

**2013-14 TRANSMISSION**

**Dual Clutch Transmission Control System - Veloster**

**DESCRIPTION AND OPERATION**

**DESCRIPTION**

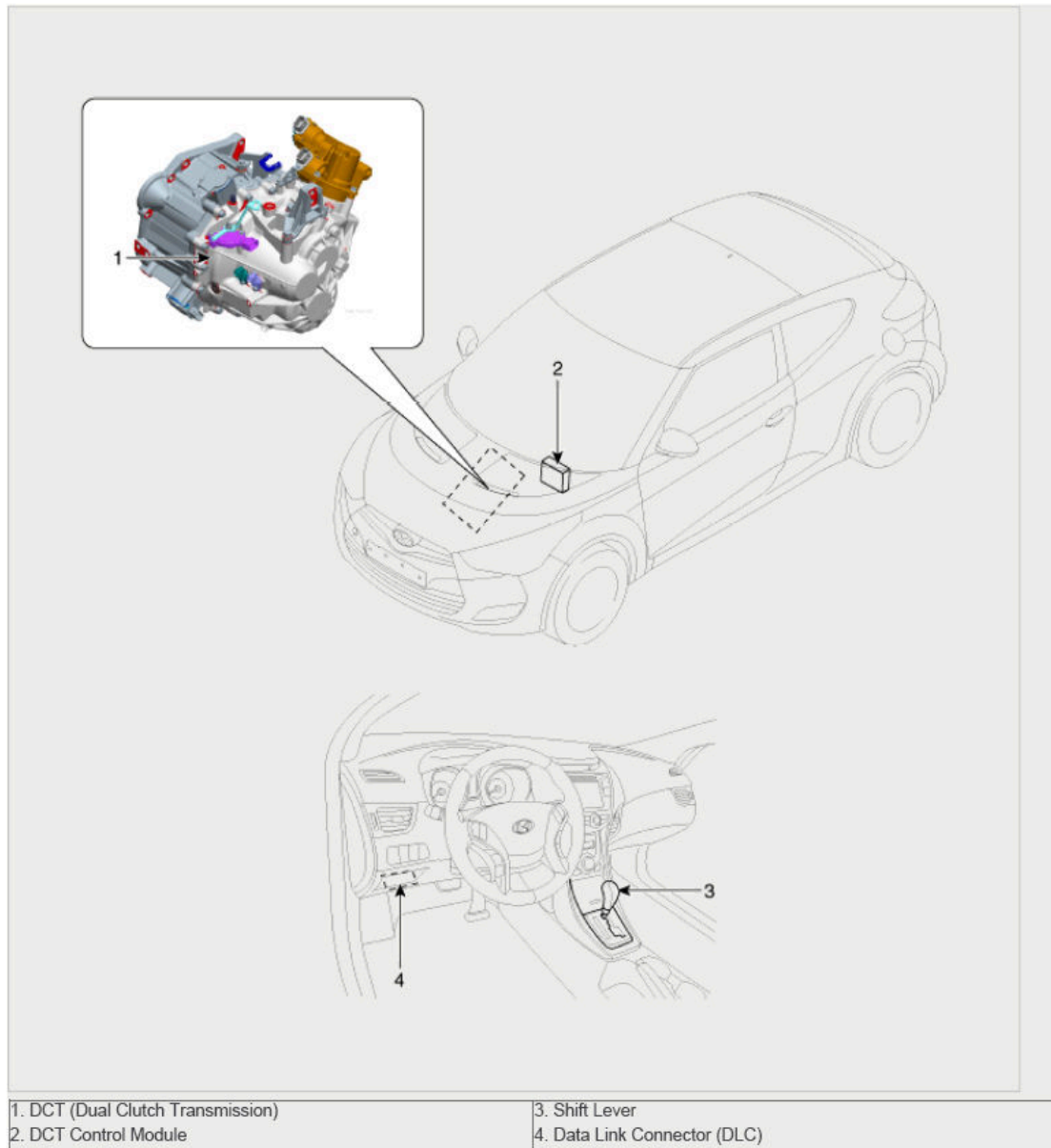
The Dual Clutch Transmission (DCT) control system measures required data to identify the state of the control target and computes the appropriate compensation value if adjustment is necessary. The actuator is controlled according to the computed compensation value to obtain desired output.

If transmission or driving-performance-related failure is detected, first perform self-diagnosis and basic transmission inspection (oil check).

Then use the diagnostic tool to inspect the transmission control system components.

**COMPONENTS AND COMPONENTS LOCATION**

**COMPONENT LOCATION**



**Fig. 1: Identifying Dual Clutch Transmission, Control Module, Shift Lever And Data Link Connector**

**Courtesy of HYUNDAI MOTOR AMERICA**

## **DCT CONTROL MODULE (TCM)**

### **DESCRIPTION AND OPERATION**

#### **Description**

The Transmission Control Module (TCM) is like the brain for the DCT. It receives information from various sensors for a wide range of transmission controls to provide an optimal driving environment for the driver. The TCM is programmed for optimal operation in all driving conditions. If the TCM

malfunctions, store the failure information in memory and provide the error information to a mechanic for fast and accurate repair.

## REPAIR PROCEDURES

### Inspection

#### TCM Inspection Procedure

1. Inspecting TCM ground circuit: Measure the resistance between the TCM and chassis ground.

(Check the terminal connected to the chassis ground while using the back of the harness connector as the base point for TCM.)

**Normal reading (resistance):** Below 1ohms

2. Inspecting the TCM connector: Disconnect the TCM connector and visually inspect to see whether there is a bend on the ground terminal of the harness connector. Also visually check the connection pressure.
3. If no problem is found during inspection in step 1 and step 2, then the problem is with the TCM itself. In this case, replace the TCM and inspect the vehicle again.
4. Re-inspecting TCM: Install the TCM that was determined to have malfunctioned from step 3 in another vehicle. Reset the error code and then check the operation in that vehicle. If the vehicle operates without any problems, then inspect the first vehicle with the initial problem again.

### Replacement

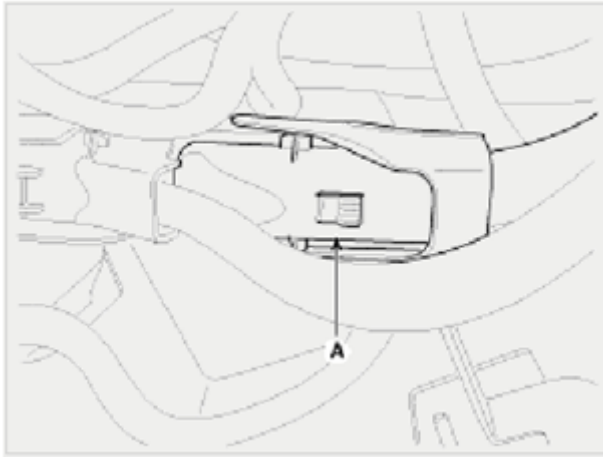
1. Turn off the ignition switch and then disconnect the battery (-) cable.
2. Remove the lower cover on the crash pad.

(Refer to the **CRASH PAD** .

3. Disconnect the TCM connector (A).
4. Remove the mounting bolt and nut. Then remove the TCM (B).

#### TCM mounting bolt/nut:

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



**Fig. 2: Identifying TCM Connector**  
Courtesy of HYUNDAI MOTOR AMERICA

5. Installation is the reverse of removal.

## **CLUTCH ACTUATOR MOTOR 1 (ODD GEAR)**

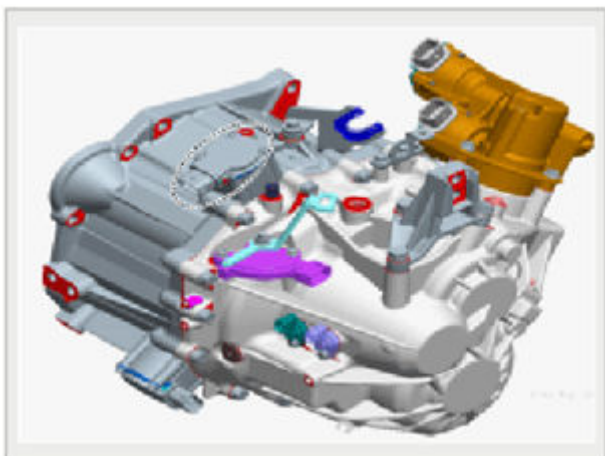
### **DESCRIPTION AND OPERATION**

#### **Description**

The clutch actuator motor is mounted on the DCT.

The clutch actuator motor comprises an actuator motor that controls the odd clutch and an actuator motor that controls the even clutch.

The odd actuator motor receives signals from the TCM and controls the odd clutch. The even actuator motor receives signals from the TCM and controls the even clutch.



**Fig. 3: Identifying DCT And Clutch Actuator Motor**  
Courtesy of HYUNDAI MOTOR AMERICA

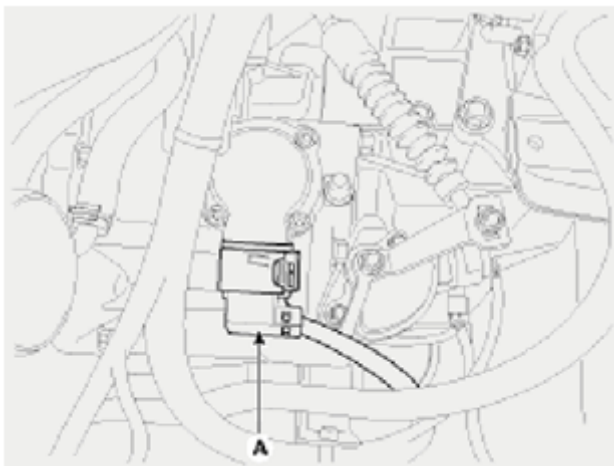
**REPAIR PROCEDURES**

**Inspection**

1. Turn off the ignition switch.
2. Disconnect the clutch motor connector.
3. Measure the resistance on the clutch motor terminal.
4. Refer to the specifications and check that the measured resistance is as specified.

**Removal**

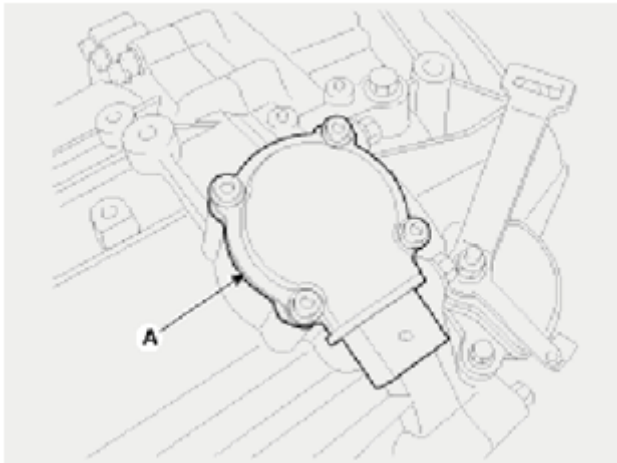
1. Remove the following parts first:
  - A. Air cleaner assembly and air duct (Refer to **AIR CLEANER** .
  - B. Battery and tray (Refer to the **CHARGING SYSTEM**
  - C. ECM (Refer to the **ENGINE CONTROL MODULE (ECM)**)
2. Disconnect the clutch actuator motor connector (A).



**Fig. 4: Identifying Clutch Actuator Motor Connector**  
Courtesy of HYUNDAI MOTOR AMERICA

3. Loosen the mounting screw, and then remove the clutch actuator motor (A).

**Tightening Torque:** 4.4 ~ 5.4 N.m (0.45 ~ 0.55 kgf.m, 3.3 ~ 4.0 lb-ft)



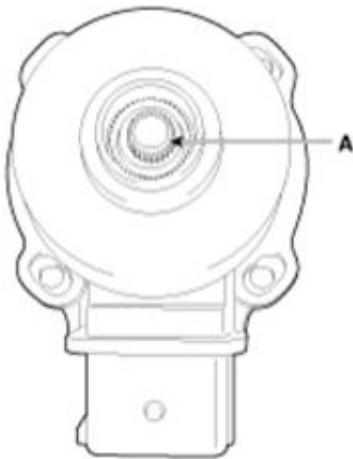
**Fig. 5: Identifying Clutch Actuator Motor Screw**  
Courtesy of HYUNDAI MOTOR AMERICA

**Installation**

1. Installation is the reverse of removal.

**NOTE: Clutch actuator spline (A) with grease before installation.**

Specified grease [CSG-101M (0.1ml)]



**Fig. 6: Identifying Clutch Actuator Spline**  
Courtesy of HYUNDAI MOTOR AMERICA

**CLUTCH ACTUATOR MOTOR 2 (EVEN GEAR)**

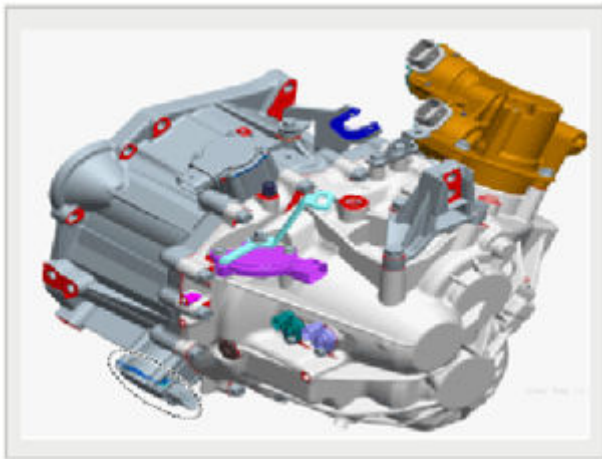
**DESCRIPTION AND OPERATION**

**Description**

The clutch actuator motor is mounted on the DCT.

The clutch actuator motor comprises an actuator motor that controls the odd clutch and an actuator motor that controls the even clutch.

The odd actuator motor receives signals from the TCM and controls the odd clutch. The even actuator motor receives signals from the TCM and controls the even clutch.



**Fig. 7: Identifying Clutch Actuator Motor And DCT**  
Courtesy of HYUNDAI MOTOR AMERICA

## REPAIR PROCEDURES

### Inspection

1. Turn off the ignition switch.
2. Disconnect the clutch motor connector.
3. Measure the resistance on the clutch motor terminal.
4. Refer to the specifications and check that the measured resistance is as specified.

### Removal

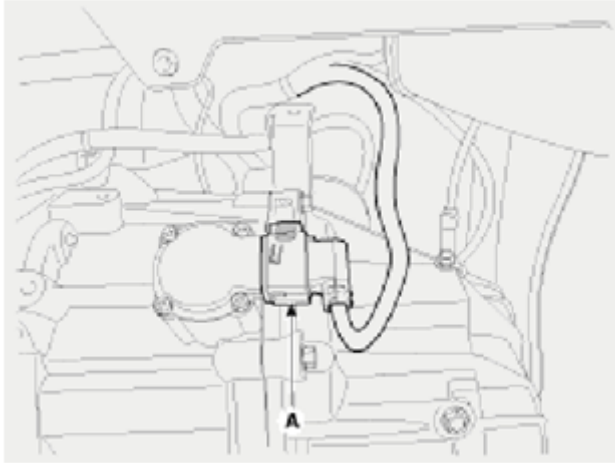
1. Remove the following parts first:
  - A. Air cleaner assembly and air duct  
(Refer to AIR CLEANER .
  - B. Battery and tray

(Refer to the **CHARGING SYSTEM**)

C. ECM

(Refer to **ENGINE CONTROL MODULE (ECM)**)

2. Disconnect the clutch actuator motor connector (A).

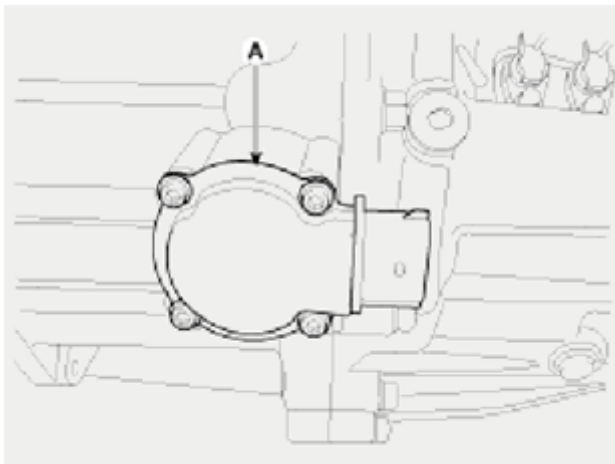


**Fig. 8: Identifying Clutch Actuator Motor Connector**  
Courtesy of HYUNDAI MOTOR AMERICA

3. Loosen the mounting screw, and then remove the clutch actuator motor (A).

**Tightening Torque:**

4.4 ~ 5.4 N.m (0.45 ~ 0.55 kgf.m, 3.3 ~ 4.0 lb-ft)



**Fig. 9: Identifying Clutch Actuator Motor Mounting Screw**  
Courtesy of HYUNDAI MOTOR AMERICA

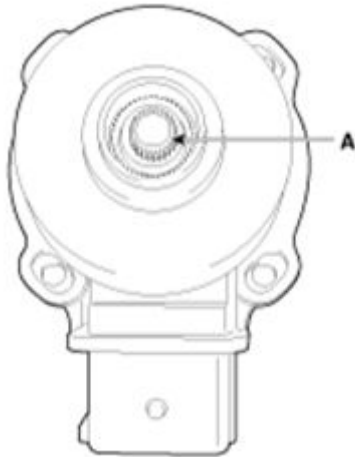


**Installation**

1. Installation is the reverse of removal.

**NOTE: Clutch actuator spline (A) with grease before installation.**

Specified grease [CSG-101M (0.1ml)]



**Fig. 10: Identifying Clutch Actuator Spline**  
Courtesy of HYUNDAI MOTOR AMERICA

**GEAR ACTUATOR MOTOR**

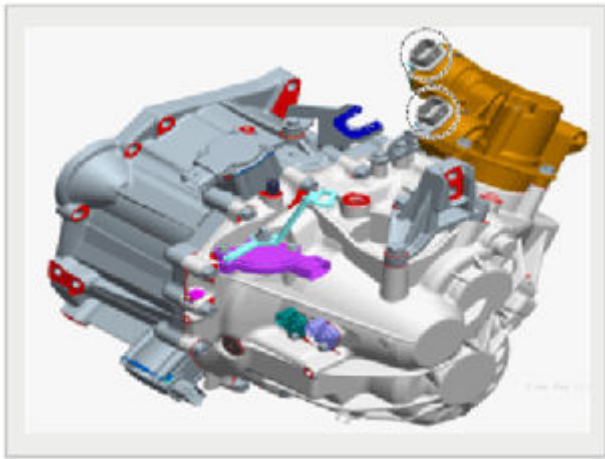
**DESCRIPTION AND OPERATION**

**Description**

The gear actuator motor is mounted on the complete shaft.

The gear actuator motor comprises the shift motor and select motor.

The gear actuator shift motor and select motor receive signals from the TCM to control the gear.



**Fig. 11: Identifying Gear Actuator Shift Motor**  
**Courtesy of HYUNDAI MOTOR AMERICA**

## REPAIR PROCEDURES

### Inspection

1. Turn off the ignition switch.
2. Disconnect the gear actuator motor connector.
3. Measure the resistance on the gear actuator motor terminal.
4. Refer to the specifications and check that the measured resistance is as specified.

### Removal

1. Remove the gear actuator assembly.

(Refer to "GEAR ACTUATOR .

## INPUT SPEED SENSOR 1

### DESCRIPTION AND OPERATION

#### Description

The input shaft speed sensor is important in that it detects the input shaft RPM and sends this information to the TCM. It provides important input information for electric control.

The information is needed in all operations, including feedback control, gear shift control and failure detection of other sensors.