

1970-73 AUDI S90 & 100

S90 (1970-72)
100 (1970-73)

DESCRIPTION

Brake system is hydraulically operated, utilizing a tandem master cylinder and Teves T 51/349 power brake unit. Front disc brakes consist of rotors attached to transmission output flanges, and two-piston calipers attached to transmission. Disc pads are equipped with a ceramic transmitter-type wear sensor. Transmitter is mounted on cross spring and will break when contact is made with pad plates, interrupting control circuit and causing indicator light on instrument panel to be activated. Rear brakes are leading-trailing shoe/drum type, using a dual piston wheel cylinder. Parking brake is cable actuated, operating secondary shoes of rear brake assemblies.

ADJUSTMENT

NOTE — Adjustments or readjustments should be carried out on cold brakes. However, brakes must be warm when testing. Instrument panel trim must be removed to adjust master cylinder push rod free play.

MASTER CYLINDER PUSH ROD FREE PLAY

Check brake pedal free play by measuring distance between master cylinder push rod and master cylinder piston. This measurement should be .039" (1.0 mm), which would give free play of .20" (5.08 mm) at brake pedal. If necessary to adjust, loosen lock nut on push rod and turn push rod until correct clearance is obtained. Tighten lock nut and again measure pedal free play at brake pedal.

FRONT DISC BRAKES

Front disc brakes are self-adjusting, therefore, no adjustment in service is required.

REAR DRUM BRAKES

Raise and support rear of vehicle and release parking brake. Using a 17 mm wrench, tighten eccentric adjusters until wheels can no longer be turned by hand. Loosen eccentric adjusters until wheels are just free to turn.

PARKING BRAKE

Raise and support rear of vehicle and adjust rear brakes. Lift parking brake lever until it engages third ratchet stop. Adjust nut at equalizer until rear wheels are just free to turn. When parking brake lever is pulled up one additional notch (to fourth ratchet stop), rear wheels should be locked.

HYDRAULIC SYSTEM BLEEDING

Fill master cylinder reservoir with brake fluid and maintain level throughout bleeding operation. Attach a hose to bleeder screw, and immerse opposite end in a container partially full of brake fluid. Open bleeder screw approximately one-half turn, depress brake pedal, close bleeder screw, and slowly return pedal. Continue operation until air bubbles are no longer seen in discharged fluid. Bleeding sequence is left-rear, right-rear, right-front, left-front.

REMOVAL & INSTALLATION

FRONT DISC BRAKE PADS

Removal — Remove lock clips. Pull out retaining pins so they project into openings in side members. **NOTE** — Do not remove rubber grômets from side member holes. Using a suitable extractor tool (SB-3), remove disc pads from caliper. **NOTE** — Disc pads can be removed on right side only after removing front exhaust pipe.

Installation — Press both pistons into caliper bores. **NOTE** — Fluid level in master cylinder reservoir will rise. Siphon sufficient fluid to prevent reservoir from overflowing. Ensure pistons are in correct alignment in bores using suitable tool (B-5). Install disc pads in recesses of caliper, slide in retaining pins, and install lock clip. Pump brake pedal several times to position disc pads. Bleed hydraulic system if necessary.

FRONT DISC BRAKE CALIPER & ROTOR

Removal — 1) On vehicles equipped with automatic transmission, disconnect steering damper from its bracket and move out of way. On all models, depress brake pedal approximately 1.2" (30.48 mm) and hold in this position by using suitable pedal support. Disconnect temperature transmitter wire from connector (near transmission).

2) On automatic transmission equipped vehicles, disconnect hydraulic line at union on transmission, EGR line at exhaust pipe, and exhaust pipe from hangers. On all models, disconnect and remove front exhaust pipe and shield from manifold, and drive shaft at stub axle.

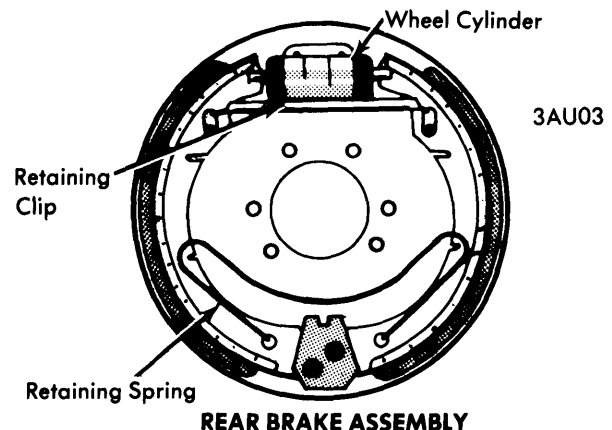
3) Remove ball joint mounting bolt, pull wheel downward, and swing out steering knuckle after prying it off ball joint. Remove disc brake pads, leaving spring and wire in vehicle. Remove EGR filter from oil pan. Remove caliper mounting nuts, then remove caliper and rotor from stub axle. **NOTE** — If necessary, pry engine assembly to one side to ease removal.

Installation — To install, reverse removal procedure, tighten caliper mounting bolts securely, and bleed hydraulic system.

REAR BRAKE DRUM

Removal — Raise and support vehicle, remove wheel and tire assembly. Pry off dust cap, remove cotter pin from hex nut, and remove nut. Remove brake drum making sure that retaining washer and wheel bearing do not fall out.

Installation — To install, reverse removal procedure, adjust brakes, and adjust wheel bearings. See *Wheel Bearing Adjustment* in WHEEL ALIGNMENT Section.



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REAR BRAKE SHOES

Removal — With brake drum removed, remove retaining spring for brake shoes. Remove shoes as an assembly by disconnecting spring at bottom, pulling shoes back from wheel cylinder, and disconnecting parking brake cable.

Installation — To install, reverse removal procedure and note the following: Make sure long ends of retaining clip and spring are installed on secondary shoe and parking brake lever. Ensure brake shoes are correctly positioned on wheel cylinder pistons.

REAR BRAKE WHEEL CYLINDER

Removal — With drum and shoes removed, depress brake pedal approximately 1.4" (35.56 mm) and hold in this position by using suitable pedal support. Disconnect remaining hydraulic line and cylinder mounting nuts. Separate master cylinder from power unit, taking care not to lose "O" ring installed between units.

Installation — To install, reverse removal procedure, adjust brakes and bleed hydraulic system.

MASTER CYLINDER

Removal — Disconnect hydraulic line at rear of master cylinder. Depress brake pedal 1.2-1.6" and hold in position using a suitable pedal support. Disconnect remaining hydraulic line and cylinder mounting nuts. Separate master cylinder from power unit taking care not to lose "O" ring installed between them.

Installation — To install, reverse removal procedure and bleed hydraulic system.

POWER BRAKE UNIT

Removal — Siphon brake fluid from master cylinder reservoir and disconnect hydraulic lines. Loosen hose clamp and disconnect vacuum hose from power unit. From inside vehicle, remove trim below instrument panel as necessary. Disconnect push rod from brake pedal, remove power unit adapter attaching nuts, and remove power unit and master cylinder from engine compartment as an assembly. Separate master cylinder and adaptor from power unit.

Installation — To install, reverse removal procedure and note the following: Be sure to install "O" ring between master cylinder and power unit. Install adaptor to power unit so that center punch mark on adaptor is located on lower right hand side facing engine. To complete installation, adjust pedal push rod free play and bleed hydraulic system.

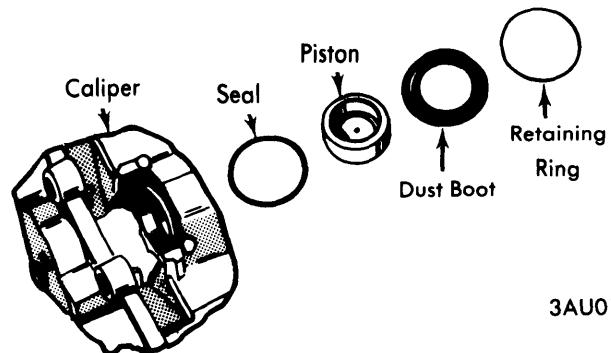
Check Valve Replacement — A vacuum check valve is located in vacuum line between intake manifold and power unit. To remove, loosen hose clamps, separate vacuum hoses from check valve, and remove check valve. To install, reverse removal procedure and note the following: Check valve is stamped with the word "MOTOR" and an arrow. End of valve in which arrow points must be connected to shorter hose from intake manifold.

OVERHAUL

FRONT DISC BRAKE CALIPER

Disassembly — Remove disc pads. Pry out retaining ring and remove dust seal by hand. Place a small block of wood in caliper cavity, and remove piston by applying compressed air to fluid inlet. Remove remaining piston in same manner.

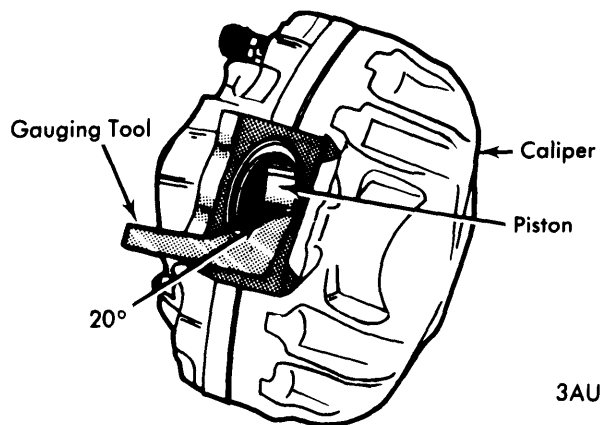
Remove seal from caliper bore using a piece of wood or plastic. **NOTE** — Do not use hard or sharp tools for this purpose. Do not separate caliper halves.



3AU01
FRONT DISC BRAKE CALIPER ASSEMBLY

Cleaning & Inspection — Clean all parts in alcohol only. Check cylinder bore and piston for damage. **NOTE** — Do not machine caliper bore or piston. Parts are serviced by replacement only.

Reassembly — Coat all parts with ATE brake cylinder paste (or equivalent), reverse disassembly procedure, and note the following: Use new seals, dust boots, and retaining rings when reassembling. When installing piston, make sure machined surface of piston face makes a 20° angle to wall of caliper bore (see illustration). Install disc pads after caliper has been installed on vehicle.



3AU02
PISTON INSTALLATION

REAR WHEEL CYLINDER

Disassembly — Thoroughly clean outside of cylinder. Remove end caps, piston and seal assemblies, and spring. Remove dust cap and bleeder screw.

Cleaning & Inspection — Clean all parts in alcohol only. Check all parts for rust, corrosion, and damage. Check cylinder bore and piston for wear or damage. Cylinder bore should not exceed .6287" (16.0 mm) and piston diameter should not be less than .619" (15.74 mm). **NOTE** — Manufacturer recommends replacing rubber components on each disassembly.

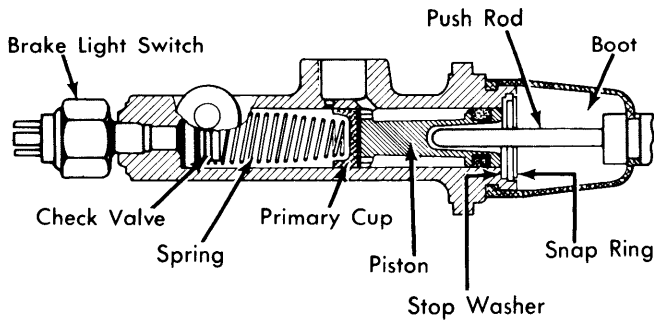
Reassembly — Reverse disassembly procedure and note the following: Apply a thin coat of ATE brake cylinder paste (or equivalent) to all parts during assembly.

Brakes

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MASTER CYLINDER

Disassembly — Remove reservoir, brake light switch, circlip and dismantle cylinder. To extract piston, unscrew stop screw.



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**AUDI MASTER CYLINDER
(COMPONENT PARTS)**

Cleaning & Inspecting — Clean all parts in denatured alcohol. Inspect bore and piston for rust or wear and replace any parts out of tolerance. It is advisable to always replace rubber parts.

Reassembly — Preassemble pistons and coat cups with ATE brake cylinder paste (or equivalent). Insert assembly into cylinder bore, install stop screw and circlip. Install brake light switch and reservoir.

NOTE — Models without power brake servo differ slightly. Primary piston design is somewhat varied. Piston is equipped with only one secondary boot. There is no air compensating bore. Brake light switch location is different.

TIGHTENING SPECIFICATIONS	
Application	Ft. Lbs. (mkg)
Caliper-To-Transmission	72 (10.0)
Brake Line Nuts	8 (1.1)
Drive Shaft-To-Transmission	74 (10.3)

DISC BRAKE ROTOR SPECIFICATIONS						
Application	Disc Diameter In. (mm)	Lateral Runout In. (mm)	Parallelism In. (mm)	Original Thickness In. (mm)	Minimum Refinish Thickness In. (mm)	Discard Thickness In. (mm)
All Models	11.45 (292.0)	.004 (1.0)	.0008 (.02)	.413 (10.5)354 (9.0)

BRAKE SYSTEM SPECIFICATIONS				
Application	Drum Diam. In. (mm)	Wheel Cylinder Diameter		Master Cylinder
		Front In. (mm)	Rear In. (mm)	Diameter In. (mm)
All Models	7.87 (200.0)	①	.625 (15.8)	.813 (20.7)

① — Front disc equipped.