

FRONT & REAR AXLE

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CONTENTS

FRONT AXLE	2
Precautions	
PRECAUTIONS	
Preparation	
SPECIAL SERVICE TOOLS	
COMMERCIAL SERVICE TOOLS	2
Noise, Vibration and Harshness (NVH)	
Troubleshooting	3
NVH TROUBLESHOOTING CHART	3
On-vehicle Service	
FRONT AXLE PARTS	3
FRONT WHEEL BEARING	
DRIVE SHAFT	5
Wheel Hub and Rotor Disc	
COMPONENTS	6
REMOVAL	6
INSTALLATION	7
DISASSEMBLY	8
INSPECTION	8
ASSEMBLY	3
Knuckle Spindle	9
REMOVAL	Q
INSPECTION	
INSTALLATION	10
Drive Shaft	10
COMPONENTS	10
REMOVAL	11
DISASSEMBI Y	11

INSPECTION12	AT
ASSEMBLY13	
INSTALLATION14 Service Data and Specifications (SDS)15	TF
WHEEL BEARING (FRONT)15	
DRIVE SHAFT16	PD
REAR AXLE 17	
Precautions17	
PRECAUTIONS17	AX
Preparation17	
SPECIAL SERVICE TOOLS17	வா
COMMERCIAL SERVICE TOOLS18	SU
Noise, Vibration and Harshness (NVH)	
Troubleshooting18	BR
On-vehicle Service18	
REAR AXLE PARTS18	
REAR WHEEL BEARING18	ST
Components19	0 1
Removal19	
Inspection21	RS
AXLE SHAFT21	
BEARING CAGE21	
REAR AXLE HOUSING21	BT
Installation21	
Service Data and Specifications (SDS)22	
WHEEL BEARING (REAR)22	HA
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Precautions PRECAUTIONS

NBAX0001

- 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.
- Use flare nut wrench when removing and installing brake tubes.
- After installing removed suspension parts, check wheel alignment and adjust if necessary.
- 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.

NBAX0002

Tool number (Kent-Moore No.) Tool name	Description		
ST29020001 (J24319-01) Ball joint remover		c b a	Removing tie-rod outer end and lower ball joint a: 34 mm (1.34 in) b: 6.5 mm (0.256 in) c: 61.5 mm (2.421 in)
	NT694		
KV401021S0 (—) Bearing race drift			Installing wheel bearing outer race
	NT153		
KV40105400 (J36001) Wheel bearing lock nut wrench			Removing and installing wheel bearing lock nut
	NT154		

COMMERCIAL SERVICE TOOLS

Tool name	Description	
1 Flare nut crowfoot 2 Torque wrench	NT360	Removing and installing each brake piping a: 10 mm (0.39 in)
Hub cap drift	NT115	Installing hub cap a: 57 mm (2.24 in) dia. b: 46 mm (1.81 in) dia.

Noise, Vibration and Harshness (NVH) Troubleshooting

NVH TROUBLESHOOTING CHART

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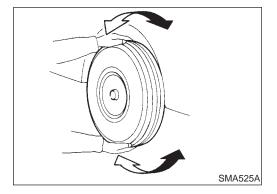
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Use the chart below to help you find the cause of the symptom. If necessary, repair or replace these parts.

	Reference pa	ge	I	AX-12	I	AX-6, 19	I	AX-4, 18	PD-3	PD-3	Refer to DRIVE SHAFT in this chart.	Refer to AXLE in this chart.	SU-3	SU-3	SU-3	BR-6	ST-5
Possible cause : SUSPECTED P/			Excessive joint angle	Joint sliding resistance	Imbalance	Improper installation, looseness	Parts interference	Wheel bearing damage	PROPELLER SHAFT	DIFFERENTIAL	DRIVE SHAFT	AXLE	SUSPENSION	TIRES	ROAD WHEEL	BRAKES	STEERING
	DDIVE OUAET	Noise, Vibration	×	×					×	×		×	×	×	×	×	×
	DRIVE SHAFT	Shake	×		×				×			×	×	×	×	×	×
		Noise				×	×		×	×	×		×	×	×	×	×
		Shake				×	×		×		×		×	×	×	×	×
Symptom	Vibration				×	×		×		×		×	×			×	
	AXLE	Shimmy				×	×						×	×	×	×	×
		Judder				×							×	×	×	×	×
		Poor quality ride or handling				×	×	×					×	×	×		

 $[\]times$: Applicable



On-vehicle Service FRONT AXLE PARTS

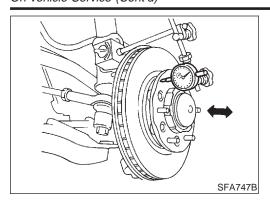
Check front axle parts for excessive play, cracks, wear and other damage.

- 1. Shake each front wheel to check for excessive play.
- 2. Retighten all nuts and bolts to the specified torque.

Tightening torque:

Refer to "Wheel Hub and Rotor Disc", AX-6.





FRONT WHEEL BEARING

1. Check that wheel bearings operate smoothly.

2. Check axial end play.

Axial end play: 0 mm (0 in)

3. Adjust wheel bearing preload if there is any axial end play or wheel bearing does not turn smoothly.

Preload Adjustment

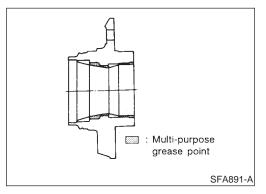
NRAX0005S01

NBAX0005

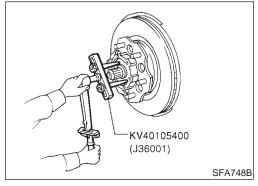
Adjust wheel bearing preload after wheel bearing has been replaced or front axle has been reassembled.

Adjust wheel bearing preload as follows:

 Before adjustment, thoroughly clean all parts to prevent dirt entry.

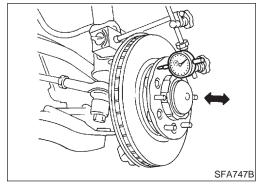


- 2. Apply multi-purpose grease sparingly to the following parts:
- Threaded portion of spindle
- Contact surface between wheel bearing lock washer (chamfered side) and outer wheel bearing
- Grease seal lip
- Wheel hub (as shown at left)



- 3. Tighten wheel bearing lock nut with Tool.
 - (8 10 kg-m, 58 72 ft-lb)
 - . Turn wheel hub several times in both directions.
- 5. Loosen wheel bearing lock nut so that torque becomes 0 N⋅m (0 kg-m, 0 ft-lb).
- 6. Retighten wheel bearing lock nut with Tool.

(0.05 - 0.15 kg-m, 4.3 - 13.0 in-lb)



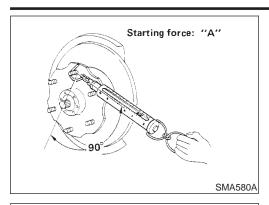
- 7. Turn wheel hub several times in both directions.
- 8. Retighten wheel bearing lock nut with Tool.

(0.05 - 0.15 kg-m, 4.3 - 13.0 in-lb)

9. Measure wheel bearing axial end play.

Axial end play: 0 mm (0 in)



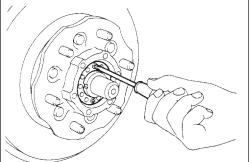


10. Measure starting force "A" at wheel hub bolt.



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11. Install lock washer by tightening the lock nut within 15 to 30 degrees.



12. Turn wheel hub several times in both directions to seat wheel bearing correctly.

13. Measure starting force "B" at wheel hub bolt. Refer to procedure 10.

14. Wheel bearing preload "C" can be calculated as shown below.

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C = B - A

Wheel bearing preload "C":



7.06 - 20.99 N (0.72 - 2.14 kg, 1.59 - 4.72 lb) 15. If wheel bearing preload "C" is outside specifications, remove



lock washer. Tighten or loosen lock nut within ±15 degrees (Refer to step 11 above). Install lock washer, then repeat steps 12, 13 and 14.

PD

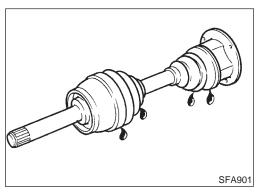
16. Repeat above procedures until correct axial end play and wheel bearing preload are obtained.

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17. Install drive flange and wheel hub cap.

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DRIVE SHAFT

grease leakage.

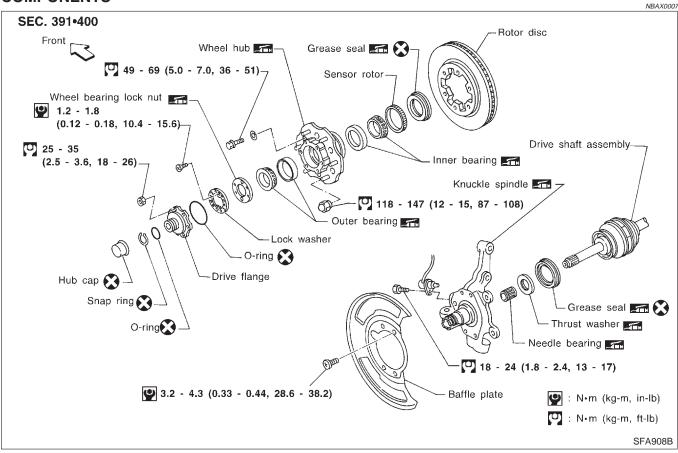
Check boot and drive shaft for cracks, wear, damage and

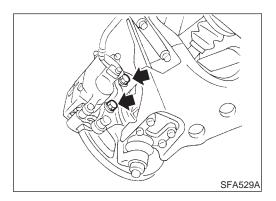
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Wheel Hub and Rotor Disc

COMPONENTS





REMOVAL

CAUTION:

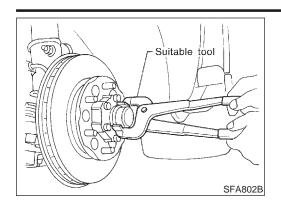
Before removing the front axle assembly, disconnect the ABS wheel sensor from the assembly. Then move it away from the front axle assembly area. Failure to do so may result in damage to the sensor wires and the sensor becoming inoperative.

1. Remove brake caliper assembly.

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.





Drive flange

KV40105400 (J36001)

Snap ring

Suitable tool

SFA753B

SFA364BA

Remove hub cap with suitable tool.



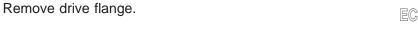
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Remove snap ring with suitable tool.







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6. Remove wheel bearing lock nut.







BR



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BT







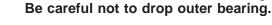










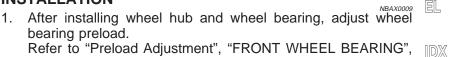


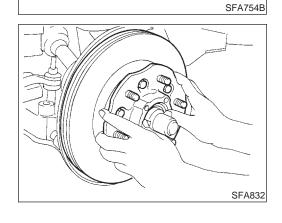
"On-vehicle Service", AX-4.

Remove wheel hub and wheel bearing.

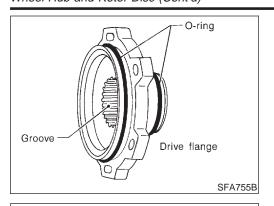
INSTALLATION



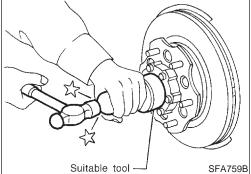






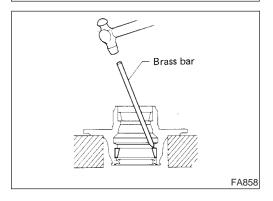


- Pack drive flange groove with grease, apply grease to O-ring (two places) and mating surface of drive flange, and install flange.
- 3. Install snap ring.



4. Install hub cap using a suitable tool.

Do not reuse hub cap. When installing, replace it with a new one.



DISASSEMBLY

Remove grease seal and bearing outer races with suitable brass bar.

INSPECTION

Thoroughly clean wheel bearings and wheel hub.

Wheel Bearing

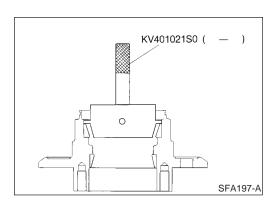
 Make sure wheel bearing rolls freely and is free from noise, crack, pitting and wear.

Wheel Hub

NBAX0011S02

NBAX0011

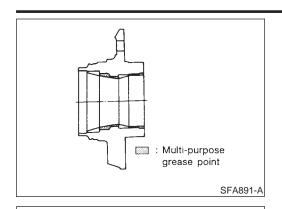
 Check wheel hub for crack by using a magnetic exploration or dyeing test.



ASSEMBLY

1. Install bearing outer race with Tool until it seats in hub.





Inner side

SFA459B

2. Pack multi-purpose grease into wheel hub.

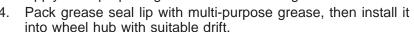


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Apply multi-purpose grease to each bearing cone.





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Tool.

NBAX0013

Remove drive shaft. Refer to "Drive Shaft", AX-11.







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Separate tie-rod end and lower ball joint from knuckle with ST

Install stud nut conversely on stud bolt so as not to damage stud bolt.







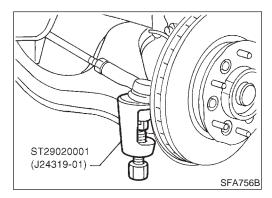


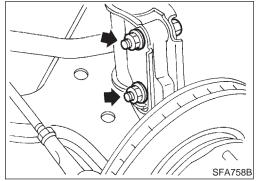












Separate knuckle from strut.



INSPECTION

Knuckle Spindle

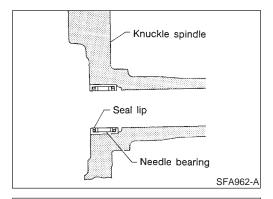
NBAX0014

Check knuckle spindle for deformation, cracks and other damage by using a magnetic exploration or dyeing test.

Needle Bearing

NBAX0014S0

 Check needle bearing for wear, scratches, pitting, flaking and burn marks.



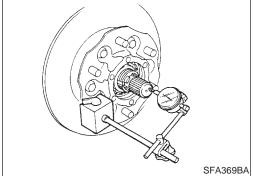
INSTALLATION

NBAX0015

1. Install needle bearing into knuckle spindle.

Make sure that needle bearing is facing in proper direction. Apply multi-purpose grease.

- Install knuckle with wheel hub.
- 3. Install tie-rod end and lower ball joint.

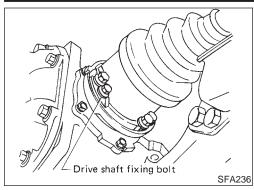


- 4. After installing knuckle spindle, adjust wheel bearing preload. Refer to "Preload Adjustment", "FRONT WHEEL BEARING", "On-vehicle Service", AX-4.
- After installing drive shaft, check drive shaft axial end play.
 Do not reuse snap ring once it has been removed.
 Refer to "Drive Shaft", AX-10.

Drive Shaft COMPONENTS

COMPONENTS NBAX0016 Wheel side (ZF100) SEC. 391 (Rzeppa joint) Circlip 🔀 Drive shaft Snap ring O 34 - 44 N•m (3.5 - 4.5 kg-m, 25 - 33 ft-lb) Joint assembly (Wheel side) Boot band (Large) Boot (Tripod joint) (Wheel side)-Boot band (Small) Boot band Slide joint housing Spider assembly Snap ring Final drive side (TS82F) Plug seal SFA874-B





REMOVAL

NBAX0017

Remove hub cap and snap ring. Refer to "REMOVAL", "Wheel Hub and Rotor Disc", AX-6.

Remove bolts fixing drive shaft to final drive.

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Remove transverse link fixing nut and bolts.

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Separate drive shaft from knuckle by lightly tapping it with a copper hammer.

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Cover boots with shop towel so as not to damage them when

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removing drive shaft.

Remove plug seal from slide joint housing by lightly tapping around slide joint housing.

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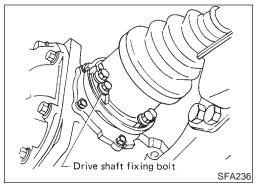
Remove boot bands.

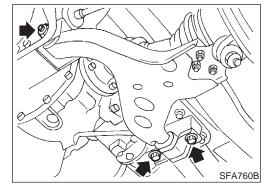
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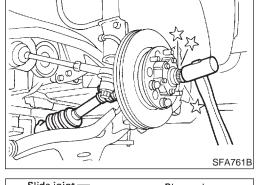
Move boot and slide joint housing toward wheel side, and put matching marks.

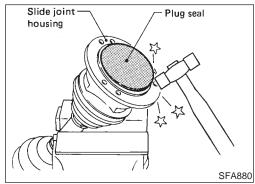
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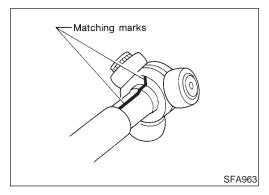
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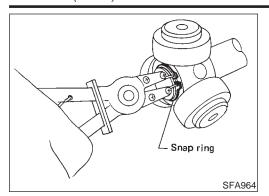




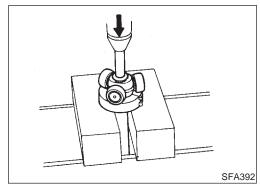




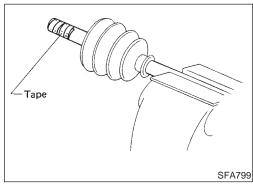




4. Remove snap ring.

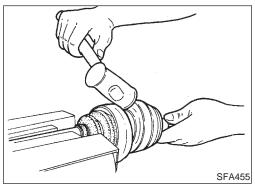


5. Detach spider assembly with press.



6. Draw out boot.

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



Wheel Side (ZF100)

CAUTION:

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 suitable tool.

Be careful not to damage threads on drive shaft.

Remove boot bands.

INSPECTION

NBAX0019

NBAX0018S02

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

Drive Shaft

NBAX0019S01

Replace drive shaft if it is twisted or cracked.

Boot

NBAX0019S02

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



Joint Assembly (Final drive side)

Replace any parts of double offset joint which show signs of scorching, rust, wear or excessive play.



- 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.



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.



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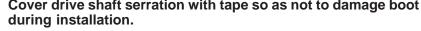
Final Drive Side (TS82F)

Install new small boot band, boot and side joint housing to drive shaft.



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

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Press-fit with spider assembly serration chamfer facing



Install new snap ring.

Pack with grease.

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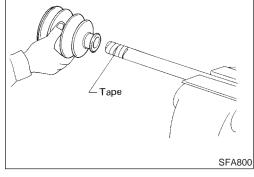
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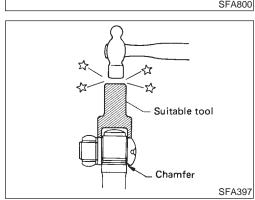
Specified amount of grease: 95 - 105 q (3.35 - 3.70 oz)

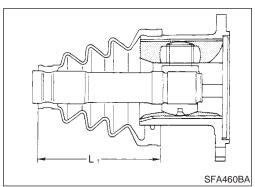
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Make sure that boot is properly installed on the drive shaft groove. Set boot so that it does not swell and deform when its length is "L₁".

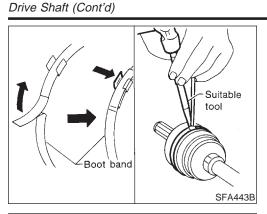
Length "L₁": 95 - 97 mm (3.74 - 3.82 in)





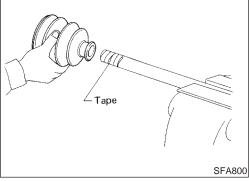






- 6. Lock new larger boot band securely with a suitable tool, then lock new smaller boot band.
- 7. Install new plug seal to slide joint housing by lightly tapping it.

 Apply sealant to mating surface of plug seal.

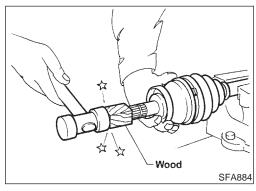


Wheel Side (ZF100)

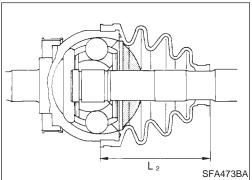
NBAX0020S02

Install new small boot band and boot on drive shaft.

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



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



3. Pack drive shaft with specified amount of grease.

Specified amount of grease:

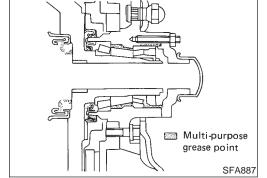
135 - 145 g (4.76 - 5.11 oz)

4. 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".

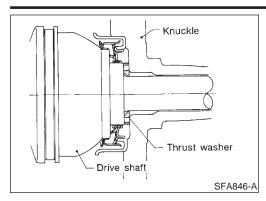
Length "L2": 96 - 98 mm (3.78 - 3.86 in)

- 5. Lock new larger boot band securely with a suitable tool.
- 6. Lock new smaller boot band.







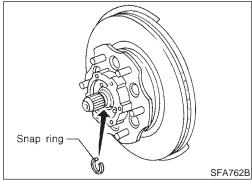


Install thrust washer onto drive shaft. Make sure that thrust washer is facing in proper direction, apply multi-purpose grease.



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When installing drive shaft, adjust drive shaft axial end play by selecting a suitable snap ring.

EC

Temporarily install new snap ring on drive shaft in the same thickness as it was installed before removal.



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- Set dial gauge on drive shaft end.
- Measure axial end play of drive shaft.

Axial end play: 0.45 mm (0.0177 in) or less

If axial end play is not within the specified limit, select another snap ring.



1.1 mm (0.043 in)	1.9 mm (0.075 in)
1.3 mm (0.051 in)	2.1 mm (0.083 in)
1.5 mm (0.059 in)	2.3 mm (0.091 in)
1.7 mm (0.067 in)	, , ,



Service Data and Specifications (SDS)

WHEEL BEARING (FRONT)

Tightening torque 78 - 98 N·m (8 - 10 kg-m, 58 - 72 ft-lb) Retightening torque after loosening wheel bearing 0.5 - 1.5 N·m (0.05 - 0.15 kg-m, 4.3 - 13.0 in-lb) lock nut Axial end play 0 mm (0 in) Wheel bearing lock nut Starting force at wheel hub bolt N (kg, lb) Α 15° - 30° Turning angle Starting force at wheel hub bolt N (kg, lb) Wheel bearing preload at wheel hub bolt B - A7.06 - 20.99 N (0.72 - 2.14 kg, 1.59 - 4.72 lb)

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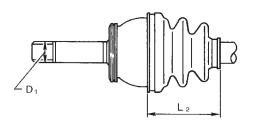
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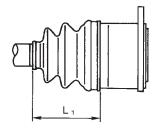
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DRIVE SHAFT			=NBAX0033
	Final drive side		TS82F
Drive shaft joint type	Wheel side		ZF100
	Fixed joint axial end play limit		1 mm (0.04 in)
Diameter	Wheel side (D ₁)		29.0 mm (1.142 in)
	Quality		Nissan genuine grease or equivalent
Grease	0 " 1	Final drive side	95 - 105 g (3.35 - 3.70 oz)
	Specified amount of grease	Wheel side	135 - 145 g (4.76 - 5.11 oz)
Drive shaft axial end pla	Drive shaft axial end play		0.45 mm (0.0177 in) or less
Do at locath	Final drive side (L ₁)		95 - 97 mm (3.74 - 3.82 in)
Boot length	Wheel side (L ₂)		96 - 98 mm (3.78 - 3.86 in)

Wheel side Final drive side





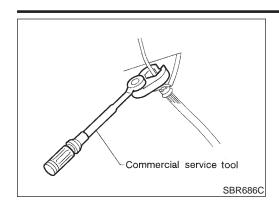
SAX001

Drive Shaft End Snap Ring

NBAX0033S01

Thickness mm (in)	Part No.	Thickness mm (in)	Part No.
1.1 (0.043) 1.3 (0.051) 1.5 (0.059) 1.7 (0.067)	39253-88G10 39253-88G11 39253-88G12 39253-88G13	1.9 (0.075) 2.1 (0.083) 2.3 (0.091)	39253-88G14 39253-88G15 39253-88G16





Precautions PRECAUTIONS

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.

MA

 Use flare nut wrench when removing and installing brake tubes.

EM

 After installing removed suspension parts, check wheel alignment and adjust if necessary.

LC

EG

• Always torque brake lines when installing.

Preparation

SPECIAL SERVICE TOOLS

The actual shapes of Kent-M	oore tools may differ from those of special service t	ools illustrated here.	, L
Tool number (Kent-Moore No.) Tool name	Description		
KV40101000 (J25604-01) Axle stand		Removing rear axle shaft	
	NT159		T
ST36230000 (J25840-A)		Removing rear axle shaft	· [P[
Sliding hammer			A
	NT126		. SI
ST38020000 (—) Bearing lock nut wrench		Removing wheel bearing lock nut	B
	NT160		\$1
HT72480000 or HT72210000 (J25852-B) Rear axle shaft bearing		Removing wheel bearing	R
puller	NT161		B
ST37840000 (—) Rear axle shaft guide		Installing rear axle shaft	H/
	NT162		\$(

EL

REAR AXLE

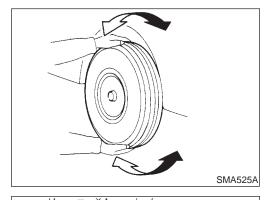


COMMEDCIAL SERVICE TOOLS

COMMERCIAL SER	RVICE TOOLS	NBAX0025
Tool name	Description	
1 Flare nut crowfoot 2 Torque wrench		Removing and installing each brake piping a: 10 mm (0.39 in)
Rear axle oil seal drift	NT360 C a b D NT163	Installing oil seal a: 74 mm (2.91 in) dia. b: 68 mm (2.68 in) dia. c: 10 mm (0.39 in)

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

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



On-vehicle Service REAR AXLE PARTS

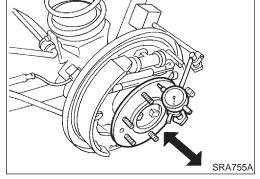
Check rear axle parts for excessive play, wear and damage.

- 1. Shake each rear wheel to check for excessive play.
- 2. Retighten all nuts and bolts to the specified torque.

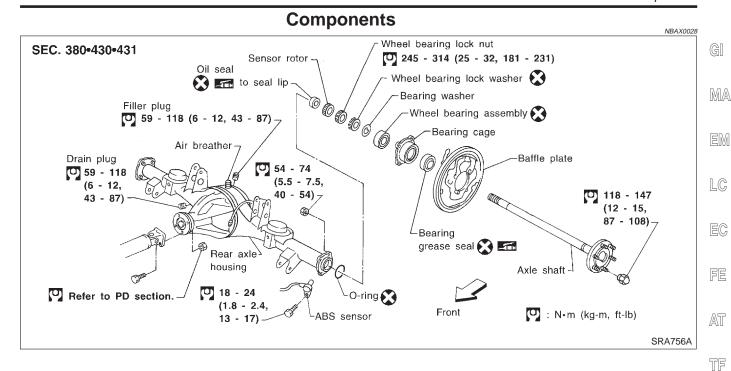
Tightening torque: Refer to "Components", AX-19.

REAR WHEEL BEARING 1. Check that wheel bearings operate smoothly.

- 2. Check axial end play.
 - **Axial end play:** 0 mm (0 in)







Removal

CAUTION:

NBAX0029

AX

ST

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

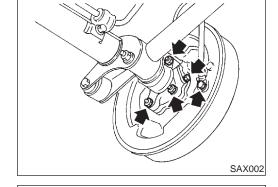
Wheel bearing does not require maintenance.

If growling noise is emitted from wheel bearing during operation, replace wheel bearing assembly.

If the wheel bearing assembly is removed, it must be renewed. The old assembly must not be re-used.

Disconnect parking brake cable and brake tube.

Remove nuts securing wheel bearing cage with baffle plate.



ST36230000 (J25840-A) KV40101000 (J25604-01) SRA758A Draw out axle shaft with Tool.

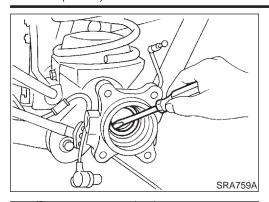
When drawing out axle shaft, be careful not to damage oil seal.

HA

SC

REAR AXLE

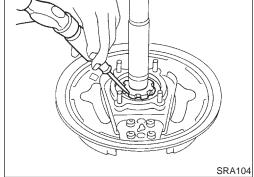




4. Remove oil seal with a screwdriver.

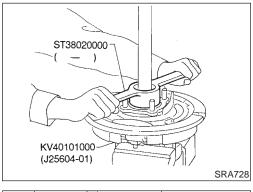
Do not reuse oil seal once it is removed. Always install new one.

5. Remove ABS sensor rotor.

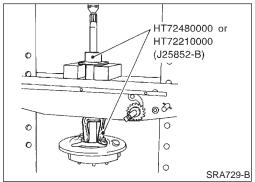


6. Unbend lock washer with a screwdriver.

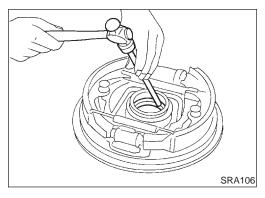
Do not reuse lock washer once removed. Always install new one.



7. Remove bearing lock nut with Tool.



8. Remove wheel bearing together with bearing cage and baffle plate from axle shaft.



- 9. Remove grease seal with a screwdriver.
- 10. Remove wheel bearing assembly with a brass drift.



Inspection

AXLE SHAFT

NBAX0030

Check axle shaft for straightness, cracks, damage, wear and distortion. Replace if necessary.

BEARING CAGE

MA

Check bearing cage for deformation and cracks. Replace if necessary.

REAR AXLE HOUSING

Check rear axle housing for yield, deformation and cracks. Replace if necessary.

Installation

Press new wheel bearing until it bottoms end face of bearing

Maximum load P:

Maximum load P:

39 kN (4 ton, 4.4 US ton, 3.9 Imp ton)

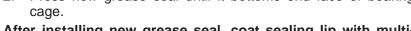
Always press outer race of wheel bearing during installation.

AT

Press new grease seal until it bottoms end face of bearing

After installing new grease seal, coat sealing lip with multipurpose grease.

AX

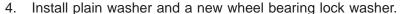


Press axle shaft into inner race of wheel bearing.

47.1 kN (4.8 ton, 5.3 US ton, 4.72 Imp ton)

Be careful not to damage and deform grease seal.

HA



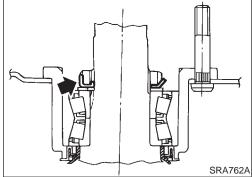
SC

EL

Tighten wheel bearing lock nut to specified torque.

(25 - 314 N·m (25 - 32 kg-m, 181 - 231 ft-lb)

Fit wheel bearing lock washer lip in wheel bearing lock nut groove correctly by tightening lock nut. Be sure to bend it up.



Press

Press

Suitable tool

SRA288A

SRA289A

SRA761A

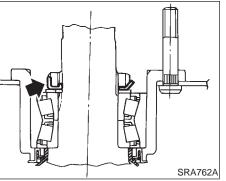
Suitable tool

Grease seal

Wheel bearing assembly

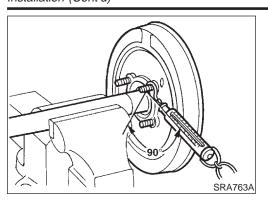
Suitable tool

Suitable tool



REAR AXLE

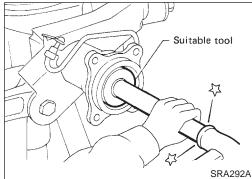




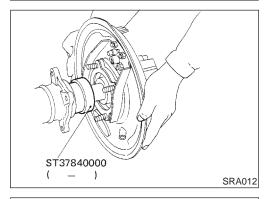
- 6. Check wheel bearing preload.
- Turn bearing cage (with respect to axle shaft) two or three times. It must turn smoothly.
- b. Attach spring gauge to bearing cage bolt (as shown at left) and pull it at a speed of 10 rpm to measure preload.

Spring gauge indication:

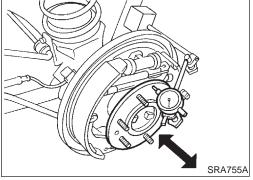
6.9 - 48.1 N (0.7 - 4.9 kg, 1.5 - 10.8 lb)



7. Install new oil seal to rear axle housing using a suitable tool. After installing new oil seal, coat sealing lip with multi-purpose grease.



- 3. Press ABS sensor rotor onto axle shaft until it contacts wheel bearing lock nut.
- 9. Position axle shafts in rear axle housing with Tool as a guide. **Be careful not to damage oil seal.**



- 10. Check axial end play.
- a. Check that wheel bearings operate smoothly.
- b. Check axial end play.

Axial end play: 0 mm (0 in)

Service Data and Specifications (SDS)

WHEEL BEARING (REAR)

Wheel bearing axial end play	0 mm (0 in)
Wheel bearing lock nut tightening torque	245 - 314 N·m (25 - 32 kg-m, 181 - 231 ft-lb)
Wheel bearing preload measured at bearing cage bolt	6.9 - 48.1 N (0.7 - 4.9 kg, 1.5 - 10.8 lb)