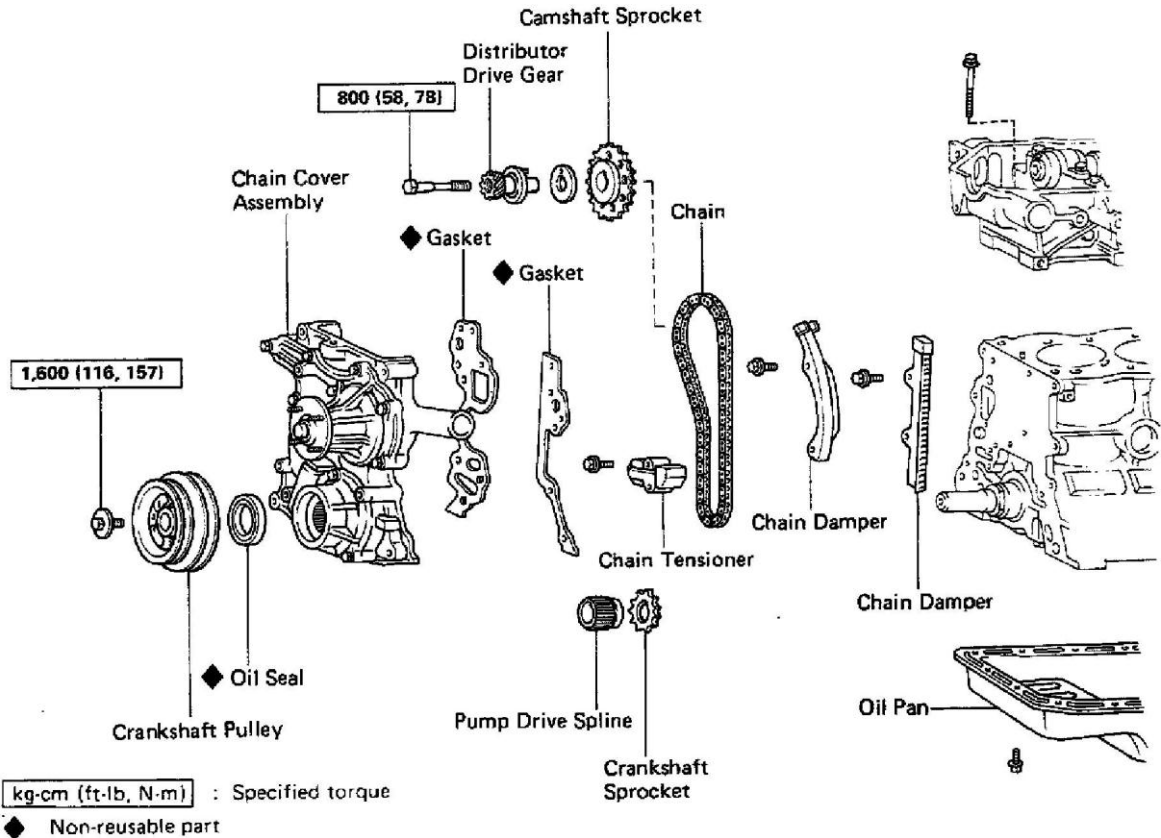




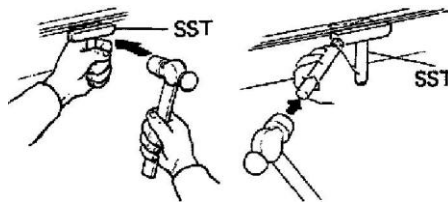
# Toyota Truck Pickup 2WD L4-2.4L SOHC (22R) 1987

## Timing Chain: Service and Repair



### PREPARATION FOR REMOVAL OF TIMING CHAIN

1. REMOVE CYLINDER HEAD
2. REMOVE RADIATOR
3. REMOVE OIL PAN
  - (a) Remove the engine undercover.
  - (b) Remove the engine mounting bolts.
  - (c) Place a jack under the transmission and raise the engine approx. 25 mm (0.98 in. ).
  - (d) Remove the sixteen bolts and two nuts.

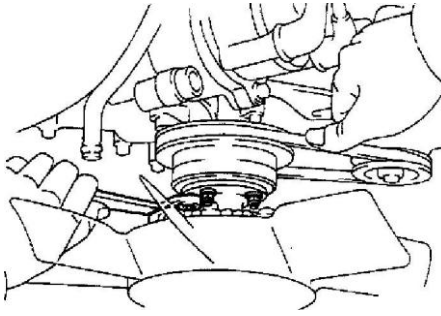


- (e) Using SST and brass bar, separate the oil pan from the cylinder block.  
SST 09032-00100

NOTE: When removing the oil pan, be careful not to damage the oil pan flange.

### REMOVAL OF TIMING CHAIN

1. ( with PS ) REMOVE PS BELT
2. ( with A/C ) REMOVE A/C BELT, COMPRESSOR AND BRACKET

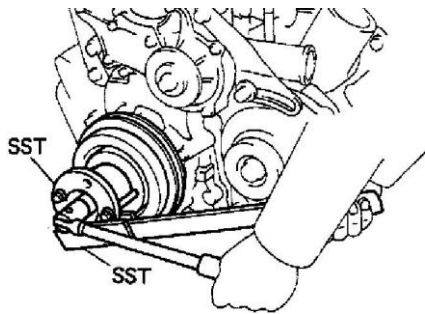


3. REMOVE FLUID COUPLING WITH FAN AND WATER PUMP PULLEY

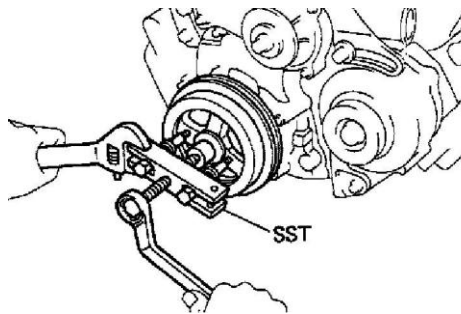
- (a) Loosen the water pump pulley set bolts.
- (b) Loosen the belt adjusting bolt and pivot bolt of the alternator, and remove the drive belt.
- (c) Remove the set nuts, fluid coupling with fan and water pump pulley.

4. REMOVE CRANKSHAFT PULLEY

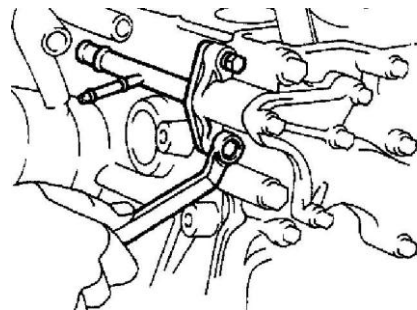
- (a) (with A/C) Remove the No.2 crankshaft pulley.



- (b) Using SST to hold the crankshaft pulley, loosen the pulley bolt.  
SST 09213-70010 and 09330-00021

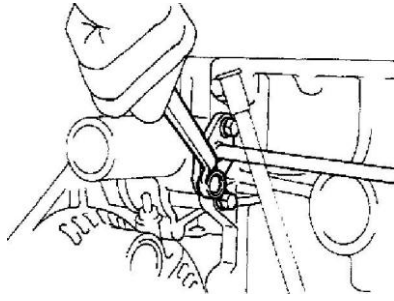


- (c) Using SST, remove the crankshaft pulley. SST 09213-31021



5. REMOVE NO.1 WATER BY-PASS PIPE

- (22R) Remove the three bolts and pipe.
- (22R- E) Remove the two bolts and pipe.
- (22R- TE) Remove the two bolts, and disconnect the pipe from the timing chain cover.

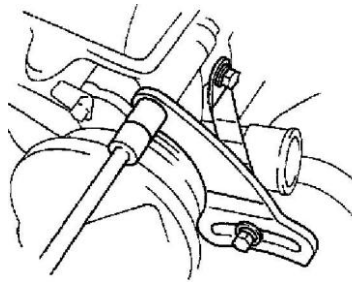


6. (22 R, 22R-E) DISCONNECT HEATER WATER OUTLET PIPE

Remove the two bolts, and disconnect heater water outlet pipe.

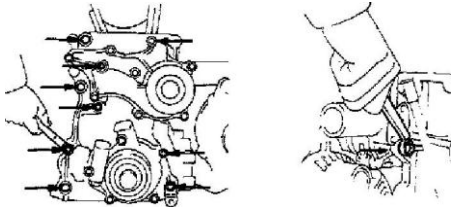
(22R- TE) REMOVE NO.3 TURBO WATER PIPE

Remove the two bolts and No.3 turbo water pipe.



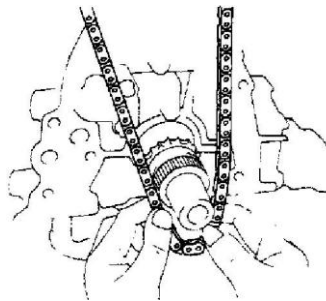
7. REMOVE FAN BELT ADJUSTING BAR

Remove the three bolts and bar.



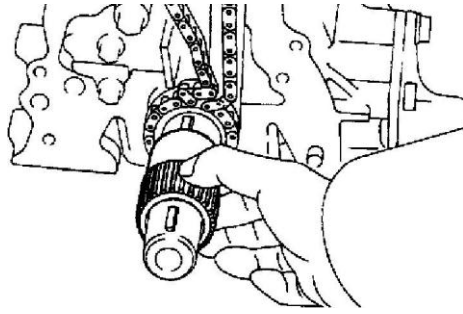
8. REMOVE CHAIN COVER ASSEMBLY

- (a) Remove ten timing chain cover bolts shown by the arrows.
- (b) Using a plastic faced hammer, loosen the chain cover and remove it.



9. REMOVE CHAIN AND CAMSHAFT SPROCKET

- (a) Remove the chain from the damper.
- (b) Remove the cam sprocket and chain together.



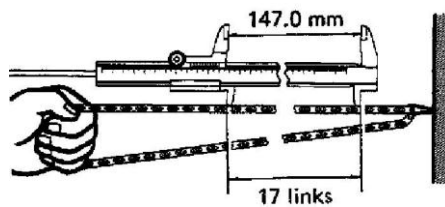
10. REMOVE PUMP DRIVE SPLINE AND CRANKSHAFT SPROCKET

If the oil pump drive spline and sprocket cannot be removed by hand, use SST to remove them together.  
SST 09213-36020

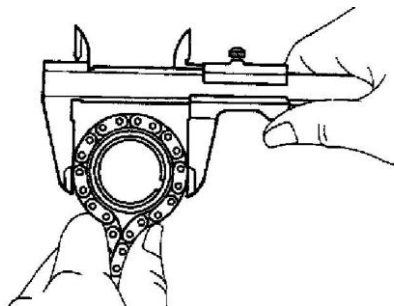
11. REMOVE GASKET MATERIAL ON CYLINDER BLOCK

INSPECTION OF COMPONENTS

1. MEASURE CHAIN AND SPROCKET WEAR



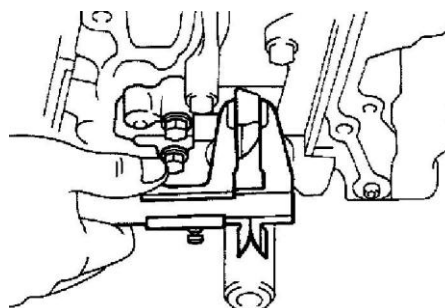
- (a) Measure the length of 17 links with the chain fully stretched.
- (b) Make the same measurements at least three other places selected at random. Chain elongation limit at 17 links: 147.0 mm (5.787 in.) If over the limit at any one place, replace the chain.



- (c) Wrap the chain around the sprocket.
- (d) Using a vernier caliper, measure the outer sides of the chain rollers as shown. Measure both sprockets.

Crankshaft sprocket minimum: 59.4 mm (2.339 in.) Camshaft sprocket minimum: 113.8 mm (4.480 in.)

If the measurement is less than minimum, replace the chain and two sprockets.

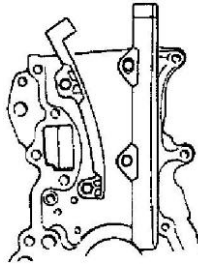


## 2. MEASURE CHAIN TENSIONER

Using a vernier caliper, measure the tensioner as shown.

Tensioner minimum: 11.0 mm (0.433 in.)

If the tensioner is worn or less than minimum, replace the chain tensioner.



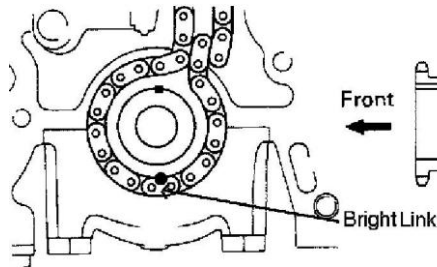
## 3. MEASURE CHAIN DAMPERS

(a) Using a micrometer, measure each damper.

Damper wear limit: 0.5 mm (0.020 in.)

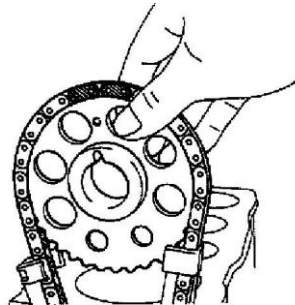
If either damper is worn or less than minimum, replace the damper.

## INSTALLATION OF TIMING CHAIN



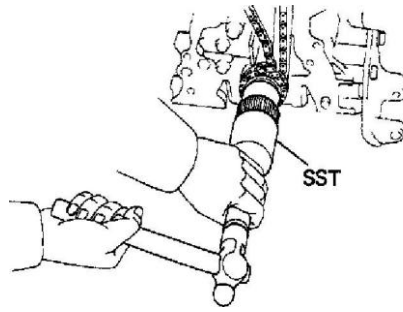
### 1. INSTALL CRANKSHAFT SPROCKET AND CHAIN

- Turn the crankshaft until the shaft key is on top.
- Slide the sprocket over the key on the crankshaft.
- Place the timing chain on the sprocket with the single bright link aligned with the timing mark on the sprocket.



### 2. PLACE CHAIN ON CAMSHAFT SPROCKET

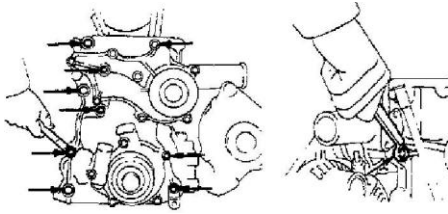
- Place the timing chain on the sprocket so that the space between the bright chain links is aligned with the timing mark.
- Make sure the chain is positioned dampers.
- Turn the camshaft sprocket counterclockwise to take the slack out of the chain.



### 3. INSTALL OIL PUMP DRIVE SPLINE

Slide the oil pump drive spline over the crankshaft key.

NOTE: If the oil pump drive spline is difficult to install by hand, install using SST.  
SST 09608-35014 (09608-06040)



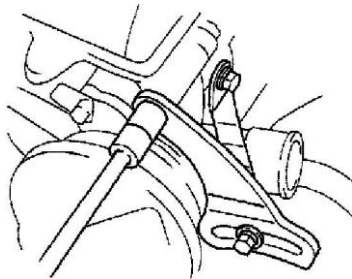
### 4. INSTALL TIMING CHAIN COVER ASSEMBLY

- (a) Remove the old cover gaskets. Clean the gasket surface. Install new gaskets over the dowels.
- (b) Slide the cover assembly over the dowels and pump spline. (c) Insert the bolts as shown and torque them.

Torque:

8mm bolt 130 kg-cm (9 ft-lb, 13 N.m)

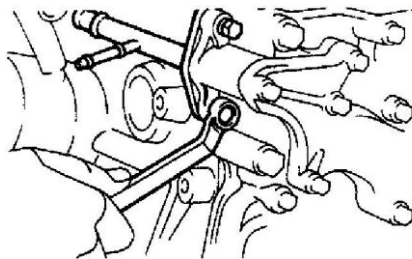
10 mm bolt 400 kg-cm (29 ft-lb, 39 N.m )



### 5. INSTALL FAN BELT ADJUSTING BAR

- (a) Temporarily install the adjusting bar to the alternator.
- (b) Install the adjusting bar to the chain cover and cylinder head.

Torque: 130 kg-cm (9 ft-lb, 13 N.m)

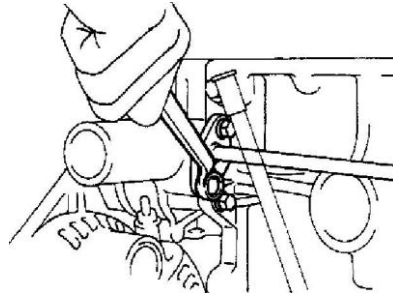


### 6. (22 R, 22R-E) INSTALL HEATER WATER OUTLET PIPE

Connect the heater water outlet pipe to the timing gear cover with two bolts.

(22R- TE) INSTALL NO.3 TURBO WATER PIPE

Install the No.3 turbo water pipe with the two bolts.

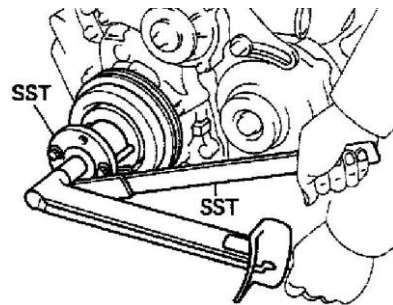


7. INSTALL NO.1 WATER BY-PASS PIPE

(22R) Install the pipe with the three bolts.

(22R- E) Install the pipe with the two bolts.

(22R- TE) Connect the pipe to the timing chain cover with the two bolts.



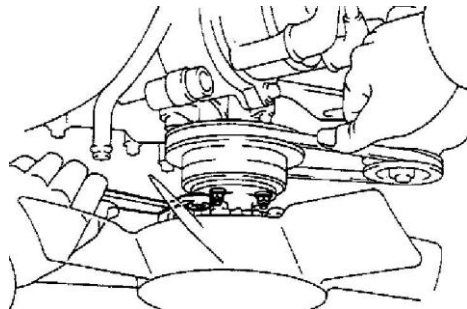
8. INSTALL CRANKSHAFT PULLEY

(a) Install the crankshaft pulley and bolt.

(b) Using SST to hold the crankshaft pulley, torque the bolt. SST 09213-70010 and 09330-00021

Torque: 1600 kg-cm (116 ft-lb, 157 N.m)

(c) (with A/C) Install the No.2 crankshaft pulley.



9. INSTALL WATER PUMP PULLEY AND FLUID COUPLING WITH FAN

(a) Temporarily install the water pump pulley and fluid coupling with fan with four nuts.

(b) Place the drive belt on to each pulley.

(c) Stretch the belt tight and tighten the four nuts.

10. ADJUST DRIVE BELT TENSION

11. ( with A/C) INSTALL A/C COMPRESSOR BRACKET, COMPRESSOR AND BELT

12. (with PS) INSTALL PS BELT

13. INSTALL OIL PAN

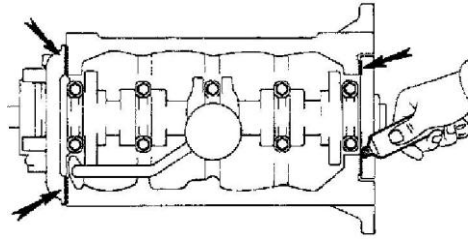
(a) Remove any old packing material and be careful no to drop any oil on the contacting surfaces of the oil pan and cylinder block.

^ Using a razor blade and gasket scraper, remove all the packing (FIPG) material from the gasket surfaces.

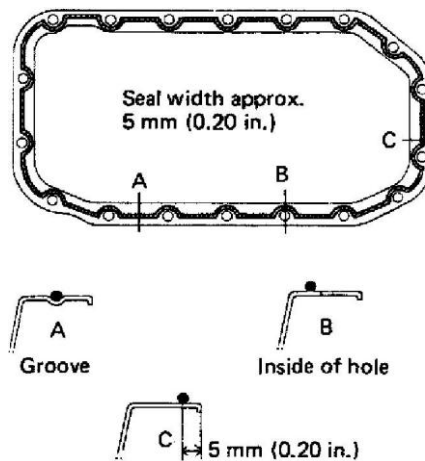
^ Thoroughly clean all components to remove all the loose material.

^ Clean both sealing surfaces with a non-residue solvent.

CAUTION: Do not use a solvent which will affect the painted surfaces.



- (b) Apply seal packing to the joint part of the cylinder block and chain cover, cylinder block and rear oil seal retainer. Seal packing: Part No.08826-00080 or equivalent



- (c) Apply seal packing to the oil pan as shown in the figure. Seal packing: Part No.08826-00080 or equivalent

^ Install a nozzle that has been cut to a 5-mm (0.20 in.) opening.

NOTE: Avoid applying an excess amount to the surface. Be especially careful near oil passages.

^ Parts must be assembled within 5 minutes of application. Otherwise, the material must be removed and re-applied.

^ Immediately remove nozzle from tube and reinstall cap.

- (d) Install the oil pan over the studs on the block with sixteen bolts and two nuts. Torque the bolts and nuts.

Torque: 130 kg-cm (9 ft-lb, 13 N.m)

- (e) Lower the engine and install the engine mounting bolts. (f) Install the engine under cover.

#### POST INSTALLATION

1. INSTALL RADIATOR
2. INSTALL CYLINDER HEAD