

WORK INSTRUCTIONS



Date: February, 1985.

No. 164
Grp. 05

Subject: **TIMING CHAIN CONVERSION
SINGLE TO DOUBLE ROLLER CHAIN
MODELS 107 AND 126 WITH ENGINE 116.96
MODEL YEAR 1981-1983**

1. Disconnect negative battery terminal.
2. Drain coolant from radiator and engine block.
3. Drain engine oil.
4. Remove V-belts, engine fan and radiator.
5. Remove cruise control actuator from engine.
6. Disconnect alternator with bracket, power steering pump, air pump and air conditioning compressor with bracket. Leaving pipes/hoses connected, move respective components aside.
7. Remove both valve covers.
8. Hold camshaft with special retaining wrench and loosen stretch bolt on each camshaft sprocket (Figure 1).
9. Set engine at ignition TDC for cylinder no. 1 (Figure 2). Loosen front crankshaft bolt and the six pulley screws with the aid of the engine locking tool inserted in the ring gear (starter removed), and recheck TDC setting.

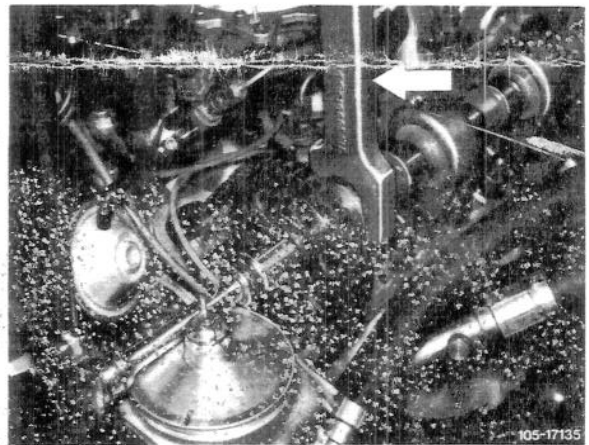


Figure 1

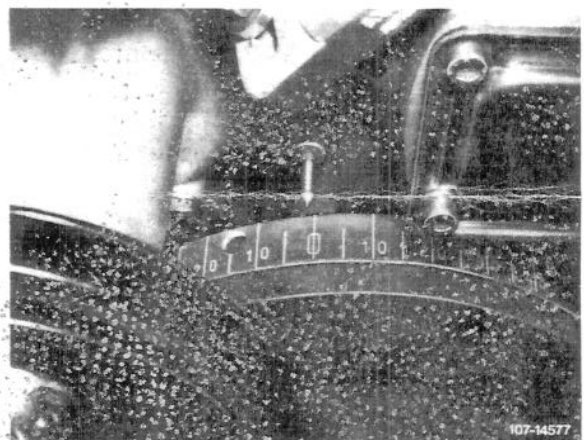


Figure 2

NOTE: Do not move crankshaft again until the new timing chain has been installed and properly timed.

10. Remove ignition distributor.
11. Remove TDC transmitter.
12. Remove crankshaft pulley and vibration damper.
13. For easier realignment of key, match-mark crankshaft and hub (bolt removed) with a chisel. Pull off hub.
14. Remove water pump (Figure 3).

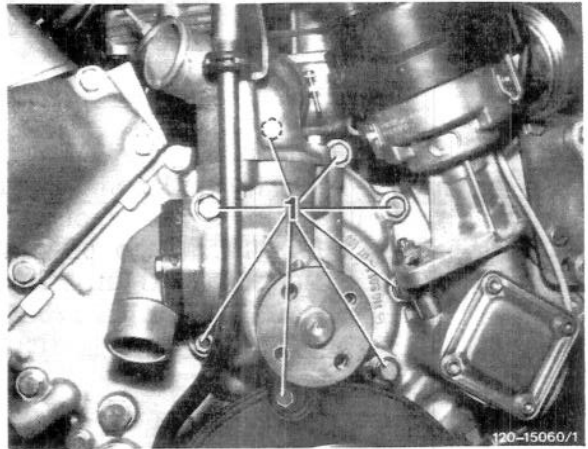


Figure 3

15. Pull out radial seal (Figure 4).

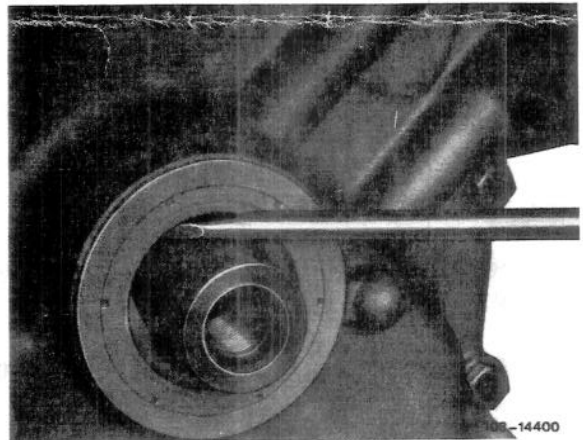


Figure 4

NOTE: For model 107, it is necessary to remove the front axle/carrier to allow removal of oil pan. For R & R of front axle, refer to M.F. - Front axle, Job no. 33-100.

16. Remove oil pan (Figure 5).

Model 107: Remove the complete oil pan assembly.

Model 126: Remove the lower (small) section of oil pan. Disconnect the upper section of oil pan from crankcase and lower it on subframe.

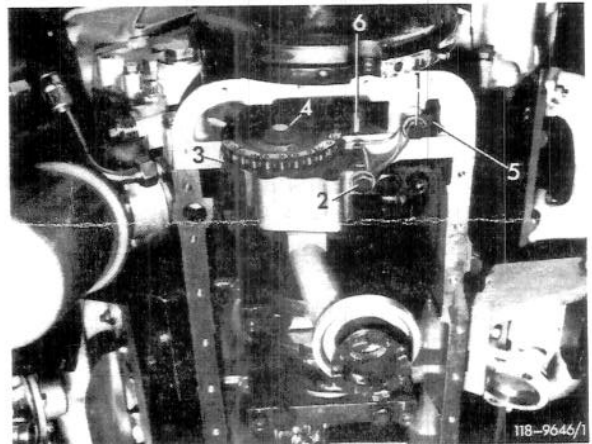


Figure 5

17. Remove oil pump, remove tensioning spring of oil pump chain.

18. Remove timing chain cover by removing the additional M8 cylinder head screws (Figure 6, arrows).

NOTE: Cut a strip of sheet metal (approximately 70 x 80 mm) bend it slightly and place it between the oil pump chain and crankshaft sprocket to prevent the chain from staying engaged in the sprocket teeth.

To pull off the timing chain cover, lift up the tensioning lever of the oil pump chain.

CAUTION! Do not damage the cylinder head gaskets.

19. Match-mark distributor drive sprocket and timing chain with paint dots.

20. Match-mark camshaft sprockets and timing chain with paint dots.

21. Match-mark crankshaft sprocket and timing chain with paint dots (two arrows, Figure 7).

22. Loosen the left slide rail (Figure 8, 7 single arrow).

23. Remove chain tensioner.

24. Remove slide rails inside of cylinder heads.

NOTE: Inspect slide rails and replace if required.

25. Remove camshaft sprockets.

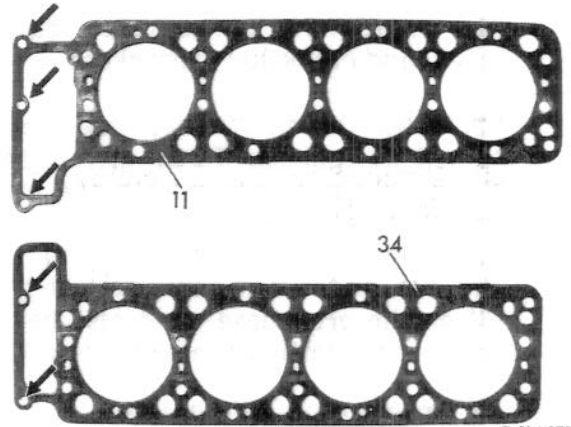
26. Remove timing chain from below.

27. Pull off crankshaft, distributor and intermediate drive sprockets.

28. Transfer the paint dots to the new timing chain (by counting links) and sprockets.

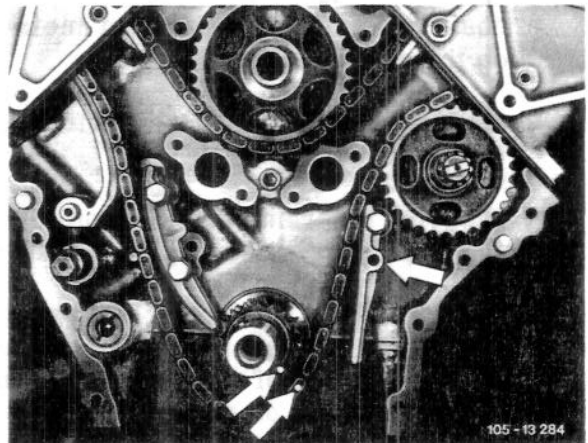
29. Clean all sealing surfaces.

30. Replace O-rings (1 and 2) in timing chain cover (Figure 8).



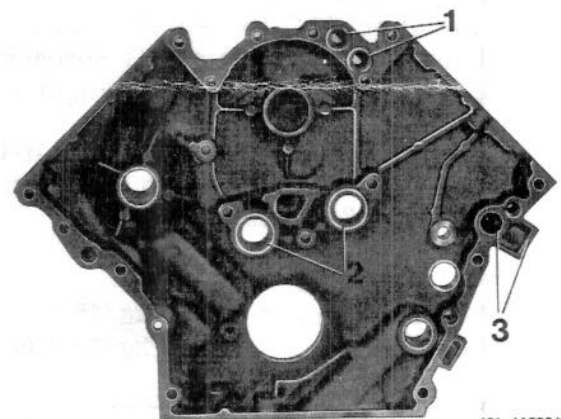
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Figure 6



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Figure 7



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Figure 8

31. Install new intermediate, distributor drive, and crankshaft sprockets.

32. With piston number one still positioned at ignition TDC, install the new timing chain together with the camshaft sprockets while matching up all paint dots on chain and sprockets. The mark (2) on the distributor drive sprocket and the lug (3) on the crankcase must also be aligned for proper ignition timing (Figure 9).

33. Tighten the left slide rail.

34. Install slide rails in cylinder heads.

35. Coat sealing surface of timing chain cover with sealing compound and install, and at the same time place the oil pump chain (using the curved sheet metal strip) on the crankshaft sprocket.

Install the new radial seal with installation tool.

36. For the remaining assembly, follow the steps for disassembly in reverse order.

IMPORTANT: The rear mating surface of the oil pan must be aligned to the rear mating surface of the cylinder crankcase (arrows). If the oil pan is not aligned with the crankcase, noise and vibrations may result (Figure 10).

Crank engine over by hand, and then set at ignition TDC for cylinder no. 1. Check timing marks on camshaft sprockets and distributor rotor for proper alignment.

Check tension of V-belts with belt-tension gauge "Krikit" (refer to instructions in S.I. MBT 13/2, Feb. 1980).

V-belts 9.5 mm = 20-25 kg/45-55 lbs.
V-belt 12.5 mm = 40-46 kg/90-100 lbs.

Pressure test cooling system.

Run engine and check for leaks.

Check idle speed, ignition timing and engine operating temperature.

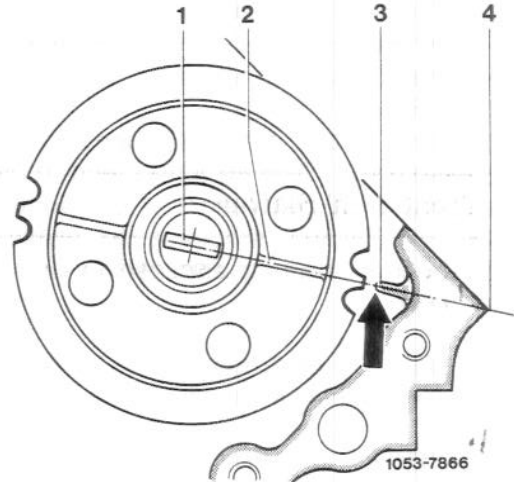


Figure 9

- 1 Drive key
- 2 Timing mark on sprocket
- 3 Lug on crankcase
- 4 Reference point to crankcase (to form common center line)

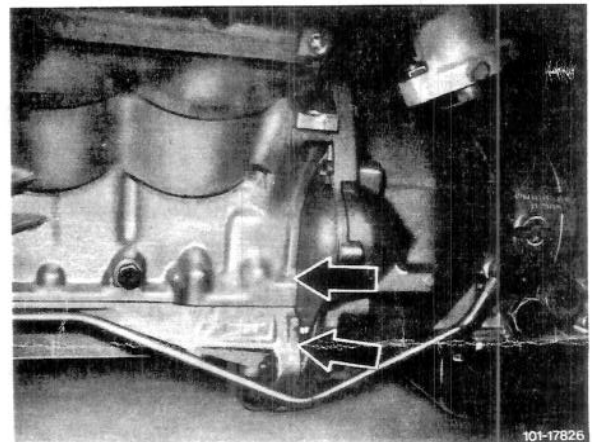


Figure 10

Tightening Torques		Nm
Oil drain plug	Model 107 M26	50
	Model 126 M12	40
Front crankshaft bolt		270-300
Timing chain cover screws (M8)		25
Oil pan screws		11
Valve cover screws		3
Stretch bolt for camshaft sprocket		100

Special Tools

Tool Name	Tool Number
Cooling system pressure tester	001 589 48 21 00
Radiator cap with hose adapter for pressure tester	605 589 00 25 00
6 mm Allen wrench with T-handle, length 440 mm	116 589 03 07 00
Impact puller for sliding rail pins (in conjunction with threaded studs.)	116 589 20 33 00
Threaded stud M6 x 50	116 589 01 34 00
Engine lock (starter removed)	116 589 01 40 00
Puller for crankshaft hub	116 589 10 33 00
Torque wrench, 3/4" drive, range 150-500 Nm	Locally Available
27 mm socket, 1/2" drive	001 589 65 09 00
Radial seal installer	110 589 07 61 00
Belt-tension gauge (Krikrit)	Available from: The Gates Rubber Co. 999 S. Broadway Denver, CO 80217
Camshaft retaining wrench	116 589 01 01 00

Parts Information

Qty.	Part Name	Part Number
1	Double roller chain	000 997 75 94
2	Camshaft sprocket	116 052 06 01
1	Intermediate sprocket	116 050 ⁰⁵ 02 05
1	Crankshaft sprocket	116 052 ⁰¹ 05 03
1	Drive sprocket, distributor	116 150 ⁰⁸ 06 12
1	Oil pan gasket	116 014 ⁰⁸ 05 22
1	Water pump gasket	117 201 ⁰⁴ 00 80
1	Chain tensioner seal	116 052 ⁰⁸ 08 80 ¹¹
1	Radial seal, crankshaft	003 997 03 47
2	O-ring, timing cover	621 997 00 40
2	O-ring, timing cover	004 997 80 48

Also need chain rails
(slide)