

DIRECTORATE GENERAL BORDER ROADS

REPAIR INSTRUCTION

NO. 10

CHECKING AND RESETTING OF VALVETIMING-PERKINS P-6 ENGINE

1. It has been observed that the timing chain in Perkins P-6 engines gets stretched after a continuous use of 5000 to 8000 Km. This results in upsetting of the valve timing and injection timing and which further leads to the following defects: -

- (a) Starting trouble
- (b) Excessive fuel consumption
- (c) Engine over heating
- (d) Poor engine efficiency
- (e) Fouling of exhaust valve with the Piston
- (f) Damages to valves and engine block

2. In order to avoid the above defects all V/E fitted with Perkins engines (P-6) should be sent to Field Wksp after every 5000 Km for checking and resetting of the valve timing, as per the procedure outlined in succeeding paragraphs.

CHECKING OF VALVE TIMING

3. (a) Turn the engine in the normal direction of rotation until the inlet tappet on No. 1 cylinder just tightens

(b) With the engine cold, place a .002 in feeler gauge between tappet and rocker to ensure that the timing is checked at a tappet clearance (.010 in). Alternatively set the inlet tappet of No.1 cylinder at .101 in resetting to .012 in. after checking the timing. This is the point at which valve timing his should be between 11 and 16 P.T.D.G.

4. If the timing is not with in these limits, the necessary adjustments should be made or the camshaft sprocket as described in Para-5.

RESETTING VALVE TIMING

5. (a) Remove rocker assembly and atomizers

(b) Release the pawls in the automatic tensioners and push it as far to the left as possible. Wedge it in that position with a piece of wood.

© Unscrew the three set screws and remove the camshaft sprocket with timing chain.

(d) Bring No. 1 piston to T.D.C. This may be checked by examining the flywheel T.D.C. mark through the inspection hole in the fly wheel housing.

(a) Turn the fuel pump drive sprocket until the arrow stamped on the sprocket is in line with the arrow stamped on the timing case the scribed line marked with the letter "S" on the fuel pump coupling should now coincide

(b) Fit camshaft sprocket, with chain, to the camshaft hub ensuring that the arrows on the inside of the sprocket and camshaft hub are in line, and that the arrows on the outside of the sprocket and the timing case also coincided. It should be noted that at all times during this operation, the timing chain must be kept as tight as possible between the crank shaft sprocket, fuel pump and camshaft sprocket.

(c) Remove the wedge from the automatic chain tensioner and see that the chain is correctly tensioned.

(d) Replace rocker shaft and adjust tappets to .012".

(e) Replace atomizers

(f) Tappets should be re-adjusted, if necessary, to 0.010" with the engine warm.

SUMMARY

3. This instruction lays down the precautions, which must be observed while replacing injectors and is issued for the guidance of Field Workshops.

PRECAUTIONS

4. (a) After removing the old injector ensure that the injector mounting hole in the cylinder head or the injector's sleeve are free from swarf and carbon.

(b) While withdrawing the old injector, the old copper seating washer should be removed and discarded, if the old washer is not discarded and an additional washer is fitted, the nozzle will not protrude into the combustion chamber and the fuel spray will be not correctly directed in the combustion chamber thus resulting an incomplete combustion and consequently reduced power.

(e) While re-fitting the injector only the correct type of washers should be used. This will avoid the possibility of gas blow –by and overheating of the nozzle due to poor metal contact. Seating washers already used once should never be used again.