

### Burgess BK3 Motor Drive Pulley Replacement

The original motor drive pulley is made from red plastic and is wide enough to accommodate the drive belt position in low speed or high speed. The original pulley has a twist off diagonal slot which engages with a 3.5mm diameter cross pin in the motor shaft. The red plastic wears with usage.

The replacement solution is a standard 5mm pitch transmission pulley from Bearing Boys which only needs slight modification in the lathe as detailed below.

Mount the pulley boss end in a collet chuck on the lathe leaving enough of the boss exposed to allow a parting tool access. Use a travelling centre to centralise and stabilise the pulley in the collet as it is will not be fully gripped by the collet with the available grip length.

Turn back the pulley inner flange to the same diameter as the boss and to leave 25mm of tooth width. This is tricky because the flange is a compressed fit onto the pulley body. As you turn it down it will start to free itself from the body of the pulley and stick to the parting tool while freely rotating on the pulley boss. The solution to this is to initially cut a small section of the flange down to the boss diameter and then with the parting tool 'knock' the remaining flange sideways off the pulley body. You will then have to take the pulley out of the collet to remove the flange remains.

Once the teeth are 25mm wide and the boss turned down to match the original boss diameter, loosen the collet and push the pulley firmly home and fasten tight after ensuring it is running central using the revolving centre. Drill out the centre bore of the pulley to 3/8" diameter. I suggest doing this progressively, 9mm, 9.4mm and then finish with a 3/8" reamer.

Mount the pulley horizontally in a milling vice and find the diametric centre and lock the axis. It might be prudent to support the pulley in this position. Using a centre drill mark a starting pip on the boss at the point where the witness mark of the newly cut material meets the original anodised boss. Cross drill to 3.5mm diameter.

Mount the pulley vertically in the milling vice and clamp with a parallel on either side to space and grip the pulley beyond the limits of the remaining flange. The pulley should be rotated slightly on the diametric hole and then milled down with a suitable tool to give a 3.5mm slot that creates a 'B' shape with the diametric hole.

*Note that providing you can remove the cross pin through the motor shaft, you can ignore the milling of the 'B' slot and just drill the 3.5mm cross hole and fit the cross pin directly through the pulley and the motor shaft.*

Run the reamer through the central hole once again to clear any burrs and offer the pulley to the bandsaw stub and check that the pulley slides into place and then rotate locks. File to fit if needed.

Here is a pictorial view of the details and the result.

