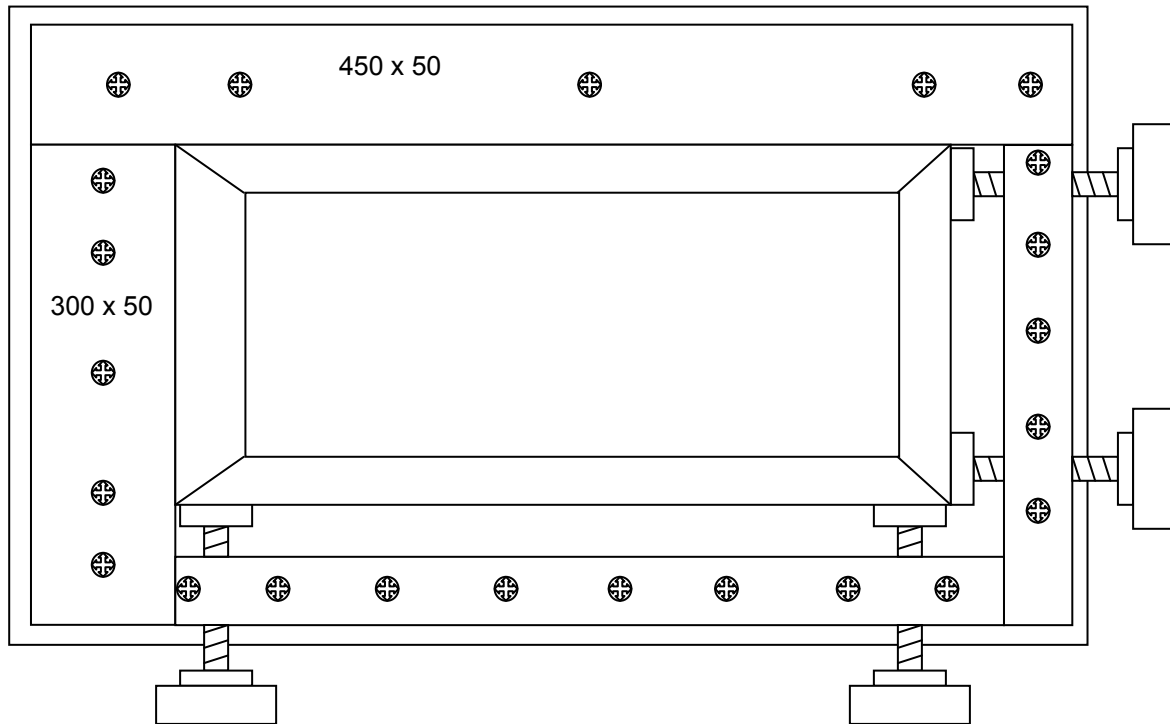


# Clamp for Mitred Frames



There are numerous frame clamps on the market and no doubt some do the job better than others. For boxmaking work we want the frame to glue up as square as possible as well as having all 4 corners pulled up tight. I have found the following design works better than any of the commercial clamps that I have tried. This clamp should be made to take the largest frame you might want to make, and then it can be blocked off to handle anything smaller. I will give dimensions for a clamp to take frames up to 360 x 260 mm



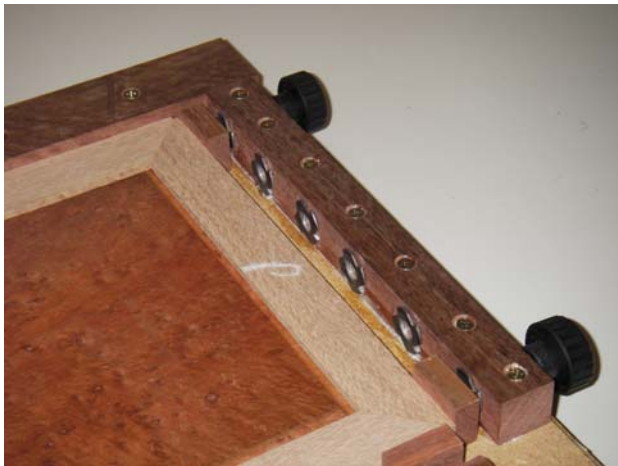
## Materials

450 x 350 x 18 (or thicker)	MDF or Chipboard
450 x 50 x 25	Hardwood
300 x 50 x 25	Hardwood
300 x 25 x 25	Hardwood
370 x 25 x 25	Hardwood
4 @ Knobs with M8 x 45 threaded inserts	
About 12 @ M8 "T" nuts	
About 24 @ 30 mm or 40 mm chipboard screws (depending on the thickness of your base piece)	

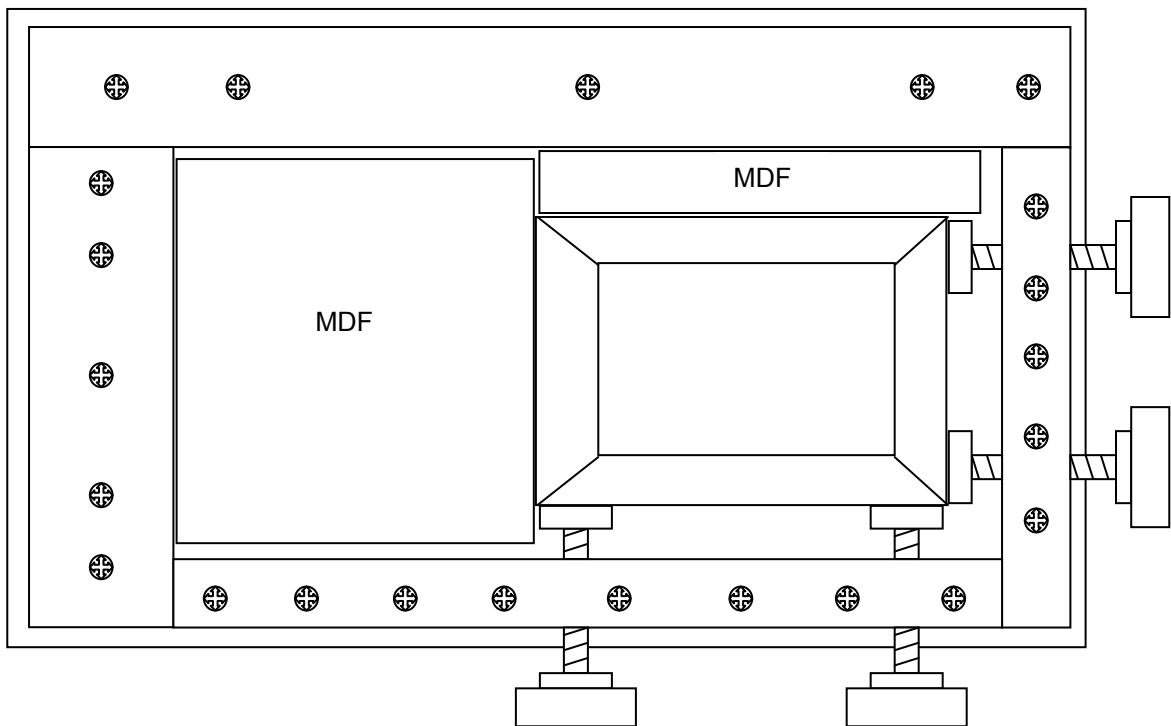
For the main body of the clamp we want a piece of MDF or Chipboard about 450 x 350 and at least 18 mm thick. We want this board to be as stiff as possible, and a piece of chipboard 30 or 40 mm thick would be even better. An offcut from a kitchen sink cut-out is excellent.

## Construction

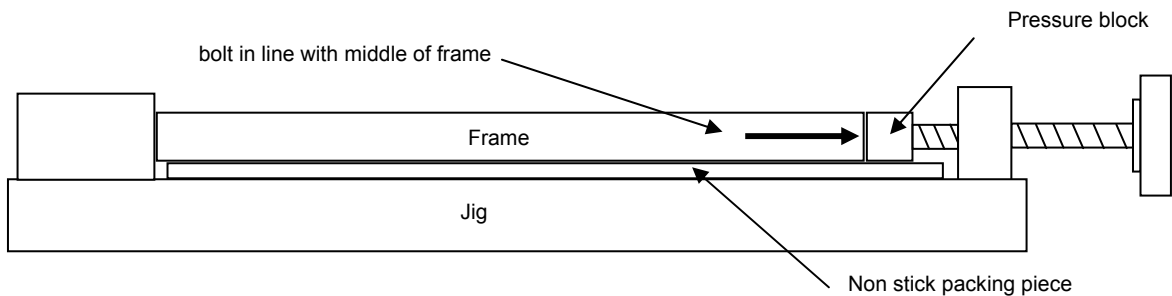
Start by gluing and screwing the 2 cleats (450 x 50 and 300 x 50) down as shown above, paying particular attention to get them accurately at 90°. Screwing by itself is not adequate, we want the structure to be as rigid as possible, as we will be putting a lot of pressure on the jig in use. For the other 2 sides, we use the 30 x 18 strips of Hardwood with "T" nuts inserted about every 40 mm on the inside edge. Drill and countersink for screws between each "T" nut. With lots of "T" nuts we can apply pressure directly over the joint for whatever size frame we have, by blocking off the jig with pieces of MDF. Notice how the knobs are applying pressure directly over the joints in the drawings above and below.



Close-up of "T" nuts in hardwood block



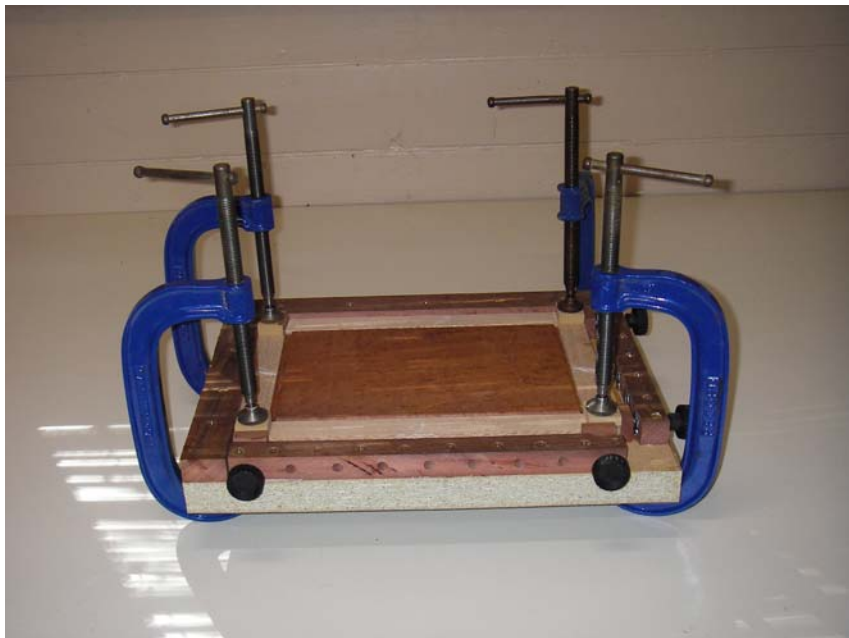
To avoid the frame gluing down to the jig with squeeze-out, use a piece of ply or MDF covered in plastic packaging tape, cut to 350 x 250, under the frame. Ideally the threaded knobs should be in line with the middle of the frame (in height), see drawing of section through jig below:



This can be adjusted by varying the thickness of the non-stick packing piece. On my jig I used a piece of 3 mm MDF. Small pressure blocks of hardwood between the bolts and the frame will spread the pressure out and prevent damage to the frame. Make 4 of these about 30 x 18 x 10 and drill a flat bottomed hole about half way through the side to accommodate the end of the bolt.

In use, apply glue to both halves of each joint and loosely assemble with the panel in place. Place the frame in the jig and start by aligning the top L.H. corners of the frame, making sure that the inside and outside edges line up well. You can then use the knobs to selectively pull up the other 3 corners, again making sure that the inside and outside edges are flush. Once you are happy with the alignment, you can increase the pressure on the knobs (a little bit on each one in turn) to clamp the frame tightly. Ideally you want glue squeezing out along the full length of each mitre to show that they have all pulled up well.

I usually leave the frame clamped up in the jig overnight for the glue to dry. If you are worried about the top surface of the frame not being flush across the mitres, you can use G clamps on each corner (with a non stick pressure block above the corner) to pull the pieces into alignment. See photo below. NOTE: This may not be possible with small frames in a big jig.



© Roger Gifkins 2006  
Ph 02 6567 4313  
gifkins@midcoast.com.au  
www.gifkins.com.au

