



SECTION FA

FRONT AXLE & FRONT SUSPENSION



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CAUTION
Do not overtighten wheel bearing nuts, as this can cause wheel bearing failure.

Turning in both directions two or three times measuring the turning torque and axial play to see if they are within the specified ranges. If they are not, adjust.

Wheel bearing starting torque:
Axial play: 0 mm (0 in)

With new grease seal
As mounted at wheel
As mounted at axle hub

1.0 to 1.8 kg-cm (0.7 to 1.3 ft-lb)
0.5 to 0.8 kg-cm (0.3 to 0.6 ft-lb)

As mounted at wheel hub
As mounted at axle hub

1.8 kg (4.0 lb)

ADJUSTMENT WHEEL BEARING

1. Block rear wheels with chocks.
2. Turn front wheels to the right and support it with the chocks.
3. Remove dust cap and bearing nut.
4. Remove hub cap, cotter pin, adjusting cap and wheel bearing nut.
5. Slightly loosen the recommended multi-point grease to the surface of spindle and contact surface between wheel bearing washer and outer wheel bearing.
6. Tighten wheel bearing nut, using a suitable torque wrench.

Note: Make sure that the nut is fully seated on the hub.

7. Tightening torque: 1.0 to 1.8 kg-cm (0.7 to 1.3 ft-lb) for wheel bearing and 0.5 to 0.8 kg-cm (0.3 to 0.6 ft-lb) for nut.



INSPECTION AND ADJUSTMENT

INSPECTION

Inspect in accordance with periodic maintenance schedule.

1. Block rear wheels with chocks.
2. Jack up the front of car and support it with safety stands.

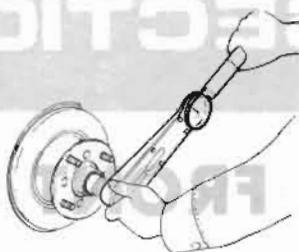
Refer to Section GI for lifting points and towing.

3. By shaking each front wheel with grasping the upper and lower surfaces of the tires, check suspension parts for looseness, wear, or damage. Tighten all loose bolts and nuts to the specified torque. Replace all worn parts as described under Front Suspension.

4. Check wheel bearings. If there is any axial end play, adjust bearings to specifications.

Replace worn or damaged bearings as described under Front Axle.

5. Check strut for oil leakage or damage.



FA263

Fig. FA-1 Tightening Wheel Bearing Nut

7. Turn wheel hub several times in both directions to seat wheel bearing correctly; again tighten wheel bearing nut to the above torque.

8. Turn back wheel bearing nut "A" degrees.

Return angle "A": 60°

Install adjusting cap and align any of its slots with hole in spindle. If the above procedure fails to align hole and slot together, then tighten lock nut as much as 15 degrees until hole in spindle is aligned with any slot.

CAUTION:

Do not overtighten wheel bearing nuts, as this can cause wheel bearing seizure.

9. Turn hub in both directions two or three times, measuring its turning torque and axial play to see if they are within the specified ranges. If they are not, adjust.

Axial play: 0 mm (0 in)

Wheel bearing starting torque:

With new grease seal

As measured at wheel

bearing nut

4.0 to 8.5 kg-cm

(3.5 to 7.4 in-lb)

As measured at wheel hub

bolt

Less than

1.8 kg (4.0 lb)

With used grease seal

As measured at wheel bearing nut

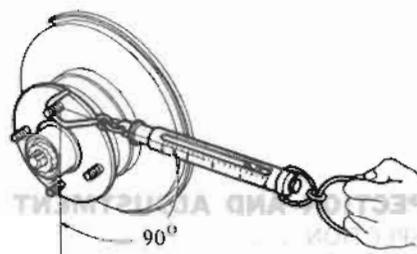
1.0 to 4.5 kg-cm

(0.9 to 3.9 in-lb)

As measured at wheel hub bolt

Less than

0.7 kg (1.5 lb)



FA326

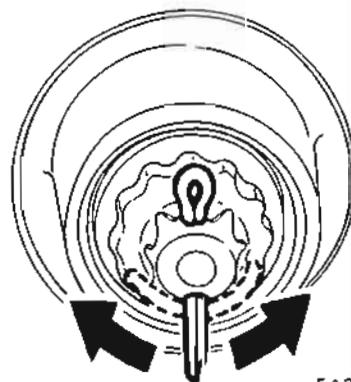
Fig. FA-2 Measuring Bearing Starting Torque

Repeat above procedures until correct starting torque is obtained.

Note:

- a. Correctly measure rotation starting force toward tangential direction against hub bolt.
- b. Above figures do not include "dragging" resistance with brake pads.
- c. Any slightest wheel bearing axial play cannot be tolerated.

10. Insert new cotter pin with the legs through these two parts; spread legs away from each other against sides of wheel bearing nut.



FA265

Fig. FA-3 Installing Cotter Pin

ADJUSTMENT

WHEEL BEARING

1. Block rear wheels with chocks.
2. Jack up the front of car and support it with safety stands.
3. Remove brake pads. Refer to Section BR for pad replacement.
4. Remove hub cap, cotter pin, adjusting cap and wheel bearing nut.
5. Sparingly apply recommended multi-purpose grease to threaded portion of spindle and contact surface between wheel bearing washer and outer wheel bearing.
6. Tighten wheel bearing nut, using a suitable torque wrench.

Ⓣ Tightening torque:

Wheel bearing nut

2.5 to 3.0 kg-m

(18 to 22 ft-lb)

11. Install hub cap with new O-ring, pad and wheel.

WHEEL ALIGNMENT

Correct front wheel alignment assures proper car handling characteristics and minimum steering effort with the least amount of tire wear. Before adjusting front wheel alignment, be sure to make preliminary inspection of front end parts:

- Tire pressure and balance
- Wheel bearings and wheel bearing nuts
- Steering gear play
- Steering gear housing loose at frame
- Steering linkage and connections
- Shock absorber operation

If wrong, repair or replace the damaged portion or parts.

When using equipment for front wheel alignment inspection, follow the instructions furnished with equipment.

Note: Inspection should be made with the car set level and at curb weight.

Camber and caster

Camber and caster are preset at factory and cannot be adjusted.

The car requires only toe-in and car posture adjustment.

Note: If camber or caster alignment is not within specifications, check associated parts. Repair or replace as necessary.

Toe-in

Measure toe-in, and adjust as necessary. For adjustment, carry out the following procedure.

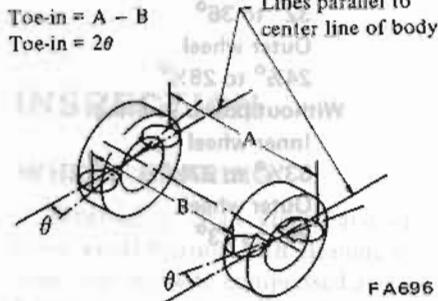
1. With steering wheel at its straight-ahead position, check front wheels to see if they are set in straight-ahead positions.
2. Toe-in can be adjusted by varying length of steering side rods.

Toe-in (Unladen):

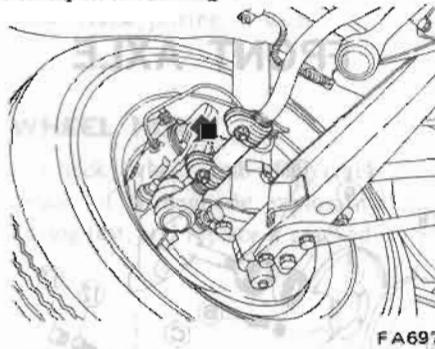
1 to 3 mm (0.04 to 0.12 in)
6' to 16' (On both sides)

"Unladen" means the following conditions:

- Tankful of fuel, radiator filled and engine oil full.
- Spare tire, jack, hand tools, mats in design position.
- All tires inflated to specified pressure.
- All excessive mud, dirt and road deposit accumulations away from chassis and underbody.



With power steering



Without power steering

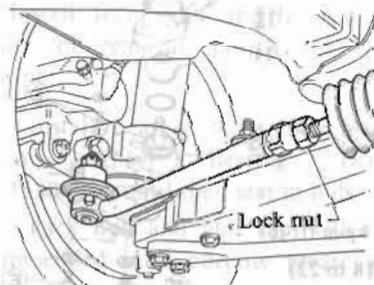


Fig. FA-4 Adjusting Toe-in

Note:

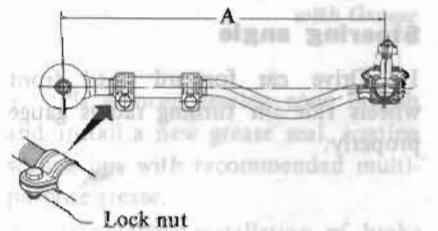
- a. Loosen lock nuts and turn left and right side rod bars equally.
- b. Turning side rod bar in forward direction of car increases toe-in.
- c. If side rods have been disassembled, set the distance between inner and outer ball stud centers to the specified value "A" beforehand when reassembling.

"A" dimension:

With power steering
366.3 mm (14.42 in)
Without power steering
291 mm (11.46 in)

- d. Make sure that side rod sockets are screwed in side rod bar more than 35 mm (1.38 in).

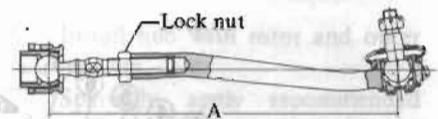
With power steering



FA788

Fig. FA-5 Side Rod Length

Without power steering



FA802

Fig. FA-6 Side Rod Length

3. After correct toe-in is obtained, tighten side rod lock nuts.

Tightening torque:

Side rod lock nuts

With power steering

1.1 to 1.7 kg-m

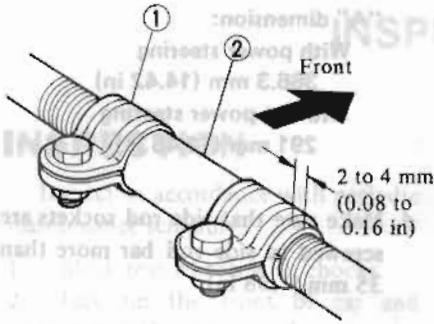
(8 to 12 ft-lb)

Without power steering

8.0 to 10.0 kg-m

(58 to 72 ft-lb)

Note: Make sure that side rod clip faces in direction shown in Fig. FA-6 and side rod clip is held within 2 to 4 mm (0.08 to 0.16 in) from end of side rod bar.



- 1 Side rod clip
- 2 Side rod bar

FA698

Fig. FA-7 Proper Installation of Clip

Steering angle

1. Drive car forward until front wheels ride on turning radius gauge properly.

2. Gauge should register zero when steering wheel is in straight-ahead position.
3. Rotate steering wheel all the way right and left; measure turning angle on inner wheel.

Turn in or out stopper bolt until correct turning angle is obtained.

Turning angle:

With power steering

Inner wheel

32° to 36°

Outer wheel

24½° to 28½°

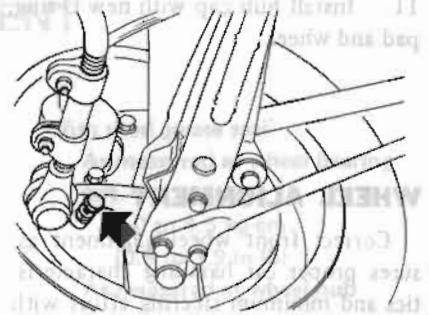
Without power steering

Inner wheel

33½° to 37½°

Outer wheel

29° to 33°



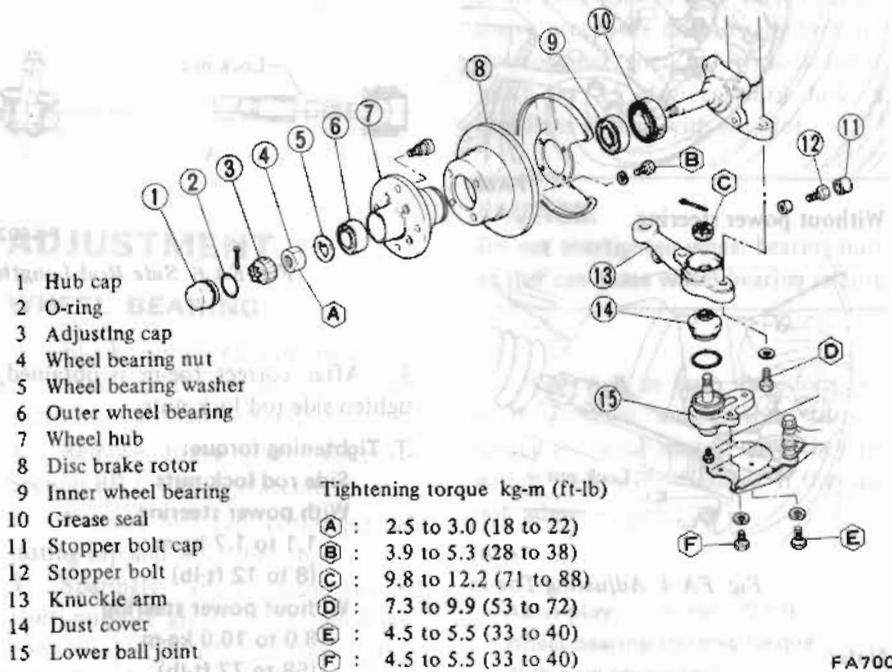
FA789

Fig. FA-8 Adjusting Steering Angle

4. After adjustment, lock adjustment nut.

Note: Turning angle of outer wheel will automatically be set by adjusting turning angle of inner wheel to specified values.

FRONT AXLE



FA700

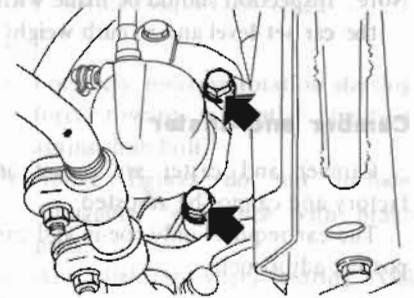
Fig. FA-9 Front Axle

REMOVAL

1. Block rear wheels with chocks.
2. Jack up front of car and support it with safety stands.
3. Remove wheel and tire assembly.

4. Remove brake caliper assembly.

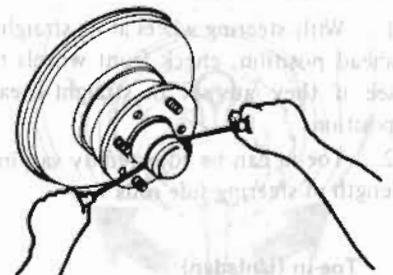
Note: Brake tube must not be disconnected from brake carrier assembly.



BR169A

Fig. FA-10 Removing Brake Caliper

5. Work off hub cap from hub using thin screwdrivers as shown below. If necessary, tap around it with a soft hammer while removing cap.

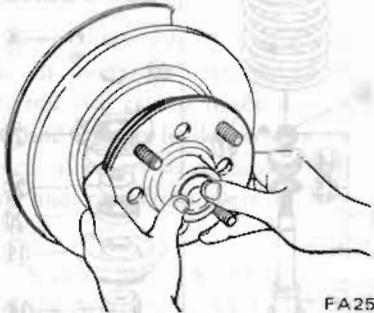


FA702

Fig. FA-11 Removing Hub Cap

Note: During operation, be careful to avoid damaging O-ring.

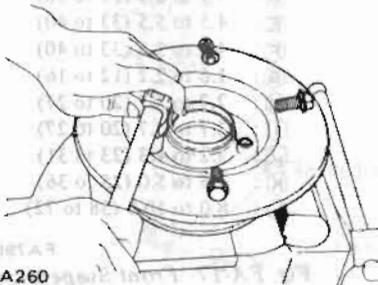
6. Pry off cotter pin; take out adjusting cap and wheel bearing lock nut.
7. Remove wheel hub with disc brake rotor from spindle with bearing installed.



FA258
Fig. FA-12 Removing Wheel Hub

Note: Be careful not to drop outer bearing cone out of hub when removing hub from knuckle spindle.

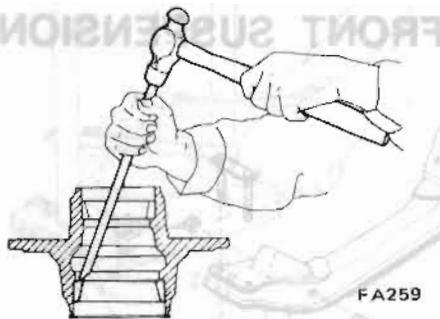
8. Remove outer bearing cone
9. Loosen four bolts securing brake disc; remove disc brake rotor from wheel hub assembly.



FA260
Fig. FA-13 Removing Disc Brake Rotor

Loosen screws securing baffle plate; take out baffle plate.

10. Remove inner bearing cone after prying out grease seal. Discard grease seal.
11. If it is necessary to replace bearing outer race, drive it out from hub with a brass drift and mallet. Evenly tap bearing outer race through two grooves inside hub.



FA259
Fig. FA-14 Removing Bearing Outer Race

INSPECTION

WHEEL BEARING

Thoroughly clean grease and dirt from wheel bearing with cleaning solvent, and dry with compressed air free from moisture. Check wheel bearing to see that it rolls freely and is free from noise, crack, pitting, or wear.

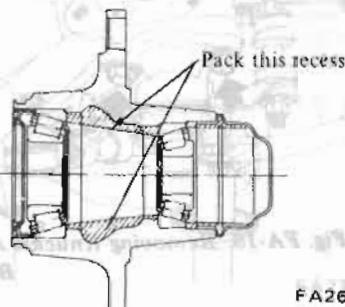
WHEEL HUB

Check wheel hub for crack by means of a magnetic exploration or dyeing test, and replace if cracked.

INSTALLATION

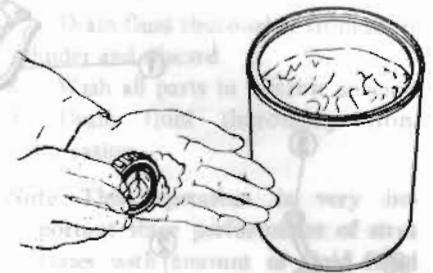
Install front axle in the reverse order of removal, noting the following:

1. Install bearing outer race with Front Wheel Bearing Drift ST35300000 until they seat in hub.
2. Pack hub and hub cap with recommended multi-purpose grease up to shaded portions.



FA261
Fig. FA-15 Lubricating Points of Wheel Hub

3. Coat each bearing cone with recommended multi-purpose grease.



FA781
Fig. FA-16 Coating Bearing Cone with Grease

4. Place inner bearing cone in hub and install a new grease seal, coating sealing lips with recommended multi-purpose grease.
5. Concerning installation of brake parts, refer to Section BR.

Tightening torque:

Rotor to hub
3.9 to 5.3 kg-m
(28 to 38 ft-lb)

6. Install hub with rotor and outer bearing cone.
7. Sparingly apply recommended multi-purpose grease to threaded portion of spindle and bearing washer to bearing contacting face. Then install washer and wheel bearing nut.

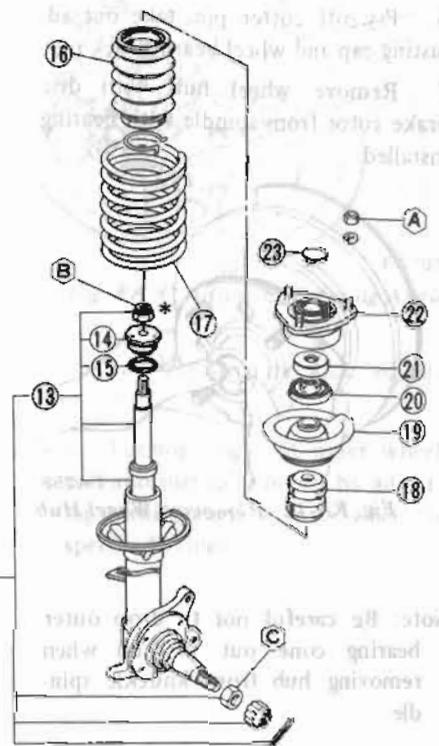
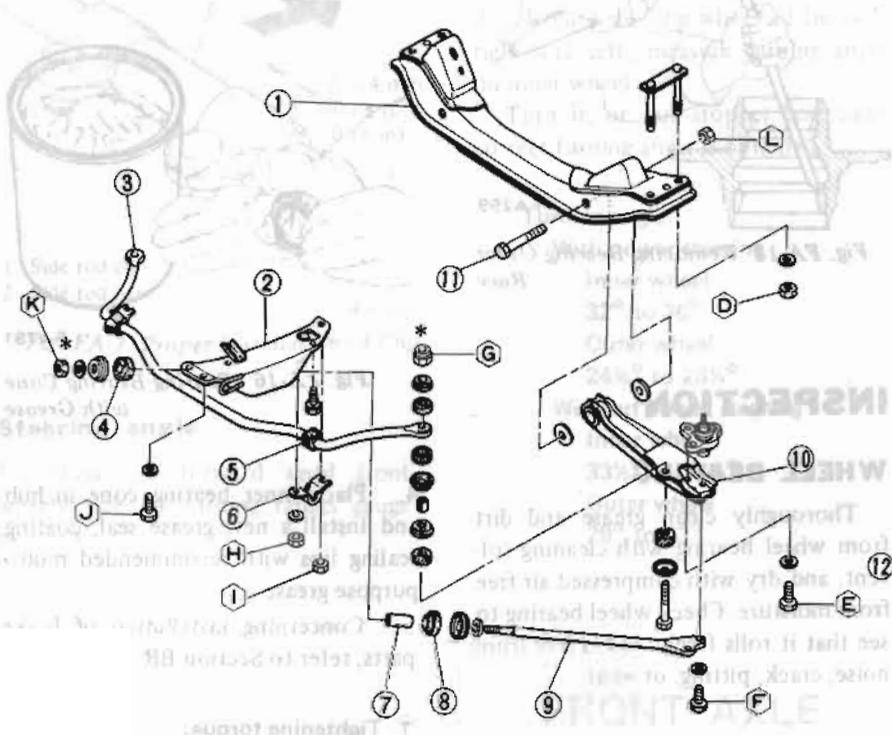
Adjust wheel bearing nut as described in Adjustment in this section.

Note:

- a. In order to assure correct bearing starting torque and to extend service life of wheel bearings, be sure to avoid dirt and foreign particles getting in bearings, grease seal, washer, bearing nut, etc.
- b. Grease should be changed at each disassembly and in accordance with Periodic Maintenance Schedule.

8. Install O-ring on hub cap and install hub cap on hub.
9. Install brake caliper assembly, referring to Section BR.
10. Install wheel and tire.

FRONT SUSPENSION



- | | |
|--------------------------------|----------------------------------|
| 1 Suspension crossmember | 11 Transverse link mounting bolt |
| 2 Tension rod bracket | 12 Strut assembly |
| 3 Stabilizer bar | 13 Shock absorber |
| 4 Tension rod mounting bushing | 14 Gland packing |
| 5 Stabilizer bushing | 15 O-ring |
| 6 Stabilizer bracket | 16 Dust cover |
| 7 Tension rod collar | 17 Front spring |
| 8 Tension rod mounting bushing | 18 Bound bumper |
| 9 Tension rod | 19 Front spring upper seat |
| 10 Transverse link | 20 Dust seal |

Tightening torque kg-m (ft-lb)

A	3.0 to 4.0 (22 to 29)
B	6.0 to 7.5 (43 to 54)
C	2.5 to 3.0 (18 to 22)
D	5.1 to 6.9 (37 to 50)
E	4.5 to 5.5 (33 to 40)
F	4.5 to 5.5 (33 to 40)
G	1.6 to 2.2 (12 to 16)
H	2.7 to 3.7 (20 to 27)
I	2.7 to 3.7 (20 to 27)
J	3.2 to 4.3 (23 to 31)
K	3.5 to 5.0 (25 to 36)
L	8.0 to 10.0 (58 to 72)

*: Replace self-locking nut whenever strut is disassembled.

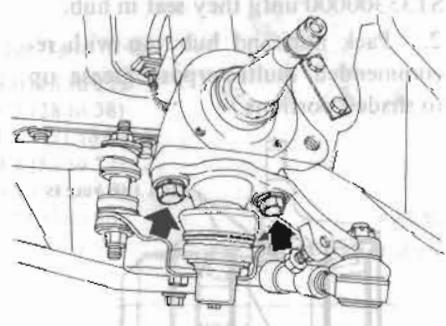
FA790

Fig. FA-17 Front Suspension

SPRING AND STRUT ASSEMBLY

REMOVAL

1. Disconnect brake tube from brake assembly.
2. Remove brake caliper assembly. See Fig. FA-10.
3. Remove bolt connecting strut to knuckle arm.

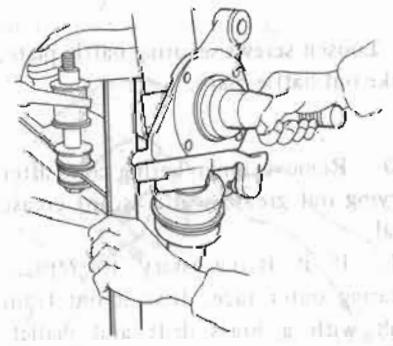


FA704

Fig. FA-18 Removing Knuckle Arm Bolts

4. Detach knuckle arm from bottom of strut. This can be done by forcing

lower arm down with a suitable bar.



FA791

Fig. FA-19 Removing Knuckle Arm

5. Support strut assembly with a jack or suitable stand and remove three nuts securing strut to hoodledge. Strut assembly and spring can then be removed as a unit.

DISASSEMBLY

When disassembling a strut, extra caution should be exercised to avoid dirt and dust getting inside strut. This dirt and dust is loaded with abrasive which, if enters strut, causes internal leak and premature wear of moving parts.

1. Secure Strut & Steering Gear Housing Attachment KV48100300 in a vise and install strut on attachment.
2. Set up Spring Compressor ST35651001 on spring. Compress spring just far enough to permit turning of strut mounting insulator by hand. Remove self-locking nut.

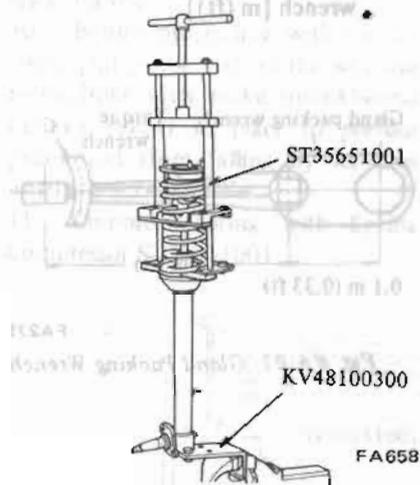


Fig. FA-20 Compressing Spring

3. Remove lock nut on top of piston rod; remove mounting insulator, strut mounting bearing, dust seal, spring seat, spring and bumper rubber.

CAUTION:

Be sure to hook special tool (ST35651001) evenly on a minimum of three coils, paying attention not to damage piston rod.

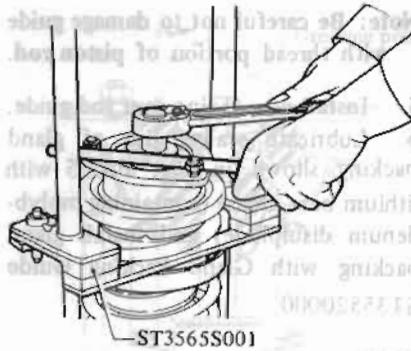


Fig. FA-21 Removing Mounting Insulator

4. Retract piston rod by pushing it down until it bottoms. Remove gland packing with Gland Packing Wrench ST35500001.

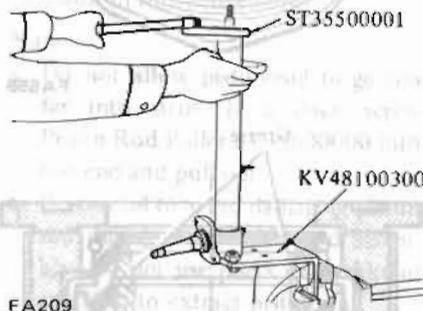


Fig. FA-22 Removing Gland Packing

Note: Clean gland packing of mud and other foreign particles accumulated.

5. Remove O-ring from top of piston rod guide bushing.
6. Lift out piston rod together with cylinder.

Note: Do not remove piston rod quickly as this will cause oil to spurt out.

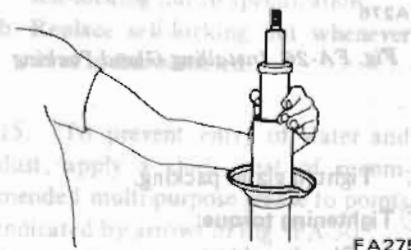


Fig. FA-23 Removing Piston Rod and Cylinder

Note: Piston rod, piston rod guide and cylinder are adjusted to provide precision mating surfaces and should be handled as a matched set.

7. Drain fluid thoroughly from inner cylinder and discard.
8. Wash all parts in suitable solvent.
9. Drain fluid thoroughly from outer casing.

Note: This operation is very important since performance of strut varies with amount of fluid filled within strut.

INSPECTION

1. Replace gland packing, O-ring and fluid whenever strut is disassembled.
2. Wash all parts, except for non-metallic parts, with suitable solvent and dry with compressed air.
3. Blow dirt and dust off of non-metallic parts using compressed air.

Note:

- a. Oil oozing out at and around gland packing does not call for strut maintenance. If oil leaks past spring seat, check piston rod and gland packing to correct the cause of problem. If oil leakage occurs on welded portion of outer strut casing, replace strut outer casing assembly.
- b. If shock absorber itself is malfunctioning, replace as an assembly (including piston rod, cylinder, bottom valve and guide bushing).

Outer casing

Check outer casing for evidences of deformation, cracking or other damage. If necessary, discard.

Strut mounting insulator

Replace if cemented rubber-to-metal joints are melted or cracked. Rubber parts should also be replaced, if deteriorated.

Strut mounting bearing

Replace if inspection reveals abnormal noise or excessive rattle in axial direction.

Note: Check dust seal for scratches or cracks on lips and replace if necessary.

ASSEMBLY

When assembling strut, be careful not to drop or scratch parts since they are precisely machined to very close tolerances. Before assembly, clean away all dirt to prevent any possible entry of dirt into strut.

Note: If replacement of any strut component parts is found to be necessary, make sure that parts are the same brand as those used in the strut assembly.

1. Install strut outer casing on Strut & Steering Gear Housing Attachment KV48100300. See Fig. FA-22.
2. Install cylinder and piston rod assembly (shock absorber kit) in outer casing.
3. Remove piston rod guide from cylinder and pour correct amount of new fluid into cylinder and strut outer casing.

Amount of oil:
290 cc (17.70 cu in)



FA065
Fig. FA-24 Filling Shock Absorber Fluid

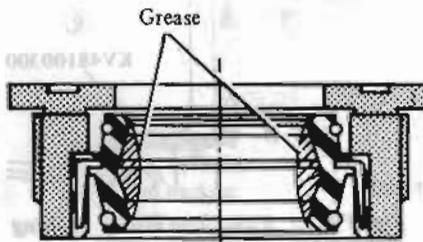
- Note:**
- a. It is important that correct amount of fluid be poured into strut to assure correct damping force of shock absorber.
 - b. Use **GENUINE NISSAN STRUT OIL** or equivalent every after overhaul.
 4. Securely install piston rod guide in cylinder.

Note: Be careful not to damage guide with thread portion of piston rod.

5. Install new O-ring over rod guide.
6. Lubricate sealing lips of gland packing shown in Fig. FA-25 with lithium base grease (containing molybdenum disulphide) and install gland packing with Gland Packing Guide ST35520000.



FA659



FA464

Fig. FA-25 Greasing Points of Gland Packing



FA276

Fig. FA-26 Installing Gland Packing

7. Tighten gland packing.

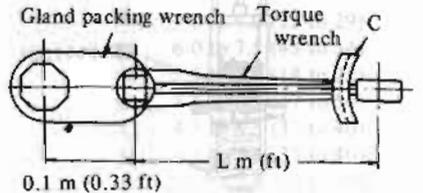
Ⓣ **Tightening torque:**
Gland packing
10.0 to 13.0 kg-m
(72 to 94 ft-lb)

- Note:**
- a. When tightening gland packing, it is important that piston rod be extended approximately 120 mm (4.72 in) from upper surface of gland packing to facilitate spring installation.
 - b. Gland packing should be tightened to specified torque with the aid of Gland Packing Wrench ST35500001. When doing so, the amount of torque to be read beneath wrench needle should be modified according to the following formula:

$$C \text{ kg-m} = 10 \times \left(\frac{L}{L + 0.10} \right) \text{ or}$$

$$C \text{ ft-lb} = 72 \times \left(\frac{L}{L + 0.33} \right)$$

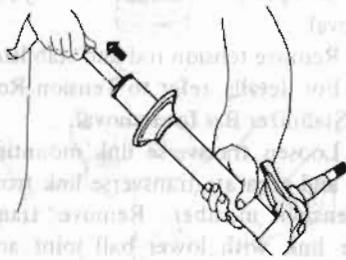
where,
C ... Value to be read on the torque wrench [kg-m (ft-lb)]
L ... Effective length of torque wrench [m (ft)]



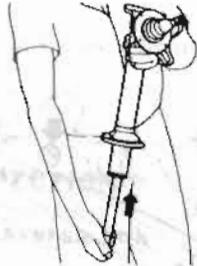
FA278

Fig. FA-27 Gland Packing Wrench

8. Bleed air out of shock absorber as follows:
 - (1) Holding strut by hand with its spindle side facing down, pull out piston rod completely. Then, turn strut upside down so that spindle side is now facing up. Under this condition, retract piston rod all the way in.
 - (2) Repeat the above procedure several times so that air will be bled out from strut thoroughly.
 - (3) If, during the above step, an equal pressure is felt through the hand gripping piston rod on both strokes, it is an indication that air is expelled from strut thoroughly.



FA070



FA071

Fig. FA-28 Air Bleeding from Strut

9. Place Strut & Steering Gear Housing Attachment KV48100300 in jaws of a vise.

10. Before proceeding with further steps, pull piston rod all the way out to the limit of its stroke; install bound bumper rubber in place to prevent piston rod from falling by its own weight.

11. Compress spring with Spring Compressor ST35651001.

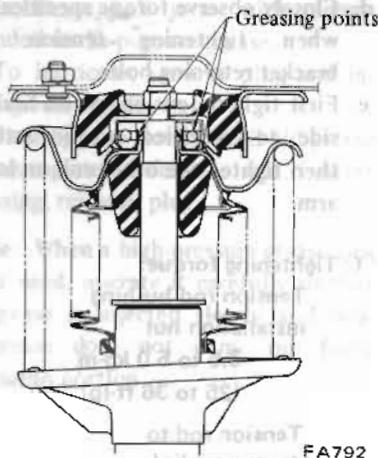


FA665

Fig. FA-29 Compressing Spring

Note: To prevent interference between upper spring seat and special tool, leave upper 2.5 to 3 turns of spring coils free, compress spring and assemble to strut.

12. Lubricate dust seal indicated by arrow in Fig. FA-30 with recommended multi-purpose grease.



FA792

Fig. FA-30 Greasing Points

13. Install dust cover, upper spring seat, dust seal, mounting bearing and insulator in this written order.

Note:

- Do not allow piston rod to go too far into strut. If it does, screw Piston Rod Puller ST35600000 into rod end and pull out.
- Be careful to avoid damaging piston rod during disassembly and assembly. Do not use pliers or the like in an effort to extract piston rod.
- Install thrust bearing so that it points in correct direction, Fig. FA-30.

14. Tighten new piston rod self-locking nut.

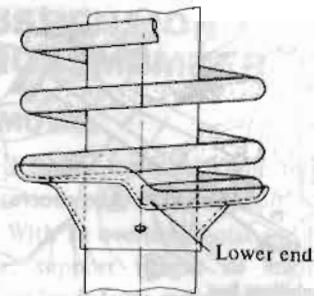
- Ⓢ Tightening torque:
- Piston rod self-locking nut
6.0 to 7.5 kg-m
(43 to 54 ft-lb)

Note:

- Temporarily tighten self-locking nut on tip of piston rod. After installing piston rod on car, tighten self-locking nut to specification.
- Replace self-locking nut whenever strut is disassembled.

15. To prevent entry of water and dust, apply a thick coat of recommended multi-purpose grease to points indicated by arrows in Fig. FA-30.

16. After placing spring in position between upper and lower spring seats, release compressor gradually.



FA074

Fig. FA-31 Installing Front Spring

17. Raise bound bumper rubber to upper spring seat.

INSTALLATION

Install strut and spring assembly in reverse order of removal.

Ⓢ Tightening torque:

- Strut to hoodledge
3.0 to 4.0 kg-m
(22 to 29 ft-lb)
- Steering knuckle arm to strut
7.3 to 9.9 kg-m
(53 to 72 ft-lb)

Note: Make sure brake hose is secure and not twisted.

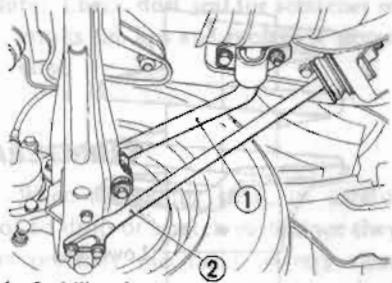
TENSION ROD AND STABILIZER BAR

REMOVAL

- Jack up the front of car and support it with safety stands; remove wheels.
- Remove splashboard.
- Back off nut ① securing tension rod to bracket and remove bolts ② which secure tension rod to lower arm. Tension rod can then be taken out. See Fig. FA-32.
- Remove nuts ③ securing stabilizer bar to connecting rod.

Note: Two wrenches are necessary in this operation.

- Remove bolts ④ and nuts ⑤ securing stabilizer bar bracket in position. Stabilizer bar can then be taken out.



- 1 Stabilizer bar
- 2 Tension rod

FA795

Fig. FA-32 Removing Tension Rod and Stabilizer Bar

INSPECTION

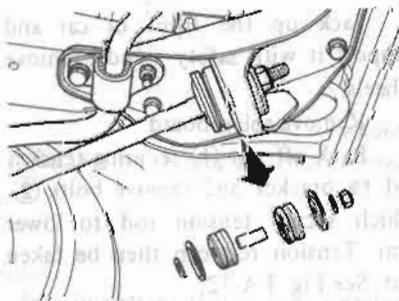
1. Check tension rod and stabilizer bar for evidence of deformation or cracks; if necessary, replace.
2. Check rubber parts (such as tension rod and stabilizer bar bushings) to be sure they are not deteriorated or cracked; if necessary, replace.

INSTALLATION

Install tension rod and stabilizer bar in the reverse order of removal.

Note:

- a. To install stabilizer bar, first temporarily tighten stabilizer bar bracket securing nuts and bolts. Final tightening should be carried out at curb weight with tires on ground.
- b. Noting direction of tension rod bushing, properly center bushing in tension rod bushing washer.



FA793

Fig. FA-33 Direction of Tension Rod Bushing

- c. After installation, make sure minimum clearances between tension rods and stabilizer bar are equal on both sides.

- d. Closely observe torque specification when tightening tension rod bracket retaining bolts.
- e. First tighten tension rod on bracket side to specified torque setting; then tighten the other end on lower arm.

Tightening torque:

Tension rod bushing installation nut
3.5 to 5.0 kg-m
(25 to 36 ft-lb)

Tension rod to transverse link
4.5 to 5.5 kg-m
(33 to 40 ft-lb)

Tension rod bracket to body
3.2 to 4.3 kg-m
(23 to 31 ft-lb)

Stabilizer bar bracket
2.7 to 3.7 kg-m
(20 to 27 ft-lb)

Stabilizer bar connecting rod
1.6 to 2.2 kg-m
(12 to 16 ft-lb)

TRANSVERSE LINK AND LOWER BALL JOINT

The transverse link is connected to the suspension member through a rubber bushing and to the strut through a ball joint.

The lower ball joint is assembled at factory and cannot be disassembled.

REMOVAL

1. Block rear wheels with chocks.
2. Jack up the front of car and support it with safety stands; remove wheel.
3. Remove splashboard.
4. Pry cotter pin off side rod socket ball joint.

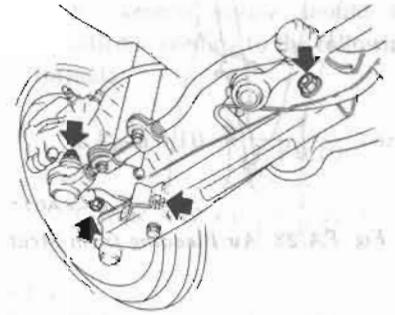
Remove castle nut and separate side rod from knuckle arm with Ball Joint Remover HT72520000. For details, refer to Steering Linkage (Section ST) for removal.

5. Loosen bolts securing knuckle arm to lower end of strut, and separate knuckle arm from strut. For details,

refer to Spring and Strut Assembly for removal.

6. Remove tension rod and stabilizer bar. For details, refer to Tension Rod and Stabilizer Bar for removal.

7. Loosen transverse link mounting bolt and separate transverse link from suspension member. Remove transverse link with lower ball joint and knuckle arm.

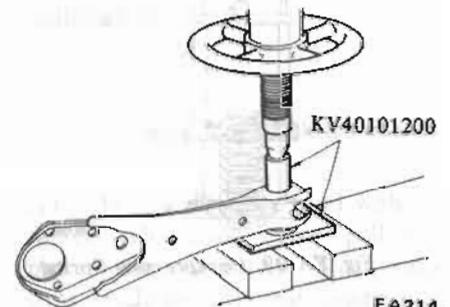


FA794

Fig. FA-34 Removing Transverse Link with Lower Ball Joint

8. Place transverse link in a vise, loosen bolt securing ball joint to transverse link and remove ball joint from transverse link.

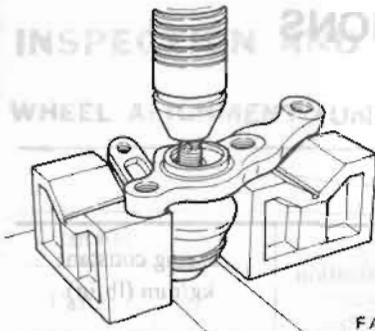
9. Withdraw transverse link bushing from transverse link using Front Transverse Link Bushing Replacer Set KV40101200.



FA214

Fig. FA-35 Removing transverse link bushing

10. Place knuckle arm in a vise. Remove suspension ball joint from knuckle arm using a press.



FA712

Fig. FA-36 Removing Lower Ball Joint

3. Lubricate ball joint with recommended multi-purpose grease.

To lubricate, remove plug and install grease nipple.

Pump grease slowly until old grease is completely forced out. After greasing, reinstall plug.

Note: When a high-pressure grease gun is used, operate it carefully so that grease is injected slowly and new grease does not come out from clamp portion.

INSPECTION

Transverse link

1. Repair or replace transverse link if deformed, cracked or damaged.
2. If rubber bushing shows evidence of cracking, replace with a new one.
3. Make sure mating surface of bushing is clean and free from oil or grease.

Lower ball joint

1. Ball joint is assembled at factory and cannot be disassembled. Check ball stud turning torque with nut in place on ball stud.

If it is far from specifications, replace.

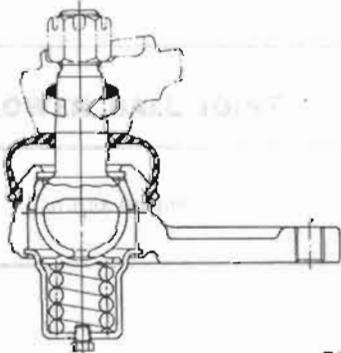
Turning torque:

New parts

25 to 80 kg-cm
(22 to 69 in-lb)

Used parts

More than 15 kg-cm (13 in-lb)



FA333

Fig. FA-37 Lower Ball Joint

2. Check condition of dust cover. If it is cracked excessively, replace ball joint.

INSTALLATION

Install transverse link and suspension ball joint in reverse order of removal.

Note:

- a. When installing transverse link spindle, install it together with rear side lower arm bushing.
- b. To install transverse link, first temporarily tighten nuts securing transverse link spindle which connects transverse link to suspension crossmember. Final tightening should be carried out at curb weight with tires on ground. And also, at this time, front side nut should be tightened before rear side nuts.
- c. Make sure mating surface of bushing is clean and free from oil and grease.

Tightening torque:

Ball joint socket to transverse link

4.5 to 5.5 kg-m
(33 to 40 ft-lb)

Ball joint to knuckle arm

9.8 to 12.2 kg-m
(71 to 88 ft-lb)

Transverse link to suspension crossmember

8.0 to 11.0 kg-m
(58 to 80 ft-lb)

Side rod ball joint to knuckle arm

5.5 to 10.0 kg-m
(40 to 72 ft-lb)

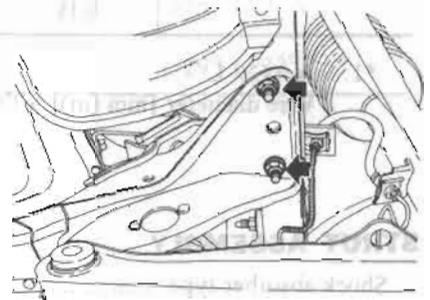
Knuckle arm to strut

7.3 to 9.9 kg-m
(53 to 72 ft-lb)

SUSPENSION CROSSMEMBER

REMOVAL

1. Remove transverse link, referring to previous part of this section.
2. With an overhead hoist and lifting cable, support weight of engine to remove loads from mountings.
3. Remove engine mounting nuts. Separate suspension crossmember from engine.
4. Remove bolt, indicated by arrow, and separate suspension crossmember from car body.



FA713

Fig. FA-38 Removing Suspension Crossmember

INSPECTION

Check suspension crossmember for evidence of deformation or cracking; if necessary, replace.

INSTALLATION

Install suspension crossmember in reverse order of removal.

Tightening torque:

Suspension member to body frame

5.1 to 6.9 kg-m
(37 to 50 ft-lb)

Engine mounting insulator to suspension member

3.2 to 4.3 kg-m
(23 to 31 ft-lb)

SERVICE DATA AND SPECIFICATIONS

GENERAL SPECIFICATIONS

COIL SPRING

Model	Item Side	Dimension A x C x L*1	Color identification	Spring constant kg/mm (lb/in)
2 seater	R.H.	13.0 x 150 x 311 (0.512 x 5.91 x 12.24)	White & White	2.26 (126.6)
	L.H.			
2 + 2 seater	R.H.	13.0 x 150 x 320 (0.512 x 5.91 x 12.60)	Red & Blue	2.26 (126.6)
	L.H.			

*1: A x C x L

Wire diameter [mm (in)] x Coil diameter [mm (in)] x Free length [mm (in)]

STRUT ASSEMBLY

Shock absorber type	Double acting hydraulic
Shock absorber fluid	cc (cu in) 290 (17.70)
Piston rod diameter	mm (in) 22 (0.87)
Piston diameter	mm (in) 32 (1.26)
Stroke	mm (in) 178 (7.01)
Damping force [at 0.3 m (1.0 ft)/sec.]	
Expansion	kg (lb) 100 (221)
Compression	kg (lb) 35 (77)

STABILIZER BER

Bar diameter	mm (in) 22 (0.87)
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INSPECTION AND ADJUSTMENT

WHEEL ALIGNMENT (Unladen * 1)

			With power steering	Without power steering
Camber	degree		-30' to 1°	
Caster	degree		4°5' to 5°35'	
Toe-in	mm (in)		1 to 3 (0.04 to 0.12)	
	degree *2		6' to 16'	
Kingpin inclination	degree		8°35' to 10°5'	
Front wheel turning angle	Inside	degree	32° to 36°	33½° to 37½°
	Outside	degree	24½° to 28½°	29° to 33°

*1 : Tankful of fuel, radiator coolant and engine oil full.
Spare tire, jack, hand tools, mats in designed position.

*2 : On both sides

WHEEL BEARING

Wheel bearing axial play		mm (in)	0 (0)
Wheel bearing nut tightening torque		kg-m (ft-lb)	2.5 to 3.0 (18 to 22)
Return angle		degree	60°
Wheel bearing starting torque at wheel bearing nut	With new grease seal	kg-cm (in-lb)	4.0 to 8.5 (3.5 to 7.4)
	With used grease seal	kg-cm (in-lb)	1.0 to 4.5 (0.9 to 3.9)
At wheel hub bolt	With new grease seal	kg (lb)	Less than 1.8 (4.0)
	With used grease seal	kg (lb)	Less than 0.7 (1.5)

LOWER BALL JOINT

Turning torque	New parts	kg-cm (in-lb)	25 to 80 (22 to 69)
	Used parts	kg-cm (in-lb)	More than 15 (13)

TIGHTENING TORQUE

BALL JOINT

Socket to transverse link	kg-m (ft-lb)	4.5 to 5.5 (33 to 40)
Ball joint to knuckle arm (stud nut)	kg-m (ft-lb)	9.8 to 12.2 (71 to 88)

STRUT

Knuckle arm to strut	kg-m (ft-lb)	7.3 to 9.9 (53 to 72)
Strut to hoodledge	kg-m (ft-lb)	3.0 to 4.0 (22 to 29)
Piston rod self-locking nut	kg-m (ft-lb)	6.0 to 7.5 (43 to 54)
Gland packing	kg-m (ft-lb)	10.0 to 13.0 (72 to 94)

DISC BRAKE

Rotor to hub	kg-m (ft-lb)	3.9 to 5.3 (28 to 38)
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SIDE ROD

Ball joint nut	kg-m (ft-lb)	5.5 to 10.0 (40 to 72)
Side rod lock nut		
with power steering	kg-m (ft-lb)	1.1 to 1.7 (8 to 12)
without power steering	kg-m (ft-lb)	8.0 to 10.0 (58 to 72)

TRANSVERSE LINK

Transverse link to suspension crossmember	kg-m (ft-lb)	8.0 to 11.0 (58 to 80)
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TENSION ROD

Bushing nut	kg-m (ft-lb)	3.5 to 5.0 (25 to 36)
Tension rod to transverse link	kg-m (ft-lb)	4.5 to 5.5 (33 to 40)
Tension rod bracket	kg-m (ft-lb)	3.2 to 4.3 (23 to 31)

STABILIZER BER

Stabilizer bar bracket	kg-m (ft-lb)	2.7 to 3.7 (20 to 27)
Stabilizer mounting nut	kg-m (ft-lb)	1.6 to 2.2 (12 to 16)

SUSPENSION CROSSMEMBER

Suspension member to body frame	kg-m (ft-lb)	5.1 to 6.9 (37 to 50)
Engine mounting insulator to suspension member	kg-m (ft-lb)	3.2 to 4.3 (23 to 31)

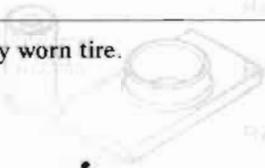
TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
<p>Vibration, shock and shimmy of steering wheel.</p> <p>Vibration: Loose connection of the serration parts and wear of each part of linkage cause vibration of front wheels and, steering wheel vibration. This is very noticeable when travelling on rough road.</p> <p>Shock: When the front wheels are travelling on bumpy roads, the play of the steering linkage is transmitted to the steering wheel. This is especially noticeable when travelling on rough road.</p> <p>Shimmy: Abnormal vibration of the front suspension system and the whole steering linkage, which occurs at specific speeds.</p>	<p>Improper tire pressure.</p> <p>Imbalance and deformation of road wheel.</p> <p>Unevenly worn tire or insufficient tightening of wheel nuts.</p> <p>Improperly adjusted or worn front wheel bearing.</p> <p>Faulty wheel alignment.</p> <p>Worn lower arm bushings.</p> <p>Insufficiently tightened steering gear housing.</p> <p>Wear of steering linkage.</p> <p>Worn suspension ball joint.</p> <p>Excessive backlash due to improper adjustment of the steering gear box.</p> <p>Damaged idler arm.</p> <p>Worn column bearing, weakened column bearing spring, or loose clamp.</p> <p>Malfunction of shock absorber (inside the strut) or loose installation bolts.</p> <p>Imbalance of car level.</p>	<p>Adjust.</p> <p>Correct the imbalance or replace.</p> <p>Replace or tighten.</p> <p>Adjust or tighten.</p> <p>Adjust.</p> <p>Replace.</p> <p>Retighten.</p> <p>Replace faulty parts.</p> <p>Replace.</p> <p>Adjust correctly.</p> <p>Replace.</p> <p>Replace or retighten.</p> <p>Replace or retighten.</p> <p>Correct the imbalance.</p>
<p>Car pulls to right or left.</p> <p>When driving with hands off the steering wheel on a flat road, the car gently swerves to right or left.</p> <p>Note: A faulty rear suspension may also be the cause of this problem and, therefore, see also Section RA.</p>	<p>Improper tire pressure or insufficient tightening of wheel nuts.</p> <p>Difference in wear and tear of right and left tire treads.</p> <p>Incorrect adjustment or abrasion of front wheel bearing.</p> <p>Collapsed or twisted front spring.</p> <p>Incorrect wheel alignment.</p> <p>Incorrect brake adjustment (binding).</p> <p>Worn rubber bushings for lower arm and tension rod.</p> <p>Deformed steering linkage and lower arm and tension rod.</p> <p>Imbalance of car level.</p>	<p>Adjust or tighten.</p> <p>Replace tires.</p> <p>Adjust or replace.</p> <p>Replace.</p> <p>Adjust.</p> <p>Adjust.</p> <p>Replace.</p> <p>Replace.</p> <p>Correct the imbalance.</p>

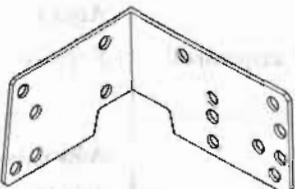
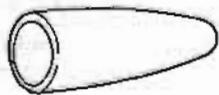
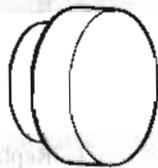
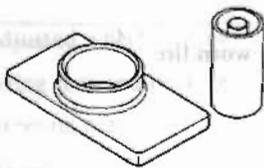
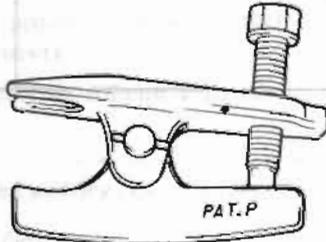
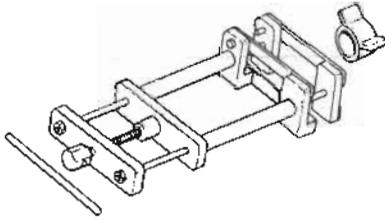
Front Axle & Front Suspension

Condition	Probable cause	Corrective action
<p>Instability of car.</p>	<p>Improper tire pressure.</p> <p>Worn rubber bushings for lower arm and tension rod.</p> <p>Incorrect wheel alignment.</p> <p>Worn or deformed steering linkage and suspension link.</p> <p>Incorrect adjustment of steering gear.</p> <p>Deformed or unbalanced wheel.</p>	<p>Adjust.</p> <p>Replace.</p> <p>Adjust.</p> <p>Replace.</p> <p>Adjust.</p> <p>Correct or replace.</p>
<p>Stiff steering wheel. (Checking up procedure)</p> <p>Jack up front wheels, detach the steering gear arm and operate the steering wheel, and;</p> <p>If it is light, check steering linkage, and suspension parts.</p> <p>If it is heavy, check steering gear and steering column parts.</p>	<p>Improper tire pressure.</p> <p>Insufficient lubricants or mixing impurities in steering gear box or excessively worn steering linkage.</p> <p>Stiff or damaged suspension ball joint, or lack of grease.</p> <p>Worn or incorrectly adjusted wheel bearing.</p> <p>Worn or damaged steering gear and bearing.</p> <p>Incorrectly adjusted steering gear.</p> <p>Deformed steering linkage.</p> <p>Incorrect wheel alignment.</p> <p>Damaged strut mounting bearing.</p> <p>Damaged or stiff piston or shock absorber piston rod (in the strut).</p> <p>Interference of steering column with turn signal switch.</p>	<p>Adjust.</p> <p>Replenish grease or replace the part.</p> <p>Replace.</p> <p>Replace or adjust.</p> <p>Replace.</p> <p>Adjust.</p> <p>Replace.</p> <p>Adjust.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p>
<p>Excessive steering wheel play.</p>	<p>Incorrectly adjusted steering gear housing.</p> <p>Worn steering linkage.</p> <p>Improperly fitted gear housing.</p> <p>Incorrectly adjusted wheel bearing.</p> <p>Worn lower arm and tension rod bushings.</p>	<p>Adjust.</p> <p>Replace.</p> <p>Retighten.</p> <p>Adjust.</p> <p>Replace.</p>
<p>Noises.</p>	<p>Improper tire pressure.</p> <p>Insufficient lubricating oil and grease for suspension ball joint and steering linkage, or their breakage.</p> <p>Loose steering gear bolts, linkage and suspension parts.</p> <p>Faulty shock absorber (inside the strut).</p> <p>Faulty wheel bearing.</p> <p>Worn steering linkage and steering gear.</p> <p>Worn lower arm and tension rod bushings.</p> <p>Broken or collapsed coil spring.</p>	<p>Adjust.</p> <p>Replenish lubricating oil and grease, or replace.</p> <p>Retighten.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p>

Front Axle & Front Suspension

Condition	Probable cause	Corrective action
	Loose stabilizer bar installation bolts and nuts. Loose strut to hoodledge installation nuts.	Retighten. Retighten.
Grating tire noise. 	Improper tire pressure. Incorrect wheel alignment. Deformed knuckle spindle and suspension linkage.	Adjust. Adjust. Replace.
Jumping of disc wheel. 	Improper tire pressure. Imbalanced wheels. Faulty shock absorber. Faulty tire. Deformed wheel rim.	Adjust. Adjust. Replace. Replace. Replace.
Excessively or partially worn tire. 	Improper tire pressure. Incorrect wheel alignment. Faulty wheel bearing. Incorrect brake adjustment. Tires not rotated. Rough and improper driving manner.	Adjust. Adjust. Replace. Adjust. Rotate tires at recommended intervals. Drive more gently.

SPECIAL SERVICE TOOLS

Tool number & tool name	Kent-Moore No. Reference page or Fig. No.	Tool number & tool name	Kent-Moore No. Reference page or Fig. No.
KV48100300 Strut and steering gear housing attachment 	J 25729 Fig. FA-20 Fig. FA-22	ST35520000 Gland packing guide 	J25826 Fig. FA-26
ST35300000 Front wheel bearing drift 	— Page FA-5	KV40101200 Transverse link bushing replacer 	— Fig. FA-35
ST35500001 Gland packing wrench 	J 25825 Fig. FA-22	HT72520000 Ball joint remover 	— Page FA-10
ST3565S001 Coil spring compressor set 	J 25833 Fig. FA-20 Fig. FA-21		