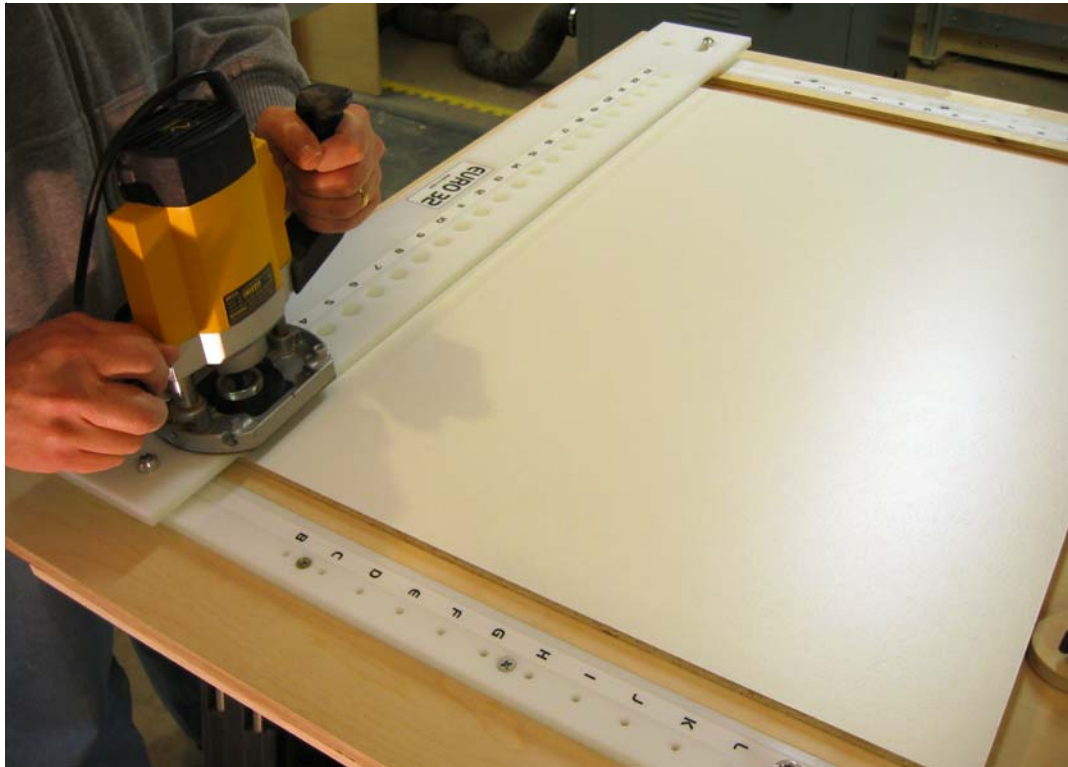


EURO 32™

HOLE-BORING SYSTEM

CONDENSED OWNERS MANUAL



***Simplifying Hole Boring
For Frameless Cabinets!™***

www.euro32products.com

Introduction to the 32mm System

Frameless cabinetry also known as European 32mm system cabinetry was developed after World War II in response to a lack of wood supplies and a great demand for cabinetry required in the rebuilding of Europe. The 32mm system is based on columns of 5mm diameter holes that are bored into the cabinet side panels which are spaced 32 mm center to center (CTC) apart from each other. The system holes are used to mount a wide variety of European hardware including door hinges, drawer guides (runners), shelf pins and other hardware.

Even though you hear the term “European System” used in European frameless cabinet construction there seems to be a difference of opinion as to what the “system” should be. This is especially true when it comes to where to start the first set of holes from the bottom edge of the cabinet side panels as shown in Figure 1 and whether to use balanced or unbalanced side panels shown in Figure 2. In researching the design for the Euro 32 Hole-Boring System we found that most of the suggested starting hole positions were dictated by the manufacturer of the hardware as well as personal preferences. Figure 3 shows some of the variations of base cabinet layouts that are recommended by Blum, KISS II (Grass Hardware), Danny Proulx (author of ‘Building Frameless Kitchen Cabinets’) and Jim Tolpin (author of ‘Working at Wood Working’). We are not here to debate which is correct as each has valid reasons as to why they start the first hole where they do. In addition, you’ll find that there are valid arguments for using balanced or unbalanced side panels. There are a number of books and multiple web sites that address frameless cabinet design and construction that can guide you to making an informed decision which to use (for more information see page 20). No matter which methodology you decide to use, the Euro 32 Hole-Boring System can be used to bore all, or specific, hardware mounting holes, quickly and accurately.

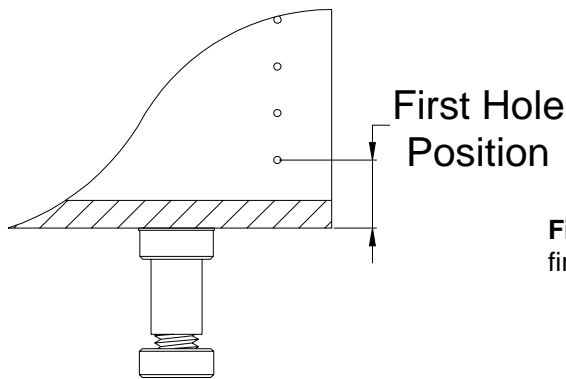


Figure 1 Some commonly used dimensions for the first hole position are 35, 40, 46.5 and 64 mm.

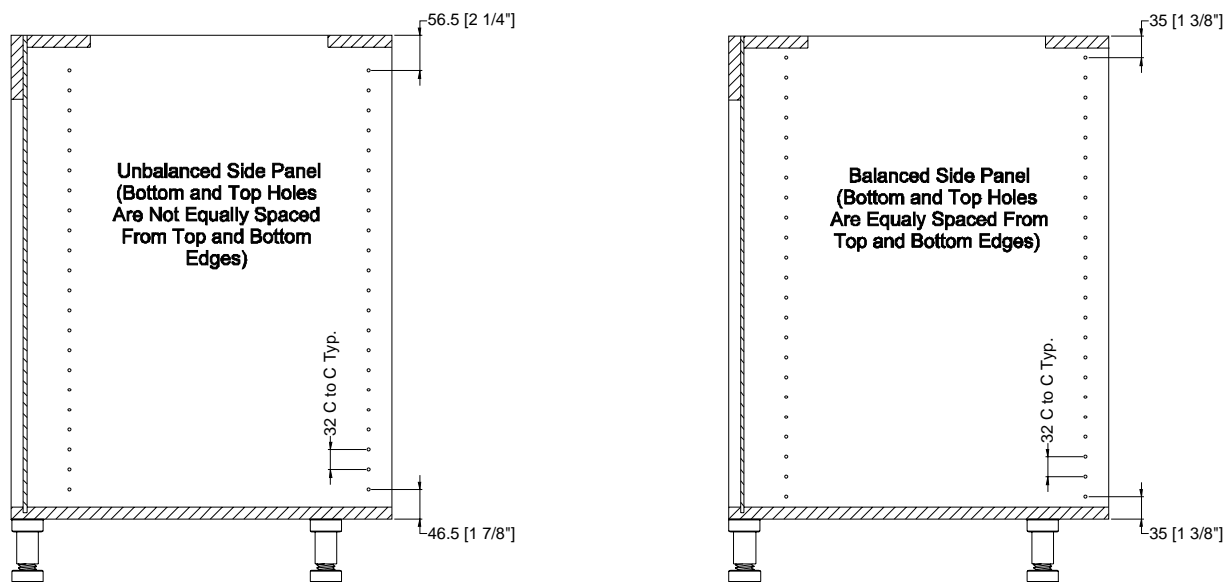
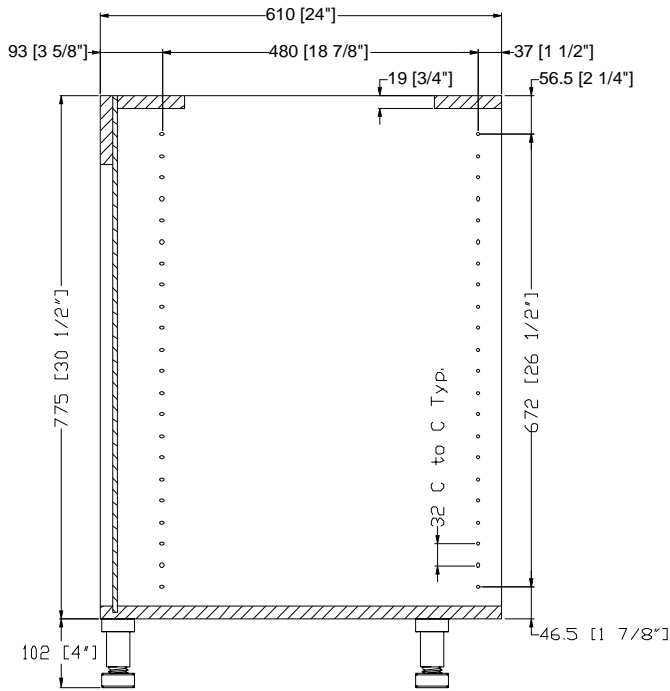
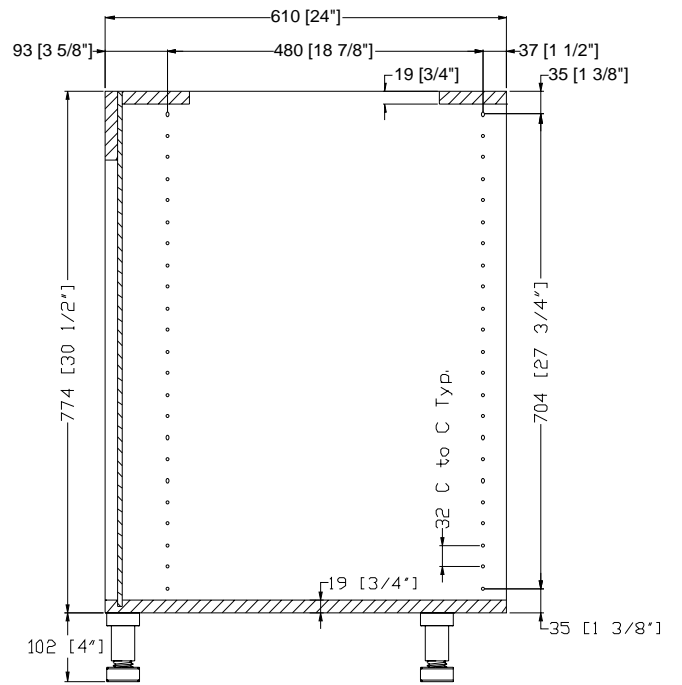


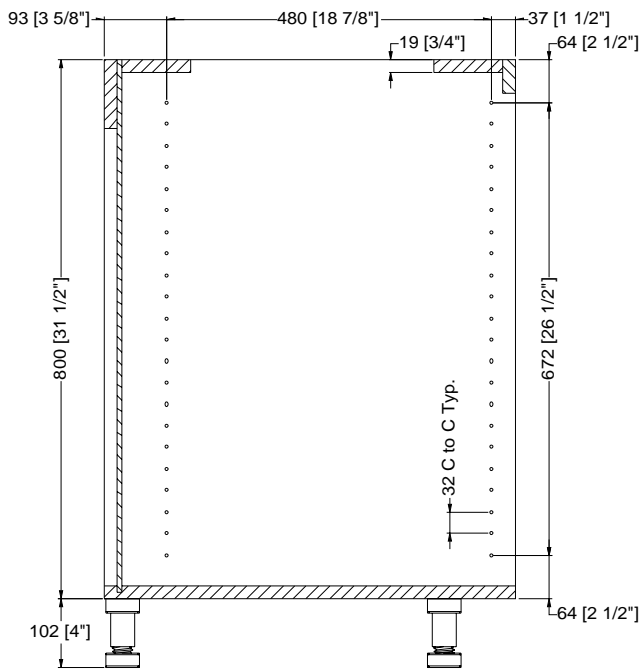
Figure 2



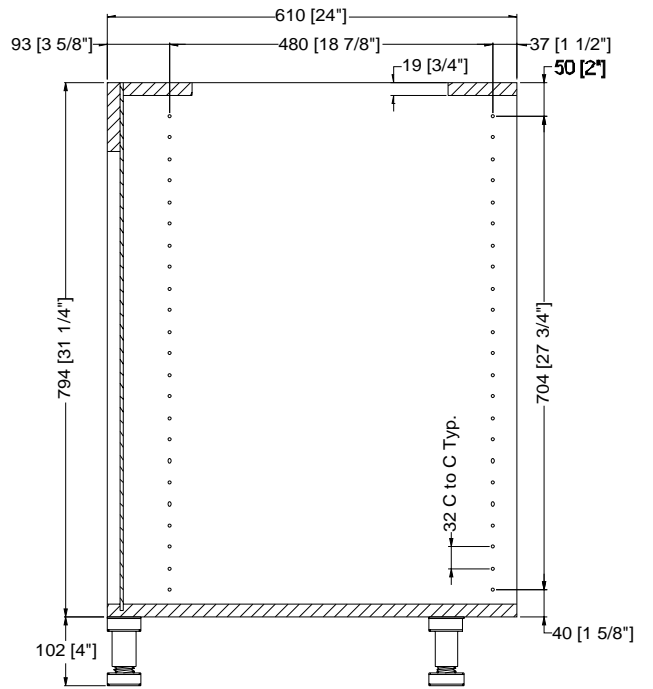
BLUM
(22 HOLES UNBALANCED PANELS)



KISS II System
(23 HOLES BALANCED PANELS)



Danny Proulx
(22 HOLES BALANCED PANELS)



Jim Tolpin
(23 HOLES UNBALANCED PANELS)

Figure 3

Note: All dimensions are in millimeters (mm) the inch dimensions in [brackets] are for reference only and should not be used for constructing cabinets.

OVERLAY vs INSET

The initial set up of the EURO 32 Hole-Boring System is based on OVERLAY cabinet door and drawer design. Overlay cabinets require that the system holes be placed 37 mm in from the front edge as shown in Figure 18.

If you are building cabinets with INSET doors and drawers the front system holes must be inset in further from the front edge to allow for the door and drawers to be flush with the front edges of the cabinet. The most common inset dimension is 57 mm (38 mm+ 19 mm), which is based on drawers and doors that are 19 mm (3/4") thick. Note: If you're using drawer & door fronts are thicker than 19mm (3/4") then add shims between the guide-rails and the front stop-rail contact points, which will increase the distance of the hole setback from the front edge of the work-piece.

The EURO 32 Hole-Boring System is designed to easily be adjusted to 57 mm by simply removing the front stop-rail rotating it 180° as shown in Figure 19 and re-secure it to the work surface following steps 8 & 9 on page 8.

Figure 18

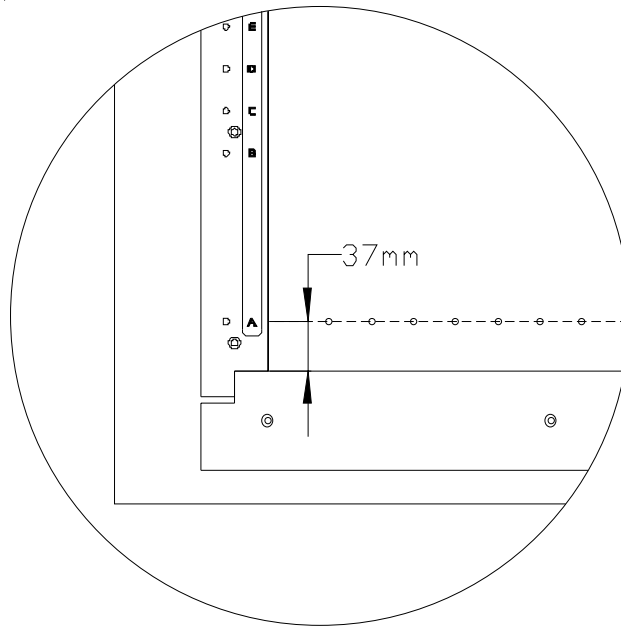
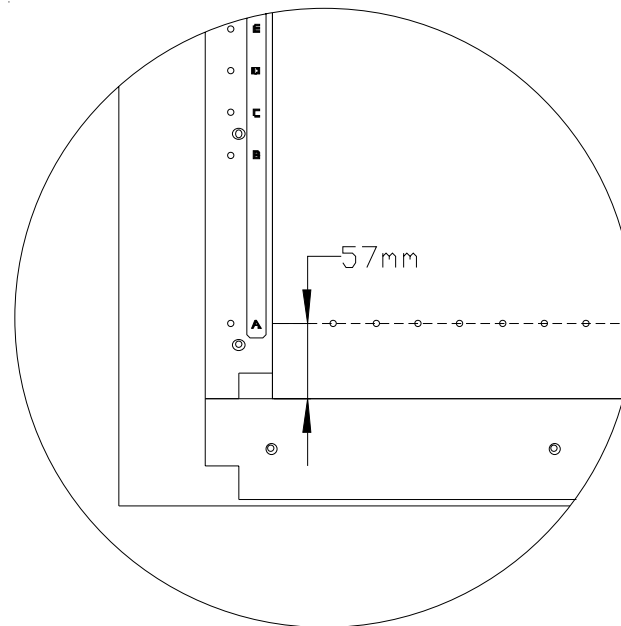


Figure 19



Using The Euro 32 Hole-Boring Jig:

WARNING! BEFORE PROCEEDING ANY FURTHER PLEASE BE SURE TO READ AND FULLY UNDERSTAND YOUR ROUTER'S OWNERS MANUAL. FAILURE TO COMPLETELY UNDERSTAND HOW TO USE YOUR ROUTER SAFELY COULD RESULT IN PERSONAL INJURY, CAUSE DAMAGE TO ROUTER BITS, THE HOLE-BORING TEMPLAT OR THE ROUTER ITSELF.

LEFT SIDE PANEL HOLE BORING:

The following steps covers the hole boring of "unbalanced" base cabinet side panels that follow the Blum system hole pattern. Notice the use of a 17.5 mm wide spacer piece, as shown in Figure 26, between the right guide-rail and the bottom edge of the work-piece. This is to adjust the position of the first hole to be 46.5 mm up from the bottom edge of the cabinet side. For more information on using spacers, please refer to page 4.

Note: Set the Euro 32 Hole-Boring System on a workbench, or a pair of sawhorses so that you have access to both the front and rear of the system.

1. Cut your cabinet side panels to size and apply the edge banding of choice to desired edges and trim off excess.
2. Place the "left" side panel (work-piece) into the Euro 32 Hole Boring System so that the bottom edge is placed against the "right" guide-rail and the front edge (banded edge) is tightly against the front stop-rail as shown in Figure 26.
3. Clamp the work-piece in place using one of the methods described on page 12.
4. Place the front guide-pins in position "A" on both the right and left guide-rails and tighten them in place by hand. **WARNING! HAND TIGHTEN THE GUIDE-PINS IN PLACE - DO NOT USE A HEX HEAD WRENCH TO TIGHTEN! OVER TIGHTENING CAN CAUSE DAMAGE TO THE GUIDE-RAIL THREADS.** Position the rear guide-pins in the corresponding holes that is dictated by the length of the drawer guide being used. For this example we are using a standard 22" drawer guide, which would use the hole position labeled "M" (480 mm from hole position "A"). Insert the rear guide-pins in both guide-rails at position "M".

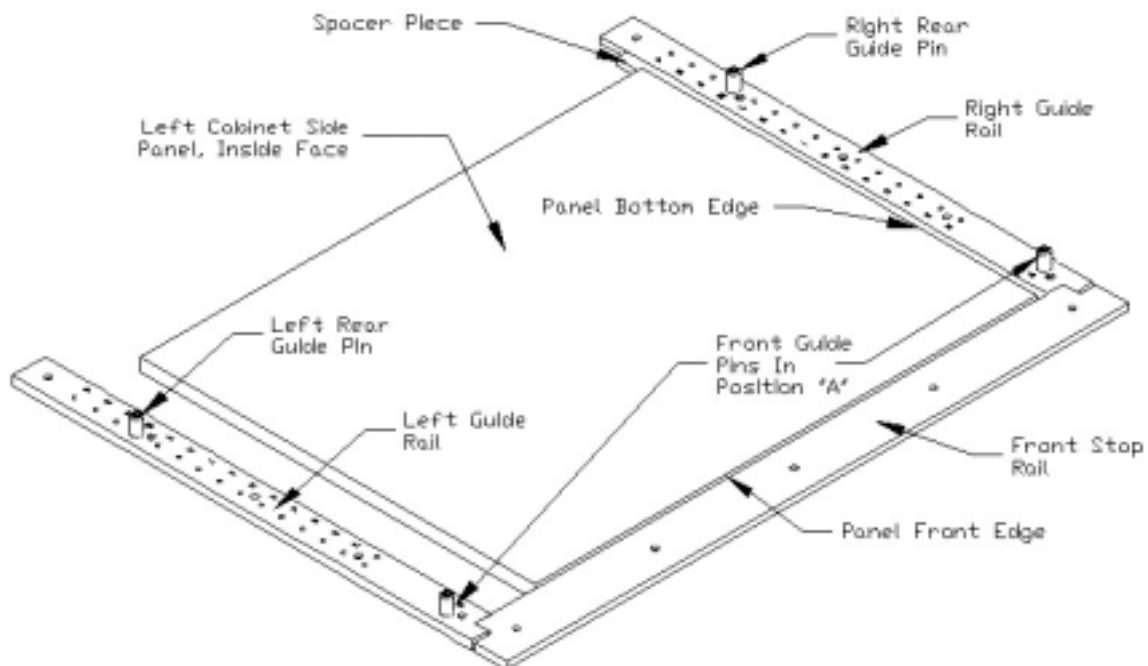


Figure 26

5. Place the hole-boring template with the guide-hole over the right guide-pin in position "A" and the slotted hole over the left guide-pin in position "A" as shown in Figure 27.
6. Take your plunge router and insert a 5/8" guide bushing and a 5 mm hole boring bit and adjust the depth (keep in mind thickness of the template is 1/2"). **NOTE: Make sure that the guide bushing is concentric with the arbor of the router. If it is not concentric the holes will not be positioned properly on the work-piece. Consult your routers owners manual on adjusting the concentricity of the bushing.**
7. Position the router's guide bushing in the hole labeled "1" as shown in Figure 28, turn on the router and plunge the bit into the work-piece and then raise the router back into its upper most position. **WARNING! FAILURE TO BRING THE ROUTER TO ITS UPPER MOST POSITION BEFORE MOVING ONTO THE NEXT HOLE COULD CAUSE DAMAGE TO THE TEMPLATE AND POSSIBLY TO YOURSELF.**
8. Pick up the router and position it into the next hole position. Repeat the preceding steps until all the holes that you require have been bored into the cabinet side work piece.

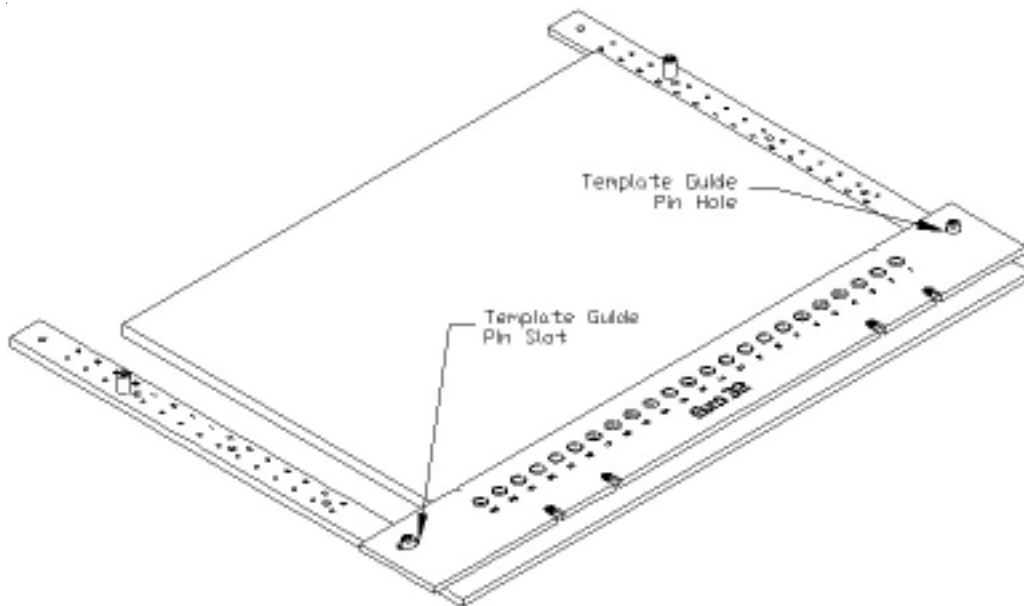


Figure 27

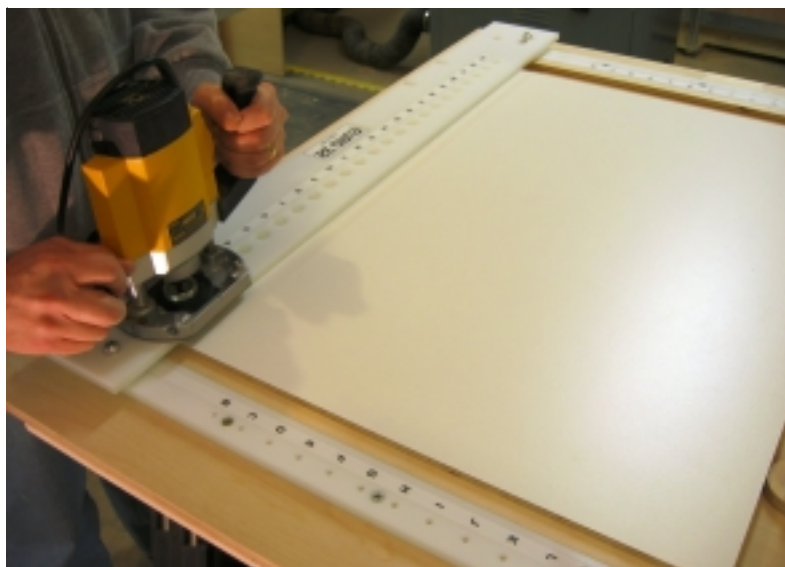


Figure 28

9. Lift the hole-boring template off the guide-pins in position "A" and move the template straight back to the guide-pins at the rear of the guide-rails that are in position "M" as shown in Figure 29. Repeat the hole boring process for the rear column of holes as shown in Figure 30. The completed panel is shown in Figure 31 on the following page.

WARNING! DO NOT OVER EXTEND YOURSELF! If you cannot reach the rear holes comfortably from the front of the system as shown in Figure 30, move around to the rear of the system and proceed to bore the rear system holes while maintaining proper footing.

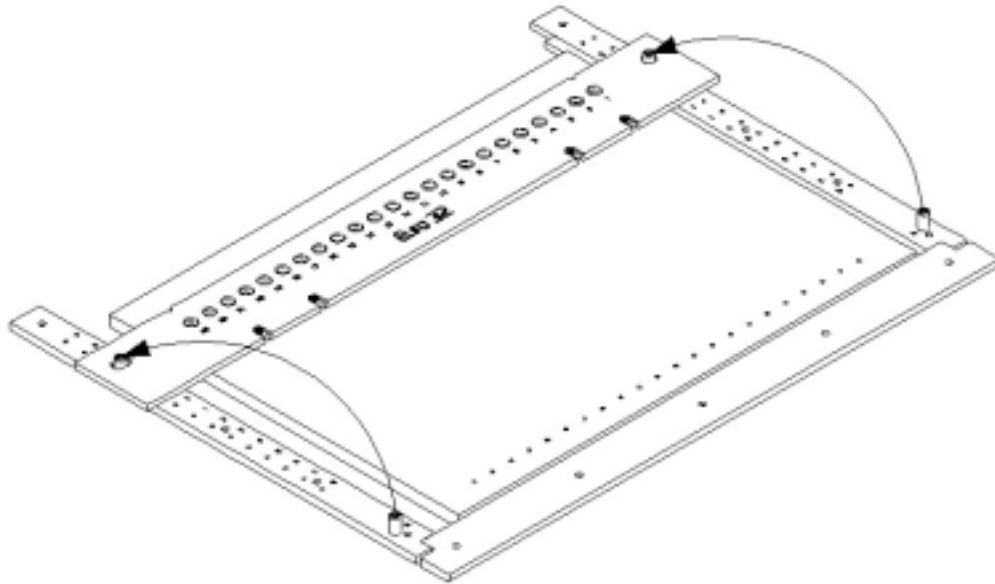


Figure 29



Figure 30

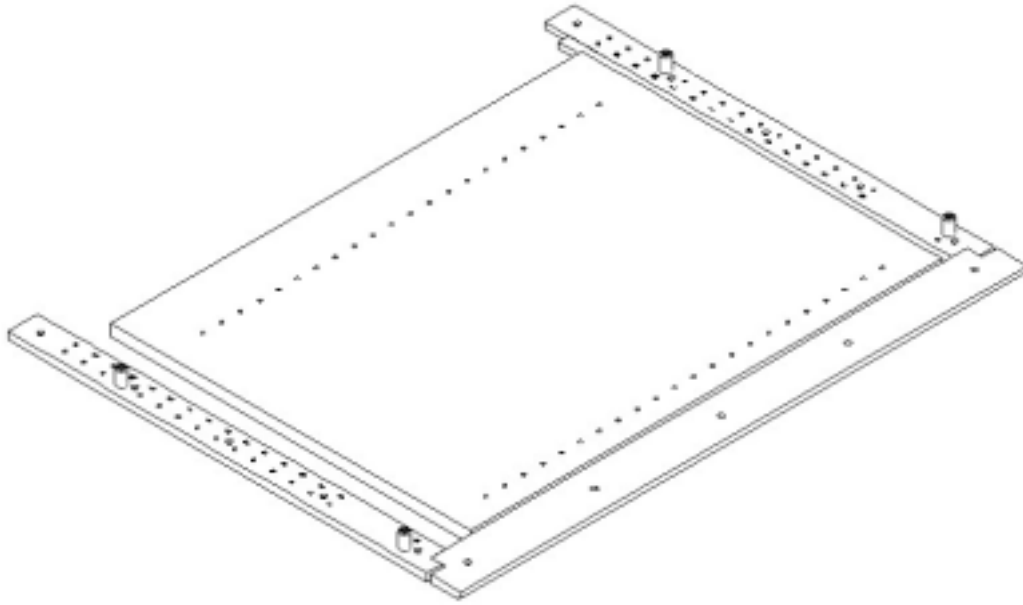


Figure 31

RIGHT SIDE PANEL HOLE-BORING:

1. To bore the holes in the "right" cabinet side panel (work-piece) place the bottom edge of the work-piece against the "left" guide-rail and the front (edge banded) edge against the front stop-rail as shown in Figure 32.

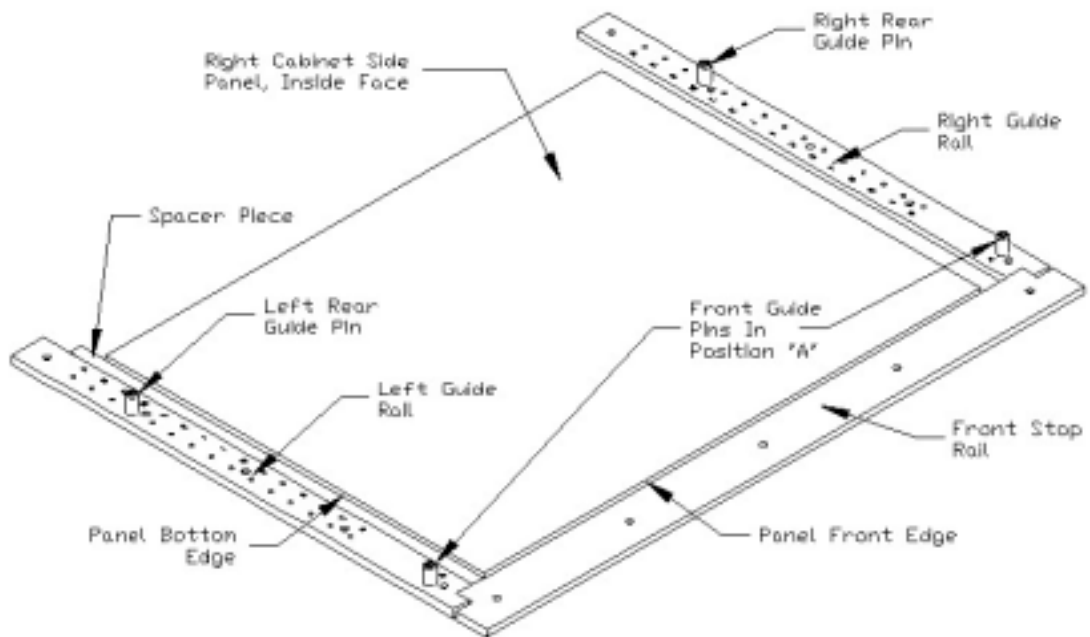


Figure 32

2. Rotate the hole-boring template 180° around so that the guide-pin hole is on the left and position it onto the guide-pin located in position “A” of the left guide-rail and the slotted hole is positioned onto the guide-pin located in position “A” on the right-guide rail as shown in Figure 33.

3. Proceed to bore the system holes by repeating steps 3-9 on page 15.

Once both the right and left cabinet side panels have been completed the cabinet can be assembled and hardware installed. **TIP: It is easier to install the hardware (especially drawer guides) onto the side panels before doing the final assembly of the cabinet.**

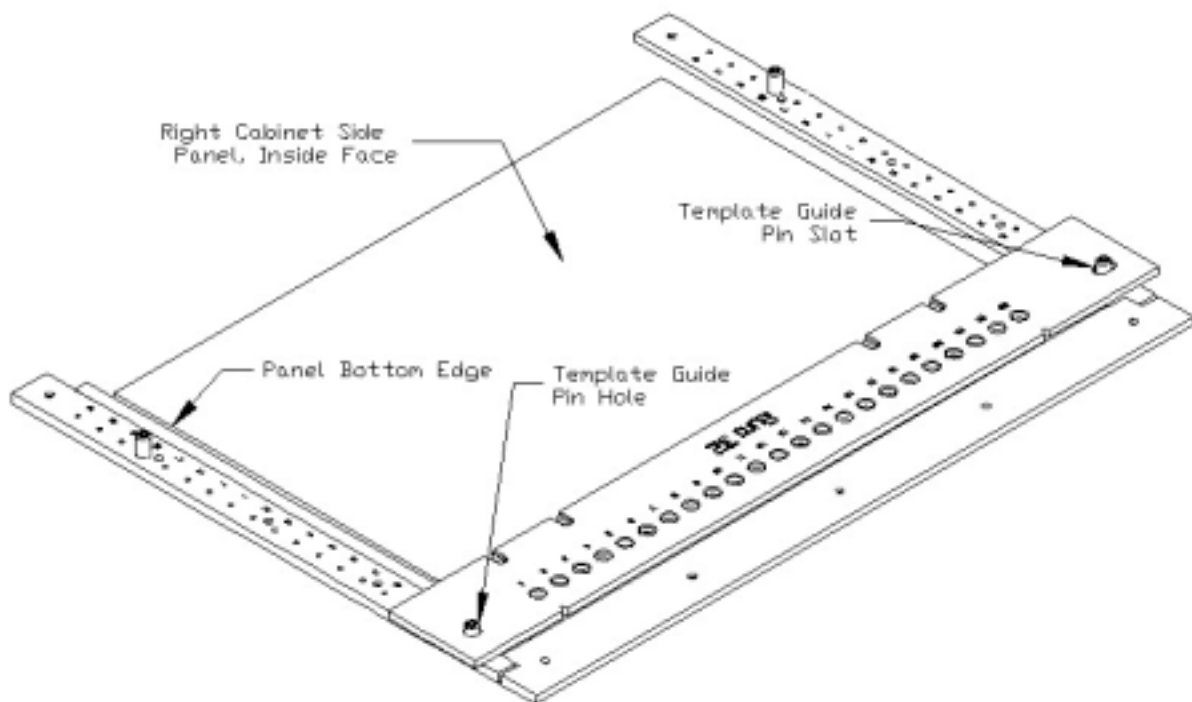


Figure 33

Note: Although we've only covered boring the system holes in the base cabinet side panels the same process is used to bore holes in the upper cabinet side panels. The only differences are the width of the panels and the placement of the rear hole, which is typically 196mm or hole position “D”. Additional cabinet layouts can be found starting on page 38.

ASSEMBLY:

1. Attach the toggle clamps (B) to the clamp-block (A) using the 1/4-20 X 1/2 pan head screws (I) as shown in Figure 1.

2. Insert the 5/16-18 X 1-1/2" T-Slot bolts (C) through the clamp-block, as shown in Figure 2, and attach the 5/16" thread T-Nuts (D) as shown in Figure 2.

This completes the clamp-block assembly. The remaining items (E, F, G & H) will be used in the hole boring process, which will be covered on the following pages.

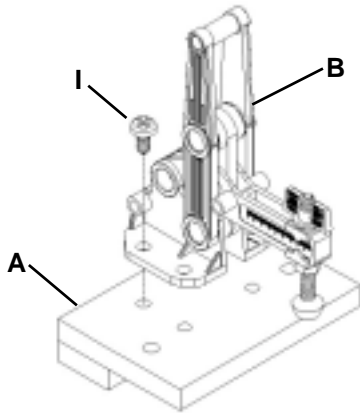


Figure 1

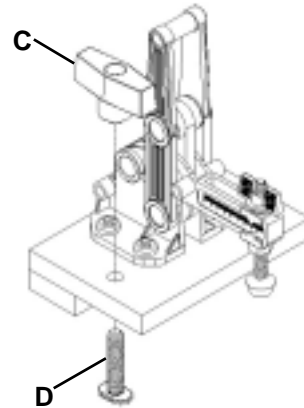


Figure 2

USING THE CLAMP-BLOCK KIT:

1. Attach the clamp-blocks to the hole-boring template as shown in Figures 3 & 4. Tighten the T-Nuts (C) to secure the clamp-block to the hole-boring template. Note: It only takes a little pressure to secure the clamp-blocks to the hole-boring template. **DO NOT overtighten the T-Nuts or you could damage the hole-boring template.**

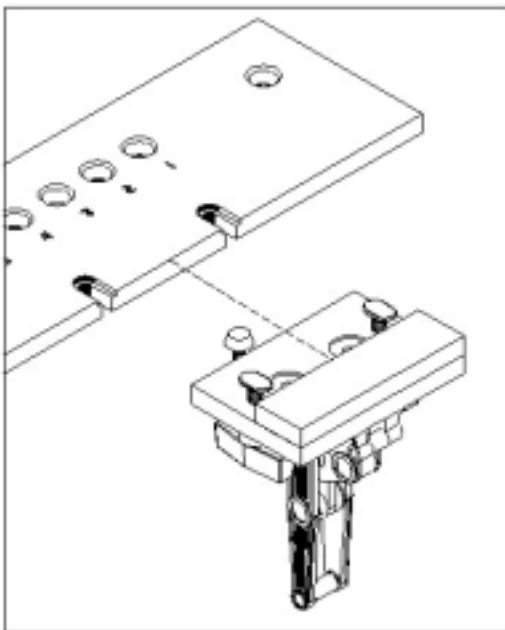


Figure 3

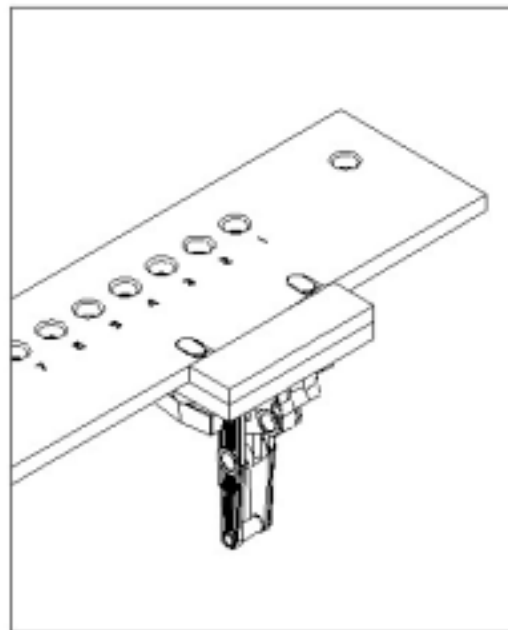


Figure 4

2. Take one of the guide-pins from one of the guide-rails used on the Euro 32 System and install it into the stop-block (H) as shown in Figure 5. **Hand tighten the guide-pin only DO NOT use a allen wrench to tighten!**

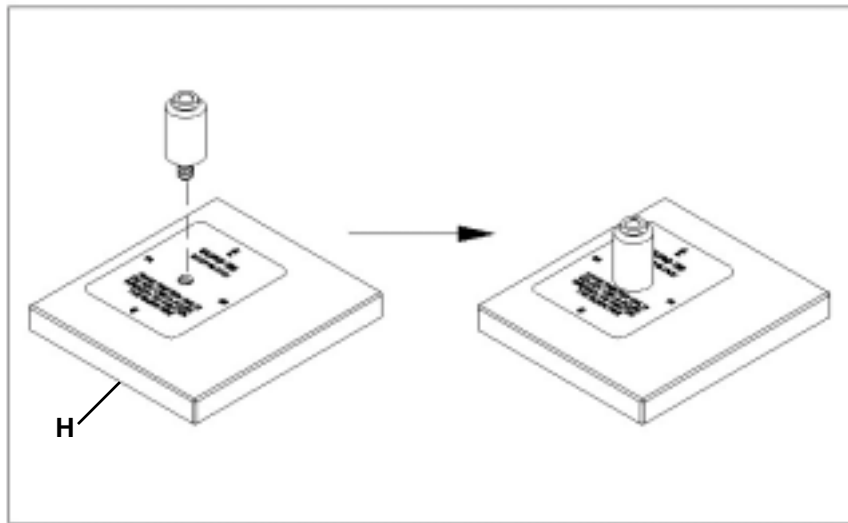


Figure 5

Note: The numbers on the stop-block label, as shown in Figure 6, correspond to where the center of the first hole will be positioned from the bottom edge of the work-piece. The block is designed to accommodate the most commonly used hole positions as described on page 2.

If you choose to use a dimension other than the ones on the stop-block you can make your own stop-block, or relocate the guide-pin hole on the included stop-block by the using the formula as shown in Figure 7 on the following page.

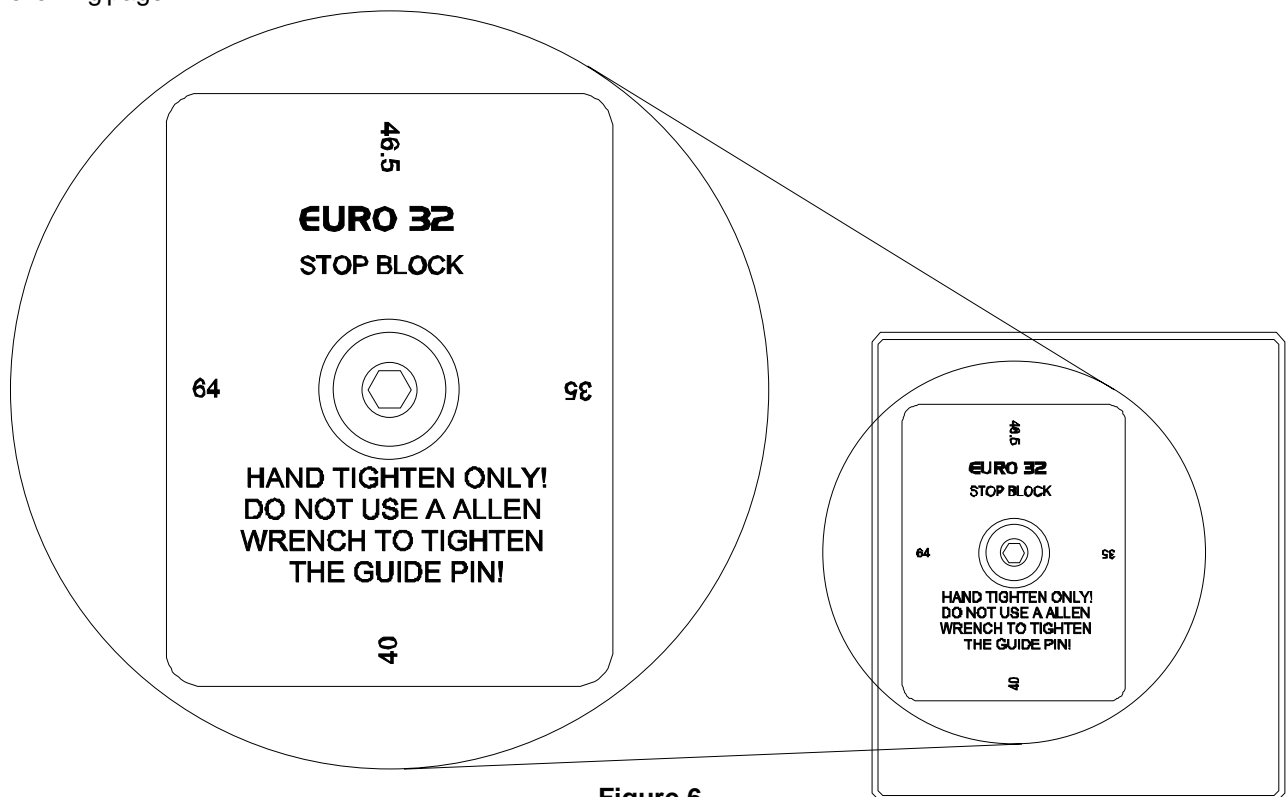
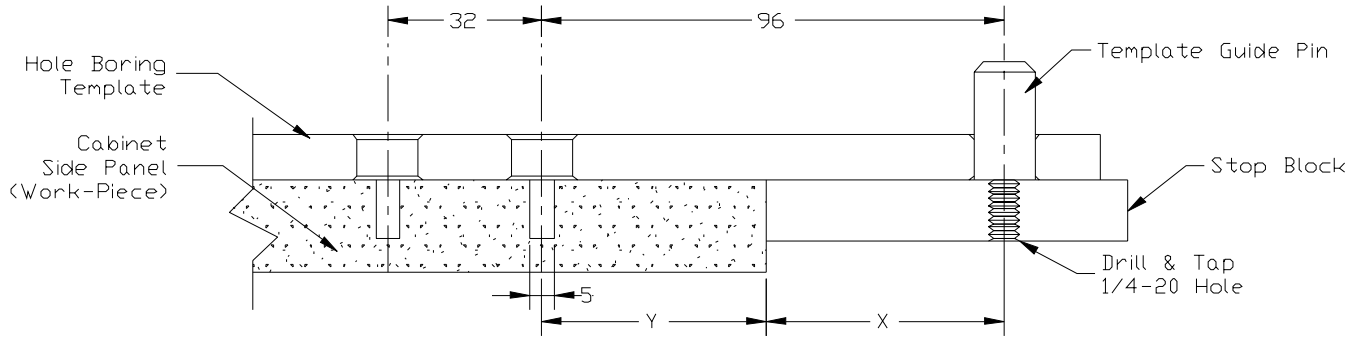


Figure 6



$X=96 - Y$ (Y=desired starting position)

Figure 7

3. Attach the stop-block to the hole-boring template using the O-ring to hold it in place as shown in Figure 8. Be sure to position the stop-block with the desired starting hole dimension facing hole number 1 of the hole-boring template.

This completes the setup of the hole-boring template. You're now ready to start the hole boring process, which is covered in the following pages.

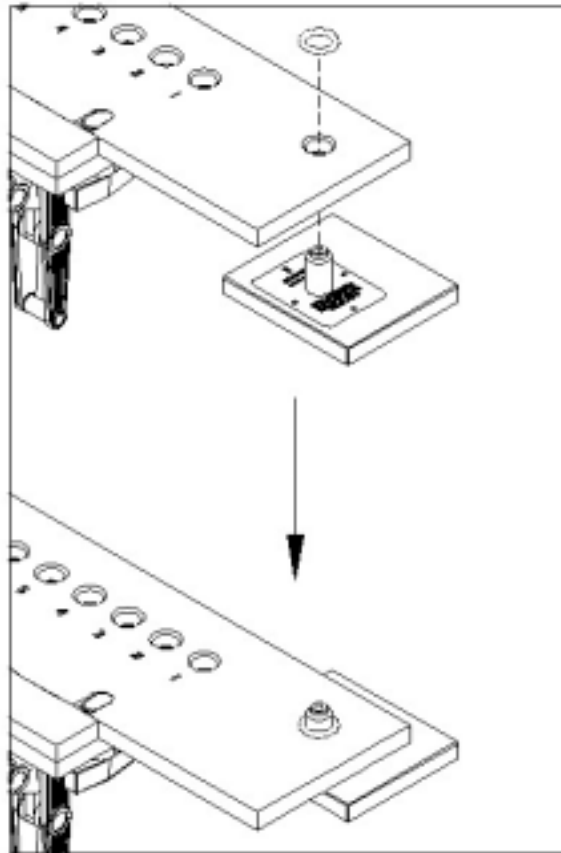


Figure 8

TALL CABINET SIDE PANEL HOLE-BORING PROCESS (LEFT SIDE PANEL)

1. Cut the cabinet side panels to the desired size and apply edge banding to the desired edges and trim off the excess. From this point forward the cabinet side panels will be referred to as the work-pieces. We will be boring the LEFT cabinet side work-piece first. The RIGHT cabinet side work-piece will be covered later.
2. You will need to be able to move around the work-piece in order to bore the front and rear system holes. Therefore, it is recommended that you place the work-piece on a pair of sawhorses.
3. Take the hole-boring template and attach the clamp-blocks and the stop-block (as outlined on pages 22-24).

Note: The hole-boring template is **front heavy** once the clamp-blocks have been attached to it. It can easily tip forward and fall to the floor causing damage to it. Therefore, you'll want to adjust the spindle pressure of the toggle clamps before trying to attach it to your work-piece. Lay the hole boring template on a workbench (top side down) and using scrap piece of the material you're using for the work-piece adjust the pressure by moving the nut **(e)** and wing nut **(f)** along the spindle screw **(g)** shown in Figure 10. The rubber tip of the spindle should just expand slightly when the toggle clamp is activated. **EXCESSIVE PRESSURE TO THE SPINDLE COULD CAUSE DAMAGE TO THE TOGGLE CLAMP.**

4. Attach the hole-boring template to the cabinet side work-piece making sure the clamp-blocks **(a)** are tight against the front edge of the work-piece **(b)** and that the stop-block **(c)** is tight against the bottom edge **(d)** of the work-piece as shown in Figures 9, 10 & 11. Secure the hole-boring template in place with the toggle clamps.

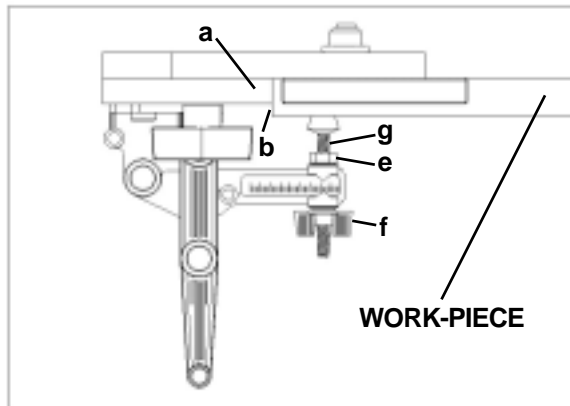


Figure 10

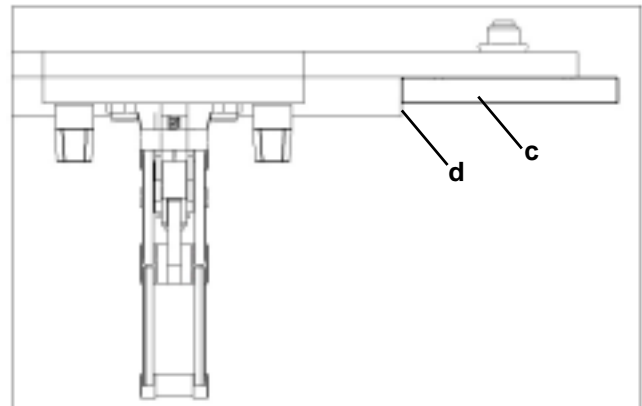


Figure 9

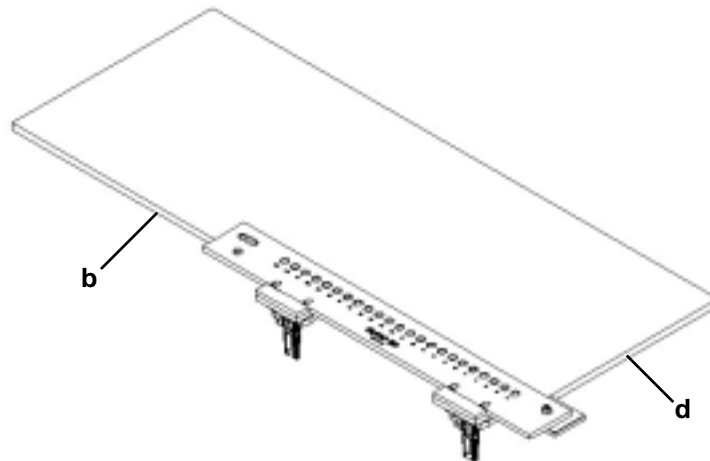


Figure 11

5. With the hole-boring template attached to the work-piece use your plunge router, fitted with a 5mm hole-boring bit, and bore all 23 holes as shown in Figure 12.
6. Remove the hole-boring template from the work-piece and remove the stop-block from the hole-boring template and set it aside.
7. Place one of the stop-pins in the third hole in from the end from the last hole as shown in Figure 13.
8. Place the guide-pin hole of the hole-boring template over the stop-pin and secure the hole-boring template to the work-piece with the toggle clamps as shown in Figure 14; making sure the clamp-blocks are tight against the front edge of the work-piece and then continue to bore the holes.
9. Depending on how long your work-piece is you may have to repeat steps 7 & 8 few times until all desired holes have been bored into the work-piece as shown in Figure 15.



Figure 12



Figure 13

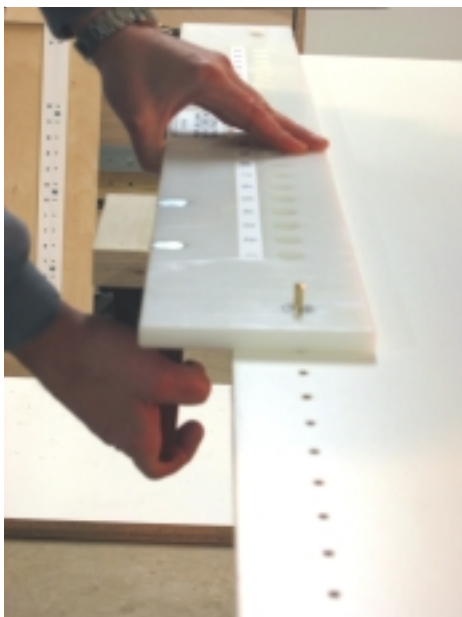


Figure 14



Figure 15

Now that the all front system holes have been bored into the work-piece it's now time to set up and bore the rear system holes.

1. Take the two stop-pins and place one in the 1st hole up from the bottom edge of the work-piece and place the second stop-pin in the 23rd hole as shown in Figure 16.
2. Remove the clamp-blocks from the hole-boring template. Position the hole-boring template so that the hole marked 23 is now at the bottom edge of the work-piece as shown in Figure 16.
3. Attached the stop-block in the guide-pin hole that is below the guide-pin slot with the desired starting hole dimension facing hole number 23 of the hole-boring template as shown in Figures 16.

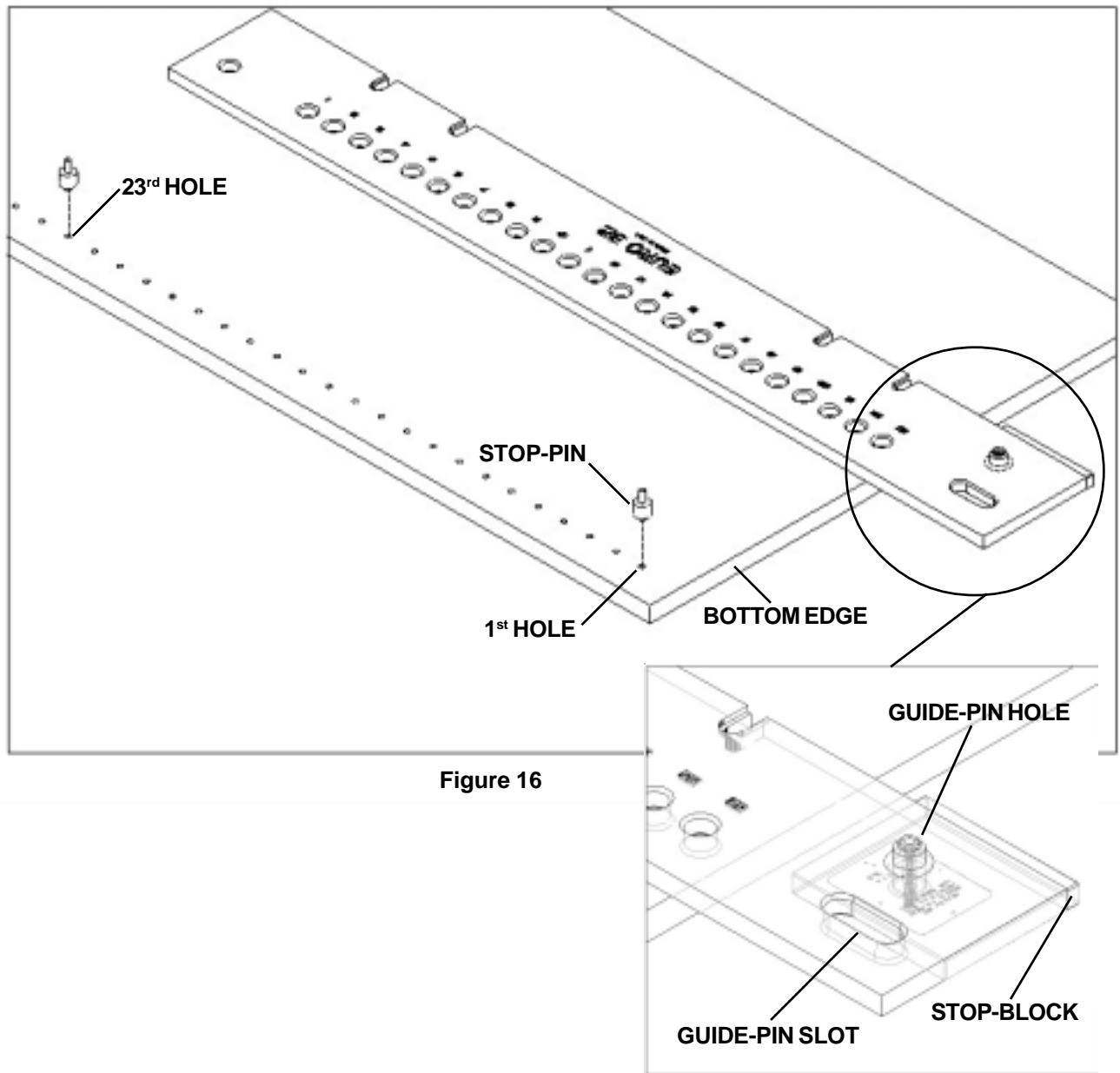


Figure 16

4. Insert the parallel-pins in holes 1 & 23 of the hole-boring template as shown in Figure 17.

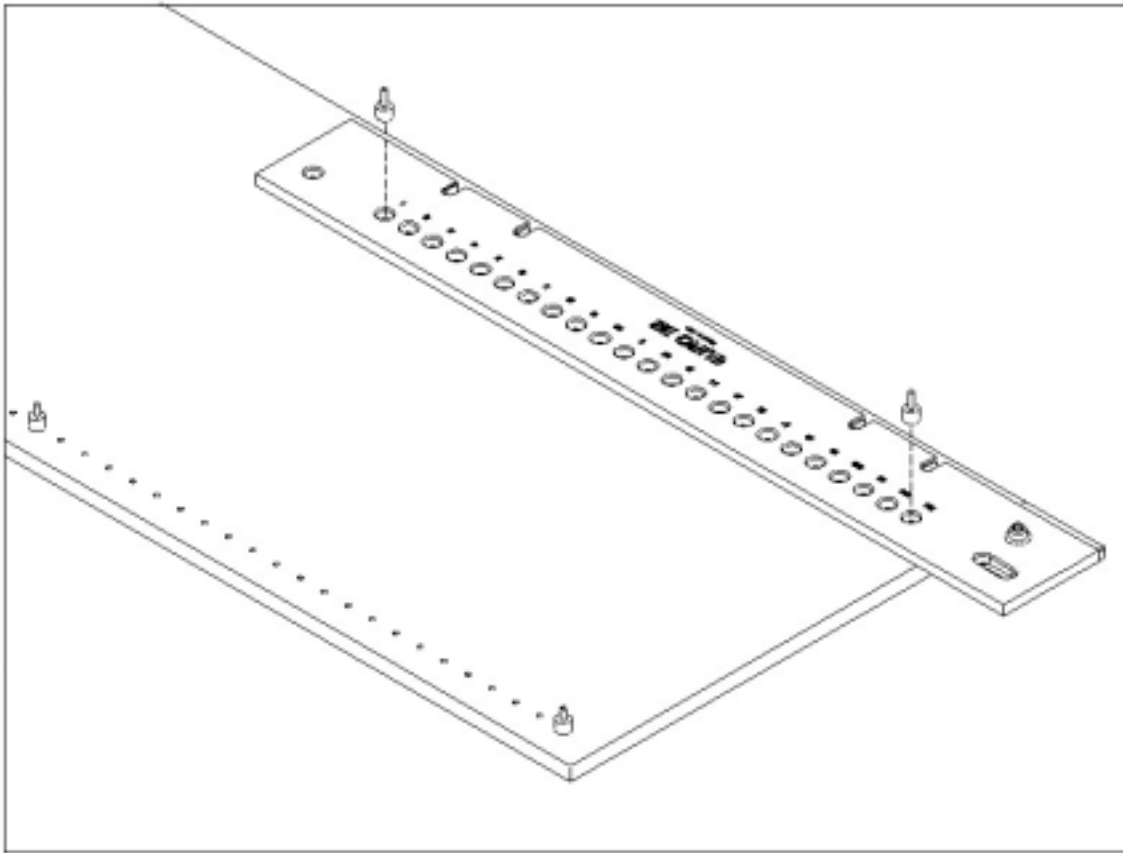


Figure 17

5. To set the rear hole distance from the front holes you will need to cut two pieces 1" (25.4mm) x 24" (610mm) from 1/2" (12.7mm) thick plywood. Drill two 5mm holes that are spaced apart what ever distance that you require as shown in Figure 18. **Note:** Typical distances for 24" (610mm) deep cabinets is 480mm that corresponds to the mounting hole distance of standard 22" drawer guides. Typical distance for upper cabinet is 192mm.

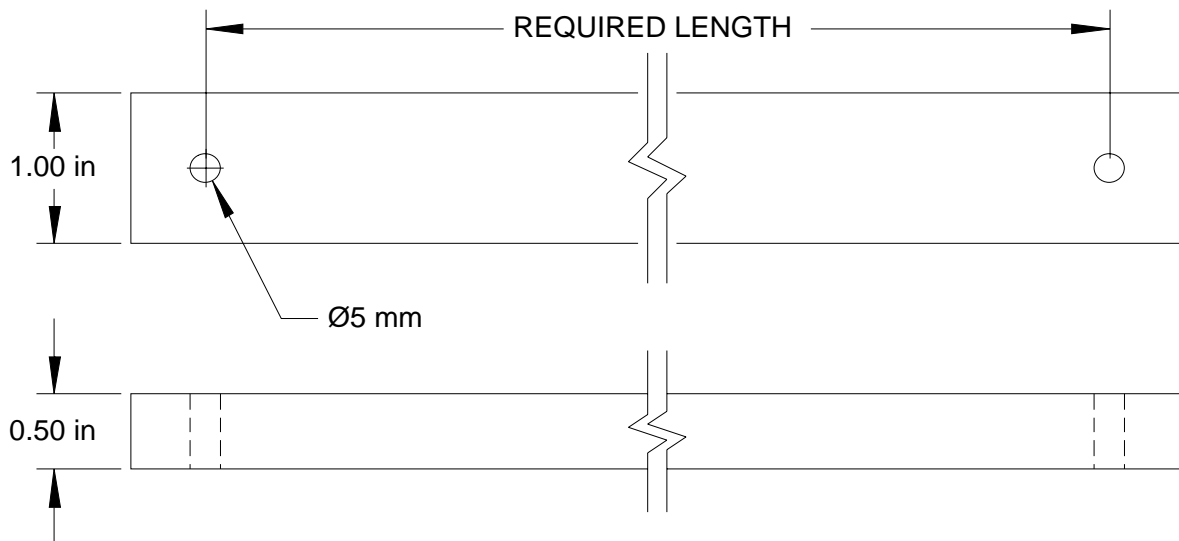


Figure 18

Note: An alternative method to set the spacing between the front and rear holes is to use the drawer guides themselves. Most manufacturers of drawer guides provide two different size mounting holes - one for using standard #6 flat head wood screws and one for using with system screws as shown in Figure 19. Although the holes are offset by 9 mm the center to center distance of each size hole remains to be in multiples of 32mm as shown in the full length drawing of the drawer guide in Figure 19.

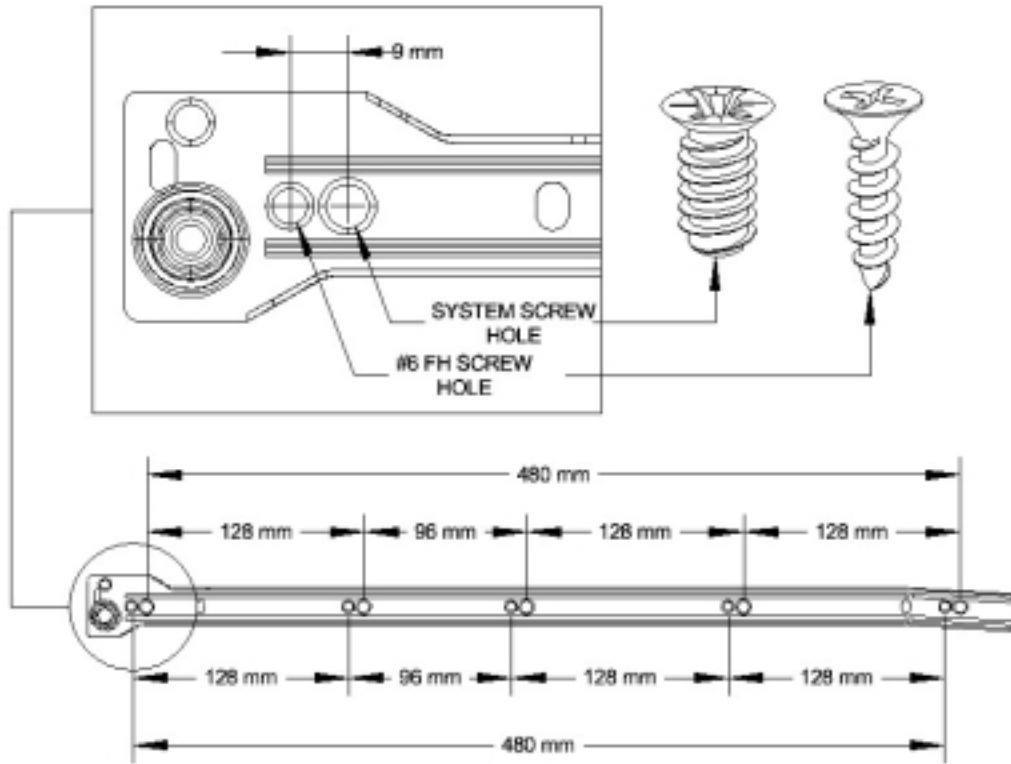


Figure 19

6. Place the spacer strip, or the drawer guides (using the flat head screw holes), between the stop-pins and the parallel-pins and clamp the hole-boring template to the work-piece using two clamps on the outer most edges making sure the stop-block is tight up against the bottom edge of the work-piece as shown in Figure 20. The hole-boring template is now parallel to the front system holes.

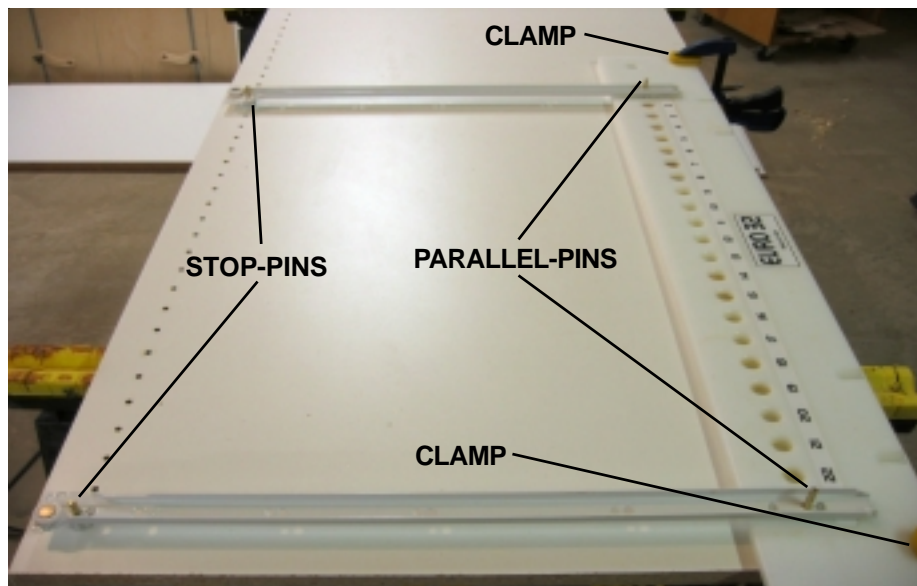


Figure 20

7. Remove the drawer guides, or spacer strips and the parallel-stop pins from the hole-boring template and proceed to bore the rear holes.

8. Once the holes have been bored un-clamp the hole-boring template from the work-piece and remove the stop-block from the template.

9. Place a stop-pin in the last rear hole that you've just bored and place the second stop-pin in the 23rd up from the hole that is directly across from the last rear hole as shown in Figure 21.

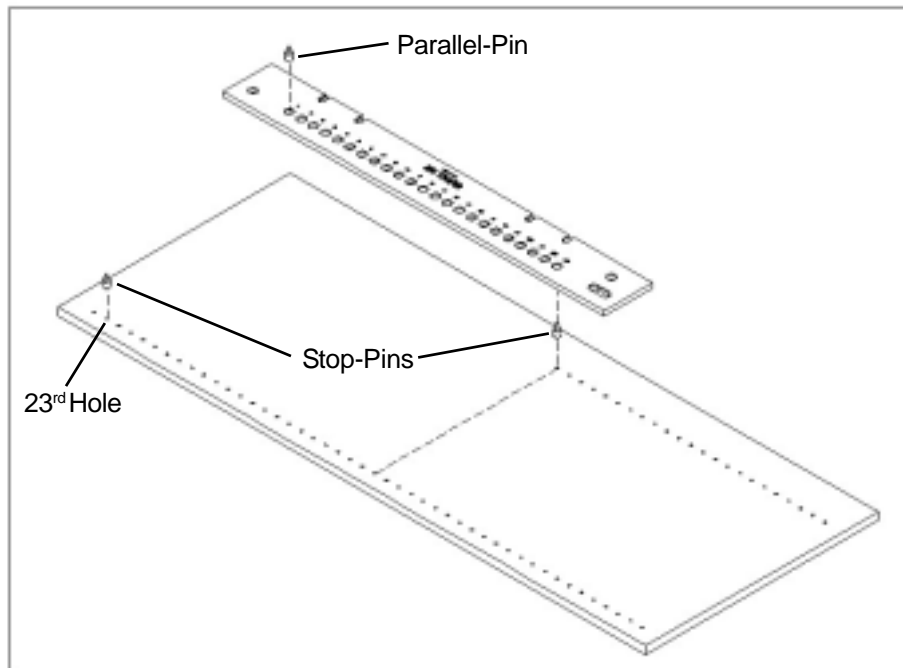


Figure 21

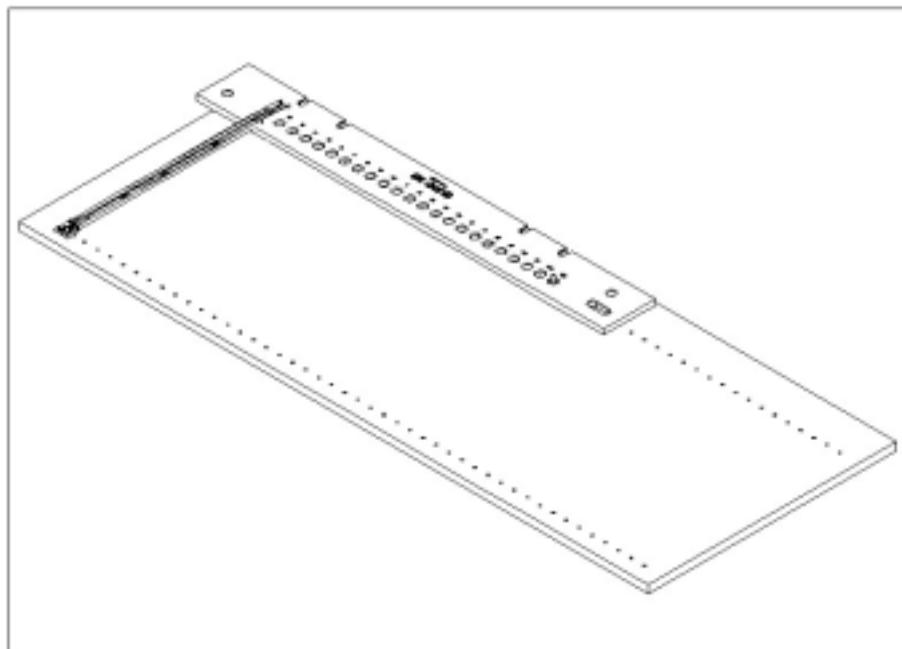


Figure 22

10. Place the hole-boring template over the rear stop-pin and place a parallel-pin in the last hole of the template; then place the spacer strip, or drawer guide over the stop-pin and parallel-pin as shown in Figure 22.

11. Clamp the hole-boring template in place. Remove the spacer strip, stop-pins and parallel-pin and continue to bore the holes.

12. If you have a few additional holes to bore, but not enough to use the previous steps, take both stop-pins and place them in two of the rear holes as shown in Figure 23.

13. Place the hole-boring template over the pins and clamp the template to the work-piece as shown in Figure 24.

14. Bore the remaining holes.

This completes the hole boring process for the left cabinet side. Boring the holes in the right cabinet side piece is basically the same as the left side, but there are a few differences that will be outlined on the following pages.

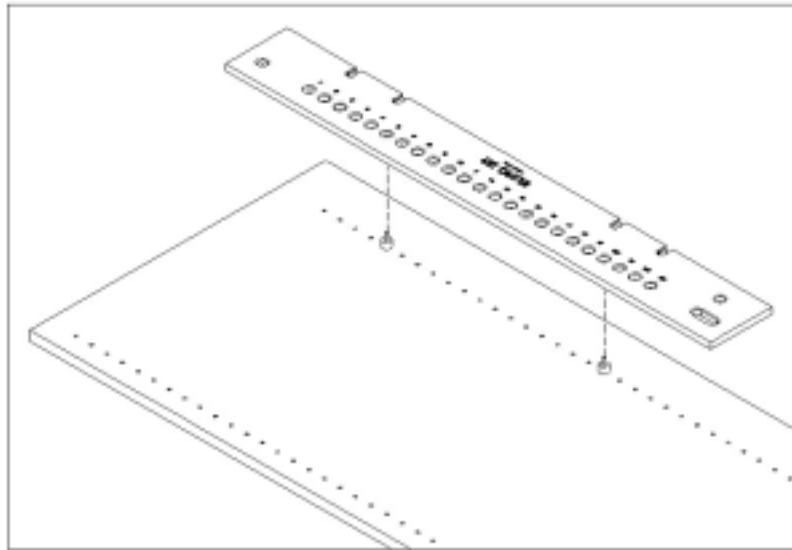


Figure 23

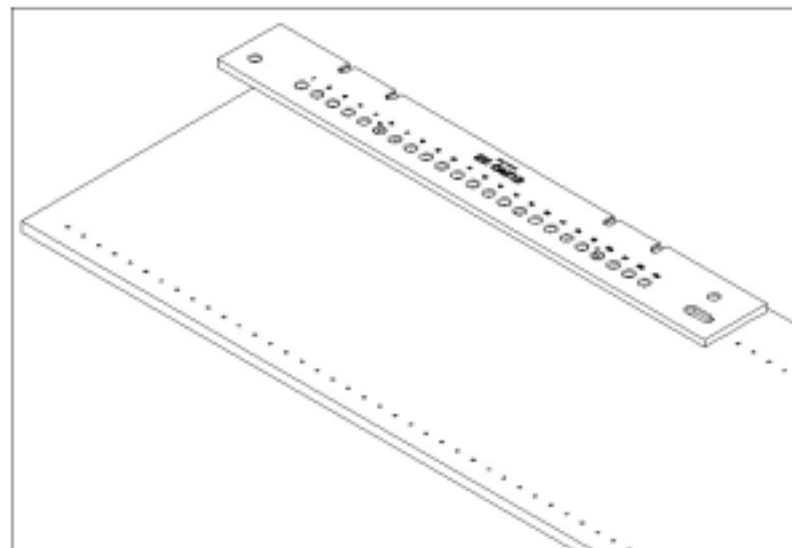


Figure 24

TALL CABINET SIDE PANEL HOLE-BORING PROCESS (RIGHT SIDE PANEL)

Boring the system holes in the right cabinet side panel is basically the same as boring the left cabinet side panel as covered in the previous section. However, there are some differences that need to be taken into consideration that will be addressed in the following steps.

1. Attach the clamp-blocks to the hole-boring template.
2. Attach the stop-block in the guide-pin hole that is below the guide-pin slot with the desired starting hole dimension facing hole number 23 of the hole-boring template as shown in Figure 1.
3. Lay the hole-boring template face down on the work-piece. Take a square and align the stop-block so that it is perpendicular to the rear edge of the hole-boring template and clamp the stop-block to the hole-boring template as shown in Figure 2.

Note: If the stop-block isn't clamped to the hole-boring template it will have the tendency to rotate as shown in Figure 3, which will throw off the first hole position. Figure 4 shows the correct position of the stop-block. This only needs to be done for the first hole position for the front system holes.

4. Attach the hole-boring template to the work-piece as shown in Figures 5 & 6, making sure the clamp-blocks and stop-block are tight against the front and bottom edges respectively. **Note: The bottom edge is on the left side of the work-piece when facing the front edge of the work-piece.**

5. Proceed to bore the front system holes.

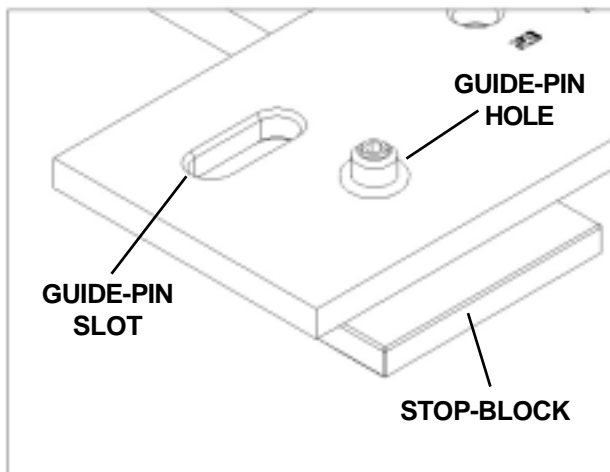


Figure 1

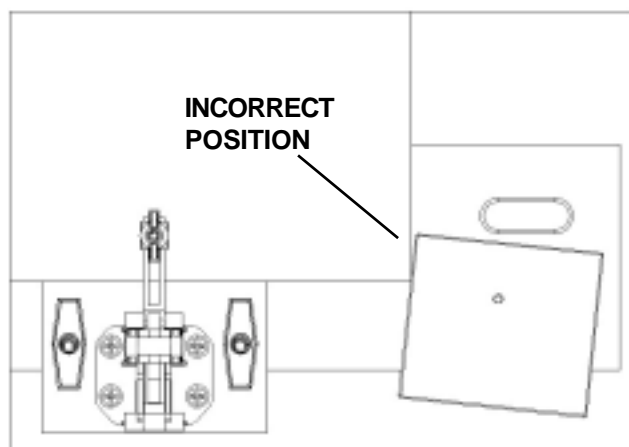


Figure 3 (Bottom View)



Figure 2

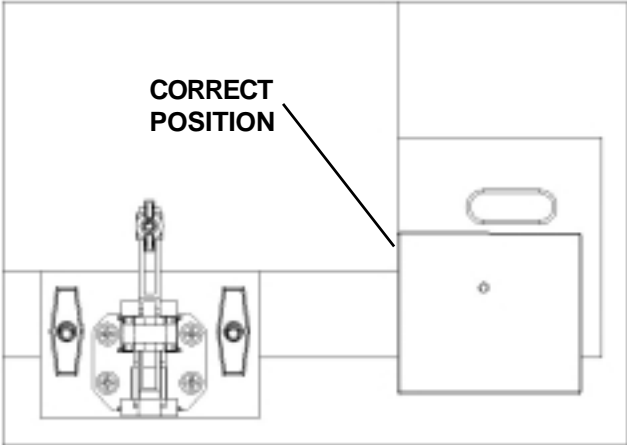


Figure 4 (Bottom View)



Figure 5

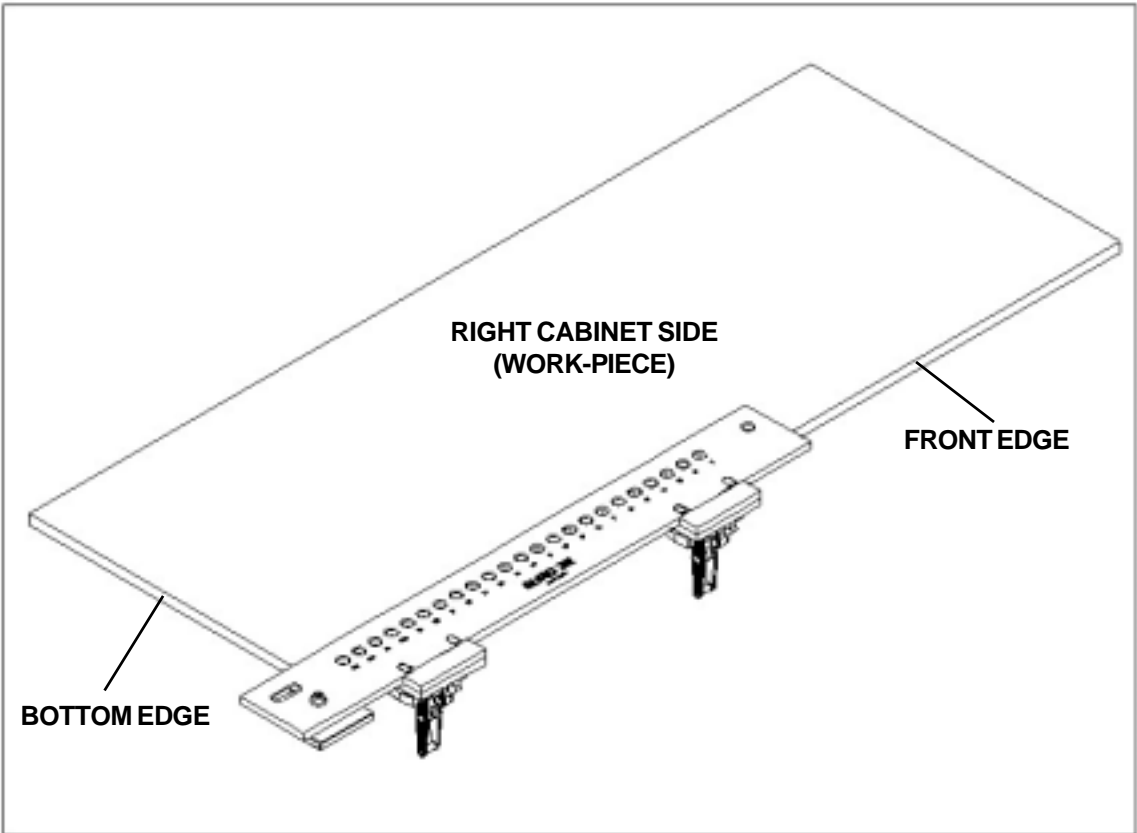


Figure 6

6. Remove the hole-boring template from the work-piece and remove the stop-block from the hole-boring template.
7. Place a stop-pin in the last hole bored in the work-piece; place the 23rd of the hole-boring template over the stop-pin and secure it to the work-piece with the toggle clamps as shown in Figures 7 & 8.
8. Remove the stop-pin and continue boring the system holes.
9. Repeat steps 7 & 8 until all desired holes have been bored.

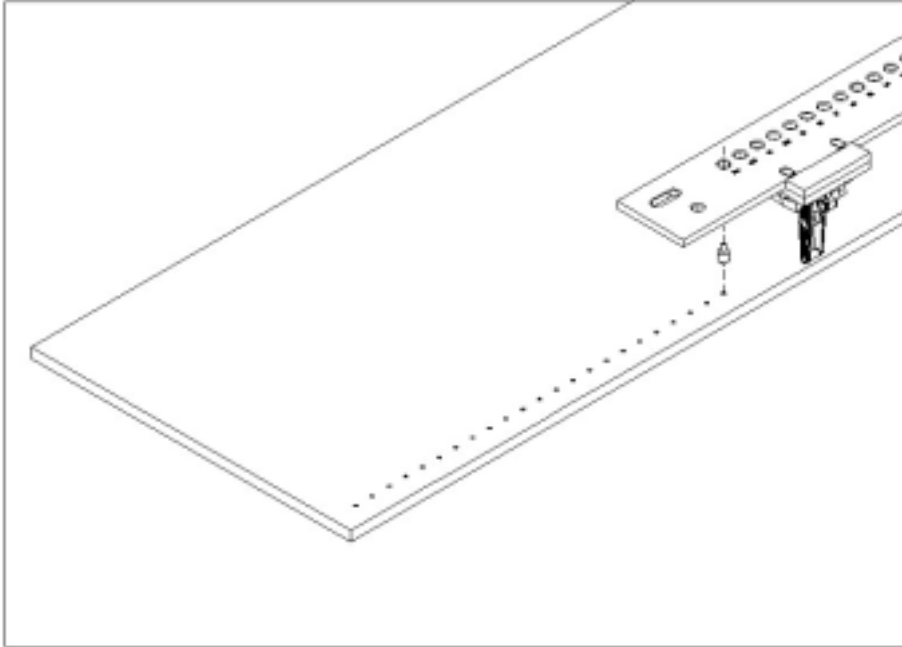


Figure 7

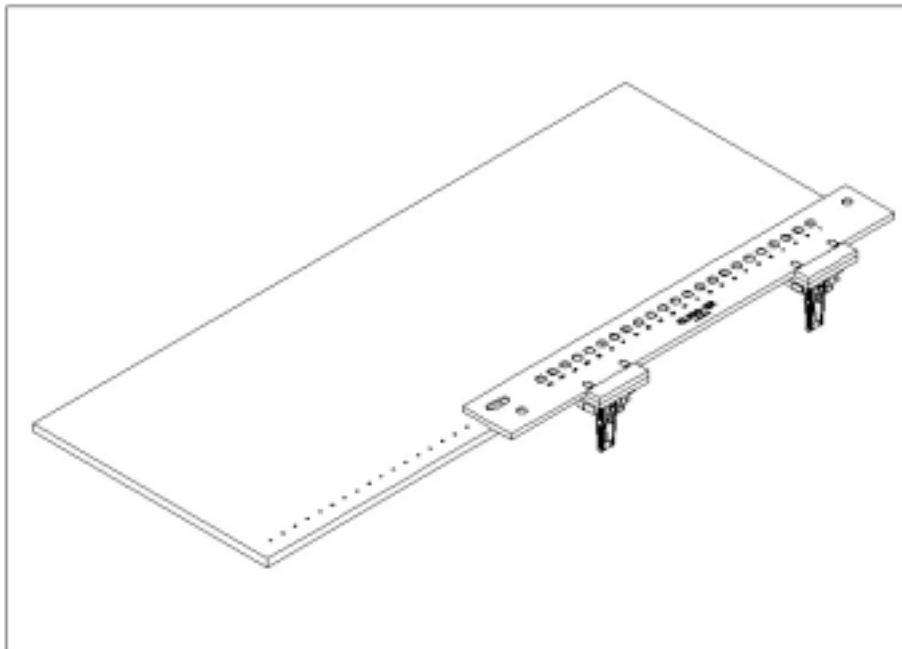


Figure 8

BORING THE REAR SYSTEM HOLES IN THE RIGHT CABINET SIDE PANEL:

- 1. Position the hole-boring template so that the hole marked 1 is now at the bottom edge of the work-piece as shown in Figure 9.
- 2. Attach the stop-block in the guide-pin hole that is near the number one hole of the template as shown in Figure 9.

From this point on follow steps 3 -14 starting on page 27 to bore the rear system holes.

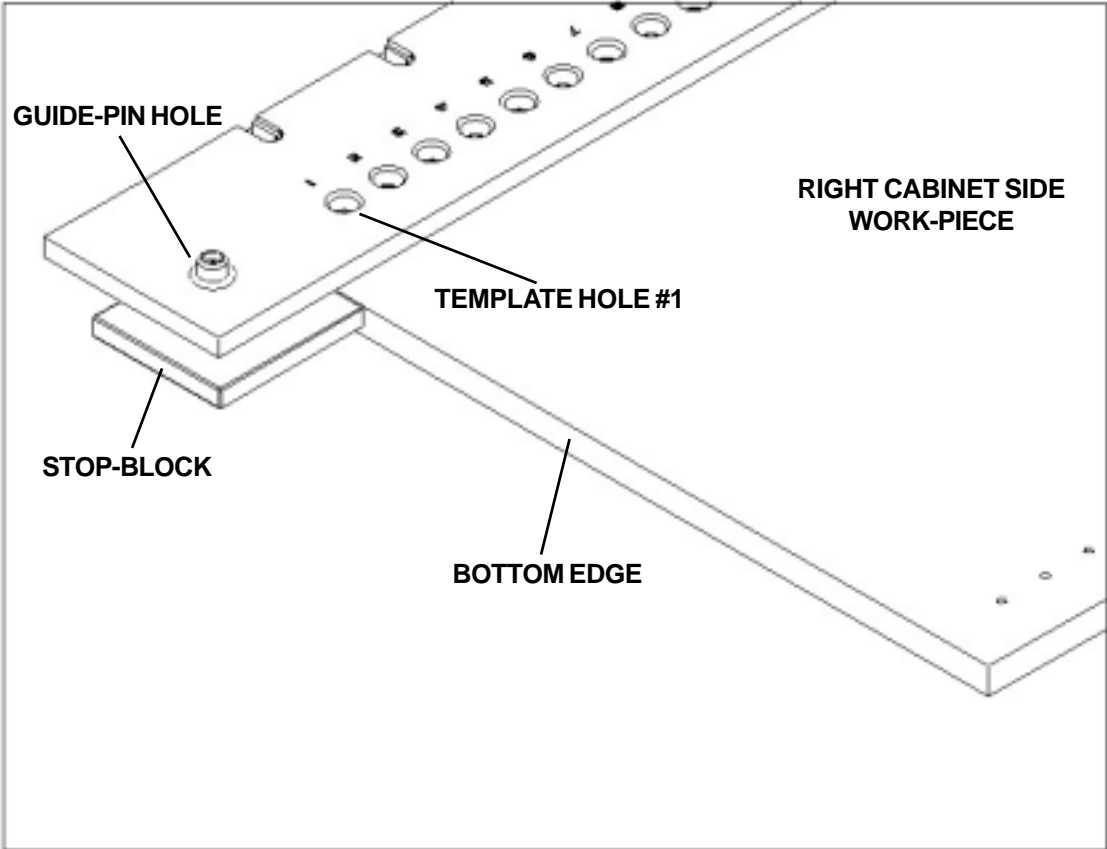


Figure 9

Cabinet Construction:

The following pages cover the basic base and upper cabinet designs based on Blum's recommended system-hole placement. As stated previously, there doesn't appear to be a universal standard to the European system. There are a few books on building frameless cabinets as well as discussions on frameless cabinet construction that can be found at various wood working forums on the web. The hardware manufacturers web sites are also a great source of information that can help you in deciding which system-hole placement that will work best for you. (See page 20 for a list of books and web sites.) We've adopted the use of the Blum system-hole placement in our shop as it works best for us, but this is just our opinion and preference.

On page 39 you'll find a drawing showing the components that make up typical base cabinet. You'll notice the use of adjustable legs being used on the base of European frameless cabinets. The use of the adjustable legs offers several benefits over using the wood frame alternative approach that is shown on page 40, as well as conventional framed cabinets which are:

- Allows perfect leveling and alignment of the cabinets during installation without having to use shims.
- Allows easy access for electrical, plumbing, gas and ventilation runs without needing to cut holes and notches into the cabinets as shown in Figure 1.
- The Toe Kick Plate is independent making it easier to make and install as shown in Figure 1.
- Greater yield of cabinet side panels from a standard sheet of material since the Toe Kick is eliminated as shown in Figure 1.
- Frameless cabinet side panels require fewer cuts verses conventional framed cabinets, which reduces material waste, and time needed to cut the panels as shown in Figure 1.

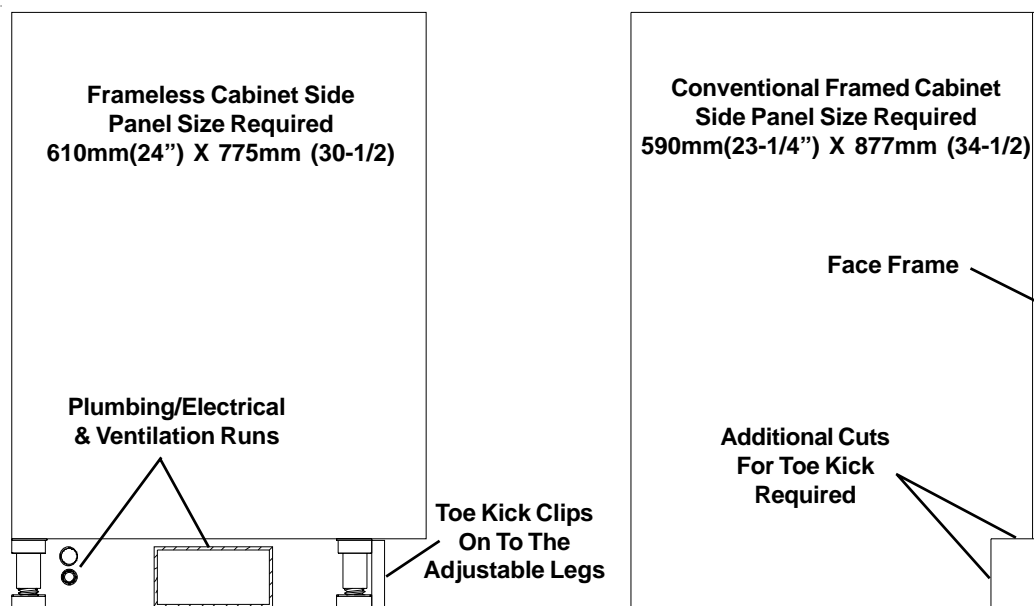


Figure 1

As time permits we'll add more information regarding the building of frameless cabinets, which will be found on our web site. Until then we hope you enjoy using the Euro 32 Hole-Boring System in your shop. We want to hear from you, please visit our web site often and send us your questions and comments.