

# BRAKE SYSTEM

1993 Nissan Sentra

1993 BRAKES  
Nissan Disc & Drum  
Sentra

## DESCRIPTION & OPERATION

All brake systems are operated hydraulically using a tandem master cylinder and vacuum power unit. All models have front disc brakes. Rear brakes are either drum or disc.

## BLEEDING BRAKE SYSTEM

### BLEEDING PROCEDURES

NOTE: Check fluid level in master cylinder frequently during bleeding procedure.

Bleed brake system in proper sequence. See BRAKELINE BLEEDING SEQUENCE table.

#### BRAKELINE BLEEDING SEQUENCE TABLE

Application	Sequence
Sentra .....	LR, RF, RR, LF

## ADJUSTMENTS

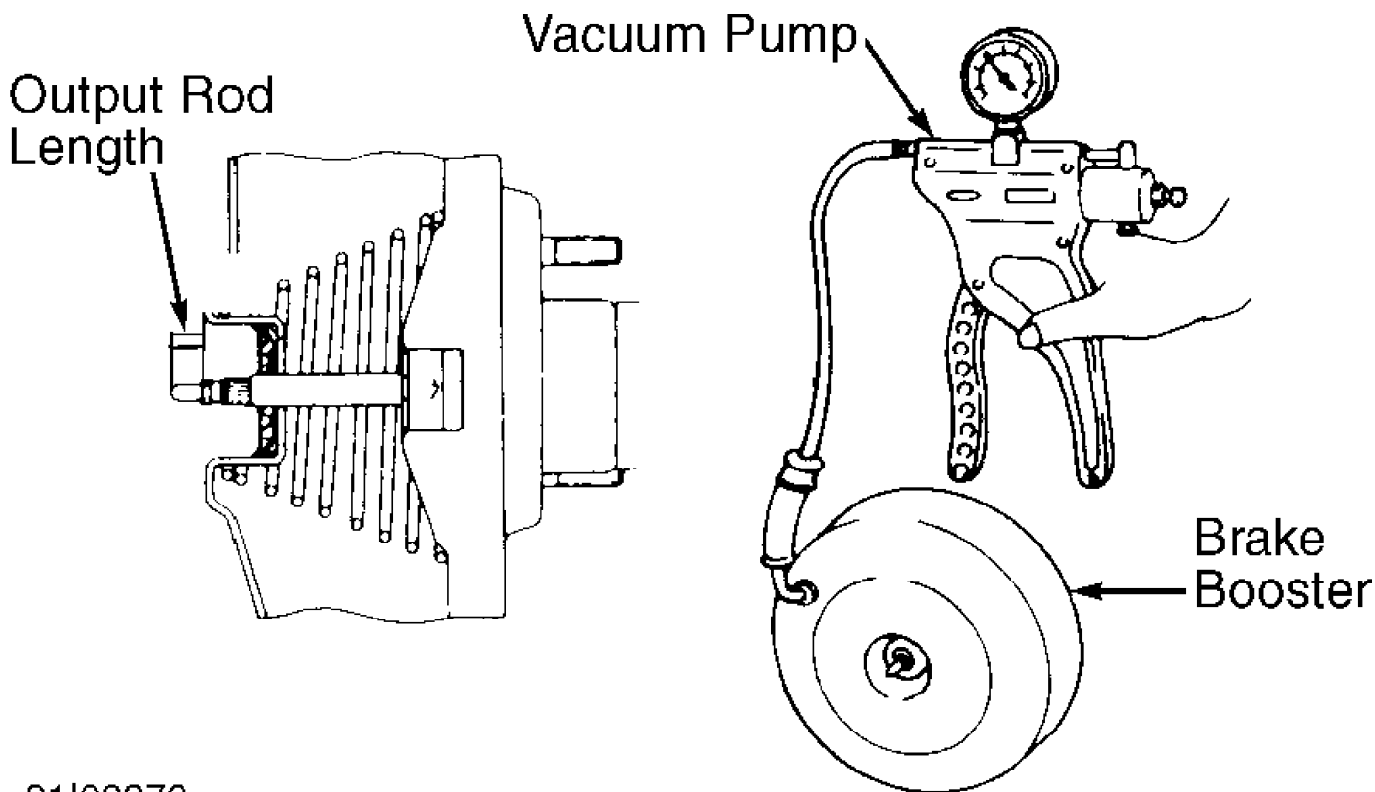
### POWER BRAKE UNIT OUTPUT ROD

1) Attach a hand-held vacuum pump to power brake unit supply port. See Fig. 1. Apply 20 in. Hg vacuum to power brake unit. Measure length of output rod extending from power brake unit housing.

2) See POWER BRAKE UNIT OUTPUT ROD LENGTH SPECIFICATIONS table. Adjust output rod length if necessary. If output rod length cannot be adjusted properly, replace power brake unit.

#### POWER BRAKE UNIT OUTPUT ROD LENGTH SPECS TABLE

Application	In. (mm)
Sentra 1.6L (8" Booster) .....	.19-.20 (4.8-5.1)
Other Models .....	.40-.41 (10.3-10.5)



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Fig. 1: Measuring Output Rod Length  
 Courtesy of Nissan Motor Co., U.S.A.

### BRAKE PEDAL HEIGHT & FREE PLAY

1) Measure pedal height from pressure face of pedal pad to floor pan insulator, without carpet. See BRAKE PEDAL HEIGHT SPECIFICATIONS table.

2) To adjust pedal height, loosen brake booster input rod lock nut, and rotate input rod to attain proper height. Tighten lock nut, and adjust stoplight switch. Ensure pedal free play is .04-.12" (1.0-3.0 mm).

#### BRAKE PEDAL HEIGHT SPECIFICATIONS TABLE

Application	Pedal Height In. (mm)
Sentra	
A/T .....	6.2-6.6 (157-167)
M/T .....	5.8-6.2 (148-158)

### PARKING BRAKE

1) Remove parking brake lever cover. Raise and support rear of vehicle. Pull up on parking brake lever using force of 44 lbs. (20 kg). Rear wheels should lock at appropriate lever stroke. See PARKING BRAKE LEVER STROKE SPECIFICATIONS table.

2) Adjust parking brake using adjusting nut located beside or below parking brake lever. After releasing lever, ensure rear wheels rotate freely and slack is not present at rear cables.

#### PARKING BRAKE LEVER STROKE SPECIFICATIONS TABLE

Application	Notches
Sentra	
Rear Disc Brake .....	7-9
Rear Drum Brake .....	5-7

#### REAR BRAKE SHOE CLEARANCE

1) Set shoe adjustment assembly so clearance between brake drum inside diameter and brake shoes outside diameter is as specified. See BRAKE SHOE INSTALLATION CLEARANCE SPECIFICATIONS table.

2) After brake drum installation, depress brake pedal to center shoes. Check pedal travel. Rotate brake drum to verify free movement.

#### BRAKE SHOE INSTALLATION CLEARANCE SPECIFICATIONS TABLE

Application	In. (mm)
Sentra .....	.014-.022 (.36-.56)

#### STOPLIGHT SWITCH & AUTOMATIC SPEED CONTROL DEVICE SWITCH

1) Both switches are located below dash panel, at brake pedal bracket. Adjust brake pedal height. See BRAKE PEDAL HEIGHT & FREE PLAY.

2) Check clearance and position of switches. Clearance between brake pedal stopper rubber and threaded end of switch should be .01-.04" (0.3-1.0 mm). To adjust, loosen lock nut and turn switch body. After adjustment, tighten lock nut.

#### TESTING

##### POWER BRAKE UNIT

NOTE: Determine whether source of problem is in power brake unit or check valve. Always inspect check valve.

DO NOT disassemble power brake unit. After air-tight and operational tests, replace complete assembly if problem is determined to be in power brake unit.

##### Air-Tight Check

1) Start engine, and operate it for 2 minutes. Turn engine off. Depress brake pedal several times. If brake pedal height rises gradually on successive pedal depressions, go to next step. If pedal does not rise on successive pumps, check for air leak.

2) Start engine. Depress brake pedal and turn engine off. Hold brake pedal down for 30 seconds. If brake pedal height does not change, power brake unit is air tight. If pedal height changes, check for air leak.

##### Operational Check

With engine off, depress brake pedal several times until pedal height no longer changes. Press and hold brake pedal down. Start engine. If pedal goes down slightly, power brake unit is okay. If pedal does not move, check for air leak.

#### PROPORTIONING VALVE

CAUTION: Check rear brake pressure 2 seconds after front brake pressure reaches specified value. On vehicles with ABS, disconnect ABS actuator harness connector.

Using 2 pressure gauges, attach one to front brake bleeder and one to rear brake bleeder. Bleed air from front and rear bleeders. Depress brake pedal until front brake pressure reading is achieved. Check rear brake pressure. See PROPORTIONING VALVE PRESSURE SPECIFICATIONS table. If reading is not as indicated, replace dual proportioning valve (separated type) or master cylinder assembly (built-in type).

PROPORTIONING VALVE PRESSURE SPECIFICATIONS TABLE

Application	Front Brake Pressure psi (kg/cm <sup>2</sup> )	Rear Brake Pressure psi (kg/cm <sup>2</sup> )
Sentra		
With ABS		
Except 2.0L (SE) .....	711 (50) .....	284-341 (20-24)
2.0L (SE) .....	924 (64) .....	498-555 (34-38)
Without ABS		
1.6L .....	1067 (75) .....	640-697 (45-49)
2.0L (SR) .....	782 (55) .....	356-412 (25-29)
2.0L (SE) .....	995 (70) .....	569-626 (40-44)

## REMOVAL & INSTALLATION

NOTE: When removing or installing components, refer to appropriate illustration for exploded view of specific assembly. See Figs. 2-4.

### FRONT BRAKE PADS

#### Removal

1) Raise and support front of vehicle. Remove wheel assembly. Remove bottom guide pin. Rotate caliper body upward on guide pin.

2) Remove pad retainers, shims and brake pads. Note pad condition and location for proper installation (if reusable). Minimum pad thickness is .08" (2.0 mm) for all models.

#### Installation

1) Clean piston and area around lock and guide pins. Install inner pad. Seat piston by placing lever through opening in caliper body and pushing piston into bore. Apply brake grease to pad retainer points on caliper assembly. Install outer pad and shims.

2) Install pad retainers. Rotate caliper body down into original position. Install lower lock pin. Tighten bolts to specification, and depress brake pedal several times to seat pads. See TORQUE SPECIFICATIONS table at the end of this article.

### FRONT BRAKE CALIPER

#### Removal

Raise and support front of vehicle. Remove wheel assembly. Disconnect and plug brake line from caliper. Remove caliper mount bolts. Remove caliper assembly.

#### Installation

To install, reverse removal procedure. Tighten caliper mount

bolts to specification. See TORQUE SPECIFICATIONS table at the end of this article. Bleed hydraulic system. See BLEEDING BRAKE SYSTEM.

## FRONT BRAKE ROTOR

NOTE: For exploded view of hub assembly, see SUSPENSION - FRONT article in the SUSPENSION section.

### Removal & Installation

Raise and support vehicle. Remove wheel assembly. Remove caliper, but DO NOT disconnect brake hose. See FRONT BRAKE CALIPER. Wire caliper aside. Remove rotor from hub. To install, reverse removal procedure.

## REAR BRAKE PADS

### Removal

1) Raise and support rear of vehicle. Remove rear wheel assembly. Release parking brake. Remove parking brake cable retainer (if equipped). Remove lower pin bolts, lock spring and pad retainer spring (if equipped).

2) Rotate caliper upward. Remove pads and pad shims. Note locations and condition of pads for proper installation (if reusable). Minimum pad thickness is .08" (2.0 mm).

### Installation

1) To install, reverse removal procedure. Clean area around pin bolts and piston end. DO NOT damage piston boot. Retract piston into cylinder body by turning it clockwise.

2) On all models, apply silicone brake grease to caliper sliding surfaces and pad contact area on mounting support.

## REAR BRAKE CALIPER

### Removal

Remove rear wheel assembly. Disconnect hydraulic line from caliper, and plug openings. Disconnect parking brake cable and stay (if equipped). Remove caliper mount bolts, and remove caliper assembly.

### Installation

To install, reverse removal procedure. Install and tighten hydraulic line and caliper mount bolts to specification. See TORQUE SPECIFICATIONS table at the end of this article. Bleed hydraulic system. See BLEEDING BRAKE SYSTEM.

## REAR BRAKE ROTOR

### Removal

Remove caliper. See REAR BRAKE CALIPER. Remove rotor from axle flange. If rotor is difficult to remove, install 2 bolts in rotor and gradually tighten them to remove rotor.

### Installation

1) To install, reverse removal procedure.

2) After installation is complete, adjust clearance between pad and rotor by depressing pedal until pedal stroke is constant.

## REAR BRAKE DRUM & SHOES

### Removal

Raise and support vehicle. Remove rear wheel assembly. Remove

drum. Remove brake shoe return springs. Remove adjuster and shoes as an assembly. Separate adjuster and shoes. Remove remaining components, and mark for installation reference.

#### Installation

1) To install, reverse removal procedure. Apply Lubriplate to backing plate bosses, adjuster assembly threads and parking brake lever pin.

2) Before installing drum, adjust brake shoe clearance. See REAR BRAKE SHOE CLEARANCE under ADJUSTMENTS. After installation is complete, depress brake pedal to center shoes, and check pedal travel. Rotate brake drum to ensure free movement.

### MASTER CYLINDER

#### Removal

Disconnect electrical wiring at cylinder reservoir. Disconnect and plug hydraulic lines at master cylinder. Drain fluid from reservoir. Remove cylinder mounting nuts, and remove master cylinder.

#### Installation

To install, reverse removal procedure. Bleed hydraulic system. See BLEEDING BRAKE SYSTEM. Check pedal height. See BRAKE PEDAL HEIGHT & FREE PLAY under ADJUSTMENTS.

### POWER BRAKE UNIT

#### Removal

Remove master cylinder. See MASTER CYLINDER. Disconnect power unit push rod from brake pedal by removing clevis pin. Disconnect vacuum line from power brake unit. Remove power brake unit-to-firewall nuts. Remove power brake unit.

#### Installation

To install, reverse removal procedure. Before installing master cylinder, adjust booster output push rod. See POWER BRAKE UNIT OUTPUT ROD under ADJUSTMENTS.

### POWER BRAKE UNIT CHECK VALVE

#### Removal & Installation

1) Check valve is located in vacuum line between intake manifold and power brake unit. To remove, disconnect retaining clip from firewall (if equipped). Remove hose clamps, separate hoses from valve, and remove check valve.

2) Inspect check valve to ensure air flows in direction of intake manifold only. If air flows both ways or does not flow at all, replace check valve. To install, reverse removal procedure.

### OVERHAUL

NOTE: Overhaul procedures are not available from manufacturer. Refer to appropriate illustration for exploded view of specific assembly. See Figs. 2-4.

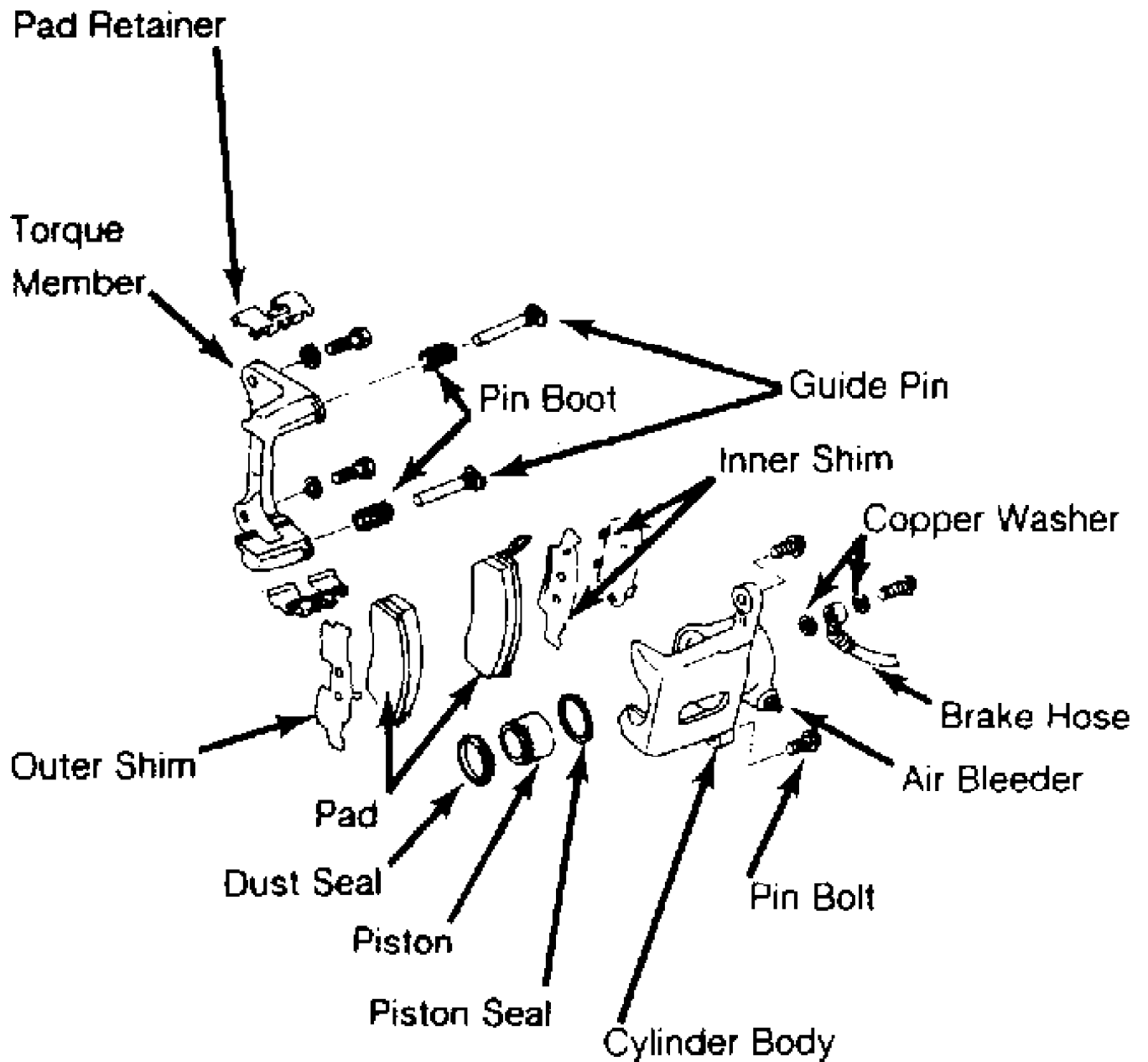
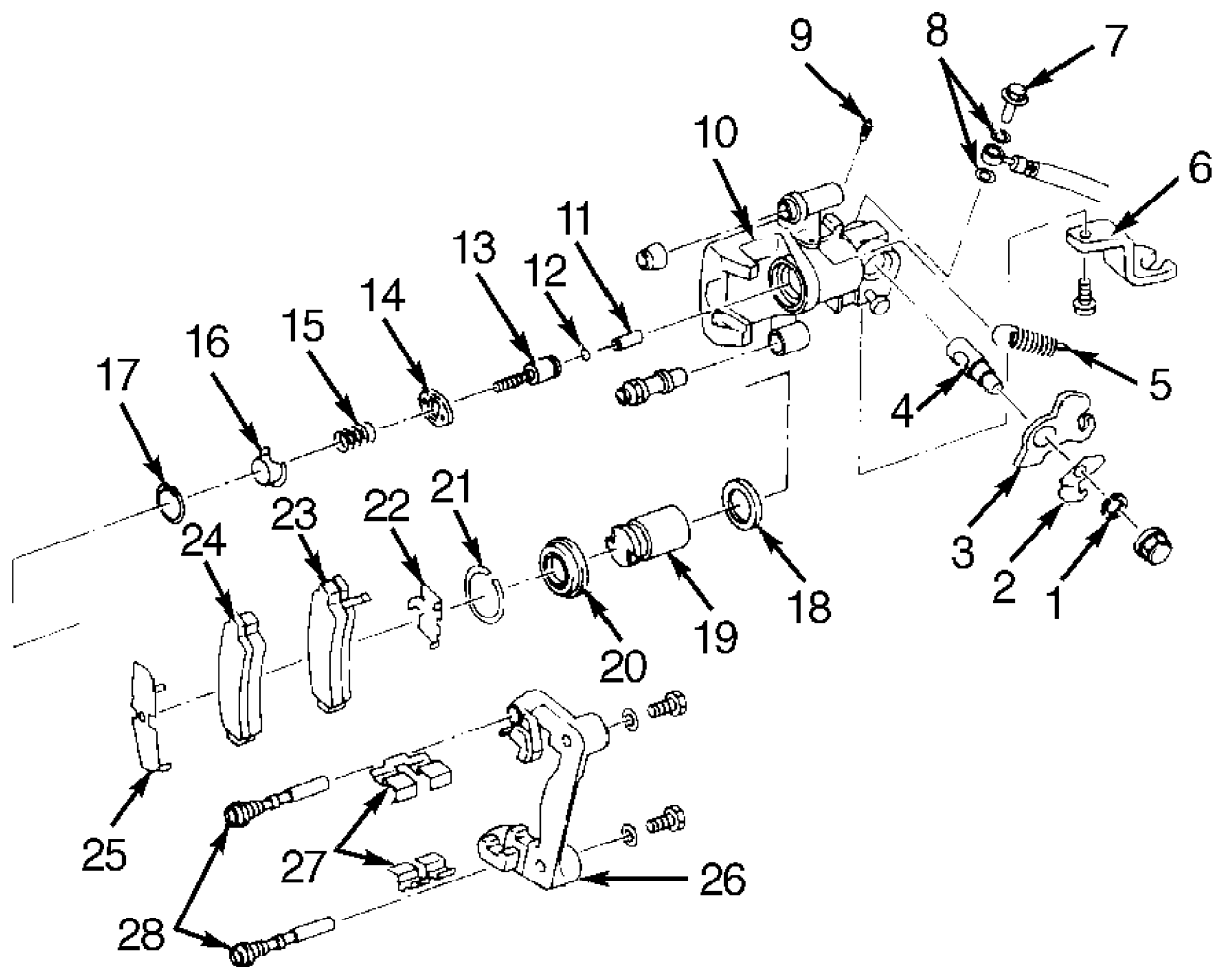


Fig. 2: Exploded View Of Front Brake Caliper (Typical)  
 Courtesy of Nissan Motor Co., U.S.A.



- |                    |                  |                          |
|--------------------|------------------|--------------------------|
| 1. Washer          | 11. Strut        | 20. Piston Boot          |
| 2. Spring          | 12. "O" Ring     | 21. Piston Boot Retainer |
| 3. Toggle Lever    | 13. Push Rod     | 22. Inner Shim           |
| 4. Cam             | 14. Key Plate    | 23. Inner Pad            |
| 5. Return Spring   | 15. Spring       | 24. Outer Pad            |
| 6. Cable Guide     | 16. Spring Cover | 25. Outer Shim           |
| 7. Connecting Bolt | 17. Snap Ring    | 26. Torque Member        |
| 8. Copper Washer   | 18. Piston Seal  | 27. Retainer Spring      |
| 9. Bleed Screw     | 19. Piston       | 28. Side Pin             |
| 10. Cylinder       |                  |                          |

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Fig. 3: Exploded View Of Rear Disc Brake Caliper  
 Courtesy of Nissan Motor Co., U.S.A.



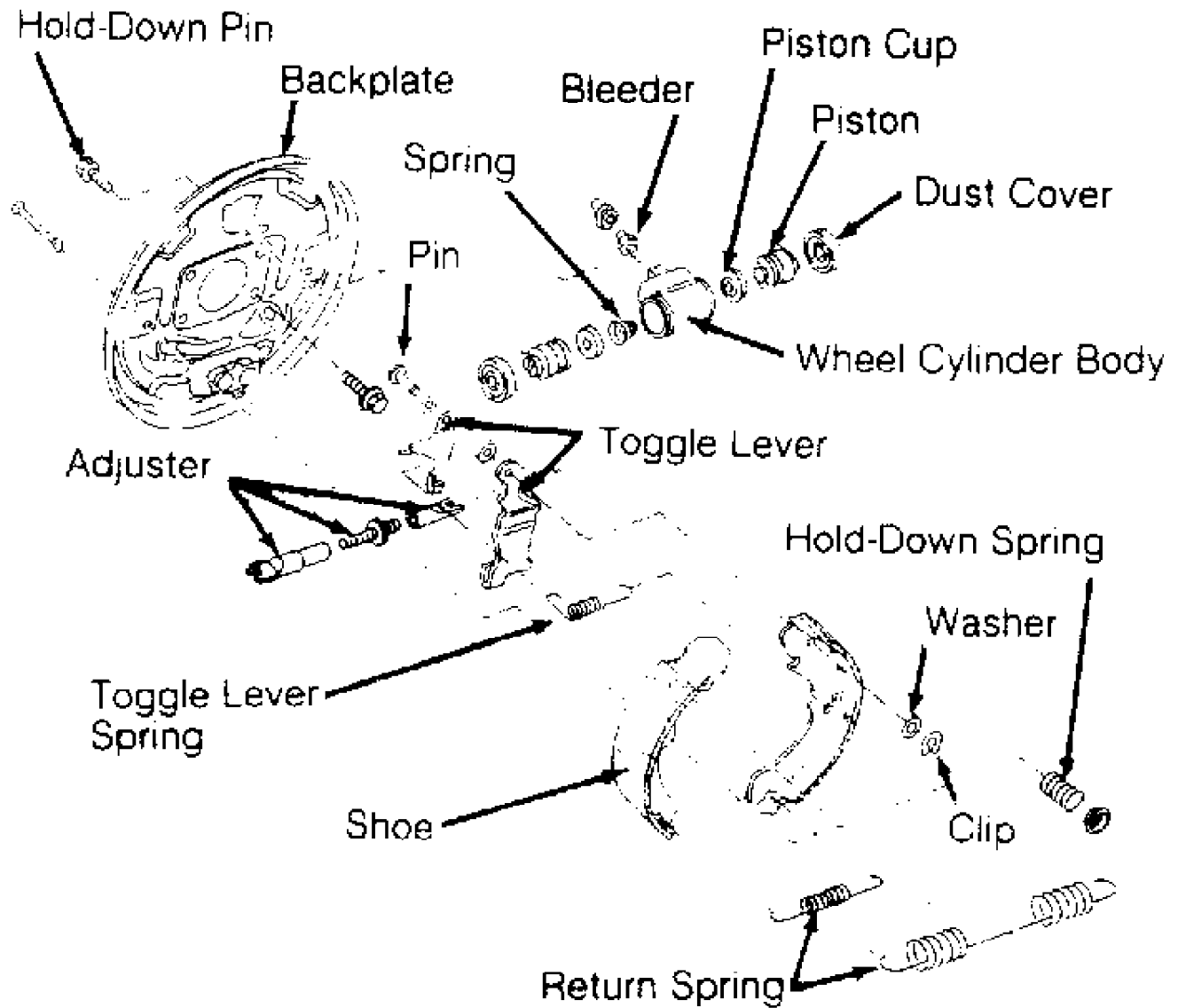


Fig. 4: Exploded View Of Rear Drum Brakes  
 Courtesy of Nissan Motor Co., U.S.A.

## TORQUE SPECIFICATIONS

### TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Backing Plate Mount Bolt/Nut (Rear) .....	28-38 (38-52)
Booster Input Rod Lock Nut .....	12-16 (16-22)
Brake Line Bolt .....	12-14 (16-19)
Brake Line Flare Nut .....	11-13 (15-18)
Brake Pedal Fulcrum Shaft Nut .....	12-16 (16-22)
Caliper-To-Torque Member Bolt	
1.6L .....	16-23 (22-31)
2.0L .....	23-30 (31-41)
Torque Member-To-Mount Bolt	
Front .....	40-47 (54-64)

Rear .....	28-38 (38-52)
Wheel Lug Nuts .....	72-87 (98-118)

INCH Lbs. (N.m)

Master Cylinder Mount Nut .....	72-96 (8-11)
Power Brake Unit-To-Firewall Nut .....	108-144 (12-16)

## DISC BRAKE SPECIFICATIONS

DISC BRAKE SPECIFICATIONS TABLE

Application	In. (mm)
Disc Diameter	
Front	
1.6L .....	9.45 (240.0)
2.0L	
SE Model .....	10.12 (257.0)
SR Model .....	9.84 (249.9)
Rear .....	9.21 (233.9)
Disc Thickness (Std.)	
Front	
1.6L .....	.71 (18.0)
2.0L	
SE Model .....	1.02 (25.9)
SR Model .....	.71 (18.0)
Rear .....	.28 (7.1)
Lateral Runout .....	.003 (.08)
Master Cylinder Bore Diameter	
1.6L	
With ABS .....	.875 (22.22)
Without ABS	
Standard .....	.750 (19.05)
GXE & XE Models .....	.813 (20.64)
2.0L .....	.875 (22.22)
Minimum Disc Thickness	
Front	
Without ABS	
1.6L .....	.63 (16.0)
2.0L	
SE Model (1) .....	.63 (16.0)
SR Model .....	.63 (16.0)
With ABS	
1.6L .....	.63 (16.0)
2.0L	
SE Model .....	.945 (24.0)
SR Model .....	.63 (16.0)
Rear .....	.24 (6.1)

(1) - Sports package is .945 inch (.240 mm)

## DRUM BRAKE SPECIFICATIONS

DRUM BRAKE SPECIFICATIONS TABLE

Application	In. (mm)
Drum Diameter .....	7.09 (180.1)
Master Cylinder Bore Diameter	

Standard .....	.750 (19.05)
GXE & XE Models .....	.813 (20.64)
Maximum Out-Of-Round .....	.0012 (.030)
Maximum Refinish Diameter .....	7.13 (181.1)
Runout .....	.002 (.05)
Wheel Cylinder Bore Diameter .....	.625 (15.88)

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