

Headstock dividing attachment for Emco Compact 8

I wanted to be able to divide work held in the lathe chuck. Duncan Munro describes how George Thomas' Versatile Dividing Head can be attached to a Myford lathe, unfortunately that proved difficult on my Emco Compact. I decided to make a dividing attachment with a worm that engages the 40 tooth gear wheel at the rear of the lathe mandrel. I adjusted the dimensions of the attachment such that I could use as many parts as possible from my dividing head.

Materials

I started with a 80 x 35 -mm pieces of 10 mm steel plate for the bracket. I also used a piece of 20-mm thick steel plate as a head for the worm. The worm was turned from a piece of 15-mm diameter mild steel rod I had in my scrapbox.

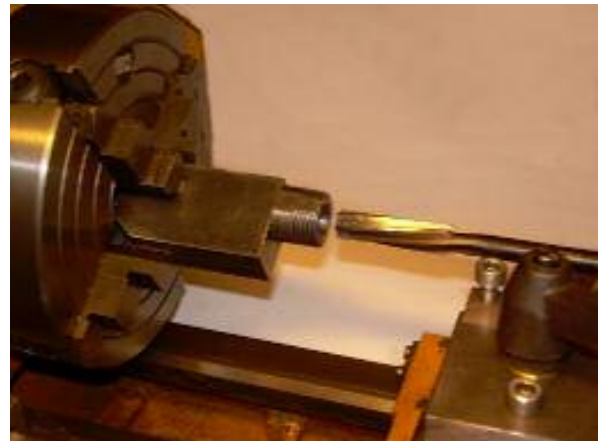
Bracket

Since I didn't want to make permanent changes to any part of my lathe, I removed the block used to clamp the front cover to the headstock (just two M6 socket head screws). I made a bracket with two 6-mm holes 20-mm apart, and countersunk the holes. The bracket extends 18-mm above the headstock and here I will drill a 8-mm hole for the worm head. I had to cut away part of the corner to make room for the M5 front cover screw.



Worm head

The worm head was made from 20-mm thick steel. I used a hacksaw to cut the work roughly to shape and then used the Mini-Mill to mill the sides parallel and square. Then the work was moved to the 4-jaw and the upper 17-mm was turned to a diameter of 23-mm so the division plates would just slide onto the short stub. Since the work is only 20-mm in one of the directions the stub will not be completely round. The upper part was threaded M23 x 1.25. Then a small pilot hole was drilled through the head, opened up to 11.8-mm and reamed to 12-mm (right picture). The worm shaft will pass through this hole so I wanted it accurate and smooth. This attachment will not be used much so bronze bushes are not needed.



The next operation was to turn the side of the head so the worm will engage the straight teeth on the mandrel gear wheel. These teeth are cut parallel to the mandrel and the screwcut worm will deviate slightly from 90 deg. angle.

I mounted the work in the 4-jaw with the face that will contact the bracket facing outwards. I used some packing between the work and one jaw (right picture). Then the side was turned so the bracket could move without obstruction.



To the left is a trial fit of the parts. Everything fits well and movement is smooth.

Worm

The worm was turned from a piece of 15-mm diameter mild steel. I drilled centre holes in each end. One end was turned down to a diameter of 8-mm for a length of 10-mm. This end was then threaded M8 using a die in a tailstock dieholder.

The worm was then mounted between centres and one end turned to 12-mm diameter for a push fit in the reamed hole in the head.

The work was turned around and the worm cut (right picture).



The last operation on the worm was to cut a flat on the shaft close to the end threaded M8. The flats are a little over 8-mm apart to fit the slot in the indexing arm of my dividing head (right picture).



Putting it all together

A small nut to fit the M23 x 1.25 thread on the head was turned from a piece of 32-mm diameter mild steel.

Now I could mount the headstock dividing attachment to the rear of my Emco and use the division plates, indexing arm and sector arms from my dividing head (lower right picture).



