2007 BRAKES

Base - Service Information - Nitro

BASE - SERVICE INFORMATION

DESCRIPTION

BRAKE SYSTEM

ESP and Power assist four wheel disc brakes are standard equipment. Front disc brake components consist of single piston calipers and ventilated rotors. Rear disc brakes use a drum in hat design for the parking brake which is activated by brake shoes pressing against the inside of the drum in hat rotor.

The parking brake mechanism is lever and cable operated. The cables are attached on a equalizer on the lever cable. The parking brakes are operated by a hand lever.

The vehicle is equipped with ESP (Electronic Stability Program). There are four wheel speed sensors, one sensor at each wheel to monitor input.

A dual diaphragm vacuum power brake booster is used for all applications. All models have an aluminum master cylinder with plastic reservoir.

Factory brake lining on all models consists of an organic base material combined with metallic particles. The original equipment linings do not contain asbestos.

WARNING

WARNING

WARNING: DaimlerChrysler does not manufacture any vehicles or replacement parts that contain asbestos. Aftermarket products may or may not contain asbestos. Refer to aftermarket product packaging for product information. Whether the product contains asbestos or not, dust and dirt can accumulate on brake parts during normal use. Follow practices prescribed by appropriate regulations for the handling, processing and disposing of dust and debris.

CAUTION: Never use gasoline, kerosene, alcohol, motor oil, transmission fluid, or any fluid containing mineral oil to clean the system components. These fluids damage rubber cups and seals. Use only fresh brake fluid or Mopar brake cleaner to clean or flush brake system components. These are the only cleaning materials recommended. If system contamination is suspected, check the fluid for dirt, discoloration, or separation into distinct layers. Also check the reservoir cap seal for distortion. Drain and flush the system with new brake fluid if contamination is suspected.

CAUTION: Use Mopar brake fluid, or an equivalent quality fluid meeting SAE/DOT standards J1703 and DOT 3. Brake fluid must be clean and free of contaminants. Use fresh fluid from sealed containers only to ensure proper antilock component operation.

CAUTION: Use Mopar multi-mileage or high temperature grease to lubricate caliper slide surfaces, drum brake pivot pins, and shoe contact points on the backing plates. Use multi-mileage grease or GE 661 or Dow 111 silicone grease on caliper slide pins to ensure proper operation.

DIAGNOSIS AND TESTING

BASE BRAKE SYSTEM

Base brake components consist of the brake shoes, calipers, rotors, brake lines, master cylinder, booster, and parking brake components.

Brake diagnosis involves determining if the problem is related to a mechanical, hydraulic, or vacuum operated component.

The first diagnosis step is the preliminary check.

PRELIMINARY BRAKE CHECK

1. Check condition of tires and wheels. Damaged wheels and worn, damaged, or underinflated tires can cause pull, shudder, vibration, and a condition similar to grab.
2. If complaint was based on noise when braking, check suspension components. Jounce front and rear of vehicle and listen for noise that might be caused by loose, worn or damaged suspension or steering components.
3. Inspect brake fluid level and condition. Note that the brake reservoir fluid level will decrease in proportion to normal lining wear. **Also note that brake fluid tends to darken over time. This is normal and should not be mistaken for contamination.**
    - If fluid level is abnormally low, look for evidence of leaks at calipers, brake lines, and master cylinder.
    - If fluid appears contaminated, drain out a sample to examine. System will have to be flushed if fluid is separated into layers, or contains a substance other than brake fluid. The system seals and cups will also have to be replaced after flushing. Use clean brake fluid to flush the system.
4. Check parking brake operation. Verify free movement and full release of cables and hand lever. Also note if vehicle was being operated with parking brake partially applied.
5. Check brake pedal operation. Verify that pedal does not bind and has adequate free play. If pedal lacks free play, check pedal and power booster for being loose or for bind condition. Do not road test until condition is corrected.
6. Check booster vacuum check valve and hose.
7. If components checked appear OK, road test the vehicle.

ROAD TESTING

1. If complaint involved low brake pedal, pump pedal and note if it comes back up to normal height.
2. Check brake pedal response with transmission in Neutral and engine running. Pedal should remain firm under constant foot pressure.
3. During road test, make normal and firm brake stops in 40-64 km/h (25-40 mph) range. Note faulty brake operation such as low pedal, hard pedal, fade, pedal pulsation, pull, grab, drag, noise, etc.
4. Attempt to stop the vehicle with the parking brake only and note grab, drag, noise, etc.

PEDAL FALLS AWAY

A brake pedal that falls away under steady foot pressure is generally the result of a system leak. The leak point could be at a brake line, fitting, hose, or caliper. If leakage is severe, fluid will be evident at or around the leaking component.

Internal leakage (seal by-pass) in the master cylinder caused by worn or damaged piston cups, may also be the problem cause.

An internal leak in the ABS or junction block may also be the problem with no physical evidence.

Pedal fall-away can also be caused by the vacuum level building in the booster. This is common, especially in vehicles equipped with a vacuum pump, and is not an indication of malfunction. To differentiate between a leak and vacuum build, turn off the engine, and pump the pedal 4-5 times (until the vacuum is depleted), then press and hold the pedal with constant force. If the pedal still falls away, pursue root causing leaks. If the pedal remains firm under this condition, leaks are not the issue.

LOW PEDAL

If a low pedal is experienced, pump the pedal several times. If the pedal comes back up worn linings or rotors are the most likely causes. The proper course of action is to inspect and replace all worn components.

SPONGY PEDAL

A spongy pedal is most often caused by air in the system. However, substandard brake lines and hoses can also cause a spongy pedal. The proper course of action is to bleed the system, and replace substandard quality brake hoses if suspected.

HARD PEDAL OR HIGH PEDAL EFFORT

A hard pedal or high pedal effort may be due to lining that is water soaked, contaminated, glazed, or badly worn. The power booster or check valve could also be faulty.

Hard pedal is also a symptom of a vacuum leak - check hoses and connections.

PEDAL PULSATION

Pedal pulsation is caused by components that are loose, or beyond tolerance limits.

The primary cause of pulsation are disc brake rotors with excessive lateral runout or thickness variation. Other causes are loose wheel bearings or calipers and worn, damaged tires.

NOTE: Some pedal pulsation may be felt during ABS activation.

BRAKE DRAG

Brake drag occurs when the lining is in constant contact with the rotor or drum. Drag can occur at one wheel, all wheels, fronts only, or rears only.

Drag is a product of incomplete brake shoe release. Drag can be minor or severe enough to overheat the linings, rotors and drums.

Minor drag will usually cause slight surface charring of the lining. It can also generate hard spots in rotors and drums from the overheat-cool down process. In most cases, the rotors, drums, wheels and tires are quite warm to the touch after the vehicle is stopped.

Severe drag can char the brake lining all the way through. It can also distort and score rotors and drums to the point of replacement. The wheels, tires and brake components will be extremely hot. In severe cases, the lining may generate smoke as it chars from overheating.

Common causes of brake drag are:

- Seized or improperly adjusted parking brake cables.
- Loose/worn wheel bearing.
- Seized caliper piston.
- Caliper binding on corroded bushings or rusted slide surfaces.
- Loose caliper mounting.
- Drum parking brake shoes binding on worn/damaged support plates.
- Mis-assembled components.
- Long booster output rod.

If brake drag occurs at all wheels, the problem may be related to a blocked master cylinder return port, or faulty power booster (binds-does not release).

BRAKE FADE

Brake fade is usually a product of overheating caused by brake drag. However, brake overheating and resulting fade can also be caused by riding the brake pedal, making repeated high deceleration stops in a short time span, or constant braking on steep mountain roads. Refer to **BRAKE DRAG** for causes.

BRAKE PULL

Front brake pull condition could result from:

- Contaminated lining in one caliper
- Seized caliper piston
- Binding caliper
- Loose caliper
- Rusty caliper slide surfaces
- Improper brake shoes
- Damaged rotor

A worn, damaged wheel bearing or suspension component are further causes of pull. A damaged front tire (bruised, ply separation) can also cause pull.

A common and frequently misdiagnosed pull condition is where direction of pull changes after a few stops. The cause is a combination of brake drag followed by fade at one of the brake units.

As the dragging brake overheats, efficiency is so reduced that fade occurs. Since the opposite brake unit is still functioning normally, its braking effect is magnified. This causes pull to switch direction in favor of the normally functioning brake unit.

An additional point when diagnosing a change in pull condition concerns brake cool down. Remember that pull will return to the original direction, if the dragging brake unit is allowed to cool down (and is not seriously damaged).

REAR BRAKE GRAB OR PULL

Rear grab or pull is usually caused by improperly adjusted or seized parking brake cables, contaminated lining, bent or binding shoes and support plates, or improperly assembled components. This is particularly true when only one rear wheel is involved. However, when both rear wheels are affected, the master cylinder or proportioning valve could be at fault.

BRAKES DO NOT HOLD AFTER DRIVING THROUGH DEEP WATER PUDDLES

This condition is generally caused by water soaked lining. If the lining is only wet, it can be dried by driving with the brakes very lightly applied for a mile or two. However, if the lining is both soaked and dirt contaminated, cleaning and/or replacement will be necessary.

BRAKE LINING CONTAMINATION

Brake lining contamination is mostly a product of leaking calipers, worn seals, driving through deep water puddles, or lining that has become covered with grease and grit during repair. Contaminated lining should be replaced to avoid further brake problems.

WHEEL AND TIRE PROBLEMS

Some conditions attributed to brake components may actually be caused by a wheel or tire problem.

A damaged wheel can cause shudder, vibration and pull. A worn or damaged tire can also cause pull.

Severely worn tires with very little tread left can produce a grab-like condition as the tire loses and recovers traction. Flat-spotted tires can cause vibration and generate shudder during brake operation. A tire with internal damage such as a severe bruise, cut, or ply separation can cause pull and vibration.

BRAKE NOISES

Some brake noise is common with some disc brakes during the first few stops after a vehicle has been parked overnight or stored. This is primarily due to the formation of trace corrosion (light rust) on metal surfaces. This light corrosion is typically cleared from the metal surfaces after a few brake applications causing the noise to subside.

BRAKE SQUEAK/SQUEAL

Brake squeak or squeal may be due to linings that are wet or contaminated with brake fluid, grease, or oil. Glazed linings and rotors with hard spots can also contribute to squeak. Dirt and foreign material embedded in the brake lining will also cause squeak/squeal.

A very loud squeak or squeal is frequently a sign of severely worn brake lining. If the lining has worn through to the brake shoes in spots, metal-to-metal contact occurs. If the condition is allowed to continue, rotors and drums can become so scored that replacement is necessary.

BRAKE CHATTER

Brake chatter is usually caused by loose or worn components, or glazed/burnt lining. Rotors with hard spots can also contribute to chatter. Additional causes of chatter are out-of-tolerance rotors, brake lining not securely attached to the shoes, loose wheel bearings and contaminated brake lining.

THUMP/CLUNK NOISE

Thumping or clunk noises during braking are frequently **not** caused by brake components. In many cases, such noises are caused by loose or damaged steering, suspension, or engine components. However, calipers that bind on the slide surfaces can generate a thump or clunk noise.

STANDARD PROCEDURE

PRESSURE BLEEDING - BASE BRAKES

Use Mopar brake fluid, or an equivalent quality fluid meeting SAE J1703-F and DOT 3 standards only. Use fresh, clean fluid from a sealed container at all times.

Do not pump the brake pedal at any time while bleeding. Air in the system will be compressed into small bubbles that are distributed throughout the hydraulic system. This will make additional bleeding operations necessary.

Do not allow the master cylinder to run out of fluid during bleed operations. An empty cylinder will allow additional air to be drawn into the system. Check the cylinder fluid level frequently and add fluid as needed.

Bleed only one brake component at a time in the following sequence:

Master Cylinder
Right Rear Wheel
Left Rear Wheel
Right Front Wheel
Left Front Wheel

Follow the manufacturers instructions carefully when using pressure equipment. Do not exceed the tank manufacturers pressure recommendations. Generally, a tank pressure of 103-139 kPa (15-20 psi) is sufficient for bleeding.

Fill the bleeder tank with recommended fluid and purge air from the tank lines before bleeding.

Do not pressure bleed without a proper master cylinder adapter. The wrong adapter can lead to leakage, or drawing air back into the system. Use adapter provided with the equipment or Adapter 6921.

MANUAL BLEEDING

Use Mopar brake fluid, or an equivalent quality fluid meeting SAE J1703-F and DOT 3 standards only. Use fresh, clean fluid from a sealed container at all times.

Do not pump the brake pedal at any time while bleeding. Air in the system will be compressed into small bubbles that are distributed throughout the hydraulic system. This will make additional bleeding operations necessary.

Do not allow the master cylinder to run out of fluid during bleed operations. An empty cylinder will allow additional air to be drawn into the system. Check the cylinder fluid level frequently and add fluid as needed.

Bleed only one brake component at a time in the following sequence:

Master Cylinder
Junction Block
Right Rear Wheel
Left Rear Wheel
Right Front Wheel
Left Front Wheel

1. Remove reservoir filler caps and fill reservoir.
2. If calipers were overhauled, open all caliper bleed screws. Then close each bleed screw as fluid starts to drip from it. Top off master cylinder reservoir once more before proceeding.

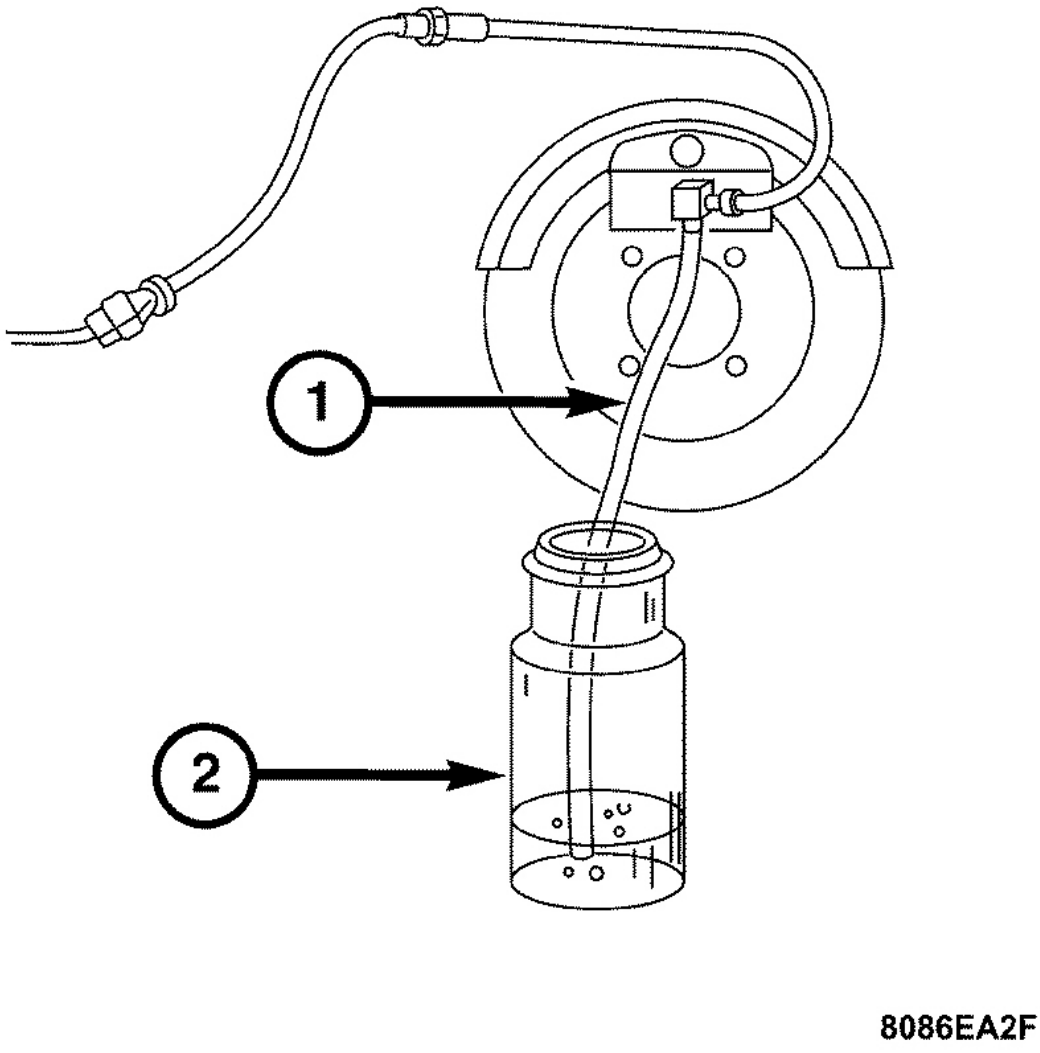

Fig. 1: Bleed Hose Setup
Courtesy of CHRYSLER LLC

3. Attach one end of bleed hose to bleed screw and insert opposite end in glass container partially filled with brake fluid. Be sure end of bleed hose is immersed in fluid.
4. Open up bleeder, then have a helper press down the brake pedal. Once the pedal is down close the bleeder. Repeat bleeding until fluid stream is clear and free of bubbles. Then move to the next wheel.

SPECIFICATIONS

BASE BRAKES

DESCRIPTION	SPECIFICATION
Front Disc Brake Rotor Diameter	302 x 28 mm (11.9 x 1.1 in)
Rear Disc Brake Rotor Diameter	316 x 12 mm (12.04 x 0.472 in)
Front Ventilated Disc Brake Rotor	Max. Runout 0.020 mm (0.001 in.)
Rear Solid Disc Brake Rotor	Max. Runout 0.020 mm (0.001 in.)
Front Ventilated Disc Brake Rotor	Max. Thickness Variation 0.009 mm (0.0004 in.)
Rear Solid Disc Brake Rotor	Max. Thickness Variation 0.009 mm (0.0004 in.)
Front Ventilated Disc Brake Rotor	Min. Thickness 26.4 mm (1.039 in.)
Rear Solid Disc Brake Rotor	Min. Thickness 10.4 mm (0.409 in.)
Disc Brake Calipers	Single piston floating
Brake Booster	Dual Diaphragm

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

DESCRIPTION	N.m	Ft. Lbs.	In. Lbs.
Brake Booster Mounting Nuts	25	-	220
Brake Pedal Shaft to Steering Column Support Bracket Nut & Washer Assembly	22.6	-	200
Master Cylinder Mounting Nuts	25	-	220
Master Cylinder Brake Lines	20	15	180
ESP Module Bolt	10	-	85
ESP Module Nut	10	-	85
Front Caliper Adapter Mounting Bolts	136	100	-
Front Caliper to Adapter Mounting Bolts	37	28	-
Rear Caliper Adapter Mounting Bolts	102	75	-
Rear Caliper to Adapter Mounting Bolts	37	28	-
Front Caliper Brake Hose Banjo Bolt	31	23	-
Rear Caliper Brake Hose Banjo Bolt	31	23	-
Parking Brake Lever Nuts	16	-	140
Parking Brake Lever Bracket Screws	10-14	7-10	-

SPECIAL TOOLS

BASE BRAKES

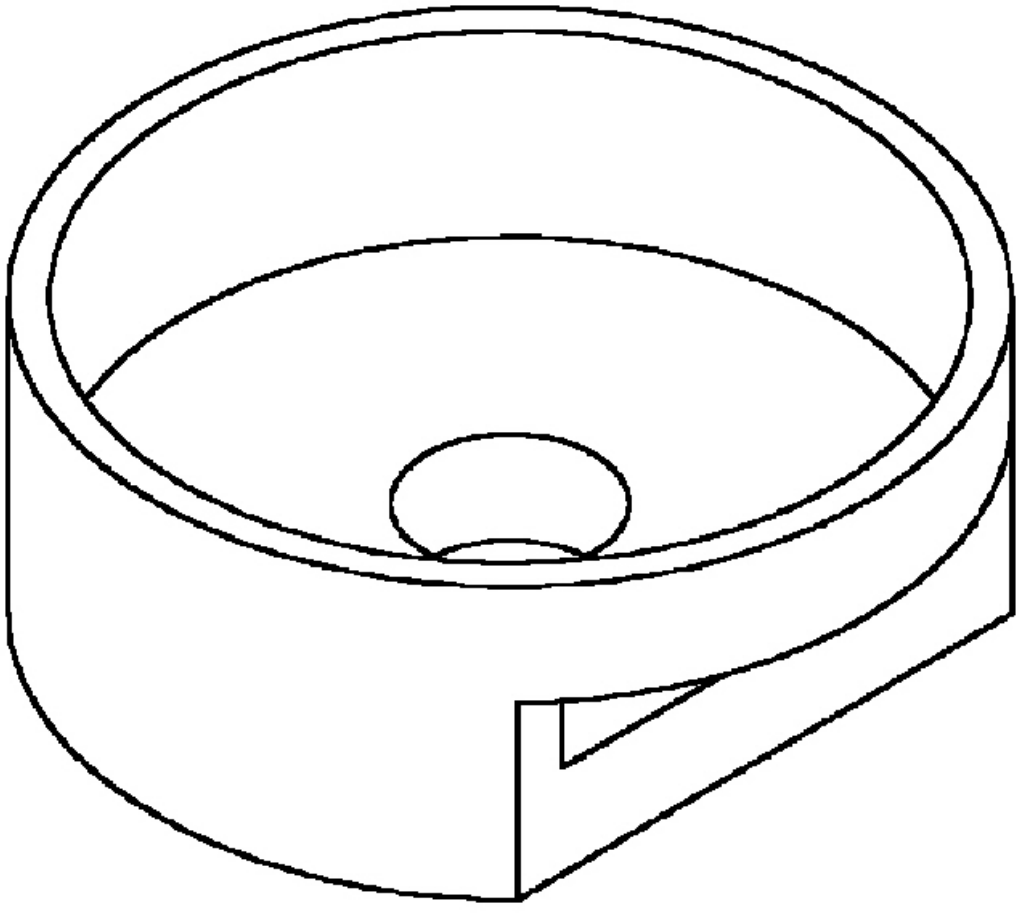

Fig. 2: Installer Caliper Dust Boot 8280
Courtesy of CHRYSLER LLC

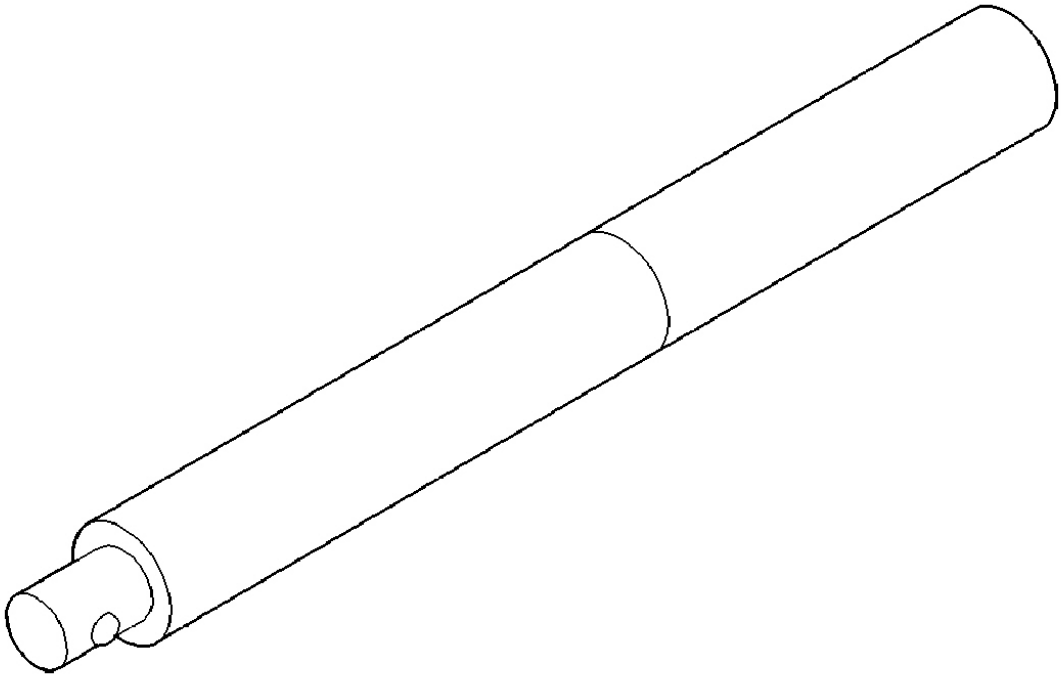

Fig. 3: Handle C-4171
Courtesy of CHRYSLER LLC

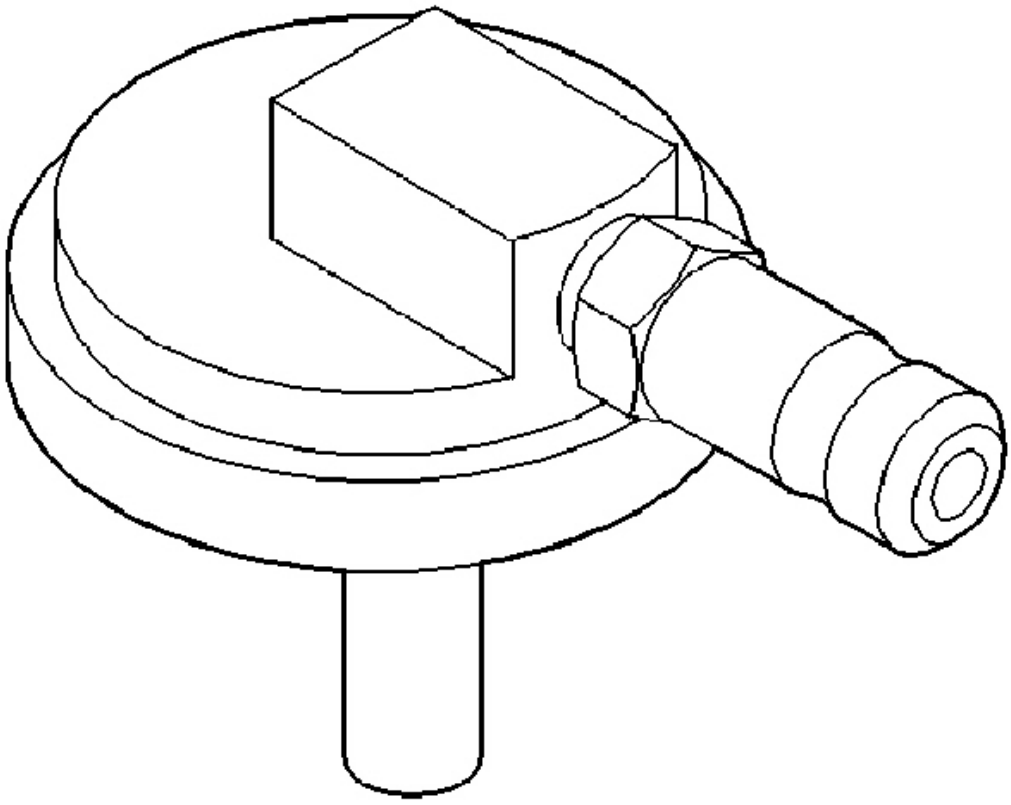

Fig. 4: Adapter Pressure Bleeder 6921
Courtesy of CHRYSLER LLC

HYDRAULIC/MECHANICAL

BRAKE LINES

DESCRIPTION

BRAKE HOSES AND LINES

Flexible rubber hose is used at both front and rear brake. Solid crimp one piece double walled ISO style flare steel tubing is also part of the rubber hoses. They are serviced as one piece to the major hydraulic braking components.

DIAGNOSIS AND TESTING

BRAKE LINE AND HOSES

Flexible rubber hose is used at both front and rear brakes. Inspect the hoses whenever the brake system is serviced, at every engine oil change, or whenever the vehicle is in for service.

Inspect the hoses for surface cracking, scuffing, or worn spots. Replace any brake hose/line immediately if the fabric casing of the hose is exposed due to cracks or abrasions.

Also check brake hose installation. Faulty installation can result in kinked, twisted hoses, or contact with the wheels and tires or other chassis components. All of these conditions can lead to scuffing, cracking and eventual failure.

The steel brake lines should be inspected periodically for evidence of corrosion, twists, kinks, leaks, or other damage. Heavily corroded lines will eventually rust through causing leaks. In any case, corroded or damaged brake lines/hoses should be replaced.

Factory replacement brake lines/hoses are recommended to ensure quality, correct length and superior fatigue life. Care should be taken to make sure that brake line/hose mating surfaces are clean and free from nicks and burrs. Also remember that the brake lines are serviced as a whole assembly with the rubber hoses in a solid crimp design.

Use new copper seal washers at all caliper connections. Be sure brake line connections are properly made (not cross threaded) and tightened to recommended torque.

REMOVAL

RIGHT REAR BRAKE LINE/HOSE

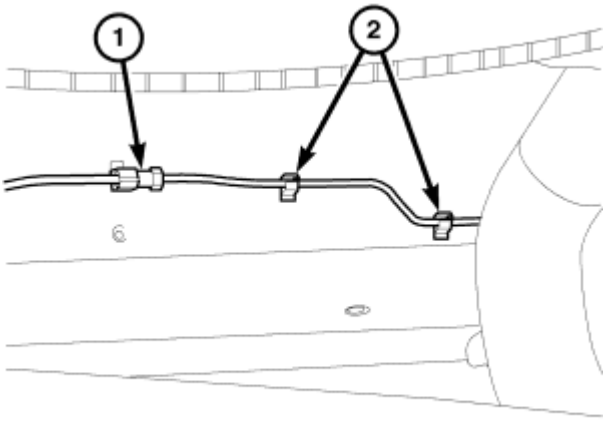

Fig. 5: Identifying Brake Hose/Line Union Fitting & Brake Line From Mounting Clips
Courtesy of CHRYSLER LLC

1. Install prop rod on the brake pedal to keep pressure on the brake system.
2. Raise and support the vehicle.
3. Remove the caliper banjo bolt.

4. Disconnect the brake hose/line union fitting (1).
5. Remove the brake line from the mounting clips (2) at the body.

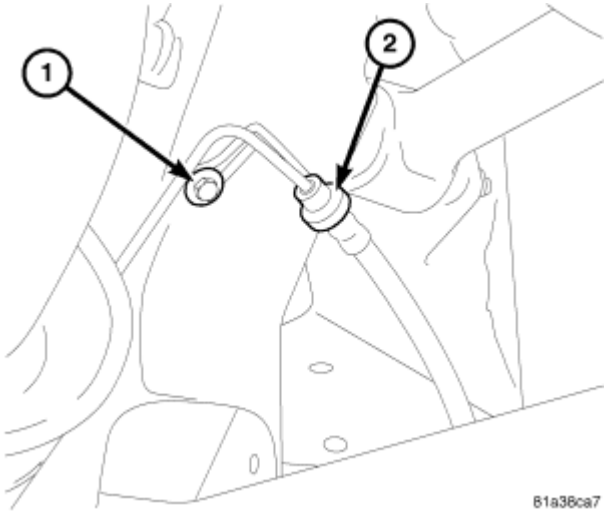

Fig. 6: Identifying Brake Hose/Line Mounting Bolt & Line/Hose
Courtesy of CHRYSLER LLC

6. Remove the brake hose/line mounting bolt (1) from the body.
7. Remove the line/hose (2).

LEFT REAR BRAKE LINE/HOSE

1. Install prop rod on the brake pedal to keep pressure on the brake system, Holding pedal in this position will isolate master cylinder from hydraulic brake system and will not allow brake fluid to drain out of brake fluid reservoir while brake lines are open. This will allow you to bleed out the area of repair instead of the entire system.
2. Remove the brake tube at the HCU.
3. Raise and support vehicle.
4. Remove the exhaust from the engine manifolds and the hanger bracket at the transmission.
5. Remove the fuel tank. Refer to **REMOVAL** .

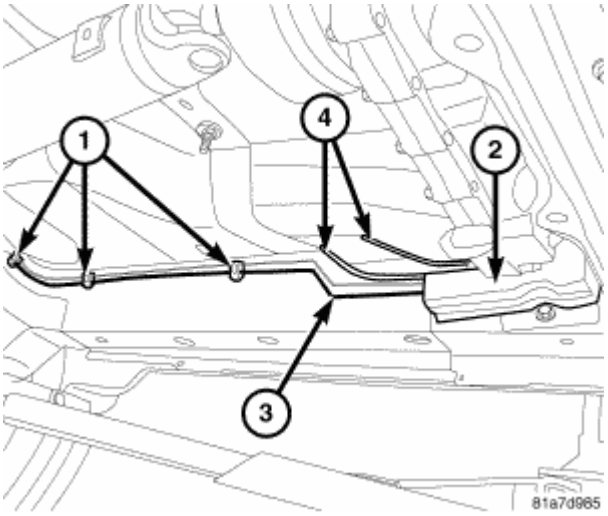

Fig. 7: Identifying Bracket, Brake Hose/Line, Fuel Line Bundle & Retainers
Courtesy of CHRYSLER LLC

6. Remove the brake hose banjo bolt at the caliper.
7. Remove the bracket (2) on the body securing the brake/fuel line bundle then remove the brake line (3) from the fuel line bundle (4).
8. Disconnect the brake hose/line from the retainers (1) on the body.
9. Remove the brake hose/line (3) from the vehicle.

LEFT FRONT BRAKE HOSE/LINE

1. Install prop rod on the brake pedal to keep pressure on the brake system, Holding pedal in this position will isolate master cylinder from hydraulic brake system and will not allow brake fluid to drain out of brake fluid reservoir while brake lines are open. This will allow you to bleed out the area of repair instead of the entire system.
2. Remove the left front brake tube at the HCU.
3. Raise and support vehicle.
4. Disconnect the wheel speed sensor from the hose.
5. Remove the brake hose banjo bolt at the caliper.
6. Disconnect the brake hose/line from the body.
7. Remove the brake hose/line from the vehicle.

RIGHT FRONT BRAKE HOSE/LINE

1. Install prop rod on the brake pedal to keep pressure on the brake system, Holding pedal in this position will isolate master cylinder from hydraulic brake system and will not allow brake fluid to drain out of brake fluid reservoir while brake lines are open. This will allow you to bleed out the area of repair instead of the entire system.
2. Remove the air box assembly.

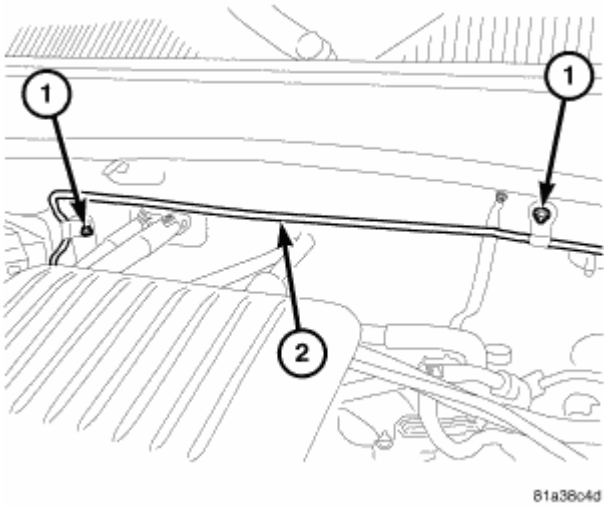

Fig. 8: Identifying Brake Line & Mounting Clip Studs
Courtesy of CHRYSLER LLC

3. Remove the right front brake tube at the HCU.
4. Remove the brake line (2) from the mounting clip studs (1).
5. Disconnect the electrical connectors to the body control module on the inner fender.
6. Raise and support vehicle.
7. Remove the tire and wheel assembly.
8. Disconnect the wheel speed sensor routing clips (1) from the hose (4).
9. Remove the brake hose banjo bolt (3) at the caliper.
10. Disconnect the brake hose/line from the body.
11. Remove the brake hose/line from the vehicle.

INSTALLATION

LEFT FRONT BRAKE HOSE/LINE

1. Install the line/hose.
2. Install the brake hose banjo bolt at the caliper.
3. Reconnect the wheel speed sensor routing clips to the hose.
4. Install the tire and wheel assembly.
5. Lower the vehicle.
6. Install the line to the mounting clips on the body.
7. Install the brake line to the HCU.
8. Remove the prop rod from the brake pedal.
9. Bleed the area of repair for the brake system, **If a proper pedal is not felt during bleeding an area of repair then a base bleed system must be performed.** . See **STANDARD PROCEDURE**.

RIGHT REAR BRAKE LINE/HOSE

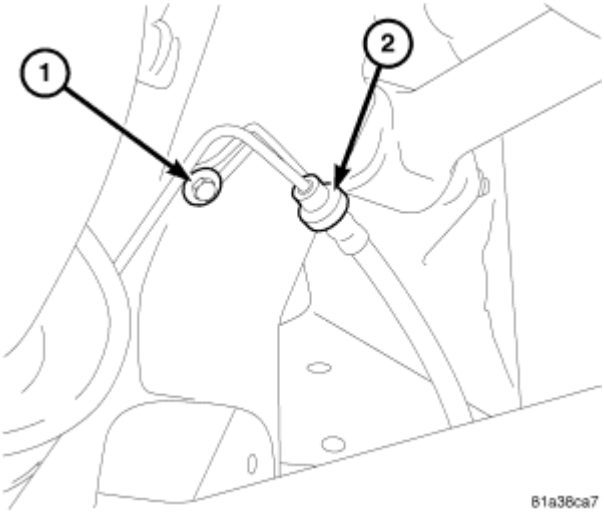

Fig. 9: Identifying Brake Hose/Line Mounting Bolt & Line/Hose
Courtesy of CHRYSLER LLC

1. Install the line/hose (2).
2. Install the brake hose/line mounting bolt (1) to the body.
3. Install the caliper banjo bolt.

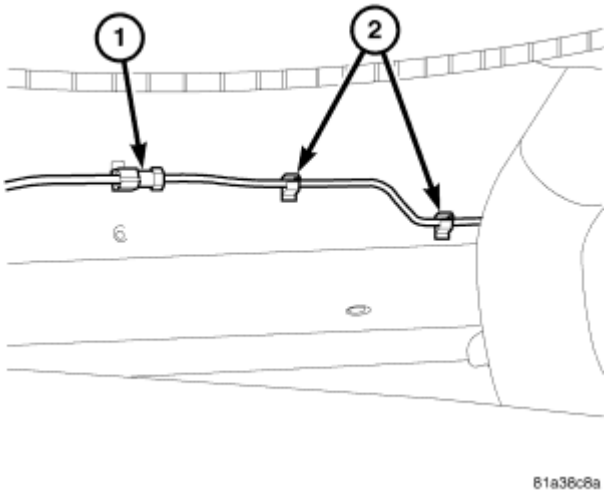

Fig. 10: Identifying Brake Hose/Line Union Fitting & Brake Line From Mounting Clips
Courtesy of CHRYSLER LLC

4. Install the brake line from the mounting clips (2) at the body.
5. Reconnect the brake hose/line union fitting (1).
6. Remove the prop rod from the brake pedal.
7. Bleed the brake system. See **STANDARD PROCEDURE**.

RIGHT FRONT BRAKE HOSE/LINE

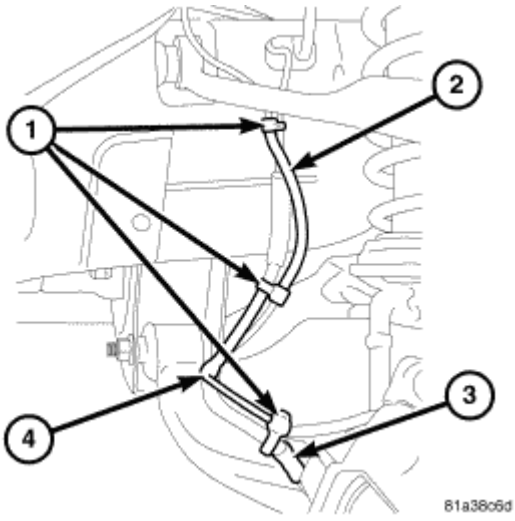

Fig. 11: Identifying Line/Hose, Brake Hose Banjo Bolt, Wheel Speed Sensor Routing Clips & Hose
Courtesy of CHRYSLER LLC

1. Install the line/hose (4).
2. Install the brake hose banjo bolt (3) at the caliper.
3. Reconnect the wheel speed sensor routing clips (1) to the hose (4).
4. Install the tire and wheel assembly.
5. Lower the vehicle.

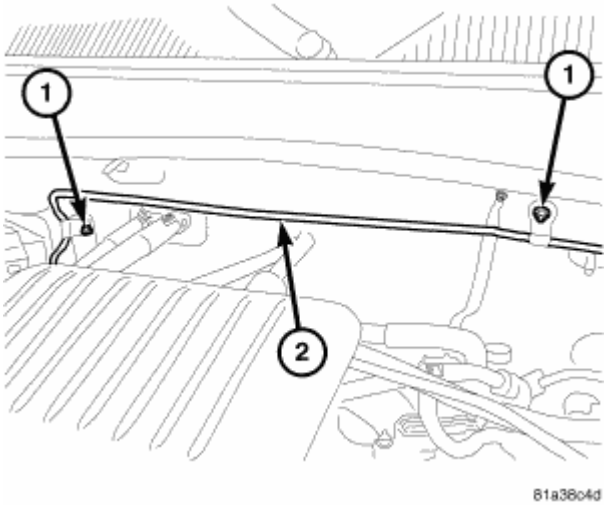

Fig. 12: Identifying Brake Line & Mounting Clip Studs
Courtesy of CHRYSLER LLC

6. Install the mounting clips on the studs (1).
7. Install the brake line to the HCU.
8. Install the air box assembly.
9. Reconnect the electrical connectors to the body control module on the inner fender.

10. Remove the prop rod from the brake pedal.
11. Bleed the area of repair for the brake system, **If a proper pedal is not felt during bleeding an area of repair then a base bleed system must be performed.** . See **STANDARD PROCEDURE**.

LEFT REAR BRAKE HOSE/LINE

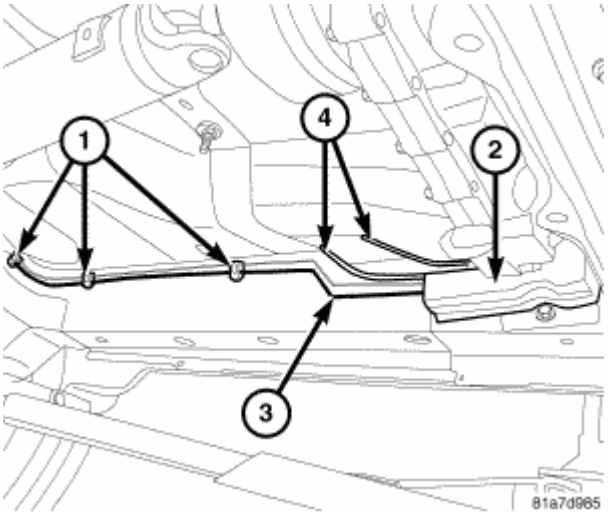

Fig. 13: Identifying Bracket, Brake Hose/Line, Fuel Line Bundle & Retainers
Courtesy of CHRYSLER LLC

1. Install the brake hose/line (3) to the vehicle.
2. Reconnect the brake hose/line in the retainers (1) to the body.
3. Reinstall the brake line (3) to the fuel line bundle (4) and install the bracket (2).
4. Install the exhaust to the manifolds and reinstall the exhaust hanger at the transmission.
5. Install the fuel tank. Refer to **INSTALLATION** .
6. Install the brake hose banjo bolt at the caliper.
7. Lower the vehicle.
8. Install the brake tube at the HCU.
9. Remove the prop rod.
10. Bleed the area of repair for the brake system, **If a proper pedal is not felt during bleeding an area of repair then a base bleed system must be performed.** . See **STANDARD PROCEDURE**.

BRAKE PADS/SHOES

REMOVAL

PADS-DISC BRAKE-REAR

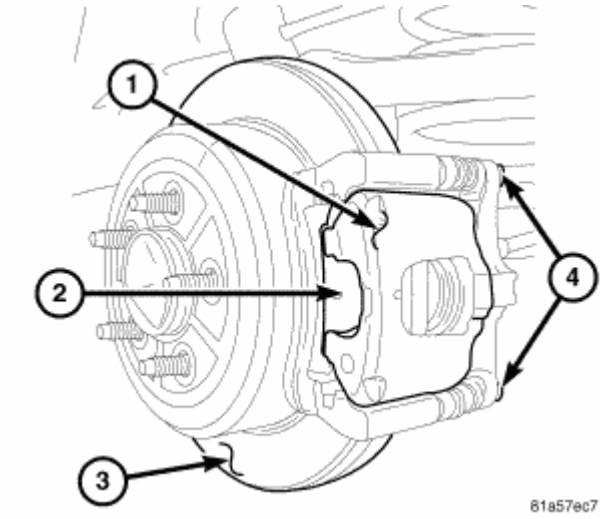

Fig. 14: Caliper Assembly
Courtesy of CHRYSLER LLC

1. Raise and support vehicle.
2. Remove the wheel and tire assemblies.
3. Compress the caliper (1).
4. Remove the rear caliper mounting bolts (4), see **REMOVAL**.

NOTE: Do not allow brake hose to support caliper assembly.

5. Remove the caliper by tilting the top up and off the caliper adapter.
6. Support and hang the caliper.
7. Remove the brake pads (2) from the caliper (1).

PADS-DISC BRAKE-FRONT

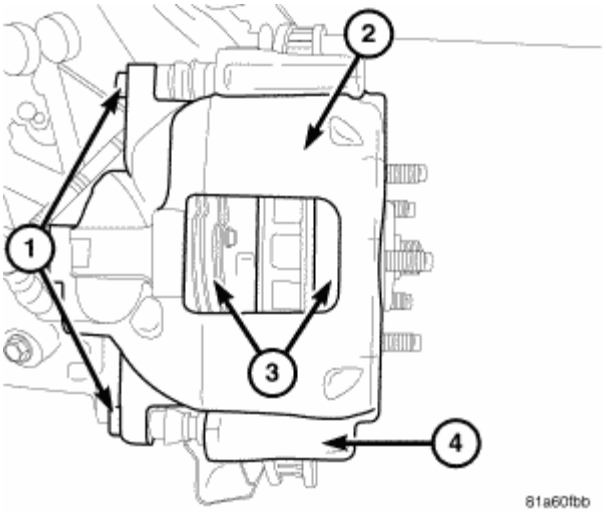

Fig. 15: Identifying Caliper Mounting Bolts, Disc Brake Caliper, Inboard/Outboard Pads & Adapter

Courtesy of CHRYSLER LLC

1. Raise and support the vehicle.
2. Remove the front wheel and tire assembly.
3. Drain a small amount of fluid from the master cylinder brake reservoir with a **clean** suction gun.
4. Bottom the caliper pistons into the caliper by prying the caliper over.
5. Remove the caliper mounting bolts (1).
6. Remove the disc brake caliper (2) from the adapter (4).

CAUTION: Never allow the disc brake caliper to hang from the brake hose. Damage to the brake hose will result. Provide a suitable support to hang the caliper securely.

7. Remove the inboard and outboard pads (3).

INSTALLATION

PADS-DISC BRAKE-REAR

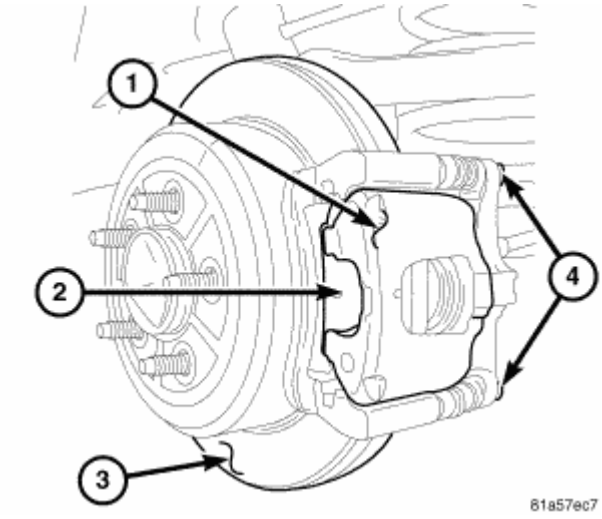

Fig. 16: Caliper Assembly
Courtesy of CHRYSLER LLC

1. Install the brake pads (2) to the caliper adapter.
2. Install caliper (1) to the rotor and then install the caliper mounting bolts (4), see **INSTALLATION**.
3. Install wheel and tire assemblies and lower vehicle, refer to **STANDARD PROCEDURE** .
4. Apply brakes several times to seat caliper pistons and brake shoes and obtain firm pedal.
5. Top off master cylinder fluid level.

PADS-DISC BRAKE-FRONT

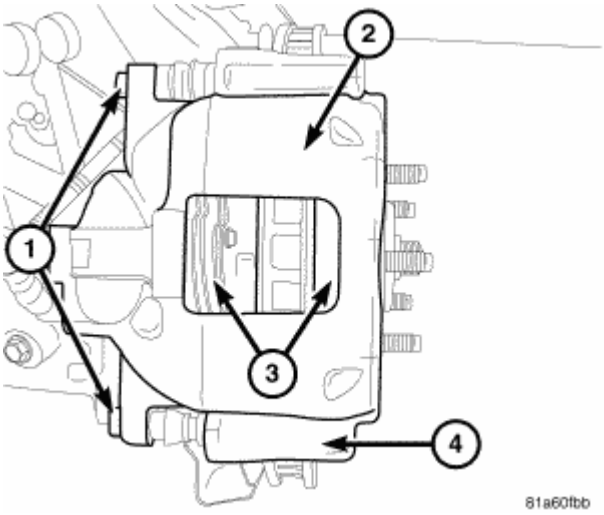

Fig. 17: Identifying Caliper Mounting Bolts, Disc Brake Caliper, Inboard/Outboard Pads & Adapter
Courtesy of CHRYSLER LLC

1. Install the inboard and outboard pads (3).
2. Install the caliper (2). See **INSTALLATION**.
3. Install the tire and wheel assembly. Refer to **STANDARD PROCEDURE** .

DISC BRAKE CALIPERS

DESCRIPTION

DISC BRAKE CALIPER

The calipers are a single piston type. The calipers are free to slide laterally, this allows continuous compensation for lining wear.

OPERATION

DISC BRAKE CALIPER

When the brakes are applied fluid pressure is exerted against the caliper piston. The fluid pressure is exerted equally and in all directions. This means pressure exerted against the caliper piston and within the caliper bore will be equal. See **Fig. 18**.

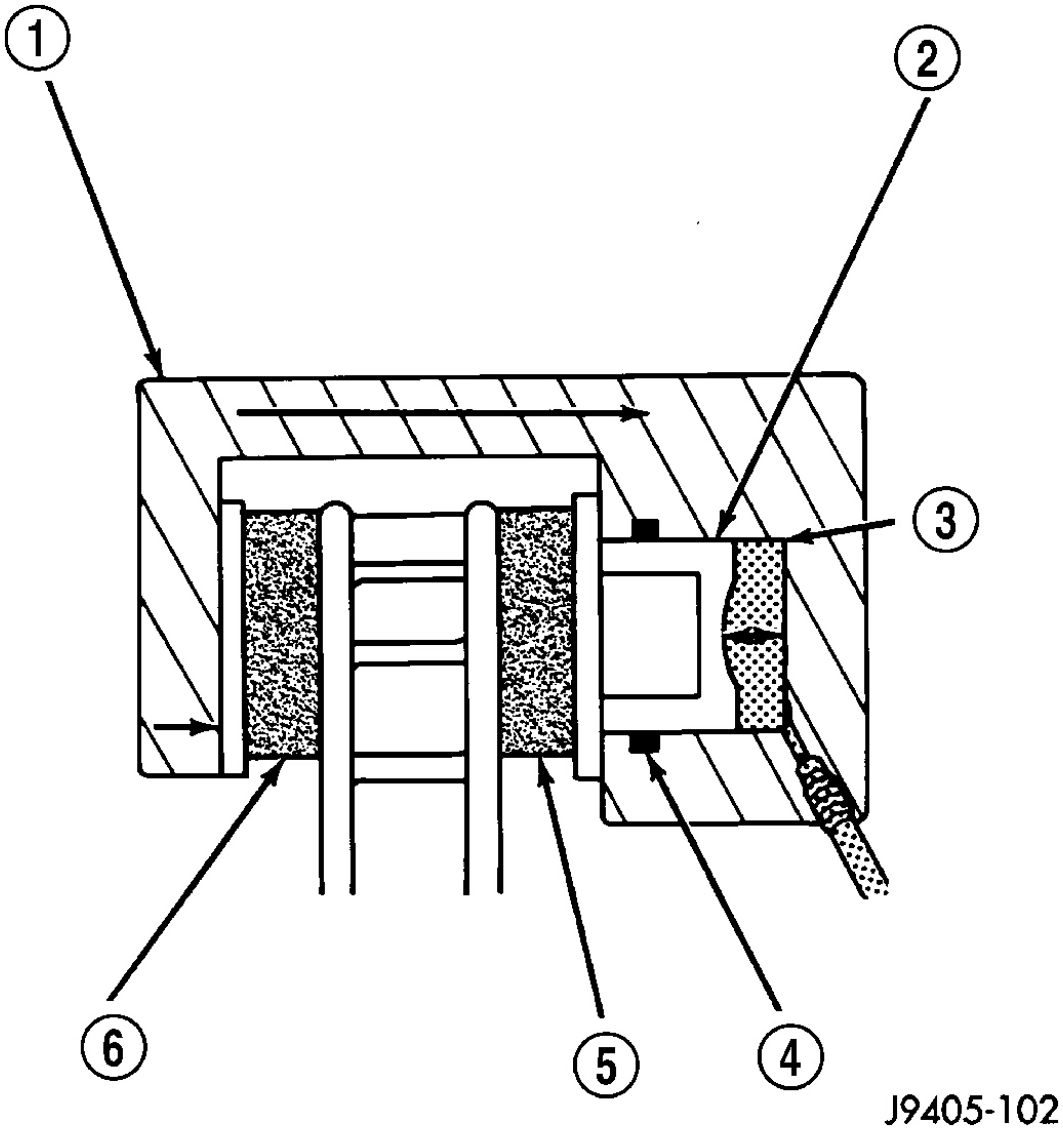

Fig. 18: Brake Caliper Operation
Courtesy of CHRYSLER LLC

1 - CALIPER
2 - PISTON
3 - PISTON BORE
4 - SEAL
5 - INBOARD SHOE
6 - OUTBOARD SHOE

Fluid pressure applied to the piston is transmitted directly to the inboard brake shoe. This forces the shoe lining against the inner surface of the disc brake rotor. At the same time, fluid pressure within the piston bore forces the caliper to slide inward on the mounting bolts. This action brings the outboard brake shoe lining into contact with the outer surface of the disc brake rotor.

In summary, fluid pressure acting simultaneously on both piston and caliper, produces a strong clamping action. When sufficient force is applied, friction will attempt to stop the rotors from turning and bring the vehicle to a stop.

Application and release of the brake pedal generates only a very slight movement of the caliper and piston. Upon release of the pedal, the caliper and piston return to a rest position. The brake shoes do not retract an appreciable distance from the rotor. In fact, clearance is usually at, or close to zero. The reasons for this are to keep road debris from getting between the rotor and lining and in wiping the rotor surface clear each revolution.

The caliper piston seal controls the amount of piston extension needed to compensate for normal lining wear.

During brake application, the seal is deflected outward by fluid pressure and piston movement. See **Fig. 19**. When the brakes (and fluid pressure) are released, the seal relaxes and retracts the piston.

The amount of piston retraction is determined by the amount of seal deflection. Generally the amount is just enough to maintain contact between the piston and inboard brake shoe.

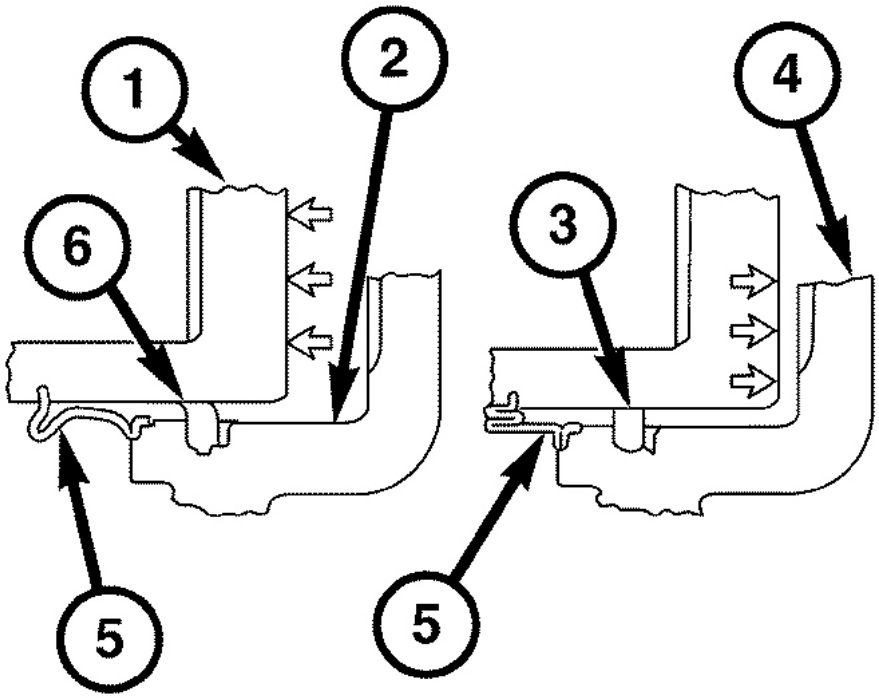

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Fig. 19: Caliper Piston Seal Function For Automatic Adjustment
Courtesy of CHRYSLER LLC

1 - PISTON
2 - CYLINDER BORE
3 - PISTON SEAL BRAKE PRESSURE OFF
4 - CALIPER HOUSING
5 - DUST BOOT
6 - PISTON SEAL BRAKE PRESSURE ON

REMOVAL

CALIPER-DISC BRAKE-REAR

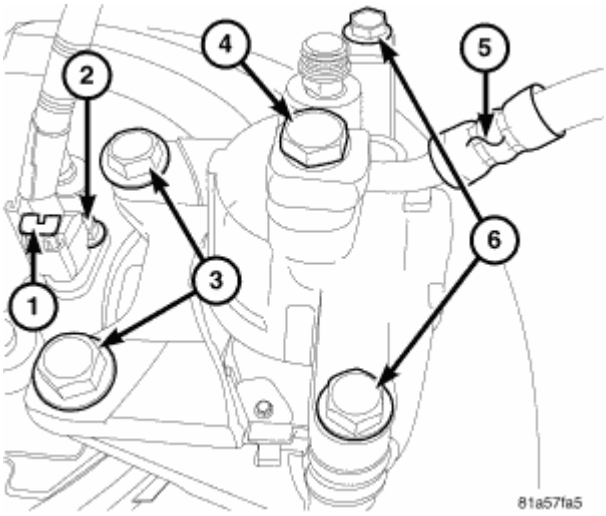

Fig. 20: Identifying Bolts, Brake Hose & Brake Hose Banjo Bolt
Courtesy of CHRYSLER LLC

1. Install prop rod on the brake pedal to keep pressure on the brake system, Holding pedal in this position will isolate master cylinder from hydraulic brake system and will not allow brake fluid to drain out of brake fluid reservoir while brake lines are open. This will allow you to bleed out the area of repair instead of the entire system.
2. Raise and support vehicle.
3. Remove the wheel and tire assembly.
4. Remove the brake hose banjo bolt (4) if replacing caliper.
5. Remove the caliper mounting bolts (6).
6. Remove the caliper from vehicle.

CALIPER- DISC BRAKE-FRONT

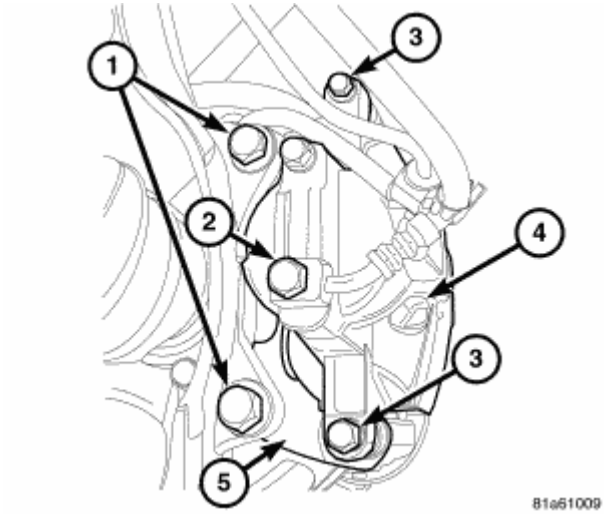

Fig. 21: Disc Brake Caliper Components
Courtesy of CHRYSLER LLC

1. Install prop rod on the brake pedal to keep pressure on the brake system, Holding pedal in this position will isolate master cylinder from hydraulic brake system and will not allow brake fluid to drain out of brake fluid reservoir while brake lines are open. This will allow you to bleed out the area of repair instead of the entire system.
2. Raise and support vehicle.
3. Remove front wheel and tire assembly.
4. Remove the brake hose banjo bolt (2) if replacing caliper.
5. Remove the caliper mounting bolts (3).
6. Remove the caliper (4) from vehicle.

DISASSEMBLY

DISC BRAKE CALIPER

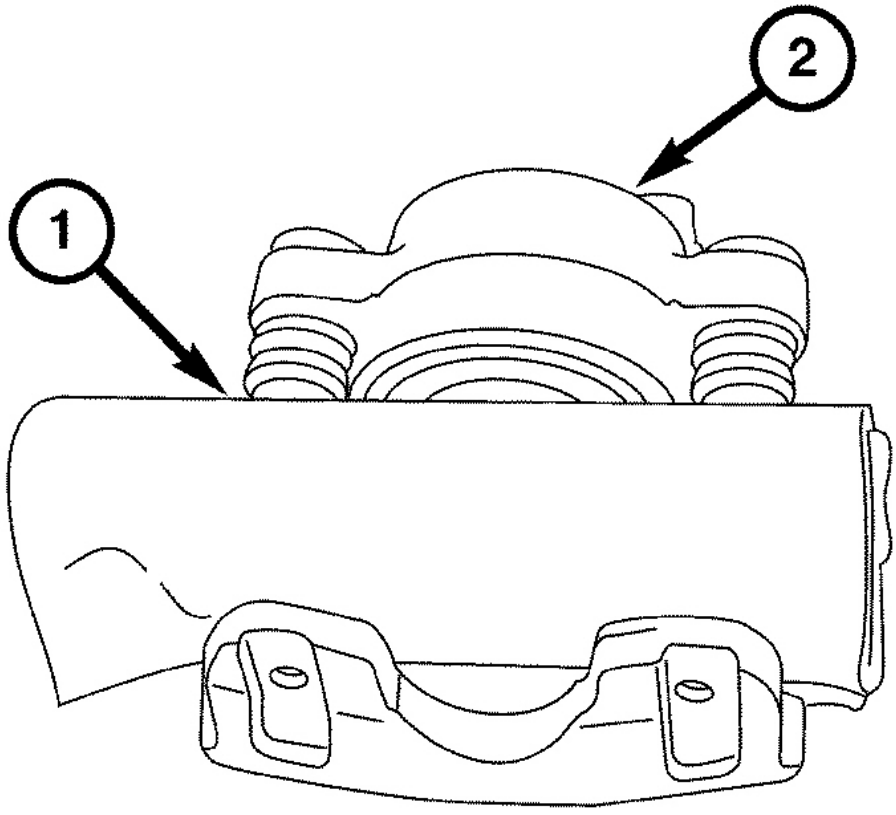

Fig. 22: Padding Caliper Interior - Typical
Courtesy of CHRYSLER LLC

1. Remove brake shoes from caliper.
2. Drain brake fluid out of caliper.
3. Take a piece of wood and pad it with one-inch thickness of shop towels (1). Place this piece in the outboard shoe side of the caliper in front of the piston. This will cushion and protect caliper piston during removal.

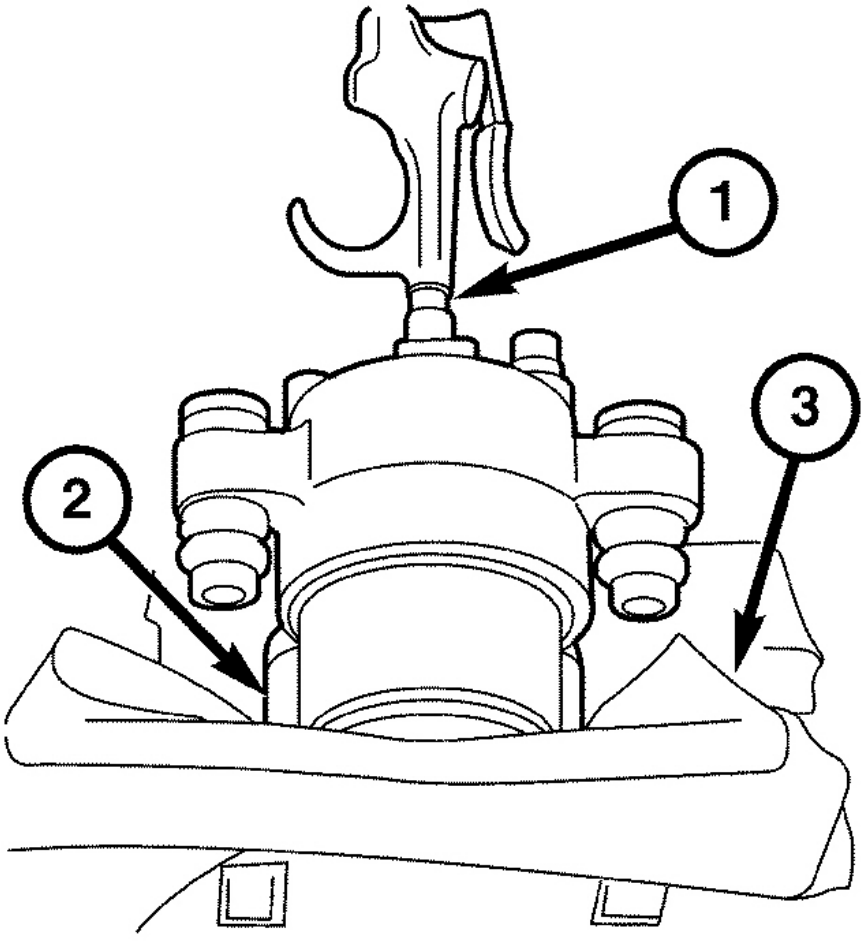

Fig. 23: Removing Caliper Piston - Typical
Courtesy of CHRYSLER LLC

4. Remove caliper piston (2) with **short bursts** of low pressure compressed air. Direct air through fluid inlet port and ease piston out of bore.

CAUTION: Do not blow the piston out of the bore with sustained air pressure. This could result in a cracked piston. Use only enough air pressure to ease the piston out.

WARNING: Never attempt to catch the piston as it leaves the bore. This may

result in personal injury.

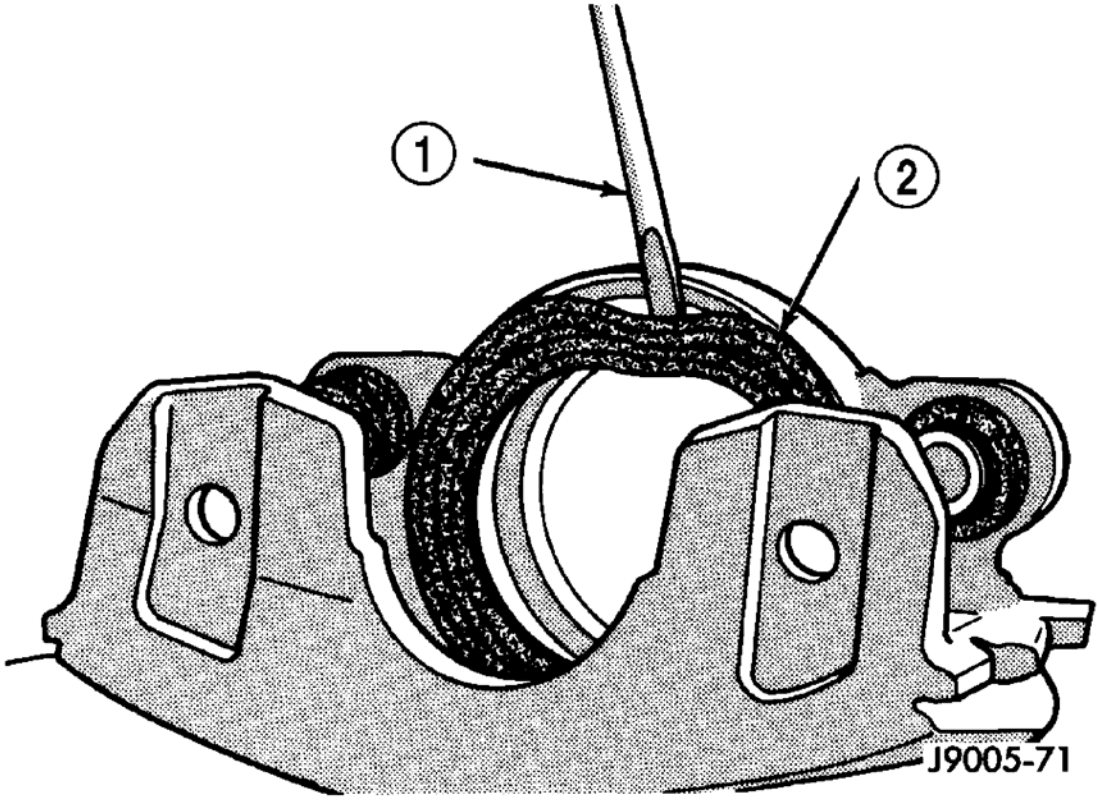

Fig. 24: Removing Caliper Piston Dust Boot - Typical
Courtesy of CHRYSLER LLC

5. Remove caliper piston dust boot with suitable pry tool (1).

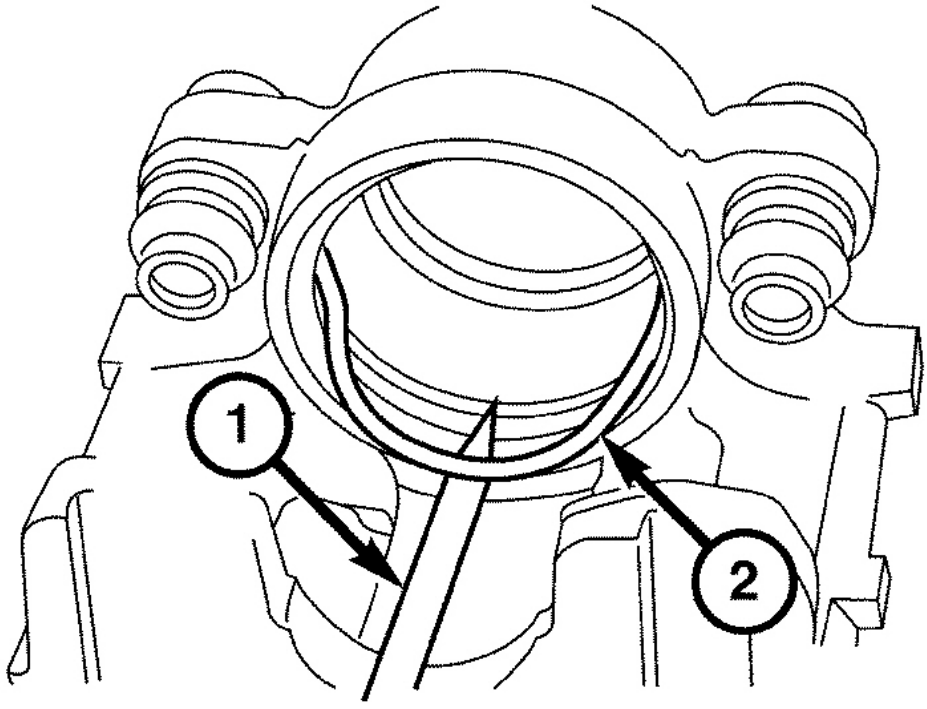

Fig. 25: Removing Caliper Piston Seal - Typical
Courtesy of CHRYSLER LLC

6. Remove caliper piston seal with wood or plastic tool (1). Do not use metal tools as they will scratch piston bore.

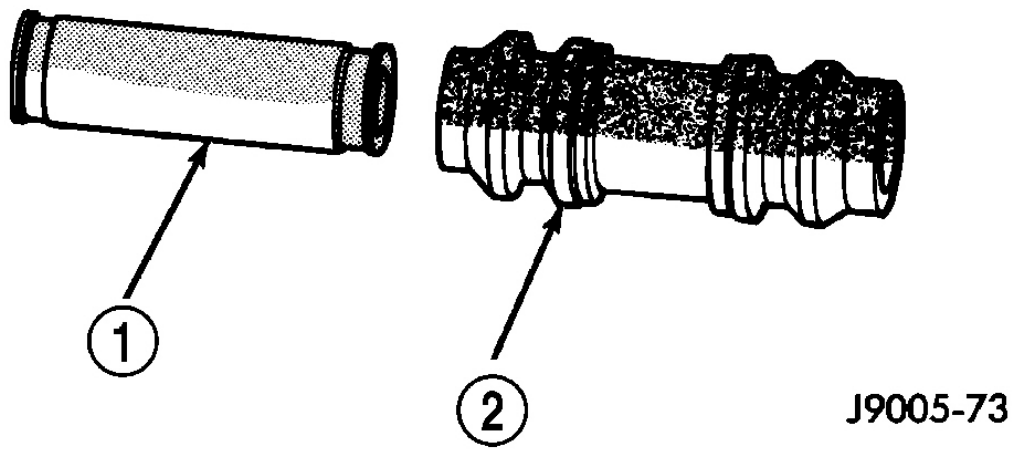

Fig. 26: Removing Caliper Mounting Bolt Bushings And Boots
Courtesy of CHRYSLER LLC

7. Remove caliper mounting bolt bushings (1) and boots (2).

CLEANING

DISC BRAKE CALIPER

Clean the caliper components with clean brake fluid or brake clean only. Wipe the caliper and piston dry with lint free towels or use low pressure compressed air.

CAUTION: Do not use gasoline, kerosene, thinner, or similar solvents. These products may leave a residue that could damage the piston and seal.

INSPECTION

DISC BRAKE CALIPER

The piston is made from a phenolic resin (plastic material) and should be smooth and clean.

The piston must be replaced if cracked or scored. Do not attempt to restore a scored piston surface by sanding or polishing.

CAUTION: If the caliper piston is replaced, install the same type of piston in the caliper. Never interchange phenolic resin and steel caliper pistons. The pistons, seals, seal grooves, caliper bore and piston tolerances are different.

The bore can be **lightly** polished with a brake hone to remove very minor surface imperfections. See **Fig. 27**.

The caliper should be replaced if the bore is severely corroded, rusted, scored, or if polishing would increase bore diameter more than 0.025 mm (0.001 inch).

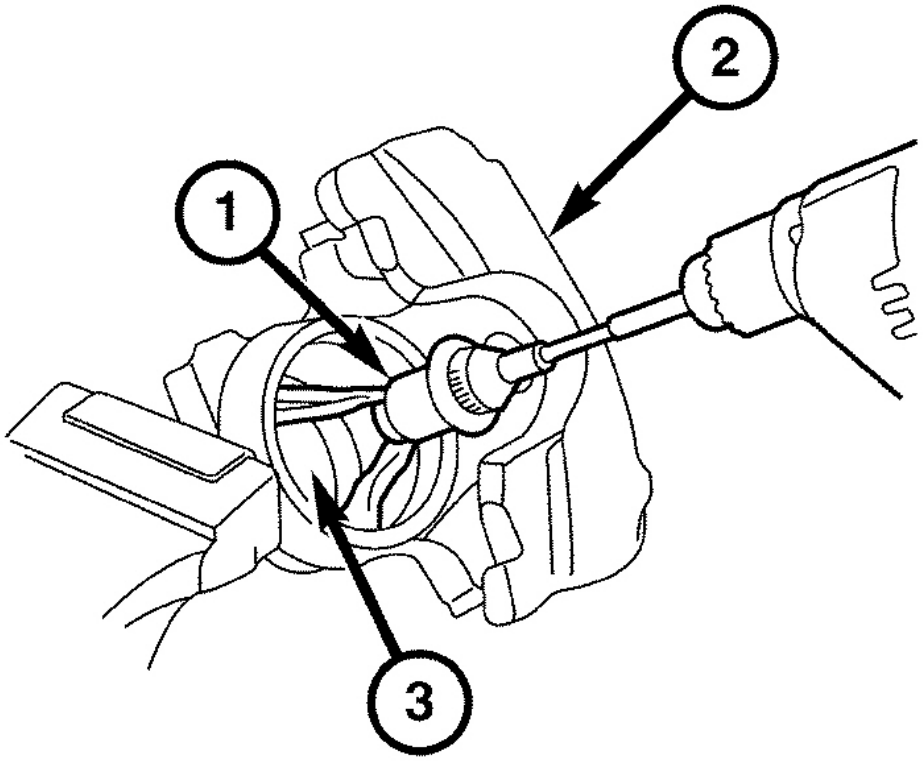

Fig. 27: Polishing Piston Bore - Typical
Courtesy of CHRYSLER LLC

1 - SPECIAL HONE
2 - CALIPER
3 - PISTON BORE

ASSEMBLY

DISC BRAKE CALIPER

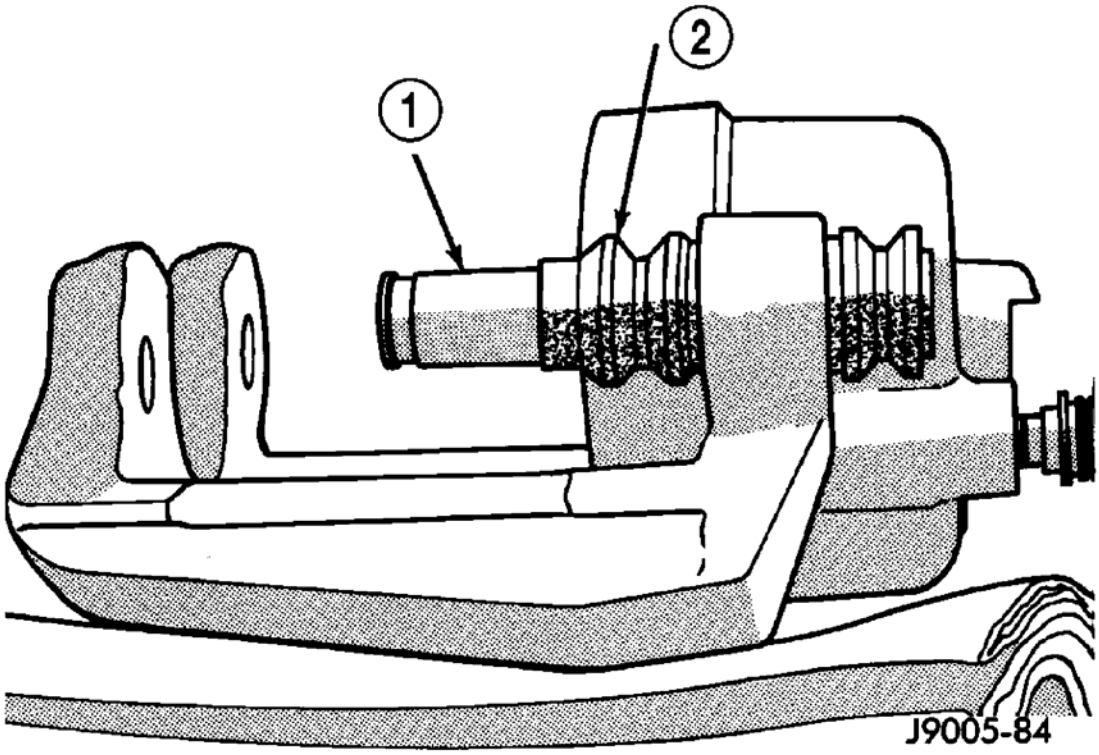

Fig. 28: Installing Bushings & Boots - Typical
Courtesy of CHRYSLER LLC

1 - BUSHING
2 - BOOT

CAUTION: Dirt, oil, and solvents can damage caliper seals. Insure assembly area is clean and dry.

1. Lubricate caliper piston bore, new piston seal and piston with clean brake fluid.
2. Lubricate caliper bushings and interior of bushing boots with silicone grease.
3. Install bushing boots (2) in caliper, then insert bushing into boot and push bushing (1) into place.

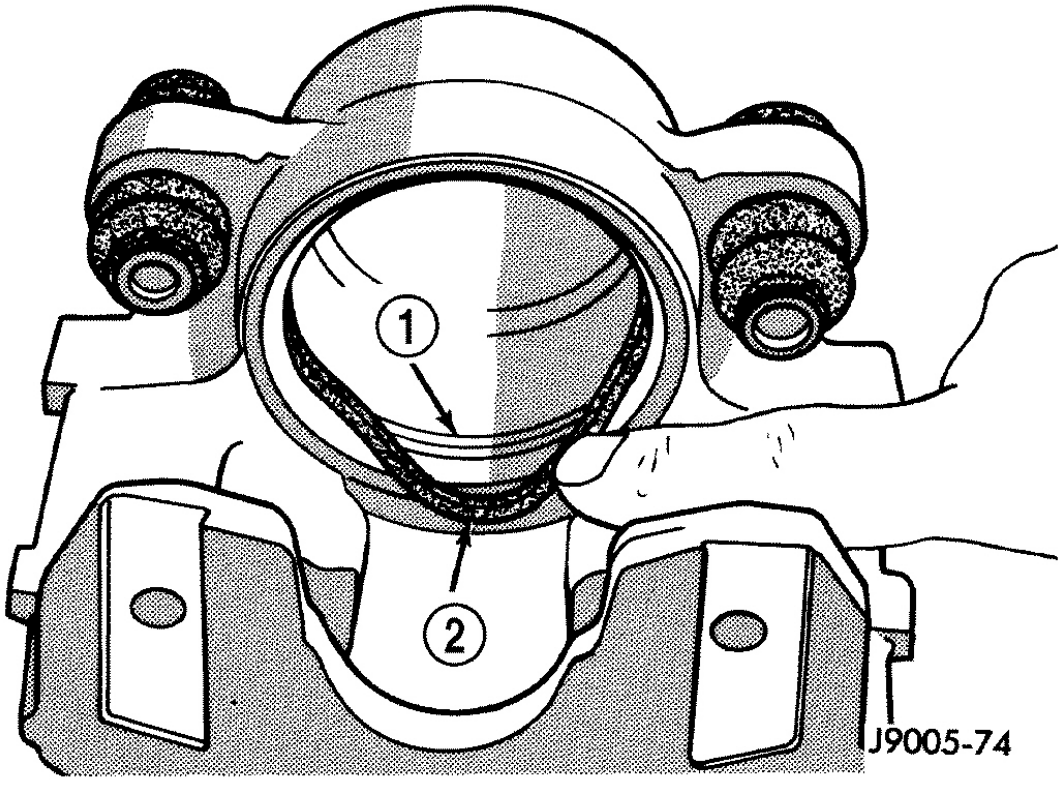

Fig. 29: Installing Piston Seal - Typical
Courtesy of CHRYSLER LLC

1 - SEAL GROOVE
2 - PISTON SEAL

4. Install new piston seal into seal groove (1) with finger.

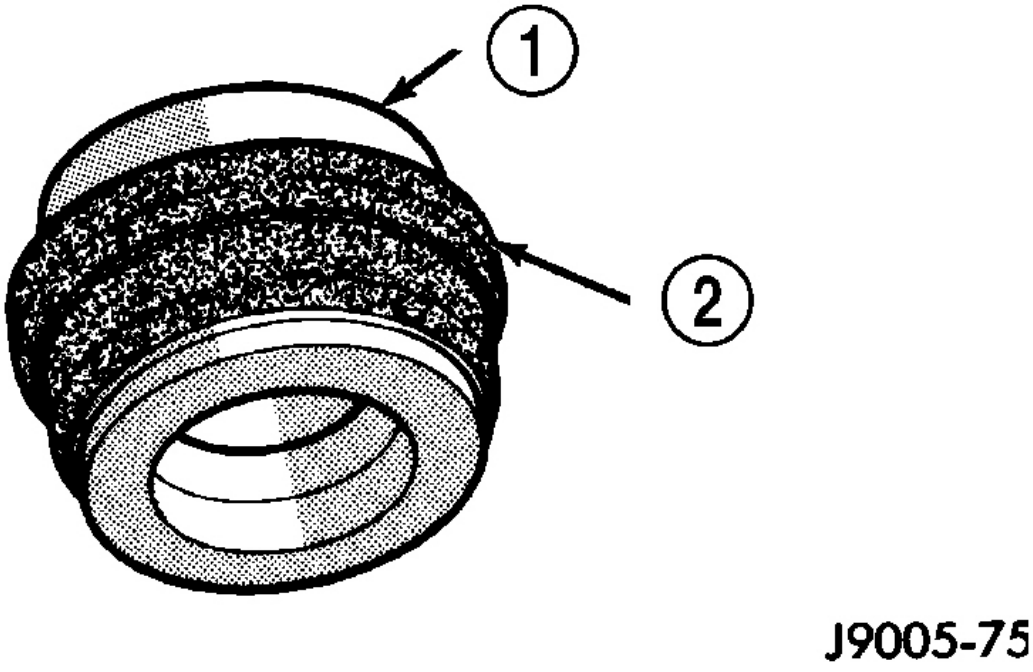

Fig. 30: Dust Boot On Piston - Typical
Courtesy of CHRYSLER LLC

5. Install new dust boot on caliper piston and seat boot in piston groove (1).

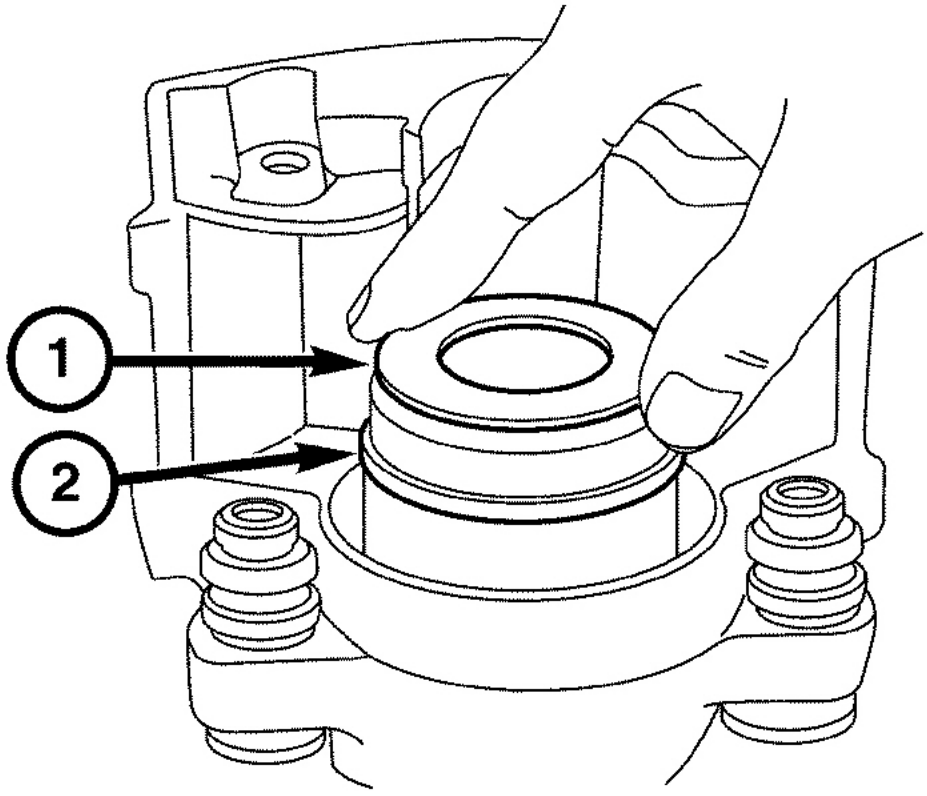

Fig. 31: Installing Caliper Piston - Typical
Courtesy of CHRYSLER LLC

1 - PISTON
2 - BOOT

6. Press piston (1) into caliper bore by hand, use a turn and push motion to work piston into seal.
7. Press caliper piston to bottom of bore.

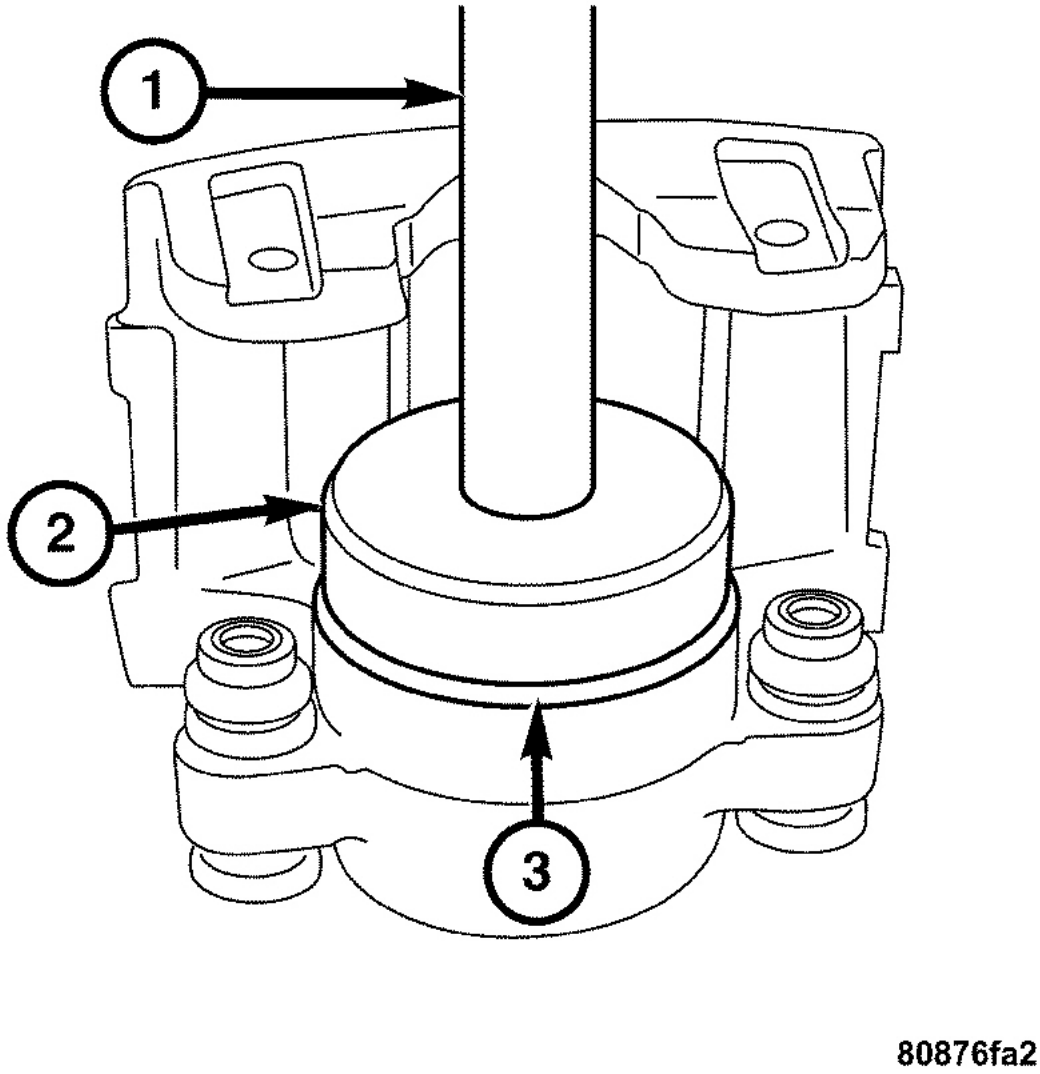

Fig. 32: Installing Piston Dust Boot - Typical
Courtesy of CHRYSLER LLC

1 - HANDLE C-4171
2 - INSTALLER C-4842
3 - DUST BOOT

8. Seat dust boot (3) in caliper with Installer Tool C-4842 (2) and Tool Handle C-4171 (1).
9. Replace caliper bleed screw if removed.

INSTALLATION

CALIPER-DISC BRAKE-FRONT

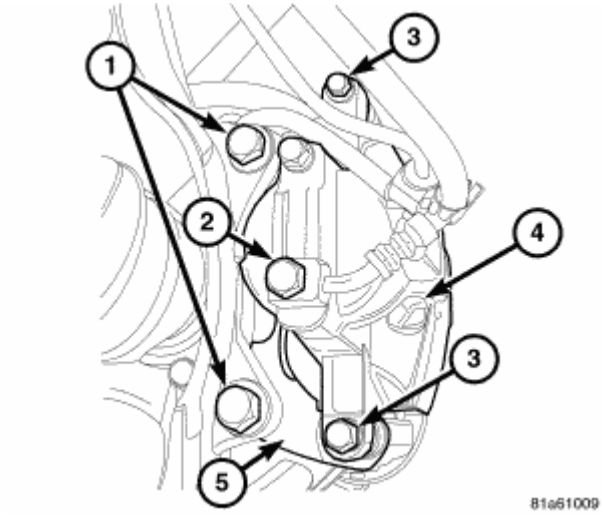

Fig. 33: Disc Brake Caliper Components
Courtesy of CHRYSLER LLC

1. Install caliper (4) to the caliper adapter (5).
2. Coat the caliper mounting bolts (3) with silicone grease. Begin with the bolt closet to the bleeder screws (top), Then install and tighten the bolts to 37 N.m (28 ft. lbs.).

CAUTION: Verify brake hose is not twisted or kinked before tightening fitting bolt.

3. Install the brake hose banjo bolt (2) and brake hose to the caliper (4) with **new seal washers** and tighten fitting bolt to 31 N.m (23 ft. lbs.) If removed.
4. Remove the prop rod from the vehicle.
5. Bleed the area of repair for the brake system, **If a proper pedal is not felt during bleeding an area of repair then a base bleed system must be performed.** . See **STANDARD PROCEDURE**.
6. Install the wheel and tire assemblies. Refer to **STANDARD PROCEDURE** .
7. Remove the supports and lower the vehicle.
8. Verify a firm pedal before moving the vehicle.

CALIPER-DISC BRAKE-REAR

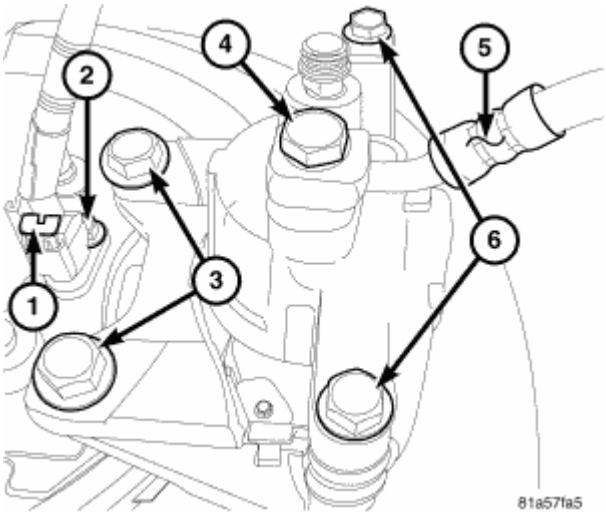

Fig. 34: Identifying Bolts, Brake Hose & Brake Hose Banjo Bolt
Courtesy of CHRYSLER LLC

1. Install the brake pads if removed.
2. Install caliper. Tighten the bolts (6) to 37 N.m (28 ft. lbs.)

CAUTION: Verify brake hose (5) is not twisted or kinked before tightening fitting bolt.

3. Install the brake hose (5) to the caliper with **new seal washers** and install the brake hose banjo bolt (4) tighten fitting bolt to 31 N.m (23 ft. lbs.).
4. Remove the prop rod from the vehicle.
5. Bleed the area of repair for the brake system, **If a proper pedal is not felt during bleeding an area of repair then a base bleed system must be performed.** . See **STANDARD PROCEDURE**.
6. Install the wheel and tire assemblies. Refer to **STANDARD PROCEDURE** .
7. Remove the supports and lower the vehicle.
8. Verify a firm pedal before moving the vehicle.

DISC BRAKE CALIPER ADAPTER

REMOVAL

DISC BRAKE CALIPER ADAPTER

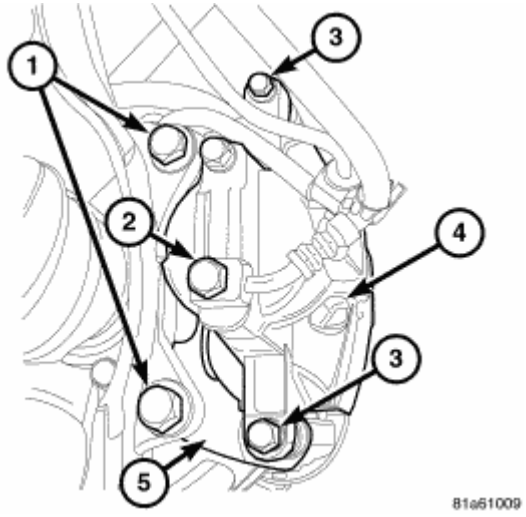

Fig. 35: Disc Brake Caliper Components
Courtesy of CHRYSLER LLC

1. Raise and support the vehicle.
2. Remove the front wheel and tire assembly.
3. Drain a small amount of fluid from master cylinder brake reservoir with a **clean** suction gun.
4. Bottom the caliper pistons into the caliper by prying the caliper over.
5. Remove the caliper mounting bolts (3).
6. Remove the disc brake caliper (4) from the adapter (5).

CAUTION: Never allow the disc brake caliper to hang from the brake hose. Damage to the brake hose will result. Provide a suitable support to hang the caliper securely.

7. Remove the inboard and outboard brake pads. See **REMOVAL**.
8. Remove the caliper adapter mounting bolts (1).

INSTALLATION

DISC BRAKE CALIPER ADAPTER

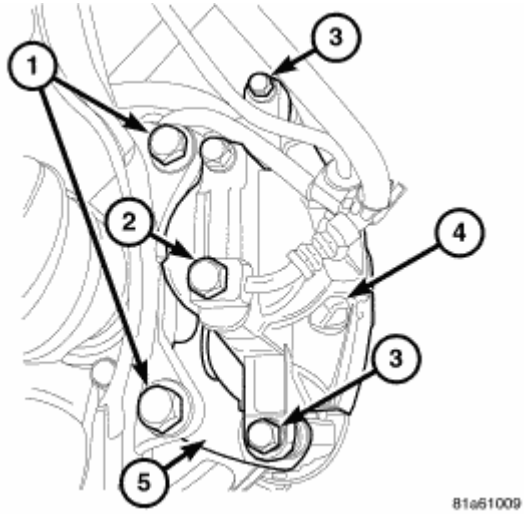

Fig. 36: Disc Brake Caliper Components
Courtesy of CHRYSLER LLC

1. Install the caliper adapter mounting bolts (1). Tighten the mounting bolts to 135 N.m (100 ft.lbs).
2. Install the inboard and outboard pads. See **INSTALLATION**.
3. Install the caliper mounting bolts (3). See **INSTALLATION**.
4. Install the tire and wheel assembly. Refer to **STANDARD PROCEDURE** .

ROTORS

DIAGNOSIS AND TESTING

DISC BRAKE ROTOR

The rotor braking surfaces should not be refinished unless necessary.

Light surface rust and scale can be removed with a lathe equipped with dual sanding discs. The rotor surfaces can be restored by machining in a disc brake lathe if surface scoring and wear are light.

Replace the rotor under the following conditions:

- Severely scored
- Tapered
- Hard spots
- Cracked
- Below minimum thickness

ROTOR MINIMUM THICKNESS

Measure rotor thickness at the center of the brake shoe contact surface. Replace the rotor if worn below minimum thickness, or if machining would reduce thickness below the allowable minimum.

Rotor minimum thickness is usually specified on the rotor hub. The specification is either stamped or cast into the hub surface.

ROTOR RUNOUT

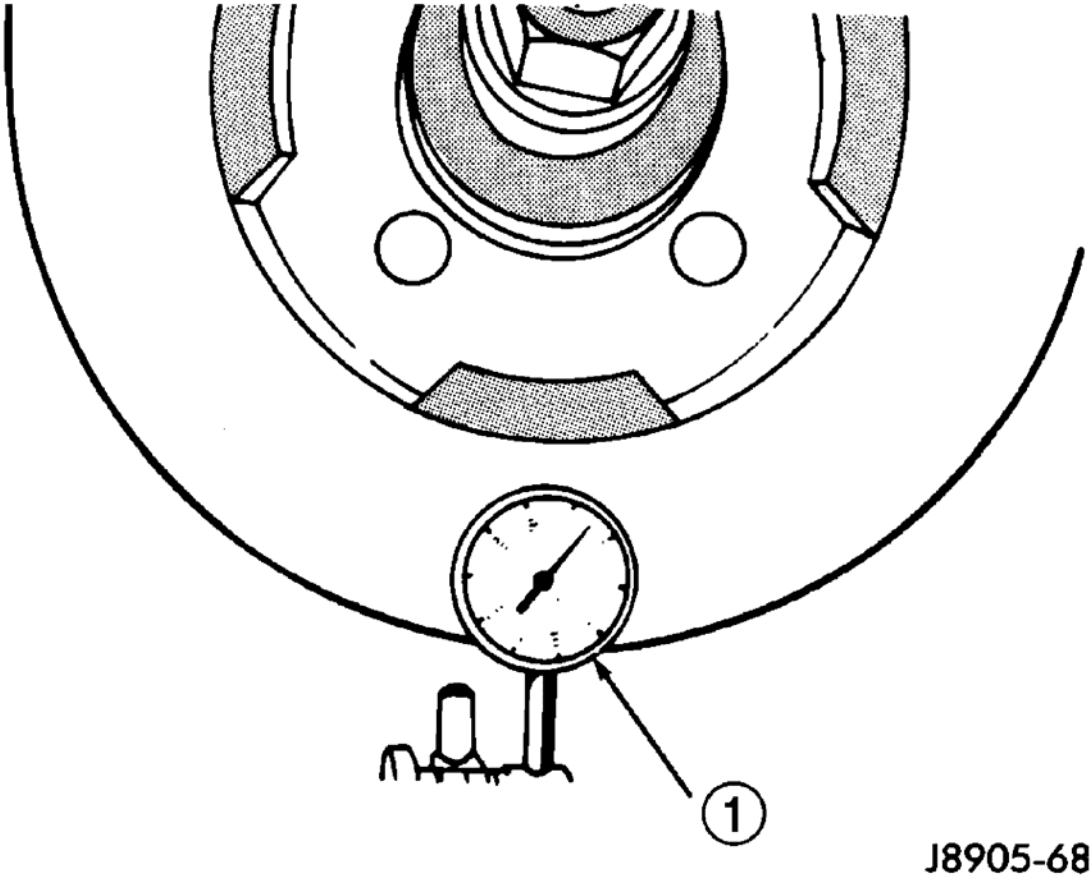

Fig. 37: Checking Rotor Runout & Thickness Variation
Courtesy of CHRYSLER LLC

1 - DIAL INDICATOR

Check rotor lateral runout with dial indicator C-3339 (1). See **Fig. 37**. Excessive lateral runout will cause brake pedal pulsation and rapid, uneven wear of the brake shoes. Position the dial indicator plunger approximately 25.4 mm (1 in.) inward from the rotor edge. The dial indicator should be positioned in the center of the rotor surface. Maximum allowable rotor runout is 0.102 mm (0.004 in.).

ROTOR THICKNESS VARIATION

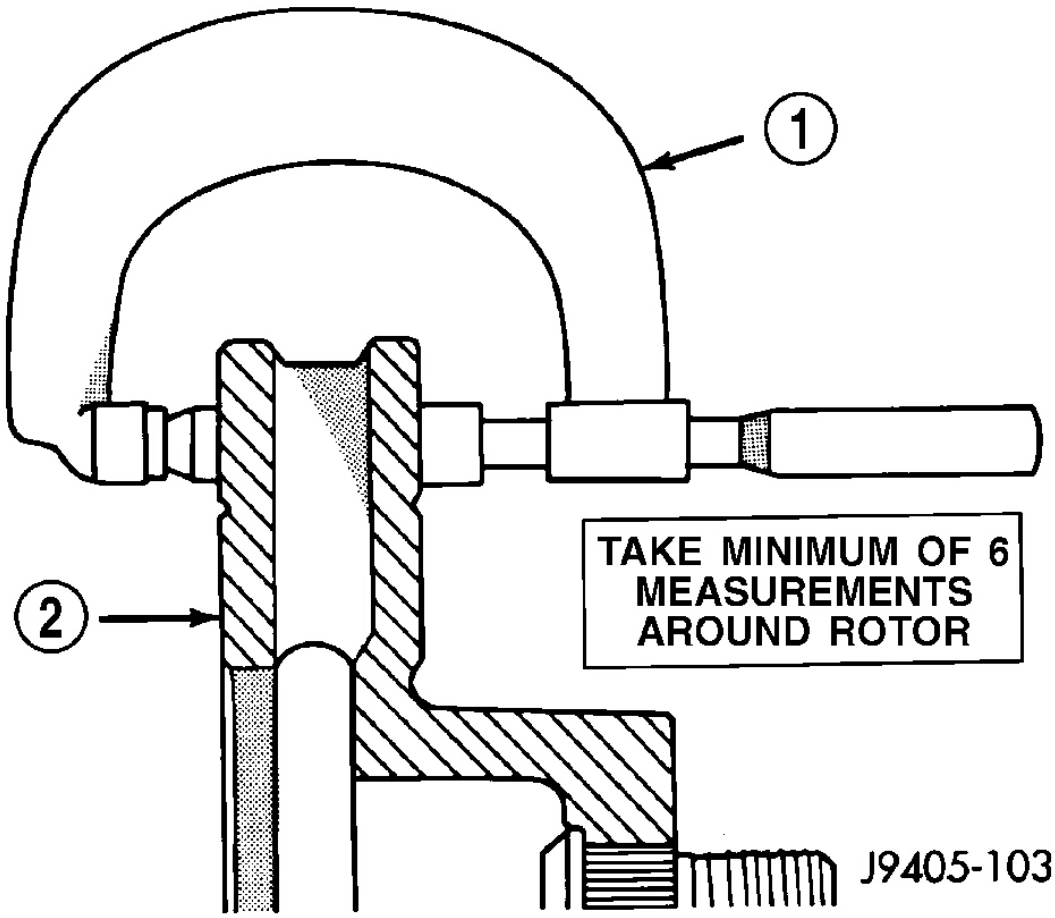

Fig. 38: Measuring Rotor Thickness
Courtesy of CHRYSLER LLC

1 - MICROMETER
2 - ROTOR

Variations in rotor thickness will cause pedal pulsation, noise and shudder.

Measure rotor thickness at 6 to 12 points around the rotor face. See **Fig. 38**.

Position the micrometer (1) approximately 25.4 mm (1 in.) from the rotor (2) outer circumference for each measurement.

Thickness should not **vary** by more than 0.013 mm (0.0005 in.) from point-to-point on the rotor. Machine or replace the rotor if necessary.

BRAKE DRUM IN HAT ROTOR

The maximum allowable diameter of the drum braking surface is indicated on the drum outer edge. Always replace the drum if machining would cause drum diameter to exceed the size limit indicated on the drum in hat.

BRAKE DRUM RUNOUT

Measure drum diameter and runout with an accurate gauge. The most accurate method of measurement involves mounting the drum in a brake lathe and checking variation and runout with a dial indicator.

Machine the drum if runout or variation exceed values. Replace the drum in hat rotor if machining causes the drum in hat rotor to exceed the maximum allowable diameter.

STANDARD PROCEDURE

DISC BRAKE ROTOR MACHINING

NOTE: A hub mounted on-vehicle lathe is highly recommended. This type of lathe trues the rotor to the vehicles hub/bearing.

The disc brake rotor can be machined if scored or worn. The on-vehicle lathe must machine both sides of the rotor simultaneously with dual cutter heads. The rotor mounting surface must be clean before placing on the on-vehicle lathe. Equipment capable of machining only one side at a time may produce a tapered rotor. **This type of rotor machining is not recommended** .

NOTE: Proper wheel torque is also critical to help prevent any warping of the disc brake rotor.

CAUTION: Brake rotors that do not meet minimum thickness specifications before or after machining must be replaced.

BRAKE DRUM IN HAT ROTOR MACHINING

The brake drum in hat rotor can be machined on a drum lathe when necessary. Initial machining cuts should be limited to 0.12 - 0.20 mm (0.005 - 0.008 in.) at a time as heavier feed rates can produce taper and surface variation. Final finish cuts of 0.025 to 0.038 mm (0.001 to 0.0015 in.) are recommended and will generally provide the best surface finish.

Be sure the drum in hat rotor is securely mounted in the lathe before machining operations. A damper strap should always be used around the drum to reduce vibration and avoid chatter marks.

The maximum allowable diameter of the drum braking surface is stamped or cast into the drum in hat rotor.

CAUTION: Replace the drum in hat rotor if machining will cause the drum to exceed the maximum allowable diameter.

REMOVAL

DISC BRAKE ROTOR-FRONT

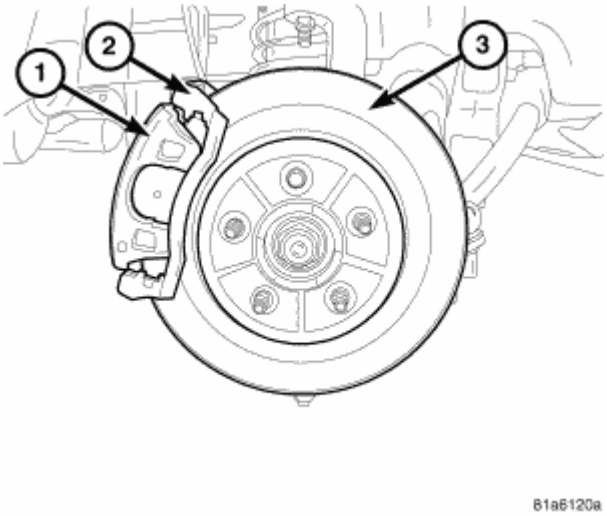

Fig. 39: Front Disc Brake Rotor
Courtesy of CHRYSLER LLC

1. Raise and support the vehicle.
2. Remove the tire and wheel assembly.

CAUTION: Never allow the disc brake caliper to hang from the brake hose. Damage to the brake hose will result. Provide a suitable support to hang the caliper securely.

3. Remove the caliper adapter (2). See **REMOVAL**.
4. Remove the disc brake rotor (3).

DISC BRAKE ROTOR-REAR

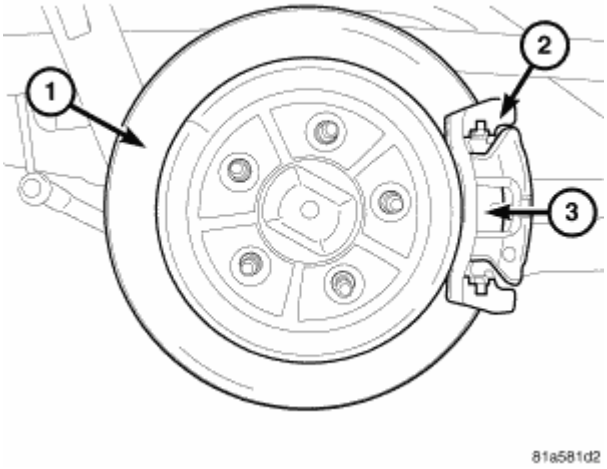

Fig. 40: Rear Disc Brake Rotor
Courtesy of CHRYSLER LLC

1. Raise and support the vehicle
2. Remove the tire and wheel assembly.
3. Remove the disc brake caliper adapter (2) and pads (3), see **REMOVAL**.
4. Remove the retaining clips and rotor assembly (1).

INSTALLATION

DISC BRAKE ROTOR-FRONT

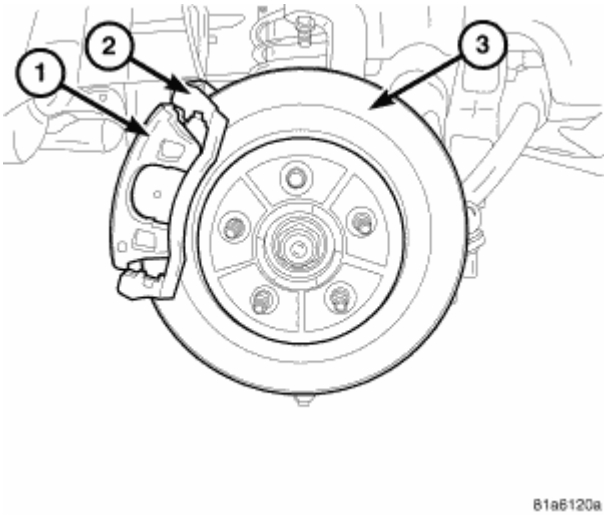

Fig. 41: Front Disc Brake Rotor
Courtesy of CHRYSLER LLC

1. Install the disc brake rotor (3) to the hub.
2. Install the caliper mounting adapter (2). See **INSTALLATION**.

3. Install the tire and wheel assembly. Refer to **STANDARD PROCEDURE** .

DISC BRAKE ROTOR-REAR

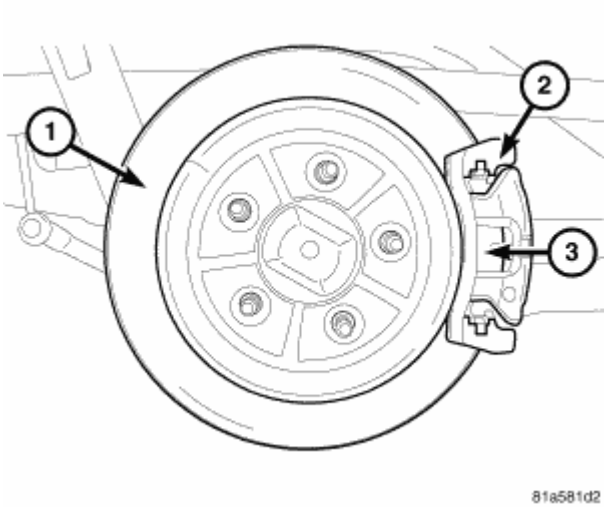

Fig. 42: Rear Disc Brake Rotor
Courtesy of CHRYSLER LLC

1. Install the rotor (1) to the axle shaft.
2. Install the disc brake caliper adapter (2) and pads (3), see **INSTALLATION**.
3. Install the tire and wheel assembly. Refer to **STANDARD PROCEDURE** .
4. Lower the vehicle.

PEDAL

DESCRIPTION

BRAKE PEDAL

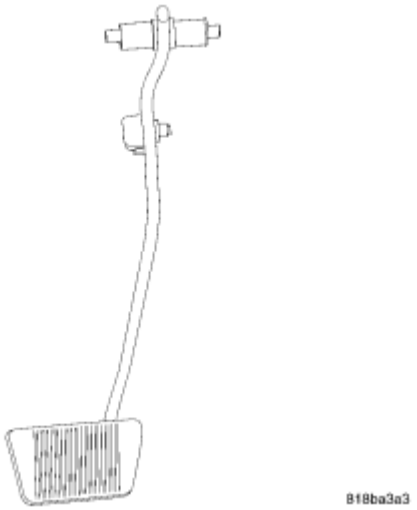

Fig. 43: Brake Pedal
Courtesy of CHRYSLER LLC

A suspended-type brake pedal is used, the pedal pivots on a shaft mounted in the steering column support bracket. The bracket is attached to the dash panel.

OPERATION

BRAKE PEDAL

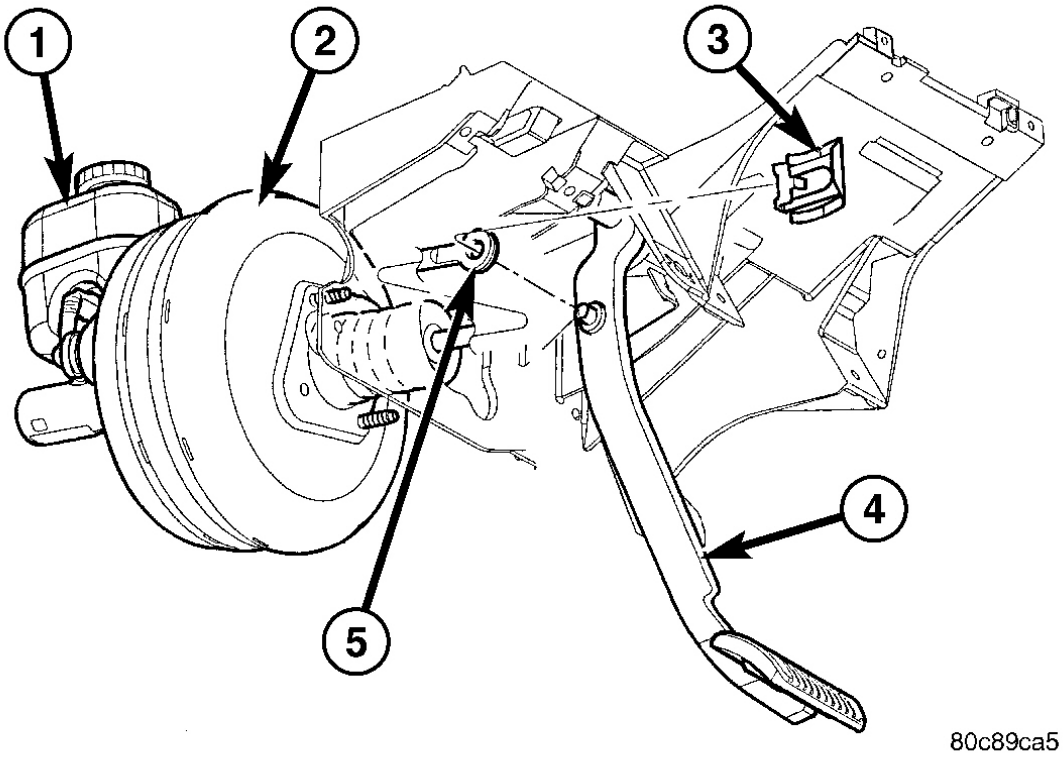

Fig. 44: Booster Push Rod
Courtesy of CHRYSLER LLC

1 - MASTER CYLINDER ASSEMBLY
2 - BRAKE BOOSTER
3 - CLIP
4 - BRAKE PEDAL
5 - BOOSTER ROD

The brake pedal (4) is attached to the booster push rod (5). When the pedal is depressed, the primary booster push rod (5) is depressed which moves the booster secondary rod. The booster secondary rod depresses the

master cylinder piston (1). See **Fig. 44**.

REMOVAL

BRAKE PEDAL

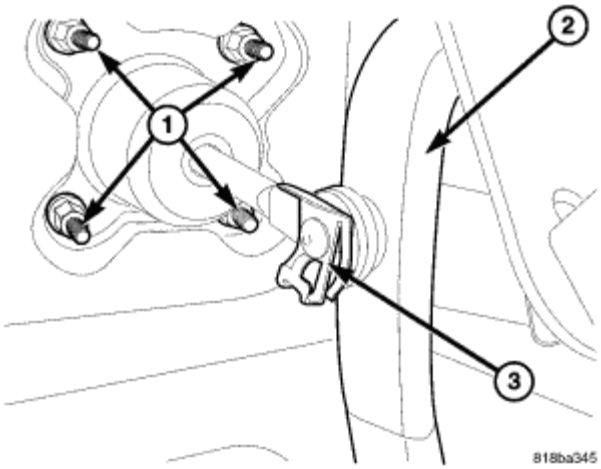

Fig. 45: Identifying Retainer Clip, Pedal & Booster Mounting Nuts
Courtesy of CHRYSLER LLC

1. Remove the knee blocker under the steering column, refer to **REMOVAL** .
2. Remove the retainer clip (3) securing the booster push rod to pedal (2).
3. Remove the brake lamp switch, refer to **REMOVAL** .
4. Remove the two nuts securing the pedal to the column bracket.
5. Remove the pedal from the vehicle.

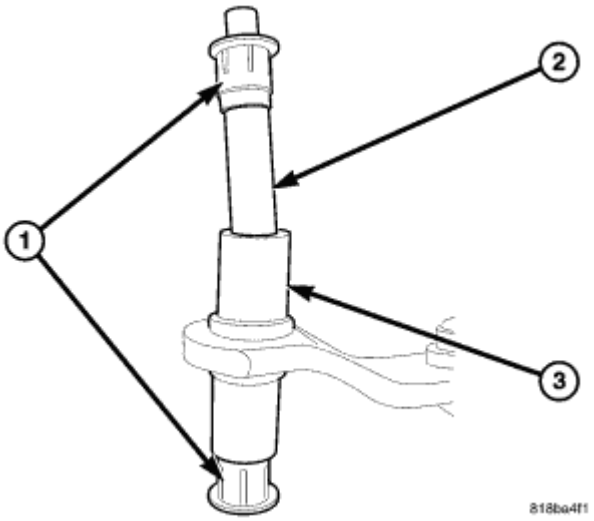

Fig. 46: Pedal Bushing
Courtesy of CHRYSLER LLC

6. Remove the pedal bushing if necessary.

INSTALLATION

BRAKE PEDAL

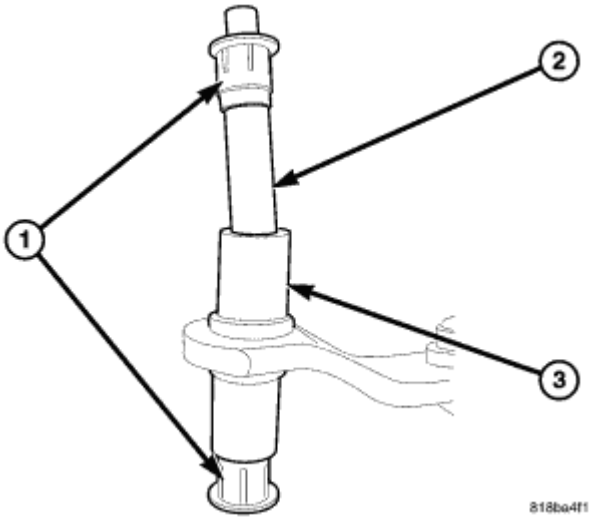

Fig. 47: Pedal Bushing
Courtesy of CHRYSLER LLC

1. Lubricate the brake pedal pin and bushings with Mopar multi-mileage grease.
2. Install the pedal bushings if removed.

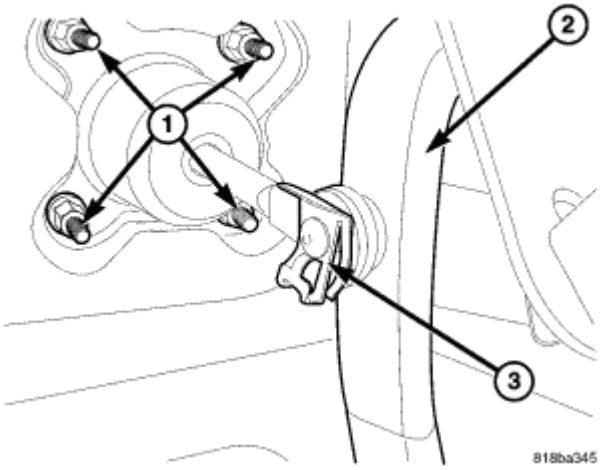

Fig. 48: Identifying Retainer Clip, Pedal & Booster Mounting Nuts
Courtesy of CHRYSLER LLC

3. Install the pedal into the vehicle.
4. Install the nuts securing the pedal to the column bracket.

5. Tighten the nuts to 22.6 N.m (200 in. lbs.).
6. Install the booster push rod on the pedal pin and install a new retainer clip (3).
7. Install the brake lamp switch, refer to **INSTALLATION** .
8. Install the knee blocker, refer to **INSTALLATION** .

POWER BRAKE BOOSTER

DESCRIPTION

POWER BRAKE BOOSTER

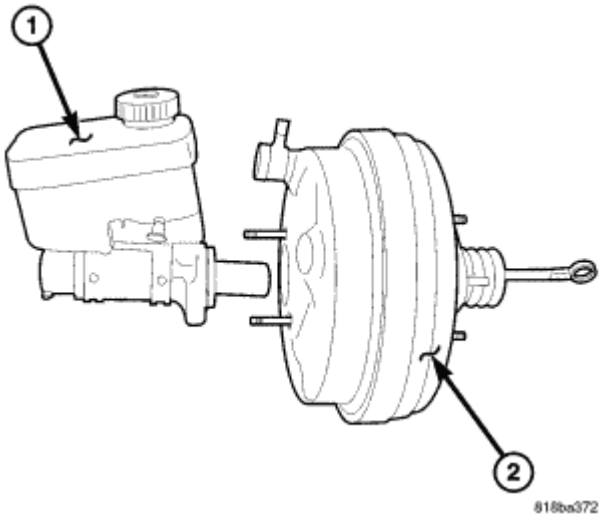

Fig. 49: Brake Master/Booster Assembly
Courtesy of CHRYSLER LLC

The booster assembly consists of a housing divided into separate chambers by two internal diaphragms. The outer edge of each diaphragm is attached to the booster housing. The diaphragms are connected to the booster primary push rod.

Two push rods are used in the booster. The primary push rod connects the booster to the brake pedal. The secondary push rod connects the booster (2) to the master cylinder (1) to stroke the cylinder pistons.

The booster assembly is of the tie-bar design. This means the structural support of the assembly is through the tie-bars, whose ends protrude through the booster shell. One end is the master cylinder mounting stud and the other end is the booster mounting stud. The booster assembly (with properly functioning check valve installed) may not have a good vacuum seal unless the booster is installed on the dash panel mounting bracket with master cylinder and booster mounting nuts properly torqued.

OPERATION

POWER BRAKE BOOSTER

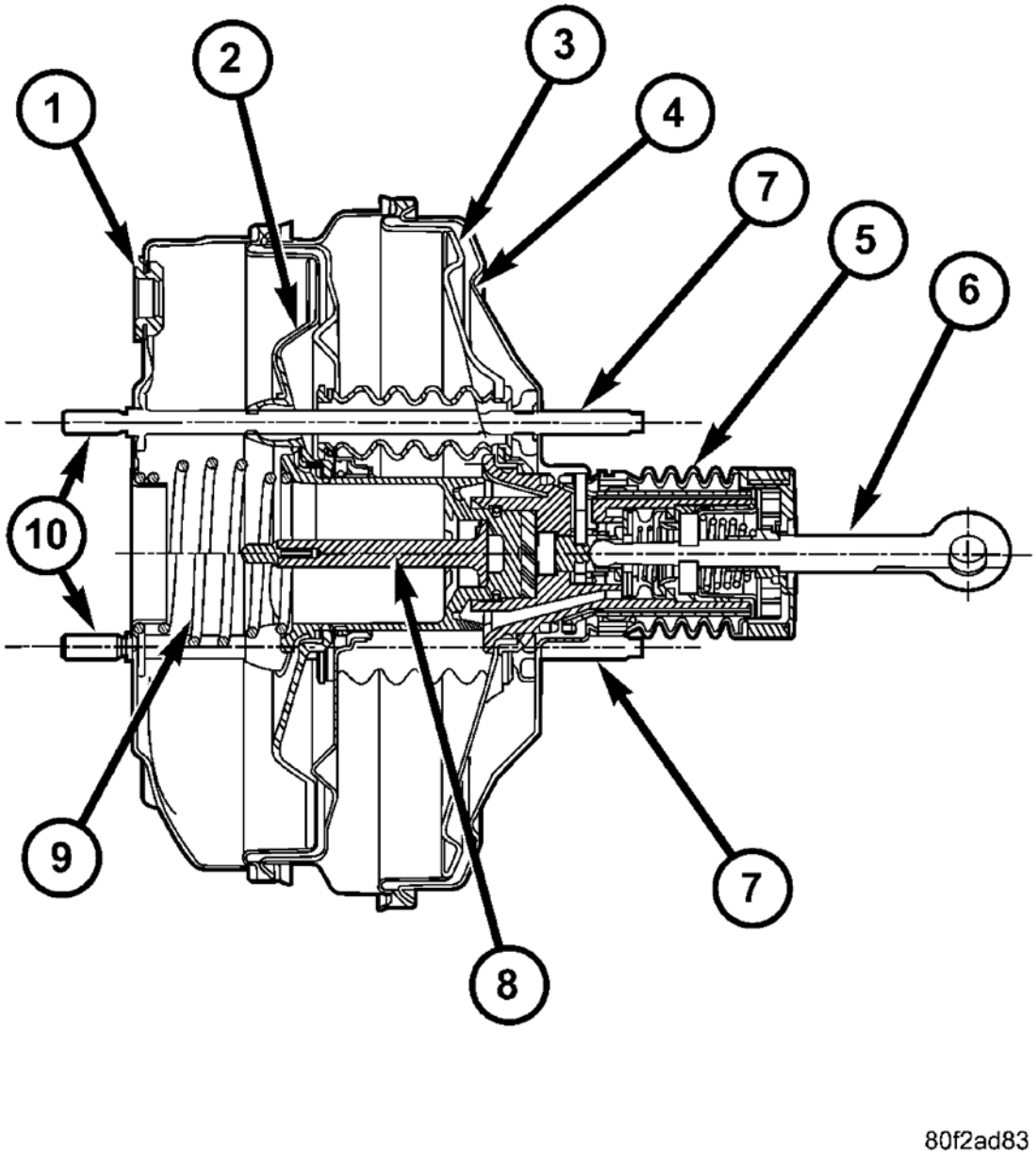

Fig. 50: Power Brake Booster Cut Away
Courtesy of CHRYSLER LLC

1 - VACUUM CHECK VALVE
2 - FRONT DIAPHRAGM
3 - REAR DIAPHRAGM
4 - HOUSING
5 - SEAL
6 - PRIMARY PUSH ROD (TO BRAKE PEDAL)
7 - BOOSTER MOUNTING STUDS

8 - SECONDARY PUSH ROD (TO MASTER CYLINDER)
9 - SPRING
10 - MASTER CYLINDER MOUNTING STUDS

The atmospheric inlet valve is opened and closed by the primary push rod (6). Booster vacuum supply is through a hose attached to an intake manifold fitting at one end and to the booster check valve (1) at the other. The vacuum check valve (1) in the booster housing (4) is a one-way device that prevents vacuum leak back.

Power assist is generated by utilizing the pressure differential between normal atmospheric pressure and a vacuum. The vacuum needed for booster operation is taken directly from the engine intake manifold. The entry point for atmospheric pressure is through a filter and inlet valve at the rear of the housing. See **Fig. 50**.

The chamber areas forward of the booster diaphragms are exposed to vacuum from the intake manifold. The chamber areas to the rear of the diaphragms, are exposed to normal atmospheric pressure of 101.3 kilopascals (14.7 pounds/square in.).

Brake pedal application causes the primary push rod to open the atmospheric inlet valve. This exposes the area behind the diaphragms to atmospheric pressure. The resulting pressure differential provides the extra apply force for power assist.

The booster check valve, check valve grommet and booster seals are serviceable.

DIAGNOSIS AND TESTING

MASTER CYLINDER/POWER BOOSTER

1. Start engine and check booster vacuum hose connections. A hissing noise indicates vacuum leak. Correct any vacuum leak before proceeding, also ensure booster mounting nuts are torqued correctly.
2. Stop engine and shift transmission into Neutral.
3. Pump brake pedal until all vacuum reserve in booster is depleted.
4. Press and hold brake pedal under light foot pressure. The pedal should hold firm, if the pedal falls away master cylinder is faulty (internal leakage). This could also indicate an external leak, such as at fittings, hoses, HCU, etc., or a symptom of an internal leak in the HCU
5. Start engine and note pedal action. It should fall away slightly under light foot pressure then hold firm. If no pedal action is discernible, power booster, vacuum supply, or vacuum check valve is faulty. Proceed to the **POWER BOOSTER VACUUM TEST**.
6. If the POWER BOOSTER VACUUM TEST passes, rebuild booster vacuum reserve as follows: Release brake pedal. Increase engine speed to 1500 RPM, close the throttle and immediately turn off ignition to stop engine.
7. Wait a minimum of 90 seconds and try brake action again. Booster should provide two or more vacuum assisted pedal applications. If vacuum assist is not provided, booster is faulty.

POWER BOOSTER VACUUM TEST

1. Connect vacuum gauge to booster check valve with short length of hose and T-fitting. See **Fig. 51**.

2. Start and run engine at curb idle speed for one minute.
3. Observe the vacuum supply. If vacuum supply is not adequate, repair vacuum supply.
4. Clamp hose shut between vacuum source and check valve.
5. Stop engine and observe vacuum gauge.
6. If vacuum drops more than one inch Hg (33 millibars) within 15 seconds, booster diaphragm or check valve is faulty.

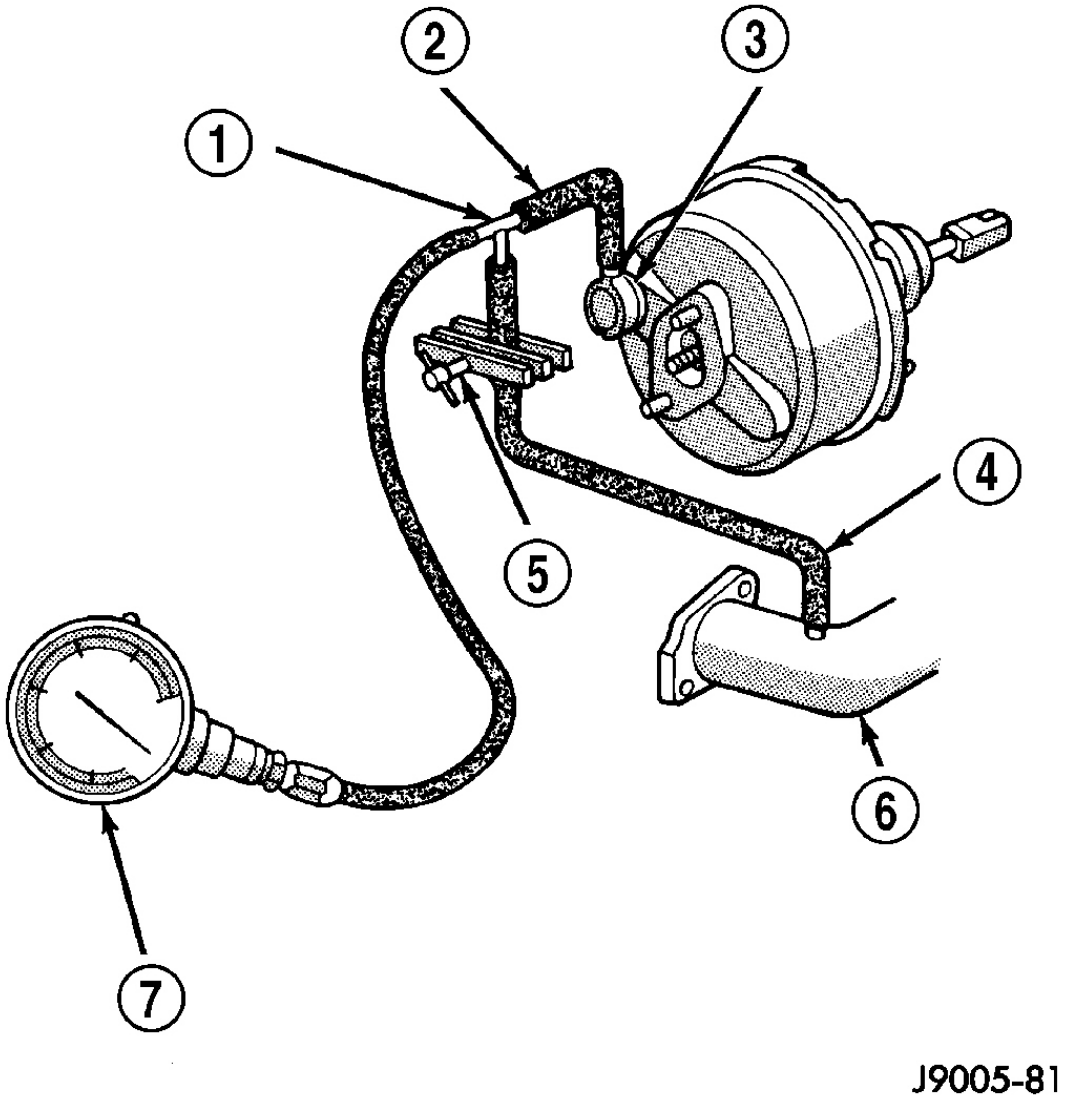

Fig. 51: Typical Booster Vacuum Test Connections
Courtesy of CHRYSLER LLC

1 - TEE FITTING
2 - SHORT CONNECTING HOSE
3 - CHECK VALVE
4 - CHECK VALVE HOSE
5 - CLAMP TOOL
6 - INTAKE MANIFOLD
7 - VACUUM GAUGE

POWER BOOSTER CHECK VALVE TEST

1. Disconnect vacuum hose from check valve.
2. Remove check valve and valve seal from booster.
3. Use a hand operated vacuum pump for test.
4. Apply 15-20 inches vacuum at large end of check valve. See **Fig. 52**.
5. Vacuum should hold steady. If gauge on pump indicates vacuum loss, check valve is faulty and should be replaced.

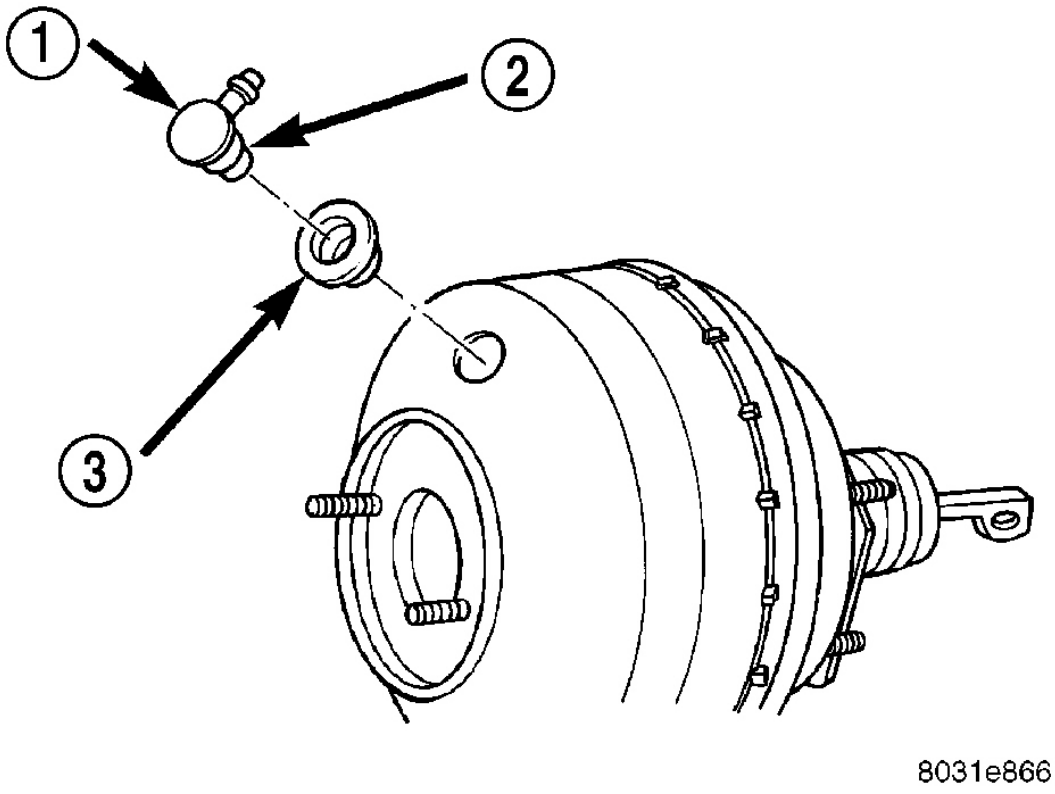

Fig. 52: Typical - Vacuum Check Valve & Seal

Courtesy of CHRYSLER LLC

1 - BOOSTER CHECK VALVE
2 - APPLY TEST VACUUM HERE
3 - VALVE SEAL

REMOVAL

POWER BRAKE BOOSTER - LHD

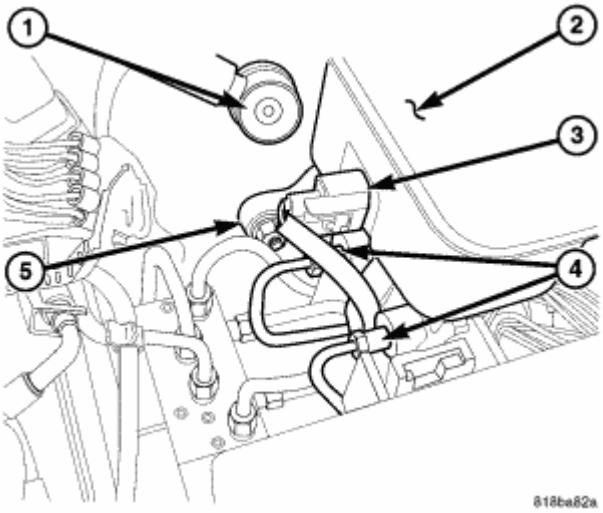

Fig. 53: Identifying Reservoir, Fluid Level Electrical Connector, Brake Lines, Mounting Nuts & Booster Check Valve
Courtesy of CHRYSLER LLC

1. Disconnect the wire (3) to the fluid level switch at the bottom of the reservoir (2).
2. Remove the master cylinder (2). See **REMOVAL**.
3. Disconnect vacuum hoses from booster check valve (1).
4. Remove the brake lines (4) from the master cylinder and the HCU (ABS vehicles only) or the junction block for clearance.
5. Disconnect the HCU from the mounts and move to the side for clearance of the booster.

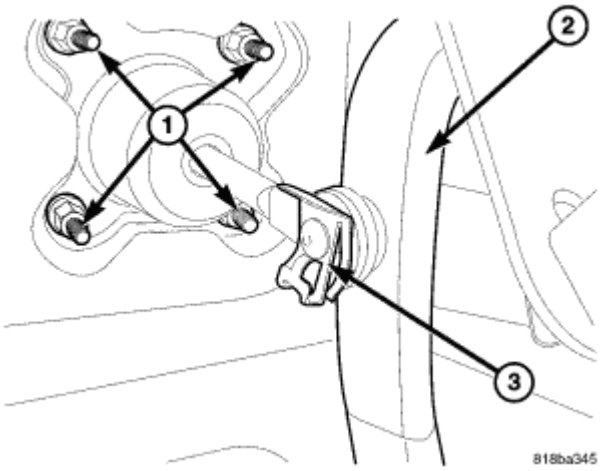

Fig. 54: Identifying Retainer Clip, Pedal & Booster Mounting Nuts
Courtesy of CHRYSLER LLC

6. Remove knee blocker under the steering column, refer to **REMOVAL** .
7. Remove the brake light switch and discard, refer to **REMOVAL** .
8. Remove retaining clip (3) that secures booster push rod to brake pedal (2).
9. Remove nuts attaching booster (1) to the dash panel.
10. In engine compartment, slide booster studs out of dash panel, tilt booster upward, and remove booster from engine compartment.

POWER BRAKE BOOSTER - RHD

1. Remove the air box. Refer to **REMOVAL** .
2. Siphon the fluid out of the master cylinder.

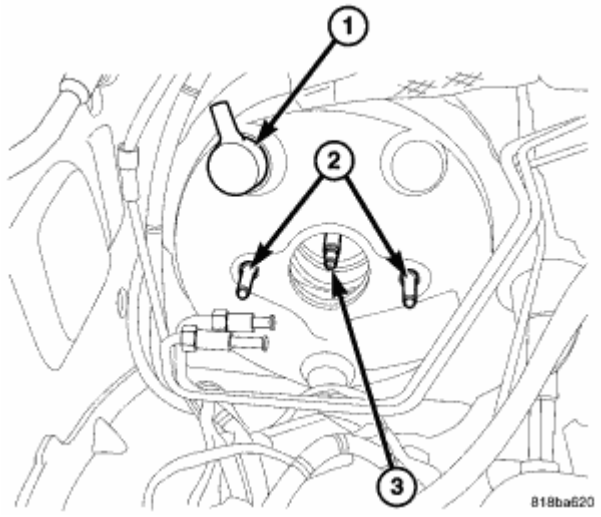

Fig. 55: BRAKE BOOSTER
Courtesy of CHRYSLER LLC

3. Remove the brake lines from the master cylinder.
4. Remove the master cylinder. See **REMOVAL**.
5. Disconnect vacuum hose from booster check valve (1).

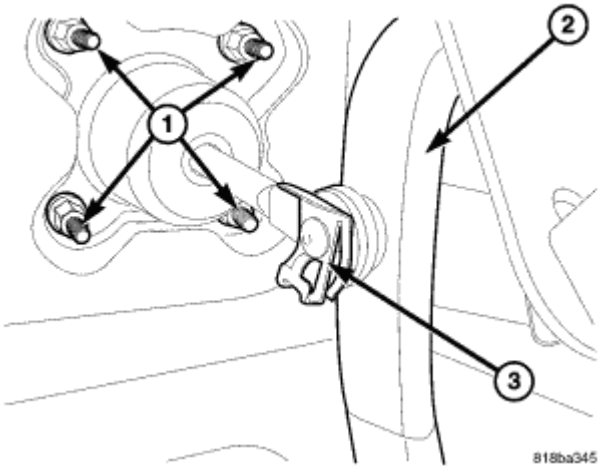

Fig. 56: Identifying Retainer Clip, Pedal & Booster Mounting Nuts
Courtesy of CHRYSLER LLC

6. Remove knee blocker under the steering column, refer to **REMOVAL** .
7. Remove the brake light switch and discard, refer to **REMOVAL** .
8. Remove retaining clip (3) that secures booster push rod to brake pedal (2).
9. Remove nuts (1) attaching booster to the dash panel.
10. In engine compartment, slide booster studs out of dash panel, tilt booster upward, and remove booster from engine compartment.

INSTALLATION

POWER BRAKE BOOSTER - LHD

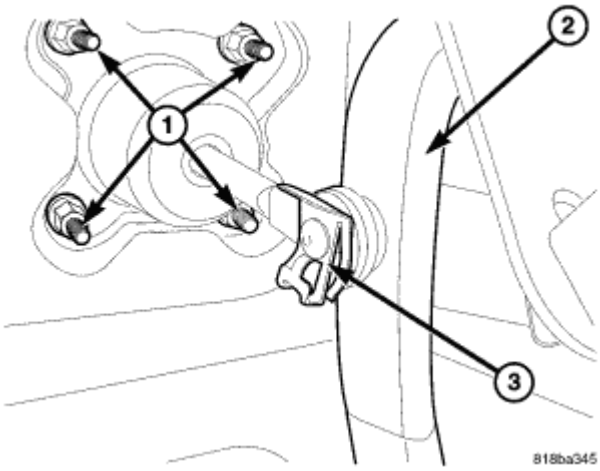

Fig. 57: Identifying Retainer Clip, Pedal & Booster Mounting Nuts
Courtesy of CHRYSLER LLC

1. Align and position booster on the dash panel.
2. Install booster mounting nuts (1). Tighten nuts just enough to hold booster in place.

NOTE: Lubricate the pedal pin with Mopar multi-mileage grease before installation.

3. Slide booster push rod onto the brake pedal (2). Then secure push rod to pedal pin with retaining clip (3).
4. Tighten booster mounting nuts (1) to 25 N.m (220 in. lbs.).
5. Install a new brake lamp switch and reconnect the electrical connector.
6. Install the knee blocker, refer to **INSTALLATION** .

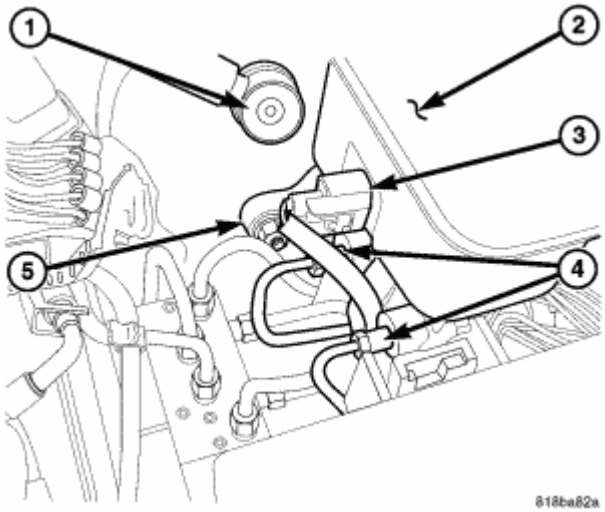

Fig. 58: Identifying Reservoir, Fluid Level Electrical Connector, Brake Lines, Mounting Nuts & Booster Check Valve
Courtesy of CHRYSLER LLC

7. If original master cylinder is being installed, check condition of seal at rear of master cylinder. Replace seal if cut, or torn.
8. Clean cylinder mounting surface of brake booster. Use shop towel wetted with brake cleaner for this purpose. Dirt, grease, or similar materials will prevent proper cylinder seating and could result in vacuum leak.
9. Align and install master cylinder on the booster studs. Install mounting nuts and tighten to 25 N.m (220 in. lbs.).
10. Connect vacuum hose to booster check valve (1).
11. Remount the HCU. Tighten bracket mounting nuts to 14 N.m (125 in. lbs.).
12. Connect and secure the brake lines (4) to HCU or junction block and master cylinder. Start all brake line fittings by hand to avoid cross threading.
13. Connect the wire to fluid level switch (3) at the bottom of the reservoir (2).
14. Fill and bleed base brake system, see **STANDARD PROCEDURE**.
15. Verify proper brake operation before moving vehicle.

POWER BRAKE BOOSTER - RHD

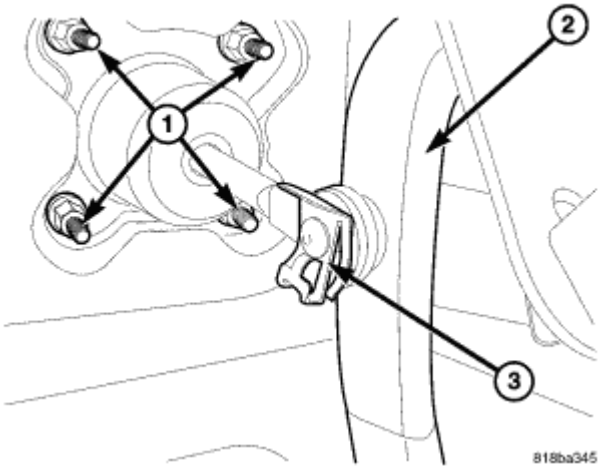

Fig. 59: Identifying Retainer Clip, Pedal & Booster Mounting Nuts
Courtesy of CHRYSLER LLC

1. Align and position booster on the dash panel.
2. Install booster mounting nuts (1). Tighten nuts just enough to hold booster in place.

NOTE: Lubricate the pedal pin with Mopar multi-mileage grease before installation.

3. Slide booster push rod onto the brake pedal (2). Then secure push rod to pedal pin with retaining clip (3).
4. Tighten booster mounting nuts (1) to 39 N.m (29 ft. lbs.).
5. Install a new brake lamp switch and reconnect the electrical connector.

6. Install the knee blocker, refer to **INSTALLATION** .

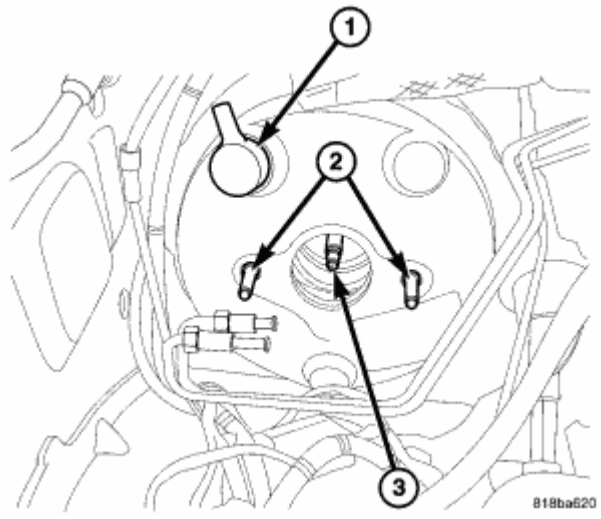

Fig. 60: Brake Booster
Courtesy of CHRYSLER LLC

7. If original master cylinder is being installed, check condition of seal at rear of master cylinder. Replace seal if cut, or torn.
8. Clean cylinder mounting surface of brake booster. Use shop towel wetted with brake cleaner for this purpose. Dirt, grease, or similar materials will prevent proper cylinder seating and could result in vacuum leak.
9. Align and install master cylinder on the booster studs (2). Install mounting nuts and tighten to 17.5 N.m (155 in. lbs.). See **INSTALLATION**.
10. Connect vacuum hose to booster check valve (1).
11. Connect and secure the brake lines to master cylinder. Start all brake line fittings by hand to avoid cross threading.
12. Connect the wire to fluid reservoir.
13. Install the air box.
14. Fill and bleed base brake system, see **STANDARD PROCEDURE**.
15. Verify proper brake operation before moving vehicle.

MASTER CYLINDER

DESCRIPTION

MASTER CYLINDER

The master cylinder has a removable plastic reservoir. The cylinder body is made of aluminum and contains a primary and secondary piston assembly. The cylinder body including the piston assemblies are not serviceable. If diagnosis indicates an internal problem with the cylinder body, it must be replaced as an assembly. The reservoir and grommets are the only replaceable parts on the master cylinder.

OPERATION

MASTER CYLINDER

The master cylinder bore contains a primary and secondary piston. The primary piston supplies hydraulic pressure to the front brakes. The secondary piston supplies hydraulic pressure to the rear brakes. The master cylinder reservoir stores reserve brake fluid for the hydraulic brake circuits.

DIAGNOSIS AND TESTING

MASTER CYLINDER/POWER BOOSTER

1. Start engine and check booster vacuum hose connections. A hissing noise indicates vacuum leak. Correct any vacuum leak before proceeding, also ensure booster mounting nuts are torqued correctly.
2. Stop engine and shift transmission into Neutral.
3. Pump brake pedal until all vacuum reserve in booster is depleted.
4. Press and hold brake pedal under light foot pressure. The pedal should hold firm, if the pedal falls away master cylinder is faulty (internal leakage). This could also indicate an external leak, such as at fittings, hoses, HCU, etc., or a symptom of an internal leak in the HCU
5. Start engine and note pedal action. It should fall away slightly under light foot pressure then hold firm. If no pedal action is discernible, power booster, vacuum supply, or vacuum check valve is faulty. Proceed to the POWER BOOSTER VACUUM TEST.
6. If the POWER BOOSTER VACUUM TEST passes, rebuild booster vacuum reserve as follows: Release brake pedal. Increase engine speed to 1500 RPM, close the throttle and immediately turn off ignition to stop engine.
7. Wait a minimum of 90 seconds and try brake action again. Booster should provide two or more vacuum assisted pedal applications. If vacuum assist is not provided, booster is faulty.

POWER BOOSTER VACUUM TEST

1. Connect vacuum gauge to booster check valve with short length of hose and T-fitting. See **Fig. 51**.
2. Start and run engine at curb idle speed for one minute.
3. Observe the vacuum supply. If vacuum supply is not adequate, repair vacuum supply.
4. Clamp hose shut between vacuum source and check valve.
5. Stop engine and observe vacuum gauge.
6. If vacuum drops more than one inch Hg (33 millibars) within 15 seconds, booster diaphragm or check valve is faulty.

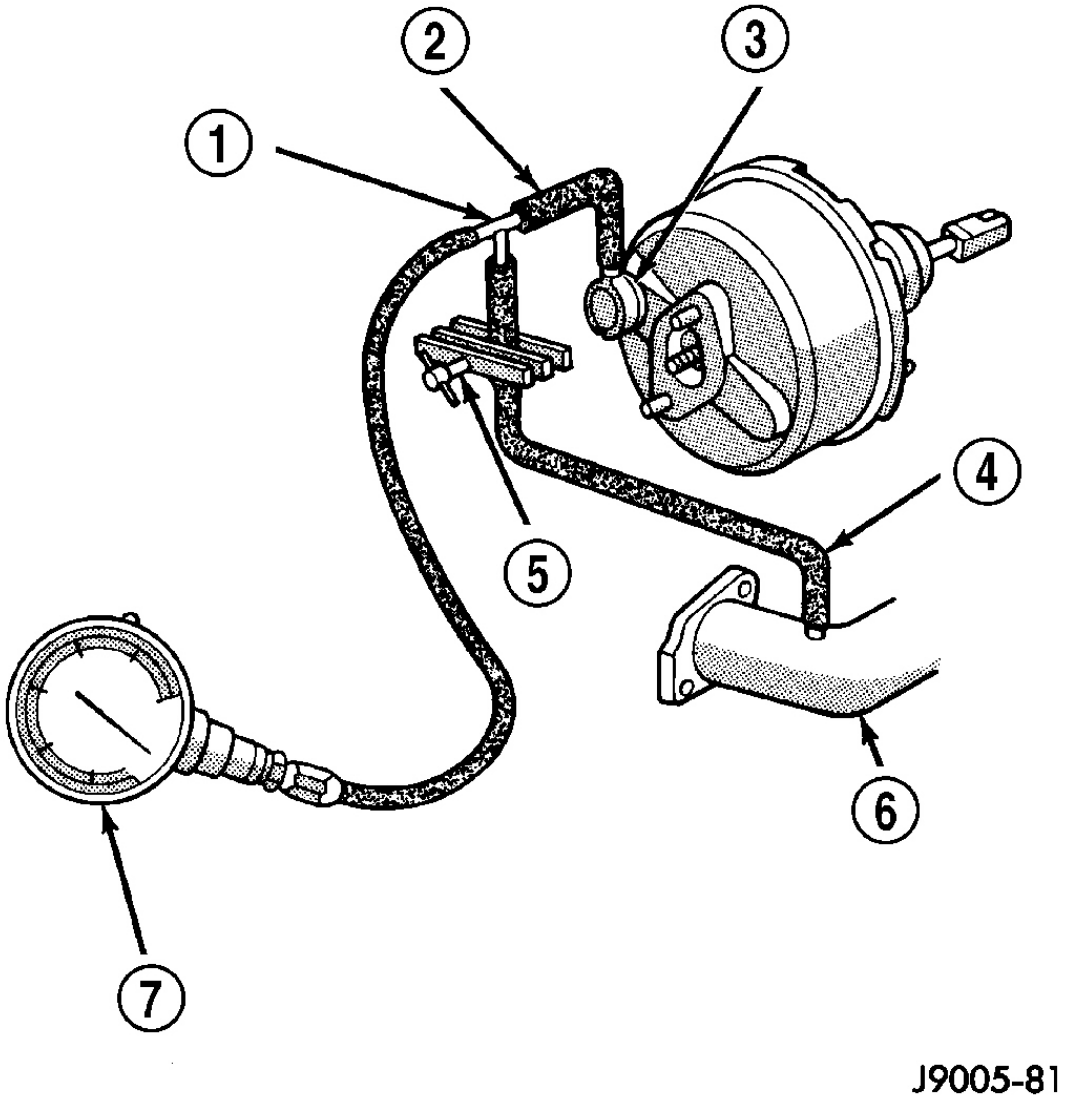

Fig. 61: Typical Booster Vacuum Test Connections
Courtesy of CHRYSLER LLC

1 - TEE FITTING
2 - SHORT CONNECTING HOSE
3 - CHECK VALVE
4 - CHECK VALVE HOSE
5 - CLAMP TOOL
6 - INTAKE MANIFOLD
7 - VACUUM GAUGE

POWER BOOSTER CHECK VALVE TEST

1. Disconnect vacuum hose from check valve.
2. Remove check valve and valve seal from booster.
3. Use a hand operated vacuum pump for test.
4. Apply 15-20 inches vacuum at large end of check valve. See **Fig. 52**.
5. Vacuum should hold steady. If gauge on pump indicates vacuum loss, check valve is faulty and should be replaced.

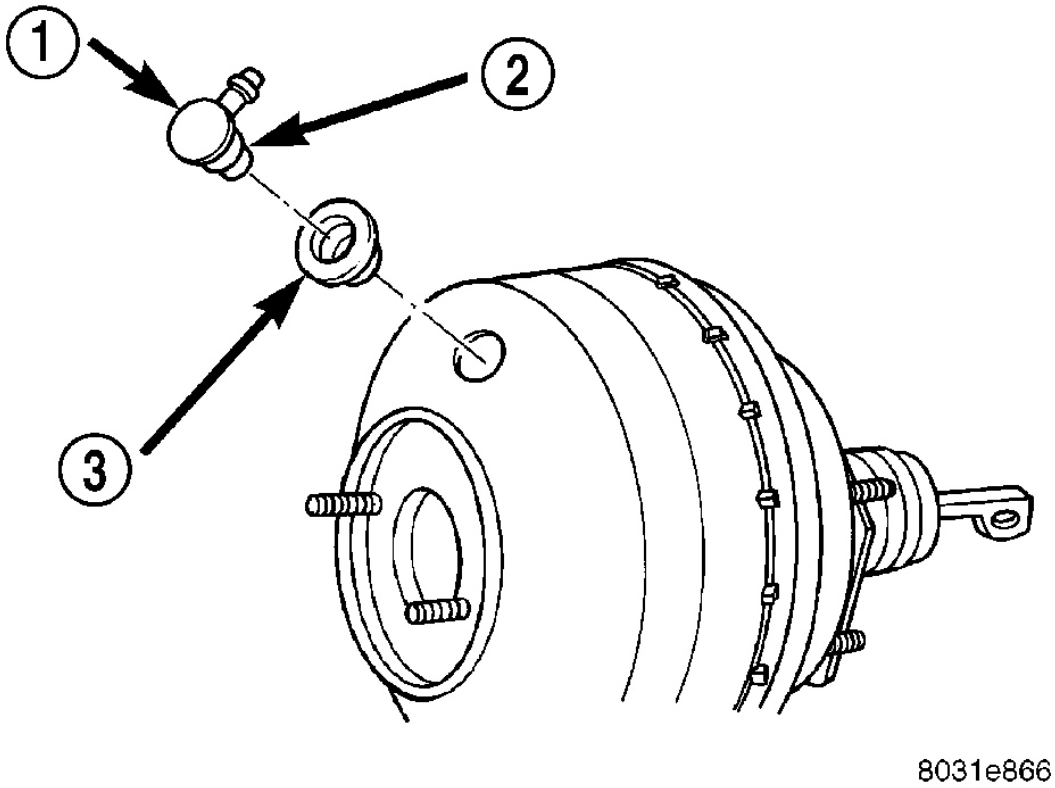

Fig. 62: Typical - Vacuum Check Valve & Seal
Courtesy of CHRYSLER LLC

1 - BOOSTER CHECK VALVE
2 - APPLY TEST VACUUM HERE
3 - VALVE SEAL

STANDARD PROCEDURE

MASTER CYLINDER BLEEDING

A new master cylinder should be bled before installation on the vehicle. Required bleeding tools include bleed tubes and a wood dowel to stroke the pistons. Bleed tubes can be fabricated from brake line.

1. Mount master cylinder in vise.
2. Attach bleed tubes to cylinder outlet ports. Then position each tube end into reservoir. See **Fig. 63**.
3. Fill reservoir with fresh brake fluid.
4. Press cylinder pistons inward with wood dowel. Then release pistons and allow them to return under spring pressure. Continue bleeding operations until air bubbles are no longer visible in fluid.

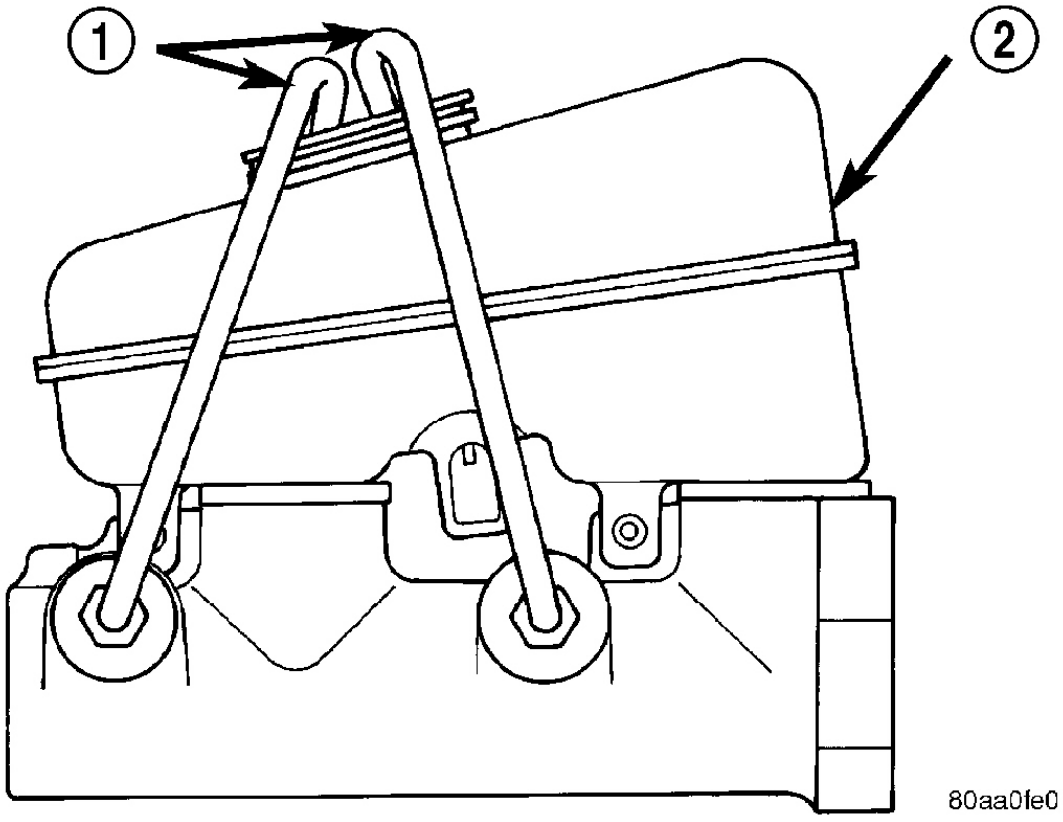

Fig. 63: Master - Typical
Courtesy of CHRYSLER LLC

1 - BLEEDING TUBES
2 - RESERVOIR

REMOVAL

MASTER CYLINDER

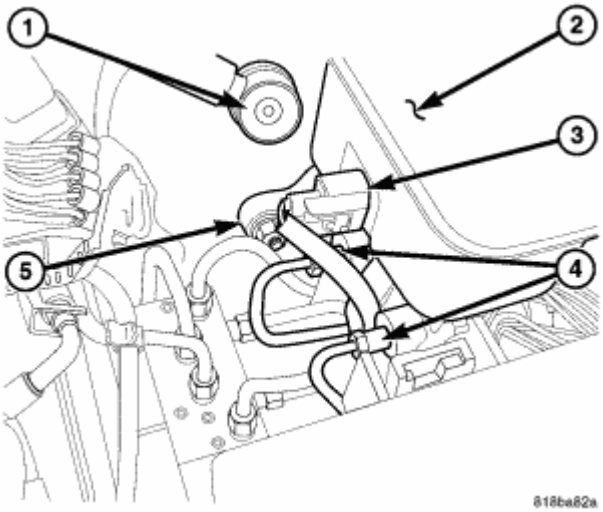

Fig. 64: Identifying Reservoir, Fluid Level Electrical Connector, Brake Lines, Mounting Nuts & Booster Check Valve
Courtesy of CHRYSLER LLC

1. Siphon and drain the fluid from the reservoir (2).
2. Disconnect the fluid level electrical connector (3) from the reservoir (2).
3. Remove the brake lines (4) at the master cylinder.
4. Remove mounting nuts (5) from the master cylinder.

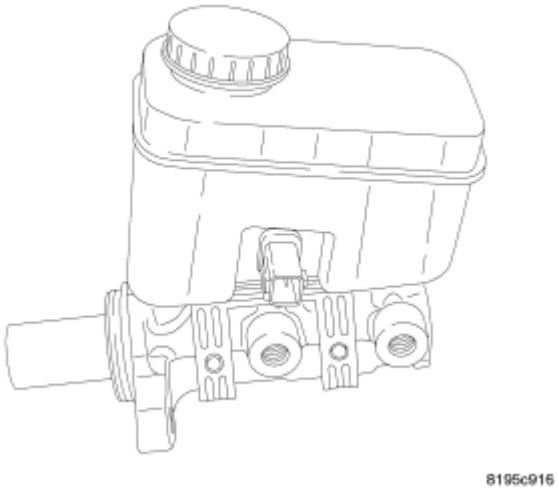

Fig. 65: Master Cylinder
Courtesy of CHRYSLER LLC

5. Remove master cylinder.
6. Remove cylinder cover and drain the rest of the fluid.
7. If master cylinder reservoir requires service, see **REMOVAL**.

INSTALLATION

MASTER CYLINDER

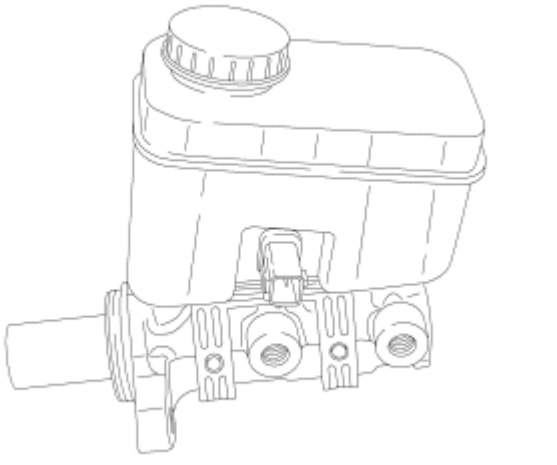

Fig. 66: Master Cylinder
Courtesy of CHRYSLER LLC

NOTE: If master cylinder is replaced, bleed cylinder before installation.

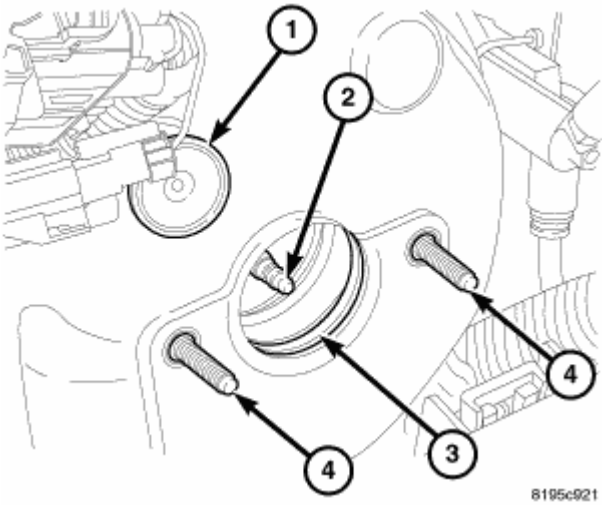

Fig. 67: Identifying Brake Booster & Brake Booster Studs
Courtesy of CHRYSLER LLC

1. Clean cylinder mounting surface of brake booster (3).

NOTE: Insure the O-ring is on the master cylinder at the booster interface.

2. Install master cylinder onto brake booster studs (4).

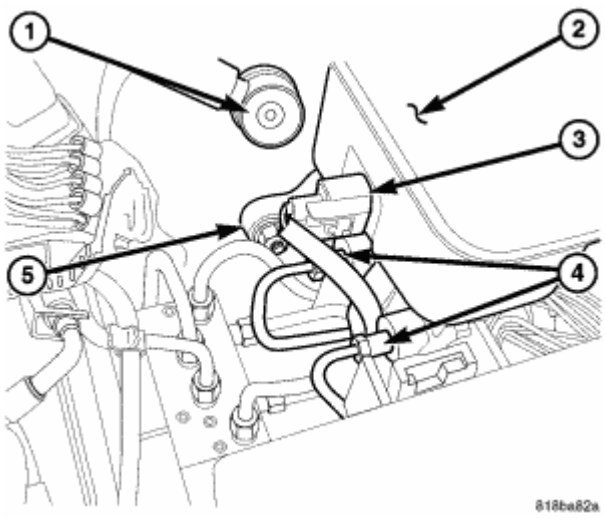

Fig. 68: Identifying Reservoir, Fluid Level Electrical Connector, Brake Lines, Mounting Nuts & Booster Check Valve
Courtesy of CHRYSLER LLC

3. Install mounting nuts (5) and tighten to 17 N.m (151 in. lbs.).
4. Connect the brake lines (4) to the master cylinder and tighten to 19 N.m (168 in. lbs.).
5. Connect fluid level electrical connector (3) to the reservoir (2).
6. Fill and bleed base brake system, see **STANDARD PROCEDURE**.

FLUID

DESCRIPTION

BRAKE FLUID

The brake fluid used in this vehicle must conform to DOT 3 specifications and SAE J1703 standards. No other type of brake fluid is recommended or approved for usage in the vehicle brake system. Use only Mopar brake fluid or an equivalent from a tightly sealed container.

CAUTION: Never use reclaimed brake fluid or fluid from a container which has been left open. An open container of brake fluid will absorb moisture from the air and contaminate the fluid.

CAUTION: Never use any type of a petroleum-based fluid in the brake hydraulic system. Use of such type fluids will result in seal damage of the vehicle brake hydraulic system causing a failure of the vehicle brake system. Petroleum based fluids would be items such as engine oil, transmission fluid, power steering fluid, etc.

STANDARD PROCEDURE

BRAKE FLUID LEVEL

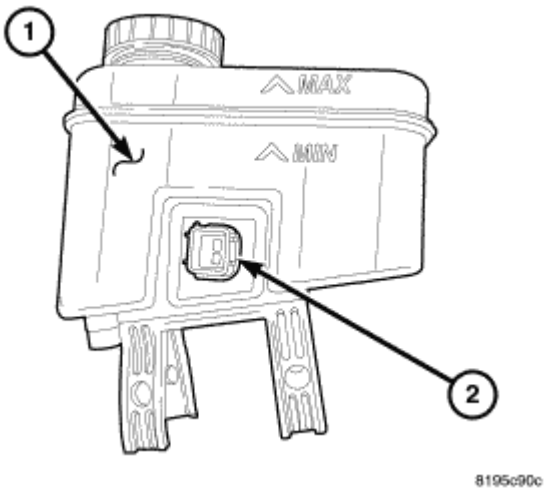

Fig. 69: Identifying Master Cylinder Reservoir
Courtesy of CHRYSLER LLC

Always clean the master cylinder reservoir and caps before checking fluid level. If not cleaned, dirt could enter the fluid.

The fluid fill level is indicated on the side of the master cylinder reservoir (1).

The correct fluid level is to the MAX indicator on the side of the reservoir. If necessary, add fluid to the proper level.

FLUID RESERVOIR

REMOVAL

RESERVOIR

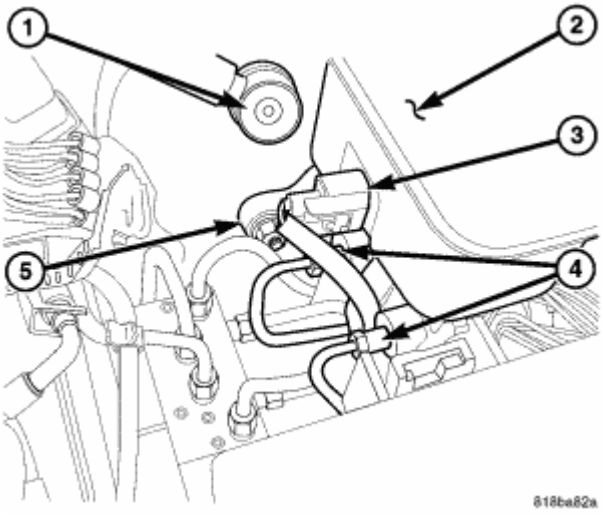

Fig. 70: Identifying Reservoir, Fluid Level Electrical Connector, Brake Lines, Mounting Nuts & Booster Check Valve

Courtesy of CHRYSLER LLC

1. Install prop rod on brake pedal to keep pressure on the brake system.
2. Remove reservoir cap and siphon fluid into drain container.
3. Remove the electrical connector (3) from the fluid level switch in the reservoir (2).

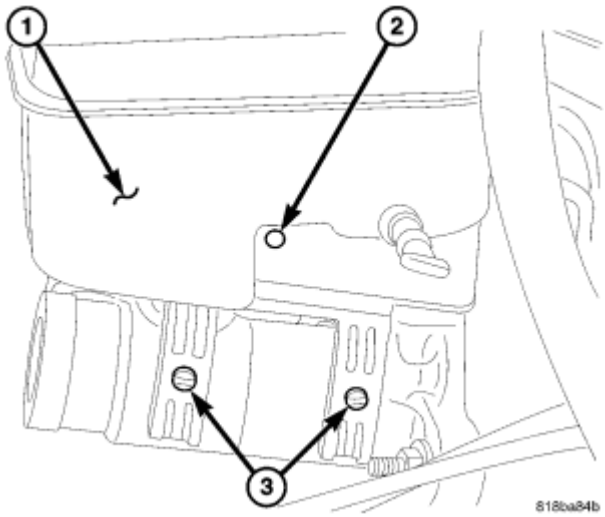

Fig. 71: Identifying Reservoir & Tabs
Courtesy of CHRYSLER LLC

4. Remove the reservoir (1) from the master cylinder by pulling the four tabs (3) outward to release.

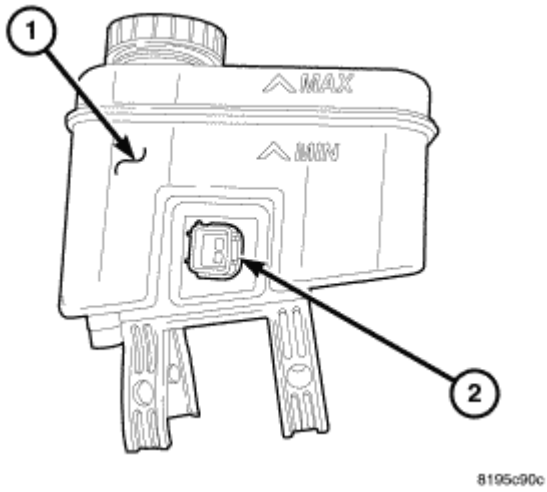

Fig. 72: Identifying Master Cylinder Reservoir
Courtesy of CHRYSLER LLC

5. Remove the reservoir (1) from the master cylinder by pulling upwards.
6. If replacing the reservoir (1) remove the fluid level sensor (2) by squeezing the tabs together while pulling on the sensor (2).

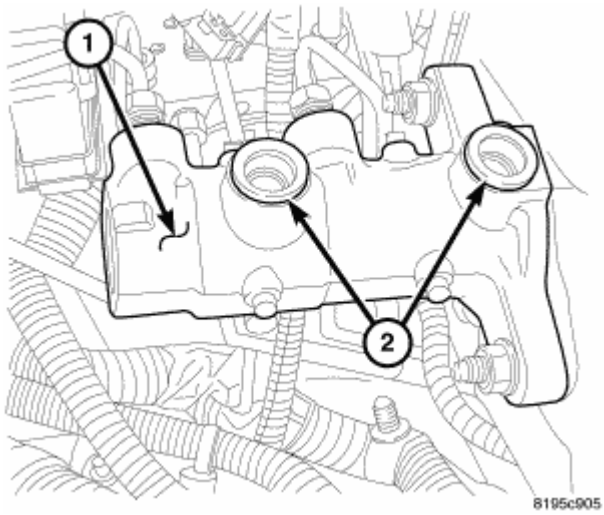

Fig. 73: Identifying Old Grommets & Cylinder Body
Courtesy of CHRYSLER LLC

7. Remove old grommets (2) from cylinder body (1).

INSTALLATION

RESERVOIR

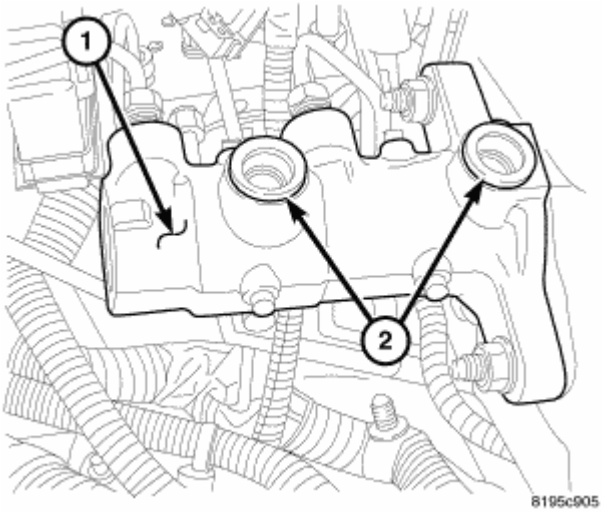

Fig. 74: Identifying Old Grommets & Cylinder Body
Courtesy of CHRYSLER LLC

CAUTION: Do not use any type of tool to install the grommets (2). Tools may cut, or tear the grommets creating a leak problem after installation. Install the grommets using finger pressure only and insure that the grommets are properly seated and checked for leaks after installation.

1. Lubricate new grommets (2) with clean brake fluid and Install new grommets (2) onto reservoir outlets

(1). Use finger pressure to install and seat grommets.

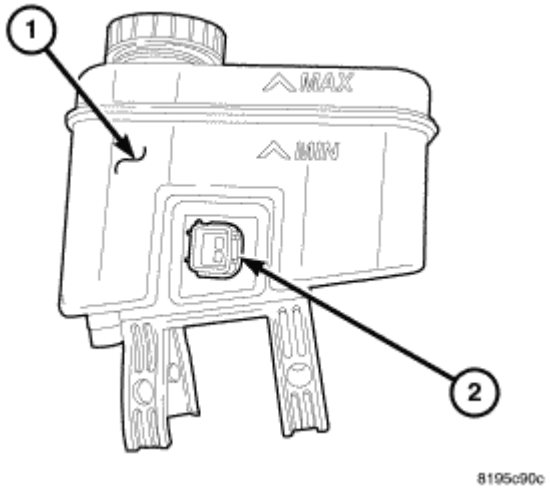

Fig. 75: Identifying Master Cylinder Reservoir
Courtesy of CHRYSLER LLC

2. Start reservoir (1) and grommets into holes on master cylinder.

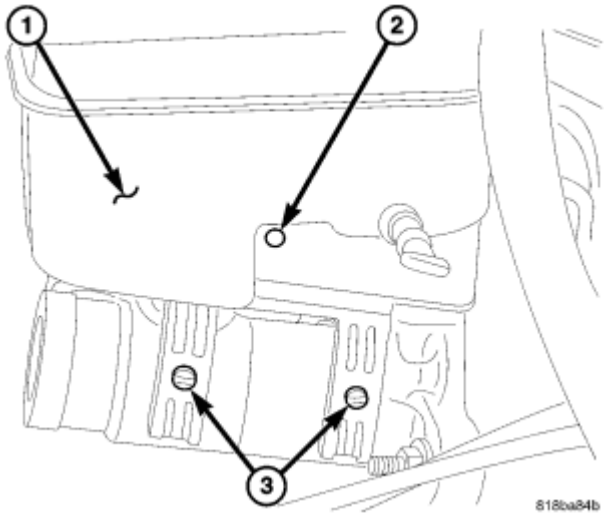

Fig. 76: Identifying Reservoir & Tabs
Courtesy of CHRYSLER LLC

3. Then rock reservoir (1) back and forth while pressing downward to seat it in the holes on the master cylinder. **Make sure the four tabs are securely seated over the nubs (3).**

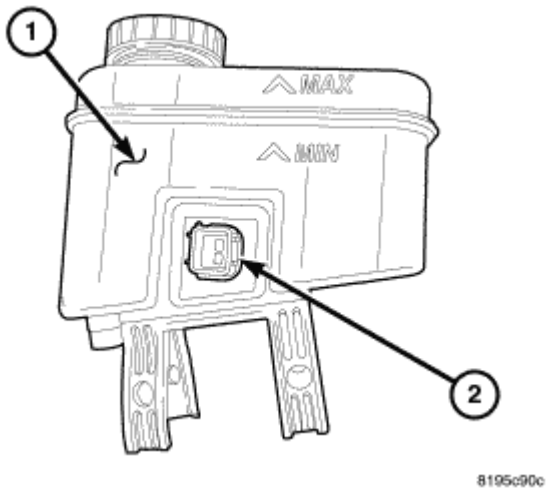

Fig. 77: Identifying Master Cylinder Reservoir
Courtesy of CHRYSLER LLC

4. Install the fluid level sensor (2) if removed by just inserting the sensor in the reservoir until the tabs click.

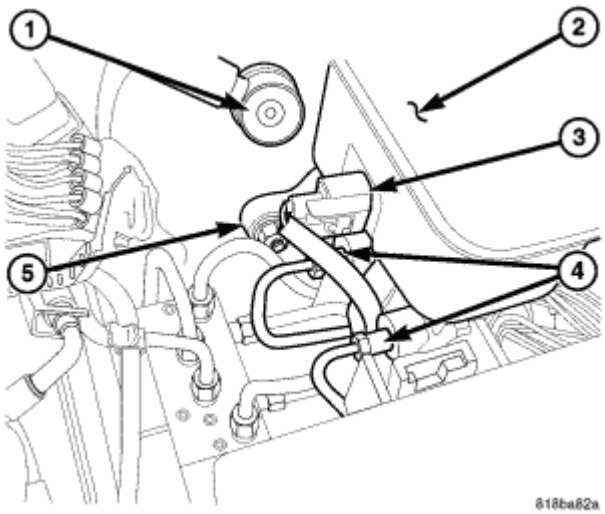

Fig. 78: Identifying Reservoir, Fluid Level Electrical Connector, Brake Lines, Mounting Nuts & Booster Check Valve
Courtesy of CHRYSLER LLC

5. Reconnect the electrical connector (3) to the fluid reservoir level switch.
6. Remove the prop rod from the vehicle.
7. Fill and bleed base brake system, see **STANDARD PROCEDURE**.

SUPPORT PLATE

REMOVAL

SUPPORT PLATE

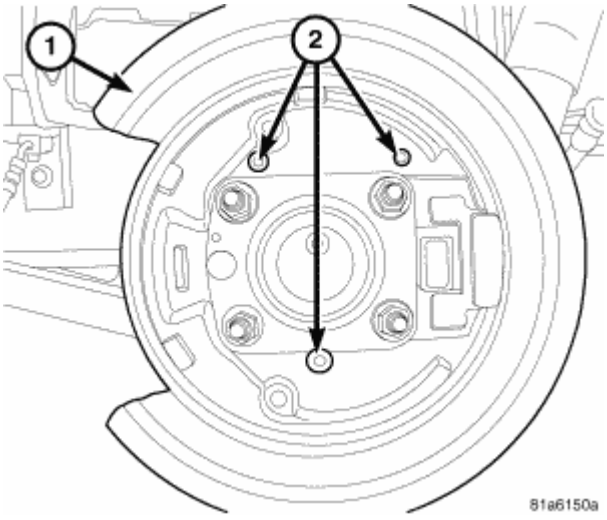

Fig. 79: Identifying Support Plate & Attaching Bolts
Courtesy of CHRYSLER LLC

1. Remove wheel and tire assembly.
2. Remove the disc brake caliper. See **REMOVAL**.
3. Remove the rotor, see **REMOVAL**.
4. Remove the axle shaft, refer to **REMOVAL** .
5. Remove the park brake shoes, see **REMOVAL**.
6. Remove the bolts (2) attaching the support plate (1) to the axle and remove the support plate (1).

INSTALLATION

SUPPORT PLATE

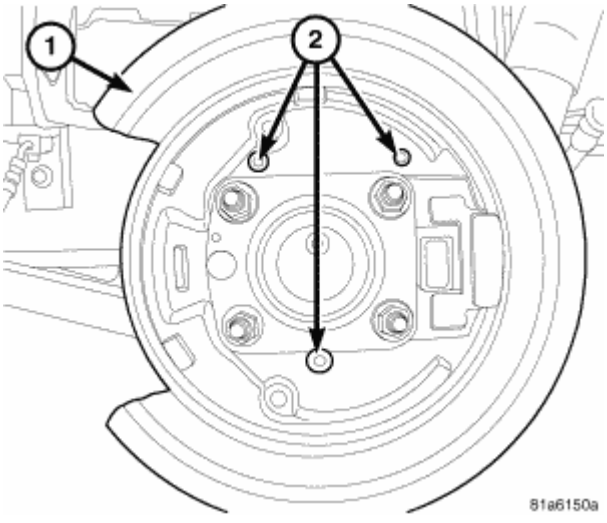

Fig. 80: Identifying Support Plate & Attaching Bolts
Courtesy of CHRYSLER LLC

1. Install support plate (1) on axle flange. Tighten attaching bolts (2) to 115 N.m (85 ft. lbs.).
2. Install the park brake shoes, see **INSTALLATION**.
3. Install axle shaft, refer to **INSTALLATION** .
4. Adjust brake shoes to drum with brake gauge. See **ADJUSTMENTS**.
5. Install the rotor. See **INSTALLATION**.
6. Install the caliper. See **INSTALLATION**.
7. Install the wheel and tire assembly. Refer to **STANDARD PROCEDURE** .

PARKING BRAKE

DESCRIPTION

PARKING BRAKE

The parking brake is a hand lever and cable operated system used to apply the rear brakes.

OPERATION

PARKING BRAKE

A hand operated lever in the passenger compartment is the main application device. The front cable is connected between the hand lever and the rear cables with an equalizer.

The rear cables are connected to the actuating lever on each primary brake shoe. The levers are attached to the brake shoes by a pin either pressed into, or welded to the lever. A clip is used to secure the pin in the brake shoe. The pin allows each lever to pivot independently of the brake shoe.

To apply the parking brakes, the hand lever is pulled upward. This pulls the rear brake shoe actuating levers forward, by means of a tensioner and cables. As the actuating lever is pulled forward, the parking brake strut (which is connected to both shoes), exerts a linear force against the secondary brake shoe. This action presses the secondary shoe into contact with the drum. Once the secondary shoe contacts the drum, force is exerted through the strut. This force is transferred through the strut to the primary brake shoe causing it to pivot into the drum as well.

A gear type ratcheting mechanism is used to hold the lever in an applied position. Parking brake release is accomplished by the hand lever release button.

A parking brake switch is mounted on the parking brake lever and is actuated by movement of the lever. The switch, which is in circuit with the red warning light in the dash, will illuminate the warning light whenever the parking brakes are applied.

Parking brake is self-adjusting when the lever is pulled. The cable tensioner, once adjusted at the factory, should not need further adjustment under normal circumstances.

ADJUSTMENTS

PARKING BRAKE LOCK OUT

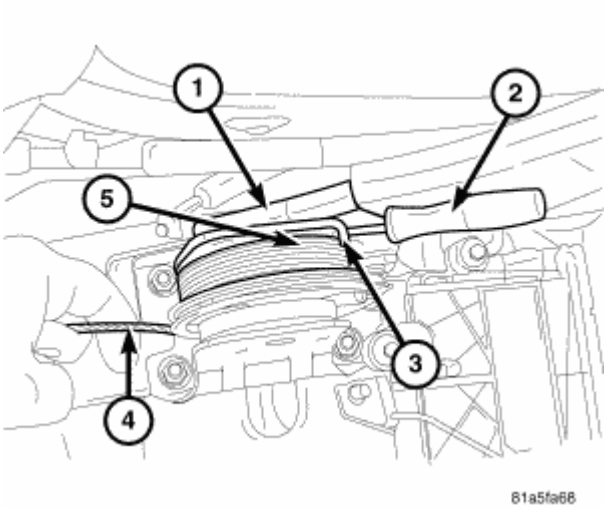

Fig. 81: Parking Brake Lock Out
Courtesy of CHRYSLER LLC

NOTE: The parking brake is self-adjusting, it can not be adjusted.

1. Remove the center floor console. Refer to **REMOVAL** .
2. With lever in DOWN position, pull up on the core cable (4) rotating the drum (5) until the drum cut-out aligns with hole on lever tab (3), then install a punch (2) in this hole and drum cut-out. Release grasp on core cable.
3. The park brake system is now locked out to perform necessary repairs.

CABLES

REMOVAL

REAR PARKING BRAKE CABLES

1. Lock out the parking brake cables. See **ADJUSTMENTS**.

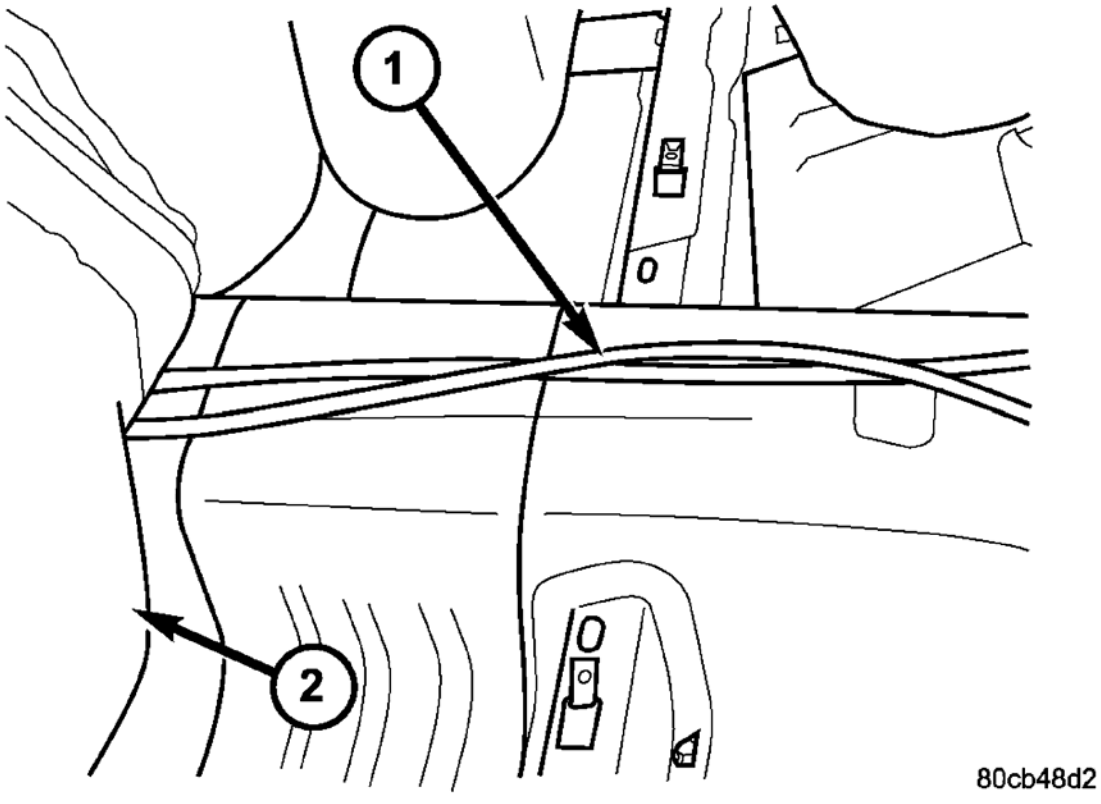

Fig. 82: Mounting Brackets
Courtesy of CHRYSLER LLC

1 - PARK BRAKE CABLES 2 - CARPET

2. Remove the rear seat. Refer to **REMOVAL** .
3. Pull the carpet forward far enough in the rear to gain access to the two parking brake cables through the floor.

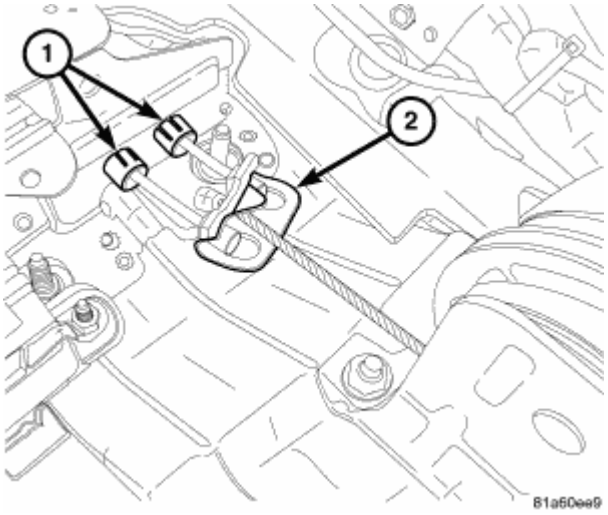

Fig. 83: Identifying Cables & Equalizer
Courtesy of CHRYSLER LLC

4. Disconnect the two cables (1) from the equalizer (2) and then remove the cables front the mount using a proper sized box end wrench over the tangs.

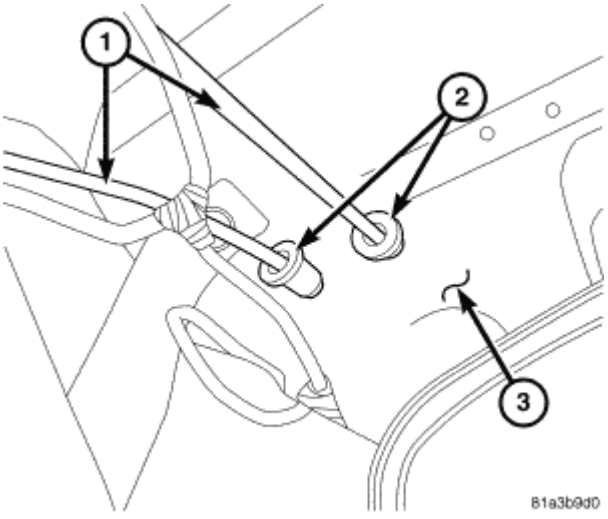

Fig. 84: Identifying Cables, Floor & Grommets
Courtesy of CHRYSLER LLC

5. Push the cables (1) through the floor (3) with the grommets (2).

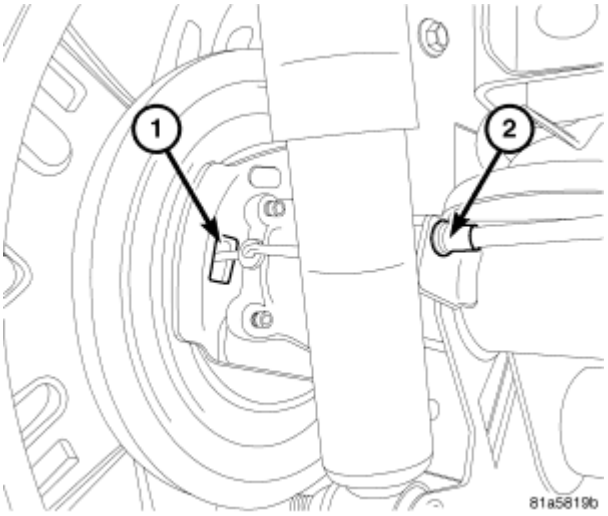

Fig. 85: Identifying Brake Lever & Brake Cable
Courtesy of CHRYSLER LLC

6. Remove the stabilizer bar bracket retainer.
7. Remove the park brake cable from the stabilizer bar retainer and mount.
8. Remove the cable from the axle bracket with a proper sized box end wrench over the tangs.
9. Remove the brake cable (2) from the brake lever (3).

INSTALLATION

REAR PARKING BRAKE CABLES

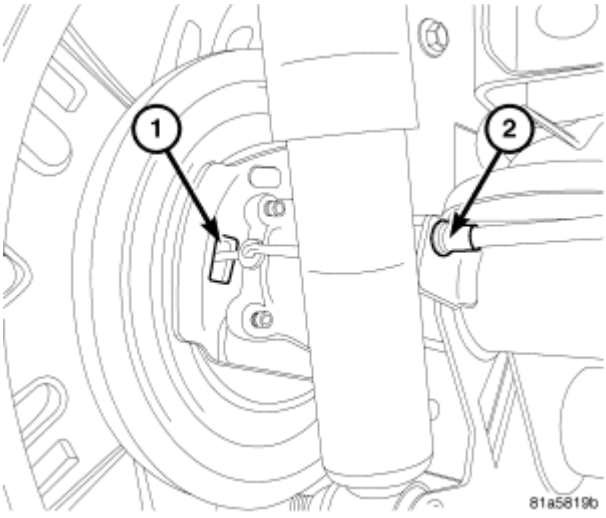

Fig. 86: Identifying Brake Lever & Brake Cable
Courtesy of CHRYSLER LLC

1. Install the cables (2) into the axle bracket.
2. Reconnect the cable to the park brake lever (1).

3. Install the park brake cable between the stabilizer bar retainer bracket and the mount. Tighten the bolts to 47 N.m (35 ft. lbs.).

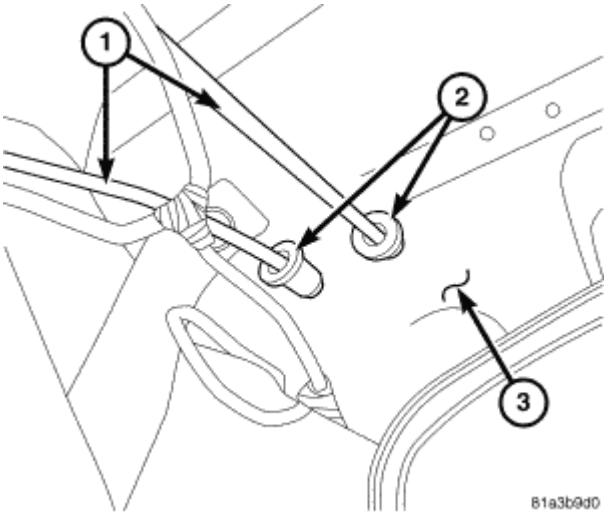

Fig. 87: Identifying Cables, Floor & Grommets
Courtesy of CHRYSLER LLC

4. Push the cables (1) through the floor (3) and seat the grommets (2).

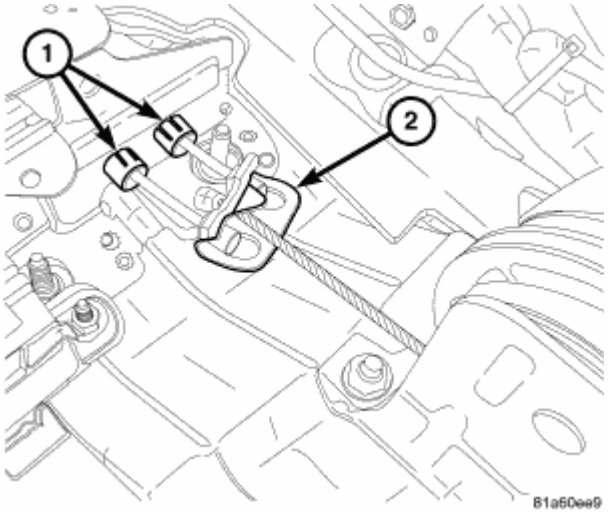

Fig. 88: Identifying Cables & Equalizer
Courtesy of CHRYSLER LLC

5. Reconnect the two cables (1) to the front mount and then to the equalizer (2).

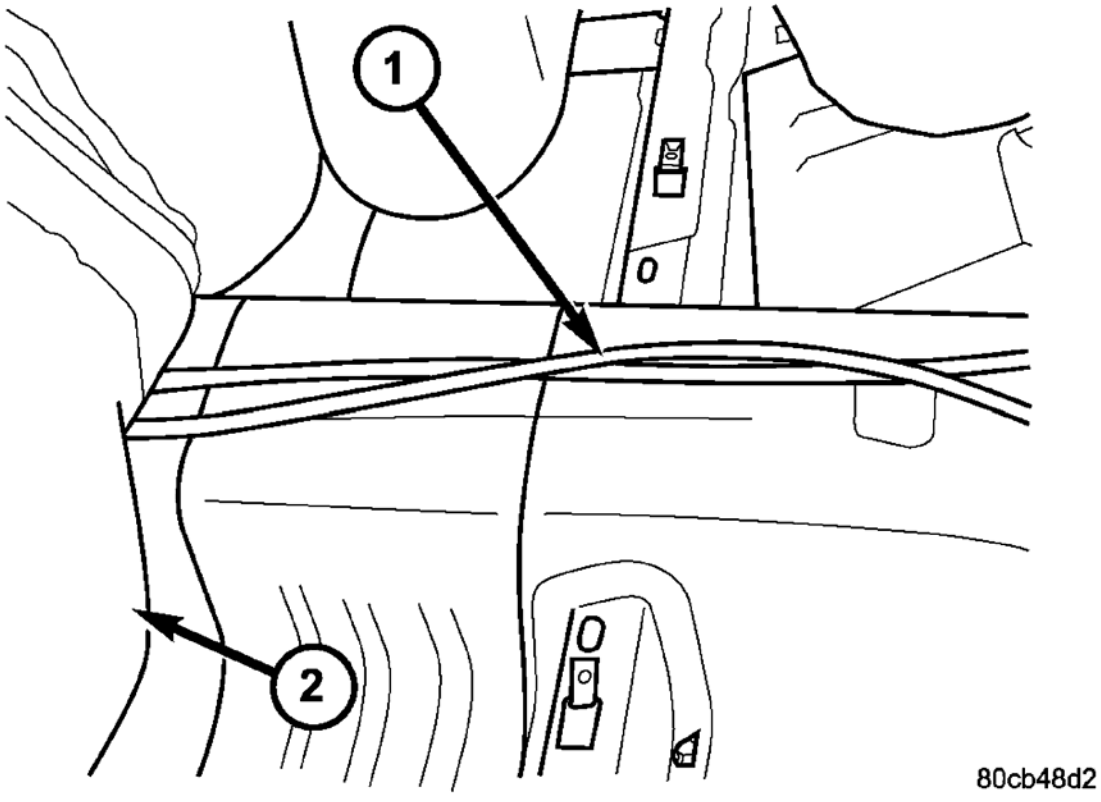

Fig. 89: Mounting Brackets
Courtesy of CHRYSLER LLC

1 - PARK BRAKE CABLES 2 - CARPET

6. Lay the carpet (2) back down in the rear.
7. Install the rear seat. Refer to **INSTALLATION** .
8. Remove the lock out device on the lever.
9. Adjust the park brake shoes. See **ADJUSTMENTS**.
10. Test the parking brake.

LEVER

REMOVAL

PARKING BRAKE LEVER

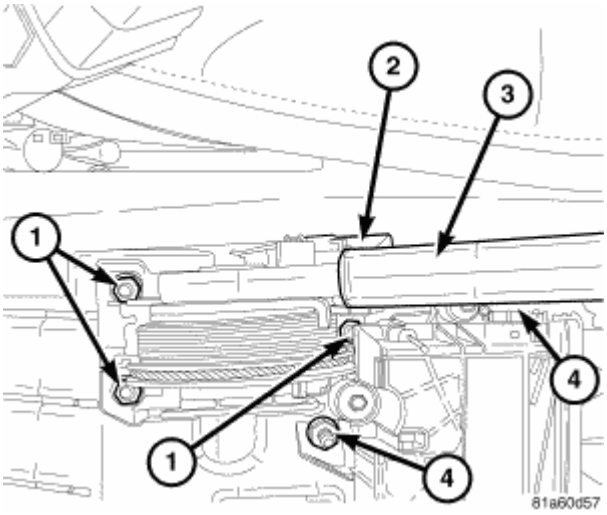

Fig. 90: Identifying Parking Brake Lever Assembly Mounting Nuts, Parking Brake Lamp Switch Wire, Lever Assembly & Occupant Restraint Controller Mounting Nuts
Courtesy of CHRYSLER LLC

1. Remove the center floor console, refer to **REMOVAL** .
2. Lock out the parking brakes. See **ADJUSTMENTS**.
3. Disengage the front cables from the equalizer.
4. Disconnect the parking brake lamp switch wire (2).
5. Remove the occupant restraint controller mounting nuts (4). Refer to **REMOVAL** .
6. Remove the parking brake lever assembly mounting nuts (1).
7. Remove the lever assembly (3).

INSTALLATION

PARKING BRAKE LEVER

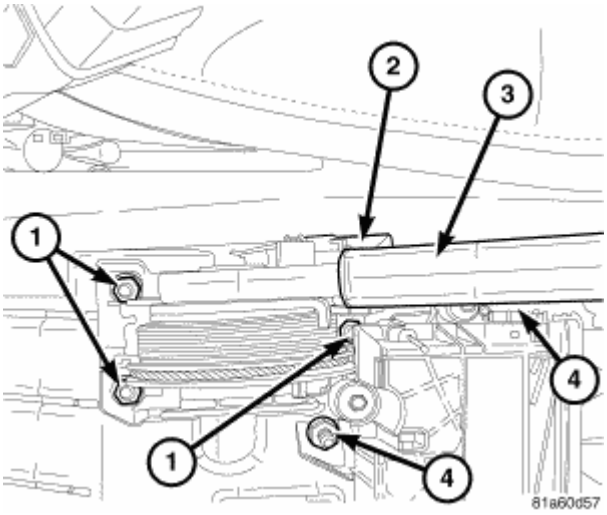

Fig. 91: Identifying Parking Brake Lever Assembly Mounting Nuts, Parking Brake Lamp Switch Wire,

Lever Assembly & Occupant Restraint Controller Mounting Nuts
Courtesy of CHRYSLER LLC

1. Install the parking brake lever assembly (3).
2. Install the parking brake lever assembly (3) to the mounting bolts and tighten the nuts (1) to 16 N.m (140 in. lbs.).
3. Engage the front cables to the equalizer.
4. Reconnect the parking brake lamp switch wire (2).
5. If installing a new parking brake lever remove the pin that comes on the lever when shipped.
6. If you are reinstalling the original park brake lever remove the lock out device at this time.
7. Install the occupant restraint controller. Refer to **INSTALLATION** .
8. Test the parking brake lever.
9. Install the center floor console, refer to **INSTALLATION** .

SHOES

DESCRIPTION

DRUM IN HAT PARK BRAKES

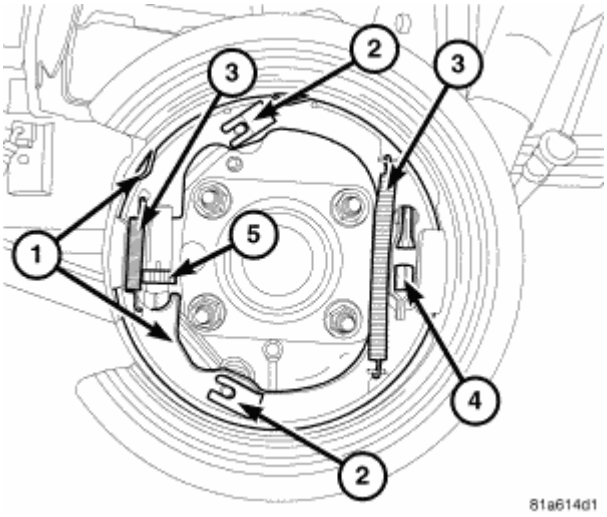

Fig. 92: Identifying Brake Shoes
Courtesy of CHRYSLER LLC

Drum in hat park brakes are dual shoe, internal expanding units with an automatic self adjusting mechanism.

OPERATION

DRUM IN HAT PARK BRAKE

When the parking brake lever is pulled the brake cable pulls the brake shoes outward against the brake drum. When the brake lever is released the return springs attached to the brake shoes pull the shoes back to their

original position.

REMOVAL

PARK BRAKE SHOES - DRUM IN HAT

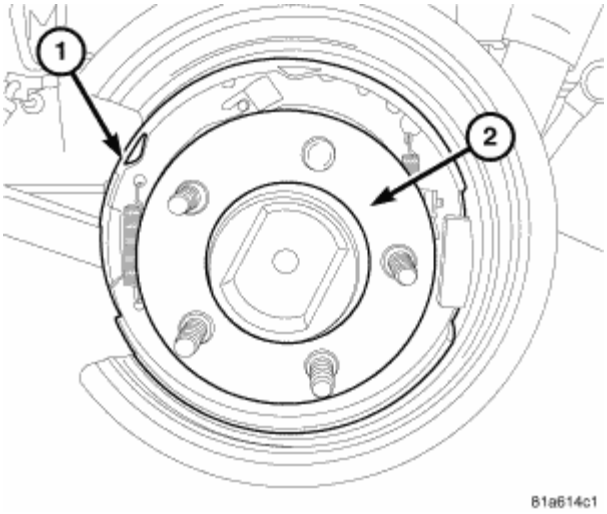

Fig. 93: Identifying Rear Park Brake Shoes & Axle Shaft
Courtesy of CHRYSLER LLC

1. Raise and support the vehicle.
2. Remove the tire and wheel assembly.
3. Remove the disc brake caliper, see **REMOVAL**.
4. Remove the disc brake rotor, see **REMOVAL**.
5. Remove the axle shaft (2). Refer to **REMOVAL** .

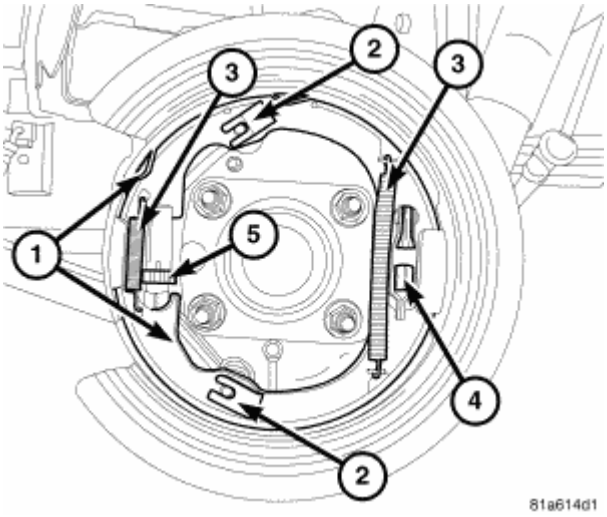

Fig. 94: Identifying Brake Shoes
Courtesy of CHRYSLER LLC

6. Disassemble the rear park brake shoes (1).

CLEANING

REAR DRUM IN HAT BRAKE

Clean the individual brake components, including the support plate exterior, with a water dampened cloth or with brake cleaner. Do not use any other cleaning agents. Remove light rust and scale from the brake shoe contact pads on the support plate with fine sandpaper.

INSPECTION

REAR DRUM IN HAT BRAKE

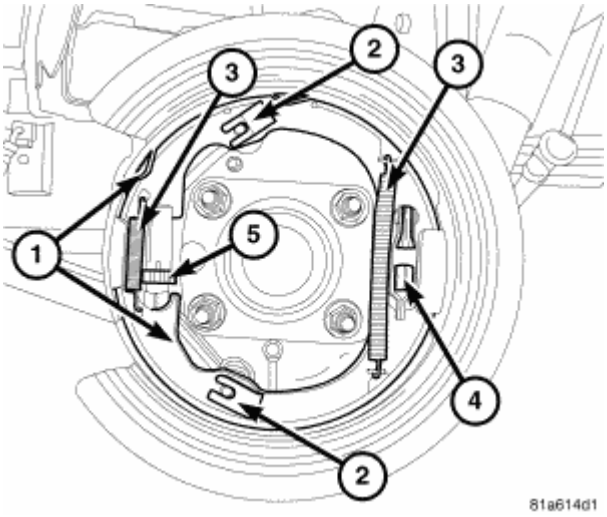

Fig. 95: Identifying Brake Shoes
Courtesy of CHRYSLER LLC

As a general rule, riveted brake shoes (1) should be replaced when worn to within 0.78 mm (1/32 in.) of the rivet heads. Bonded lining should be replaced when worn to a thickness of 1.6 mm (1/16 in.).

Examine the lining contact pattern to determine if the shoes are bent or the drum is tapered. The lining should exhibit contact across its entire width. Shoes exhibiting contact only on one side should be replaced and the drum checked for runout or taper.

Inspect the adjuster screw assembly. Replace the assembly if the star wheel or threads are damaged, or the components are severely rusted or corroded.

Discard the brake springs and retainer components if worn, distorted or collapsed. Also replace the springs if a brake drag condition had occurred. Overheating will distort and weaken the springs.

Inspect the brake shoe contact pads on the support plate, replace the support plate if any of the pads are worn or rusted through. Also replace the plate if it is bent or distorted.

INSTALLATION

PARK BRAKE SHOES - DRUM IN HAT

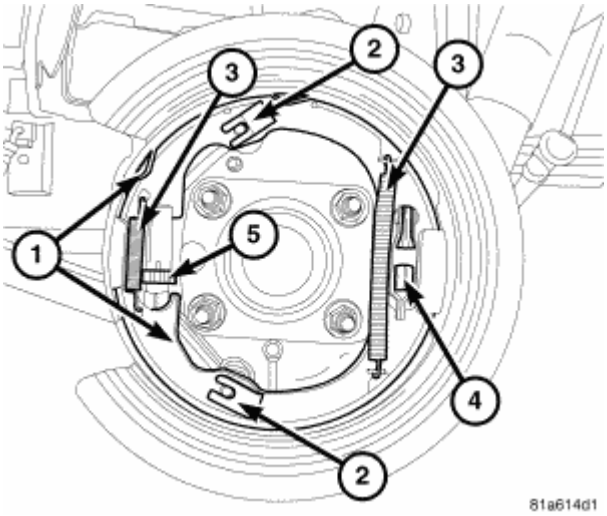

Fig. 96: Identifying Brake Shoes
Courtesy of CHRYSLER LLC

NOTE: On a new vehicle or after parking brake lining replacement, it is recommended that the parking brake system be conditioned prior to use. This is done by making one stop from 25 mph on dry pavement or concrete using light to moderate force on the parking brake lever.

1. Reassemble the rear park brake shoes (1).
2. Adjust the rear brake shoes (5). See **ADJUSTMENTS**.

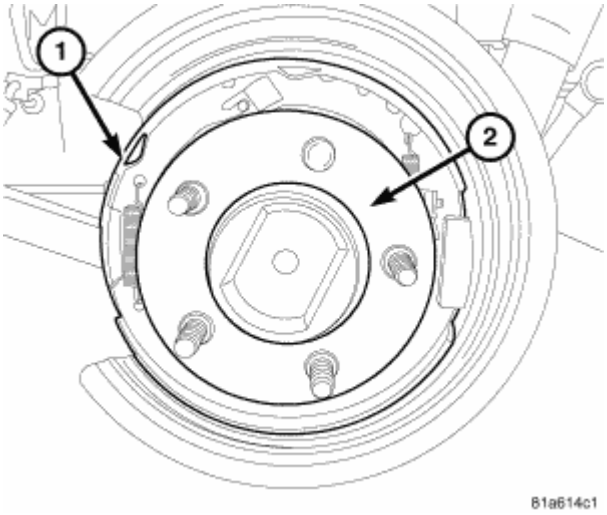

Fig. 97: Identifying Rear Park Brake Shoes & Axle Shaft
Courtesy of CHRYSLER LLC

3. Install the axle shaft (2). Refer to **INSTALLATION** .
4. Install the disc brake rotor. See **INSTALLATION**.
5. Install the disc brake caliper. See **INSTALLATION**.
6. Install the tire and wheel assembly. Refer to **STANDARD PROCEDURE** .
7. Lower the vehicle.

ADJUSTMENTS

REAR DRUM IN HAT PARK BRAKE (ROTOR REMOVED)

Under normal circumstances, the only time adjustment is required is when the shoes are replaced, removed for access to other parts, or when one or both rotors are replaced.

Adjustment can be made with a standard brake gauge or with adjusting tool. Adjustment is performed with the complete brake assembly installed on the backing plate.

CAUTION: Before adjusting the park brake shoes be sure that the park brake lever is in the fully released position. If park brake lever is not in the fully released position, the park brake shoes can not be accurately adjusted.

1. Raise vehicle.
2. Remove tire and wheel.
3. Remove disc brake caliper from caliper adapter. See **REMOVAL**.
4. Remove rotor from the axle shaft. See **REMOVAL**.

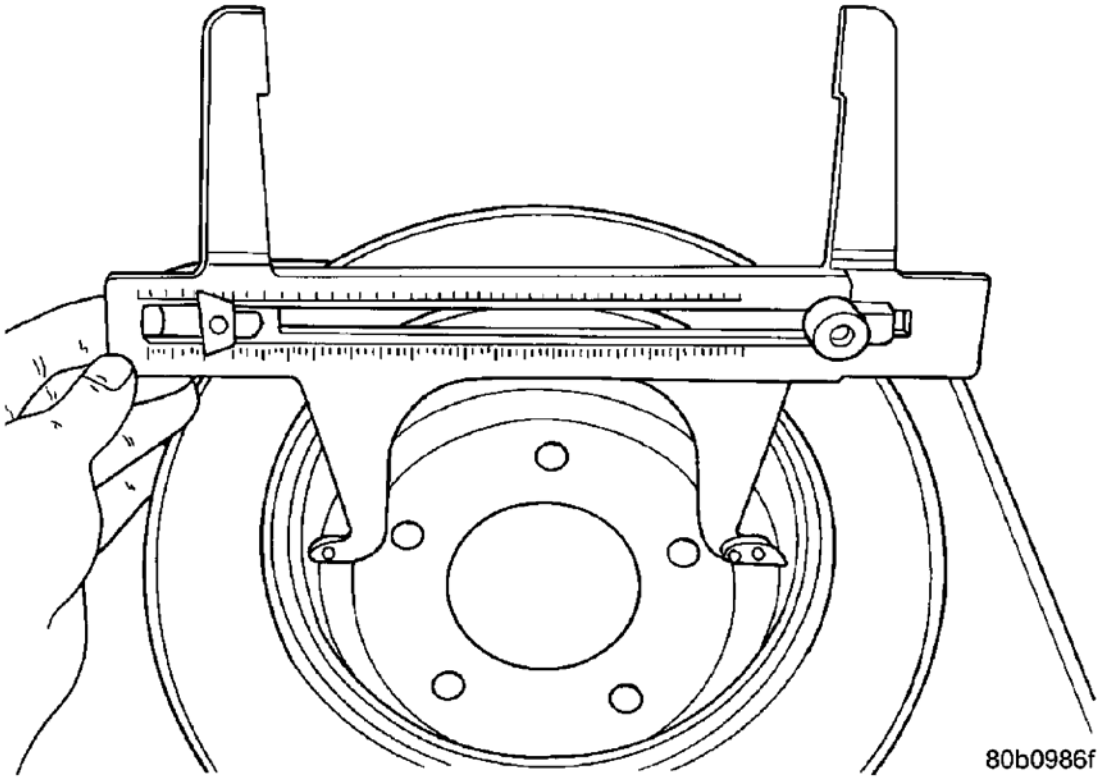

Fig. 98: Measuring Park Brake Drum Diameter
Courtesy of CHRYSLER LLC

NOTE: When measuring the brake drum diameter, the diameter should be measured in the center of the area in which the park brake shoes contact the surface of the brake drum.

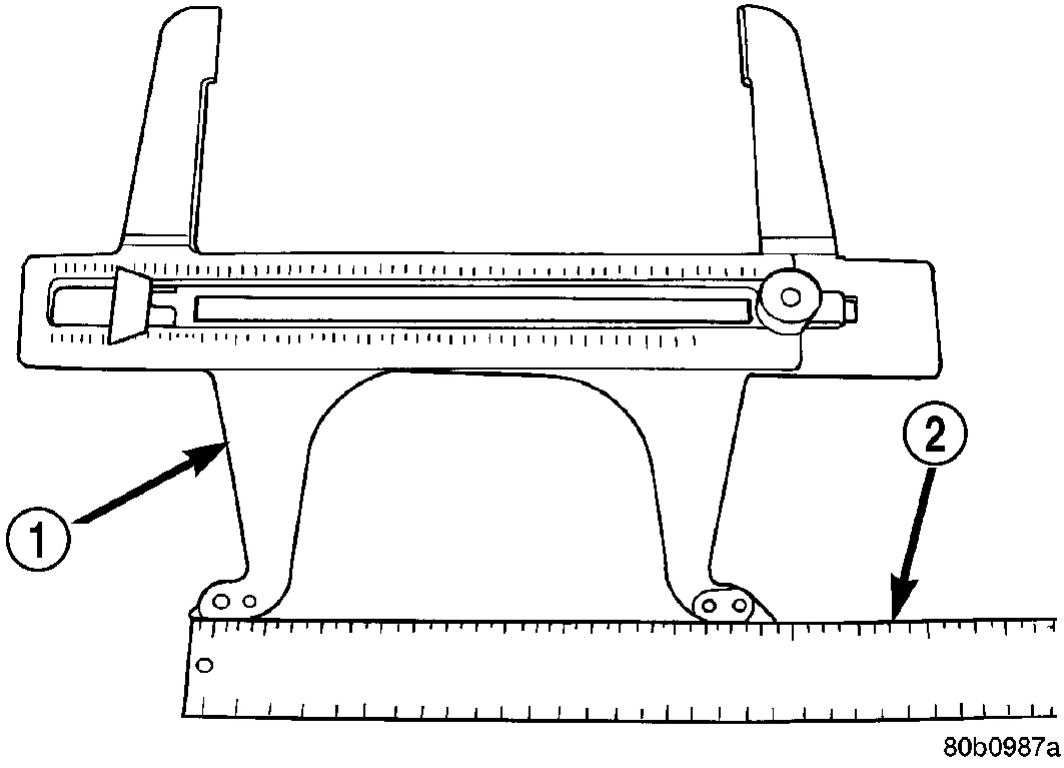

Fig. 99: Reading Park Brake Drum Diameter
Courtesy of CHRYSLER LLC

1 - SPECIAL TOOL C-3919
2 - RULER

5. Using Brake Shoe Gauge, Special Tool C-3919 (1), or equivalent, **accurately** measure the inside diameter of the park brake drum portion of the rotor. See **Fig. 98**.
6. Using a ruler (2) that reads in 64th of an inch, accurately read the measurement of the inside diameter of the park brake drum from the special tool. See **Fig. 99**.

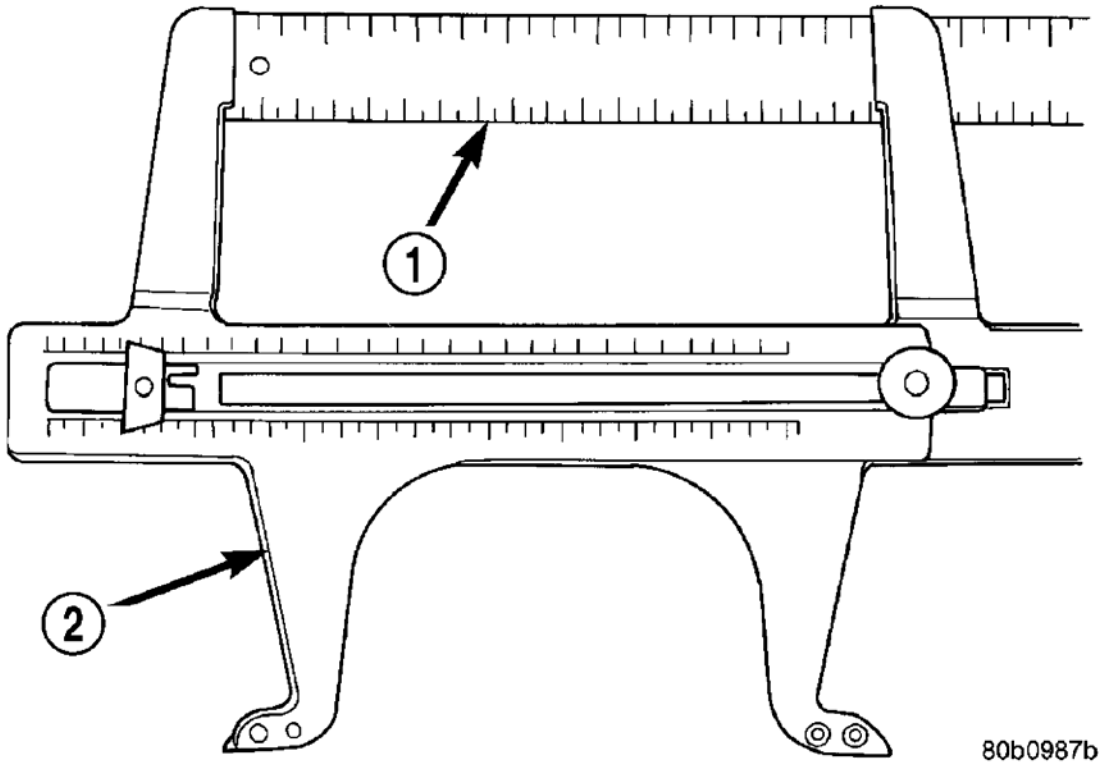

Fig. 100: Setting Gauge To Park Brake Shoe Measurement
Courtesy of CHRYSLER LLC

1 - RULER 2 - SPECIAL TOOL C-3919

7. Reduce the inside diameter measurement of the brake drum that was taken using Special Tool C-3919 (2) by 1/64 of an inch. Reset Gauge, Brake Shoe, Special Tool C-3919 (2) or the equivalent used, so that the outside measurement jaws are set to the reduced measurement. See **Fig. 100**.
8. Place Gauge, Brake Shoe, Special Tool C-3919 (2) , or equivalent over the park brake shoes. The special tool must be located diagonally across at the top of one shoe and bottom of opposite shoe (widest point) of the park brake shoes.
9. Using the star wheel adjuster, adjust the park brake shoes until the lining on the park brake shoes just touches the jaws on the special tool.
10. Repeat step 8 above and measure shoes in both directions.
11. Install brake rotor on the axleshaft. See **INSTALLATION**.
12. Rotate rotor to verify that the park brake shoes are not dragging on the brake drum. If park brake shoes are dragging, remove rotor and back off star wheel adjuster one notch and recheck for brake shoe drag against drum. Continue with the previous step until brake shoes are not dragging on brake drum.
13. Install disc brake caliper on caliper adapter. See **INSTALLATION**.
14. Install wheel and tire.

15. Tighten the wheel mounting nuts in the proper sequence until all nuts are torqued to half the specified torque. Then repeat the tightening sequence to the full specified torque of 129 N.m (95 ft. lbs.).
16. Lower vehicle.

CAUTION: Before moving vehicle, pump brake pedal several times to ensure the vehicle has a firm enough pedal to stop the vehicle.

NOTE: After parking brake lining replacement, it is recommended that the parking brake system be conditioned prior to use. This is done by making one stop from 25 mph on dry pavement or concrete using light to moderate force on the parking brake hand lever.

17. Road test the vehicle to ensure proper function of the vehicle's brake system.

REAR DRUM IN HAT PARK BRAKE (ROTOR INSTALLED) USING ADJUSTMENT TOOL

Adjustment can be made with a standard brake gauge or with adjusting tool. Adjustment is performed with the complete brake assembly installed on the backing plate.

1. Be sure parking brake lever is fully released.
2. Raise vehicle so rear wheels can be rotated freely.
3. Remove plug from each access hole in brake support plates.
4. Insert adjusting tool through support plate access hole and engage tool in teeth of adjusting screw star wheel. See **Fig. 101**.

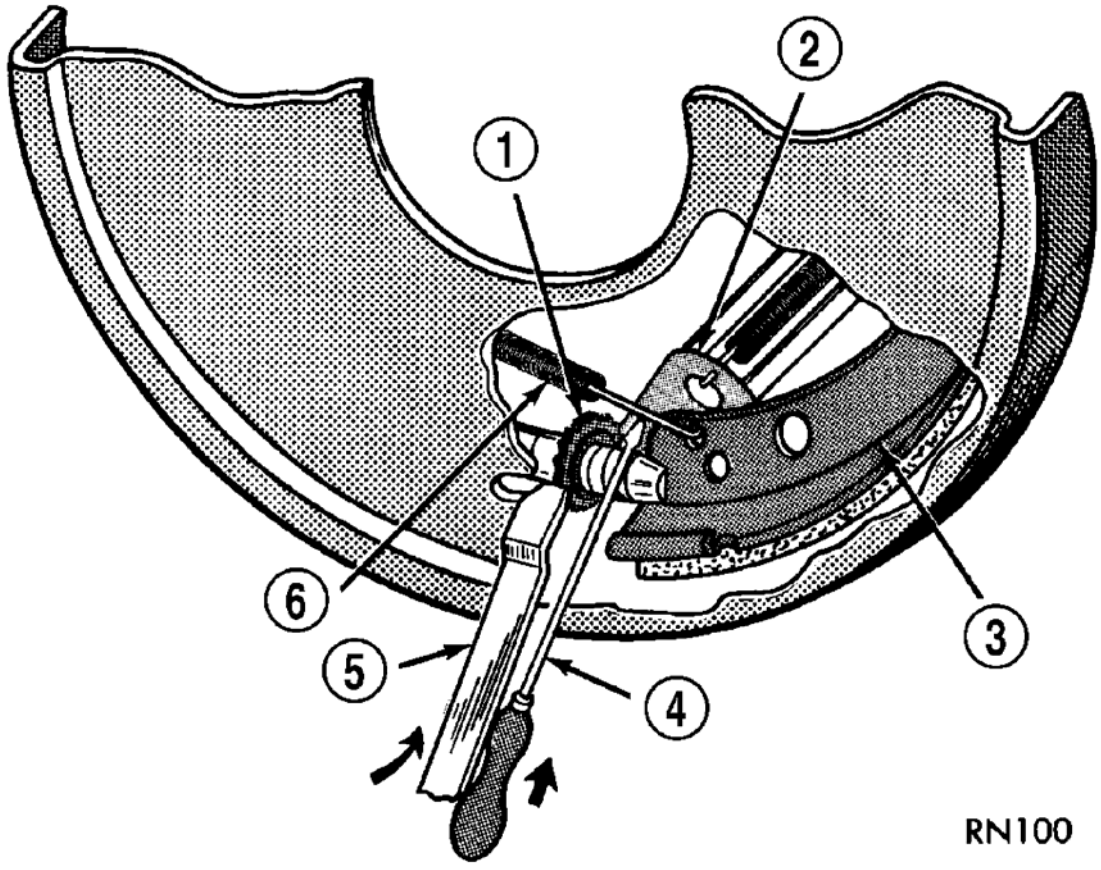

Fig. 101: Brake Adjustment
Courtesy of CHRYSLER LLC

1 - STAR WHEEL
2 - LEVER
3 - BRAKE SHOE WEB
4 - SCREWDRIVER
5 - ADJUSTING TOOL
6 - ADJUSTER SPRING

5. Rotate adjuster screw star wheel (move tool handle upward) until slight drag can be felt when wheel is rotated.
6. Push and hold adjuster lever away from star wheel with thin screwdriver.
7. Back off adjuster screw star wheel until brake drag is eliminated.
8. Repeat adjustment at opposite wheel. Be sure adjustment is equal at both wheels.
9. Install support plate access hole plugs.
10. Lower vehicle.
11. Apply park brake hand lever and make sure park brakes hold the vehicle stationary.

12. Release park brake hand lever.