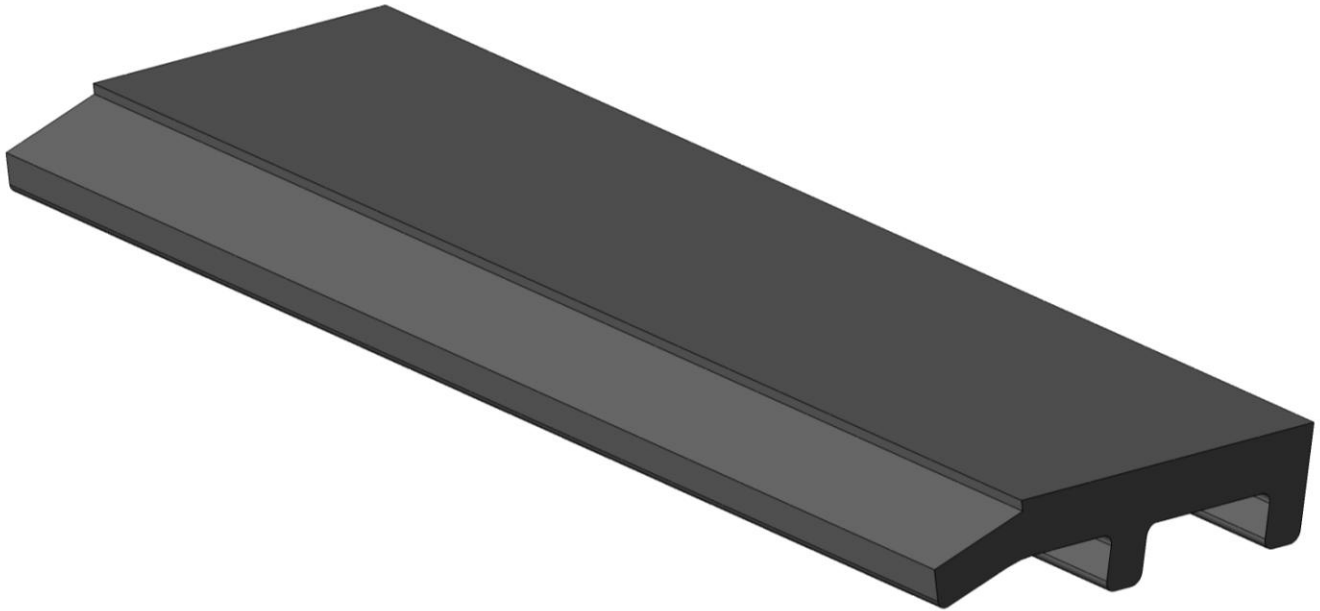


Drill WNG Damper Sustain Tray

The Sustain Pickup Rail



If you buy the rails undrilled, you will need to drill and tap the rails. WNG makes this easy for you.

We supply both the proper drill bit and tap for this process.

All you need do is punch the appropriate scale, drill and tap to achieve a drilled sustain tray for your damper action.



Shop Tools

Drill press With a long table
Clean table

Hand Tools

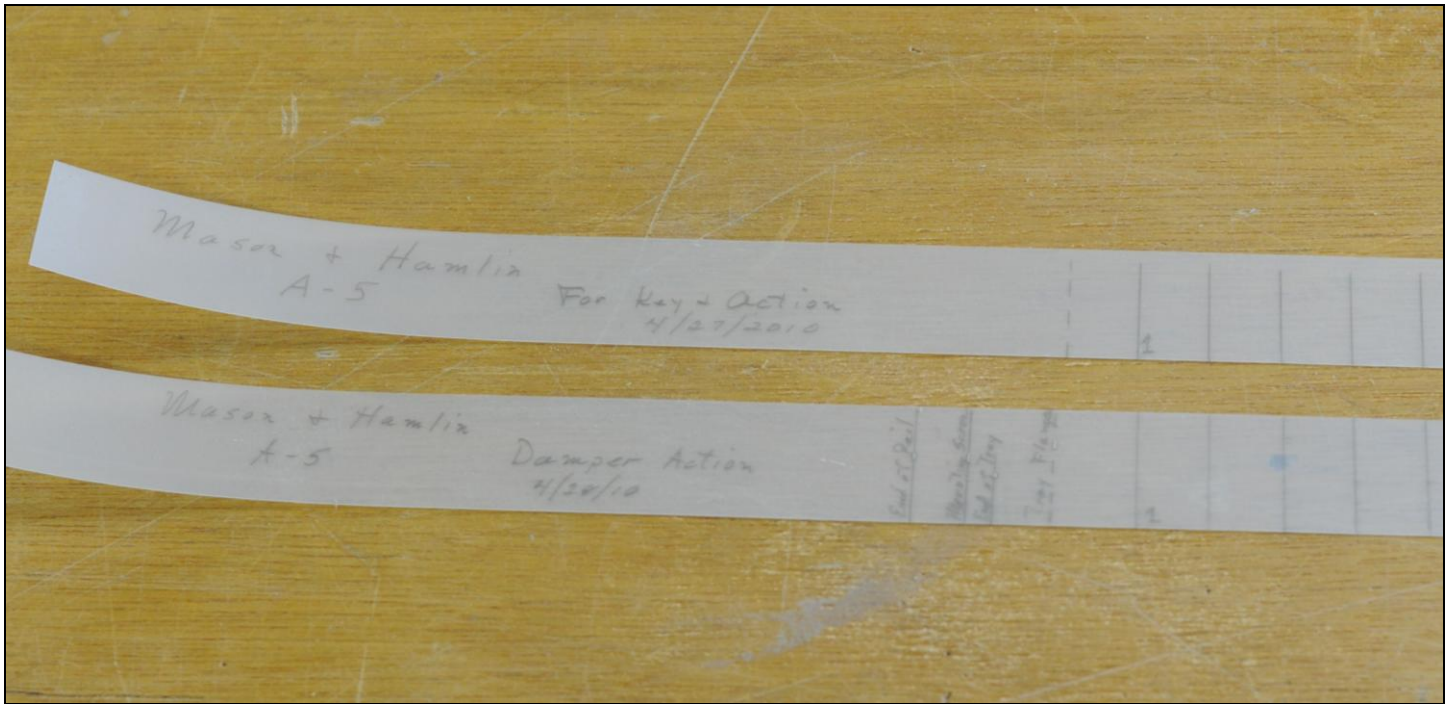
Plastic mallet
WNG Damper Rail Punch
Small spring clamps
Machinist's scribe
Small machinist's square
Drift punch
Battery powered drill
Metric 6" rule

Drill Bits

3.3mm drill
M4x.7mm tap

Supplies

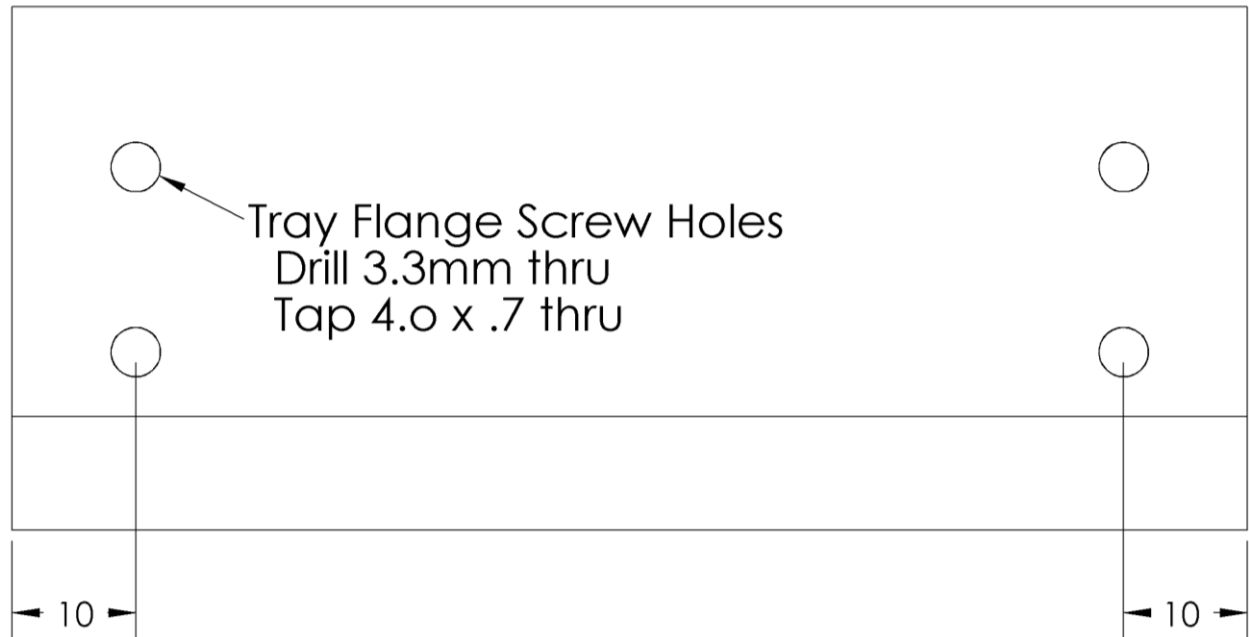
Mylar Scale Stick
Masking tape - $\frac{3}{4}$ " or 19mm wide
Pencil
Black Paint Felt Tip
Tap Magic (Cutting fluid for Aluminum)



You will need a scale stick. WNG provides several methods of creating a scale stick. If you are unsure as just what a scale stick is, download the article that explains scale sticks.

The mylar scale stick should show the location of the notes, tray flanges, Mounting holes in relation to the end of the rails.

Basic End Measurements for the Sustain Pickup Rail

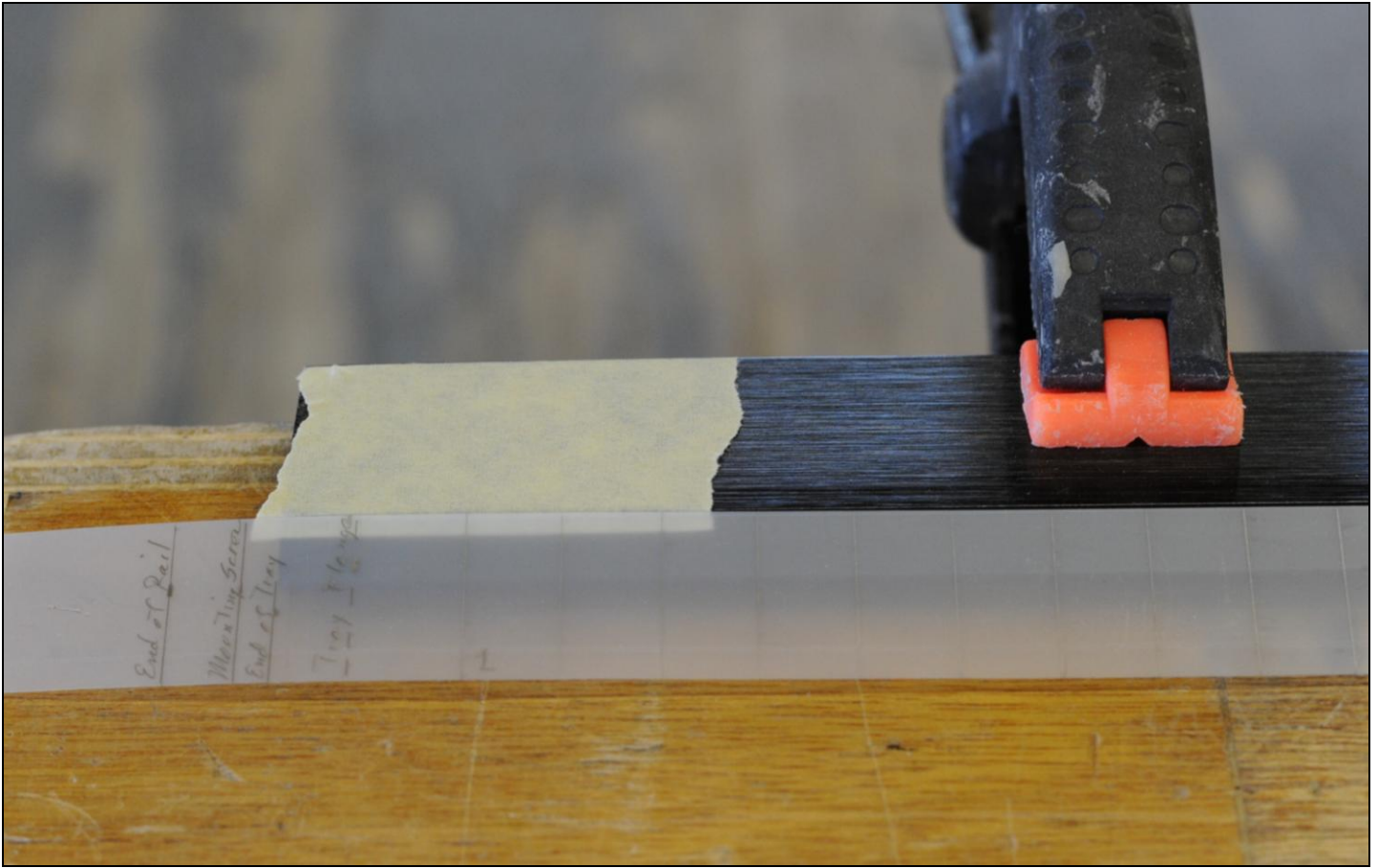


On a sustain pickup rail, at each end the tray flange holes should be 10mm or .39" from the end of the rail. In addition, these holes must be drilled in accordance with the damper action scale stick

Make sure that that all of the above information is included on your mylar scale stick.

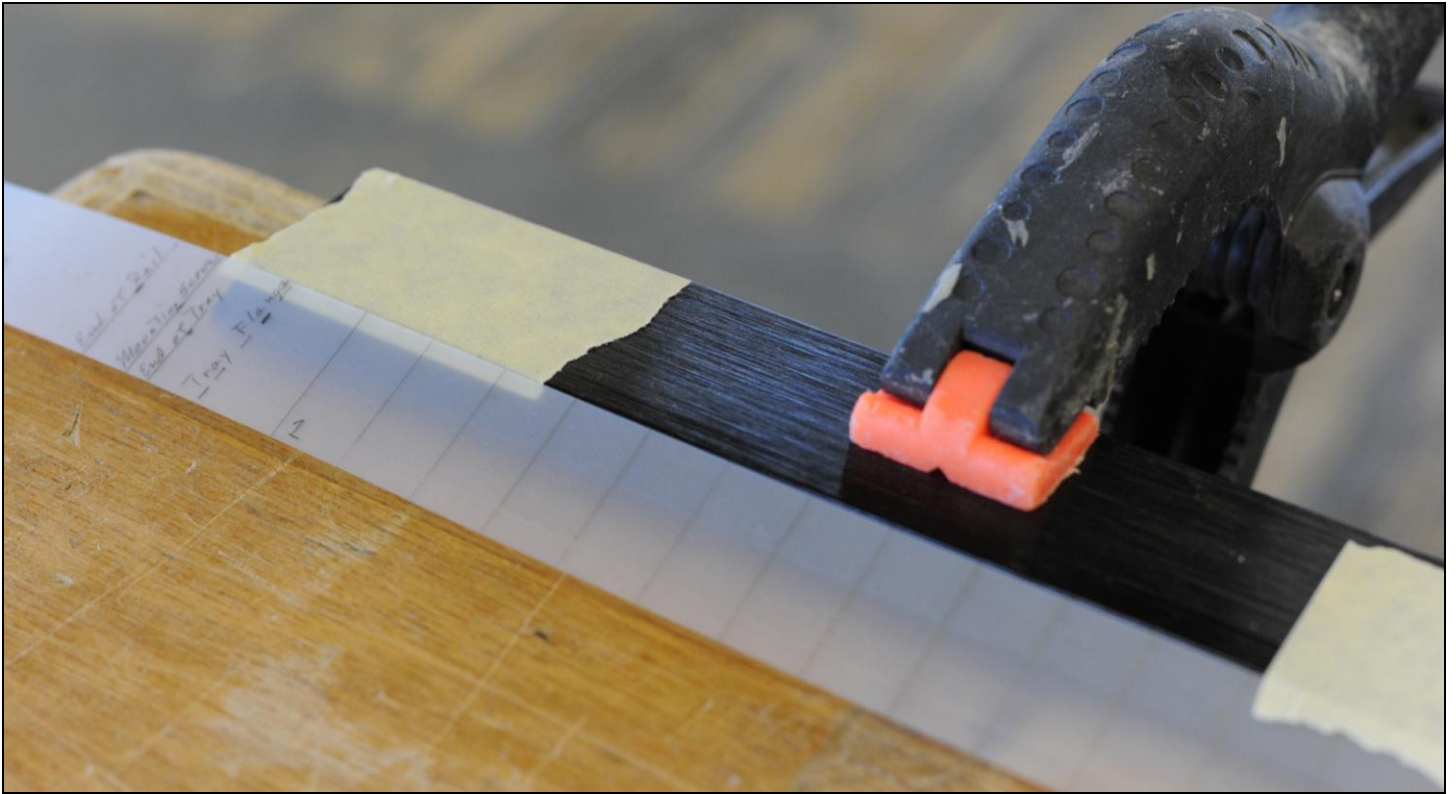
Clamp the undrilled Damper Sustain Tray to the bench. Marking a rail for drilling is much easier if it doesn't move during the process.

Orientation is critical. It is easy to do this part backwards.



Using the mylar scale stick, place 2" or 50mm wide masking tape on the sustain tray where the mounting screw holes will go.

The end of the tray should be 10mm out from the center line of the tray mounting screw holes.



Position the scale stick so that the mark for the bass tray flange falls on the mark that is already on the tape at the bass end of the Damper Sustain Tray.

After the scale stick is positioned on the Damper Sustain Tray, tape the scale stick to the Damper Sustain Tray.



Place a mark on the tape next to the mylar scale stick to transfer the tray flange lines to the Damper Sustain Tray.



The treble end of the rail is 10mm or about 3/8" from the tray flange line. Mark the tape with this measurement.



Use a square to draw on the tape lines from the marks you just put on the tape. These lines are the centerlines for the tray flanges and locate left to right, or bass to treble, the tray flange screw holes.

Tray Flange Screw Hole Locations



These are the dimensions that correctly locate the Tray Flange Screw Holes from the back of the tray.



For each tray flange you need to mark, drill & tap two screw holes. You will need a ruler, preferable a millimeter ruler, but any ruler will do.

On the lines you marked on the tape, measure and mark on the tape at 13mm or about .512in and 28mm or about 1.102in. This is where you drill for the tray flange screw holes.



Place the tip onto the intersection of the lines on the tape and strike the punch with a non metallic hammer. This operation is necessary for the punch mark to reliably hold the drill bit when drilling.



This line should be on your damper action scale stick. The end of the rail will be 10mm or about 3/8" from the treble Tray Flange.

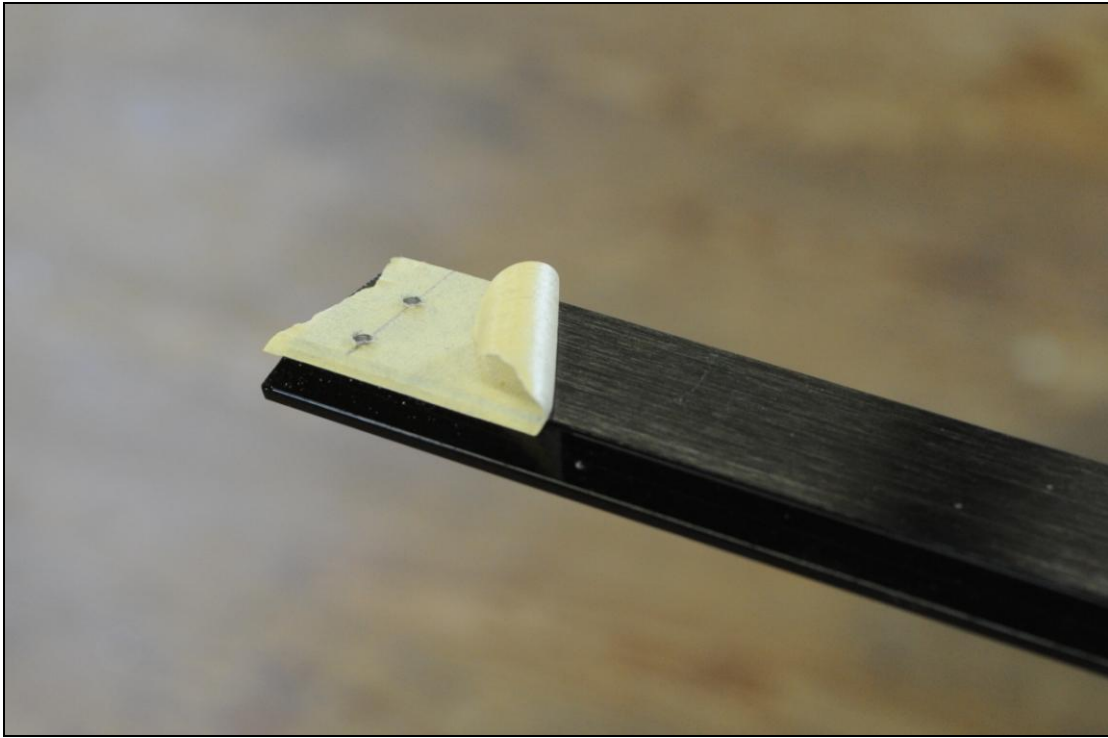
Use a pencil to mark the tape for the end cut on the Damper Sustain Tray.



Use a bandsaw to cut the flange rail to length. Cut to the outside of the line you marked on the tape. You can also use a hack saw if you wish.



Use a vertical belt sander to clean up the end of the rail. On metal it is best to use an old belt as sanding metal will ruin the belt for sanding wood.



Remove the tape from the sustain tray.



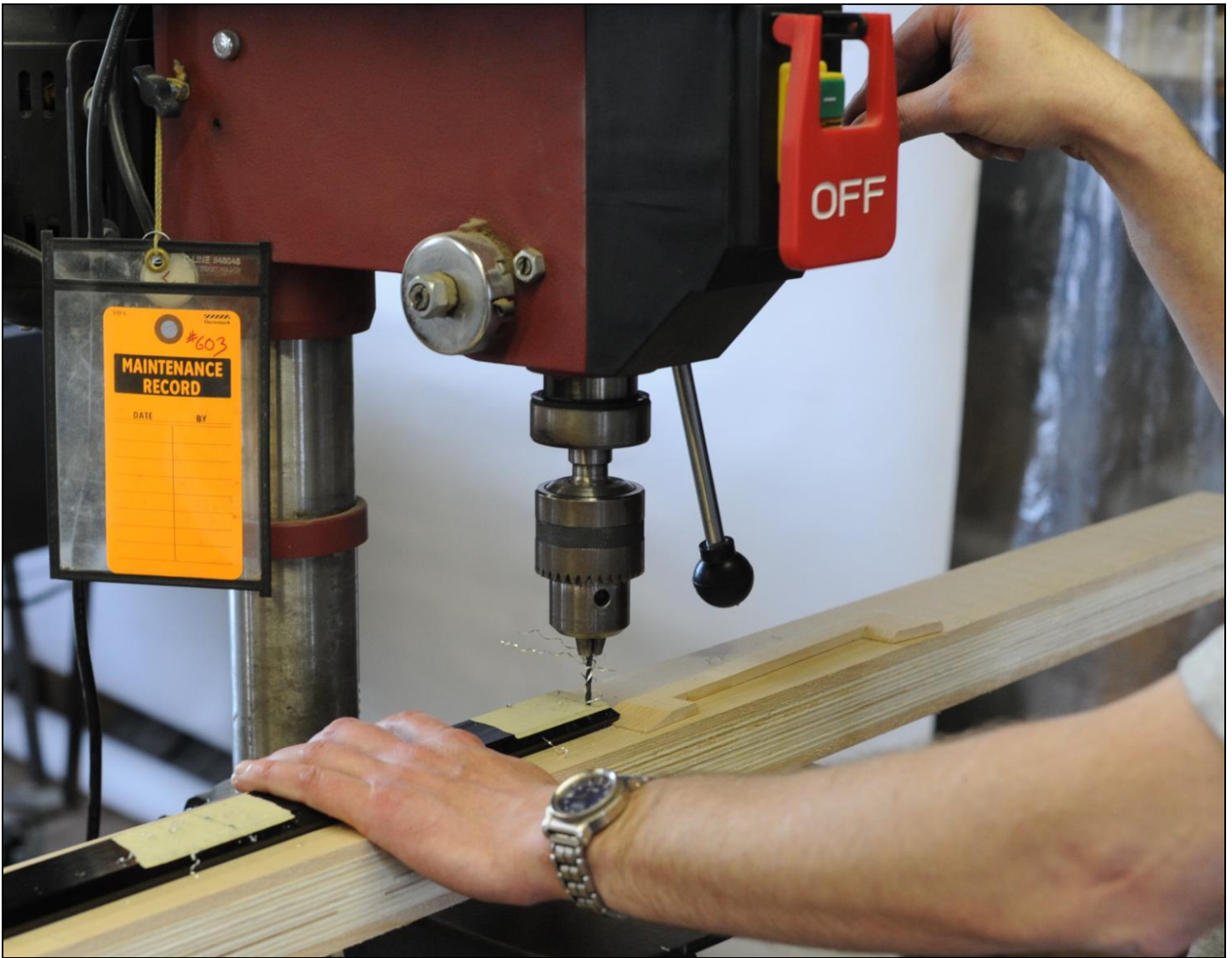
Set up your drill press with a table long enough so that at note 1 or the highest treble damper note the rail is safely on the table.



Put a 3.3mm drill bit in the drill press. Note that this is the same drill bit used for the flange screws.

Set the rotational speed of the drill press at 3000 RPM.

Raise the table until the tip of the drill bit is 3mm or about 1/8" above the rail.



Position the mark under the drill and slowly lower while loosely holding the rail. The tip of the drill will catch the punch mark and pull the rail directly under the drill. Feed the drill into the hole at a moderate pace, fast enough to generate chips, slow enough to match the rate the drill can cut aluminum.

Drill all the note and tray flange holes with this setup. The hole size and threading are the same for note and tray flanges.

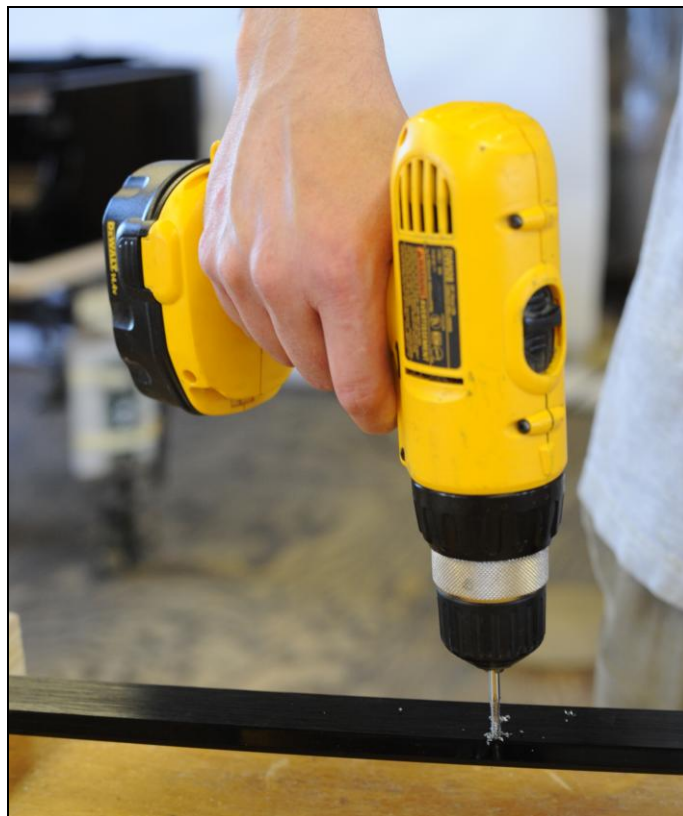


The easiest way to cut threads is with a tap in a battery powered drill. The tap size is 4.0 x .7mm.

Also, you will need the Tap Magic Aluminum Cutting Fluid to lubricate the tap while cutting threads in the aluminum rail.



Cutting threads in aluminum is easy however, you will need to apply cutting fluid to the tap. The cutting fluid keeps the aluminum from balling up in the threads causing a stripped hole.



The easiest way to tap the flange holes is with a tap in a battery powered drill. The procedure is easy.

Put the tap in the drill.

Set the direction of rotation forward and the speed slow.

Put a small amount of cutting fluid for Aluminum on the tap.

While holding the tap vertical, pull the trigger and let the tap pull you into the hole.

When the tap is through the metal of the rail, stop the drill, reverse the direction, and pull the trigger. The tap will quickly thread itself out of the hole.



You can use any kind of felt tip to black in the end of the rail. A paint felt tip works the best. Obviously the color choice should be black.

Paint the end so it matches the color of the rails and does not stand out.