

## Belt and Pulley Change Amadeal CJ06/18A

**Disclaimer** - The following method of replacing the drive belt and motor pulley is for instruction and guidance only. I take no responsibility for any damage or injury that may result from any persons following this guide.

No claim is made that this is the manufacturers recommended method.

**Background** - I purchased the lathe 2<sup>nd</sup> hand, and soon afterwards the chuck stopped turning in either direction, even though the motor was operating.



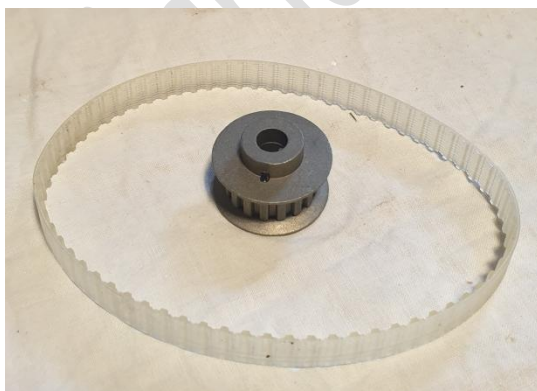
Removal of the end cover revealed that the plastic motor drive pulley had broken and the drive belt was not visible, but there was evidence on the pulley of it melting. (Also discovered a dead centre! Doubt if this was anything to do with the failure.)

I searched for videos on Youtube and the internet but was unable to find any that provided detailed support in changing the pulley.

On purchasing a replacement Pulley and gear, I recorded, step by step, the process I followed and the tools I used in order to assist in the reassembly.

In the interest of sharing with other hobbyists I put together a video, but due to its length, I edited it down to photos of the key steps and have made this pdf available to give some idea of the process and tools I used.

### Pulley and Belt -



Purchased from Amadeal (Harrys Machine Shop) Amadeal.co.uk.

CJ18 - timing belt for Metal Motor Pulley.  
CJ18 Metal Motor Pulley

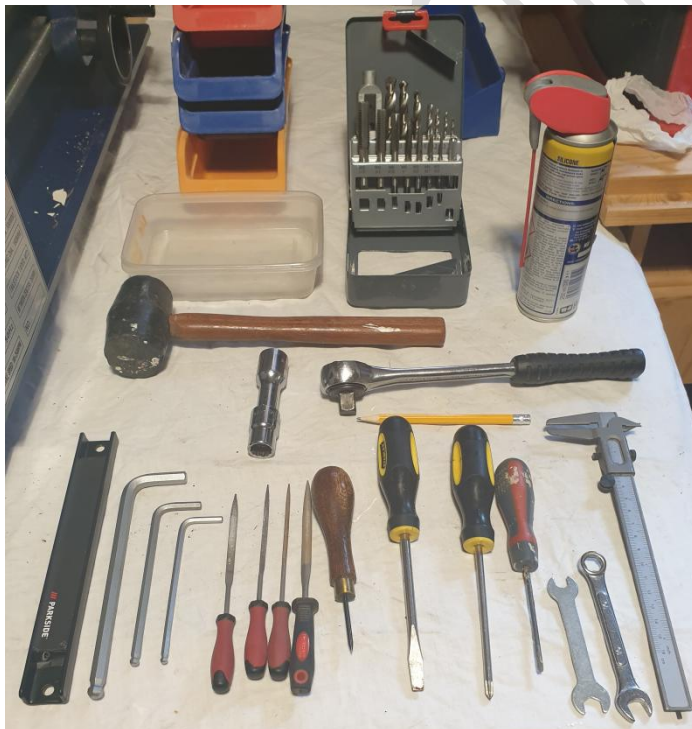
## Preparation -



I disconnected the lathe from the mains supply and placed it on top of a table, giving me all round unrestricted access.

Conscious that there was a danger of losing grub screws, washers and keys, I placed the lathe on top of a white sheet and collected a range of containers to place parts in as I took it apart.

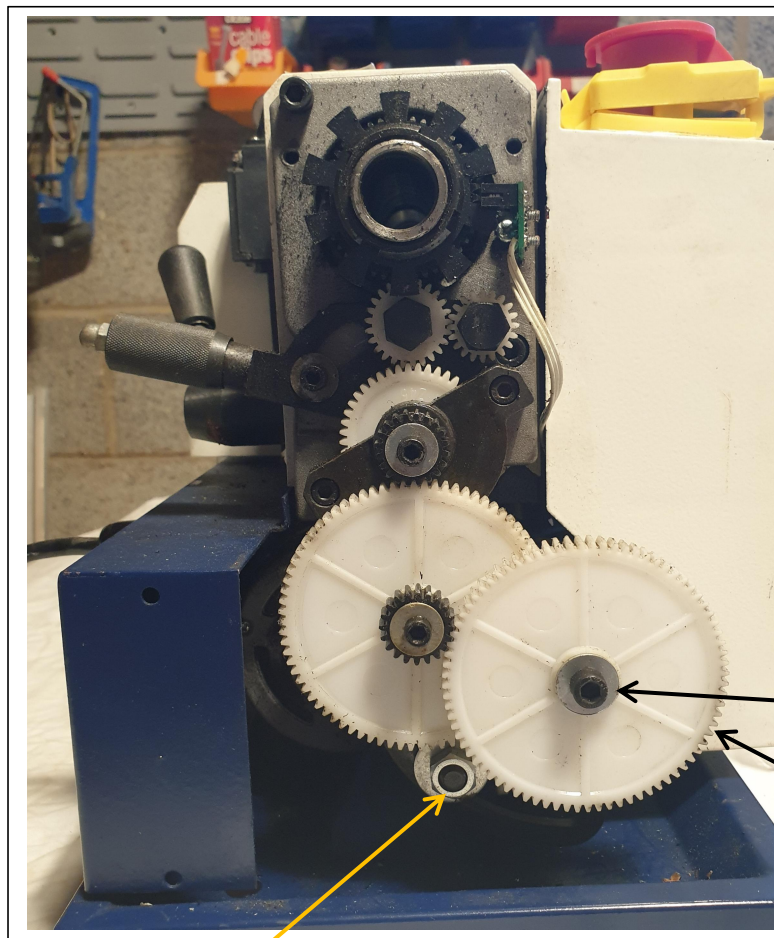
## Tools Used -



- Mallet
- M14 Socket and Ratchet
- Metric Allen Keys (at least 4mm and 5mm)
- Needle files
- Bradawl
- Flat headscrewdriver
- Posi-drive screwdriver
- Electricians Screwdriver (For Grub screw not electrics)
- 2 x 10mm open ended spanners
- M4 tap and 3.3mm drill
- Silicon lubricant

### Optional

- Magnetic tool holder
- Storage boxes



### Dismantling step 1

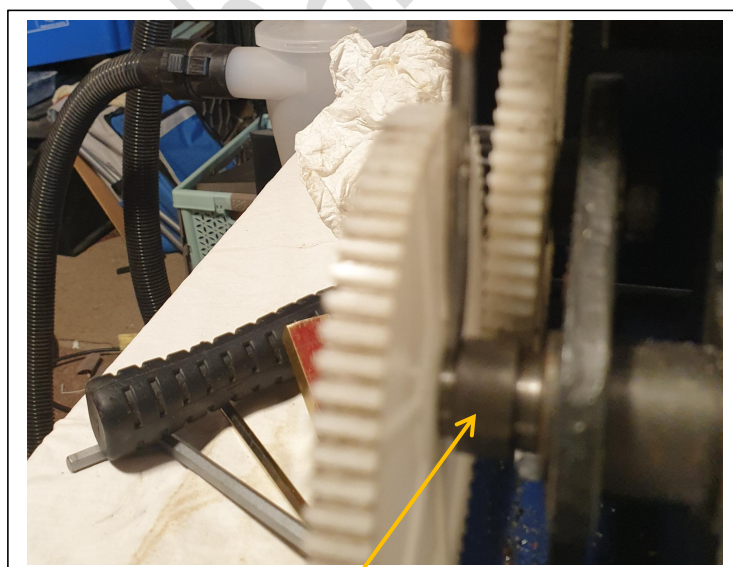
- Remove the end cover.
- Slacken the M14 Support plate nut
- Remove the 5mm socket head screw.
- Remove the large lead shaft drive gear wheel.

Note - On mine, the gear and key were very tight on the shaft. See image below.

5mm socket head screw

Lead Shaft drive Gear

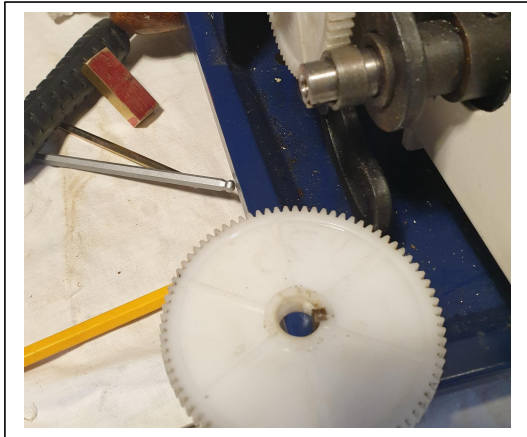
M14 Gear Support Plate Nut



There is a bush at the rear of the gear wheel. Using the small screwdriver I moved this away from the gear, allowing me to use a larger flat-head screwdriver to gently prise the gear wheel and key off the shaft, rotating the gear as I edged it off. Take care not to lose the key!!

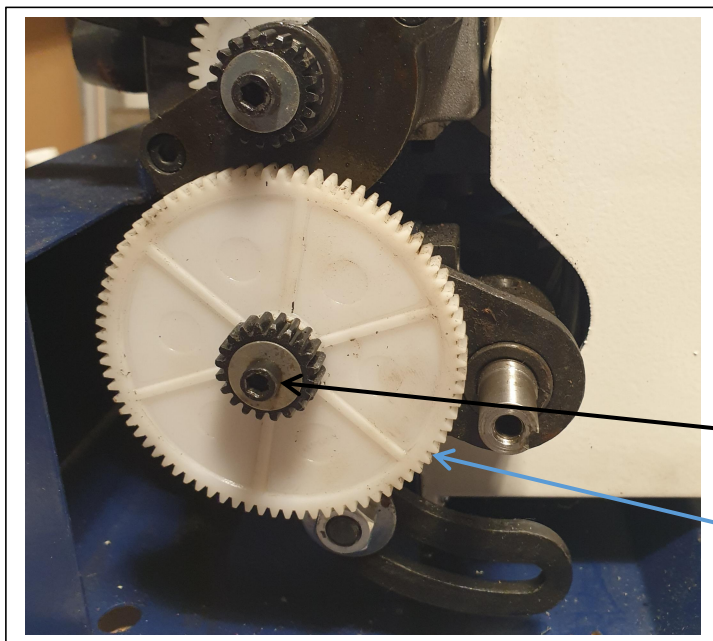
Bush





I like to be methodical! Keep parts safe and avoid mixing them up.

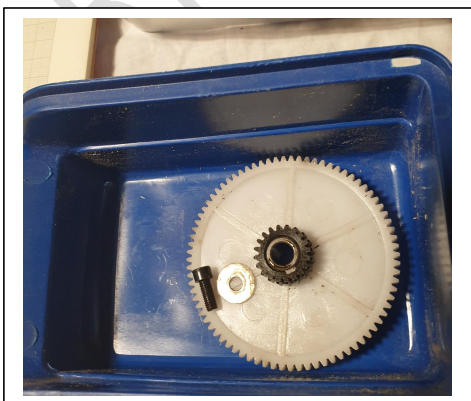
## Step 2



- Remove 4mm socket screw
- Followed by remaining lower gear wheels.

4mm Socket heat screw

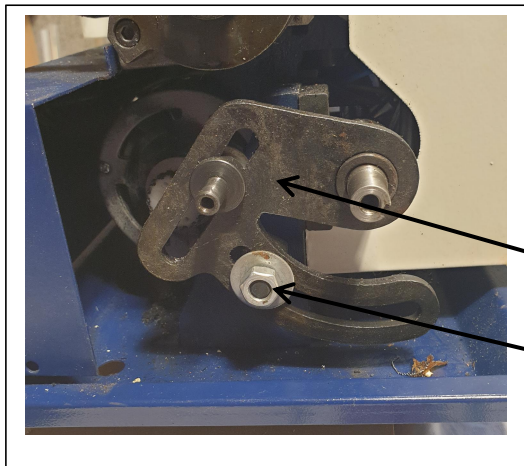
Lower gear wheel assembly



Promise I won't show you putting the parts in a separate container again!

Might just be me, being compulsive.

### Step 3

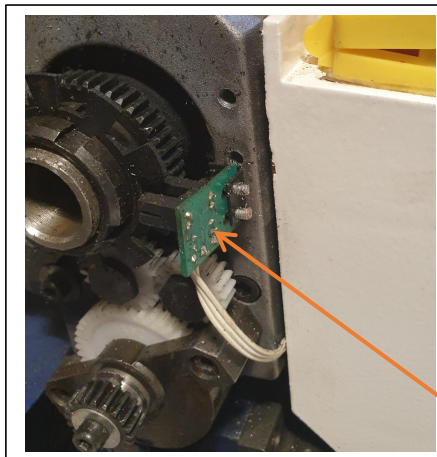


Remove the M14 nut and washer and the bottom gear support bracket.

Gear support bracket

M14 Nut and washer

### Step 4



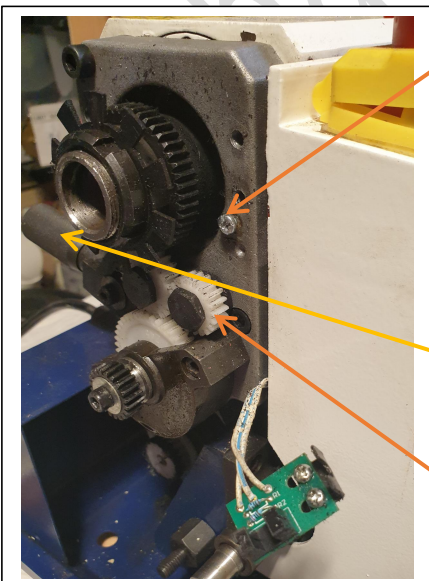
Remove the small PCB holding the Hall Effect Transducer (RPM pickup). Slacken off the round head screw and it slots off.

The screw can be left in place.

There is no need to disconnect any of the electrics (apart from the mains!!), or electronics as they can be held out of the way.

Hall Effect Transduce PCB

### Step 5



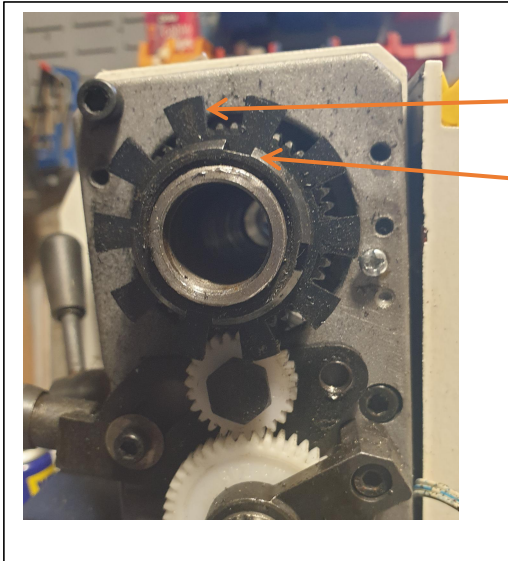
Round head Screw securing the Hall Effect

At this stage I removed one of the direction changing gears to provide access to the socket headed screw, however, this can be moved out of the way by using the lever to reverse the direction of travel.

Direction change lever

I removed this gear to provide access to the socket head screw, however this is not necessary. (see above)

## Step 6



Remove the slotted disk.

Slotted disk

Castellated nut

The castellated nut needs to be removed, ideally this should be done using a C spanner, however, I used a flat bladed screwdriver and the mallet (not recommended practice!), after preventing the chuck from turning. See picture below.

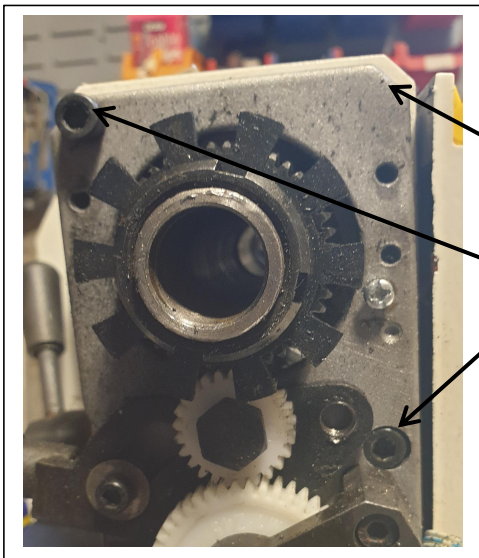


With the chuck prevented from moving, the castellated nut was easy to remove by tapping the nut using the screwdriver with the mallet.





### Step 7



Remove the pulley cover by unscrewing the 2 6mm cap head screws.

Pulley Cover

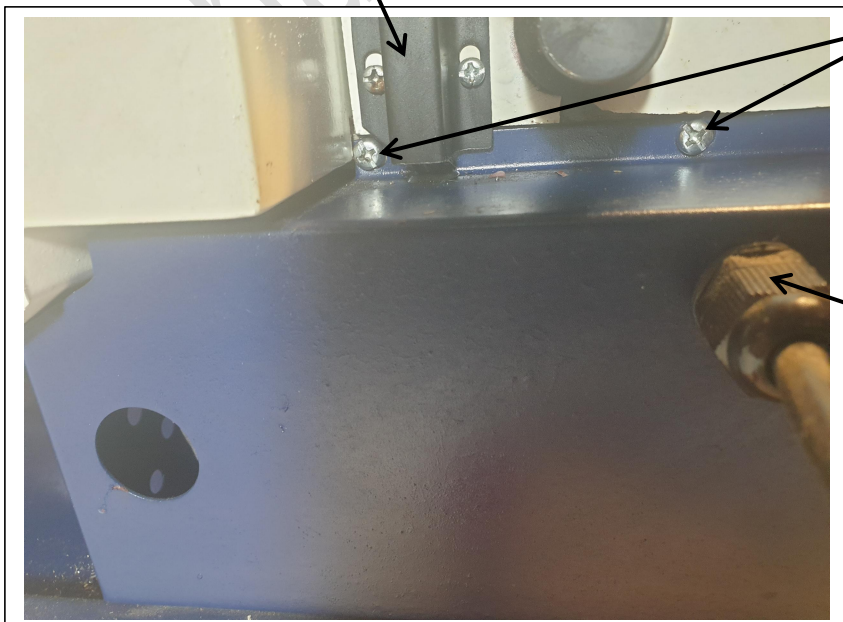
Retaining screws

You will now have access to the top and bottom drive belt pulley, however, to replace and tension the belt, it is necessary to move the motor cover, as well as the control unit. There is no need to actually remove the cover or control unit as access to the required nuts and bolts can be achieved with them just moved to the side.

### Motor Cover

To undo the motor cover, first undo and remove the cable cover for the chuck guard microswitch. This is held in place by 4 posidrive screws. Then remove the 3 motor cover screws and slacken off the mains cable gland nut. The cover can then be manoeuvred out of the way.

Chuck guard microswitch cable cover



2 of the motor cover retaining screws.

One additional under lathe rear splash guard

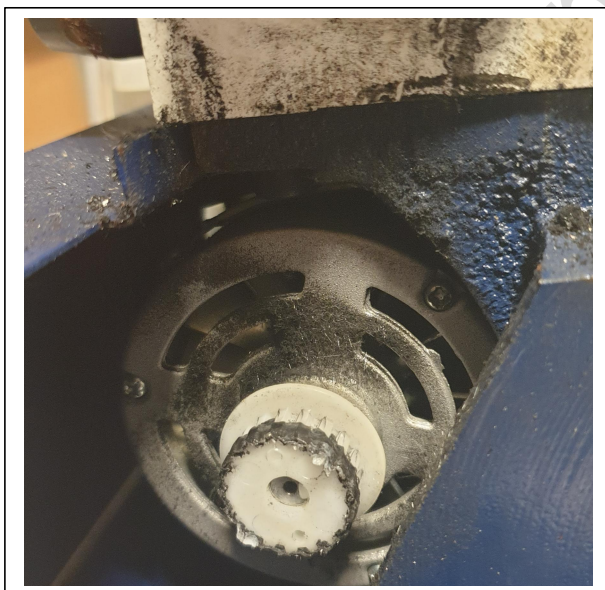
Cable gland

## Control Unit



Undo the 4 posidrive screws, (2 at the top and two underneath). The unit can then be manoeuvred out of the way.

## STEP 8 - If you are changing the bottom drive pulley

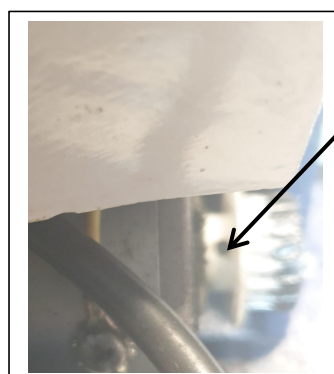


### Removing

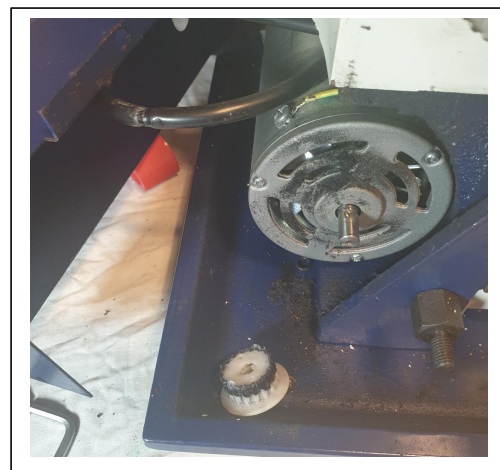
To remove the pulley, slacken off the grub screw at the back of the pulley.

Prise the pulley off the shaft, then remove the grub screw and place in a safe location!!

I used a magnetic tool holder to ensure that it wasn't lost.



Grub screw





## Fitting new pulley



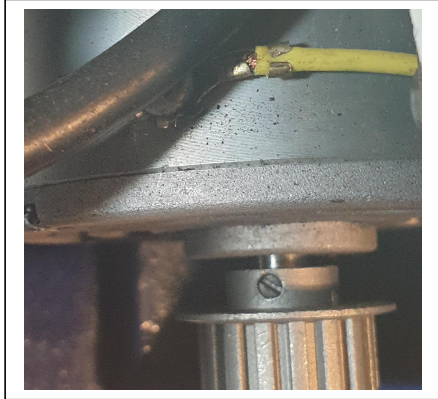
I found 2 issues with the new pulley.

1. It would not fit on the shaft
2. There wasn't a tapped hole for the grub screw.

I used needle files to remove burrs and gently filed enough of the key so that it fitted.

Once it went on the shaft, I marked where the grub screw needed to be fitted (180 degrees from the key.)

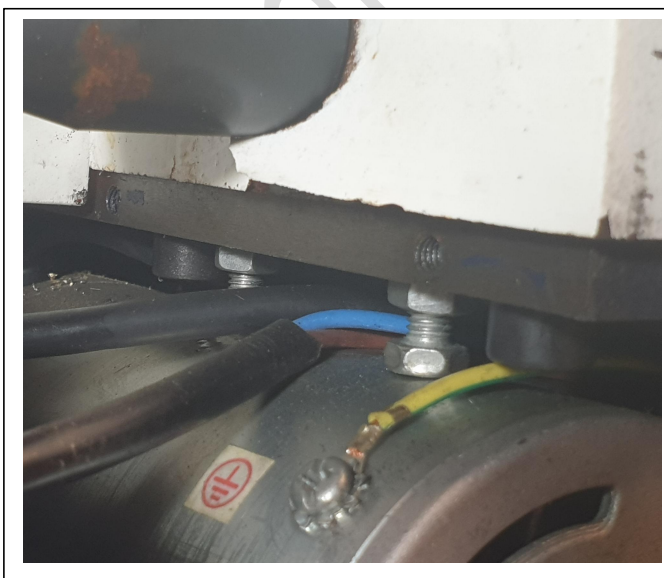
I drilled the pulley using a 3.3mm drill and tapped the hole M4.



Internal burrs were removed using a needle file.

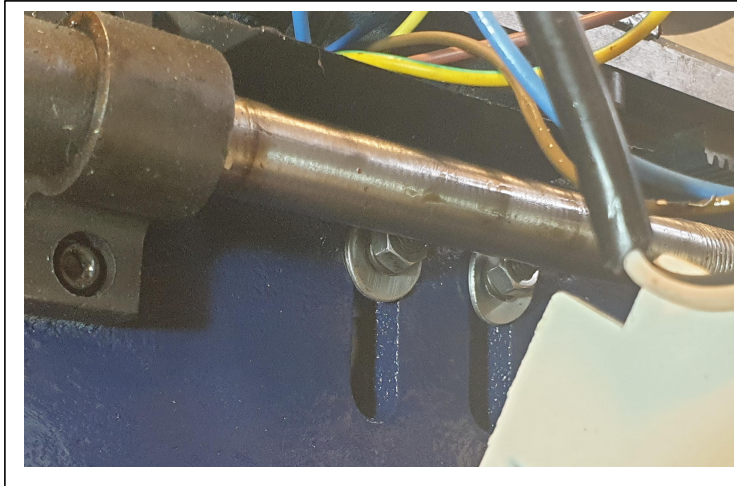
The pulley was then pushed on to the motor shaft and secured in place using the grub screw.

## Fitting and tensioning the belt

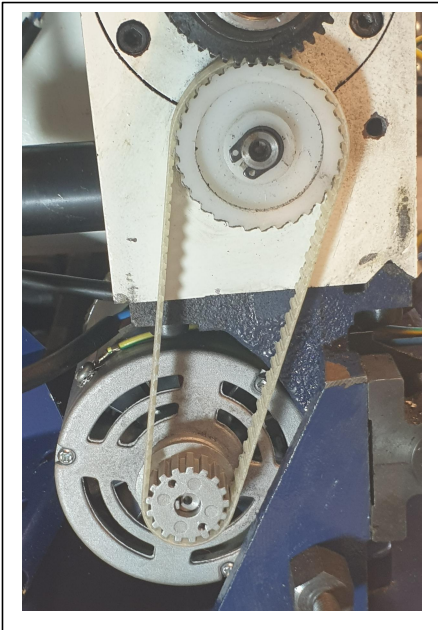


The 2 tensioning bolts are located above the motor. These can be adjusted using 2 x 10mm open ended spanners, preferably thin section.

Undoing the top nuts allows the bolt to be screwed into the bottom of the headstock casting. Slacken both off.



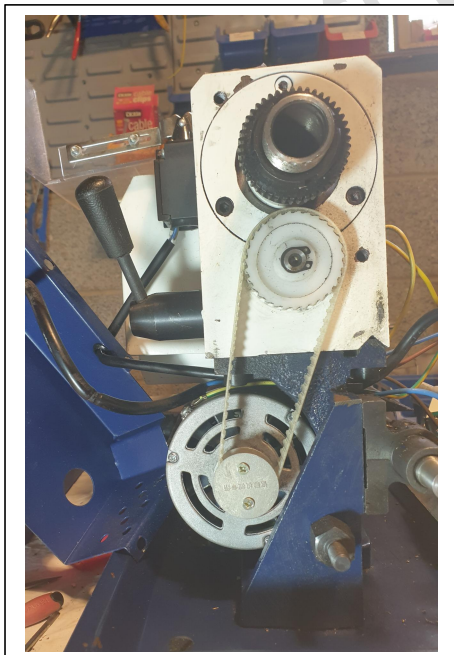
The motor retaining bolts are situated behind the leadscrew and can be slacked off using the 10mm open ended spanners. Only slacken enough that the motor can be moved.



Fit the belt and adjust the tension using the bolts and nuts above the motor, ensuring that it is horizontal.

Tighten the motor retaining nuts.

Fit the front onto the motor pulley.



At this stage the process is complete, and reassembly can commence. However, I only replaced the motor cover and control unit, removed the chuck restraint before testing at low speed in Left and Right Hand drive.

I checked for true running of the belt and rechecked the tension before completing the reassembly using the reverse process of dis assembly.

## Notes

Richard Summerfield