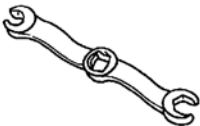
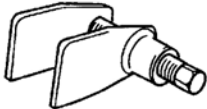
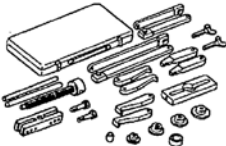
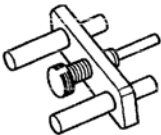


2002 BRAKES

Disc & Drum - Sedona

GENERAL

SPECIAL SERVICE TOOLS

Tool (Number and name)	Illustration	Use
0K130 430 019 Flare nut wrench		Used to remove and install brake pipe.
0K130 430 017 Disk brake expander		Used to assemble disc pad.
0K670 990 AA0 Bearing installer set		Used to remove sensor rotor.
0K9A4 430 001 Adjustment gauge		Used to adjust push rod gap.

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Fig. 1: Illustrating Special Service Tools
Courtesy of KIA MOTORS AMERICA, INC.

SPECIFICATIONS

Item		Specification
Brake pedal	Type	Suspended
	Pedal lever ratio	4.0
	Maximum stroke in (mm)	5.51 (140)
Master cylinder	Type	Tandem (with level sensor)
	Cylinder inner diameter in (mm)	ø1.0 (ø25.4)
Front disc brake	Type	Anchor disc
	Cylinder bore in (mm)	2 x ø1.787 (2 x ø45.4)
	Pad dimension (area x thickness) in ² x in (mm ² x mm)	9.998 x 0.41 (6,450 x 10.5)
	Disc plate dimension (outer diameter x thickness) in (mm)	10.866 x 1.02 (276 x 26)
Rear drum brake	Type	Leading-trailing
	Cylinder inner diameter in (mm)	ø0.88 (ø22.22)
	Lining dimension (area x thickness) in ² x in (mm ² x mm)	41.68 x 0.17 (26,900 x 4.5)
	Drum inner diameter in (mm)	ø10 (ø254)
	Shoe clearance adjustment	Incremental auto adjustment
Power brake unit	Type	Tandem vacuum booster
	Outer diameter in (mm)	8+9 (203+229)
Brake fluid	Type	FMVSS 116 : DOT-3, SAE J1703, DOT-4
Parking brake	Type	Mechanical
	Operating system	Foot lever
	Lever ratio	6.2
Brake force control system (Without ABS)	Type	LS PV (Load sensing proportioning valve)

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Fig. 2: Specifications
Courtesy of KIA MOTORS AMERICA, INC.

SYMPTOM-RELATED DIAGNOSTIC PROCEDURE

TROUBLESHOOTING GUIDE

Problem	Possible cause	Action
Poor braking	Leakage of brake fluid Air in system Worn pad or lining Brake fluid, grease, oil or water on pad or lining Hardening of pad or lining surface or poor contact Malfunction of disc brake piston Malfunction of master cylinder or wheel cylinder Malfunction of master vacuum unit Malfunction of check valve (vacuum hose) Damaged vacuum hose Deterioration of flexible hose Low engine vacuum Malfunction of dual proportioning valve	Repair Bleed air Replace Clean or replace Grind or replace Replace Repair or replace Replace Replace Replace Replace or replace Replace
Brakes pull to one side	Worn pad or lining Brake fluid, grease, oil or water on pad or lining Hardening of pad or lining surface or poor contact Abnormal wear or distortion of disc, drum, pad, or lining Malfunction of automatic adjuster Loose backing plate/dust cover mounting bolts Malfunction of wheel cylinder Improperly adjusted wheel alignment Unequal tire air pressures	Replace Clean or replace Grind or replace Repair or replace Repair or replace Tighten Repair or replace Adjust Adjust
Brakes do not release	No brake pedal free play Improperly adjusted push rod clearance Clogged master cylinder return port Contaminated brake fluid Weak brake pad or shoe return spring Wheel cylinder not returning properly Malfunctioning piston seal on disc brake Incorrect shoe position	Adjust Adjust Clean Clean or replace Replace Clean or replace Replace Clean or replace
Excessive pedal travel (too much pedal stroke)	Improperly adjusted pedal play Worn pad or lining Air in pipes Damaged master cylinder Contaminated brake fluid Damaged vacuum hose Low engine vacuum	Adjust Replace Bleed air Replace Replace Replace Repair
Abnormal noise or vibration during braking	Worn pad or lining Deteriorated pad or lining Brakes do not release Foreign material or scratches on disc plate or drum contact surface Loose backing plate/dust cover or caliper mounting bolts Damaged disc or drum contact surface Poor contact of pad or lining Insufficient grease on sliding parts Too much disc thickness variation	Replace Grind or replace Refer to above problem Clean Tighten Replace Repair or replace Grease Replace

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Fig. 3: Troubleshooting Guide (1 Of 2)
Courtesy of KIA MOTORS AMERICA, INC.

Problem	Possible cause	Action
Steering wheel pulls to one side	Dragging brake Malfunction of steering system Damaged or unbalanced wheel(s) Incorrect tire pressure Malfunction of suspension	Repair Repair Repair Repair Repair
Rear brakes do not release	No parking cable play Weak return spring Malfunction of wheel cylinder piston Distortion of parking cable Malfunction of auto adjuster	Adjust Replace Replace Repair or replace Repair or replace

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Fig. 4: Troubleshooting Guide (2 Of 2)
 Courtesy of KIA MOTORS AMERICA, INC.

DESCRIPTION AND OPERATION

FRONT DISC BRAKE

The front disc brake system consists of a double piston, brake disc rotor, a floating front disc brake caliper assembly, shoes and linings. The front disc brake caliper is mounted directly to the steering knuckle, using boots, sleeves, and 2 sleeve bolts which thread directly into the steering knuckle. The sleeve bolts, sleeves and sleeve boots control the side to side movement of the caliper. The piston seal is designed to assist in maintaining the proper brake shoe to rotor clearance. All the front brake forces generated during braking of the vehicle are taken up directly by the steering knuckles of vehicle. The molded rubber dust boots mount in a counter bore of the cylinder bore opening and in a groove which is machined in the outer surface of the piston. This prevents contamination of the piston and the bore area. As lining wears, reservoir level will go down. If fluid has been added, reservoir overflow may occur when the piston is pushed back into the new lining position. Overflowing can be avoided by removing a small amount of fluid from the master cylinder reservoir.

REAR DRUM BRAKE

The rear wheel drum brakes are two shoes, internal expanding type with an automatic adjust screw. The automatic adjuster screw is actuated each time the brakes are applied. The automatic adjuster screw is located directly below the wheel cylinder.

BRAKE SYSTEM COMPONENTS

STRUCTURAL VIEW

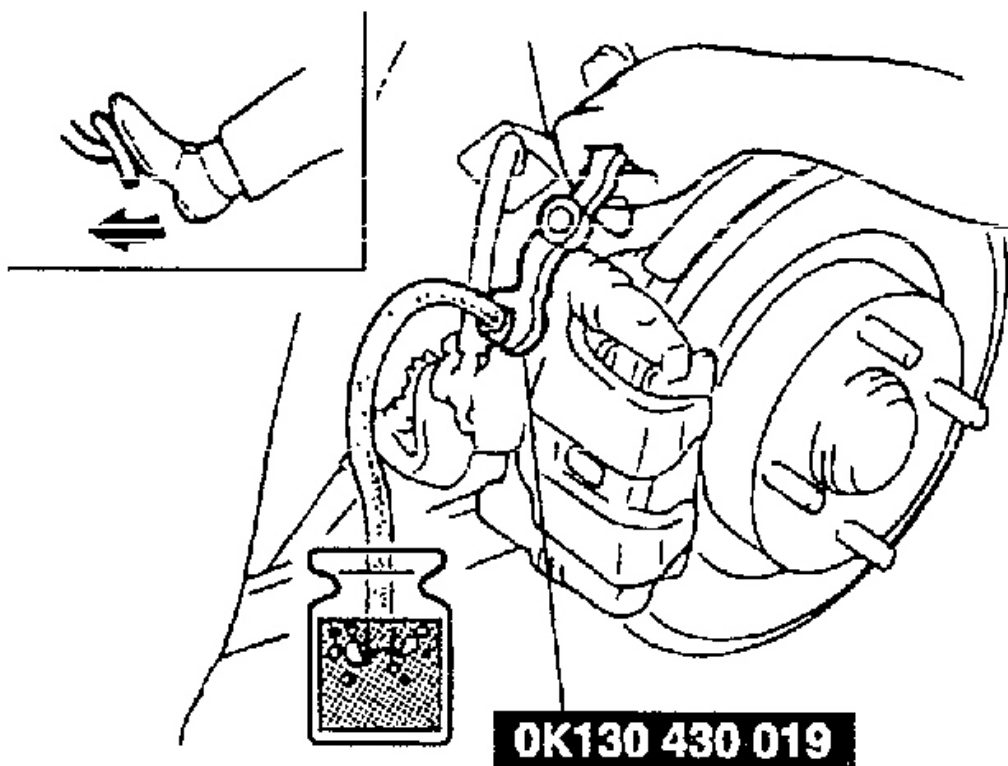
3. Place other end of vinyl tube in a clear container.
4. Depress brake pedal a few times, and then hold it in depressed position.
5. Have a second person loosen the bleeder screw, drain out fluid, and re-tighten screw with SST (OK130 430 019).

Tightening torque:

16-22 lb.ft (21-29 N.m, 2.2-3.0 kg.m)

CAUTION:

- Both people should stay in voice contact with each other.
- Be sure pedal remains depressed until air bleed screw is tightened.



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Fig. 6: Illustrating Bleeding System
Courtesy of KIA MOTORS AMERICA, INC.

6. Repeat steps 4 and 5 until no air bubbles are seen.
7. Check for correct brake operation.
8. Verify that there is no fluid leakage. Clean away any spilled fluid with rags.
9. After air bleeding, add brake fluid to reservoir until specified level.

NOTE: **Air bleeding must be started from bleeder screw that is farthest from the master cylinder.**

FLEXIBLE HOSE

INSPECTION

Check for scars, cracks, and swelling of flexible hose. Replace hose if necessary.

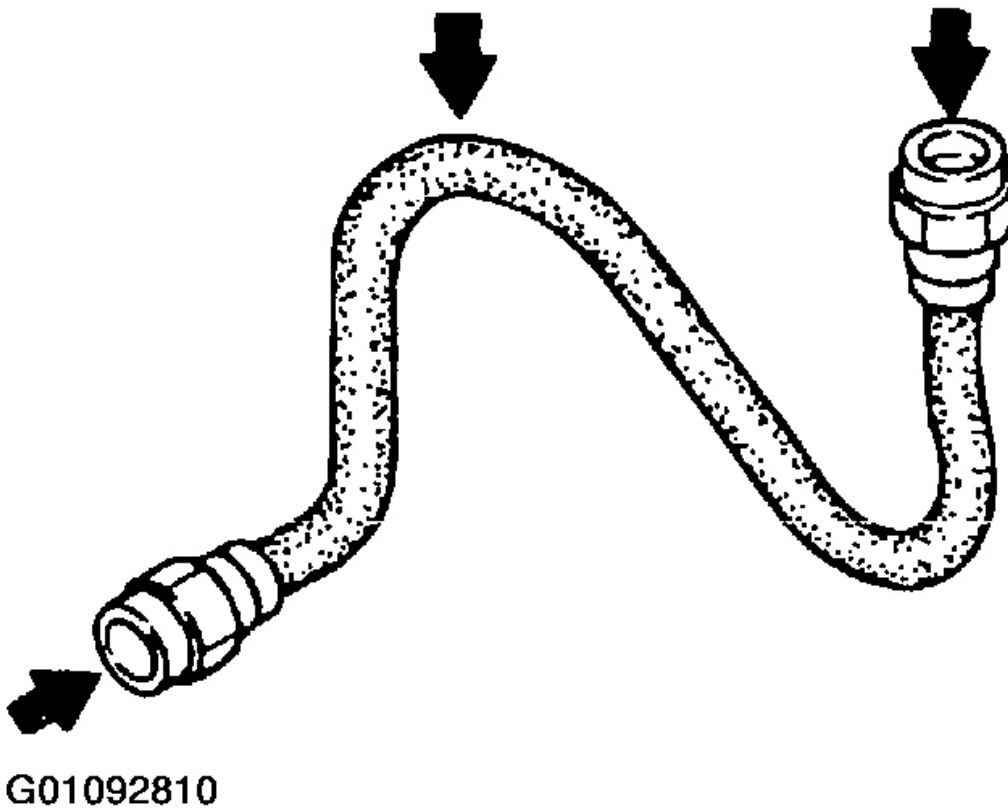


Fig. 7: Inspecting Flexible Hose
Courtesy of KIA MOTORS AMERICA, INC.

REMOVAL

1. Remove brake pipe with SST(OK130 430 019).
2. Disconnect clip and remove flexible hose from bracket.

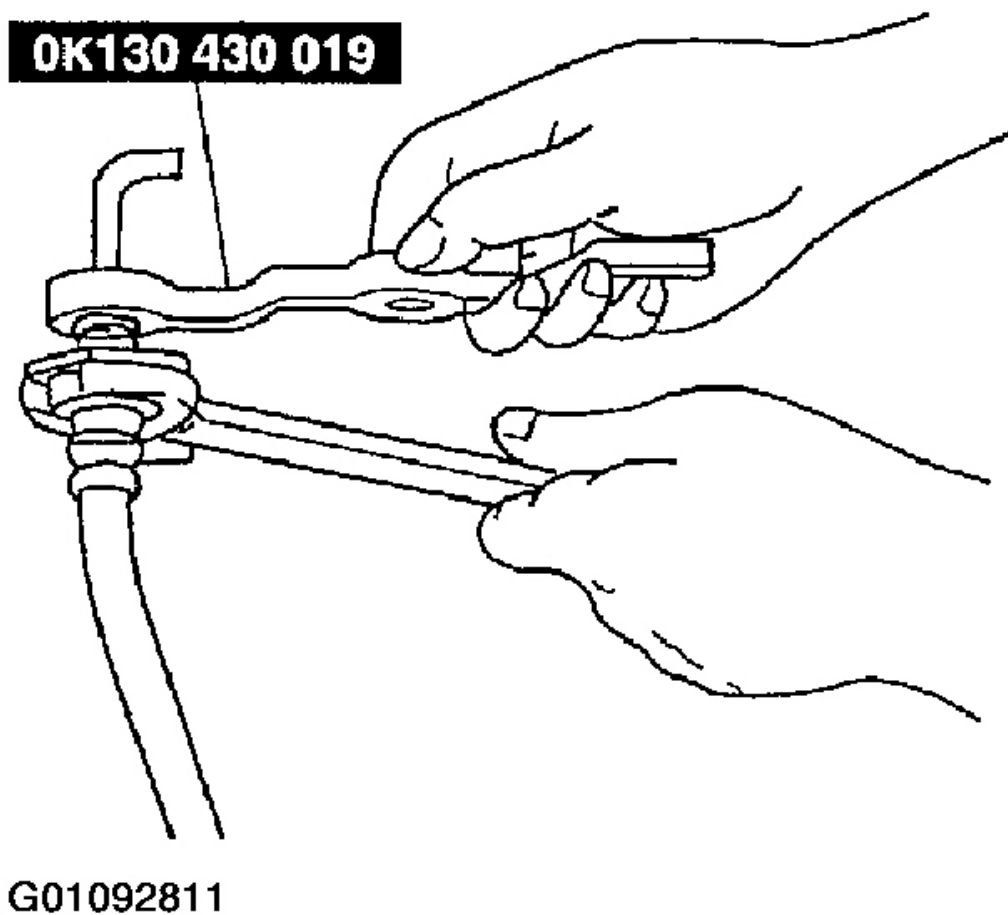
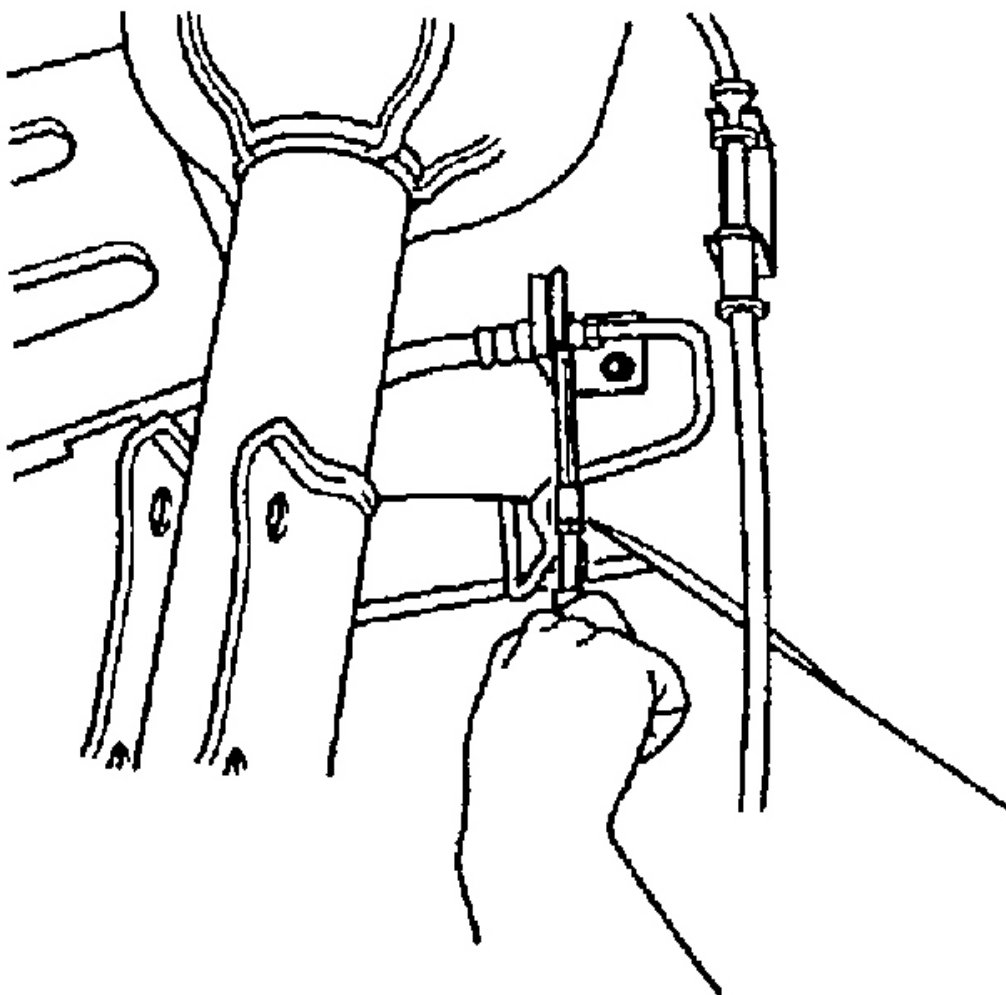


Fig. 8: Disconnecting Flexible Hose From Bracket
Courtesy of KIA MOTORS AMERICA, INC.

INSTALLATION

1. Place flexible hose in bracket and fix flexible hose with clip.



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Fig. 9: Installing Flexible Hose Into Bracket
Courtesy of KIA MOTORS AMERICA, INC.

2. Connect flexible hose to brake pipe and tighten flare nut with SST (OK130 430 019).

CAUTION:

- Verify that hose is not twisted.
- Verify that hose does not touch other parts when vehicle bounces or when steering wheel is turned fully right or left.

Tightening torque:

9-16 lb.ft (13-22 N.m, 1.3-2.2 kg.m)

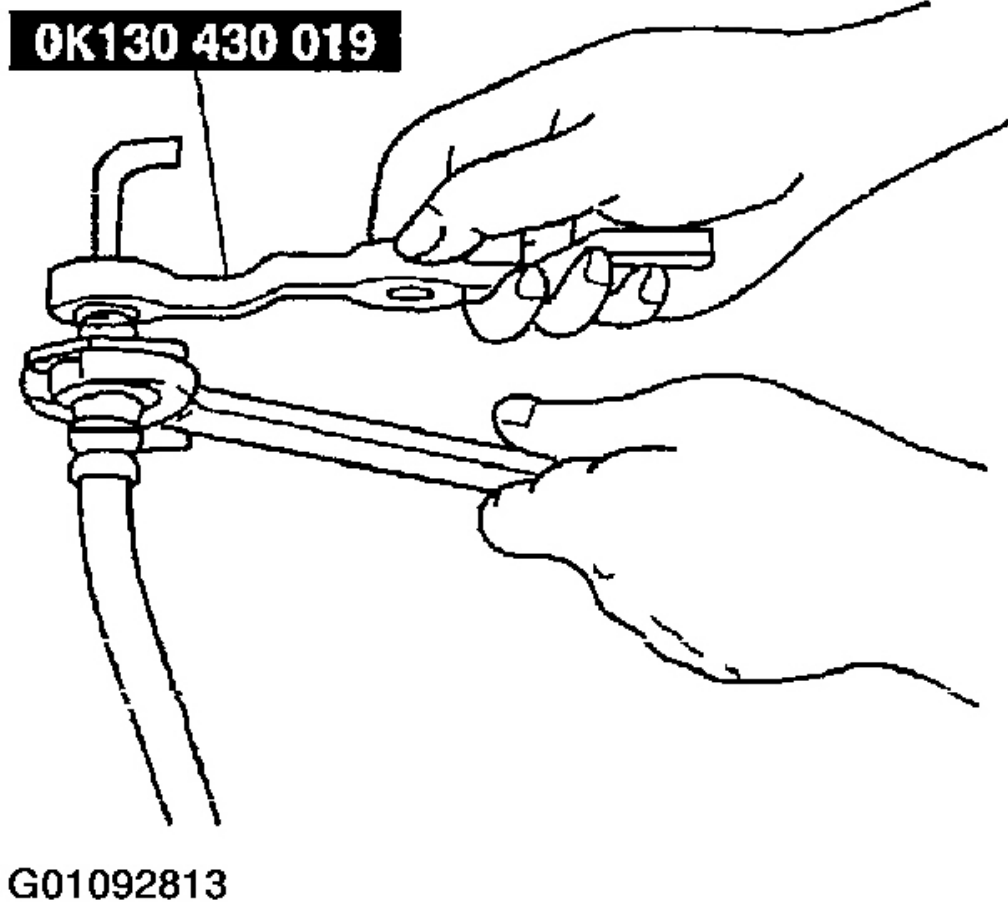
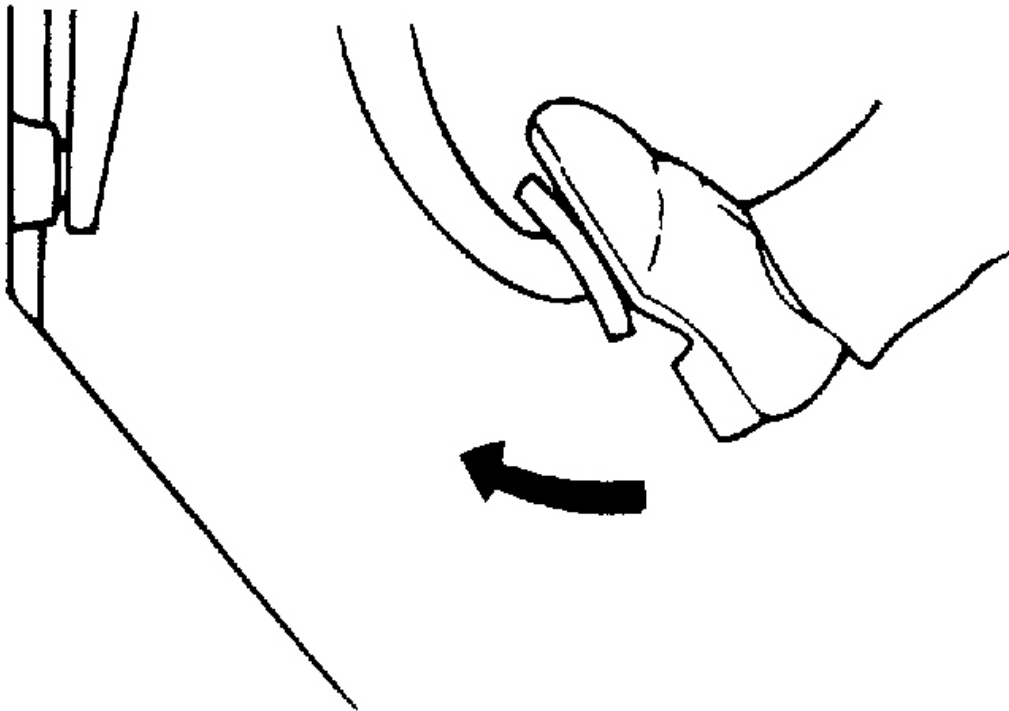


Fig. 10: Tightening Hose
Courtesy of KIA MOTORS AMERICA, INC.

BRAKE FLUID

Depress brake pedal several times and inspect for leakage in brake line system.



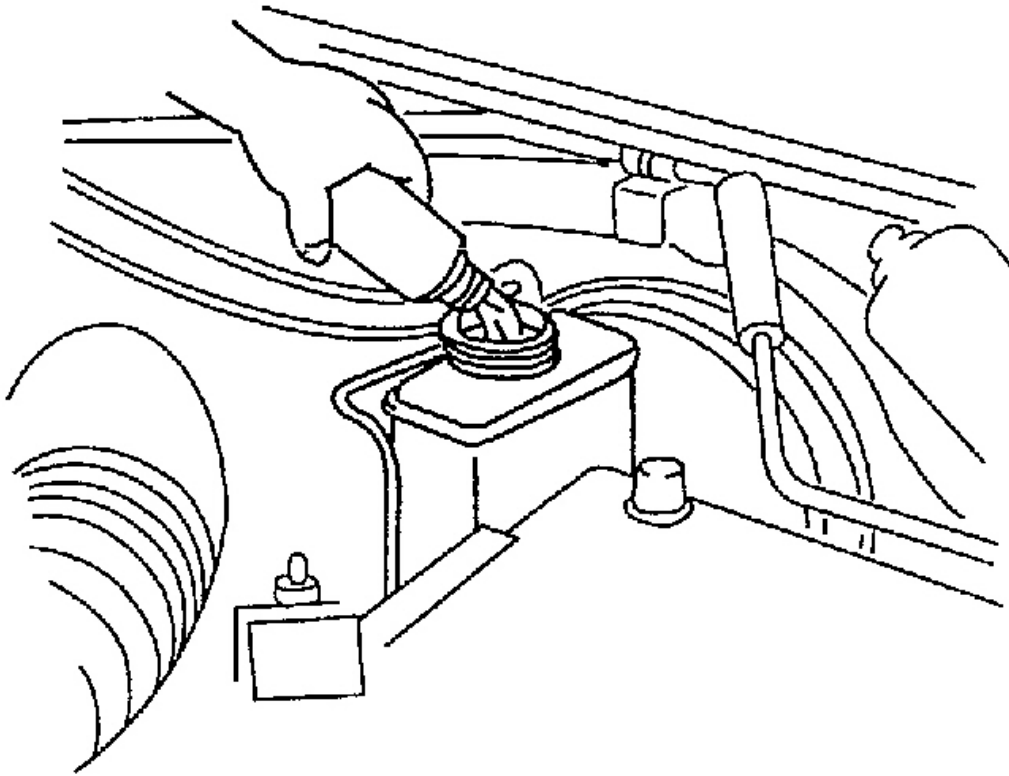
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Fig. 11: Checking For Fluid Leaks
Courtesy of KIA MOTORS AMERICA, INC.

LEAKAGE CHECK

Verify that fluid level in reservoir is between Max and Min lines on reservoir.

Add fluid if it is below Min.

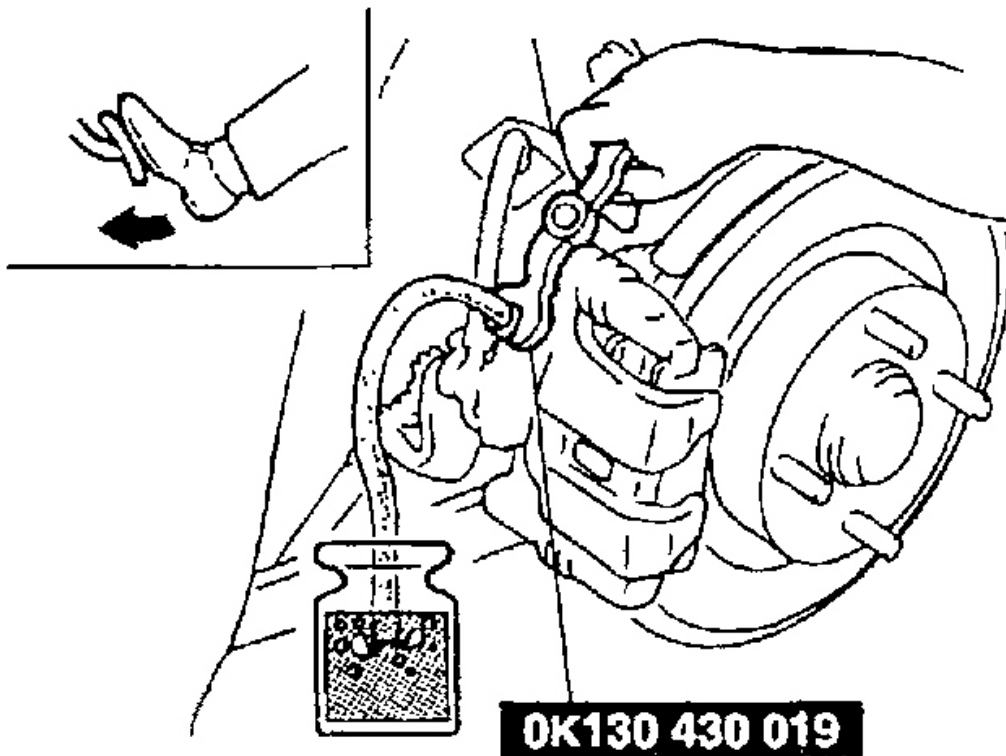


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Fig. 12: Adding Brake Fluid
Courtesy of KIA MOTORS AMERICA, INC.

REPLACEMENT

1. Follow procedure outline in air bleeding.
2. Continue bleeding and replacing the brake fluid until only clean fluid is expelled.
3. Fill reservoir to Max level.



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Fig. 13: Illustrating Bleeding System
Courtesy of KIA MOTORS AMERICA, INC.

BRAKE BOOSTER ASSEMBLY

COMPONENT

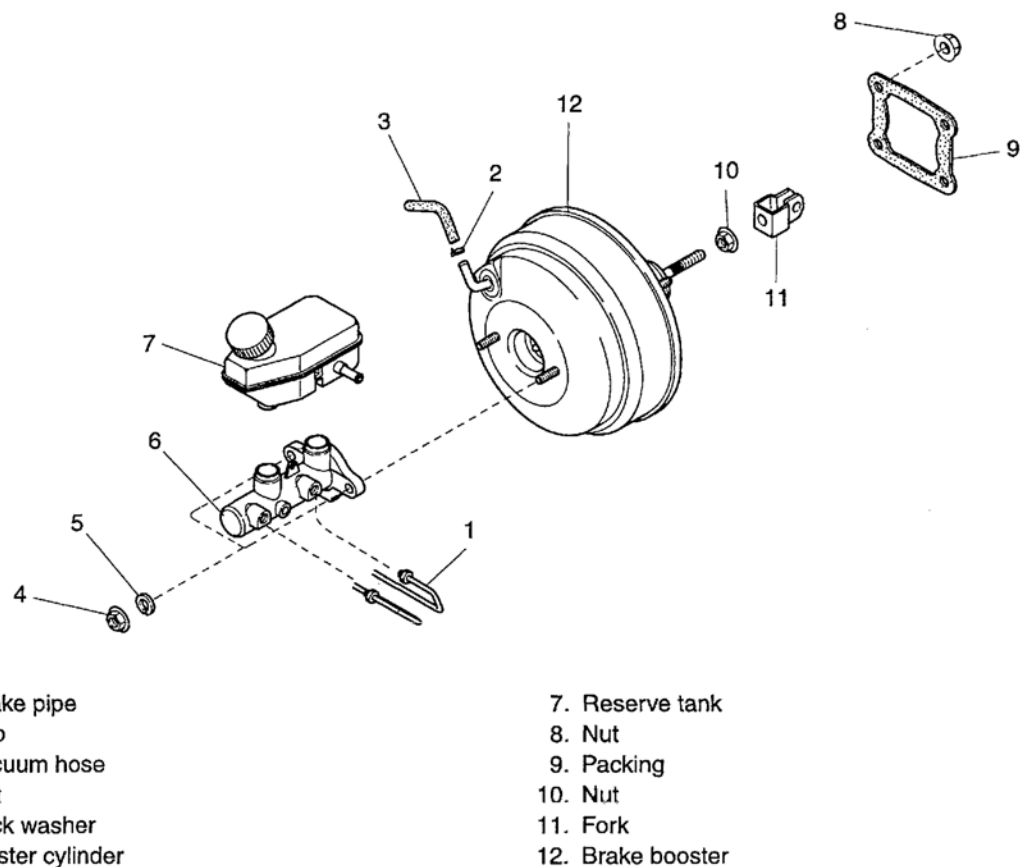


Fig. 14: Illustrating Brake Booster Components
Courtesy of KIA MOTORS AMERICA, INC.

REMOVAL

1. Remove a battery.
2. Disconnect the master cylinder electrical connector.

CAUTION: Before removing the brake pipes and reserve tank from master cylinder, be sure they are clean to prevent dirt particles from entering the brake hydraulic system.

3. Loosen the brake pipe flare nuts and disconnect the brake pipe from the brake master cylinder.
4. On manual transaxle vehicles, remove the clamp and pull the clutch master cylinder hose from the master cylinder reserve tank.
5. Cap the brake pipe and the brake master cylinder ports.
6. Remove two nuts and lock washers and remove the master cylinder.
7. Loosen the vacuum hose clamp and remove the vacuum booster hose from the power brake booster.

8. From inside vehicle, remove the pin and discard it.
9. Remove the clevis pin.
10. Remove the four power brake booster nuts.
11. Remove the power brake booster.
12. Remove the power brake booster gasket and discard it.

INSPECTION

MASTER CYLINDER

1. Measure a clearance between a push rod of power brake booster and a master cylinder piston by using the SST (OK993 430 032).

Clearance: 0 in (0 mm)

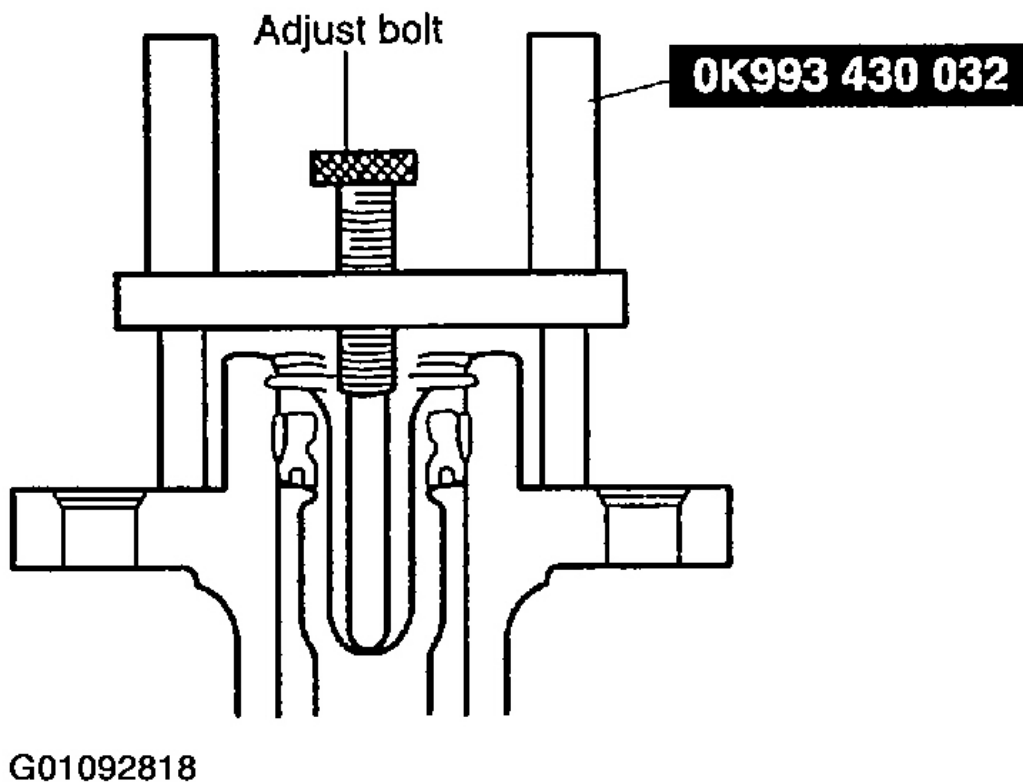


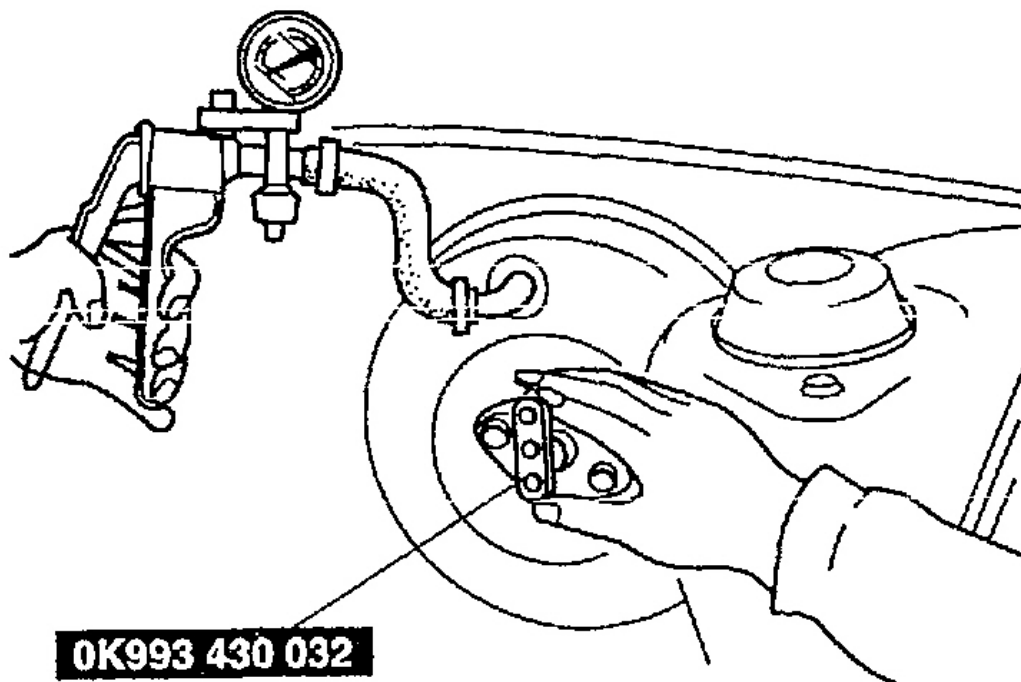
Fig. 15: Measuring Pushrod To Piston Clearance
Courtesy of KIA MOTORS AMERICA, INC.

2. If the clearance is out of the specification, a push rod will be turned to adjust the clearance.

Vacuum pressure inHg (mmHg)	Clearance between push rod and piston in(mm)
0 (0)	0.016~0.024 (0.4~0.6)
19.7 (500)	0.0039~0.016 (0.1~0.4)

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Fig. 16: Pushrod To Piston Clearance Specification
Courtesy of KIA MOTORS AMERICA, INC.



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Fig. 17: Measuring Pushrod To Piston Clearance

BRAKE FLUID LEVEL SENSOR

1. Check for a continuity by using an ohmmeter when the fluid level is below Min.

REPLACEMENT

CAUTION: When replacing the master cylinder on a vehicle, a new vacuum seal must be installed on the master cylinder. Use only procedure detailed below for installing the vacuum seal onto the master cylinder.

1. Install a new gasket onto the power brake booster studs.
2. Have an assistant position the power brake booster.
3. From inside vehicle, install four nuts.

Tighten the power brake booster nuts.

Tightening torque:

14-19 lb.ft (19-26 N.m, 1.9-2.6 kg.m)

4. Lubricate the clevis pin with grease and install it.
5. Install a new pin.
6. Position the vacuum booster hose to the power brake booster and install the vacuum hose clamp.
7. Position the brake master cylinder and install the two nuts.

Tightening torque:

7.2-11.5 lb.ft (10-16 N.m, 1.0-1.6 kg.m)

8. On manual transaxle vehicle, position the clutch master cylinder and install the clamp.
9. Uncap the brake pipes and the brake master cylinder ports.

CAUTION: When installing the primary and secondary brake pipes on master cylinder, be sure brake pipe Do Not contact any other components within the vehicle and that there is slack in the flexible sections of the pipes. This is required due to the movement between the ABS hydraulic control module (HCU) and the master cylinder, when the vehicle is in motion.

10. Connect the brake pipes to the brake master cylinder and tighten the brake pipe flare nuts.

Tightening torque:

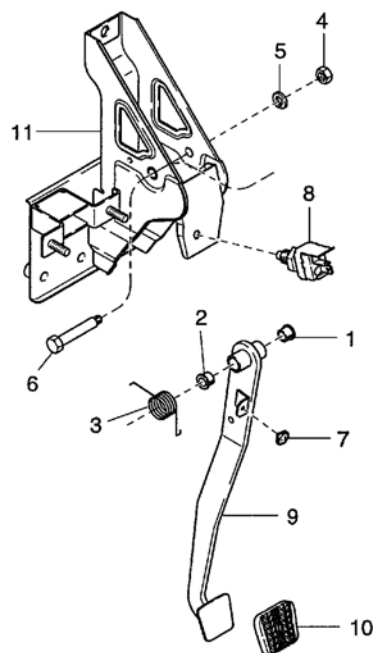
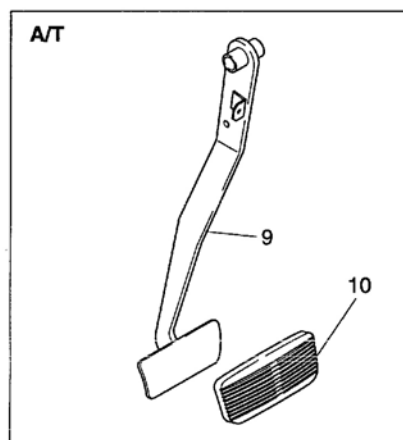
9-16 lb.ft (13-21 N.m, 1.3-2.2 kg.m)

11. Connect the brake master cylinder connector.
12. Install battery.
13. Bleed the brake system.

BRAKE PEDAL

COMPONENT

M/T



1. Bush
2. Bush
3. Return spring
4. Nut
5. Lock washer
6. Pivot bolt

7. Stopper rubber
8. Stop lamp switch
9. Brake pedal
10. Pedal pad
11. Master vacuum bracket

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Fig. 18: Illustrating Brake Pedal Assembly

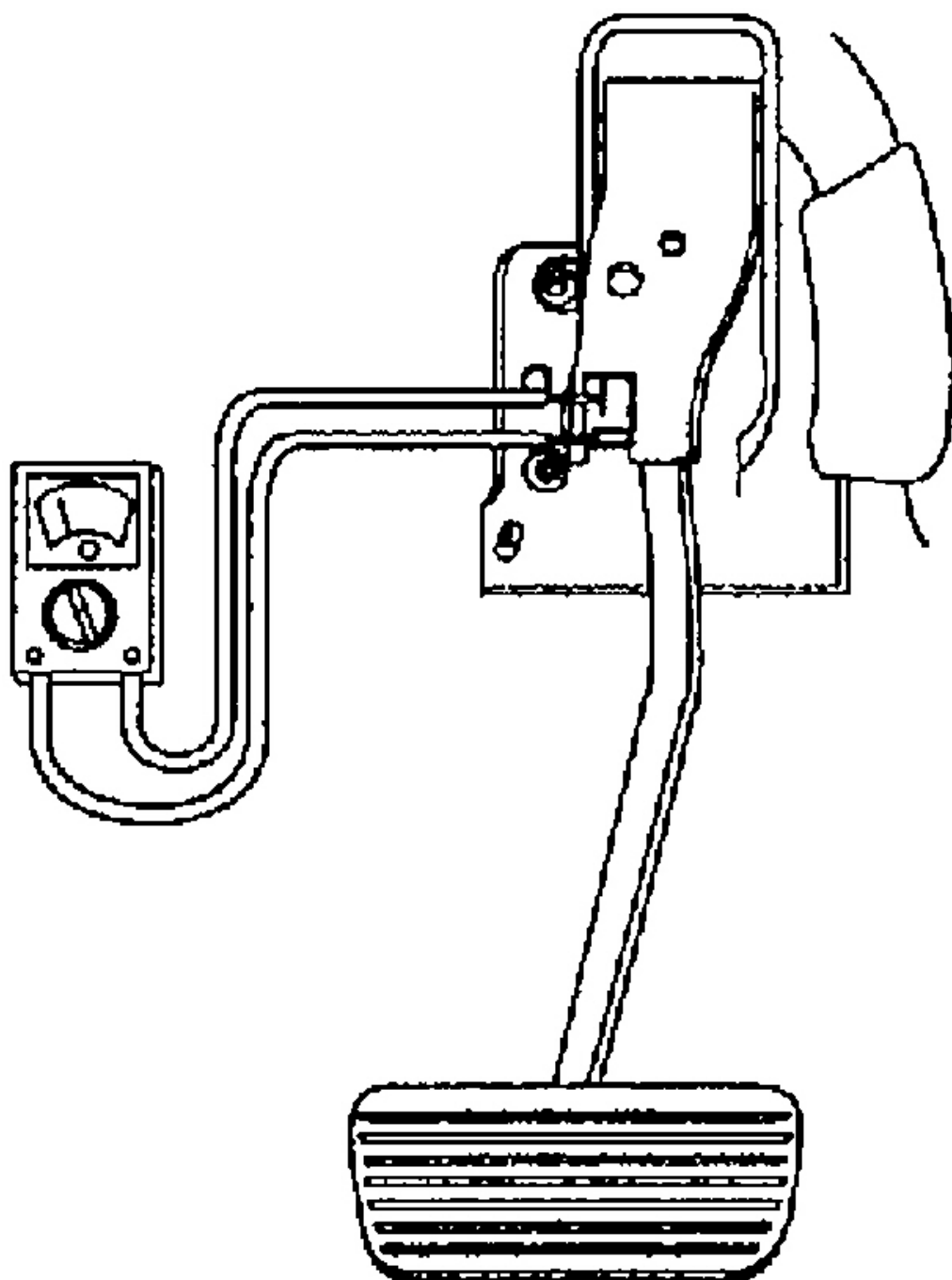
REMOVAL

1. Disconnect the stop lamp switch connector.
2. Remove the nut and washer from the pedal through pivot bolt.
3. Slide out the brake pedal through bolt.
4. Remove the brake pedal return spring from the brake pedal.
5. Remove the brake pedal.
6. Remove the brake pedal bushings from the brake pedal.
7. Remove the stopper rubber from the brake pedal.

INSPECTION

STOP LIGHT SWITCH

1. Remove the stop light switch.
2. Connect an ohmmeter to the stop light switch, and check a continuity with depressing the brake pedal.



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Fig. 19: Testing Stop Light Switch
Courtesy of KIA MOTORS AMERICA, INC.

REPLACEMENT

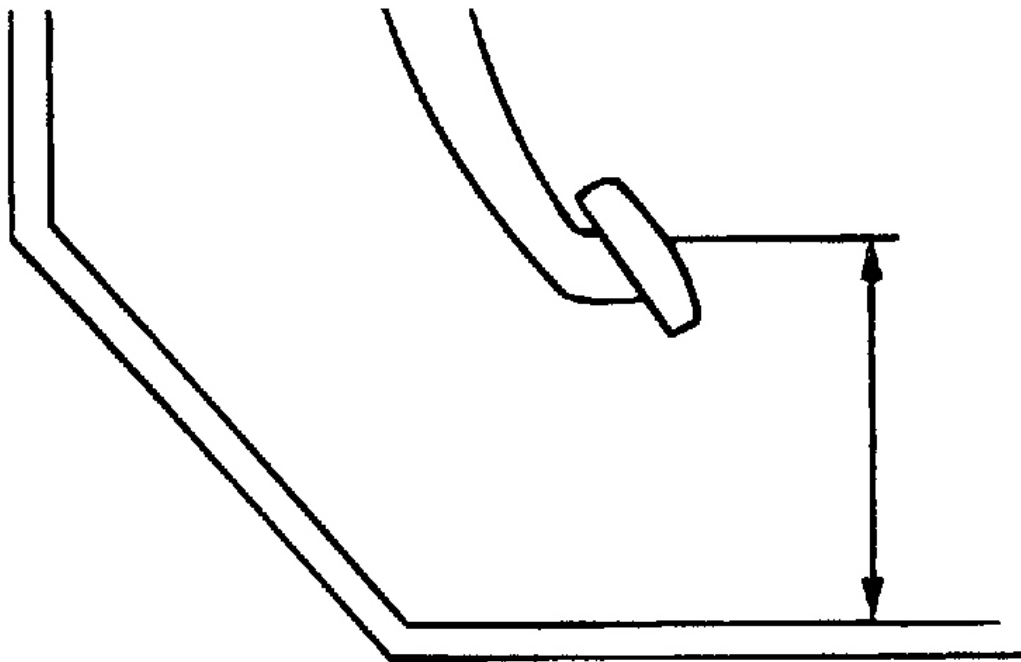
1. Lubricate the brake pedal bushings and install them to the brake pedal.
2. Position the brake pedal and slide the brake pedal through bolt into place.
3. Install the nut and washer onto the brake pedal through bolt.
4. Install the brake pedal return spring.
5. Connect the stop lamp switch connector.

BRAKE PEDAL HEIGHT

INSPECTION

Check whether the distance from the center of pedal pad upper side to the floor panel in the specification.

Pedal height: 7.29 +/- 0.12 in (185.2 +/- 3 mm)



G01092822

Fig. 20: Measuring Distance From The Center Of Pedal Pad Upper Side To The Floor Panel

ADJUSTMENT

1. Disconnect brake lamp switch connector.
2. Loosen the lock nut B, and turn the switch A counter-clockwise until it no longer contacts the brake pedal.
3. Loosen the lock nut D, and adjust the pedal height by turning a push rod C.

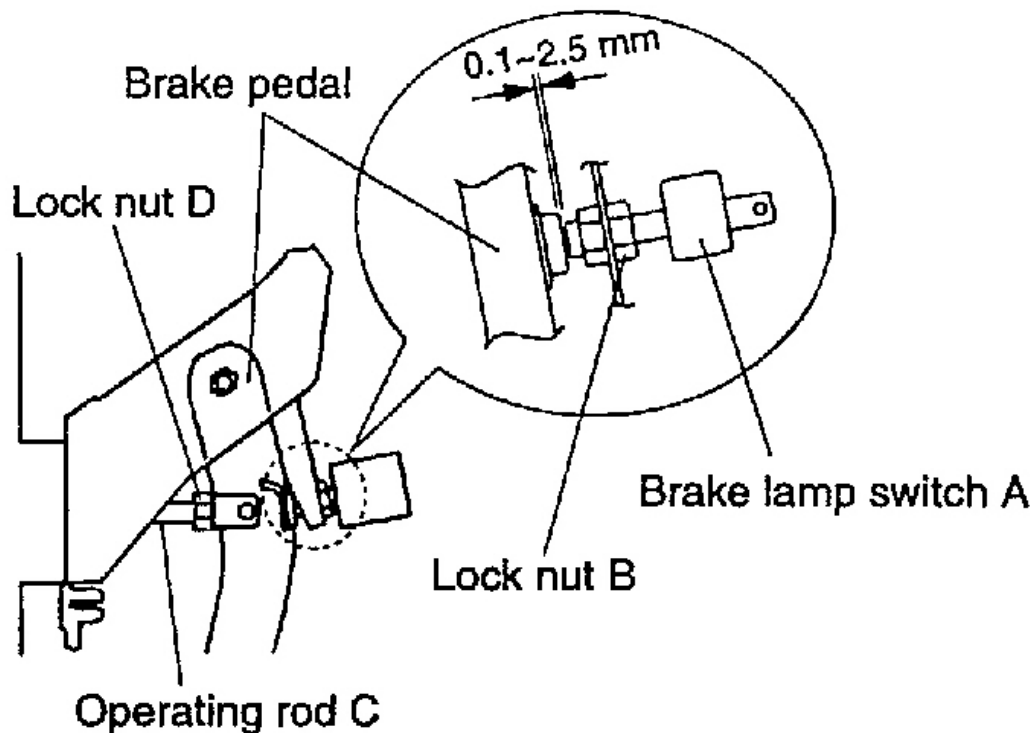
Pedal free play: 0.16-0.31 in (5-8 mm)

4. Tighten the operating rod lock nut D after adjusting pedal free play.
5. Turn the switch A till the white rod of the switch appears about 0.1-2.5 mm and tighten lock nut B.

Tightening torque:

10-13 lb.ft (14-18 N.m, 1.4-1.8 kg.m)

6. Connect the brake lamp switch connector.



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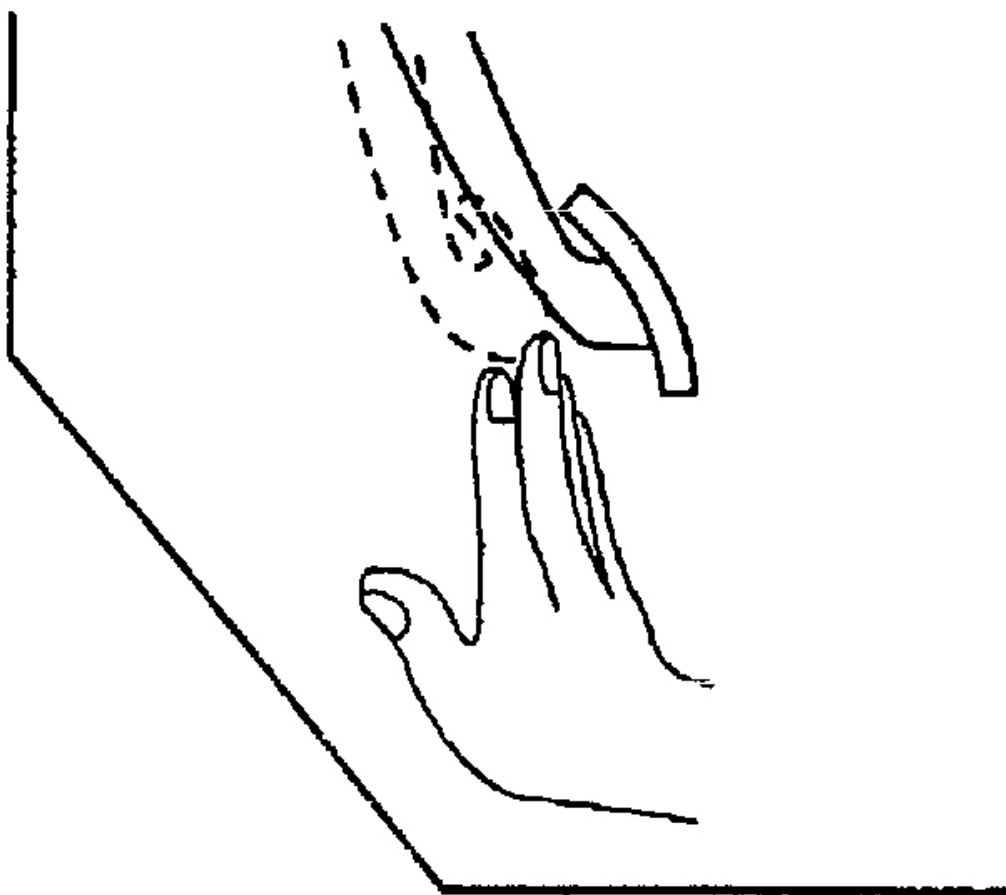
Fig. 21: Adjusting Brake Lamp Switch
Courtesy of KIA MOTORS AMERICA, INC.

PEDAL FREE PLAY

INSPECTION

1. Depress the pedal several times to eliminate the vacuum in the system.
2. Remove a spring clip, and check that the holes on a fork and a pedal are aligned, then assemble the clip again.
3. Check the pedal free play by depressing the pedal lightly with hand.

Pedal free play: 0.16-0.31 in (5-8 mm)



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Fig. 22: Checking The Pedal Free Play
Courtesy of KIA MOTORS AMERICA, INC.

ADJUSTMENT

1. Adjust the pedal free play as the method of adjustment of the brake pedal height.

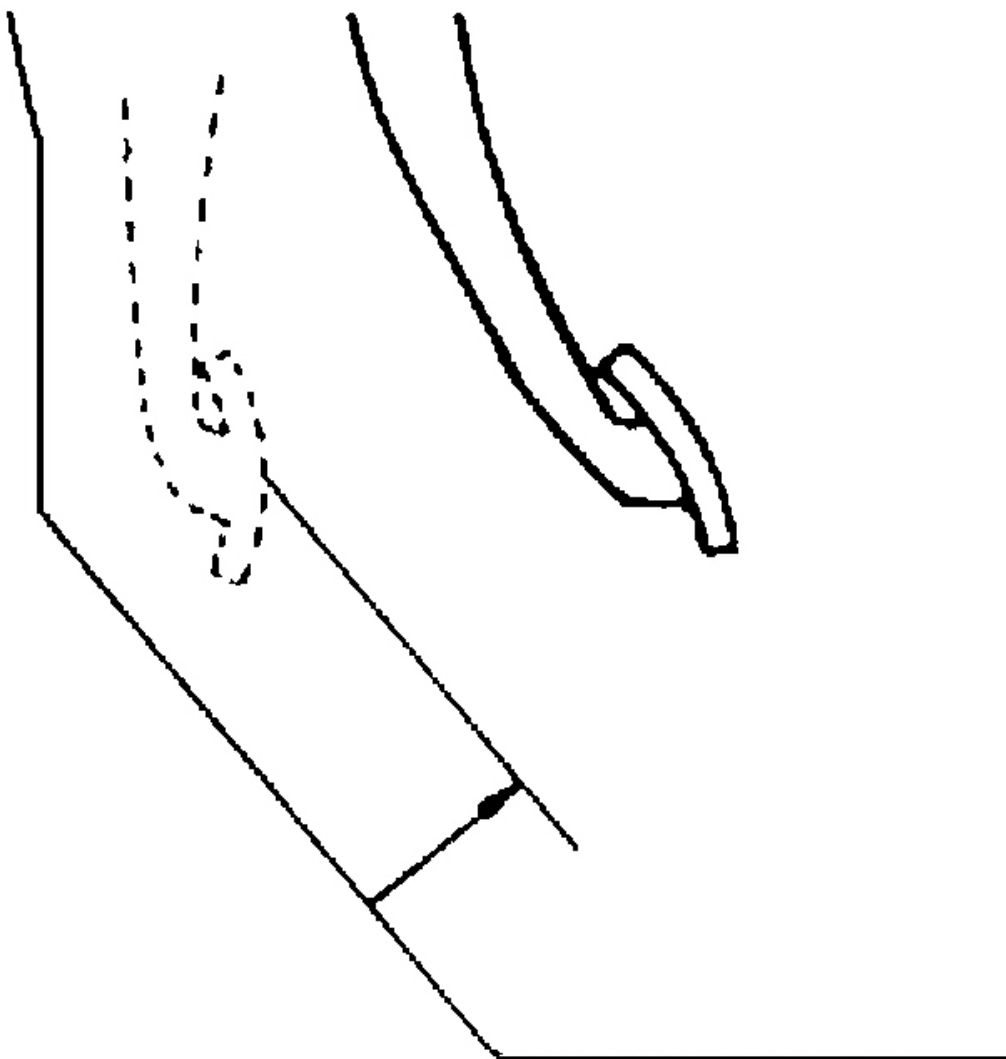
PEDAL-TO-FLOOR CLEARANCE

INSPECTION

1. Start the engine, and check that the clearance from a dash panel to a center of pedal pad upper side is in the specification when the pedal is depressed with 589 N (132 lb, 60 kg).

Pedal-to-floor distance: 1.02 in (26 mm)

2. If the clearance is less than the specification, following points have to be tested.
 1. Air insertion in the inside of brake system
 2. Wear of pads
 3. Excessive clearance of shoe
 4. Failed auto adjust
 5. Leakage of master cylinder



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Fig. 23: Measuring Pedal-To-Floor Distance
Courtesy of KIA MOTORS AMERICA, INC.

FRONT DISC BRAKE

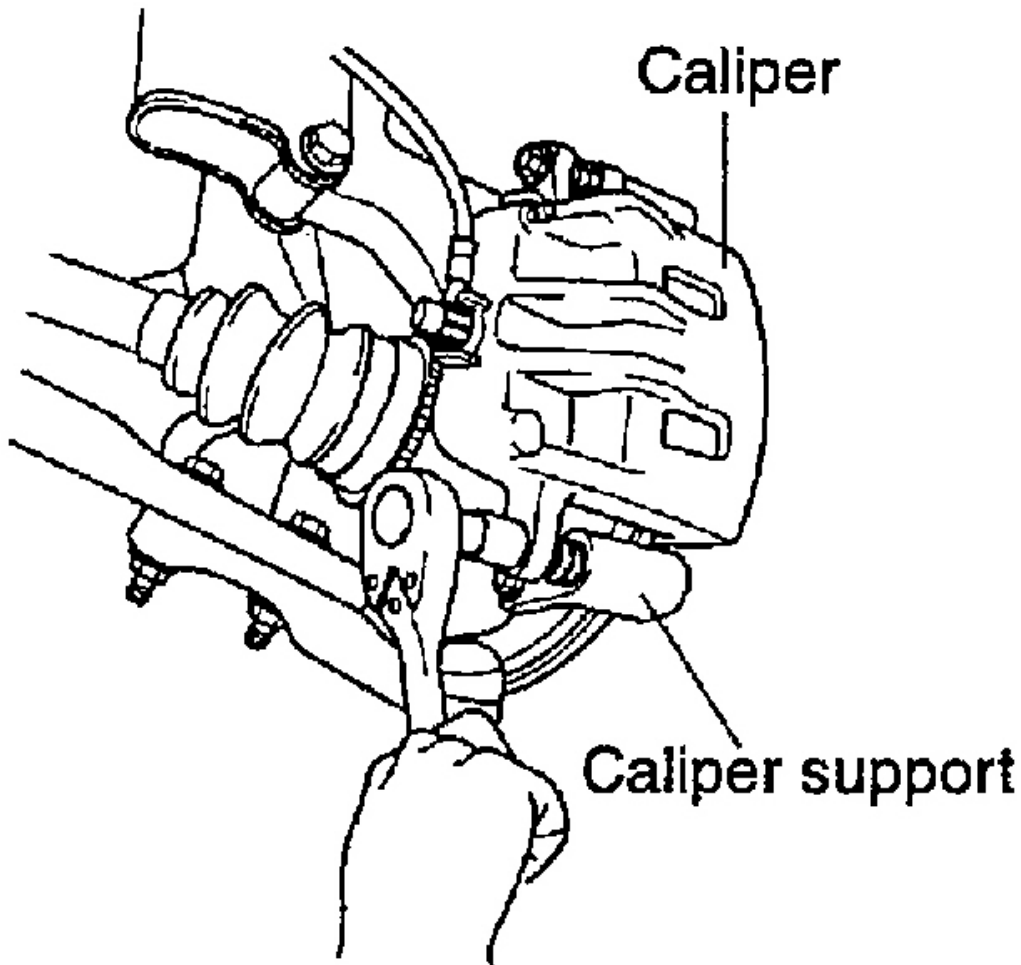
REMOVAL

1. Raise and support vehicle.

2. Remove front wheel and tire assemblies.

CAUTION: During service procedures, grease or any other foreign material must be kept off brake shoe assemblies, and braking surfaces of brake drum and external surfaces of hub/bearing assembly.

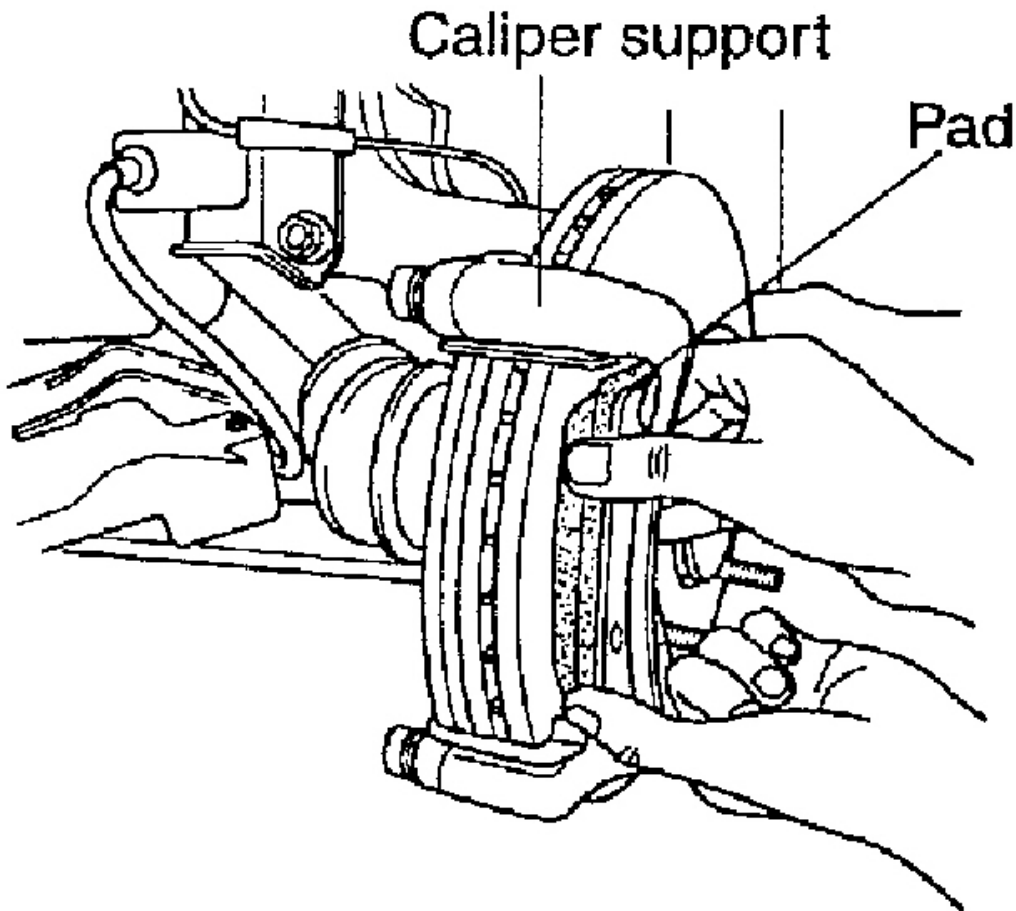
3. Loosen the two caliper mounting bolts from the caliper support.



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Fig. 24: Loosening The Two Caliper Mounting Bolts
Courtesy of KIA MOTORS AMERICA, INC.

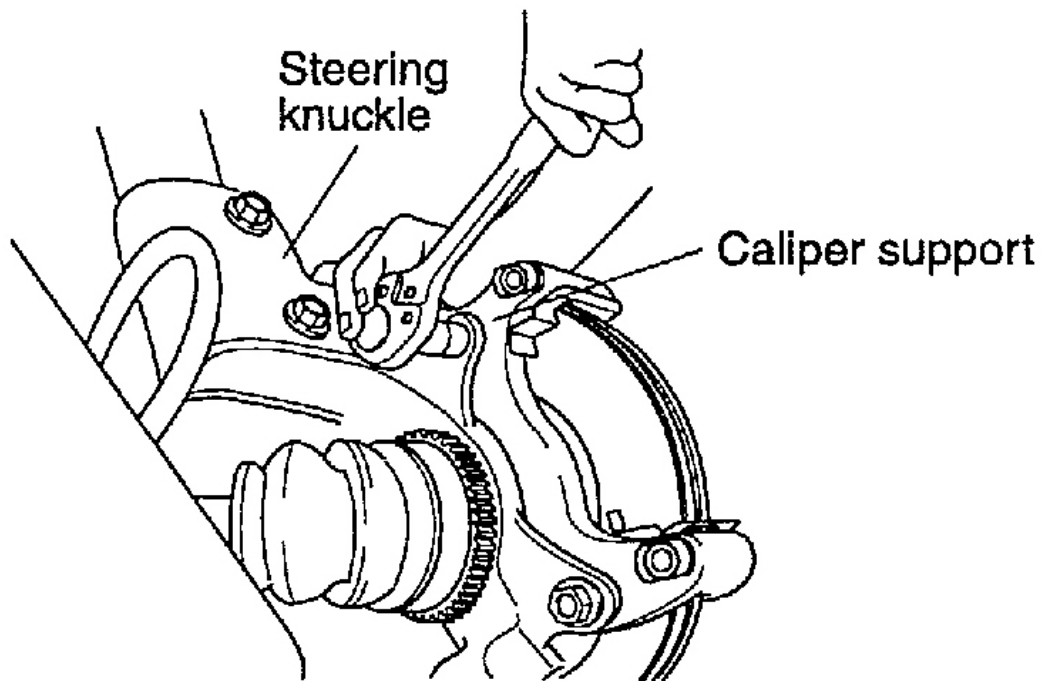
4. Remove caliper from caliper support.
5. Support caliper firmly to prevent weight of caliper from being supported by the brake fluid flexible hose. Supporting weight of caliper by the brake fluid flexible hose, can damage the flexible brake hose.
6. Remove the pad assembly from the caliper support.



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Fig. 25: Removing The Pad Assembly
Courtesy of KIA MOTORS AMERICA, INC.

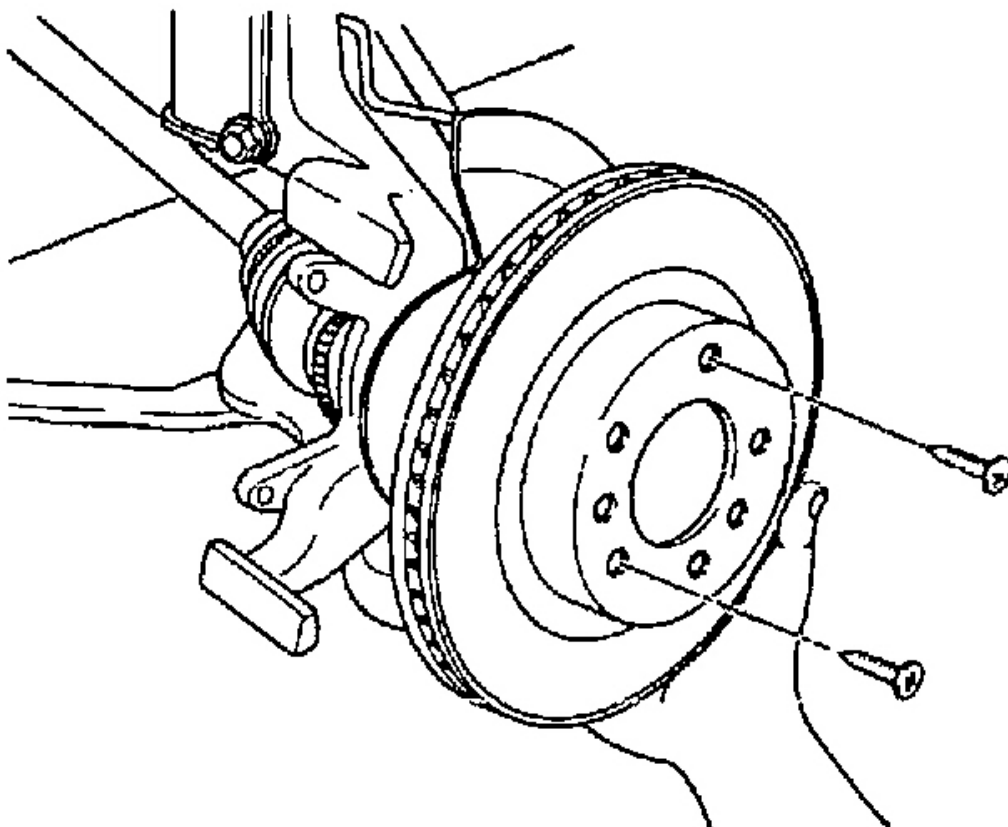
7. Loosen the two caliper support mounting bolts and remove the caliper support from the steering knuckle.



G01092830

Fig. 26: Loosening The Caliper Support Mounting Bolts
Courtesy of KIA MOTORS AMERICA, INC.

8. Loosen the two disc plate screws from the front hub assembly. Then pull the disc plate out from the front hub assembly.



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Fig. 27: Removing The Disc Plate Out From The Front Hub Assembly
Courtesy of KIA MOTORS AMERICA, INC.

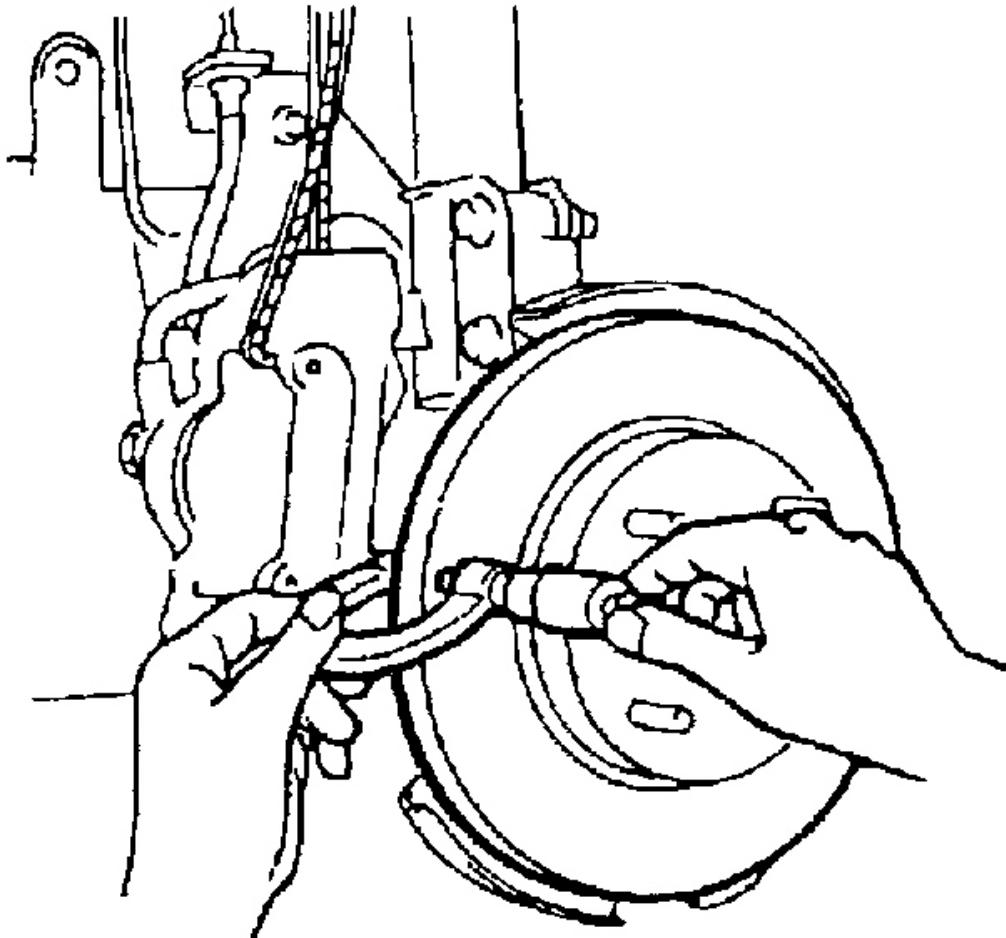
INSPECTION

DISC PLATE

1. Measure thickness of disc plate.

Standard: 1.02 in (26 mm)

Minimum: 0.94 in (24 mm)



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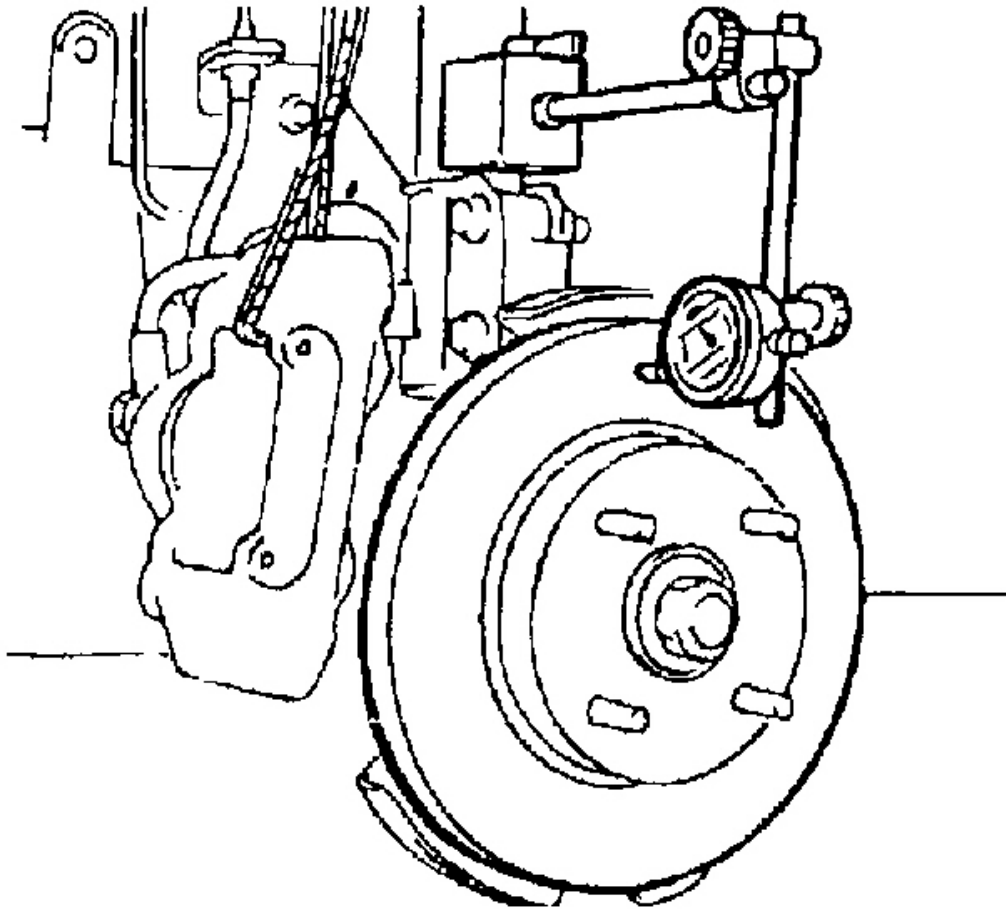
Fig. 28: Measuring Thickness Of Disc Plate
Courtesy of KIA MOTORS AMERICA, INC.

2. Measure runout at 0.47-0.63 in (12-16 mm) inside from outer edge of contact surface of disc pad.

Runout: 0.002 in (0.05 mm) Max.

CAUTION:

- There must be no wheel bearing looseness.
- Measurement location is outer edge of disc plate surface.



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Fig. 29: Measuring Disc Plate Surface Runout
Courtesy of KIA MOTORS AMERICA, INC.

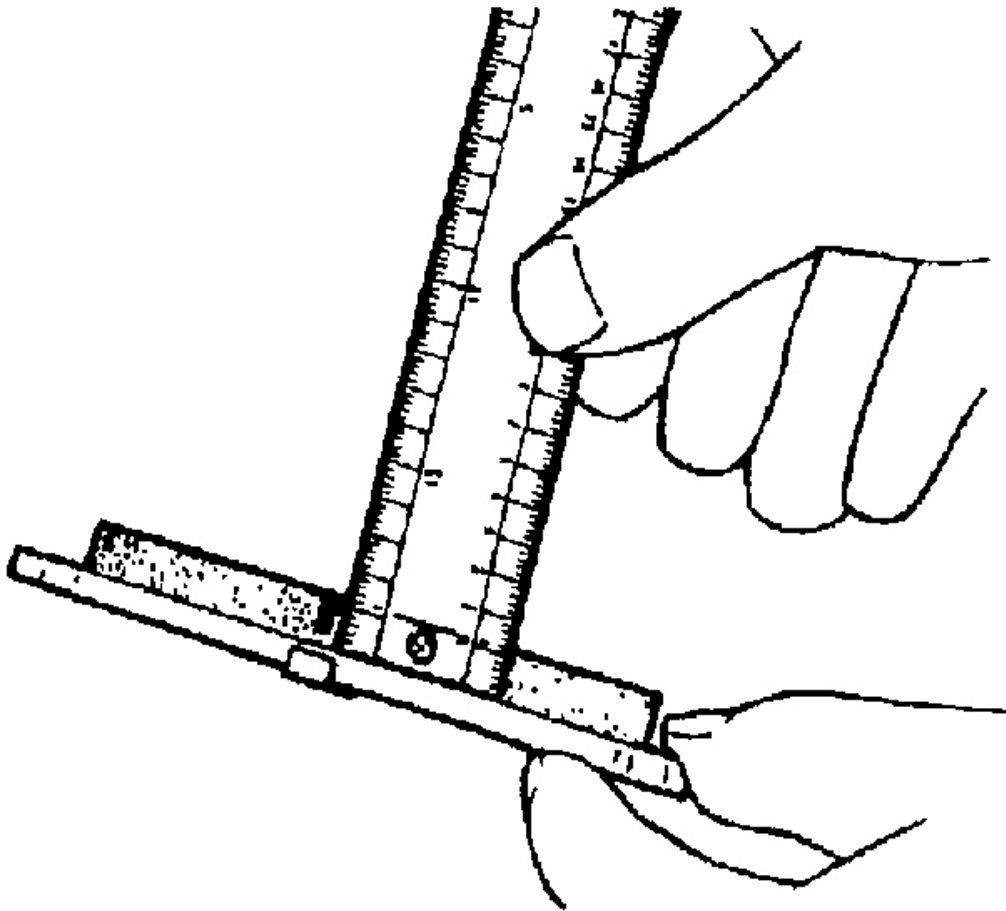
DISC BRAKE PAD

1. Check facing for oil or grease abnormal wear, cracks, and deterioration or damage from heat. Measure thickness of lining.

Specified thickness: 0.41 in (10.5 mm)

Minimum: 0.1 in (2.5 mm)

2. Visually check for damage or wear on the guide plate.



G01092834

Fig. 30: Measuring Thickness Of Lining
Courtesy of KIA MOTORS AMERICA, INC.

REPLACEMENT

NOTE: Perform the following steps after the replacement.

- Fill the fluid and bleed air.
- Check the leakage of fluid.
- Depress the brake pedal several times, and check that the brake does not have any friction when the wheel is turned by hand.

1. Install the disc plate to the front hub assembly before tightening the two disc plate screws.

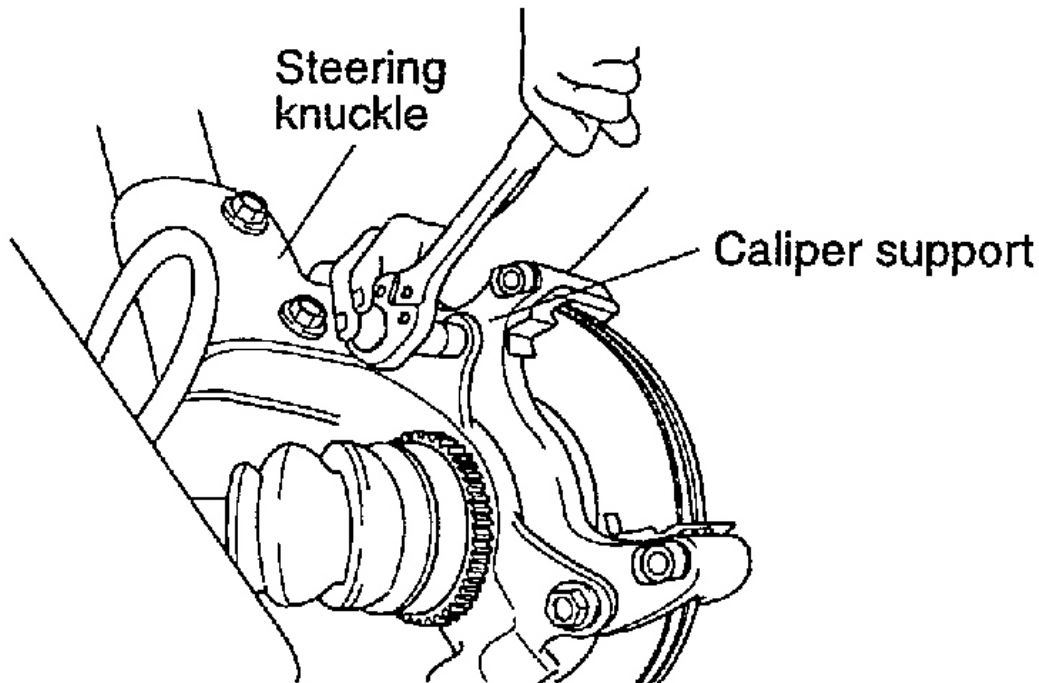
Tightening torque:

7-11 lb.ft (10-15 N.m, 1.0-1.5 kg.m)

2. Install the caliper support to the steering knuckle and tighten the caliper support mounting bolts.

Tightening torque:

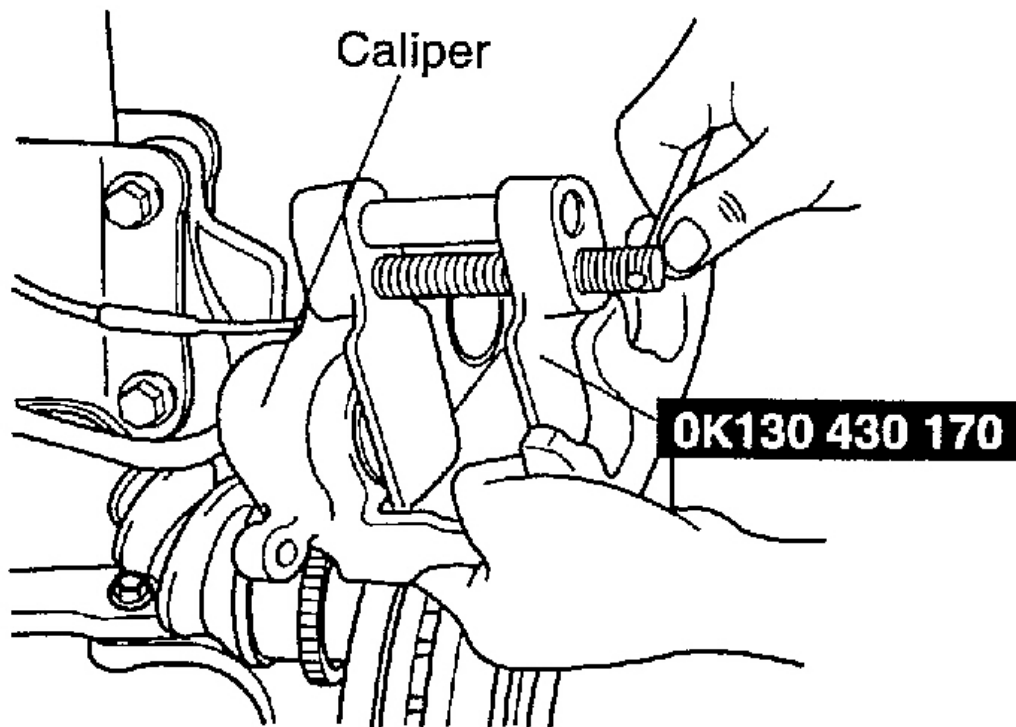
7.2-9.4 lb.ft (9.8-12.7 N.m, 1.0-1.3 kg.m)



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Fig. 31: Installing The Caliper Support To The Steering Knuckle
Courtesy of KIA MOTORS AMERICA, INC.

3. Install the pad assembly to the caliper support.
4. Expand the piston using SST (OK130 430 017) and install the caliper into caliper support.



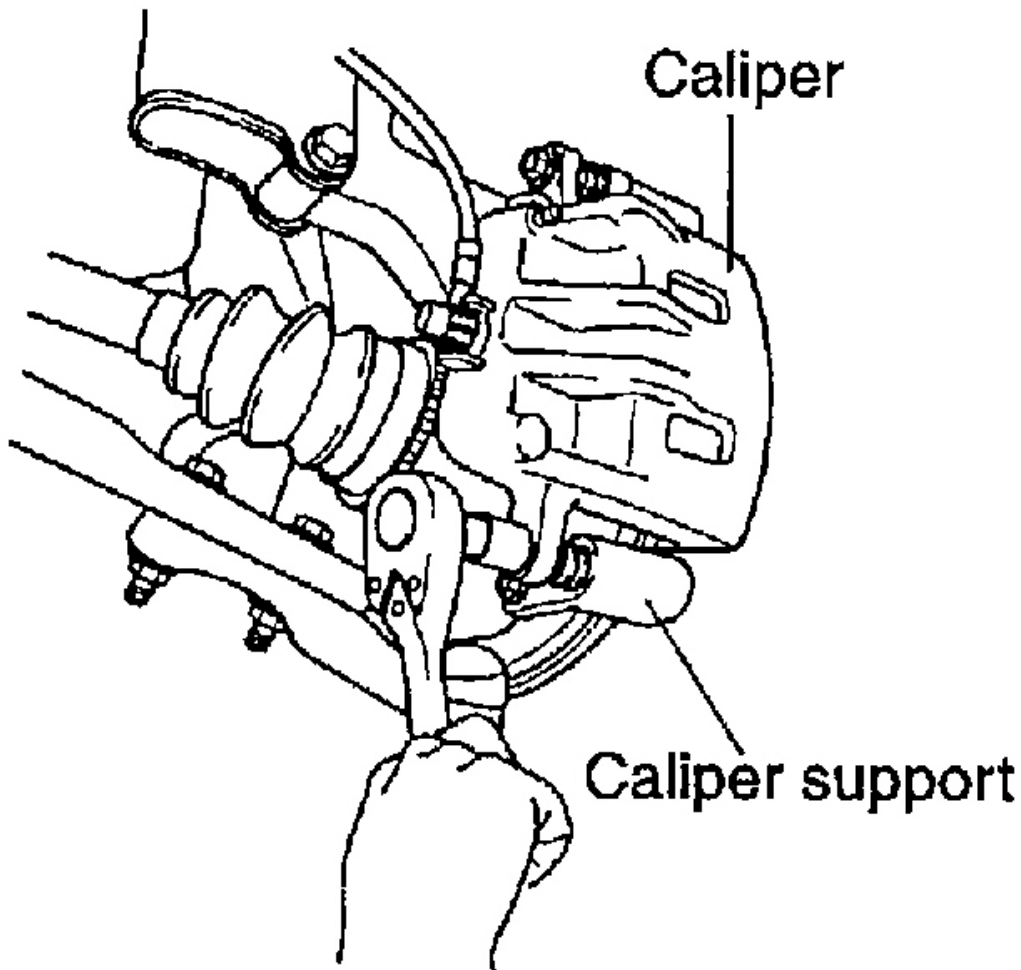
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Fig. 32: Expanding The Caliper Piston
Courtesy of KIA MOTORS AMERICA, INC.

5. Tighten the caliper mounting bolts.

Tightening torque:

18-26 lb.ft (24.5-35.3 N.m, 2.5-3.6 kg.m)



G01092837

Fig. 33: Tightening The Caliper Mounting Bolts
Courtesy of KIA MOTORS AMERICA, INC.

CAUTION: Use care when installing the caliper assembly onto the steering knuckle, so the seals on the caliper bushings do not get damaged by the steering knuckle bosses.

6. Install wheel and tires.
7. Tighten hub nuts.

Tightening torque:

65-79 lb.ft (88-108 N.m, 9.0-11 kg.m)

8. Before moving vehicle, pump the brake pedal several times to insure vehicle has a firm brake pedal.

LOAD SENSING PROPORTIONING VALVE (LSPV)-WITHOUT ABS

DESCRIPTION

1. LSPV is installed between a master cylinder and a rear wheel brake to vary the fluid pressure on the rear wheel brake.
2. Install the valve on the frame and connect it to the rear axle by using a spring. The distance between the valve and rear axle will be varied by the loading condition. This distance difference will reveal as a different spring length, and it will make the valve working.

INSPECTION

STEP 1.

1. Check whether the rear brake applied earlier than the front brake when the vehicle is empty and stops suddenly.
2. Check the brake works effectively enough when empty vehicle, full loading, and moving backward.
3. Check the brake works effectively when the vehicle moves straight forward and with full loading.

STEP 2.

1. If there is a problem with step 1, check the pressure of LSPV.
2. The pressure can be checked by using a pressure gage for both input and output.
3. The measuring condition will be Empty vehicle + One passenger.
4. Stop the engine and set the vacuum of power brake unit to 0. (Depress the brake pedal 10 times).

STEP 3.

1. Disconnect the outlet pipe joint of LSPV, and install a pressure gage 9810 kPa (100 kg/cm^2 , 1422 psi) at there.
2. Disconnect the front brake pipe from the master cylinder, and install a pressure gage.
3. Bleed the air from the brake system.
4. Depress the brake pedal until the master cylinder pressure equal to A, then record rear brake pressure A'.
5. Depress the brake pedal again, and apply additional pressure until the pressure equal to B, then record pressure B'.

CAUTION: If the pressure exceeds the specification, replace the LSPV.

Specification (Dynamic condition)

Item	Slop (tan θ)	Split point
L.L.V.W	0.25	35 bar
G.V.W	0.25	80 bar

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Fig. 34: Load Sensing Proportioning Valve Specifications (1 Of 3)
Courtesy of KIA MOTORS AMERICA, INC.

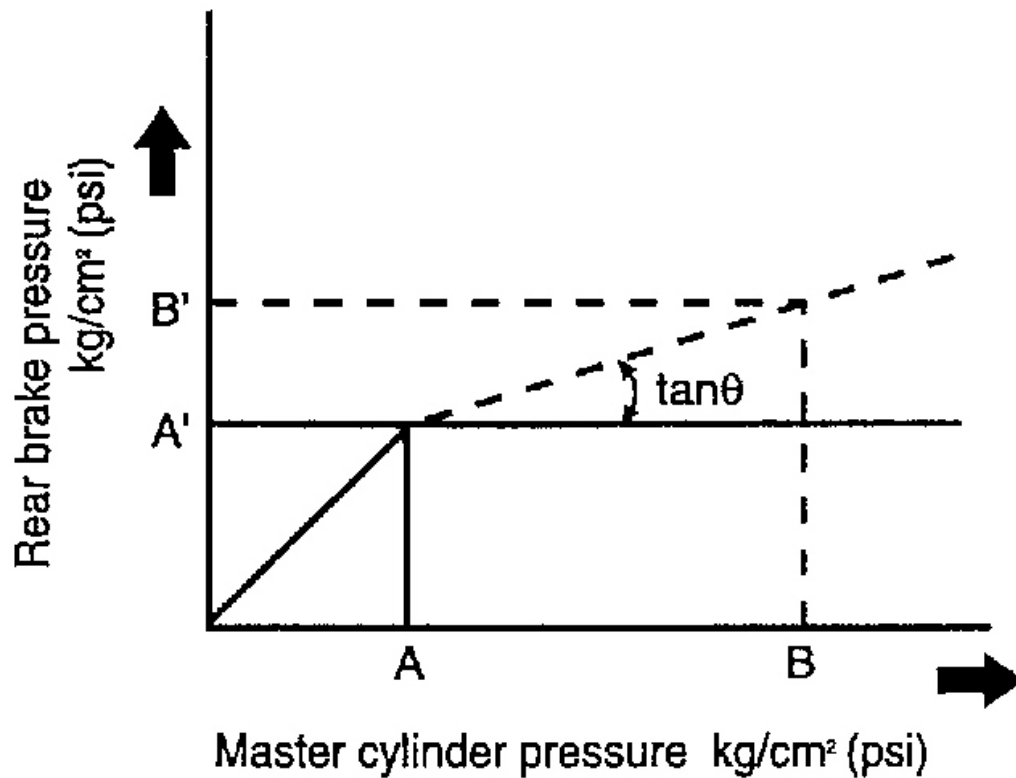
Unit : kg/cm² (psi)

Master cylinder output pressure		Rear brake pressure
L.L.V.W	A: 35.69 (507.6)	A': 35.69 (507.6)
	B: 71.38 (1015.3)	B': 44.61 (634.5)
G.V.W	A: 81.58 (1160.3)	A': 81.58 (1160.3)
	B: 91.77 (1305.3)	B': 84.13 (1196.6)

L.V.W : Light Load Vehicle Weight
G.V.W : Gross Vehicle Weight

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Fig. 35: Load Sensing Proportioning Valve Specifications (2 Of 3)
Courtesy of KIA MOTORS AMERICA, INC.



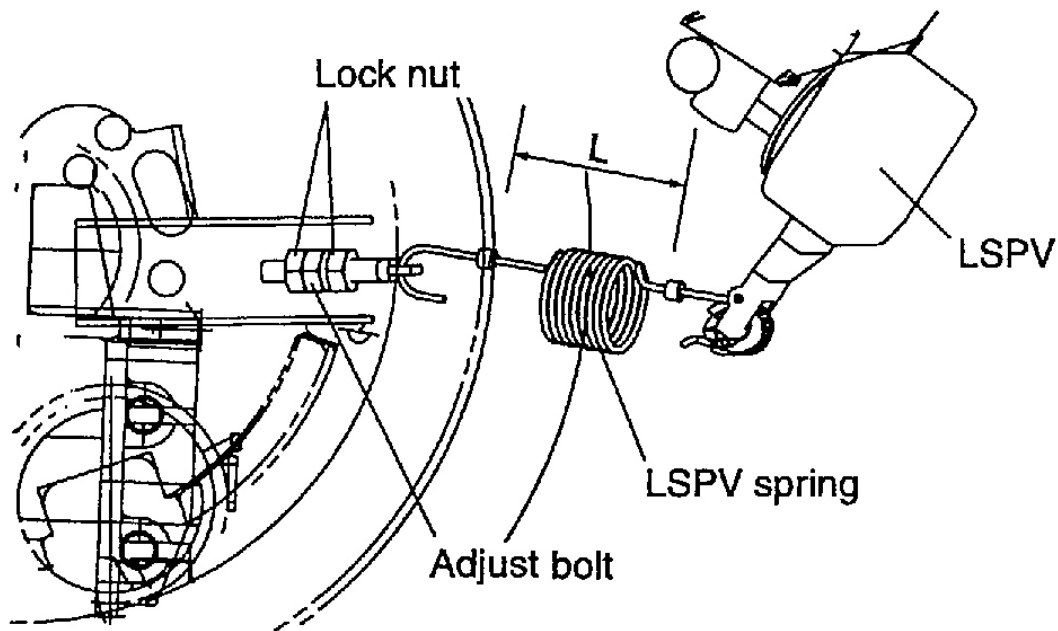
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Fig. 36: Load Sensing Proportioning Valve Specifications (3 Of 3)
 Courtesy of KIA MOTORS AMERICA, INC.

ADJUSTMENT

1. Empty vehicle + One passenger.
2. Place the vehicle on a leveled ground.
3. Loosen the lock nut and turn the adjust bolt to adjust the spring length "L" to the specifications.

L = 90 mm (3.54 in)



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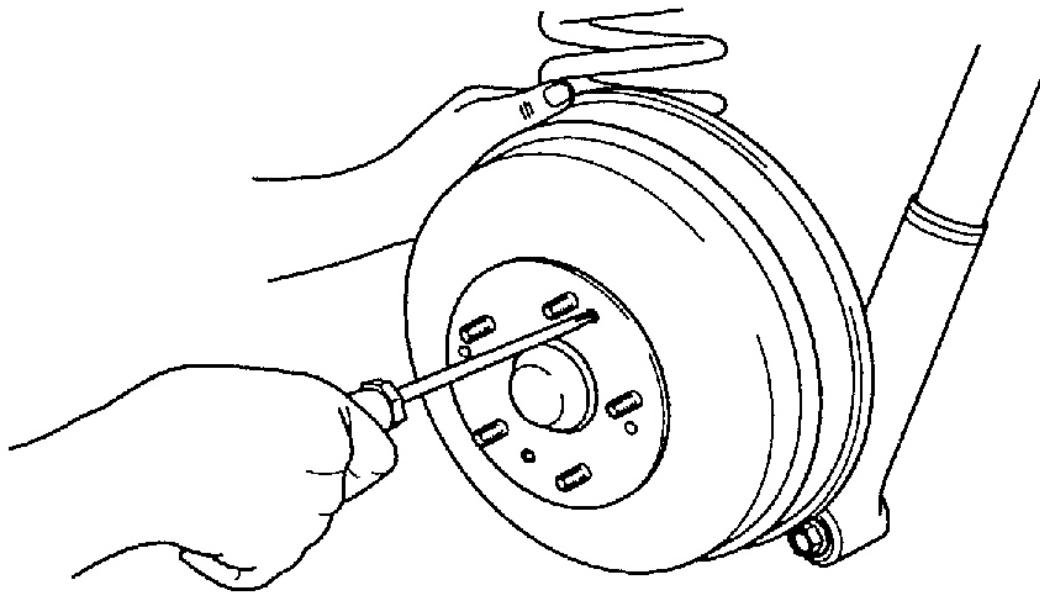
Fig. 37: Adjusting Load Sensing Proportioning Valve
Courtesy of KIA MOTORS AMERICA, INC.

CAUTION: Make sure of the mounting direction of spring.

REAR DRUM BRAKE

REMOVAL

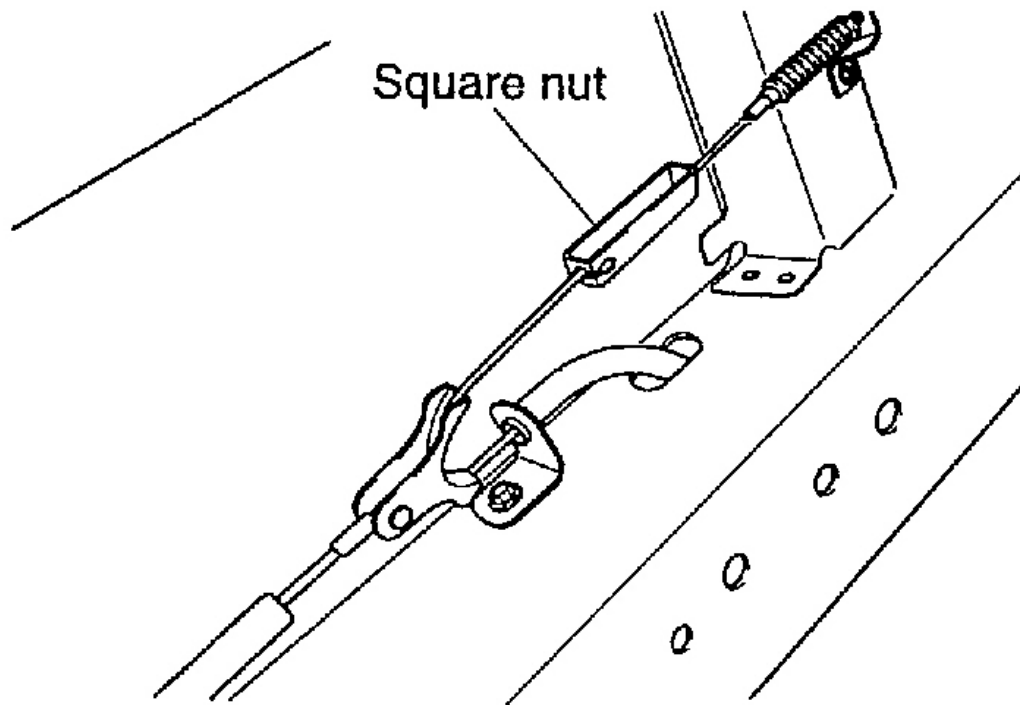
1. Remove rear wheel and tire assembly from vehicle.
2. Remove rear brake drums from hub and bearing assemblies after loosening the two brake drum screws.



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Fig. 38: Removing Rear Brake Drums
Courtesy of KIA MOTORS AMERICA, INC.

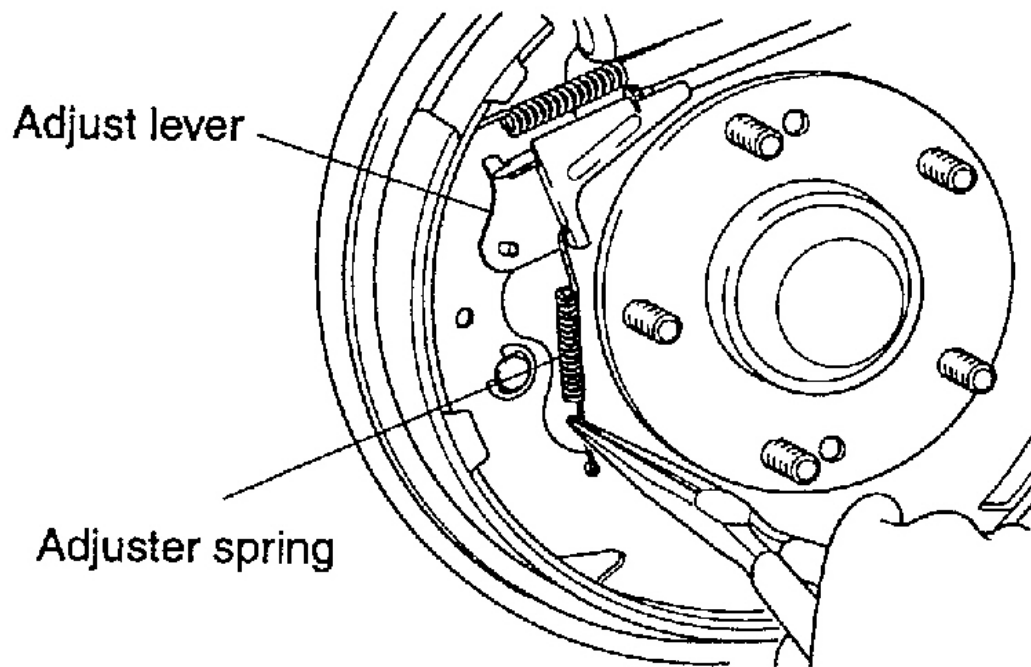
3. Be sure that the parking brake pedal is in the release (most upward) position.
4. Completely loosen square nut of the rear parking brake cable. Then create slack in the rear parking brake cables.



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Fig. 39: Loosening Square Nut
Courtesy of KIA MOTORS AMERICA, INC.

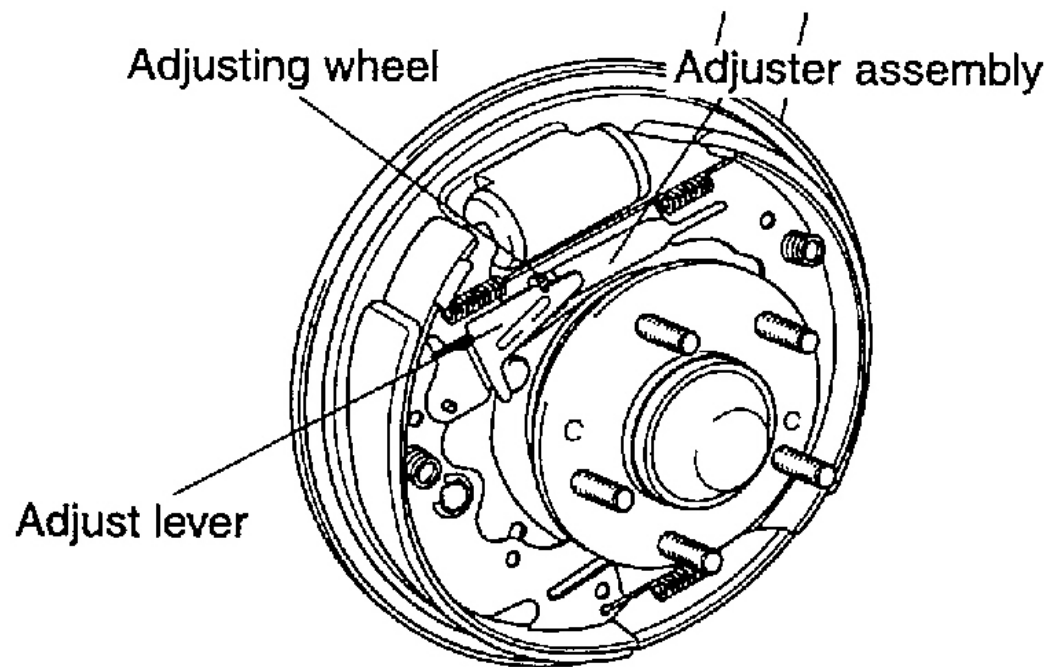
5. Remove adjuster spring from adjust lever and brake shoe.



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Fig. 40: Removing Adjuster Spring
Courtesy of KIA MOTORS AMERICA, INC.

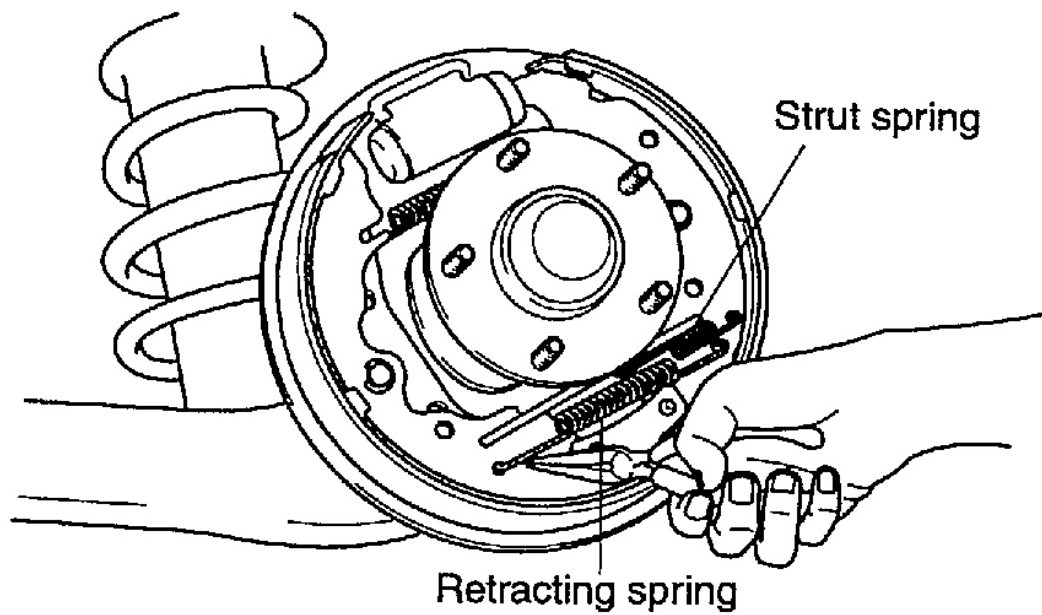
6. Remove adjust lever and turn the adjusting wheel of adjuster assembly to the direction of the arrow as shown.



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Fig. 41: Removing Adjust Lever
Courtesy of KIA MOTORS AMERICA, INC.

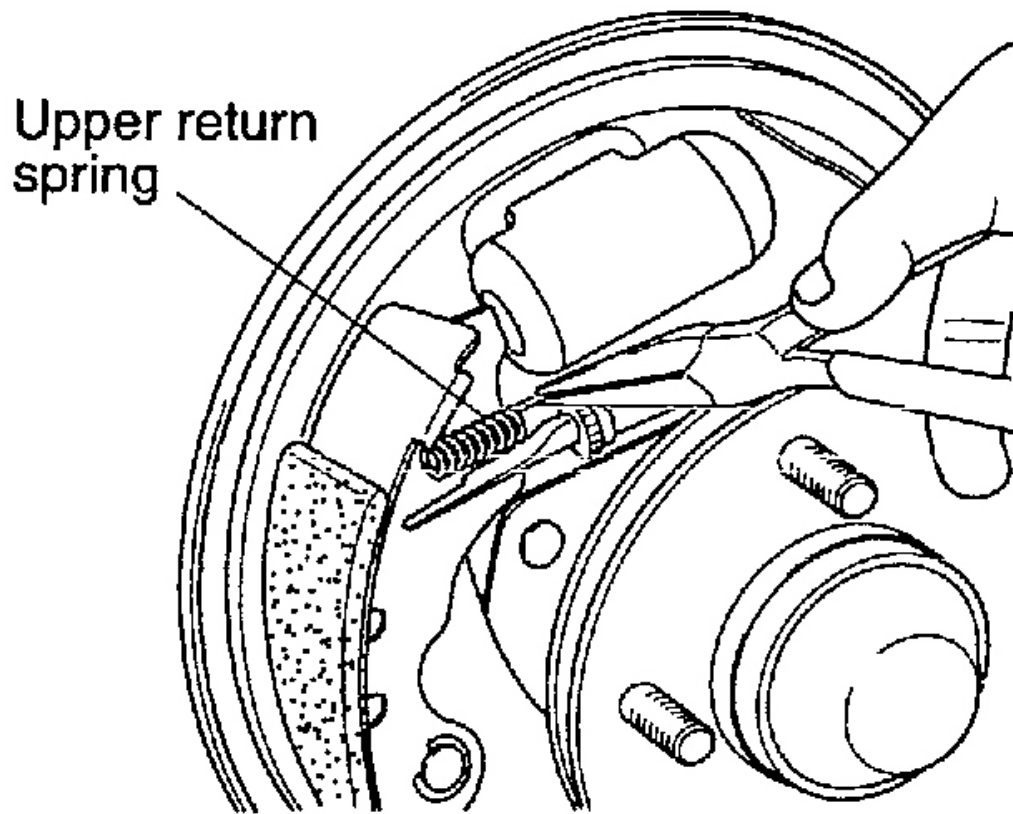
7. Remove the strut spring and the lower retracting spring from the brake shoe.



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Fig. 42: Removing The Strut Spring
Courtesy of KIA MOTORS AMERICA, INC.

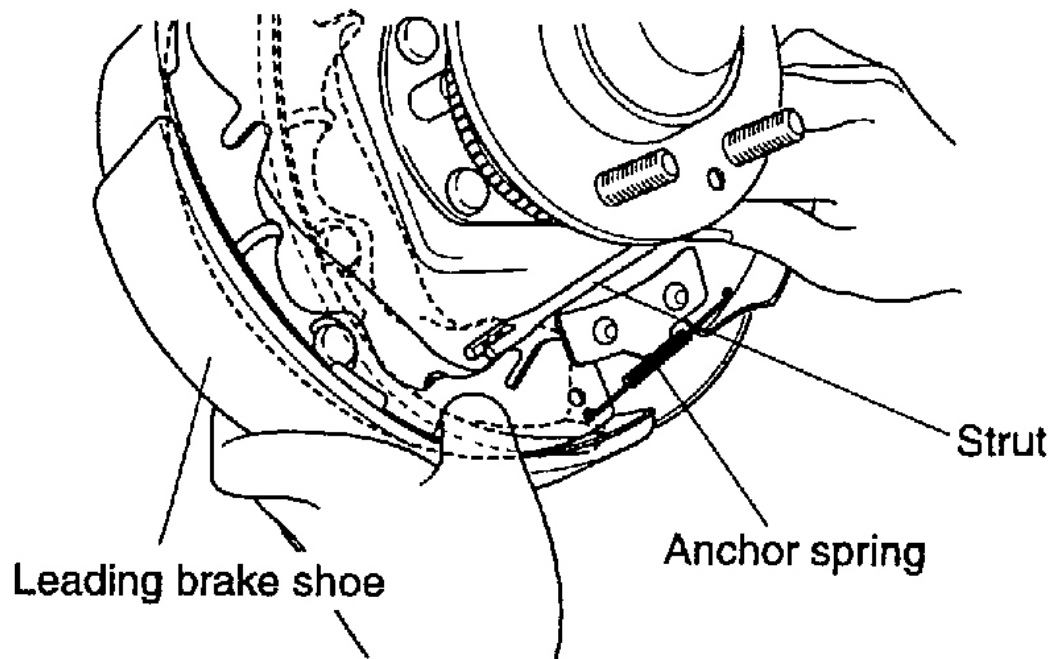
8. Remove the upper return spring from the brake shoe.



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Fig. 43: Removing The Upper Return Spring
Courtesy of KIA MOTORS AMERICA, INC.

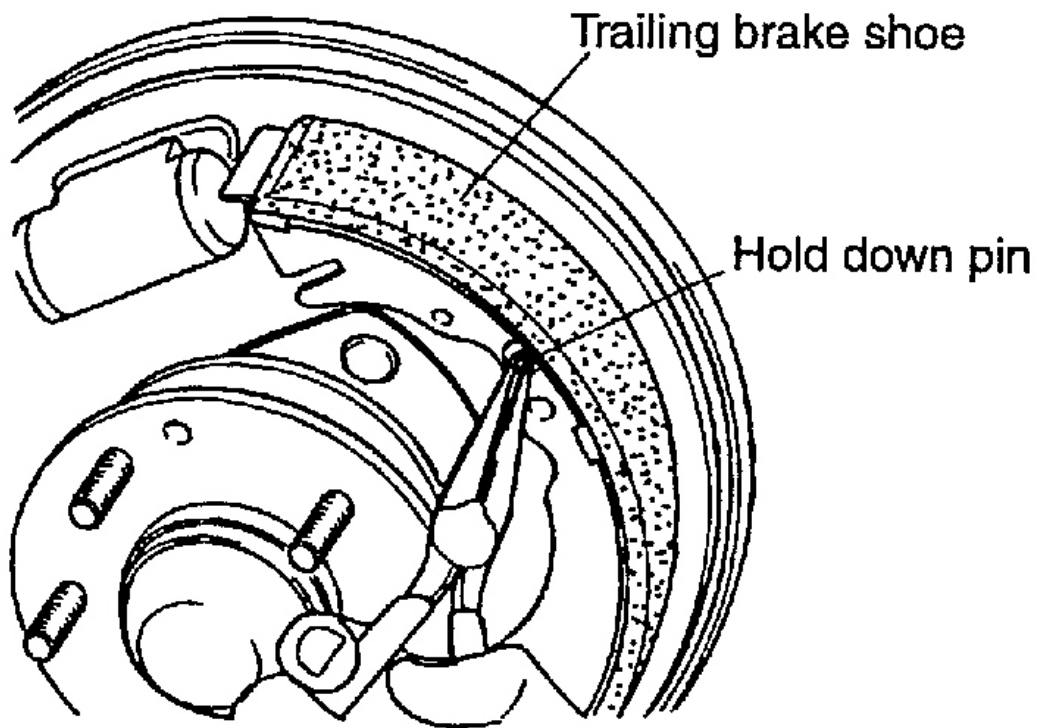
9. Remove brake back plate hold down spring and pin from the leading brake shoe assembly.
10. Remove the leading brake shoe. Then remove the adjuster assembly, strut and anchor spring from the trailing brake shoe.



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Fig. 44: Removing The Leading Brake Shoe
Courtesy of KIA MOTORS AMERICA, INC.

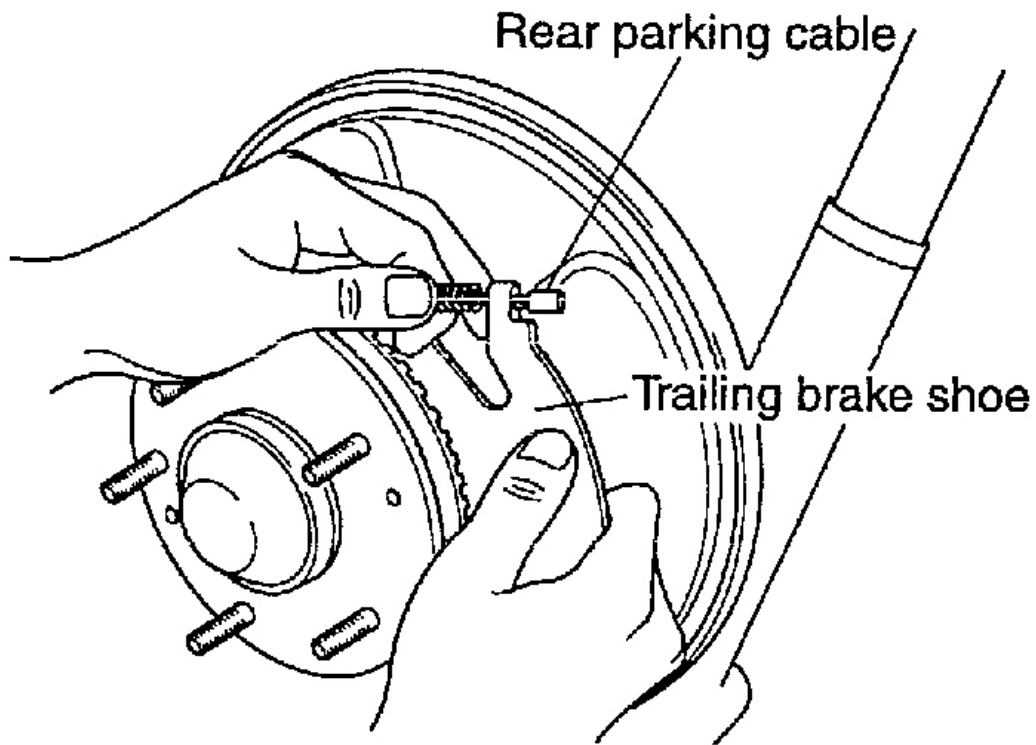
11. Remove the trailing brake shoe from the brake back plate after removing hold down spring and pin.



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Fig. 45: Removing The Trailing Brake Shoe
Courtesy of KIA MOTORS AMERICA, INC.

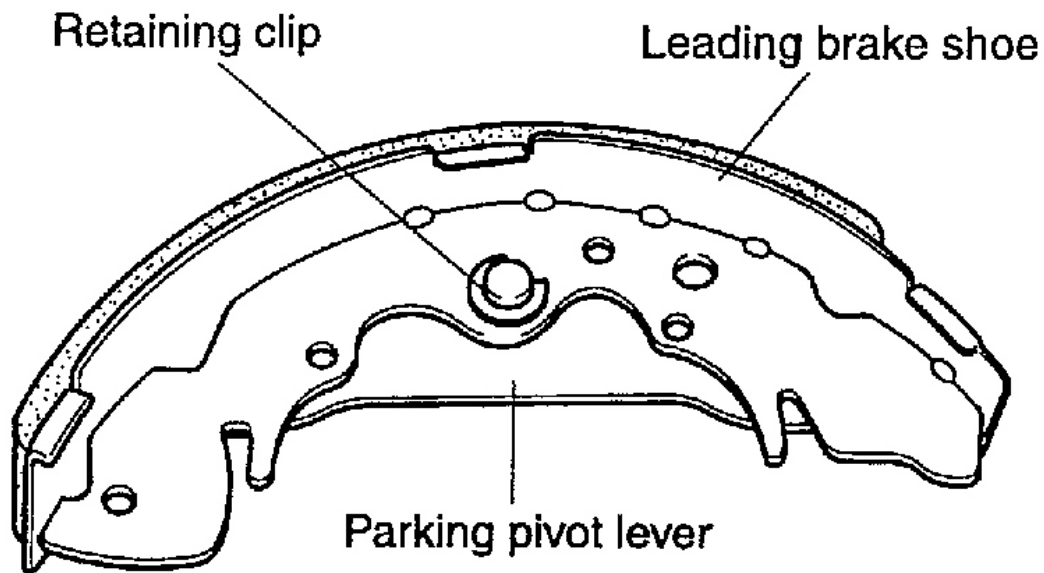
12. Remove the trailing brake shoe from the rear parking cable.



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Fig. 46: Removing The Rear Parking Cable
Courtesy of KIA MOTORS AMERICA, INC.

13. Remove parking pivot lever from the leading brake shoe.



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Fig. 47: Removing Parking Pivot Lever
Courtesy of KIA MOTORS AMERICA, INC.

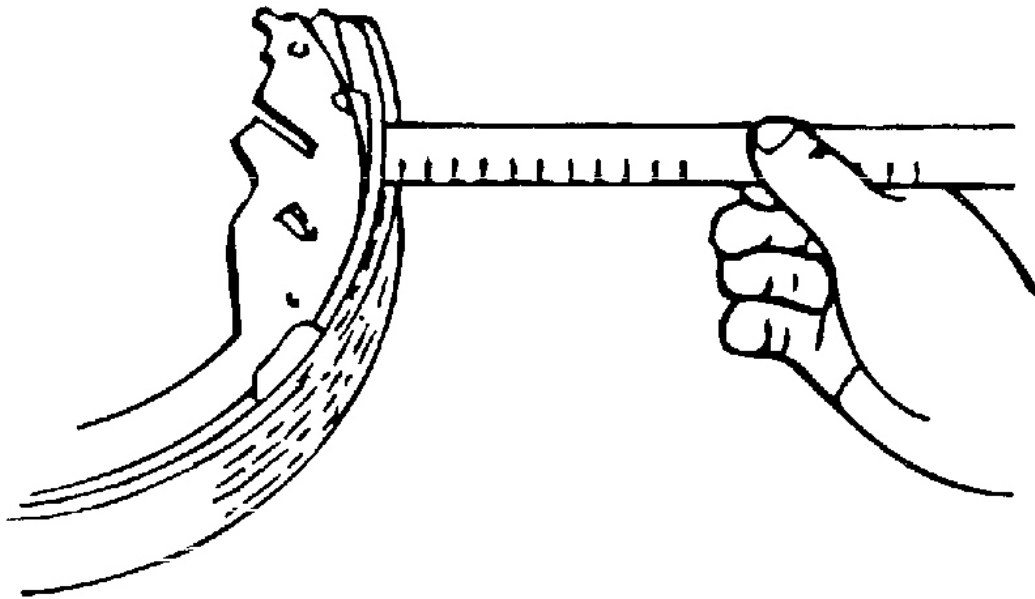
INSPECTION

1. Inspect the disassembled parts for wear, rust or damage.
2. Measure the thickness of brake shoe lining.

Standard: 0.17 in (4.5 mm)

Minimum: 0.04 in (1 mm)

3. If the shoe lining is less than minimum or shows signs of uneven wear, replace new one.



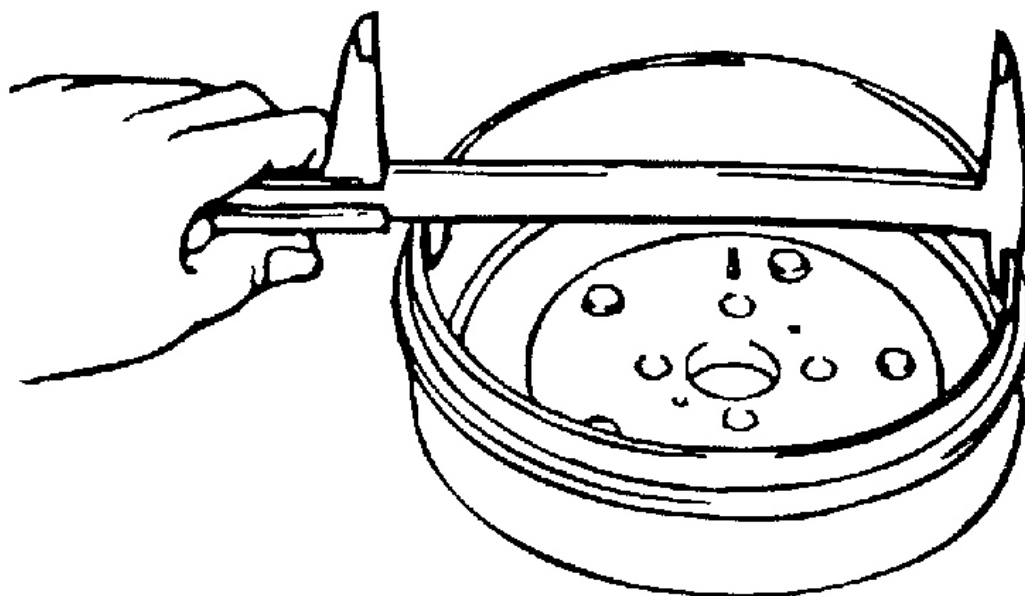
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Fig. 48: Measuring The Thickness Of Brake Shoe Lining
Courtesy of KIA MOTORS AMERICA, INC.

4. Measure the inside diameter of the brake drum.

Standard: 10 in (254 mm)

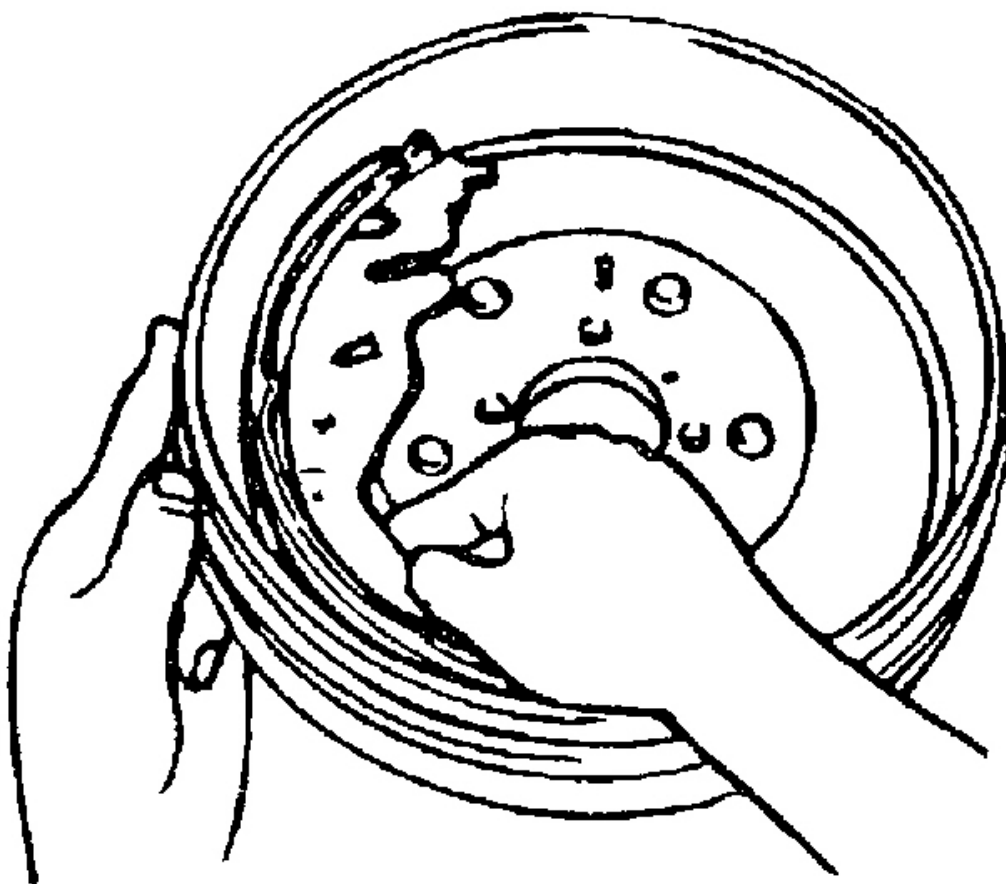
Maximum: 10.07 in (256 mm)



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Fig. 49: Measuring The Inside Diameter Of The Brake Drum
Courtesy of KIA MOTORS AMERICA, INC.

5. If the inside diameter of the brake drum is more than maximum or shows signs of uneven wear, replace new one.
6. Inspect the lining and drum for proper contact. If the contact condition is improper, repair it with a grinder or replace the brake shoe assembly.

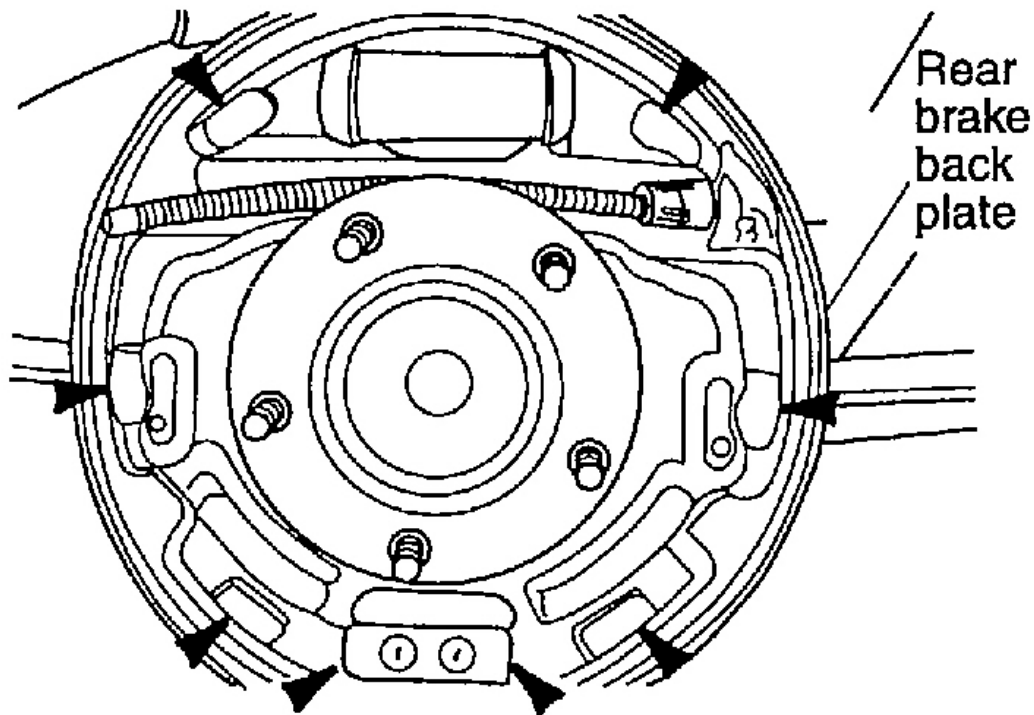


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Fig. 50: Inspecting The Lining And Drum For Proper Contact
Courtesy of KIA MOTORS AMERICA, INC.

REPLACEMENT

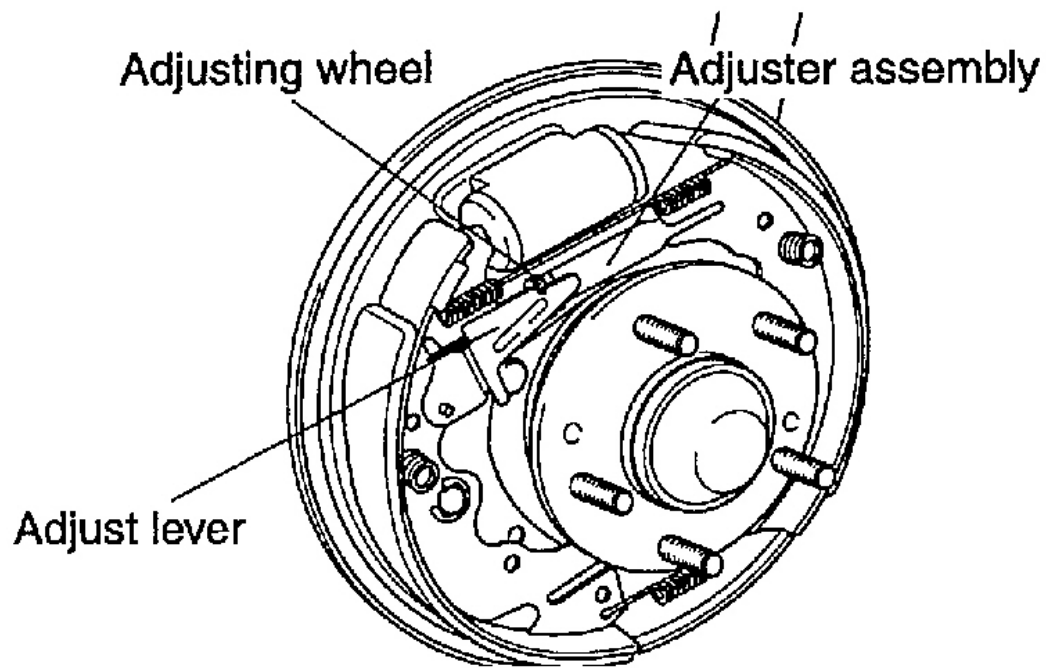
1. Lubricate the eight shoe contact areas on the back plate and anchor.



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Fig. 51: Lubricating Shoe Contact Areas
Courtesy of KIA MOTORS AMERICA, INC.

2. Install the trailing brake shoe to the rear parking cable.
3. Install trailing brake shoe on brake back plate and install the trailing brake shoe hold down spring and pin on the brake shoe.
4. Tighten the square nut of rear parking cable.
5. Install the anchor spring then install adjuster assembly, and strut.
6. Install leading brake shoe on brake back plate.
7. Install the brake shoe upper return spring, strut spring and the lower retracting spring to the brake shoe.
8. Properly rotate the adjusting wheel of adjuster assembly to the proper direction.



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Fig. 52: Illustrating Adjuster Assembly
Courtesy of KIA MOTORS AMERICA, INC.

9. Install the adjuster spring on the adjust lever and leading brake shoe assembly.
10. Install the leading brake shoe hold down spring and pin on the brake shoe.

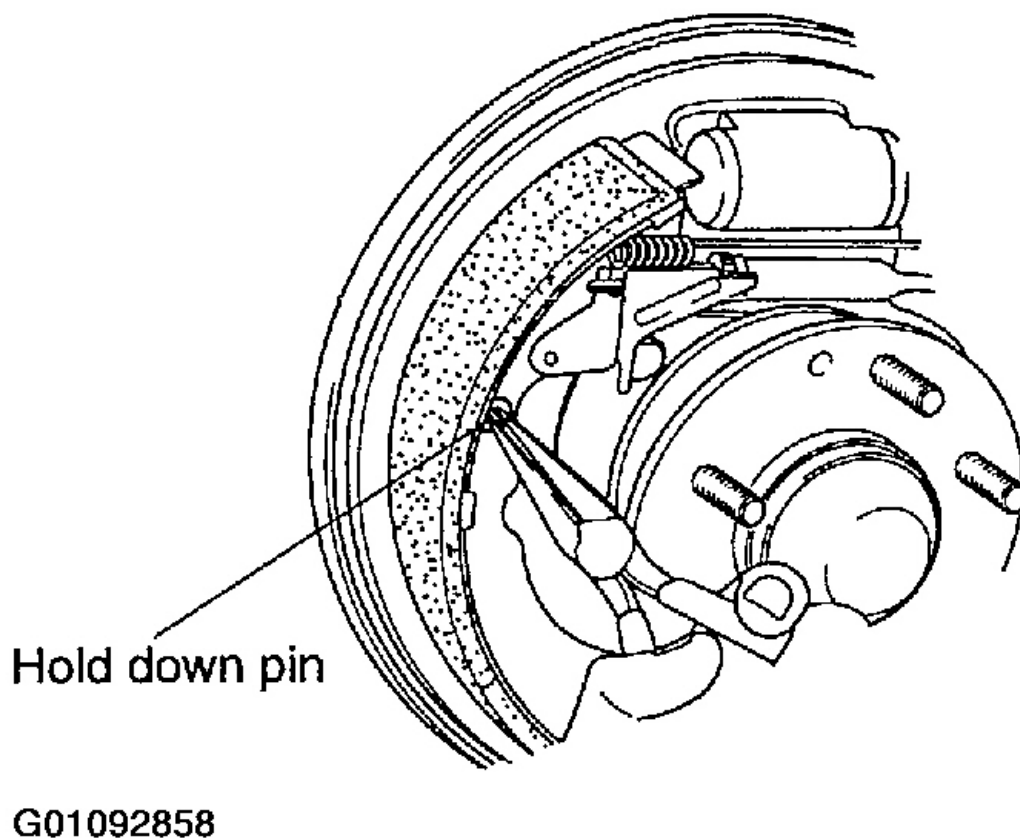
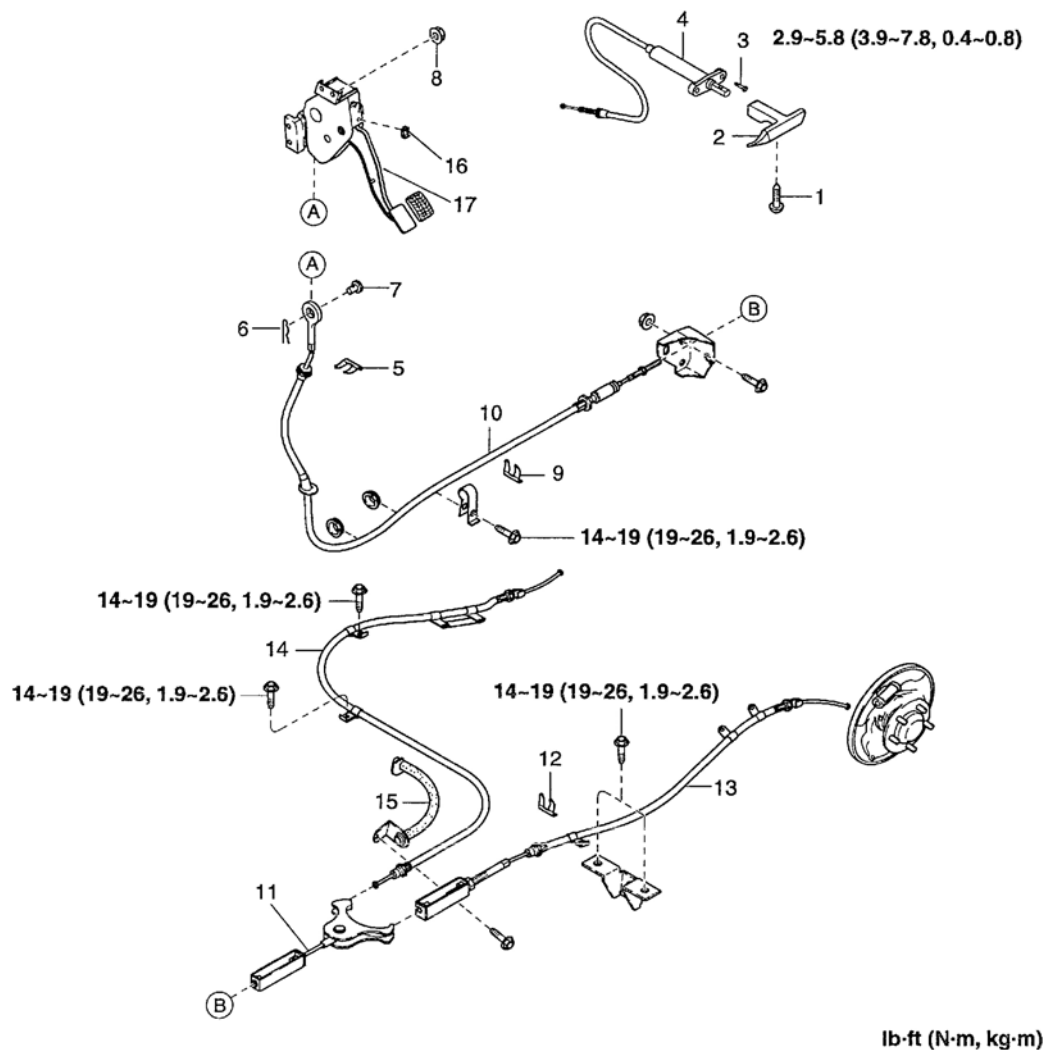


Fig. 53: Installing The Leading Brake Shoe Hold Down Spring
Courtesy of KIA MOTORS AMERICA, INC.

11. Adjust brake shoes assemblies so as not to interfere with brake drum installation.
12. Install the rear brake drums on the hubs.
13. Check and adjust the pedal stroke to specifications. See **PARKING BRAKE SYSTEM** .
14. Install wheel and tire.
15. Push the parking brake pedal to the floor once and release pedal. This will automatically remove the slack from and correctly adjust the parking brake cables.
16. Test the vehicle on the road. The adjuster will continue to provide brake adjustment during the road test of vehicle.

PARKING BRAKE SYSTEM

COMPONENT



1. Screw
2. Release lever
3. Bolts
4. Release cable
5. Flexible hose clip
6. Spring pin

7. Joint pin
8. Nuts
9. Clip
10. Front cable
11. Equalizer assembly
12. Clip

13. Rear cable-LH
14. Rear cable-RH
15. Guide bracket
16. Parking brake switch
17. Parking brake pedal

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Fig. 54: Illustrating Parking Brake Components
 Courtesy of KIA MOTORS AMERICA, INC.

INSPECTION

NOTE:

- Check whether parking brake pedal stroke is in the specification when parking brake pedal is depressed down.
- Check whether rear brake is not released during wheel is being turned by

hands, after depressing brake pedal down a few times.

- Check whether parking brake warning lamp turns on when parking brake pedal is depressed.

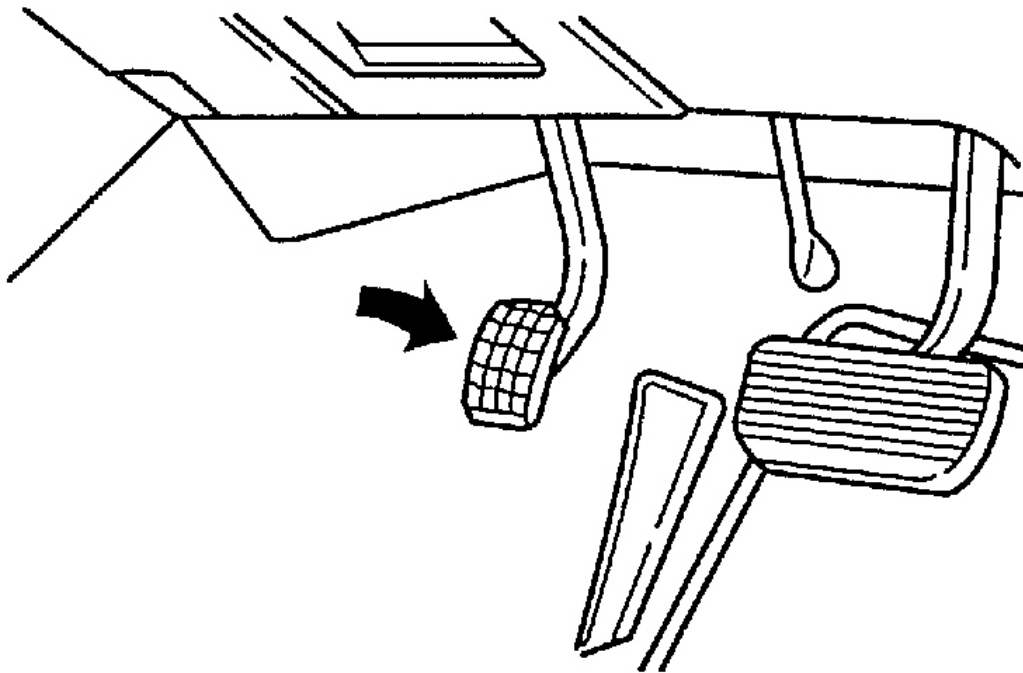
For parking brake pedal adjustment, see INSPECTION .

PEDAL STROKE

INSPECTION

1. Check whether the pedal stroke is in the specification when the parking brake pedal is depressed with 196 N (44 lb, 20 kg).

Pedal stroke: 3.50-4.33 in (90-110 mm)

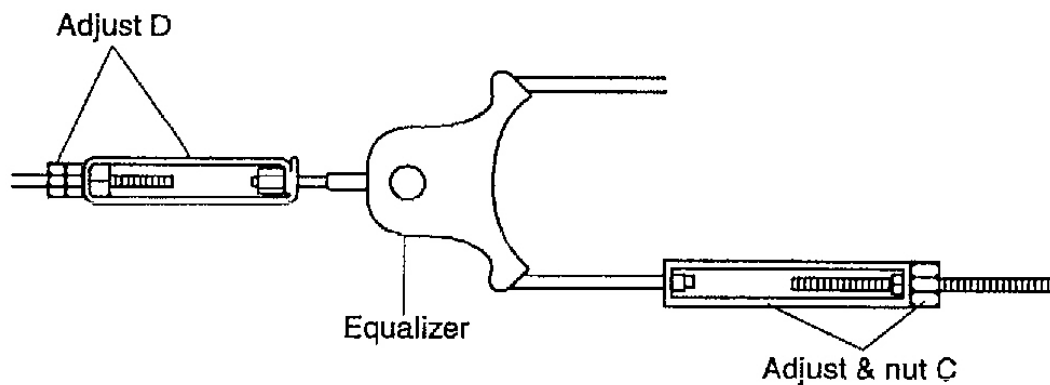


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Fig. 55: Testing Parking Brake Pedal Adjustment
Courtesy of KIA MOTORS AMERICA, INC.

ADJUSTMENT

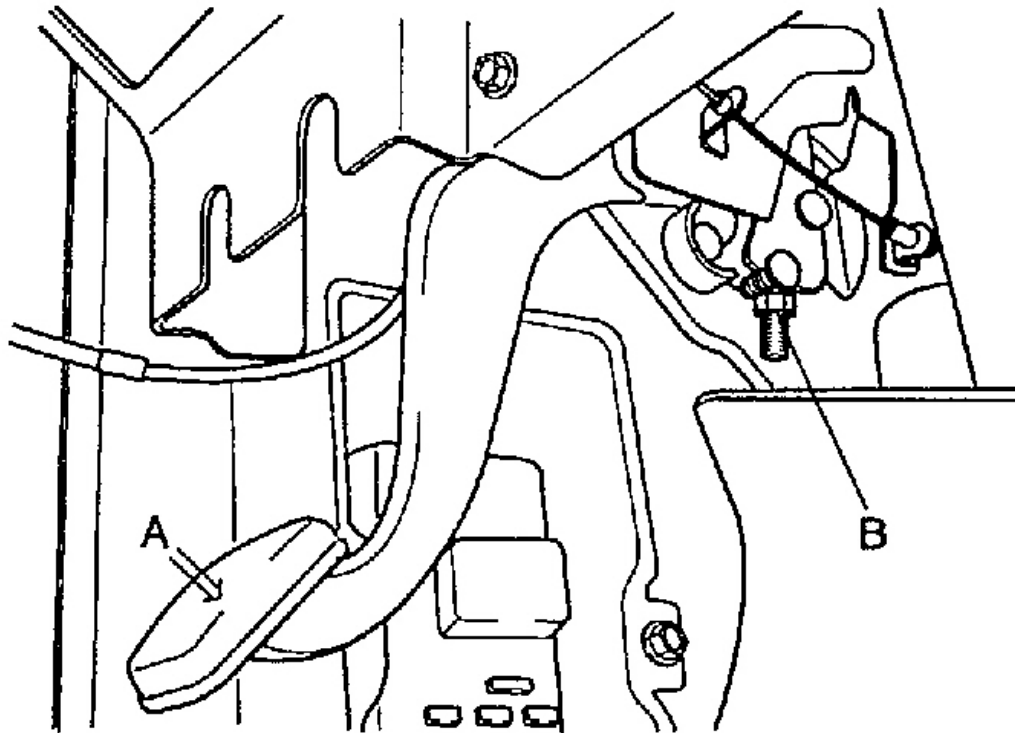
1. Adjust the adjust & nut C or the adjust D so that the pedal stroke becomes 3.54-4.33 in (90-110 mm) and then adjust the adjust nut B finally when 196 N (44 lb, 20 kg) is applied on foot parking pedal pad A.



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Fig. 56: Adjusting Parking Brake
Courtesy of KIA MOTORS AMERICA, INC.

2. The stroke shall be free from the dragging when the foot parking pedal is pushed to 1.57 in (40 mm).



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Fig. 57: Illustrating Pedal Travel
Courtesy of KIA MOTORS AMERICA, INC.

NOTE:

- Adjust parking brake pedal stroke and check whether parking brake warning lamp turns on when brake pedal is pushed to 0.78 in (20 mm).
- Check whether the rear wheel is dragged when rear wheel is turned by hands.
- Be careful not to twist the cable during adjusting the adjust nut.