

GROUP 22A

MANUAL
TRANSAXLE

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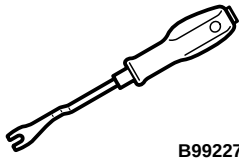
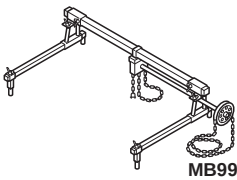
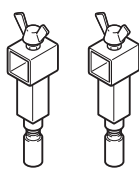
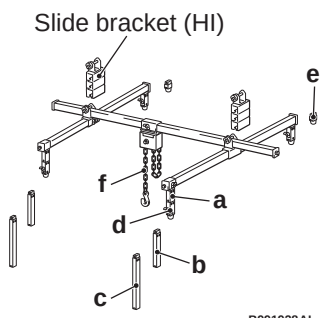
LUBRICANT

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Item		Specified lubricants	Quantity L (cu. in)
Transmission oil		MITSUBISHI MOTORS NEW MULTI GEAR OIL ECO API GL-4, SAE 75W-80	1.6 (97.64)
Transaxle assembly	Spline sections of input shaft and clutch disk	Mitsubishi Part number 0101011 or equivalent	Adequate amount

SPECIAL TOOLS

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Tool	Tool number and name	Supersession	Application
 B992277	MB992277	Clip remover	Disconnect the joint between the gearshift cable and select cable assembly
 MB991895	MB991895 Engine hanger	Tool not available	When the engine hanger is used: Supporting the engine assembly during removal and installation of the transaxle assembly
 MB992906	MB992906 Engine hanger attachment	Tool not available	
 Slide bracket (HI) B991928 AI	MB991928 Engine hanger a: MB991929 Joint (50) ×2 b: MB991930 Joint (90) ×2 c: MB991931 Joint (140) ×2 d: MB991932 Foot (standard) ×4 e: MB991933 Foot (short) ×2 f: MB991934 Chain and hook assembly	Tool not available	

MANUAL TRANSAXLE DIAGNOSIS

INTRODUCTION

The manual transaxle can exhibit any of the following symptoms: noise or vibration is generated, oil leaks, shifting gears is hard or troublesome, or the transaxle jumps out of gear.

The causes of these symptoms could come from: incorrect mounting, the oil level may be low, or a component of the transaxle may be faulty.

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TROUBLESHOOTING STRATEGY

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a manual transaxle fault.

1. Gather information from the customer.

2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify malfunction is eliminated.

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SYMPTOM CHART

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Symptom	Inspection procedure	Reference page
Noise, Vibration	1	P.22A-3
Oil Leaks	2	P.22A-5
Hard Shifting	3	P.22A-5
Jumps Out of Gear	4	P.22A-6

SYMPTOM PROCEDURES

Inspection Procedure 1: Noise, Vibration

DIAGNOSIS

STEP 1. Check the idle speed.

Q: Does the idle speed meet the standard values?

YES : Go to Step 2.

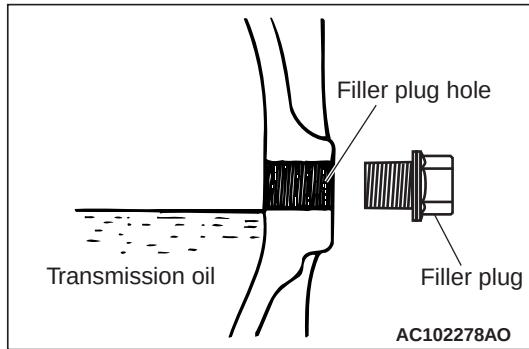
NO : Refer to GROUP 11A, On-vehicle Service – Idle Speed Check [P.11A-12](#).

STEP 2. Check whether the transaxle and engine mount is loose or damaged.

Q: Are the transaxle and engine mount loose or damaged?

YES : Tighten or replace the part. Then go to Step 7.

NO : Go to Step 3.



STEP 3. Check that the oil level is up to the lower edge of the filler plug hole.

Q: Is the oil level up to the lower edge of the filler plug hole?

YES : Go to Step 4.

NO : Refill Mitsubishi Motors Genuine NEW MULTI GEAR OIL API classification GL-3, SAE 75W-80. Then go to Step 7.

STEP 4. Check for the specified oil.

Q: Is the specified oil Mitsubishi Motors Genuine NEW MULTI GEAR OIL API classification GL-3, SAE 75W-80?

YES : Go to Step 5.

NO : If in doubt, replace the oil. Refer to [P.22A-7](#). Then go to Step 7.

STEP 5. Remove the transaxle. Check the end play of the input and output shafts.

Q: Does the end play of the input and output shafts meet the standard value?

YES : Go to Step 6.

NO : Adjust the end play of the input and output shafts. Then go to Step 7.

STEP 6. Disassemble the transaxle. Check the gears for wear and damage.

Q: Are the gears worn or damaged?

YES : Replace the gears. Go to Step 7.

NO : Go to Step 7.

STEP 7. Retest the systems.

Q: Is the noise or vibration still there?

YES : Return to Step 1.

NO : The procedure is complete.

Inspection Procedure 2: Oil Leaks

DIAGNOSIS

STEP 1. Visual check.

Raise the vehicle, and check for oil leaks. If oil leak is difficult to locate, steam clean the transaxle and drive the vehicle for at 10 minutes. Then check the leak again.

Q: Is the oil leak(s) found?

YES : Go to Step 2.

NO : Check for the oil leaks around the engine.
Then go to Step 4.

STEP 2. Visual check at the clutch housing.

Q: Do oil leaks appear around the joint between the engine and the clutch housing?

YES : Remove the transaxle. Check the input shaft oil seal, and replace if necessary.
Then go to Step 4.

NO : Go to Step 3.

STEP 3. Check the oil seal or O-ring for damage.

Q: Is the oil seal or O-ring damaged?

YES : Replace the oil seal or the O-ring. Then go to Step 4.

NO : Go to Step 4.

STEP 4. Retest the system.

Q: Is the oil still leaking?

YES : Return to Step 1.

NO : The procedure is complete.

Inspection Procedure 3: Hard Shifting

DIAGNOSIS

STEP 1. Check the transaxle control

Q: Are the shift cable and the select cable in good condition?

YES : Go to Step 2.

NO : Repair or replace the shift cable and the select cable. Refer to [P.22A-8](#). Then go to Step 7.

STEP 2. Check the transaxle oil.

Q: Is the oil dirty?

YES : Replace the oil. Refer to [P.22A-7](#). Then go to Step 7

NO : Go to Step 3.

STEP 3. Check the clutch system.

Q: Is the clutch system normal?

YES : Go to Step 4.

NO : Repair or replace the clutch system. Refer to [P.21B-3](#). Then go to Step 7.

STEP 4. Remove and disassemble the transaxle. Check the control bell-crank dust cover and the shift and select lever shaft.

Q: Is the control housing in good condition?

YES : Go to Step 5.

NO : Repair or replace the control housing (Refer to GROUP 22B, Transaxle [P.22B-10](#)) Then go to Step 7.

STEP 5. Check for poor meshing or worn synchronizer ring and gear cone.

Q: Is poor meshing or worn synchronizer ring and gear cone found?

YES : Repair or replace the synchronizer ring and gear cone. Then go to Step 7.

NO : Go to Step 6.

STEP 6. Check the synchronizer spring for weakness.

Q: Is the synchronizer spring weak?

YES : Replace the synchronizer spring. Then go to Step 7.

NO : Go to Step 7.

STEP 7. Retest the system.

Q: Is the shifting of the gears still hard?

YES : Return to Step 1.

NO : The procedure is complete.

Inspection Procedure 4: Jumps Out of Gear

DIAGNOSIS**STEP 1. Check the transaxle control**

Q: Are the gearshift cable and the select cable in good condition?

YES : Go to Step 2.

NO : Repair or replace the gearshift cable and the select cable. Refer to [P.22A-8](#). Then go to Step 6.

STEP 2. Remove and disassemble the transaxle. Check the lock ball assembly for breakage.

Q: Is the poppet spring or lock ball assembly broken?

YES : Replace the lock ball assembly (Refer to GROUP 22B, Transaxle [P.22B-10](#)). Then go to Step 6.

NO : Go to Step 3.

STEP 3. Check the selecting bell-crank assembly and control bell-crank dust cover and the gearshift and select lever shaft.

Q: Is the control housing in good condition?

YES : Go to Step 4.

NO : Repair or replace the selecting bell-crank assembly and control bell-crank dust cover and the gearshift and select lever shaft (Refer to GROUP 22B, Transaxle [P.22B-10](#)). Then go to Step 6.

STEP 4. Check the gearshift forks for wear.

Q: Is the gearshift forks worn?

YES : Replace the gearshift fork. Refer to GROUP 22B, Transaxle [P.22B-10](#). Then go to Step 6.

NO : Go to Step 5.

STEP 5. Check the clearance.

Q: Is the clearance between the synchronizer hub and sleeve excessive?

YES : Replace the synchronizer hub or sleeve. Refer to GROUP 22B, Output Shaft [P.22B-25](#). Then go to Step 6.

NO : Go to Step 6.

STEP 6. Retest the system.

Q: Does the transaxle still jump out of gear?

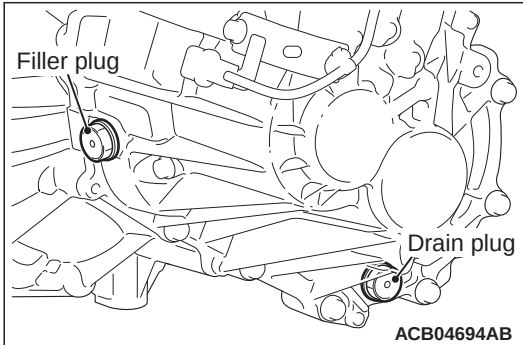
YES : Return to Step 1.

NO : The procedure is complete.

ON-VEHICLE SERVICE

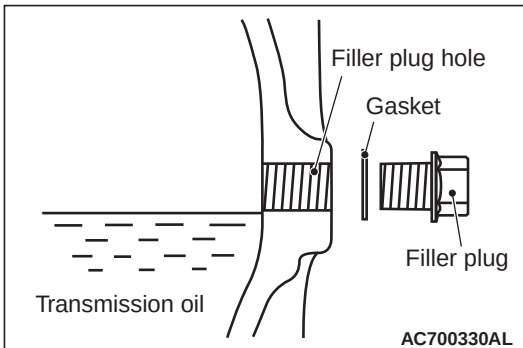
TRANSMISSION OIL LEVEL CHECK

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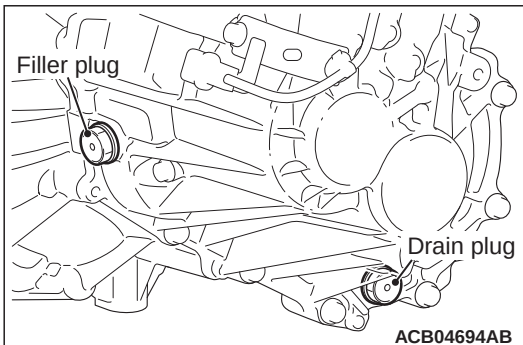
1. Remove the filler plug and gasket.
2. Check that the oil level is up to the lower edge of the filler plug hole.
3. Check that the oil is not noticeably dirty.
4. Tighten the filler plug and new gasket to the specified torque.

Tightening torque: 40 ± 11 N·m (30 ± 8 ft-lb)



TRANSMISSION OIL REPLACEMENT

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1. Remove the filler plug and gasket.
2. Remove the drain plug and gasket, and drain the oil.
3. Tighten the drain plug and new gasket, to the specified torque.

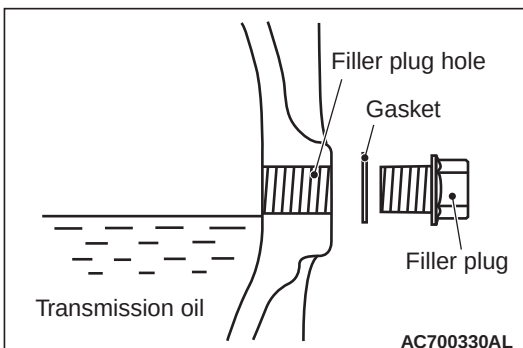
Tightening torque: 48 ± 20 N·m (35 ± 14 ft-lb)

4. Fill with MITSUBISHI MOTORS NEW MULTI GEAR OIL ECO API GL-4, SAE 75W-80 until the level comes to the lower portion of filler plug hole.

Quantity: 1.6 dm^3 (1.69 quarts)

5. Tighten the filler plug and new gasket to the specified torque.

Tightening torque: 40 ± 11 N·m (30 ± 8 ft-lb)



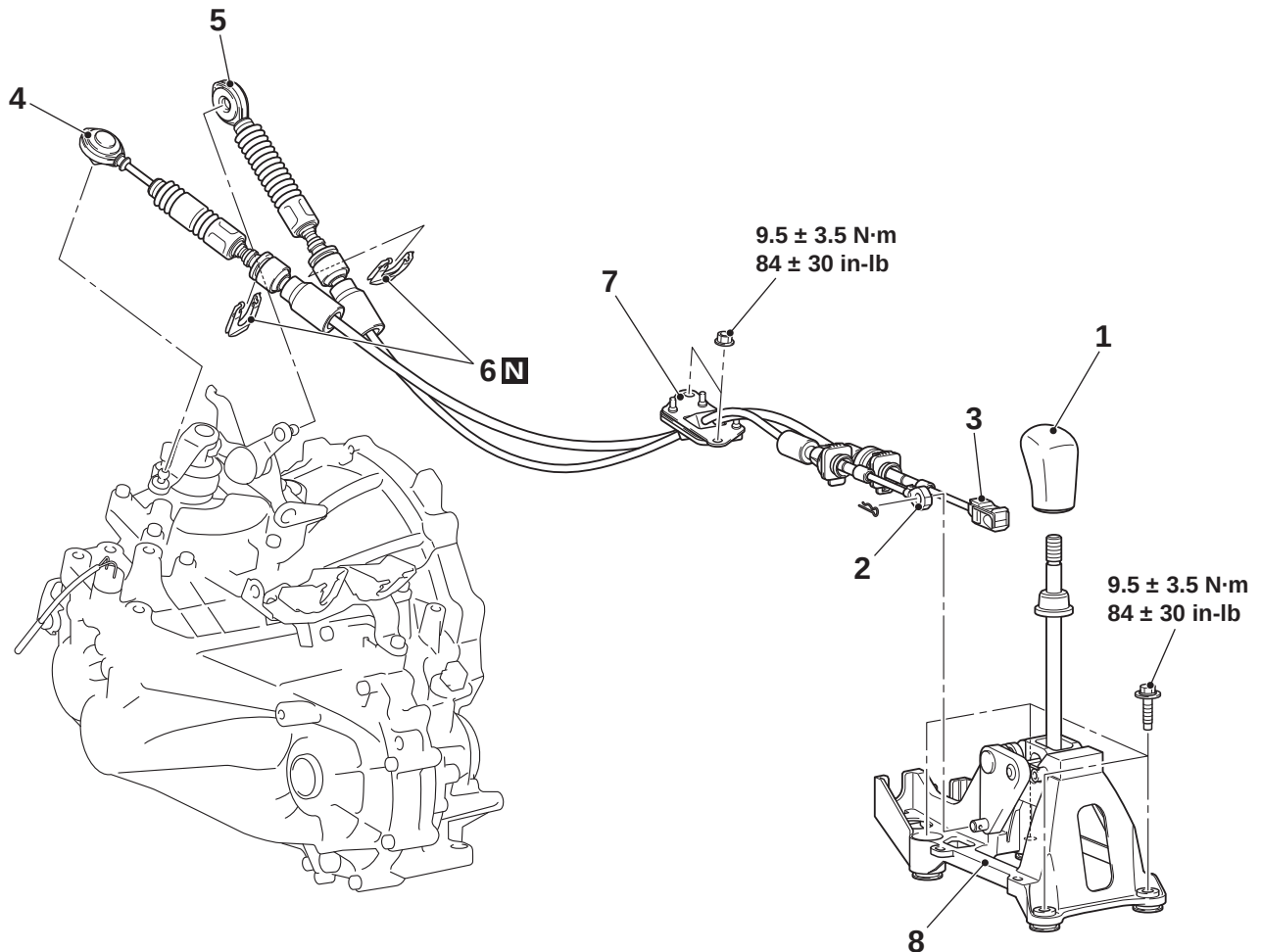
TRANSAXLE CONTROL

REMOVAL AND INSTALLATION

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⚠ WARNING

Be careful not to subject the SRS-ECU to any shocks during removal and installation of the gearshift cable and select cable assembly.



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Gearshift cable and select cable assembly removal steps

1. Gearshift lever knob
 - SRS-ECU Removal and Installation (Refer to GROUP 52B, SRS-ECU [P.52B-229](#)).
2. Select cable connection (Gearshift lever side)
- >>B<< 3. Gearshift cable connection (Gearshift lever side)
 - Air Cleaner Assembly Removal and Installation (Refer to GROUP 15, Air Cleaner [P.15-5](#)).
 - Battery and Battery Tray Removal and Installation (Refer to GROUP 54A, Battery [P.54A-7](#)).

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Gearshift cable and select cable assembly removal steps

4. Gearshift cable connection (Transaxle side)
 5. Select cable connection (Transaxle side)
 6. Gearshift link clip
 7. Gearshift cable and select cable assembly
- Gearshift lever assembly removal steps**
1. Gearshift lever knob
 - Floor Console Removal and Installation (Refer to GROUP 52A, Floor Console Assembly [P.52A-7](#)).
 2. Select cable connection (Gearshift lever side)

**Gearshift lever assembly
removal steps (Continued)**

- >>B<< 3. Gearshift cable connection
(Gearshift lever side)
8. Gearshift lever assembly

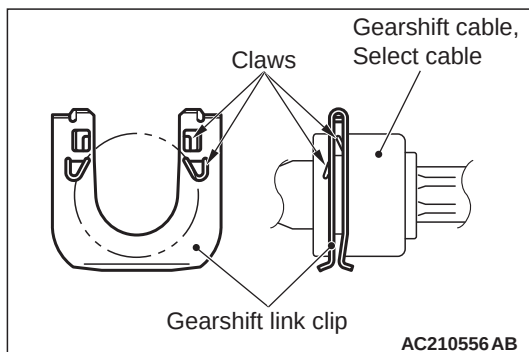
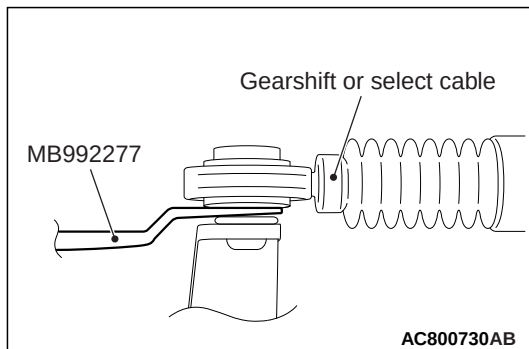
REMOVAL SERVICE POINT

**<<A>> SELECT CABLE CONNECTION
(TRANSAXLE SIDE)/GEARSHIFT CABLE
CONNECTION (TRANSAXLE SIDE)/GEARSHIFT
LINK CLIP REMOVAL**

⚠ CAUTION

Be careful not to pull out the cable directly to disconnect the joint because the cable could be broken.

1. Use the clip remover (special tool: MB992277), and disconnect the joint.



2. Push up the claws of the gearshift link clip using a screwdriver, etc., and then remove the gearshift link clip from the bracket together with the cables.

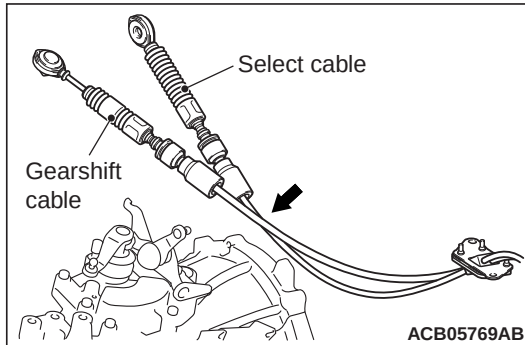
INSTALLATION SERVICE POINTS

>>A<< GEARSHIFT CABLE AND SELECT CABLE
ASSEMBLY/GEARSHIFT LINK CLIP/GEARSHIFT
CABLE CONNECTION (TRANSAXLE
SIDE)/SELECT CABLE CONNECTION (TRAN-
SAXLE SIDE) INSTALLATION

1. Cross the gear shift cable and the select cable as shown and install them to the transaxle.

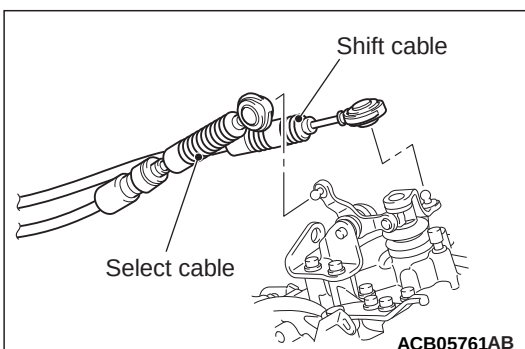
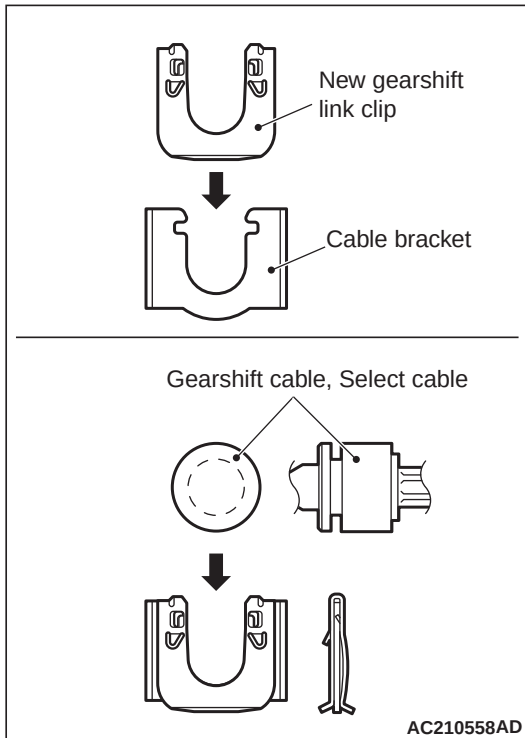
⚠ CAUTION

Securely insert the clip, shift cable, and select cable until they click into place.



2. After installing the new gearshift link clip to the cable bracket of the transaxle, install the gearshift cable and select cable to the cable bracket.

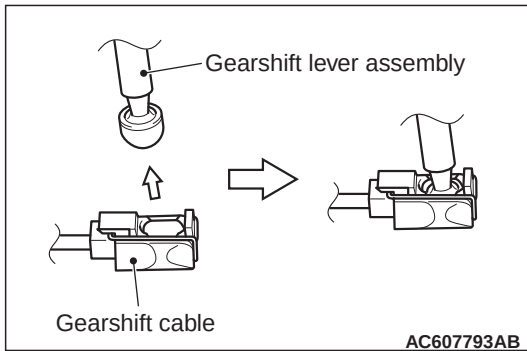
NOTE: The clip is reversible.



3. Securely fit the tips of the gearshift cable and the select cable.
4. Move the shift lever and gearshift lever to all positions and check that the operation is smooth.

**>>B<< GEARSHIFT CABLE CONNECTION
(GEARSHIFT LEVER SIDE) INSTALLATION**

Insert the tip of the gearshift cable to the gearshift lever assembly thoroughly as shown until it clicks in place.

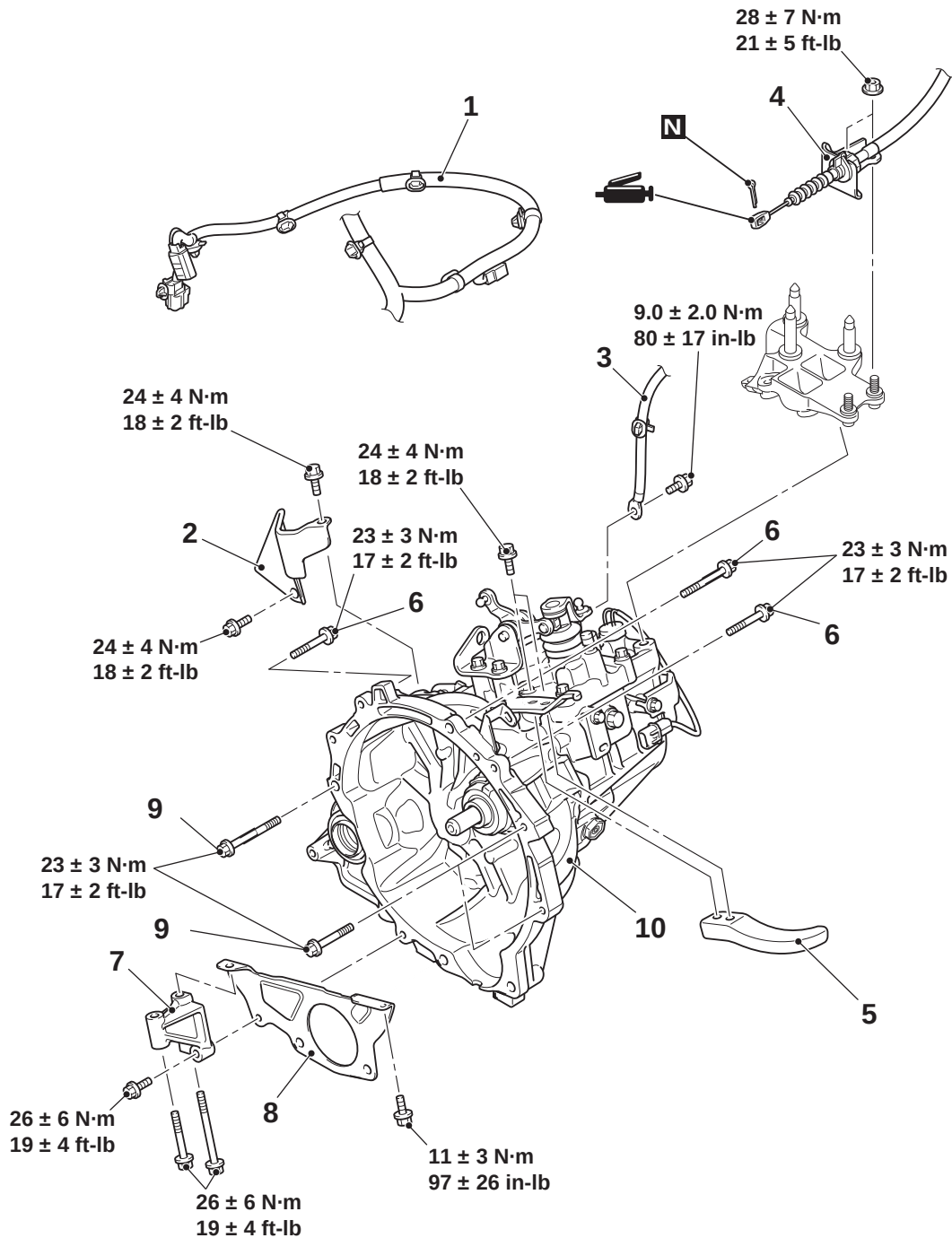


TRANSAXLE ASSEMBLY

REMOVAL AND INSTALLATION

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Pre-removal operation • Under Cover Front Removal (Refer to GROUP 51 – Under Cover P.51-15). • Transmission Oil Draining (Refer to P.22A-7). • Starter Motor Assembly Removal (Refer to GROUP 16 – Stator Motor Assembly P.16-21). • Catalytic Converter Removal (Refer to GROUP 15 – Exhaust Pipe and Main muffler P.15-10.) • Drive Shaft Removal (Refer to GROUP 26 – Drive Shaft Assembly P.26-20.) • Air Cleaner Assembly Removal (Refer to GROUP 15 – Air Cleaner P.15-5). • Battery and Battery Tray Removal (Refer to GROUP 54A – Battery P.54A-7).	Post-installation operation • Clutch Pedal Check And Adjustment (Refer to P.21A-2). • Battery and Battery Tray Installation (Refer to GROUP 54A – Battery P.54A-7). • Air Cleaner Assembly Installation (Refer to GROUP 15 – Air Cleaner P.15-5). • Drive Shaft Installation (Refer to GROUP 26 – Drive Shaft Assembly P.26-20.) • Catalytic Converter Installation (Refer to GROUP 15 – Exhaust Pipe and Main muffler P.15-10.) • Starter Motor Assembly Installation (Refer to GROUP 16 – Stator Motor Assembly P.16-21). • Transmission Oil Refilling (Refer to P.22A-7). • Under Cover Front Installation (Refer to GROUP 51 – Under Cover P.51-15).
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Removal steps

1. Connector and wiring harness connection
2. Heat protector bracket
3. Battery ground connection
4. Clutch cable connection
5. Impact support lever
- Gearshift cable and select cable assembly connection <Transaxle side> (Refer to P.22A-8)
6. Transaxle assembly upper part coupling bolts
7. Transaxle stay
8. Bell housing cover

Removal steps (Continued)

- Engine roll rod assembly (Refer to GROUP 32 – Engine Roll Stopper Rod P.32-4)
- While supporting the engine and transaxle assembly with a garage jack.
- Transaxle mounting insulator and transaxle mounting bracket (Refer to GROUP 32 – Transaxle Mounting P.32-3)
- Engine assembly supporting
- 9. Transaxle assembly lower part coupling bolts
- 10. Transaxle assembly

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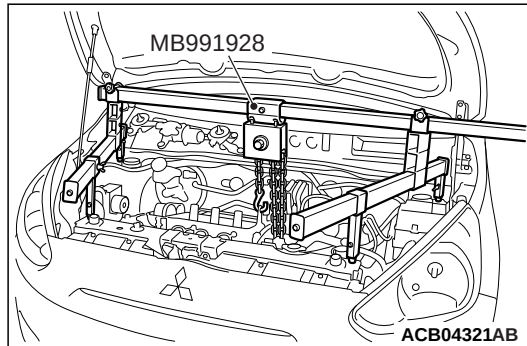
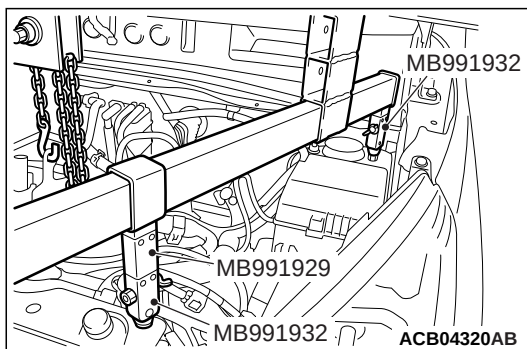
REMOVAL SERVICE POINTS

<<A>> TRANSAXLE ASSEMBLY UPPER PART
COUPLING BOLTS REMOVAL

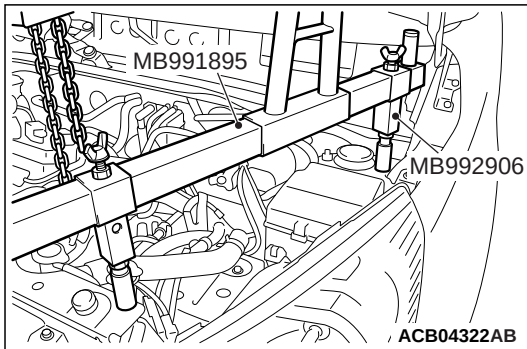
Only loosen the each bolt from the engine and transaxle assembly (do not remove).

<> ENGINE ASSEMBLY SUPPORTING

1. <When engine hanger (Special tool: MB991928) is used>
 - (1) Assemble the engine hanger (Special tool: MB991928).
(Set the components below to the base hanger.)
 - Slide bracket (HI)
 - Foot x 4 (standard) (MB991932)
 - Joint x 2 (50) (MB991929)
 - (2) Set the foot of the engine hanger (Special tool: MB991928) as shown in the figure.
NOTE: Adjust the engine hanger balance.
 - (3) Remove the garage jack and then remove the transaxle assembly upper part coupling bolts that have been loosened previously.



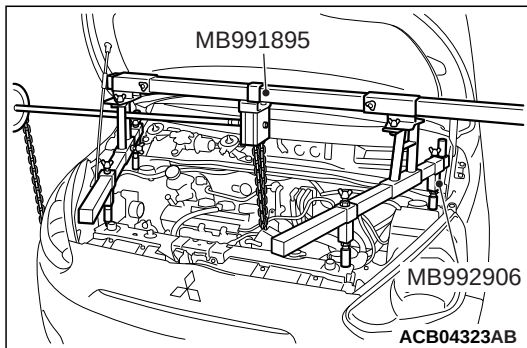
2. <When engine hanger (Special tool: MB991895) and engine hanger attachment (Special tool: MB992906) are used>



- (1) Set the foot of the engine hanger (Special tool: MB991895) and engine hanger attachment (Special tool: MB992906) as shown in the figure.

NOTE: Adjust the engine hanger balance.

- (2) Remove the garage jack and then remove the transaxle assembly upper part coupling bolts that have been loosened previously.

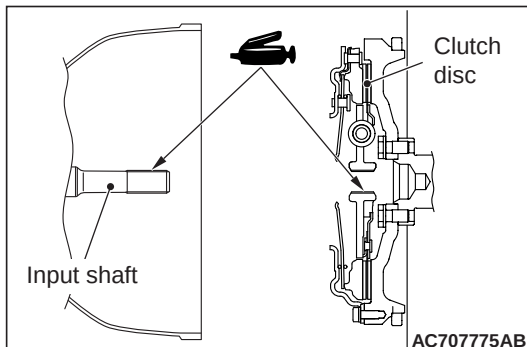


INSTALLATION SERVICE POINTS

>>A<< TRANSAXLE ASSEMBLY INSTALLATION

When installing the transaxle assembly, apply the specified grease to the spline of clutch disc and input shaft.

Specified grease: Mitsubishi Part No.0101011 or equivalent



NOTES