

MT-2

Manual Transaxle System

General Information

Specifications

Transaxle type		M6CF3-1
Engine type		Diesel(U2) 1.7
Gear ratio	1st	3.769
	2nd	2.040
	3rd	1.294
	4th	0.976
	5th	0.778
	6th	0.633
	Reverse	3.583
Final gear ratio		4.333

Tightening Torques

Items	N.m	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 lever assembly bolts	8.8 ~ 13.7	0.9 ~ 1.4	6.5 ~ 10.1
Shift control cable bracket	15 ~ 22	1.5 ~ 2.2	10.8 ~ 15.9
Roll rod support bracket bolt	88.3 ~ 107.9	9.0 ~ 11.0	65.1 ~ 79.6
Transaxle support bracket bolts	88.3 ~ 107.9	9.0 ~ 11.0	65.1 ~ 79.6
Starter motor mounting bolts	38.2 ~ 58.8	3.9 ~ 6.0	28.2 ~ 43.4
Transaxle upper mounting bolts	58.8 ~ 78.5	6.0 ~ 8.0	43.4 ~ 57.9
Transaxle lower mounting bolts	34.3 ~ 49.0	3.5 ~ 5.0	25.3 ~ 36.2
	42.2 ~ 53.9	4.3 ~ 5.5	31.1 ~ 39.8

 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.

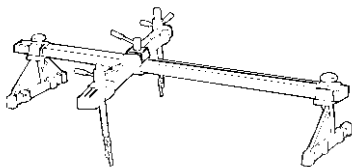
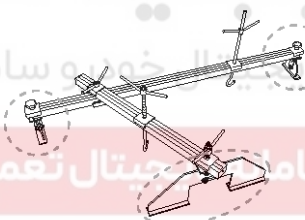
General Information

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Lubricants

Items	Recommended lubricant	Quantity
Transaxle gear oil	SAE 75W/85 API GL-4 TGO-7(MS517-14)	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 (CASMOLY L9508)	As required

Special Service Tools

Tool (Number and name)	Illustration	Use
09200-38001 Engine support fixture (Beam)	 KKBF030A	Removal and installation of the transaxle. Except lower supporter, use beam only with new engine support fixture supporter (SST No.: 09200-2S000)
09200-2S000 Engine support fixture (Supporter)	 SXMAT9080D	Removal and installation of the transaxle. Use this supporter with the upper beam of the engine support fixture (SST No.: 09200-38001)

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Manual Transaxle System

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



Manual Transaxle System

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Manual Transaxle System

Service Adjustment Procedure

Transaxle gear oil level

Inspection

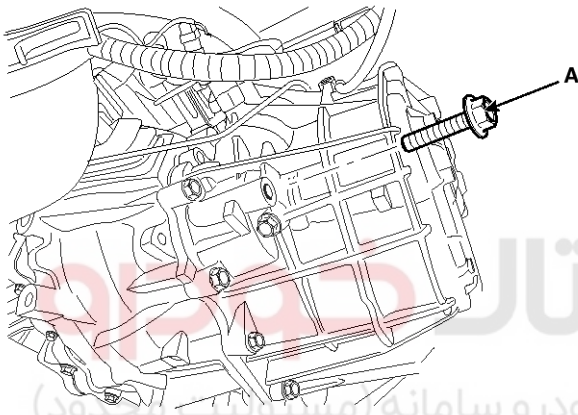
NOTICE

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.

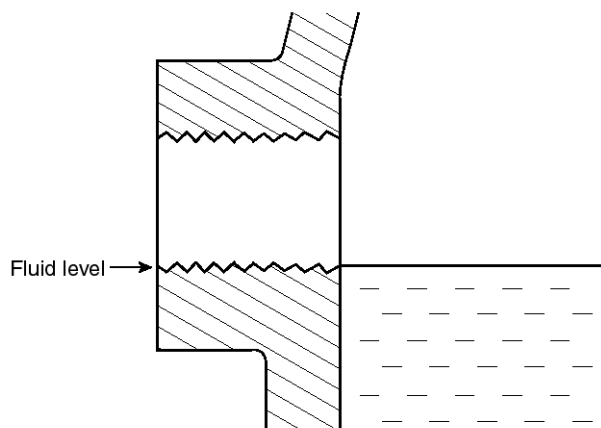
1. Remove oil filler plug (A).



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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.



LKGF002F

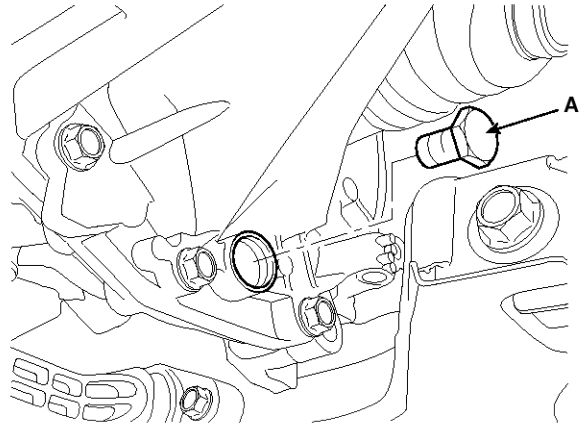
3. Install filler plug.

Tightening torque:

58.9 ~ 78.5 N.m (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).



SPBMB9021L

3. Install the drain plug with new washer.

Tightening torque:

58.9 ~ 78.5 N.m (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

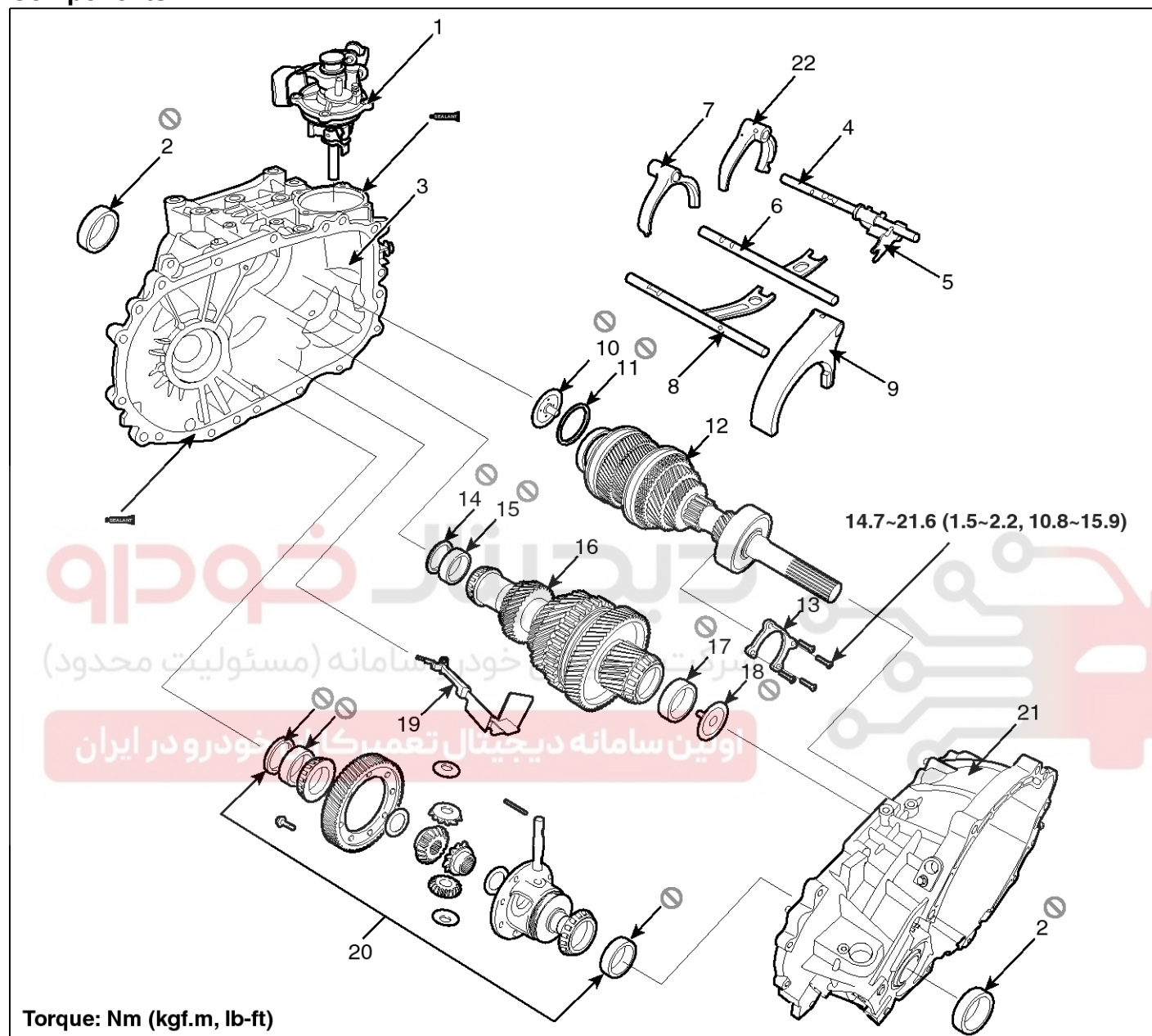
Oil capacity: 1.9L (0.50 U.S.gal., 2.0 U.S. qt., 1.67 Imp qt.)

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Manual Transaxle System

Manual Transaxle

Components



S94MT9000L

1. Control shaft complete
2. Oil seal
3. Transaxle case
4. 5&6th shift rail
5. Reverse shift rug
6. 3&4th shift rail
7. 3&4th shift fork

8. 1&2nd shift rail
9. 1&2nd shift fork
10. Input shaft oil guide
11. Snap ring
12. Input shaft assembly
13. Input shaft bearing retainer
14. Spacer

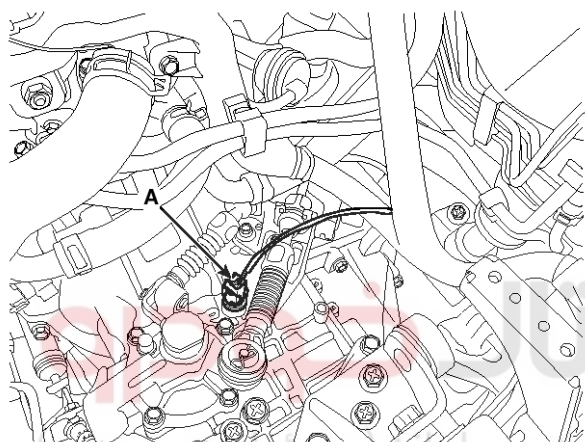
15. Output shaft rear outer race
16. Output shaft assembly
17. Output shaft front outer race
18. Output shaft oil guide
19. Oil guide
20. Differential assembly
21. Clutch housing
22. 5&6th shift fork

Manual Transaxle System

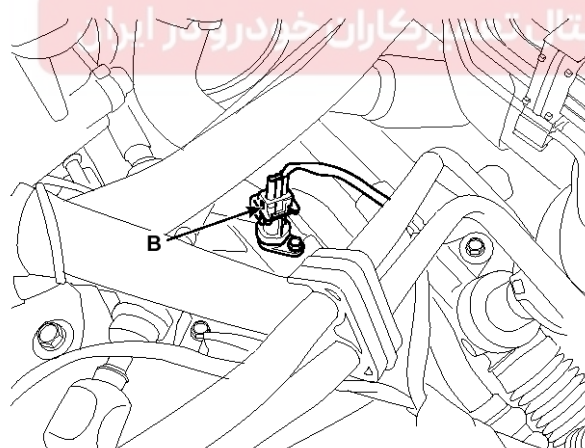
MT-7

Removal

1. Remove the following items;
 - Engine cover. (Refer to "Intake and Exhaust system" in EM group.)
 - Air cleaner assembly and air duct. (Refer to "Intake and Exhaust system" in EM group.)
 - ECM. (Refer to "Engine control module" in FL group)
 - Battery and battery tray. (Refer to "Charging system" in EE group.)
2. Disconnect the vehicle speed sensor connector (B) and the back lamp switch connector (A).

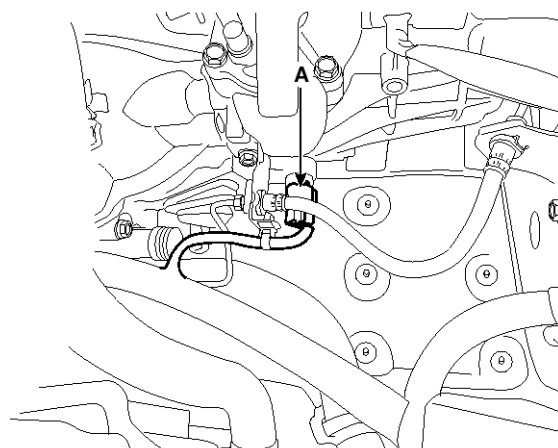


SELMA1001L



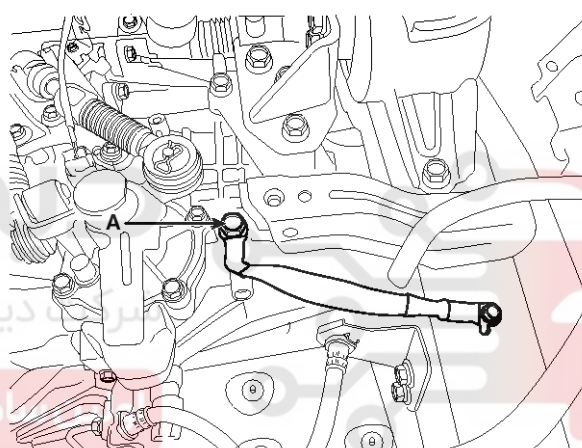
SELMA1002L

3. Disconnect the neutral switch connector (A).



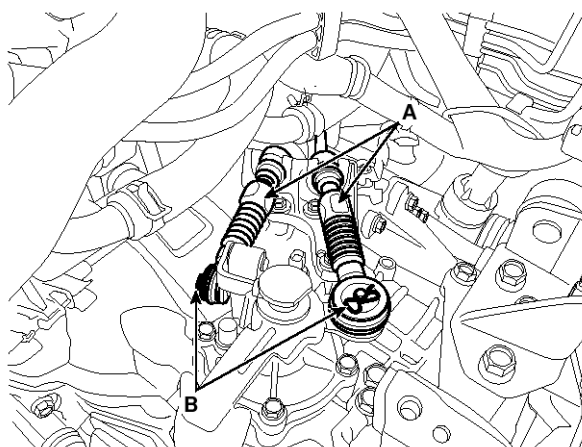
SELMA1003L

4. Remove the ground wire by removing a bolt (A).



SELMA1004L

5. Disconnect the cable assembly (A) after removing the pins (B).



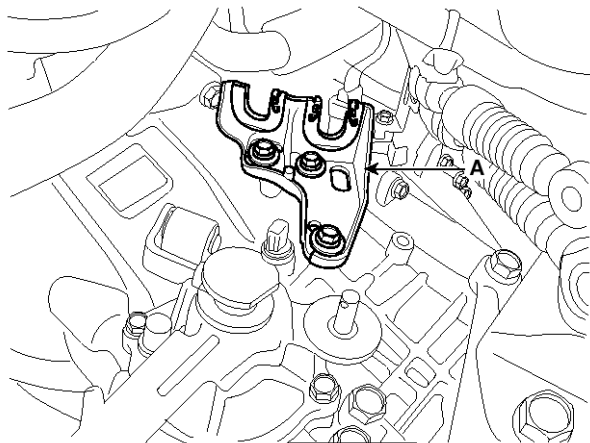
SELMA1005L

MT-8

6. Remove the control cable bracket (A) by removing bolts (3ea).

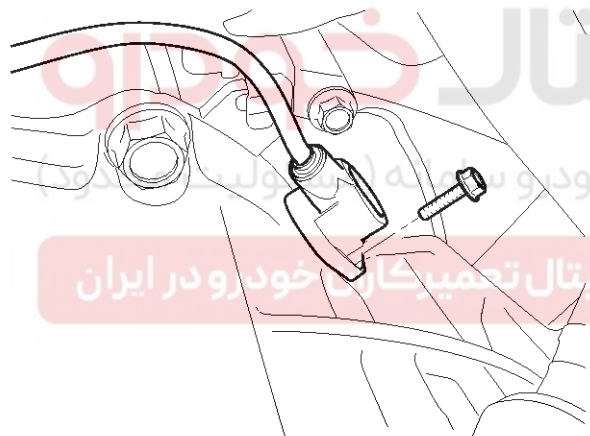
Tightening torque:

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



SELMA1006L

7. Remove the CKP sensor by removing a bolt.



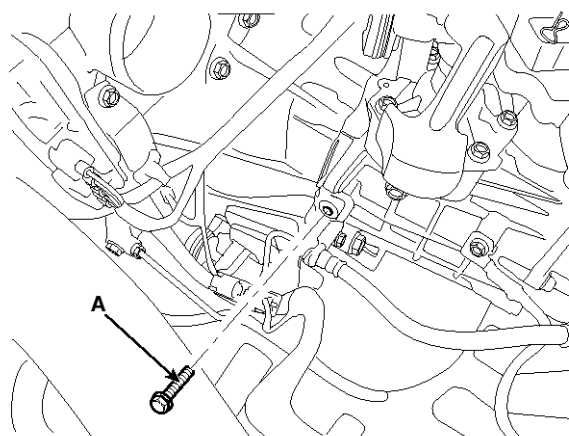
SPBMB9020L

Manual Transaxle System

8. Remove the tube bracket bolt (A).

Tightening torque:

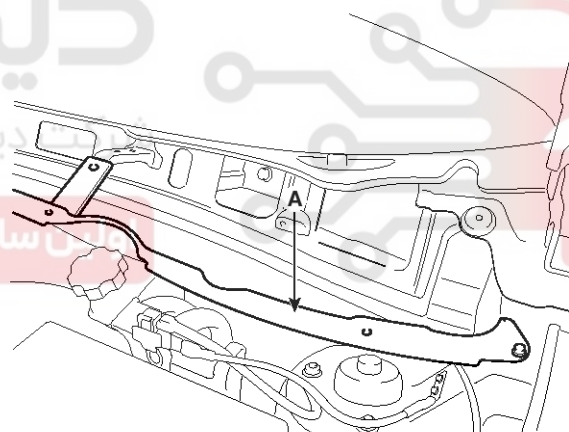
15 ~ 22 N.m (1.5 ~ 2.2 kgf.m, 10.8 ~ 15.9 lb-ft)



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9. Remove the cowl top cover or wiper motor. (Refer to "Windshield Wiper/Washer" in BE group.)

10. Remove the cowl complete assembly panel (A).

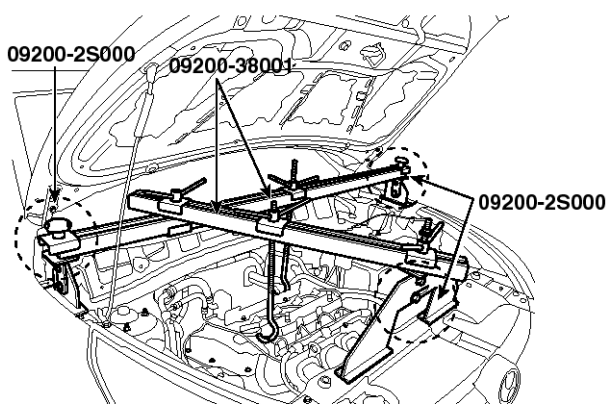


SLMAT0013D

Manual Transaxle System

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11. Using the engine support fixture (Support SST No.: 09200-2S000, Beam SST No.: 09200-38001), hold the engine and transaxle assembly safely.



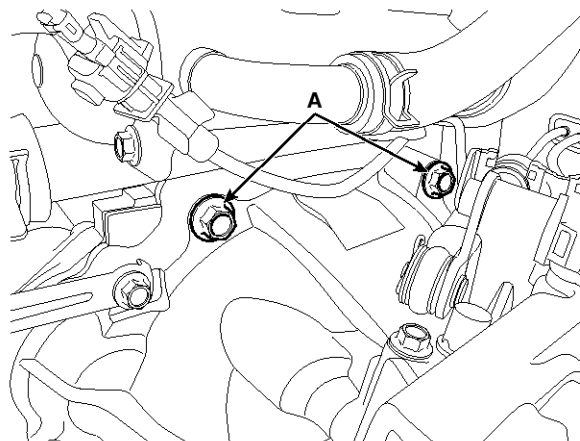
SXMAT9082D

12. Remove the transaxle upper mounting bolt (B-2ea) and the start motor mounting bolt (A-2ea).

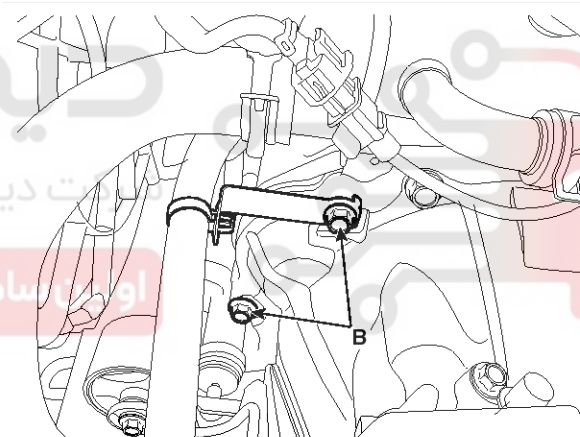
Tightening torque:

[A] 60 ~ 80 N.m (6.0 ~ 8.0 kgf.m, 43.4 ~ 57.9 lb-ft)

[B] 39 ~ 60 N.m (3.9 ~ 6.0 kgf.m, 28.2 ~ 43.4 lb-ft)



SEDMT9029L



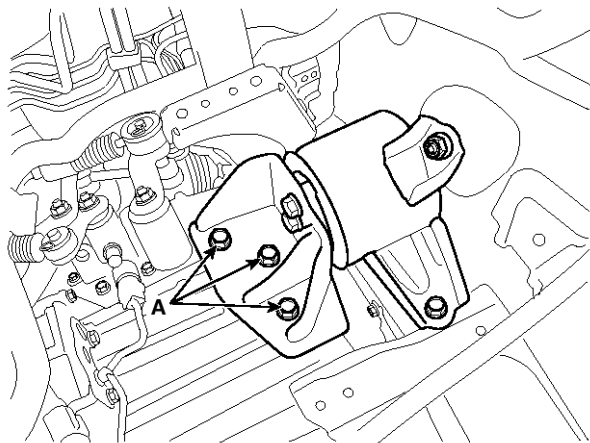
SEDMT9030L

MT-10

13. Supporting the transaxle with a jack, remove the mounting bolts (A-3ea).

Tightening torque:

88.3 ~ 107.9 N.m (9.0 ~ 11.0 kgf.m, 65.1 ~ 79.6 lb-ft)

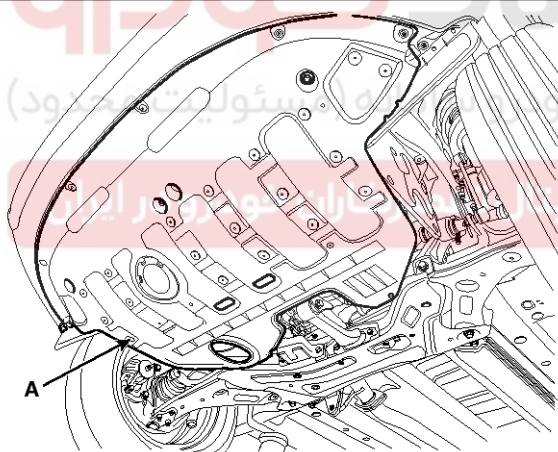


SLMMT0001D

14. Remove the under cover (A).

Tightening torque:

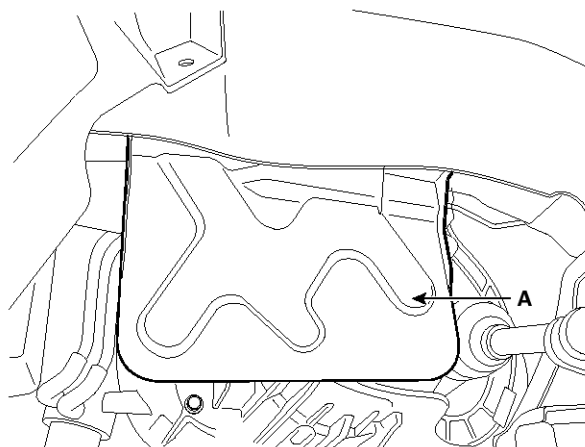
19.6 ~ 21.6 N.m (2.0 ~ 2.2 kgf.m, 14.5 ~ 15.9 lb-ft)



SSLAT0021D

Manual Transaxle System

15. Remove the side cover (A).



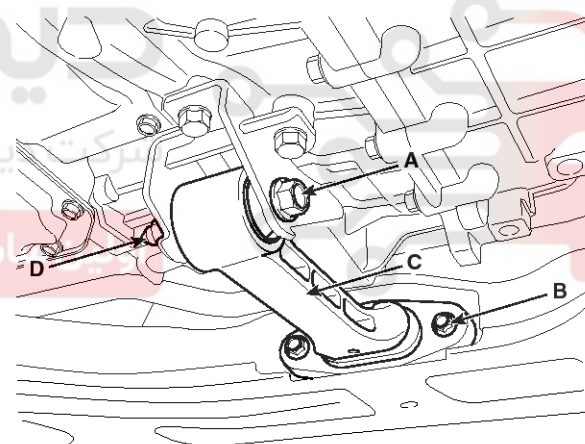
SSLMT1006D

16. Remove the roll rod bracket (C) after removing bolt (A,B).

Tightening torque:

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

(D) 107.9 ~ 127.5 N.m (11 ~ 13 kgf.m, 79.6 ~ 94.1 lb-ft)



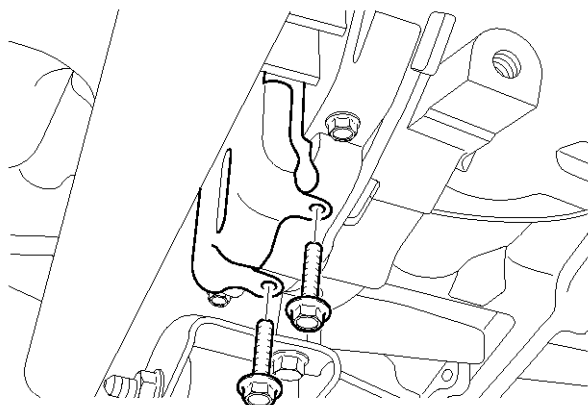
SSLWD1030N

Manual Transaxle System

MT-11

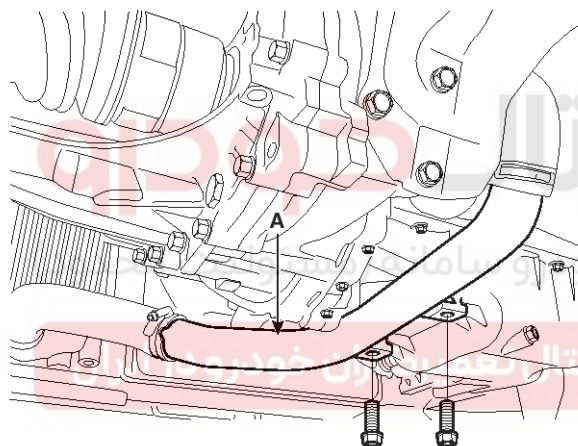
17. Remove the drive shaft assembly. (Refer to "Drive shaft assembly" in DS group.)

18. Remove the dust cover by removing the bolts (2ea).



SPBMB9014L

19. Remove the intercooler pipe (A).

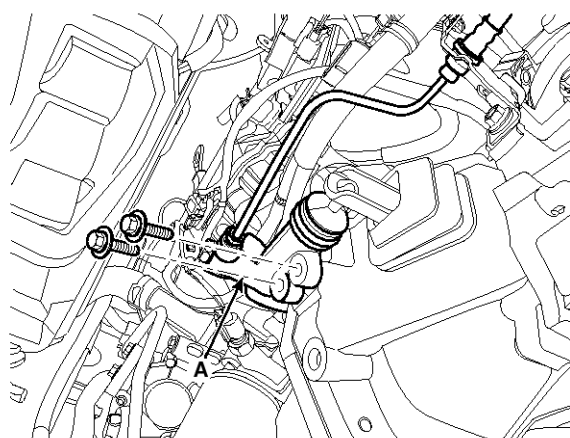


SHDMB6015D

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

Tightening torque:

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

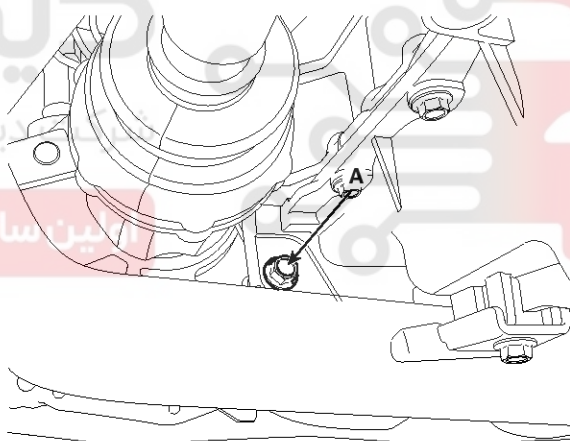


SELMA1022L

21. Remove the bolt (A) left in the engine side.

Tightening torque:

43 ~ 55 N.m (4.3 ~ 5.5 kgf.m, 31.1 ~ 39.8 lb-ft)



SEDMT9034L

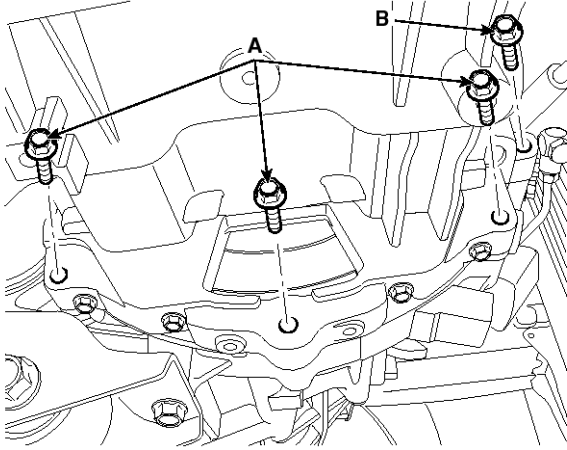
MT-12

22. Supporting the transaxle with a jack, remove the transaxle lower mounting bolts (A-3ea, B-1ea).

Tightening torque:

[A] 35 ~ 50 N.m (3.5 ~ 5.0 kgf.m, 25.3 ~ 36.2 lb-ft)

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



SPBMB9019L

Manual Transaxle System

Installation

1. Installation is the reverse of removal.

- Power steering fluid replacement and air bleeding. (Refer to "General information" in ST group.)
- Adding Manual transaxle fluid. (Refer to "Manual transaxle system" in this group.)
- Perform bleeding air procedure in concentric slave cylinder after pouring the brake fluid. (Refer to "Concentric slave cylinder" in CH group.)

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Manual Transaxle Control System

MT-13

Manual Transaxle Control System

Back-up Lamp Switch

Description

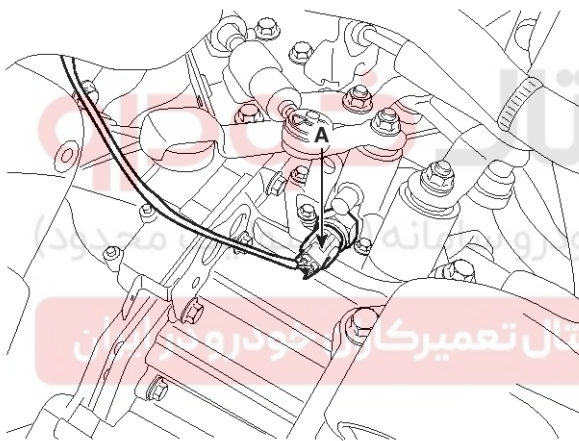
Back up lamp switch is pushed by the reverse lug sliding when select arm, and switches the back up lamp.

Specifications

1. Working voltage : DC 10~15V
2. Operating force : 3.0kg Max.
3. Voltage drop : - 0.4V
4. Working temperature : -30°C ~ 100°C [-30°F ~ 212°F]

Inspection

1. Disconnect the back up lamp switch connector(A).

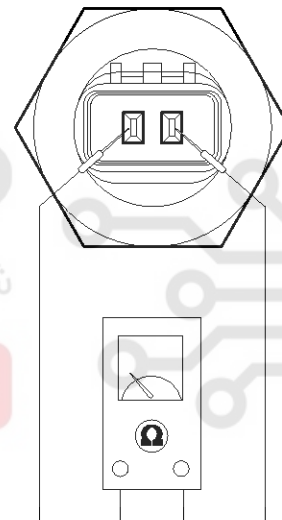


SXMMA0001L

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

Condition	1	2
Reverse Range	●	●
Other Range		

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



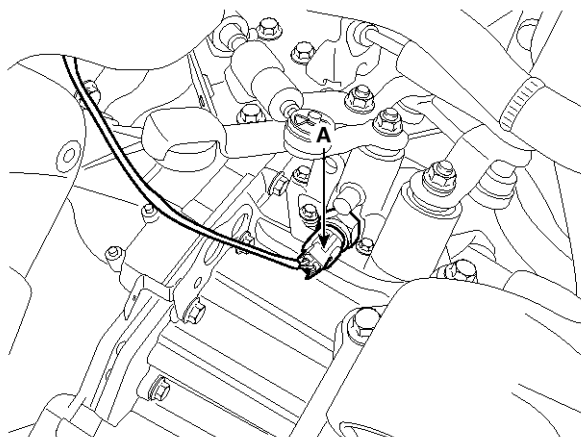
LMJF003B

MT-14

Manual Transaxle System

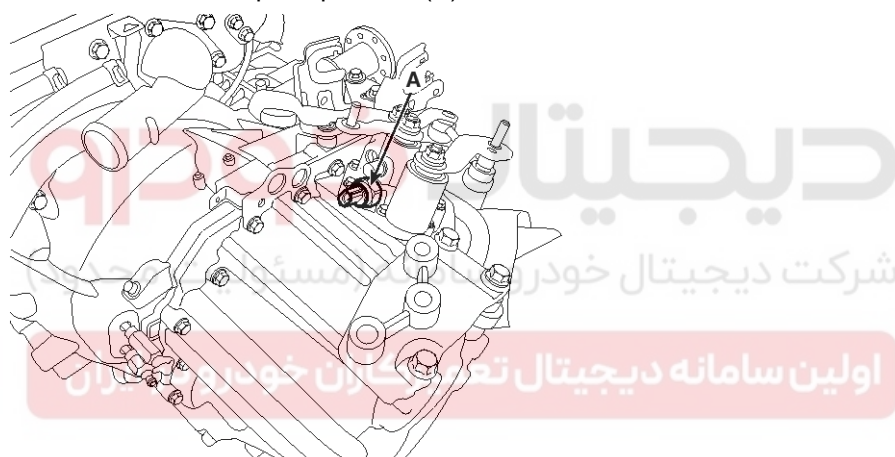
Replacement

1. Disconnect the back up lamp switch connector(A).



SXMMMA0001L

2. Remove the back up lamp switch (A).



SSLMT1010D

3. Replace a new one and install the back up lamp switch.

Tightening torque:

29.4 ~ 34.3 N.m (3.0 ~ 3.5 kgf.m, 21.7 ~ 25.3 lb-ft)



Manual Transaxle Control System

MT-15

Neutral Switch

Description

Neutral position switch is pushed when shifting neutral, and send the signal to ECU.

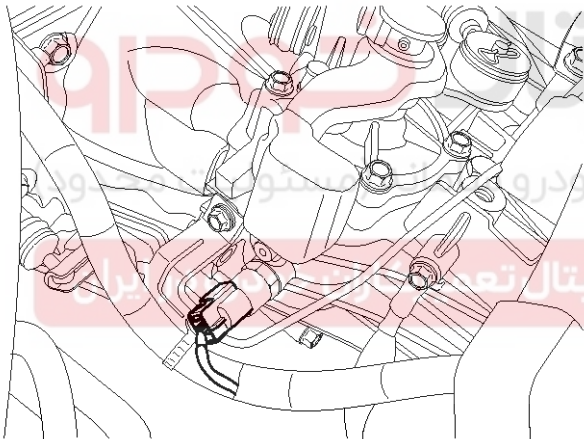
Neutral position switch is only for diesel engines.

Specifications

1. Current voltage : 12V
2. Working voltage : 10~15V
3. Operating force : 1.0 kg +0.2kg Max. (at 2mm stroke position)
4. Voltage drop : Max 0.15V with rated load before test, Max 0.24V with rated load after test
5. Working temperature : -30°C ~ 80°C

Inspection

1. Disconnect the neutral position switch connector.



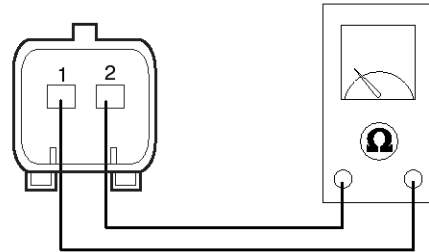
SPBMB9006L

2. Check the continuity between no. 1 and 2 terminals of neutral position switch.

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

3. If necessary, repair or replace the neutral position switch.

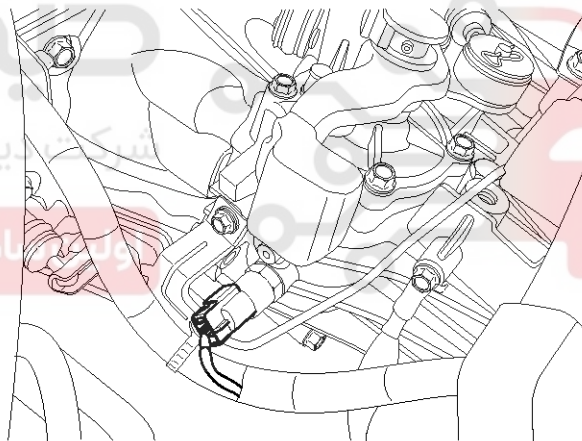
Condition	1	2
Neutral	●	●
Other		



LMJF100B

Replacement

1. Disconnect the neutral position switch connector.



SPBMB9006L

2. Remove the neutral position switch.
3. Replace a new one and install the neutral position switch, then connect the connector.

Tightening torque :

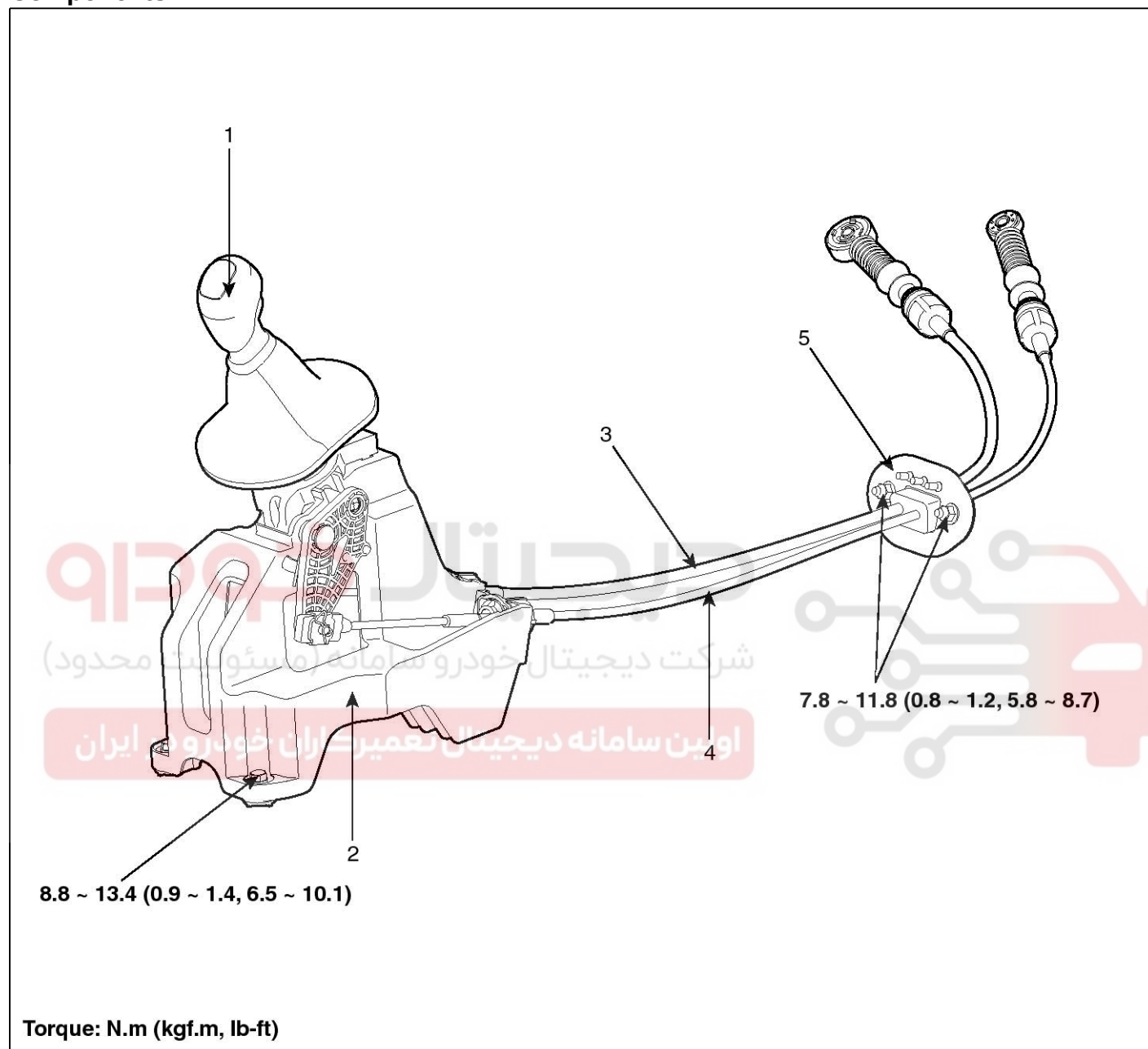
30~35 N.m (3.0~3.5 kgf.m, 21.7~25.3 lb-ft)

MT-16

Manual Transaxle System

Shift Lever

Components



SSLMT1011N

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

4. Select cable assembly
5. Retainer

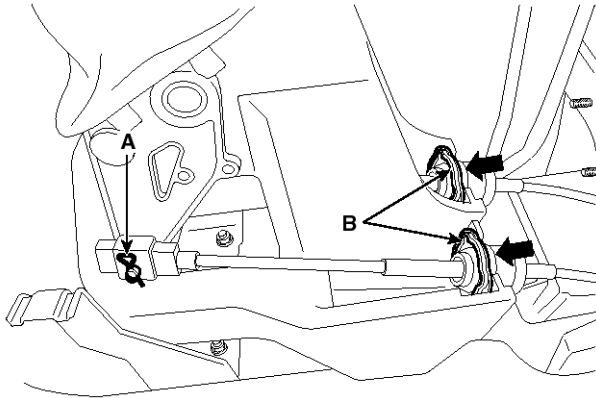
Manual Transaxle Control System

MT-17

Removal

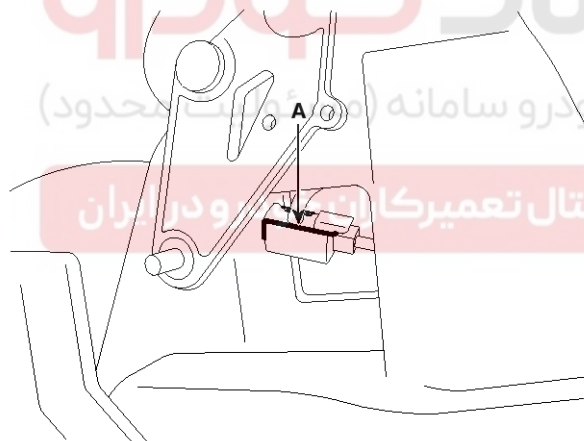
Shift Lever Assembly Replacement

1. Remove the floor Interior console assembly. (Refer to "Interior(Console)" in BD group)
2. Remove the select cable snap pin (A) and the clip (B) from the select cable assembly.



SSLMT1003D

3. Remove the clip (A) from the shift cable assembly.

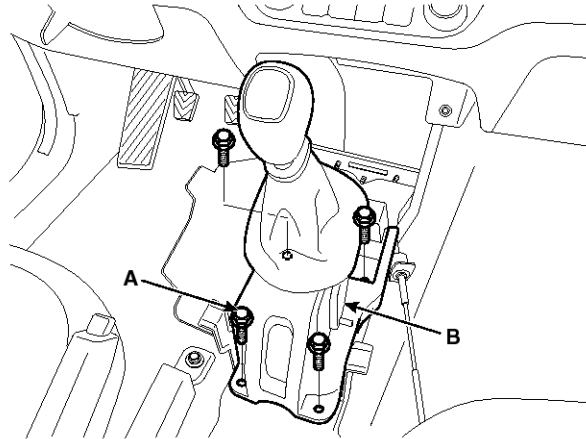


SSLMT1001D

4. Remove the shift lever assembly(B) after removing shift lever assembly installation bolt(A).

Tightening torque :

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



SSLMT1002D

5. Installation is the reverse of removal.

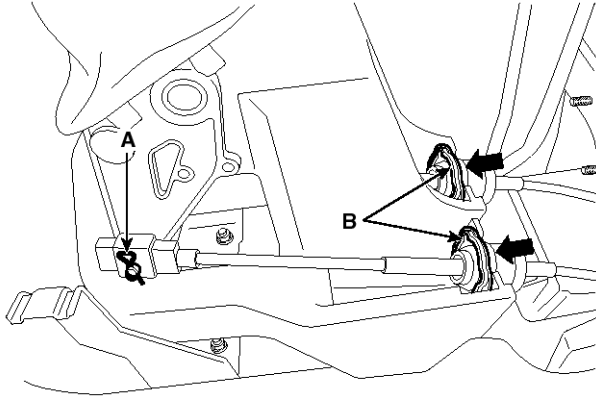
NOTICE

- Make sure vehicle does not roll before setting room side shift lever and T/M side manual control lever to "N" position.

MT-18

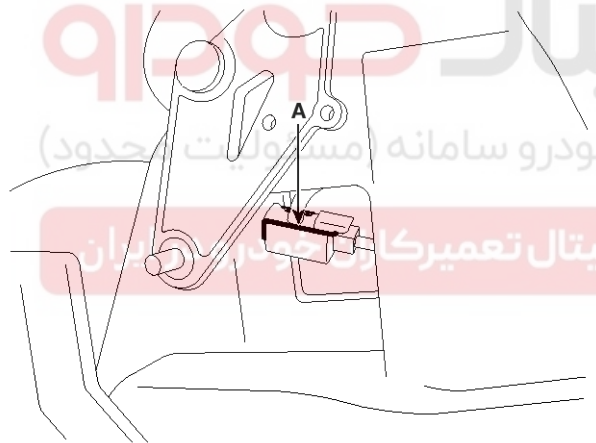
Shift Cable Replacement

1. Remove the floor Interior console assembly. (Refer to "Interior(Console)" in BD group)
2. Remove the select cable snap pin (A) and the clip (B) from the select cable assembly.



SSLMT1003D

3. Remove the clip (A) from the shift cable assembly.

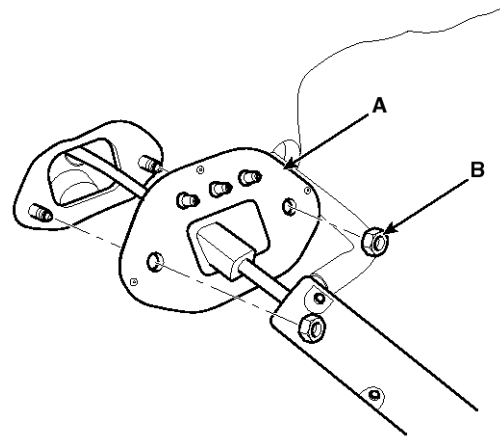


SSLMT1001D

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

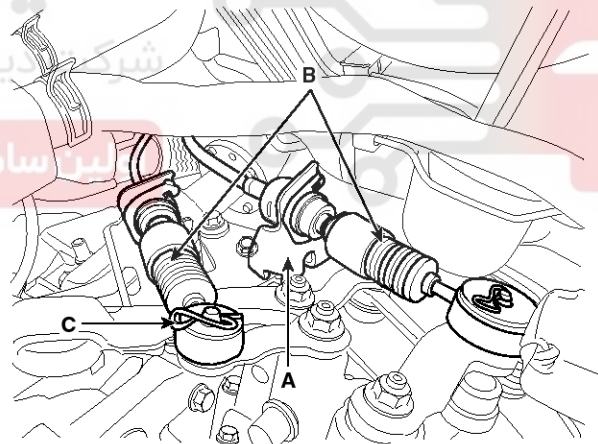
Tightening torque :

7.8~11.8N.m (0.8~1.2kgf.m, 5.8~8.7lb-ft)



SHDAT6108D

5. Remove the cable(B) from the cable bracket(A) at manual transaxle assembly side.
6. Remove the pins(C).
7. Remove the shift cable and select cable at cabin room.



SSLMT1051D

8. Installation is the reverse of removal.

NOTICE

- Make sure vehicle does not roll before setting room side shift lever and T/M side manual control lever to "N" position.

Manual Transaxle Control System

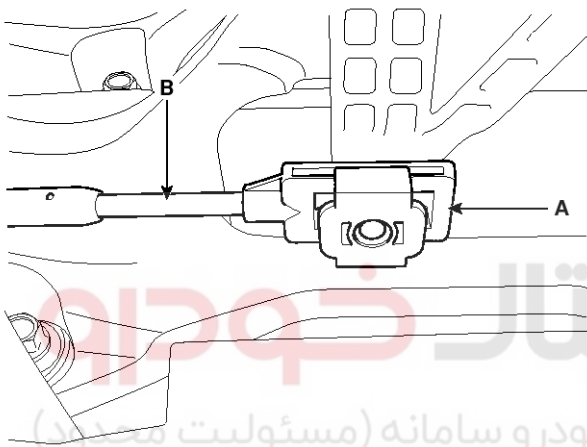
MT-19

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.

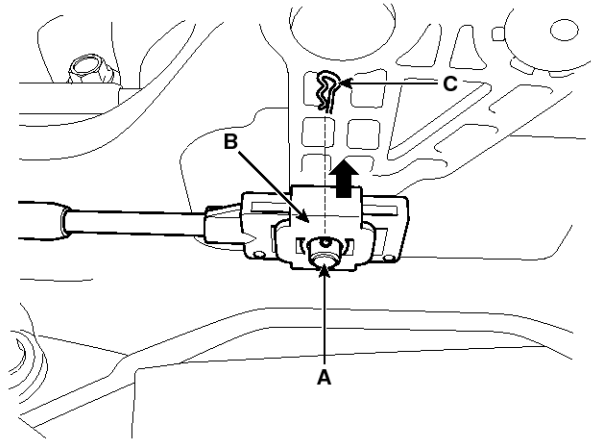
Adjustment

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



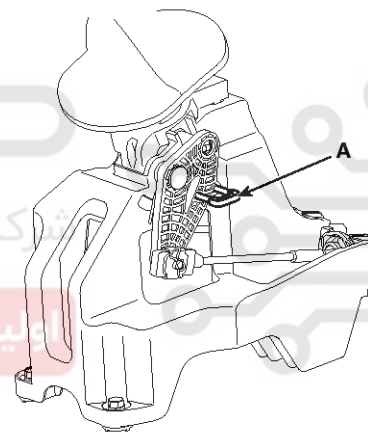
AMLF006A

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



AMLF007A

3. Remove neutral position pin (A) after shift lever assemble.



SSLMT1033D