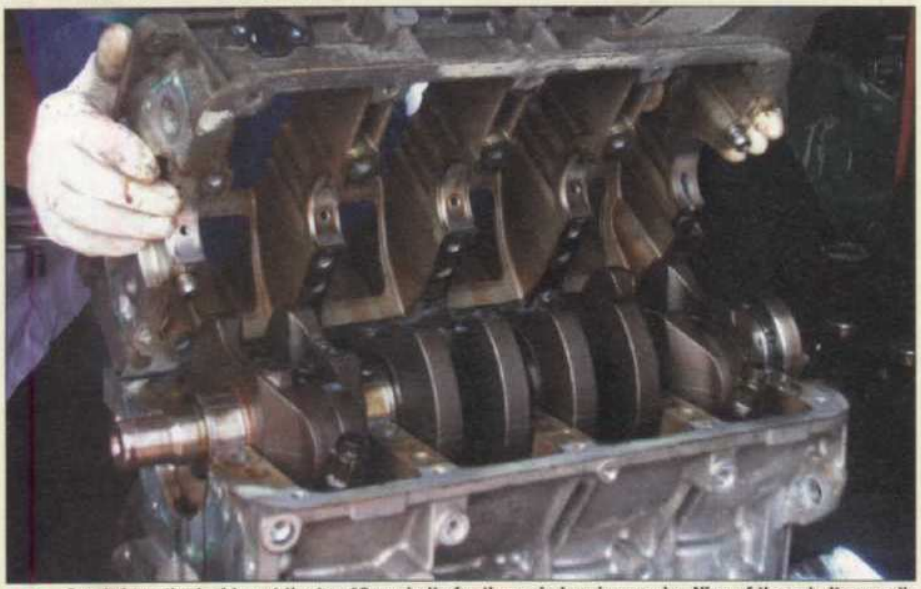
13 Check the oil pressure release valve by removing it from the pump with a 12mm allen key. Ensure the bore and piston are free from scoring and corrosion. Light corrosion can be cleaned with fine wet and dry. The spring length should be 38.9mm when free. Refit with a new sealing ring.

14 To prevent the liners moving, use a piece of angled iron with holes cut for the head bolts and some tubing cut to the height of the cylinder head. Place the angled iron on the top of the engine block, fit the tubing and refit the head bolts.

15 Turn the engine upside down and lookout for oil and coolant spillage. Remove the oil sump, fitted with 14 10mm bolts (rear two are longer). Be careful not to damage the oil pickup when removing the sump. You may need to use a plastic hammer to break seal (be careful on the alloy).

16 Remove the oil pickup, fitted with two 8mm bolts. Renew the o-ring for the pickup. Check the condition of the plastic pickup. Renew if there are any signs of cracking or perishing.

17 Remove the liner clamps from Step 14 if want to proceed further. Remove the oil rail, fitted with two 10mm nuts. Make a note of which way round this is fitted for later. Prise out the rear oil seal and renew.



18 Crack from the inside out the ten 10mm bolts for the main bearing carrier. Nine of these bolts are all the same length (one is longer). A plastic hammer may be required to break the seal on the carrier to remove it.

Rebuild Tips

Camshaft cover gasket – can become brittle. It is very important that it is torqued down to 10NM, working from the centre outwards.

Cam wheels – ensure they are clean of oil and dirt to avoid contaminating the timing belt. Also make sure the camshaft pulleys have not worked loose and worn the end of the camshaft and gear wheel. Always use new bolts for front and rear camshaft pulleys and use Loctite sealant. Replace locating roll pins if loose or worn.

Exhaust camshaft – check there are no fractures in the rubber damper section of the exhaust camshaft.

Timing up – turn the bottom front crankshaft pulley to the safe mode marking (look for marking on pulley and timing cover – not TDC). At the rear of the engine, fit the rear pulleys with the timing marks facing outwards (horizontal), through the centre line of the camshafts. Fit the rear timing belt, then rotate 180° so both marks are facing each other in the centre. Move to the front of the engine and fit the front camshaft pulleys. Two markings on the exhaust camshaft pulley should be horizontal and in line with one marking on the inlet camshaft pulley. Fit the timing belt across the locked camshaft pulleys and fit in a clockwise direction.

Locating dowels – standard plastic items can break and provide more head to block movement. Fit steel locating dowels (see Parts and Prices).

Head gasket – using a new head gasket, cut away the silicone tracking at the front, either side of the locating dowel on both sides. This will help to avoid the head gasket blowing around this area (common problem). Alternatively, fit an upgraded head gasket from Mike Satur.

Head bolts – can be re-used, but replace if you are unsure. If you intend to reuse them, store them in order upon removal (Step 7) using a piece of cardboard with numbered holes. When refitting the bolts, lower them carefully into the top of the engine block and finger tighten them. Measure the distance between the underside of the bolt head and block. Anything approaching 98mm may not give enough stretch on the bolt, so replace or investigate the problem.

Water pump – after refitting, use centre punch to locate dowels. Apply a thread lock to the 8mm bolts. Fit a new rubber ring.

Main bearings – look at the front of the main bearing carrier for a code indicating which bearings to use.

Big end bearings – look on the crankshaft for a reference indicating which big end bearings to use.

Inlet manifold – check the face of the inlet manifold for signs of corrosion around the waterway. Make sure it mates correctly to the head, especially if fitting a new one. Always renew the gasket.