CAUTION

- If the power cable is incorrectly assembled, it may result in serious damage in inverter, drive motor, and high voltage battery. In addition, it may also cause injury to driver or service engineer. As a result, take caution when assembling the power cable.

3. Fill the coolant and then check the leakage.

NOTICE

- Refill the motor cooling system with coolant and then perform the air bleeding using the GDS.
  (Refer to Motor Cooling System - "Coolant")

4. Install the motor assembly after Perform the "Initialization of Automatic Resolver Offset Calibration"

NOTICE

- If "Initialization of Automatic Resolver Offset Calibration" is not reset after exchanging the motor, it may result in reduced max power output as well as drive range.
  (Refer to Motor Assembly - "Motor Position and Temperature Sensor")

Motor System

- Description

Motor Position Sensor

The accurate position of the rotor must be known at all times to ensure maximum output control of the motor. Like the CMP sensor on the engine, it detects the position of the rotor in the motor.

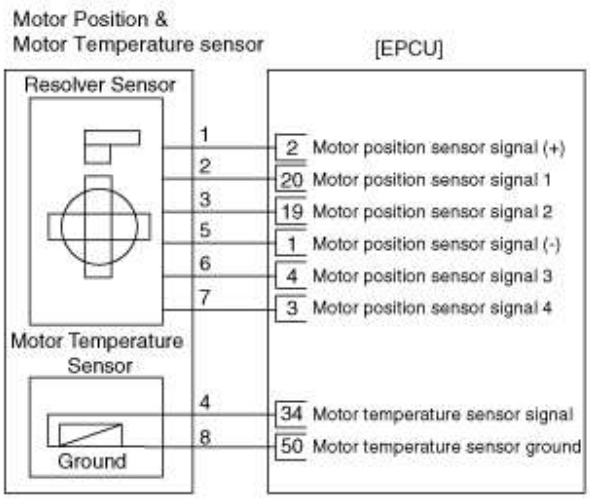
Motor Temperature Sensor

The motor temperature has the large effect on the motor output. When the motor over heats, it's IPM and stator coil may deform and their performance may be affected. To prevent this, a temperature sensor is embedded in the motor to control the motor torque according to its temperature.

Motor System

- Circuit Diagram

[Circuit Diagram]

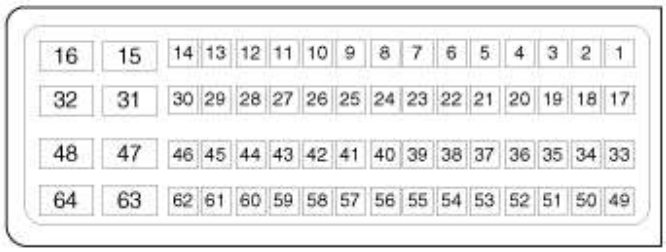


[Connection Information]

Terminal	Connected to Function	Function
1	EPCU (2)	Motor position sensor signal (+)
2	EPCU (20)	Motor position sensor signal 1
3	EPCU (19)	Motor position sensor signal 2
4	EPCU (34)	Motor temperature sensor signal
5	EPCU (1)	Motor position sensor signal (-)
6	EPCU (4)	Motor position sensor signal 3
7	EPCU (3)	Motor position sensor signal 4
8	EPCU (50)	Motor temperature sensor ground

[Harness Connector]

Motor Position &
Motor Temperature Sensor Connector



Electric Power Control Unit (EPCU) Connector

Motor System

- Inspection

1. Remove the under cover.
   (Refer to Motor Assembly - "Under Cover")
2. Disconnect the motor position and temperature sensor connector (A).

3. Using a multi tester, measure the phase resistance.

[Sensor Connector]

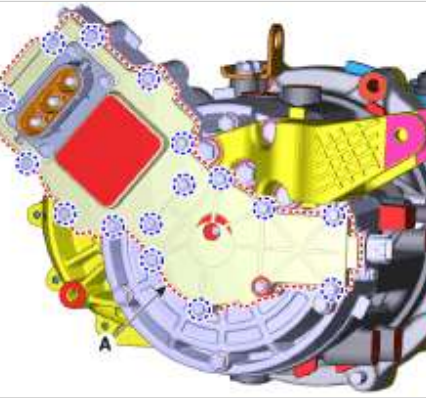
Pin	Function
1	REZ (+)
2	REZ S1
3	REZ S2
4	TEMP
5	REZ (-)
6	REZ S3
7	REZ S4
8	TEMP GND

Test item	Test part		Inspection standard	Remarks
phase resistance	Motor position sensor	1 - 5	26.5Ω ± 10 %	[15.06 °C (59.1 ˚F)] - [25.1 °C (77.2 ˚F)]
		2 - 6	87.0Ω ± 10 %	
		3 - 7	76.0Ω ± 10 %	
	Motor temperature sensor	4 - 8	12.12 kΩ [20 °C (68 ˚F)] - 8.322 kΩ [30 °C (86 ˚F)]	A separate table is provided for each temperature.

- Removal

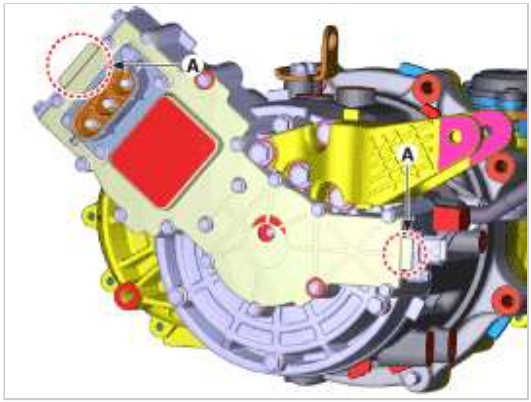
1. Remove the motor assembly.
   (Refer to Motor System - "Motor Assembly")
2. Remove the resolver sensor cover (A).

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



Information

• Use a flathead screw driver into service space (A) to remove the resolver sensor cover.

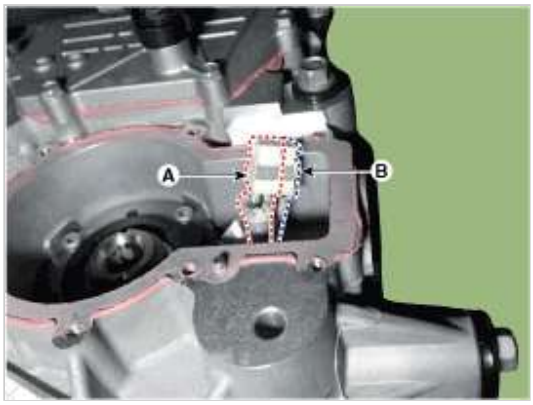


⚠ CAUTION

- Practice caution when using the flathead screwdriver. It may damage the motor housing or sensor connector.

3. Disconnect the resolver sensor conncetor (A).

4. Separate the motor position sensor (A) and temperature sensor (B) using a awl or (-) driver.

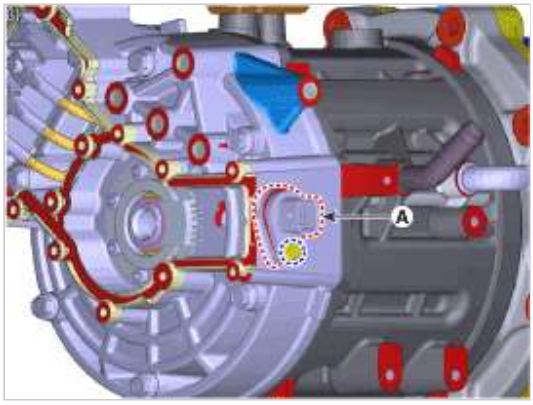


⚠ CAUTION

- When removing the connector, be caureful not to damage it.
- Motor position & temperature connector (A) should be reconnected in the direction of the arrow below.

5. Loosen the bolt removing the sensor connector (A).

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

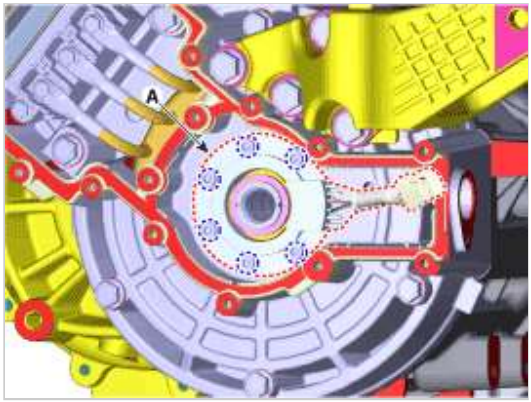


⚠ CAUTION

- Replace the sensor connector to a new one.
- Be careful not to damage the O-ring (A) when installing the sensor connector.

6. Loosen the bolts and then removing the resolver sensor (A).

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



NOTICE

- Check the direction of the sensor when installing the resolver sensor.

- The resolver sensor should be installed horizontally on the motor housing matching surface.
  (If the resolver sensor is not horizontally installed, it may be tilted and damaged.)

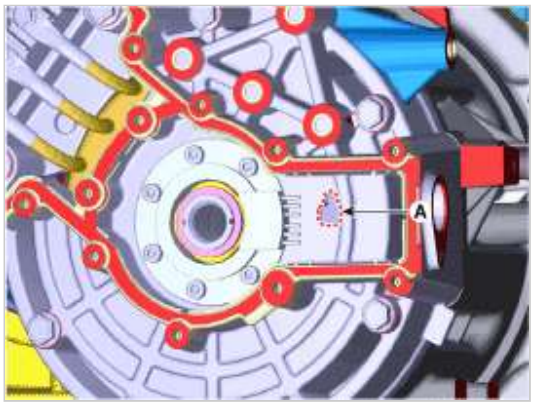
- Installation

1. To install, reverse the removal procedures.

⚠ CAUTION

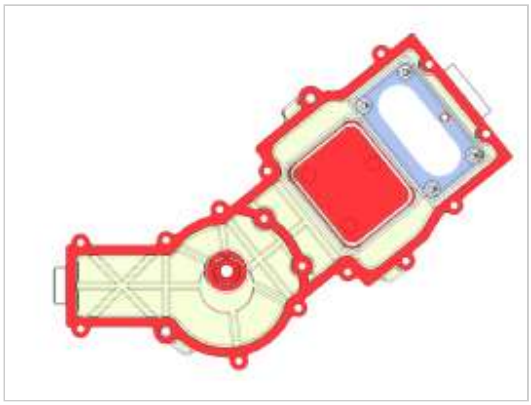
- Clean the hardened sealant, dust, moisture and any other foreing substances on the motor housing surface and the sensor cover before installing the resolver sensor cover.
- Order the grommet (B) in the hole (A) in the housing, apply the sealant, and then install it.

Specified sealant :LOCTITE 5910 or equivalent

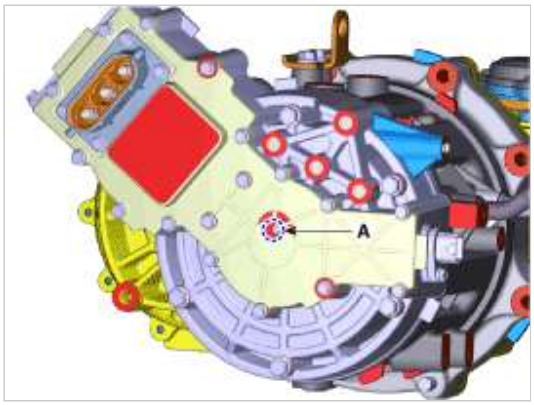


- Apply the sealant on the resolver sensor cover and install it within 5 minutes.

Specified sealant :LOCTITE 5460 or equivalent



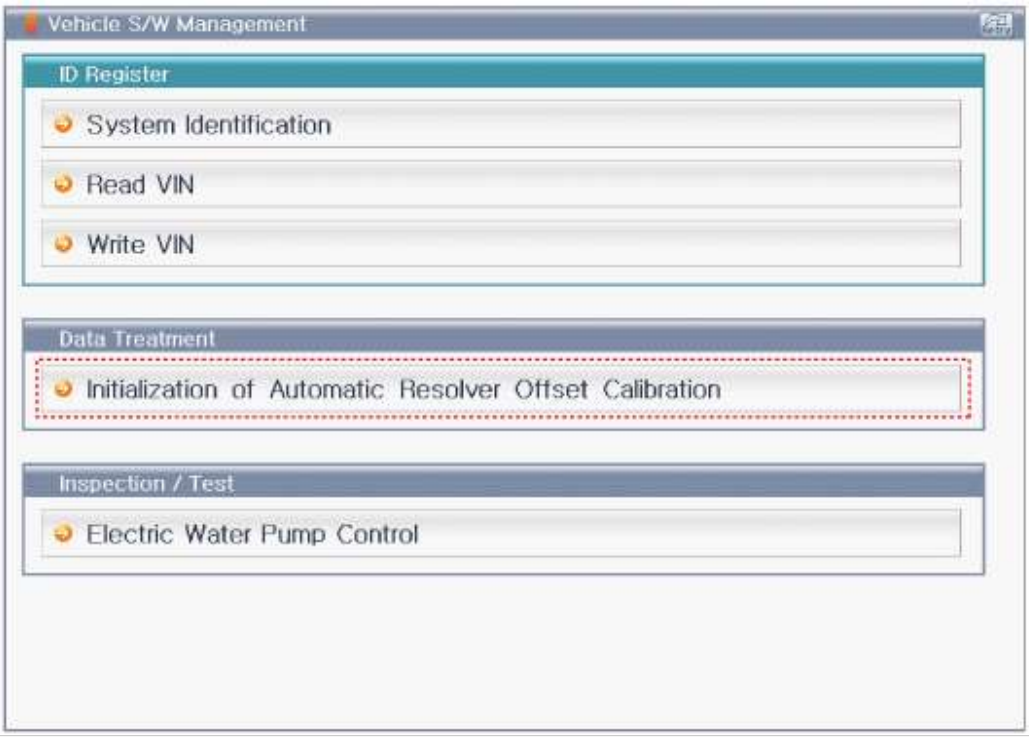
- Check if the pressure regulator (A) is installed.
  (If the pressure regulator (A) is damaged, replace it with a new one.)

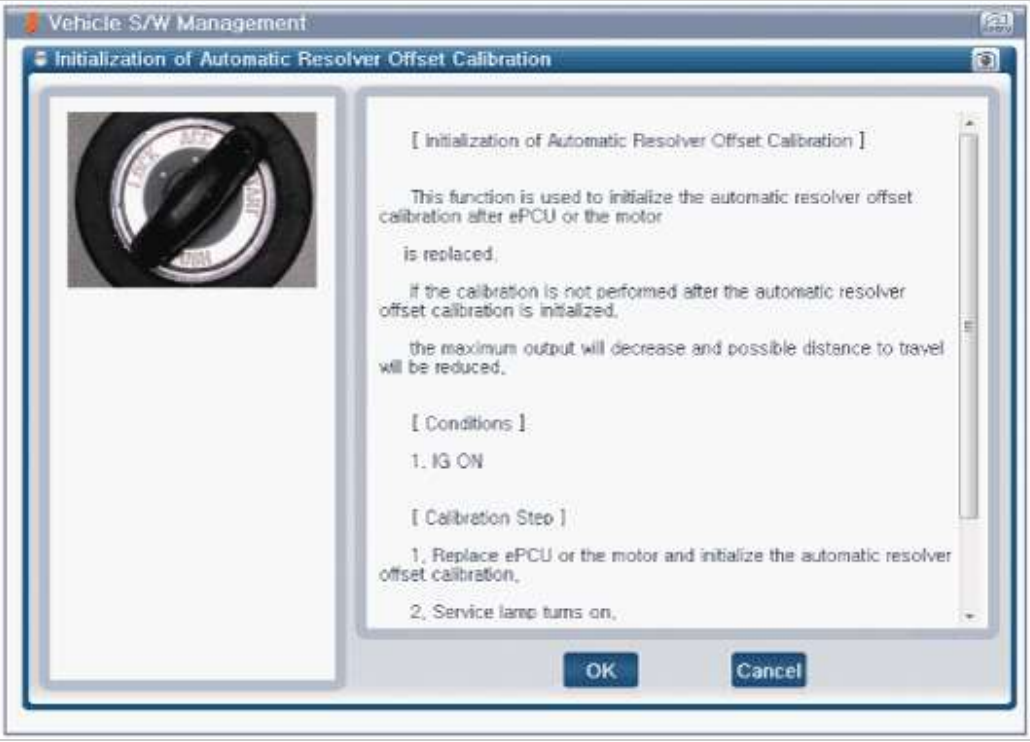


2. Install the motor assembly.
   (Refer to Motor System - "Motor Assembly")
3. Perform the initialization of automatic resolver offset calibration.
   (Refer to Motor Position & Temperature Sensor - "Initialization of Motor/HSG Resolver Calibration)

- Initialization of Motor/HSG Resolver Calibration

1. Turn ignition switch "OFF" and connect the GDS to the Data Link Connector.
2. P range & Turn ignition switch "ON" (Power button LED "Red"), Select "Vehicle S/W Management"
3. Perform the "Motor/HSG Resolver Calibration".


Vehicle S/W Management
ID Register
System Identification
Read VIN
Write VIN
Data Treatment
Initialization of Automatic Resolver Offset Calibration
Inspection / Test
Electric Water Pump Control


Vehicle S/W Management
Initialization of Automatic Resolver Offset Calibration
[Initialization of Automatic Resolver Offset Calibration]
This function is used to initialize the automatic resolver offset calibration after ePCU or the motor
is replaced.
If the calibration is not performed after the automatic resolver offset calibration is initialized,
the maximum output will decrease and possible distance to travel will be reduced.
[Conditions]
1. IG ON
[Calibration Step]
1. Replace ePCU or the motor and initialize the automatic resolver offset calibration.
2. Service lamp turns on.
OK
Cancel