

SECTION **FAX**
FRONT AXLE

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FAX

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PRECAUTIONS

PRECAUTIONS

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Caution

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Observe the following precautions when disassembling and assembling drive shaft.

- Joint sub-assembly does not disassemble because it is non-overhaul parts.
- Perform work in a location which is as dust-free as possible.
- Before disassembling and assembling, 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

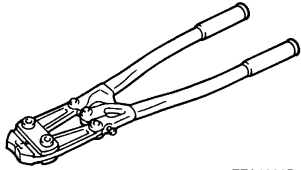

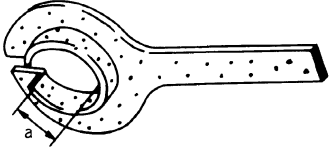
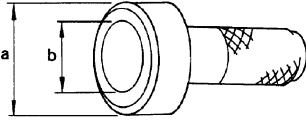
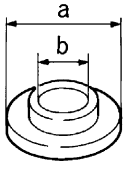
PREPARATION

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Special Service Tools [SST]

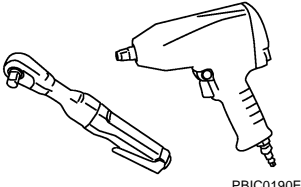
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
KV40107300 (-) Boot band crimping tool	 ZZA1229D Installing boot band
KV40107500 (-) Drive shaft attachment	 ZZA1230D Removing drive shaft (RH side)
KV38107900 (-) Protector a: 32 mm (1.26 in) dia.	 ZZA0835D Installing drive shaft (RH side)
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

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Tool name	Description
Power tool	 PBIC0190E Loosening bolts and nuts

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NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

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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.

Symptom			Possible cause and SUSPECTED PARTS												
			Excessive joint angle	Joint sliding resistance	Imbalance	Improper installation, looseness	Parts interference	Wheel bearing damage	FRONT AXLE AND FRONT SUSPENSION	FRONT AXLE	TIRES	ROAD WHEEL	DRIVE SHAFT	BRAKES	STEERING
Reference page			—	FAX-14	—	FAX-5	—	FAX-5	NVH in FAX and FSU sections	Refer to Front 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
	DRIVE SHAFT	Noise	x	x				x	x	x	x		x	x	
	DRIVE SHAFT	Shake	x		x			x	x	x	x		x	x	
Symptom	FRONT AXLE	Noise				x	x	x	x		x	x	x	x	
		Shake				x	x	x	x		x	x	x	x	
		Vibration				x	x	x	x		x		x	x	
		Shimmy				x	x		x		x	x		x	
		Judder				x			x		x	x		x	
		Poor quality ride or handling				x	x		x		x	x			

x: Applicable

FRONT WHEEL HUB AND KNUCKLE

FRONT WHEEL HUB AND KNUCKLE

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On-Vehicle Inspection

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Make sure that the mounting conditions (looseness, backlash) of each component and component conditions (wear, damage) are normal.

WHEEL BEARING INSPECTION

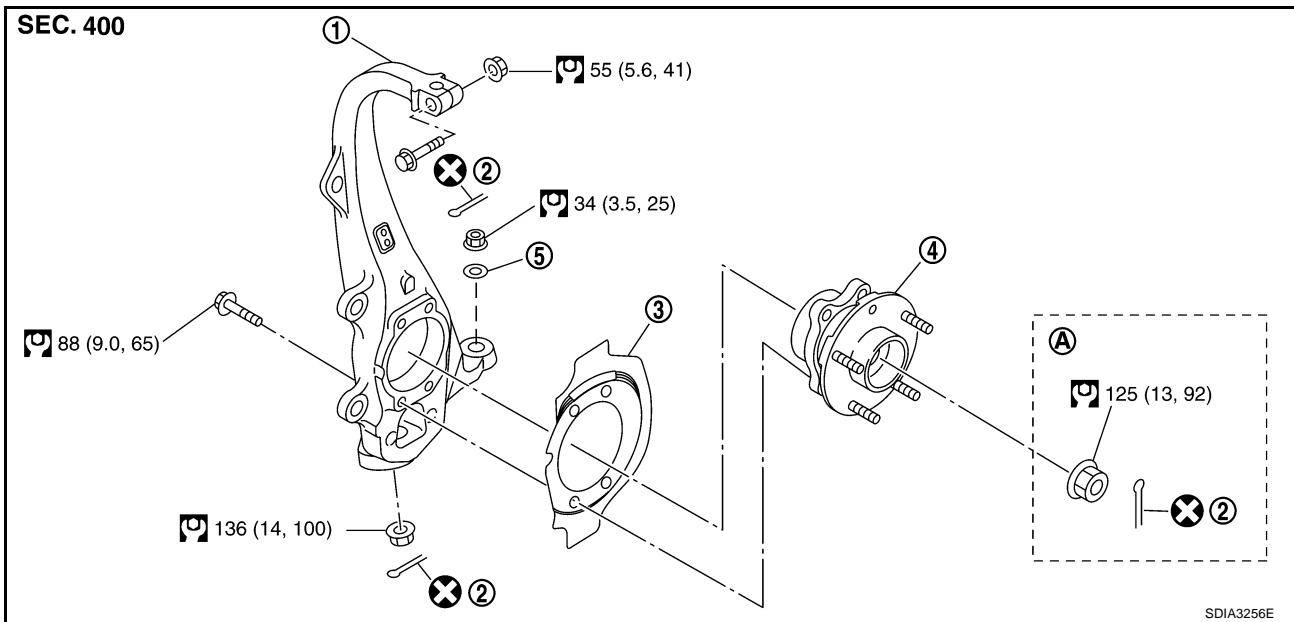
- Move wheel hub and bearing assembly in the axial direction by hand. Make sure there is no looseness of wheel bearing.

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

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

Removal and Installation COMPONENT

NDS000FG



1. Steering knuckle
2. Cotter pin
3. Splash guard
4. Wheel hub and bearing assembly
5. Washer

A: AWD models

Refer to [GI-11, "Components"](#), for the symbols in the figure.

REMOVAL

Wheel Hub and Bearing Assembly

1. Remove tires from vehicle with power tool.
2. Remove wheel sensor from steering knuckle. Refer to [BRC-54, "WHEEL SENSOR"](#).

CAUTION:

Do not pull on wheel sensor harness.

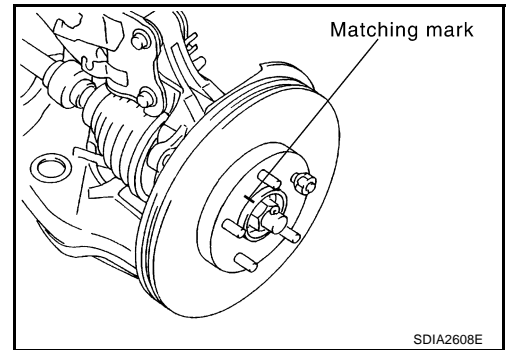
3. Remove brake hose bracket. Refer to [BR-11, "BRAKE TUBE AND HOSE"](#).
4. Remove torque member fixing bolts with power tool. Hang torque member in a place where it will not interfere with work. Refer to [BR-22, "FRONT DISC BRAKE"](#).

CAUTION:

Do not depress brake pedal while brake caliper is removed.

FRONT WHEEL HUB AND KNUCKLE

- Put matching mark on disc rotor and wheel hub and bearing assembly, then remove disc rotor.
- Remove cotter pin, then loosen hub lock nut with power tool. (AWD)



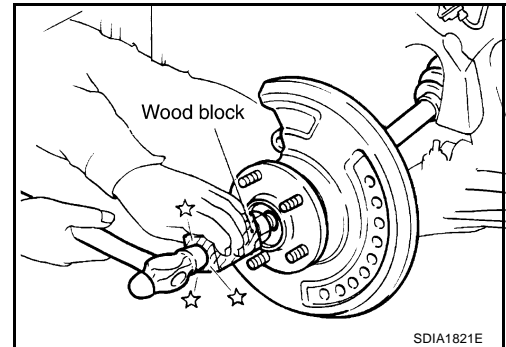
- Separate wheel hub and bearing assembly from drive shaft by lightly tapping the end with a hammer (suitable tool) and a wood block, and then remove hub lock nut. (AWD)

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 housing (or joint sub-assembly), shaft and the other parts.

NOTE:

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



- Remove wheel hub and bearing assembly mounting bolts, and then remove splash guard and wheel hub and bearing assembly from steering knuckle.

Steering knuckle

- Refer to the procedure from 1 to 7 in "Wheel Hub and Bearing Assembly" [FAX-5, "REMOVAL"](#).
- Remove cotter pin (1), and then loosen the nut.
- Remove steering outer socket (2) from steering knuckle (3) so as not to damage ball joint boot (4) using the ball joint remover (suitable tool).

CAUTION:

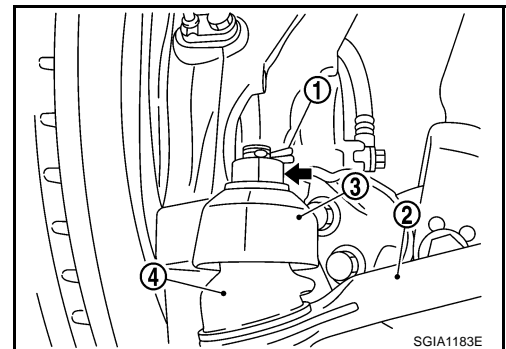
Temporarily tighten the nut to prevent damage to threads and to prevent the ball joint remover (suitable tool) from suddenly coming off.

- Remove cotter pin of transverse link and steering knuckle, and then loosen nut.
- Remove transverse link from steering knuckle so as not to damage ball joint boot using the ball joint remover (suitable tool).

CAUTION:

Temporarily tighten the nut to prevent damage to threads and to prevent ball joint remover (suitable tool) from suddenly coming off.

- Remove fixing nut and bolt with power tool, and then remove steering knuckle from upper link. Refer to [FSU-8, "Components"](#).
- Remove wheel hub and bearing assembly mounting bolts, and then remove splash guard and wheel hub and bearing assembly from steering knuckle.



INSPECTION AFTER REMOVAL

Check components for deformation, cracks, and other damage. Replace if there are.

Ball Joint Inspection

Check boots of transverse link and steering outer socket ball joint for breakage, axial play, and torque. Refer to [FSU-14, "INSPECTION AFTER REMOVAL"](#), "TRANSVERSE LINK", [PS-23, "INSPECTION AFTER DISASSEMBLY"](#), "POWER STEERING GEAR".

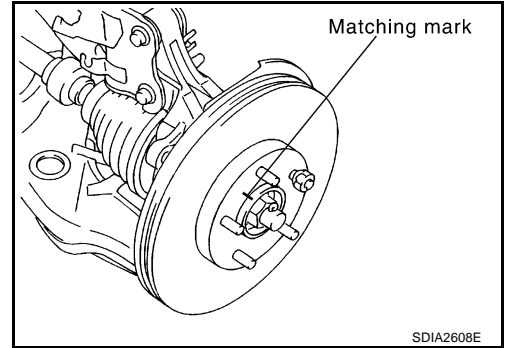
FRONT WHEEL HUB AND KNUCKLE

INSTALLATION

- Installation is the reverse order of the removal. For tightening torque, refer to [FAX-5, "COMPONENT"](#) .
- Perform the final tightening of each of parts under unladen conditions, which were removed when removing wheel hub and bearing assembly and steering knuckle. Check the wheel alignment. Refer to [FSU-6, "Wheel Alignment Inspection"](#) (2WD), [FSU-24, "Wheel Alignment Inspection"](#) (AWD).
- Adjust neutral position of steering angle sensor after checking the wheel alignment. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#) .
- Check wheel sensor harness for proper connection. Refer to [BRC-54, "WHEEL SENSOR"](#) .
- Assemble disc rotor and wheel hub and bearing assembly by aligning each matching mark as shown in the figure when installing disc rotor.

NOTE:

Refer to [BR-27, "DISC ROTOR INSPECTION"](#) , for assembly when removing disc rotor without matching mark.



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FRONT DRIVE SHAFT

FRONT DRIVE SHAFT

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On-Vehicle Inspection

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

CAUTION:

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

DRIVE SHAFT BOOT REPLACEMENT

1. Remove tires from vehicle with power tool.
2. Remove wheel sensor from steering knuckle. Refer to [BRC-54, "WHEEL SENSOR"](#) .

CAUTION:

Do not pull on wheel sensor harness.

3. Remove brake hose bracket. Refer to [BR-11, "BRAKE TUBE AND HOSE"](#) .
4. Remove torque member fixing bolts with power tool. Hang torque member in a place where it will not interfere with work. Refer to [BR-22, "FRONT DISC BRAKE"](#) .

NOTE:

Do not depress brake pedal while brake caliper is removed.

5. Remove disc rotor. Refer to [FAX-5, "Removal and Installation"](#) .
6. Remove cotter pin, then loosen hub lock nut with power tool.
7. Separate wheel hub and bearing assembly from drive shaft by lightly tapping the end with a hammer (suitable tool) and a 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 housing (or joint sub-assembly), shaft and the other parts.

NOTE:

Use a puller (suitable tool) if wheel hub and drive shaft cannot be separated even after performing the above procedure.

8. Remove cotter pin (1), and then loosen the nut.
9. Remove steering outer socket (2) from steering knuckle (3) so as not to damage ball joint boot (4) using the ball joint remover (suitable tool).

CAUTION:

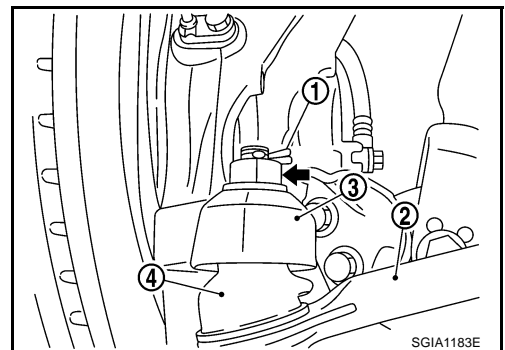
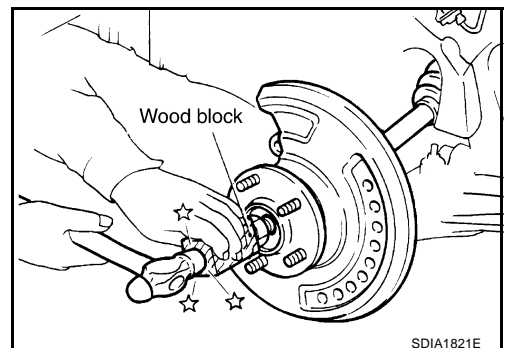
Temporarily tighten the nut to prevent damage to threads and to prevent the ball joint remover (suitable tool) from suddenly coming off.

10. Remove cotter pin of transverse link and steering knuckle, and then loosen nut.
11. Remove transverse link from steering knuckle so as not to damage ball joint boot using the ball joint remover (suitable tool).

CAUTION:

Temporarily tighten the nut to prevent damage to threads and to prevent ball joint remover (suitable tool) from suddenly coming off.

12. Remove drive shaft from wheel hub and bearing assembly.
13. Remove boot bands, and then remove boot from joint sub-assembly.

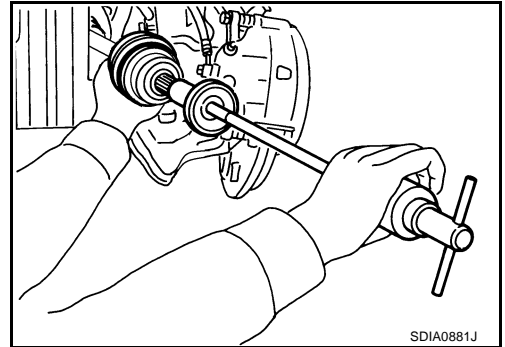


FRONT DRIVE SHAFT

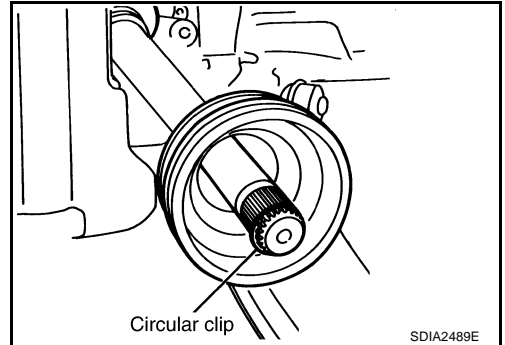
14. Screw a drive shaft puller (suitable tool) into joint sub-assembly screw part to a length of 30 mm (1.18 in) or more. Support drive shaft with one hand and pull out joint sub-assembly with a sliding hammer (suitable tool) from shaft.

CAUTION:

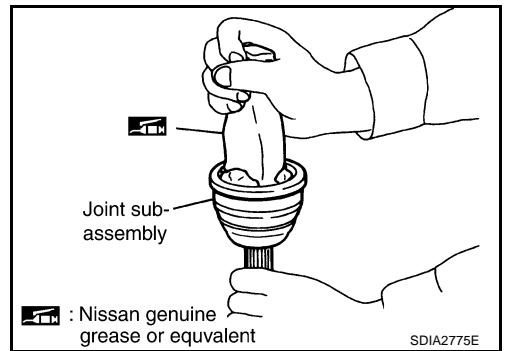
- Align a sliding hammer and drive shaft and remove them by pulling firmly and uniformly.
- If joint sub-assembly cannot be pulled out, try after removing drive shaft from vehicle.



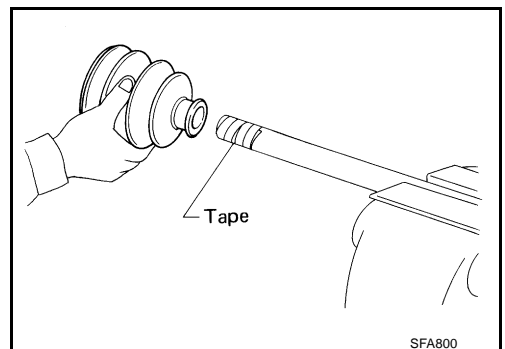
15. Remove the circular clip from shaft.
16. Remove boot from shaft.
17. Clean the old grease on joint sub-assembly with paper towels.



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



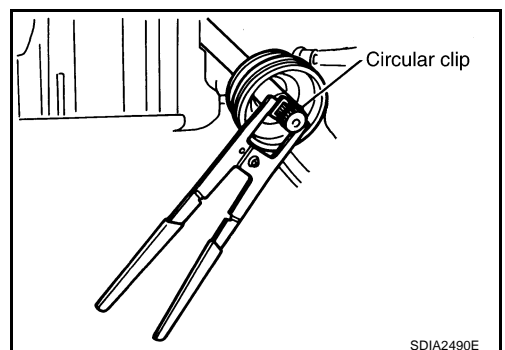
19. Wrap serration on shaft with tape to protect the boot from damage. Install new boot and boot bands to shaft.
20. Remove the tape wrapped around the serration on shaft.



21. Position circular clip on groove at the shaft edge. Align both counter axles of the shaft edge and joint sub-assembly. Then, assemble shaft with circular clip onto joint sub-assembly.

NOTE:

Drive joint inserter (suitable tool) is recommended when installing circular clip.



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FRONT DRIVE SHAFT

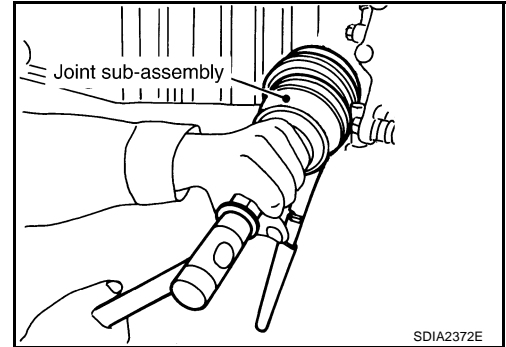
22. Install joint sub-assembly to shaft using plastic hammer.

CAUTION:

Confirm that joint sub-assembly is correctly engaged while rotating drive shaft.

23. Apply the balance of the specified amount of grease (NISSAN genuine grease or equivalent) into the boot inside from large diameter side of boot.

Grease amount : 77 – 97 g (2.71 – 3.42 oz)



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

CAUTION:

If grease adheres to the boot mounting surface (with *mark) on the shaft and joint sub-assembly, boot may come off. Remove all grease from the surface.

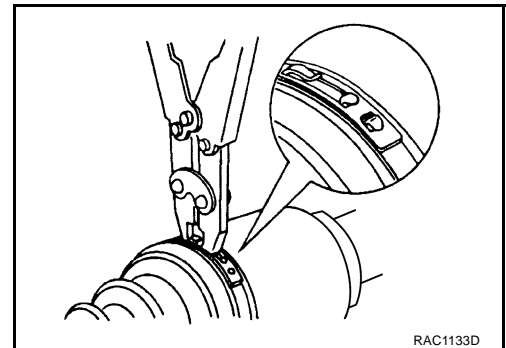
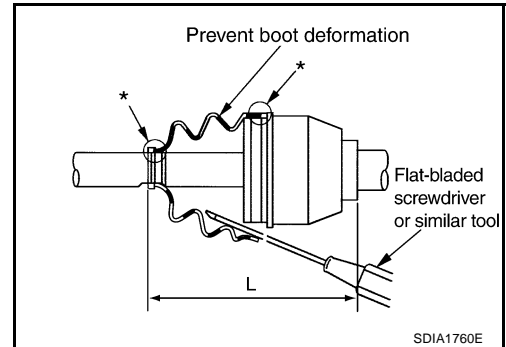
25. To prevent from the deformation of the boot, adjust the boot installation length to the specified value shown below (L) by inserting the flat-bladed screwdriver into inside of the boot from the large diameter side of the boot and discharging the inside air.

Boot installation length (L) : 136 mm (5.35 in)

CAUTION:

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

26. Secure the large and small ends of the boot with new boot bands using the boot band crimping tool [SST: KV40107300 (-)] as shown in the figure.



NOTE:

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

Dimension "M" : 2.0 – 3.0 mm (0.079 – 0.118 in)

27. Secure joint sub-assembly and shaft, and then make sure that they are in the correct position when rotating boot. Install them with new boot band when boot installation positions become incorrect.

28. Insert drive shaft to wheel hub and bearing assembly, and then temporarily tighten hub lock nut.

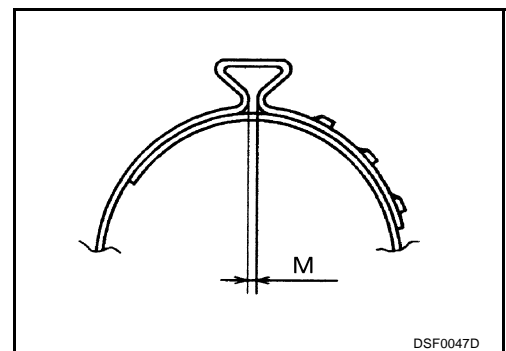
29. Install transverse link to steering knuckle. Refer to [FAX-5, "COMPONENT"](#).

30. Install steering outer socket to steering knuckle. Refer to [FAX-5, "COMPONENT"](#).

31. Install disc rotor. Refer to [FAX-5, "Removal and Installation"](#).

32. Install torque member fixing bolts to steering knuckle. Refer to [BR-22, "FRONT DISC BRAKE"](#).

33. Install brake hose bracket to steering knuckle. Refer to [BR-11, "BRAKE TUBE AND HOSE"](#).

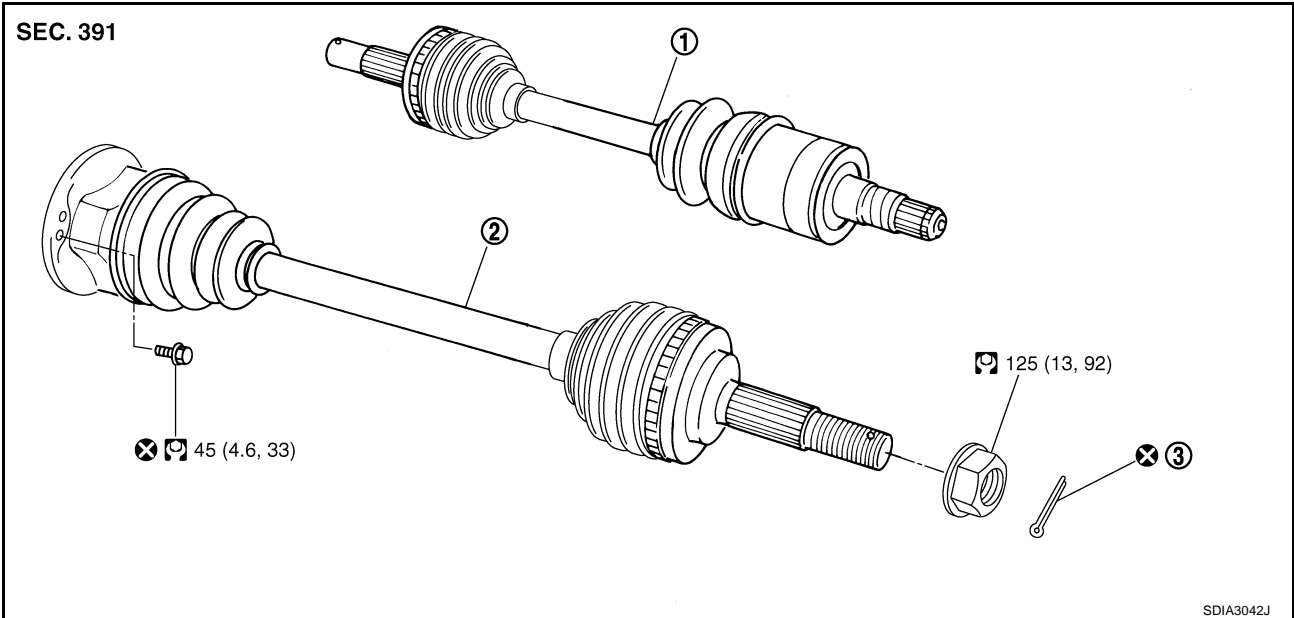


FRONT DRIVE SHAFT

34. Install wheel sensor to steering knuckle. Refer to [BRC-54, "WHEEL SENSOR"](#).
35. Tighten the hub lock nut to the specified torque. Refer to [FAX-5, "COMPONENT"](#).
36. Install cotter pin.
37. Install tires to vehicle.

Removal and Installation COMPONENT

NDS000G1



1. Drive shaft (RH side)
2. Drive shaft (LH side)
3. Cotter pin

Refer to [GI-11, "Components"](#), for the symbols on the figure.

REMOVAL

1. Remove tires from vehicle with power tool.
2. Remove wheel sensor from steering knuckle. Refer to [BRC-54, "WHEEL SENSOR"](#).
3. Remove brake hose bracket. Refer to [BR-11, "BRAKE TUBE AND HOSE"](#).
4. Remove torque member fixing bolts with power tool. Hang torque member in a place where it will not interfere with work. Refer to [BR-22, "FRONT DISC BRAKE"](#).

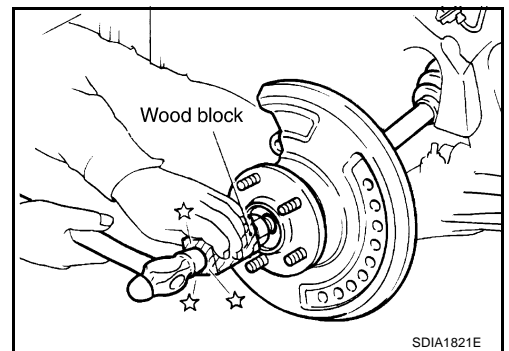
CAUTION:
Do not depress brake pedal while brake caliper is removed.

5. Remove disc rotor. Refer to [FAX-5, "Removal and Installation"](#).
6. Remove cotter pin, then loosen hub lock nut with power tool.
7. Separate wheel hub and bearing assembly from drive shaft by lightly tapping the end with a hammer (suitable tool) and a 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 housing (or joint sub-assembly), shaft and the other parts.

NOTE:

Use a puller (suitable tool) if wheel hub and drive shaft cannot be separated even after performing the above procedure.



FRONT DRIVE SHAFT

8. Remove cotter pin (1), and then loosen the nut.
9. Remove steering outer socket (2) from steering knuckle (3) so as not to damage ball joint boot (4) using the ball joint remover (suitable tool).

CAUTION:

Temporarily tighten the nut to prevent damage to threads and to prevent the ball joint remover (suitable tool) from suddenly coming off.

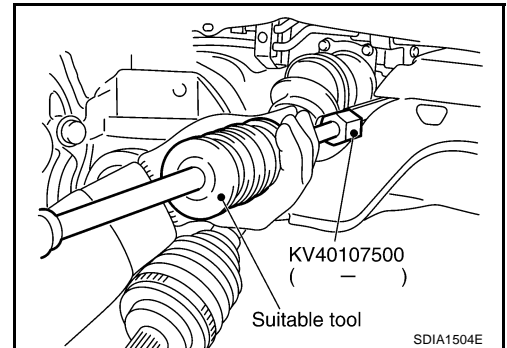
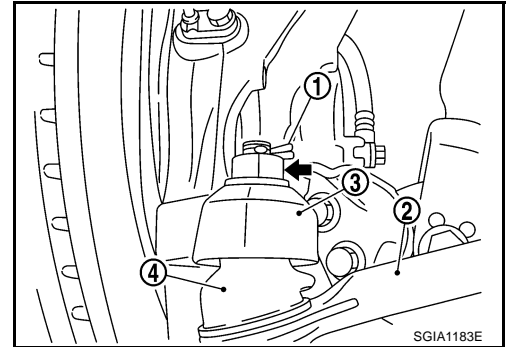
10. Remove drive shaft from wheel hub and bearing assembly.
11. Remove fixing nuts and bolts, and then remove shock absorber arm. Refer to [FSU-26, "Components"](#).
12. Remove drive shaft from front final drive. (RH side)

- Remove drive shaft from front final drive using the drive shaft attachment [SST] and a drive shaft puller (suitable tool) while inserting tip of the drive shaft attachment [SST] between housing and front final drive as shown in the figure.

CAUTION:

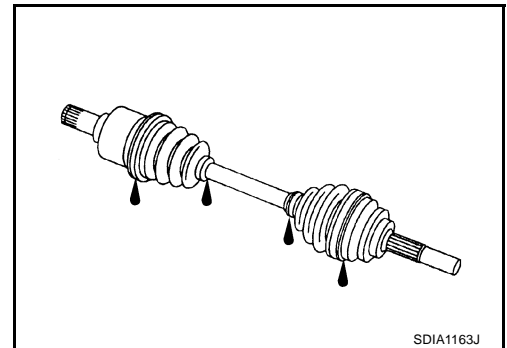
Do not place drive shaft joint at an extreme angle when removing drive shaft. Also be careful not to overextend side shaft joint.

13. Remove fixing nuts and bolts, and then remove drive shaft from vehicle. (LH side)



INSPECTION AFTER REMOVAL

- Move joint up/down, left/right, and in the axial directions. Check for motion that is not smooth and for significant looseness.
- Check boot for cracks, damage, and leakage of grease.
- Disassemble drive shaft and exchange malfunctioning part if there is a non-standard condition.

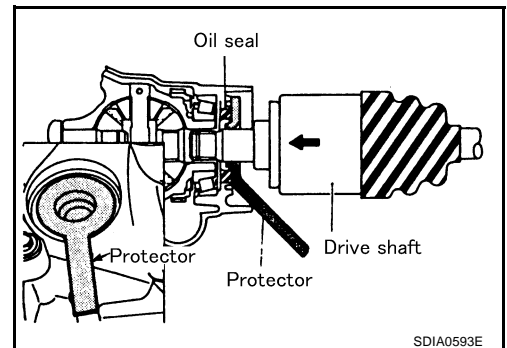


INSTALLATION

CAUTION:

Always replace transaxle side oil seal with new one when installing drive shaft. Refer to [FFD-11, "SIDE OIL SEAL"](#).

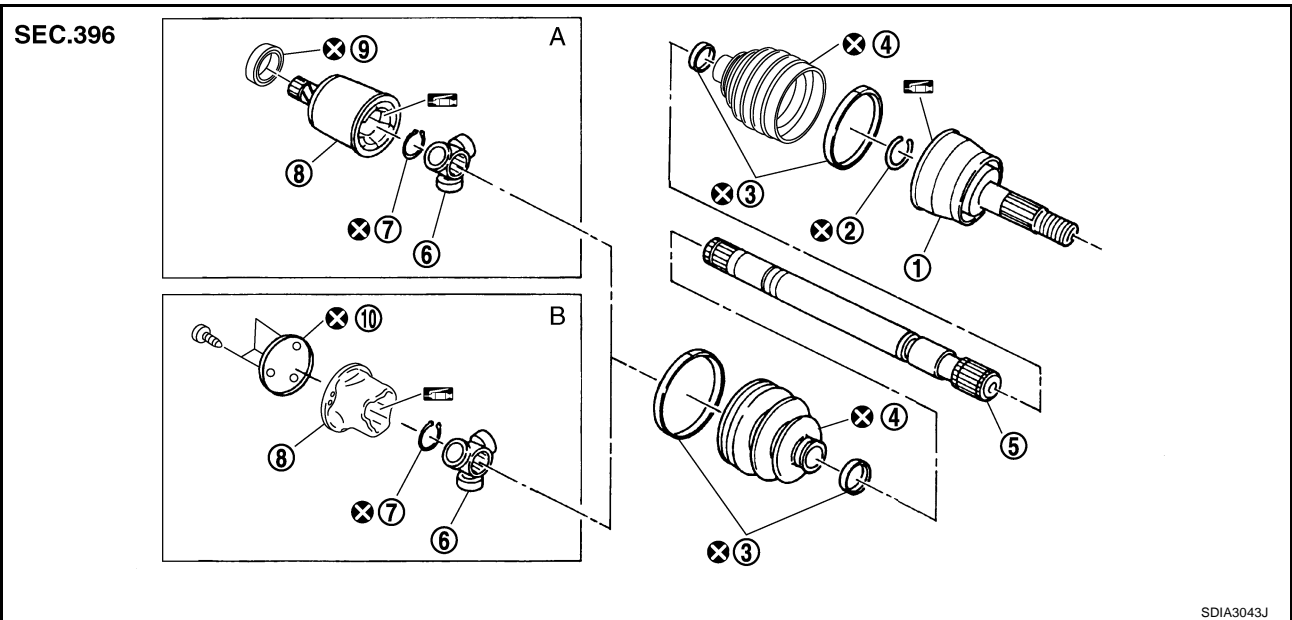
- Installation is the reverse order of removal. For tightening torque refer to [FAX-11, "COMPONENT"](#).
- Place the protector [SST: KV38107900 (-)] onto front final drive to prevent damage to the oil seal while inserting drive shaft. Slide drive shaft sliding joint and tap with a hammer to install securely. (RH side)



FRONT DRIVE SHAFT

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Disassembly and Assembly COMPONENT




- | | | |
|-----------------------|------------------|--------------------|
| 1. Joint sub-assembly | 2. Circular clip | 3. Boot band |
| 4. Boot | 5. Shaft | 6. Spider assembly |
| 7. Snap ring | 8. Housing | 9. Dust shield |

10. Plug

A: RH side

B: LH side

Refer to [GI-11. "Components"](#) and the following for the symbols in the figure.

: NISSAN genuine grease or equivalent

DISASSEMBLY

Front Final Drive Side

- Place shaft in a vise.

CAUTION:

Protect shaft when securing in a vise using aluminum or copper plates.

- Remove boot bands, and then remove boot from housing.
- If plug needs to be removed, move boot to wheel side, and drive it out with a plastic hammer. (LH side)
- Put matching marks on housing and shaft, and then pull out housing from shaft.

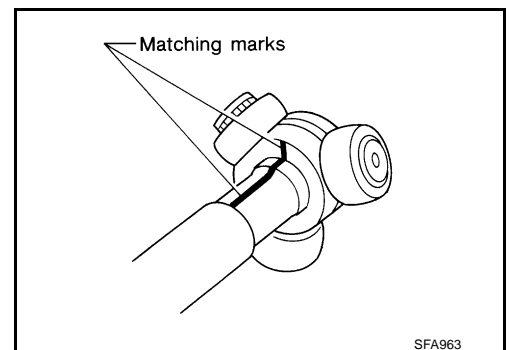
CAUTION:

Use paint or similar substance for matching marks. Do not scratch the surfaces.

- Put matching marks on the shaft and spider assembly.

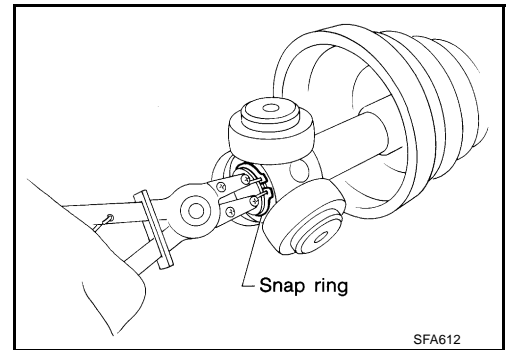
CAUTION:

Use paint or similar substance for matching marks. Do not scratch the surfaces.



FRONT DRIVE SHAFT

6. Remove snap ring. Remove spider assembly from the shaft.
7. Remove boot from the shaft.
8. Remove dust cover from housing. (RH side)
9. Clean old grease on housing with paper towels.



Wheel Side

1. Secure shaft in a vise.

CAUTION:

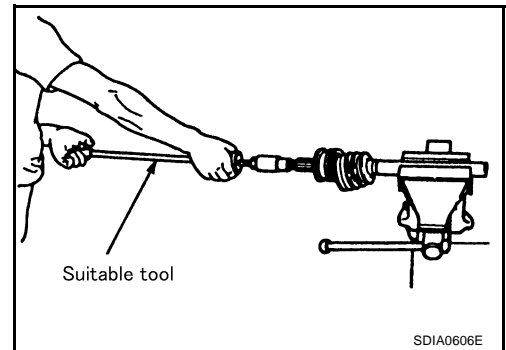
Protect shaft when securing in a vise using aluminum or, copper plates.

2. Remove boot bands, and then remove boot from joint sub-assembly.
3. Screw the drive shaft puller (suitable tool) 30 mm (1.18 in) or more onto the thread on joint sub-assembly, and pull joint sub-assembly out of shaft.

CAUTION:

- Replace entire drive shaft assembly if joint sub-assembly cannot be removed after five or more unsuccessful attempts.
- Align sliding hammer and drive shaft and remove them by pulling firmly and uniformly.

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



INSPECTION AFTER DISASSEMBLY

Shaft

Check shaft for runout, cracks, or other damage. Replace if there are.

Joint Sub-Assembly (Wheel Side)

Check the following:

- Joint sub-assembly for rough rotation and excessive axial looseness.
- The inside of the joint sub-assembly for entry of foreign material.
- Joint sub-assembly for compression scars, cracks, and fractures inside of joint sub-assembly.

Replace joint sub-assembly if there are any non-standard conditions of components.

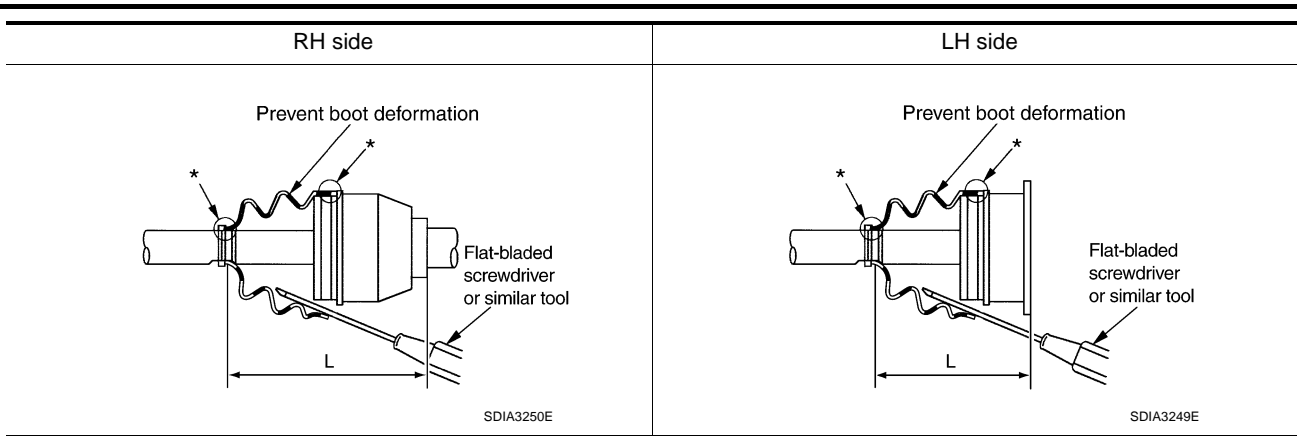
Housing and Spider assembly (Front Final Drive side)

Replace housing and spider assembly if there is scratching or wear of housing roller contact surface or spider roller contact surface.

NOTE:

Housing and spider assembly are used in a set.

FRONT DRIVE SHAFT



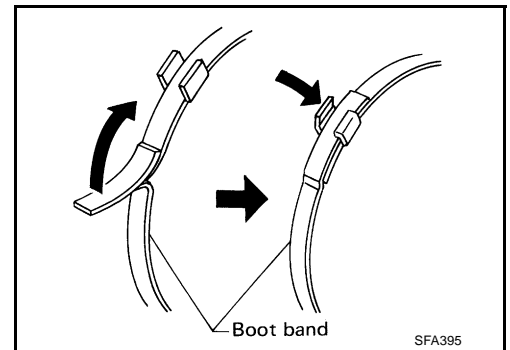
Boot installation length (L)

RH side	: 158 mm (6.22 in)
LH side	: 150.9 – 152.9 mm (5.94 – 6.02 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.

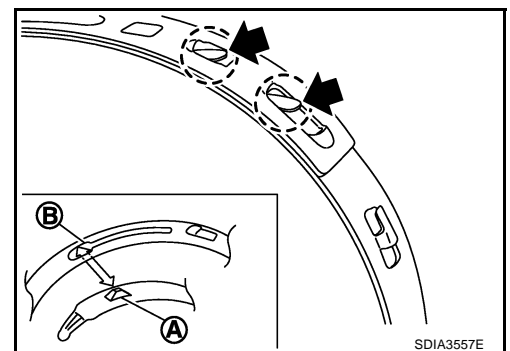
10. Install new larger and smaller boot bands securely.
 - a. For one-touch clamp band (LH side)
 - i. Secure the large and small ends of boot with new boot bands as shown in the figure.



- b. For low profile type band (RH side)
 - i. Put boot band in the groove on drive shaft boot. Then fit pawls (↔) into holes to temporary installation.

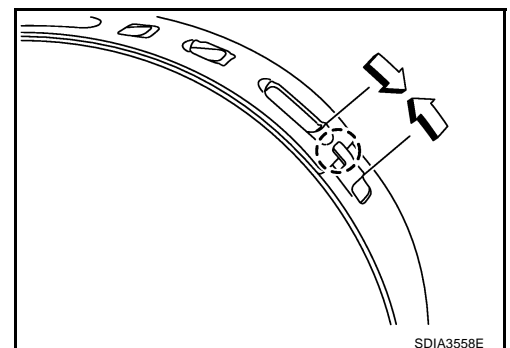
NOTE:

For the large diameter side, fit projection (A) and guide slit (B) at first.



- ii. Pinch projection on the band with suitable pliers to tighten band.
- iii. Insert tip of band below end of the pawl.

11. Align matching marks painted when housing was removed.
12. Secure housing and shaft, and then make sure that they are in the correct position when rotating boot. Install them with new boot band when the mounting positions become incorrect.
13. Install dust cover to housing. (RH side)



FRONT DRIVE SHAFT

Wheel Side

Assemble in steps 18 to 27 of [FAX-8, "DRIVE SHAFT BOOT REPLACEMENT"](#) , "ON-Vehicle Inspection and Service".

A

B

C

FAX

E

F

G

H

I

J

K

L

M

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Wheel Bearing

NDS000FK

Axial end play

0.05 mm (0.002 in) or less

Drive Shaft

NDS000FL

Joint type	Wheel side	Front final drive side
Grease quantity	77 – 97 g (2.71 – 3.42 oz)	113 – 123 g (3.99 – 4.34 oz) (RH side) 95 – 105 g (3.35 – 3.70 oz) (LH side)
Boots installed length	136 mm (5.35 in)	158 mm (6.22 in) (RH side) 150.9 – 152.9 mm (5.94 – 6.02 in) (LH side)