GENERAL MOTORS FLOATING CALIPER DISCS

Chevrolet
GMC

NOTE – *Delco floating caliper disc brakes are used on all gasoline engine models, except if equipped with Bendix Hydroboost. Models equipped with Bendix Hydroboost and all diesel models use Bendix sliding caliper disc brakes. See appropriate article in this Section.*

NOTE – *SERIES IDENTIFICATION – The vehicle series numbers used in this article have been abbreviated for common reference to both Chevrolet and GMC models. Chevrolet models use numerical designations as listed. GMC models are identified as follows: 1500 = 10; 2500 = 20; 3500 = 30.*

DESCRIPTION

Delco floating caliper disc brake assembly uses a single piston caliper. The caliper is mounted to an anchor plate which is bolted to the steering knuckle. The caliper assembly floats through 4 rubber bushings on 2 steel guide pins threaded into anchor plate. When brakes are applied, hydraulic pressure is passed to caliper piston. This force is transmitted to inner brake pad against inner rotor braking surface. Pressure then moves caliper inward on guide pins, thus forcing outer disc pad against outer rotor braking surface. When brakes are released, pressure is removed from cylinder and rotor runout moves piston back into caliper cylinder to maintain sufficient rotor-to-pad clearance.

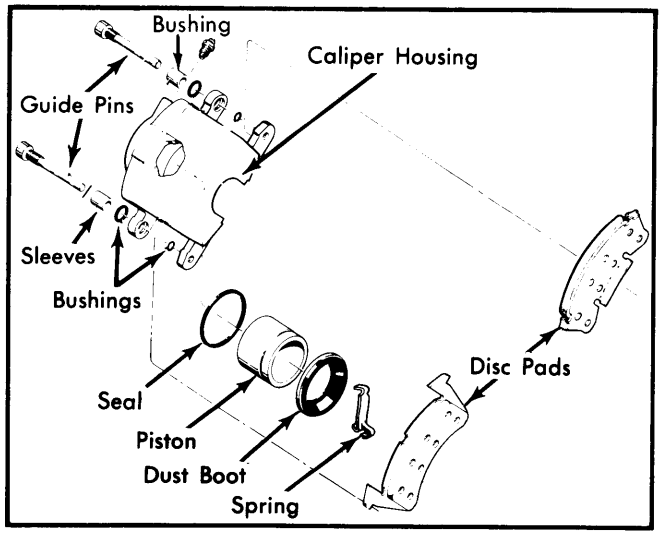

Fig. 1 Exploded View of Floating Caliper Assembly

ADJUSTMENT & SERVICING

DISC PAD ADJUSTMENT

Pad wear is automatically compensated for by piston moving outward in cylinder bore; therefore, no disc pad adjustment in service is required. NOTE – *Inspect condition of disc pads whenever wheels are removed. If any pad is worn to within 1/32" of rivet heads, replace complete disc pad set.*

BLEEDING SYSTEM

See Hydraulic Brake Bleeding in this Section.

REMOVAL & INSTALLATION

DISC BRAKE PADS

Removal – 1) Remove two-thirds of brake fluid from front reservoir in master cylinder. Raise vehicle and remove wheel. Place a 7" "C" clamp on caliper so that solid side of clamp rests against metal part of outer disc pad. Tighten "C" clamp until caliper moves away from vehicle far enough to push piston to bottom of bore. Remove "C" clamp.

2) Do not disconnect brake line to caliper. Remove two mounting bolts which secure caliper to support bracket. Lift caliper off rotor and remove inner disc pad. Pry out outer disc pad. Place caliper on front suspension arm so that caliper weight is not hanging on brake hose. Remove shoe support spring from cavity in piston. Remove sleeves from inner ear in caliper. Remove rubber bushings from grooves in each of four caliper ears.

Installation – 1) Install new rubber bushings in four caliper ears. Use a suitable installation tool (J-22835) to install sleeves in bushings. Position sleeves so that end toward disc pad is flush with machined surface of ear. Install shoe support spring on inner disc pad. Place the single tang end of spring over notch in center edge of pad. Now press the two tangs at the spring end of the inner disc pad over the bottom edge of pad.

2) Place inner disc pad with spring attached in caliper so that the ear end of disc pad is down and the bottom end up at an angle with spring resting on the inside diameter of piston. Press down on both ends of disc pad until pad is in a flat position resting on piston. CAUTION – *The inner disc pads are specifically left and right, when correctly installed, the wear sensor will be toward rear of caliper.*

3) Place outer disc pad in caliper with the ears at pad top over caliper ears and the tab at the bottom engaged in the caliper cut-out. Note left and right disc pads. Place caliper over rotor, lining up caliper ears with holes in the mounting bracket. With caliper installed in place, make sure brake hose is not twisted.

4) Start bolts through sleeves in inner caliper ears and through mounting bracket. Make sure that the bolts pass under the retaining ears in the inner disc pad. Push bolts through the holes in the outer disc pads and caliper ears. Thread bolts into mounting bracket. Tighten bolts to 35 ft. lbs.

5) Fill master cylinder with new brake fluid. Pump brake pedal several times to seat disc pads against rotor. Clinch upper ears of outer disc pad using a pair of channel lock pliers with one jaw on top of upper ear and other jaw on bottom of disc pad in notch. After clinching, ears should be flat against caliper housing with no radial clearance. If clearance exists, repeat procedure.

BRAKE CALIPER

Removal & Installation – **Brake caliper removal and installation procedures are same as for disc brake pads, except it will be necessary to disconnect brake hose.**

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DISC ROTOR

Removal (2-WD Models) – 1) Raise vehicle and position on safety stands. Remove brake caliper without disconnecting brake line as previously outlined.

2) Remove grease cover from end of hub. Remove cotter pin, nut, washer and outer bearing. Remove rotor and hub assembly.

Installation – Install rotor and hub assembly on spindle. Install outer bearing, washer and nut. Adjust wheel bearing. See *Wheel Bearing Adjustment in WHEEL ALIGNMENT Section.*

Removal (4-WD W/Locking Hubs – Part Time 4-WD) – 1) Turn hub actuator knob to "LOCK" position. Rotate tire to make sure hub is locked.

2) Raise vehicle and position on safety stands. Remove brake caliper assembly without disconnecting brake line as previously outlined.

3) Remove 6 hub retaining plate screws. Remove retaining plate, actuating knob and "O" ring. Remove outer snap ring. Remove outer clutch retaining ring, actuating cam body, outer clutch gear and spring.

4) Remove snap ring from end of axle. Remove inner clutch gear and spring retainer plate (K10 and K20 models only). Remove wheel bearing lock nut, lock ring and inner adjusting nut. Remove rotor and hub assembly.

Installation – 1) Install rotor and hub assembly on spindle. Install inner nut and adjust wheel bearing. See *Wheel Bearing Adjustment in WHEEL ALIGNMENT Section.*

2) On K10 and K20 models, install spring retainer plate with flange side facing bearing. Install inner clutch gear. Press in on gear and install snap ring on axle.

3) Install pressure spring with large end toward bearing. Spring should extend 7/8" past spindle when correctly installed.

4) Install outer clutch gear, actuating cam body (with cams facing forward), outer clutch retaining ring and snap ring.

5) Install "O" ring on retaining plate. Install actuating knob on retaining plate. Install actuating knob with knob in "LOCK" position. Make sure grooves in knob fit into actuator cam body.

6) Install 6 cover bolts and seals. Tighten bolts to 35-40 INCH Lbs. Turn knob to "FREE" position and check hub operation. Install brake caliper as previously outlined.

Removal (4-WD, Full-Time Models) – 1) Raise vehicle and position on safety stands. Remove brake caliper without disconnecting brake lines as previously outlined.

2) Remove grease cover on end of hub. Remove snap ring from end of axle. Remove drive gear. On K10 and K20 models, remove pressure spring.

3) Remove wheel bearing outer lock nut, lock ring and inner adjusting nut. Remove rotor and hub assembly.

Installation – 1) Install rotor and hub assembly on spindle. Install inner nut and adjust wheel bearings. See *Wheel Bearing Adjustment in WHEEL ALIGNMENT Section.*

2) On K10 and K20 models, install pressure spring. On all models, install drive gear, snap ring and grease cover. Install brake caliper as previously outlined.

OVERHAUL

BRAKE CALIPER

Disassembly – Clean exterior of caliper with denatured alcohol and place on clean work surface. Remove brake hose, discarding copper gasket. Drain brake fluid from caliper. Use clean shop towels to pad interior of caliper and use compressed air introduced at caliper inlet, to remove piston. CAUTION – *Use just enough air pressure to ease piston out of bore.* Use screwdriver to pry boot out of caliper housing. Remove piston seal from its groove in caliper bore, using a piece of wood or plastic. CAUTION – *Do not use metal tool of any type for this operation.* Remove bleeder valve from housing.

Inspection – Boot, seal, rubber bushings, and sleeves are to be replaced each time caliper is overhauled. Clean all other parts in denatured alcohol. Dry parts with dry, filtered, compressed air. NOTE – *Using lubricated shop air will leave a film of mineral oil on metal parts. This may damage rubber parts upon contact during reassembly.* Check guide pins for corrosion, breaks in plating, or other damage. Do not attempt to clean pins; replace them. Check outside diameter of piston for scoring, nicks, corrosion, and worn or damaged plating. If surface defects exist, piston must be replaced.

NOTE – *Refinishing piston with abrasives is not acceptable.* Piston bore should be checked for similar defects. Bore is not plated; therefore, minor corrosion can be polished with crocus or emery cloth. Thoroughly clean bore after polishing. Replace caliper housing if bore corrosion cannot be easily cleaned.

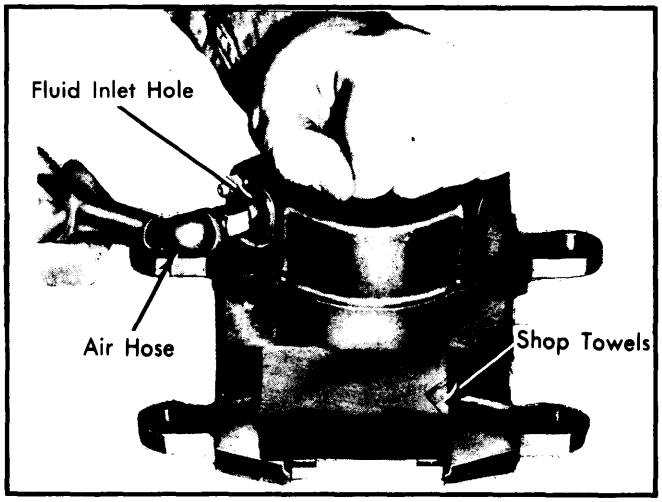

Fig. 2 Using Compressed Air to Remove Caliper Piston

Reassembly – Lubricate bore in caliper housing and new piston seal with clean brake fluid. Position seal in caliper bore groove. Lubricate piston with clean brake fluid and assemble

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new boot into groove in piston with fold facing open end of piston. Insert piston into caliper bore, using care not to unseat seal. DO NOT force piston to bottom of bore. Postion outer diameter of boot in caliper counterbore and, using suitable tool (J-22904), drive in until fully seated. Check boot installation to ensure retaining ring (molded into boot) is not bent, and that boot is installed completely below caliper face. Install brake hose, using new copper gasket.

DISC ROTOR

Lateral Runout – Adjust wheel bearings until all endplay is eliminated. Attach dial indicator with contact tip of indicator approximately one inch from rotor edge. Set indicator to zero and turn rotor through one complete revolution, noting indicator reading.

Parallelism – Check thickness of rotor at four or more points around circumference of rotor. Make all measurements at same distance from edge of rotor. If thickness variation is excessive, refinish or replace rotor as necessary.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Brake Hose-to-Caliper	22
Caliper Mounting Bolts	35
Application	**Inch Lbs.**
Hydraulic Line-to-Brake Hose	150
Support Plate-to-Knuckle Bolts	140

DISC BRAKE ROTOR SPECIFICATIONS

Application	Disc Diameter	Lateral Runout	Parallelism	Original Thickness	Minimum Refinish Thickness	Discard Thickness
All 10 Series & G20	11.86″	.004″	.0005″	1.280″	1.230″	1.215″
Remaining Models	12.5″	.004″	.0005″	1.280″	1.230″	1.215″