SECTION RAX
REAR AXLE

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PRECAUTIONS

PFP:00001

Cautions

EDS000W0

Observe the following precautions when disassembling and servicing drive shaft.

- Perform work in a location which is as dust-free as possible.
- Before disassembling and servicing, clean the outside of parts.
- The disassembly and service location must be taken to prevent the entry of foreign objects.
- Disassembled parts must be carefully reassembled in the correct order. If work is interrupted, a clean cover must be placed over parts.
- Paper shop cloth must be used. Fabric shop cloth 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.

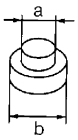
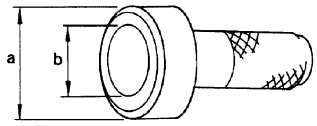
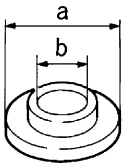
PREPARATION

PFP:00002

Special Service Tools

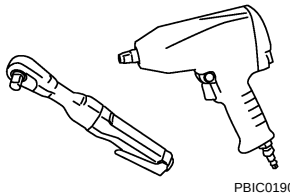
EDS000W1

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
ST3306 1000 (J8107-2) Drift a: 28.5 mm (1.12 in) dia. b: 38.0 mm (1.50 in) dia.  ZZA0969D	Removing outer side inner race of wheel bearing
KV381 00500 (—) Drift a: 80 mm (3.15 in) dia b: 60 mm (2.36 in) dia  ZZA0701D	Installing drive shaft plug
KV381 02200 (—) Drift a: 90 mm (3.54 in) dia b: 31 mm (1.22 in) dia  ZZA0920D	Installing drive shaft plug

Commercial Service Tools

EDS000W2

Tool name	Description
Power tool  PBIC0190E	● Removing wheel nuts ● Removing brake caliper assembly

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

EDS000W3

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

Reference page			—	RAX-9,RAX-9	—	RAX-5	—	NVH in PR section.	NVH in RFD section.	NVH in FAX and FSU 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	FRONT AXLE AND FRONT 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 and Service

EDS000W4

Check that the mounting conditions (looseness, back lash) of each component and component status (wear, damage) are normal.

WHEEL BEARING INSPECTION

- Move wheel hub in the axial direction by hand. Check that there is no looseness of rear wheel bearings.

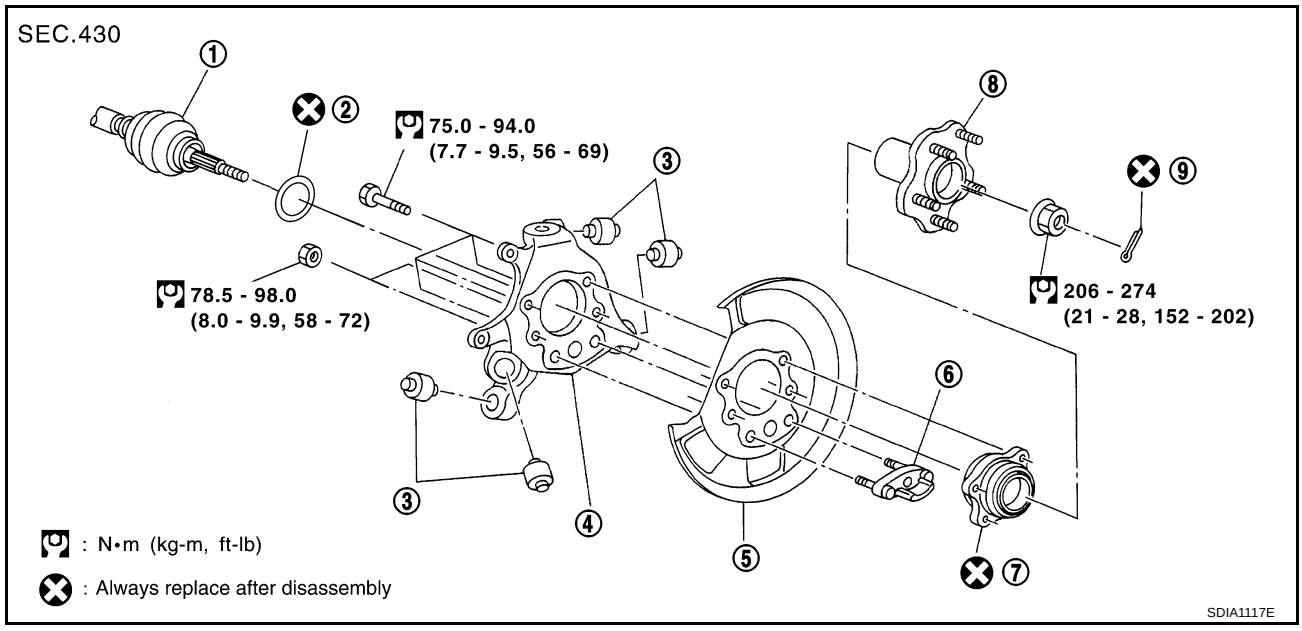
  Standard value

  Axial end play : 0 mm (0 in)

- Rotate wheel hub and check that there is no unusual noise or other irregular conditions. If there are any irregular conditions, replace wheel bearings.

Removal and Installation

EDS000W5



1. Drive shaft
2. Bushing
3. Axle
4. Back plate
5. Anchor block
6. Wheel bearing
7. Wheel hub
8. Cotter pin

REMOVAL

1. Remove tire with power tool.
2. Remove cotter pin. Then remove lock nut from drive shaft.
3. Remove brake caliper with power tool. Hang it in a place where it will not interfere with work.

   CAUTION:
   - **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 SHOE"PB-4, "PARKING BRAKE CONTROL" .
5. Remove radius rod. Refer to RSU-13, "RADIUS ROD" .
6. Set jack on rear lower link, retighten fixing bolt and nut in front lower link and rear lower link.
7. Remove fixing bolt and nut in lower side of shock absorber.
8. Slowly jack, then remove coil spring from rear lower link.
9. Remove front lower link and rear lower link from axle.
10. 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.**

11. Use a ball joint remover (suitable tool) to remove suspension arm from axle. Be careful not to damage ball joint boot.

CAUTION:
To prevent damage to threads and to prevent ball joint remover (suitable tool) from coming off, and temporarily tighten lock nut.

INSPECTION AFTER REMOVAL

Ball Joint Inspection

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

INSTALLATION

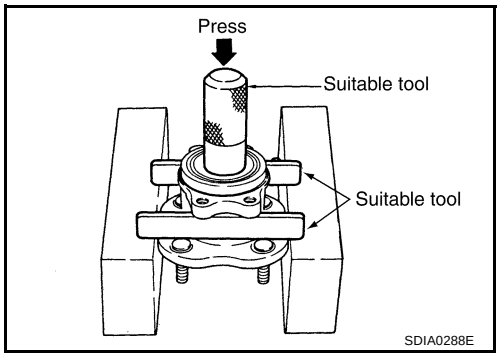
- Refer to component parts drawing for tightening torque. For installation, follow removal procedure in reverse order. Refer to RAX-5, "Removal and Installation" .

Disassembly and Assembly

EDS000W6

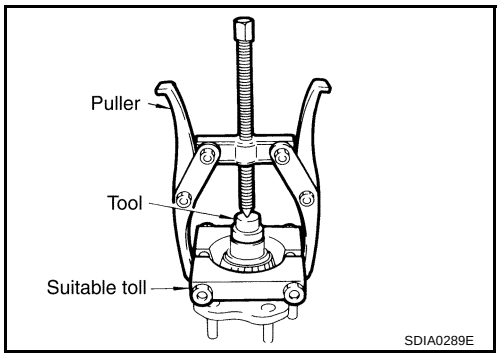
DISASSEMBLY

1. Remove wheel bearing fixing bolt and anchor block fixing nut inside axle vehicle, and remove wheel bearing·wheel hub, back plate and anchor block from axle.
2. Using a drift (suitable tool), and press wheel hub from wheel bearing to remove it.



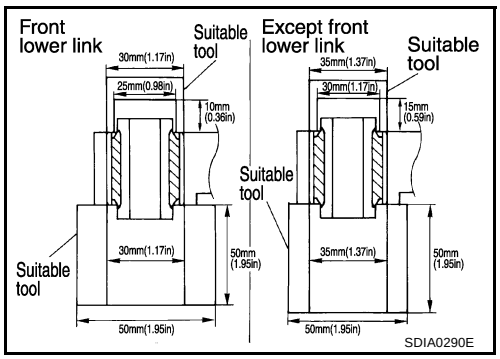
3. Remove outer inner-race of wheel bearing from wheel hub using a puller (suitable tool), drift (special service tool), and bearing replacer (suitable tool)

Tool number : ST3306 1000 (J8107-2)



Bushing

- Using a suitable drift, remove each bushing from axle.



INSPECTION AFTER DISASSEMBLY

Wheel Hub

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

Axle

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

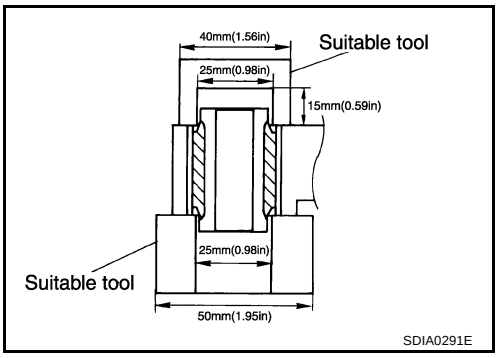
Back plate

- 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

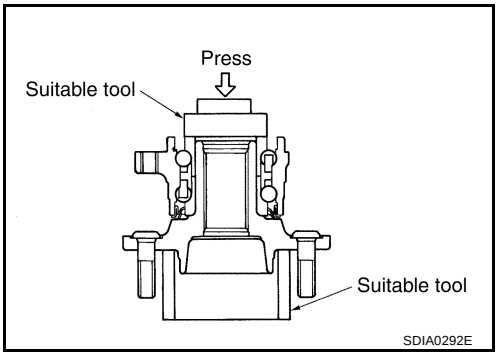
1. Press fit a wheel hub into wheel bearing with a drift (suitable tool).

   CAUTION:

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

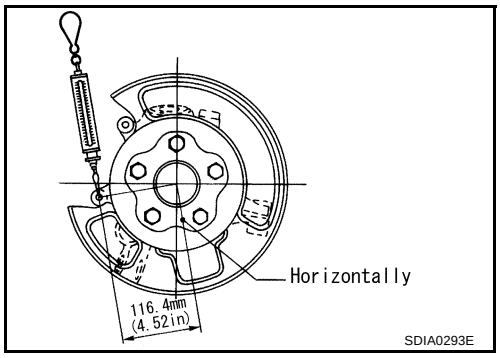
   NOTE:

   Final press load guideline. Less than [49,033 N (5.000 kg, 11,000lb)]
2. Install back plate and wheel bearing·wheel hub onto axle.
3. Install anchor block onto axle.



INSPECTION AFTER ASSEMBLY

1. With wheel bearing pressed into axle housing, apply 49,033 N (5.000 kg, 11,000lb) to wheel hub and rotate both clockwise and counterclockwise 10 times to minimize resistance.
2. Attach spring scale in the position shown in the illustration and pull at a rate of 10±2 rpm to measure rotating torque.



Standard value

Rotating torque:

Less than 1.49 N·m (0.15 kg-m, 13 in-lb)

Spring scale reading:

Less than 12.8 N (1.31 kg, 2.88 lb)

REAR DRIVE SHAFT

PFP:39600

Removal and Installation

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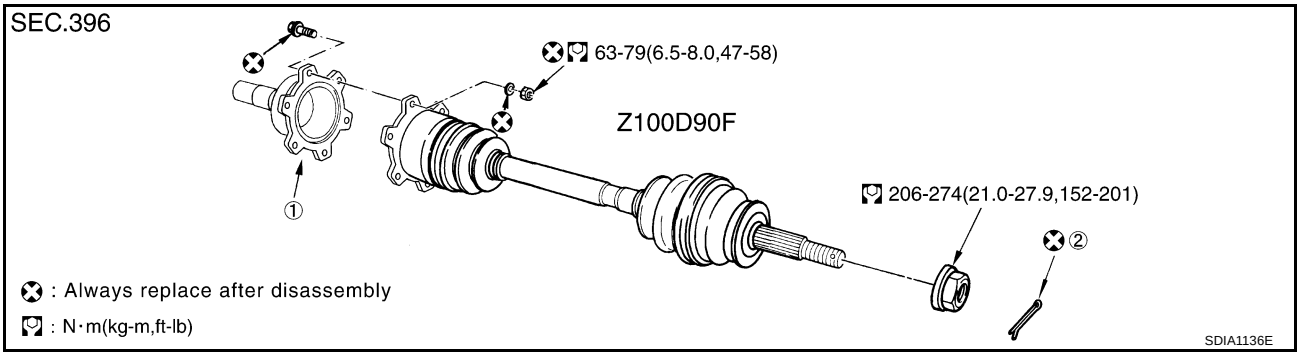
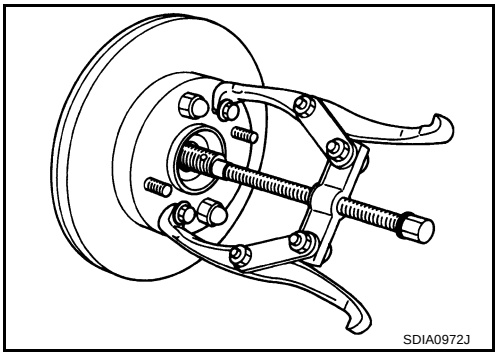


REMOVAL

1. Remove tire with power tool.
2. Remove cotter pin. Then remove lock nut from drive shaft.
3. Remove exhaust center tube.
4. Remove fixing nuts and bolts between final drive and drive shaft.
5. Using a puller (suitable tool), remove drive shaft from axle.

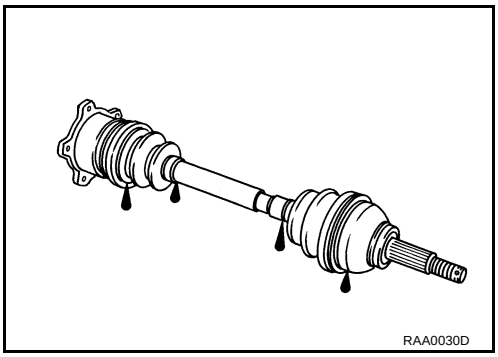
CAUTION:

- **When removing drive shaft, do not apply an excessive angle to drive shaft joint. Also be careful not to excessively extend slide joint.**



INSPECTION AFTER REMOVAL

- Move joint in the up/down, left/right, and axial direction. Check for any rough movement or significant looseness.
- Check boot for cracks or other damage, and also for grease leakage.



INSTALLATION

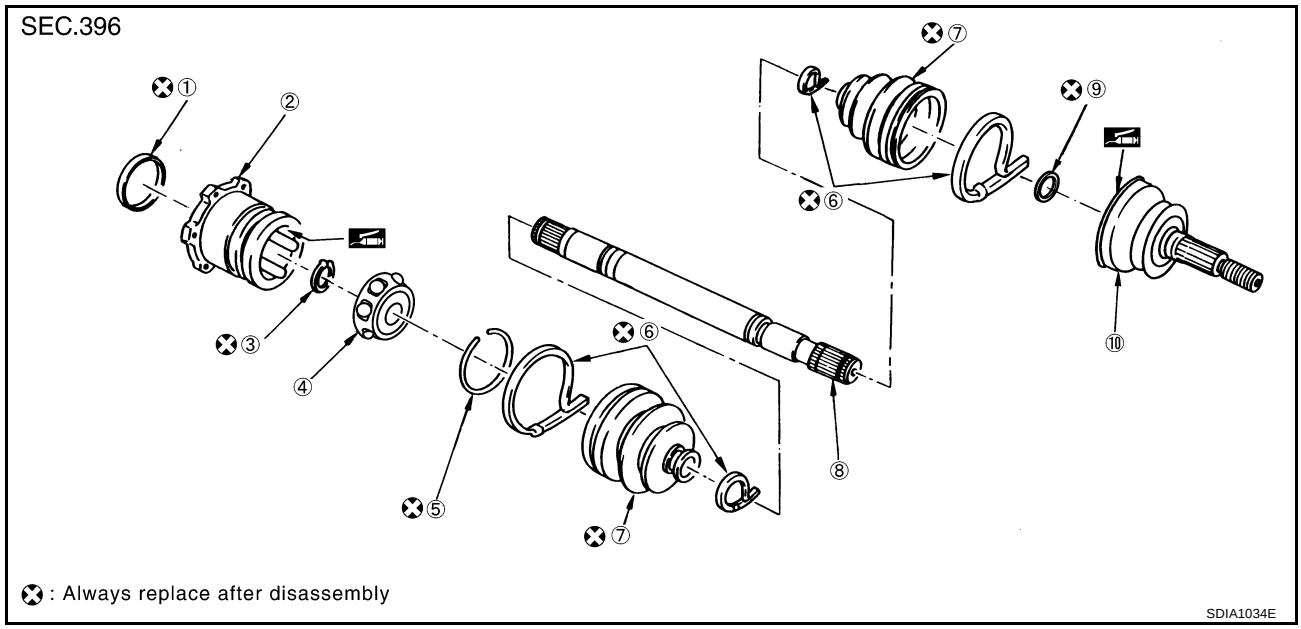
- Refer to component parts drawing for tightening torque. For installation, follow removal procedure in reverse order.

CAUTION:

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

Disassembly and Assembly

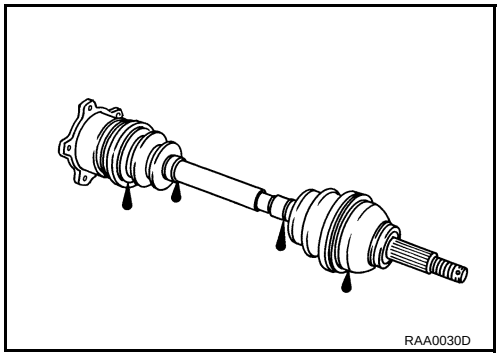
EDS000W8



1. Plug
2. Housing
3. Snap ring
4. Ball cage·Steel ball·Inner race
5. Stopper ring
6. Boot band
7. Boot
8. Shaft
9. Circular clip
10. Joint sub assembly

INSPECTION BEFORE DISASSEMBLY

- Move joint in the up/down, left/right, and axial direction. Check for any rough movement or significant looseness.
- Check boot for cracks or other damage, and also for grease leakage.

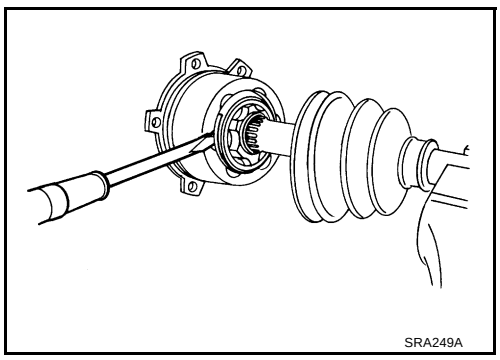


DISASSEMBLY

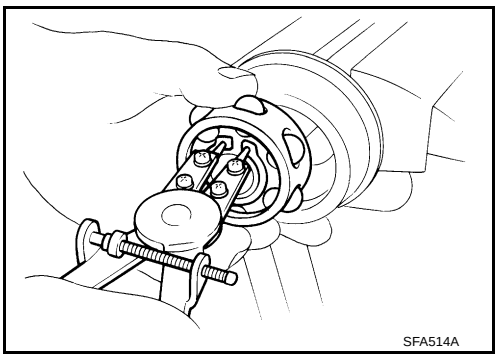
Final Drive Side

1. Remove boot bands.
2. Press shaft in a vice.

   CAUTION:
   When securing in a vice, use aluminum plates, copper plates or something similar to protect shaft.
3. If plug needs to be removed, move boot to wheel side, and drive it out with a plastic hammer.
4. Remove stopper ring with a flat-bladed screwdriver, and pull out housing.



5. Remove snap ring, then remove ball cage·inner race·steel balls from shaft.


SFA514A

6. Remove boot from shaft.

CAUTION:
- **If foreign materials are mixed in with grease as a result of boot breakage, disassemble and check ball cage, steel ball assembly.**
- **After cleaning grease, disassemble ball cage and steel ball assembly.**
- **If components such as steel balls become worn, damaged or scored, replace them with housing as a set.**

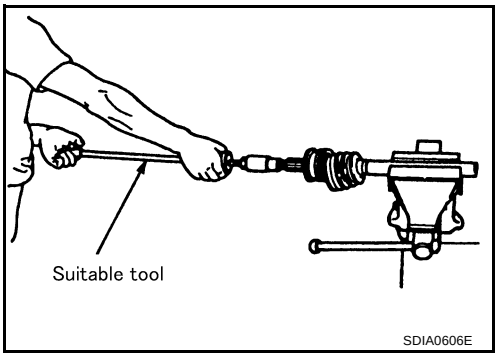
Wheel Side

1. Place shaft in a vice.

CAUTION:
When retaining drive shaft in a vice, always use copper or aluminium plates between vise and shaft.

2. Remove boot bands. Then remove boot from joint sub-assembly.
3. 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 the entire drive shaft assembly.**
- **Align sliding hammer and drive shaft and remove them by pulling directly.**



SDIA0606E

4. Remove boot from shaft.
5. Remove circular clip from shaft.
6. While rotating ball cage, remove old grease on joint sub-assembly with paper towels.

CAUTION:
Visually check joint sub-assembly for compression scar, cracks, fractures. If any non-standard condition is detected, replace entire joint sub-assembly.

INSPECTION AFTER DISASSEMBLY

Shaft

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

Fixed Joint Side

- Check that there is no rough rotation or unusual axial looseness.
- Check that there is no foreign material inside joint.

CAUTION:
If there are any irregular conditions of joint sub-assembly components, replace the entire joint sub-assembly.

Sliding Joint Side

Housing

- Check that there is no damage or unusual wear of ball rolling surface.
- Check that there is no damage to shaft screws.
- Check that there is no deformation of boot installation parts.

Ball Cage

- Check that there is no damage or other irregular conditions of sliding surface.

Steel ball

- Check that there is no damage or unusual wear.

Inner Race

- Check ball sliding surface for damage and unusual condition.
- Check that there is no damage to serrated parts.

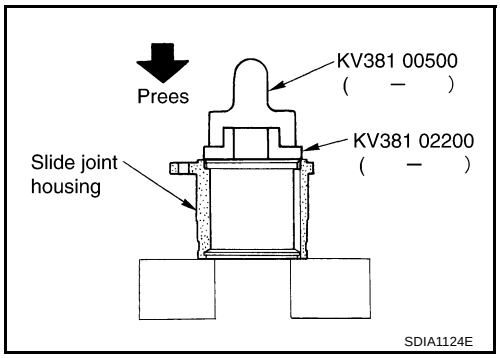
NOTE:
Housing, ball cage, steel ball, and inner race are a set. Replace them as a set.

ASSEMBLY

Final Drive Side

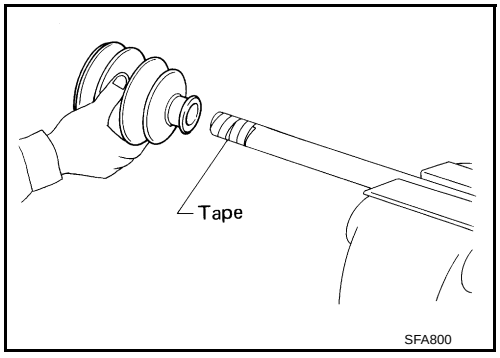
1. If plug has been removed, use a drift (special service tool) to press in a new one.

   CAUTION:
   Do not reuse plug.



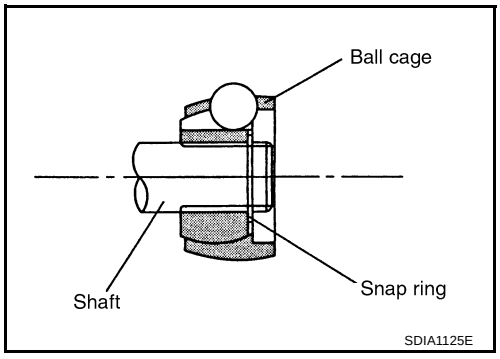
2. Wind serrated part of shaft with tape. Install boot band and boot to shaft. Be careful not to damage boot.

   CAUTION:
   Discard old boot band and boot; replace with new ones.



3. Remove protective tape wound around serrated part of shaft.
4. Install ball cage·steel ball·inner race to shaft, and secure them tightly with a snap ring.

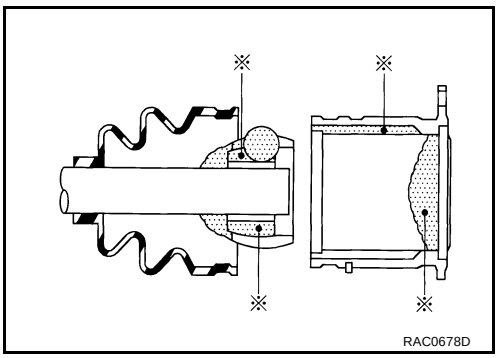
   CAUTION:
   Do not reuse snap ring.



5. Insert the amount grease (Nissan genuine grease or equivalent) onto sliding joint housing (* point) to the quantity mentioned below, and install it to shaft.

Reference value

Grease amount : 165 - 175 g (5.82 - 6.17 oz)



6. Install stopper ring to sliding joint housing.
7. After installed, pull shaft to check engagement between joint sub-assembly and stopper ring.
8. Install boot securely into grooves (* point) shown in the figure.

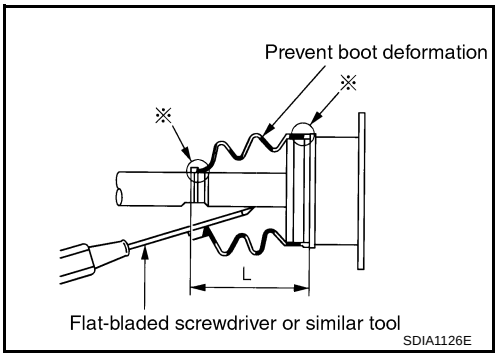
CAUTION:

Remove grease adhering to boot mounting surface (* point) on joint. If grease adheres to boot mounting surface, boot may come off.

9. When boot installation length “L” is the indicated below, insert a flat bladed screw driver or similar tool into smaller side of boot and remove air from boot to prevent boot deformation.

Standard value

Length “L” : 93.9 mm (3.697 in)



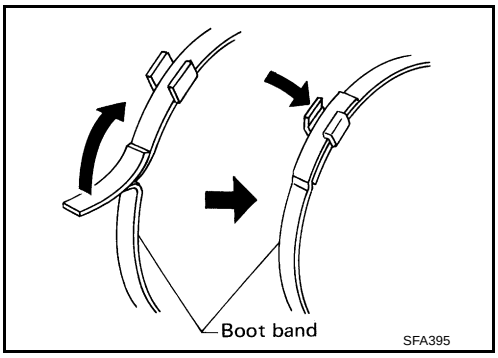
CAUTION:

- **Boot may break if boot installation length is than standard value.**
- **Take care not to touch the tip of screw driver to inside of boot.**

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

CAUTION:

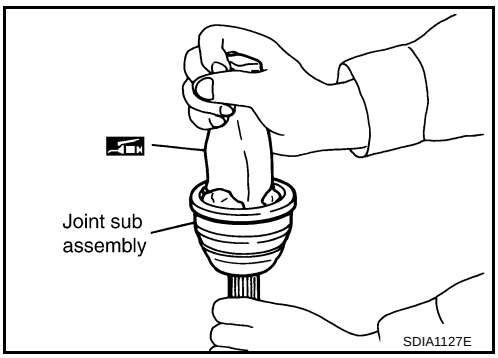
Check that boot installation position does not change. If position changes, reinstall boot bands.



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.

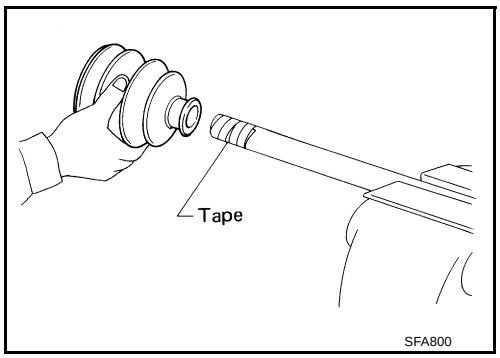
Wheel Side

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



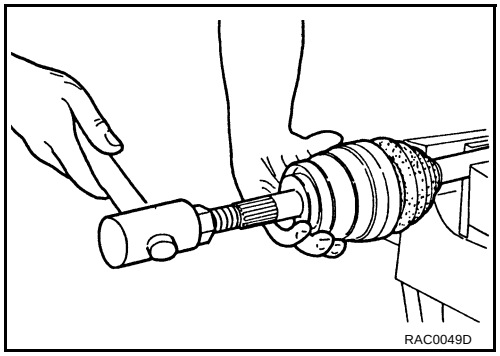
2. Wrap shaft serration with tape to protect boot from damage. Install new boot and boot bands to shaft.

CAUTION:
Discard old boot band and boot; replace with new ones.



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.

CAUTION:
Do not reuse circular clip.



5. Insert the amount grease (Nissan genuine grease or equivalent) listed below into housing from large end of boot.

Reference value

Grease amount : 113 - 123 g (3.99 - 4.34 oz)

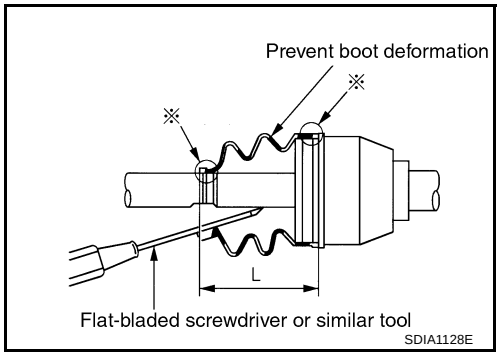
6. Install boot securely into grooves (indicated by * marks) shown in the figure.

CAUTION:
If there is grease on boot mounting surfaces (indicated by * marks) of joint, boot may come off. Remove all grease from surfaces.

7. Check that boot installation length “L” is the length indicated below. Insert a flat-bladed screwdriver or similar tool into smaller side of boot. Remove air from boot to prevent boot deformation.

Standard value

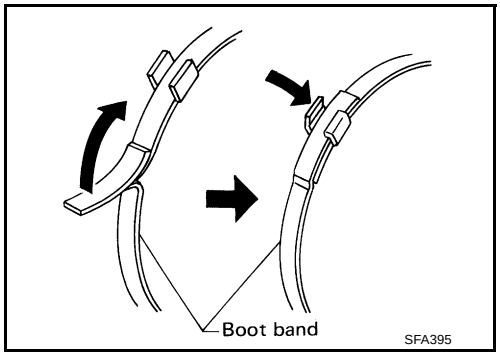
Boot installation length “L” : 97 mm (3.82 in)



CAUTION:

- **Boot may brake if boot installation length is than standard value.**
- **Be careful that screwdriver tip doe not contact inside surface of boot.**

8. Secure big and small ends of boot with new boot bands as shown in the figure.



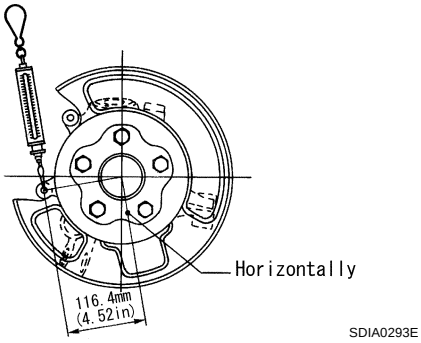
9. After installing housing and shaft, rotate boot to check whether or not the actual position is correct. If boot position is not correct, secure boot with new boot bands again.

SERVICE DATA

PFP:00030

Wheel Bearing

EDS000W9

Axial end play limit	0 mm (0 in)
Rotational torque	Less than 1.49 N·m (0.15 kg-m, 13 in-lb)
Measurement of spring scale	Less than 12.8 N (1.31 kg, 2.88 lb)
Measuring point: (Brake caliper installation points)	 SDIA0293E

Drive Shaft

EDS000WA

Z100D90F TYPE

Joint type	Z100 (Wheel side)	D90F (Final drive side)
Grease quantity	113 - 123 g (3.99 - 4.34 oz)	165 - 175 g (5.82 - 6.17 oz)
Boots installed length	97 mm (3.82 in)	93.9 mm (3.697 in)

Tightening Torque

EDS000WB

Drive shaft - Side flange	63 - 79 N·m (6.5 - 8.0 kg-m, 47 - 58 ft-lb)
Hub lock nut	206 - 274 N·m (21.0 - 27.9 kg-m, 152 - 201 ft-lb)