

Engine - Timing Chain/Front Cover Revised Procedure

Classification:
EM98-009

Reference:
NTB98-107

Date:
January 15, 1999

GA16DE TIMING CHAIN/FRONT COVER REVISED SERVICE PROCEDURE

APPLIED ENGINE:
GA16DE

APPLIED MODELS:
1991-94 Sentra (B13) w/GA16DE
1991-93 NX1600 (B13)
1995-99 Sentra (B14) w/GA16DE
1995-98 200SX (B14) w/GA16DE

SERVICE INFORMATION

A revised service procedure for the engine front cover/timing chain has been adopted for the GA16DE. It is no longer recommended to remove the cylinder head when removing the timing chain/front cover(s). Utilize the following steps when servicing the front cover, timing chain, guides or tensioner(s)

PARTS INFORMATION

| DESCRIPTION | PART #/PFP | QUANTITY |
|----------------------------|--------------|-----------|
| Dowel-Block to Oil Pump | 11022-77A00 | 2 |
| Genuine Nissan RTV sealant | 999MP-A7007* | as needed |

* Use Expense Code "009" for reimbursement of the portion of the RTV tube that is actually used for the repair. DO NOT put the RTV P/N on the claim.

CLAIMS INFORMATION

Please reference the "Revision C" pages of the Nissan "1992-1999 Warranty Flat Rate Information Manual", Section "AG", Op Codes AG12AA, AG14AA, AG142A, AG143A, AG144A and AG24AA. Also reference Section "CA", Op Codes CA20AA and CA22AA. You will note that the descriptions and flat rate times applicable to the B13 and B14 vehicles (with GA16DE engines) for these Op Codes have been revised to reflect this new procedure.

Caution

- ^ After removing the timing chain, do not turn the crankshaft and camshaft separately or the valves will strike the piston heads.
- ^ When installing chain tensioners or other sliding parts, lubricate contacting surfaces with new engine oil.
- ^ Apply new engine oil to bolt threads and seat surfaces when installing the camshaft sprockets and the crankshaft pulley.
- ^ Do not spill engine coolant on the drive belts.
- ^ Please refer to the Service Manual for the correct tightening torque.

Removal

1. Set # 1 piston at TDC on its compression stroke.
2. Remove the spark plug wires.

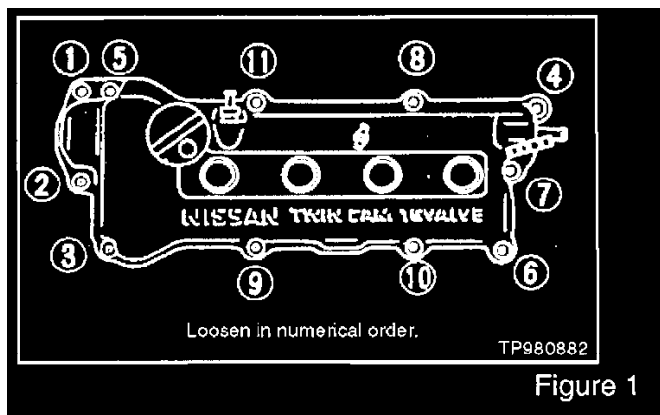


Figure 1

3. Remove the rocker cover (see Figure 1).
4. Remove the coolant reservoir tank with bracket and reposition it for clearance.
5. Support the engine with a suitable jack.
6. Remove cylinder head front mounting bracket.
7. Remove engine front mounting, then the engine front mounting bracket.
8. Remove cylinder head front cover.

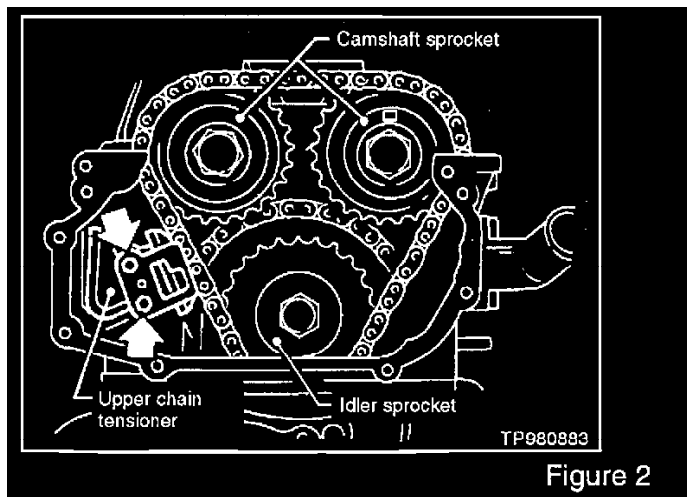


Figure 2

9. Remove the upper chain tensioner (see Figure 2).

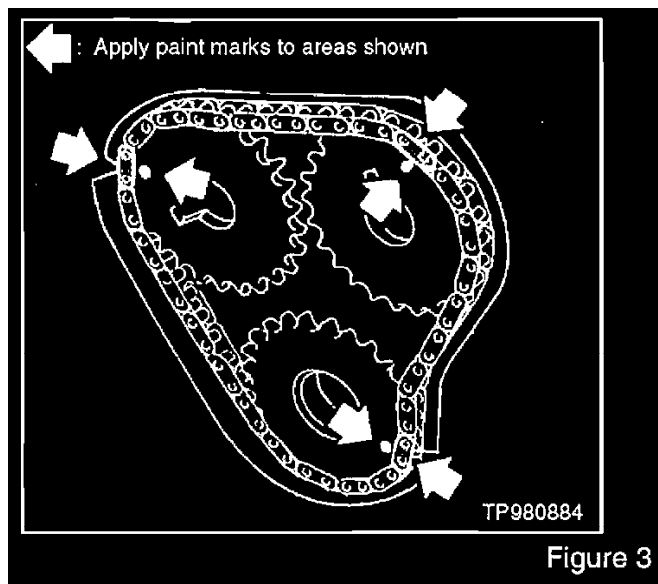


Figure 3

10. Wipe off the links of the upper timing chain next to the timing marks on the sprockets. Put paint marks on the timing chain, matching them with the timing marks on the cam sprockets and idler sprocket (see Figure 3)
11. Remove the four (4) front cover to cylinder head bolts.
12. Remove side and lower engine compartment splash covers.
13. Remove the accessory drive belts.
14. Remove the crankshaft pulley.
15. Drain coolant by removing the cylinder block drain plug and opening the radiator drain cock (Refer to MA section of the Service Manual).
16. Drain engine oil.
17. Remove intake manifold support of engine front side.
18. Remove power steering pump, pump bracket and tension rod. Position pump aside for clearance.

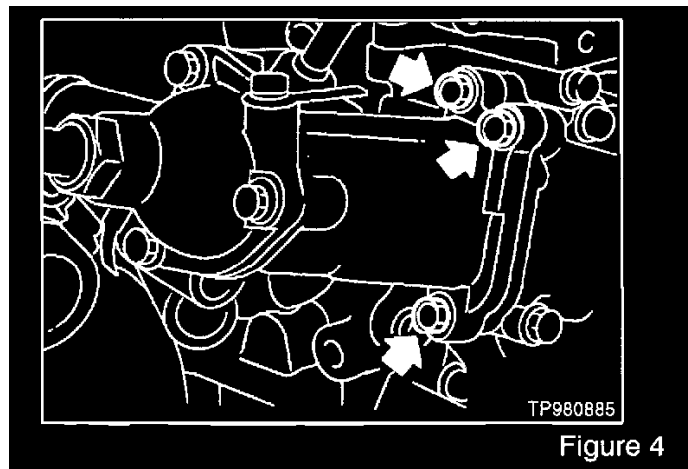


Figure 4

19. Remove the thermostat housing (See Figure 4).

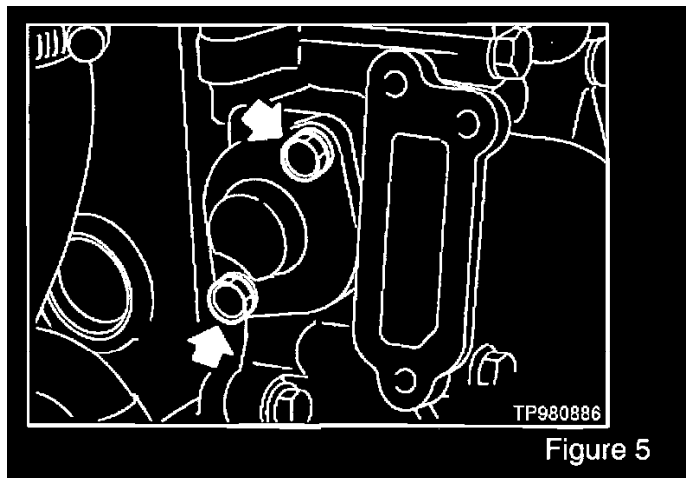


Figure 5

20. Remove the lower chain tensioner (see Figure 5).
21. Remove the front exhaust tube. Refer to the "FE" section (Exhaust System) of the Service Manual.
22. Remove the front and rear engine gussets (if equipped) on either side of the oil pan.

NOTE:

On A/T models, remove the rear plate cover.

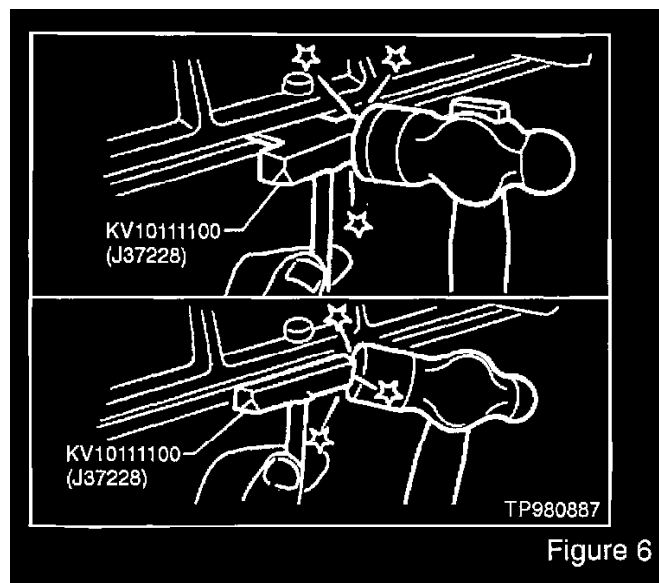


Figure 6

23. Remove the oil pan (see Figure 6).
 - a. Insert the Tool between the cylinder block and oil pan.
- CAUTION:**
Be careful not to damage the aluminum mating face. Do not insert a screwdriver, or the oil pan flange will become damaged.
- b. Slide the Tool by tapping it on the side of the Tool with a hammer.
24. Remove the A/C compressor and position it aside for clearance.
 25. Remove the A/C and alternator bracket with the alternator.
 26. Remove the oil pump drive spacer.

CAUTION:

Be careful not to scratch the drive spacer when removing it.

27. Remove the front cover bolts and front cover.

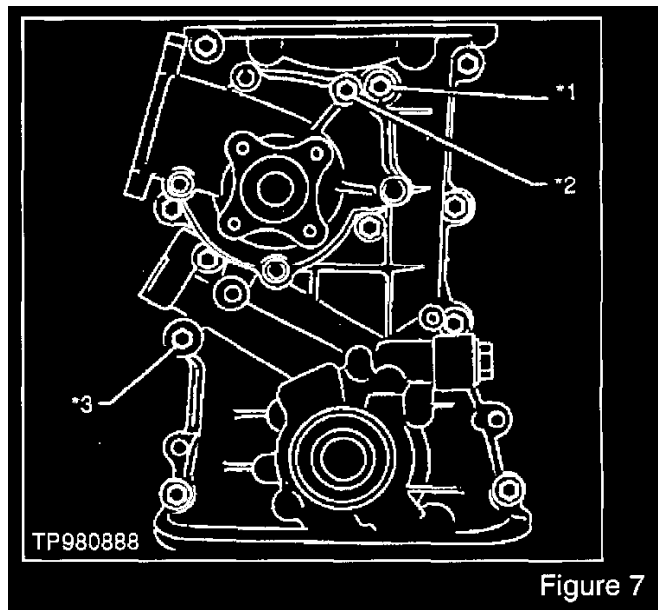


Figure 7

CAUTION:

One bolt is located on the water pump (see Figure 7).

*1: Located on engine front mounting bracket.

*2: Located on the water pump.

*3: Located on the power steering oil pump adjusting bar.

CAUTION:

Be careful not to tear or damage the cylinder head gasket.

28. Remove the cylinder block to front cover alignment dowels.

CAUTION:

Do not hit the dowels or the cylinder block will crack.

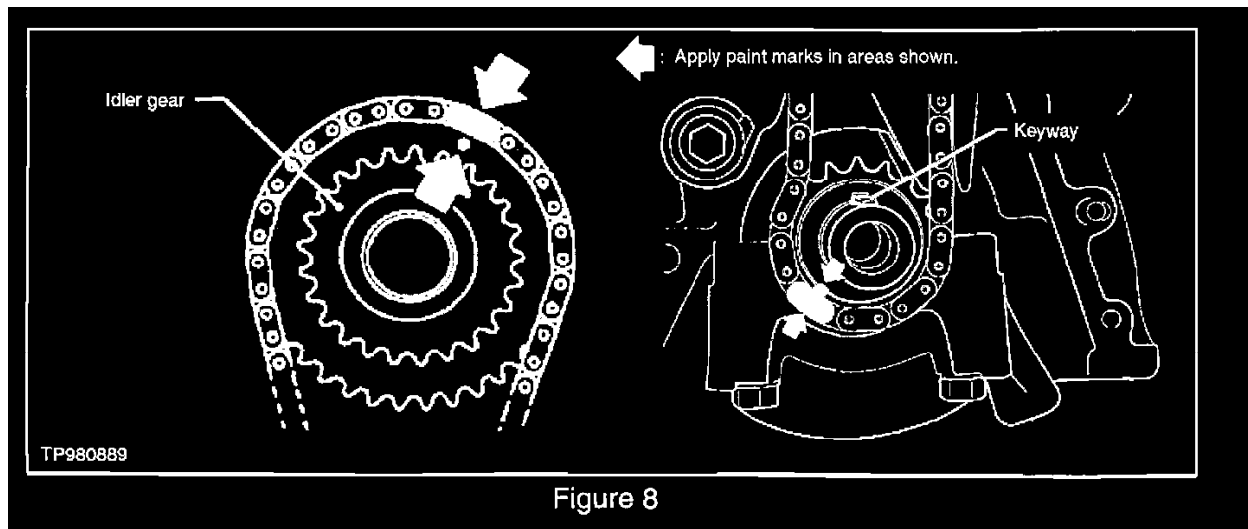


Figure 8

29. Wipe off the links of the lower timing chain next to the timing marks on the sprockets. Put paint marks on the timing chain, matching them with the timing marks on the idler sprocket and crankshaft sprocket (see Figure 8).

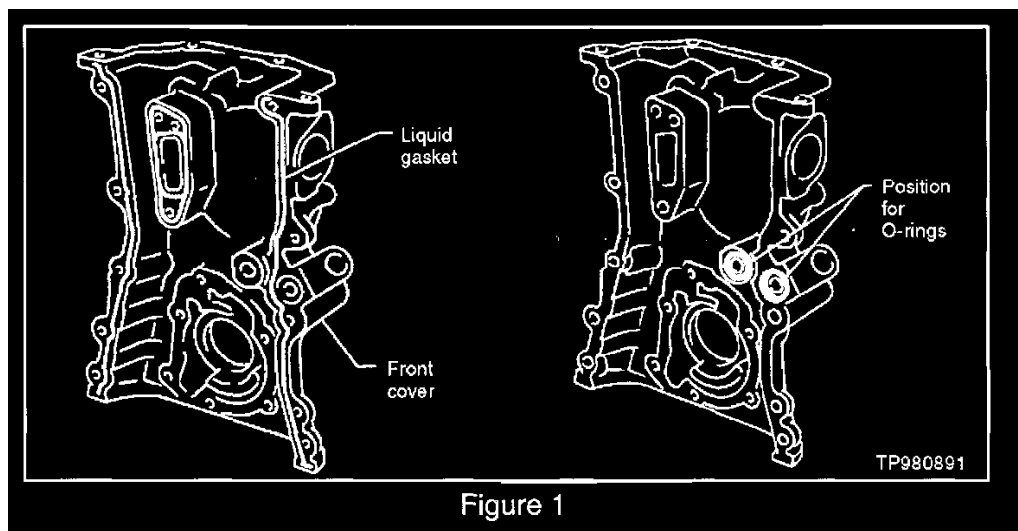
Installation

1. Install the crankshaft sprocket, making sure the mating marks face the front of the engine.
2. Install the idler sprocket and lower timing chain using the mating marks and the paint marks made during the removal process.

CAUTION:

Be careful not to tear or damage the cylinder head gasket.

3. Install the lower chain guides.
4. Front cover installation:
 - a. Using a scraper or other suitable tool remove all traces of liquid gasket from the cylinder block and front cover mating surfaces.
 - b. Install new crankshaft seal in front cover.



- c. Install new oil passage O-rings and apply a continuous bead of RTV sealant to the front cover (see Figure 1).

NOTE:

Use Genuine Nissan RTV silicone sealant P/N 999MP-A7007, Three Bond P/N TB1207D or equivalent.

- d. Install the front cover to the engine.

CAUTION:

Be careful not to tear or damage the cylinder head gasket or oil seal.

5. Align oil pump drive spacer with the oil pump, and install.
6. Install the oil strainer.
7. Install oil pan, referring to "Installation" in the "OIL PAN" section of the Service Manual.
8. Install upper timing chain and sprockets, using the painted reference marks made during removal.
9. Install upper chain tensioner.

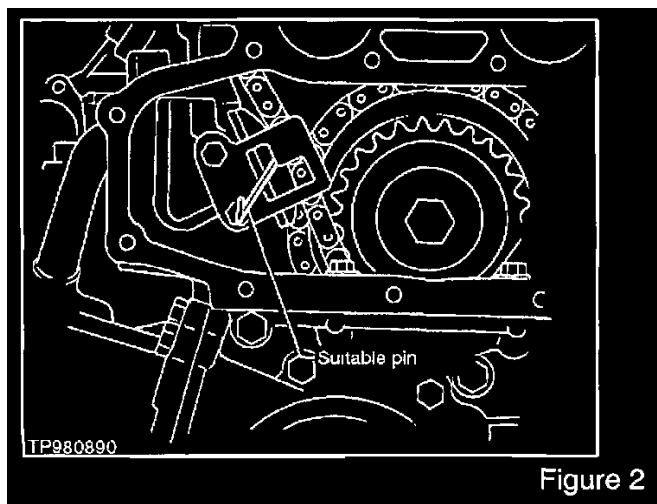


Figure 2

- a. Before installing the chain tensioner, insert a suitable pin into the pin hole of the chain tensioner (see Figure 2) to hold the tensioner in.
- b. Once the tensioner is installed, remove the pin.

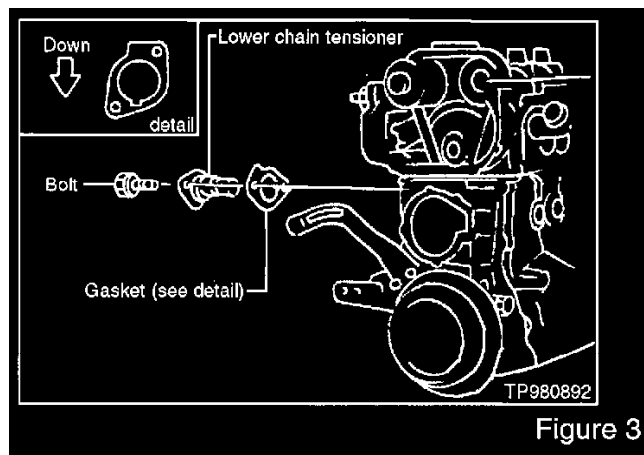


Figure 3

10. Install the lower chain tensioner (See Figure 3).

NOTE:

Make sure the gasket is facing the proper direction before installing the tensioner.

CAUTION:

Now rotate the crankshaft by hand. Check that no binding or interference problems occur when the engine is rotated.

11. Install the thermostat housing.

- a. Use a scraper to remove all traces of liquid gasket from the mating surfaces of the engine front cover and the thermostat housing.

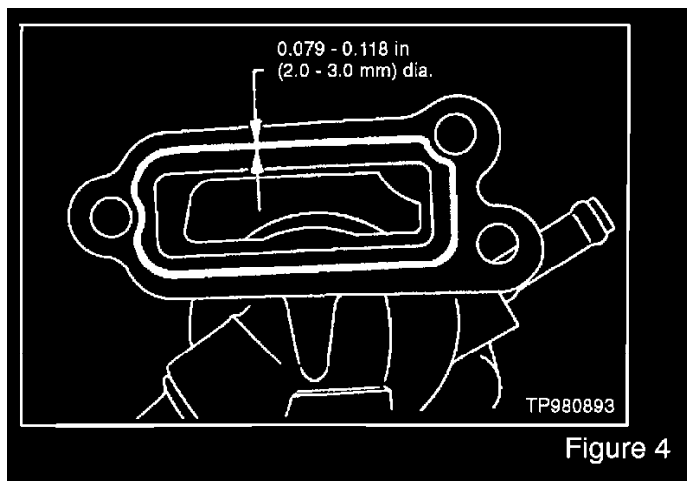


Figure 4

- b. Apply a continuous bead of RTV sealant to the housing as shown in Figure 4.

NOTE:

Use Genuine Nissan RTV silicone sealant P/N 999MP-A7007, Three Bond P/N TB1207D or equivalent.

12. Install camshaft sprocket cover:

- a. Use a scraper to remove all traces of liquid gasket from the mating surfaces of the cylinder head and camshaft sprocket cover.

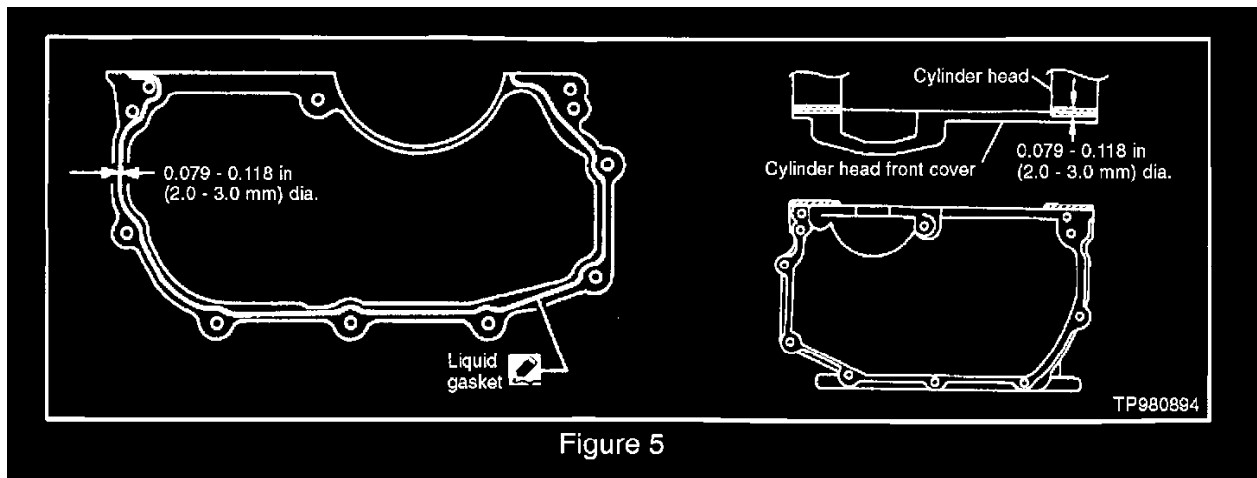


Figure 5

- b. Apply a continuous bead of RTV sealant to the cover as shown in Figure 5.

NOTE:

Use Genuine Nissan RTV silicone sealant P/N 999MP-A7007, Three Bond P/N TB1207D or equivalent.

- d. Install camshaft sprocket cover.

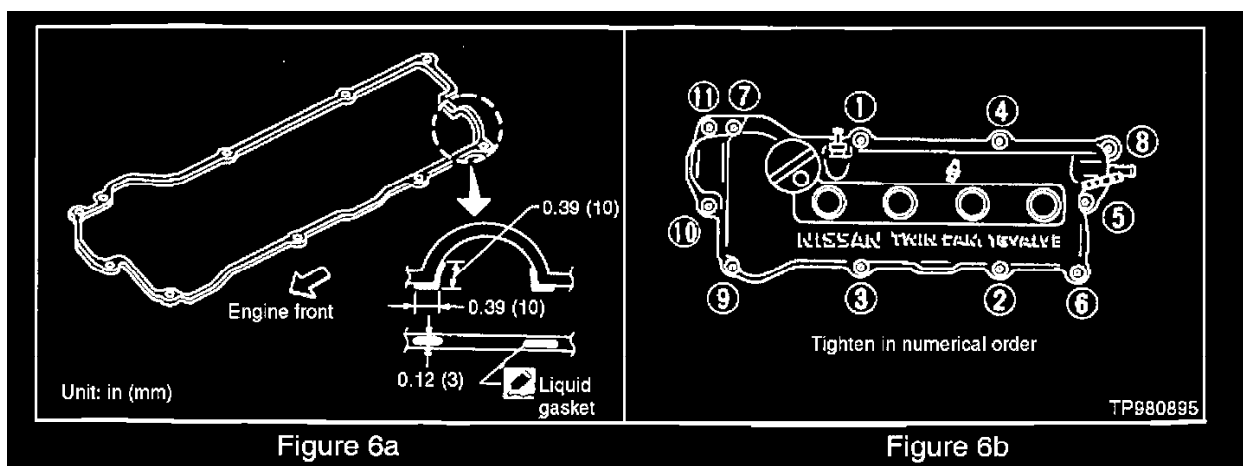


Figure 6a

Figure 6b

13. Apply RTV sealant to rocker cover gasket (see Figure 6a) and install rocker cover, tightening the bolts as shown in Figure 6b.
14. Install the following parts:
 - a. Crankshaft pulley.
 - b. A/C compressor and alternator bracket with alternator.
 - c. A/C compressor.
 - d. Power steering oil pump and tension rod.
15. Install front and rear engine gussets (if equipped), and rear cover plate (A/T models).
16. Install front exhaust tube.
17. Install upper right engine bracket and mount.
18. Install coolant reservoir tank.
19. Install alternator, power steering and A/C compressor drive belts.
20. Install engine compartment splash guards.
21. Install vacuum hoses, electrical harnesses and connectors.
22. Install spark plug wires.
23. Refill with coolant. Refer to the "MA" section ("Changing engine coolant, Engine Maintenance") of the Service Manual.
24. Refill with engine oil. Refer to the "MA" section ("Changing engine oil, Engine Maintenance") of the Service Manual.