

Brake System

LANCIA

Lancia
Except Scorpion

DESCRIPTION

Brake system is hydraulically operated. System utilizes a tandem (dual piston) master cylinder and on some models, a power brake assist unit. Front and rear brakes are disc type. The brake system is fitted with an adjustable brake pressure limiter valve which regulates brake operating pressure on rear wheels. Parking brake is lever operated with cables acting on rear calipers. All models are equipped with brake wear limit indicator on front wheels. When brake lining reaches wear limit a warning light on instrument panel comes on.

ADJUSTMENT

PARKING BRAKE

Raise and support vehicle. Make sure brake system has no air trapped in lines. Apply parking brake three notches up from full released position. Loosen lock nut, turn adjuster rod until control cable is stretched and wheels are locked. Tighten lock nut. Check operation.

PRESSURE LIMITER

1) Raise and support vehicle. Leave vehicle in unloaded state (fuel tank empty, spare tire and jack assembly removed, no driver). Remove limiter dust cover. Loosen limiter mounting bolts. Twist limiter housing counterclockwise until there is .001" (.03 mm) clearance between control rod and limiter plunger.

2) Rotate limiter housing clockwise until feeler gauge contact is broken. Do not load control rod. Tighten mounting bolts and recheck clearance. Refit dust cover.

BRAKE BLEEDING

1) Begin work on either one of the front calipers. Attach bleeder tube to inner (closest to caliper support) bleeder screw. Immerse opposite end of tube in a container partially filled with brake fluid.

2) Pump pedal several times. Keep pressure on pedal. Open bleed screw and allow air to be forced out of system. Make sure that as pedal moves toward floor, it does not swing the full travel. Close bleed screw with pedal down. Allow pedal to return unassisted before next stroke.

3) Repeat procedure until all air is bled from system. Use the following sequence for bleeding: Front; either caliper first, rear; either one first.

REMOVAL & INSTALLATION

FRONT & REAR DISC BRAKE PADS

Removal — 1) Remove wheels. Remove spring clips. Drive out component keeping pad carrier to caliper. Remove pad carrier then slip out disc pads. Do not lose mounting springs.

2) Check disc pads for wear. Replace pads if they have less than .039" (1 mm) of lining left. Always replace pads in sets.

NOTE — Front caliper assemblies are fitted with pad wear warning devices. Unit must be replaced when pads are renewed.

Installation — Thoroughly clean brake rotor. Completely seat pistons in cylinders. On rear calipers, pistons must be turned clockwise in cylinder while pushing to fully seated position. Fit new pads and spring clips. If old pads are being reinstalled, make sure they are put back in original position. Reverse removal procedure for remaining components.

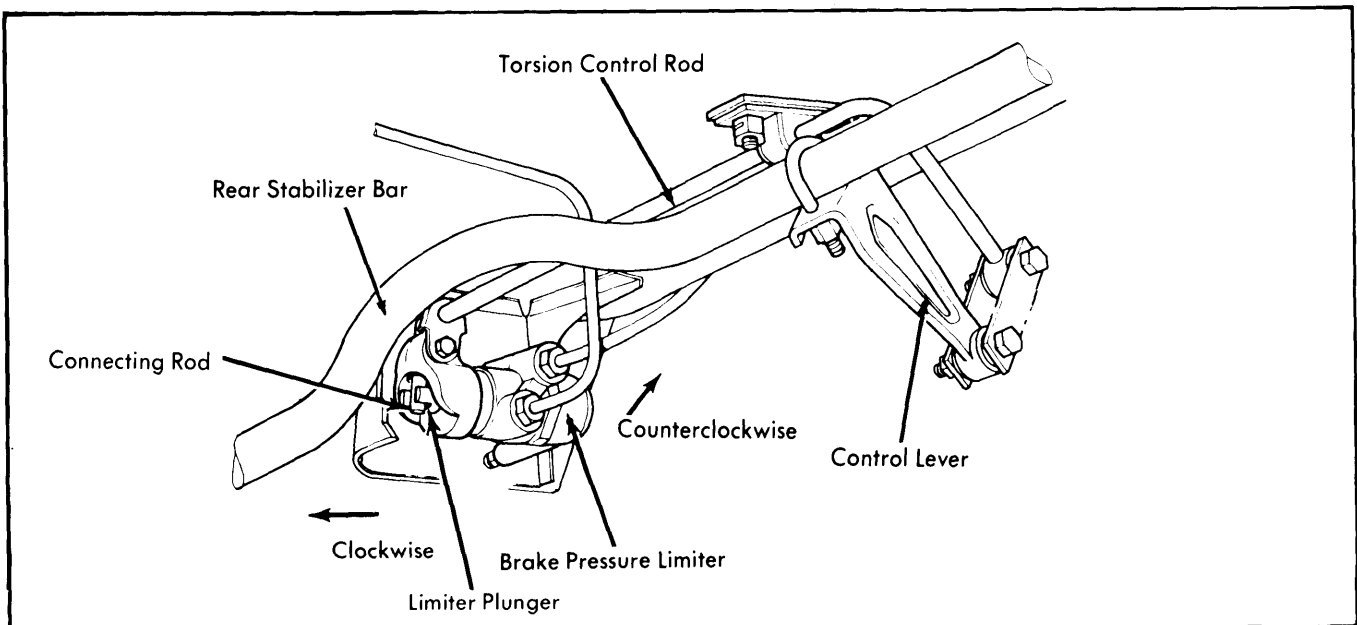


Fig. 1 Installed View from Under Vehicle Showing Adjustment Direction of Rear Brake Pressure Limiter

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FRONT & REAR BRAKE CALIPER

Removal — Raise and support vehicle. Remove wheel. Disconnect hydraulic inlet lines at caliper cylinder. On rear calipers, disconnect parking brake from control lever. Pull out spring clips. Drive off retaining component and remove pad carrier. Disconnect electrical lead on front caliper. Remove caliper mounting bolts and slide assembly from mounting.

Installation — To install caliper assembly, reverse removal procedure and note: Bleed hydraulic system. Check parking brake operation.

FRONT & REAR ROTOR

Removal — Raise and support vehicle. Remove wheel. Remove caliper assembly, but do not disconnect hydraulic line; lay caliper out of way. Remove rotor mounting bolts and pull rotor off. It may be necessary to use a puller to free rotor before sliding it off vehicle.

Installation — To install rotor, reverse removal procedure and check runout. On front wheels, attach dial gauge to front strut. On rear wheels, attach dial gauge to support tool 88095768 (or equivalent). Clean rotor surface and set gauge .08" (2 mm) from outer diameter. Slowly turn rotor and record reading. Runout must not exceed .002" (.05 mm).

MASTER CYLINDER & POWER ASSIST UNIT (SERVO)

Removal — Disconnect battery. Disconnect electrical leads from master cylinder. Separate hydraulic lines and remove master cylinder from servo. Disconnect vacuum hose from power assist unit. Work under instrument panel and unhook brake pedal return spring. Remove operating rod from brake pedal. Remove servo from support by extracting mounting nuts and sliding servo off.

Installation — To install, reverse removal procedure and note: Adjust control rod length. Bleed hydraulic system.

PRESSURE LIMITER

Removal — Raise vehicle and place on safety stands. Remove top bolt connecting control rod to mounting (shackle support), then loosen bottom bolt. Remove torsion control rod clamp from underbody. Loosen hydraulic fittings. Separate pressure limiter and take off with control rod. Remove rubber cover from pressure limiter, take out bolt mounting plate to limiter and separate control rod from plate.

Installation — To install, reverse removal procedure and note: Adjust pressure limiter. Bleed hydraulic system.

PRESSURE LIMITER TORSION CONTROL ROD

Removal — Remove top bolt connecting control rod to shackle support. Remove torsion control rod clamp from underbody. Remove rubber cover from pressure limiter. Remove bolts keeping pressure limiter to bracket. Leave hydraulic lines connected. Lower control rod limiter, remove control rod and bracket from underbody.

Installation — To install, reverse removal procedure and adjust brake limiter.

OVERHAUL

FRONT DISC BRAKE CALIPER

Disassembly — 1) Completely clean outside of caliper. Fit caliper in vice. Remove pad carrier. Take off both bleeder screws. Slide off dust guard. Force compressed air into inner inlet port to remove piston from cylinder.

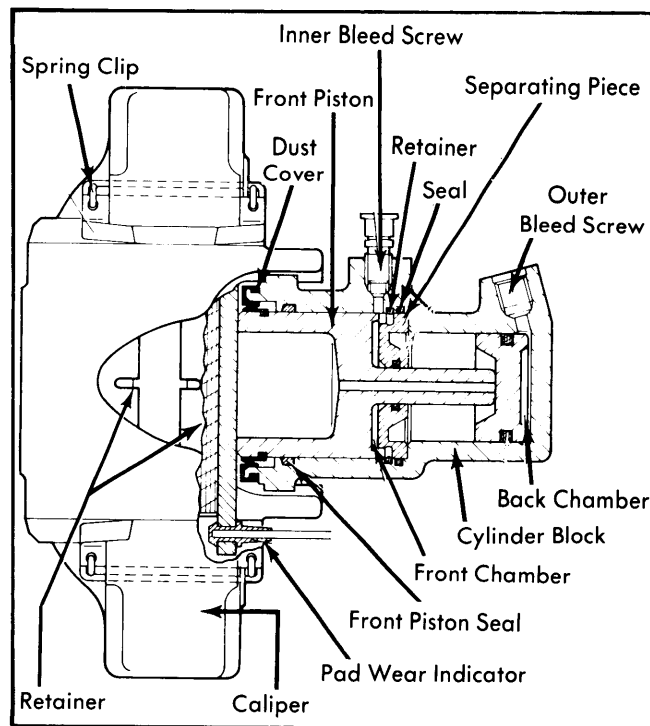


Fig. 2 Sectional View of Lancia Front Disc Brake Assembly

2) Take out front piston seal. Use a small diameter tool to lift edges and remove retainer. Access to retainer is gained through bleeder screw hole.

3) Refit piston to caliper. Again apply compressed air to inner inlet port this time removing front piston and separating piece. Force air pressure into outer bleeder screw and remove back piston. Remove seals from cylinder.

Inspection — Look at both pistons and replace if severely scored or pitted. Examine cylinder for signs of scoring, if excessively damaged, replace cylinder. Free any restriction in bleed screws.

Reassembly — Insert back piston and separating piece in cylinder. Fit retainer. Make sure retainer gap aligns with bleed hole. Refit cylinder to carrier. Reverse disassembly procedures for remaining components.

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REAR DISC BRAKE CALIPER

Disassembly – 1) Thoroughly clean outer cylinder housing of grease before beginning disassembly. Fit caliper in vise. Remove pad carrier and retaining spring. Turn piston counterclockwise and separate dust shield. Apply air pressure to brake fluid inlet port and remove piston.

2) Remove snap ring from inside piston, then remove washer, bearing, self-adjuster and piston return spring. Take out parking brake snap ring and remove control lever, return spring, and drive block.

3) Take out brake adjusting rod and washers from cylinder. Remove seals from adjuster rod and from inside cylinder. When removing seals avoid scratching cylinder with tool.

Inspection – Check piston and cylinder for scoring or seizure marks, replace as necessary. Make sure seal seating grooves are not distorted, replace if necessary. Make sure bleed screws are not restricted.

Reassembly – Lightly coat all internal components with brake fluid. Refit parking brake control lever with spring and drive block to caliper cylinder using press and suitable tool 88053067. Turn piston clockwise and seat. Notch in piston must be facing top. Refit carrier block. Reverse disassembly procedure to assemble remaining components.

MASTER CYLINDER

Disassembly – 1) Remove fluid reservoir. Clean outside of cylinder body. Fit master cylinder to vise. Remove snap ring.

Remove back piston assembly. Separate following components from piston:

- Washers
- Seals
- Guide bushing seal
- Piston guide bushing
- Floating spacer and piston seal
- Seal spring
- Spring caps and return spring

2) Back out piston stop screw. Remove front piston in assembled state. Separate following components from piston: (Also, refer to Fig. 3)

- Spring thrust washer
- Piston seals
- Seal spring
- Spring caps
- Piston return spring

Inspection – Check that all components slide freely in cylinder. Make sure both pistons and cylinders are free of score marks. Replace components if scoring is evident.

Reassembly – 1) Before reassembling pistons, lightly coat components with Castrol B.N.G. grease (or equivalent). Reassemble pistons in reverse of disassembly procedure. Make sure to replace all seals with new parts.

2) Fit front piston in master cylinder with groove aligning with threaded bore. Install stop screw and tighten. Check piston for free movement. Slide back piston into bore and fit snap ring. Fit grommets and install fluid reservoir.

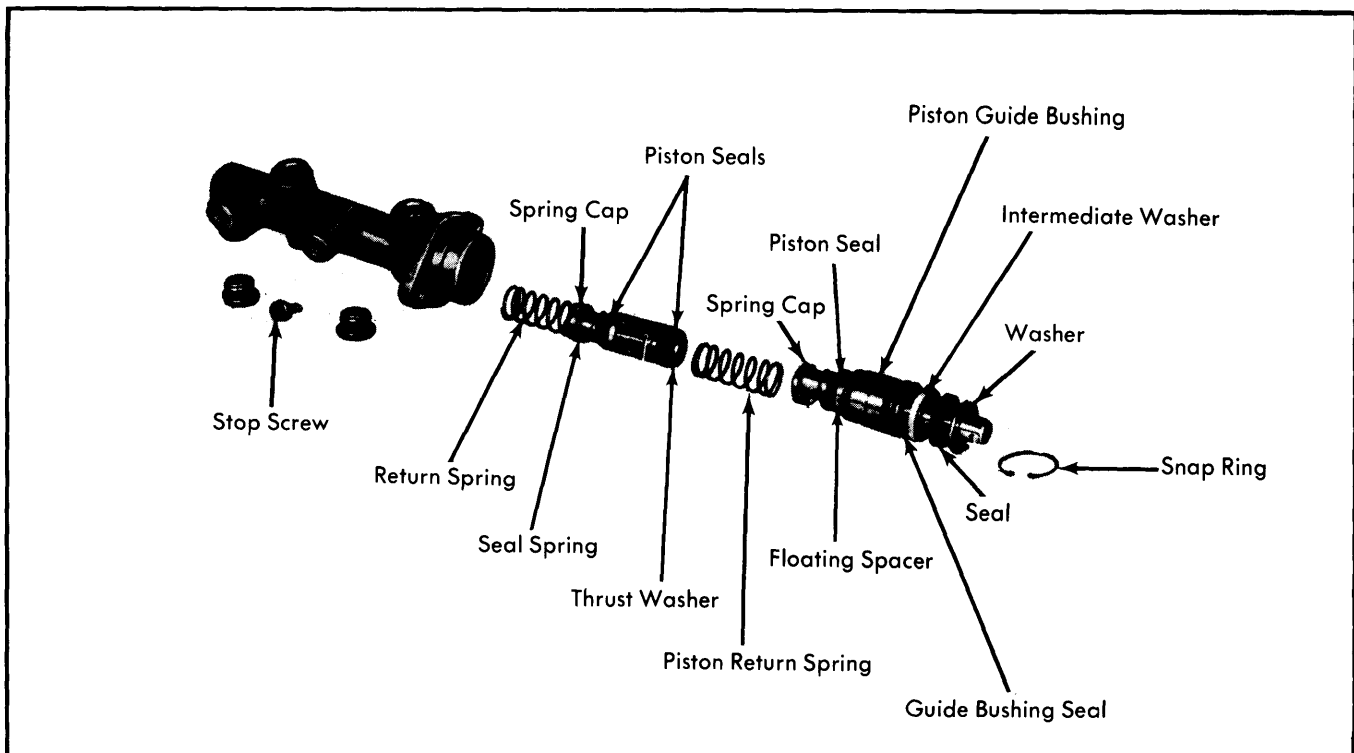


Fig. 3 Exploded View of Master Cylinder Internal Components. Primary and Secondary Pistons are Shown Removed, but Assembled