

BRAKE SYSTEM

Article Text

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:31PM

ARTICLE BEGINNING

1995-96 BRAKES

Volkswagen - Disc & Drum

Golf

DESCRIPTION

All models are equipped with front disc brakes. Rear brakes are either disc or drum. Parking brake acts on rear brakes and is cable-actuated. All models use a pressure regulator between front and rear brake circuits to avoid rear wheel lock-up during hard braking.

A vacuum-assisted brake booster is used to ease brake pedal application. A vacuum check valve, located in vacuum supply hose, prevents vacuum leakdown when engine is off.

SERVICING

Manufacturer recommends replacing brake fluid every 2 years. After replacing brake fluid, bleed brake system. See

BLEEDING BRAKE SYSTEM

BLEEDING BRAKE SYSTEM

CAUTION: Ensure fluid level in master cylinder is adequate at all times during bleeding procedure. Use only DOT 4 brake fluid. DO NOT use DOT 5 silicone brake fluid.

BLEEDING PROCEDURES

NOTE: Manufacturer recommends bleeding brake system using Pressure Bleeder (US 1116). If a pressure bleeder is not available, use standard bleeding procedure.

1) Exhaust vacuum reserve from power unit by depressing brake pedal several times. On ABS-equipped vehicles, depress brake pedal at least 20 times to relieve system pressure.

2) On all vehicles, fill master cylinder with clean brake fluid. If master cylinder was replaced, bleed master cylinder before bleeding wheel calipers. Connect bleeder hose to appropriate bleeder valve. See BRAKELINE BLEEDING SEQUENCE table.

BRAKELINE BLEEDING SEQUENCE TABLE

AA
Application (1) Sequence

Golf RR, LR, RF, LF

(1) - On all vehicles, push brake pressure regulator lever in direction of rear axle when bleeding rear brakes.

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Pressure regulator is mounted on a bracket near rear trailing arm. See Fig. 1.

AA

3) Submerge other end of hose in clean glass jar partially filled with clean brake fluid. Pump brake pedal several times, then hold down. Open bleeder valve. Holding pedal down, close bleeder valve. Release brake pedal.

4) Repeat procedure until brake fluid shows no signs of air bubbles. When bleeding rear brakes, push lever of pressure regulator in direction of rear axle.

5) After bleeding ABS-equipped vehicles, turn ignition on. Allow pump to run until it shuts off. If pump runs longer than 2 minutes, allow pump to cool for 10 minutes. On all vehicles, ensure master cylinder reservoir is full.

ADJUSTMENTS

BRAKE PRESSURE REGULATOR

NOTE: Brake pressure regulator is mounted on a bracket near rear trailing arm. See Fig. 1.

CAUTION: DO NOT adjust pressure regulator with brake pedal depressed.

1) Ensure fuel tank is full and spare tire is in trunk. Raise and support vehicle. Attach Pressure Gauges (VAG 1310) to left front brake caliper and right rear brake caliper/cylinder. Bleed pressure gauge and hoses through valve on gauges.

2) Lower vehicle and bounce rear of vehicle several times. Press on brake pedal until front brake pressure gauge reading equals pressure listed in 1st Reading column of BRAKE PRESSURES table. Hold brake pressure. Rear brake pressure gauge reading should be within specification in 1st Reading column of BRAKE PRESSURES table.

3) Release brake pedal. Press on brake pedal until front brake pressure gauge reading equals pressure listed in 2nd Reading column of BRAKE PRESSURES table. Hold brake pressure. Rear brake pressure gauge reading should be within specification in 2nd Reading column of BRAKE PRESSURES table.

4) Adjust spring tension on brake pressure regulator if rear brake pressure for 1st and/or 2nd reading is not within specification. Decreasing spring tension will reduce system pressure. Increasing spring tension will increase system pressure. Recheck regulator pressures and re-adjust regulator as needed.

BRAKE PRESSURES TABLE

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Application	1st Reading psi (Bar)	2nd Reading psi (Bar)
Front Gauge	725 (50)	1450 (100)
Rear Gauge		

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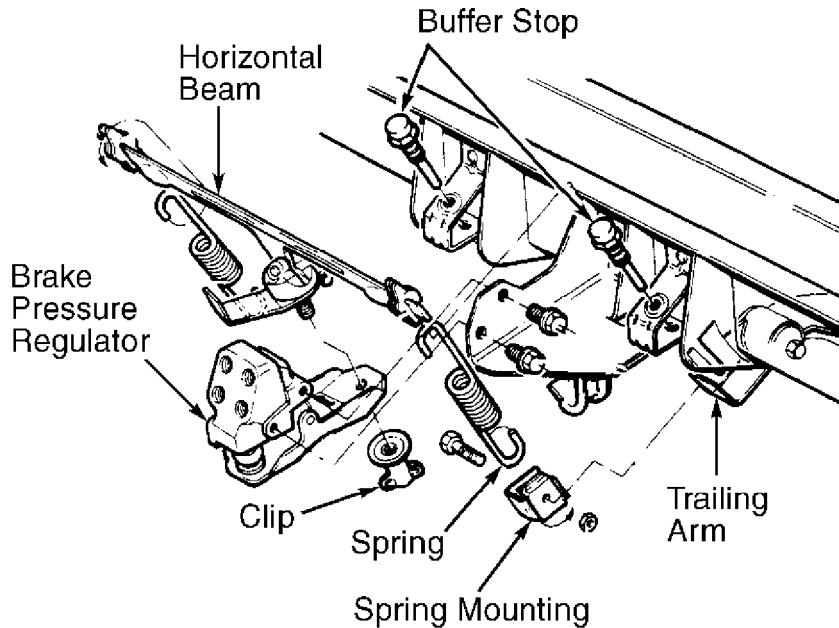
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Disc Brakes 406-493 (28-34) 711-798 (49-55)
Drum Brakes 435-508 (30-35) 740-812 (51-56)
AA



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Fig. 1: Identifying Brake Pressure Regulator Components (Typical)
Courtesy of Volkswagen United States, Inc.

MASTER CYLINDER PUSH ROD

NOTE: Master cylinder push rod is not adjustable.

STOPLIGHT SWITCH

NOTE: Some stoplight switches (Type 3) are mounted on master cylinder and are not adjustable.

Adjustable Stoplight Switch (Type 1)

Switch is located above brake pedal. To adjust, loosen lock nut. Turn switch until distance between brake pedal arm and first thread on switch body is .20-.24" (5-6 mm). See Fig. 2. Tighten lock nut.

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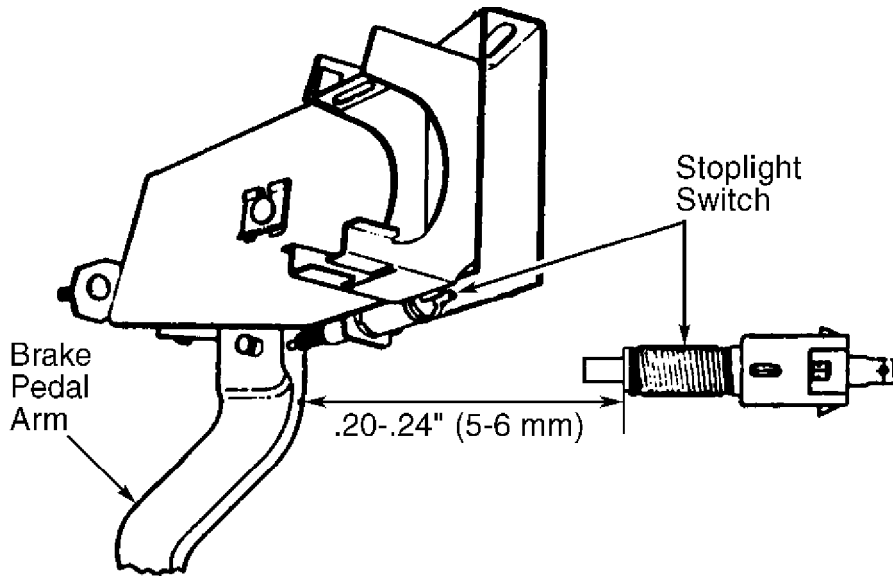
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Fig. 2: Adjusting Stoplight Switch (Type 1)
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Adjustable Stoplight Switch (Type 2)

1) Switch must be removed to adjust. Switch is located above brake pedal. Remove trim under instrument panel.

2) Disconnect stoplight switch connector. Turn stoplight switch clockwise 90 degrees. Remove switch. Pull stoplight switch plunger fully out. Depress brake pedal as far as possible by hand.

3) Guide stoplight switch through locating hole and secure by turning counterclockwise 90 degrees. Pull brake pedal up to stop by hand. This sets stoplight switch back one notch. Connect stoplight switch connector.

4) Ensure stoplight switch operates properly. Repeat steps 2) and 3) if necessary. If stoplight switch operates okay, install trim under instrument panel.

PARKING BRAKE

Rear Disc

1) Raise and support vehicle. Disengage parking brake. Loosen locking nuts at parking brake lever. Tighten adjusting nuts until levers on calipers just move off stops. Measure gap between stop and lever. See Fig. 3.

2) Maximum clearance between parking brake lever (on caliper) and stop is .04-.12" (1-3 mm). Apply and release parking brake. Ensure rear wheels rotate freely. Tighten lock nuts.

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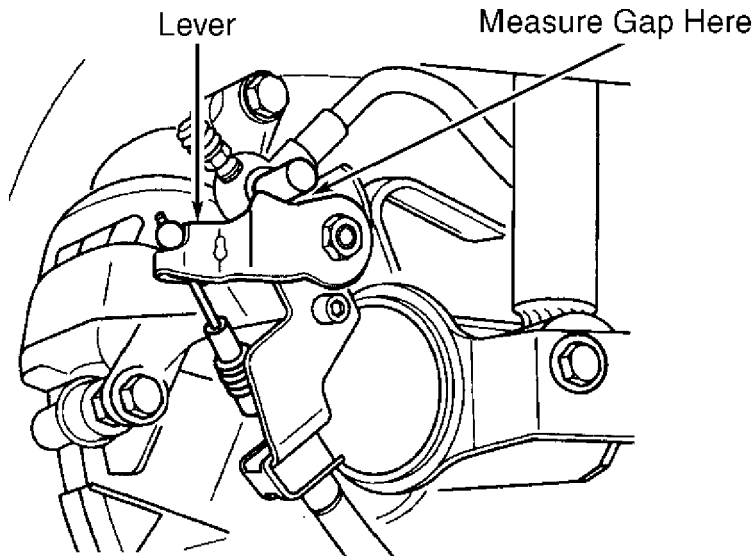
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Fig. 3: Adjusting Rear Disc Parking Brake
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Rear Drum

Raise and support vehicle. Apply brake pedal once firmly. Pull parking brake handle up 4 notches. Loosen locking nuts at parking brake lever. Tighten adjusting nuts until respective rear wheel can just be rotated by hand. Release parking brake. Ensure rear wheels rotate freely. Tighten lock nuts.

WHEEL BEARINGS

NOTE: Front wheel bearings, also called hub or axle bearings, are sealed units with 1-piece outer race. Bearings are not adjustable.

Rear Wheel Bearings

Tighten adjusting nut snugly while turning drum or rotor. Back off and retighten nut just until axial movement is eliminated. Install locking cap and NEW cotter key. Install dust cap.

REMOVAL & INSTALLATION

FRONT DISC BRAKE PADS

BRAKE SYSTEM

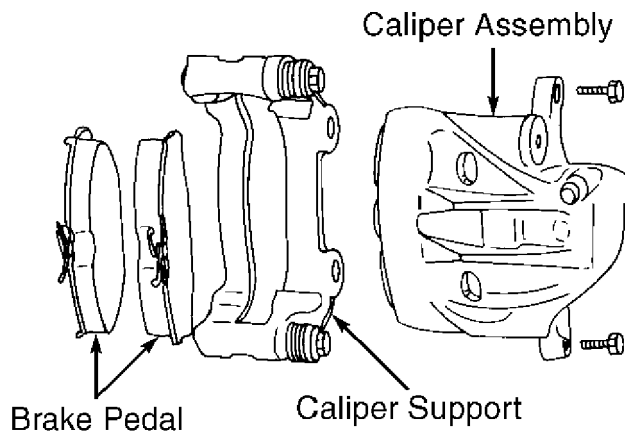
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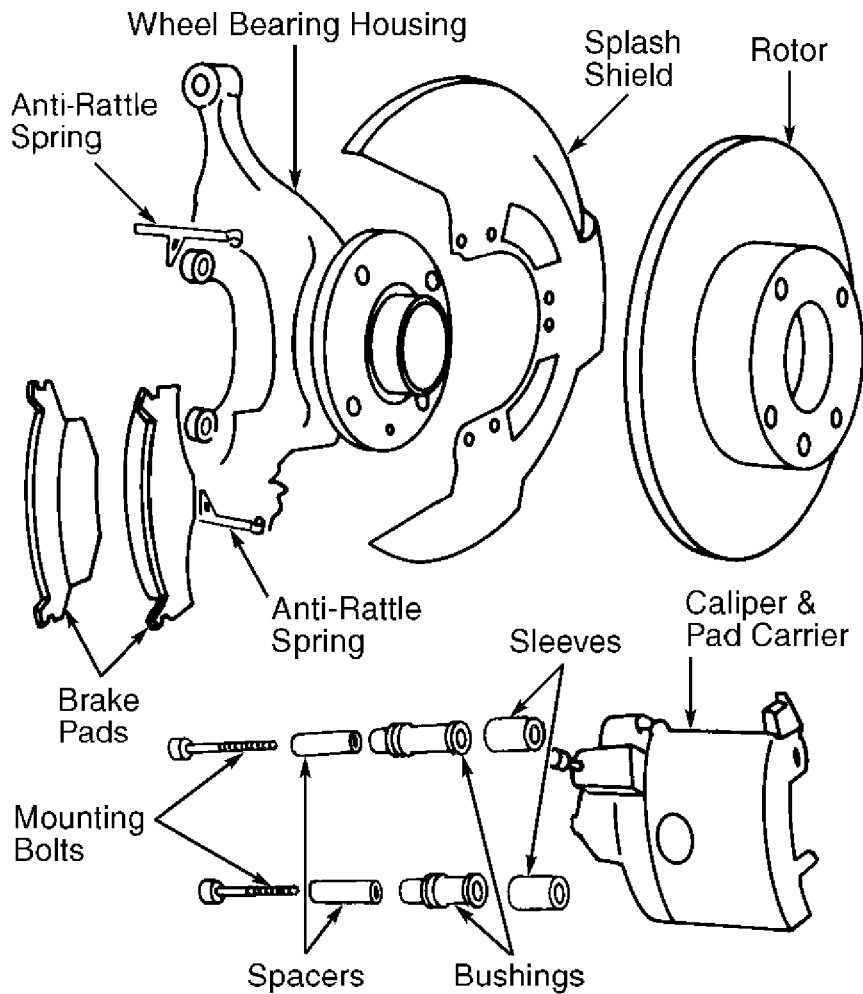
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Fig. 4: Identifying Front Caliper Components (Typical)
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Fig. 5: Identifying Front Disc Brake Components (Typical)
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Removal

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1) Raise and support vehicle. Remove front wheels. Hold lower guide pin using an open end wrench. Remove lower caliper mounting bolt. Push caliper assembly upward and swing out from bottom. See Figs. 4 and 5.

2) Siphon small amount of brake fluid from reservoir. Remove pads and retaining springs from caliper support. Replace pads exceeding wear limit. Wear limit of pads is .28" (7.0 mm), including backing plate.

Installation

1) Seat caliper piston fully into cylinder bore. Install inner pad and then outer pad. Swing caliper assembly down. Hold lower guide pin using an open end wrench.

2) Install lower caliper mounting bolt. Depress brake pedal several times to allow pads to move into operating position. Ensure master cylinder reservoir fluid level is full.

FRONT & REAR BRAKE CALIPER

Removal & Installation

1) Raise and support vehicle. Remove wheels. Disconnect brakeline from caliper, and plug openings. Bend back locking tabs (if equipped) on mounting bolts. If removing rear brake calipers, disconnect parking brake cables.

2) On all calipers, remove caliper mounting bolts. See Fig. 4. Remove caliper assembly from wheel bearing housing. To install, reverse removal procedure. Use NEW lock plates (if equipped) and mounting bolts. Bleed hydraulic brake system. See BLEEDING PROCEDURES under BLEEDING BRAKE SYSTEM

FRONT & REAR BRAKE ROTOR

Removal

Raise and support vehicle. Remove wheels. Remove caliper and suspend from frame with wire. Remove countersunk screw that holds rotor to hub. Pull rotor off hub.

Installation

To install, reverse removal procedure. Adjust wheel bearings (if necessary). See WHEEL BEARINGS under ADJUSTMENTS.

REAR DISC BRAKE PADS

Removal

Raise and support vehicle. Remove rear wheels. Disconnect parking brake cable from caliper. Remove caliper mounting bolts. Remove caliper, and wire aside. Siphon small amount of brake fluid from reservoir. Remove pads and retaining springs from caliper support. Replace pads that exceed wear limit. Wear limit of pads is .28" (7.0 mm), including backing plate.

Installation

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Seat caliper piston fully into cylinder bore. Install inner pad first and then install outer pad. Position caliper. Install caliper mounting bolts. With engine off, depress brake pedal several times to allow pads to move into operating position. Ensure master cylinder reservoir fluid level is full.

REAR BRAKE DRUM

Removal

Raise and support vehicle. Remove rear wheel. Remove grease cap, cotter pin, nut lock and nut. Remove thrust washer and outer bearing. Remove drum with inner bearing and grease seal.

Installation

To install, reverse removal procedure. Adjust wheel bearings. See WHEEL BEARINGS under ADJUSTMENTS. Apply brake pedal firmly several times to set self-adjusting mechanism.

REAR BRAKE SHOES

Removal

1) Remove brake drum. See REAR BRAKE DRUM under REMOVAL & INSTALLATION. After removing drum, remove retainer clips, hold-down springs and anchor pins. Remove lower return spring. Disconnect parking brake cable from lever. See Fig. 6.

2) Disconnect adjusting wedge spring and upper return spring. Remove brake shoes together with push rod and tensioning spring. Place push rod and shoes in vise. Remove tension spring. Separate shoes from push rod.

Installation

To install, reverse removal procedure. Ensure lug on adjusting wedge faces backing plate. Adjust wheel bearings (if necessary). See WHEEL BEARINGS under ADJUSTMENTS. Apply brake firmly to set self-adjusting mechanism.

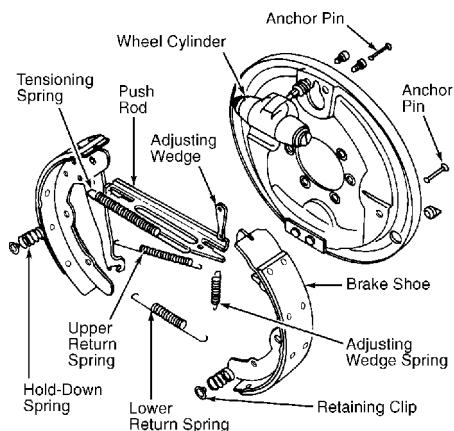


Fig. 6: Identifying Rear Drum Brake Components (Typical)
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MASTER CYLINDER R & I

Removal

- 1) Drain master cylinder reservoir. Remove cover plate (if equipped). Disconnect brakelines and wiring at master cylinder.
- 2) Remove master cylinder from brake booster. Be careful to keep any spacers used on attaching bolts for proper installation.

Installation

To install, reverse removal procedure. Always use NEW "O" ring between master cylinder and brake booster. Bleed hydraulic system. See BLEEDING BRAKE SYSTEM

VACUUM-ASSISTED BRAKE BOOSTER

Removal

Remove master cylinder from brake booster. See MASTER CYLINDER R & I. Disconnect brake push rod from brake pedal. Disconnect vacuum hose from booster. Remove booster from vehicle.

NOTE: Not all vehicles have all components.

Installation

To install, reverse removal procedure. Always use NEW damping ring, washer, filter and "O" ring (as equipped). Slots in damping washer and filter must be offset 180 degrees (if equipped). Complete installation, and bleed hydraulic system. See BLEEDING BRAKE SYSTEM

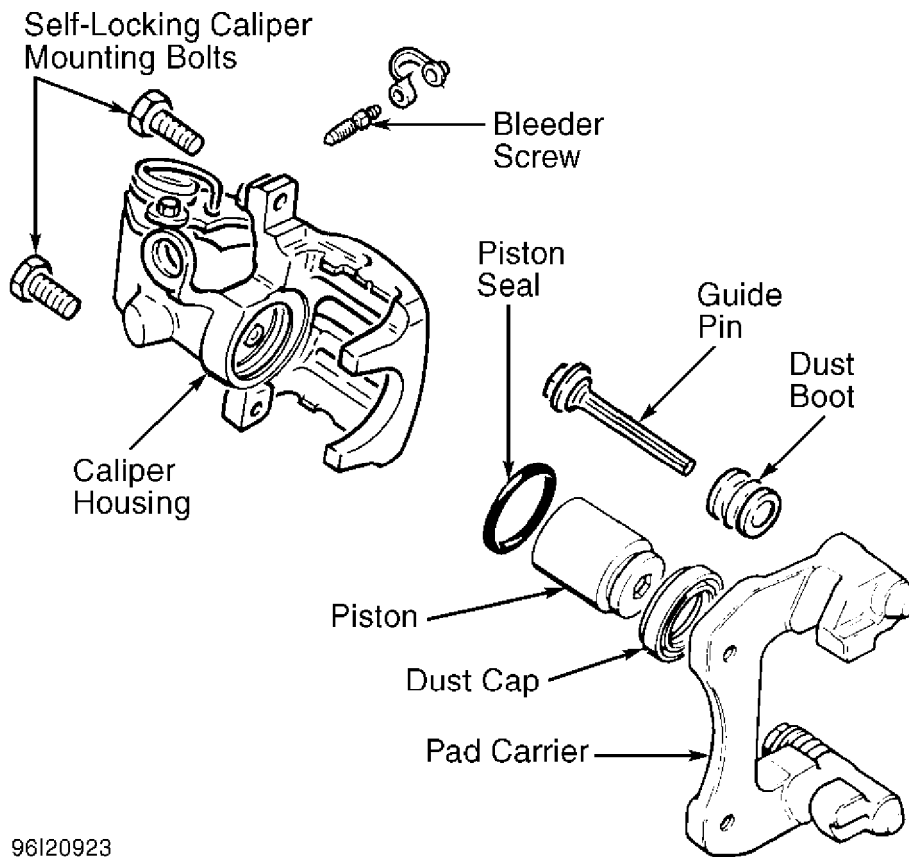
OVERHAUL

BRAKE CALIPER

NOTE: Black staining from piston seal wear may show on caliper bore walls and piston. This staining is normal.

Remove brake caliper. See FRONT & REAR BRAKE CALIPER under REMOVAL & INSTALLATION. Refer to illustration for overhaul. See Fig. 7

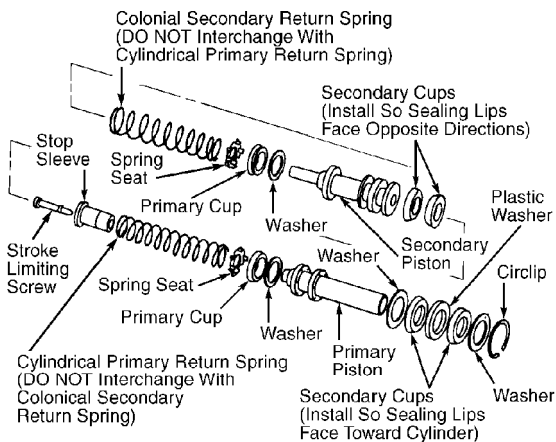
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Fig. 7: Identifying Caliper Components (Typical)
 Courtesy of Volkswagen United States, Inc.

MASTER CYLINDER

NOTE: Manufacturer does not recommend overhaul of master cylinder. Illustration is provided for information purposes only. See Fig. 8.



96A20925
Fig. 8: Identifying Master Cylinder Components (Typical)
 Courtesy of Volkswagen United States, Inc.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application Ft. Lbs. (N.m)

Caliper Mounting Bolts (1)	
Front	18 (25)
Rear	26 (35)
Pad Carrier Mounting Bolt	48 (65)
Rear Backing Plate-To-Flange Bolt	44 (60)
Wheel Lug Bolt	81 (110)

INCH Lbs. (N.m)

Wheel Cylinder Bolt	89 (10)
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(1) - Always replace all self-locking bolts.

DISC BRAKE SPECIFICATIONS

DISC BRAKE SPECIFICATIONS TABLE (1)

Application In. (mm)

Front	
Solid Disc	
Disc Diameter	(2)
Original Thickness47 (12.0)
Wear Limit39 (10.0)
Vented disc	
4-Cylinder	
Disc Diameter	10.08 (256.0)
Original Thickness79 (20.0)
Wear Limit71 (18.0)
VR6	
Disc Diameter	11.02 (280.0)
Original Thickness87 (22.0)
Wear Limit79 (20.0)
Rear	
Disc Diameter	8.90 (226.0)
Original Thickness39 (10.0)

(1) - Lateral runout is .002" (.05 mm).

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

DRUM BRAKE SPECIFICATIONS

DRUM BRAKE SPECIFICATIONS TABLE

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AAA
Application In. (mm)

Drum Diameter 9.06 (230.0)
Maximum Drum Refinish Diameter (1)
Wear Limit 9.11 (231.5)

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

END OF ARTICLE