

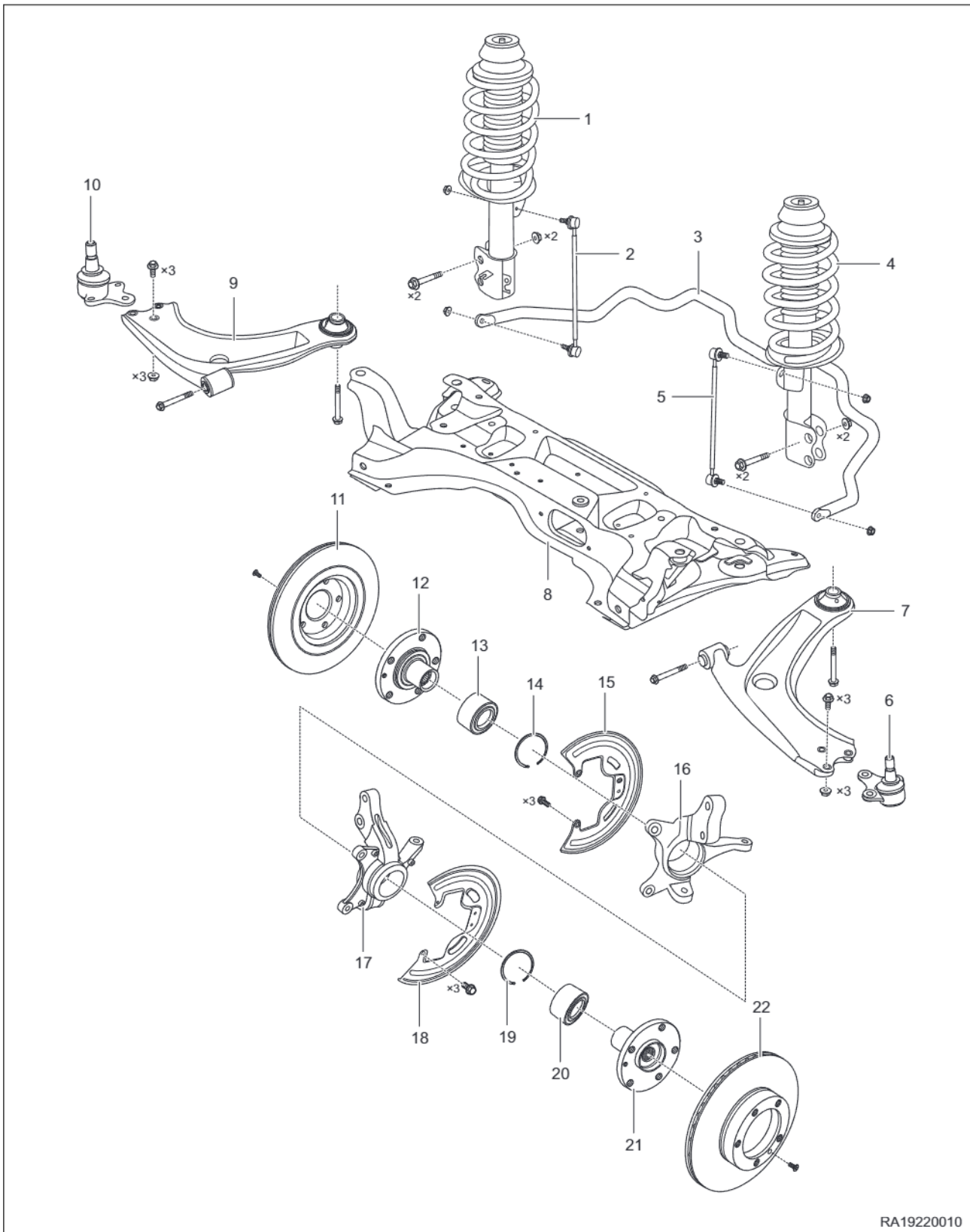
SUSPENSION

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GENERAL INFORMATION

Description

Front Suspension

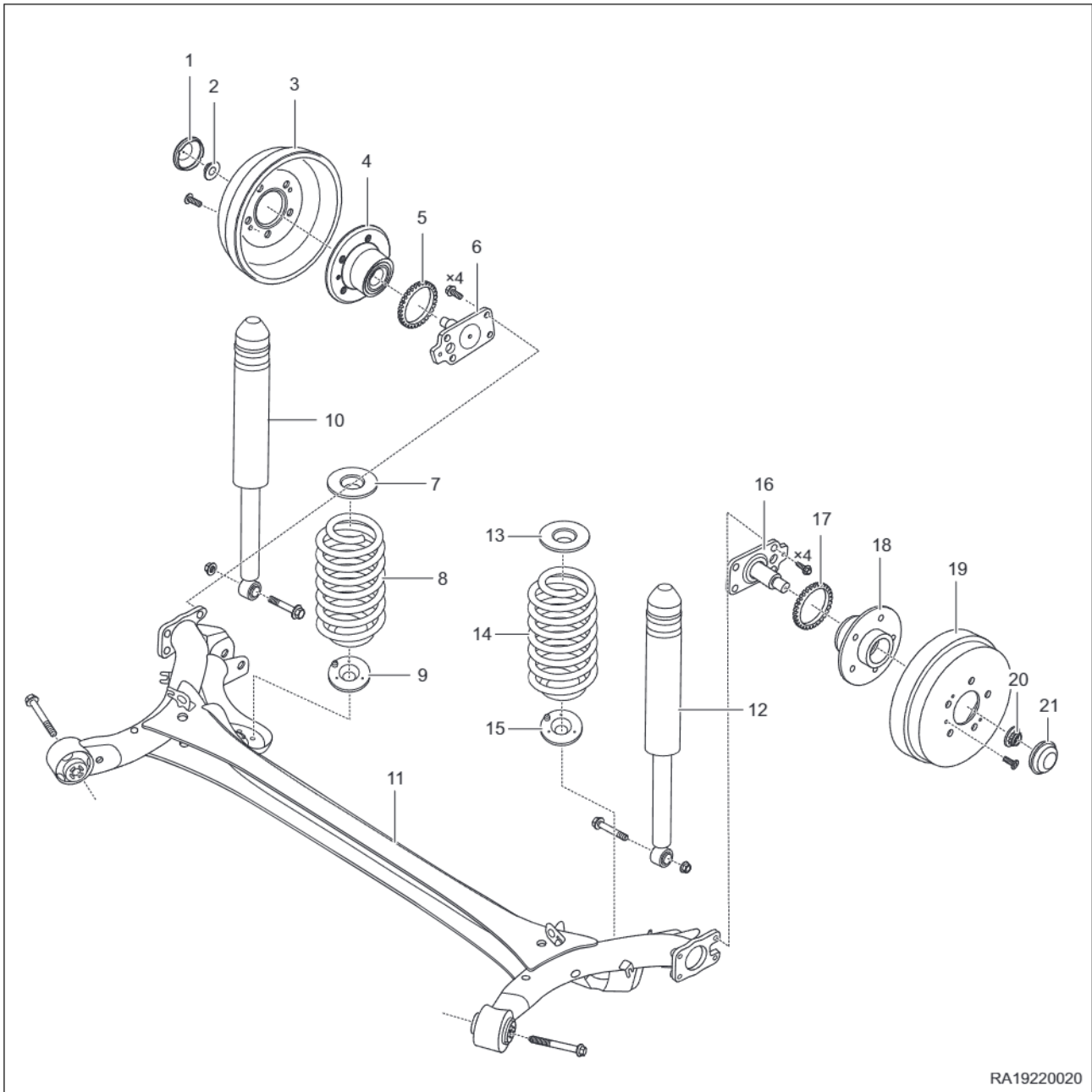


RA19220010

1 - Front Right Shock Absorber Assembly	2 - Front Right Stabilizer Link Assembly
3 - Front Stabilizer Bar Assembly	4 - Front Left Shock Absorber Assembly
5 - Front Left Stabilizer Link Assembly	6 - Front Left Control Arm Ball Pin Assembly
7 - Front Left Control Arm Assembly	8 - Front Sub Frame Welding Assembly
9 - Front Right Control Arm Assembly	10 - Front Right Control Arm Ball Pin Assembly
11 - Front Right Brake Disc	12 - Front Right Axle Hub
13 - Front Right Axle Hub Bearing	14 - Front Right Axle Hub Bearing Retainer
15 - Front Right Dust Guard	16 - Front Right Steering Knuckle Assembly
17 - Front Left Steering Knuckle Assembly	18 - Front Left Dust Guard
19 - Front Left Axle Hub Bearing Retainer	20 - Front Left Axle Hub Bearing
21 - Front Left Axle Hub	22 - Front Left Brake Disc

In this model, Macpherson independent suspension is used for front suspension, which is equipped with cylindrical coil spring, double action telescopic shock absorber, with lateral stabilizer and the height is not adjustable. Front suspension has driving and steering functions. The upper end of suspension is connected to the body, and the lower end is connected to the front steering knuckle. The sub frame is connected to the body with bolts, thus improving driving stability and safety.

Rear Suspension



RA19220020

1 - Rear Right Bearing End Cover	2 - Rear Shaft Assembly Right Locking Nut
3 - Rear Right Brake Drum	4 - Rear Right Hub Assembly
5 - Rear Right Hub Ring Gear	6 - Rear Right Hub Shaft
7 - Rear Right Coil Spring Upper Cushion	8 - Rear Right Coil Spring
9 - Rear Right Coil Spring Lower Cushion	10 - Rear Right Shock Absorber Assembly
11 - Rear Shaft Assembly	12 - Rear Left Shock Absorber Assembly
13 - Rear Left Coil Spring Upper Cushion	14 - Rear Left Coil Spring
15 - Rear Left Coil Spring Lower Cushion	16 - Rear Left Hub Shaft
17 - Rear Left Hub Ring Gear	18 - Rear Left Hub Assembly
19 - Rear Left Brake Drum	20 - Rear Shaft Assembly Left Locking Nut
21 - Rear Left Bearing End Cover	

In this model, the torsion beam type semi-independent suspension is used for rear suspension, which is equipped with cylindrical coil spring, double action telescopic shock absorber, without lateral stabilizer and the height is not adjustable. The upper end of suspension is connected to the body, and the lower end is connected to the rear shaft assembly, thus improving driving stability and safety.

Specifications

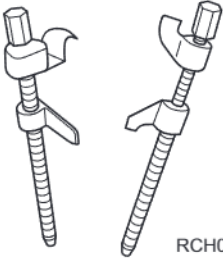
Torque Specifications

Description	Torque (N·m)
Wheel Mounting Bolt	110 ± 10
Coupling Nut Between Front Stabilizer Link Assembly and Front Shock Absorber Assembly	50 ± 5
Coupling Nut Between Front Stabilizer Link Assembly and Front Stabilizer Bar Assembly	50 ± 5
Coupling Bolt Between Front Brake Hose Assembly and Front Shock Absorber Assembly	10 ± 1.5
Coupling Bolt Between Front Shock Absorber Assembly and Front Steering Knuckle Assembly	110 ± 10
Coupling Nut Between Front Shock Absorber Assembly and Front Steering Knuckle Assembly	110 ± 10
Coupling Nut Between Front Shock Absorber Assembly and Body	60 ± 5
Front Shock Absorber Assembly Locking Nut	60 ± 5
Coupling Nut Between Front Control Arm Ball Pin Assembly and Front Steering Knuckle Assembly	120 ± 10
Coupling Bolt Between Front Part of Front Control Arm Assembly and Front Sub Frame Welding Assembly	180 ± 10
Coupling Bolt Between Rear Part of Front Control Arm Assembly and Front Sub Frame Welding Assembly	180 ± 15

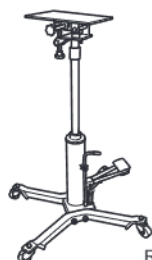
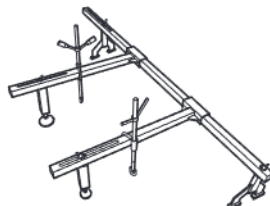
Description	Torque (N·m)
Coupling Bolt Between Front Control Arm Ball Pin Assembly and Front Control Arm Assembly	50 ± 5
Coupling Nut Between Front Control Arm Ball Pin Assembly and Front Control Arm Assembly	50 ± 5
Coupling Bolt Between Rear Mounting Cushion and Rear Mounting Bracket	85 ± 8.5
Coupling Nut Between Rear Mounting Cushion and Rear Mounting Bracket	85 ± 8.5
Coupling Nut Between Front Part of Front Sub Frame Welding Assembly and Body	120 ± 10
Coupling Bolt Between Rear Part of Front Sub Frame Welding Assembly and Body	120 ± 10
Coupling Bolt Between Front Sub Frame Welding Assembly and Steering Mechanism	100 ± 10
Coupling Bolt Between Front Sub Frame Welding Assembly and Steering Mechanism High Pressure Fluid Return Pipe Assembly	7 ± 1.5
Coupling Bolt Between Front Stabilizer Bar Assembly and Front Sub Frame Welding Assembly	50 ± 5
Coupling Bolt Between Rear Shock Absorber Assembly and Rear Shaft Assembly	110 ± 10
Coupling Nut Between Rear Shock Absorber Assembly and Rear Shaft Assembly	110 ± 10
Coupling Nut Between Upper Part of Rear Shock Absorber Assembly and Body	20 ± 3
Steering Tie Rod Locking Nut	47 ± 3
Steering Wheel Locking Nut	35 ± 3

Tools

Special Tool

Spring Compressor	 RCH0000021
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General Tools

Transmission Carrier	 RCH0000005
Engine Equalizer	 RCH0000026

DIAGNOSIS & TESTING

Problem Symptoms Table

HINT:

Use the table below to help determine the cause of problem symptoms. Check each suspected area in sequence. Repair or replace the faulty components, or adjust them as necessary.

Front Suspension

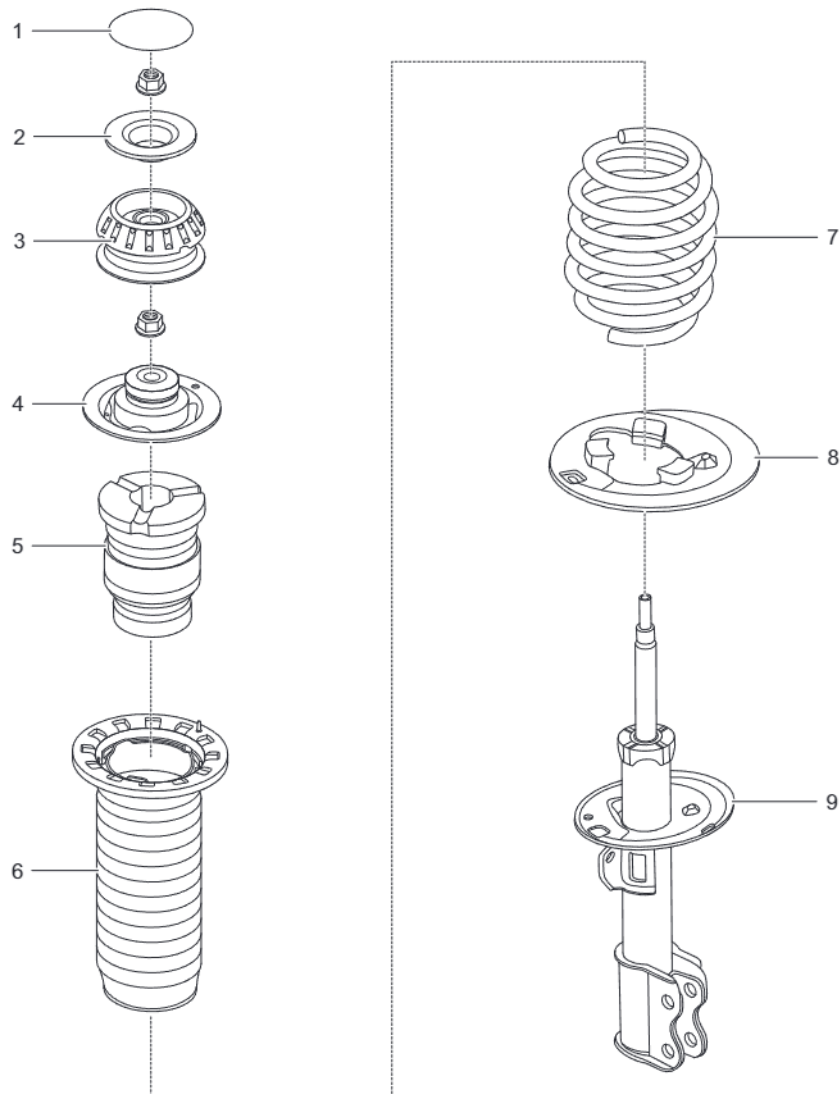
Symptom	Suspected Area	See page
Vehicle pulls	Front tire (worn or improperly inflated)	23-8
	Front wheel alignment (incorrect)	22-40
	Control arm ball pin assembly (loose)	22-23
	Front hub bearing (excessively worn)	21-12
	Front suspension components (excessively worn or deformed)	22-11
Bottoming	Vehicle (overloaded)	-
	Front coil spring (weak)	22-15
	Front shock absorber assembly (worn or damaged)	22-11
	Front suspension components (excessively worn or deformed)	22-11
Sways/Pitches	Front tire (worn or improperly inflated)	23-8
	Front stabilizer bar assembly (bent or broken)	22-25
	Front shock absorber assembly (worn or damaged)	22-11
Wheel shimmy	Front tire (worn or improperly inflated)	23-8
	Front wheel (out of balance)	23-12
	Front shock absorber assembly (worn or damaged)	22-11
	Front wheel alignment (incorrect)	22-40
	Control arm ball pin assembly (loose)	22-23
	Front hub bearing (excessively worn)	21-12
	Steering gear (out of adjustment or damaged)	28-24
Abnormal tire wear	Front tire (improperly inflated)	23-8
	Front wheel alignment (incorrect)	22-40
	Front shock absorber assembly (worn or deformed)	22-11
	Front suspension components (worn or deformed)	22-11

Rear Suspension

Symptom	Suspected Area	See page
Vehicle pulls	Rear tire (worn or improperly inflated)	23-8
	Rear wheel alignment (incorrect)	22-40
	Rear hub bearing (excessively worn)	21-19
	Rear suspension components (worn or deformed)	22-31
Bottoming	Vehicle (overloaded)	-
	Rear coil spring (weak)	22-38
	Rear shock absorber assembly (worn or damaged)	22-31
	Rear suspension components (excessively worn or deformed)	22-31
Sways/pitches	Rear tire (worn or improperly inflated)	23-8
	Rear shaft assembly (bent or broken)	21-20
	Rear shock absorber assembly (worn or deformed)	22-31
Abnormal tire wear	Rear tire (improperly inflated)	23-8
	Rear wheel alignment (incorrect)	22-40
	Rear shock absorber assembly (worn or deformed)	22-31
	Rear suspension components (worn or deformed)	22-31

ON-VEHICLE SERVICE

Front Shock Absorber Assembly



RA19220021

22

1 - Front Shock Absorber Assembly Cover Cap	2 - Front Connecting Plate Assembly
3 - Front Insulator Assembly	4 - Front Spring Upper Tray with Bearing Assembly
5 - Front Buffer Block	6 - Front Dust Boot with Spring Upper Cushion
7 - Front Coil Spring	8 - Front Spring Lower Cushion
9 - Front Shock Absorber Assembly Strut	

On-vehicle Inspection

1. Check the front shock absorber assembly.
 - a. Park the vehicle on level ground, and bounce the vehicle up and down, then check if the vehicle shakes up and down when the body bounds. If the vehicle shakes up and down consecutively, the shock absorber assembly may be damaged and should be replaced.
2. Check the front shock absorber assembly for leakage.
 - a. As the shock absorber assembly operates frequently while driving the vehicle, the shock absorber fluid temperature rises and oil gas is formed and adheres to the dust boot. This is a normal phenomenon, and it is not necessary to replace the shock absorber assembly.
 - b. The shock absorber is designed with a thin layer of oil film on the surface of piston rod. While the shock absorber is being compressed, the oil film will be scraped off by the dust plate on the shock absorber oil seal and a small amount of oil will remain on the upper part of oil seal. Due to high oil permeability, the oil remaining on the upper part of oil seal spreads slowly from the upper part of shock absorber to the lower part of shock absorber, thus forming a thin coat of oil film. When any of the following conditions occurs:
Oil film is between dust boot and spring seat;
Oil traces in the circumferential direction are even.
For the above conditions, oil traces are formed through volatilization, so we can judge it as minor leaks. This is a normal phenomenon, and it is not necessary to replace the shock absorber assembly.
 - c. If the following conditions occur:
Oil traces in the circumferential direction are uneven;
Oil traces reach the lower connecting positions.
The above conditions indicate that there may be leakage in the shock absorber assembly, and it is necessary to replace the shock absorber assembly.
 - d. If it is difficult to accurately judge the shock absorber assembly for leakage from appearance, perform road test after wiping off the oil on the surface of the malfunctioning shock absorber. Under normal road conditions, drive the vehicle for 5 to 10 minutes and perform inspection. If there are oil traces at the shock absorber assembly surface, it indicates oil leakage, and it is necessary to replace the shock absorber assembly.

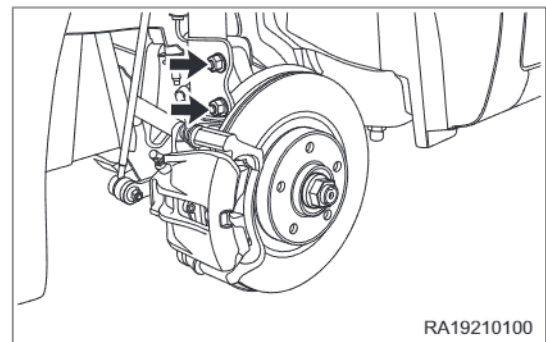
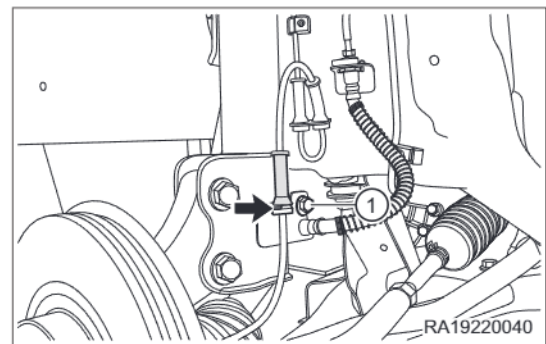
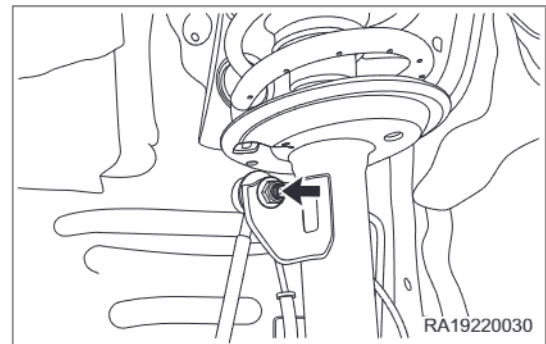
Removal

⚠ WARNING

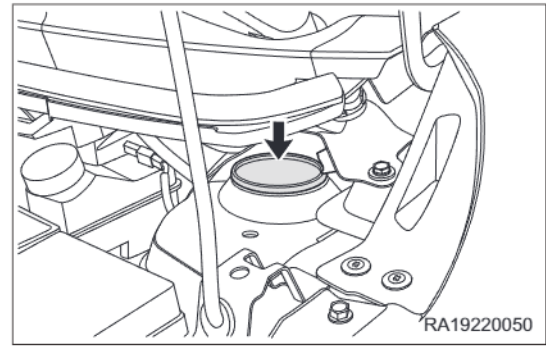
- Be sure to wear the necessary safety equipment to prevent accidents.
- Make sure that the safety lock of lifter has been locked when removing and installing the chassis parts.
- It is not permitted to weld or modify the suspension bearing parts and guide parts.
- When removing and installing the chassis parts, replace the self-locking nuts and rusted nuts for safety.
- Operate carefully when removing and installing the coil spring, preventing the spring from jumping out and causing personal injury.

HINT:

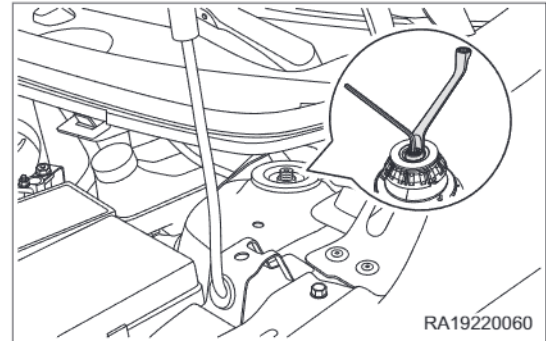
- Use the same procedures for the right side and left side.
 - The procedures listed below are for the left side.
1. Remove the front left wheel (See page 23-10).
 2. Remove the front left shock absorber assembly.
 - a. Remove the coupling nut (arrow) between front left stabilizer link assembly and front left shock absorber assembly.
(Tightening torque: $50 \pm 5 \text{ N}\cdot\text{m}$)
 - b. Disengage the front left wheel speed sensor (arrow) from the front left shock absorber assembly, and remove the front left brake hose assembly fixing bolt (1).
(Tightening torque: $10 \pm 1.5 \text{ N}\cdot\text{m}$)
 - c. Remove 2 coupling bolts and nuts (arrow) between front left shock absorber assembly and front left steering knuckle assembly.
(Tightening torque: $110 \pm 10 \text{ N}\cdot\text{m}$)



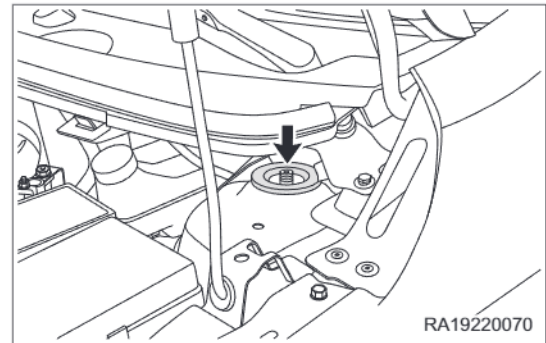
- d. Remove the front left shock absorber assembly cover cap (arrow).



- e. Hold the end of front shock absorber assembly lever with an inner hexagon wrench, and then remove the fixing nut from the front left shock absorber assembly with a fixing wrench.
(Tightening torque: 60 ± 5 N·m)



- f. Remove the front connecting plate assembly (arrow) from the upper part of front left shock absorber assembly.

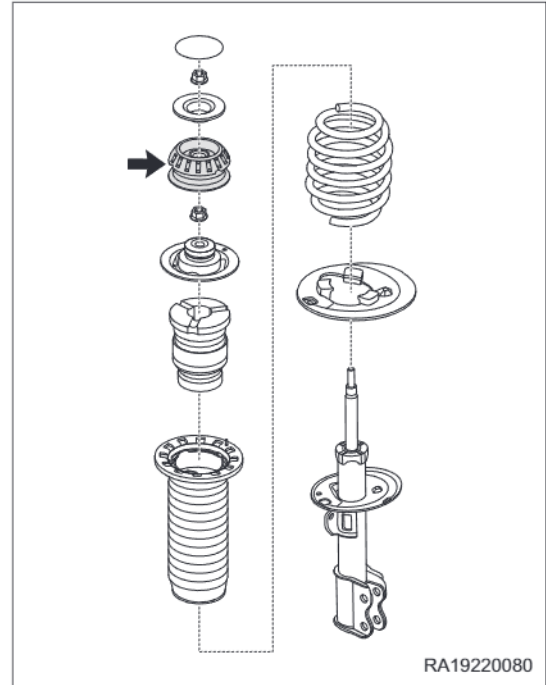


- g. Remove the front left shock absorber assembly with coil spring.

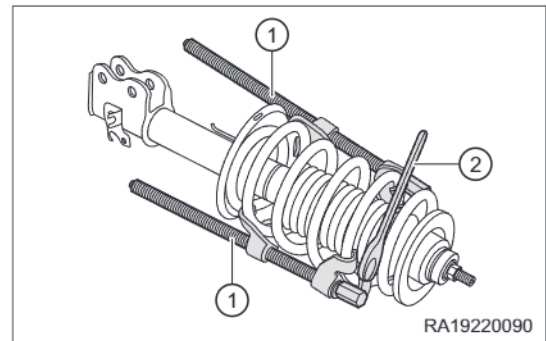
Disassembly

HINT:

- Use the same procedures for the right side and left side.
 - The procedures listed below are for the left side.
1. Remove the front insulator assembly.
 - a. Remove the front insulator assembly (arrow) from the upper part of front left shock absorber assembly.



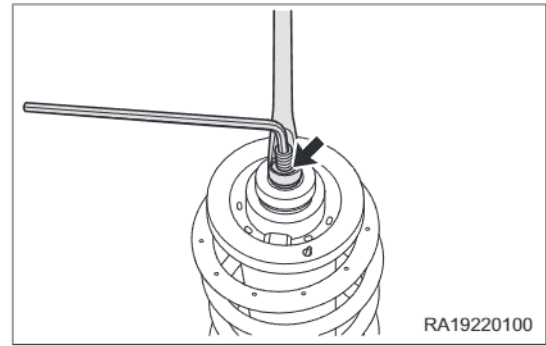
2. Remove the locking nut from the front left shock absorber assembly.
 - a. Install the spring compressor (1), and tighten the end lever of spring compressor with a wrench (2) to compress the front coil spring.



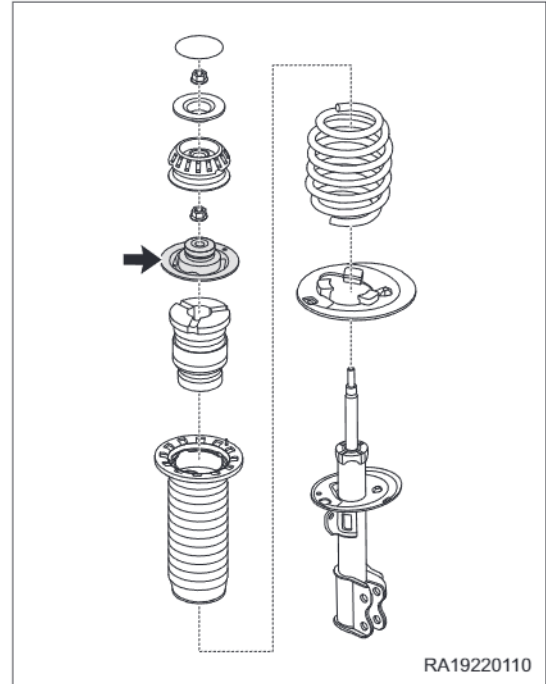
⚠ WARNING

- When removing the front coil spring, compress the spring until the locking nut can be rotated. DO NOT compress the coil spring more than necessary, avoid damaging the spring and personal injury.

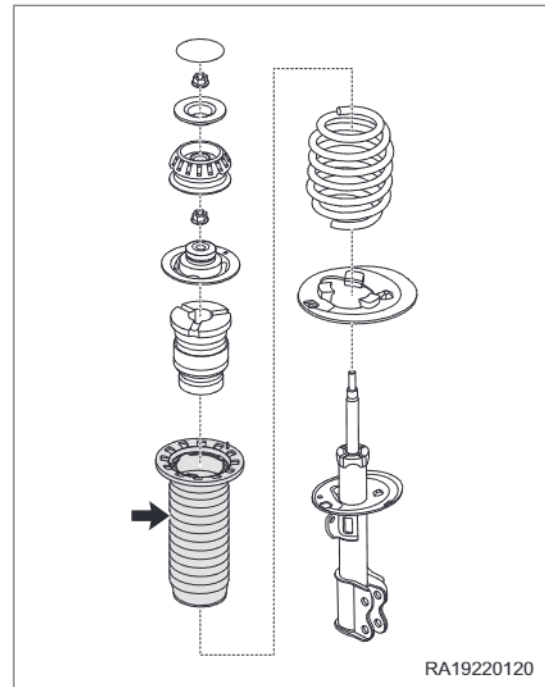
- b. Hold the end of front left shock absorber assembly lever with an inner hexagon wrench, and then remove the locking nut (arrow) from the front left shock absorber assembly with a fixing wrench. (Tightening torque: $60 \pm 5 \text{ N}\cdot\text{m}$)



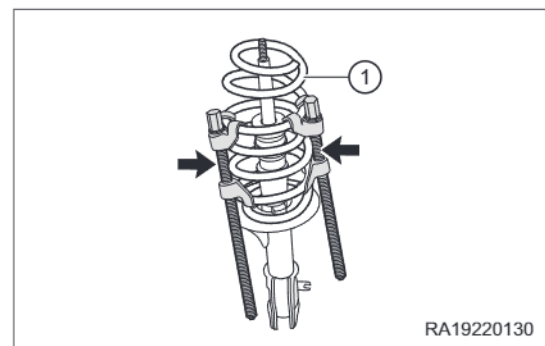
3. Remove the front spring upper tray with bearing assembly.
 - a. Remove the front spring upper tray with bearing assembly (arrow) from the upper part of front left shock absorber assembly.



4. Remove the front dust boot with spring upper cushion.
 - a. Remove the front dust boot with spring upper cushion (arrow) from the upper part of front left shock absorber assembly.

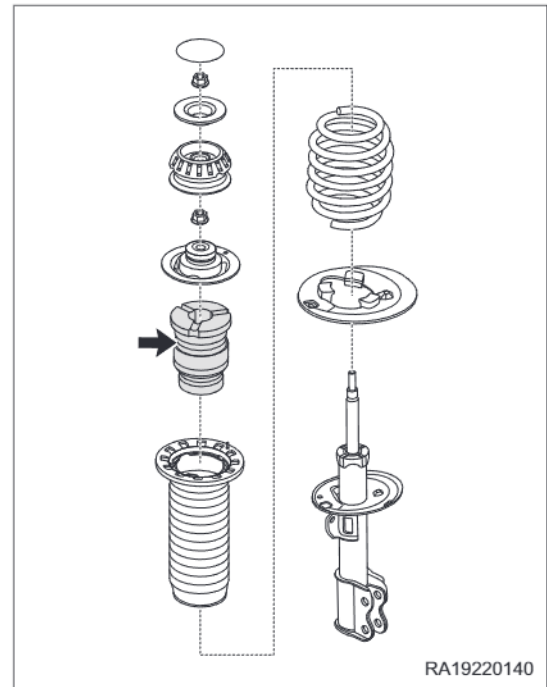


5. Remove the front coil spring.
 - a. Remove the front left coil spring (1) with spring compressor (arrow) from the front left shock absorber assembly.

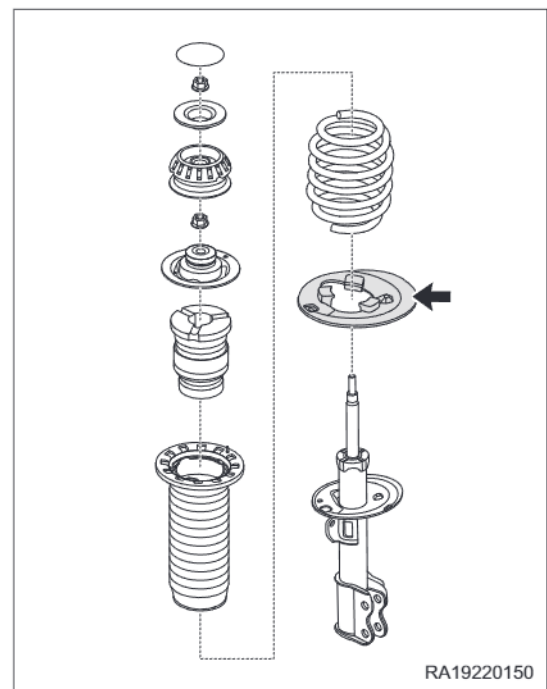


- b. Slowly loosen the spring compressor, and carefully remove the front left coil spring.

6. Remove the front buffer block.
 - a. Detach the front buffer block (arrow) from the front left shock absorber assembly, and remove it.



7. Remove the front spring lower cushion.
 - a. Detach the front spring lower cushion (arrow) from the positioning hole in the lower end of front left shock absorber assembly strut and remove it.

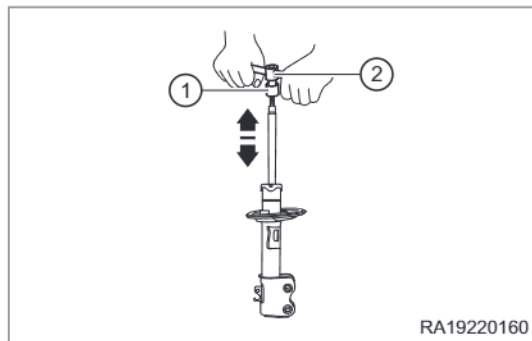


Inspection

1. Check the front shock absorber assembly.

Manual inspection:

- a. Install the locking nut (1) to the upper end of front shock absorber assembly strut, and then install the T-wrench (2) or equivalent.
- b. Compress and extend the front shock absorber assembly strut several times by hands in the direction of arrow as shown in the illustration. Check that there is no abnormal resistance or unusual sound during operation. If there is any abnormality, replace the front shock absorber assembly with a new one.



2. Check the other components of front shock absorber assembly.

- a. Check the front insulator assembly, front dust boot with spring upper cushion, front buffer block and front spring lower cushion for cracks, wear or deformation. Replace them as necessary.
- b. Check the front connecting plate assembly and front spring upper tray with bearing assembly for damage. Replace them as necessary.
- c. Check the front coil spring for wear, cracks or deformation. Replace it as necessary.

Assembly

Assembly is in the reverse order of disassembly.

CAUTION

- Make sure to align the protrusion of front dust boot with spring upper cushion and the positioning hole of front spring upper tray with bearing assembly during installation.
- Make sure to align the protrusion of front spring lower cushion and the positioning hole in the lower end of front shock absorber assembly strut during installation.

Installation

Installation is in the reverse order of removal.

CAUTION

- Always tighten the coupling bolts and nuts to the specified torque.
- Check the wheel alignment after installation. Adjust the wheel alignment to standard range as necessary.

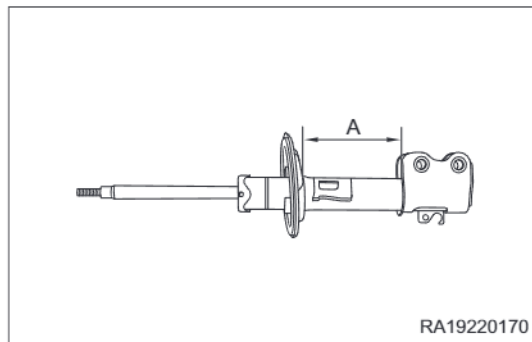
Disposal

WARNING

- The shock absorber assembly contains nitrogen and oil which are under negative pressure. Before handling, be sure to wear goggles and release the pressure inside the shock absorber assembly to avoid personal injury.

1. Disposal of the front shock absorber assembly.

- Extend the front shock absorber assembly strut fully, and clamp it in the vise at an angle.
- Using a drill or equivalent, make a hole slowly at area A shown in the illustration to discharge the gas in the front shock absorber assembly.



CAUTION

- The gas discharged from the shock absorber is colorless and harmless. Be careful when drilling, because the iron chips may fly out.

- Handle the shock absorber assembly properly after discharging the gas.

ENVIRONMENTAL PROTECTION

- Recycle the disposed front shock absorber assembly according to the local environmental regulations.

Front Control Arm Assembly

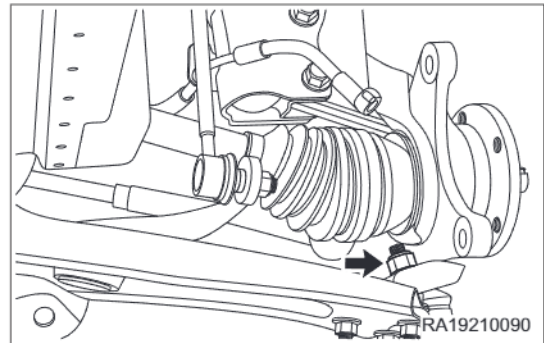
Removal

CAUTION

- Be sure to wear the necessary safety equipment to prevent accidents.
- Make sure that the safety lock of lifter has been locked when removing and installing the chassis parts.
- It is not permitted to weld or modify the suspension bearing parts and guide parts.
- When removing and installing the chassis parts, replace the self-locking nuts and rusted nuts for safety.

HINT:

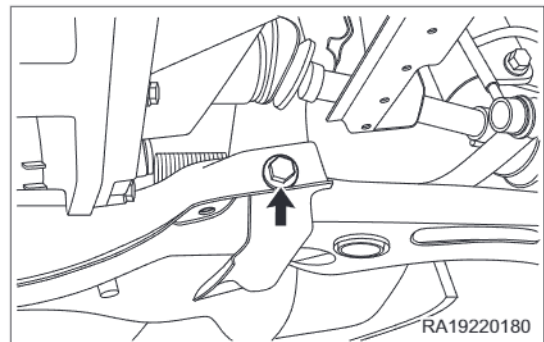
- Use the same procedures for the right side and left side.
 - The procedures listed below are for the left side.
1. Remove the front left wheel ([See page 23-10](#)).
 2. Remove the front left control arm assembly.
 - a. Remove the coupling nut (arrow) between front left control arm ball pin assembly and front left steering knuckle.
(Tightening torque: $120 \pm 10 \text{ N}\cdot\text{m}$)



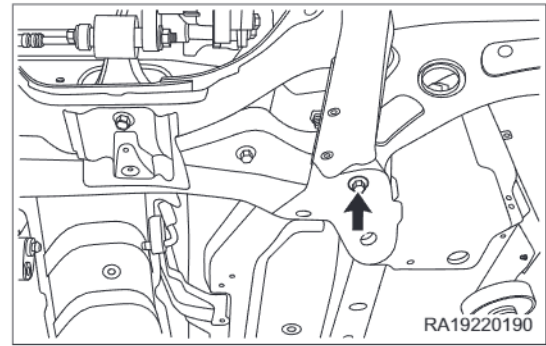
CAUTION

- If it is difficult to remove the control arm ball pin end from the steering knuckle, disengage the ball pin by uniformly striking the end of steering knuckle slightly with a hammer or equivalent.

- b. Remove the coupling bolt (arrow) between front part of front left control arm assembly and front sub frame welding assembly.
(Tightening torque: $180 \pm 10 \text{ N}\cdot\text{m}$)



- c. Remove the coupling bolt (arrow) between rear part of front left control arm assembly and front sub frame welding assembly.
(Tightening torque: 180 ± 15 N·m)



- d. Remove the front left control arm assembly with ball pin.

Installation

Installation is in the reverse order of removal.

CAUTION

- Always tighten the coupling bolts and nuts to the specified torque.
- Make sure that the ball pin rotates smoothly and is not stuck after installation.
- Check the wheel alignment after installation. Adjust the wheel alignment to standard range as necessary.

Front Control Arm Ball Pin Assembly

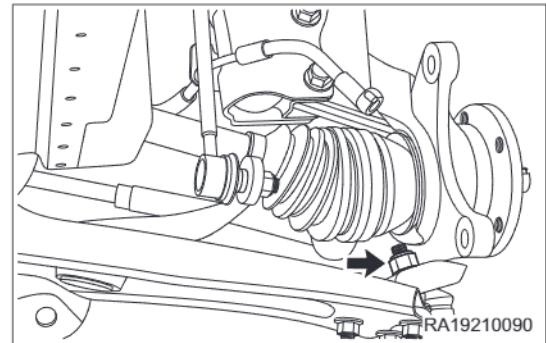
Removal

CAUTION

- Be sure to wear the necessary safety equipment to prevent accidents.
- Make sure that the safety lock of lifter has been locked when removing and installing the chassis parts.
- It is not permitted to weld or modify the suspension bearing parts and guide parts.
- When removing and installing the chassis parts, replace the self-locking nuts and rusted nuts for safety.

HINT:

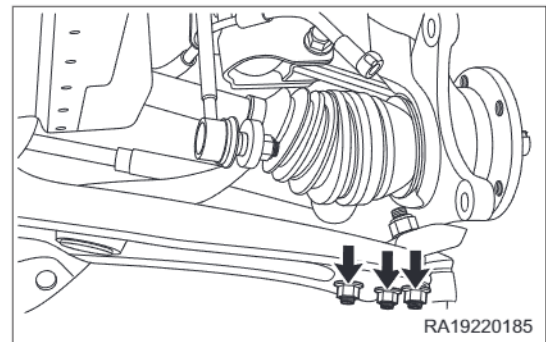
- Use the same procedures for the right side and left side.
 - The procedures listed below are for the left side.
1. Remove the front left wheel ([See page 23-10](#)).
 2. Remove the front left control arm ball pin assembly.
 - a. Remove the coupling nut (arrow) between front left control arm ball pin assembly and front left steering knuckle.
(Tightening torque: $120 \pm 10 \text{ N}\cdot\text{m}$)



CAUTION

- If it is difficult to remove the control arm ball pin end from the steering knuckle, disengage the ball pin by uniformly striking the end of steering knuckle slightly with a hammer or equivalent.

- b. Remove the coupling bolts and nuts (arrow) between front left control arm ball pin assembly and front left control arm assembly.
(Tightening torque: $50 \pm 5 \text{ N}\cdot\text{m}$)



- c. Remove the front left control arm ball pin assembly.

Inspection

1. Check the control arm ball pin assembly.
 - a. Check the control arm ball pin assembly bushes for wear, cracks, deformation, damage or grease leakage. Replace it as necessary.
 - b. Check if the control arm ball pin assembly rotates smoothly. Replace it as necessary.

Installation

Installation is in the reverse order of removal.

CAUTION

- Always tighten the coupling bolts and nuts to the specified torque.
- Make sure that the ball pin rotates smoothly and is not stuck after installation.
- Check the wheel alignment after installation. Adjust the wheel alignment to standard range as necessary.

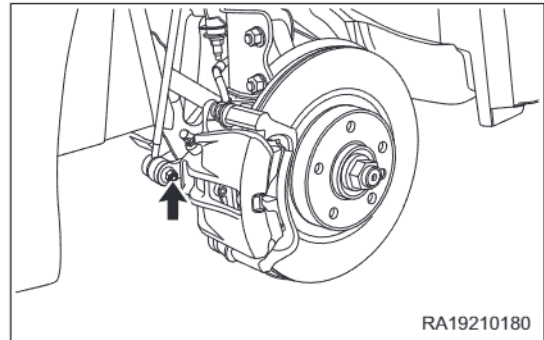
Front Stabilizer Bar Assembly

Removal

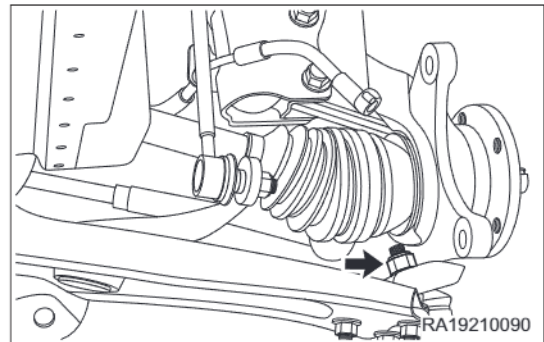
CAUTION

- Be sure to wear the necessary safety equipment to prevent accidents.
- Make sure that the safety lock of lifter has been locked when removing and installing the chassis parts.
- It is not permitted to weld or modify the suspension bearing parts.
- When removing and installing the chassis parts, replace the self-locking nuts and rusted nuts for safety.
- When lowering the front sub frame welding assembly, it needs to support the engine and transmission assembly securely with the engine equalizer to avoid damage.

1. Remove the front wheel ([See page 23-10](#)).
2. Remove the main catalytic converter assembly ([See page 11-11](#)).
3. Remove the front stabilizer bar assembly.
 - a. Support the engine and transmission assembly securely with the engine equalizer.
 - b. Hold the lower end of front left link assembly with an inner hexagon wrench, remove the coupling nut (arrow) between front left stabilizer bar and front left link assembly with a fixing wrench and disengage the front left link assembly. Use the same removal procedure for the right side.
(Tightening torque: $50 \pm 5 \text{ N}\cdot\text{m}$)



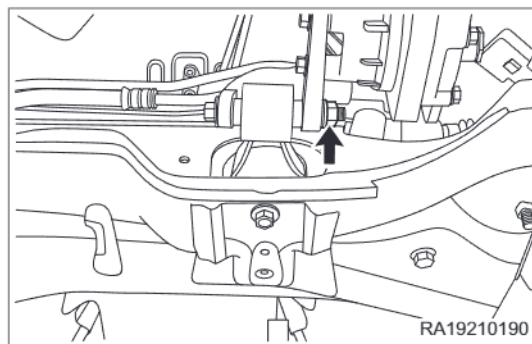
- c. Remove the coupling nut (arrow) between front left control arm ball pin assembly and front left steering knuckle. Use the same removal procedure for the right side.
(Tightening torque: $120 \pm 10 \text{ N}\cdot\text{m}$)



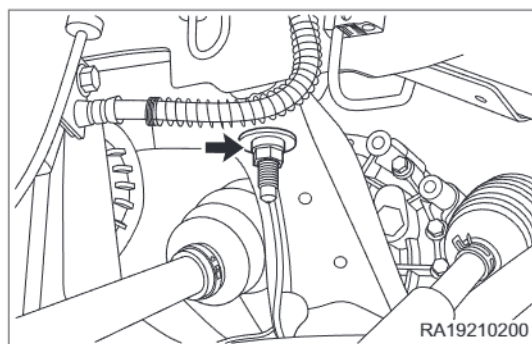
CAUTION

- If it is difficult to remove the control arm ball pin end from the steering knuckle, disengage the ball pin by uniformly striking the end of steering knuckle slightly with a hammer or equivalent.

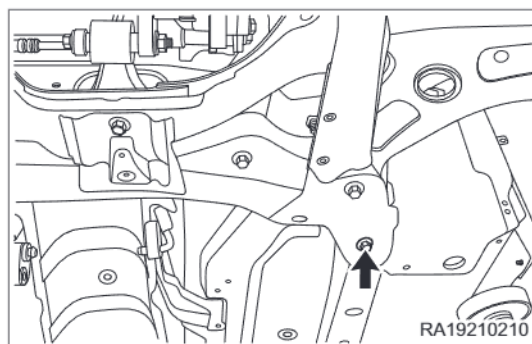
- d. Remove the coupling bolt and nut (arrow) between rear mounting cushion and rear mounting bracket.
(Tightening torque: $85 \pm 8.5 \text{ N}\cdot\text{m}$)



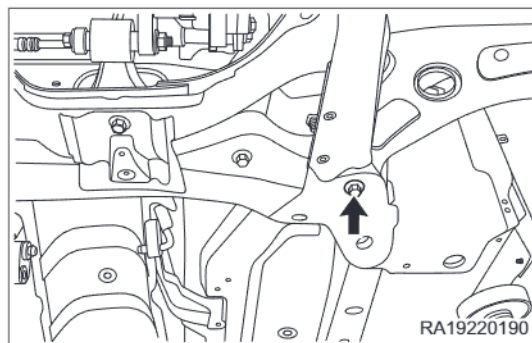
- e. Remove the coupling nut and washer (arrow) between front left part of front sub frame welding assembly and body. Use the same removal procedure for the right side.
(Tightening torque: $120 \pm 10 \text{ N}\cdot\text{m}$)



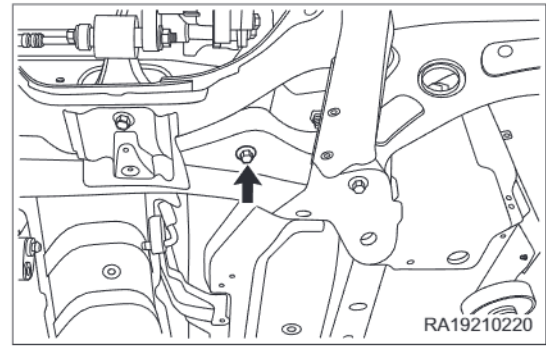
- f. Remove the coupling bolt (arrow) between rear left part of front sub frame welding assembly and body. Use the same removal procedure for the right side.
(Tightening torque: $120 \pm 10 \text{ N}\cdot\text{m}$)



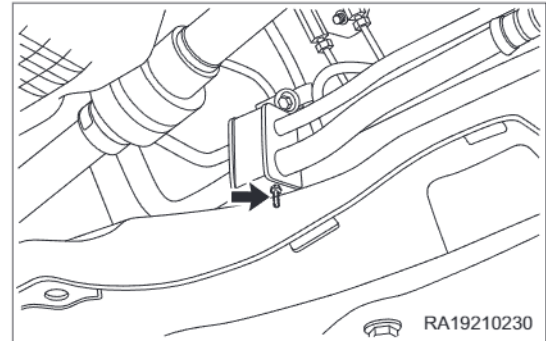
- g. Remove the coupling bolt (arrow) between rear part of front left control arm assembly and front sub frame welding assembly. Use the same removal procedure for the right side.
(Tightening torque: $180 \pm 15 \text{ N}\cdot\text{m}$)



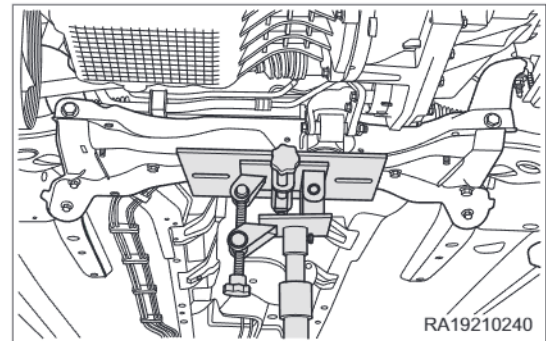
- h. Remove the coupling bolt (arrow) between the left side of front sub frame welding assembly and steering mechanism. Use the same removal procedure for the right side.
(Tightening torque: $100 \pm 10 \text{ N}\cdot\text{m}$)



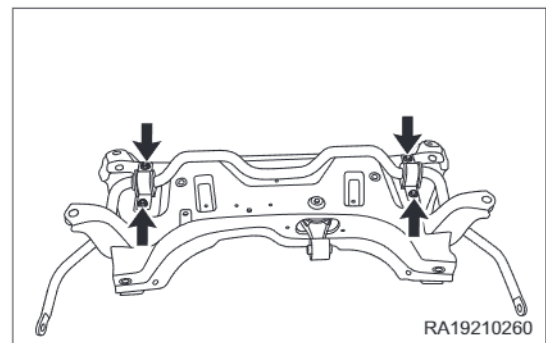
- i. Remove the coupling bolt (arrow) between front sub frame welding assembly and steering mechanism high pressure fluid return pipe assembly.
(Tightening torque: $7 \pm 1.5 \text{ N}\cdot\text{m}$)



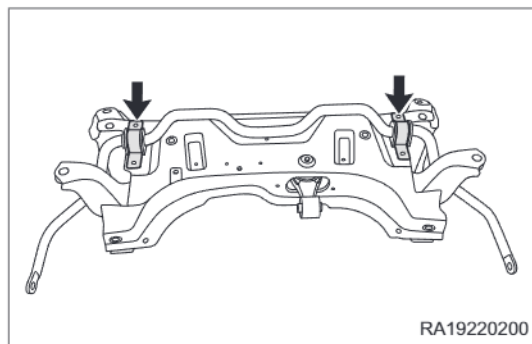
- j. Support the front sub frame welding assembly with front stabilizer bar assembly with a transmission carrier, and lower it carefully.



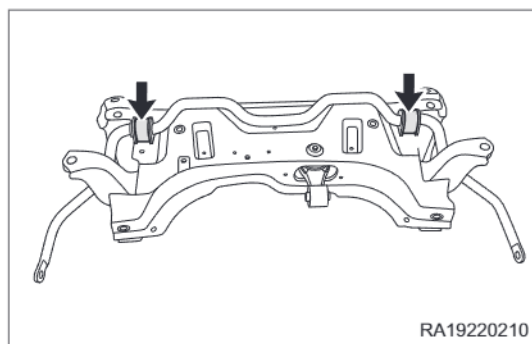
- k. Remove the coupling bolts (arrow) between front stabilizer bar assembly and front sub frame welding assembly, and separate them.
(Tightening torque: $50 \pm 5 \text{ N}\cdot\text{m}$)



- I. Detach the left and right fixing clamps (arrow) from the front stabilizer bar assembly.



- m. Detach the left and right rubber bushes (arrow) from the front stabilizer bar assembly.



Inspection

1. Check the front stabilizer bar assembly.
 - a. Check the front stabilizer bar assembly fixing clamps for wear, cracks, deformation or damage. Replace them as necessary.
 - b. Check the front stabilizer bar assembly rubber bushes for dirt, wear, cracks, deformation or damage. Replace them as necessary.

Installation

Installation is in the reverse order of removal.

CAUTION

- Always tighten the coupling bolts and nuts to the specified torque.
- Check the wheel alignment after installation. Adjust the wheel alignment to standard range as necessary.

Front Stabilizer Link Assembly

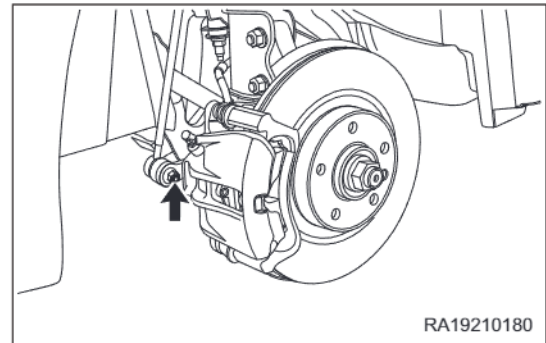
Removal

CAUTION

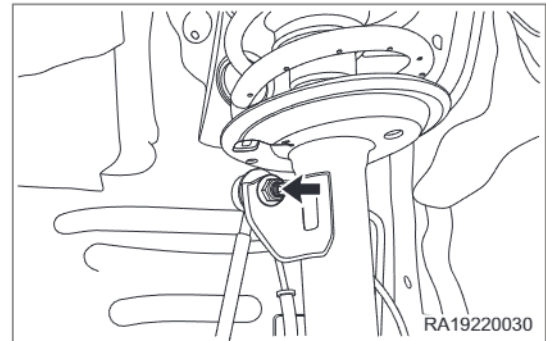
- Be sure to wear the necessary safety equipment to prevent accidents.
- Make sure that the safety lock of lifter has been locked when removing and installing the chassis parts.
- It is not permitted to weld or modify the suspension bearing parts.
- When removing and installing the chassis parts, replace the self-locking nuts and rusted nuts for safety.

HINT:

- Use the same procedures for the right side and left side.
 - The procedures listed below are for the left side.
1. Remove the front left wheel (See page 23-10).
 2. Remove the front left stabilizer link assembly.
 - a. Hold the lower end of front left stabilizer link assembly with an inner hexagon wrench, and remove the coupling nut (arrow) between front left stabilizer bar assembly and front left stabilizer link assembly with a fixing wrench.
(Tightening torque: $50 \pm 5 \text{ N}\cdot\text{m}$)



- b. Hold the upper end of front left stabilizer link assembly with an inner hexagon wrench, and remove the coupling nut (arrow) between front left stabilizer link assembly and front left shock absorber assembly with a fixing wrench.
(Tightening torque: $50 \pm 5 \text{ N}\cdot\text{m}$)



- c. Remove the front left stabilizer link assembly.

Inspection

1. Check the front stabilizer link assembly.
 - a. Check the front stabilizer link assembly bushes for wear, cracks, deformation, damage or grease leakage. Replace them as necessary.
 - b. Check if the end of front stabilizer link assembly rotates smoothly. Replace it as necessary.

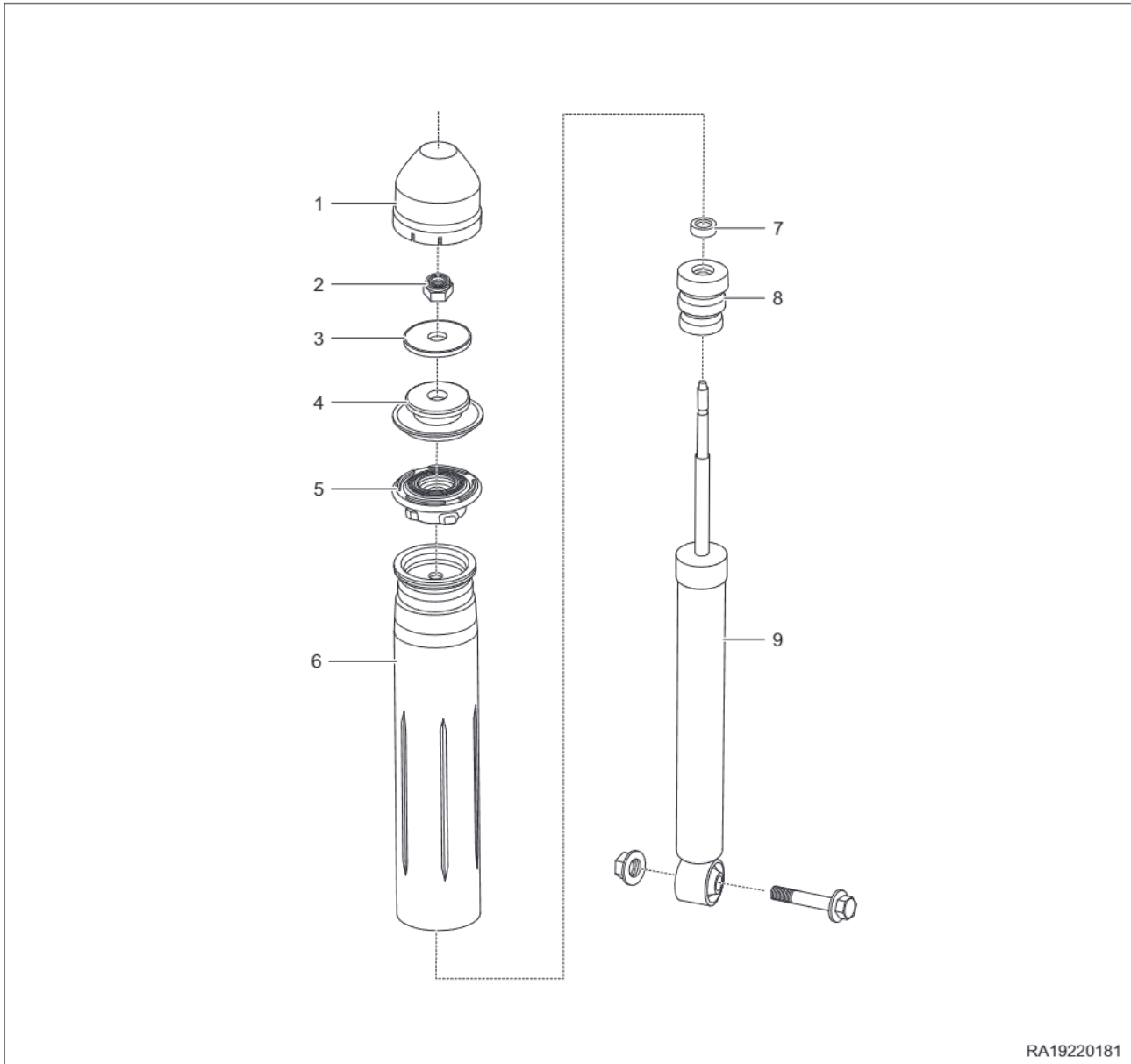
Installation

Installation is in the reverse order of removal.

CAUTION

- Always tighten the coupling nuts to the specified torque.
- Make sure that the front stabilizer link assembly rotates smoothly and is not stuck after installation.

Rear Shock Absorber Assembly



1 - Rear Shock Absorber Assembly Cover Cap	2 - Rear Shock Absorber Assembly Fixing Nut
3 - Circular Shim	4 - Rear Insulator Upper Body
5 - Rear Insulator Lower Body	6 - Rear Dust Boot
7 - Set Ring	8 - Rear Buffer Block
9 - Rear Shock Absorber Assembly	

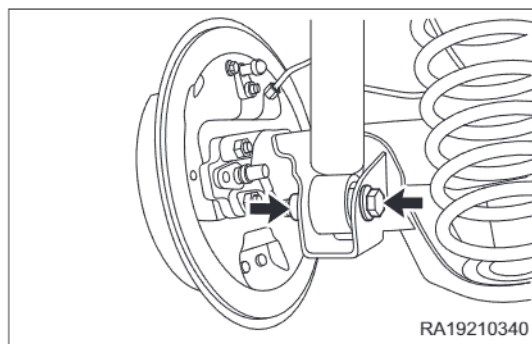
Removal

CAUTION

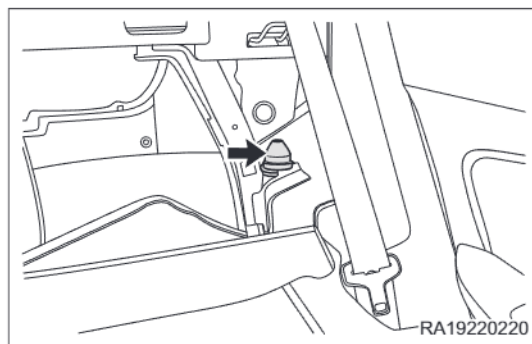
- Be sure to wear the necessary safety equipment to prevent accidents.
- Make sure that the safety lock of lifter has been locked when removing and installing the chassis parts.
- It is not permitted to weld or modify the suspension bearing parts.
- When removing and installing the chassis parts, replace the self-locking nuts and rusted nuts for safety.

HINT:

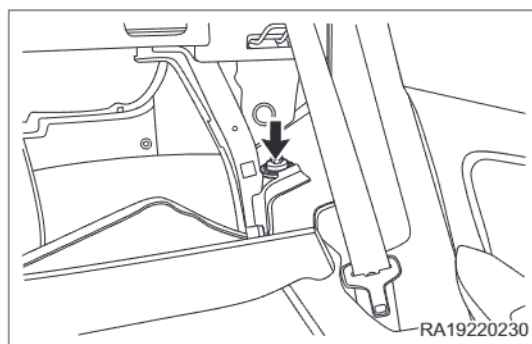
- Use the same procedures for the right side and left side.
 - The procedures listed below are for the left side.
1. Remove the rear left shock absorber assembly.
 - a. Support the rear shaft assembly with a wooden block and a transmission carrier securely to avoid damage.
 - b. Remove the coupling bolt and nut (arrow) between rear left shock absorber assembly and rear shaft assembly.
(Tightening torque: $110 \pm 10 \text{ N}\cdot\text{m}$)



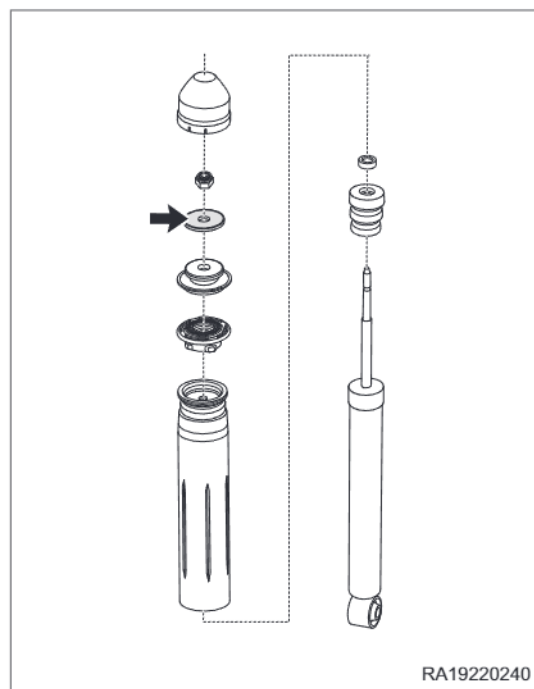
- c. Fold back the rear left seat, remove the rear seat left trim cover assembly, and then take out the rear left shock absorber assembly cover cap (arrow).



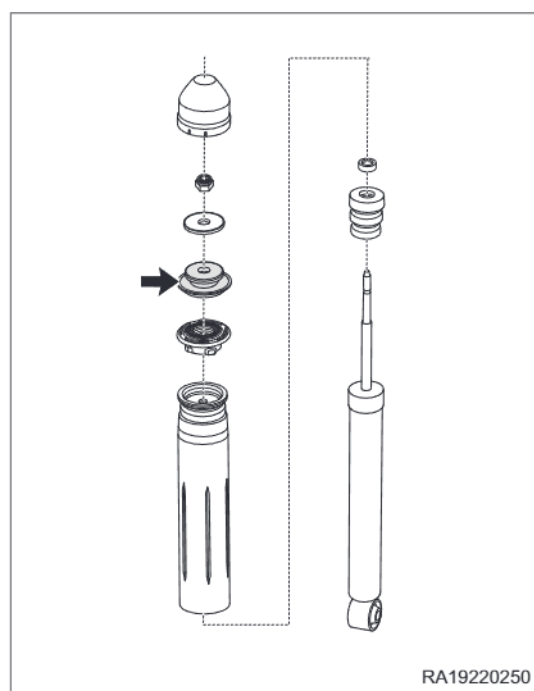
- d. Remove the coupling nut (arrow) between upper part of rear left shock absorber assembly and body.
(Tightening torque: $20 \pm 3 \text{ N}\cdot\text{m}$)



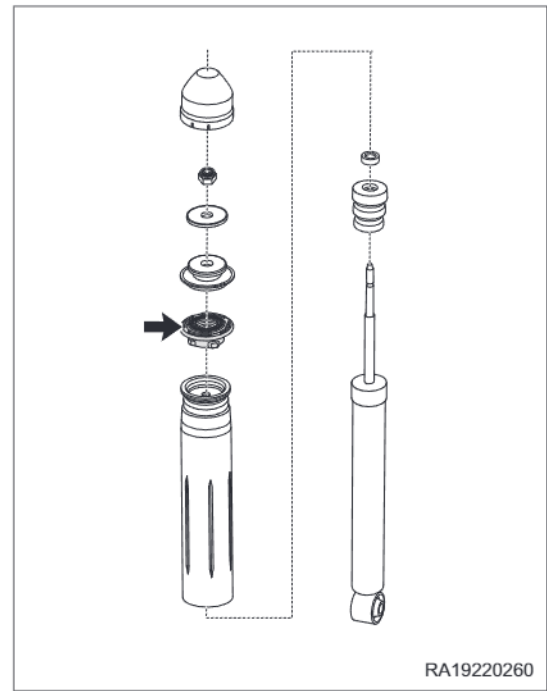
- e. Remove the circular shim (arrow) from the upper part of rear left shock absorber assembly.



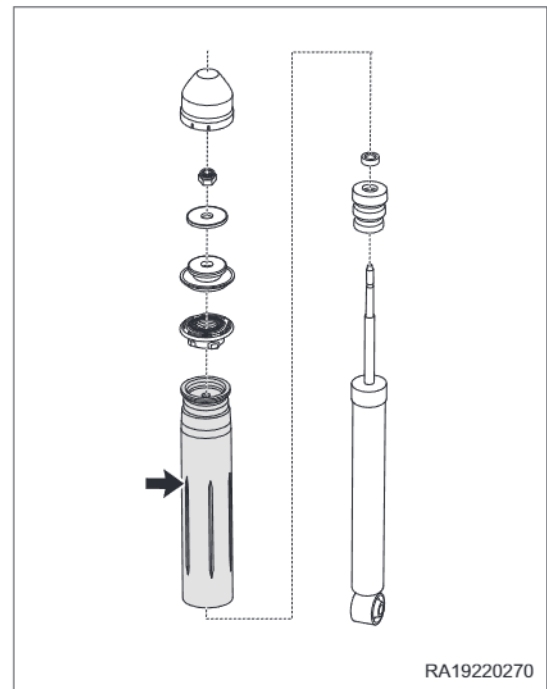
- f. Remove the rear insulator upper body (arrow) from the rear left shock absorber assembly.



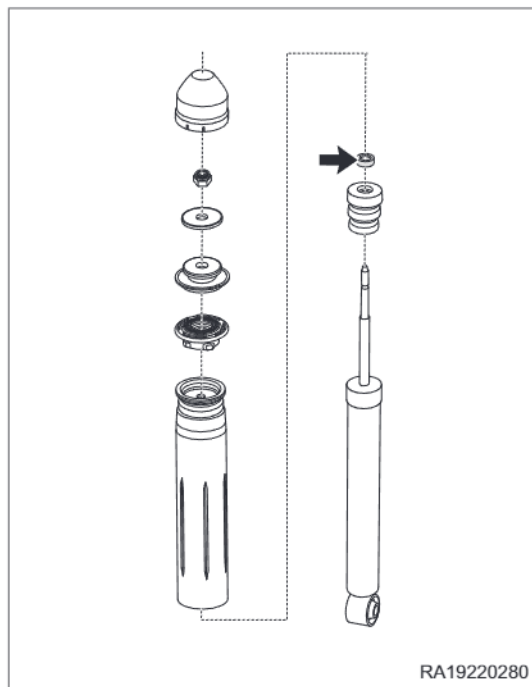
- g. Remove the rear insulator lower body (arrow) from the rear left shock absorber assembly.



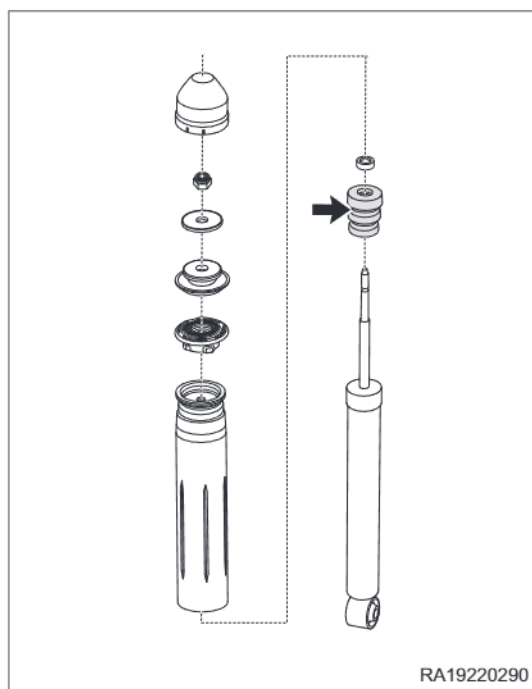
- h. Remove the rear dust boot (arrow) from the rear left shock absorber assembly.



- i. Remove the set ring (arrow) from the rear left shock absorber assembly.



- j. Remove the rear buffer block (arrow) from the rear left shock absorber assembly.

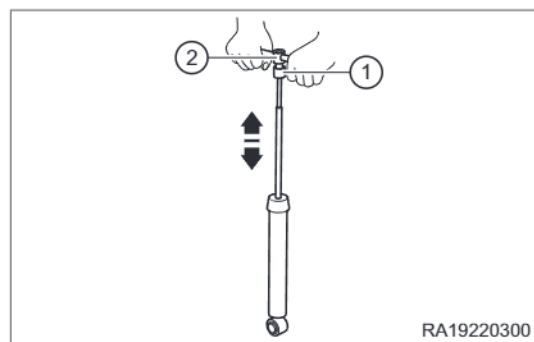


Inspection

1. Check the rear shock absorber assembly.

Manual inspection:

- Install the nut (1) to the upper end of rear shock absorber assembly strut, and then install the T-wrench (2) or equivalent.
- Compress and extend the rear shock absorber assembly strut several times by hands in the direction of arrow as shown in the illustration. Check that there is no abnormal resistance or unusual sound during operation. If there is any abnormality, replace the rear shock absorber assembly with a new one.



2. Check the other components of rear shock absorber assembly.

- Check the rear shock absorber assembly cover cap, rear insulator upper body, rear insulator lower body, rear dust boot and rear buffer block for cracks, wear or deformation. Replace them as necessary.
- Check the circular shim or set ring for damage. Replace them as necessary.

Installation

Installation is in the reverse order of removal.

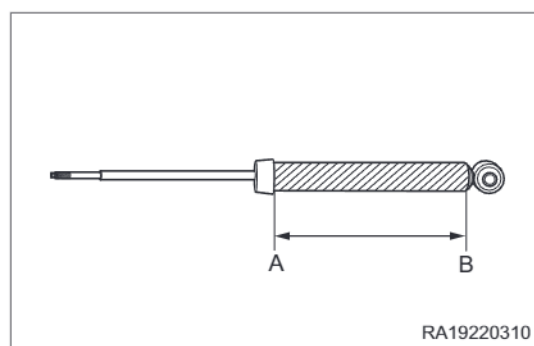
CAUTION

- Always tighten the coupling bolts and nuts to the specified torque.
- Make sure to align the set ring with the groove on the upper part of rear buffer block during installation.
- Bounce the vehicle up and down several times to stabilize the rear suspension after installation.

Disposal

1. Disposal of the rear shock absorber assembly.

- Extend the rear shock absorber assembly strut fully.
- Using a drill, make a hole between A and B in the strut as shown in the illustration to discharge the gas inside the rear shock absorber assembly.



CAUTION

- Be careful when drilling, because iron chips may fly out. Always perform the operations with the proper safety equipment to avoid personal injury.
- The gas is colorless, odorless and nonpoisonous.

- c. After discharging the gas inside the rear shock absorber assembly, handle the rear shock absorber assembly properly.

**ENVIRONMENTAL PROTECTION**

- Recycle the disposed rear shock absorber assembly according to the local environmental regulations.

Rear Coil Spring

Removal

CAUTION

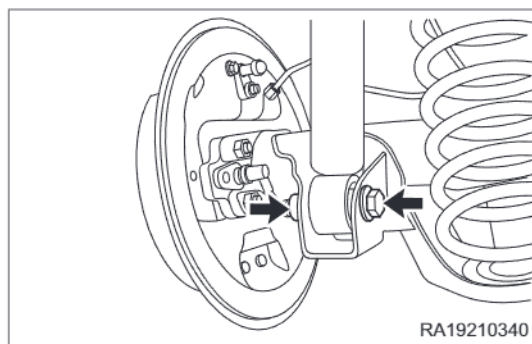
- Be sure to wear the necessary safety equipment to prevent accidents.
- Make sure that the safety lock of lifter has been locked when removing and installing the chassis parts.
- It is not permitted to weld or modify the suspension bearing parts.
- When removing and installing the chassis parts, replace the self-locking nuts and rusted nuts for safety.

HINT:

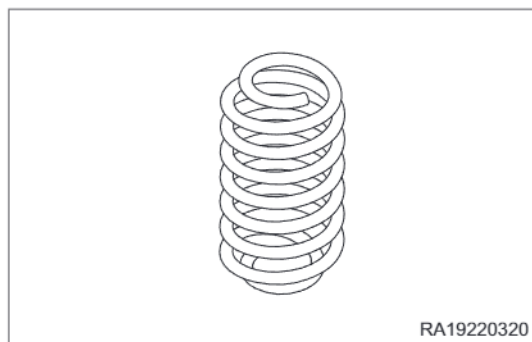
- Use the same procedures for the right side and left side.
- The procedures listed below are for the left side.

1. Remove the rear left coil spring.

- Support the rear shaft assembly with a wooden block and a transmission carrier to avoid damage.
- Remove the coupling bolt and nut (arrow) between rear left shock absorber assembly and rear shaft assembly.
(Tightening torque: $110 \pm 10 \text{ N}\cdot\text{m}$)



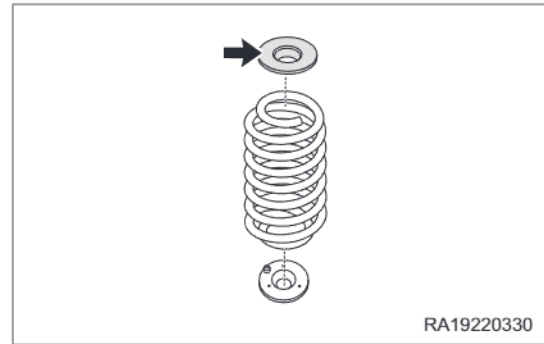
- Lower the transmission carrier slowly to the appropriate height and take off the rear coil spring carefully.



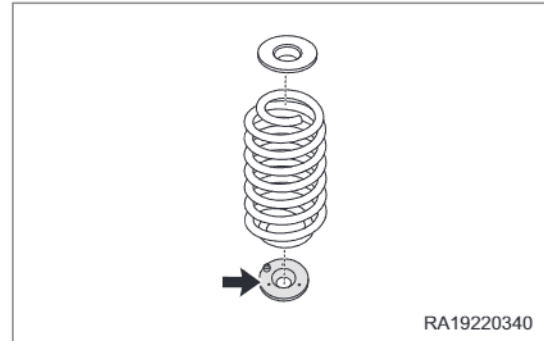
CAUTION

- If it is difficult to remove the rear coil spring, have an assistant to press the rear shaft assembly, and the other remove the rear coil spring.

- d. Detach the rear coil spring upper cushion (arrow) from the body.



- e. Detach the rear coil spring lower cushion (arrow) from the left side of rear shaft assembly, and remove it.



Inspection

1. Check the rear coil spring assembly.
 - a. Check the rear coil spring for wear, cracks and permanent deformation due to excessive use. Replace it as necessary.
 - b. Check the rear coil spring upper cushion and lower cushion for dirty, wear, cracks, deformation or damage. Replace them as necessary.

Installation

Installation is in the reverse order of removal.

CAUTION

- Always tighten the coupling bolts and nuts to the specified torque.
- Always align the protrusion of rear coil spring lower cushion with the positioning hole of rear shaft assembly during installation.
- After installation, lower the vehicle and bounce the vehicle up and down several times to stabilize the rear suspension.

WHEEL ALIGNMENT

Description

CAUTION

- Be sure to perform the wheel alignment procedure according to the operating instructions of four-wheel alignment device.
- Periodic maintenance and service for four-wheel alignment device should be performed.

In general, the wheel alignment has the following 6 parameters:

1. Front wheel camber
2. Front wheel toe-in
3. Kingpin caster
4. Kingpin inclination
5. Rear wheel camber
6. Rear wheel toe-in

If the following components have been removed, installed or replaced, check and perform the wheel alignment procedures:

- Front control arm assembly
- Front steering knuckle
- Front shock absorber assembly
- Steering gear and steering tie rod
- Drive shaft
- Front sub frame welding assembly

Specifications

Specifications (parameters standard for four-wheel alignment)

Item		Specified Value
Front Wheel	Front Wheel Camber	5' ± 45'
	Front Wheel Toe-in	9' ± 12'
	Kingpin Inclination	10°48' ± 30'
	Kingpin Caster	4°26' ± 45'
Rear Wheel	Rear Wheel Camber	-1°15' ± 20'
	Rear Wheel Toe-in	7' ± 20'
Sideways Sliding		≤ 3m/km

Problem Symptoms Table

HINT:

Use the table below to help determine the cause of problem symptoms. Check each suspected area in sequence. Repair or replace the faulty components, or adjust them as necessary.

Symptom	Suspected Area	See page
Vehicle pulls	Front wheel alignment (incorrect)	22-40
	Rear wheel alignment (incorrect)	22-40
Wheel shimmy	Front wheel alignment (incorrect)	22-40
	Rear wheel alignment (incorrect)	22-40
Abnormal tire wear	Tire (worn or improperly inflated)	23-8
	Front wheel alignment (incorrect)	22-40
	Rear wheel alignment (incorrect)	22-40

Inspection before Wheel Alignment

- Vehicle is in unloaded state.
- Use a lifter to support and raise the vehicle to the proper height.
- Check the hub bearing for excessive clearance, and replace the hub bearing as necessary.
- Check the suspension components, power steering tie rod and ball pin for wear, deformation or damage. Replace the malfunctioning part as necessary.
- Check if the shock absorber assembly operates normally.
- Check if the tire pressure is within the specified range and adjust it to specified pressure as necessary.

Standard Inflation Pressure of Cold Tire (kPa)

Item	Front Wheel	Rear Wheel	Spare Tire
Tire (Unloaded)	230	220	250

- Check the rim and tire.
 - Visually check the rim and tire for scratches, wear or damage.
 - Perform the wheel dynamic balance procedures ([See page 23-12](#)).

Front Wheel Camber

Incorrect front wheel camber will cause abnormal tire wear. Check and adjust the front wheel camber as necessary.

In normal conditions, it is not necessary to adjust the camber after assembling the independent suspension and the wheel steering knuckle. It can be adjusted through the coupling bolt between independent suspension and steering knuckle if the camber is not within the tolerance due to other reasons.

Specified Value for Front Wheel Camber

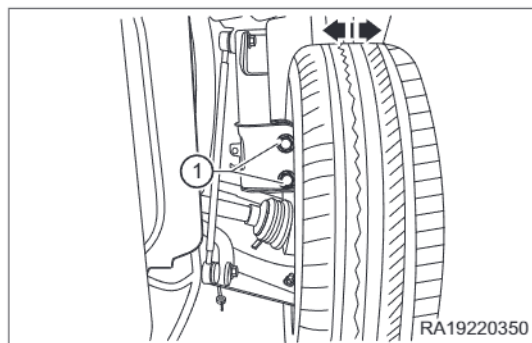
Item	Specified Value
Front Wheel Camber	$5' \pm 45'$

Inspection

1. Check (visually) the driving system components for deformation and damage before adjustment. Replace any deformed or damaged component as necessary.
2. Install the wheel alignment device onto the front wheel, and perform the inspection procedures according to the operating instructions for wheel alignment device.

Adjustment

1. If the front wheel camber is not within the tolerance of the specified value, loosen the coupling bolts (1) between front shock absorber assembly and front steering knuckle, and move the wheel to adjust.



2. Tighten the coupling bolts to the specified torque after adjusting the front wheel camber.
(Tightening torque: $110 \pm 10 \text{ N}\cdot\text{m}$)

Front Wheel Toe-in

Incorrect front wheel toe-in will cause wheel pull and abnormal tire wear. Check and adjust the front wheel toe-in as necessary.

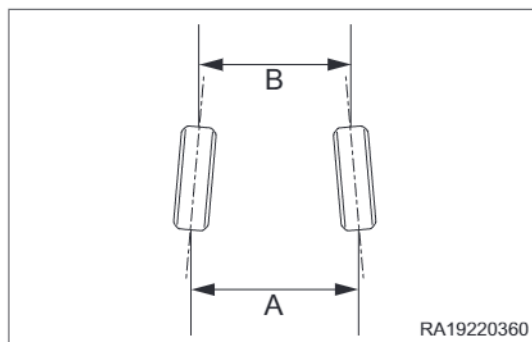
Adjust the length of steering tie rod to the specified value if the front wheel toe-in is not within the tolerance due to other reasons.

Specified Value for Front Wheel Toe-in

Item	Specified Value
Front Wheel Toe-in	$9' \pm 12'$

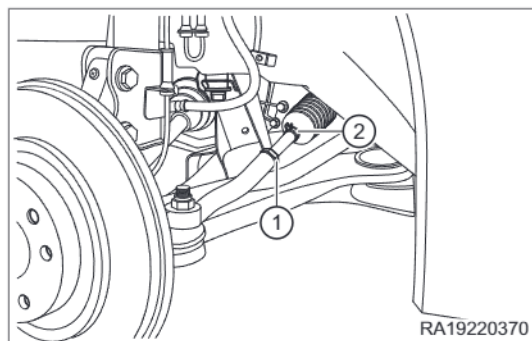
Inspection

1. Perform the inspection with the four-wheel alignment device (perform the inspection procedures referring to the operating instructions for four-wheel alignment device).
2. Manual inspection:
 - a. Park the vehicle on level ground, check if the front tire pressure is within the specified range and adjust it to specified value as necessary.
 - b. Place marks on the center position in front of the front wheels, and measure the distance A between marks with a tape measure.
 - c. Push the vehicle to rotate the wheels 180°, and measure the distance B between marks with the tape measure when the marks are turned to the rear of wheels.
 - d. Calculation method: front wheel toe-in = $A - B \leq 1 \text{ mm}$



Adjustment

1. Make adjusting preparation for wheel alignment according to the requirement of tester.
2. Loosen the steering tie rod locking nut (1) and the elastic jacket snap ring (2), and turn the tie rod to adjust the length according to the requirement until the front wheel toe-in reaches the specified value.



3. Tighten the steering tie rod locking nut and reinstall the elastic jacket snap ring. Check if the locking nut is tightened in place and if the jacket position is correct.
(Tightening torque: $47 \pm 3 \text{ N} \cdot \text{m}$)

CAUTION

- If the elasticity of elastic jacket snap ring is not enough, replace it.

4. After adjusting the front wheel toe-in, check the steering wheel for eccentricity. If necessary, loosen the steering wheel locking nut and adjust the steering wheel to the horizontal position, and then tighten the steering wheel locking nut to the specified torque.
(Tightening torque: $35 \pm 3 \text{ N}\cdot\text{m}$)

Kingpin Caster & Kingpin Inclination

1. The kingpin caster and kingpin inclination can only be checked by using the four-wheel alignment device.
2. The kingpin caster and kingpin inclination are assured by the design structure and cannot be adjusted. If the measured value is not within the specified range, check if the other components that connect to the steering knuckle are deformed or damaged. Also, check if the connected part of steering knuckle is deformed or damaged. If it is, replace the corresponding components.

Item	Specified Value
Kingpin Caster	$4^{\circ}26' \pm 45'$
Kingpin Inclination	$10^{\circ}48' \pm 30'$

Rear Wheel Camber & Rear Wheel Toe-in

The rear wheel camber and rear wheel toe-in are assured by the design structure and cannot be adjusted. If the measured value is not within the specified range, check if the rear suspension components are deformed or damaged. Replace them as necessary. If the rear shaft assembly is deformed due to a strong shock and the rear wheel alignment parameters are changed or exceed the specified range, replace the rear shaft assembly.

Item		Specified Value
Rear Wheel	Rear Wheel Camber	$-1^{\circ}15' \pm 20'$
	Rear Wheel Toe-in	$7' \pm 20'$

