

# BRAKE SYSTEM

## 1998 Mitsubishi Galant

1997-98 BRAKES  
Mitsubishi - Disc & Drum

Diamante, Eclipse, Galant, Mirage, Montero, Montero Sport,  
3000GT

### INTRODUCTION

This article contains information on repair and service of basic hydraulic brake system. If vehicle is equipped with anti-lock brakes, also see appropriate ANTI-LOCK article.

### DESCRIPTION

Brake system consists of a master cylinder, vacuum power brake booster, proportioning valve and self-adjusting assembly. Montero has a Load-Sensing Proportioning Valve (LSPV). All models are equipped with front disc brakes and either rear disc or drum brakes. Parking brake assembly activates rear brakes.

### BLEEDING BRAKE SYSTEM

#### BLEEDING PROCEDURES

Bleed brakes whenever hydraulic lines are opened or pedal feels spongy. Bleed system in appropriate sequence. See BRAKE LINE BLEEDING SEQUENCE table. Use only DOT 3 or DOT 4 approved fluid and DO NOT mix fluid types.

#### BRAKE LINE BLEEDING SEQUENCE

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Application	Sequence
Diamante, Eclipse, Galant, Mirage & 3000GT	RR, LF, LR, RF
Montero	RR, LR, LSPV, RF, LF
Montero Sport	RR, LR, RF, LF

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### ADJUSTMENTS

#### BRAKE PEDAL HEIGHT, FREE PLAY & CLEARANCE

1) To measure brake pedal height, pull up carpet under brake pedal. Measure distance between floor board and middle of brake pedal pad surface with brake pedal released. See BRAKE PEDAL HEIGHT SPECIFICATIONS table.

2) To adjust pedal height, separate connector from stoplight switch, and loosen switch lock nut. Back-off switch so it does not contact brake pedal arm. Loosen master cylinder push rod lock nut. Adjust brake pedal height by rotating master cylinder push rod until brake pedal height is within specification.

#### BRAKE PEDAL HEIGHT SPECIFICATIONS

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Application	Pedal Height: In. (mm)
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Diamante, Eclipse, Montero Sport & Galant .....	6.9-7.1 (175-181)
Mirage .....	6.4-6.6 (164-167)
Montero .....	7.3-7.5 (186-191)
3000GT .....	7.0-7.2 (177-182)

3) Tighten lock nut, and ensure brake pedal height is within specification. Start engine to evacuate brake booster chamber. Stop engine, and apply brake several times to remove vacuum from brake booster.

4) Using hand pressure, depress brake pedal to measure free play before resistance is felt. Free play distance for all models is 0.10-0.31" (3-8 mm). If distance is not within specification, it is probably caused by excessive play between the brake pedal arm and the clevis pin. Check and replace as necessary.

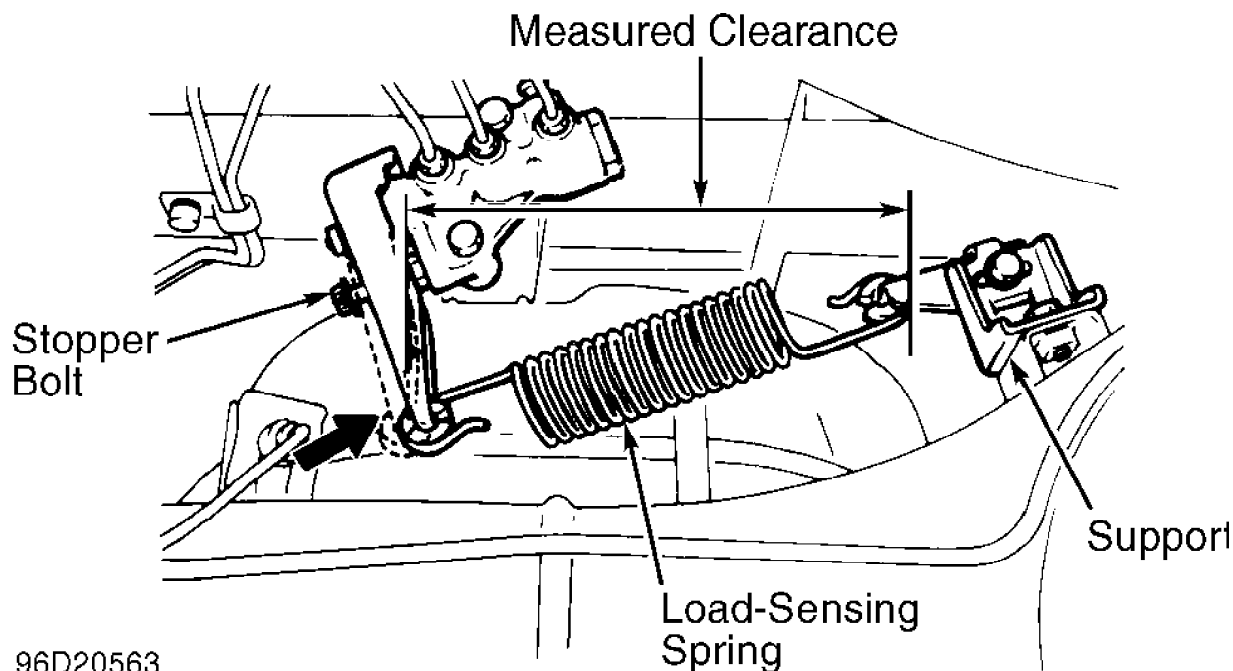
5) Start engine and apply 110 lbs. (490 N) of pressure to brake pedal. With the carpet pulled back, measure the distance between the brake pedal and the floorboard. If the distance is not 3.1-3.5" (80-90 mm) check for air in brake hydraulic system, brake adjustment or defective parking brake component or adjustment. Adjust or repair as necessary.

### LOAD-SENSING PROPORTIONING VALVE (LSPV)

Montero

1) Park vehicle on level surface. Remove excess weight from vehicle. Make sure the lever is all the way towards the valve side. Measure length of entire spring. See Fig. 1.

If spring length is not within specification, adjust spring support until correct length is obtained. See LSPV SPRING LENGTH table.



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Fig. 1: Adjusting Load-Sensing Proportioning Valve Spring (Montero)  
Courtesy of Mitsubishi Motor Sales of America.

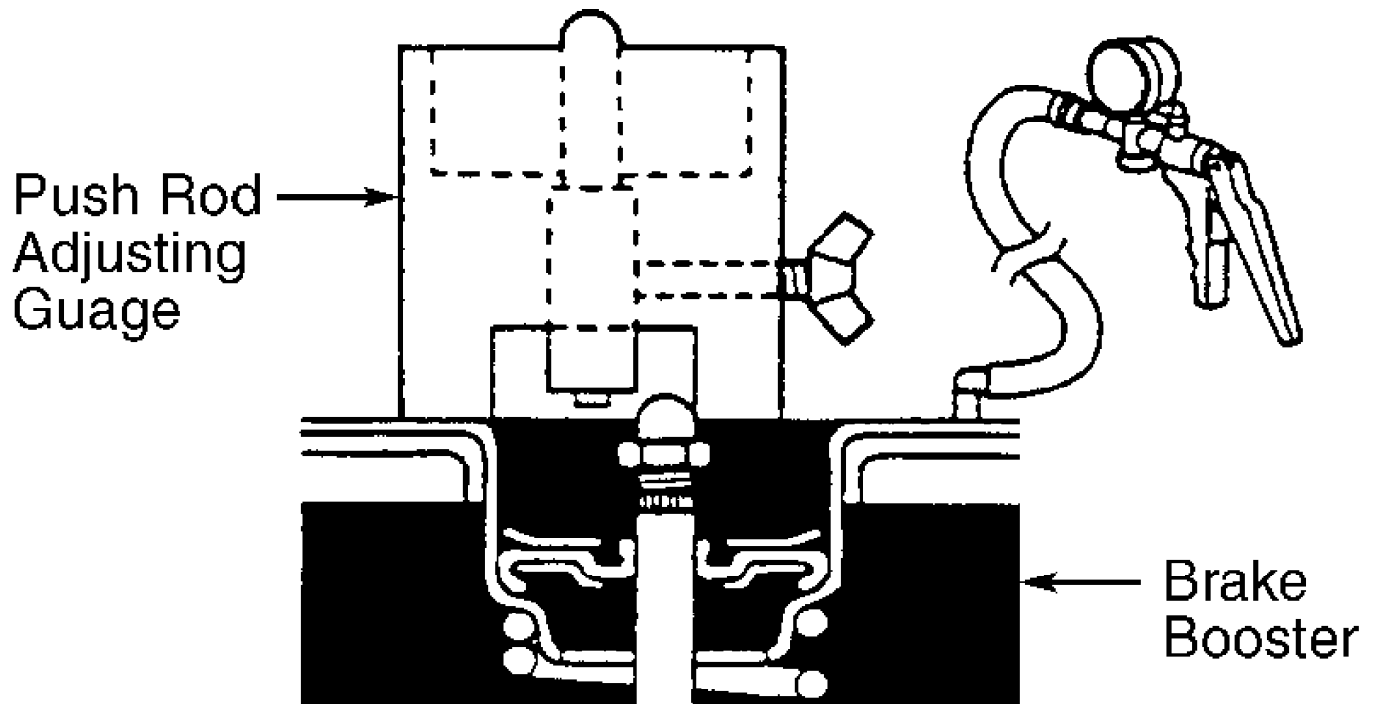
### BRAKE BOOSTER PUSH ROD

Adjustment (Except Diamante)

1) Place the Push Rod Adjusting Gauge (MB991714) in the master cylinder, position gauge shaft so it contacts master cylinder piston and tighten wing bolt.

2) Apply a vacuum of 9.7 psi (-66.7 kPa) for Eclipse, Galant, Montero and 3000GT and 19.6 psi (-66.7 kPa) for Mirage and Montero Sport to the brake booster using a hand held vacuum pump.

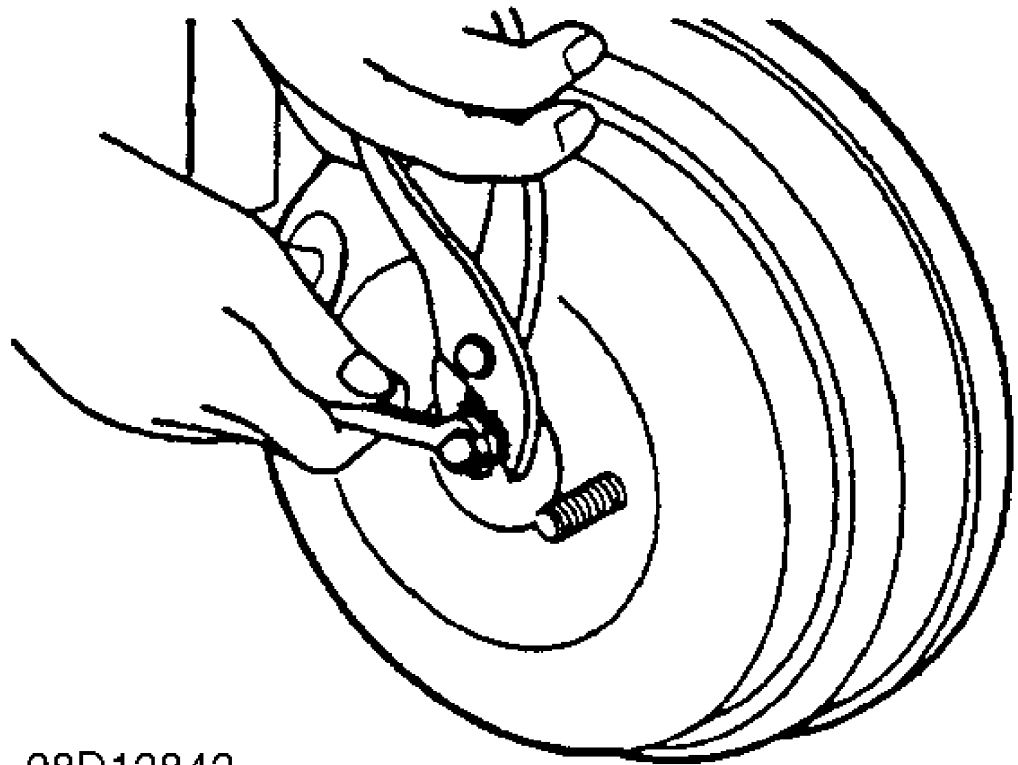
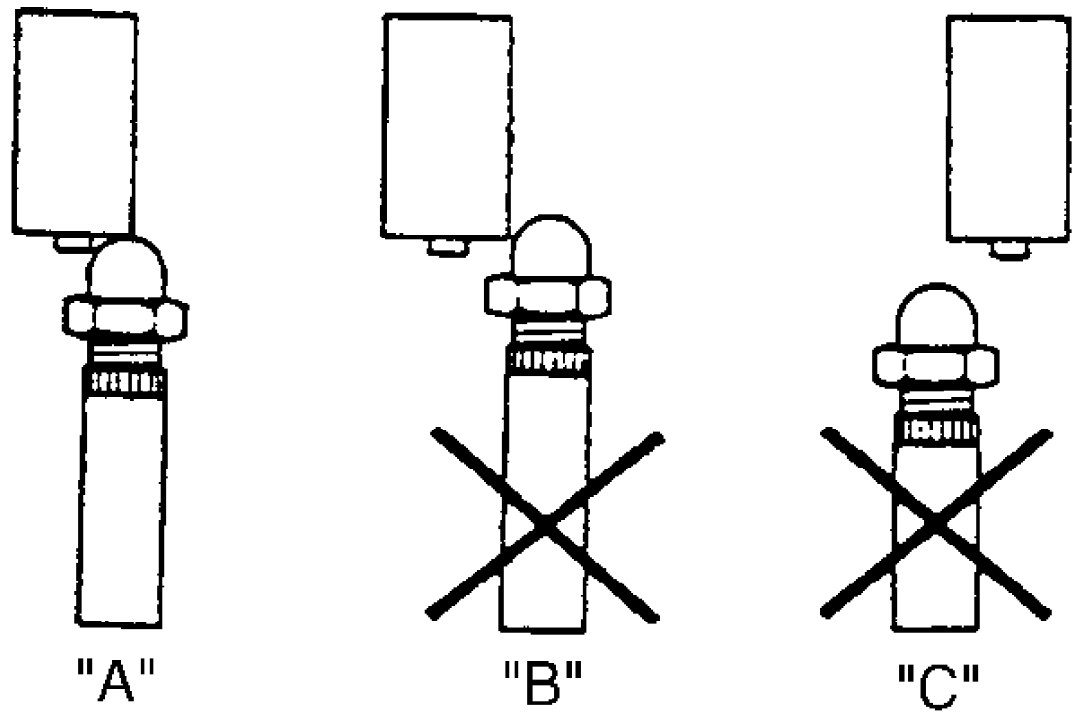
3) Rotate the gauge tool so it is positioned offset from center of the brake booster. See Fig. 2.



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Fig. 2: Push Rod Adjusting Gauge Setup.  
Courtesy of Mitsubishi Motor Sales of America.

4) Move the gauge tool towards the center so the shaft contacts the end of the brake booster push rod. If contact is not as shown in position "A", shorten the rod if position "B" is present, or lengthening it if position "C" is present. See Fig. 3.



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Fig. 3: Adjusting Brake Booster Push Rod Clearance  
 Courtesy of Mitsubishi Motor Sales of America.

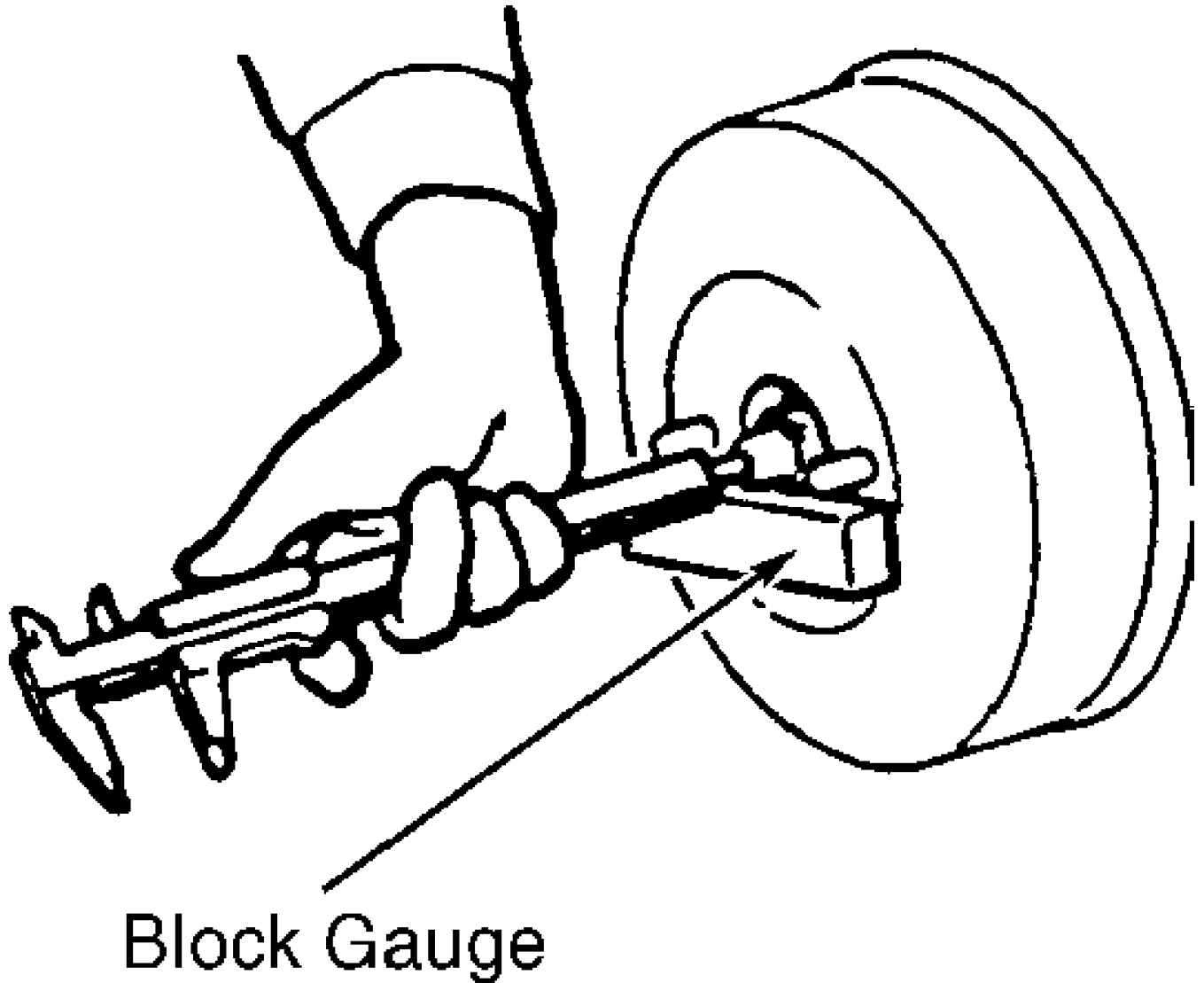
Adjustment (Diamante)

- 1) Start engine and depress the brake pedal at least two

times then switch the engine off.

2) Remove the master cylinder from the brake booster making sure the push rod is not disturbed and the brake pedal is not depressed after master cylinder removal.

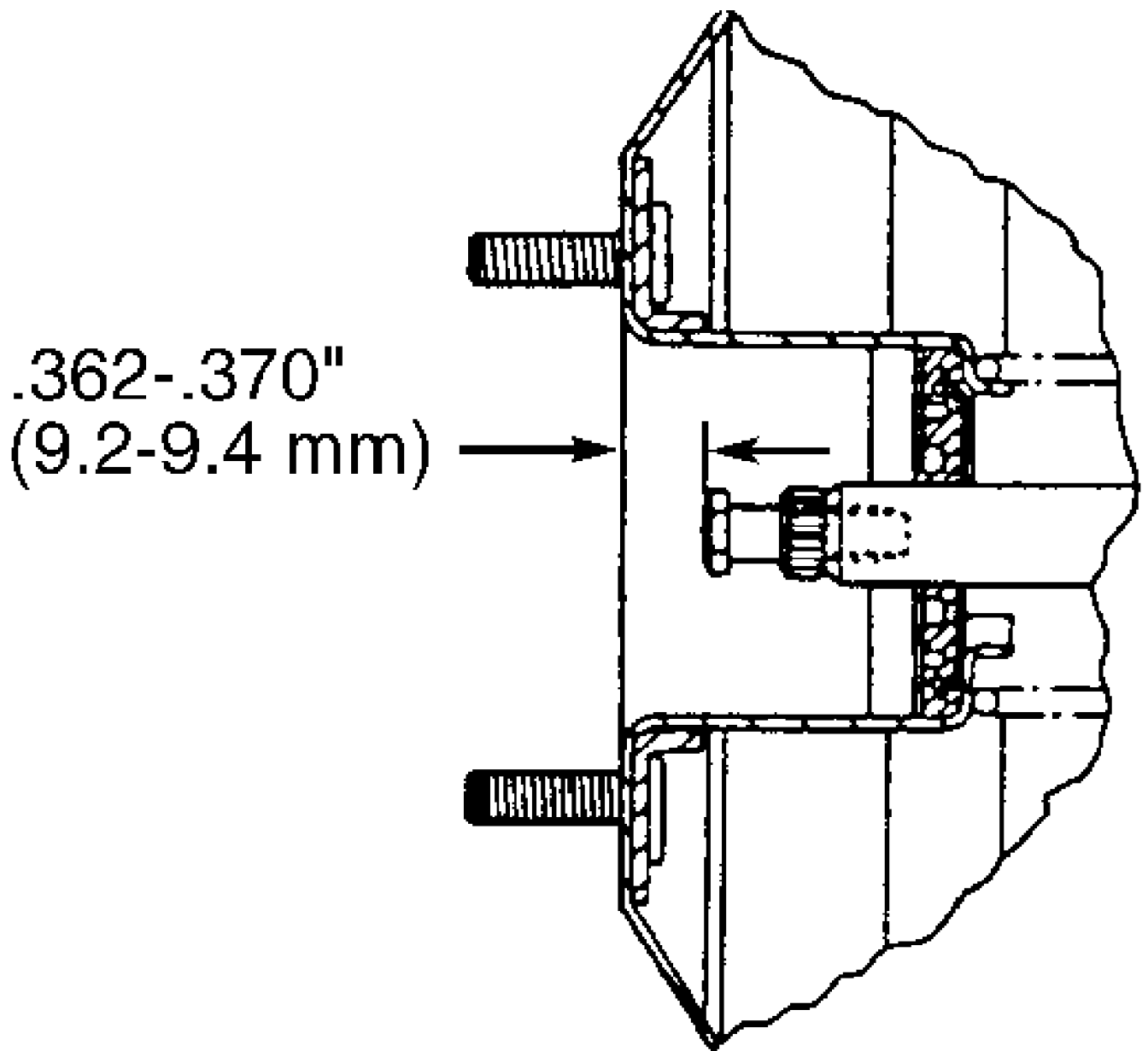
3) Using a Vernier Caliper and Block Gauge, measure the thickness of the block gauge and add .366" (9.3 mm) to the gauge thickness and set the caliper to this dimension. See Fig. 4.



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Fig. 4: Setting Caliper And Block Gauge (Diamante)  
Courtesy of Mitsubishi Motor Sales of America.

4) Check the push rod position with vernier caliper set to the calculated dimension. Specification range .362"-.370" (9.2-9.4 mm). See Fig. 5.



## PUSH ROD SETTING

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Fig. 5: Push Rod Setting (Diamante)  
Courtesy of Mitshbishi Motor Sales of America.

5) If clearance is NOT within range, turn push rod screw to correct length.

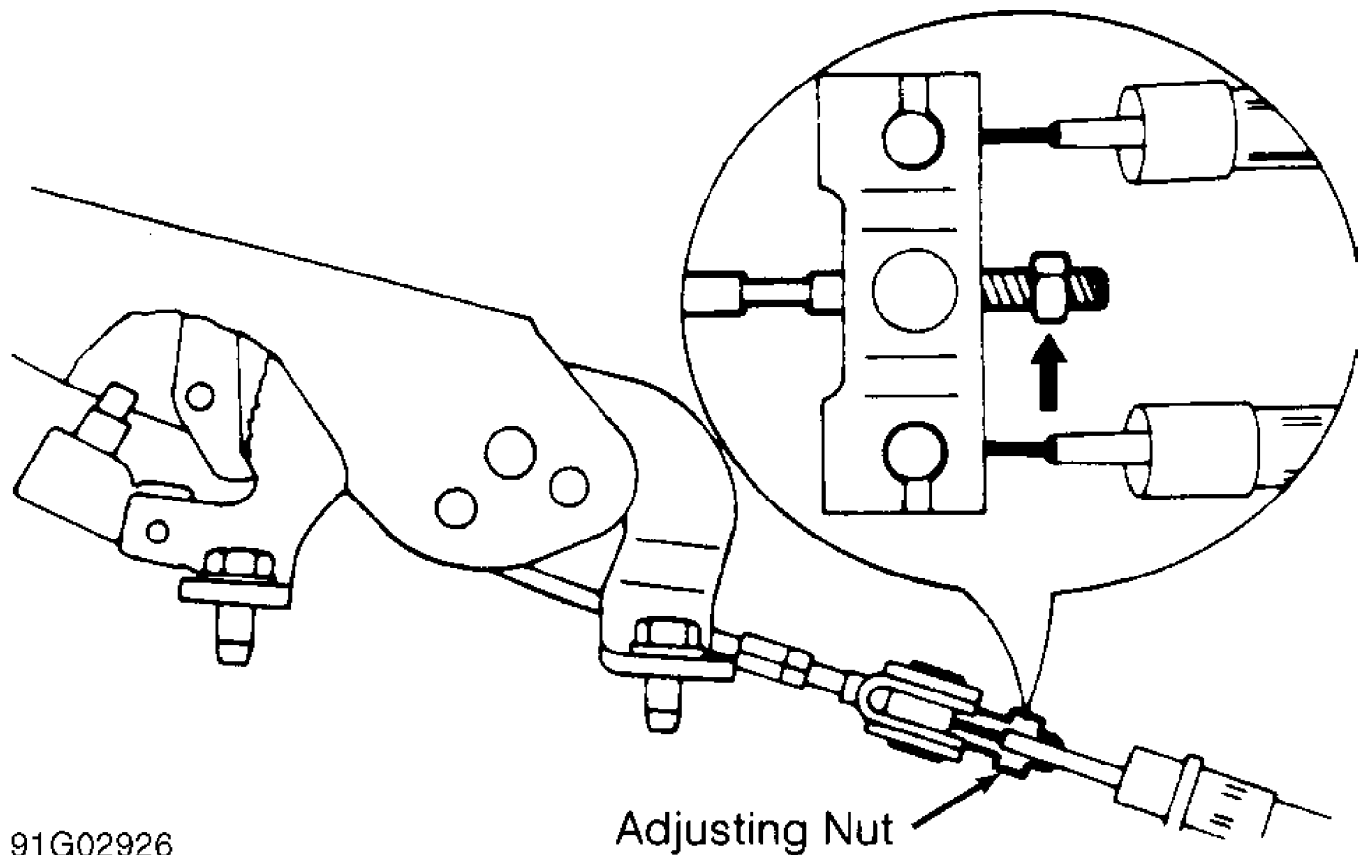
NOTE: This measurement is taken on the radial face of the push rod, .085" (2.15 mm) from the center of the radial face. This adjusting procedure MUST be done with 18-22 in. Hg

(62-73 kPa) of vacuum applied to the brake booster.

## PARKING/EMERGENCY BRAKE

NOTE: Adjust service brakes before adjusting parking brake.

Start engine, and apply brake pedal. Pull parking brake lever with a force of 44-45 lbs. (196-200 N). Parking brake lever should move up 3-5 notches on Diamante, Stealth and 3000GT, 4-6 notches on Montero, and 5-7 notches on all other models. If adjustment is necessary, turn adjusting nut located under console or at end of cable rod. See Fig. 6.



91G02926

Fig. 6: Adjusting Parking/Emergency Brake (Typical)  
Courtesy of Mitsubishi Motor Sales of America.

## REAR BRAKE SHOES

Fully release parking brake and depress brake pedal several times to center shoes and adjust brake shoe clearance. Adjust shoes so brake shoes lightly contact brake drum. Adjust parking brake, and check pedal travel. Rotate brake drum to verify free movement.

## STOPLIGHT SWITCH

Loosen lock nut, and adjust switch-to-pedal arm clearance to 0.02-0.04" (0.5-1.0 mm). Tighten lock nut. DO NOT depress master cylinder push rod during stoplight switch adjustment.

## TESTING

## POWER BRAKE BOOSTER

### System Check

1) Run engine for 1-2 minutes. Shut engine off, and depress brake pedal several times with normal pressure. If pedal height gradually becomes higher with successive applications, power brake booster is okay. If pedal height remains steady, power brake booster is not operating properly, go to next step.

2) With engine stopped, depress brake pedal repeatedly until pedal height no longer falls. Hold brake pedal down, and start engine. If pedal moves downward slightly, power brake booster is okay. If pedal height does not change, power brake booster is not operating properly, go to next step.

3) With engine running, press and hold brake pedal. Shut off engine. Hold brake pedal for 30 seconds. Brake pedal height should not change. If pedal rises, power brake booster is not operating properly, go to next step.

4) If brake booster operation is not as specified in each step, disconnect vacuum hose at brake booster and check for sufficient vacuum with engine running. Also check brake booster check valve operation. Repair or replace as necessary.

### Check Valve Inspection

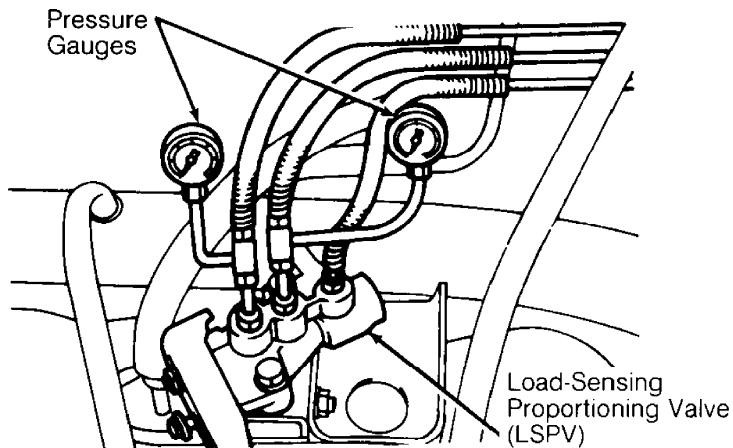
Remove vacuum hose from power brake booster. Do not remove check valve from hose. Check valve should hold vacuum in one direction and allow air to pass in other direction.

## LOAD-SENSING PROPORTIONING VALVE (LSPV)

### Montero

1) Before diagnosing Load-Sensing Proportioning Valve (LSPV), ensure all other brake components are operating properly. When all other brake system components are determined to be okay, ensure LSPV spring length is within specification. See Fig. 1. See LOAD-SENSING PROPORTIONING VALVE (LSPV) under ADJUSTMENTS.

2) After spring length is determined to be within specification, connect pressure gauges to input and output ports of LSPV. See Fig. 7. Bleed brake system. See BLEEDING BRAKE SYSTEM.



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Fig. 7: Connecting Pressure Gauges To LSPV (Montero)  
Courtesy of Mitsubishi Motor Sales of America.

3) With vehicle unloaded at correct ride height and LSPV spring correctly adjusted to 8.9" (227 mm), slowly depress brake pedal



and check fluid input and output pressures at LSPV. See LSPV PRESSURE SPECIFICATIONS table.

4) Disconnect spring at support and pull spring and lever toward support until spring length is 10.1" (257 mm). See Fig. 1. Slowly depress brake pedal and check input and output pressures at LSPV. See LSPV PRESSURE SPECIFICATIONS table. If fluid input pressure is okay and output pressure is not within specification, replace LSPV assembly. Remove gauges and bleed brake system.

LSPV PRESSURE SPECIFICATIONS

LSPV Spring Length	Inlet Pressure psi (kg/cm <sup>2</sup> )	Outlet Pressure psi (kg/cm <sup>2</sup> )
8.9" (227 mm)	1422 (100)	873-1002 (61-70)
8.9" (227 mm)	2560 (180)	1129-1314 (79-92)
10.1" (257 mm)	2560 (180)	1863-2148 (131-151)

NON-LOAD-SENSING PROPORTIONING VALVE

Pressure Test (Except Montero)

1) Connect pressure gauges to input and output ports of proportioning valve. See Fig. 8. Bleed brake system. See BLEEDING BRAKE SYSTEM.

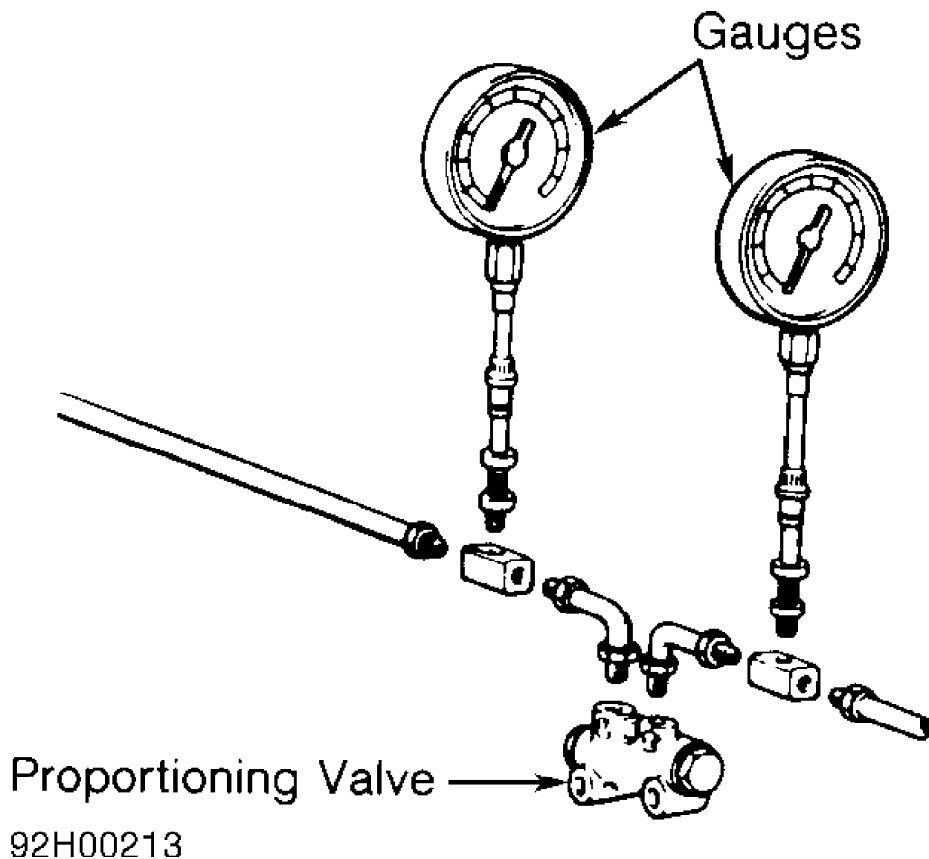


Fig. 8: Connecting Pressure Gauges To Proportioning Valve (Typical)  
Courtesy of Mitsubishi Motor Sales of America.

2) Slowly depress brake pedal. Check readings on pressure gauges. Ensure output pressure begins to drop relative to input

pressure at specified pressure range (split point). See SPLIT POINT PRESSURE SPECIFICATIONS table.

SPLIT POINT PRESSURE SPECIFICATIONS

Application	psi (kg/cm <sup>2</sup> )
Diamante .....	312-383 (22-27)
Eclipse	
Without ABS .....	320-391 (22-27)
With ABS .....	320-391 (22-27)
Galant .....	462-533 (33-38)
Mirage	
2-Door .....	320-392 (22-26)
4-Door .....	391-463 (27-32)
Montero Sport .....	(1)

(1) - Information not available from manufacturer.

3) Continue depressing brake pedal, and check readings on pressure gauges. See PROPORTIONING VALVE PRESSURE SPECIFICATIONS table. If fluid pressures or split point are not within specification, replace proportioning valve.

PROPORTIONING VALVE PRESSURE SPECIFICATIONS

Application/ Model	Inlet Pressure psi (kg/cm <sup>2</sup> )	(1) Outlet Pressure psi (kg/cm <sup>2</sup> )
Diamante .....	1138 (80)	676-747 (48-53)
Eclipse		
With ABS .....	996 (69)	569-640 (39-44)
Without ABS .....	925 (61)	462-533 (32-37)
Galant .....	996 (69)	604 (43)
Mirage		
2-Door .....	1422 (98)	566-680 (39-47)
4-Door .....	1422 (98)	619-733 (43-51)
3000GT		
Hatchback .....	906 (64)	651-723 (46-51)
Convertible .....	1117 (79)	846-917 (60-65)
Montero Sport .....	(1)	(1)

(1) - Information is not available from manufacturer.

**REMOVAL & INSTALLATION**

**FRONT DISC BRAKE PADS**

CAUTION: DO NOT remove or contaminate special grease coating on lock pins.

Removal & Installation (Except 3000GT AWD)

- 1) Raise and support vehicle. Remove front wheels. Remove lower lock pin or sleeve bolt. See Figs. 13-15. Lift caliper body upward. Support caliper aside. Remove shims and pads from support mounting. Remove pad clips.
- 2) If installing new pads, compress piston to bottom of bore. Install retaining clips, pads and shims. Start engine and depress brake pedal several times to expand caliper piston. Check brake fluid level.

#### Removal & Installation (3000GT AWD)

1) Raise and support vehicle. Remove front wheels. Remove clip, brake pad retaining pins and spring. See Fig. 17. Remove shims and pads from caliper. Keep track of location of shims for reassembly.

2) Compress caliper pistons fully in bores. Install shims on brake pads. Install brake pads. Install spring clip, pad retaining pins and clip. Start engine and depress brake pedal several times to expand caliper piston. Check brake fluid level.

### FRONT BRAKE CALIPER

#### Removal

Raise and support vehicle. Remove front wheels. Remove hose clip from brake hose mount (if equipped). Disconnect brake hose from caliper. Remove upper and lower caliper-to-steering knuckle bolts. Lift caliper body upward. Remove caliper.

#### Installation

To install, reverse removal procedure. Tighten bolts to specification. See TORQUE SPECIFICATIONS. Bleed brake system. See BLEEDING BRAKE SYSTEM.

### FRONT BRAKE ROTOR

#### Removal & Installation (Except Montero & Montero Sport)

Raise vehicle, and remove wheel(s). Remove caliper. See FRONT BRAKE CALIPER. Slide rotor off hub. To install, reverse removal procedure.

#### Removal (Montero & Montero Sport)

Raise and support vehicle. Remove brake caliper. See FRONT BRAKE CALIPER. On 4WD, remove bearing grease cap, snap ring, shim, 6 bolts and drive flange from axle shaft. On 2WD remove 6 bolts and hub cover. Remove screw(s) from lock washer. Remove lock washer. Remove lock nut using Lock Nut Wrench (MB990954). Remove hub assembly. Place match marks on rotor and hub. Remove rotor from front hub.

#### Installation

1) Install rotor on hub. Service wheel bearings and seals as necessary. Install front hub assembly. Install lock nut, and tighten it to 119 ft. lbs. (165 N.m). Loosen lock nut, and retighten it to 18 ft. lbs. (24 N.m). Loosen lock nut 30-40 degrees. Install lock washer and screw(s).

2) On 2WD, reverse removal procedure for remaining components. On 4WD, install drive flange, shim and snap ring. Using feeler gauge, check axle shaft-to-hub clearance. Clearance should be 0.016-0.028" (0.41-0.71 mm). Use appropriate shim to obtain correct clearance. Shim is located behind snap ring on end of axle shaft. Recheck clearance if necessary. Install remaining components.

### PARKING BRAKE SHOES

#### Removal & Installation (Diamante)

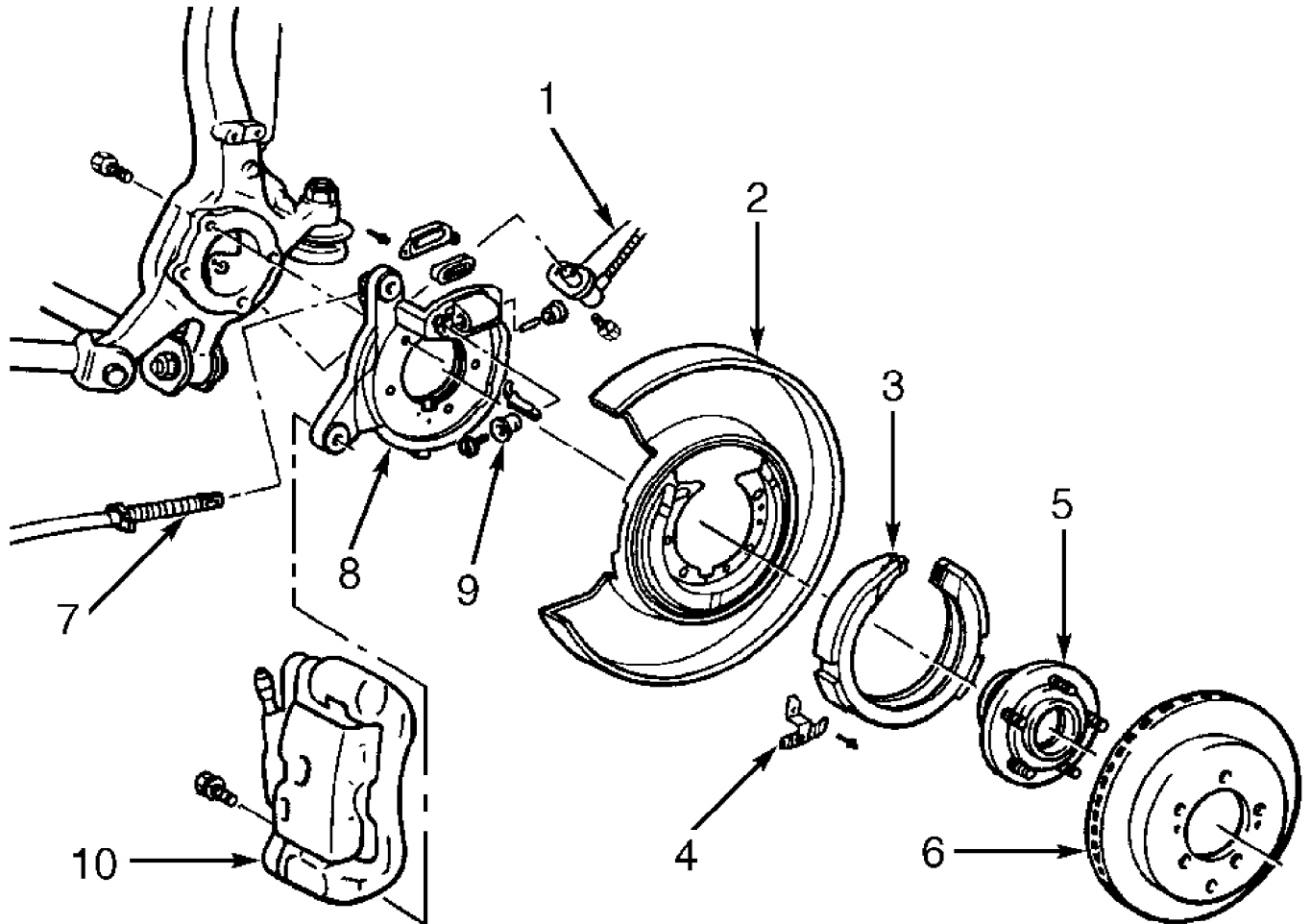
1) Raise and support vehicle. Remove rear wheels. Remove rear disc brake caliper and rotor. If rotor removal is difficult, rotate rotor until hole in rotor is upward. Back-off brake shoe adjustment with a flat blade screwdriver through hole in rotor.

2) Disconnect rear speed sensor. See Fig. 9. Remove 4 bolts and hub. Remove screw and shoe hold-down spring. Remove shoe. To install, reverse removal procedure. Adjust brake shoe by turning adjuster star wheel.

Removal (Eclipse, Montero & Montero Sport)

1) Raise and support vehicle. Remove rear wheels. Disconnect rear speed sensor (if equipped). Remove rear disc brake calipers and rotors. See REAR BRAKE CALIPER.

2) Remove adjuster spring. Remove shoe hold-down cup, spring and pin. See Fig. 10. Note how shoe-to-anchor spring is installed, and then remove adjuster and shoe-to-anchor spring. Remove strut and return spring. Remove clip and shoe and lining assembly.

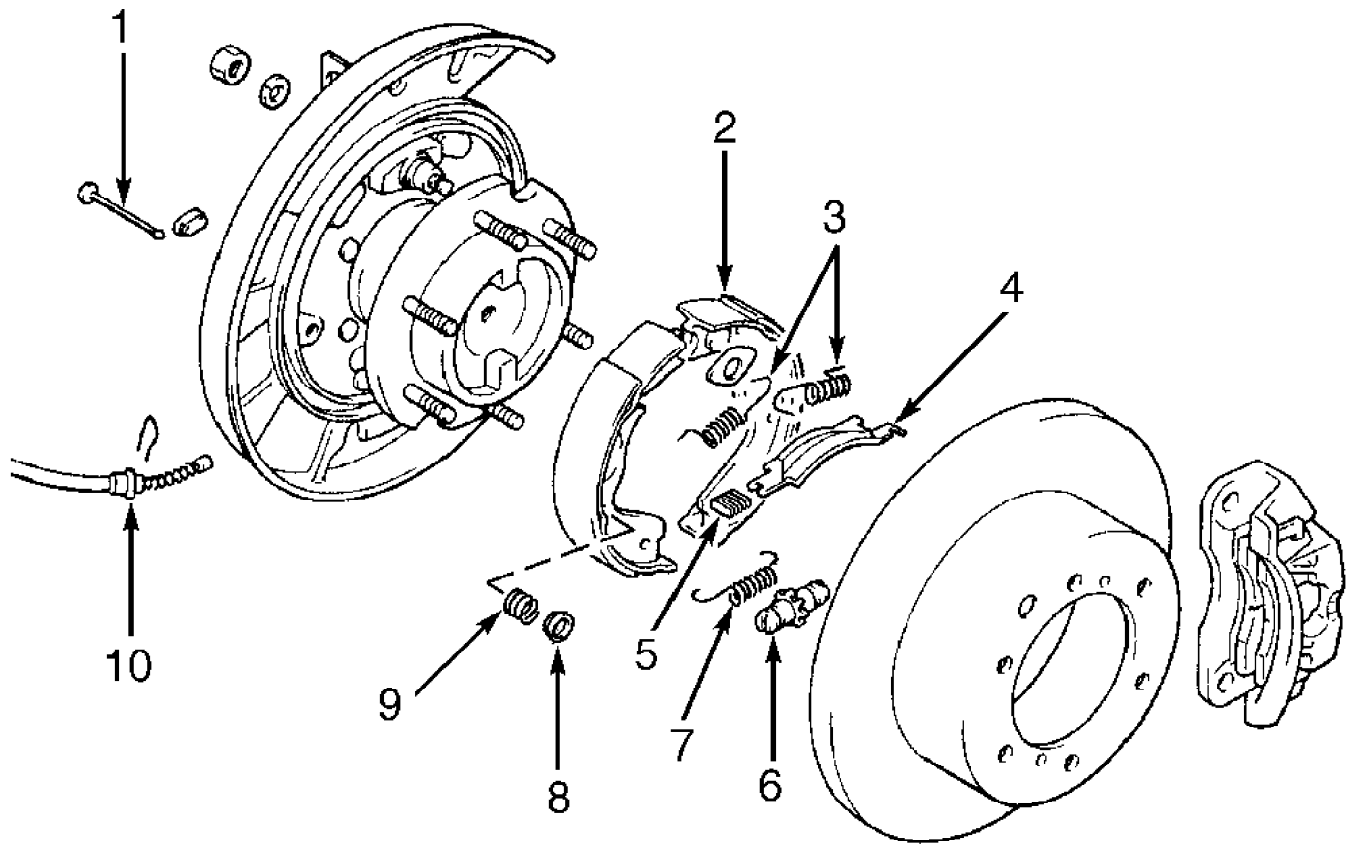


- 1. Wheel Speed Sensor
- 2. Splash Shield
- 3. Brake Shoe
- 4. Shoe Hold-Down Spring
- 5. Hub

- 6. Rotor
- 7. Parking Brake Cable
- 8. Backing Plate
- 9. Star Wheel Adjuster
- 10. Caliper

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Fig. 9: Exploded View Of Parking Brake Assembly (Diamante)  
Courtesy of Mitsubishi Motor Sales of America.



- |                       |                         |
|-----------------------|-------------------------|
| 1. Hold-Down Pin      | 6. Adjuster Assembly    |
| 2. Brake Shoe         | 7. Lower Shoe Spring    |
| 3. Shoe Return Spring | 8. Spring Retainer      |
| 4. Strut              | 9. Hold-Down Spring     |
| 5. Strut Spring       | 10. Parking Brake Cable |

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Fig. 10: Exploded View Of Parking Brake Assembly (Typical With Rear Disc Brakes - Except Diamante)  
 Courtesy of Mitsubishi Motor Sales of America.

**CAUTION:** Shoe-to-anchor spring must be installed correctly for proper functioning of parking brakes.

**Installation**

1) To install, reverse removal procedure. When installing shoe-to-anchor spring, ensure spring is installed correctly. When installing adjuster, install left adjuster with adjusting bolt facing vehicle front and right adjuster with adjusting bolt facing vehicle rear.

2) On models with ABS, ensure gap between rotor teeth and speed sensor pole piece is 0.008-0.039" (0.20-1.00 mm).

**Removal (3000GT)**

1) Raise and support vehicle. Remove rear wheel(s). Disconnect rear speed sensor. Remove rear disc brake calipers and

rotors. See REAR BRAKE CALIPER.

2) On FWD models, remove grease cap, hub nut and hub. On AWD models, disconnect rear axle from companion flange at hub. Remove axle hub nut. Using slide hammer and Hub Adapter (MB991354), remove axle from knuckle.

3) On all models, remove adjusting wheel spring. Remove shoe hold-down cup, spring and pin. Note how shoe-to-anchor spring is installed, and then remove adjuster and shoe-to-anchor spring. Remove strut and return spring. Remove clip and shoe and lining assembly.

CAUTION: Shoe-to-anchor spring must be installed correctly for proper functioning of parking brakes.

#### Installation

To install, reverse removal procedure. When installing shoe-to-anchor spring, ensure spring is installed correctly. When installing adjuster, install left adjuster with adjusting bolt facing vehicle front and right adjuster with adjusting bolt facing vehicle rear. On AWD, tighten companion flange nut to 188-217 ft. lbs. (260-300 N.m).

## REAR DISC BRAKE PADS

NOTE: Replace inner and outer pads at same time.

#### Removal

Raise and support vehicle. Remove rear wheels, and disconnect parking brake cable. Remove lower lock pin bolt. Lift caliper body upward. Using a wire, support caliper aside. Remove inner shims, anti-squeak shim and pad assembly from support mounting. Remove pad clips.

#### Installation

Rotate piston to align notches in piston projection on back of pads (if equipped). Install retaining clips, pad assembly, inner shims and anti-squeak shim onto support mounting. Lower caliper body, and install lock pin.

## REAR BRAKE CALIPER

#### Removal

Raise and support vehicle. Remove rear wheels. Disconnect brake hose from caliper. Cap end of brake line to prevent spillage. Remove upper and lower caliper mounting bolts. Lift caliper body upward. Remove caliper.

#### Installation

To install, reverse removal procedure. Tighten bolts to specification. See TORQUE SPECIFICATIONS. Bleed brake system. See BLEEDING BRAKE SYSTEM.

## REAR BRAKE ROTOR

#### Removal & Installation

Raise and support vehicle. Remove rear caliper. See REAR BRAKE CALIPER. Remove rotor. To install, reverse removal procedure.

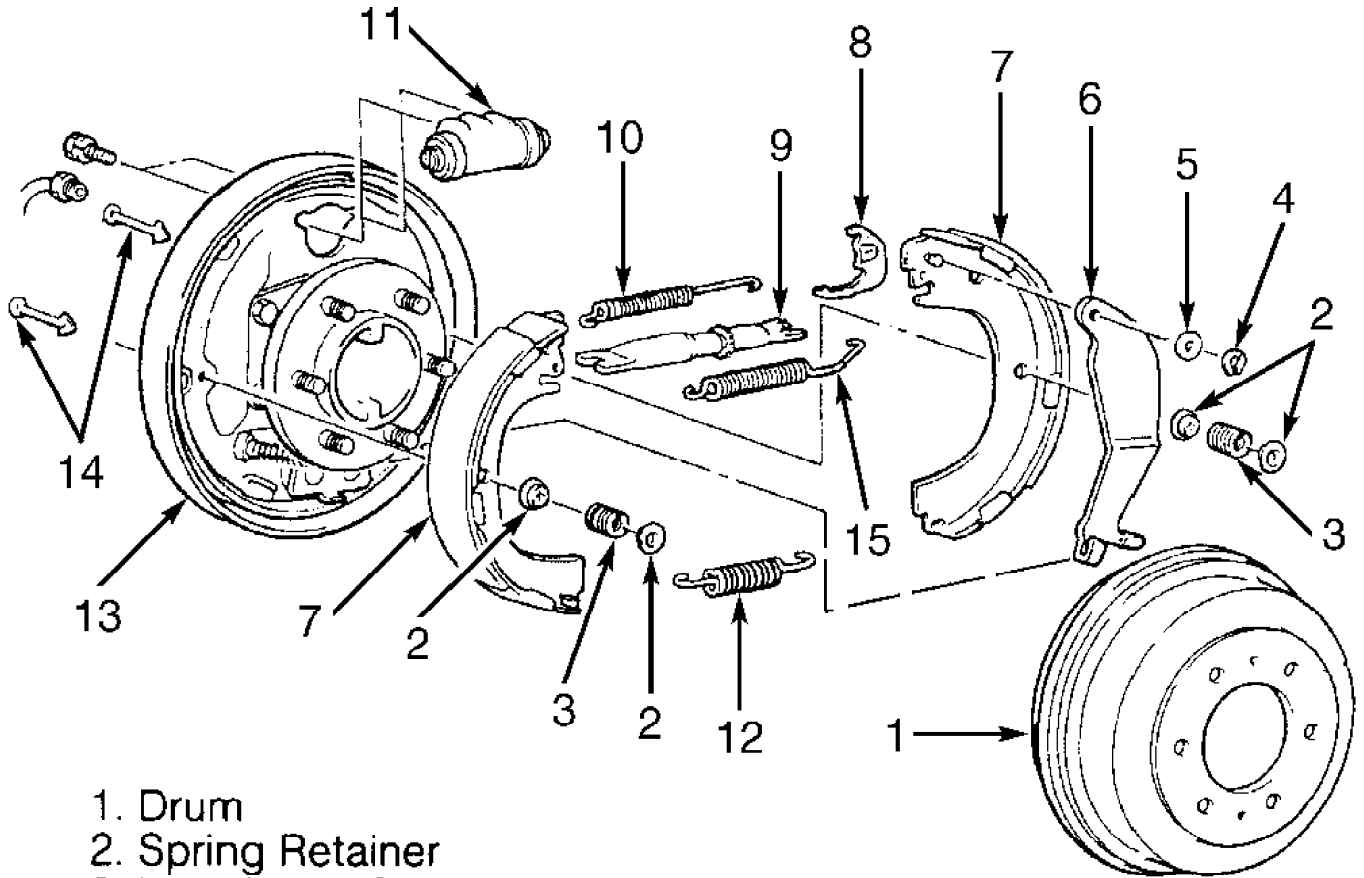
## REAR BRAKE DRUM & SHOES

#### Removal

1) Raise and support vehicle. Remove wheels. Remove brake drum from hub. If drum is difficult to remove, back-off shoe adjuster

and remove drum. Remove shoe return springs and shoe hold-down springs. See Fig. 11.

2) Disconnect parking brake cable from lever. Remove brake shoes and adjuster assembly. Remove parking brake lever snap ring, and disengage lever from brake shoe.



- 1. Drum
- 2. Spring Retainer
- 3. Hold-Down Spring
- 4. Clip
- 5. Wave Washer
- 6. Parking Brake Lever
- 7. Brake Shoe
- 8. Adjuster Lever
- 9. Adjuster Assembly

- 10. Shoe-To-Lever Spring
- 11. Wheel Cylinder
- 12. Lower Shoe Spring
- 13. Backing Plate
- 14. Hold-Down Pins
- 15. Upper Shoe Return Spring

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Fig. 11: Exploded View Of Rear Drum Brake Assembly (Montero Sport Shown, Others Similar)

Courtesy of Mitsubishi Motor Sales of America.

#### Installation

1) To install, reverse removal procedure. Apply Lubriplate to shoe-to-backing plate bosses, adjuster assembly threads and parking brake lever pin.

2) Adjust shoes to lightly contact brake drum. See REAR BRAKE SHOES under ADJUSTMENTS. Depress brake pedal to center shoes, and check pedal travel. Rotate brake drum to ensure free movement.

## WHEEL CYLINDERS

### Removal & Installation

Raise and support vehicle. Remove rear brake drum and shoes. See REAR BRAKE DRUM & SHOES. Remove wheel cylinder and seal assembly. To install, reverse removal procedure. Bleed brakes. See BLEEDING BRAKE SYSTEM.

## MASTER CYLINDER

### Removal

Drain brake fluid from master cylinder. Remove sensor connector (if equipped). Disconnect brake lines from master cylinder, and install plugs to prevent brake fluid spillage. Remove master cylinder from booster and separate reservoirs from housing (if necessary).

### Installation

To install, reverse removal procedure. Before installation, check and adjust clearance between back of master cylinder piston and power brake push rod. See MASTER CYLINDER PUSH ROD under ADJUSTMENTS. After installation, adjust pedal height. See BRAKE PEDAL HEIGHT & FREE PLAY under ADJUSTMENTS. Bleed brake system.

## POWER BRAKE BOOSTER

### Removal

Remove brake master cylinder. See MASTER CYLINDER. Disconnect vacuum hose from power brake booster. Disconnect clevis pin attaching brake pedal to power brake booster push rod. From inside vehicle, remove 4 nuts attaching power brake booster to firewall. Remove power brake booster.

### Installation

To install, reverse removal procedure. Install master cylinder. Bleed brake system if necessary.

## POWER BRAKE BOOSTER CHECK VALVE

**NOTE:** To test check valve before removal, see POWER BRAKE BOOSTER under TESTING.

### Removal & Installation

Remove vacuum hose with check valve from power brake booster. Loosen hose clamp(s) and remove check valve from hose on Mirage and Summit. On all models, coat end(s) of check valve with sealant before installation. Install valve with arrow (identification mark) pointing toward intake manifold. Install and secure hose clamp(s).

## REAR AXLE BEARINGS & OIL SEAL

### Removal (Montero & Montero Sport)

1) With disc or drum removed, disconnect brake line from caliper or wheel cylinder. Disconnect parking brake cable end, and remove cable attaching bolts. Remove brake backing plate, bearing case and axle shaft as an assembly. If axle shaft binds, use slide hammer and puller to remove.

2) Remove shims, "O" ring and snap ring. Retain shims for installation. Secure axle shaft assembly in a vise, and remove one retainer bolt from backing plate. Push bearing case completely to side of dust cover. Place adhesive tape around edge of bearing case at



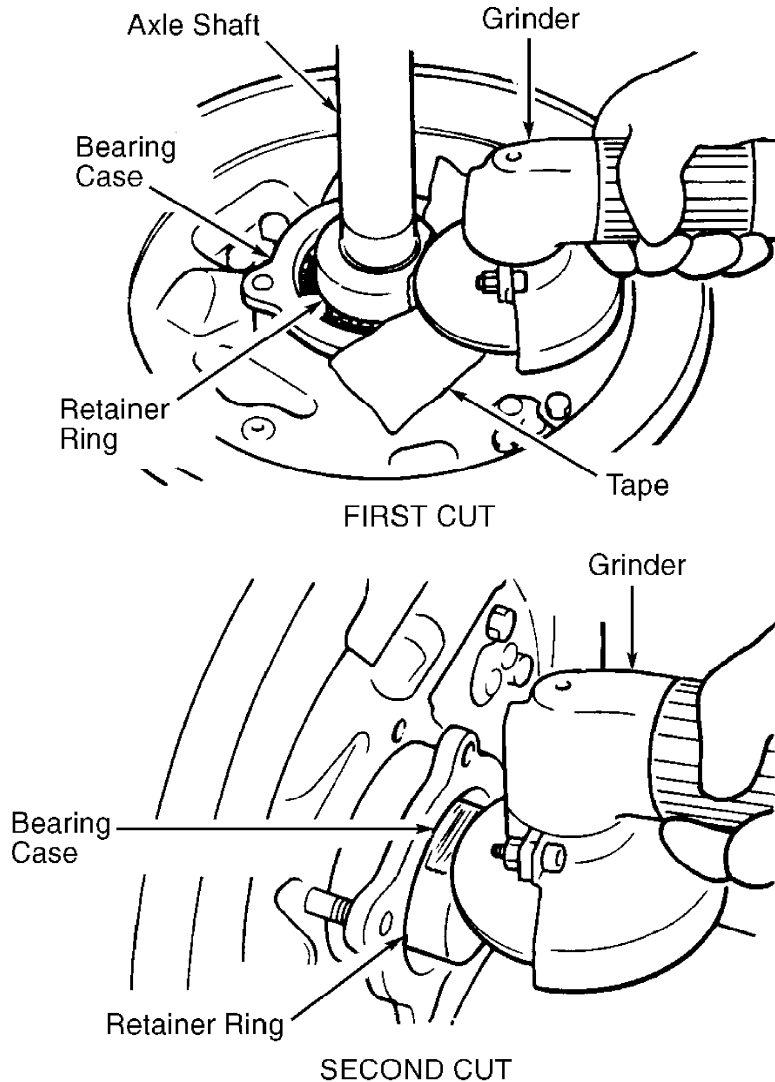
retainer bolt hole to prevent damage.

CAUTION: DO NOT damage bearing case or axle shaft when grinding or chiseling retainer ring.

3) Secure axle shaft, and grind retainer ring until retainer ring wall thickness is 0.04-0.06" (1.0-1.5 mm) on axle shaft side and 0.08" (2.0 mm) on bearing side (FIRST CUT). See Fig. 9.

4) Change angle of grind, and remove remaining 0.08" (2.0 mm) of retainer ring wall on bearing side (SECOND CUT). Using a chisel, cut retainer ring. Remove ring. DO NOT damage axle shaft.

5) Install Puller (MB990787-01) to remove bearing case from axle shaft. Rotate nuts with equal force to remove wheel bearing. Remove bearing outer race using a hammer and drift. Remove oil seal from axle housing using a slide hammer and hook.



92A00216  
Fig. 12: Grinding Bearing Retainer Ring (Montero & Montero Sport)  
Courtesy of Mitsubishi Motor Sales of America.

#### Installation

- 1) Apply Multipurpose Grease (SAE J310) to oil seal, oil seal

cavity and contact surfaces. Install oil seal using seal driver. Press new oil seal into bearing case until it is flush with face of bearing case. Install backing plate and bearing case.

2) Apply grease to external surfaces of bearing outer race. Press bearing outer race into bearing case. Install rear brake assembly and bearing case. Pack bearing case and axle threads with grease. Install new retainer ring and snap ring.

3) Using a feeler gauge, measure clearance between snap ring and new retainer ring. Clearance should be less than 0.0065" (0.165 mm). If clearance exceeds specification, install a new selective snap ring to bring clearance to specification. See SNAP RING THICKNESS SPECIFICATION table.

SNAP RING THICKNESS SPECIFICATION

Thickness: In. (mm)	Color
0.060 (1.52)	Red
0.067 (1.70)	Purple
0.073 (1.85)	Blue
0.079 (2.01)	Yellow
0.085 (2.16)	Neutral

4) Check condition of oil seal and replace as necessary. Install axle shaft assembly into axle housing. Tighten bearing retainer bolts to 65 ft. lbs (15 N.m.). To complete installation, reverse removal procedure.

**REAR AXLE HUB BEARINGS**

NOTE: Rear hub bearings are not serviceable on FWD models.

Removal & Installation (FWD Models)

1) Raise and support vehicle. Remove wheels. Remove wheel speed sensor (if equipped). On models with drum brakes, remove brake drum and shoes. See REAR BRAKE DRUM & SHOES.

2) On models with disc brakes, remove caliper and rotor. On all models, remove hub bolts or spindle nut and hub assembly. To install, reverse removal procedure. Tighten hub bolts or spindle nut to specification. See HUB TIGHTENING TORQUE table. Rotate brake drum or disc to ensure free movement.

NOTE: Rear hub bearings are not serviceable on Eclipse AWD models.

Removal & Installation (Eclipse AWD)

1) Raise and support vehicle. Remove wheels. Remove wheel speed sensor (if equipped). On models with drum brakes, remove brake drum and shoes. See REAR BRAKE DRUM & SHOES.

2) On models with disc brakes, remove caliper and rotor. On all models, remove axle nut. Remove 4 hub bolts and hub assembly. To install, reverse removal procedure. Tighten hub bolts to specification. See HUB TIGHTENING TORQUE table. Rotate brake drum or disc to ensure free movement.

HUB TIGHTENING TORQUE

Application	Ft. Lbs. (N.m)
Hub Mounting Bolts	54-65 (74-85)
Spindle Nut	
Mirage	127 (172)
3000GT FWD	170 (230)

### Removal & Installation (3000GT AWD Models)

1) Raise and support vehicle. Remove wheels. Remove wheel speed sensor (if equipped). Remove caliper and rotor.

2) Remove 4 bolts and separate rear drive axle from hub companion flange. Using Yoke Holder (MB990767), hold rear axle hub and remove axle nut at companion flange.

3) Using slide hammer and Hub Adapter (MB991354), remove axle shaft from knuckle. Place axle in hydraulic press. Using an appropriate bearing splitter, remove ABS rotor (if equipped) and outer axle bearing.

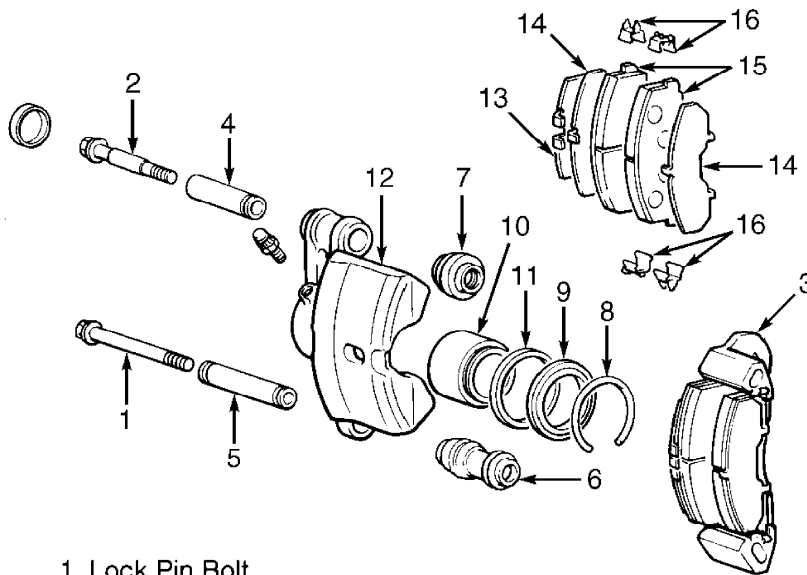
4) Remove inner bearing and seal from axle. Using Bearing Installer Handle (MB990938) and Adapter (MB990931), install bearing and axle seal.

5) Using Installer (MB990799), install dust shield onto axle shaft. Using hydraulic press, install outer axle bearing onto axle shaft so seal lip is facing towards axle shaft. Press on wheel speed sensor rotor (if equipped) with groove on speed sensor rotor is facing towards axle shaft flange.

6) Install axle shaft assembly into knuckle and tighten axle nut to 188-217 ft. lbs. (260-300 N.m.). To complete installation, reverse removal procedure. Tighten bolts to specification.

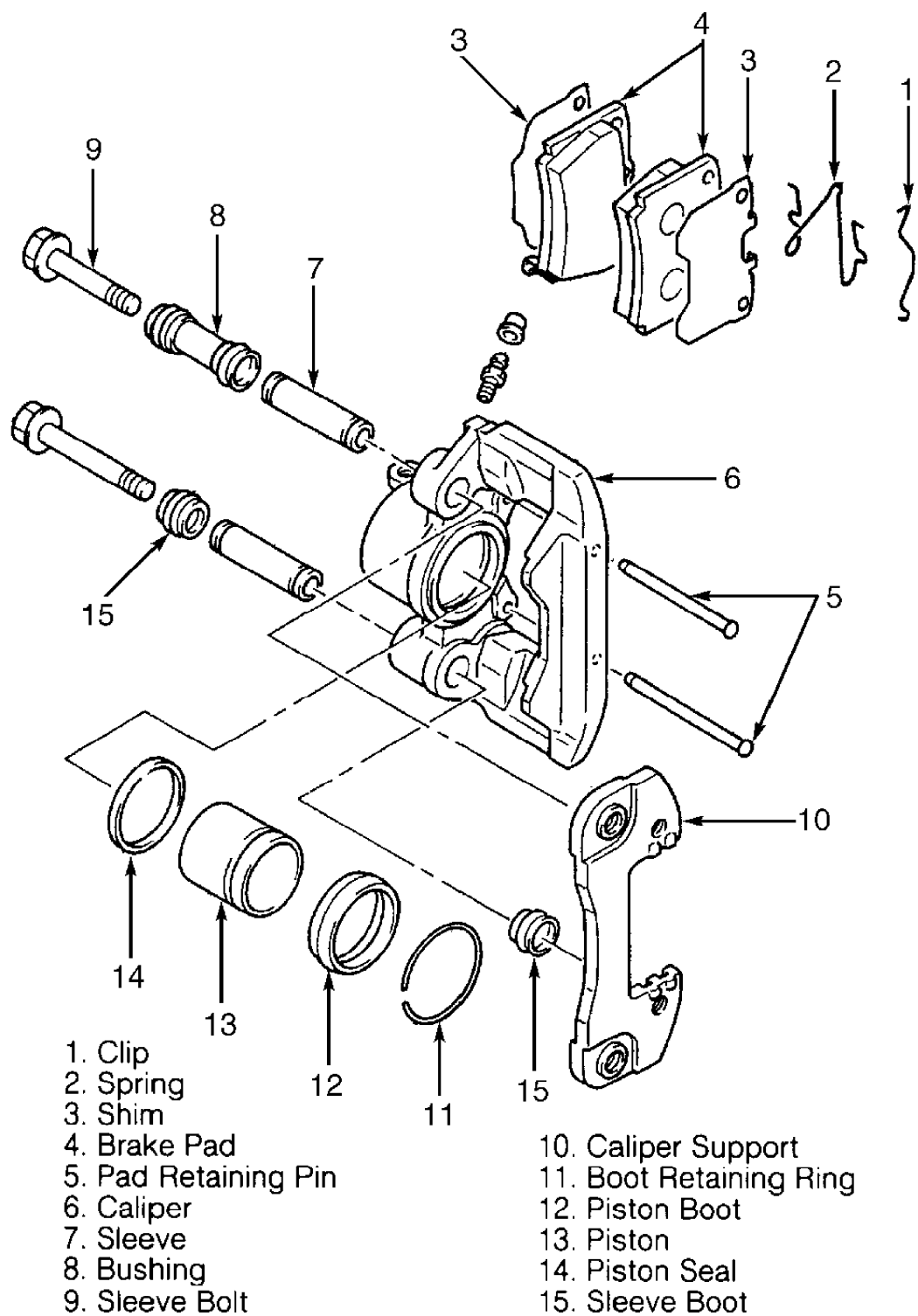
## OVERHAUL

NOTE: For exploded views of calipers, see Figs. 13 through 17. For exploded view of master cylinder, see Fig. 18.



- |                   |                |                |
|-------------------|----------------|----------------|
| 1. Lock Pin Bolt  | 7. Boot        | 12. Caliper    |
| 2. Guide Pin Bolt | 8. Ring        | 13. Inner Shim |
| 3. Support        | 9. Piston Boot | 14. Outer Shim |
| 4. Sleeve         | 10. Piston     | 15. Pad        |
| 5. Sleeve         | 11. Seal       | 16. Clip       |
| 6. Boot           |                |                |

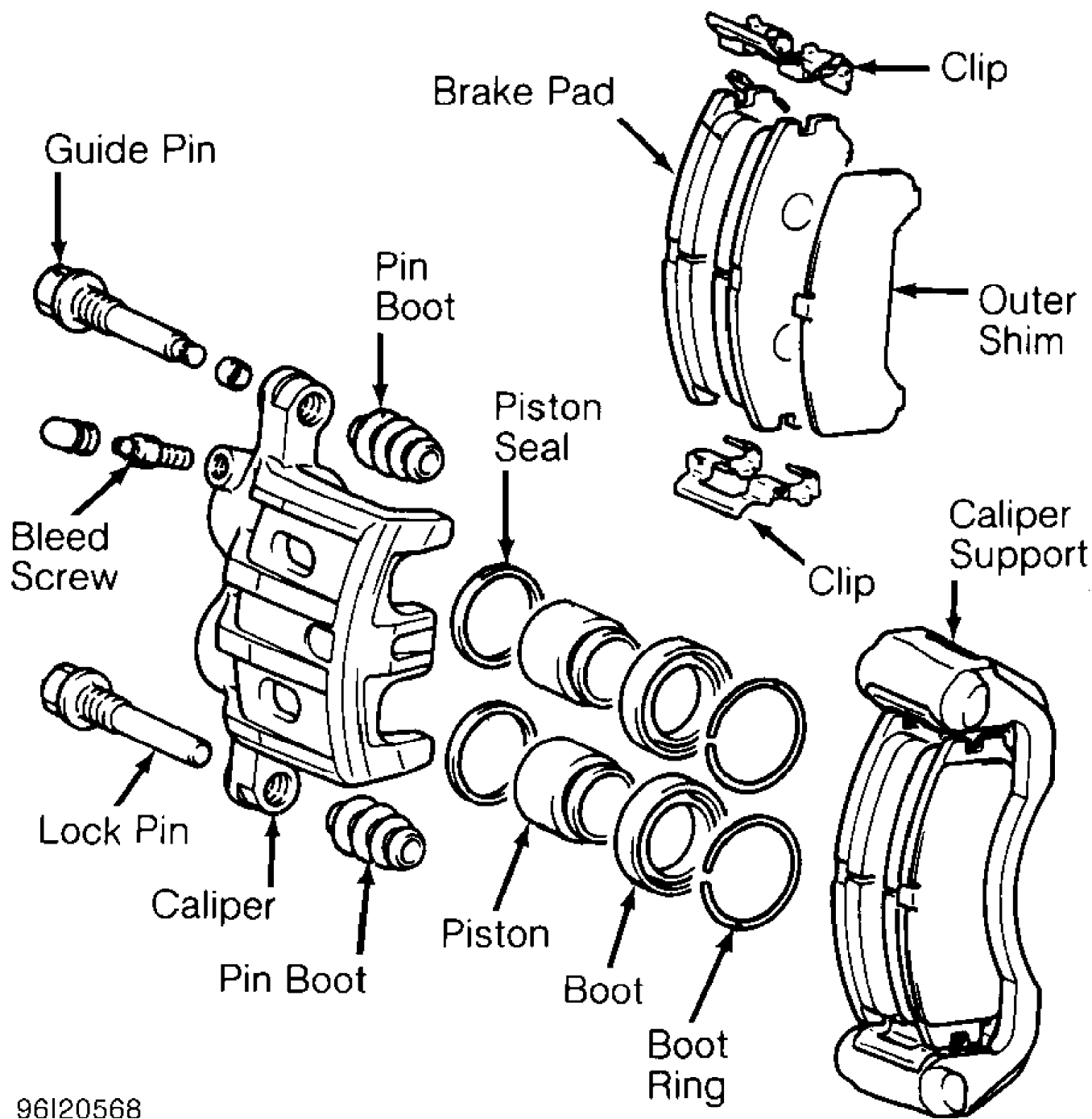
96H20567  
Fig. 13: Exploded View Of Single Piston Caliper Assembly (Except  
Montero Sport)  
Courtesy of Mitsubishi Motor Sales of America.



- 1. Clip
- 2. Spring
- 3. Shim
- 4. Brake Pad
- 5. Pad Retaining Pin
- 6. Caliper
- 7. Sleeve
- 8. Bushing
- 9. Sleeve Bolt
- 10. Caliper Support
- 11. Boot Retaining Ring
- 12. Piston Boot
- 13. Piston
- 14. Piston Seal
- 15. Sleeve Bolt

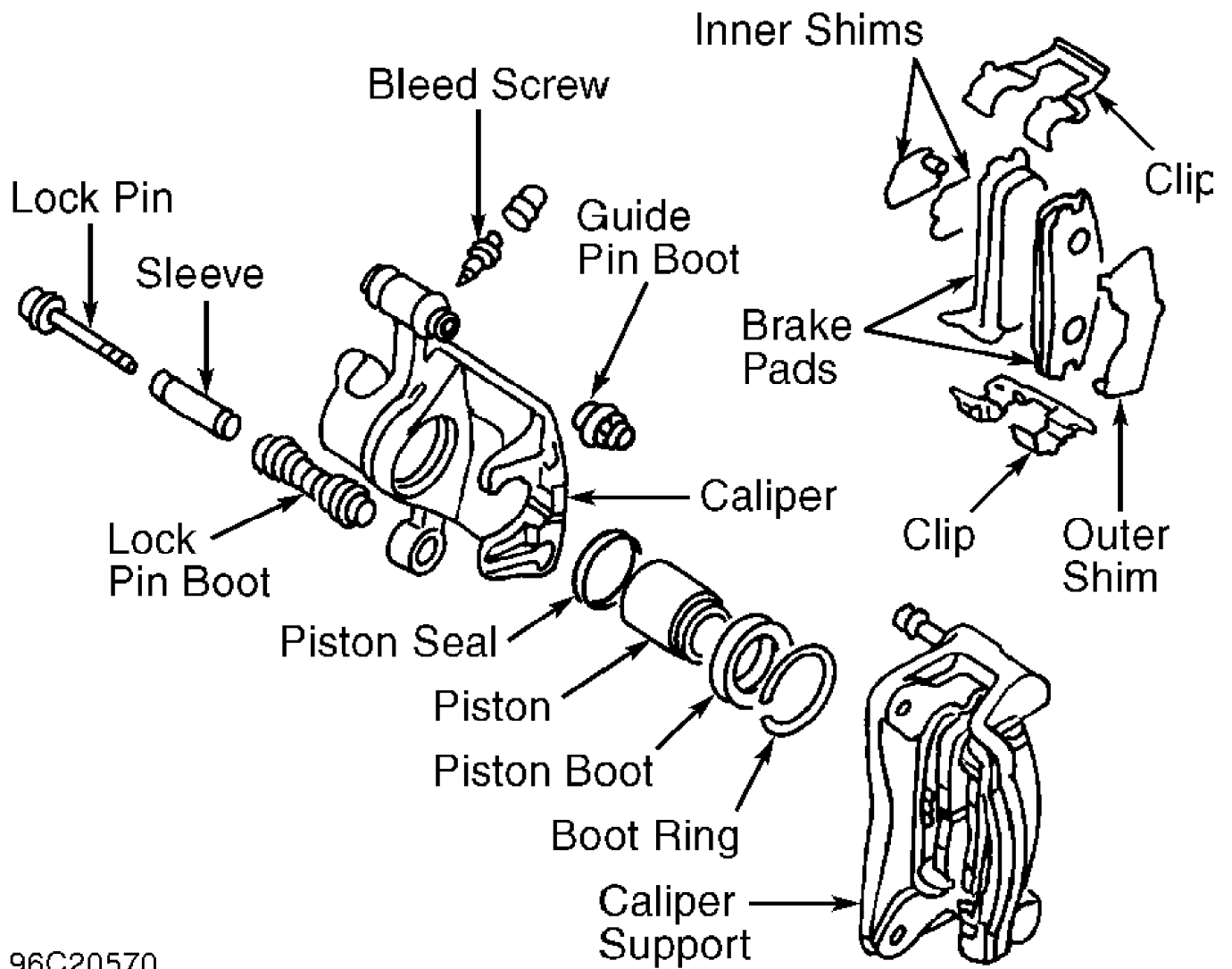
97C08648

Fig. 14: Exploded View Of Single Piston Caliper Assembly (Montero Sport)  
 Courtesy of Mitsubishi Motor Sales of America.



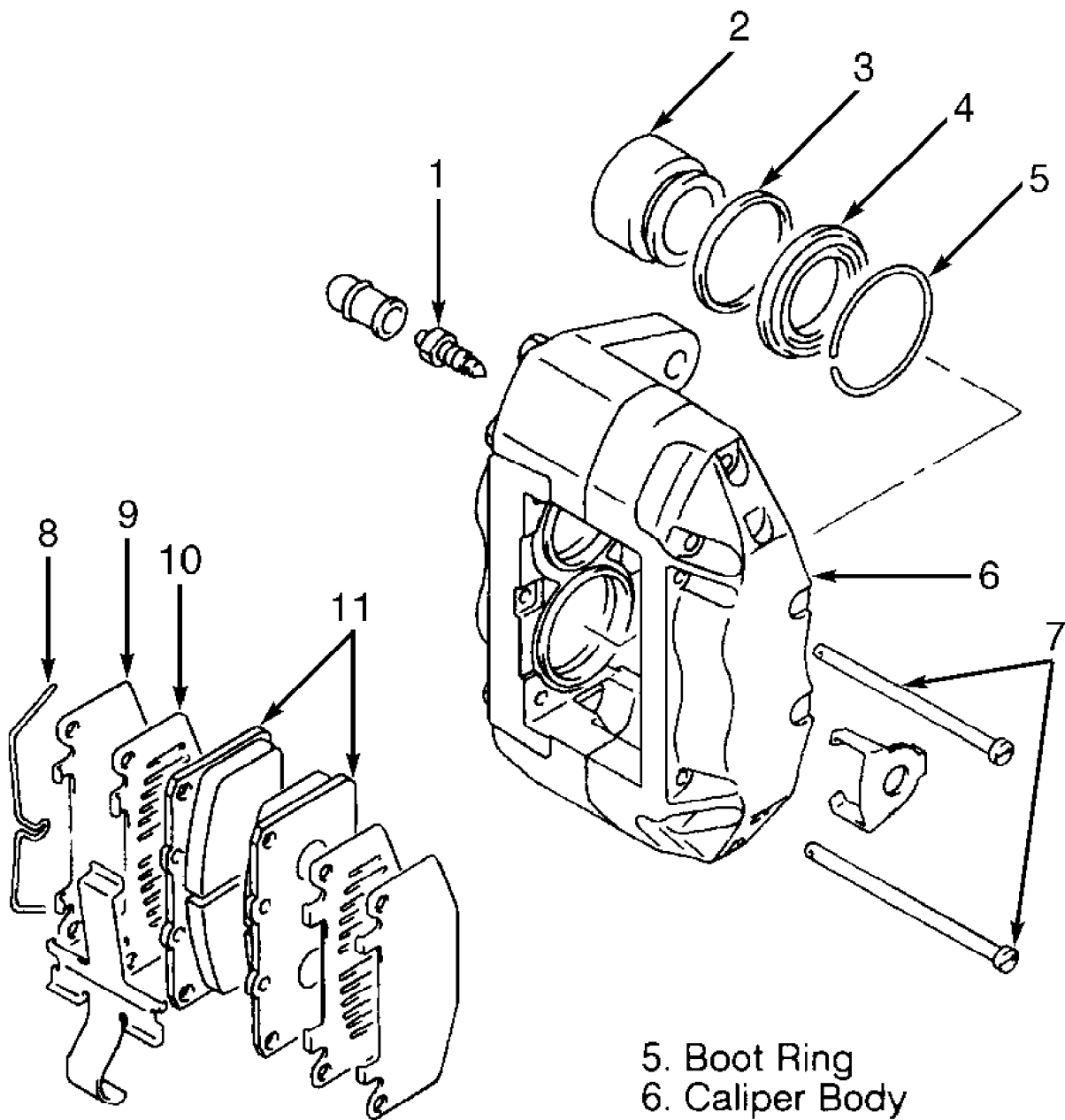
96I20568

Fig. 15: Exploded View Of Dual Piston Caliper Assembly  
 Courtesy of Mitsubishi Motor Sales of America.



96C20570

Fig. 16: Exploded View Of 4-Piston Caliper Assembly (Montero)  
 Courtesy of Mitsubishi Motor Sales of America.

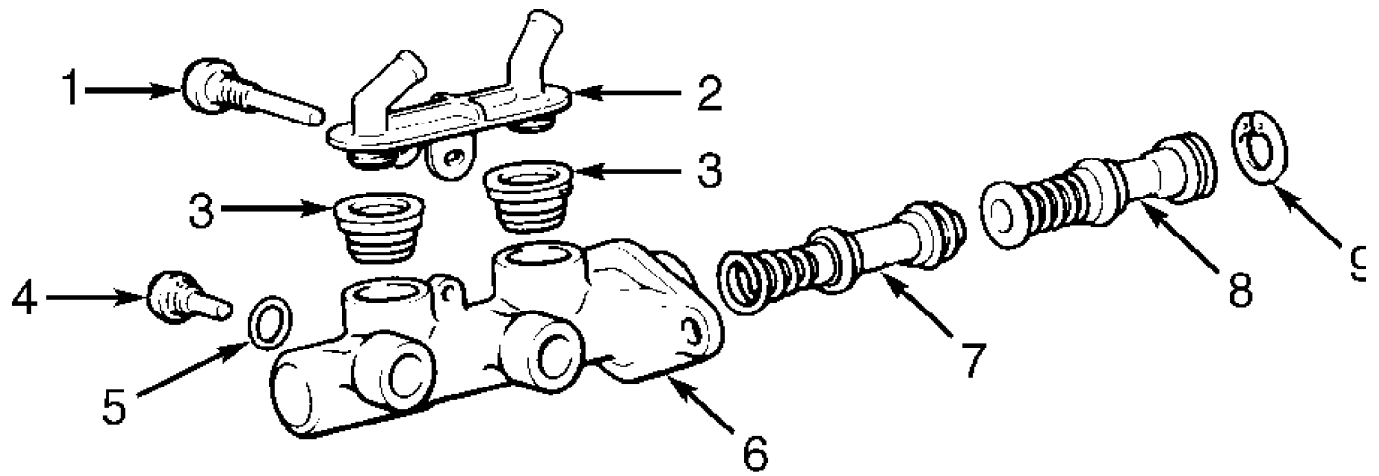


- 1. Bleeder Screw
- 2. Piston
- 3. Piston Seal
- 4. Piston Boot

- 5. Boot Ring
- 6. Caliper Body
- 7. Pad Retaining Pin
- 8. Clip
- 9. Outer Shim
- 10. Inner Shim
- 11. Brake Pad

97108651

Fig. 17: Exploded View Of 4-Piston Caliper Assembly (3000GT AWD)  
 Courtesy of Mitsubishi Motor Sales of America.



- |                        |                     |
|------------------------|---------------------|
| 1. Reservoir Bolt      | 6. Master Cylinder  |
| 2. Nipple Or Reservoir | 7. Secondary Piston |
| 3. Seal                | 8. Primary Piston   |
| 4. Stopper Bolt        | 9. Snap Ring        |
| 5. Gasket              |                     |

96J20569

Fig. 18: Exploded View Of Master Cylinder (Typical)  
 Courtesy of Mitsubishi Motor Sales of America.

### TORQUE SPECIFICATIONS

#### TORQUE SPECIFICATIONS (DIAMANTE)

Application	Ft. Lbs. (N.m)
Brake Line Flare Nuts	11 (15)
Caliper Guide & Lock Pin Bolt	
Front	54 (73)
Rear	24 (32)
Caliper Mounting Bolts	
Front	66 (90)
Rear	36-43 (49-59)
Rear Hub-To-Knuckle Bolts	55-65 (74-88)
Wheel Lug Nut	67-81 (90-110)

#### TORQUE SPECIFICATIONS (ECLIPSE)

Application	Ft. Lbs. (N.m)
Brake Line Flare Nuts	11 (15)
Caliper Guide & Lock Pin Bolt	54 (73)
Caliper Mounting Bolts	66 (90)
Rear Hub-To-Knuckle Nut	60 (81)
Wheel Lug Nut	89-103 (120-140)

INCH Lbs. (N.m)

Master Cylinder Mounting Nut	115 (13)
Bleeder Screw	71 (8)



Wheel Cylinder Bolt ..... 89 (10)

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#### TORQUE SPECIFICATIONS (GALANT)

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Application	Ft. Lbs. (N.m)
Brake Line Flare Nuts .....	11 (15)
Caliper Guide & Lock Pin Bolt .....	54 (73)
Caliper Mounting Bolts .....	66 (90)
Rear Hub-To-Knuckle Nut .....	60 (81)
Wheel Lug Nut .....	67-81 (90-110)

INCH Lbs. (N.m)

Master Cylinder Mounting Booster Nut .....	115 (13)
Bleeder Screw .....	71 (8)
Wheel Cylinder Bolt .....	89 (10)

---

#### TORQUE SPECIFICATIONS (MIRAGE)

---

Application	Ft. Lbs. (N.m)
Brake Line Flare Nuts .....	11 (15)
Caliper Guide Pin Bolt .....	36 (49)
Caliper Lock Pin Bolt .....	61-69 (83-93)
Caliper Mounting Bolts .....	66-81 (90-110)
Rear Wheel Bearing Nut .....	127 (172)
Wheel Lug Nut .....	67-81 (90-110)

INCH Lbs. (N.m)

Master Cylinder Mounting Booster Nut .....	115 (13)
Bleeder Screw .....	71 (8)
Wheel Cylinder Bolt .....	89 (10)

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#### TORQUE SPECIFICATIONS (MONTERO)

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Application	Ft. Lbs. (N.m)
Brake Line Flare Nuts .....	11 (15)
Caliper Guide & Lock Pin Bolt	
Front .....	54 (73)
Rear .....	32 (44)
Caliper Mounting Bolt .....	65 (88)
Wheel Lug Nut .....	72-87 (98-118)
Rear Axle Bearing Retainer Nut .....	145-173 (196-235)

INCH Lbs. (N.m)

Master Cylinder Mounting Nut .....	115 (13)
Bleeder Screw .....	71 (8)

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#### TORQUE SPECIFICATIONS (MONTERO SPORT)

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Application	Ft. Lbs. (N.m)
Brake Line Flare Nuts .....	11 (15)
Caliper Guide & Lock Pin Bolt (Front) .....	54 (73)
Caliper Mounting Bolt .....	

Front .....	66 (90)
Rear .....	94 (127)
Wheel Lug Nut	
15x6" Wheel .....	87-101 (118-137)
15x7" Wheel .....	72-86 (98-117)
Rear Axle Bearing Retainer Nut .....	145-173 (196-235)
	INCH Lbs. (N.m)
Master Cylinder Mounting Nut .....	115 (13)
Bleeder Screw .....	71 (8)
Wheel Cylinder Nut .....	89 (10)

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#### TORQUE SPECIFICATIONS (3000GT)

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Application	Ft. Lbs. (N.m)
Brake Line Flare Nuts .....	11 (15)
Caliper Guide & Lock Pin Bolt (FWD)	
Front .....	54 (73)
Rear .....	20 (27)
Caliper Mounting Bolts	
Front .....	66 (90)
Rear .....	36-43 (49-59)
Front Axle Shaft Nut .....	166 (230)
Rear Wheel Bearing Nut	
AWD .....	192-221 (260-300)
FWD .....	170 (230)
	INCH Lbs. (N.m)
Master Cylinder Mounting Nut .....	84 (10)

### BRAKE SYSTEM BRAKE SPECIFICATIONS

#### BRAKE SPECIFICATIONS (DIAMANTE)

---

Application	In. (mm)
Booster Pushrod Clearance .....	.016-.024 (.40-.60)
Disc Runout .....	.003 (.08)
Disc Thickness (Minimum)	
Front .....	.88 (22.4)
Rear .....	.33 (8.4)
Hub End Play .....	.002 (.05)
Master Cylinder Inside Diameter .....	1.0 (25.4)
Pad Lining Thickness (Minimum)	
Front .....	1.08 (2.0)
Rear .....	1.04 (1.0)

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#### BRAKE SPECIFICATIONS (ECLIPSE)

---

Application	In. (mm)
Booster Pushrod Clearance .....	.023-.033 (.65-.85)
Disc Runout .....	.003 (.08)
Disc Diameter	
AWD .....	9.0 (228)
Except AWD .....	8.0 (204)

Disc Thickness (Minimum)	
Front .....	.88 (22.4)
Rear .....	.33 (8.4)
Drum Inside Diameter (Maximum) .....	9.1 (231)
Hub End Play .....	.002 (.05)
Master Cylinder Inside Diameter	
With ABS .....	1.0 (25.4)
Without ABS .....	.93 (23.8)
Pad Lining Thickness (Minimum) .....	.08 (2.0)
Shoe Lining Thickness (Minimum) .....	.039 (1.0)
Wheel Cylinder Inside Diameter .....	.750 (19.1)

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BRAKE SPECIFICATIONS (GALANT)

Application	In. (mm)
Booster Pushrod Clearance	
Single Booster .....	.024-.031 (.60-.80)
Tandem Booster .....	.016-.024 (.40-.60)
Disc Runout .....	.003 (.08)
Disc Thickness (Minimum) .....	.88 (22.4)
Drum Inside Diameter (Maximum) .....	9.1 (231)
Hub End Play .....	.002 (.05)
Master Cylinder Inside Diameter .....	1.0 (25.4)
Pad Lining Thickness (Minimum) .....	.08 (2.0)
Shoe Lining Thickness (Minimum) .....	.039 (1.0)
Wheel Cylinder Inside Diameter .....	.750 (19.1)

---

BRAKE SPECIFICATIONS (MIRAGE)

Application	In. (mm)
Booster Pushrod Clearance .....	.026-.033 (.65-.85)
Disc Runout .....	.006 (.0024)
Disc Thickness (Minimum) .....	.65 (16.4)
Drum Inside Diameter (Maximum) .....	8.1 (206)
Hub End Play .....	.002 (.05)
Master Cylinder Inside Diameter .....	.87 (22.22)
Pad Lining Thickness (Minimum) .....	.08 (2.0)
Shoe Lining Thickness (Minimum) .....	.039 (1.0)
Wheel Cylinder Inside Diameter .....	.750 (19.1)

---

BRAKE SPECIFICATIONS (MONTERO)

Application	In. (mm)
Booster Pushrod Clearance .....	.026-.035 (.65-.90)
Disc Runout	
Front .....	.004 (.10)
Rear .....	.003 (.08)
Disc Thickness (Minimum)	
Front .....	1.0 (25.4)
Rear .....	.65 (16.4)
Hub End Play .....	.0098 (.25)
Master Cylinder Inside Diameter .....	.937 (23.8)
Pad Lining Thickness (Minimum)	
Front .....	1.08 (2.0)
Rear .....	(1)
Parking Brake Drum Diameter (Maximum) .....	7.795 (198)

(1) - Information not available from manufacturer.

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BRAKE SPECIFICATIONS (MONTERO SPORT)

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Application	In. (mm)
Disc Runout	
Front .....	.002 (.06)
Rear .....	.003 (.08)
Disc Thickness (Minimum)	
Front .....	.88 (22.4)
Rear .....	.65 (16.4)
Drum Diameter (Maximum) .....	10.71 (272.0)
Hub End Play (Maximum) .....	.002 (.05)
Master Cylinder Inside Diameter .....	.937 (23.8)
Pad Lining Thickness (Minimum) .....	1.08 (2.0)
Shoe Lining Thickness (Minimum) .....	.039 (1.0)
Wheel Cylinder Inside Diameter .....	.90 (22.8)

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BRAKE SPECIFICATIONS (3000GT)

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Application	In. (mm)
Booster Pushrod Clearance .....	.026-.030 (.65-.75)
Disc Runout	
Front	
AWD .....	.004 (.10)
FWD .....	.003 (.07)
Rear .....	.003 (.08)
Disc Thickness (Minimum)	
Front	
AWD .....	1.12 (28.4)
FWD .....	.88 (22.4)
Rear	
AWD .....	.72 (18.4)
FWD .....	.65 (16.4)
Hub End Play .....	.002 (.05)
Master Cylinder Inside Diameter .....	1.0 (25.4)
Pad Lining Thickness (Minimum) .....	1.08 (2.0)
Parking Brake Drum Diameter (Maximum) .....	6.65 (169)

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