

ENGINE

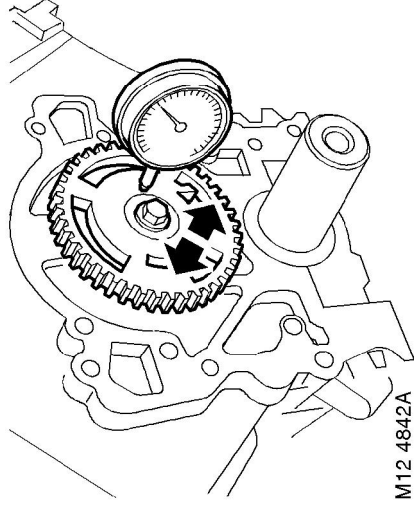
Oil pressure relief valve if fitted - refit

1. Lubricate new 'O' ring with engine oil and fit to relief valve plug.
2. Lubricate relief valve spring, piston and piston bore with engine oil.
3. Assemble piston to relief valve spring, insert piston and spring into piston bore.
4. Fit relief valve plug, depress plug and fit circlip.
5. Ensure circlip is fully seated in groove.

CAMSHAFT AND TAPPETS

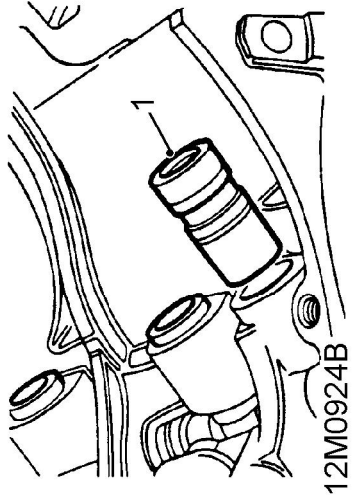
Camshaft end-float - check

1. Remove rocker shaft assemblies.
2. Remove pushrods and store in their fitted order.
3. Remove timing chain and gears.



4. Temporarily fit camshaft gear and gear bolt.
5. Attach a suitable DTI to front of cylinder block with stylus of gauge contacting camshaft gear.
6. Push camshaft rearwards and zero gauge.
7. Using camshaft gear bolt, pull camshaft forwards and note end-float reading on gauge.
End-float = 0.05 to 0.25 mm (0.002 to 0.010 in)
8. If end-float is incorrect, fit a new thrust plate and re-check. If end-float is still incorrect, a new camshaft must be fitted.

Camshaft and tappets - remove



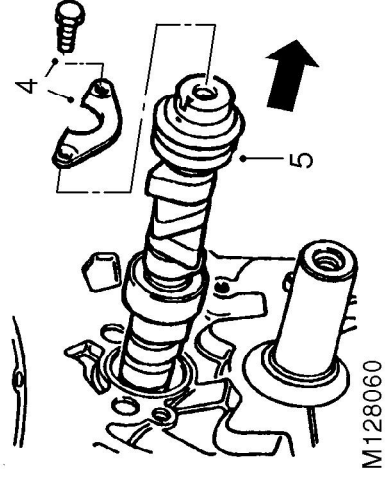
1. Remove tappets and retain with their respective pushrods.



CAUTION: Store tappets upright to prevent oil loss.



2. When tappets prove difficult to remove due to damaged camshaft contact area, proceed as follows. Lift tappets in pairs to the point where damaged face is about to enter tappet bore and fit rubber bands to retain tappets. Repeat until all tappets are retained clear of camshaft lobes. The tappets can then be withdrawn out the bottom of their bores when the sump and camshaft are removed.
3. Remove camshaft gear and bolt.

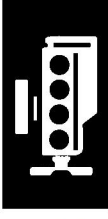


4. Remove 2 bolts securing camshaft thrust plate to cylinder block, remove plate.
5. Withdraw camshaft, taking care not to damage bearings in cylinder block.



NOTE: Camshafts fitted to 4.0 litre engines are colour coded ORANGE whilst those fitted to 4.6 litre engines are colour coded

RED.



ENGINE

Camshaft and tappets - inspection

1. Thoroughly clean all components.
2. Inspect camshaft bearing journals and lobes for signs of wear, pitting, scoring and overheating.
3. Support camshaft front and rear bearings on vee blocks, and using a DTI, measure camshaft run-out on centre bearing:
Maximum permitted run-out = 0.05 mm (0.002 in)
4. Inspect thrust plate for wear, replace plate if wear is evident.
5. Clean and inspect tappets. Check for an even, circular wear pattern on the camshaft contact area. If contact area is pitted or a square wear pattern has developed, tappet must be renewed.
6. Inspect tappet body for excessive wear or scoring. Replace tappet if scoring or deep wear patterns extend up to oil feed area. Clean and inspect tappet bores in cylinder block.
7. Ensure that tappets rotate freely in their respective bores.
8. Inspect pushrod contact area of tappet, replace tappet if surface is rough or pitted.

Camshaft and tappets - refit



NOTE: If a replacement camshaft is to be fitted, ensure colour coding is correct.

Camshafts fitted to 4.0 litre engines are colour coded **ORANGE** whilst those fitted to 4.6 litre engines are colour coded **RED**.

1. Lubricate camshaft journals with engine oil and carefully insert camshaft into cylinder block.
2. Fit camshaft thrust plate, fit bolts and tighten to 25 Nm (18 lbf.ft).



NOTE: If camshaft or thrust plate has been replaced, it will be necessary to re-check camshaft end-float.

3. Immerse tappets in engine oil. Before fitting, pump the inner sleeve of tappet several times using a pushrod to prime tappet; this will reduce tappet noise when engine is first started.
4. Lubricate tappet bores with engine oil and fit tappets in removed order.



NOTE: Some tappet noise may still be evident on initial start-up. If necessary, run the engine at 2500 rev/min for a few minutes until noise ceases.

5. Fit timing chain and gears.
6. Fit rocker shaft assemblies.