

# MANUAL TRANSMISSION

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E22AA--

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### 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 interconnecting 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		4WD
	F5M22	F5M31	W5M31
Model	F5M22	F5M31	W5M31
Applicable engine	4G93, 4G63	4G64, 4D68 Turbocharger 4D65 Turbocharger	4G93, 4G63
Type	5-speed floor shift	5-speed floor shift	5-speed floor shift
Gear ratio			
1st	3.454	3.250	3.083
2nd	1.947	1.833	1.684
3rd	1.285	1.271	1.115
4th	0.939	0.888	0.833
5th	0.756	0.651	0.690
Reverse	3.083	3.166	3.166
Final gear ratio	4.592	4.322 ... 4G64 4.913 ... 4D65, 4D68	—
Reduction ratio			
Primary	—	—	1.680
Front differential	—	—	3.100
Transfer	—	—	1.090
Speedometer gear ratio (driven/drive)	29/36	29/36	29/36

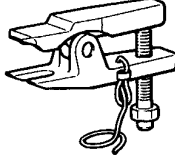
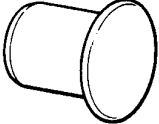
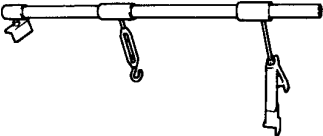
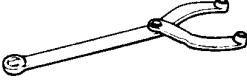
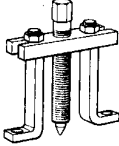
## LUBRICANTS

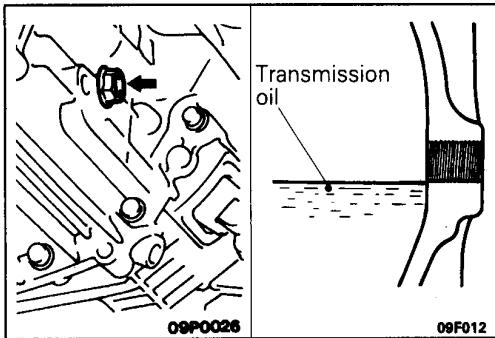
E22CD--

Items	Specified lubricant	Quantity dm <sup>3</sup> (U.S.qts., Imp.qts.)
Transmission oil	Hypoid gear oil, SAE 75W-90 or 75W-85W conforming to API classification GL-4	<F5M22> 1.8 (1.9, 1.6) <F5M31, W5M31> 2.3 (2.4, 2.0)
Transfer oil		<W5M31> 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>
	MB991191	Engine hanger	To support the engine assembly during removal and installation of the transmission
	MB990767	End yoke holder	Fixing the hub <4WD>
	MB990241	Axle shaft puller	Removal of the drive shaft <4WD>



## SERVICE ADJUSTMENT PROCEDURES

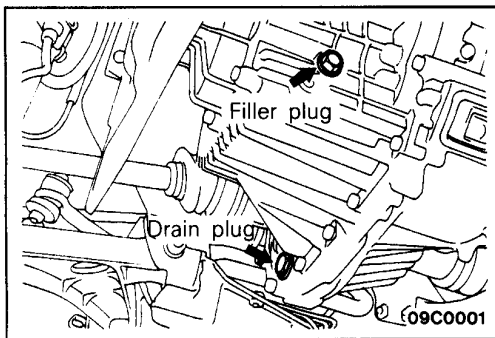
E22FDAS

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

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

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

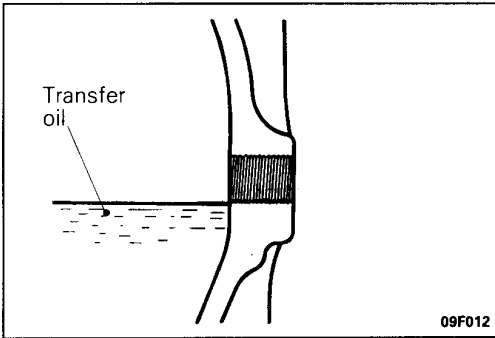
**Quantity:**

<2WD> 1.8 dm<sup>3</sup> (1.9 U.S.qts., 1.6 Imp.qts.)

<4WD> 2.3 dm<sup>3</sup> (2.4 U.S.qts., 2.0 Imp.qts.)

5. Tighten filler plug to specified torque.

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

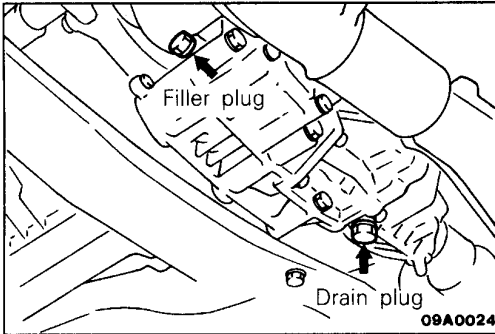


**TRANSFER OIL LEVEL CHECK <4WD>**

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.

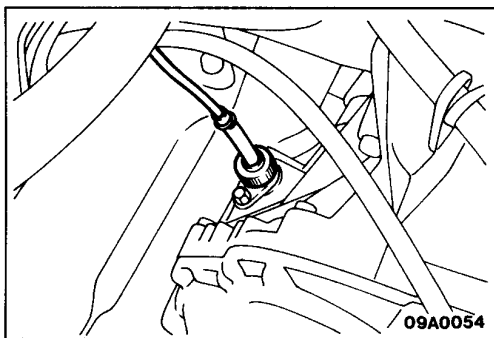
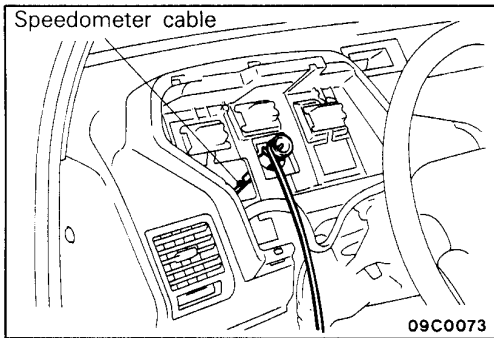
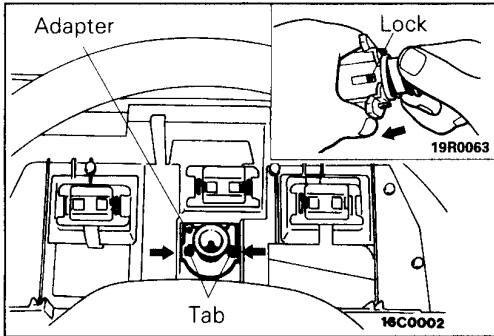
**Specified transmission oil:**

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

**Quantity: 0.5 dm<sup>3</sup> (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**

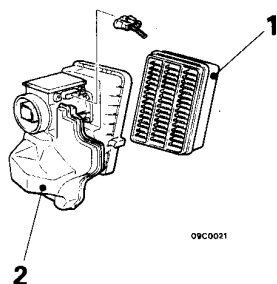
**If the cable is not correctly and securely connected, it may cause incorrect indication by the speedometer, or abnormal noise. Be sure to connect it correctly.**

# TRANSMISSION CONTROL

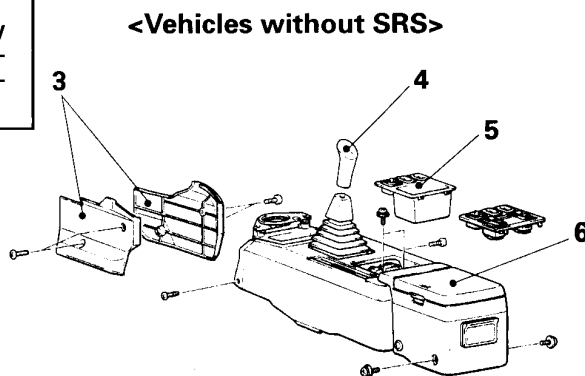
## REMOVAL AND INSTALLATION

**Caution: SRS**

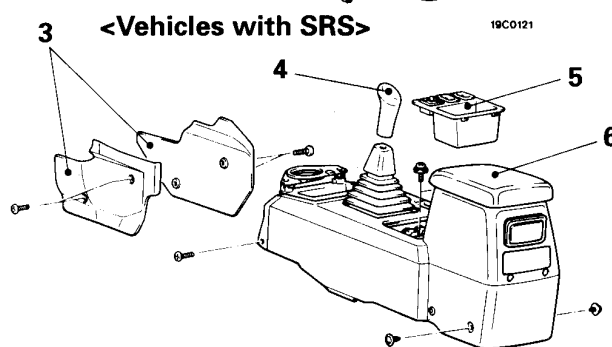
Be careful not to subject the SRS diagnosis unit to any shocks during removal and installation of the floor console, transmission control cable and shift lever assembly.



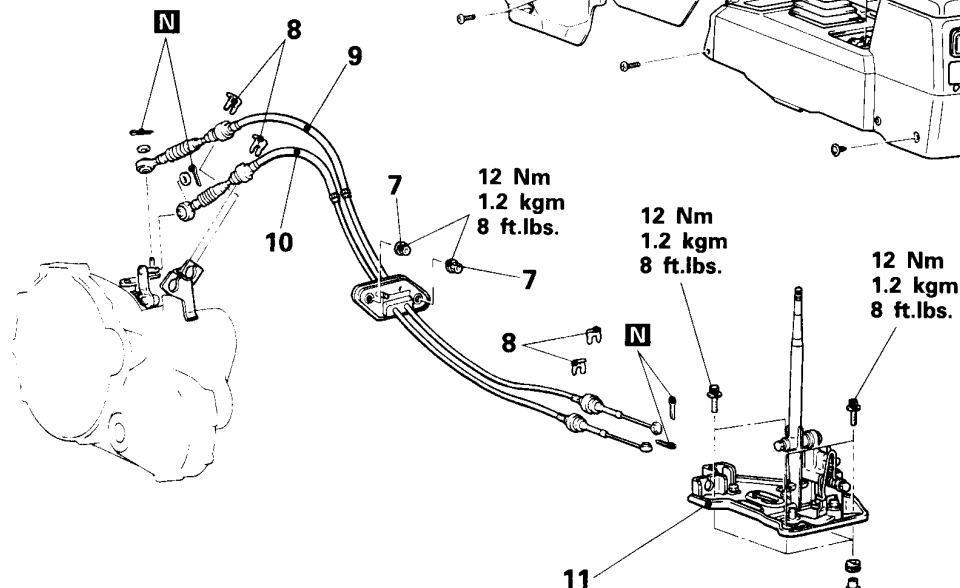
09C0021



19C0121



19C0254



09C0017

**Removal steps of the transmission control cable assembly**

1. Air cleaner element
2. Air cleaner cover
3. Side cover
4. Shift lever knob
5. Floor console switch panel
6. Floor console assembly
7. Nut
8. Clip
9. Shift cable
10. Select cable

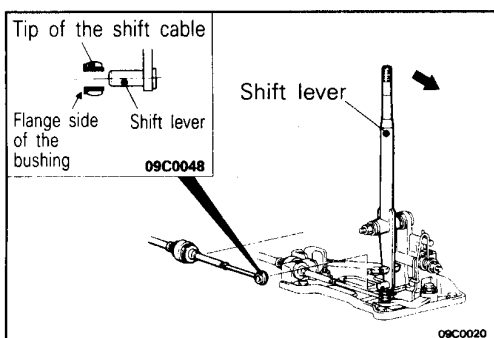
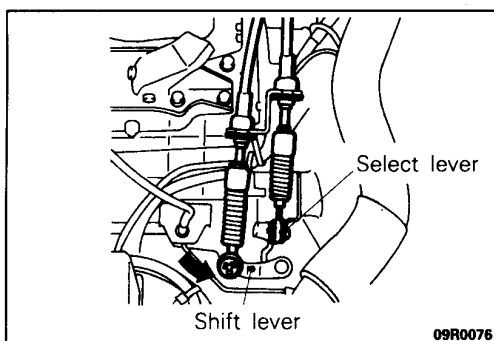
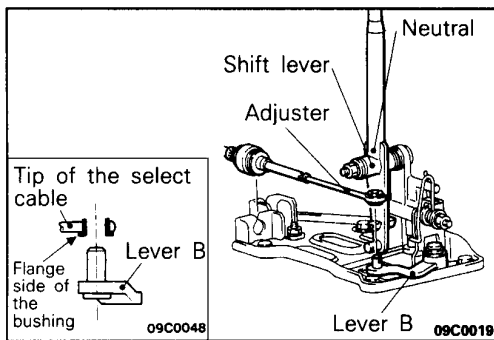
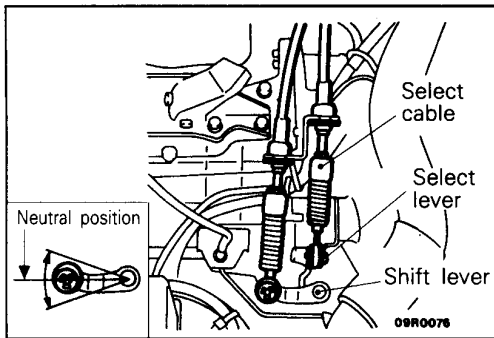
**Removal steps of the shift lever assembly**

3. Side cover
4. Shift lever knob
5. Floor console switch panel
6. Floor console assembly
11. Shift lever assembly

**INSPECTION**

E22HCAJ

- Check the select cable for function and for damage.
- Check the shift cable for function and for damage.
- Check the boot for damage.
- Check each bushing for wear or abrasion, sticking, impeded action, and damage.

**SERVICE POINTS OF INSTALLATION**

E22HDAO

**10. INSTALLATION OF 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.

**9. INSTALLATION OF 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**

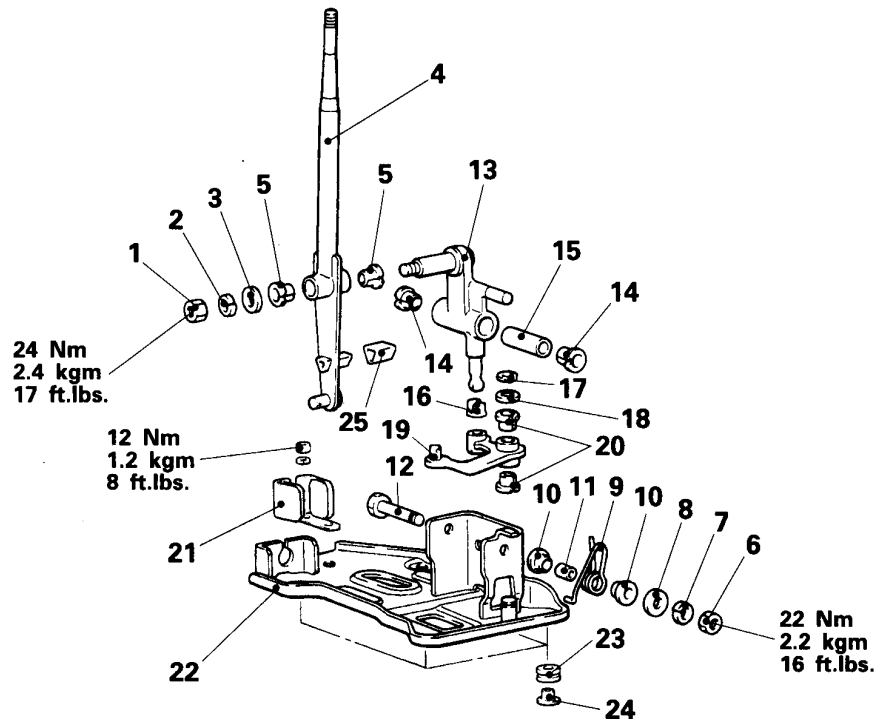
If the shift lever does not move easily, depress and hold the clutch pedal.

- (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.



DISASSEMBLY AND REASSEMBLY

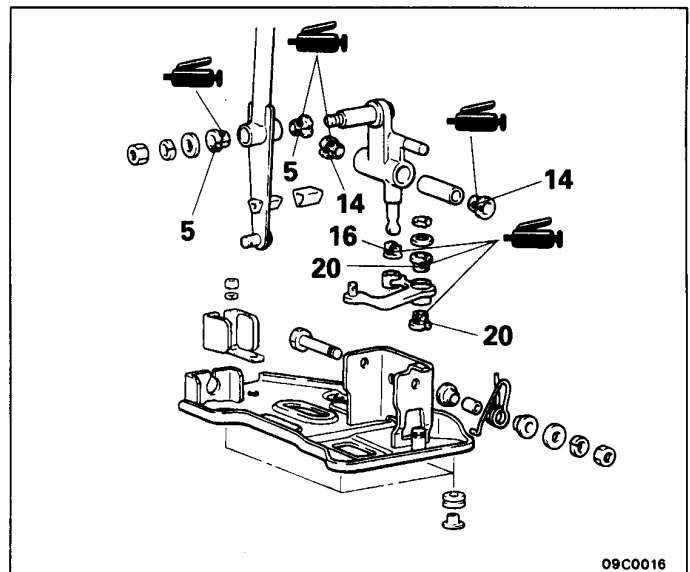
E22HE-



09C0015

**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. Sheet
11. Pipe
12. Bolt
13. Lever A
14. Bushing
15. Collar
16. Bushing
17. Snap ring
18. Washer
19. Lever B
20. Bushing
21. Cable bracket
22. Bracket assembly
23. Bushing
24. Distance piece
25. Shift stopper



09C0016

## TRANSMISSION ASSEMBLY &lt;2WD&gt;

E22JA-2

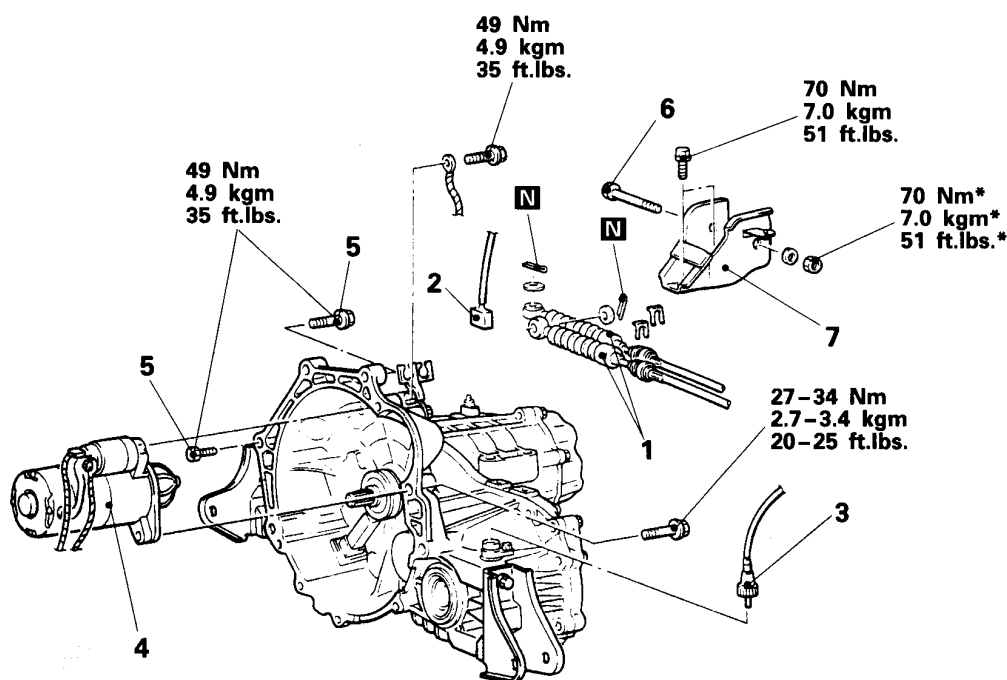
## REMOVAL AND INSTALLATION

**Pre-removal Operation**

- Removal of the Air Cleaner Assembly

**Post-installation Operation**

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



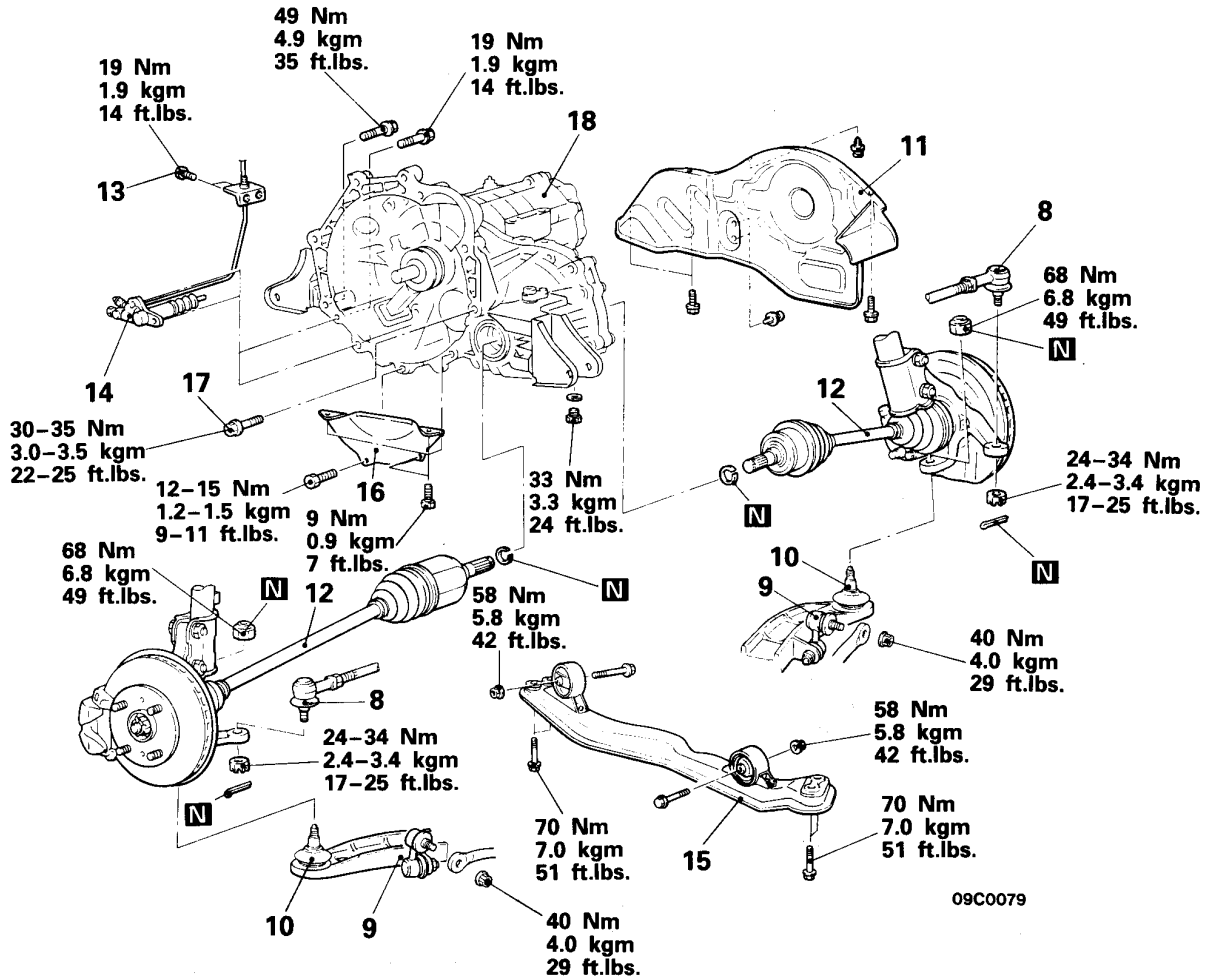
09C0077

**Removal steps**

1. Control cable connection
2. Backup lamp switch connector
3. Speedometer cable connection
- ↔ 4. Starter motor
5. Transmission assembly upper part coupling bolt
- ↔ 6. Transmission mount bolt
7. Transmission mount bracket

**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.



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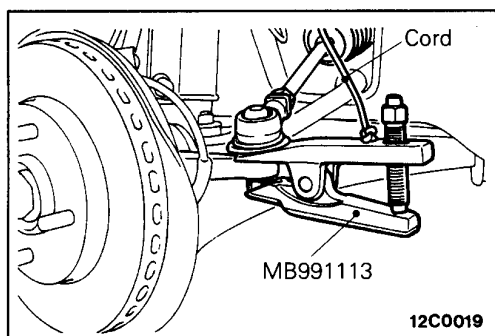
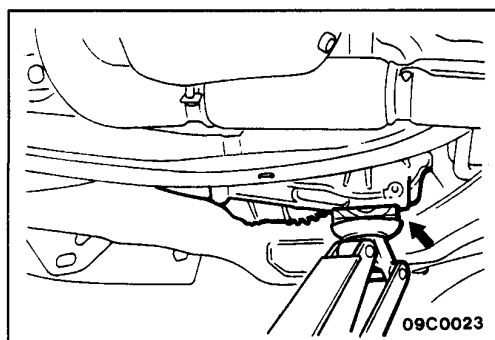
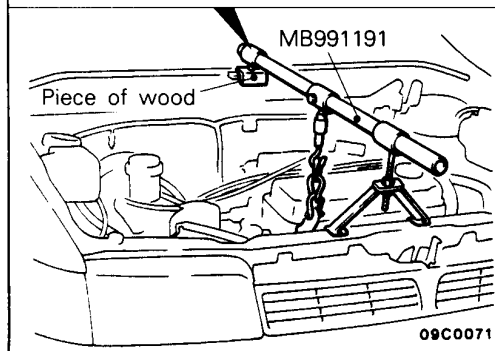
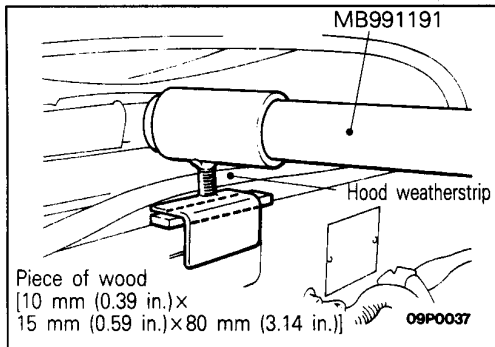
- Lifting up of the vehicle
- ◄► 8. Connection for tie rod end
- ◄► 9. Connection for stabilizer bar
- ◄► 10. Connection for lower arm ball joint
- 11. Under cover (RH)
- Draining of the transmission oil
- ◄► ◄◄ 12. Drive shaft connection
- ◄► 13. Clutch oil line bracket bolt
- ◄► 14. Connection for release cylinder
- 15. Center member <Petrol-powered vehicles>
- 16. Bell housing cover
- 17. Transmission assembly lower part coupling bolts
- ◄► 18. Transmission assembly

## SERVICE POINTS OF REMOVAL

E22JBCK

## 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

For petrol-powered vehicles, set the special tool to the vehicle and support the engine assembly.

**Caution**

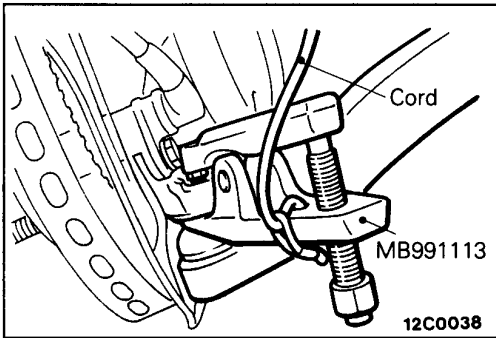
**Be sure to insert a piece of wood between engine hanger assembly support and front deck. Make sure that the hood weatherstrip is not caught between the front deck and the piece of wood.**

For diesel-powered vehicles, use a garage jack to raise the transmission assembly until there is no load on the transmission insulator, and then remove the transmission mounting bolts.

## 8. REMOVAL OF TIE ROD END

**Caution**

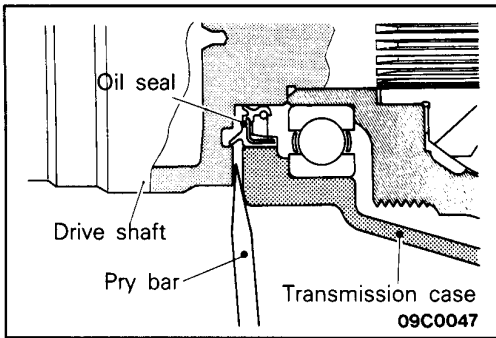
1. Loosen the nut only, don't remove it from the tie rod end.
2. Fix the special tool at the strut, etc. by a cord in order to avoid dropping it.



**10. 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.



**12. DISCONNECTION OF DRIVE SHAFT**

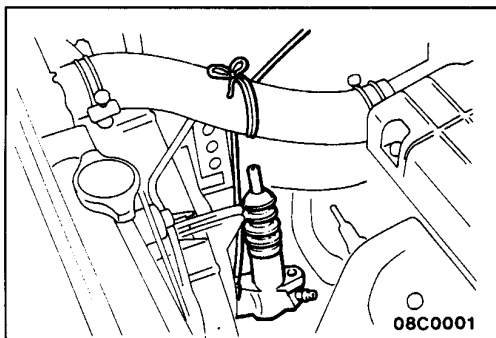
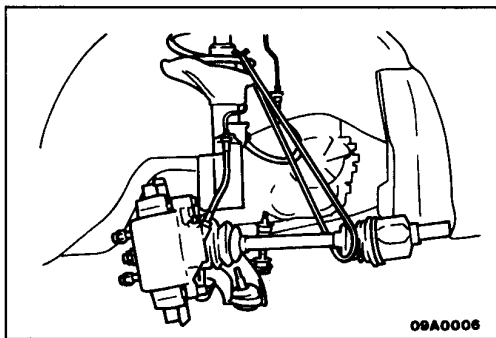
- (1) Insert a pry bar between the transmission case and the drive shaft, and then pry the drive shaft from the transmission.

**NOTE**

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

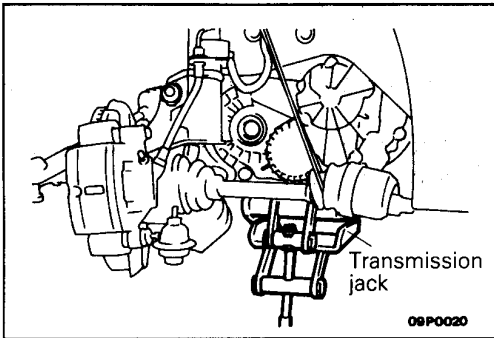
**Caution**

1. Do not pull on the drive shaft; doing so will damage the inboard joint; be sure to use the pry bar.
2. Do not insert the pry bar so deep as to damaged 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.



**14. DISCONNECTION OF CLUTCH RELEASE CYLINDER**

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

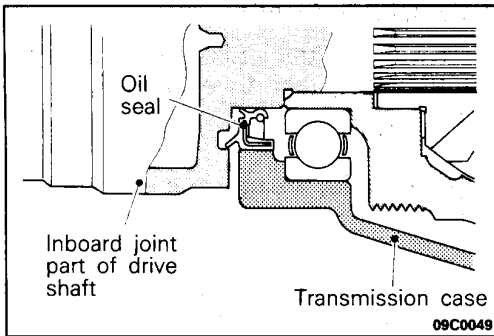


### 18. REMOVAL OF TRANSMISSION ASSEMBLY

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

E22JDBI

### 12. INSTALLATION OF DRIVE SHAFT

Provisionally install the drive shaft so that the inboard joint part 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>**

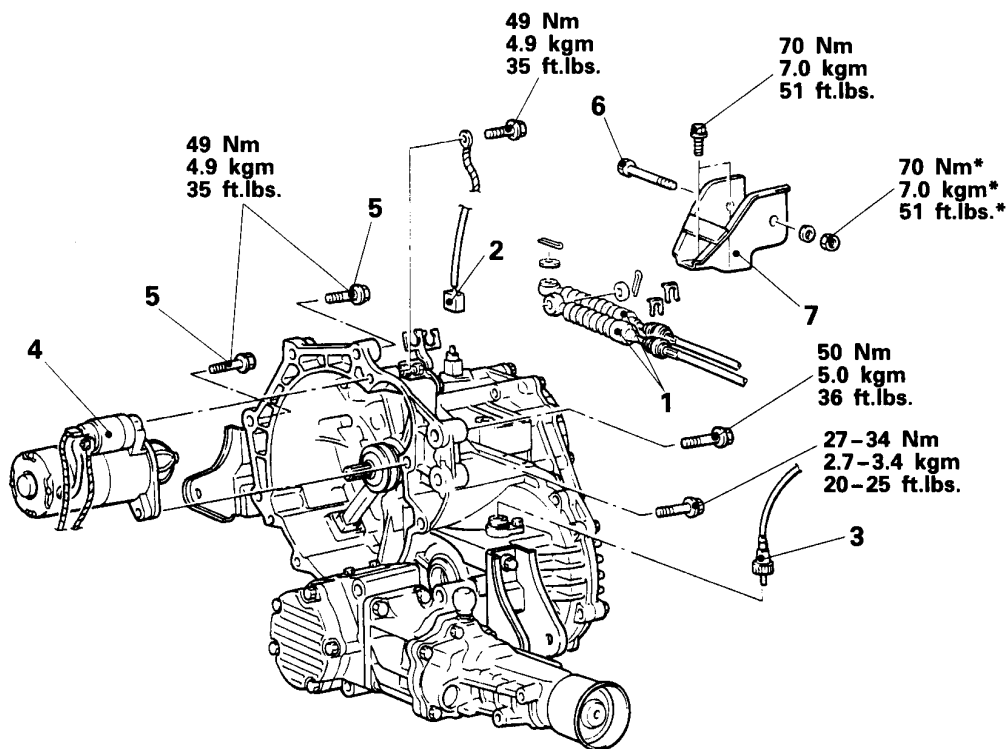
**REMOVAL AND INSTALLATION**

**Pre-removal Operation**

- Removal of the Air Cleaner Assembly

**Post-installation Operation**

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



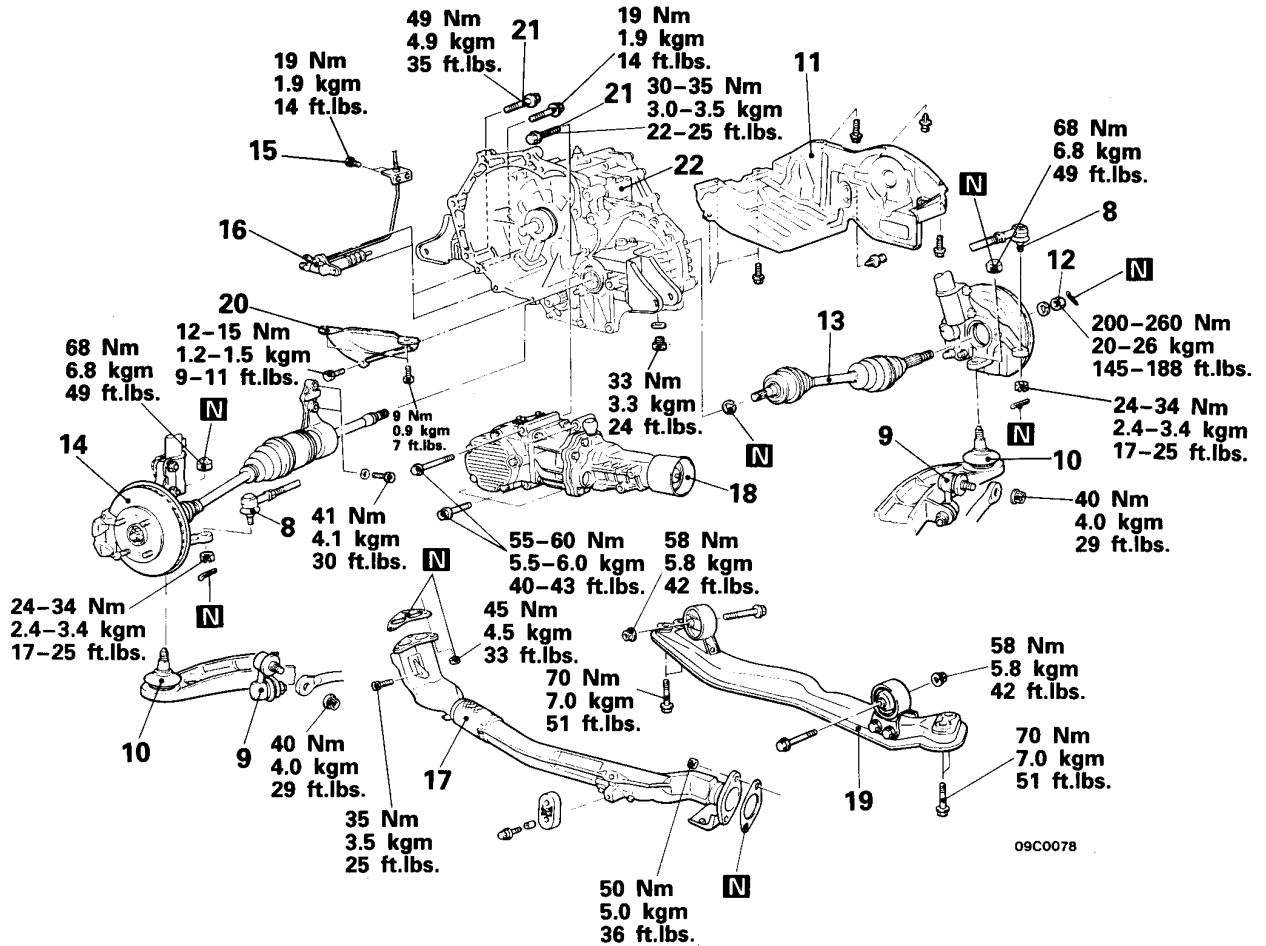
09C0076

**Removal steps**

1. Control cable connection
2. Backup lamp switch connector
3. Speedometer cable connection
- ↔ 4. Starter motor
5. Transmission assembly upper part coupling bolt
- ↔ 6. Transmission mount bolt
7. Transmission mount bracket

**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.



09C0078

- Lifting up of the vehicle
- ↔ 8. Connection for tie rod end
- ↔ 9. Connection for stabilizer bar
- ↔↔ 10. Connection for lower arm ball joint
- Draining of the transmission oil
- ↔ 11. Under cover (RH)
- ↔↔↔ 12. Drive shaft nut (RH)
- ↔↔↔ 13. Drive shaft (RH)
- ↔↔↔ 14. Connection for drive shaft and inner shaft
- ↔ 15. Clutch oil line bracket bolts
- ↔ 16. Connection for clutch release cylinder

- ↔ 17. Front exhaust pipe
- ↔ 18. Transfer assembly
- ↔ 19. Center member
- ↔ 20. Bell housing cover
- ↔ 21. Transmission assembly lower part coupling bolts
- ↔ 22. Transmission assembly

**Transfer assembly removal steps**

- ↔ 17. Front exhaust pipe
- ↔ 18. Transfer assembly



**SERVICE POINTS OF REMOVAL**

E22JBCL

**4. REMOVAL OF STARTER MOTOR**

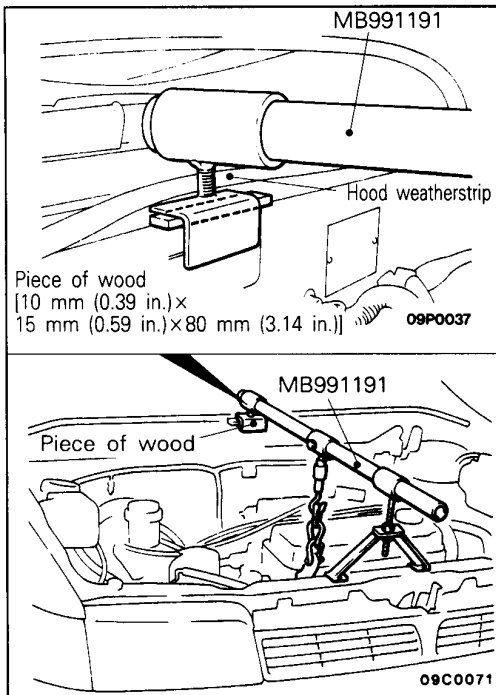
Remove the starter motor with the starter motor harness still connected, and secure it inside the engine compartment.

**6. REMOVAL OF TRANSMISSION MOUNT BOLT**

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

**Caution**

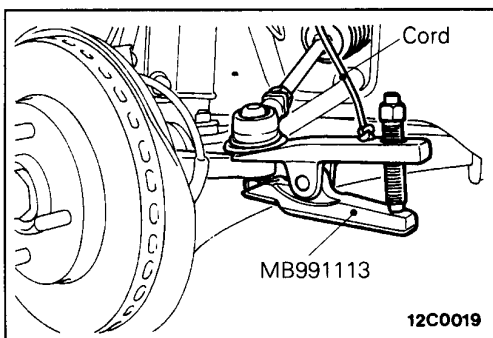
Be sure to insert a piece of wood between engine hanger assembly support and front deck. Make sure that the hood weatherstrip is not caught between the front deck and the piece of wood.



**8. REMOVAL OF TIE ROD END**

**Caution**

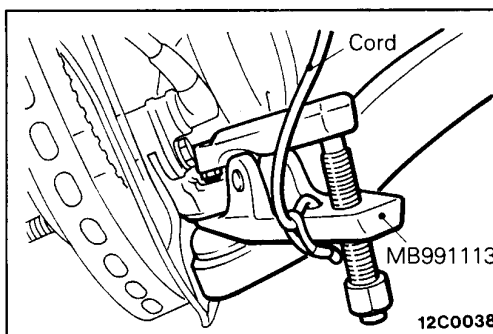
1. Loosen the nut only, don't remove it from the tie rod end.
2. Fix the special tool at the strut, etc. by a cord in order to avoid dropping it.

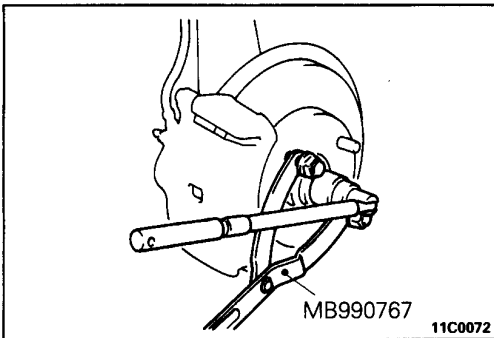


**10. REMOVAL OF LOWER ARM BALL JOINT**

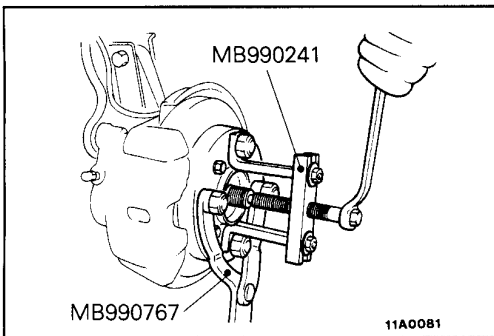
**Caution**

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.



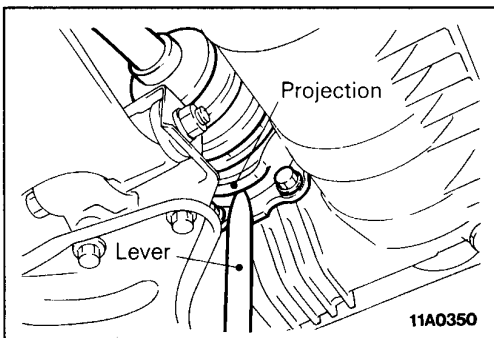


## 12. REMOVAL OF DRIVE SHAFT NUT



## 13. REMOVAL OF DRIVE SHAFT (RH)

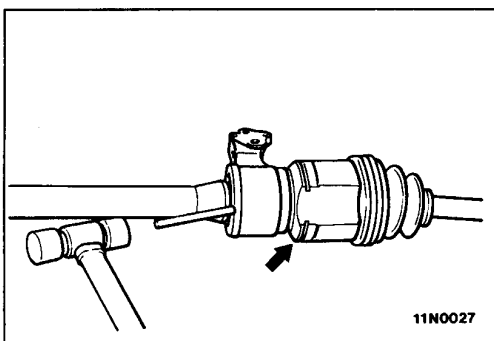
- (1) Use the special tools to push out the drive shaft from the front hub.



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

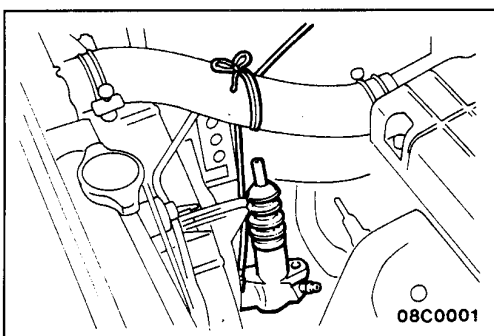
### Caution

**Do not pull on the drive shaft; doing so will damage the D.O.J.; be sure to use the lever.**



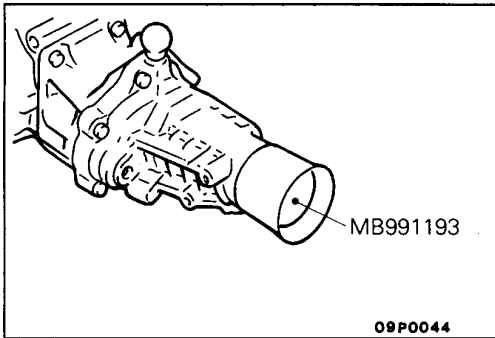
## 14. REMOVAL OF DRIVE SHAFT AND INNER SHAFT

- (1) If the inner shaft and transmission are tightly joined, tap the center bearing bracket lightly with a plastic hammer, etc. to remove the drive shaft and inner shaft (LH) 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.



## 16. DISCONNECTION OF CLUTCH RELEASE CYLINDER

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

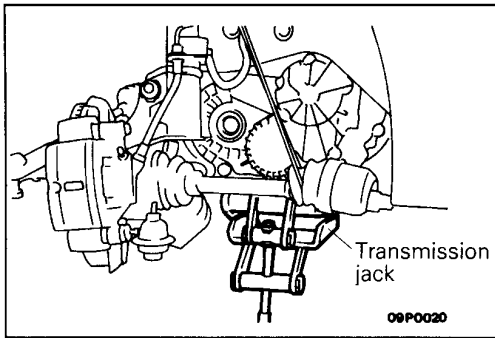


**18. REMOVAL OF TRANSFER ASSEMBLY**

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.

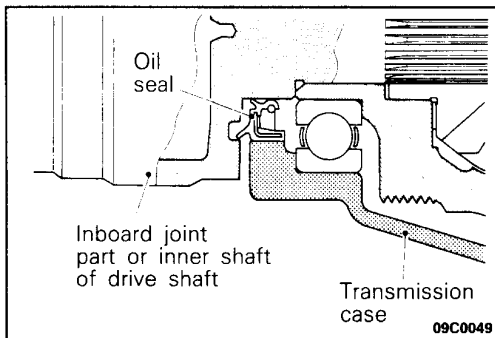


**22. REMOVAL OF TRANSMISSION ASSEMBLY**

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**

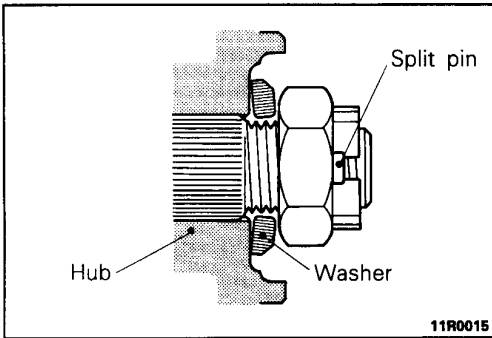
E22JDBJ

**14. INSTALLATION OF DRIVE SHAFT AND INNER SHAFT/13. DRIVE SHAFT (RH)**

Provisionally insert the drive shaft so that the inner joint section or the inner shaft section is straight and not bent relative to the transmission.

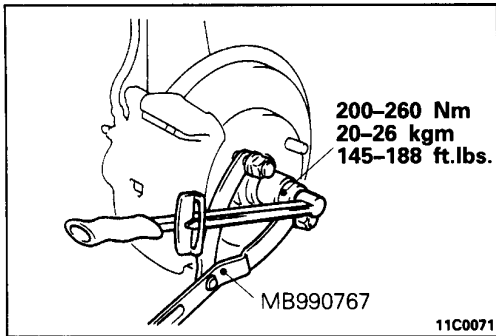
**Caution**

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.



## 12. INSTALLATION OF DRIVE SHAFT NUT

- (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.