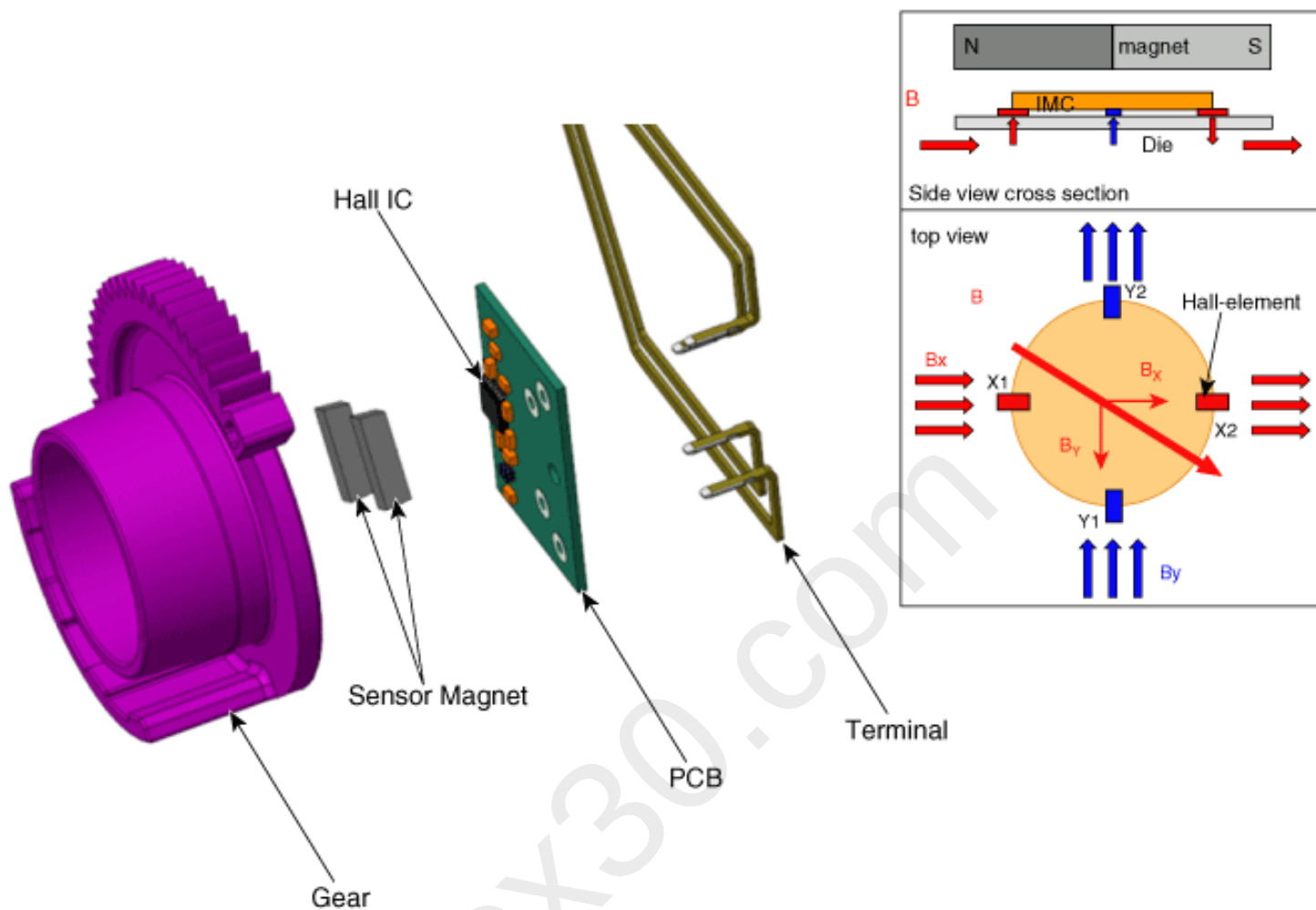


Description

The Electronic Throttle Control (ETC) System consists of a throttle body with an integrated control motor and throttle position sensor (TPS). Instead of the traditional throttle cable, an Accelerator Position Sensor (APS) is used to receive driver input. The ECM uses the APS signal to calculate the target throttle angle; the position of the throttle is then adjusted via ECM control of the ETC motor. The TPS signal is used to provide feedback regarding throttle position to the ECM. Using ETC, precise control over throttle position is possible; the need for external cruise control modules/cables is eliminated.





Fail-safe
Mode

Items	Fail-safe	
ETC Motor	Throttle valve stuck at 7°	
TPS	TPS 1 fault	Replace it with TPS2
	TPS 2 fault	Replace it with TPS1
	TPS 1, 2 fault	Throttle valve stuck at 9.2°



- When throttle value is stuck at 9.2°, engine speed is limited at below 1,200 - 1700 rpm.

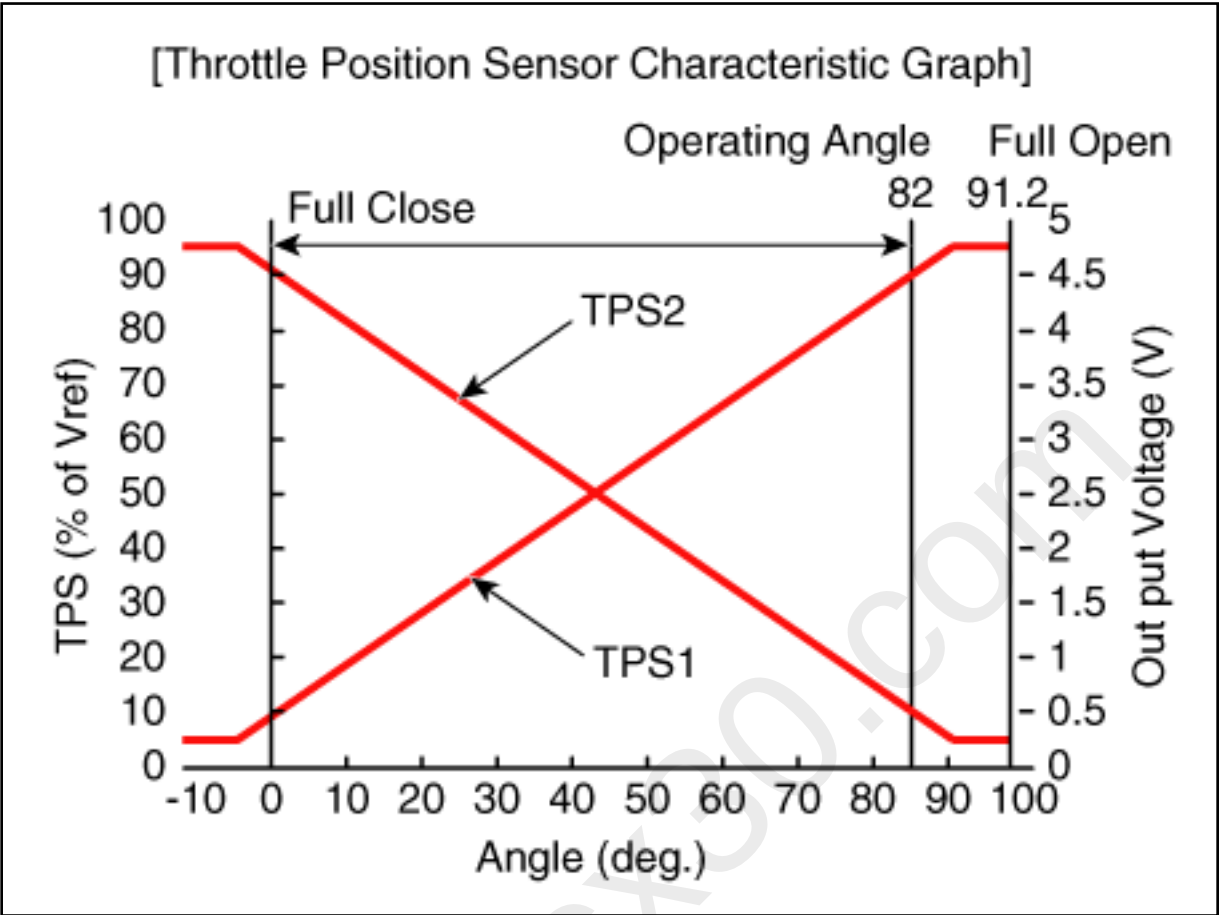
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Specification

Throttle Position Sensor (TPS)

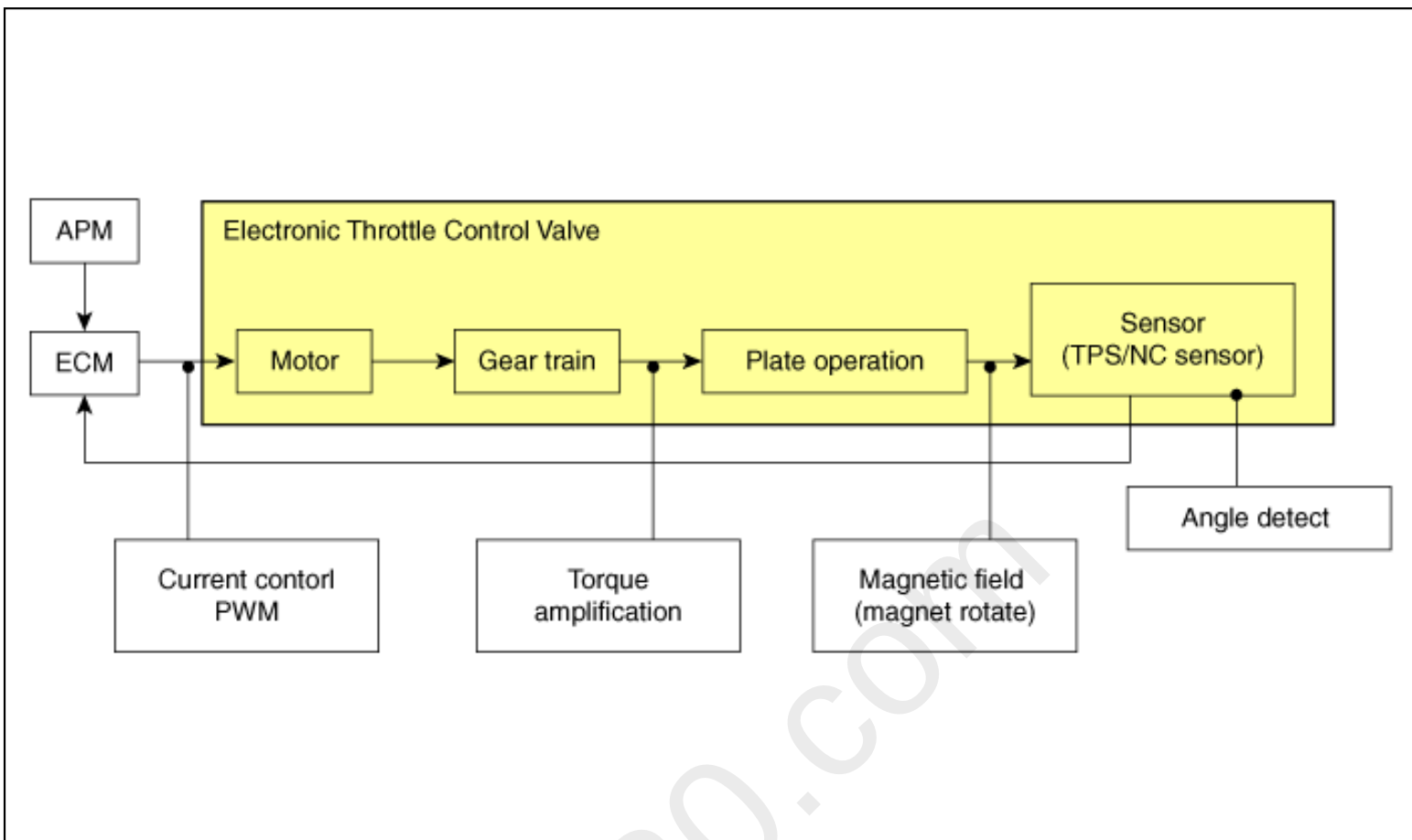
▷ Type : IC Rotation Sensor type

▷ Specification

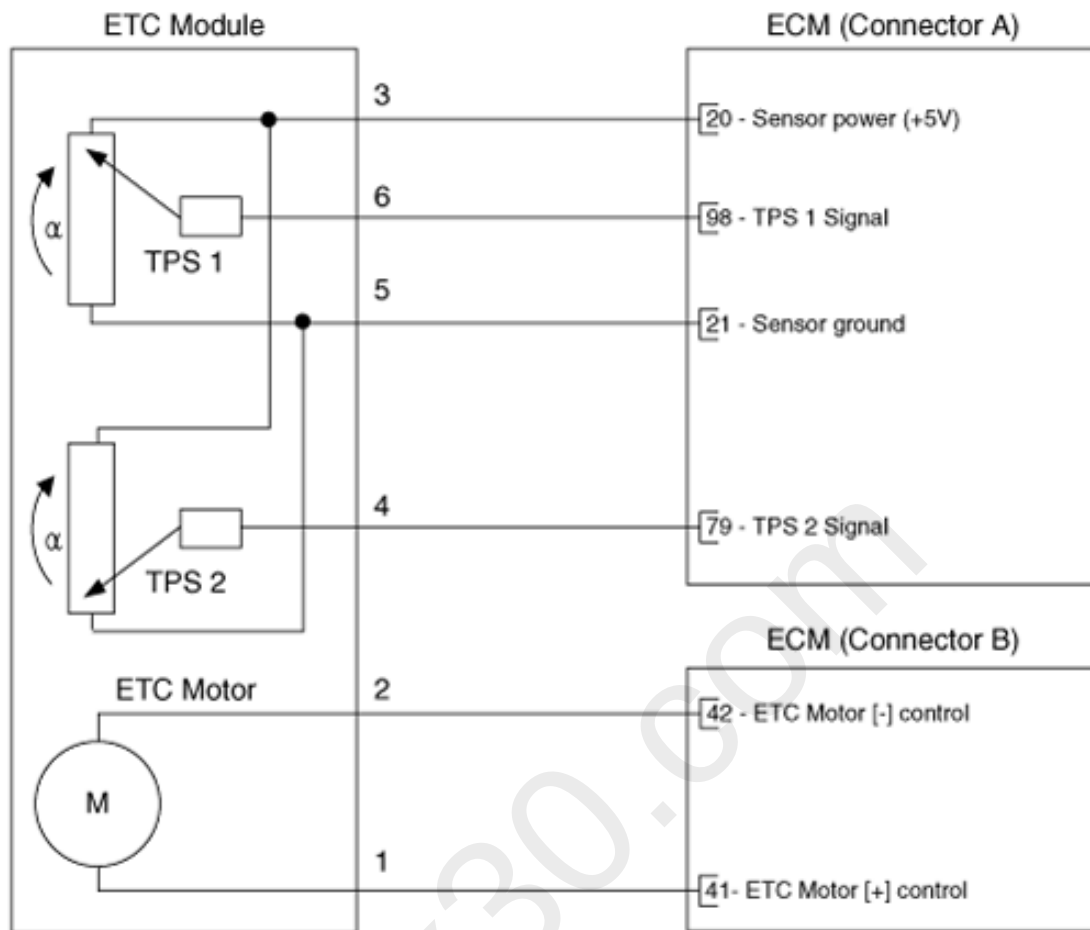


[ETC Motor]	
Item	Sensor Resistance
Coil Resistance (Ω)	1.29 - 1.57 [20°C(68°F)]

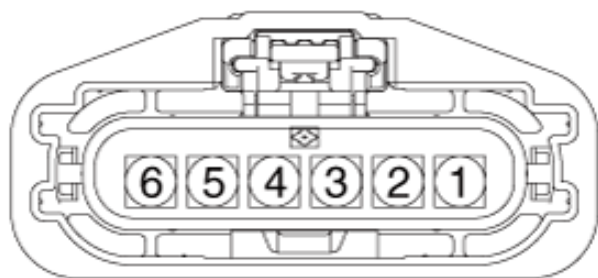
Schematic
Diagram



Circuit
Diagram



Harness Connector



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Inspection

Throttle Position Sensor (TPS)

1. Connect a diagnostic tool on the Data Link Connector (DLC).
2. Start engine and check output voltages of TPS 1 and 2 at C.T and W.O.T.

Specification : Refer to Specification Section.

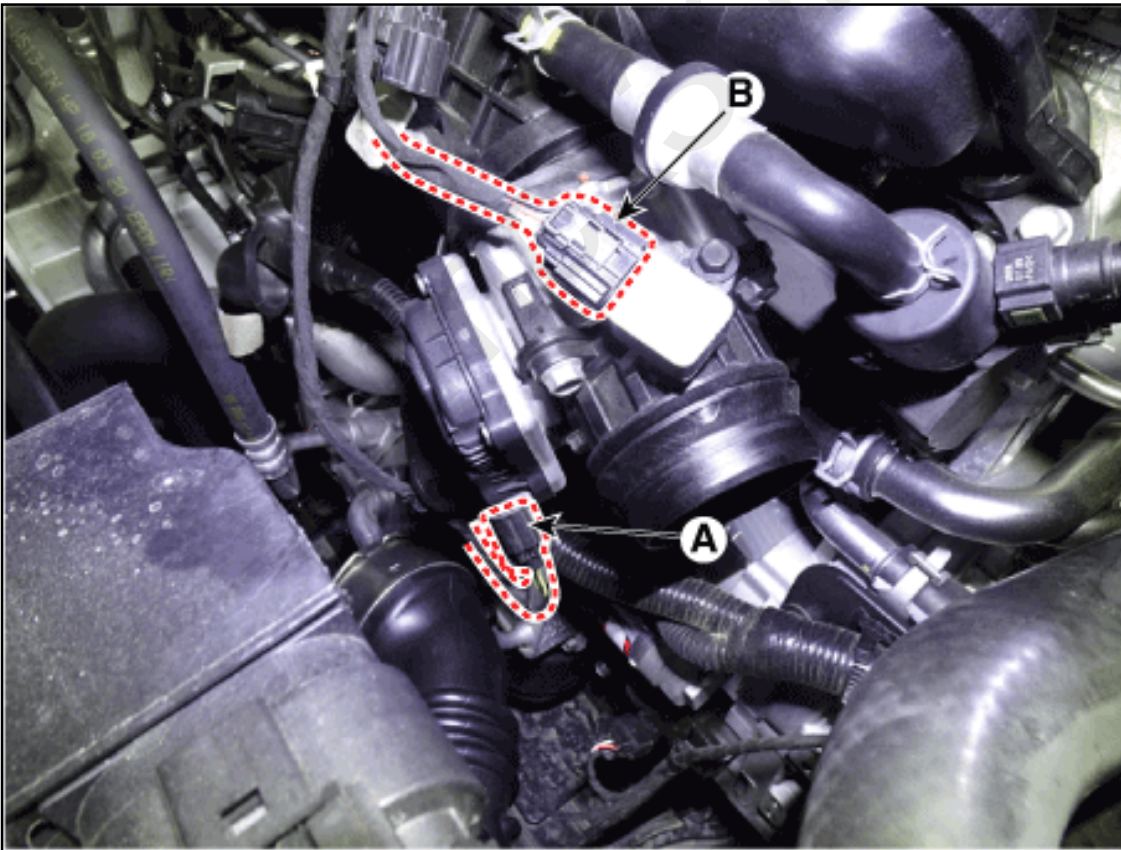
ETC Motor

1. Turn the ignition switch OFF.
2. Disconnect the ETC module connector.
3. Measure resistance between the ETC module terminals 1 and 2.
4. Check that the resistance is within the specification.

Specification : Refer to Specification Section.

Removal

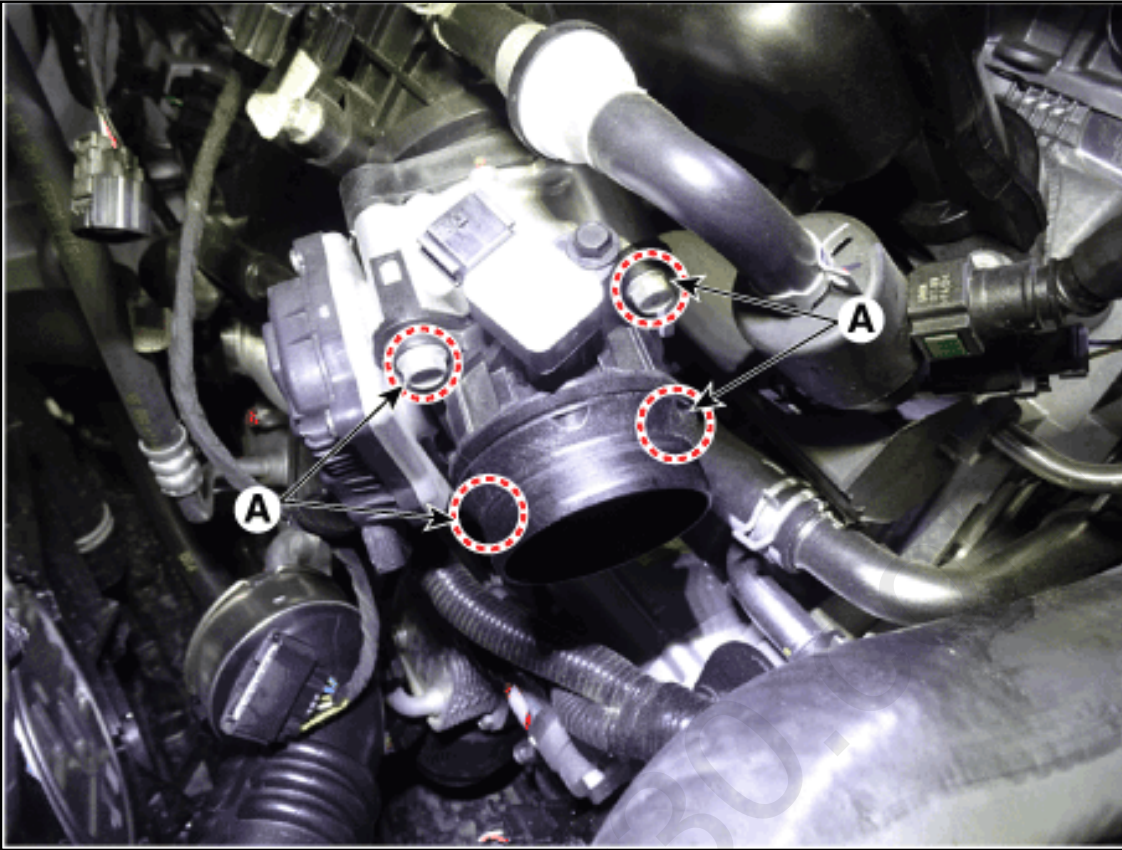
1. Turn ignition switch OFF and disconnect the battery negative (-) terminal.
2. Remove the Intercooler outlet hose.
(Refer to Engine Mechanical - "Intercooler")
3. Disconnect the ETC module connector (A).
4. Disconnect BPS connector (B).



5. Remove the ETC module after remove the mounting bolt (A).

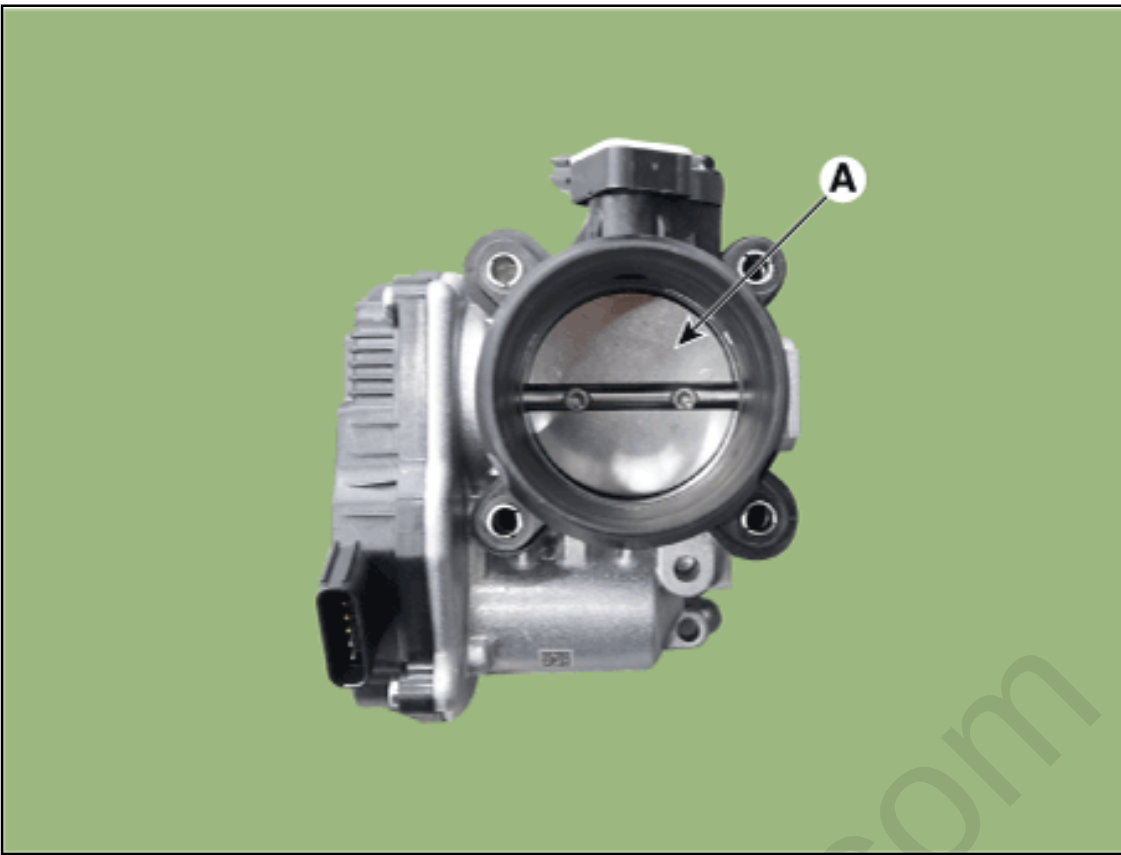
Tightening Torque :

9.8 - 11.8 N.m (1.0 - 1.2 kgf.m, 7.2 - 8.7 lb-ft)

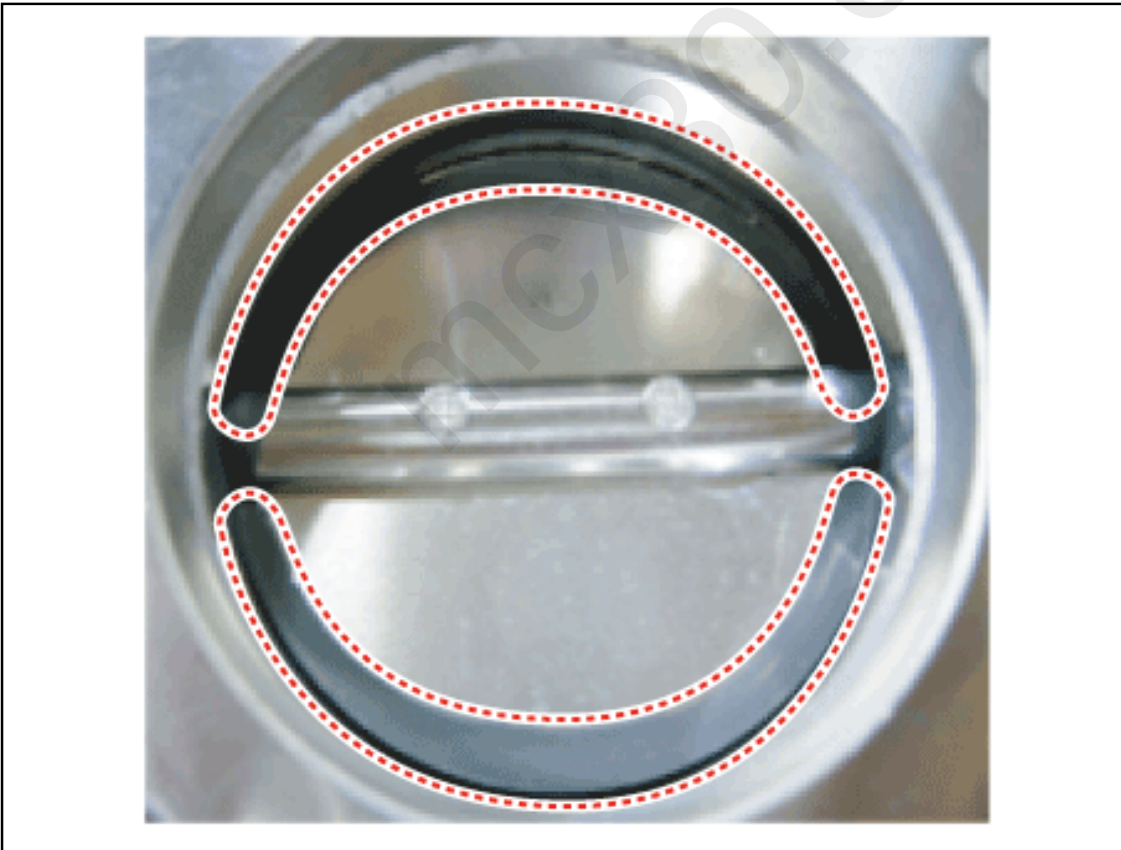


Cleaning

1. Remove the ETC Module.
(Refer to Engine Control System - "ETC System")
2. Keep the ETC module plate (A) open.



3. Clean the pollutant in the throttle body with a soft cloth moistened with cleaning fluid.





- Do not spray cleaning fluid directly onto ETC. Use a lint free cloth moistened with cleaning fluid.
- Be careful not to clean the coating fluid around the shaft. If coating fluid is removed, idling control failure might occur by foreign substance inflow or excessive air leakage.

4. After cleaning, re-install the ETC module and then perform the ETC module learning procedure.
(Refer to Engine Control System - "ETC System")

Installation



- Install the component to the specified torques.
- Note that internal damage may occur when the component is dropped. In this case, use it after inspecting.

1. Install in the reverse order of removal.

Adjustment

ETC Module Learning Procedure

Be sure to perform the ETC module learning procedure when replacing or re-installing the ETC module.

1. Wait for 1 minute with the ignition switch ON.
2. Start the engine and hold the idle status for 15 minutes.
3. Wait for 1 minute with the ignition switch OFF.
4. Restart the engine, and check that the idle speed is stable.



- If the ETC module learning procedure is not performed after replacing or reinstalling the ETC module, MIL illumination with DTCs may occur.