

JAGUAR

XJ6
XJ12
XJS

DESCRIPTION

Brake system utilizes four wheel disc brakes and a tandem master cylinder connected to a power unit (servo). Front calipers are four piston type. Master cylinder supplies hydraulic pressure to two individual brake circuits (front and rear). A combination valve is used to indicate a pressure difference between brake circuits. Front calipers are mounted on stub axle carriers and rear calipers are mounted inboard on differential housing. Rear rotors are connected to differential drive shaft flanges. Each front caliper consists of four pistons (two inboard and two outboard) and each rear caliper has two opposing pistons. Parking brake consists of independent, lever operated, disc pads mounted on rear calipers. Parking brake pads operate on rear brake rotor.

ADJUSTMENT

DISC BRAKE PADS

Due to self-adjusting feature of calipers, no adjustment in service is required.

PARKING BRAKE

Parking Brake Caliper — Caliper is self-adjusting to compensate for pad wear, therefore, no adjustment is required.

Parking Brake Cable (XJ6) — Put parking brake in fully released position. Loosen lock nut on front yoke. Disconnect yoke from bell crank lever at clevis pin. Rotate yoke on adjusting rod so that when yoke is reconnected there is a slight amount of slack in cable. Reconnect yoke and tighten lock nut.

Parking Brake Cable (XJ12) — Working under vehicle, loosen lock nut. Remove clevis pin. Make sure parking brakes are fully released. Rotate adjusting nut until parking brake cable has just a slight amount of slack. Reconnect clevis pin. Tighten lock nut.

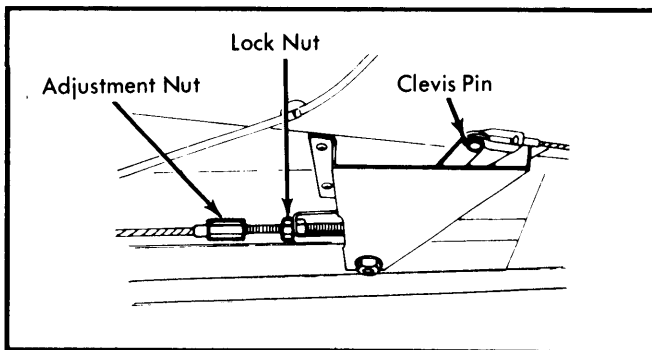


Fig. 1 XJ12 Parking Brake Cable Adjustment Points

Parking Brake Cable (XJS) — Pull back carpet near rear of drivers seat to gain access to adjustment components. Place parking brake in fully released position. Loosen cable lock nut. Rotate adjusting nut until cable has only a slight amount of slack. Tighten lock nut.

HYDRAULIC SYSTEM BLEEDING

- 1) Keep hydraulic fluid reservoirs filled with clean brake fluid during bleeding operation. Attach a bleed tube to bleeder screw on left-rear brake caliper, and immerse opposite end of tube in a container partially filled with brake fluid.
- 2) Run engine at idle speed. Loosen bleeder screw, operate pedal through full stroke until discharged fluid is free of air bubbles, close bleeder screw. Repeat procedure on right-rear caliper and front calipers.

COMBINATION VALVE

Operation Testing — 1) Put gear selector lever in Park. When ignition switch is on and parking brake is applied, brake warning light should be on. Run engine at idle. Release parking brake. Apply pedal hard.

2) Open any bleeder screw. Brake warning light should light. Close bleeder, then release and reapply brake pedal. Brake warning light should go out. Carefully repeat procedure if warning light will not go on. Replace component as necessary.

REMOVAL & INSTALLATION

DISC PADS (SERVICE BRAKES)

Removal — Raise vehicle and remove wheels. Remove pin clips, pad retaining pins, anti-chatter springs (if equipped) and lining pads.

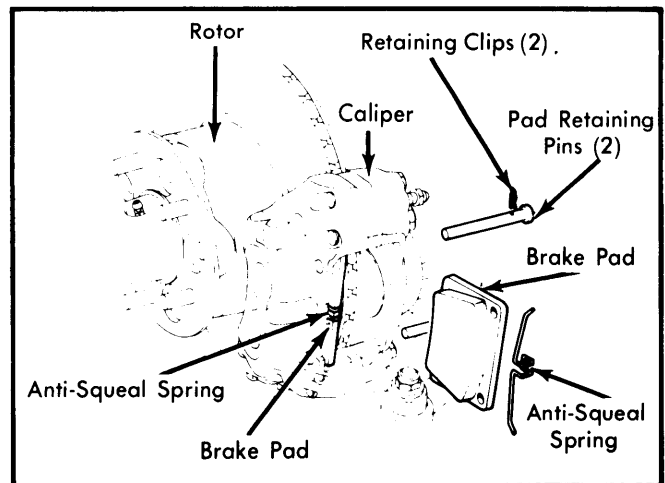


Fig. 2 Removing Front Disc Brake Pads

Installation — Draw out about half the brake fluid from reservoir(s). This will enable caliper pistons to be pushed back into cylinders without overflowing fluid. Lever pistons back, insert new pads, springs and replace retaining pins and clips. Check pads for freedom of movement within caliper. Check reservoirs for correct fluid level.

DISC PADS (PARKING BRAKE)

Removal & Installation — Parking brake calipers must be removed to replace disc pads. See *Parking Brake Caliper Removal & Installation*.

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PARKING BRAKE CALIPER

Removal — 1) Raise and support vehicle. On XJS models only, adjust some slack into parking brake cable. Remove nuts and bolts attaching rear suspension mounting plate to rear suspension unit and remove plate from vehicle. Disconnect parking brake cable and return spring from caliper.

2) Remove caliper mounting bolts and release lever, then slide caliper around rotor and remove through hole left by suspension plate. To remove disc pads, remove nut and spring washer securing pads to pad carriers.

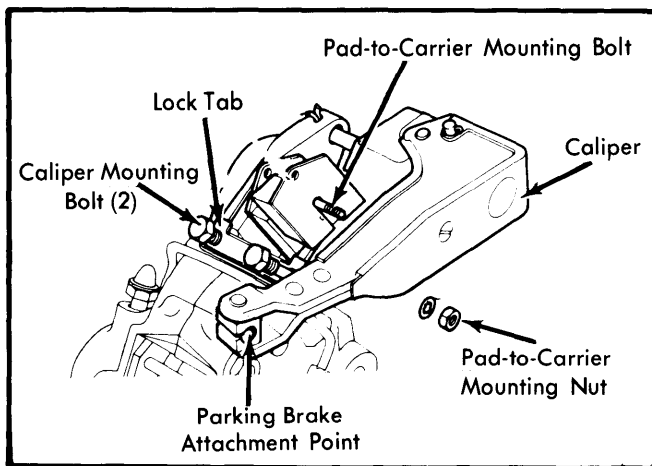


Fig. 3 Detail of Parking Brake Caliper

Installation — 1) To install, reverse removal procedure and note the following: On XJ6 and XJ12 models only, adjust caliper if new pads have been installed or if caliper has been overhauled. Adjust by holding one pad carrier stationary and turning remaining carrier until there is a clearance of .75" (19.0 mm) between disc pad surfaces.

2) On all models, operate caliper actuating lever until adjuster ratchet stops clicking. Install remaining components and check operation of brakes.

SERVICE BRAKE CALIPER

NOTE — Do not separate caliper halves for repair. If a leak exists between halves, replace caliper

Removal (Front) — Raise vehicle and remove wheels. Disconnect caliper fluid line and plug. Discard locking wire from mounting bolts. Remove caliper.

NOTE — Check position and number of shims between steering arm and caliper; replace shims in order.

Installation — 1) Place caliper in position. If original caliper is being reinstalled, refit shims. Install mounting bolts and safety wire. Bleed brakes.

2) If new caliper is being used, check gap between caliper abutment and rotor face. Gap should be no more than .010" (.25 mm). Gap on upper and lower abutment on SAME SIDE must be equal. If rotor is not centered, remove one caliper mounting bolt and add or subtract shims as necessary. Repeat procedure on other bolt.

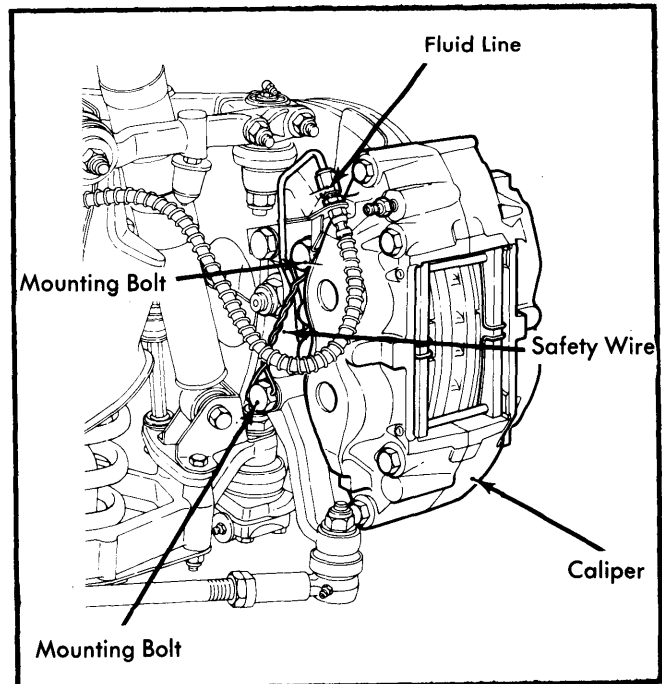


Fig. 4 Components to Remove to Allow Brake Caliper to be Removed.

Removal (Rear) — Remove parking brake caliper as previously outlined. Disconnect and plug hydraulic line from caliper mounting bolts and lock wire. Slide caliper around brake rotor and out hole left by suspension plate.

Installation — Place caliper in position, install shims if equipped, and secure bolts. Torque bolts to 49-55 ft. lbs. Check rotor for center between caliper. If necessary, adjust shims between drive flange and rotor. If shim adjustment is performed, rear wheel camber must be checked. See *Jaguar Rear Wheel Camber Adjustment* in **WHEEL ALIGNMENT** Section. Complete installation by reversing removal procedures.

BRAKE ROTOR

Removal (Front) — 1) Remove brake caliper as previously outlined. Remove hub-to-rotor attaching bolts and washers. Remove hub dust cap, then remove cotter pin, axle nut and washer from axle stub and remove hub.

2) Insert a punch through access hole in splash shield and lightly tap on it to free water deflector. Remove rotor assembly by sliding it from caliper jaws and over axle stub.

Installation (Front) — To install, reverse removal procedure and note the following: Pack hub and wheel bearings with suitable grease and adjust wheel bearing end play. See *Wheel Bearing Adjustment* in **WHEEL ALIGNMENT** Section.

Removal (Rear) — Remove brake caliper as previously outlined. Disconnect shock absorber from lower mount and remove radius arm locking bolt and lower control arm outer grease fitting. Place stands under hub assembly and slide radius arm from anchor point. Loosen clamp and slide boot

Brakes

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away from inner universal joint, then remove universal joint-to-rotor attaching bolts and separate universal joint from rotor.

NOTE — DO NOT move shims mounted between drive axle flange and brake rotor.

Installation — To install, reverse removal procedure and note the following: Ensure caliper is centered on rotor; adjust by adding or removing shims between rotor and drive axle flange. Caliper is centered when gap is not more than .010" (.25 mm). Check rear wheel camber and adjust if necessary. See *Camber Adjustment* in **WHEEL ALIGNMENT** Section.

MASTER CYLINDER

Removal & Installation — Disconnect electrical wires from master cylinder reservoir. Remove filter. Disconnect clips mounted to cylinder. Separate all hydraulic lines and plug openings. Remove nuts mounting cylinder to power unit studs. To install, reverse removal procedure.

POWER BRAKE UNIT (SERVO)

Removal — 1) Disconnect battery. Disconnect and plug master cylinder lines. Pry vacuum hose from power unit. Remove fluid reservoir.

2) On XJS models, swing pedal box bracket into vertical position. Remove 4 pedal box mounting nuts. Slide off master cylinder. Lift off pedal box and power unit, then separate.

3) Remove bolt securing upper pedal box. Remove reservoir mounting bracket and stop light switch. Remove 6 bolts

attaching pedal box. Remove brake pedal pad. Withdraw pedal box, master cylinder, and power brake unit as an assembly, then separate.

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

COMBINATION VALVE

Removal & Installation — Disconnect battery. Remove air cleaner. Disconnect electrical lead. Separate fluid lines and plug openings. Remove mounting nut and bolt. To install, reverse removal procedure and bleed brakes.

OVERHAUL

BRAKE CALIPER

NOTE — DO NOT separate caliper halves for service; pistons and seals may be changed without splitting caliper. If a leak is detected between caliper halves, replace caliper as a unit.

Disassembly — With disc pads removed, install a suitable piston clamp to retain outboard piston(s), then apply compressed air to fluid inlet port and remove inboard piston(s). Pull dust seal from piston(s) and caliper grooves. Carefully remove piston seal from cylinder.

NOTE — Inboard piston(s) must be installed before outboard piston(s) can be removed.

Cleaning & Inspection — Clean all parts in alcohol and inspect for wear or damage. Check cylinder bore and pistons for scratches, rust or corrosion; replace all damaged parts.

Reassembly — Coat cylinder, piston and seal with brake fluid before installing. Place piston seal in bore. Install dust seal over cylinder groove and carefully insert piston through dust

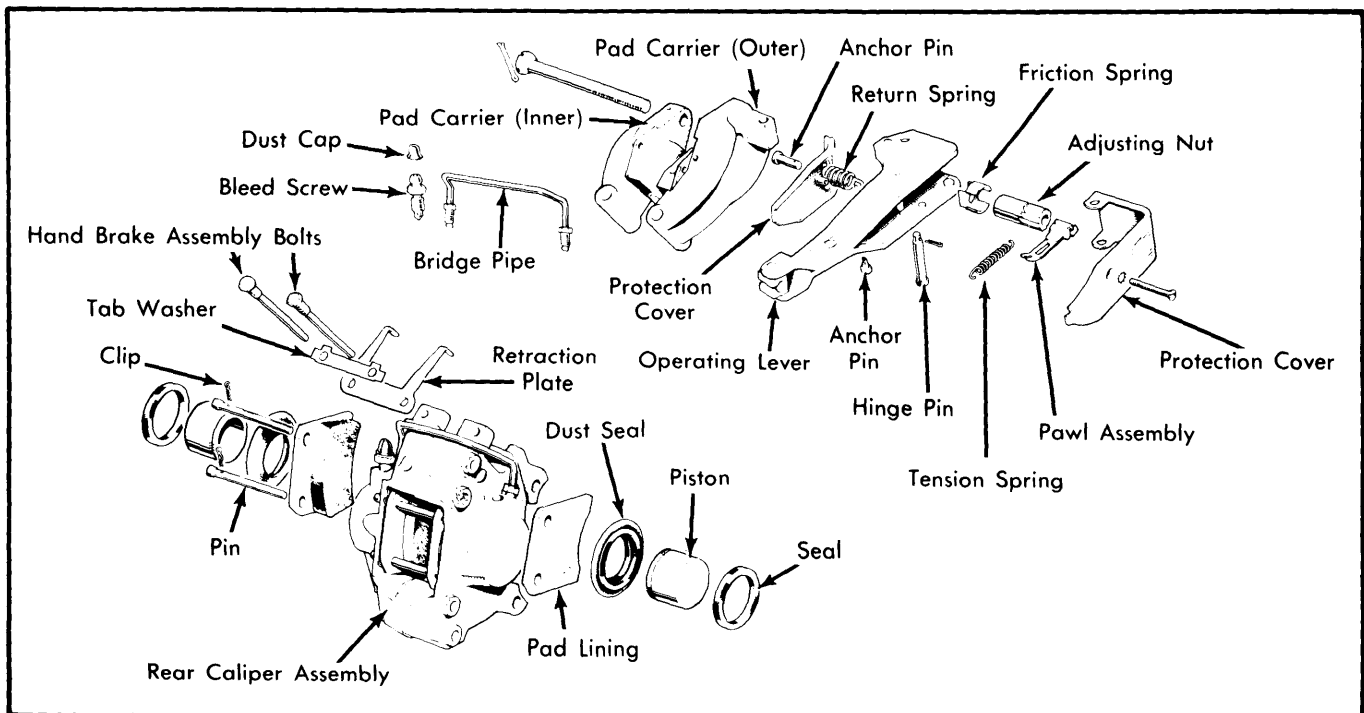


Fig. 5 Exploded View of Rear Brake Caliper with Detail of Parking Brake Assembly

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seal. Pull dust seal into groove in piston. Use piston clamp to press piston completely into cylinder. Repeat procedure for outer piston seal replacement. Install caliper as previously outlined.

away from spring lock. Install master cylinder and bleed brake system.

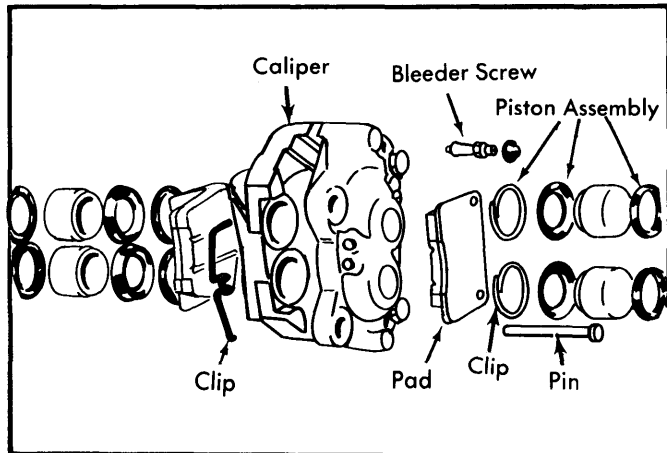


Fig. 6 Exploded View of 4 Piston Front Disc Brake Assembly

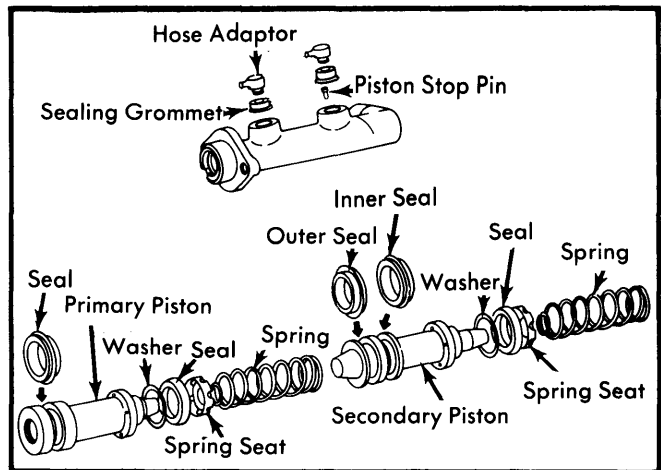


Fig. 7 Exploded View of Dual Piston Master Cylinder

MASTER CYLINDER

Disassembly — With master cylinder removed from vehicle, carefully pry hose adaptors from sealing grommets and grommets from master cylinder. Push in on primary piston and remove secondary piston stop pin from forward grommet housing. Remove spring lock, then tap flange end of cylinder to remove primary and secondary piston assemblies. Disassemble springs, spring seats, seals and washers from piston assemblies.

Cleaning & Inspection — Clean all parts in alcohol and dry with a lint-free cloth. Inspect pistons and bore for wear, scores, or corrosion; replace damaged parts as necessary.

Reassembly — To reassemble, reverse disassembly procedure and note the following: Lubricate all parts with clean brake fluid. Install secondary piston inner seal with lip facing away from primary piston and install outer seal with lip facing primary piston. Install primary piston seal with lip facing

COMBINATION VALVE

NOTE — Combination valve CANNOT be overhauled.

POWER BRAKE UNIT (SERVO)

NOTE — Power brake unit CANNOT be overhauled; if determined defective, replace entire unit.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Pedal Box-to-Body	11-13 (1.5-1.8)
Caliper Mounting Bolts	
Front	50-60 (7.0-8.3)
Rear	49-55 (6.7-7.6)
Wheel Lug Nuts	40-60 (5.5-8.3)

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						
Front	11.18 (284)	.004 (.1)950 (24.1)
Rear	10.38 (263.5)	.004 (.1)500 (12.7)