SECTION RAX
REAR AXLE

CONTENTS

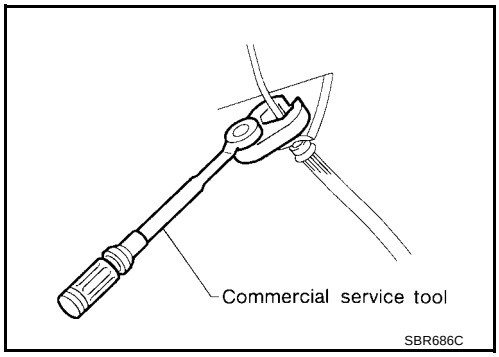
PRECAUTIONS

PFP:00001

Precautions

EDS000PV

- **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.**



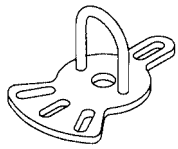
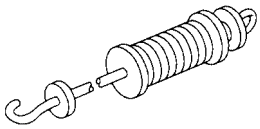
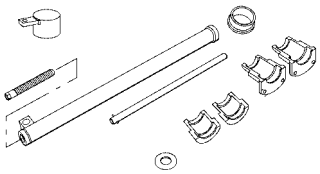
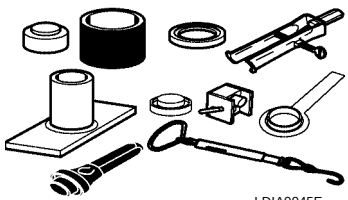
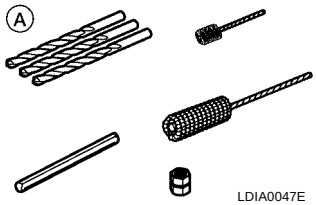
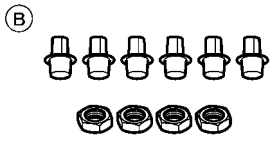
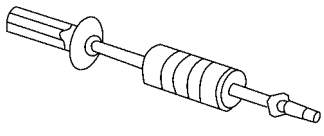
PREPARATION

PFP:00002

Special Service Tools

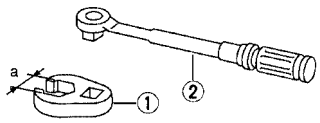
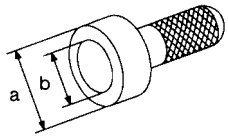
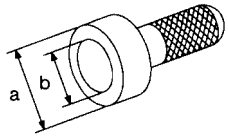
EDS000WP

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
KV40101000 (J25604-01) Axle stand  NT159	Removing rear axle shaft
ST36230000 (J25840-A) Slide hammer  NT126	Removing rear axle shaft
KV40106500 (J-45073) Rear axle bearing remover  LPD022	Removing wheel bearing, wheel bearing lock nut and ABS sensor rotor
— (J-46215) Rear axle bearing installation kit  LDIA0045E  LDIA0047E  LDIA0048E	Installing rear axle bearing **a: ABS sensor mount repair kit J-46215-8** **b: Plastic plugs and nuts kit J-46215-4**
— (J-23907) Seal and bushing puller  LDIA0046E	Removing rear axle seal

Commercial Service Tools

EDS000PX

Tool name	Description
1 Flare nut crowfoot 2 Torque wrench  S-NT360	Removing and installing each brake piping **a: 10 mm (0.39 in)**
Bearing cage oil seal drift  NT115	Installing oil seal **a: 74 mm (2.91 in) dia.** **b: 68 mm (2.68 in) dia.**
Rear axle oil seal drift  NT115	Installing oil seal **a: 54.5 mm (2.15 in.)** **b: 34.5 mm (1.36 in.)**

NOISE VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

EDS000U7

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

Reference page			RAX-10	PR-4, "Propeller Shaft Vibration"	RAX-10	—	RAX-10	PR-3, "NVH Troubleshooting Chart"	RFD-6, "NVH Troubleshooting Chart"	Refer to DRIVE SHAFT in this chart.	Refer to AXLE in this chart.	RSU-4, "NVH Troubleshooting Chart"	WT-3, "NVH Troubleshooting Chart"	WT-3, "NVH Troubleshooting Chart"	BR-5, "NVH Troubleshooting Chart"
Possible cause and SUSPECTED PARTS			Excessive joint angle	Imbalance	Improper installation, looseness	Parts interference	Wheel Bearing Damage	PROPELLER SHAFT	DIFFERENTIAL	DRIVE SHAFT	AXLE	SUSPENSION	TIRES	ROAD WHEEL	BRAKES
Symptom	DRIVE SHAFT	Noise, Vibration	×					×	×		×	×	×	×	×
		Shake	×	×				×			×	×	×	×	×
	AXLE	Noise			×	×		×	×	×		×	×	×	×
		Shake			×	×		×		×		×	×	×	×
		Vibration			×	×		×		×		×	×		
		Shimmy			×	×						×	×	×	×
		Shudder			×							×	×	×	×
		Poor quality ride or handling			×	×	x					×	×	×	

×: Applicable

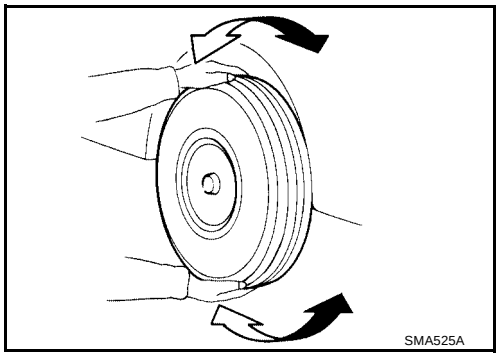
ON-VEHICLE SERVICE

PFP:00000

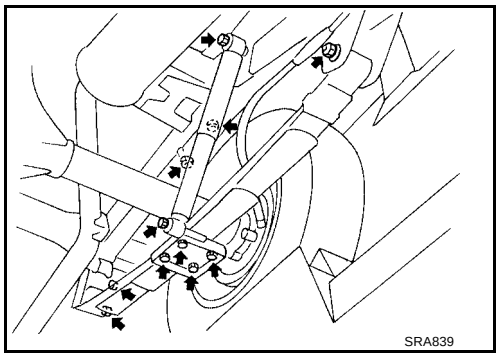
Rear Axle Parts

EDS000PZ

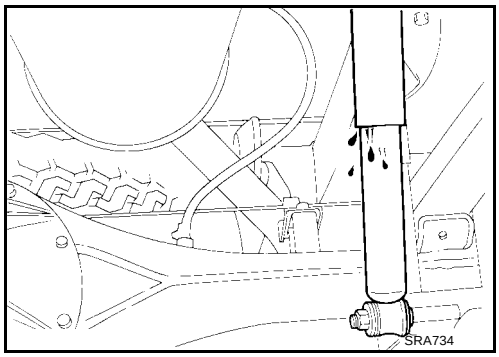
Check rear axle parts for excessive play, wear and damage.


SMA525A

- Shake each rear wheel to check for excessive play.
- Retighten all nuts and bolts to the specified torque. Refer to RSU-5, "Components" .


SRA839

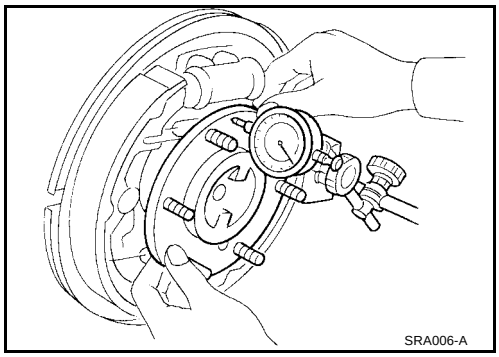
- Check shock absorber for oil leakage and other damage.
- Check shock absorber bushing for excessive wear and other damage.


SRA734

Rear Wheel Bearing

EDS000Q0

- Check that wheel bearings operate smoothly.
- Check axial end play. Refer to: RAX-17, "Wheel Bearing (Rear)"


SRA006-A

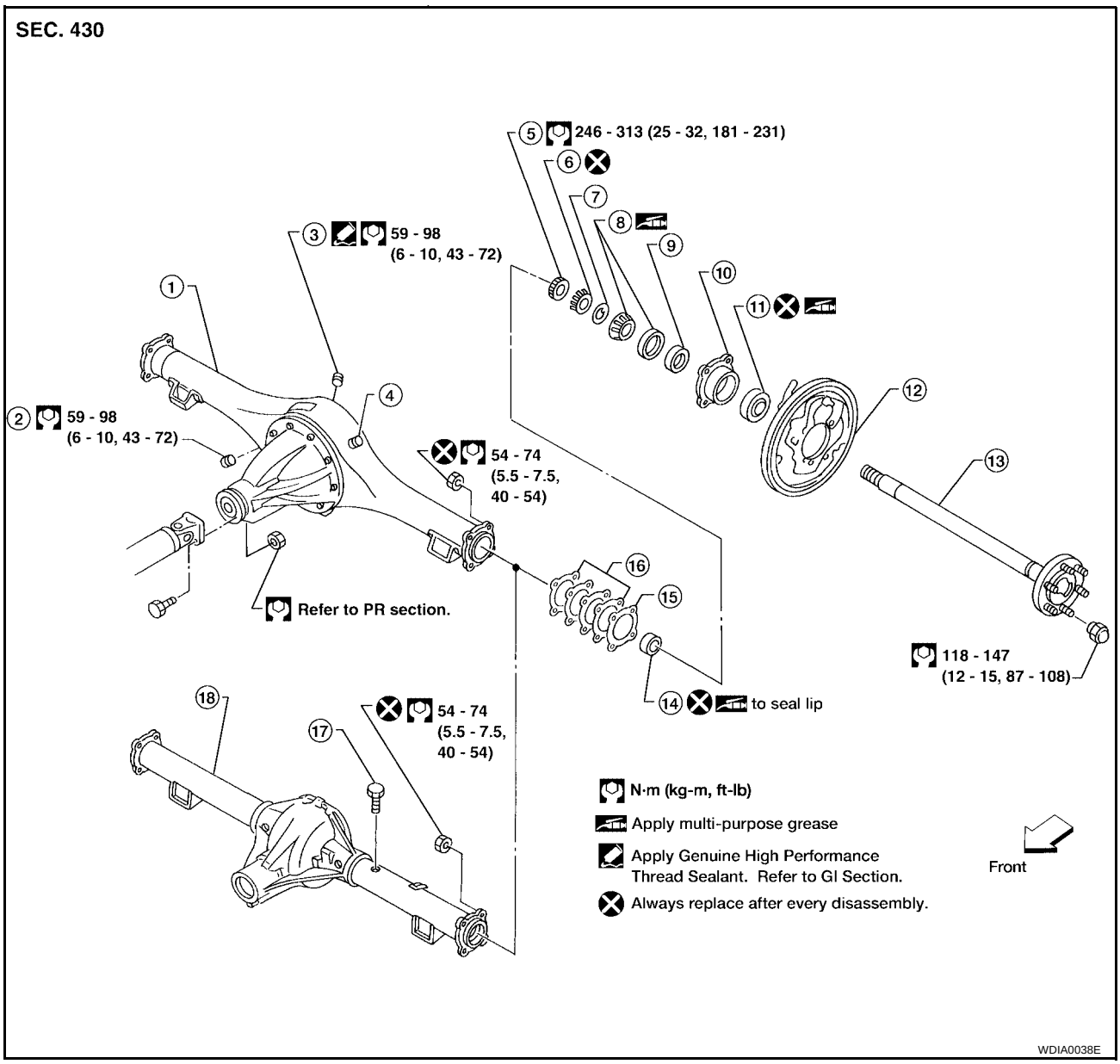
WHEEL HUB

PFP:43202

Components

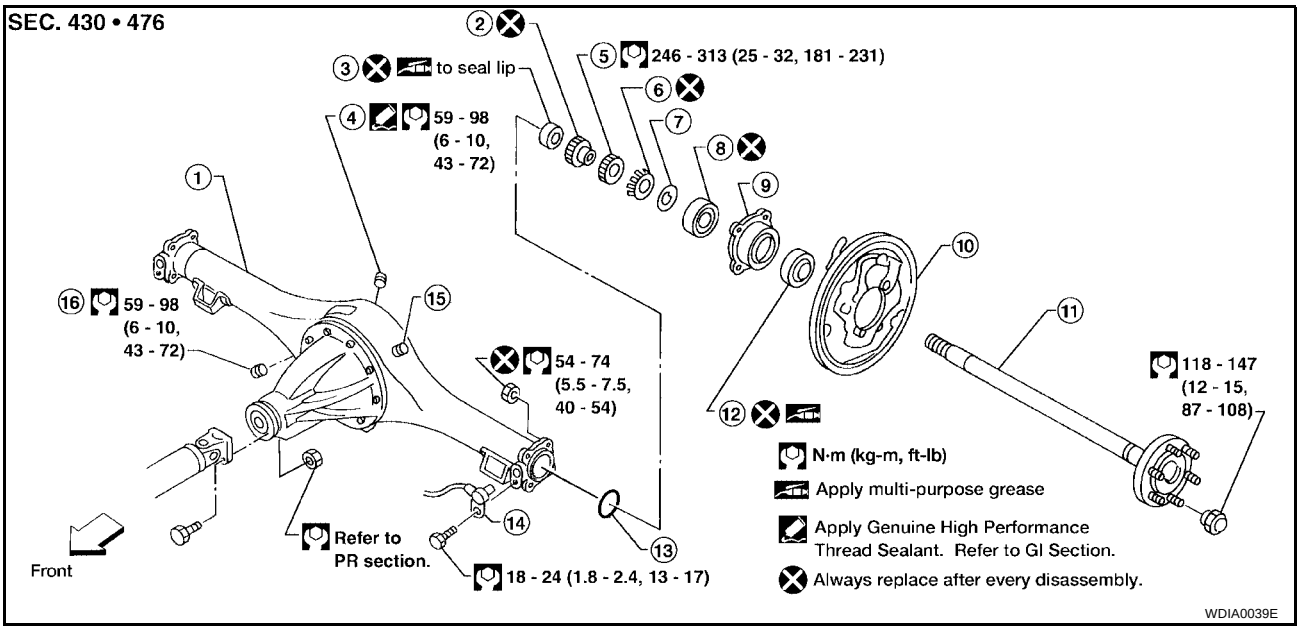
EDS000WQ

2WD Models C200 and H233B



1. Rear axle case (rear final drive model H233B)
2. Drain plug
3. Filler plug
4. Air breather
5. Wheel bearing lock nut
6. Wheel bearing lock washer
7. Bearing washer
8. Wheel bearing and race
9. Bearing spacer
10. Bearing cage
11. Bearing grease seal
12. Baffle plate
13. Axle shaft
14. Oil seal
15. Case seal
16. Case shim
17. Air breather
18. Rear axle case (rear final drive model C200)

4WD Model H233B



1. Rear axle case (rear final drive model H233B)
2. ABS sensor rotor
3. Oil seal
4. Filler plug
5. Wheel bearing lock nut
6. Wheel bearing lock washer
7. Bearing washer
8. Wheel bearing assembly
9. Bearing cage
10. Baffle plate
11. Axle shaft
12. Bearing grease seal
13. O-ring
14. ABS sensor
15. Air breather
16. Drain plug

Removal

EDS000WR

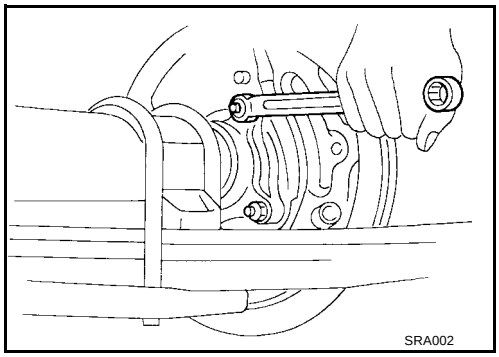
CAUTION:

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 replaced. The old assembly must not be re-used.

1. Disconnect parking brake cable and brake tube.
2. Remove nuts securing wheel bearing cage to baffle plate.
   - Insert Tool to plug the wheel cylinder opening to keep out dirt and moisture.

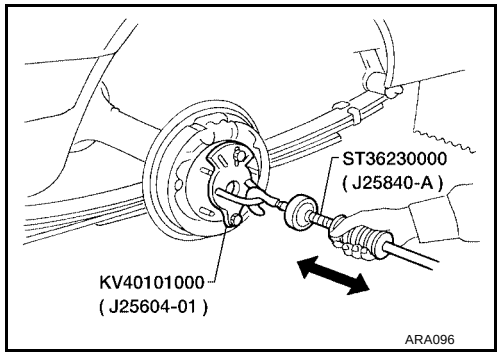
Tool number : — (J-46215-4 part of J-46215)



3. Draw out the axle shaft using Tool.

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

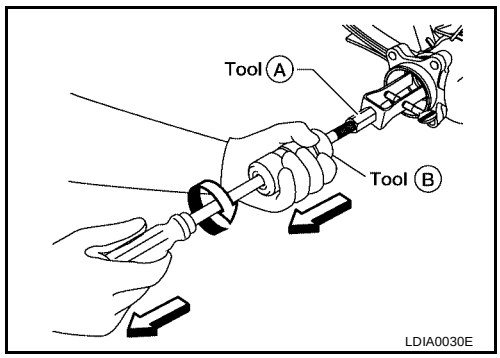
4. Remove the case shim and case seal (2WD models).
5. Remove the O-ring (4WD models).



6. Remove oil seal using Tools as shown.

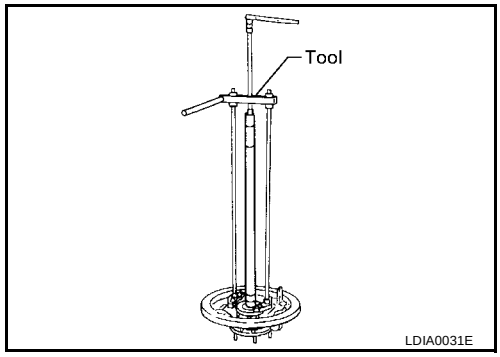
Tool number A: — (J-26941 part of J-46215)
Tool number B: — (J-23907)

- Do not reuse the oil seal once it is removed. Always install a new oil seal.
- Apply a constant pressure on the slide hammer while turning the slide hammer 180° degrees periodically while pulling the oil seal out.

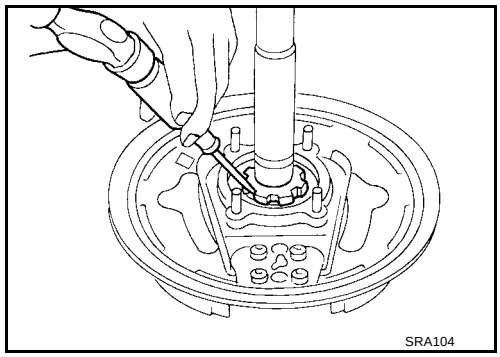


7. Remove the ABS sensor rotor using Tool (4WD models). Always replace the sensor rotor with a new one.

Tool number : KV40106500 (J-45073)

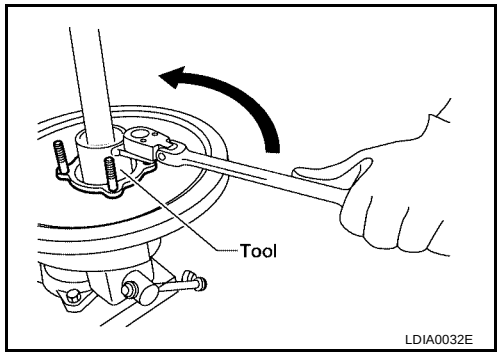


8. Unbend the lock washer with a suitable tool.



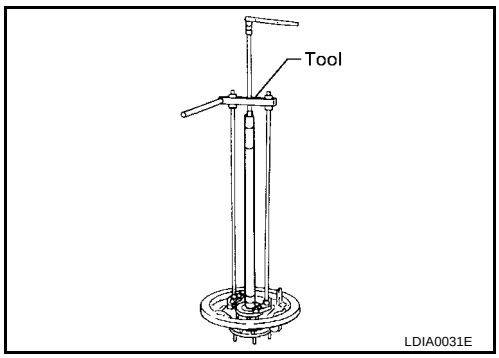
9. Remove the wheel bearing lock nut with Tool.

Tool number : — (J-45073-1 part of J-45073)

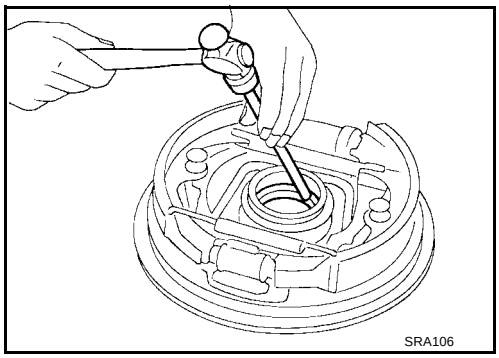


10. Remove the inner wheel bearing backing plate from the axle shaft using Tool, then remove the outer wheel bearing and the outer grease seal from the axle shaft.

    Tool number : KV40106500 (J-45073)



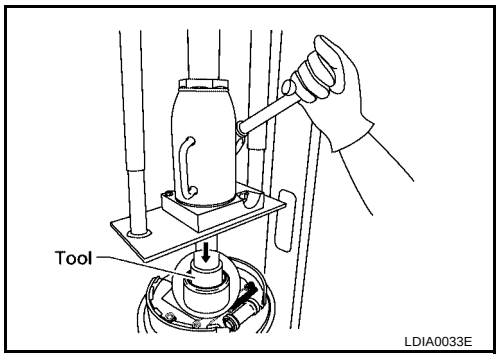
11. Remove wheel bearing outer race with a brass drift (2WD models).



12. Remove the wheel bearing race assembly (4WD models) using Tool.

    CAUTION:
    Make sure that the hub support Tool is properly set underneath the wheel bearing assembly before pressing the wheel bearing race assembly out.

    Tool number : — (J-46215-1 part of J-46215)
    Tool number : — (J-46215-2 part of J-46215)



Inspection

EDS000WS

AXLE SHAFT

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

WHEEL BEARING

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

AXLE CASE

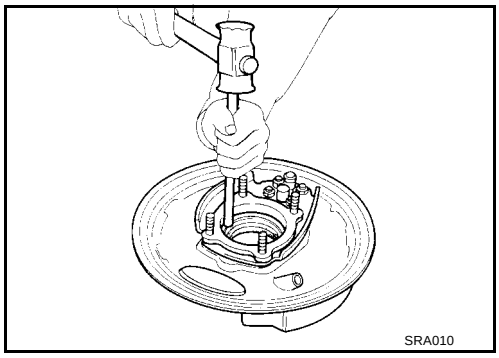
- Check axle case for yield, deformation and cracks. Replace if necessary.

Installation

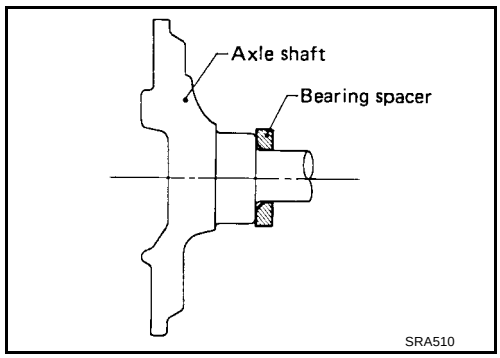
EDS000WT

2WD MODELS

1. Install wheel bearing outer race with a brass drift.
2. Install a new grease seal in bearing cage.
   - After installing new grease seal, coat sealing lip with multi-purpose grease.

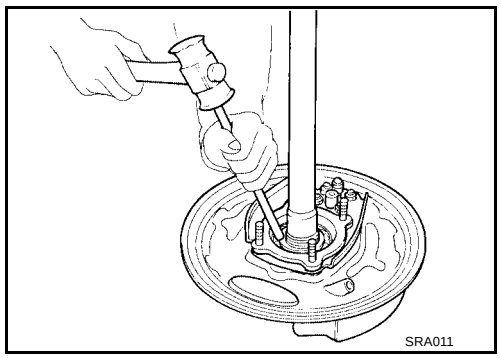


3. Install bearing spacer with chamfer side facing axle shaft flange.

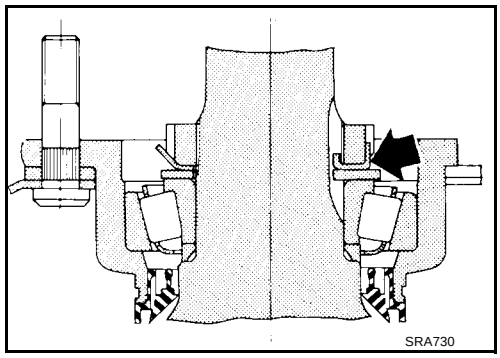


4. Install wheel bearing inner race with a brass drift.
5. Coat each bearing cone with multi-purpose grease.

Specified amount of grease : 8 - 12 g (0.28 - 0.42 oz)

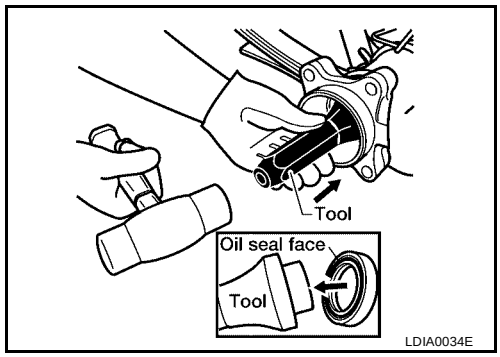


6. Install plain washer and a new wheel bearing lock washer.
7. Tighten wheel bearing lock nut.
   - Fit wheel bearing lock washer lip in wheel bearing lock nut groove correctly by tightening lock nut. Be sure to bend it up.

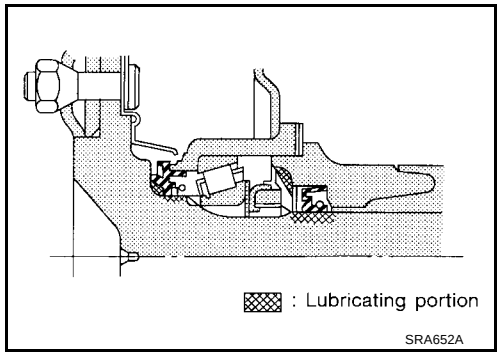


8. Install the new oil seal into the axle housing using Tool as shown.
   - After installing the new oil seal, coat the sealing lip with oil.
   - Install the new oil seal with the seal facing outwards and the so that the seal is fully seated in the axle housing.

Tool number : — (J-34115 part of J-46215)



9. Apply multi-purpose grease to the recess of axle case end as shown.
10. Apply gear oil to the spline of axle shaft. Coat the oil seal surface of axle shaft with multi-purpose grease as shown.

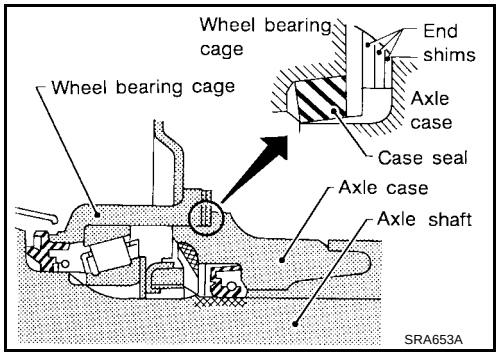


11. Adjust axial end play.

a. Select end shims.

Standard thickness including seal	**: 1.5 mm (0.059 in)**
Axle case end shim	**Refer to RAX-17, "Wheel Bearing (Rear)" .**

CAUTION:
Do not insert end shims between case seal and bearing cage.

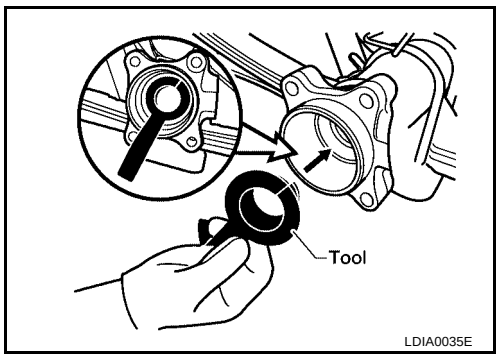


b. Insert Tool into the new axle shaft seal as a guide.

CAUTION:
When inserting axle shaft, be careful not to damage oil seal.

- The split ends of the Tool must butt up together and not overlap as shown.

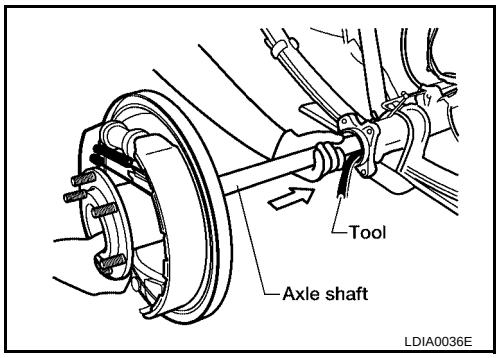
Tool number : — (J-34296-1 part of J-46215)



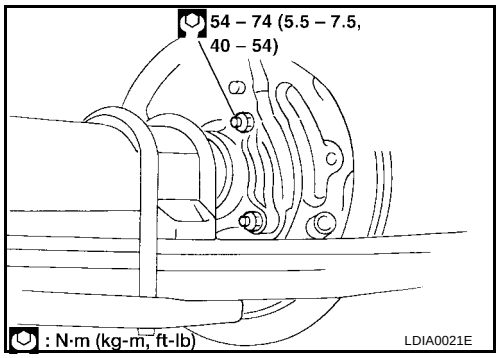
c. Insert the axle shaft assembly.

- Remove the Tool when the axle shaft assembly is approximately 90% inserted to protect the new axle shaft seal.

Tool number : — (J-34296-1 part of J-46215)

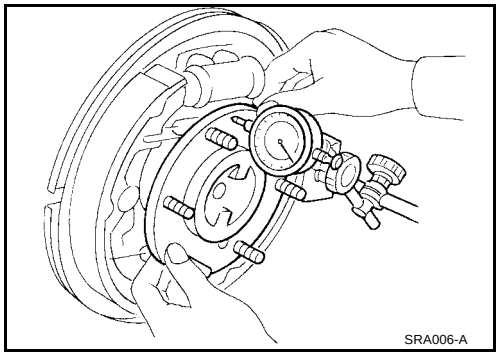


d. Install the new wheel bearing cage to backing plate nuts and tighten to specification as shown.



e. Measure the end play of the axle shaft.

Axial End Play	
Servicing only one side of axle shaft	**: 0.02 - 0.15 mm (0.0008 - 0.0059 in)**
Servicing Both Sides of the Axle Shafts	
On first axle shaft (right or left) adjust axial end play	**: 0.30 - 0.90 mm (0.0118 - 0.0354 in)**
After servicing second axle shaft, total end play	**: 0.02 - 0.15 mm (0.0008 - 0.0059 in)**



f. If the axial end play is not within the specified limit, reselect the axle case end shims. Refer to RAX-17, "Wheel Bearing (Rear)" .

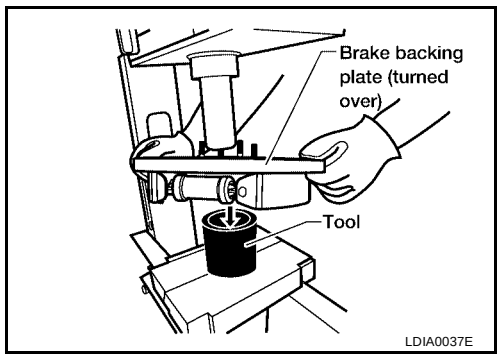
CAUTION:
While adjusting the axial end play, be careful not to damage the oil seal.

12. Connect the parking brake cable and brake tube.
    - Bleed the air from the rear brakes. Refer to BR-9, "Bleeding Brake System" .

4WD MODELS

1. Place the brake backing plate over the Tool as shown and insert the new axle bearing assembly in the bearing cage.

   Tool number : — (J-46215-2 part of J-46215)

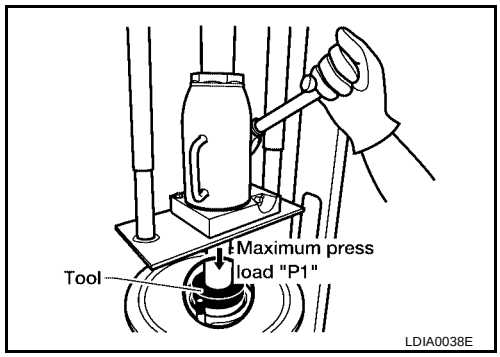


2. Place the Tool onto the axle bearing assembly and carefully press in the new axle bearing assembly until it is fully seated.

   CAUTION:
   Always press outer race of wheel bearing during installation.

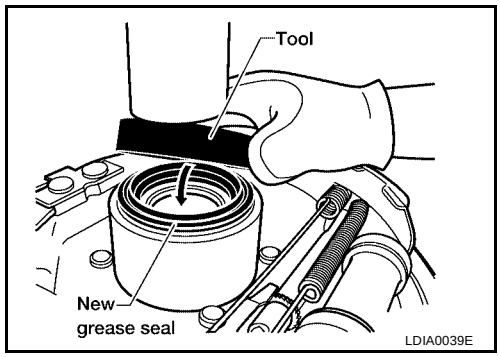
   Tool number : — (J-46215-3 part of J-46215)

   Maximum press load "P_1" : 38 kN (4 ton, 4.4 US ton, 3.9 Imp ton)



3. Place Tool over the new grease seal as shown.

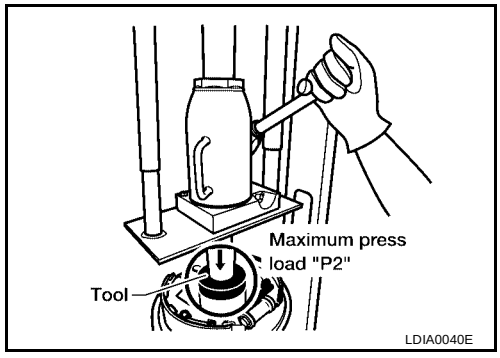
   Tool number : — (J-46215-5 part of J-46215)



4. Press in the new grease seal until it is fully seated.
   - After installing the new grease seal, coat the sealing lip with multi-purpose grease.

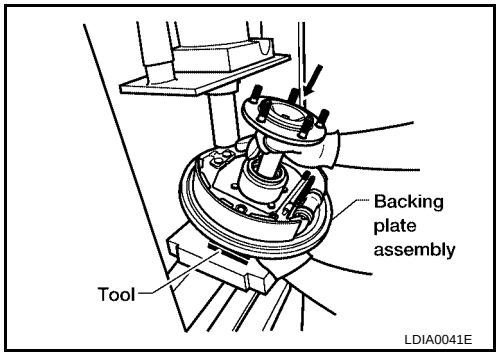
   Tool number : — (J-46215-5 part of J-46215)

   Maximum press load "P_2" : 7.8 kN (0.8 ton, 0.9 US ton, 0.79 Imp ton)



5. Place the hub and bearing assembly on Tool and insert the axle shaft into the backing plate.

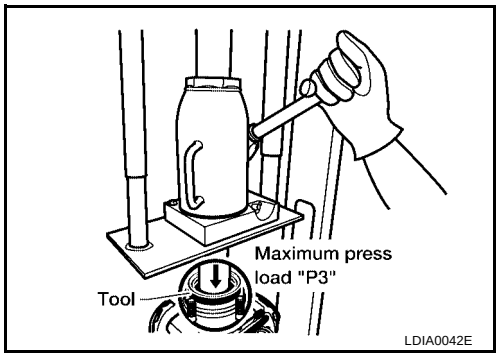
Tool number : — (J-46215-7 part of J-46215)



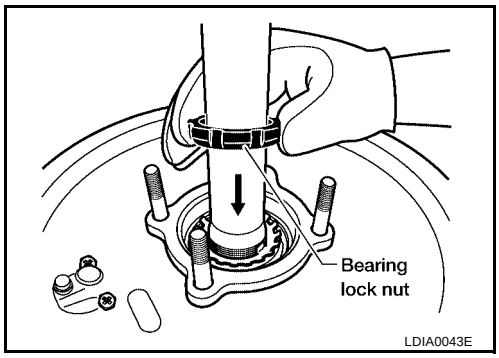
6. Place Tool on the axle shaft and press into inner race of wheel bearing.
   - Be careful not to damage or deform the grease seal.

Tool number : — (J-46215-5 part of J-46215)

Maximum load "P_3" : 47.1 kN (4.8 ton, 5.3 US ton, 4.72 Imp ton)



7. Reinstall the wheel bearing flat washer, new wheel bearing lock washer, and the wheel bearing lock nut so the tapered side is down against the lock washer.

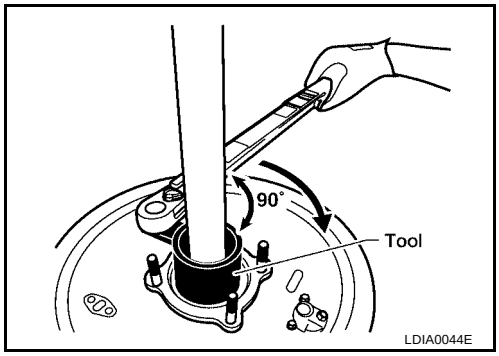


8. Using Tool tighten the wheel bearing lock nut to the specified torque as shown.

NOTE:
When tightening, keep the Tool and torque wrench at a 90° degree angle to achieve the most accurate tightening torque.

Tool number : — (J-45073-1 part of J-45073)

Wheel bearing lock nut : Refer to RAX-7, "Components" .



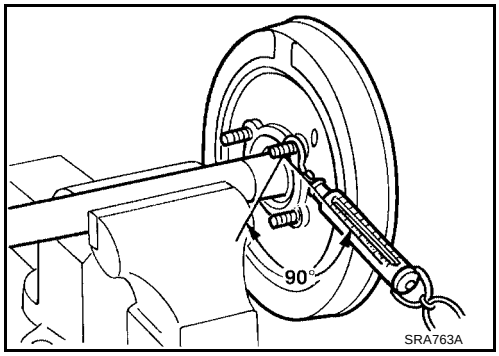
9. Check the wheel bearing preload.

a. Turn the bearing cage (with respect to axle shaft) two or three times. It must turn smoothly.

b. Attach Tool to the bearing cage bolt and pull it at a speed of 10 rpm to measure preload.

Tool number : — (J-08129 part of J-46215)

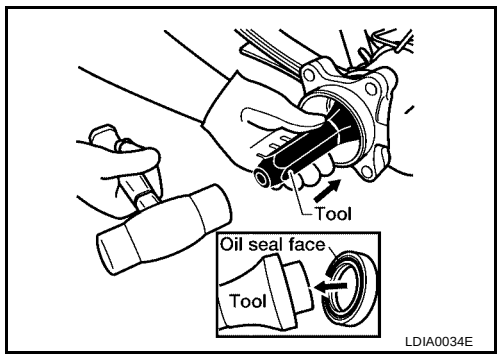
Spring gauge indication to measure preload : 6.9 - 48.1 N (0.7 - 4.9 kg, 1.5 - 10.8 lb)



c. Adjust the locknut torque within the specified torque range to adjust the wheel bearing preload.

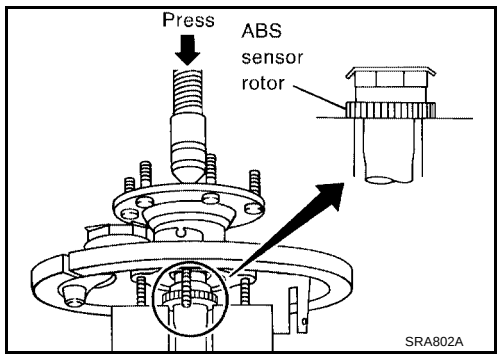
10. Bend the lock washer tab into the groove of the lock nut.
11. Install the new oil seal into the axle housing using Tool as shown.
    - After installing the new oil seal, coat the sealing lip with oil.
    - Install the new oil seal with the seal facing outwards and the so that the seal is fully seated in the axle housing.

    Tool number : — (J-34115 part of J-46215)



12. Install a new O-ring on the axle housing.
13. Press the ABS sensor rotor onto the axle shaft until it contacts the wheel bearing lock nut. Always replace the sensor rotor with a new one.

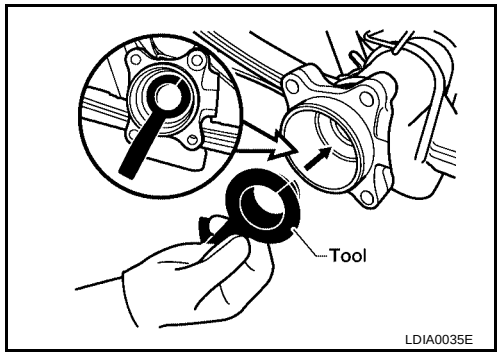
    Maximum press load : 43.2 kN (4.4 ton, 4.8 US ton, 4.33 Imp ton)



14. Insert Tool into the new axle shaft seal as a guide.

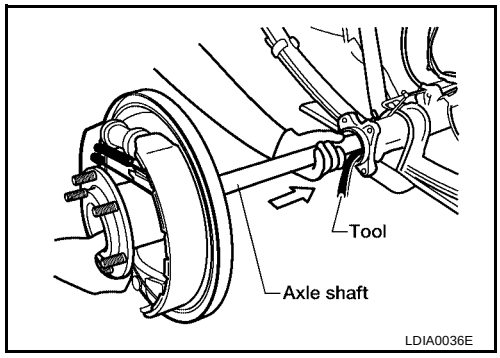
    CAUTION:
    When inserting axle shaft, be careful not to damage oil seal.
    - The split ends of the Tool must butt up together and not overlap as shown.

    Tool number : — (J-34296-1 part of J-46215)

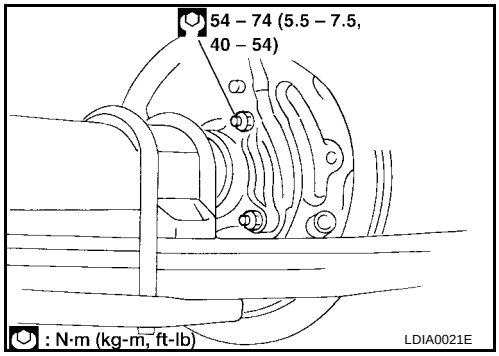


15. Insert the axle shaft assembly.
    - Remove the Tool when the axle shaft assembly is approximately 90% inserted to protect the new axle shaft seal.

    Tool number : — (J-34296-1 part of J-46215)



16. Install the new wheel bearing cage to baffle plate nuts and tighten to specification as shown.

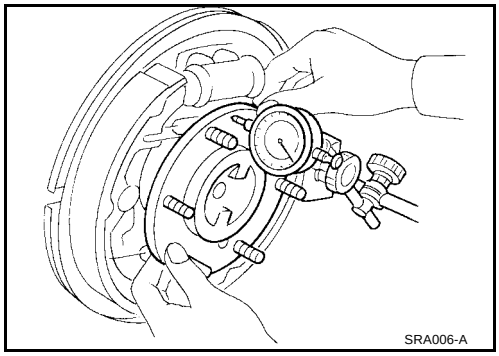


17. Check the axial end play as shown.

a. Check that the wheel bearings operate smoothly.

b. Check that the axial end play is within specification.

Axial end play : 0 mm (0 in)



18. Connect parking brake cable and brake tube.

- Bleed air from rear brakes. Refer to BR-9, "Bleeding Brake System" .

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Wheel Bearing (Rear)

EDS000Q5

2WD MODELS

Total end play mm (in)	0.02 - 0.15 (0.0008 - 0.0059)	
Available rear axle case end shims	Thickness mm (in)	Part number*
	0.05 (0.0020)	43086-P0110
	0.07 (0.0028)	43087-P0110
	0.10 (0.0039)	43088-P0110
	0.15 (0.0059)	43086-B9500
	0.20 (0.0079)	43089-P0110
	0.50 (0.0197)	43090-P0110
	1.00 (0.0394)	43036-01G00

*: Always check with the Parts Department for the latest parts information.

4WD MODELS

Total end play mm (in)	0 (0)
Wheel bearing preload at bearing cage bolt N (kg, lb)	6.9 - 48.1 (0.7 - 4.9, 1.5 - 10.8)