

SECTION **FAX**
FRONT AXLE

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FAX

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PRECAUTIONS

PRECAUTIONS

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Precautions

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CAUTION:

- **When installing each rubber part, final tightening must be carried out under unladen condition* with tires on ground.**
*: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.
- **After installing removed suspension parts, check the wheel alignment.**
- **Do not jack up at lower links.**

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.
- 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

PREPARATION

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Special Service Tools

EDS001D4

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
HT72520000 (J-25730-A) Ball joint remover	Removing tie-rod outer end and lower ball joint
KV38106700 (J-34296) KV38106800 (J-34297) Differential side oil seal protector	Installing drive shaft LH: KV38106700 (J34296) RH: KV38106800 (J34297)
KV40107300 (—) Boot Band crimping tool	Installing boot bands
KV40107500 (—) Drive shaft attachment	Removing drive shaft (VQ35DE)

Commercial Service Tools

EDS001D5

Tool name	Description
Power tool	Loosening bolts and nuts

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

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NVH Troubleshooting Chart

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

Symptom		Possible cause and SUSPECTED PARTS	Reference page															
			Excessive joint angle	Joint sliding resistance	Imbalance	Improper installation, looseness	Parts interference	Wheel bearing damage	DRIVE SHAFT	WHEEL HUB	SUSPENSION	TIRES	ROAD WHEEL	BRAKES	STEERING			
Symptom	DRIVE SHAFT	Noise, Vibration	x	x								x	x	x	x	x		
		Shake	x		x							x	x	x	x	x	x	
	WHEEL HUB	Noise				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
		Shimmy				x	x					x	x	x	x	x	x	
		Shudder				x						x	x	x	x	x	x	
		Poor quality ride or handling				x	x	x				x	x	x				

x: Applicable

WHEEL HUB AND KNUCKLE

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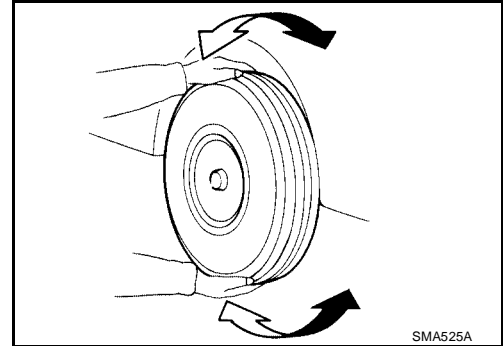
WHEEL HUB AND KNUCKLE

On-vehicle Service

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Check front axle and front suspension parts for excessive play, cracks, wear or other damage.

- Shake each front wheel to check for excessive play.
- Make sure that cotter pin is inserted.
- Retighten all axle and suspension nuts and bolts to the specification. Refer to [FAX-6, "Removal and Installation"](#) (FAX), [FSU-5, "Components"](#) (FSU).

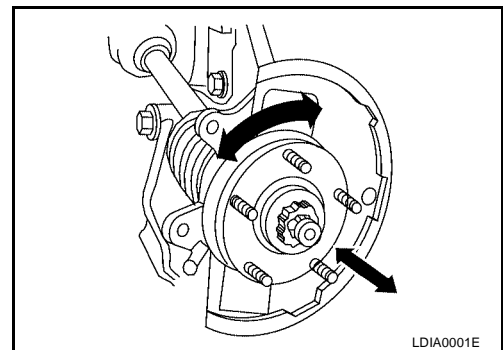


FRONT WHEEL BEARING

- Check that wheel bearings operate smoothly.
- Check axial end play.

Axial end play : 0.07 mm (0.0030 in) or less

If out of specification or wheel bearing does not turn smoothly, replace wheel bearing assembly. Refer to [FAX-6, "Removal and Installation"](#).



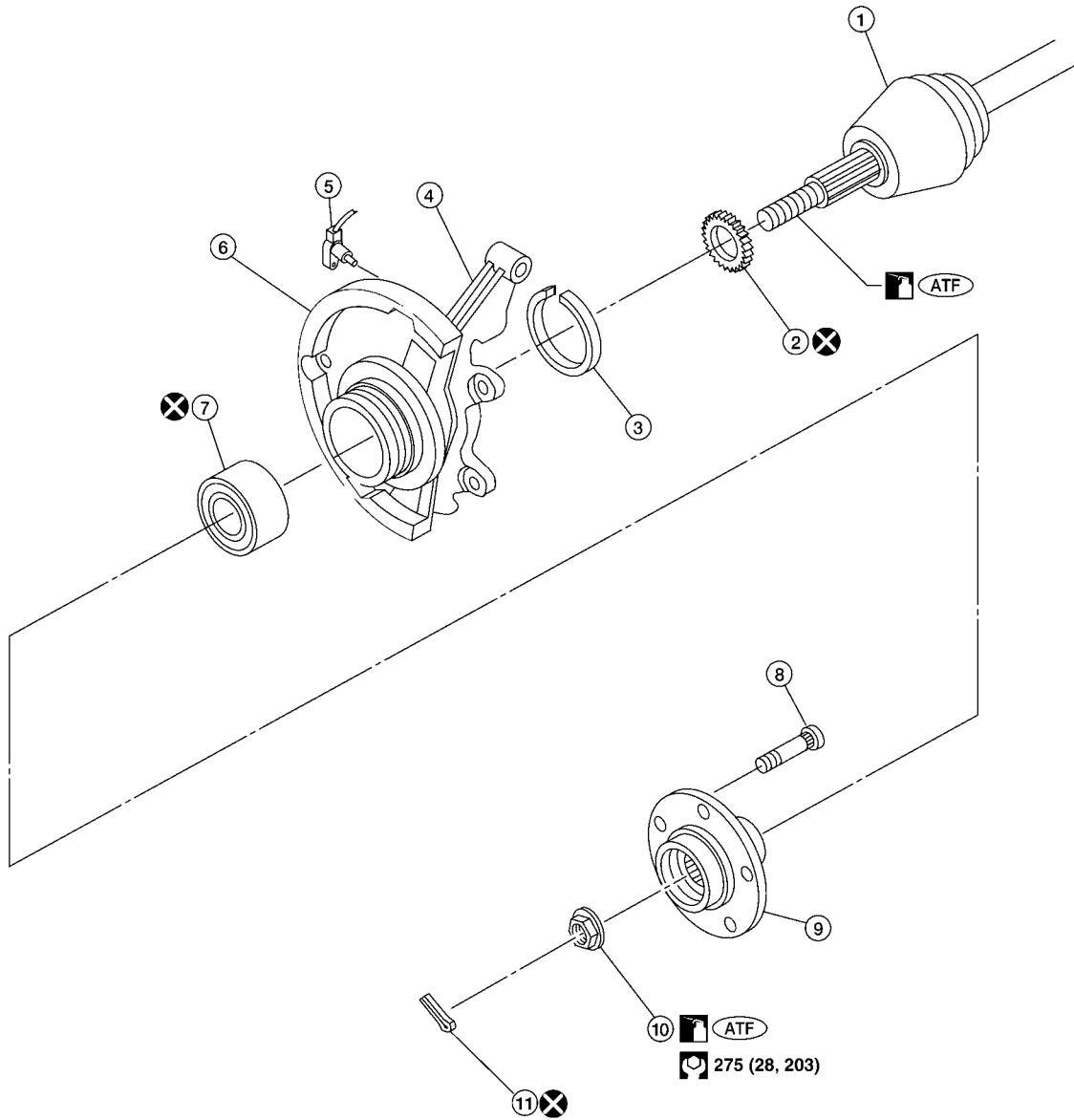
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WHEEL HUB AND KNUCKLE

Removal and Installation

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- | | | |
|----------------------------|-------------------------------|-----------------|
| 1. Drive shaft | 2. Sensor rotor (if equipped) | 3. Snap ring |
| 4. Steering knuckle | 5. Wheel sensor (if equipped) | 6. Baffle plate |
| 7. Wheel bearing assembly | 8. Hub bolt | 9. Wheel hub |
| 10. Wheel bearing lock nut | 11. Cotter pin | ⇐ Front |

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WHEEL HUB AND KNUCKLE

REMOVAL

CAUTION:

Before removing the front axle assembly, remove the wheel sensor from the assembly. Then move it away from the front axle assembly area.

Failure to do so may result in damage to the sensor wires and the wheel sensor becoming inoperative.

1. Remove the wheel and tire. Refer to [WT-7, "Rotation"](#) .
2. Remove the engine undercover.
3. Remove the wheel sensor, if equipped. Refer to [BRC-43, "Removal and Installation"](#) .

CAUTION:

Before removing the front axle assembly, remove the ABS wheel sensor from the assembly, then position it aside. Failure to do so may result in damage to the sensor or sensor wires, rendering it inoperative.

4. Remove the cotter pin, then the wheel bearing lock nut using power tool.
5. Remove brake caliper assembly and rotor using power tool. Refer to [BR-22, "Removal and Installation of Caliper Assembly and Disc Rotor"](#) (CLZ25VD), [BR-29, "Removal and Installation of Caliper Assembly and Disc Rotor"](#) (CLZ25VE).
 - The brake hose does not need to be disconnected from brake caliper. In this case, suspend caliper assembly aside with wire.

CAUTION:

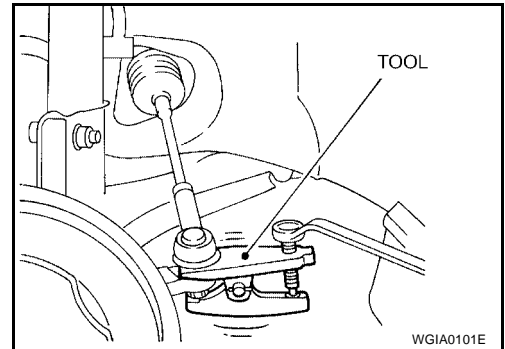
- Do not stretch or twist brake hose.
- Do not depress brake pedal, or brake caliper piston will pop out.

6. Separate tie rod from knuckle using Tool.

Tool number : HT72520000 (J-25730-A)

CAUTION:

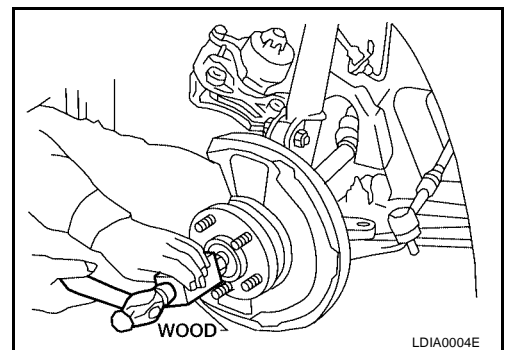
Install stud nut on stud bolt to prevent damage to stud bolt.



7. Separate drive shaft from knuckle by lightly tapping it. If it is hard to remove, use a suitable puller.

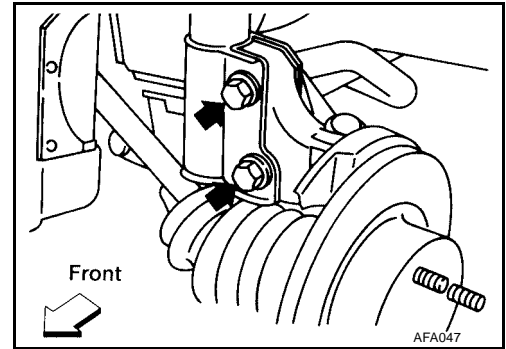
CAUTION:

Cover boots with shop towel so as not to damage them when removing drive shaft.



WHEEL HUB AND KNUCKLE

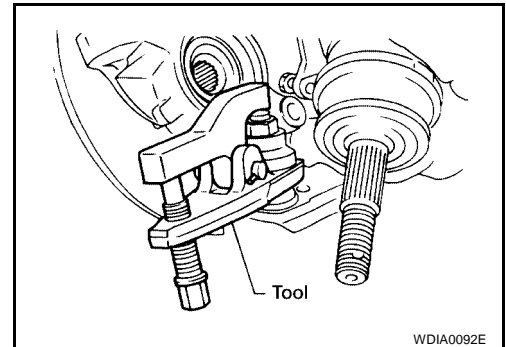
8. Remove lower shock absorber (strut) bolts.



9. Loosen lower ball joint nut.
10. Separate knuckle from lower ball joint stud using Tool.

Tool number : HT72520000 (J-25730-A)

11. Remove lower ball joint nut, then knuckle from transverse link.



INSPECTION AFTER REMOVAL

Wheel Hub

- Check wheel hub for cracks by a magnetic exploration or dyeing test, and replace if cracked.

Knuckle

- Check for deformity, cracks (by magnetic exploration or dyeing test) and damage on steering knuckle, replace if necessary.

Snap Ring

- Check for wear and damage on snap ring, replace if necessary.

INSTALLATION

- Installation is in the reverse order of removal. Tighten front suspension and power steering components to specification, refer to [FSU-5, "Components"](#) (FSU section), [PS-14, "Removal and Installation"](#) (PS section).

Disassembly and Assembly

DISASSEMBLY

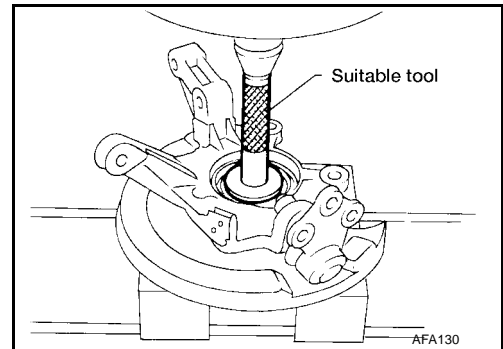
CAUTION:

- When removing wheel hub or wheel bearing from knuckle, replace wheel bearing assembly (outer race, inner races and grease seals) with a new one.
- When replacing wheel bearing, replace complete wheel bearing assembly (inner races and outer race).

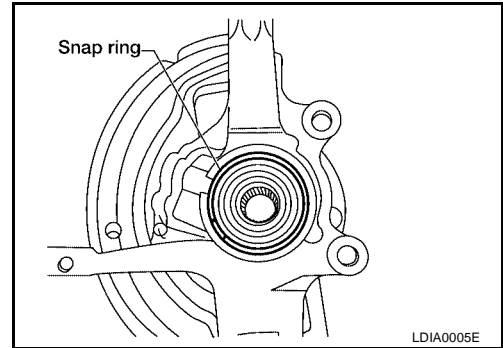
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WHEEL HUB AND KNUCKLE

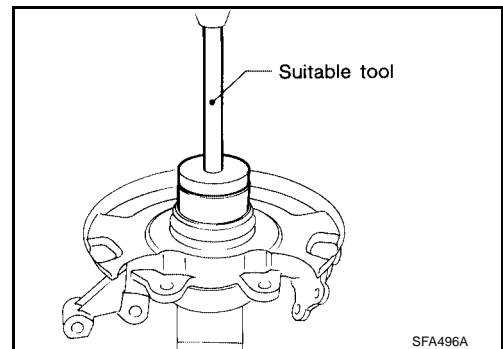
1. Press out wheel hub from knuckle using suitable tool.



2. Remove snap rings.



3. Press out wheel bearing from knuckle using suitable tool.



ASSEMBLY

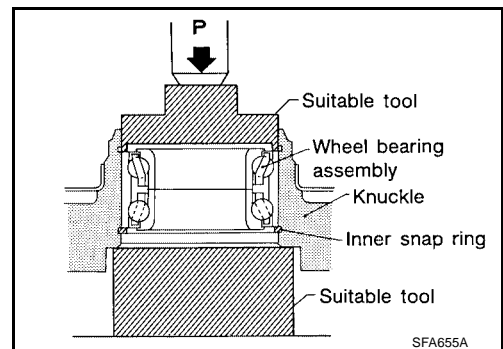
1. Install inner snap ring into groove of knuckle.
2. Press new wheel bearing assembly into knuckle until it contacts snap ring.

Maximum load P : 50 kN (5.1 ton, 5.6 US ton, 5.02 Imp ton)

CAUTION:

- Do not press inner race of wheel bearing assembly.
- Do not apply oil or grease to mating surfaces of wheel bearing outer race and knuckle.

3. Install outer snap ring into groove of knuckle.



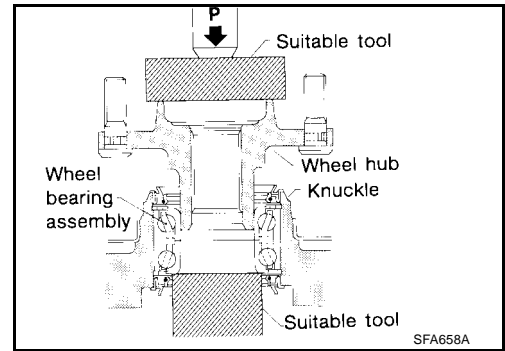
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WHEEL HUB AND KNUCKLE

4. Press wheel hub into knuckle.

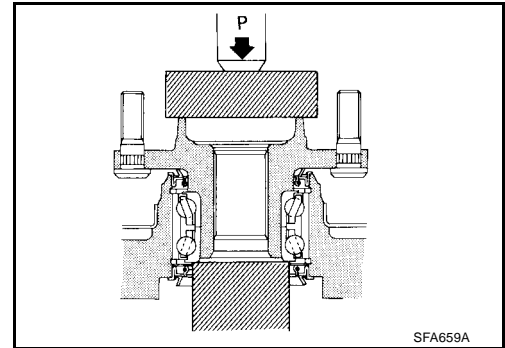
Maximum load P : 50 kN (5.1 ton, 5.6 US ton, 5.02 Imp ton)

5. Check bearing operation.



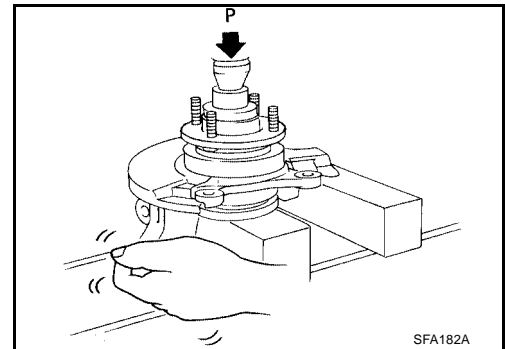
a. Add load P with press.

Load P : 35-50 kN (3.6 - 5.1 ton, 3.9 - 5.6 US ton, 3.51 - 5.02 Imp ton)



b. Spin knuckle several turns in both directions.

c. Make sure that wheel bearings operate smoothly.



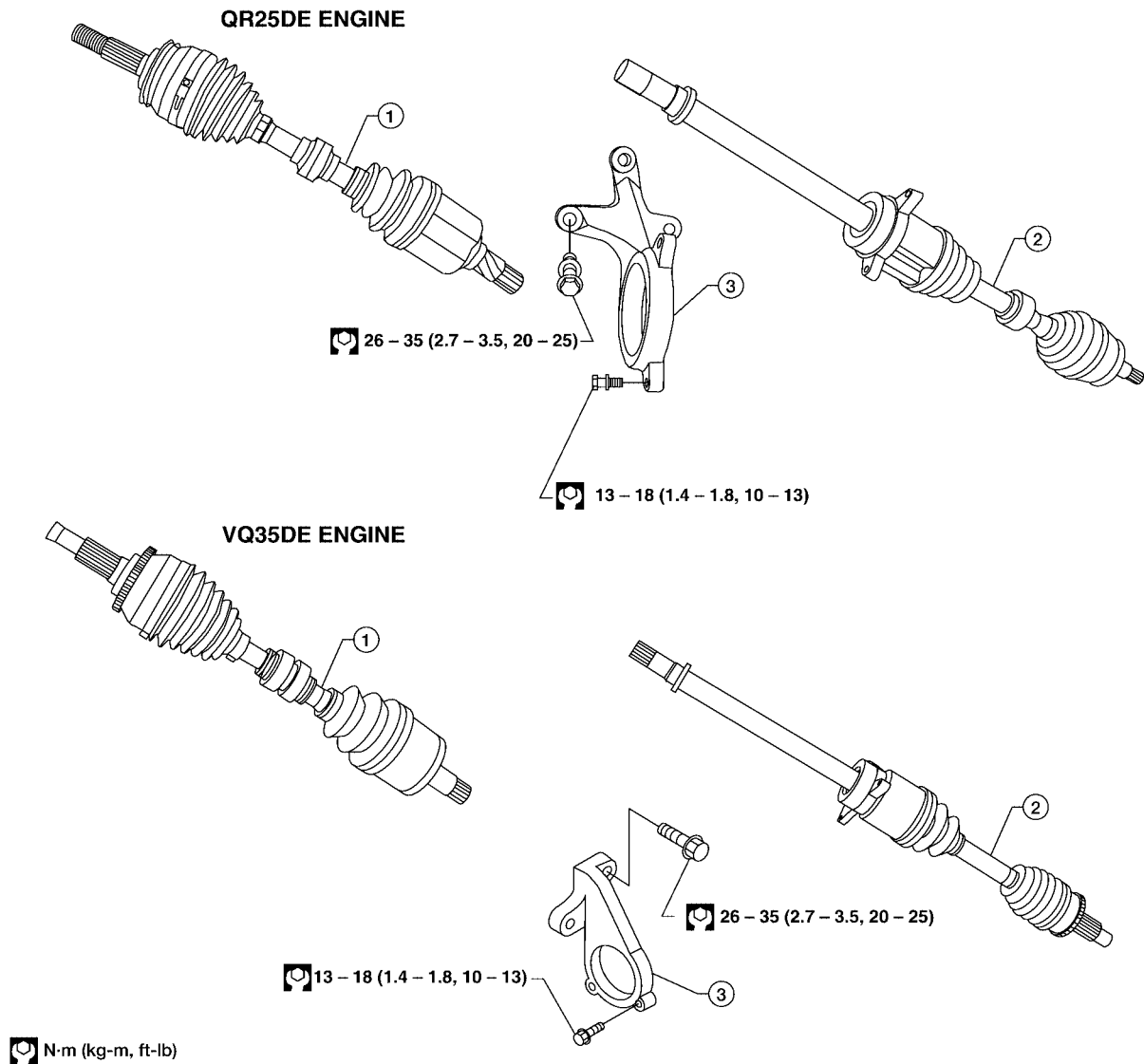
FRONT DRIVE SHAFT

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FRONT DRIVE SHAFT Removal and Installation

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1. LH drive shaft

2. RH drive shaft

3. Center support bracket

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REMOVAL

1. Remove the wheel and tire.
2. Remove brake caliper and disc rotor. Refer to [BR-22, "Removal and Installation of Caliper Assembly and Disc Rotor"](#) (CLZ25VD), [BR-29, "Removal and Installation of Caliper Assembly and Disc Rotor"](#) (CLZ25VE).

CAUTION:

Do not twist or stretch brake hose when moving components.

NOTE:

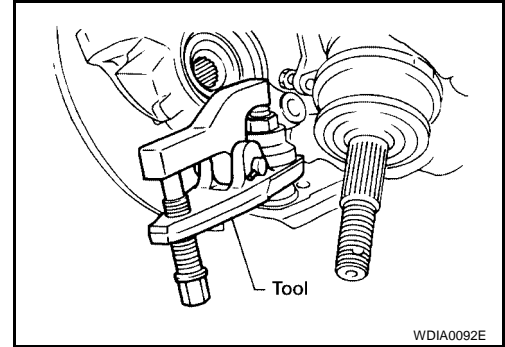
Brake caliper does not need to be disconnected.

3. Remove the cotter pin and wheel bearing lock nut using power tool.

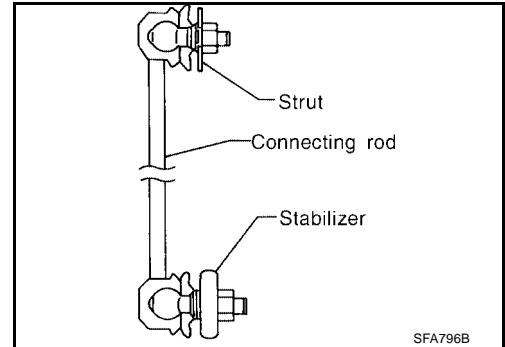
FRONT DRIVE SHAFT

- Remove the engine undercover.
- Loosen the lower ball joint nut and separate the lower ball joint transverse link using Tool.

Tool number : HT72520000 (J-25730-A)



- Disconnect the connecting rod from the strut. Refer to [FSU-11](#), "[Removal and Installation](#)".

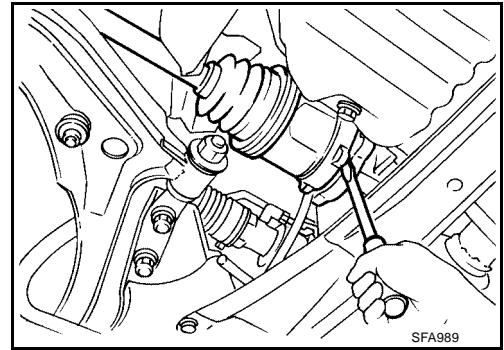


- Separate drive shaft from knuckle by lightly tapping it. If it is hard to remove, use a puller.

CAUTION:

Cover boots with shop towel so as not to damage them when removing drive shaft.

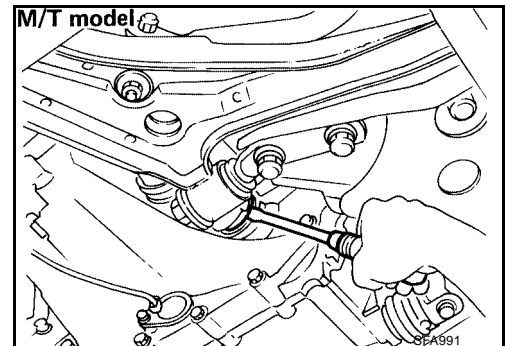
- Remove support bearing bolts using power tool, and pull right-hand drive shaft from transaxle using suitable tool as shown.



- Remove lefthand drive shaft from transaxle.

— For QR25DE M/T models —

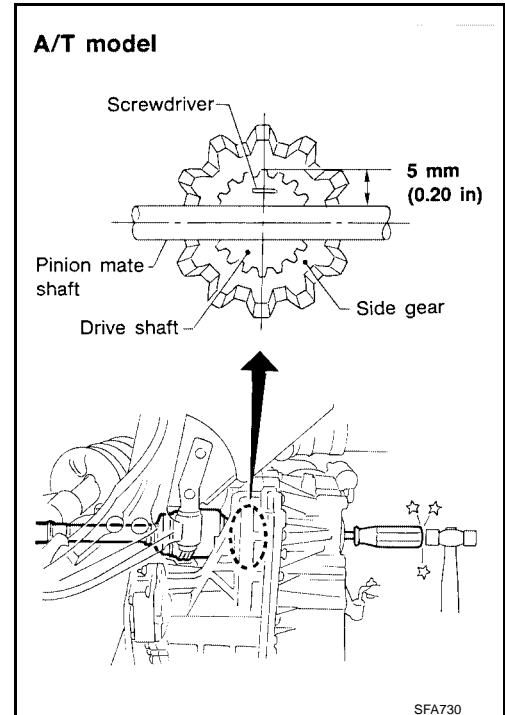
- Pry off drive shaft from transaxle using a suitable tool as shown.



FRONT DRIVE SHAFT

— For QR25DE A/T models —

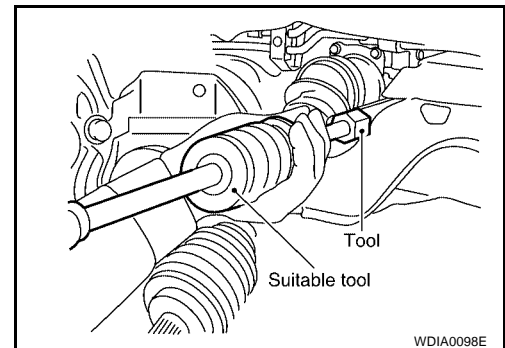
- Insert screwdriver into transaxle opening for right drive shaft and strike with a hammer.
- Be careful not to damage pinion mate shaft and side gear.



— For VQ35DE models —

- Remove drive shaft from transaxle using Tool and drive shaft puller or suitable tool.
- Set Tool and a drive shaft puller or suitable tool between drive shaft (slide joint side) and transaxle as shown, then remove drive shaft.

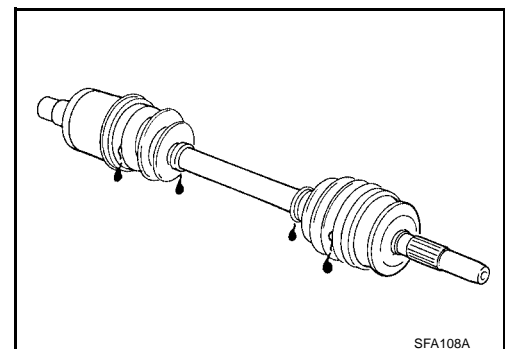
Tool number : KV40107500 (—)



10. Remove oil seal from transaxle case.

INSPECTION AFTER REMOVAL

- Check for halting movement or a noticeable rattle by moving a joint part vertically, horizontally and to axial direction.
- Check for crack damage and grease leak of boot.



INSTALLATION

Transaxle Side

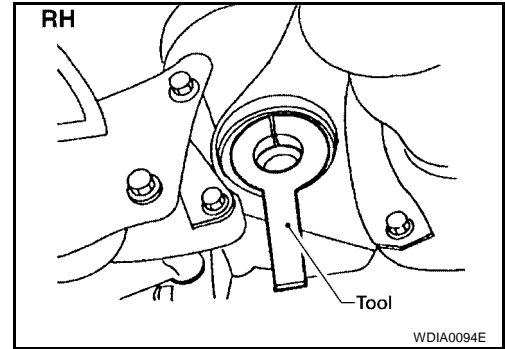
1. Drive a new oil seal into transaxle case, for all except RE5F22A. Refer to [MT-12, "Removal and Installation"](#) (RS5F51A), [MT-75, "Removal and Installation"](#) (RS6F51A) or [AT-270, "Differential Side Oil Seal Replacement"](#) (RE4F04B).

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FRONT DRIVE SHAFT

- Set Tool along the inner circumference of oil seal.

Tool number : KV38106800 (J-34297)



- Install a new circlip on the drive shaft.

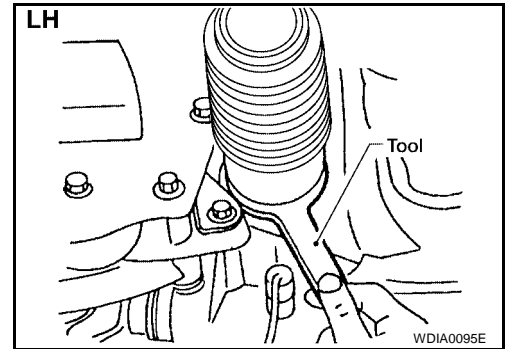
CAUTION:

Always use a new circlip for installation.

- Insert drive shaft into transaxle. Be sure to properly align the serrations and then withdraw Tool.

Tool number : KV38106800 (J-34296)

- Push drive shaft, then press-fit circlip on the drive shaft into circlip groove of side gear.
- After its insertion, try to pull the flange out of the slide joint by hand. If it pulls out, the circlip is not properly meshed with the side gear.
- Install remaining components in the reverse order of removal.
 - When installing wheel and tire, refer to [WT-7, "Rotation"](#).



Wheel Side

- Install drive shaft into knuckle.
- Tighten support bearing bolts. Refer to [FAX-11, "Removal and Installation"](#).
- Tighten upper knuckle nut and wheel bearing lock nut. Refer to [FAX-6, "Removal and Installation"](#).
- Install a new cotter pin to secure the wheel bearing lock nut.

CAUTION:

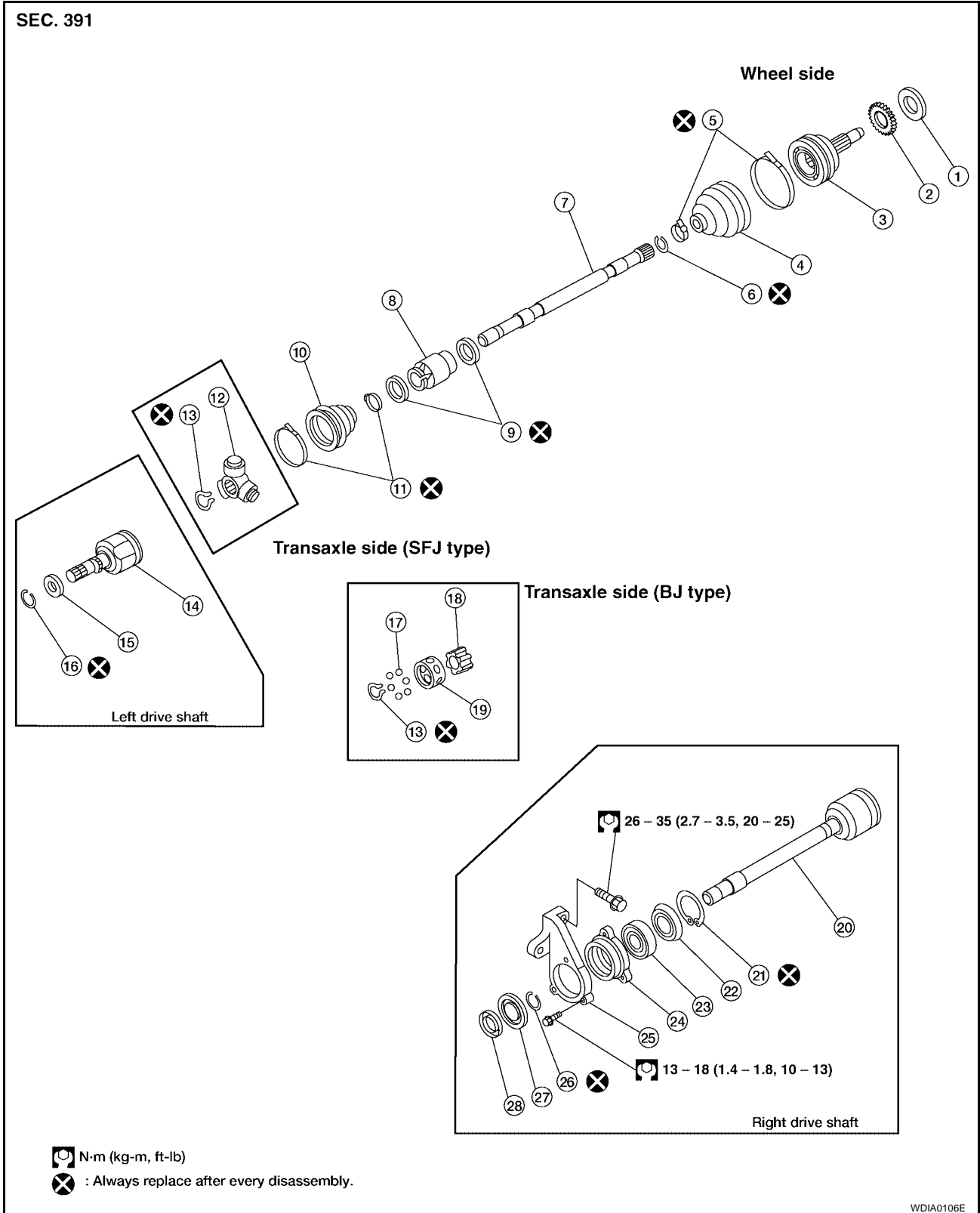
Always use a new cotter pin for installation.

- Install the remaining components in the reverse order of removal.
 - When installing wheel and tire, refer to [WT-7, "Rotation"](#).

FRONT DRIVE SHAFT

Disassembly and Assembly

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|----------------|-------------------------------|------------------------|
| 1. Dust shield | 2. Sensor rotor (if equipped) | 3. Joint assembly |
| 4. Boot | 5. Boot band | 6. Circlip |
| 7. Drive shaft | 8. Dynamic damper | 9. Dynamic damper band |
| 10. Boot | 11. Boot band | 12. Spider assembly |
| 13. Snap ring | 14. Slide joint assembly | 15. Dust shield |
| 16. Circlip | 17. Ball | 18. Inner race |

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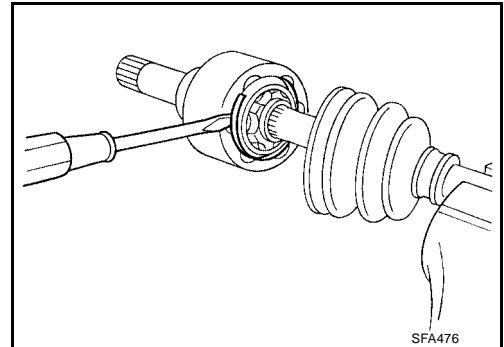
FRONT DRIVE SHAFT

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|--------------------------------|--|------------------------------|
| 19. Cage | 20. Slide joint housing with extension shaft | 21. Snap ring |
| 22. Dust shield | 23. Support bearing | 24. Support bearing retainer |
| 25. Center support bracket | 26. Snap ring | 27. Dust shield |
| 28. Differential side oil seal | | |

DISSASSEMBLY

Transaxle Side (BJ type)

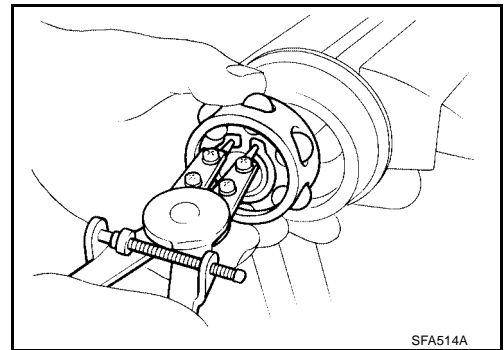
1. Remove boot bands.
2. Put matching marks on slide joint housing and inner race, before separating joint assembly.
3. Remove stopper ring with a screwdriver, and pull out slide joint housing.
4. Put matching marks on inner race and drive shaft.



5. Remove snap ring, then remove ball cage, inner race and balls as a unit.
6. Draw out boot.

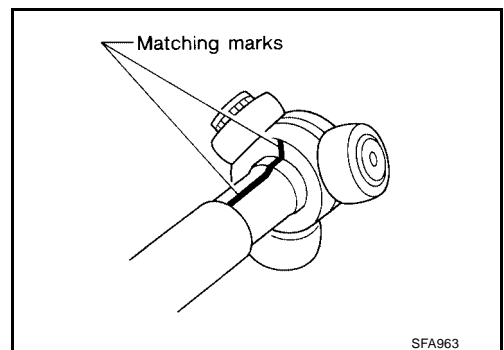
CAUTION:

Cover drive shaft serrations with tape so as not to damage the boot.



Transaxle Side (SFJ type)

1. Remove boot bands.
2. Put matching marks on slide joint housing and drive shaft before separating joint assembly.
3. Put matching marks on spider assembly and drive shaft.



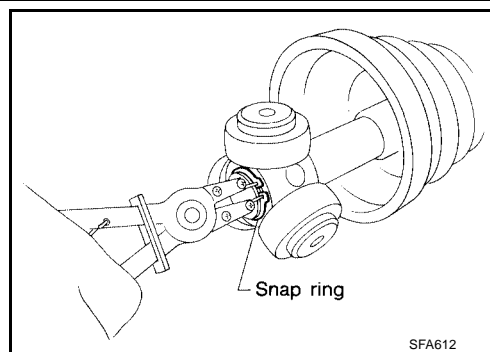
FRONT DRIVE SHAFT

4. Remove snap ring, then remove spider assembly.

CAUTION:
Do not disassemble spider assembly.

5. Draw out boot.

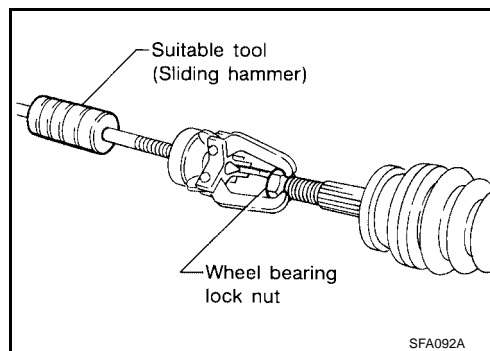
CAUTION:
Cover drive shaft serrations with tape to prevent damage to the boot.



Wheel Side

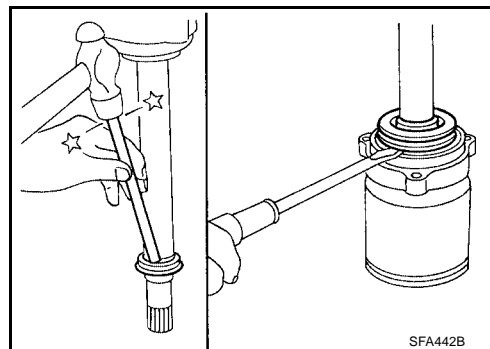
CAUTION:
The joint on the wheel side cannot be disassembled.

1. Before separating joint assembly, put matching marks on drive shaft and joint assembly.
2. Separate joint assembly using suitable tool.
Be careful not to damage threads on drive shaft.
3. Remove boot bands.
4. Draw out boot.

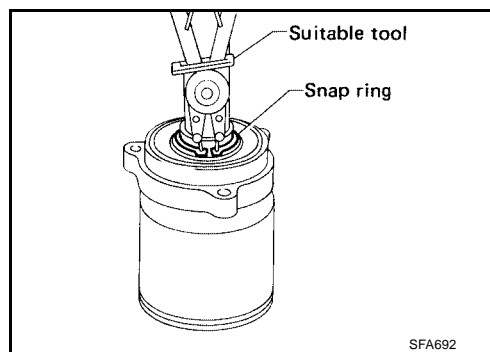


Support Bearing

1. Remove dust shield.



2. Remove snap ring using suitable tool.



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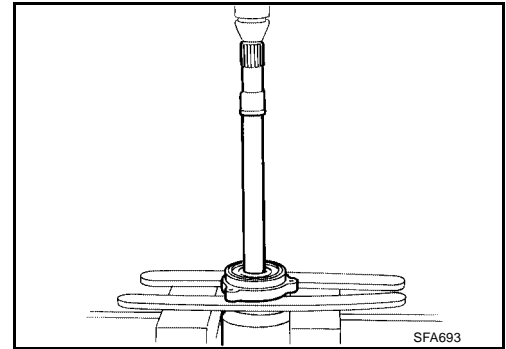
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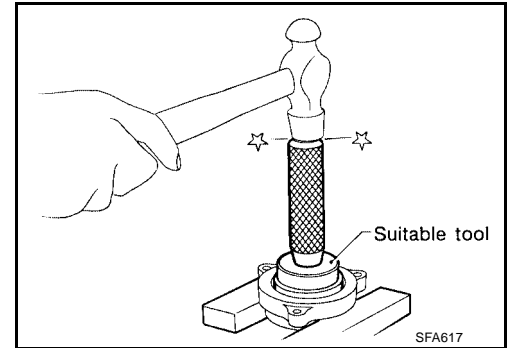
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FRONT DRIVE SHAFT

3. Press support bearing assembly off drive shaft.



4. Separate support bearing from retainer using suitable tool.



INSPECTION AFTER DISASSEMBLY

Thoroughly clean all parts in cleaning solvent, and dry with compressed air. Check parts for evidence of deformation or other damage.

Shaft

Replace drive shaft if it is twisted or cracked.

Boot and Boot Band

Check boot for fatigue, cracks or wear. Replace boot with new boot bands.

Joint Assembly (Transaxle side)

- Check spider assembly for needle bearing and washer damage. Replace if necessary. (SFJ type)
- Check roller surfaces for scratches, wear or other damage. Replace if necessary. (SFJ type)
- Replace any parts of double offset joint which show signs of scorching, rust, wear or excessive play. (BJ type)
- Check serration for deformation. Replace if necessary.
- Check slide joint housing for any damage. Replace if necessary.

Joint Assembly (Wheel side)

Replace joint assembly if it is deformed or damaged.

Housing (Slide joint)

- Check for damage or abnormal wear on ball rolling surface.
- Check for wear on shaft bolts.
- Check for deformity on boot install part.

Ball cage

- Check for damage or abnormality on sliding surface.

Steel ball

- Check for damage or abnormal wear.

Inner race

- Check for damage or abnormality on ball rolling surface.
- Check for damage on serration part.

FRONT DRIVE SHAFT

Support Bearing

Make sure wheel bearing rolls freely and is free from noise, cracks, pitting or wear.

ASSEMBLY

CAUTION:

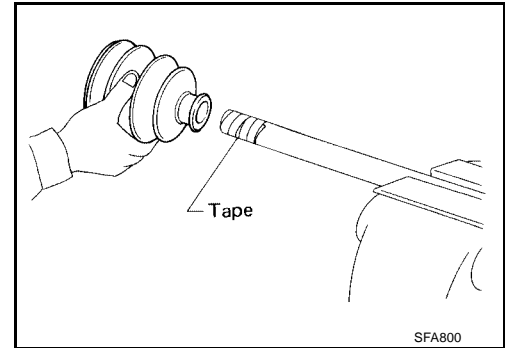
- After drive shaft has been assembled, ensure that it moves smoothly over its entire range without binding.
- Use Genuine NISSAN Grease or equivalent after every overhaul.

Transaxle Side (BJ type)

1. Install boot and new small boot band on drive shaft.

CAUTION:

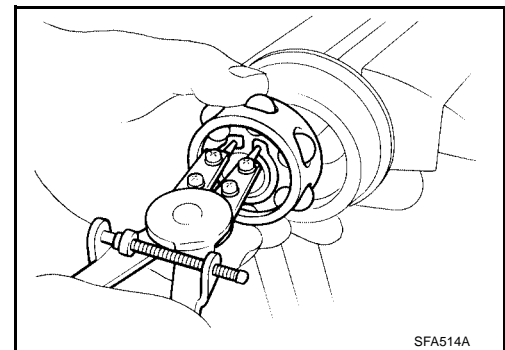
Cover drive shaft serration with tape so as not to damage boot during installation.



2. Install ball cage, inner race and balls as a unit, making sure the marks which were made during disassembly are properly aligned.
3. Install new snap ring.
4. Pack drive shaft with specified amount of grease.

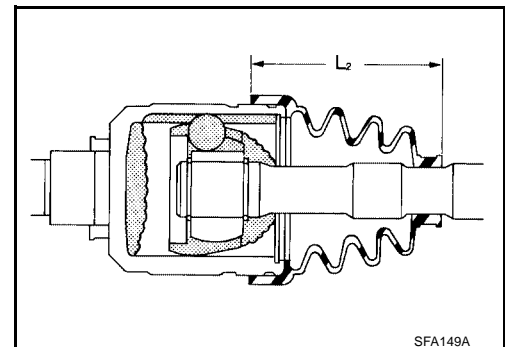
Grease capacity : 115 – 135 g (4.06 – 4.76 oz)

5. Install slide joint housing, then install new snap ring.

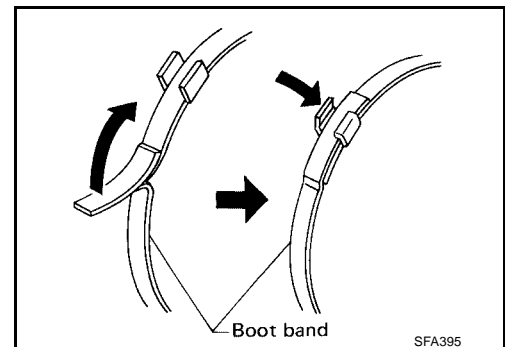


6. Make sure that boot is properly installed on the drive shaft groove.
Set boot so that it does not swell and deform when its length is "L2".

Length "L2" : 95.1 – 97.9 mm (3.74 – 3.85 in)



7. Lock new larger and smaller boot bands securely with a suitable tool.



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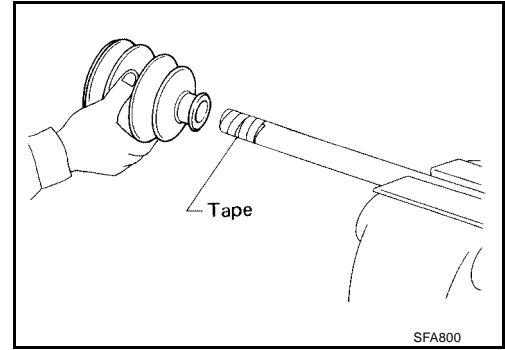
FRONT DRIVE SHAFT

Transaxle Side (SFJ type)

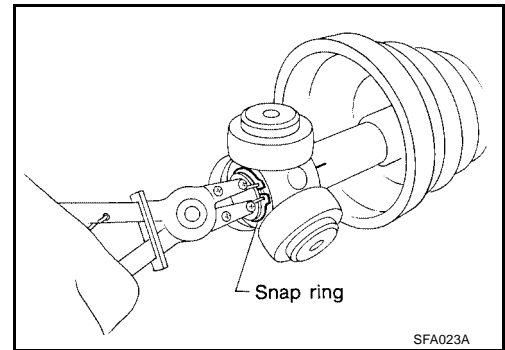
1. Install boot and new small boot band on drive shaft.

CAUTION:

Cover drive shaft serration with tape to prevent damage to boot during installation.



2. Install spider assembly securely, making sure the marks which were made during disassembly are properly aligned.
3. Install new snap ring.



4. Pack drive shaft with specified amount of grease.

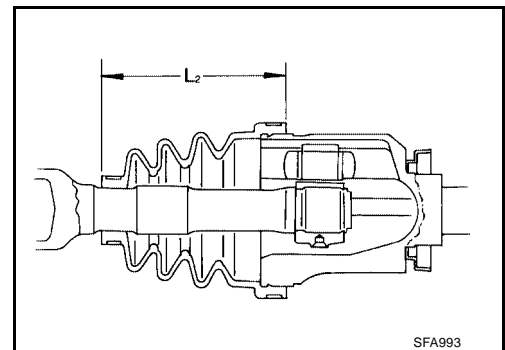
Grease capacity : 180 – 200 g (6.35 – 7.05 oz)

5. Install slide joint housing.

6. Set boot so that it does not swell and deform when its length is "L2".

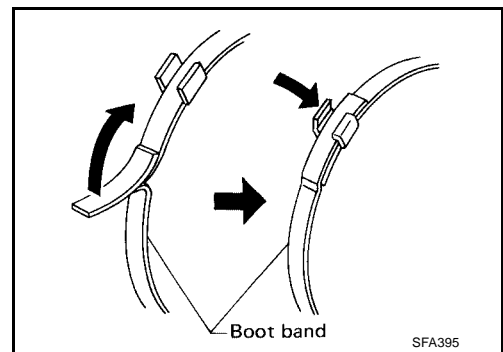
Length "L2" : 96.9 – 99.7 mm (3.81 – 3.93 in)

Make sure that boot is properly installed on the drive shaft groove.

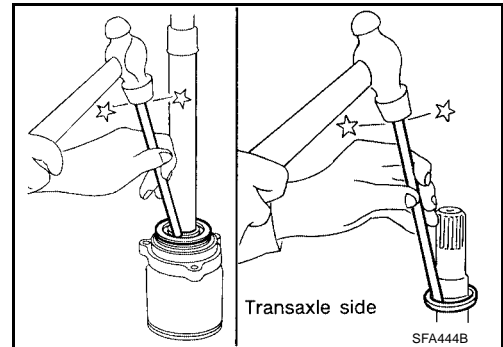


FRONT DRIVE SHAFT

7. Lock new larger and smaller boot bands securely with a suitable tool.



- Install snap ring.



- Install new dust shield.

Wheel Side

1. Press in sensor rotor to joint sub-assembly using suitable drift, if equipped.

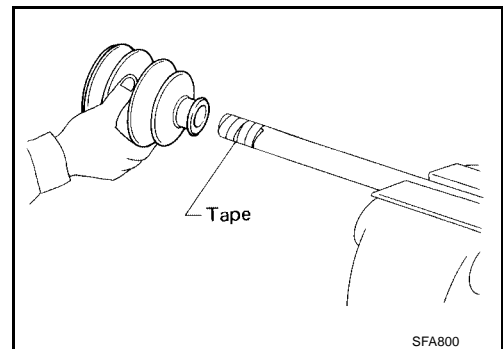
CAUTION:

Always install a new sensor rotor.

2. Install boot and new small boot band on drive shaft.

CAUTION:

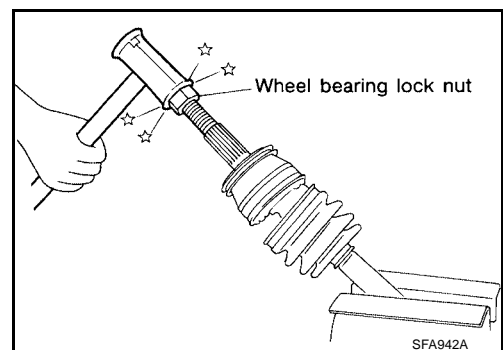
Cover drive shaft serration with tape so as not to damage boot during installation.



3. Set joint assembly onto drive shaft by lightly tapping it. Install joint assembly securely, ensuring marks which were made during disassembly are properly aligned.

CAUTION:

Make sure circlip engages inside joint assembly and the drive shaft does not pull out.



FRONT DRIVE SHAFT

4. Pack drive shaft with specified amount of grease.

Grease capacity

QR25DE : 115 – 135 g (4.06 – 4.76 oz)

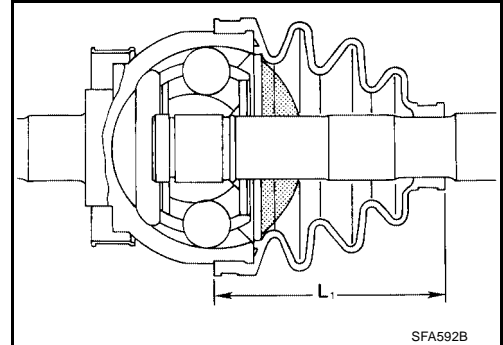
VQ35DE : 145 – 165 g (5.11 – 5.82 oz)

5. Make sure that boot is properly installed on the drive shaft groove.
Set boot so that it does not swell and deform when its length is "L1".

Length "L1"

QR25DE : 114.3 – 117.1 mm (4.50 – 4.61 in)

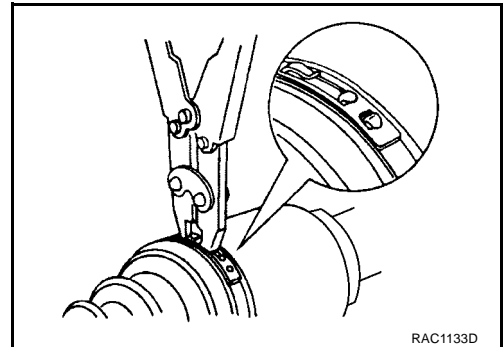
VQ35DE : 126.7 – 129.9 mm (4.99 – 5.11 in)



SFA592B

6. Lock new larger and smaller boot bands securely using Tool as shown.

Tool number : KV40107300



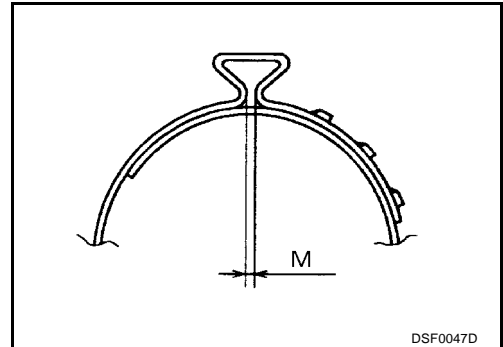
RAC1133D

7. Measure criped area of boot bands after installation.

CAUTION:

Secure boot band so that dimemnsion "M" meets specification as shown.

Dimension "M" : 1.0 – 4.0 mm (0.039 – 0.157 in)



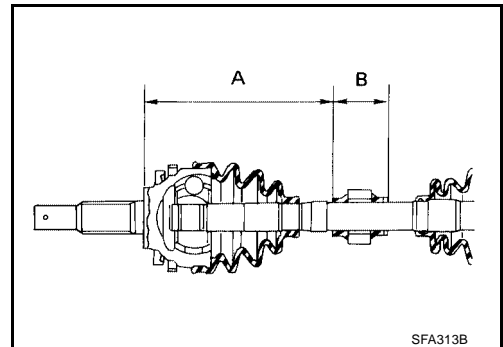
DSF0047D

Dynamic Damper

1. Use new damper bands when installing.
2. Install dynamic damper from stationary-joint side while holding it securely.

Unit: mm (in)

Applied model	RH		LH	
	QR25DE	VQ35DE	QR25DE	VQ35DE
Engine	QR25DE	VQ35DE	QR25DE	VQ35DE
"A"	207 - 213 (8.1 - 8.4)	—	207 - 213 (8.1 - 8.4)	207 - 213 (8.1 - 8.4)
"B"	50 (2.0)	—	50 (2.0)	50 (2.0)

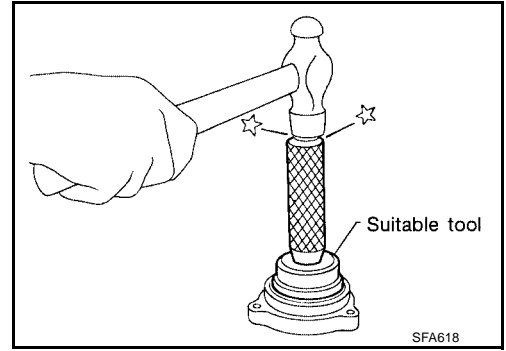


SFA313B

FRONT DRIVE SHAFT

Support Bearing

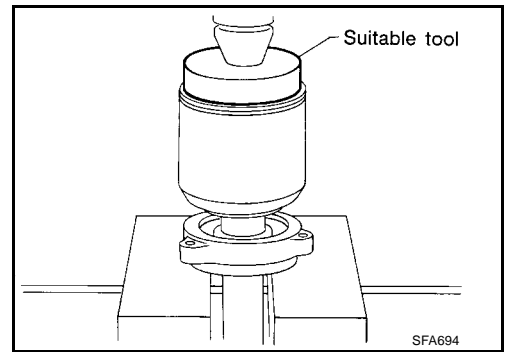
- Press bearing into retainer using suitable tool.



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- Press drive shaft into bearing using suitable tool.



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SERVICE DATA AND SPECIFICATIONS (SDS)

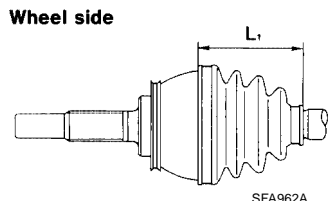
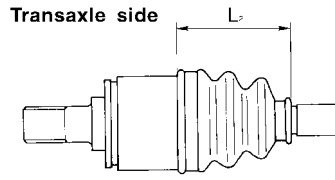
SERVICE DATA AND SPECIFICATIONS (SDS)

PF0:00030

Drive Shaft

EDS001DC

Applied model		QR25DE	VQ35DE
Grease	Quality	NISSAN Genuine Grease or equivalent	
	Capacity g (oz)	Wheel side (BJ type)	115 - 135 (4.06 - 4.76)
		Wheel side (SFJ type)	180 - 200 (6.35 - 7.05)
	Wheel side	115 - 135 (4.06 - 4.76)	145 - 165 (5.11 - 5.82)



Boot length mm (in)	Transaxle side "L ₂ "	96.9 - 99.7 (3.81 - 3.93)	95.1 - 97.9 mm (3.74 - 3.85 in)
	Wheel side "L ₁ "	114.3 - 117.1 (4.50 - 4.61)	126.7 - 129.9 (4.99 - 5.11)

Wheel Bearing (Front)

EDS001DD

Wheel bearing axial end play limit	0.07 mm (0.0030 in) or less
Wheel bearing lock nut tightening torque	236 - 313 N·m (24 - 31 kg-m, 174 - 230 ft-lb)