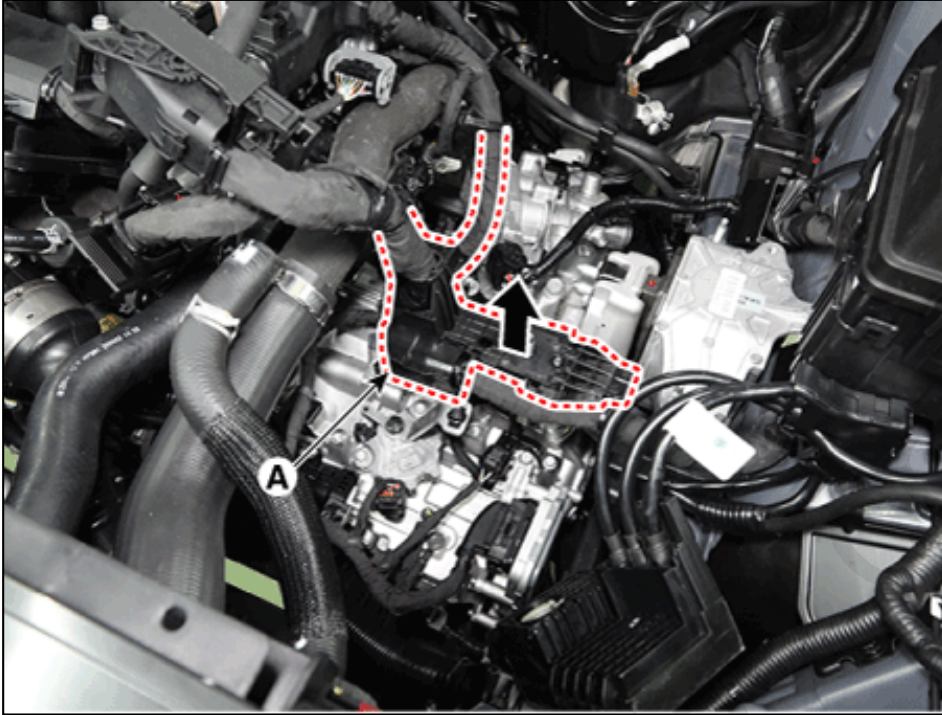


Removal

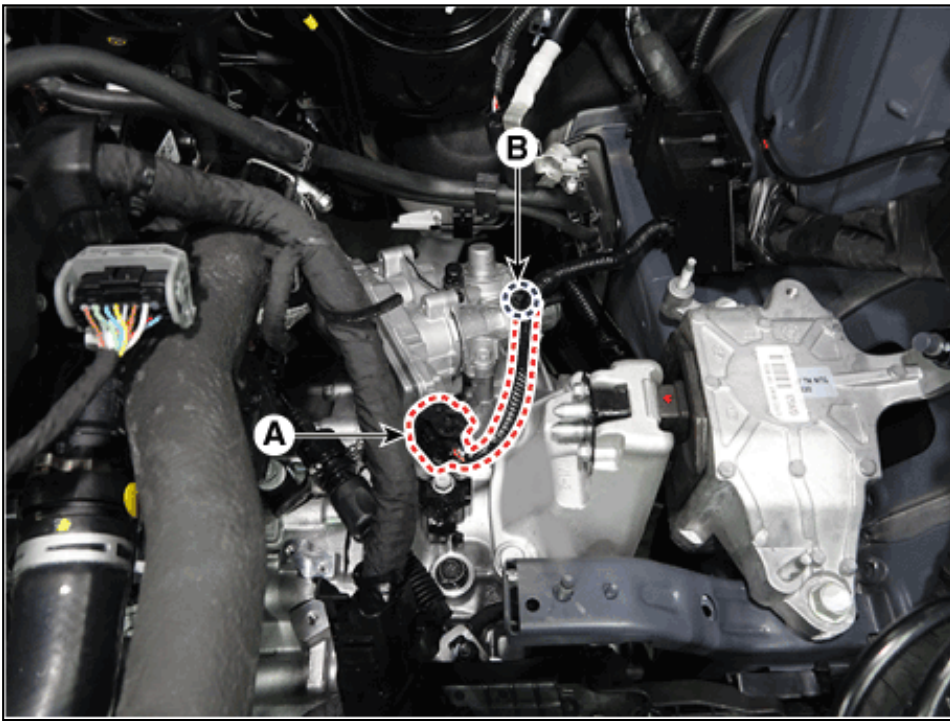
1. Turn ignition switch OFF and disconnect the negative (-) battery cable.
2. Remove the air cleaner assembly and air duct.
(Refer to Engine Mechanical System - "Air cleaner")
3. Remove the ECM.
(Refer to Engine Control / Fuel System - "Engine Control Module (ECM)")
4. Remove the battery and battery tray.
(Refer to Engine Electrical System - "Battery")
5. Disconnect the wiring bracket (A).



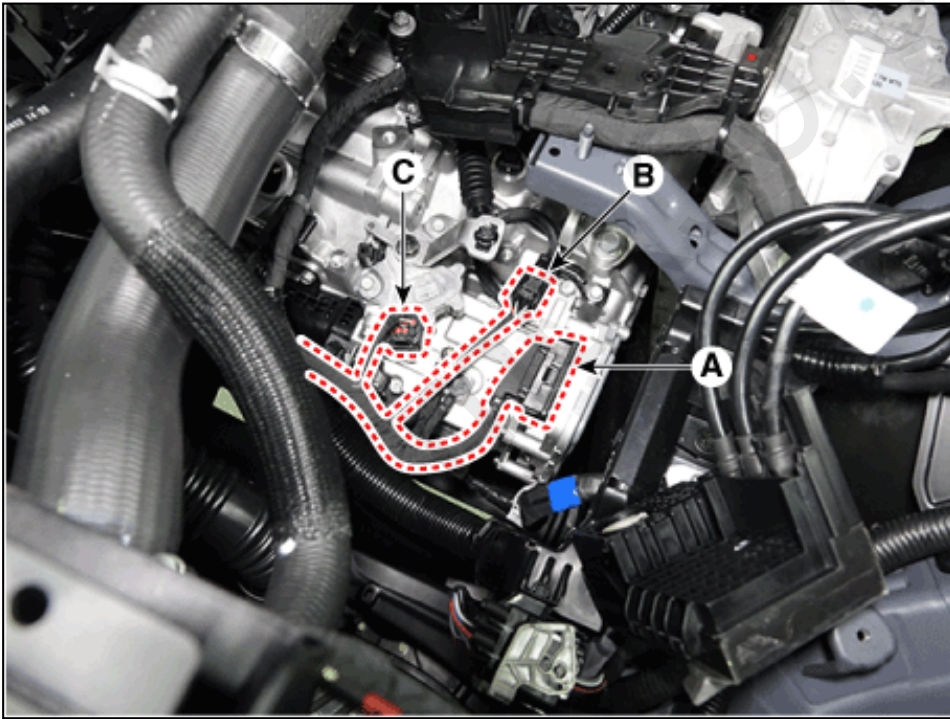
6. Disconnect the gear actuator connector (A).
7. Loosen the gear actuator wiring bracket mounting bolts (B).

Tightening torque :

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



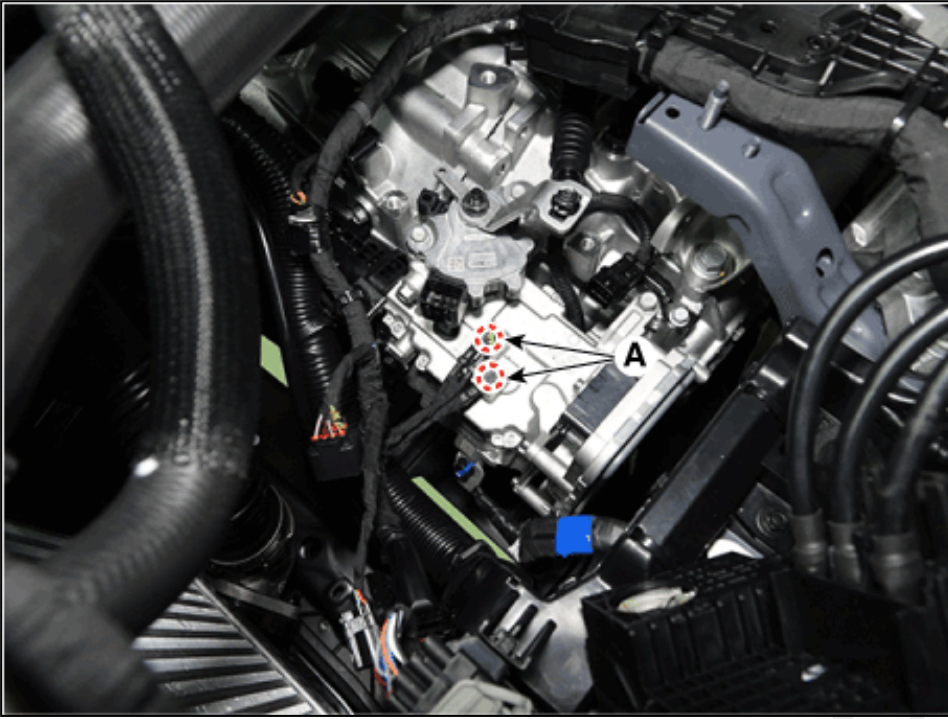
8. Disconnect the connectors in the illustration below
- A.TCM connector
 - B.Input speed sensor
 - C.Inhibitor switch connector



9. Loosen the ground mounting bolt (A).

Tightening torque :

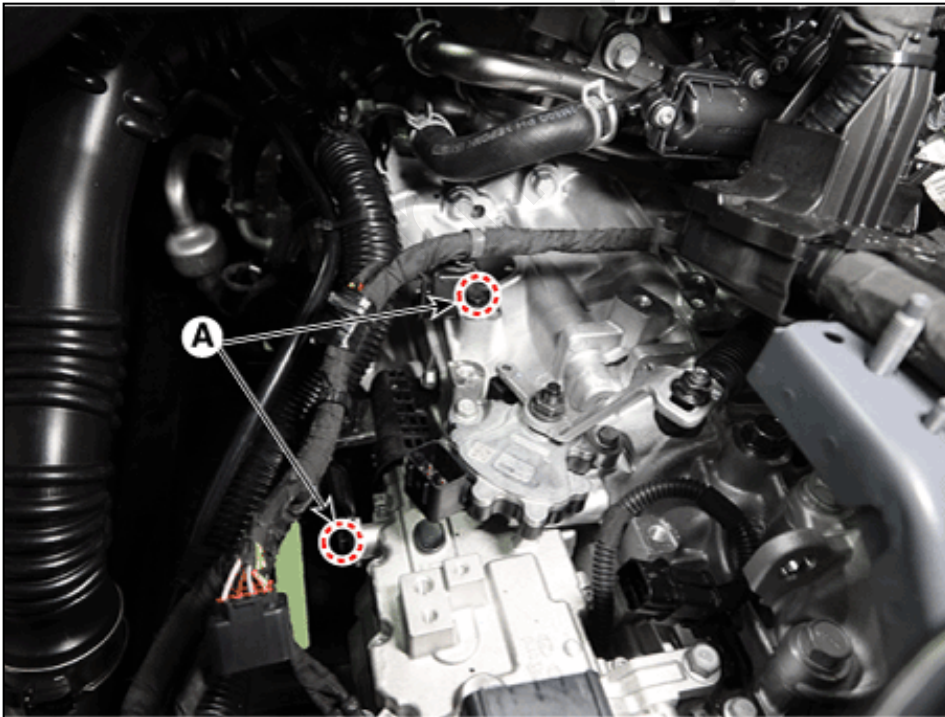
9.8 - 11.8 N.m (1.0 - 1.2 kgf.m, 7.2 - 8.7 lb-ft)



10. Loosen the mounting bolts (A) and then remove the wiring bracket.

Tightening torque :

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

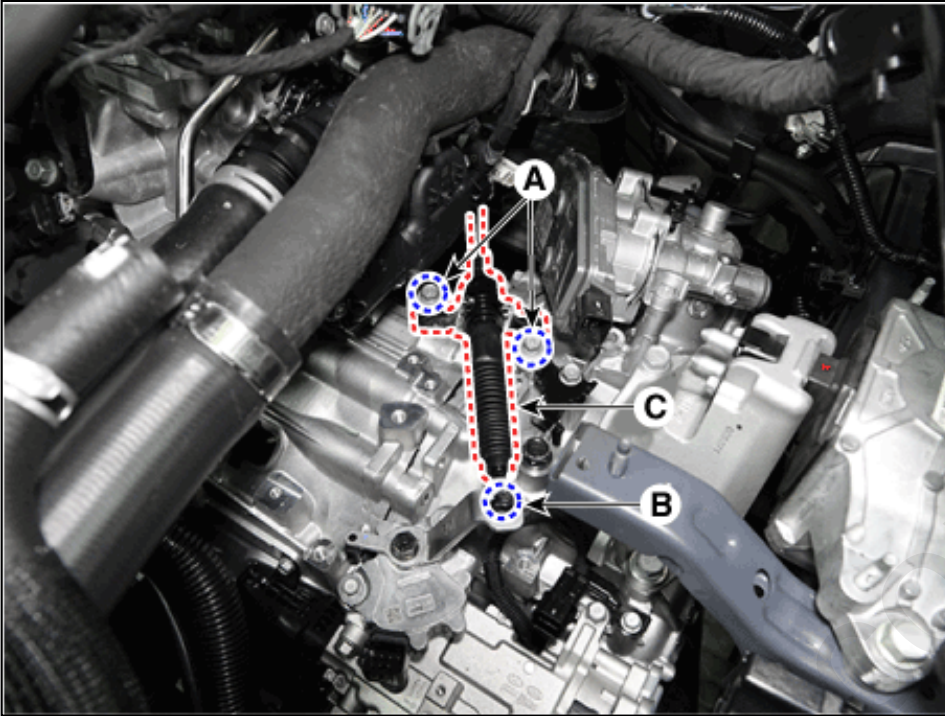


11. Remove the shift cable and cable bracket (C) after loosening the bolt (A) and nuts (B).

Tightening torque :

(A) : 19.6 - 26.5 N.m (2.0 - 2.7 kgf.m, 14.5 - 19.5 lb-ft)

(B) : 9.8 - 13.7 N.m (1.0 - 1.4 kgf.m, 7.2 - 10.1 lb-ft)

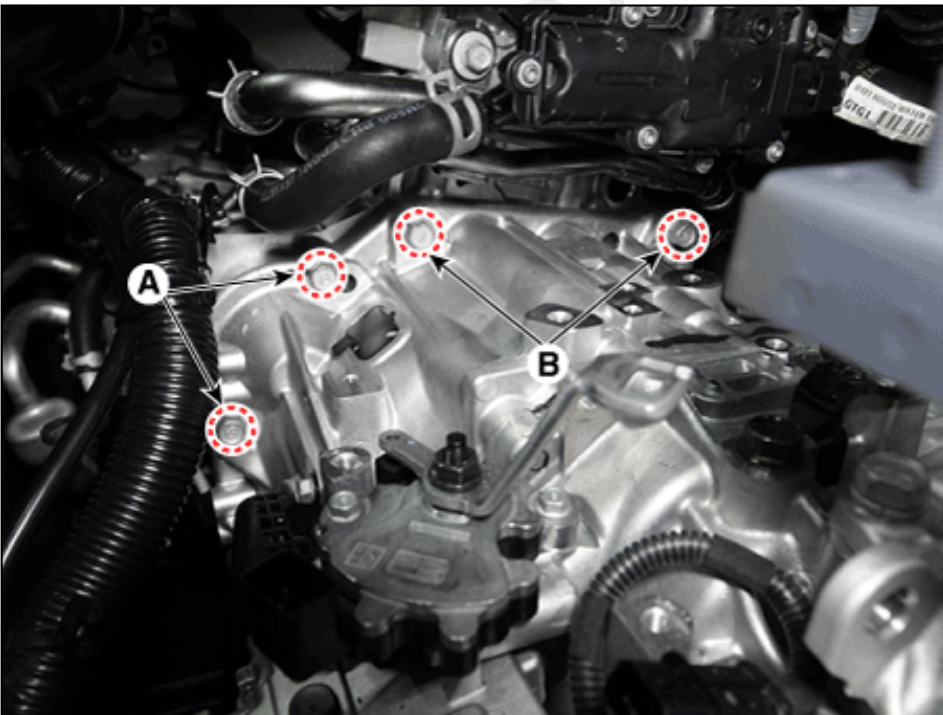


12. Loosen the starter mounting bolts (A) and transmission upper mounting bolts (B).

Tightening torque :

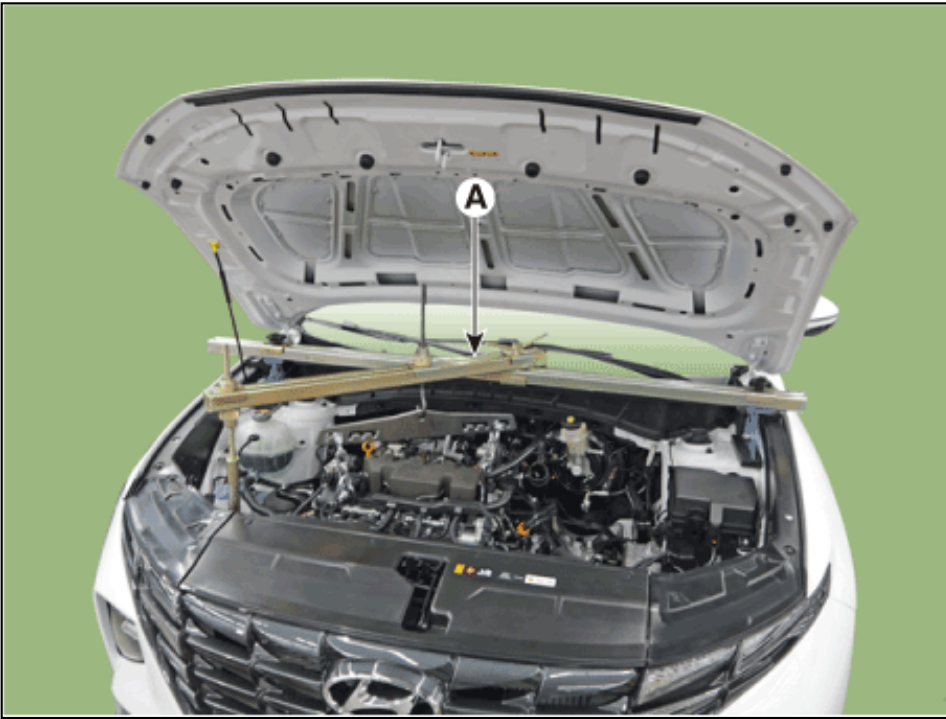
(A) 49.0 - 63.7 N.m (5.0 - 6.5 kgf.m, 36.2 - 47.0 lb-ft)

(B) 42.2 - 53.9 N.m (4.3 - 5.5 kgf.m, 31.1 - 39.8 lb-ft)



13. Assemble the engine support fixture use a (Beam SST No.: 09200 - 3N000, Adapter SST No.: 09200-4X000, Engine support fixture (supporter) SST No.: 09200-2S200, Engine support fixture (front) SST No.: 09200-L1200.

14. Using the engine support fixture (A), hold the engine and transaxle assembly safely.



15. Remove the front wheel guard.
(Refer to Body (Interior and Exterior) - "Front Wheel Guard")
16. Loosen the transmission bracket support mounting bolts (A).

Tightening torque :

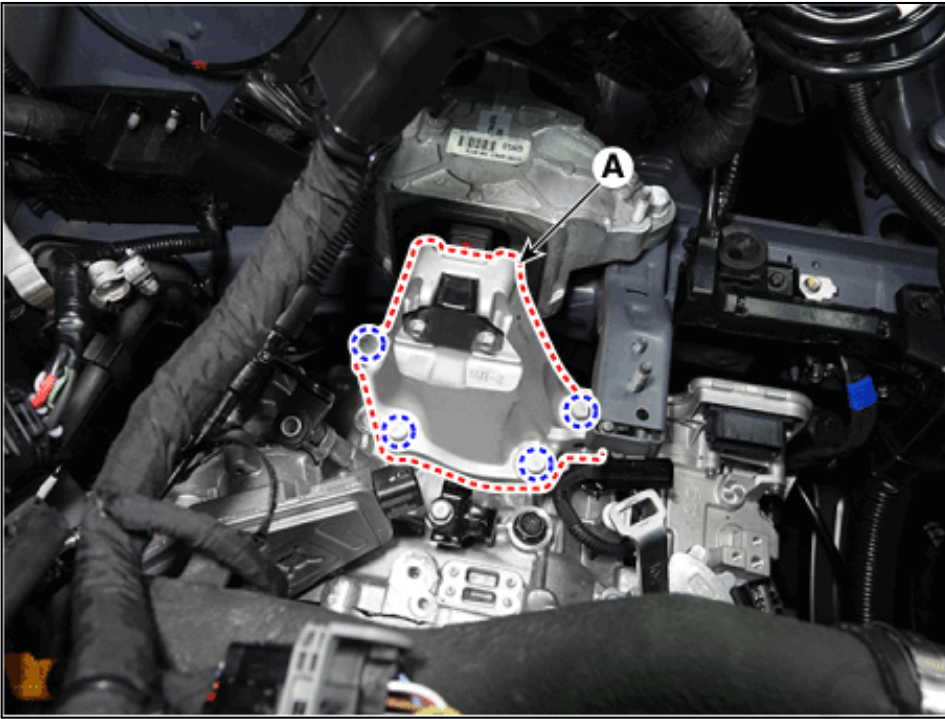
107.9 - 127.5 N.m (11.0 - 13.0 kgf.m, 79.6 - 94.0 lb-ft)



17. Loosen the bolts and then removing the transmission bracket (A).

Tightening torque :

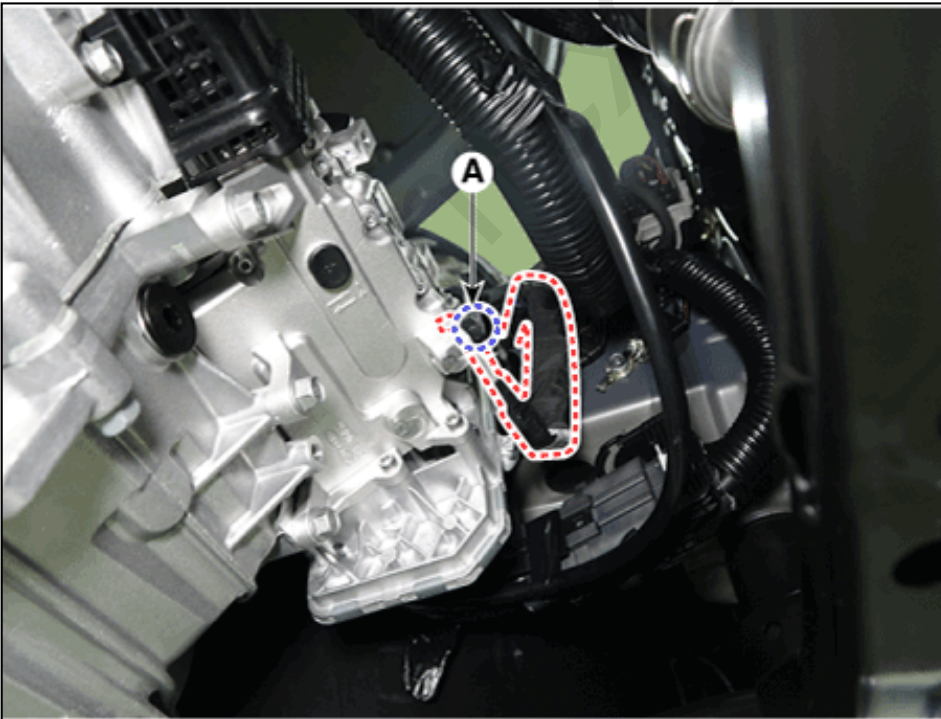
58.8 - 78.5 N.m (6.0 - 8.0 kgf.m, 43.4 - 57.9 lb-ft)



18. Loosen the ground mounting bolt (A).

Tightening torque :

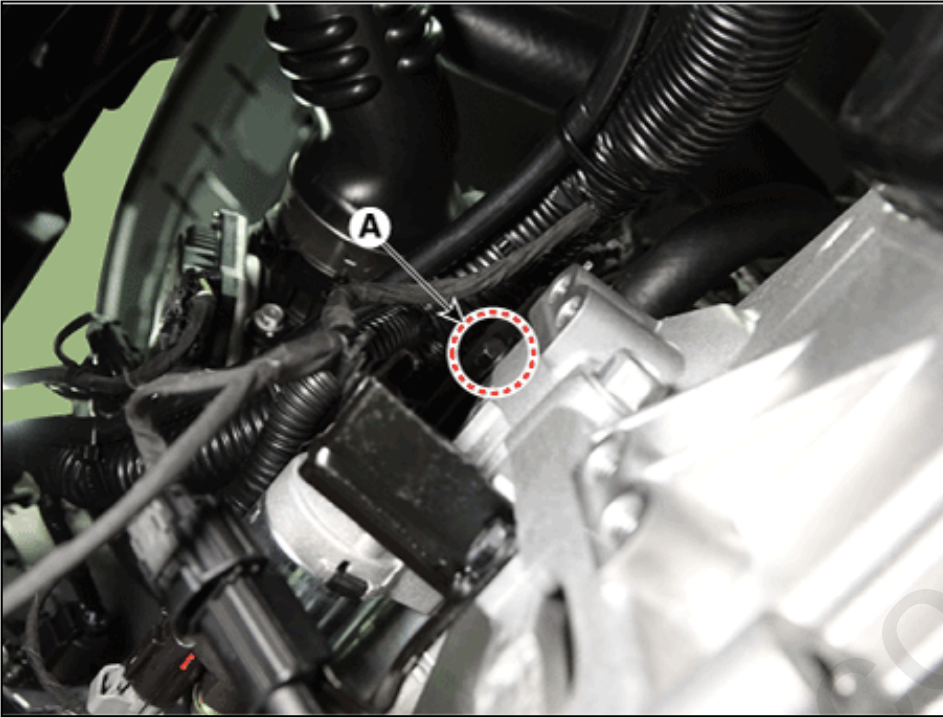
9.8 - 11.8 N.m (1.0 - 1.2 kgf.m, 7.2 - 8.7 lb-ft)



19. Loosen the mounting bolts (A) and then remove the wiring bracket.

Tightening torque :

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



20. Remove the front sub frame.

(Refer to Suspension System - "Front Sub Frame")

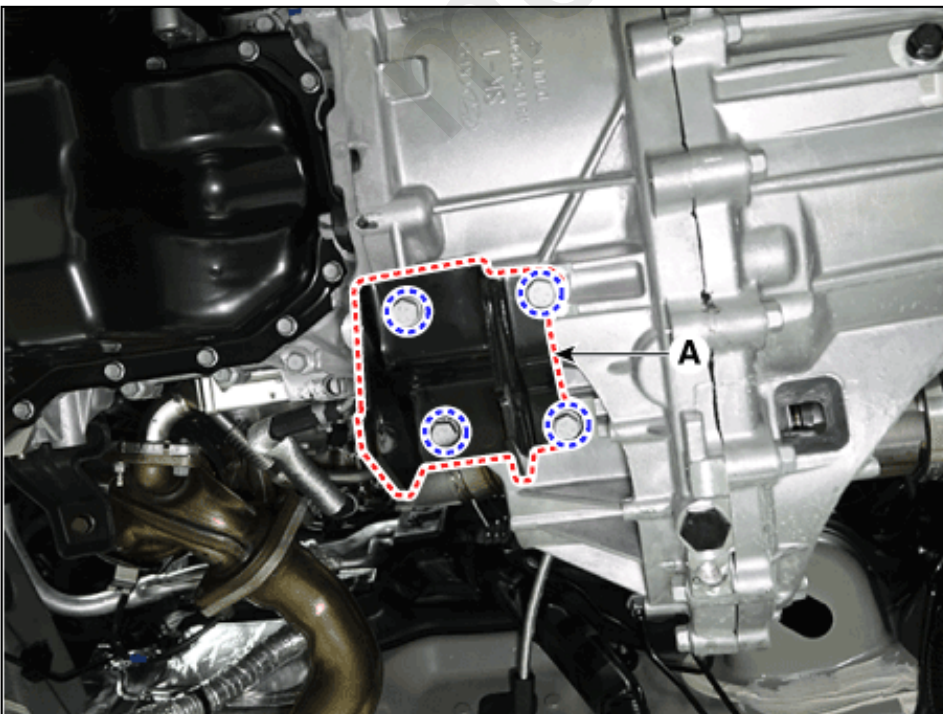
21. Remove the driveshaft assembly.

(Refer to Driveshaft and Axle - "Front Driveshaft")

22. Loosen the bolts and then removing the roll rod support bracket (A).

Tightening torque :

49.0 - 68.6 N.m (5.0 - 7.0 kgf.m, 36.2 - 50.6 lb-ft)

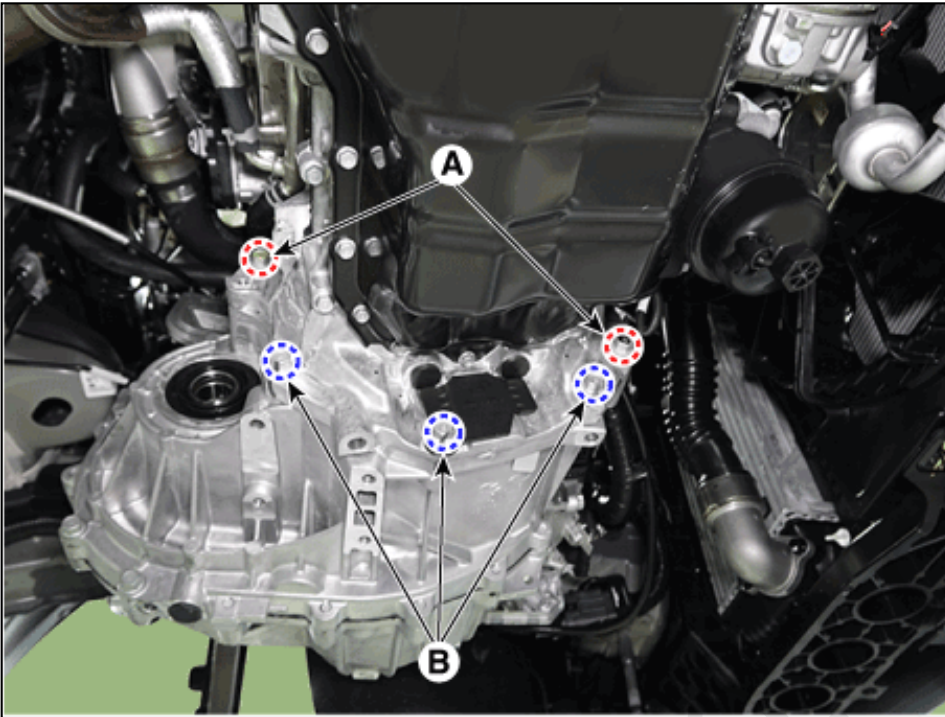


23. Support the transmission safely by using the jack.
24. Loosen the transmission lower mounting bolts (A, B).

Tightening torque :

(A) : 42.2 - 53.9 N.m (4.3 - 5.5 kgf.m, 31.1 - 39.8 lb-ft)

(B) : 42.2 - 48.1 N.m (4.3 - 4.9 kgf.m, 31.1 - 35.4 lb-ft)



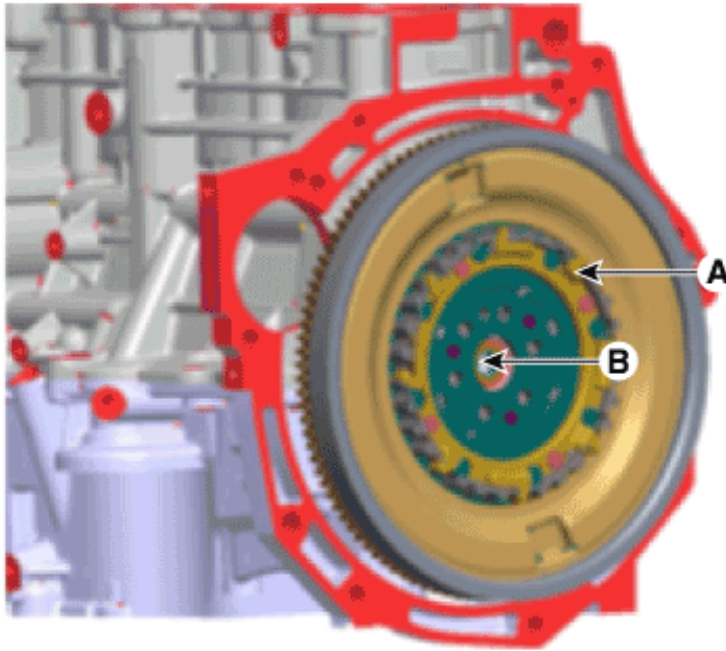
25. After separating the transmission from the engine, remove the transmission by lowering the jack slowly.

- ☐
- Be careful not to damage other nearby systems or parts when removing the transmission assembly.

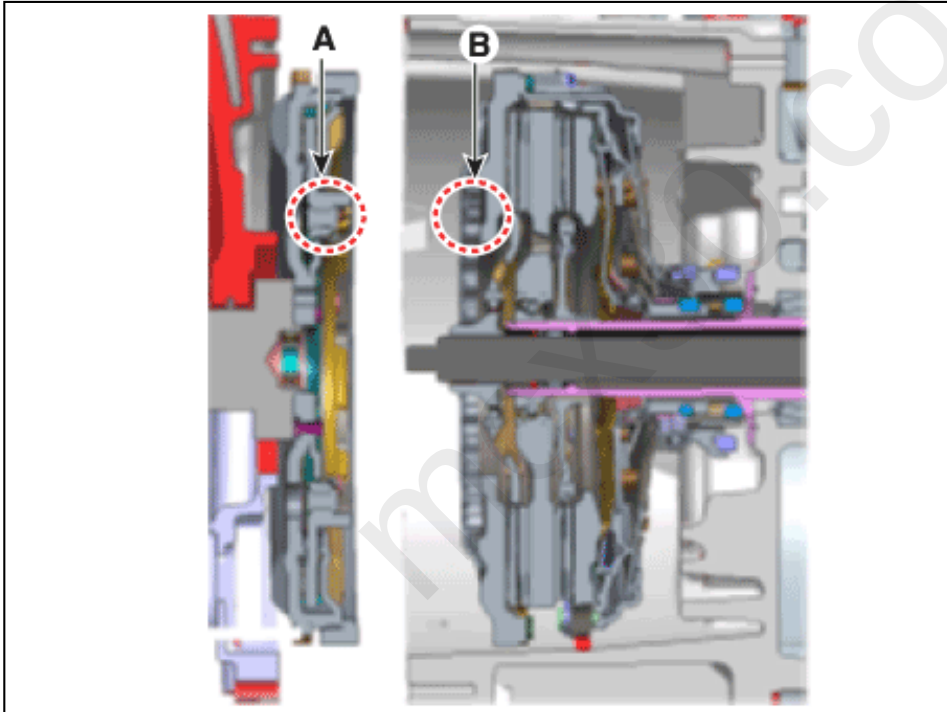
Installation

1. To install, reverse the removal procedure.

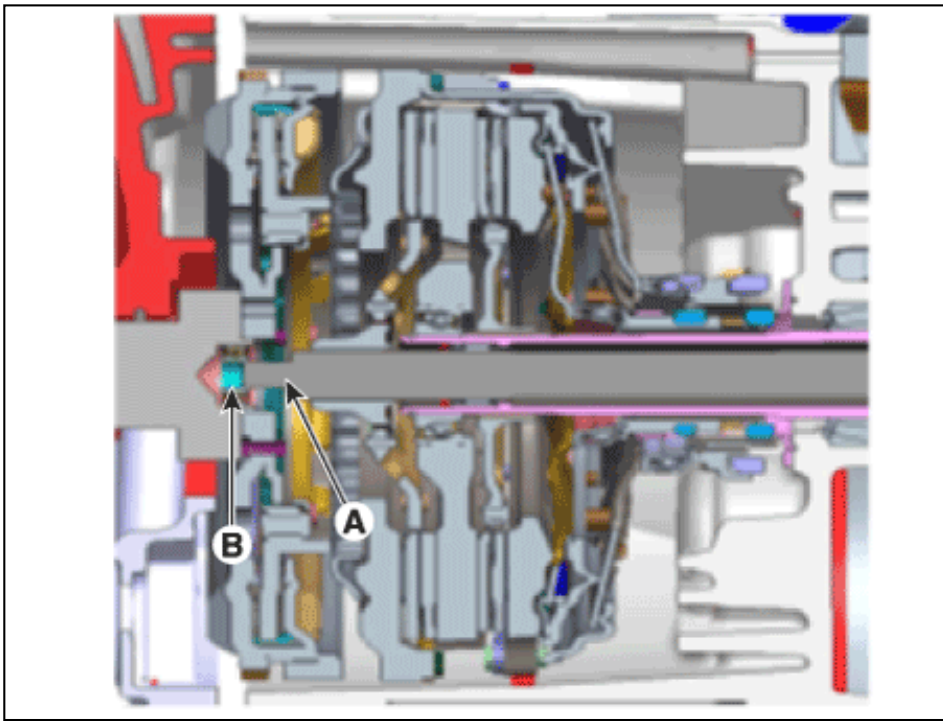
- ☐
- Matters that require attention when installing the dual clutch transmission (DCT) to engine
- 1)Check the pilot bearing (B) and external damper (A) on the side of engine for any dents, damages and deformations before installing the DCT.



2) Align the external damper spline (A) with the dual clutch spline (B).



3) Assemble the DCT (A) to the knock bushing on the engine side (B) and then insert the input shaft to the engine pilot bearing.



- 4) After adhering the DCT with engine by pushing the DCT, tighten the mounting bolts after checking that there is no gap (less than 2mm) between the clutch housing and the engine block.
(If the bolt is tightened while there is a gap, then the spline of external damper or clutch will be damaged or broken.)

Follow the separated each procedure as below according to reinstallation or replacing with a new dual clutch transmission.
In case of the reinstallation

1. If the differential oil seal is damaged and oil is leaking, replace the oil seal with a new one. When installing the new oil seal, use the special tool.

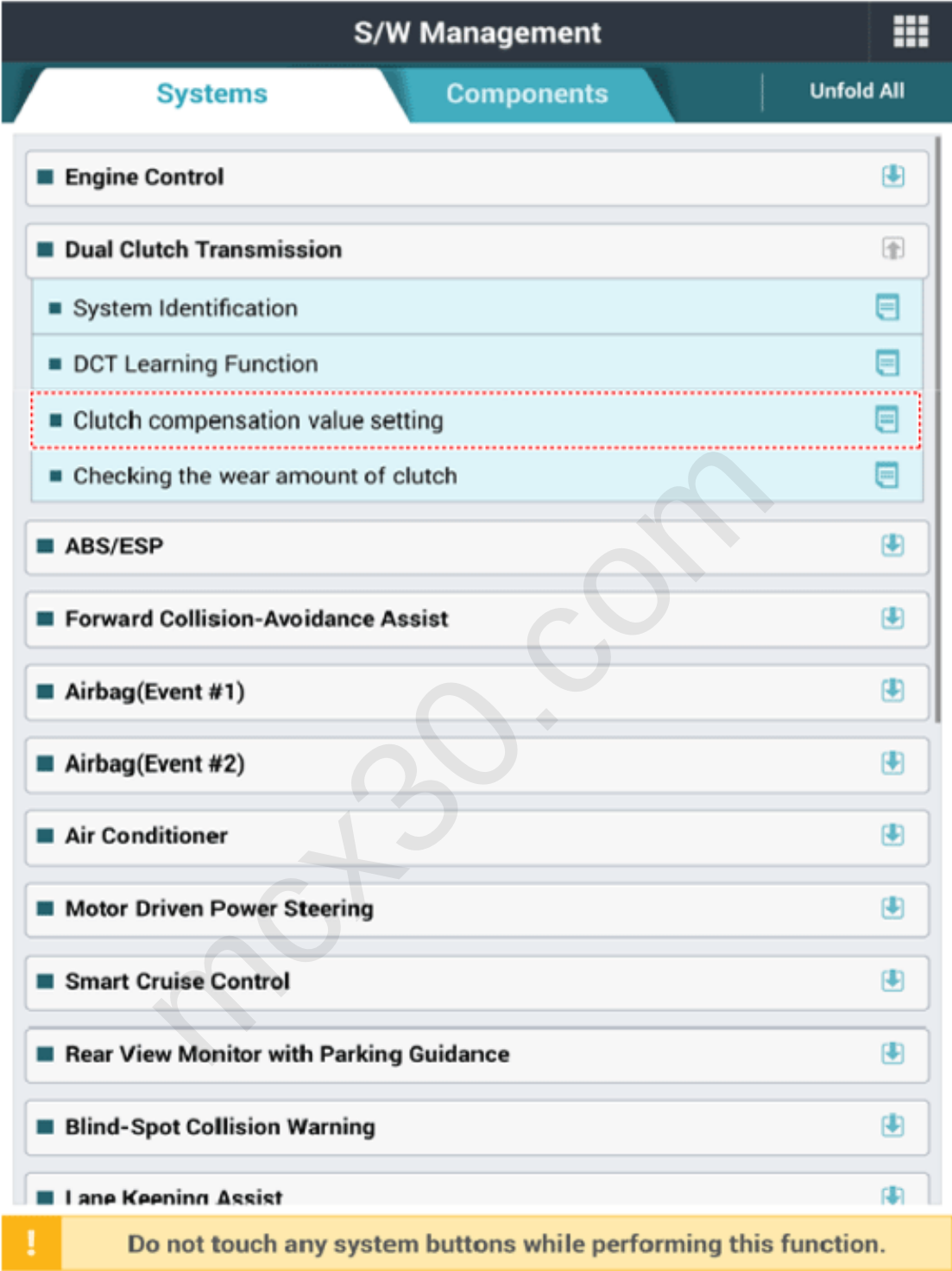
Item	Special service tool	
	Installer	Handle
transmission case side, clutch housing side oil seal	09453-3L240	09231-H1100
Driven gear oil seal (in case of the 4WD vehicle)	09473-D3500	09231-H1100

2. After installing the DCT, check the oil level after refilling the DCT with oil.
(Refer to DCT (Dual Clutch Transmission) System - "Transmission Gear Oil")
3. Clear the diagnostic trouble codes (DTC) using the diagnostic tool. Even though disconnecting the battery negative terminal, the DTCs will not be cleared. So, be sure to clear the DTCs using the diagnostic tool.

In case of the replacing with a new dual clutch transmission.

1. After replacing the new DCT, it need not oil refill & level check procedure because oil is already filled with specified quantity inside new DCT.
2. Clear the diagnostic trouble codes (DTC) using the diagnostic tool. Even though disconnecting the battery negative terminal, the DTCs will not be cleared. So, be sure to clear the DTCs using the diagnostic tool.

3. Perform clutch characteristics input procedure using the diagnostic tool. (One of two procedure must be performed.)
- 1)Clutch compensation value setting.



2)Clutch touch point learning.

S/W Management

Systems

Components

Unfold All

■ Engine Control

■ Dual Clutch Transmission

■ System Identification

■ DCT Learning Function

■ Clutch compensation value setting

■ Checking the wear amount of clutch

■ ABS/ESP

■ Forward Collision-Avoidance Assist

■ Airbag(Event #1)

■ Airbag(Event #2)

■ Air Conditioner

■ Motor Driven Power Steering

■ Smart Cruise Control

■ Rear View Monitor with Parking Guidance

■ Blind-Spot Collision Warning

■ Lane Keeping Assist

!

Do not touch any system buttons while performing this function.

General
Information

1. Check & Change intervals

Check & Replenishmen	Change		Capacity	Oil specification
	Normal Use	Severe Use		
60000 km / 4 years (40000 miles / 4 years)	No service required	120000 km (80000 miles)	1.6 - 1.7L (0.42 - 0.45 U.S. gal., 1.69 - 1.80 U.S. qt., 1.41 - 1.50 lmp qt)	API Service GL-4, SAE 70W • Recommended oil –SK : HK D DCTF TGO-10 –H.K.SHELL : SPIRAX S6 GHDE 70W DCTF –S-OIL : 7 DCTF HKM

☐

Severe usage is defined as

- Frequent driving on rough road (Bumpy road, gravel road, snow road, unpaved road. etc.)
- Frequent driving on mountain road, ascent/descent.
- Driving for patrol, taxi, commercial car or vehicle towing.
- Frequent driving under high speed (over 170km)
- More than 50% driving in heavy city traffic during hot weather above 32°C (90°F)
- driving in areas using salt or other corrosive materials or in very cold weather.
- Towing a trailer or using a camper on roof rack.
- Manual transmission oil should be changed any time.

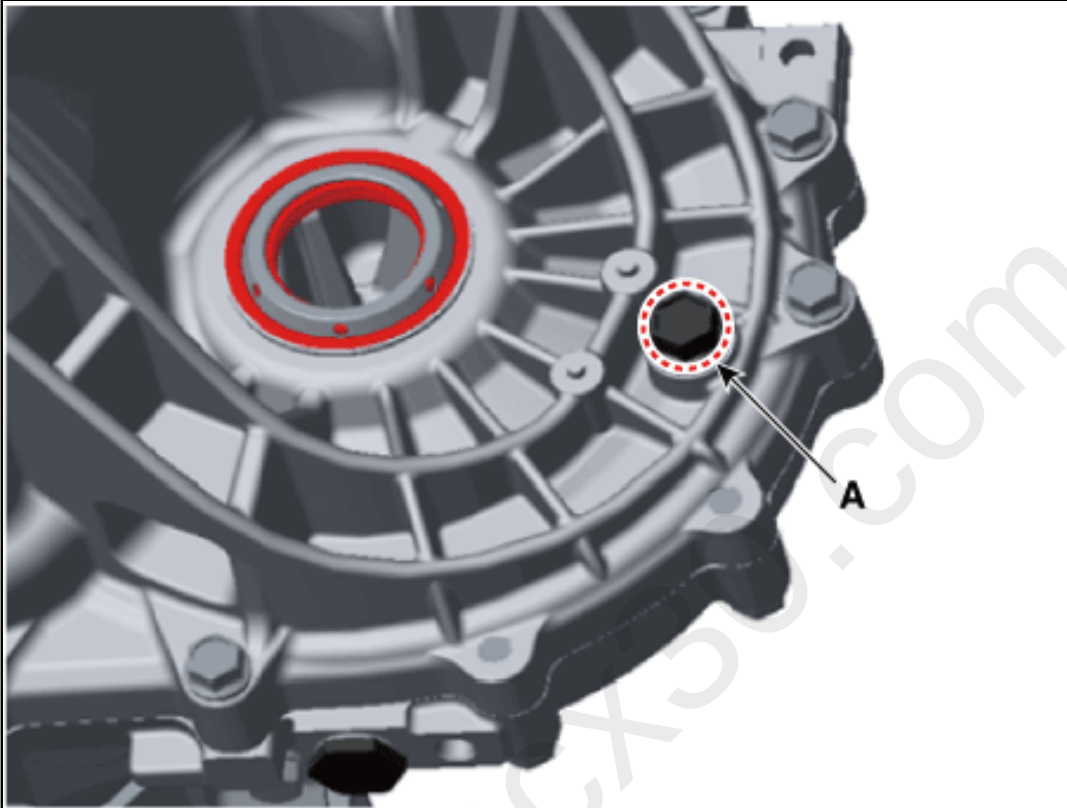
Manual transmission have been submerged in water.

Inspection



- In principle, the transmission oil is maintenance-free, and no exchange is required.
But it must be inspected and replenished every 4 years or 40,000 miles.

1. Uplift the vehicle with lift.
2. Remove the engine room under cover.
(Refer to Engine Mechanical System - "Engine Room Under Cover")
3. Loosen the oil filler plug (A).

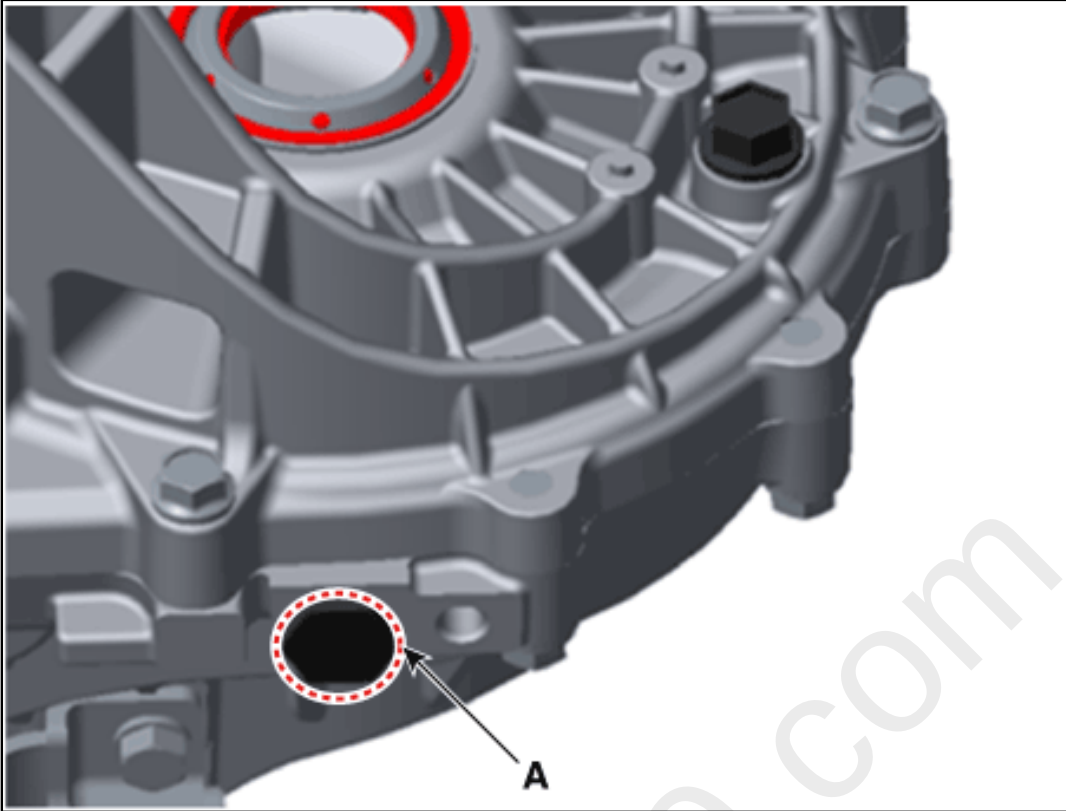


4. Check the oil level.



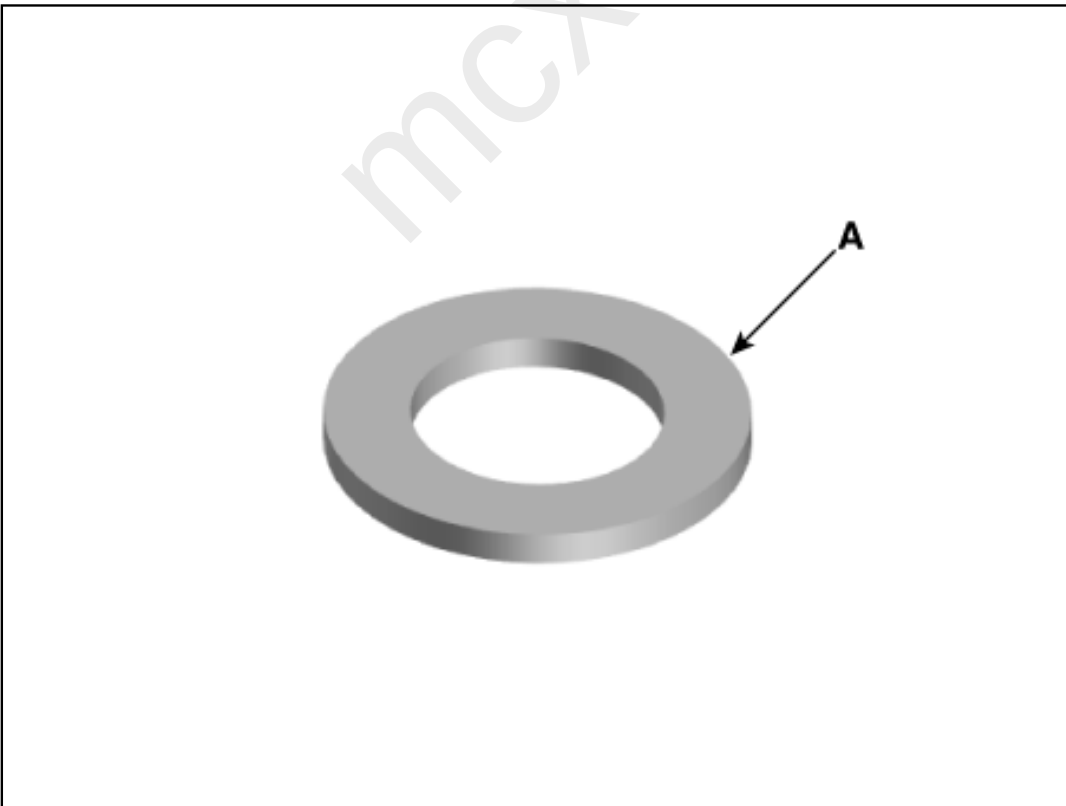
- For the accuracy, inspect the oil level after the oil is completely drained.
- Loosen the drain plug (A) and wait for over 10 minutes until the oil is drained enough.
- Install the drain plug (A) after drain the oil.
- After the inspection, inject the oil through the filler plug hole according to the specification.
(Specified fluid : 1.6 - 1.7L (0.42 - 0.45 U.S.gal., 1.69 - 1.80 U.S. qt., 1.41 - 1.50 Imp qt))

- While draining, some of the oil flows into the transmission part and the oil may be less than the specification by 0.1 - 0.15 L (0.03 - 0.04 U.S.gal., 0.10 - 0.16 U.S. qt., 0.09 - 0.13 Imp qt.) This is normal and additional oil injection is not required.



- The existing gasket (A) must be replaced with a new one. (Do not reuse it.)

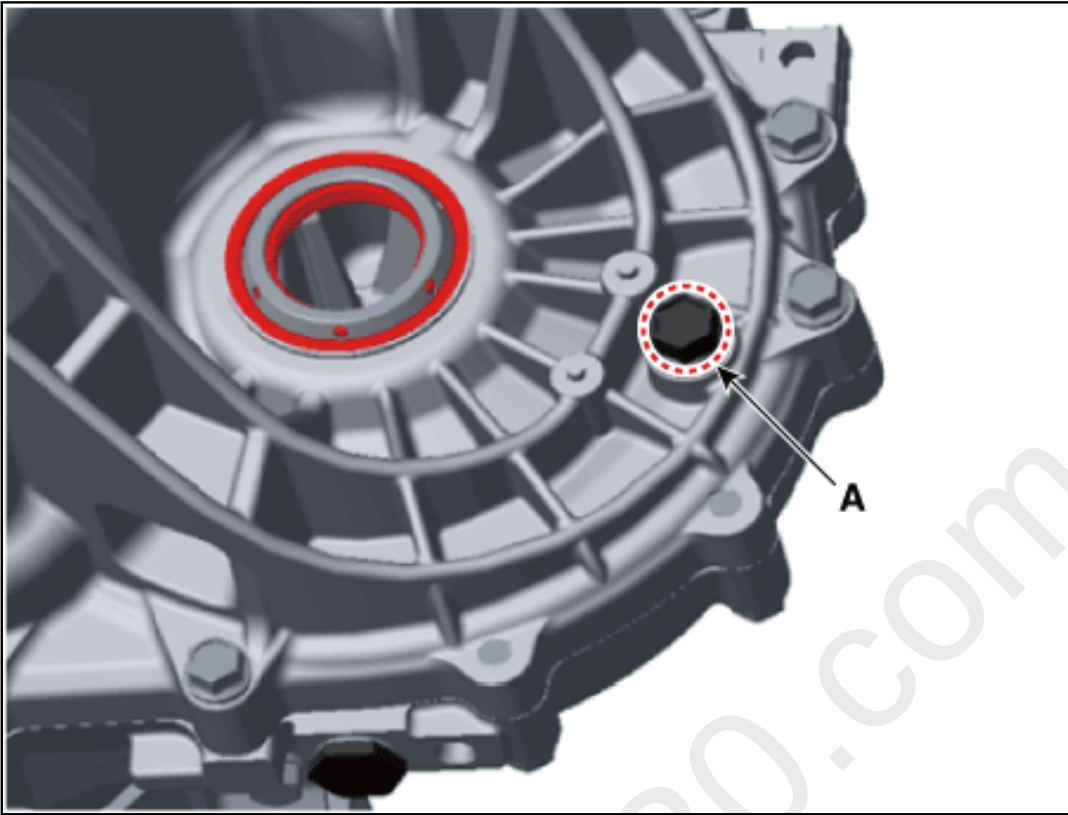
New gasket part no.: 45323-39000



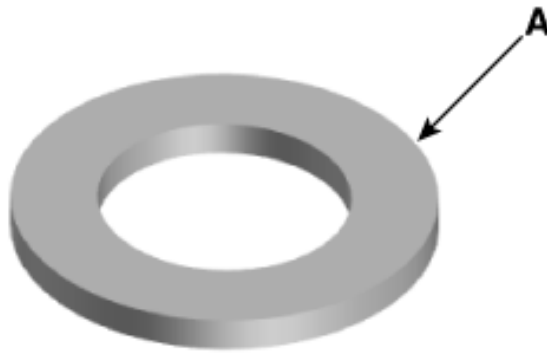
5. Install the filler plug (A) with new gasket.

Tightening torque :

58.9 - 78.5 N.m (6.0 - 8.0 kgf.m, 43.4 - 57.8 lb-ft)



- The existing gasket (A) must be replaced with a new one. (Do not reuse it.)



6. Install the engine room under cover.

(Refer to Engine Mechanical System - "Engine Room Under Cover")

Replacement



In principle, the Dual Clutch Transmission (DCT) oil is not changed under normal driving conditions. However, under harsh driving conditions, it must be changed every 80,000 miles.

Harsh driving conditions are as follows:

- Frequent driving on rough road (Bumpy road, gravel road, snow road, unpaved road. etc.)
 - Frequent driving on mountain road, ascent/descent.
 - Driving for patrol, taxi, commercial car or vehicle towing.
 - Frequent driving under high speed (over 170km)
 - More than 50% driving in heavy city traffic during hot weather above 32°C (90°F)
 - driving in areas using salt or other corrosive materials or in very cold weather.
 - Towing a trailer or using a camper on roof rack.
 - Manual transmission oil should be changed any time.
- Manual transmission have been submerged in water.

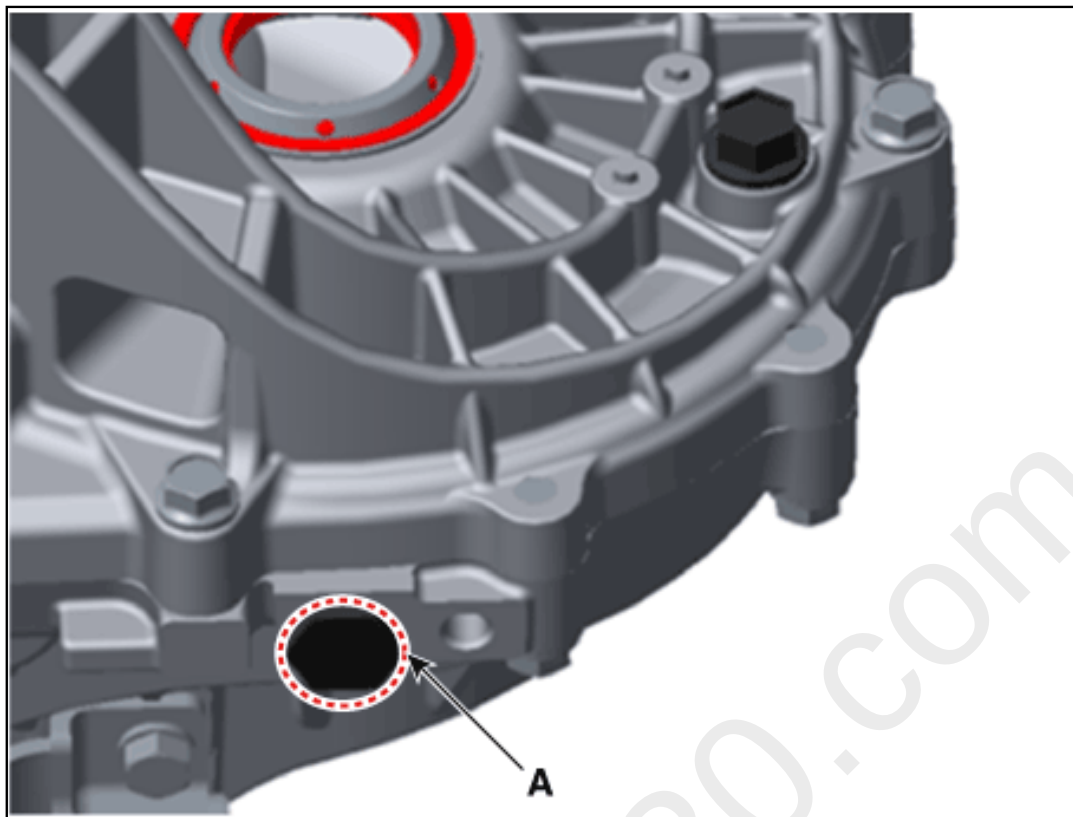
1. Remove the engine room under cover.

(Refer to Engine Mechanical System - "Engine Room Under Cover")

2. Remove the drain plug (A) and drain all the oil. Then install the drain plug with a new gasket.

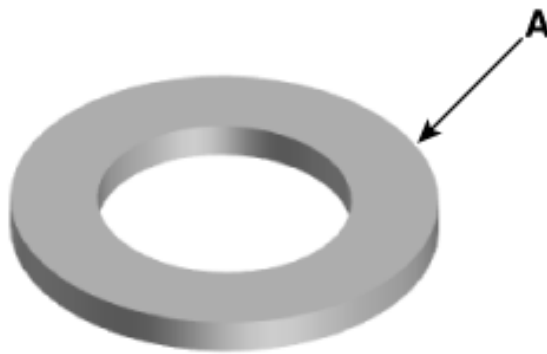
Tightening torque :

44.1 - 48.8 N.m (4.5 - 6.0 kgf.m, 32.5 - 43.4 lb-ft)



- The existing gasket (A) must be replaced with a new one. (Do not reuse it.)

New gasket part no.: 45323-39000



3. Add new oil through the filler plug hole (A) and, fill it just below the plug opening.

Standard oil :

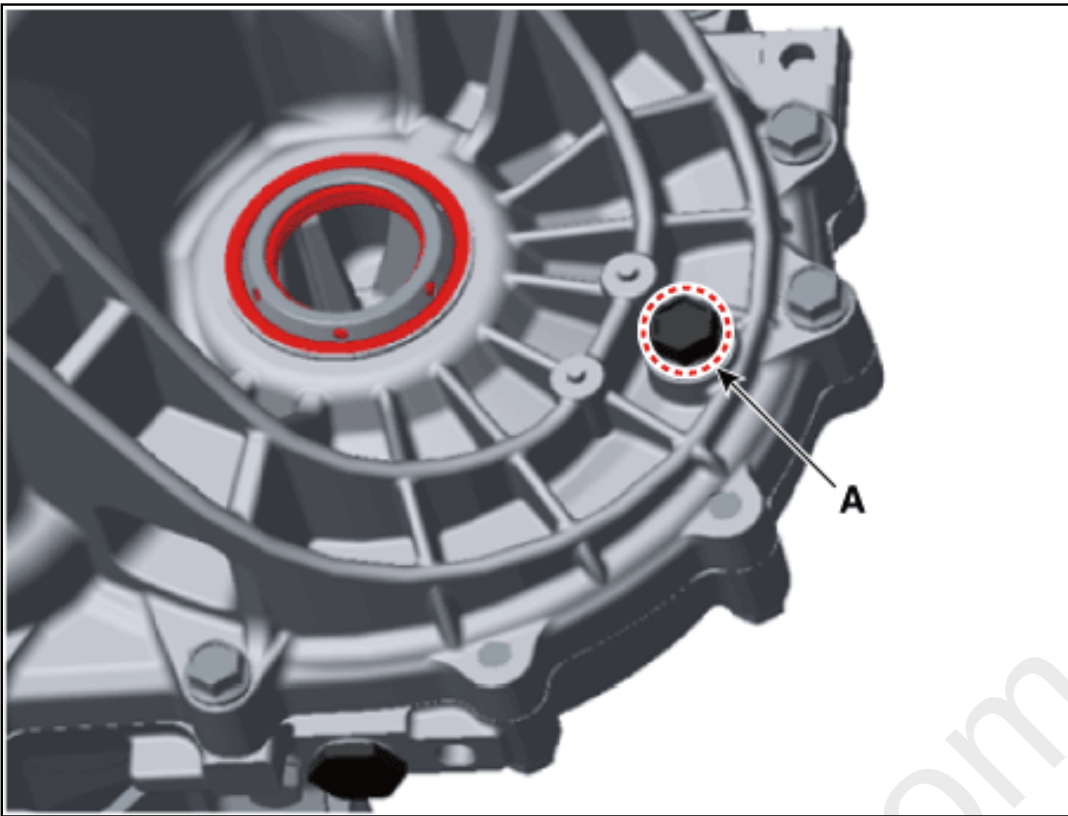
API Service GL-4, SAE 70W

Recommmend oil:

SK : HK D DCTF TGO-10, H.K.SHELL : SPIRAX S6 GHDE 70W DCTF, S-OIL : 7 DCTF HKM

Oil capacity :

1.6 - 1.7L (0.42 - 0.45 U.S.gal., 1.69 - 1.80 U.S. qt., 1.41 - 1.50 lmp qt)



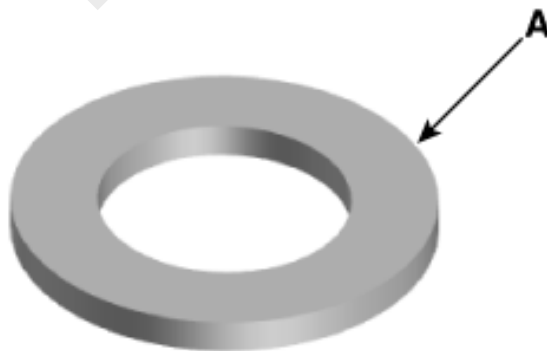
4. Install the filler plug bolt (A) with new gasket.

Tightening torque :

58.9 - 78.5 N.m (6.0 - 8.0 kgf.m, 43.4 - 57.8 lb-ft)



- The existing gasket (A) must be replaced with a new one. (Do not reuse it.)



5. Install the engine room under cover.

(Refer to Engine Mechanical System - "Engine Room Under Cover")

mcx30.com

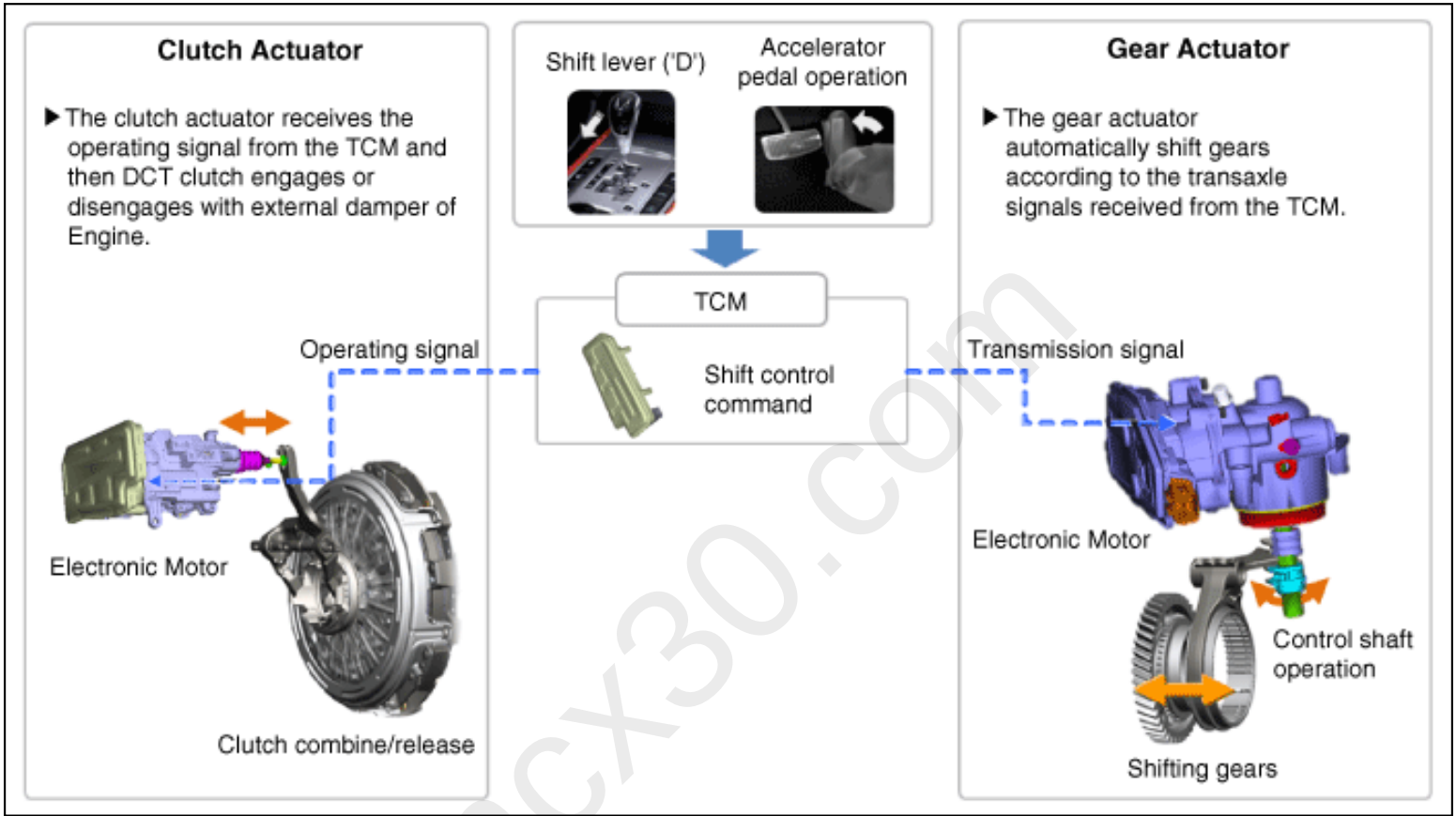
Description

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.

Operation principle

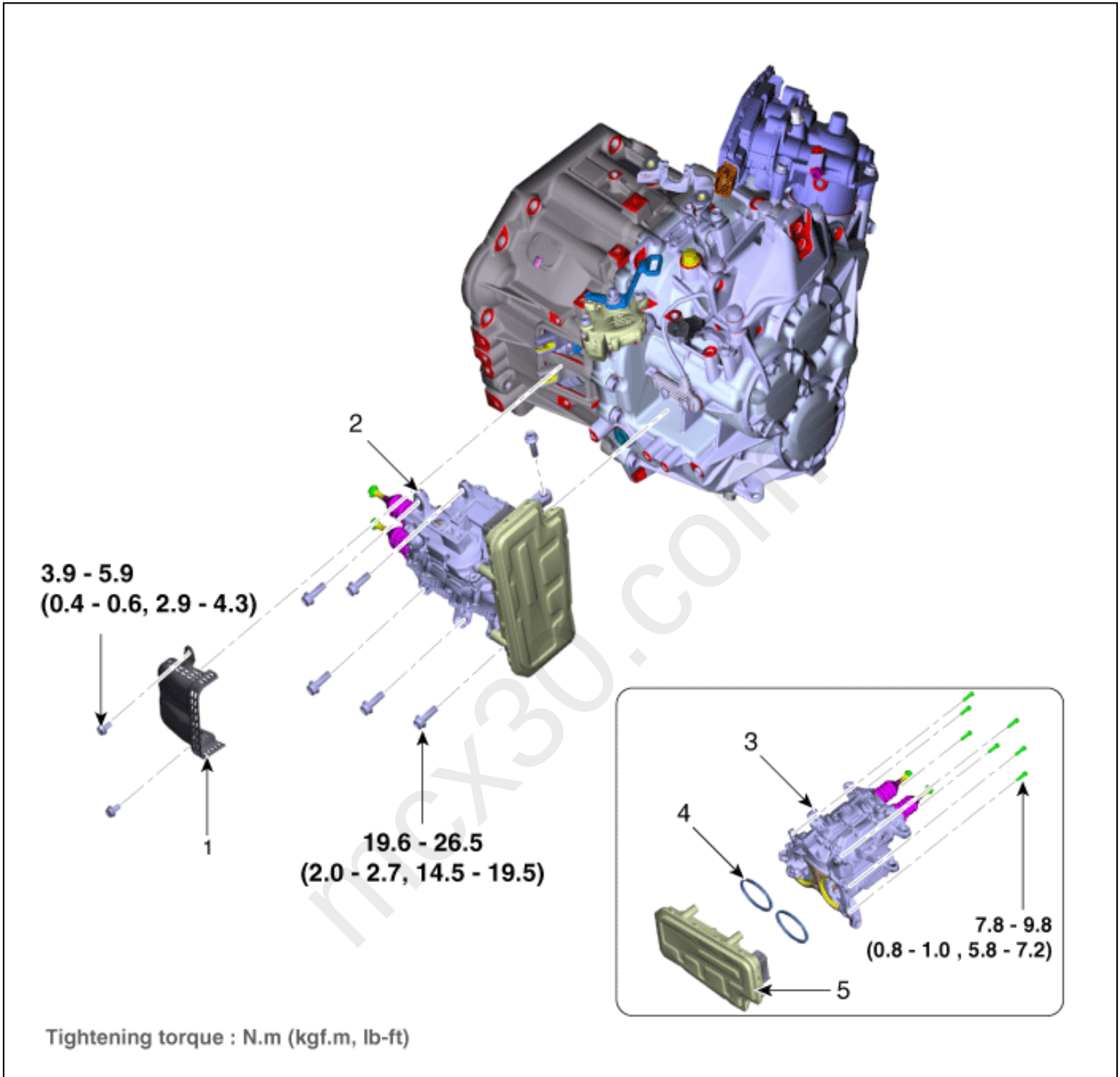


Description

•Function

The Transmission Control Module (TCM) is like the brain for the Dual Clutch Transmission (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.

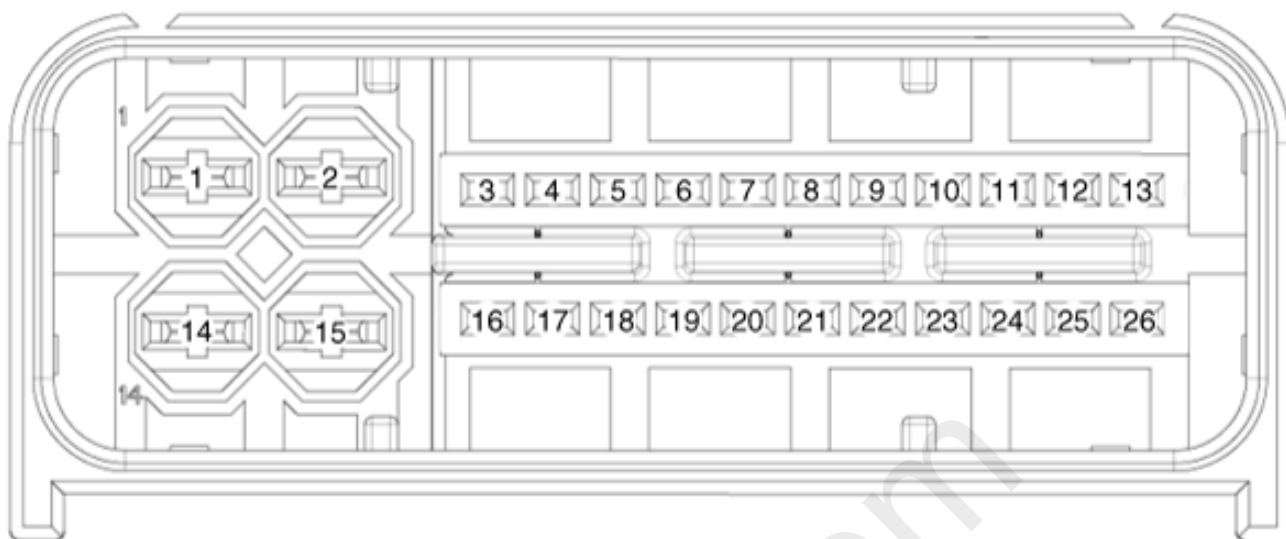
mcx30.com



- 1. Fork cover
- 2. Clutch actuator & TCM assembly
- 3. Clutch actuator assembly

- 4. O-ring
- 5. DCT control module (TCM)

Connector and Terminal Function



Pin	Description	Pin	Description
1	Ground 2 (Power)	14	Battery power 2 (Motor)
2	Ground 1 (Power)	15	Battery power 1 (Motor)
3	Shift lock solenoid	16	Battery voltage (Low Power)
4	Paddle shift "Up"	17	P-CAN 1 Low
5	Paddle shift "Down"	18	P-CAN 1 High
6	Inhibitor switch signal "R"	19	Local-DCT 1 Low
7	Inhibitor switch signal "N"	20	Local-DCT 1 High
8	Inhibitor switch signal "D"	21	Local-DCT 2 Low
9	Inhibitor switch signal "P"	22	Local-DCT 2 High
10	-	23	PT-Local 1 Low
11	Ignition voltage	24	PT-Local 1 High
12	Input speed sensor signal 2 (Even)	25	Input speed sensor signal 1 (Odd)
13	Input speed sensor power 2 (9 V)	26	Input speed sensor power 1 (9 V)

Inspection

Transmission Control Module (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 1Ω

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.

Removal

1. Prior to replacing the TCM, check the TCM clutch compensation value with the diagnostic tool tool.



■ Rear View Monitor with Parking Guidance

■ Blind-Spot Collision Warning

■ Lane Keeping Assist



Do not touch any system buttons while performing this function.

2. Turn ignition switch OFF and disconnect the battery negative (-) terminal.

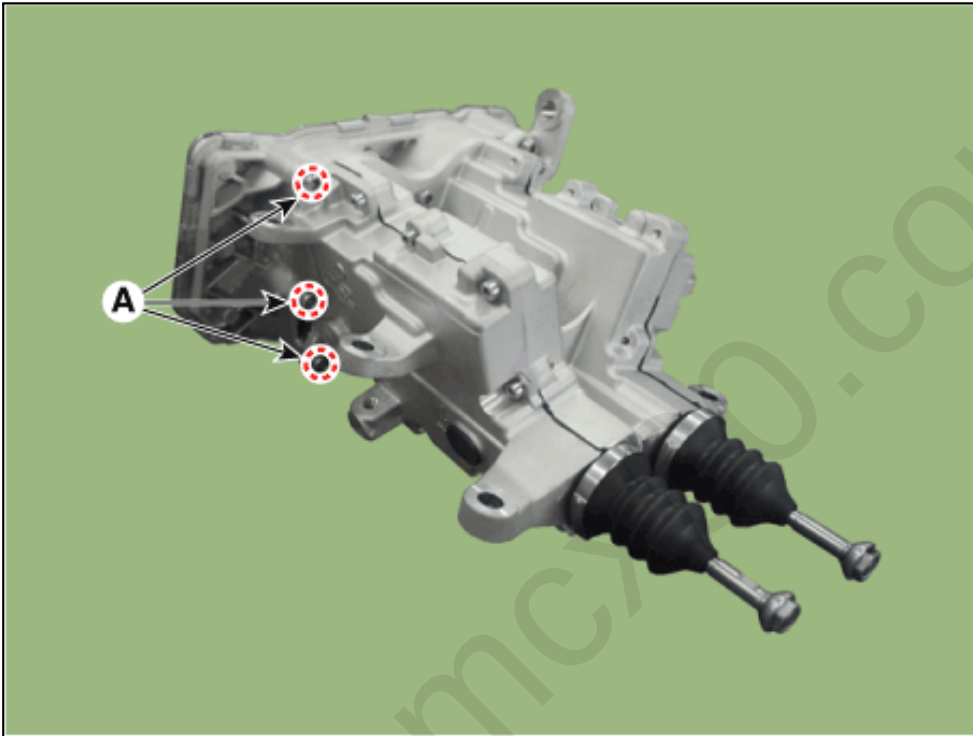
3. Remove the clutch actuator assembly.

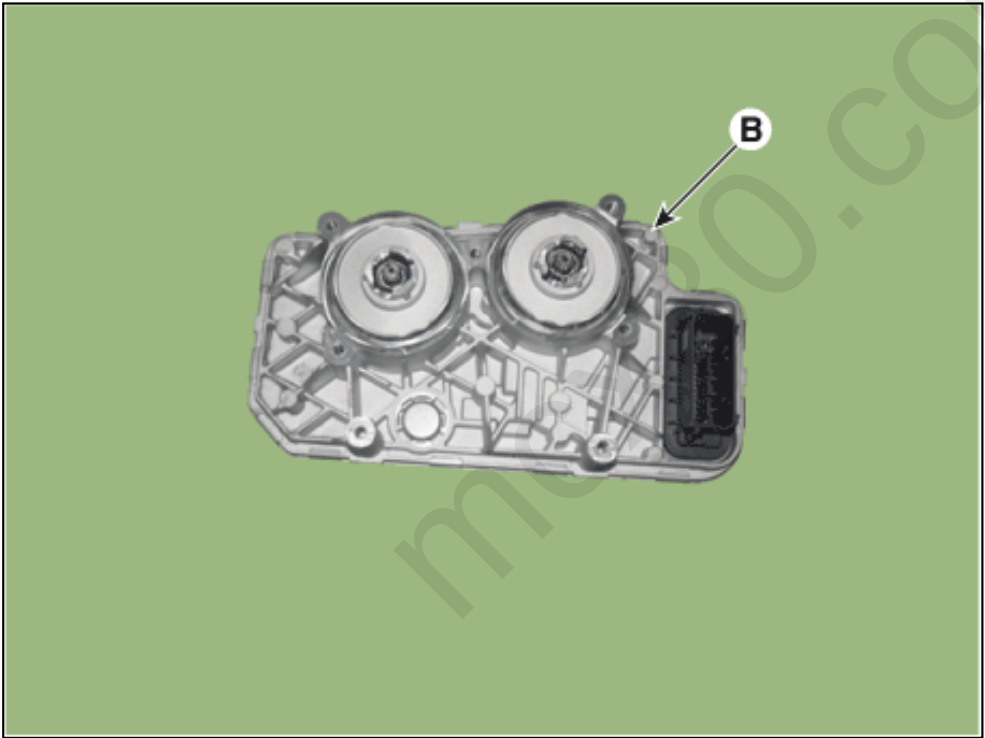
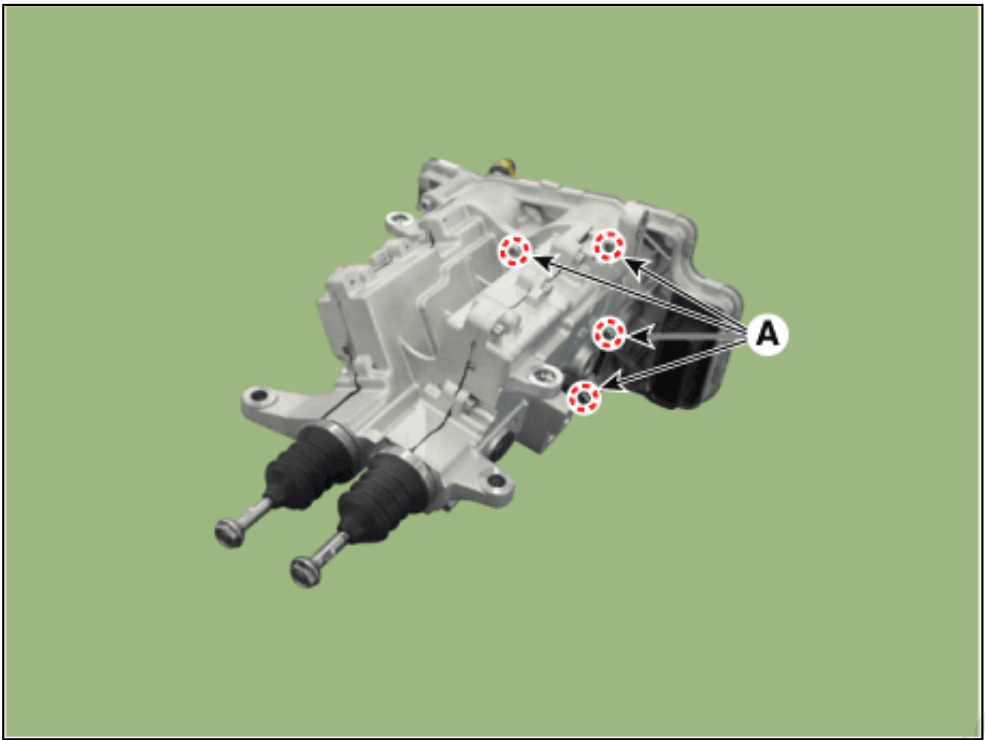
(Refer to Dual Clutch Transmission Control System - "Clutch Actuator & TCM Assembly")

4. Loosen the bolts (A) and then removing the TCM (B).

Tightening torque:

7.8 - 9.8 N.m (0.8 - 1.0 kgf.m, 5.8 - 7.2 lb-ft)



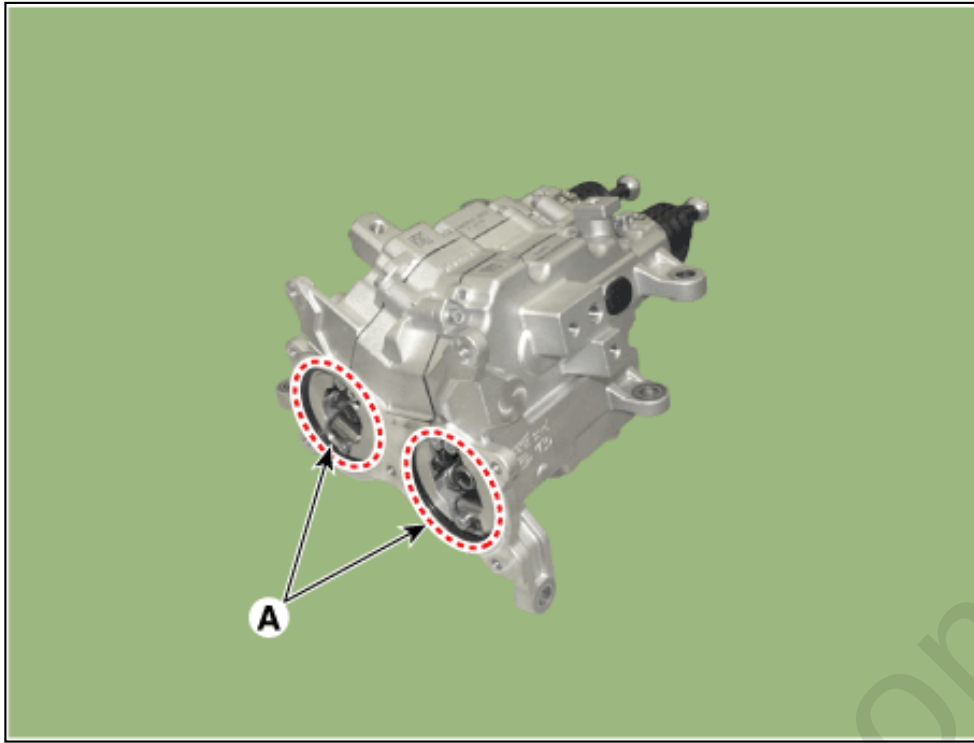


Installation

1. To install, reverse the removal procedure.



- The existing O-rings (A) must be replaced with a new one. (Do not reuse it.)



2. Perform the clutch compensation value setting procedure using the diagnostic tool after replacing TCM.



- Before performing the DCT learning procedure using diagnostic tool, perform the learning process after leaving for 5 minutes in the idle state. Because it may be a problem to operation of wear compensation device when entering the DCT learning function at battery low voltage condition.
- When performing the DCT learning function, Perform the DCT learning function twice to ensure accuracy and reliability of the clutch touch point.
- When the ignition is turned off after completing the 2 steps of the DCT learning procedure, the operation of wear compensation device will be performed. It takes up to 6 minutes for the operation of the wear compensation device to be completed, during which time it should not be started engine.
- The engine must be started after at least 6 minutes to ensure that the wear compensation device is fully operated. (keep the engine off for at least 6 minutes)
- If the engine is started while the wear compensation device is operating, sufficient operation of the wear compensation device is not possible, so the excessive operation of the wear compensation device may occur in the next engine starting cycle

S/W Management

Systems

Components

Unfold All

■ Engine Control

■ Dual Clutch Transmission

■ System Identification

■ DCT Learning Function

■ Clutch compensation value setting

■ Checking the wear amount of clutch

■ ABS/ESP

■ Forward Collision-Avoidance Assist

■ Airbag(Event #1)

■ Airbag(Event #2)

■ Air Conditioner

■ Motor Driven Power Steering

■ Smart Cruise Control

■ Rear View Monitor with Parking Guidance

■ Blind-Spot Collision Warning

■ Lane Keeping Assist

!

Do not touch any system buttons while performing this function.

3. Perform the clutch touch point learning procedure using the diagnostic tool after replacing TCM

S/W Management

Systems

Components

Unfold All

■ Engine Control

■ Dual Clutch Transmission

■ System Identification

■ DCT Learning Function

■ Clutch compensation value setting

■ Checking the wear amount of clutch

■ ABS/ESP

■ Forward Collision-Avoidance Assist

■ Airbag(Event #1)

■ Airbag(Event #2)

■ Air Conditioner

■ Motor Driven Power Steering

■ Smart Cruise Control

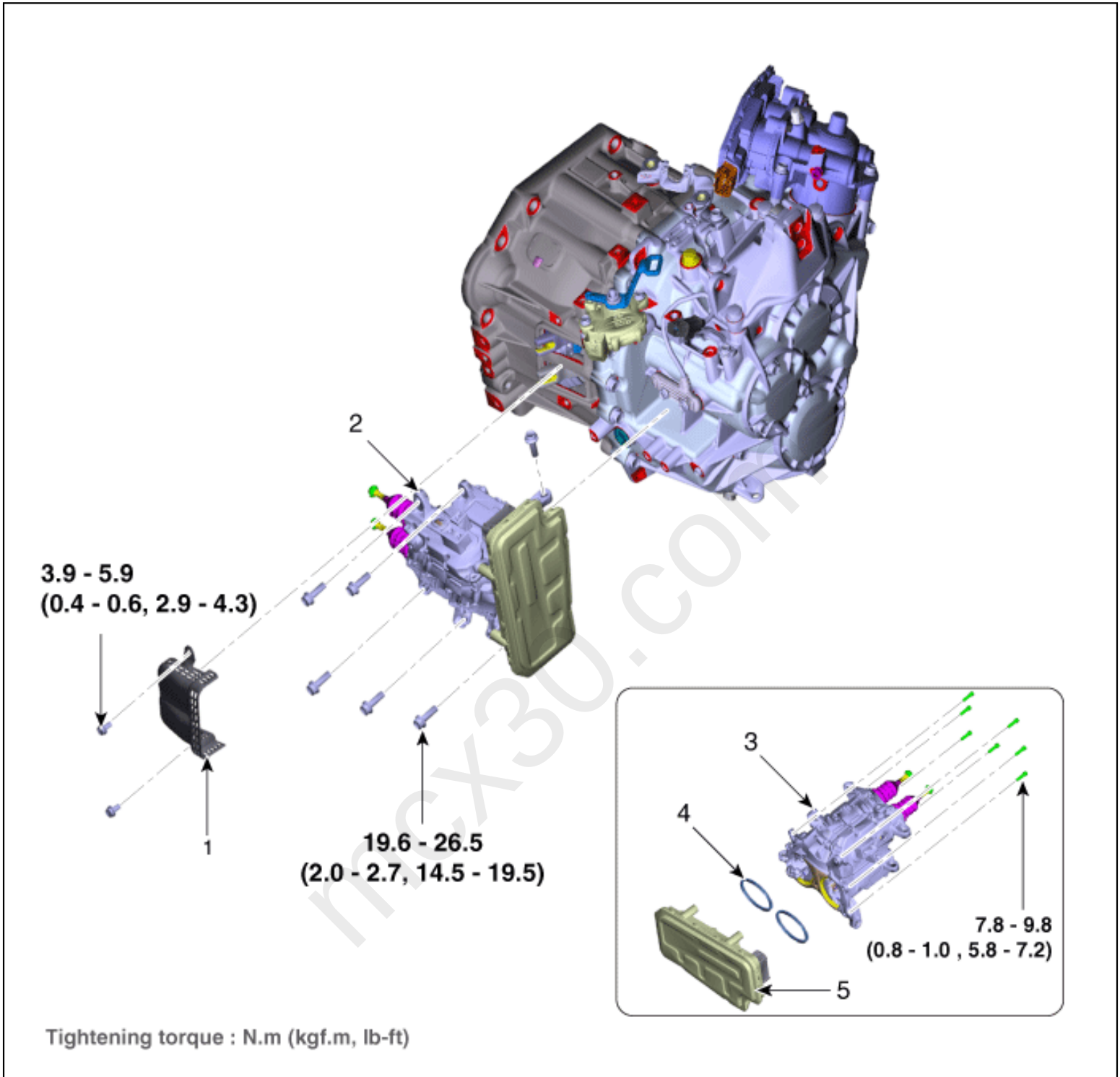
■ Rear View Monitor with Parking Guidance

■ Blind-Spot Collision Warning

■ Lane Keening Assist

!

Do not touch any system buttons while performing this function.



- 1. Fork cover
- 2. Clutch actuator & TCM assembly
- 3. Clutch actuator assembly

- 4. O-ring
- 5. DCT control module (TCM)

Specification

Item	Specification
Rated voltage	12V
Rod length	79.0 - 80.0 mm (3.1102 - 3.1496 in.)
Wear adjustment amount	0.25 mm (0.0098 in.) @ 1 Click

mcx30.com

Inspection

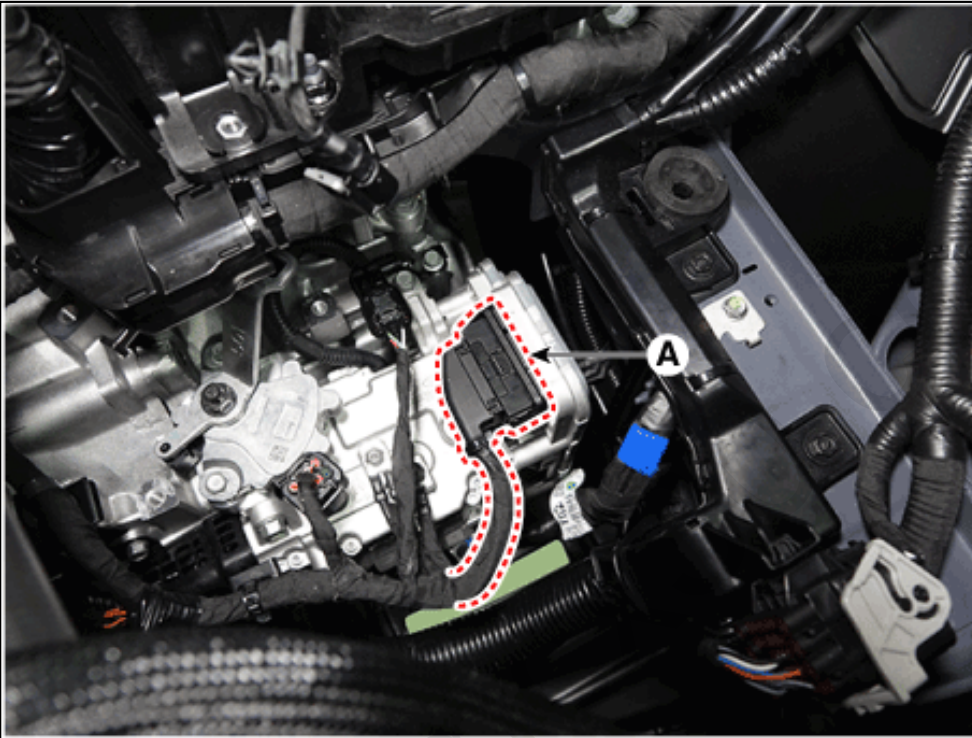
1. The DCT system can be more quickly diagnosed for troubles by using the vehicle diagnostic system (diagnostic tool). (Refer to DTC guide)

diagnostic tool provides the following information.

- 1)Self diagnosis : Inspects and displays diagnostic trouble code (DTC)
- 2)Sensor data : Checks the system input/output value status
- 3)Forced operation : Checks the system operating status
- 4)Additional function : Controls system options, zero point adjustment and other functions

Removal

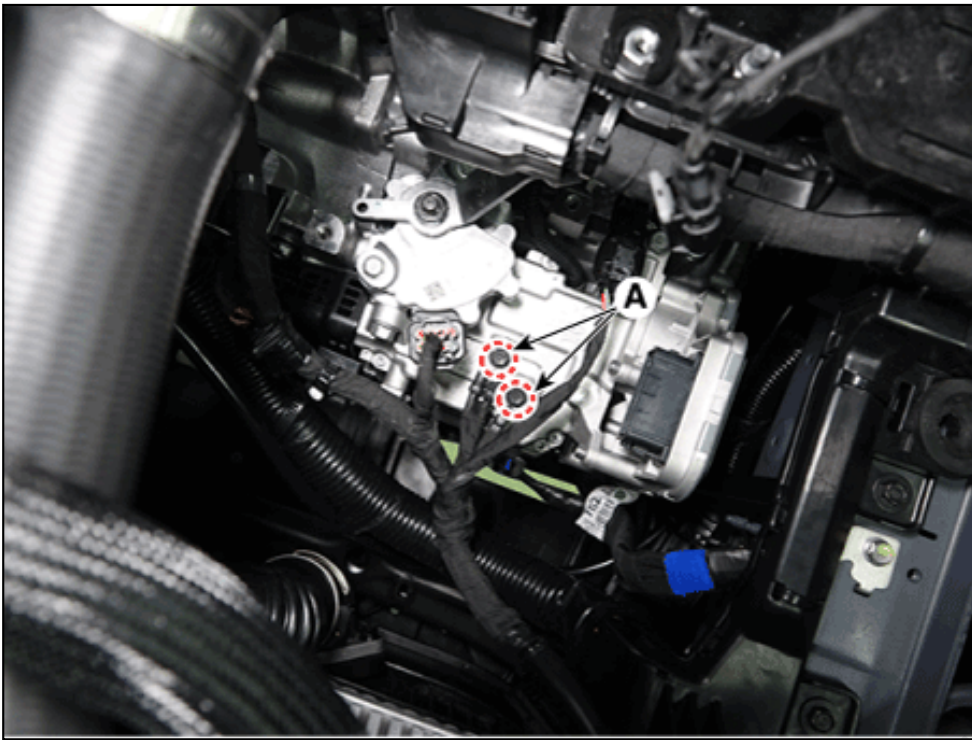
1. Turn ignition switch OFF and disconnect the battery negative (-) terminal.
2. Remove the air cleaner assembly.
(Refer to Engine Mechanical System - "Air cleaner")
3. Disconnect the TCM connector (A).



4. Loosen the ground mounting bolt (A).

Tightening torque :

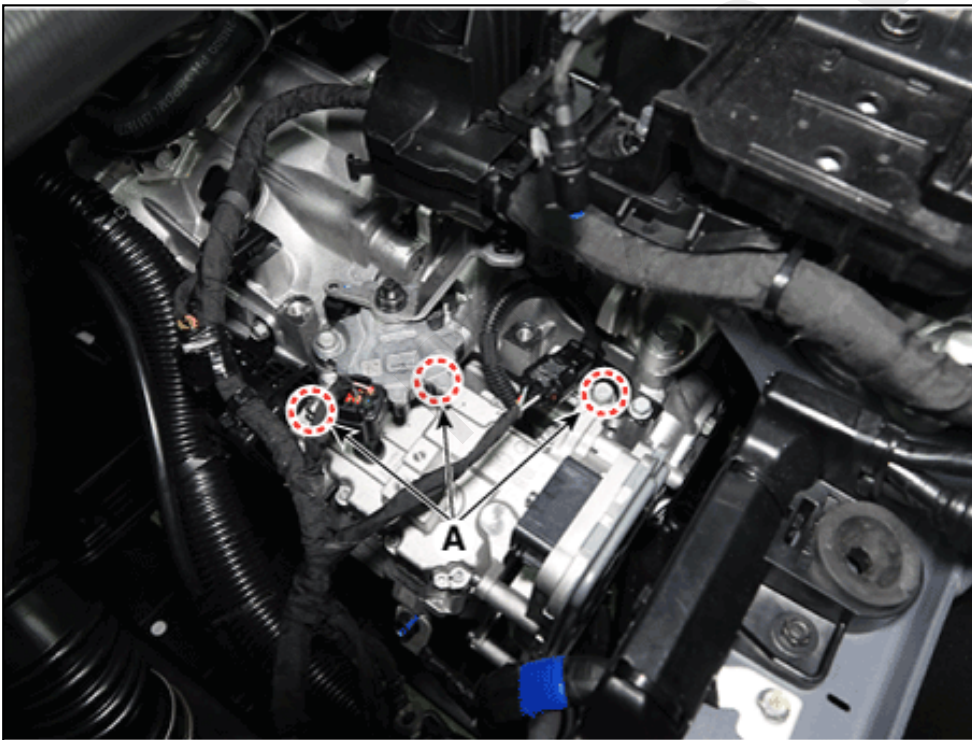
9.8 - 11.8 N.m (1.0 - 1.2 kgf.m, 7.2 - 8.7 lb-ft)



5. Loosen the clutch actuator upper mounting bolts (A).

Tightening torque :

19.6 - 26.5 N.m (2.0 - 2.7 kgf.m, 14.5 - 19.5 lb-ft)

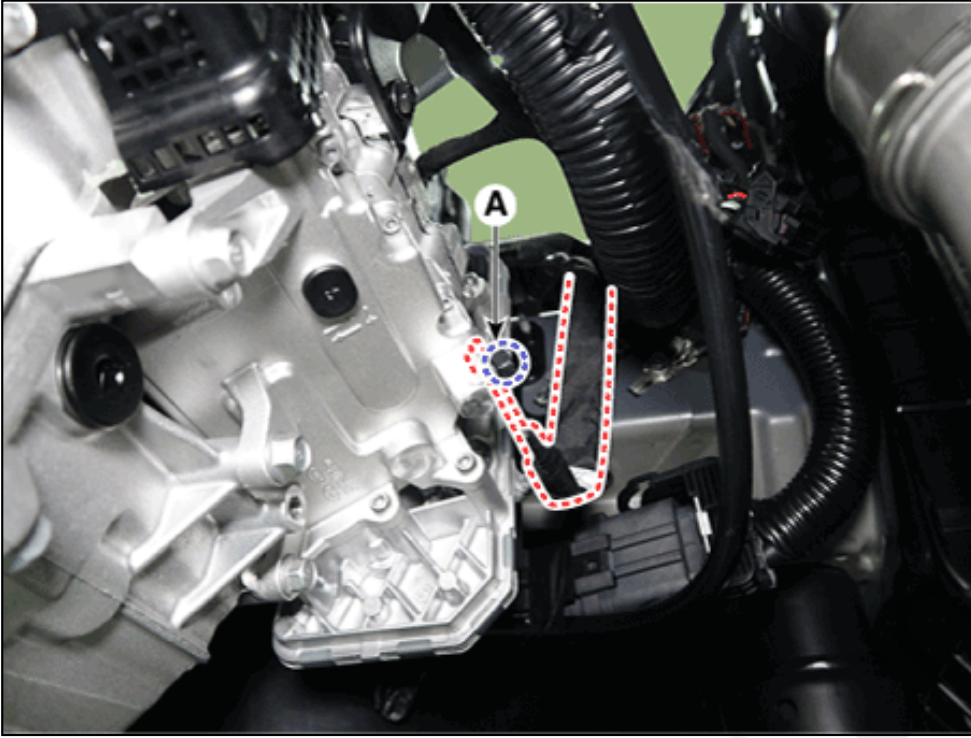


6. Remove the engine room under cover.
(Refer to Engine Mechanical System - "Engine Room Under Cover")

7. Loosen the ground mounting bolt (A).

Tightening torque :

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



8. Loosen the bolt (A) and then removing the wiring bracket.

Tightening torque :

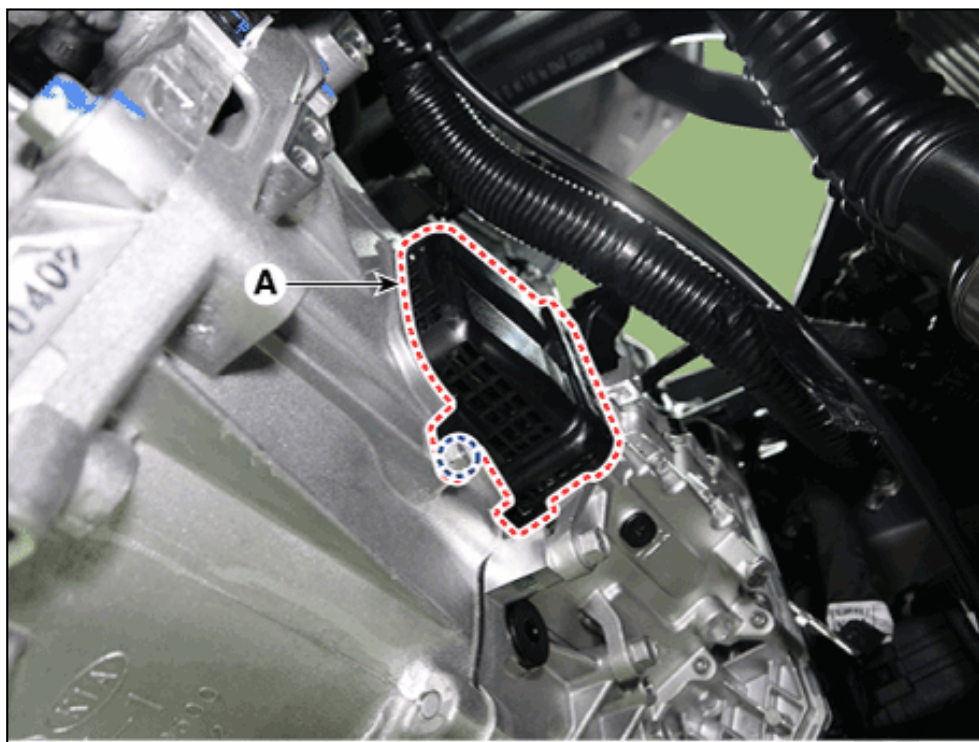
9.8 - 11.8 N.m (1.0 - 1.2 kgf.m, 7.2 - 8.7 lb-ft)



9. Loosen the bolts and then removing the fork cover (A).

Tightening torque :

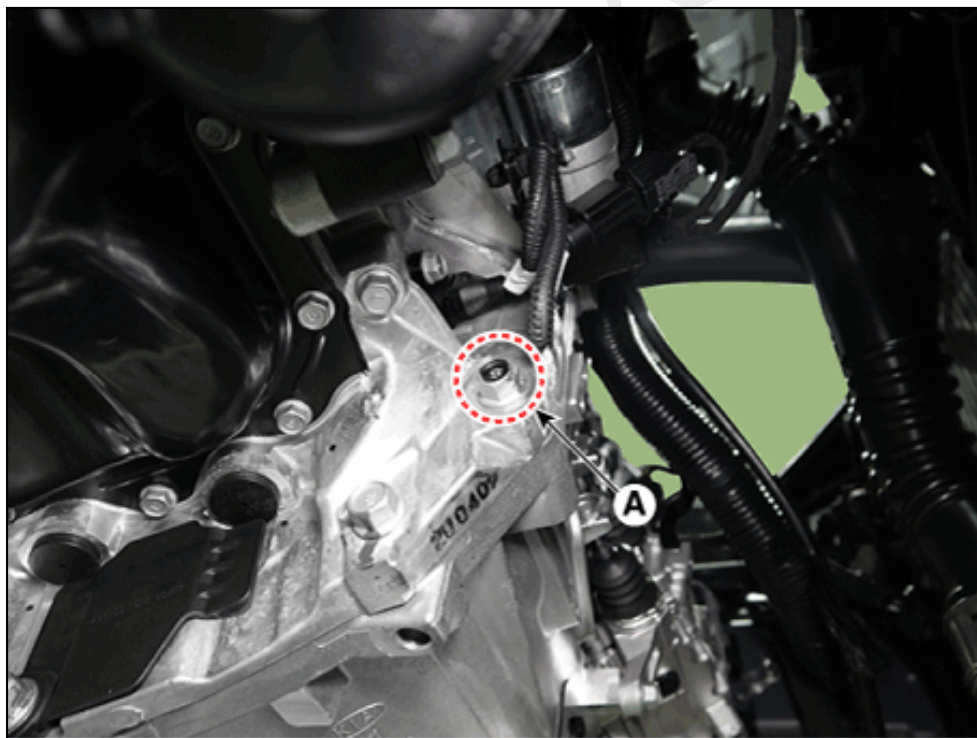
3.9 - 5.9 N.m (0.4 - 0.6 kgf.m, 2.9 - 4.3 lb-ft)



10. Loosen the transmission lower mounting bolt (A).

Tightening torque :

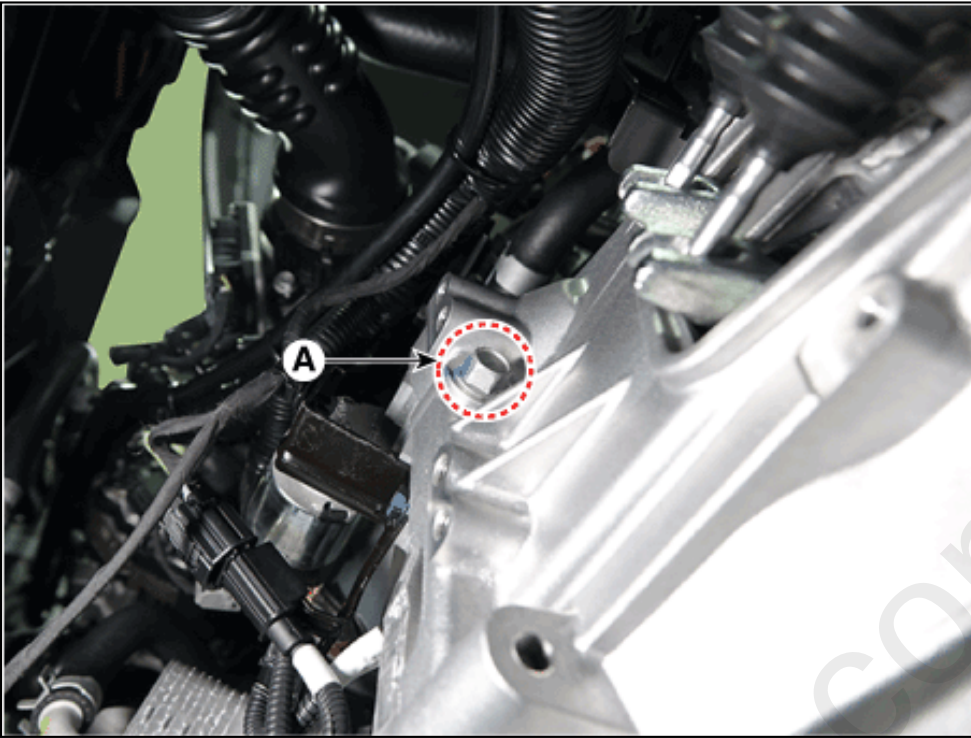
42.2 - 53.9 N.m (4.3 - 5.5 kgf.m, 31.1 - 39.8 lb-ft)



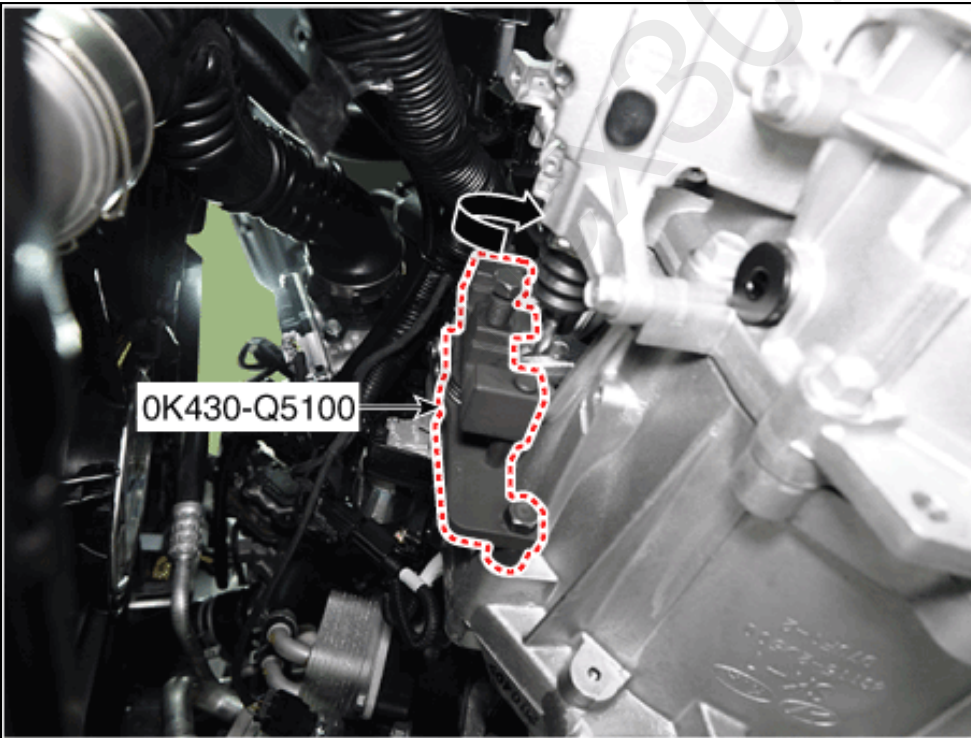
11. Loosen the starter mounting bolt (A)

Tightening torque :

49.0 - 63.7 N.m (5.0 - 6.5 kgf.m, 36.2 - 47.0 lb-ft)



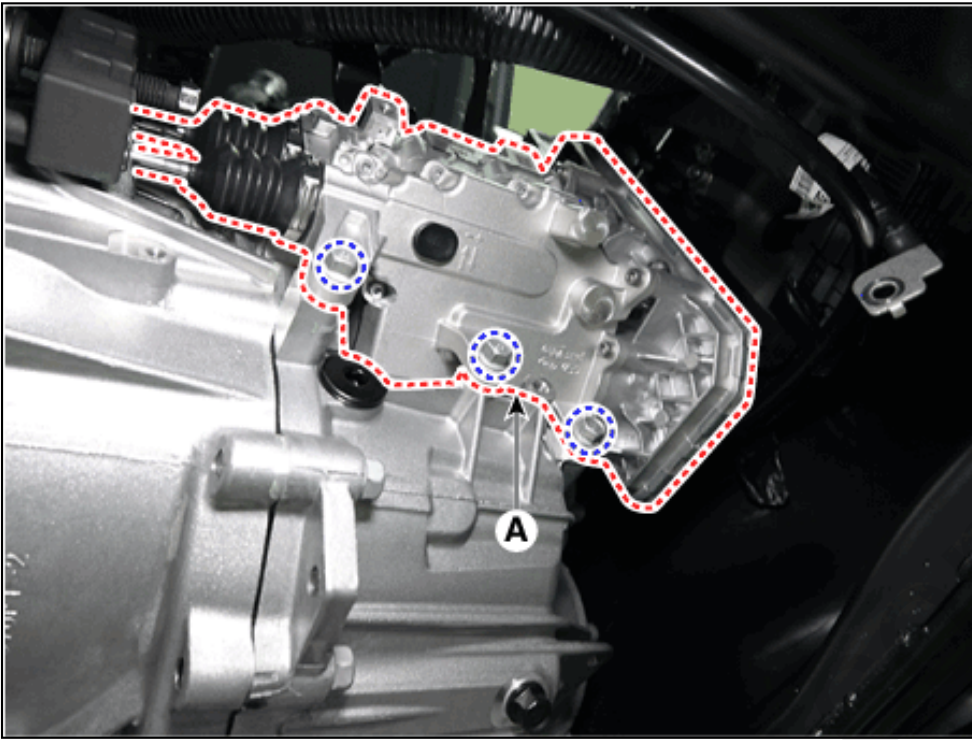
12. Fix the clutch engagement fork after installing special service tool (0K430-Q5100).



13. Loosen the clutch actuator lower mounting bolts and then removing the clutch actuator (A).

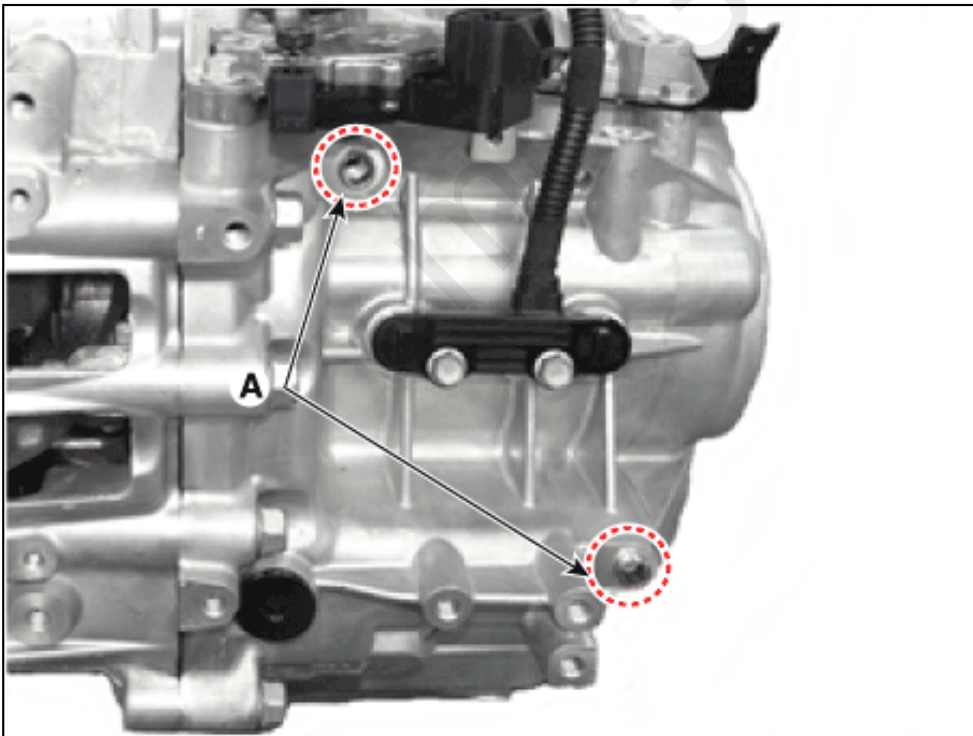
Tightening torque :

19.6 - 26.5 N.m (2.0 - 2.7 kgf.m, 14.5 - 19.5 lb-ft)



Installation

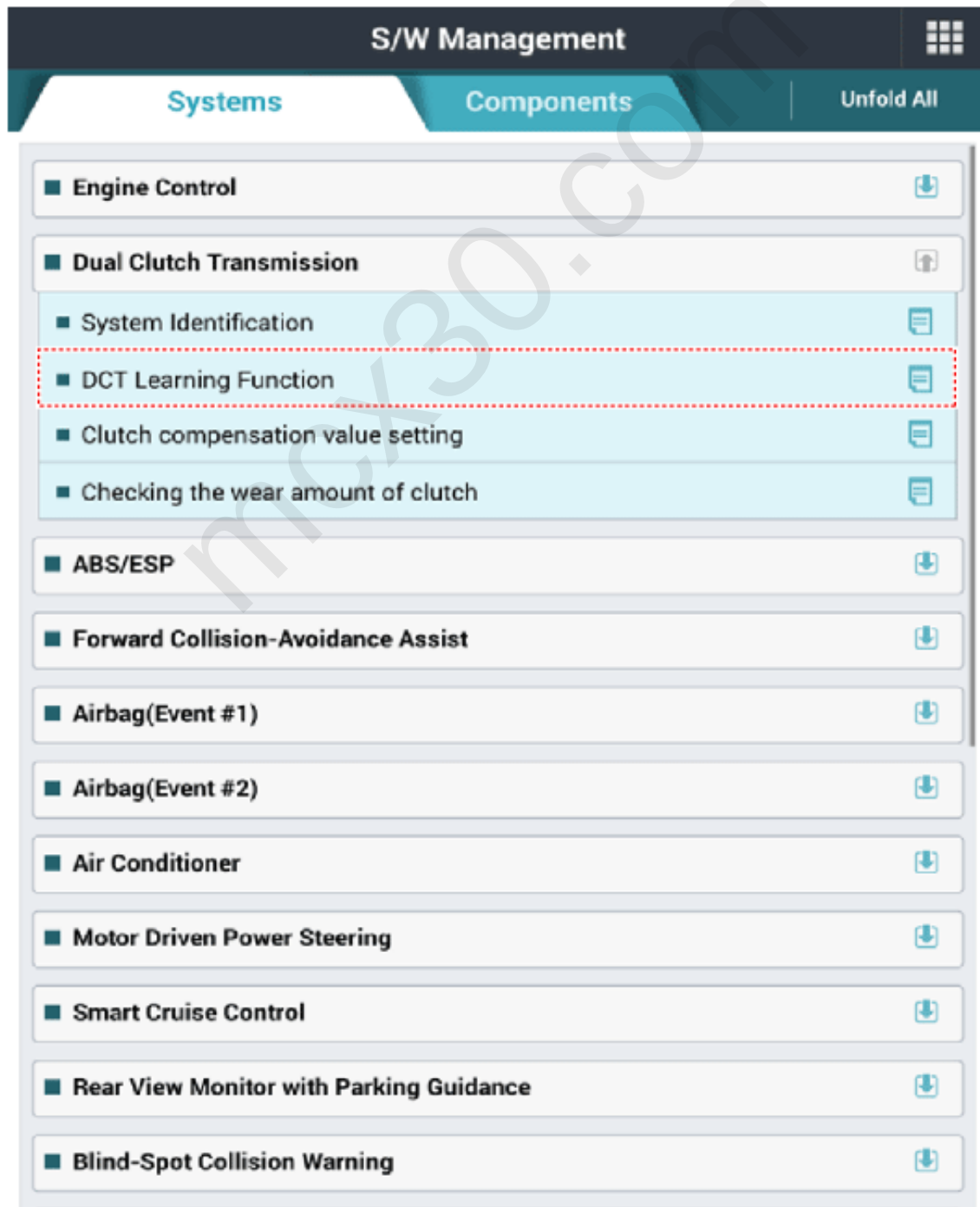
1. To install, reverse the removal procedures.
2. Check the assembled state of the dowel pins (A) before installing the clutch actuator assembly.

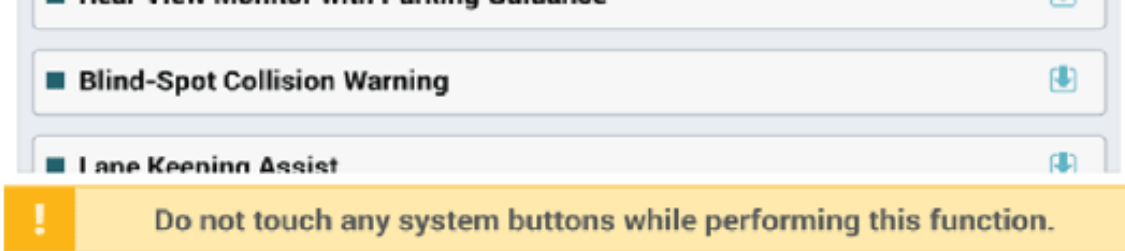


3. Perform the clutch touch point learning procedure using the diagnostic tool.



- Before performing the DCT learning procedure using diagnostic tool, perform the learning process after leaving for 5 minutes in the idle state. Because it may be a problem to operation of wear compensation device when entering the DCT learning function at battery low voltage condition.
- When performing the DCT learning function, Perform the DCT learning function twice to ensure accuracy and reliability of the clutch touch point.
- When the ignition is turned off after completing the 2 steps of the DCT learning procedure, the operation of wear compensation device will be performed. It takes up to 6 minutes for the operation of the wear compensation device to be completed, during which time it should not be started engine.
- The engine must be started after at least 6 minutes to ensure that the wear compensation device is fully operated. (keep the engine off for at least 6 minutes)
- If the engine is started while the wear compensation device is operating, sufficient operation of the wear compensation device is not possible, so the excessive operation of the wear compensation device may occur in the next engine starting cycle





- Even if you removed and reinstalled the clutch actuator, be sure to perform the touch point learning.
- If you have replaced the dual clutch assembly or clutch actuator, be sure to perform the touch point learning.

Adjustment

- If you replaced the dual clutch assembly or clutch actuator, be sure to perform wear compensation by referring to the following table.

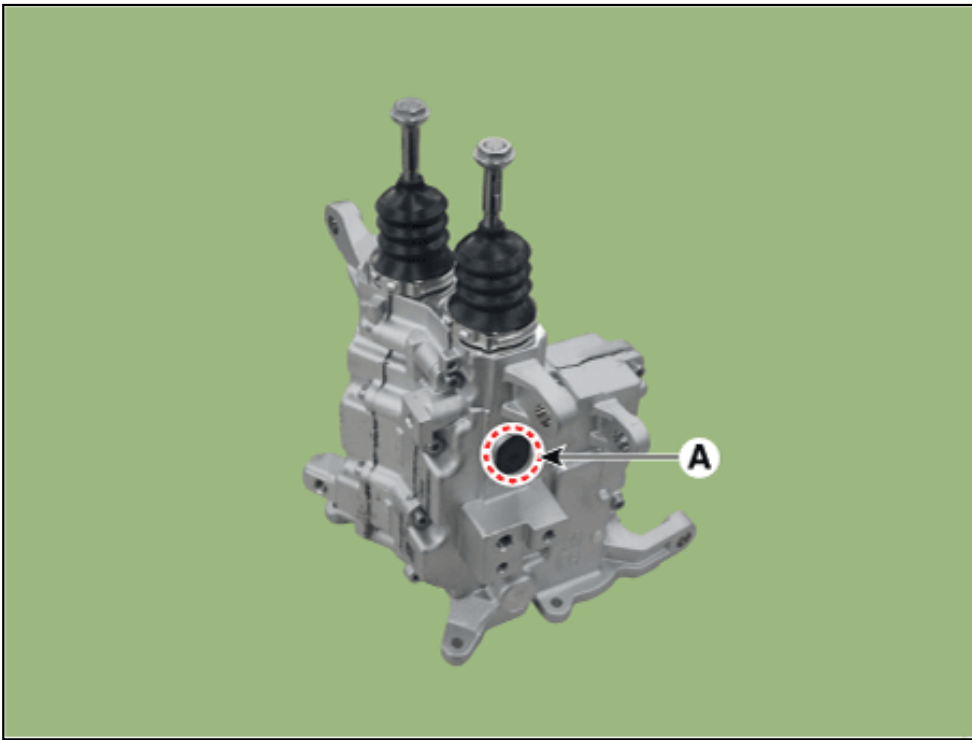
Replaced Part	Wear Compensation (Clutch Actuator)
Dual Clutch assembly	Need to initialize rod length
Dual clutch assembly + Clutch actuator&TCM assembly	Rod length adjustment is not required
Only Clutch actuator&TCM assembly	
Only Clutch actuator or TCM assembly	

- If the rod length is less than 52 mm (2.0472 in.), replace all of the dual clutch assembly, clutch actuator, and engagement bearing.

Initializing the rod length (When only the dual clutch assembly is replaced or Both dual clutch assembly and clutch actuator is replaced)

- Be sure to perform it when you have replaced the dual clutch assembly but reuse the clutch actuator.
- Perform the procedure when both the dual clutch assembly and clutch actuator are replaced.
- It is performed to adjust the rod length of an old clutch actuator to that of a new clutch actuator.

1. Remove the clutch actuator assembly.
(Refer to Clutch Actuator & TCM Assembly - "Removal")
2. Remove sealing rubber (A) from old part clutch actuator.

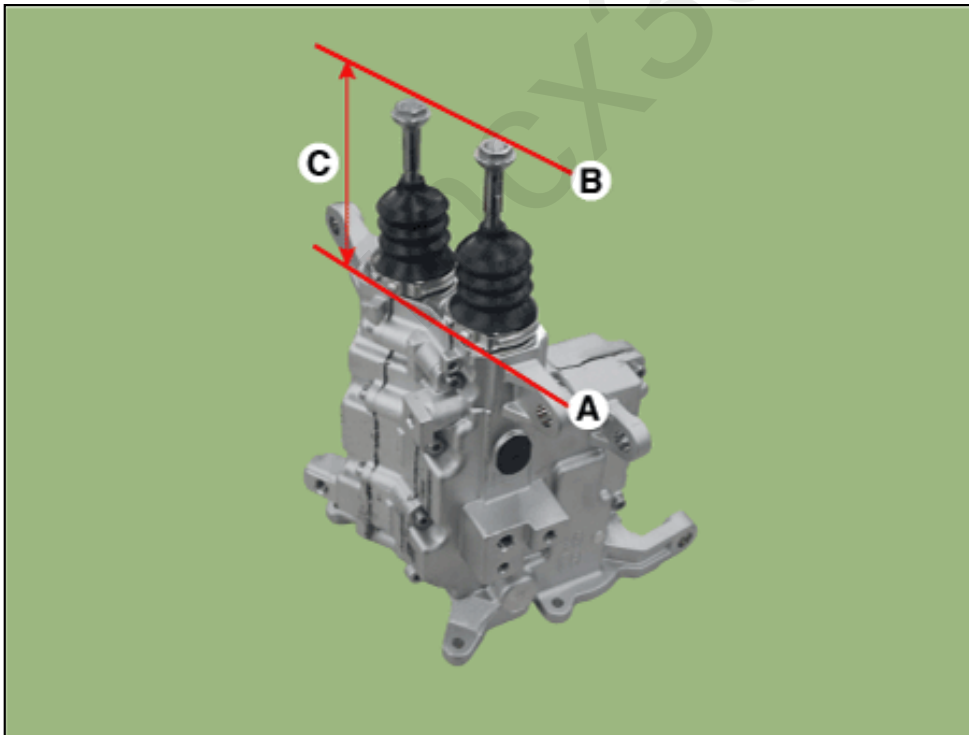


3. Slightly pull the rod of the clutch actuator removed from the vehicle and measure length of each rod (C). If the length is shorter than the initialization length, you need to perform initialization.

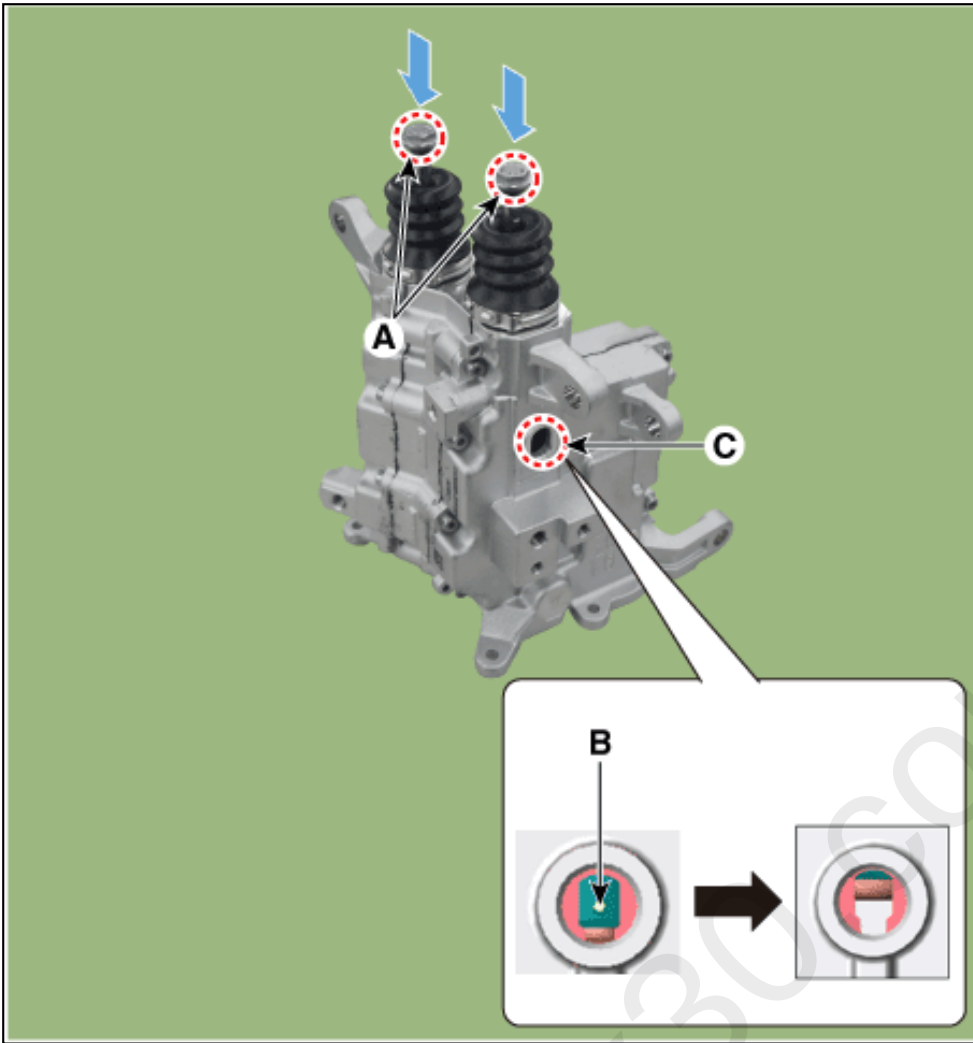
Rod length (C) : Length from the reference plane (A) to the end of the rod (B).

(**Initializ rod length** : 79.0 - 80.0 mm (3.1102 - 3.1496 in.))

- 1)Clutch actuator 1
- 2)Clutch actuator 2



4. Press the end part of rod (A) and release the pressing force when you see the nut bump (B).

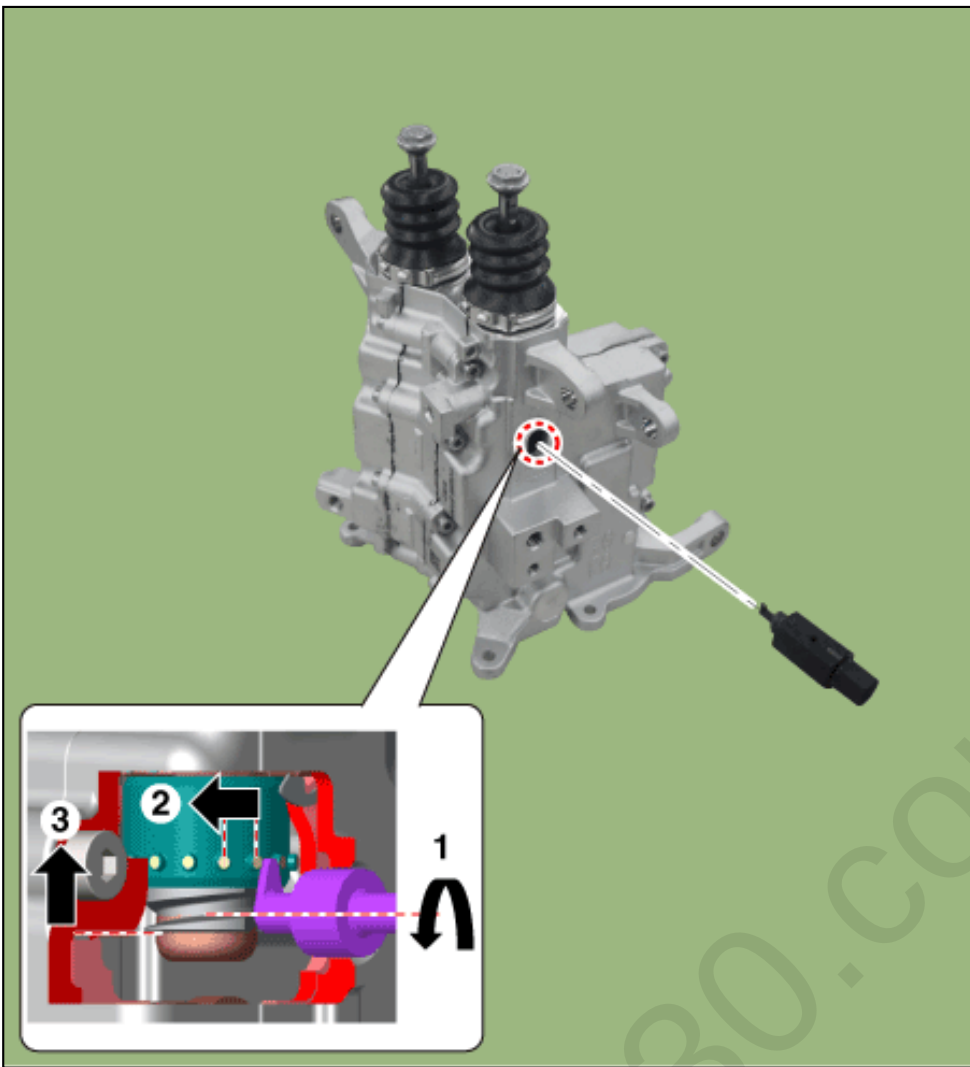


- Light inside of the hole (C) and check the nut bump (B) inside of it.
- Repeat the operation if the nut bump (B) does not come down to the assembly hole position.
- The nut bump (B) can be moved up a little by sealing boot if the pressing force is released.

5. Insert a special tool (0K430-Q5300) (A) to a sealing rubber hole.
Rotate the SST counter-clockwise and adjust the length of the clutch actuator's rod.

Increasing (+) rod length : Rotate counter-clockwise / once +0.25mm (+0.0098 in.)

Shortening (-) rod length : Rotate clockwise / once -0.25mm (-0.0098 in.)



• Perform the same procedure for the opposite side rod.



- Be aware not to break the clutch actuator caused by break away inner parts when the SST over rotates clockwise.
- If the rod length is not initialized to 79.0 - 80.0 mm (3.1102 - 3.1496 in.) during initialization of wear compensation, DCT shift shock may occur or driving may be impossible.

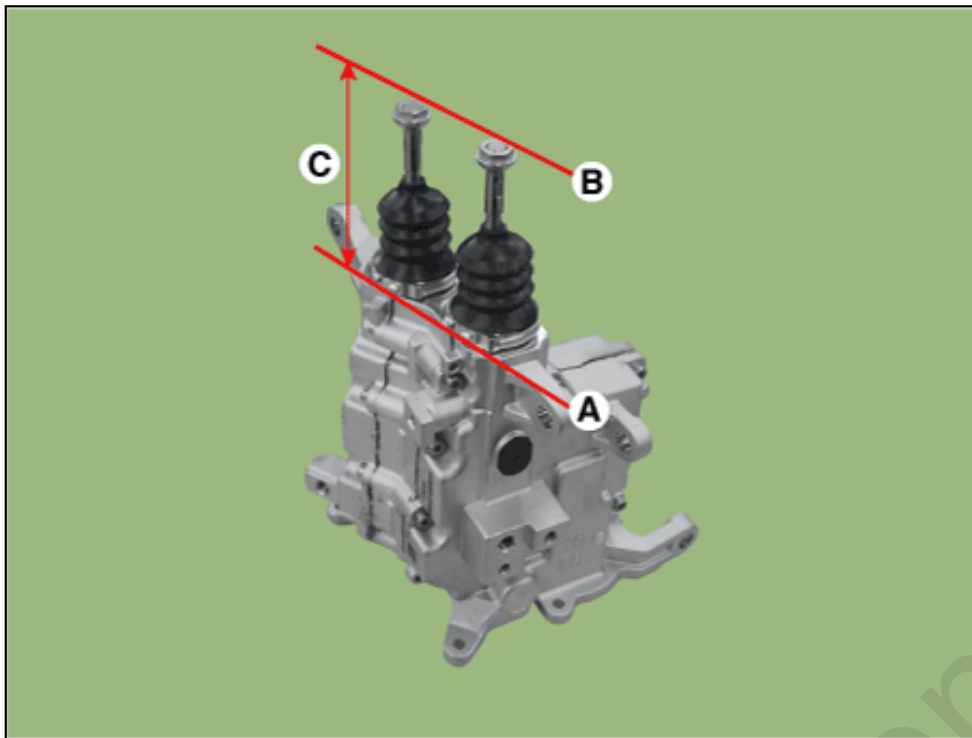
6. Slightly pull the rod of the clutch actuator and check whether the "length of the rod which the final adjustment is finished" is same with the "rod's initialized length".

Rod length (C) : Length from the reference plane (A) to the end of the rod (B).

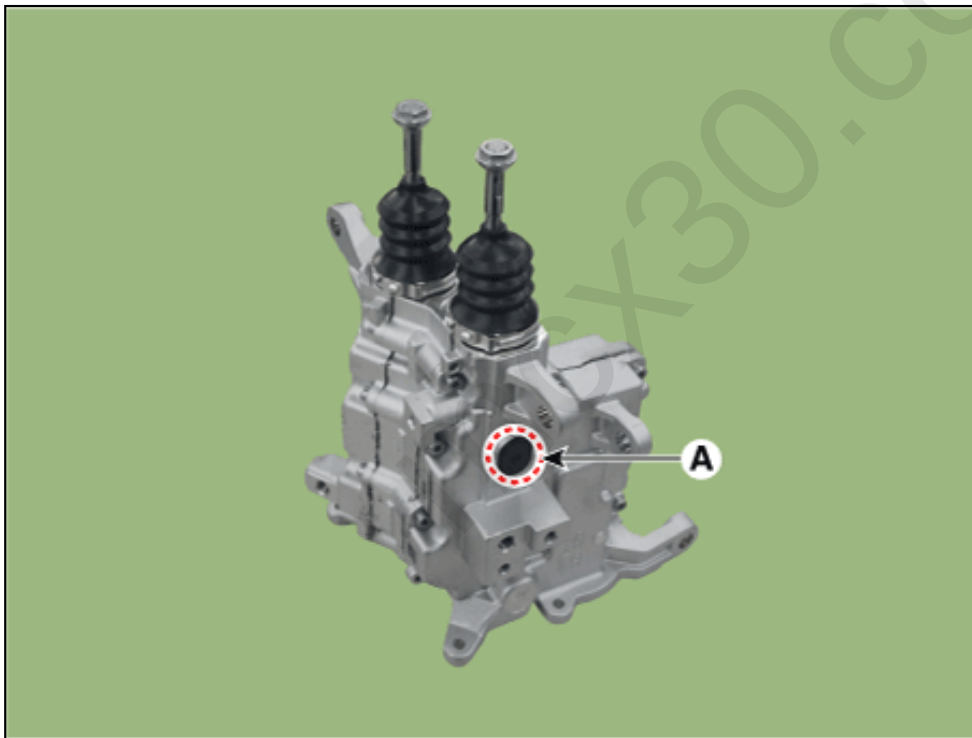
(**Initializ rod length :** 79.0 - 80.0 mm (3.1102 - 3.1496 in.))

1) Clutch actuator 1

2)Clutch actuator 2



7. Install the sealing rubber (A).

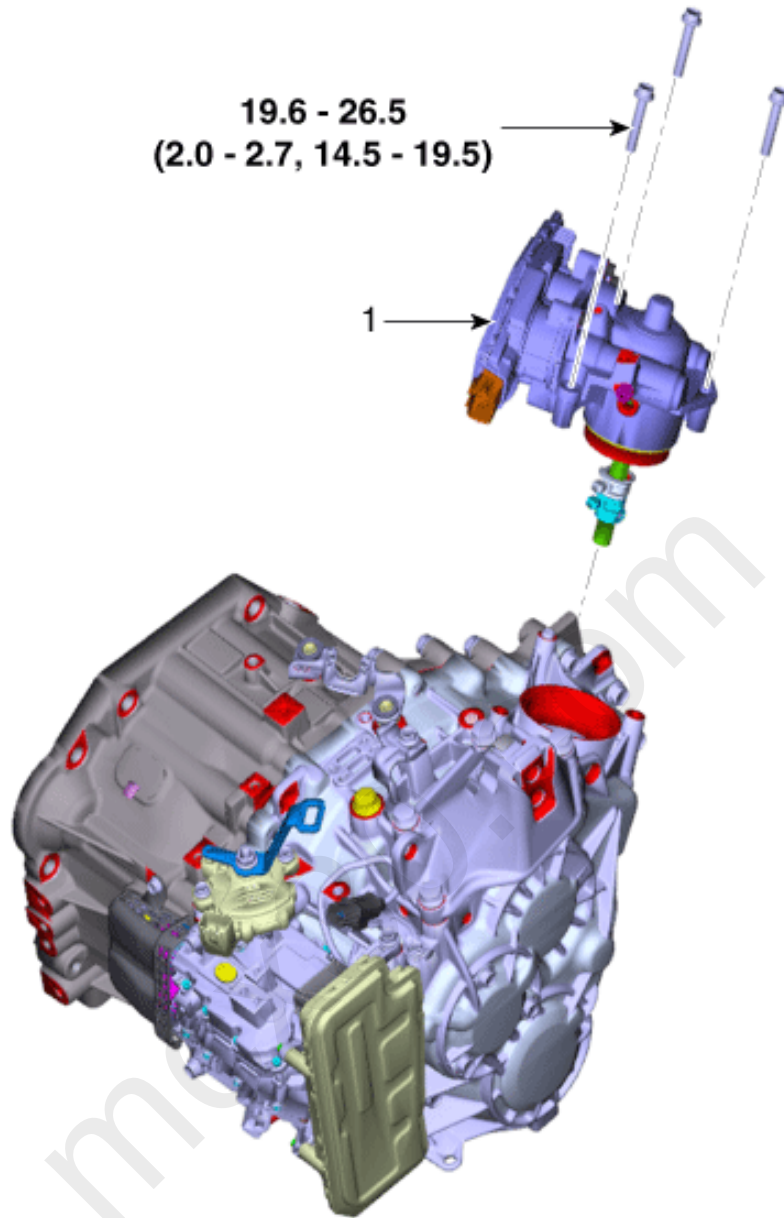


8. Remove the clutch actuator assembly from the special tool (0K430-Q5300).

Description

- Gear actuator uses signals from TCM to control the gear.

mcx30.com



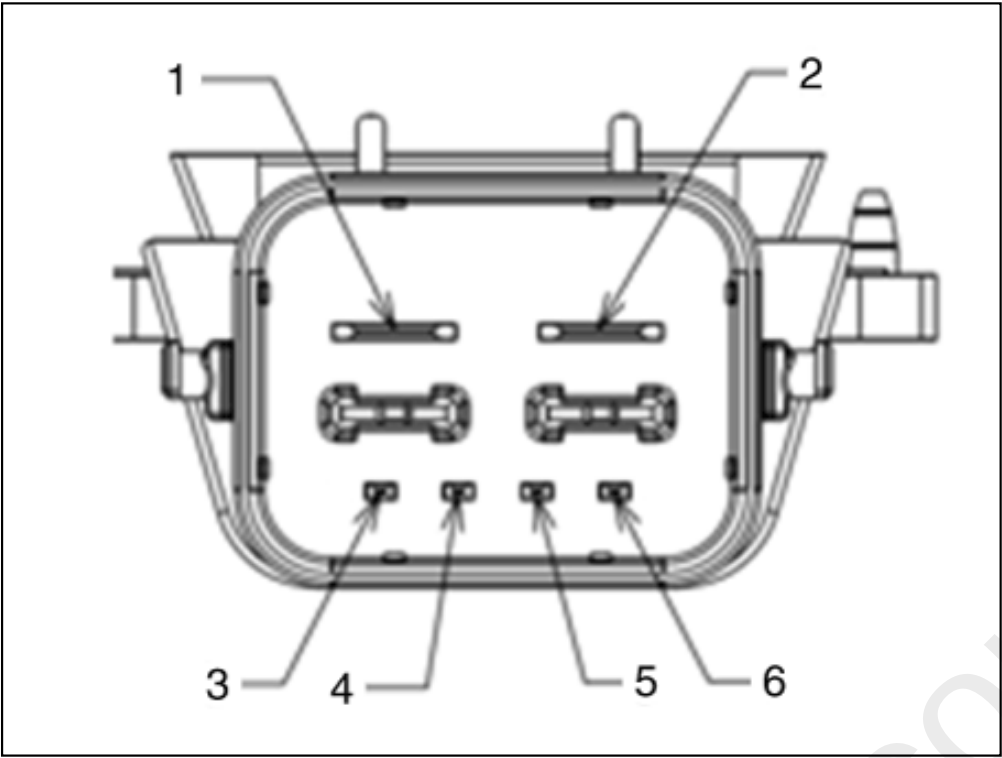
1. Gear actuator assembly

Specification

Item	Specification
Operation condition	-40 to 257 °F (- 40 to 125 °C)
Rated voltage	12V

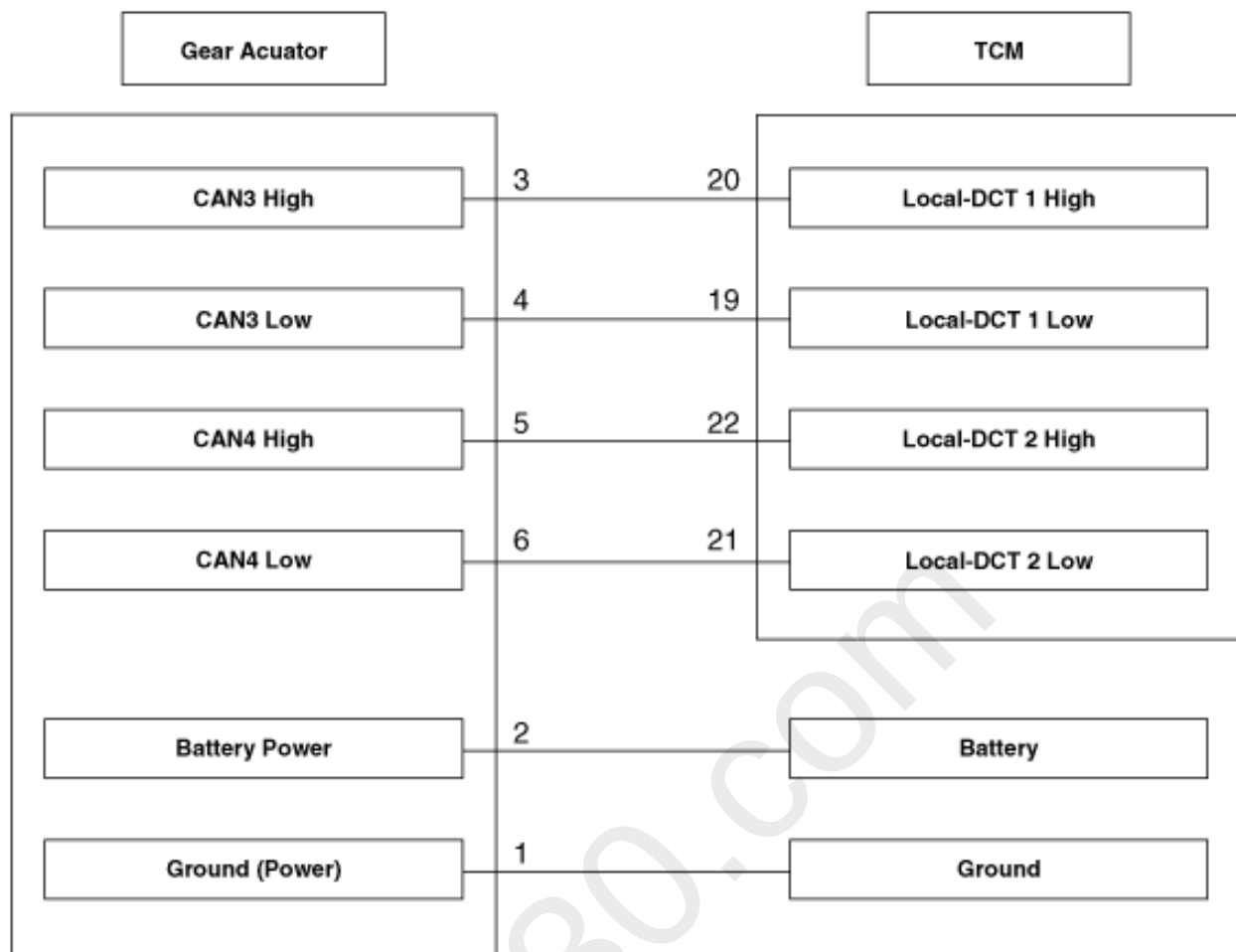
mcx30.com

[Connector and Terminal
Function]



Pin	Description	Pin	Description
1	Ground (Power)	4	CAN3 Low
2	Battery Power	5	CAN4 High
3	CAN3 High	6	CAN4 Low

[Circuit Diagram]



Inspection

1. The DCT system can be more quickly diagnosed for troubles by using the vehicle diagnostic system (diagnostic tool). (Refer to DTC guide)

diagnostic tool provides the following information.

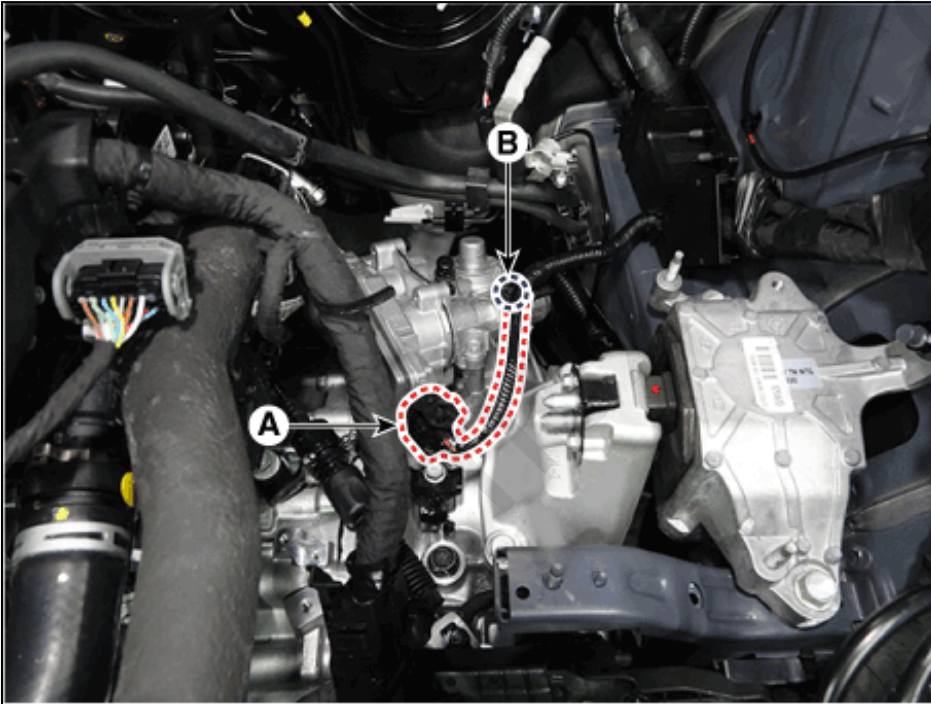
- 1)Self diagnosis : Inspects and displays diagnostic trouble code (DTC)
- 2)CAN signals : Checks the system input/output value status
- 3)Forced operation : Checks the system operating status
- 4)Additional function : Controls system options, zero point adjustment and other functions

Removal

1. Turn ignition switch OFF and disconnect the negative (-) battery cable.
2. Remove the air cleaner assembly and air duct.
(Refer to Engine Mechanical System - "Air cleaner")
3. Remove the ECM.
(Refer to Engine Control / Fuel System - "Engine Control Module (ECM)")
4. Remove the battery and battery tray.
(Refer to Engine Electrical System - "Battery")
5. Disconnect the gear actuator connector (A).
6. Loosen the gear actuator wiring bracket mounting bolts (B).

Tightening torque :

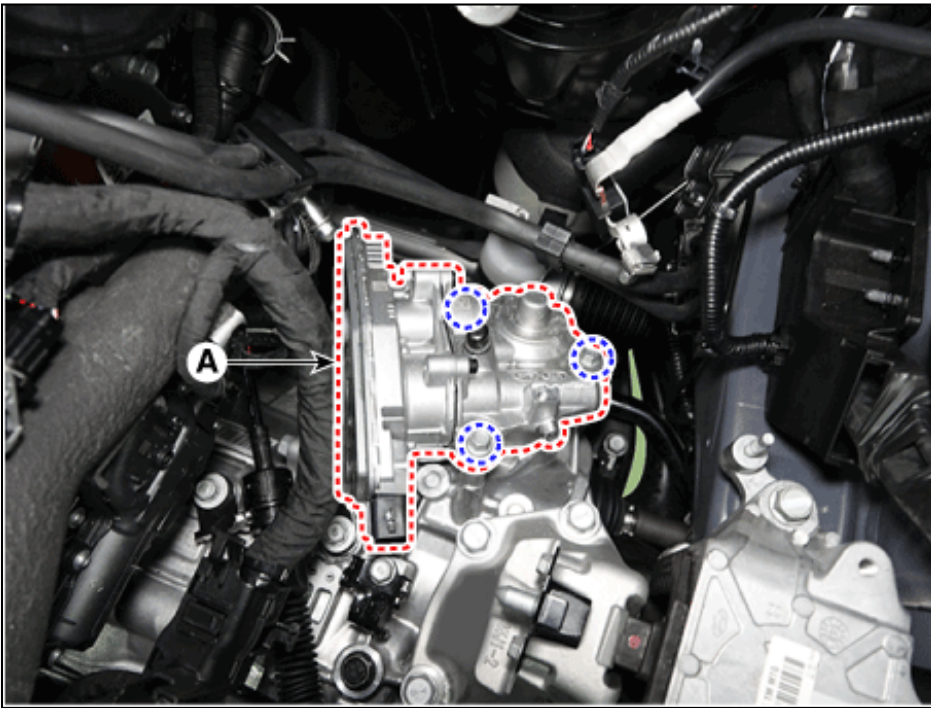
9.8 - 11.8 N.m (1.0 - 1.2 kgf.m, 7.2 - 8.7 lb-ft)



7. Loosen the bolts and then removing the gear actuator (A).

Tightening torque :

19.6 - 26.5 N.m (2.0 - 2.7 kgf.m, 14.5 - 19.5 lb-ft)



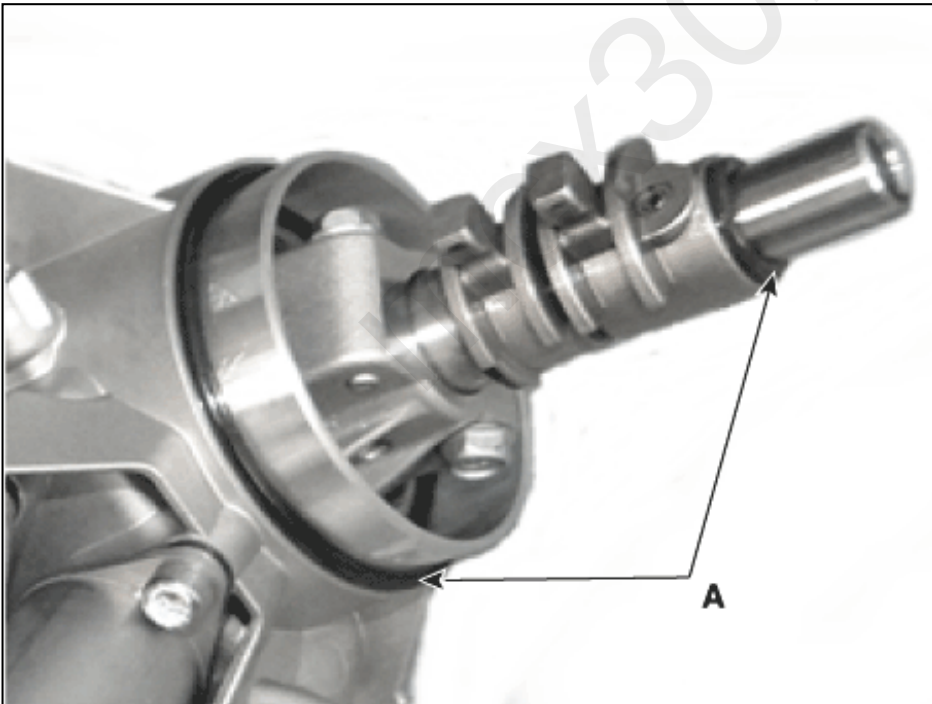
Installation

1. To install, reverse the removal procedure.



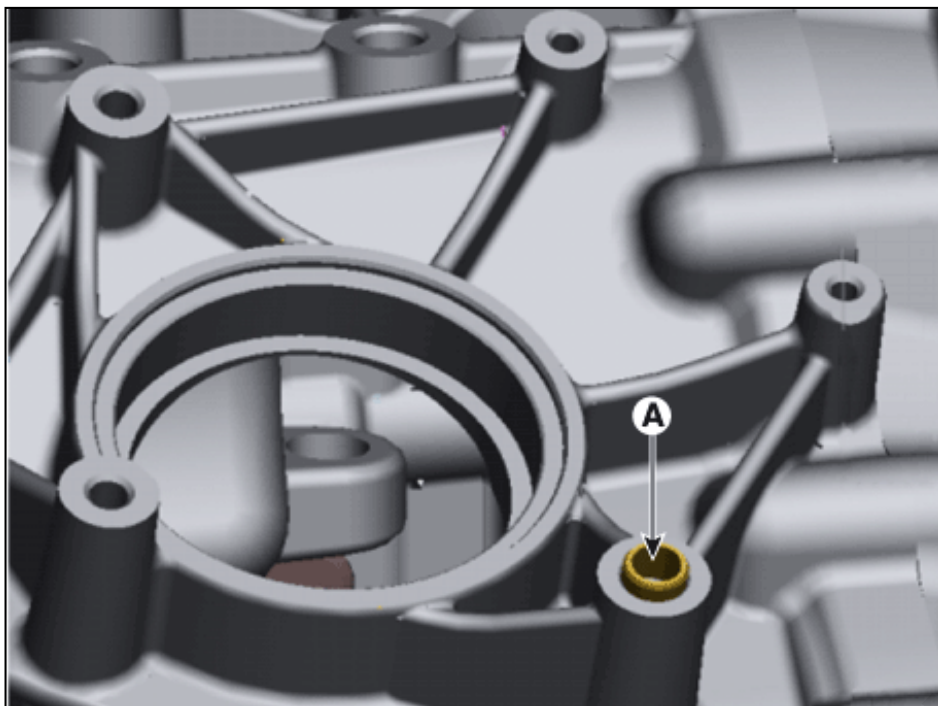
- Check the details below before installing the gear actuator assembly.

- 1)Check that the gear actuator is placed in the "neutral" state.
- 2)Check the assembled state of the O-rings (A).

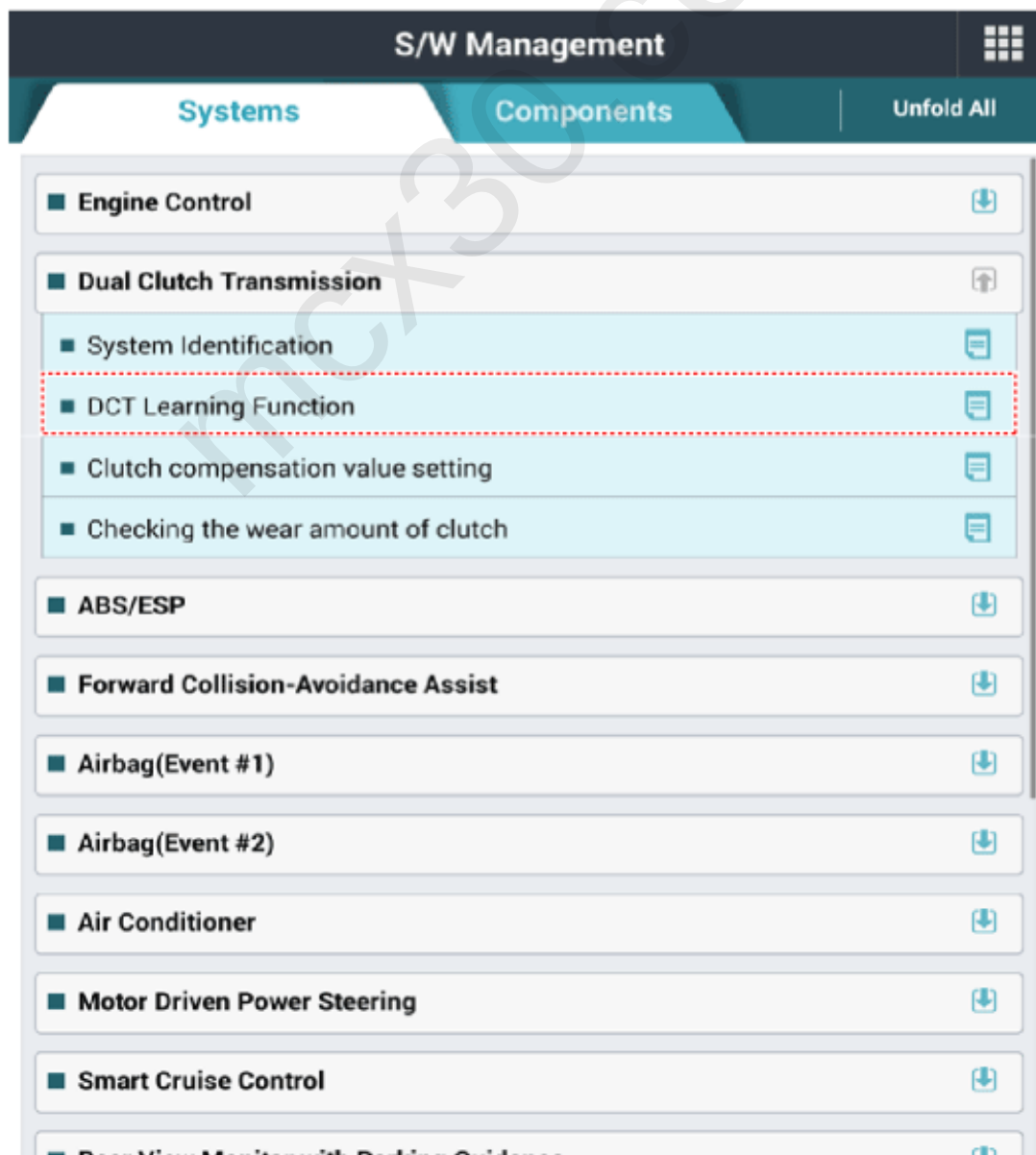


- 3)Apply gear oil to the surface of O- rings.

4) Check the assembled state of the dowel pins (A).



• Perform the clutch touch point learning procedure using the diagnostic tool after replacing the clutch actuator assembly.



■ Smart Cruise Control



■ Rear View Monitor with Parking Guidance



■ Blind-Spot Collision Warning



■ Lane Keeping Assist

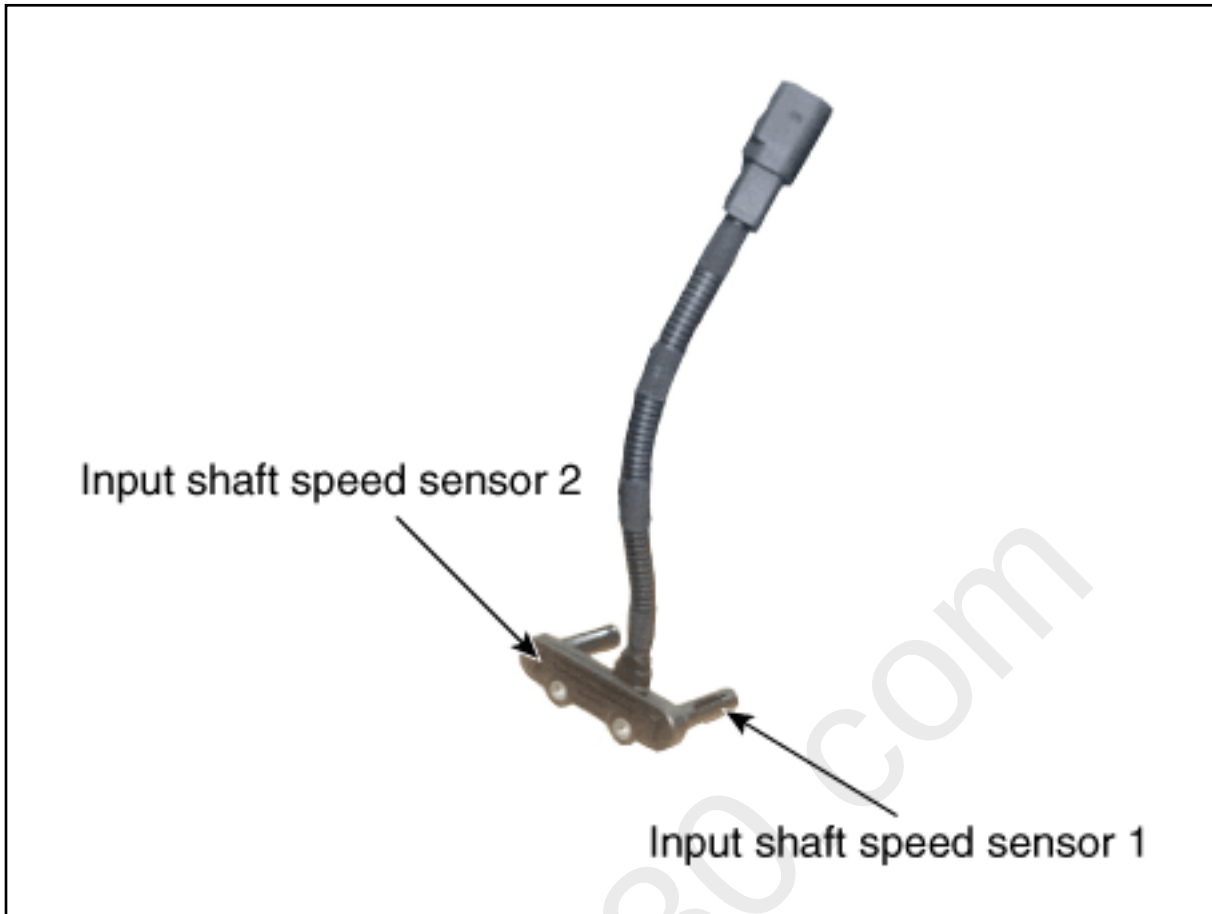


Do not touch any system buttons while performing this function.

mcx30.com

Description

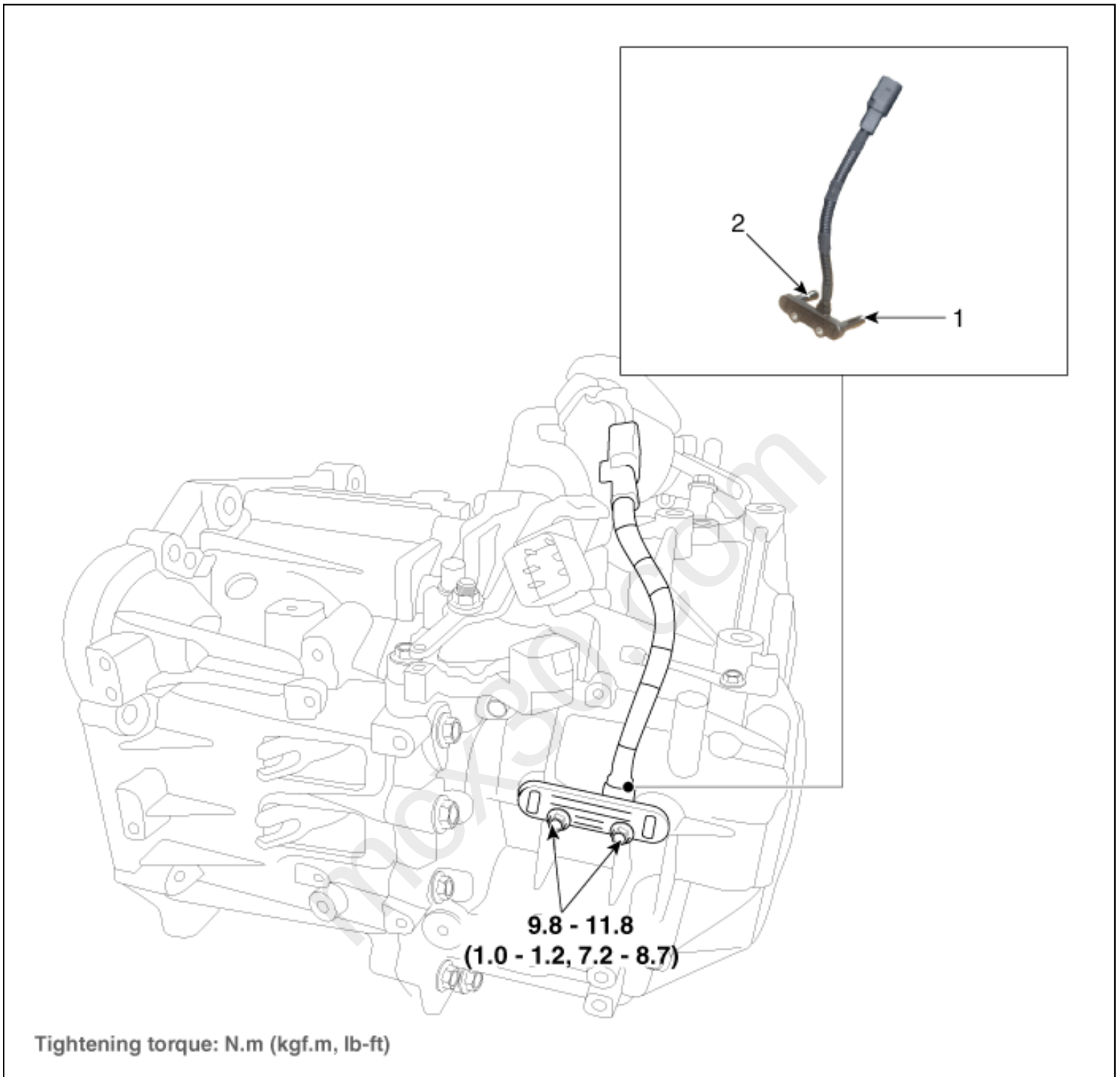
- **Components location :** DCT (Dual Clutch Transmission)



- **Function**

The input shaft speed sensor is important in that it detects the input shaft RPM and sends this information to the Transmission Control Module (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.

Components



1. Input shaft speed sensor 1 (Odd)

2. Input shaft speed sensor 2 (Even)

Specification

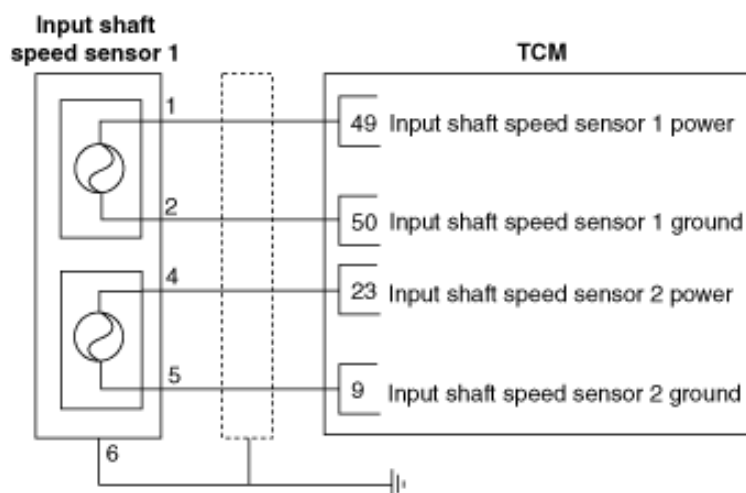
Item	Specification
Type	Hall effect sensor
Output signal	High: 11.8 - 16.8 mA
	Low: 5.9 - 8.4 mA

mcx30.com

Circuit Diagram

[Circuit Diagram]

[Connection Information]

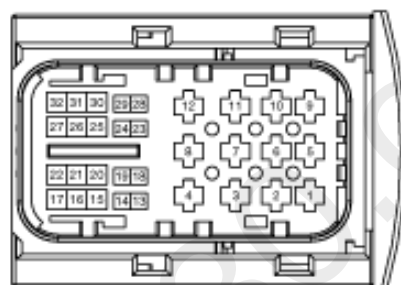


Terminal	Connected to	Function
1	TCM(49)	Input shaft speed sensor 1 power
2	TCM(50)	Input shaft speed sensor 1 ground
3	-	-
4	TCM(23)	Input shaft speed sensor 2 power
5	TCM(9)	Input shaft speed sensor 2 ground
6	Sensor ground	Sensor Shield

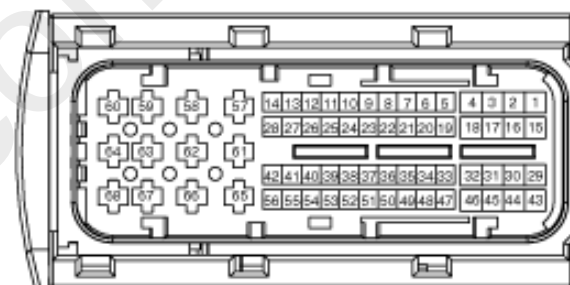
[Harness Connector]



C528
Input shaft speed sensor
connector



Connector [A]
TCM



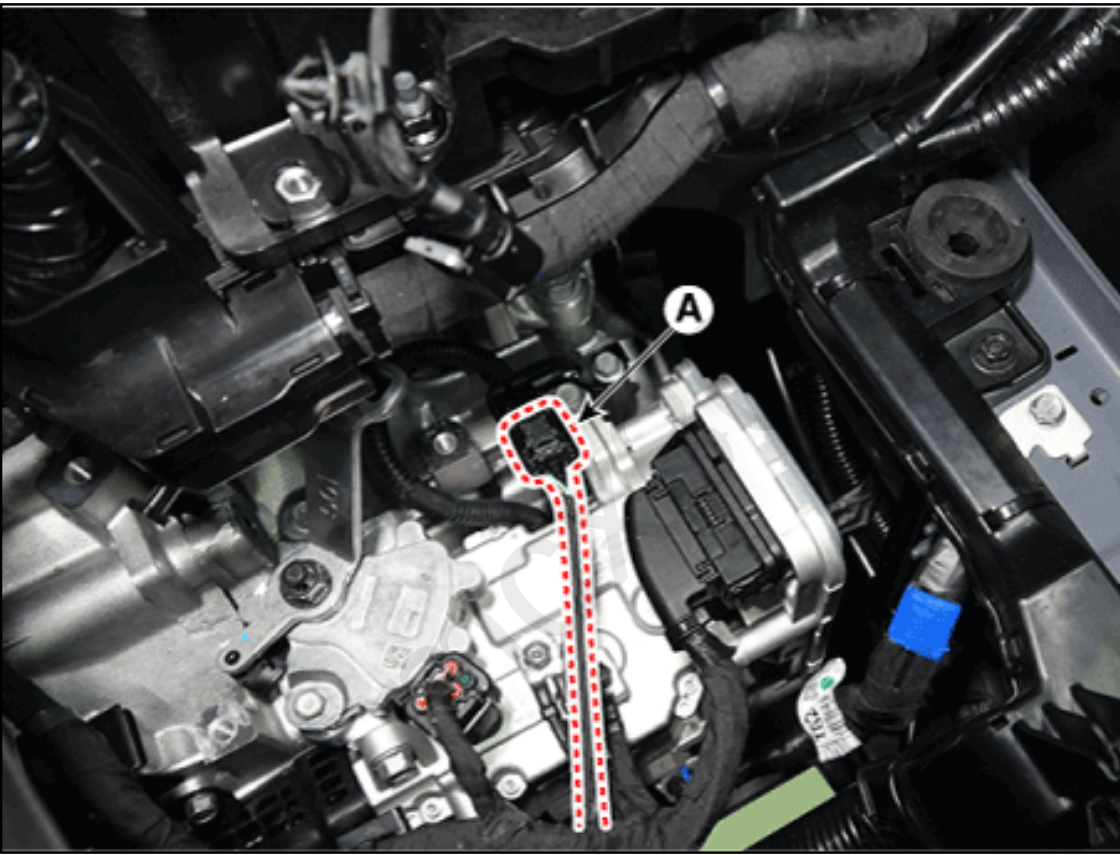
Connector [B]
TCM

Inspection

1. The DCT system can be more quickly diagnosed for troubles by using the vehicle diagnostic system (diagnostic tool). (Refer to DTC guide)
diagnostic tool provides the following information.
 - 1)Self diagnosis : Inspects and displays diagnostic trouble code (DTC)
 - 2)Sensor data : Checks the system input/output value status
 - 3)Forced operation : Checks the system operating status
 - 4)Additional function : Controls system options, zero point adjustment and other functions

Removal

1. Turn ignition switch OFF and disconnect the battery negative (-) terminal.
2. Remove the air cleaner assembly and air duct.
(Refer to Engine Mechanical System - "Air cleaner")
3. Disconnect the input shaft speed sensor connector (A).

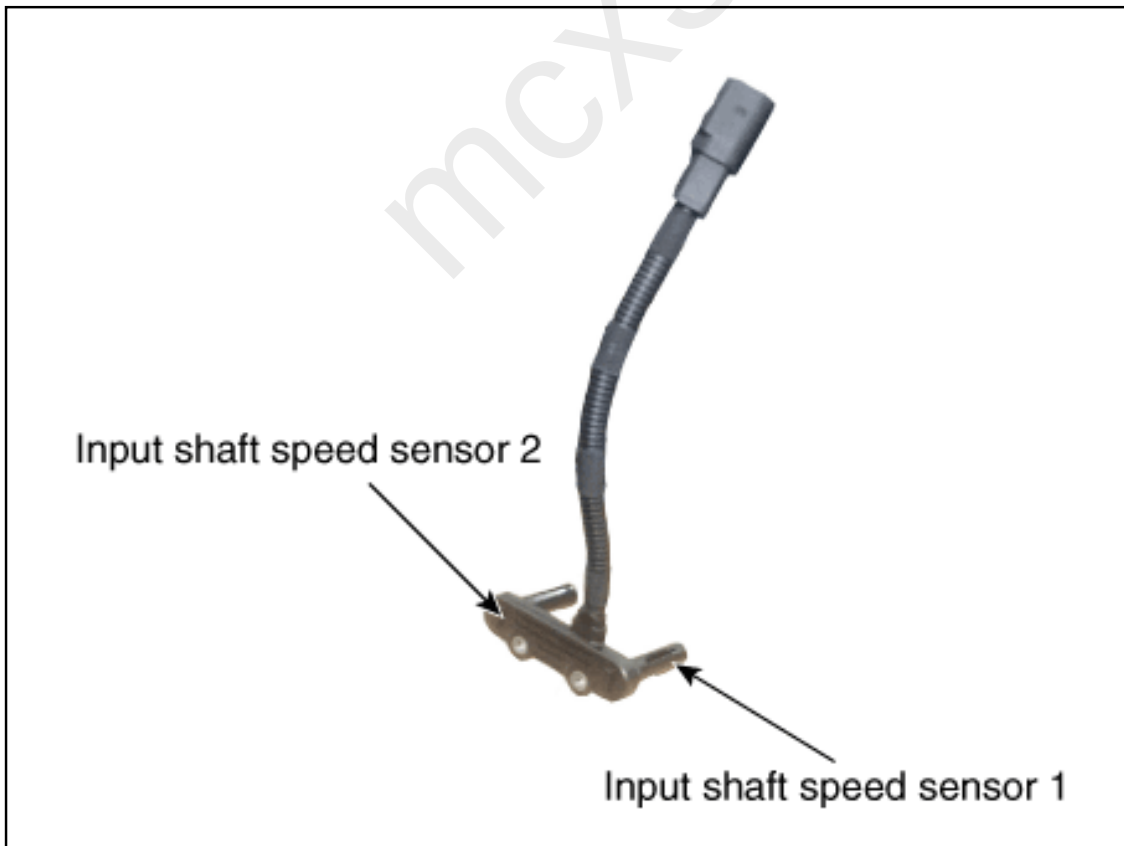
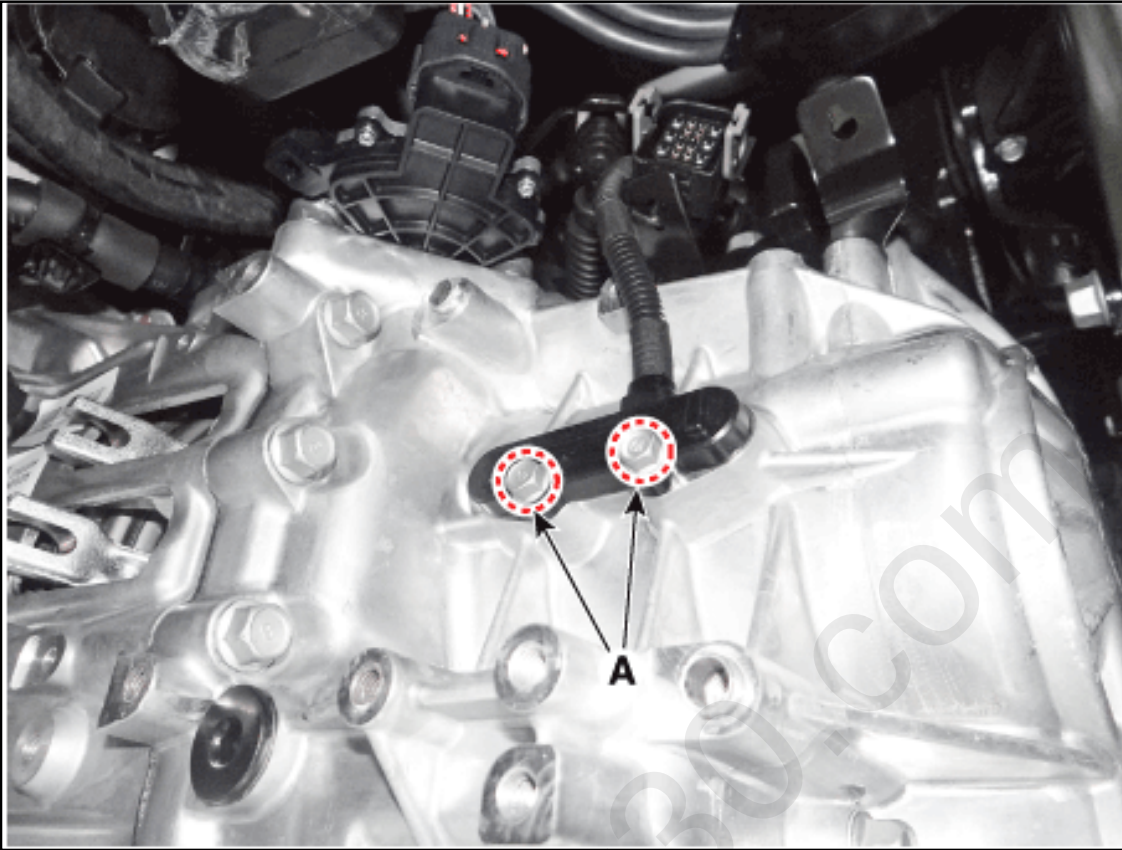


4. Remove the clutch actuator.
(Refer to Dual Clutch Transmission Control System - "Clutch Actuator & TCM Assembly")

5. Remove the input shaft speed sensor (A).

Tightening torque :

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



Installation

1. Install in the reverse order of removal.

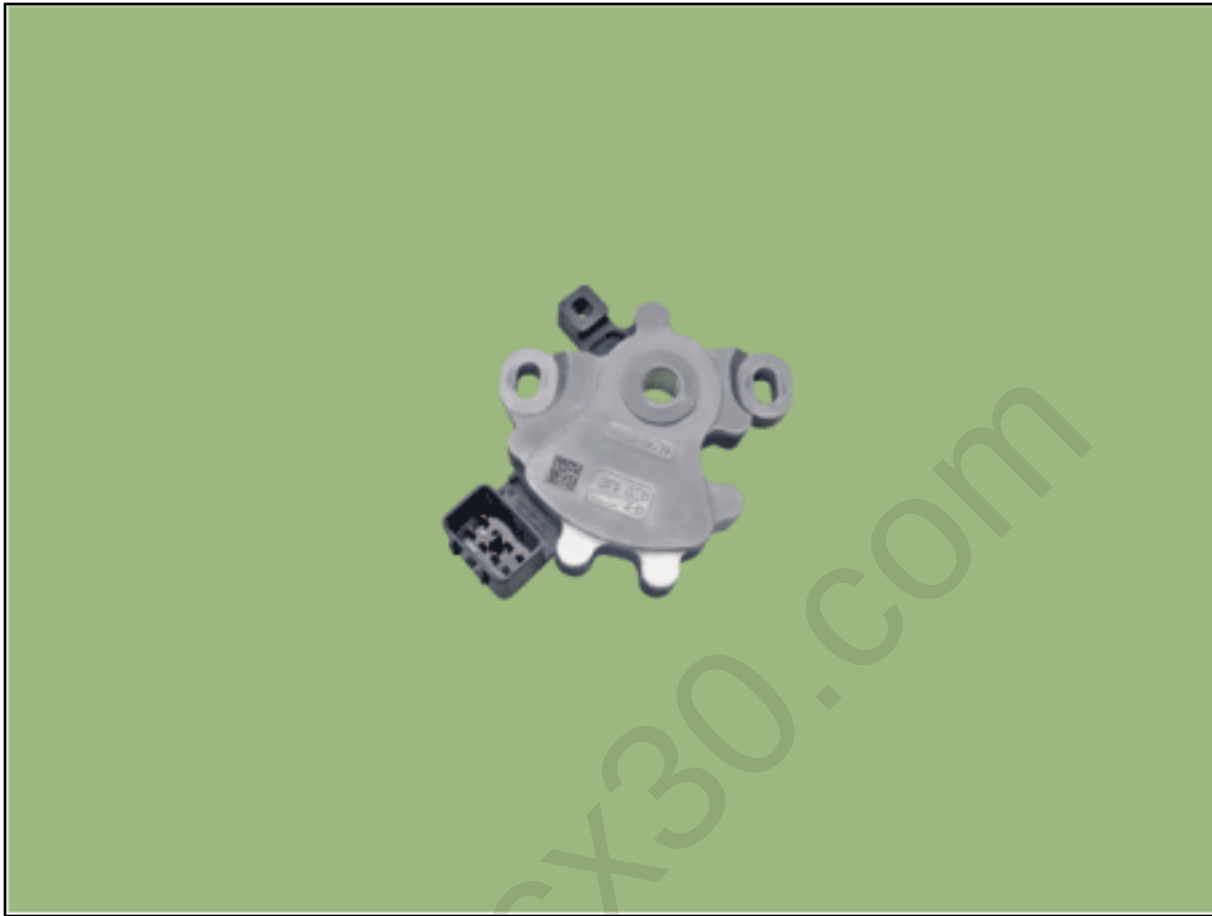


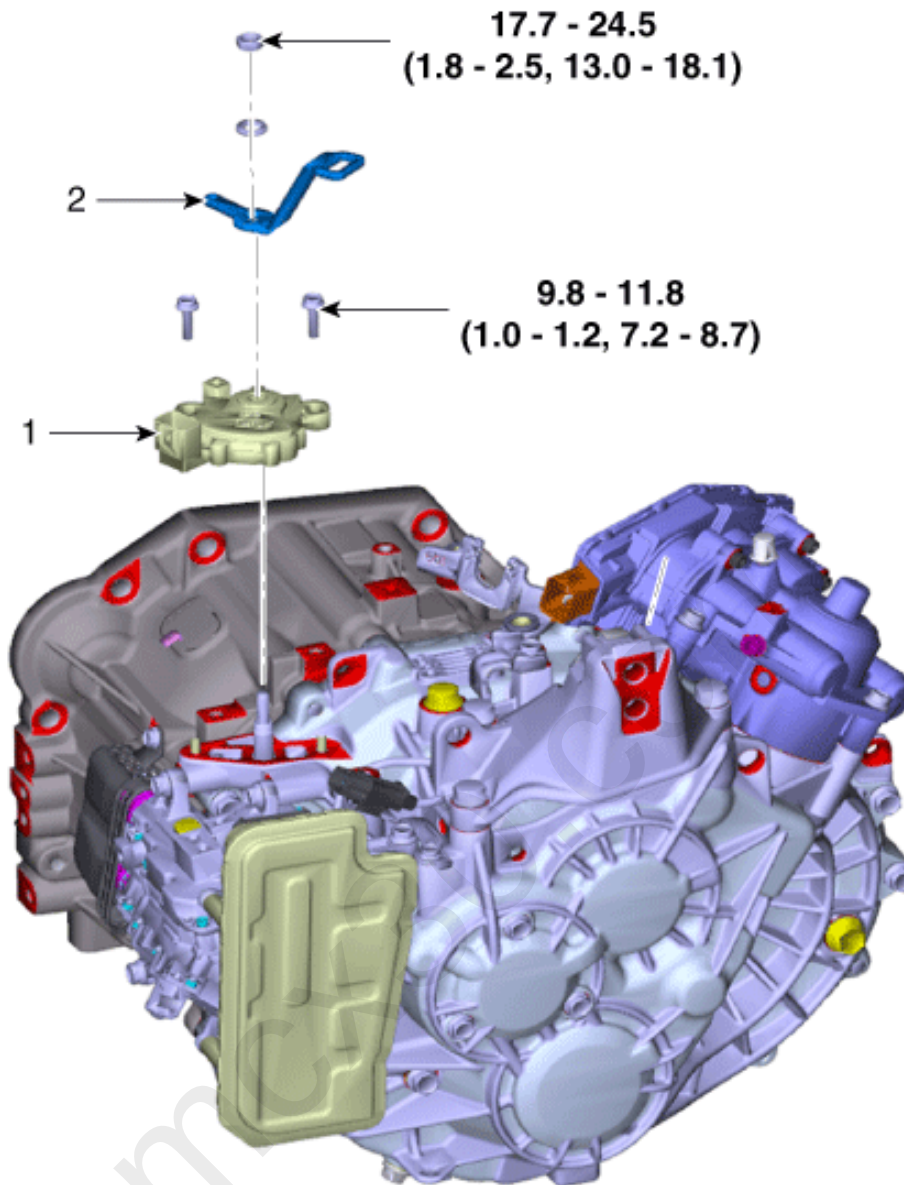
- Before installing the input speed sensor, check the assembled state of the O-rings (A) and should apply gear oil to the surface of O- rings.



Description

- The inhibitor switch is installed on top of transmission, and is connected to the shift lever through shift cable.
- Inhibitor switch signals (S1, S2, S3, S4) are transmitted to the TCM according to the driver's shift lever control.





Tightening torque : N.m (kgf.m, lb-ft)

1. Inhibitor switch

2. Manual control lever

Fault Diagnosis for Symptom

Major Symptom	Expected Cause	Items to Check and Measures
Shift lever not operating Gear not marked on cluster Shock occurs while shifting lever Warning lamp ON Engine OFF while vehicle is parked	Inhibitor switch circuit abnormal Inhibitor switch function abnormal	Check the inspection FLOW and replace the inhibitor switch
	Inhibitor switch "N" setting faulty	Adjust "N" setting using "N" setting jig (refer to automatic transmission system - "inhibitor switch")
	Shift cable separation faulty	Adjust shift cable separation (refer to automatic transmission system - "inhibitor switch")
	Poor ground condition on reversing light circuit	Check the ground condition on reversing light and retighten it
	Inhibitor switch vehicle side circuit abnormal	Check the connection of junction box power terminal, fuse (TCU2) terminal and replace the junction box or adjust the gap
		Check inside the inhibitor switch connector for foreign substance and whether terminal is bent
	Poor ground condition on inhibitor switch wire	Check the ground condition of wire and retighten it
	Poor inhibitor unit (disconnection/short-circuit)	Replace inhibitor switch (refer to inhibitor switch inspection)

Specifications

Item	Specification
Power supply	12V
Output type	Combination of output signals

Signal Code Table

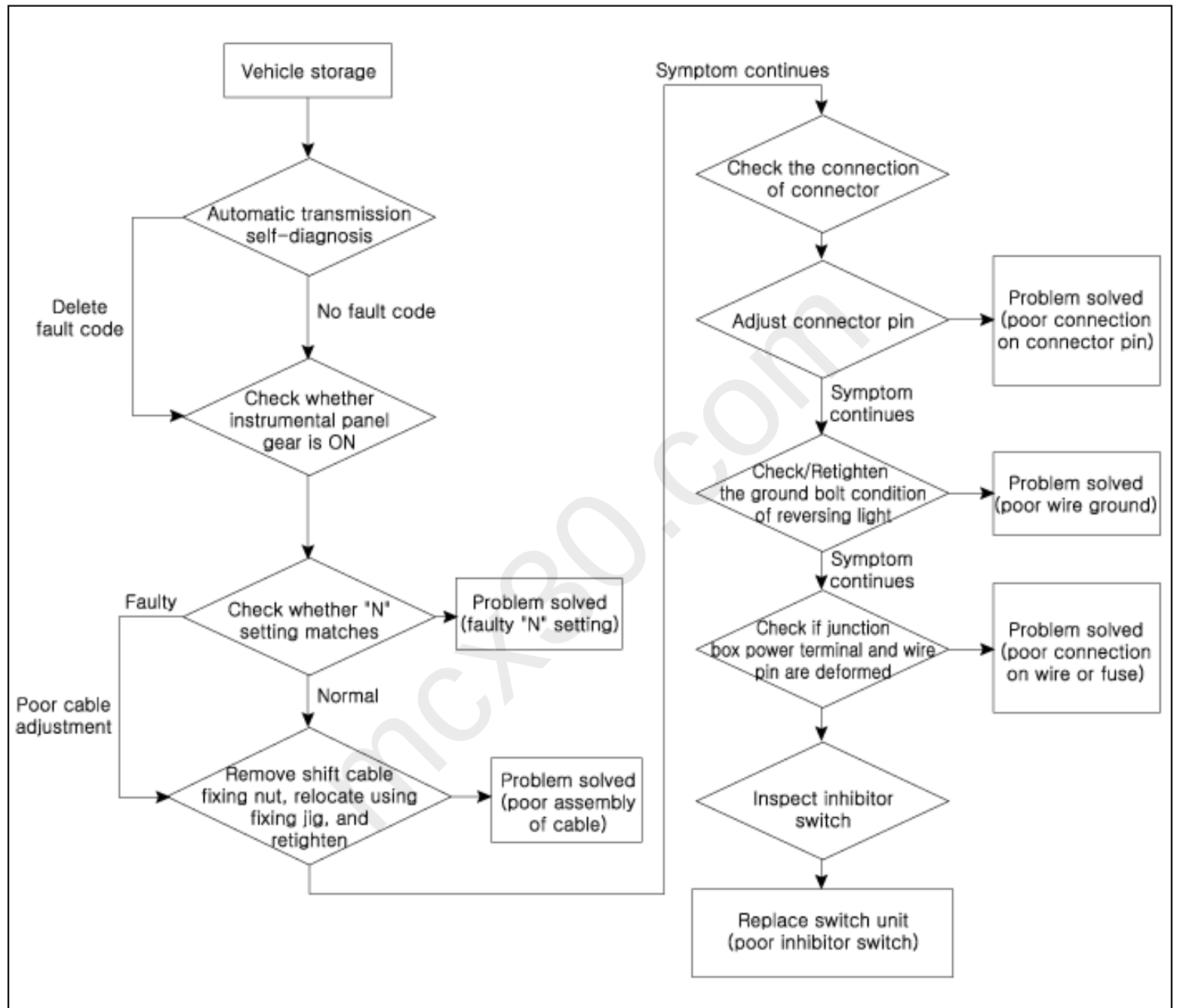
	P	Pst (P - R)	R	Nst (R - N)	N	N-D	D
Signal "1"	12V	12V	0	0	0	0	0
Signal "2"	0	12V	12V	12V	0	0	0
Signal "3"	0	0	0	12V	12V	12V	0
Signal "4"	0	0	0	0	0	12V	12V

Inspection



- Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.

Inspection flow



Items to check

1. Inspect DTC code.
2. Inspect whether N setting matches.
 - Adjust N setting (refer to automatic transmission system - "inhibitor switch")
3. Inspect shift cable separation.
 - Adjust shift cable separation (refer to automatic transmission system - "shift cable")

4. Inspect whether connector is connected.

- Inspect connector thoroughly for looseness, poor connection, bending, corrosion, contamination, deformation, or damage.
- Turn ignition key "ON" and engine "OFF" and measure the power supplied to inhibitor switch circuit and voltage between ground.

Specification : approx. 12 V

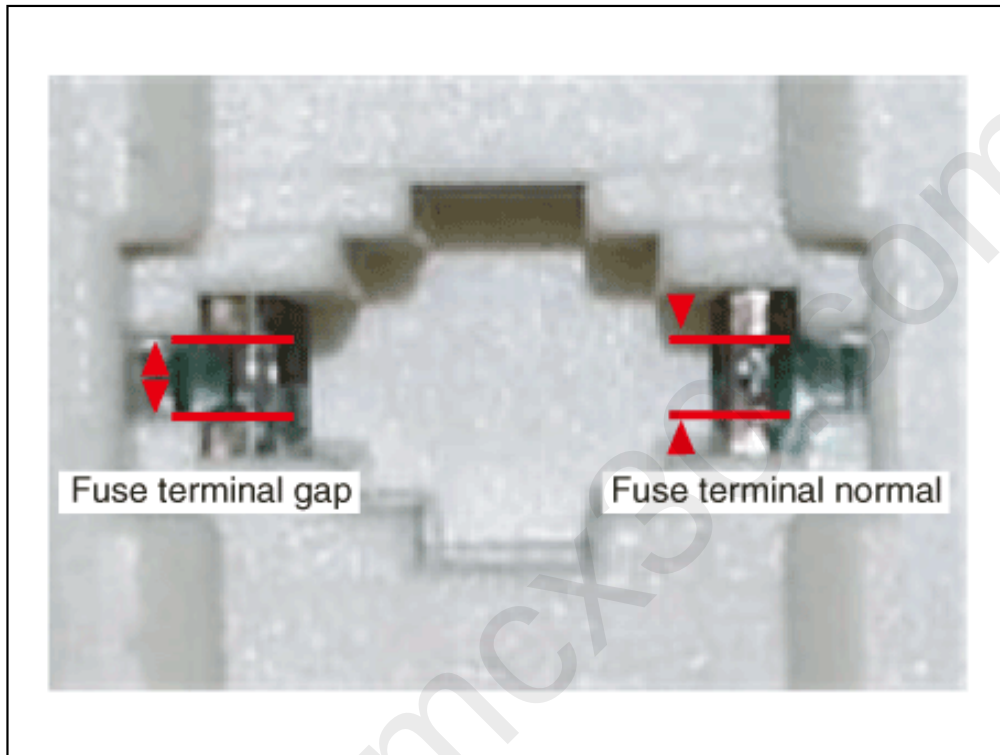
- Fix the pin wiring when connector pin wiring is faulty (refer to ETM - "wiring repair").

5. Inspect ground condition on reversing light circuit.

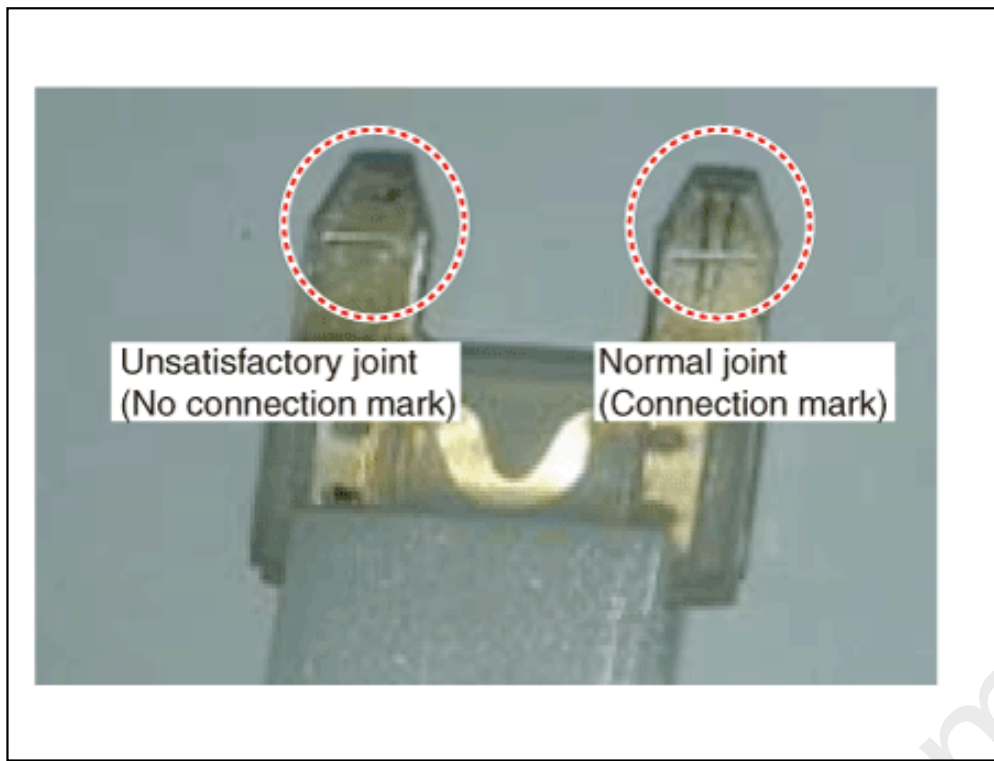
- Check the ground location of reversing light (refer to ETM - "harness location map").
- Reattach reversing light if ground condition is faulty.

6. Inspect wiring connection on junction box power terminal and fuse lamp.

- Check whether fuse holder is separated and holder is holding the fuse tight.



- Attach tester fuse to check if it is connected appropriately.



- Check whether fuse capacity is appropriate for each circuit.
- Check if fuse is damaged.
- Check pulling of fuse fixing wiring, inflow of foreign substance, and arrangement condition of terminal.
- Relocate the terminal that has been pulled and inspect using the method explained above.
- When problem is not solved, refer to the circuit diagram wiring repair instructions to fix or replace the terminal.

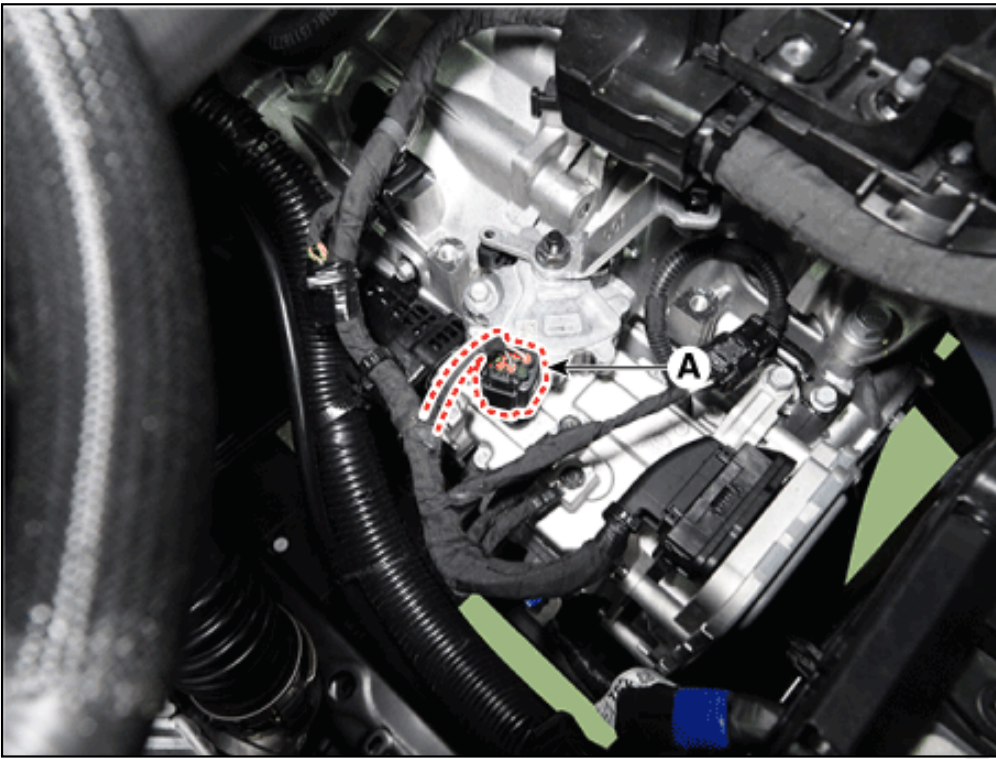
7. Inspect inhibitor switch signal.

- Turn ignition key "ON" and engine "OFF".
- Measure the voltage between each terminal and chassis ground when shifting lever to "P, R, N, D" range.

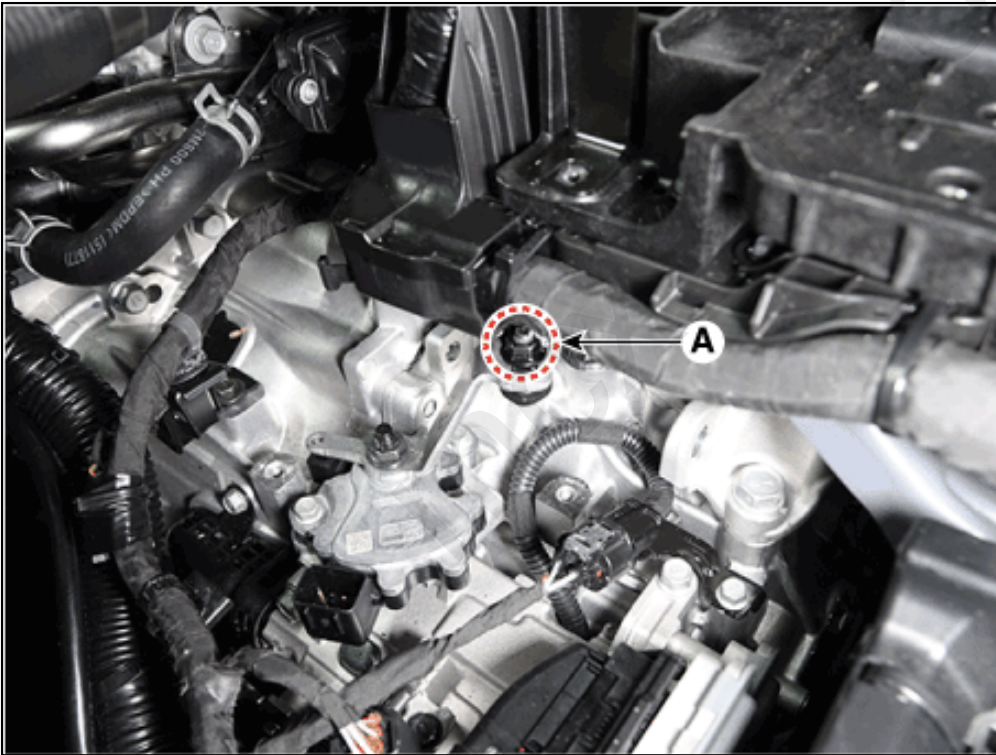
Specified value: refer to specification "signal code" table

Removal

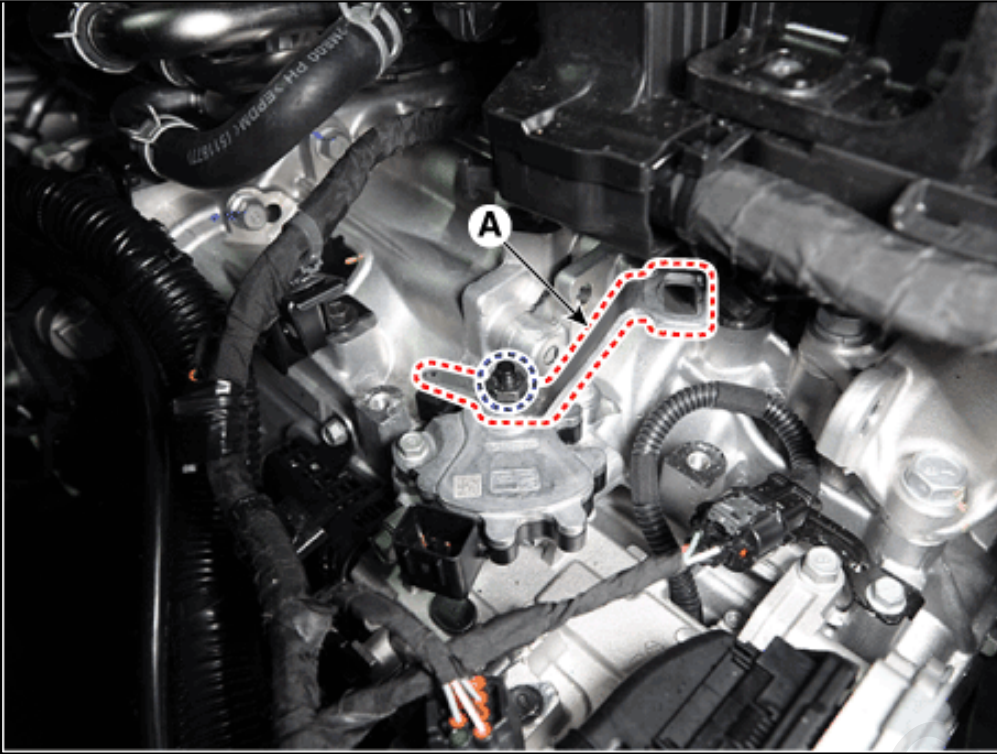
1. Turn ignition switch OFF and disconnect the battery negative (-) terminal.
2. Make sure vehicle does not roll before setting shift lever to "N" position.
3. Remove the air cleaner assembly and air duct.
(Refer to Engine Mechanical System - "Air cleaner")
4. Disconnect the inhibitor switch connector (A).



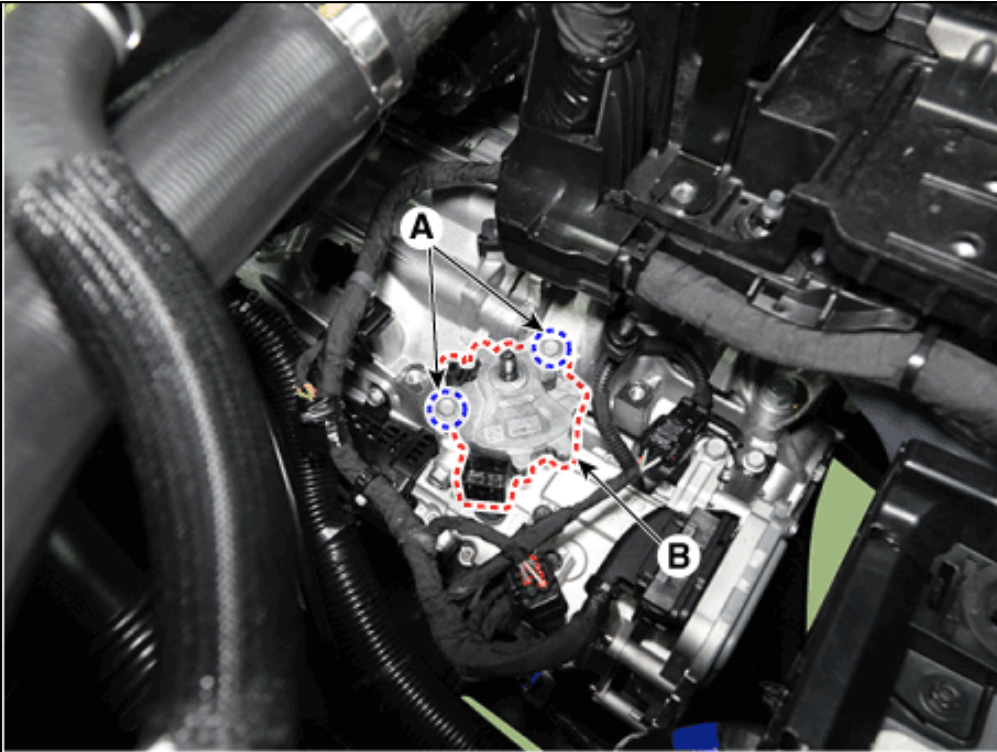
5. Loosen the shift cable mounting nut (A).



6. Remove the manual control lever (A) after loosening the mounting nut.



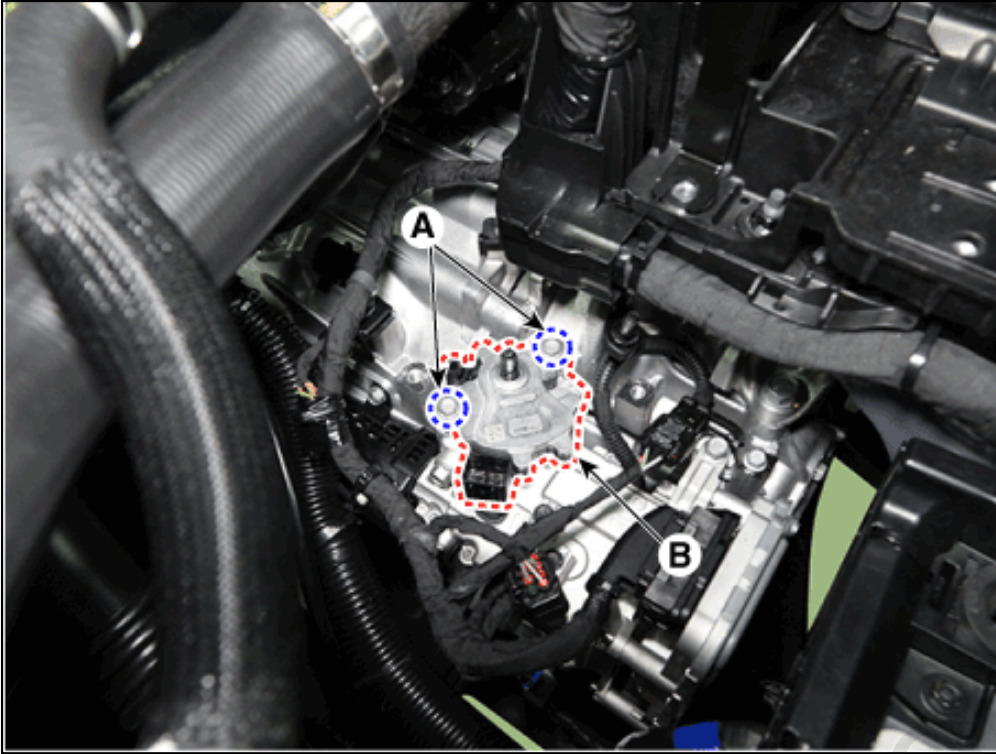
7. Remove the inhibitor assembly (B) after loosening the mounting bolts (A).



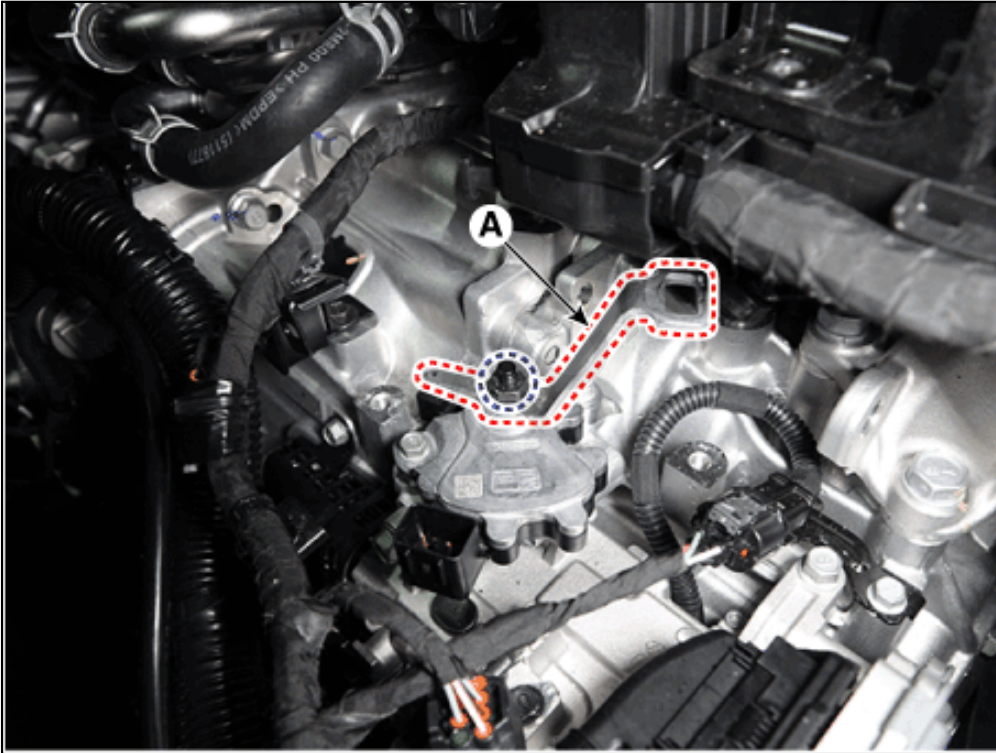
Installation

1. Check that the shift lever is placed in the "N" position.

2. Lightly tighten the inhibitor switch mounting bolts (A) after installing the inhibitor switch (B).



3. Lightly tighten the manual control lever mounting nut after installing the manual control lever (A).



4. Align the hole in the manual control lever with the "N" position hole of the inhibitor switch and then insert the inhibitor switch guide pin (09480-A3800).

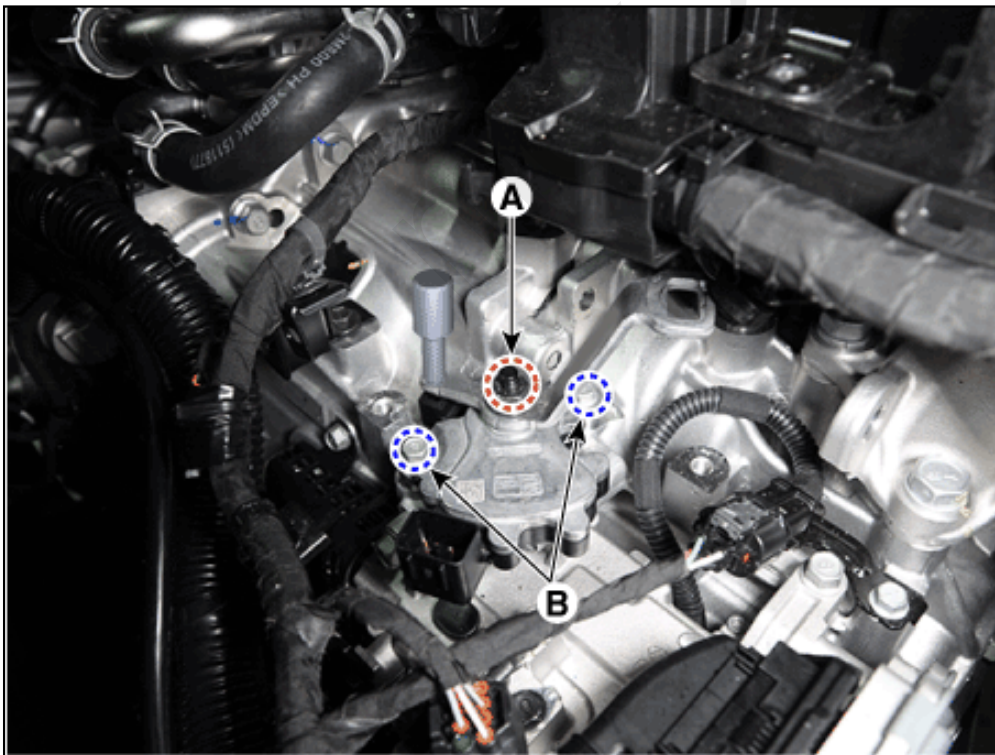


5. Tighten the nut (A) and bolts (B) with the specified torque.

Tightening torque :

(A) : 17.7 - 24.5 N.m (1.8 - 2.5 kgf.m, 13.0 - 18.1 lb-ft)

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

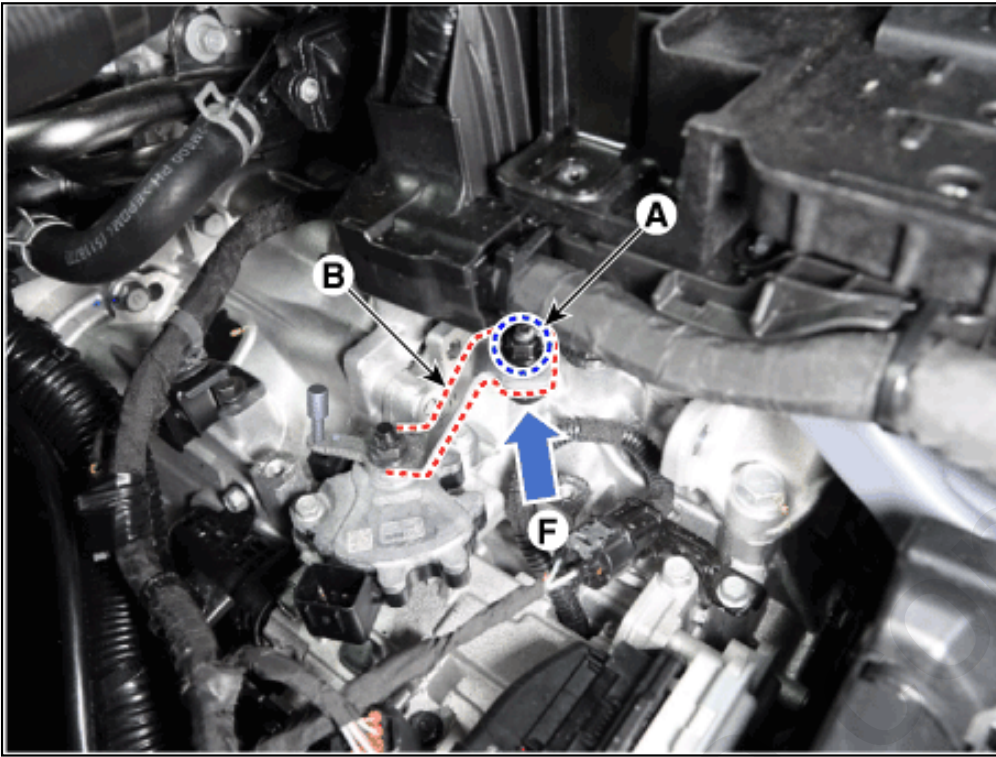


6. Lightly tighten the nut (A) after connected the shift cable in the manual control lever (B).
7. Push shift cable lightly to "F" direction shown to eliminate free play of shift cable.

8. Tighten the nut (A) with the specified torque.

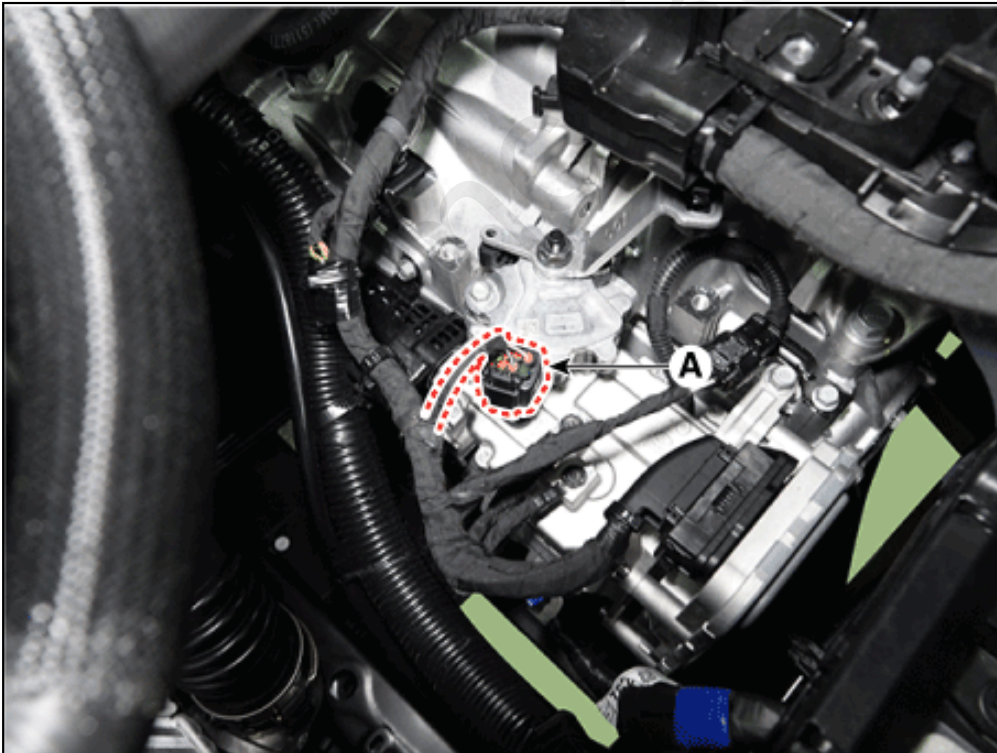
Tightening torque :

9.8 - 13.7 N.m (1.0 - 1.4 kgf.m, 7.2 - 10.1 lb-ft)



9. Remove the inhibitor switch guide pin (SST No. : 09480-A3800) from the hole.

10. Connect the inhibitor switch connector (A).



11. Install the air cleaner and air duct.

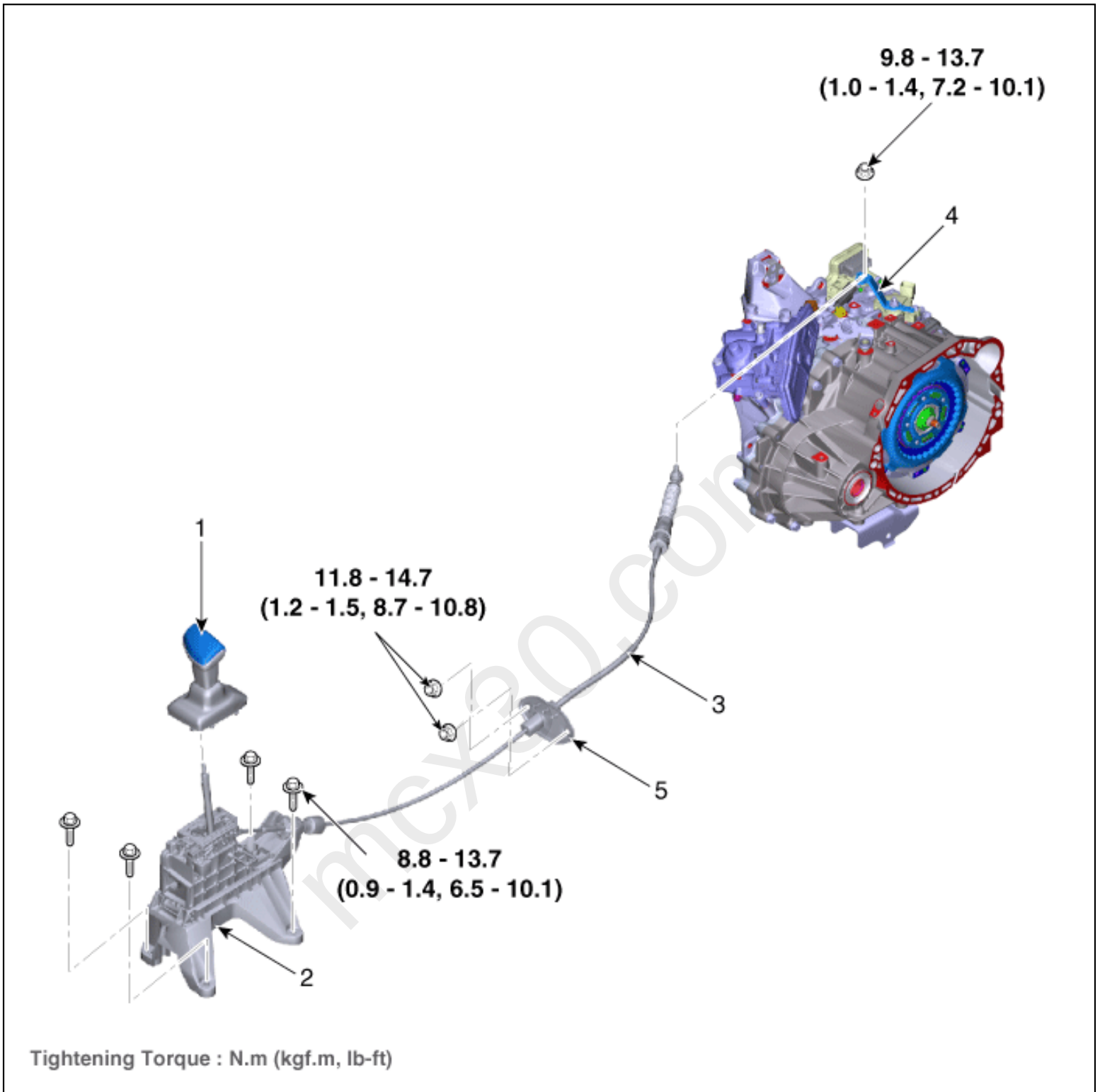
(Refer to Engine Mechanical System - "Air cleaner")



- Check that operating surely at each range of the inhibitor switch corresponding to each position of shift lever.

mcx30.com

Components



1. Shift lever knob & boots assembly
2. Shift lever assembly
3. Shift cable

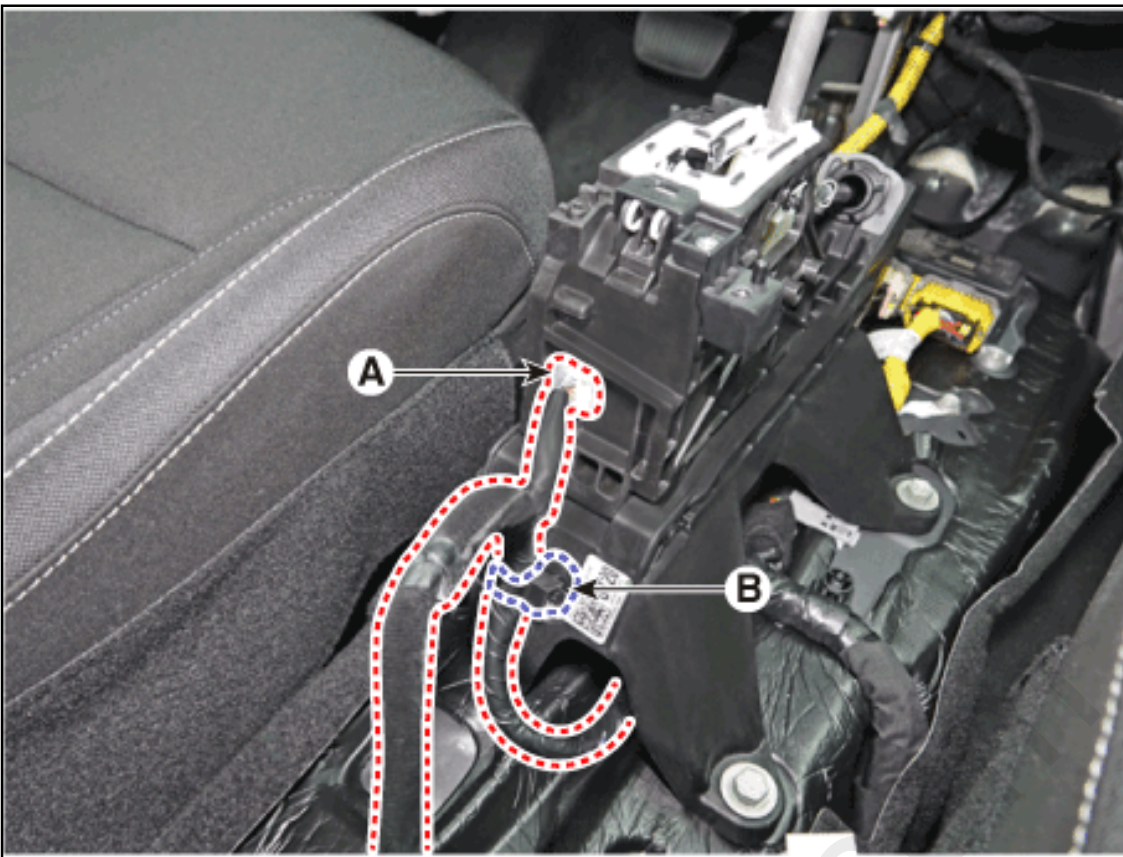
4. Manual control lever
5. Shift cable retainer

Removal

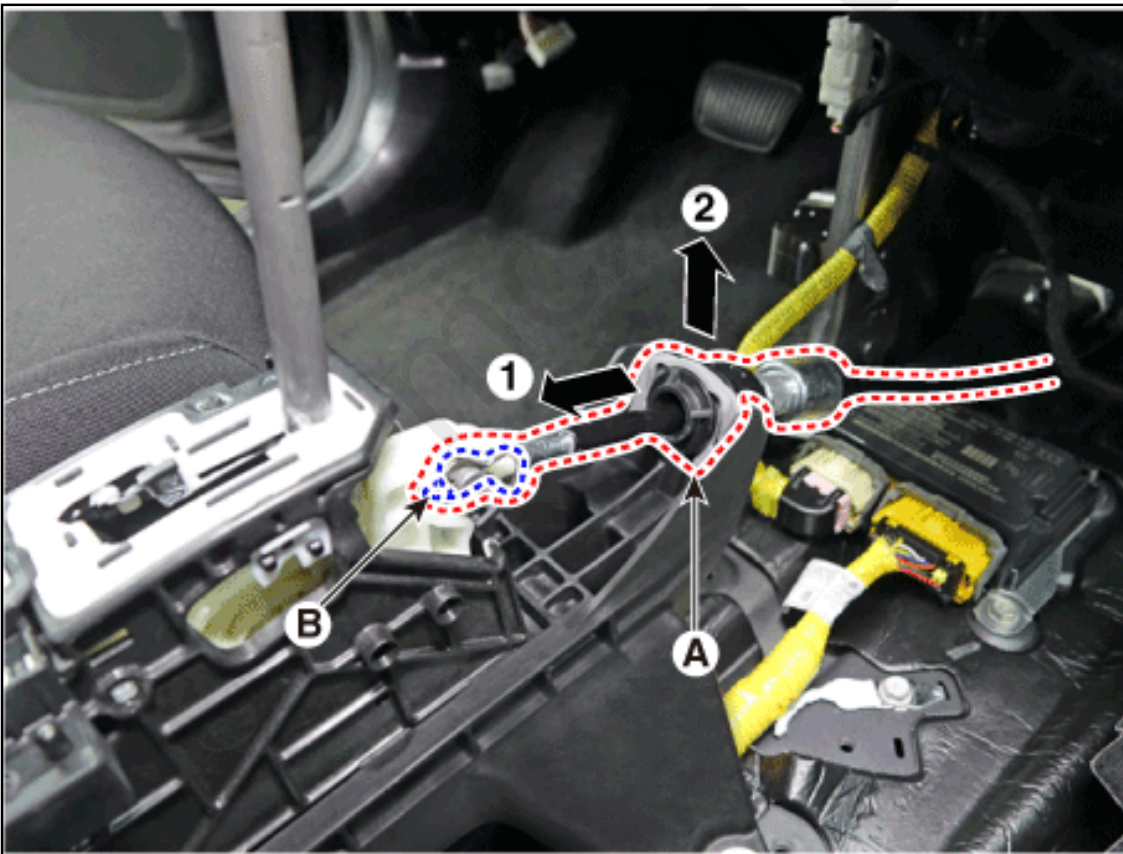
1. Remove the shift lever knob & boots (A) pull both of it up.



2. Remove the floor console assembly.
(Refer to Body (Interior and Exterior) - "Floor Console")
3. Disconnect the shift lever connector (A) and wiring clip (B).



4. Disconnect the shift cable (A) after removing the snap pin (B).



5. Remove the shift lever assembly (A) after removing the bolts.

Tightening torque :

8.8 - 13.7 N.m (0.9 - 1.4 kgf.m, 6.5 - 10.1 lb-ft)



Installation

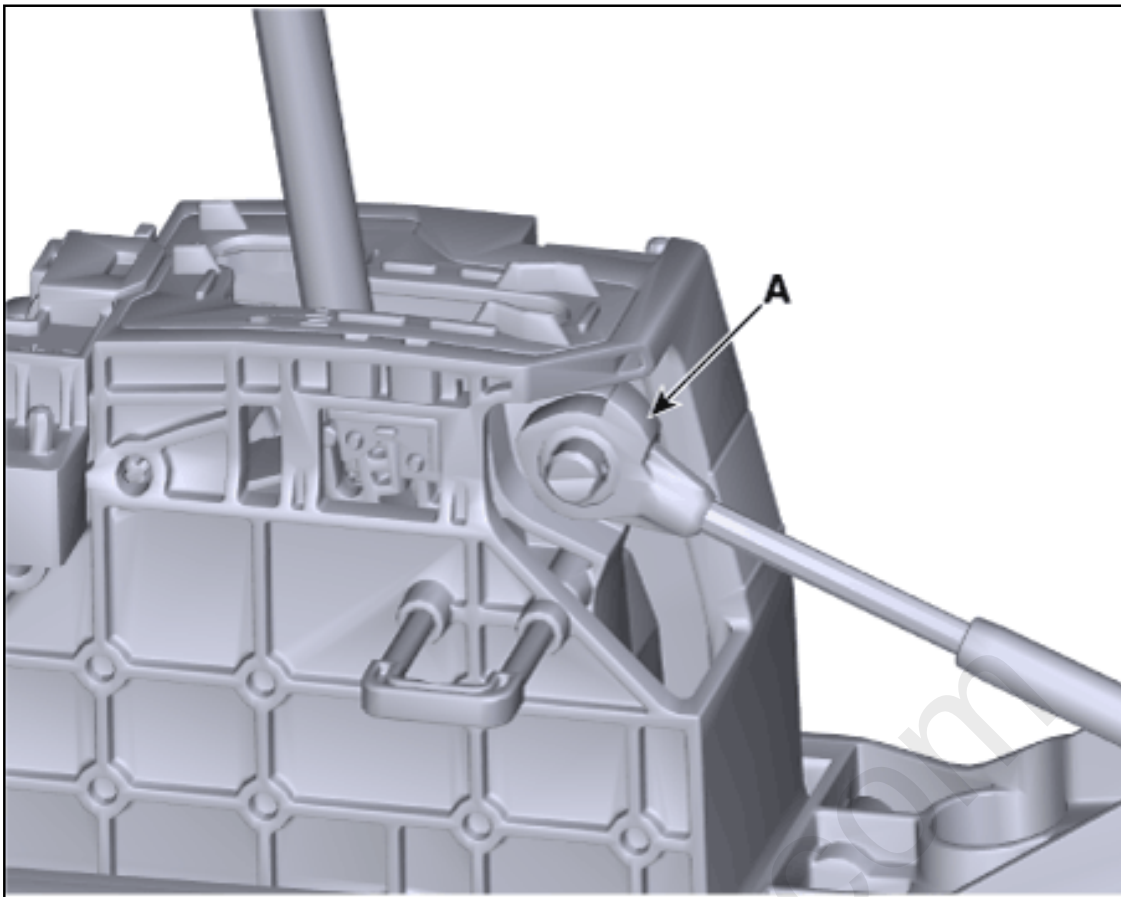
1. To install, reverse the removal procedure.



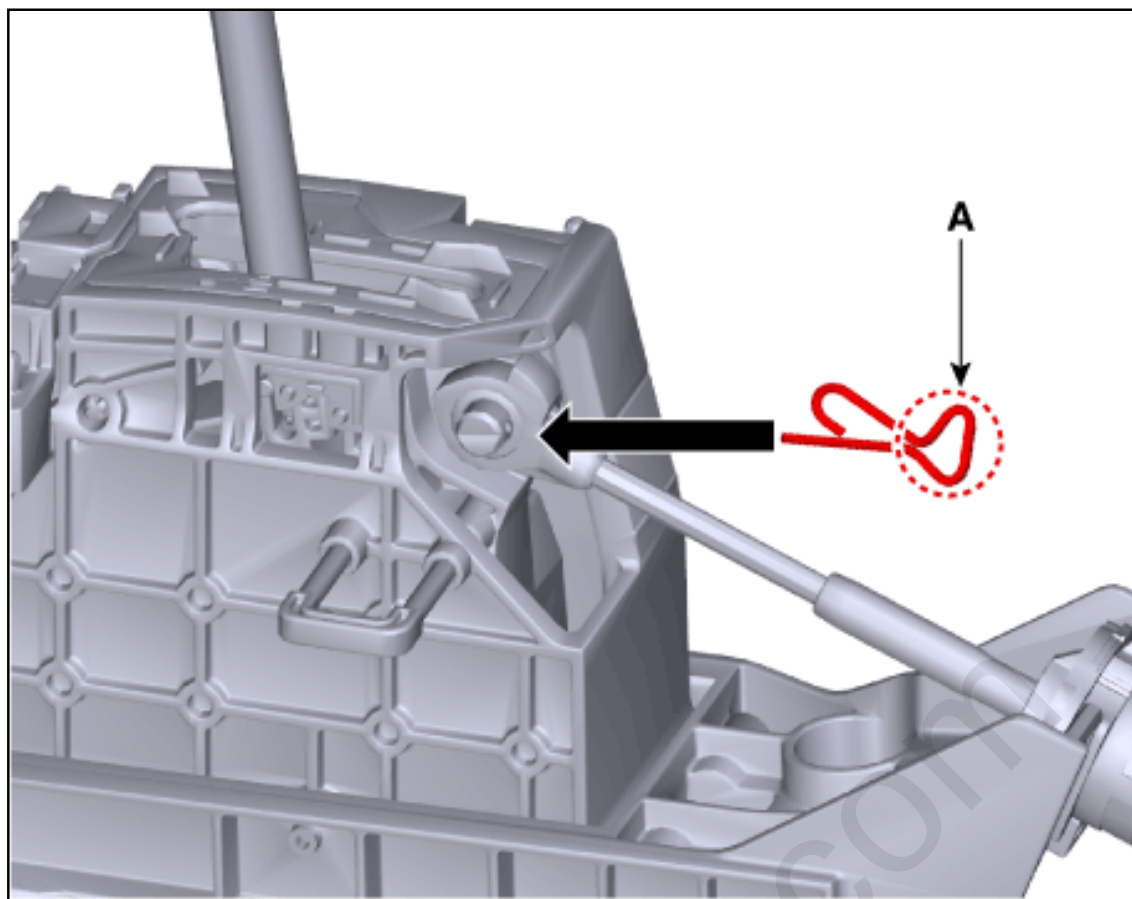
- Before installing, check that the shift lever and manual control lever are placed in the "N" position.



- When assembling shift cable, the projection (A) must face upwards.

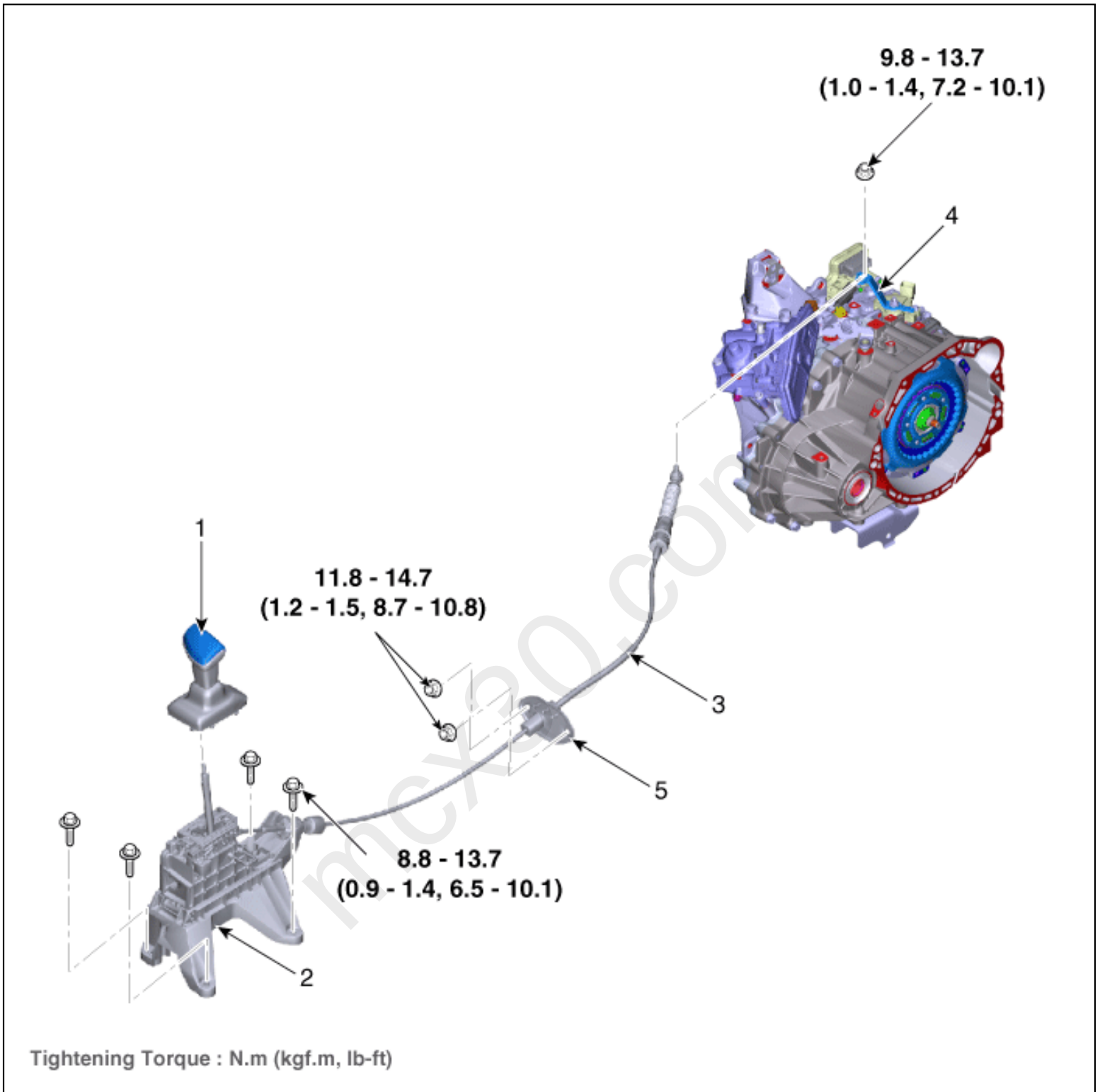


- When assembling the snap pin, be careful about the correct direction.
 - The band portion (A) must point to the front of the vehicle.
 - The band portion (A) must point outwards.



mcx30.com

Components

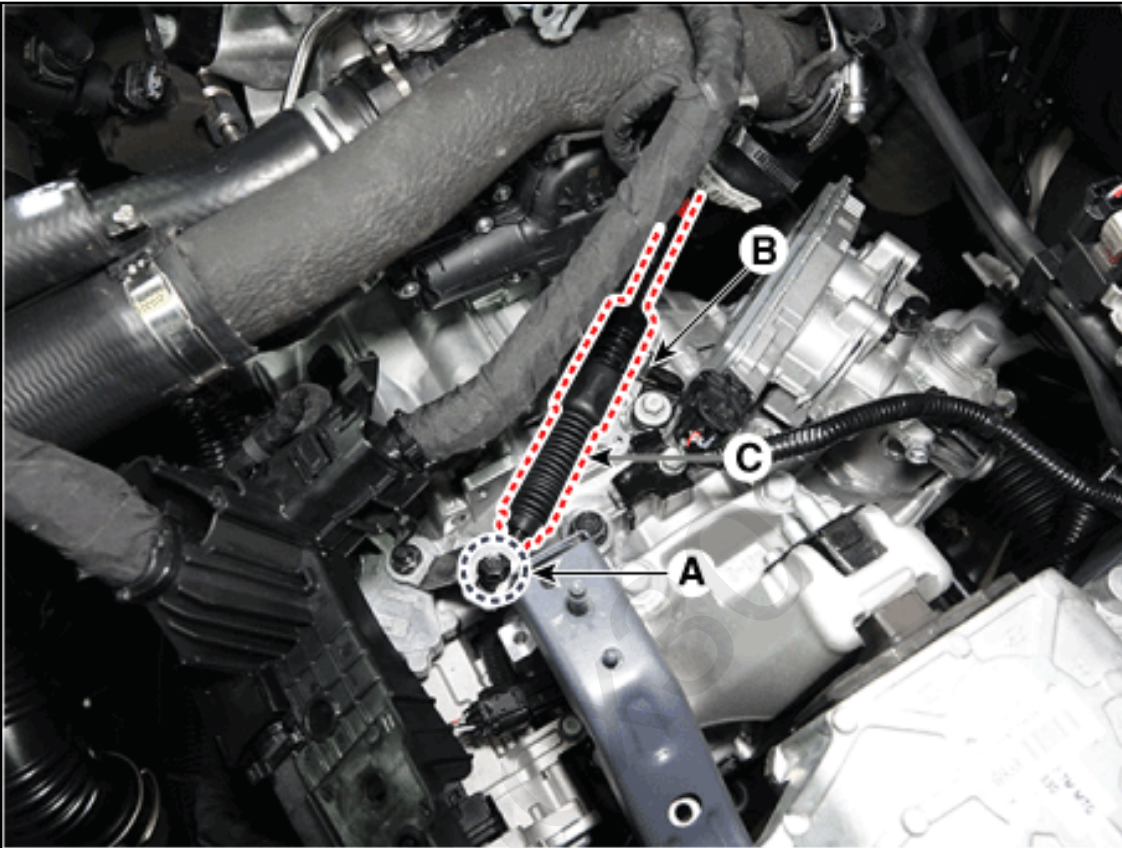


1. Shift lever knob & boots assembly
2. Shift lever assembly
3. Shift cable

4. Manual control lever
5. Shift cable retainer

Removal

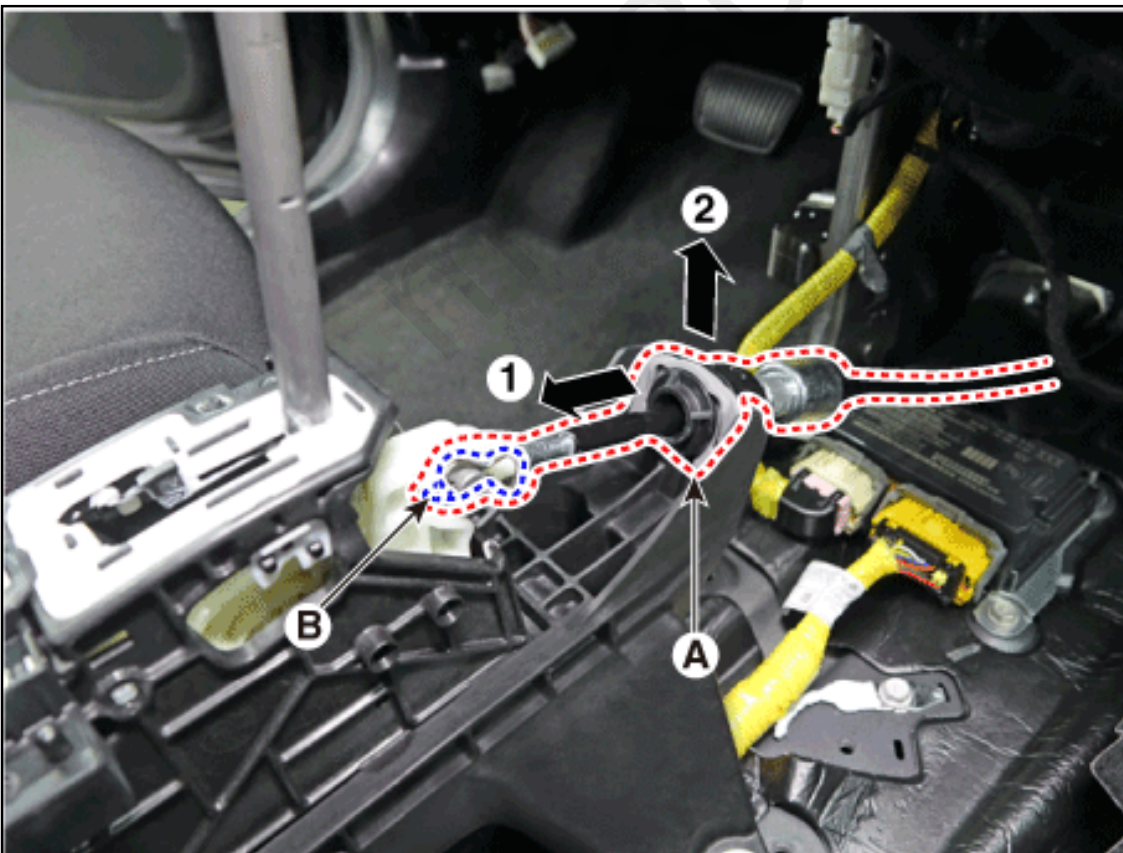
1. Turn ignition switch OFF and disconnect the negative (-) battery cable.
2. Remove the air cleaner assembly and air duct.
(Refer to Engine Mechanical System - "Air cleaner")
3. Remove the ECM.
(Refer to Engine Control / Fuel System - "Engine Control Module (ECM)")
4. Remove the battery and battery tray.
(Refer to Engine Electrical System - "Battery")
5. Remove the shift cable (C) from the cable bracket (B), after loosening the mounting nut (A).



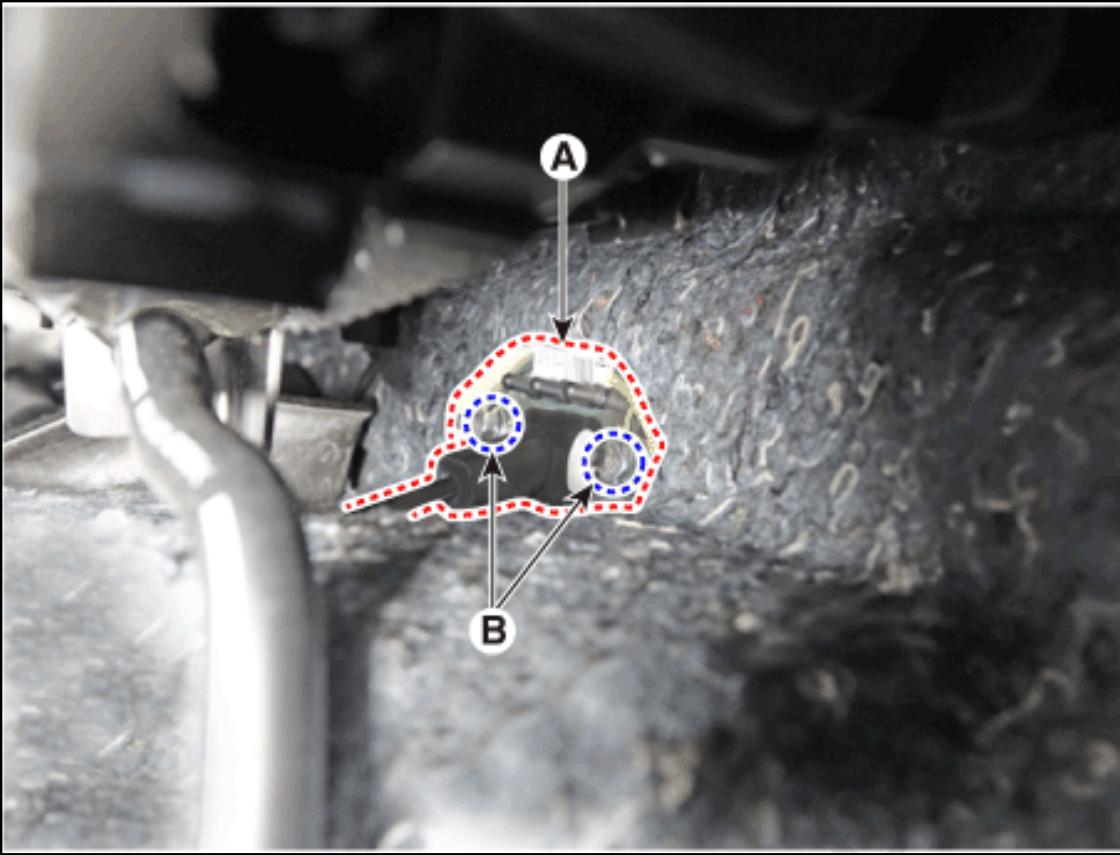
6. Remove the shift lever knob & boots (A) pull both of it up.



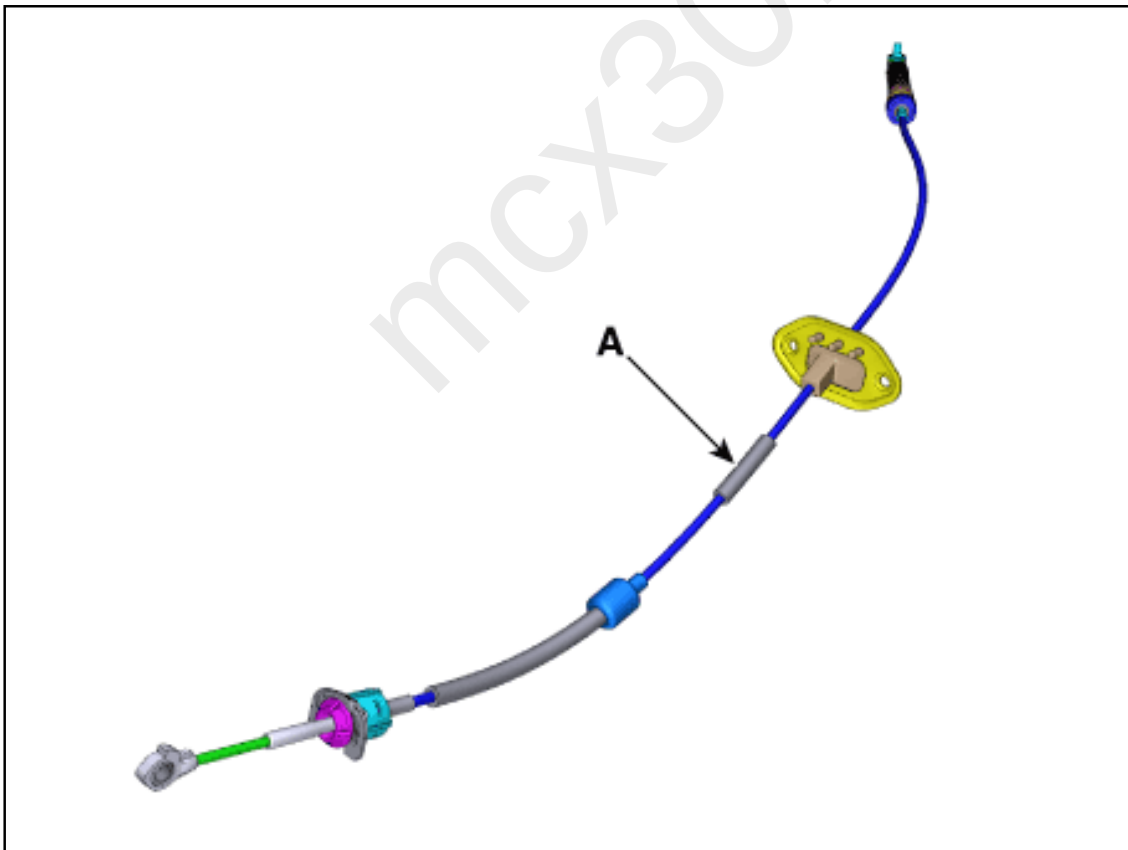
7. Remove the floor console assembly.
(Refer to Body (Interior and Exterior) - "Floor Console")
8. Disconnect the shift cable (A) after removing the snap pin (B).



9. Remove the retainer (A) by loosening the nuts (B-2ea).



10. Remove the shift cable from the vehicle.

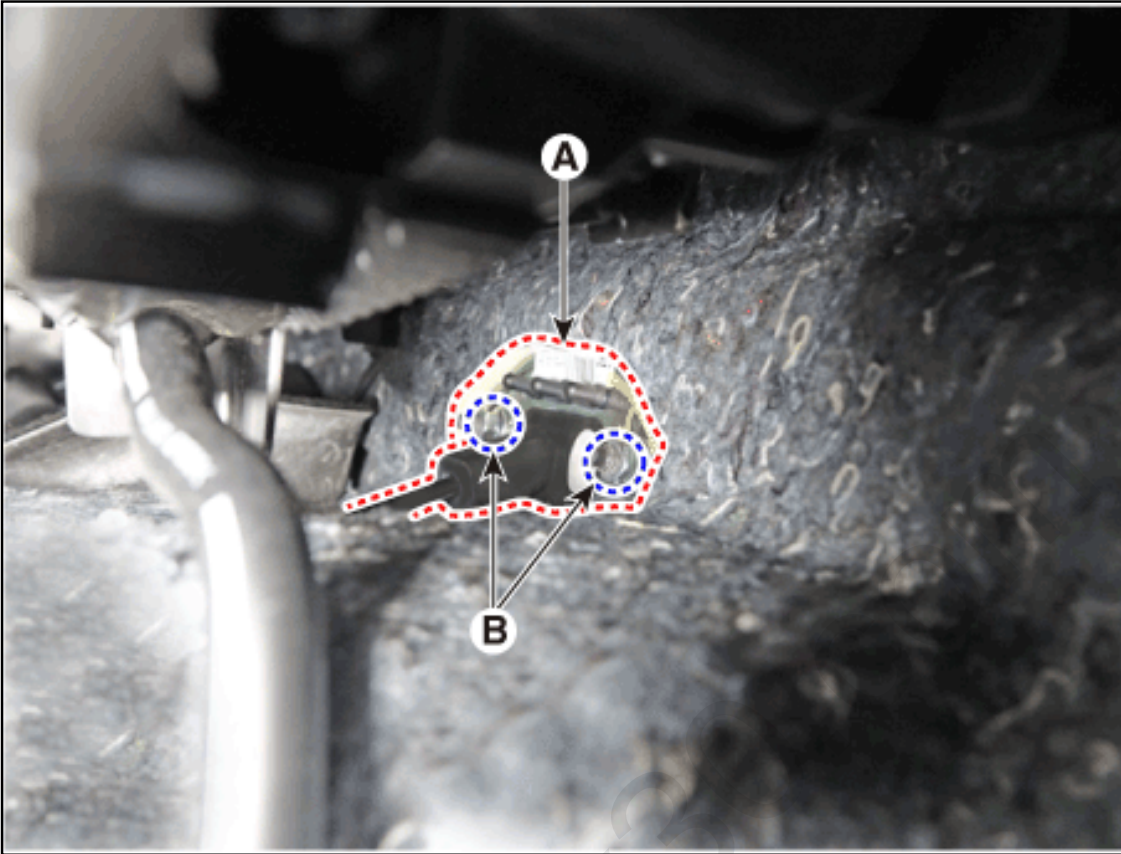


Installation

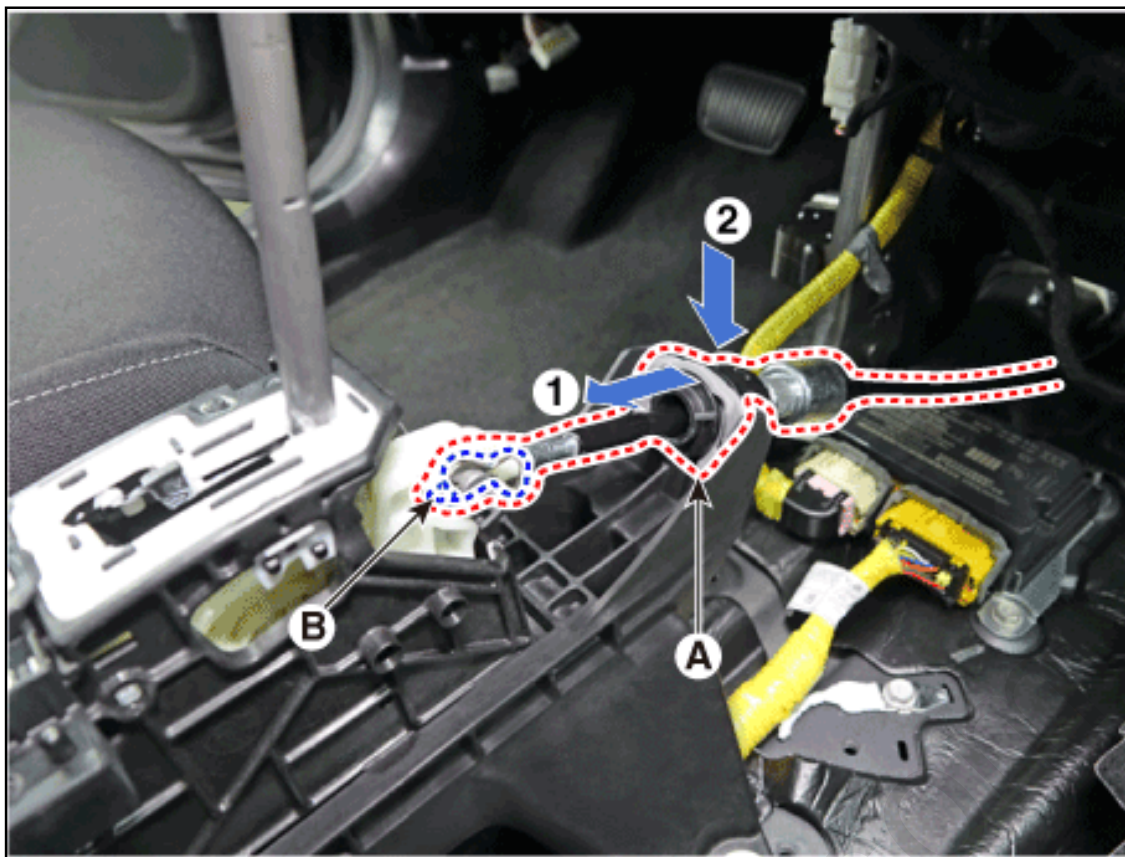
1. Install the retainer (A) and then tighten the nut (B-2ea).

Tightening torque :

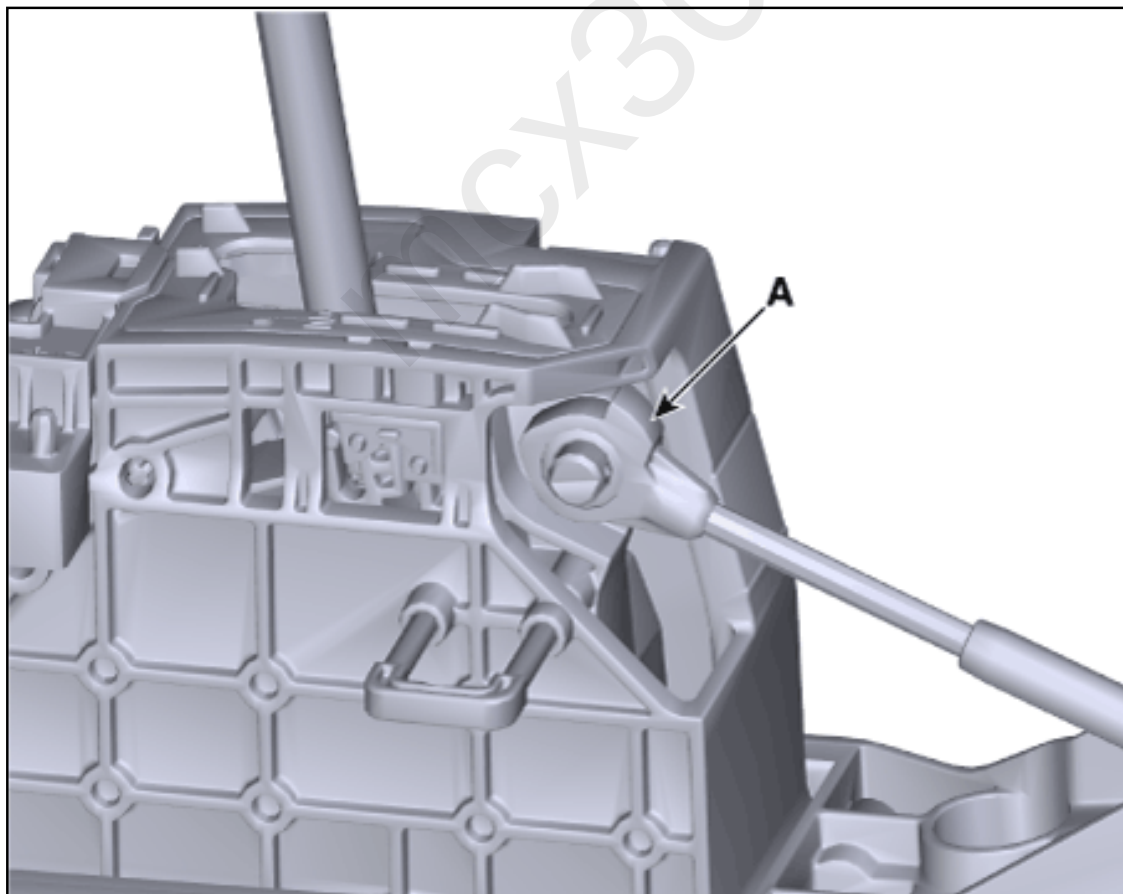
11.8 - 14.7 N.m (1.2 - 1.5 kgf.m, 8.7 - 10.8 lb-ft)



2. Install the shift cable (A) and then fix the snap pin (B).

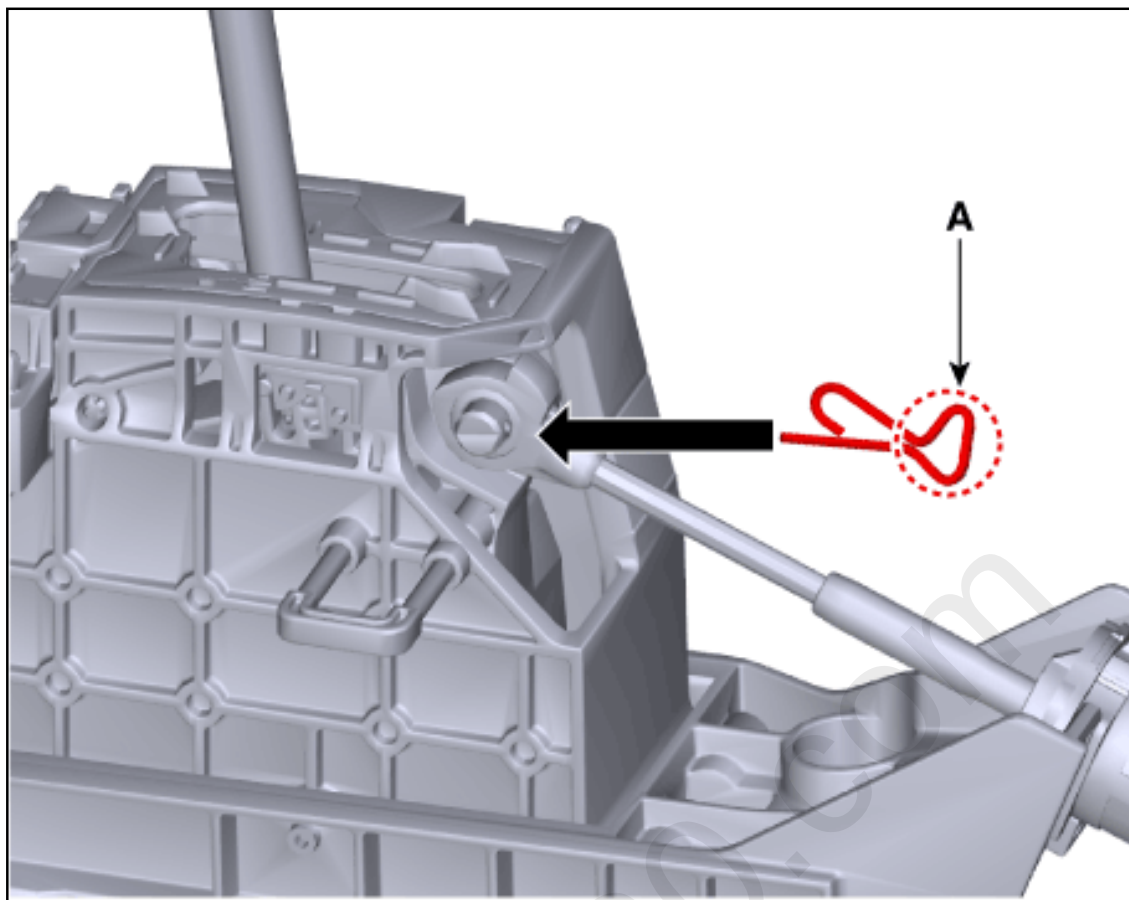


- When assembling shift cable, the projection (A) must face upwards.



- When assembling the snap pin, be careful about the correct direction.

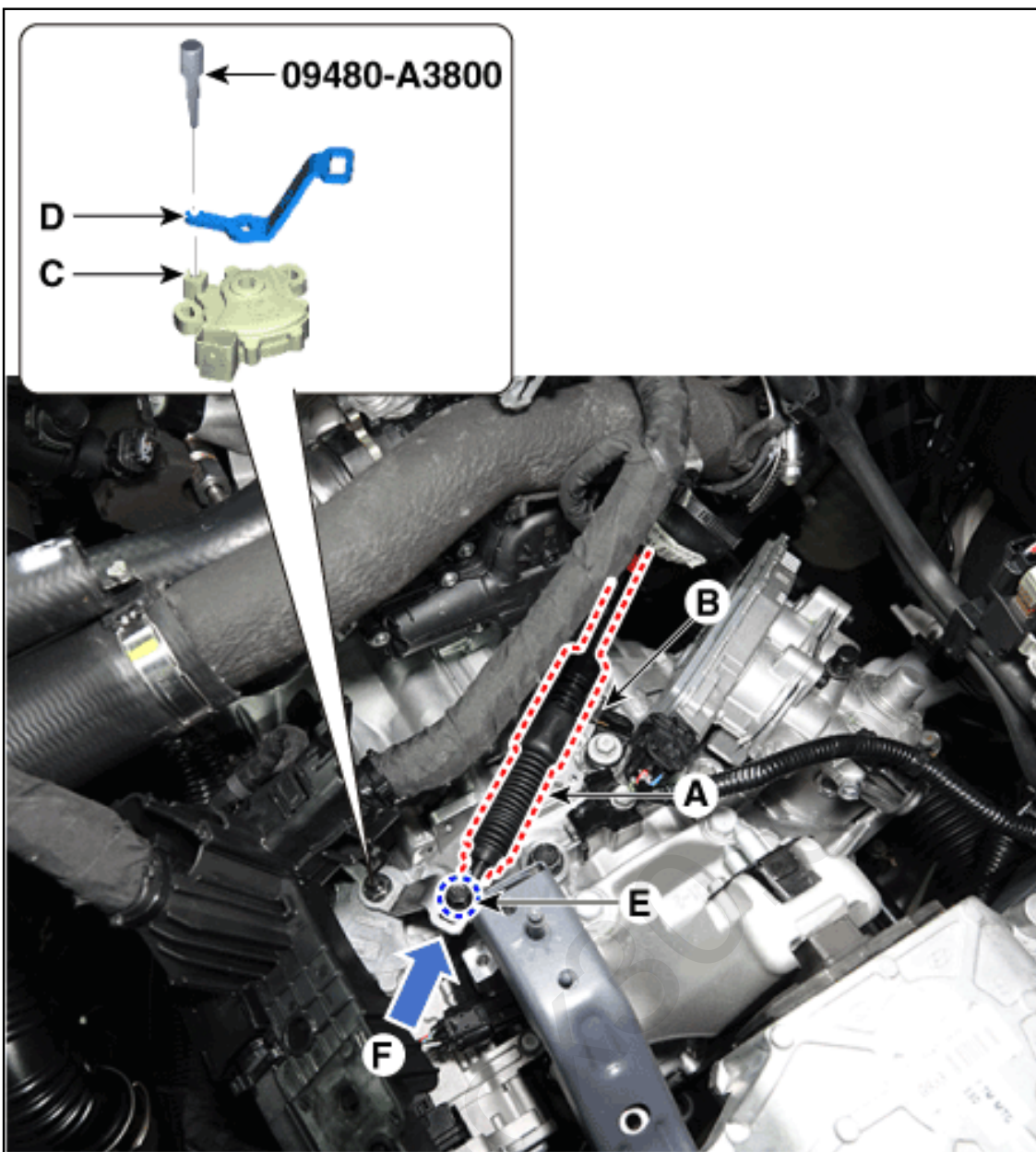
- The band portion (A) must point to the front of the vehicle.
- The band portion (A) must point outwards.



3. Install the floor console assembly.
(Refer to Body - "Floor Console")
4. Install the shift lever knob & boots (A).



5. Install the shift cable (A) in the cable bracket (B).
6. Align the hole (C) in the manual control lever with the "N" position hole (D) of the inhibitor switch and then insert the inhibitor switch guide pin (SST No.:09480-A3800).
7. Lightly tighten the nut (E) after connected the shift cable (A) in the manual control lever.
8. Push shift cable (A) lightly to "F" direction shown to eliminate free play of shift cable.
9. Tighten the nut (E) with the specified torque.



10. Remove the inhibitor switch guide pin (SST No.:09480-A3800) from the hole.

11. Install the battery and tray.

(Refer to Engine Electrical System - "Battery")

12. Install the ECM.

(Refer to Engine Control / Fuel System - "Engine Control Module (ECM)")

13. Install the air cleaner assembly and air duct.

(Refer to Engine Mechanical System - "Air cleaner")



- Check that operating surely at each range of the inhibitor switch corresponding to each position of shift lever.

Description

- **Components location** : DCT (Dual Clutch Transmission)

- **Function**

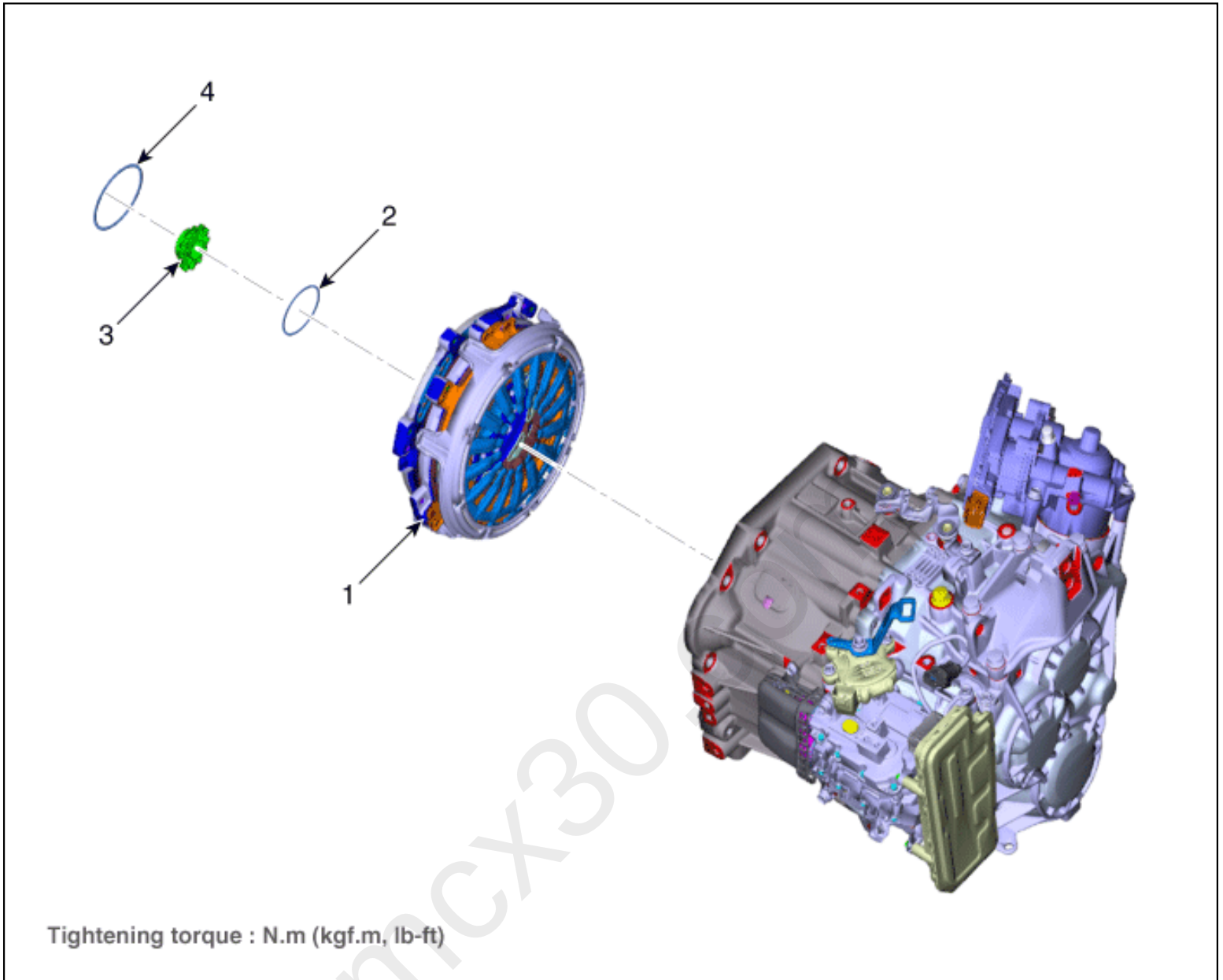
The dual clutch is installed within the transmission.

The dual clutch comprises an odd clutch and an even clutch. The odd clutch transfers and cuts off engine power to the transmission when shifting odd gears.

The even clutch transfers and cuts off engine power to the transmission when shifting even gears.

mcx30.com

Components

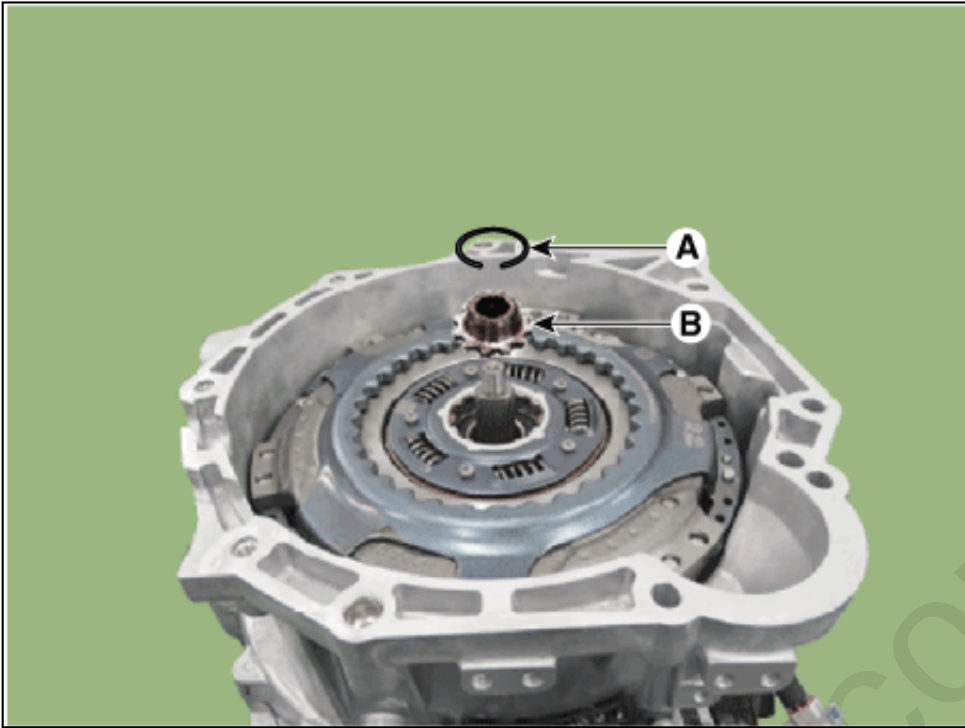


1. Dual clutch assembly
2. Snap ring

3. Spline hub
4. Retaining ring

Removal

1. Remove the dual clutch transmission from the vehicle.
(Refer to Dual Clutch Transmission Assembly - "DCT (Dual Clutch Transmission)")
2. Remove the retaining ring (A) and then removing the spline hub (B).



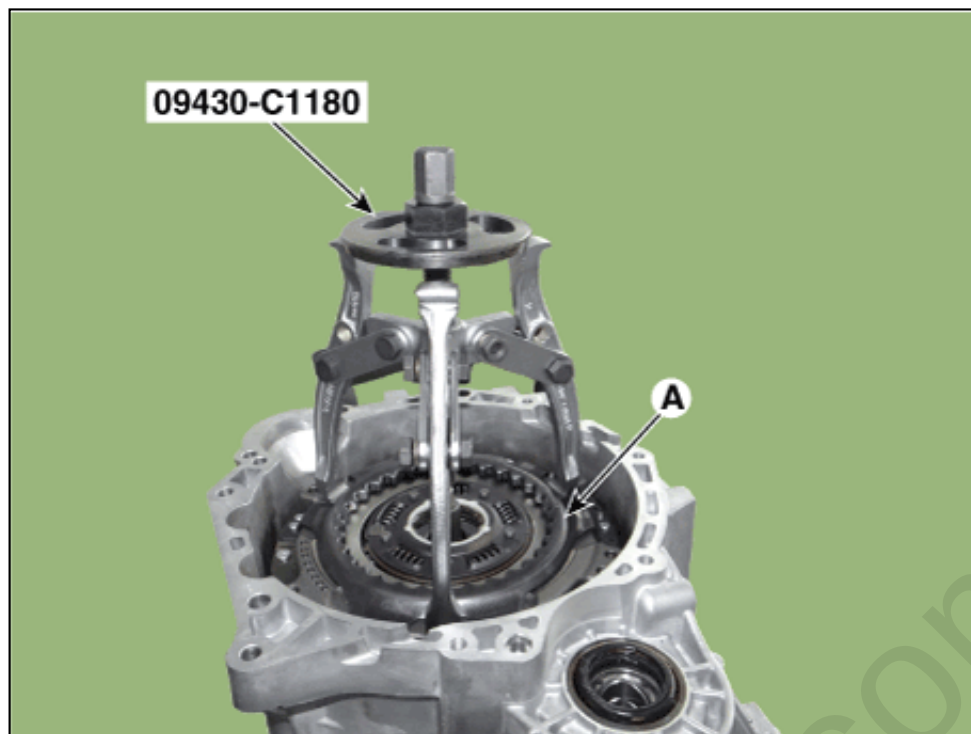
3. Remove the snap ring (A).



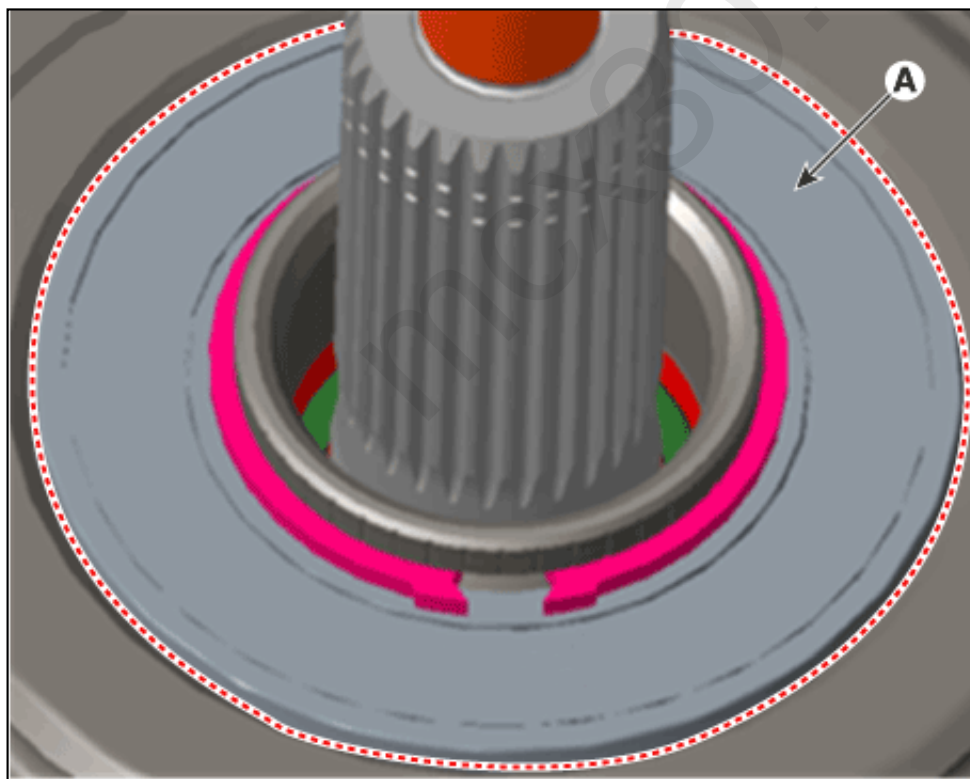
- The snap ring can deform when it removed by forced removal and can't reuse it.
- If it's difficult to remove the snap ring for stuck, release the stuck by using a rubber hammer with a center cylinder of dual clutch installer (09430-2A240) and then remove the snap ring.
- Be careful to damage dual clutch assembly support bearing rubber seal.



- 1) When removing is not possible due to snap ring jamming, place the center cylinder (09430-2A240) and hit it with a rubber hammer. When it loosens, remove it.



- 2) In case of the dual clutch reuse, make sure not to damage the dual clutch support bearing rubber seal (A) when removing the snap ring.

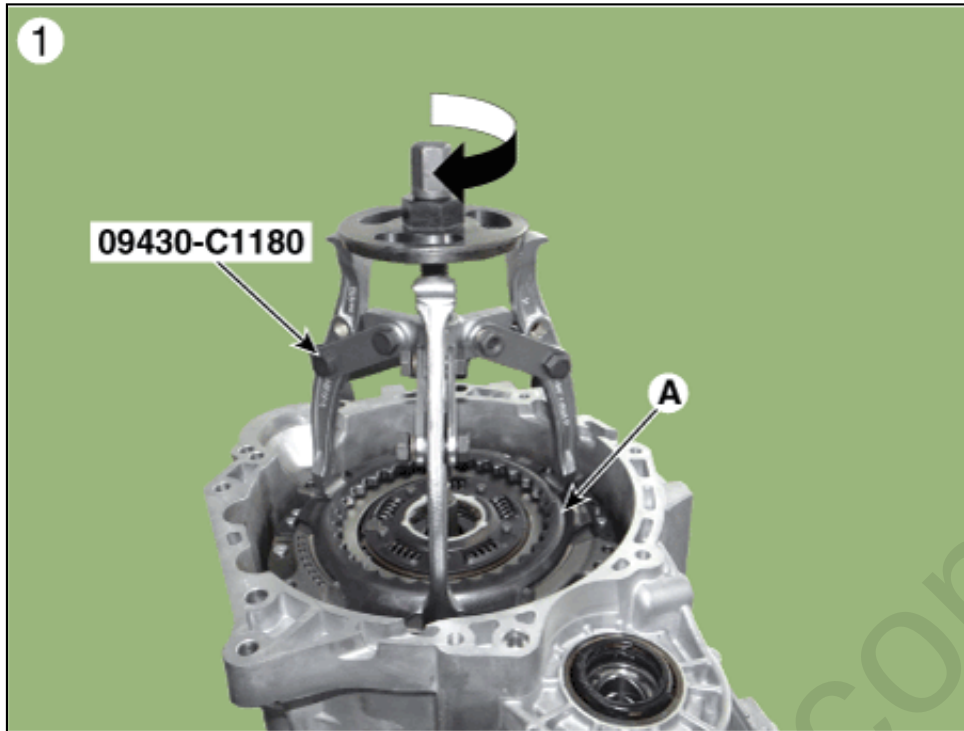


4. Remove the dual clutch assembly (A).

1) Attach the special tool (09430-C1180) to the dual clutch assembly and remove it with a wrench or a spanner.

2) Use a special tool (09430-C1180) to detach the dual clutch from the transmission housing.

※ When detaching the dual clutch from the transmission housing, make sure not to drop the dual clutch.

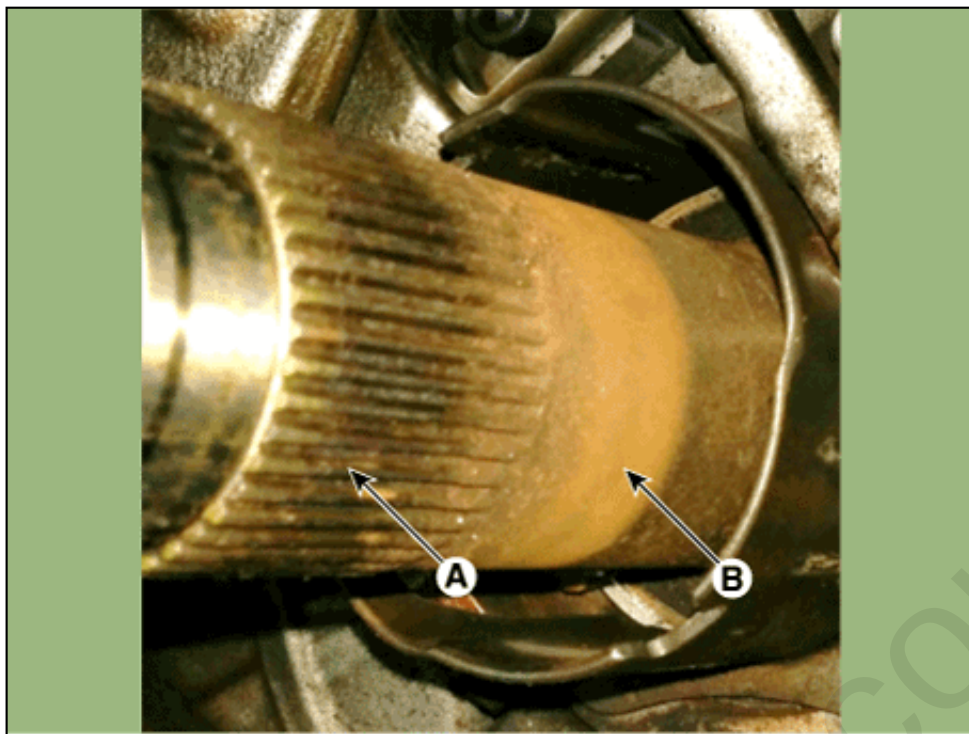


Installation



1) Remove the dust and foreign matters from the input shaft spline (A) and shaft (B).

※ Do not use steel soles and sandpapers, WD40 and anti-corrosive lubricant. (It could cause a corrosion of the rubber or oil seals.)

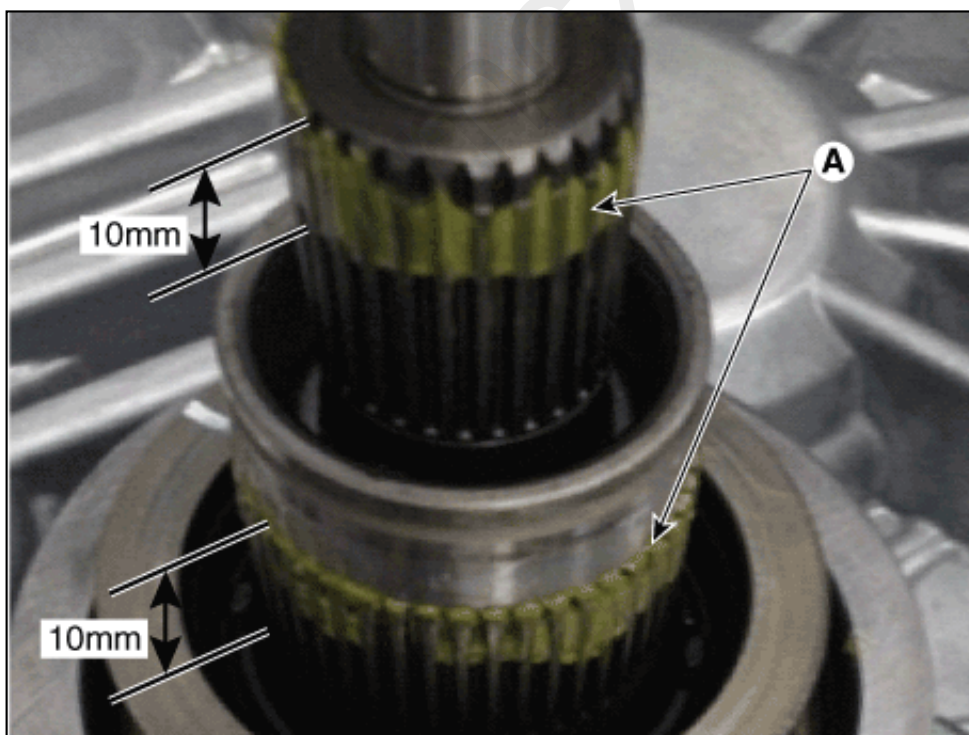


2) Check the grease on the input shaft spline part (A). If there is no grease, apply it to the 10mm point from the each end of the spline.

※ Grease overspraying may result excessive scattering and this may cause the clutch to slip.

Specified grease : Extreme pressure grease for vehicle

Quantity : 0.15 - 0.25g



1. Fix the special tool (09430-C1180) to the dual clutch assembly at three places at 120-degree intervals, then move to the top of the housing.



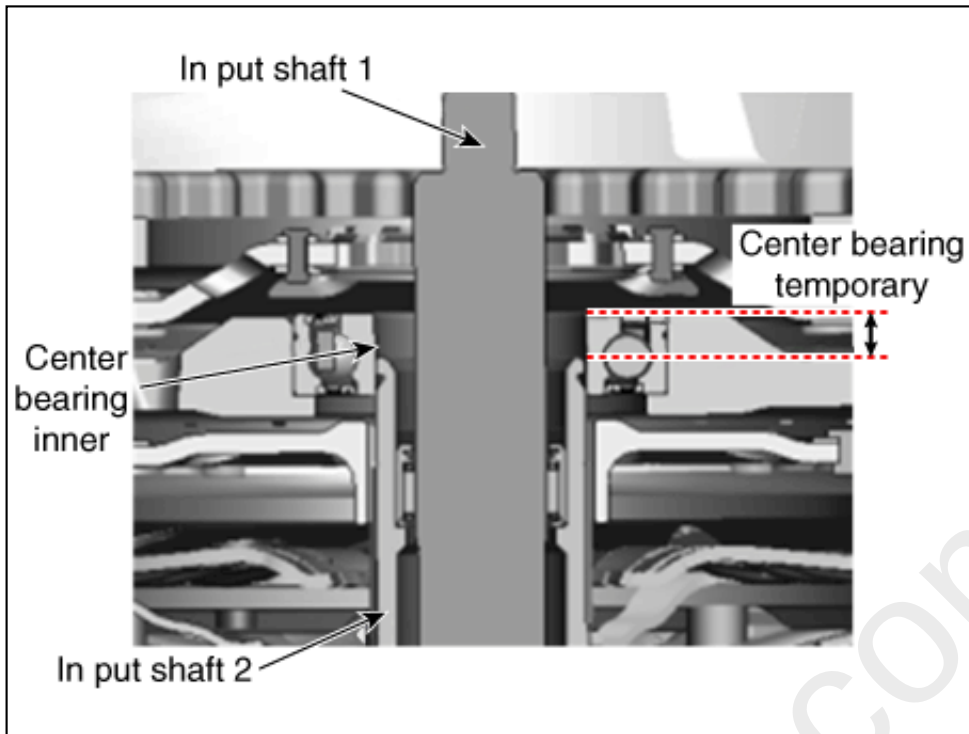
2. Assemble the dual clutch to the input shaft 2 temporarily.



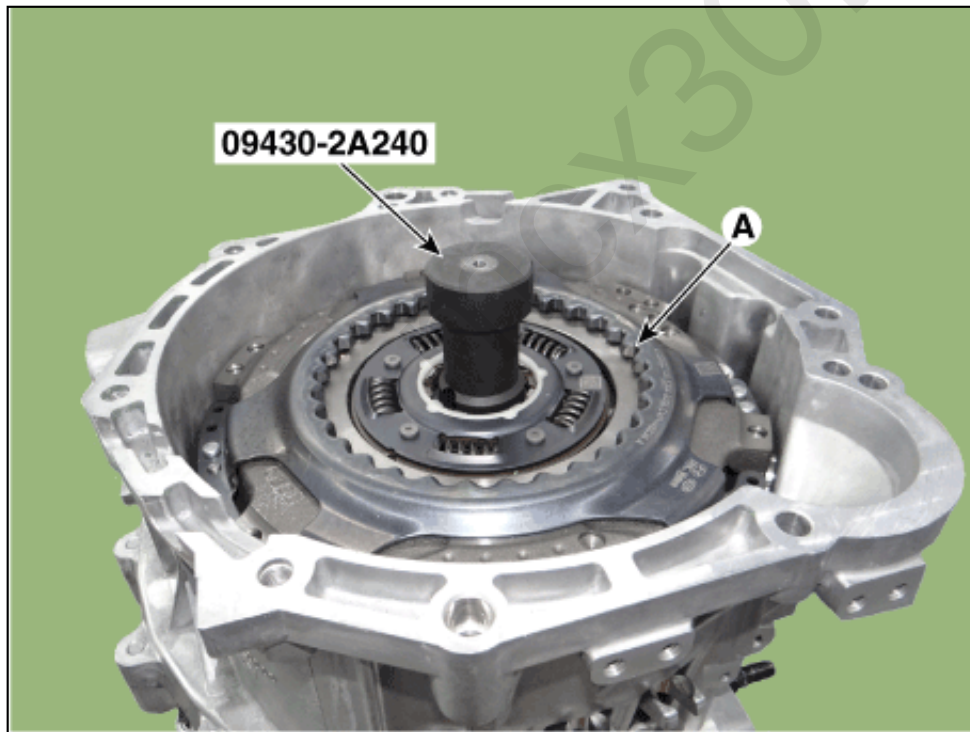


Dual clutch temporary assembly condition

- 1) In the input shaft 2, the center bearing inner ring should be properly and temporarily inserted.
- 2) When the clutch is press-fitted in an unstable temporary assembly, it may cause damage to the clutch.

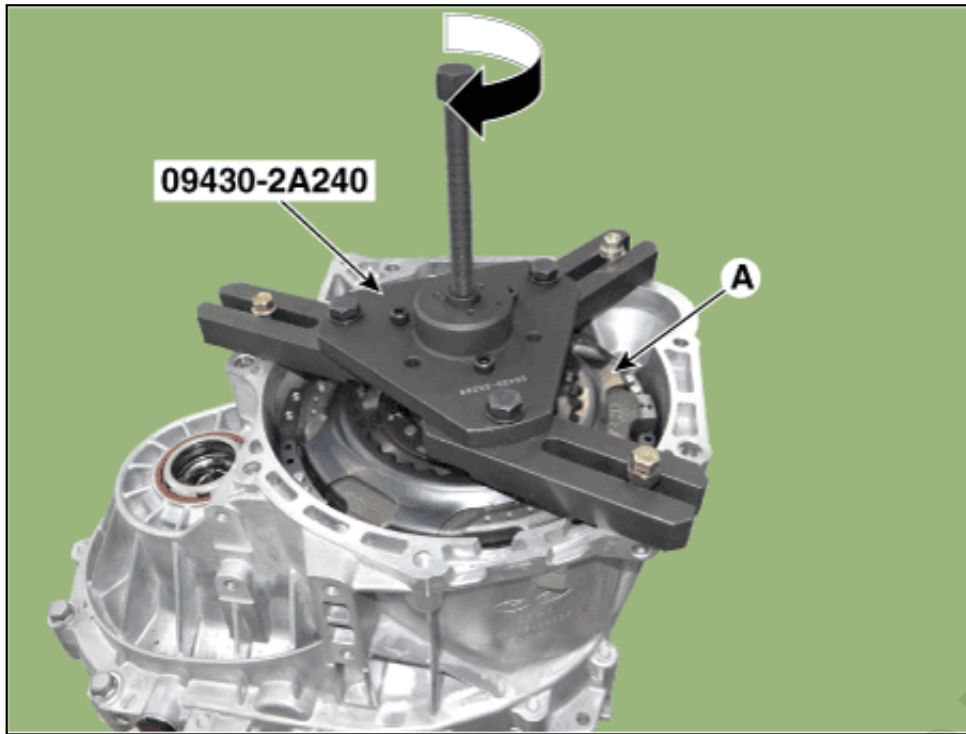


3. Install the SST (No.:09430-2A240) on the support bearing within the dual clutch assembly (A).



4. Install the SST (No. : 09430-2A240) on the clutch housing side.

5. Install the dual clutch assembly (A) using the SST (No. : 09430-2A240).

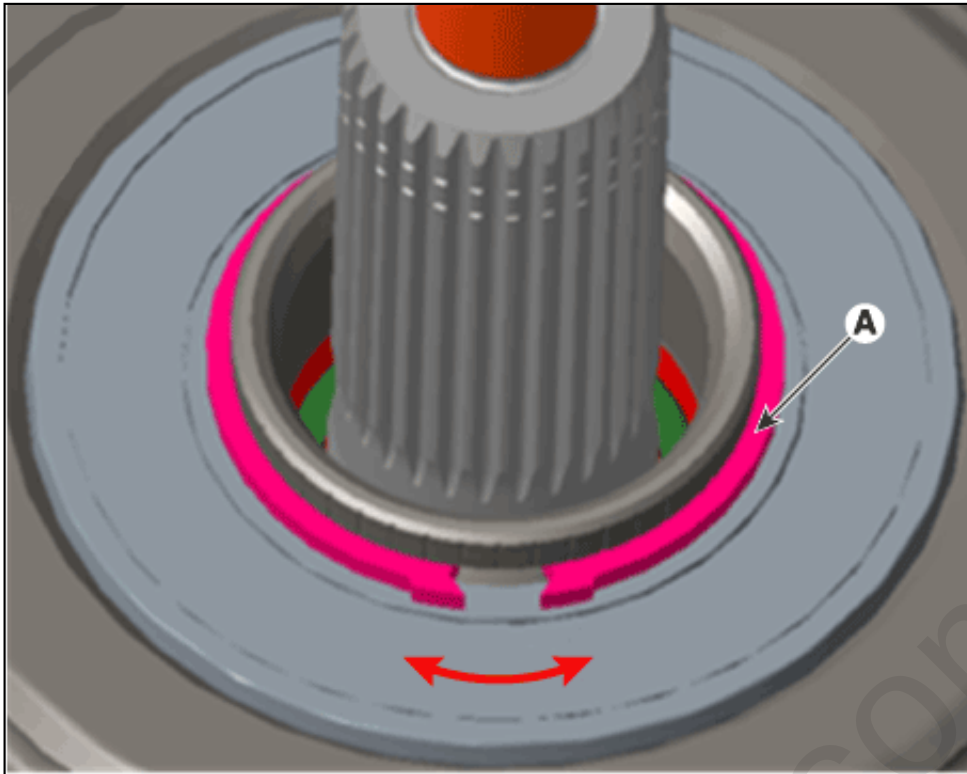


6. Install the snap ring (A).

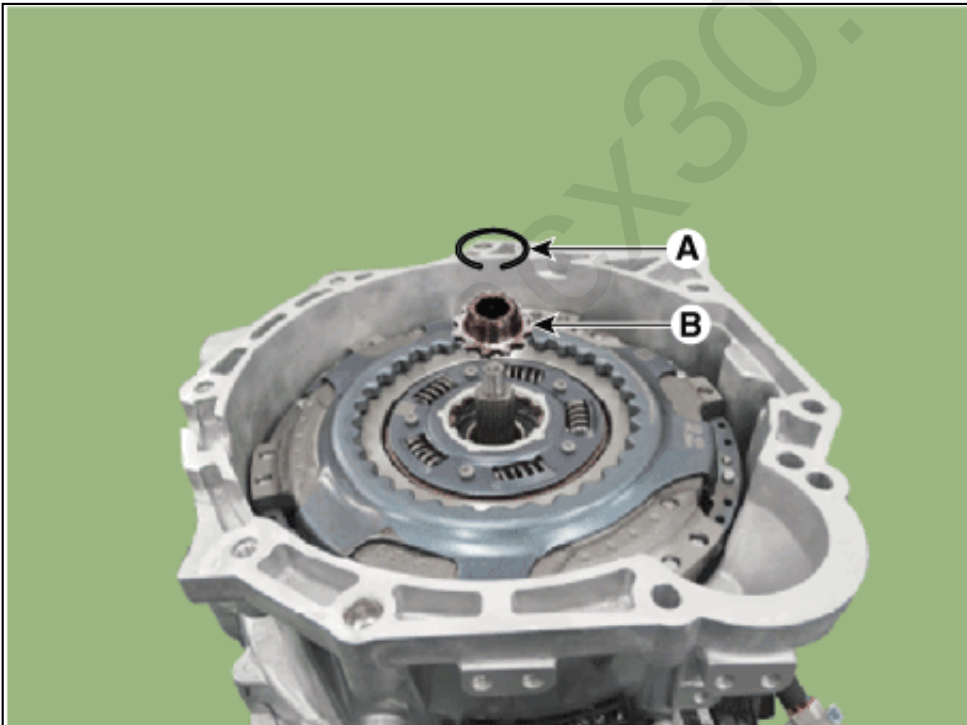




- After tightening the snap ring (A), see if it can properly rotate to the right or the left.

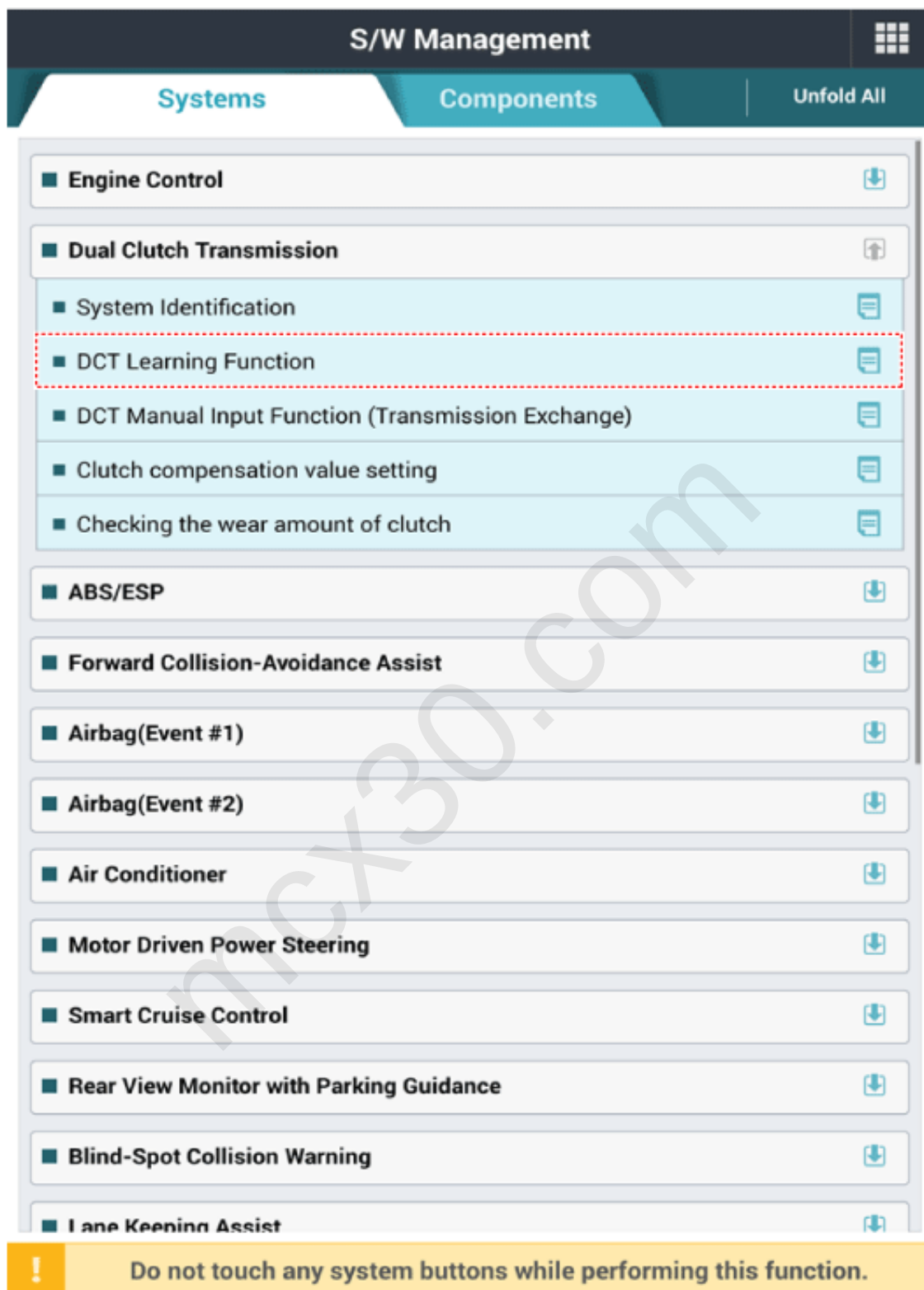


7. Install the spline hub (B) and the install the retaining ring (A).



8. Install the dual clutch transmission in the vehicle.
(Refer to Dual Clutch Transmission Assembly - "DCT (Dual Clutch Transmission)")
9. Perform the work procedures for abrasion compensation reset after installing the new dual clutch assembly.
(Refer to Clutch Actuator & TCM Assembly - "Adjustment")

10. Perform the clutch touch point learning procedure using the GDS after replacing the dual clutch assembly.





• DCT Learning Mode

Purpose	To reset the TCM adaptive values after Double Clutch Transmission(DCT) or TCM is replaced.
Enable Condition	1. Engine Off 2. Ignition Switch On 3. Gear lever position "P" 4. Brake Status : On 5. No DTC
Concerned Component	DCT, TCU
Concerned DTC	P17C0, P17C000
Fail Safe	Cluster will be displayed "E" and set DTC and only enable to operate 1st gear and reverse gear.
Etc	1.All values will be erased after starting DCT learning mode. 2.User can perform only once after IG On. Restart this function, after IG Off -> IG On and restart diagnostic tool.

OK



Do not touch any system buttons while performing this function.

S/W Management

■ DCT Learning Function

● [DCT Learning Function]

This function should be carried out when replacing TCU and clutch packs.

Must perform in both IG ON and Idle status sequentially.

Please check the operating condition.

● [CONDITION]

1. Engine Status : Ignition ON, Engine OFF
2. Brake Status : ON
3. Shift Lever : P
4. No DTC

It may take up to 30 seconds.

* DCT learning process is available only one time after IG ON. If you want to perform this function again, please turn IG OFF and ON before retrying.

OK

Cancel

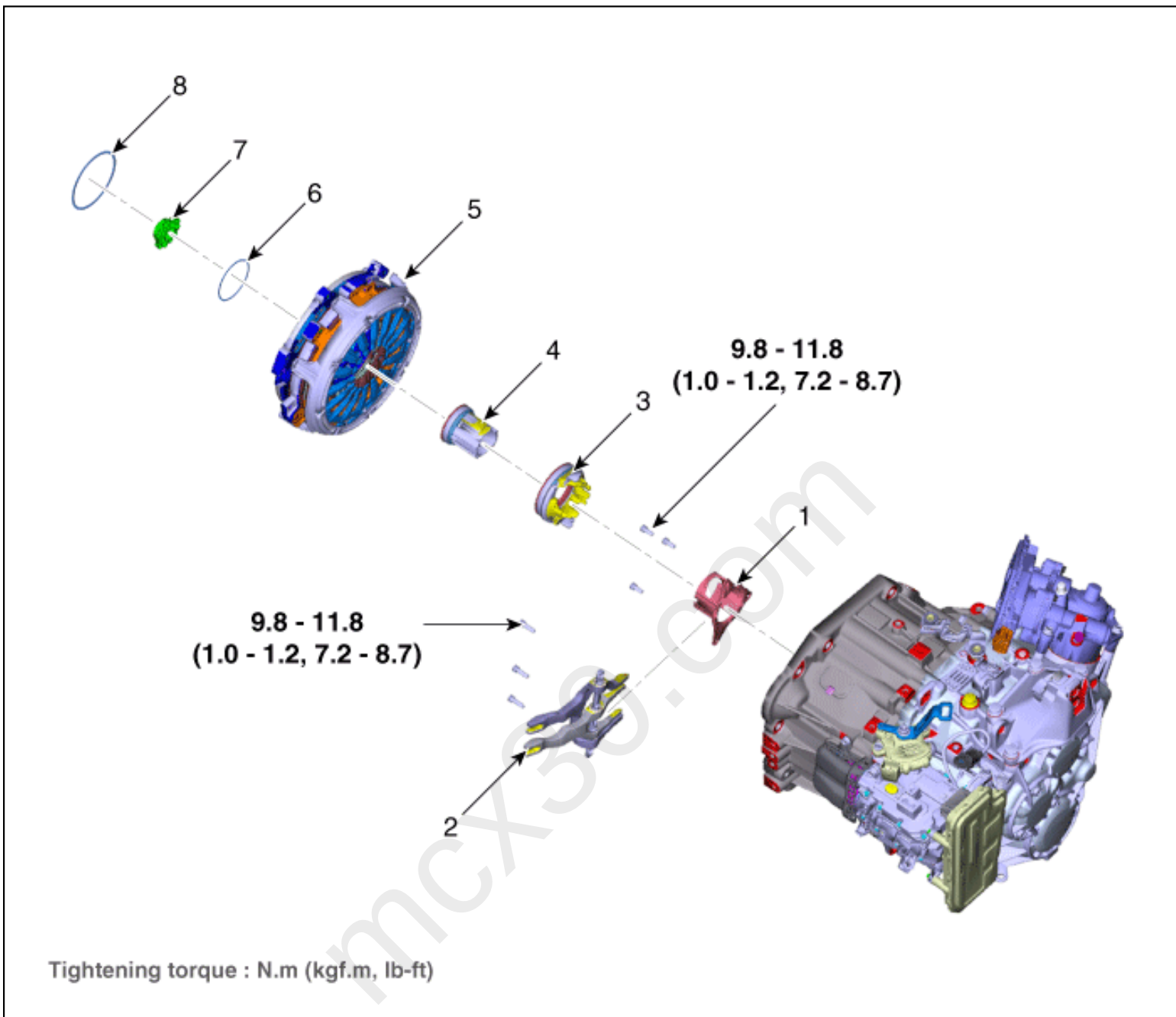


Do not touch any system buttons while performing this function.



- Even if you removed and reinstalled the clutch actuator, be sure to perform the touch point learning.
- If you have replaced the dual clutch assembly or clutch actuator, be sure to perform the touch point learning.

Components

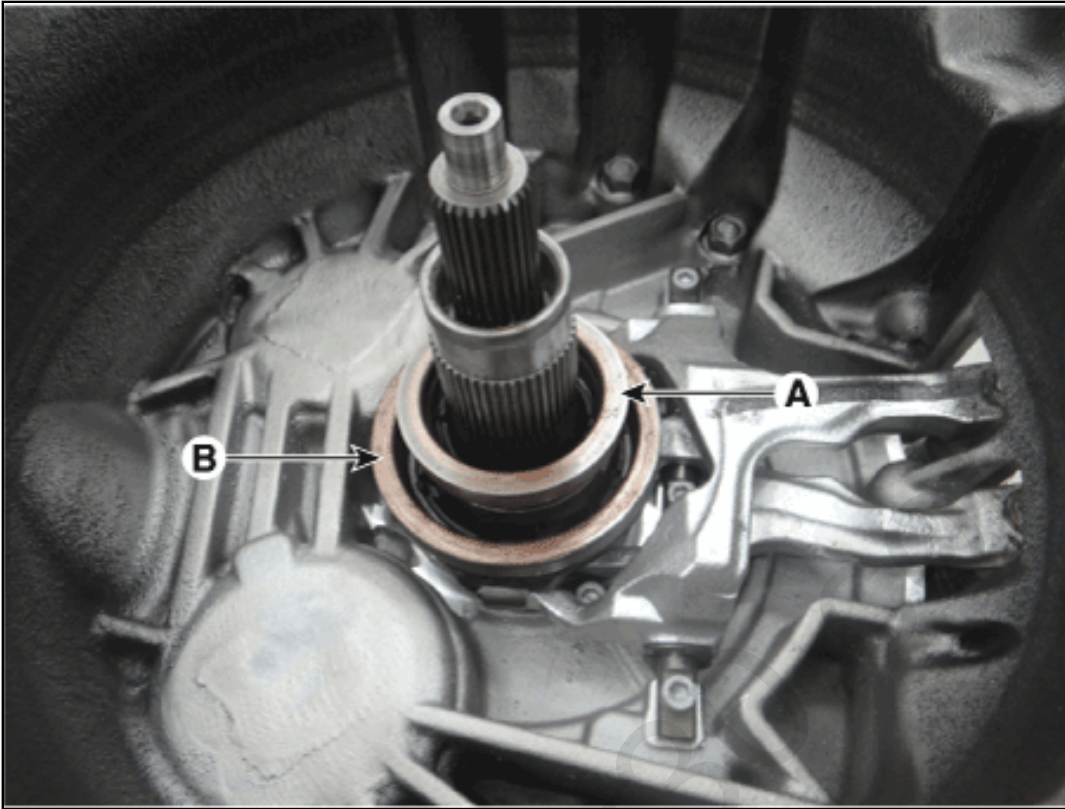


1. Engagement bearing sleeve
2. Clutch engagement fork
3. Engagement bearing 1 (Odd)
4. Engagement bearing 2 (Even)

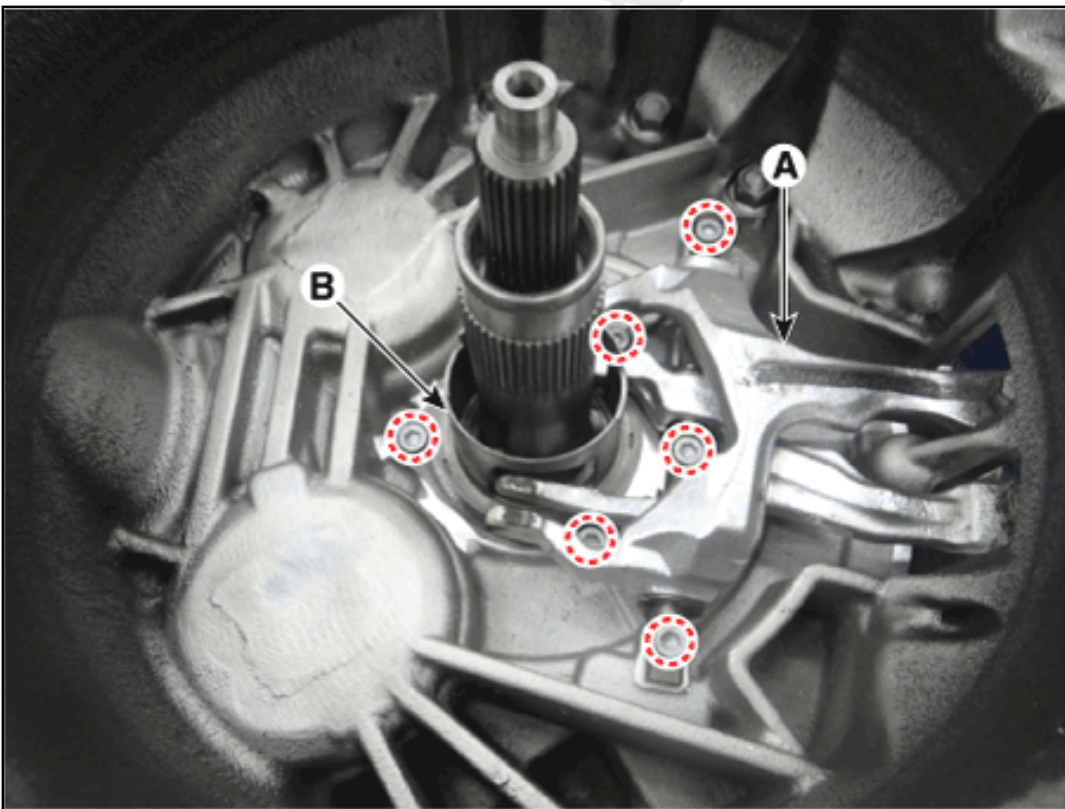
5. Dual clutch assembly
6. Snap ring
7. Spline hub
8. Retaining ring

Removal

1. Remove the dual clutch transmission from the vehicle.
(Refer to Dual Clutch Transmission Assembly - "DCT (Dual Clutch Transmission)")
2. Remove the dual clutch assembly.
(Refer to Dual Clutch System - "Dual Clutch Assembly")
3. Remove the clutch engagement bearing 1 (A) and 2 (B).



4. Remove the clutch engagement fork (A) and engagement bearing sleeve (B).



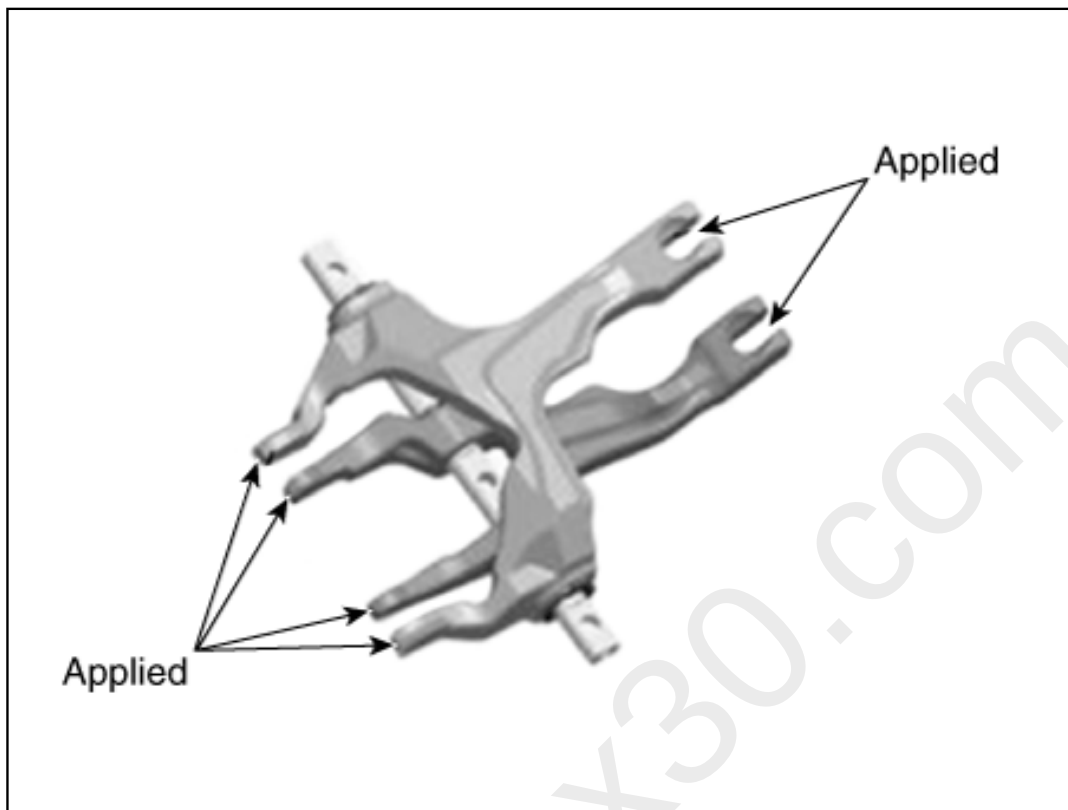
Installation



- Apply coat of grease when installing the clutch fork.

Spec grease : CASMOLY 9508

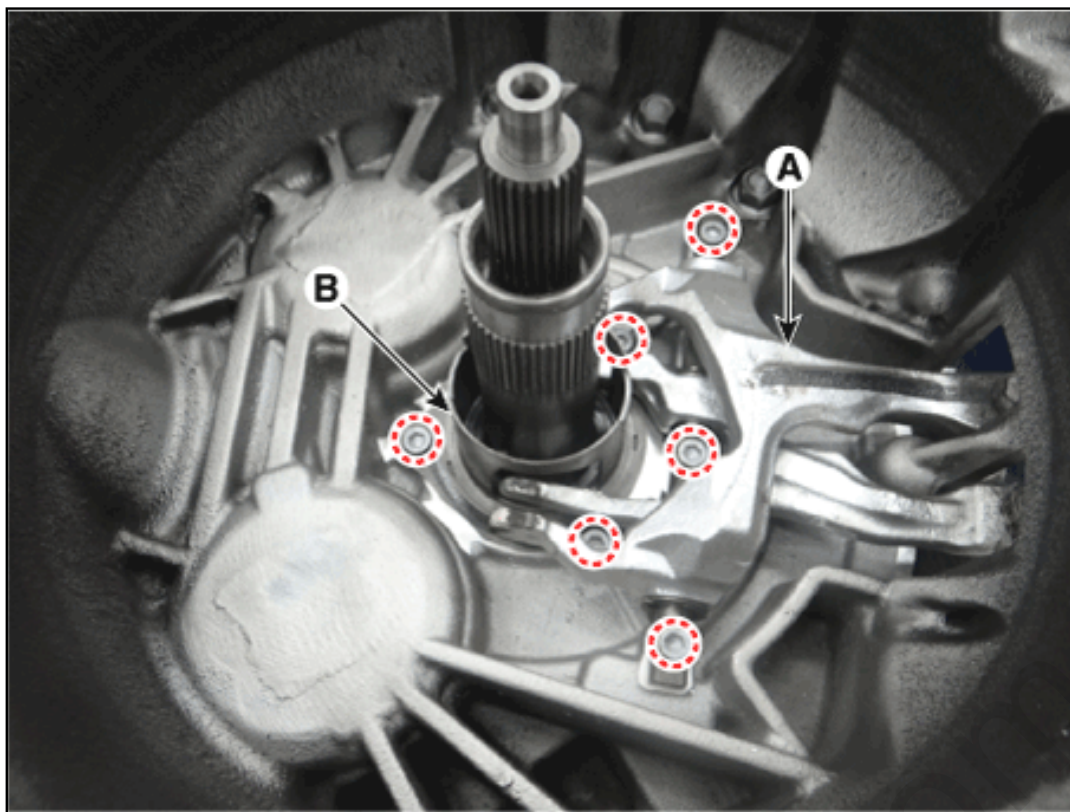
Amount : 0.2g



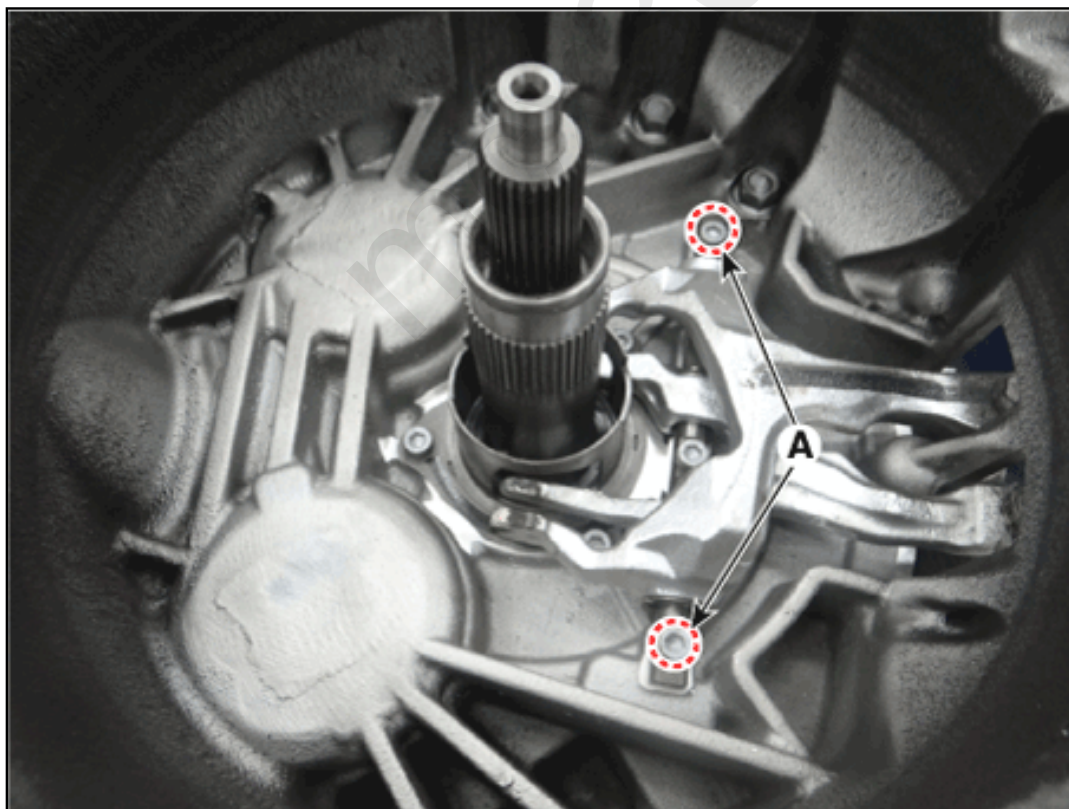
1. Install the clutch engagement fork (A) and engagement bearing sleeve (B).

Tightening torque :

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



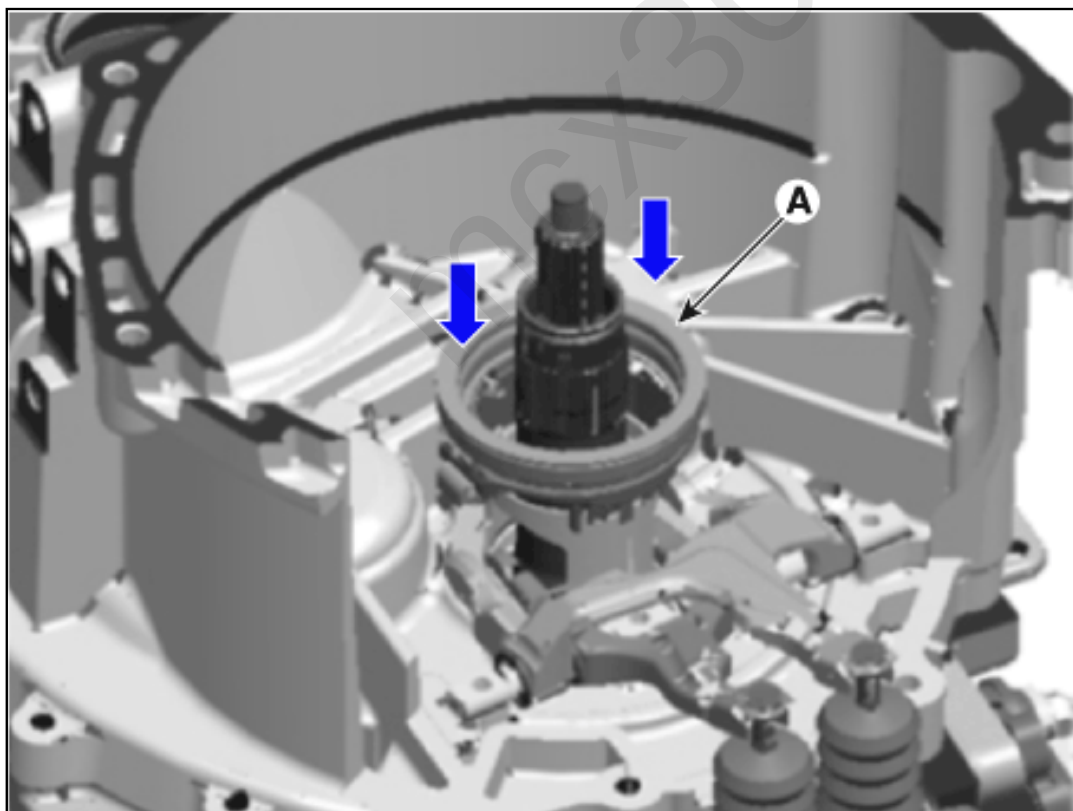
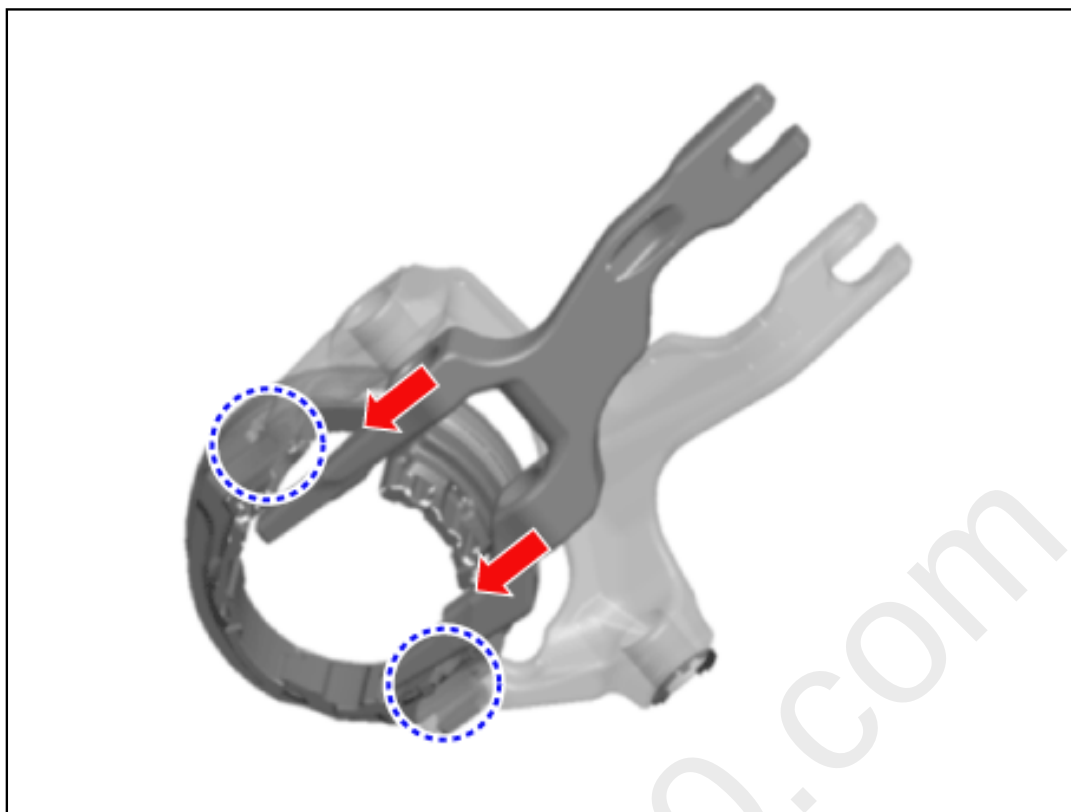
- Check dowel pins (A-2ea) when installing the fork assembly. Replace the dowel pin with new part if it is damaged or deformed.
- Take caution of the direction of fork assembly shaft when installing.



2. Install the engagement bearing 1 (A).



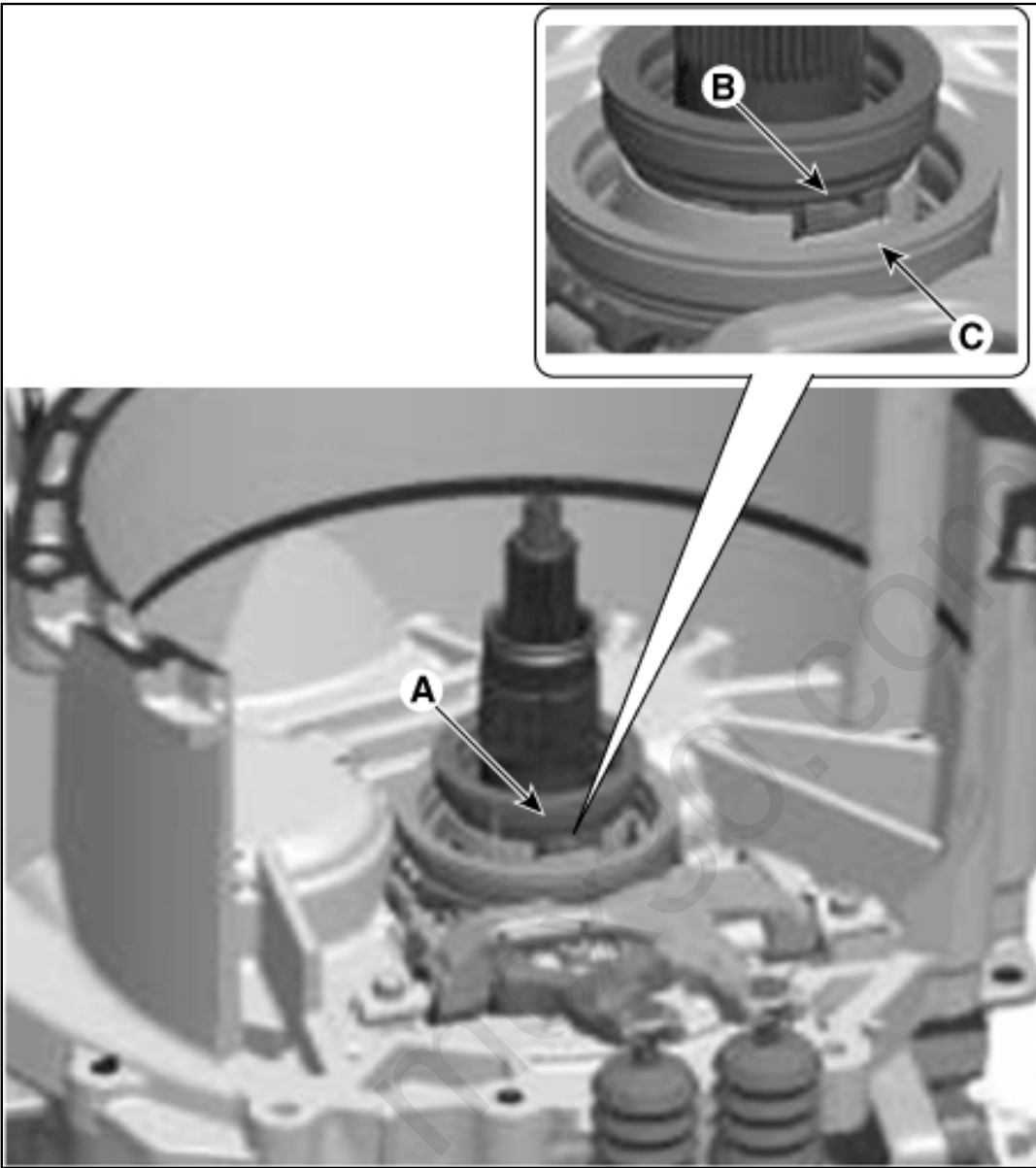
- Align the fork with the bearing plastic guide direction.



3. Install the engagement bearing 2 (A).



- Take caution and make sure that the bearing plastic stopper (B) is settled in the sleeve (C).



- Apply coat of spec grease on the 1st input shaft spline (A) after installing the bearing.

- Apply proper amount of transmission oil on the 2nd input shaft spline (B).
(Be careful not to get oil on the spline when applying coat of oil.)

Spec grease : CASMOLY 9508

Amount : 0.15 - 0.25g

