

SIMPLE SMALL DIESEL TWINSHAFT CONVERSION.

Needing a small diesel twinshaft engine to suit a small scale Facel Vega tethered car I'm building, I decided to convert a DC 0.55cc Dart engine by adding a dummy, non-driven shaft. I bought the extra gear cutting change wheel required for my Boxford lathe to cut the thread to fit the crankcase backplate fixing, then I had an idea to avoid this fiddly task altogether, so I'll show how to do it just by simple turning, for which I used my smaller Hobbymat lathe, with just a couple of tap-cut threads. The images should reduce the tedious word count



enormously to describe the process, which should be suitable for any small diesel of up to 1 or 1.5cc which has a similar backplate/tank attachment arrangement.

These images show that the Dart's existing backplate has been drilled and tapped right through & countersunk for an 8BA screw, long enough to give about 1/4" of protruding thread to affix the dummy shaft, the end of which is turned and recessed to fit tightly over the inside of the backplate and butt up to its back



face. A smear of Araldite epoxy glue fixes the screw into place, and makes a sound seal against crankcase pressure.

The dummy shaft is cut from a suitable piece of hard aluminium alloy of 5/8" diameter for the Dart, and the image here shows the shape of the end which fits into the backplate. No detailed dimensions will be mentioned, just use a Vernier to measure to suit your particular engine. The dummy shaft is drilled and tapped 8BA to a suitable depth for the screw protruding from the backplate.



The completed dummy shaft is shown here. Note the 3/32" diameter tightening hole drilled through it, and the end of mine has been turned as a tight fit for a 4mm shielded ball bearing to fit into the freewheeling non-driven wheel, and tapped M3 for the wheel attachment screw. I made mine 5/16" diameter to match the Dart crankcase's shaft for symmetry.

The length of the dummy shaft is made to give the desired distance between the faces of the driven and non-driven wheels to achieve the correct track measurement for you particular car. I turned a steel wheel for the driven side to act as a flywheel, and an alloy wheel which runs on the 4mm shielded bearing for the non-driven side. Incidentally, the crankshaft taper on the Dart engine is 15 degrees, & there is a Dremel high speed cutter #125 which has a



30 degree apex and will cut this in one go if the hub is rotated in the lathe chuck and the Dremel bit gripped in the drill chuck.

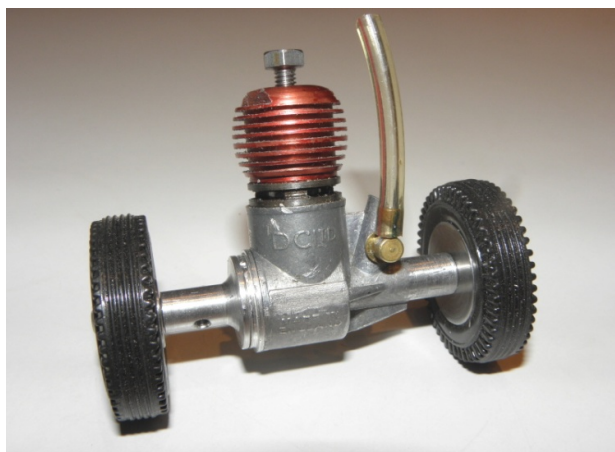
The image opposite shows the completed dummy shaft screwed and Araldited into the backplate recess. When the epoxy has cured, the whole assembly can be screwed into place on the engine and tightened with a tommy bar.

You'll need to make a pair of screwed clamps to fit over the shaft ends to firmly attach the engine to the car's bottom pan.

Other minor modification I made to my power unit were



to fit a 4BA hexagon head screw in place of the T bar compression screw, and to use a swept elbow spraybar from an ED baby to route the fuel tube neatly to the fuel tank. It was also necessary to file off a small part of the lower crankcase strengthening web where the screwed clamp fits. I used a good DC Dart which had broken mounting lugs, so I milled these off as they are surplus to requirements when using clamp mounting, and this also saves an unnecessary excavation of the bottom pan for a lower lug. This makes procuring a suitable powerplant more cost effective, as engines in this condition are a good deal cheaper; this pleases an old Yorkshireman no end, and puts some otherwise sad cases back into useful life. This is what the final result looks like!



Steve Betney.