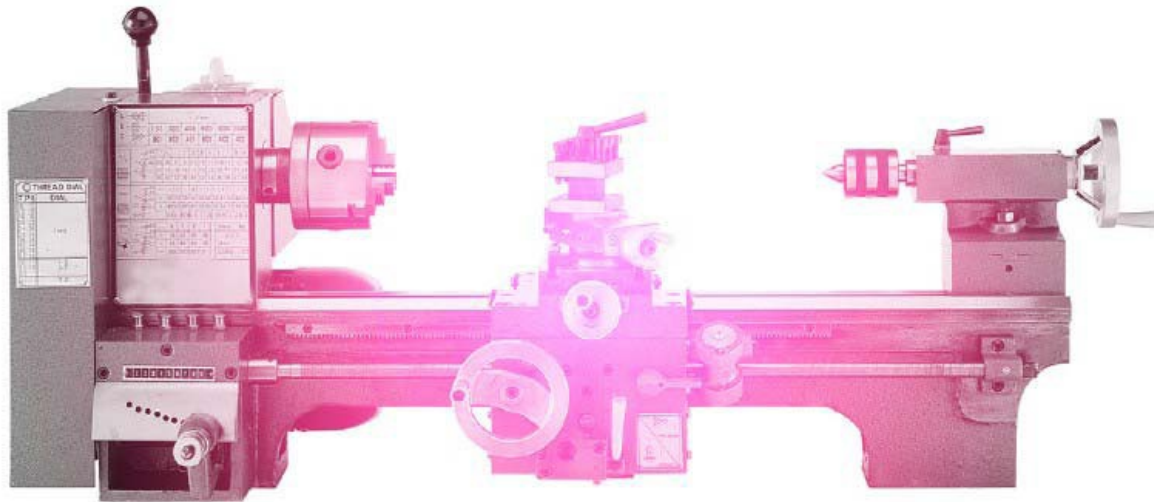


'a' Gear Shaft Retaining Clip Modification

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Oct 2010



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I was unsatisfied with the e-clip (circlip) on the 'a' gear shaft. E-clips are not intended to be removed and replaced repeatedly. About the 12th gear change the e-clip would lose its grip, and it is prone to fly off during removal or replacement.



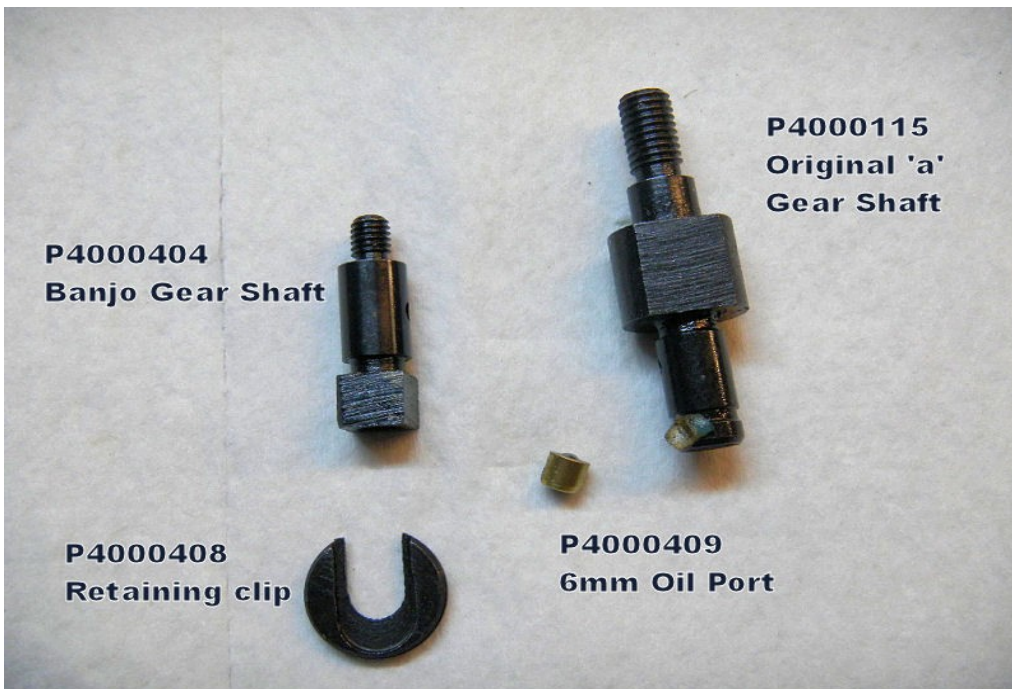
Original Clips

Taps needed:

M6x1.0mm plug tap

M6x1.0mm bottoming tap

Required parts, Grizzly part numbers are listed.



Part Numbers and parts Involved

Parts List:

P4000115 - Original 'a' Gear Shaft

P4000408 - Retaining clip

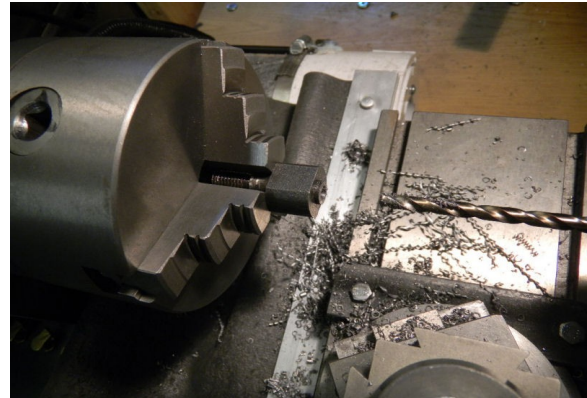
P4000404 - Banjo Gear Shaft

P4000409 - 6mm Oil Port

Cautionary Note: On some lathes the 'a' Gear Shaft has a set screw holding it. Make sure to check beneath the threading placard on the head stock for an access hole before trying to remove the 'a' Gear Shaft.



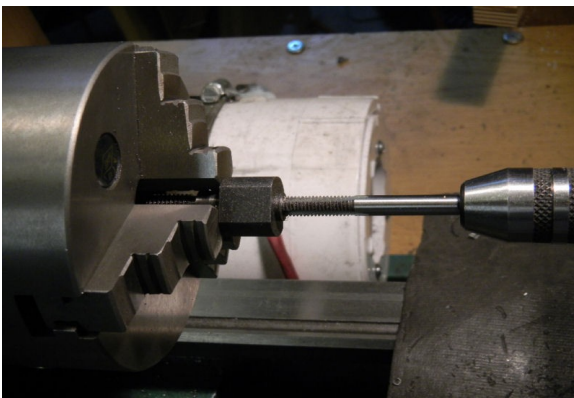
Mount 'a' Gear Shaft on lathe; Part off Shaft



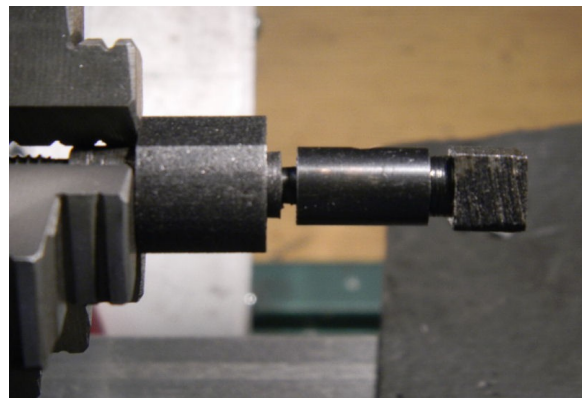
Drill with 5mm Drill Bit

Mount the 'a' Gear Shaft in the three jaw as shown and part off the round portion of the shaft. Please note the 1mm stub on the shaft. Be sure to leave this or the shaft will be too short for the keyed bushing. DAMHIKT! If you find a hole in the end of the shaft, you are ahead. If not, drill a locator hole with a spotting drill bit. Drill into the shaft with a 5mm drill bit to 11-12mm depth. Tap the hole with an M6x1.0mm plug tap and then finish with a bottoming tap.

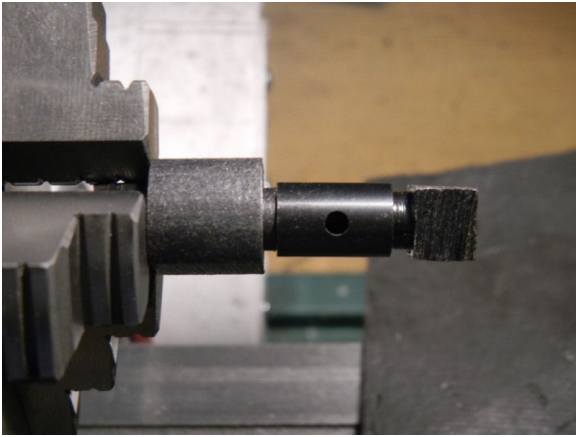
Do not remove the 'a' Gear Shaft from the lathe yet. Thread the Banjo shaft onto the 'a' Gear Shaft with the keyed bushing, install two change gears and Retaining Clip. Verify that the keyed bushing doesn't bind but has minimal side play.



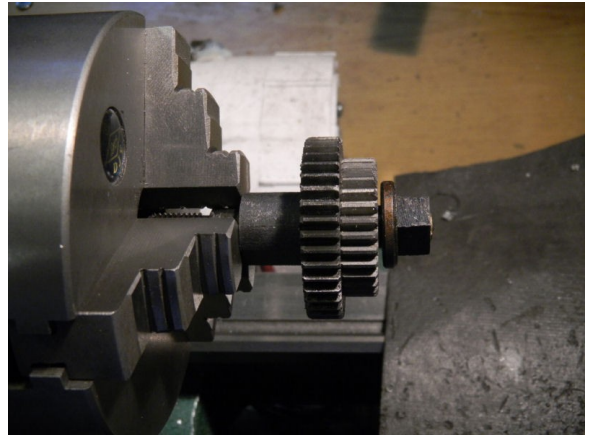
Tap hole M6x1.0mm



Test Fit of Thread - Not quite



Ahh... Much better



Test assemble with gears and keyed bushing

At this point, you can trim the stub of the shaft you left so the bushing does not have any side play.

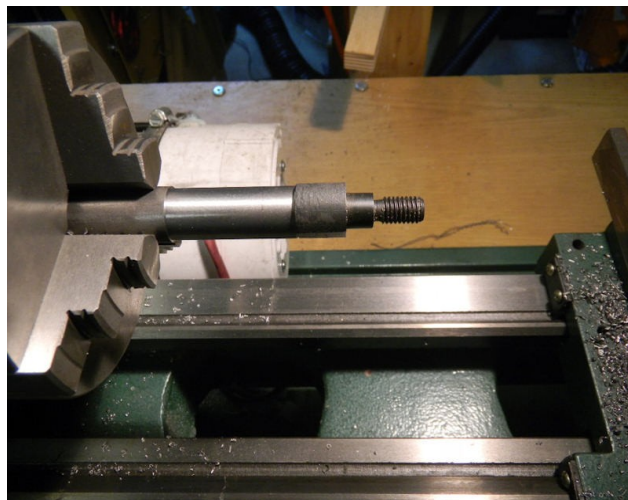
Press the Oil Port into the Banjo Gear Shaft. Slide the Keyed Bushing onto the Banjo Gear Shaft and screw into the 'a' Gear Shaft.

Remove the 'a' Gear Shaft from the lathe. Install the shaft into the head stock.

If you have a tumbler reverse mounted on the 'a' Gear Shaft you may have to relieve the 'a' Gear Shaft. The "stub" photo shows you how to size the shaft.

Since I was already set up to drill and tap, I drilled a 5mm hole in the end, tapped and installed a spare M6x1mm screw with the head cutoff. Mount the 'a' Gear Shaft and turn down the the required spacing and diameter.

This photo is staged. I would never machine that far from the head stock.



It took me about an hour to do this work, but it took MUCH longer to document and photograph. ENJOY!