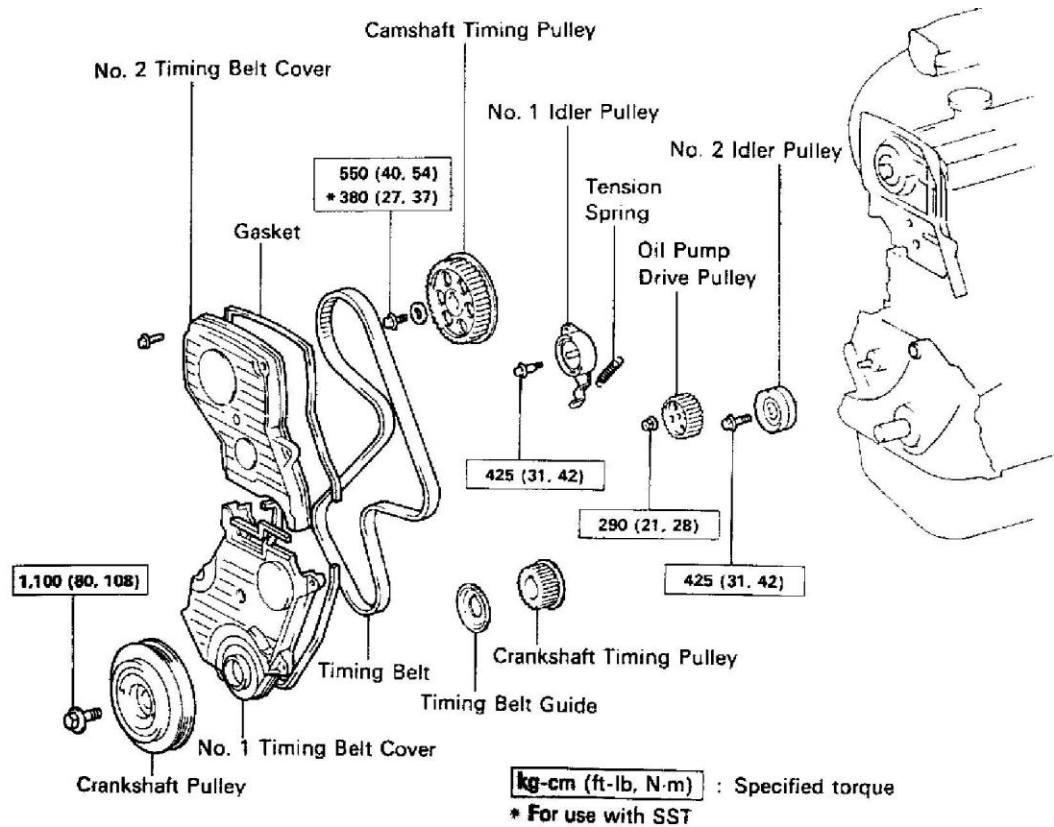




Toyota Celica L4-2.2L DOHC (5S-FE) 1990

Timing Belt: Service and Repair

Timing Belt Removal



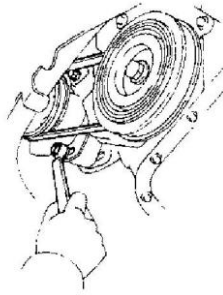
REMOVAL OF TIMING BELT

1. Disconnect cable from negative terminal of battery.

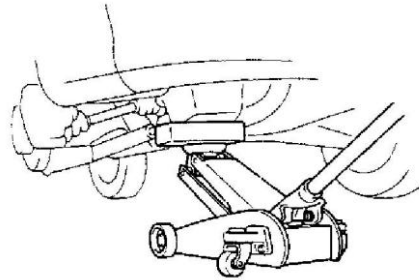
CAUTION:

Work must be started after approx. 20 seconds or longer from the time the ignition switch is turned to the "LOCK" position and the negative (-) terminal cable is disconnected from the battery.

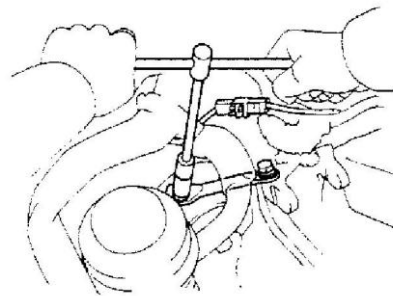
2. Remove RH front wheel.
3. Remove RH engine under cover.
4. On vehicles with cruise control system, remove cruise control actuator.
5. Remove alternator.



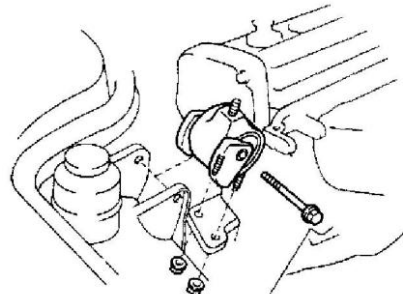
6. Remove PS drive belt.
Loosen the two bolts, and remove the drive belt.



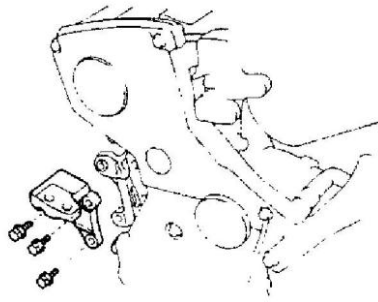
7. Slightly jack up engine.
Raise the engine enough to remove the weight from the engine mounting on the right side.



8. Disconnect connector from ground wire on RH fender apron.
9. Remove RH engine mounting stay.
Remove the bolt, nut and mounting stay.
10. Disconnect PS reservoir tank from bracket.



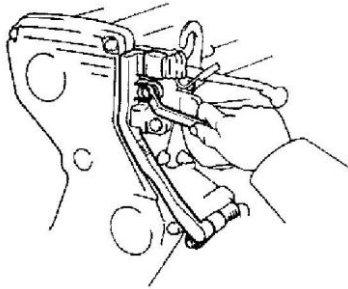
11. Remove RH engine mounting insulator.
Remove the through bolt, two nuts and mounting insulator.



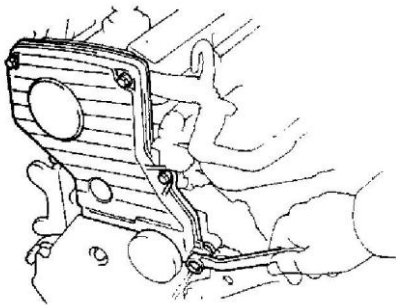
12. Remove RH engine mounting bracket.
Remove the three bolts and mounting bracket.

HINT: Lower the jack and perform the operation with the engine fully down.

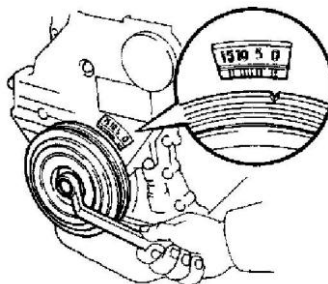
13. Remove spark plugs.



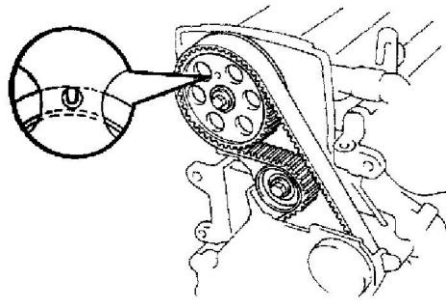
14. Disconnect engine wire from alternator bracket and adjusting bar.
Remove the two bolts, and disconnect the engine wire from the alternator bracket and adjusting bar.



15. Remove No.2 timing belt cover.
Remove the five bolts, timing belt cover and two gaskets.
16. Set No.1 cylinder to TDC/Compression.

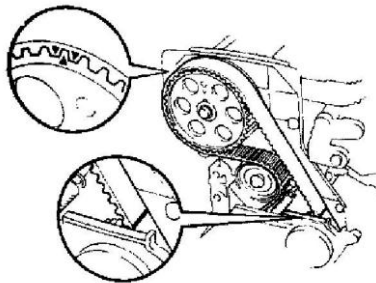


- (a) Turn the crankshaft pulley and align its groove with timing mark "0" of the No.1 timing belt cover.



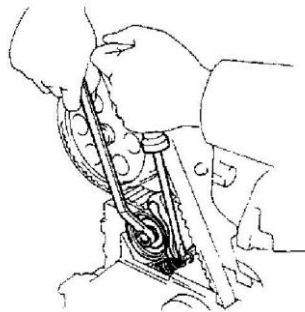
- (b) Check that the hole of the camshaft timing pulley is aligned with the timing mark of the bearing cap. If not, turn the crankshaft one revolution (360°).

17. Remove timing belt from camshaft timing pulley.

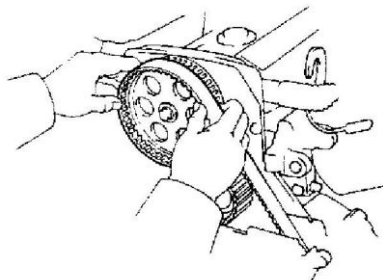


HINT: (When re-using timing belt)

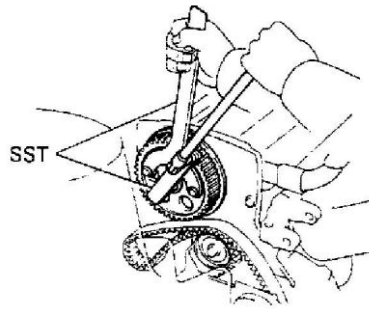
Place the matchmarks on the timing belt and camshaft timing pulley, and place matchmark on timing belt to match the end of the No.1 timing belt cover.



- (a) Loosen the mounting bolt of the No.1 idler pulley and shift the pulley toward the left as far as it will go and temporarily tighten it.



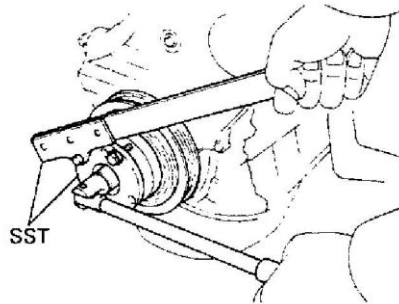
- (b) Remove the timing belt from the camshaft timing pulley.



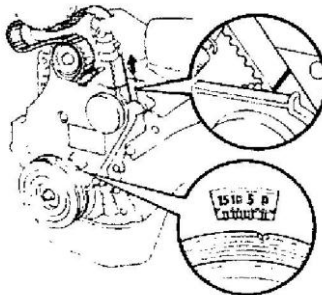
18. Remove camshaft timing pulley.

Using SST 09249-63010 and 09278-54012, remove the bolt, plate washer and timing pulley.

19. Remove crankshaft pulley.

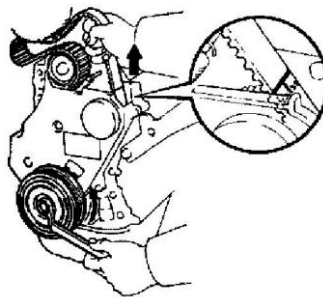


(a) Using SST 09213-54015 (09214-00030) and 09330-00021, remove the pulley bolt.



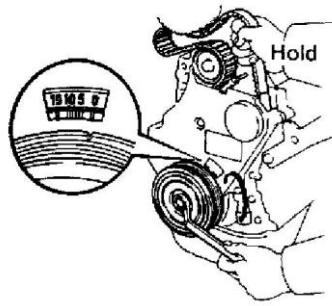
HINT (When re-using timing belt)

After loosening the crankshaft pulley bolt, check that the timing belt match-mark aligns with the end of the No.1 timing belt cover when the crankshaft pulley groove is aligned with the timing mark "0" of the No.1 timing belt cover. If the matchmark does not align, align as follows:

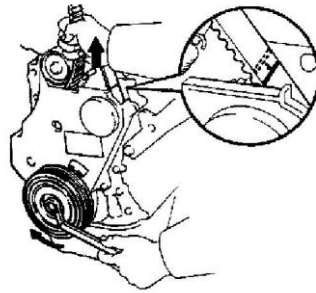


(When matchmark is out of alignment on clockwise)

^ Align the matchmark by pulling the timing belt up on the water pump pulley side while turning the crankshaft pulley counterclockwise.

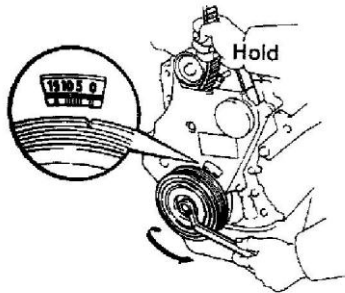


^ After aligning the matchmark, hold the timing belt. And turn the crankshaft pulley clockwise and align its groove with timing mark "0" of the No.1 timing belt cover.

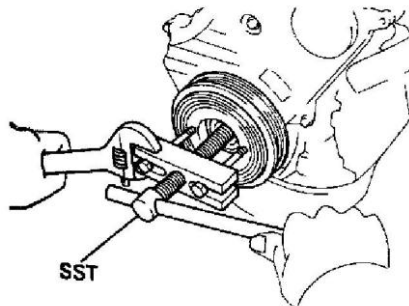


(When matchmark is out of alignment on counterclockwise)

^ Align the matchmark by pulling the timing belt up on the No.1 idler pulley side while turning the crankshaft pulley clockwise.

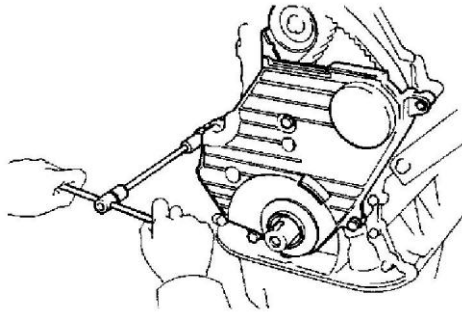


^ After aligning the matchmark, hold the timing belt. And turn the crankshaft pulley counterclockwise, and align its groove with timing mark "0" of the No.1 timing belt cover.

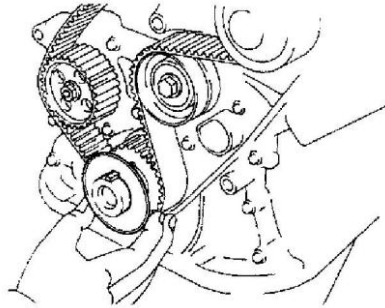


(b) Using SST 09213-60017 (09213-00020, 0921 3-00030, 0921 3-00050), remove the pulley.

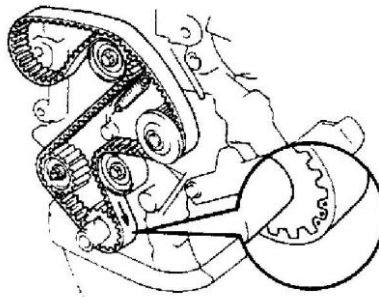
HINT: (When re-using timing belt) Remove the pulley without turning it.



20. Remove No.1 timing belt cover.
Remove the four bolts, timing belt cover and gasket



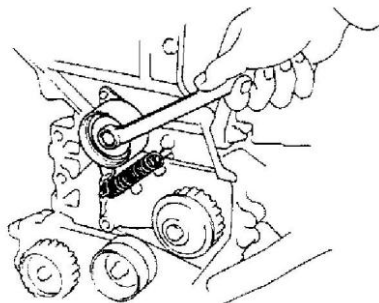
21. Remove timing belt guide.



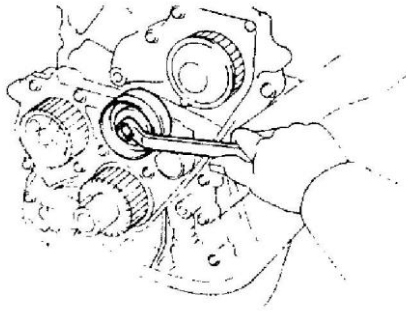
22. Remove timing belt.

HINT: (When re-using timing belt)

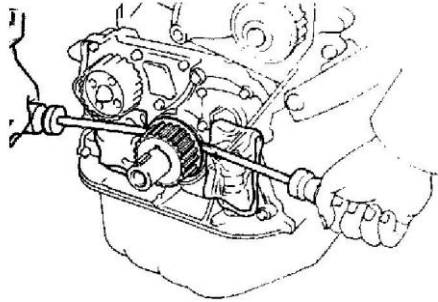
Draw a direction arrow on the timing belt (in the direction of engine revolution), and place matchmarks on the timing belt and crankshaft timing pulley.



23. Remove No.1 idler pulley and tension spring. Remove the bolt, pulley and tension spring.

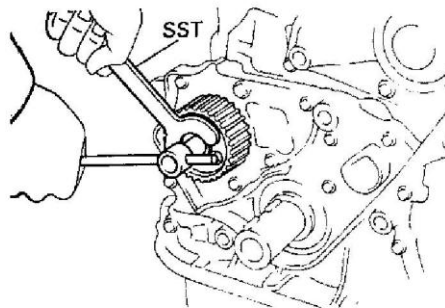


24. Remove No.2 idler pulley.
Remove the bolt and pulley.



25. Remove crankshaft timing pulley.
If the pulley can not be removed by hand, use two
screwdrivers.

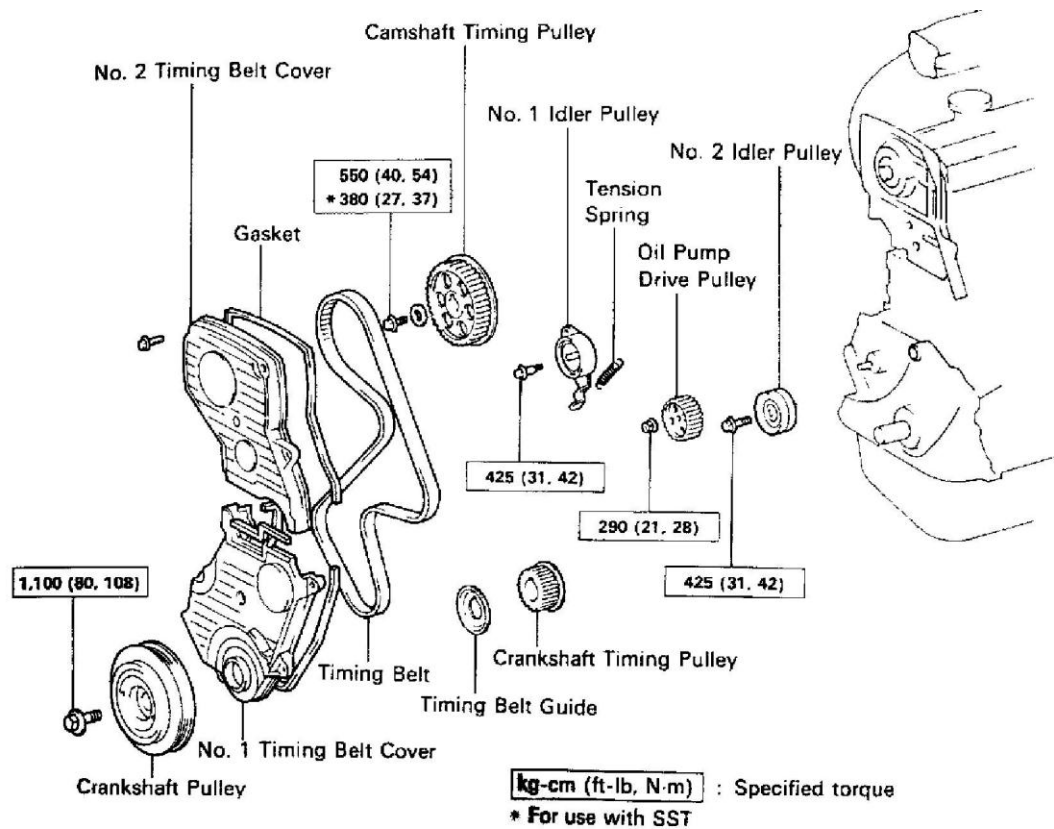
HINT: Position shop rags as shown to prevent damage.



26. Remove oil pump pulley.
Using SST 09616-30011, remove the nut and pulley.

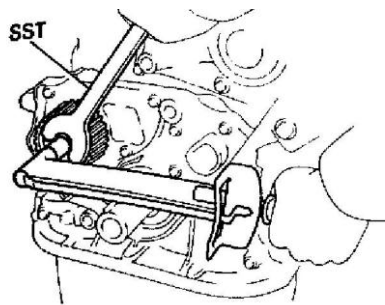
Timing Belt: Service and Repair

Timing Belt Installation



INSTALLATION OF TIMING BELT

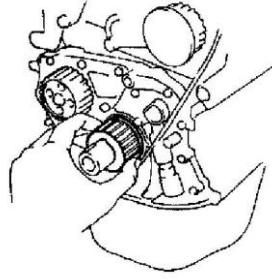
1. Install oil pump pulley.
 - (a) Align the cutouts of the pulley and shaft, and slide on the pulley.



- (b) Using SST 09616-30011, install the nut.

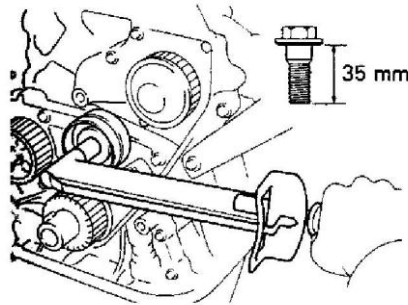
Torque: 290 kg-cm (21 ft-lb, 28 N.m)

2. Install crankshaft timing pulley.



(a) Align the timing pulley set key with the key groove of the pulley. (b) Slide on the timing pulley, facing the flange side inward.

3. Install No.2 idler pulley.

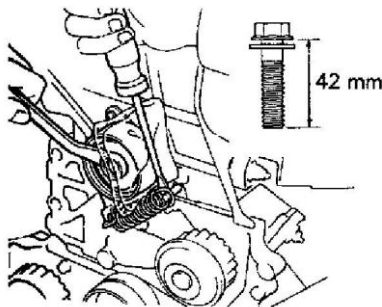


(a) Install the pulley with the bolt.

Torque: 425 kg-cm (31 ft-lb, 42 N.m) HINT: Use bolt 35 mm (1.38 in.) in length.

(b) Check that the idler pulley moves smoothly.

4. Temporarily install No.1 idler pulley and tension spring.



(a) Install the pulley with the bolt. Do not tighten the bolt yet.

HINT: Use bolt 42 mm (1.65 in.) in length.

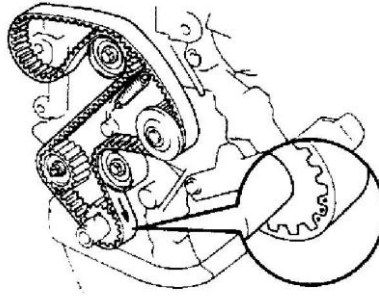
(b) Install the tension spring.

(c) Pry the pulley toward the left as far as it will go and tighten the bolt. (d) Check that the idler pulley moves smoothly.

5. Temporarily install timing belt.

NOTICE: The engine should be cold.

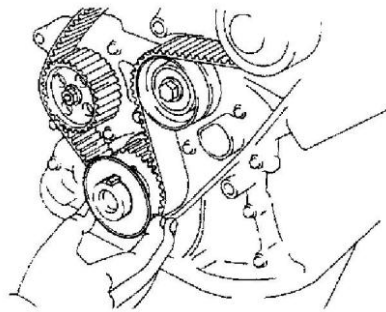
- (a) Using the crankshaft pulley bolt, turn the crankshaft and position the key groove of the crankshaft timing pulley upward.
- (b) Remove any oil or water on the crankshaft pulley, oil pump pulley, water pump pulley, No.1 idler No.2 idler pulley, and keep them clean.



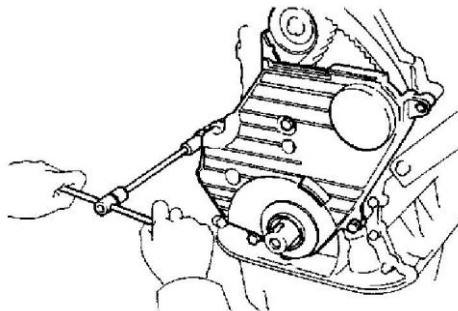
- (c) Install the timing belt on the crankshaft timing pulley, oil pump pulley, No.1 idler pulley, water pump pulley and No.2 idler pulley.

HINT: (When re-using timing belt)

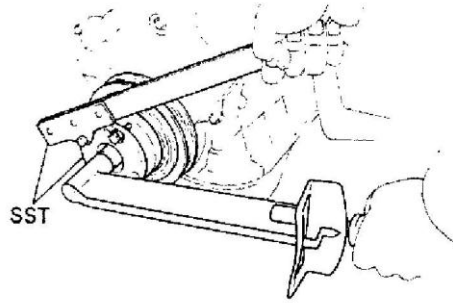
Align the points marked during removal, and install the belt with the arrow pointing in the direction of engine revolution.



- 6. Install timing belt guide.
Install the guide, facing the cup side outward.

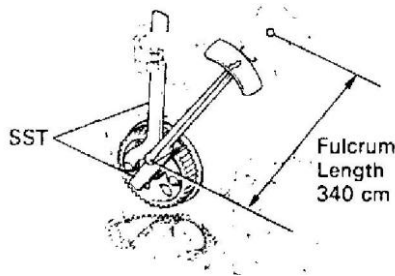


- 7. Install No.1 timing belt cover.
 - (a) Install the gasket to the timing belt cover.
 - (b) Install the timing belt cover with the four bolts.



8. Install crankshaft pulley.

- (a) Align the pulley set key with the key groove of the pulley, and slide on the pulley.
 - (b) Using SST 09213-54015 (09214-00030) and 09330-00021, install the pulley bolt.
- Torque: 1,100kg-cm (80 ft-lb, 108 N.m)



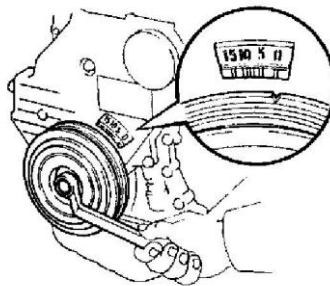
9. Install camshaft timing pulley.

- (a) Align the camshaft knock pin with the knock pin groove of the pulley, and slide on the timing pulley.; (b) Using SST 09249-63010 and 09278-54012, install the plate washer and bolt.

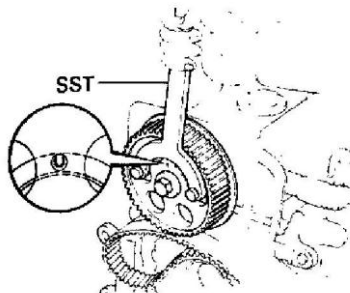
Torque: 380 kg-cm (27 ft-lb, 37 N.m)

HINT: Use a torque wrench with a fulcrum length of 340 cm (13.39 in.)

10. Set No.1 cylinder to TDC/Compression.

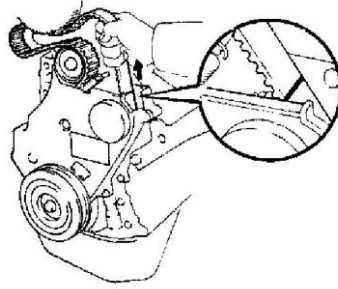


- (a) Turn the crankshaft pulley, and align its groove with timing mark "0" of the No.1 timing belt cover.



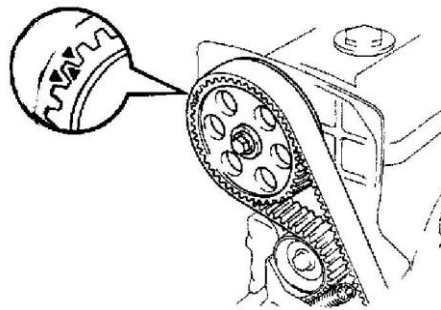
- (b) Using SST 09278-54012, turn the camshaft, and align the hole of the camshaft timing pulley with the timing mark of the bearing cap.

11. Install timing belt.



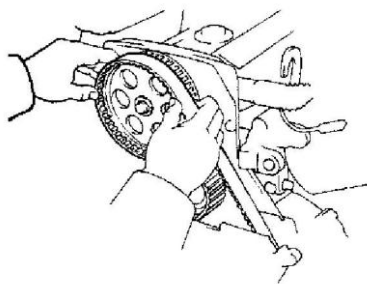
HINT: (When re-using timing belt)

- ^ Check that the matchmark on the timing belt matches the end of the No.1 timing belt cover.



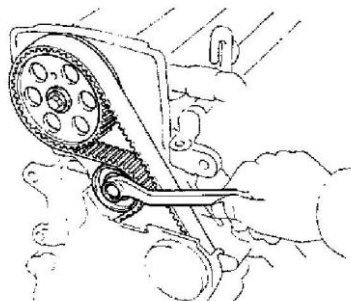
- ^ Align the matchmarks of the timing belt and camshaft timing pulley. If the matchmark does not align, shift the meshing of the timing belt and crankshaft timing pulley until they align.

- (a) Remove any oil or water on the camshaft timing pulley, and keep it clean.

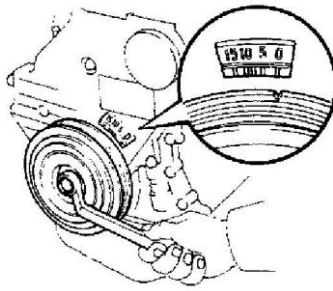


- (b) Install the timing belt, and checking the is tension between the crankshaft timing pulley and camshaft timing pulley.

12. Check valve timing.

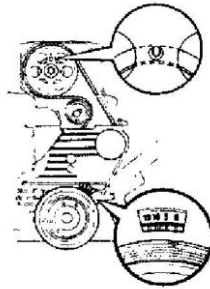


- (a) Loosen the No.1 idler pulley bolt 1 /2 turn.

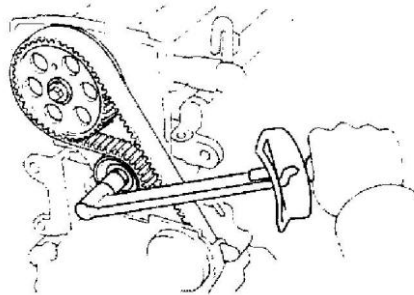


- (b) Turn the crankshaft pulley two revolutions from TDC to TDC.

NOTICE: Always turn the crankshaft clockwise.

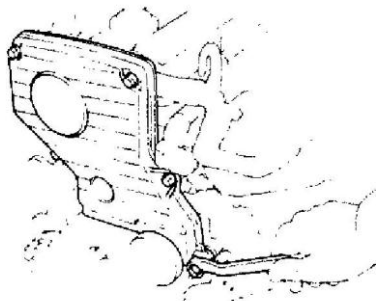


- (c) Check that each pulley aligns with the timing marks as shown. If the timing marks do not align, remove the timing belt and reinstall it.



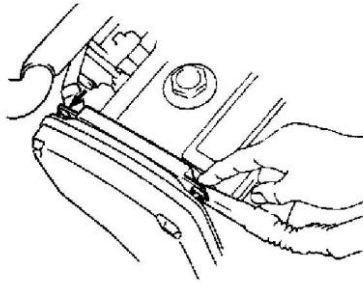
- (d) Torque the mounting bolt of the No.1 idler pulley.

Torque: 425 kg-cm (31 ft-lb, 42 N.m)

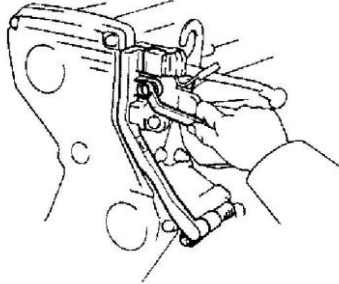


13. Install No.2 timing belt cover.

- (a) Install the two gaskets to the No.1 and No.2 belt covers. (b) Install the belt cover with the five bolts.

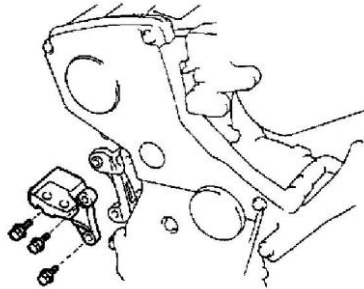


(c) Install the two clamps of the engine wire to each bolt.



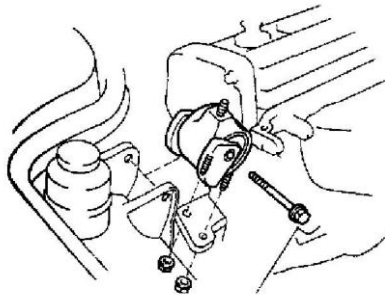
14. Install engine wire to alternator bracket and adjusting bar.
Install the engine wire with the two bolts.
15. Install spark plugs.

Torque: 180 kg-cm (13 ft-lb, 18 N.m)



16. Install RH engine mounting bracket.
Install the bracket with the three bolts.

Torque: 530 kg-cm (38 ft-lb, 52 N.m)



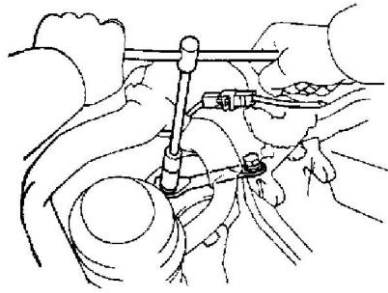
17. Install RH engine mounting insulator.
Install the mounting insulator with the through bolt and two nuts.

Torque:

Nut 530 kg-cm (38 ft-lb, 52 N.m)

Through bolt 890 kg-cm (64 ft-lb, 87 N.m)

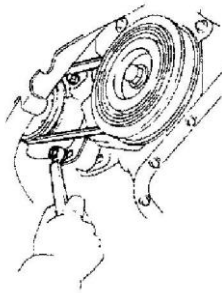
18. Install PS reservoir tank to bracket.



19. Install RH engine mounting stay.
Install the mounting stay with the bolt and nut.

Torque: 740 kg-cm (54 ft-lb, 73 N.m)

20. Connect ground connector to ground wire on RH fender apron.



21. Install PS drive belt
Install the drive belt with the pivot bolt and adjusting bolt.
22. Install alternator.
23. On vehicles with cruise control system install cruise control actuator.
24. Install RH front wheel.
25. Connect cable to negative terminal of battery.
26. Check and adjust the drive belts.

Alternator belt tension:

With A/C	New belt 165 ± 10 lbf
	Used belt 110 ± 10 lbf

Without A/C	New belt 125 ± 25 lbf
	Used belt 90 ± 20 lbf

P/S belt tension:	New belt 125 ± 25 lbf
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Used belt 80 ± 20 lbf

27. Install RH engine under cover.