

12.18 Locate the seven oil pump vanes into the slots in the vane rotor

are fitted with the slight scuff marks, caused by the vane rings, facing the vane rotor (see Bustration).

19 Place the outer oil pump vane ring in position on the vane rotor.

20 Refit the two oil pump slide seals, followed by the slide seal springs (see illustration).

21 Fit the oil pump slide pin to the slide pin spring, then refit the spring and pin to the pump housing. Using a screwdriver, compress the slide pin as done during removal, and push the slide pin and spring into position. Ensure that the flat side of the slide pin head is facing toward the top of the timing cover (see Bustration).

22 With the oil pump assembled, measure the axial and radial clearances of the various components using a straight-edge and feeler blades (see **Bustrations**). If any of the measurements exceed the clearances given in the specifications, a new pump repair kit or a new timing cover will be required.

23 if all is satisfactory, thoroughly lubricate the pump internal components with clean engine oil, then refit the pump cover (see illustration). Progressively tighten the pump cover retaining boits in a diagonal sequence to the specified torque.

24 Temporarily refit the crankshaft pulley to the timing cover, engaging the pulley shaft with the oil pump vane rotor. Turn the pulley in the normal direction of rotation to check that the pump operates smoothly and the pulley can be turned easily.

25 Fit a new crankshaft oil seal to the timing cover as described in Section 13.

26 Refit the timing chain and cover to the engine as described in Section 6.

## 13 Crankshaft oil seals – renewal

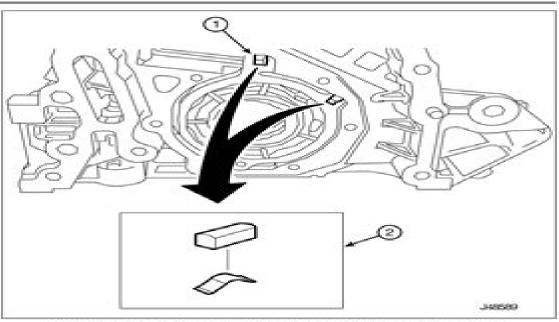


#### Timing chain end oil seal

 Remove the crankshaft pulley as described in Section 5.

2 The seal can now be carefully prised out with a screwdriver or similar hooked tool (see Blustration).

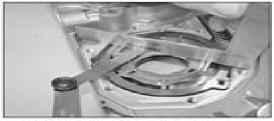
3 Clean the oil seal seat with a wooden or plastic scraper.



12.20 Refit the two oil pump slide seals and slide seal springs (2) into the locations shown (1)



12.21 Ensure that the flat side (arrowed) of the oil pump slide pin head is facing toward the top of the timing cover



12.22a Measure the axial clearances...



12.22b ...and radial clearances of the various components using a straight-edge and feeler blades



12.23 Thoroughly lubricate the pump internal components with clean engine oil, then refit the pump cover

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Andrew K. Legg, Martynn Randall

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