TIMING COVER,GEAR AND CHAIN

To Remove

Special Tools

Vibration damper remover/ replacer C3732A

Disconnect the battery.

Drain the engine oil.

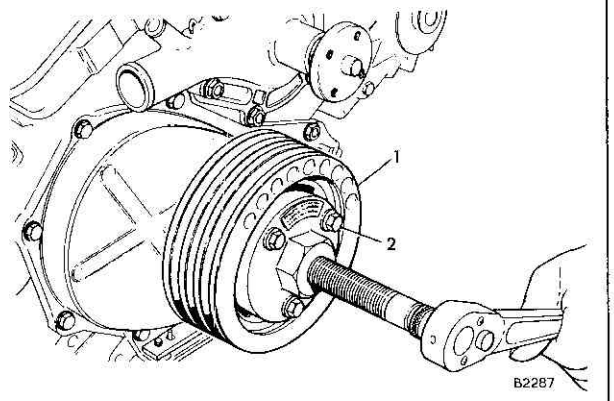
Drain the cooling system.

Remove the radiator (Refer to Sub-section C200).

Remove fan and fan belt.

Remove bolt and washer securing vibration damper to crankshaft.

Install Tool C.3732A and pull vibration damper assembly off end of crankshaft (Fig. 1).



1. VIBRATION DAMPER PULLEY
2. SPECIAL TOOL

Fig. 1 *Removing vibration damper assembly*

Remove four bolts and clamping strip securing front of sump to timing cover.

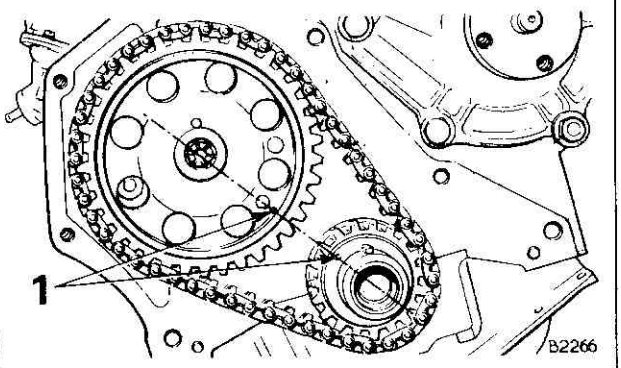
Loosen sump bolts to provide sufficient clearance for removing timing cover.

Note: Care must be taken not to damage the sump gasket.

Remove seven bolts securing timing cover to cylinder block. Carefully withdraw cover and gasket taking care not to damage oil seal.

Remove sump seal from timing cover.

Line up timing marks on sprockets (Fig. 2).



1. TIMING MARKS

Fig. 2 *Alignment of timing marks*

Remove camshaft sprocket securing bolt and washer.

Withdraw camshaft sprocket and timing chain.

To remove the crankshaft sprocket

Refit the crankshaft damper bolt and screw fully home in order to protect the internal threads of the crankshaft. Using a suitable three jaw puller, withdraw the sprocket and collect the key. Remove the bolt.

Inspection and Overhaul

Examine the sprockets for wear, chips or cracks. Renew where necessary.

Examine the timing chain for wear and damage. Renew where necessary.

Clean timing cover and examine for cracks.

Clean mating faces on cylinder block and timing cover.

Examine timing cover oil seal and renew if suspect.

Check the timing cover sump seal for damage, renew as necessary.

To Refit

Special Tools

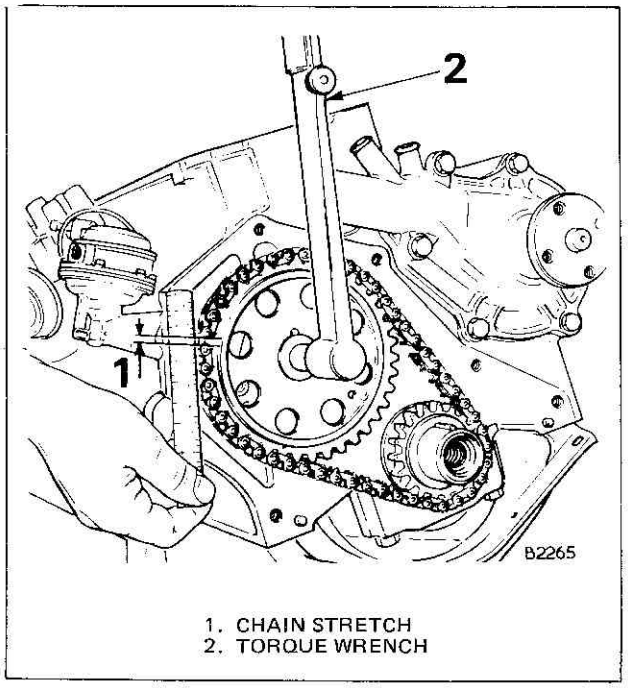
Vibration damper remover/ replacer C3732A

Spacer from RG 566.
Adaptor – timing cover oil seal replacer CB 0035.

Locate the key in the crankshaft, clean and lightly oil the mating surfaces of the crankshaft and crankshaft sprocket. Position the sprocket on the crankshaft with the timing dot facing the front of the engine.

Screw the threaded shaft of Tool C 3732A into the crankshaft. Slide Tool CB 0035 over the threaded shaft followed by thrust bearing and nut of Tool C 3732A. Tighten the nut to commence pressing the sprocket onto the crankshaft.

Immediately any serious resistance is felt, remove the nut, thrust bearing and Tool CB 0035. In its place fit the tubular spacer from Tool RG 566 followed by the thrust washer, thrust bearing and nut from Tool C 3732A. Tighten the nut to press on the sprocket until it abuts its register on the crankshaft. Remove the tools.



1. CHAIN STRETCH
2. TORQUE WRENCH

Fig. 3 *Measuring timing chain stretch*

IMPORTANT

Under no circumstances must the sprocket be driven onto the crankshaft. If this method is used, premature failure of the cast iron crankshaft is liable to follow. Use only the method recommended.

Position the timing chain on camshaft sprocket.

Install camshaft sprocket and timing chain, camshaft sprocket boss to camshaft. Check alignment of timing marks (Fig. 2).

Fit washer and securing bolt to camshaft sprocket and torque tighten to Data figure.

Measuring Timing Chain for Stretch

Place a torque wrench and socket over the camshaft bolt and apply torque in the direction of crankshaft rotation to take up slack (Fig. 3), 41 Nm (30 lbf. ft.) with cylinder head installed or 20.5 Nm (15 lbf. ft.) cylinder head removed. With torque applied to camshaft bolt, crankshaft should not be permitted to move.

Make a mark on the camshaft sprocket and a corresponding mark on the front of the cylinder block.

Apply the same torque in the reverse direction. Mark the sprocket and cylinder block.

If chain movement exceeds 4.1 mm ($\frac{3}{16}$ in.) install a new timing chain (Fig. 3).

Fit the sump seal to the timing cover.

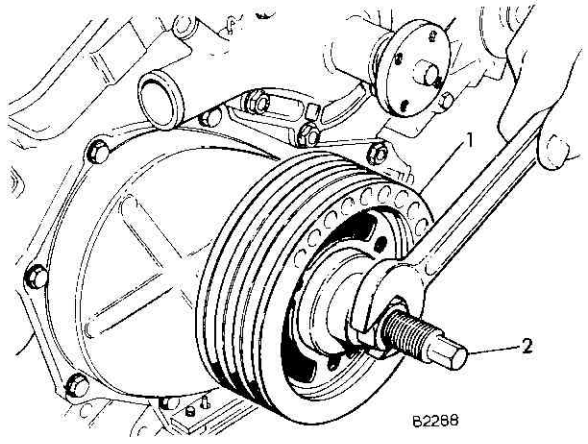
Using a new gasket fit the timing cover over the locating dowels. Fit the seven securing bolts and torque tighten to Data figure.

Ensure that the sump gaskets are not damaged. Fit the four bolts and clamping strip securing the sump to timing cover. Torque tighten sump bolts to Data figure.

Lubricate the timing cover oil seal lip with engine oil.

Position vibration damper hub slot on key in crankshaft, carefully slide damper onto crankshaft.

Fit Tool C.3732A in position and press vibration damper pulley onto crankshaft (Fig. 4).



1. VIBRATION DAMPER PULLEY
2. SPECIAL TOOL

Fig. 4 *Installing vibration damper assembly*

Fit bolt and washer securing vibration damper pulley to crankshaft. Torque tighten to Data figure.

Refit fan and fan belt.

Refit the radiator (Refer to Sub-section C 200).

Refill the cooling system.

Refill the engine oil.

Reconnect the battery.

Renewing the Timing Cover Oil Seal Insitu

Special Tools
Vibration damper remover/ replacer C 3732A Adaptor oil seal replacer CB 0035 (use with C 3732A)

Remove the front undertray.

Remove the radiator lower cowl.

Remove the fan.

Remove the fan belt.

Remove the vibration damper pulley. (This section).

Prise the oil seal from the timing cover, taking care not to damage the cover.

Install the threaded shaft into the crankshaft. (Part of Special Tool C 3732A).

Position the oil seal in the timing cover aperture, seal lips facing inwards. Hold the seal in position and fit Special Tool CB 0035 onto threaded shaft, followed by thrust bearing and nut. (Part of Special Tool C 3732A). Tighten nut until tool is flush with timing cover.

Remove the replacer tools C 3732A and CB 0035.

Refit the vibration damper pulley. (This section).

Refit the fan belt.

Refit the fan.

Refit radiator lower cowl.

Refit the front undertray.

VALVE TIMING

Rotate crankshaft until No. 6 exhaust valve is closing and No. 6 intake valve is opening. Install dial indicator so that the indicator pointer contacts the valve spring retainer on No. 1 intake valve parallel to the axis of the valve stem.

Turn No. 1 intake adjusting screw in one complete turn to remove lash. Adjust dial indicator to zero. Rotate crankshaft clockwise (normal running direction) until valve has lifted .029 inch. The timing of the crankshaft pulley should now read from 12 degrees before top dead center to top dead centre. Readjust lash.

If reading is not within the specified limits:

Check sprocket index marks.

Inspect timing chain for wear.

Check accuracy of "0" mark on timing indicator.