CRANKSHAFT AND FLYWHEEL

Crankshaft Identification

A Maltese Cross stamped on the engine numbering pad on right side of block, on top boss directly behind coil indicates that engine is equipped with a crankshaft which had one or more connecting rods and/or main bearing journals finished .001 inch undersize. The position of the undersize journal or journals is stamped on the centre counterweight of crankshaft.

A Maltese Cross with an X indicates that all connecting rods and/or main bearing journals are .010 inch undersize.

Connecting rod journals will be identified by the letter "R" and main bearing journals by the letter "M". For example "M-1" indicates that No. 1 main bearing is .001 inch undersize.

When a crankshaft is replaced, all main and connecting rod bearings should be replaced with new bearings. Therefore, selective fitting of the bearings is not required when a crankshaft and bearings are renewed.

CRANKSHAFT AND MAIN BEARINGS

To Remove

Remove engine from vehicle (Refer to Sub-section A 240).

Remove gearbox if fitted (Refer to Sub-section F 120).

Remove clutch (Refer to Sub-section E 040).

Remove starter motor (Refer to Sub-section D 104).

Remove flywheel (This section).

Remove flywheel housing (This section).

Fit engine to suitable engine stand.

Remove cylinder head (Refer to Sub-section A 231).

Remove sump (Refer to Sub-section A 221).

Unscrew oil pick up tube from cylinder block.

Remove pistons and connecting rods (Refer to Sub-section A 213).

Remove timing cover, camshaft sprocket and timing chain (Refer to Sub-section A 215).

Release and remove the two bolts securing the rear oil seal retainer. Remove retainer.

Release and remove main bearing cap bolts.

Remove main bearing caps and lower half shell bearings. Keep individual bearing caps and shells together for subsequent re-assembly. All bearing caps are numbered.

Lift out crankshaft taking care not to damage the shaft.

Remove upper half shell bearings noting their position for re-assembly.

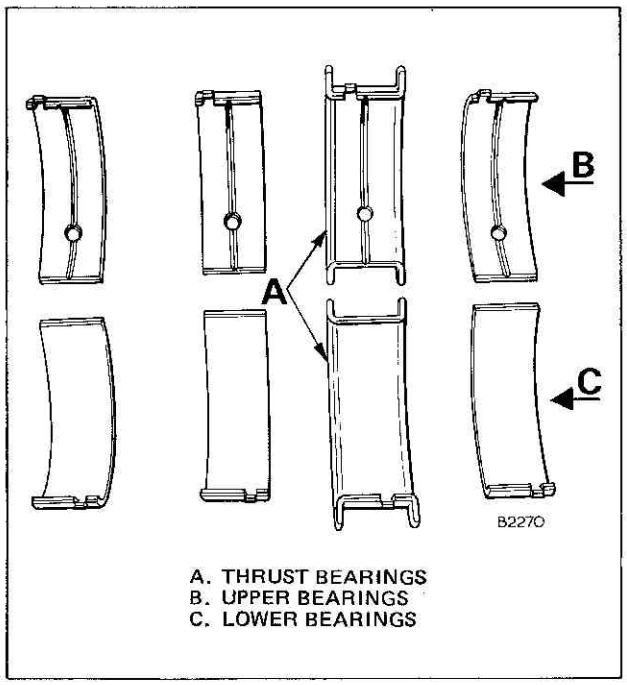
Inspection and Overhaul

Nos. 1, 2 and 4 lower main bearings are interchangeable (Fig. 1). The No. 2 and 4 upper main bearings are interchangeable.

No. 1 upper main bearing is not interchangeable and is chamfered on the tab side for timing chain oiling and can be identified by a red marking on the edge of the bearing.

Upper main bearings are grooved and lower main bearings are plain and are not interchangeable.

No. 3 upper and lower main bearings are flanged to carry the crankshaft thrust loads and are not interchangeable.



A. THRUST BEARINGS
B. UPPER BEARINGS
C. LOWER BEARINGS

Fig. 1 *Main bearing identification*

Examine shell bearings for scratches and wear.

Examine crankshaft for cracks, scratches and wear.

Examine rear main bearing oil seal for wear and damage.

Crankshaft Regrinding

Shell bearings are available in a range of undersizes —check with Parts Division.

Measure all journals and compare with the dimensions in "Data".

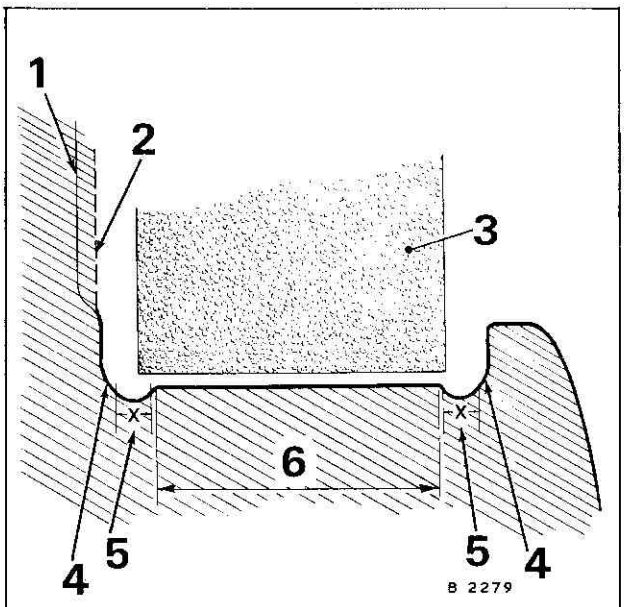
Journal grinding should not exceed 0.3 mm (0.012 in) under the standard journal diameter.

The thrust faces of No. 3 main bearing must not be ground (Fig. 2).

The crankshaft must be examined for cracks before and after grinding and any sharp edges on oilways must be removed.

Fillet radii must be maintained.

After grinding all oilways must be thoroughly cleaned.



1. THRUST SURFACE OF PIN JOURNALS AND NUMBER 3 MAIN
2. THRUST SURFACE OF ALL OTHER MAIN JOURNALS
3. GRINDING WHEEL SURFACE
4. NICKS IN THIS AREA CRITICAL TO CRANKSHAFT STRENGTH
5. EDGE OF GRINDING WHEEL MUST FALL WITHIN THIS DISTANCE
6. JOURNAL SURFACE TO BE GROUND

Fig. 2 *Crankshaft pin and main journal grinding*

To Refit

Thoroughly clean the cylinder block paying particular attention to the oil galleries.

Lubricate all parts liberally with clean engine oil.

Locate the upper half shell bearings in the cylinder block.

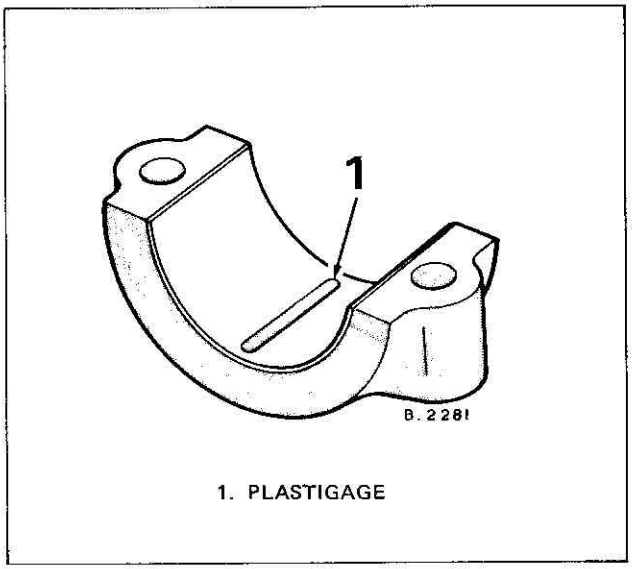
Note: The upper halves of the bearing have an oil groove, the lower halves do not.

Wipe all the crankshaft journals and crankpins and lower the crankshaft into position, squarely, so that all bearings make contact at the same time. Before fitting, the crankshaft must be flushed out and blown dry with compressed air.

Fit the main bearing caps in their correct positions and torque tighten to Data figure.

Check that the crankshaft rotates freely.

Refit the lower oil seal retainer. Torque tighten to Data figure.



1. PLASTIGAGE

Fig. 3 *Plastigage placed in lower shell*

Checking Main Bearing Clearances

Mount a dial indicator at the end of the crankshaft.

Check the crankshaft end float. If the end float exceeds Data figure fit new No. 3 main bearings. Remove dial indicator.

If the crankshaft is found to be excessively tight or loose, check the clearances one bearing at a time with Perfect Circle Plastigage.

Remove the main bearing cap and shell to be checked.

Note: If the engine is in the vehicle, support weight of crankshaft with a jack or stand placed under counterweight adjacent to main bearing being checked. When servicing No. 1 main bearing, support crankshaft at vibration damper. All other bearings must remain tightened.

Clean shell and exposed portion of crankshaft journal. Surfaces must be dry as Plastigage is oil soluble.

Cut a length of Plastigage the width of bearing shell. Immerse it in hot water to soften it then lay it on the bearing shell (Fig. 3).

Fit main bearing cap and torque tighten bolts to Data figure.

Remove bearing cap and measure the width of crushed strip, using the graduated metric scale on the Plastigage packing (Fig. 4). Check the indicated clearance against that specified in Data. New bearings should be installed if bearing clearance is not within specifications.

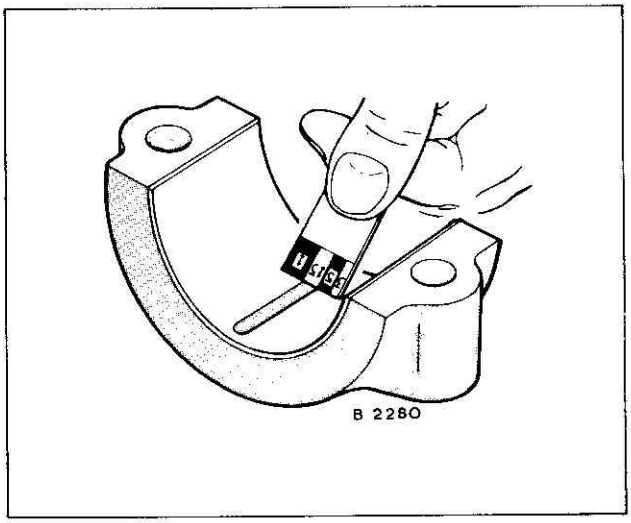


Fig. 4 *Clearance measurement*

DESCRIPTION AND MODIFICATIONS

This may seem a little out of place but I have heard about problems with people stealing work and selling it - for example on eBay.

If you're reading this and you bought this manual anywhere then you have been ripped off.

Please contact me via my email mikejamson@hotmail.com Otherwise I can be found on the dodge50 facebook page, if not then get in contact with Greg and he can pass the message on to me.

I have note done this pdf manual for my own personal gain and wish to see the community of 50 series owners benefit from the information here, and I do not want to see the community get taken advantage of and somebody else gain from it unfairly.

The information in pdf format will hopefully allow more of these wonderful trucks to stay on the road by providing information to everybody.

This has been quite a long and involved process to scan the manual and to convert it into a pdf format. I do aplogise as I have used several different scanners and several different computers to do it, so there are no doubt some errors hidden throughout, as well as some editing errors.

I have aimed to balance quality and file size and hope that this balance meets to everybody's approval.

If you see an error please let me know and I will fix it as soon as I can.

Remove the crushed Plastigage from the shell, wipe clean and oil it before assembly. Torque tighten to Data figure.

Refit the remaining engine items reversing the removal procedure.

Crankshaft Rear Oil Seal

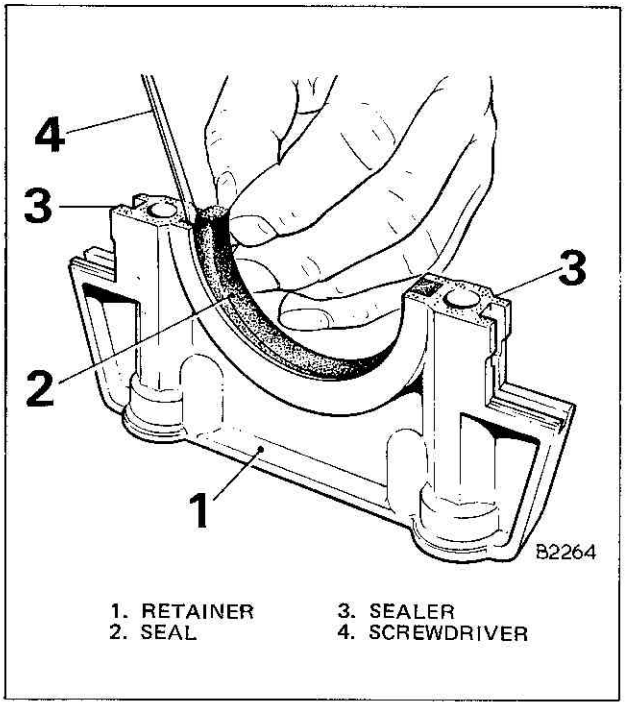
Service seals are of split rubber type composition. The seals make it possible to renew the upper rear seal without removing the crankshaft. The seal must be used as an upper and lower set and cannot be combined with the rope seal.

To Renew

Remove the sump (Refer to Sub-section A 221).

Remove rear seal retainer and rear main bearing cap.

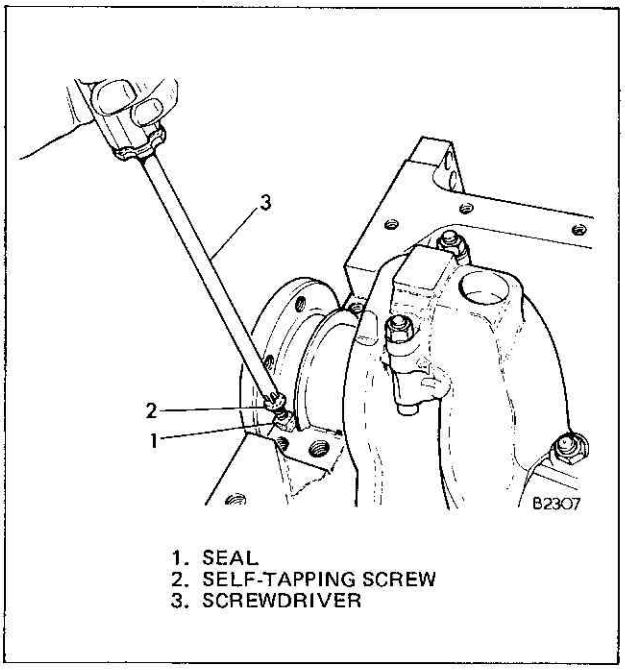
Remove lower rope seal by prising from the side with a small screwdriver (Fig. 5).



1. RETAINER
2. SEAL
3. SEALER
4. SCREWDRIVER

Fig. 5 *Removing lower oil seal from retainer*

Remove upper rope seal by carefully screwing a thin self-tapping screw into the seal, taking care not to damage the crankshaft (Fig. 6). Pull the seal out while rotating the crankshaft.



1. SEAL
2. SELF-TAPPING SCREW
3. SCREWDRIVER

Fig. 6 *Fitting self-tapping screw to upper oil seal*

Wipe crankshaft surface clean and oil lightly with clean engine oil before installing new oil seal.

Oil seal lip lightly with clean engine oil.

Hold seal (with paint stripe to the rear) tightly against crankshaft with thumb to ensure that the sharp edge of the groove does not damage the seal during installation. Rotate the crankshaft, if necessary, while sliding seal into groove. Care must be taken not to damage the seal lip.

Install other half of the seal into the lower seal retainer with paint strip to rear.

Fit rear main bearing cap, torque tighten bolts to Data figure.

Apply small amount of gasket sealer to bottom of seal retainer, both sides (Fig. 5). Do not use sealer on seal ends or lip.

Fit lower seal retainer, torque tighten bolts to Data figure.

Refit sump (Refer to Sub-section A 221).

FLYWHEEL

If required the flywheel can be removed with the engine in situ.

To Remove

Remove gearbox (Refer to Sub-section F 120).

Remove clutch (Refer to Sub-section E 040).

Remove starter motor (Refer to Sub-section D 104).

Support the flywheel and remove the six set-screws.

Remove flywheel.

Inspection and Overhaul

Examine the flywheel friction face for scoring or cracks.

Examine the starter ring teeth for chips and wear.

Examine the primary shaft spigot bush fitted in the crankshaft for wear or damage.

Renew as necessary.

Removing and Refitting the Starter Ring Gear

Support the flywheel with its front face—engine side—on blocks of wood.

Tap around the ring gear with a hammer and drift until it comes off the flywheel.

Remove any burrs around the flange of the flywheel.

Support the flywheel with its rear face on blocks of wood.

Place the new ring gear in an oven with the temperature set to 95°C (200°F). Allow the ring gear to remain in the oven for fifteen minutes after it has reached the required temperature.

When the ring gear is expanded, place it over the flywheel and quickly tap it into place with a mallet, ensuring it is flush with the flange all round the circumference.

Removing and Refitting Crankshaft Bush

Remove the bush from the end of the crankshaft by knocking it out with grease; fill the cavity with grease, place suitable drift against the grease.

Strike the drift to compress the grease and this will force out the bush.

Clean the bush locating bore in the crankshaft.

Knock in the new bush, with suitable drift, until the end of the bush is flush with the crankshaft flange.

To Refit

Refitment is a reversal of the removal procedure noting the following:

Torque tighten the flywheel setscrews to the Data figure.

FLYWHEEL HOUSING

To Remove

Remove the gearbox (Refer to Sub-section F 120).

Remove the clutch (Refer to Sub-section E 040).

Remove the starter motor (Refer to Sub-section D 104).

Remove the flywheel (Refer this section).

Remove the flywheel housing securing bolts and withdraw the housing from the two locating dowels.

Inspection and Overhaul

Clean the mating faces of housing and block.

Examine the flywheel housing for damage or cracks and renew if necessary.

Examine the oil gallery plug and cylinder block core plug for signs of leakage. If fitting new plugs ensure they do not protrude beyond the cylinder block face.

Check the crankshaft rear oil seal for leakage. Renew if necessary.

To Refit

Refitment is a reversal of the removal procedure noting the following:

Torque tighten the flywheel housing bolt to the data figure.