

# **DAIHATSU**

# **CHARADE**

## Chassis

### **SECTION 7**

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WR-07001

**7**

STEERING

STEERING

SCHEMATIC VIEW

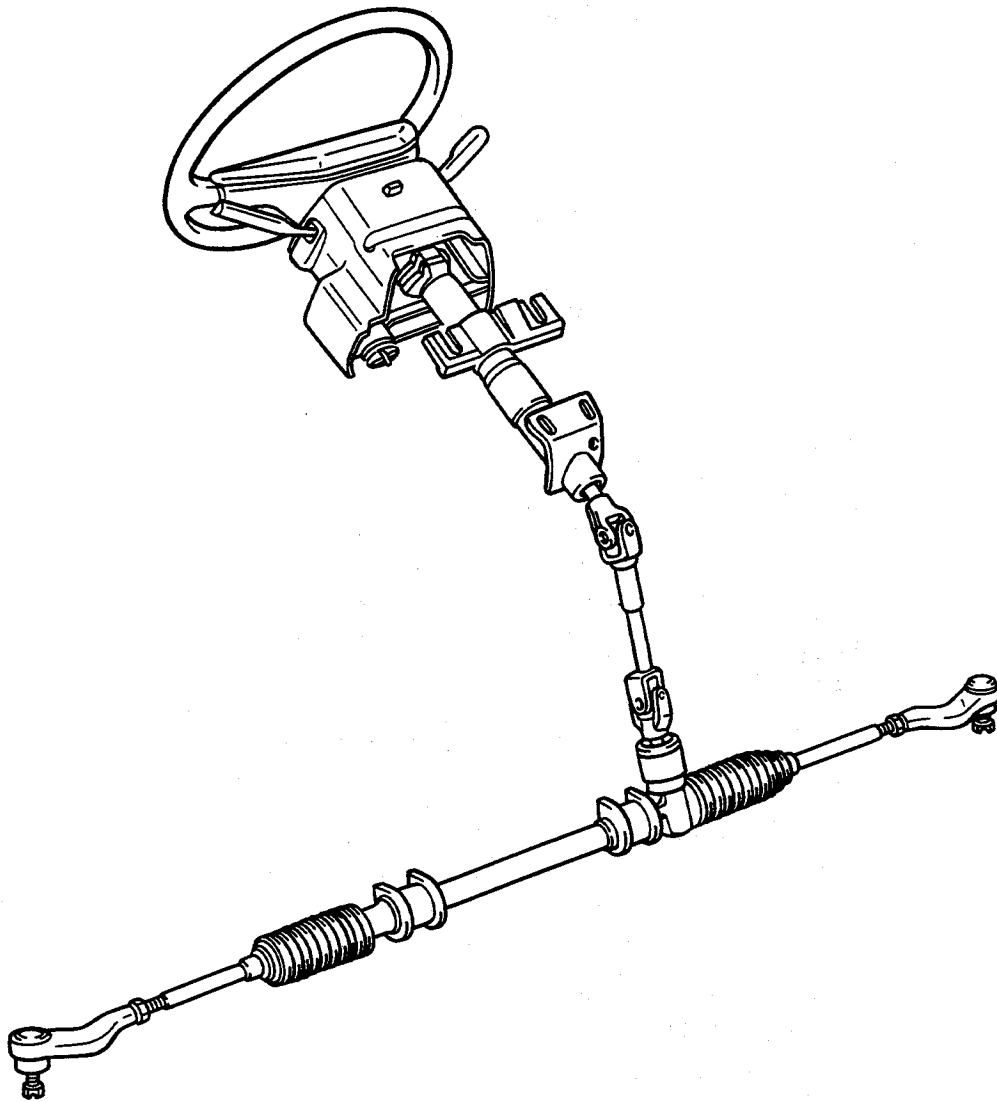


Fig. 7-1

WR-07002

# STEERING WHEEL COMPONENTS

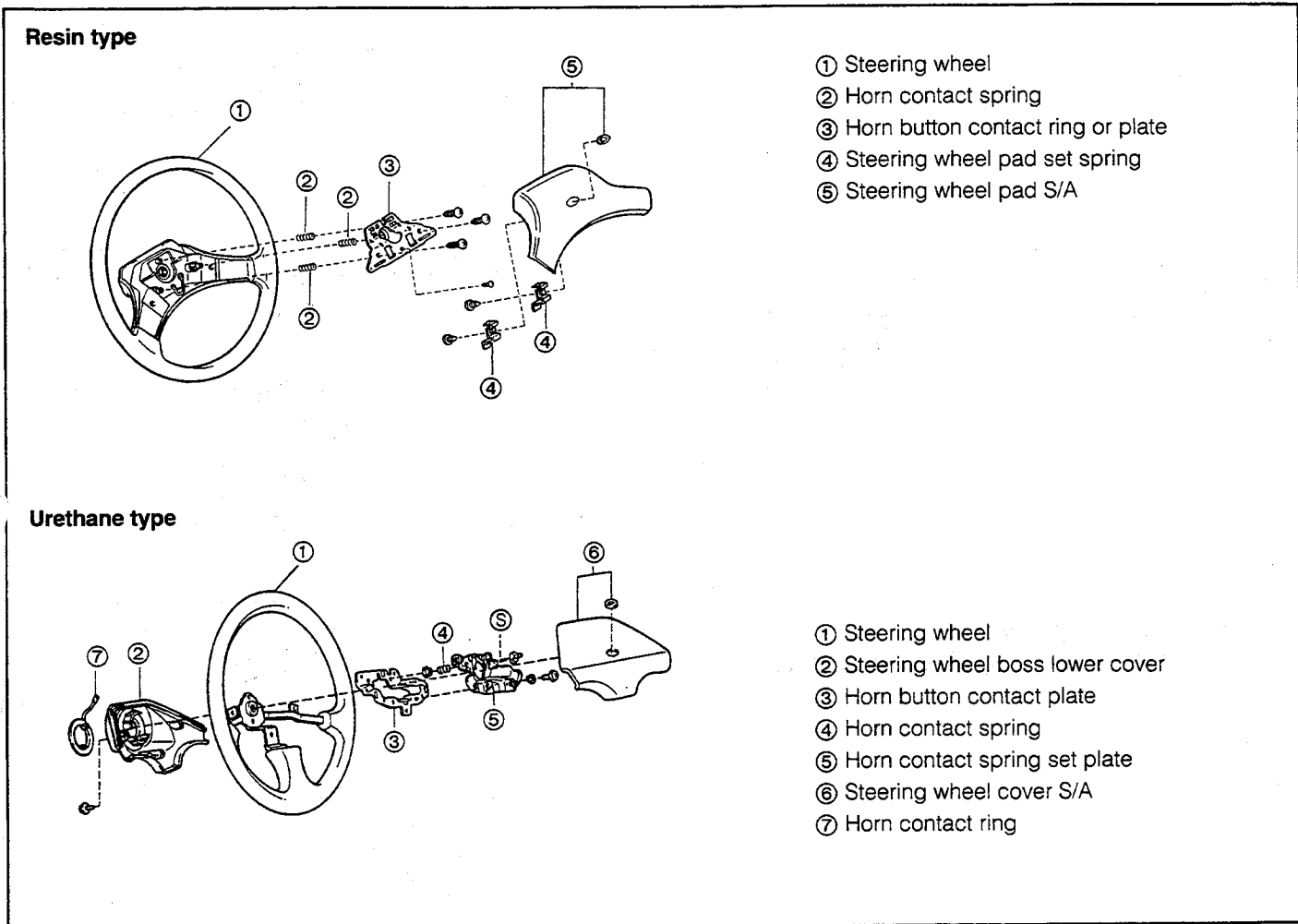


Fig. 7-2

WR-07003

## REMOVAL

1. Disconnect the battery negative (-) terminal.
2. Hold the steering wheel pad at its lower end by your fingers. Then, detach the steering wheel pad by pulling it toward your side.
3. Remove the steering wheel lock nut.

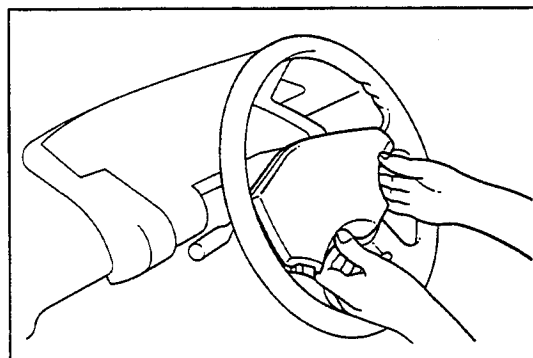


Fig. 7-3

WR-07004

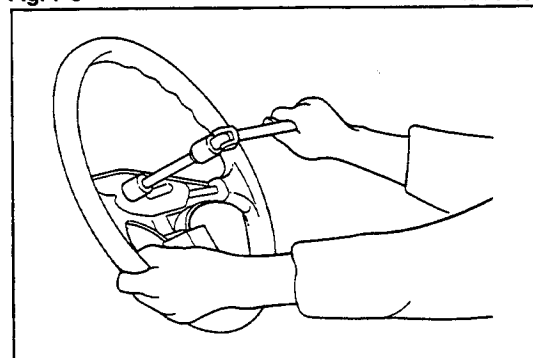


Fig. 7-4

WR-07005

## STEERING

4. Remove the steering wheel, using the following SST.  
SST: 09609-20011-000

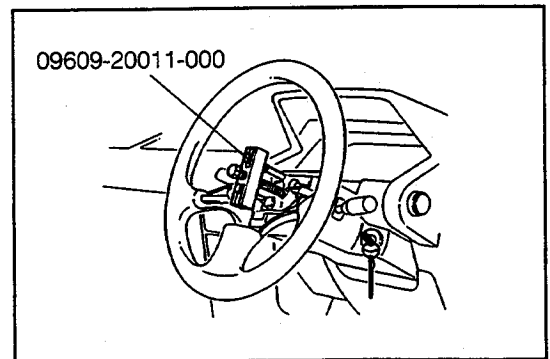


Fig. 7-5

WR-07006

## INSTALLATION

1. Fit the steering wheel and tighten the lock nut.  
Tightening Torque: 3.5 - 5.5 kg-m (25 - 40 ft-lb)
2. Install the steering wheel pad.
3. Connect the battery negative (-) terminal.

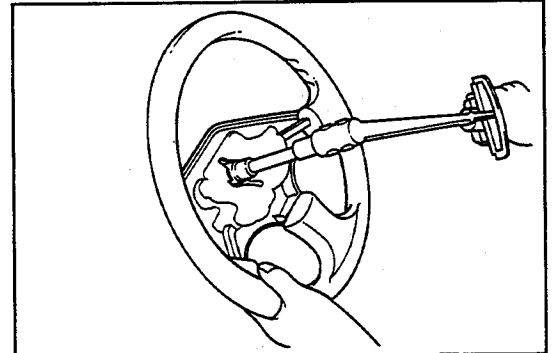


Fig. 7-6

WR-07007

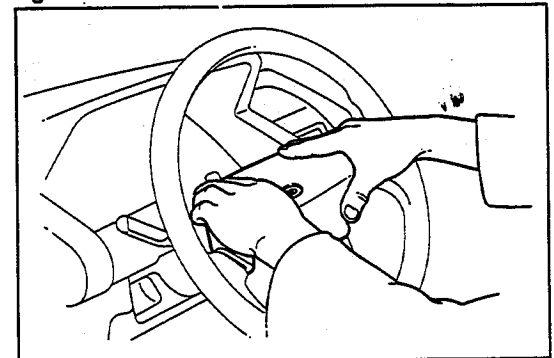


Fig. 7-7

WR-07008

## ENGINE KEY CYLINDER

### REMOVAL

1. Loosen six screws and remove the steering column lower cover.

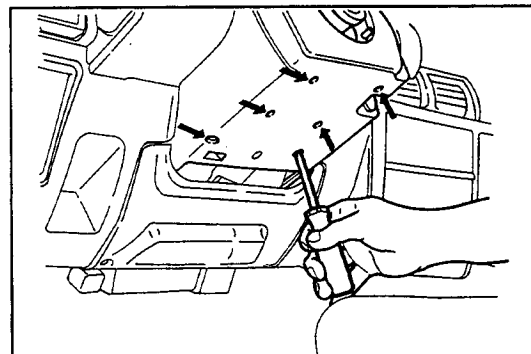


Fig. 7-8

WR-07009

2. Engine key cylinder removal
  - (1) Fabricate a rod as shown in the right figure, by bending an approx. 2 mm (0.08 inch) diameter rod.
  - (2) Set the engine key to the [ACC] position.

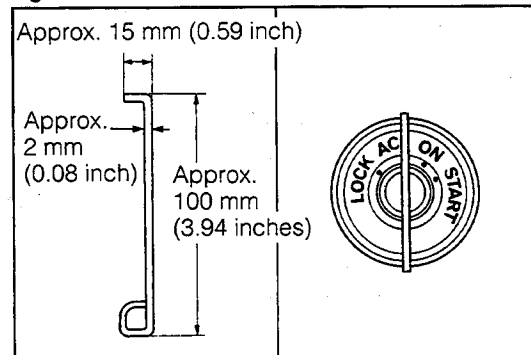


Fig. 7-9

WR-07010

- (3) While pushing the stop pin by means of the rod, draw out the cylinder.

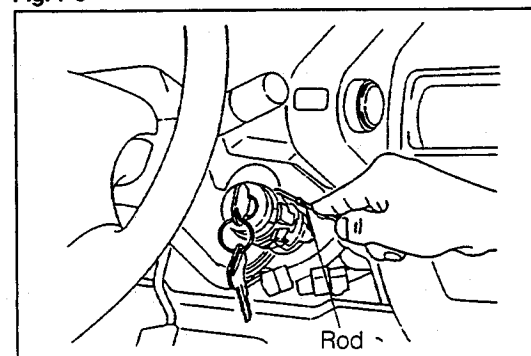


Fig. 7-10

WR-07011

### INSTALLATION

1. Engine key cylinder installation
  - (1) Insert a common screwdriver into the pawl groove of the lock cylinder. Set the pawl groove to the [ACC] position.
  - (2) Set the engine key to the [ACC] position. Insert the key cylinder. Ensure that the stop pin is locked to the lock cylinder.
2. Install the steering column lower cover.

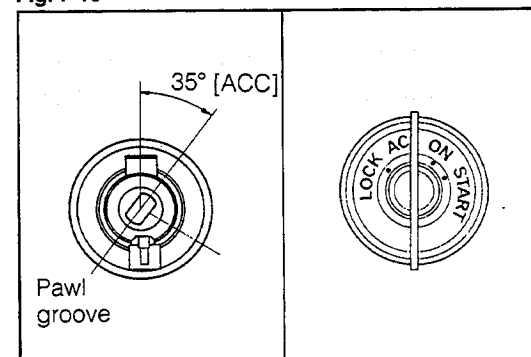


Fig. 7-11

WR-07012

# STEERING

## STEERING COLUMN COMPONENTS

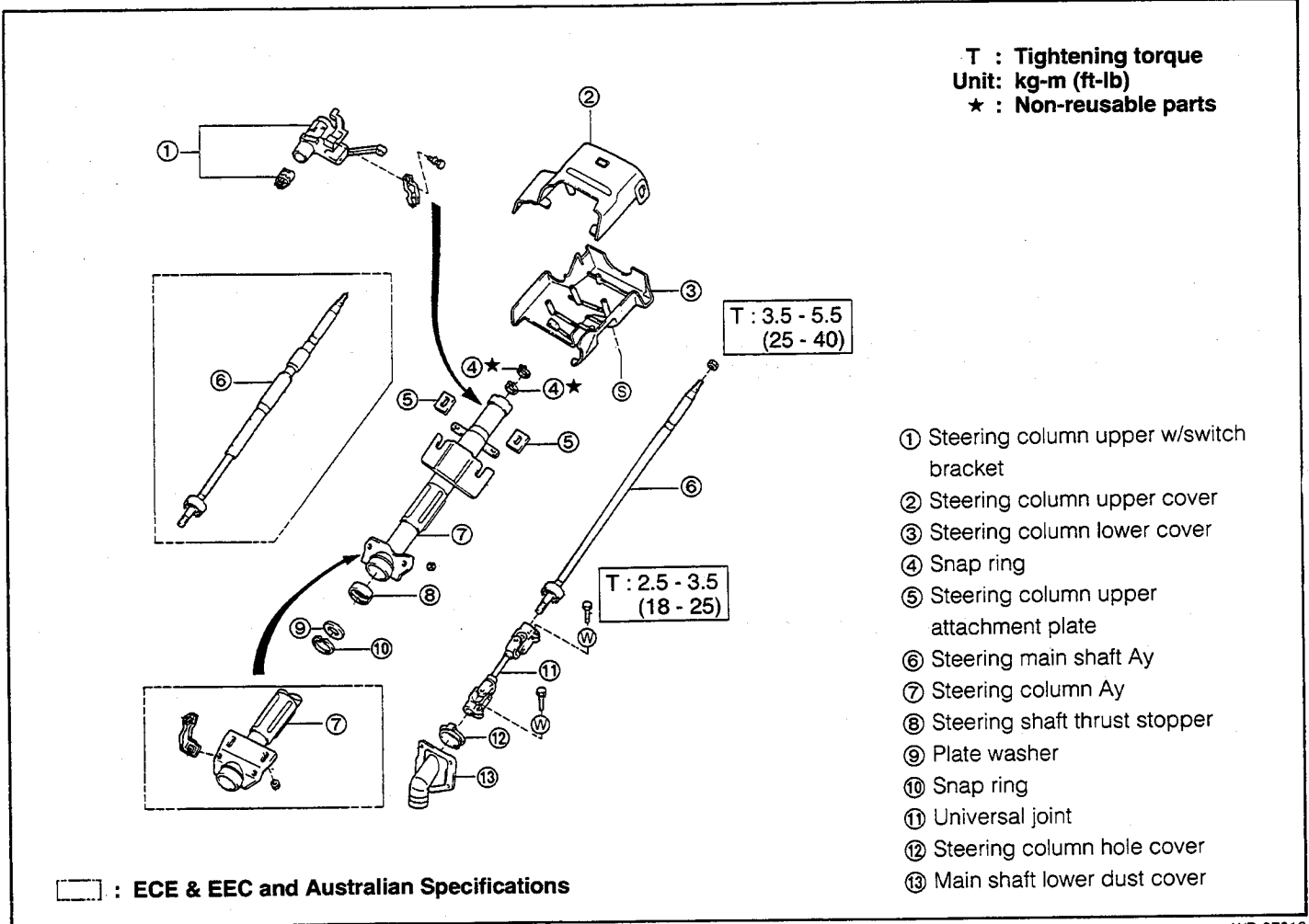


Fig. 7-12

WR-07013

### REMOVAL

1. Disconnect the battery negative (-) terminal.
2. Remove the steering wheel. (See page 7-3.)

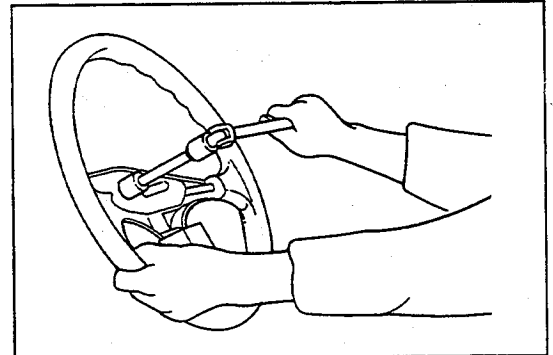


Fig. 7-13

WR-07014

3. Detach the instrument lower finish panel and steering column lower cover.

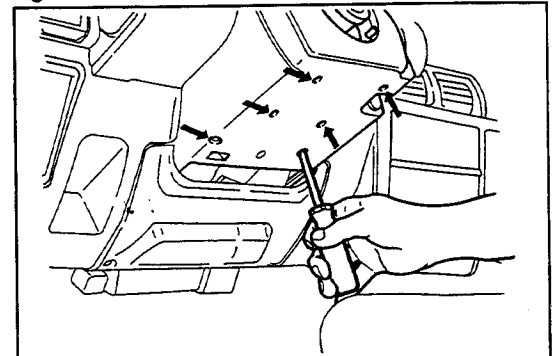


Fig. 7-14

WR-07015

4. Remove the instrument panel lower reinforcement.
5. Remove the connectors for the multi-use lever switch and engine key switch.

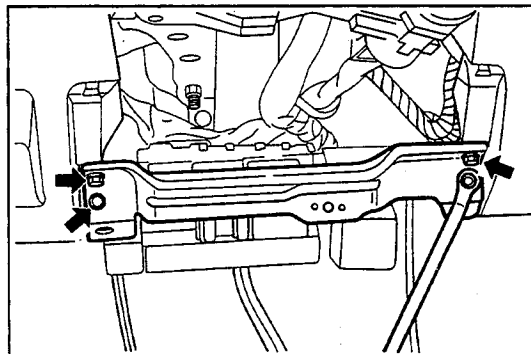


Fig. 7-15

WR-07016

6. Remove the bolt of the universal joint.

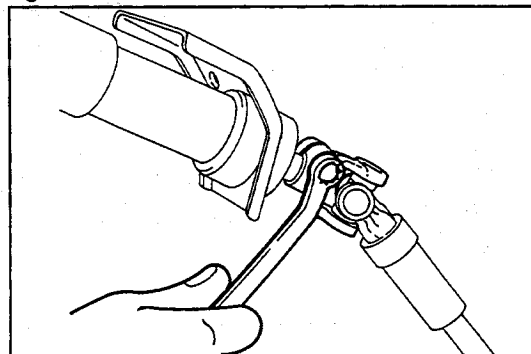


Fig. 7-16

WR-07017

7. Steering column assembly removal
  - (1) Remove three bolts and two nuts.
  - (2) Remove the steering column assembly from the body.

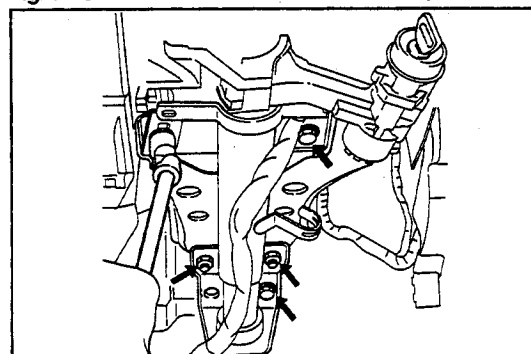


Fig. 7-17

WR-07018

8. Remove the steering column upper cover and multi-use lever switch from the steering column assembly.

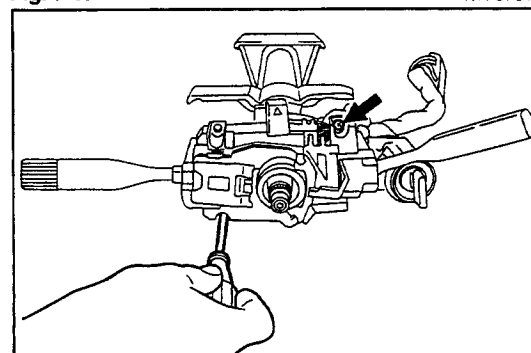


Fig. 7-18

WR-07019

## DISASSEMBLY

1. Detach the snap ring and plate washer located at the lower side of the steering main shaft.

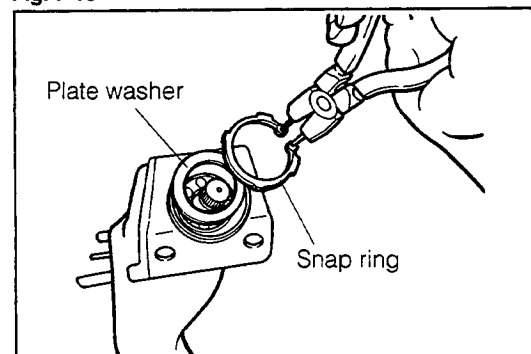


Fig. 7-19

WR-07020

## STEERING

2. Detach the snap ring located at the upper side of the steering main shaft.

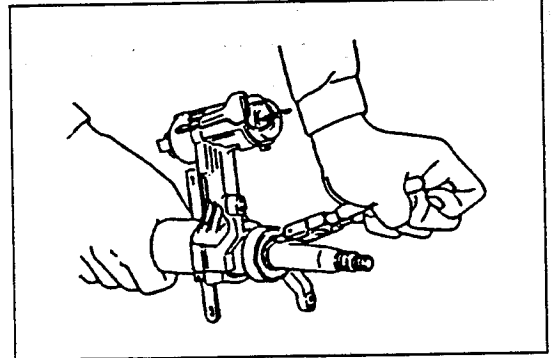


Fig. 7-20

WR-07021

3. Steering main shaft subassembly removal
  - (1) Remove the steering main shaft subassembly by tapping the main shaft lightly with a plastic hammer.

**NOTE:**

Never tap the main shaft strongly. If the main shaft should be tapped strongly, the resin pin of the steering main shaft may be damaged. (ECE & EEC and Australian specifications)

- (2) Remove the stopper from the steering main shaft.
- (3) Detach the snap ring from the steering main shaft.

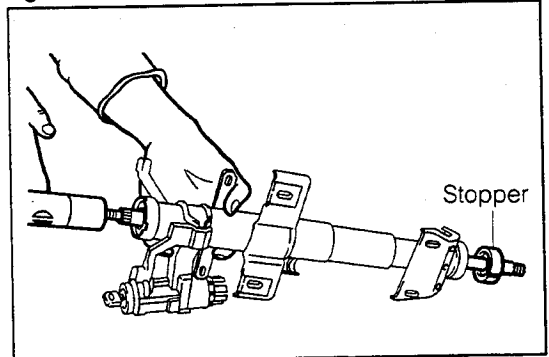


Fig. 7-21

WR-07022

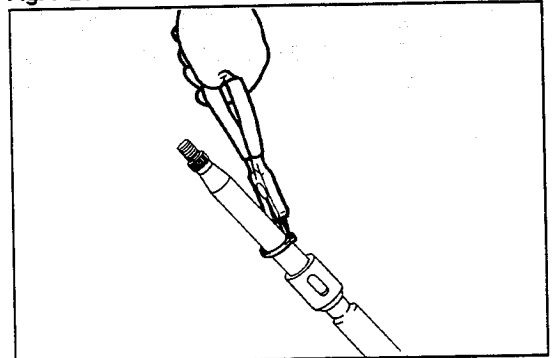


Fig. 7-22

WR-07023



**INSPECTION**

Inspect the following parts.

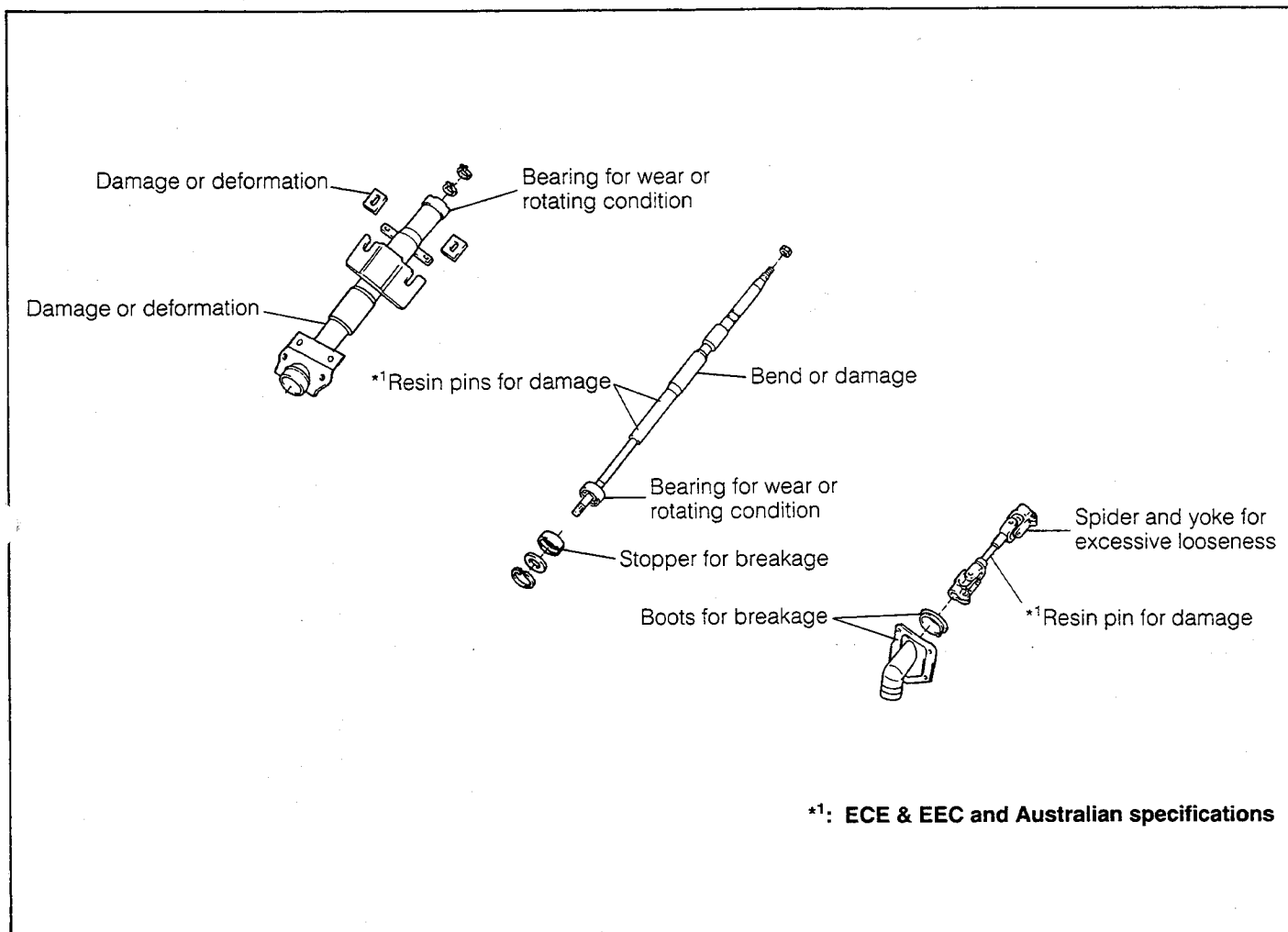


Fig. 7-23

WR-07024

**ASSEMBLY**

1. Assembly of steering main shaft
  - (1) Fit a new snap ring to the steering main shaft.
  - (2) Place the stopper on the bearing.
  
2. Insert the main shaft (with the bearing) into the steering column, using a plug wrench.

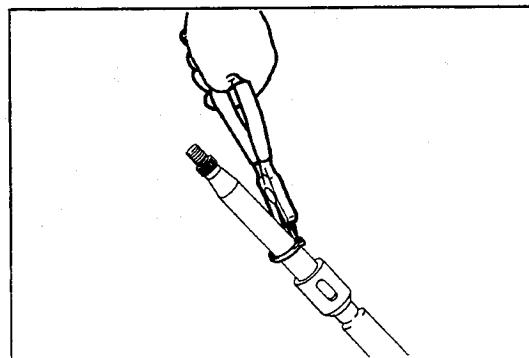


Fig. 7-24

WR-07025

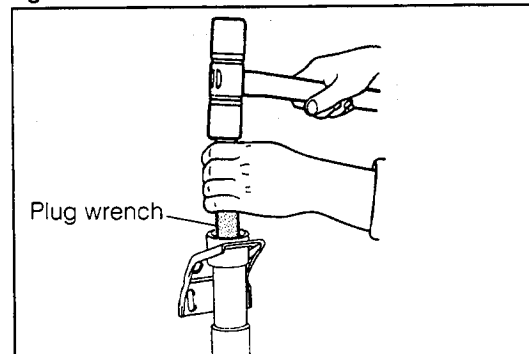


Fig. 7-25

WR-07026

## STEERING

3. Fit the new snap ring to the upper side of the steering main shaft.

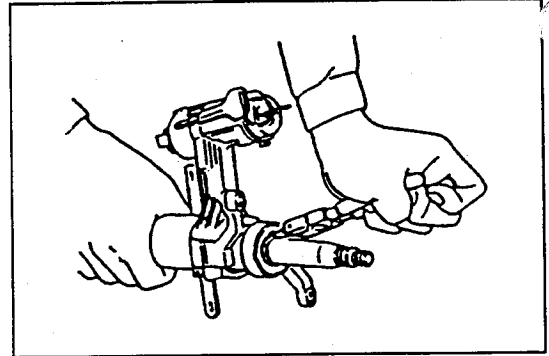


Fig. 7-26

WR-07027

4. Install the plate washer and snap ring.

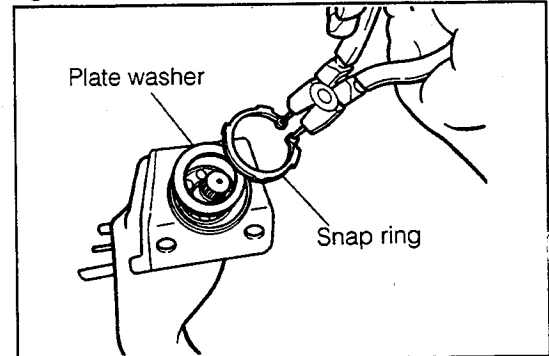


Fig. 7-27

WR-07028

5. Install the multi-use lever switch to the steering column.

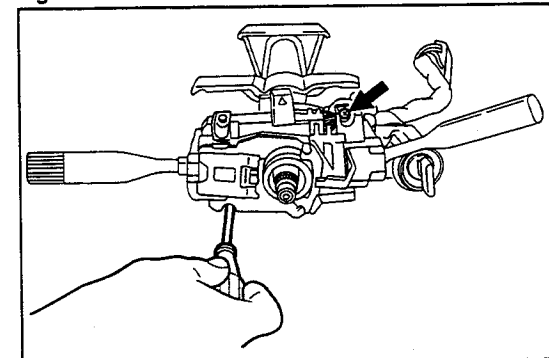


Fig. 7-28

WR-07029

## INSTALLATION

1. Steering column assembly installation
  - (1) Install the steering column upper cover to the steering column.
  - (2) Tighten the attaching bolt of the universal joint.  
Tightening Torque: 2.5 - 3.5 kg-m (18 - 25 ft-lb)
  - (3) Install the steering column with the three bolts and two nuts.  
Tightening Torque:  
Bolt 1.5 - 2.2 kg-m (11 - 16 ft-lb)  
Nut 2.5 - 3.5 kg-m (18 - 25 ft-lb)

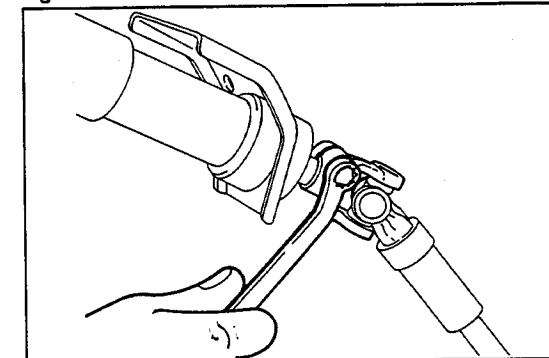


Fig. 7-29

WR-07030

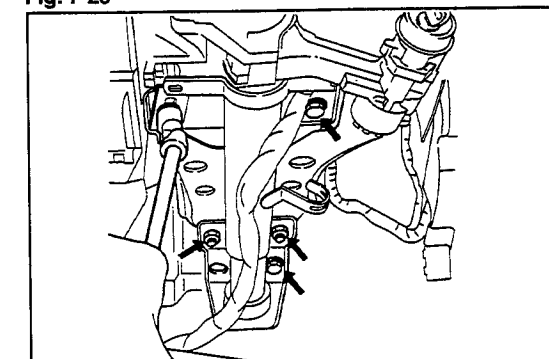


Fig. 7-30

WR-07031

2. Install the connector for the multi-use lever and engine key switch.
3. Install the instrument panel lower reinforcement.
4. Install the instrument lower finish panel and steering column lower cover.
5. Install the steering wheel.  
(See page 7-4.)
6. Install the battery negative (-) terminal.

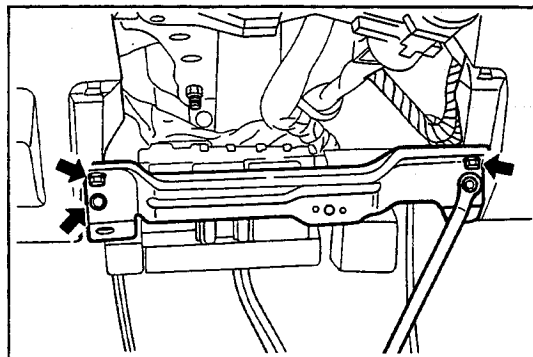


Fig. 7-31

WR-07032

# STEERING

## STEERING GEAR ASSEMBLY COMPONENTS

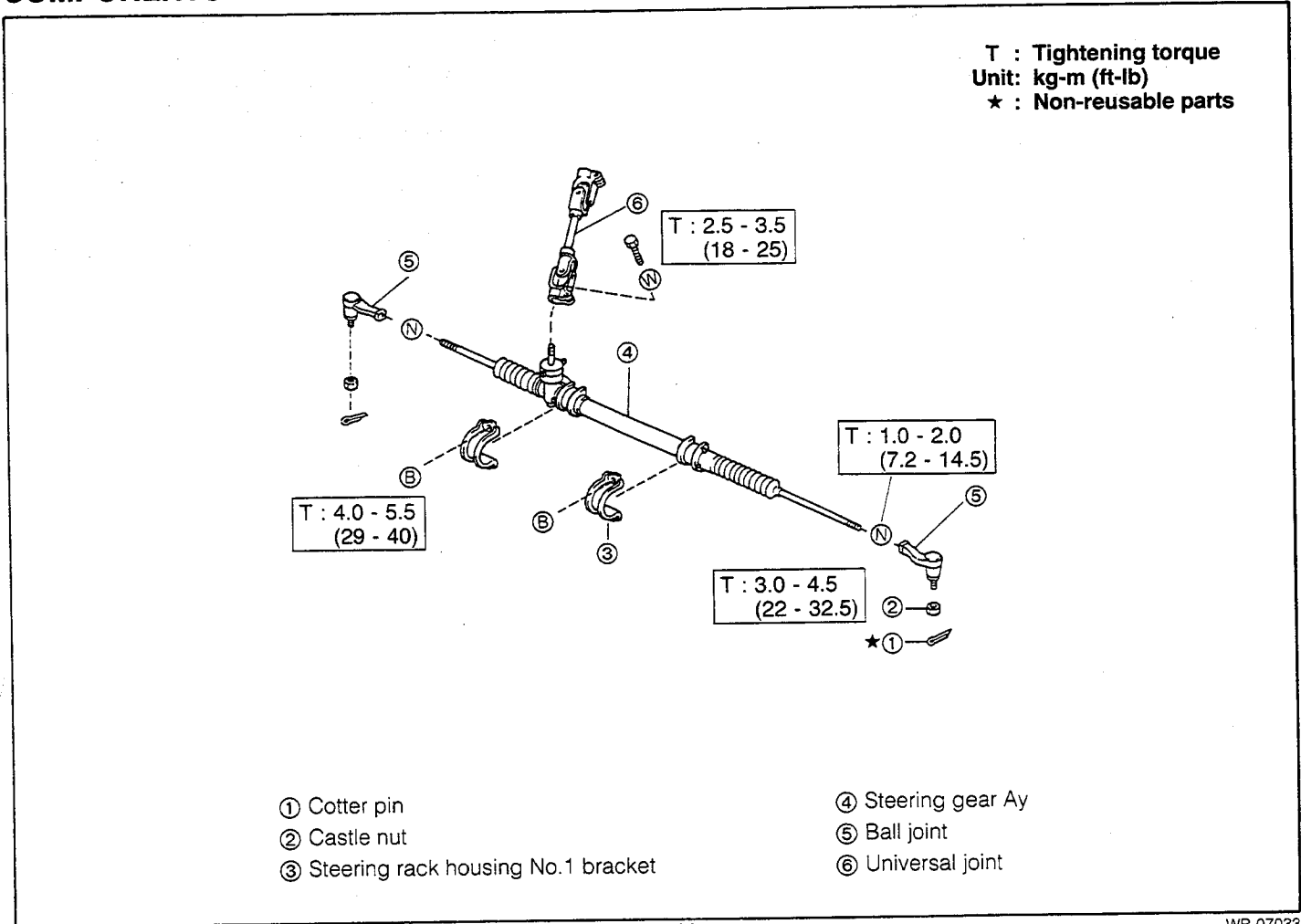


Fig. 7-32

WR-07033

### REMOVAL

1. Jack up the vehicle at the front side. Support the body with safety stands.
2. Remove the wheel.

3. Steering universal joint removal
  - (1) Remove the bolt.
  - (2) Remove the universal joint.

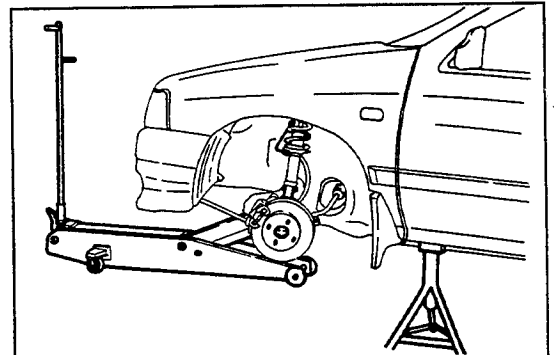


Fig. 7-33

WR-07034

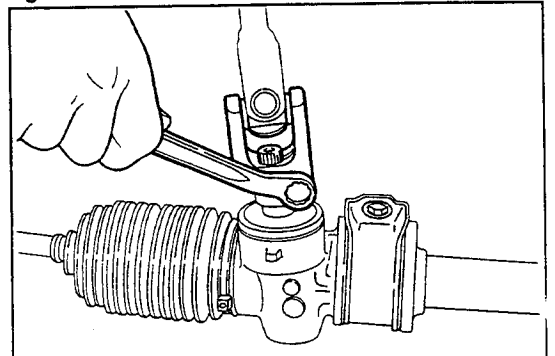


Fig. 7-34

WR-07035

## 4. Tie rod end removal

- (1) Remove the cotter pins and castle nuts.
- (2) Remove the tie rod end from the knuckle arm, using the following SST.

SST: 09611-87701-000

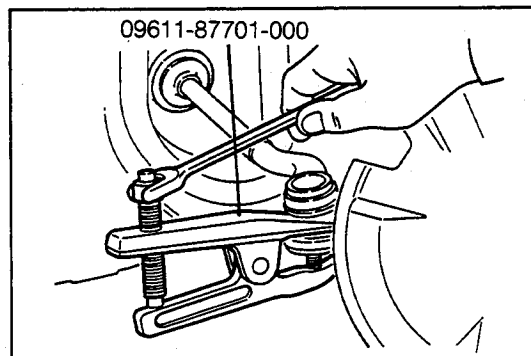


Fig. 7-35

WR-07036

## 5. Steering gear assembly removal

- (1) Remove the four pieces of steering rack housing bracket set bolts.

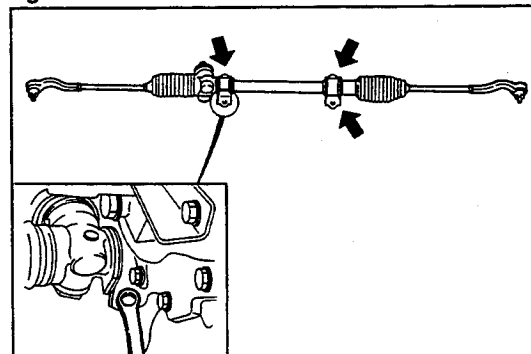


Fig. 7-36

WR-07037

- (2) Remove the steering gear assembly from the vehicle.

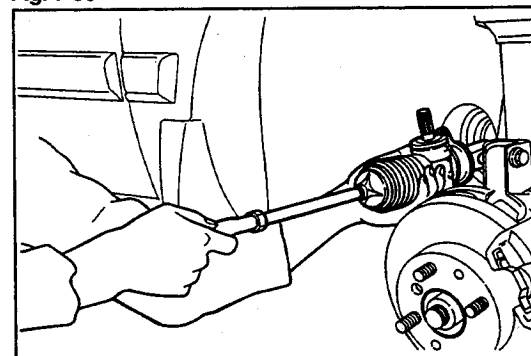


Fig. 7-37

WR-07038

# STEERING

## STEERING GEAR HOUSING

### SECTIONAL VIEW

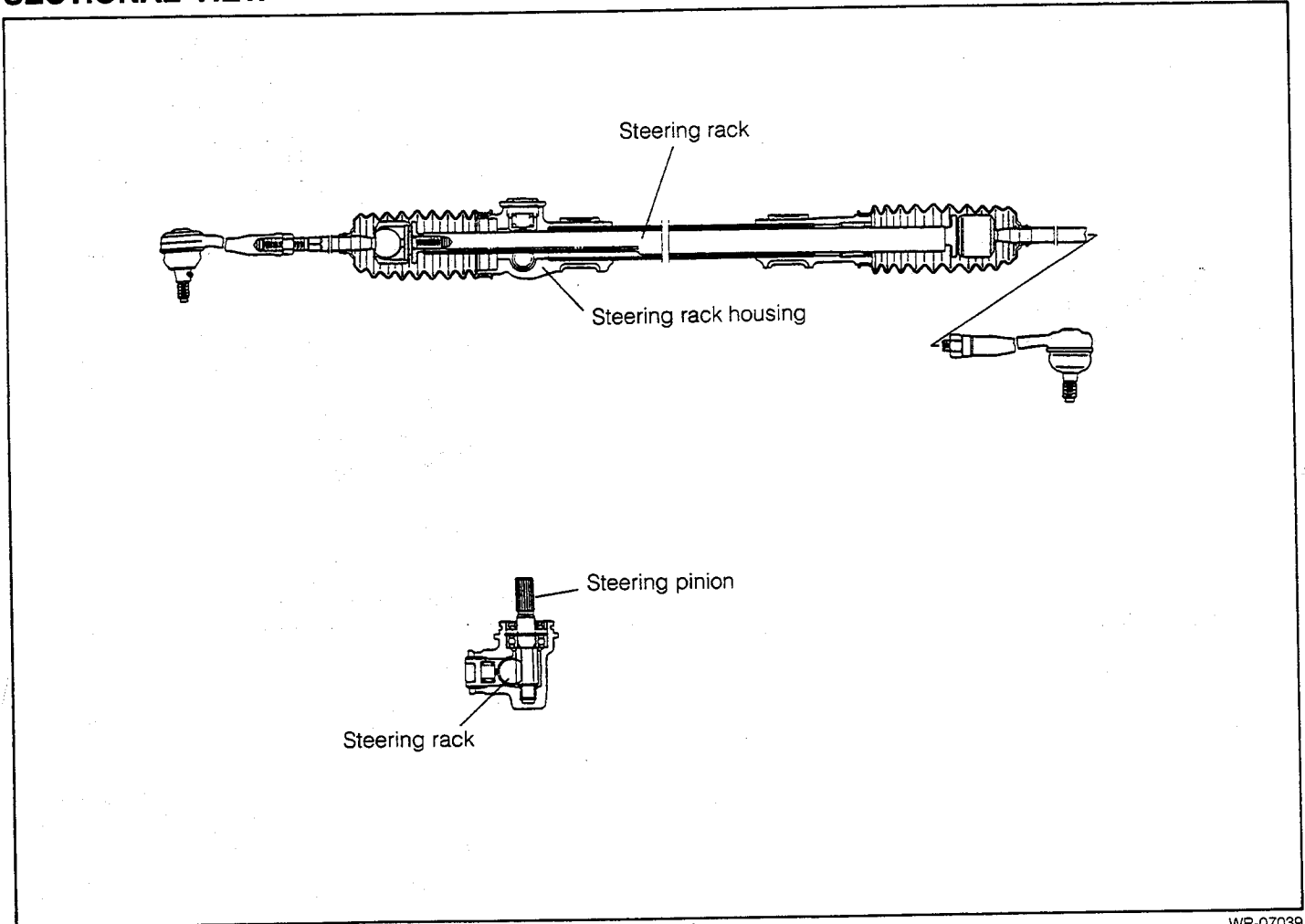


Fig. 7-38

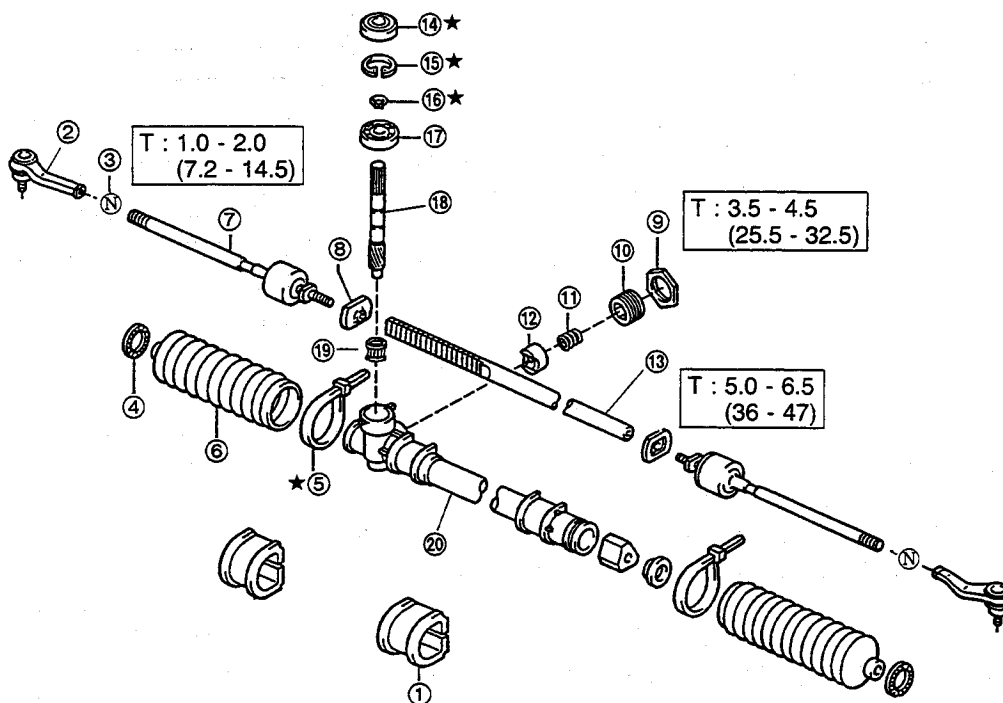
WR-07039

### Specifications

Maximum turns from lock to lock		3.82
Rack stroke	mm (inch)	141.5 (5.571)
Steering pinion tooth number		6
Rack tooth number		26

WR-07040

COMPONENTS



T : Tightening torque  
 Unit: kg-m (ft-lb)  
 \* : Non-reusable parts

- ① Steering rack housing grommet
- ② Tie rod end S/A
- ③ Nut
- ④ Steering boot band No.2
- ⑤ Steering rack boot band
- ⑥ Steering rack boot
- ⑦ Steering rack end
- ⑧ Rack end plug
- ⑨ Hexagon nut
- ⑩ Rack guide spring cap

- ⑪ Compression spring
- ⑫ Rack guide
- ⑬ Steering rack
- ⑭ Oil seal
- ⑮ Snap ring
- ⑯ Shaft snap ring
- ⑰ Radial ball bearing
- ⑱ Steering pinion
- ⑲ Needle roller bearing
- ⑳ Steering rack housing S/A

Fig. 7-39

WR-07041

# STEERING

## DISASSEMBLY

1. Clamp the mounting section of the steering rack housing in a vice with copper sheets or aluminum sheets interposed.

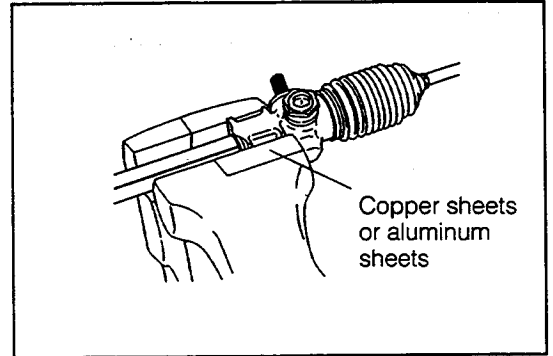


Fig. 7-40

WR-07042

2. Tie rod end removal
  - (1) Before the steering tie rod end is removed, put a mark on the rack end section in order that this mark may be used as guide to ensure easier toe-in adjustment during the reassembly.
  - (2) Slacken the lock nut. Remove the tie rod end from the rack end.

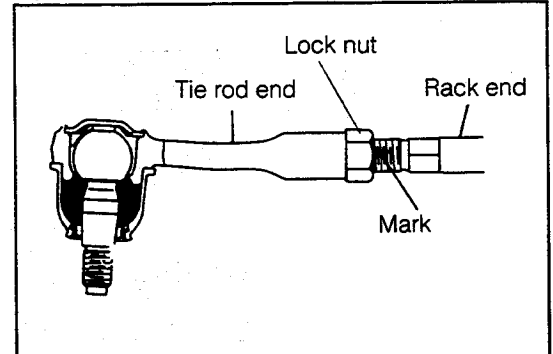


Fig. 7-41

WR-07043

3. Remove the boot band No.2 and rack boot band. Remove the rack boot.

4. Steering rack end removal
  - (1) Slacken the rack end plug, using the flat sections of the steering rack (width across flats: 19 mm) and the flat sections of the rack end plug (width across flats: 26 mm).
  - (2) Remove the steering rack end from the steering rack.
  - (3) Remove the rack end plug from the steering rack end:

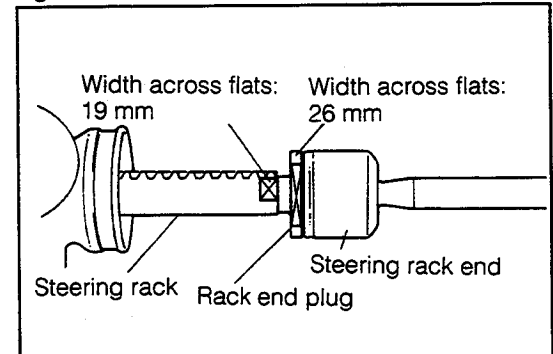


Fig. 7-42

WR-07044

5. Remove the lock nut (hexagon nut), using the following SST.

SST: 09617-22030-000

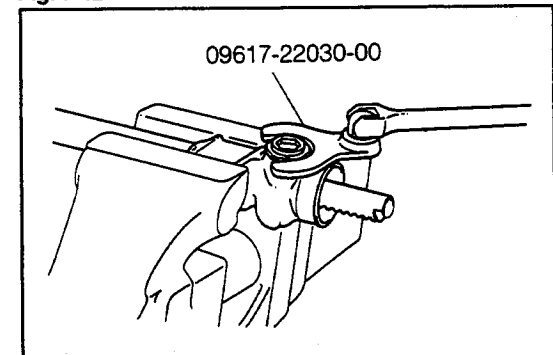


Fig. 7-43

WR-07045

6. Rack guide spring cap removal
  - (1) Remove the rack guide spring cap, using a simple spinner.  
Simple Spinner (Width across flats: 17 mm)
  - (2) Remove the compression spring and rack guide from the steering rack housing.

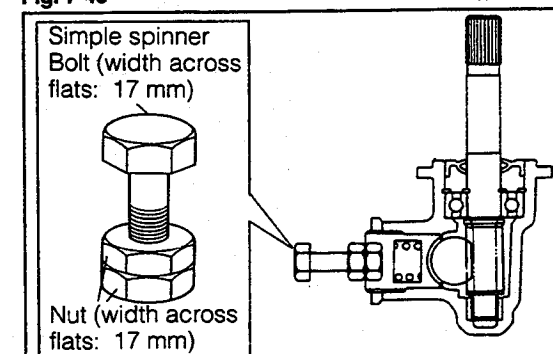


Fig. 7-44

WR-07046



7. Remove the steering rack.

**NOTE:**

- Be sure to draw out the rack toward the housing side so that the rack bush may not be damaged by the rack tooth surface.
- Draw out the rack straight, not allowing the rack to rotate.

8. Remove the oil seal, using a common screwdriver or the like. Be careful not to damage the housing during the removal.

9. Detach the snap ring, using a snap ring expander.

10. Remove the steering pinion, together with the bearing, from the steering rack housing.

11. Radial ball bearing removal

- (1) Detach the shaft snap ring, using a snap ring expander.
- (2) Remove the bearing, using the following SST.  
SST: 09950-20014-000

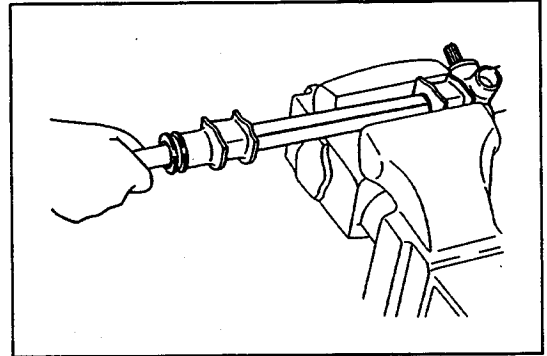


Fig. 7-45

WR-07047

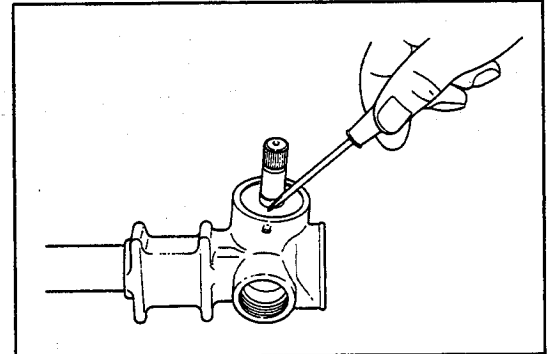


Fig. 7-46

WR-07048

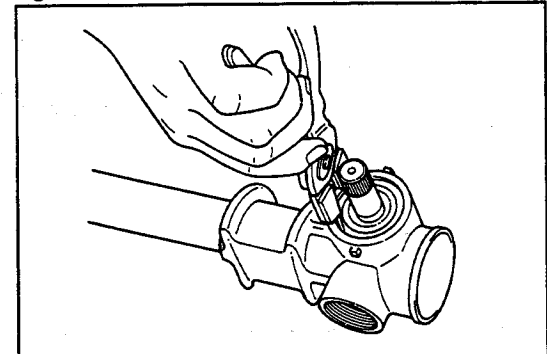


Fig. 7-47

WR-07049

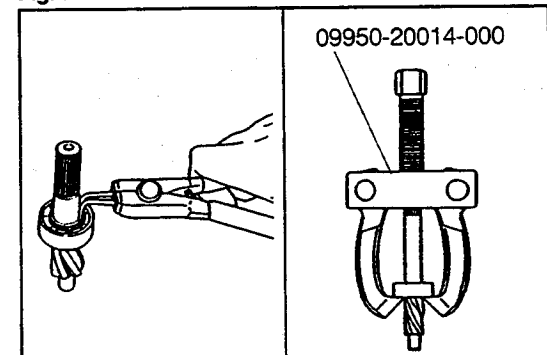


Fig. 7-48

WR-07050

# STEERING

## INSPECTION

Inspect the following parts.

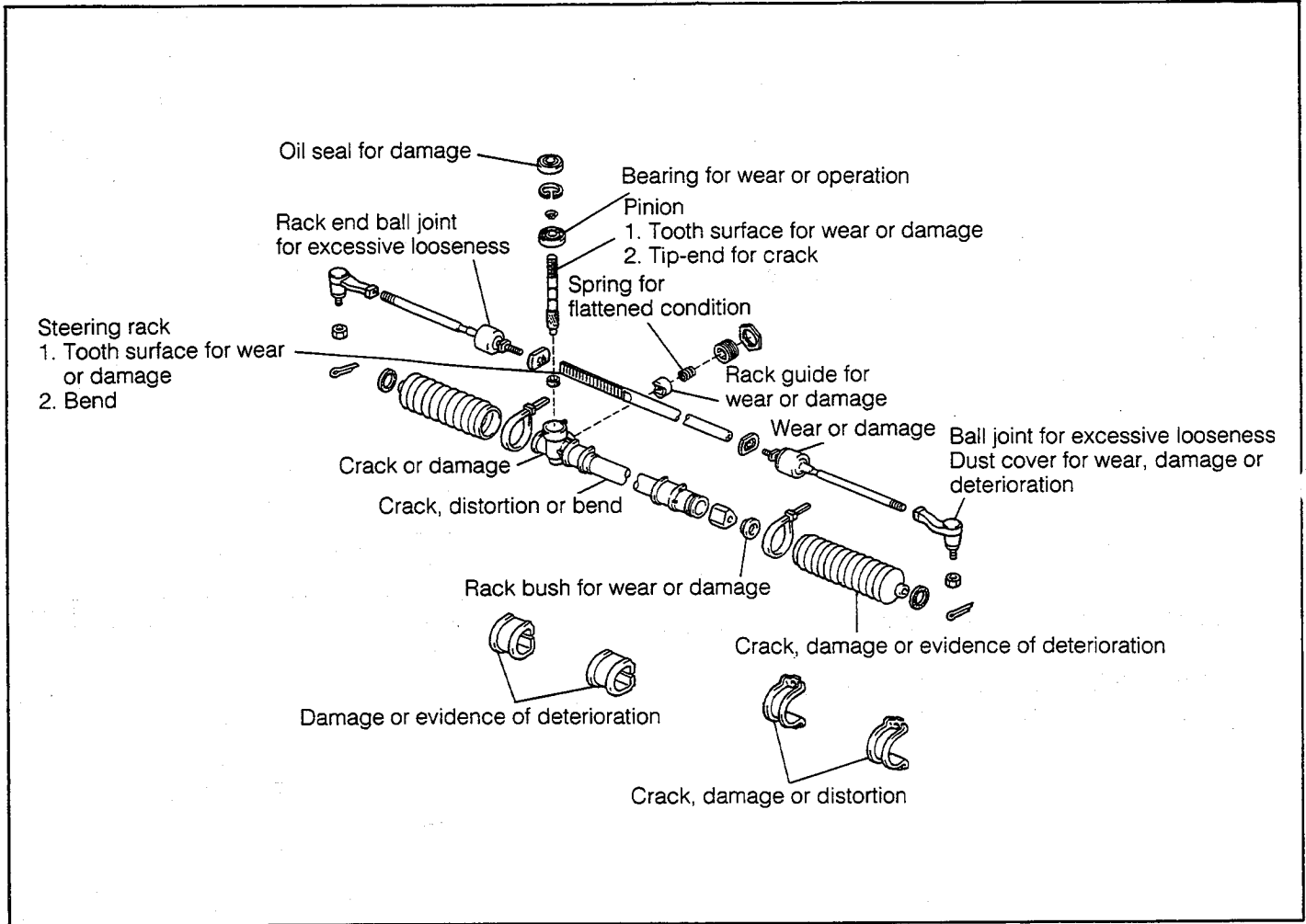


Fig. 7-49

WR-07051

## ASSEMBLY

1. Apply grease to the following sections.

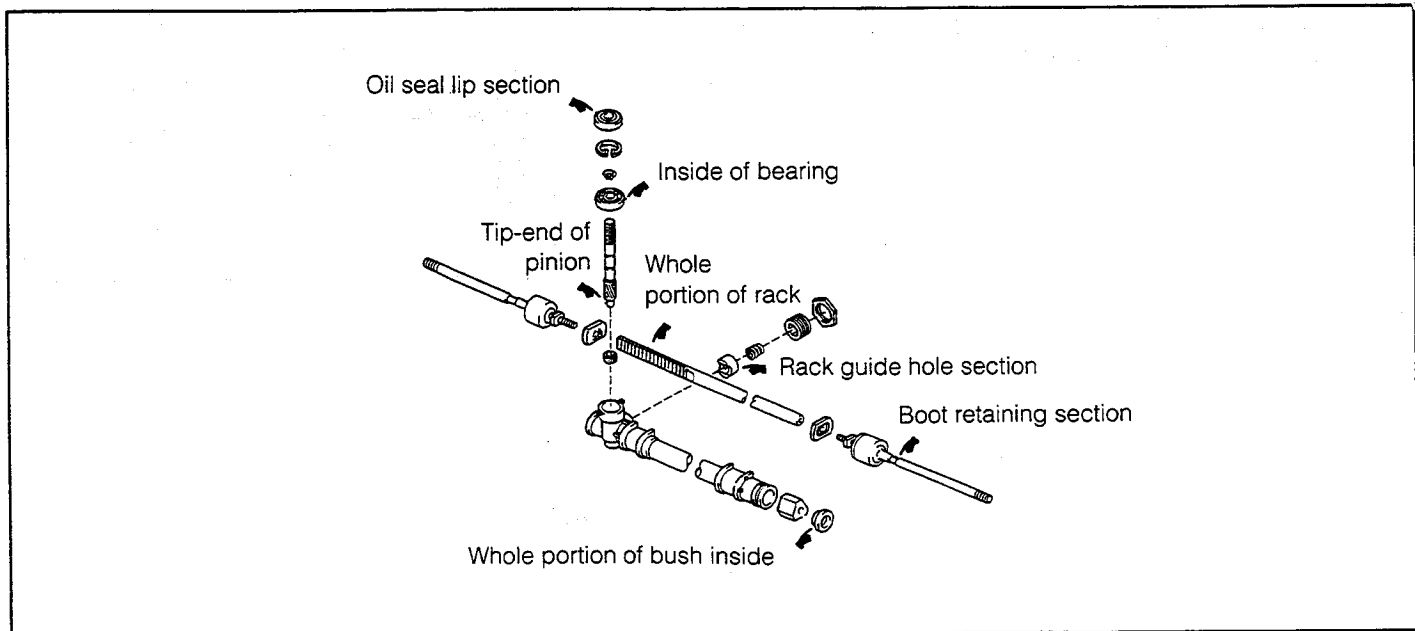


Fig. 7-50

WR-07052

## 2. Radial ball bearing installation

(1) Install the bearing to the steering pinion, using the following SST.

**SST: 09612-10061-000**

(2) Attach the shaft snap ring, using a snap ring expander.

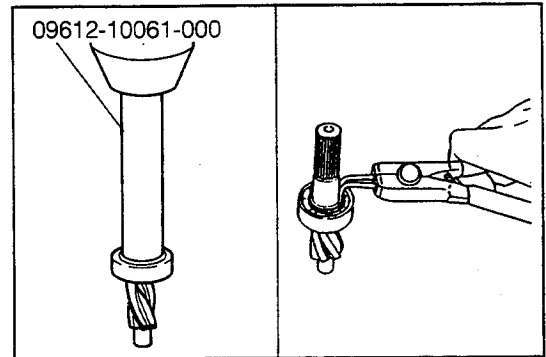


Fig. 7-51

WR-07053

## 3. Steering pinion installation

(1) Install the steering pinion to the steering rack housing, using the following SST.

**SST: 09309-87102-000**

(2) Attach the snap ring, using a snap ring expander.

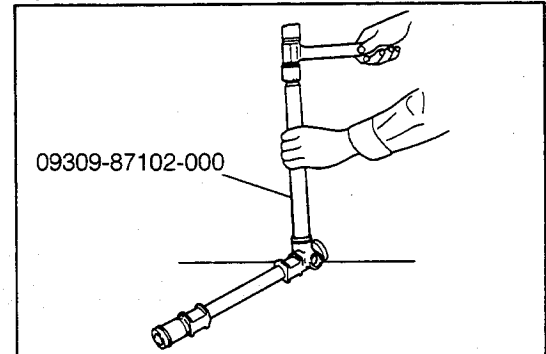


Fig. 7-52

WR-07054

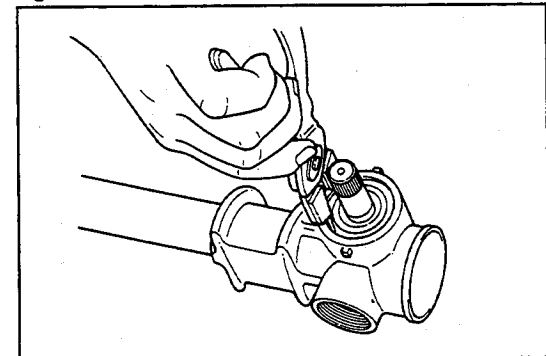


Fig. 7-53

WR-07055

3. Install the oil seal to the steering rack housing, using the following SST.

**SST: 09309-87201-000**

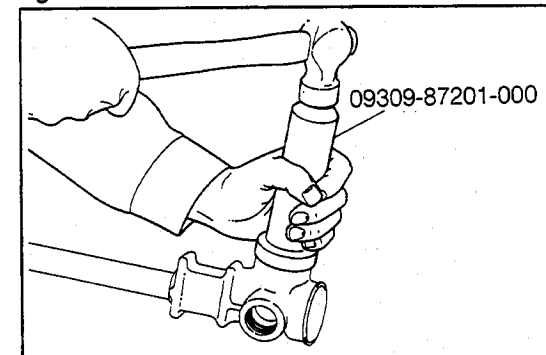


Fig. 7-54

WR-07056

## 4. Assembly of steering rack

(1) Apply EP grease to the tooth surface and whole peripheral portion of the steering rack.

(2) Assemble the steering rack, paying attention not to damage the rack bush.

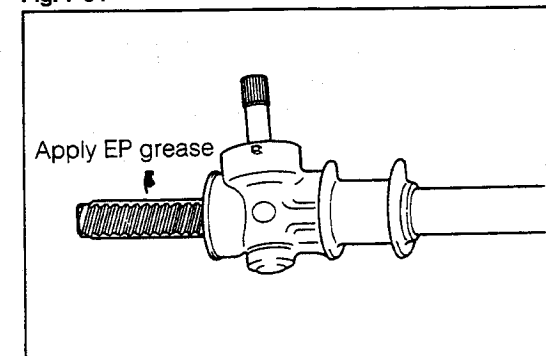


Fig. 7-55

WR-07057

## STEERING

5. Assemble the rack guide, compression spring and rack guide spring cap to the steering rack housing.

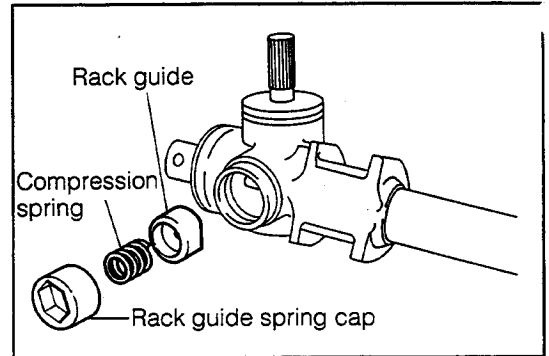


Fig. 7-56

WR-07058

6. Rack preload adjustment

- (1) Tighten the rack guide spring cap, using a simple spinner.

**Tightening Torque: 0.7 kg-m (5.1 ft-lb)**

- (2) Move the steering rack back and forth about 15 times so as to settle the steering rack. Then, proceed to tighten the rack guide spring cap again.

**Tightening Torque: 1.25 kg-m (0.9 ft-lb)**

- (3) Back off the rack guide spring cap  $45^{\circ} \pm 10^{\circ}$ , using a simple spinner.

- (4) Measure the rack preload, using the following SST.

**SST: 09616-87701-000**

**Specified Value [Starting Torque]:**

**3 - 6 kg-cm (2.6 - 5.2 inch-lb)**

- (5) If the preload does not comply with the specification, repeat the operations (1) through (4).

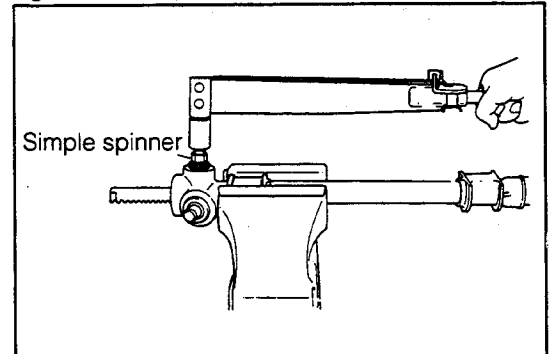


Fig. 7-57

WR-07059

7. Hexagon nut (lock nut) installation

- (1) Tighten the lock nut using the SST, while holding the rack guide spring cap with a simple spinner so as to prevent the rack guide spring cap from turning during the tightening.

**SST: 09617-22030-000**

**Tightening Torque: 3.5 - 4.5 kg-m (25.5 - 32.5 ft-lb)**

**NOTE:**

The actual reading of the torque wrench will be a product that is obtained by multiplying the figure above by the following figure given below:

$$\frac{\text{Length of torque wrench}}{\text{Length of torque wrench} + 6 \text{ cm}}$$

- (2) Check the pinion starting torque again.

**SST: 09616-87701-000**

**Specified Value [Starting Torque]:**

**3 - 6 kg-cm (2.6 - 5.2 inch-lb)**

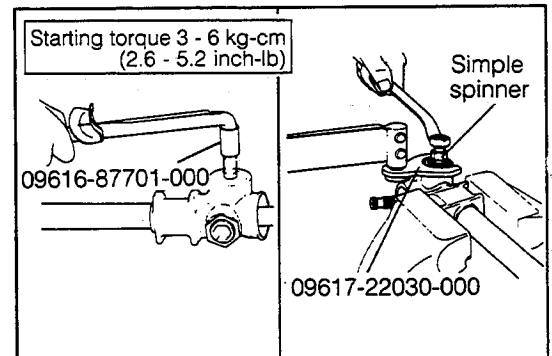


Fig. 7-58

WR-07060

## 8. Steering rack end installation

- (1) Screw in the rack end plug into the rack end.  
(Set the rack end plug in such a way that the side having a larger flange comes to the rack end side.)
- (2) Under the condition described in (1), tighten the rack end to the steering rack.
- (3) Secure the steering rack. Tighten the rack end plug.  
Tightening Torque: 5.0 - 6.5 kg-m (36 - 47 ft-lb)

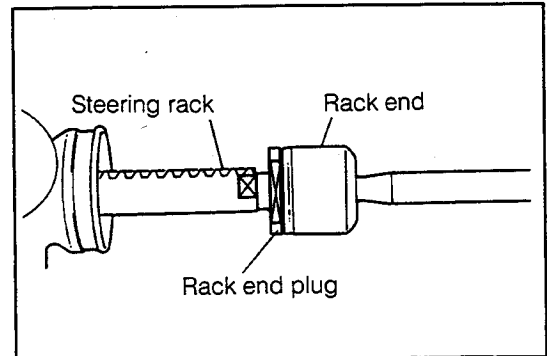


Fig. 7-59

WR-07061

## 9. Install the steering rack boot. Install the boot band No.2 and rack boot band.

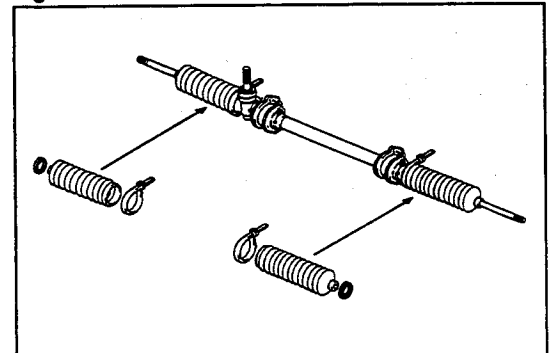


Fig. 7-60

WR-07062

## 10. Tie rod end installation

- (1) Screw in the lock nut and tie rod end into the rack end up to the mating mark. Tighten the lock nut temporarily.
- (2) Tighten the lock nut securely after the toe-in check and adjustment have been carried out.

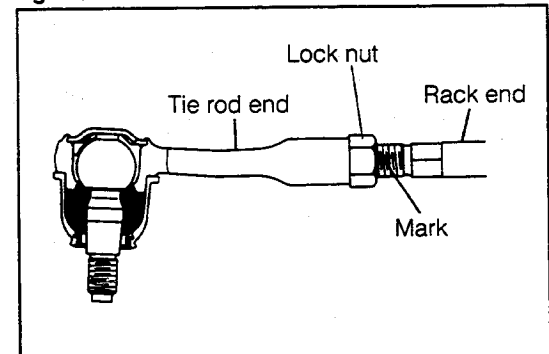


Fig. 7-61

WR-07063

## INSTALLATION

### 1. Steering rack assembly installation

- (1) Install the grommet to the steering rack assembly.  
Then, insert it to the vehicle.

#### NOTE:

Be very careful not to damage the steering rack boot during the insertion.

- (2) Install the steering universal joint to the steering pinion.  
Tighten the bolt temporarily.

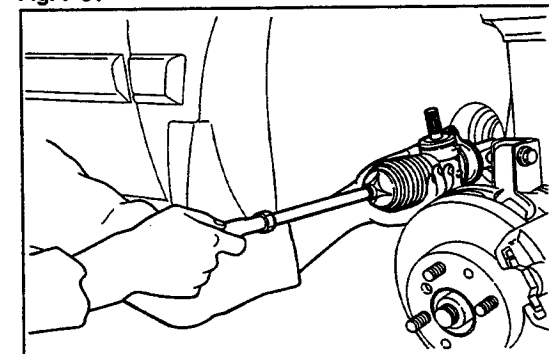


Fig. 7-62

WR-07064

- (3) Install the steering rack assembly to the body.  
Tightening Torque: 4.0 - 5.5 kg-m (29 - 40 ft-lb)

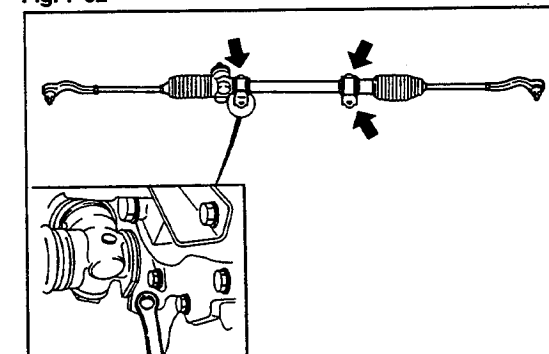


Fig. 7-63

WR-07065

## STEERING

2. Tighten the attaching bolt of the steering universal joint.  
Tightening Torque: 2.5 - 3.5 kg-m (18 - 25 ft-lb)

**NOTE:**

When tightening the bolt, be sure to limit the protruding length of the serration sections of the universal joint and pinion to 5 mm (0.20 inch).

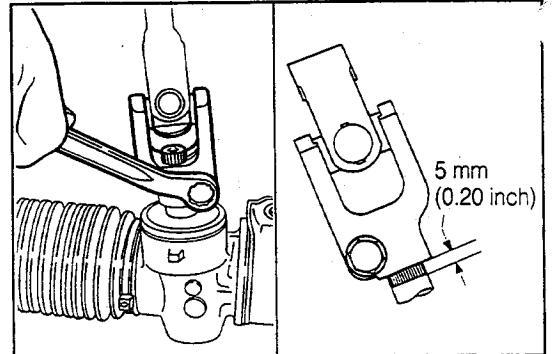


Fig. 7-64

WR-07066

3. Tie rod end installation
  - (1) Install the tie rod end to the knuckle. Tighten the castle nuts.  
Tightening Torque: 3.0 - 4.5 kg-m (22 - 32.5 ft-lb)
  - (2) Install a new cotter pins.

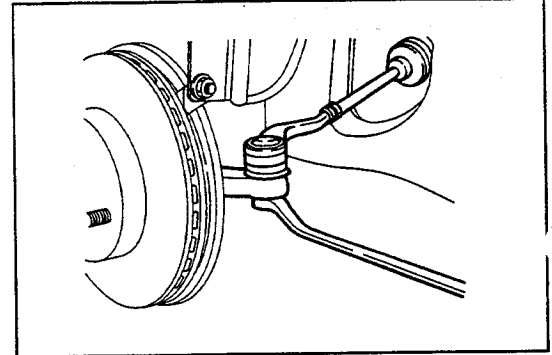


Fig. 7-65

WR-07067

4. Install the wheel. Jack down the vehicle.
5. Check the steering wheel play.
6. Perform the toe-in adjustment. (See page 5-44.)
7. Confirm the straight-ahead position of steering wheel.

WR-07068