



13 Crankshaft - inspection

Checking crankshaft endplay

1 If the crankshaft endplay is to be checked, this must be done when the crankshaft is still installed in the cylinder block/ crankcase, but is free to move.

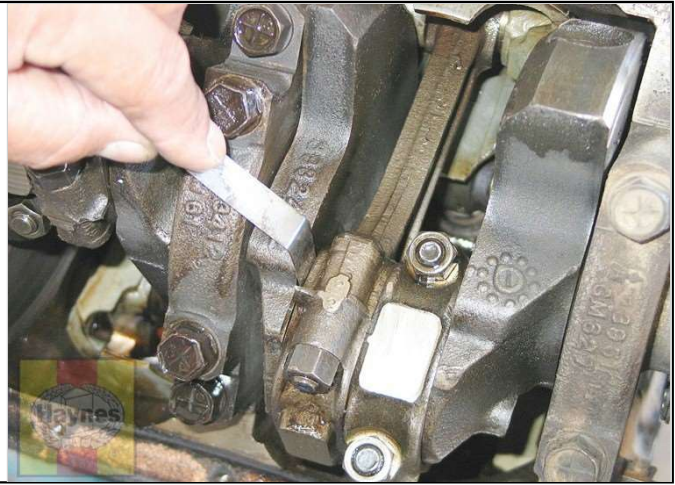
2 Check the endplay using a dial gauge in contact with the end of the crankshaft. Push the crankshaft fully one way, and then zero the gauge. Push the crankshaft fully the other way, and check the endplay. The result can be compared with the specified amount, and will give an indication as to whether new thrust bearing shells are required (see illustration) .

13.2 Measuring crankshaft endplay using a dial gauge



3 If a dial gauge is not available, feeler gauges can be used. First push the crankshaft fully towards the flywheel end of the engine, then use feeler gauges to measure the gap between the web of No. 4 connecting rod journal and the thrust bearing shell on four-cylinder engines, or between No. 6 connecting rod journal and the thrust bearing shell on six-cylinder engines (see illustration) .

13.3 Measuring crankshaft endplay using feeler gauges - six-cylinder engine shown



Inspection

- 4 Clean the crankshaft using a suitable solvent, and dry it, preferably with compressed air if available. Be sure to clean the oil holes with a pipe cleaner or similar probe, to ensure that they are not obstructed. **Warning:** *Wear eye protection when using compressed air!*
- 5 Check the main and connecting rod bearing journals for uneven wear, scoring, pitting and cracking.
- 6 Connecting rod bearing wear is accompanied by distinct metallic knocking when the engine is running (particularly noticeable when the engine is pulling from low speed) and some loss of oil pressure.
- 7 Main bearing wear is accompanied by severe engine vibration and rumble - getting progressively worse as engine speed increases - and again by loss of oil pressure.
- 8 Check the bearing journal for roughness by running a finger lightly over the bearing surface. Any roughness (which will be accompanied by obvious bearing wear) indicates that the crankshaft requires regrinding (where possible) or replacement.
- 9 If the crankshaft has been reground, check for burrs around the crankshaft oil holes (the holes are usually chamfered, so burrs should not be a problem unless regrinding has been carried out carelessly). Remove any burrs with a fine file or scraper, and thoroughly clean the oil holes as described previously.
- 10 Using a micrometer, measure the diameter of the main and connecting rod bearing journals, and compare the results with the Specifications (see illustration) . By measuring the diameter at a number of points around each journal's circumference, you will be able to determine whether or not the journal is out-of-round. Take the measurement at each end of the journal, near the webs, to determine if the journal is tapered.

13.10 Measuring a crankshaft main bearing journal



11 Check the oil seal contact surfaces at each end of the crankshaft for wear and damage. If the seal has worn a deep groove in the surface of the crankshaft, consult an engine overhaul specialist; repair may be possible, but otherwise a new crankshaft will be required.

12 If the crankshaft journals have not already been reground, it may be possible to have the crankshaft reconditioned, and to fit oversize shells (see [Section 17](#)). If no oversize shells are available and the crankshaft has worn beyond the specified limits, it will have to be renewed. Consult your BMW dealer or engine specialist for further information on parts availability.

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