



# Pattern Sanding Guides 556238

## INTRODUCTION:

This set of Pattern Sanding Guides will allow you to sand duplicate project components by following a shop-made pattern. The five different sized Guides are used with the five different diameters Sanding Drums. The Guides can be used with coarse, medium or fine abrasive sleeves.

The Drum Sanding Guides are used with Drum Sanders to smooth the edge after a project component is rough-cut to shape. To accomplish this, a shop-made pattern is made to the exact size and profile needed for the component. Use screws, double-stick tape or clamps to attach the project component to your shop made pattern.

Each Guide is larger than the drum sander. As you work against the drum, the pattern will contact the Guide at only one tangent point. This line contact, of the work against the pattern, keeps the drum from cutting deeper into your workpiece, than the guide and the pattern will allow. Each Guide is slightly larger than the corresponding drum so the wood can only touch the drum at one point on the drum. This limits the drum's depth of cut to the profile of the pattern. As the pattern with the stock moves around the larger profile guide, the wood moves away from the drum, preventing over-sanding.

## **TOOLS REQUIRED:**

- Small Square
- 5/32" Allen Wrench



## **PARTS LIST:**

521665	T-Bolt .....	1
521662	Knob .....	1
521711	Fender Washer .....	1
522888	Small Guide .....	1
522889	Medium Guide .....	1
522890	Large Guide .....	1
854643	Owners Manual .....	1

## Safety

### **WARNING**

- ✓ **Read, Understand and Follow all instruction in the Mark V manuals before using this accessory.**
- ✓ **Make sure the machine is turned off and unplugged before installing the Drum Sander and Pattern Sanding Guides.**
- ✓ **Always use proper Safety Equipment and Procedures when operating machines.**
- ✓ **Be sure to tighten all setscrews securely before using.**

## DESIGNING THE PATTERN

In order to duplicate or pattern sand project components, you must first make a pattern. When designing a pattern you must consider many questions. These questions will be asked and answered in the following section.

### *How many parts will I make?*

First, question to answer is how many parts are you going to duplicate?

- If only a few components, like legs of a single table, than you can use one of the legs as a pattern.
- If you are going to mass-produce projects for resale or multiple gifts, your pattern will be more elaborate. To make-time and speed the sanding process you will want to use the Oscillating Drum Sander Attachment.

### *What Material and Thickness will I use to Make the Pattern?*

These patterns can be made from a variety of materials. This can vary from the actual project component, to plywood, to plastic laminated particleboard to solid plastic sheet.

- The pattern must be  $\frac{3}{4}$ " thick more. This  $\frac{3}{4}$ " minimum thickness is necessary to position the stock above the bottom of the sanding drum and allow for the hardware that protrudes from below the smaller sanding drums.
- If you are only making a single piece of furniture with several identical parts, like table legs, the pattern can be one of these parts or a  $\frac{3}{4}$ " think template. After you cut this component to size and shape, it must be carefully sanded to size with smooth, fair curves. Be sure to remove all

saw marks and any other defect. Any bump or bobble in the pattern will be copied from the pattern to the next project component.

- On the other hand, if you are mass-producing projects for resale or gifts you should make the pattern from a durable material such as cabinet grade plywood or plastic laminated particleboard. Again, the pattern must be a minimum of  $\frac{3}{4}$ " thick.

### NOTE

**Some believe, for mass-production, a 1-1/2" thick pattern is best because it lets you use the entire sanding sleeve. Using the bottom half of the sleeve until it wears out then turning it over.**

**A 1-1/2" thick pattern also allows you to use these Pattern Sanding Guides with the Oscillating Drum Sanding Attachment for faster stock removal and a smoother surface after sanding. See Figures 1A, 1B, and 1C below.**



### *How will I Attach the Workpiece to the Pattern?*

Next you need to decide how to hold the workpiece to the pattern. This also depends on how many parts you are duplicating as well as the size and shape of the part you will be sanding.

- If you are using a project component from a single piece of furniture as a pattern, simple double-stick tape works well. You can also use the plywood pattern with double-stick tape and the project components. This tape holds wood parts together as long as they are clean and dust free, see figure 2. Double stick tape can be slow to remove. It also must be replaced with each part.



**Figure 2**

- If you are mass-producing project components for resale or gifts, then a more elaborate pattern is called for. The quantity, the size, the shape and whether both sides of the component will be seen, will all determine how you will hold the workpiece to the pattern. For example:

- If it is long and narrow with cuts on only the top, like a fence picket, the work pieces can be held in an open

ended box with a clamping bar and thumb screws, see Figure 3.



**Figure 3**

- If the part is only sawn to shape on a long edge, it can be positioned against wood blocks or 1/2" dowels and held down to the pattern with toggle clamps, as shown in Figure 4.



**Figure 4**

- If the component is only seen from one side and needs to be sanded on all sides, it can be held to the pattern with wood screws, see Figure 5.



**Figure 5**

## ASSEMBLY & INSTALLATION of the PATTERN SANDING GUIDES

These Pattern Sanding Guides mount directly to the main Worktable of your Mark-V models 505, 510, 520 or the main Worktable of the new Mark-7. Before installing a guide to the table you must consider the curved profile of the project component. If the sawn profiles are smooth and gradual, then the largest pattern and largest drum sander should be installed and used. If, on the other hand, the sawn profile of the part to be sanded is complex with tight curves, the smallest sanding drum and pattern should be used.

### NOTE

**The larger the sanding drum, the faster it will remove stock. The trade-off with the larger sanding drum is, you can not get into a tight radius feature, but you remove stock quicker and produce a smoother surface on a long gradual curve. The smaller sanding drums can get into small radius profiles but stock removal is slower and you will not get as smooth a surface on a long gradual curve. Because of this, always use the largest possible Pattern Sanding Guide and sanding drum.**

To mount the Pattern Sanding Guides to the worktable of your machine, follow the steps below:

### NOTE

**Before you use the Pattern Sanding Guides for the first time you will need to remove the protective covering on the clear plastic guide. If you find this difficult, gently heat the Guide with a blow dryer to warm the protective material.**

1. Set the machine in the vertical drill press position. Be sure the Base Lock is securely tightened. Install the drum sanding table insert in the main Worktable.
2. Slip the T-Bolt in the rear Miter Gauge T-slot. This is the T-slot closest to the vertical Way Tubes. Position the T-Bolt centered behind the round Table Insert opening, as shown in Figure 6.



Figure 6

3. Place Pattern Sanding Guide of your choosing, over the threaded stud of the T-Bolt, as shown in Figure 7.



Figure 7

4. Slip the Fender Washer over the threaded stud and set it on the top surface of the Pattern Sanding Guide, see Figure 8.



Figure 8

5. Thread the knob on the T-Bolt Stud, but do not tighten the knob at this time, as shown in Figure 9.



Figure 9

### ALIGNMENT & POSITIONING

1. Install the sanding drum. Install the appropriate sanding drum properly either directly on the Quill Spindle or in the Drill Chuck.
2. Extend the Quill. Position the bottom end of the sanding drum 1/8" to 1/16" from the Pattern Sanding Guide. Secure the Quill lock.
3. Align the Pattern Sanding Guide to the Sanding Drum. Use a small square, the head of a combination square or even a square block of wood to position the Pattern Sanding Guide. The Guide must be positioned tangent to and in line with the front of the sanding drum. see Figure 10.



Figure 10

4. Securely tighten the Guide Lock Knob to lock the guide in position.

### OPERATIONS

When sawing the part profile on the Bandsaw or Scroll Saw, stay close to the pattern line. The closer to the line you cut, the less stock needs to be sanded away for a smooth surface and to get to the pattern. For best results, first use a medium grit sanding sleeve. Then change to a fine grit sleeve for the smoothest surface.

1. Mount the workpiece to the pattern.
2. Plug in the machine, turn it on and set the speed. The speed of the machine for drum sanding can be between 1050-2050 rpm (Settings D to K on the speed dial). This speed setting depends on the material being sanded, the grit of the sanding sleeve and the diameter of the drum.

### Generally...

- \* Softwood can be sanded at a faster speed than hardwood. Hardwood has a tendency to burn at higher speeds.
- \* Plastic or non-ferrous metals must be sanded at slower speeds than wood. Plastic and non-ferrous metals will melt and load the sanding sleeve at speeds that are too fast.

- \* The finer the abrasive, the slower the speed. The idea here is to have the same amount of abrasive grit cutting the material, no matter what the grit or the speed is. So with the finer grit, there are more abrasive particles, so the finer grit must move at a slower speed to equal a coarser grit.
- \* The smaller the drum the faster the speed. This has to do with the surface speed of the drum. All sanding drums cut best at about the same surface speed. Because a smaller drum has less surface, it must turn faster to equal the surface speed of a larger sanding drum.

### NOTE

**Use an abrasive cleaning stick (753523) often to keep the drum from loading, clogging and burning the wood.**

3. Place the workpiece and pattern on the worktable. Feed the stock against the rotation of the sanding drum. As you get close to the Pattern Sanding Guide, you will notice that you have less surface of the drum to work with. Eventually, as the sanding drum cuts away the wood and the stock matches the pattern, you will no longer remove any stock because the pattern will contact the Pattern Sanding Guide.
4. Sand with multiple grit sleeves, coarse, for fast stock removal, then finer sleeves for a smoother surface. You must leave some stock on the workpiece to be removed by the finer sleeve. Do this by positioning the Guide 1/32" in front of the drum, see Figure 11. After sanding with the coarse sleeve, align the Guide to the sanding drum as described in Step-1 above for sanding with the fine sleeve.



Figure 11

5. There may be times where the shape of a part makes it difficult to get to a portion of the profile from the front. At these times align the Pattern Sanding Guide to either side, rather than the front of the drum, as shown in figure 12.



Figure 12

### NOTE

**If you have any questions about your Shopsmith 6" Drum Sander, please call our Customer Service Department TOLL-FREE at 1-800-762-7555, drop us an e-mail at [techsupport@shopsmith.com](mailto:techsupport@shopsmith.com), visit our website at [www.shopsmith.com](http://www.shopsmith.com).**

