SECTION RAX

REAR AXLE

CONTENTS

PRECAUTIONS

PFP:00001

Caution

NDS0001Z

Observe the following precautions when disassembling and servicing drive shaft.

- Joint sub-assembly does not disassemble because it is non-overhaul parts.
- Perform work in a location which is as dust-free as possible.
- Before disassembling and servicing, clean the outside of parts.
- Prevention of the entry of foreign objects must be taken into account 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.

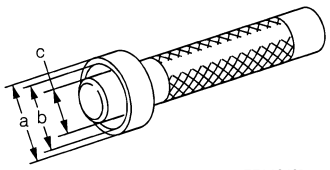
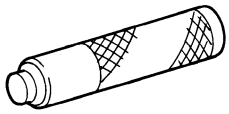
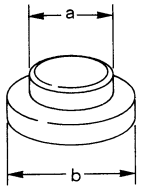
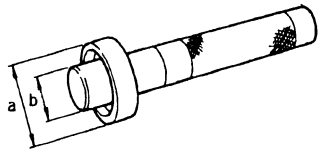
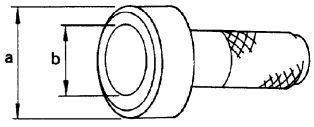
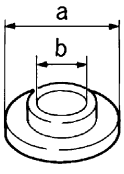
PREPARATION

PFP:00002

Special Service Tools

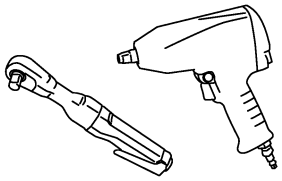
NDS00020

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
ST33220000 (—) Drift a: 37 mm (1.46 in) dia. b: 31 mm (1.22 in) dia. c: 22 mm (0.87 in) dia.	 ZZA1046D	● Removing wheel hub ● Removing wheel bearing outer side inner race ● Inspection of wheel bearing rotating torque
ST33251000 (—) Drift	 ZZA0982D	Installing wheel hub
ST35300000 (—) Drift a: 45 mm (1.77 in) dia. b: 59 mm (2.32 in) dia.	 ZZA0881D	● Installing wheel hub ● Inspection of wheel bearing rotating torque
KV40100900 (—) Drift a: 52 mm (2.05 in) dia. b: —	 ZZA0539D	Wheel bearing rotating torque inspection
KV38100500 (—) Drift a: 80 mm (3.15 in) dia. b: 60 mm (2.36 in) dia.	 ZZA0701D	Installing drive shaft plug
KV38102200 (—) Drift a: 90 mm (3.54 in) dia. b: 31 mm (1.22 in) dia.	 ZZA0920D	Installing drive shaft plug

Commercial Service Tools

NDS00021

Tool name	Description
Power tool  PBIC0190E	Loosening bolts and nuts

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

NDS00022

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

Reference page			—	RAX-12	—	RAX-6	—	NVH in PR section.	NVH in RFD 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 PS 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	TIRES	ROAD WHEEL	DRIVE SHAFT	BRAKES	STEERING
Symptom	DRIVE SHAFT	Noise	×	×				×	×	×	×	×	×		×	×
		Shake	×		×			×		×	×	×	×		×	×
	REAR AXLE	Noise				×	×	×	×	×		×	×	×	×	×
		Shake				×	×	×		×		×	×	×	×	×
		Vibration				×	×	×		×		×		×		×
		Shimmy				×	×			×		×	×		×	×
		Judder				×				×		×	×		×	×
		Poor quality ride or handling				×	×			×		×	×			

×: Applicable

WHEEL HUB

PFP:43202

On-Vehicle Inspection

NDS00023

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 on looseness of wheel bearing.

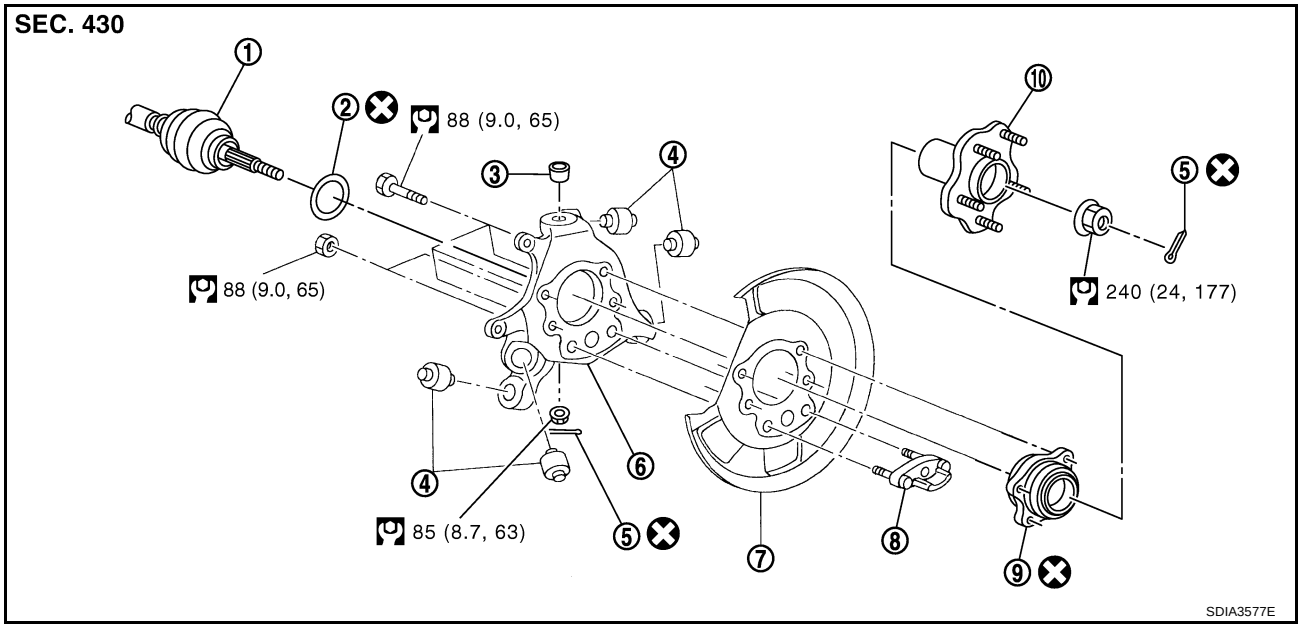
  Axial end play : 0 mm (0 in)

- Rotate wheel hub, and make sure that is on unusual noise or other irregular conditions. If there is any of irregular conditions, replace wheel hub and bearing assembly.

Removal and Installation

NDS00024

COMPONENTS



1. Drive shaft
2. Dust shield
3. Ball seat
4. Bushing
5. Cotter pin
6. Axle housing
7. Back plate
8. Anchor block
9. Wheel bearing
10. Wheel hub

Refer to GI-10, "Components" , for the symbols in the figure.

REMOVAL

1. Remove tires from vehicle with power tool.
2. Remove cotter pin. then loosen hub lock nut with power tool.
3. Remove brake caliper with power tool. Hang it in a place where it will not interfere with work. Refer to.BR-27, "REAR DISC BRAKE"

   NOTE:
   Avoid depressing brake pedal while brake caliper is removed.
4. Remove disc rotor and remove parking cable and parking brake shoe from back plate. Refer to PB-6, "PARKING BRAKE CONTROL" , PB-8, "PARKING BRAKE SHOE" .
5. Remove mounting bolts and nuts in axle side of radius rod, front lower link with power tool.
6. Remove mounting bolt and nut in axle side of rear lower link with power tool. Then remove coil spring. Refer to RSU-15, "REAR LOWER LINK & COIL SPRING" .
7. Remove mounting bolt in axle side of shock absorber with power tool.
8. Using a puller (suitable tool), remove axle from drive shaft.

CAUTION:

- **When removing axle, do not apply an excessive angle to drive shaft joint. Also be careful not to excessively extend slide joint.**
- **Do not allow drive shaft to hang down without support for counter shaft, wheel joints, and other parts.**

9. Remove suspension arm and cotter pin at axle, then loosen mounting nut.
10. Use a ball joint remover (suitable tool) to remove suspension arm from axle. Be careful not to damage ball joint boot.

CAUTION:

Tighten temporarily mounting nut to prevent damage to threads and to prevent ball joint remover (suitable tool) from coming off.

INSPECTION AFTER REMOVAL

Ball Joint Inspection

Check for boot breakage, axial looseness, and torque of suspension arm ball joint. Refer to RSU-11, "SUSPENSION ARM" .

INSTALLATION

Refer to RAX-6, "Removal and Installation" for tightening torque. Install in the reverse order of removal.

NOTE:

Refer to component parts location and do not reuse non-reusable parts.

Disassembly and Assembly

NDS00025

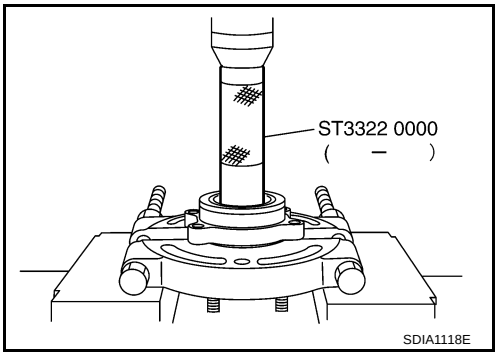
DISASSEMBLY

Wheel Bearing

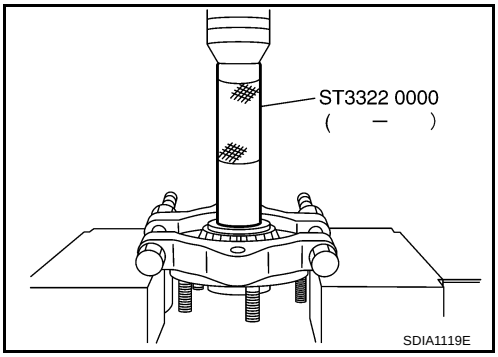
CAUTION:

Do not disassemble if wheel bearing has no trouble.

1. Remove wheel bearing mounting bolts and anchor block mounting nuts, and remove wheel hub and bearing assembly, back plate and anchor block from axle.
2. Using a drift (SST) and a puller (suitable tool), press wheel hub out to remove from wheel bearing.

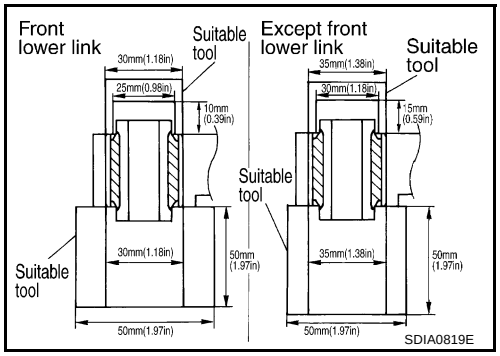


3. Using a drift (SST) and a puller (suitable tool), press wheel bearing outer side inner race out to remove from wheel hub.



Bushing

Using a suitable drift, remove each bushing from axle.



INSPECTION AFTER DISASSEMBLY

Check for deformity, cracks and damage of each parts, replace if necessary.

Wheel Hub

Inspect wheel hub for deformation, cracks, and other damage. If any irregular conditions are found, replace wheel hub.

Axle Housing

Inspect axle for deformation, cracks, and other damage. If any irregular conditions are found, replace axle.

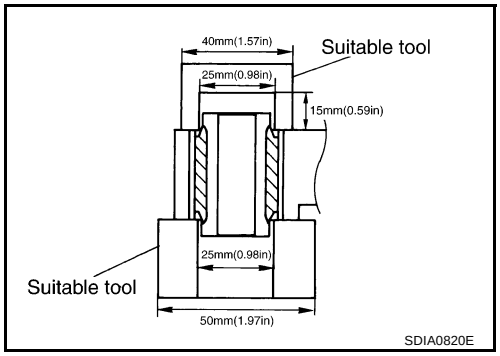
Back Plate

Inspect back plate for deformation, cracks, and other damage. If any irregular conditions are found, replace back plate.

ASSEMBLY

Bushing

Using a suitable drift to install each bushing onto axle.



Wheel Bearing

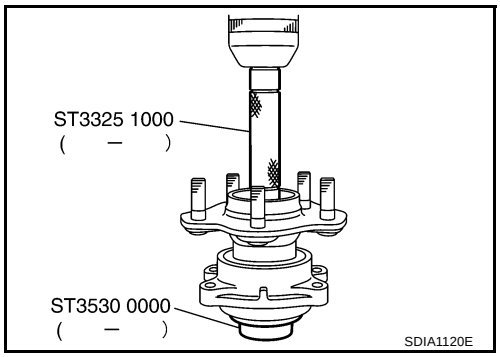
1. Press fit a wheel hub into wheel bearing with a drift (SST).

   CAUTION:

   - **Press fit a drift (SST) while holding it against wheel bearing inner side inner race.**
   - **Wheel bearing cannot be reused. Do not attempt to reuse it.**

   NOTE:

   Final press load guideline 49,033 N (5, 000 kg, 11, 000 lb)
2. Install back plate and wheel hub and bearing assembly.
3. Install anchor block onto axle.



INSPECTION AFTER ASSEMBLY

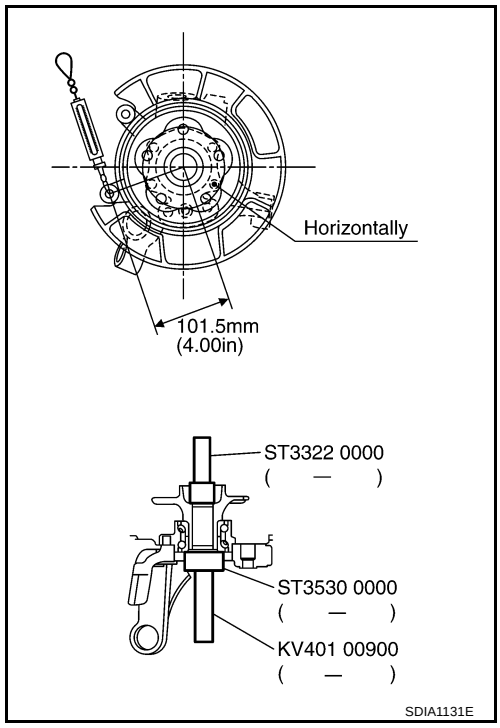
1. With wheel bearing pressed into axle, apply 49,033 N (5, 000 kg, 11, 000 lb) to wheel hub and rotate both clockwise and counterclockwise 10 times to minimize resistance.
2. Attach spring balance in the position shown in illustration and pull at a rate of 10±2 rpm to measure rotating torque.

Rotating torque:

Less than 1.88 N·m (0.19 kg-m, 17 in-lb)

Spring balance reading:

Less than 18.5 N (1.89 kg, 4.16 lb)



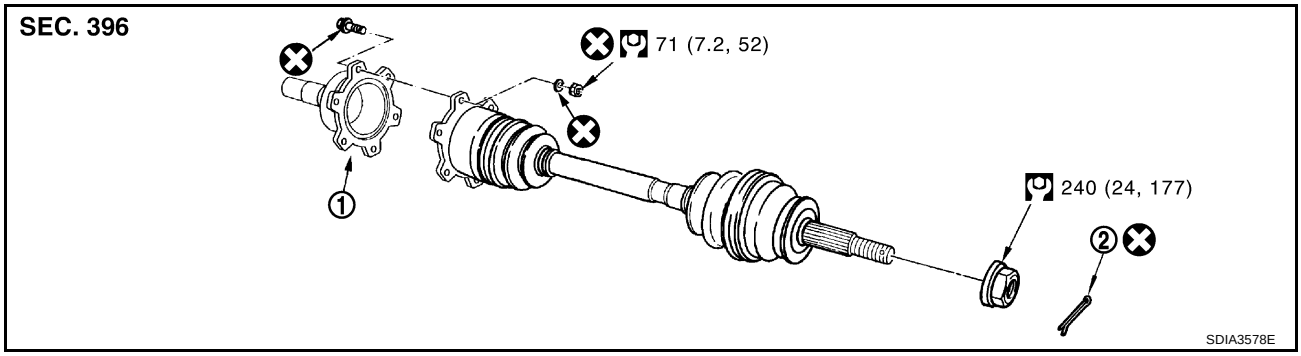
REAR DRIVE SHAFT

PFP:39600

Removal and Installation

NDS00026

COMPONENTS



1. Side flange
2. Cotter pin

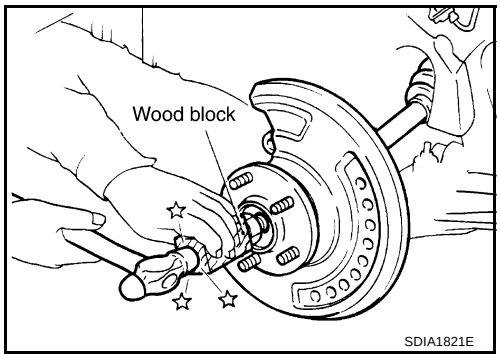
Refer to GI-10, "Components" , for the symbols in the figure.

REMOVAL

1. Remove tires from vehicle with power tool.
2. Remove cotter pin. then loosen hub lock nut with power tool.
3. Remove stabilizer connecting rod mounting bracket mounting bolts and free stabilizer connecting rod.
4. Separate the wheel hub and bearing assembly from drive shaft by lightly tapping the end with a suitable tool hammer and wood block, and then remove hub lock nut.

   CAUTION:
   - **Do not place drive shaft joint at an extreme angle. Also be careful not to overextend slide joint.**
   - **Do not allow drive shaft to hang down without support for counterpart such as joint sub-assembly, and other parts.**

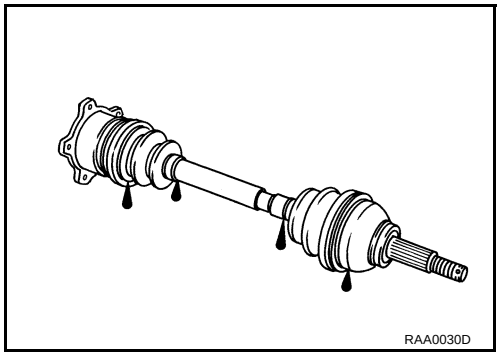
   NOTE:
   Using a puller (suitable tool) if the wheel hub and bearing assembly and drive shaft cannot be separated even after performing the above procedure.



5. Remove mounting nuts and bolts between side flange and drive shaft with power tool.

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 trouble is found, disassemble drive shaft, and then replace with new one.



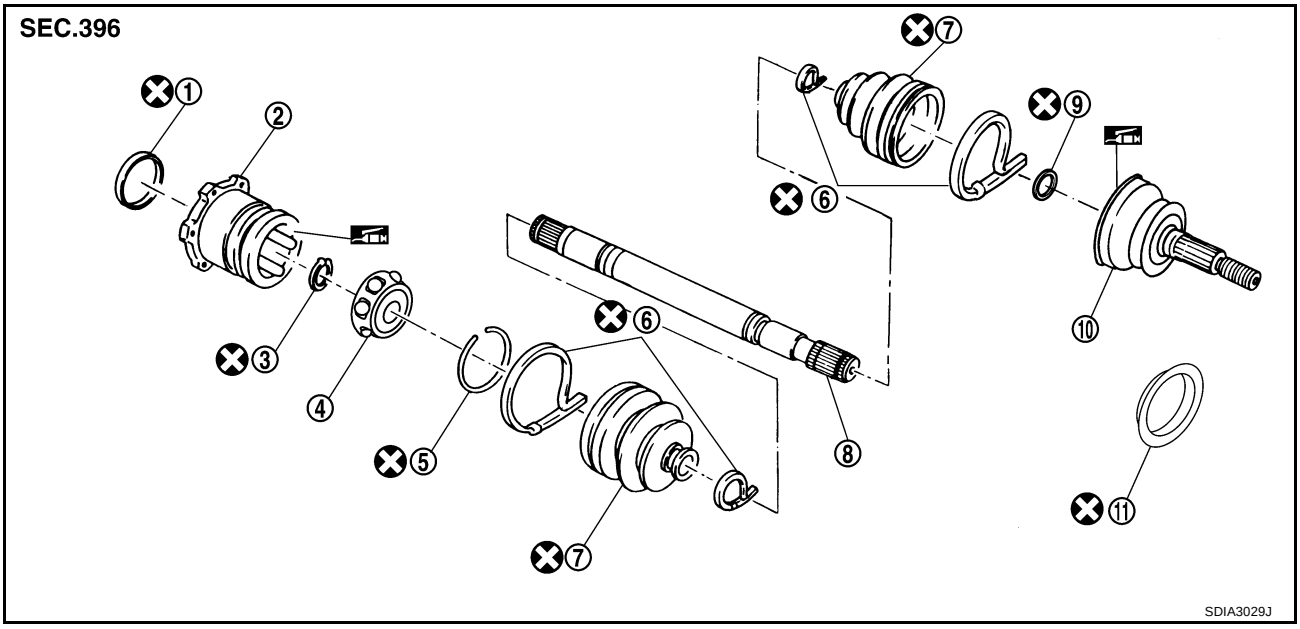
INSTALLATION

Installation is the reverse order of removal. For tightening torque refer to RAX-6, "COMPONENTS" .

Disassembly and Assembly

NDS00027

COMPONENTS



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		

Refer to GI-10, "Components" , for the symbols in the figure.

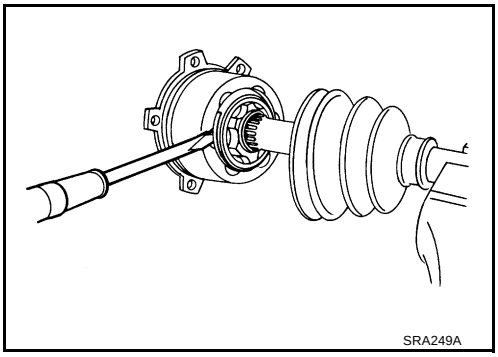
DISASSEMBLY

Rear Final Drive Side

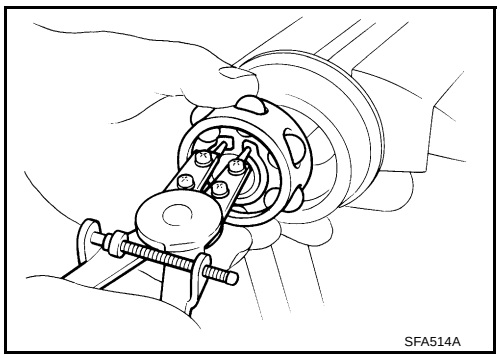
1. Press shaft in a vise.

   CAUTION:
   When retaining drive shaft in a vise, always use copper or aluminum plates between vise and shaft.
2. Remove boot bands, and then remove boot from housing.
3. If plug needs to be removed, move boot to wheel side, and drive it out with a plastic hammer.
4. Put matching marks on housing and shaft.

   CAUTION:
   Use paint or similar substance for matching marks. Do not scratch the surface.
5. Remove stopper ring with a flat-bladed screwdriver, and pull out housing.



6. Remove snap ring, then remove ball cage/steel ball/inner race assembly from shaft.
7. Remove boot from shaft.
8. Remove old grease on housing with paper towels.

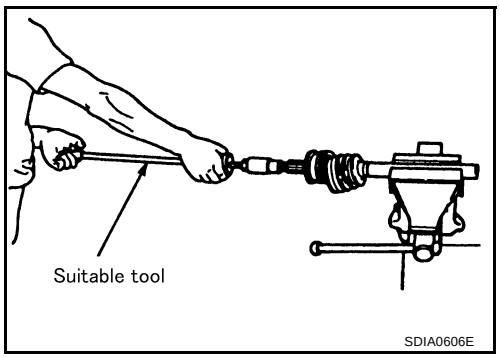

SFA514A

Wheel Side

1. Remove dust shield from drive shaft.
2. Place shaft in a vise.

   CAUTION:
   When retaining drive shaft in a vise, always use copper or aluminum plates between vise and shaft.
3. Remove boot bands. Then remove boot from joint sub-assembly.
4. Screw a drive shaft puller 30 mm (1.18 in) or more into threaded part of joint sub-assembly. Pull joint sub-assembly out of 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 directly.**
5. Remove boot from shaft.
6. Remove circular clip from shaft.
7. While rotating ball cage, remove old grease on joint sub-assembly with paper towels.



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INSPECTION AFTER DISASSEMBLY

Shaft

Replace shaft if there is any runout, cracking, or other damage.

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 (Final drive side)

- Make sure there are compression scars, cracks, factures or unusual wear of ball rolling surface.
- Make sure there is no damage to shaft screws.
- Make sure there is no deformation of boot installation parts.

Ball Cage

Make sure there are compression scars, cracks, factures of sliding surface.

Steel Ball

Make sure there are compression scars, cracks, factures or unusual wear.

Inner Race

- Check ball sliding surface for compression scars, cracks or factures.
- Make sure there is no damage to serrated part.

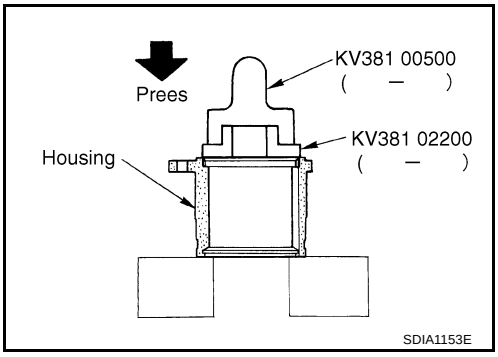
CAUTION:
If there are any irregular conditions in the component, replace with a new set of housing, ball cage, steel ball and inner race.

ASSEMBLY

Rear Final Drive Side

1. If plug has been removed, use a drift [SST] to press in a new one.

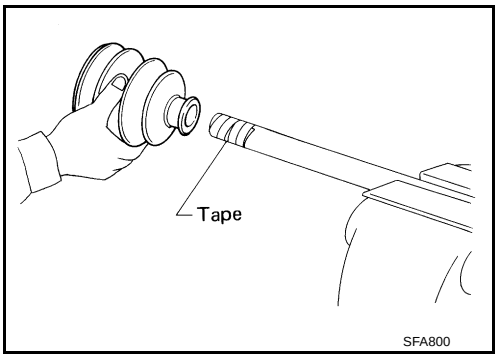
   CAUTION:
   Do not reuse plug.



2. Wrap serrated part of shaft with tape. Install boot band and boot to shaft. Be careful not to damage boot.

   CAUTION:
   Do not reuse boot band and boot.

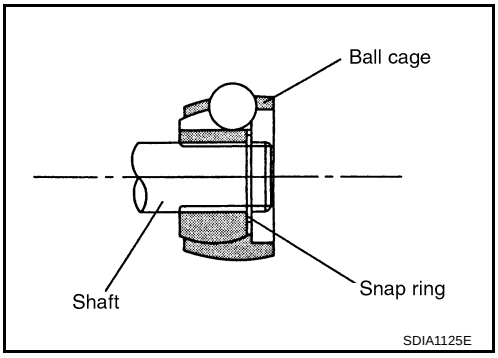
3. Remove protective tape wrapped around serrated part of shaft.



4. Install ball cage/steel ball/inner race assembly to shaft, and secure them tightly with a snap ring.

   CAUTION:
   Do not reuse snap ring.

   NOTE:
   Ailing matching marks painted when ball cage/steel ball/inner race assembly were removed.

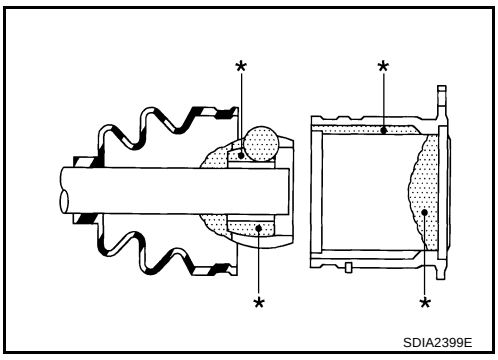


5. Apply the specified amount of grease (NISSAN genuine grease or equivalent) onto housing (* point) and install it to shaft.

   NOTE:
   Align matching marks painted when housing were removed.

   Grease amount : 124 – 134 g (4.37 – 4.73 oz)

6. Install stopper ring to housing.
7. After installed, pull shaft to check engagement between joint sub-assembly and stopper ring.



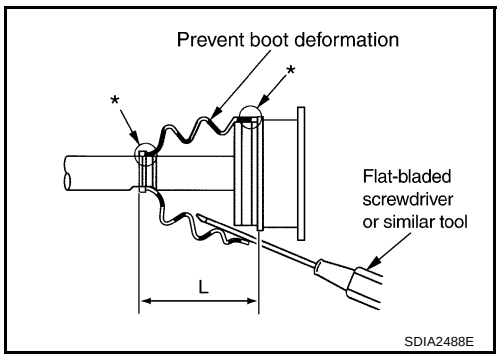
8. Install boot securely into grooves (indicated by * marks) shown in the figure.

CAUTION:

If there is grease on boot mounting surfaces (indicated by * marks) of shaft and housing, boot may come off. Remove all grease from surfaces.

9. Make sure boot installation length “L” is the length indicated below. Insert a flat-bladed screwdriver or similar tool into smaller side of boot. Bleed air from boot to prevent boot deformation.

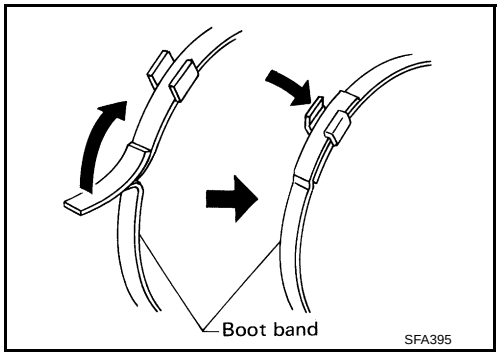
Boot installation length “L” : 93.9 mm (3.697 in)



CAUTION:

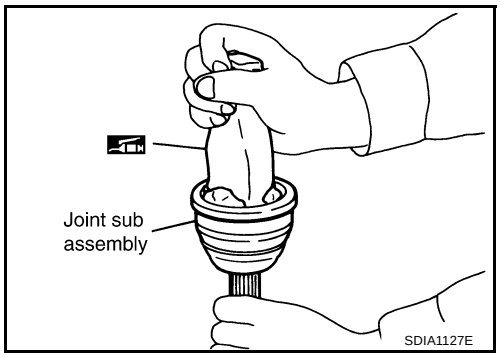
- **If the boot installation length is outside the standard, it may cause breakage in boot.**
- **Be careful not to touch the inside of the boot with the tip of a flat-bladed screwdriver.**

10. Secure big and small ends of boot with new boot bands as shown in the figure.
11. After installing housing and shaft, rotate boot to check whether or not the actual position is correct. If boot position is not correct, secure boot with new boot band again.
12. Install dust cover to housing.

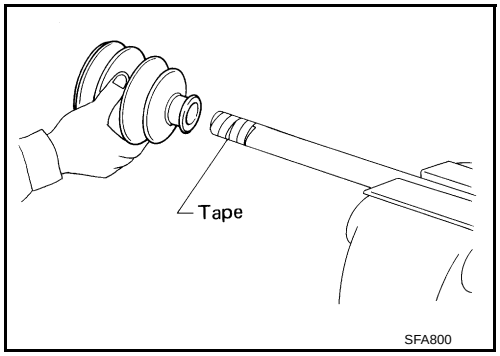


Wheel Side

1. Apply the specified of grease amount grease (NISSAN genuine grease or equivalent) into joint sub-assembly serration hole until grease begins to ooze from ball groove and serration hole. After insert grease, use a shop cloth to wipe off old grease that has oozed out.

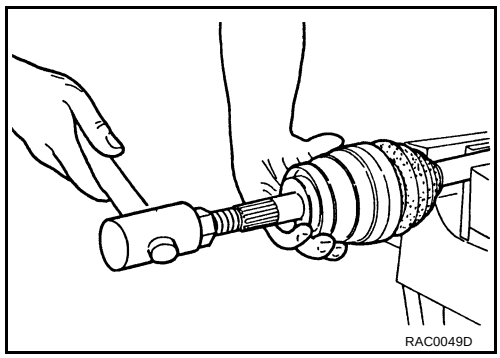


2. Wrap serrated part of shaft with tape. Install boot band and boot to shaft. Be careful not to damage boot.
3. Remove protective tape wound around serrated part of shaft.



4. Attach circular clip to shaft. At this time, circular clip must fit securely into shaft groove. Attach nut to joint sub-assembly. Use a wooden hammer to press-fit.
5. Apply the specified amount of grease (NISSAN genuine grease or equivalent) listed below into housing from large end of boot.

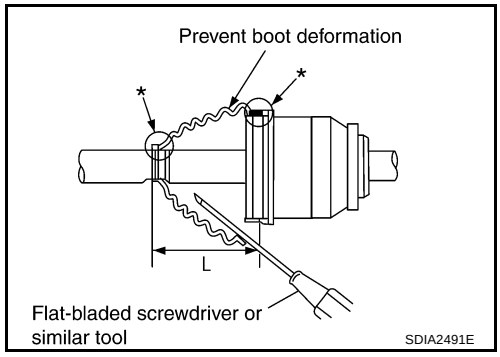
   Grease amount : 86 – 96 g (3.03 – 3.39 oz)



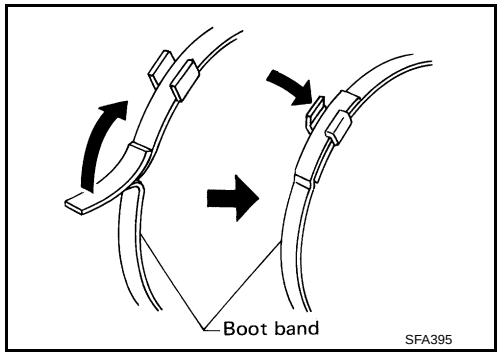
6. Install boot securely into grooves (indicated by * marks) shown in the figure.

   CAUTION:
   If there is grease on boot mounting surfaces (indicated by * marks) of shaft and housing, boot may come off. Remove all grease from surfaces.
7. Make sure boot installation length “L” is the length indicated below. Insert a flat-bladed screwdriver or similar tool into smaller side of boot. Bleed air from boot to prevent boot deformation.

   Boot installation length “L” : 97.0 mm (3.819 in)



   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 a flat-bladed screwdriver.**
8. Secure big and small ends of boot with new boot bands as shown in the figure.
9. After installing joint sub-assembly and shaft, rotate boot to check whether or not the actual position is correct. If boot position is not correct, secure boot with new boot bands again.



SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Wheel Bearing

NDS00028

Axial end play	0 mm (0 in)
Rotational torque	At a load of 49,033 N (5,000 kg, 11,000 lb) Less than 1.88 N·m (0.19 kg-m, 17 in-lb)
Measurement of spring balance	Less than 18.5 N (1.89 kg, 4.16 lb)

Drive Shaft

NDS00029

Joint	Wheel side	Final drive side
Grease quantity	86 – 96 g (3.03 – 3.39 oz)	124 – 134 g (4.37 – 4.73 oz)
Boots installed length	97.0 mm (3.819 in)	93.9 mm (3.697 in)