BRAKE SYSTEM
Article Text
1995 Subaru SVX
For Dog Nuts

Wednesday, June 02, 2004 06:39PM

ARTICLE BEGINNING

1995-96 BRAKES
Subaru - Disc & Drum

SVX

DESCRIPTION & OPERATION

All models are equipped with front disc brakes. Rear brakes are either disc or drum.

BLEEDING BRAKE SYSTEM

BRAKE FLUID

Recommended brake fluid is FMVSS No. 116, fresh DOT 3 or 4. Avoid mixing different brands of brake fluid to prevent degrading quality of fluid. Replace fluid every 30 months or 30,000 miles.

BLEEDING PROCEDURES

Ensure joints and connections of brake system do not leak. Bleed air from brake system in sequence. See BRAKELINE BLEEDING SEQUENCE table. Time interval between release and depression of brake pedal during bleeding should be 3-4 seconds. Open brake cylinder bleeder screw for 1-2 seconds on every pressure stroke.

BRAKELINE BLEEDING SEQUENCE TABLE

Application	Sequence
SVX	(1) HP, (1) HS, RF, LR, LF, RR

(1) - HP (hydraulic unit primary bleeder between LF and RR); HS (hydraulic unit secondary bleeder between RF and LR). See ANTI-LOCK BRAKE SYSTEM article.

ADJUSTMENTS

BRAKE PEDAL HEIGHT & FREE PLAY

1) Adjust brake pedal height using brake power booster operating rod. Pedal height is 5.51" (140.0 mm). See MASTER CYLINDER PUSH ROD.

2) Adjust brake pedal free play using stoplight switch. Adjust free play to .04-.12" (1.0-3.0 mm). See Fig. 1. DO NOT rotate stoplight switch. Tighten stoplight switch lock nut to 51.6-86.4 INCH lbs. (6-10 N.m).

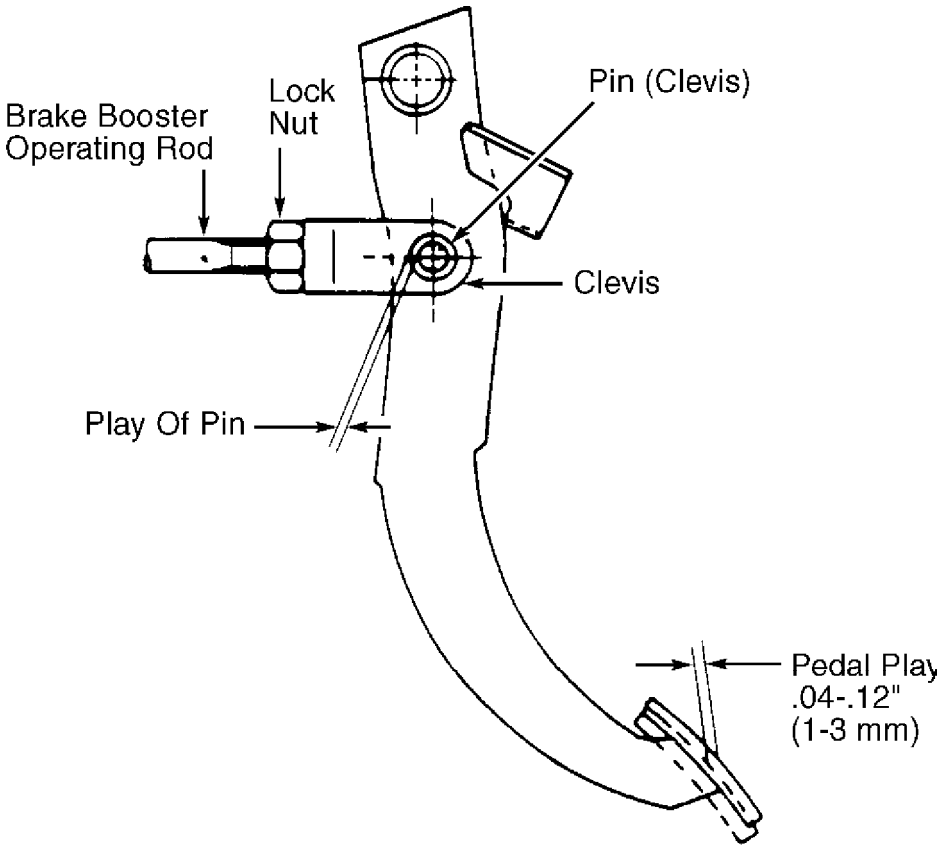

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Fig. 1: Adjusting Pedal Free Play
Courtesy of Subaru of America, Inc.

MASTER CYLINDER PUSH ROD

With engine off (no vacuum to booster), free play should exist between operating rod clevis pin and brake pedal. See Fig. 1. If free play does not exist, loosen operating rod lock nut and adjust free play. Pedal free play should be 0.04-0.12" (1.0-3.0 mm).

PARKING BRAKE ADJUSTMENT

1) Remove adjusting hole cover from rear wheel backing plate. Using flat blade screwdriver, turn brake adjusting screw star wheel until shoes make snug contact with drum surface of rotor and wheel will not turn. Back off adjusting screw star wheel 3-4 notches.

2) Turn wheel to ensure brake shoes do not drag. If shoes drag, back off shoe adjustment a few more notches. Install adjusting hole cover to rear wheel backing plate.

3) With service brakes properly adjusted, pull parking brake lever 3-5 notches. Raise vehicle on hoist. Loosen lock nut at parking brake cable equalizer. Turn adjusting nut until clearance is 0-.02 (0-.5 mm). See Fig. 2. Hold adjusting nut and tighten lock nut.

4) Lower vehicle, but keep tires off ground. Release parking brake lever. Rotate front wheels and pull parking brake lever using 44 lbs. (20 kg) of force. Wheels should lock when handle is pulled up 6-7 notches. Readjust parking brake if needed.

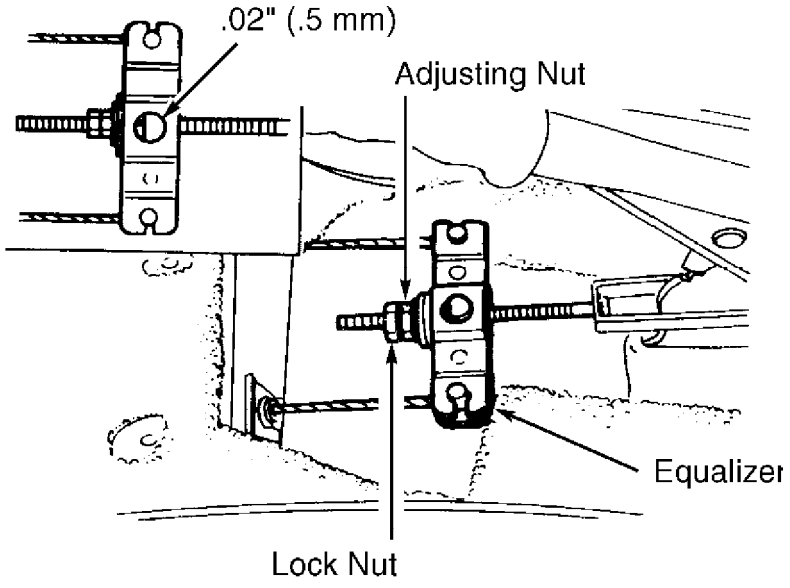


Fig. 2: Adjusting Parking Brake
Courtesy of Subaru of America, Inc.

TESTING

POWER BRAKE UNIT

1) Start engine, run it 1-2 minutes, and then turn it off. Depress brake pedal several times using normal pedal force. Each time pedal is depressed, pedal height should increase. While brake pedal is depressed, start engine. Pedal should move slightly toward floor. Continue to hold brake pedal down and turn off engine.

2) Continue to hold brake pedal down longer than 30 seconds. Brake pedal height should not change. If pedal goes slowly upward, a vacuum leak exists in power brake system. Inspect brake vacuum check valve for proper operation. If check valve is okay, replace power brake unit.

REMOVAL & INSTALLATION

FRONT DISC BRAKE PADS

NOTE: DO NOT disconnect hydraulic line from caliper. DO NOT press on brake pedal after caliper has been removed.

Removal

Raise and support vehicle. Remove wheel. Remove parking brake cable from caliper. Remove lower caliper guide pin bolt. Rotate caliper body up and away from disc. Remove pads, clips and shims from caliper support bracket. Standard front pad thickness is .67" (17.0 mm). Minimum front pad thickness, including metal backing plate, is .295" (7.49 mm). Minimum pad thickness (pad only) is .059" (1.5 mm).

Installation

Push piston(s) into caliper body. Install anti-squeak shims on both inner and outer pads. Install pad clips to support bracket and install pads. Rotate caliper body down, aligning piston notches with pad tabs. Install lower caliper guide pin bolt. Reconnect parking

brake cable. Depress brake pedal several times to set pad-to-rotor clearance.

FRONT & REAR BRAKE CALIPER

Removal

Raise and support vehicle. Remove wheel. Disconnect brakeline from caliper and plug openings. Remove brake caliper guide pin bolts from brake caliper support bracket. Remove caliper. DO NOT remove pads or support bracket unless rotor is being removed.

Installation

Apply silicone grease to guide pin, boot and guide pin bolt. Install caliper assembly, pads and parking brake cable. Install brakeline. Bleed hydraulic system. See BLEEDING BRAKE SYSTEM.

FRONT BRAKE ROTOR

Removal

Raise and support vehicle. Remove wheel. Remove caliper assembly and wire it aside. DO NOT disconnect brakeline from caliper. Remove caliper support bracket with attached disc pads from steering knuckle. Remove rotor from hub assembly. If rotor seizes to hub, use 8-mm bolts in screw holes on rotor to remove rotor.

Installation

To install, reverse removal procedure. Tighten hub-to-rotor bolts evenly to specification. See TORQUE SPECIFICATIONS. Depress brake pedal several times to seat pads.

MASTER CYLINDER R & I

Removal & Installation

Siphon brake fluid from reservoir. Disconnect warning light fluid level connection. Remove hydraulic lines. Remove master cylinder from power brake unit. To install, reverse removal procedure. Bleed hydraulic system. See BLEEDING BRAKE SYSTEM.

REAR BRAKE PADS

Removal & Installation

1) Raise and support vehicle. Remove wheel. Remove lower guide pin bolt. Rotate caliper upward and wire it aside. Remove brake pads from support bracket, noting positions of shims and clips.

2) Standard rear pad thickness is .591" (15.00 mm). Minimum pad thickness, including metal backing plate, is .256" (6.50 mm). To install, reverse removal procedure. Open caliper bleeder screw and press piston back into caliper bore. Bleed brake system (if necessary). See BLEEDING BRAKE SYSTEM.

REAR BRAKE ROTOR

Removal & Installation

1) Raise and support vehicle. Remove wheel. Remove rear caliper from support bracket and wire it aside. Remove pads and support bracket from rear axle housing. Pull rotor from hub (outboard type rotor). Remove rotor from hub assembly. If rotor seizes to hub, use 8-mm bolts in screw holes on rotor to remove rotor.

2) To remove disc rotor from hub, loosen parking brake shoe adjustment by inserting a screwdriver through backing plate access hole to turn adjusting star wheel. To install, reverse removal procedure. Tighten bolts to specification. See TORQUE SPECIFICATIONS.

REAR BRAKE SHOES

Removal & Installation

1) Raise and support vehicle. Remove rear wheels. Release parking brake. Remove brake drum. If drum is difficult to remove, remove adjusting hole cover from backplate. Insert a screwdriver through backplate access hole and back off adjuster.

2) Remove springs and brake shoes. To install, reverse removal procedure. Apply a small amount of brake grease to all brake shoe-to-backplate contract areas.

PARKING BRAKE SHOES

Removal & Installation (Models With Rear Disc Brakes)

1) Remove rear brake caliper from support and wire it aside. To remove disc rotor from hub, loosen parking brake shoe adjustment by inserting a screwdriver through backing plate access hole to turn adjusting star wheel. Remove disc rotor/drum from hub.

2) Remove front shoe return springs and shoe hold-down spring. Remove center strut and spring from between shoes. Remove adjuster star wheel assembly. Remove rear shoe return springs and shoe hold-down spring. Remove parking brake cable from lever. Remove lever from shoe. To install, reverse removal procedure. Adjust parking brake. See PARKING BRAKE ADJUSTMENT.

POWER BRAKE UNIT

Removal

1) From inside vehicle, remove brake pedal clevis pin snap pin and clevis pin. Remove power brake retaining nuts from firewall inside vehicle. Remove master cylinder. See MASTER CYLINDER R & I.

2) Disconnect vacuum hose at power brake unit. Remove power brake unit without damaging hydraulic lines.

Installation

1) Check booster-to-master cylinder push rod length at measurement "L". See Fig. 3. Length should be .394" (10.00 mm). Use care when handling booster assembly. Excessive lateral force to operating rod will damage power piston cylinder.

2) Ensure booster resin material around brake pedal rod is not damaged. Replace power booster assembly if it is dropped. To install, reverse removal procedure. Bleed hydraulic system. See BLEEDING BRAKE SYSTEM.

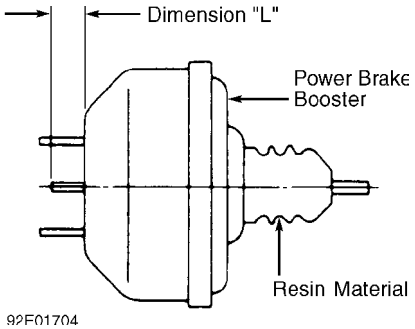


Fig. 3: Measuring Power Booster Push Rod Length
Courtesy of Subaru of America, Inc.

OVERHAUL

NOTE: Use illustrations for exploded views of front and rear disc brake calipers and master cylinder. See Figs. 4-7.

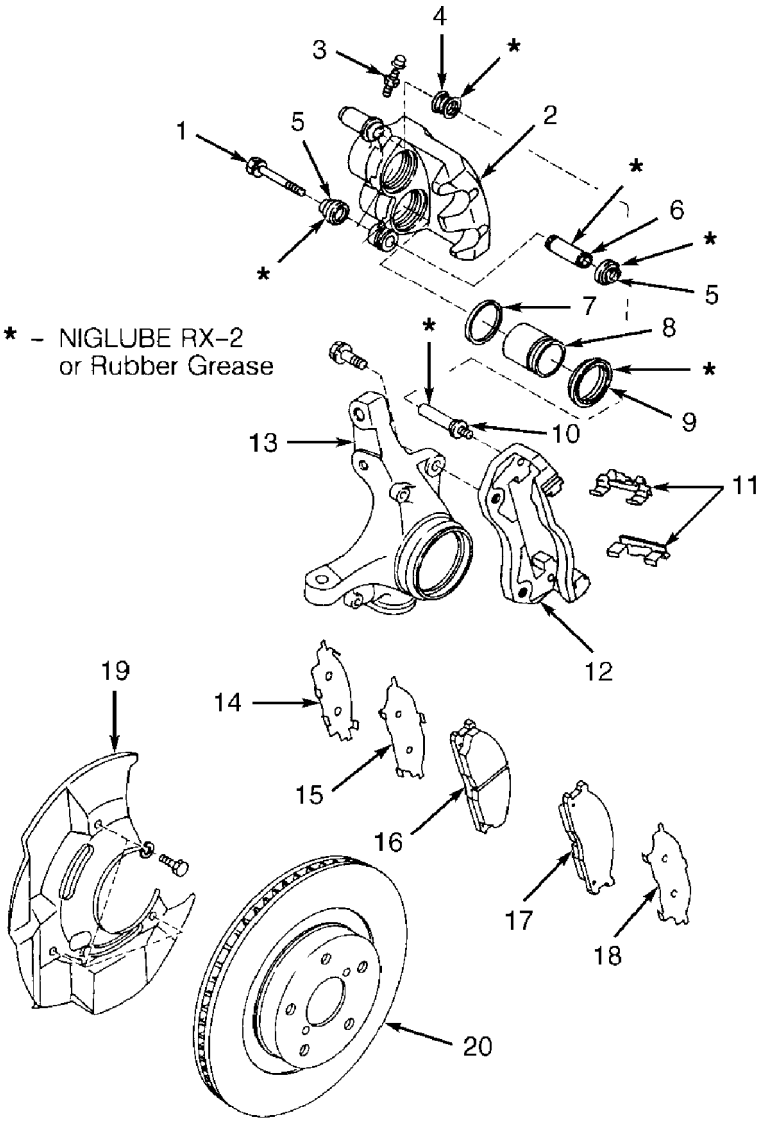
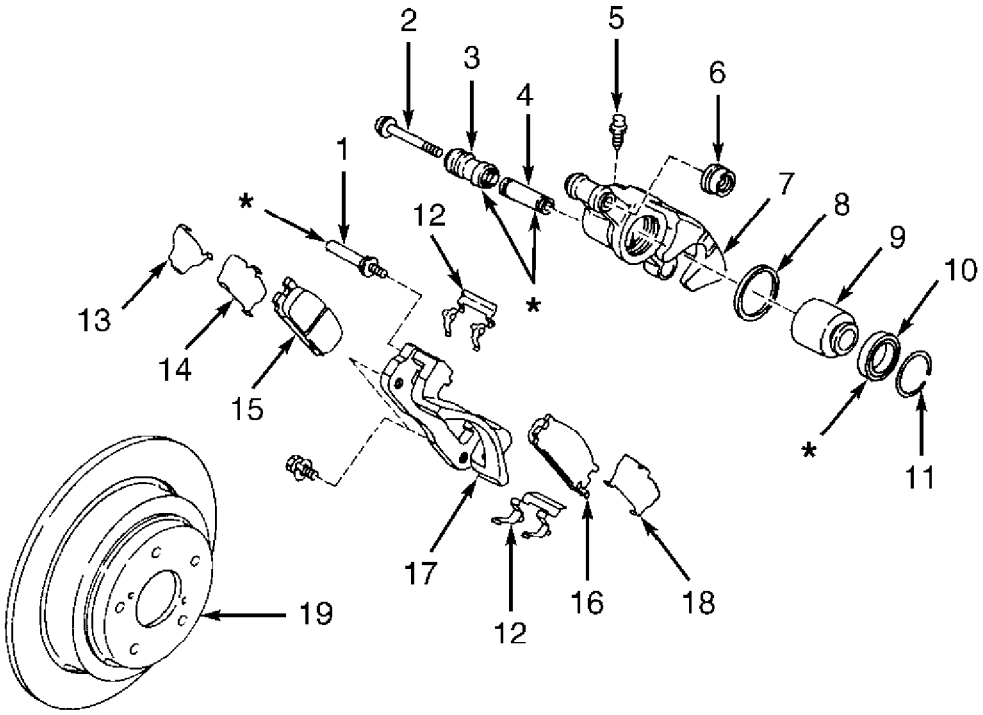


Fig. 4: Exploded View Of Front Dual Piston Caliper
Courtesy of Subaru of America, Inc.



1. Guide Pin
2. Lock Pin
3. Lock Pin Boot
4. Lock Pin Sleeve
5. Air Bleeder Screw
6. Guide Pin Boot
7. Caliper Body
8. Piston Seal
9. Piston
10. Piston Boot
11. Boot Ring
12. Pad Clip
13. Shim
14. Inner Shim
15. Inner Pad
16. Outer Pad
17. Support
18. Outer Shim
19. Disc Rotor

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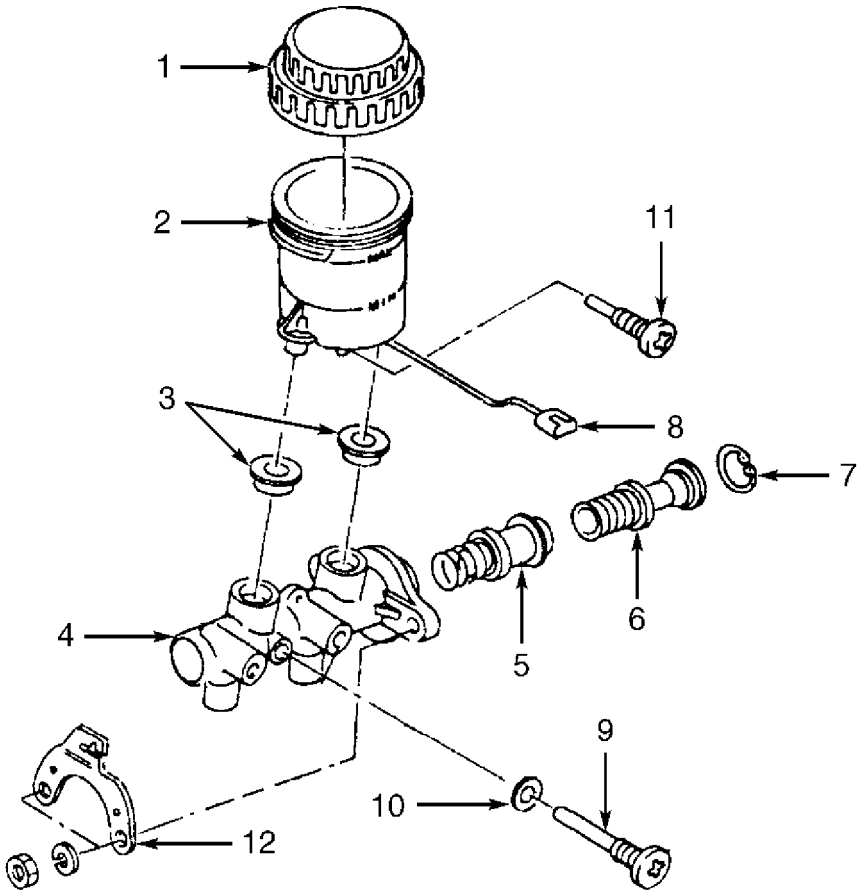
Fig. 5: Exploded View Of Rear Disc Caliper
Courtesy of Subaru of America, Inc.



1. Cap
2. Reservoir Tank
3. Seal
4. Cylinder Body
5. Secondary Piston
6. Primary Piston
7. Snap Ring
8. Level Indicator Assembly
9. Secondary Piston Stopper
10. Gasket
11. Reservoir Stopper Bolt
12. Connector Bracket

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Courtesy of Subaru of America, Inc.

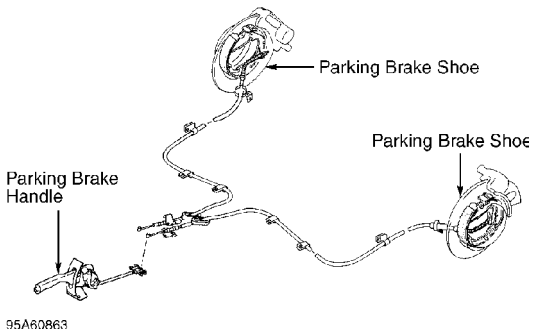

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Fig. 7: Identifying Parking Brake Components (Rear Disc Brake Equipped)
Courtesy of Subaru of America, Inc.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Backing Plate Mounting Bolts	34-43 (46-58)
Booster Mounting Nut	9-17 (12-23)
Brakeline-To-Caliper	10-13 (14-18)
Brakeline-To-Master Cylinder	10-13 (14-18)
Brakeline-To-Wheel Cylinder	10-13 (14-18)
Caliper Guide Pin	
Dual Piston	25-32 (34-44)
Single Piston	
Front	33-40 (45-54)
Rear	12-17 (16-23)
Caliper Pin Bolt	23-30 (31-41)
Caliper-To-Support Bolt (Rear)	16-23 (22-31)
Hill-Holder	
PHV Bracket	22-27 (30-36)
PHV Mount	9-17 (12-23)
Master Cylinder Mounting Nut	7-13 (10-18)
Parking Brake Cable Bracket Bolts	17-27 (23-37)
Proportioning Valve Bolts	9-17 (13-23)
Support Bracket Mounting Bolts	
Front	50-65 (68-88)
Rear	34-43 (46-58)
Wheel Bearing Nut	123-152 (167-206)
Wheel Lug Nut	58-72 (79-98)
	INCH Lbs. (N.m)
Bleeder Screw	61.2-78.0 (7.0-9.0)
Master Cylinder Stop Bolt	12.0-24.0 (1.4-2.7)
PHV Cable Lock Nut	21.6-39.6 (2.5-4.4)

DISC BRAKE SPECIFICATIONS

DISC BRAKE SPECIFICATIONS TABLE

Application	In. (mm)
Disc Rotor Diameter	
Front	11.89 (302)
Rear	11.42 (290)
Lateral Runout (Front Or Rear)	.004 (.10)
Parallelism	(1)
Original Rotor Thickness	
Front	1.10 (28.0)
Rear	.39 (10.0)
Minimum Refinish Thickness	
Front	1.02 (26)
Rear	.34 (8.5)
Discard Thickness	(1)
Master Cylinder Diameter	1.059 (26.9)

(1) - Information is not available at time of publication.

DRUM BRAKE SPECIFICATIONS

DRUM BRAKE SPECIFICATIONS TABLE

Application	In. (mm)
Drum Diameter (1)	7.48 (190.0)
Maximum Refinish Diameter	7.52 (191.0)
Discard Diameter	(2)

(1) - Parking brake drum located inside rear disc rotor.
(2) - Any diameter greater than maximum refinish diameter.

END OF ARTICLE

