

Model D4031 Mortising Kit Instruction Sheet



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Introduction

The Model D4031 (Figure 1) Mortising Kit provides everything needed to produce mortises with your drill press.

Inventory (Figure 2)

- A. Cone1
- B. Fence Assembly1
- C. Alignment Tool1
- D. Mortising Chisels4
- E. T-Nuts4
- F. Mounting Sleeves:
 - 2.945" OD x 2.600" ID1
 - 2.600" OD x 2.366" ID1
 - 2.366" OD x 2.170" ID1
- G. Mounting Bushings:
 - 2.600" OD x 2.000" ID1
 - 2.600" OD x 1.880" ID1
 - 2.600" OD x 1.570" ID1
- H. Hold-Down Rods.....2
- I. Hold-Down1
- J. Adjustable Handle.....2
- K. Rod.....1



Figure 1. Model D4031.

⚠ WARNING

Unplug your drill press before installing this mortising attachment. Failure to do so may result in serious personal injury.

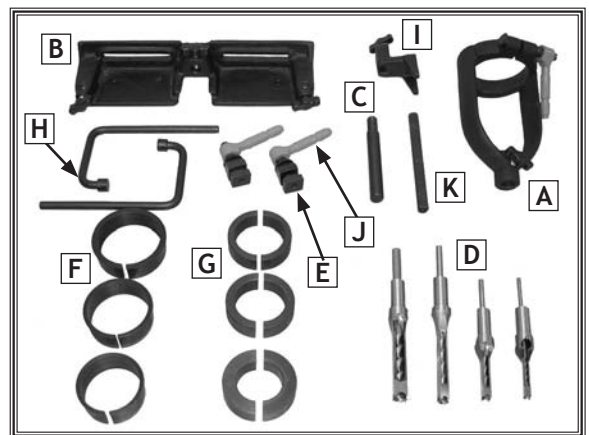


Figure 2. Inventory.

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Mounting the Cone

1. If the cone will not fit over the drill chuck, remove the chuck. Otherwise, secure the alignment tool in the drill chuck on your drill press.
2. Carefully measure the flange on the bottom of the quill on your drill press.
3. Compare the size of the flange with those listed in the **Inventory** and examine the mounting methods shown in **Figure 3**. If your quill measures 2.6", use the direct mounting method. If the measurement closely matches one of the sleeve inside diameters (ID), use one or more of the sleeves and the sleeve method. If the flange on your drill press does not match any of the ID's listed for sleeves, measure the quill body and use the pair of mount bushings.
4. Slide the cone onto the mounting surface. If you removed the chuck in **Step 1**, re-install it now and insert the alignment tool into the chuck.
5. Tighten the knob to secure the cone to the alignment tool.
6. Tighten the adjustable handle on the top of the cone.
7. Loosen the knob and the drill chuck, and remove the alignment tool.

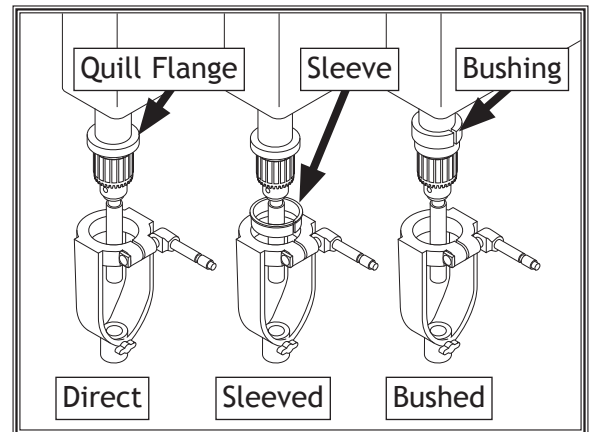


Figure 3. Three mounting methods.

Mounting the Fence

1. Remove the 2 T-nuts (see **Figure 4**) from one of the adjustable handles and check to see which fits best in the slots on your drill press table.
2. Position the fence on top of the drill press table and align the holes with the slots in the table.
3. Secure the fence in place using the 2 adjustable handles and appropriate T-nuts.

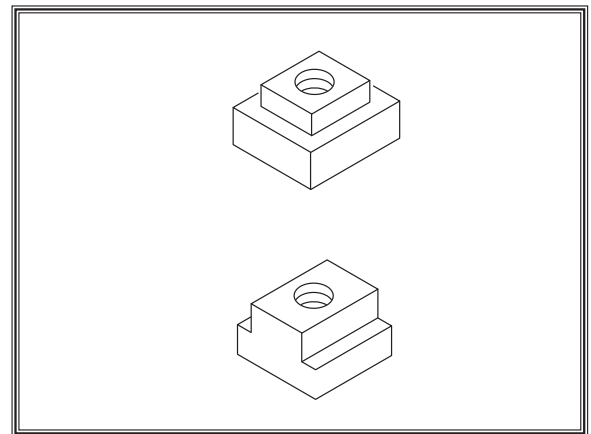


Figure 4. Two T-nut styles.

Making a Mortise

Proper alignment of the workpiece and chisel is essential to making good mortise and tenon joints. The instructions below describe one method of creating square joints with an evenly-spaced mortise. Place a scrap board on top of the drill press table if a through-mortise is to be made.

To make a mortise, do these steps:

1. Install the chisel into the cone, rotate it so the opening is positioned toward the operator and is square to the fence, as shown in **Figure 5**, then secure with the knob.
2. Secure the drill bit into the drill chuck. Slide the drill bit into the chisel as far as it will go and then allow it to drop back down $\frac{1}{32}$ " - $\frac{1}{16}$ ", as shown in **Figure 6**. If this is not done, wood chips generated by the cutting action will have no place to go, resulting in excessive heat and damage to the tool.
3. Measure the surface of the workpiece that is to have the mortise. Subtract the size of the mortise chisel and divide this number in half.

$$\begin{aligned} \text{Workpiece} &= 0.75" \\ \text{Chisel} &= -0.375" \\ &0.375" \div 2 = 0.1875" \end{aligned}$$

4. Mark the workpiece where you want the mortise and clamp it to the fence.
5. Loosen the adjustable handles on the fence. Lower the chisel with the downfeed handles on the drill press and make adjustments to the fence until the marks on the workpiece are aligned with the chisel as in **Figure 7**. Tighten the adjustable handles. If the fence cannot be adjusted close enough, adjust the table on the drill press until the chisel and marks are aligned.
6. Set the speed of the drill press between 900 and 1200 RPM.
7. Carefully inspect the alignment. When you are satisfied that the setup is worthy of being tested, replace the workpiece with a scrap piece of lumber that is the same size as the workpiece. Attach the hold-down bracket and rod(s) and make a cut.

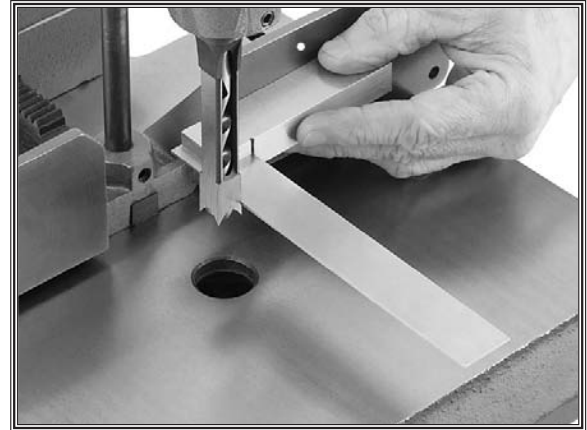


Figure 5. Example of squaring a chisel.

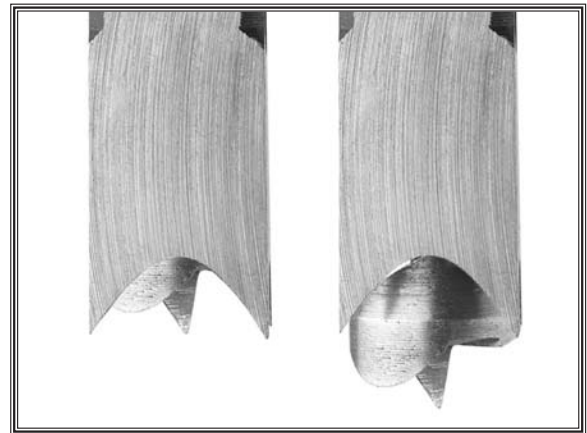


Figure 6. Proper drill bit depth.

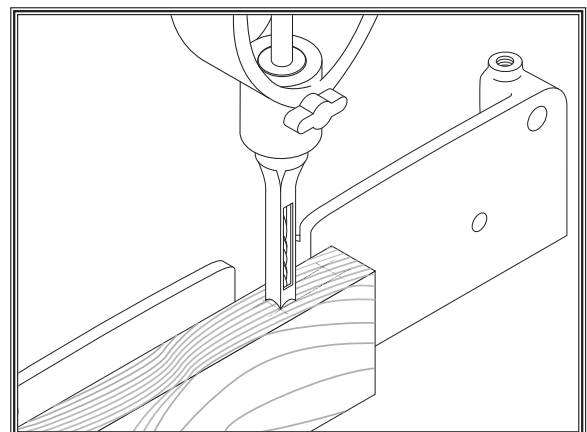


Figure 7. Aligning the chisel and marks.

8. Watch the chips coming out of the slot on the shank of the chisel. If you don't see chips or there is a lot of smoke, raise the chisel, turn off the drill press and adjust the drill lower in the chisel. If burning still occurs, lower the speed the drill press. Some burning may occur with certain species of wood regardless of the settings but you will see wood chips while cutting mortises with this tool when it is operating correctly.
9. Check the placement of the cut and make any adjustments to the setup before cutting a valuable workpiece.

Cut Sequence

Cutting mortises that are wider than the chisel must be done in proper sequence for best results. See **Figure 8** for one possible sequence that will produce good results.

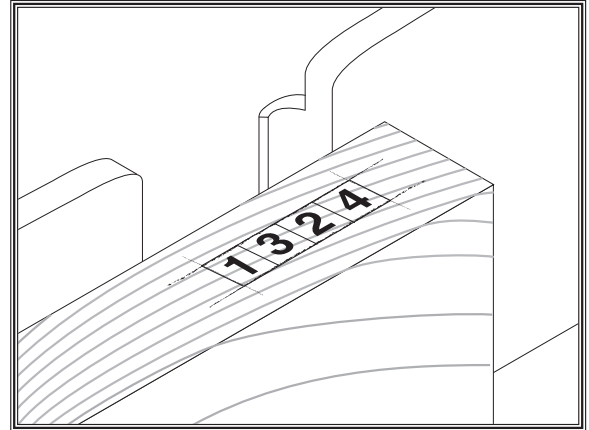
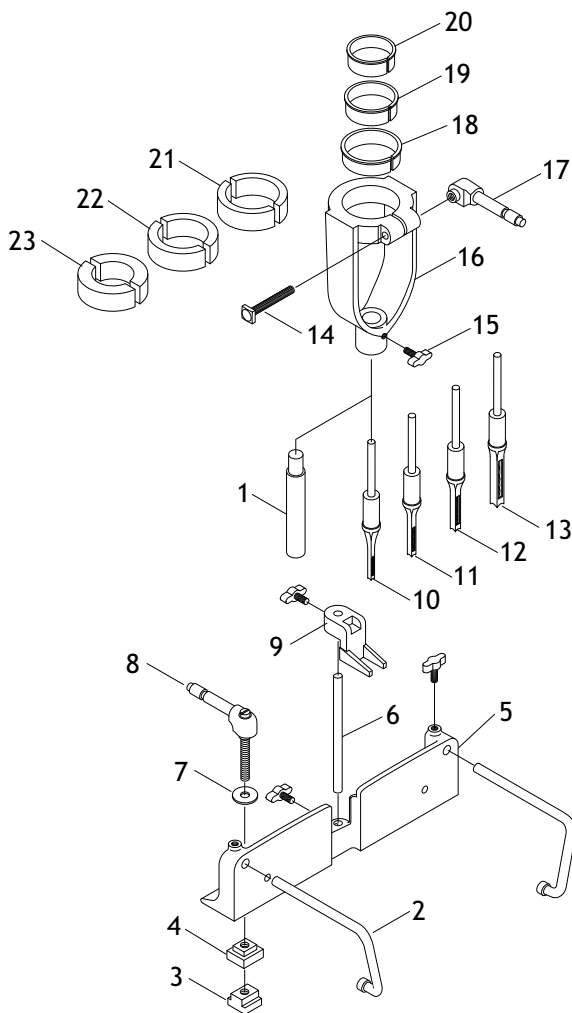


Figure 8. Staggered cut sequence.

D4031 Parts



REF	PART #	DESCRIPTION
1	XD4031001	ALIGNMENT TOOL
2	XD4031002	CLAMP ROD
3	XD4031003	LARGE T-NUT 5/16-18
4	XD4031004	SMALL T-NUT 5/16 X 18
5	XD4031005	FENCE
6	XD4031006	HOLD-DOWN ROD
7	XPW07	FLAT WASHER 5/16
8	XD4031008	HANDLE MALE 5/16-18 X 2"
9	XD4031009	HOLD-DOWN BRACKET
10	XD4031010	MORTISING CHISEL 1/2"
11	XD4031011	MORTISING CHISEL 3/8"
12	XD4031012	MORTISING CHISEL 5/16"
13	XD4031013	MORTISING CHISEL 1/4"
14	XD4031014	SQUARE HD BOLT 5/16"-18 X 2"
15	XD4031015	KNOB BOLT
16	XD4031016	CONE
17	XD4031017	HANDLE FEMALE 5/16-18"
18	XD4031018	SLEEVE 2.945" X 2.6"
19	XD4031019	SLEEVE 2.6" X 2.366"
20	XD4031020	SLEEVE 2.366" X 2.17"
21	XD4031021	BUSHING PAIR 2.6" X 2.00"
22	XD4031022	BUSHING PAIR 2.6" X 1.88"
23	XD4031023	BUSHING PAIR 2.6" X 1.57"

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