

SECTION **FAX**  
FRONT AXLE

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FAX

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# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

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

#### NVH Troubleshooting Chart

INFOID:000000001666518

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										
		Improper installation, looseness	Parts interference	Wheel bearing damage	FRONT AXLE AND FRONT SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING		
Symptom	FRONT AXLE	Noise	x	x	x	x	x	x	x	x	x	x
		Shake	x	x	x	x	x	x	x	x	x	x
		Vibration	x	x	x	x	x		x			x
		Shimmy	x	x		x	x	x		x		x
		Judder	x			x	x	x		x		x
		Poor quality ride or handling	x	x		x	x	x				
Reference page		FAX-5	—	FAX-4	NVH in FAX and FSU sections	NVH in WT section	NVH in WT section	NVH in RAX section.	NVH in BR section	NVH in ST section		

x: Applicable

# PREPARATION

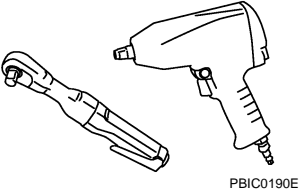
< PREPARATION >

## PREPARATION

### PREPARATION

#### Commercial Service Tool

INFOID:000000001666519

Tool name	Description
<p>Power tool</p>  <p>PBIC0190E</p>	<p>Looseing bolts and nuts</p>

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# FRONT WHEEL HUB AND KNUCKLE

< ON-VEHICLE MAINTENANCE >

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## ON-VEHICLE MAINTENANCE

### FRONT WHEEL HUB AND KNUCKLE

#### Inspection

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#### MOUNTING INSPECTION

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

#### WHEEL BEARING INSPECTION

- Move wheel hub and bearing assembly in the axial direction by hand. Make sure there is no looseness of wheel bearing.

#### **Standard**

**Axial end play** : Refer to [FAX-7, "Wheel Bearing"](#).

- Rotate wheel hub and make sure that is no unusual noise or other irregular conditions. If there is any of irregular conditions, replace wheel hub and bearing assembly.

# FRONT WHEEL HUB AND KNUCKLE

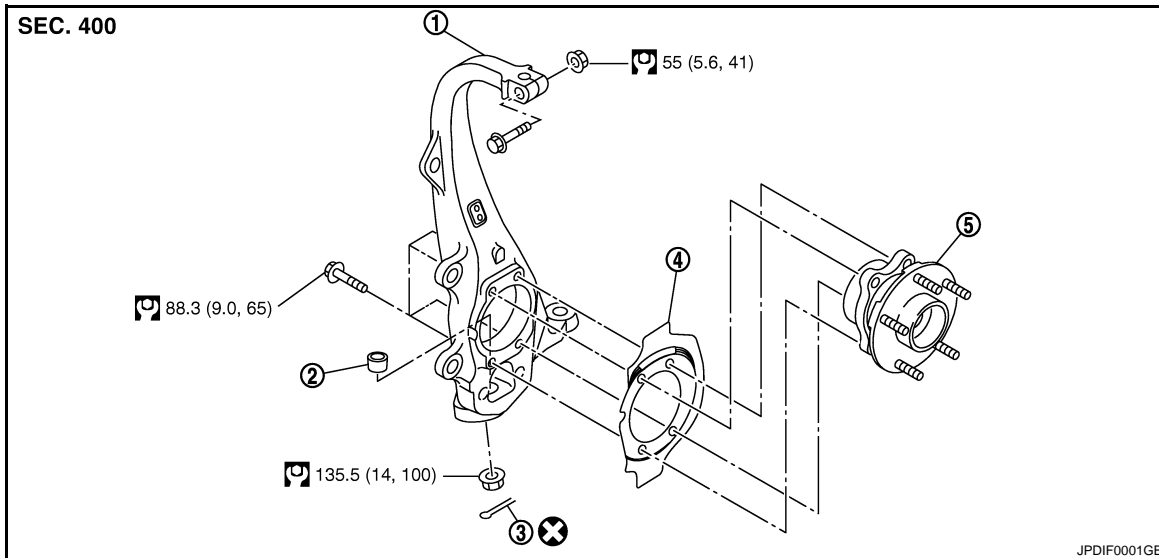
< ON-VEHICLE REPAIR >

## ON-VEHICLE REPAIR

### FRONT WHEEL HUB AND KNUCKLE

Exploded View

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- |                     |                                   |               |
|---------------------|-----------------------------------|---------------|
| 1. Steering knuckle | 2. Ball seat                      | 3. Cotter pin |
| 4. Splash guard     | 5. Wheel hub and bearing assembly |               |

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

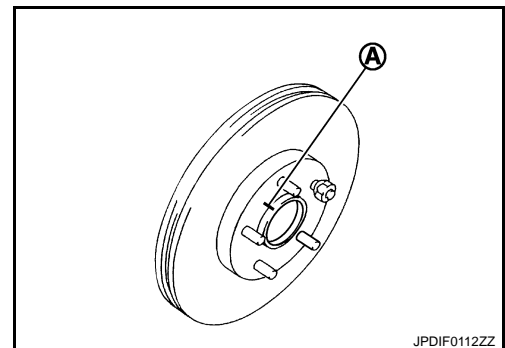
## Removal and Installation

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### REMOVAL

#### Wheel Hub and Bearing Assembly

1. Remove tires from vehicle with power tool.
2. Remove wheel sensor from steering knuckle. Refer to [BRC-100, "Exploded View"](#).  
**CAUTION:**  
**Never pull on wheel sensor harness.**
3. Remove torque member mounting bolts with power tool. Hang torque member in a place where it will not interfere with work. Refer to [BR-43, "BRAKE CALIPER ASSEMBLY \(1 PISTON TYPE\) : Exploded View"](#) (1 piston type), [BR-47, "BRAKE CALIPER ASSEMBLY \(4 PISTON TYPE\) : Exploded View"](#) (4 piston type).  
**CAUTION:**  
**Never depress brake pedal while brake caliper is removed.**
4. Remove disc rotor. Refer to [BR-44, "BRAKE CALIPER ASSEMBLY \(1 PISTON TYPE\) : Removal and Installation"](#) (1 piston type), [BR-48, "BRAKE CALIPER ASSEMBLY \(4 PISTON TYPE\) : Removal and Installation"](#) (4 piston type).  
**CAUTION:**
  - Put matching marks (A) on the wheel hub and bearing assembly and the disc rotor before removing the disc rotor.
  - Never drop disc rotor.
5. Remove wheel hub and bearing assembly mounting bolts, and then remove splash guard and wheel hub and bearing assembly from steering knuckle.



Steering Knuckle

# FRONT WHEEL HUB AND KNUCKLE

## < ON-VEHICLE REPAIR >

1. Remove wheel hub and bearing assembly, and then remove splash guard.
2. Remove brake hose bracket. Refer to [BR-21, "FRONT : Exploded View"](#).
3. Remove cotter pin (1) of steering outer socket, and then loosen the nut.

4. Remove steering outer socket (2) from steering knuckle (3) so as not to damage ball joint boot (4) using the ball joint remover.

**CAUTION:**

**Temporarily tighten the nut to prevent damage to threads and to prevent the ball joint remover from suddenly coming off.**

5. Remove cotter pin of transverse link and steering knuckle, and then loosen nut.

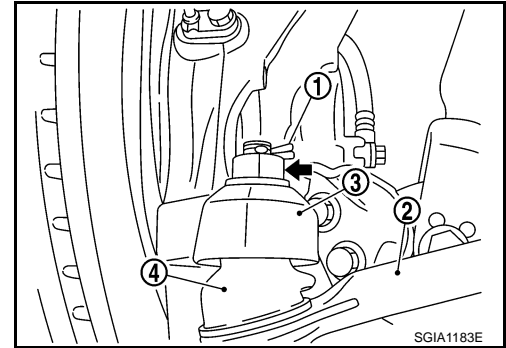
6. Remove fixing nut and bolt with a power tool, separate upper link from steering knuckle. Refer to [FSU-16, "Exploded View"](#).

7. Separate transverse link from steering knuckle so as not to damage ball joint boot using the ball joint remover.

**CAUTION:**

**Temporarily tighten the nut to prevent damage to threads and to prevent the ball joint remover from suddenly coming off.**

8. Remove steering knuckle from vehicle.



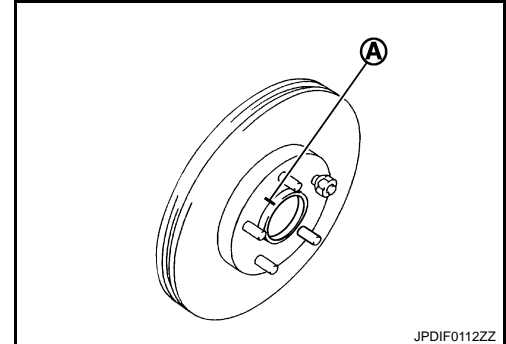
## INSTALLATION

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

- Perform the final tightening of each of parts under conditions, which were removed when removing wheel hub and bearing assembly and steering knuckle.

**CAUTION:**

- **Never reuse cotter pin.**
- **Never drop disc rotor.**
- **Align the matching marks (A) that have been made during removal when reusing the disc rotor.**



## Inspection

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### INSPECTION AFTER REMOVAL

Check components for deformation, cracks, and other damage. Replace if there are.

#### Ball Joint Inspection

Check boots of transverse link and steering outer socket ball joint for breakage, axial play, and torque. Refer to [FSU-6, "Inspection"](#) and [ST-32, "Inspection"](#).

### INSPECTION AFTER INSTALLATION

- Check the wheel alignment. Refer to [FSU-7, "Wheel Alignment Inspection"](#).
- Adjust neutral position of 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 Bearing

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Axial end play	0.05 mm (0.002 in) or less
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