

IN-SITU OPERATIONS

Cylinder Head

PARTIAL DRAINING

Only partial draining of the cooling system is necessary during some operations and the following method has been found satisfactory:

Obtain a suitable threaded union having the same thread as the cylinder block drain plug tapping to which a length of plastic piping may be attached. The piping should be 1,0 m to 1,5 m (3 to 5 feet) in length.

If the engine is cold, the cooling system will be under a partial vacuum. Under this condition remove the cylinder block drain plug and immediately fit the adaptor **before** removing the coolant filler cap.

Where an 'Engine Warm' condition exists, relieve the pressure in the system by releasing, but not removing, the coolant filler cap followed by re-tightening after the pressure diminishes. Only then must the cylinder block drain plug be removed and the reducing union fitted, followed by the removal of the coolant filler cap.

Where it proves necessary to completely drain the cooling system, use one of the above methods **followed** by the disconnection of hoses between the engine and radiator. The above routine will minimise the loss of coolant and anti-freeze.

VALVE SPRING RENEWAL

Note: During reassembly it is necessary to turn the engine. If the vehicle is fitted with air/hydraulic brakes, chock the front wheels, release the parking brake and ensure that the system is charged to a minimum of 6,0 bar (95 lbf.in²) to ensure full release of parking brake. Alternatively, 'Wind-off' the spring brake actuator.

To Remove

Disconnect battery.

Open and secure bonnet.

Release clips and lift out rear engine cover.

Remove bolts and lift out front engine cover.

Pull heater air ducting from its location at bulk-head and inner wing.

Remove bolt from oil filler neck clip and pull the complete assembly from its location on the rocker cover.

Withdraw the P.C.V. valve from the rocker cover.

Disconnect the H.T. lead and L.T. wires from the H.T. coil and remove the coil.

Release and displace wiring harness from clips at side of rocker cover.

Disconnect vacuum pipe at OSAC valve.

Remove 'Lucar' connector from choke sensor.

Release clip and displace OSAC valve.

Disconnect harness plug from throttle position solenoid.

Remove 'Lucar' connector from coolant temperature sender.

Remove eight bolts and lift off rocker cover. Recover the gasket.

Release the rocker shaft assembly from cylinder head by removing seven bolts and remove the complete assembly.

Disconnect the H.T. lead and remove appropriate spark plug.

Chock the front wheels, engage top gear, release parking brake and raise one rear wheel.

Ask an assistant to turn the wheel in the normal direction of rotation until the appropriate piston rises and the crankshaft is positioned at 20° B.T.D.C.

Obtain approximately 1,5 m (5 feet) of household mains electric cable. Feed 1,0 m (3 feet) of the cable through the plug hole into the cylinder. **Slowly** turn the rear wheel until the piston has risen and trapped the cable. This will then prevent the valves of that cylinder from opening.

Note: Do not use undue force when turning the wheel as this may cause engine damage.

Position lint free cloth to prevent accidental loss of collets down various apertures in the cylinder head casting.

Select rocker pedestal and use one of the pedestal bolts to anchor Tool PD 6118-B in a suitable position to compress the appropriate valve spring. The rear shouldered bolt (flywheel end) is of smaller diameter and should not be used as an anchor bolt.

Compress the valve spring and remove the collets. Release the pressure, displace tool, remove spring cap, valve spring, valve rotators (exhaust only) and valve stem seals.

To Refit

Refitting is a reversal of the removal procedure noting the following.

Use new seals and gasket as necessary.

Adjust the tappets (Refer to Sub-section A231).

COMPRESSION TEST

Equipment

A suitable pressure gauge having a swivel or flexible hose adaptor is required due to limited access to the spark plug holes.

The vehicle battery may be used to crank the engine during the test, providing it is in a fully charged state.

Method

Open and secure the bonnet.

Pull heater air ducting from its location at bulkhead and inner wing.

Release clips and lift out rear engine cover.

Start and run engine until HOT ('Thermostat Open' condition).

Stop engine.

Remove air filter element.

Disconnect plug leads and remove all spark plugs.

Connect pressure gauge.

Crank engine with throttle held open and observe gauge reading.

If satisfactory readings are obtained, refit components previously removed.

An engine in good condition should give the compression pressures stated in DATA pages. If the readings obtained are substantially below DATA figures, the engine is in need of attention to valves or piston rings. If a high mileage has been covered the engine may require reboring.