

Removal and Installation of Transmission

Data

For tightening torques, dimensions and tolerances refer to Job No. 320 of pertinent unit version

Special Tools

Angle of rotation tightening tool		115 589 02 13 00
Internal measuring instrument	50–100 mm	000 589 04 19 00
Micrometer	0–25 mm	000 589 06 19 00
	50–75 mm	000 589 08 19 00

Measuring Main Bearing and Connecting Rod Bearing

- 1 Mount crankshaft bearing and connecting rod bearing cap without bearing shells. Watch out for **correct installation position or number of mark** (refer to Job No. 320 of **pertinent** unit version).
- 2 Measure main bearing and connecting rod bearing basic bores in three directions with internal measuring instrument (Fig. 1). Move offset main bearing caps into center position by applying light blows with a plastic hammer. The bearing cap is centrally located when all the measuring results are in agreement.

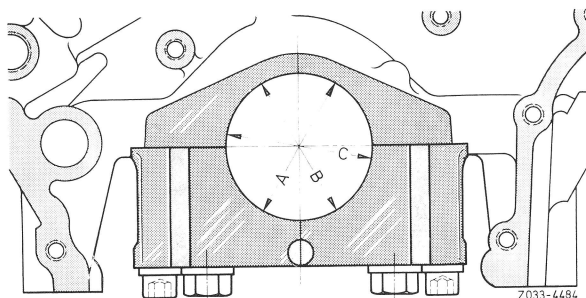


Fig. 1

Make note of measuring results (refer to item 3). For a basic bore which exceeds the specified data and for which the required overlap of the bearing shell halves is no longer assured, remove up to max. 0.02 mm from its contact surface on a surface plate.

- 3 Measure main bearing and connecting rod bearing bores at front and rear to check conicity (Fig. 2 and 3).

A conicity of more than 0.1 mm can be corrected by removing excess material on one side of bearing cap on a surface plate.

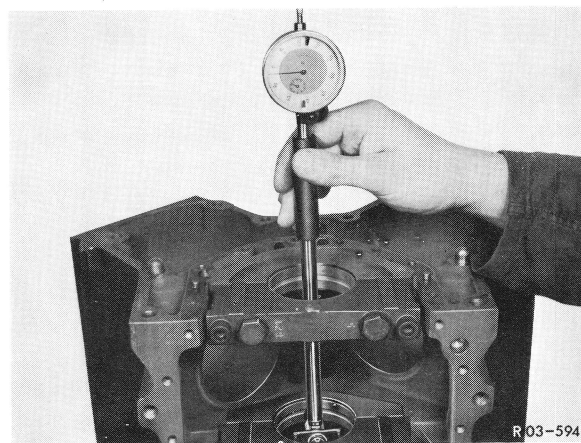


Fig. 2

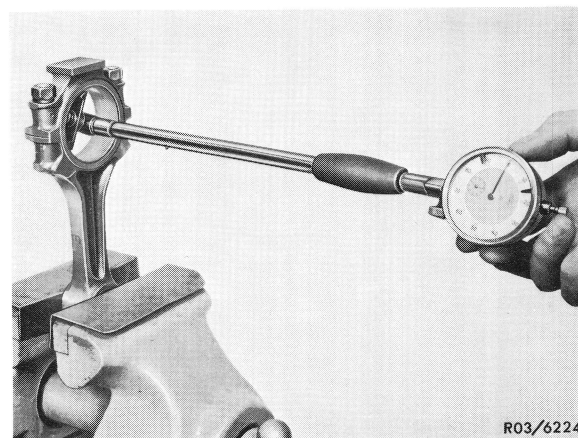


Fig. 3

03.0 Measuring and Correlating Main Bearings and Connecting Rod Bearings

Correlating of Main Bearing and Connecting Rod Bearing Shells

4 Correlate bearing shells. To maintain the specified radial clearance, select bearings after measuring the basic bores. Bearing shells are available within the existing production tolerances in two groups of varying wall thickness. They are marked red and blue for differentiation.

If a basic bore shows an oversize of 0–10 μm , starting from the lowest tolerance limit, a bearing marked blue must be installed. If the oversize is 11–20 μm , a bearing marked red is installed (starting each time from the largest diameter of the three values measured (Fig. 1)).

Since the wall thicknesses of the bearings marked blue and red are overlapping, the walls are measured with a micrometer in critical cases and correlated with the pertinent basic bore.

Note: Bearings for the individual repair stages are supplied ready for installation, but not sorted red and blue. **For this reason the workshop or its spare part stock should have an adequate number of bearing shells**, so that correct mating of “basic bore bearings” can be accomplished.

5 Remove bearing cap.

6 Carefully clean basic bearing bores and bearing shell halves.

7 Install correlated bearings (refer to bearing diagram, Job No. 320 of pertinent unit version). During assembly, insert bearing shell first with lug into pertinent groove of basic bore and then push in (Fig. 4). The bearing shell halves should fit well in basic bore.

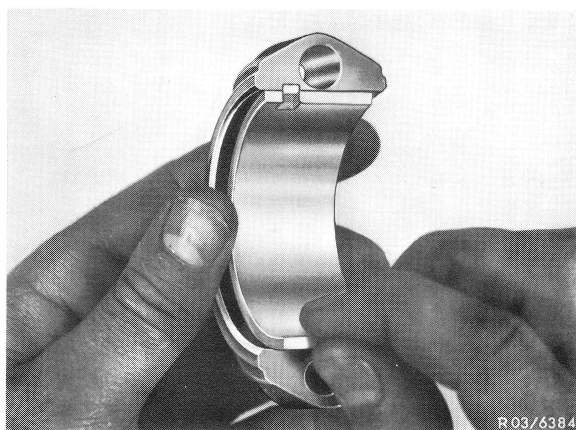


Fig. 4

8 Mount bearing cap and tighten bolts to specified torque and angle of rotation torque (Fig. 5).

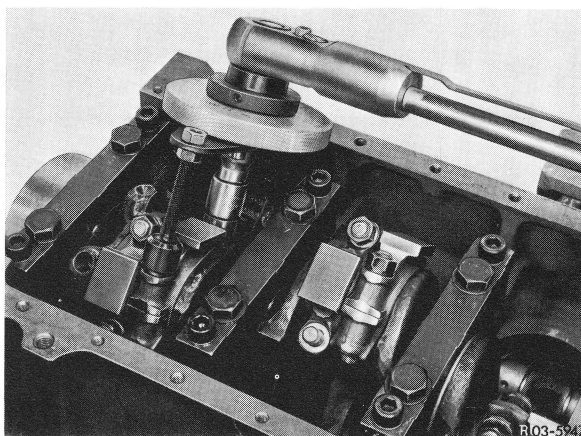


Fig. 5

9 Measure main bearing journals and crankpins of crankshaft and make note of results.

10 Calculate radial clearance from the difference of the measuring results acc. to item 1 and 8.

If in spite of a correctly correlated bearing the radial clearance is too large, install a larger bearing (refer to wall sizes of main and connecting rod bearings, Job No. 320 of pertinent unit version).

11 When the specified radial play is measured, remove bearing cap.

Mount connecting rods with oil on crankshaft and tighten connecting rod bolts to specified torque and angle of rotation torque.

12 Rotate connecting rods manually and check for unobstructed operation. Measure end play, then remove connecting rods again.

13 Measure width of fitted bearing journal of crankshaft and of fitted bearing. Calculate end play of crankshaft from difference of these two measurements.

For end play refer to Job No. 320 of pertinent unit version.

Note: For repairs, the fitted bearing is supplied in oversize widths. The running surface on the loaded end (direction of flywheel) should remain as it is, and should be **refinished at the unloaded end only** at a right angle to the bearing bore.