

TIMING GEAR, CHAINS AND TENSIONERS

Tools

Flat blade screwdriver
Torque wrench

To Remove

Disconnect the battery.

Drain engine oil.

Drain the cooling system.

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

Remove the rocker cover and bring No. 4 piston to T.D.C.

Mark the position of the distributor and the rotor arm, and remove them.

Remove the fuel pump.

Remove the cylinder head front casing, taking care not to damage the cylinder head gasket.

Remove fan and fan belt.

Remove water pump.

Remove alternator and adjusting link.

Remove the pulley (Engage 4th gear so that pulley nut can be loosened) and spacer.

Remove the sump and gasket.

Remove timing case and gasket.

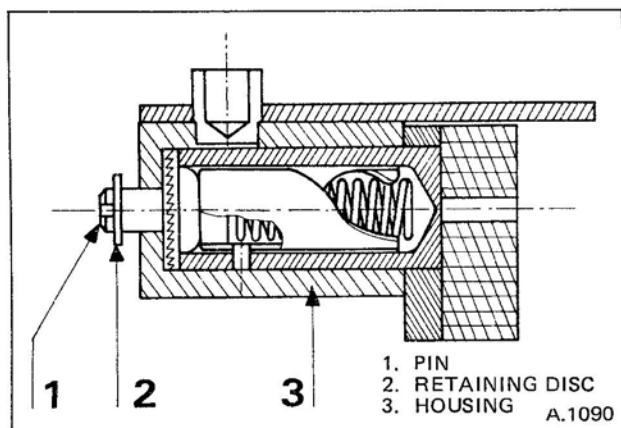


Fig. 1 Sectional view of chain tensioner

Release the automatic timing gear chain tensioner as follows:

Push in the pin (1) (fig. 1) with a screwdriver until the retaining disc (2) makes contact with the housing (3); then turn it as far as it will go to the right (a maximum of three quarters of a turn).

Remove the tensioner (fig. 2).

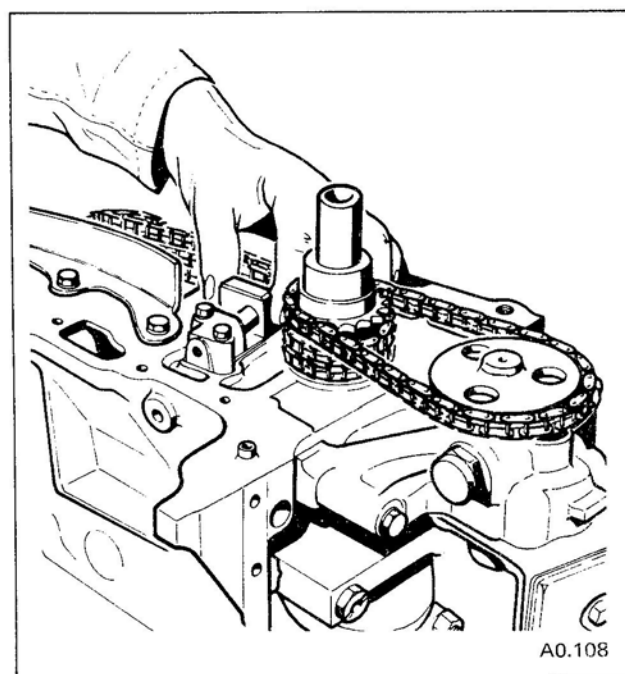


Fig. 2 Removing and refitting chain tensioner

Remove the oil pump (collect adjusting shim(s)). Remove the chain from the crankshaft sprocket.

Remove the two chain guide pads.

Unlock the camshaft sprocket locking ring.

Remove the three camshaft sprocket setscrews. Withdraw sprocket and remove timing chain.

Tap off the crankshaft sprocket using a wooden block or mallet. Collect the sprocket key.

Inspection and Overhaul

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

Examine the chains for wear or damage. Renew where necessary.

Check that the tensioner oil inlet jet, which is on the locating bush, is not blocked.

Examine the guide pads for wear or damage. Renew where necessary.

Clean the timing case and cylinder head front casing and examine for cracks.

Clean the mating faces on blocks, cylinder head and casings.

Examine timing gear casing seal and renew if suspect.

Renewing the Timing Gear Casing Seal

Remove the worn seal.

Clean the bore and check for damage.

Grease the outside of the lip on the new seal, after checking that the direction of rotation of the engine is the same as that shown on the seal (see arrow).

Lay the casing flat and position the seal in the aperture. The seal lip tensioner spring should be towards the inside of the casing.

Press the seal into the casing.

To Refit

Refit the crankshaft sprocket with the largest of its chamfers against the corner radius on the crankshaft i.e. largest chamfer first.

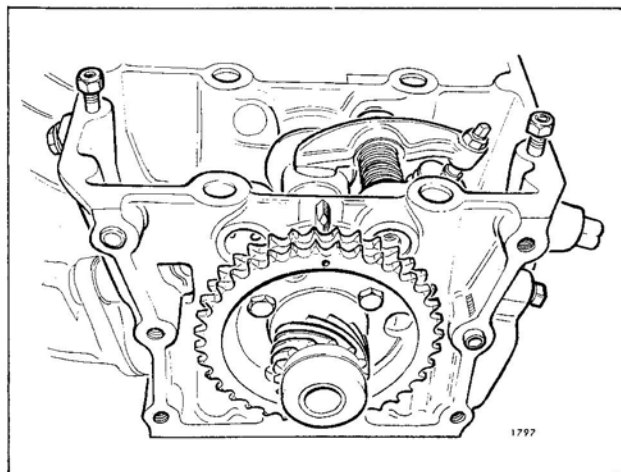


Fig. 3 *Timing marks*

Ensure Nos. 1 and 4 pistons are at T.D.C.

Fit the camshaft sprocket to the camshaft and align the securing holes. Check that the sprocket timing mark and cylinder head mark are aligned. (fig. 3).

Fit the locking plate to the sprocket and secure with three setscrews, torque tighten to Data figure. Lock each setscrew.

Pass the double chain through the aperture in the cylinder head gasket, taking great care not to tear the gasket, then swing it round to pass it simultaneously over the ends of both crankshaft and camshaft (fig. 4).

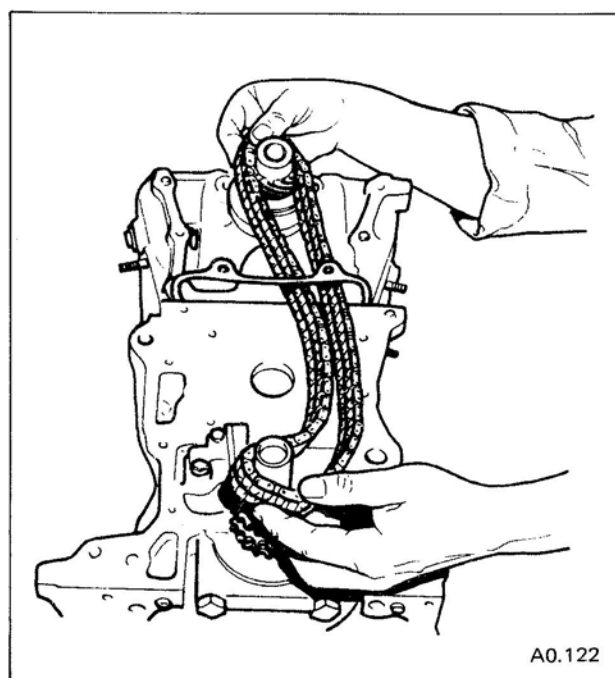


Fig. 4 *Fitting timing chain*

Engage the chain on the sprockets.

Fit the hydraulic tensioner assembly complete with backplate to the block, torque tighten to Data figure. Do not unlock at this stage.

Fit the guide pads to the block, do not tighten setscrews.

Timing Gear, Chains and Tensioners

Push the curved guide pad (Fig. 5) as far as it will go. Torque tighten the two setscrews to the Data figure.

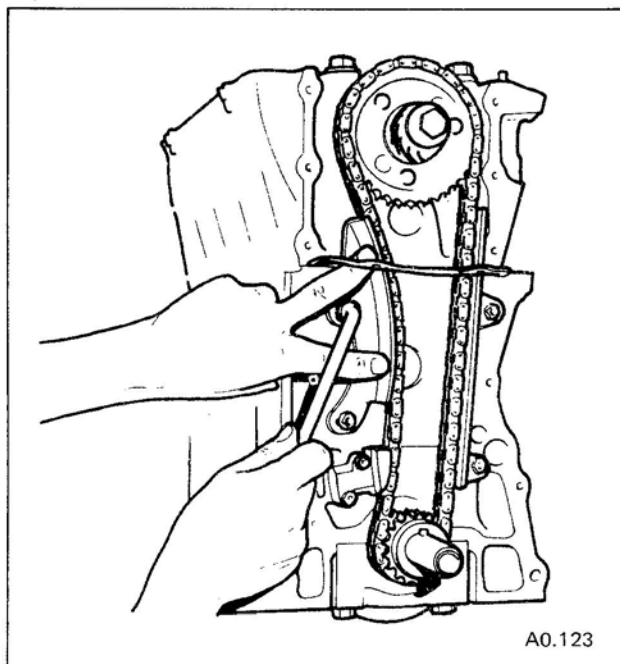


Fig. 5 Fitting timing chain guide pads

Release the hydraulic tensioner.

Push the straight guide pad against the chain, torque tighten to the Data figure.

Refit the oil pump and chain ensuring the adjusting shim(s) are fitted. Torque tighten to Data figure.

Fit a new timing gear casing gasket to the block with grease.

Grease the lip of the crankshaft seal.

Fit the spacer to the crankshaft.

Place the timing gear casing in position taking care not to damage the cylinder head gasket. Secure with the setscrews torque tightened to Data figure.

Using grease fit a new sump gasket to the block, fit the sump, secure with setscrews torque tightened to Data figure.

Using grease fit a new cylinder head front casing gasket to the cylinder head.

Fit the front casing taking care not to damage the cylinder head gasket. Secure with setscrews torque tightened to Data figure.

Refit the crankshaft pulley (Engage 4th gear so that pulley nut can be torque tightened to Data figure).

Refit alternator and adjusting link.

Refit water pump.

Refit fan and fan belt.

Refit fuel pump and gaskets.

Refit rocker cover.

Refit distributor (Refer to Sub-section D311).

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

Refill the cooling system.

Refill engine oil.

Reconnect the battery.