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SECTION RAX

REAR AXLE

RAX

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PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

Precautions for Drive Shaft

INFOID:000000010258649

- Observe the following precautions when disassembling and assembling drive shaft.
 - Never disassemble joint sub-assembly because it is non-overhaul parts.
 - Perform work in a location which is as dust-free as possible.
 - Clean the parts, before disassembling and assembling.
 - Prevent the entry of foreign objects during disassembly of the service location.
 - Reassemble disassembled parts carefully in the correct order. If work is interrupted, a clean cover must be placed over parts.
 - Use paper waste. Do not use fabric shop cloths because of the danger of lint adhering to parts.
 - Clean disassembled parts (except for rubber parts) with kerosene which shall be removed by blowing with air or wiping with paper waste.

Precautions for Removing Battery Terminal

INFOID:000000010258650

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

NOTE:

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

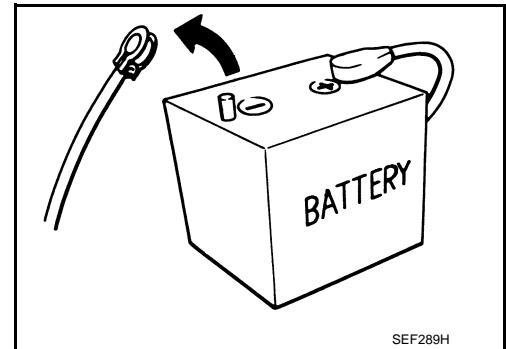
NOTE:

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

NOTE:

The removal of 12V battery may cause a DTC detection error.



PREPARATION

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PREPARATION

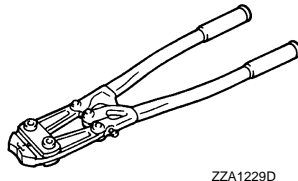
PREPARATION

Special Service Tools

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The actual shapes of TechMate tools may differ from those of special service tools illustrated here.

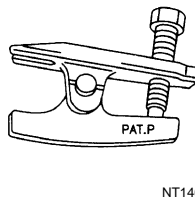
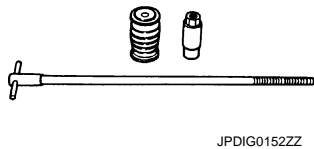
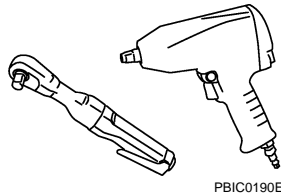
Tool number (TechMate No.) Tool name	Description
KV40107300 (-) Boot band crimping tool	Installing boot band



Commercial Service Tools

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Tool name	Description
Power tool	Loosening bolts and nuts
Drive shaft puller	Removing drive shaft joint sub assembly
Ball joint remover	Removing hub bolt



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NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

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

Reference			—	RAX-15	—	RAX-Z	—	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	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

REAR WHEEL HUB AND HOUSING

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

REAR WHEEL HUB AND HOUSING

Inspection

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MOUNTING INSPECTION

Check 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. Check there is no looseness of wheel hub and bearing assembly.

Axial end play : Refer to [RAX-16, "Wheel Hub and Bearing Assembly"](#).

- Rotate wheel hub and bearing assembly, and check 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

< PERIODIC MAINTENANCE >

REAR DRIVE SHAFT

Inspection

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Check the following items, and replace the part if necessary.

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

CAUTION:

Replace entire drive shaft assembly when noise or vibration occurs from drive shaft.

- Check boot for cracks and other damage.

REAR WHEEL HUB AND HOUSING

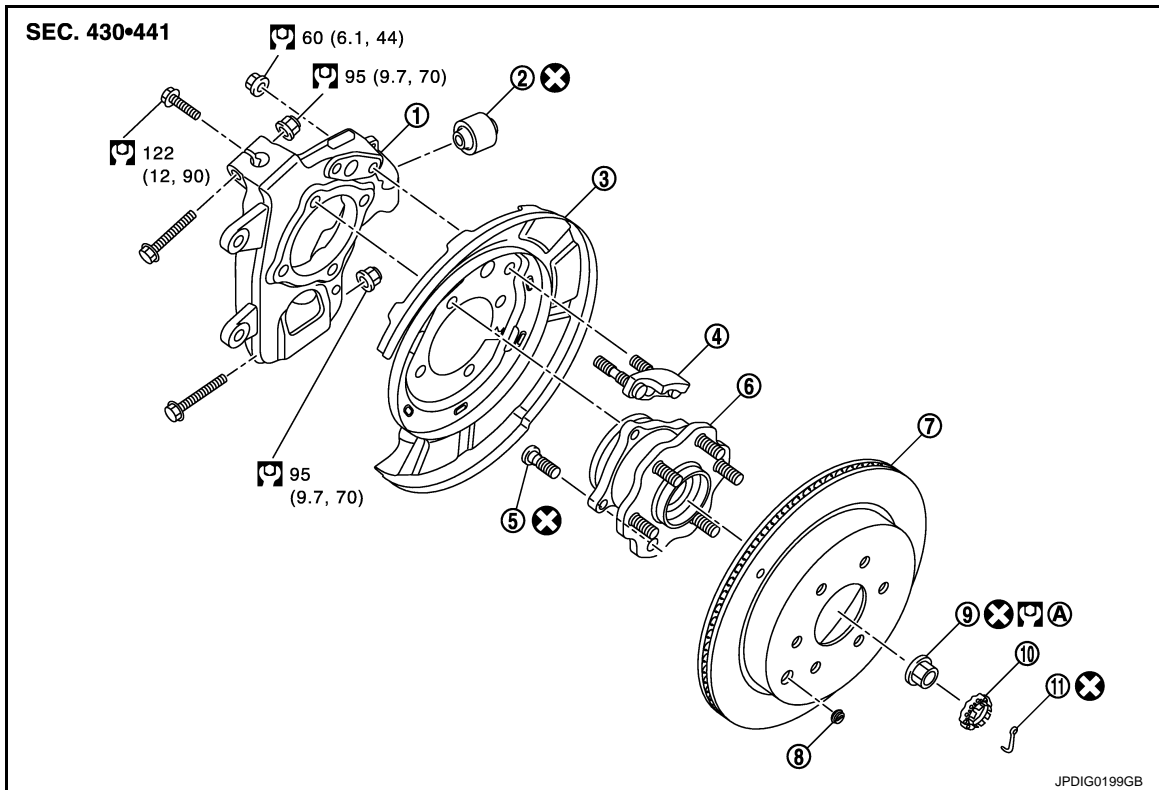
< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

REAR WHEEL HUB AND HOUSING

Exploded View

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- | | | |
|-----------------|--------------|----------------------------------|
| ① Axle housing | ② Bushing | ③ Back plate |
| ④ Anchor block | ⑤ Hub bolt | ⑥ Wheel hub and bearing assembly |
| ⑦ Disc rotor | ⑧ Plug | ⑨ Wheel hub lock nut |
| ⑩ Adjusting cap | ⑪ Cotter pin | |

Ⓐ Tightening must be done following the installation procedure. Refer to [RAX-7, "Removal and Installation"](#).

⊗ :Always replace after every disassembly.

Ⓜ :N-m (kg-m, ft-lb)

Removal and Installation

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REMOVAL

1. Remove tires with power tool. Refer to [WT-62, "Removal and Installation"](#).
2. Remove brake hose bracket from suspension arm. Refer to [BR-28, "REAR : Removal and Installation"](#).
3. Remove caliper assembly. Hang caliper assembly in a place where it will not interfere with work. Refer to [BR-45, "BRAKE CALIPER ASSEMBLY : Removal and Installation"](#).

CAUTION:

Never depress brake pedal while caliper assembly is removed.

4. Remove disc rotor. If disc rotor cannot be removed, remove as follows.

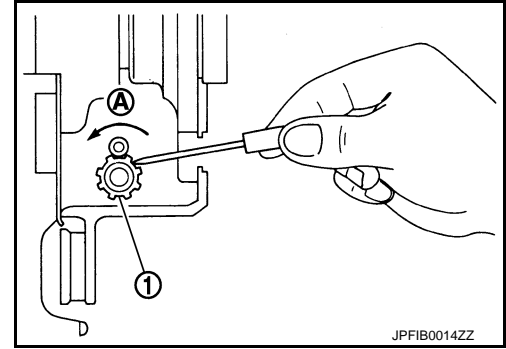
CAUTION:

- Parking brake completely in the released position.
- Put matching marks on the wheel hub and bearing assembly and the disc rotor before removing the disc rotor.
- Never drop disc rotor.

REAR WHEEL HUB AND HOUSING

< REMOVAL AND INSTALLATION >

- a. Fix the disc rotor with wheel nuts and remove the adjusting hole plug.
- b. Using suitable tool, rotate adjuster ① in the direction (A) to retract and loosen brake shoe.
5. Remove wheel sensor harness. Refer to [BRC-144, "REAR WHEEL SENSOR : Removal and Installation"](#).
6. Remove parking brake shoe and parking brake cable from back plate. Refer to [PB-8, "Removal and Installation"](#) and [PB-6, "Removal and Installation"](#).
7. Remove height sensor from rear lower link (right side). Refer to [EXL-164, "Removal and Installation"](#).
8. Remove vehicle height sensor from rear lower link (left side). Refer to [SCS-98, "Removal and Installation"](#).
9. Set suitable jack under rear lower link.
10. Remove rear lower link from axle housing. Refer to [RSU-8, "Removal and Installation"](#).
11. Remove coil spring. Refer to [RSU-8, "Removal and Installation"](#).
12. Remove cotter pin and adjusting cap, then loosen wheel hub lock nut.
13. Put matching mark (A) on drive shaft and wheel hub and bearing assembly.



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CAUTION:

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

14. Patch wheel hub lock nut with a piece of wood. Hammer the wood to disengage wheel hub and bearing assembly from drive shaft.

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.

15. Remove wheel hub lock nut.
16. Remove suspension arm from axle housing.

CAUTION:

Never damage ball joint boot.

17. Remove front lower link from axle housing.

CAUTION:

Never damage ball joint boot.

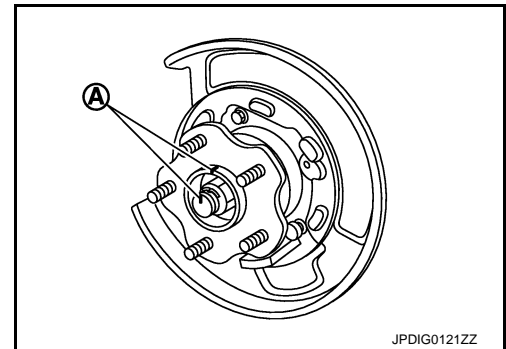
18. Remove axle housing.
19. Remove wheel hub and bearing assembly.
20. Remove anchor block mounting nuts, and then remove anchor block and back plate from axle housing.

21. Remove hub bolts ① from wheel hub and bearing assembly, using the ball joint remover (A) (commercial service tool).

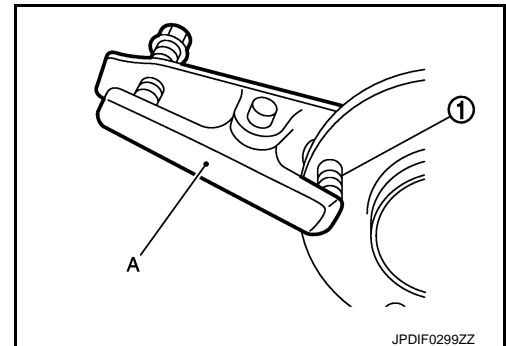
CAUTION:

- **Remove hub bolt only when necessary.**
- **Never hammer the hub bolt to avoid impact to the wheel hub and bearing assembly.**
- **Pull out the hub bolt in a direction perpendicular to the wheel hub and bearing assembly.**

22. Perform inspection after removal. Refer to [RAX-9, "Inspection"](#).



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INSTALLATION

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

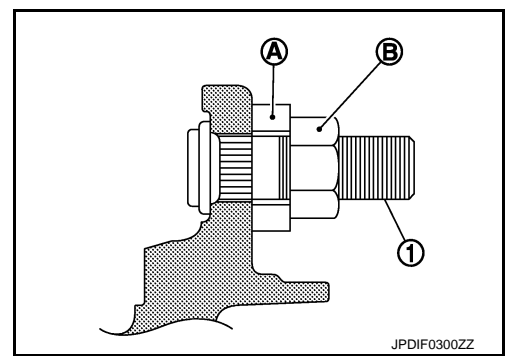
REAR WHEEL HUB AND HOUSING

< REMOVAL AND INSTALLATION >

- Place a suitable washer (A) as shown in the figure to install the hub bolts (1) by using the tightening force of the nut (B).

CAUTION:

- Check that there is no clearance between wheel hub and bearing assembly, and hub bolt.
- Never reuse hub bolt.



- Clean the matching surface of wheel hub lock nut and wheel hub and bearing assembly.

CAUTION:

Never apply lubricating oil to these matching surface.


- Clean the matching surface of drive shaft and wheel hub and bearing assembly. And then apply paste [service parts (440037S000)] to surface (A) of joint sub-assembly of drive shaft.

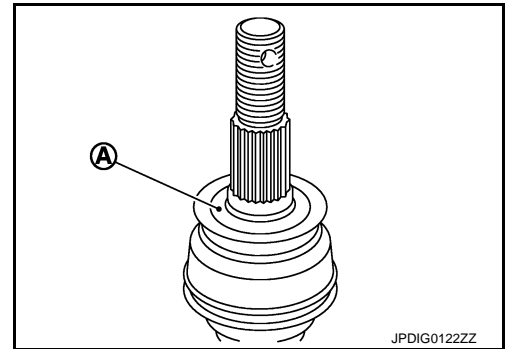
CAUTION:

Apply paste to cover entire flat surface of joint sub-assembly of drive shaft.

Amount paste 1.0 – 3.0 g (0.04 – 0.10 oz)

- Use the following torque range for tightening the wheel hub lock nut.

 : 218 – 223 N·m (22.3 – 22.7 kg·m, 161 – 164 ft·lb)



CAUTION:

- Since the drive shaft is assembled by press-fitting, use the tightening torque range for the wheel hub lock nut.
- Be sure to use torque wrench to tighten the wheel hub lock nut. Never use a power tool.

NOTE:

Wheel hub lock nut tightening torque does not over torque for avoiding axle noise, and does not less than torque for avoiding looseness.

- Perform the final tightening of each of parts under unladen conditions, which were removed when removing wheel hub and bearing assembly and axle housing.
- When installing the adjusting cap, check that there must be no play.
- Never reuse cotter pin, wheel hub lock nut, and bushing.
- Perform inspection after installation. Refer to [RAX-9, "Inspection"](#).

Inspection

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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-13, "Inspection and Adjustment"](#).

INSPECTION AFTER INSTALLATION

- Adjust parking brake operation (stroke). Refer to [PB-4, "Inspection and Adjustment"](#).
- Check wheel alignment. Refer to [RSU-6, "Inspection"](#).
- Adjust neutral position of steering angle sensor. Refer to [BRC-62, "Work Procedure"](#).
- Check standard vehicle height setting of vehicle height sensor. Refer to [SCS-67, "Work Procedure"](#).

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REAR DRIVE SHAFT

< REMOVAL AND INSTALLATION >

10. Put matching mark (A) on drive shaft and wheel hub and bearing assembly.

CAUTION:

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

11. Patch wheel hub lock nut with a piece of wood. Hammer the wood to disengage wheel hub and bearing assembly from drive shaft.

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.

12. Remove wheel hub lock nut.
13. Remove mounting bolts between side flange and drive shaft.
14. Remove drive shaft from the vehicle.
15. Perform inspection after removal. Refer to [RAX-15. "Inspection"](#).

INSTALLATION

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

- Clean the matching surface of wheel hub lock nut and wheel hub and bearing assembly.

CAUTION:

Never apply lubricating oil to these matching surface.


- Clean the matching surface of drive shaft and wheel hub and bearing assembly. And then apply paste [service parts (440037S000)] to surface (A) of joint sub-assembly of drive shaft.

CAUTION:

Apply paste to cover entire flat surface of joint sub-assembly of drive shaft.

Amount paste **1.0 – 3.0 g (0.04 – 0.10 oz)**

- Use the following torque range for tightening the wheel hub lock nut.

 : **218 – 223 N-m (22.3 – 22.7 kg-m, 161 – 164 ft-lb)**

CAUTION:

- Since the drive shaft is assembled by press-fitting, use the tightening torque range for the wheel hub lock nut.

- Be sure to use torque wrench to tighten the wheel hub lock nut. Never use a power tool.

NOTE:

Wheel hub lock nut tightening torque does not over torque for avoiding axle noise, and does not less than torque for avoiding looseness.

- Perform the final tightening of each of parts under unladen conditions, which were removed when removing wheel hub and bearing assembly and axle housing.
- When installing the adjusting cap, check that there must be no play.
- Never reuse cotter pin, wheel hub lock nut.

WHEEL SIDE

WHEEL SIDE : Disassembly and Assembly

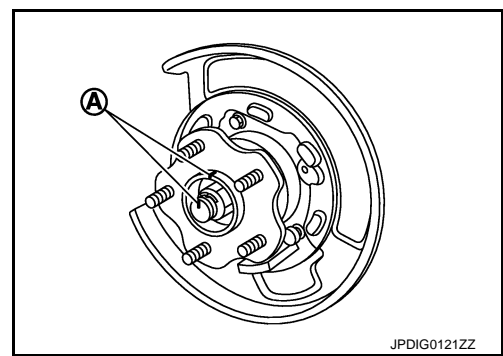
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DISASSEMBLY

1. Fix shaft with a vise.

CAUTION:

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



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REAR DRIVE SHAFT

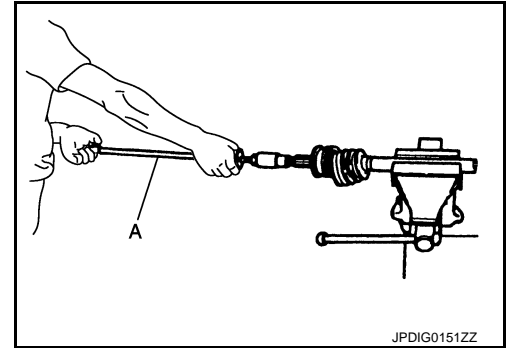
< REMOVAL AND INSTALLATION >

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 (commercial service tool) (A) 30 mm (1.18 in) or more into the thread of joint sub-assembly, and pull joint sub-assembly 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 drive shaft puller and drive shaft and remove them by pulling directly.

5. Remove circular clip from shaft.
6. Remove boot from shaft.

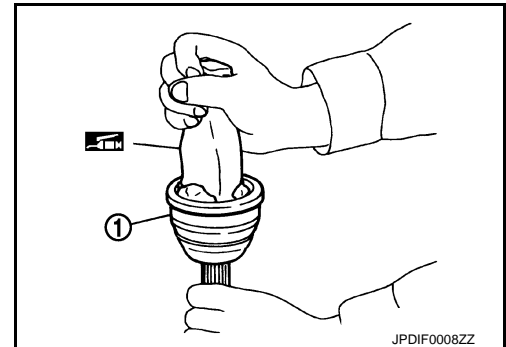


ASSEMBLY

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. Install boot and boot bands to shaft.

CAUTION:

- Wrap serration on shaft with tape (A) to protect the boot from damage.
- Never reuse boot and boot band.

4. Remove the tape wrapped around the serration on shaft.
5. Position circular clip on groove at the shaft edge.

CAUTION:

Never reuse circular clip.

NOTE:

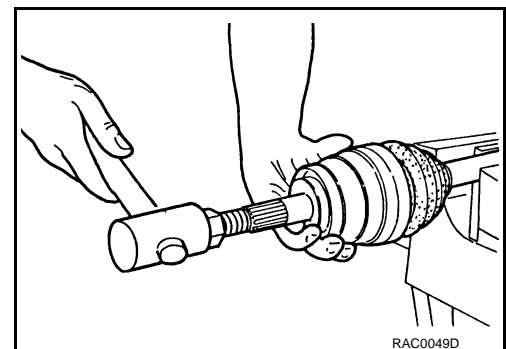
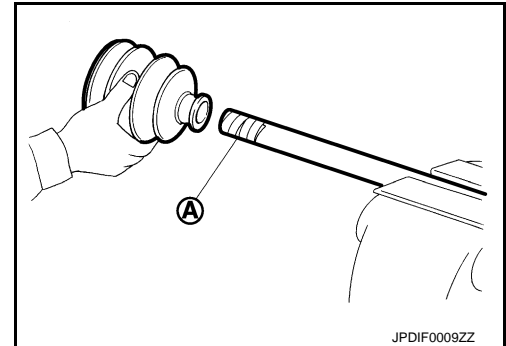
Drive joint inserter is recommended when installing circular clip.

6. Align both center axes of the shaft edge and joint sub-assembly. Then assemble shaft with joint sub-assembly holding circular clip.
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 specified amount of grease into the boot inside from large diameter side of boot.



Grease amount : Refer to [RAX-16, "Drive Shaft"](#).

REAR DRIVE SHAFT

< REMOVAL AND INSTALLATION >

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 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.

L : Refer to [RAX-16, "Drive Shaft"](#).

CAUTION:

- If the boot installation length is outside the standard, it may cause breakage of 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 [SST: KV40107300 (-)] (A).

CAUTION:

Never reuse boot band.

NOTE:

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

M : 1.0 – 4.0 mm (0.039 – 0.157 in)

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

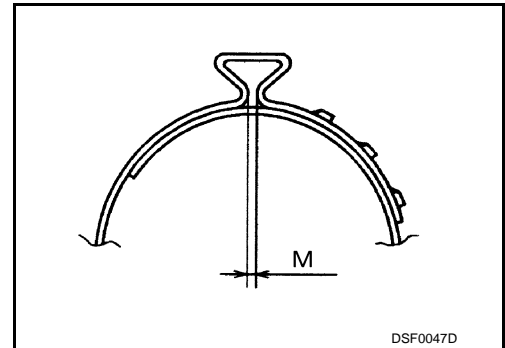
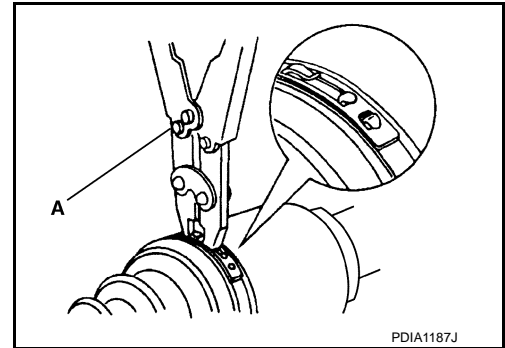
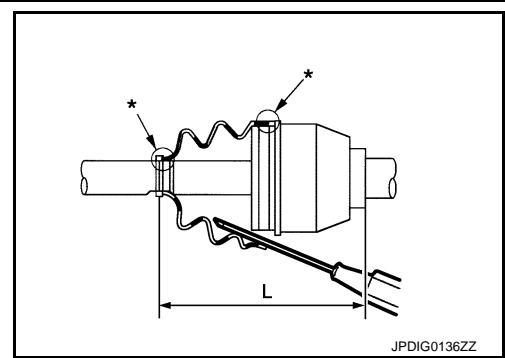
CAUTION:

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:000000010258662

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. Put matching marks on housing and shaft.

CAUTION:

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

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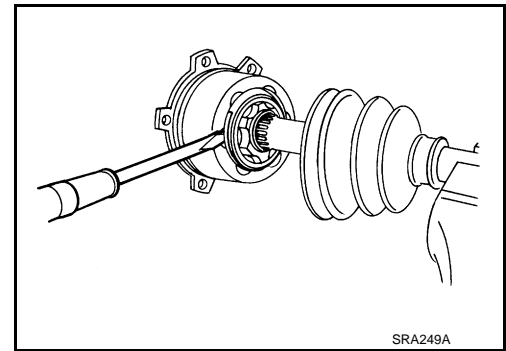
REAR DRIVE SHAFT

< REMOVAL AND INSTALLATION >

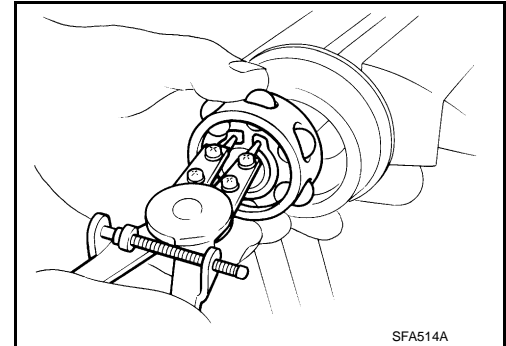
4. Remove stopper ring with suitable tool, and pull out housing.
5. Put matching marks on ball cage/steel ball/inner race assembly and shaft.

CAUTION:

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



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



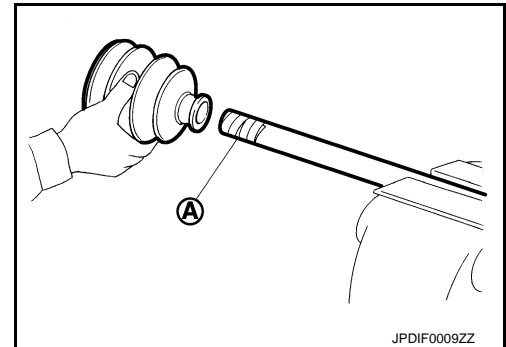
ASSEMBLY

1. Remove old grease on housing with paper waste.
2. Install boot and boot bands to shaft.

CAUTION:

- Wrap serration on shaft with tape (A) to protect the boot from damage.
- Never reuse boot and boot band.

3. Remove the tape wrapped around the serration on shaft.



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

CAUTION:

Never reuse snap ring.

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

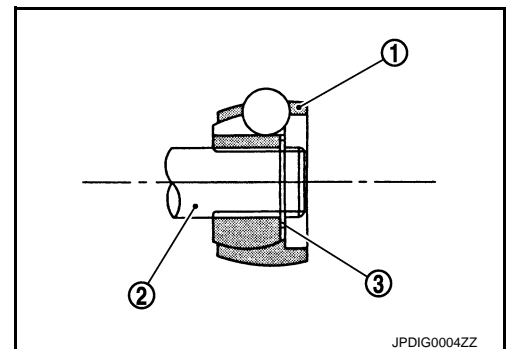
Grease amount : Refer to [RAX-16, "Drive Shaft"](#).

7. Install stopper ring to housing.

CAUTION:

Never reuse stopper ring.

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



REAR DRIVE SHAFT

< REMOVAL AND INSTALLATION >

9. 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.

10. To prevent 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.

L : Refer to [RAX-16, "Drive Shaft"](#).

CAUTION:

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

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

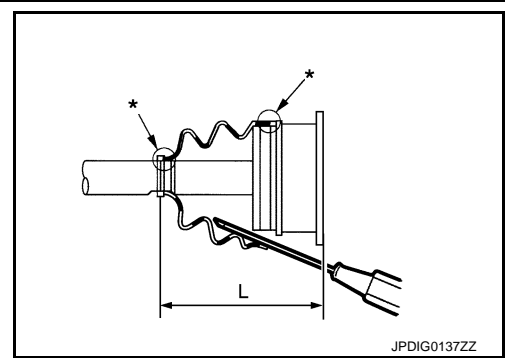
CAUTION:

Never reuse boot band.

12. Secure housing and shaft, and then check 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.

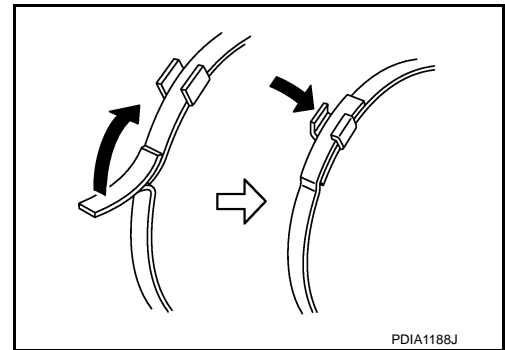


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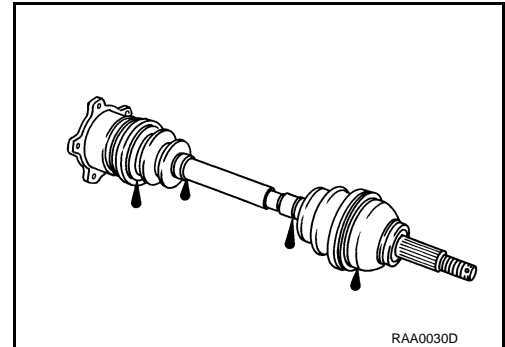
H

Inspection

INFOID:000000010258663

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.



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L

M

INSPECTION AFTER INSTALLATION

1. Check wheel alignment. Refer to [RSU-6, "Inspection"](#).
2. Adjust neutral position of steering angle sensor. Refer to [BRC-62, "Work Procedure"](#).
3. Check standard vehicle height setting of vehicle height sensor. Refer to [SCS-67, "Work Procedure"](#).

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SERVICE DATA AND SPECIFICATIONS (SDS)

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SERVICE DATA AND SPECIFICATIONS (SDS)

Wheel Hub and Bearing Assembly

INFOID:0000000010258664

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

Drive Shaft

INFOID:0000000010258665

Item	Standard	
	Wheel side	Final drive side
Grease quantity	190 – 210 g (6.71 – 7.40 oz)	175 – 195 g (6.18 – 6.87 oz)
Boots installed length	145.8 mm (5.74 in)	147.9 mm (5.82 in)