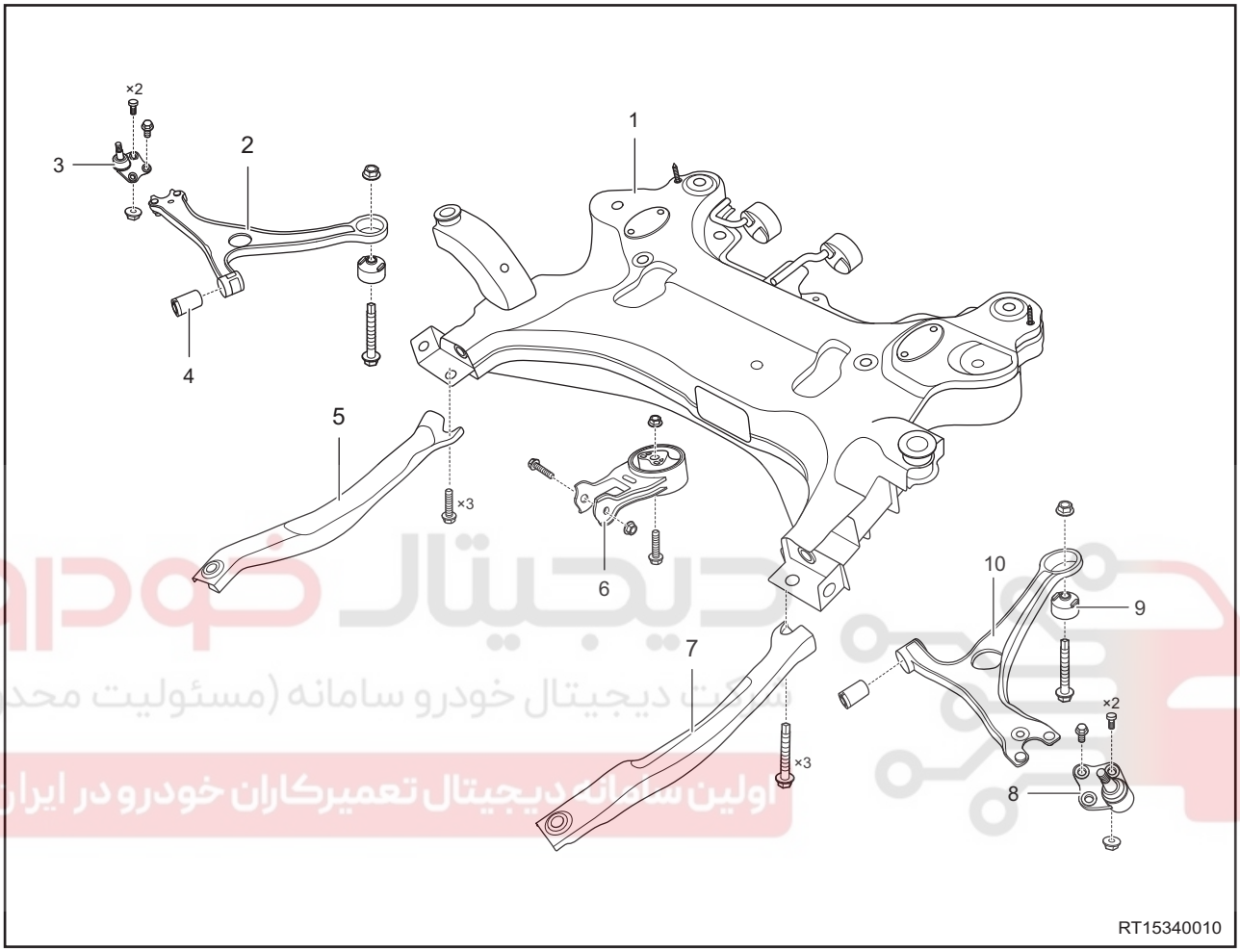
AXLE

GENERAL INFORMATION

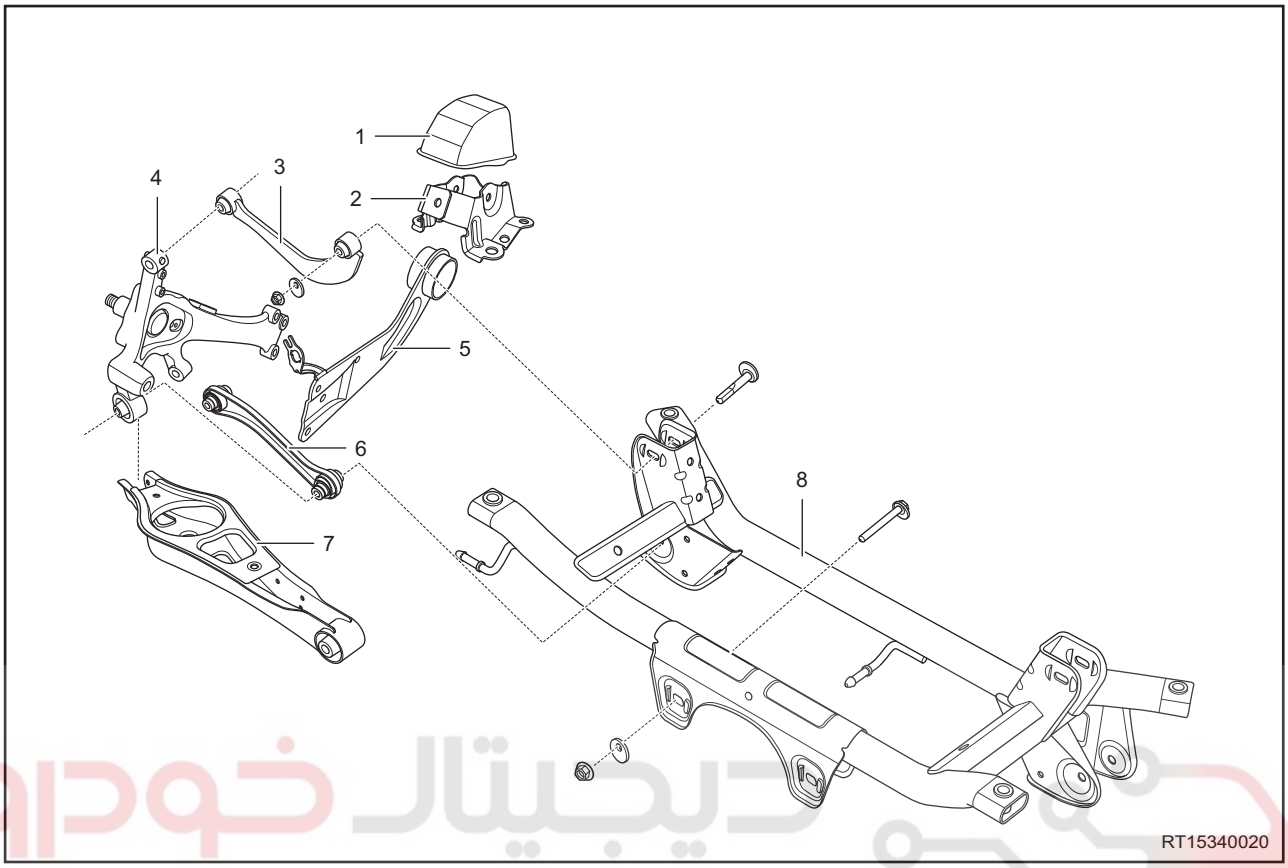
Description

Front Axle



1 - Front Sub Frame Assembly	2 - Front Right Control Arm Assembly
3 - Front Right Control Arm Ball Pin Assembly	4 - Front Rubber Bushing Assembly
5 - Right Side Rail Welding Assembly	6 - Rear Mounting Lower Body
7 - Left Side Rail Welding Assembly	8 - Front Left Control Arm Ball Pin Assembly
9 - Front Left Control Arm Rear Rubber Bushing Assembly	10 - Front Left Control Arm Assembly

Rear Axle



1 - Dust Boot	2 - Left Trailing Arm Upper Fixing Bracket
3 - Rear Left Upper Control Arm Assembly	4 - Rear Left Steering Knuckle
5 - Left Trailing Arm	6 - Rear Connecting Rod Assembly
7 - Rear Left Lower Control Arm Assembly	8 - Rear Sub Frame Welding Assembly

Axles are connected to the integral body through suspensions, and wheels are installed at both ends. Its function is to transmit force in all directions between integral body and wheels.

Specifications

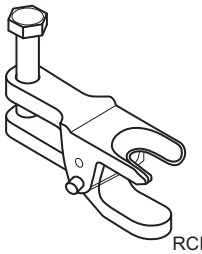
Torque Specifications

Description	Torque (N·m)
Front Drive Shaft Assembly Locking Nut	270 ± 20
Self-locking Nut Between Steering Tie Rod Assembly Ball Pin and Front Steering Knuckle Assembly	45 ± 5
Coupling Nut Between Front Control Arm Assembly Ball Pin and Front Steering Knuckle Assembly	120 ± 12
Coupling Bolt Between Control Arm and Control Arm Ball Pin	150 ± 10
Coupling Bolt Between Front Shock Absorber Assembly and Front Steering Knuckle Assembly	240 ± 24
Locking Nut Between Front Shock Absorber Assembly and Front Steering Knuckle Assembly	240 ± 24
Coupling Bolt Between Front Stabilizer Bar Assembly and Front Sub Frame Welding Assembly	25 ± 3
Coupling Bolt Between Front Sub Frame Bracket Rear End and Body	120 ± 12
Coupling Bolt Between Front Sub Frame Welding Assembly and Body	180 ± 18
Coupling Bolt Between Rear Lower Control Arm and Rear Steering Knuckle	110 ± 11
Coupling Bolt Between Rear Lower Control Arm and Rear Sub Frame	110 ± 11
Coupling Bolt Between Rear Upper Control Arm and Rear Steering Knuckle	160 ± 16
Coupling Nut Between Rear Upper Control Arm and Rear Sub Frame	110 ± 11
Coupling Nut Between Connecting Rod Assembly and Rear Sub Frame	110 ± 11
Coupling Bolt Between Connecting Rod Assembly and Rear Steering Knuckle	160 ± 16
Coupling Nut Between Rear Connecting Rod and Rear Steering Knuckle	60 ± 6
Rear Stabilizer Bar Fixing Bolt	25 ± 4
Coupling Bolt Between Rear Trailing Arm Assembly and Rear Steering Knuckle	110 ± 11
Coupling Bolt Between Rear Trailing Arm and Mounting Bracket	120 ± 12
Coupling Bolt Between Rear Trailing Arm Bracket and Body Side Rail	60 ± 6
Coupling Bolt Between Rear shock absorber and Body	60 ± 6

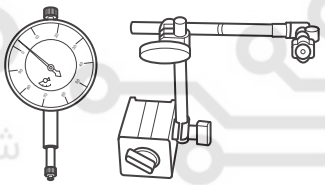
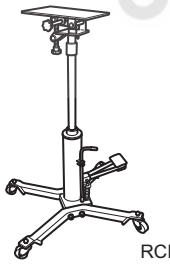
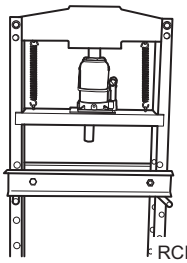
Description	Torque (N·m)
Coupling Bolt Between Rear Shock Absorber Assembly and Rear Steering Knuckle Assembly	160 ± 16
Coupling Bolt Between Rear Sub Frame and Body	120 ± 12

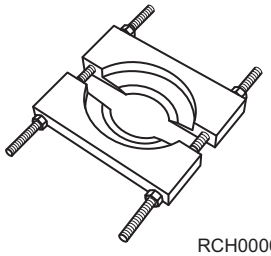
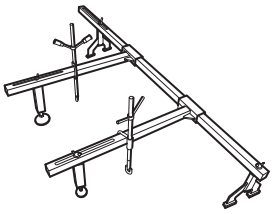
Tools

Special Tool

Ball Pin Separator	 RCH0000024

General Tools

Dial Indicator and Magnetic Holder	 RCH0000023
Transmission Carrier	 RCH0000005
Hydraulic Press	 RCH0000012

Bearing Remover	 RCH0000011
Engine Equalizer	 RCH0000026

DIAGNOSIS & TESTING

Problem Symptoms Table

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

Symptom	Suspected Area	See page
Pulls	Tire (worn or improperly inflated)	37-8
	Front wheel alignment (incorrect)	36-47
	Rear wheel alignment (incorrect)	36-47
	Front hub bearing (loose or worn)	35-14
	Rear hub bearing (loose or worn)	35-19
	Steering gear (misaligned or damaged)	42-22
	Suspension component (worn)	36-11
Front wheel shimmy	Tire (worn or improperly inflated)	37-8
	Wheel (imbalanced)	37-10
	Front shock absorber assembly (stuck or damaged)	36-11
	Front wheel alignment (incorrect)	36-47
	Control arm assembly ball pin (stuck or damaged)	36-47
	Front hub bearing (loose or worn)	35-14
	Steering gear (misaligned or damaged)	42-22
Rear wheel shimmy	Tire (worn or improperly inflated)	37-8
	Wheel (imbalanced)	37-10
	Rear shock absorber assembly (stuck or damaged)	36-28
	Rear hub bearing (loose or worn)	35-19
	Rear wheel alignment (incorrect)	36-47

ON-VEHICLE SERVICE

Front Steering Knuckle

Removal

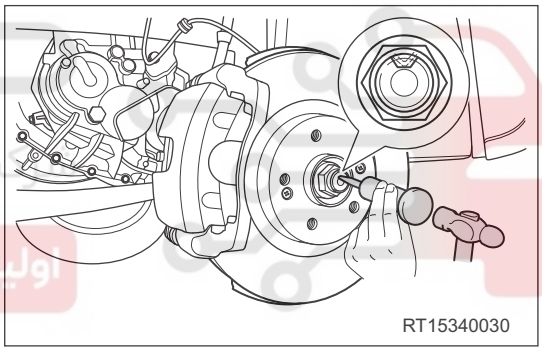
HINT:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

⚠ WARNING

- Be sure to wear necessary safety equipment to prevent accidents.
- Check if safety lock of lift is locked when repairing chassis parts.
- It is not permitted to weld or modify bearing parts of wheel suspension and guide parts of wheel.
- When removing chassis parts, replace self-locking nuts and rusted nuts for safety.

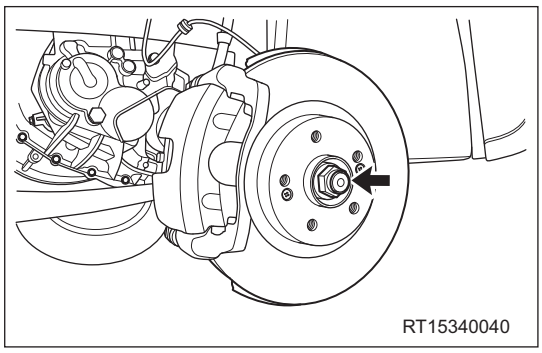
1. Remove the front left wheel (See page 37-7).
2. Remove the front drive shaft assembly locking nut.
   a. Using a nut punch and a hammer, loosen staked part of nut.


RT15340030

CAUTION

- Loosen staked part of nut completely, otherwise it will damage threads of drive shaft assembly.

   b. Remove front drive shaft assembly locking nut and washer (arrow) while applying brake securely.
   (Tightening torque: 270 ± 20 N·m)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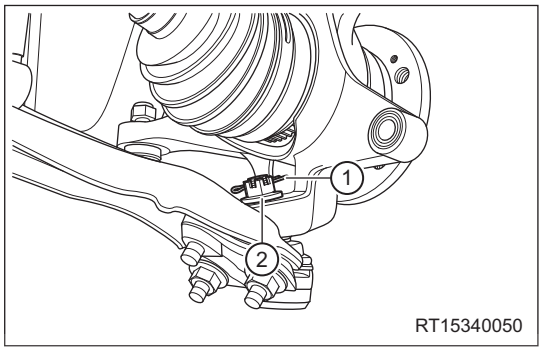
3. Remove the front left brake caliper assembly (See page 39-25).

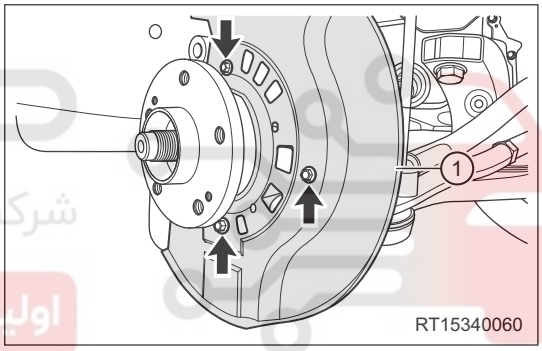
CAUTION

- Place front brake caliper assembly to a proper position after removal, and be careful not to extend front brake hose excessively.

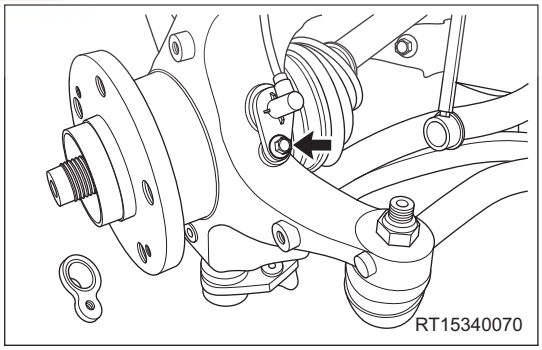
4. Remove the front left brake disc (See page 39-25).
5. Remove the front left steering knuckle assembly.
   a. Remove Locking pin (1) coupling nut (2) between front left control arm assembly ball pin and front left steering knuckle assembly.
      (Tightening torque: 120 ± 12 N·m)



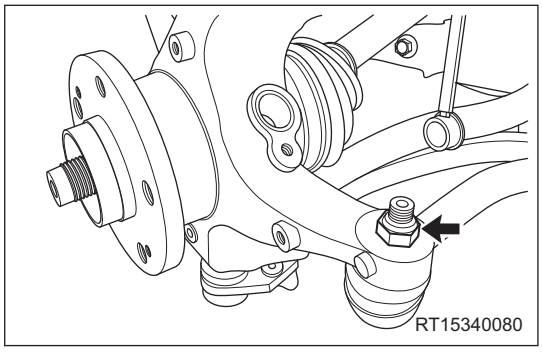
   b. Remove 3 fixing bolts (arrow) between front left dust guard and front left steering knuckle assembly, and remove front left dust guard (1).
      (Tightening torque: 9 - 11 N·m)



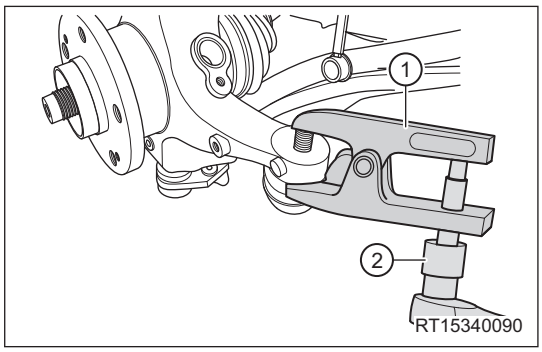
   c. Remove coupling bolt (arrow) between front left wheel speed sensor and front left steering knuckle assembly, and disengage front left wheel speed sensor carefully.
      (Tightening torque: 10 ± 1 N·m)



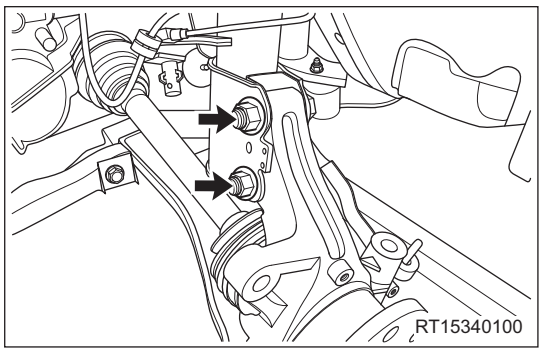
   d. Remove self-locking nut (arrow) between left steering tie rod assembly ball pin and front left steering knuckle assembly.
      (Tightening torque: 45 ± 5 N·m)



e. Install ball pin separator (1), and tighten ball pin separator bolt with a wrench (2) to separate steering tie rod ball pin from steering knuckle assembly.



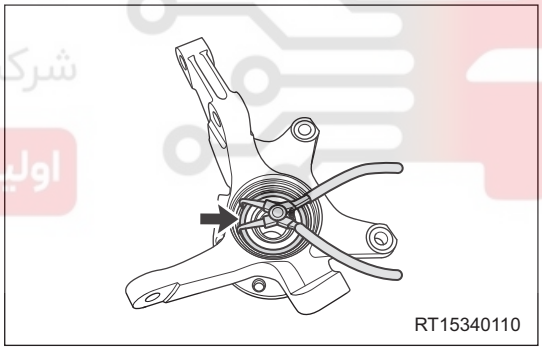
f. Remove 2 coupling bolts and nuts (arrow) between front left shock absorber assembly and front left steering knuckle assembly.
(Tightening torque: 240 ± 24 N·m)



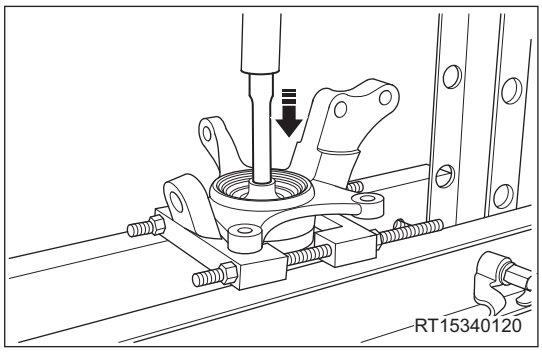
g. Disengage left drive shaft and remove front left steering knuckle assembly.

Disassembly

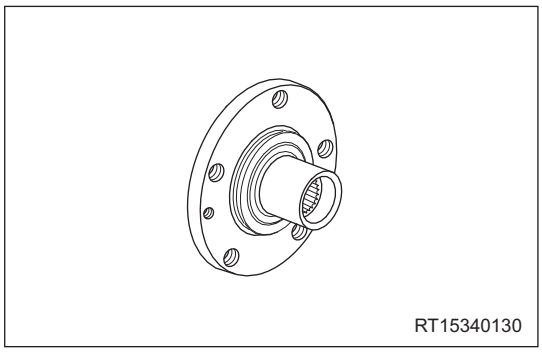
1. Remove front steering knuckle assembly, front hub and front hub bearing.
   a. Remove the front hub bearing retainer (arrow) with snap spring calipers.



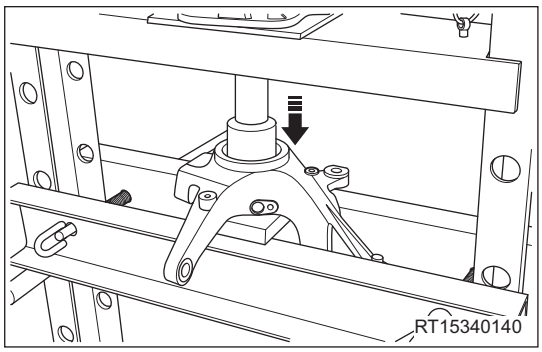
   b. Place front steering knuckle assembly on a hydraulic press, install bearing remover and adapter, and press out front hub with hydraulic press.



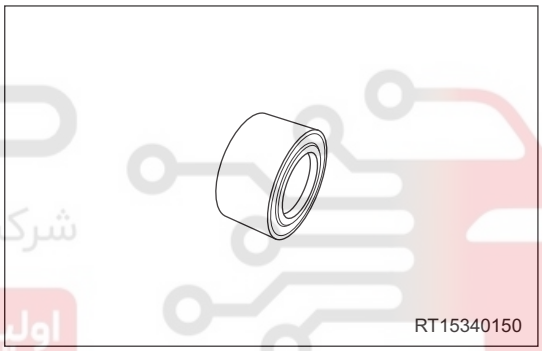
c. Remove the front hub carefully.



d. Place steering knuckle assembly on a hydraulic press, install bearing remover and adapter, and press out front hub bearing with hydraulic press.



e. Remove the front hub bearing carefully.



Inspection

1. Check front steering knuckle and dust guard.
   a. Check front steering knuckle for wear, cracks, deformation or damage. Replace as necessary.
   b. Check dust guard for dirt, wear, cracks, deformation or damage. Replace as necessary.

Assembly

Assembly is in the reverse order of disassembly.

CAUTION

- Please note that opening of retainer must face opening of the front wheel speed sensor, when installing front hub bearing retainer.

Installation

Installation is in the reverse order of removal.

CAUTION

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

Front Hub Assembly

On-vehicle Inspection

1. Remove the front wheel (See page 37-7).
2. Remove the front brake caliper assembly (See page 39-26).
3. Remove the front brake disc (See page 39-26).

Removal

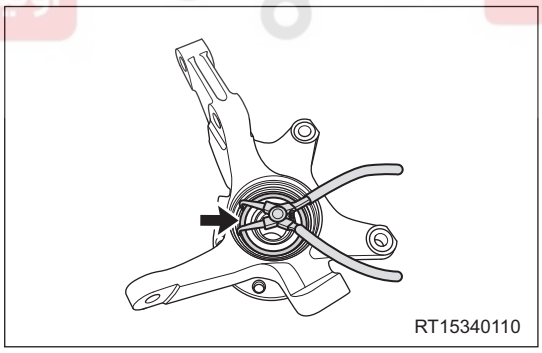
⚠ WARNING

- Be sure to wear necessary safety equipment to prevent accidents.
- Check if safety lock of lift is locked when repairing chassis parts.
- It is not permitted to weld or modify bearing parts of wheel suspension and guide parts of wheel.
- When removing chassis parts, replace self-locking nuts and rusted nuts for safety.

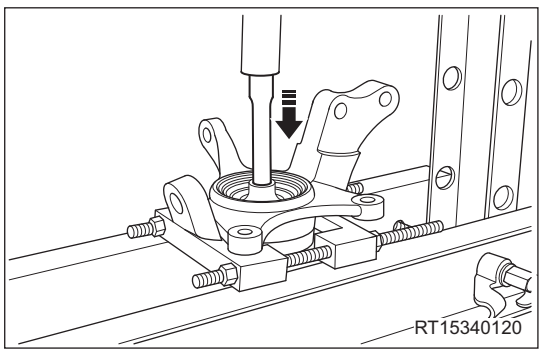
HINT:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

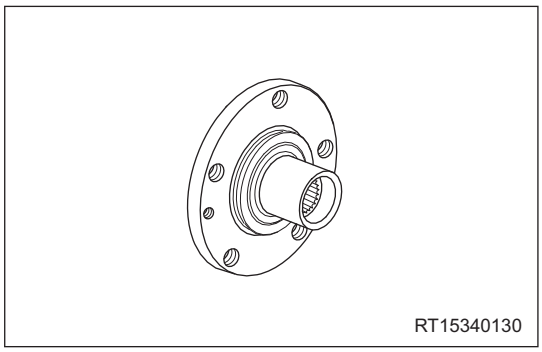
1. Remove the front left wheel (See page 37-7).
2. Remove the drive shaft assembly locking nut (See page 35-9).
3. Remove the front left brake caliper assembly (See page 39-25).
4. Remove the front left brake disc (See page 39-25).
5. Remove the front left steering knuckle assembly (See page 35-9).
6. Remove the front hub assembly.
   a. Remove front hub bearing retainer (arrow) with snap spring calipers.



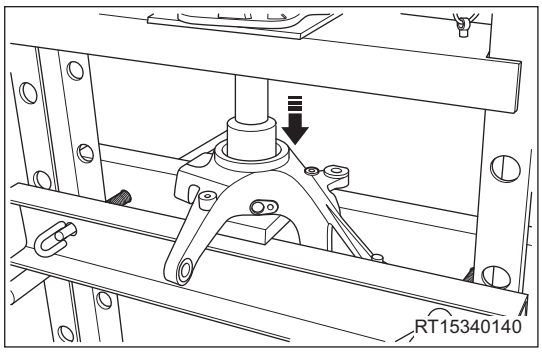
   b. Place front steering knuckle assembly on a hydraulic press, install bearing remover and adapter, and press out front hub with hydraulic press.



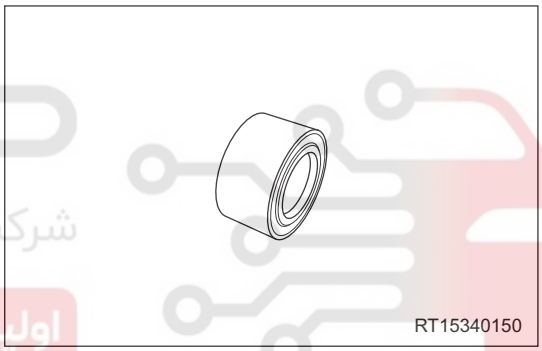
c. Remove the front hub carefully.



d. Place steering knuckle assembly on a hydraulic press, install bearing remover and adapter, and press out front hub bearing with hydraulic press.



e. Remove the front hub bearing carefully.



Installation

Installation is in the reverse order of removal.

CAUTION

- Please note that opening of retainer must face opening of the front wheel speed sensor, when installing front hub bearing retainer.
- Be sure to tighten coupling bolts and nuts to specified torques.
- Check that hub assembly rotates smoothly and there is no seizuring after installation.

Front Sub Frame Welding Assembly

Removal

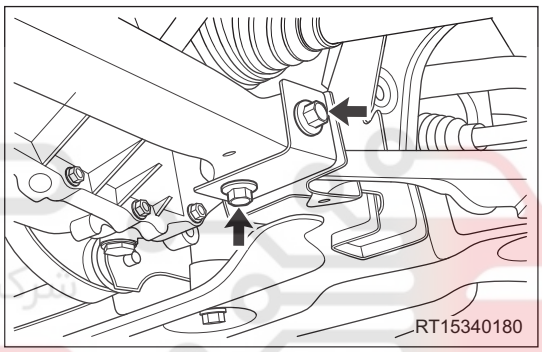
⚠ WARNING

- Be sure to wear necessary safety equipment to prevent accidents.
- Check if safety lock of lift is locked when repairing chassis parts.
- It is not permitted to weld or modify bearing parts of wheel suspension and guide parts of wheel.
- When removing chassis parts, replace self-locking nuts and rusted nuts for safety.
- When removing front sub frame welding assembly, an engine equalizer needs to be used to support engine and transmission assembly securely to prevent them from being damaged.

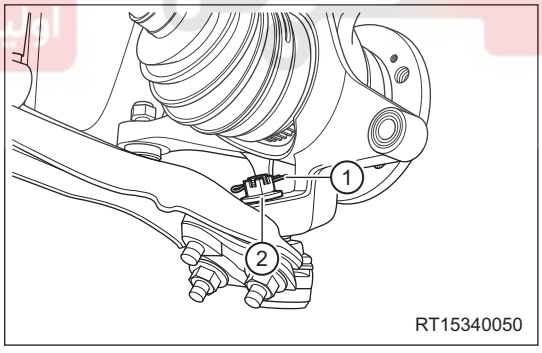
1. Remove the front wheel (See page 37-7).
2. Remove the front sub frame welding assembly.

a. Using an engine equalizer, support engine and transmission assembly securely.

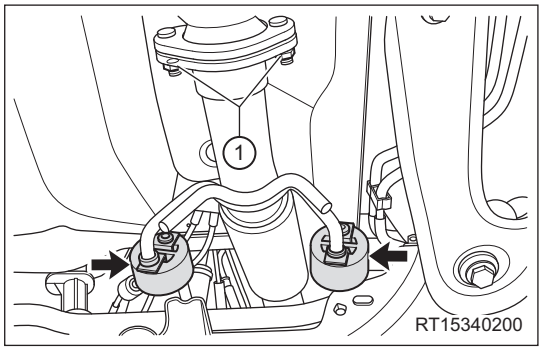
b. Remove 2 fixing bolts between front left side rail and front sub frame. Remove 2 fixing bolts (arrow) between front right side rail and front sub frame with same procedures.
(Tightening torque: 120 ± 12 N·m)



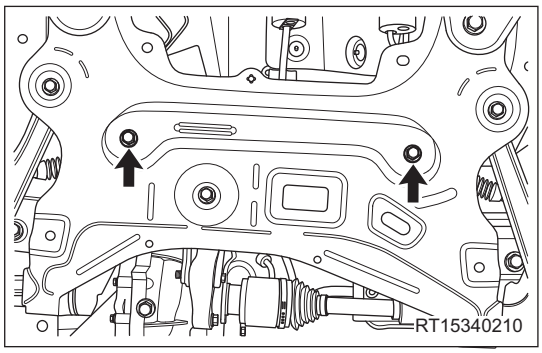
c. Remove Locking pin (1) coupling nut (2) between front left control arm assembly ball pin and front left steering knuckle assembly. Remove coupling nut between right control arm assembly ball pin and front left steering knuckle assembly with same procedures.
(Tightening torque: 120 ± 12 N·m)



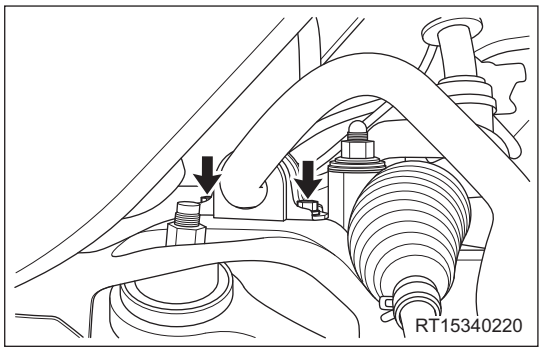
d. Detach exhaust pipe fixing rubber lifting eye (arrow) from front sub frame welding assembly.



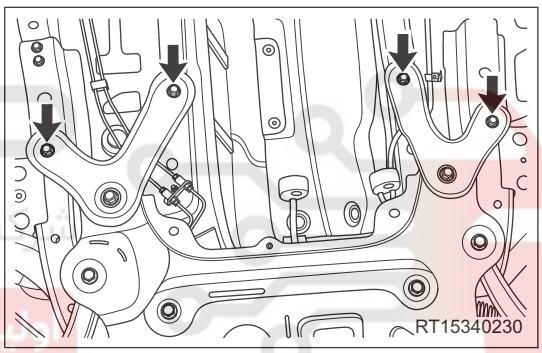
e. Remove 2 through bolts (arrow) between power steering gear with tie rod assembly and sub frame.
(Tightening torque: 180 ± 18 N·m)



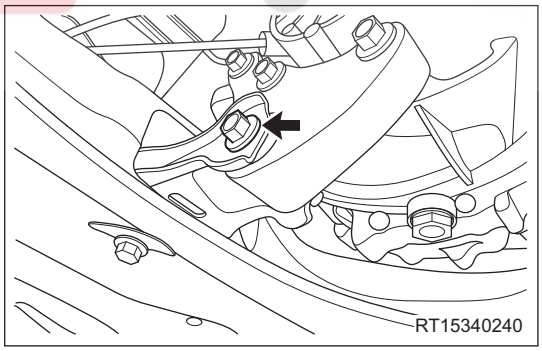
f. Remove 4 fixing bolts from stabilizer bar on sub frame.
(Tightening torque: 25 ± 3 N·m)



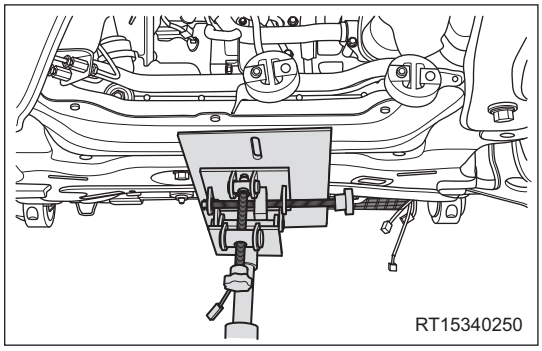
g. Remove 4 coupling bolts between sub frame bracket rear end and body.
(Tightening torque: 120 ± 12 N·m)



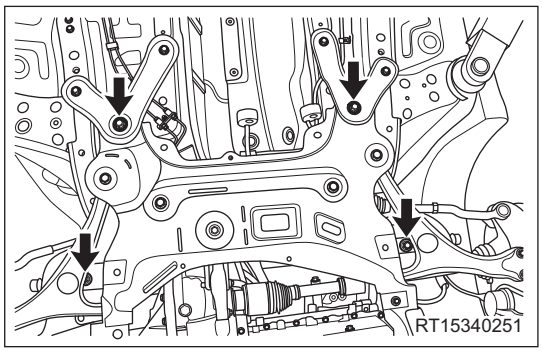
h. Remove coupling bolt (arrow) between rear mounting upper body and transmission lower body.
(Tightening torque: 105 ± 10 N·m)



i. Using a transmission carrier, support front sub frame welding assembly.



j. Remove 4 fixing bolts (arrow) between sub frame and body.
(Tightening torque: 180 ± 18 N·m)



3. Remove the front sub frame welding assembly.

Installation

Installation is in the reverse order of removal.

CAUTION

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

Rear Hub Bearing Assembly

On-vehicle Inspection

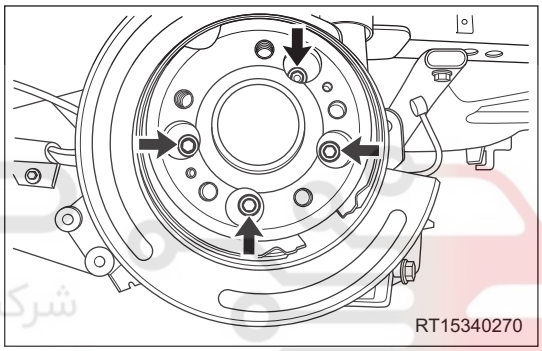
1. Remove the rear wheel (See page 37-7).
2. Remove the rear brake caliper assembly (See page 39-25).
3. Remove the rear brake disc (See page 39-38).

Removal

HINT:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

1. Remove the rear left wheel (See page 37-7).
2. Remove the rear left brake caliper assembly (See page 39-38).
3. Remove the rear left brake disc (See page 39-38).
4. Remove the rear left hub bearing assembly.
   a. Remove 4 fixing bolts (arrow) from rear left hub bearing.
      (Tightening torque: 120 ± 12 N·m)
   b. Remove the rear left hub bearing assembly.



Installation

Installation is in the reverse order of removal.

CAUTION

- Be sure to tighten bolts to specified torques.

Rear Steering Knuckle Assembly

Removal

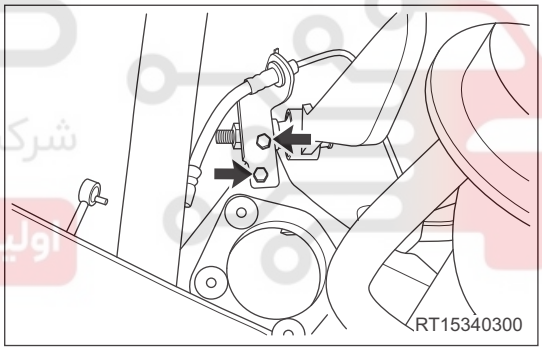
⚠ WARNING

- Be sure to wear necessary safety equipment to prevent accidents.
- Check if safety lock of lift is locked when repairing chassis parts.
- It is not permitted to weld or modify bearing parts of wheel suspension and guide parts of wheel.
- When removing chassis parts, replace self-locking nuts and rusted nuts for safety.

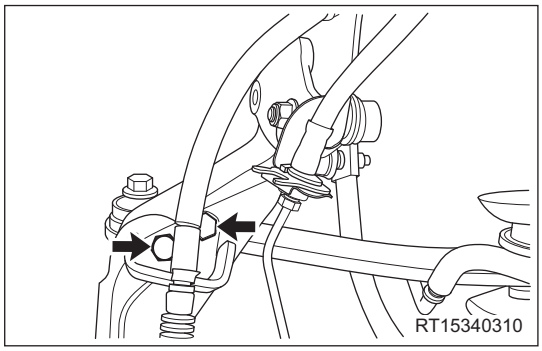
HINT:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

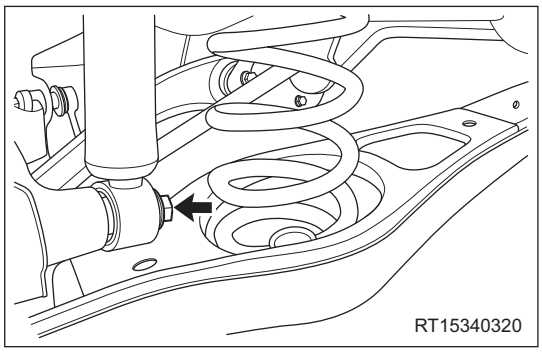
1. Remove the rear wheel (See page 37-7).
2. Remove the rear brake caliper assembly (See page 39-26).
3. Remove the rear brake disc (See page 39-38).
4. Remove the parking brake assembly (See page 40-17).
5. Remove the rear steering knuckle assembly.
   a. Remove 2 coupling bolts (arrow) between rear brake line fixing bracket and rear steering knuckle assembly.
   (Tightening torque: 15 ± 5 N·m)



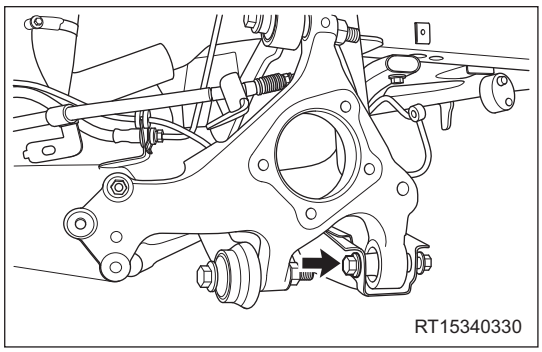
   b. Remove 2 coupling bolts (arrow) between parking brake cable assembly fixing bracket and rear steering knuckle assembly.
   (Tightening torque: 15 ± 5 N·m)



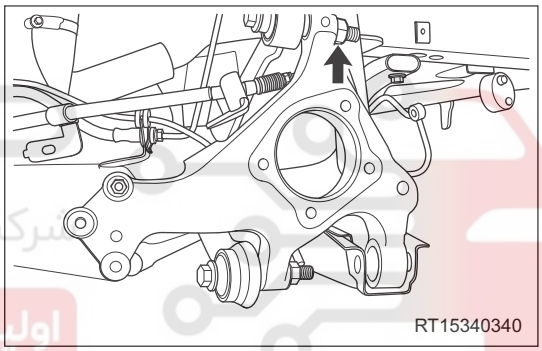
c. Remove coupling bolt (arrow) between rear shock absorber assembly and rear steering knuckle assembly.
(Tightening torque: 160 ± 16 N·m)


RT15340320

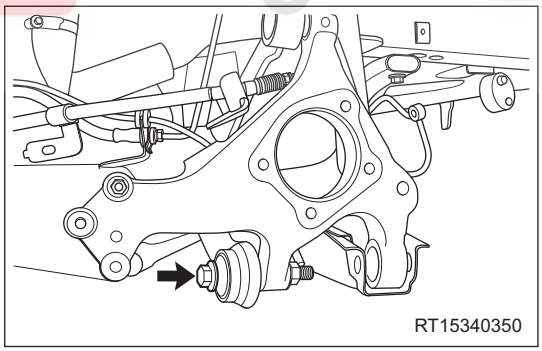
d. Remove coupling bolt and nut (arrow) between rear lower control arm assembly and rear steering knuckle assembly.
(Tightening torque: 160 ± 16 N·m)


RT15340330

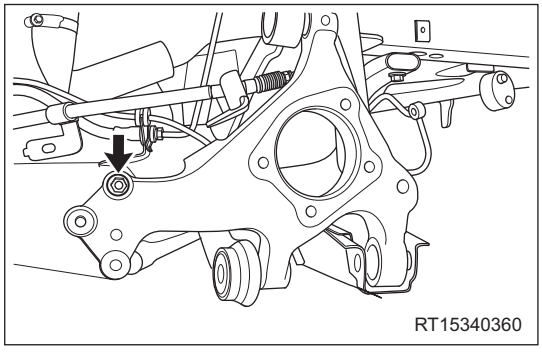
e. Remove coupling bolt and nut (arrow) between rear upper control arm assembly and rear steering knuckle assembly.
(Tightening torque: 160 ± 16 N·m)


RT15340340

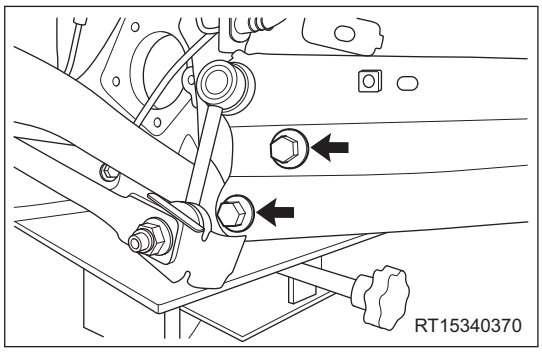
f. Remove coupling bolt and nut (arrow) between rear connecting rod assembly and rear steering knuckle assembly.
(Tightening torque: 160 ± 16 N·m)


RT15340350

g. Remove fixing nut (arrow) between rear small connecting rod and rear steering knuckle assembly.
(Tightening torque: 60 ± 6 N·m)


RT15340360

h. Remove 2 coupling bolts (arrow) between rear steering knuckle assembly and rear trailing arm assembly.
(Tightening torque: 110 ± 11 N·m)



i. Remove the rear steering knuckle assembly.

Installation

Installation is in the reverse order of removal.

CAUTION

- Be sure to tighten coupling bolts and nuts to specified torques.
- Check and adjust wheel alignment after installation. Adjust wheel alignment to the standard range as necessary.
- When removing coupling bolt and nut between rear lower control arm assembly and rear steering knuckle assembly, release the coil spring stress.

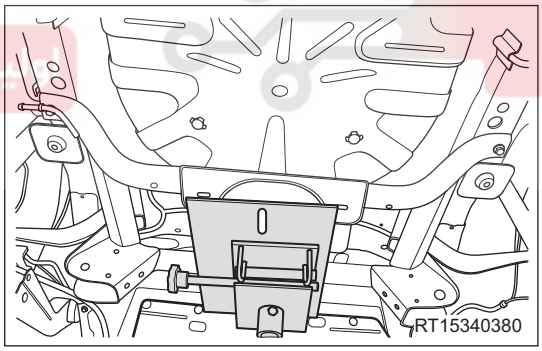
Rear Sub Frame Assembly

Removal

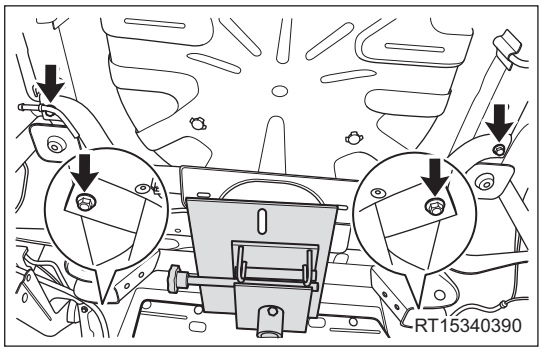
⚠ WARNING

- Be sure to wear necessary safety equipment to prevent accidents.
- Check if safety lock of lift is locked when repairing chassis.
- It is not permitted to weld or modify bearing parts of wheel suspension and guide parts of wheel.
- When removing chassis parts, replace self-locking nuts and rusted nuts for safety.

1. Remove the rear wheel (See page 37-7).
2. Drain the brake fluid (See page 39-15).
3. Remove the rear muffler assembly (See page 18-37).
4. Remove the rear brake assembly (See page 39-38).
5. Remove the rear brake disc (See page 39-38).
6. Remove the parking cable (See page 40-13).
7. Remove rear hub bearing assembly and parking brake assembly (See page 35-19).
8. Remove the rear steering knuckle (See page 35-20).
9. Remove the rear lower control arm assembly (See page 36-37).
10. Remove the rear connecting rod assembly (See page 36-42).
11. Remove the rear stabilizer bar assembly (See page 36-43).
12. Remove the rear sub frame assembly.
    a. Install transmission carrier and support rear axle.



    b. Remove 4 coupling bolts (arrow) between rear sub frame assembly and body.
    (Tightening torque: 96 ± 12 N·m)



    c. Remove the rear sub frame assembly.

Installation

Installation is in the reverse order of removal.

CAUTION

- Be sure to tighten coupling bolts and nuts to specified torques.
- Bounce vehicle up and down several times to stabilize rear suspension after installation.