

BRAKE SYSTEM

Article Text

1993 Volkswagen EuroVan
For Volkswagen Technical Site
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Saturday, March 18, 2000 10:30PM

ARTICLE BEGINNING

1993 BRAKES
Volkswagen Disc & Drum

EuroVan

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 pressure regulator between front and rear brake circuits to avoid rear wheel lock-up during hard braking.

A vacuum power-assist servo 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.

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

BRAKELINE BLEEDING SEQUENCE TABLE

Application (1) Sequence

EuroVan RR, LR, RF, LF

(1) - Push lever of pressure regulator in direction of rear axle when bleeding rear brakes.

Application (1) Sequence

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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 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

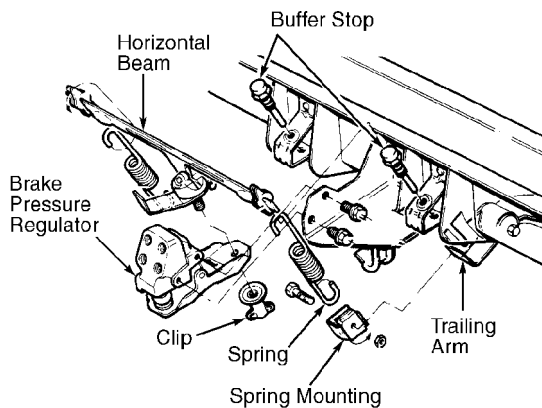
CAUTION: On all models, DO NOT adjust pressure regulator with brake pedal depressed.

1) Raise and support vehicle. Attach Pressure Gauges (VAG 1310) to right front brake caliper and left rear brake cylinder. Bleed pressure gauge and hoses through valve on gauges.

2) Press on brake pedal until reading on front gauge shows pressure given for first reading in BRAKE PRESSURES table. Hold brake pressure to specification. Rear gauge reading should be within specification given for first reading in BRAKE PRESSURES table.

NOTE: A .039" (1 mm) adjustment of slide mounting will change brake system pressure approximately 58 psi (4 kg/cm²)

3) If pressure is not within specification, loosen spring sliding mounting bolt. See Fig. 1. Move slide mounting downward to increase pressure and upward to decrease pressure. Ensure that horizontal beam remains within .16" (4 mm) of being level. Tighten bolts and repeat step 2).



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Fig. 1: Identifying Brake Pressure Regulator Components
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BRAKE PRESSURES TABLE

Application	Front Gauge psi (kg/cm ²)	Rear Gauge psi (kg/cm ²)
EuroVan (1)		
1st Reading	725 (51)	261-319 (18-22)

(1) - On EuroVan, 2nd reading is not used.

STOPLIGHT SWITCH

NOTE: Stoplight switches mounted on master cylinder are nonadjustable.

Adjustable stoplight switch is located above brake pedal. See Fig. 2. 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). Tighten lock nut.

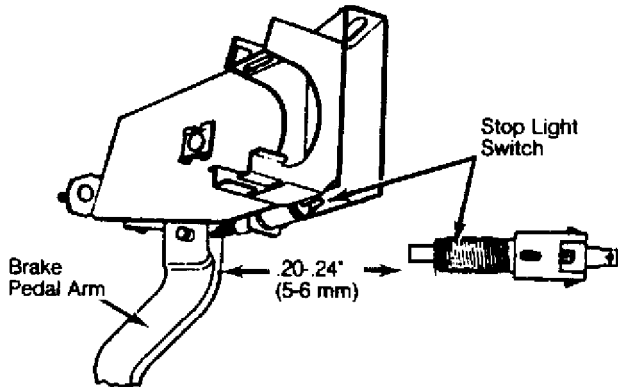


Fig. 2: Adjusting Stoplight Switch
 Courtesy of Volkswagen United States, Inc.

PARKING BRAKE

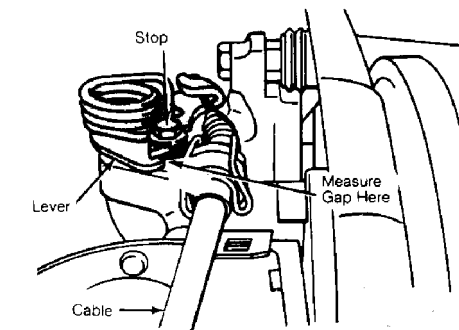


Fig. 3: Adjusting Rear Disc Parking Brake
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Disengage parking brake. Raise and support vehicle. Remove brake drums. Tighten parking brake cable adjusting nut until parking brake lever moves .08" (2 mm) away from inner brake shoe. Install brake drum and ensure both wheels rotate freely.

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 & 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. 5. 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 BRAKE DRUM

CAUTION: ALWAYS loosen or tighten castellated axle nuts with wheels on ground.

Removal

Release parking brake. Raise and support vehicle. Remove wheel. Remove brake drum attaching screw. Remove brake drum. If necessary, use screwdriver, inserted through backing plate hole, to back off brake shoe adjustment.

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Installation

To install, reverse removal procedure. 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. 4.

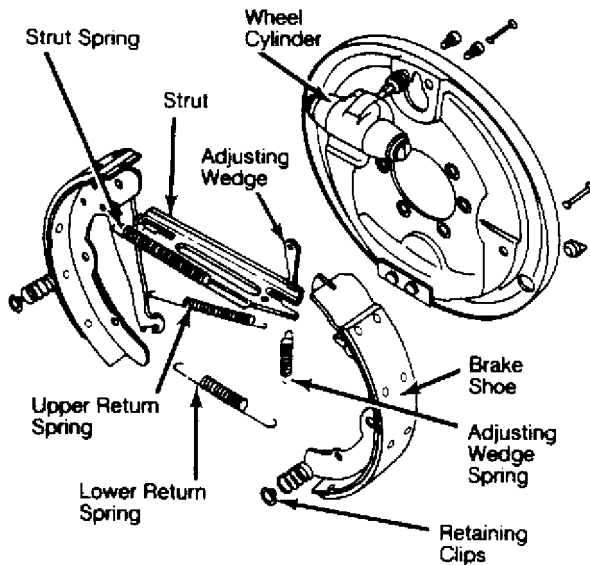


Fig. 4: Identifying Rear Brake Components (Typical)
Courtesy of Volkswagen United States, Inc.

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.

MASTER CYLINDER

Removal

1) Drain master cylinder reservoir. Remove cover plate (if equipped). Disconnect brakelines and wiring at master cylinder.

2) On models without power assist servo, disconnect brake push rod at brake pedal. On models equipped with power assist servo,

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remove master cylinder from servo. 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 power assist servo. Bleed hydraulic system.

VACUUM POWER ASSIST SERVO

Removal

Remove master cylinder from power assist servo. Disconnect brake push rod from brake pedal. Disconnect vacuum hose from servo. Remove servo from vehicle.

NOTE: Not all vehicles have all components.

Installation

To install, reverse removal procedure. Before attaching brake push rod to brake pedal, check and adjust push rod length. See MASTER CYLINDER PUSH ROD under ADJUSTMENTS. 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.

OVERHAUL

NOTE: Black staining from piston seal wear may show on caliper bore walls and piston. This staining is normal. DO NOT disassemble power assist servo as parts are not available.

Refer to appropriate illustration for caliper and master cylinder overhaul. See Figs. 5 and 6.

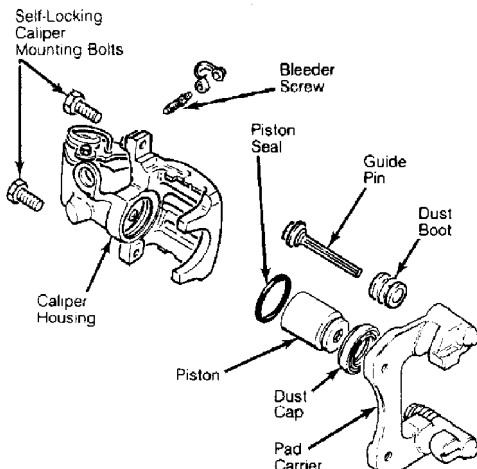


Fig. 5: Identifying Caliper Components (Typical)
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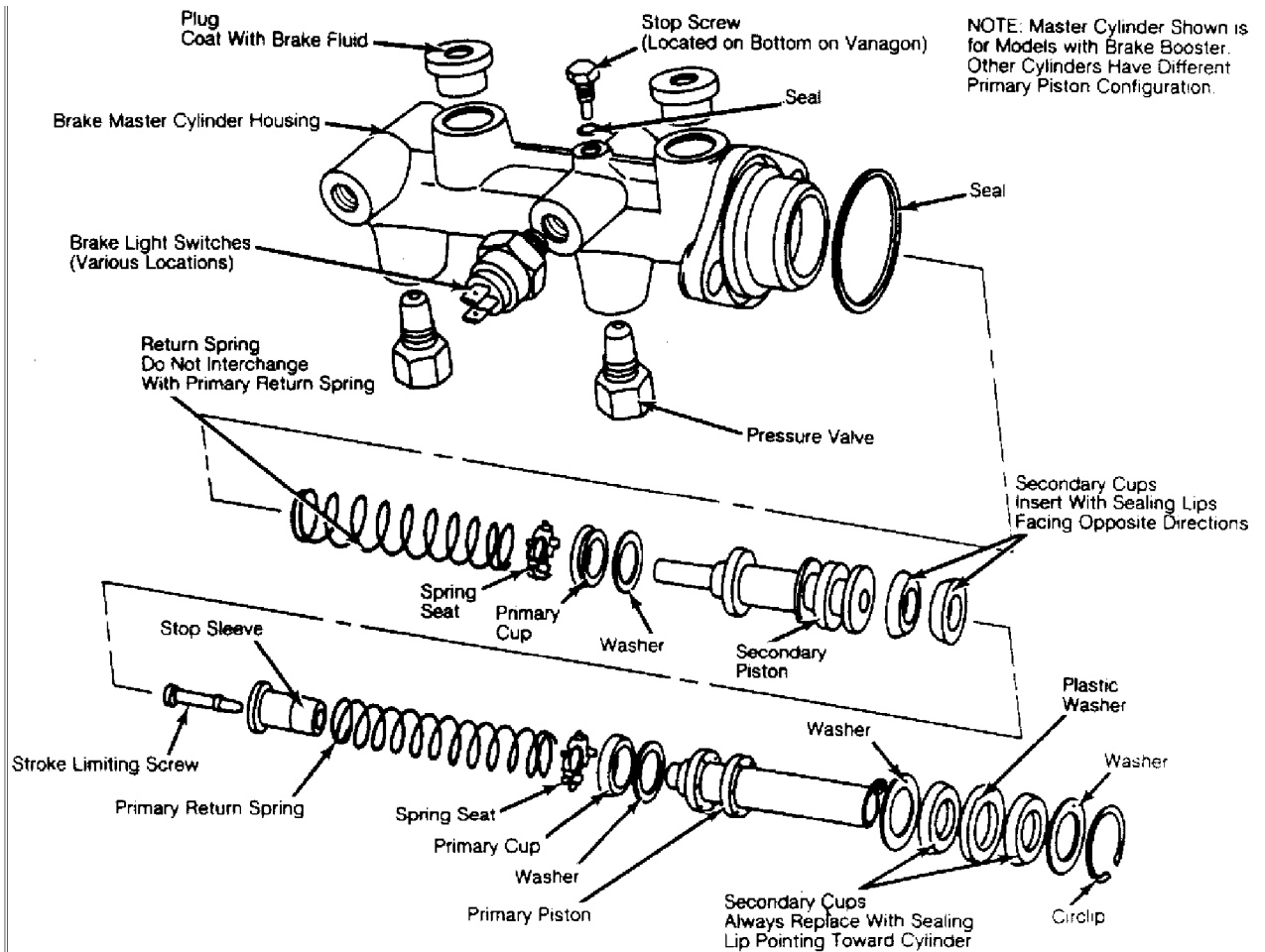


Fig. 6: Identifying Power Assist Master Cylinder Components
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TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Caliper Mounting Bolts (1)	53 (70)
Rear Backing Plate-To-Flange Bolt	44 (60)
Wheel Lug Nut	118 (160)
	INCH Lbs. (N.m)
Wheel Cylinder Bolt	80 (9)

(1) - Always replace all self-locking bolts.

DISC BRAKE SPECIFICATIONS

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DISC BRAKE SPECIFICATIONS TABLE (1)

AA

Application	In. (mm)
Front	
Disc Diameter	(2)
Original Thickness	(2)
Wear Limit787 (20)
Rear	
Original Thickness394 (10)
Wear Limit315 (8)

- (1) - Lateral runout is .002" (.05 mm).
- (2) - Information not available from manufacturer.

AA

DRUM BRAKE SPECIFICATIONS

DRUM BRAKE SPECIFICATIONS TABLE

AA

Application	In. (mm)
Drum Diameter	(1)
Maximum Drum Refinish Diameter	(1)
Wear Limit	10.610 (269.5)

- (1) - Information not available from manufacturer.

AA

END OF ARTICLE