General Information

Specifications

Type			A5SR2
Driving system			2WD/ 4WD
T/CON	Type		3 elements, 1 stage, 2 phase
	Identification inscription [Nominal diameter (mm)]		8 (Φ260)
	Stall torque ratio		1.84
Transmission	Shift position	P	Fix output axle (Engine start allowed)
		R	Reverse
		N	Neutral (Engine start allowed)
		D	1↔2↔3↔4↔5
	Gear ratio	1st	3.827
		2nd	2.368
		3rd	1.52
		4th	1
		5th	0.834
		Reverse	2.613
		Final gear ratio	3.333
	Oil pump	Type	Trochoid oil pump
		Driving system	Engine drive
	ATF oil	The recommended	APOLLOIL ATF RED-1
		Quantity	10ℓ(10.57 US qt, 8.8 Imp.qt)

Automatic Transaxle System

Description

We have employed A5SR2, the 5th speed automatic transmission with full range electronic control and sports mode that provides smooth driving with lesser transmission shock as well as pleasant driving from manual transmission.

A/t electronic control system is the system where an optimized transmission has been realized from taking a grasp of driving status, A/T internal status at A/T control unit that has integrated with control valve assembly.

This paper describes apparatus cross-sectional view, major controls and control circuit diagram, major components and their functions, and etc.

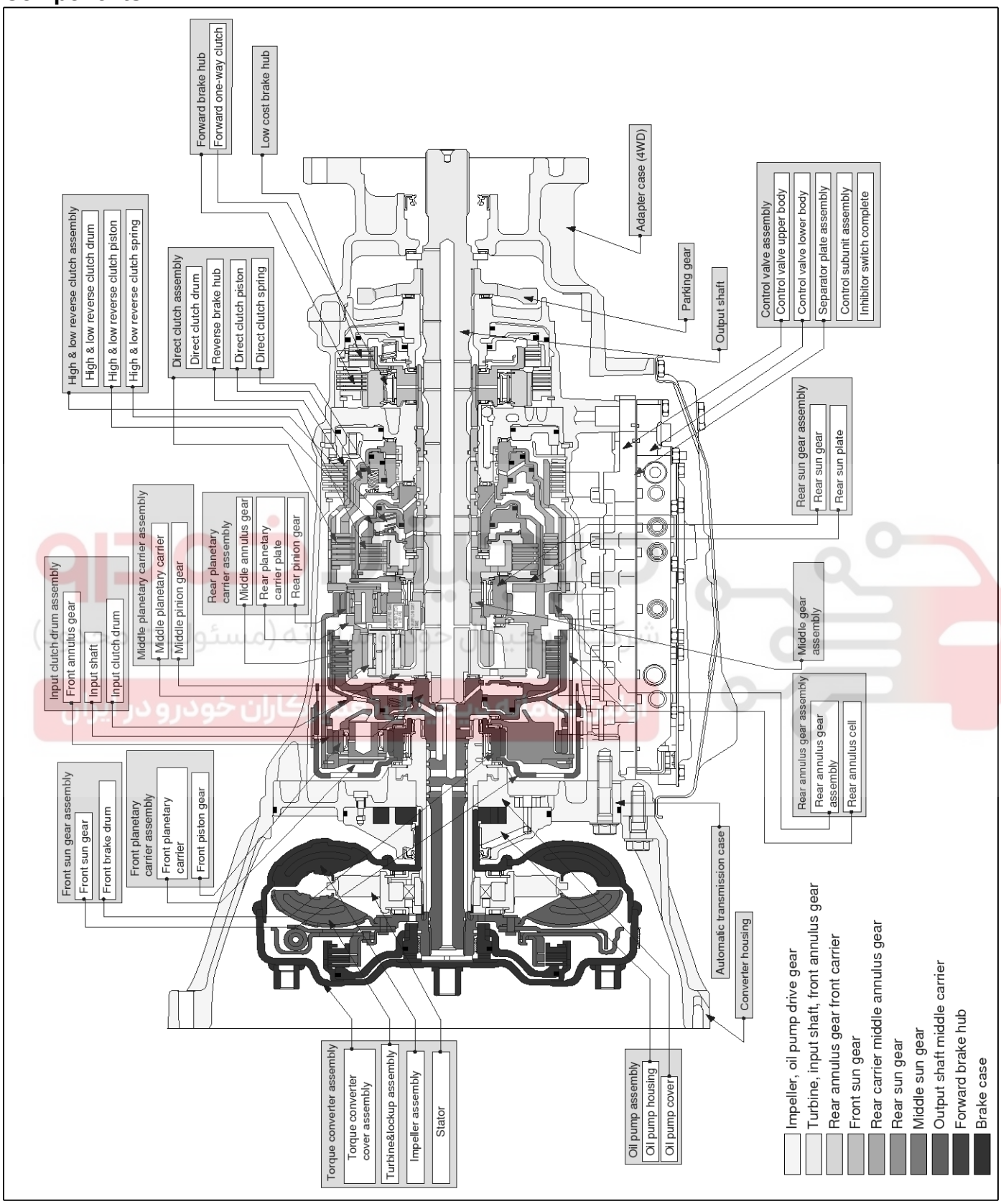
A5SR 2

Item	Contents
Improved transmission feel	- Integrated control over engine and A/T (CAN communication control) system employed - Turbine sensor 1.2 employed - Real time feedback control at all phases applied
Improved driving	- Sports mode function employed - Snow mode function employed (2WD applied) - Gear ratio extension
Improved fuel consum-ption	- Slip lock-up employed - Full range lock-up employed (Larger lock-up zone) - E-flow torque converter employed (Improved driving efficiency) - Small transmission power train employed
Improved safety	- Transmission lock apparatus (P range maintenance apparatus affixed) employed
Improved maintenance	- Electronic system diagnosis tester (hi-scan) counterpart

Major Components And Their Functions

Part name	Acronyms	Function
Front brake	F/B	Fastens the front sun gear
Input clutch	I/ C	Engages the input shaft, with the middle annulus gear and the fr-ont annulus gear
Direct clutch	D/C	Engages the rear planetary carrier with a rear sun gear
High & low reverse clutch	H & L R/C	Engages the middle sun gear with the rear sun gear
Reverse brake	R/B	Fastens the rear planetary carrier
Forward brake	FWD/B	Fastens the middle sun gear
Low cost brake	LC/B	Fastens the middle sun gear
1st one-way clutch	1st OWC	Allows the rear sun gear to turn freely forward relative to the mid sun gear but fastens it for reverse rotation
Forward one-way clutch	FWD OWC	Allows the mid sun gear to turn freely in the forward direction but fastens it for reverse rotation
3rd one-way clutch	3rd OWC	Allows the front sun gear to turn freely in the forward direction b-ut fastens it for reverse rotation

Components



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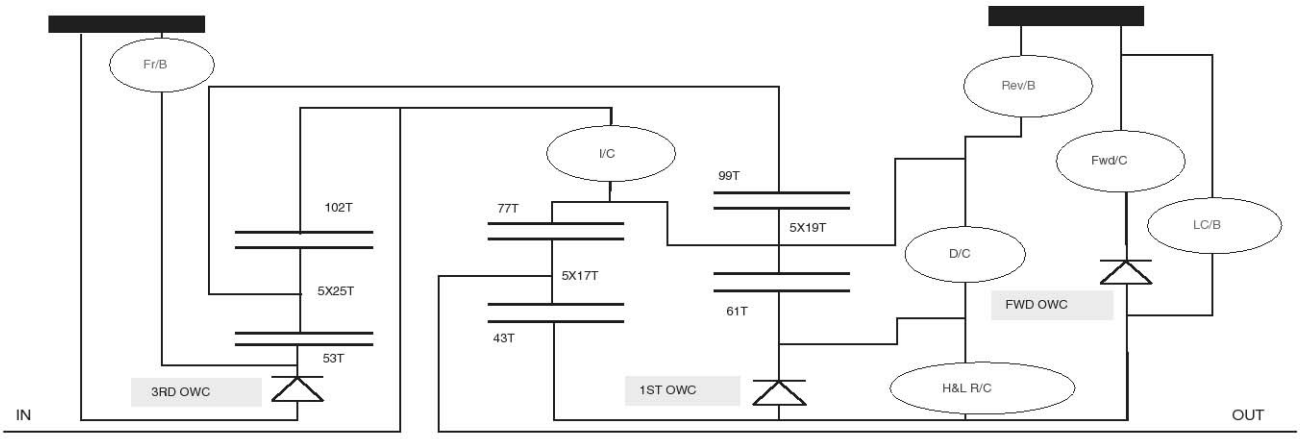
Operation



Shift Position		I/C	H&L R/C	D/C	Rev/B	Fr/B	LC/B	Fwd/B	Ratio1 OWC	Forword OWC	Ratio 2 OWC	Remarks
P			△			△						Parking position
R			0		0	0			◎		◎	Reverse position
N			△			△	△""					Neutral position
D	1st		△"			△		0	◎	◎	◎	Automatic shift 1↔2↔3 ↔4↔5
	2nd			0		△		0		◎	◎	
	3rd		0	0		0		△	◇		◎	
	4th	0	0	0				△	◇			
	5th	0	0			0		△	◇		◇	
5M	5th	0	0			0		△	◇		◇	Fix to the 5th speed
4M	4th	0	0	0				△	◇			Fix to the 4th speed
3M	3rd		0	0		0		△	◇		◎	Fix to the 3rd speed
2M	2nd			0		0	0	0		◎	◎	Fix to the 2nd speed
1M	1st		0			0	0	0	◎	◎	◎	Fix to the 1st speed

0 : Operates.
◎ : Operates during progressive acceleration.
◇ : Operates and effects power transmission while coasting.
△ : Line pressure is applied but does not affect power transmission.
△" : Operates under conditions shown in the high & low reverse clutch operating condition.
△"" : Operates under conditions shown in the LC/B operating condition.
Note) Delay control is applied during D(4,3,2,1)⇒N shift.

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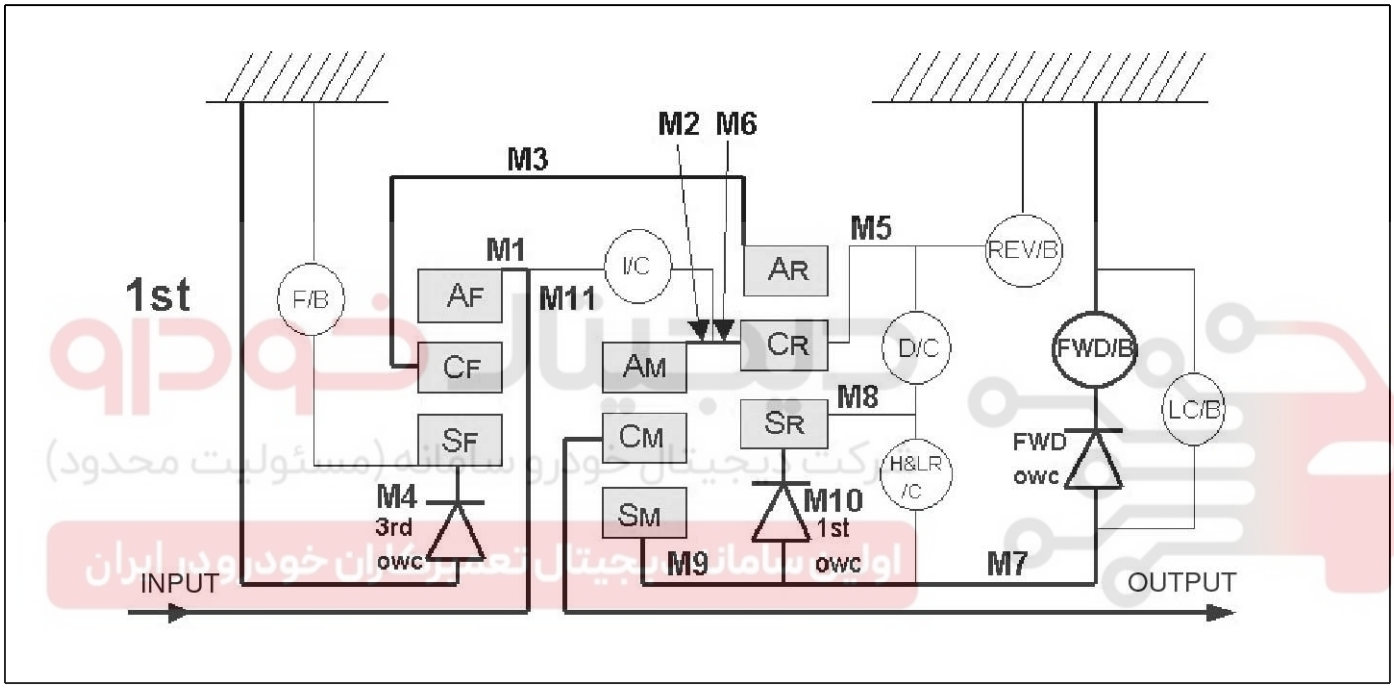
Operating Principles Of Each Range

1. N range

   Since the forward and reverse brakes are released, driving force of input shaft is not transmitted to output shaft.

2. P range
   - Since the forward and reverse brakes are released, as those in the N range, driving force of input shaft is not transmitted to output shaft.
   - Parking pawl that is linked with select lever parking gear meshes with and fastens output shaft mechanically.

3. D, M2, M3, M4, M5 range 1st speed
   - Fastens the front brake.
   - The front brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
   - The 1st one-way clutch regulates reverse rotation of the rear sun gear.
   - The 3rd one-way clutch regulates reverse rotation of the front sun gear.



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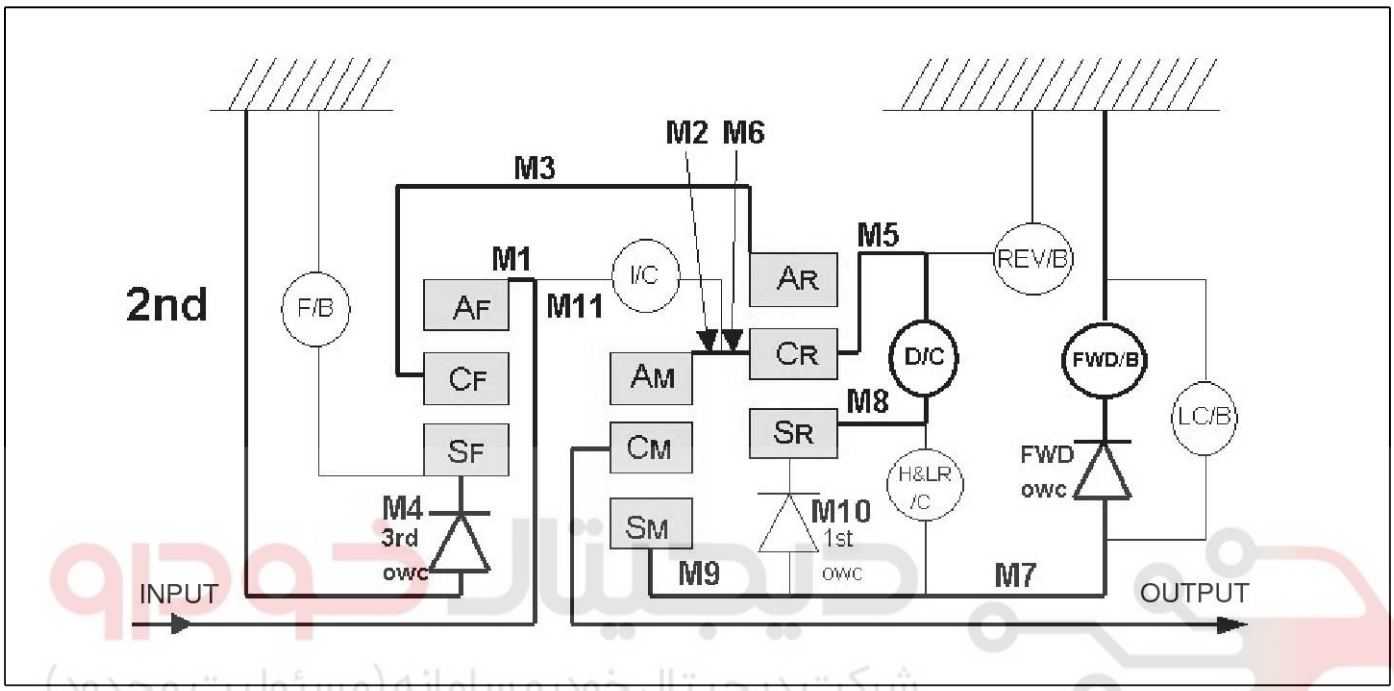
*** Power Flow**

Input shaft ⇒Front internal gear ⇒Front carrier ⇒Rear internal gear ⇒Rear carrier ⇒Middle internal gear ⇒Middle carrier ⇒Output shaft

4. D, M3, M4, M5 range ratio 2nd
   - Fasten the front brake.
   - The front brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
   - The 3rd one-way clutch regulates reverse rotation of the front sun gear.



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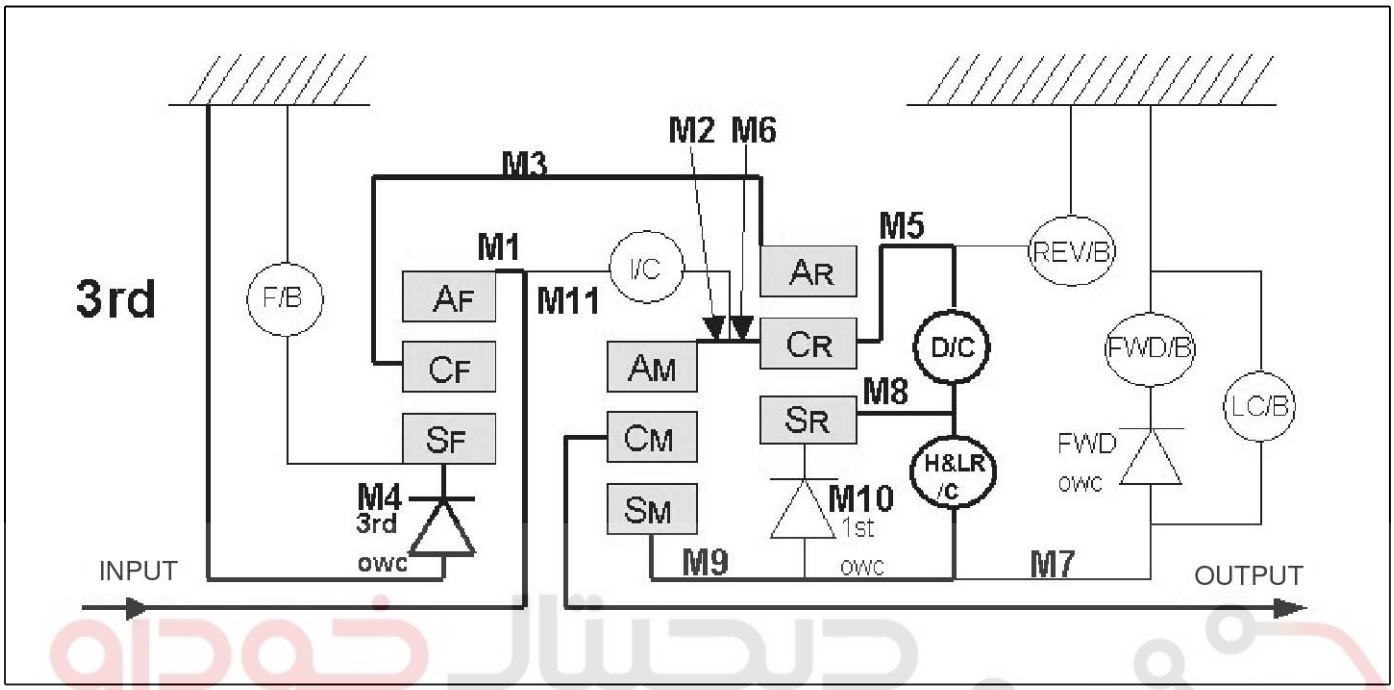
The direct clutch is coupled and the rear carrier and the rear sun gear are connected.

*** Power Flow**

Input shaft ⇒Front internal gear ⇒Front carrier ⇒Rear internal gear ⇒Rear carrier ⇒Rear carrier ⇒Middle internal gear ⇒Middle carrier ⇒Output shaft

5. D, M3, M4, M5 range 3rd speed
   - Fastens the front brake.
   - The 3rd one-way clutch regulates reverse rotation of the front sun gear.



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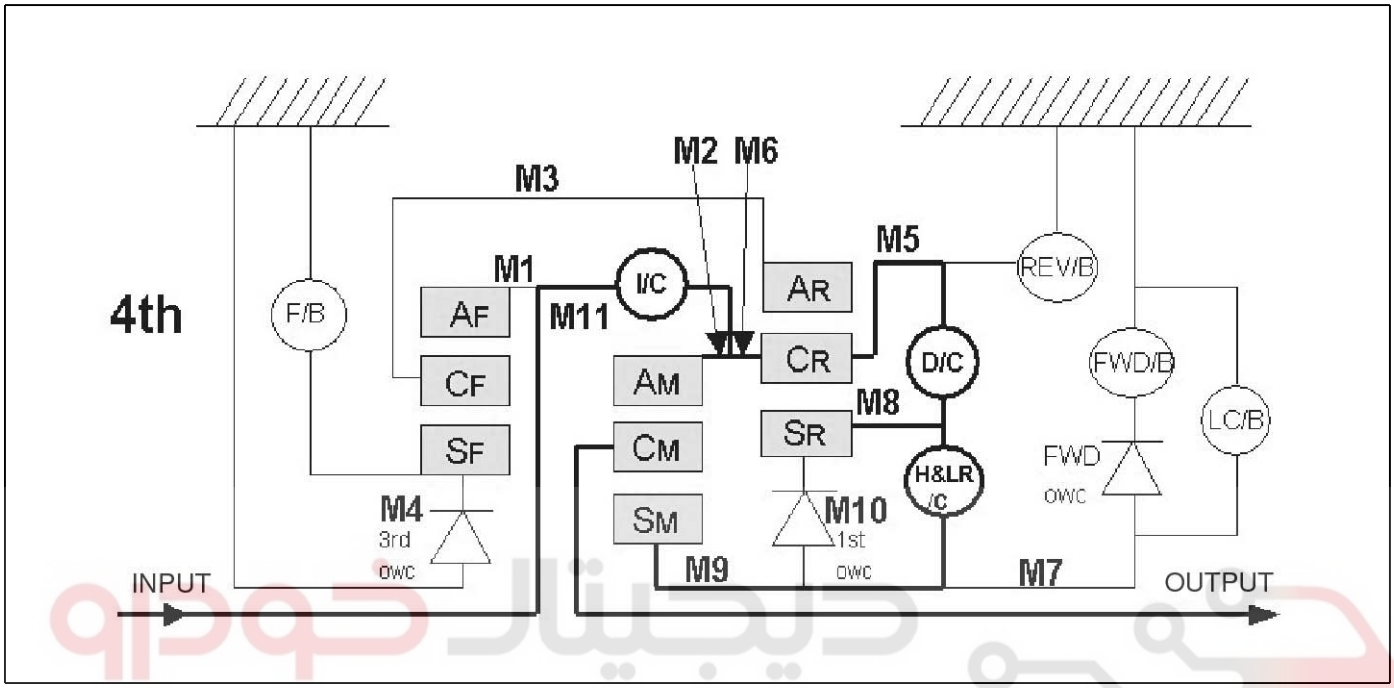
- The high & low reverse clutch is coupled and the middle and rear sun gears are connected.

*** Power Flow**

Input shaft ⇒Front internal gear ⇒Front carrier ⇒Rear internal gear ⇒Rear carrier ⇒Rear carrier ⇒Middle internal gear ⇒Middle carrier ⇒Output shaft

6. D, M4, M5 range 4th speed
   - The front brake is released and sun gear turns freely forward.
   - The input clutch is coupled and the front and middle internal gears are connected.



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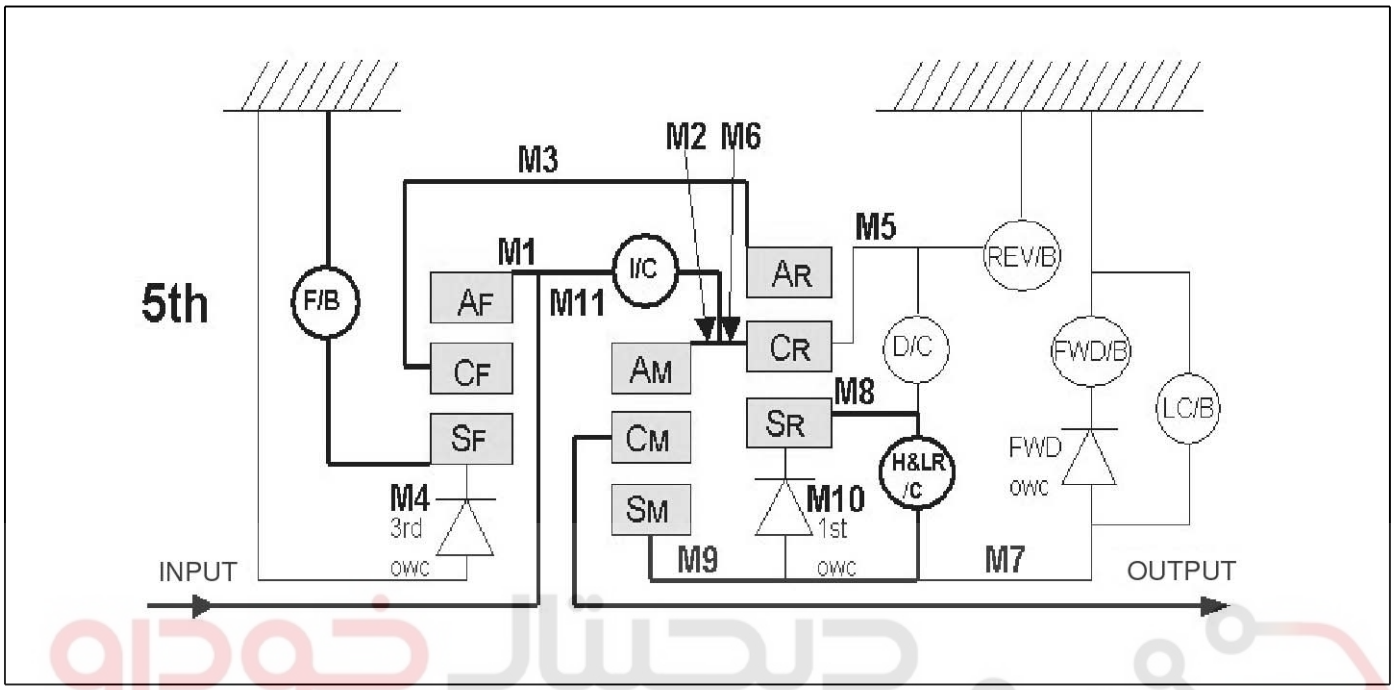
- Driving force is conveyed to the front internal gear, the middle internal gear, and the rear carrier and the three planetary gears rotate forward as a unit.

*** Power Flow**

Input shaft ⇒Front internal gear ⇒Front carrier ⇒Rear internal gear ⇒Rear carrier ⇒Middle internal carrier ⇒Middle carrier ⇒Output shaft

7. D, M5 range 5th speed
   - The front brake fastens the front sun gear.
   - The direct clutch is released and the rear carrier and rear sun gear are disconnected.



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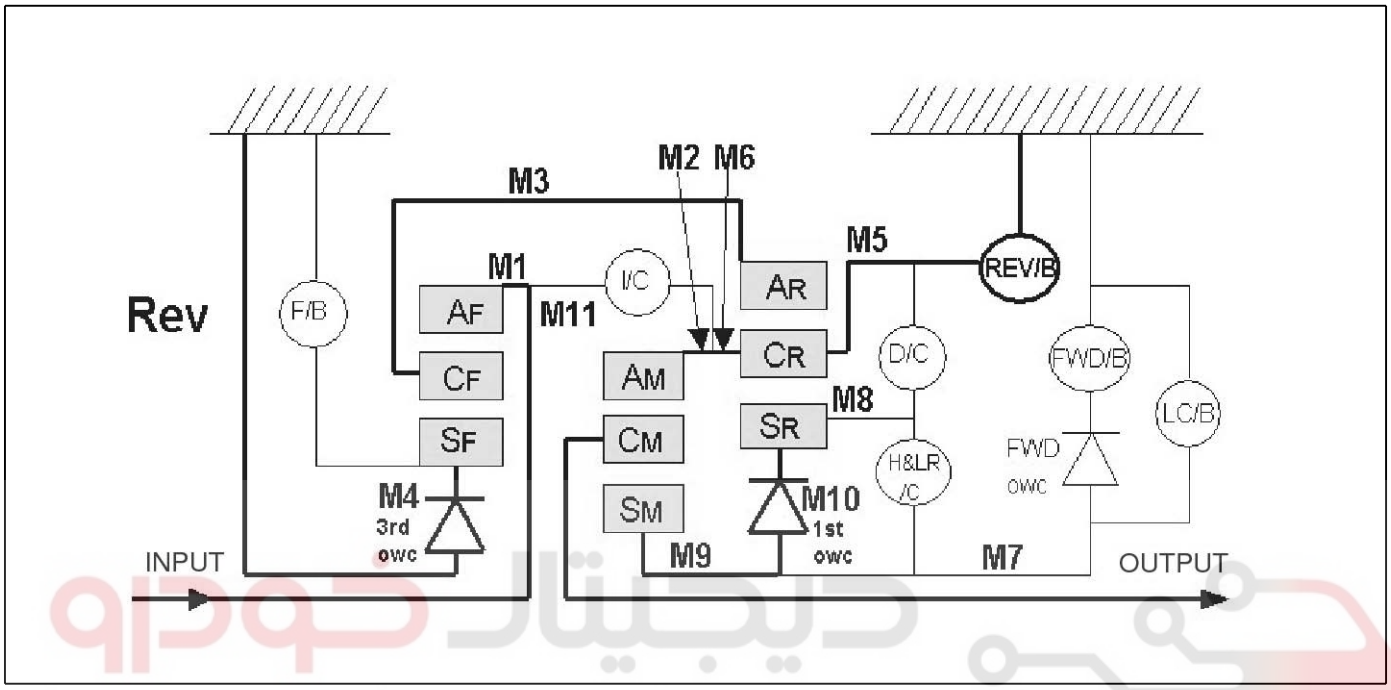
*** Power Flow**

Input shaft ⇒ Front internal ⇒ Front carrier ⇒ Rear internal input shaft ⇒ Middle internal ⇒ Rear carrier ⇒ Rear sun gear ⇒ Middle sun carrier ⇒ Middle carrier ⇒ Output shaft

8. R range
   - The front brake fastens the front sun gear.
   - The high & low reverse clutch is coupled and the middle and rear sun gears are connected.
   - The reverse brake fastens the rear carrier.



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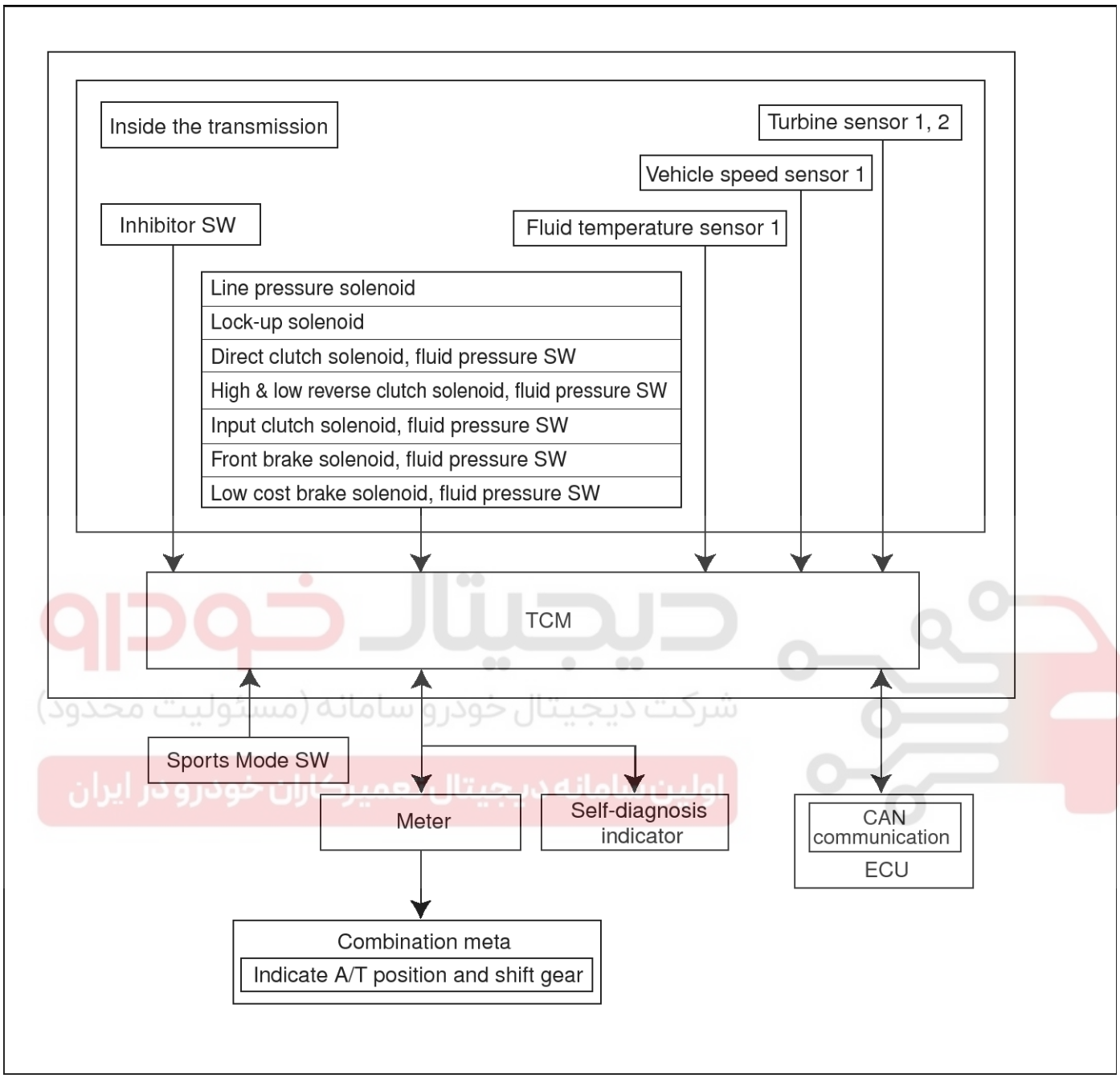
*** Power Flow**

Input shaft ⇒ Front internal ⇒ Front carrier ⇒ Rear internal ⇒ Rear sun gear ⇒ Middle sun gear ⇒ Middle carrier ⇒ Output shaft

Control System Diagram



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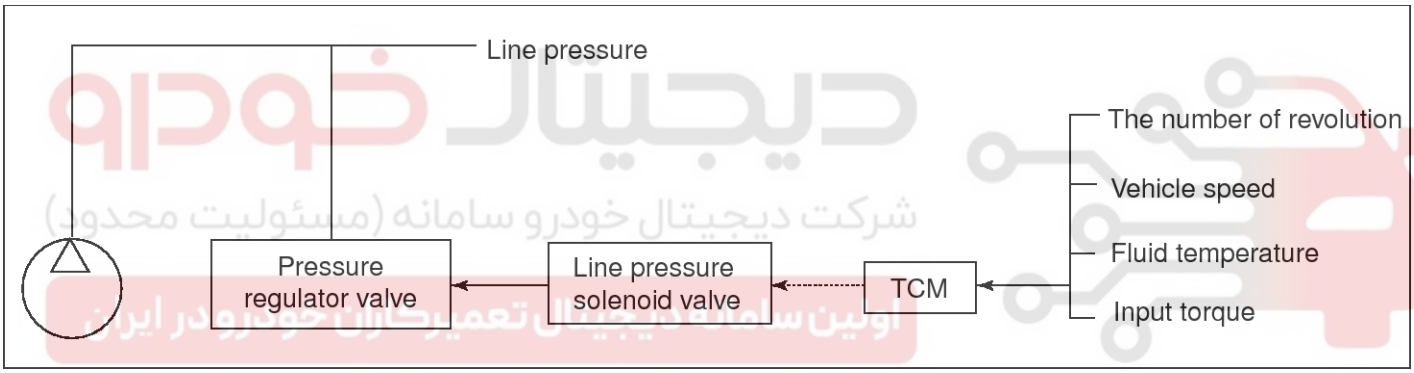
Main Communication Signal

Input to ECM(CAN)	Output to ECM(CAN)	Input from external sys.	Output to external sys.
-	-	A/T driving mode SW	Self-diagnosis indicator
Engine torque signal	Output revolution signal	Sports mode SW	Range signal (P, R, N, D)
Engine revolution signal	Turbine sensor signal	Up SW	Range signal
-	Torque reduction request signal	Down SW	Reverse lamp signal
Accelerator opening signal		Stop lamp SW	N position signal
Power		4 x 4 Low signal	

Line Pressure Control

- If the engine control unit sends the input torque signal equivalent to the engine driving force to the A/T control unit (TCM), the A/T control unit (TCM) controls line pressure solenoid.
- This line pressure solenoid controls the pressure regulator valve as the signal pressure and adjusts the pressure of the operating oil discharged from the oil pump to the line pressure most appropriate to the driving plate.

Line Pressure System Diagram



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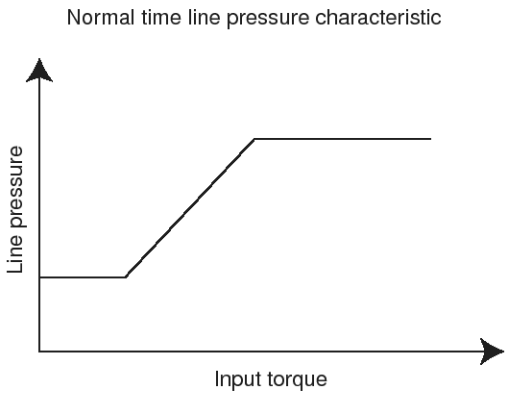
Line pressure control based on line pressure characteristic pattern of A/T control unit (TCM)

- A/T control unit (TCM) has stored in memory a number of patterns for the optimum line pressure characteristics according to driving conditions.
- In order to obtain the most appropriate line pressure characteristic to meet the current driving state, the TCM controls the line pressure solenoid current valve and thus controls the line pressure.
  - Normal line pressure control.

    Each clutch is adjusted to the necessary pressure to match the engine drive force.



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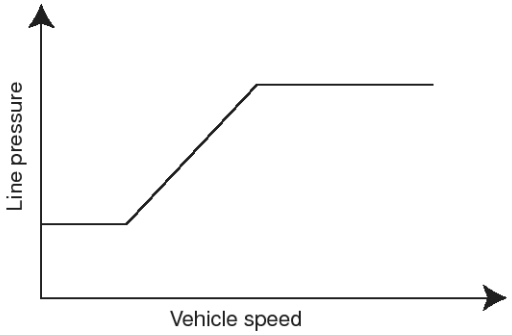
- Back-up control (Engine brake)

  Line pressure according to speed is set during shift down by select operation while driving.

Line pressure characteristic for backup control



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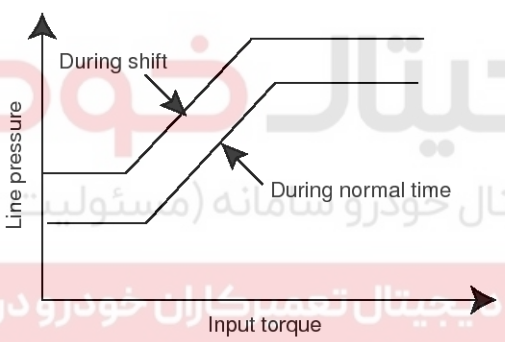
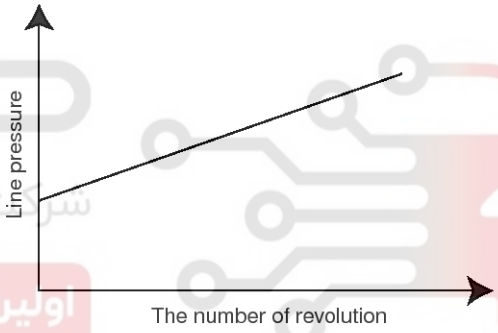
- During shift change

  Set to line pressure that is necessary for shift change. Therefore, line pressure characteristic is set according to input torque and shift types.

Line pressure characteristic during shift





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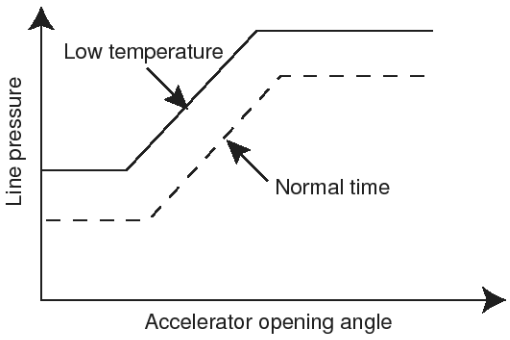
- At low fluid temperature

  When the A/T fluid temperature drops below the prescribed temperature, in order to speed up the action of each friction element, the line pressure is set higher than the normal line pressure characteristic.

Line pressure character during low temperature



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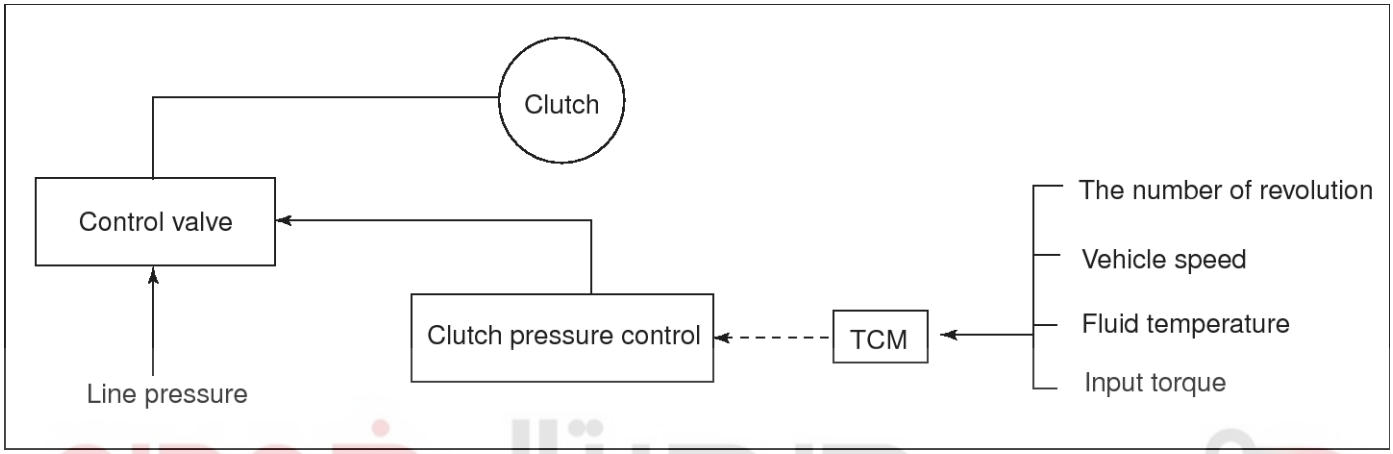
Shift control

- The clutch pressure control solenoid is controlled by the signals from the switches and sensors. Thus the clutch pressure is adjusted to be appropriate to the engine load state and vehicle driving state. It becomes possible to finely control the clutch hydraulic pressure with high precision and a smoother shift change characteristic is attained.

Shift Control System Diagram



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Shift description

Controls clutches with optimum timing and fluid pressure in response to engine speed, engine torque information, and etc.

Lock-up Control

Lock-up control is to enhance delivery efficiency by preventing the torque converter from slipping, engaging the lock-up piston into the torque converter.

It operates lock-up solenoid control in response to a signal from A/T control unit (TCM) and lock-up control valve behavior control, engages or releases the lock up piston of the torque converter.

Lock-up Operating Condition Table

Select lever	D range			Sports mode	
Gear position	5	4	3	5	4
Lock-up	○	-	-	○	○
Slip lock-up	○	○	-	-	-

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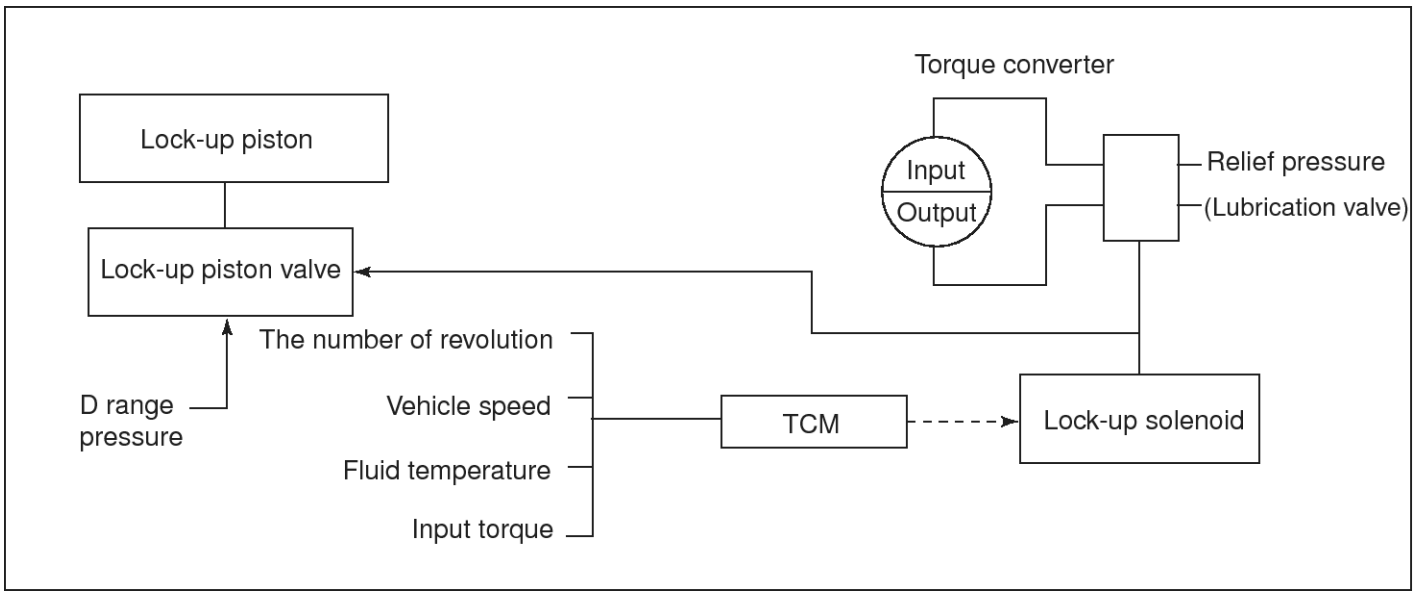
Lock-up control valve control

- In the lock-up control valve, there is operating fluid pressure circuit linked into the lock-up piston and lock-up solenoid operates valve shift in response to a signal from the A/T control unit.
- Operating fluid pressure circuit that is applied to the lock-up piston chamber is controlled with the release or apply sides.

Lock-up Control System Diagram



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Lock-up released

- In the lock-up control valve, there is operating fluid pressure circuit connected into the lock-up piston and lock-up solenoid operates valve shift in response to a signal from the A/T control unit.

  Therefore, the lock-up piston is not coupled.

Lock-up applied

- During the lock-up applied status, lock-up apply pressure is generated having the lock-up control valve to L/U by the lock-up solenoid.

  Therefore, press the lock-up piston to be coupled.

Smooth lock-up control

- A/T control unit (TCM) controls current value that is output to the lock-up solenoid when shifting lock-up applied state from lock-up released state.

  Therefore the lock-up clutch is temporarily set to half-clutched state when shifting the lock-up applied state to reduce the shock.

Half-clutched state

- Changes current value that is output to the lock-up solenoid from A/T control unit (TCM) to gradually increase lock-up solenoid pressure.

  In this way, the lock up apply pressure gradually rises and while the lock-up piston is put into half-clutched status, the lock-up piston operating pressure is increased and the coupling is completed smoothly.

Slip lock-up control

- In the slip region, A/T control unit controls current value of the lock-up solenoid to half-clutched status. Therefore lock-up operates from low speed absorbing torque fluctuation of engine.

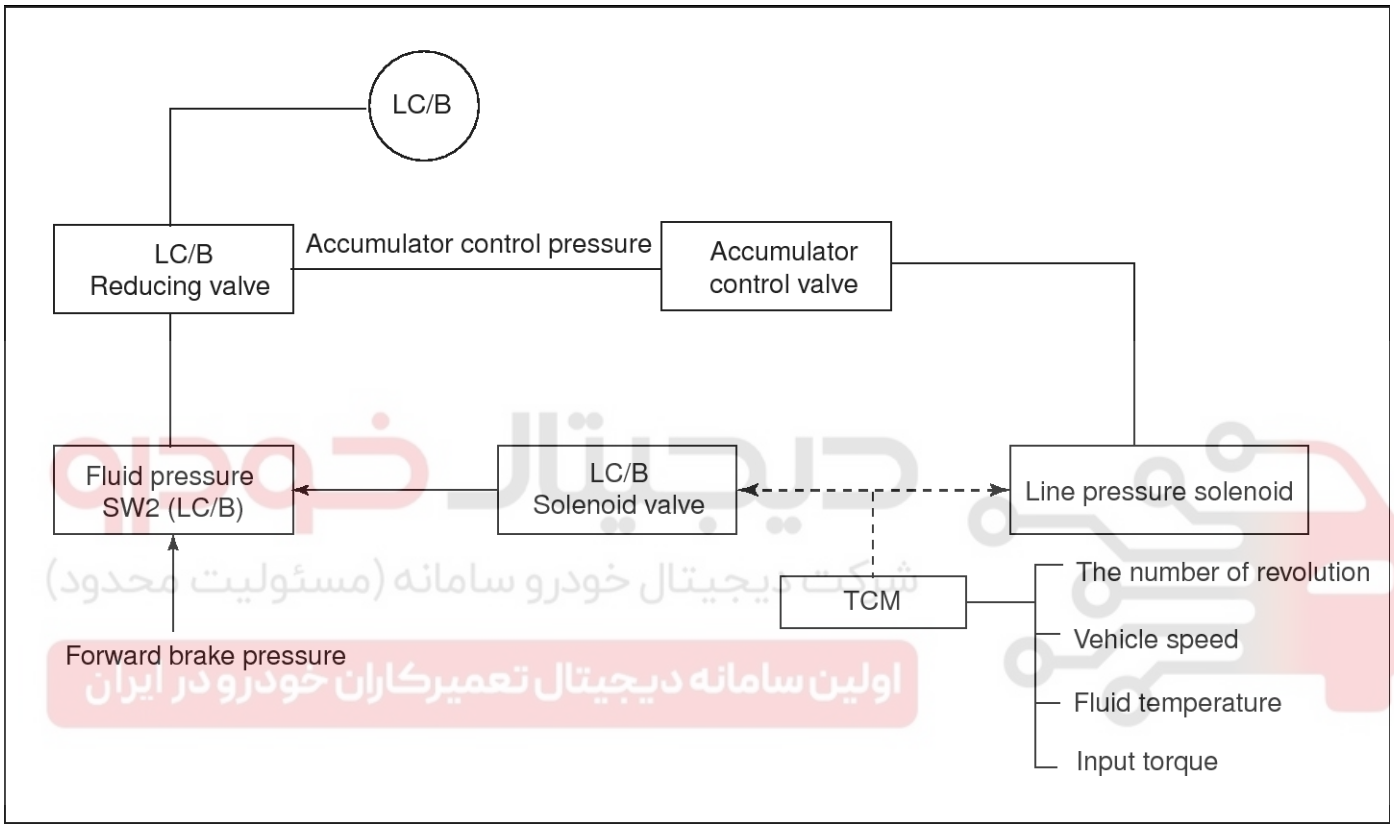
  Thereby fuel consumption was increased during low accelerator opening with 4th, and 5th gears at low speed.

Engine Brake Control

- The forward one-way clutch delivers driving force from the engine to the rear wheel but reverse driving from the wheel drive is not delivered since the one-way clutch is idling.

  Therefore low coast brake solenoid is operated to prevent the forward one-way clutch from idling so that the engine brake is operated in the same as before.

Engine Brake Control System Diagram



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- The operation of the low coast brake solenoid switches the low coast brake switch valve and controls the coupling and releasing of the low coast brake.

  The low coast brake reducing valve controls the low coast brake coupling force.

Control Valve

Control Valve Functions

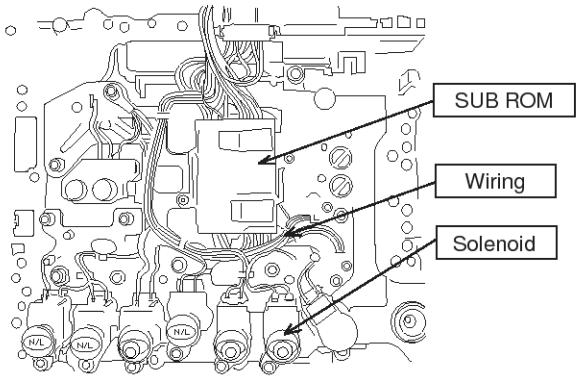
Valve name	Function
Torque converter regulator valve	Regulates line pressure to the optimum pressure (torque converter operating pressure) to prevent pressure applied to the torque converter from being excessive.
Pressure regulator valve Pressure regulator plug Pressure regulator sleeve	Regulates oil pump discharge pressure to the optimum pressure (line pressure) in response to the driving conditions.
Front brake control valve	Regulates line pressure to the optimum pressure (front brake pressure) to be applied to the front brake during the front brake apply.
Accumulator control valve	Regulates pressure applied to the accumulator piston, and the low coast reducing valve (accumulator control pressure) inresponse to the driving conditions (regulates clutch pressure at 1st, 2nd, 3rd, 5th gears).
Pilot valve A	Regulates line pressure to the regular pressure required by line pressure control, shift control, and lock-up control (pilot pressure).
Pilot valve B	Regulates line pressure to the regular pressure required by shift control (pilot pressure).
Low coast brake switching valve	Provides the low coast brake reducing valve with line pressure during engine brake operation.
Low coast brake reducing valve	Regulates line pressure to the optimum pressure to be applied to the low coast brake when the low coast brake is coupled.
N-R accumulator	Produces the stabilizing pressure for when N-R is selected.
Direct clutch piston switching valve	Operates in 4th gear and switches the direct clutch coupling capacity.
High & low reverse clutch control valve	Regulates line pressure to the optimum pressure (high & low reverse clutch pressure) to be applied to the high & low reverse clutch when the high & low reverse clutch is coupled (regulates clutch pressure in 1st, 3rd, 4th, 5th gears).
Input clutch control valve	Regulates line pressure to the optimum pressure (input clutch pressure) to be applied to the input clutch when the inputclutch is coupled (regulates clutch pressure in 4th, 5th gears).
Direct clutch control valve	Regulates line pressure to the optimum pressure (direct clutch pressure) to be applied to the direct clutch when the direct clutch is coupled (regulates clutch pressure i n 2nd, 3rd, 4th gears).
Lock-up control valve Lock-up control plug Lock-up control sleeve	Switches lock-up to operating or released. Also, by performing the lock-up operation transiently, lock-up smoothly.
Torque converter lubrication valve	Operates to switch torque converter, cooling, and oil path of lubrication system during lock-up.
Cool bypass valve	Allows excess oil to by pass cooler circuit without being fed into it.
Line pressure relief valve	Discharges excess oil from line pressure circuit.
N-D accumulator	Produces the stabilizing pressure for when N-D is selected.
Manual valve	Delivers line pressure to each circuit in response to each select position. Circuit to which line pressure is not sent drain.

Function Of Pressure Switch

Name	Function
Fluid pressure switch 1 (FR/B)	Detects abnormal fluid pressure of the front brake. When it detects any malfunction, it puts the system into fail-safe mode.
Fluid pressure switch 2(LC/B)	Detects abnormal fluid pressure of the low coast brake. When it detects any malfunction, it puts the system into fail-safe mode.
Fluid pressure switch 3(I/C)	Detects abnormal fluid pressure of the input clutch. When it detects any malfunction , it puts the system into fail-safe mode.
Fluid pressure switch 5(D/C)	Detects abnormal fluid pressure of the direct clutch. When it detects any malfunction, it puts the system into fail-safe mode.
Fluid pressure switch 6 (H & LR/C)	Detects abnormal fluid pressure of the high & low reverse clutch. When it detects any malfunction, it puts the system into fail-safe mode.

SUB ROM unit

1. Installing location: The valve body upper part
2. Function: To obtain A/T fluid pressure stability by compensating for solenoid & valve body unit fluid pressure differential.
3. Principle: Install additional ROM onto valve body of automatic transmission and input fluid pressure differential of solenoid & valve body so that TCM reads the input data to perform fluid pressure compensation.



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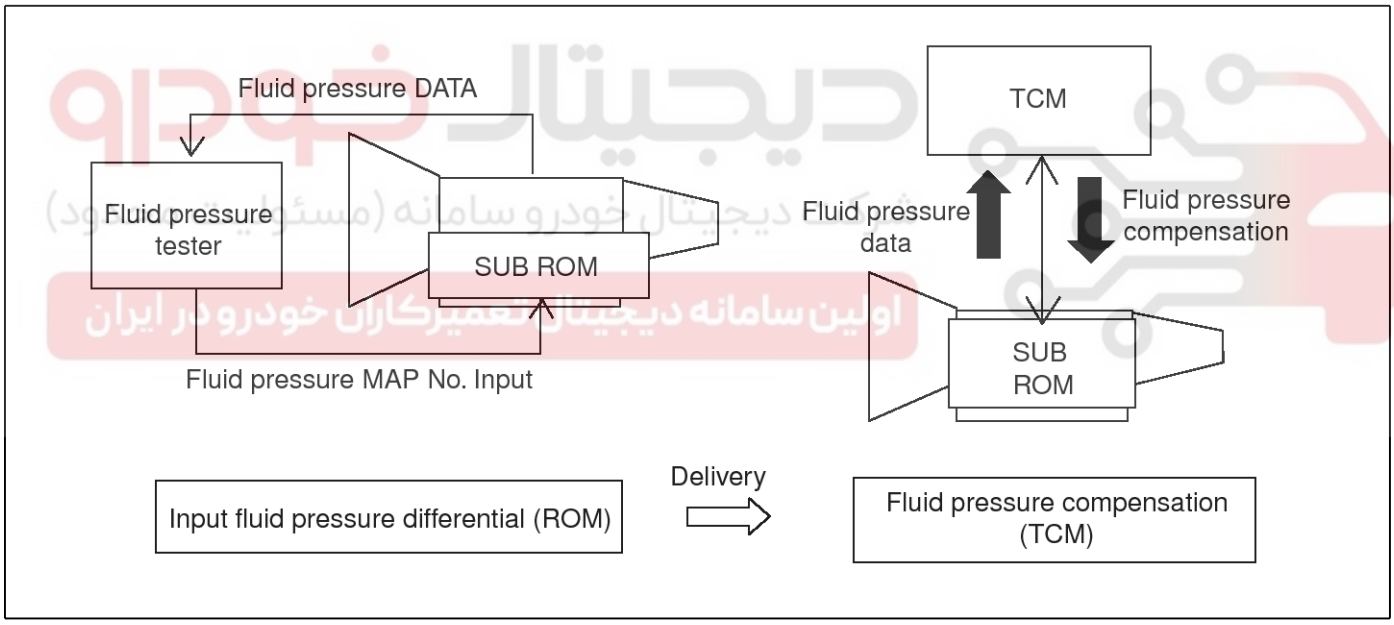

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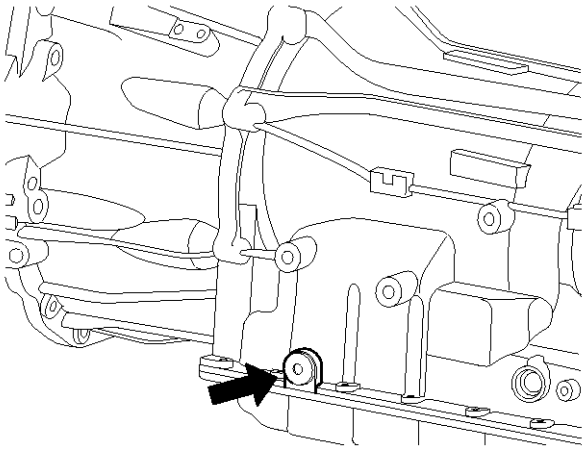
4. Maintenance
   1) When replacing with a new TCM in the vehicle
      - TCM automatically reads SUB ROM DATA during I.G ON. At this time, shift range valve is off for about 2.5 second.
   2) When replacing A/T (regardless of new or old ones) in the vehicle
      - Must erase SUB ROM DATA stored in TCM.
      - Erase SUB ROM DATA in SCAN TOOL delete mode during shift stage in R-range + accelerator opening angle maintains 50% + I.G ON.
      - TCM reads SUB ROM DATA from a new A/T upon I.G ON again after I.G OFF.
   3) Moving TCM from vehicle A to another vehicle B
      - Perform the same way as in 2) above.

Procedure of ATF level adjusting

1. Park the vehicle on a flat road and lock the tires.
2. Shift the shift lever to the "P" range.
3. Remove the overflow plug by using a torx wrench.



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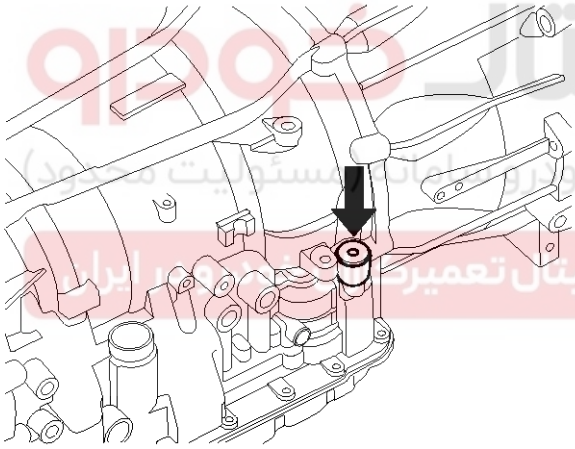
4. Remove the filler plug by using a torx wrench.



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5. Check if ATF flows out of the overflow hole. If ATF does not drop, add ATF until it drops.
6. Fix the overflow plug by using Torx wrench.
7. Add 1400cc(A5SR1),1200cc(A5SR2) of ATF from the oil filling hole.
8. Install it to the filler plug with a new gasket.
9. Tighten the filler plug by using Torx wrench with the specified torque.

Tightening torque :
24-56 Nm(2.4-5.6 kgf.m, 17.4-40.5 lb-ft)

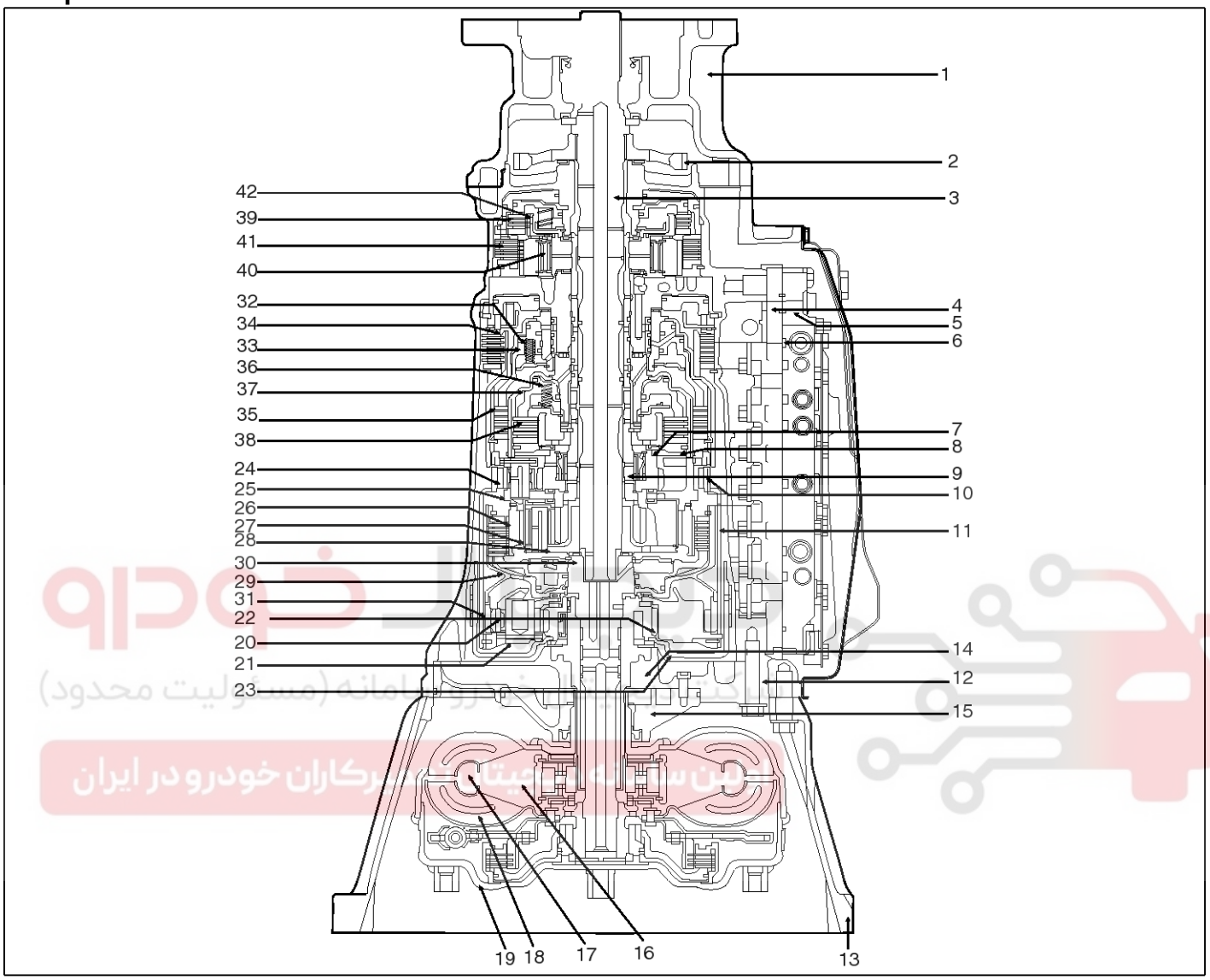
10. Start the engine.
11. Raise ATF temperatirue on CAN signal up to 50~60˚C at stabilized idle speed condition.
12. Shift from "P" to "D", then from "D" to "P", keeping each shift position "N","R" more than 2 seconds with foot braking.
13. Repeat 2 times above procedure "3".
14. Remove the overflow plug and the O-ring by using Torx wrench.
15. Check If the thin oil stream becomes drop by drop when ATF temperatirue on CAN signal is at 58~64˚C (A5SR1), 54~60˚C (A5SR2).
16. Install it to the overflow plug with a new gasket.
17. Tighten the overflow plug by using Torx wrench with the specified torque.

Tightening torque :
6-9 Nm(0.6-0.9 kgf.m, 4.3-6.5 lb-ft)

NOTICE
Be sure to wipe off spilled ATF completely after tightening the overflow plug.

Automatic Transaxle

Components

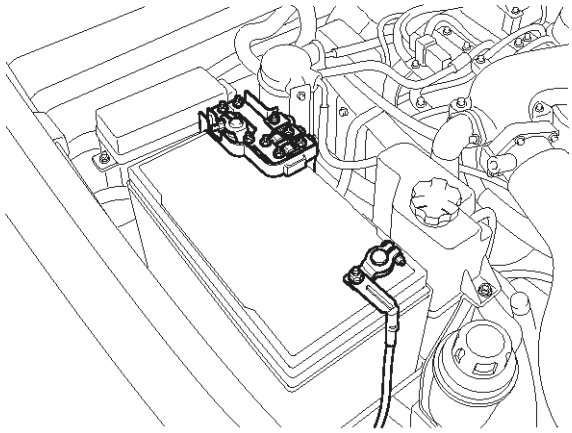


SHMAT8024L

1. Adapter case (4WD)
2. Parking gear
3. Output shaft
4. Control valve upper body
5. Control valve lower body
6. Separator plate assembly
7. Rear sun gear
8. Rear sun plate
9. Middle sun gear assembly
10. Rear annulus gear assembly
11. Rear annulus cell
12. Automatic transmission case
13. Converter housing
14. Oil pump cover
15. Oil pump housing
16. Stator
17. Impeller assembly
18. Turbine & lockup assembly
19. Torque converter cover assembly
20. Front pinion gear
21. Front planetary carrier
22. Front sun gear
23. Front brake drum
24. Rear pinion gear
25. Rear planetary carrier plate
26. Middle annulus gear
27. Middle pinion gear
28. Middle planetary carrier
29. Input clutch drum
30. Input shaft
31. Front annulus gear
32. Direct clutch return spring
33. Direct clutch piston
34. Reverse brake hub
35. Direct clutch assembly
36. High & low reverse clutch return spring
37. High & low reverse clutch piston
38. High & low reveres clutch assembly
39. Low coast brake clutch assembly
40. Forward one-way clutch
41. Forward brake clutch assembly
42. Low coast brake hub

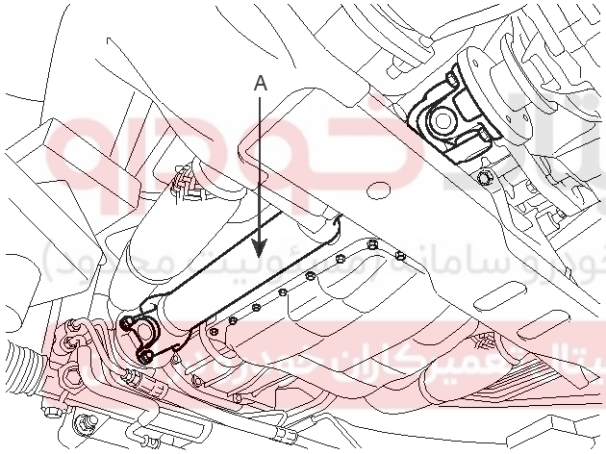
Removal

1. Disconnect the battery (-) terminal.



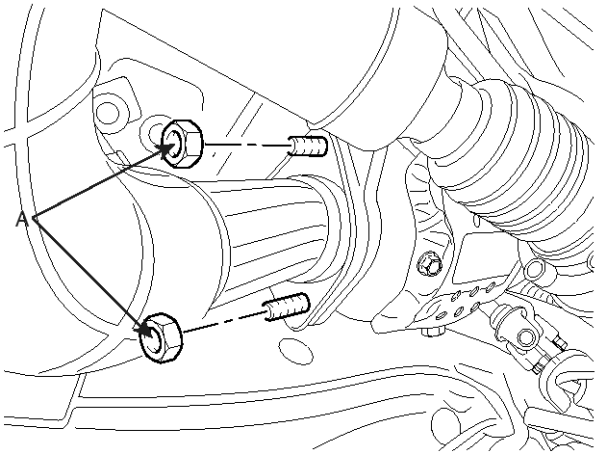
SHMAT8001D

2. Remove the front propeller shaft(A). (4WD)

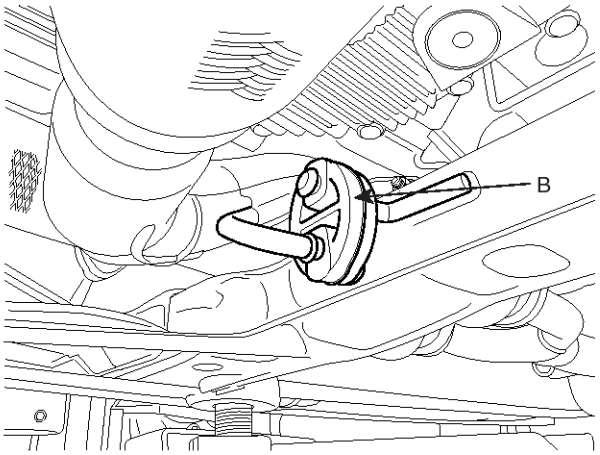


SBLAT6007L

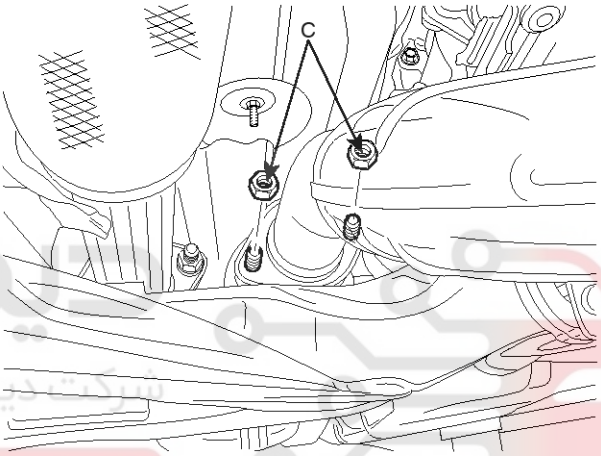
3. Remove the front muffler(A) or muffer hanger rubber(B), by removing rear muffler(C).



SHMAT8002L

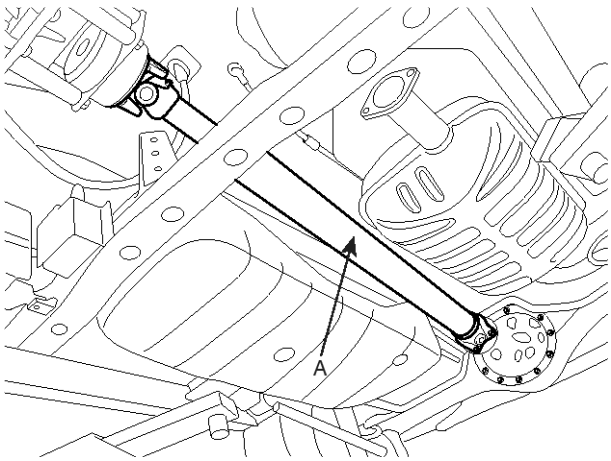


SHMAT8003L



SHMAT8004L

4. Remove the rear propeller shaft(A).

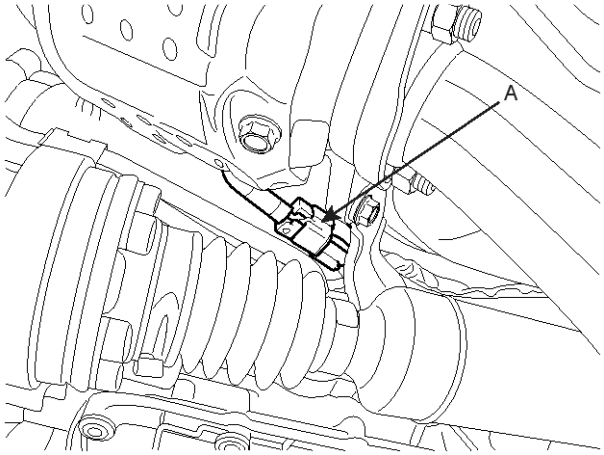


SBLAT6009L

5. Support the transaxle with a jack

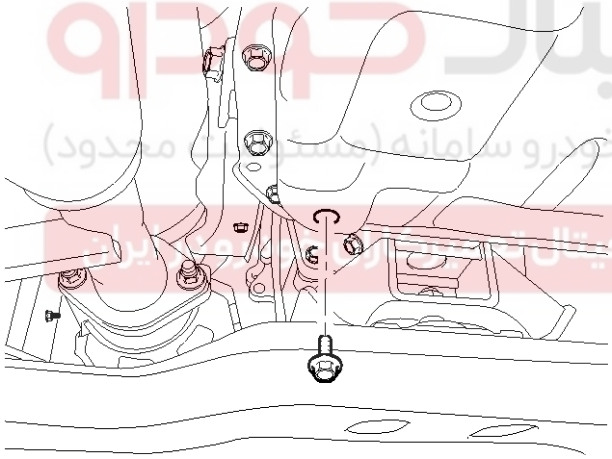
⚠CAUTION
Be careful not to give a shock or damage to the plastic oil pan.

6. Disconnect the oxygen sensor(A) connector.



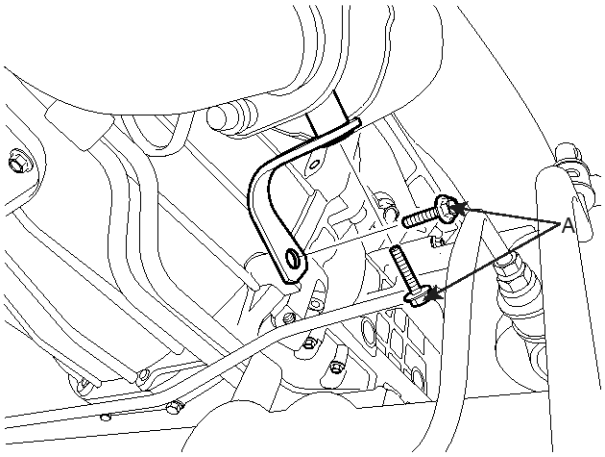
SHMAT8005L

7. Drain the automatic transmission fluid.

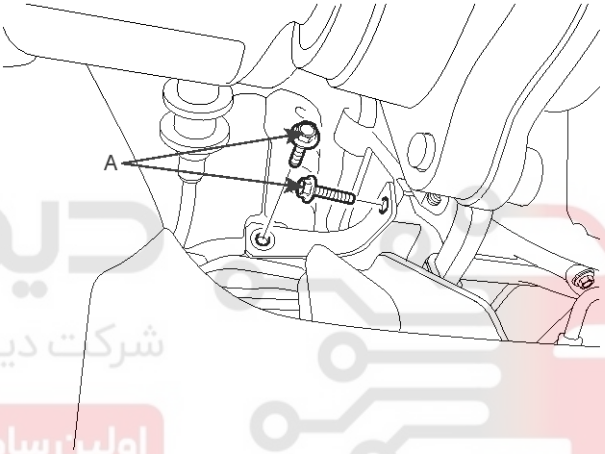


SBLAT6003L

8. Remove the exhaust manifold stay bolt (A).

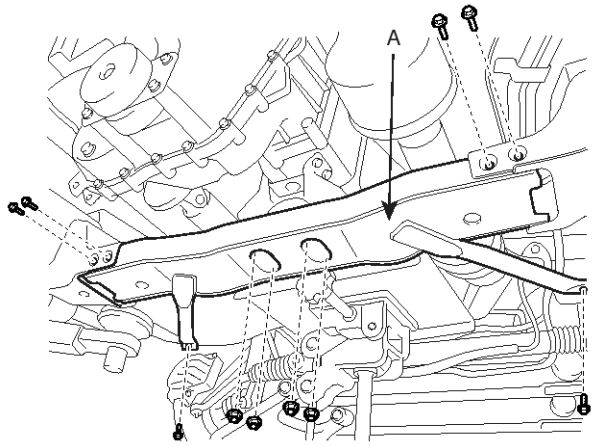


SHMAT8114L



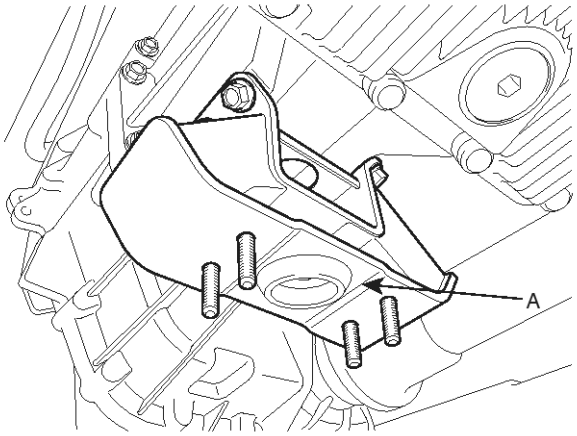
SHMAT8115L

9. Remove the cross member(A).



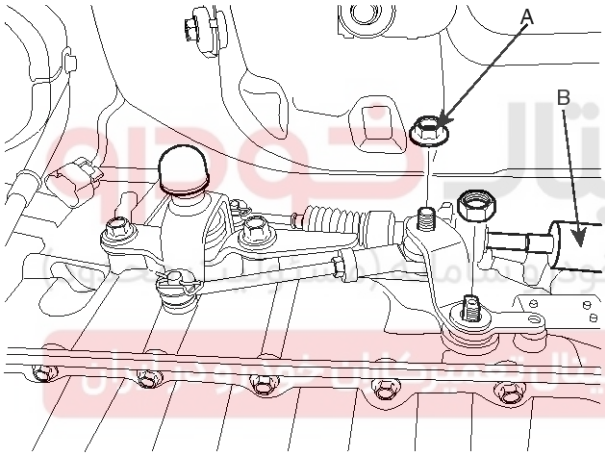
SHMAT8002D

10. Remove the insulator support bracket(A).



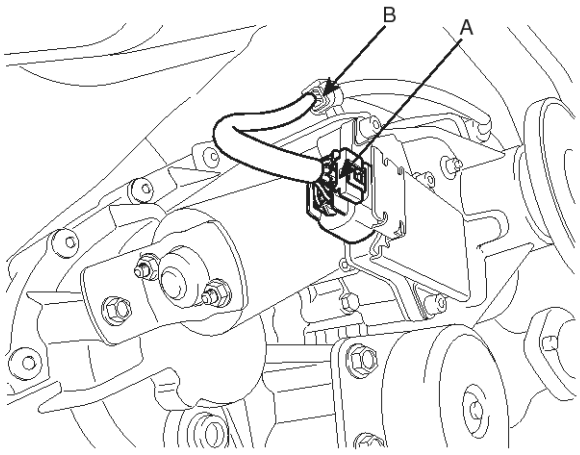
SHMAT8020L

11. Disconnect the shift cable assembly (B) by removing the nut (A-3ea)



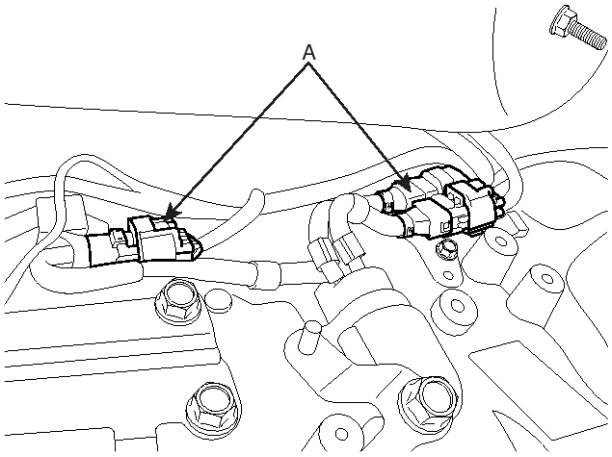
SHMAT8110L

12. Disconnect the 4WD ECU connector(A) or EMC connector(B).



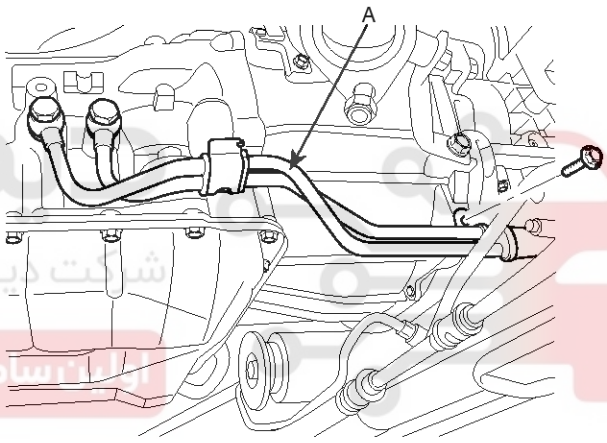
SHMAT8005D

13. Disconnect the transmission wire harness connectors(A)



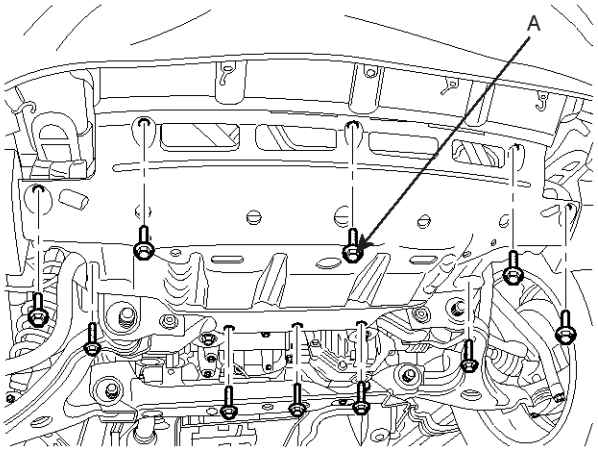
SBLAT6024L

14. Install the oil cooler pipes(A).



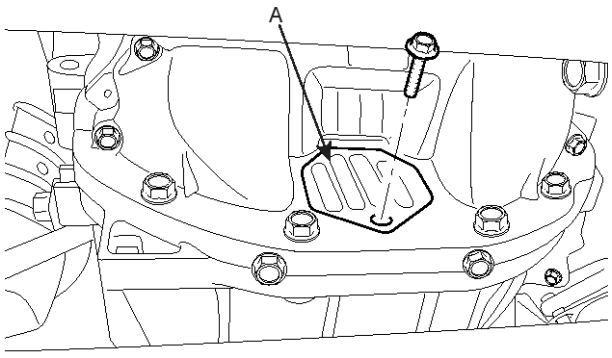
SBLAT6012L

15. Remove the under cover bolts(A-10).



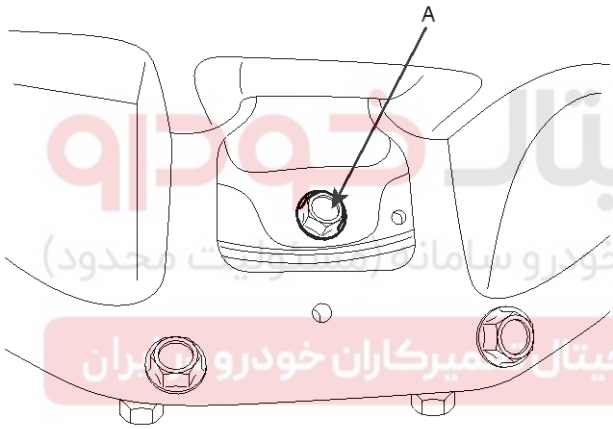
SHMAT8009L

16. Remove the drive plate cover(A).



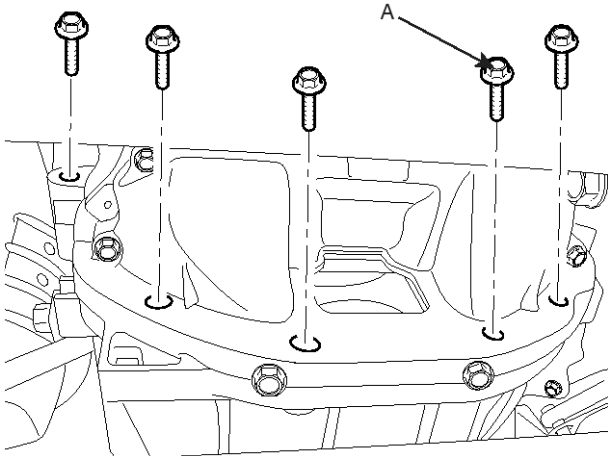
SBLAT6014L

17. Remove the torque converter mounting bolts (A-6ea) by rotating the crank shaft.



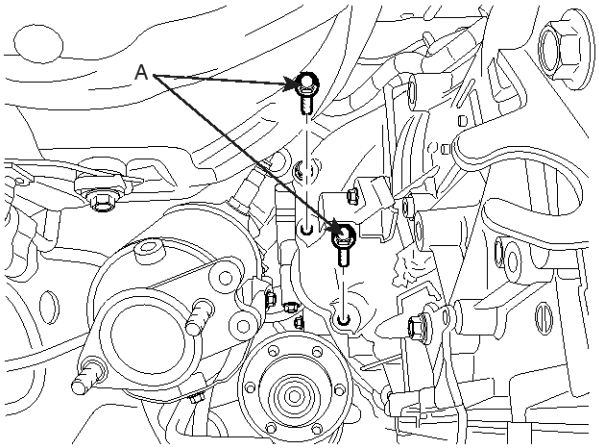
SBLAT6015L

18. Remove the transmission lower mounting bolts(A).



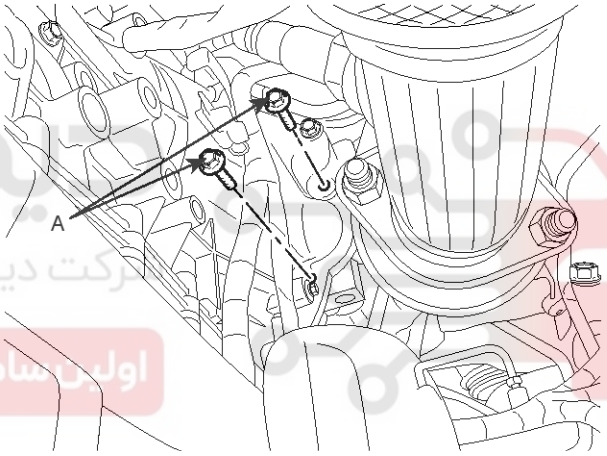
SBLAT6016L

19. Remove the mounting bolts (A-2ea) for the starter motor.



SHMAT8010L

20. Remove the mounting bolts (A-2ea).

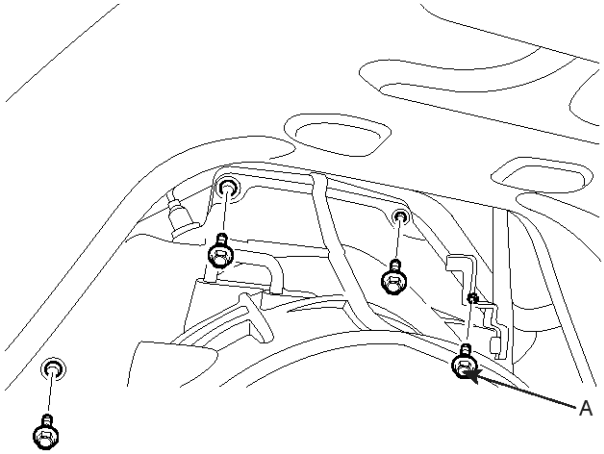


SHMAT8011L

⚠CAUTION

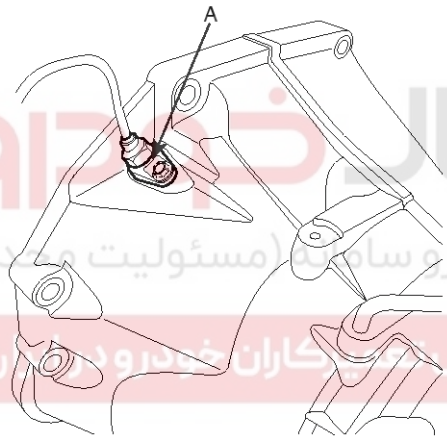
Before removing one mounting bolt on the transmission side and the other bolt for the starter motor, remove the cross member and lower the transmission assembly.

21. Remove the mounting bolts (A-4ea) on the transmission side.



SHMAT8012L

22. Disconnect the CKP sensor(A).

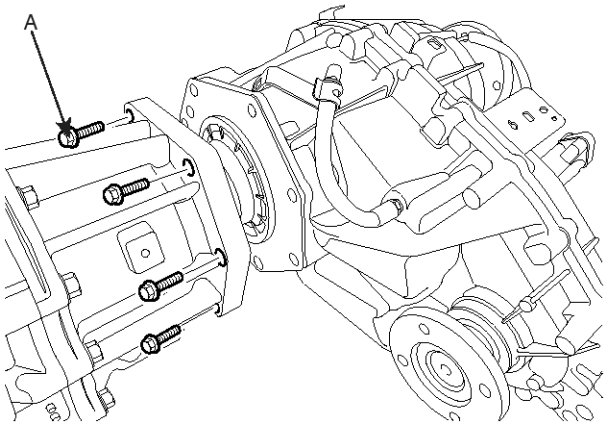


SHMAT8013L

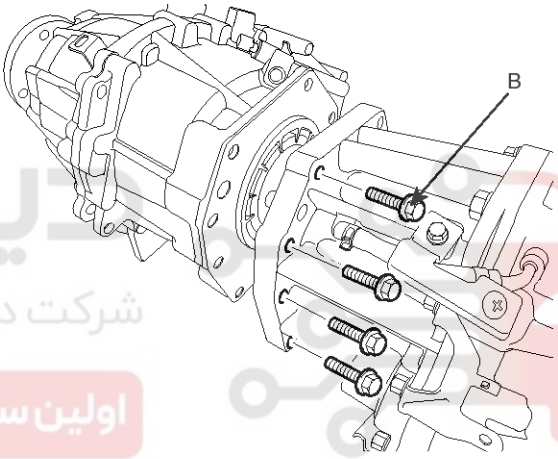
23. Remove the tansmission assembly by lowering the supporting jack.

⚠CAUTION
Be careful not to damage tubes, hoses or wire.

24. Remove the mounting bolts(A,B-4ea) and the transfer assembly.



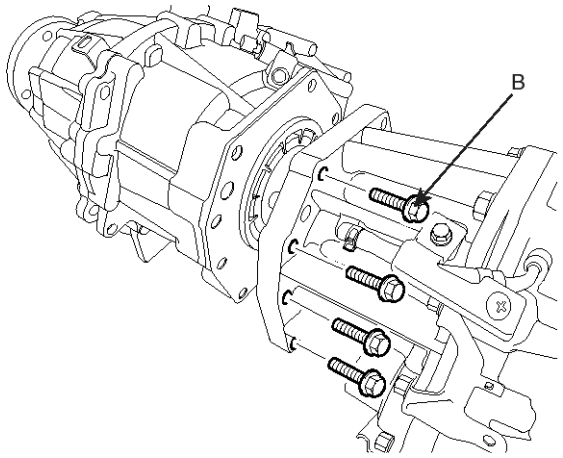
SHMAT8112L



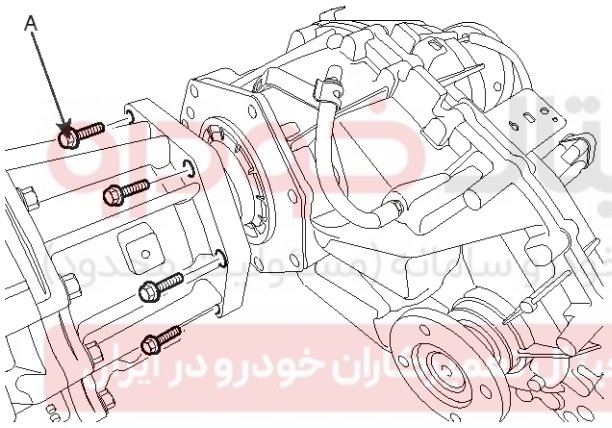
SHMAT8113L

Installation

1. Install the mounting bolts(A,B-4ea) and the transfer assembly.



SHMAT8113L

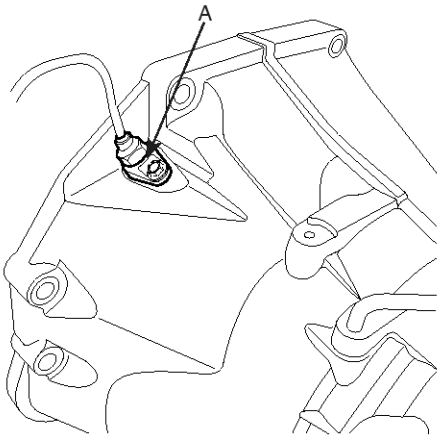


SHMAT8112L

2. Lowering the vehicle or lifting up a jack, install the transmission assembly.

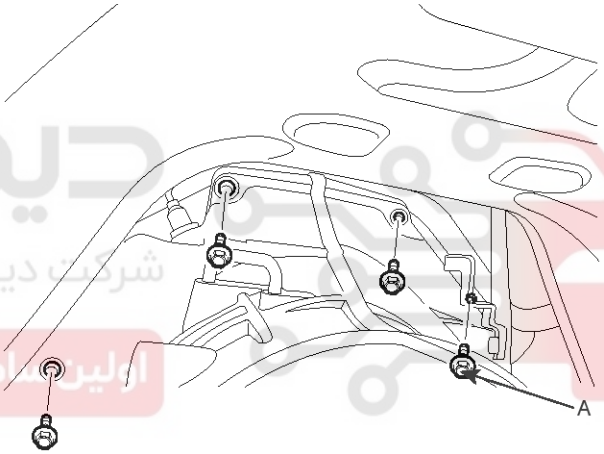
⚠CAUTION
Be careful not to damage tubes, hoses or wire.

3. Connect the CKP sensor(A).



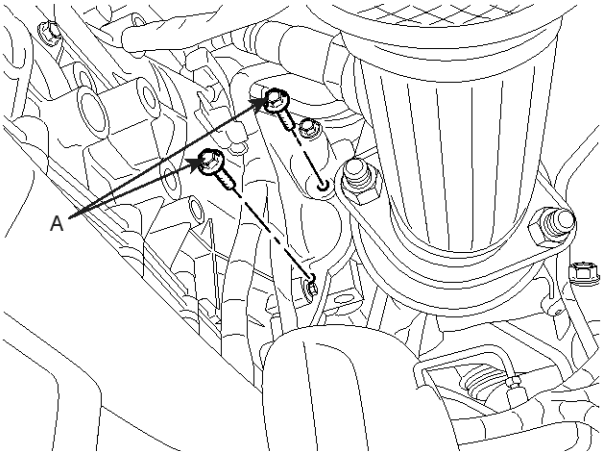
SHMAT8013L

4. Install the mounting bolts (A-4ea) on the transmission side.



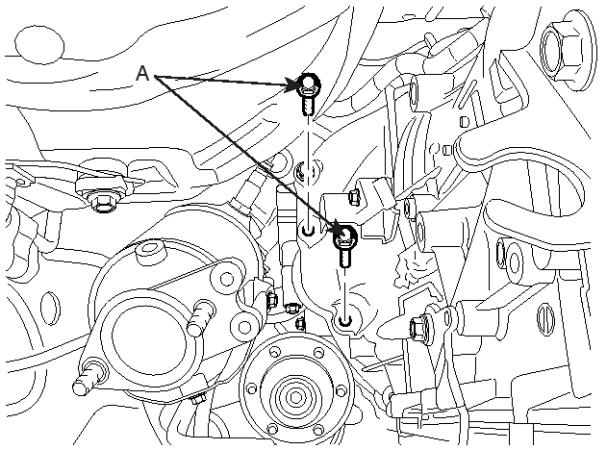
SHMAT8012L

5. Install the mounting bolts (A-2ea).



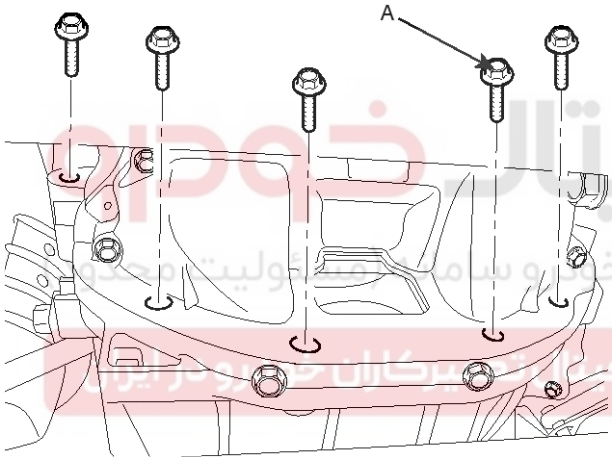
SHMAT8011L

6. Install the mounting bolts (A-2ea) for the starter motor.



SHMAT8010L

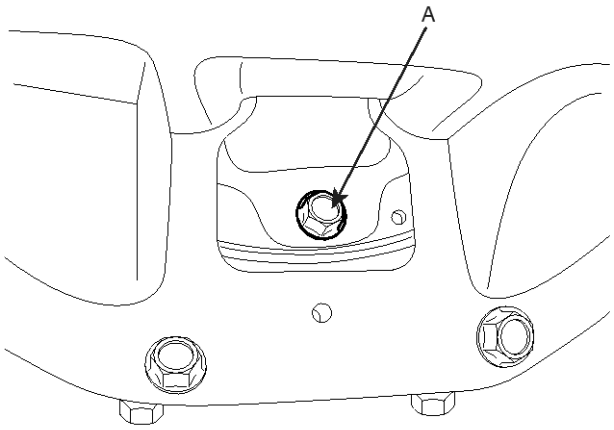
7. Install the transmission lower mounting bolts(A).



SBLAT6016L

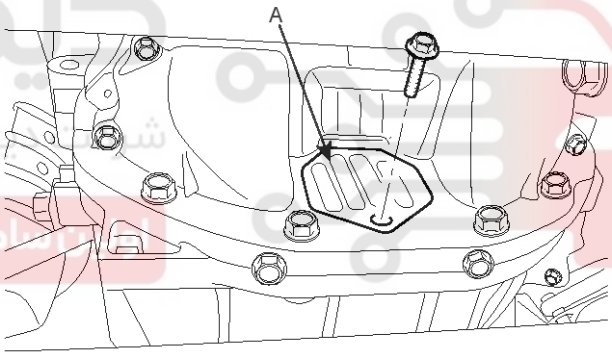
8. Install the torque converter mounting bolts (A-6ea) by rotating the crank shaft.

Tightening torque :
34.3~41.1Nm (3.5~4.2kgf.m, 25.3~30.3lb-ft)



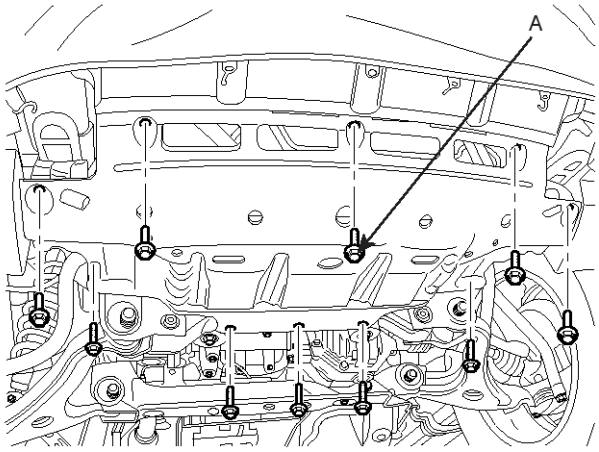
SBLAT6015L

9. Install the drive plate cover(A).



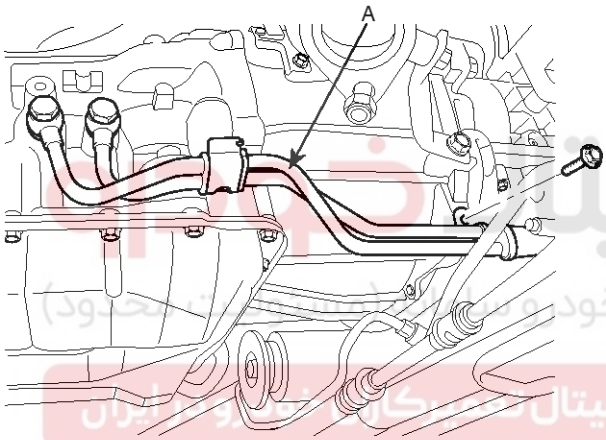
SBLAT6014L

10. Install the under cover bolts(A-10).



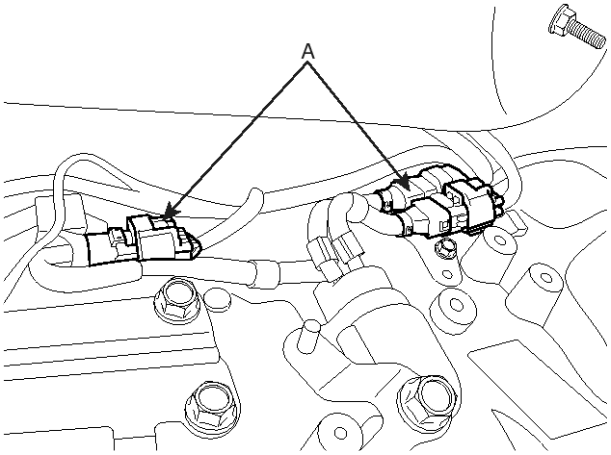
SHMAT8009L

11. Install the oil cooler pipes(A).



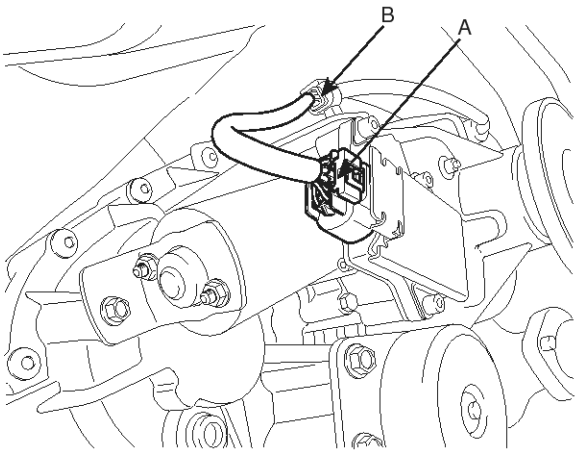
SBLAT6012L

12. Connect the transmission wire harness connectors(A)



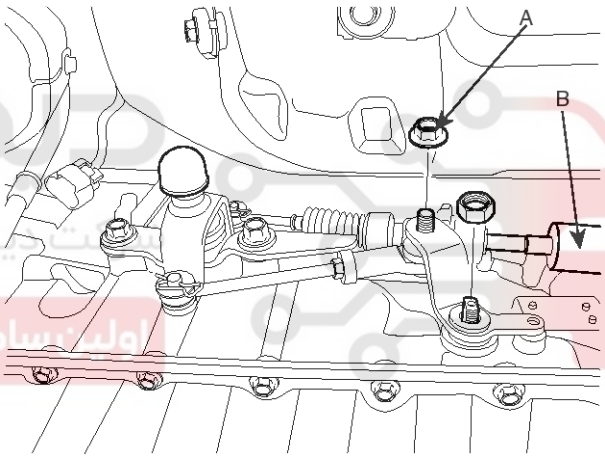
SBLAT6024L

13. Connect the 4WD ECU connector(A) or EMC connector(B).



SHMAT8005D

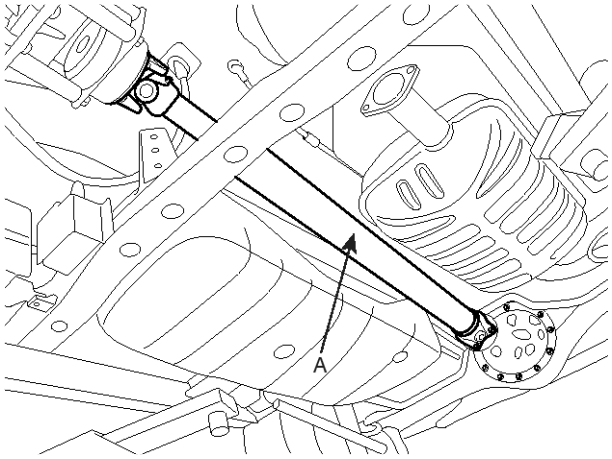
14. Connect the shift cable assembly (B) by tightening the nut (A-3ea)



SHMAT8110L

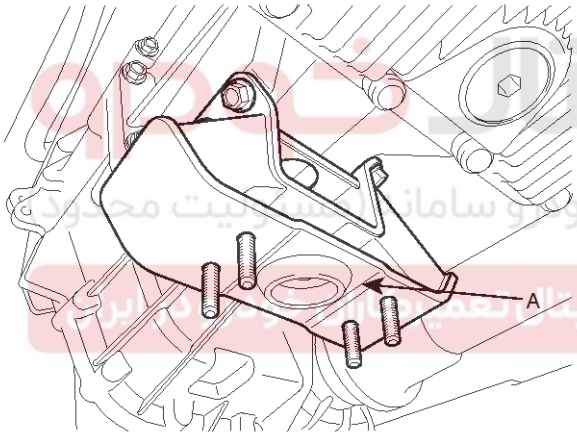
15. Install the rear propeller shaft(A).

Tightening torque :
58.83~68.64Nm(6~7kgf.m, 43.39~50.63lb-ft)



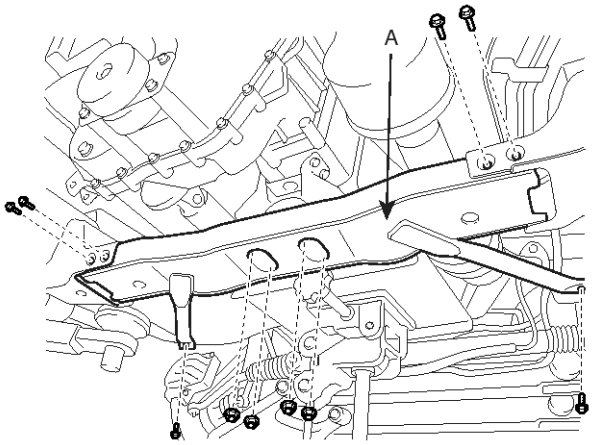
SBLAT6009L

16. Install the insulator support bracket(A).



SHMAT8020L

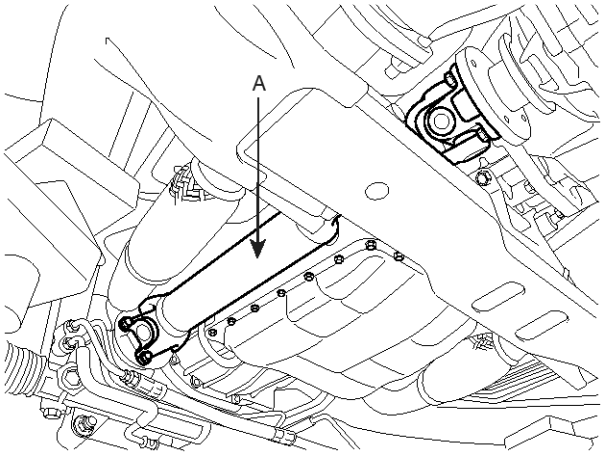
17. Install the cross member(A)



SHMAT8002D

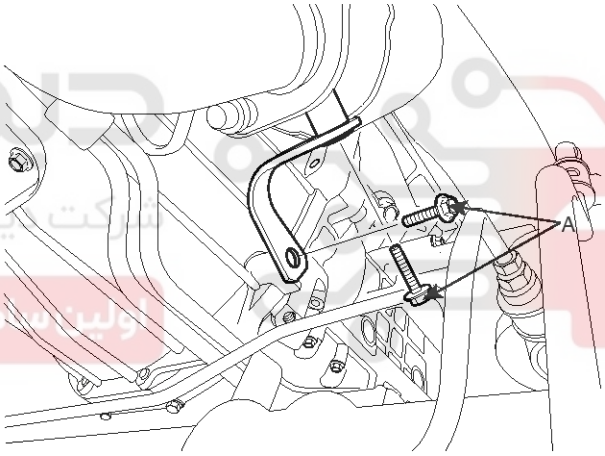
18. Install the front propeller shaft(A). (4WD)

Tightening torque :
58.83~68.64Nm(6~7kgf.m, 43.39~50.63lb-ft)

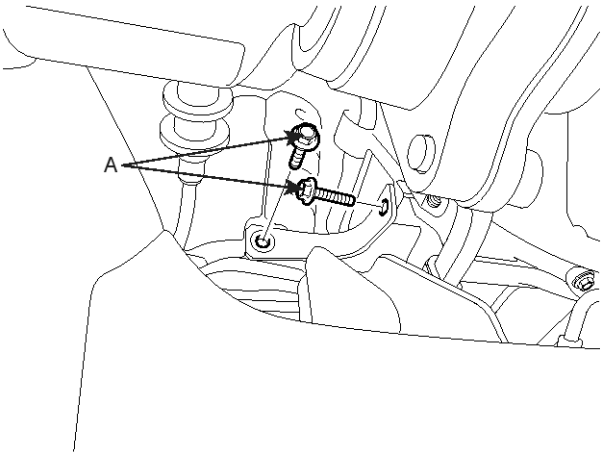


SBLAT6007L

19. Install the exhaust manifold stay bolt (A).

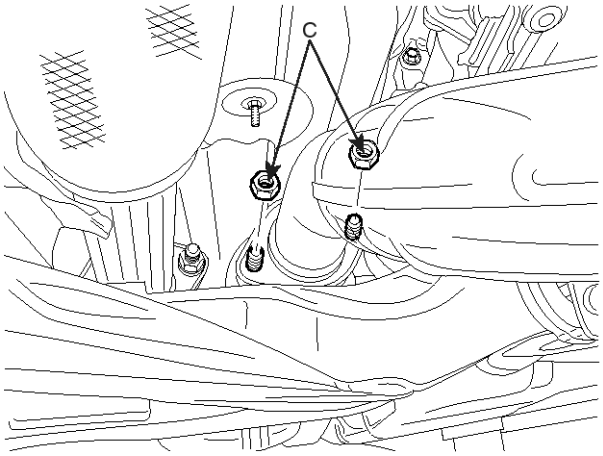


SHMAT8114L

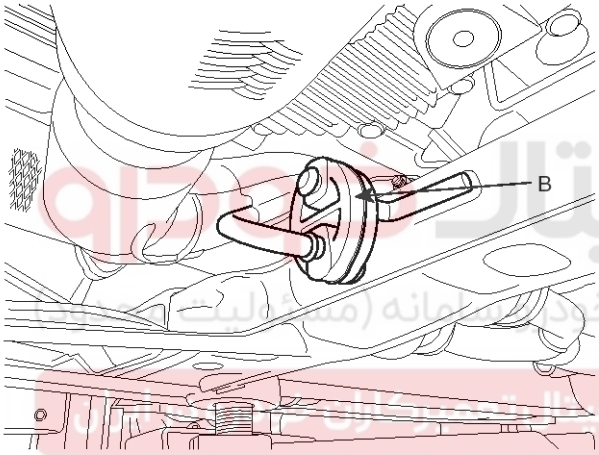


SHMAT8115L

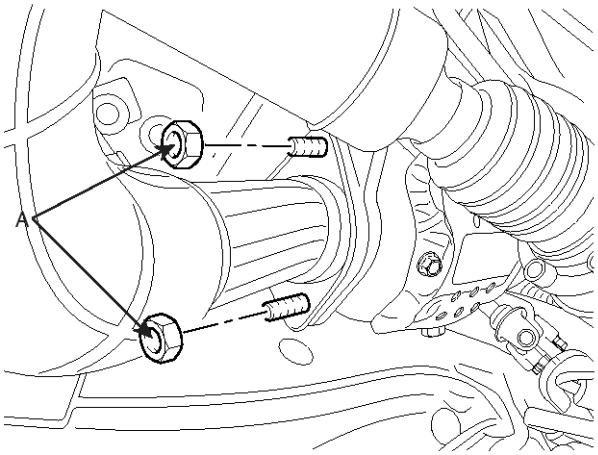
20. Install the front muffler(A) or muffer hanger rubber(B), by removing rear muffler(C).



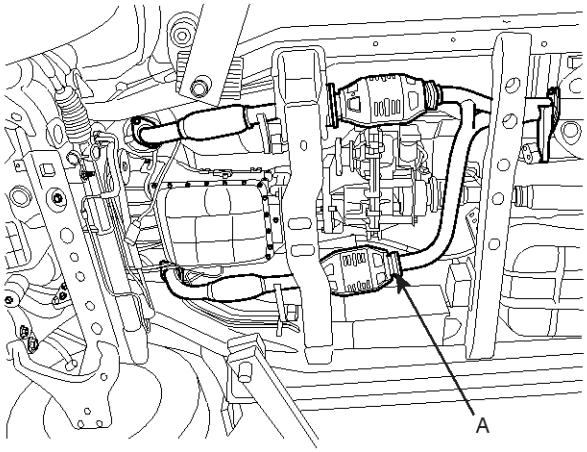
SHMAT8004L



SHMAT8003L

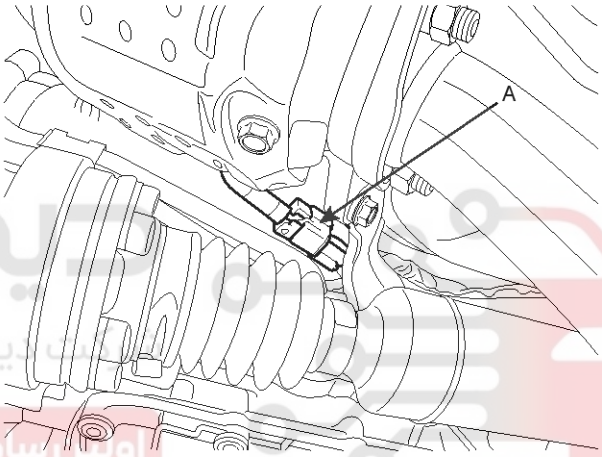


SHMAT8002L



SBLAT6008L

21. Connect the oxygen sensor(A) connector.



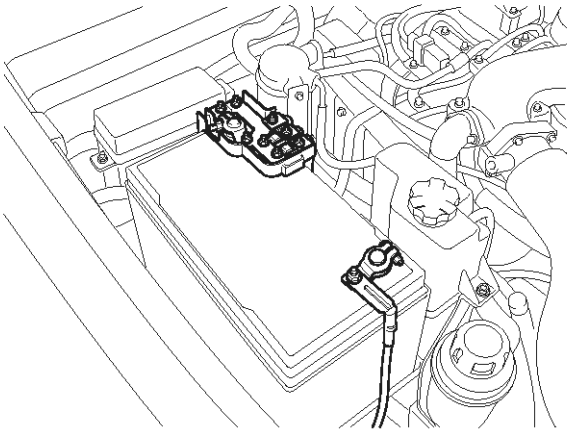
SHMAT8005L

22. Support the transaxle with a jack

⚠CAUTION

Be careful not to give a shock or damage to the plastic oil pan.

23. Install the battery (-) terminal.



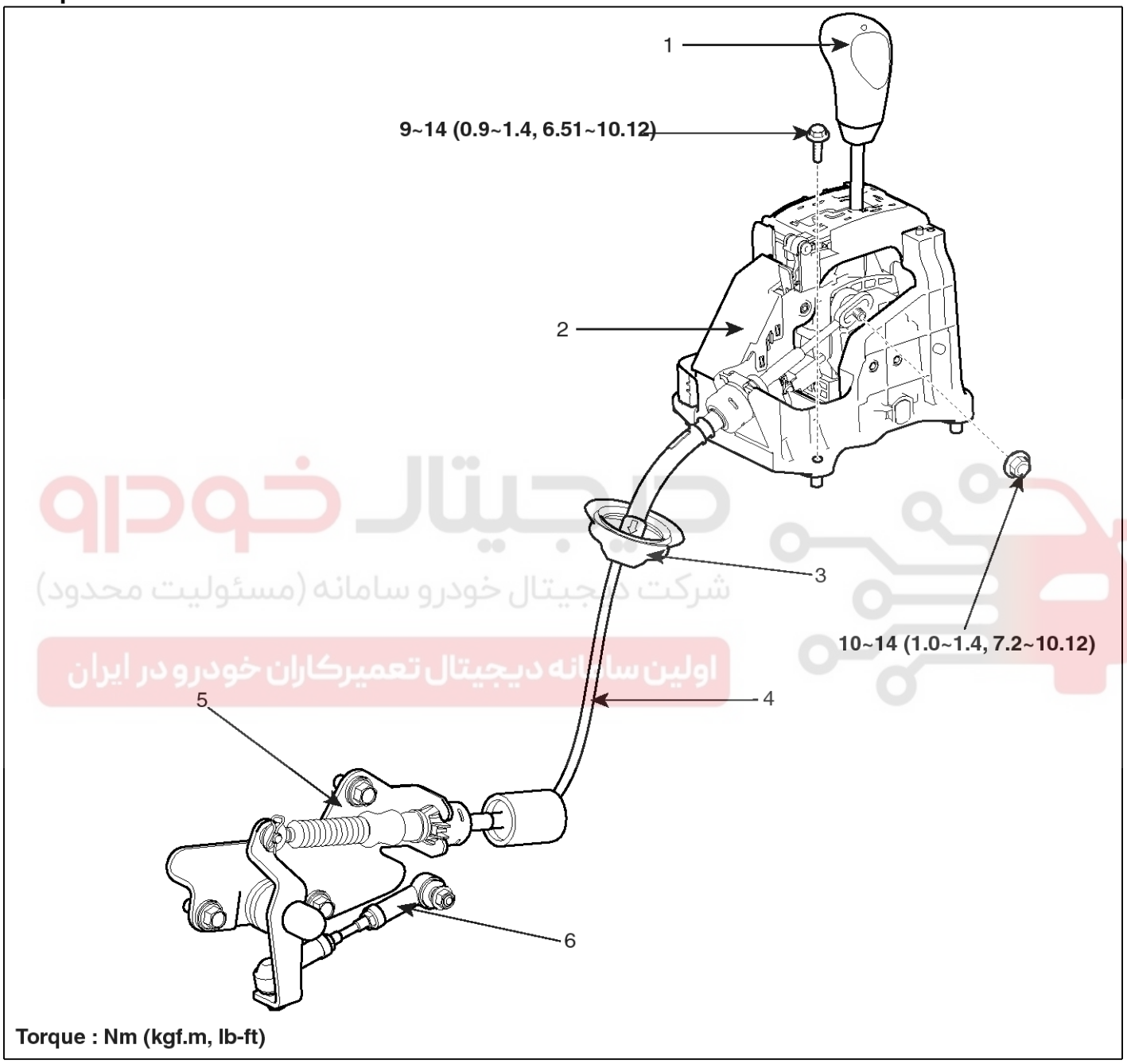
SHMAT8001D

24. Refill the transmission fluid.(See 'service adjustment procedure')

Automatic Transaxle Control System

Shift Lever

Components

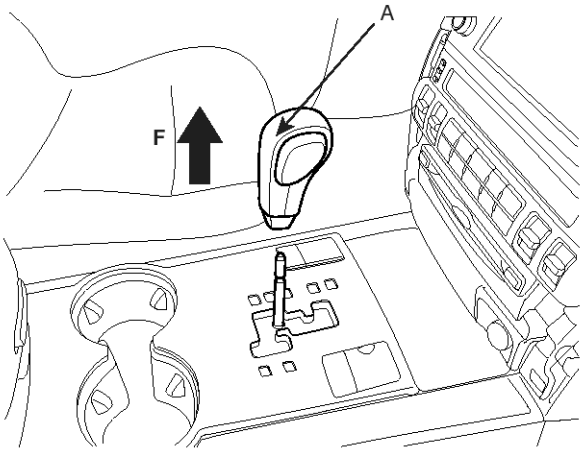


SHMAT8025L

1. Shift lever knob
2. Shift lever assembly
3. Retainer
4. Shift cable assembly
5. Cable bracket
6. Manual lever

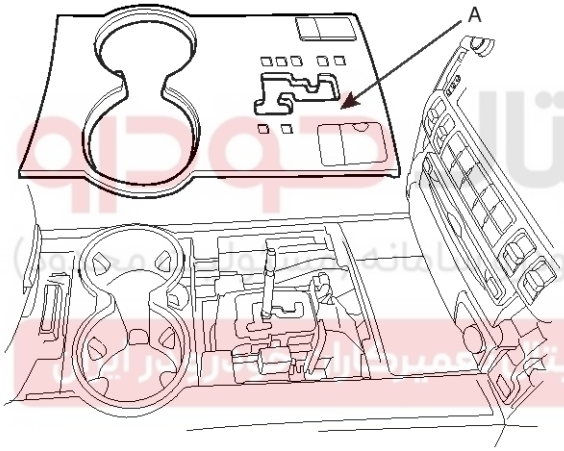
Removal

1. Pull out the shift lever knob (A) in "F" direction.



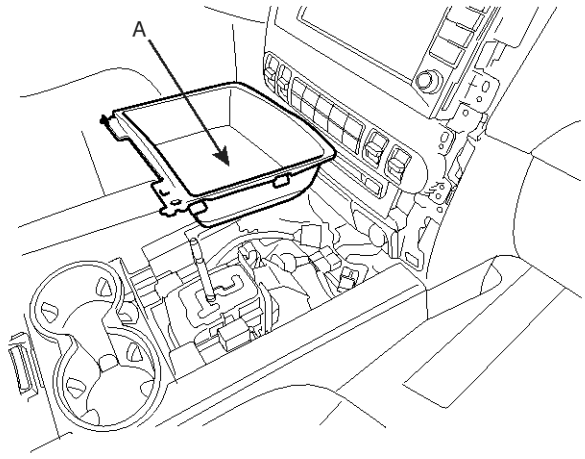
SHMAT8101D

2. Remove the center console cover(A).



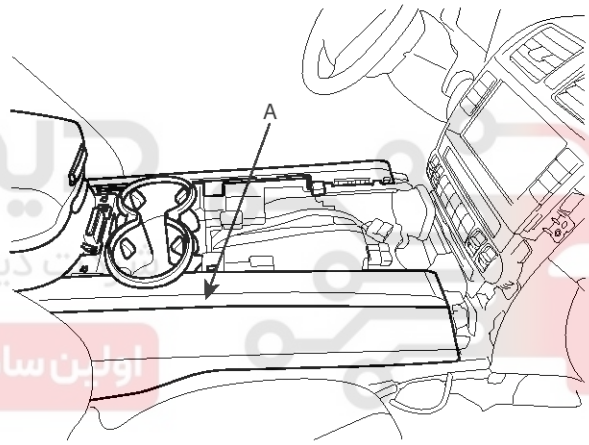
SHMAT8102D

3. Remove the trey(A).



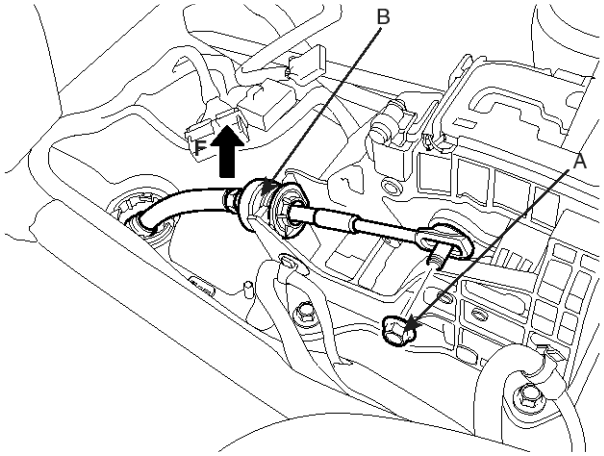
SHMAT8103D

4. Remove the center console(A).(refer to Console in DS group)



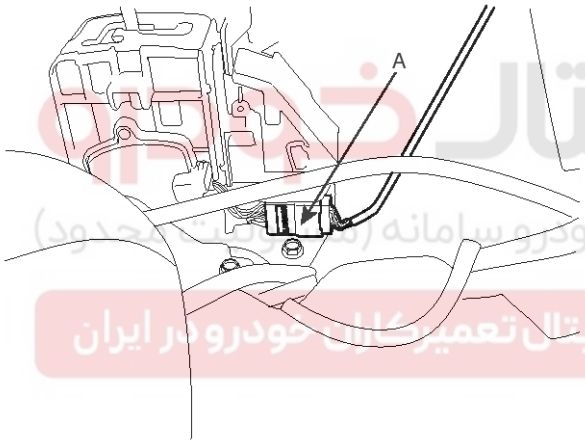
SHMAT8104D

5. After removing the control cable nut (A), remove the shift cable in the 'F' direction by pulling the clib (B) on the floor.



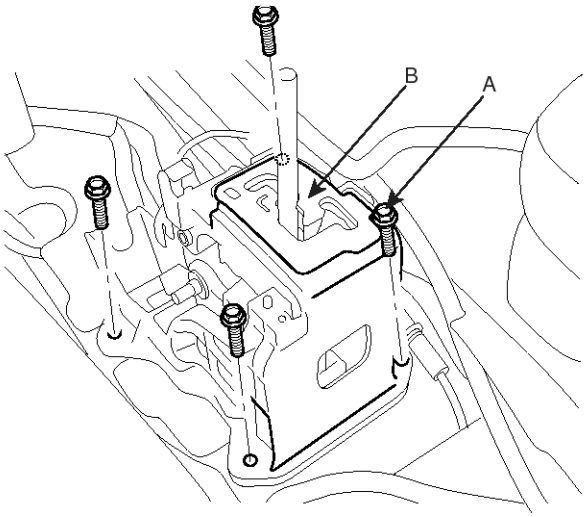
SHMAT8109L

6. Disconnect the sport mode connector (A).



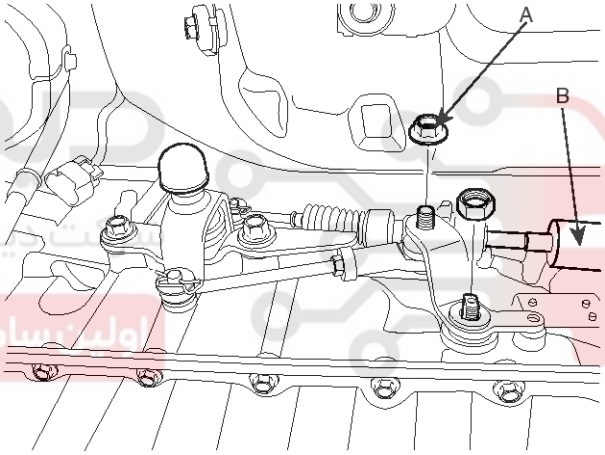
SHMAT8106D

7. Remove the shift lever assembly (B) by removing the four bolts(A).



SHMAT8108D

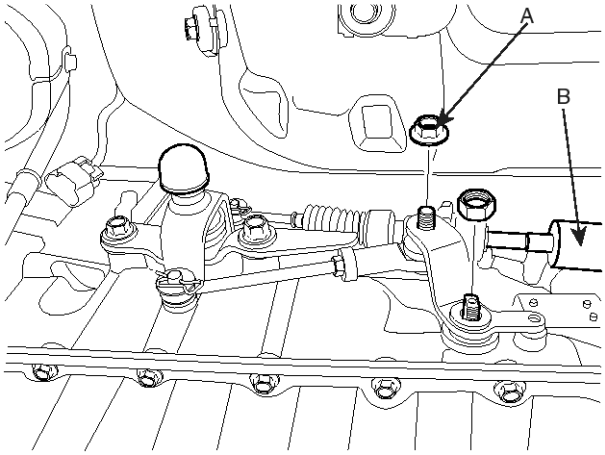
8. Disconnect the shift cable assembly (A)



SHMAT8110L

Installation

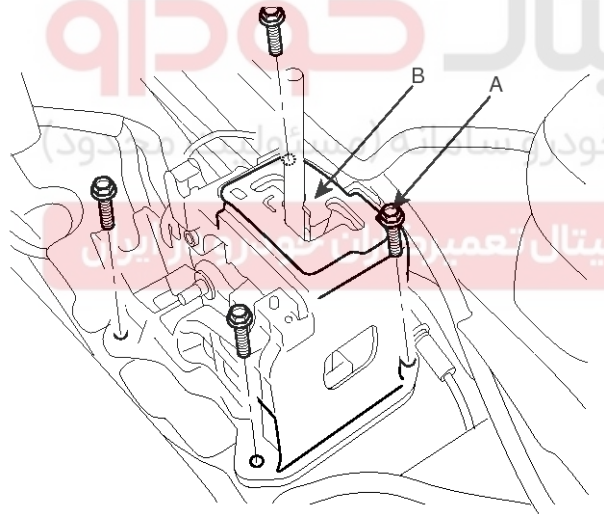
1. Connect the shift cable assembly (A)



SHMAT8110L

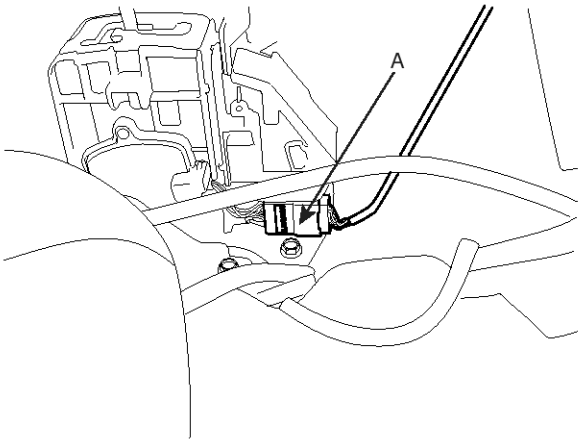
2. Install the shift lever assembly (B) by removing the four bolts(A).

Tightening torque :
9 ~ 14 Nm (5.0 ~ 6.5 Kgf.m, 36.1 ~ 47 lb-ft)



SHMAT8108D

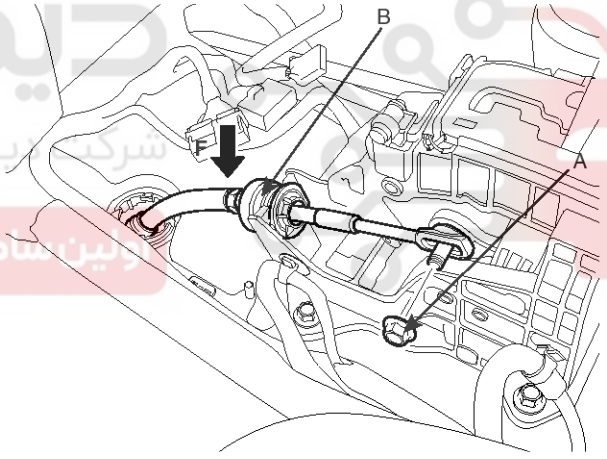
3. Connect the interlock switch connector (A).



SHMAT8106D

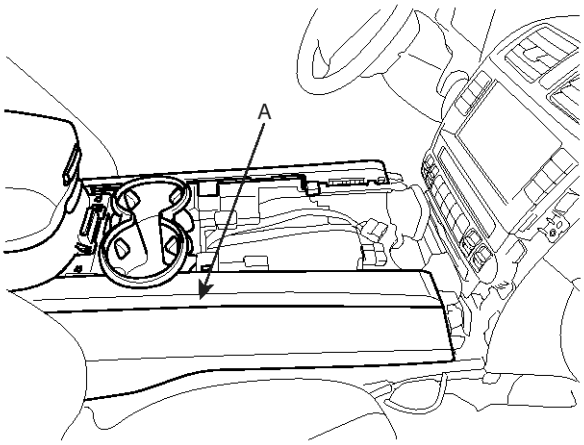
4. After Install the control cable nut (A), Install the shift cable in the 'F' direction by pulling the clib (B) on the floor.

Tightening torque :
9 ~ 13 Nm (1.0 ~ 1.4 Kgf.m, 7.2 ~ 10.1 lb-ft)



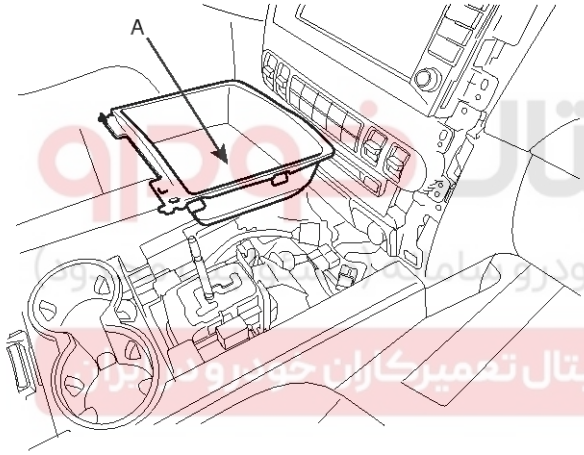
SHMAT8116L

5. Install the center console(A).(refer to Console in DS group)



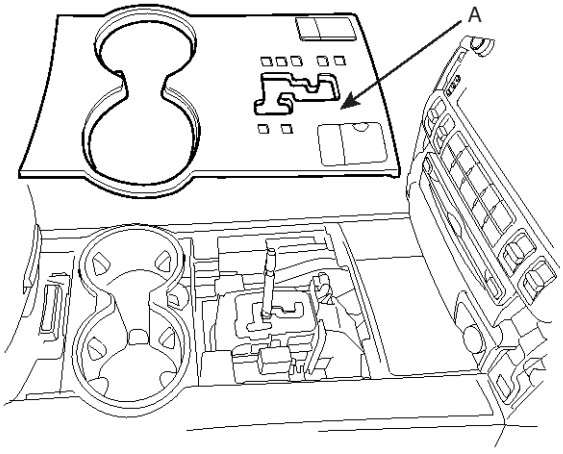
SHMAT8104D

6. Install the trey(A).



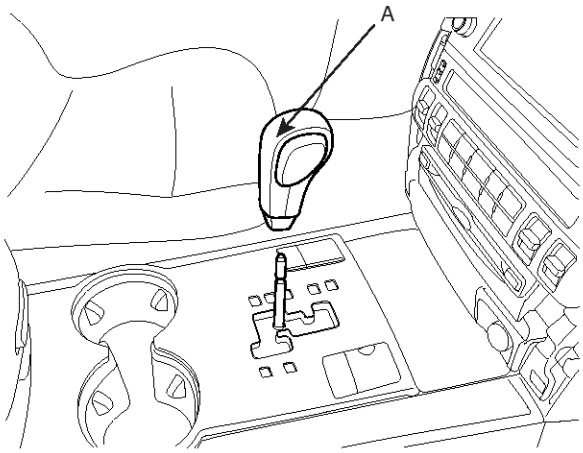
SHMAT8103D

7. Remove the center console cover(A).



SHMAT8102D

8. Insert the shift lever knob (A) with the specified force.



SHMAT8117L