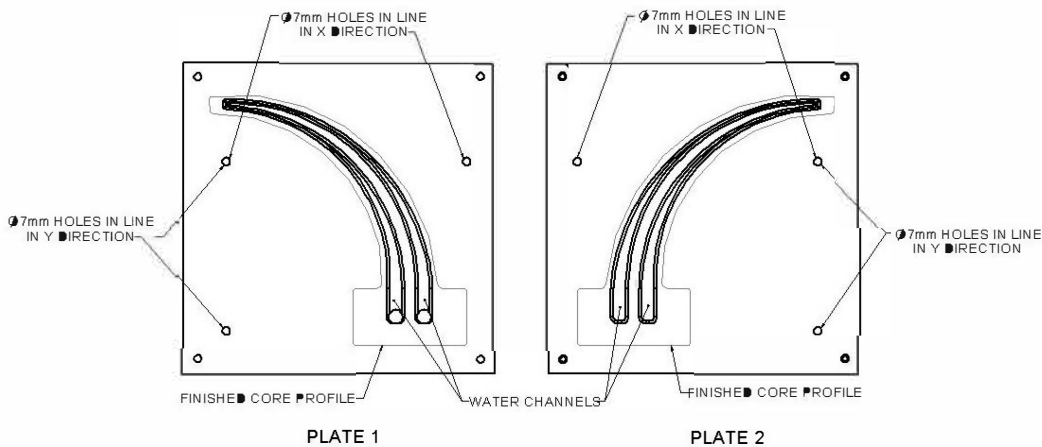
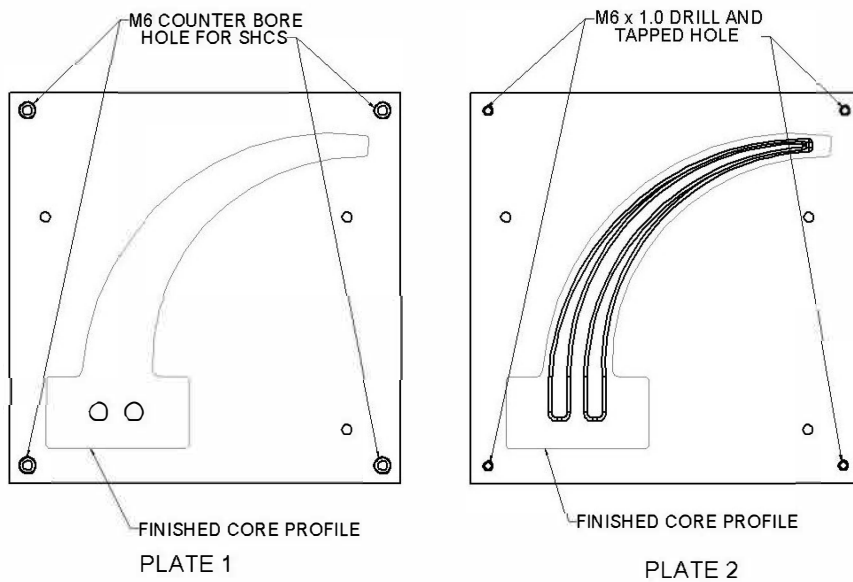


General Preparation for Fusing (Vacuum Brazing) Cores and Cavities by Polyshot

- 1) Preferred plate materials for cores and cavities are AISI H-13 and 420 SS tool steels. The fused assemblies typically require a heat treating process. In order to ensure joint integrity, all heat treating must be done by Polyshot.
- 2) When ordering and machining steel, grain structure of each plate must be in the same direction and marked for identification. This orientation must be maintained through steps including fusing.
- 3) Each plate that makes up the core/cavity must be a minimum thickness of 20.5mm \pm .05. Plates must be surface ground top and bottom, flat within .13mm and must have enough stock in length and width to finish outer profile. Maximum width and length of plates are 365mm x 510mm. Finished shapes, etc. will be machined by the customer after the plate fusing process is completed.
- 4) When designing the core/cavity, include a minimum of (2) 7mm \pm .013mm diameter dowel holes in known locations. These holes should be as far apart as possible in the plate and should be in a manner so that the plates are orientated correctly. (Ref drawing #1) The dowel holes should be a loose fit (.101mm clearance between holes and dowels) and the parts should fall apart when lifted with the dowels installed. The dowel material is not important.



5) One plate will have M6 tapped through holes for handling during our process. The other plate will have a counter bore for a M6 SHCS in the same locations as the drilled and tapped holes in the corresponding plate. A minimum of 2 sets of these holes are required (Reference Drawing #2 below). Note! There are applications where screw holes are not required. Please consult Polyshot if your application has screw hole limitations or the geometry of your parts does not warrant handling screw holes.



Drawing #2

6) Drill any necessary holes in the plates. There cannot be any through holes on the fusing surfaces within 12.7 mm of water channel (Reference Drawing #3 below). If through holes are needed within 12.7mm of the water channel, they must be machined in after the fusing process is completed.

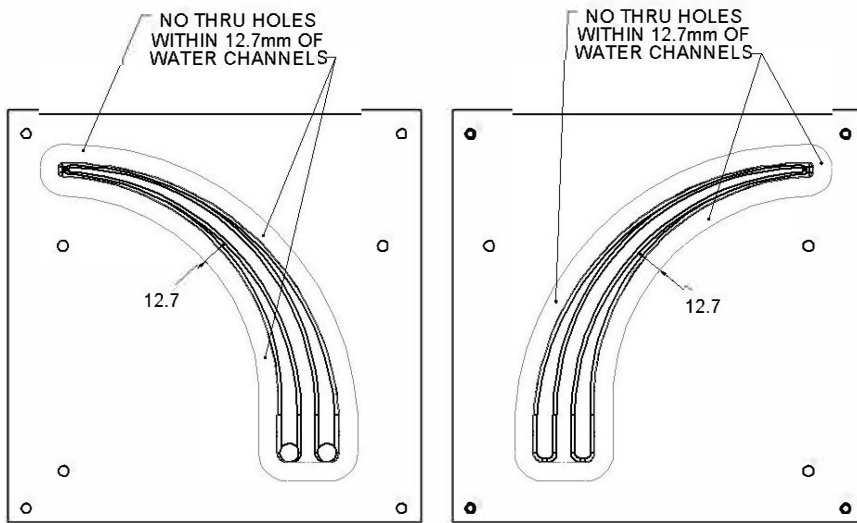


PLATE 1

PLATE 2

Drawing #3

7) For water channels, machine them finished to final width. The channels should be machined deep enough to allow for grind stock. Typically, this surface is ground and 0.13mm-.26mm of stock is removed. Polyshot will grind plates prior to plate fusion.

12) In most cases the fused plates will require a heat treat process. The customer will have the option of (a) machining the fused plates in the hardened state or (b) machine them as they are and then return them to Polyshot for the heat treating process.

Note! Every fused project is different and there are many times the general guide lines provided here can and should be modified. Please consult Polyshot Engineering department with any questions you may have about your particular project.