

CONTROL SYSTEM [L3 WITH TC]

CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION[L3 WITH TC]

Removal

- Disconnect the negative battery cable.
- Remove the charge air cooler duct. (See 01-13-5 INTAKE AIR SYSTEM REMOVAL/INSTALLATION[L3 WITH TC].)
- Remove the under cover.
- Remove the splash shield (RH).
- Disconnect the CKP sensor connector.
- Remove the installation bolts to remove the CKP sensor.

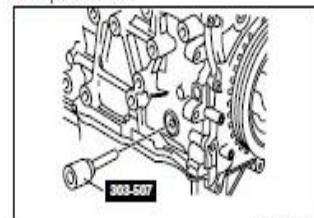
Installation

Caution

- When foreign material, such as an iron chips, gets on the CKP sensor, it can cause abnormal output from the sensor because of flux turbulence and adversely affect engine control. Be sure there is no foreign material on the CKP sensor when replacing.

- Perform the following procedure so that piston No.1 is at the top dead center.

- (1) Rotate the crankshaft in the direction of the engine rotation and remove the cylinder block lower blind plug when the No. 1 cylinder is at the point prior to top dead center (TDC) of compression, then install the SST.
- (2) Rotate the crankshaft in the direction of the engine rotation so that the No.1 piston is at TDC of the compression stroke. (Until the crank weight contacts SST and stops.)



- Using a straight edge, draw a straight line directly in the center of the twentieth tooth of the crankshaft pulley pulse wheel (counting counterclockwise from the empty space).

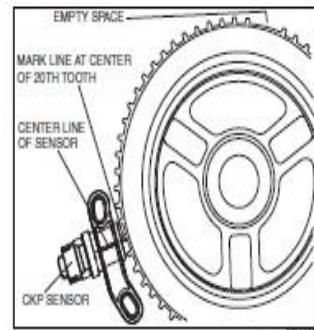
- Caution**
- If the line is not accurately drawn, ignition timing, fuel injection and other engine control systems will be adversely effected. Draw the straight line carefully using a straight edge.

- Align the center line of the crankshaft position sensor and the line drawn in Step 2, then install the sensor.
- Install the CKP sensor fitting bolts.

- Tightening torque**
5.5—7.5 N·m (57—76 kgf·cm, 49—66 in·lbf)

- Remove the SST then install the cylinder block lower blind plug.

- Tightening torque**
18—22 N·m (1.9—2.2 kgf·m, 14—16 ft·lbf)



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CRANKSHAFT POSITION (CKP) SENSOR INSPECTION[L3 WITH TC]

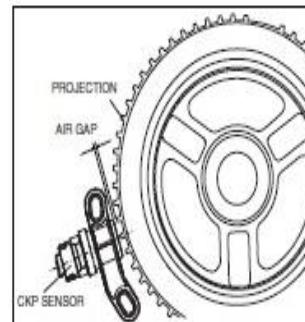
Note

- Before performing the following inspection, make sure to follow the procedure as indicated in the troubleshooting flowchart. (See 00-00-3 HOW TO USE THIS MANUAL.)

Air Gap Inspection

- Verify that the CKP sensor is securely installed.
- Using a thickness gauge, measure the air gap between the plate projections at the back of crankshaft pulley and the CKP sensor.
 - If not within the specification, inspect the plate projections for cracks or bending.
 - If there is any malfunction, replace the plate.
 - If the monitor item condition/specification (reference) is not within the specification, even though there is no malfunction, carry out the "Circuit Open/Short Inspection".

Air gap
0.5—1.5 mm (0.02—0.05 in)



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Visual Inspection

- Disconnect the negative battery cable.
- Remove the CKP sensor. (See 01-40-42 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION[L3 WITH TC].)
- Verify that there are no metal shavings on the sensor.
 - If the monitor item condition/specification (reference) is without the specification even though there is no malfunction, carry out the "Circuit Open/Short Inspection".

- Voltage Inspection**
1. Idle the engine.

Caution

- Water penetrating the connector will cause sensor malfunction. To prevent this, be careful not to damage the wiring harnesses or the waterproof connector so as to cause water penetration.

- Measure the output voltage using an oscilloscope.
 - If not within the specification, replace the CKP sensor.
 - If the monitor item condition/specification (reference) is without the specification, even though the voltage is within the specification, carry out the "Circuit Open/Short Inspection".

Voltage

Terminal	Voltage (V)	Condition
A	Below 1.0	Under any condition
B	4.8 or more	High output*
C	0.8 or less	Low output*
	B+	Under any condition

* : Output voltage varies with crankshaft rotation.



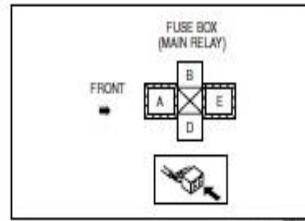
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CONTROL SYSTEM [L3 WITH TC]

Circuit Open/Short Inspection



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PCM WIRING HARNESS-SIDE CONNECTOR

20L	20A	2AV	2AB	2AS	2AS	2AG	2AC	2Y	2U	2S2	2M	2L	2K
20T	20B	2AX	2AT	2AS	2AL	2AN	2AD	2Z	2V	2R	2N	2D	2P
2BQ	2BQ	2AY	2AQ	2AC	2AM	2AL	2AU	2W	2S	2R	2K	2G	2C
2BH	2BH	2AZ	2BK	2AS	2AL	2AT	2AN	2Z	2T	2V	2L	2D	2P
10G	10C	1AY	1AU	1AC	1AM	1AT	1AD	1Z	1V	1R	1N	1D	1C
10H	10D	1AZ	1AV	1AS	1AL	1AT	1AF	1SW	1U	1R	1K	1G	1D



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- Inspect the following wiring harnesses for an open or short circuit. (Continuity check)

Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - CKP sensor terminal A and PCM terminal 2P
 - CKP sensor terminal B and PCM terminal 2W
 - CKP sensor terminal C and main relay terminal E

Short circuit

- If there is continuity, the circuit is shorted. Repair or replace the wiring harness.
 - CKP sensor terminal A and power supply
 - CKP sensor terminal B and power supply
 - CKP sensor terminal B and body ground
 - CKP sensor terminal C and body ground