

MT-2

Manual Transaxle System

General Information

Specifications

Engine type		Gasoline 1.4	Gasoline 1.6
Transaxle type		M5CF1	
Gear ratio	1st	3.786	3.615
	2nd	2.053	1.950
	3rd	1.370	←
	4th	1.031	←
	5th	0.837	←
	Reverse	3.583	←
Final gear ratio		4.412	4.294

Service Standard

Items	Standard value [in(mm)]
Input shaft rear bearing end play	0.00-0.0019L(0.00-0.05L)
Output shaft bearing end play (At 70kgf load)	0.0019T-0.0039T(0.05T-0.10T)
Input shaft front bearing end play	0.00-0.0019L(0.00-0.05L)
Differential bearing end play (At 70kgf load)	0.0059T-0.0078T(0.15T-0.20T)
Differential pinion backlash	0.0039L MAX(0.1L MAX)

T: Indicate tightening of -(minus) direction of end play

L: Indicate loosening of +(plus) direction of end play

Tightening Torques

Standard value	Nm	kgf.m	lb-ft	
Oil drain plug	60-80	6.0-8.0	43.4-57.8	
Oil filler plug	60-80	6.0-8.0	43.4-57.8	
Shift control cable bracket on transaxle side	20-27	2.0-2.7	14.5-19.5	
Rear roll support bracket bolt	50-65	5.5-6.5	36.2-47.0	
Front roll support bracket bolt	50-65	5.5-6.5	36.2-47.0	
Transaxle support bracket bolts	60-80	6.0-8.0	43.4-57.8	
Transaxle mounting bracket bolts	90-110	9.0-11.0	65.1-79.5	
Clutch release lever fulcrum bolt	55-60	5.5-6.0	39.8-43.4	
Transaxle upper mounting bolts	60-80	6.0-8.0	43.4-57.8	
Transaxle lower mounting bolts	to ENG. Block	43-55	4.3-5.5	31.1-39.8
	to Ladder frame	43-49	4.3-4.9	31.1-35.4

⚠WARNING

Always follow torque tightening levels. Failure to follow such levels can result in parts breaking if over-tightened or loosening if under-tightened. In

either case, serious personal injury or death could result to vehicle occupants.

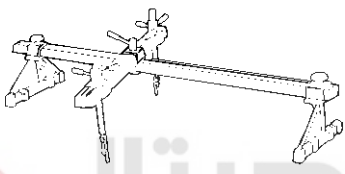
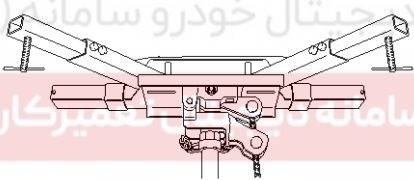
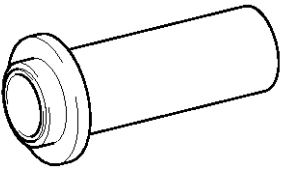
General Information

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Lubricants

Items	Recommend lubricant	Quantity
Transaxle gear oil	SAE 75W/85 API GL-4 TGO-7(MS517-14) ZIC G-F TOP 75W/85 HD GEAR OIL XLS 75W/85	1.9ℓ(2.0US qt, 1.67Imp qt)
Air Breather	MS721-38	As required
Transaxle housing	MS721-40 or MS721-38	As required
Surface of release fork and bearing	Grease (CASMOPLY L9508)	As required

Special Service Tools

Tool (Number and Name)	Illustration	Use
09200-38001 Engine support fixture	 D0038001	Removal and installation of the transaxle
09624-38000 Crossmember supporter	 EKBF005A	Supporting of crossmember
09452-21200 Oil seal installer	 Y45-006B	Installation of differential oil seal

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Troubleshooting

Symptom	Probable cause	Remedy
Vibration, noise	Loose or damaged transaxle and engine mounts	Tighten or replace mounts
	Inadequate shaft end play	Correct end play
	Worn or damaged gears	Replace gears
	Inadequate grade of oil	Replace with specified oil
	Low oil level	Replenish
	Inadequate engine idle speed	Adjust idle speed
Oil leakage	Broken or damaged, oil seal or O-ring	Replace control cable oil seal or O-ring
Hard shift	Faulty control cable	Replace control cable
	Poor contact or wear of synchronizer ring and gear cone	Correct or replace
	Inadequate grade of oil	Replace with specified oil
Jumps out of gear	Worn gear shift fork or broken poppet spring	Replace shift fork or poppet spring
	Synchronizer hub-to-sleeve spline clearance too large	Replace synchronizer hub and sleeve

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



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Service Adjustment Procedure

Transaxle Gear Oil Level

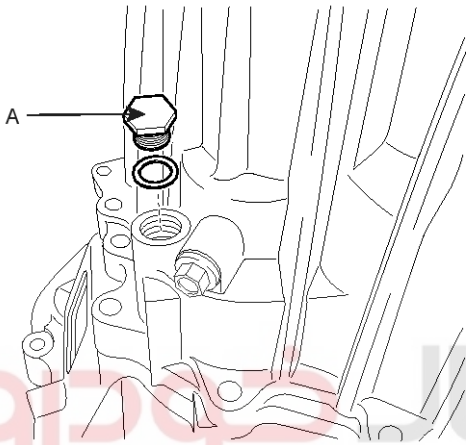
Inspection

Inspect each component for evidence of leakage.

Check the gear oil level by removing the filler plug.

If the oil is contaminated, it is necessary to replace it with new oil.

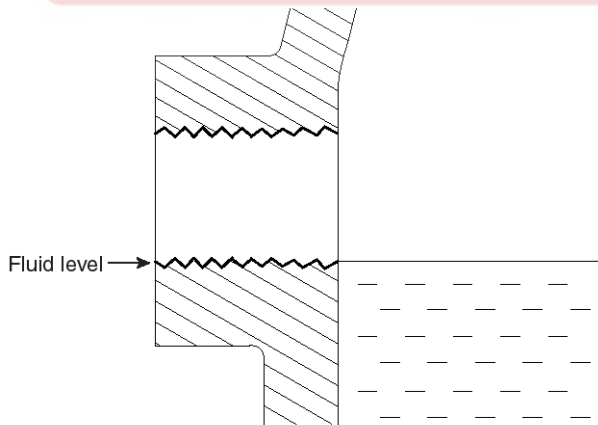
1. Remove oil filler plug(A).



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2. Check level with finger.

Oil level must be up to fill the hole, if not, add oil until it runs over.



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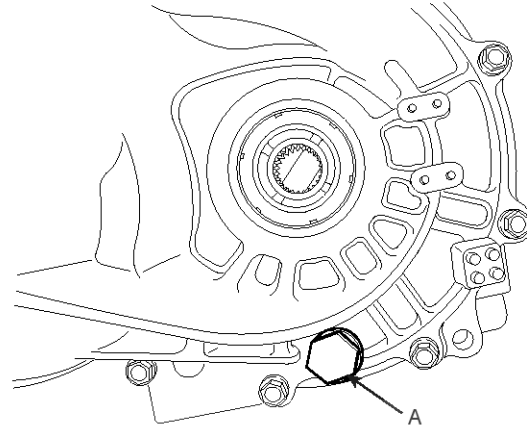
3. Install filler plug.

Tightening torque :

60-80 Nm (6.0-8.0 kgf.m, 43.4-57.8 lb-ft)

Replacement

1. With the vehicle parked on a level surface, remove the drain plug.
2. Drain the transaxle oil after loosening the drain plug(A).



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3. Install the drain plug with new washer.

Tightening torque :

60-80 Nm (6.0-8.0 kgf.m, 43.4-57.8 lb-ft)

4. Add new oil through the filler plug hole and, fill it just below the plug opening.

Standard oil SAE 75W/85, API GL-4

Oil capacity: 1.9 liter (2.0 US qt, 1.67 Imp qt)

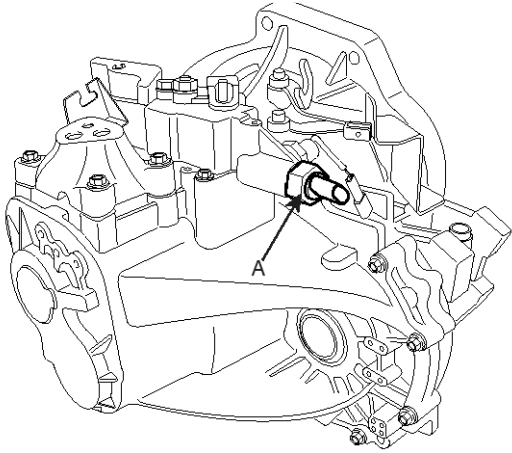
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Backup Lamp Switch

Inspection

1. Disconnect the backup lamp switch(A).



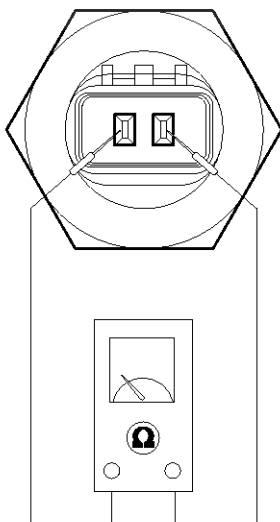
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2. Check the continuity between no. 1 and 2 terminals of backup lamp switch.

When the shift lever is in reverse, there should be continuity.

Condition	1	2
Reverse Range	●	●
Other Range		

*The back up Lamp "ON" shall keep over 0.5mm(0.02in) From ON-OFF point.



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3. If necessary, repair or replace the backup lamp switch.

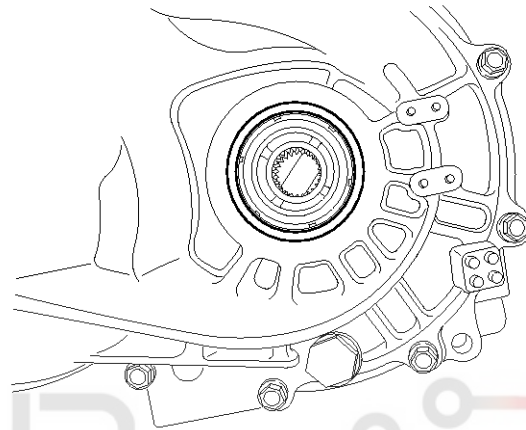
Tightening torque :

30-35 Nm (3.0-3.5 kgf.m, 21.7-25.3 lb-ft)

Drive Shaft Oil Seal

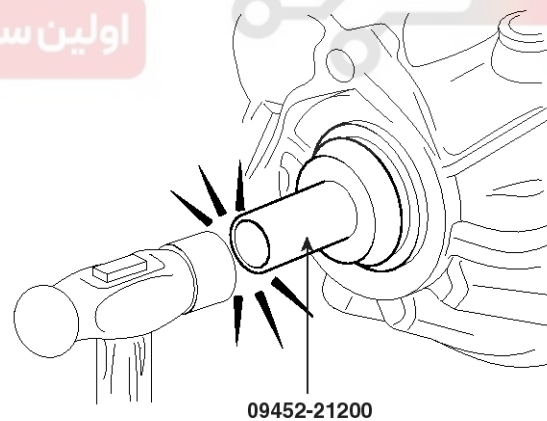
Replacement

1. Disconnect the drive shaft from the transaxle. (refer to Drive shaft in DS group)
2. Using a flat-tip screwdriver, remove the oil seal.



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3. Using the special tool(09452-21200), tap the drive shaft oil seal into the transaxle.



09452-21200

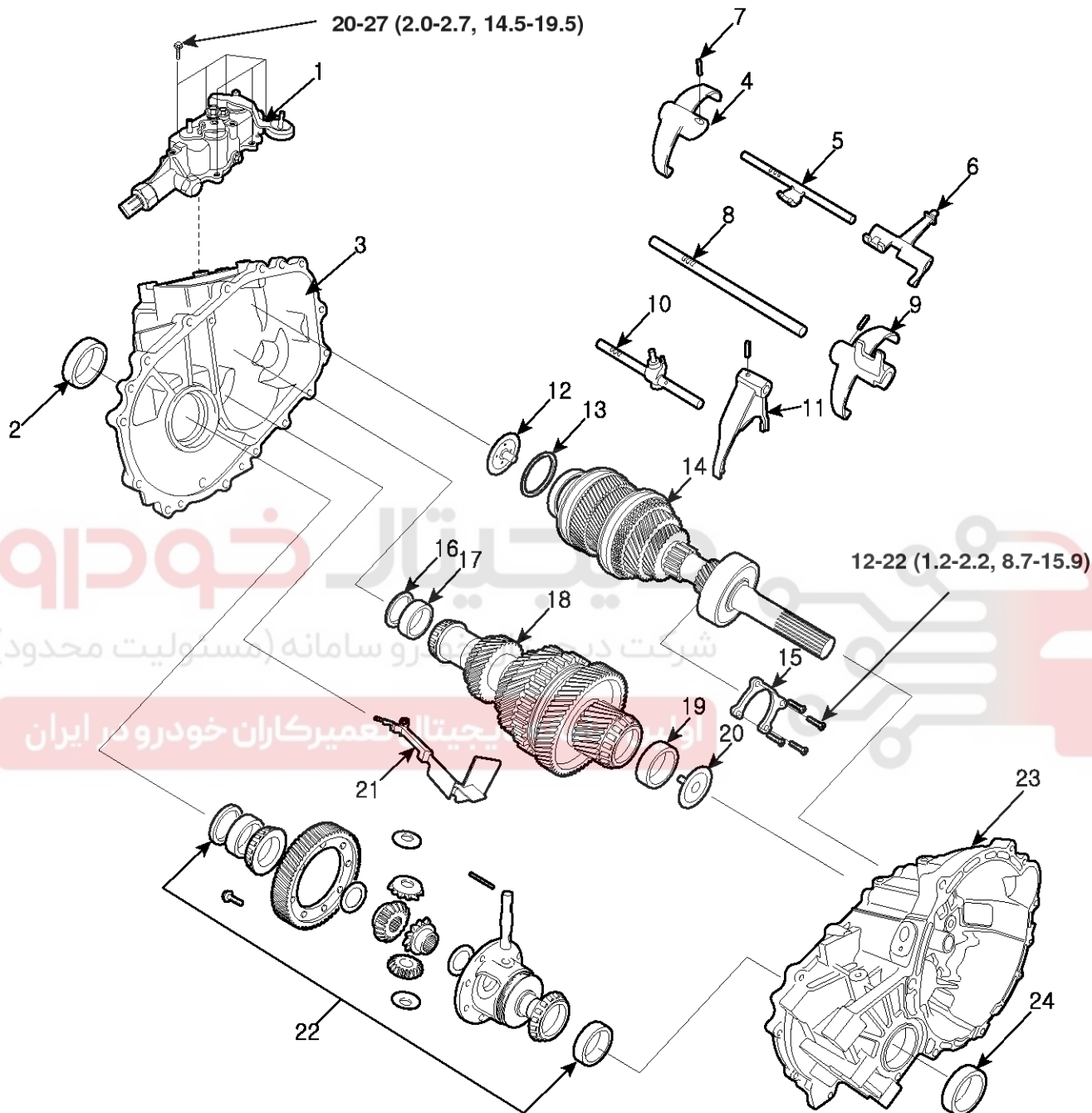
LMJF004B

Manual Transaxle System

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Manual Transaxle

Components



TORQUE:Nm(kgf.m, lb-ft)

- | | | |
|---------------------------|----------------------------------|------------------------------------|
| 1. Control shaft complete | 9. 3rd & 4th shift lug and fork | 17. Output shaft rear outer racer |
| 2. Oil seal (LH) | 10. 1st & 2nd shift rail | 18. Output shaft assembly |
| 3. Transaxle case | 11. 1st & 2nd shift fork | 19. Output shaft front outer racer |
| 4. 5th shift fork | 12. Input shaft oil guide | 20. Output shaft oil guide |
| 5. 5th shift rail | 13. Snap ring | 21. Oil guide |
| 6. Reverse shift lug | 14. Input shaft assembly | 22. Differential assembly |
| 7. Spring pin | 15. Input shaft bearing retainer | 23. Clutch housing |
| 8. 3rd & 4th shift rail | 16. Spacer | 24. Oil seal (RH) |

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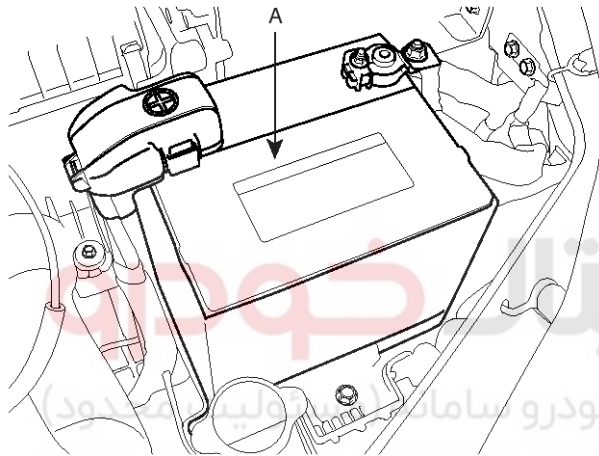
Removal

⚠ CAUTION

- Use fender covers to avoid damaging painted surfaces.
- To avoid damage, unplug the wiring connectors carefully while holding the connector portion.

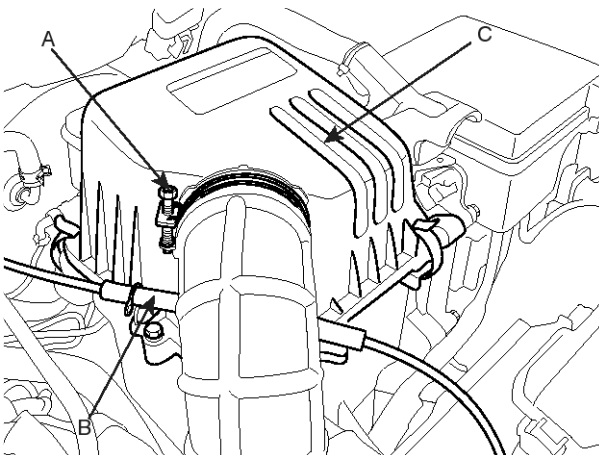
📄 NOTICE

- Mark all wiring and hoses to avoid misconnection.
1. Remove the engine cover. (refer to Engine and Transaxle Assembly in EM group)
 2. Remove the battery (A) after removing the battery terminal.



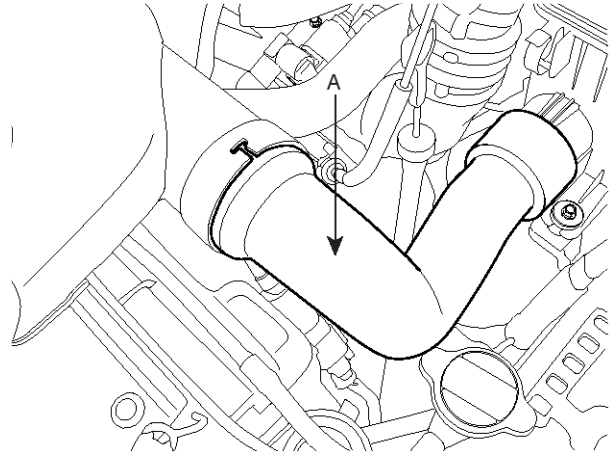
SHDAT6002D

3. Remove the upper cover of the air cleaner assembly (C) by loosening the clamp (A) and disconnecting the accelerating cable (B).



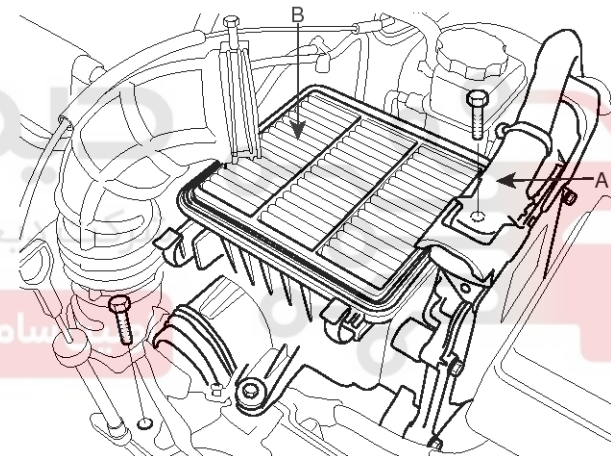
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4. Disconnect the air intake hose (A).



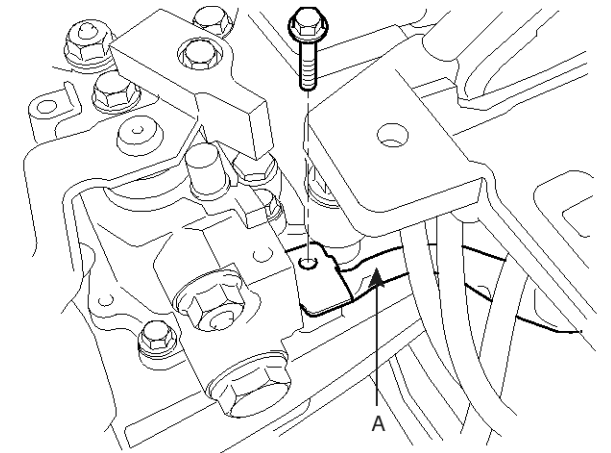
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5. Disconnect the ECM connector (A) and remove the lower cover of the air cleaner (B).



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6. Remove the ground cable from transaxle (A).

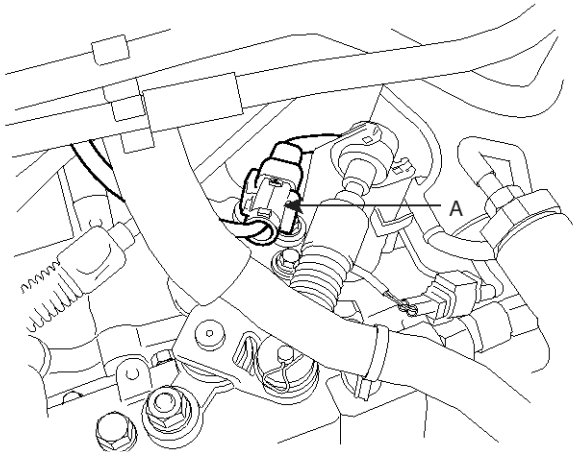


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Manual Transaxle System

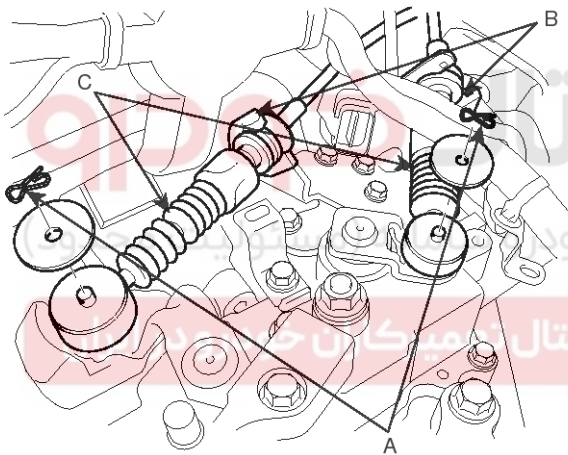
MT-9

7. Disconnect the vehicle speed sensor and the back lamp switch integrated connector (A).



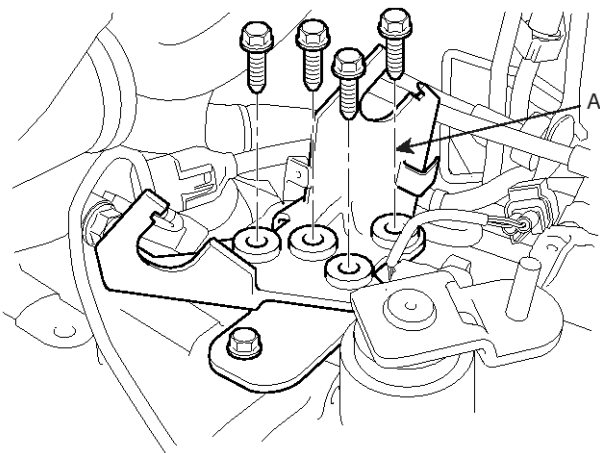
SHDMB6005D

8. Remove the control cable assembly (C) by removing the snap pins (A) and clips (B).



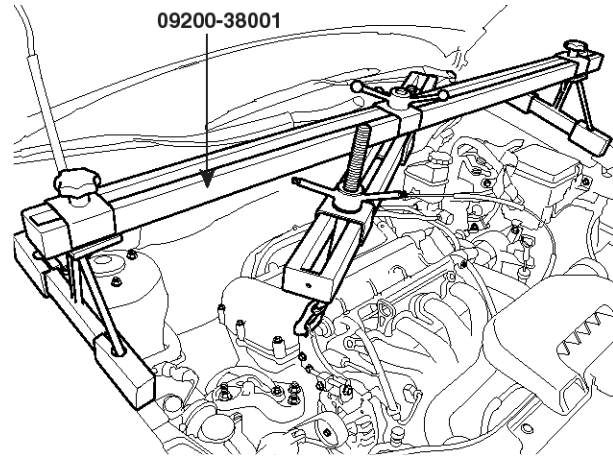
SHDMA6003D

9. Remove the shift control cable bracket (A).



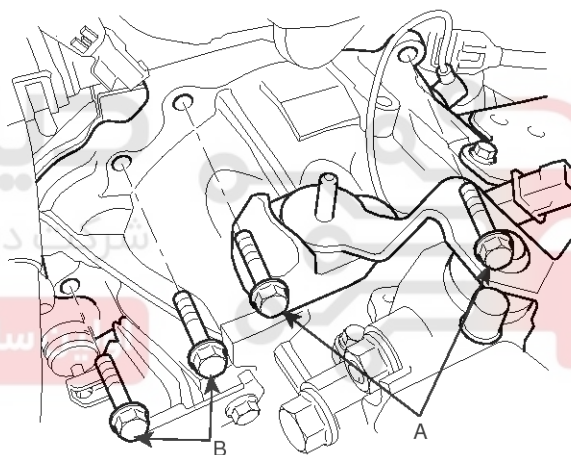
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10. Using the special tool (09200-38001), support the engine assembly safely.



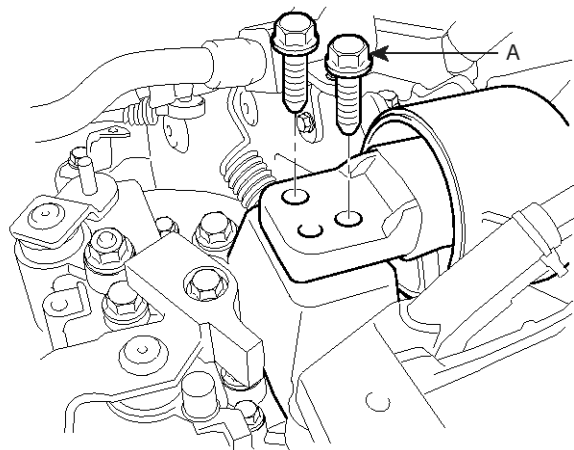
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11. Remove the transaxle upper mounting bolts (A-2ea) and the starter motor mounting bolts (B-2ea).



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12. After removing the four bolts, take the transaxle insulator mounting bracket (A) off.

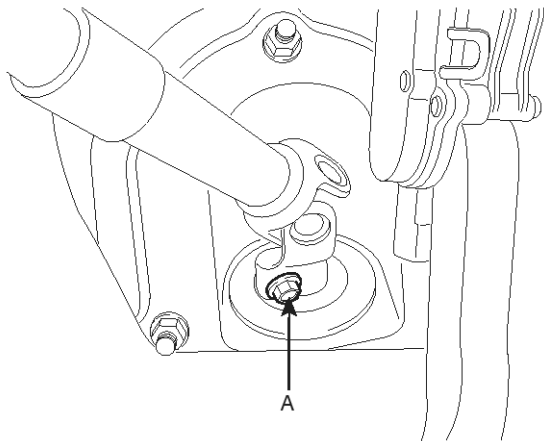


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Manual Transaxle System

13. Remove the steering joint assembly bolt. (refer to Steering column/shaft in ST group)



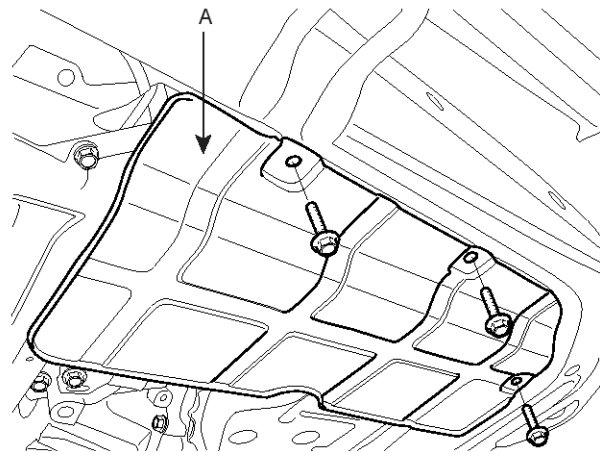
AKGF032S

14. Lifting up the vehicle.

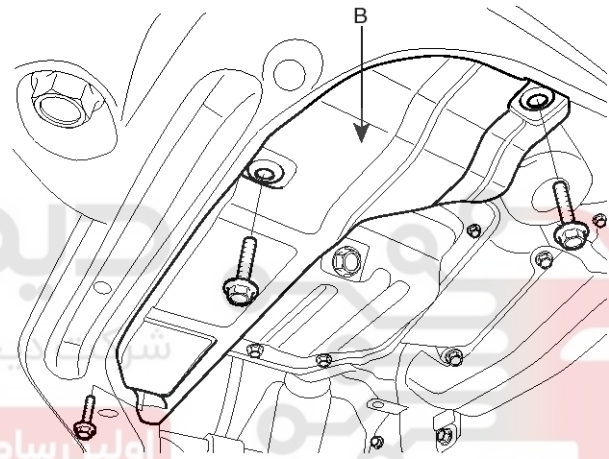
15. Remove the front wheels and tires.

16. Remove the lower arm ball joint mounting nut, the stabilizer link mounting nut, and the tie rod end mounting nut from the front knuckles. (refer to Front suspension system in SS group)

17. Remove the under shield cover. (A,B)

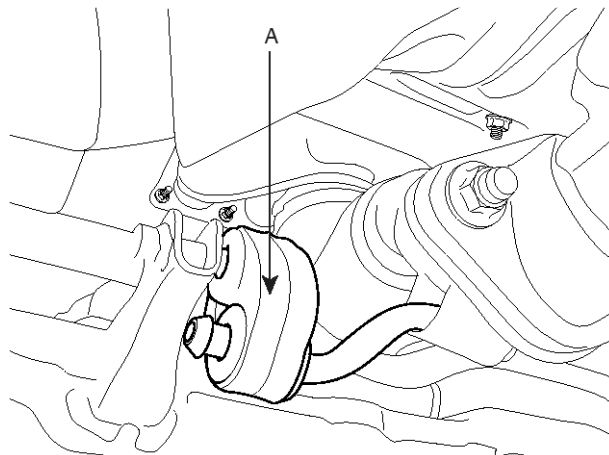


SHDAT6015D



SHDAT6016D

18. Disconnect the muffler hanger rubber (A)

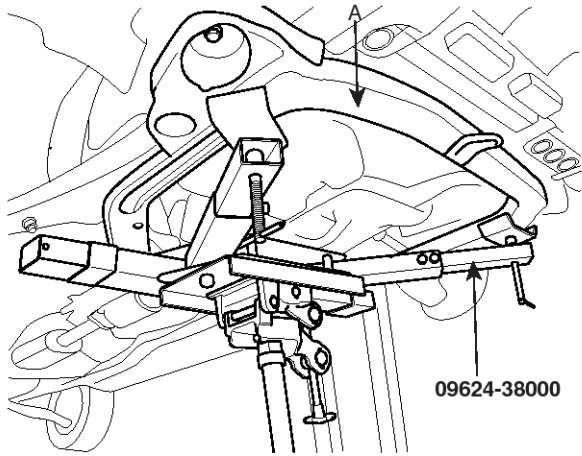


SHDAT6019D

Manual Transaxle System

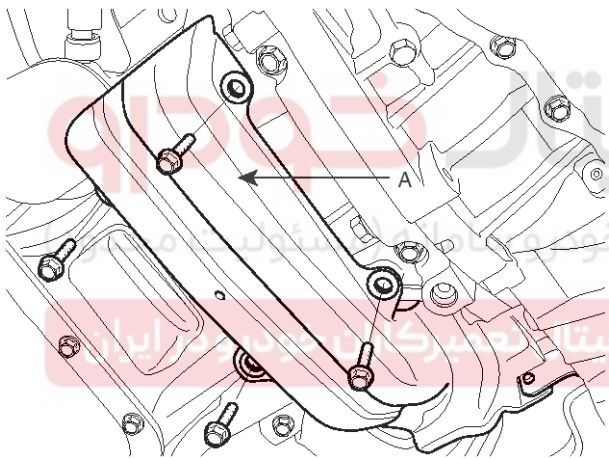
MT-11

19. Supporting the sub frame (A) with a jack and the Special tool (09624-38000), remove the mounting bolts.(refer to Stabilizer removal in SS group)

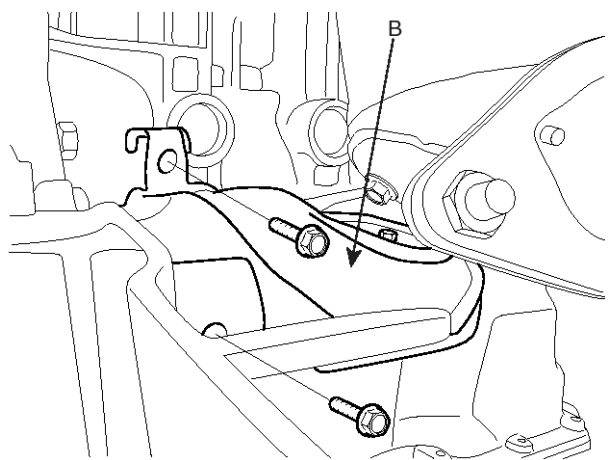


SHDAT6051D

20. Remove the brackets. (A, B)

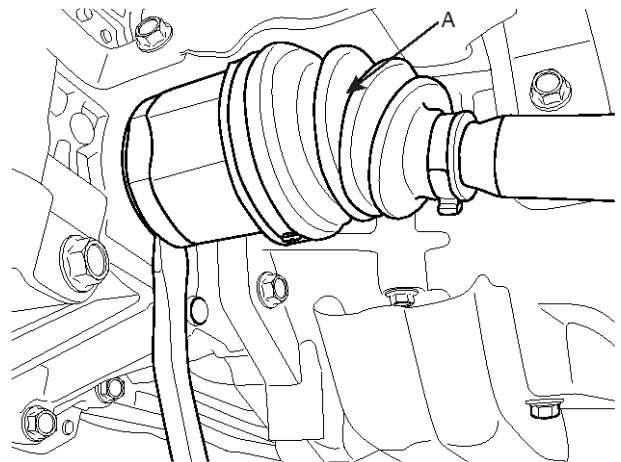


SHDAT6022D

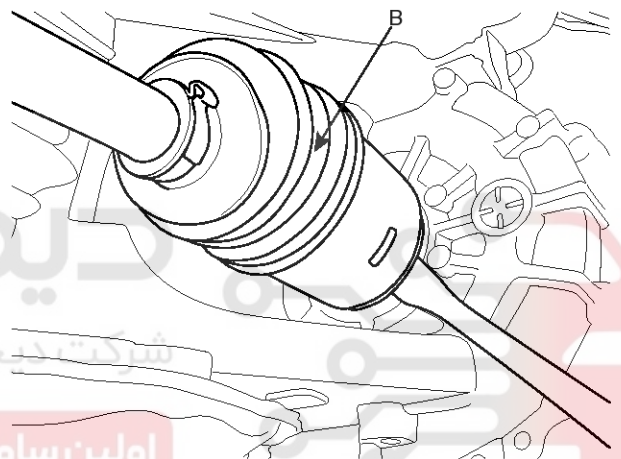


SHDAT6023D

21. Disconnect the drive shafts (A,B) from the transaxle.

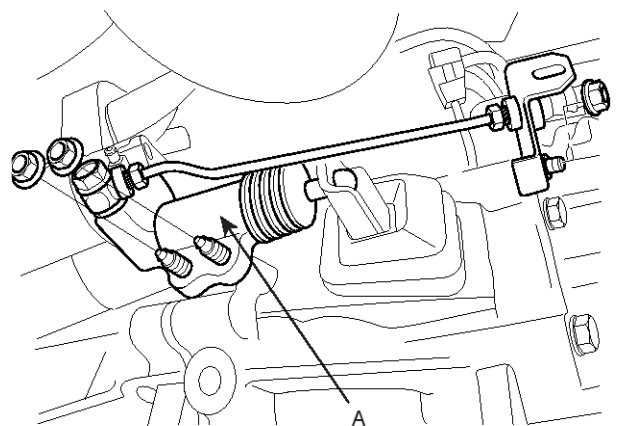


SHDAT6020D



SHDAT6021D

22. Remove the clutch release cylinder assembly (A).

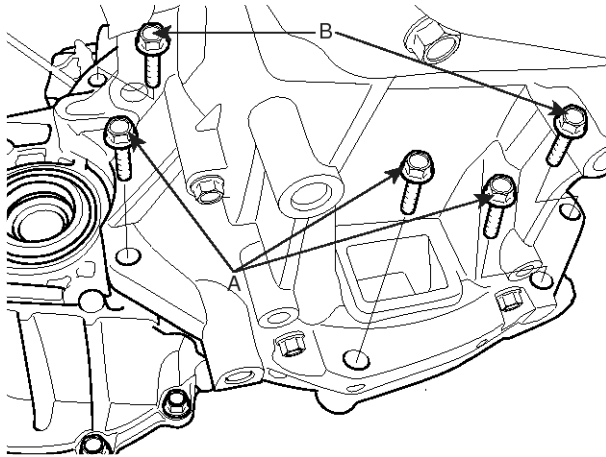


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Manual Transaxle System

23. Supporting the transaxle with a jack, remove the transaxle lower mounting bolts(A-3ea, B-2ea).



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24. Lowering the jack slowly, remove the transaxle.

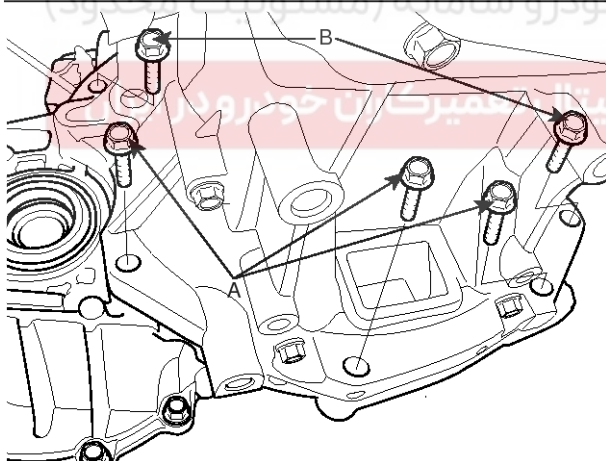
Installation

1. Install the transaxle lower mounting bolts (A-3ea,B-2ea) after fitting the transaxle assembly into the engine assembly.

Tightening torque :

[A] 43-49 Nm (4.3-4.9kgf.m, 31.1-35.4 lb-ft)

[B] 43-55 Nm (4.3-5.5kgf.m, 31.1-39.8 lb-ft)

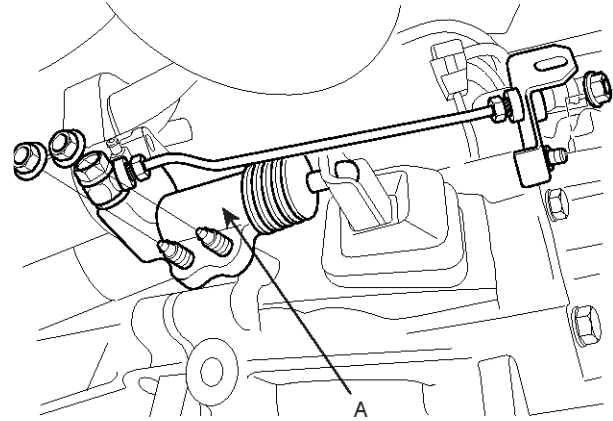


SHDMT6207D

2. Install the clutch release cylinder assembly (A).

Tightening torque :

15-22 Nm (1.5-2.2kgf.m,10.8-15.9 lb-ft)

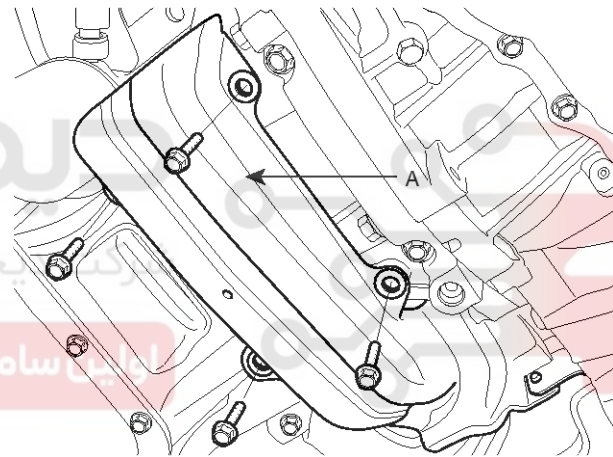


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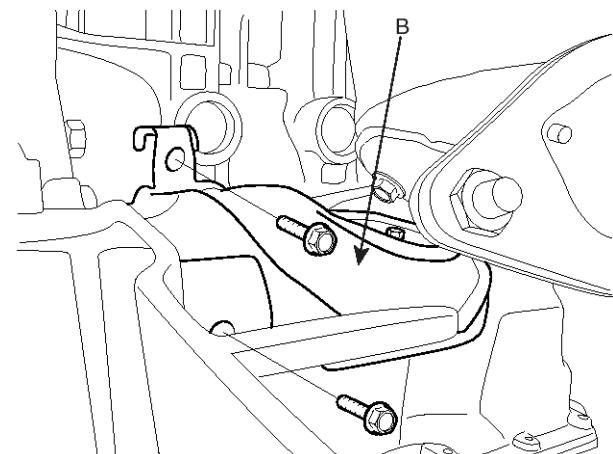
3. Install the bracket (A,B)

Tightening torque :

46-53 Nm (4.6-5.3kgf.m,33.3-38.3 lb-ft)



SHDAT6022D

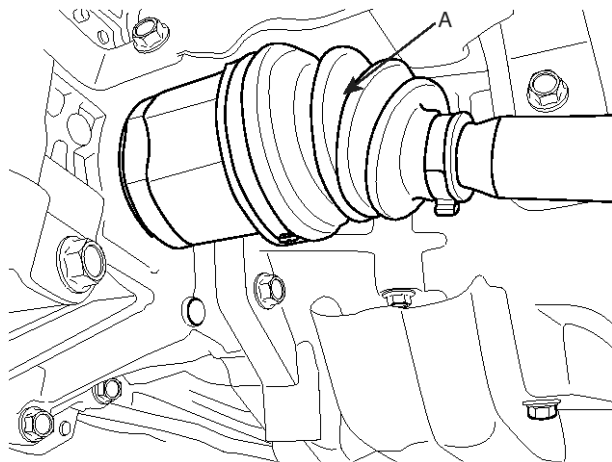


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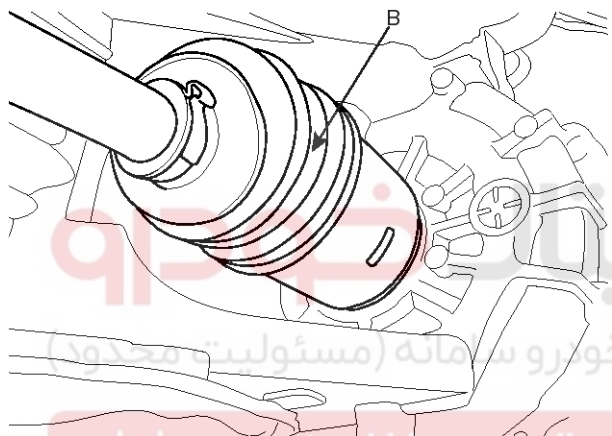
Manual Transaxle System

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4. Connect the drive shafts (A,B) to the transaxle.



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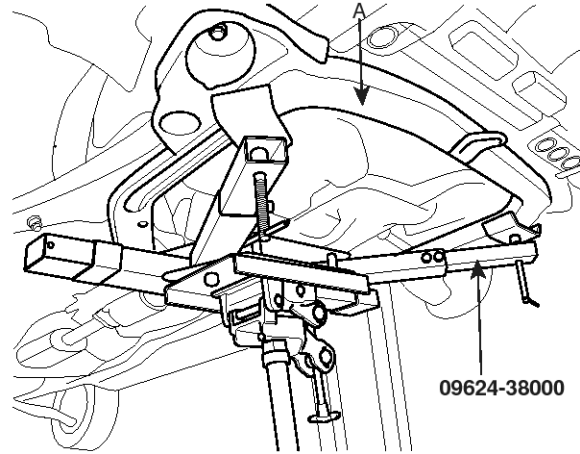


SEDMT7004L

5. Supporting the sub frame (A) with a jack and the Special tool(09624-38000), install the mounting bolts. (refer to Stabilizer installation in SS group)

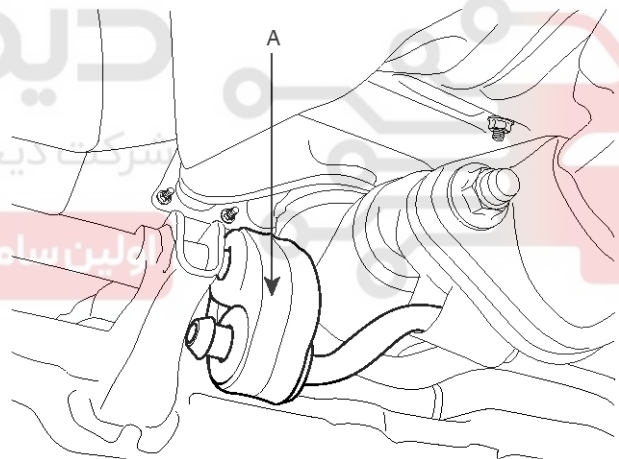
Tightening torque :

140-160Nm (14-16kgf.m, 101-118lb-ft)



SHDAT6051D

6. Install the muffler hanger rubber (A).



SHDAT6019D

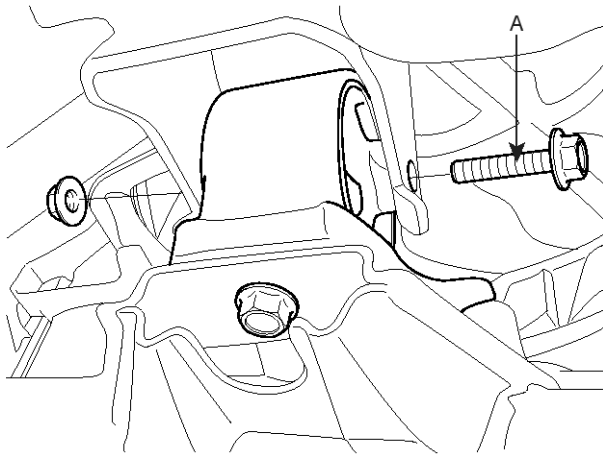
MT-14

Manual Transaxle System

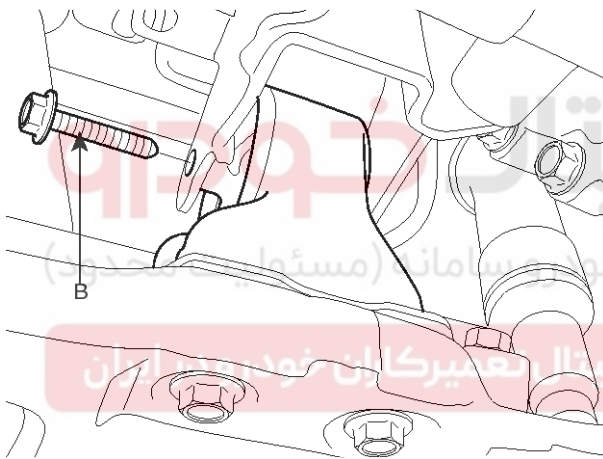
7. Install the roll stopper bracket bolts. (A,B)

Tightening torque :

50-65Nm (5-6.5kgf.m, 36.2-47.0lb-ft)

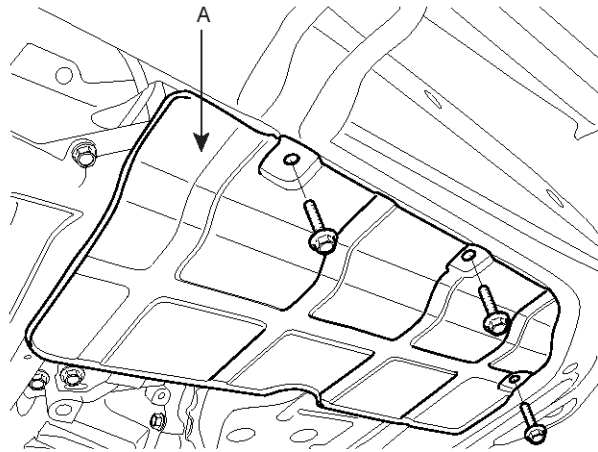


SHDAT6017D

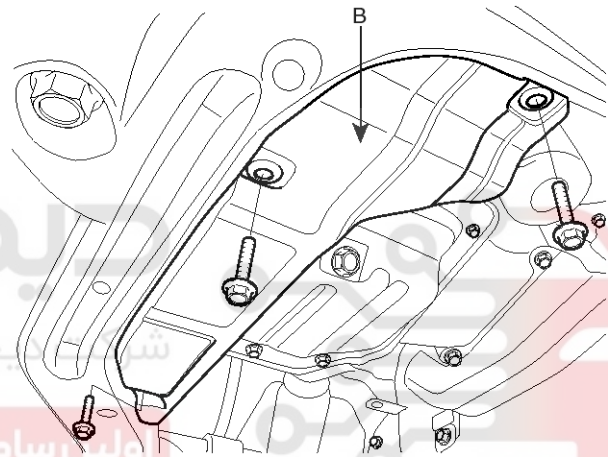


SHDAT6018D

8. Install the under shield cover. (A,B)



SHDAT6015D



SHDAT6016D

9. Install the lower arm ball joint mounting nut, the stabilizer link mounting nut, and the tie rod end mounting nut to the front knuckles. (refer to Front suspension system in SS group)
10. Install the front wheels and tires. (refer to installation in SS group)

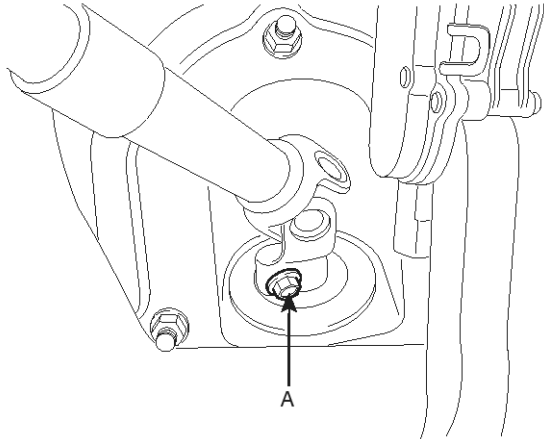
Manual Transaxle System

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11. Install the steering joint assembly bolt (A). (refer to Steering column/shaft in ST group)

Tightening torque :

18-25Nm (1.8-2.5kgf.m, 13.0-18.1lb-ft)

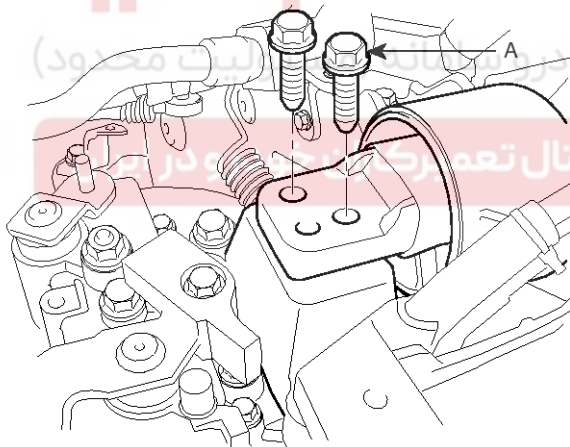


AKGF032S

12. Install the transaxle insulator mounting bracket bolts (A).

Tightening torque :

90-110Nm (9.0-11.0kgf.m, 65.1-79.5lb-ft)



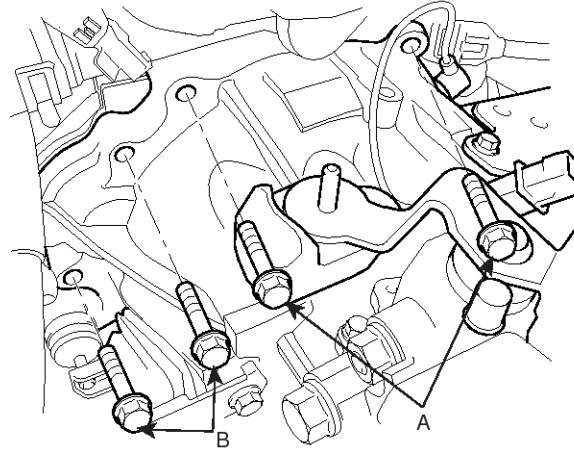
SHDMB6009D

13. Install the transaxle upper mounting bolts (A-2ea) the starter motor mounting bolts. (B-2ea)

Tightening torque :

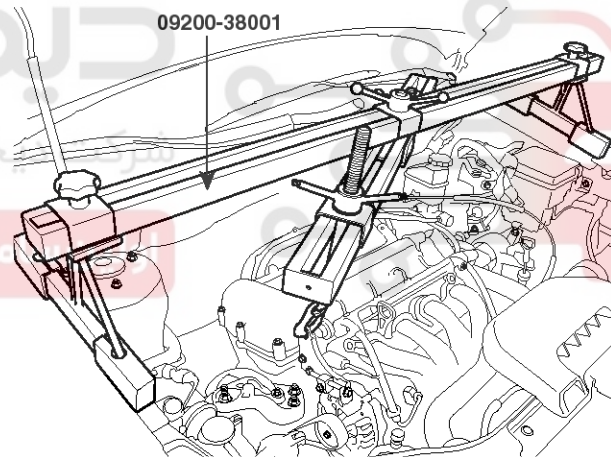
[A] 60-80Nm (6.0-8.0kgf.m, 43.4-57.8lb-ft)

[B] 43-55Nm (4.3-5.5kgf.m, 31.1-39.8lb-ft)



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14. Remove the special tool (09200-38001).



SHDAT6012D

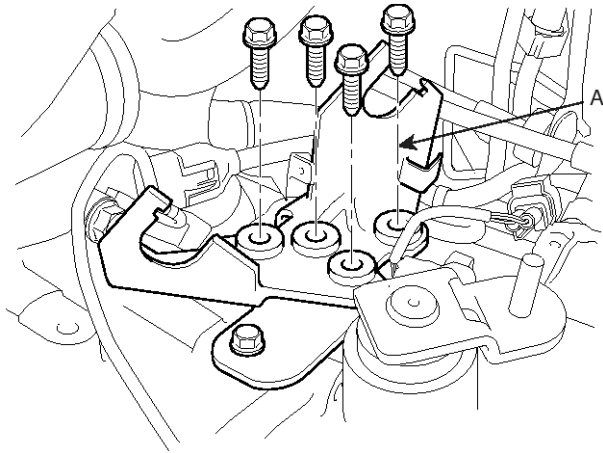
MT-16

Manual Transaxle System

15. Install the control cable bracket (A).

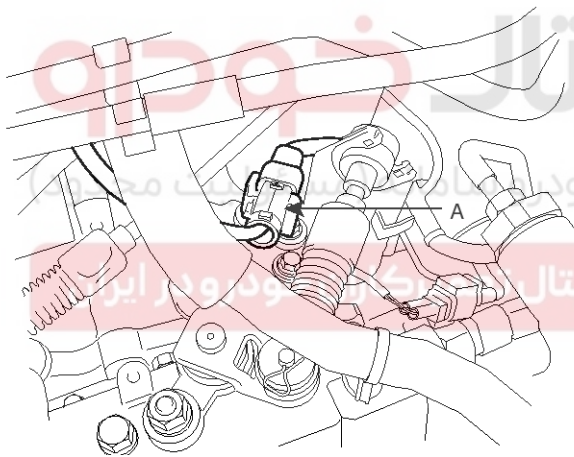
Tightening torque :

15-22Nm (1.5-2.2 kgf.m, 10.8-15.9lb-ft)



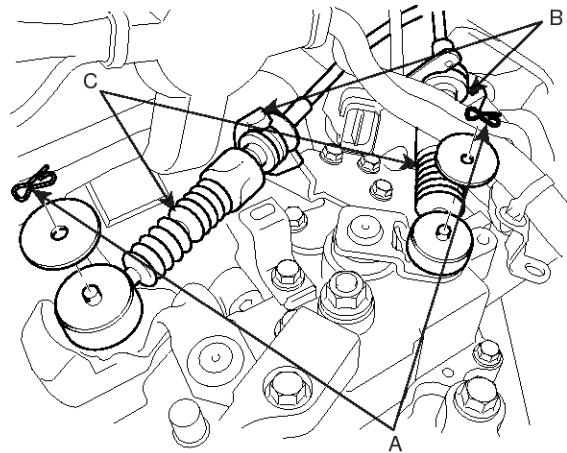
SHDMB6006D

16. Connect the vehicle speed sensor and the back lamp switch integrated connector (A).



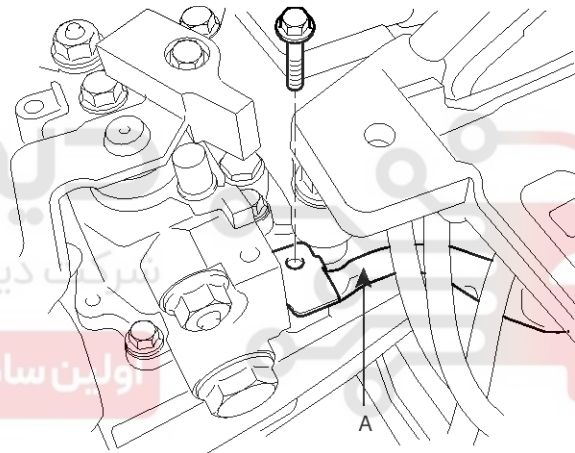
SHDMB6005D

17. Install the control cable assembly (A) by installing the clips (B) and pins (C).



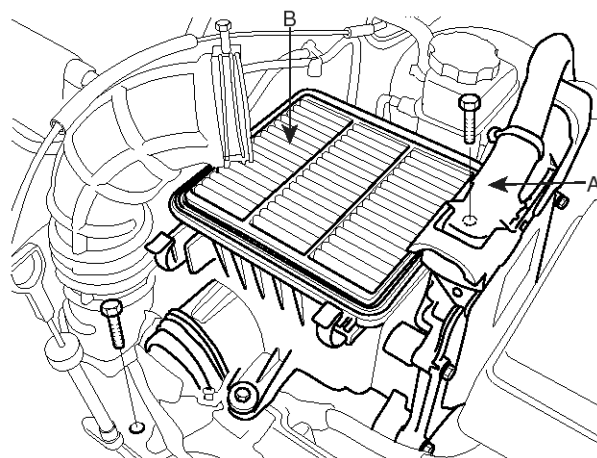
SHDMA6003D

18. Install the ground cable (A) to transaxle.



SHDMB6004D

19. Install the lower cover of the air cleaner assembly (B) and connect the PCM connector (A).

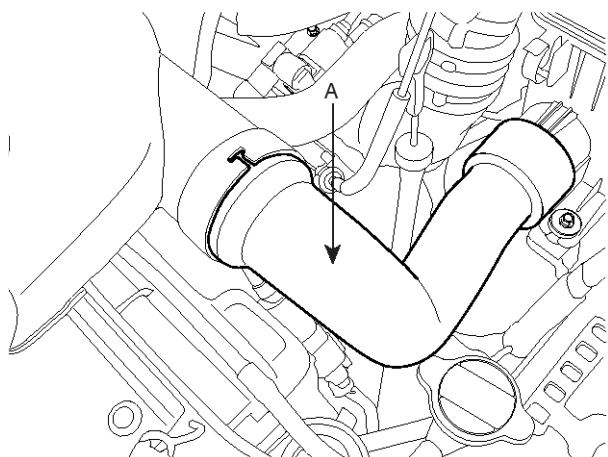


SHDAT6005D

Manual Transaxle System

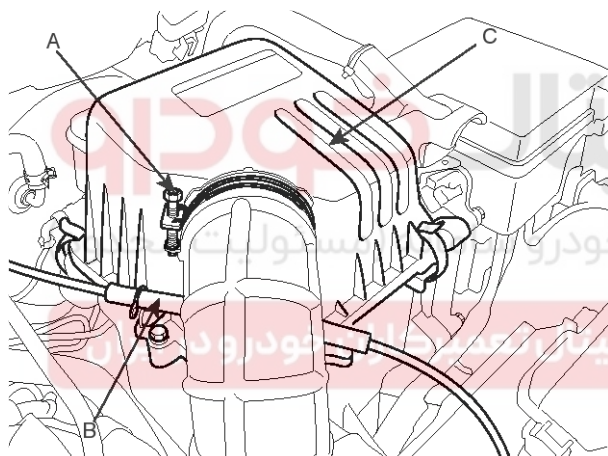
MT-17

20. Connect the air intake hose (A).



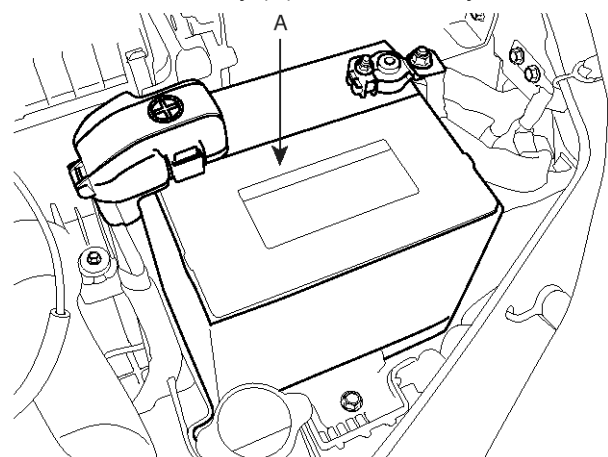
SHDAT6004D

21. Install the upper cover of the air cleaner assembly (C) by connecting the accelerating cable (B) and tightening the clamp (A).



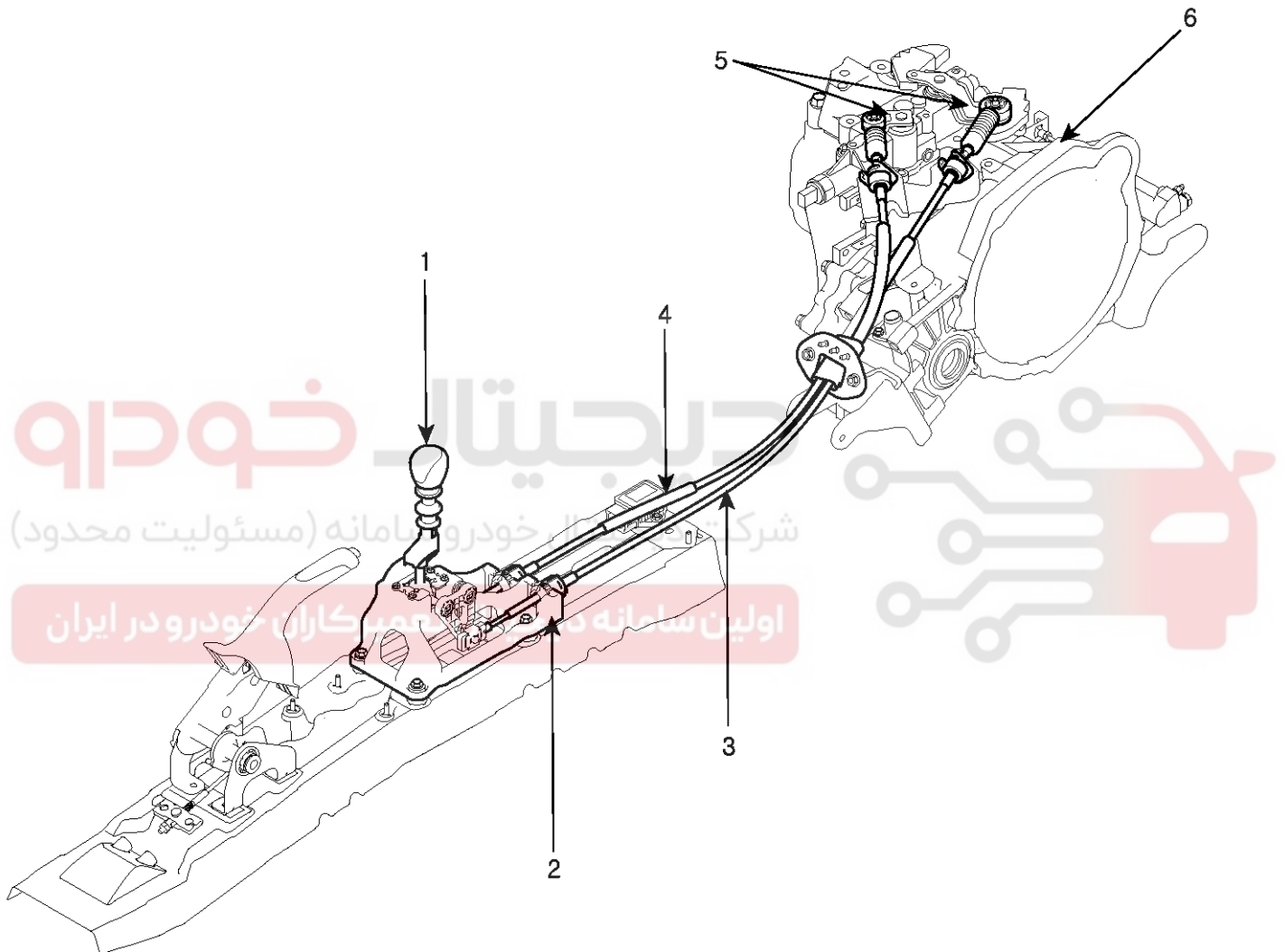
SHDAT6003D

22. Install the battery (A) and the battery terminal.



SHDAT6002D

23. Install the engine cover. (refer to Engine and Transaxle Assembly in EM group)

MT-18**Manual Transaxle System****Manual Transaxle Control System****Manual Transaxle Shift Control****Components**

- | | |
|--------------------------|--|
| 1. Shift lever knob | 4. Shift cable assembly |
| 2. Shift lever assembly | 5. Shift lever assembly(Manual Transaxle Side) |
| 3. Select cable assembly | 6. Manual transaxle assembly |

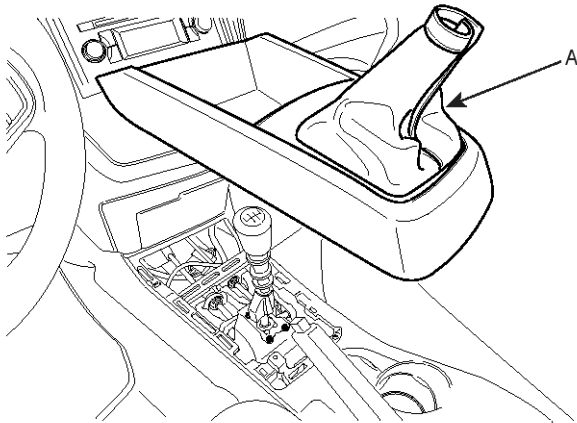
SHDMT6001L

Manual Transaxle Control System

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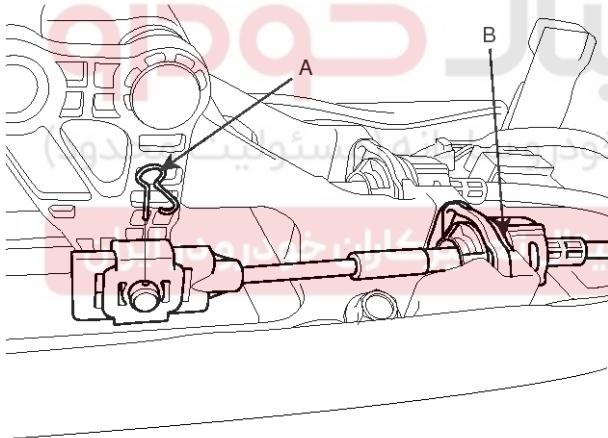
Removal

1. Remove the upper cover (A) from the center console.



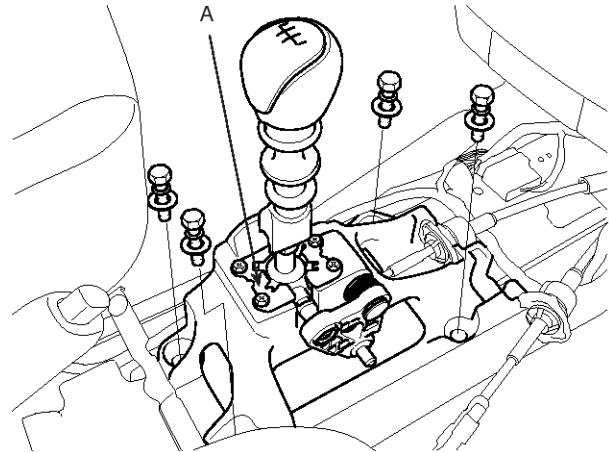
SFDMT8001L

2. Remove the center console. (refer to Console in BD group)
3. Remove the select cable by removing the snap pin (A) and the clips (B).



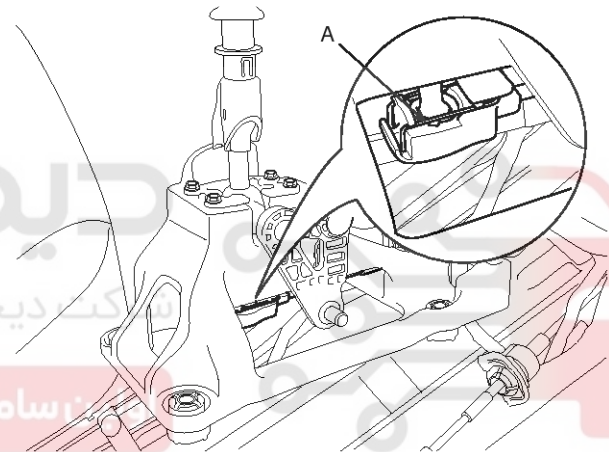
SEDMT7005L

4. Remove the shift lever assembly (A).



SHDMT6204D

5. Remove the clip (A) from the shift cable.



SHDMT6205D

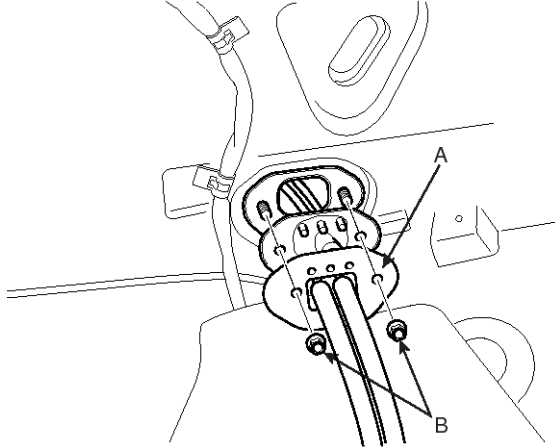
MT-20

Manual Transaxle System

6. Remove the retainer (A) and the nuts (B).

NOTICE

In case, remove the crush pad and cowl cross bar. (refer to Crush pad in BD group and Heater unit in HA group)



SHDMT6208D

- 7. Remove the cable assembly from the transaxle. (refer to Manual Transaxle's removal)
- 8. Remove the select and shift cable assemblies.

Installation

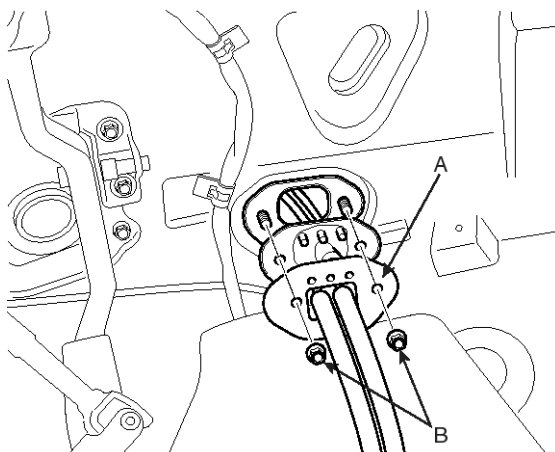
1. Install the retainer (A) and nuts(B).

Tightening torque :

12-15Nm (1.2-1.5kgf.m, 8.7-10.8lb-ft)

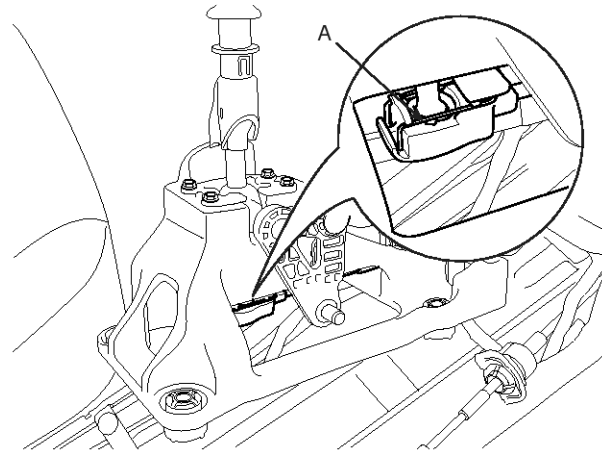
NOTICE

In case, install the crush pad and cowl cross bar. (refer to Crush pad in BD group and Heater unit in HA group)



AMJF500A

2. Install the clip (A) connecting the shift cable and the shift lever.

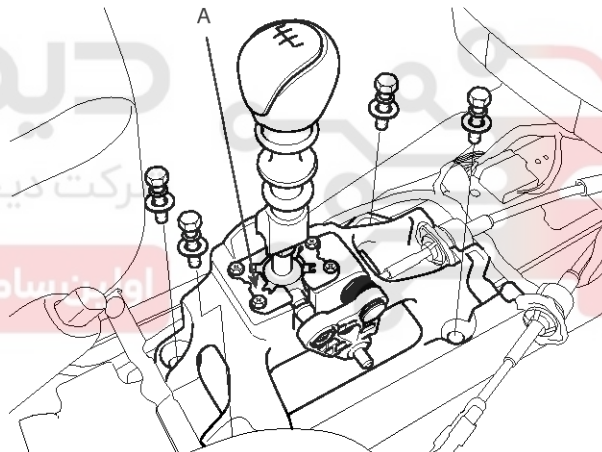


SHDMT6205D

3. Install the shift lever assembly (A).

Tightening torque :

9~14Nm(0.9~1.4kgf.m, 6.5~10.1lb-ft)

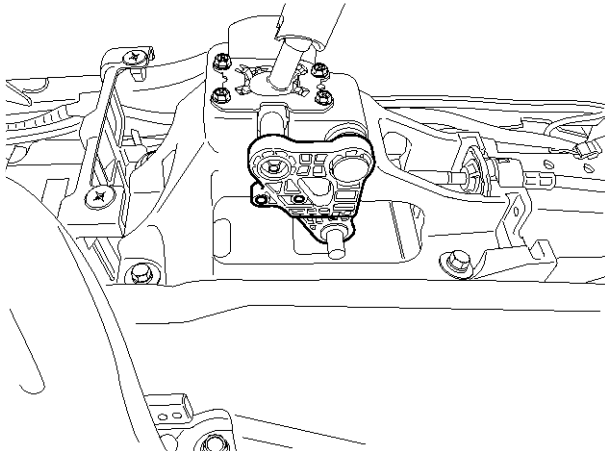


SHDMT6204D

Manual Transaxle Control System

MT-21

4. Insert a U-type pin into the holes shown of the select hinge so that prevent from false shifting when shifting to 1st gear or Reverse.

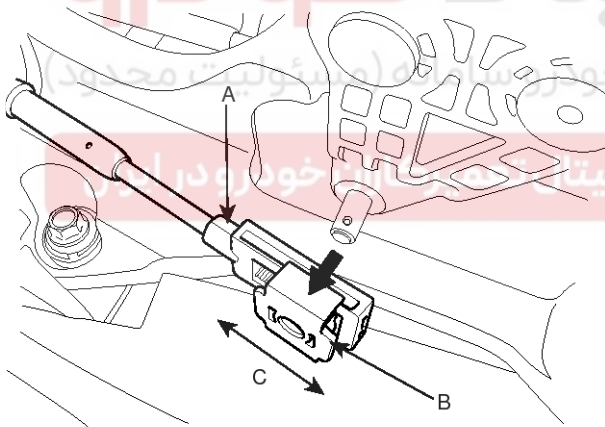


SEDMT7102L

5. Move the slide clip (B) of guide member (A) in the direction as shown in the illustration.

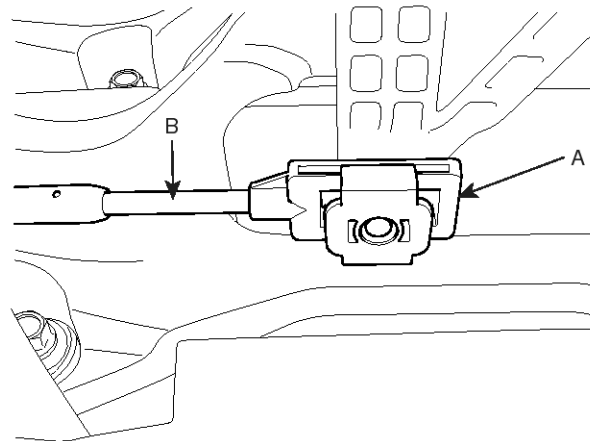
NOTICE

Adjust the slide clip fit into the select lever moving the slide clip in the direction.



AMLF005A

6. Install the guide member (A) of the select cable (B).

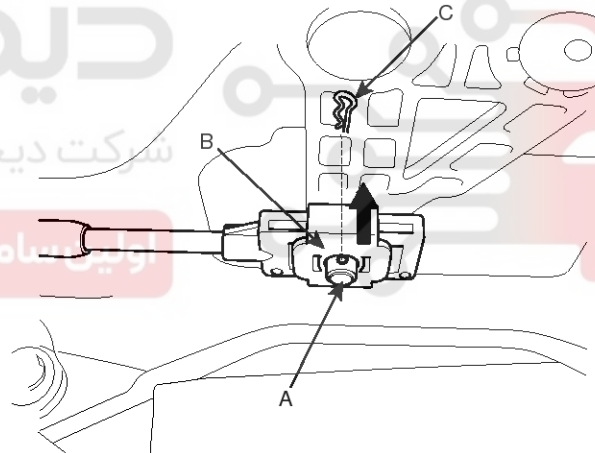


AMLF006A

7. Adjust the slide clip (B) to fit it into the select lever pin (A) and install the snap pin (C).

NOTICE

Insert the slide clip in the direction as shown in the illustration.



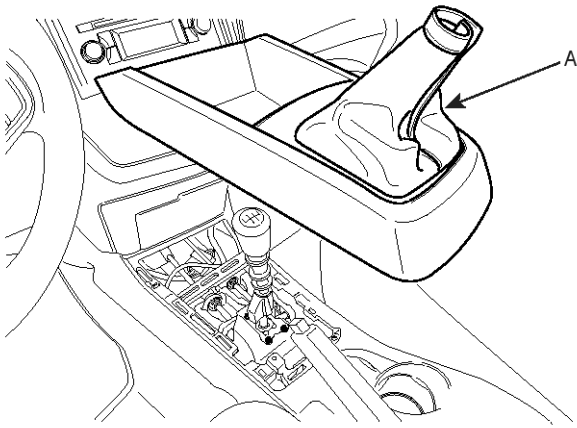
SHDMT6003L

8. Install the cable assembly placing the select and shift lever in neutral position. (refer to Manual Tramsaxle's installation)
9. Install the center console. (refer to Console in BD group)

MT-22

Manual Transaxle System

10. Install the upper cover (A) to the center console.



SFDMT8001L

Inspection

1. Check the select cable for proper operation and for damage.
2. Check the shift cable for proper operation and for damage.
3. Check the boots for damage.
4. Check the boots for wear, abrasion, sticking, restricted movement or damage.
5. Check for the weak or damaged spring.



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