

SECTION **RAX**  
REAR AXLE

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RAX

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# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

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

#### NVH Troubleshooting Chart

INFOID:000000003138875

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

Reference page			—	<a href="#">RAX-13</a>	—	<a href="#">RAX-7</a>	—	NVH in DLN section.	NVH in DLN section.	NVH in RAX and RSU sections.	Refer to REAR AXLE in this chart.	NVH in WT section.	NVH in WT section.	Refer to DRIVE SHAFT in this chart.	NVH in BR section.	NVH in ST section.	
Possible cause and SUSPECTED PARTS			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	STEERING	
Symptom	DRIVE SHAFT	Noise	x	x				x	x	x	x	x	x		x	x	
		Shake	x		x				x		x	x	x		x	x	
	REAR AXLE	Noise				x	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			

x: Applicable

# PRECAUTIONS

< PRECAUTION >

## PRECAUTION

### PRECAUTIONS

#### Precautions for Drive Shaft

INFOID:000000003756668

**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 waste 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 waste.

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# PREPARATION

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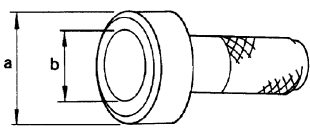
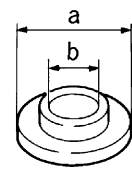
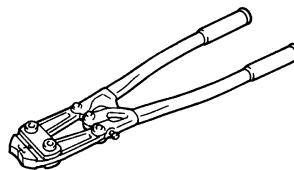
## PREPARATION

### PREPARATION

#### Special Service Tool

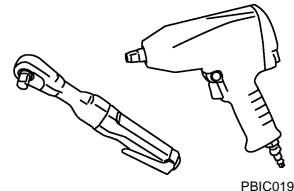
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name		Description
KV38100500 ( - ) Drift a: 80 mm (3.15 in) dia. b: 60 mm (2.36 in) dia.	 <p style="text-align: center; font-size: small;">ZZA0701D</p>	Installing drive shaft plug
KV38102200 ( - ) Drift a: 90 mm (3.54 in) dia. b: 31 mm (1.22 in) dia.	 <p style="text-align: center; font-size: small;">ZZA0920D</p>	Installing drive shaft plug
KV40107300 ( - ) Boot band crimping tool	 <p style="text-align: center; font-size: small;">ZZA1229D</p>	Installing boot band

#### Commercial Service Tool

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Tool name		Description
Power tool	 <p style="text-align: center; font-size: small;">PBIC0190E</p>	Loosening bolts and nuts

# REAR WHEEL HUB AND HOUSING

< ON-VEHICLE MAINTENANCE >

## ON-VEHICLE MAINTENANCE

### REAR WHEEL HUB AND HOUSING

#### Inspection

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#### MOUNTING INSPECTION

Make sure the mounting conditions (looseness, back lash) 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 [RAX-15, "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.

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## REAR DRIVE SHAFT

< ON-VEHICLE MAINTENANCE >

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### REAR DRIVE SHAFT

#### Inspection

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- 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

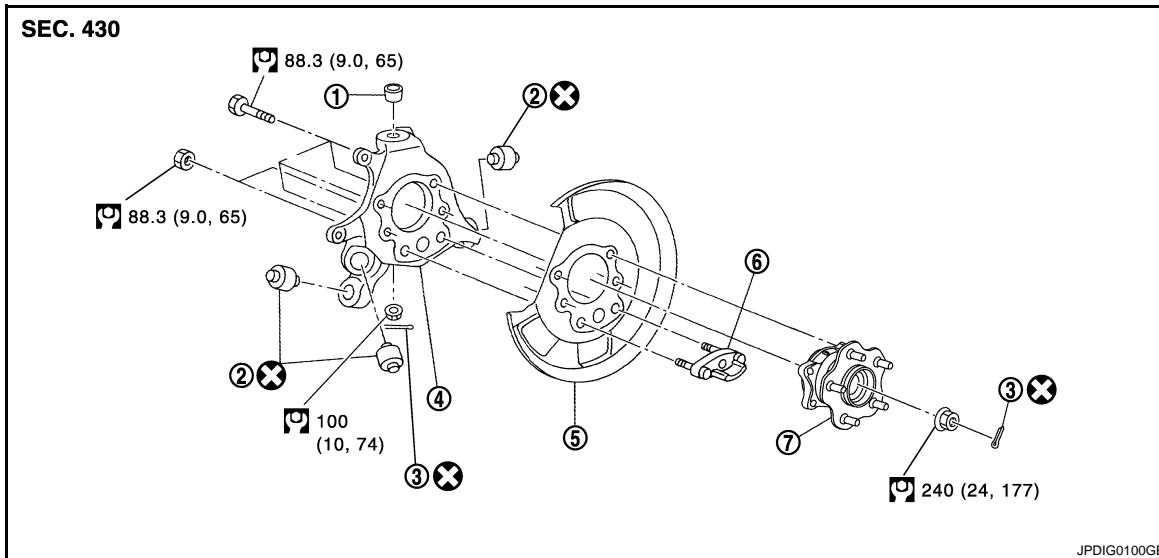
< ON-VEHICLE REPAIR >

## ON-VEHICLE REPAIR

### REAR WHEEL HUB AND HOUSING

#### Exploded View

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- |                                   |               |                 |
|-----------------------------------|---------------|-----------------|
| 1. Ball seat                      | 2. Bushing    | 3. Cotter pin   |
| 4. Axle housing                   | 5. Back plate | 6. Anchor block |
| 7. Wheel hub and bearing assembly |               |                 |

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

#### Removal and Installation

INFOID:000000003138882

##### REMOVAL

1. Remove tire with power tool.
2. Remove caliper assembly with power tool. Hang it in a place where it will not interfere with work. Refer to [BR-40, "BRAKE CALIPER ASSEMBLY : Exploded View"](#).

##### CAUTION:

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

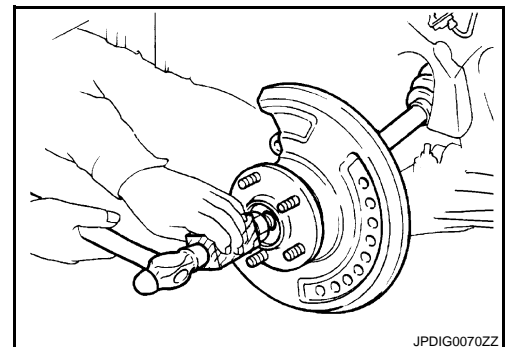
3. Remove disc rotor. Refer to [BR-41, "BRAKE CALIPER ASSEMBLY : Removal and Installation"](#).
4. Remove cotter pin, then loosen hub lock nut with a power tool.
5. Patch hub lock nut with a piece of wood. Hammer the wood to disengage wheel hub and bearing assembly from drive shaft. Take out the hub 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 counterpart such as joint sub-assembly, and other parts.**

##### NOTE:

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



6. Remove parking brake shoe and parking brake cable from back plate. Refer to [PB-7, "Exploded View"](#) and [PB-5, "Exploded View"](#).
7. Remove stabilizer connecting rod (upper side) with power tool. Refer to [RSU-16, "Exploded View"](#).
8. Remove coil spring. Refer to [RSU-8, "Exploded View"](#).
9. Set suitable jack under axle housing.

# REAR WHEEL HUB AND HOUSING

## < ON-VEHICLE REPAIR >

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10. Remove radius rod. Refer to [RSU-14, "Exploded View"](#).
11. Remove shock absorber (lower side) with power tool. Refer to [RSU-10, "Exploded View"](#).
12. Separate suspension arm from axle housing so as not to damage ball joint boot using ball joint remover, and then remove axle housing from the vehicle.  
**CAUTION:**
  - **Temporarily tighten nuts to prevent damage to threads and to prevent the ball joint remover from coming off.**
  - **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 counterpart such as joint sub-assembly, and other parts.**
13. Remove front lower link (axle housing side). Refer to [RSU-15, "Exploded View"](#).
14. Remove rear lower link (axle housing side). Refer to [RSU-8, "Exploded View"](#).
15. Remove the wheel hub and bearing assembly.
16. Remove anchor block mounting nuts, and then remove anchor block and back plate from axle housing.

## INSTALLATION

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

- Perform the final tightening of each of parts under unladen conditions, which were removed when removing wheel hub and bearing assembly and axle housing.
- Never reuse cotter pin, ball seal and bushing.

## Inspection

INFOID:000000003138883

## INSPECTION AFTER REMOVAL

### Wheel Hub and Bearing Assembly

Check the wheel hub and bearing assembly for wear, cracks, and damage. Replace if necessary.

### Axle Housing

Check the axle housing for wear, cracks, and damage. Replace if necessary.

### Ball Joint Inspection

Check for boot breakage, axial looseness, and torque of suspension arm ball joint. Refer to [RSU-5, "Inspection"](#).

## INSPECTION AFTER INSTALLATION

1. Adjust parking brake operation (stroke). Refer to [PB-3, "Inspection and Adjustment"](#).
2. Check wheel alignment. Refer to [RSU-6, "Inspection"](#).
3. Adjust neutral position of steering angle sensor. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).



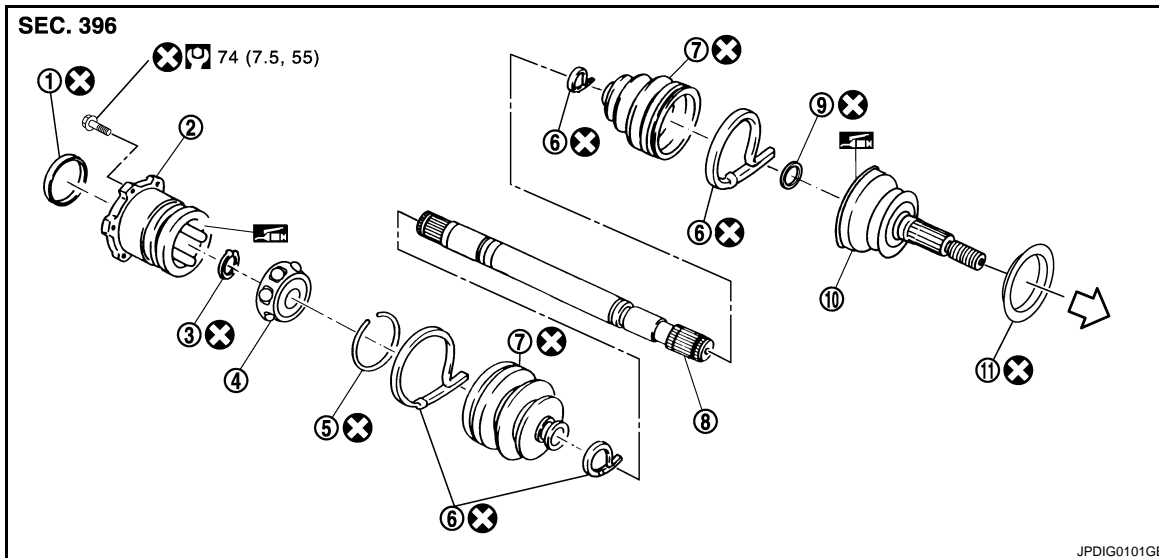
# REAR DRIVE SHAFT

< ON-VEHICLE REPAIR >

## REAR DRIVE SHAFT


### Exploded View

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- |                                             |                 |                  |
|---------------------------------------------|-----------------|------------------|
| 1. Plug                                     | 2. Housing      | 3. Snap ring     |
| 4. Ball cage/steel ball/inner race assembly | 5. Stopper ring | 6. Boot band     |
| 7. Boot                                     | 8. Shaft        | 9. Circular clip |
| 10. Joint sub-assembly                      | 11. Dust shield |                  |

⇐: Wheel side

: NISSAN genuine grease or an equivalent.

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

## Removal and Installation

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### REMOVAL

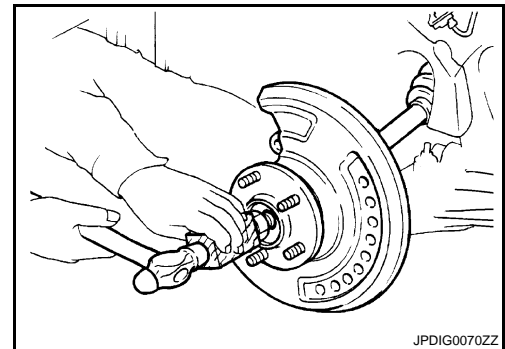
1. Remove tire with power tool.
2. Remove cotter pin, then loosen hub lock nut with power tool. Refer to [RAX-7, "Exploded View"](#).
3. Remove center muffler. Refer to [EX-5, "Exploded View"](#).
4. Patch hub lock nut with a piece of wood. Hammer the wood to disengage wheel hub and bearing assembly from drive shaft. Take out 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 counterpart such as joint sub-assembly, and other parts.

#### NOTE:

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



5. Remove mounting bolts between side flange and drive shaft.

### INSTALLATION

Install in the reverse order of removal.

### WHEEL SIDE

# REAR DRIVE SHAFT

< ON-VEHICLE REPAIR >

## WHEEL SIDE : Disassembly and Assembly

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### DISASSEMBLY

1. Fix shaft with a vise.

**CAUTION:**

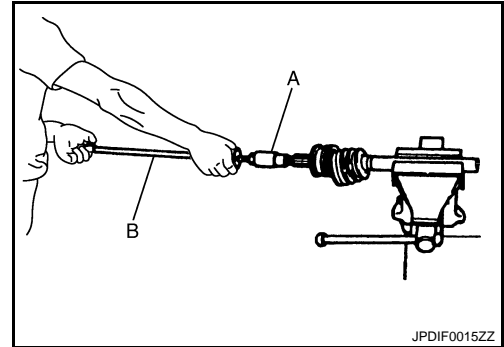
**Protect shaft when fixing with a vise using aluminum or copper plates.**

2. Remove dust shield from drive shaft.
3. Remove boot bands and 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 circular clip from shaft.
6. Remove boot from shaft.

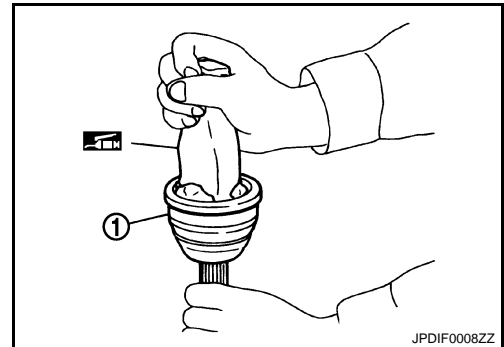


### ASSEMBLY

1. While rotating ball cage, clean old grease on joint sub-assembly with paper waste.
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 serration on shaft with tape (A) to protect the boot from damage. Install boot and boot bands to shaft.

**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:**

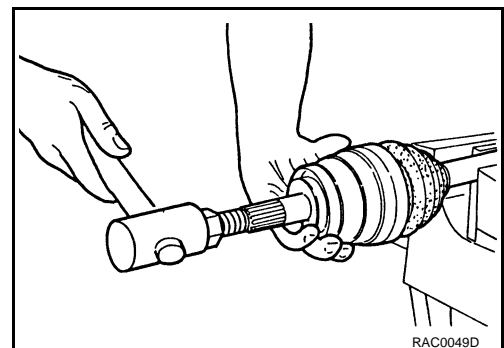
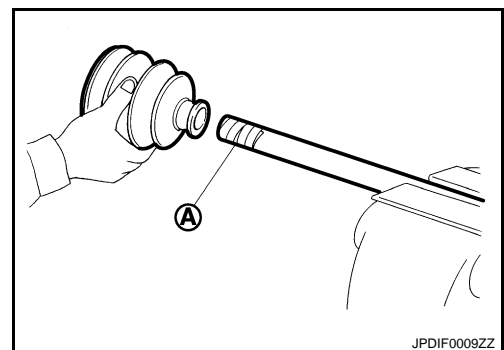
Drive joint inserter is recommended when installing circular clip.

6. Align both center axles 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-15. "Drive Shaft"](#).

# REAR DRIVE SHAFT

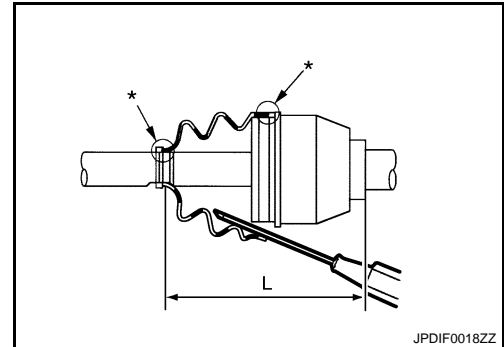
## < ON-VEHICLE REPAIR >

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

**CAUTION:**

If grease adheres to the boot mounting surface (indicated by "\*" mark) on the shaft or housing, boot may come off. Remove all grease from the surfaces.

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



**Standard**

**L** : Refer to [RAX-15, "Drive Shaft"](#).

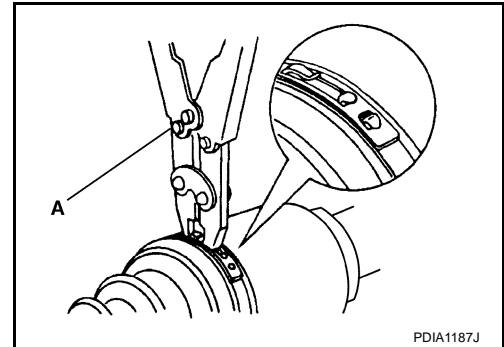
**CAUTION:**

- If the boot installation length is outside 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 the ends of the boot with boot bands using the boot band crimping tool (A) [SST: KV40107300 ( - )].

**CAUTION:**

Never reuse boot band.



**NOTE:**

Secure boot band so that dimension (M) meets the specification as shown in the figure.

**M** : 2.0 – 3.0 mm (0.079 – 0.118 in)

12. Secure joint sub-assembly and shaft, and then make sure that they are in the correct position when rotating boot. Install them with boot band when boot installation positions become incorrect.

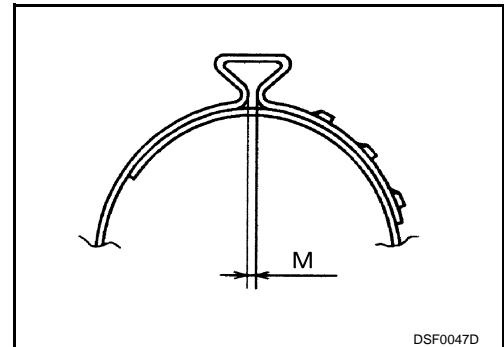
**CAUTION:**

Never reuse boot band.

13. Install dust shield to drive shaft.

**CAUTION:**

Never reuse dust shield.



## FINAL DRIVE SIDE

### FINAL DRIVE SIDE : Disassembly and Assembly

INFOID:000000003597238

#### DISASSEMBLY

1. Fix shaft with a vise.

**CAUTION:**

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

2. Remove boot bands, and then remove boot from housing.  
3. If plug needs to be removed, move boot to wheel side, and take it out with a plastic hammer.  
4. Put matching marks on housing and shaft.

**CAUTION:**

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# REAR DRIVE SHAFT

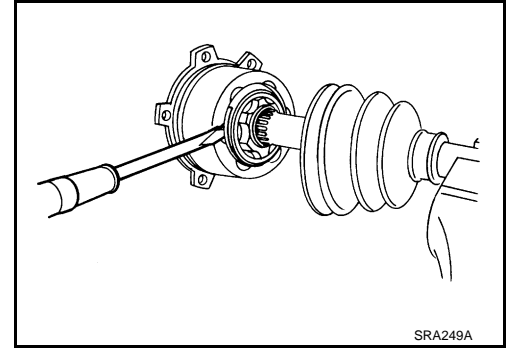
## < ON-VEHICLE REPAIR >

**Use paint or similar substance for matching marks. Never scratch the surface.**

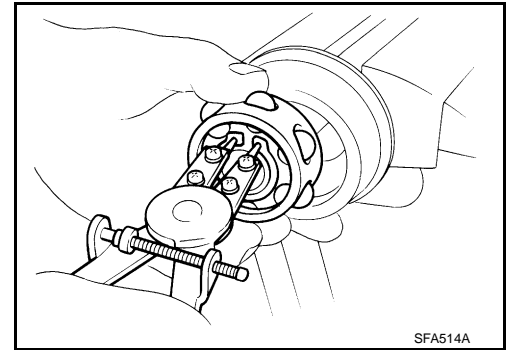
5. Remove stopper ring with suitable tool, and pull out housing.
6. Put matching marks on ball cage/steel ball/inner race assembly and shaft.

**CAUTION:**

**Use paint or similar substance for matching marks. Never scratch the surface.**



7. Remove snap ring, then remove ball cage/steel ball/inner race assembly from shaft.
8. Remove boot from shaft.



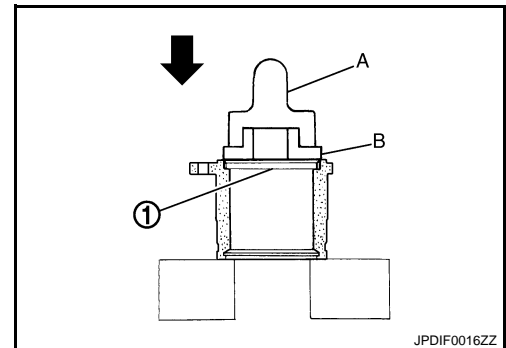
## ASSEMBLY

1. Remove old grease on housing with paper waste.
2. If plug (1) has been removed, use a drift to press in a new one.

←: Press

A : Drift [SST: KV38100500 ( - )]

B : Drift [SST: KV38102200 ( - )]

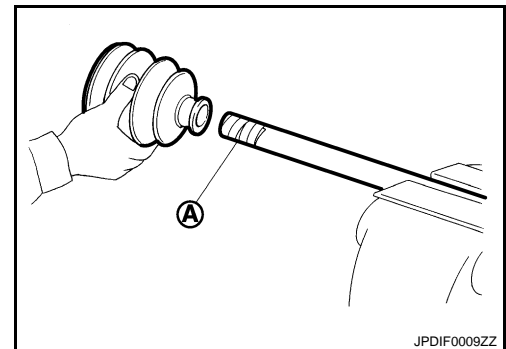


3. Wrap serration shaft with tape (A) to protect the boot from damage. Install boot and boot bands to shaft.

**CAUTION:**

**Never reuse boot and boot band.**

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



# REAR DRIVE SHAFT

## < ON-VEHICLE REPAIR >

5. Install ball cage/steel ball/inner race assembly (1), align it with the matching marks on shaft (2) put during the removal.
6. Secure ball cage/steel ball/inner race assembly onto shaft with snap ring (3).

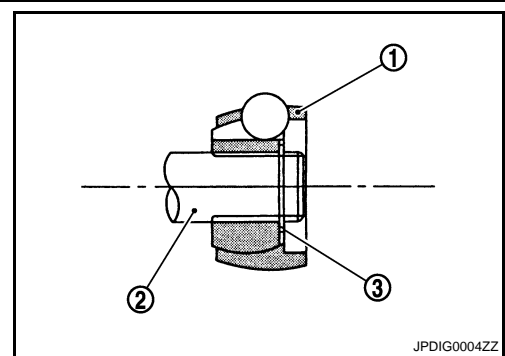
**CAUTION:**

**Never reuse snap ring.**

7. Apply the appropriate amount of grease onto housing and sliding surface.

**Standard**

**Grease amount** : Refer to [RAX-15, "Drive Shaft"](#).



8. Install stopper ring to housing.

**CAUTION:**

**Never reuse stopper ring.**

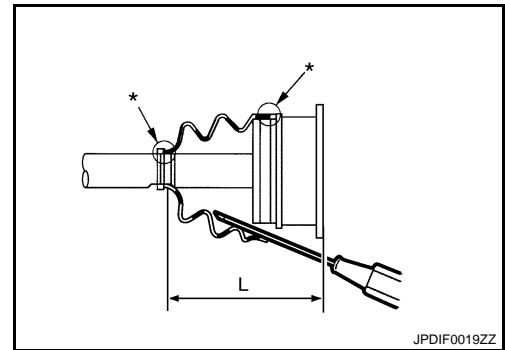
9. After installed, pull shaft to check engagement between housing and stopper ring.

10. Install boot securely into grooves (indicated by "\*" marks) shown in the figure.

**CAUTION:**

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

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



**Standard**

**L** : Refer to [RAX-15, "Drive Shaft"](#).

**CAUTION:**

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

12. Install boot bands securely as shown in the figure.

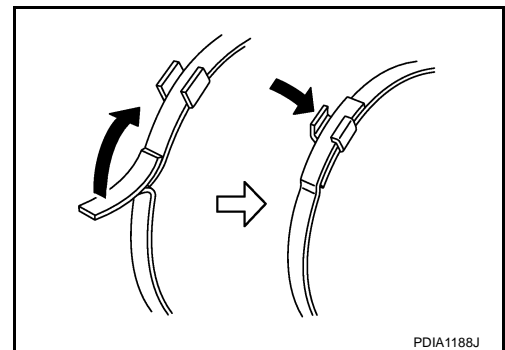
**CAUTION:**

**Never reuse boot band.**

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

**CAUTION:**

**Never reuse boot band.**



## Inspection

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### INSPECTION AFTER REMOVAL

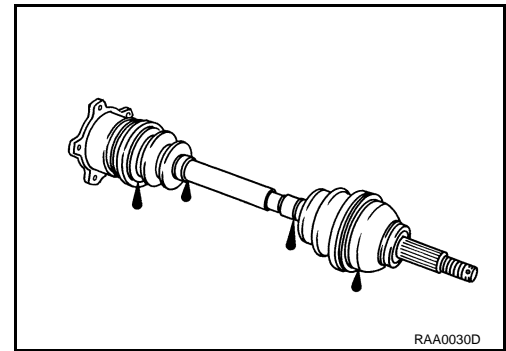
- Move joint up/down, left/right, and in the axial direction. Check for any rough movement or significant looseness.

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## REAR DRIVE SHAFT

### < ON-VEHICLE REPAIR >

- 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.



# 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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Item	Standard
Axial end play	0.05 mm (0.002 in) or less

#### Drive Shaft

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Joint	Wheel side	Final drive side
Grease quantity	100 – 130 g (3.53 – 4.58 oz)	105 – 125 g (3.70 – 4.40 oz)
Boots installed length	133.5 mm (5.26 in)	130.2 mm (5.13 in)

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