

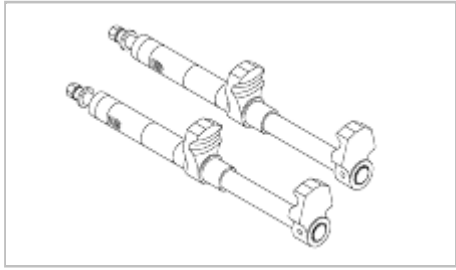
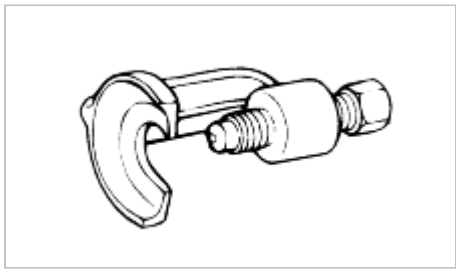


Suspension System

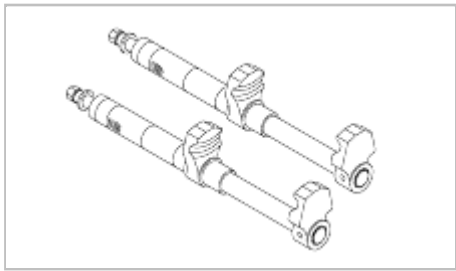
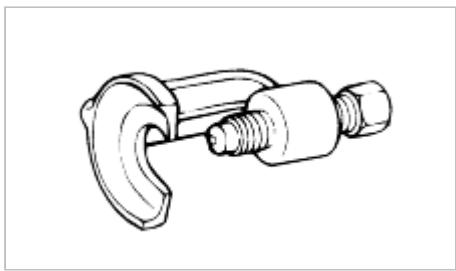
General Information



special Service tools

Tool (Number and Name)	Illustration	Use
0K2A1 341 AA1A Coil spring comp		Used to remove and install coil spring.
0K130 283 021 Ball joint puller		Used to remove tie rod and ball joint.

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SYMPTOM-RELATED DIAGNOSTIC PROCEDURE

SUSPENSION SYSTEM

Problem	Possible cause	Action
Body rolls	Deteriorated stabilizer bar and stabilizer control links Worn or deteriorated stabilizer bar bushing Worn or deteriorated lower arm bushing Shock absorber malfunction	Replace Replace Replace Replace
Poor riding comfort	Weak coil spring Shock absorber malfunction	Replace Replace
Abnormal noise from suspension	Poor lubrication or wear of lower arm ball joint Shock absorber malfunction Worn or deteriorated stabilizer bar bushing Worn or deteriorated lower arm bushing	Replace, Lubricate Replace Replace Replace
Instable riding	Weak coil spring Shock absorber malfunction Worn or deteriorated lower arm bushing Worn or deteriorated stabilizer bar bushing Improperly adjusted wheel alignment Damaged lower arm ball joint Steering system malfunction Deformed or unbalanced wheel	Replace Replace Replace Replace Adjust Replace Refer to section ST Gr. Repair or replace
Heavy steering wheel operation	Poor lubrication or wear of lower arm ball joint Improperly adjusted wheel alignment Steering system malfunction Deformed or unbalanced wheel	Replace, Lubricate Adjust Refer to section ST GR. Repair or replace
Steering pulls to one side	Weak coil spring Worn or deteriorated stabilizer bar bushing Worn or deteriorated lower arm bushing Damaged lower arm ball joint Improperly adjusted wheel alignment Steering system malfunction Brake system malfunction Deformed or unbalanced wheel	Replace Replace Replace Replace Replace Refer to section ST Gr. Refer to section BR Gr. Repair or replace
Steering wheel vibrates	Damaged lower arm ball joint Shock absorber malfunction Loose shock absorber installation Worn or deteriorated lower arm bush Worn or deteriorated stabilizer bar bush Improperly adjusted wheel alignment Worn or damaged wheel bearing Steering system malfunction Deformed or unbalanced wheel	Replace Replace Tighten Replace Replace Adjust Replace Refer to section ST Gr. Repair or replace
Steering wheel does not return	Lower arm ball joint stuck or damaged Improperly adjusted wheel alignment Steering system malfunction Deformed or unbalanced wheel	Replace Adjust Refer to section ST Gr. Repair or replace

WHEEL AND TIRE

Problem	Possible cause	Action
Excessive or irregular tire wear	Incorrect toe adjustment	Refer to next page.
Premature tire wear	Excessive tire pressure Insufficient tire pressure and high speed	Adjust Adjust
Tire squeal	Incorrect tire pressure Tire deterioration	Adjust Replace
Road noise and body vibration	Insufficient tire pressure Unbalanced wheel(s) Deformed wheel(s) or tire(s) irregular tire wear	Adjust Adjust Repair or replace Replace
Steering wheel vibration	Tire wear Unbalanced or damaged wheel Damaged tire Unequal tire pressure Loose lug nut Unbalanced wheel	Replace Repair or replace Replace Adjust Tighten Adjust
Uneven (one-side) braking	Unequal tire pressure Malfunction of braking system	Adjust Refer to section BR Gr.
Steering wheel instability	Incorrect tire pressure Unequal tire wear (between left and right) Unbalanced tire pressure Different tire types used together Incorrect lug nut tightening	Adjust Replace Adjust Replace Tighten
General driving instability	Unequal tire pressure Damaged and unbalanced wheels Loose lug nut	Adjust Repair or adjust Tighten
Excessive steering wheel grab	Loose lug nut Incorrect front wheel bearing preload	Tighten Refer to section DS Gr.



SPECIFICATIONS

WHEEL AND TIRE

Item		Type	Standard	
Wheel	Size		6JJ x 15	
	Offset	in (mm)	1.97±0.04 (50±1.0)	
	pitch circle diameter	in (mm)	4.49 (114.3)	
	Material		Steel	Steel or aluminum
Tire	Size		P215/65 R15	
	Air pressure	psi (kPa, kgf/cm ²)	34 (235, 2.4)	

*The following guide should help you understand tire designations:

P	Type (passenger)
205	Nominal width of tire in millimeters
65	Tire height-to-width ratio
R	Radial-ply tire (or "D" for bias-ply tire)
15	Nominal rim diameter in inches

Do not install smaller than minimum size tires shown on the tire inflation placard on the vehicle.

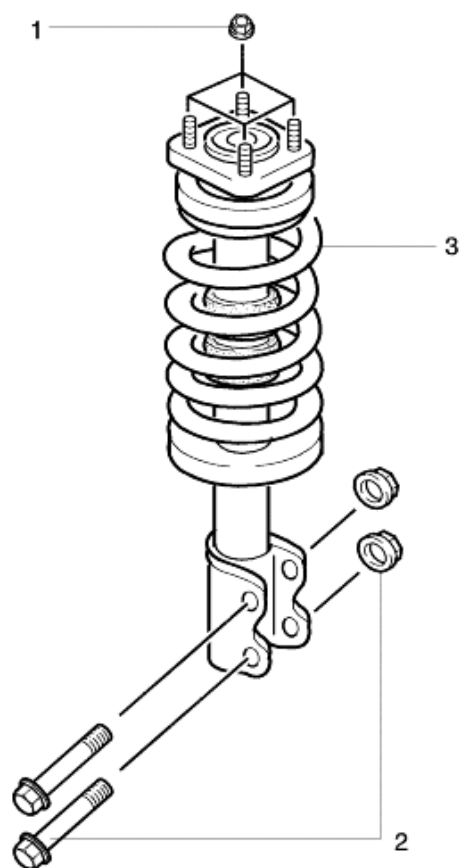
SUSPENSION SYSTEM

Item				Specification
Front	Suspension type			Macpherson strut
	Shock absorber			Double-acting, Gas filled
	Stabilizer	Type		Torsion bar
		Diameter	in (mm)	1.02 (Ø26)
	Wheel alignment	Toe	No passenger load	-0.04±0.1 (-0.9±2.5)
			Five passenger load	-0.01±0.1 (-0.3±2.5)
		Camber	No passenger load	0.51°±0.5°
			Five passengers load	0.26°±0.5°
		Caster	No passenger load	1.88°±0.5°
			Five passengers load	1.94°±0.5°
Rear	Suspension type			Five links & coil
	Shock absorber			Double-acting, Gas filled
	Stabilizer	Type		Torsion bar
		Diameter	in (mm)	1.18 (Ø30)



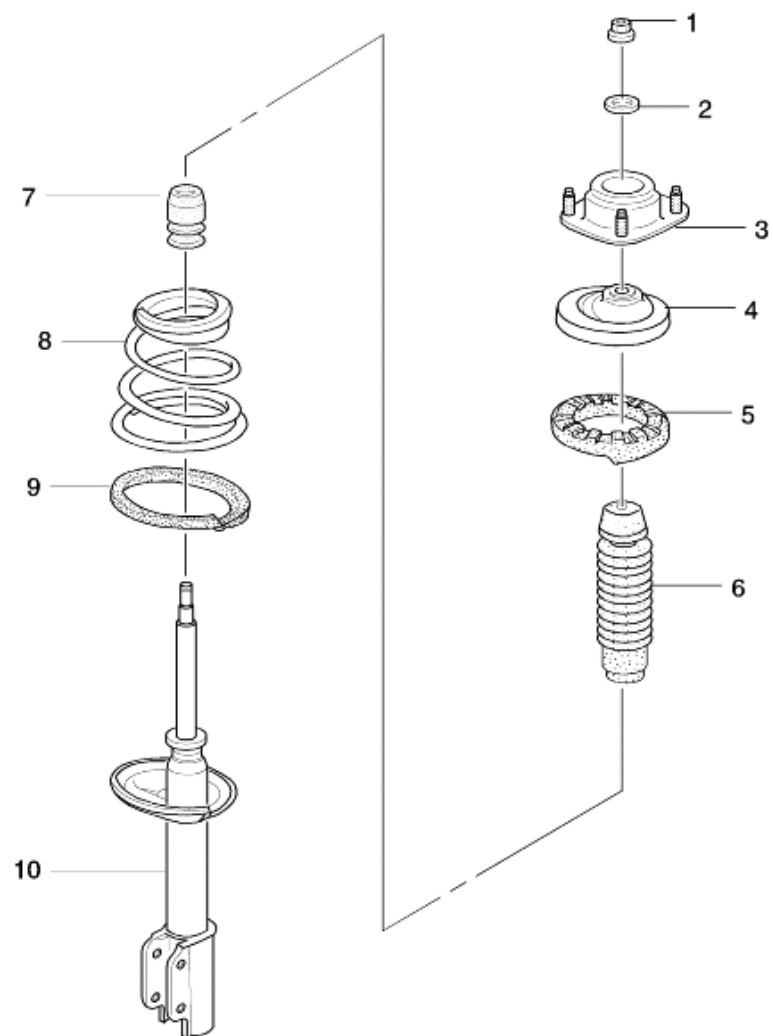
Suspension System

Front Suspension System - Front Strut
Assembly

**COMPONENT**

- 1. Nut
- 2. Bolt and nut
- 3. Shock absorber and coil spring

COMPONENT



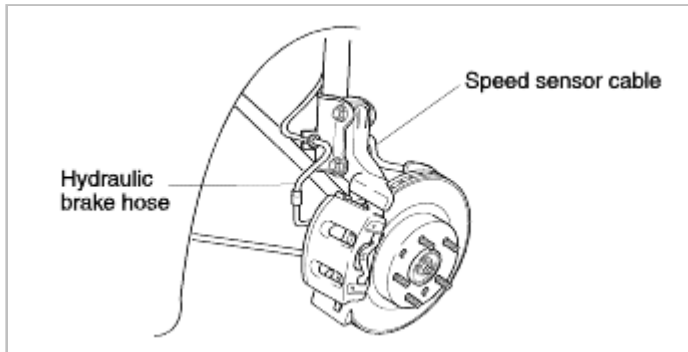
- 1. Piston retaining nut
- 2. Washer
- 3. Mounting block
- 4. Upper spring seat
- 5. Upper spring isolator

- 6. Dust boot
- 7. Bump stopper
- 8. Coil spring
- 9. Lower spring isolator
- 10. Shock absorber



Removal

1. Lift vehicle and support with safety stands.
2. Remove wheel and tire assembly.
3. Remove the brake hose and the speed sensor cable from routing bracket on the shock absorber strut assembly.



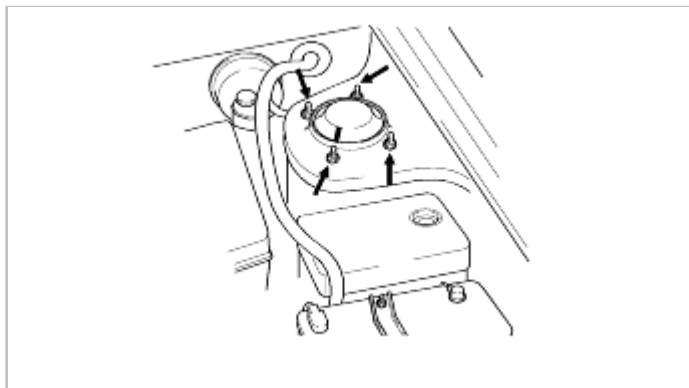
4. Remove the two shock absorber strut mounting nuts and bolts securing the spring and shock assembly to front wheel knuckle.
5. Remove the four front shock absorber upper mounting nuts.



6. Remove the shock absorber assembly from vehicle.

REPLACEMENT

1. Position the shock absorber assembly into the wheel housing. Be sure the direction indicator on the front shock absorber upper mounting bracket.



2. Secure the front shock absorber upper mounting bracket to the shock tower with nuts. Tighten the front shock absorber upper mounting bracket nuts.
-

Tightening torque :33~46 lb·ft (46~62 N·m, 4.7~6.4 kg·m)

3. Install the front shock absorber assembly to the front wheel knuckle. Tighten the shock absorber knuckle attaching nuts.

Tightening torque :88~101 lb·ft (119~137 N·m, 12.2~14 kg·m)

4. Position the hydraulic brake hose and speed sensor cable to the shock absorber assembly.
5. Install the wheel and tire assembly and tighten nuts.

Tightening torque :65~79 lb·ft (88~108 N·m, 9.0~11.0 kg·m)

6. Lower vehicle.
7. Check the front wheel alignment.

Disassembly

1. Remove the front spring and shock absorber refer to the procedure in this section.
2. Loosen four mounting bolts.
3. Place the mounting block in a vise.

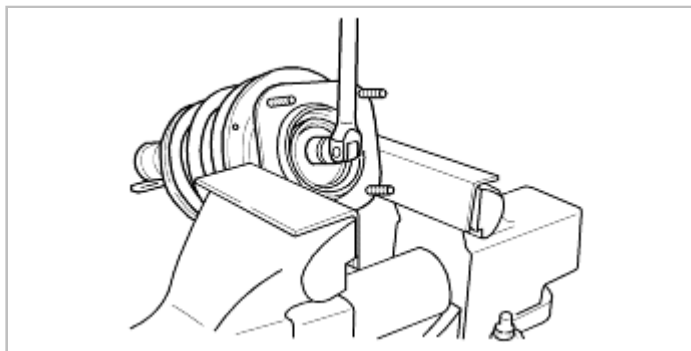
NOTICE

Use protective plates to cover jaws of vise.

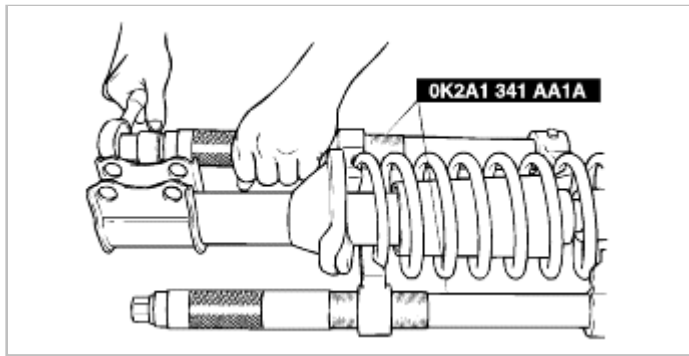
4. Loosen retaining nut two to three turns.

NOTICE

Do not remove nut.



5. Compress the coil spring with SST(0K2A1 341 001).
6. Remove the retaining nut.
7. Note the position of the mounting block, then remove it. Remove the upper spring seat, upper spring isolator, coil spring, dust boot, bump stopper and lower spring seat.



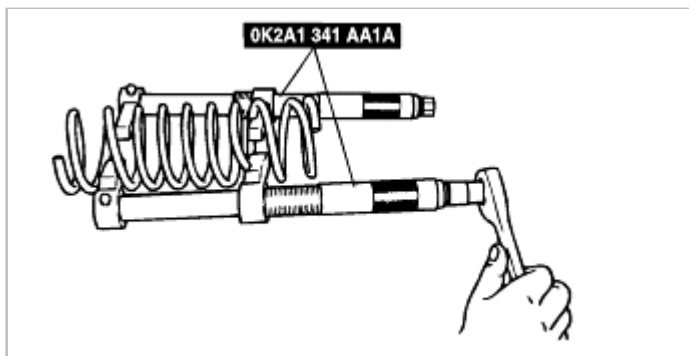
Reassembly

1. Secure the shock absorber in a vise.

NOTICE

Use protective plates to cover jaws of vise.

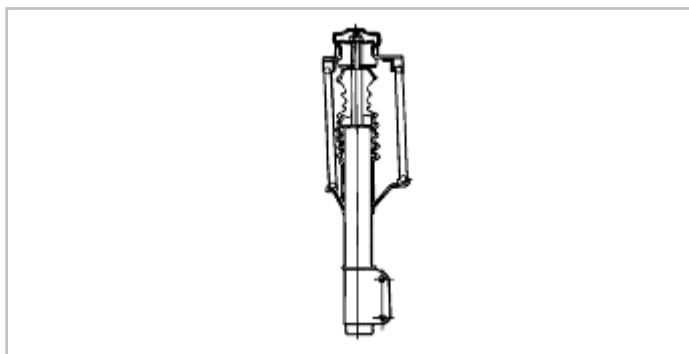
2. Compress the coil spring with SST(0K2A1 341 001).
3. Install the coil spring, inserting the bottom end of the spring into the recess of the lower seat.
4. Install the bump stopper.



5. Apply rubber lubricant to the bump stopper and the upper spring seat contact surface.
6. Install the upper spring isolator and the upper spring seat.
7. Install the mounting block in its original position.
8. Install the piston retaining nut and tighten slightly.
9. Carefully loosen and remove SST(0K2A1 341 001).

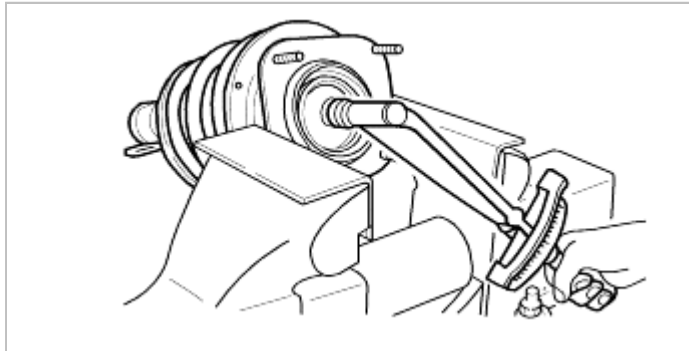
NOTICE

Verify that the coil spring is correctly seated in the upper and lower seats.



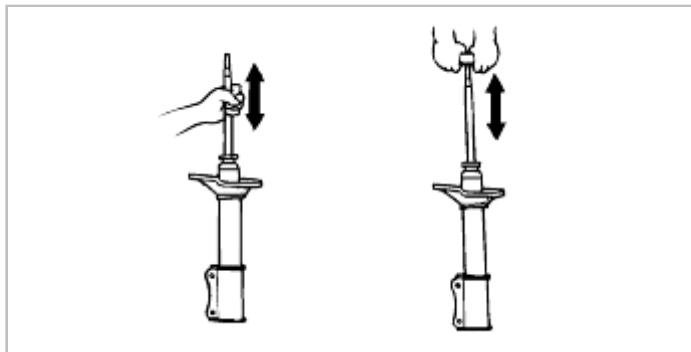
10. Secure the mounting block in a vise.
11. Tighten the piston retaining nut to specified torque.

Tightening torque :88~101 lb·ft (120~137 N·m, 12.2~14 kg·m)



Inspection

1. Check for the following and replace the strut if necessary:
 - A. Attach a handle to the piston rod, then collapse and expand the strut at least three times.
 - B. Verify that operation is smooth, continuous, and does not change with each stroke.
 - C. Verify that there is no unusual noise from within the strut.



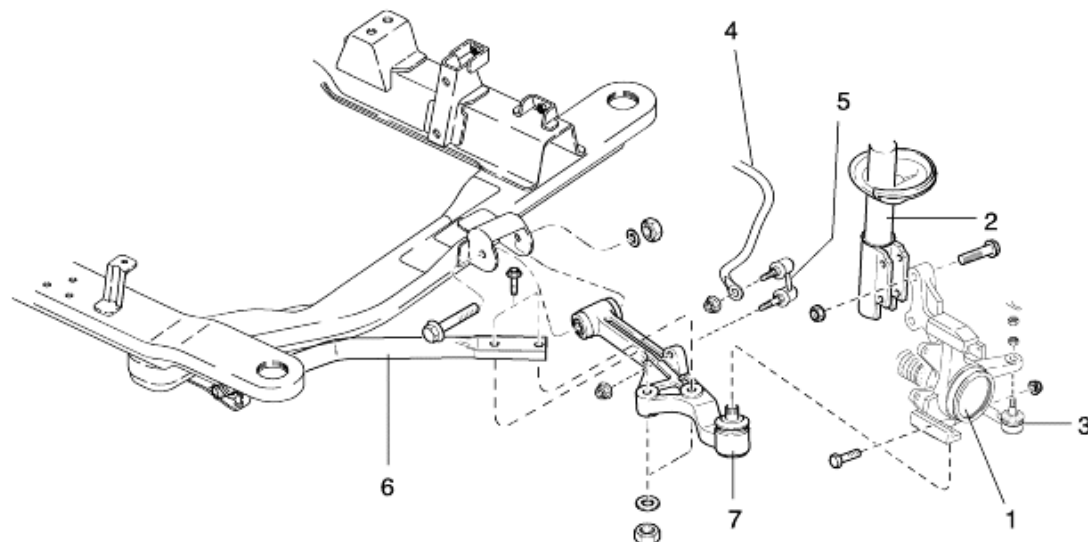


Suspension System

Front Suspension System - Front Lower Arm



COMPONENT

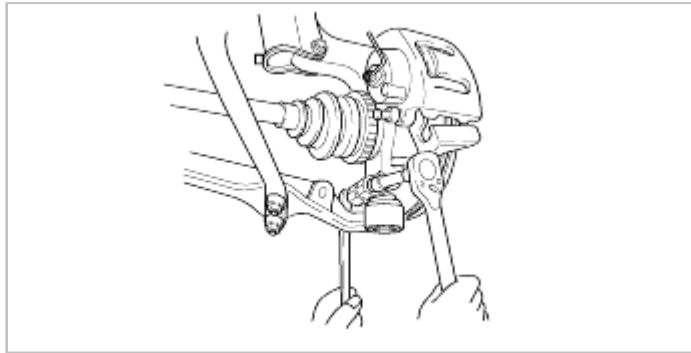


- | | |
|-------------------|----------------------------|
| 1. Knuckle | 5. Stabilizer control link |
| 2. Shock absorber | 6. Tension rod |
| 3. Tie rod end | 7. Lower arm |
| 4. Stabilizer bar | |



Removal

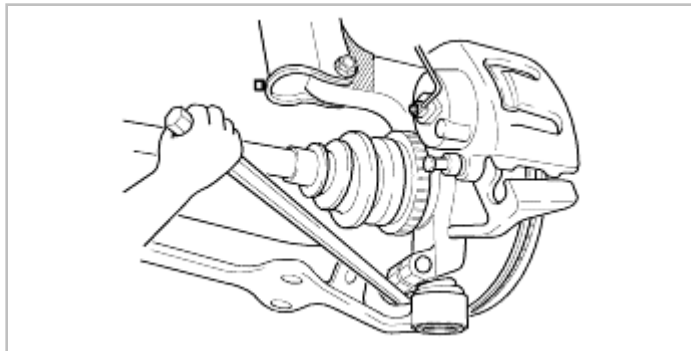
1. Lift vehicle and support with safety stands.
2. Remove wheel and tire assembly.
3. Remove stabilizer control link nut on the lower control arm.
4. Remove stabilizer control link nut from the stabilizer bar.
5. Remove the tension rod from the lower control arm after loosening two bolts and nuts.
6. Remove the lower arm ball joint bolt and nut from steering knuckle.



NOTICE

Use caution when separating lower control arm from steering knuckle, so ball joint seal does not get cut.

7. Using a prybar, separate the steering knuckle from lower control arm.



8. Remove the lower control arm from the subframe after loosening bolt and nut.

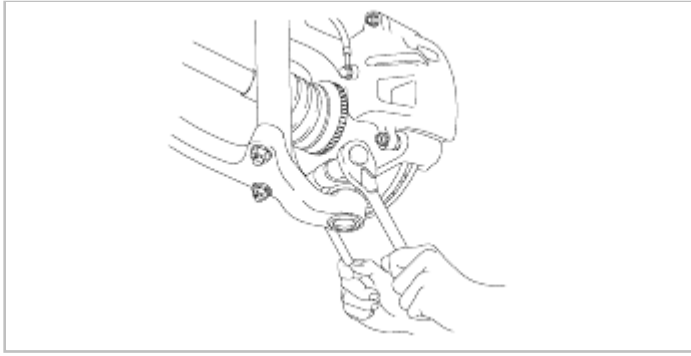
REPLACEMENT

1. Position the front lower arm to the subframe and secure it with bolt.
Tighten the lower arm nut.

Tightening torque :88~101 lb·ft (120~137 N·m, 12.2~14 kg·m)

2. Position the front lower arm ball joint into the wheel knuckle.
3. Tighten the lower arm ball joint bolt and nut to steering knuckle.

Tightening torque :69~85 lb·ft (93~15 N·m, 9.5~11.7 kg·m)



4. Install the tension rod to the lower arm.
Tighten bolts and nuts.

Tightening torque :88~101 lb·ft (120~137 N·m, 12.2~14 kg·m)

5. Tighten the stabilizer control link nut to the stabilizer bar.

Tightening torque :69~85 lb·ft (93~115 N·m, 9.5~11.7 kg·m)

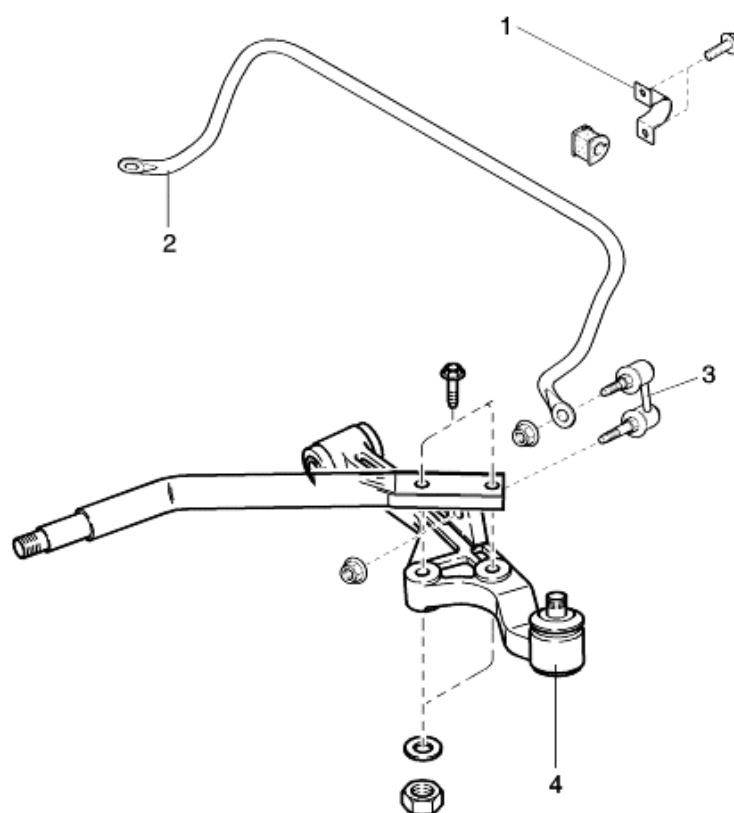
6. Tighten the stabilizer control link nut on the lower control arm.
7. Install wheel and tire assembly.
8. Lower vehicle.
9. Check the front wheel alignment.

Suspension System

Front Suspension System - Front Stabilizer
Bar



COMPONENT



1. Stabilizer bar plate
2. Stabilizer bar
3. Stabilizer control link
4. Lower arm



Removal

1. Lift front of vehicle and support it with safety stands.
2. Remove wheel and tire.
3. Remove stabilizer from control link.
4. Remove control link from the lower control arm.
5. Remove the exhaust pipe.
6. Position a suitable transaxle jack under the transaxle and secure it to the transaxle.



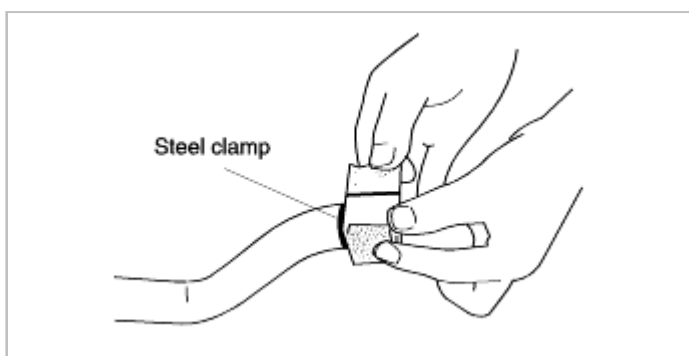
7. Remove engine mounting No.1 and 2 from the subframe.
8. Remove stabilizer mounting bolts from the subframe.
9. Lower the subframe enough to pull the stabilizer out from behind the subframe.
10. Remove the stabilizer bar.

REPLACEMENT

1. Align the stabilizer bushing with the steel clamp on the stabilizer bar. Locate the bushing adjacent to the position line on stabilizer bar.

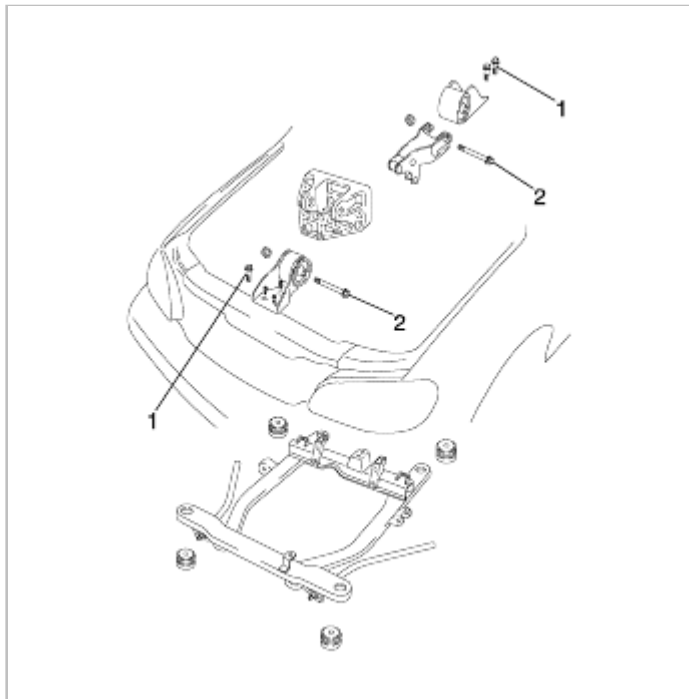
NOTICE

Do not change replacement direction of the stabilizer control link when installing.



2. Position stabilizer behind the subframe.
3. Raise the subframe into place and tighten engine mounting No.1 and 2 bolts and nuts to specified torque.

Tightening torque :1. 49-69 lb·ft (67-93 N·m, 6.8-9.5 kg·m), 2. 63-86 lb·ft (85-117 N·m, 8.7-11.9 kg·m)



4. Tighten the stabilizer mounting bolts to the subframe.

Tightening torque :16~20 lb·ft (21~26 N·m, 2.2~2.7 kg·m)

5. Install the exhaust pipe.

6. Install the stabilizer control link to the lower arm and stabilizer bar and then tighten two control link nuts.

Tightening torque :69~85 lb·ft (93~115 N·m, 9.5~11.7 kg·m)

NOTICE

Tighten the two control ink nuts to specified torque before lowering vehicle. (Unload condition)

7. Remove a suitable transaxle jack under transaxle.



DESCRIPTION AND OPERATION

FRONT SUSPENSION DESCRIPTION

This interconnection between the steering knuckle and the body of the vehicle provides for the correct steering knuckle position. This steering knuckle position provides for the correct front caster and camber settings for the vehicle, at the time the vehicle is designed. Lower arms are attached inboard to the front suspension subframe and outboard to the bottom of the steering knuckle. Attachment of the lower arm to the steering knuckle is done through a ball joint in the lower arm. During steering maneuvers, the strut and the steering knuckle (through the ball joint and a pivot bearing in the strut's upper retainer) turn as an assembly.

SUSPENSION SUBFRAME

STEERING KNUCKLE

Service replacement of the front hub/bearing assembly can be done with the front steering knuckle remaining on the vehicle.

Wheel alignment

CAUTION

Do not attempt to modify any suspension or steering components to meet vehicle alignment specifications by heating and (or) bending.

Alignment checks and adjustment should be made in the following sequence.

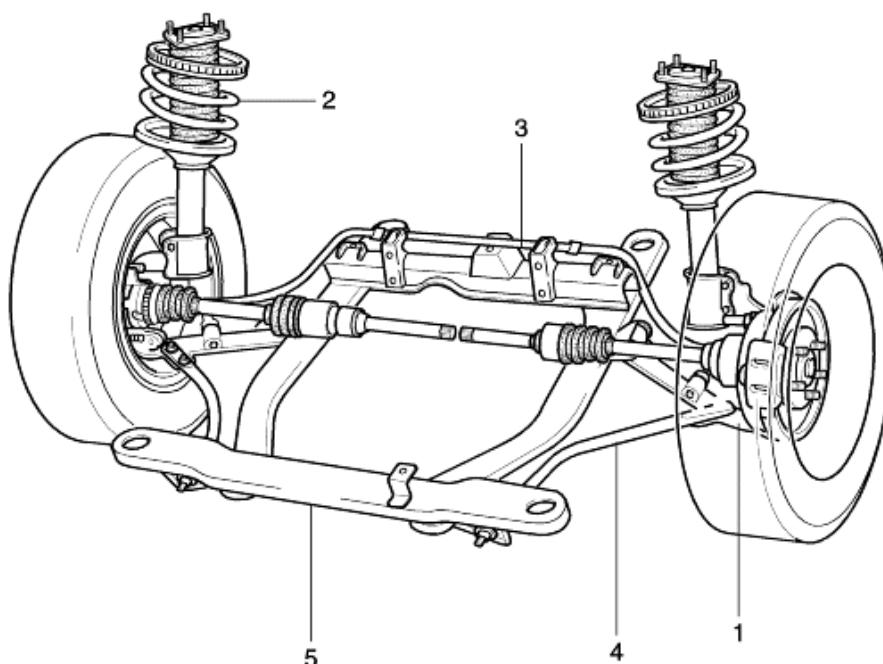
1. Camber
2. Toe

Camber is the number of degrees tilted inboard or outboard from a true vertical line when looking from front view. Inboard tilt is negative camber. Outboard tilt is positive camber. Excessive camber is a tire wear factor: negative camber causes wear on the inside of the tires tread surface, while positive camber causes wear to the outside of the tires tread surface.

Toe is measured in degree or inches (millimeters) and is the distance the front edges of the tires are closer (or farther apart) than the rear edges.

**COMPONENT****CAUTION**

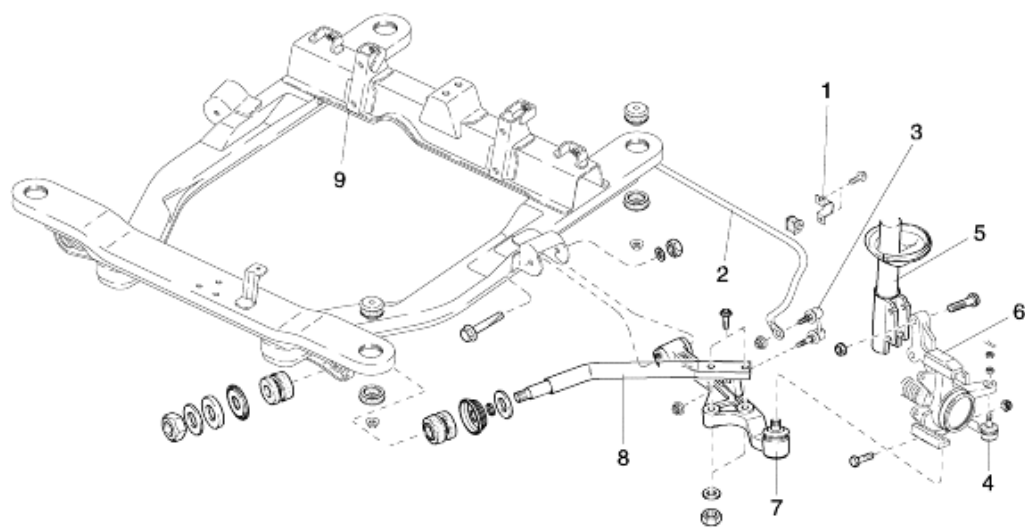
When tightening (by specified torque) the nuts of the arms and links of the front suspension system, the wheels of the vehicle shall be in contact with ground and under loads (2 passengers load at the front seats if possible).



- 1. Lower arm
- 2. Front shock absorber & coil
- 3. Stabilizer
- 4. Tension rod
- 5. Subframe

COMPONENT**CAUTION**

When tightening (by specified torque) the nuts of the arm and links of the front suspension system, the wheels of the vehicle shall be in contact with ground and under loads (2 passengers load at the front seats if possible).



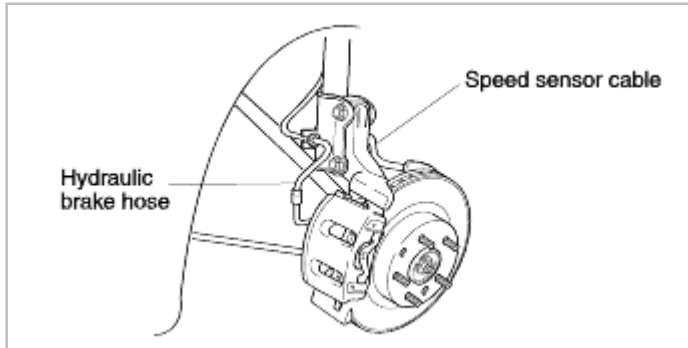
1. Stabilizer bar plate
2. Stabilizer bar
3. Stabilizer control link
4. Tie rod end
5. Front shock absorber assembly

6. Knuckle
7. Lower arm
8. Tension rod
9. Subframe

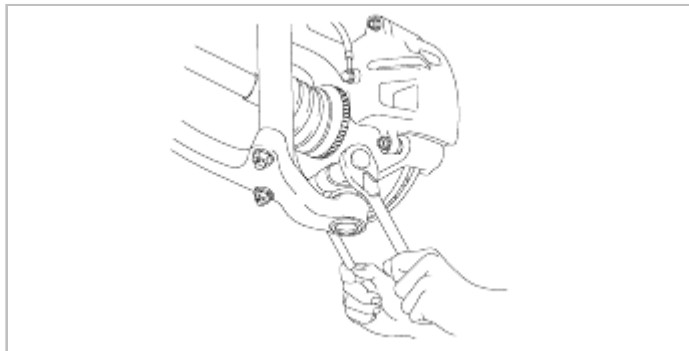


REMOVAL

1. Raise vehicle and support it with safety stands.
2. Remove wheel and tires assembly.
3. Remove the hydraulic brake hose and the speed sensor cable from routing bracket on the strut assembly.



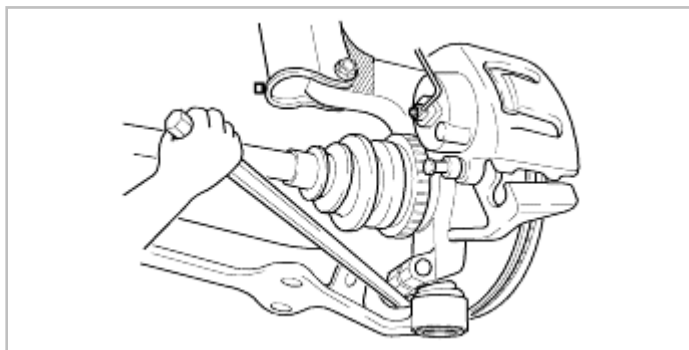
4. Remove the two stabilizer control link nut from installing on the lower control arm and to the end of the stabilizer.
5. Remove the tension rod from the lower control arm after loosening two bolts and nuts.
6. Remove the lower arm ball joint bolt and nut from steering knuckle.



7. Using a pry bar, separate steering knuckle from lower control arm.

NOTICE

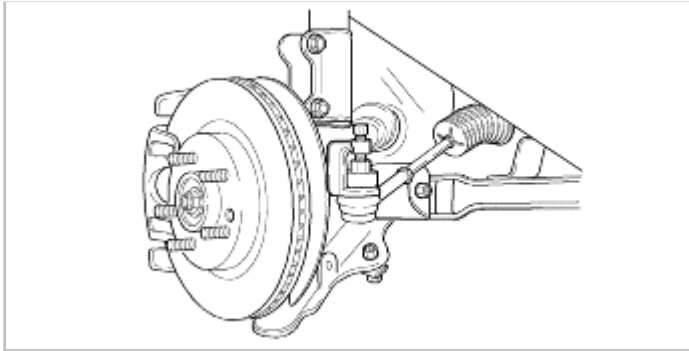
Use caution when separating lower control arm from steering knuckle, so ball joint seal does not get cut.



NOTICE

Do not damage dust boot when removing dust boot from ball joint.

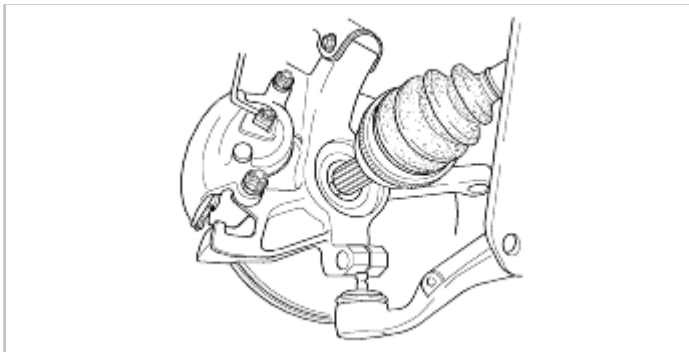
8. Remove the tie rod end nut and disconnect the tie-rod end with SST(0K130 283 021).



NOTICE

- Care must be taken not to separate the inner C/V joint during this operation.
- Do not allow driveshaft to hang by inner C/V joint after removing outer C/V joint from the hub/bearing assembly in steering knuckle.

9. Pull steering knuckle out and away from the outer C/V joint of the driveshaft.

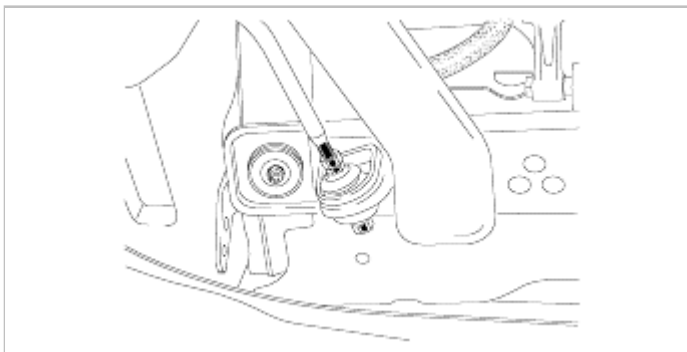


10. Remove the steering knuckle from the front shock absorber assembly after loosening bolts and nuts.

11. Remove four nuts attaching the front shock absorber assembly upper mount.

12. Remove the lower control arm from the subframe after loosening bolt and nut.

13. Mark alignment of tension rod nuts and spacer washers before loosening tension rod nuts.



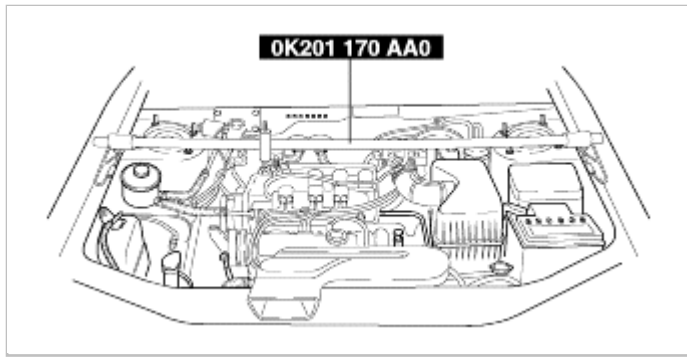
14. Remove the tension rod from the subframe.

15. Remove the stabilizer bar from the subframe after loosening bolts installed to subframe.

16. Remove the exhaust pipe.

17. Remove the fixed bracket after removing the power steering rack and pinion.

18. Support engine with engine support bar SST (0K201 170 AA0).



19. Remove the engine mounting No.1 and 2 from the subframe.
20. Remove mounting bolt and nuts of the impact bar.
21. Remove the subframe.

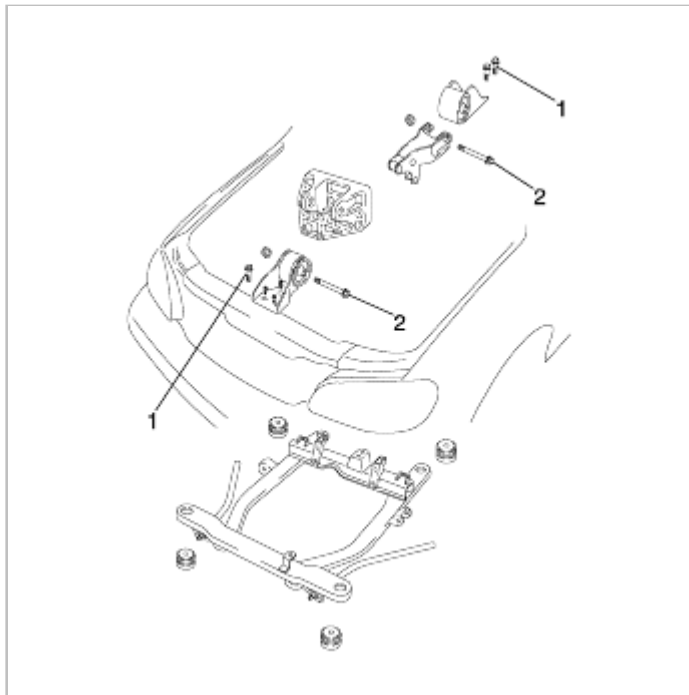
REPLACEMENT

1. Tighten the subframe with bolts.

Tightening torque :88~101 lb·ft (120~137 N·m, 12.2~14 kg·m)

2. Install the engine mounting No.1 and 2 to the subframe and tighten bolts and nuts.

Tightening torque :1. 49-69 lb·ft (67-93 N·m, 6.8-9.5 kg·m), 2. 63-86 lb·ft (85-117 N·m, 8.7-11.9 kg·m)



3. Install the power steering rack and pinion to the subframe.

Tightening torque :55~69 lb·ft (74~93 N·m, 7.5~9.5 kg·m)

NOTICE

When installing oil seal, be careful not to damage oil seal.

4. Install the exhaust pipe.
5. Remove engine support bar SST (0K201 170 AA0) from engine.
6. Install the stabilizer bar and stabilizer bar plate to the subframe and tighten bolts.

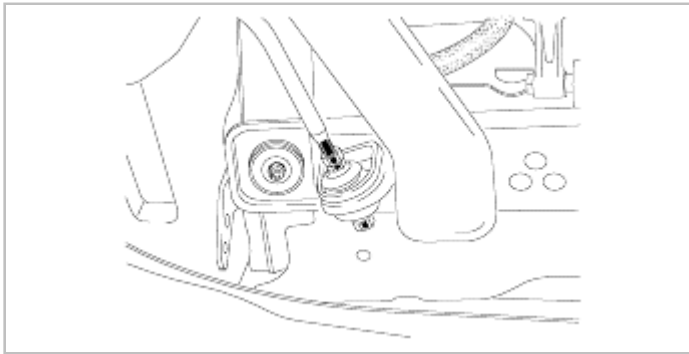
Tightening torque :16~20 lb·ft (21~26 N·m, 2.2~2.7 kg·m)

7. Put lower arm into the side of the subframe and then tighten lower arm and subframe with bolts and nuts.

Tightening torque :88~101 lb·ft (120~137 N·m, 12.2~14 kg·m)

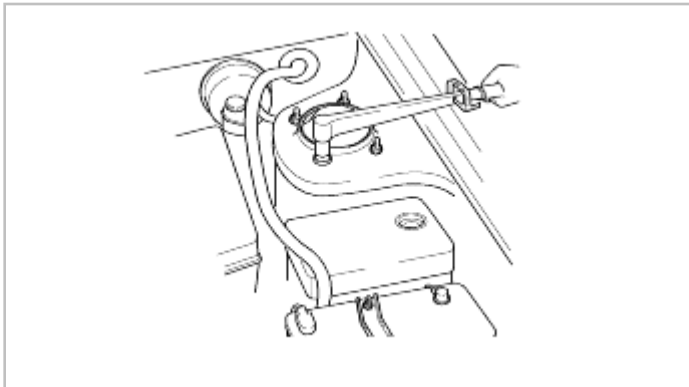
8. Tighten tension rod nuts after aligning with mark made.

Tightening torque :115~130 lb·ft (157~177 N·m, 16~18 kg·m)



9. Install the front shock absorber assembly upper mount and tighten nuts to specified torque.

Tightening torque :34~46 lb·ft (46~63 N·m, 4.7~6.4 kg·m)



10. Install the steering knuckle to shock absorber strut bracket and tighten nuts and bolts.

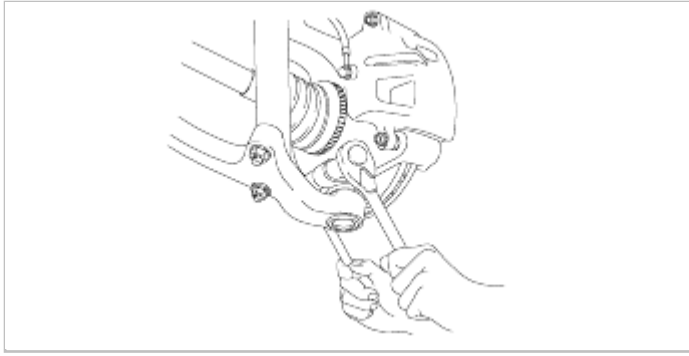
Tightening torque :88~101 lb·ft (119~137 N·m, 12.2~14 kg·m)

11. Slide driveshaft back into the front hub and bearing assembly.
12. Install tension rod to the lower arm and tighten bolts and nuts.

Tightening torque :88~101 lb·ft (119~137 N·m, 12.2~14 kg·m)

13. Attach the lower arm ball joint to the front wheel knuckle and tighten the lower arm ball joint nut and bolt.

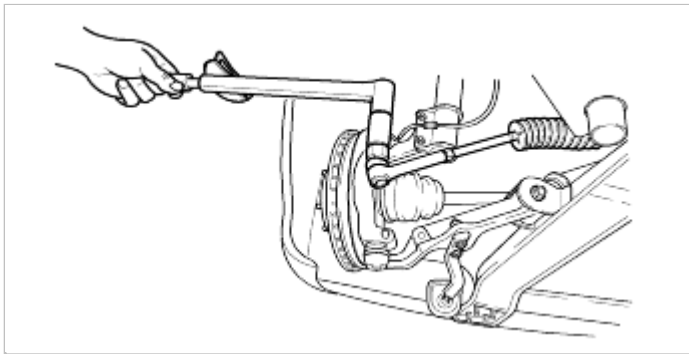
Tightening torque :69~85 lb·ft (93~115 N·m, 9.5~11.7 kg·m)



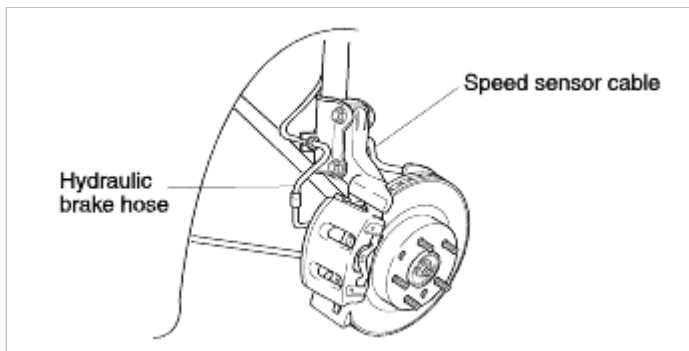
14. Install the stabilizer to the lower arm and tighten the stabilizer bolts.

Tightening torque :69~85 lb·ft (93~115 N·m, 9.5~11.7 kg·m)

15. Attach the tie rod end to the front wheel knuckle. Tighten the tie rod nut and then install a new tie rod end cotter pin.

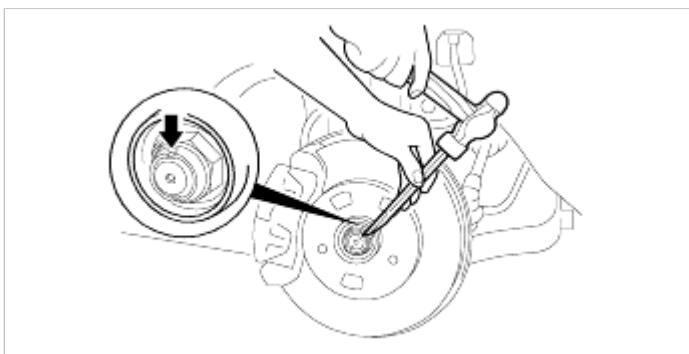


16. Install the hydraulic brake hose and the speed sensor cable to routing bracket on the strut assembly.



17. Install a new driveshaft lock nut and stake it, as shown.

Tightening torque :177~199 lb·ft (240~270 N·m, 24.5~27.5 kg·m)



18. Install front wheel and tire assembly and tighten nuts.

Tightening torque :65~79 lb·ft (88~108 N·m, 9.0~11.0 kg·m)

19. Lower vehicle.

20. Set front wheel alignment on vehicle to required specification.

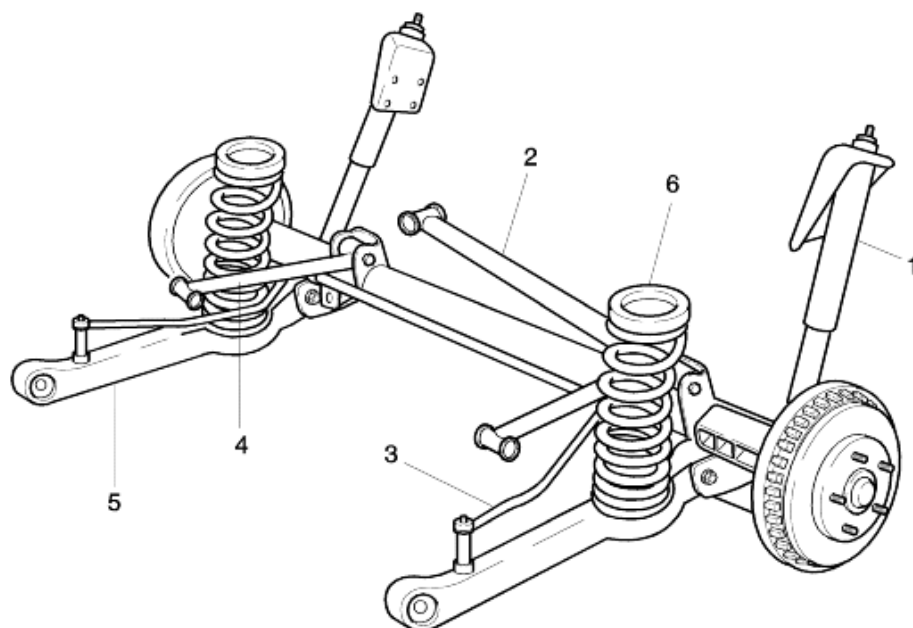


Suspension System

Rear Suspension System

**COMPONENT****CAUTION**

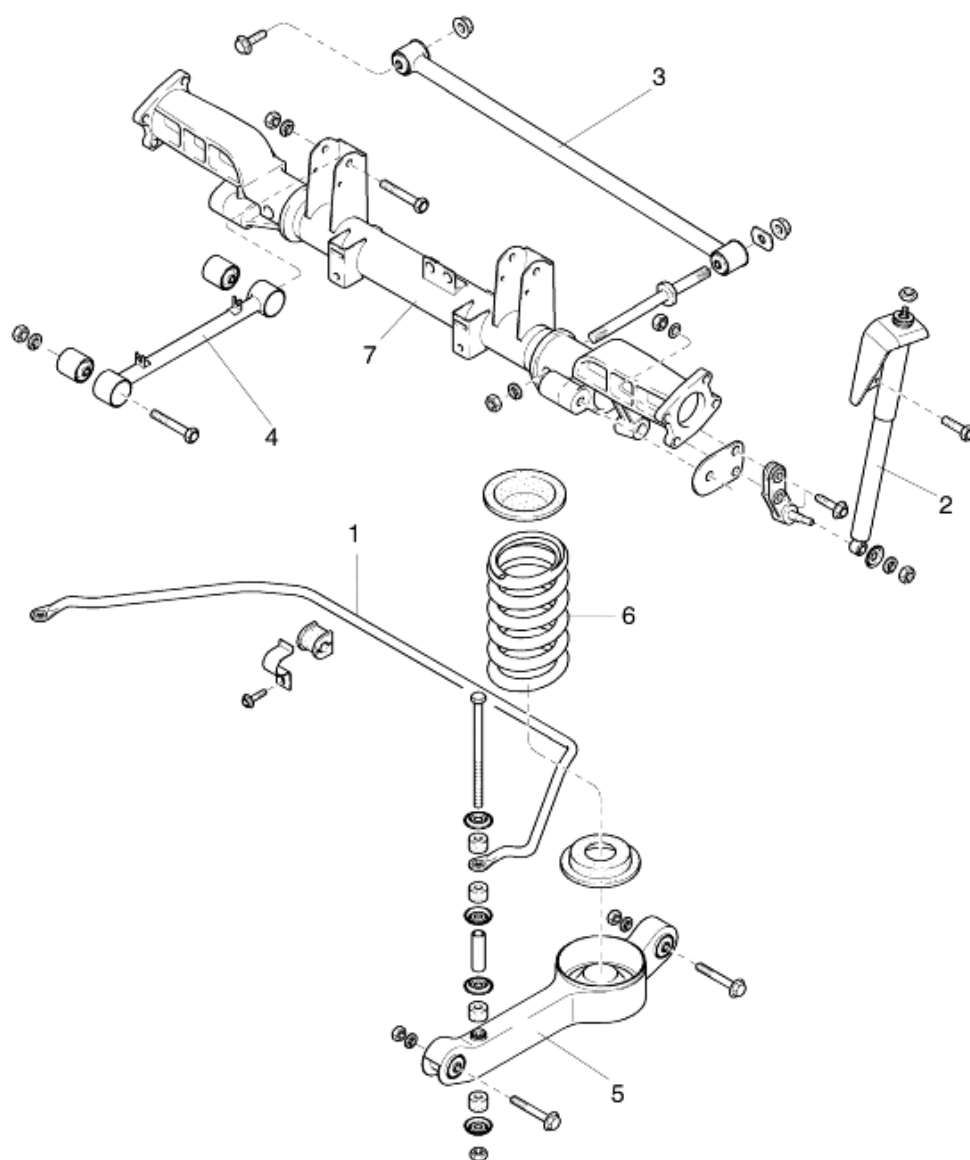
When tightening (by specified torque) the nuts of the arms and links of the rear suspension system, the wheels of the vehicle shall be in contact with ground and under loads (2 passengers load at the front seats if possible).



- 1. Rear shock absorber
- 2. Pan hard rod
- 3. Stabilizer

- 4. Upper arm
- 5. Lower arm
- 6. Coil spring

COMPONENT



1. Stabilizer bar
2. Shock absorber
3. Panhard rod
4. Upper arm assembly

5. Lower arm assembly
6. Coil spring
7. Rear casting

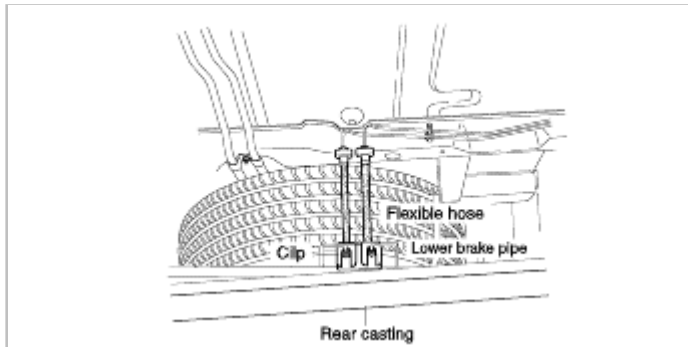


Removal

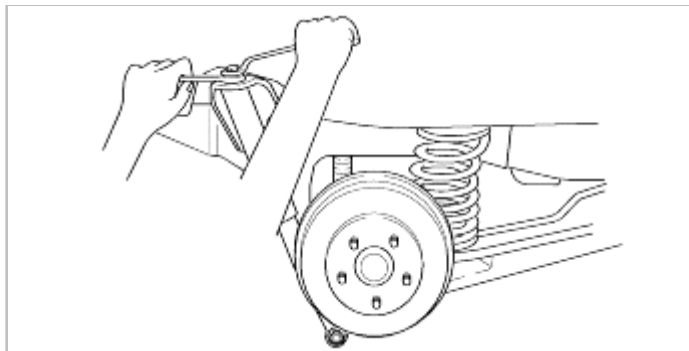
1. Raise the rear of vehicle and support it with safety stands.
2. Remove the rear wheels.
3. Disconnect lower brake pipes and flexible hoses after loosening the brake pipe nuts and pulling out the flexible hose clips.

NOTICE

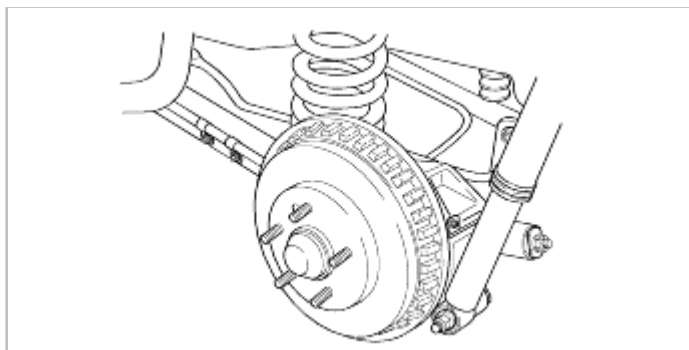
After disconnecting lower brake pipes, plug them to prevent leakage of fluid from the flexible hoses.



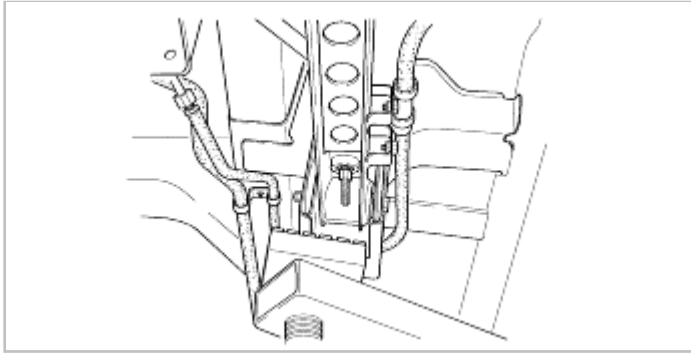
4. Raise the rear axle housing to facilitate removal of the rear suspension.
5. Remove the rear shock absorber safety nut, upper nut and washer.
6. Remove the shock absorber assembly.



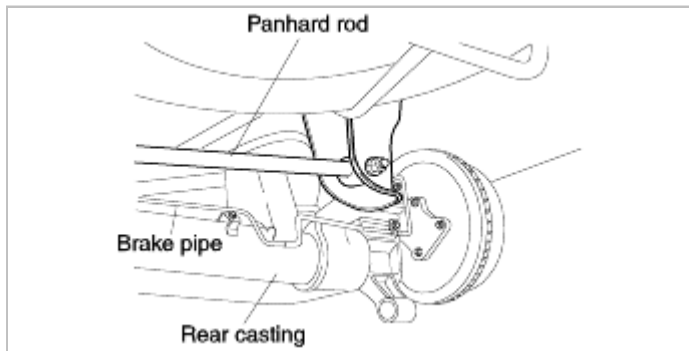
7. Remove the shock absorber lower nut and washer.



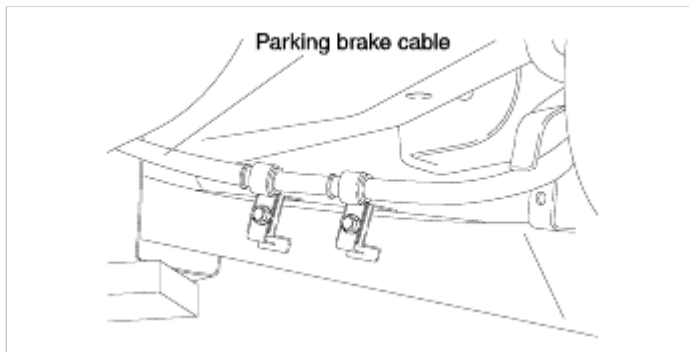
8. Loosen the stabilizer bar bolt and nut and remove pipe, cushions and retainers.



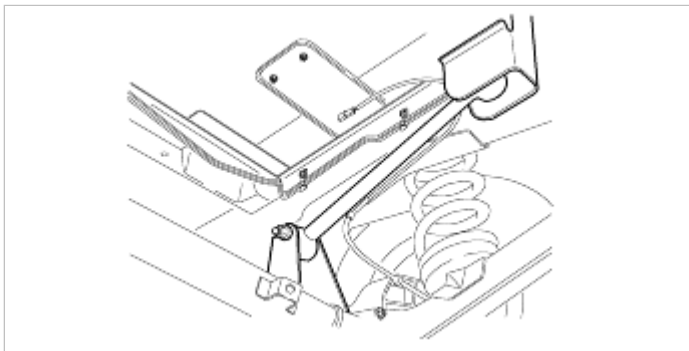
9. Remove the stabilizer plate and rubber bush after loosening bolt from the stabilizer bracket of rear casing.
10. Remove the stabilizer bar.
11. Loosen the panhard rod bolts and nuts and remove the panhard rod.



12. Remove the parking brake cable from the lower arm assembly after loosening the parking brake cable bolts.



13. Loosen the lower arm bolts and nuts and remove the lower arm assembly.
14. Loosen the upper arm bolts and nuts and remove the upper arm assembly.



15. Remove the seat rubber and coil spring.

Replacement/Inspection

1. Install the lower arm assembly to the rear casing and tighten the washer bolt and nut.

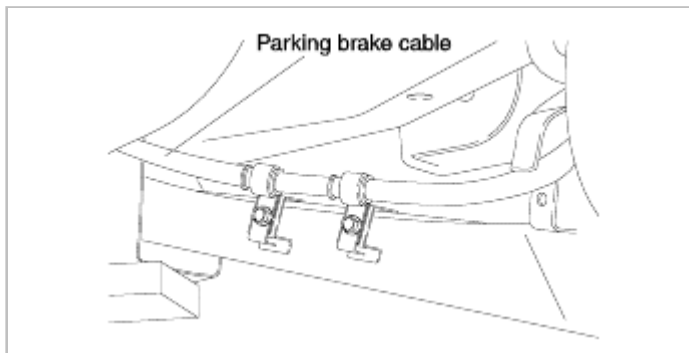
Tightening torque :87~101 lb·ft (118~137 N·m, 12~14 kg·m)

2. Install the seat rubber and coil spring to the lower arm assembly.
3. Tighten the washer bolt and nut to body.

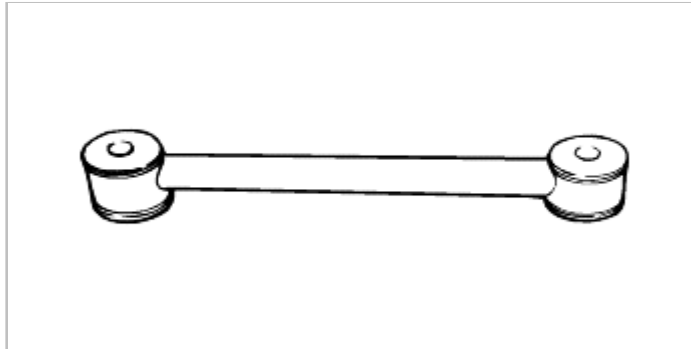
Tightening torque :87~101 lb·ft (118~137 N·m, 12~14 kg·m)

4. Install the parking brake cable to the lower arm assembly and tighten the parking brake cable bolts.

Tightening torque :14~19 lb·ft (16~23 N·m, 1.6~2.3 kg·m)

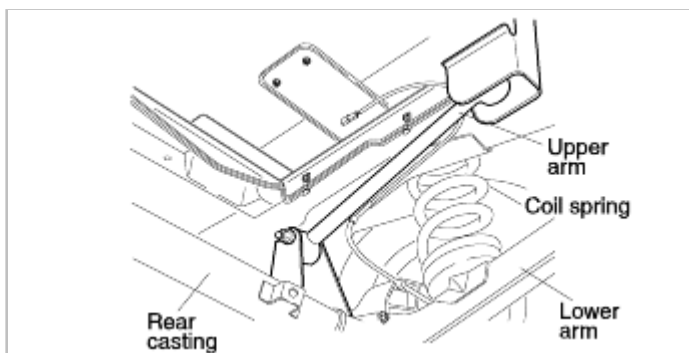


5. Inspect the upper arm for bends, cracks and/or other damage and inspect the upper arm bushings for wear and/or deterioration.



6. Install the upper arm assembly and bolts.

Tightening torque :55~69 lb·ft (74~93 N·m, 7.6~9.5 kg·m)

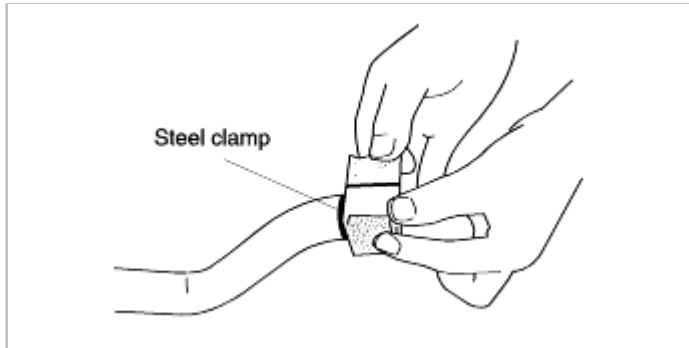


7. Inspect the panhard rod for bend, cracks and/or other damage and inspect the panhard rod bushings for wear and/or deterioration.

8. Install the panhard rod assembly and tighten bolts and nuts.

Tightening torque :Axle : 99~116 lb·ft (134~157 N·m, 13.7~16 kg·m),Body : 135~155 lb·ft (183~210 N·m, 18.7~21.5 kg·m)

9. Align the stabilizer bushing with the steel clamp on the stabilizer bar.
Located the bushing adjacent to the position line on stabilizer bar.



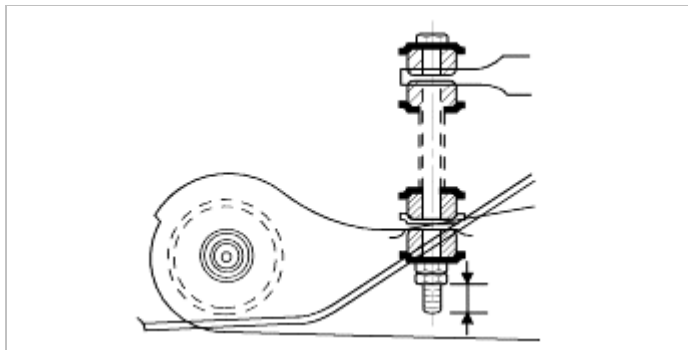
10. Tighten the stabilizer bolts to rear casting.

Tightening torque :32~40 lb·ft (43~54 N·m, 4.4~5.5 kg·m)

11. Tighten the stabilizer nuts so that the specified length of the thread is exposed and then tighten the lock nuts with the specified tightening torque.

Specification : 0.37~0.60 in (9.4~15.4 mm)

Tightening torque :17~20 lb·ft (24~28 N·m, 2.4~2.9 kg·m)



12. Install the shock absorber bracket and tighten bolts.

Tightening torque :55~69 lb·ft (74~93 N·m, 7.6~9.5 kg·m)

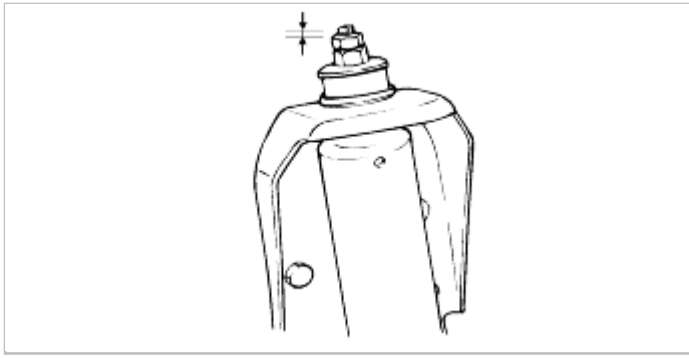
13. Tighten the shock absorber nuts until the specified length of the thread is exposed.

Tightening torque :41~47 lb·ft (55~64 N·m, 5.6~6.5 kg·m)

Specification: 0.41~0.45 in (10.5~11.5 mm)

CAUTION

- Tighten bolts and nuts lightly, and after lowering the vehicle(no passenger load condition) tighten it to the specified torque.
- Do not remove rear jounce stop unless damage is detected.

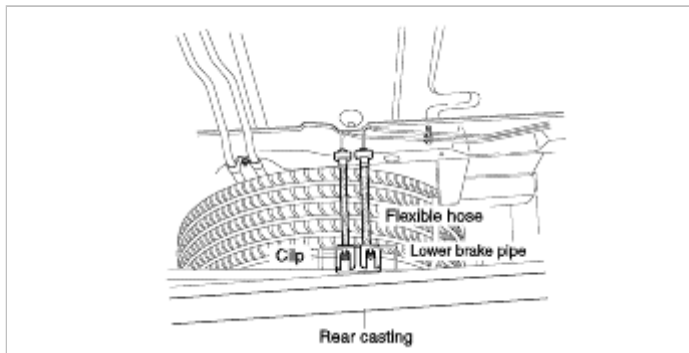


14. Tighten the shock absorber lower bolts and nuts.

Tightening torque :55~69 lb·ft (74~93 N·m, 7.6~9.5 kg·m)

15. Lower the rear axle housing.

16. Connect the lower brake pipes and flexible hoses and fix the flexible hose clips to the bracket of rear casting.



17. Install wheel and tires.

18. Lower vehicle.



Suspension System

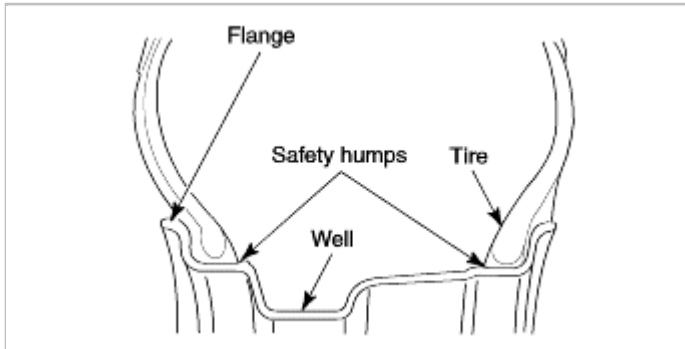
Tires/Wheels



Wheel information

All models use steel or aluminum drop center wheels.

Every wheel has raised sections between the rim flanges and rim drop well called safety humps.



Initial inflation of the tires forces the bead over these raised sections. In case of air loss the raised sections hold the tire in position on the wheel until the vehicle can be brought to a safe stop.

The wheel studs and nuts are designed for the specific wheel applications used on a vehicle and must be replaced with equivalent parts.

Before installing a wheel, remove any build up of corrosion on the wheel mounting surface.

CAUTION

Installing wheels without good metal to metal contact could cause loosening of wheel lug nuts. This could adversely affect the safety and handling of your vehicle.

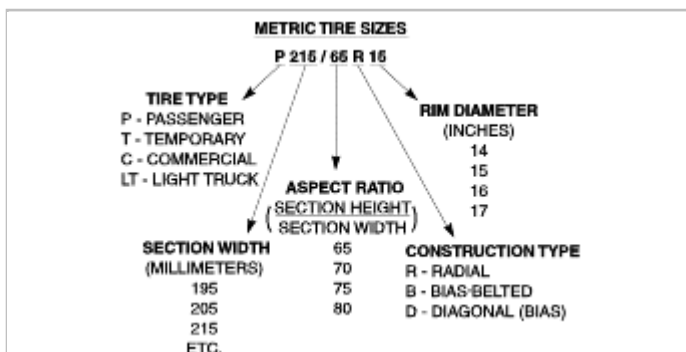
TIRE IDENTIFICATION

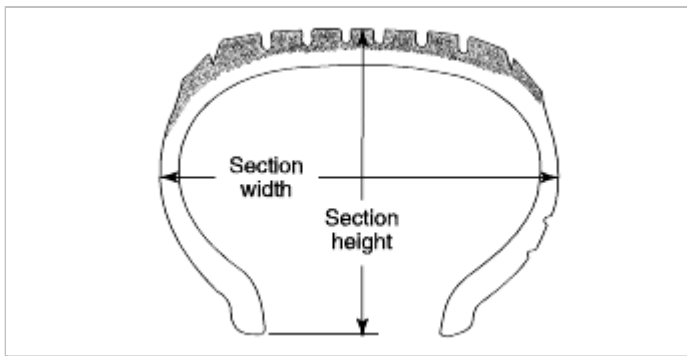
Tire type, size, aspect ratio and speed rating are encoded in the letters and numbers imprinted on the side wall of the tire. Refer to the chart to decipher the tire identification code as below.

Performance tires will have a speed rating letter after the aspect ratio number. The speed rating is not always printed on the tire sidewall. The letter S indicates that the tire is speed rated less than 112 mph (180 km/h)

- T less than 118 mph (190km/h)
- H less than 130 mph (210km/h)
- V less than 149 mph (240km/h)

(consult the tire manufacturer for the specific speed rating)

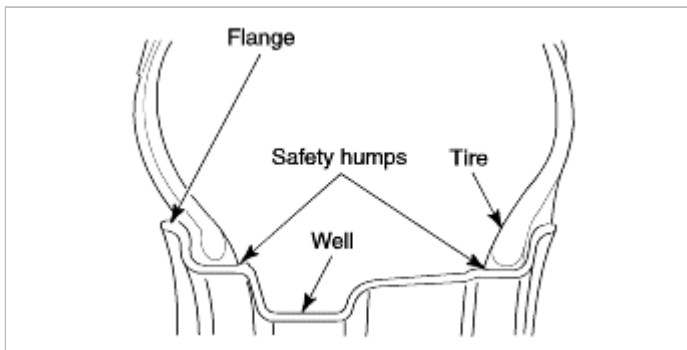




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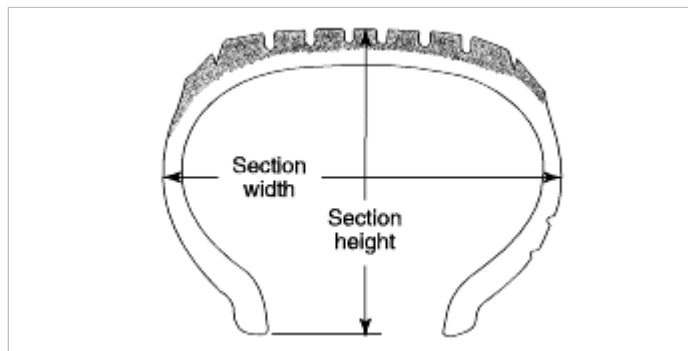
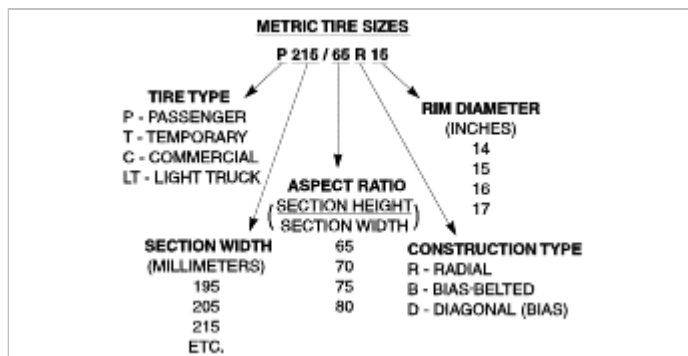
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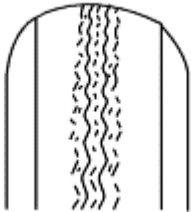
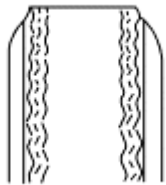
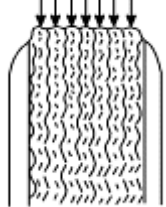
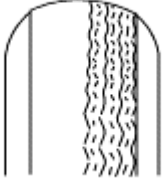

- T less than 118 mph (190km/h)
- H less than 130 mph (210km/h)
- V less than 149 mph (240km/h)

(consult the tire manufacturer for the specific speed rating)





Irregular tire wear

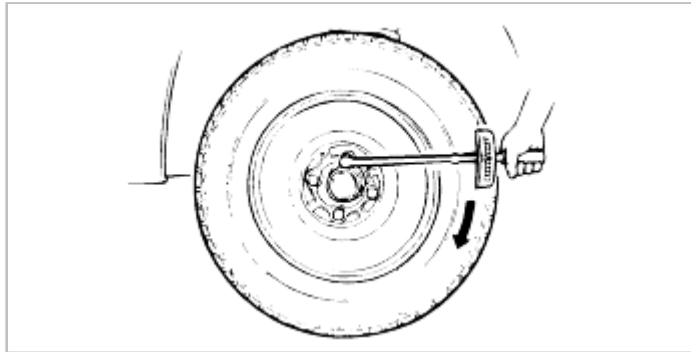
Problem	Possible cause	Remedy
Rapid wear at shoulders 	<ul style="list-style-type: none"> • Underinflation (both sides worn) • Hard cornering • Lack of rotation 	<ul style="list-style-type: none"> • Measure and adjust air pressure • Reduce cornering speed
Rapid wear at center 	<ul style="list-style-type: none"> • Overinflation • Lack of rotation 	<ul style="list-style-type: none"> • Measure and adjust air pressure
Feathered edge 	<ul style="list-style-type: none"> • Incorrect toe adjustment 	<ul style="list-style-type: none"> • Adjust toe-in to specifications
Uneven wear parts 	<ul style="list-style-type: none"> • Incorrect camber or caster • Worn or damaged suspension • Unbalanced wheel • Wobble in brake drum or disc • Lack of rotation • Hard cornering 	<ul style="list-style-type: none"> • Adjust camber or caster to specification • Repair or replace suspension component • Balance or replace • Reduce cornering speed
Bold spots 	<ul style="list-style-type: none"> • Unbalanced wheel • Tire defect 	<ul style="list-style-type: none"> • Dynamic or static balance wheels • Replace tire



Removal/Installation

1. Contact surface between wheel and hub must be clean.
2. Tighten hub nuts to specified torque.

Tightening torque :65~79 lb·ft (88~108 N·m, 9~11 kg·m)



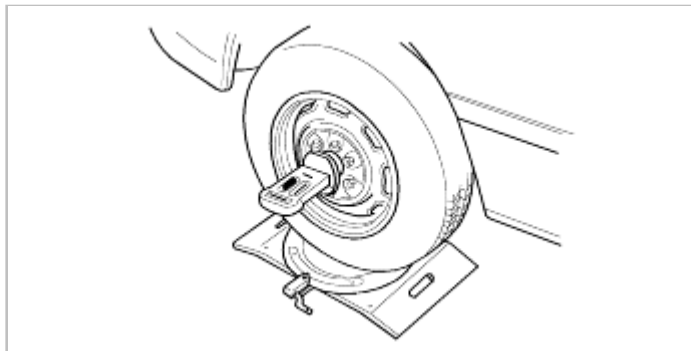
On-Vehicle service

Caster and Camber

1. Place the front wheel on a turning radius gauge.
2. Attach caster/camber gauge to front hub.
3. Measure the caster/camber and note readings.

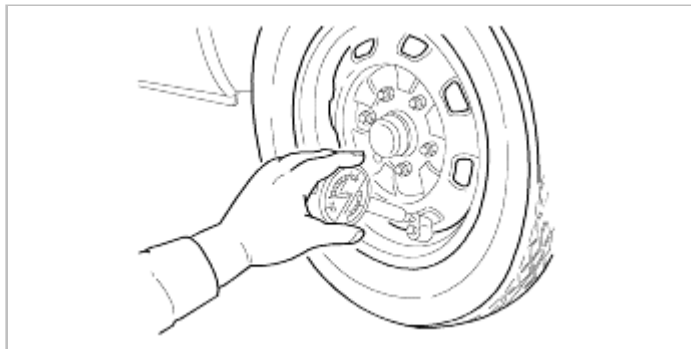
Camber : $0.51^{\circ} \pm 0.5^{\circ}$ (No passenger load), $0.26^{\circ} \pm 0.5^{\circ}$ (Five passengers load)

Caster : $1.88^{\circ} \pm 0.5^{\circ}$ (No passenger load), $1.94^{\circ} \pm 0.5^{\circ}$ (Five passengers load)



Wheel alignment preinspection

1. Set tire inflation pressures to recommended pressure, if necessary.



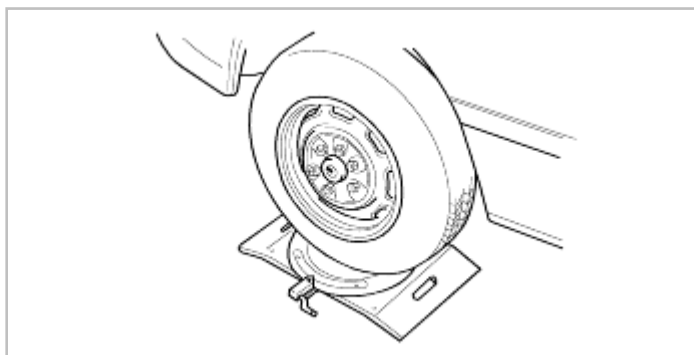
2. Inspect front wheel bearing play; replace bearing if necessary.
3. Inspect wheel and tire runout.
4. Inspect ball joints and steering linkage for excessive play.
5. Vehicle must be on a level surface and have no luggage or passenger load.
6. Jounce the vehicle to check operation of shock absorbers.
7. Difference in height, between left and right sides of vehicle, from center of wheel up to edge of fender must not exceed 0.39 in (10 mm).
8. Check that fuel tank is full, radiator coolant and engine oil are at specified levels, and spare tire, jack and tools are in designated positions.

STEERING ANGLE MAXIMUM

1. Measure the steering angle after placing the front wheel on a turning radius gauge.

Standard : Inner : $34.19^{\circ} \pm 2^{\circ}$

Outer : $29.52^{\circ} \pm 2^{\circ}$



Notes on wheels and tires

1. Do not use wheels or tires other than specified types.
2. Aluminum wheels are easily scratched. Use a soft cloth when washing them, never a wire brush. If vehicle is steam cleaned, do not allow boiling water to contact wheels.
3. If alkaline compounds (such as saltwater or road salts) get on aluminum wheels, wash them as soon as possible to prevent damage. Use a mild detergent only.

Notes regarding tire replacement

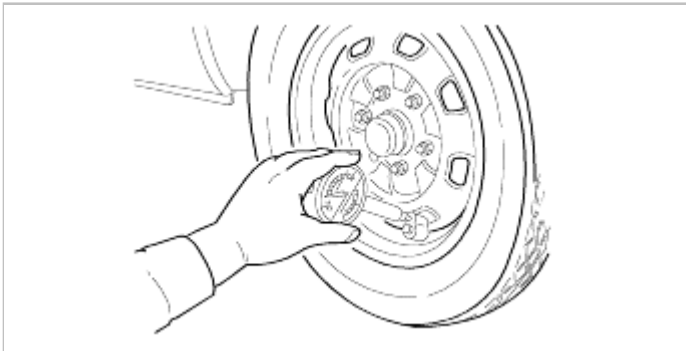
1. Be careful not to damage the tire bead, wheel rim bead, or outer edge of wheel rim.
2. Use a wire brush, fine sandpaper, or cloth to clean and remove all rust and/or dirt from wheel rim.
3. Clean aluminum wheels, with a soft cloth, never a wire brush or sandpaper.
4. Remove any pebbles, glass, nails, and other foreign items embedded in tire treads.
5. Be sure valve stem is installed carefully.
6. Apply a soapy solution to tire bead and edge of wheel.
7. If a tire iron must be used to change a tire on an aluminum wheel, use a piece of rubber between the tire iron and wheel to avoid damage. Work should be done on a rubber mat, not on a hard or rough surface.

AIR PRESSURE

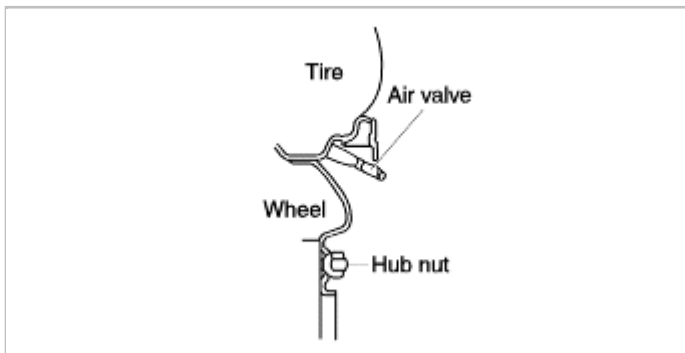
Check air pressure of all tires, including the spare tire, with an air pressure gauge. If necessary, adjust air pressure.

Tire size		
	Front Tires	Rear Tires

P215/65 R15	34 (235, 2.4)



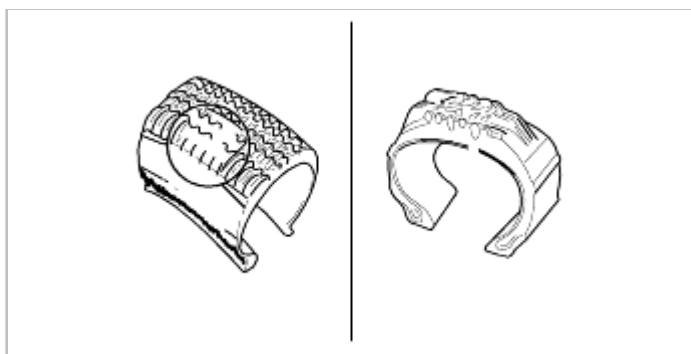
Air leakage



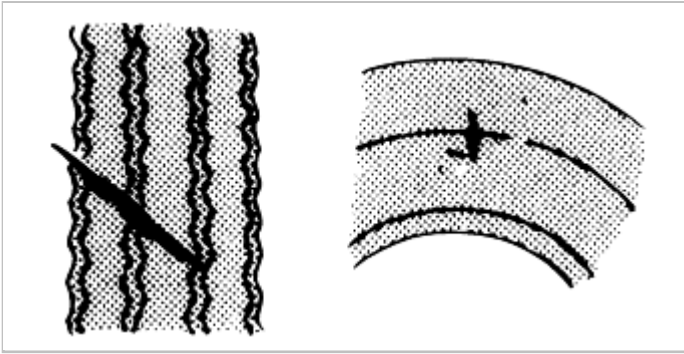
Tire wear

1. Tire should be replaced if wear indicator ribs are exposed.
2. Check remaining tread depth.

Tread depth :Standard tires: 0.063 in (1.6 mm) minimum, Snow tires: 50% of tread



Tire and wheel

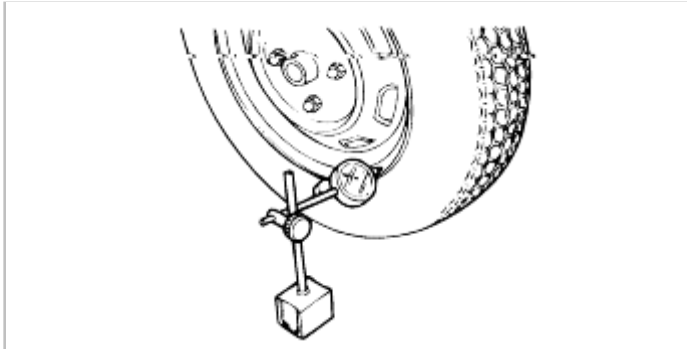


Wheel and tire runout

1. Raise vehicle and place it on safety stands.
2. Set dial indicator probe against wheel, and measure runout through one full revolution.

Runout :Wheel 0.06 in (1.5 mm) maximum,Tire 0.08 in (2.0 mm) maximum

3. Replace wheel if necessary.

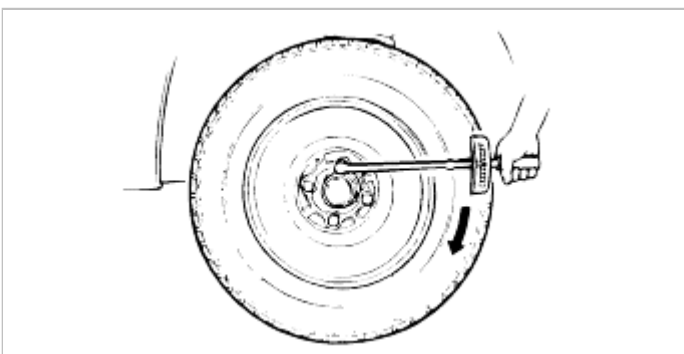


NOTICE

Check wheel balance after replacement of a wheel or tire.

Hub nut

Tightening torque :65~79 lb·ft (88~108 N·m, 9~11 kg·m)

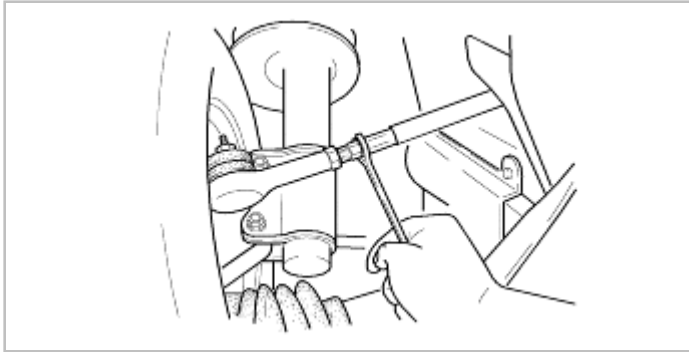


ADJUSTMENT

STEERING ANGLE MAXIMUM

1. Place both front wheels on a turning radius gauge.
2. Turn wheels fully to left and note angles for left (inner) and right (outer) wheels.

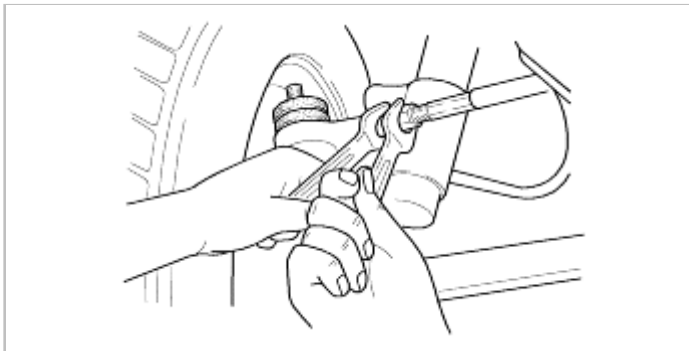
- Loosen both left and right tie rod lock nuts, then turn both tie rods to achieve specified angles. Tighten lock nuts.



- Repeat for a full right turn; right is now inner and left is now outer.
- Tighten tie rod lock nuts.

Tightening torque :50~58 lb·ft (69~78 N·m, 7.0~8.0 kg·m)

- Inspect and adjust toe after adjusting steering angle.



CAMBER

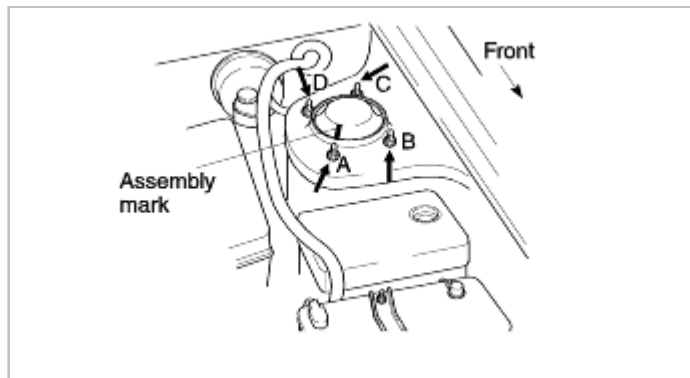
- Attach camber gauge to front hubs per manufacturer's instructions, and note readings.
- If readings do not meet specifications, lift front of vehicle until front wheels clear floor, and support with safety stands.
- Remove four mounting block nuts.



- Push mounting block downward to disengage studs, and turn it to position that corresponds to the difference between the initial reading and the specification.

Alternate	Change from starting position
positions	Camber angle
A	0°

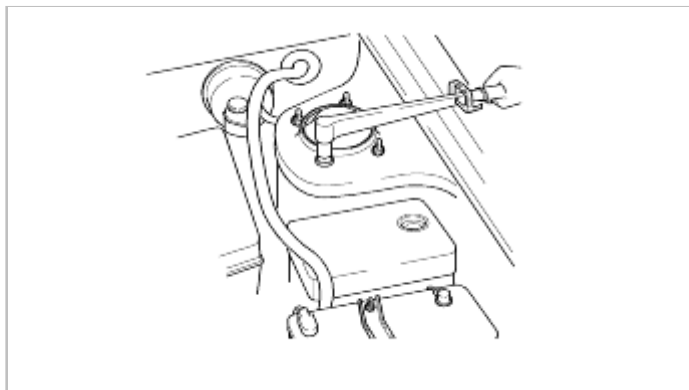
B	0.38°
C	0.38°
D	0°



5. Install and tighten mounting nuts to specified torque.

Tightening torque :34~46 lb·ft (46~63 N·m, 4.7~6.4 kg·m)

6. Lower vehicle and recheck camber.
Readjust if necessary.



CASTER

ADJUSTMENT-1

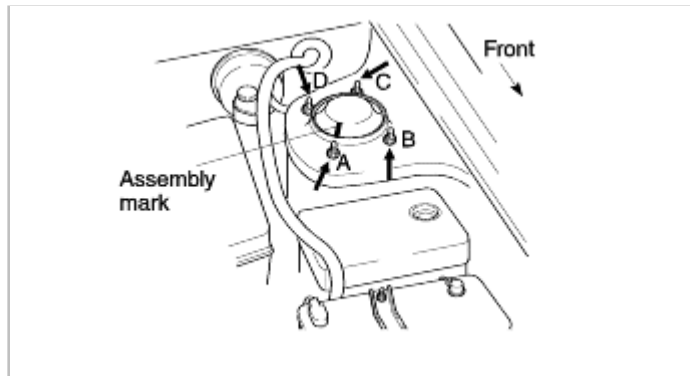
1. Attach caster gauge to front hubs per manufacturer,s instructions, and note readings.
2. If readings do not meet specifications, lift front of vehicle until front wheels clear floor, and support with safety stands.



3. Remove four mounting block nuts.

4. Push mounting block downward to disengage studs, and turn it to position that corresponds to the difference between the initial reading and specification.

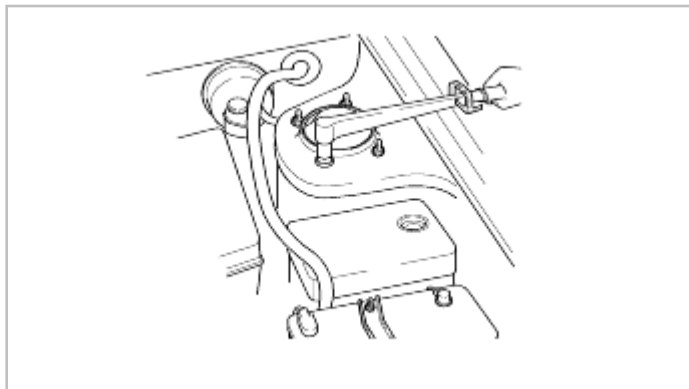
Alternate positions	Change from starting position Caster angle
A	0°
B	0°
C	0.39°
D	0.39°



5. Install and tighten mounting nuts to specified torque.

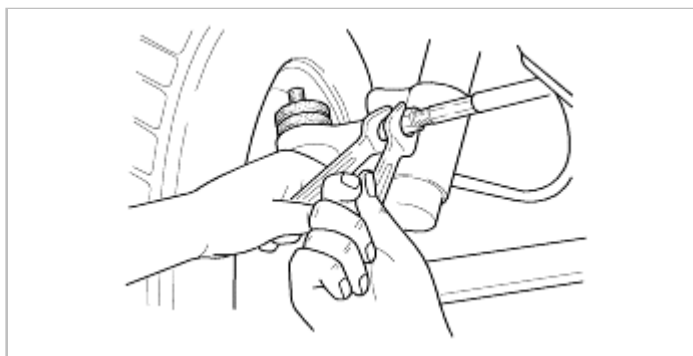
Tightening torque :34~46 lb·ft (46~63 N·m, 4.7~6.4 kg·m)

6. Lower vehicle.
Recheck caster and readjust if necessary.



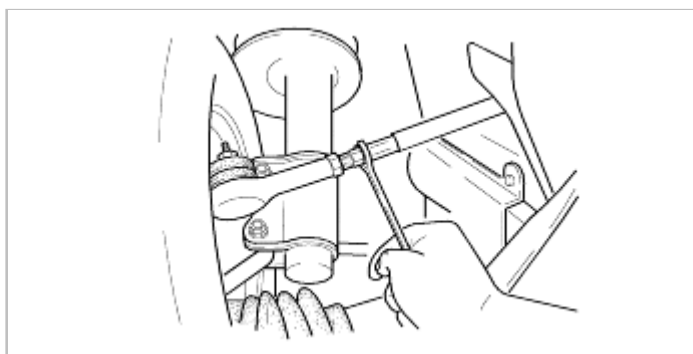
Toe (total)

1. Measure toe angle with a toe angle gauge per manufacturer instructions.
2. If measurement does not meet specification, loosen left and right tie rod lock nuts, then turn each tie rod as needed to achieve proper toe angle.
 - A. Left and right tie rods are right hand threaded. To decrease toe angle thread right and left side tie rods into tie rod ends. To increase toe-in, unthread toe rods.
 - B. One full turn of both tie rods changes toe-in by about 0.24 in (6 mm).
 - C. If may be necessary to rotate one tie rod more than the other in order to achieve the proper toe angle and still retain a straight steering wheel.



3. Tighten tie rod lock nuts.

Tightening torque :50~58 lb·ft (69~78 N·m, 7.0~8.0 kg·m)

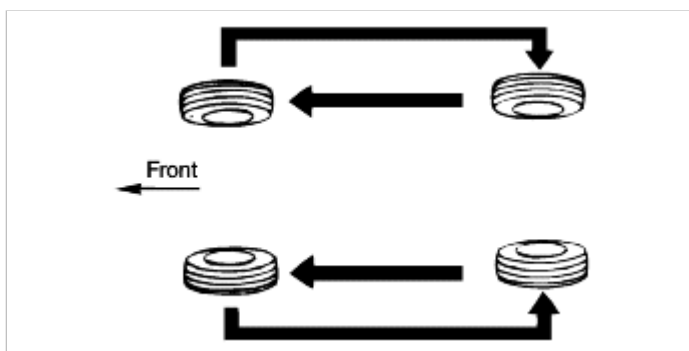


Rear wheel alignment

Tire rotation

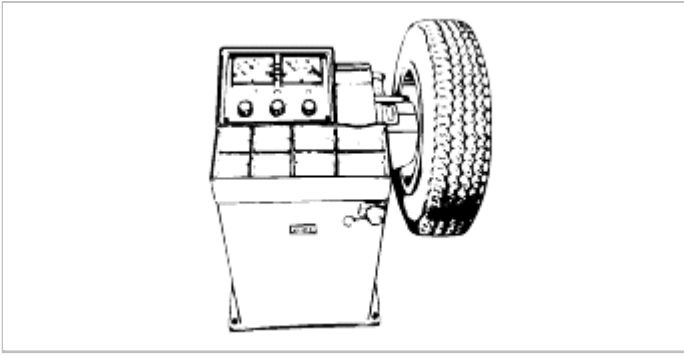
CAUTION

Keep the tires in the best condition at front. Do not move tires to opposite side of vehicle.



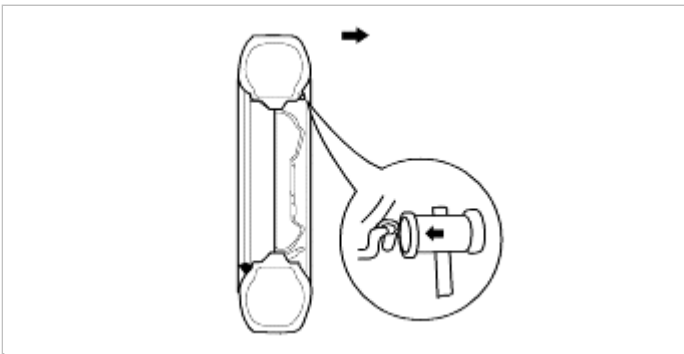
Wheel balance

Maximum imbalance at rim edge :2.12 oz (60g)



NOTICE

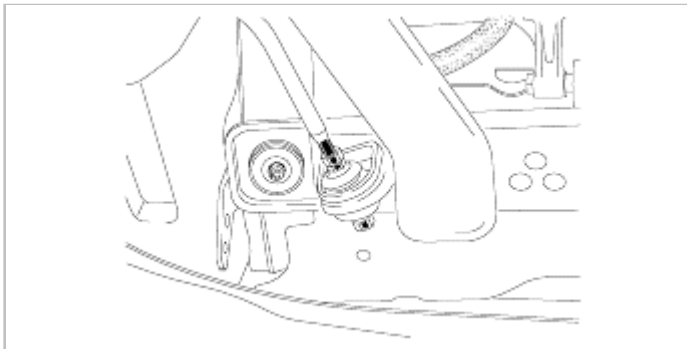
- Do not use more than two balance weights on the inner or outer side of a wheel.
- If the total weight exceeds 3.53 oz (100g), move tire around on rim and rebalance.
- Attach balance weights securely to wheel.
- Select balance weights that are suitable for steel or aluminum alloy wheels.
- Do not use an on-car balancer on automatic transmission models. Transmission damage may occur.



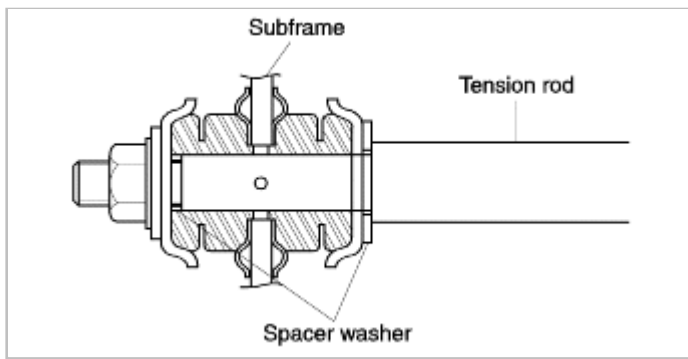
CASTER

ADJUSTMENT-2

1. Attach caster gauge to front hubs per manufacture's instructions, and note readings.
2. If readings do not meet specifications, lift front of vehicle until front wheels clear floor, and support with safety stands.
3. Mark alignment of tension rod nuts and spacer washers installed to subframe as shown.



4. If caster degree is smaller than specification, remove two washers which are installed to tension rod inward.

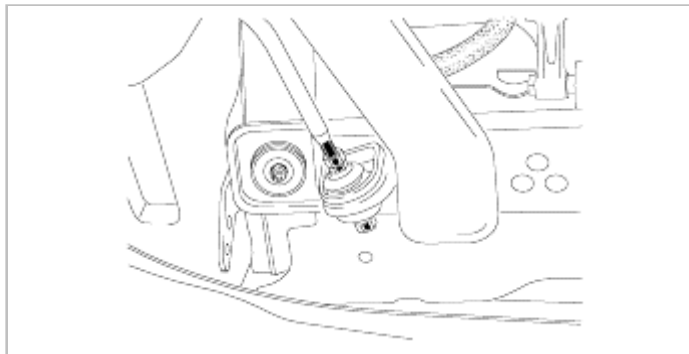


5. If caster degree is larger than specification, add two washers into tension rod to achieve specified degree.

Condition	Change from caster adjustment degree
Two washers removal	0.32° increase
Two washers addition	0.32° decrease

6. Tighten tension rod nuts after aligning with mark made.

Tightening torque :115~130 lb·ft (157~177 N·m, 16~18 kg·m)



7. Lower vehicle.
Recheck caster and readjust if necessary.



Front wheel alignment procedure

Specifications

CAUTION

Do not attempt to adjust the vehicles caster or camber by heating, bending or by performing any other modification to the vehicle's front suspension components.

Item		Specifications
Steering angle maximum (degree)	Inner	34.19°
	Outer	29.52°
Toe in (mm)	No passenger load	-0.04±0.1 (-0.9±2.5)
	Five passengers load	-0.01±0.1 (-0.3±2.5)
Camber angle (degree)	No passenger load	0.51°±0.5°
	Five passengers load	0.26°±0.5°
Caster angle (degree)	No passenger load	1.88°±0.5°
	Five passengers load	1.94°±0.5°