

Making Cylindrical squares

By Thor Hansen

To make an angle plate you will need to have a way of holding the work so you can machine the two sides at 90 deg. One way of doing that is to turn two cylindrical squares, two cylinders where the diameter is the same along its length and the bottom square with respect to the side of the cylinder. As long as your lathe turns parallel the cylinders will be square when standing on the mill table.

I found a description of how to make at Harold Hall's website:
<http://homews.co.uk/page307.html>

Materials

I had a piece of thick-walled steel pipe and some pieces of steel I could use as top and bottom.

Making the Cylinders

I cut suitable lengths from the pipe and turned a recess and a chamfer on the inside ends – right photo.



The next job was to drill a 8mm hole in each end piece and turn the end pieces so they fit into the recess turned in the pipes.

I made a small mandrel with one end turned to 8mm dia, and the outer part threaded M8 and used this to hold the work in the three jaw – right photo.



Each end piece was then chamfered so it would be ready to be welded in place – right photo.

I then used a large centre drill and centre drilled each hole.

A friend of mine welded the end piece into the pipes. Afterwards I also drilled a 3.3mm hole in the end piece near the weld and tapped the hole M4.



Turning the cylinders

Since each cylinder had a centre hole at each end they could be turned between centres – right photo. A M4 bolt in the tapped hole engages with the lathe dog.

The cylinders were also faced in the same operation.



I had a couple of long M8 studs that I use when clamping the cylinders to the milling machine table.



