

SECTION **RAX**
REAR AXLE

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RAX

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PRECAUTIONS

PRECAUTIONS

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Caution

ADS0006G

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.
- 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 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

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Special Service Tools

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

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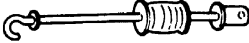
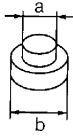
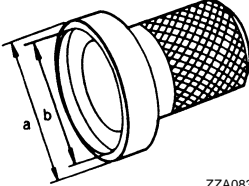
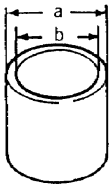
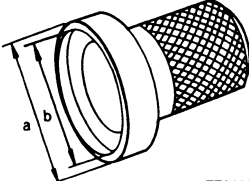
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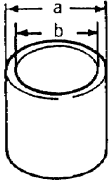
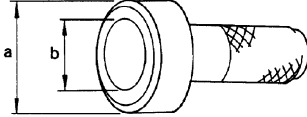
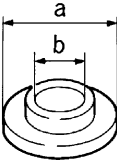
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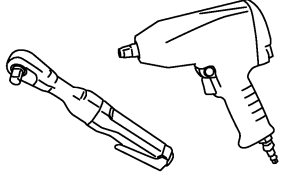
Tool number (Kent-Moore No.) Tool name	Description
KV401 04100 (—) Attachment  ZZA0947D	Removing wheel hub
ST3623 0000 (J 25840-A) Sliding hammer  ZZA0803D	Removing wheel hub
ST33061000 (J 8107-2) Drift a: 28.5 mm (1.12 in) dia. b: 38.0 mm (1.50 in) dia.  ZZA0969D	Removing wheel bearing outer side inner race
ST3527 1000 (J 26091) Drift a: 72 mm (2.83 in) dia. b: 63 mm (2.48 in) dia.  ZZA0837D	Removing wheel bearing
KV401 05310 (—) Drift a: 75 mm (2.95 in) dia. b: 62 mm (2.44 in) dia.  ZZA0832D	Removing wheel bearing
ST3072 0000 (J 25405) Drift a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.  ZZA0837D	Installing wheel bearing

PREPARATION

Tool number (Kent-Moore No.) Tool name		Description
KV401 05220 (—) Drift a: 75 mm (2.95 in) dia. b: 62 mm (2.44 in) dia.	 ZZA0832D	Installing wheel hub
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

ADS00089

Tool name		Description
Power tool	 PBIC0190E	<ul style="list-style-type: none"> ● Removing wheel nuts ● Removing hub lock nut ● Removing brake caliper assembly ● Removing radius rod ● Removing front lower link ● Removing shock absorber lower bolt ● Removing drive shaft

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PPF:00003

NVH Troubleshooting Chart

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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 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	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			

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WHEEL HUB

WHEEL HUB

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On-Vehicle Inspection and Service

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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 wheel bearings.

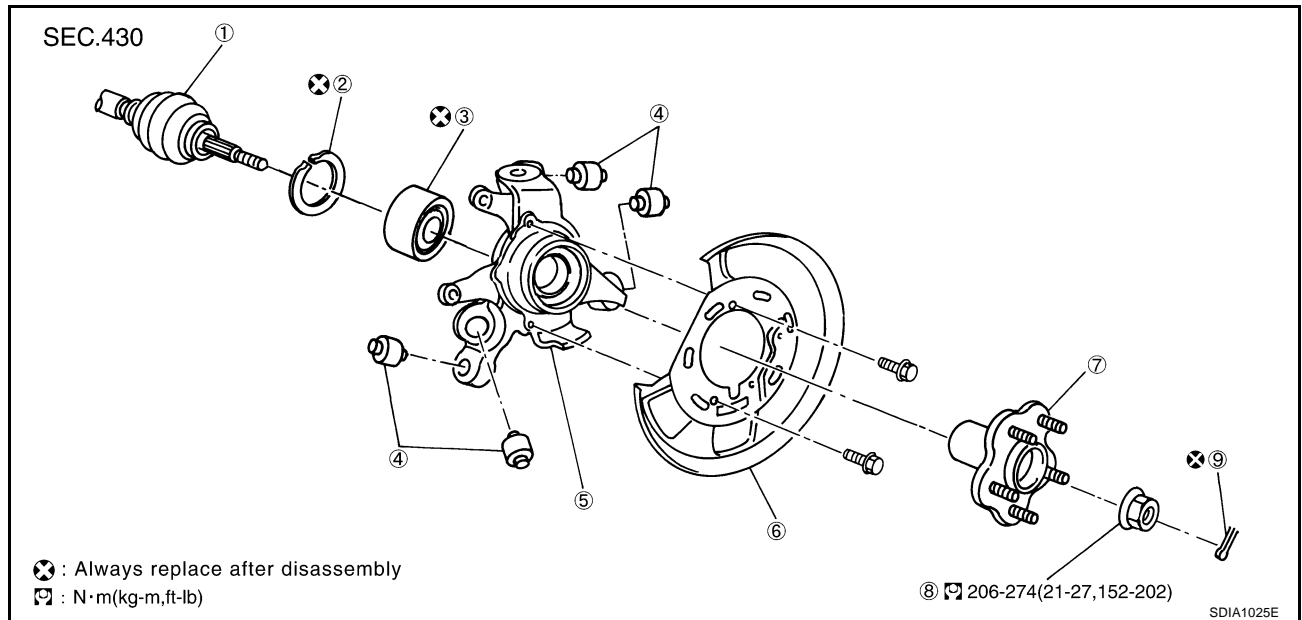
Standard value

Axial end play : 0.05 mm (0.002 in) or less

- 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

ADS0006K



- | | | |
|----------------|--------------|------------------|
| 1. Drive shaft | 2. Snap ring | 3. Wheel bearing |
| 4. Bushing | 5. Axle | 6. Back plate |
| 7. Wheel hub | 8. Lock nut | 9. Cotter pin |

REMOVAL

1. Remove tire with power tool.
2. Remove cotter pin. Then remove lock nut from drive shaft 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-31, "REAR DISC BRAKE"](#).

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-4, "PARKING BRAKE CONTROL"](#), [PB-5, "PARKING BRAKE SHOE"](#).
 5. Remove fixing bolts and nuts in axle side of radius rod, front lower link with power tool.
 6. Remove fixing bolt and nut in axle side of rear lower link. Then remove coil spring. Refer to [RSU-14, "REAR LOWER LINK & COIL SPRING"](#).
 7. Remove fixing bolt and nut 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.**

WHEEL HUB

- Do not allow drive shaft to hang down without support for counter shaft, wheel joints, and other parts.

9. Remove cotter pin and lock nut of suspension arm ball joint.
10. 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 mounting nut.

INSPECTION AFTER REMOVAL

Ball Joint Inspection

- Check for boot breakage, axial looseness, and torque of suspension arm ball joint. Refer to [RSU-10](#), "[SUSPENSION ARM](#)".

INSTALLATION

- Refer to [RAX-6](#), "[Removal and Installation](#)" for tightening torque. Tighten in the reverse order of removal.

CAUTION:

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

Disassembly and Assembly

DISASSEMBLY

Wheel Bearing

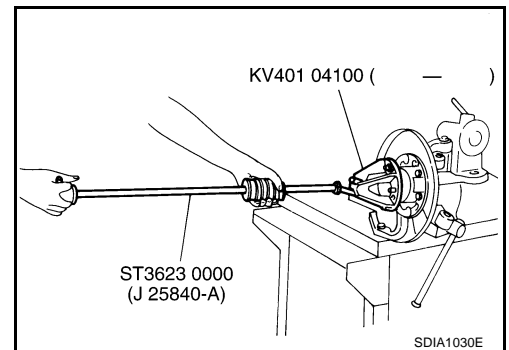
CAUTION:

Do not disassemble if wheel bearing has no trouble.

1. Place axle in a vise. Remove wheel hub from axle with a sliding hammer (special service tool) and an appropriate attachment (special service tool).

CAUTION:

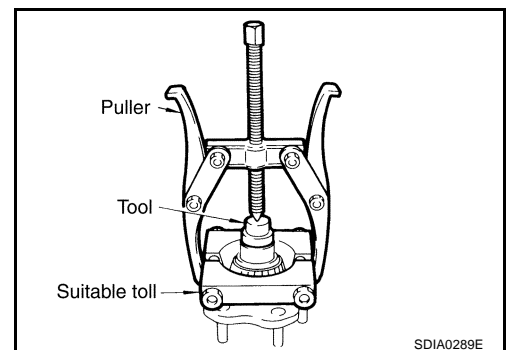
When securing axle in a vise, use copper plates or something similar.



2. Using a drift (special service tool), puller (suitable tool) and a bearing replacer (suitable tool), press wheel bearing outer side inner race out to remove from wheel hub.

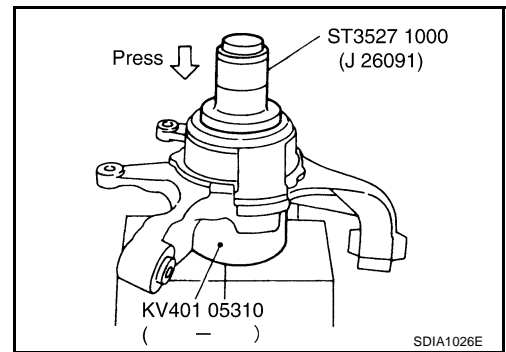
Tool number : ST33061000 (J 8107- 2)

3. Remove snap ring and back plate from axle.



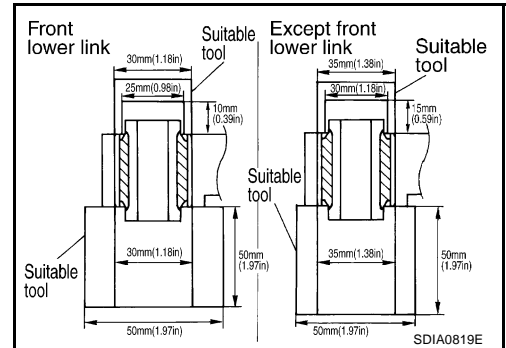
WHEEL HUB

- Using a drift (special service tool), remove wheel bearing from axle.



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.

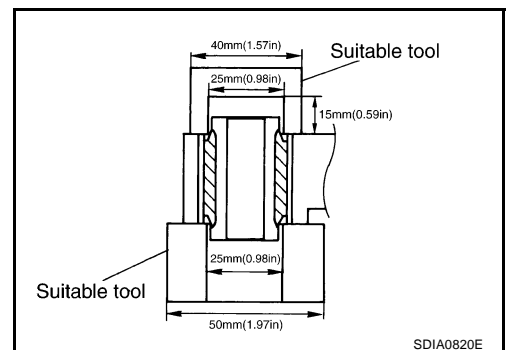
Back Plate

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

ASSEMBLY

Bushing

- Using a suitable drift, install each bushing onto axle.



WHEEL HUB

Wheel Bearing

1. Using a drift (special service tool), install wheel bearing onto axle.

CAUTION:

- Press fit a drift (special service tool) while holding it against wheel bearing inner side inner race.
- Discard old wheel bearing; replace with new one.

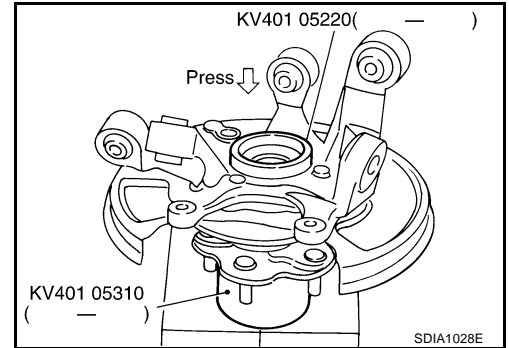
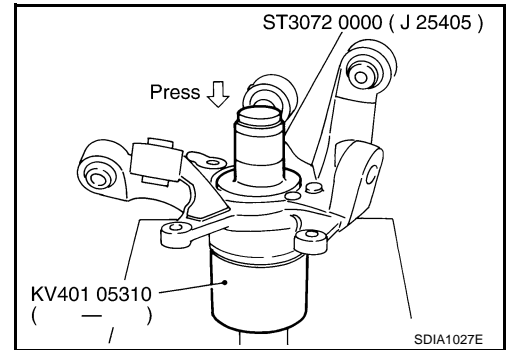
2. Install snap ring onto axle.

CAUTION:

- Discard old snap ring; replace with new one.

3. Install back plate onto axle.

4. Using a drift (special service tool), install wheel hub onto axle.



INSPECTION AFTER ASSEMBLY

1. With wheel bearing pressed into axle, apply 34,324 to 49,033 N (3,500 to 5,000 kg, 7,718 to 11,025 lb) to wheel hub and rotate both clockwise and counterclockwise 10 times to minimize resistance.
2. Attach spring scale in the position shown in illustration and pull at a rate of 10 ± 2 rpm to measure rotating torque.

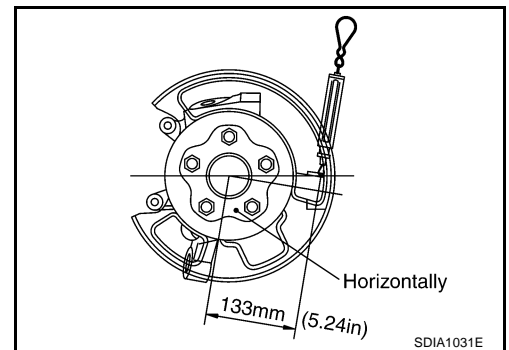
Standard value

Rotating torque:

Less than 1.961 N-m (0.20 kg-m, 17 in-lb)

Spring scale reading:

Less than 14.7 N (1.5 kg, 32.4 lb)



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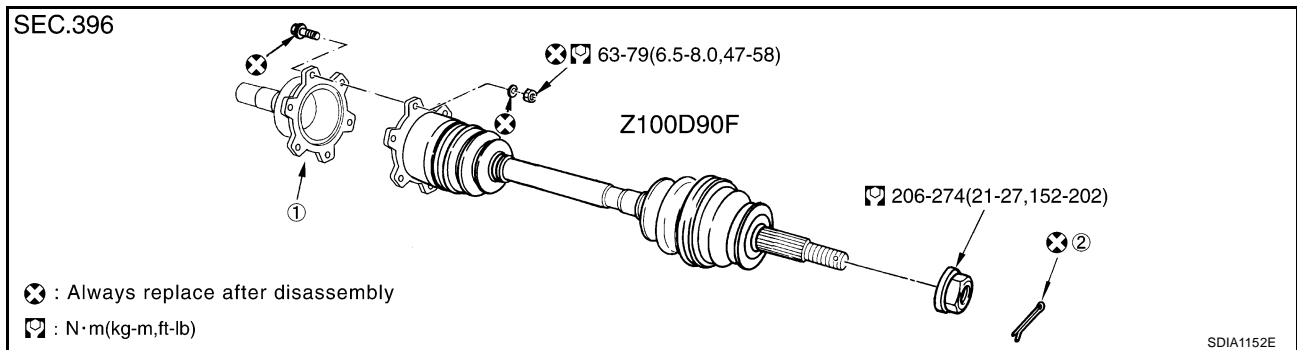
REAR DRIVE SHAFT

REAR DRIVE SHAFT

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Removal and Installation

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1. Side flange

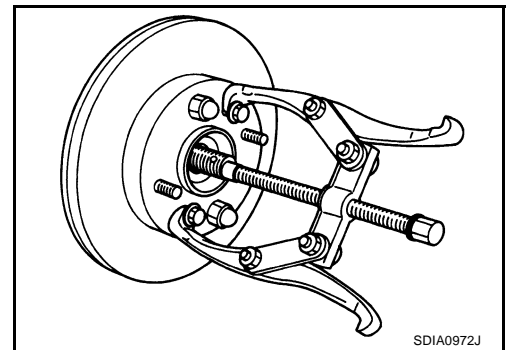
2. Cotter pin

REMOVAL

1. Remove tire with power tool.
2. Remove cotter pin. Then remove lock nut from drive shaft with power tool.
3. Remove exhaust center tube. Refer to [EX-3, "EXHAUST SYSTEM"](#).
4. Remove fixing nuts and bolts between final drive and drive shaft with power tool.
5. Using a puller (suitable tool), remove drive shaft from axle.

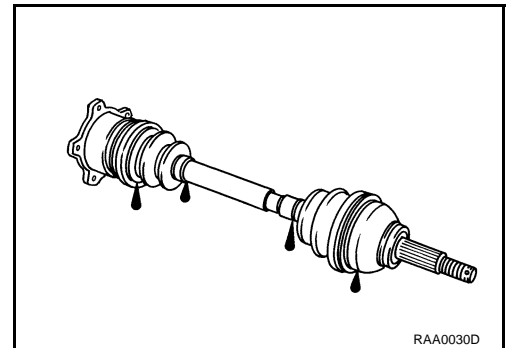
CAUTION:

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



INSTALLATION

- Refer to [RAX-10, "Removal and Installation"](#) for tightening torque. Tighten in the reverse order of removal

CAUTION:

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

REAR DRIVE SHAFT

Disassembly and Assembly

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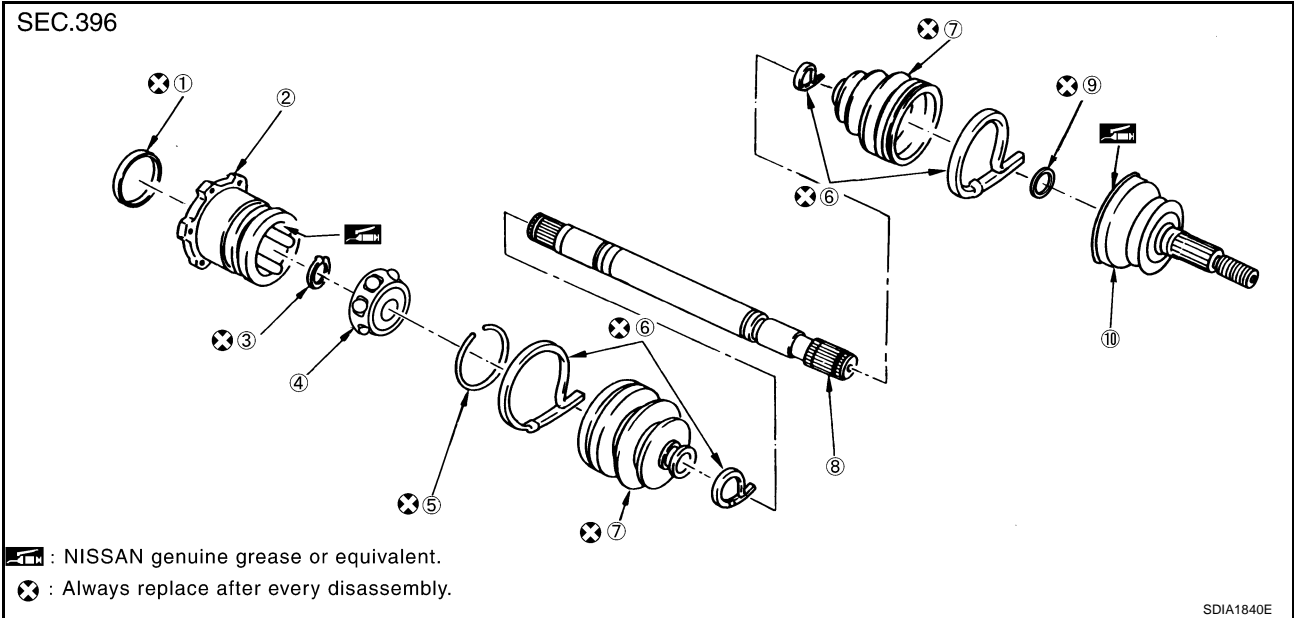
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1. Plug
2. Housing
3. Snap ring
4. Ball cage/Steel ball/Inner race assembly
5. Stopper ring
6. Boot band
7. Boot
8. Shaft
9. Circular clip
10. Joint sub-assembly

DISASSEMBLY

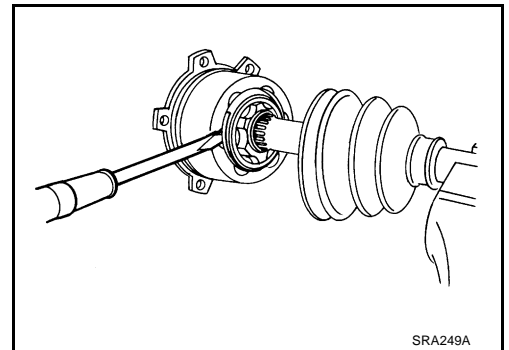
Final Drive Side

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

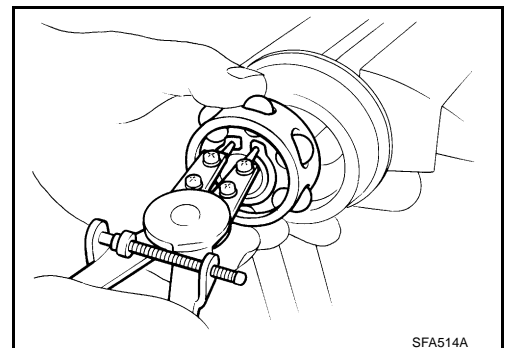
CAUTION:

When retaining drive shaft in a vise, always use copper or aluminum plates between vise and 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/steel ball/inner race assembly from shaft.
6. Remove boot from shaft.
7. Remove old grease on housing with paper towels.



REAR DRIVE SHAFT

Wheel Side

1. Place shaft in a vise.

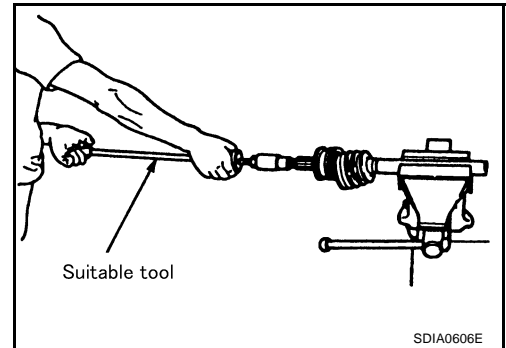
CAUTION:

When retaining drive shaft in a vise, 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 (suitable tool) 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.



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.

INSPECTION AFTER DISASSEMBLY

Shaft

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

Fixed Joint Side (Joint sub-assembly)

- Check that there is no rough rotation or unusual axial looseness.
- Check that there is no foreign material inside joint.
- Check joint sub-assembly for compression scar, cracks, fractures.

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 compression scar, cracks, fractures or unusual wear of ball rolling surfaces.
- 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 compression scar, cracks, fractures of sliding surface.

Steel Ball

- Check that there is compression scar, cracks, fractures or unusual wear.

Inner Race

- Check ball sliding surface for compression scar, cracks, fractures.
- Check that there is no damage to serrated parts.

CAUTION:

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

REAR DRIVE SHAFT

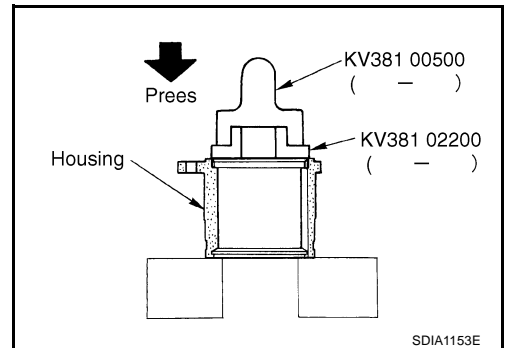
ASSEMBLY

Final Drive Side

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

CAUTION:

Discard old plug; replace with new one.

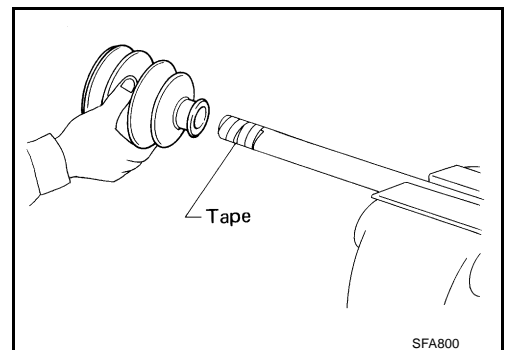


2. Wind serrated part of shaft with tape. Install boot band and boot to shaft. Be careful not to damage boot.

CAUTION:

Discard old boot band and boot; replace with new one.

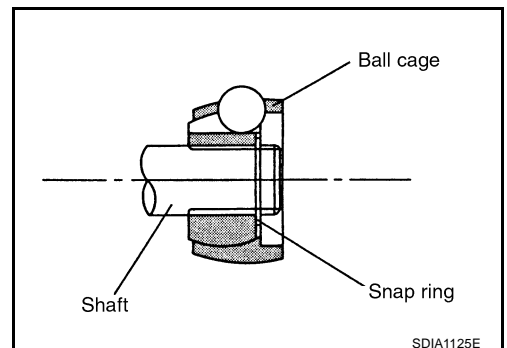
3. Remove protective tape wound around serrated part of shaft.



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

CAUTION:

Discard old snap ring; replace with new one.

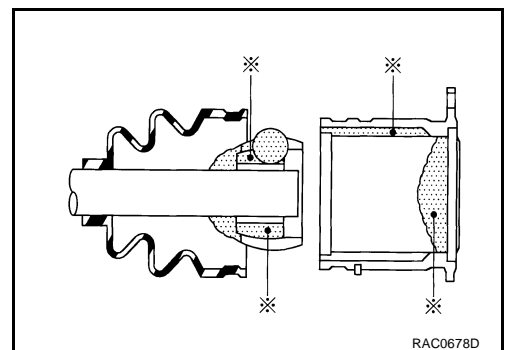


5. Insert the amount grease (Nissan genuine grease or equivalent) onto housing (* point) to the quantity mentioned below, and install it to shaft.

Reference value

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.



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REAR DRIVE SHAFT

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. 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" : 93.9 mm (3.697 in)

CAUTION:

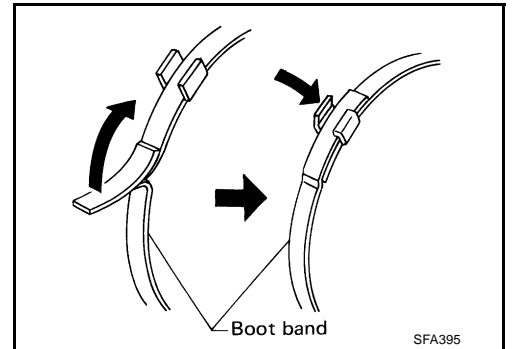
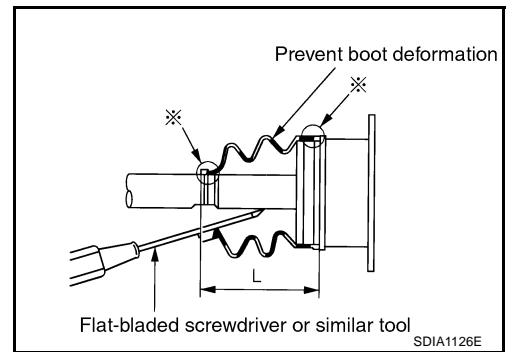
- Boot may break if boot installation length is than standard value.
- Take care not to touch the tip of screwdriver to inside of boot.

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

CAUTION:

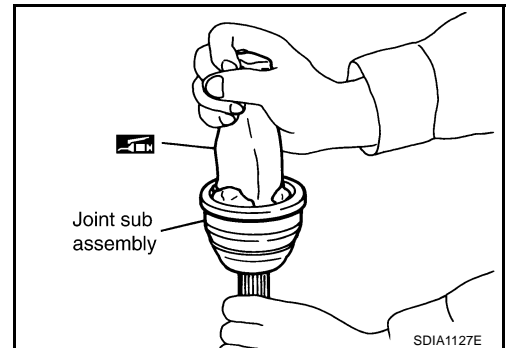
Discard old boot band; replace with new one.

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 ball groove and serration hole. After inserting grease, use a shop cloth to wipe off old grease that has oozed out.

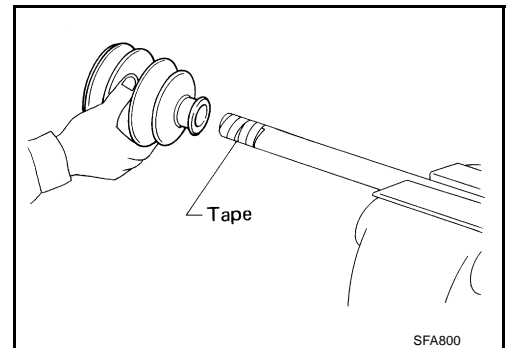


2. Wind serrated part of shaft with tape. Install boot band and boot to shaft. Be careful not to damage boot.

CAUTION:

Discard old boot band and boot; replace with new one.

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



REAR DRIVE SHAFT

- 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:

Discard old circular clip; replace with new one.

- Apply the grease amount (Nissan genuine grease or equivalent) listed below into joint sub-assembly from large end of boot.

Reference value

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

- 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 joint sub-assembly, boot may come off. Remove all grease from surfaces.

- 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:

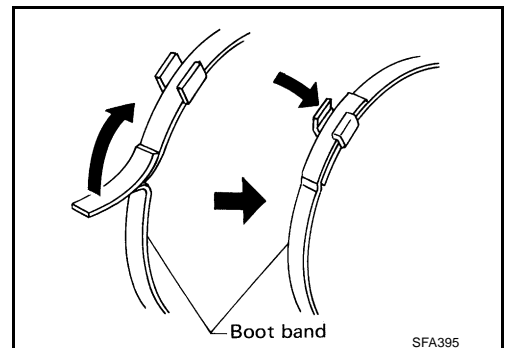
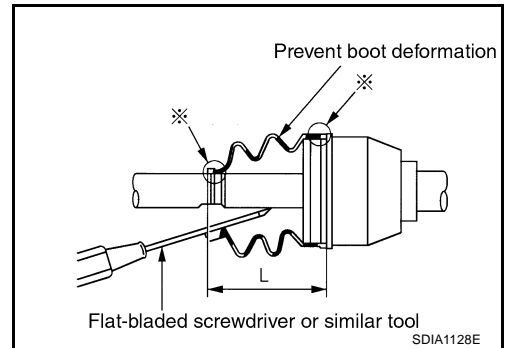
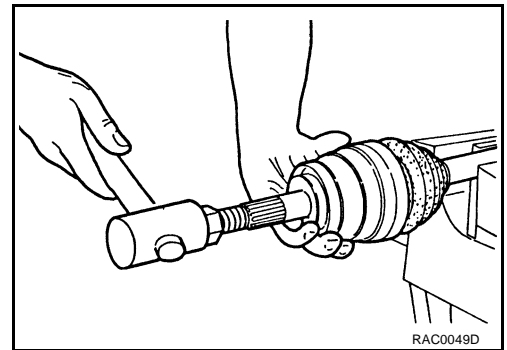
- **Boot may brake if boot installation length is than standard value.**
- **Be careful that screwdriver tip does not contact inside surface of boot.**

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

CAUTION:

Discard old boot band; replace with new one.

- 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.



A
B
C

RAX

E
F
G

H

I
J
K

L

M

SERVICE DATA

SERVICE DATA

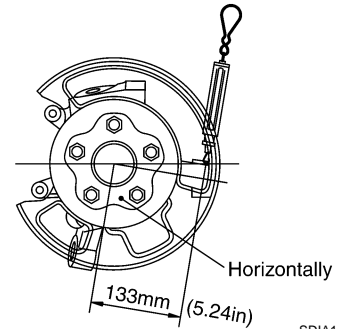
PFP:00030

Wheel Bearing

ADS00060

Axial end play limit	0.05 mm (0.002 in) or less
Rotating torque	At a load of 34,324 to 49,033 N (3,500 to 5,000 kg, 7,718 to 11,025 lb) Less than 1.961 N·m (0.20 kg-m, 17 in-lb)
Measurement of spring scale	Less than 14.7 N (1.5 kg, 32.4 lb)

Measuring point: (Brake caliper installation points)



SDIA1031E

Drive Shaft Z100D90F TYPE

ADS0006P

Joint type	Z100 (Wheel side)	D90F (Final drive side)
Grease amount	86 - 96 g (3.03 - 3.39 oz)	124 - 134 (4.37 - 4.73 oz)
Boots installation length	97 mm (3.82 in)	93.9 mm (3.697 in)