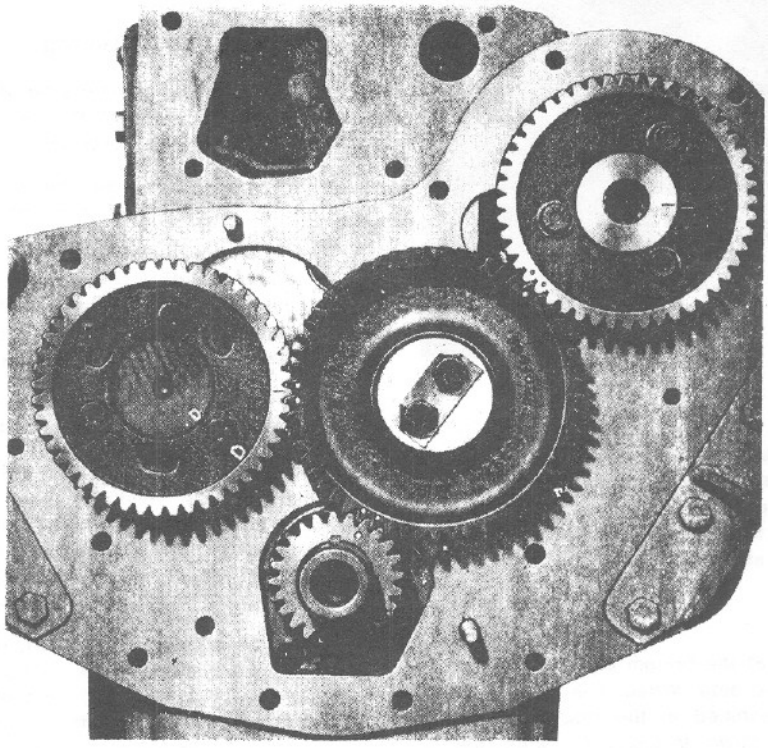
SECTION L
Timing



L1

General

As timing gears are employed, the factory setting remains constant. It is also worth remembering that the removal of the cylinder head in no way effects either the fuel pump or the valve timing.

TIMING MARKS

When the engine is originally timed at the factory, certain marks are stamped on the gears, so that if for any reason the engine timing has to be disturbed, then to reset to the original timing is quite straight forward.

To Reset the Engine to the Original Timing

Before commencing the retiming procedure it is assumed that (a) the camshaft, fuel pump and idler gears have all been removed, and (b) the camshaft is free to turn by hand. (If the cylinder head assembly is still in position, it is advisable to remove the atomisers and rocker shaft to facilitate the retiming operations).

1. Turn the engine until the keyway in the front of the crankshaft is uppermost as shown in Fig. L.1 (This will bring Nos. 1 and 4 pistons to T.D.C.)

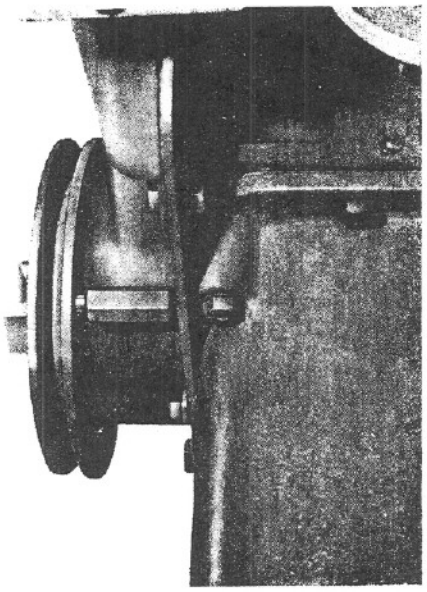
2. Fit the camshaft gear to its hub ensuring that the 'D' marks are correctly aligned. (Refer to Fig. K.5). Secure with the three setscrews

3. Similarly, fit the fuel pump gear to the fuel pump drive hub ensuring that the stamped timing marks align as shown in Fig. K.6. Secure with the three setscrews.

4. Replace the idler gear so that the double dots on the idler gear are matched to the single dot on the crankshaft gear and single line (or dot) on the camshaft gear, whilst the single dot on the idler gear matches with the double dots on the fuel pump gear. These timing marks when correctly positioned will appear as shown in Fig. L.1.

5. Locate the idler gear with the hub and the two securing setscrews using a new tabwasher.

6. Backlash adjustment should be carried out as described under the heading 'To Refit the Idler Gear and Hub'



L2

NOTE : When the timing has been reset, great care should be exercised when first turning the engine, for should the timing be incorrectly set, even by only one tooth, there is the possibility that a valve head will strike the piston crown.

TIMING PIN

A timing pin is fitted at the bottom of the timing case cover on the left hand side. When it is unscrewed it locates in a hole machined in the rear face of the crankshaft pulley (as shown in Fig. L.2), when Nos. 1 and 4 pistons are at T.D.C.
With some applications, two holes are provided in the rear face of the crankshaft pulley, i.e., one for the T.D.C. position and the other for the static fuel pump timing position.
Always return this pin to its normal location immediately T.D.C. has been determined and before any attempt is made to turn or start the engine.

Checking Fuel Pump Timing—See Page P.7

Checking Valve Timing

To check the valve timing proceed as follows :

1. Turn the crankshaft until the valves of No. 4 cylinder are on overlap'.
2. In this position set the valve clearance of No. 1 inlet valve to 0.039 in (1 mm).
3. Turn the engine slowly in the normal direction of rotation until the clearance of No. 1 inlet valve is just taken up. (In this condition it will just be possible to rotate No. 1 inlet valve push rod between the thumb and the forefinger).
4. Nos. 1 and 4 pistons will now be at T.D.C. if the timing has been correctly set.

   NOTE : No adjustment is provided for valve timing. should the timing be incorrect and the camshaft gear has been correctly fitted to the camshaft hub, the error will probably be due to incorrect alignment of the original timing marks on the drive gears. Recheck as detailed on Page L.1.

   When valve timing is originally set and checked during production a timing tolerance of plus or minus 2½ (flywheel) degrees is allowed for item (4) above. When the timing has been correctly set, do not forget to reset No. 1 inlet valve clearance to the correct figure also to return the timing pin to its correct location if it has been used to check T.D.C.