RAW-J/MB

2nd October, 1962

Major V.T. Mountford
Mr. J.A.B. Lovekin
Mr. R.E. Thomas

LATEST DESIGN OF SIBA DYNASTARTER

This new design of crankshaft mounted Dynastarter differs from that which we have been testing in that the rotor is mounted the reverse way round with the open end outwards. The stator is mounted on an external cover plate spigotted to the inner cover plate which in turn is spigotted to the crank case. As drawn the outer cover plate houses a contact breaker, the whole arrangement being very similar to the Miller flywheel generator which we used on the RE1, RE2, Ensign and Prince models. In view, however, of the greater weight and width of the SIBA rotor a ball steady bearing is provided to ensure that the contact breaker cam runs true and that the rotor and stator are strictly concentric. This bearing is no doubt necessary when the Dynastarter is fitted to a typical 2-stroke engine with a built up crankshaft held together by press fits even though each half-shaft is usually carried on two ball bearings which, however, are too close together to guarantee absolutely true running.

It is doubtful, however, whether the outrigger bearing is really necessary in the case of our Crusader Sports or 250 Clipper engines which have a solid one piece nodular iron crankshaft carried on two widely spaced bearings and which do not need the crankshaft mounted contact breaker as they have an independent half speed one.

In any event a steady bearing can only resist bending stresses or whip, whereas experience with the Dynastarter which we have been running (which has a steady bearing carried on steel crankshaft extension) shows that the greatest trouble is likely to be caused by torsional stresses due to the flywheel effect of the rotor. A steady bearing can do nothing at all about these.

The weight and overhang of the rotor appear to be very great but its

/Cont....

Major V.T. Mountford
Mr. J.A.B. Lovekin
Mr. R.E. Thomas

2nd October, 1962

weight is actually negligible compared with, say, the gas loading on the crankpin which is of the order of 1½ tons compared with perhaps 10 lbs. for the rotor. Unless therefore the presence of the rotor alters the frequency of vibration of the crankshaft in bending in such a way as to bring a harmonic of this vibration into the useful speed range, a bending failure of the shaft is no more likely when it is fitted with the SIBA rotor without a steady bearing than it is when fitted with the standard Lucas rotor.

On the other hand the new inverted rotor is shown fitted on a nodular iron taper of about the same dimensions as those on the high tensile steel crankshaft extension which have already shown signs of torsional fretting in the engine which has been run and one of which cracked when the steel was in too hard and brittle a condition.

While the need for a steady bearing is distinctly doubtful it would seem therefore that a larger diameter taper and a substantial nut, with which to secure the rotor to the shaft, are most essential.

This can be achieved, at the expense of a little more overhang of the mass centre of thr rotor, with the original design of Dynastarter which has the advantage that the stator can be carr ied on the main crankcase casting so that only one cover plate is required instead of two.

R.A. Wilson-Jones