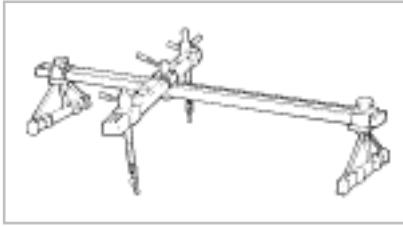


专用工具(M/T)

Tool (Number and Name)	Illustration	Use
09200-38001 发动机支撑架		拆卸及安装变速器总成

故障诊断(M/T)

Symptom	Probable cause	Remedy
振动,噪音	发动机或变速器支架松动 齿轮轴向间隙过大 齿轮磨损或损坏 润滑油变质 润滑油不足 发动机怠速不稳	拧紧 调整端隙 更换 更换规定齿轮油 加油 调怠速
漏油	油封或O形环损坏	更换油封或O形环
换挡困难	操纵拉线损坏 同步环与齿轮锥面啮合不良或磨损 同步器弹簧过度疲劳 齿轮油等级不对	更换操纵拉线 修理或更换 更换同步器弹簧 更换指定齿轮油
易脱档	分离叉磨损或菌形弹簧折断 同步器鼓与接合套间隙过大	更换分离叉或菌形弹簧 更换同步器齿鼓与接合套

PROBLEM CHART (M/T)

技术参数 (M/T)

Model	M5GF1		M5GF1-1
型式	5个前进档,1个倒档		
传动比	2.0 DOHC	2.4 DOHC	2.7 V6
1档	3.636	3.455	3.231
2档	2.056	1.947	
3档	1.296	1.296	
4档	0.943	0.943	
5档	0.775	0.775	
倒档	3.455	3.455	
主减速比	4.063	3.882	4.063

维修标准

Item	Standard value
差速器侧轴承端隙	0.05T ~ 0.10T (0.0019T ~ 0.0039T) mm (in.)
差速器齿轮啮合间隙	0.025L ~ 0.150L (0.00095L ~ 0.0057L) mm (in.)
前输入轴轴承卡簧端隙	0.01L ~ 0.12L (0.00038L ~ 0.0045L) mm (in.)
后输入轴轴承卡簧端隙	0.01L ~ 0.12L (0.00038L ~ 0.0045L) mm (in.)
前输出轴轴承卡簧端隙	0.01L ~ 0.12L (0.00038L ~ 0.0045L) mm (in.)
后输出轴轴承卡簧端隙	0.01L ~ 0.09L (0.00038L ~ 0.00342L) mm (in.)
5档输入齿轮卡簧端隙	0.01L ~ 0.05L (0.00038L ~ 0.0019L) mm (in.)
3档输出齿轮卡簧端隙	0.01L ~ 0.05L (0.00038L ~ 0.0019L) mm (in.)

规定扭矩 (M/T)

Item	Nm	kg·cm	lb·ft
分离轴承套螺栓	5 ~ 8	50 ~ 80	4 ~ 6
分离叉轴安装螺母	27 ~ 40	270 ~ 400	20 ~ 29
变速杆	20 ~ 27	200 ~ 270	15 ~ 20

放油塞	30 ~35	300 ~ 350	22 ~ 26
提动球节	35 ~ 42	350 ~ 420	26 ~ 31
离合器壳与变速器壳安装螺栓	35 ~ 42	350 ~ 420	26 ~ 31
车速表从动齿轮螺栓	4 ~ 6	40 ~ 60	3 ~ 4
倒档惰轮螺栓	43 ~ 55	430 ~ 550	32 ~ 40
侧盖螺栓	10 ~ 12	100 ~ 120	7 ~ 8
换档拉线支架螺栓	20 ~ 27	200 ~ 270	15 ~ 20
分泵总成固定螺栓	15 ~ 22	150 ~ 220	11 ~ 16
变速杆支架	9 ~ 14	90 ~ 140	7 ~ 10
前支架与副车架螺栓	60 ~ 80	600 ~ 800	43 ~ 58
前支架中心螺栓与螺母	50 ~ 65	500 ~ 650	36 ~ 47
前支架与变速器螺栓	60 ~ 80	600 ~ 800	43 ~ 58
后支架与副车架螺栓	50 ~ 65	500 ~ 650	36 ~ 47
后支架中心螺栓与螺母	50 ~ 65	500 ~ 650	36 ~ 47
后支架与变速器螺栓	60 ~ 80	600 ~ 800	43 ~ 58
变速器副车架装配螺母	60 ~ 80	600 ~ 800	43 ~ 58
变速器支架螺栓	60 ~ 80	600 ~ 800	43 ~ 58
变速器支架中心螺栓	90 ~ 110	900 ~ 1100	65 ~ 80
前轴承座圈与止动体盖螺栓	15 ~ 22	150 ~ 220	10 ~ 16

润滑 (M/T)

Item	Recommended lubricant	Quantity
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变速器齿轮油	HYUNDAI原厂润滑油 MTF75W/90,API-GL4	2.1 (2.2, 1.8)
变速器输入轴花键	CASMOLY L9508	适量
变速器油封边缘	RETINAX AM, MOLYTEX GREASE EP-2	适量
变速器壳与离合器壳的定位面	三元密封剂1216	适量
变速器壳与后壳的定位面	三元密封剂1216	适量
轴承挡圈螺栓 (仅埋头螺栓)	三元密封剂1303	适量

检查及维修顺序

检查变速器油

检查各部位的漏油情况,并拆下车速传感器查看油量,如果油量不足,适当添加。

- 1.
- 2.
- 3.

更换变速器齿轮油

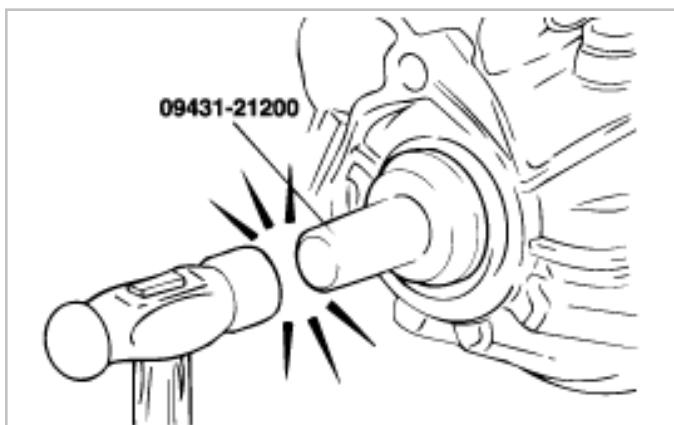
使用现代原厂齿轮油 MTF SAE 75W/90 (API-GL-4)。

1. 将车辆停在平坦地面上拉紧驻车制动器,并松开放油塞排出变速器油。
2. 换上新垫片拧紧放油塞。
3. 拆下加注孔螺塞,添加变速器油。

更换半轴油封

1. 从变速器中拆下半轴。
2. 用平口螺丝刀拆卸油封。
3. 用专用工具 (09431-21200) 安装半轴油封。
4. 油封上涂适量齿轮油。

变速器齿轮油 : 北京现代纯正品齿轮油SAE 75W/90或API GL-4。



SERVICE ADJUSTMENT PROCEDURES

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 and check level with finger.
2. Oil level must be up to fill the hole, add oil until it runs over. Then reinstall plug.
3. Replace the oil so that the transaxle gear oil is not dirty, and so that it is of a suitable viscosity.

REPLACEMENT OF TRANSAXLE GEAR OIL

Use HYUNDAI GENUINE PARTS MTF SAE 75W/90 (API GL-4).

1. With the vehicle parked on a level surface, remove the drain plug and drain the transaxle oil.
2. Replace the gasket with a new one and install the drain plug.
3. Add new oil through the filler plug and, fill it to just below the plug opening.

Standard value

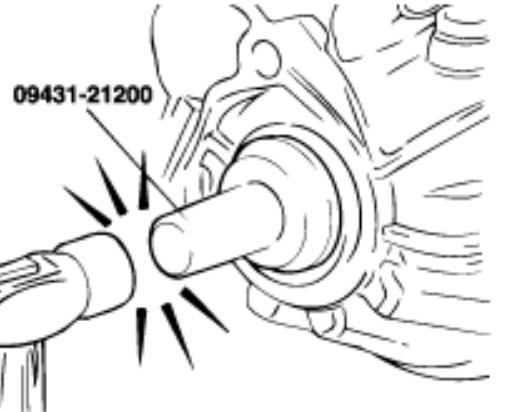
Transaxle oil total capacity :

2.1 lit (2.2 U.S.qts., 1.8 imp.qts.)

DRIVE SHAFT OIL SEAL REPLACEMENT

1. Disconnect the drive shaft from the transaxle (Refer to "DS" group).
2. Using a flat-tip screwdriver, remove the oil seal.
3. Using the special tool (09431-21200), tap the drive shaft oil seal into the transaxle.
4. Apply a coating of gear oil to the oil seal.

Transaxle gear oil : HYUNDAI GENUINE PARTS MTF 75W/90 API GL-4. Disconnect the drive shaft from the transaxle (Refer to "DS" group).



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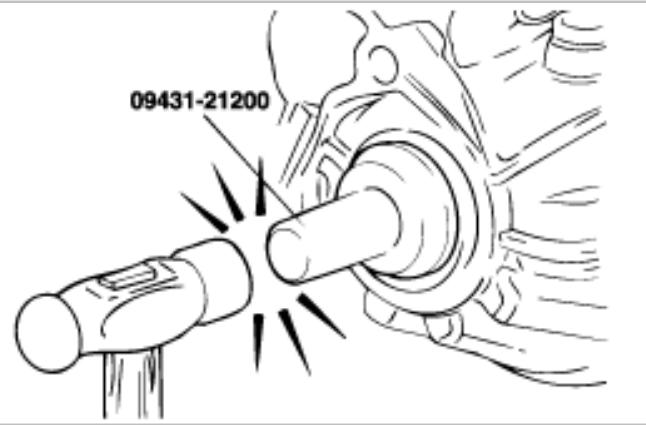
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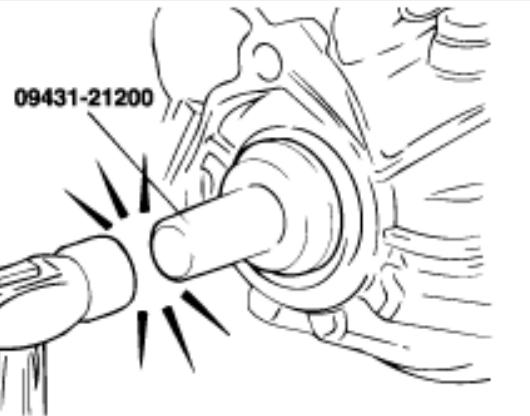
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Standard value

Transaxle oil total capacity :

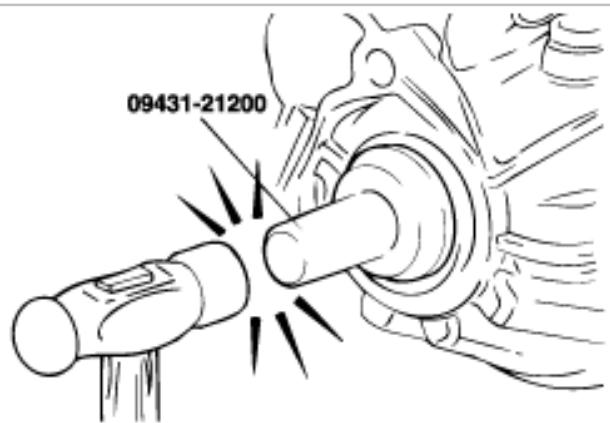
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DRIVE SHAFT OIL SEAL REPLACEMENT

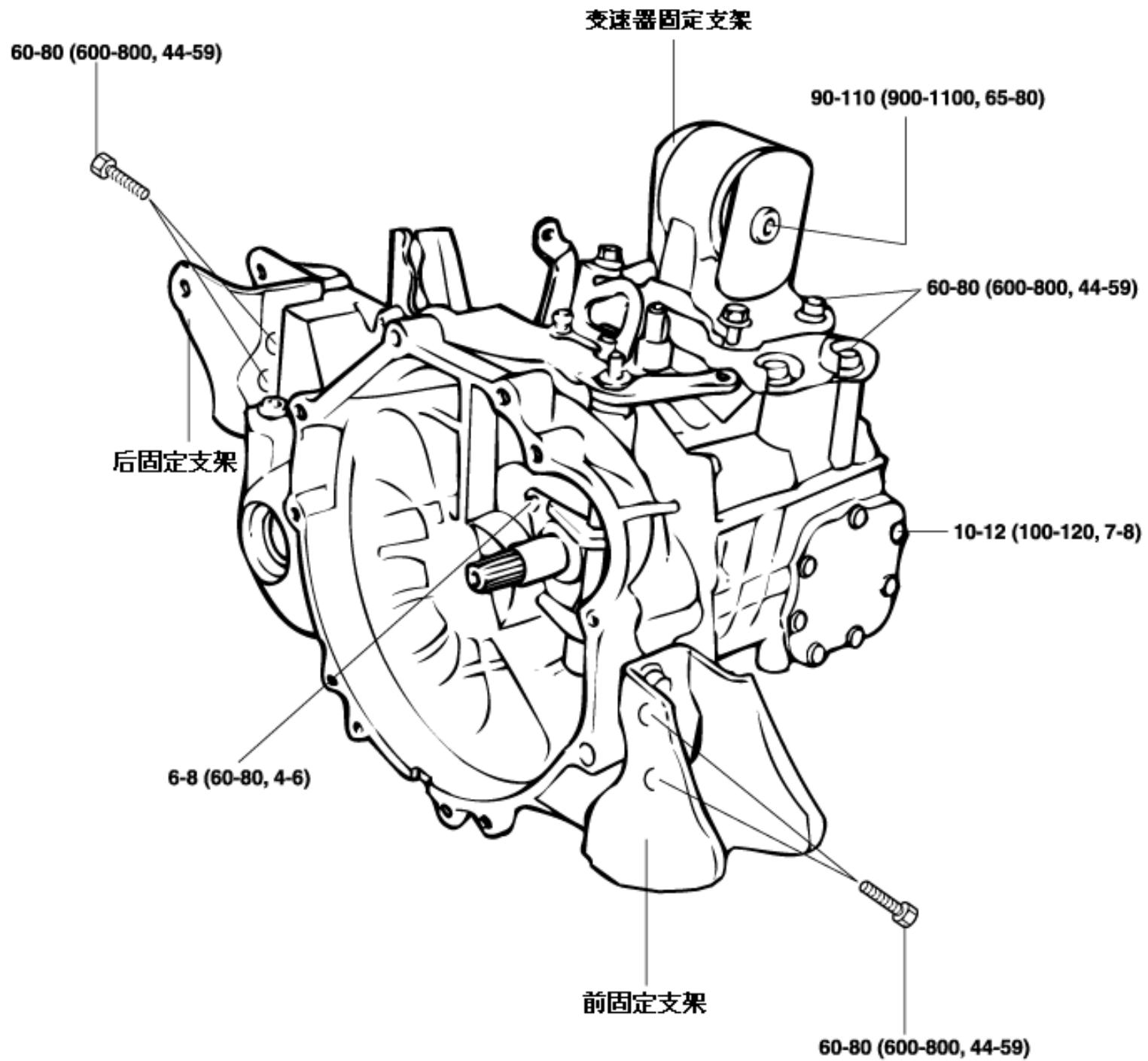
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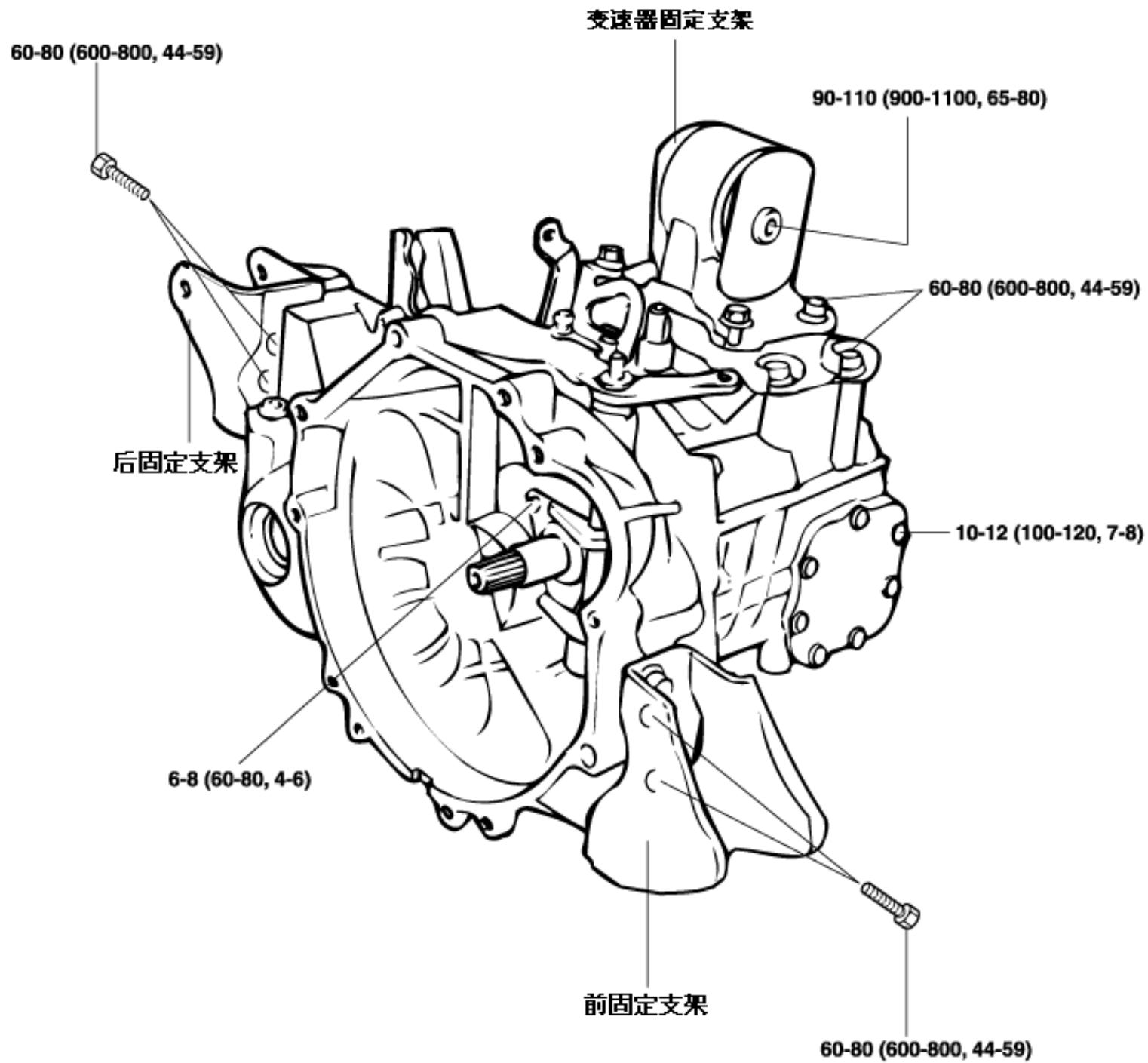
Transaxle gear oil : HYUNDAI GENUINE PARTS MTF 75W/90 API GL-4. Disconnect the drive shaft form the transaxle (Refer to "DS" group).



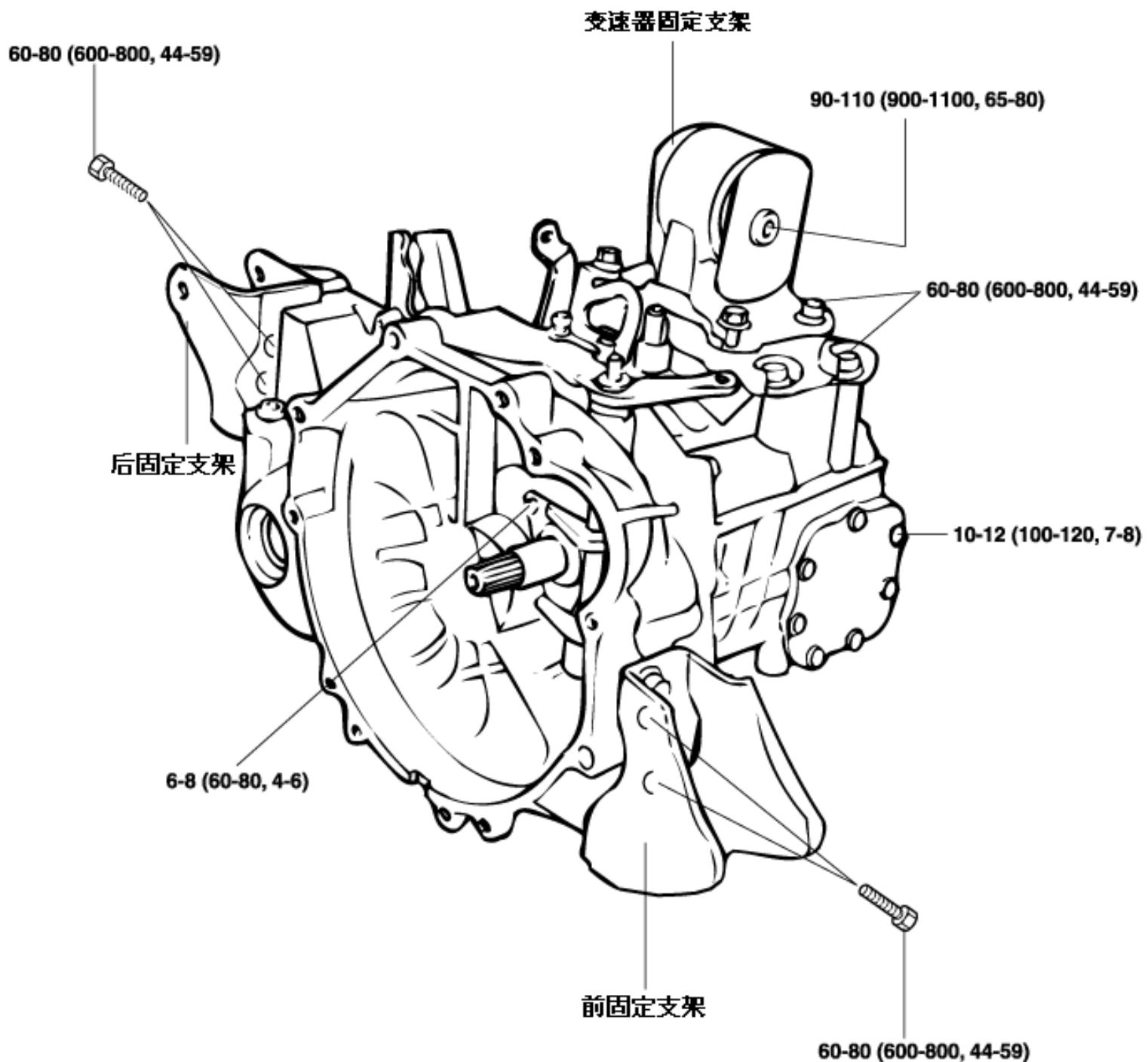
结构图

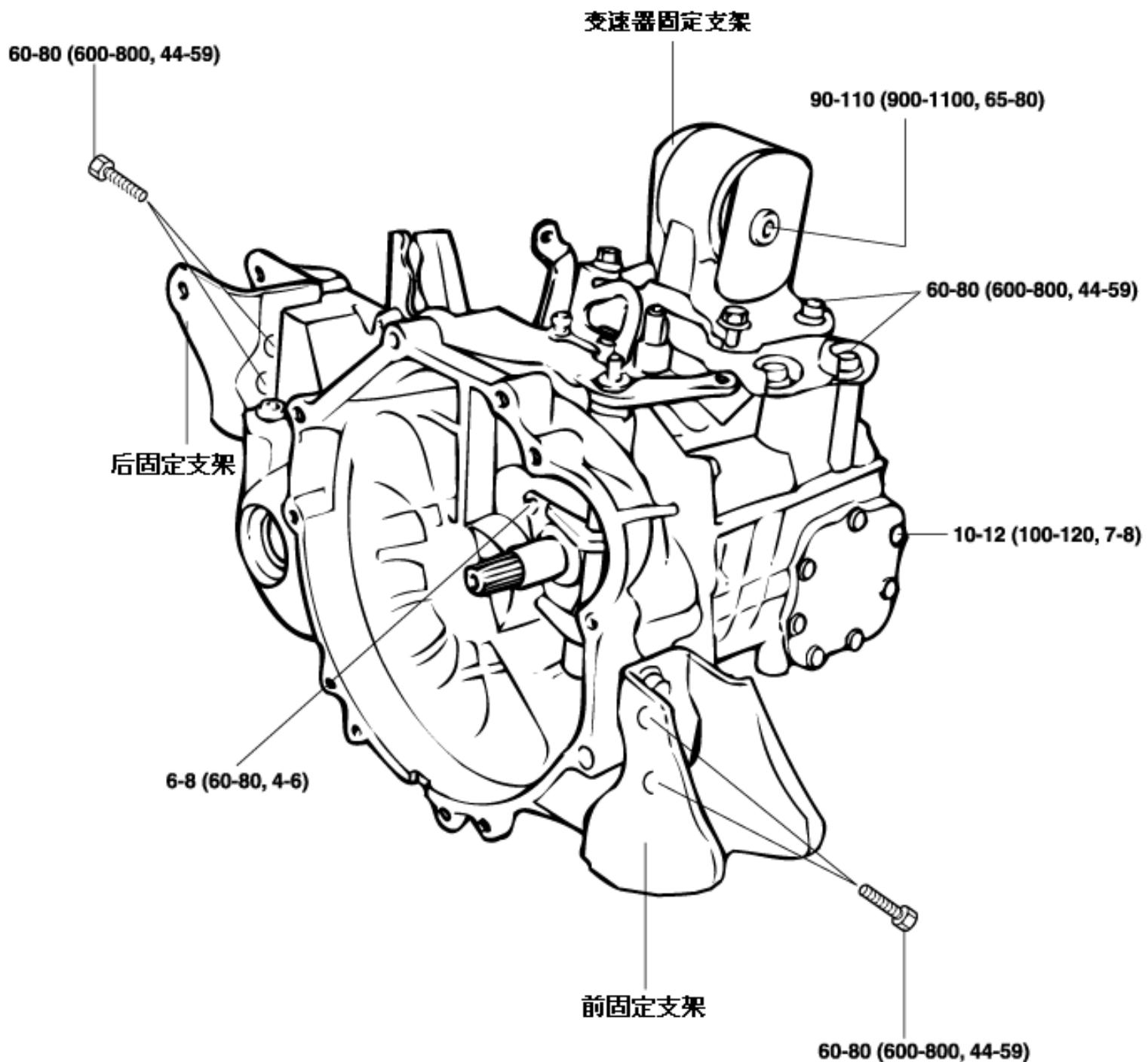


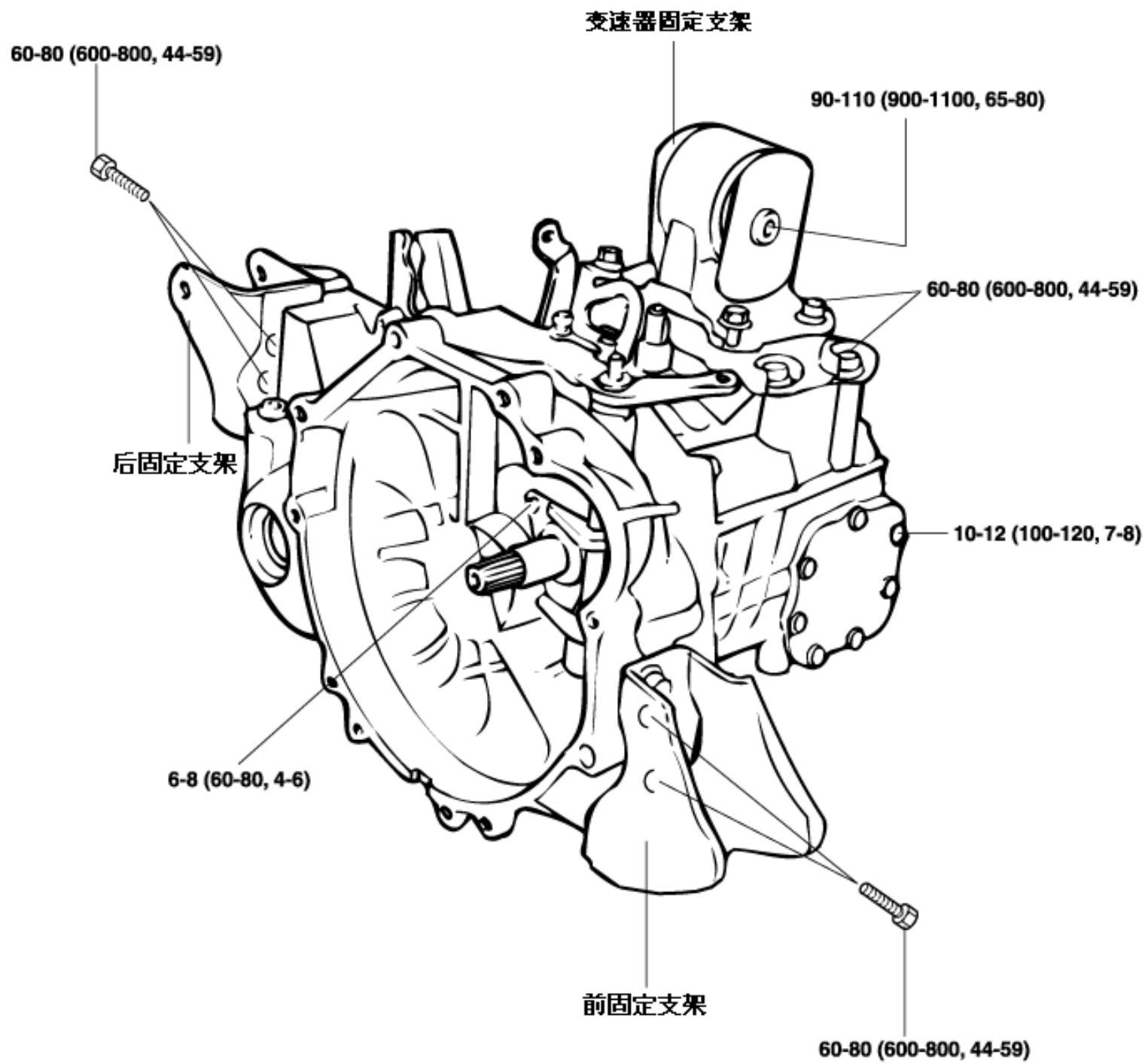
COMPONENTS



COMPONENTS

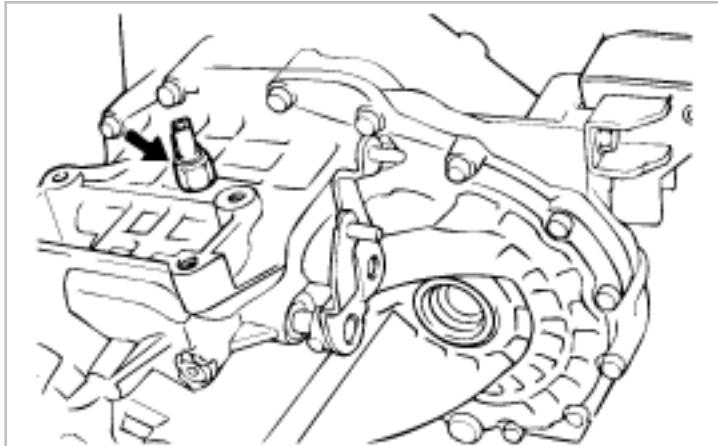




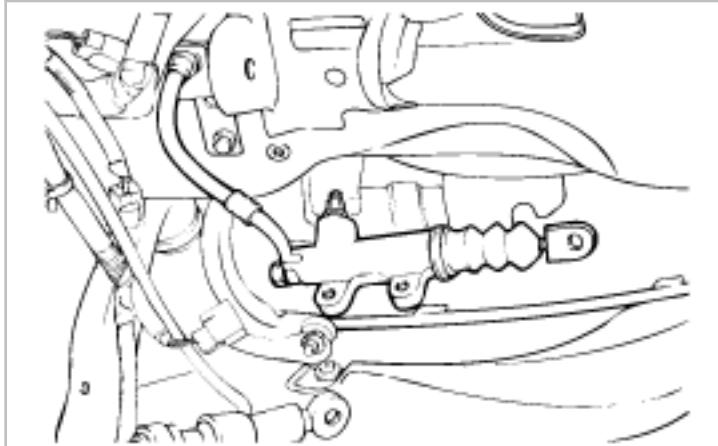


拆卸

1. 拆下蓄电池负极。
2. 拆下空气管。
3. 拆下空气滤清器。
4. 拆开倒车灯开关插头。

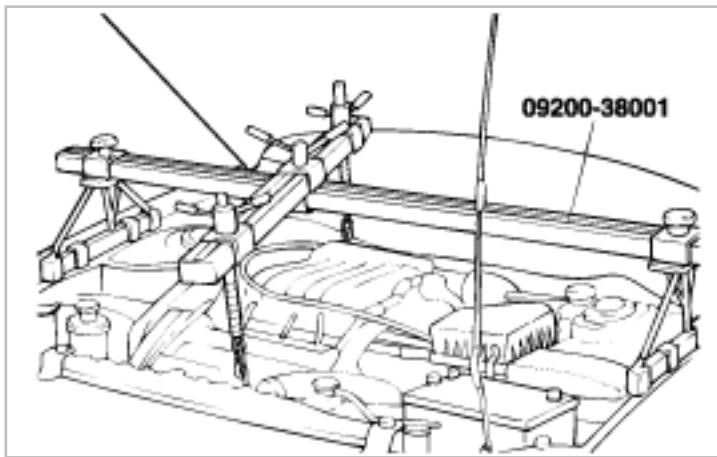


5. 拆开离合器油管和夹子。
6. 拆开离合器分泵。



7. 拆下车速表软轴。
8. 拆下变速杆和变速杆拉线。
9. 拆卸起动机装配螺栓,并拆下变速器总成的上端装配螺栓。

10. 用专用工具支撑发动机 (09200-38100) 。



11. 拆下变速器安装支架和橡胶缓冲垫。

12. 支撑车辆。

13. 拆下前轮胎。

14. 拧松放油塞排出变速器油。

15. 拆开转向横拉杆球头,下支臂球头和半轴。

16. 拆下变速器U形螺栓和回油软管装配螺栓。

17. 拆下前排气管。

18. 拆下发动机架装配螺栓,并拆开发动机架。

19. 拆卸变速器前止动支架。



20. 拆卸后侧支架。



21. 拆下变速器侧面装配螺栓。

22. 用千斤顶拆卸变速器总成。

參考

固定支架安装程序。

注意

1.发动机与变速器安装支架的拆解顺序：

2.固定支架安装程序。

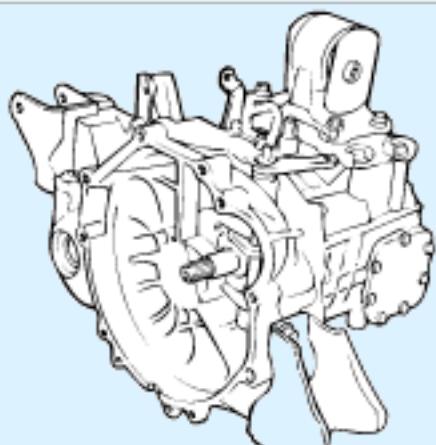
1)发动机支架。

2)变速器支架。

3)后支架。

4)前支架。

3.装配支架时,应避免橡胶缓冲体的损坏,如有损伤,怠速时产生振动。



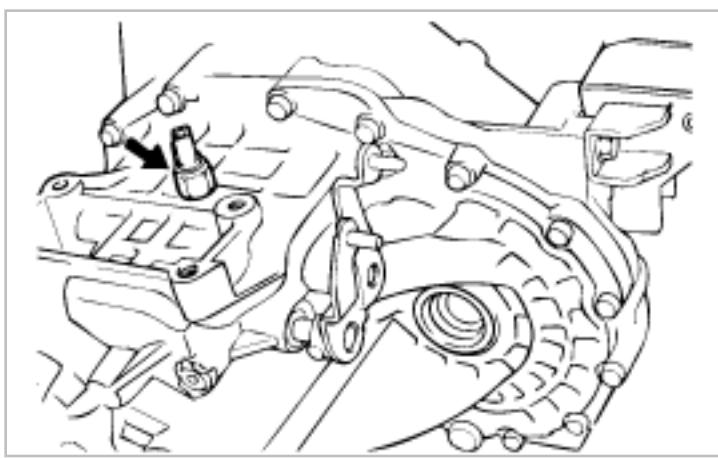
REMOVAL

1. Remove the battery (-) cable.

2. Remove the air duct.

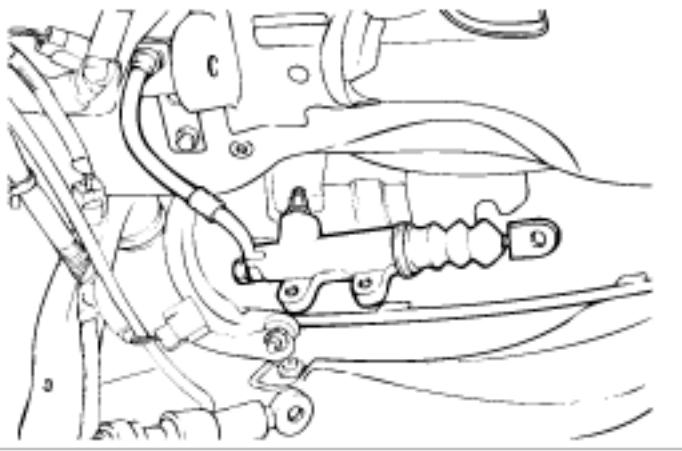
3. Remove the air cleaner and air flow hose assembly.

1. Disconnect the backup light switch connector.



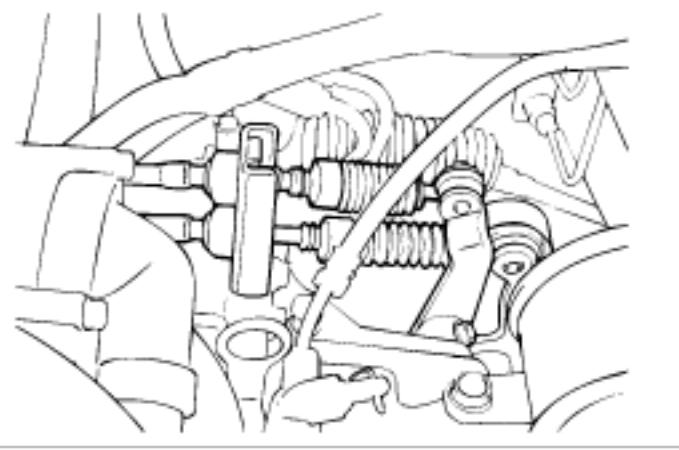
2. Disconnect the clutch tube and clip.

3. Remove the clutch release cylinder (Refer to "CH" Group).



1. Disconnect the speedometer sensor connector.

2. Remove the select cable and shift cable.



1. Remove the starter motor mounting bolts. And remove the upper connecting bolts of the transaxle assembly.

2. Attach to the engine hooks using special tool.

3. Remove the transaxle mounting bracket and insulator.



1. Lift up the vehicle.

2. Remove the front tire and the caliper.



1. Remove the drain plug and drain the transaxle gear oil.

2. Disconnect the tie rod end, lower arm ball joint and drive shaft. (Refer to "DS" Group).



1. Remove the gear box u-joint bolt and the return tube mounting bolts.

2. Remove the front muffler.

3. Remove the sub-frame mounting bolts and the sub-frame.



1. Remove the transaxle front roll stopper.



1. Remove the rear roll stopper bracket.



1. Remove the transaxle side mounting bolts.

2. Remove the transaxle assembly supporting by a jack.



参考

When supporting the transaxle assembly, make sure that the lifting force is applied to a wide area, not to a small localized area.

注意

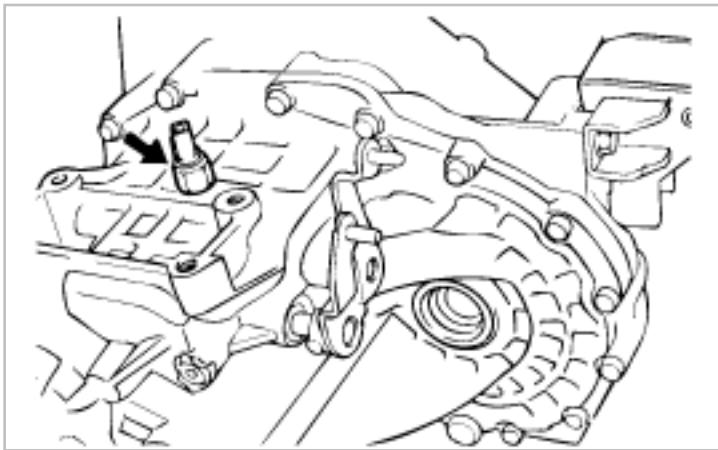
1. Engine and transaxle mounting insulators should be installed the specified torque.
2. Mounting bracket installation procedures.
 - Engine mounting bracket.
 - T/M mounting bracket.
 - Rear roll stopper mounting bracket.
 - Front roll stopper mounting bracket.
3. Especially, when installing front roll stopper mounting bracket, be careful not to crush the insulator. If crushed, idle vibration will be high.

REMOVAL

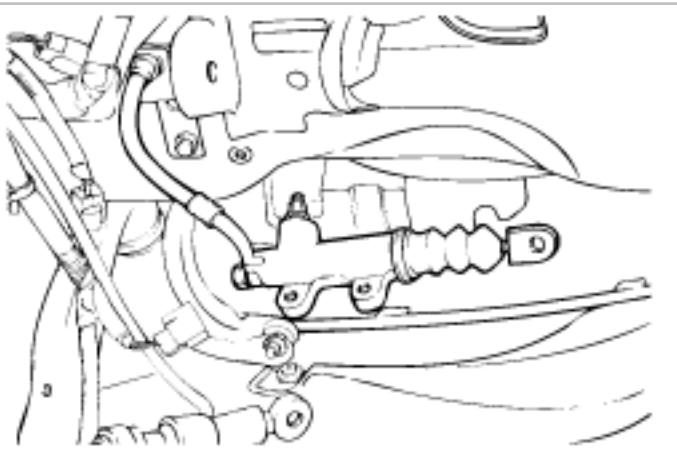
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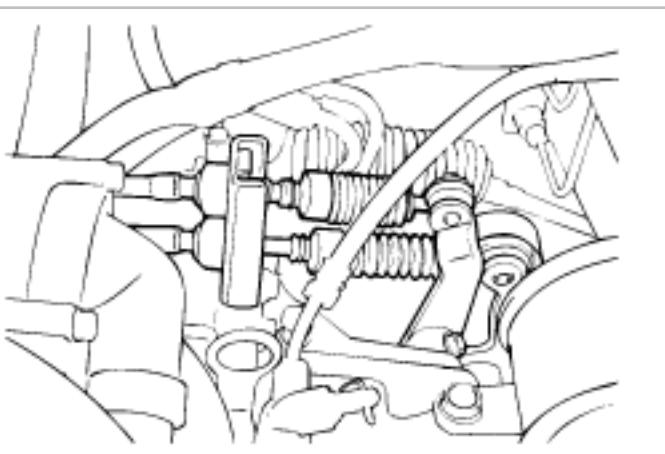
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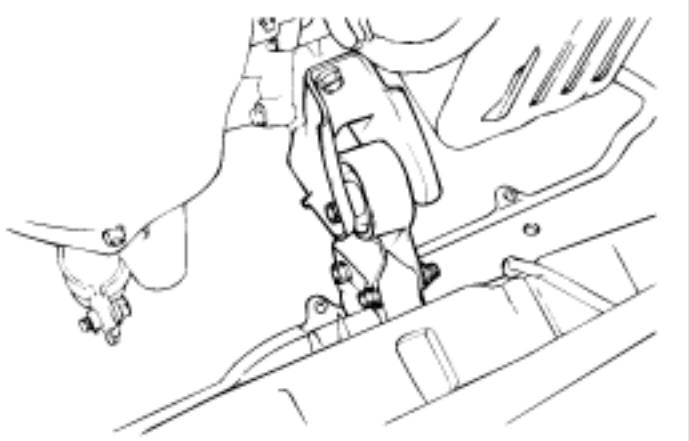
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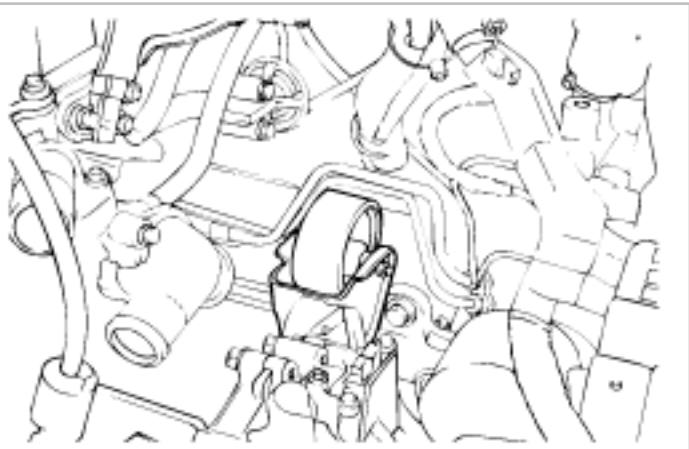
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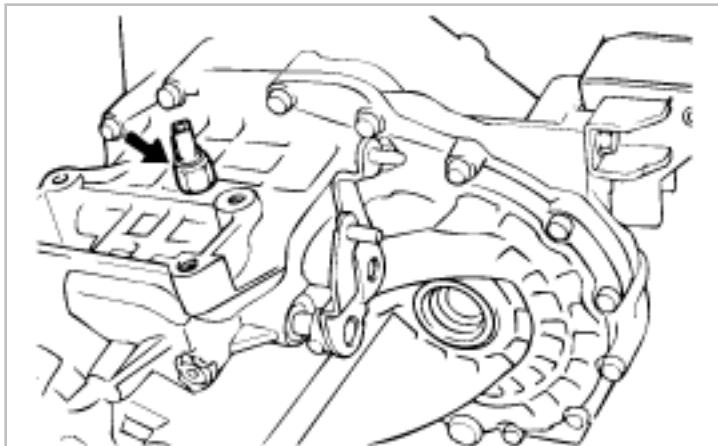
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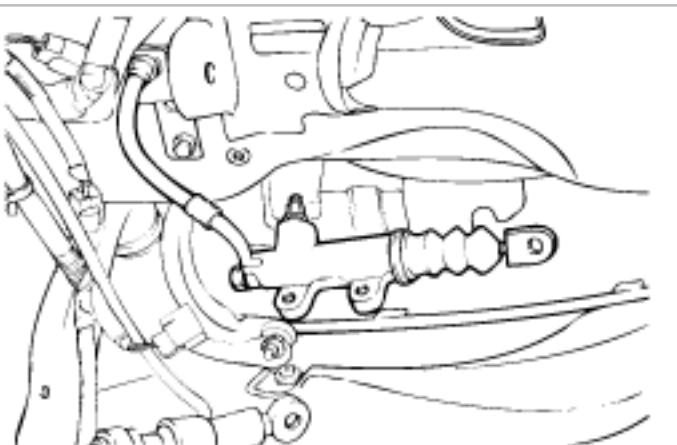
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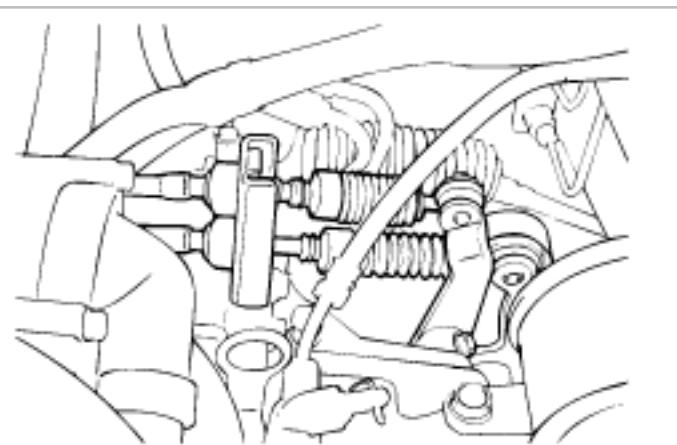
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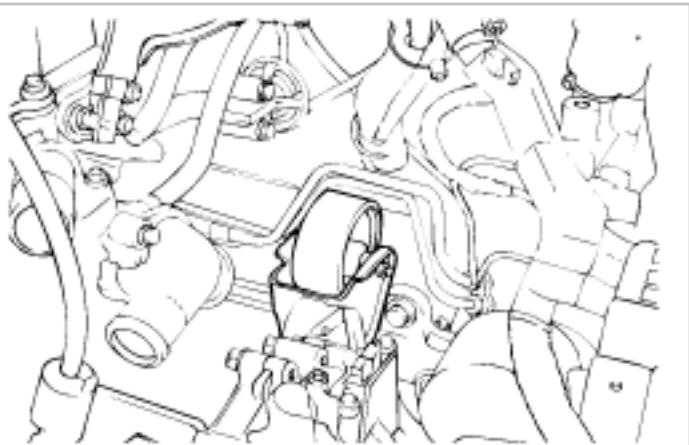
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2. Remove the front muffler.
3. Remove the sub-frame mounting bolts and the sub-frame.



1. Remove the transaxle front roll stopper.



1. Remove the rear roll stopper bracket.



1. Remove the transaxle side mounting bolts.
2. Remove the transaxle assembly supporting by a jack.



参考

When supporting the transaxle assembly, make sure that the lifting force is applied to a wide area, not to a small localized area.

注意

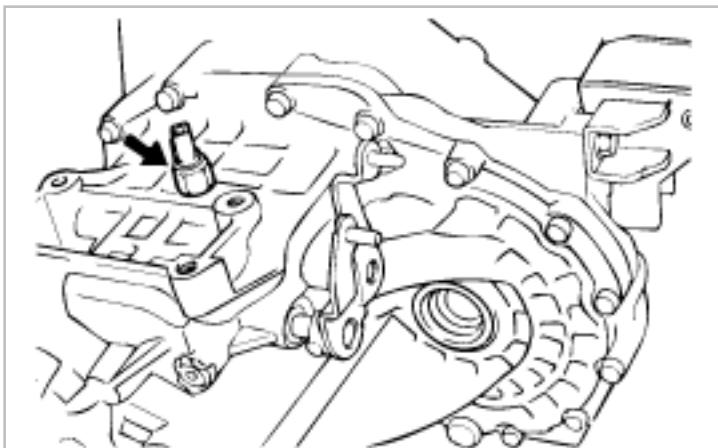
1. Engine and transaxle mounting insulators should be installed the specified torque.
2. Mounting bracket installation procedures.
 - Engine mounting bracket.
 - T/M mounting bracket.
 - Rear roll stopper mounting bracket.
 - Front roll stopper mounting bracket.
3. Especially, when installing front roll stopper mounting bracket, be careful not to crush the insulator. If crushed, idle vibration will be high.

REMOVAL

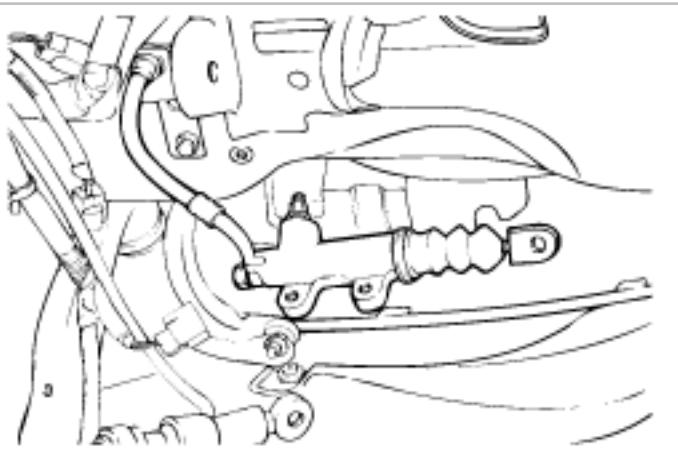
1. Remove the battery (-) cable.
2. Remove the air duct.
3. Remove the air cleaner and air flow hose assembly.



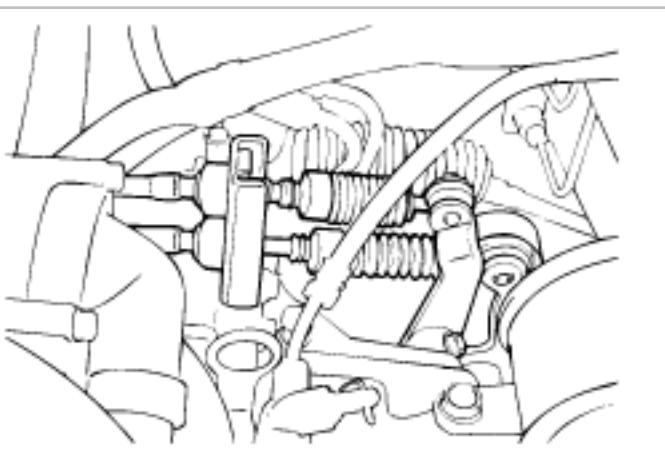
1. Disconnect the backup light switch connector.



2. Disconnect the clutch tube and clip.
3. Remove the clutch release cylinder (Refer to "CH" Group).



1. Disconnect the speedometer sensor connector.
2. Remove the select cable and shift cable.



1. Remove the starter motor mounting bolts. And remove the upper connecting bolts of the transaxle assembly.
2. Attach to the engine hooks using special tool.
3. Remove the transaxle mounting bracket and insulator.



1. Lift up the vehicle.
2. Remove the front tire and the caliper.



1. Remove the drain plug and drain the transaxle gear oil.
2. Disconnect the tie rod end, lower arm ball joint and drive shaft. (Refer to "DS" Group).



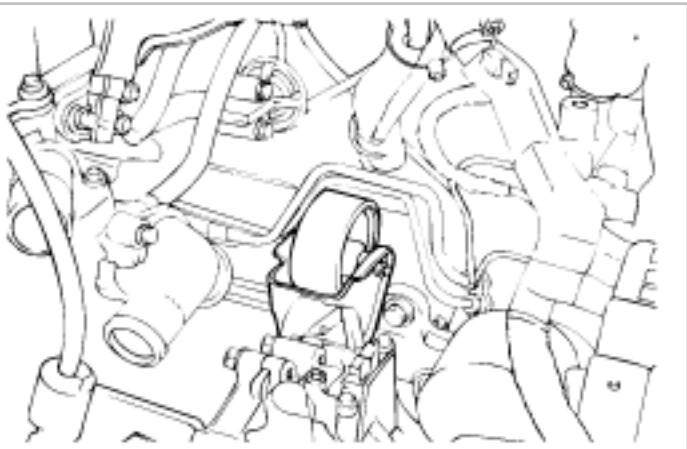
1. Remove the gear box u-joint bolt and the return tube mounting bolts.
2. Remove the front muffler.
3. Remove the sub-frame mounting bolts and the sub-frame.



1. Remove the transaxle front roll stopper.



1. Remove the rear roll stopper bracket.



1. Remove the transaxle side mounting bolts.
2. Remove the transaxle assembly supporting by a jack.



参考

When supporting the transaxle assembly, make sure that the lifting force is applied to a wide area, not to a small localized area.

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安装

1. 安装按拆卸的相反顺序进行。

INSTALLATION

1. Installation is the reverse of removal.

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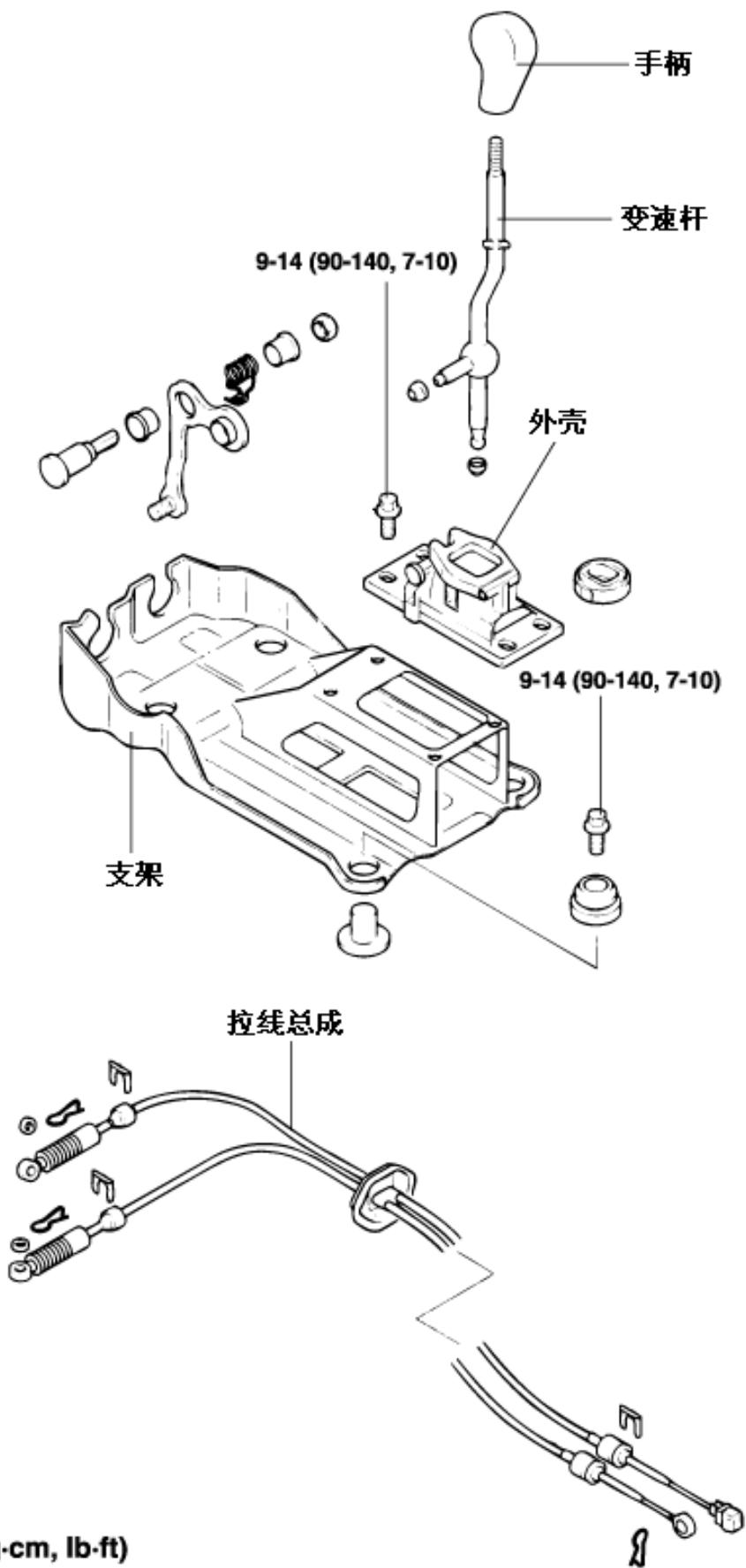
INSTALLATION

1. Installation is the reverse of removal.

INSTALLATION

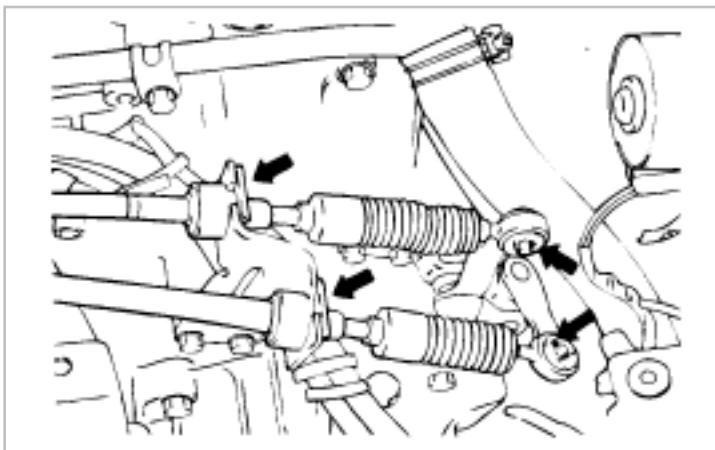
1. Installation is the reverse of removal.

结构图



拆卸

1. 拆下操纵台。
2. 拆下开口销和夹子（变速杆侧）。
3. 拆下变速杆总成。
4. 拆下座圈和螺栓。
5. 拆下开口销和夹子（变速器侧）。
6. 拆下变速拉线和选档拉线。



安装

1. 安装变速杆总成。
2. 安装变速杆与选档拉线。

检查

1. 检查选档拉线有无磨损或损坏。
2. 检查变速拉线有无磨损或损坏。
3. 检查防尘罩有无损坏。
4. 检查轴套有无磨损,锈蚀或损坏。
5. 检查弹簧有无变形或损坏。

装配

1. 滑动部位与轴套里涂上多用途润滑脂。
2. 装复按拆卸的相反顺序进行。