SECTION RAX
REAR AXLE

CONTENTS

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000010297896

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	×	×	×	×	×	×	×
		Shake	×	×	×	×	×	×	×
		Vibration	×	×	×	×	×		
		Shimmy	×	×		×	×	×	×
		Judder	×			×	×	×	×
		Poor quality ride or handling	×	×		×	×	×	

×: Applicable

PERIODIC MAINTENANCE

REAR WHEEL HUB AND HOUSING

Exploded View

INFOID:0000000010297897

Refer to RAX-4, "Exploded View".

Inspection

INFOID:0000000010297898

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-6, "Wheel Bearing".

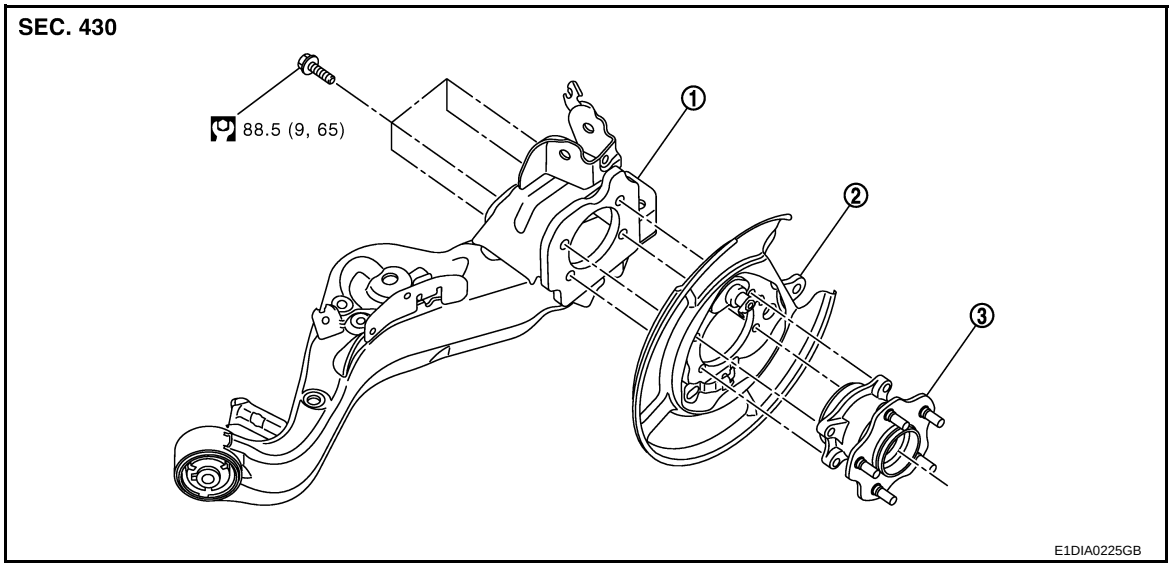
- Rotate wheel hub, and make sure there is no unusual noise or other irregular conditions. If there is any of irregular conditions, replace wheel hub and bearing assembly.

REMOVAL AND INSTALLATION

REAR WHEEL HUB

Exploded View

INFOID:0000000010297899



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:0000000010481080

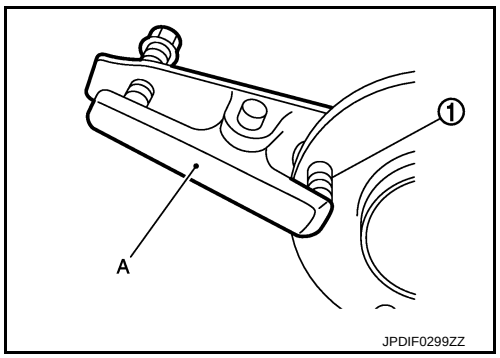
REMOVAL

Wheel Hub and Bearing

1. Remove the wheel and tire using power tool. Refer to WT-60, "Wheel Balance Adjustment (Aluminum Wheel)".
2. Remove the bolt and separate the rear wheel sensor from the wheel hub and bearing. Refer to BRC-139, "REAR WHEEL SENSOR : Removal and Installation".
   CAUTION:
   - **Failure to separate the rear wheel sensor from the wheel hub and bearing may result in damage to the rear wheel sensor.**
   - **Pull out the rear wheel sensor, being careful to turn it as little as possible. Never pull on wheel sensor harness.**
3. Remove torque member bolts using power tool, leaving the brake hose attached. Position brake caliper aside with wire. Refer to BR-43, "BRAKE CALIPER ASSEMBLY : Exploded View".
   CAUTION:
   Never depress brake pedal while brake caliper is removed.
4. Put alignment marks on the disc brake rotor and on the wheel hub and bearing. Remove the disc brake rotor. Remove disc brake rotor.
   CAUTION:
   Never drop disc brake rotor.
5. Remove the hub bolts and the wheel hub and bearing.

6. If necessary, remove the wheel studs (1) from the wheel hub and bearing using a suitable tool (A).

CAUTION:
- **Remove the wheel studs only when necessary.**
- **Never hammer the wheel studs or damage to the wheel hub and bearing may occur.**
- **Pull out the wheel studs in a direction perpendicular to the wheel hub and bearing.**

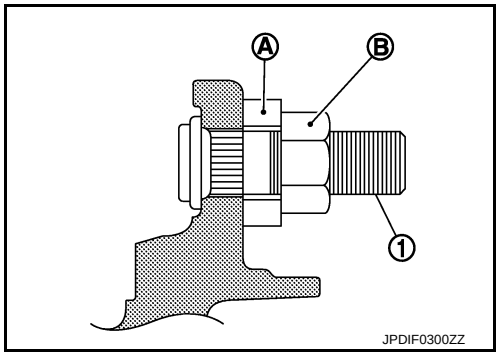


INSTALLATION

Installation is in the reverse order of removal.

- Place a washer (A) as shown to install the wheel studs (1) by using the tightening force of the nut (B).

CAUTION:
- **Never reuse the wheel stud.**
- **Check that there is no clearance between the wheel stud and the wheel hub and bearing.**
- **Before installing, make sure there is no foreign material such as iron fragments adhered to the pick-up part of the rear wheel sensor.**
- **When installing, make sure there is no foreign material such as iron fragments on and in the hole in the wheel hub and bearing for the rear wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.**



- Install the rear wheel sensor to the wheel hub and bearing. Refer to BRC-139, "REAR WHEEL SENSOR : Exploded View".
- Align the matching marks made during removal when reusing the disc brake rotor.
- Check that the wheel hub and bearing operates smoothly.
- Perform the inspection after installation. Refer to RAX-5, "Inspection".

Inspection

INFOID:0000000010297901

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)

Wheel Bearing

INFOID:0000000010297902

Axial end play	0.05 mm (0.002 in) or less

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000010297903

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

Reference page			—	RAX-19	—	RAX-14	—	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
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
Symptom	DRIVE SHAFT	Noise	×	×				×	×	×	×	×	×		×
		Shake	×		×			×		×	×	×	×		×
	REAR AXLE	Noise				×	×	×	×	×		×	×	×	×
		Shake				×	×	×		×		×	×	×	×
		Vibration				×	×	×		×		×		×	
		Shimmy				×	×			×		×	×		×
		Judder				×				×		×	×		×
		Poor quality ride or handling				×	×			×		×	×		

×: Applicable

PRECAUTION

PRECAUTIONS

Precautions for Drive Shaft

INFOID:0000000010297904

CAUTION:

Note the following precautions when disassembling and assembling drive shaft.

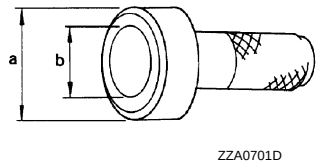
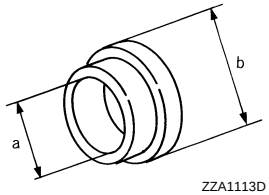
- **Joint sub-assembly does not disassemble because it is non-overhaul parts.**
- **Perform work in a dust-free location.**
- **Before disassembling and assembling, clean the parts.**
- **Prevent the entry of foreign objects during disassembly of the service location.**
- **Disassembled parts must be 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.**

PREPARATION

PREPARATION

Special Service Tool

INFOID:0000000010297905

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

PERIODIC MAINTENANCE

REAR WHEEL HUB AND HOUSING

Exploded View

INFOID:0000000010297906

Refer to RAX-12, "Exploded View".

Inspection

INFOID:0000000010297907

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-21, "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.

REAR DRIVE SHAFT

Inspection

INFOID:0000000010297908

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

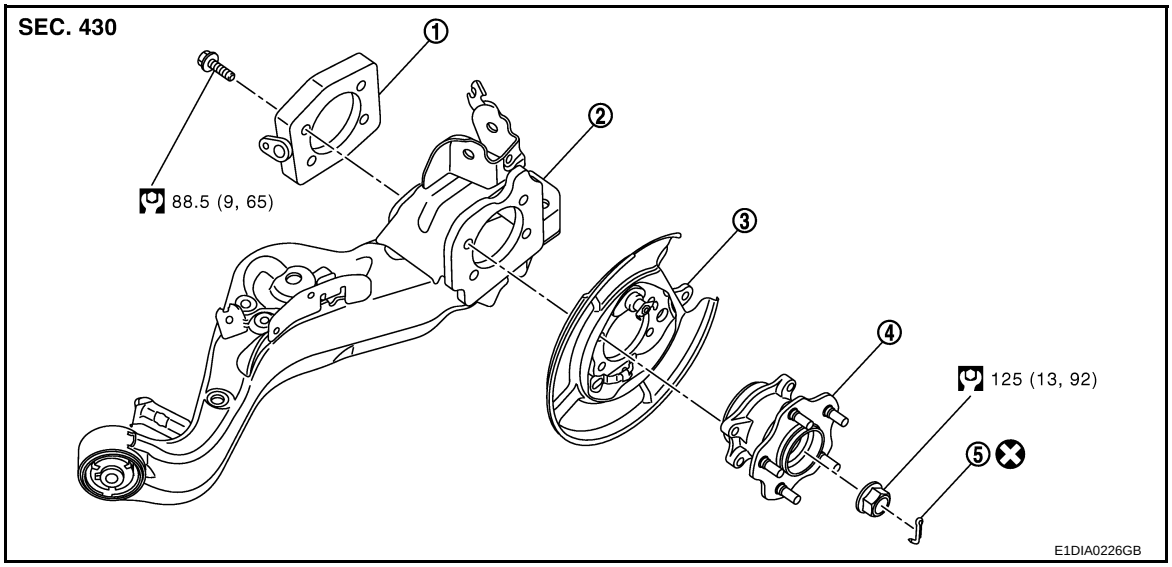
CAUTION:
Replace entire drive shaft assembly when noise or vibration occur from drive shaft.

REMOVAL AND INSTALLATION

REAR WHEEL HUB AND HOUSING

Exploded View

INFOID:0000000010297909



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

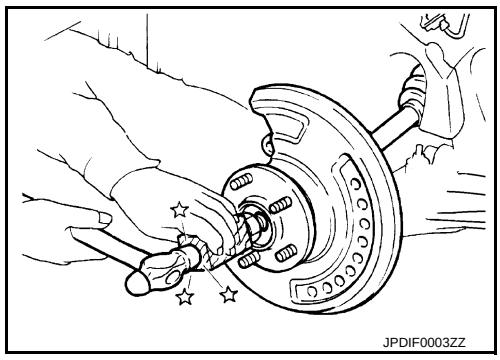
INFOID:0000000010297910

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-43, "BRAKE CALIPER ASSEMBLY : Exploded View" (LHD), BR-86, "BRAKE CALIPER ASSEMBLY : Exploded View" (RHD).
   CAUTION:
   Never depress brake pedal while brake caliper is removed.
3. Remove disc rotor.
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 drop 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.

Inspection

INFOID:0000000010297911

INSPECTION AFTER REMOVAL

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

INSPECTION AFTER INSTALLATION

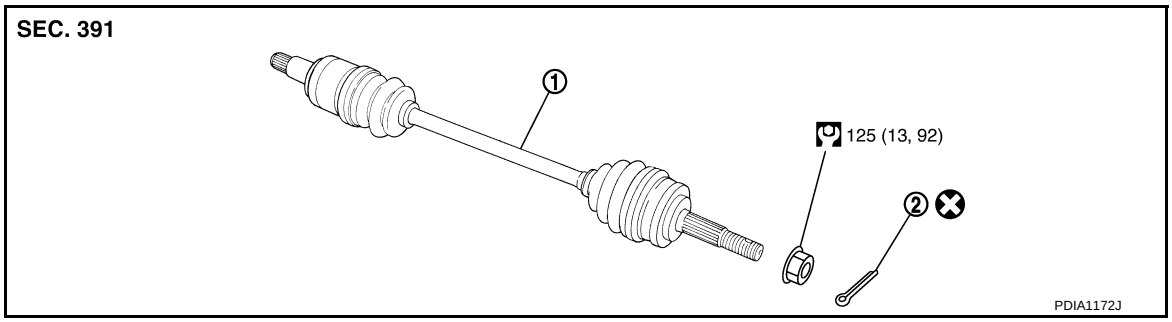
Check wheel alignment. Refer to FSU-7, "Wheel Alignment Inspection".

REAR DRIVE SHAFT

Exploded View

INFOID:0000000010297912

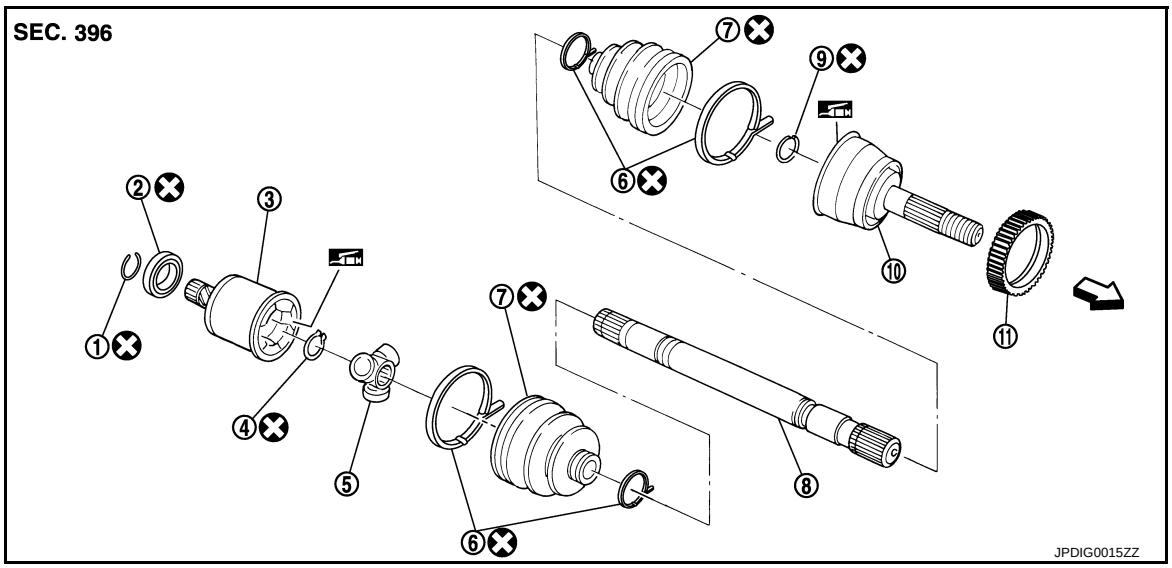
REMOVAL



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.

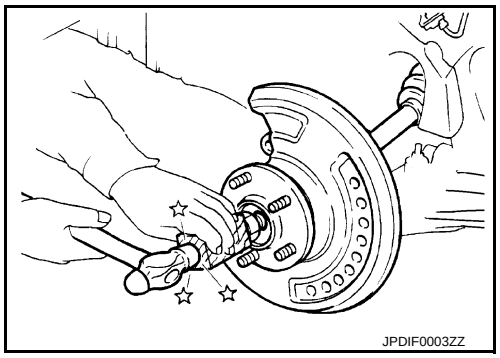
Removal and Installation

INFOID:0000000010297913

REMOVAL

1. Remove tires from vehicle.
2. Remove torque member mounting bolts. Hang torque member not to interfere with work. Refer to BR-43, "BRAKE CALIPER ASSEMBLY : Exploded View" (LHD), BR-86, "BRAKE CALIPER ASSEMBLY : Exploded View" (RHD).
   CAUTION:
   Never depress brake pedal while brake caliper is removed.

3. Remove disc rotor.
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-139, "REAR WHEEL SENSOR : Exploded View".
7. Remove stabilizer link. Refer to RSU-16, "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-13, "Exploded View".
11. Remove lower link from suspension arm. Refer to RSU-13, "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:0000000010297914

DISASSEMBLY

Final Drive Side

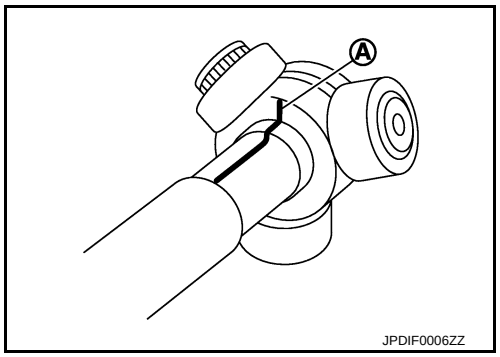
1. Fix shaft with a vise.

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.

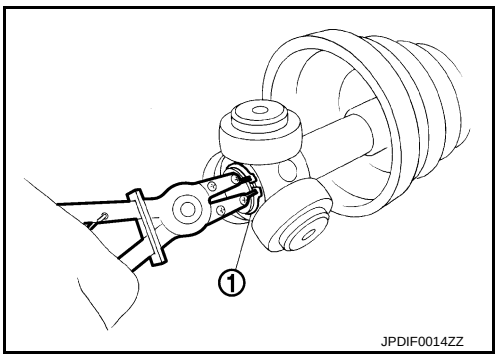
CAUTION:
Use paint or an equivalent for matching marks. Never scratch the surface.

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



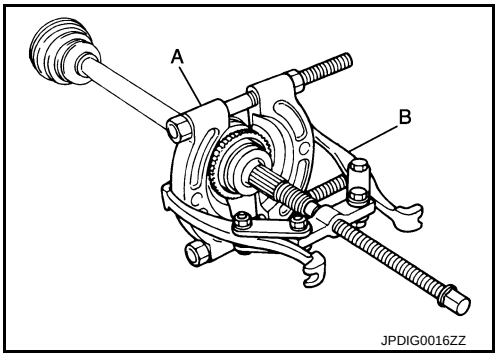
CAUTION:
Use paint or an equivalent for matching marks. Never scratch the surface.

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.

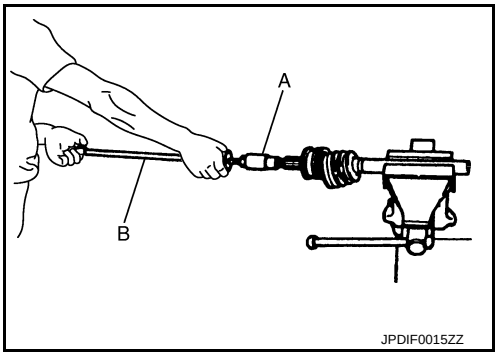


Wheel Side

1. If sensor rotor needs to be removed, use a bearing replacer (A) and puller (B). Refer to BRC-141, "REAR SENSOR ROTOR : Removal and Installation - Rear Sensor Rotor".



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.

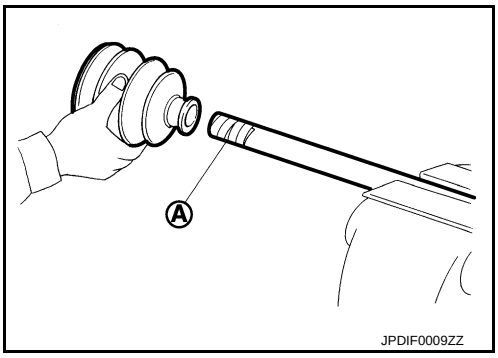


7. While rotating ball cage, clean old grease on joint sub-assembly with paper towels.

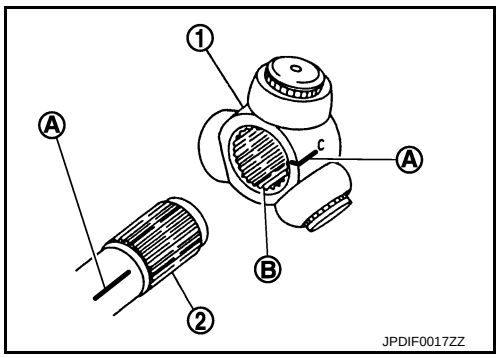
ASSEMBLY

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.



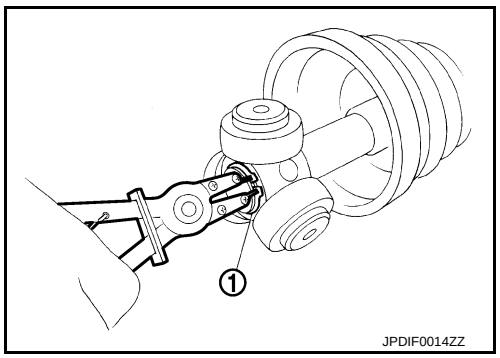
3. To install the spider assembly (1), align it with the matching marks (A) that were on the shaft (2) during the removal, and direct the serration mounting surface (B) to the shaft.



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

Standard

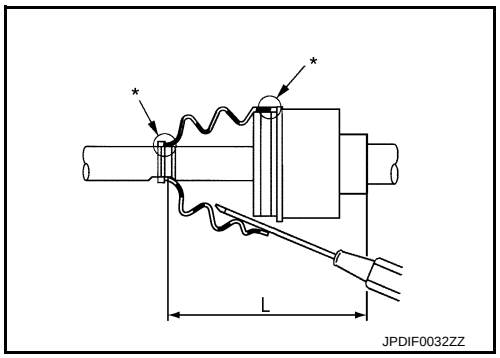
Grease amount	**: Refer to RAX-21, "Drive Shaft".**



7. Align matching marks painted when housing were removed.
8. 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.

9. 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.



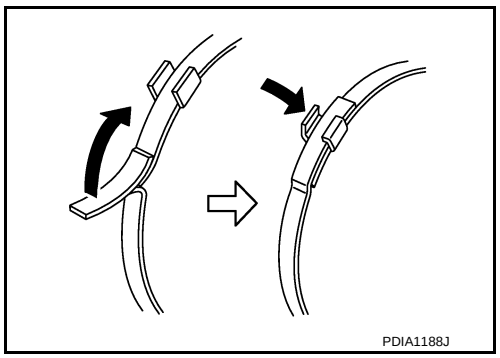
Standard

Boots installed length (L)	**: Refer to RAX-21, "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.**

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

CAUTION:
Never reuse boot band.



11. 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.
12. Install dust shield to housing.

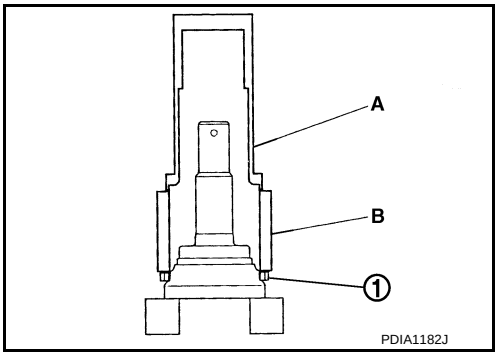
CAUTION:
Never reuse dust shield.

13. Install circular clip to housing.

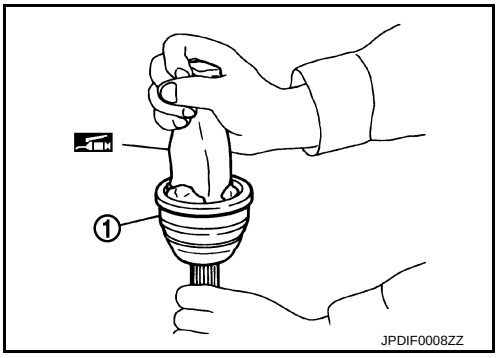
CAUTION:
Never reuse circular clip.

Wheel Side

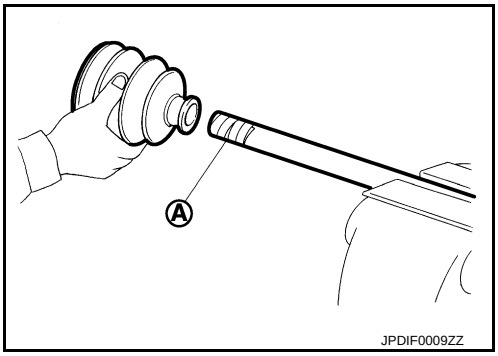
1. If sensor rotor (1) is removed, use a drift (A) (SST: KV38100500) and collar (B) (SST: KV40101840) to press in a new one.



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.

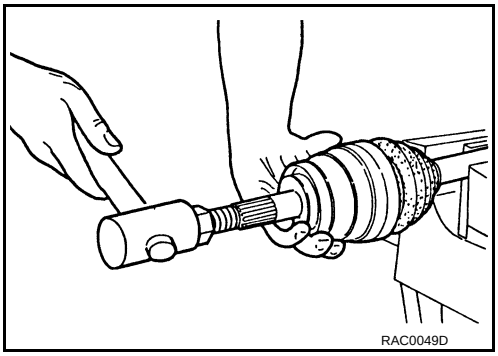


3. Wrap serrated part of shaft with tape (A). Install boot band and boot to shaft. Be careful not to damage boot.
CAUTION:
Never reuse boot and boot band.
4. Remove the tape wrapped around the serrated on shaft.
5. Position circular clip on groove at the shaft edge.
CAUTION:
Never reuse circular clip.
NOTE:
Drive joint inserter is recommended when installing circular clip.
6. Align both center 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.

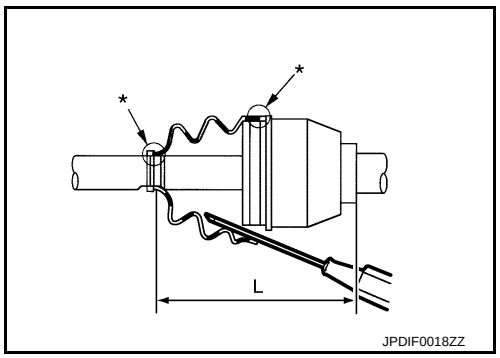


Standard

Grease amount **: Refer to RAX-21, "Drive Shaft".**



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.

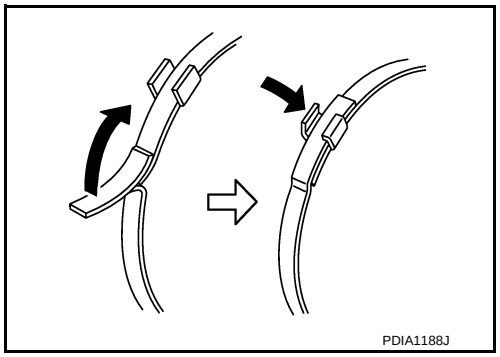
Standard

Boots installed length (L)	**: Refer to RAX-21, "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.

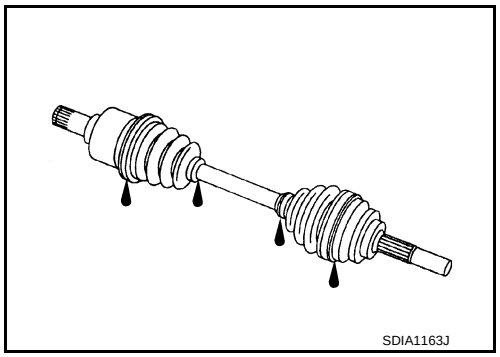


Inspection

INFOID:0000000010297915

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 DISASSENBLY

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)

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.

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Wheel Bearing

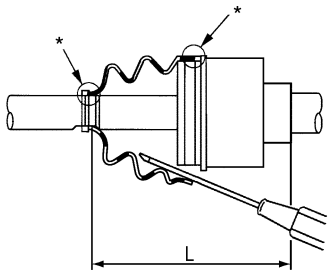
INFOID:0000000010297916

Axial end play	0.05 mm (0.002 in) or less

Drive Shaft

INFOID:0000000010297917

Joint	Wheel side	Final drive side
Grease quantity	35 – 45 g (1.23 – 1.59 oz)	40 – 50 g (1.41 – 1.76 oz)
Boots installed length (L)	90.2 – 92.2 mm (3.55 – 3.63 in)	151.55 – 153.55 mm (5.97 – 6.05 in)



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