

SECTION **FSU**  
FRONT SUSPENSION

A  
B  
C  
D

FSU

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# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

#### NVH Troubleshooting Chart

INFOID:000000001666543

Use chart below to help you find the cause of the symptom. If necessary, repair or replace these parts.

Symptom		Possible cause and SUSPECTED PARTS	Reference page													
			FSU-23	FSU-11	—	—	—	FSU-23	FSU-Z	FSU-20	NVH in DLN section	NVH in FAX and FSU section	NVH in WT section	NVH in BR section	NVH in ST section	
Noise	FRONT SUSPENSION	Improper installation, looseness	x	x	x	x	x	x	x			x	x	x	x	x
		Strut deformation, damage or deflection	x	x	x	x	x		x			x	x	x	x	x
		Bushing or mounting deterioration	x	x	x	x	x					x	x			x
		Parts interference	x	x	x	x				x			x	x	x	x
		Spring fatigue	x	x	x	x							x	x	x	x
		Suspension looseness	x	x	x	x							x	x	x	x
Shake	FRONT SUSPENSION	Incorrect wheel alignment														
		Stabilizer bar fatigue														
		PROPELLER SHAFT														
		FRONT AXLE AND FRONT SUSPENSION														
		ROAD WHEEL														
		BRAKE														
Vibration	FRONT SUSPENSION	STEERING														
		Noise	x	x	x	x	x	x				x	x	x	x	x
		Shake	x	x	x	x	x		x			x	x	x	x	x
		Vibration	x	x	x	x	x					x	x			x
		Shimmy	x	x	x	x					x		x	x	x	x
		Judder	x	x	x								x	x	x	x
Poor quality ride or handling	FRONT SUSPENSION	FRONT AXLE AND FRONT SUSPENSION	x	x	x	x	x				x	x				
		ROAD WHEEL	x	x	x	x	x		x	x		x	x			
		BRAKE	x	x	x											
		STEERING	x	x	x											
		Noise	x	x	x	x	x									
		Shake	x	x	x	x	x									

x: Applicable

# PRECAUTIONS

< PRECAUTION >

## PRECAUTION

### PRECAUTIONS

#### Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

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The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIRBAG" and "SEAT BELT" of this Service Manual.

#### **WARNING:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIRBAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

#### Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:000000001666545

#### **NOTE:**

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

#### OPERATION PROCEDURE

1. Connect both battery cables.

#### **NOTE:**

Supply power using jumper cables if battery is discharged.

2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

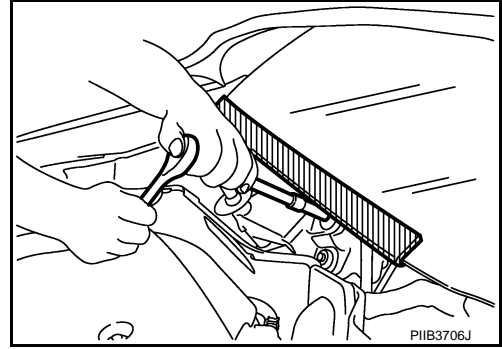
## PRECAUTIONS

### < PRECAUTION >

#### Precaution for Procedure without Cowl Top Cover

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When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



#### Precautions for Suspension

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##### **CAUTION:**

- When installing rubber bushings, the final tightening must be carried out under unladen conditions with tires on ground. Oil might shorten the life of rubber bushings. Be sure to wipe off any spilled oil.
- Unladen conditions mean that fuel, engine coolant and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions.
- After servicing suspension parts, be sure to check wheel alignment.
- Self-lock nuts are not reusable. Always use new ones when installing. Since new self-lock nuts are pre-oiled, tighten as they are.

# PREPARATION

< PREPARATION >

## PREPARATION

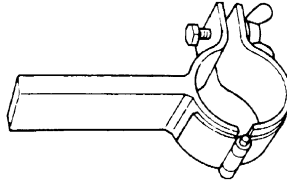
### PREPARATION

#### Special Service Tool

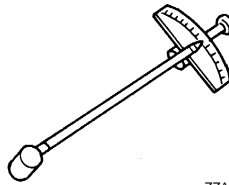
INFOID:000000001666548

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST35652000 ( - ) Strut attachment	Disassembling and assembling shock absorber
ST3127S000 (J-25765-A) Preload gauge	Measuring rotating torque of ball joint



ZZA0807D

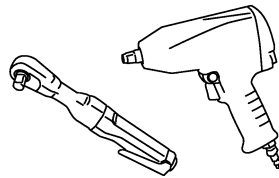


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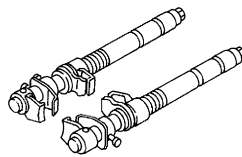
#### Commercial Service Tool

INFOID:000000001666549

Tool name	Description
Power tool	Loosening bolts and nuts
Spring compressor	Removing and installing coil spring



PBIC0190E



S-NT717

# FRONT SUSPENSION ASSEMBLY

< ON-VEHICLE MAINTENANCE >

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## ON-VEHICLE MAINTENANCE

### FRONT SUSPENSION ASSEMBLY

#### Inspection

INFOID:000000001666550

#### MOUNTING INSPECTION

Make sure the mounting conditions (looseness, backlash) of each component and component conditions (wear, damage) are normal.

#### BALL JOINT AXIAL END PLAY

1. Set front wheels in a straight-ahead position.

**CAUTION:**

**Never depress brake pedal.**

2. Place an iron bar or equivalent between transverse link or upper link and steering knuckle.
3. Measure axial end play by prying it up and down.

**Standard**

**End play** : Refer to [FSU-25, "Ball Joint"](#).

**CAUTION:**

**Be careful not to damage ball joint boot. never damage the installation position by applying excessive force.**

#### SHOCK ABSORBER

Check for oil leakage, damage and replace if malfunction is detected.

# WHEEL ALIGNMENT

< ON-VEHICLE MAINTENANCE >

## WHEEL ALIGNMENT

### Wheel Alignment Inspection

INFOID:000000001666551

#### Description

##### CAUTION:

- **Camber, caster, kingpin inclination angles cannot be adjusted.**
- **If camber, caster, or kingpin inclination angle is outside the standard, check front suspension parts for wear and damage. Replace suspect parts if a malfunction is detected.**
- **Kingpin inclination angle is reference value, no inspection is required.**
- Measure wheel alignment under unladen conditions.

##### NOTE:

“Unladen conditions” means that fuel, engine coolant, and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions.

#### General Information and Recommendations

- A four-wheel thrust alignment should be performed.
- This type of alignment is recommended for any NISSAN/INFINITI vehicle.
- The four-wheel “thrust” process helps ensure that the vehicle is properly aligned and the steering wheel is centered.
- The alignment rack itself should be capable of accepting any NISSAN/INFINITI vehicle.
- The rack should be checked to ensure that it is level.
- Make sure the machine is properly calibrated.
- Your alignment equipment should be regularly calibrated in order to give correct information.
- Check with the manufacturer of your specific equipment for their recommended Service/Calibration Schedule.

#### Alignment Process

##### IMPORTANT:

Use only the alignment specifications listed in this Service Manual.

- When displaying the alignment settings, many alignment machines use “indicators”: (Green/red, plus or minus, Go/No Go). **Do not use these indicators.**
- The alignment specifications programmed into your machine that operate these indicators may not be correct.
- This may result in an ERROR.
- Some newer alignment machines are equipped with an “optional Rolling Compensation” method to “compensate” the sensors (alignment targets or head units). **Do not use this “Rolling Compensation” method.**
- Use the “Jacking Compensation Method”. After installing the alignment targets or head units, raise the vehicle and rotate the wheels 1/2 turn both ways.
- See Instructions in the alignment machine you're using for more information on this.

#### Preliminary Check

Check the following:

- Tires for improper air pressure and wear.
- Road wheels for runout. Refer to [WT-92, "Inspection"](#).
- Wheel bearing axial end play. Refer to [FAX-4, "Inspection"](#).
- Transverse link or upper link ball joint axial end play. Refer to [FSU-25, "Ball Joint"](#).
- Shock absorber operation.
- Each mounting part of axle and suspension for looseness and deformation.
- Each of suspension member, shock absorber, upper link and transverse link for cracks, deformation and other damage.
- Vehicle height (posture).

# FRONT COIL SPRING AND SHOCK ABSORBER

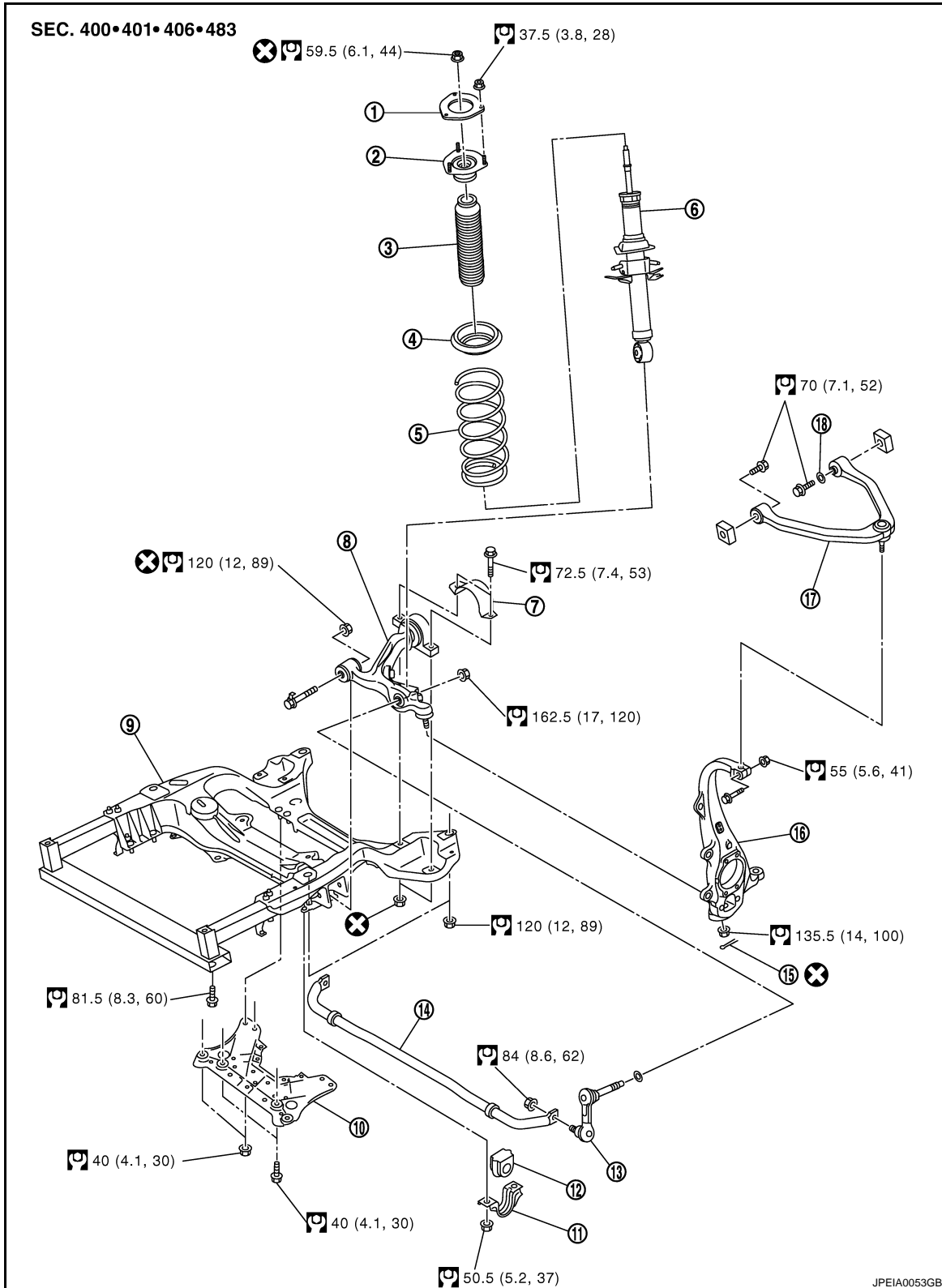
< ON-VEHICLE REPAIR >

## ON-VEHICLE REPAIR

### FRONT COIL SPRING AND SHOCK ABSORBER

Exploded View

INFOID:000000001666574





# FRONT COIL SPRING AND SHOCK ABSORBER

< ON-VEHICLE REPAIR >

- |                               |                                    |                            |
|-------------------------------|------------------------------------|----------------------------|
| 1. Mounting seal              | 2. Shock absorber mounting bracket | 3. Bound bumper            |
| 4. Rubber seat                | 5. Coil spring                     | 6. Shock absorber          |
| 7. Insulator                  | 8. Transverse link                 | 9. Front suspension member |
| 10. Suspension member stay    | 11. Stabilizer clamp               | 12. Stabilizer bushing     |
| 13. Stabilizer connecting rod | 14. Stabilizer bar                 | 15. Cotter pin             |
| 16. Steering knuckle          | 17. Upper link                     | 18. Stopper rubber         |

Refer to [GI-4, "Components"](#) for symbols in the figure.

## Removal and Installation

INFOID:000000001666553

### REMOVAL

1. Remove tires with power tool.
2. Remove harness of the wheel sensor from shock absorber.  
**CAUTION:**  
**Never pull on wheel sensor harness.**
3. Remove brake hose bracket. Refer to [BR-21, "FRONT : Exploded View"](#).
4. Remove mounting nuts on the lower side of stabilizer connecting rod with power tool.
5. Remove mounting nuts on upper side of stabilizer connecting rod with power tool, and then remove stabilizer connecting rod from transverse link.
6. Separate upper link from steering knuckle.
7. Remove mounting nuts of shock absorber mounting bracket, then remove shock absorber assembly.

### INSTALLATION

Note the following, and install in the reverse order of removal.

#### **CAUTION:**

**Never tap on the ball joint cap of the stabilizer connecting rod with a hammer or a similar item when inserting the stabilizer connecting rod into the transverse link.**

- Perform final tightening of bolts and nuts at the shock absorber lower side (rubber bushing), under unladen conditions with tires on level ground.

## Disassembly and Assembly

INFOID:000000001666554

### DISASSEMBLY

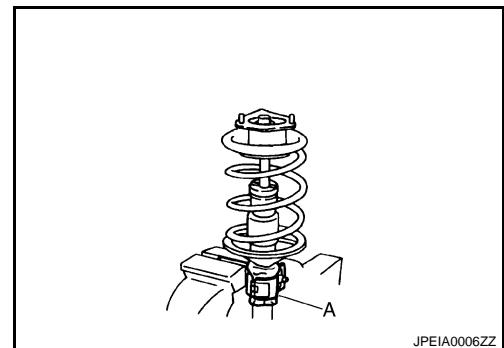
#### **CAUTION:**

**Never damage shock absorber piston rod when removing components from shock absorber.**

1. Install strut attachment (A) [SST: ST35652000 ( - )] to shock absorber and secure it in a vise.

#### **CAUTION:**

**When installing the strut attachment to shock absorber, wrap a shop cloth around strut to protect it from damage.**



# FRONT COIL SPRING AND SHOCK ABSORBER

## < ON-VEHICLE REPAIR >

- Using a spring compressor (A) (commercial service tool), compress coil spring between rubber seat and spring lower seat (on shock absorber) until coil spring with a spring compressor is free.

**CAUTION:**

**Be sure a spring compressor is securely attached coil spring. Compress coil spring.**

- Make sure coil spring with a spring compressor between rubber seat and spring lower seat (shock absorber) is free and then remove piston rod lock nut while securing the piston rod tip so that piston rod does not turn.

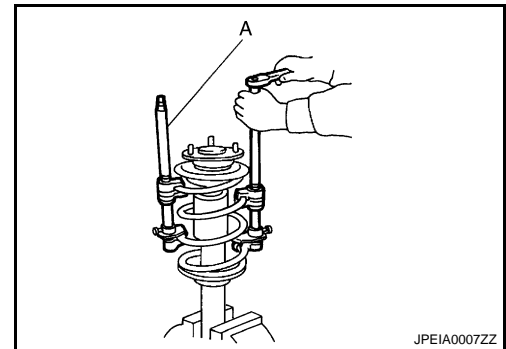
- Remove mounting seal, shock absorber mounting bracket, rubber seat, bound bumper from shock absorber.

- Remove coil spring with a spring compressor, and then gradually release a spring compressor.

**CAUTION:**

**Loosen while making sure coil spring attachment position does not move.**

- Remove the strut attachment from shock absorber.



## ASSEMBLY

- Install strut attachment (A) [SST: ST35652000 ( - )] to shock absorber and secure it in a vise.

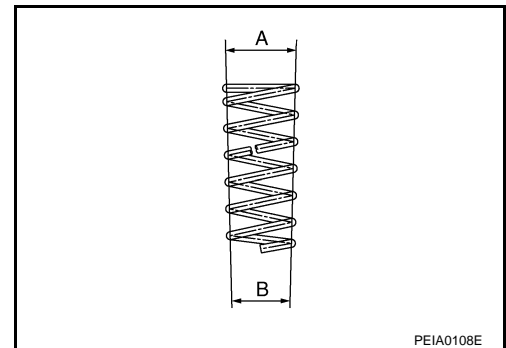
**CAUTION:**

**When installing the strut attachment to shock absorber, wrap a shop cloth around strut to protect it from damage.**

- Compress coil spring using a spring compressor (commercial service tool), and install it onto shock absorber.

**CAUTION:**

- Install with the large-diameter side (A) facing up and the small-diameter side (B) facing down.
- Be sure a spring compressor is securely attached to coil spring. Compress coil spring.



- Assemble the shock absorber mounting bracket and rubber seat.

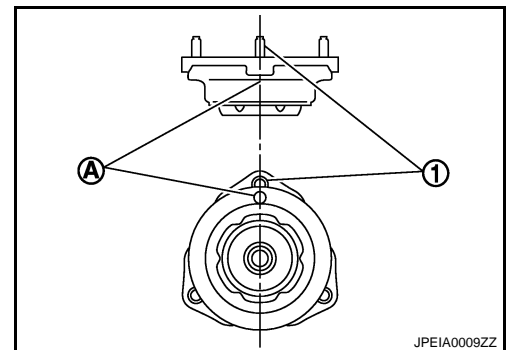
**CAUTION:**

**Align the paint mark (A) to the stud bolt (1) position when assembling.**

- Apply soapy water to bound bumper.

**CAUTION:**

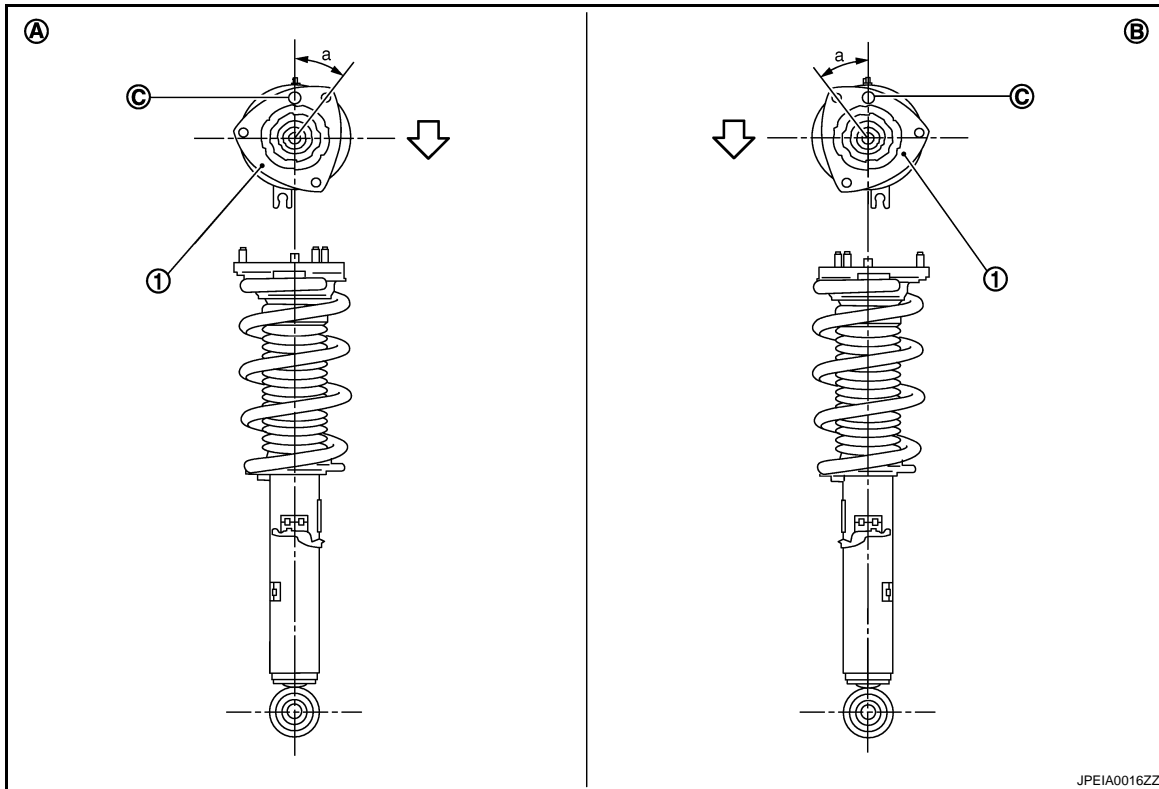
**Never use machine oil.**



# FRONT COIL SPRING AND SHOCK ABSORBER

## < ON-VEHICLE REPAIR >

5. Insert bound bumper into shock absorber mounting bracket, and then install it to shock absorber together with rubber seat.



A: Right side

B: Left side

←: Vehicle front

- Install the shock absorber mounting bracket (1) as shown in the figure.

**Angle (a) : 35.4°**

- Check that the lower end of the coil spring (C) is positioned at the spring lower seat of the shock absorber.
6. Secure piston rod tip so that piston rod does not turn, then tighten piston rod lock nut with specified torque.
  7. Gradually release a spring compressor, and remove coil spring.  
**CAUTION:**  
**Loosen while making sure coil spring attachment position does not move.**
  8. Remove the strut attachment from shock absorber.
  9. Install the mounting seal to shock absorber mounting bracket.

## Inspection

INFOID:000000001666555

### INSPECTION AFTER INSTALLATION

- Check wheel alignment. Refer to [FSU-25. "Wheel Alignment"](#).
- Adjust neutral position of steering angle sensor after checking wheel alignment. Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).
- Check wheel sensor harness for proper connection. Refer to [BRC-100. "Exploded View"](#).

### INSPECTION AFTER DISASSEMBLY

#### Shock Absorber

Check the following:

- Shock absorber for deformation, cracks or damage, and replace it if a malfunction is detected.
- Piston rod for damage, uneven wear or distortion, and replace it if a malfunction is detected.

## FRONT COIL SPRING AND SHOCK ABSORBER

### < ON-VEHICLE REPAIR >

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- For oil leakage, and replace it if a malfunction is detected.

#### Shock Absorber Mounting Bracket and Rubber Parts Inspection

Check shock absorber mounting bracket for cracks and rubber parts for wear. Replace it if a malfunction is detected.

#### Coil Spring

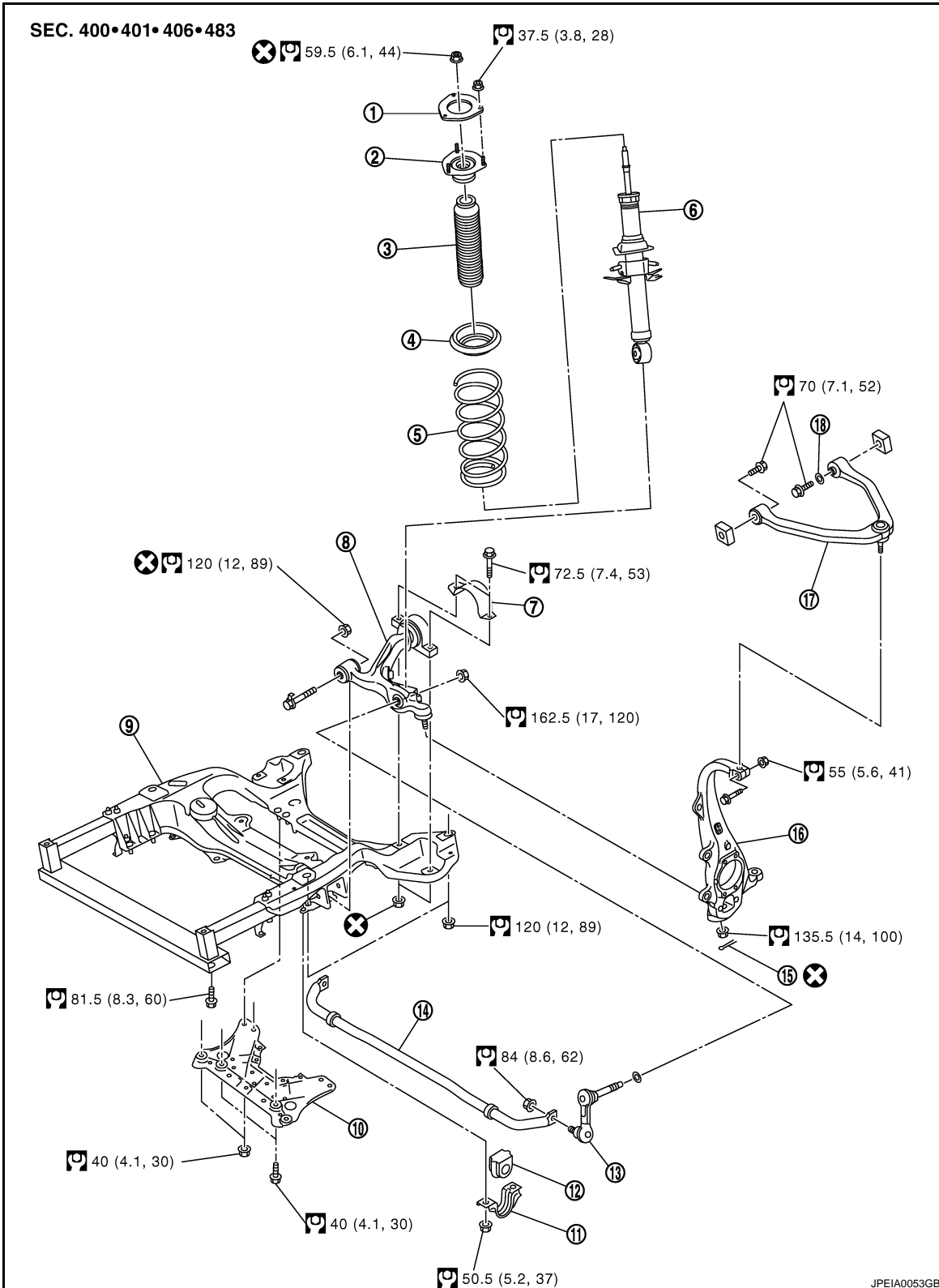
Check coil spring for cracks, wear or damage, and replace it if a malfunction is detected.

# TRANSVERSE LINK

## < ON-VEHICLE REPAIR > TRANSVERSE LINK

### Exploded View

INFOID:000000001666575



- |                  |                                    |                            |
|------------------|------------------------------------|----------------------------|
| 1. Mounting seal | 2. Shock absorber mounting bracket | 3. Bound bumper            |
| 4. Rubber seat   | 5. Coil spring                     | 6. Shock absorber          |
| 7. Insulator     | 8. Transverse link                 | 9. Front suspension member |

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# TRANSVERSE LINK

## < ON-VEHICLE REPAIR >

- |                               |                      |                        |
|-------------------------------|----------------------|------------------------|
| 10. Suspension member stay    | 11. Stabilizer clamp | 12. Stabilizer bushing |
| 13. Stabilizer connecting rod | 14. Stabilizer bar   | 15. Cotter pin         |
| 16. Steering knuckle          | 17. Upper link       | 18. Stopper rubber     |

Refer to [GI-4, "Components"](#) for symbols in the figure.

## Removal and Installation

INFOID:000000001666557

### REMOVAL

1. Remove tires with power tool.
2. Remove under cover with power tool.
3. Remove shock absorber. Refer to [FSU-8, "Exploded View"](#).
4. Remove steering outer socket from steering knuckle. Refer to [ST-26, "Exploded View"](#).
5. Remove transverse link from steering knuckle.
6. Set suitable jack under transverse link.
7. Remove mounting bolts and nuts, and then remove transverse link.

### INSTALLATION

Note the following, and install in the reverse order of removal.

#### CAUTION:

**Never tap on the ball joint cap of the stabilizer connecting rod with a hammer or a similar item when inserting the stabilizer connecting rod into the transverse link.**

- Perform final tightening of bolts and nuts at the front suspension member installation and shock absorber lower side (rubber bushing), under unladen conditions with tires on level ground.

## Inspection

INFOID:000000001666558

### INSPECTION AFTER REMOVAL

#### Visual Inspection

Check the following:

- Transverse link and bushing for deformation, cracks or damage. Replace it if a malfunction is detected.
- Ball joint boot for cracks or other damage, and also for grease leakage. Replace it if a malfunction is detected.

#### Ball Joint Inspection

Manually move ball stud to confirm it moves smoothly with no binding.

#### Swing Torque Inspection

##### NOTE:

Before measurement, move ball stud at least ten times by hand to check for smooth movement.

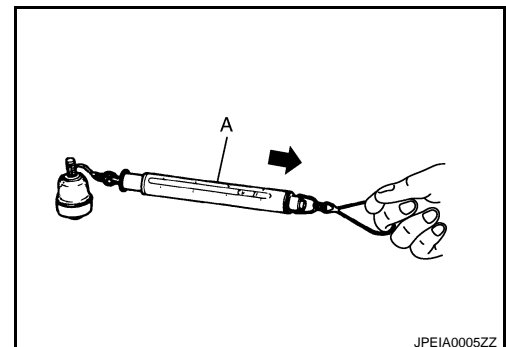
- Hook a spring balance (A) at cotter pin mounting hole. Confirm spring balance measurement value is within specifications when ball stud begins moving.

**Standard**

**Swing torque**

: Refer to [FSU-25, "Ball Joint"](#).

- If it is outside the specified range, replace transverse link assembly.



#### Rotating Torque Inspection

## TRANSVERSE LINK

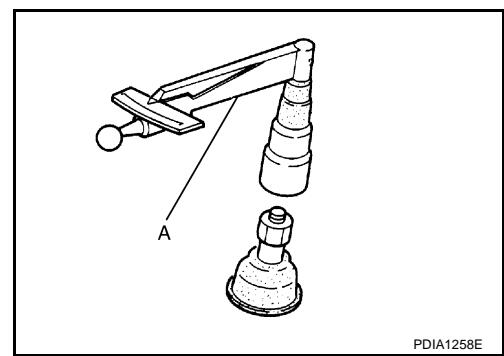
### < ON-VEHICLE REPAIR >

- Attach mounting nut to ball stud. Make sure that rotating torque is within specifications with a preload gauge (A) [SST: ST3127S000 (J-25765-A)].

#### Standard

**Rotating torque** : Refer to [FSU-25, "Ball Joint"](#).

- If it is outside the specified range, replace transverse link assembly.



#### Axial End Play Inspection

- Move tip of ball stud in axial direction to check for looseness.

#### Standard

**Axial end play** : Refer to [FSU-25, "Ball Joint"](#).

- If it is outside the specified range, replace transverse link assembly.

#### INSPECTION AFTER INSTALLATION

- Check wheel alignment. Refer to [FSU-7, "Wheel Alignment Inspection"](#).
- Adjust neutral position of steering angle sensor after checking wheel alignment. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

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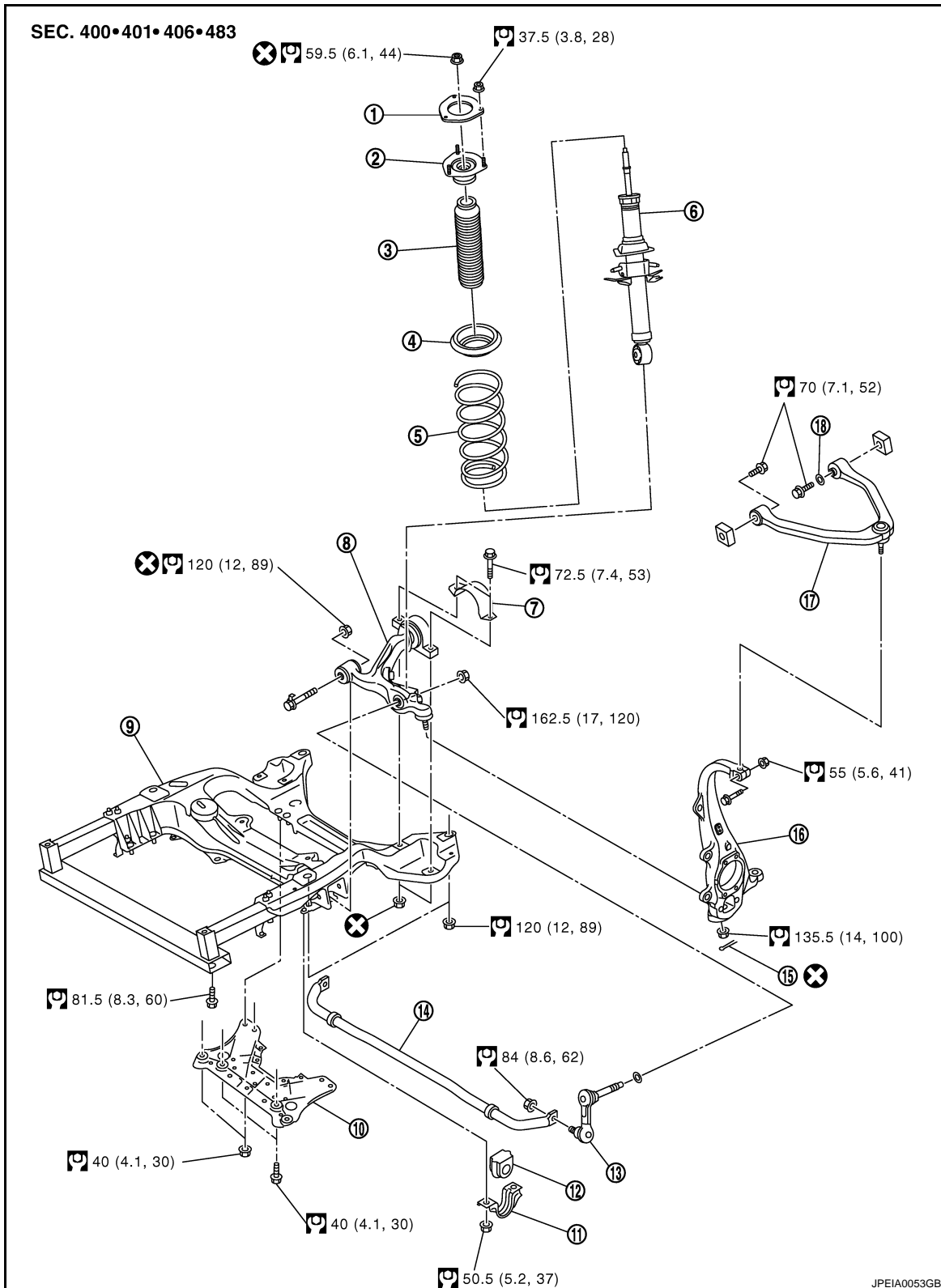
# UPPER LINK

< ON-VEHICLE REPAIR >

## UPPER LINK

Exploded View

INFOID:000000001666576



- |                  |                                    |                            |
|------------------|------------------------------------|----------------------------|
| 1. Mounting seal | 2. Shock absorber mounting bracket | 3. Bound bumper            |
| 4. Rubber seat   | 5. Coil spring                     | 6. Shock absorber          |
| 7. Insulator     | 8. Transverse link                 | 9. Front suspension member |



# UPPER LINK

## < ON-VEHICLE REPAIR >

- |                               |                      |                        |
|-------------------------------|----------------------|------------------------|
| 10. Suspension member stay    | 11. Stabilizer clamp | 12. Stabilizer bushing |
| 13. Stabilizer connecting rod | 14. Stabilizer bar   | 15. Cotter pin         |
| 16. Steering knuckle          | 17. Upper link       | 18. Stopper rubber     |

Refer to [GI-4, "Components"](#) for symbols in the figure.

## Removal and Installation

INFOID:000000001666560

### REMOVAL

1. Remove tires with power tool.
2. Remove shock absorber. Refer to [FSU-8, "Exploded View"](#).
3. Remove mounting bolts and nuts with power tool, and then remove upper link from steering knuckle.
4. Remove mounting bolts and nuts, and then remove upper link and stopper rubber.

### INSTALLATION

Note the following, and install in the reverse order of removal.

- Perform final tightening of bolts and nuts at the vehicle installation position (rubber bushing), under unladen conditions with tires on level ground.

### Inspection

INFOID:000000001666561

#### INSPECTION AFTER REMOVAL

##### Visual Inspection

Check the following:

- Upper link and bushing for deformation, cracks or damage. Replace it if a malfunction is detected.
- Ball joint boot for cracks or other damage, and also for grease leakage. Replace it if a malfunction is detected.

##### Ball Joint Inspection

Manually move ball stud to confirm it moves smoothly with no binding.

##### Swing Torque Inspection

###### NOTE:

Before measurement, move ball stud at least ten times by hand to check for smooth movement.

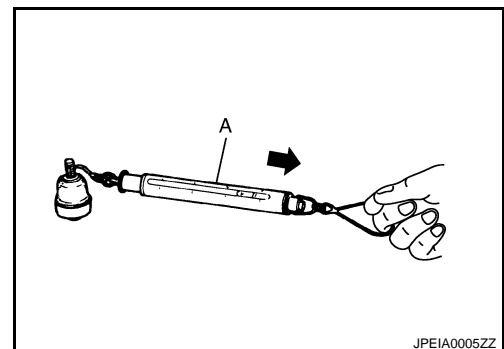
- Hook a spring balance (A) at cutout on ball stud. Confirm spring balance measurement value is within specifications when ball stud begins moving.

###### Standard

###### Swing torque

: Refer to [FSU-25, "Ball Joint"](#).

- If it is outside the specified range, replace upper link assembly.



##### Rotating Torque Inspection

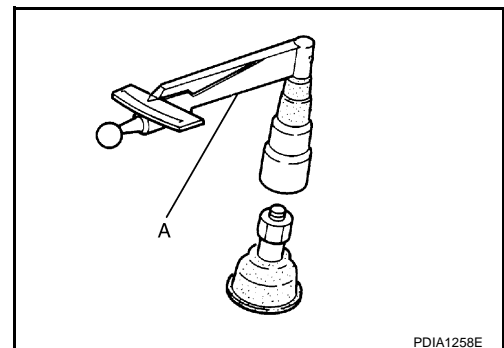
- Attach mounting nut to ball stud. Make sure that rotating torque is within specifications with a preload gauge (A) [SST: ST3127S000 (J-25765-A)].

###### Standard

###### Rotarian torque

: Refer to [FSU-25, "Ball Joint"](#).

- If it is outside the specified range, replace upper link assembly.



##### Axial End Play Inspection

- Move tip of ball stud in axial direction to check for looseness.

## UPPER LINK

< ON-VEHICLE REPAIR >

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### Standard

**Axial end play** : Refer to [FSU-25, "Ball Joint"](#).

- If it is outside the specified range, replace upper link assembly.

### INSPECTION AFTER INSTALLATION

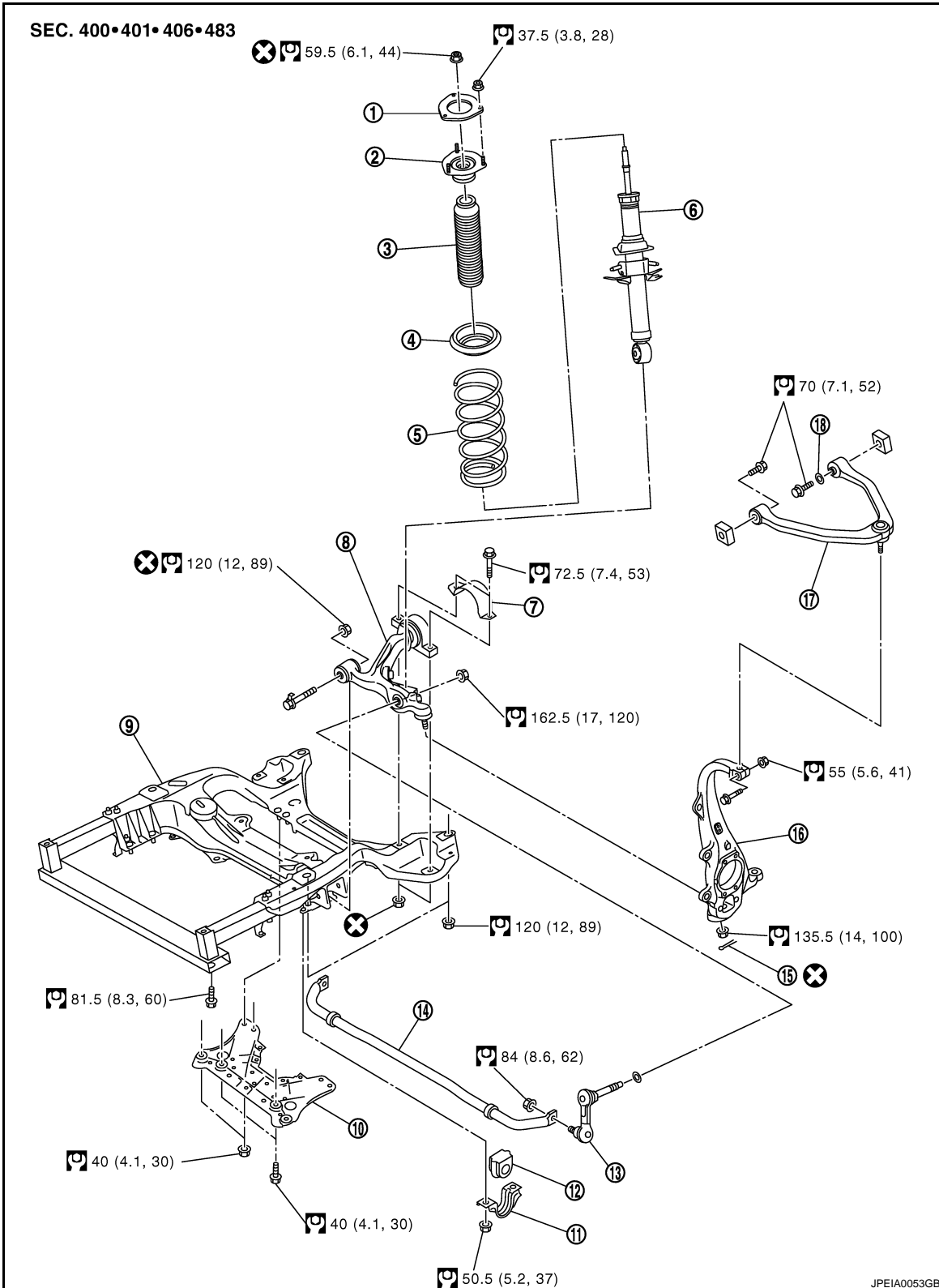
- Check wheel alignment. Refer to [FSU-25, "Wheel Alignment"](#).
- Adjust neutral position of steering angle sensor after checking wheel alignment. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

# FRONT STABILIZER

< ON-VEHICLE REPAIR >  
FRONT STABILIZER

Exploded View

INFOID:000000001666577



- |                  |                                    |                            |
|------------------|------------------------------------|----------------------------|
| 1. Mounting seal | 2. Shock absorber mounting bracket | 3. Bound bumper            |
| 4. Rubber seat   | 5. Coil spring                     | 6. Shock absorber          |
| 7. Insulator     | 8. Transverse link                 | 9. Front suspension member |

A  
B  
C  
D  
FSU  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P

# FRONT STABILIZER

## < ON-VEHICLE REPAIR >

---

- |                               |                      |                        |
|-------------------------------|----------------------|------------------------|
| 10. Suspension member stay    | 11. Stabilizer clamp | 12. Stabilizer bushing |
| 13. Stabilizer connecting rod | 14. Stabilizer bar   | 15. Cotter pin         |
| 16. Steering knuckle          | 17. Upper link       | 18. Stopper rubber     |

Refer to [GI-4. "Components"](#) for symbols in the figure.

## Removal and Installation

INFOID:000000001666563

### REMOVAL

1. Remove tires with power tool.
2. Remove under cover with power tool.
3. Remove the mounting nut on the lower side of stabilizer connecting rod with power tool, and then remove stabilizer connecting rod from stabilizer bar.
4. Remove the mounting nuts of stabilizer clamp, and then remove stabilizer clamp and stabilizer bushing.
5. Remove stabilizer bar.

### INSTALLATION

Install in the reverse order of removal.

### Inspection

INFOID:000000001666564

### INSPECTION AFTER REMOVAL

Check stabilizer bar, stabilizer connecting rod, stabilizer bushing and stabilizer clamp for deformation, cracks or damage. Replace it if a malfunction is detected.

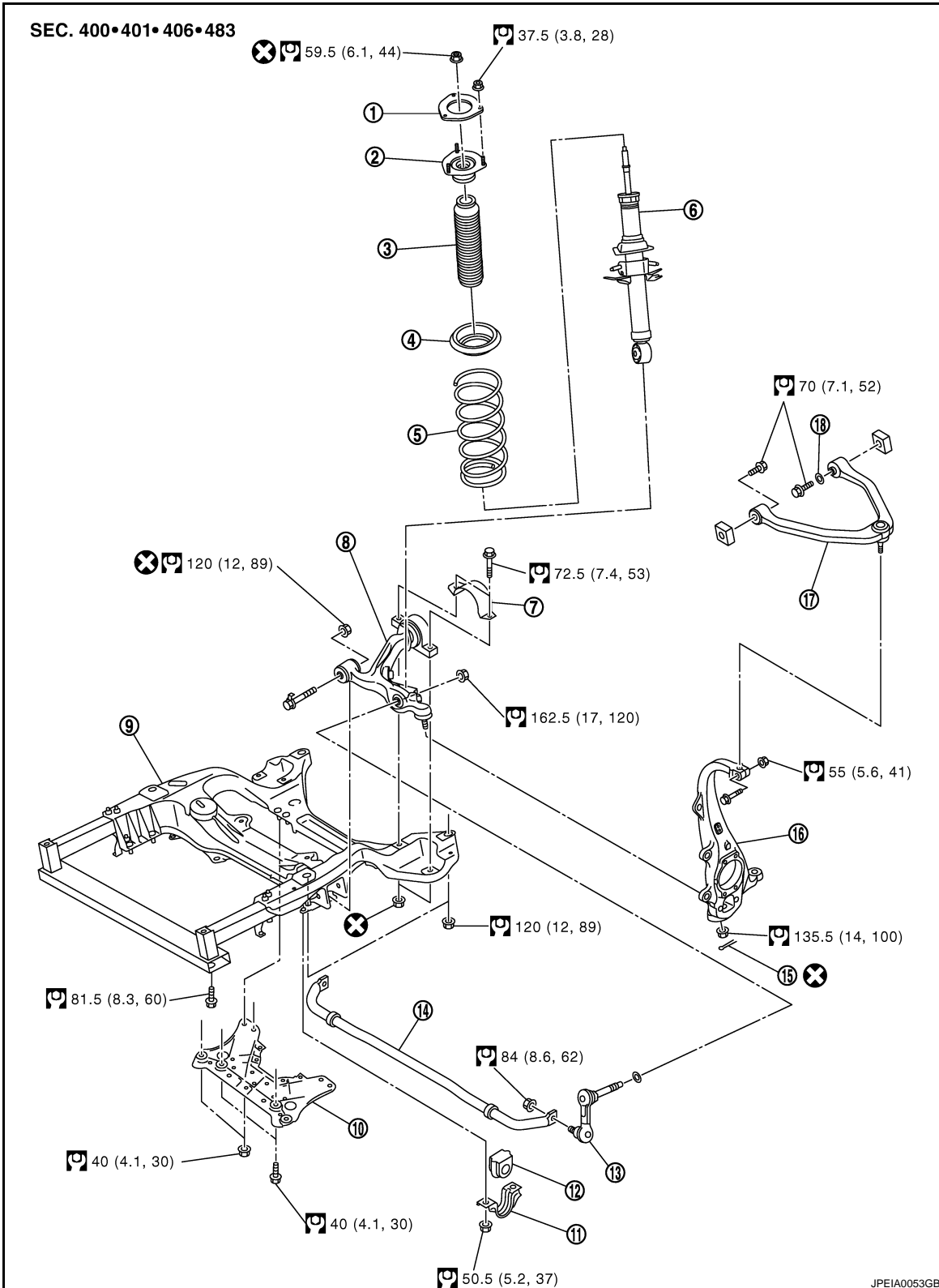
# FRONT SUSPENSION MEMBER

< ON-VEHICLE REPAIR >

## FRONT SUSPENSION MEMBER

Exploded View

INFOID:000000001666578



- |                  |                                    |                            |
|------------------|------------------------------------|----------------------------|
| 1. Mounting seal | 2. Shock absorber mounting bracket | 3. Bound bumper            |
| 4. Rubber seat   | 5. Coil spring                     | 6. Shock absorber          |
| 7. Insulator     | 8. Transverse link                 | 9. Front suspension member |

A  
B  
C  
D  
FSU  
F  
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# FRONT SUSPENSION MEMBER

## < ON-VEHICLE REPAIR >

- |                               |                      |                        |
|-------------------------------|----------------------|------------------------|
| 10. Suspension member stay    | 11. Stabilizer clamp | 12. Stabilizer bushing |
| 13. Stabilizer connecting rod | 14. Stabilizer bar   | 15. Cotter pin         |
| 16. Steering knuckle          | 17. Upper link       | 18. Stopper rubber     |

Refer to [GI-4, "Components"](#) for symbols in the figure.

## Removal and Installation

INFOID:000000001666566

### REMOVAL

1. Remove tire with power tool.
2. Remove under cover with power tool.
3. Remove suspension member stay with power tool.
4. Separate steering gear assembly and lower joint. Refer to [ST-26, "Exploded View"](#).
5. Remove steering outer socket from steering knuckle.
6. Remove wheel sensor from steering knuckle. Refer to [BRC-100, "Exploded View"](#).
7. Remove stabilizer connecting rod from transverse link. Refer to [FSU-19, "Exploded View"](#).
8. Remove front stabilizer. Refer to [FSU-19, "Exploded View"](#).
9. Install engine slinger, and then hoist engine.
10. Remove transverse link from front suspension member with power tool. Refer to [FSU-13, "Exploded View"](#).
11. Remove steering hydraulic piping bracket and steering gear from front suspension member. Refer to [ST-45, "Exploded View"](#).
12. Set suitable jack front suspension member.
13. Remove mounting nuts between engine mounting insulator and from suspension member. Refer to [EM-67, "Exploded View"](#).
14. Remove mounting bolts and nuts of front suspension member with power tool.
15. Gradually lower jack to remove front suspension assembly from vehicle.

### INSTALLATION

Note the following, and install in the reverse order of removal.

- Perform final tightening of installation position between front suspension member and transverse links (rubber bushing) under unladen condition with tires on level ground.

### Inspection

INFOID:000000001666567

#### INSPECTION AFTER REMOVAL

Check the front suspension member for significant deformation, cracks, or damages. Replace if necessary.

#### INSPECTION AFTER INSTALLATION

- Check wheel alignment. Refer to [FSU-25, "Wheel Alignment"](#).
- Adjust the neutral position of the steering angle sensor after checking the wheel alignment. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

# FRONT SUSPENSION ASSEMBLY

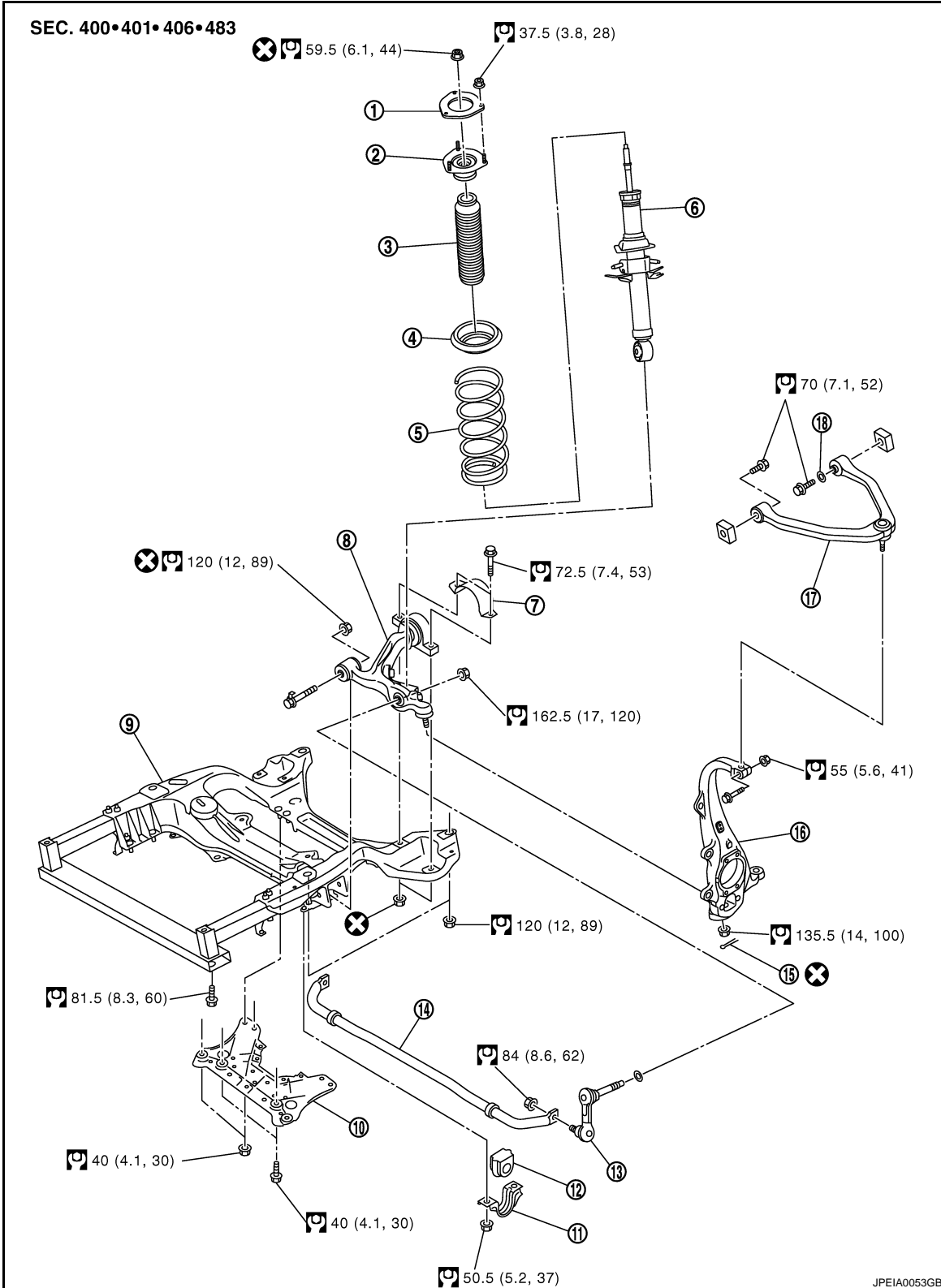
< REMOVAL AND INSTALLATION >

## REMOVAL AND INSTALLATION

### FRONT SUSPENSION ASSEMBLY

Exploded View

INFOID:000000001666568



A

B

C

D

FSU

F

G

H

I

J

K

L

M

N

O

P

# FRONT SUSPENSION ASSEMBLY

## < REMOVAL AND INSTALLATION >

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- |                               |                                    |                            |
|-------------------------------|------------------------------------|----------------------------|
| 1. Mounting seal              | 2. Shock absorber mounting bracket | 3. Bound bumper            |
| 4. Rubber seat                | 5. Coil spring                     | 6. Shock absorber          |
| 7. Insulator                  | 8. Transverse link                 | 9. Front suspension member |
| 10. Suspension member stay    | 11. Stabilizer clamp               | 12. Stabilizer bushing     |
| 13. Stabilizer connecting rod | 14. Stabilizer bar                 | 15. Cotter pin             |
| 16. Steering knuckle          | 17. Upper link                     | 18. Stopper rubber         |

Refer to [GI-4, "Components"](#) for symbols in the figure.

## Removal and Installation

INFOID:000000001666569

### REMOVAL

Remove suspension assembly with engine assembly from vehicle. Refer to [EM-67, "Exploded View"](#).

### INSTALLATION

Install in the reverse order of removal.

## Inspection

INFOID:000000001666570

### INSPECTION AFTER INSTALLATION

- Check wheel alignment. Refer to [FSU-25, "Wheel Alignment"](#).
- Adjust the neutral position of the steering angle sensor after checking the wheel alignment. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).
- Check wheel sensor harness for proper connection. Refer to [BRC-100, "Exploded View"](#).



# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

### SERVICE DATA AND SPECIFICATIONS (SDS)

#### Wheel Alignment

INFOID:000000001666571

Camber Degree minute (Decimal degree)	Minimum	-1° 10' (-1.17°)	
	Nominal	-0° 25' (-0.42°)	
	Maximum	0° 20' (0.33°)	
	Left and right difference	0° 33' (0.55°) or less	
Caster Degree minute (Decimal degree)	Minimum	4° 05' (4.08°)	
	Nominal	4° 50' (4.83°)	
	Maximum	5° 35' (5.58°)	
	Left and right difference	0° 39' (0.65°) or less	
Kingpin inclination Degree minute (Decimal degree)	Minimum	6° 40' (6.67°)	
	Nominal	7° 25' (7.42°)	
	Maximum	8° 10' (8.17°)	
Total toe-in	Distance	Minimum	0 mm (0 in)
		Nominal	In 1 mm (0.04 in)
		Maximum	In 2 mm (0.08 in)
	Angle (left wheel or right wheel) Degree minute (Decimal Degree)	Minimum	0° 00' (0.00°)
		Nominal	In 0° 02' 30" (0.04°)
		Maximum	In 0° 05' (0.08°)

Measure value under unladen\* conditions.

\*: Fuel, engine coolant and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions.

#### Ball Joint

INFOID:000000001666572

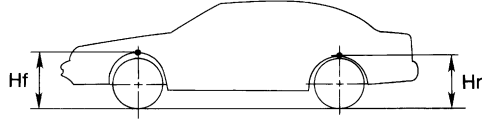
Swing torque	Transverse link	0.5 – 3.6 N·m (0.06 – 0.36 kg·m, 5 – 31 in-lb)
	Upper link	0 – 2.0 N·m (0 – 0.2 kg·m, 0 – 17 in-lb)
Measurement on spring balance	Transverse link	7.8 – 56.3 N (0.8 – 5.7 kg, 1.8 – 12.7 lb)
	Upper link	0 – 61.5 N (0 – 6.3 kg, 0 – 13.8 lb)
Rotating torque	Transverse link	0.5 – 3.9 N·m (0.06 – 0.39 kg·m, 5 – 34 in-lb)
	Upper link	0 – 2.0 N·m (0 – 0.2 kg·m, 0 – 17 in-lb)
Axial end play		0 mm (0 in)

# SERVICE DATA AND SPECIFICATIONS (SDS)

## < SERVICE DATA AND SPECIFICATIONS (SDS)

### Wheel Height

INFOID:000000001666573



SFA818A

Applied model	Except for sport models	Sport models
Tire size	225/50R18	225/45R19
Front (Hf)	712 mm (28.03 in)	715 mm (28.15 in)

Measure value under unladen\* conditions

\*: Fuel, engine coolant and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions.