

MANUAL TRANSMISSION

CONTENTS

E22AA-

SPECIFICATIONS	2	TRANSMISSION CONTROL*	7
General Specifications	2	TRANSMISSION ASSEMBLY <2WD>	10
Lubricants	2	TRANSMISSION ASSEMBLY <4WD>	15
SPECIAL TOOLS	3		
SERVICE ADJUSTMENT PROCEDURES	4		
Transmission Oil Level Check	4		
Transmission Oil Replacement	4		
Transfer Oil Level Check <4WD>	5		
Transfer Oil Replacement <4WD>	5		
Speedometer Cable Replacement	6		

WARNING REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

WARNING!

- (1) Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver (from rendering the SRS inoperative).
- (2) Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.
- (3) MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B - Supplemental Restraint System (SRS), before beginning any service or maintenance of any component of the SRS or any SRS-related component.

NOTE

The SRS includes the following components: SRS diagnosis unit, SRS warning lamp, air bag module, clock spring, and inter-connecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

SPECIFICATIONS

GENERAL SPECIFICATIONS

E22CA--

Items	2WD			
	F5M21	F5M22	F5M22	F5M22
Model	F5M21	F5M22	F5M22	F5M22
Applicable engine	4G13	4G92	4G93	4D68
Type	5-speed floor shift	5-speed floor shift	5-speed floor shift	5-speed floor shift
Gear ratio				
1st	3.363	3.083	3.083	3.363
2nd	1.947	1.947	1.947	1.947
3rd	1.285	1.285	1.285	1.285
4th	0.939	0.939	0.939	0.939
5th	0.777	0.777	0.777	0.756
Reverse	3.083	3.083	3.083	3.083
Final gear ratio	4.322	4.021	4.322	3.752
Speedometer gear ratio (driven/drive)	31/36	31/36	31/36	31/36

Items	4WD	
	W5M31-2-VRCE	W5M31-2-VPCE
Model	W5M31-2-VRCE	W5M31-2-VPCE
Applicable engine	4G92	4G92
Type	5-speed floor shift	5-speed floor shift
Gear ratio		
1st	3.083	3.083
2nd	1.684	1.684
3rd	1.115	1.115
4th	0.833	0.833
5th	0.651	0.690
Reverse	3.166	3.166
Final gear ratio	—	—
Reduction ratio		
Primary	1.680	1.680
Front differential	3.100	3.100
Transfer	1.090	1.090
Speedometer gear ratio (driven/drive)	31/36	31/36

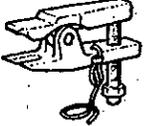
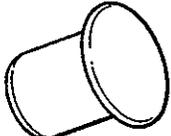
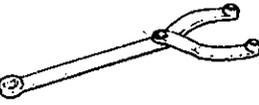
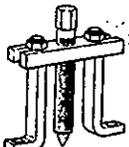
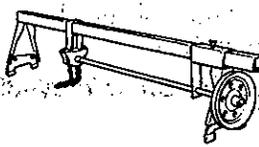
LUBRICANTS

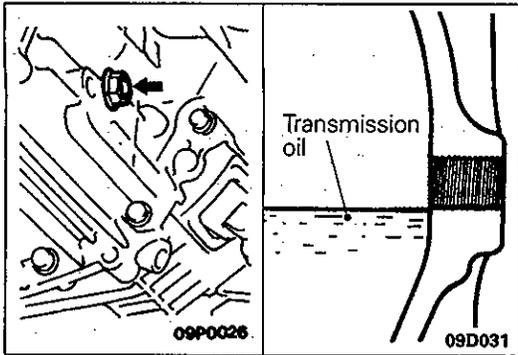
E22CD--

Items	Specified lubricant	Quantity ℓ (U.S.qts., Imp.qts.)
Transmission oil	Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4	<2WD> 1.8 (1.9, 1.6) <4WD> 2.2 (2.3, 1.9)
Transfer oil		<4WD> 0.5 (0.5, 0.4)

SPECIAL TOOLS

E22DA--

Tool	Number	Name	Use
	MB991113	Steering linkage puller	Disconnection of the coupling of the knuckle and lower arm ball joint Disconnection of the coupling of the knuckle and tie-rod end ball joint
	MB991193	Plug	Preventing foreign substances from entering transfer <4WD>
	MB990767	End yoke holder	Fixing the hub <4WD>
	MB990241	Axle shaft puller	Removal of the drive shaft <4WD>
	GENERAL SERVICE TOOL MZ203827	Mechanic hanger, engine	Supporting the engine assembly during removal and installation of the transmission
	MB991460	Plug	Prevention of entry of foreign objects into the transmission case



SERVICE ADJUSTMENT PROCEDURES

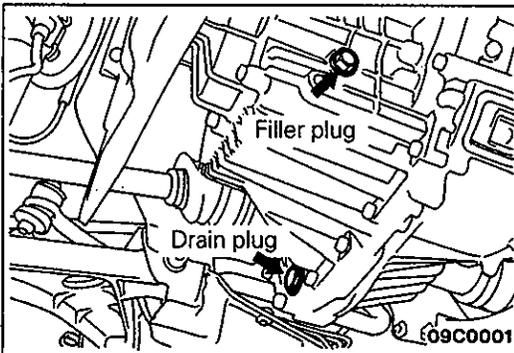
E22FDAS

TRANSMISSION OIL LEVEL CHECK

Inspect each component for evidence of leakage, and check the oil level by remaining the filler plug. If the oil is contaminated, it is necessary to replace it with new oil.

- (1) Oil level should be at the lower portion of the filler plug hole.
- (2) Check that the transmission oil is not noticeably dirty, and that it has a suitable viscosity.
- (3) Tighten filler plug to specified torque.

Specified torque: 33 Nm (3.3 kgm, 24 ft.lbs.)



TRANSMISSION OIL REPLACEMENT

- (1) Remove transmission drain plug.
- (2) Drain oil.
- (3) Tighten drain plug to specified torque.

Specified torque: 33 Nm (3.3 kgm, 24 ft.lbs.)

- (4) Remove filler plug and fill with specified oil till the level comes to the lower portion of filler plug hole.

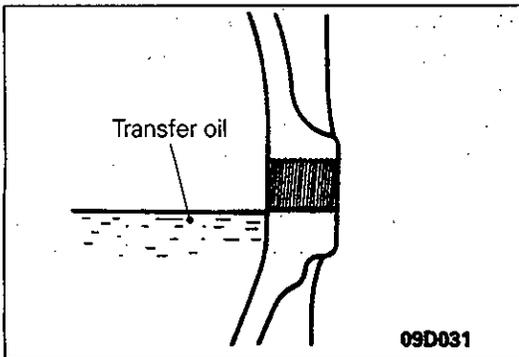
Specified oil: Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API GL-4

Quantity:

<2WD> 1.8 dm³ (1.9 U.S.qts., 1.6 Imp.qts.)
 <4WD> 2.2 dm³ (2.3 U.S.qts., 1.9 Imp.qts.)

- (5) Tighten filler plug to specified torque.

Specified torque: 33 Nm (3.3 kgm, 24 ft.lbs.)

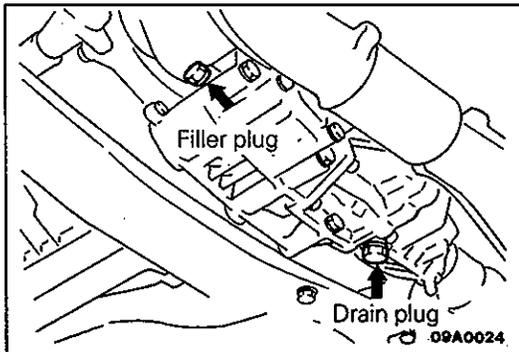


TRANSFER OIL LEVEL CHECK <4WD>

E22FDAT

- (1) Remove the oil filler plug.
- (2) Check to ensure that the oil level reaches to the bottom edge of the oil filler plug hole.
- (3) Check to ensure that the oil is not exceptionally dirty, and that it is of sufficient viscosity.
- (4) Install the oil filler plug, tightening it to the specified torque.

Specified torque: 33 Nm (3.3 kgm, 24 ft.lbs.)



TRANSFER OIL REPLACEMENT <4WD>

- (1) Remove the oil drain plug and drain the oil.
- (2) Install the oil drain plug and tighten it to the specified torque.

Specified torque: 33 Nm (3.3 kgm, 24 ft.lbs.)

- (3) Remove the oil filler plug and fill with oil until the level reaches the bottom edge of the oil filler plug hole.

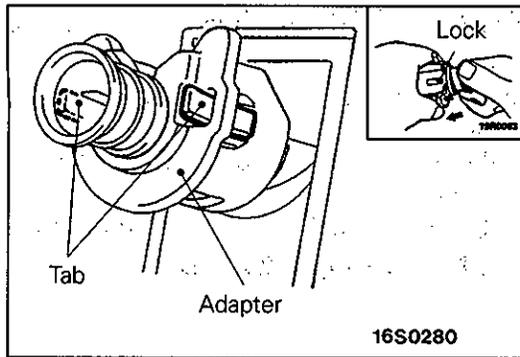
Specified transmission oil:

Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API GL-4

Quantity: 0.5 dm³ (0.5 U.S.qts., 0.4 Imp.qts.)

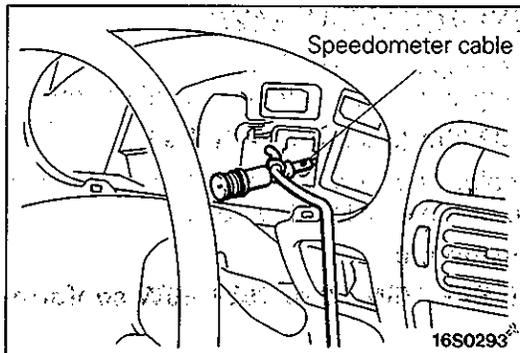
- (4) Install the oil filler plug and tighten it to the specified torque.

Specified torque: 33 Nm (3.3 kgm, 24 ft.lbs.)

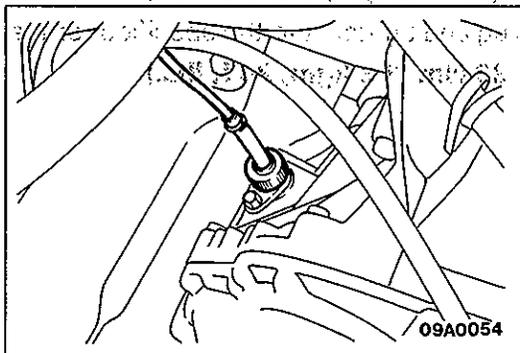
**SPEEDOMETER CABLE REPLACEMENT**

E22FCBK

- (1) Remove the meter hood and combination meter.
- (2) Remove the adapter lock.
- (3) Pull the speedometer cable slightly into the passenger compartment, and remove the rear side of the adapter from the cable.
- (4) After turning the adapter so that the notched section is aligned with the tab on the cable-side; remove the adapter by sliding it backwards.



- (5) Tie a rope to the end of the speedometer cable that is in the passenger compartment. Then remove the grommet inside the engine compartment, and pull the cable into the engine compartment.
- (6) Install the new speedometer cable, and install it securely to the adapter.



- (7) At the transmission end of the speedometer cable, the key joint should be inserted into the transmission, and the nut should be securely tightened.

Caution

If the cable is not correctly and securely connected, it may cause incorrect indication by the speedometer, or abnormal noise. Be sure to connect it correctly.

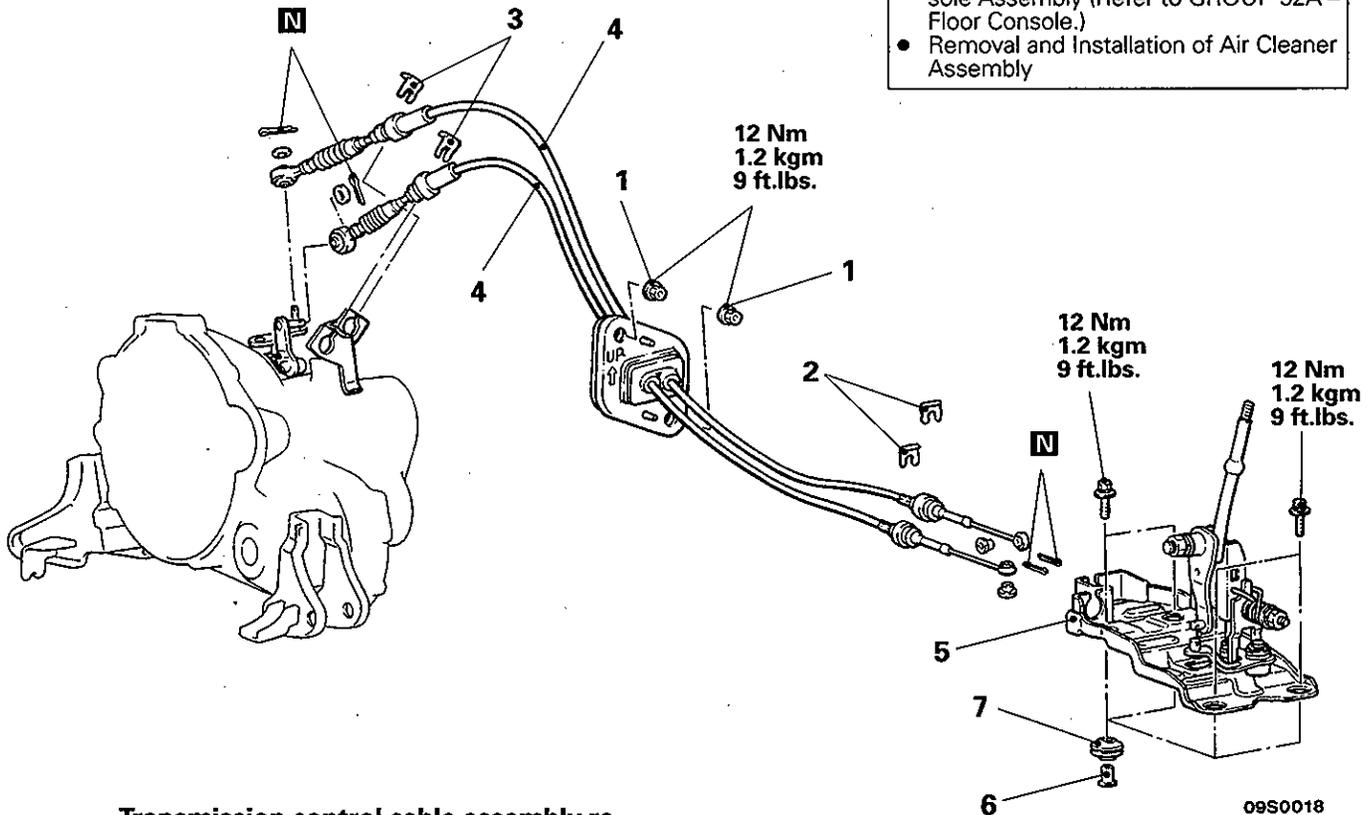
TRANSMISSION CONTROL

E22HA-

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

- Removal and Installation of Floor Console Assembly (Refer to GROUP 52A – Floor Console.)
- Removal and Installation of Air Cleaner Assembly



Transmission control cable assembly removal steps

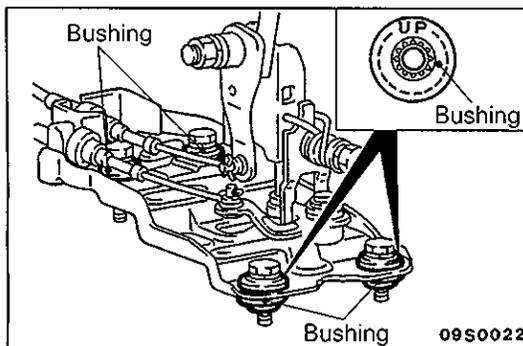
1. Nut
2. Clip (passenger compartment side)
3. Clip (engine room side)
- ◆◆ 4. Shift cable and select cable assembly

Shift lever assembly removal steps

- ◆◆ 2. Clip (passenger compartment side)
- ◆◆ 4. Shift cable and select cable assembly (passenger compartment side)
5. Shift lever assembly
- ◆◆ 6. Distance piece
- ◆◆ 7. Bushing

Caution: SRS

Be careful not to subject the SRS diagnosis unit to any shocks during removal and installation of the floor console, transmission control cable and shift lever assembly.

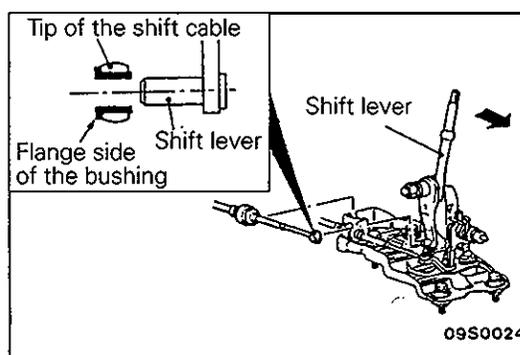
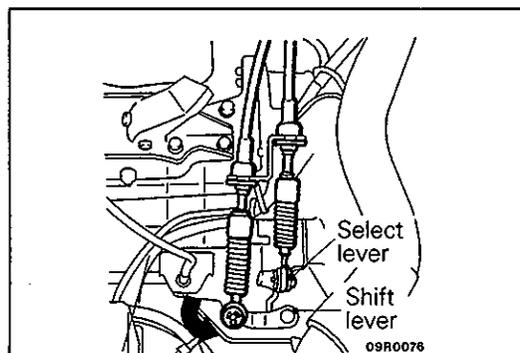
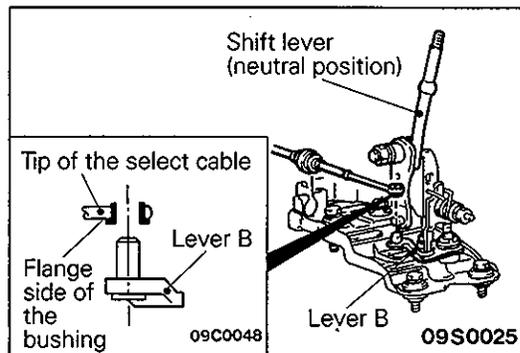
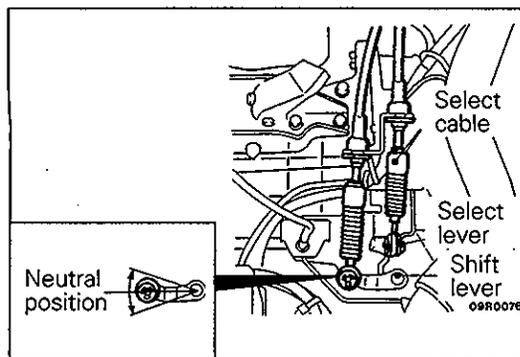


SERVICE POINTS OF INSTALLATION

E22HDAP

7. INSTALLATION OF BUSHING

Install so that the side of the bushing with the UP mark is facing upward.



4. INSTALLATION OF SHIFT CABLE AND SELECT CABLE ASSEMBLY

<SELECT CABLE>

- (1) Set the shift lever of the transmission side at the neutral position.

NOTE

When the shift lever of the transmission side is set at the neutral position, the select lever of the transmission side is also set at the neutral position.

- (2) While leaving the shift lever inside the passenger compartment in the neutral position, install the select cable to the passenger compartment side of the shift lever.
- (3) Install the select cable so that the flange side of resin bushing is positioned at the edge of lever B side.

<SHIFT CABLE>

- (1) While leaving the select lever at the transmission side in the neutral position, move the shift lever at the transmission side in the direction of the arrow in the illustration to set it to 4th gear.

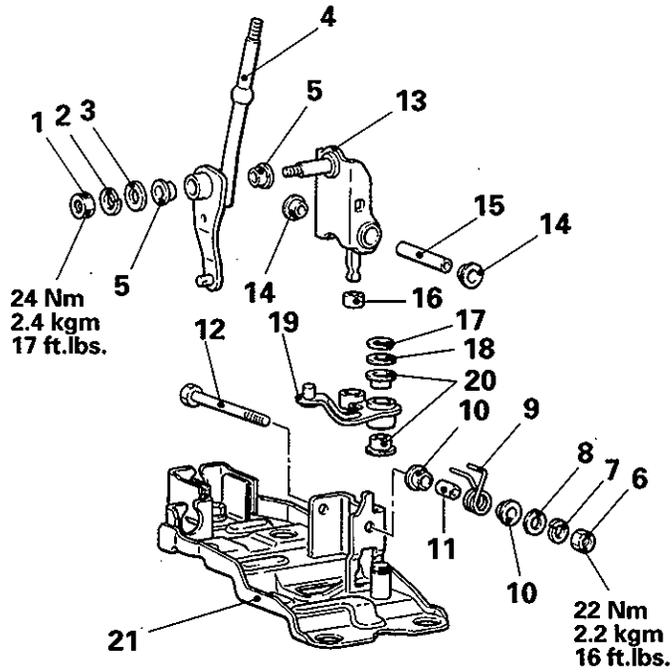
NOTE

If the shift lever does not move easily, depress and hold the clutch pedal.

- (2) Pull the shift lever at the passenger compartment side fully in the direction shown in the illustration (4th gear position), and install the shift cable to the shift lever at the passenger compartment side. Furthermore, install the resin bushing on the tip of the shift cable so that the flange side is facing the split pin.
- (3) Put the shift lever to all the positions and make sure that the operation is smooth.

SHIFT LEVER ASSEMBLY

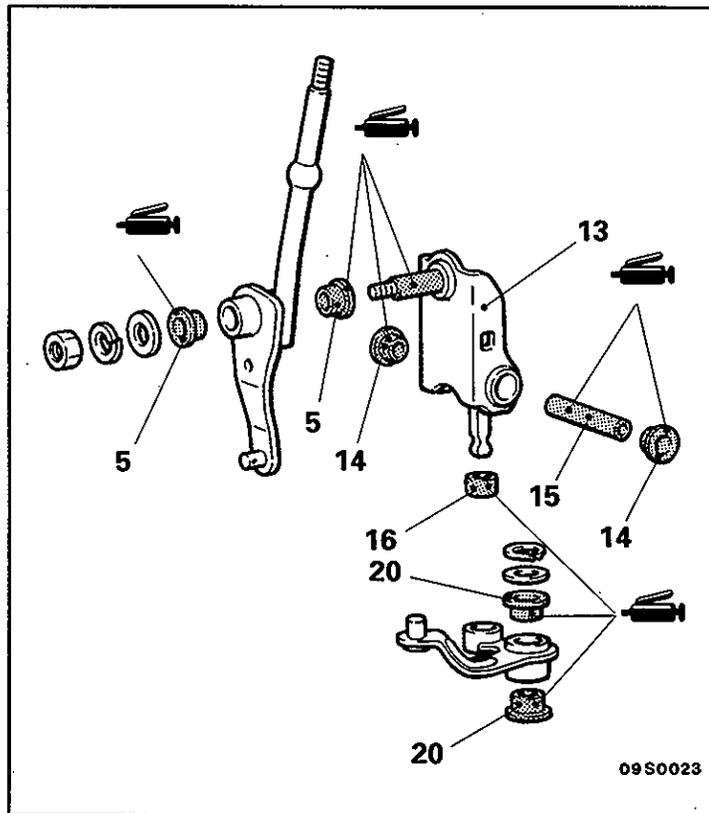
DISASSEMBLY AND REASSEMBLY



09S0005

Disassembly steps

1. Nut
2. Spring washer
3. Plain washer
4. Shift lever
5. Bushing
6. Nut
7. Spring washer
8. Plain washer
9. Return spring
10. Bushing
11. Pipe
12. Bolt
13. Lever A
14. Bushing
15. Collar
16. Bushing
17. Snap ring
18. Washer
19. Lever B
20. Bushing
21. Bracket assembly



TRANSMISSION ASSEMBLY <2WD>

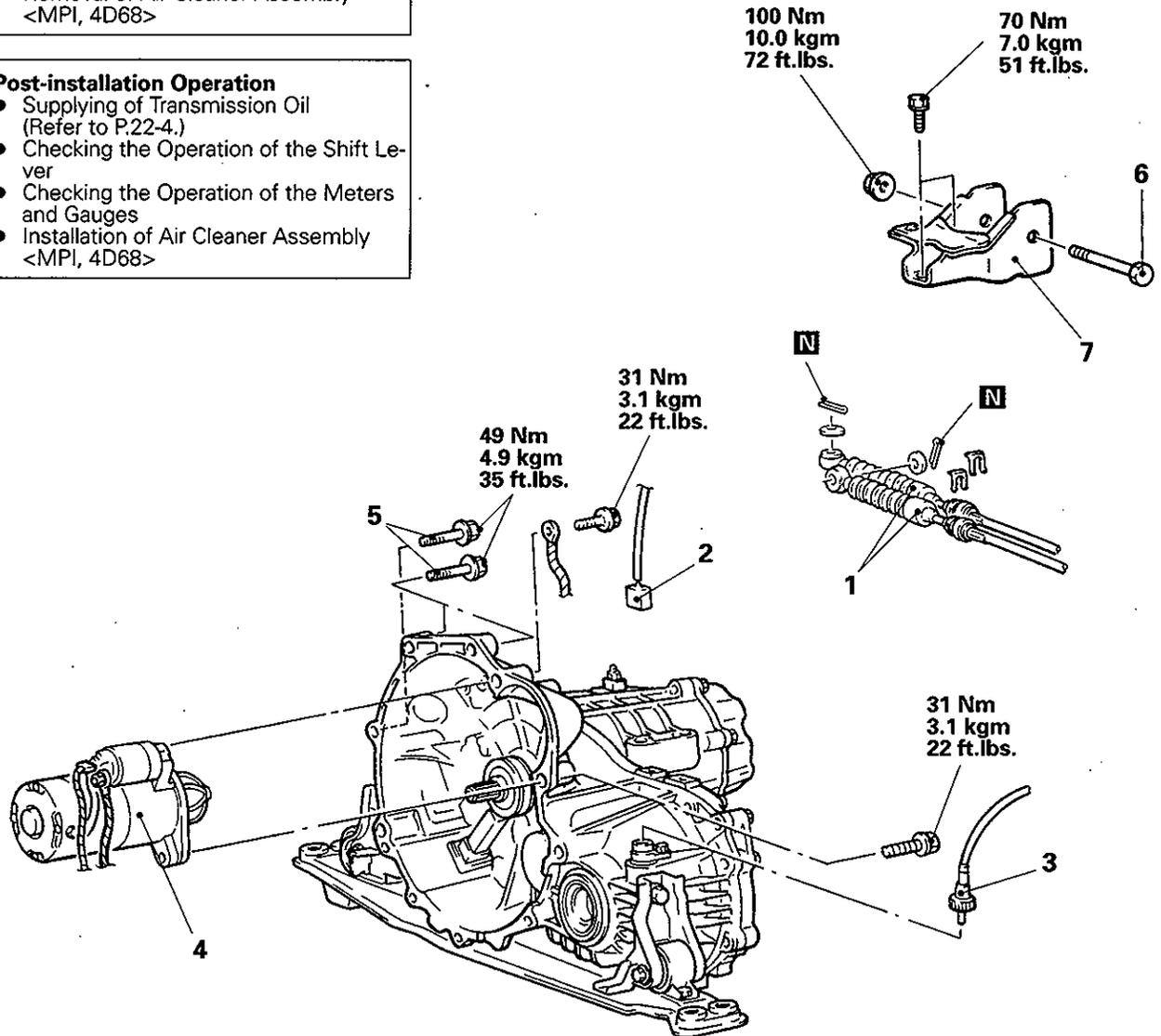
REMOVAL AND INSTALLATION

Pre-removal Operation

- Removal of Air Cleaner Assembly <MPI, 4D68>

Post-installation Operation

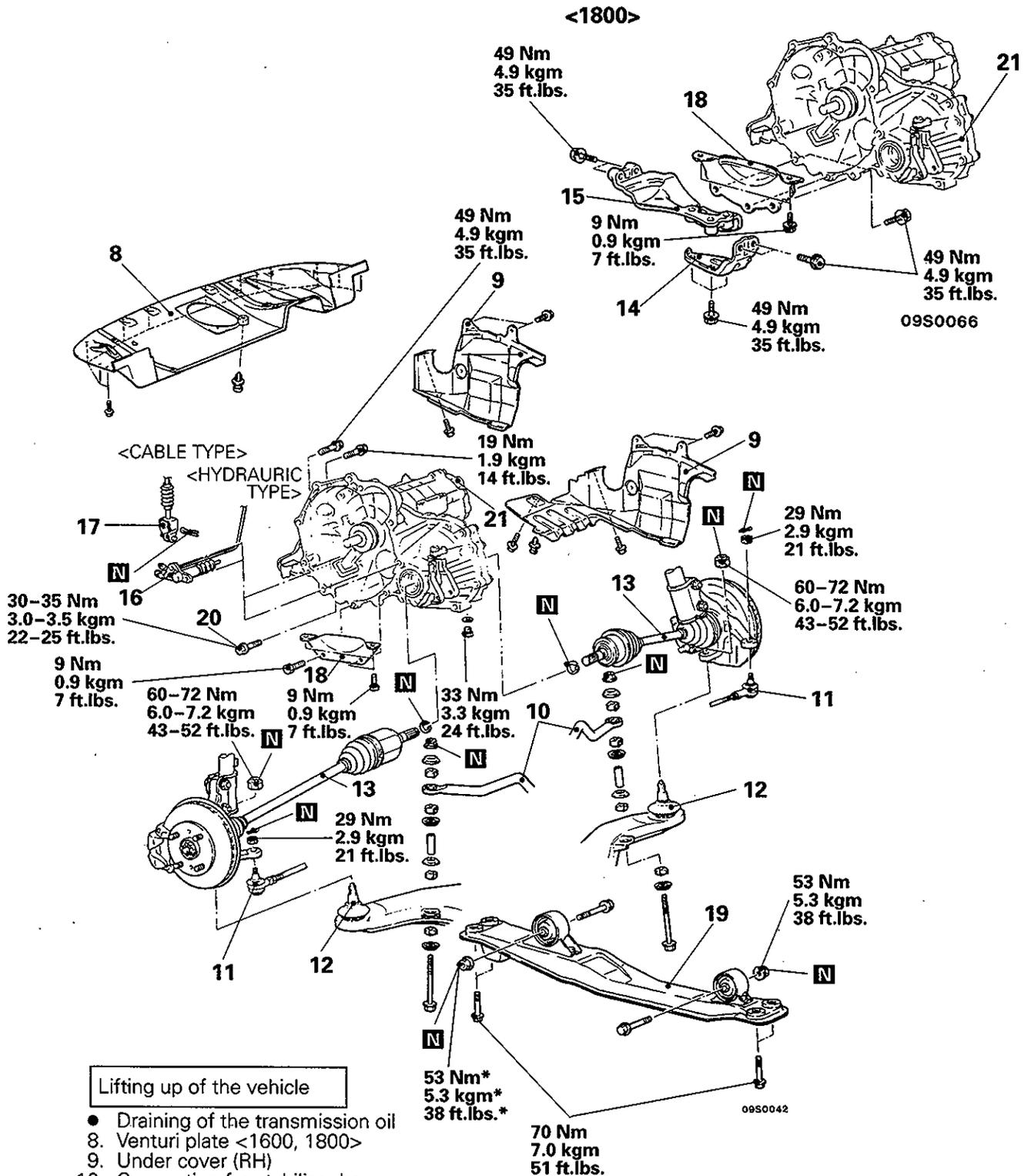
- Supplying of Transmission Oil (Refer to P.22-4.)
- Checking the Operation of the Shift Lever
- Checking the Operation of the Meters and Gauges
- Installation of Air Cleaner Assembly <MPI, 4D68>



09S0076

Removal steps

- | | | |
|--|-------------------|--|
| <ul style="list-style-type: none"> 1. Shift cable and select cable connection 2. Backup lamp switch connector 3. Speedometer cable connection 4. Starter motor | <p>⇔</p> <p>⇔</p> | <ul style="list-style-type: none"> 5. Transmission assembly upper part coupling bolt 6. Transmission mount bolt 7. Transmission mount bracket ● Supporting engine assembly |
|--|-------------------|--|



Lifting up of the vehicle

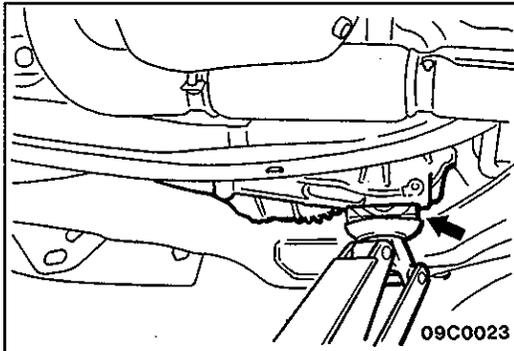
- Draining of the transmission oil
- 8. Venturi plate <1600, 1800>
- 9. Under cover (RH)
- 10. Connection for stabilizer bar
- 11. Connection for tie rod end
- 12. Connection for lower arm ball joint
- 13. Connection for drive shaft
- 14. Transmission stay B
- 15. Transmission stay A
- 16. Connection for clutch release cylinder
- 17. Connection for clutch cable
- 18. Bell housing cover
- 19. Center member assembly

- 20. Transmission assembly lower part coupling bolts
- 21. Transmission assembly

NOTE
For tightening locations indicated by the * symbol, first tighten temporarily, and then make the final tightening with the entire weight of the engine applied to the vehicle body.

SERVICE POINTS OF REMOVAL**4. REMOVAL OF STARTER MOTOR**

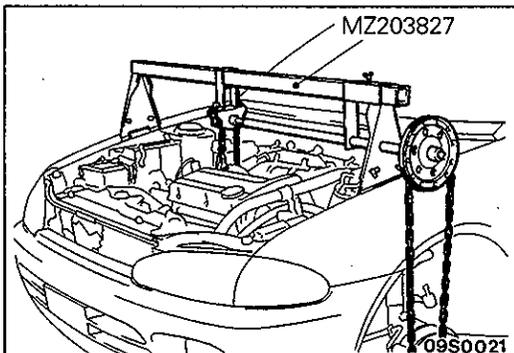
Remove the starter motor with the starter motor harness still connected, and secure it inside the engine compartment.

**6. REMOVAL OF TRANSMISSION MOUNT BOLT**

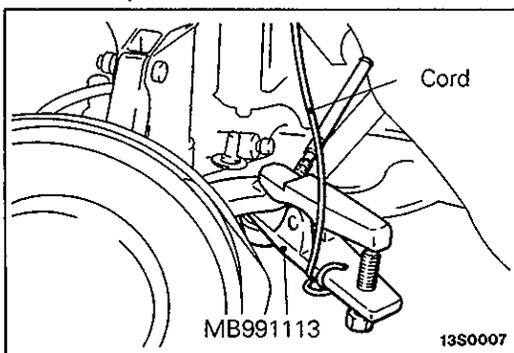
Use a garage jack to raise the transmission assembly until there is no load on the transmission mounting insulator, and then remove the transmission mounting bolts.

Caution

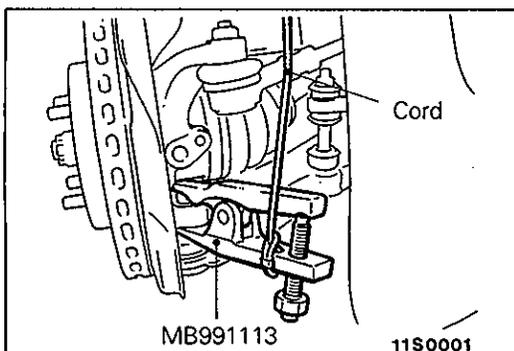
When jacking up the transmission assembly, support it over a wide area so force is not applied to only one part of it.

**● SUPPORTING ENGINE ASSEMBLY**

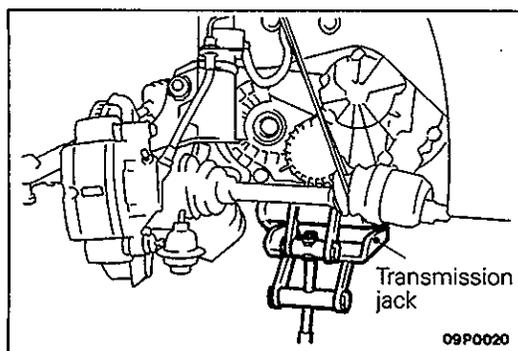
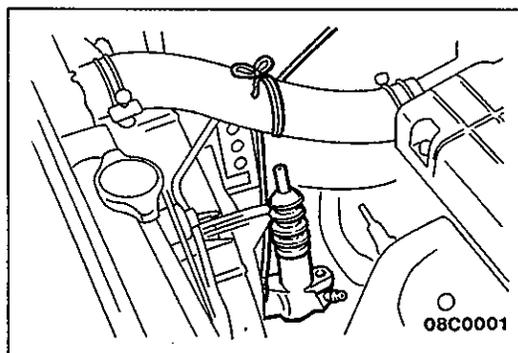
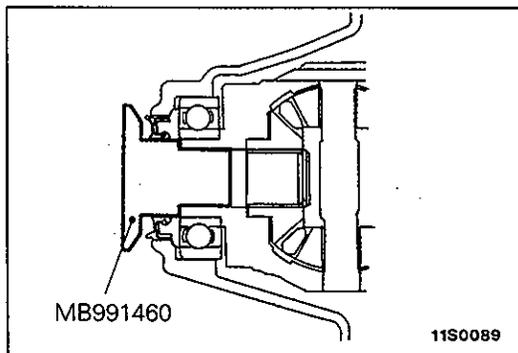
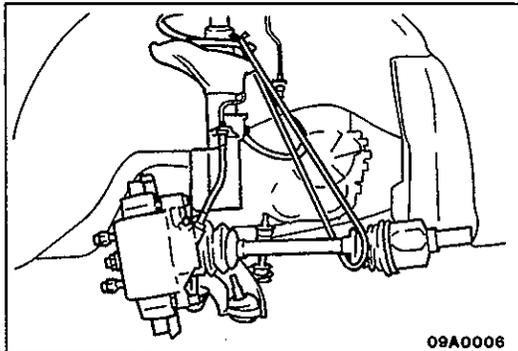
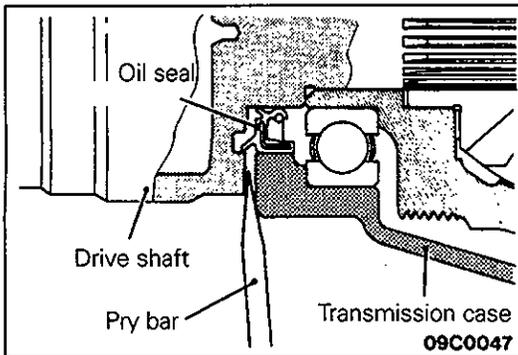
Set the special tool to the vehicle to support the engine assembly.

**11. REMOVAL OF TIE ROD END****Caution**

1. Loosen the nut only, don't remove it from the tie rod end.
2. Fix the special tool at the strut, etc. by a cord in order to avoid dropping it.

**12. REMOVAL OF LOWER ARM BALL JOINT****Caution**

1. Loosen the nut only, don't remove it from the knuckle.
2. Fix the special tool at the strut, etc. by a cord in order to avoid dropping it.



13. DISCONNECTION OF DRIVE SHAFT

- (1) Insert a pry bar between the transmission case and the drive shaft, and then pry the drive shaft from the transmission.

NOTE

Take out the drive shaft with the hub and knuckle, etc., still attached.

Caution

1. **Do not pull on the drive shaft; doing so will damage the TJ assembly; be sure to use the pry bar.**
2. **Do not insert the pry bar so deep as to damage the oil seal.**

- (2) Suspend the removed drive shaft with wire so that there are no sharp bends in any of the joints.
- (3) Turn the right hand drive shaft 90° toward the front of the vehicle so that it will not be a hindrance.

- (4) Use the special tool provided as a cover to prevent the entry of foreign objects into the transmission case.

16. DISCONNECTION OF CLUTCH RELEASE CYLINDER

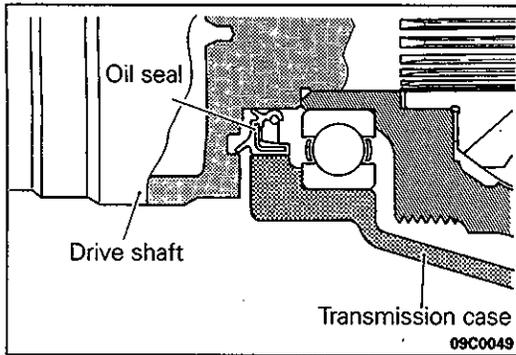
Remove the clutch release cylinder and then secure at the body side without disconnecting the oil line coupling.

21. REMOVAL OF TRANSMISSION ASSEMBLY

Support the transmission assembly by using transmission jack; then, after moving the transmission assembly to the right, lower it.

Caution

When supporting the transmission assembly by the transmission jack, take care to be sure that the jack's force is applied to a wide area, not to only a small localized area.



SERVICE POINTS OF INSTALLATION

E22.JDBI

13. INSTALLATION OF DRIVE SHAFT

Provisionally install the drive shaft so that the TJ case of the drive shaft is straight, and not bent relative to the transmission.

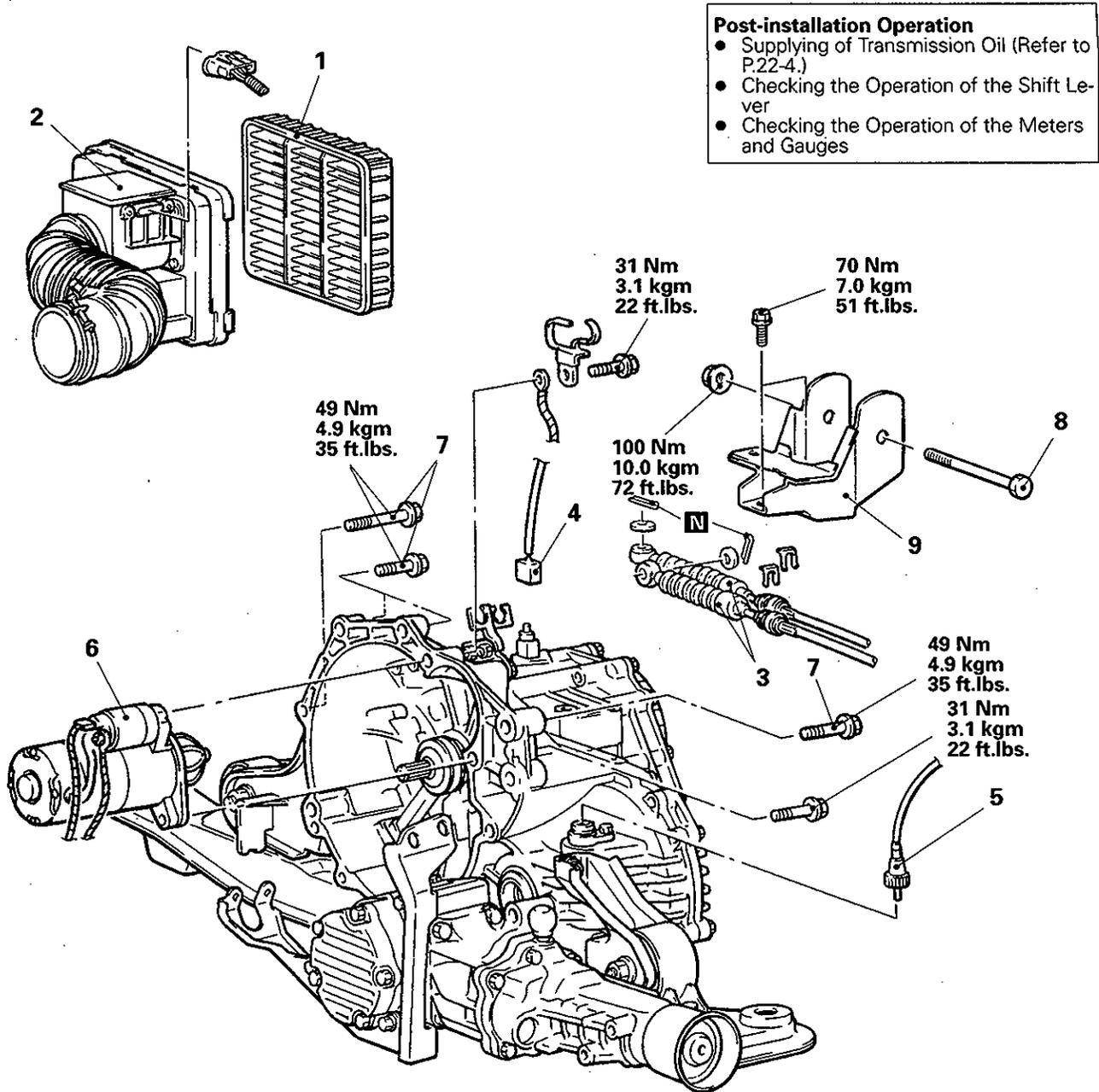
Caution

Care must be taken to ensure that the oil seal lip part of the transmission is not damaged by the serrated part of the drive shaft.

TRANSMISSION ASSEMBLY <4WD>

E22JA--

REMOVAL AND INSTALLATION



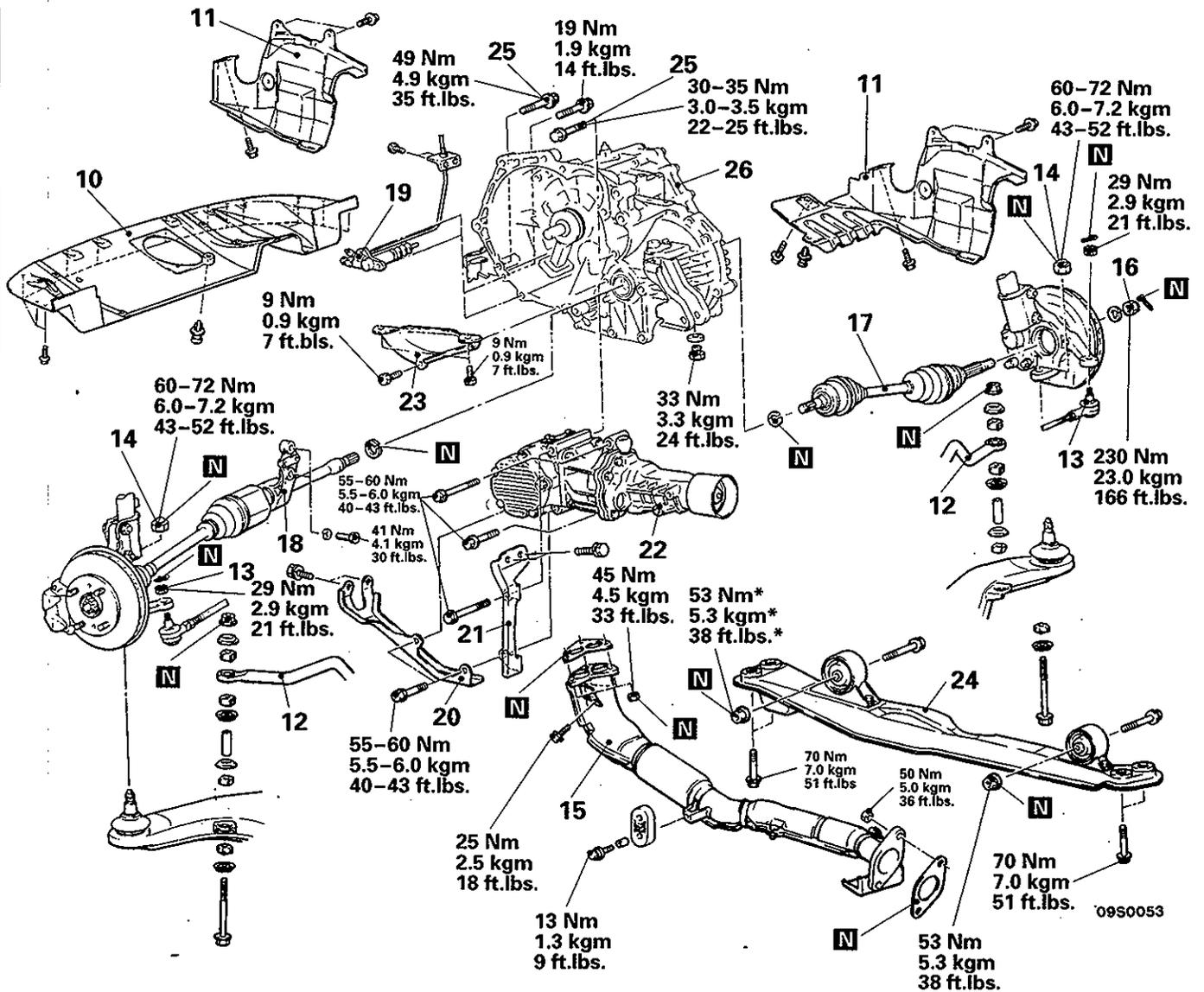
Post-installation Operation

- Supplying of Transmission Oil (Refer to P.22-4.)
- Checking the Operation of the Shift Lever
- Checking the Operation of the Meters and Gauges

09S0059

Removal steps

- | | |
|---|---|
| 1. Air cleaner element | |
| 2. Air cleaner cover and hose assembly | |
| 3. Shift cable and select cable connection | ↔ |
| 4. Backup lamp switch connector | |
| 5. Speedometer cable connection | ↔ |
| 6. Starter motor | |
| 7. Transmission assembly upper part coupling bolt | |
| 8. Transmission mount bolt | |
| 9. Transmission mount bracket | |
| • Supporting engine assembly | |



Lifting up of the vehicle

- Draining of the transmission oil
- 10. Venturi plate
- 11. Under cover (RH)
- 12. Connection for stabilizer bar
- ◆◆ 13. Connection for tie rod end
- ◆◆ 14. Connection for lower arm ball joint
- ◆◆ 15. Front exhaust pipe
- ◆◆ ◆◆ 16. Drive shaft nut (RH)
- ◆◆ ◆◆ 17. Drive shaft (RH)
- ◆◆ ◆◆ 18. Connection for drive shaft and innershaft assembly (LH)
- ◆◆ 19. Connection for clutch release cylinder
- ◆◆ 20. Transfer stay (Front)
- ◆◆ 21. Transfer stay (Rear)
- ◆◆ 22. Transfer assembly

- 23. Bell housing cover
- 24. Center member assembly
- 25. Transmission assembly lower part coupling bolt
- ◆◆ 26. Transmission assembly

Transfer assembly removal steps

- 15. Front exhaust pipe
- 20. Transfer stay (Front)
- 21. Transfer stay (Rear)
- ◆◆ 22. Transfer assembly

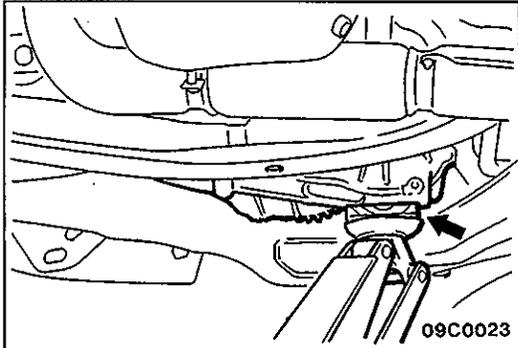
NOTE
For tightening locations indicated by the * symbol, first tighten temporarily, and then make the final tightening with the entire weight of the engine applied to the vehicle body.

E22JBCN

SERVICE POINTS OF REMOVAL

6. REMOVAL OF STARTER MOTOR

Remove the starter motor with the starter motor harness still connected, and secure it inside the engine compartment.

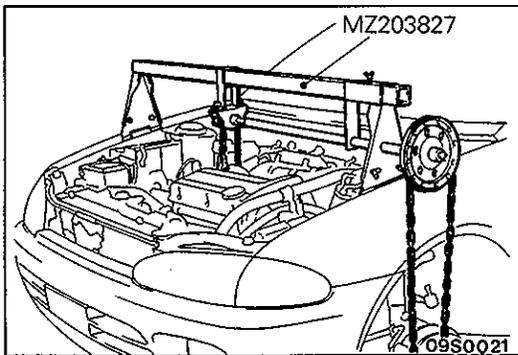


8. REMOVAL OF TRANSMISSION MOUNT BOLT

Use a garage jack to raise the transmission assembly until there is no load on the transmission mounting insulator, and then remove the transmission mounting bolts.

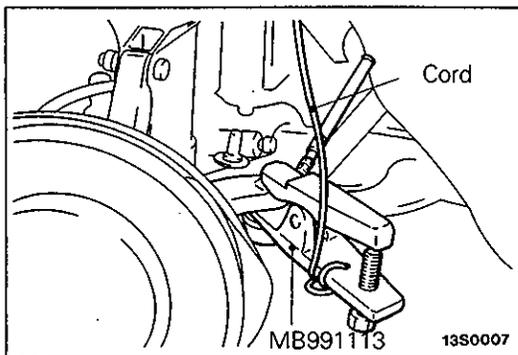
Caution

When jacking up the transmission assembly, support it over a wide area so force is not applied to only one part of it.



• SUPPORTING ENGINE ASSEMBLY

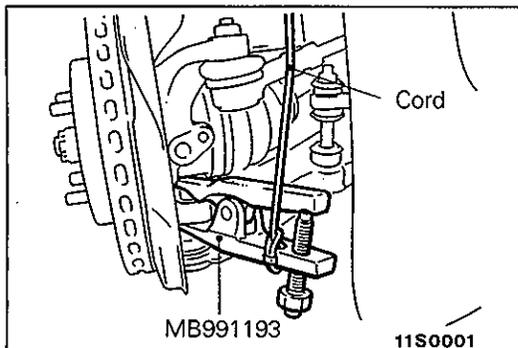
Set the special tool to the vehicle to support the engine assembly.



13. REMOVAL OF TIE ROD END

Caution

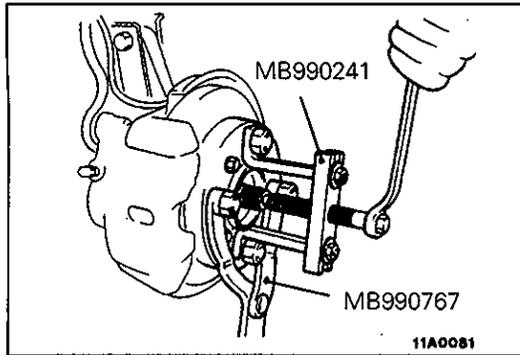
1. Loosen the nut only, don't remove it from the tie rod end.
2. Fix the special tool at the strut, etc. by a cord in order to avoid dropping it.



14. REMOVAL OF LOWER ARM BALL JOINT

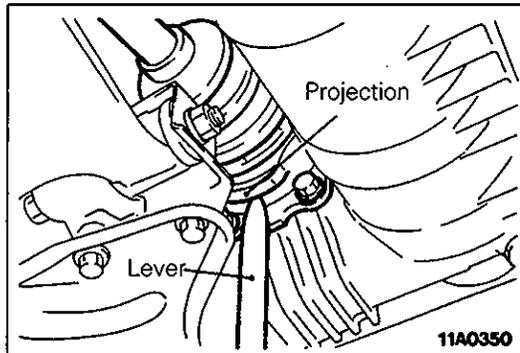
Caution

1. Loosen the nut only, don't remove it from the knuckle.
2. Fix the special tool at the strut, etc. by a cord in order to avoid dropping it.



16. REMOVAL OF DRIVE SHAFT NUT (RH)/17. DRIVE SHAFT (RH)

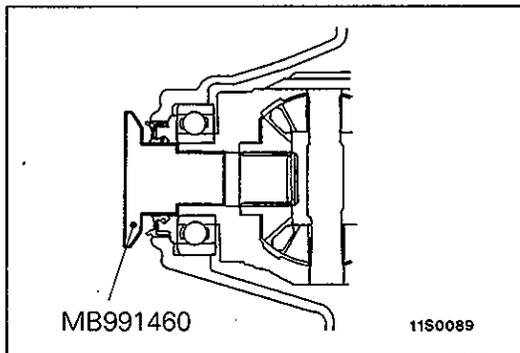
- (1) Use the special tools to loosen the drive shaft nut, and then push out the drive shaft from the hub.



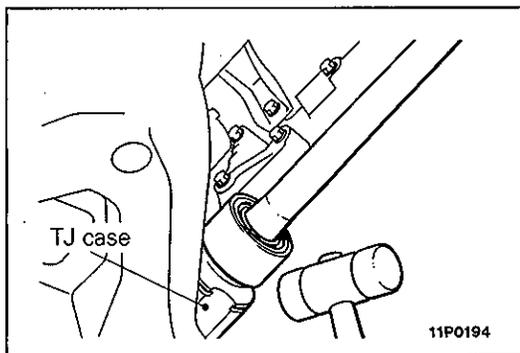
- (2) Apply a lever to the projecting part of the drive shaft to remove the drive shaft from the transmission.

Caution

Do not pull on the drive shaft; doing so will damage the TJ assembly; be sure to use the lever.



- (3) Use the special tool provided as a cover to prevent the entry of foreign objects into the transmission case.

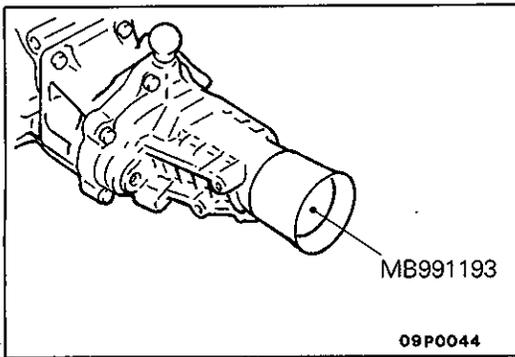


18. REMOVAL OF DRIVE SHAFT AND INNER SHAFT ASSEMBLY (LEFT SIDE)

- (1) Lightly tap the T.J. case of the drive shaft with a plastic hammer or similar tool to remove the inner shaft from the transmission.
- (2) Suspend the removed drive shaft and inner shaft with wire so that there are no sharp bends in any of the joints.
- (3) Use the special tool provided as a cover to prevent the entry of foreign objects into the transmission case.

19. DISCONNECTION OF CLUTCH RELEASE CYLINDER

Remove the clutch release cylinder and then secure at the body side without disconnecting the oil line coupling.

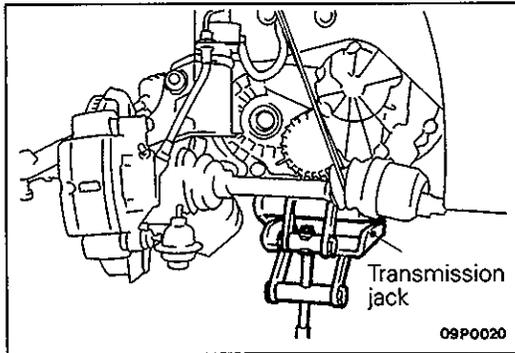


22. REMOVAL OF TRANSFER ASSEMBLY

Cover the transfer opening with the special tool to prevent transmission oil discharge and the entry of foreign objects.

Caution

1. Be cautious to avoid damaging the transfer oil seal lip.
2. The propeller shaft should be suspended so that it is not sharply bent.

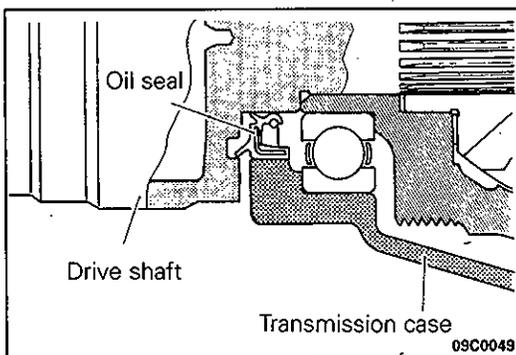


26. REMOVAL OF TRANSMISSION ASSEMBLY

Support the transmission assembly by using a transmission jack; then, after moving the transmission assembly to the right, lower it.

Caution

When supporting the transmission assembly by the transmission jack, take care to be sure that the jack's force is applied to a wide area, not to only a small localized area.



SERVICE POINTS OF INSTALLATION

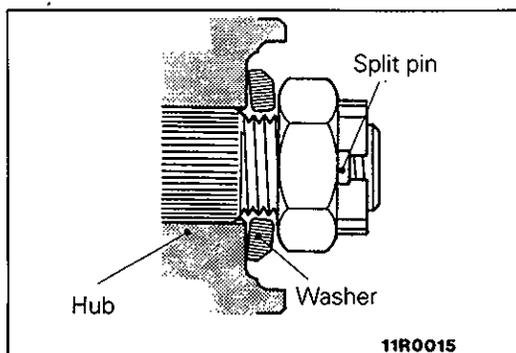
E22JDBK

18. INSTALLATION OF DRIVE SHAFT AND INNER SHAFT ASSEMBLY (LEFT SIDE)/17. DRIVE SHAFT (RIGHT SIDE)

Provisionally insert the drive shaft so that the T.J. case and inner shaft are straight toward the transmission.

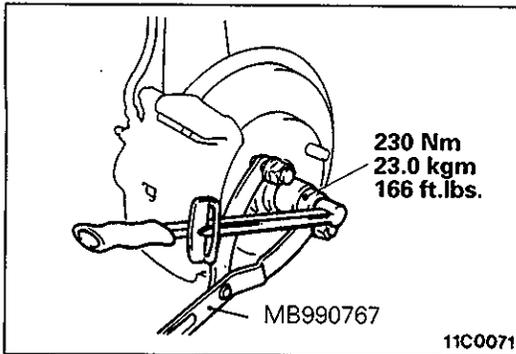
Caution

Care must be taken to ensure that the oil seal lip part of the transmission is not damaged by the serrated part of the drive shaft.



16. INSTALLATION OF DRIVE SHAFT NUT (RH)

- (1) Be sure to install the washer and drive shaft nut in the specified direction.



- (2) Using the special tool, tighten the drive shaft nut.

Caution

Before securely tightening the drive shaft nuts, make sure there is no load on the wheel bearings.

- (3) If the position of the split pin holes does not match, tighten the nut up to 260 Nm (26 kgm, 188 ft.lbs.) in maximum.
- (4) Install the split pin in the first matching holes and bend it securely.