AUDI

4000
5000

DESCRIPTION

NOTE – *In this article, non-turbocharged Audi 5000 models are referred to as "5000"; turbocharged models are referred to as "Turbo".*

Brake system is hydraulically operated using a tandem master cylinder and power brake unit. Front brakes are sliding caliper disc. Rear brakes on Turbo models are sliding caliper disc; all other models use leading/trailing shoe drum brakes. Brake hydraulic system incorporates a brake pressure regulator to prevent premature lock-up of rear wheels. All service brake systems are self-adjusting. Parking brake is cable actuated on rear brake system.

ADJUSTMENT

STOP LIGHT SWITCH

On Turbo models, remove connector, loosen locknut and turn switch until tip is just touching brake pedal. Attach ohmmeter and turn switch until reading is infinite (switch open). Turn switch two additional turns and tighten lock nut. On all other models, loosen lock nut and turn switch until distance between tip and switch body is .087-.098" (2.2-2.5 mm). See *Fig. 1*. Tighten lock nut and check operation of switch.

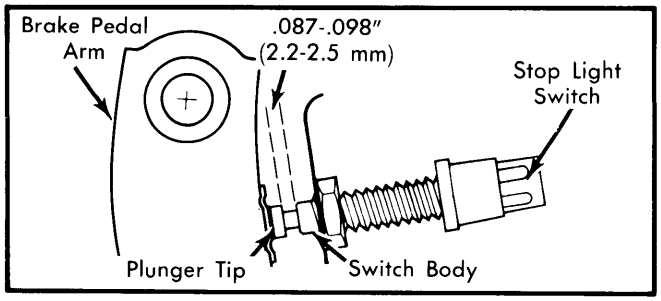

Fig. 1 Adjusting Stop Light Switch

PARKING BRAKE

NOTE – *Parking brake adjustment on Turbo is required only if rear calipers or parking brake parts are replaced.*

Turbo – Raise and support vehicle. Release parking brake lever and ensure parking brake levers at each rear wheel are resting on caliper stops (loosen parking brake cable adjustment if necessary). Depress brake pedal 40 times, then pull parking brake lever up to 3rd notch. Tighten adjusting nut at equalizer until both wheels can just be turned by hand. Release parking brake lever and check that wheels rotate freely and levers on calipers return to stops. See *Fig. 2*.

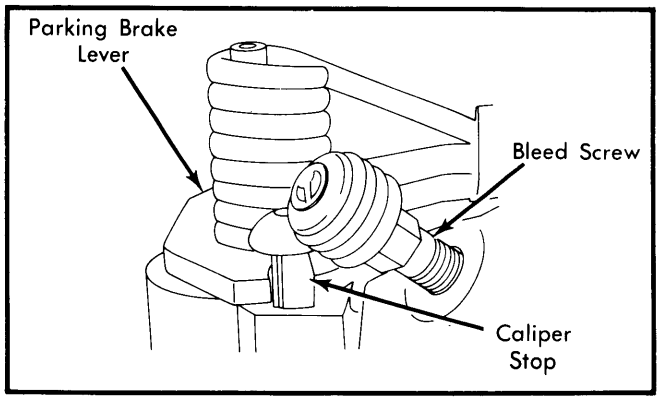

Fig. 2 Turbo Rear Disc Brake Caliper Parking Brake Lever Resting Position

Except Turbo – Raise and support vehicle. Firmly depress brake pedal once. Set parking brake lever at 3rd notch (2nd on 4000) from fully released position. Tighten adjusting nut at equalizer until both wheels can just be turned by hand. Release parking brake lever and ensure both wheels rotate freely.

BRAKE WARNING LIGHT

A dual warning light is mounted on dash. Light should glow when parking brake lever is pulled 1 notch and go off when lever is fully released (ignition on). To check circuit warning sensor, release parking brake (ignition on) and ensure light is off. Open bleeder screw on 1 wheel and depress brake pedal; light should glow.

BRAKE PRESSURE REGULATOR

Checking & Adjusting – **1)** Regulator is located on rear frame. Empty vehicle, fill fuel tank and load driver's seat to 165 lbs. (74.8 kg). Bounce rear of car several times and allow vehicle to settle normally. Firmly depress brake pedal and release quickly; regulator should have moved.

2) Measure distance from top of tire rim to lower edge of fender lip (both sides). Install left spring tensioner. Raise vehicle on hoist and insert right spring tensioner (upper end only). Lower vehicle and bounce rear of car several times. Allow car to settle normally and attach right spring tensioner to axle.

NOTE – *Spring tensioners and measurement are not required if drive-on type hoist is used to support vehicle.*

3) Raise vehicle and check measurement; adjust if necessary. Connect 1500 psi (110 kg/cm²) gauge to left front caliper and another to right rear wheel cylinder (caliper). Bleed gauges and depress brake pedal firmly several times. Depress brake pedal until front gauge reaches specification listed in table. Check rear gauge reading.

Brake Pressure Regulator Pressures

Application	Front Gauge psi (kg/cm²)	Rear Gauge psi (kg/cm²)
4000		
1st Reading	725 (51)	457-566 (32-40)
2nd Reading	1450 (102)	725-914 (51-64)
5000 & Turbo		
1st Reading	725 (51)	493-566 (35-40)
2nd Reading	1450 (102)	827-899 (58-63)

4) If pressures are consistently high at rear gauge, loosen regulator clamp bolt and REDUCE spring tension. If pressures were consistently low, INCREASE spring tension. If pressures cannot be obtained after adjustment, replace regulator.

AUDI (Cont.)

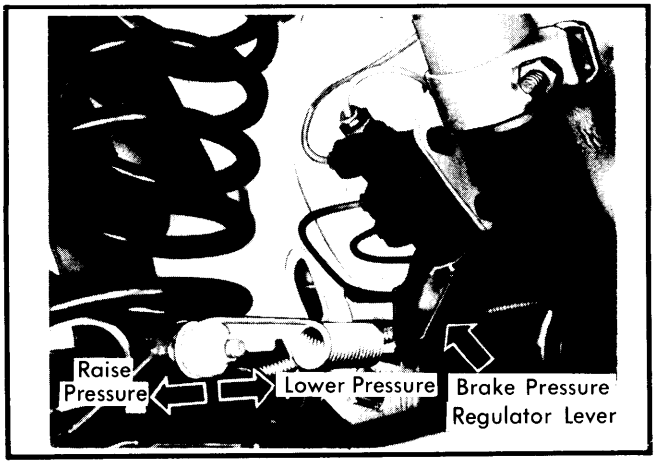

Fig. 3 Brake Pressure Regulator Adjustment (Audi 4000 Regulator is Mounted in Reverse Direction)

REMOVAL & INSTALLATION

NOTE – *During removal or installation of brake pads or calipers, siphon small amount of brake fluid from master cylinder reservoir BEFORE pushing caliper piston into cylinder bore to prevent overflowing. Also, when reusing brake pads, mark the pads to ensure replacement in their original locations.*

NOTE – *Whenever brake pads or shoes are replaced and when brake rotors or drums are resurfaced or replaced, make sure the part is replaced or resurfaced on both sides of the vehicle to prevent uneven braking.*

FRONT DISC BRAKE PADS

Removal (5000) – Raise and support vehicle, remove tire and wheel. Remove plug from end of caliper guide pin. Remove Allen head bolts from top of caliper mounting frame. Thread 8 mm bolts into caliper guide pins and pull to remove guide pins. Remove caliper from mounting frame and lay aside. Remove brake pads (outer pad first) and push piston into housing.

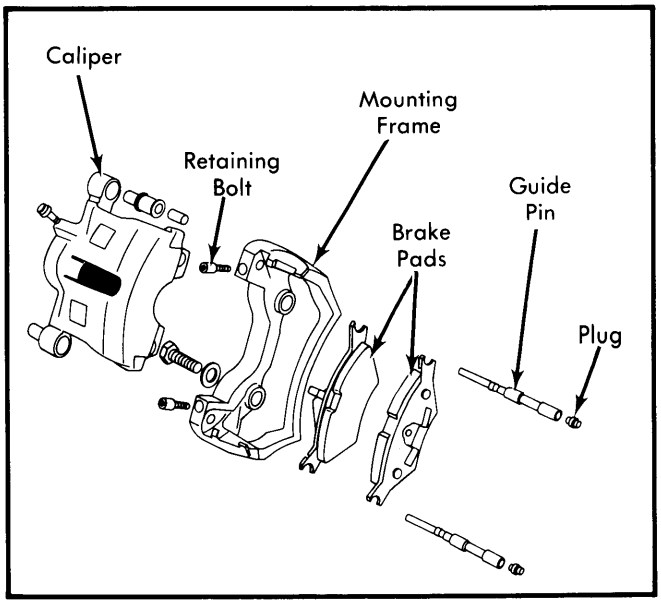

Fig. 4 Exploded View of Audi 5000 Front Disc Brake Assembly

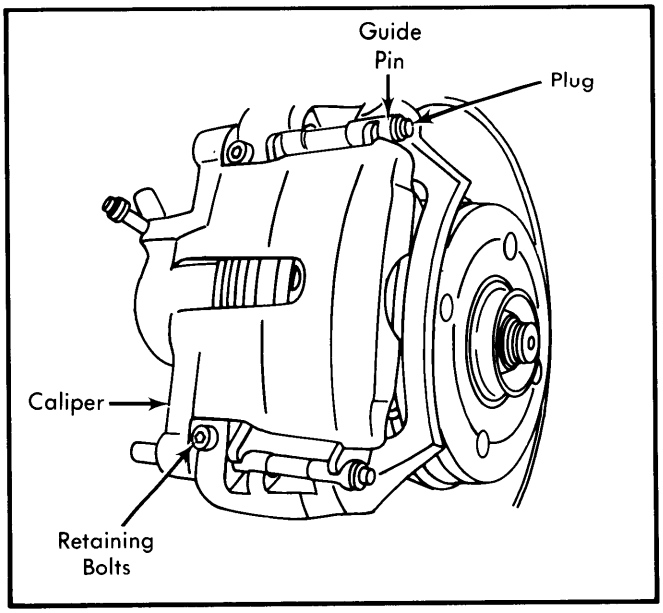

Fig. 5 Location of Guide Pins and Retaining Bolts

Installation — Install brake pads in caliper (inner pad first) making sure to align pegs on outer brake pad with holes in caliper. Install caliper assembly into mounting frame. Push caliper guide pins into mounting frame as far as possible. Install new Allen head guide pin retaining bolts in mounting frame and replace plugs in ends of guide pins.

Removal (4000 & Turbo) – **1)** Raise and support vehicle; remove tire and wheel. Using hand pressure, force caliper to slide outward (toward outer wheel bearing) to seat piston in caliper bore.

2) Hold guide pin head with open end wrench while removing lower mounting bolt. Rotate caliper assembly upward. See *Fig.* 6. Remove disc pads from carrier.

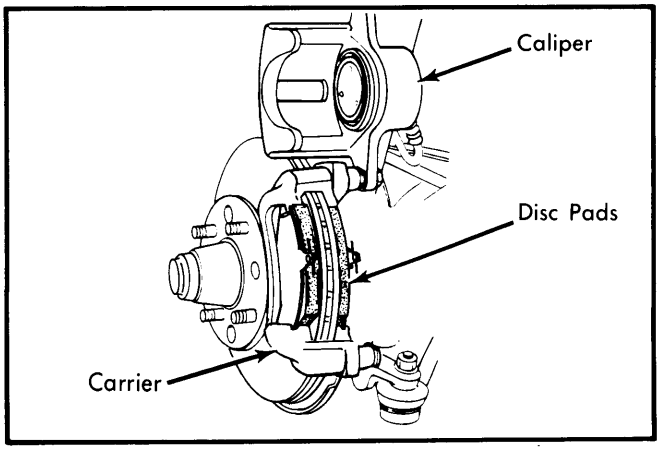

Fig. 6 Audi 4000 and Turbo Front Disc Pad Removal

Installation – **1)** Clean area where pads rest. Make sure grommets on guide pins are not damaged. Guide pins must slide smoothly in housing. Install brake pads. Swing caliper housing down.

NOTE – *When replacing disc pads on Turbo and 4000 models, install head shield (furnished with repair kit) on piston side of inner pad.*

AUDI (Cont.)

2) Make sure pads do not hit piston; force piston deeper into housing if necessary. Tighten lower mounting bolt. Depress brake pedal several times to seat pads against rotor.

FRONT DISC BRAKE CALIPER

NOTE – *When replacing calipers, use compatible units or replace calipers in matched pairs.*

Removal (5000) – Raise and support vehicle, remove tire and wheel. Remove plug from end of caliper guide pin. Remove Allen head bolts from top of caliper mounting frame. Thread 8 mm bolts into ends of guide pins and pull to remove guide pins. Remove caliper from mounting frame.

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

Removal (4000 & Turbo) – Raise and support vehicle; remove tire and wheel. Disconnect and plug hydraulic line from caliper. Bend back locking tabs (if equipped) on mounting bolts. Hold guide pin head with open end wrench and remove mounting bolts and caliper. Remove brake pad carrier mounting bolts and carrier.

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

FRONT DISC BRAKE ROTOR

Removal – Raise and support vehicle; remove tire and wheel. Remove caliper as previously described and hang from vehicle frame with wire. DO NOT disconnect hydraulic line unless necessary. Remove screw securing rotor to spindle (4000) and pull rotor from spindle.

Installation – To install rotor assembly, reverse removal procedure. Bleed hydraulic system if necessary.

REAR DISC BRAKE PADS

NOTE – *When reusing brake pads, mark the pads to ensure replacement in their original locations.*

Removal – Raise and support vehicle; remove tire and wheel. Hold guide pin head with open end wrench while removing mounting bolts. Remove caliper and hang from vehicle frame with wire. DO NOT disconnect or damage hydraulic line. Remove disc pads from carrier.

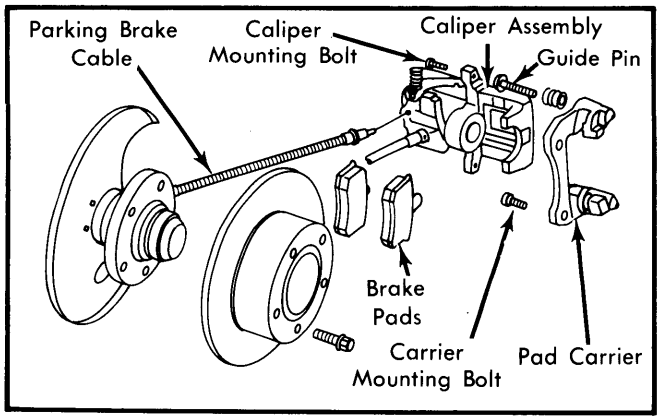

Fig. 7 Exploded View of Audi Turbo Rear Disc Brake Assembly

Installation – Using an Allen wrench, turn piston in clockwise rotation while pushing into caliper bore. Install brake pads in carrier. Install caliper assembly and tighten mounting bolts. Pump brake pedal 40 times to seat pads. Check parking brake adjustment and bleed hydraulic system if necessary.

REAR DISC BRAKE CALIPER

Removal – Raise and support vehicle; remove tire and wheel. Disconnect parking brake cable from caliper assembly. Disconnect and plug hydraulic line from caliper. Remove caliper mounting bolts while holding guide pin head with open end wrench and remove caliper. Remove pad carrier mounting bolts and carrier.

Installation – 1) Fill caliper cylinder with brake fluid and pre-bleed caliper. Install brake pad carrier, then install caliper assembly. Tighten mounting bolts.

2) Reconnect hydraulic line and parking brake cable to caliper. Pump brake pedal 40 times to seat pads. Check parking brake adjustment and bleed hydraulic system.

REAR DISC BRAKE ROTOR

Removal – Raise and support vehicle; remove tire and wheel. Remove caliper as previously described and hang from frame with wire. DO NOT disconnect hydraulic line. Remove rotor from spindle.

Installation – To install, reverse removal procedure.

REAR BRAKE DRUM

Removal – Raise and support vehicle. Remove tire. Before removing right drum, release spring pressure on pressure regulator. Remove 1 wheel bolt. Using a screwdriver inserted through wheel bolt hole, push adjusting wedge upward. Reinstall wheel bolt. Remove wheel bearing hardware. Remove drum assembly without dropping thrust washer or outer bearing.

Installation – To install, reverse removal procedure and adjust wheel bearings. See *appropriate Rear Suspension article in SUSPENSION Section.* Depress brake pedal firmly to set self-adjusting mechanism.

REAR BRAKE SHOES

Removal – 1) Remove brake drum. Remove hold-down springs and pins. Remove brake shoes from anchor pins and remove return springs.

2) Disconnect parking brake cable from lever. Disconnect adjusting wedge spring and upper return spring. Remove brake shoes. Place adjuster strut and shoe in vise; remove tension spring. Separate shoe and components.

Installation – To install, reverse removal procedure and note the following: Lug on adjusting wedge faces backing plate. Adjust wheel bearings. See *appropriate Rear Suspension article in SUSPENSION Section.* Install drum and depress brake pedal firmly to set self-adjusting mechanism.

AUDI (Cont.)

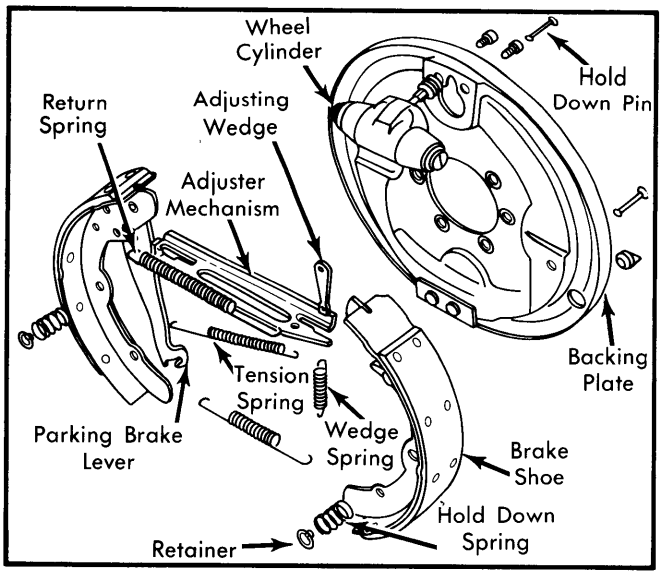

Fig. 8 Exploded View of Rear Drum Brake Assembly (Audi 4000 and 5000 Models)

MASTER CYLINDER

Removal – Siphon brake fluid from reservoir and remove hydraulic lines from master cylinder. Disconnect warning light electrical lead. Remove mounting bolts and separate master cylinder from power brake unit.

Installation – Replace "O" ring between master cylinder and power brake unit. Reverse removal procedure and bleed hydraulic system.

POWER BRAKE UNIT

Removal – Remove master cylinder from power brake unit. Remove pin at brake pedal and disconnect operating rod. Remove mounting nuts from firewall. Disconnect vacuum line and remove power unit.

Installation – To install, reverse removal procedure and note the following: Replace filter at operating rod end.

NOTE – *Clevis and brake lever each have 2 holes. Install clevis pin only in holes nearest front of vehicle.*

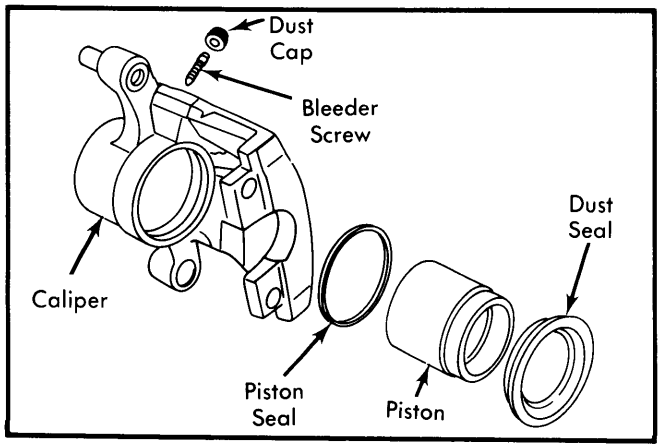

Fig. 9 Exploded View of Audi 5000 Front Disc Brake Caliper Assembly

CHECK VALVE

Large diameter side fits into power unit. To test, remove vacuum line and check valve. Blow into large diameter hole; valve should open. Blow into small diameter hole; valve should close. Replace if defective.

OVERHAUL

FRONT DISC BRAKE CALIPER

Disassembly – Remove brake pads and clean outside surfaces of caliper. Place a block of wood between piston and housing. Force piston out with compressed air and remove dust seal. Remove piston seal without damaging bore or groove.

Cleaning & Inspection – Clean all parts in alcohol only. Check cylinder bore and piston for wear or damage. Parts are serviced by replacement only. Boots, guide pins and other minor parts are only available with new pad carrier.

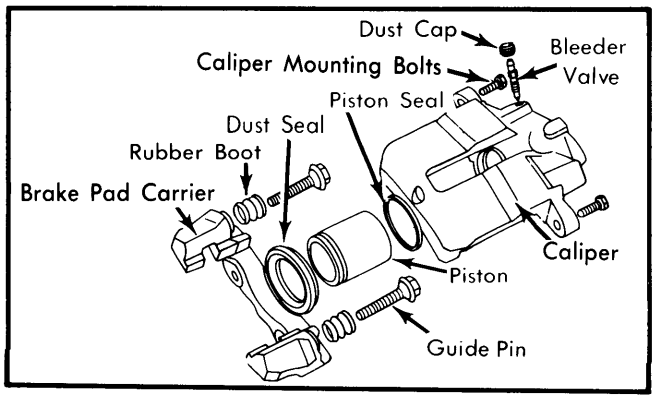

Fig. 10 Exploded View of Audi 4000 and Turbo Front Disc Brake Caliper Assembly

Reassembly – Coat piston, cylinder bore, and new seal with suitable brake paste. Fit seal into cylinder. Slide dust seal onto piston. Slowly insert piston into bore, fitting inner lip of dust seal into caliper housing groove. Fully seat piston in bore. Engage outer lip of dust seal into piston groove.

REAR DISC BRAKE CALIPER (TURBO)

Disassembly – 1) Remove caliper and clean outside surfaces. Remove parking brake lever housing bolts and housing. Remove guide pin and sleeve, then remove return spring and lever from housing. Remove and discard seal and "O" ring.

2) Using hand pressure, push piston out rear of caliper assembly. Remove push rod from rear of piston, then "O" ring, seals and spacer. Carefully remove piston seal without damaging bore or groove.

Cleaning & Inspection – Clean all parts in alcohol only. Check all parts for wear or damage. Guide pins, dust boots, seals, "O" rings and pad carrier are the only serviceable parts. Any damage to other parts requires replacement of caliper assembly.

Reassembly – 1) Coat piston, piston seal and parking brake guide pin with suitable brake paste. Fit seal into cylinder groove. Slide dust seal onto piston. Install spacer, "O" ring and seal onto push rod. Fit push rod into piston. Push piston into caliper bore from rear.

AUDI (Cont.)

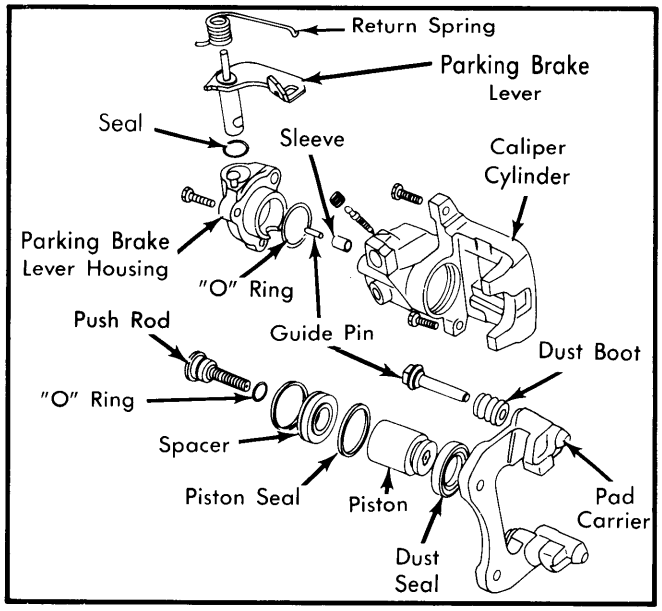

Fig. 11 Exploded View of Rear Disc Brake Assembly

2) Replace seals on parking brake lever assembly, then install return spring and brake lever into housing. Install guide pin and sleeve in housing. Fit parking brake lever housing to rear of caliper and ensure push rod pin aligns with housing. Install and tighten bolts. Pre-bleed caliper assembly.

REAR WHEEL CYLINDER

Disassembly – Thoroughly clean outside of cylinder. Remove boots, piston assemblies, cups and spring. Remove dust cap and bleeder screw.

Cleaning & Inspection – Clean all parts in alcohol only. Check all parts for rust, corrosion or wear. If necessary, replace complete cylinder.

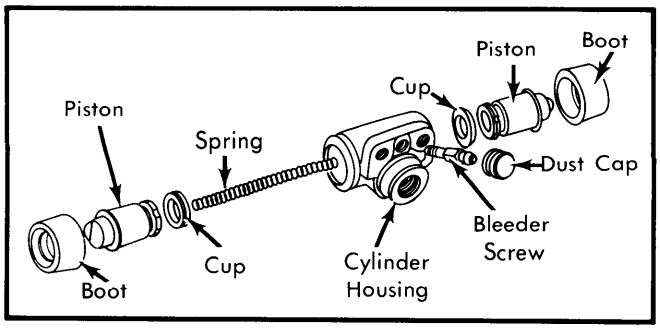

Fig. 12 Exploded View of Rear Wheel Cylinder

Reassembly – Reverse disassembly procedure and note the following: Refer to *Fig. 12* for correct installation position of wheel cylinder pistons.

MASTER CYLINDER

Disassembly – Remove "O" ring from master cylinder housing. Remove piston stop screw. Remove retaining ring and both pistons from housing. Remove pressure valves and reservoir from master cylinder housing. Disassemble piston assemblies as necessary.

Cleaning & Inspection – Clean all parts in alcohol and check for rust, corrosion, or other damage; replace parts as necessary. Make sure compensating and filler holes are not plugged.

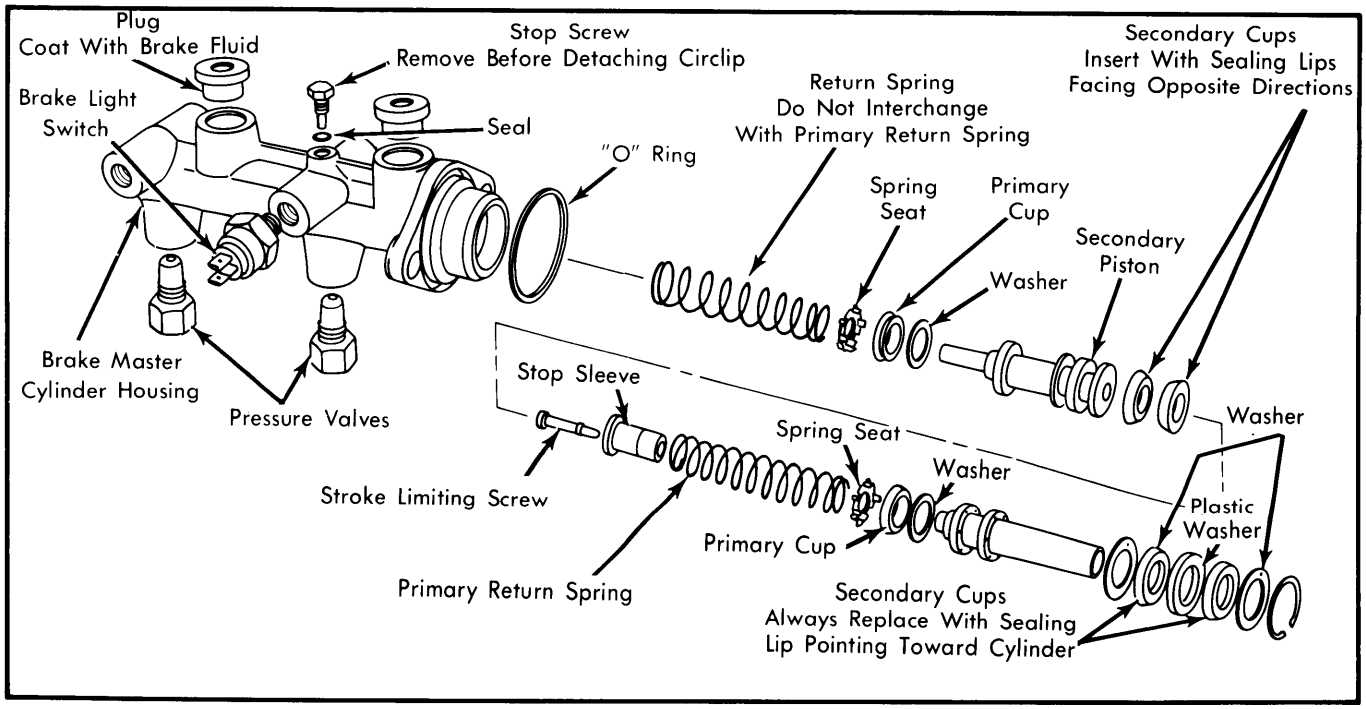

Fig. 13 Master Cylinder Component Relationship (Audi 4000 Housing External Design Differs – Internal Parts Are Identical)

AUDI (Cont.)

Reassembly – Reverse disassembly procedure and note the following: Lubricate primary piston shaft with silicone grease and all other parts with brake cylinder paste. Replace all rubber parts. DO NOT interchange primary cup and piston seal; piston seal is identified by a groove and chamfered end.

POWER BRAKE UNIT

Manufacturer does not recommend overhaul of power brake unit. Replace as complete assembly if defective.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N·m)
Caliper-to-Carrier Bolts	
4000 & Turbo (Front & Rear)	25 (34)
Carrier Mounting Bolts	
4000	36 (49)
Turbo	
Front	83 (112)
Rear	47 (64)
Caliper Mounting Frame Bolts (5000)	83 (112)
Caliper Guide Pin Retaining Bolts (5000)	18 (24)

DISC BRAKE SPECIFICATIONS

Application	Caliper Bore Diameter In. (mm)	Lateral Runout In. (mm)	Parallelism In. (mm)	Original Thickness In. (mm)	Minimum Refinish Thickness In. (mm)	Discard Thickness In. (mm)
Audi 4000	.....	.002 (.06)	.....	.472 (12)	.....	.394 (10)
Audi 5000	.....	.002 (.06)	.0008 (.02)	.866 (22)	.....	.787 (20)
Audi Turbo						
Front	.....	.002 (.06)	.0008 (.02)	.866 (22)	.....	.787 (20)
Rear	.....	.002 (.06)	.0008 (.02)	.394 (10)	.....	.315 (8)

DRUM BRAKE SPECIFICATIONS

Application	Wheel Cyl. Bore Diameter In. (mm)	Drum Diameter In. (mm)	Original Diameter In. (mm)	Maximum Refinish Diameter In. (mm)	Discard Diameter In. (mm)
Audi 4000	.....	7.874 (200)	7.874 (200)	7.894 (200.5)	7.913 (201)
Audi 5000	.....	9.055 (230)	9.055 (230)	9.094 (231)	9.134 (232)