



## 10 Crankshaft - removal

1 On four-cylinder engines, remove the oil pan, the timing chain housing, and the flywheel/driveplate (see [Chapter 2A](#) ).

2 On six-cylinder engines, remove the oil pan, the primary timing chain, and the flywheel/driveplate, (see [Chapter 2B](#) ).

3 Remove the pistons and connecting rods, (see [Section 9](#) ). If no work is to be done on the pistons and connecting rods, there is no need to remove the cylinder head, or to push the pistons out of the cylinder bores. The pistons should just be pushed far enough up the bores so that they are positioned clear of the crankshaft journals. **Warning:** *If the pistons are pushed up the bores, and the cylinder head is still fitted, take care not to force the pistons into the open valves.*

4 Check the crankshaft endplay (see [Section 13](#) ), then proceed as follows.

5 Loosen and remove the retaining bolts, and remove the oil seal carrier from the rear (flywheel/driveplate) end of the cylinder block, along with its gasket (see illustration) .

**10.5 Remove the oil seal carrier from the rear of the cylinder block**



6 On six-cylinder engines, if not already done, remove the oil pump drive chain and, if necessary, remove the crankshaft sprocket with reference to Part B of this Chapter.

7 On four-cylinder engines, the main bearing caps should be numbered 1 to 5 from the timing chain end of the engine. Caps No. 1 to 3 are numbered, cap No. 4 has shoulders machined into the end faces, and cap No. 5 is unmarked. If the bearing caps are not marked, mark them accordingly using a center-punch.

8 On six-cylinder engines, the main bearing caps should be numbered 1 to 7 on the exhaust side of the engine, starting from the timing chain end of the engine (see illustration) . If not, mark them accordingly using a center-punch.

### 10.8 Main bearing cap identification number - six-cylinder engine



9 Loosen and remove the main bearing cap retaining bolts, and lift off each bearing cap (see illustration) . Recover the lower bearing shells, and tape them to their respective caps for safe-keeping.

### 10.9 Lifting off a main bearing cap



10 On four-cylinder engines, note that the lower thrust bearing shell, which controls crankshaft endplay is fitted to No. 4 main bearing cap.

11 On six-cylinder engines, note that the lower thrust bearing shell, which controls crankshaft endplay is fitted to No. 6 main bearing cap. Also note the oil pick-up tube support bracket, which is secured by the No. 5 main bearing cap bolts.

12 Lift out the crankshaft. Take care as the crankshaft is heavy.

13 Recover the upper bearing shells from the cylinder block (see illustration) , and tape them to their respective caps for safe-keeping. Again, note the location of the upper thrust bearing shell.

**10.13 Lifting an upper main bearing shell from the cylinder block**



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