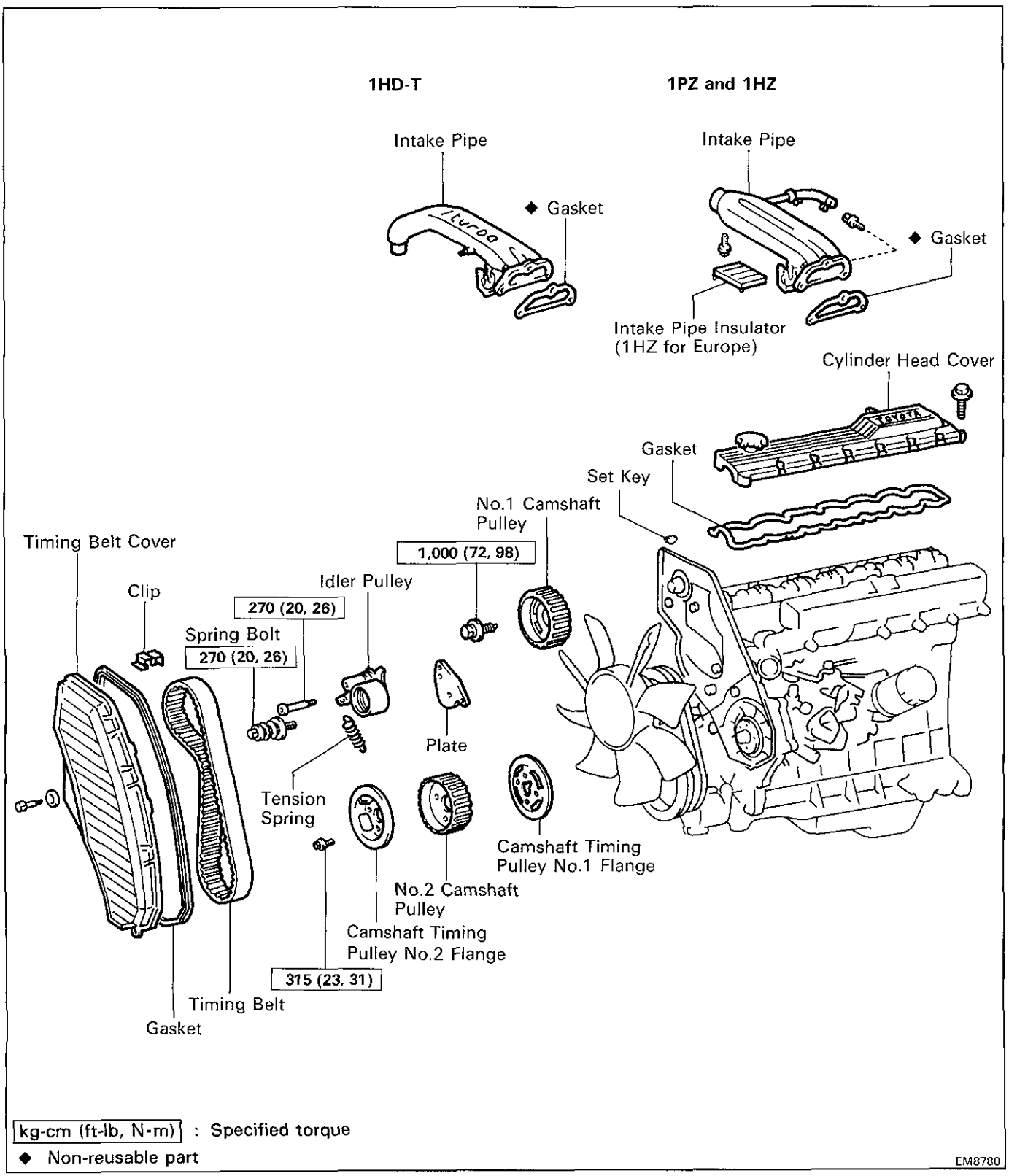
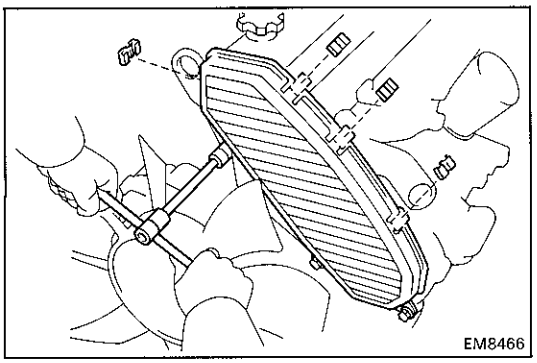
TIMING BELT

HINT: If replacing the timing belt before the timing belt warning light comes on, (light comes on after 100,000 km of driving), be sure to reset the timing belt counter of the speedometer to zero.

COMPONENTS



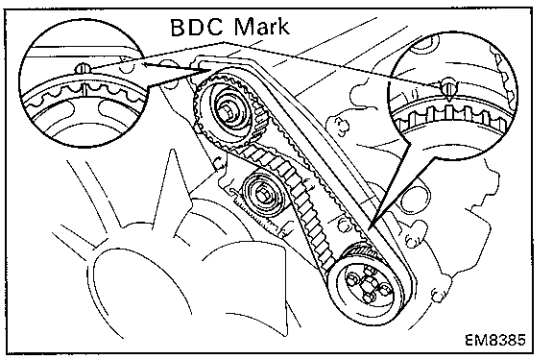


REMOVAL OF TIMING BELT

(See page EM-32)

1. REMOVE TIMING BELT COVER

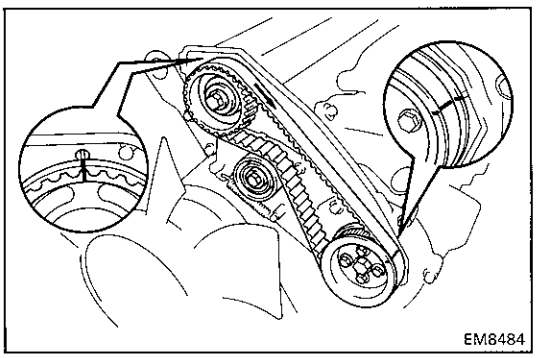
Remove the three seal washer, bolts, four clips, timing belt cover and gasket.



2. SET NO.1 CYLINDER TO BDC

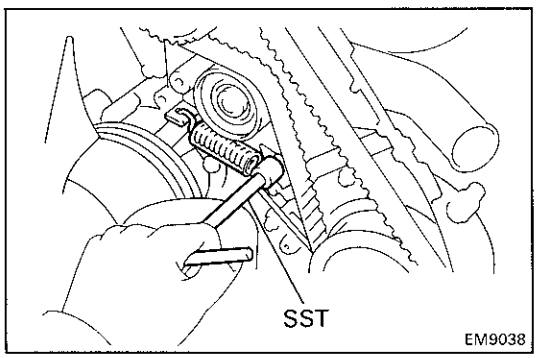
Turn the crankshaft pulley clockwise, set the No.1 and No.2 camshaft pulley grooves at each position (BDC mark).

HINT: By positioning the No.1 cylinder at BDC, interference between the valve and piston is avoided, even if the camshaft rotates.



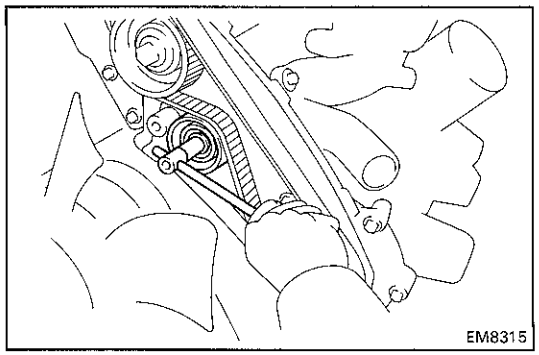
3. REMOVE TIMING BELT

HINT: If re-using the timing belt, draw a direction arrow on the timing belt (in direction of engine revolution), and place matchmarks on the pulleys and timing belt.

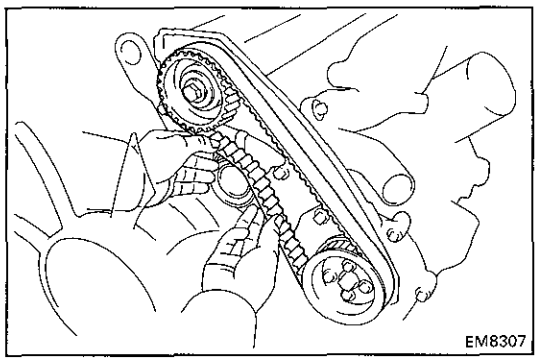


(a) Using SST, remove the tension spring.

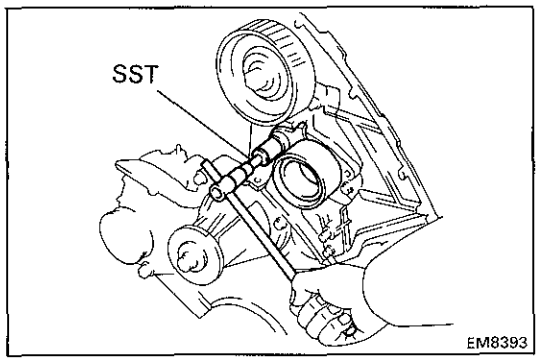
SST 09717 – 20010



(b) Remove the spring bolt of the timing belt idler.



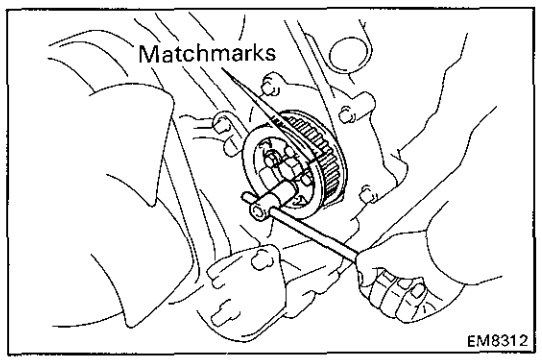
(c) Remove the timing belt.



4. REMOVE TIMING BELT IDLER PULLEY

Using SST, remove the bolt, timing belt idler pulley and plate.

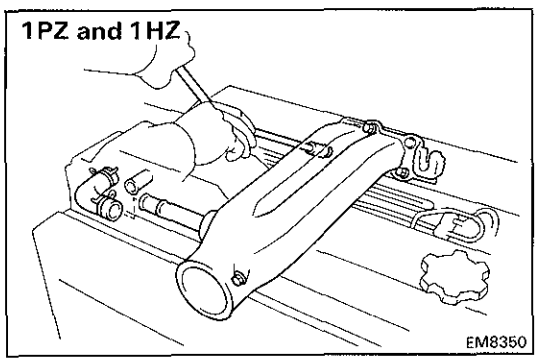
SST 09923-00020



5. REMOVE NO.2 CAMSHAFT TIMING PULLEY

(a) Place matchmarks on the camshaft timing pulley No.2 flange and No.2 camshaft timing pulley.

(b) Remove the four bolts, camshaft timing pulley No.2 flange, No.2 camshaft timing pulley and camshaft timing pulley No.1 flange.

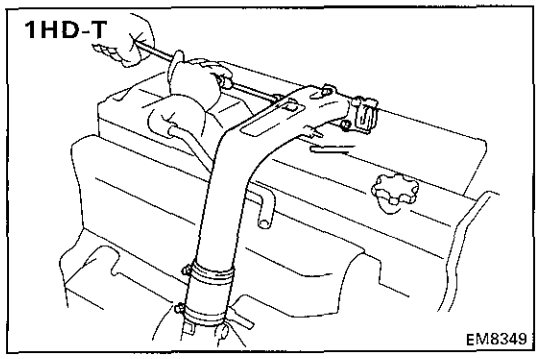


6. REMOVE INTAKE PIPE
(1PZ and 1HZ)

(a) Disconnect the PCV hose.

(b) Remove the four bolts, intake pipe and gasket.

(c) (1HZ (Eourope))
Remove the intake pipe insulator.

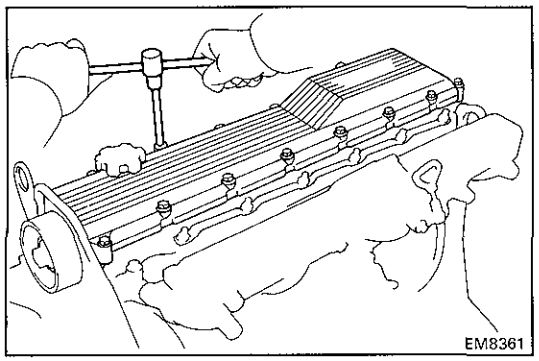


(1HD-T)

(a) Disconnect the turbo vacuum hose.

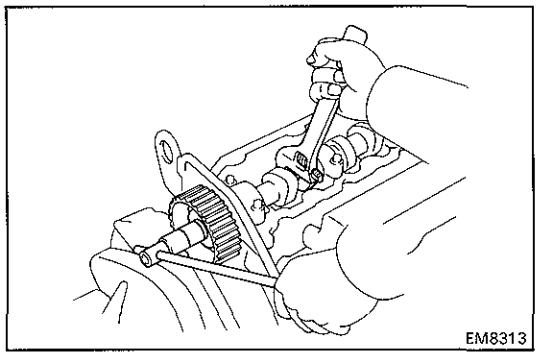
(b) Loosen the air hose clamp bolt.

(c) Remove the three bolts, intake pipe and gasket.



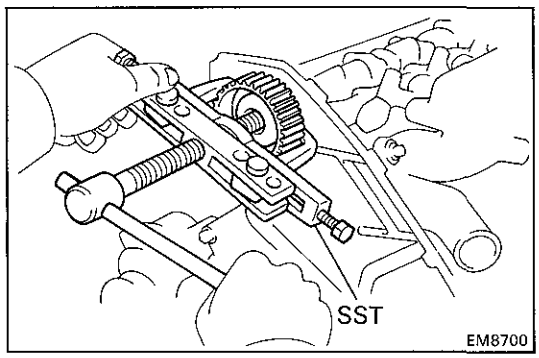
7. REMOVE CYLINDER HEAD COVER

Remove the twelve bolts (1PZ) or fourteen bolts (1HZ and 1HD-T), two nuts, cylinder head cover and gasket.



8. REMOVE NO.1 CAMSHAFT TIMING PULLEY

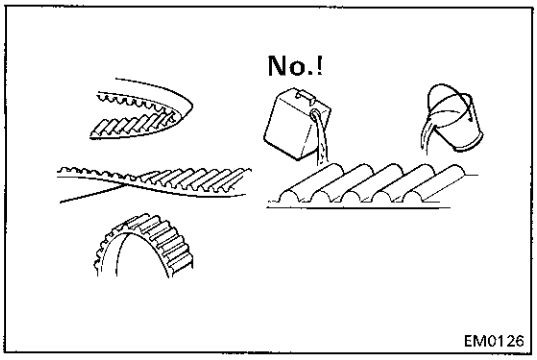
(a) Hold the hexagonal wrench head portion of the camshaft with a wrench, and remove the No.1 camshaft timing pulley bolt.



(b) Using SST, remove the No.1 camshaft timing pulley.

SST 09950-20017

(c) Remove the set key.

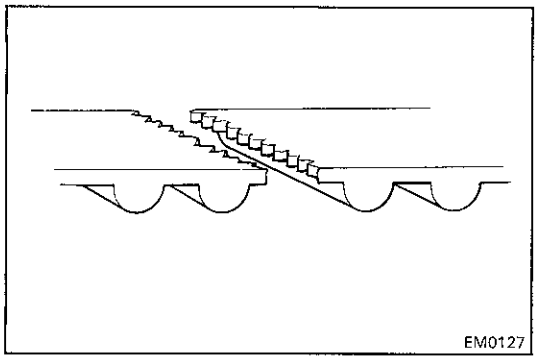


INSPECTION OF TIMING BELT COMPONENTS

1. INSPECT TIMING BELT

NOTICE:

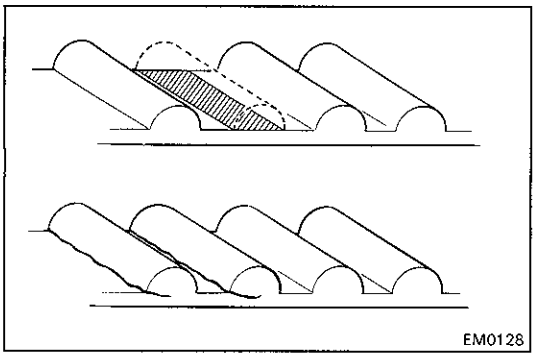
- **Do not bend, twist or turn the timing belt inside out.**
- **Do not allow the timing belt to come into contact with oil, water or steam.**
- **Do not utilize timing belt tension when installing or removing the mount bolt of the camshaft timing pulley.**



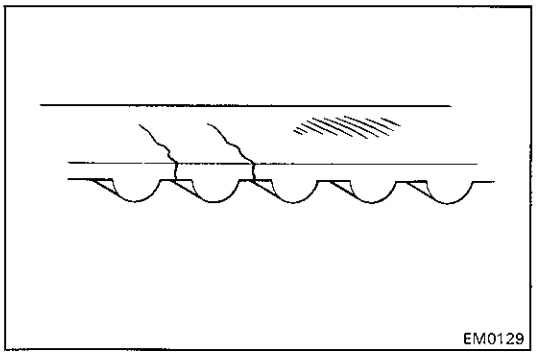
If there are any defects as shown in the illustration, check the following points:

(a) Premature parting

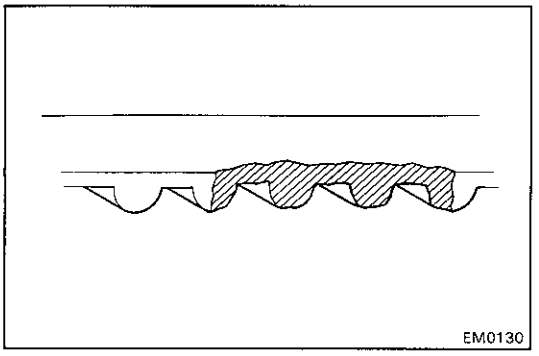
- Check for proper installation.
- Check the timing belt cover gasket for damage and, check for proper installation.



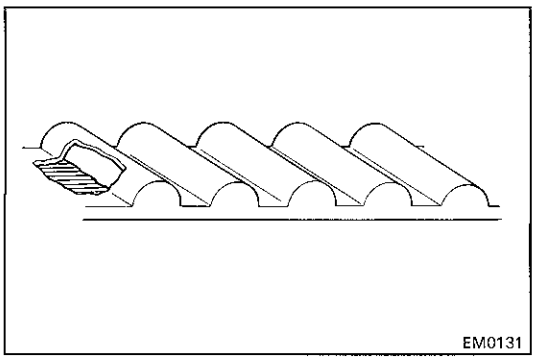
(b) If the belt teeth are cracked or damaged, check to see if the camshaft is locked.



(c) If there are cracks or noticeable wear on the belt face, check to see if there are nicks on one side of the idler pulley lock.

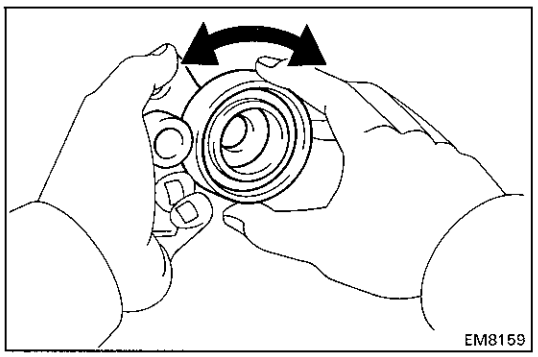


(d) If there is wear or damage on only one side of the belt, check the alignment of the each pulley.



(e) If there is noticeable wear on the belt teeth, check timing belt cover for damage and check for correct gasket installation. Check for foreign material on the pulley teeth.

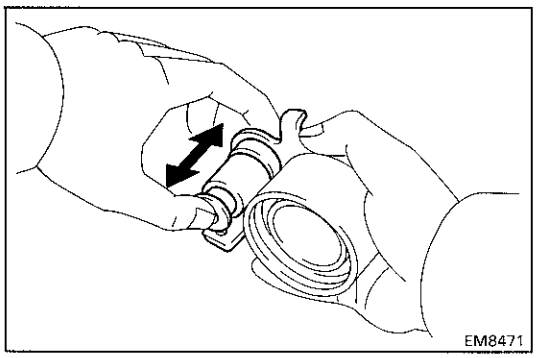
If necessary, replace the timing belt.



2. INSPECT IDLER PULLEY

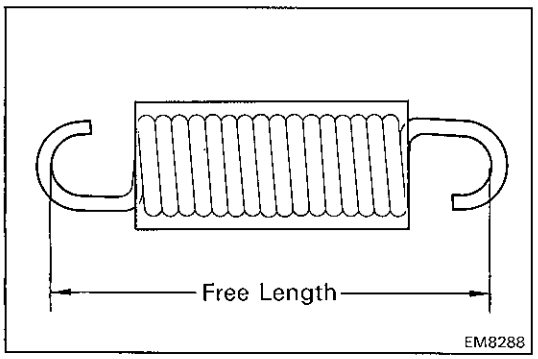
(a) Check the turning smoothness of the idler pulley.

If necessary, replace the idler pulley.



(b) Check that the idler pulley and the pulley bolt slide smoothly.

If necessary, replace the idler pulley.



3. INSPECT TENSION SPRING

(a) Measure the free length of the tension spring.

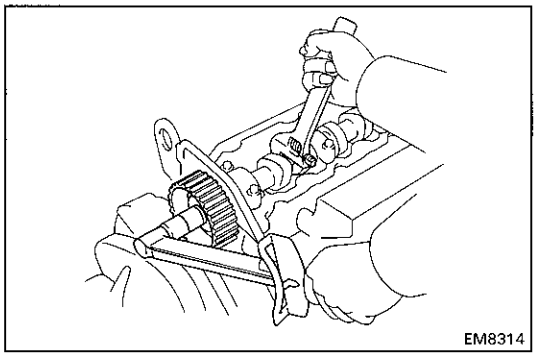
Free length: 72.7 mm (2.862 in.)

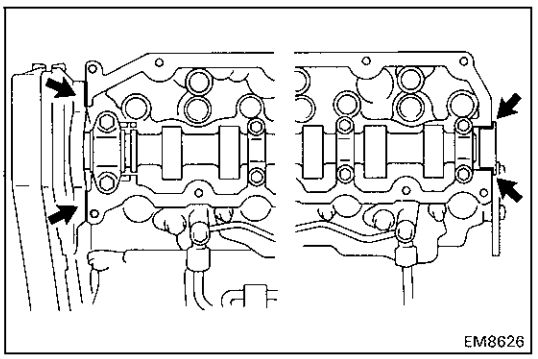
If the free length is not as specified, replace the tension spring.

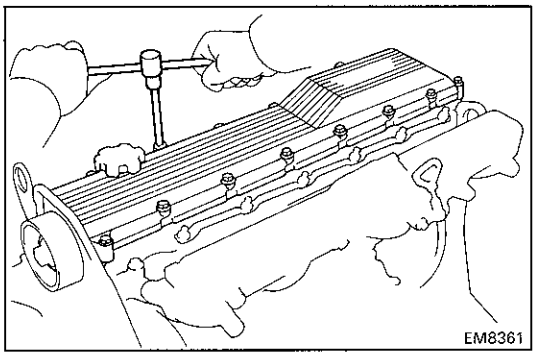
(b) Measure the tension of the tension spring at the specified installed length.

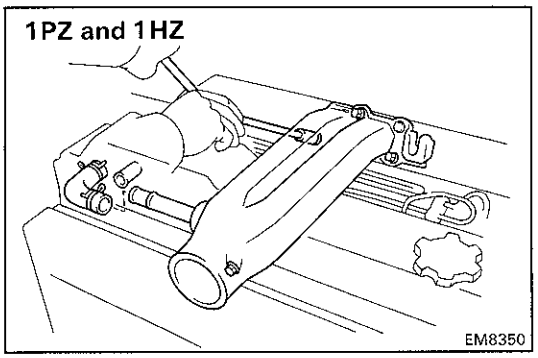
Installed tension:
23—28 kg (50.7—61.7 lb, 225—275 N·m)
at 90.1 mm (3.547 in.)

If the installed tension is not as specified, replace the tension spring.

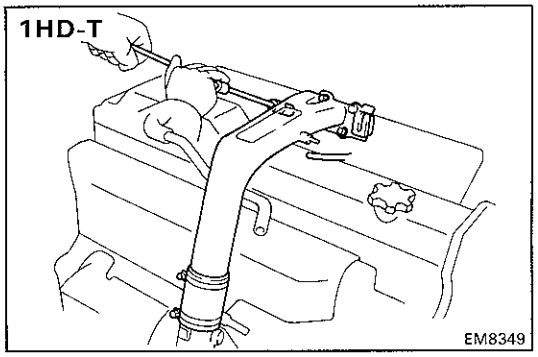

EM8314


EM8626


EM8361



EM8350



EM8349

INSTALLATION OF TIMING BELT

(See page EM-32)

1. INSTALL NO.1 CAMSHAFT TIMING PULLEY

(a) Install the set key to the key groove of the camshaft.

(b) Align the pulley set key with the key groove of the No.1 camshaft timing pulley, slide the No.1 camshaft timing pulley.

(c) Temporarily install the No.1 timing pulley bolt.

(d) Hold the hexagonal wrench head portion of the camshaft with a wrench, and tighten the No.1 camshaft timing bolt.

Torque: 1,000 kg-cm (72 ft-lb, 98 N·m)

2. INSTALL CYLINDER HEAD COVER

(a) Rmove any old packing (FIPG) material.

(b) Apply seal packing to the cylinder head as shown in the illustration.

Seal packing: Part No.08826-00080 or equivalent

(c) Install the gasket to the cylinder head cover.

(d) Install the cylinder head cover with the twelve bolts (1PZ) or fourteen bolts (1HZ and 1HD-T) and two nuts.

3. INSTALL INTAKE PIPE

(1PZ and 1HZ)

(a) (1HZ (Eourope))
Place the intake pipe insulator on the cylinder head cover.

(b) Install a new gasket and intake pipe with the four bolts.

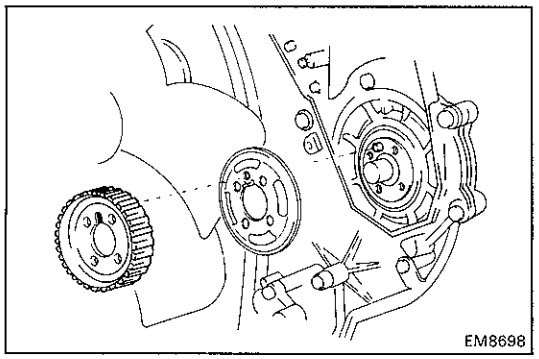
(c) Connect the PCV hose.

(1HD-T)

(a) Install a new gasket and intake pipe with the three bolts.

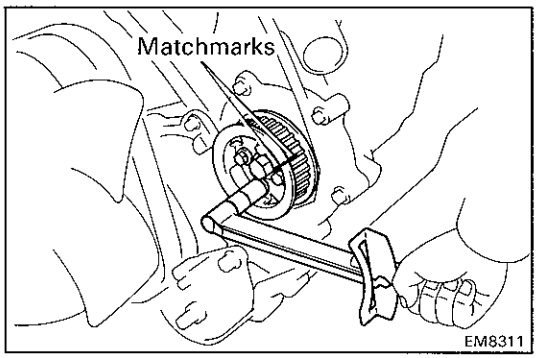
(b) Connect the air hose and tighten the hose clamp.

(c) Connect the turbo vacuum hose.



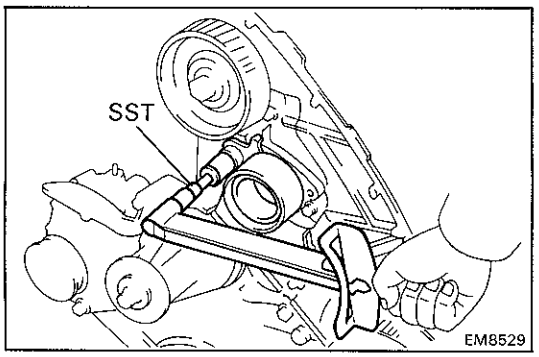
4. INSTALL NO.2 CAMSHAFT TIMING PULLEY

(a) Align the knock pin of the injection pump drive gear with the knock pin hole of the camshaft timing pulley No.1 flange and cutout portion of the No.2 camshaft timing pulley.



(b) Align the matchmarks of the No.2 camshaft timing pulley and camshaft timing pulley No.2 flange, and install and tighten the four bolts.

Torque: 315 kg-cm (23 ft-lb, 31 N·m)

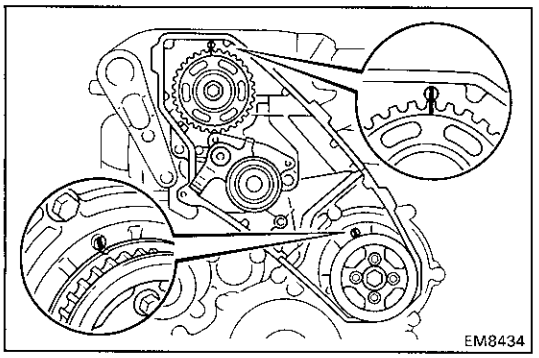


5. INSTALL TIMING BELT IDLER PULLEY

Using SST, install the plate and timing belt idler pulley with the bolt.

SST 09923-00020

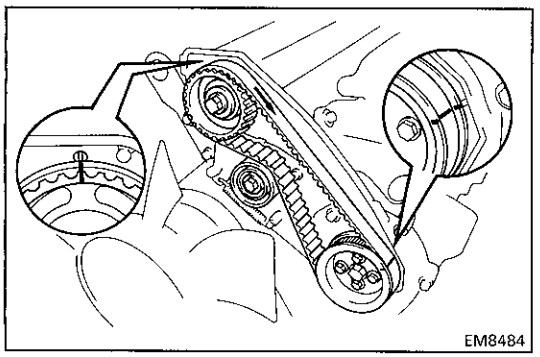
Torque: 270 kg-cm (20 ft-lb, 26 N·m)



6. SET NO.1 CYLINDER TO BDC

Set the timing pulleys at each position.

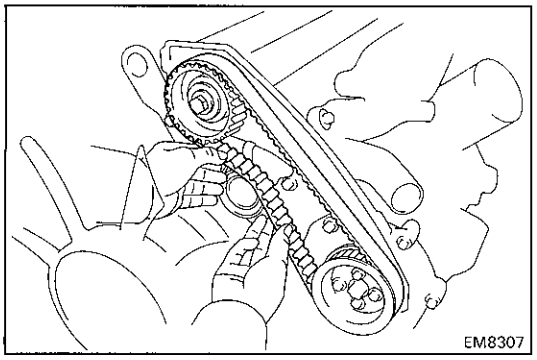
NOTICE: When turning the crankshaft, the valve heads will hit against the piston top. So do not turn it more than necessary.



7. INSTALL TIMING BELT

NOTICE: The engine should be cold.

HINT: If re-using the timing belt, align the points marked during removal, and install the timing belt with the arrow pointing in the direction of engine revolution.



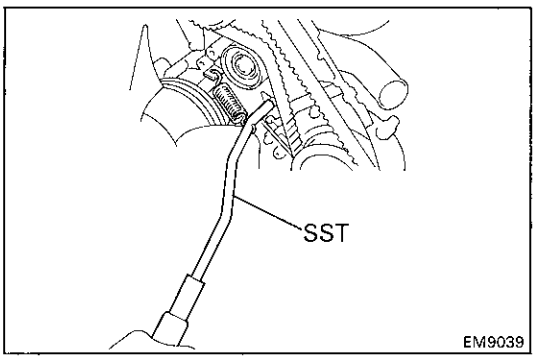
(a) Remove any oil or water on each pulley, and keep them clean.

(b) Install the timing belt in following order:

(1) No.2 camshaft timing pulley

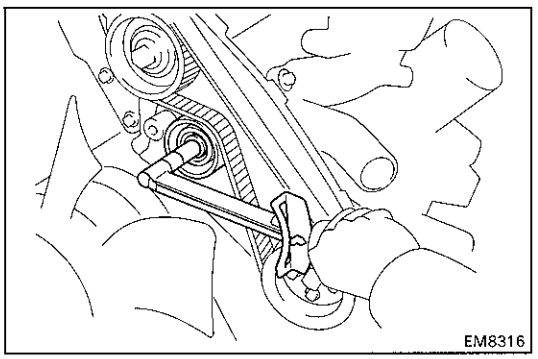
(2) No.1 camshaft timing pulley

(3) Timing belt idler pulley



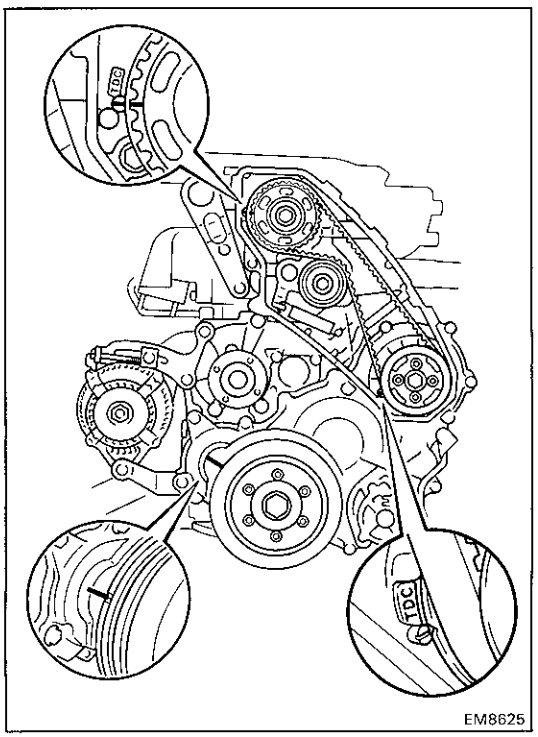
(c) Using SST, install the tension spring.

SST 09718-20010



(d) Install and torque the spring bolt of the timing belt idler.

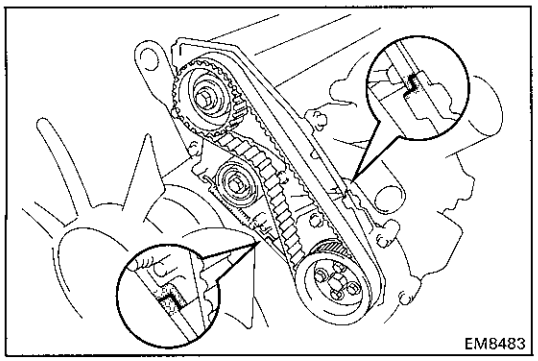
Torque: 270 kg-cm (20 ft-lb, 26 N·m)



8. CHECK VALVE TIMING

Turn the crankshaft pulley clockwise and check that each pulley align with the timing marks (TDC mark) as shown in the illustration.

If the marks do not align, remove the timing belt and reinstall it.

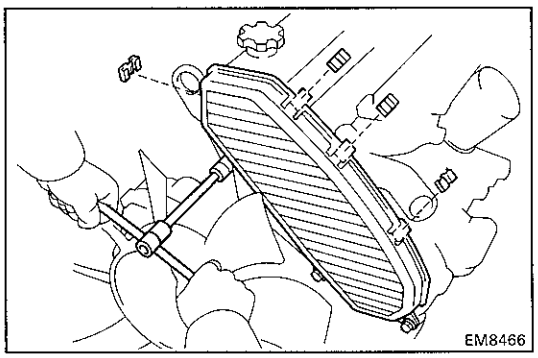


9. INSTALL TIMING BELT COVER

(a) Remove any old packing (FIPG) material.

(b) Apply seal packing to the camshaft oil seal retainer and timing gear cover as shown in the illustration.

Seal packing: Part No.08826-00080 or equivalent



(c) Install the gasket to the timing belt cover.

(d) Install the timing belt cover with the three seal washers, three bolts and four clips.