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# Wooden Plane Hardware Kit



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Made in  
Canada

05P40.45



Blade packaged separately.

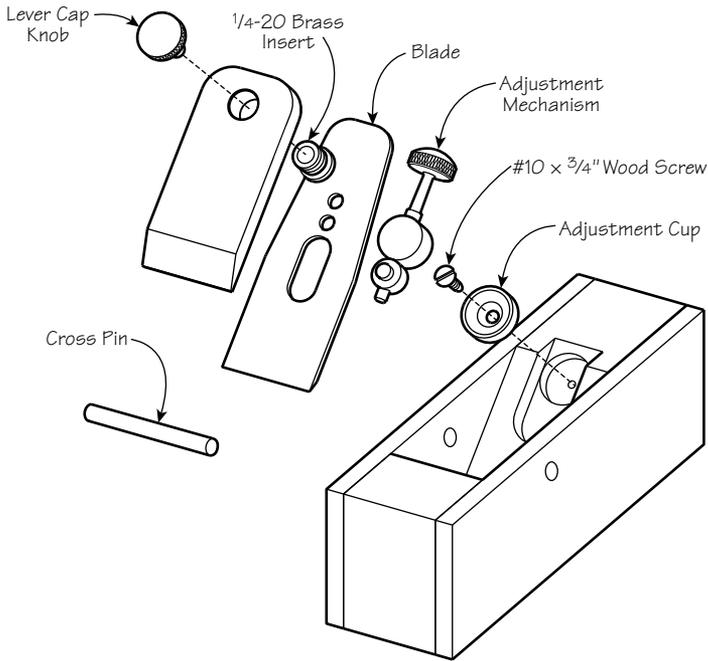
## Introduction

The following instructions describe how to make a basic bevel-down wood-bodied smooth plane, complete with a Norris-style adjuster. Instead of a hard-to-adjust wedge, the blade is secured by a user-made wooden lever cap with a brass knob. The lever cap is retained with the brass cross pin. Aside from the specifications on fitting the components, the size and shape of the body may be changed to suit your preference.

Basic woodworking skills are required.

Wood is not included.

## Hardware Components



**Figure 1: Hardware components supplied with this kit.**



**Caution:** Be aware that the blade is sharp; careless handling can result in serious injury.

**Table 1: Hardware Components**

Item	Qty.
Adjustment Cup	1
Wood Screw, #10 × 3/4"	1
Adjustment Mechanism	1
1/4-20 Brass Insert	1
Blade, 1 5/8"	1
Lever Cap Knob	1
Brass Cross Pin	1

## Required Tools

### Layout

- Pencil
- Ruler
- Marking/striking knife
- Combination square
- Center punch or scratch awl
- Compass

### Drilling

- 1/8", 1/4" and 3/8" brad-point drill bits
- 7/8" Forstner bit
- Drill press

### Cutting/Shaping

- Block plane – or other plane as preferred
- Backsaw or dozuki
- Mill file, single cut
- 1/2" chisel
- Bandsaw
- Double-cut files, rasps and sandpaper as desired for shaping and smoothing

### Miscellaneous

- Wood glue
- Epoxy
- Clamps
- Slot screwdriver
- Turner's tape

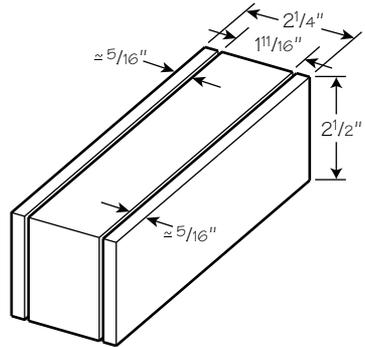
## Required Material

The body of the plane, as well as the lever cap, can be made from any dense, close-grained hardwood. Beech and hard maple are excellent choices. Other hardwoods such as cherry and walnut may also be used. The required size for the body is noted in *step 1* and the required size for the lever cap is noted in *step 13*.

## Making the Plane

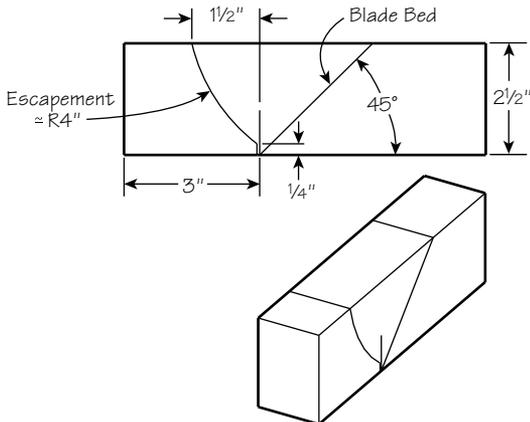
### Preparing the Body

1. Select a hardwood blank and cut it to size: 8" L × 2 1/4" W × 2 1/2" H.
2. Measure and mark the 1 11/16" inner body centered on the blank, as shown in **Figure 2**, then cut outside these lines using a bandsaw to ensure the inner body remains 1 11/16" wide. The remaining side pieces will be approximately 5/16" thick. Remove the machining marks with a plane.

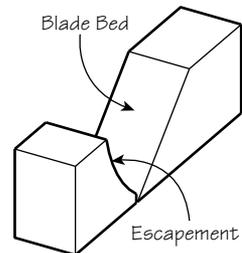


**Figure 2: Preparing the blank.**

3. Lay out the inner body as shown in **Figure 3**. Use a pencil to mark the mouth location 3" in from one end of the bottom of the inner body. Carry the line part-way up the side using a square. Lay out the blade bed location at 45° from the 3" mark, then scribe the 4" radius (approximately) for the escapement using a compass. Cut along the lines.



**Figure 3: Side view of inner body layout.**



**Figure 4: Inner body cut-outs.**

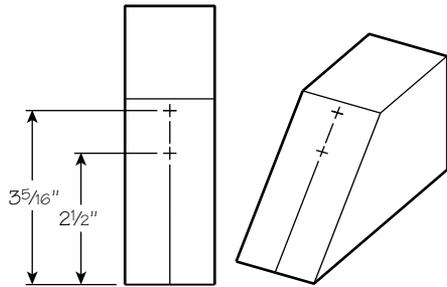
## Drilling the Holes for the Adjuster

4. Draw a line along the center of the blade bed surface. Measuring up from the bed lip, make marks at  $2\frac{1}{2}$ " and  $3\frac{5}{16}$ ". Use a center punch or scratch awl to dimple the locations.

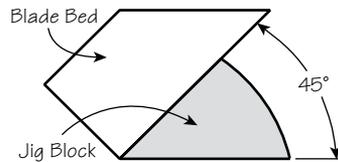
5. A drill press is necessary for drilling the holes, as is a jig block with a  $45^\circ$  angle on it to hold the blade bed surface at the correct angle. This jig block may be the waste piece from the body cut-out (as shown in **Figure 6**), or one made specifically for this purpose. You can use turner's tape to affix the blade bed blank to the jig block.

6. At the  $3\frac{5}{16}$ " mark, drill a  $\frac{7}{8}$ " diameter hole to a depth of  $2\frac{1}{32}$ " (this hole will receive the adjustment cup). Use a  $\frac{1}{8}$ " bit to drill a pilot hole,  $\frac{1}{2}$ " deep, inside the  $\frac{7}{8}$ " hole for the #10  $\times$   $\frac{3}{4}$ " wood screw, as shown in **Figure 7**.

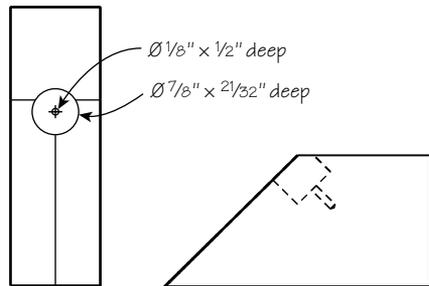
7. Drill a  $\frac{3}{8}$ " deep hole at the  $2\frac{1}{2}$ " mark, using the  $\frac{7}{8}$ " Forstner bit. Cut out the remaining material from the adjuster pocket with a chisel, as shown in **Figure 8**.



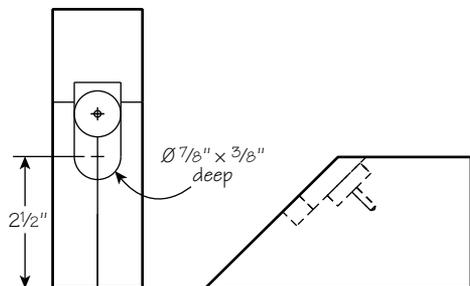
**Figure 5: Blade bed layout.**



**Figure 6: Jig block.**



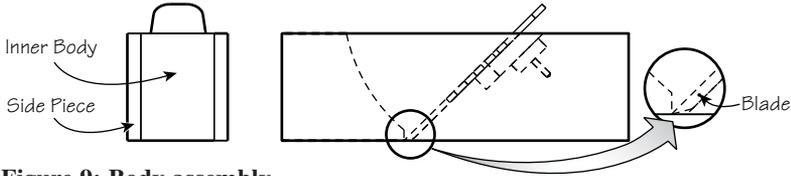
**Figure 7: Drilling the holes in the blade bed.**



**Figure 8: Cutting out the adjuster pocket.**

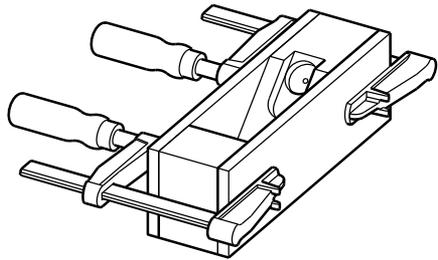
## Assembling the Body

8. Arrange the inner body cut-outs and side pieces as shown in **Figure 9**. Place the blade (bevel down) on the blade bed and position the front piece of the body so it is just touching the leading edge of the blade. This will ensure a tight mouth opening.



**Figure 9: Body assembly.**

9. Apply wood glue to the adjoining surfaces, then clamp the parts together and remove the blade. Let the glue cure before proceeding.

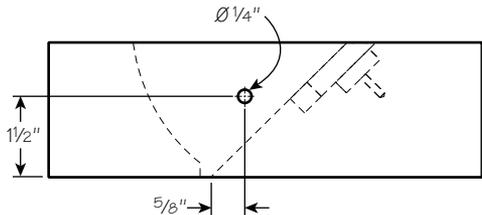


**Figure 10: Body glue-up.**

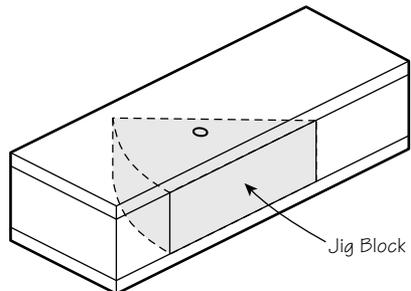
## Cross Pin

10. Drill a  $\frac{1}{4}$ " diameter hole through both sides of the plane body at a location  $\frac{5}{8}$ " back from the blade bed edge and  $1\frac{1}{2}$ " up from the sole, as shown in **Figure 11**.

**Tip:** To prevent tear-out, insert the jig block into the plane body, as shown in **Figure 12**.



**Figure 11: Cross-pin hole.**



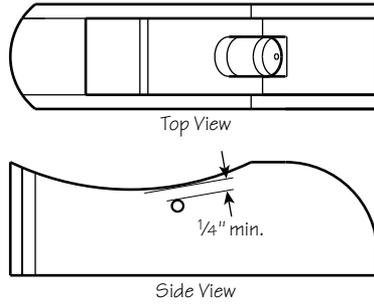
**Figure 12: Inserting jig block into body to prevent tear-out.**

## Shaping the Body

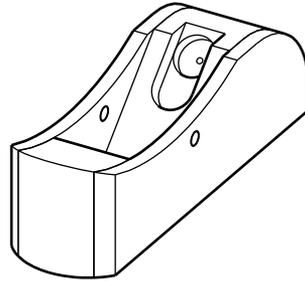
11. Sketch the desired shape or profile on the side of the body and cut with a bandsaw. Similarly, draw the desired curve at the front and cut with a bandsaw.

**Tip:** Avoid shaping the body too close to the cross-pin hole. To reduce the chance of the wood splitting, be sure the hole is at least  $\frac{1}{4}$ " below the top edge of the plane, as shown in **Figure 13**.

12. With the basic shape established, you can refine the shape of the body by rounding off corners and edges with a rasp. Remove material based on how the plane feels in your hand.



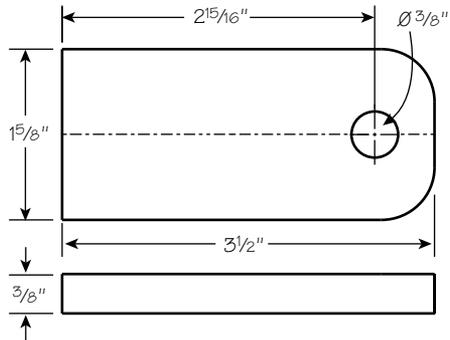
**Figure 13: Body profile.**



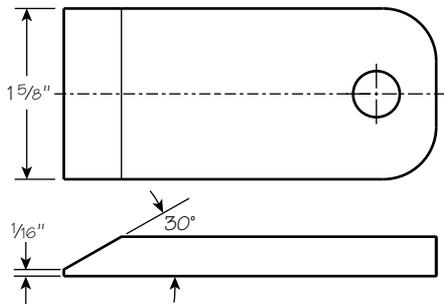
**Figure 14: Shaping the body.**

## Making the Lever Cap

13. Select a piece of hardwood and cut it to size:  $\frac{3}{8}$ "  $\times$   $1\frac{5}{8}$ "  $\times$   $3\frac{1}{2}$ ".
14. Draw a line along the center of the lever cap. Make a mark at  $2\frac{15}{16}$ ", as shown in **Figure 15**. Use a center punch or scratch awl to dimple the location.
15. Drill a  $\frac{3}{8}$ " diameter hole at the  $2\frac{15}{16}$ " mark.
16. Bevel the edge of the lever cap as shown in **Figure 16**.



**Figure 15: Lever cap layout.**



**Figure 16: Beveling the edge of the lever cap.**

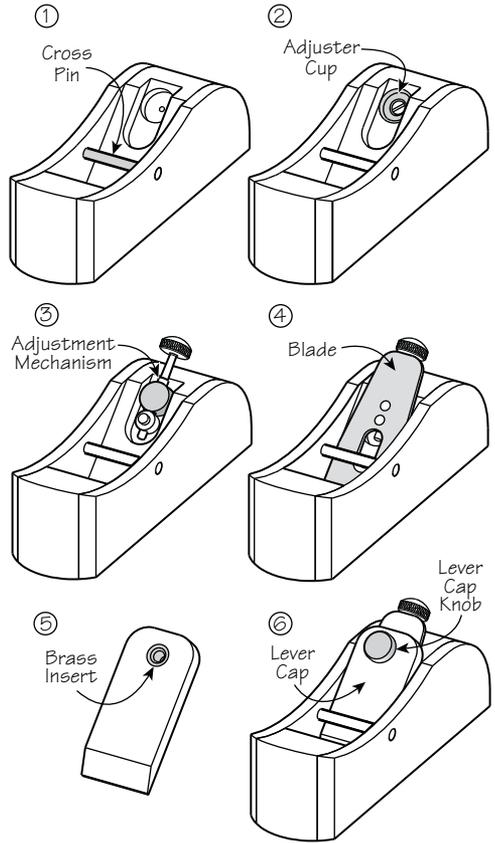
## Assembling the Plane

1. Insert the brass cross pin through the  $\frac{1}{4}$ " diameter holes in both sides of the plane body.
2. Install the adjuster cup with the #10  $\times \frac{3}{4}$ " wood screw in the hole in the blade bed. (See **Figure 17**.)
3. Place the adjustment mechanism in the cup.
4. Position the blade (bevel down) on the blade bed such that the adjuster pin is in the first adjuster hole.
5. Push the brass insert into the  $\frac{3}{8}$ " diameter hole in the lever cap (flange facing non-bevelled side).

**Tip:** You can put a spot of epoxy on the threads to hold it in place.

6. Slide the lever cap under the cross pin and onto the blade. Attach the lever cap knob and tighten.

**Tip:** Sand the top of the lever cap as needed until it fits easily under the cross pin.



**Figure 17: Assembling the plane.**

## Finishing

Sand and finish as desired.

## Sharpening

The blade comes with a  $23^\circ$  primary bevel and a finely ground  $25^\circ$  micro-bevel. This configuration provides a strong, long-wearing edge that can be quickly honed many times before the primary bevel needs to be reground. Additional honing will improve performance.

## Accessories

**05P22.02**  $25^\circ$  A2 Tool Steel Blade,  $0.125" \times 1\frac{5}{8}"$

**05P22.52**  $25^\circ$  O1 Tool Steel Blade,  $0.125" \times 1\frac{5}{8}"$

**05P22.72**  $25^\circ$  PM-V11<sup>®</sup> Tool Steel Blade,  $0.125" \times 1\frac{5}{8}"$

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