



flows past the ball valve, and enters the lower chamber where it extends the plunger assembly and takes up any clearance between the valve stem and the heel of the cam. When the cam lobe starts to depress the tappet bucket, and compress the plunger assembly, pressure in the lower chamber rapidly rises above that of the oil supply, so that the ball valve is forced against its seat in the inner plunger. The trapped incompressible fluid in the lower chamber acts to transfer the movement of the tappet bucket to the engine valve stem.

When the engine valve is returned to its seat, the compression force on the plunger assembly is relieved, and pressure in the lower chamber is reduced to that of the oil supply. Oil is again able to flow past the ball valve into the lower chamber to keep the plunger assembly fully extended and the tappet against the heel of the cam.

The coil spring maintains full plunger extension when the engine is stopped and oil pressure is absent. The lower chamber thus remains filled with oil, and the tappet assembly operates satisfactorily for the short period before working oil pressure is attained following engine start up. If any air should become trapped in the lower chamber of the tappet, the compressibility of this air will result in reduced valve lift and mechanical noise, but the system is self bleeding and a short period of running should expel the air.

Note that in order to achieve a uniform wear profile on the top surface of the tappet, the cams are offset in relation to the tappet centreline and impart a gradual rotation of the tappet during normal running.

Tappet Replacement

Access to the tappets is available after the camshafts have been removed (see Sub-Section ED.6). Use a rubber sucker or magnet to withdraw a tappet assembly. The tappet assembly is not **servicable**, and should be replaced if found to be faulty or worn beyond service limits. New tappets are supplied ready filled with oil and do not require bleeding before fitting.

Inspection

1. Using finger pressure, try to compress the inner plunger of the tappet. No discernable free play or movement should be apparent.
2. Inspect the top surface of the tappet for flatness and smoothness, and replace if visibly marked.
3. Measure the tappet diameter in several positions, and record the smallest dimension.
New part diameter: 31.959 - **31.967mm** (1.2582 - **1.2585in**)
4. Remove the valve and spring assembly (see Sub-Section ED.9) and measure the cylinder head tappet bore across the thrust direction.
New bore diameter: 32.000 - **32.016mm** (1.2598 - **1.2605in**)

On re-assembly, liberally coat the tappet with clean engine oil or assembly lubricant before refitting into the tappet bore. Refit the camshafts (see Sub-Section ED.6).

ED.8 - CYLINDER HEADS

The aluminium alloy twin overhead camshaft cylinder heads are handed, and are secured by ten long setscrews which are threaded deep into the crankcase. The camshaft bearings are machined directly in the head, but replaceable valve seats and guides are used.

Cylinder Head Removal

The engine must be removed from the vehicle before a cylinder head can be removed, but the camshafts may remain in position. In the following procedure, the exhaust manifold and turbocharger are also left fitted. Note that the dipstick tube cannot be removed with the exhaust manifold fitted, but may remain in position during cylinder head replacement. If necessary, loosen the union nut to allow the tube to be rotated for improved access.

1. Remove the engine (see Sub-Section ED.1 7).
2. Remove the intake plenum (see Sub-Section ED.4).
3. Remove the cam drive belt (see Sub-Section ED.5).