FRONT & REAR AXLE

SECTION AX

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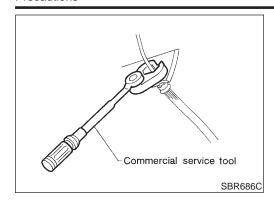












Precautions PRECAUTIONS

NFA X0001

- When installing rubber parts, 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 wheel alignment and adjust if necessary.
- Use flare nut wrench when removing or installing brake tubes
- Always torque brake lines when installing.

Preparation

SPECIAL SERVICE TOOLS

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

NFAX0002

Tool number (Kent-Moore No.) Tool name	Description	
HT72520000 (J25730-B) Ball joint remover	NT146	Removing tie-rod outer end and lower ball joint
KV38106700 (J34296) KV38106800 (J34297) Differential side oil seal protector	NT147	Installing drive shaft LH: KV38106700 (J34296) RH: KV38106800 (J34297)

COMMERCIAL SERVICE TOOLS

NFAX0003

Tool name	Description	
1 Flare nut crowfoot 2 Torque wrench	a 2 1 2 NT360	Removing and installing each brake piping a: 10 mm (0.39 in)

Noise, Vibration and Harshness (NVH) **Troubleshooting**

NVH TROUBLESHOOTING CHART

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NFAX0004S01 Use the chart below to help you find the cause of the symptom. If necessary, repair or replace these parts.

Reference page		1	AX-12	I	AX-5, 19	I	AX-4, 18	Refer to DRIVE SHAFT in this chart.	Refer to AXLE in this chart.	SU-4	SU-4	SU-4	BR-7	ST-5	
Possible cause and SUSPECTED PARTS		Excessive joint angle	Joint sliding resistance	Imbalance	Improper installation, looseness	Parts interference	Wheel bearing damage	DRIVE SHAFT	AXLE	SUSPENSION	TIRES	ROAD WHEEL	BRAKES	STEERING	
	DDIVE OUAET	Noise, Vibration	×	×						×	×	×	×	×	×
	DRIVE SHAFT	Shake	×		×					×	×	×	×	×	×
		Noise				×	×		×		×	×	×	×	×
Symptom		Shake				×	×		×		×	×	×	×	×
		Vibration				×	×		×		×	×			×
	AXLE	Shimmy				×	×				×	×	×	×	×
		Judder				×					×	×	×	×	×
		Poor quality ride or handling				×	×	×			×	×	×		

×: Applicable



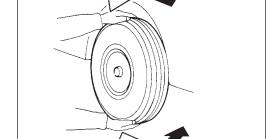
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On-vehicle Service FRONT AXLE PARTS

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



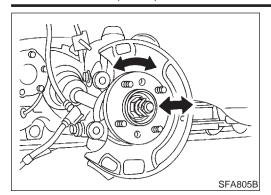
Shake each front wheel to check for excessive play.

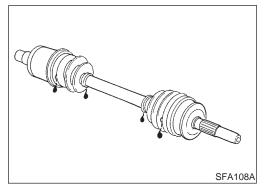
- Make sure that cotter pin is inserted.
- Retighten all axle and suspension nuts and bolts to the specified torque.

Tightening torque:

Refer to SU-10, "FRONT SUSPENSION".

SMA525A





FRONT WHEEL BEARING

Check that wheel bearings operate smoothly.

Check axial end play.

Axial end play:

0.05 mm (0.0020 in)

If out of specification or wheel bearing does not turn smoothly, replace wheel bearing assembly.

Refer to "Wheel Hub and Knuckle", "FRONT AXLE", AX-5.

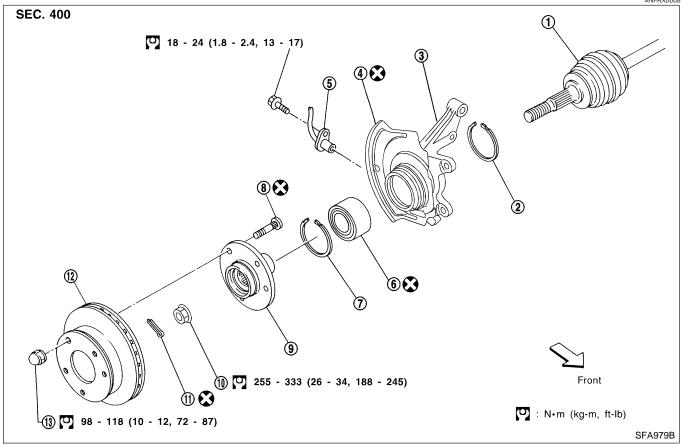
DRIVE SHAFT

NFAX0007

NFAX0006

Check for grease leakage or other damage.

Wheel Hub and Knuckle **COMPONENTS**



- Drive shaft 1.
- Snap ring
- Knuckle 3.
- Baffle plate 4.
- ABS sensor

- Wheel bearing assembly 6.
- 7. Snap ring
- Hub bolt 8.
- Wheel hub

- 10. Wheel bearing lock nut
- 11. Cotter pin
- 12. Brake disc
- 13. Wheel nut

REMOVAL

Before removing the front axle assembly, disconnect the ABS 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 sensor becoming inoperative.

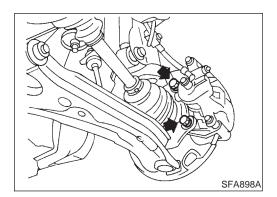
- Remove wheel bearing lock nut.
- Remove brake caliper assembly and rotor.

Brake hose need not be disconnected from brake caliper. In this case, suspend caliper assembly with wire so as not to stretch brake hose. Be careful not to depress brake pedal, or piston will pop out.

Make sure brake hose is not twisted.



















































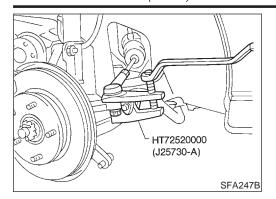






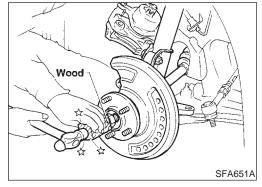






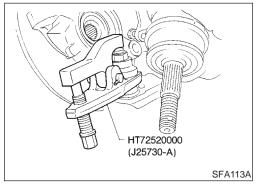
3. Separate tie-rod from knuckle with Tool.

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

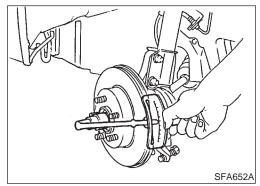


4. Separate drive shaft from knuckle by lightly tapping it. If it is hard to remove, use a puller.

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



- 5. Loosen lower ball joint tightening nut.
- 6. Separate knuckle from lower ball joint stud with Tool.
- 7. Remove knuckle from transverse link.



INSTALLATION

NFAX0010

1. Install knuckle with wheel hub.

When installing knuckle to strut, be sure to hold bolts and tighten nuts.

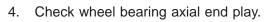
: 176 - 189 N·m (17.9 - 19.3 kg-m, 130 - 139 ft-lb)

Before tightening, apply oil to threaded portion of drive shaft.

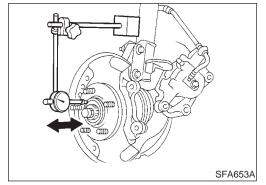
2. Tighten wheel bearing lock nut.

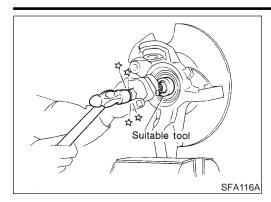
(26 - 34 kg-m, 188 - 245 ft-lb)

3. Check that wheel bearings operate smoothly.



Axial end play: 0.05 mm (0.0020 in)





Snap ring

Suitable tool

SFA654A

SAX005

SFA905A

Suitable tool

DISASSEMBLY

CAUTION:

NEA VOOAA

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

MA

Wheel Hub

NEA V0044 C04

Drive out hub with inner race (outside) from knuckle with a suitable tool.

LC

Wheel Bearing

NEA Y0011502

When replacing wheel bearing, replace complete wheel bearing assembly (Inner races and outer race).

- EC

1. Remove bearing inner race (outside).

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2. Remove snap rings.

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Wheel Hub and Knuckle

3. Press out bearing outer race.

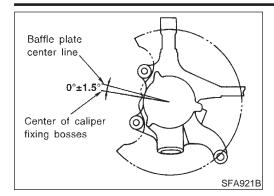
NFAX0012

Check wheel hub and knuckle for cracks by using a magnetic exploration or dyeing test.

Snap Ring

NFAX0012S02

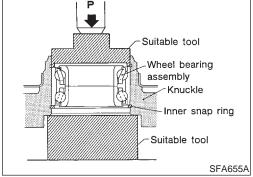
Check snap ring for wear or cracks. Replace if necessary.



ASSEMBLY

NFAX0013

- When removing baffle plate, replace it with a new one.
- When installing the baffle plate, press new plate so that it is in contact with knuckle wall. Refer to figure at left.



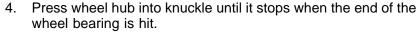
- 1. Install inner snap ring into groove of knuckle.
- 2. Press new wheel bearing assembly into knuckle until it contacts snap ring.

Maximum load P:

29 kN (3 ton, 3.3 US ton, 3.0 Imp ton)

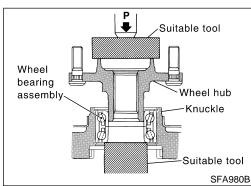
CAUTION:

- 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.
- Install outer snap ring into groove of knuckle.



Maximum load P:

49 kN (5 ton, 5.5 US ton, 4.9 Imp ton)



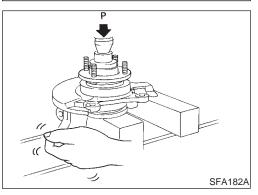
- 5. Check bearing operation.
- a. Add load P with press.

Load P:

49.0 kN

(5.0 ton, 5.5 US ton, 4.92 Imp ton)

- b. Spin knuckle several turns in both directions.
- c. Make sure that wheel bearings operate smoothly.



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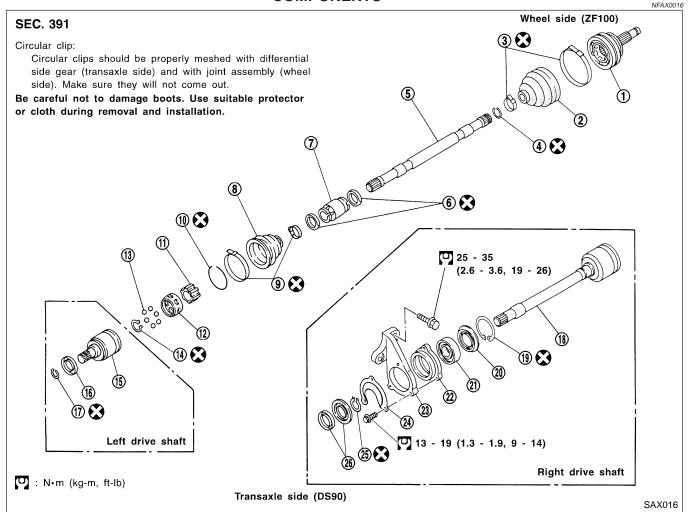
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Drive Shaft COMPONENTS



- Joint assembly 1.
- Boot 2.
- Boot band 3.
- Circular clip 4.
- Drive shaft 5.
- 6. Dynamic damper band
- 7. Dynamic damper
- 8. **Boot**
- Boot band 9.

- 10. Snap ring
- 11. Inner race
- 12. Cage
- 13. Ball
- 14. Snap ring
- 15. Slide joint housing
- 16. Dust shield
- 17. Circular clip
- 18. Slide joint housing with extension shaft

- 19. Snap ring
- 21. Support bearing
- 22. Support bearing retainer
- 23. Bracket
- 24. Snap ring
- 25. Dust shield

REMOVAL

1. Remove wheel bearing lock nut.

Brake caliper need not be disconnected. Do not twist or stretch brake hose when moving components.

- Remove strut lower mount bolts.
- 3. Remove brake hose clip.

20. Dust shield

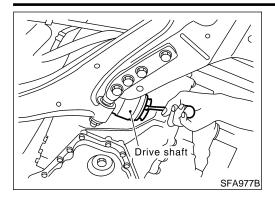
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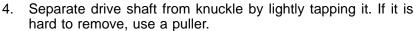
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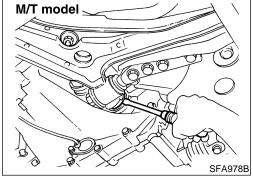




Cover boots with shop towel so as not to damage them when removing drive shaft.

Refer to "Wheel Hub and Knuckle", "FRONT AXLE", AX-5.

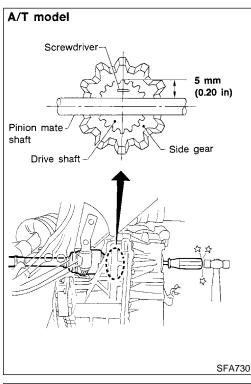
5. Remove right drive shaft from transaxle.



6. Remove left drive shaft from transaxle.

— For M/T models —

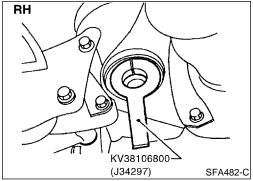
Pry off drive shaft from transaxle as shown at left.



— For A/T models —

 Insert screwdriver into transaxle opening for right drive shaft and strike with a hammer.

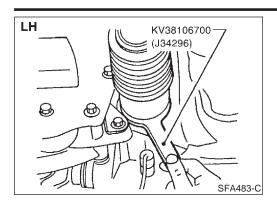
Be careful not to damage pinion mate shaft and side gear.



INSTALLATION Transaxle Side

NFAX0015

- 1. Drive a new oil seal to transaxle. Refer to MT-8 or AT-282, "Replacing Oil Seal" or "Differential Side Oil Seal Replacement", "ON-VEHICLE SERVICE".
- 2. Set Tool along the inner circumference of oil seal.



- Insert drive shaft into transaxle. Be sure to properly align the serrations and then withdraw Tool.
- Push drive shaft, then press-fit circular clip on the drive shaft into circular clip groove of side gear.
- After its insertion, try to pull the flange out of the slide joint by hand. If it pulls out, the circular clip is not properly meshed with the side gear.



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Wheel Side

- Install drive shaft into knuckle.
- Tighten upper knuckle nut and wheel bearing lock nut. Refer to section Installation in "Wheel Hub and Knuckle", "FRONT AXLE", AX-5.

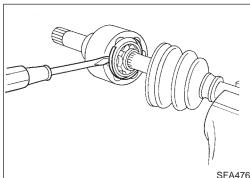


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DISASSEMBLY

Transaxle Side

housing.

3.

Remove boot bands.

Put matching marks on slide joint housing and inner race, before separating joint assembly.

NFAX0017S01

NFAX0017

NFAX0015S02

Remove stopper ring with a screwdriver, and pull out slide joint



AX

- Put matching marks on inner race and drive shaft.
- Remove snap ring, then remove ball cage, inner race and balls as a unit.
- Draw out boot.

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



NFAX0017S02

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CAUTION:

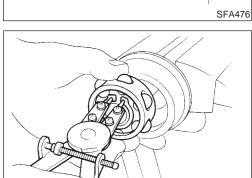
SFA514A

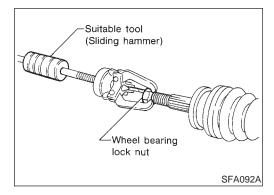
The joint on the wheel side cannot be disassembled.

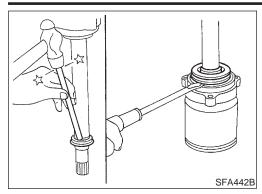
- Before separating joint assembly, put matching marks on drive shaft and joint assembly.
- Separate joint assembly with a suitable tool.

Be careful not to damage threads on drive shaft.

- Remove boot bands.
- Draw out boot.



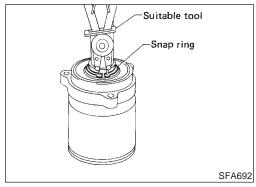




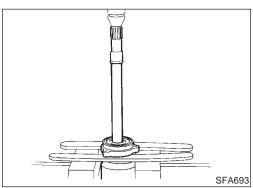
Support Bearing

1. Remove dust shield.

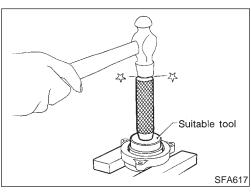
NFAX0017S03



Remove snap ring.



3. Press support bearing assembly off of drive shaft.



4. Separate support bearing from retainer.

INSPECTION

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

Drive Shaft

NFAX0018S01

Replace drive shaft if it is twisted or cracked.

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

Joint Assembly (Transaxle side)

Check serration for deformation. Replace if necessary.

Check slide joint housing for any damage. Replace if neces-



Joint Assembly (Wheel side)

Replace joint assembly if it is deformed or damaged.



Support Bearing

NFAX0018S05 Make sure wheel bearing rolls freely and is free from noise, cracks, pitting or wear.



Support Bearing Bracket

NFA X0018506 Check support bearing bracket for cracks with a magnetic exploration or dyeing test.



ASSEMBLY

After drive shaft has been assembled, ensure that it moves smoothly over its entire range without binding.



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Use NISSAN GENUINE GREASE or equivalent after every overhaul.



Wheel Side

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



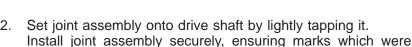
NFAX0019S01

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













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made during disassembly are properly aligned.

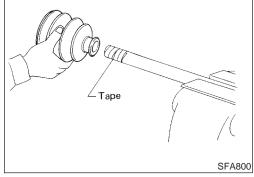
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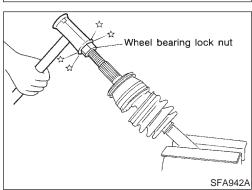
Specified amount of grease:

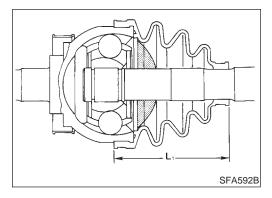
135 - 145 g (4.76 - 5.11 oz) Make sure that boot is properly installed on the drive shaft

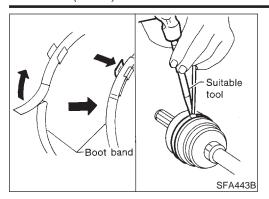
groove. Set boot so that it does not swell and deform when its length is "L₁".

Length "L₁": 97 mm (3.82 in)

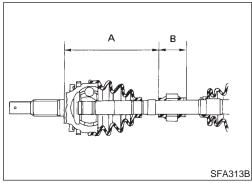








Lock new larger and smaller boot bands securely with a suitable tool.



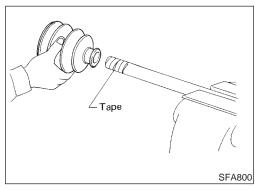
Dynamic Damper

NFAX0019S02

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

Length:

"A": 205 - 215 mm (8.07 - 8.46 in)
"B": 50 mm (1.97 in) (Except M/T model with LSD)
70 mm (2.76 in) (M/T model with LSD)

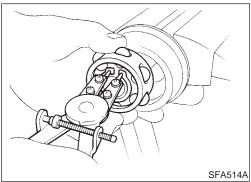


Transaxle Side

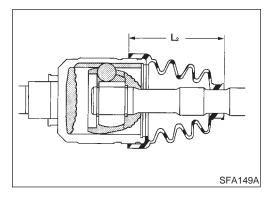
NFA X0019S03

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

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



- 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.

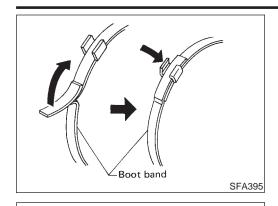
Specified amount of grease:

165 - 175 g (5.82 - 6.17 oz)

- 5. Install slide joint housing, then install new snap ring.
- 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": 98 mm (3.86 in)



Suitable tool

Suitable tool

Transaxle side

SFA618

SFA694

SFA444B

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

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Support Bearing

Press bearing into retainer.

NFAX0019S04



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Press drive shaft into bearing.

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Service Data and Specifications (SDS) DRIVE SHAFT

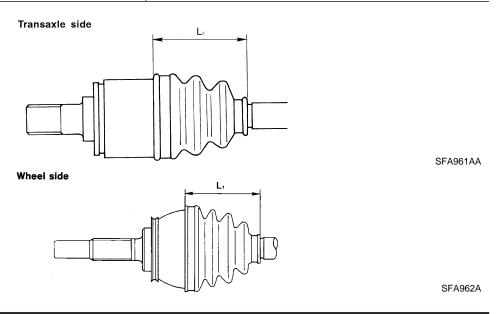
NFAX0020

Applied model			All
Transaxle side			DS90
Joint type	Wheel side		ZF100
	Quality		Nissan genuine grease or equivalent
Grease	Consoity a (oz)	Transaxle side	165 - 175 (5.82 - 6.17)
	Capacity g (oz) Wheel side		135 - 145 (4.76 - 5.11)

Install snap ring.

Install new dust shield.

Applied model		All
Poot longth mm (in)	Transaxle side "L ₂ "	98 (3.86)
Boot length mm (in)	Wheel side "L₁"	97 (3.82)



WHEEL B	EARING (FRONT)
Wheel bearing axial end play limit mm (in)	0.05 (0.0020)
Wheel bearing lock nut tightening torque N·m (kg-m, ft-lb)	255 - 333 (26 - 34, 188 - 245)

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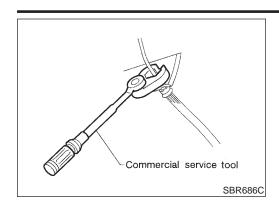
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Precautions PRECAUTIONS

tubes.

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.

Use flare nut wrench when removing or installing brake

- After installing removed suspension parts, check wheel alignment.
- Do not jack up at the trailing arm and lateral link.
- Always torque brake lines when installing.

Preparation

SPECIAL SERVICE TOOLS

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

NFAX0032

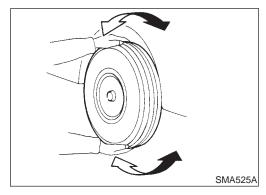
Tool number (Kent-Moore No.) Tool name	Description		
ST15310000 (—) Drift	b a d c	Install ABS sensor rotor a: 84 mm (3.31 in) dia. b: 96 mm (3.78 in) dia. c: 8 mm (0.31 in) d: 20 mm (0.79 in)	

COMMERCIAL SERVICE TOOLS

NFAX0024 Tool name Description GG94310000 Removing and installing brake piping 1 Flare nut crowfoot a: 10 mm (0.39 in) 2 Torque wrench HA SC NT360 Drift Install ABS sensor rotor a: 75 mm (2.95 in) dia. EL b: 62 mm (2.44 in) dia. NT371

Noise, Vibration and Harshness (NVH) **Troubleshooting**

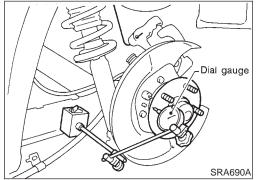
Refer to "Noise, Vibration and Harshness (NVH) Troubleshooting", "FRONT AXLE", AX-3.



On-vehicle Service REAR AXLE PARTS

Check axle and suspension parts for excessive play, wear or dam-

Shake each rear wheel to check for excessive play.



REAR WHEEL BEARING

NFAX0027

Check axial end play.

Axial end play:

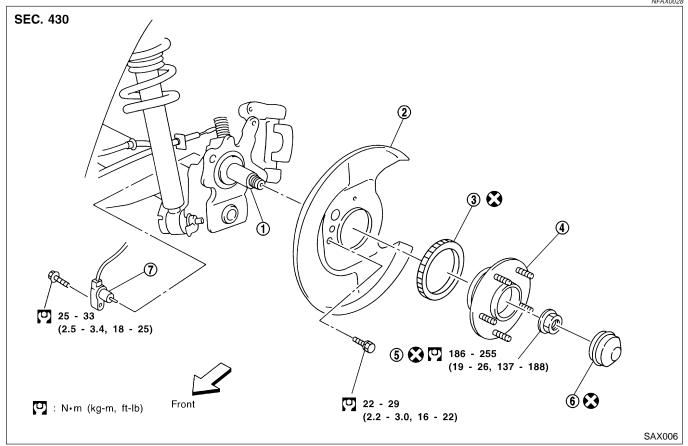
0.05 mm (0.0020 in)

- Check that wheel hub bearings operate smoothly.
- Check tightening torque of wheel bearing lock nut.

(19 - 26 kg-m, 138 - 188 ft-lb)

Replace wheel bearing assembly if there is axial end play or wheel bearing does not turn smoothly. Refer to "Wheel Hub", "REAR AXLE", AX-19.

Wheel Hub COMPONENTS



- 1. Spindle
- 2. Baffle plate
- 3. ABS sensor rotor

- 4. Wheel hub bearing
- 5. Wheel bearing lock nut
- 6. Hub cap
- 7. ABS sensor

REMOVAL

CAUTION:

 Before removing the rear wheel hub assembly, disconnect the ABS wheel sensor from the assembly. Then move it away from the hub assembly. Failure to do so may result in damage to the sensor wires and the sensor becoming inoperative.

- Wheel hub bearing does not require maintenance. If any of the following symptoms are noted, replace wheel hub bearing assembly.
- 1) Growling noise is emitted from wheel hub bearing during operation.
- Wheel hub bearing drags or turns roughly. This occurs when turning hub by hand after bearing lock nut is tightened to specified torque.





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AX

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NFAX0029

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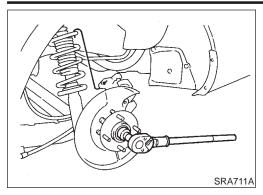
KS

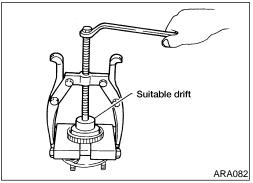
D77

HA

SC

EL







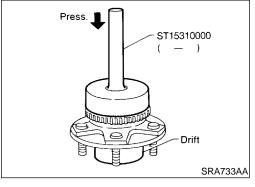
- 2. Remove wheel bearing lock nut.
- 3. Remove brake rotor.
- 4. Remove wheel hub bearing from spindle.

Brake hose does not need to be disconnected from brake caliper.

Suspend caliper assembly with wire so as not to stretch brake hose.

Be careful not to depress brake pedal, or piston will pop out. Make sure brake hose is not twisted.

5. Remove the sensor rotor using suitable puller, drift and bearing replacer.

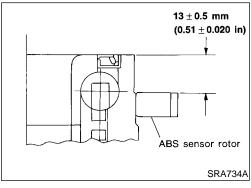


INSTALLATION

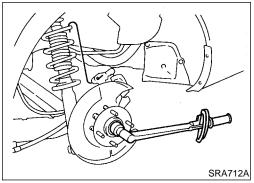
NFAX0030

 With vehicles equipped with ABS, press-fit ABS sensor rotor into wheel hub bearing using a drift.

Do not reuse ABS sensor rotor. When installing, replace it with a new one.



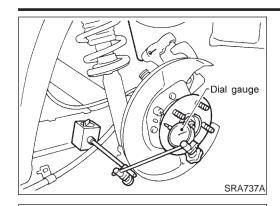
 Press-fit ABS sensor rotor as far as the location shown in figure at left.



- Install wheel hub bearing.
- Tighten wheel bearing lock nut.
 Before tightening, apply oil to threaded portion of rear spindle.
 Do not reuse wheel bearing lock nut.

(19 - 26 kg-m, 138 - 188 ft-lb)

Check that wheel bearings operate smoothly.



Spindle

Lock nut

SFA599B

Check wheel hub bearing axial end play.
 Axial end play:

Axial end play: 0.05 mm (0.0020 in)

GI

MA

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LC

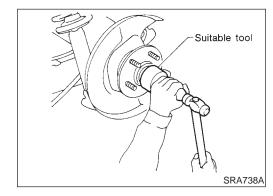
Clinch two places of lock nut.

EC

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Install hub cap using a suitable tool.
 Do not reuse hub cap. When installing, replace it with a new one.

AX

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REAR AXLE

Service Data and Specifications (SDS)

Service Data and Specifications (SDS) WHEEL BEARING (REAR)

=NFAX0031

Wheel bearing axial end play mm (in)	0.05 (0.0020)
Wheel bearing lock nut tightening torque N·m (kg-m, ft-lb)	187 - 254 (19 - 26, 138 - 188)