

BRAKE SYSTEM

1988 Jeep Cherokee

1988 BRAKES
Jeep - Brake System

Cherokee, Comanche, Grand Wagoneer, Wagoneer, Wrangler

DESCRIPTION

DISC BRAKES

Floating caliper disc brake assembly uses a single piston caliper which "floats" on 2 bolts. As brake pedal is depressed, hydraulic pressure is passed through a proportioning valve to brake caliper piston.

This force is transmitted to inboard brake pad, forcing it against braking surface of rotor. Pressure then moves outer caliper housing and pad inward on caliper mounting bolts, thus forcing outer pad against outer braking surface of rotor.

DRUM BRAKES

Self-centering type system uses primary and secondary brake shoes with cable operated automatic adjusters. Brake shoe anchor is located at upper end of shoes above wheel cylinder. Single double acting brake cylinder is used.

MASTER CYLINDER - EXCEPT GRAND WAGONEER

The Delco Quick Take-Up master cylinder is used with systems utilizing low drag calipers. Master cylinder includes a quick take-up valve which delivers a large volume of fluid, at low pressure, upon initial brake application.

MASTER CYLINDER - GRAND WAGONEER

Bendix and Delco-Moraine tandem dual piston master cylinders are single casting type with front and rear pistons and a separate reservoir and outlet for each piston. Primary piston is operated by push rod connected to brake pedal. Secondary piston is operated by primary piston.

ADJUSTMENTS

NOTE: For Hub, Bearing and Axle Shaft Removal, Installation and Adjustment information, see appropriate DRIVE AXLES article.

DISC BRAKE PADS

Automatic adjustment is provided by outward relocation of piston as lining wears.

DRUM BRAKE SHOES

1) Rear brake shoes adjust automatically as brakes are applied while vehicle is operated in reverse. Drive vehicle in reverse applying brakes firmly 10-15 times, between each reverse brake application, drive vehicle forward and press brakes firmly.

2) Manual adjustment is required if shoes have been removed

and reinstalled. Brake shoes can be manually adjusted by rotating adjuster screw. Remove access slot cover.

3) Using a small blade screwdriver, push in on adjustment lever to separate from adjustment screw. Turn adjustment screw until brake drum is locked tight. Back screw off until wheel rotates freely. If brake drum is to be removed, back off adjustment screw several notches for adequate clearance.

HEIGHT SENSING PROPORTIONING VALVE - COMANCHE

NOTE: Anytime adjustment is required the lever bushing must be replaced.

Adjustment must be made on a drive-on lift or a flat level surface with vehicle at curb weight. Remove height sensing proportioning valve shaft nut and washer. Disconnect valve lever and remove spring. Remove and discard bushing.

Rotate valve shaft to permit installation and proper alignment of valve adjusting gauge (J-35853-2).

NOTE: The gauge (J-35853-2) must be properly seated on the "D" shape of the shaft and the lower mounting bolt of the valve. See Fig. 2. Also, all linkage components, excluding the spring, must be connected to the axle housing before installation of bushing.

Place lever bushing in lever. Using bushing installation tool (J-35853-1) press bushing along with lever onto valve shaft. Remove lever and adjusting to (J-35853-2) then install the spring. Install lever, washer and retaining nut. Tighten retaining nut to 100 Inch-lbs. (11 N.m). Connect spring to lever arm.

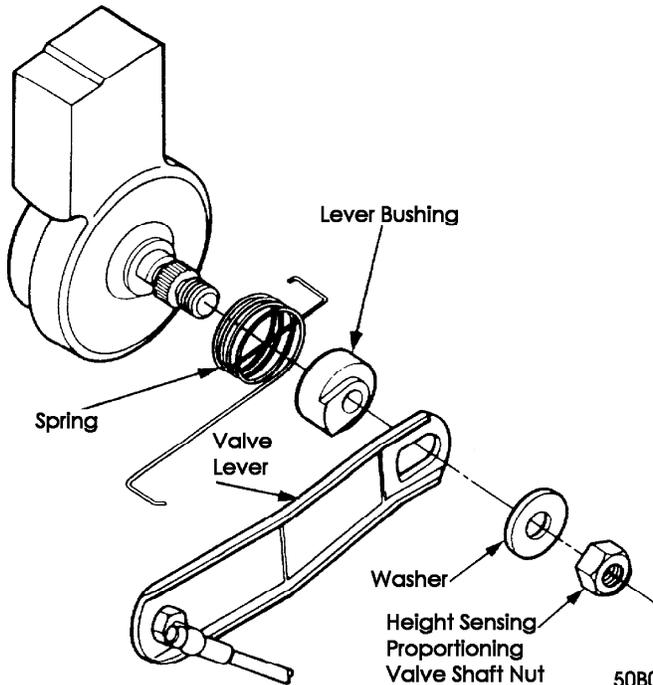
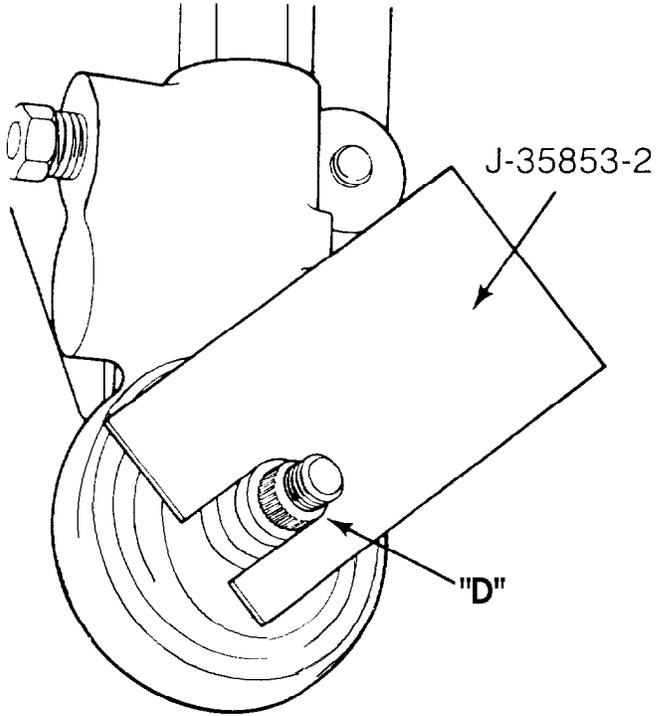
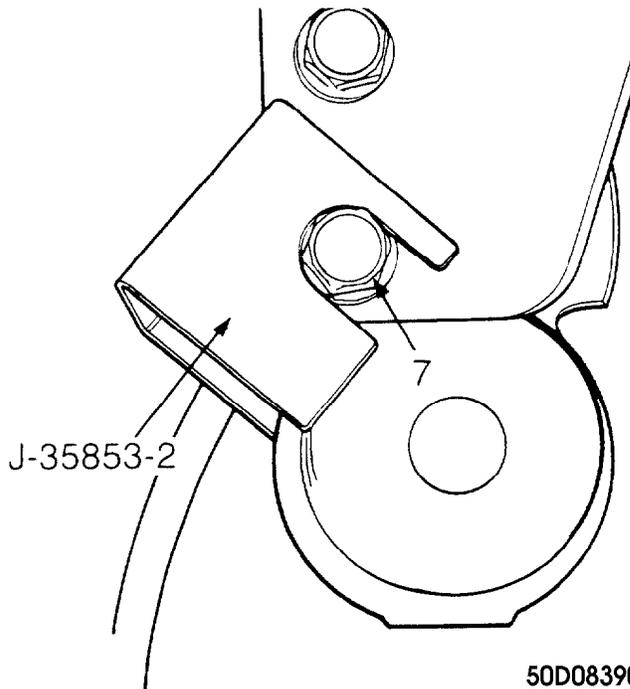


Fig. 1: Exploded View of Height Sensing Proportioning Valve

FRONT VIEW OF VALVE



SIDE VIEW OF VALVE



50D08390

Fig. 2: Front and Side View of Valve Shaft

BACK VIEW OF VALVE

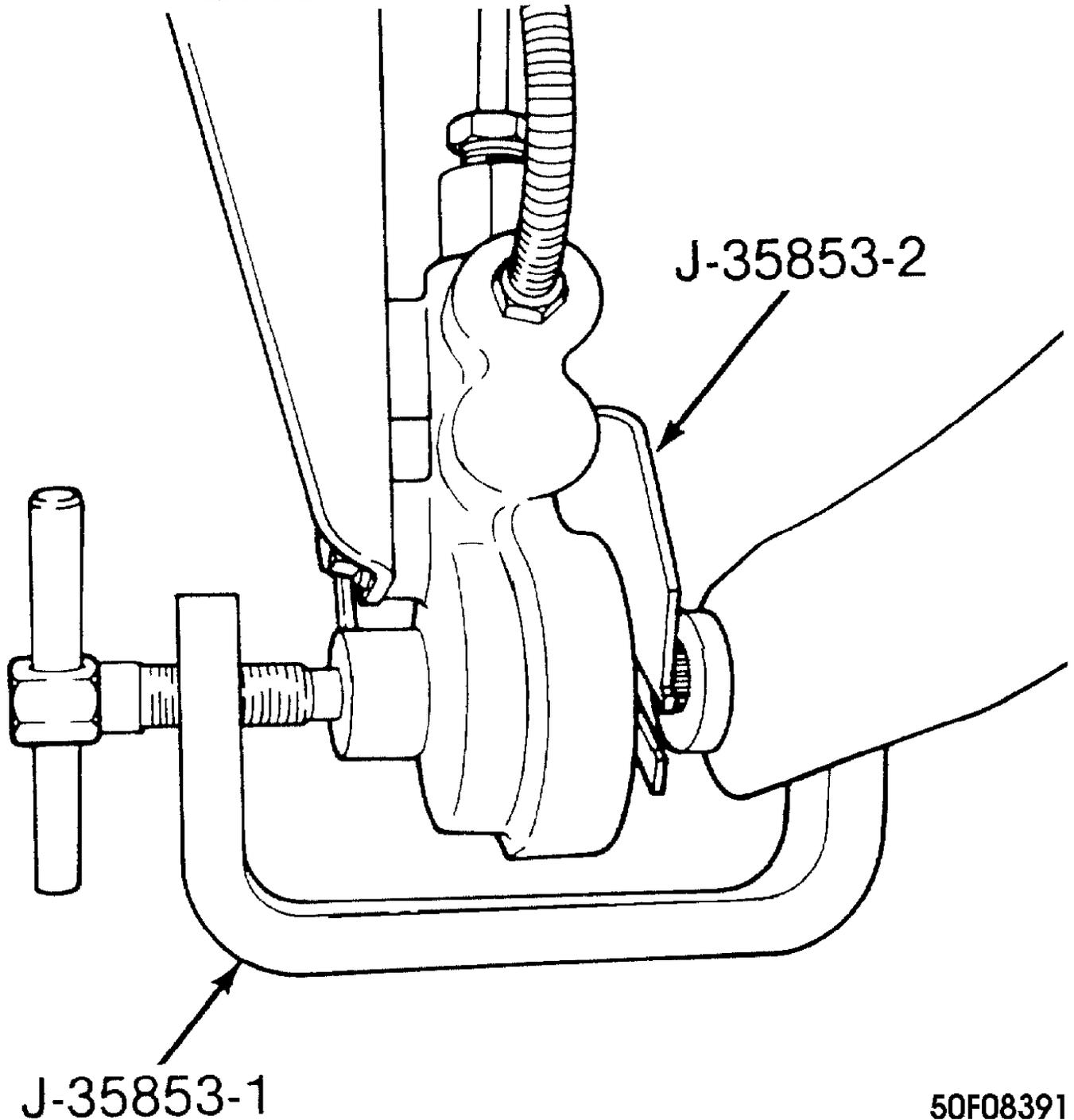


Fig. 3: Back View of Valve Shaft

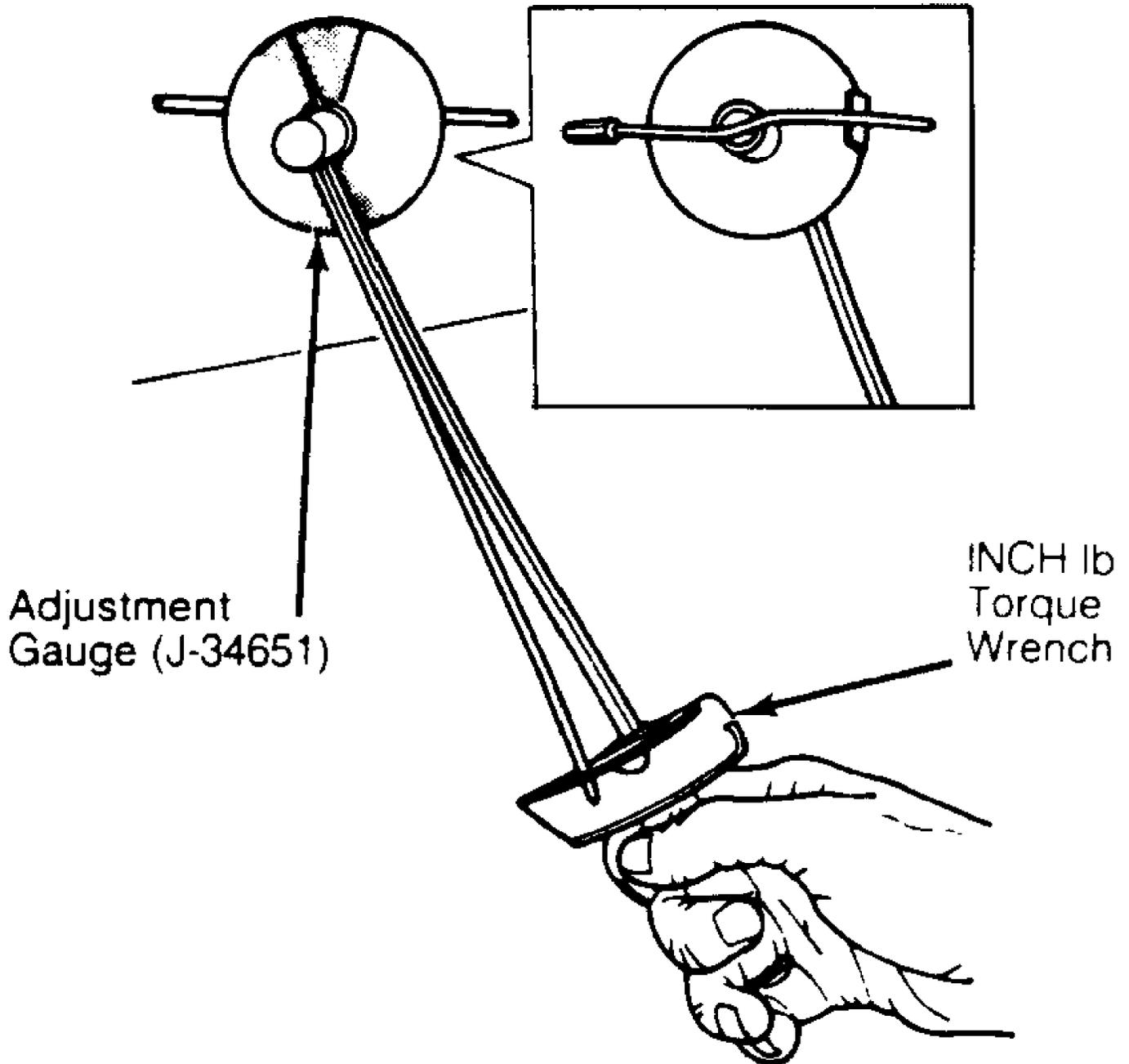
50F08391

PARKING BRAKE - EXCEPT GRAND WAGONEER

1) Adjust rear brakes. Check cable for binds, kinks or frayed condition. Replace cable (if necessary). Apply and release parking brake 5 times.

2) On all models except Wrangler, place parking brake lever in fifth notch. Raise vehicle. Using Adjustment Gauge (J-34651), apply a torque of 50-55 INCH lbs. (5-6 N.m). See Fig. 4.

3) Adjust nut on parking brake cable equalizer until pointer is in Blue section of gauge. Apply and release parking brake cable 5 times. Check adjustment and readjust cable (if necessary).



30086

Fig. 4: Parking Brake Adjustment (Except Grand Wagoneer)
Courtesy of American Motors/Jeep Corp.

PARKING BRAKE - GRAND WAGONEER

1) Adjust rear brakes. Check cable for binds, kinks or frayed condition. Replace cable (if necessary). Release parking brake. Loosen lock nuts at parking brake cable equalizer under vehicle.

2) Tighten cables until wheels drag slightly when rotated by hand. Loosen equalizer until wheels rotate freely and no drag is felt. Tighten lock nuts and check operation of parking brake.

ROTOR SERVICING

RUNOUT

1) Measure rotor lateral runout by mounting a dial indicator on support stand or steering spindle. Position indicator stylus so it contacts center of rotor braking surface.

2) Zero indicator and turn rotor one revolution. Note indicator reading. Runout must not exceed specification. See DISC BRAKE ROTOR SPECIFICATIONS table. Refinish or replace rotor (if necessary).

NOTE: Thickness of machined rotor must not be below minimum thickness specification.

PARALLELISM

Measure rotor parallelism with a micrometer. Measure thickness at 4 or more equally spaced points around rotor at approximately 1" from edge of rotor. Variation must not exceed specification. See DISC BRAKE ROTOR SPECIFICATIONS table. Refinish or replace rotor (if necessary).

BRAKE SYSTEM BLEEDING

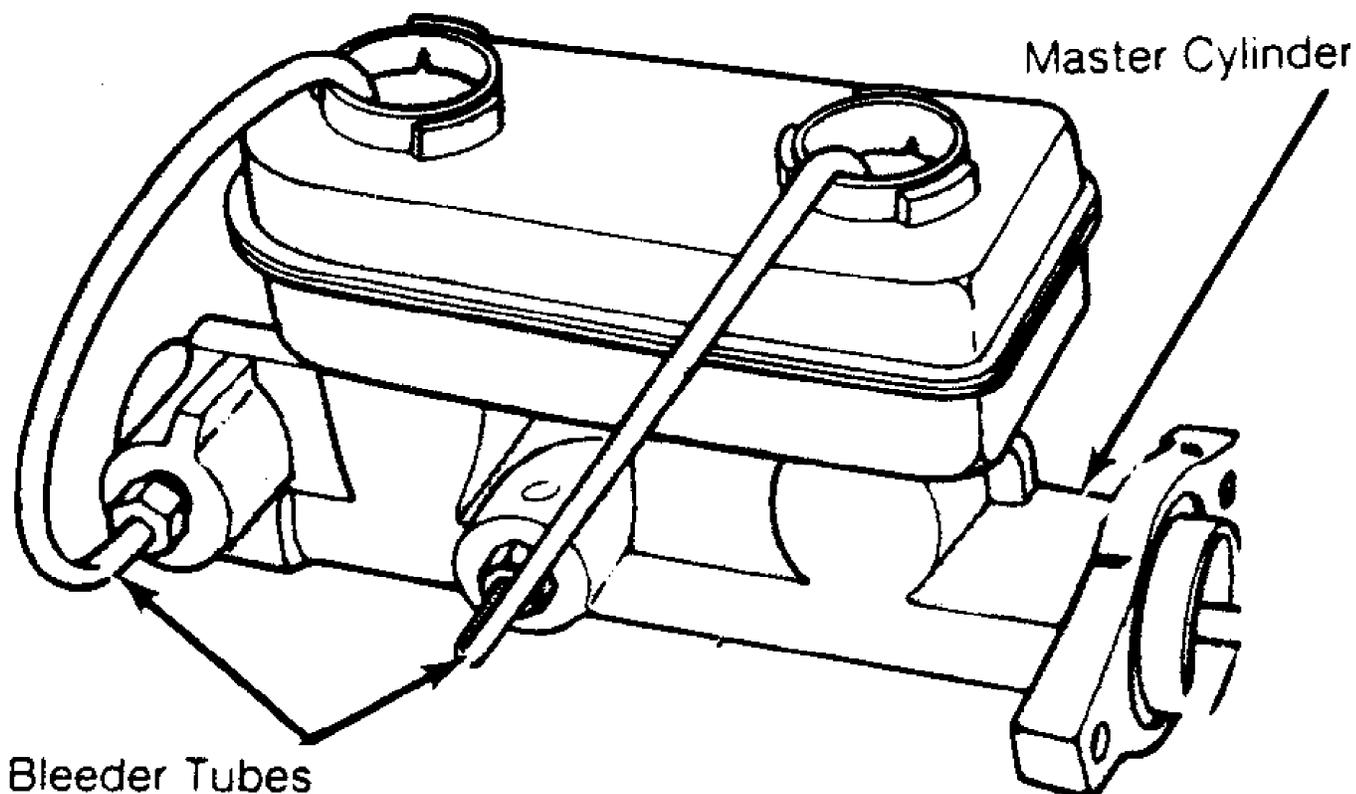
Hydraulic system bleeding is necessary any time air has been introduced into system. Bleed brakes at all 4 wheels if master cylinder lines have been disconnected or master cylinder has run dry. Bleed brakes with vacuum bleeding equipment, pressure bleeding equipment or by manually pumping brake pedal while using bleeder tubes. Always bleed brake lines in sequence. See BLEEDING SEQUENCE table.

MASTER CYLINDER BLEEDING

Bench Bleeding

1) Master cylinder must be bled before installation to prevent excessive amounts of air from entering the brake system, creating poor brake operation.

2) Place master cylinder in soft-jawed vise. DO NOT tighten vise enough to damage master cylinder. Install bleeder tubes in both outlets of master cylinder. See Fig. 5.



30000

Fig. 5: Bleeding Master Cylinder
 Courtesy of American Motors/Jeep Corp.

3) Fill master cylinder with clean brake fluid that meets DOT 3 specifications. Ensure that the end of bleeder tubes are submerged in the brake fluid.

4) Using proper sized rod, apply and release master cylinder until no air bubbles exist in brake fluid flow. Once all air bubbles are gone from master cylinder secure cap and install.

5) Bleeder tubes should be left installed on master cylinder until master cylinder is installed. Master cylinder must be bled at brake lines and wheels after installation.

Bleeding On Vehicle

1) Install master cylinder on vehicle after bench bleeding. Remove bleeder lines and install brake lines. DO NOT fully tighten brake lines at this time.

2) Slowly force brake pedal to the floor and hold in this position. Tighten brake lines and release brake pedal. Repeat procedure until no air bubbles exist at brake lines. Remaining wheel cylinder or calipers may be require bleeding.

HYDRAULIC CONTROL VALVES

Hold Off Valve

1) Prior to the pressure tank bleeding procedure, the hold off valve incorporated in the combination valve must be correctly positioned. This allows brake fluid to flow through the combination valve to the entire brake system.

2) The valve stem of the hold off valve may be retained using

tools available from Chrysler Motors (C-4121) or General Motors (J-23709) during bleeding procedure. See Figs. 6 and 7. Remove valve retainer once brake bleeding procedure is complete.

CAUTION: DO NOT use rigid clamp to position valve stem. Damage to the valve assembly may result causing brake failure.

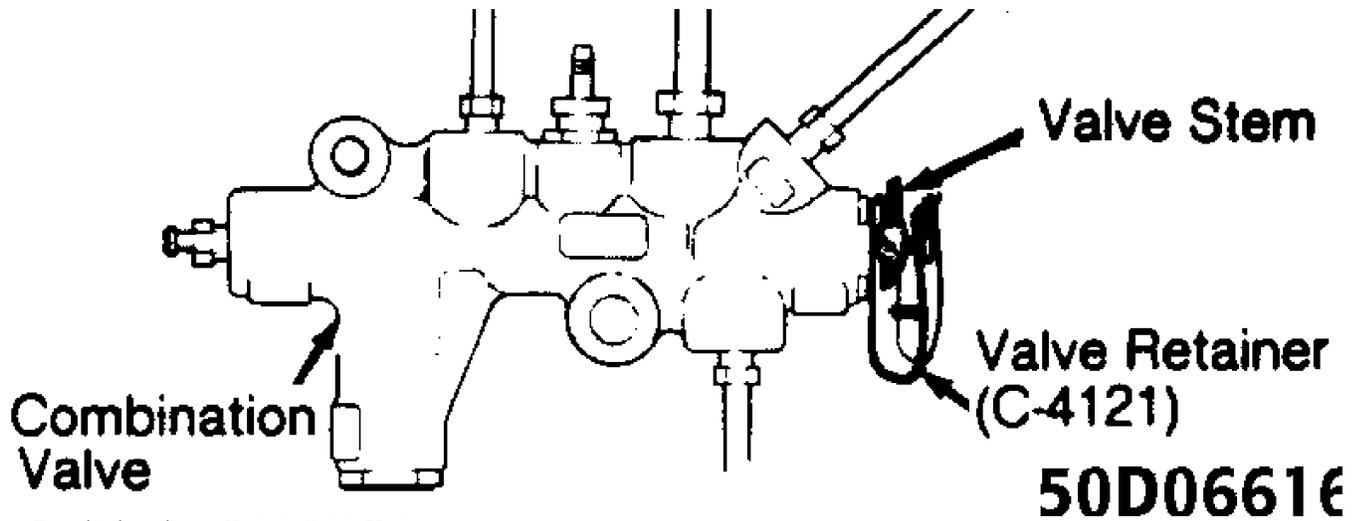


Fig. 6: Positioning Hold Off Valve
Courtesy of American Motors/Jeep Corp.

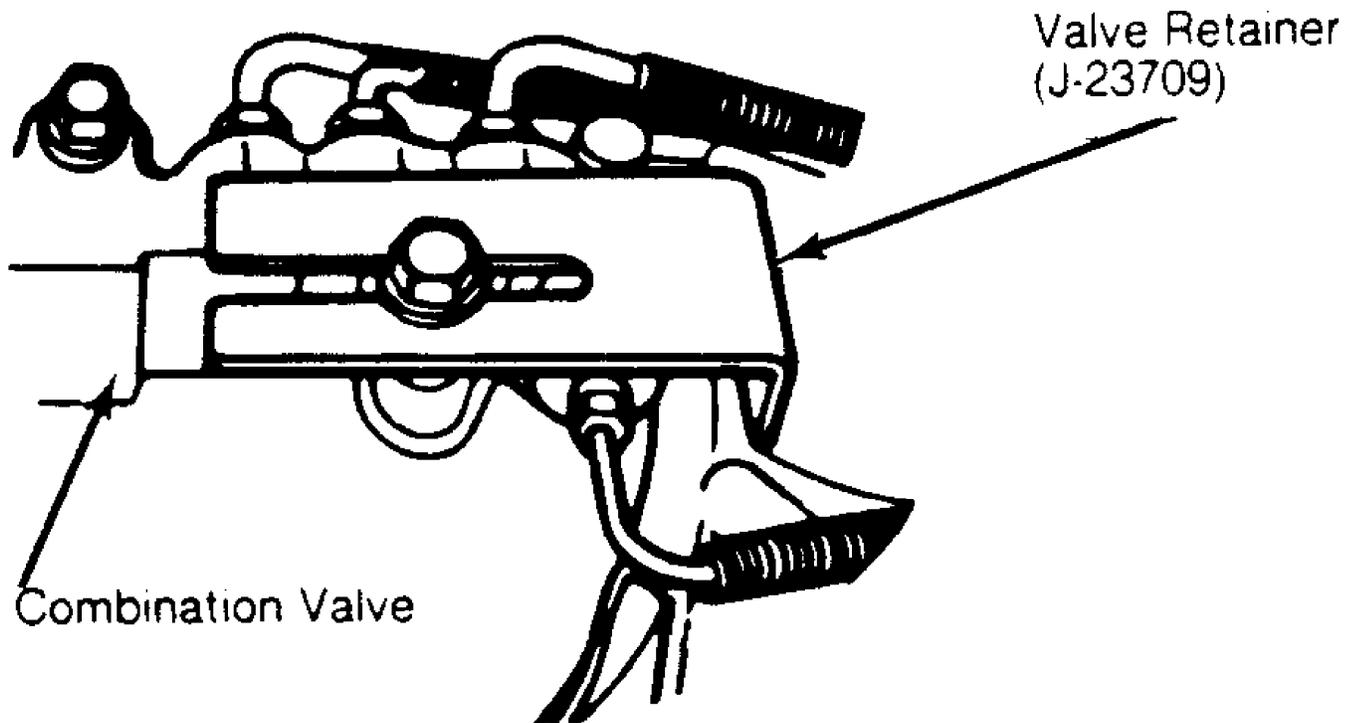


Fig. 7: Positioning Hold Off Valve
Courtesy of American Motors/Jeep Corp.

VACUUM BLEEDING

Fill master cylinder. Install vacuum bleed equipment to first bleeder valve to be serviced. Open bleeder valve 3/4-1 turn. Depress vacuum pump and pull fluid into reservoir jar. Bleed each bleeder valve in sequence. See BLEEDING SEQUENCE table.

PRESSURE BLEEDING

1) Clean master cylinder cap and surrounding area. Remove cap. With pressure tank at least 1/2 full, connect to master cylinder with adapters. Attach bleeder hose to first bleeder valve to be serviced. See BLEEDING SEQUENCE table.

2) Place other end of hose in clean glass jar partially filled with clean brake fluid so end of hose is submerged in fluid. The hold off valve must be positioned properly before pressure bleeding (if equipped). See HYDRAULIC CONTROL VALVES under BRAKE SYSTEM BLEEDING in this article.

3) Open release valve on pressure bleeder. Follow equipment manufacturer's pressure instructions or see PRESSURE BLEEDER SETTINGS table. Open bleeder screw 3/4-1 turn and note fluid flow.

4) Close bleeder screw when fluid flowing is free of bubbles. Repeat procedure on remaining wheels in proper sequence. Check brake pedal operation after bleeding has been completed.

5) Remove pressure bleeding equipment and valve retainer from hold off valve. Ensure that master cylinder is full of fluid.

PRESSURE BLEEDER SETTINGS TABLE

Application	psi (kg/cm ²)
All Models	15-20 (1.1-1.4)

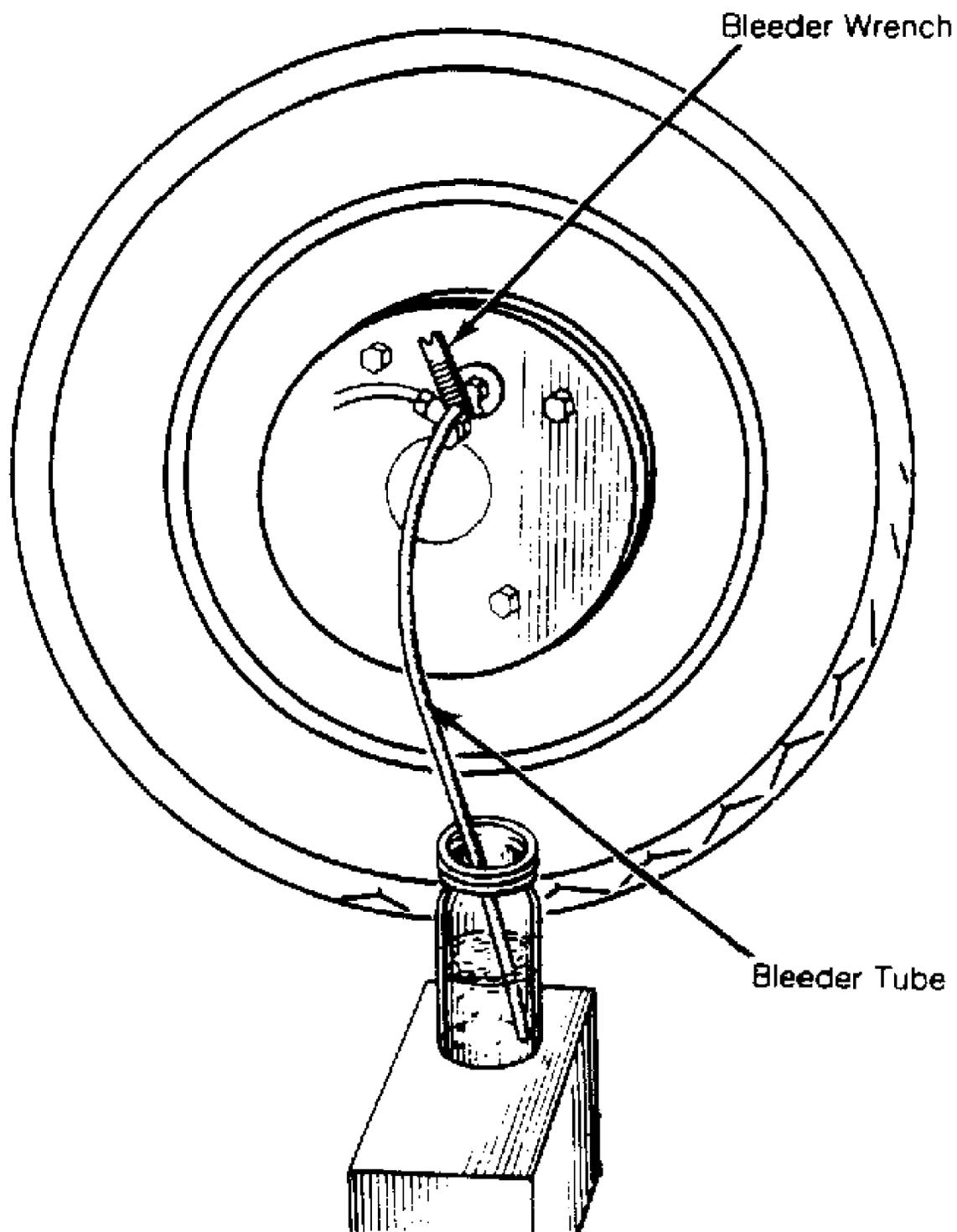
MANUAL BLEEDING

NOTE: When bleeding disc brakes, air may tend to cling to caliper walls. Lightly tap caliper, while bleeding, to aid in removal of air.

1) Fill master cylinder. Install bleeder hose to first bleeder valve to be serviced. See BLEEDING SEQUENCE table. Submerge other end of hose in clean glass jar partially filled with clean brake fluid. See Fig. 8.

2) Open bleeder valve 3/4-1 turn. Depress brake pedal slowly through full travel. Close bleeder valve and release pedal. Repeat procedure until flow of fluid shows no signs of air bubbles.

NOTE: When bleeding brake system manually, ensure bleeder valve is closed when brake pedal is released.



30346

Fig. 8: Wheel Cylinder Bleeding Procedure
Courtesy of American Motors/Jeep Corp.

BLEEDING SEQUENCE

Before bleeding system, exhaust all vacuum from power unit by depressing brake pedal several times. Bleed master cylinder (if equipped) with bleeder screws. Bleed slave cylinder on vehicles equipped with remote mount power assist units. Bleed wheel cylinders and calipers in sequence. See BLEEDING SEQUENCE table.

BLEEDING SEQUENCE TABLE

Application	Sequence
All Models	RR, LR, RF, LF

REMOVAL & INSTALLATION

DISC BRAKE CALIPER

Removal & Installation

Caliper removal and installation procedures are same as for disc pad replacement. To remove caliper from vehicle, disconnect brake line at caliper and cap hole to prevent contamination.

DISC BRAKE PADS

Removal

1) Drain 2/3 of brake fluid from master cylinder reservoir. Raise vehicle and support with safety stands. Remove front wheel assembly.

2) Place "C" clamp on caliper. Solid end of clamp should contact back of caliper. Screw end should contact metal part of outboard shoes.

3) Tighten "C" clamp until caliper forces piston to bottom of bore. Remove both Allen head mounting bolts and lift caliper off rotor. Support caliper out of the way.

4) On Grand Wagoneer, remove both brake pads from caliper. Note spring position and support spring from inboard shoe. Remove sleeves and bushings from caliper.

5) On all other models, hold anti-rattle clip against caliper adapter and remove outer brake pad. Remove inner brake pad and anti-rattle clip from caliper adapter.

Installation

1) To install, reverse removal procedure. On Grand Wagoneer, lubricate new bushings, sleeves, bushing grooves, and small ends of mounting bolts with silicone lubricant. Install rubber bushings in caliper mounting ears.

2) On all other models, clean caliper mating surfaces on adapter with a wire brush. Apply double sided adhesive tape to back side of inner pad. Clean caliper piston surface. Lubricate caliper mating surfaces on caliper adapter.

3) On all models, lubricate caliper mounting bolts using brake corrosion lubricant and tighten mounting bolts. Add brake fluid to reservoir. Apply brakes until brake pedal is firm. Check brake fluid level.

DISC BRAKE ROTOR - WRANGLER

Removal

Raise and support vehicle. Remove front wheel and caliper. Suspend caliper from frame or suspension. Remove rotor from hub.

Installation

Clean hub and rotor mating surfaces. To install, reverse removal procedure.

NOTE: DO NOT disconnect brake hose from caliper unless caliper is to be disassembled.

DISC BRAKE ROTOR - CHEROKEE, COMANCHE & WAGONEER

Removal

1) Raise and support vehicle. Remove front wheel and caliper. Suspend caliper from frame or suspension. Remove cap, cotter pin, nut retainer, adjusting nut and thrust washer from spindle.

2) Remove outer bearing from hub. Remove hub and rotor from spindle. Remove hub and rotor seal. Remove inner bearing from hub.

Installation

1) Apply small amount of "EP" type waterproof wheel bearing grease in hub cavity. Lubricate inner and outer bearings. Install inner bearing and seal in rotor. Clean rotor surface (if necessary).

2) Install hub and rotor on spindle. Install outer bearing, thrust washer and spindle nut. Tighten spindle nut to 17-25 ft. lbs. (23-34 N.m) while rotating rotor to seat bearings. Loosen spindle nut 1/2 a turn and retighten an additional 19 INCH lbs (2 N.m). Reverse removal procedure to complete installation.

DISC BRAKE ROTOR - GRAND WAGONEER

Removal

1) Raise vehicle and support with safety stands. Remove wheel and caliper. On models without front hubs, remove rotor hub cap, drive gear snap ring, drive gear, pressure spring and spring cup.

2) On models with front hubs, remove screws attaching hub body to hub clutch and remove hub body from clutch. Remove large and small retaining rings. Remove hub clutch from axle shaft.

3) On all models, remove wheel bearing outer and inner lock nuts and retaining ring using Socket (J-6893-D). Remove rotor. Remove wheel bearings from rotor.

Installation

1) Lubricate bearings with "EP" type waterproof wheel bearing grease. Install bearings and seal in rotor. Install rotor and inner lock nut. Inner lock nut has a locating peg on one side. When installed, peg must face away from bearing.

2) Install wheel, but do not tighten lug nuts completely. Tighten inner lock nut to 50 ft. lbs. (68 N.m) while rotating wheel. Back of inner lock nut 1/6 turn (45-65 degrees).

3) Install retaining washer. Ensure that inner lock nut locating peg is engaged with retaining washer. Install outer lock nut and tighten to 50 ft. lbs. (68 N.m).

4) On models without front hubs, install pressure spring cup, pressure spring, drive gear and snap ring. Coat rim of chrome hub cover with Permatex No. 3 and install cap in rotor hub.

NOTE: Recessed side of spring cup faces outer bearing and flat side faces pressure spring.

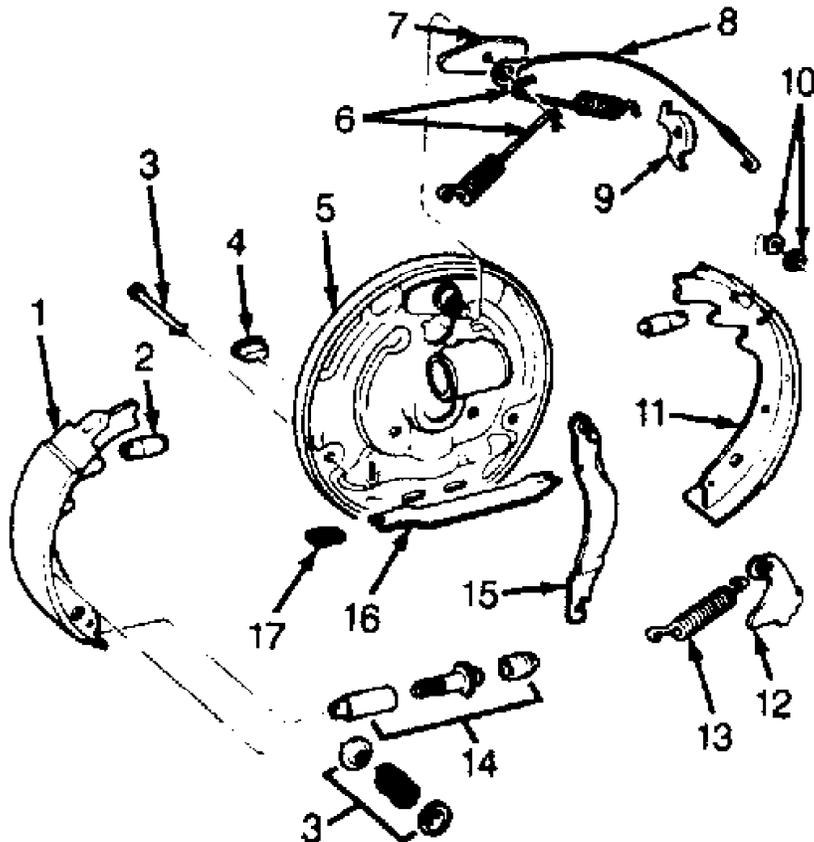
5) On models with front hubs, install hub clutch on axle. Install large and small hub retaining rings. Install hub body on clutch and tighten to 30 INCH lbs. (3 N.m). Reverse removal procedure to complete installation.

DRUM BRAKE SHOES - EXCEPT GRAND WAGONEER

Removal

1) Raise vehicle and support with safety stands. Remove wheel assembly and drum. Remove "U" clip and washer from parking brake lever pivot pin. Place Wheel Cylinder Clamp (J-8002) over wheel cylinder.

2) Remove primary and secondary return springs, spring retainers, hold-down springs and retaining pins. Remove adjuster lever, adjuster screw and spring from brake shoes. Remove brake shoes. See Fig. 9.



- | | |
|-------------------------|--------------------------|
| 1) Secondary Brake Shoe | 10) Washer |
| 2) Wheel Cylinder Pin | 11) Primary Brake Shoe |
| 3) Hold Down Pin | 12) Adjustment Lever |
| 4) Access Cover | 13) Lower Return Spring |
| 5) Backing Plate | 14) Self-Adjuster |
| 6) Return Springs | 15) Parking Brake Lever |
| 7) Guide Plate | 16) Parking Brake Strut |
| 8) Adjusting Cable | 17) Parking Brake Spring |
| 9) Cable Guide | |

Fig. 9: Exploded View of Drum Brake (w/Cable Operated Adjuster)
Courtesy of American Motors/Jeep Corp.

Installation

1) Lubricate support plate ledges, anchor pin, adjuster cable

guide, adjuster screw assembly, parking brake lever and lever pivot pin with molybdenum disulphide grease.

2) Connect parking brake lever to secondary brake shoe with washer and "U" clip. Crimp ends of clip to secure clip on pivot. Remove wheel cylinder clamp. Position brake shoes on brake support plate and install hold-down springs.

3) Install parking brake lever strut and spring. Install adjuster cable guide plate and adjuster cable on anchor pin. Install primary return spring. Install guide to secondary brake shoe. Install secondary return spring.

4) Install adjuster screw, spring and lever. Connect lever to cable. Using Brake Gauge (J-21177-01), preset brake shoe adjustment. Install brake drums. Adjust brake shoes with drum in place.

5) Install wheels and lower vehicle. To adjust and balance brake system, apply and release brakes 10-15 times while driving forward and backward. Road test vehicle.

DRUM BRAKE SHOES - GRAND WAGONEER

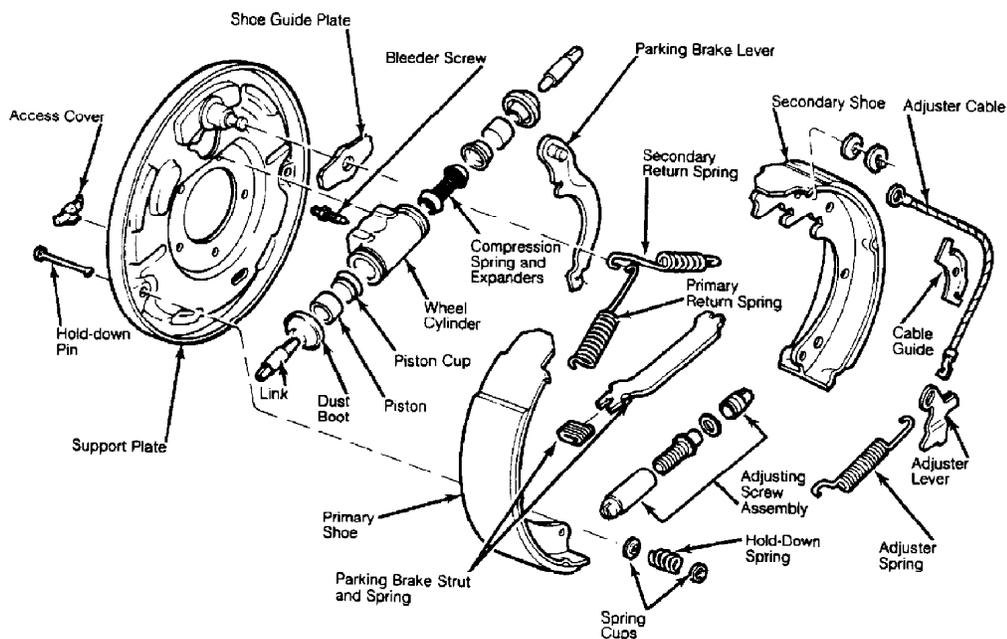
Removal

1) Raise vehicle and support with safety stands. Remove wheels. On models with full-floating rear axle, remove 2 screws that retain drum on hub.

2) On all models, remove primary shoe return spring, automatic adjuster actuator spring and secondary shoe return spring. Remove hold-down springs. Remove brake shoe assemblies. See Fig. 10.

3) Disengage parking brake cable from parking brake lever. Remove parking brake strut and brake shoe assembly as a unit. Place wheel cylinder clamps over cylinders in order to retain pistons.

4) Inspect automatic adjuster lever and pivot, actuating lever, parking brake lever, automatic adjuster and springs. Replace weak springs, bent levers and parts that are worn or broken.



30400
Fig. 10: Exploded View of Drum Brake Assembly (Grand Wagoneer)
Courtesy of American Motors/Jeep Corp.

Installation

1) Clean support plate. Apply a thin film of molybdenum

disulphide grease or chassis lubricant on support plate ledges, anchor pin, adjuster screw threads and pivot.

2) Apply grease to adjuster lever-to-secondary brake shoe contact surface, parking brake lever pivot and portion of lever that contacts secondary brake shoe.

3) Attach parking brake cable to parking brake lever on secondary shoe. Pinch "U" clip to retain lever on shoe. Install secondary brake shoe, automatic adjuster lever and lever pivot as an assembly.

4) Install brake shoe hold-down spring. Install return spring on actuating lever tang. Large end of tapered spring should rest on brake shoe.

5) Install primary shoe and hold-down spring. Install guide plate on anchor pin. Install parking brake strut and spring on brake shoes.

6) Install adjusting screw and spring. Short end of hooked spring attaches to primary brake shoe. Long hooked end attaches to secondary brake shoe.

7) Install secondary shoe return spring, adjuster spring and primary return spring. Install brake drums. Adjust brakes. Bleed brake system.

8) Install wheels and lower vehicle. Apply and release brakes 10-15 times while driving forward and backward to adjust and balance brake system. Road test vehicle.

MASTER CYLINDER - EXCEPT GRAND WAGONEER

Removal

1) With engine off, depress brake pedal several times to release vacuum in power unit. Clean dirt and grease from brake line connections.

2) Disconnect and plug brake lines at master cylinder. Remove retaining nuts and master cylinder.

Installation

To install, reverse removal procedure. Bleed brake system. See BRAKE SYSTEM BLEEDING in this article.

MASTER CYLINDER - GRAND WAGONEER

Removal

Disconnect brake lines at master cylinder and plug. On vehicles without power assist units, disconnect brake pedal push rod at brake pedal. Remove master cylinder retaining nuts at firewall. Remove master cylinder.

Installation

1) Master cylinder should be bench bled before installation. See BRAKE SYSTEM BLEEDING in this article. Position master cylinder on vehicle. Loosely install retaining nuts. Loosely install brake lines to cylinder. Tighten retaining nuts. Tighten brake lines.

2) Connect brake pedal push rod (if removed). Fill reservoir with brake fluid and bleed brake system. See BRAKE SYSTEM BLEEDING in this article.

REAR AXLE BEARING & SEAL

Removal

1) Raise vehicle and support with safety stands. Remove wheel assembly and brake drum. Remove support plate retaining nuts through hole provided in axle flange. Use a slide hammer to remove axle shaft.

2) If wheel bearing cup remains in housing, use Slide Hammer (J-2619-01) and Bearing Remover (J-26941) to remove bearing cups.

Remove axle shaft oil seal from axle housing tube.

3) Place axle shaft in a vise. Drill a 1/4" (6.35 mm) hole 3/4 of the way through bearing retaining ring. Chisel off bearing retaining ring. Do not use a torch. Press bearing off axle. Remove seal and retainer plate.

Installation

Lubricate bearing and seal lip. Install retainer plate and seal over axle. Press axle shaft bearing and retaining ring on shaft simultaneously. Ensure bearing and ring are seated against axle shaft shoulder. To complete installation, reverse removal procedure to complete installation.

WHEEL CYLINDER

Removal

Remove wheel assemblies, brake drums and brake shoes. Disconnect brake line at wheel cylinder. Do not bend brake line away from cylinder. Remove cylinder-to-support plate bolts. Remove cylinder.

Installation

To install, reverse removal procedure. Start brake line fitting into cylinder before installing cylinder to support plate.

OVERHAUL

DISC BRAKE CALIPER

Disassembly

1) Clean caliper exterior with brake cleaning solvent. Drain residual fluid from caliper and place caliper on a clean working surface.

2) Remove piston from caliper by applying compressed air to inlet port. Use just enough pressure to ease piston out of bore. Protect piston from damage with folded shop towels. Do not try to catch piston by hand.

3) Pry dust boot out of bore with screwdriver. Do not scratch bore. Using a small plastic or wooden stick, pry piston seal from bore. See Fig. 11. Remove bleeder screw, sleeves, and bushings.

Cleaning & Inspection

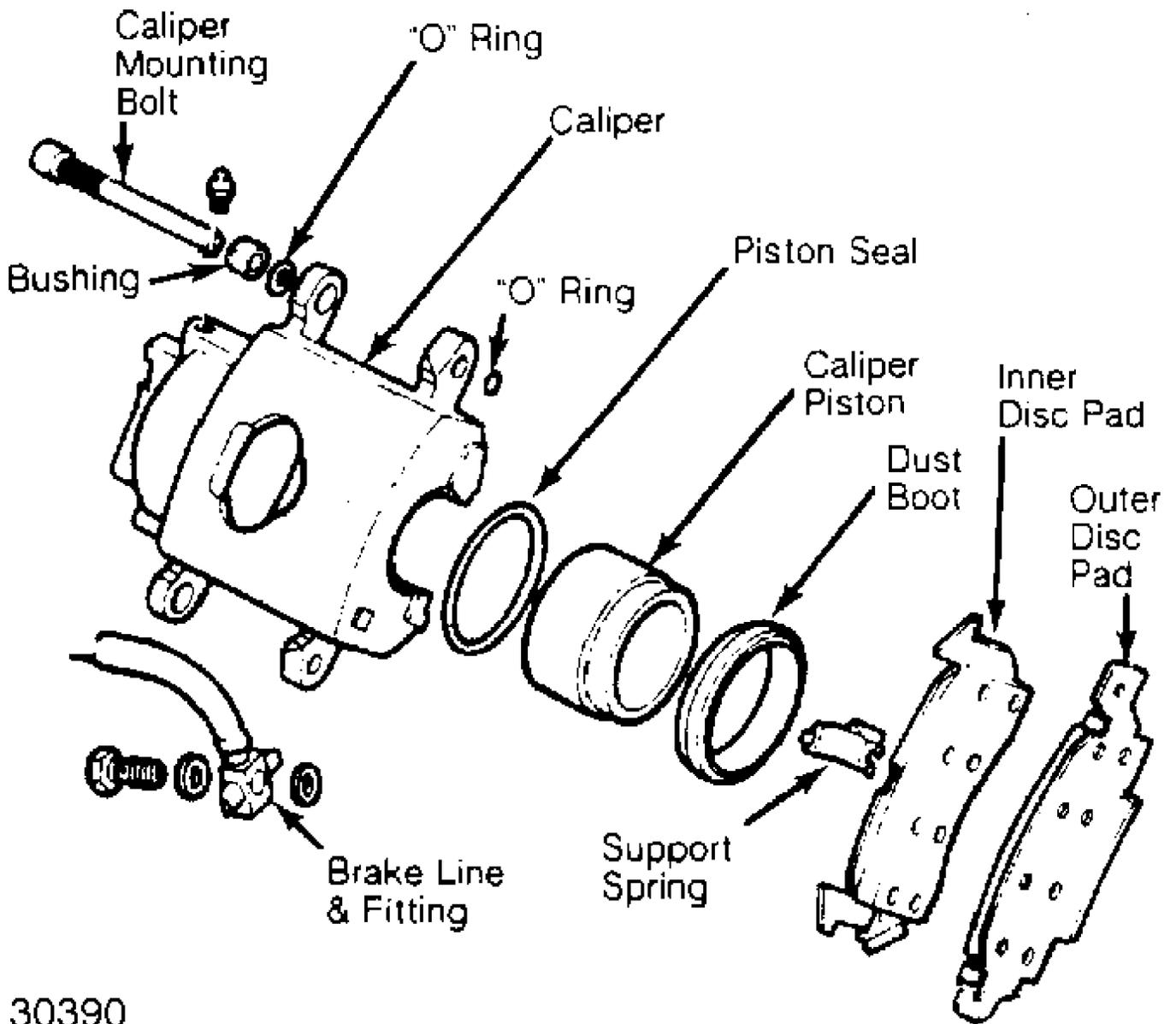
Clean all parts with brake cleaning solvent. Blow dry parts. Check for damaged or worn parts. Stains on piston bore can be polished with crocus cloth. Do not use emery cloth or any other abrasive.

Reassembly

1) Lubricate bore and new seal with brake fluid. Install seal in groove using fingers. Lubricate piston with brake fluid. Slide metal retainer portion of dust boot over open end of piston. Pull boot rearward until boot lip seats in piston groove.

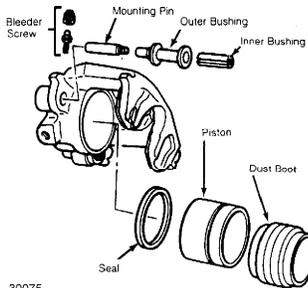
2) Push retainer portion of dust boot forward until boot is flush with rim at open end of piston and boot fold snaps into place. Insert piston in bore being careful not to unseat piston seal.

3) Push piston to bottom of bore using hammer handle. Position dust boot retainer in counterbore at top of piston bore. Seat dust boot retainer with Dust Boot Installer (J-22904 or J-33028). Reverse removal procedure to complete installation.



30390

Fig. 11: Caliper Assembly (Grand Wagoneer)
 Courtesy of American Motors/Jeep Corp.



30075

Fig. 12: Caliper Assembly (Except Grand Wagoneer)
 Courtesy of American Motors/Jeep Corp.

MASTER CYLINDER - EXCEPT GRAND WAGONEER

NOTE: Do not hone master cylinder. Bore has a highly polished "Bearingized" surface. Honing will cause premature failure of rubber parts.

Disassembly

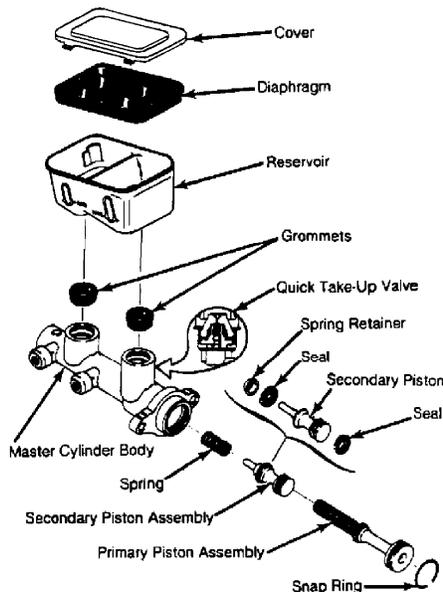
- 1) Remove reservoir cover and diaphragm. Drain remaining brake fluid. Push in on primary piston and remove snap ring.
- 2) Carefully apply compressed air at forward brake line hole while plugging rear hole. Use caution as piston will be forced out open end of master cylinder with considerable force.
- 3) Remove spring retainer and seals from secondary piston. Discard seals. Clamp mounting ear of master cylinder in vise and carefully pry off reservoir.
- 4) Do not attempt to remove take-up valve from master cylinder as it is not a serviceable component. Remove reservoir grommets and discard.

Inspection

Inspect cylinder bore for scoring or corrosion. If signs of corrosion are evident, replace master cylinder. Use no abrasives on cylinder bore. Inspect reservoir cover and diaphragm for cuts, cracks or deformation. Replace damaged or defective parts as necessary.

Reassembly

- 1) Lubricate new reservoir grommets with clean brake fluid and press into master cylinder. Ensure grommets are properly seated. Lay reservoir on flat, hard surface. Rock master cylinder body onto reservoir until completely seated.
- 2) Lubricate new piston seals with clean brake fluid and install on secondary piston, with lip of seals toward ends of piston. Install spring retainer.
- 3) Install secondary piston spring and secondary piston assembly in master cylinder. Lubricate primary piston seals with clean brake fluid.
- 4) Install primary piston in master cylinder. Press in piston and install snap ring. Fit diaphragm in reservoir cover and install cover.



30354
Fig. 13: Exploded View of Quick Take-Up Master Cylinder
Courtesy of General Motors Corp.

MASTER CYLINDER - GRAND WAGONEER

NOTE: Do not hone master cylinder bore. Bore has a highly polished "bearingized" surface. Honing will cause premature failure of rubber parts.

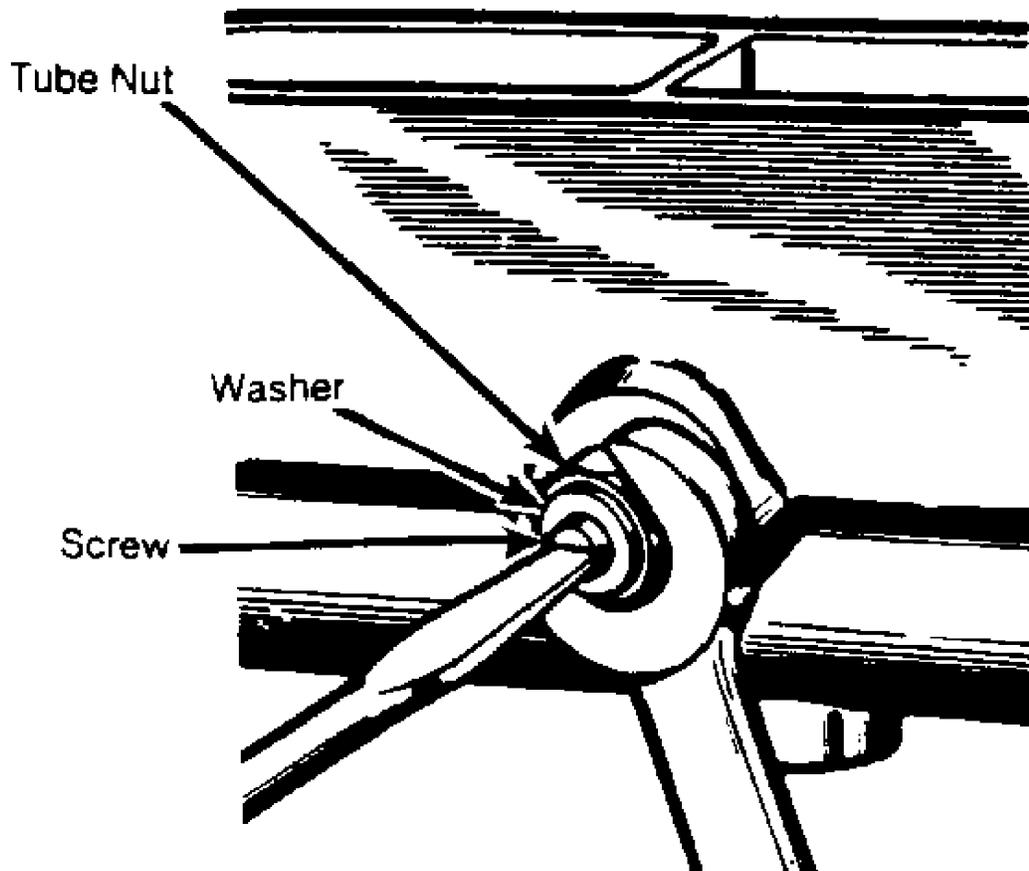
Disassembly

1) Clean outside of cylinder thoroughly and remove cover.

Drain fluid. Pump piston to remove any remaining fluid. On Delco/Moraine models with composite fluid reservoir, install metal flange in vise and pry reservoir off with a pry bar. Bendix composite reservoir is held on by 4 bolts on bottom of reservoir. On manual brake models, remove boot from cylinder to uncover push rod retainer.

2) Pry up retainer tab to release retainer. Remove snap ring from groove in cylinder bore. Remove both piston assemblies. Remove remaining internal parts from bore. Note direction of piston seals. Remove and discard all rubber parts from piston assemblies.

3) Tube seats can be removed if damaged. Enlarge holes in tube seats using a 13/64" drill. Place a large flat washer over outlet and thread a 1/4" x 20 x 3/4" screw into seat. Tighten screw until seat is loose. See Fig. 14. Remove seat, screw and washer.



30348

Fig. 14: Removing Tube Seat from Master Cylinder
Courtesy of American Motors/Jeep Corp.

Inspection

Inspect cylinder bore for scoring or corrosion. Staining

which has not pitted or roughened surface of cylinder can be removed with crocus cloth. If cylinder bore is scored, pitted or corroded, replace master cylinder.

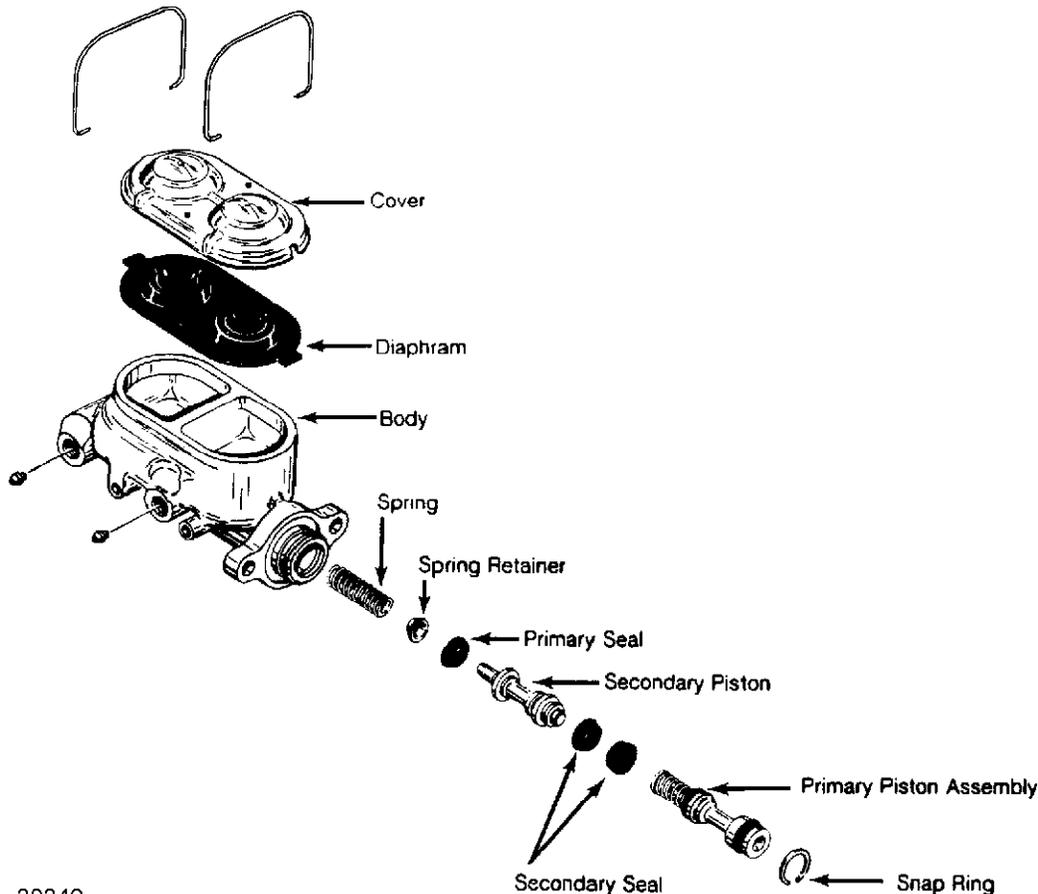
Reassembly

1) Install replacement tube seats by threading a spare brake line tube nut into hole. Turn nut in until tube seat bottoms. Do not cock tube seat in hole. Remove nut and check for burrs which may have been loosened by nut. Install secondary seals on secondary piston, with cup lips facing away from each other.

2) Install primary seal, spring retainer and return spring on secondary piston. Install seal so lip faces interior of master cylinder when installed. Lubricate cylinder bore with clean brake fluid and install secondary piston assembly. Lubricate primary piston seals and install primary piston assembly in bore. Hold primary piston downward in bore and install snap ring.

3) Install composite reservoir (if equipped). On models with push-on composite fluid reservoir, invert reservoir, install grommets and press on body using a rocking motion. Install master cylinder cover and new diaphragm.

4) On vehicles with manual brakes, assemble brake pedal push rod through retainer (if equipped). Push retainer over end of master cylinder and install rubber boot.



30349

Fig. 15: Exploded View of Master Cylinder (Grand Wagoneer)
Courtesy of American Motors/Jeep Corp.

WHEEL CYLINDER

Disassembly

Remove dust boots. Push pistons, piston cups and expander spring out of bore. Discard cups. Clean all parts with brake solvent. Inspect cylinder bore and piston for pitting, wear or damage. Replace as necessary. Light scoring or pitting may be removed by honing.

Reassembly

1) Lubricate cylinder bore and internal components with brake fluid. Do not lubricate dust boots. Position replacement piston cups on spring expanders. Install assembled parts in cylinder bore.

2) Ensure expanders are seated in piston cups. Cups are to be installed with lips facing each other. Install pistons with flat sides facing interior of bore. Install dust boots.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Disc Brakes	
Caliper Mounting Bolts	35 (47)
Bleeder Screw	12 (16)
Brake Line-to-Caliper	13 (18)
Drum Brakes	
Wheel Cylinder Bolts	11 (15)
Bleeder Screw 1/4"	4-5 (5-7)
Bleeder Screw 3/8"	4-10 (5-14)
Brake Line	10-17 (14-23)
Backing Plate Bolt	30-40 (41-54)
Master Cylinder Retaining Nuts	
Except Grand Wagoneer	20 (27)

BRAKE SYSTEM SPECIFICATIONS

DISC BRAKE SPECIFICATIONS

DISC BRAKE SPECIFICATIONS TABLE

Application	In. (mm)
Cherokee, Comanche, Wagoneer & Wrangler	
Disc Diameter	11.02 (279.9)
Lateral Runout	0.005 (0.13)
Parallelism	0.001 (0.03)
Original Thickness	0.88 (22.4)
Min. Refinish Thickness	0.815 (20.70)
Discard Thickness	0.815 (20.70)
Grand Wagoneer	
Disc Diameter	12.00 (304.8)
Lateral Runout	0.005 (0.13)
Parallelism	0.001 (0.03)
Original Thickness	N/A
Min. Refinish Thickness	1.215 (30.86)
Discard Thickness	1.215 (30.86)

DRUM BRAKE SYSTEM SPECIFICATIONS

DRUM BRAKE SPECIFICATIONS TABLE

Application	In. (mm)
Cherokee, Comanche, Wagoneer & Wrangler	
Drum Diameter	10.00 (254.0)
Drum Width	1.75 (44.5)
Max. Drum Refinish Diam.	10.06 (255.5)
Wheel Cyl. Diameter875 (22.2)
Master Cyl. Diameter937 (23.8)
Grand Wagoneer	
Drum Diameter	11.00 (279.4)
Drum Width	2.00 (50.8)
Max. Drum Refinish Diam.	11.06 (280.9)
Wheel Cyl. Diameter937 (23.80)
Master Cyl. Diameter	1.125 (28.58)
