

2004-05 BRAKES**Disc & Drum - Sedona****DESCRIPTION & OPERATION**

All models use front disc brakes. Rear brakes are self-adjusting drum type. Parking brake cable mechanism applies rear brakes.

NOTE: For trouble shooting ABS brake system or servicing ABS hydraulic system, see ANTI LOCK BRAKES article.

BLEEDING BRAKE SYSTEM

NOTE: For bleeding ABS brake system, see ANTI LOCK BRAKES article.

CAUTION: Do not allow brake fluid to remain on a painted surface. Wash it off immediately.

NOTE: If bleeding brake system using a pressure bleeder, DO NOT depress brake pedal. It is only necessary to open each bleed screw in same order as manual bleeding to release air from system.

BLEEDING PROCEDURE

NOTE: Brake fluid reservoir must be kept 3/4 full during bleeding procedure.

1. Raise and support vehicle. Ensure master cylinder is clean of dirt, moisture or any other type of contaminates that may enter master cylinder reservoir. Fill reservoir with clean brake fluid. Remove bleeder cap, and attach clear vinyl bleeder hose onto bleeder plug. Place other end of hose into a clean transparent container. See **Fig. 1**.
2. Bleed brakes in correct sequence. See **BRAKELINE BLEEDING SEQUENCE** table. Depress brake pedal at least 10 times, and then hold it in depressed position. With an assistant, loosen bleeder screw, drain fluid, and retighten screw. Be sure pedal remains depressed until bleeder screw is tightened.
3. Repeat step 2 until flow of brake fluid is clear and shows no sign of air bubbles. Check for correct brake operation. Ensure there is no fluid leakage. Add fluid to reservoir at specified level.

BRAKELINE BLEEDING SEQUENCE

| Application | Sequence |
|-------------|-----------------|
| Sedona | RR, LR, RF & LF |

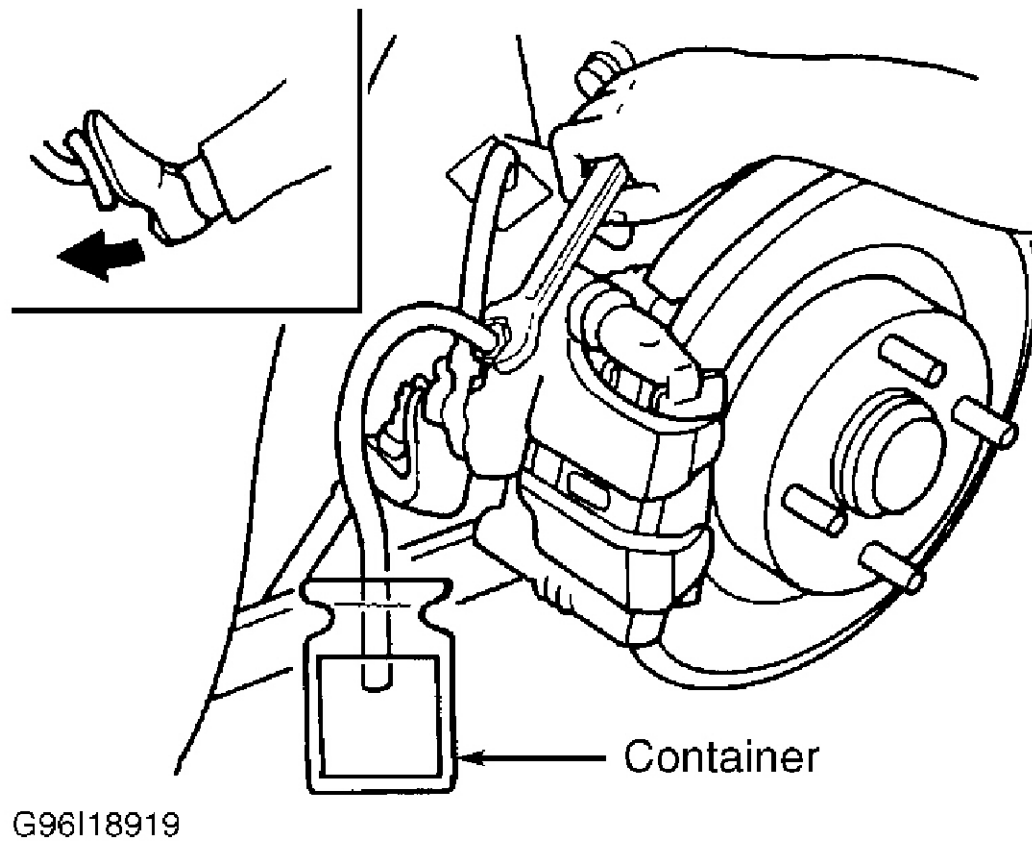


Fig. 1: Bleeding Brake Fluid Into Container
Courtesy of KIA MOTORS AMERICA, INC.

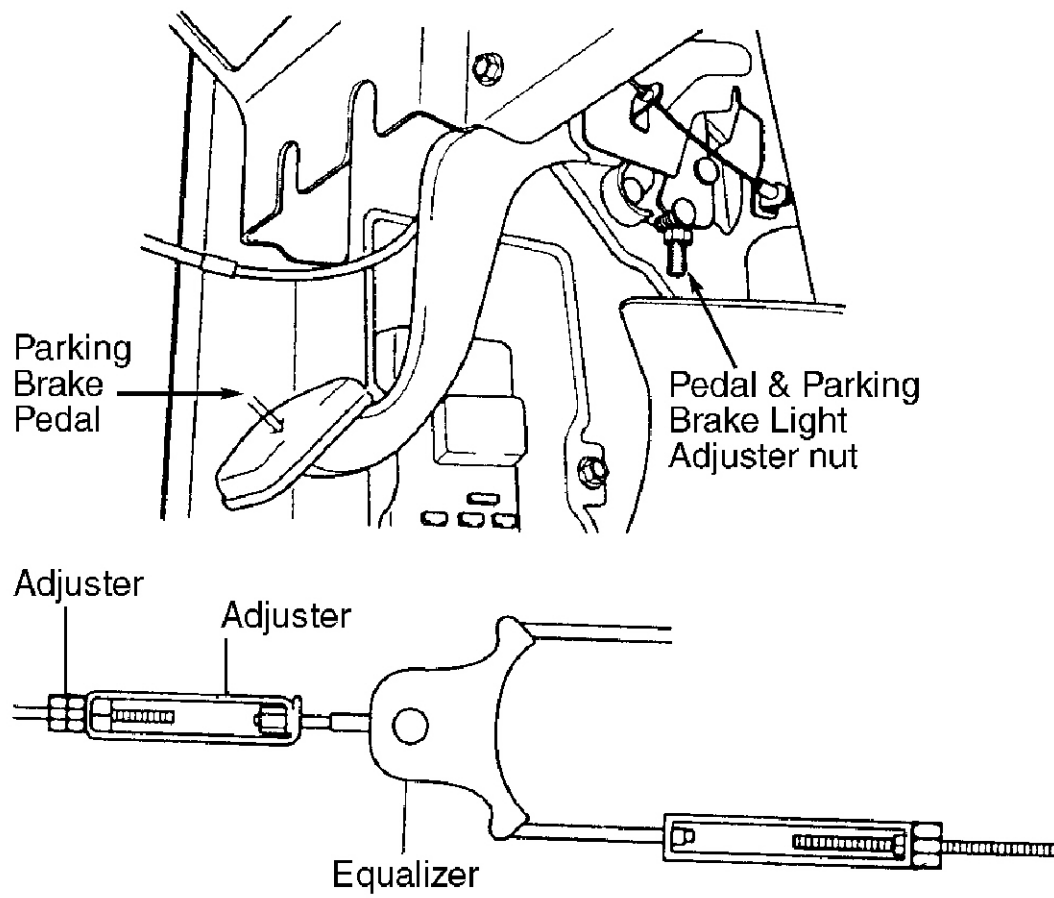
ADJUSTMENTS

PARKING BRAKE

1. Check stroke specification by pressing foot pedal with a force of 44 lbs. (20 kg). Pedal stroke should be 3.50-4.33" (90-110 mm). If lever stroke is as specified, no adjustment is necessary. If lever stroke is not as specified, go to next step.

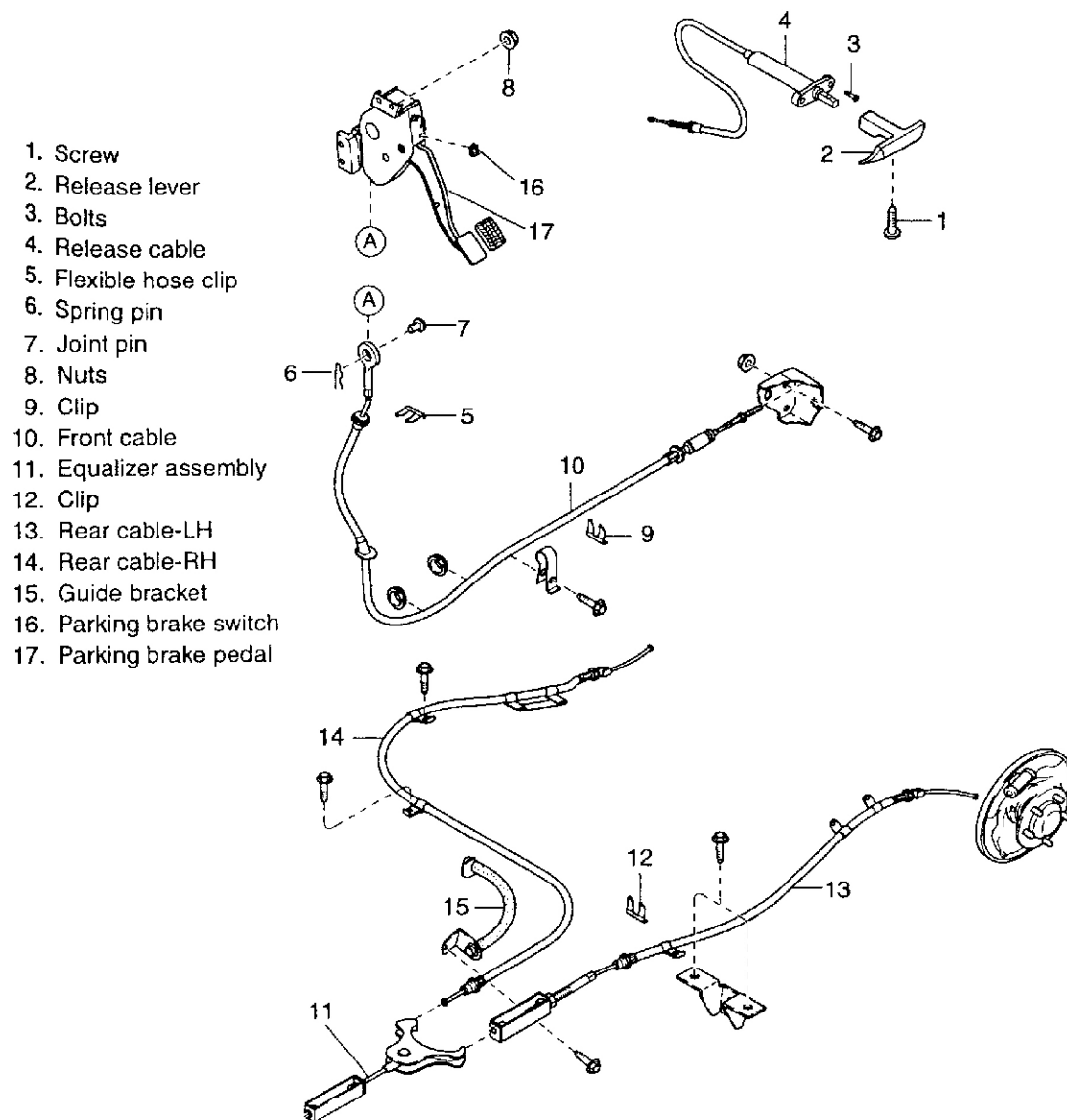
NOTE: Be careful not to twist the cable while adjusting the adjuster nut.

2. Adjust the nut on the cable equalizer assembly so that the pedal stroke becomes 3.54-4.33" (90-110 mm). See **Fig. 2** and **Fig. 3**. Ensure that the parking brake system does not drag when the foot parking pedal is depressed 1.57" (40 mm).
3. Adjust the pedal adjuster nut as necessary so parking brake warning light turns on when brake pedal is pushed to 0.78" (20 mm). As a final inspection, check if rear wheel is dragging when turned by hand. If so, repeat adjustment procedure.



G00306892

Fig. 2: Adjusting Parking Brake
Courtesy of KIA MOTORS AMERICA, INC.

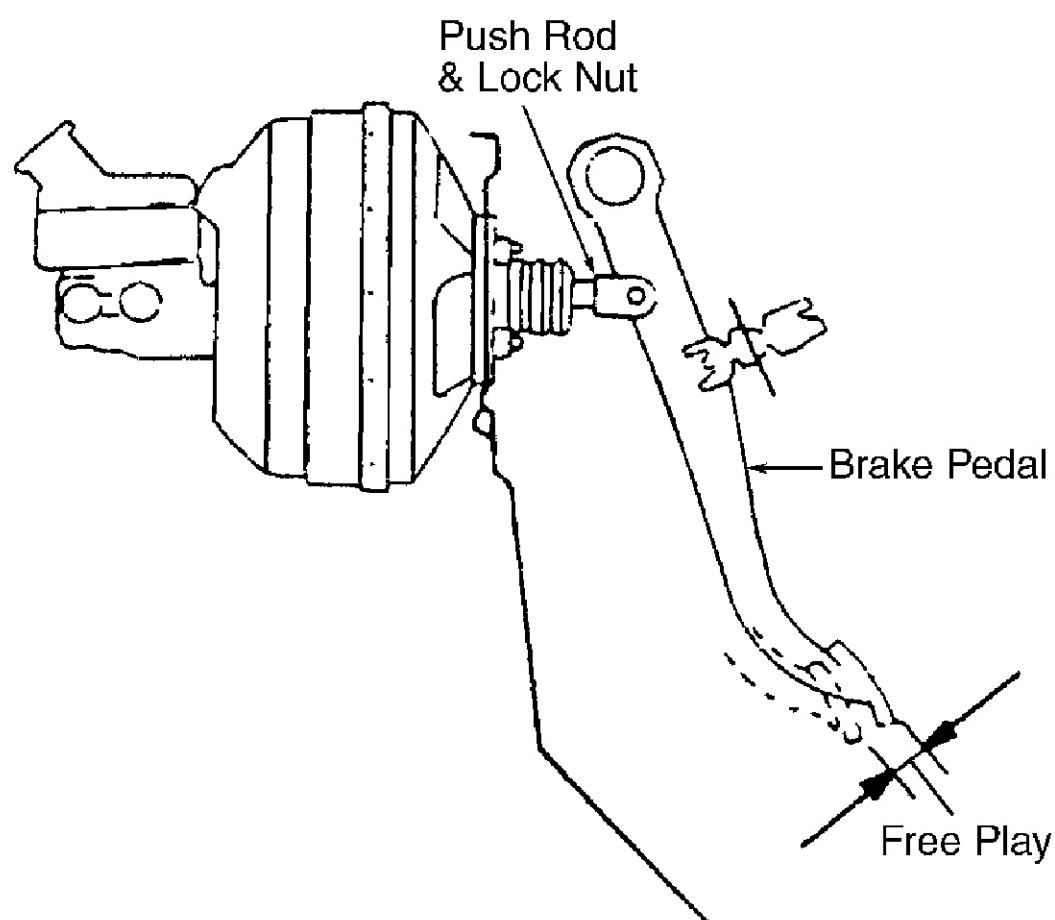


G00285450

Fig. 3: Exploded View Of Parking Brake Assembly
Courtesy of KIA MOTORS AMERICA, INC.

BRAKE PEDAL FREE PLAY

1. With engine off, depress pedal a few times to eliminate vacuum. Depress brake pedal by hand and check pedal free play at top of pedal travel before any resistance is felt. Free play should be 0.20-0.31" (5-8 mm). See **Fig. 4**. If free play is as specified, no adjustment is necessary.
2. If free play is not as specified, loosen push rod lock nut. Rotate push rod until correct free play is obtained. Tighten push rod lock nut.

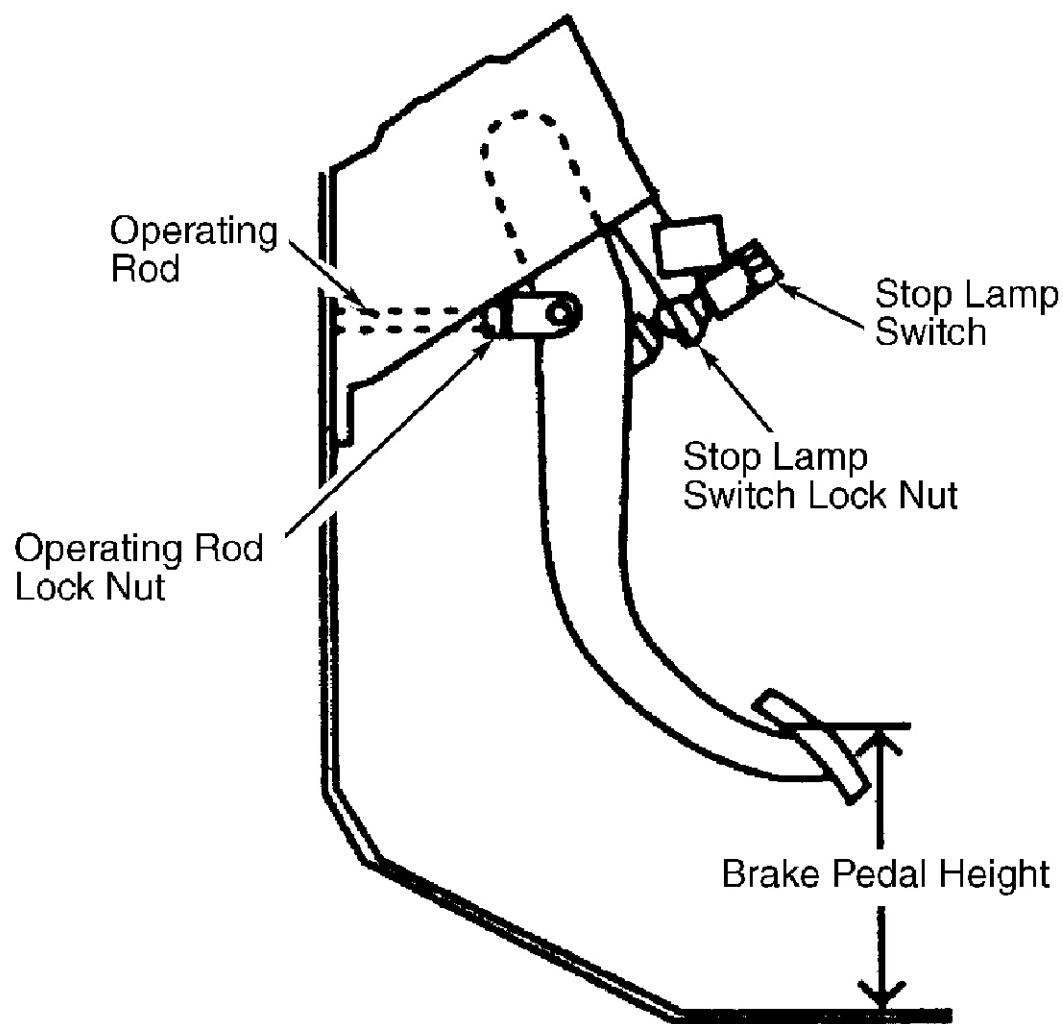


G00285424

Fig. 4: Measuring Brake Pedal Free Play
Courtesy of KIA MOTORS AMERICA, INC.

BRAKE PEDAL HEIGHT & BRAKELIGHT SWITCH

1. Measure brake pedal height from upper center pedal pad-to-carpet. Pedal height should be 7.17-7.41" (182.2-188.2 mm). See **Fig. 5** . If pedal height is as specified, no adjustment is necessary.
2. If pedal height is not as specified, disconnect brakelight switch connector. Loosen brakelight switch lock nut. Turn brakelight switch until switch plunger does not contact pedal. Loosen brake master cylinder push rod lock nut.
3. Turn brake master cylinder push rod until pedal height is as specified in step 1 . Tighten brakelight switch until plunger contacts pedal and then rotate switch an additional 1/2 turn. Tighten both lock nuts to specification. See **TORQUE SPECIFICATIONS** . Reconnect brakelight switch connector. Check brakelight operation.



G00285440

Fig. 5: Measuring Brake Pedal Height & Adjusting Brakelight Switch
Courtesy of KIA MOTORS AMERICA, INC.

BRAKE PEDAL-TO-FLOOR CLEARANCE

1. Depress brake pedal with a force of 132 lbs. (59.9 kg). Measure distance between upper center pedal pad-to-carpet. See **Fig. 6** . Clearance should be 1.02" (26.0 mm).
2. If clearance is not as specified, check for air in brake hydraulic system, rear brake automatic adjuster malfunction or worn brake shoes or pads. Replace components as necessary.

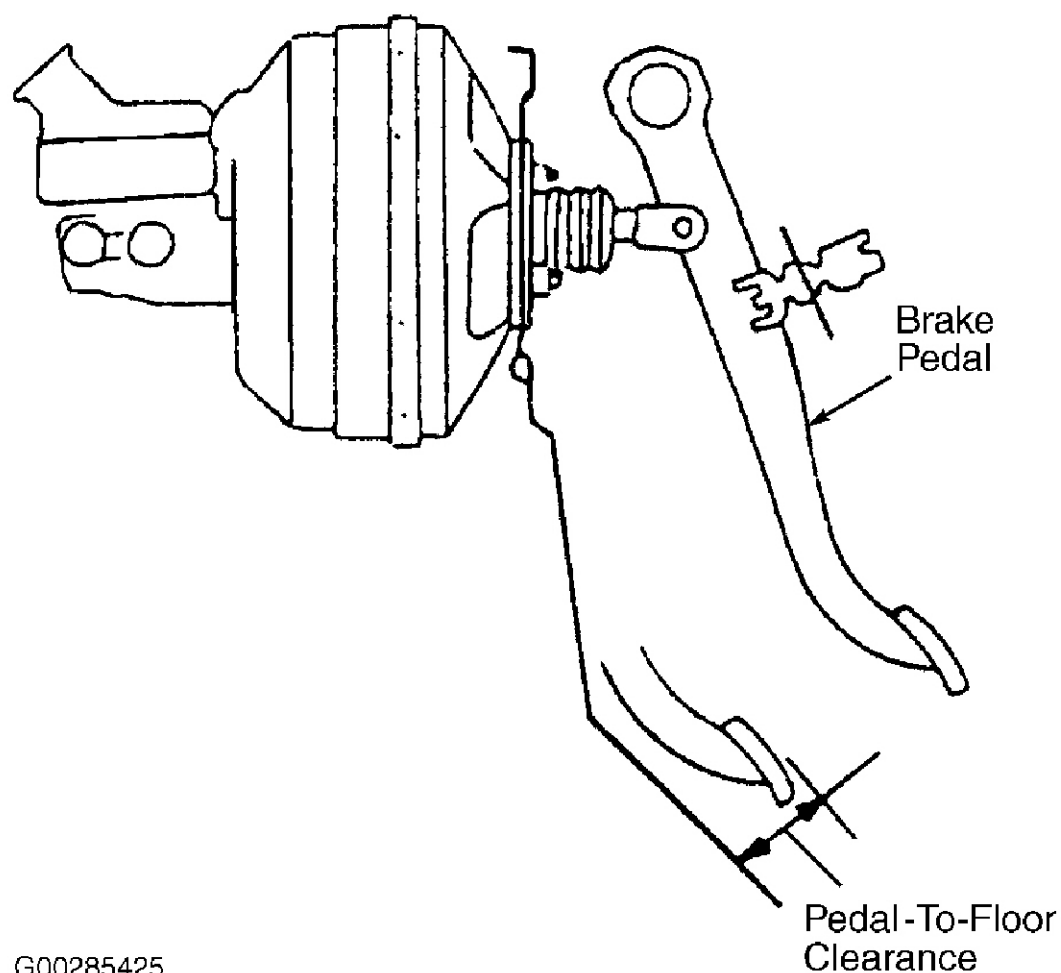


Fig. 6: Adjusting Brake Pedal-To-Floor Clearance
Courtesy of KIA MOTORS AMERICA, INC.

LOAD SENSING PROPORTIONING VALVE (LSPV)

NOTE: Adjustment condition must be an empty vehicle plus one passenger.

Place the vehicle on a level ground. Loosen lock nut and turn the adjust bolt to adjust the spring length "L" to 3.54" (90 mm). Ensure LSPV spring is mounted in proper direction. See **Fig. 7**.

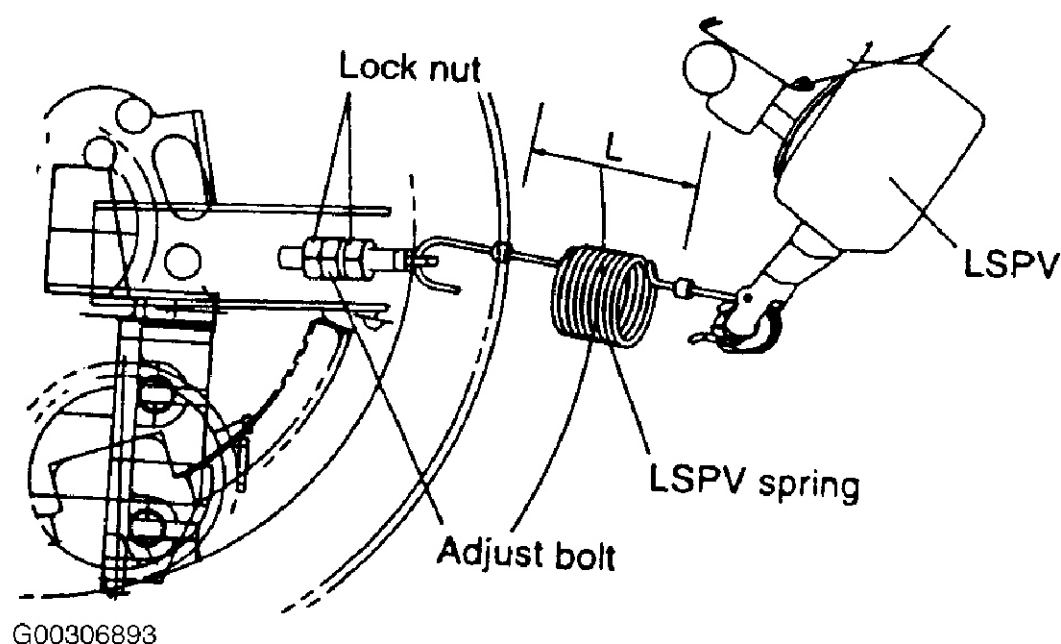


Fig. 7: Adjusting Load Sensing Proportioning Valve (LSPV)
 Courtesy of KIA MOTORS AMERICA, INC.

TESTING

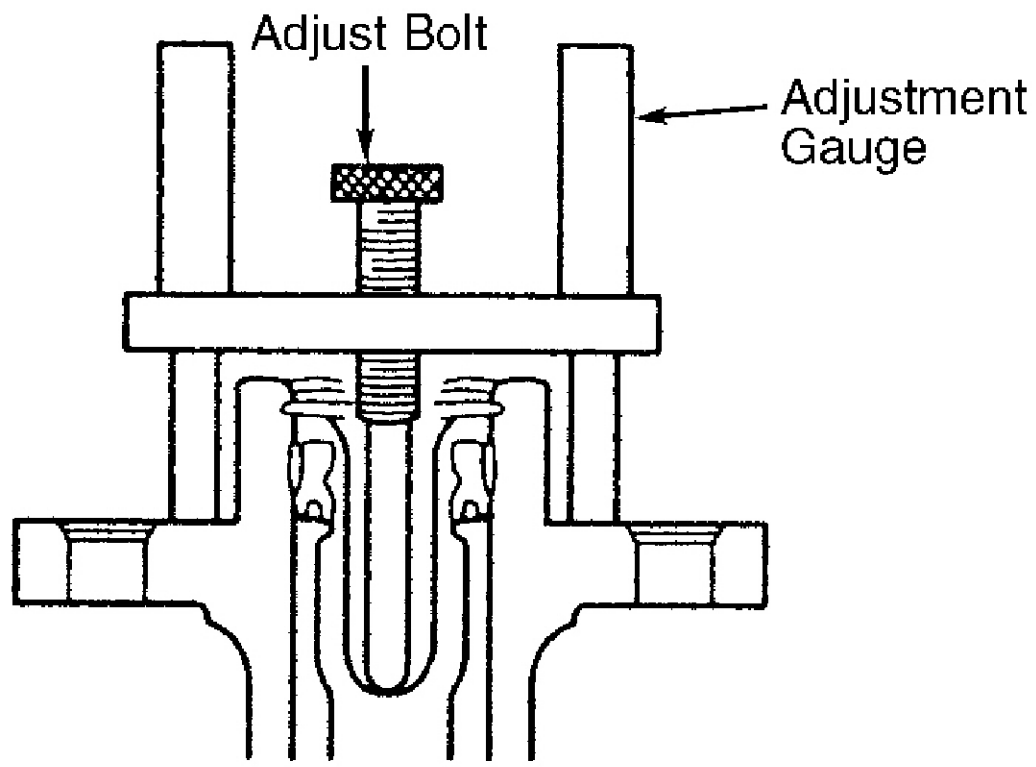
POWER BRAKE BOOSTER

1. Measure clearance between push rod of power brake booster and master cylinder piston by using Adjustment Gauge (OK993 430 032). See **Fig. 8** . See **POWER BRAKE BOOSTER PUSH ROD/PISTON CLEARANCE** table.
2. Using vacuum gauge and pump, Apply vacuum to power brake booster. Using adjustment gauge, measure clearance between push rod of power brake booster and master cylinder piston. See **Fig. 9** . Compare measurement with specification. See **POWER BRAKE BOOSTER PUSH ROD/PISTON CLEARANCE** table.

POWER BRAKE BOOSTER PUSH ROD/PISTON CLEARANCE

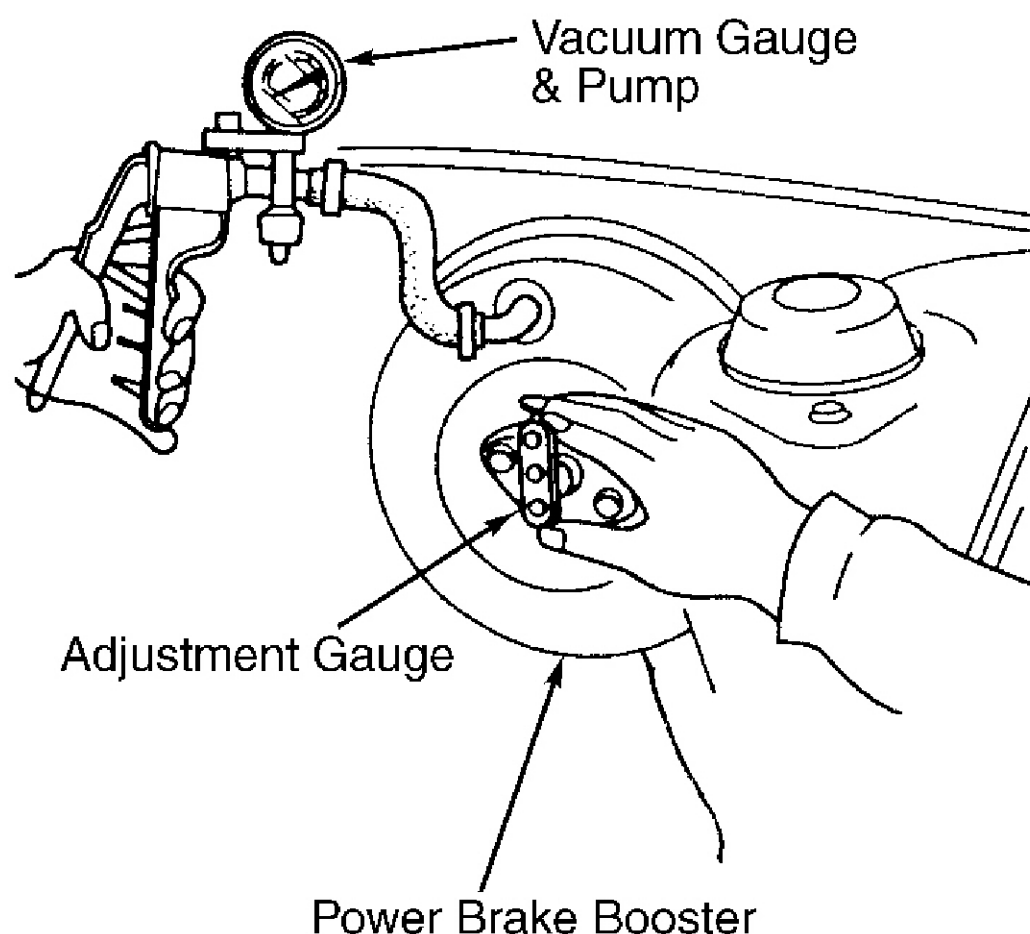
| Test Condition | Clearance - In. (mm) |
|----------------------|--------------------------|
| 0" Hg (0 mm Hg) | 0.016-0.024 (0.41-0.61) |
| 19.7" Hg (500 mm Hg) | 0.0039-0.016 (0.10-0.41) |

3. If the clearance is not as specified, push rod must be turned to adjust the clearance. Recheck measurement after adjustment.
4. Using an ohmmeter, check brake fluid level switch for continuity when the fluid level is below minimum level. Continuity should exist. Fill fluid reservoir and recheck continuity. Continuity should not exist. Replace switch as necessary.



G00306894

Fig. 8: Measuring Brake Booster Push Rod Clearance
Courtesy of KIA MOTORS AMERICA, INC.



G00306895

Fig. 9: Testing Power Brake Booster With Vacuum
Courtesy of KIA MOTORS AMERICA, INC.

LOAD SENSING PROPORTIONING VALVE (LSPV)

NOTE: For testing procedure for LSPV on vehicles equipped with ABS, see ANTI LOCK BRAKES article.

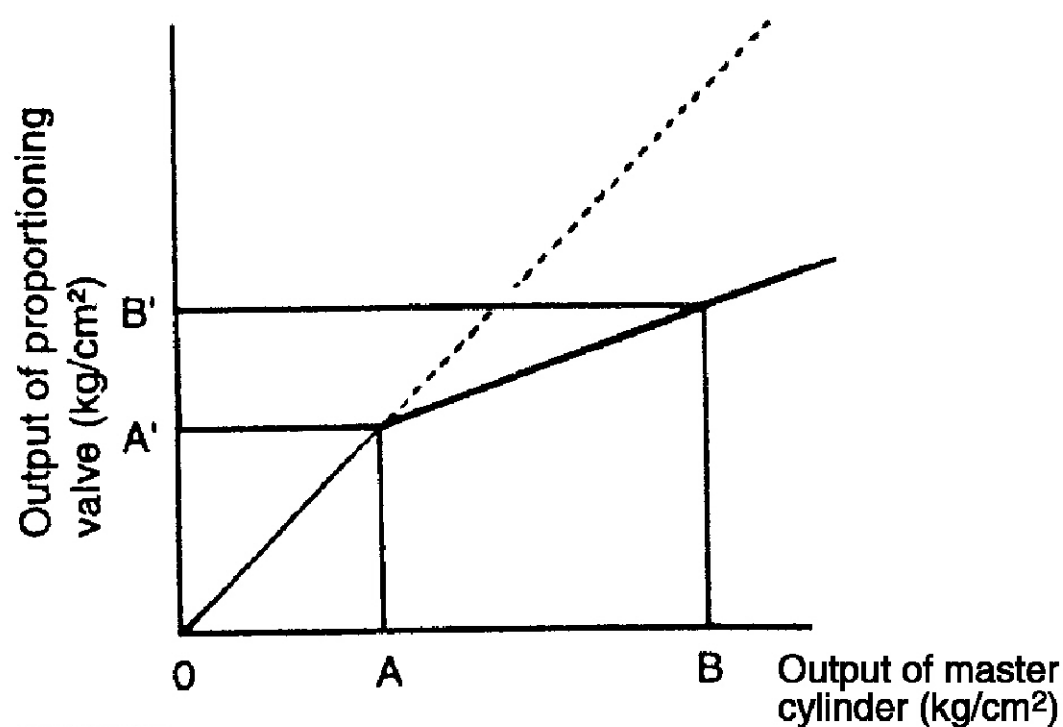
1. Perform the following procedures:
 - A. Road test vehicle to check whether the rear brake applied earlier than the front brake when the vehicle is empty and stops suddenly. Also check that the brake system operates effectively when vehicle is empty, fully loaded, and moving backward.
 - B. Check that the brake system operates effectively when the vehicle is moving straight forward and is fully loaded. If brake system operates normally, system is operating as designed. If brake system does not operate normally, go to next step.
2. Perform the following procedures:
 - A. If there is a problem in step 1, check the pressure of LSPV. Using commercially available pressure gauges, check pressure gauge for both input and output sides of pressure system.
 - B. The measuring condition should be an empty vehicle plus one passenger. Stop the engine. Depress the brake pedal 10 times in order to set the vacuum of power brake unit to 0" Hg. Go to next step.
3. Perform the following procedures:
 - A. Disconnect the outlet line of LSPV, and install a commercially available pressure gauge capable of measuring pressures up to 1422 psi (100 kg/cm²). Disconnect the front brake line from the master

cylinder, and install a pressure gauge.

- B. Bleed the air from the brake system. See **BLEEDING BRAKE SYSTEM**.
- C. Depress the brake pedal until the master cylinder pressure is equal to "A", then record rear brake pressure "A". See **LSPV PRESSURE SPECIFICATIONS** table. See **Fig. 10**. Depress the brake pedal again, and apply additional pressure until the master cylinder pressure is equal to "B". Record rear brake pressure "B". If the pressure exceeds the specification, replace the LSPV. See **LOAD SENSING PROPORTIONING VALVE (LSPV)** under REMOVAL & INSTALLATION.

LSPV PRESSURE SPECIFICATIONS

| Application | Specification |
|----------------------------------|-----------------------------------|
| Light Load Vehicle Weight (LLVW) | |
| Master Cylinder Output Pressure | |
| "A" | 512 psi (36 kg/cm ²) |
| "B" | 1009 psi (71 kg/cm ²) |
| Rear Brake Pressure | |
| "A" | 512 psi (36 kg/cm ²) |
| "B" | 625 psi (44 kg/cm ²) |
| Gross Vehicle Weight (GVW) | |
| Master Cylinder Output Pressure | |
| "A" | 1166 psi (82 kg/cm ²) |
| "B" | 1351 psi (95 kg/cm ²) |
| Rear Brake Pressure | |
| "A" | 1166 psi (82 kg/cm ²) |
| "B" | 1194 psi (84 kg/cm ²) |



G00285437

Fig. 10: Measuring Brake Input & Output Pressures

Courtesy of KIA MOTORS AMERICA, INC.

REMOVAL & INSTALLATION

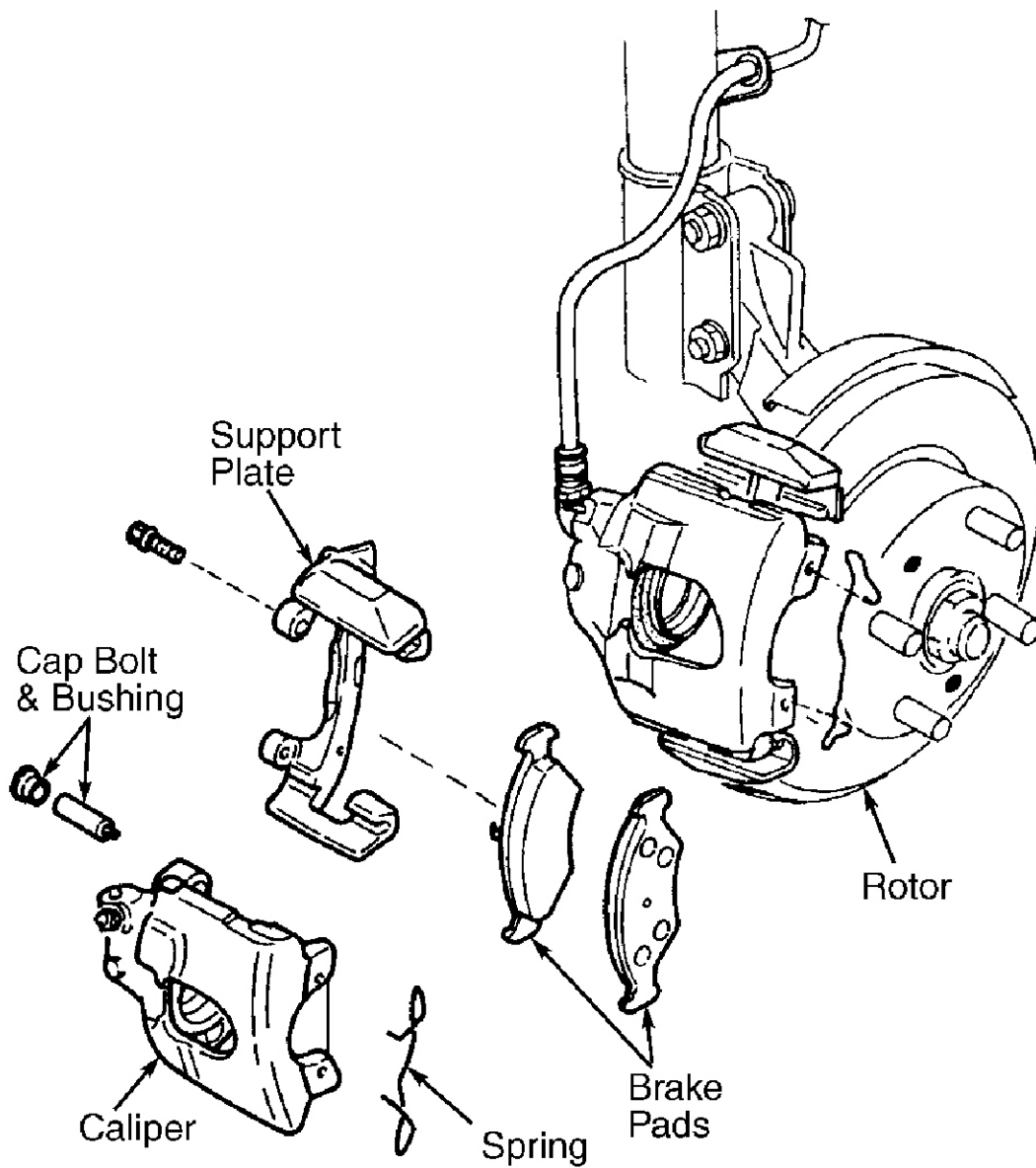
FRONT DISC BRAKE PADS & CALIPER

Removal

1. Raise and support vehicle. Remove front wheel and tire assemblies. Remove plastic caps. Remove 2 bolts and bushings. Remove caliper and wire aside. Remove spring clip. Remove brake pads. See **Fig. 11** . Measure brake pad lining thickness. Replace pad if lining thickness is less than 0.1" (2.5 mm).

NOTE: Excessive runout could be caused by a loose wheel hub bearing.

2. Prepare to catch any brake fluid. Using flare nut wrench, disconnect brake hose. Remove 2 bolts and support plate. Remove caliper. Using dial indicator, measure runout at outer braking contact edge of rotor. Compare to specifications and resurface or replace as necessary. See **DISC BRAKE SPECIFICATIONS** . If runout is greater than specification, resurface or replace rotor.



G00014108

Fig. 11: Exploded View Of Front Disc Brake Components
Courtesy of KIA MOTORS AMERICA, INC.

Installation

To install, reverse removal procedure. Tighten bolts and nuts to specification. See **TORQUE SPECIFICATIONS** . Bleed brake system. See **BLEEDING BRAKE SYSTEM** . Inspect brake system for leaks.

FRONT BRAKE ROTOR

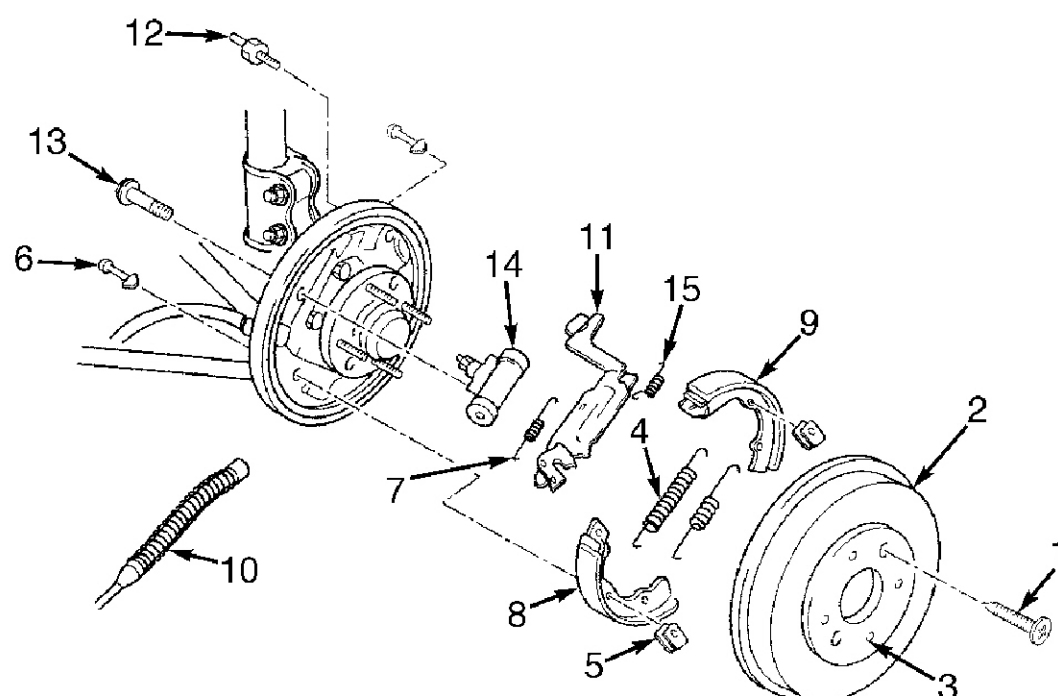
Removal & Installation

Raise and support vehicle. Remove front wheel and tire assemblies. Remove brake caliper. See **FRONT DISC BRAKE PADS & CALIPER** . Remove rotor mounting screws and remove rotor from hub. To install, reverse removal procedure. Tighten screws to specification. See **TORQUE SPECIFICATIONS** .

REAR DRUM BRAKE SHOES & WHEEL CYLINDERS

Removal

1. Raise and support vehicle. Remove rear wheel and tire assemblies. Release parking brake. Using impact driver, if necessary, remove 2 brake drum mounting screws. Remove brake drum. See **Fig. 12** .
2. Completely loosen square nut of the rear parking brake cable. Then create slack in the rear parking brake cables. Remove adjuster spring from operating lever assembly and brake shoe. Remove operating lever assembly and turn the adjusting wheel of lever assembly downward, in reverse direction of normal adjusting operation.
3. Remove strut spring and lower retracting spring from brake shoe. Remove upper return spring from the brake shoe. Remove spring clip and hold down pin from leading brake shoe assembly. Remove leading brake shoe.
4. Remove adjuster assembly, strut and anchor spring from the trailing brake shoe. Remove the trailing brake shoe from the brake backing plate after removing spring clip and hold down. Remove trailing brake shoe from the rear parking cable. Remove parking pivot lever from the leading brake shoe.



- | | |
|-------------------------|------------------------------|
| 1. Mounting Screws | 9. Brake Shoe-Trailing |
| 2. Brake Drum | 10. Parking Brake Cable |
| 3. Drum Pulling Threads | 11. Operating Lever Assembly |
| 4. Return Springs | 12. Brake Line |
| 5. Spring Clips | 13. Bolts |
| 6. Hold Down Pins | 14. Wheel Cylinder Assembly |
| 7. Adjuster Spring | 15. Anti-Rattle Spring |
| 8. Brake Shoe-Leading | |

G00055590

Fig. 12: Exploded View Of Rear Drum Brake
 Courtesy of KIA MOTORS AMERICA, INC.

Installation

To install, reverse removal procedure. Coat all internal parts of wheel cylinders with clean brake fluid. Apply brake grease onto wheel cylinder and anchor sliding points, adjuster threads and shoe contact points on backing plate. Adjust brake shoes. Tighten bolts and nuts to specification. See **TORQUE SPECIFICATIONS**. Bleed brake system. See **BLEEDING BRAKE SYSTEM**. Inspect brake system for leaks.

MASTER CYLINDER

NOTE: Brake fluid will damage painted surfaces. If brake fluid is spilled on painted surface, wipe off immediately and clean with alcohol.

Removal

CAUTION: Before removing the brakelines and reserve tank from master cylinder, ensure that they are clean to prevent dirt contamination of brake hydraulic system.

1. Disconnect battery ground cable. Remove battery. Disconnect fluid level switch connector. On vehicles equipped with manual transaxle, remove clamp and pull the clutch master cylinder hose from the master cylinder reserve tank.

| |
|-------------------------------------|
| 2005 Kia Sedona EX |
| 2004-05 BRAKES Disc & Drum - Sedona |

2. On all models, loosen brake line flare nuts and disconnect the brakelines from brake master cylinder. Cap all openings to prevent fluid loss and contamination. Remove 2 nuts and lock washers. Remove master cylinder.

Installation

To install master cylinder, reverse removal procedure. Tighten bolts and nuts to specification. See **TORQUE SPECIFICATIONS** . Bleed brake system. See **BLEEDING BRAKE SYSTEM** .

PARKING BRAKE

NOTE: Removal and installation procedure is not available from the manufacturer.

POWER BRAKE BOOSTER

Removal

1. Remove master cylinder. See **MASTER CYLINDER** . Disconnect vacuum hose from booster. From inside vehicle, remove spring clip from clevis pin.
2. Remove 4 booster nuts. Remove booster. Remove mounting bracket gasket.

Installation

CAUTION: When replacing master cylinder, a new vacuum seal **MUST** be installed on master cylinder.

1. Install a NEW gasket onto the power brake booster studs. Have an assistant position the power brake booster. From inside vehicle, install 4 nuts. Tighten nuts to specification. See **TORQUE SPECIFICATIONS** .
2. Lubricate the clevis pin with grease and install. Install NEW retainer clip. Position the vacuum booster hose to the power brake booster and install NEW vacuum hose clamp. Position the brake master cylinder and install the 2 nuts. Tighten nuts to specification. See **TORQUE SPECIFICATIONS** .

NOTE: On vehicles equipped with manual transaxle, position clutch master cylinder and install the clamp.

3. Uncap the brakelines and the brake master cylinder ports. When installing the primary and secondary brakelines on master cylinder, ensure brakelines DO NOT contact any other components. Also take care that there is slack in the flexible sections of the pipes. This is required due to the movement between the ABS hydraulic control module, if equipped, and the master cylinder, when the vehicle is in motion.
4. Connect the brakelines to brake master cylinder and tighten to specification. See **TORQUE SPECIFICATIONS** . Connect the brake master cylinder connector.
5. Install battery. Bleed system. See **BLEEDING BRAKE SYSTEM** . Inspect system for leaks.
6. Check brake pedal height and free play. Adjust as necessary. See **BRAKE PEDAL FREE PLAY** and **BRAKE PEDAL HEIGHT & BRAKELIGHT SWITCH** under ADJUSTMENTS.

LOAD SENSING PROPORTIONING VALVE (LSPV)

NOTE: Removal and installation procedure is not available from the manufacturer.

OVERHAUL

NOTE: Overhaul information is not available from manufacturer.

TORQUE SPECIFICATIONS

2005 Kia Sedona EX

2004-05 BRAKES Disc & Drum - Sedona

TORQUE SPECIFICATIONS

| Application | Ft. Lbs. (N.m) |
|------------------------------------------------|------------------------|
| Brakeline Flare Nuts | 10-16 (13-22) |
| Front Brake Hose-To-Caliper Bolt | 10-16 (13-22) |
| Front Caliper Support Bracket-To-Knuckle Bolts | 33-49 (45-67) |
| Front Caliper-To-Support Bracket Bolts | 18-26 (24-35) |
| Parking Brake Cables Attaching Nuts | 14-19 (19-26) |
| Power Brake Booster Nuts | 14-19 (19-26) |
| Wheel Lug Nuts | 65-80 (88-108) |
| | INCH Lbs. (N.m) |
| Brake Master Cylinder Nuts | 89-142 (10-16) |
| Brakelight Switch Lock Nut | 89-115 (10-13) |
| Bleeder Screw | 53-80 (6-9) |
| Front Rotor-To-Hub Bolts | 89-133 (10-15) |
| Master Cylinder Push Rod Lock Nut | 89-115 (10-13) |
| Rear Wheel Cylinder Mounting Bolts | 89-115 (10-13) |
| Wheel Speed Sensor Bolt | 71-89 (8-10) |

DISC BRAKE SPECIFICATIONS**DISC BRAKE SPECIFICATIONS**

| Application | In. (mm) |
|--------------------|-----------------|
| Front Brake Pads | |
| Standard Thickness | 0.41 (10.5) |
| Minimum Thickness | 0.10 (2.5) |
| Front Disc | |
| Standard Thickness | 1.02 (26) |
| Minimum Thickness | 0.94 (24) |
| Runout | 0.002 (0.05) |

DRUM BRAKE SPECIFICATIONS**DRUM BRAKE SPECIFICATIONS**

| Application | In. (mm) |
|--------------------|-----------------|
| Drum | |
| Standard Diameter | 10 (254) |
| Maximum diameter | 10.08 (256) |
| Brake Shoe | |
| Standard Thickness | 0.17 (4.5) |
| Minimum Thickness | 0.04 (1) |

| |
|-------------------------------------|
| 2005 Kia Sedona EX |
| 2004-05 BRAKES Disc & Drum - Sedona |

| |
|-------------------------------------|
| 2005 Kia Sedona EX |
| 2004-05 BRAKES Disc & Drum - Sedona |

| |
|-------------------------------------|
| 2005 Kia Sedona EX |
| 2004-05 BRAKES Disc & Drum - Sedona |

| |
|-------------------------------------|
| 2005 Kia Sedona EX |
| 2004-05 BRAKES Disc & Drum - Sedona |