Lee Valley

Piano Stool Hardware Kit 01K71.01

This kit provides the key hardware components to make a height-adjustable piano stool. It consists of a seat base and threaded shaft assembly and a steel nut that provide a total seat adjustment of 6″. The seat base and threaded shaft assembly is mounted to the underside of a piano stool seat, and the 3″ long by 1.245″ outside diameter nut is mounted in a hole drilled in a wooden base/cap. The design of the hardware components is such that there will always be at least 2″ of engagement of the threaded shaft in the nut to prevent the seat from being spun out of its base. The instructions that follow provide dimensional guidelines so you can design a stool that suits your needs.

Design Considerations and Assembly

If you are building a four-legged piano stool, the footprint should be larger in diameter than the seat diameter to reduce the possibility of the stool tipping over. A three-legged design would require a larger footprint, since three legs are less stable than four. Our example shown in **Figure 1** has four legs, with a 16″ diameter footprint and a 12″ diameter seat. **Figure 2** gives a top view illustration, showing that a three-legged stool should have a larger-diameter footprint than the four-legged stool.

The height of the leg/base/cap assembly should be approximately 2″ shorter than the desired overall height of the piano stool when the threaded shaft is fully lowered into the nut. The leg/base/cap assembly shown in **Figure 1** is 18″, and yields a piano stool that is 20″ high when the threaded shaft is fully lowered into the nut, and 26″ high when it is fully raised.

The wooden base should be large enough to accommodate the nut, which is 3″ long with a 1.245″ outside diameter and a 2″ diameter flange. (Our example has a 2″ × 2″ × 3″ long base.) To drill the hole in the wooden base, you will need a $1\frac{1}{4}$″ drill bit (e.g., spade, forstner, saw tooth) with a shank length of at least 4″. The diameter of the hole should be just large enough for the nut to slide in easily without having to force it in. An oversized hole, however, may cause the mounting screws to break out of the sidewalls, preventing them from fully engaging in the wood.

We recommend you test the accuracy of your drill bit in a piece of scrap wood (of the same material you will use to make your piano stool). Dry fit the nut into the test piece. If the fit is tight, gradually make the hole larger with a half-round file or with sandpaper wrapped around a piece of 1″ diameter dowel. When you are satisfied with the fit, make your base, and drill a hole through the center of the base (repeating any adjustments that were required to achieve a good fit). It is important that the hole be on center. While a hand drill should produce acceptable results, we recommend you use a drill press if possible. Insert the nut into the hole to test the fit, and make any further adjustments as required. Remove the nut and set it and the base aside.

The cap in our piano stool example in **Figure 1** is 5″ diameter by 1″ thick. Drill a hole through the center of the cap (repeating any adjustments that were required to achieve a good fit). Insert the nut into the hole to test the fit, and make any further adjustments as required. Remove the nut and set it and the cap aside.

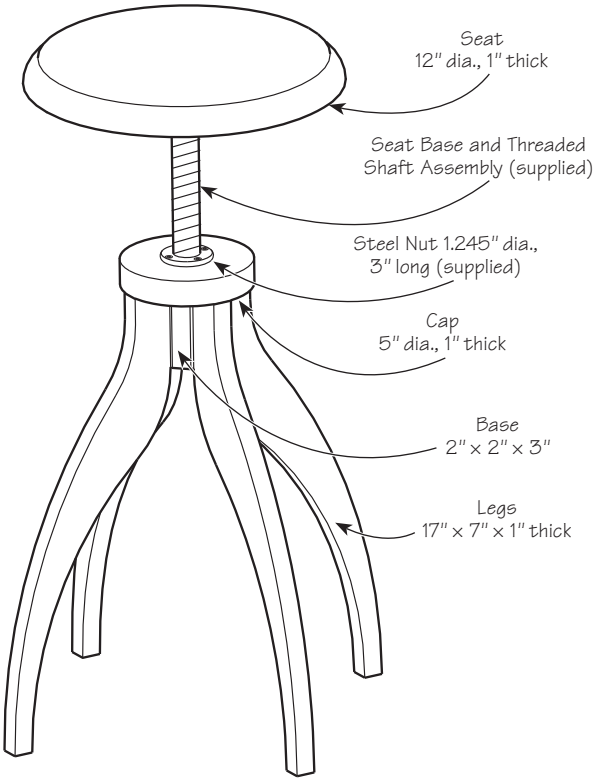

Figure 1: Stool overview.

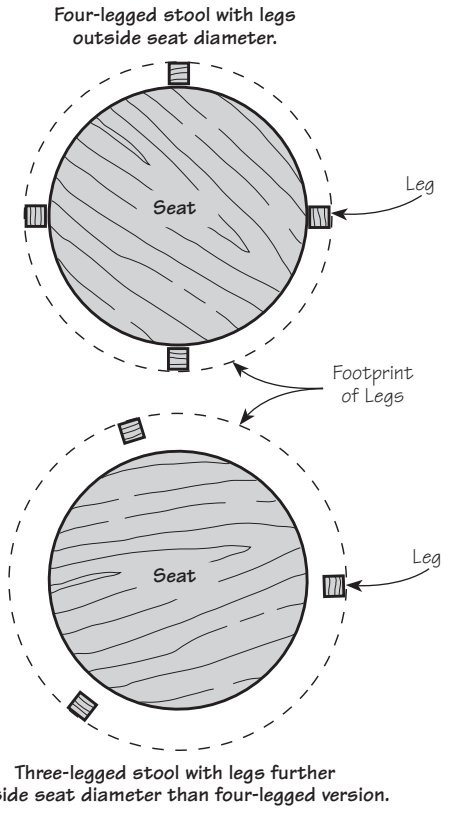

Figure 2: Footprint of legs.

Note: *You may combine the base and cap as one piece in your piano stool design.*

The legs in our example were made with 1″ × 8″ lumber and cut with a bandsaw. To ensure the legs are all the same size and shape, we recommend you make a template. To make the best use of the wood, the legs may be traced and laid out as shown in **Figure 3**.

Dry fit the nut, cap and base together before final assembly of the cap to the base (if two pieces) to ensure the through holes in both pieces line up with each other. Join the legs, cap and base in such a way as to produce a secure structure. For the stool shown in **Figure 1**, we secured all joints using water-based wood glue (polyvinyl acetate). We also fastened each leg horizontally to the base, using one screw per leg, and secured the cap vertically to the legs, again using one screw per leg. Each screw was counterbored and concealed with a plug.

The diameter and thickness of your piano stool seat should be suitably sized to support the weight of the intended user. Mark the exact center of the under side of your wooden seat with a pencil or scribe. Draw a 4 1/2″ diameter circle around the center point. Align the seat base with the circle.

Mark and drill pilot holes, then secure the seat base and threaded rod assembly to the underside of the seat with four #12 flat-head wood screws.

Glue the nut into the hole in the leg assembly with high-strength slow-cure epoxy. Mark and drill pilot holes, then secure the nut to the leg assembly with four #6 flat-head wood screws.

Apply desired finish.

Insert the threaded rod into the nut in the leg assembly. Turn the seat counterclockwise to raise it and clockwise to lower it.

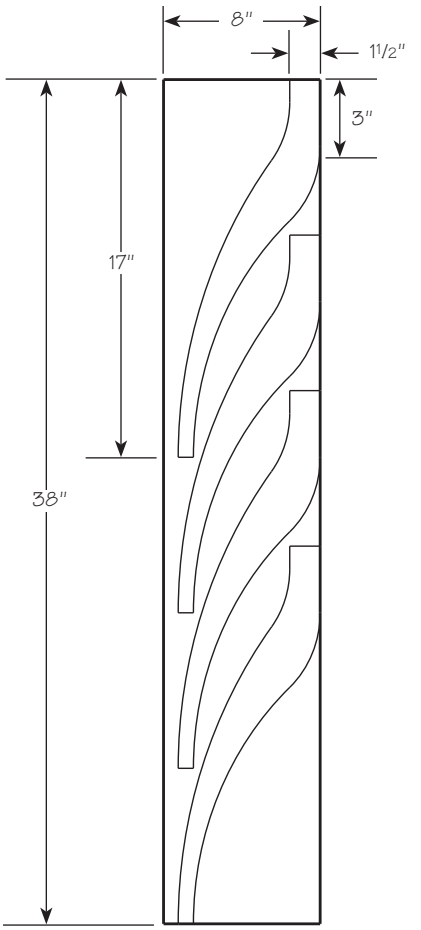

Figure 3: Nesting template to reduce lumber waste.

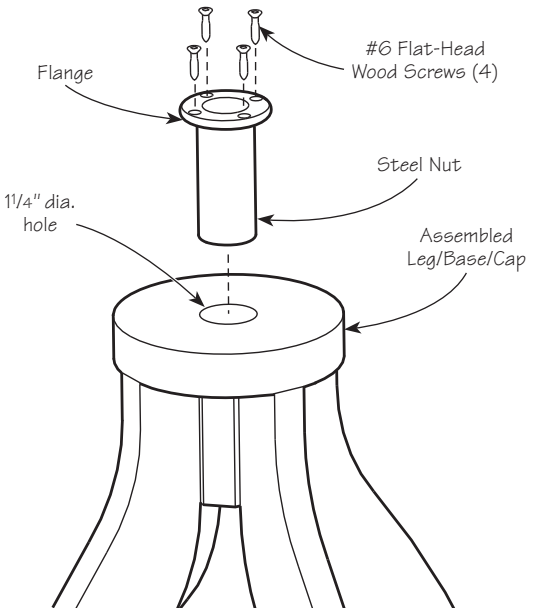

Figure 4: Securing nut in the leg/base/cap assembly.