

# SERVICE MANUAL

*Datsun*

MODEL 510 SERIES  
CHASSIS and BODY



## SECTION FA FRONT AXLE & FRONT SUSPENSION

FA

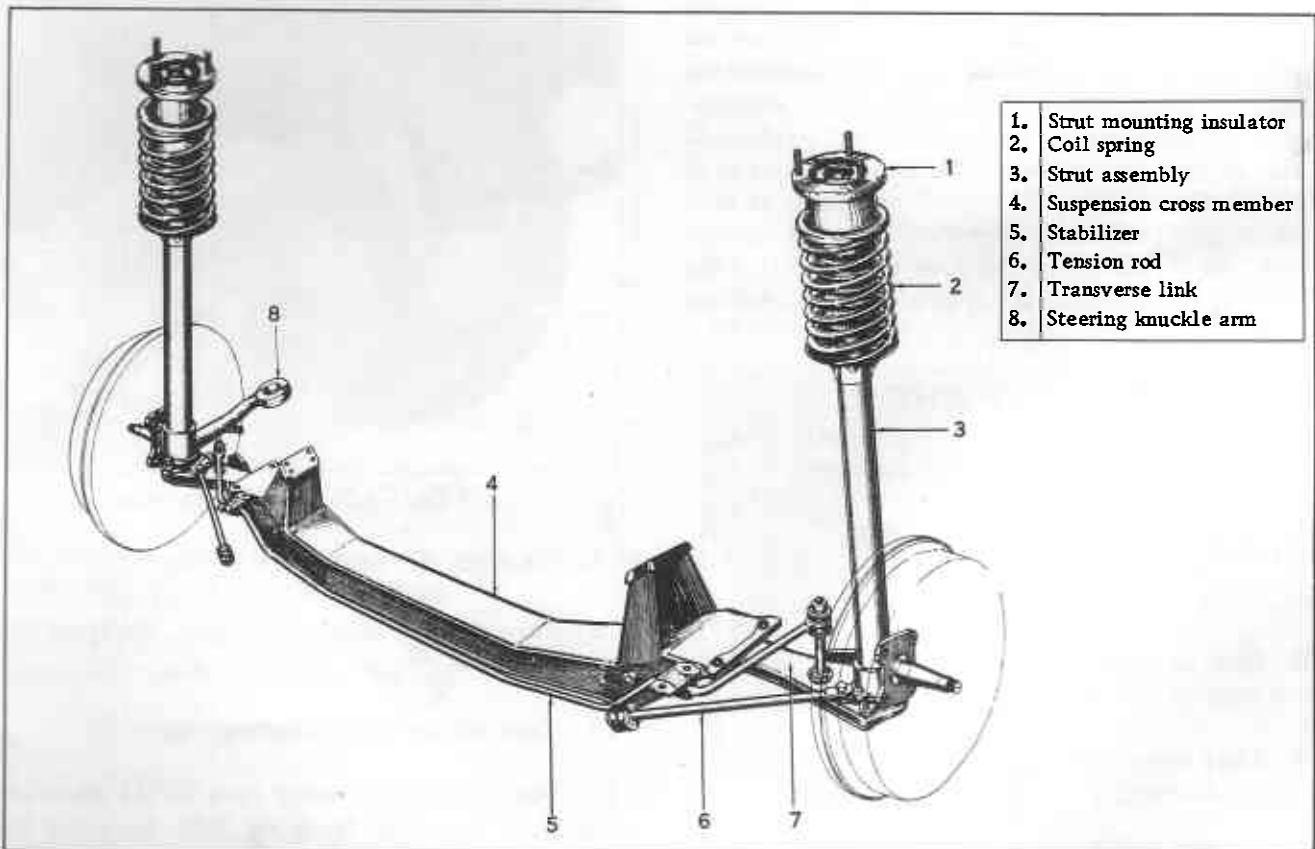
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# FRONT AXLE & FRONT SUSPENSION

## FRONT AXLE AND FRONT SUSPENSION

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- |    |                          |
|----|--------------------------|
| 1. | Strut mounting insulator |
| 2. | Coil spring              |
| 3. | Strut assembly           |
| 4. | Suspension cross member  |
| 5. | Stabilizer               |
| 6. | Tension rod              |
| 7. | Transverse link          |
| 8. | Steering knuckle arm     |

*Fig. FA-1 Front suspension assembly*

## CHASSIS

### GENERAL DESCRIPTION

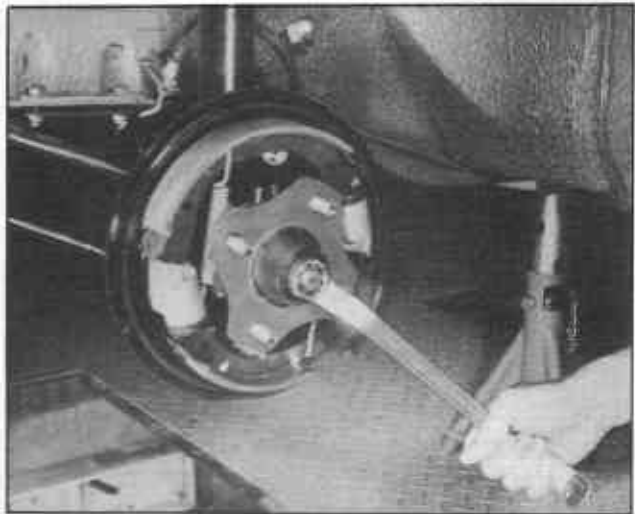
The front suspension adopted is of Strut-type in which the shock absorber and the spindle both made into a single unit are supported by the coil-spring on the upper end and by the transverse link on the lower end.

Its mechanical details are explained below: The spindle is welded to the bottom end of the strut outer casing: a ball-joint is attached to the lower part of the spindle; the ball-joint and the transverse link (lower link) are connected and they are fitted to the suspension member via a rubber bush. Also the strut outer casing contains the shock absorber mechanism. The inner cylinder and the piston rod are positioned securely in the outer casing by the gland packing and the piston rod guide, and a coil-spring is encased between the upper end of the piston rod and the spring seat which is welded to the outer casing. And these components, as a single unit, are fitted through the thrust bearing, on their upper part, to the chassis frame. Also, the transverse link supports, by means of the tension rod, which is fitted to the chassis through a rubber bush, the forward and backward movements of the whole strut. The torsion-bar-type stabilizer is so made that the strut maintains connections on its right and left sides. Therefore, this suspension mechanism is such a refined system to absorb into the chassis efficiently the forces of 3 directions, i.e., to absorb the force of forward and backward directions by the tension rod, the force of up and down directions by the strut and finally the force of sideway directions by the transverse-link.

### WHEEL-HUB AND WHEEL BEARING (Car equipped with drum-type brakes)

#### Removal

1. Place wedges behind rear wheels.
2. Jack up front wheels and support the car by the stands.
3. After wheel nuts are removed, detach wheels and brake drums.
4. Remove the hub and the cap.
5. Remove the cotter pin and the front spindle nut.
6. Remove the front wheel bearing washer.
7. Detach the hub assembly from the spindle.
8. Take out the outer bearing cage.
9. Take out, by using a driver, the front hub grease seals.
10. Take out the inner bearing cage.
11. Punch out each outer race of the inner and the outer bearings from the hub, by using the drift. Front hub drift assembly ST49120000.

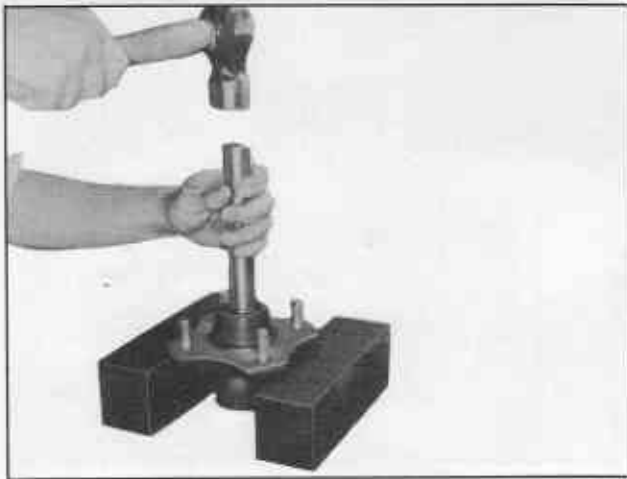


*Fig. FA-2 Spindle nut removal*



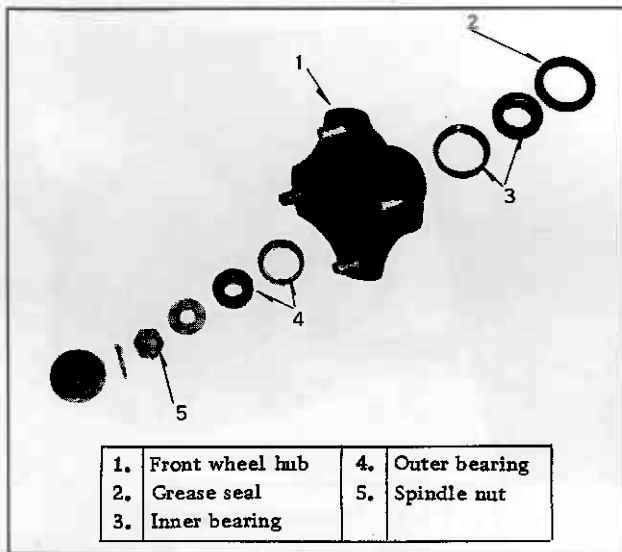
*Fig. FA-3 Wheel-hub removal*

## FRONT AXLE & FRONT SUSPENSION



**Fig. FA-4** Wheel bearing removal

### Inspection

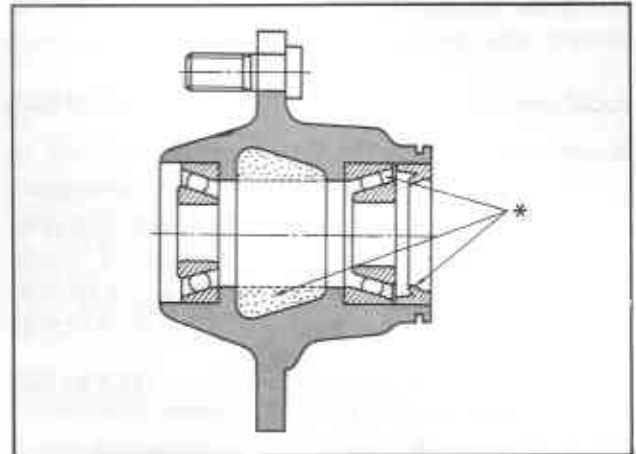


**Fig. FA-5** Exploded view of front wheel hub assembly

1. After removal, all parts should be thoroughly washed.
2. Replace damaged bearings and hubs.
3. Replace grease seals with new ones, in principle, after each dismantling.
4. Replace grease for wheel bearing, in principle, after each disassembling

### Installation

1. Installation is done in the exact reverse of removal.



**Fig. FA-6**

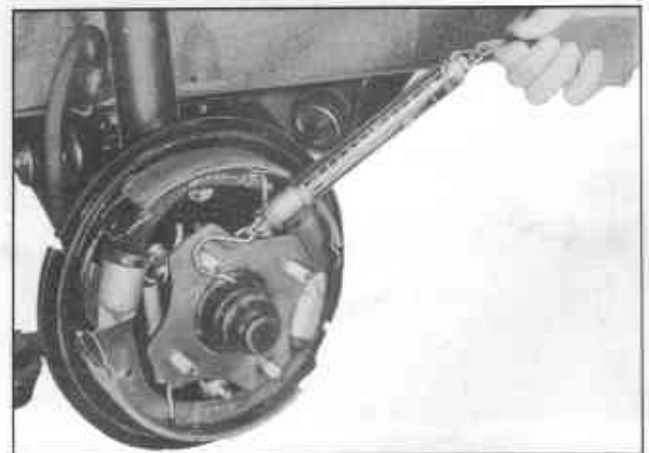
2. Apply MP2 or MP3 grease to the parts (marked with \* ) inside the hub.

3. Apply grease also to the hub cap.

**Note:** Cars with disc brakes use only MP3 type of grease.

### Spindle nut tightening

1. Tighten the spindle nut to 3.0 to 3.5 kg-m (21.7 to 25.3 ft-lb) torque.
2. Rotate the hub a few times to run in the bearing and again tighten the spindle nut to 3.0 to 3.5 kg-m (21.7 to 25.3 ft-lb) torque.
3. Return the spindle nut a quarter rotation (90°) and fit the hole at the spindle with one of the grooves on the spindle nut. Install the cotter pin into this hole to lock the spindle nut.



**Fig. FA-7** Measurement of hub turning resistance

## CHASSIS

4. Check the following specifications and if the results are out of specifications, adjust again.

Axial end play of hub 0 mm (0 in.)

Hub turning resistance

When a new bearing and a grease seal are used, less than 7 kg-cm (97.2 in-oz)

In case of readjustment, less than 4 kg-cm (55.5 in-oz)

Note: Tightening torque 3 to 3.5 kg-m (21.7 to 15.3 lb-ft) should be strictly observed.

### WHEEL HUB AND WHEEL BEARING (Car equipped with disc brakes)

#### Removal

1. Jack up the car.
2. After wheel nuts are removed, detach wheels.
3. Detach the brake hose connector (on the frame side).

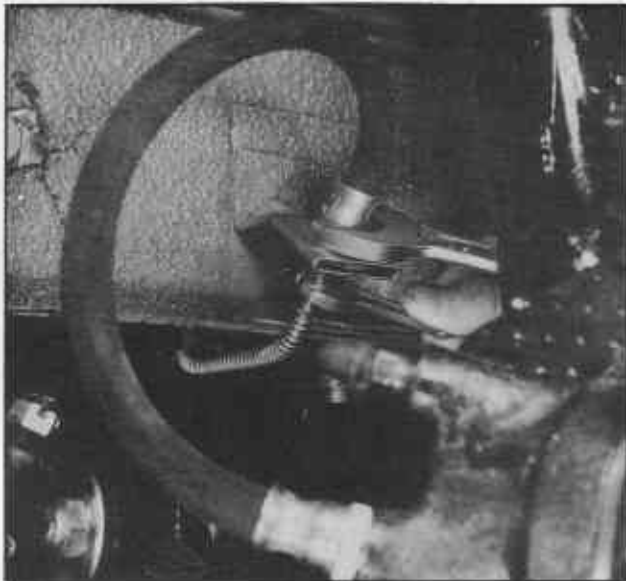


Fig. FA-8 Detaching brake pipe

4. After caliper-fitting bolts are removed, detach the caliper assembly.

5. Remove the hub cap.

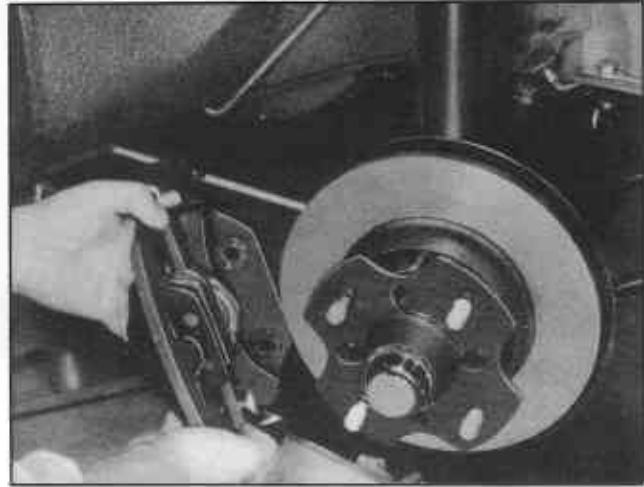


Fig. FA-9 Caliper removal

6. Remove the cotter pin and the front spindle nut.

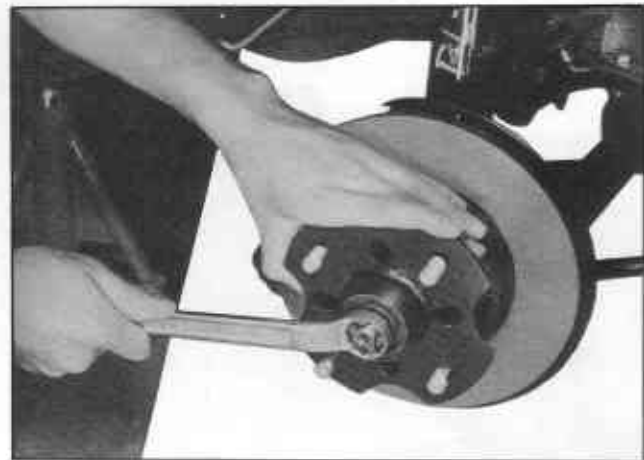


Fig. FA-10 Spindle nut removal

7. Remove the front wheel bearing washer.

8. Detach the front wheel hub and the rotor.

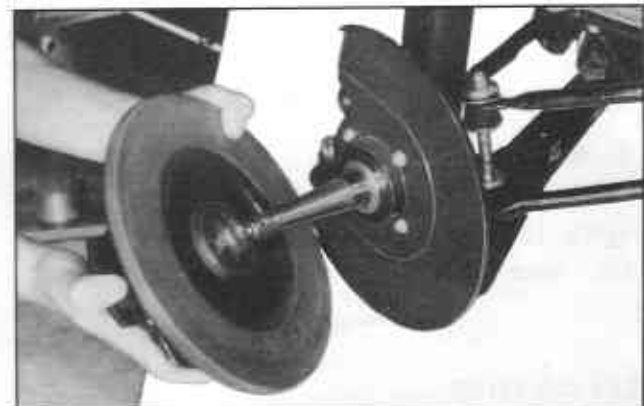


Fig. FA-11 Wheel-hub and rotor removal

## FRONT AXLE & FRONT SUSPENSION

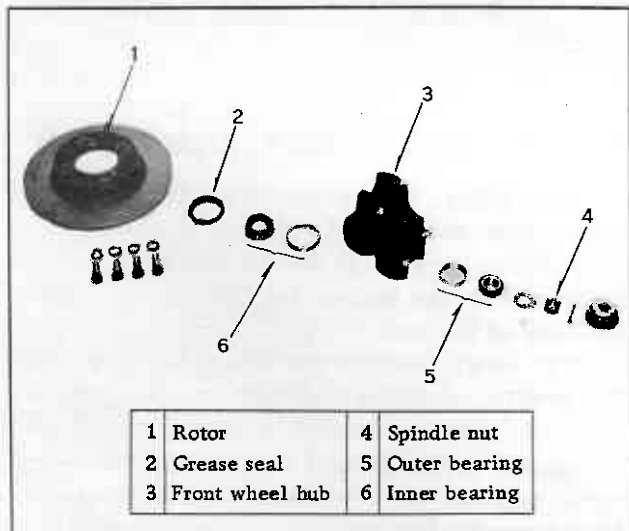
9. Remove the bearing collar.
10. Take out the outer bearing cage.
11. Scrape out, with a driver, the front hub grease seal.
12. Take out the inner bearing cage.
13. Punch out each outer race of the inner and the outer bearings, by using a drift.
14. After rotor-fitting bolts are removed, detach the rotor.



*Fig. FA-12 Detaching rotor*

### Inspection

1. After removal, all parts should be replaced.



*Fig. FA-13 Exploded view of front wheel hub assembly*

2. Damaged bearings and hubs should be replaced.

3. Replace grease seals with new ones, in principle, after each disassembling.

### Installation

1. Installation is done in the exact reverse of removing.
2. Apply MP3 type grease to the inside of hub cap in the hub.  
(See the section on car with drum brakes, the front wheel hub on p. FA-3).

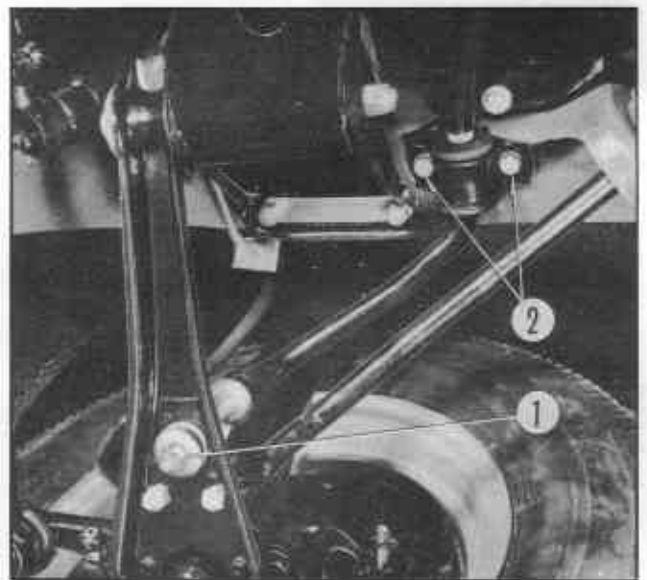
#### Tightening torque

Spindle nut	Refer to p. FA-3
Caliper fixing bolts	7.3 to 9.9 kg-m (52.8 to 71.6 ft-lb)
Rotor fixing bolts	3.9 to 5.3 kg-m (28.2 to 38.3 ft-lb)
Back plate fixing bolt	2.7 to 3.7 kg-m (19.5 to 26.8 ft-lb)

### STABILIZER

#### Removal

1. Remove stabilizer-fitting bolts (the transverse link side) ① (on both sides).
2. After the frame-side bracket of the stabilizer ② is removed, the stabilizer can be easily taken out (on both sides).



*Fig. FA-14 Stabilizer removal*

# CHASSIS

## Inspection

Deformation and cracks on the bar, and damages of rubber parts should be checked.

## Installation

Do the exact reverse of removal.

Tightening torque of stabilizer fixing

Transverse link bracket side	1.2 to 1.7 kg-m (8.7 to 12.3 ft-lb)
Frame bracket side	1.9 to 2.5 kg-m (13.7 to 18.1 ft-lb)

## TENSION ROD

### Removal

1. Remove the fitting nuts ① on the body-frame side.
2. Remove fitting bolts ② on the transverse link side, and the tension rod can be easily taken out.

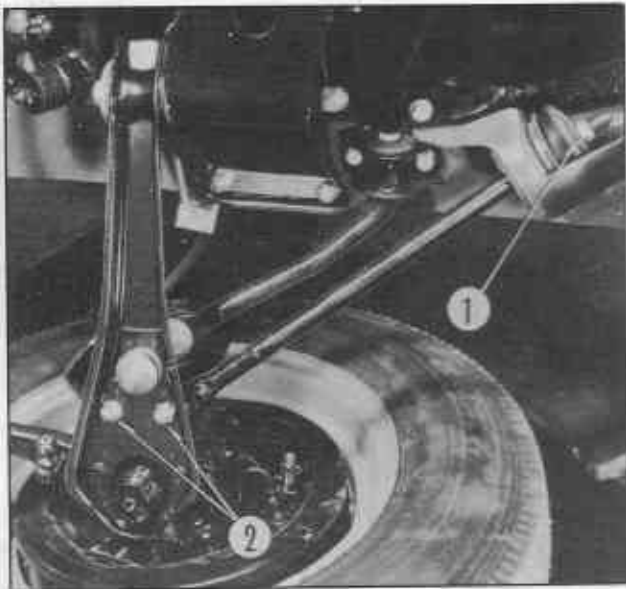


Fig. FA-15 Tension rod removal

## Inspection

Check whether there is any deformation or cracks on the bar and any damage on rubber parts.

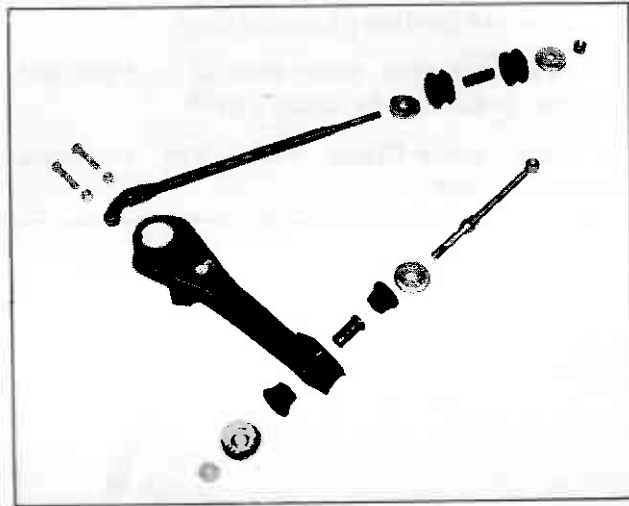


Fig. FA-16 Tension rod and transverse link

### Installation

Do the exact reverse of removing.

Tightening torque	
Frame bracket side	7.2 to 9.6 kg-m (52.1 to 69.4 ft-lb)
Transverse link side	4.9 to 6.3 kg-m (35.4 to 45.6 ft-lb)

## SPRING AND STRUT ASSEMBLY

The front suspension unit consists of a strut-outer casing with spindle, inside which is a cylinder, located at the top by the piston rod guide and at the bottom by the bottom valve in the base of the unit.

The inner components are assembled under the severe condition and hate any dirt or alien matters. These components (piston rod, piston rod guide, cylinder and bottom valve) are serviced together as an assembly, not separately. So, whenever the replacement is intended, the inner components should be replaced as an assembly.

# FRONT AXLE & FRONT SUSPENSION

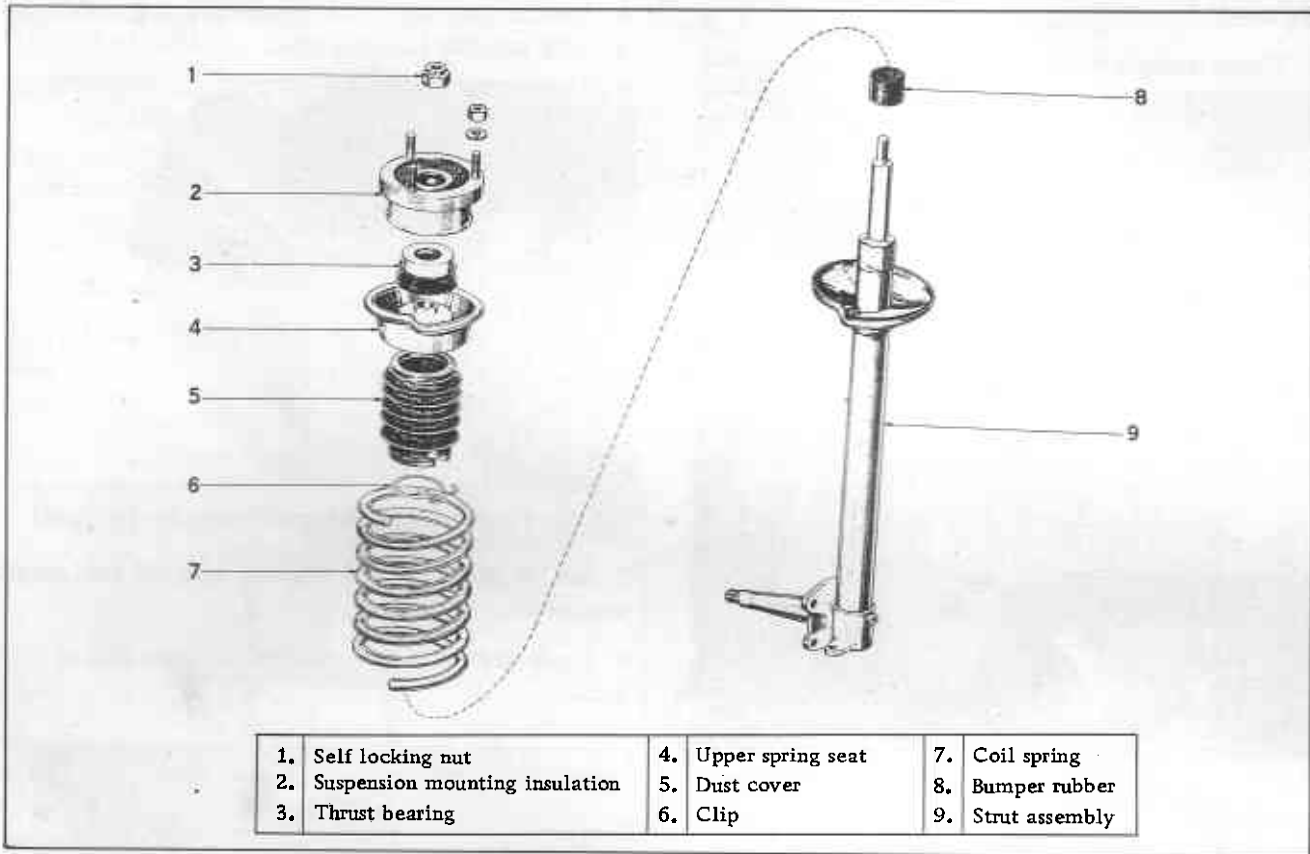


Fig. FA-17 Exploded view of suspension unit

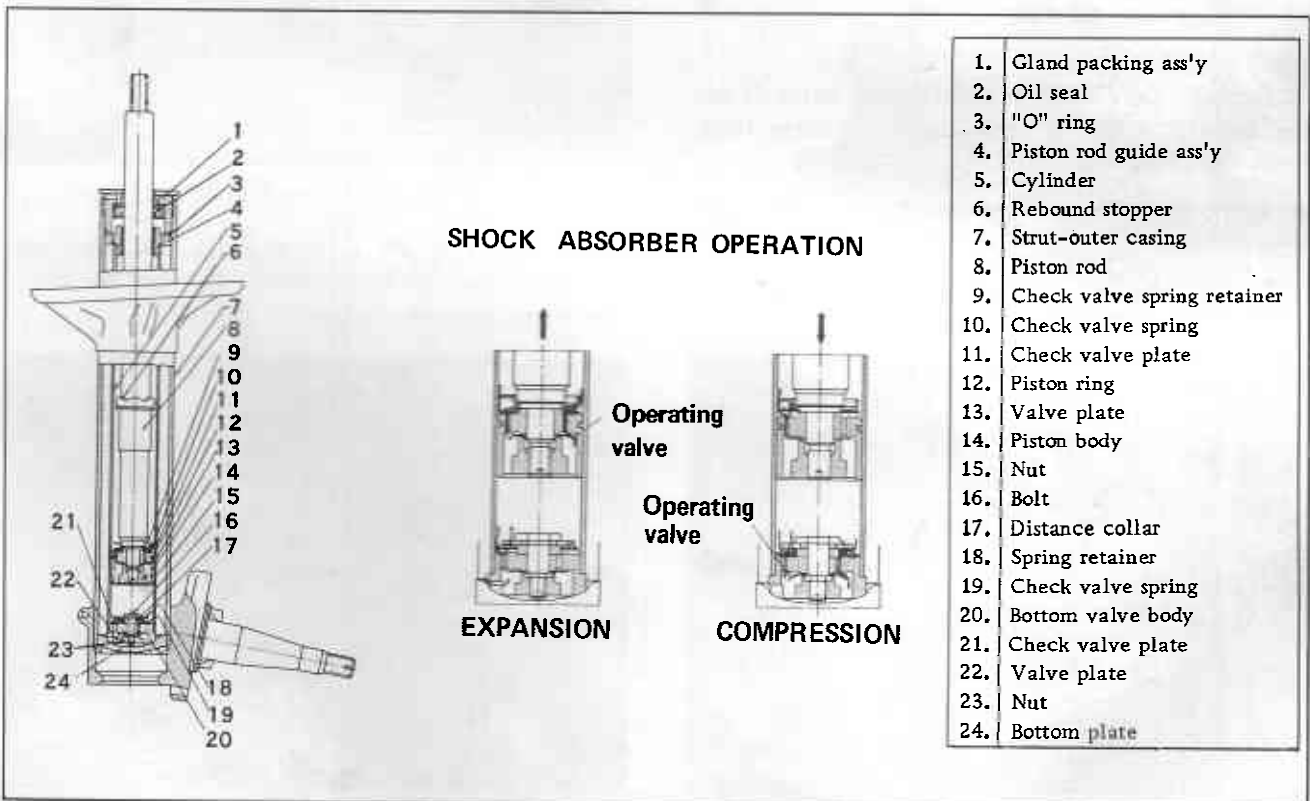


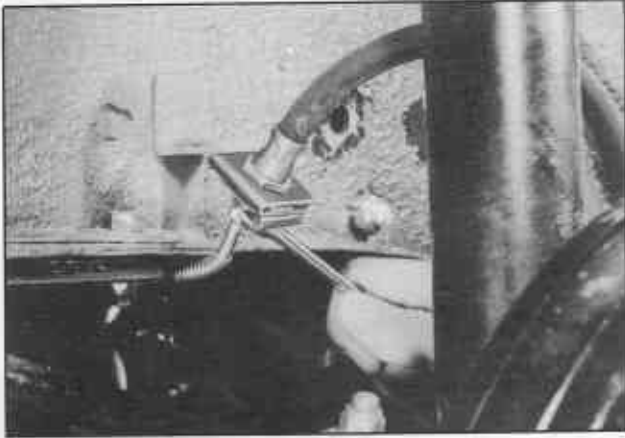
Fig. FA-18 Sectional view of strut assembly



## CHASSIS

### Removal

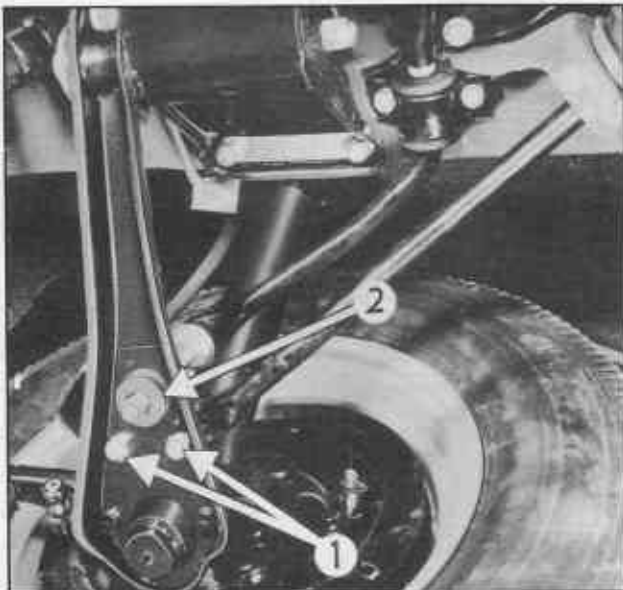
1. Place wedges behind rear wheels.
2. Jack up the car and support it by the stands.
3. Remove wheels.
4. Detach the brake-hose connector, remove the lock spring, and disconnect the brake-hose from the brake tube.



*Fig. FA-19*

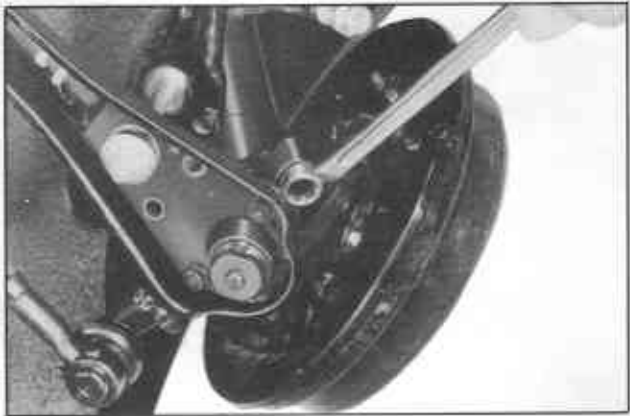
**Note:** Plug up the end of the disconnected tube with a rubber cap, so that brake fluid will not be lost.

5. Detach the tension-rod-fitting bolts ① and the stabilizer-fitting nuts ② and separate them from the transverse link.



*Fig. FA-20 Transverse link removal*

6. Detach the two bolts connecting the strut assembly and the knuckle arm.



*Fig. FA-21 Detaching knuckle arm to strut bolts*

7. Set a jack at the bottom end of the strut assembly.

8. Open the hood and remove the nuts fitting the strut.



*Fig. FA-22 Strut mounting bolts removal*

9. By lowering the jack slowly, the strut assembly, with springs attached, can be taken out from the body-frame.



*Fig. FA-23 Strut assembly removal*

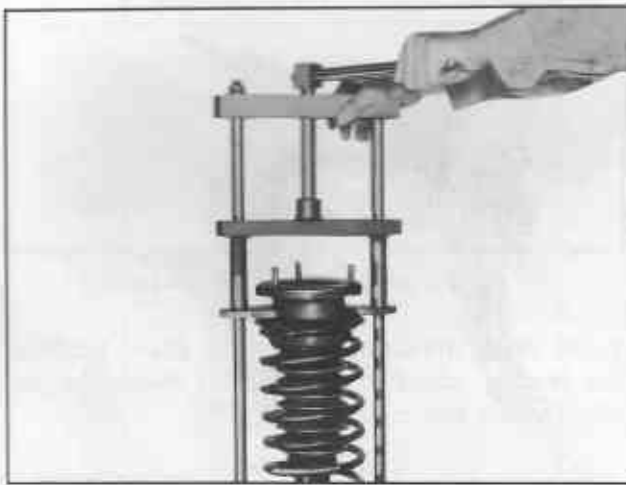
## FRONT AXLE & FRONT SUSPENSION

### Disassembly

Disassembling and reassembling should be carried out in a clean place, in order to prevent dirt and other align matters from sticking to the component parts.

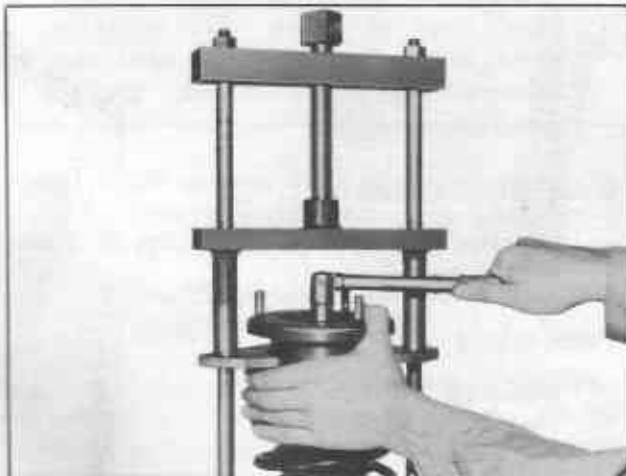
1. Fit the strut assembly to the attachment.
2. Take off the dust-cover snap-ring.
3. Fit the coil spring compressor and compress the suspension coil spring slightly.

Special tool: ST49100000



*Fig. FA-24 Coil spring compressor*

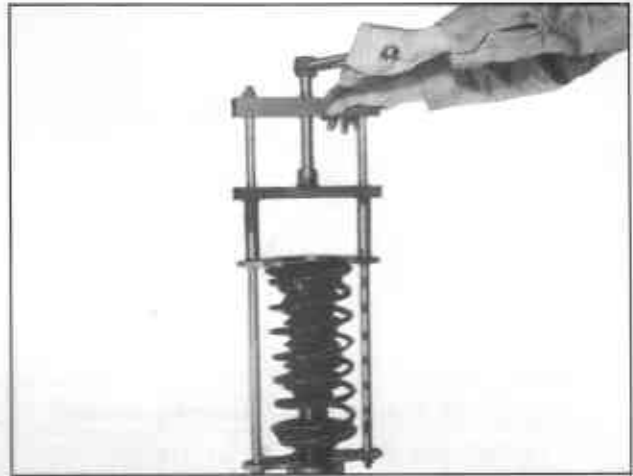
4. Take off the self-locking nut which retains the upper thrust bearing assembly.



*Fig. FA-25 Taking off the self-locking nut*

5. Detach the strut-mounting insulator, the thrust bearing, the spring seat and the bumper rubber.

6. Loosen the spring compressor and take out the coil spring.



*Fig. FA-26 Coil spring removal*

7. Remove the gland packing.

Special tool: Gland packing wrench ST49130000



*Fig. FA-27 Gland packing removal*

**Note:** Before starting the work, push down the piston rod to the lowest position, and clean the mud and dirt sticking to the gland packing and its environment.

When the gland packing is caulked, first break the caulking and then start the work.

8. Remove the O-ring from above the piston rod guide.
9. Remove the piston rod and cylinder assembly by lifting the piston rod upwards slowly.

## CHASSIS

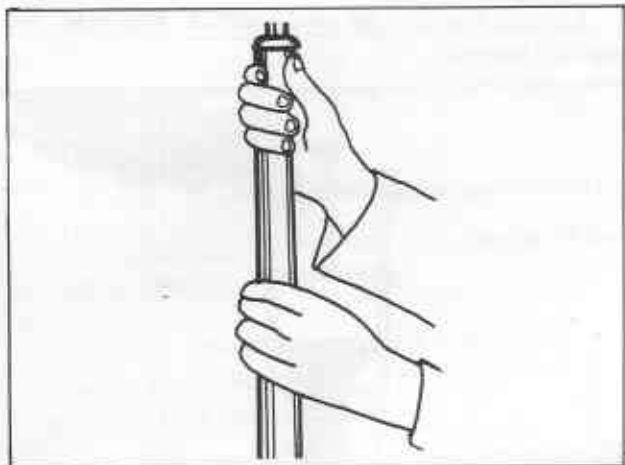


Fig. FA-28 Shock absorber assembly removal

**Note:** The piston rod and its guide should not be removed from the cylinder. They are serviced together as an assembly, not separately.

10. Empty the fluid into a suitable waste container.

11. Wash all components in a suitable bath.

12. Drain the remaining oil completely from the strut-outer casing.

**Note:** This procedure should be strictly observed because the performance of the shock absorber is easily influenced by the amount of the damping oil. When assembling the amount of the damping oil should be measured strictly.

### Inspection

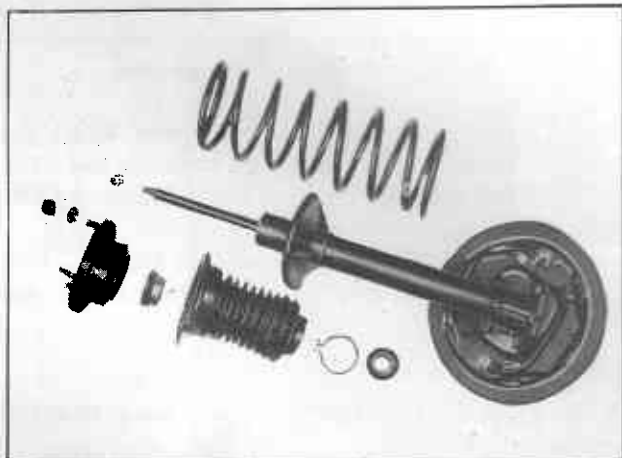


Fig. FA-29 Exploded view of spring and strut assembly

1. All parts except non-metal parts should be first washed with gasoline or thinner, and then dirt and other alien matters should be removed by air-blowing.

2. Non-metal parts should be cleaned only by air-blowing.

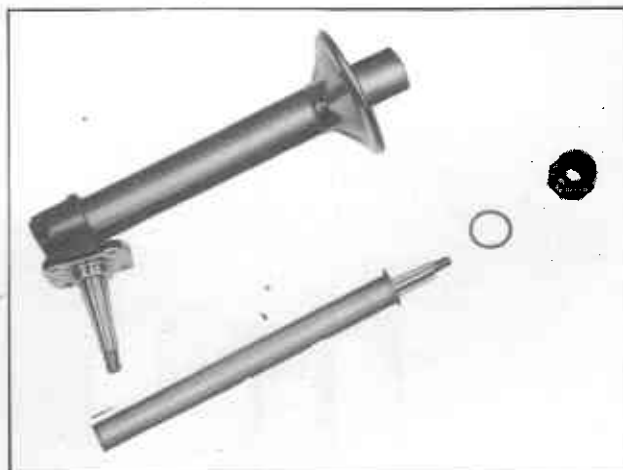


Fig. FA-30 Shock absorber assembly

3. At each disassembling, the gland packing, the O-ring and the damping oil should be replaced with new ones without fail.

#### Strut-outer casing

Deformed, cracked or damaged casing should be replaced.

#### Spindle

Care must be taken when checking, if there is any crack on the base and the screw portion of the spindle. Replace, if found abnormal.

#### Spring and rubber parts

Replace, if cracked, worn out or otherwise damaged.

#### Thrust bearing

Replace, if worn out, deformed or otherwise damaged.

#### Assembly

**Note:** a. All parts are precision finished, and, therefore, should not be dropped or scratched.

## FRONT AXLE & FRONT SUSPENSION

- b. When reassembling, all component parts should be thoroughly cleaned, and it should be ascertained that the dirt and other alien matters are completely removed.
- c. When working, never use waste cotton or gloves.

1. Fix the strut-outer casing to the adapter.
2. Fit the piston rod and cylinder assembly into the strut-outer casing.
3. Fill the strut-outer casing with the correct quantity of oil.



*Fig. FA-31 Filling shock absorber oil*

Applied models	All sedan models Ex. P510-UTK, PL510-TK and L510-S	All wagon models	P510-UTK, PL510-TK and L510-S
Oil quantity	300 cc	325 cc	290 cc

**Note:** a. Oil quantity has a close relationship with damping power, and precise measurement by a measuring cylinder is necessary.

b. Use Nissan genuine oil (NISSEKI SHOCK ABSORBER OIL A-1).

4. Place the rubber O-ring on top of the piston rod guide and fit the gland packing. Do not damage the oil seal when installing the gland packing.

Special tool: Gland packing guide A, B  
ST49340000

**Note:** Before tightening the gland packing pull the Piston rod upward by approximately 90 mm

(3.54 in.). This will give the best condition for bleeding the shock absorber system.



*Fig. FA-32 Gland packing installation*

5. Tighten the gland packing to 6 to 6.5 kg-m (43.4 to 47.0 lb-ft) torque.

Special tool: ST49130000

6. Bleed the shock absorber system by moving the piston rod up and down.

(1) Position the spindle down, when the piston rod is pulled out upwards, and position the spindle up when the piston is inserted.

(2) Repeat this procedure 4 or 5 times, and the bleeding is completed.

(3) Complete bleeding can be ascertained by the fact that there is no change of feeling of pressure, when the piston rod is given stroke motions.

7. Position the suspension coil spring, bump rubber and spring seat with dust cover on the top of the piston rod, which should be in fully extended position. Compress the spring, using the Special tool: ST49100000.

8. Fit the strut mounting insulator and bearing assembly and secure with the self-locking nut.

Tightening torque: 6 to 7.5 kg-m  
(43.4 to 54.2 lb-ft)

### Installation

1. Installing is a reversal procedure of the removal.

2. After reassembling the strut and spring assembly, apply grease thoroughly to the portions marked with \* as shown in Figure FA-33.

## CHASSIS

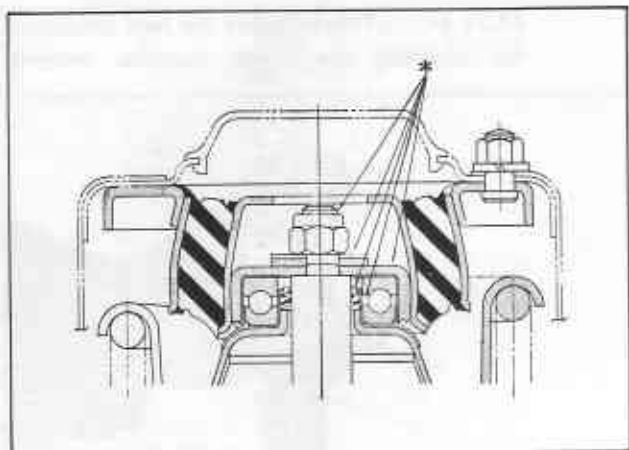


Fig. FA-33 Sectional view of strut mounting insulator

3. The work of fitting the strut assembly can be performed more easily, if the dust cover on the hood ledge is removed.

### Tightening torque

Nuts fixing the strut assembly to body	3.9 to 5.2 kg-m (28.2 to 37.6 ft-lb)
Bolts fixing knuckle arm to strut	6.0 to 8.0 kg-m (43.4 to 57.8 ft-lb)
Nut fixing tension rod to transverse link	4.9 to 6.3 kg-m (35.4 to 45.6 ft-lb)
Stabilizer fixing bolts	
Transverse link bracket side	1.2 to 1.7 kg-m (8.7 to 12.3 ft-lb)
Frame bracket side	1.9 to 2.5 kg-m (13.7 to 18.1 ft-lb)

Note: The self-locking nuts should be replaced whenever disassembled.

## TRANSVERSE LINK

### Removal

1. Place wedges behind rear wheels.
2. Jack up the car and support it by the stands.
3. Separate the tension rod ① and the stabilizer ② from the transverse link ③.
4. Remove bolts ④ for fitting the lower ball-joint.

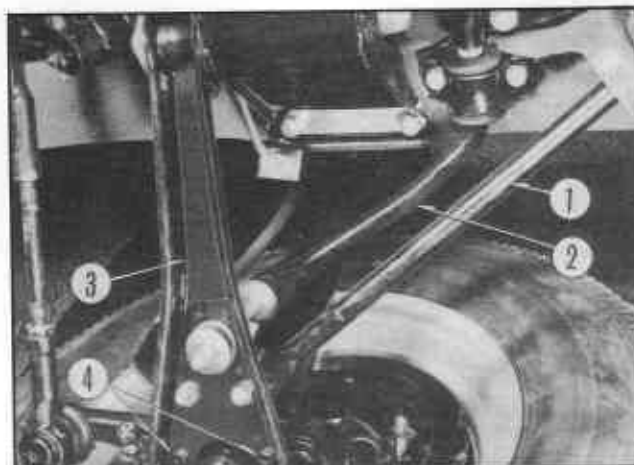


Fig. FA-34 Underside view of front axle

5. Remove nut ①, then the transverse link can be easily taken out.

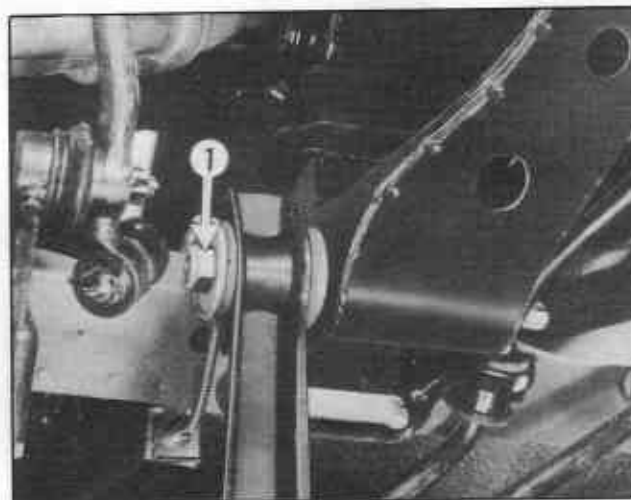


Fig. FA-35 Transverse link removal

### Inspection

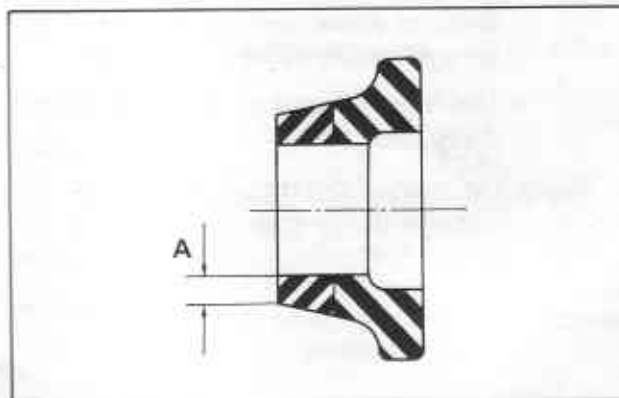


Fig. FA-36 Transverse link bush

## FRONT AXLE & FRONT SUSPENSION

1. Replace the cracked, deformed or otherwise damaged link.
2. Check the abrasion of rubber parts, and, if measurement A as shown in Figure FA-36 is less than 1 mm (0.03937 in.), replace the rubber parts with new ones.

### Installation

Do the exact reverse of removing.

#### Tightening torque

Transverse link to cross member	12.2 to 13.5 kg-m (88.2 to 97.6 ft-lb)
Lower ball joint	1.9 to 2.5 kg-m (13.7 to 18.1 ft-lb)
Tension rod to transverse link	4.9 to 6.3 kg-m (35.4 to 45.6 ft-lb)
Stabilizer to transverse link	1.2 to 1.7 kg-m (8.7 to 12.3 ft-lb)

### LOWER BALL JOINT

#### Removal

1. Separate the tension rod ① and the stabilizer ② from the transverse link ③.

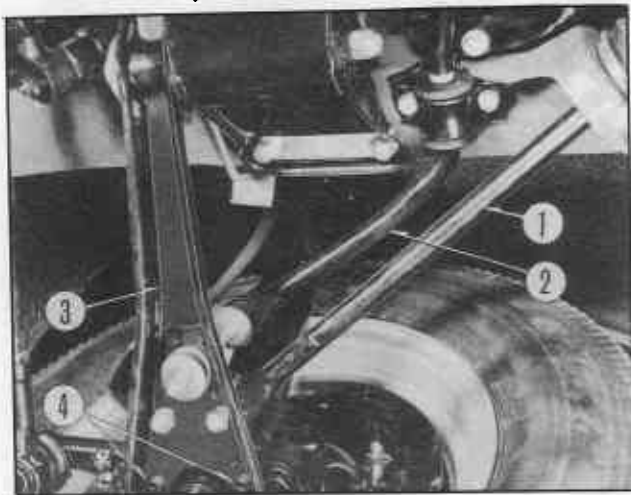


Fig. FA-37 Underside view of front axle

2. Remove the bolt connecting the strut and the knuckle arm.

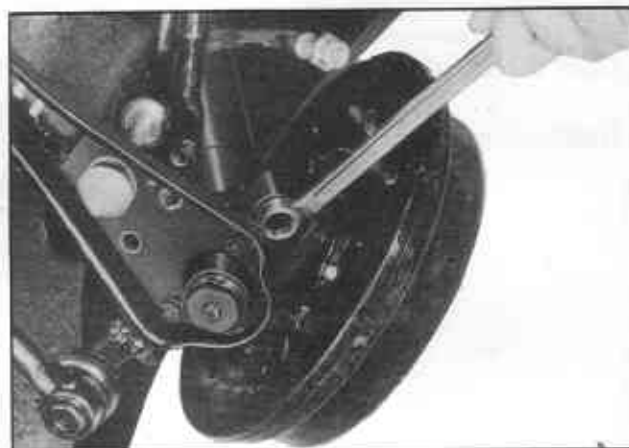


Fig. FA-38 Detaching knuckle arm from strut

3. Remove the cotter pin and the lower ball joint nut.
4. Separate the lower ball joint from the knuckle arm.



Fig. FA-39 Detaching ball joint from knuckle arm

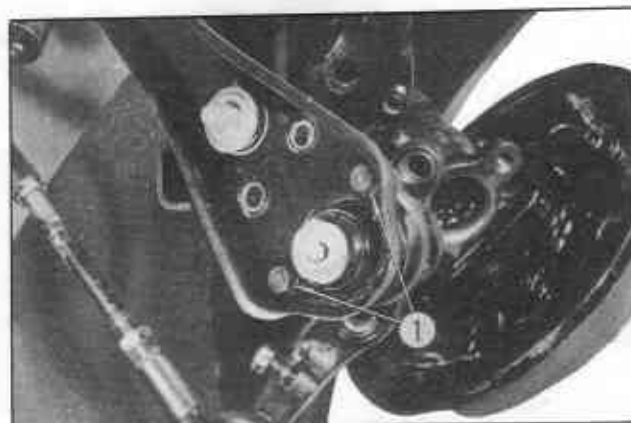


Fig. FA-40 Detaching ball joint from transverse link