

SECTION **RAX**  
REAR AXLE

A  
B  
C

RAX

CONTENTS

E

**2WD**

**SYMPTOM DIAGNOSIS** ..... 2

**NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING** ..... 2  
 NVH Troubleshooting Chart ..... 2

**ON-VEHICLE MAINTENANCE** ..... 3

**REAR WHEEL HUB AND HOUSING** ..... 3  
 Exploded View ..... 3  
 Inspection ..... 3

**ON-VEHICLE REPAIR** ..... 4

**REAR WHEEL HUB** ..... 4  
 Exploded View ..... 4  
 Removal and Installation ..... 4  
 Inspection ..... 4

**SERVICE DATA AND SPECIFICATIONS (SDS)** ..... 5

**SERVICE DATA AND SPECIFICATIONS (SDS)** ..... 5  
 Wheel Bearing ..... 5

**4WD**

**SYMPTOM DIAGNOSIS** ..... 6

**NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING** ..... 6  
 NVH Troubleshooting Chart ..... 6

**PRECAUTION** ..... 7

**PRECAUTIONS** ..... 7  
 Precautions for Drive Shaft ..... 7

**PREPARATION** ..... 8

**PREPARATION** ..... 8  
 Special Service Tool ..... 8

**ON-VEHICLE MAINTENANCE** ..... 9

**REAR WHEEL HUB AND HOUSING** ..... 9  
 Exploded View ..... 9  
 Inspection ..... 9

**REAR DRIVE SHAFT** ..... 10  
 Inspection ..... 10

**ON-VEHICLE REPAIR** ..... 11

**REAR WHEEL HUB AND HOUSING** ..... 11  
 Exploded View ..... 11  
 Removal and Installation ..... 11  
 Inspection ..... 12

**REAR DRIVE SHAFT** ..... 13  
 Exploded View ..... 13  
 Removal and Installation ..... 13  
 Disassembly and Assembly ..... 14  
 Inspection ..... 18

**SERVICE DATA AND SPECIFICATIONS (SDS)** ..... 20

**SERVICE DATA AND SPECIFICATIONS (SDS)** ..... 20  
 Wheel Bearing ..... 20  
 Drive Shaft ..... 20

F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P

# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

[2WD]

## SYMPTOM DIAGNOSIS

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

#### NVH Troubleshooting Chart

INFOID:000000001181375

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

Reference page			RAX-4	—	RAX-3	NVH in RAX and RSU sections	NVH in WT section	NVH in WT section	NVH in BR section
Possible cause and SUSPECTED PARTS			Improper installation, looseness	Parts interference	Wheel bearing damage	REAR AXLE AND REAR SUSPENSION	TIRE	ROAD WHEEL	BRAKE
Symptom	RAER AXLE	Noise	x	x	x	x	x	x	x
		Shake	x	x	x	x	x	x	x
		Vibration	x	x	x	x	x		
		Shimmy	x	x		x	x	x	x
		Judder	x			x	x	x	x
		Poor quality ride or handling	x	x		x	x	x	

x: Applicable

# REAR WHEEL HUB AND HOUSING

< ON-VEHICLE MAINTENANCE >

[2WD]

## ON-VEHICLE MAINTENANCE

### REAR WHEEL HUB AND HOUSING

#### Exploded View

INFOID:000000001181376

Refer to [RAX-4, "Exploded View"](#).

#### Inspection

INFOID:000000001181377

#### MOUNTING INSPECTION

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

RAX

#### 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 [RAX-5, "Wheel Bearing"](#).

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

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# REAR WHEEL HUB

< ON-VEHICLE REPAIR >

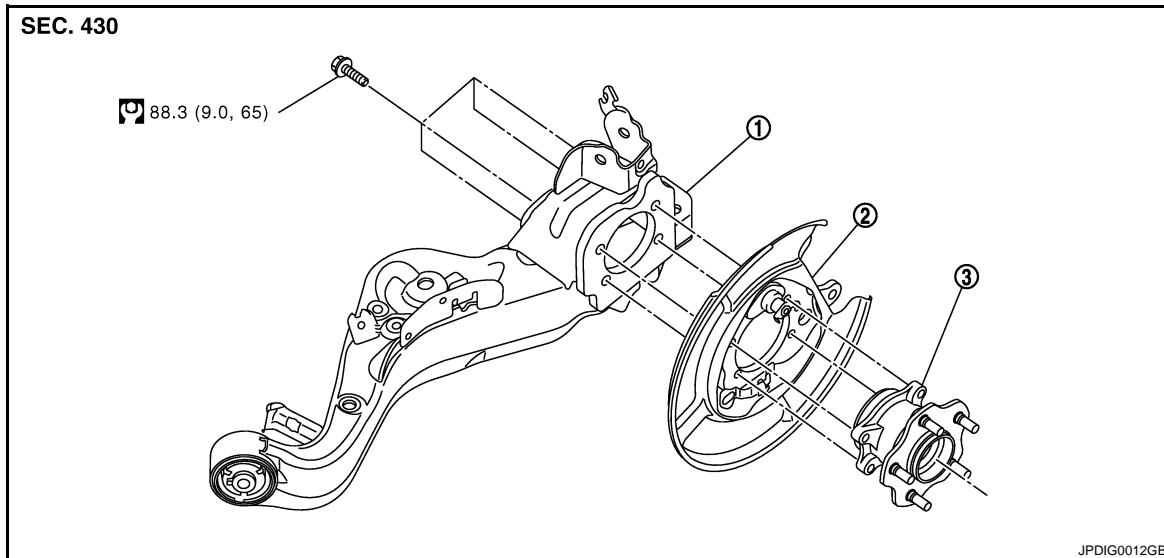
[2WD]

## ON-VEHICLE REPAIR

### REAR WHEEL HUB

#### Exploded View

INFOID:000000001181378



1. Suspension arm

2. Back plate

3. Wheel hub and bearing assembly

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

## Removal and Installation

INFOID:000000001181379

### REMOVAL

#### Wheel Hub and Bearing Assembly

1. Remove tires from vehicle.
2. Remove torque member mounting bolts. Hang torque member not to interfere with work. Refer to [BR-45. "BRAKE CALIPER ASSEMBLY : Exploded View"](#) (LHD), [BR-92. "BRAKE CALIPER ASSEMBLY : Exploded View"](#) (RHD).

#### **CAUTION:**

**Never depress brake pedal while brake caliper is removed.**

3. Remove disc rotor. Refer to [PB-7. "Removal and Installation"](#).
4. Remove wheel hub and bearing assembly.

### INSTALLTION

Install in the reverse order of removal.

### Inspection

INFOID:000000001181380

#### INSPECTION AFTER REMOVAL

Check wheel hub and bearing assembly for wear, cracks, and damage. Replace if there are.

#### INSPECTION AFTER INSTALLATION

Check wheel alignment. Refer to [FSU-7. "Wheel Alignment Inspection"](#).

# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[2WD]

## SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Wheel Bearing

INFOID:000000001181381

Axial end play	0.05 mm (0.002 in) or less
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# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

[4WD]

## SYMPTOM DIAGNOSIS

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

#### NVH Troubleshooting Chart

INFOID:000000001181382

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

Reference page																
Possible cause and SUSPECTED PARTS																
Symptom	DRIVE SHAFT	Noise	×	×					×	×	×	×	×	×	×	
		Shake	×		×			×		×	×	×	×		×	
	REAR AXLE	Noise				×	×	×	×	×		×	×	×	×	
		Shake				×	×	×		×		×	×	×	×	
		Vibration				×	×	×		×		×		×		
		Shimmy				×	×			×		×	×		×	
		Judder				×				×		×	×		×	
		Poor quality ride or handling				×	×			×		×	×			
		Excessive joint angle														
		Joint sliding resistance														
		Imbalance														
		Improper installation, looseness														
		Parts interference														
		PROPELLER SHAFT														
		DIFFERENTIAL														
		REAR AXLE AND REAR SUSPENSION														
		REAR AXLE														
		TIRE														
		ROAD WHEEL														
		DRIVE SHAFT														
		BRAKE														

×: Applicable

# PRECAUTION

## PRECAUTIONS

### Precautions for Drive Shaft

INFOID:000000001181383

**CAUTION:**

Note the following precautions when disassembling and assembling drive shaft.

- Joint sub-assembly does not disassemble because it is non-overhaul parts.
- Perform work in a dust-free location.
- Before disassembling and assembling, clean the parts.
- Prevent the entry of foreign objects during disassembly of the service location.
- Disassembled parts must be carefully reassembled in the correct order. If work is interrupted, a clean cover must be placed over parts.
- Paper shop cloths must be used. Fabric shop cloths must not be used because of the danger of lint adhering to parts.
- Disassembled parts (except for rubber parts) should be cleaned with kerosene which shall be removed by blowing with air or wiping with paper shop cloths.

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# PREPARATION

< PREPARATION >

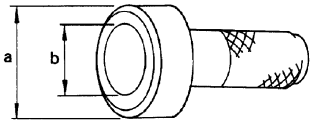
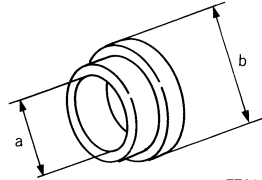
[4WD]

## PREPARATION

### PREPARATION

#### Special Service Tool

INFOID:000000001181384

Tool number Tool name	Description
<p>KV38100500 Drift a: 80 mm (3.15 in) dia. b: 60 mm (2.36 in) dia.</p>  <p>ZZA0701D</p>	Installing sensor rotor
<p>KV40101840 Collar a: 67 mm (2.64 in) dia. b: 85 mm (3.35 in) dia.</p>  <p>ZZA1113D</p>	Installing sensor rotor



# REAR WHEEL HUB AND HOUSING

< ON-VEHICLE MAINTENANCE >

[4WD]

## ON-VEHICLE MAINTENANCE

### REAR WHEEL HUB AND HOUSING

#### Exploded View

INFOID:000000001181385

Refer to [RAX-11, "Exploded View"](#).

#### Inspection

INFOID:000000001181386

#### MOUNTING INSPECTION

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

RAX

#### 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 [RAX-20, "Wheel Bearing"](#).

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

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## REAR DRIVE SHAFT

< ON-VEHICLE MAINTENANCE >

[4WD]

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### REAR DRIVE SHAFT

#### Inspection

INFOID:000000001181387

- Check drive shaft mounting point and joint for looseness and other damage.
- Check boot for cracks and other damage.

**CAUTION:**

**Replace entire drive shaft assembly when noise or vibration occur from drive shaft.**

# REAR WHEEL HUB AND HOUSING

< ON-VEHICLE REPAIR >

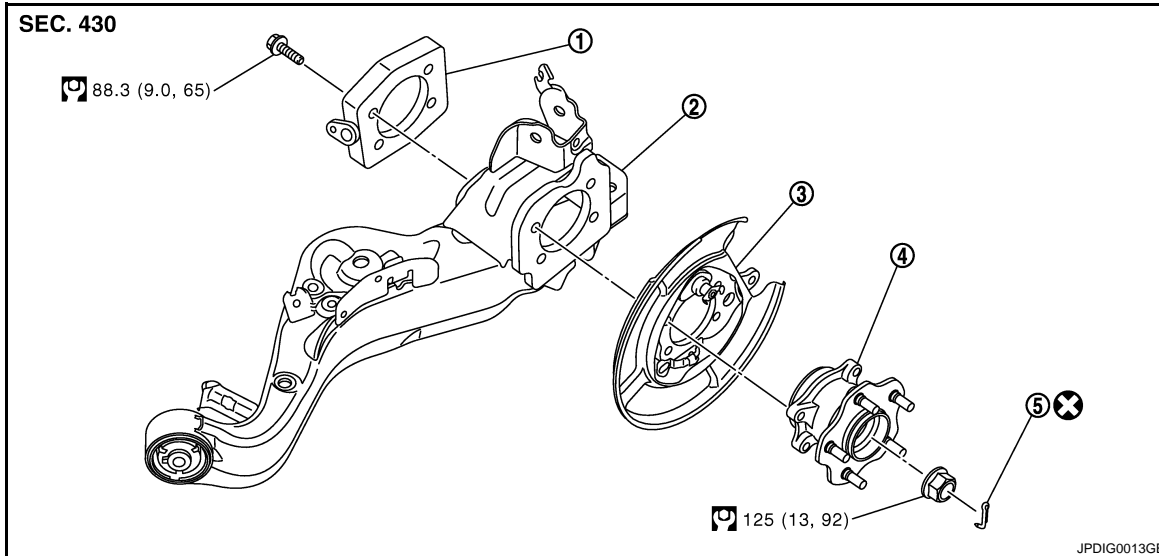
[4WD]

## ON-VEHICLE REPAIR

### REAR WHEEL HUB AND HOUSING

#### Exploded View

INFOID:000000001181388



1. Axle housing
2. Suspension arm
3. Back plate
4. Wheel hub and bearing assembly
5. Cotter pin

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

#### Removal and Installation

INFOID:000000001181389

##### REMOVAL

###### Wheel Hub and Bearing Assembly

1. Remove tires from vehicle.
2. Remove torque member mounting bolts. Hang torque member not to interfere with work. Refer to [BR-45, "BRAKE CALIPER ASSEMBLY : Exploded View"](#) (LHD), [BR-92, "BRAKE CALIPER ASSEMBLY : Exploded View"](#) (RHD).

##### **CAUTION:**

**Never depress brake pedal while brake caliper is removed.**

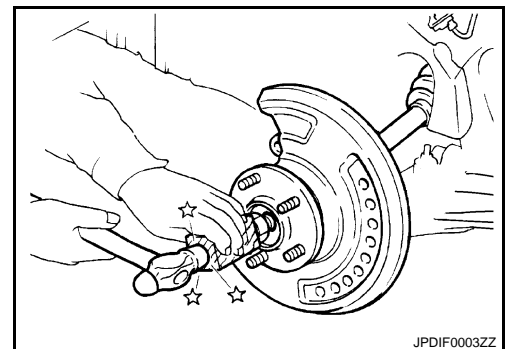
3. Remove disc rotor. Refer to [PB-7, "Removal and Installation"](#).
4. Remove cotter pin, and then loosen hub lock nut.
5. Patch hub lock nut with a piece of wood. Hammer the wood to disengage wheel hub and bearing assembly from drive shaft. Remove the hub lock nut.

##### **CAUTION:**

- **Never place drive shaft joint at an extreme angle. Also be careful not to overextend slide joint.**
- **Never droop drive shaft. Support drive shaft by housing, joint sub-assembly, shaft etc.**

##### **NOTE:**

Use suitable puller, if wheel hub and bearing assembly and drive shaft cannot be separated even after performing the above procedure.



6. Remove wheel hub and bearing assembly.

##### INSTALLTION

Install in the reverse order of removal.

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## REAR WHEEL HUB AND HOUSING

< ON-VEHICLE REPAIR >

[4WD]

### Inspection

INFOID:000000001181390

#### INSPECTION AFTER REMOVAL

Check wheel hub and bearing assembly for wear, cracks, and damage. Replace if there are.

#### INSPECTION AFTER INSTALLATION

Check wheel alignment. Refer to [RSU-5, "Wheel Alignment Inspection"](#).

# REAR DRIVE SHAFT

< ON-VEHICLE REPAIR >

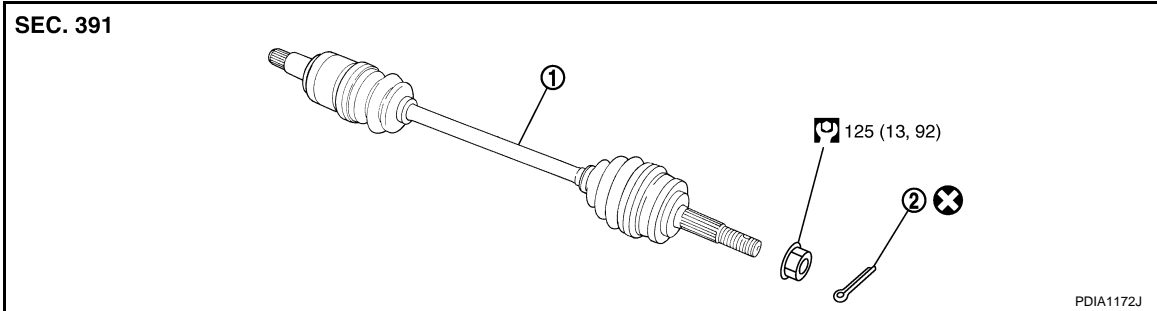
[4WD]

## REAR DRIVE SHAFT

### Exploded View

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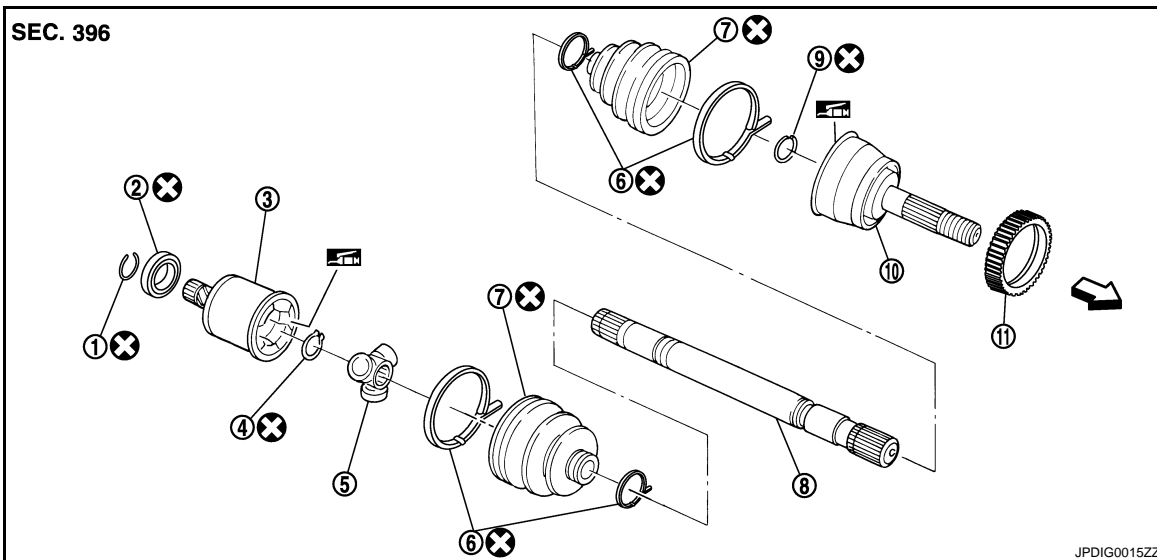
### REMOVAL



1. Drive shaft
2. Cotter pin


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

### DISASSEMBLY



1. Circular clip
2. Dust shield
3. Housing
4. Snap ring
5. Spider assembly
6. Boot band
7. Boot
8. Shaft
9. Circular clip
10. Joint sub-assembly
11. Sensor rotor

⇐: Wheel side

: Fill NISSAN genuine grease or an equivalent.

Refer to [GI-4, "Components"](#) for symbols not described on the above.

### Removal and Installation

INFOID:000000001181392

#### REMOVAL

1. Remove tires from vehicle.
2. Remove torque member mounting bolts. Hang torque member not to interfere with work. Refer to [BR-45, "BRAKE CALIPER ASSEMBLY : Exploded View"](#) (LHD), [BR-92, "BRAKE CALIPER ASSEMBLY : Exploded View"](#) (RHD).

#### CAUTION:

Never depress brake pedal while brake caliper is removed.

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# REAR DRIVE SHAFT

[4WD]

< ON-VEHICLE REPAIR >

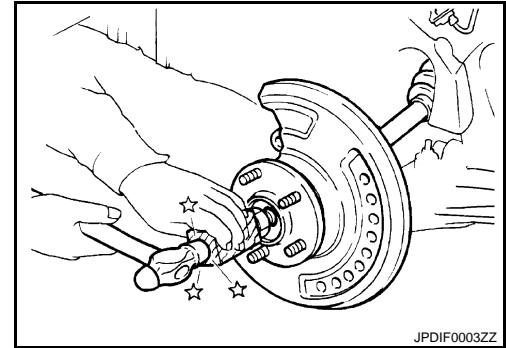
3. Remove disc rotor. Refer to [PB-7, "Removal and Installation"](#).
4. Remove cotter pin, then loosen hub lock nut.
5. Patch hub lock nut with a piece of wood. Hammer the wood to disengage wheel hub and bearing assembly from drive shaft. Remove the hub lock nut.

**CAUTION:**

- Never place drive shaft joint at an extreme angle. Also be careful not to overextend slide joint.
- Never allow drive shaft to hang down without support for housing (or joint sub-assembly), shaft and the other parts.

**NOTE:**

Using a suitable puller if the wheel hub and bearing assembly and drive shaft cannot be separated even after performing the above procedure.



6. Remove wheel sensor from axle housing. Refer to [BRC-67, "REAR WHEEL SENSOR : Exploded View"](#) (without ESP), [BRC-172, "REAR WHEEL SENSOR : Exploded View"](#) (with ESP).
7. Remove stabilizer link. Refer to [RSU-17, "Exploded View"](#).
8. Set suitable jack under suspension arm.
9. Remove shock absorber from suspension arm. Refer to [RSU-9, "Exploded View"](#).
10. Remove upper link from suspension arm. Refer to [RSU-11, "Exploded View"](#).
11. Remove lower link from suspension arm. Refer to [RSU-11, "Exploded View"](#).
12. Remove drive shaft from final drive assembly.

## INSTALLATION

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

- Perform final tightening of bolts and nuts at suspension arm (rubber bushing), under unladen conditions with tires on level ground.

## Disassembly and Assembly

INFOID:000000001181393

## DISASSEMBLY

Final Drive Side

1. Fix shaft with a vise.

**CAUTION:**

**Protect shaft using aluminum or copper plates when fixing with a vise.**

2. Remove boot bands, and then remove boot from housing.
3. Put matching marks on housing and shaft.

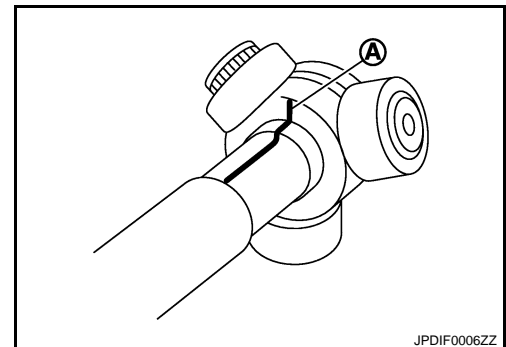
**CAUTION:**

**Use paint or an equivalent for matching marks. Never scratch the surface.**

4. Put matching marks (A) on the spider assembly and shaft.

**CAUTION:**

**Use paint or an equivalent for matching marks. Never scratch the surface.**

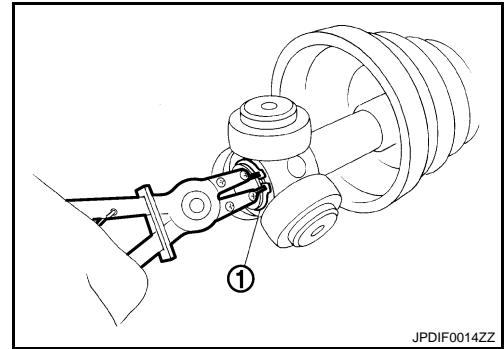


# REAR DRIVE SHAFT

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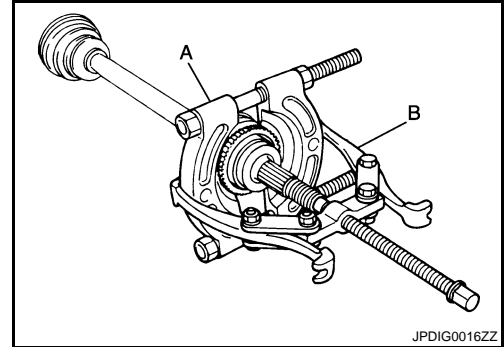
## < ON-VEHICLE REPAIR >

5. Remove snap ring (1), and then remove spider assembly from shaft.
6. Remove boot from shaft.
7. Remove circular clip housing.
8. Remove dust shield to housing.
9. Remove old grease on housing with paper towels.



## Wheel Side

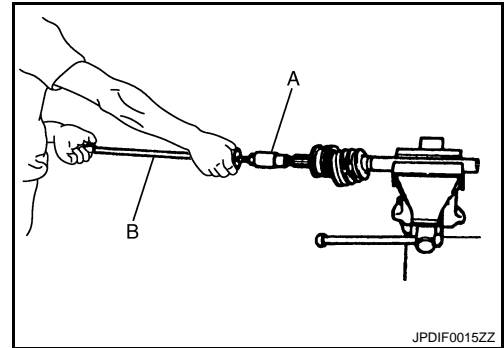
1. If sensor rotor needs to be removed, use a bearing replacer (A) and puller (B). Refer to [BRC-68. "REAR SENSOR ROTOR : Exploded View"](#) (without ESP), [BRC-173. "REAR SENSOR ROTOR : Exploded View"](#) (with ESP).



2. Fix shaft with a vise.  
**CAUTION:**  
**Protect shaft using aluminum or copper plates when fixing with a vise.**
3. Remove boot bands. Then remove boot from joint sub-assembly.
4. Screw the drive shaft puller (A) 30 mm (1.18 in) or more into the thread of joint sub-assembly, and pull joint sub-assembly with a sliding hammer (B) from shaft.

- **CAUTION:**  
• If joint sub-assembly cannot be removed after five or more unsuccessful attempts, replace shaft and joint sub assembly as a set.
- Align sliding hammer and drive shaft and remove them by pulling directory.

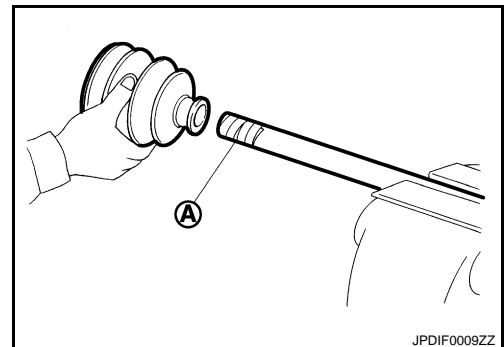
5. Remove boot from shaft.
6. Remove circular clip.  
**CAUTION:**  
**Never reuse circular clip.**
7. While rotating ball cage, clean old grease on joint sub-assembly with paper towels.



## ASSEMBLY

### Final drive Side

1. Wrap serrated part of shaft with tape (A). Install boot band and boot to shaft. Be careful not to damage boot.  
**CAUTION:**  
**Never reuse boot and boot band.**
2. Remove the tape wrapped around the serrated on shaft.



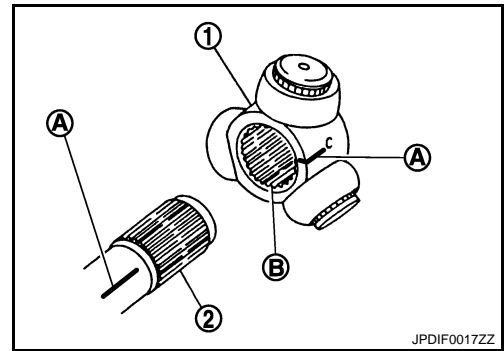
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# REAR DRIVE SHAFT

[4WD]

## < ON-VEHICLE REPAIR >

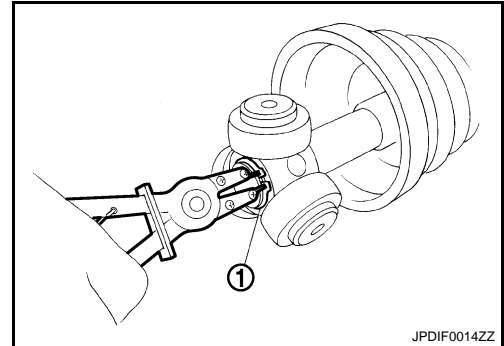
- To install the spider assembly (1), align it with the matching marks (A) that were on the shaft (2) during the removal, and direct the serration mounting surface (B) to the shaft.



- Secure spider assembly onto shaft with snap ring (1).
- Apply the appropriate amount of grease onto housing and slid surface.
- Assemble the housing onto spider assembly, and apply the balance of the specified amount grease.

### Standard

Grease amount : Refer to [RAX-20, "Drive Shaft"](#).

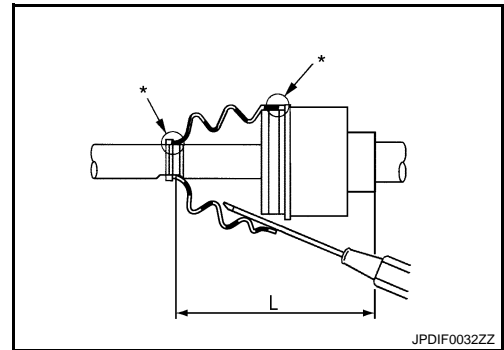


- Align matching marks painted when housing were removed.
- Install boot securely into grooves (indicated by "\*" marks) shown in the figure.

### CAUTION:

If there is grease on boot mounting surfaces (indicated by "\*" marks) of shaft or housing, boot may be removed. Remove all grease from the surfaces.

- To prevent from deformation of the boot, adjust the boot installation length to the value shown below (L) by inserting the suitable tool into the inside of boot from the large diameter side of boot and discharging inside air.



### Standard

Boots installed length (L) : Refer to [RAX-20, "Drive Shaft"](#).

### CAUTION:

- If the boot installation length exceeds the standard, it may cause breakage in boot.
- Be careful not to touch the inside of the boot with the tip of tool.

- Secure large and small ends of boot with new boot bands as shown in the figure.

### CAUTION:

Never reuse boot band.

- Secure housing and shaft, and then make sure that they are in the correct position when rotating boot. Install them with new boot band when the mounting positions become incorrect.

- Install dust shield to housing.

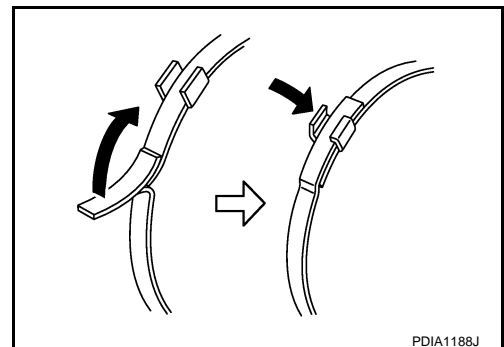
### CAUTION:

Never reuse dust shield.

- Install circular clip to housing.

### CAUTION:

Never reuse circular clip.



Wheel Side

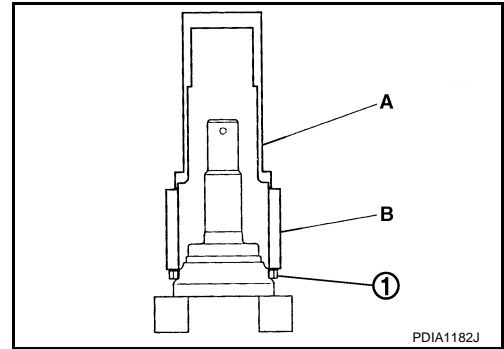


# REAR DRIVE SHAFT

[4WD]

## < ON-VEHICLE REPAIR >

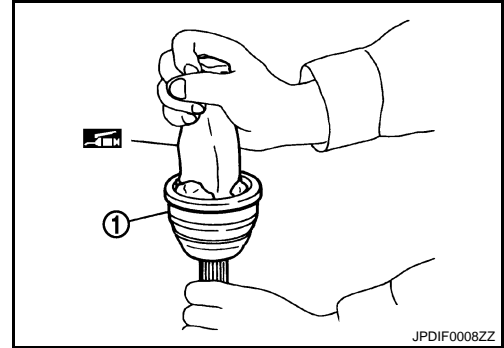
1. If sensor rotor (1) is removed, use a drift (A) (SST: KV38100500) and collar (B) (SST: KV40101840) to press in a new one.



2. Fill serration slot joint sub-assembly (1) with NISSAN genuine grease or equivalent until the serration slot and ball groove become full to the brim.

**CAUTION:**

After applying grease, use a shop cloth to wipe off old grease that has oozed out.



3. Wrap serrated part of shaft with tape (A). Install boot band and boot to shaft. Be careful not to damage boot.

**CAUTION:**

Never reuse boot and boot band.

4. Remove the tape wrapped around the serrated on shaft.

5. Position circular clip on groove at the shaft edge.

**CAUTION:**

Never reuse circular clip.

**NOTE:**

Drive joint inserter is recommended when installing circular clip.

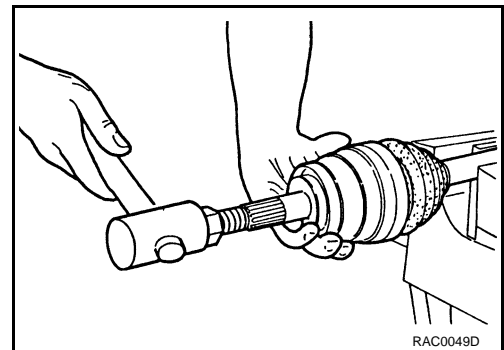
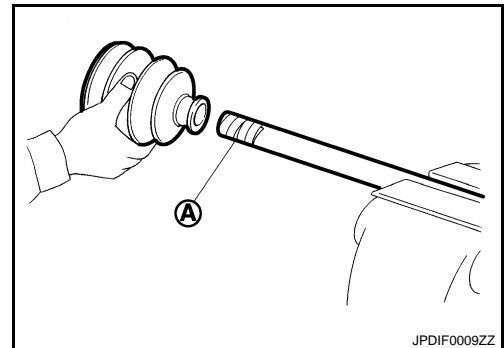
6. Align both center axes of the shaft edge and joint sub-assembly. Then assemble shaft with circular clip joint sub-assembly.

7. Install joint sub-assembly to shaft using plastic hammer.

**CAUTION:**

Confirm that joint sub-assembly is correctly engaged while rotating drive shaft.

8. Apply the balance of the specified amount of grease into the boot inside from large diameter side of boot.



**Standard**

**Grease amount** : Refer to [RAX-20. "Drive Shaft"](#).

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# REAR DRIVE SHAFT

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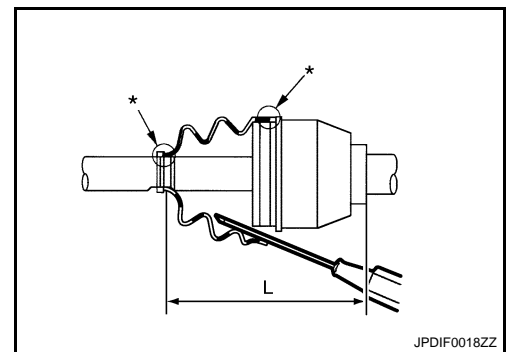
## < ON-VEHICLE REPAIR >

9. Install the boot securely into grooves (indicated by “\*” marks) shown in the figure.

**CAUTION:**

If grease adheres to the boot mounting surface (with “\*” mark) on the shaft or joint sub-assembly, boot may be removed. Remove all grease from the surfaces.

10. To prevent from deformation of the boot, adjust the boot installation length to the specified value shown below (L) by inserting the suitable tool into inside of the boot from the large diameter side of boot and discharging the inside air.



**Standard**

Boots installed length (L)

: Refer to [RAX-20, "Drive Shaft"](#).

**CAUTION:**

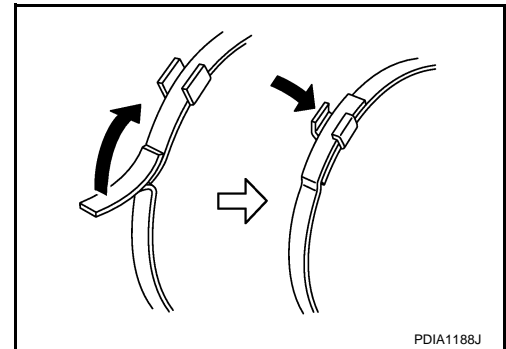
- If the boot installation length exceeds the standard, it may cause breakage in boot.
- Be careful not to touch the inside of the boot with the tip of tool.

11. Secure large and small ends of boot with new boot bands as shown in the figure.

**CAUTION:**

Never reuse boot band.

12. Secure housing and shaft, and then make sure that they are in the correct position when rotating boot. Install them with new boot band when the mounting positions become incorrect.

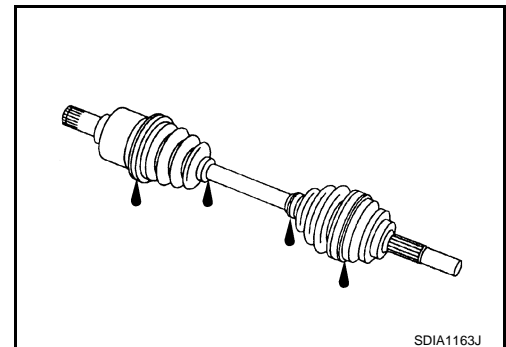


## Inspection

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### INSPECTION AFTER REMOVAL

- Move joint up/down, left/right, and in the axial direction. Check for any rough movement or significant looseness.
- Check boot for cracks or other damage, and also for grease leakage.
- If a malfunction is found, disassemble drive shaft, and then replace with new one.



### INSPECTION AFTER DISASSEMBLY

#### Shaft

Check shaft for runout, cracks, or other damage. Replace if there are.

#### Joint Sub-Assembly (Wheel Side)

Check the following:

- Joint sub-assembly for rough rotation and excessive axial looseness.
  - The inside of the joint sub-assembly for entry of foreign material.
  - Joint sub-assembly for compression scars, cracks, and fractures inside of joint sub-assembly.
- Replace joint sub-assembly if there are any non-standard conditions of components.

#### Housing and Spider assembly (Final Drive Side)

## REAR DRIVE SHAFT

< ON-VEHICLE REPAIR >

[4WD]

Replace housing and spider assembly if there is scratching or wear of housing roller contact surface or spider roller contact surface.

**NOTE:**

Housing and spider assembly are used in a set.

A

B

C

RAX

E

F

G

H

I

J

K

L

M

N

O

P

# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[4WD]

## SERVICE DATA AND SPECIFICATIONS (SDS)

### SERVICE DATA AND SPECIFICATIONS (SDS)

#### Wheel Bearing

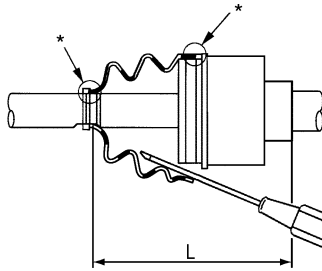
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Axial end play	0.05 mm (0.002 in) or less
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#### Drive Shaft

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Joint	Wheel side	Final drive side
Grease quantity	75 – 85 g (2.64 – 2.99 oz)	85 – 95 g (2.99 – 3.35 oz)
Boots installed length (L)	90.2 – 92.2 mm (3.551 – 3.630 in)	125.8 – 127.8 mm (4.95 – 5.03 in)



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