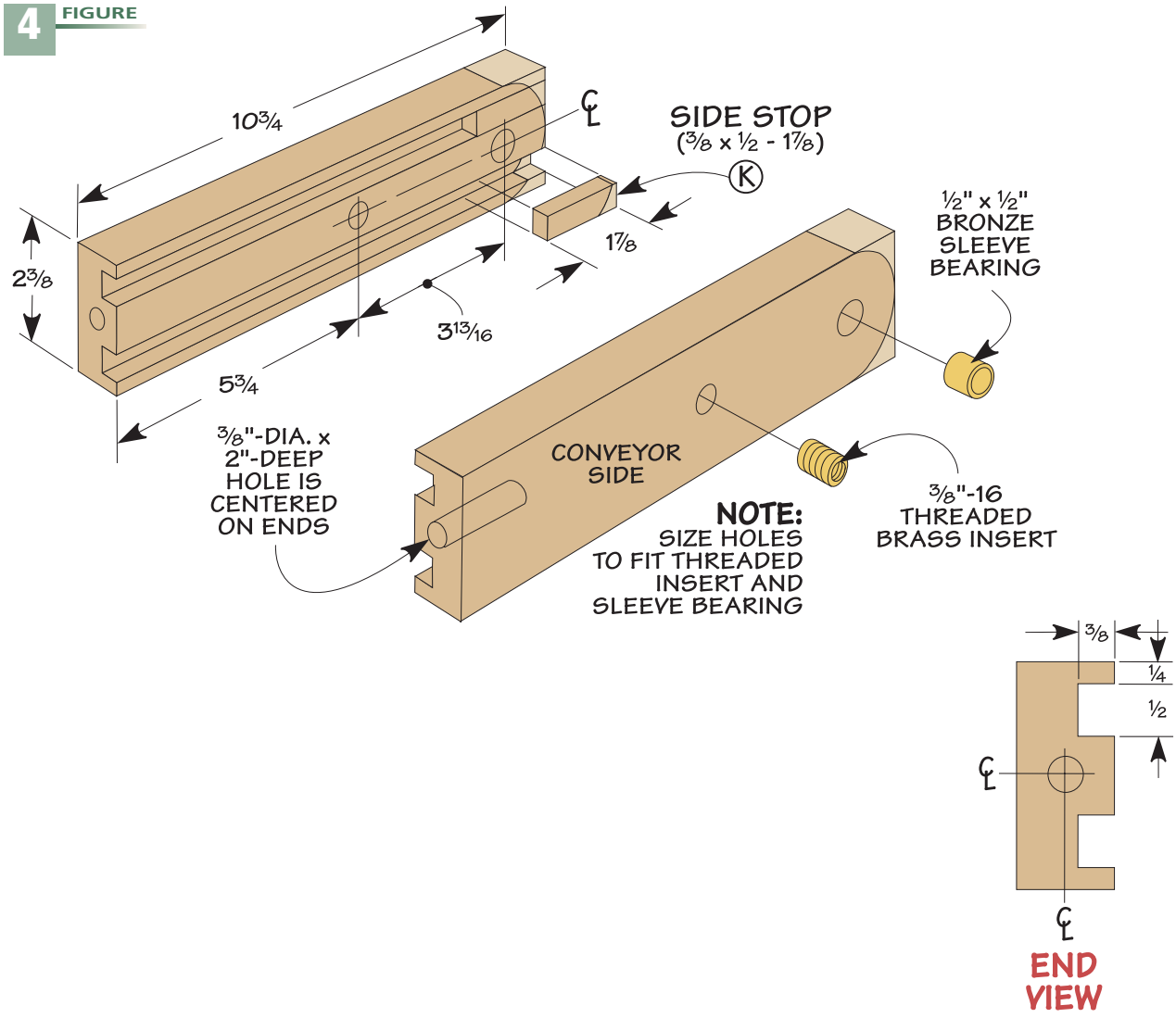
Making the Conveyor Sides. With the platens complete, you can turn your attention to the 1"-thick hardwood sides that provide strength and stability (Figure 4).

After cutting the sides to size, I drilled three holes in each. One hole accepts a bronze bearing that supports each end of the roller. A second hole is sized for a threaded brass insert used to mount the conveyor assembly to the base place. And the third hole is in one end of the side piece. It accepts a threaded rod used to adjust the conveyor belt (Figure 3). Here again, turn to page 12 for a handy jig to do this.

Once you have the holes drilled, the next step is to cut a pair of grooves in each piece (Figure 4). These grooves capture the edges of the platen and allow the two assemblies to slide together.

Then to locate the platens as you slide them into the sides, I added a pair of stops to each side piece (Figure 4). Once the stops are glued in place, you can round the end of each side piece and glue the threaded rod in place in *two* of the side pieces (Figures 3 and 3a on page 5).

4 FIGURE

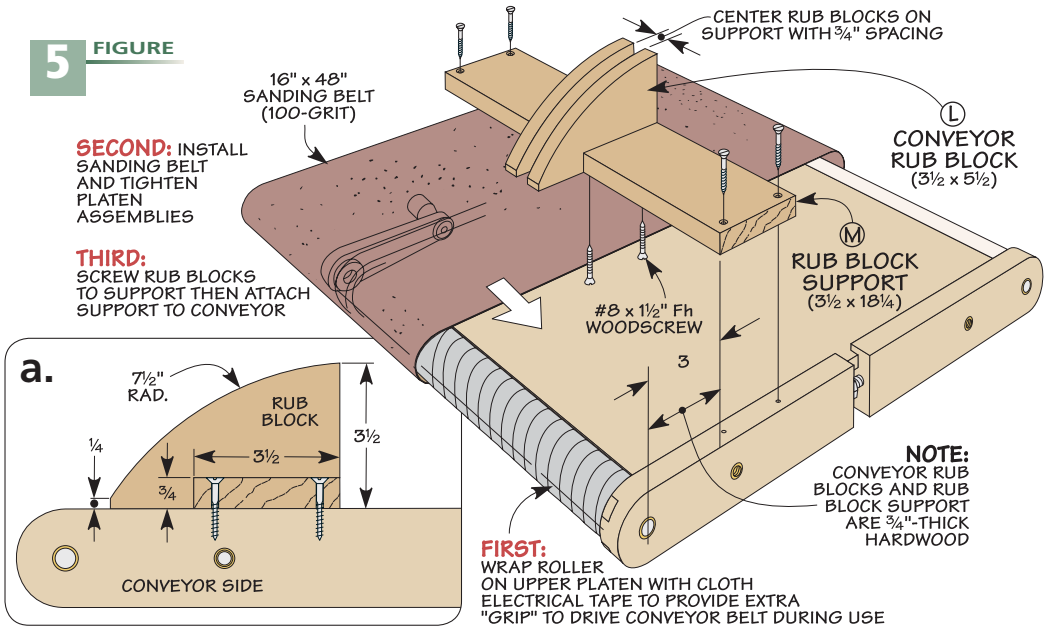


Assemble the Conveyor. At this point, you're ready to assemble the conveyor. And you'll want to be sure to pay close attention as you do this. It can be easy to glue the wrong parts in place since everything looks alike. To help out here, I labeled one set of parts as the "upper platen" (uses the longer shaft) and the other as the "lower platen" (uses the two side pieces with the threaded shafts).

One thing to keep in mind is that it's the straight edges of the platen that are glued to the side pieces. The tapered edges aren't glued at all. Finally, putting the two assemblies together during assembly ensures that everything will stay nice and square while the glue dries.

Conveyor Height. After you install the handle on the upper platen and slip the belt in place, you're ready to add the other half of the height adjustment mechanism. This is nothing more than a pair of rub blocks and a support piece that align with the rub block on the base (Figures 5 and 5a). The space between the blocks provides clearance for the threaded shaft on the base.

FIGURE 5



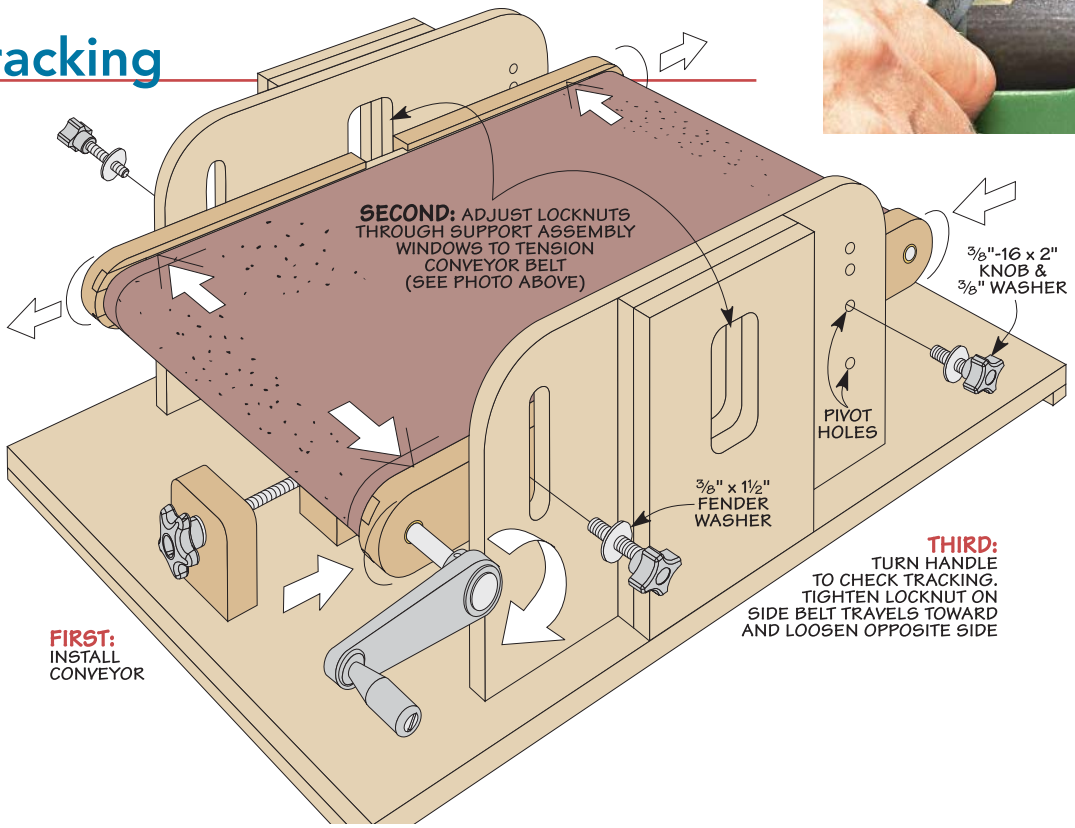
Once you have everything in place, you can install the conveyor and then adjust the belt tracking. For more on this, check out the box below.

Adjusting the Tracking

A set of knobs and washers is all it takes to install the conveyor. (To adjust the tracking, it doesn't matter which set of pivot holes you use.)

Adjusting the Tracking. For the sanding belt to track evenly, you'll need to "tweak" the tension on the belt. This is just a matter of tightening (or loosening) the adjustment nuts (photo at right).

Start by turning the handle and noting which side the belt moves toward. Next, slightly tighten the nut on that side (you may need to slightly loosen the opposite side as well.) Check the tracking again, and repeat until it tracks evenly.



making the
Drum

With the conveyor assembly in place to support and move the workpiece, the next step is to make the sanding drum.

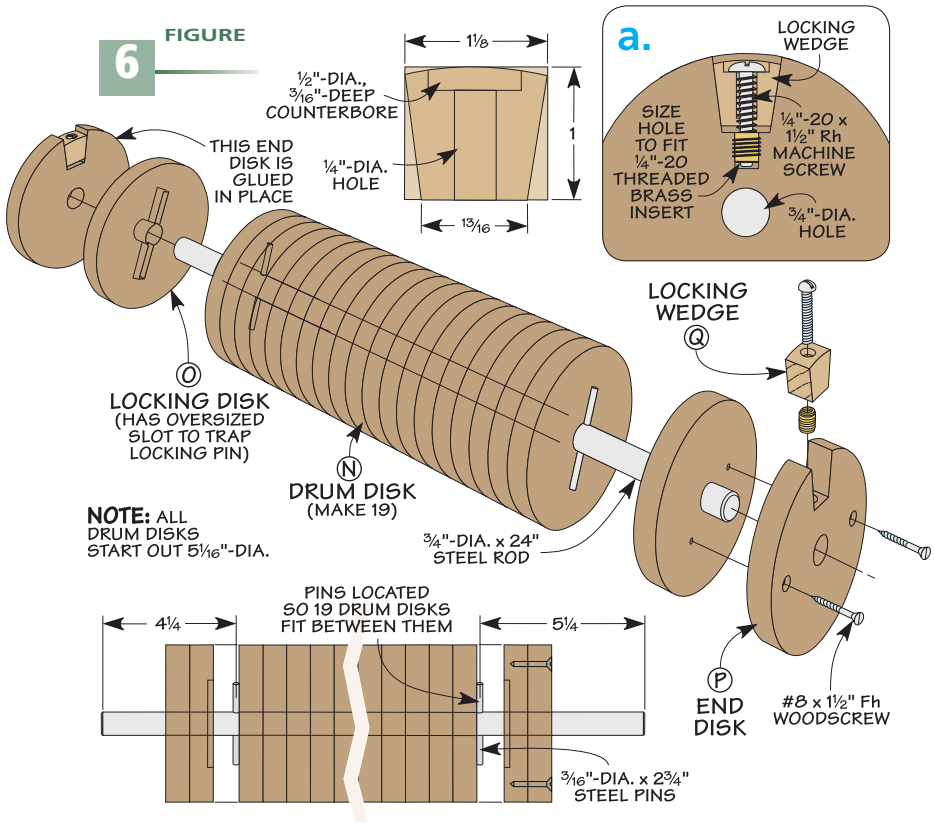
Start with the Disks. Figure 6 provides an overview of the sanding drum. It's just a heavy-duty steel shaft and a set of 23 disks made from ¾" MDF. After cutting the disks to rough size (slightly over 5"), you can turn to Shop Short Cuts again to enlarge the center hole.

If you take a look at the lower left part of Figure 6, you'll see a pair of steel pins on either side of the center disks (19 total). These pins are used to "lock" all the disks to the shaft once the disks are glued to each other (Figure 6a). It is important to locate the pins so that 19 of the disks fit between them once they're installed and glued together.

Slipping the disks in place for assembly can be a challenge if the fit is really tight. Shop Short Cuts on page 12 shows how an easy way to "press" the disks in place.

Adding the Locking Disks. With the center section of the drum assembled and the pins in place, you're ready to glue on the locking disks that keep the entire assembly from spinning. To do this, each locking disk has a slot that traps the locking pin (Figure 6).

FIGURE 6



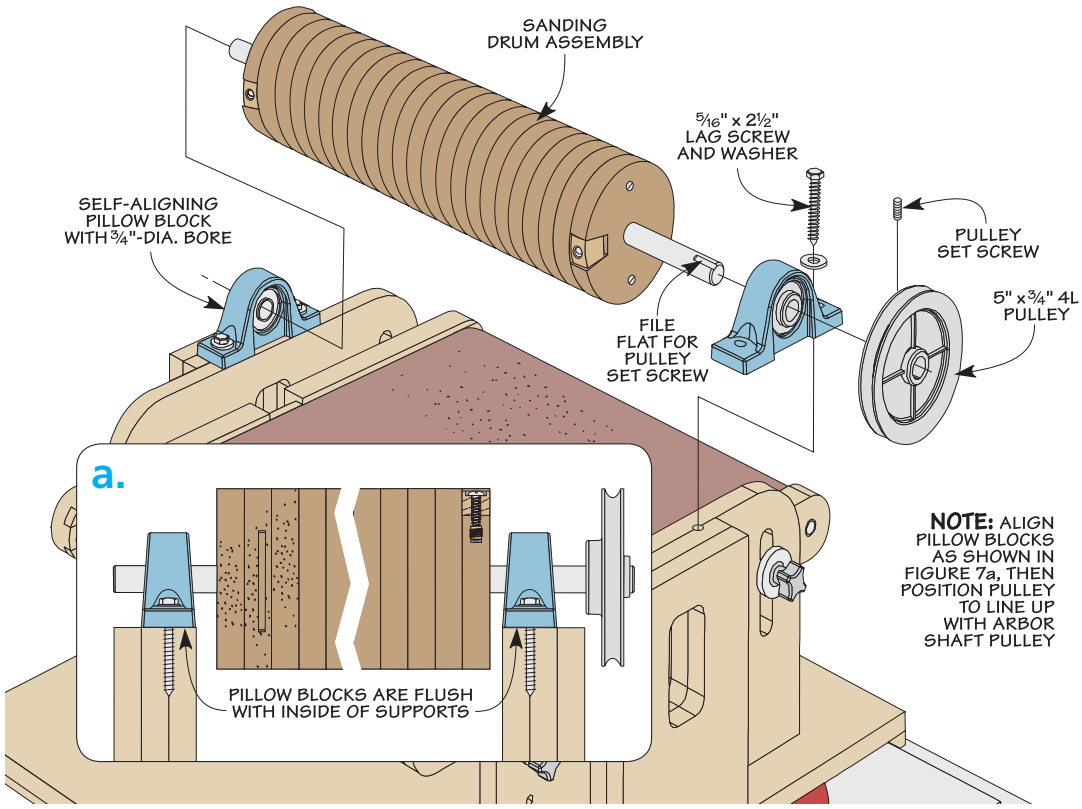
Complete the Ends. The next step is attaching the two end disks. The end disks serve an important function — they hold the sandpaper in place on the drum. To do this, each disk has a tapered notch cut in it to accept a hardwood wedge, as in Figure 6a.

A threaded insert installed at the bottom of the notch accepts a machine screw that passes through the wedge. (For more on drilling the hole for the threaded insert, turn to page 15.) Tightening the wedge "pulls" the sandpaper tight around the drum and locks it in place.

As you can see in Figure 6 above, the end disk at the far end of the shaft is glued to the rest of the drum. At the other end, the disk is screwed in place. The reason for this is simple — the end of the sanding strip needs to fit into the notch. Screwing the disk to the rest of the drum allows you to reposition it to match the trued up drum (more on this later).

Install the Drum. The next step is to install the drum. To do this, start by slipping a pillow block onto each end of the shaft. But don't tighten the set screw to lock them in place just yet. First, set the assembly on top of the base supports so the pillow blocks are centered over the arbor shaft and align with the

FIGURE 7



inside face of the uprights, as in Figure 7a.

The pillow blocks are self-aligning, but you may have to "tweak" each one a bit so it rests flat against the top of the support. Then you can drill the mounting holes and screw the blocks in place.

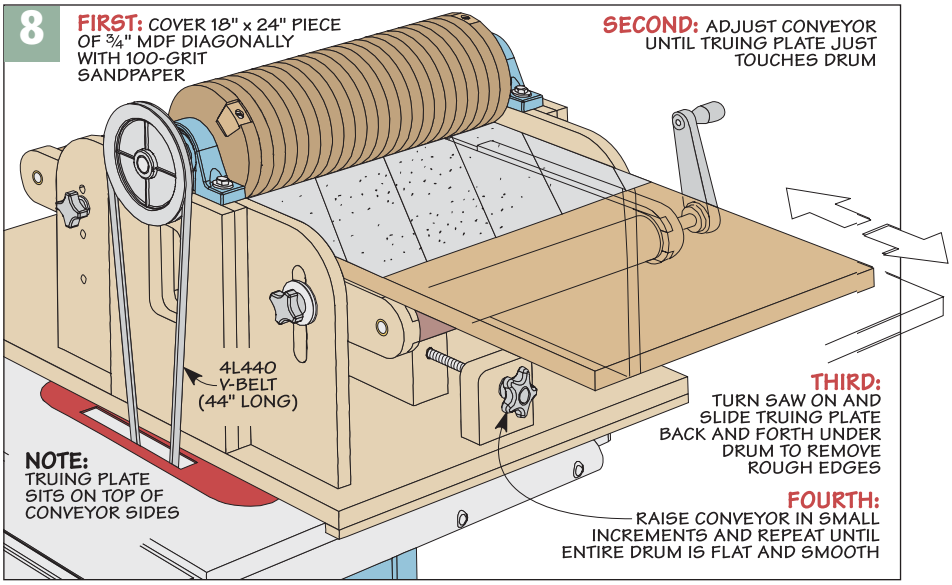
After filing a small flat at the end of the shaft, you can install the pulley and belt that drives the drum (Figures 7 and 8). Note: To tighten the belt, simply lower the saw arbor.

Truing up the Drum. Figure 8 shows you how I used a flat sheet of ¾" MDF covered in 100-grit sandpaper to true up the sanding drum. Note: Although you can true the drum up at this point, you may want to wait until the dust hood is installed to cut down on the sanding dust (turn to page 10).

After covering the sheet with sandpaper, raise the conveyor until the sanding sheet just touches the drum. Then, turn your table saw on to start the drum spinning and slide the truing plate under the drum.

You'll need to raise the conveyor in small increments as you work, replacing the sandpaper as necessary. And don't worry about the final size of the drum. What's more important is that it's smooth, flat, and true to the conveyor.

Once the drum is trued up, it's a good idea to apply a couple coats of finish to "harden" the surface. Then you can check out the box below for installing a strip of sandpaper.



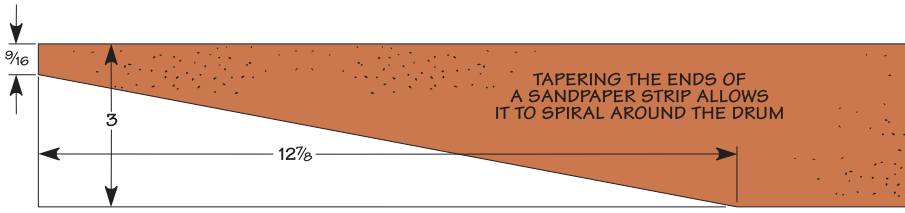
Install a Sanding Strip

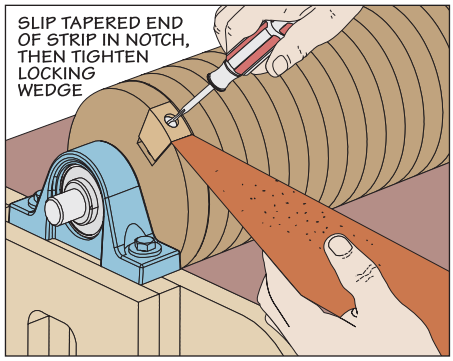
Installing the first sanding strip determines the position of the end disk you screwed in place earlier. Plus, it creates a handy template for any other sanding strip.

Taper One End. The first step is to taper one end of a 3"-wide sanding strip (drawing at right). Once that's complete, lock the end in place (left drawing below.)

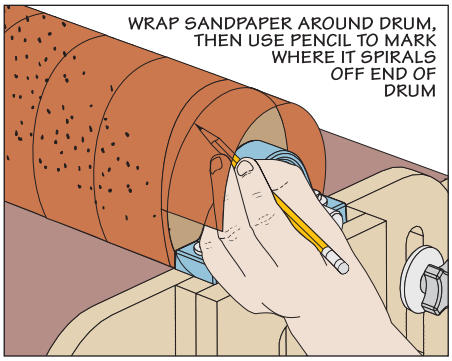
Wrap the Drum. Next, wrap the strip around the drum making sure the edges butt against one another. With the strip held in place, use a pencil to trace along the inside of the strip where it rolls off the end of the sanding drum (center drawing). Note: You may need to make small adjustments to the taper at either end slightly to match the final diameter of the drum.

Locate the End Disk. Next, trim along the pencil line and clip off the tip. Now, loosen the locking wedge and rotate the end disk until the end of the strip will slip in place, then tighten the locking wedge. Finally, screw the end disk back in place.

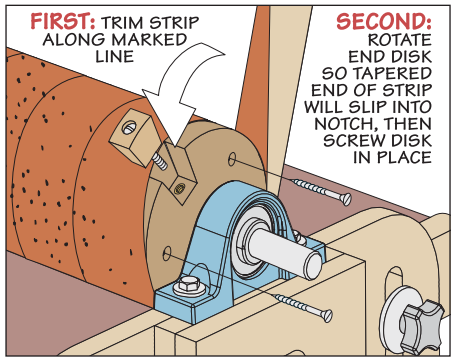




▲ ***Starting the Strip.*** *After tapering one end of the sanding strip, lock it in place with the wedge and wrap it around the drum.*



▲ ***Mark the Strip.*** *At the opposite end of the drum, mark where the strip goes off the end of the drum. Then trim along the line.*



▲ ***Locate the End Disk.*** *Rotate the end disk until the tapered end of the strip fits into the notch, then screw the disk in place.*

finish up with the

Belt Guard & Dust Hood

You're almost done with the thickness sander. All that's left to do is add a belt guard and dust hood, like the ones in the photo at right.

BELT GUARD

The size of the dust hood depends on the final size of the belt guard, so I built the guard first.

A Simple Door. Making the belt guard will go pretty quick. It's really nothing more than three pieces of ¾" MDF joined together in the shape of a "U" to wrap around the belt and pulley (Figure 9a).

To allow for the piano hinge used to mount the guard, the back is slightly narrower than the front. Then, to ensure the guard doesn't rub, it's raised slightly above the saw table (Figure 9). And a magnetic catch holds the guard closed, even if the dust hood is open.

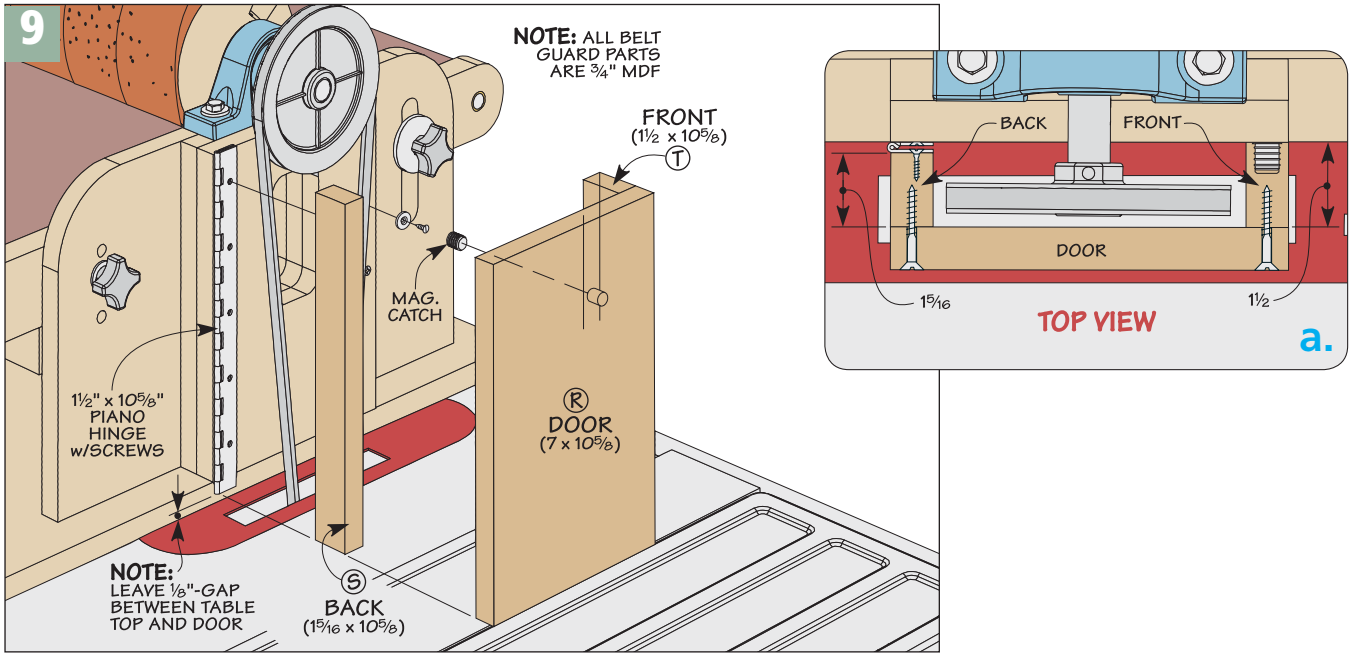
CONTROLLING THE DUST

A thickness sander can make a lot of dust in a hurry. So a dust collection hood is pretty much a necessity.

The dust hood doesn't require much in parts or time to make. It's just two ends connected by hardwood strips at the front and back that hold a clear, plastic cover in place (Figure 10, page 11). And a dust port at the top allows you to hook up the hose from your shop vacuum.

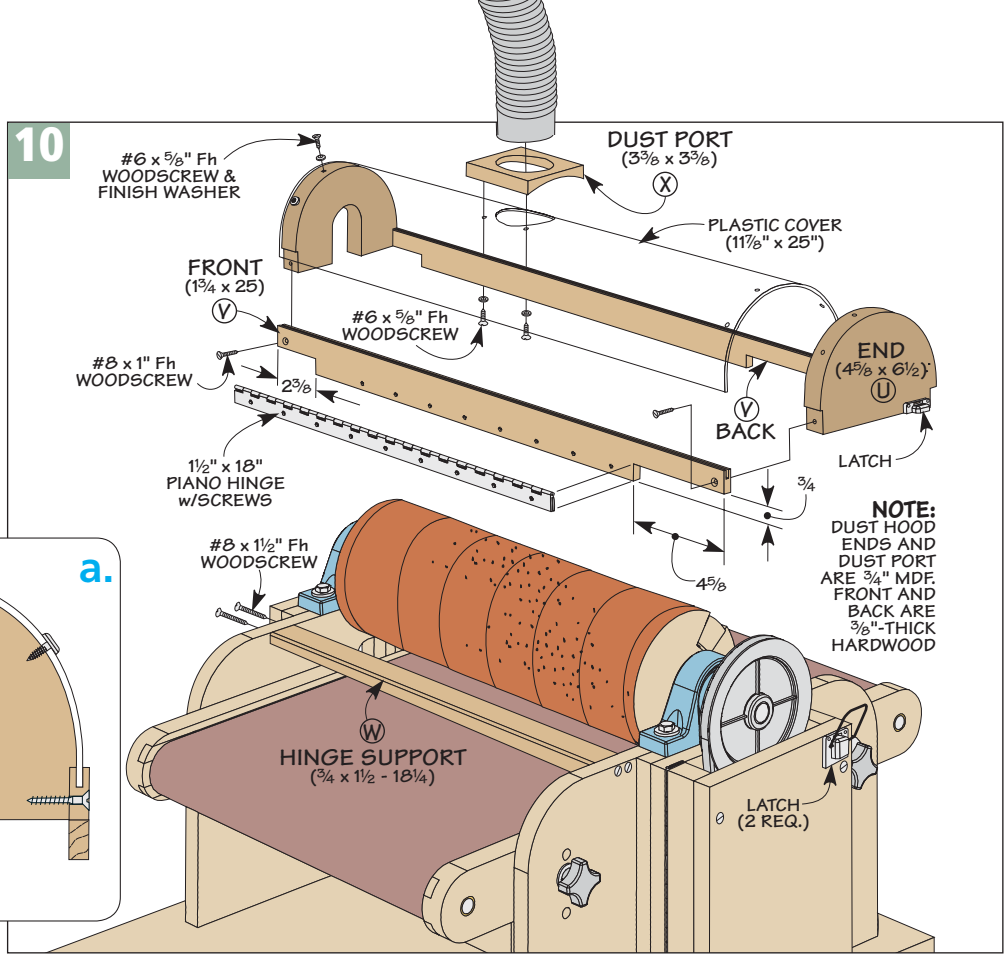
Make the Ends. I started by making the ends of the dust hood from ¾" MDF. After notching the ends to accept the front and back strips, you can round the ends and notch one of them to fit over the shaft of the drum (Figure 10).

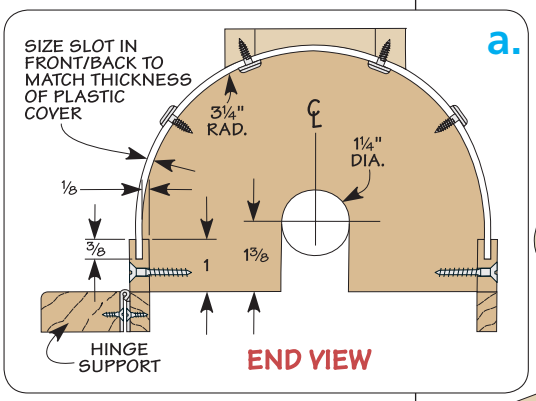
Assembly. The ends are connected by hardwood strips at the front and back. A narrow slot down the center of the strip provides a simple way to secure the edge of the plastic cover (Figure 10a). To allow for the dust port that's added next, cut a centered hole in the cover. Then, install the cover with a few screws and finish washers.



Installation. After sizing the dust port and screwing it to the cover, you're ready to attach the dust hood to the base using a piano hinge and a hinge support bar. Finally, add a pair of latches to hold the dust hood closed.

With all the work behind you, you're ready to put your thickness sander to work. For a few tips on setting up and using the sander, see below.





Sander Set Up: Step by Step

With the sander complete, you'll find using it is the easiest part of all.

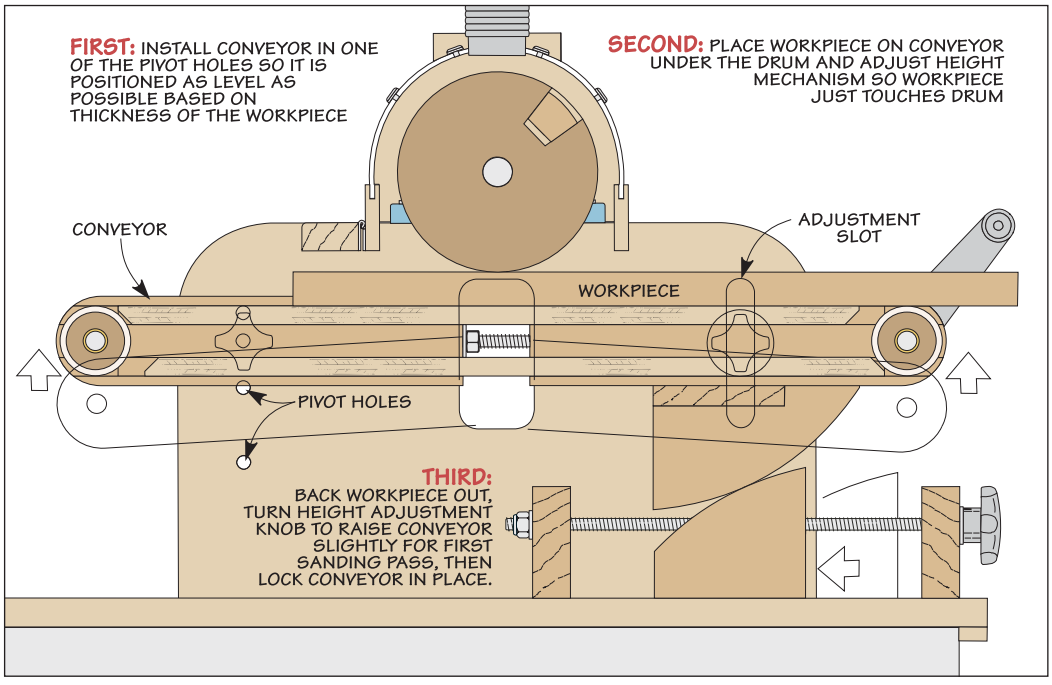
Sandpaper Grit. The first thing to do is install a strip of sandpaper suited to the task at hand. For taking a workpiece down in thickness, you can use 50- to 80-grit. For finish sanding, I like to use either 150- or 180-grit sandpaper.

Adjust the Conveyor. Once you have the sandpaper installed, the first step in using the sander is establishing the initial location of the conveyor. It should be as level as possible when the workpiece is just touching the drum (drawing at right). You'll need to adjust the rub block so it supports the conveyor in this position.

After backing out the workpiece, give the height adjustment knob a small turn to provide some initial sanding and then lock the conveyor in place.

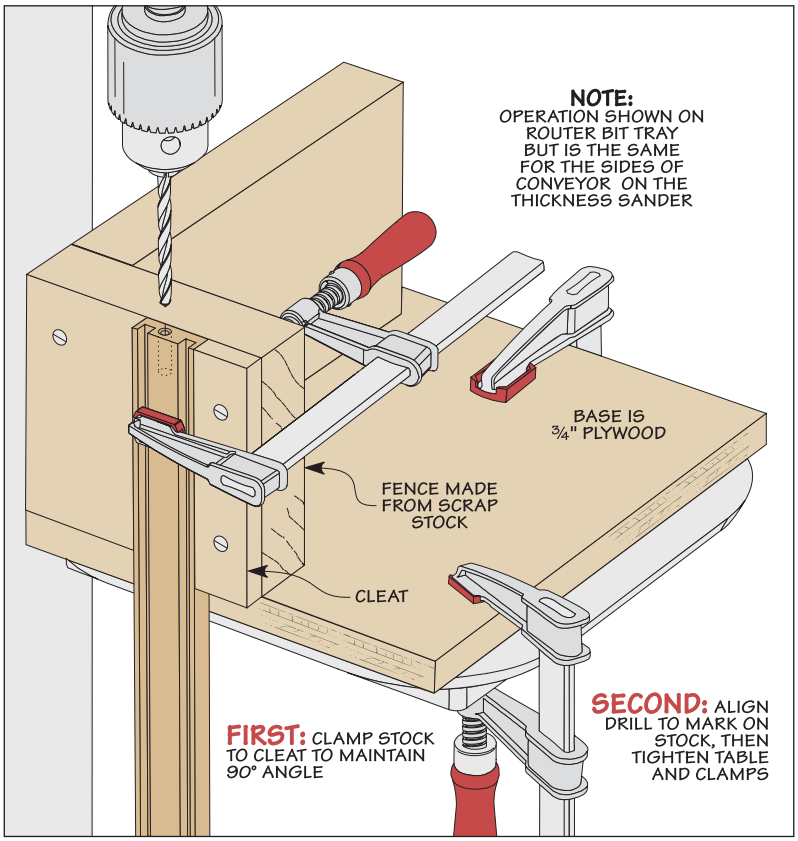
With your sander running, turn the handle at a constant rate to smoothly move the workpiece under the drum. For subsequent passes, simply raise the conveyor slightly and repeat the process.

Once you have one side flat and smooth, it's a good idea to flip the workpiece over between passes, just like you would when using a power planer. And to get the best results, it's always a good idea to clean the sanding drum often.



Shop Short Cuts

Vertical Drilling Jig



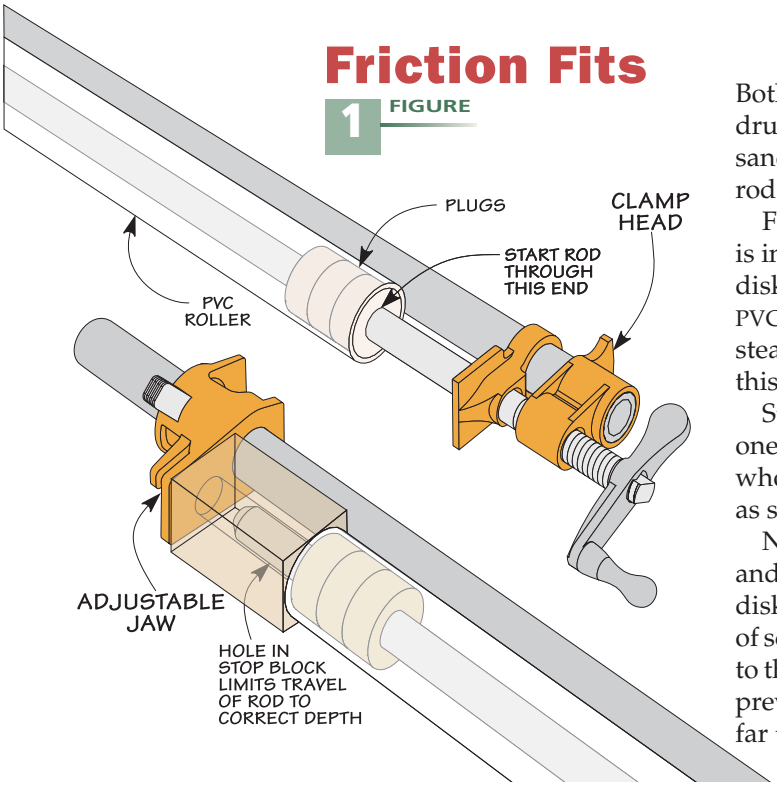
The thickness sander requires a drilling a hole in the end of a long workpiece. This can be a challenging task. You may be tempted to pull out the hand drill and "eyeball" the alignment. But there's an easier and more accurate way to do this operation.

You can build the jig from scrap wood and plywood. It's simply a fence with a support screwed to the back to keep it square. A cleat is attached to the fence to register the stock. The fence assembly is then screwed to a plywood base that clamps to the drill press table.

To use the jig, first loosen your table and swing it to the side. Then clamp the workpiece to the cleat and position the jig on the table. Swing the table back under the bit and adjust the alignment. When you've got it centered, just tighten up the table and clamps, then drill the hole.

Friction Fits

FIGURE 1

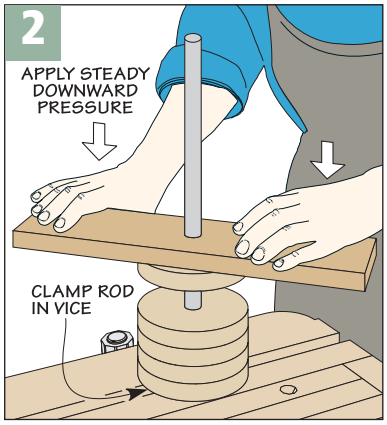


Both the roller assembly and the drum of the shop-built thickness sander require fitting a metal rod into MDF disks.

For the roller assembly, a rod is inserted through a set of three disks that are epoxied into a PVC roller. Good alignment and steady pressure are the keys to this operation.

Start by placing the rod into one end of the roller and put the whole assembly in a pipe clamp, as shown in Figure 1.

Now tighten the clamp slowly and press the rod through the disks and into position. A piece of scrap wood with a hole drilled to the depth of the final exposure prevents the rod from going too far through the assembly.



In the case of the disks for the sanding drum, begin by securing the rod in a vise. Then just drill a slightly oversized hole in a piece of wood. You can use this piece to press the disks onto the rod.

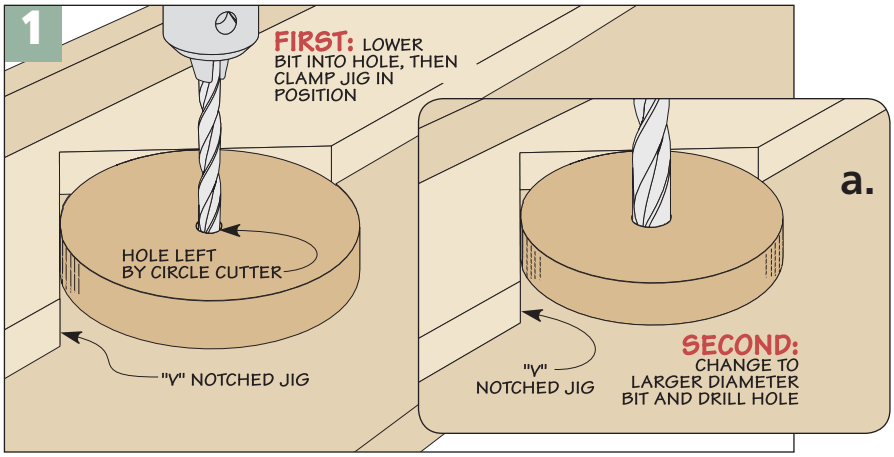
Supporting a Disk

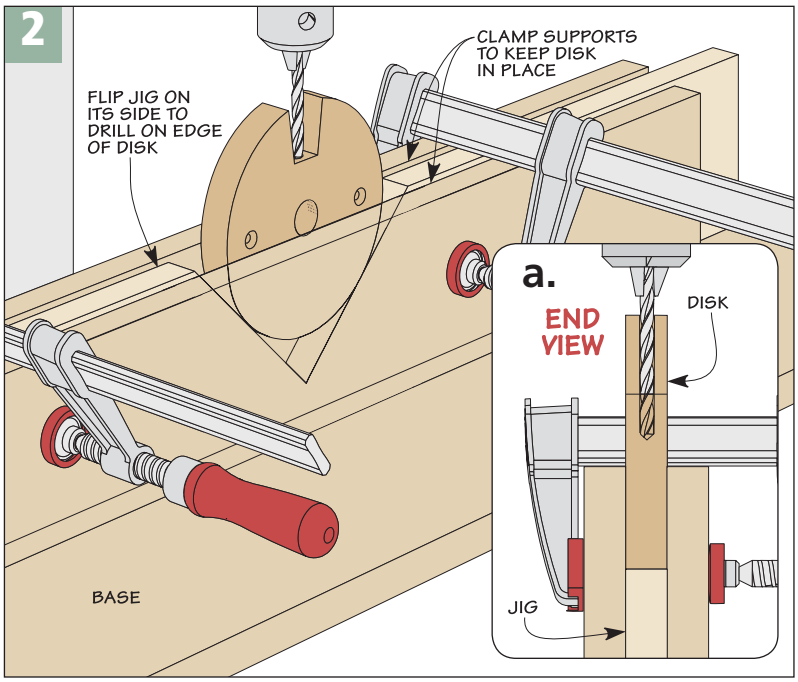
All of the MDF disks for the drum require additional drilling. First, the center hole left by the circle cutter must be enlarged to fit the metal rod. Then, the two end disks each need holes to hold the locking wedges.

Working with round workpieces presents a few problems. When lying flat, they don't offer a square reference edge to put against a fence. When held vertically they roll, making drilling difficult. The answer to both problems is the simple, notched auxiliary fence made from scrap MDF or plywood that you see in Figure 1.

The easiest way to enlarge the holes in the sides is to simply lay the disk flat on the table with a bit the same diameter as the hole in the chuck. Lower the bit into the disk and clamp the notched jig to the table. Now, you can put the larger diameter bit in the chuck and drill perfectly centered holes in each of the pieces (Figure 1a).

Drilling the hole in the two end disks involves a very similar operation — only it's done sideways, like you see in Figure 2. Turn the jig vertically and place another piece of scrap on the outside. Clamp them both to the fence and you'll easily be able to hold your disks in position in the notch.





top-notch results with MDF

The keys to success with this versatile material are a few simple techniques.

When it comes to choosing material for a shop project, MDF (Medium Density Fiberboard) is often at the top of my list. The thickness sander is a good example. A little bit of hardwood, some hardware, and half a sheet of MDF and you've got a real workhorse of a machine.

MDF is basically just a mixture of fine wood fibers and a binder that's pressed into plywood-like sheets. But this simple material has a lot of pluses. First off, since MDF has no "grain," it's very stable. The sheets are flat and will stay that way. And with carbide tools, it machines smoothly and easily. Topping it off, MDF is relatively inexpensive.

I take a pretty straightforward approach to assembling pieces of MDF into a project. I rely on simple rabbets and dadoes or butt joints along with glue and screws for a strong assembly. But there are a few simple tricks you should know to get the best results.

GLUING MDF

When I'm assembling an MDF project, a bottle of yellow wood glue is always close at hand. Since MDF is made from wood fibers, it will form a relatively strong glue bond. A big bonus is that, similar to plywood, MDF offers good gluing surface on the edges and the faces.

Edges and Faces. When you start working with MDF, you'll quickly notice a difference between the look and feel of the outside faces and the inner core and cut edges. And this is a pretty important point when it comes to gluing.

You'll find that the outside faces of MDF are smooth, hard, and very dense. This makes face to face gluing an easy job. You'll get a glue bond between the pieces that's stronger than the MDF itself.

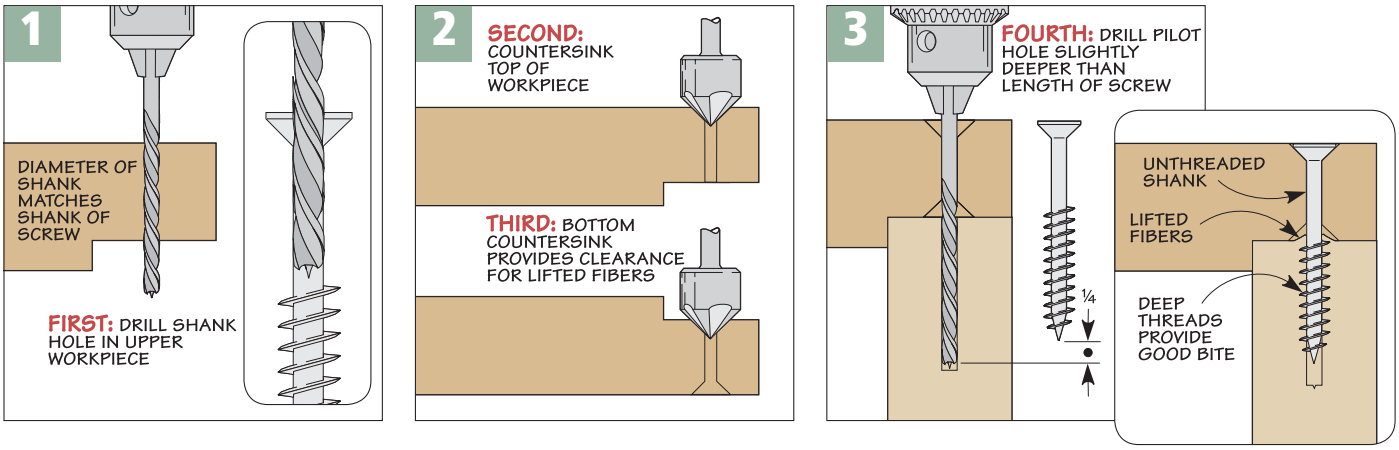
But you'll find that the edges and the core of MDF are rougher, "flakier," and more porous. What this means is that applying glue to the edge surfaces of MDF can be like pouring water onto sand. If you just go through your normal gluing routine, you can end up with a joint that's "glue starved."

Glue on Glue. Fortunately, the fix to this problem is easy. The

A First Coat. *Start by applying a bead of glue to the surface. Then spread it with your finger.*

Glue Starved. *After snugly assembling the two pieces, pull them apart. You'll find that most of the glue has soaked in.*

Add More Glue. *So now, apply a second bead of glue, spread it out and assemble the joint for good.*



photos at the bottom of page 14 show the technique I like to use. Basically, what you want to do is "double glue" the joint. The first layer of glue soaks in and helps seal the surface. The second application can then spread through the joint and create a solid bond.

And don't be stingy with the glue. I like to see a fair amount of squeezeout (main photo). A strong joint is worth the cleanup.

INSTALLING SCREWS

Adding a few screws to an MDF joint can eliminate any doubts about strength and can allow you to leave the clamps on the rack.

The Two Keys. Although MDF is a strong, dense material, the "fibrous" structure can lead to problems when installing screws. One weakness is that a screw installed into the edge of MDF can cause it to split through its thickness. The result is a screw with no "bite"and a bulge on the surface.

The first key to avoiding this headache is a pilot hole of the right diameter and drilled to the right depth. The drawings above explain how to do this part of the job.

The second key goes hand in hand with the first — the right screw. Standard, tapered wood screws can split MDF. And their shallow threads won't hold well. A straight-shanked screw, like that shown in the right margin, is my favorite for MDF (see Sources).

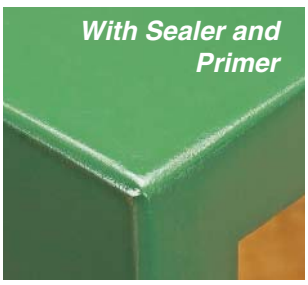
When these screws are installed in a properly sized pilot hole, there is very little chance of splitting. The unthreaded shank section allows the two pieces to draw together snugly while the deep, widely spaced threads hold tight.

Final Tips. There are two more things to mention. As insurance against splitting, try to keep your screws one inch or more from the ends. And when you drive the screws, be careful to not overtighten them and strip the threads.

Once you have the project solidly assembled, you'll want to give it some protection. For a few pointers, see below.

▲ ***Screws for MDF.*** *These straight-shanked screws can be used with a finish washer for a cleaner look.*

Painting: A Smooth Finish



It's always a good idea to put a finish on MDF projects. Sometimes this is nothing more than a coat of wiping varnish to protect against grime and moisture. But for some projects, like the drum sander, I prefer the extra durability of paint.

The smooth, flat surfaces of MDF make it ideal for spraying on paint. You won't need to do much in the way of surface preparation to get good results. But the more porous edges are a different story.

Just like glue, the edges of MDF readily absorb paint. What you can end up with is a noticeable contrast between the smooth faces and rough edges (top left photo).

▲ ***Edge Sealer.*** *Drywall joint compound makes a quick, easy sealer for the porous edges.*

To solve this problem, I take a couple of simple steps. First, I seal all the exposed edges with drywall joint compound, as shown in the photo above. It looks like a mess, but it actually goes on easily with a putty knife or even your finger. And when dry, the excess sands off with a minimum of effort.

Then, before applying the topcoat, I seal everything with a coat of primer (photo above). The topcoat will then build quickly to a smooth durable, film (lower left photo).