

## SAAB

99  
900

## DESCRIPTION

Service brake system is hydraulically operated by a tandem master cylinder and vacuum power brake unit acting on four-wheel disc brakes. Front calipers are sliding yoke Girling calipers; rear brakes are fixed yoke ATE calipers. Master cylinder contains level sensor which illuminates a warning lamp on instrument panel if fluid level becomes low. Brake circuit is double diagonal system (right front, left rear/left front, right rear). Parking brake is mechanically operated on FRONT brake caliper assemblies.

## ADJUSTMENT

## PARKING BRAKE

Before adjusting cable, apply brake lever several times to stretch cables. Rotate cable adjusting nuts located at rear of parking brake lever under plastic cover until distance between lever on front caliper and yoke is .016-.022" (.41-.56 mm). Check distance with parking brake fully released.

**NOTE** — Parking brake cables are crossed, so to adjust left parking brake mechanism (cable), right adjusting nut must be rotated and vice versa.

## BRAKE WARNING LIGHT

A dual warning light (individual lights on 900) is mounted on instrument panel. Parking brake light should glow when parking brake lever is pulled 1 notch (ignition on) and go off when lever is fully released. To check circuit warning sensor, fully release parking brake and ensure light is off (99 only). Open engine compartment and raise master cylinder filler cap; warning lamp should glow. If not, check bulb or circuit connections.

## REMOVAL &amp; INSTALLATION

## DISC BRAKE PADS

**Removal** — Raise and support vehicle on safety stands; remove wheel. Rotate brake rotor until recess in edge of rotor is aligned with brake pads. On Girling calipers, remove damper spring, pin retaining clips and retaining pins. On ATE calipers, remove cover plate, mounting pins and retaining spring. Remove brake pads; use extractor tool (8995771) if required.

**Installation** — Open bleeder screw and seat piston into cylinder bore; close bleeder screw. On Girling calipers, rotate piston while pressing into cylinder bore. On ATE calipers, check piston position with template (8995342). Install brake pads. On Girling calipers, install retaining pins, clips and damper spring. On ATE calipers, install spring, lock pins and cover plate. Pump brake pedal several times to set pad-to-rotor clearance.

**NOTE** — Girling caliper brake pads are not interchangeable. Outer pads are identified by "V" notch.

## DISC BRAKE CALIPER

**Removal** — Raise and support vehicle and remove wheels. On front wheel calipers, disconnect parking brake cable from lever on caliper. On all wheels, disconnect hydraulic line from

hose, then plug lines to prevent entry of dirt and loss of fluid. Remove caliper attaching bolts and lift off caliper.

**Installation** — To install, reverse removal procedure and note the following: Tighten all attaching bolts, bleed hydraulic system and adjust parking brake cables.

## DISC BRAKE ROTOR

**Removal** — Remove caliper assembly (hydraulic line attached) and support out of way. DO NOT allow caliper to hang by hydraulic line. On front disc, apply parking brake, remove rotor and hub attaching nut from spindle and release parking brake. Remove rotor and hub assembly from spindle with a puller, remove hub-to-rotor bolts and separate rotor. On rear disc, remove rotor attaching bolts and rotor.

**Installation** — To install, reverse removal procedure. Tighten all nuts and bolts and adjust parking brake if necessary.

## MASTER CYLINDER

**Removal** — Disconnect electrical lead to warning switch on master cylinder. Disconnect clutch master cylinder hose from fluid reservoir, then plug reservoir nipple to prevent loss of fluid. Disconnect hydraulic lines from master cylinder. Remove master cylinder-to-power brake unit attaching nuts and lift off master cylinder.

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

## POWER BRAKE BOOSTER

**NOTE** — Before power brake unit can be removed on 900 Series, ash tray and lower portion of instrument panel must be removed.

**Removal** — From inside engine compartment, remove upper circlip from brake pedal push rod. Disconnect all electrical leads, hydraulic and vacuum lines from master cylinder and power brake unit. Remove 4 attaching nuts and lift off master cylinder and power unit as an assembly. Separate master cylinder from power unit.

**NOTE** — Three power unit attaching nuts are removed from inside vehicle while fourth is removed from engine compartment, 99 Series only. All attaching nuts are removed from inside vehicle on 900 Series.

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

**Check Valve Replacement** — Remove vacuum hose clamps at check valve and remove check valve from power unit. To install, reverse removal procedure.

**Filter Replacement** — Remove power brake unit from vehicle. Remove rubber dust boot and filter retainer. Withdraw silencer and filter from end of booster. To install, cut a slit in filter and slip over push rod. Reverse removal procedure and ensure slots in filter and silencer are 180° apart.

## SAAB (Cont.)

## OVERHAUL

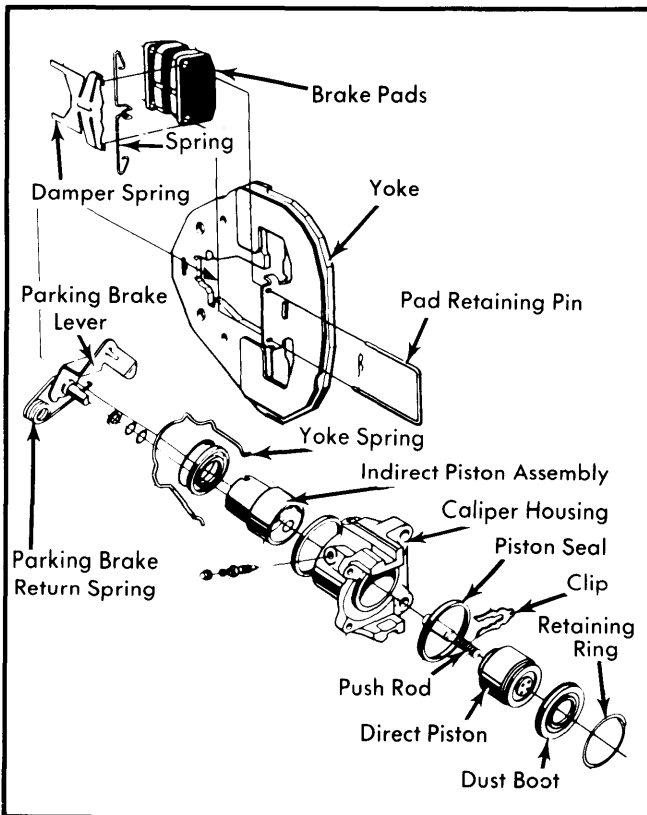
## CALIPER ASSEMBLY

**Disassembly (Girling Type) — 1)** With caliper removed from vehicle, mount assembly in a soft jawed vise. Remove parking brake return spring. Separate yoke from caliper assembly. Remove spring and parking brake lever from yoke.

**2)** Remove retaining ring and dust boot, then using compressed air, force out indirect piston assembly from caliper. Press direct piston push rod and remove piston from caliper. Remove "O" rings and seal rings from caliper bore and pistons.

**Cleaning & Inspection —** Wash all parts, except indirect piston assembly, in clean brake fluid and dry with a lint-free cloth. Inspect all parts for corrosion, damage or wear; replace defective parts. Replace all rubber parts during overhaul.

**NOTE —** Indirect piston assembly must be wiped clean only. DO NOT use any type of solvent or brake fluid.



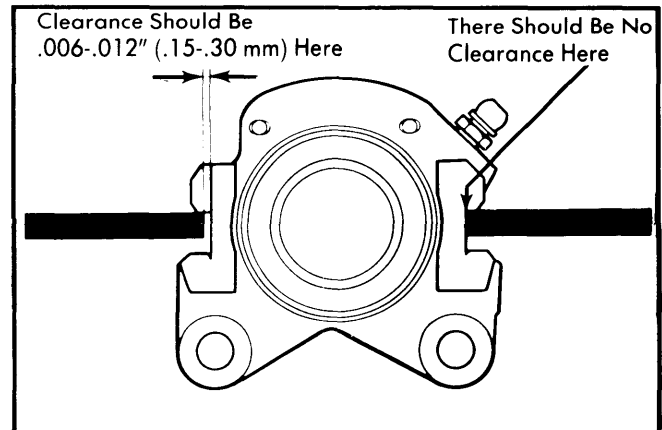
**Fig. 1 Exploded View of Girling Caliper**

**Reassembly — 1)** Lubricate pistons and caliper bore with clean brake fluid, then install new "O" rings and seal rings to pistons and caliper bore. Install indirect piston into caliper with recess for yoke aligned with groove in caliper housing, then install direct piston in the same manner. Press in indirect piston and screw in direct piston until edges of dust boot grooves are flush with caliper housing.

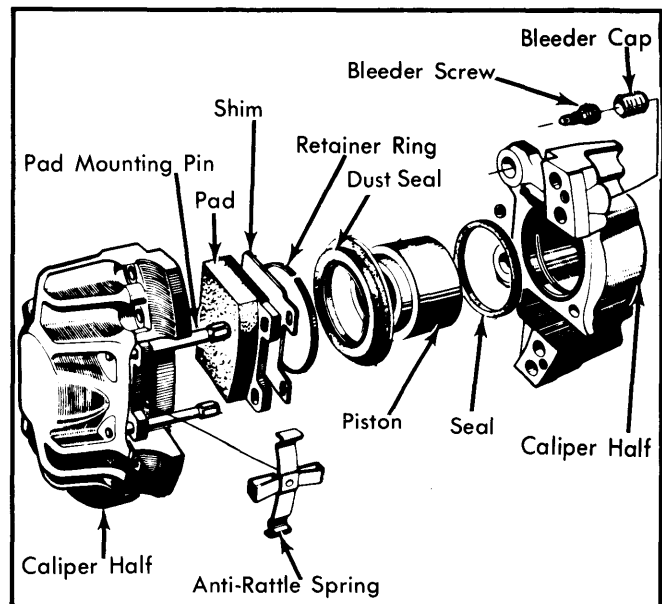
**2)** Install dust boots and retaining rings. Fit yoke spring and parking brake lever to yoke, then align yoke guide edges with groove on caliper housing and install yoke. Lift parking brake

lever and install axle pin into hole in indirect piston. Install parking brake return spring. Check yoke-to-caliper housing clearance; no clearance is permissible on bleeder screw side, opposite side clearance must be .006-.012" (.15-.30 mm). See Fig. 2.

**NOTE —** Yoke must seat in indirect piston recess.



**Fig. 2 Girling Caliper Clearance Measuring Points**



**Fig. 3 Exploded View of ATE Caliper**

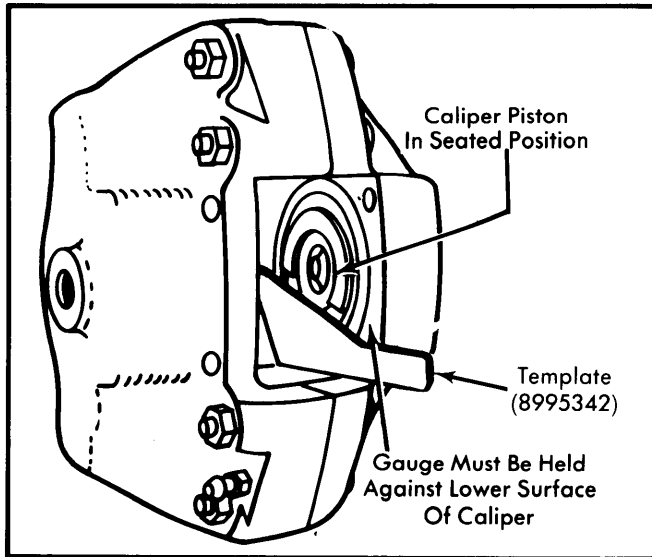
**Disassembly (ATE Type) —** With caliper and pads removed, clean outer portion of caliper. Remove dust covers and retaining rings. Insert wooden block between pistons and carefully apply compressed air to fluid inlet port to force pistons out of cylinder bores. Remove piston seals from cylinder bores without damaging bores. Remove bleeder screw.

**NOTE —** DO NOT separate caliper halves.

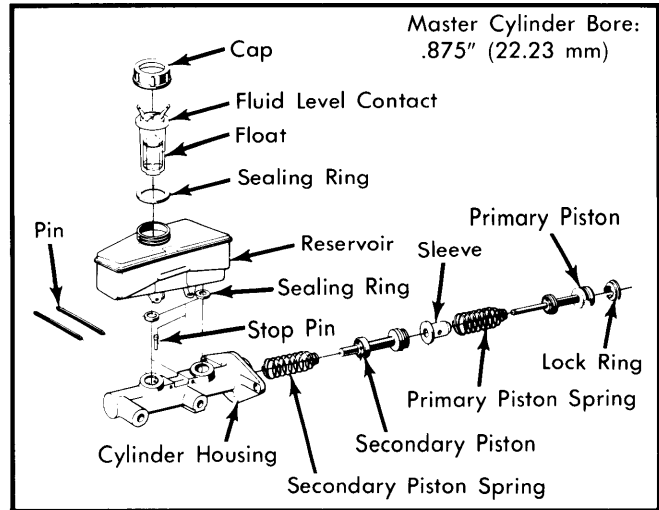
**Cleaning & Inspection —** Wash all parts in clean brake fluid. Inspect cylinder bores and pistons for corrosion, damage or wear; replace defective parts. Replace all rubber parts during overhaul.

**Reassembly —** Coat all parts with clean brake fluid and install new piston seals in cylinder bores. Carefully install pistons

## SAAB (Cont.)



**Fig. 4** Checking ATE Caliper Piston Position



**Fig. 5** Exploded View of Master Cylinder

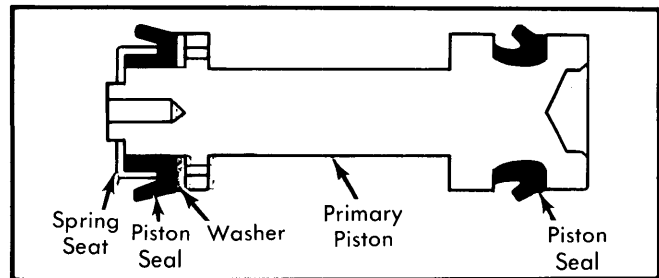
### MASTER CYLINDER

**Disassembly** – 1) With master cylinder removed from vehicle, drain brake fluid from reservoir. Mount cylinder in a soft jaw vise. Remove retaining pins and separate reservoir from master cylinder (pins may have to be driven out). Remove rubber seals from reservoir mounting holes in cylinder.

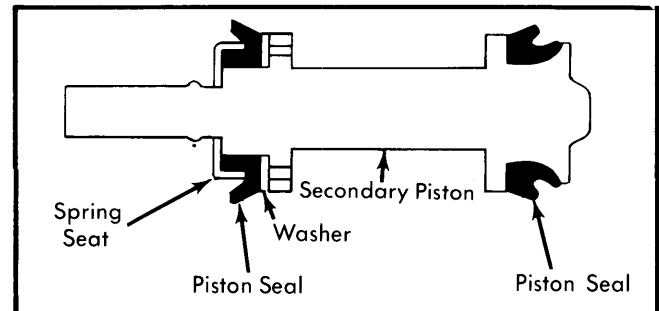
2) Push in on primary piston and pull secondary piston stop pin from forward reservoir mounting hole. Remove circlip and take out primary piston assembly and spring. Remove cylinder from vise and carefully knock it against a block of wood to remove secondary piston assembly and spring. Remove brake warning switch from master cylinder, then remove end plug and lift out warning valve assembly.

**Cleaning & Inspection** – Wash all parts in clean brake fluid and dry with a clean, lint-free cloth. Inspect all parts for corrosion, damage or wear; replace defective parts. Replace rubber parts during overhaul.

**Reassembly** – Reverse disassembly procedure. Coat all parts with clean brake fluid and use care not to damage seals during installation of pistons.



**Fig. 6** Primary Piston Seal Installation



**Fig. 7** Secondary Piston Seal Installation

### 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)
99 & 900 Front	2.126 (54)	.004 (.10)	.0006 (.015)	.500 (12.7)	.461 (11.7)	.460 (11.6)
Rear	1.181 (30)	.004 (.10)	.0006 (.015)	.413 (10.5)	.374 (9.5)	.373 (9.4)