Vac-Clamp

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Woodworking:- Using Vac-Clamp with jigs

Most workshops will, at some stage, need to produce complex shapes with quite close dimensional accuracies. Unless you have a CNC router a jig and router will be the only way to do this successfully.

The main problems associated with using a jig is how do you hold your work piece and jig together. A lot of trades people will use varying methods of clamping such as "G" clamps or screw the jig to the work piece or some other method which will mark or damage at least one surface. Another problem is movement of the work piece whilst the cutting process is being completed.

Using a Vac-Clamp with a jig is an extremely effective way of getting around both of these problems and allow dimensional accuracies and rates which rival a CNC router. This document will show how to make a jig that will work with a Vac-Clamp, and keep frustration at bay.

First thing to do is to create your template. This must be accurate because if there are any defects in this one you will end up with a workshop full of beautifully cut scrap. The photo below shows our template cut out of MDF this was used because it is flat and relatively non porous. All non-porous materials would also be suitable.

Our template will be glued onto a carrier board because it does not fully cover the clamp face . This provides stability and makes the jig easier to set up

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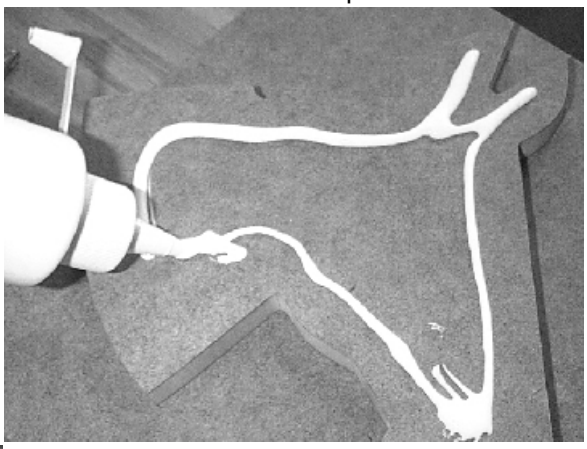
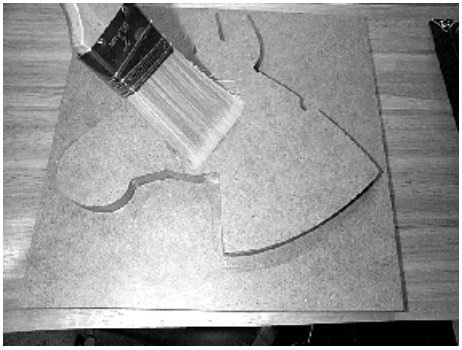
We recommend that the template is glued to a carrier board otherwise air leaks will occur between it and the carrier board . The ensuing loss of suction will mean loss of holding power. The carrier board should at least cover the Vac-Clamp. The carrier board in this example is 260 x 260.



Screwing the template onto the carrier board will hold it in place while the glue sets. Make sure that the screws are not going to interfere with the rubber seal on the clamp when it comes time to use the jig.



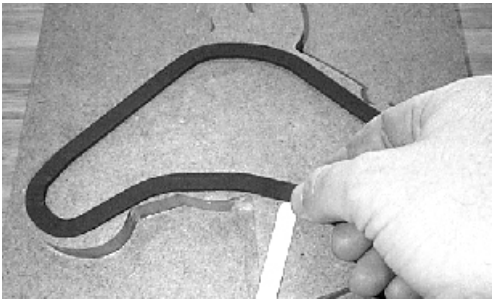
The result of the work should reveal an item like the one shown left, template mounted securely on a carrier board preferably in the middle.

Hint A coating of sealer will successfully seal MDF. Make sure to coat the edge of the template and carrier board as this is where the MDF is most porous. If possible seal the inside of the vacuum transfer hole too.

The next step is the key to the success of the jig. The secondary seal used on the jig should be something like a closed cell neoprene or EPDM rubber.

Make sure that the seal that is being used is non porous.

Our sample jig uses an EPDM rubber single sided tape. A good seal must be made, so ensure that the tape or rubber achieves this. Note that the secondary seal is flat against the jig.



HINT Use a narrow tape, this will allow tight curves to be achieved without puckering.

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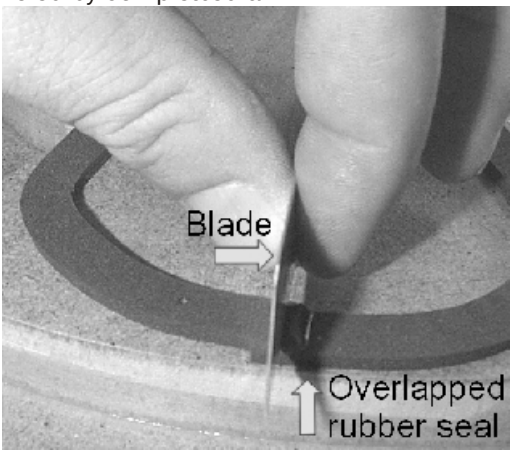
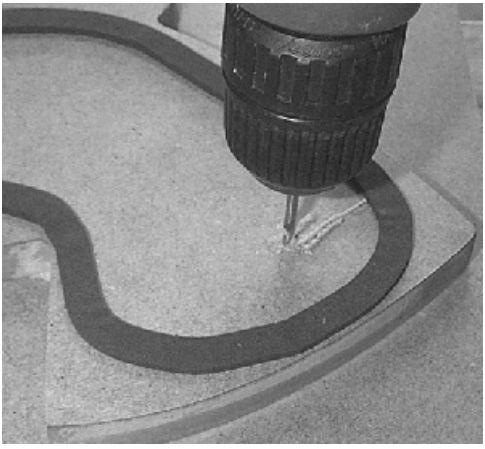


HINT To get the ends of the tape to line up, lay one piece over the other and cut through both with a sharp knife. Carefully remove the pieces that are not required and butt the two ends together

A vacuum transfer hole needs to be put in.
HINT Put the transfer hole approximately above the vacuum port of the clamp. It does not need to be perfect. It is also a good idea to seal the inside of the hole with .



Now the hard work is done it is time to get the thing working. The carrier board in our example is MDF with a foil facing. This means that it is non porous and ideal for this sort of work, nice and reliable too.

If you have a lot of work to do with a jig it may be useful to have some positioning blocks on the Vac clamp side. These are used to keep the jig from moving around when the air is switched off and the suction stops. Positioning blocks also mean that the jig will always be in the correct position when the jig is to be used again.

Remember not to cover the exhaust outlet of the clamp.

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With the jig ready to go and our work piece chosen setting the depth of cut is the next thing to do. A router cutter with a ball bearing is ideal. This will give you an accurate cut which will be as smooth, and as accurate as your jig will allow.
HINT A rough cut can be made with an oversize bearing on a router (eg 3/8" bearing 1/4" cutter). The fine finish cut can be done with the correct size bearing

Set the ball race or, in our example, pilot point to the required depth. Remember to cut in an anti-clockwise direction on the outside cut of a workpiece