

## MT-2

## Manual Transaxle System

## General Information

## SPECIFICATION

Engine			A2.5	Σ3.5	S2.4D
Manual transmission			M5UR1		
4WD Drive type			PART (EST) & FULL TIME (ATT) 4WD		
M/T	CLUTCH	COVER	DIAPHRAM SPRING		
		DISC	Dry single plate		
	CHANGE CONTROL TYPE		FLOOR DIRECT TYPE		
	TRANSMISSION TYPE		Forward 5th, Reverse 1st, Constant Synchromesh		
	Gear ratio	1st	3.749		4.155
		2nd	2.044		2.265
		3rd	1.289		1.428
		4th	1.000		1.000
		5th	0.794		0.880
		Reverse	3.453		3.827
	Oil	Gear oil		SAE 75W-90 (Fill-for-life)	
		Capacity	2WD	3.2ℓ (3.4 Us qt, 2.8 Imp qt)	
4WD			2.7ℓ (2.85 Us qt, 2.38 Imp qt)		
Transfer case	Gear ratio	HIGH	1.000		
		LOW	2.480		
	Oil	Gear oil		ATF DEXRON III (No change oil)	
		Capacity		1.42ℓ (1.5 Us qt, 1.25 Imp qt)	

LMAE010A

# General Information

## MT-3

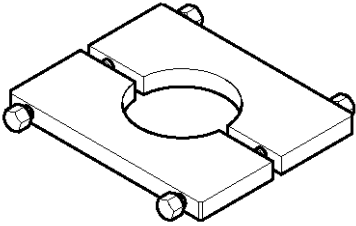
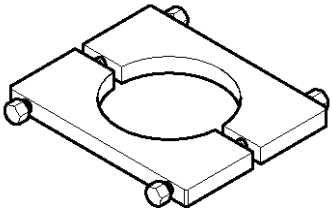
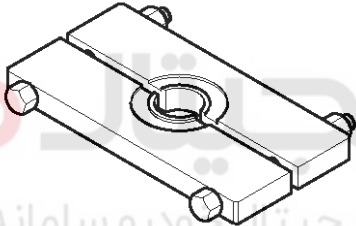
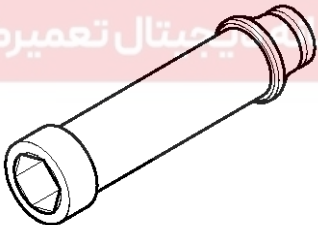
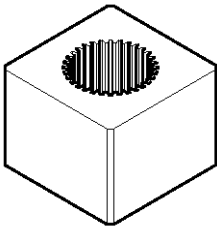
### TIGHTENING TORQUE

Model	Item	N-m	Kg-cm	lb-ft
M5UR1	Engine(A2.5 ENG.) to transmission (12 X 45, 50, 70, 90)	43 - 55	430 - 550	31 - 40
	Engine(S2.4 ENG.) to transmission (12 X 50, 60, 40, 55)	43 - 55	430 - 550	31 - 40
	Poppet plate bolt	10 - 12	100 - 120	7 - 9
	Front bearing retainer (8X28)	20 - 27	200 - 270	14 - 20
	Back-up lamp switch	30 - 35	300 - 350	22 - 25
	Main shaft lock nut	170 - 190	1700 - 1900	123 - 137
	Clutch release cylinder (Fulcrum)	30 - 42	300 - 420	22 - 30
	Reverse idle shaft bolt (10X40)	43 - 55	430 - 550	31 - 40
	Transmission case and adapter (10X50)	43 - 55	430 - 550	31 - 40
	Rear retainer bearing (2WD: 8X60, 4WD: 8X80)	20 - 27	200 - 270	14 - 15
	Shift control housing assembly	20 - 27	200 - 270	14 - 15
	Oil drain plug	60 - 65	600 - 650	43 - 48
	Oil filler plug	60 - 65	600 - 650	43 - 48

### SERVICE STANDARD

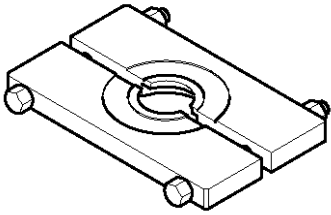
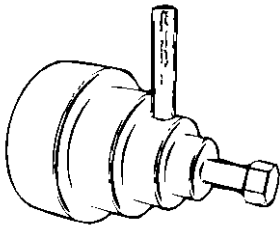
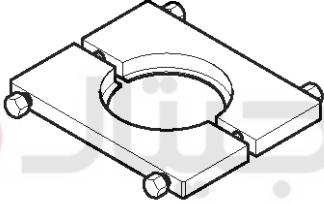
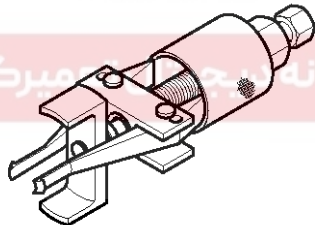
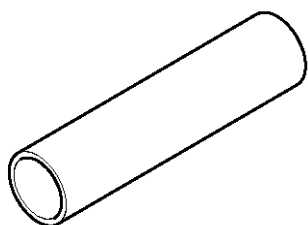
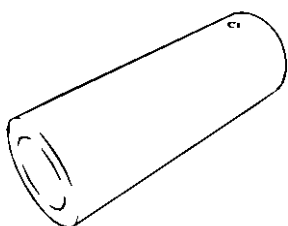
Model	Item	Standard value mm(in)
M5UR1	Front retainer bearing end play	0-0.1L (0-0.0039)
	3rd&4th snap ring end play	0-0.08L (0-0.0031)
	3rd gear end play	0.1-0.2L (0.0039-0.0079)
	Reverse gear end play	0.08-0.18L (0.0031-0.0071)
	5th&R snap ring end play	0-0.08L (0-0.0031)
	5th gear end play	0.13-0.28L (0.0051-0.0110)
	Reverse retainer bearing end play	0-0.1L (0-0.0039)
	1st gear end play	0.1-0.2L (0.0039-0.0079)
	Reverse idle gear end play	0.08-0.18L (0.0031-0.0071)
	1st&2nd snap ring end play	0-0.08L (0-0.0031)
	2nd gear end play	0.13-0.28L (0.0052-0.0110)
	Counter shaft end play	0.02-0.12L (0.0008-0.0047)

**MT-4****Manual Transaxle System****SPECIAL SERVICE TOOL**

Tool (Number and name)	Illustration	Use
09432-3E000 Sleeve hub remover (3rd-4th )		Removal of main shaft 3rd-4th sleeve hub. Removal of main shaft 5th reverse sleeve hub.
09432-3E100 Sleeve hub remover (1st-2nd-d)		Removal of main shaft 1st-2nd sleeve hub.
09432-3E200 Main shaft bearing remover (Rear)		Removal of main shaft bearing. (Rear)
09432-H1100 Lock nut wrench		Removal and installation of main shaft lock nut
09432-3E300 Main shaft holder		Hold main shaft to remove and install main shaft lock nut.

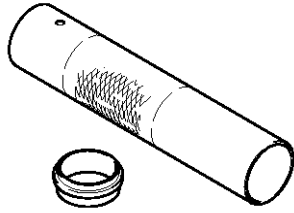
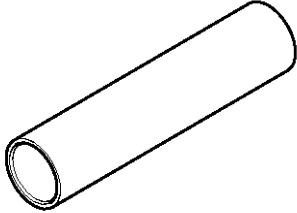
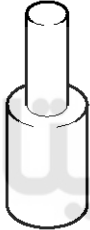
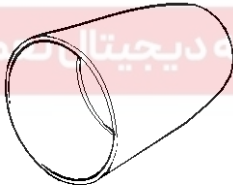
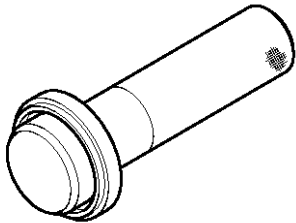
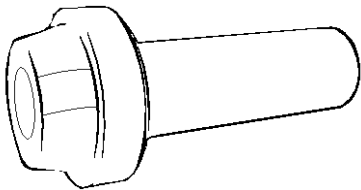
## General Information

## MT-5

Tool (Number and name)	Illustration	Use
09432-3E400 Double ball bearing remover		Removal of main shaft double ball bearing.
09432-3E500 Counter shaft bearing remover		Removal of counter shaft taper roller bearing.
09432-3E600 3rd sleeve remover		Removal of main shaft 3rd sleeve.
09431-2C200 Taper roller bearing outer race remover		Removal of adapter housing taper roller bearing outer race.
09432-3A100 Double ball bearing installer		Installation of main shaft double ball bearing. Installation of main shaft 3rd sleeve.
09432-3E700 Adapter housing oil seal installer		Installation of adapter housing oil seal.

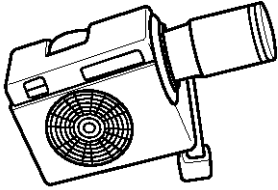
## MT-6

## Manual Transaxle System

Tool (Number and name)	Illustration	Use
0K552 171 AA0 Sleeve hub installer		Installation of main shaft 5th-Reverse sleeve hub.
09432-22000 Ball bearing installer		Installation of main shaft ball bearing. Installation of counter shaft taper roller bearing.
0k9A1 190 004 3rd-4th sleeve hub installer		Installation of main shaft 3rd-4th sleeve hub.
09432-3E800 Snap ring guide(2nd)		Assister of installing main shaft 2nd snap ring.
09432-3E900 Front retainer oil seal installer		Inserting of front retainer oil seal.
09432-3E110 Adapter housing bearing outer race installer		Installation of adapter housing bearing outer race.

## General Information

## MT-7

Tool (Number and name)	Illustration	Use
09432-3E000 Air heater or Leister 4000(9 C1) (made by Eco Tool Leister)		Removal and installation of double bearing installed part of adapter.

## TROUBLESHOOTING

Symptom	Probable cause	Remedy
Gear will not be shifted or is hard to be shifted	Bent shift lever Excessively worn return spring Clutch dose not release correctly	Repair or replace Replace Adjust or replace
Jumps out of gear or has too much play	Shift lever malfunction Worn bush Bent lever Clutch dose not release correctly	Replace Replace Replace Replace
Lever is hard to be operated	Insufficient grease of shift lever assembly	Replace
Emits abnormal sound when operating	Worn bush	Replace

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

## MT-8

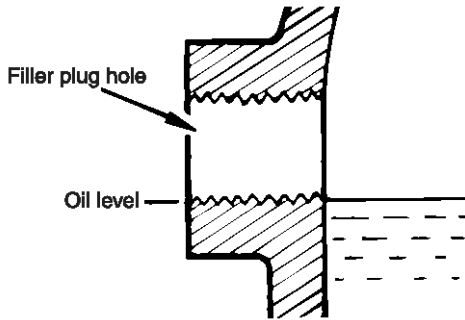
## Manual Transaxle System

### Manual Transaxle System

#### SERVICE ADJUSTMENT PROCEDURES

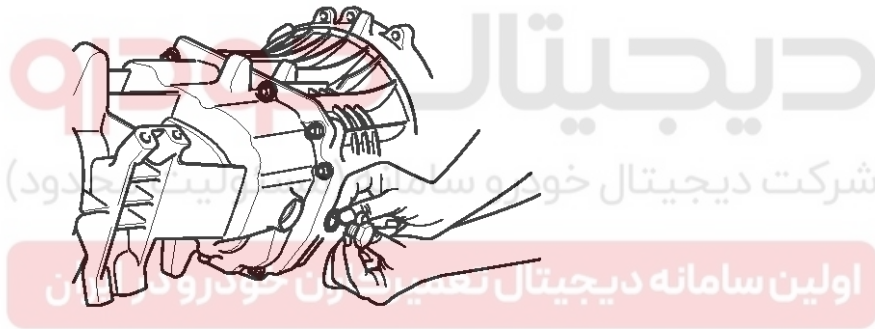
#### OIL INSPECTION AND REPLACEMENT

1. Raise vehicle on hoist and remove the filler plug and check the oil level.



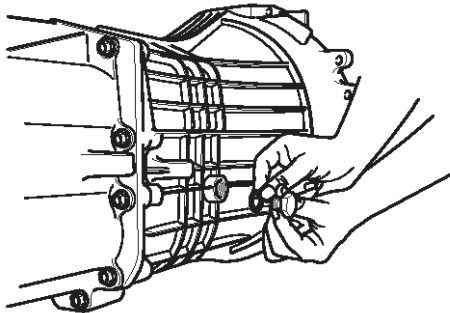
LMAC060A

2. In case of the oil replacement, remove the drain plug and drain the oil and tighten the drain plug and new packing.



LMAC060B

3. Fill the specified transmission oil to the level.
4. Tighten the filler plug and new packing.



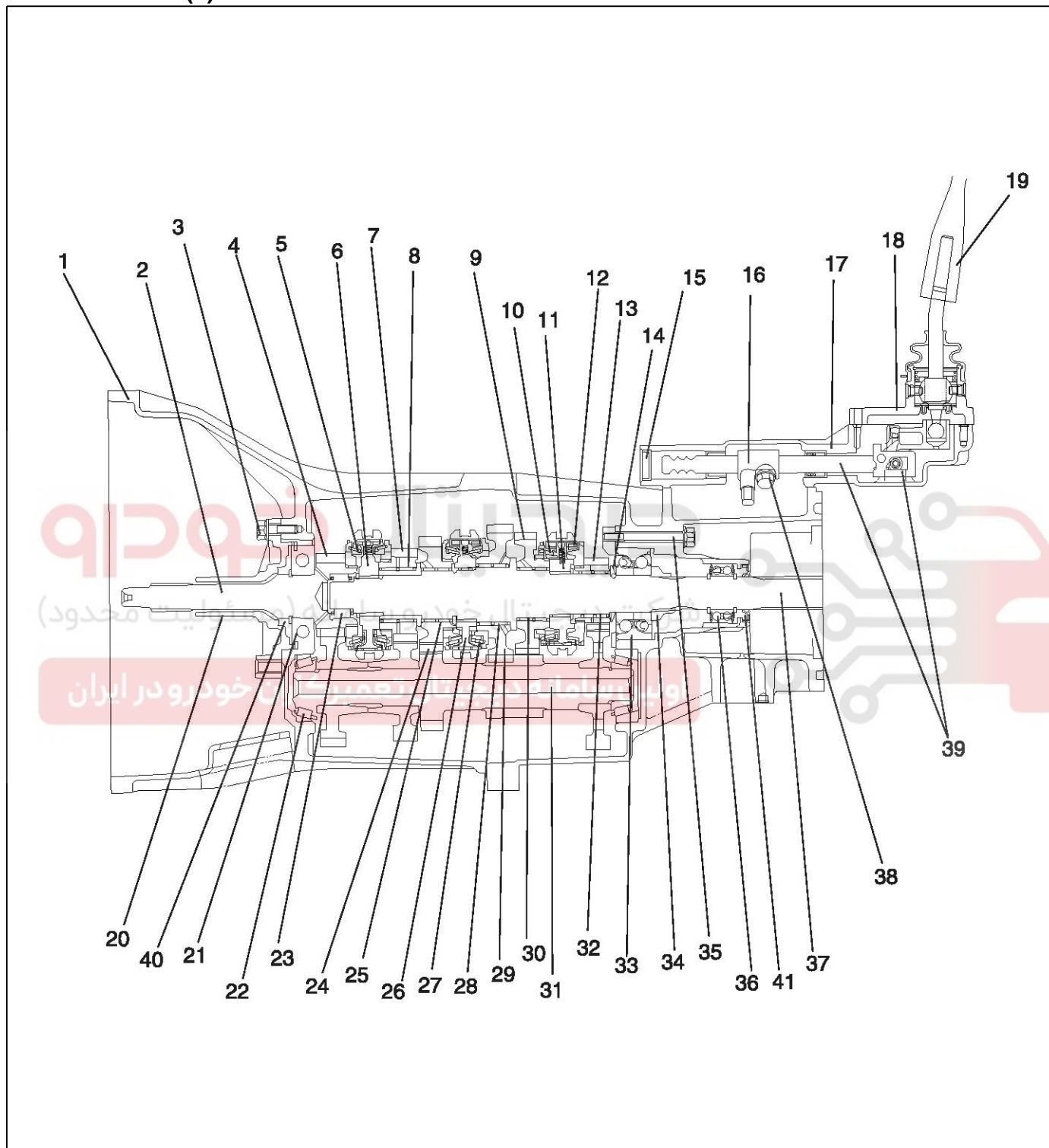
LMAC060C

# Manual Transaxle System

**MT-9**

## Manual Transaxle

### COMPONENTS (1)



LMAE080A



**MT-10****Manual Transaxle System**

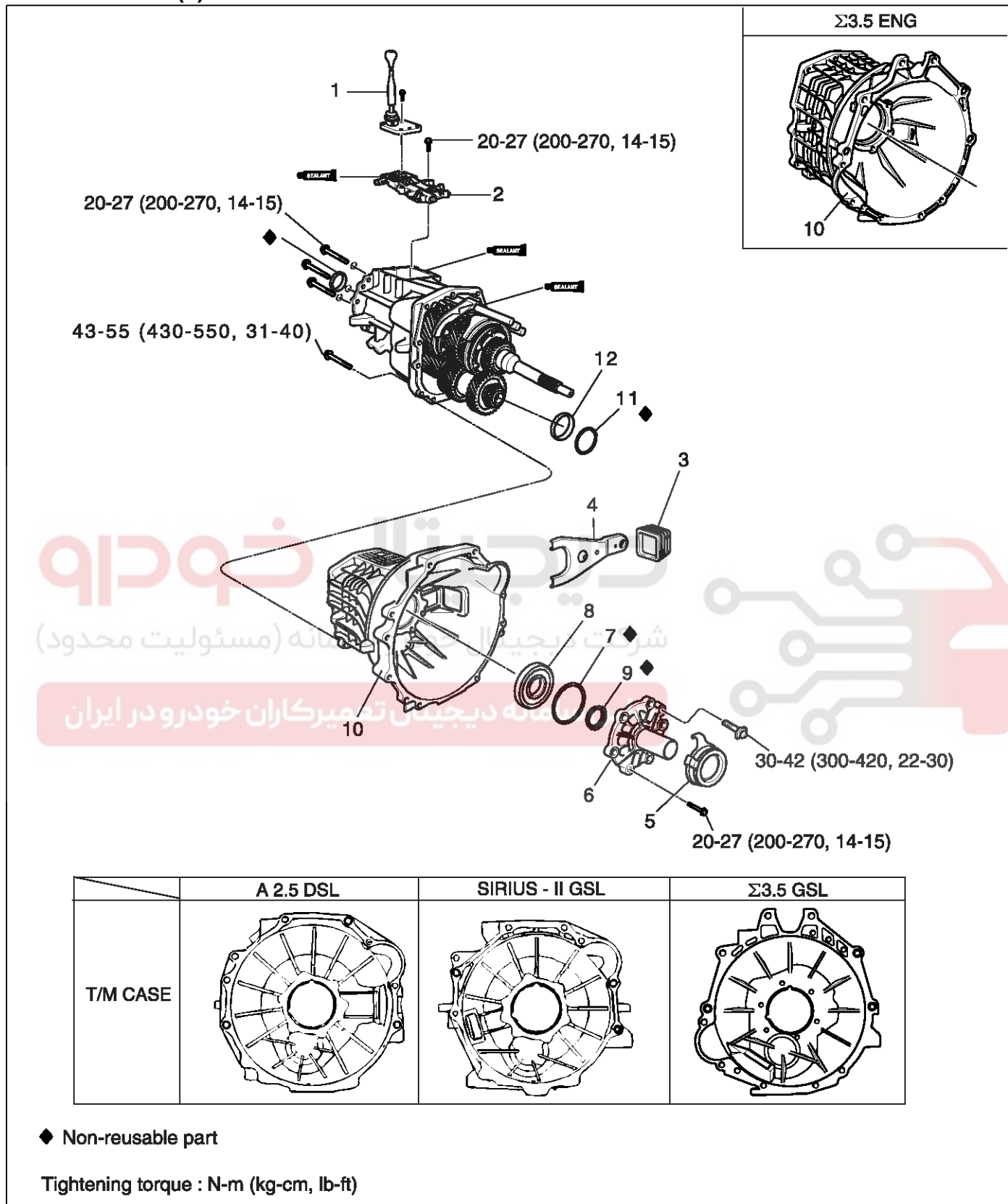
- |   |                                   |
|---|-----------------------------------|
| 1. Transmission case                          | 31. Counter shaft                 |
| 2. Main drive pinion                          | 32. 5th speed gear needle bearing |
| 3. Front retainer bolt                        | 33. Rear double ball bearing      |
| 4. 4th speed gear                             | 34. Locking nut                   |
| 5. Synchronizer ring (3rd, 4th)               | 35. Bearing retainer bolt         |
| 6. 3rd & 4th synchronizer hub and sleeve      | 36. Ball bearing                  |
| 7. 3rd speed gear                             | 37. Main shaft                    |
| 8. 3rd speed gear needle bearing              | 38. Control finger bolt           |
| 9. Reverse gear                               | 39. Control shaft assembly        |
| 10. Synchronizer ring (Reverse)               | 40. Front oil seal                |
| 11. 5th & Reverse synchronizer hub and sleeve | 41. Rear oil seal                 |
| 12. Synchronizer ring (5th)                   |                                   |
| 13. 5th speed gear                            |                                   |
| 14. Spacer                                    |                                   |
| 15. Extension plug                            |                                   |
| 16. Control finger                            |                                   |
| 17. Shift control housing                     |                                   |
| 18. Shift lever housing                       |                                   |
| 19. Shift lever                               |                                   |
| 20. Front bearing retainer                    |                                   |
| 21. Front ball bearing                        |                                   |
| 22. Taper bearing                             |                                   |
| 23. 4th speed gear needle bearing             |                                   |
| 24. 2nd speed gear                            |                                   |
| 25. 2nd speed gear needle bearing             |                                   |
| 26. 1st & 2nd synchronizer hub and sleeve     |                                   |
| 27. Synchronizer ring (1st, 2nd)              |                                   |
| 28. 1st speed gear bearing                    |                                   |
| 29. 1st speed gear                            |                                   |
| 30. Reverse gear needle bearing               |                                   |

LMAE080B

# Manual Transaxle System

## MT-11

### COMPONENTS (2)



LMAE090A

## MT-12

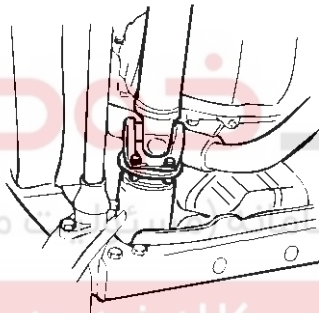
## Manual Transaxle System

## &lt; Disassembly Procedure &gt;

- |                             |                               |
|-----------------------------|-------------------------------|
| 1. Shift control lever      | 8. Front retainer bearing     |
| 2. Shift control housing    | 9. Oil seal                   |
| 3. Clutch release fork boot | 10. Transmission case housing |
| 4. Clutch release fork      | 11. Space                     |
| 5. Clutch release bearing   | 12. Taper bearing outer race  |
| 6. Front retainer           |                               |
| 7. Space                    |                               |

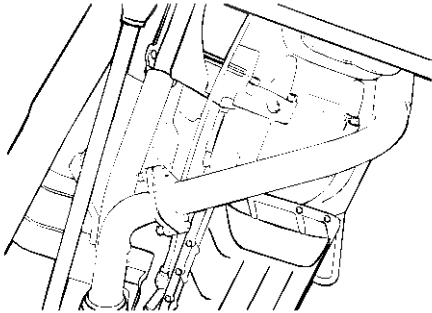
## REMOVAL

1. Remove the battery (-) terminal.
2. Remove the knob and the control lever.
3. Raise the vehicle.
4. Remove the transmission under cover.
5. Remove the clutch release cylinder.
6. Remove the front propeller shaft (4WD vehicle).



LMAC070A

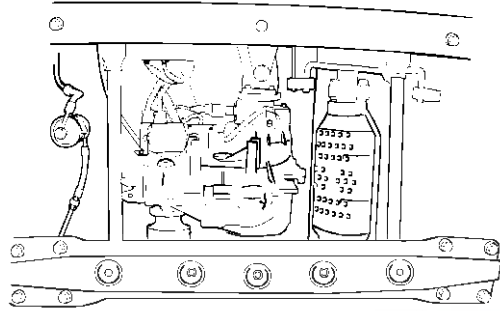
7. Remove the front muffler and the heater protector.



LMAC070B

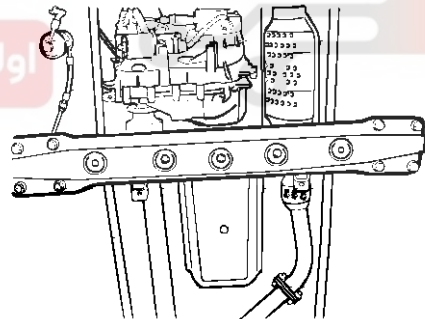
LMAC090B

8. Remove the transfer case connector (4WD vehicle).



LMAC070C

9. Remove the rear propeller shaft.
10. Support the transmission by the jack.
11. Remove the rear cross member.



LMAC070D

12. Remove the transmission with transfer case (4WD vehicle).

# Manual Transaxle System

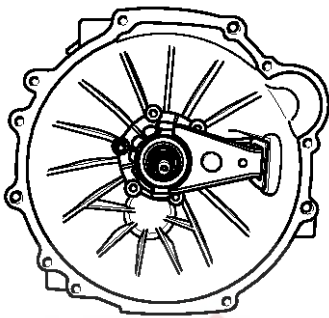
## MT-13

### DISASSEMBLY

#### PRECAUTION

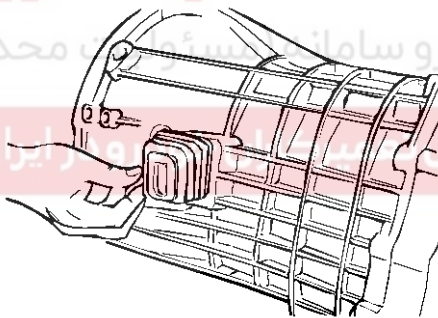
- Clean the transaxle exterior thoroughly with a steam cleaner or clear or cleaning solvent before disassembly.
- Clean the removed parts (except sealed bearings) and all sealing surfaces with cleaning solvent, and dry with compressed air.
- Clean out all holes and passages with compressed air, and verify that there are no obstructions.

1. Remove release fork assembly and bearing.



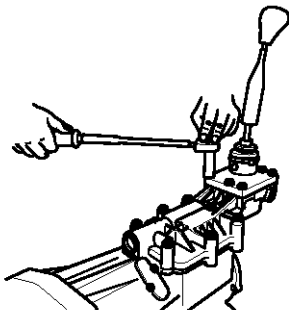
LMAC100A

2. Remove clutch release fork boot.



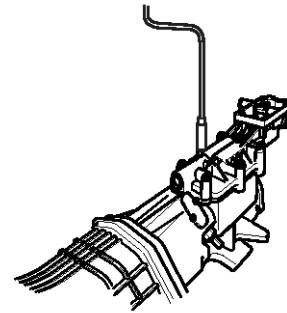
LMAC100B

3. Remove shift control lever assembly.



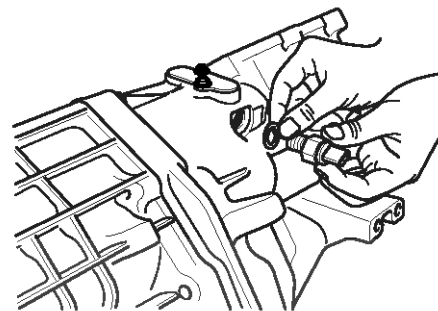
LMAC100C

4. Remove transmission shift control housing.



LMAC100D

5. Remove back up lamp switch.

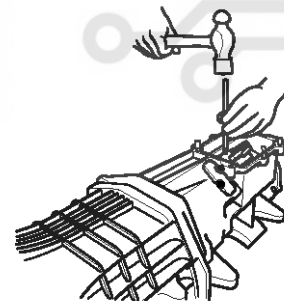


LMAC100E

6. Using the pin punch, remove shift rail roll pin.

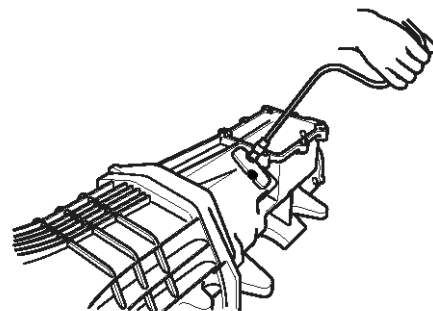
#### NOTICE

Do not use old roll pin again.



LMAC100F

7. With a magnet, remove springs and ball after loosening interlock puppet plate bolts.

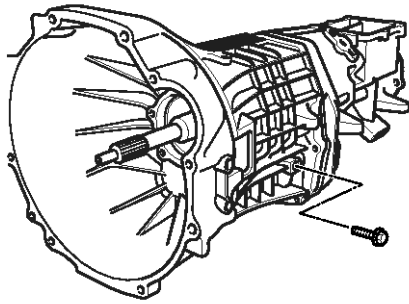


LMAC100G

## MT-14

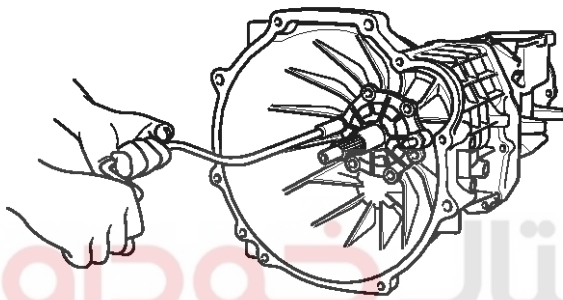
## Manual Transaxle System

8. Loose a reverse idle shaft bolt on the transmission case housing side.



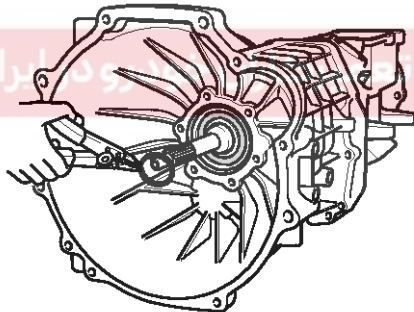
LMAC100H

9. Remove retainer after loosening the front retainer bolt.



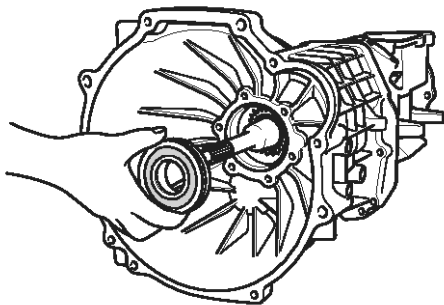
LMAC100I

10. Remove snap ring.



LMAC100J

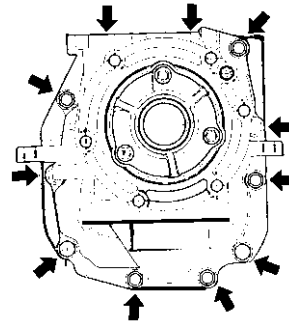
11. Remove front bearing.



LMAC100K

12. Remove transmission case housing after loosening

case housing bolt.

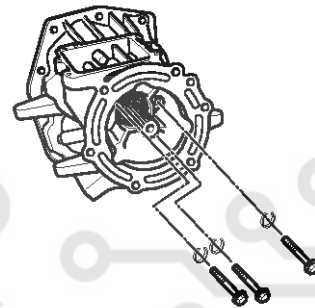


LMAC100L

13. Remove bearing retainer bolt.

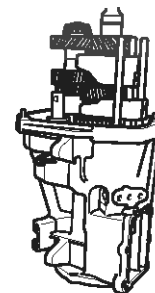
**NOTICE**

*In case of 4WD, remove bearing retainer bolt after loosening the transfer case bolt.*



LMAC100M

14. Remove reverse idle shaft after loosening a reverse idle shaft bolt on the adapter side.



LMAC100N

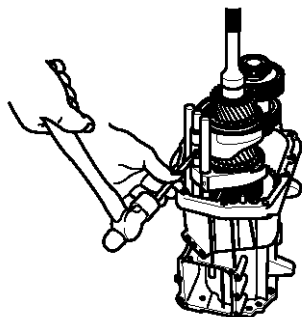
15. Using the pin punch, remove 3th shift fork pin.

**NOTICE**

*Do not use old roll pin again.*

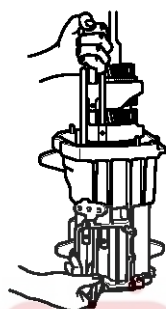
# Manual Transaxle System

## MT-15



LMAC100O

16. Remove 3rd shift rail after setting each gear to the neutral position.

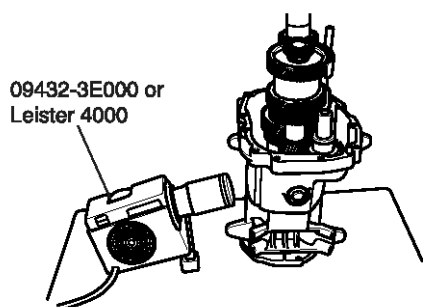


LMAC100P

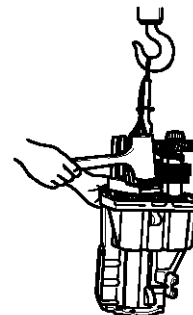
17. In order to disassemble main shaft assembly, counter shaft assembly and shift rail from adapter, heat double bearing installed part of adapter with electrical heater (Leister 4000) or SST (09432-3E000) as shown picture below.

### NOTICE

- Secure main shaft assembly, counter shaft assembly and shift rail with a strap or cord for ease of removal, and then hang them on the jack or suitable crane. Because it is dangerous to pick up them with hands.
- Heat the double bearing installed part of adapter at 400°C for about 4 min.
- In case of removing by force with press or hammer instead of electrical heater, it is possible to damage double bearing.



18. Disassemble it tapping adapter with rubber hammer lightly after heating.

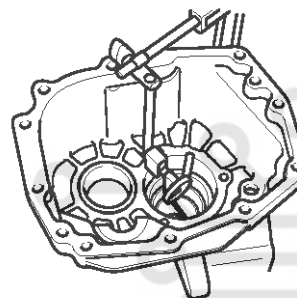


LMAC100Q

LMAC100R

### REASSEMBLY

- Measure the depth (A) between the bottom of the main shaft double bearing seat in the adapter and the sealing surface of the adapter.



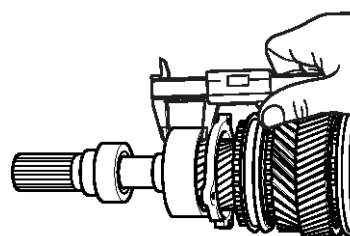
LMAC110A

- Measure the thickness (B) of main shaft double bearing.

Measured value: A-B

End play: 0~0.1mm (0-0.0039 in)

- Select a shim that is equal to the measured value considering the end play.



LMAC110B

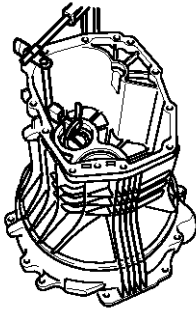
- Measure the depth (A) between the bottom of the counter shaft bearing race seat in the transmission case housing and the sealing surface of case



## MT-16

## Manual Transaxle System

housing.



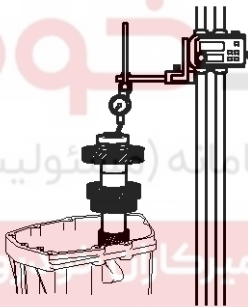
LMAC110C

5. Install the counter shaft and temporarily taper bearing outer race. Measure the height (B) between the sealing surface of adapter and the upper face of the bearing race (located on the counter shaft).

Measured value: A-B

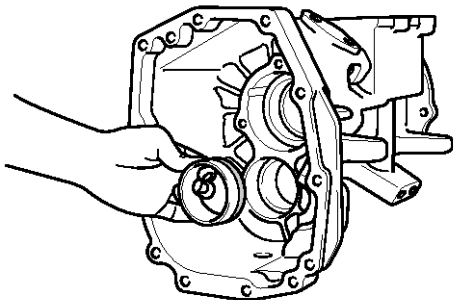
End play: 0.02~0.12mm (0.0008-0.0047 in)

Select a shim that is equal to the measured value considering the end play.



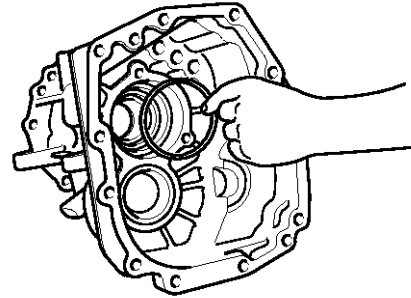
LMAC110D

6. Install the outer race and selected shim into the counter shaft taper bearing seat of adapter.



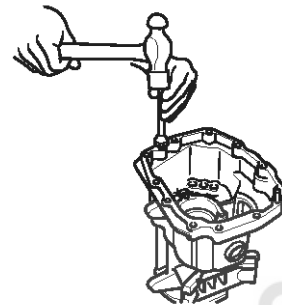
LMAC110E

7. Install the selected shim into the main shaft bearing seat.



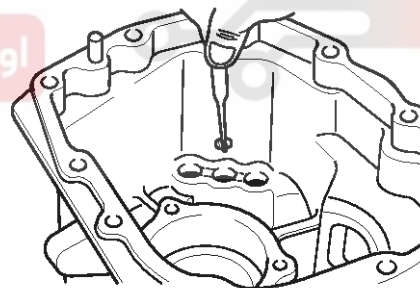
LMAC110F

8. Install two dowel pins into the grooves of the sealing surface of the adapter.



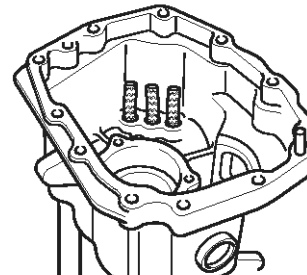
LMAC110G

9. Insert two interlock balls into the grooves in the rail holes.



LMAC110H

10. In order to secure two interlock balls, temporarily install flexible hoses into the rail holes.



LMAC110I

# Manual Transaxle System

## MT-17

11. Match up and secure the main shaft, counter shaft and 1st&2nd and 5th R shift fork assembly with a strap or cord for ease of installation. Then, hang them on the jack or suitable crane. Because it is dangerous to pick up them with hands.

### NOTICE

Do not install 3rd&4th shift fork and rail.



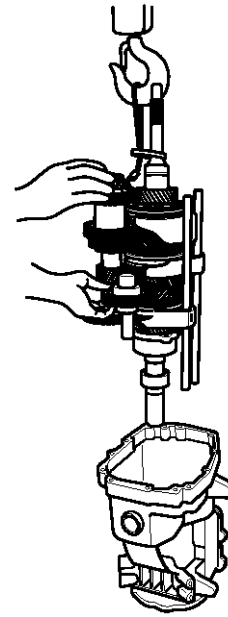
LMAC110J

12. Heat the main shaft double bearing seat part in adapter with electrical heater (Leister 4000) or SST (09432-3E000).

09432-3E000 or  
Leister 4000

LMAC110K

13. Install the main shaft, counter shaft and shift fork assembly into the adapter after removing two flexible hoses installed temporarily.



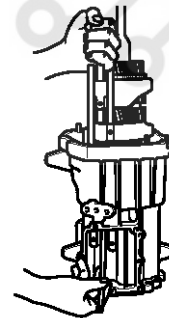
LMAC110L

14. Insert 3rd&4th shift rail into the rail hole.

### NOTICE

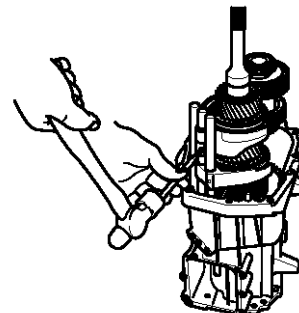
Make sure to set each gear to the neutral position before inserting.

Be careful not to fall out interlock ball into the adapter when inserting 3rd&4th shift rail.



LMAC110M

15. Using the pin punch, install 3rd&4th shift fork pin.



LMAC110N



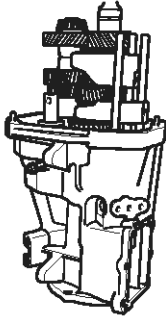
## MT-18

## Manual Transaxle System

16. Tighten reverse idle shaft bolt and washer on the adapter side.

Tightening torque:

43-55 N·m (430-550 kg·cm, 31-40 lb·ft)

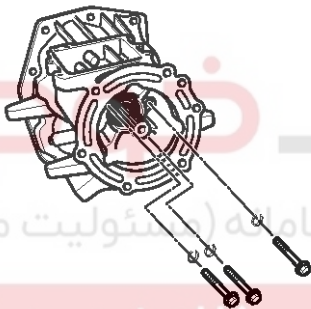


LMAC110O

17. Tighten three rear bearing retainer bolts with washer.

Tightening torque:

20-27 N·m (200-270 kg·cm, 14-15 lb·ft)

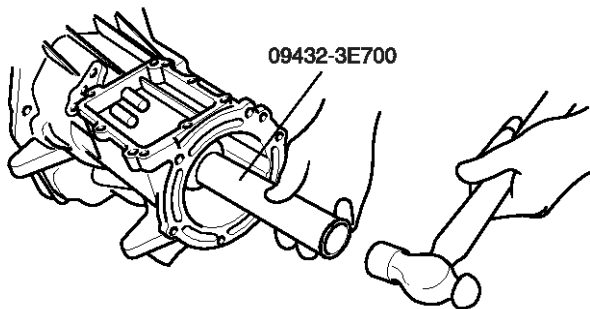


LMAC110P

18. Using SST(09432-3E700), install oil seal on the adapter housing.

### NOTICE

Apply the grease to the oil seal.

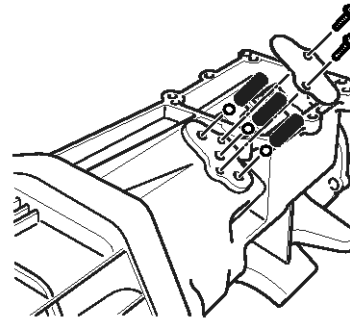


LMAC110Q

19. Install steel balls, poppet springs and interlock poppet plate.

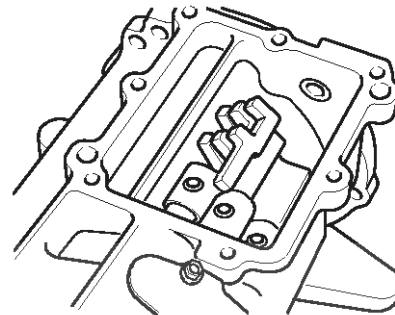
Tightening torque:

10-12 N·m (100-120 kg·cm, 7-9 lb·ft)



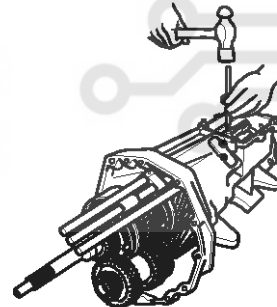
LMAC110R

20. Install control lugs in the end of shift control rails.



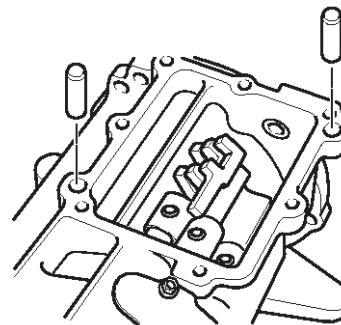
LMAC110S

21. Insert new roll pins into the control lugs and shift rails.



LMAC110T

22. Insert two dowel pins into the grooves on the sealing surface of shift control housing in adapter.



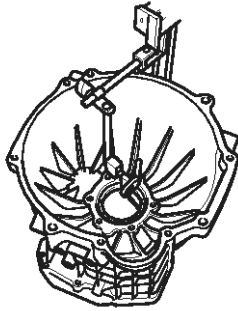
LMAC110U

23. Measure the depth (A) of front retainer bearing seat

# Manual Transaxle System

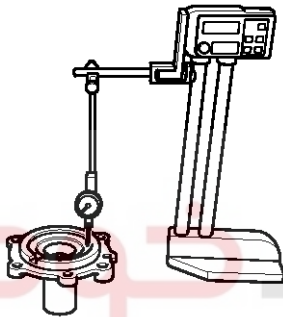
## MT-19

in the outside of the transmission case housing (clutch housing side).



LMAC110V

24. Measure the height (B) from contacting surface of front case retainer.



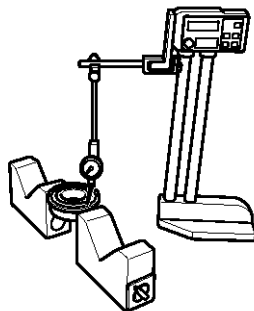
LMAC110W

25. Measure height (C) of retainer bearing from contacting surface of snap ring.

Measured value: A-B-C

End play: 0 ~ 0.1 mm (0-0.0039 in)

Select a shim that is equal to the measured value considering the end play.



LMAC110X

26. Install outer race and spacer on the counter shaft taper bearing.

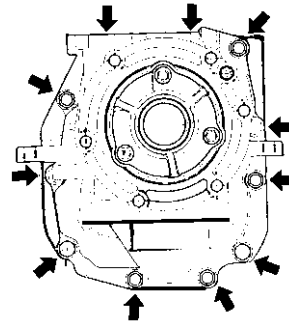
27. Install the transmission case housing onto the sealing surface of the adapter.

Tightening torque:

43-55 N·m (430-550 kg·cm, 31-40 lb·ft)

### NOTICE

Apply sealant to the sealing surface of adapter housing.

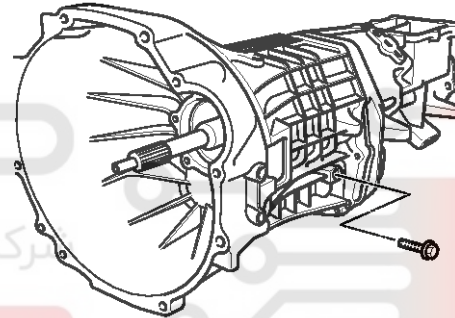


LMAC110Y

28. Install reverse idle shaft bolt on the case housing side.

Tightening torque:

43-55 N·m (430-550 kg·cm, 31-40 lb·ft)

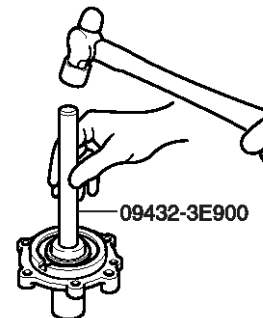


LMAC110Z

29. Using SST (09432-3E900), install the front retainer oil seal.

### NOTICE

Apply grease to the oil seal.

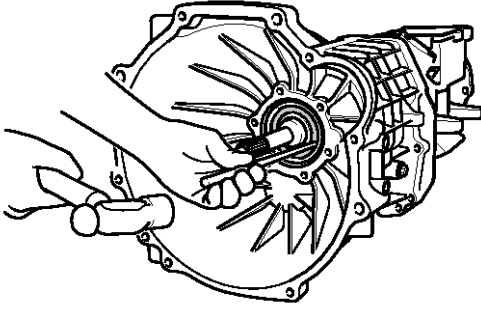


LMAC111A

30. Install front bearing in the case housing.

## MT-20

## Manual Transaxle System

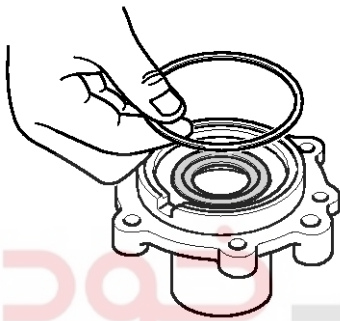


LMAC111B

31. Install the selected spacer on the front retainer.

**NOTICE**

*Apply grease to spacer.*



LMAC111C

32. Tighten the front retainer bolts.

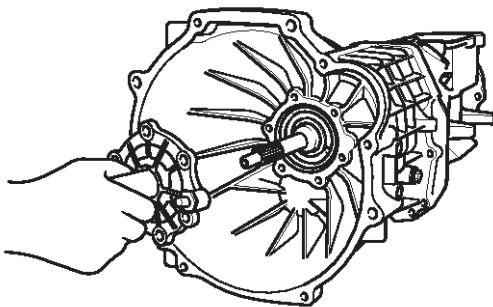
Tightening torque:

Flange bolt: 20-27 N·m (200-270 kg·cm, 14-20 lb·ft)

Fulcrum bolt: 30-42 N·m (300-420 kg·cm, 22-30 lb·ft)

**NOTICE**

*Apply grease to the contacting surface of the case housing.*

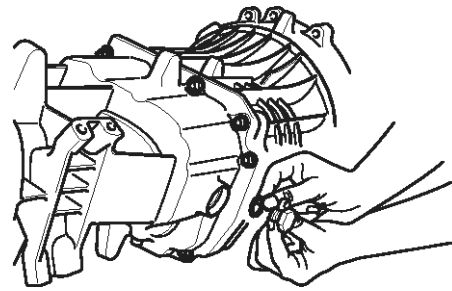


LMAC111D

33. Tighten oil drain plug and new washer.

Tightening torque:

60-65 N·m (600-650 kg·cm, 43-48 lb·ft)

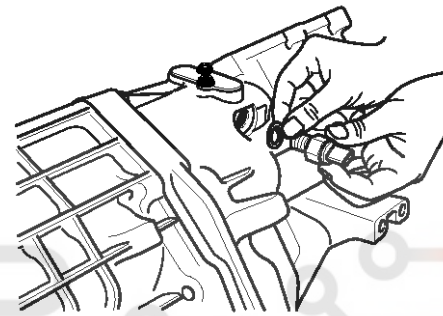


LMAC111E

34. Install back lamp switch and washer.

Tightening torque:

30-35 N·m (300-350 kg·cm, 22-25 lb·ft)



LMAC111G

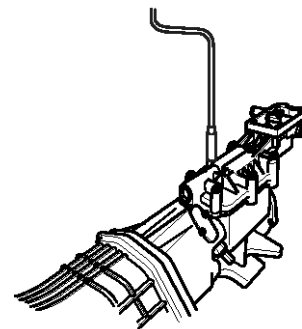
35. Install shift control case on the adapter housing.

Tightening torque:

20-27 N·m (200-270 kg·cm, 14-20 lb·ft)

**NOTICE**

*Apply sealant to the sealing surface of the adapter housing.*



LMAC111H

36. Install shift control lever assembly.

Tightening torque:

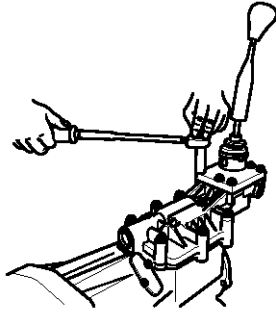
20-27 N·m (200-270 kg·cm, 14-20 lb·ft)

**NOTICE**

*Apply sealant to the sealing surface of shift control case.*

# Manual Transaxle System

## MT-21



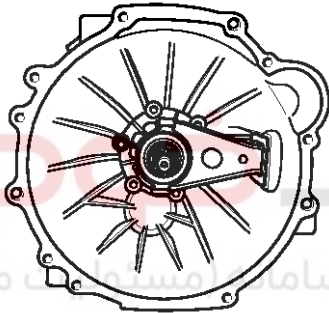
LMAC111I

37. Install release fork tube, release bearing and release fork.

### NOTICE

*Apply grease to spread bearing sliding surface and holes of release fork.*

*Apply grease to bearing inner face and groove.*



LMAC111J



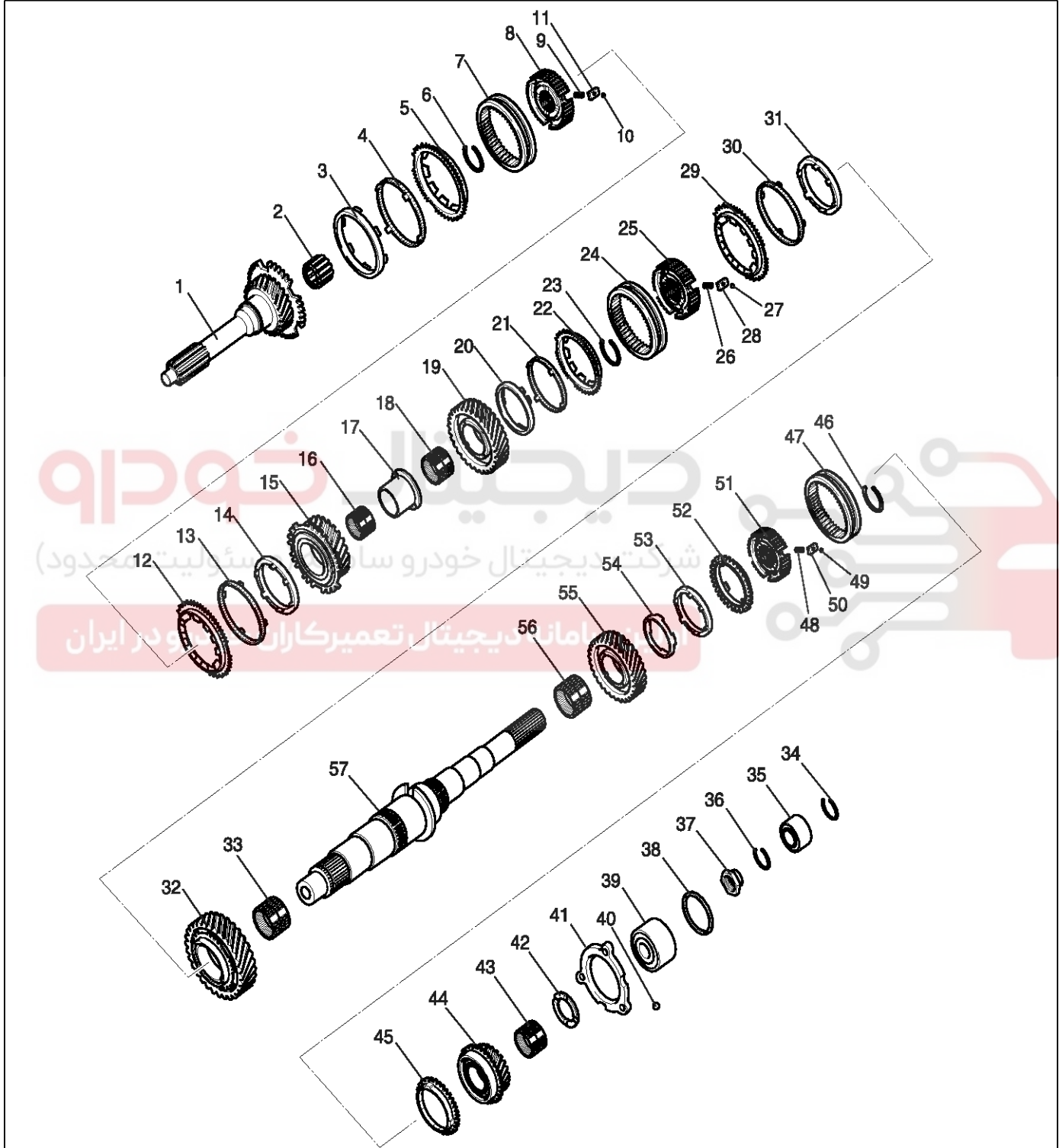
## MT-22

## Manual Transaxle System

### Manual Transaxle Gear System

#### Main Shaft

#### COMPONENTS



LMAE140A

# Manual Transaxle Gear System

## MT-23

- |                                   |  |
|-----------------------------------|--|
| 1. Main drive pinion gear         | 41. Rear bearing retainer              |
| 2. 4th speed gear needle bearing  | 42. Spacer                             |
| 3. 4th synchronizer inner ring    | 43. 5th speed gear needle bearing      |
| 4. 4th synchronizer cone (Double) | 44. 5th speed gear                     |
| 5. 4th synchronizer outer ring    | 45. 5th synchronizer ring (Single)     |
| 6. Snap ring                      | 46. Snap ring                          |
| 7. 3rd & 4th synchronizer sleeve  | 47. 5th & Reverse synchronizer sleeve  |
| 8. 3rd & 4th synchronizer hub     | 48. Synchronizer spring                |
| 9. Synchronizer spring            | 49. Steel ball                         |
| 10. Steel ball                    | 50. Synchronizer key                   |
| 11. Synchronizer key              | 51. 5th & Reverse synchronizer hub     |
| 12. 3rd synchronizer outer ring   | 52. Reverse synchronizer outer ring    |
| 13. 3rd synchronizer cone         | 53. Reverse synchronizer cone (Double) |
| 14. 3rd synchronizer inner ring   | 54. Reverse synchronizer inner ring    |
| 15. 3rd speed gear                | 55. Reverse gear                       |
| 16. 3rd speed gear needle bearing | 56. Reverse gear needle bearing        |
| 17. 3rd speed gear bearing sleeve | 57. Main shaft                         |
| 18. 2nd speed gear needle bearing |  |
| 19. 2nd speed gear                |  |
| 20. 2nd synchronizer inner ring   |  |
| 21. 2nd synchronizer cone         |  |
| 22. 2nd synchronizer outer ring   |  |
| 23. Snap ring                     |  |
| 24. 1st & 2nd synchronizer sleeve |  |
| 25. 1st & 2nd synchronizer hub    |  |
| 26. Synchronizer spring           |  |
| 27. Steel ball                    |  |
| 28. Synchronizer key              |  |
| 29. 1st synchronizer outer ring   |  |
| 30. 1st synchronizer cone         |  |
| 31. 1st synchronizer inner ring   |  |
| 32. 1st speed gear                |  |
| 33. 1st speed gear needle bearing |  |
| 34. Snap ring                     |  |
| 35. Rear ball bearing             |  |
| 36. Snap ring                     |  |
| 37. Locking nut                   |  |
| 38. Spacer                        |  |
| 39. Rear double ball bearing      |  |
| 40. Steel ball                    |  |

LMAE140B



## MT-24

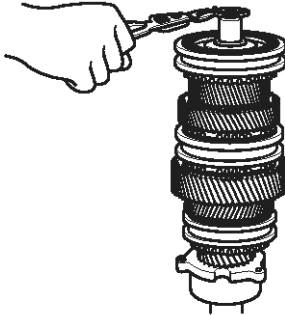
## Manual Transaxle System

## DISASSEMBLY

## NOTICE

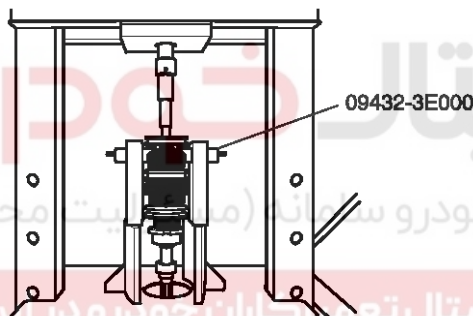
Use care to prevent the main shaft from falling when pressing fears and assemblies from it.

1. Remove 4th gear sleeve snap ring.



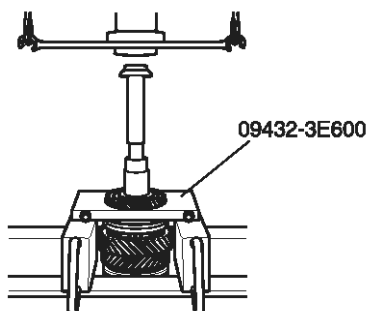
LMAC150A

2. Using SST(09432-3E000), remove 3rd&4th synchronizer hub, sleeve, 3rd speed gear and synchronizer ring (3rd).



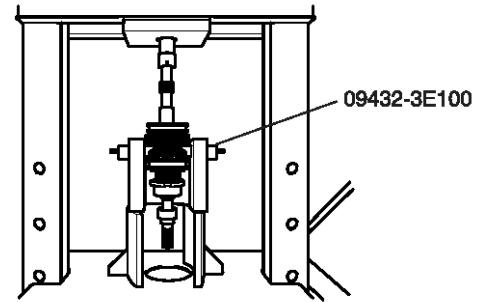
LMAC150B

3. Remove 3rd speed gear needle bearing.
4. Using SST(09432-3E600), remove 2nd gear and 3rd speed gear bearing sleeve.



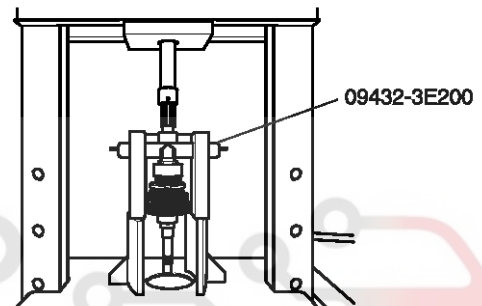
LMAC150C

5. Remove synchronizer ring (2ND).
6. Using SST(09432-3E100), remove 1st&2nd synchronizer hub and sleeve and 1st gear after removing snap ring.



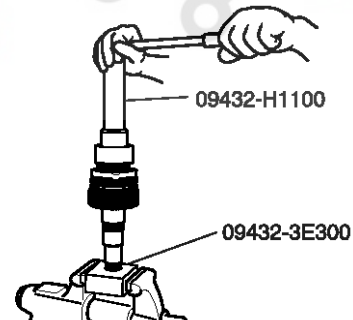
LMAC150D

7. Remove synchronizer ring (1st).
8. Remove 1st speed gear needle bearing.
9. Using SST(09432-3E200), remove main shaft rear ball bearing after removing snap ring.



LMAC150E

10. Using SST(09432-H1100/09432-3E300), remove lock nut after releasing calking of lock nut.

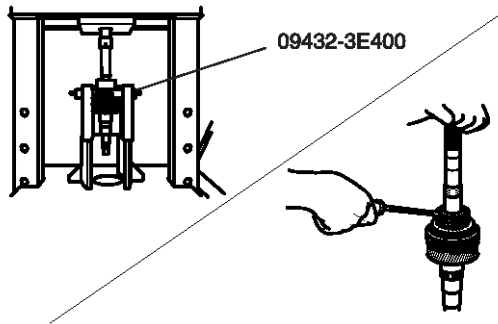


LMAC150F

11. Using SST(09432-3E400), remove space after removing double bearing.

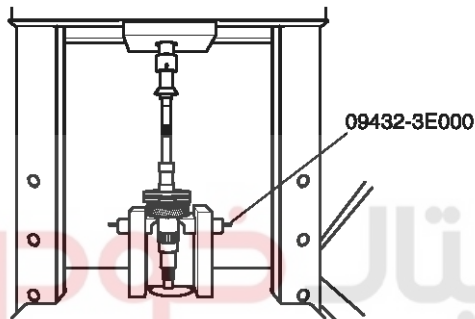
# Manual Transaxle Gear System

## MT-25



LMAC150G

12. Remove 5th speed gear, synchronizer ring (5th) and 5th speed gear needle bearing.
13. Using SST (09432-3E000), remove 5th&R synchronizer sleeve and hub and reverse gear.



LMAC150H

14. Remove synchronizer ring (Reverse).

### ASSEMBLY

#### NOTICE

Clean perfectly every part before assembly.

1. Install reverse needle bearing onto the main shaft.

#### NOTICE

Apply grease to reverse needle bearing.



LMAC160A

2. Install reverse gear and synchronizer ring (Reverse).

#### NOTICE

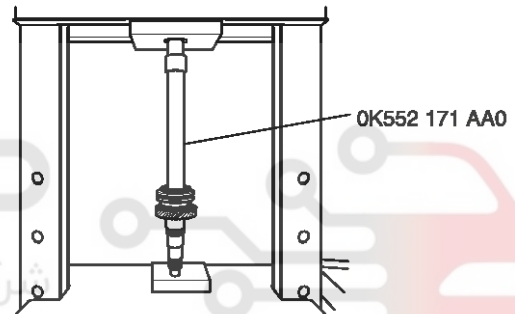
Check and separate synchronizer ring of each gear before assembly as shown below.

Synchronizer ring	1st/2nd	Triple cone
	3rd/4th	Double cone
	5th/Reverse	Single/double cone



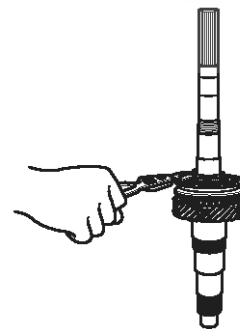
LMAC160B

3. Using SST (0K552 171 AA0), install 5th&R sleeve hub assembly.



LMAC160C

4. Install snap ring.



LMAC160D

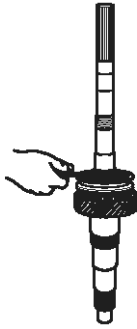
5. Measure the clearance between sleeve hub and snap ring with feeler gage after installing snap ring.

End play: 0.0~0.08mm (0-0.0031 in)



## MT-26

## Manual Transaxle System



LMAC160E

6. Install 5th needle bearing and 5th synchronizer ring (Single cone).

**NOTICE**

Apply transmission oil to needle bearing.



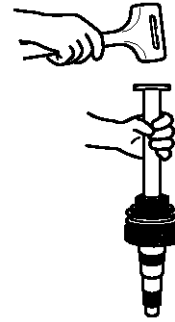
LMAC160F

7. Insert ball as shown below picture after installing 5th gear.



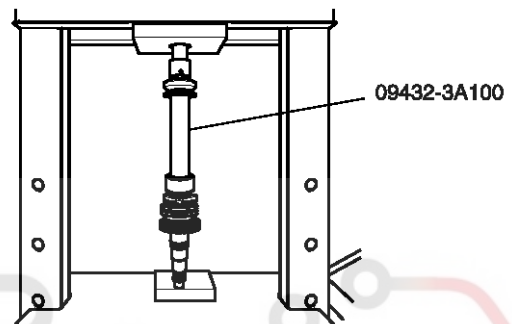
LMAC160G

8. Install space with suitable tool after applying transmission oil to space.



LMAC160H

9. Install the double bearing using SST(09432-3A100) after install double bearing support bracket with flat face up.

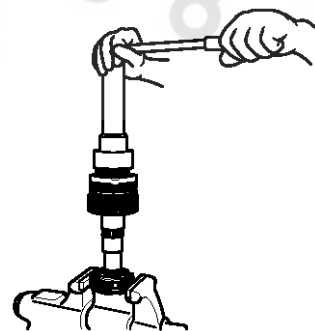


LMAC160I

10. Tighten hub lock nut.

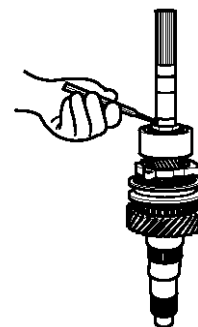
Tightening torque:

170-190N·m (1700-1900 kg·cm, 120-140 lb·ft)



LMAC160J

11. Calk one part of lock nut using suitable tool.

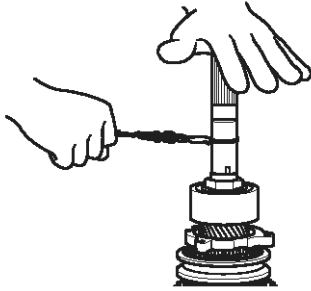


# Manual Transaxle Gear System

## MT-27

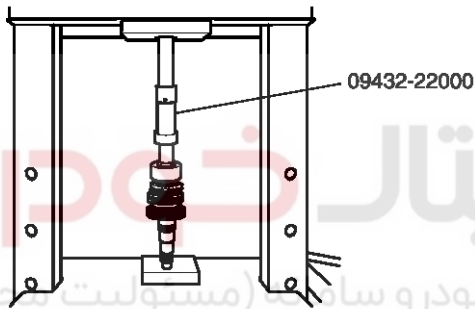
LMAC160K

12. Install snap ring under the rear ball bearing of main shaft.



LMAC160L

13. Using SST(09432-22000), install the rear ball bearing of main shaft, then install snap ring at the upper end of rear ball bearing.



LMAC160M

14. Rotate main shaft to reverse direction and install 1st needle bearing.

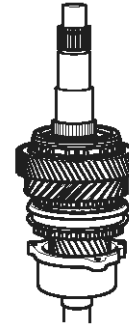
### NOTICE

Apply transmission oil to 1st needle bearing.



LMAC160N

15. Install 1st gear and synchronizer ring (1st).

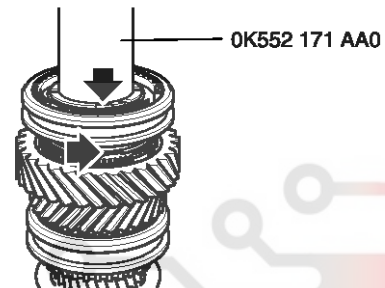


LMAC160O

16. Using SST(0K552 171 AA0), install 1st&2nd synchronizer sleeve and hub.

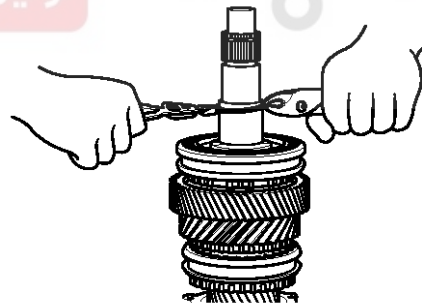
### NOTICE

Align hub groove and synchronizer ring groove in the side face as shown below picture when pressing.



LMAC160P

17. Install snap ring.



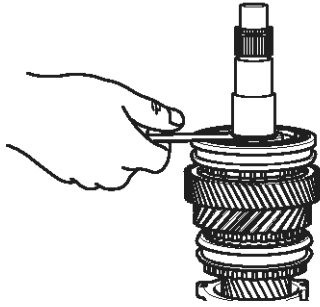
LMAC160Q

18. Measure the clearance between sleeve and snap ring using feeler gage after installing 1st&2nd sleeve and snap ring.

End play: 0.0-0.08mm (0-0.0031 in)

## MT-28

## Manual Transaxle System



LMAC160R

19. Install 2nd needle bearing and synchronizer ring (2nd).

**NOTICE**

Apply transmission oil to 2nd needle bearing.



LMAC160S

20. Install 2nd gear snap ring after installing snap ring guide. (09432-3E800)



09432-3E800

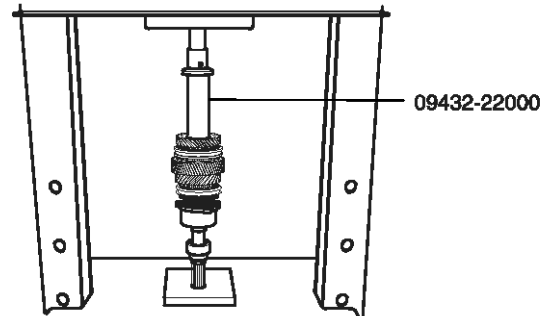
LMAC160T

21. Install 2nd gear onto the main shaft.



LMAC160U

22. Using SST(09432-22000), install 3rd speed gear bearing sleeve.

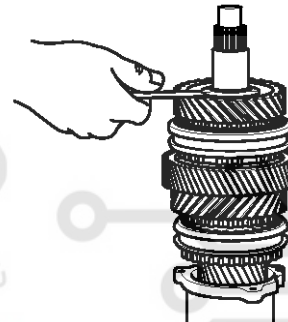


09432-22000

LMAC160V

23. Measure the clearance between 2nd gear and main shaft sleeve using feeler gage.

End play: 0.13~0.28mm (0.0051-0.0110 in)



LMAC160W

24. Install 3rd needle bearing.

**NOTICE**

Apply transmission oil to 3rd needle bearing.



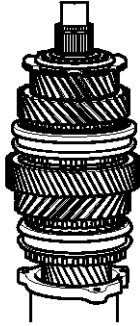
LMAC160X

25. Install 3rd gear onto the main shaft.

End play: 0.1-0.2mm (0.0039-0.0079 in)

# Manual Transaxle Gear System

## MT-29



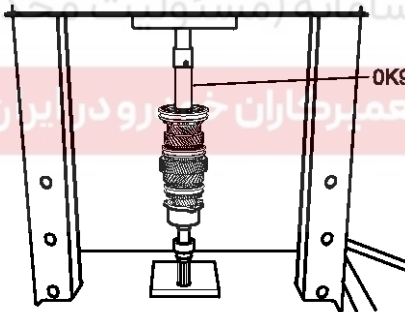
LMAC160Y

26. Install 3rd synchronizer ring (3rd).



LMAC160Z

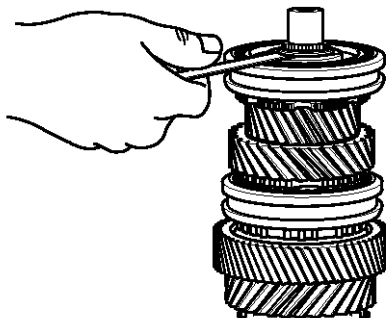
27. Using SST(0K9A1 190 004), install 3rd&4th synchronizer sleeve and hub.



LMAC161A

28. Measure the clearance between sleeve and snap ring using feeler gage after installing snap ring.

End play: 0.0~0.08mm (0-0.0031 in)



LMAC161B

29. Install 4th synchronizer ring (4th).



LMAC161C

30. Install 4th needle bearing.

### NOTICE

Apply transmission oil to 4th needle bearing.



LMAC161D

31. Install main drive pinion gear onto the main shaft.



LMAC161E

32. Measure the clearance of 1st and reverse gear.

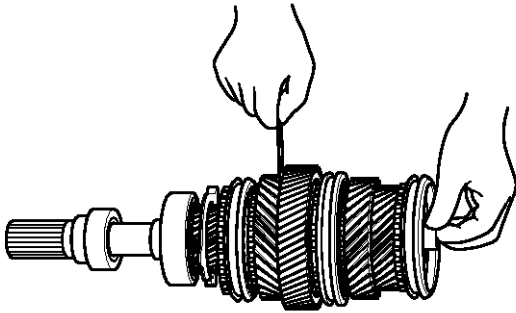
End play :

1st: 0.10~0.20mm (0.0039-0.0079 in)

R: 0.08~0.18mm (0.0031-0.0071 in)

## MT-30

## Manual Transaxle System



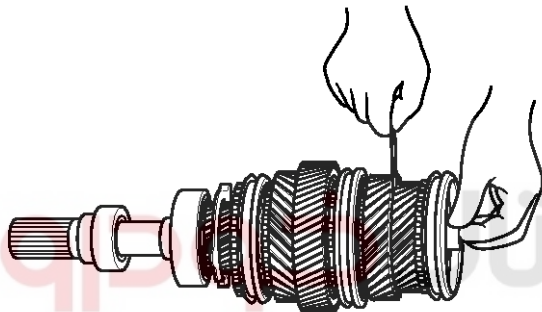
LMAC161F

33. Measure the clearance of 2nd and 3rd gear.

End play :

2nd: 0.1~0.25mm (0.0039-0.0098 in)

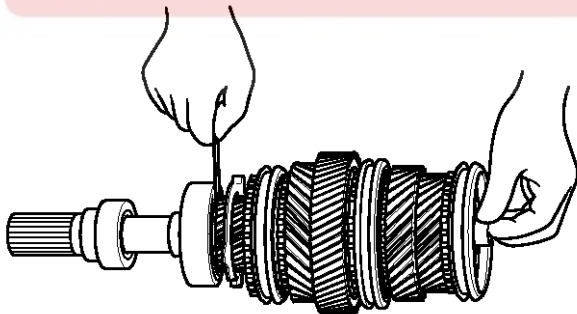
3rd: 0.1~0.2mm (0.0039-0.0079 in)



LMAC161G

34. Measure the clearance of 5th gear.

End play: 0.13~0.28mm (0.0051-0.0110 in)



LMAC161H

35. Measure the length of main shaft.

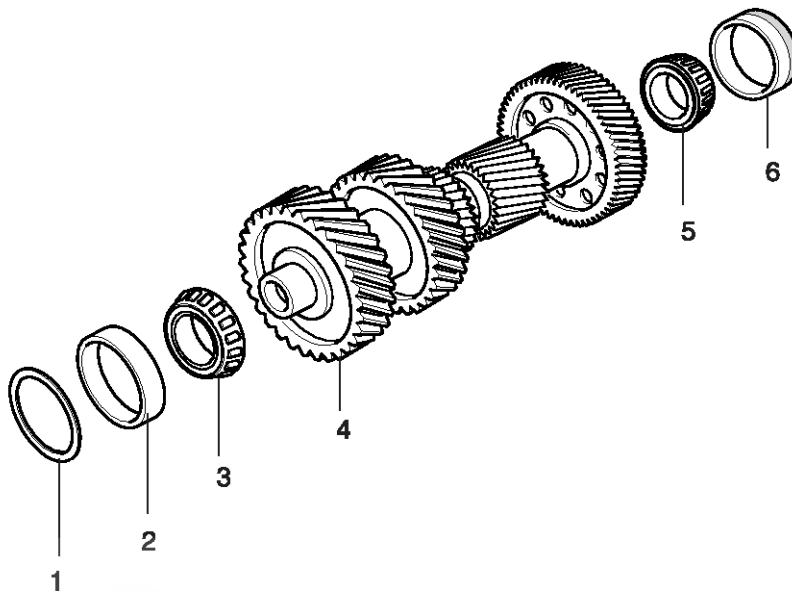
Main shaft length	4X2	558.6 - 559 mm (21.99 - 22.00 in)
	4X4	490 - 490.4 mm (19.29 - 19.30 in)

# Manual Transaxle Gear System

## MT-31

### Count Shaft

#### COMPONENTS

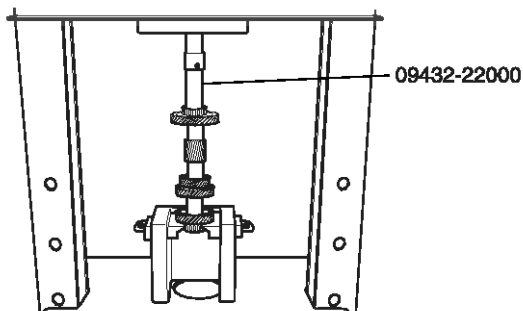


#### < Disassembly Notice >

- |                       |                       |
|-----------------------|-----------------------|
| 1. Spacer             | 4. Counter shaft      |
| 2. Bearing outer race | 5. Taper bearing      |
| 3. Taper bearing      | 6. Bearing outer race |

#### ASSEMBLY NOTICE

- Using SST(09432-22000), install taper bearing onto both side of counter shaft.



LMAC180A

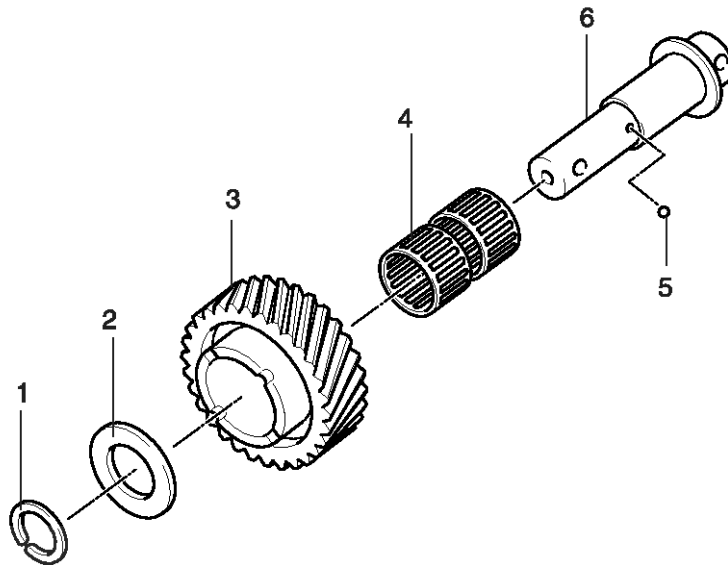
LMAC170A

## MT-32

## Manual Transaxle System

### Reverse Idler Gear Assembly

#### COMPONENTS



< Disassembly notice >

1. Snap ring
2. Spacer
3. Reverse idle gear

4. Needle bearing
5. Steel ball
6. Reverse idle shaft

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LMAC190A

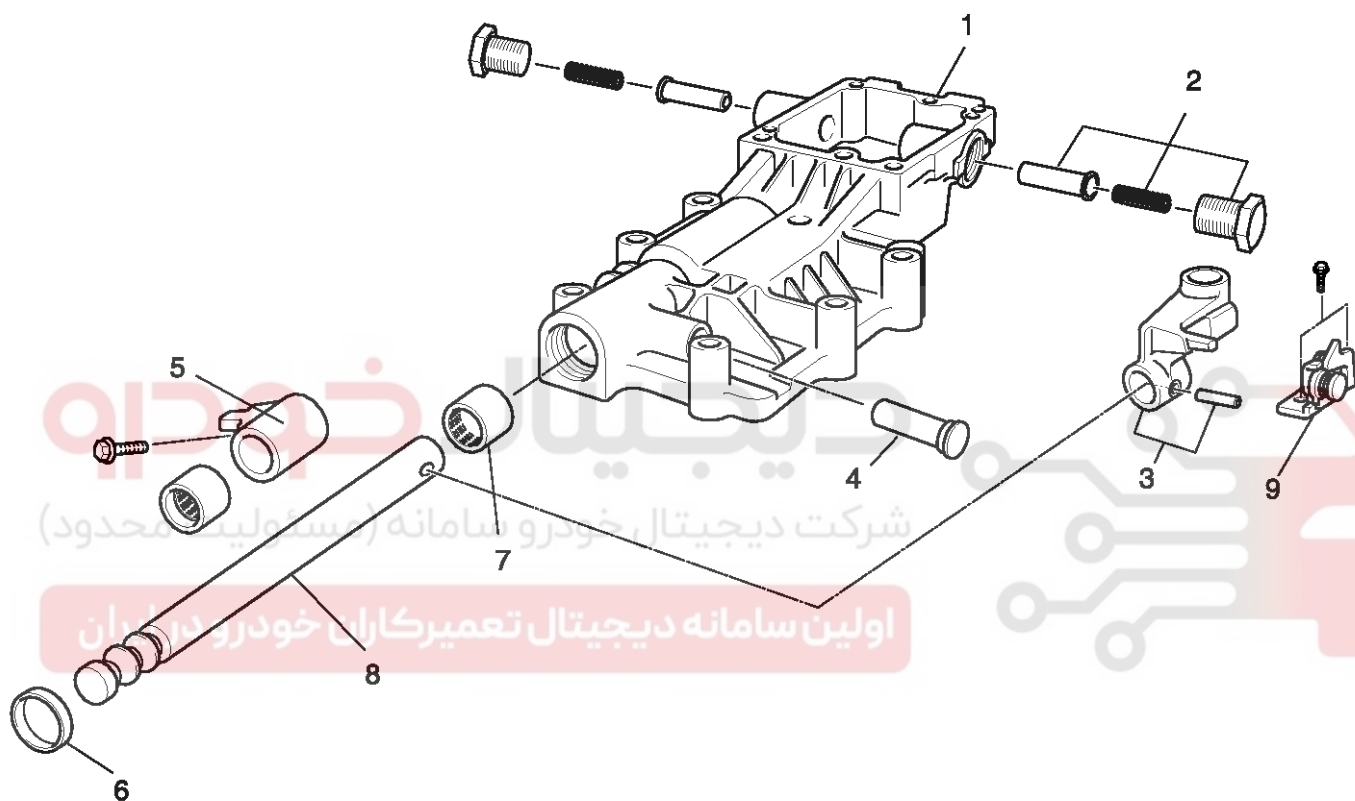
# Manual Transaxle Control System

**MT-33**

## Manual Transaxle Control System

### Manual Transaxle Shift Control

#### COMPONENTS



#### < Disassembly Notice >

- |                             |                             |
|-----------------------------|-----------------------------|
| 1. Shift control housing    | 6. Cap sealing              |
| 2. Plunger rolling assembly | 7. Linear ball bearing      |
| 3. Change shifter           | 8. Control shaft            |
| 4. Pin - Detent             | 9. Stopper bracket assembly |
| 5. Control finger           |                             |

LMAC120A

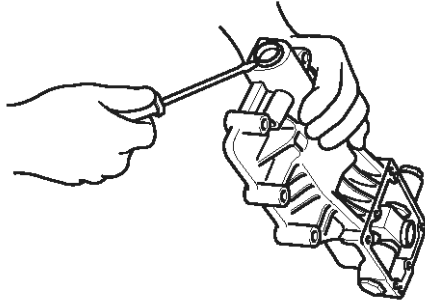


## MT-34

## Manual Transaxle System

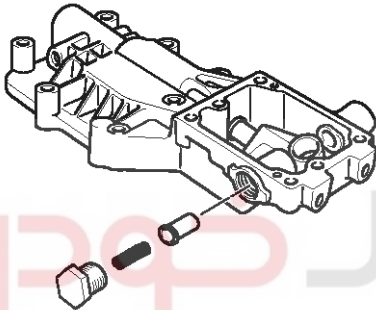
## DISASSEMBLY

1. Remove cap sealing.



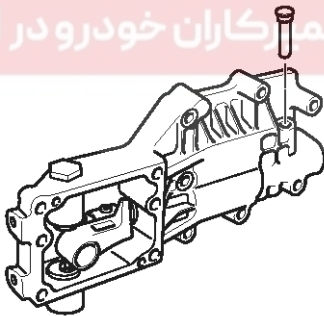
LMAC130A

2. Remove both of plunger rolling assembly in shift control housing.



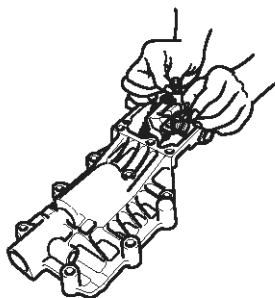
LMAC130B

3. Remove pin-detent and change shifter.



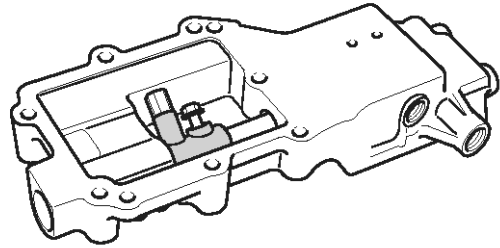
LMAC130C

4. Loosen the stopper bracket bolt.



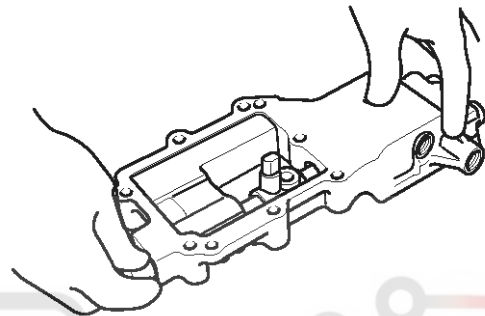
LMAC130D

5. Loosen the shift control finger bolt.



LMAC130E

6. Remove the control shaft.



LMAC130F