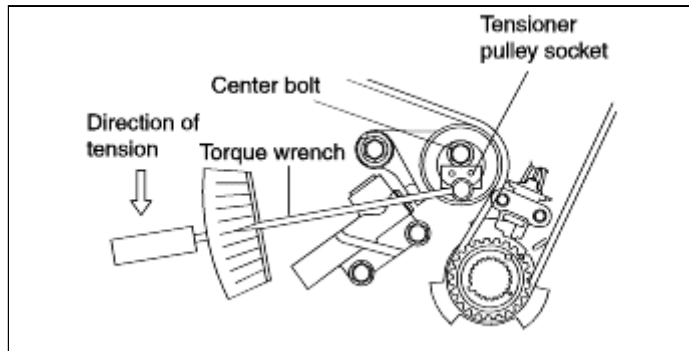


1. Tension setting (While auto tensioner is not operating : And set pin being kept installed.)

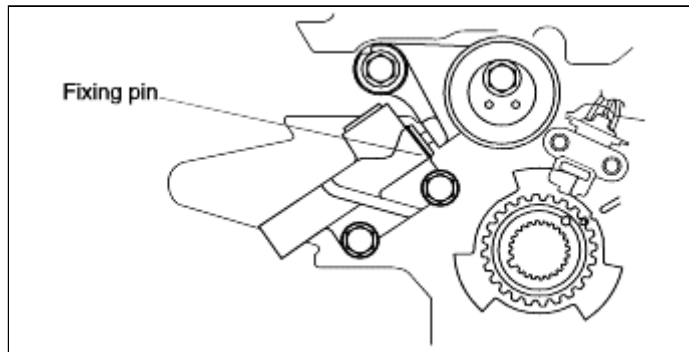
(1) After rotating crankshaft 1/4 revolution reversely, rotate it clockwise to position No. 1 cylinder at TDC.

Then, loosen the center bolt and give the belt 50kg·cm of tension with tensioner pulley socket (Two pins are attached) and torque wrench. While maintaining this state, tighten the center bolt to the standard torque.

Center bolt standard torque :43 - 55 N·m (430 - 550kg·cm, 31.72 - 40.57 lb-ft)



(2) Pull out the auto tensioner fixing pin.



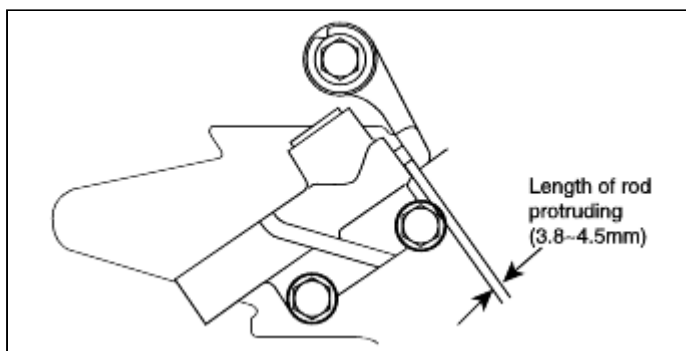
2. How to check tension (While auto tensioner is operating : and fixing pin being uninstalled.)

(1) After rotating crankshaft 2 revolutions clockwise to position No. 1 cylinder at TDC, wait for about 5minutes, and measure the amount of protruding of the auto tensioner rod.

CAUTION

This is "leak down" time for the auto tensioner rod to protrude 1mm when tension caused by rotation of the crankshaft has changed.

(2) Check if the amount of rod protruding is in the range of 3.8~4.5mm.

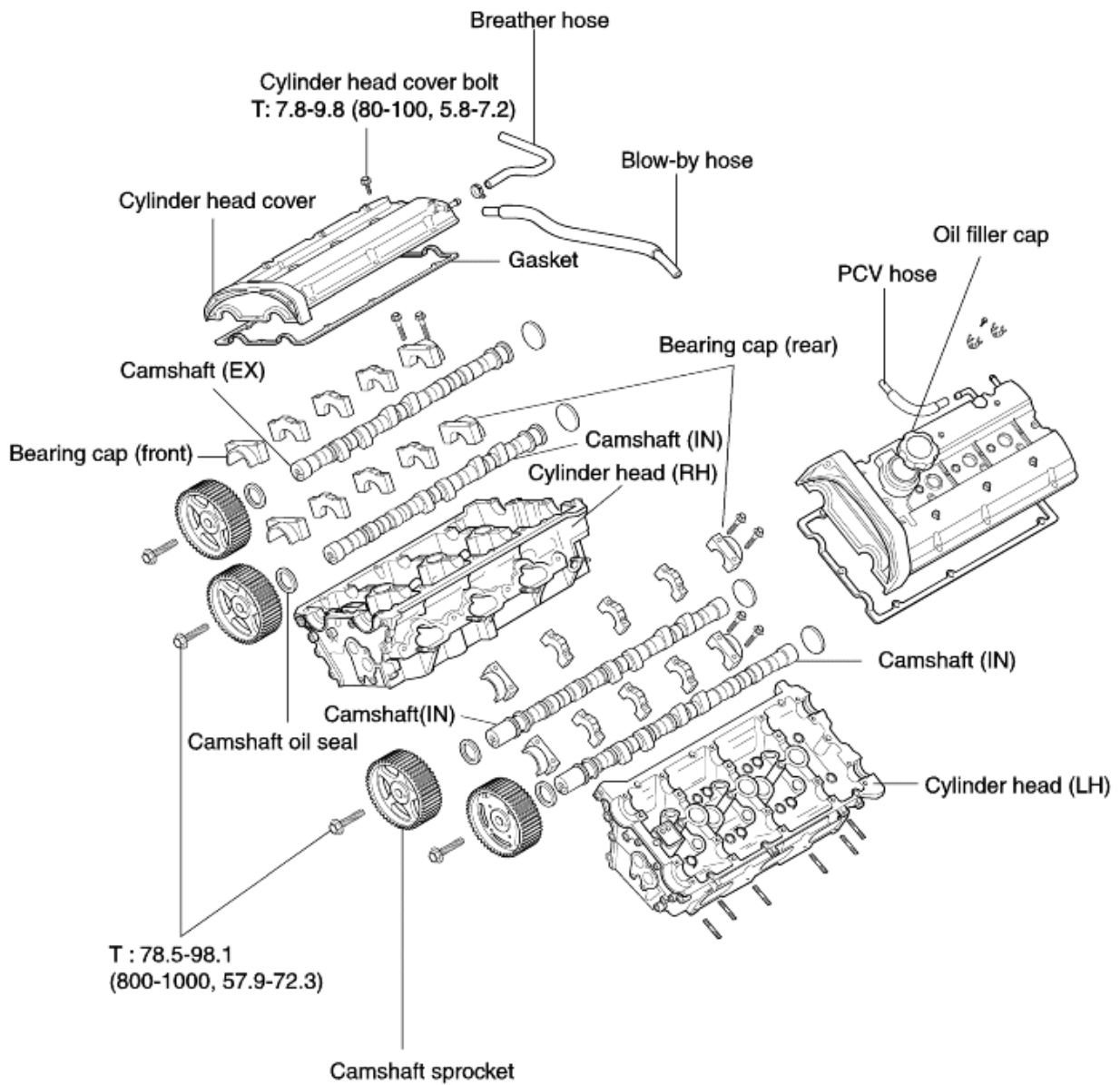


3. Recheck if each sprocket is within the specified range.

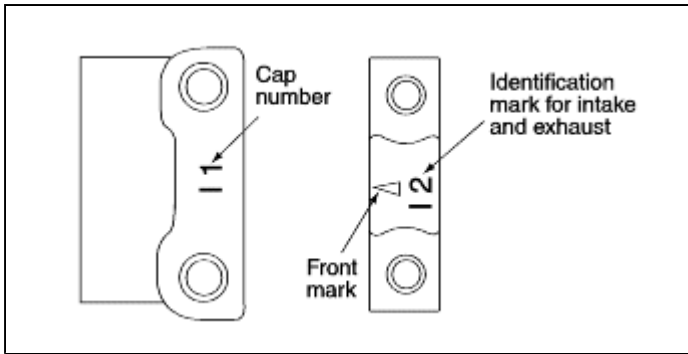
NOTE



Components

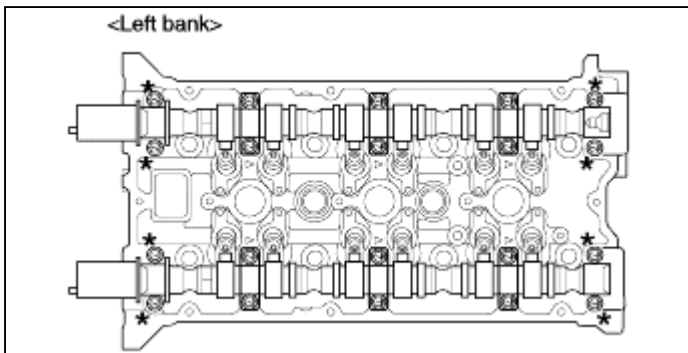


TORQUE : N·m (kg·cm, lb·ft)



6. Tighten the bearing cap in two or three steps. Tighten it to the standard torque at the last stage.
 *Bearing cap standard torque

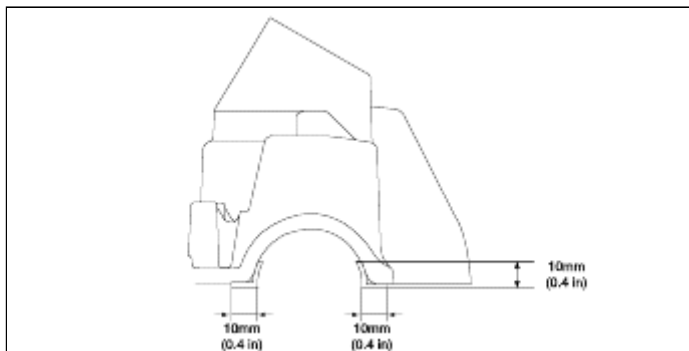
Torque 16 pieces at the both ends : 18.6 - 20.6 N·m(190 - 210kg·cm,
 13.7 - 15.2 lb·ft) 24 pieces in the middle : 10 - 12 N·m(100 - 120kg·cm,
 7.38 - 8.85 lb·ft)



7. Install the cylinder head cover.
 (1) Install the gasket to the cylinder head cover correctly.
 (2) Clean sealing surface on camshaft cap.

NOTE
 Clean sealing surface with use plastic scraper, to prevent oil leak.

- (3) Apply sealant to the sealing surface on cylinder head cover and camshaft cap.
 Sealant type : LT 5900

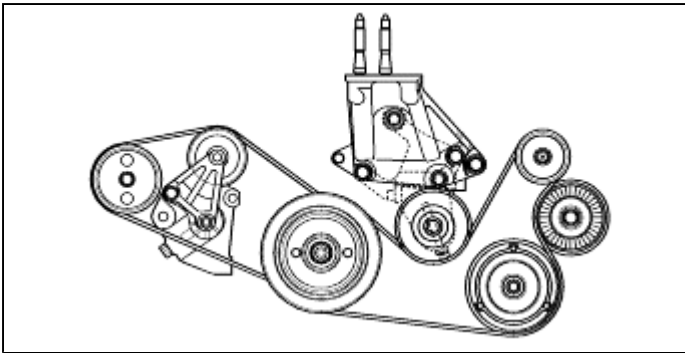


- (4) Install the cylinder head cover to the cylinder head.

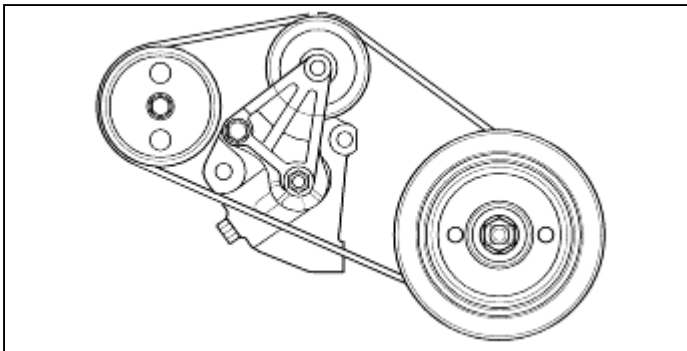
NOTE
 Be careful of gasket escapement when installing the cylinder head cover. You must use the washer when installing the cylinder head cover bolts.



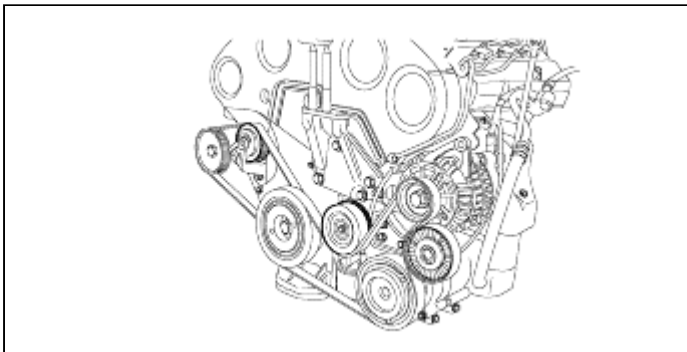
Drive belt and tension adjustment



1. Install the power steering belt.



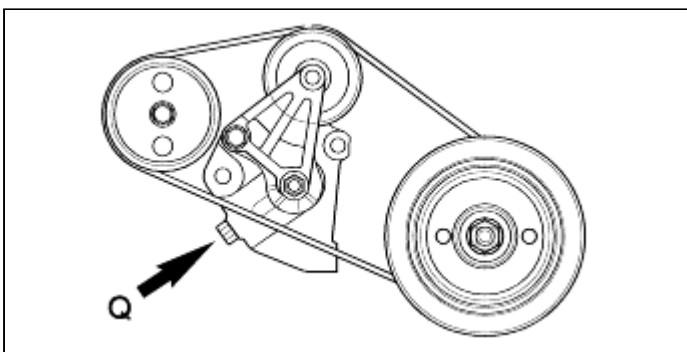
2. Install the drive belt.



3. After installing the belt loosening the adjustment bolt counter clockwise at the "Q" arrow indication, apply tension to the belt by tightening the bolt clockwise.

NOTE

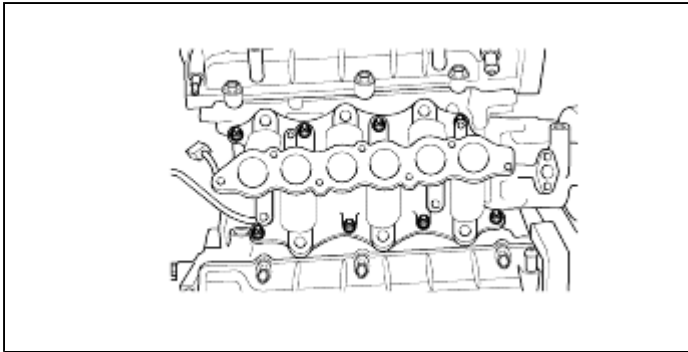
When adjusting belt tension, adjust it only after tightening the bolt lightly not making tension pulley eccentric.



4. Adjusting drive belt tension.

1. After replacing the intake manifold gasket, install the surge tank tightening the specified torque.

Tightening torque: 19.6 - 22.6 N·m (200 - 230 kg·cm, 14.5 - 16.6 lb·ft)

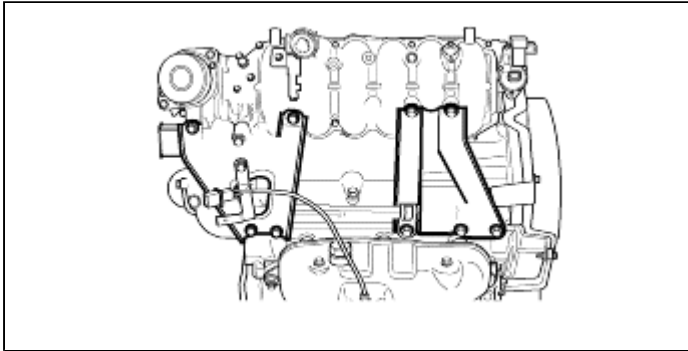


2. Install the delivery pipe and injector assembly to the intake manifold.

CAUTION

Check the interference between the injector and injector hole in intake manifold.

3. Install the surge tank stay.



4. Install the fuel injector connector and wiring harness.
5. Connect the high pressure fuel hose.
6. Connect the various vacuum hose.
7. Connect the PCV valve hose and brake booster hose.
8. Install the idle speed actuator.
9. Installation of thermostat
 - (1) Install the water outlet fitting gasket which is attached to thermostat at housing.
Align the arrangement mark on thermostat at housing with jiggle valve.
 - (2) Smear the sealant on cooling water temperature sensor and cooling water temperature gauge unit.
10. Install the air hose.
11. Install the accelerator cable.

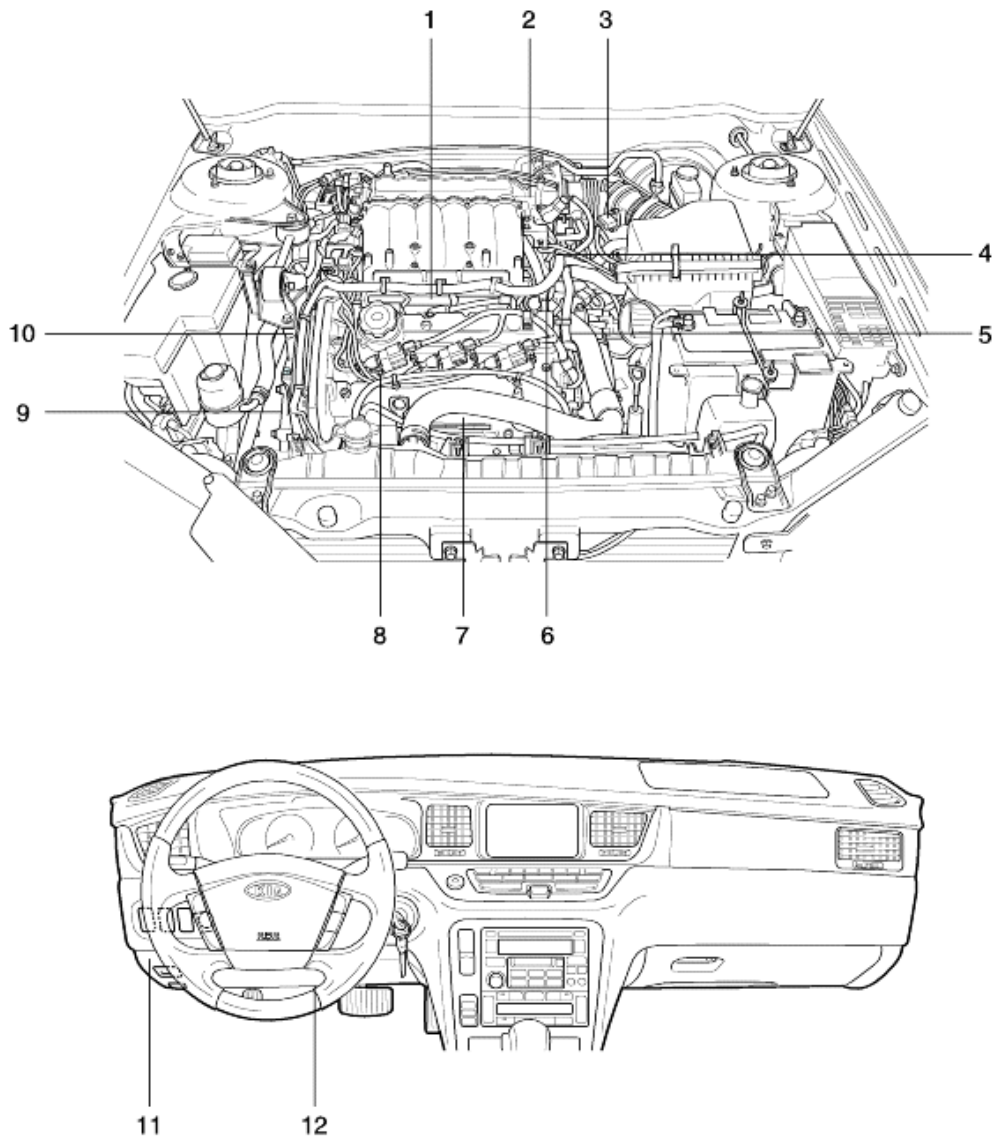
Inspection

1. Surge tank
 - (1) Inspect the surge tank for damage and crack, if necessary, replace it.
 - (2) Check if cooling water passage is blocked.
 - (3) Inspect the mating surface for warpage using a straight edge or filler gauge.

Standard value : 0.15mm (0.006 in) Service limit : 0.2mm (0.008 in)



ENGINE CONTROL SYSTEM



- 1. Knocking sensor
- 2. TPS
- 3. AFS, IAT
- 4. PCSV
- 5. ECT
- 6. IG FAIL sensor

- 7. O₂ sensor
- 8. Ignition coil
- 9. CKPS
- 10. CMPS
- 11. ECM control relay
- 12. Self-diagnosis terminal



TROUBLESHOOTING PROCEDURE FOR DTC

Diagnostic trouble code No. P0106	Manifold absolute pressure sensor circuit malfunction
Diagnostic trouble code No. P0107	Manifold absolute pressure sensor low input
Diagnostic trouble code No. P0108	Manifold absolute pressure sensor high input
[Related items]	1) Open or short to chassis ground between MAPS and ECM 2) Open between MAPS and ECM 3) Poor connections between MAPS and ECM 4) Misplaced, loose or corroded terminals 5) Foreign materials fouled MAPS 6) Faulty MAPS

Step	Inspection		Action
1	Connect SCAN TOOL to data link connector or OBD-II check connector. Start engine and allow engine to idle until engine reaches operating temperature. Monitor MAP voltage signals. 1) Specification: 0.8~2.4V Is voltage signal within specification?	Yes	Problem is intermittent or was repaired and engine control module memory was not cleared. Check terminal connections at ECM and MAPS.
		No	Go to step 2.
2	Turn ignition switch to OFF and disconnect MAPS connector. Turn ignition switch to ON and measure voltage of MAPS reference 5V between MAPS harness connector and chassis ground. 1) Specification: approximately 5V Is voltage within specification?	Yes	Go to step 3.
		No	Open or short circuit to chassis ground between MAPS harness connector and ECM Repair wire as necessary.
3	Thoroughly check MAPS and ECM connectors for loose, bent, corroded, contaminated, deteriorated or damaged terminals. Is connection okay?	Yes	Go to step 4.
		No	Repair as necessary.
4	Check MAPS for contamination, deterioration or damage. Is MAPS contaminated, deteriorated or damaged?	Yes	Clean MAPS with cleaner before installing. If MAPS is damaged or deteriorated, replace.
		No	Go to step 5.
5	Turn ignition to OFF and disconnect ECM connector. Measure resistance of MAPS signal circuit between MAPS harness connector and ECM harness connector. Measure resistance of MAPS ground circuit between MAPS harness connector and ECM harness connector. 1) Specification: below 1Ω Does each resistance indicate continuity circuit?	Yes	Go to step 6.
		No	Open circuit between MAPS harness connector and ECM harness connector. Repair as necessary.
	ECM connector and MAPS connector is still disconnected.	Yes	Go to step 7.



TROUBLESHOOTING PROCEDURE FOR DTC

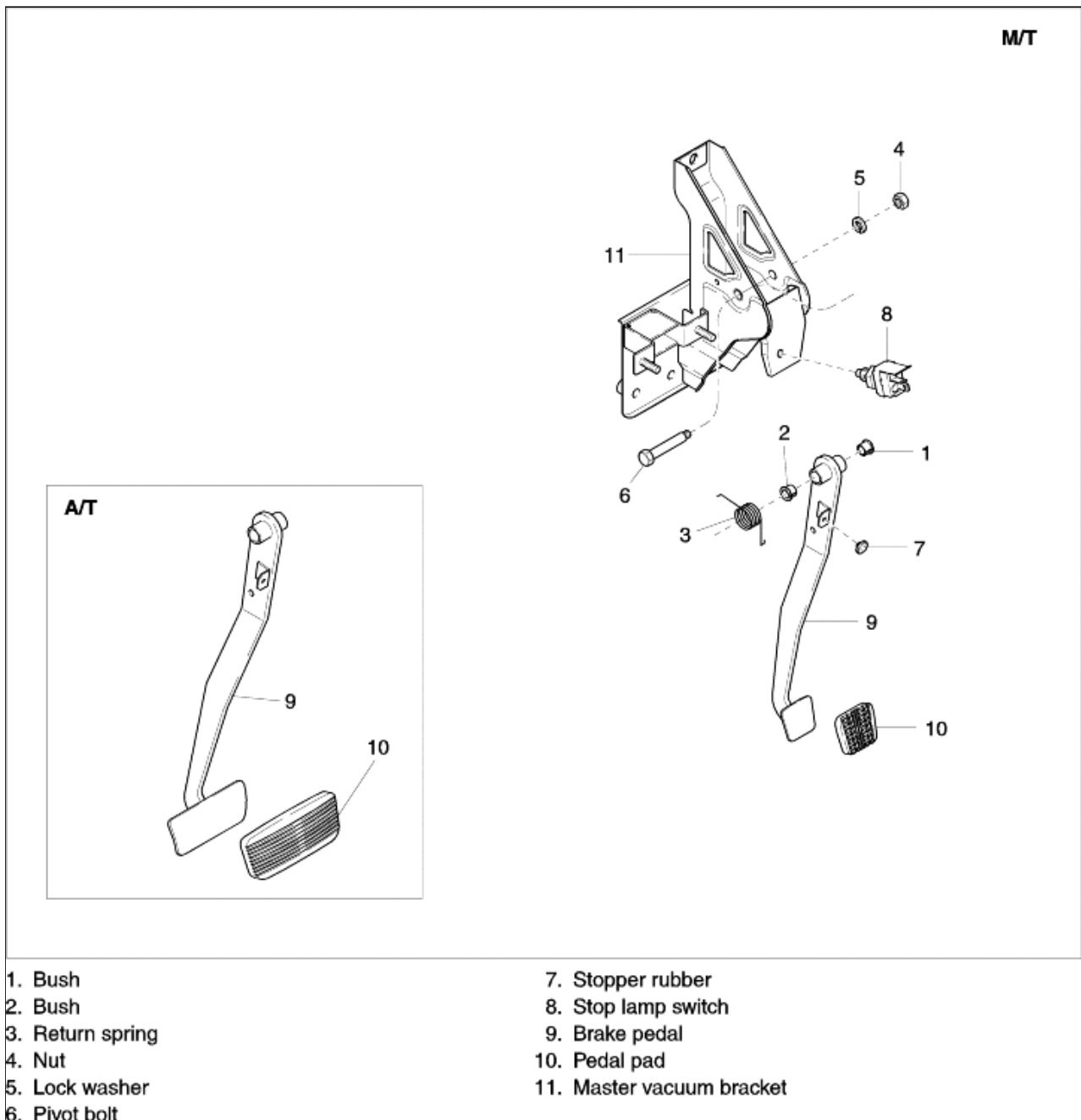
Diagnostic trouble code No. P1159	VICS valve circuit malfunction
[Related items]	1) Open or short to chassis ground between VICS valve and ECM 2) Faulty VICS valve

Step	Inspection	Action	
1	Thoroughly check VICS valve for loose, bent, corroded, contaminated, or damaged connectors. Is nay problem present?	Yes	Repair as necessary.
		No	Go to step 2.
2	Turn ignition to OFF and disconnect VICS valve connector. Turn ignition to ON and measure voltage of VICS valve power circuit between VICS valve harness connector and chassis ground. 1) Specification : approximately B+ Is voltage within specification?	Yes	Go to step 3.
		No	Open circuit or short circuit to chassis ground between VICS valve harness connector and main relay. Repair as necessary.
3	Turn ignition to OFF. VICS valve connector is still disconnected. Measure resistance between VICS valve battery power and signal terminal. 1) Specification : $13.8 \pm 3.5 \Omega$ @ 20°C (68°F) Is resistance within specification?	Yes	Check VICS valve for poor terminal contacts to oxidation, bent deformed, or misplaced terminals. Repair as necessary.
		No	Temporarily install a known good VICS vlave and check for proper operation. If problem is corrected, replace VICS valve.
4	Turn ignition to OFF and disconnect ECM connector. Measure resistance of VICS valve signal circuit between VICS valve harness connector and ECM harness connector. 1) Specification : below 1 Ω Does resistance indicate continuity circuit?	Yes	Go to step 5.
		No	Open circuit between VICS valve harness connector and ECM harness connector. Repair as necessary.
5	ECM connector VICS valve connector is still disconnected. Measure resistance between VICS valve harness connector and chassis ground at VICS valve signal circuit. Measure resistance between VICS valve battery voltage circuit and signal circuit. 1) Specification : infinite Does resistance indicate open circuit?	Yes	Temporarily install a known good VICS vlave and check for proper operation. If problem is corrected, replace VICS valve.
		No	Short circuit to chassis ground between VICS valve harness connector and ECM harness connector. Short circuit between VICS valve battery power circuit and signal circuit. Repair as necessary.
6	Return vehicle to original condition. Clear all diagnostic trouble codes. Verify by driving with SCAN TOOL connected and monitor for pending codes..		



Brake pedal

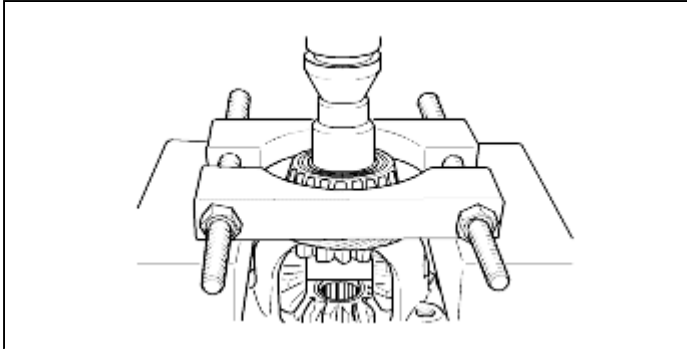
Component





Disassembly

1. Remove the taper roller bearing.

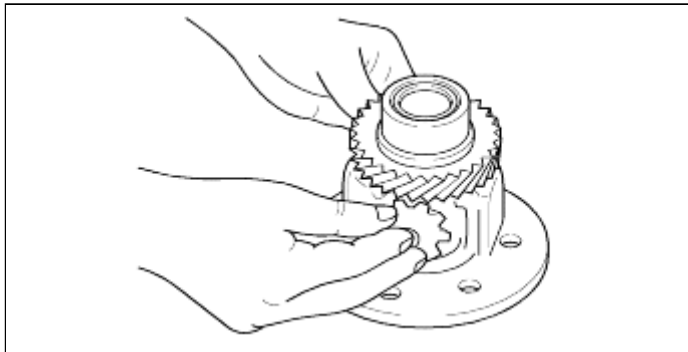


Reassembly

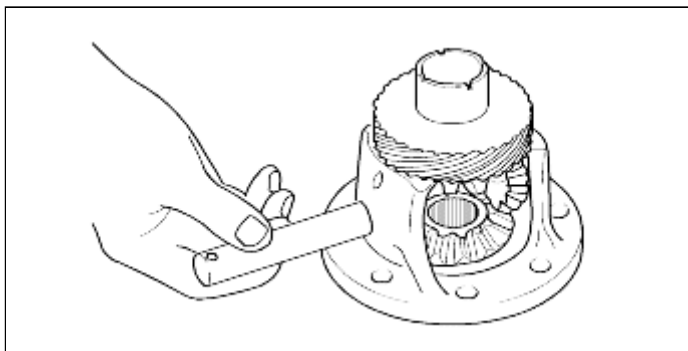
1. Remove the spacer, the side gear, the washer, the pinion and the pinion shaft.
 - (1) Connect the side gear with the spacer, and install the side gear into differential case.

NOTE

Use a spacer of neutral thickness
0.037~0.039in(0.93~1.00mm) for a new side gear.



- (2) Connect the washer to the pinion and install them simultaneously at the point so that they may lock with the side gear.
- (3) Install the pinion shaft.



- (4) Check the side gear pinion backlash and install a proper spacer.

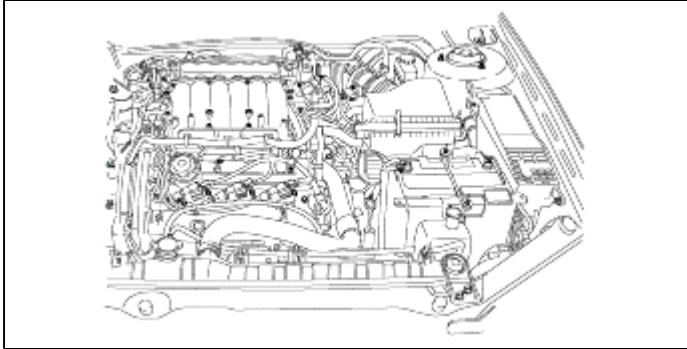
Standard value :0.00098~0.0059in(0.025~0.150mm)



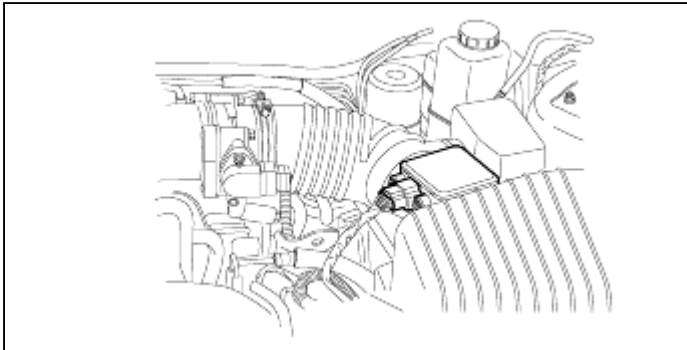
Automatic transaxle system

Removing transaxle

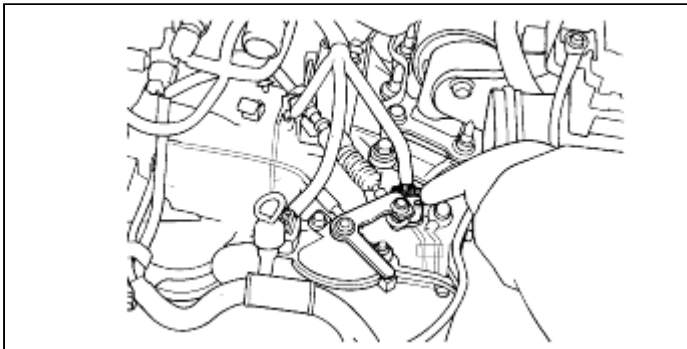
1. Remove the battery and the tray assembly.



2. Remove the engine wiring and the transaxle wiring.



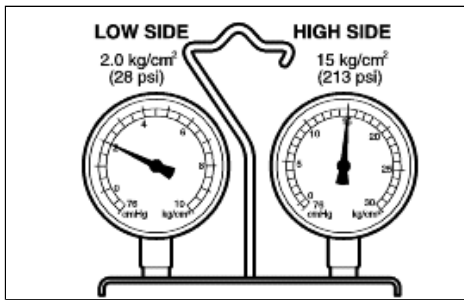
3. Remove the air cleaner (air duct, hose) assembly.
4. Disconnect the shift cable from the transaxle.



5. Disconnect the cooler hose from the transaxle.
6. Remove the radiator and the hose (drain coolant).
7. Disconnect the heater hose.
8. Disconnect the power steering column and the gear box universal joint.
9. Remove the power steering oil pressure and return the tube from the gear box.

NOTE

Collect dropping oil with a container when disconnecting tube.



DIAGNOSIS

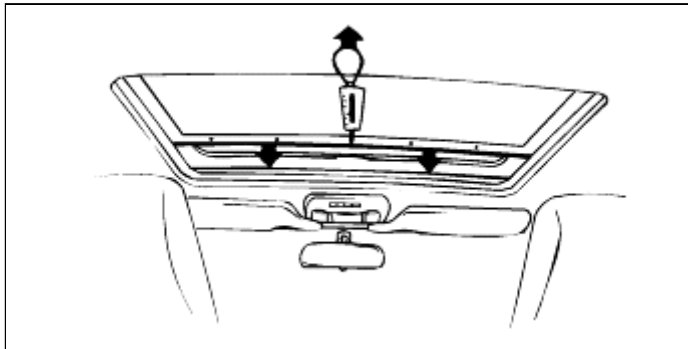
SYMPTOMS	PROBABLE CAUSES	REMEDY	MANIFOLD GAUGE READINGS
<ol style="list-style-type: none"> 1) Low pressure and high pressure are low. 2) Cooler outlet air is a little cooler. 	<ol style="list-style-type: none"> 1) Gas leak. 	<ol style="list-style-type: none"> 1) Check and repair. 2) Add refrigerant. 	
<ol style="list-style-type: none"> 1) Low pressure and high pressure are high. 	<ol style="list-style-type: none"> 1) Faulty cooling or condenser freezing. 2) Belt slip. 	<ol style="list-style-type: none"> 1) Maintain the proper level of refrigerant. Clean the condenser. 2) Adjust the belt. 	
<ol style="list-style-type: none"> 1) Low pressure and high pressure are high. 2) Low pressure pipe is not cold. 	<ol style="list-style-type: none"> 1) Air in the system. 	<ol style="list-style-type: none"> 1) Clean or repair the receiver drier. 2) Check for oil contamination. 	
<ol style="list-style-type: none"> 1) Low pressure side indicates negative pressure and high pressure side indicates low pressure. 2) Frost or dew on pipes connected with receiver or expansion valve. 	<ol style="list-style-type: none"> 1) Dust or moisture frozen at expansion valve. 2) Gas leak. 	<ol style="list-style-type: none"> 1) Repair the receiver drier and replace the expansion valve. 2) Replace the expansion valve if the receiver-drier is faulty. 	
<ol style="list-style-type: none"> 1) Low pressure side pressure sometimes goes to negative pressure or normal. 	<ol style="list-style-type: none"> 1) Intaken moisture is frozen at expansion valve hole. 	<ol style="list-style-type: none"> 1) Repair and bleed receiver drier 	
<ol style="list-style-type: none"> 1) Low pressure and high pressure are high. 2) Much frost or dew on the low pressure side piping. 	<ol style="list-style-type: none"> 1) Expansion valve failure. Receiver-drier faulty. 2) Flow control faulty. 	<ol style="list-style-type: none"> 1) Repair receiver drier. 2) Check oil contamination. 	

1. If the glass panel movement is difficult, check and adjust.
 - (1) Make sure the battery voltage is normal.
 - (2) Make sure that the sunroof sliding unit is free of foreign material.
 - (3) Make sure that, when the glass panel opens, the rear position of panel dose not interfere with the roof panel.

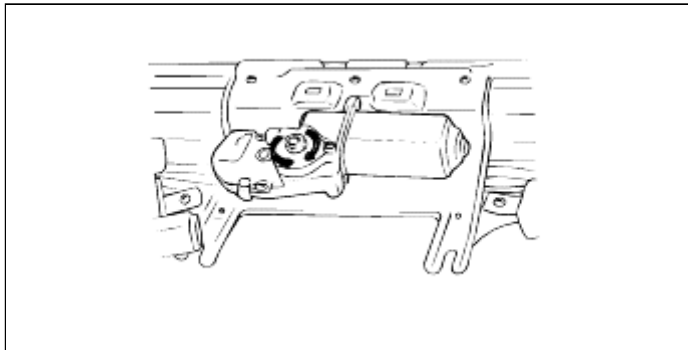
NOTE

If the stopper is moved forward too far, it may cause malfunction or leaks. Make sure the gap between the glass panel and roof panel is not more than 0.3 mm.

- (4) Measure the driving force of the motor, and adjust it to 15~25 kg (33.1~55.7 lb) with the torque adjustment nut on the motor.
- (5) To measure, use the deep hole in the center of the lid lower panel.

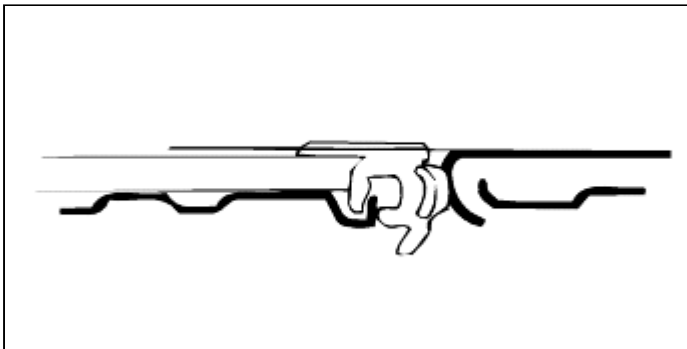


- (6) After adjustment, be sure to lock the nut with the pawl washer.



Adjustment

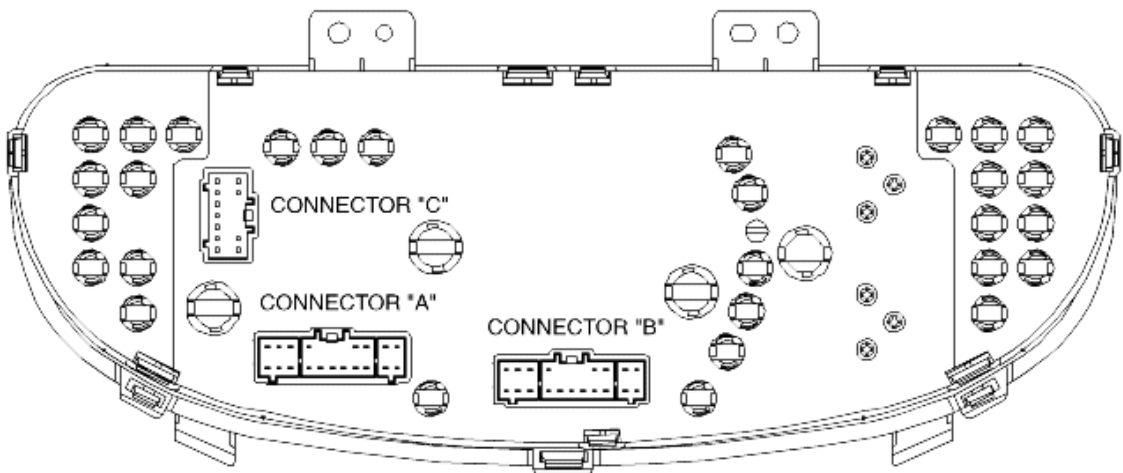
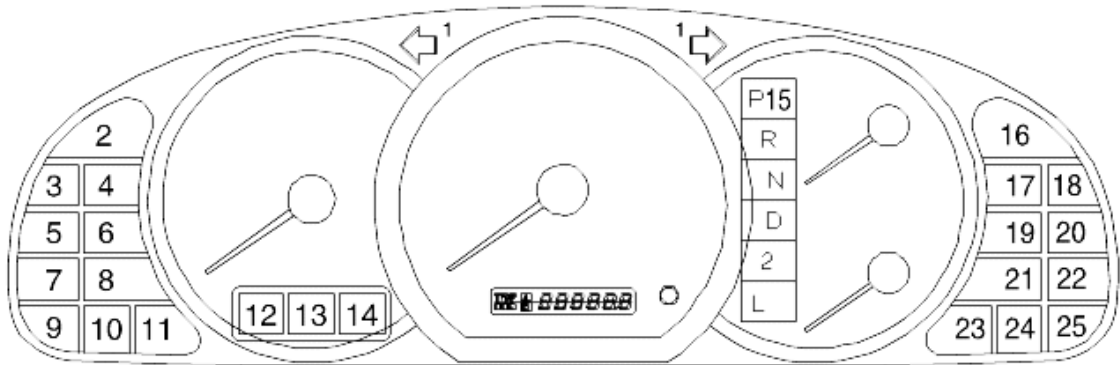
1. Adjust the difference between the height of the glass panel and the roof panel.
 - Front side : -1~0 mm
 - Rear side : 0~1 m
 If the difference is not as specific, adjust the following procedure.

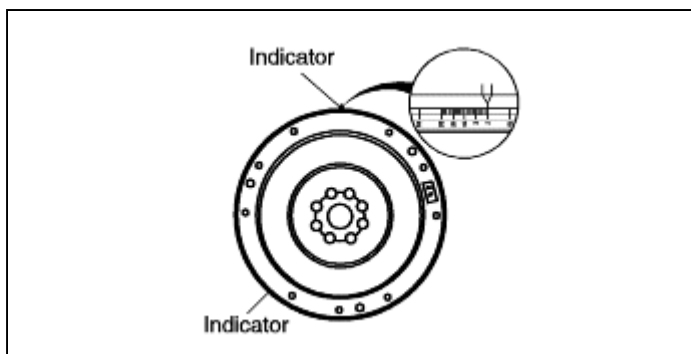


- (1) Loosen the front screw and rear screw and adjust the height between the glass panel and roof panel.



Component

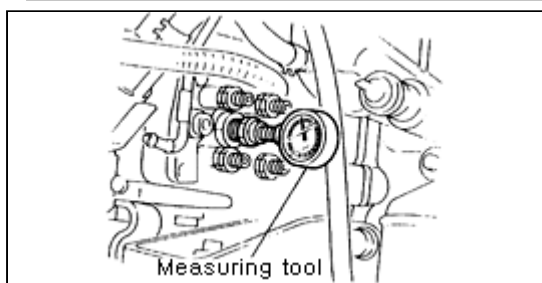




2. Remove the injection pipe between the injection pump and the nozzle.
3. After removing the cover of hydraulic part of injection pump, install the SST (OK670 131 010).

CAUTION

- 1) Be careful for fuel leak during removing the injection pump.
- 2) Install it so that the SST indicates about $0.039 \pm 0.0078\text{in}$ ($1.0 \pm 0.2\text{mm}$)

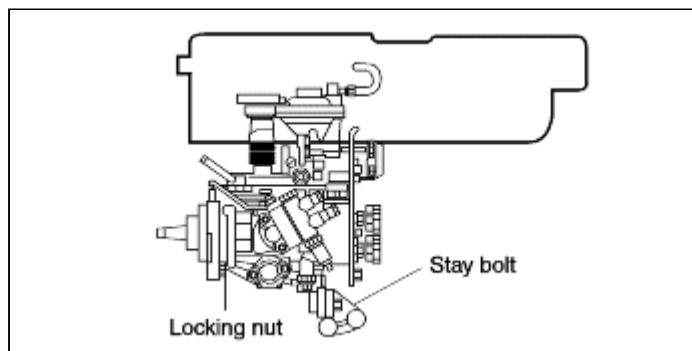


4. Rotate the crankshaft pulley in reverse to align it to BTDC 20° ~ 30° .
5. Align the indicator of dial gauge to 0 rotate the crankshaft pulley in left and right and then verify the position of indicator.
6. Rotate the crankshaft pulley in reverse to align it to TDC and then check the dial gauge reading. (Refer to step 1)

Lift amount : $0.039 \pm 0.0078\text{in}$ ($1.0 \pm 0.2\text{mm}$)

7. If the dial gauge reading exceeds the specification, loosen the stay bolt of injection pump.
8. Loosen the tightening nut for the injection pump by using a socket wrench.
9. Rotate the injection pump body so that the dial gauge indicates $0.043 \pm 0.0039\text{in}$ ($1.1 \pm 0.1\text{mm}$) at TDC.
10. Tighten the stay bolt of injection pump and the tightening nut.

Tightening torque
 Tightening nut : $11.6\sim 16.9\text{lb-ft}$ ($16\sim 22\text{N-m}$, $1.6\sim 2.2\text{kg-m}$)
 Stay bolt : $23.8\sim 31.1\text{lb-ft}$ ($32\sim 42\text{N-m}$, $3.3\sim 4.3\text{kg-m}$)



11. Remove the SST (OK670 131 010).