

## **Chapter 5**

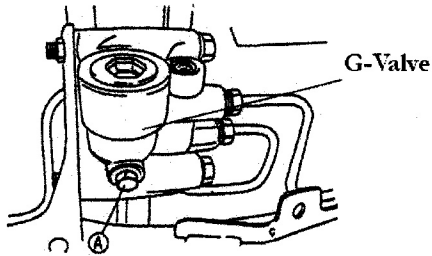
### **Brake System**

- 9. Bleeding Brake System (Air)**
- 10. Parking Brake Adjustment**
- 11. Master Cylinder System**
- 12. Brake Booster**
- 13. Disk Brake & Caliper Overhaul**
- 14. Rear Brake Drum System Overhaul**
- 15. Parking Brake Cable System**
- 16. Complete Brake Line System**

# Brake System

## Air Bleeding

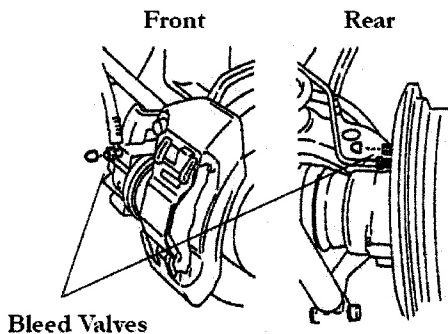
**Caution:** G-Valve Equipped Vehicles Will Need Bypass Before Bleeding Rear Brakes. See Below Diagram Reference (A). Turn 1 Rotation Open.



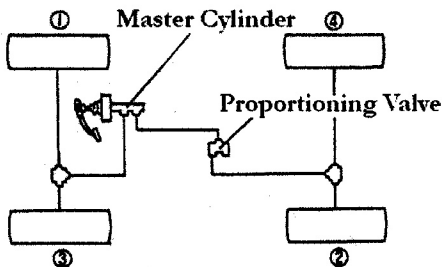
**Note:** 2 People Required

Use Chart Below For Order Of Bleeding Valves.

One Service Engineer Pumps Pedal 3 Times, Hold, Bleed Repeat. Repeat Procedure Until Air is Out.



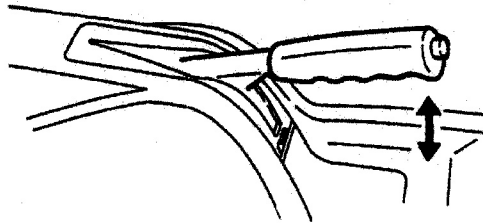
**Bleed Air Series Order**



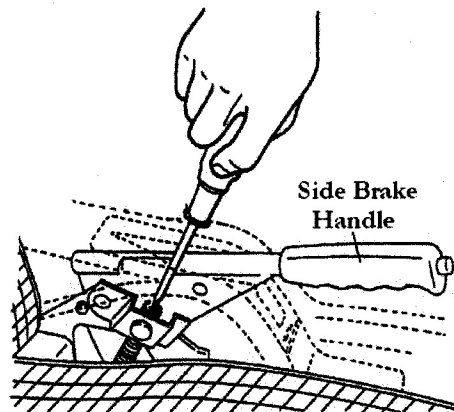
## Parking Brake Lever

Parking Brake Lever Has 7~9 Inch Travel Allowance.

Force to Engage No More Than 20kg



**Note:** Remove Side Brake Cover To Access Adjustment Screw

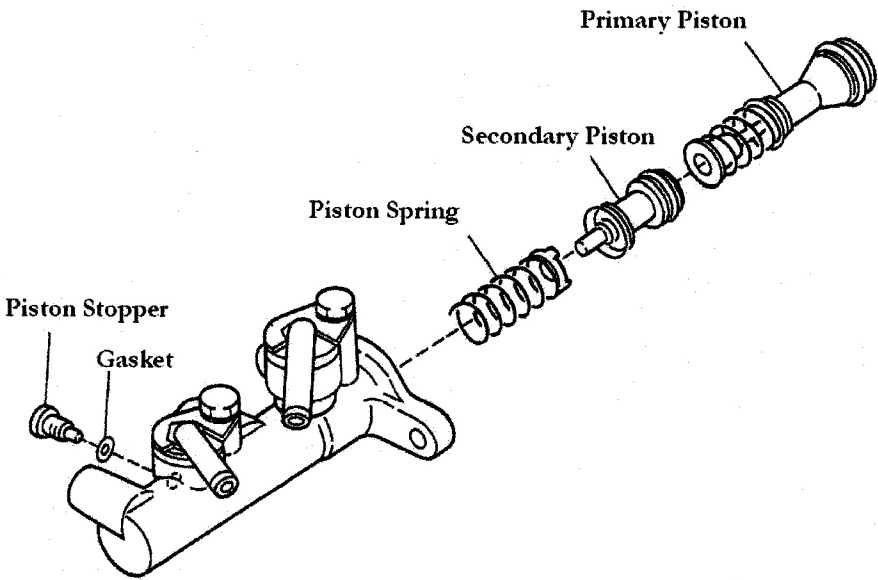


# Brake System

Tools	Snap Ring Pliers	Snap Ring Removal
	Dial Gage	Disk Rotor
	Micrometer	Disk Rotor Thickness
	Air Duster	
Oil	DOT3 - DOT4	

## Master Cylinder

Exploded View



# Brake System

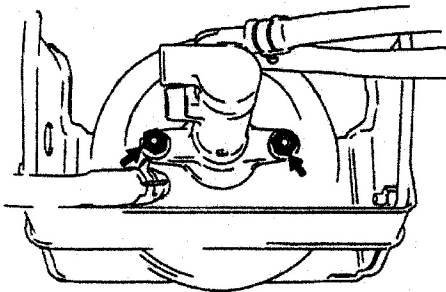
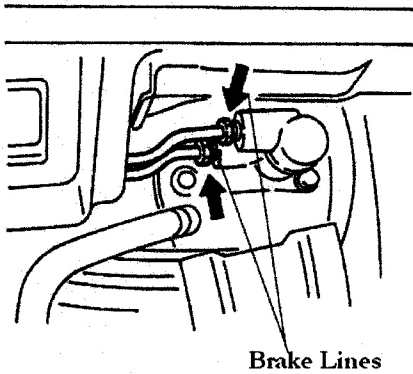
## Master Cylinder Removal

1. Drain Brake Fluid By Attaching Hose To FRONT and REAR Bleed Valves and Pump Master Cylinder Until Dry.

Note: Make Sure Old Brake Fluid Is Disposed of Properly. Never Re-Use Brake Fluid

2. Remove Steering Column  
(See Steering Section)

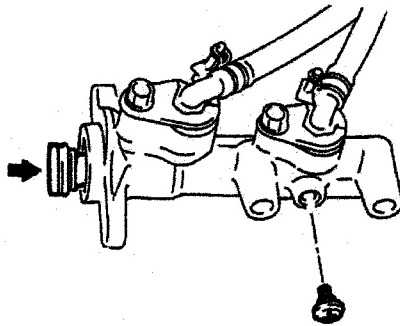
3. Remove Brake Lines From Assembly



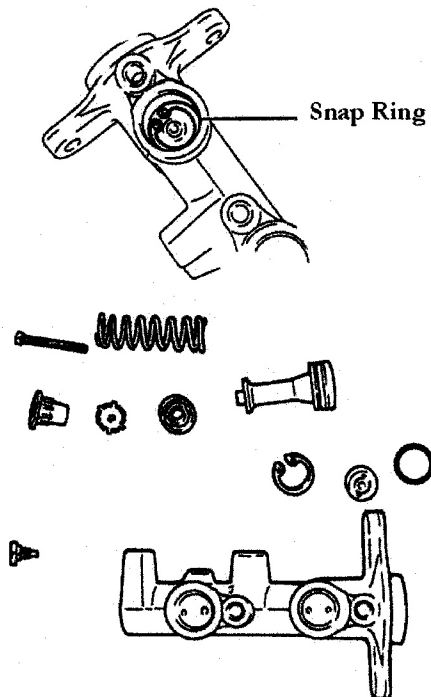
4. Remove Attachment Nuts and Slide Out Master Cylinder

5. Disconnect Feeder Hoses (Wrap With Plastic Bag)

6. Remove Piston Stopper Screw



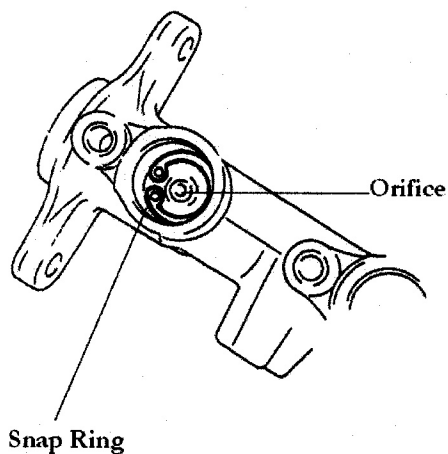
7. Disassemble Complete Unit and Clean and Inspect. If Cracks are Found Discard Complete Unit





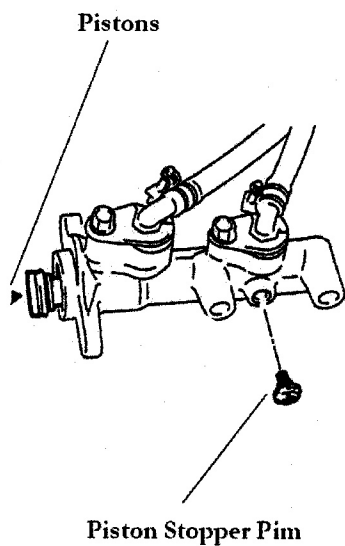
## Brake System

**Note: As Previously mentioned, Any Cracks Found Are Not Repairable and Unit Must be Replaced**



**Thoroughly Clean All Parts Before Assembly**

**Never Re-Use Rubber Seals and Gaskets**

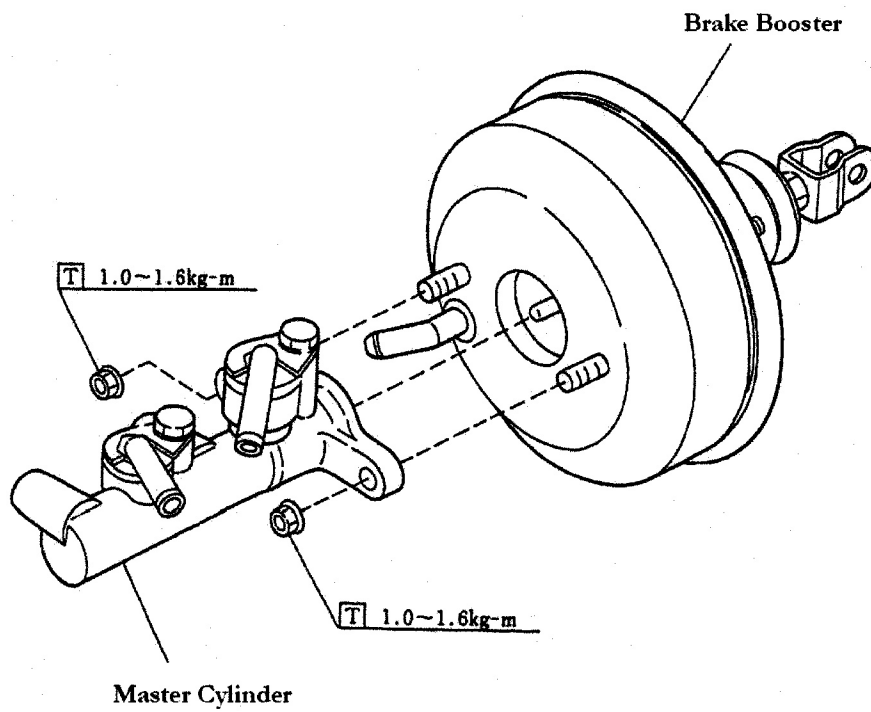


**Assemble Unit in Revearse Order  
Use Only New Parts**

1. Attach Fluid Line Hoses
2. Attach Assembly to Vehicle
3. Connect Fluid Lines
4. Bleed Brake Fluid Lines
5. Re- Assemble Steering Column

## Brake System

### Brake Booster

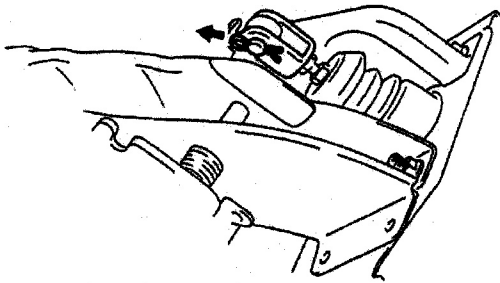


T= Torque kg.cm

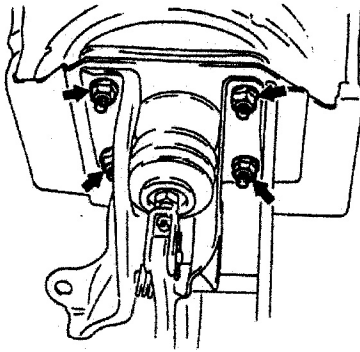
# Brake System

## Brake Booster Replacement

1. Drain Brake Fluid from Reserve Tank
2. Remove Steering Column if Necessary
3. Disconnect Brake Lines to Master Cylinder
4. Remove Master Cylinder
5. Disconnect Brake Pedal

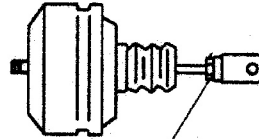


6. Remove the 4 Retaining Bolts
7. Remove Booster



**Note: Brake Boosters Can NOT be Repaired  
They Must be Replace With New**

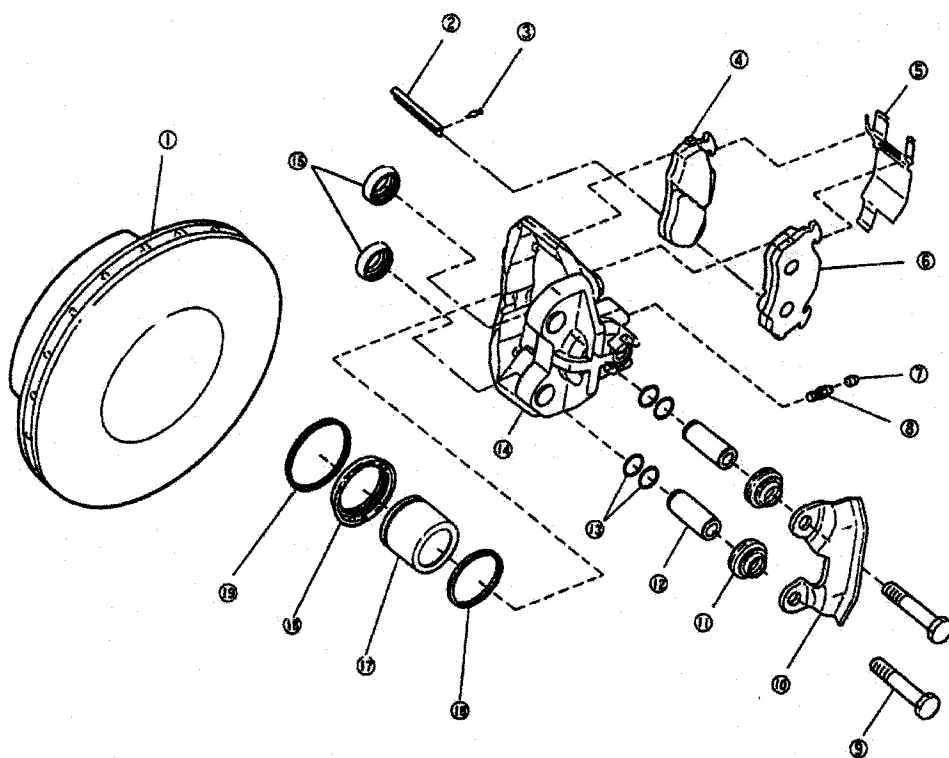
**Note: Only Adjustment Can be Made to  
Actuator Yoke Length**



**Adjustment Bolt**

## Brake System

Front Disk Brake Expoded View



- 1. Disk Rotor
- 2. Key
- 3. Key Spring
- 4. Outer Pad
- 5. Pad Cover
- 6. Inner Pad
- 7. Cap

- 8. Air Bleeder Screw
- 9. Lock Pin Bolt
- 10. Caliper Cover
- 11. Outer Sleeve Boots
- 12. Sleeve
- 13. O Ring
- 14. Caliper

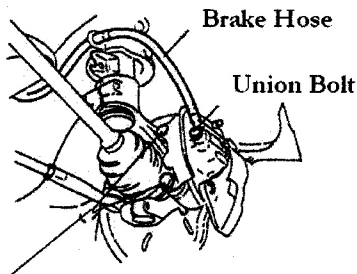
- 15. Inner Sleeve Boots
- 16. Oil Seal
- 17. Piston
- 18. Piston Boot
- 19. Boot Retainer

## Brake System

### Caliper Removal -Pad Replacement- Caliper Disassembly

#### Caliper Removal

1. Jack Vehicle and Remove Front Tires
2. Remove Union Bolt and Place Hose End into Plastic Bag and Seal.
3. Remove Lock Pin Bolts

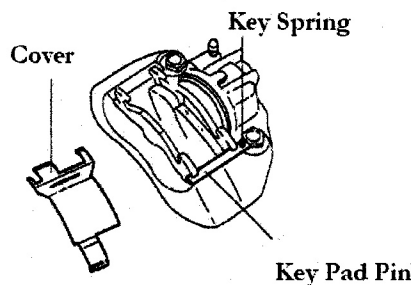


Lock Pin Bolts (2)

4. Remove Caliper

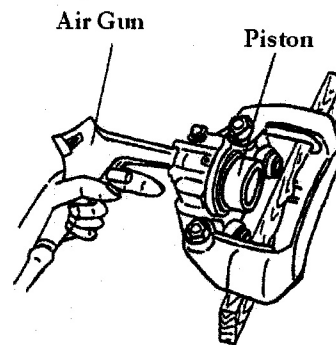
#### Pad Replacement

1. Remove Pad Cover
2. Remove Key Spring and Key Pad Pin
3. Clean Caliper With Brake Cleaner
4. Replace Brake Pads
5. Assemble
6. Bleed Air From Brake System

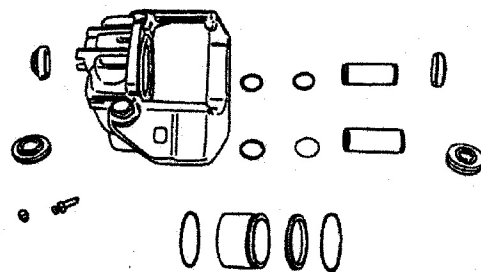


#### Caliper Disassembly

1. Follow Removal of Caliper Instructions
2. Remove Retainer Key and Pads
3. Place On Wood Block (Not in Vise)
4. Use Air Gun to Push Out Piston
5. Remove Piston and Related Parts
6. Check Cylinder Bore For Cracks or Pitting  
Note: If Pitting or Cracks Found Replace Caliper
7. Clean Thoroughly
8. Use Caliper Rebuild Kit Containing All Necessary Parts



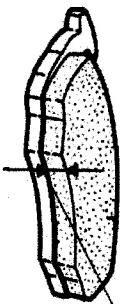
#### Exploded View of Caliper



# Brake System

## Brake Pad Inspection -Disk Rotor Inspection

### Brake Pad Thickness



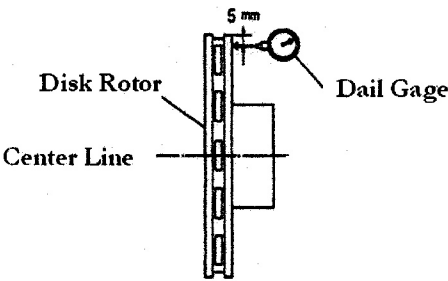
Measure Here

### Limitations

Pad Thickness	Pass	15mm
	Fail	8 mm

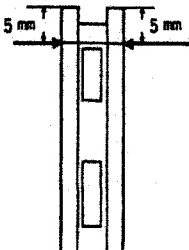
### Disk Run-Out Limits

Note: Set Dial Gage 5mm From Top of Rotor



Brake Disk Run-Out Limit (mm)	0.1
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Note: Measure Thickness 5mm From Top

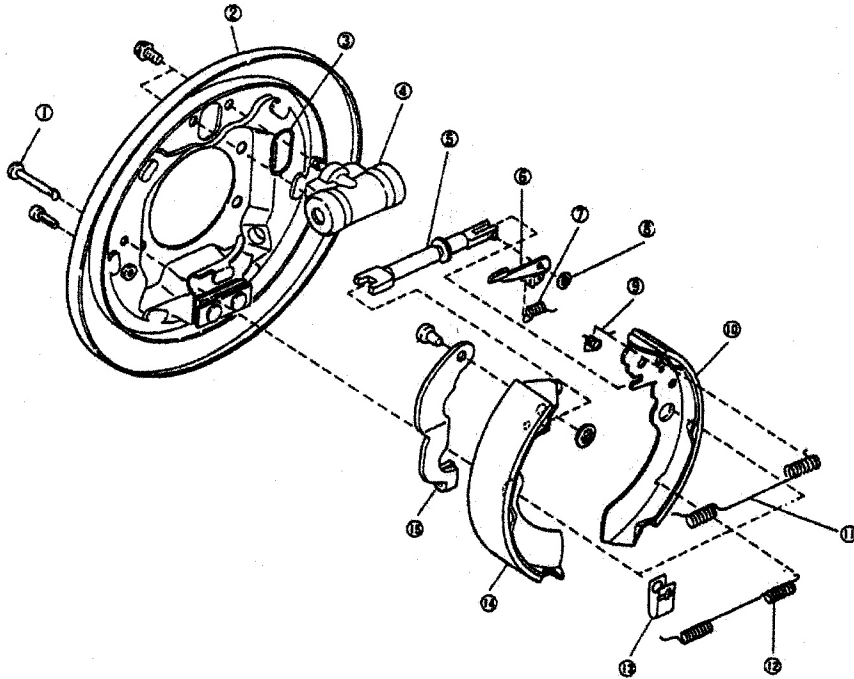


	Rotor Thickness
Fine	18.0mm
Limit	16.0mm

## Brake System

### Rear Drum Brakes

Expolded View



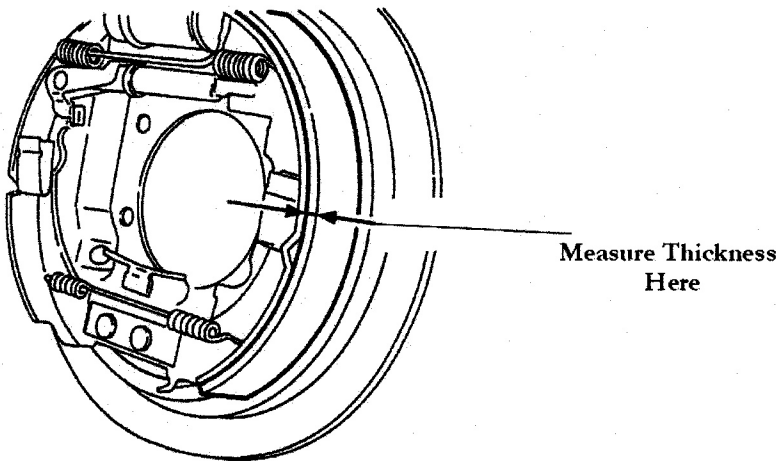
1. Hold Down Pin
2. Back (Dust) Plate
3. Adjust Hole
4. Wheel Cylinder
5. Auto-Adjust Assembly
6. Adjusting Lever
7. Lever Spring
8. Spring Washer
9. Lever Spring
10. Leading (F) Shoe

11. Upper Shoe Spring
12. Lower Shoe Spring
13. Hold Down Spring Clip
14. Trailing Shoe
15. Parking Lever

# Brake System

## Brake Shoe Inspection

Note: Brake Shoes Should Be Inspected Every 24,000 Kilometers



Thickness Limitations

Fine	4.4mm
Fail	1.7mm

Fail= Replace



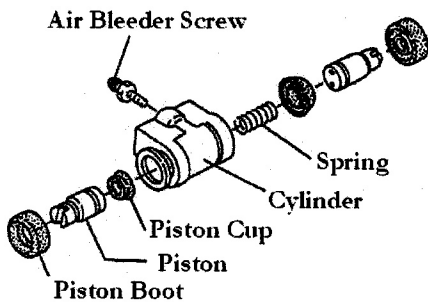
# Brake System

## Wheel Cylinder

## Brake Drum

### Wheel Clyinder Replacement

- 1. Jack Vehicle
- 2. Remove Tire
- 3. Remove Drum
- 4. Remove Brake Pads
- 5. Remove Wheel Cylinder Attachment Bolts



- 6. Rebuilt Wheel Cylinder With Replacement Kit

Note: If Cylinder Bore is Scratched Use Brake Cylinder Hone.

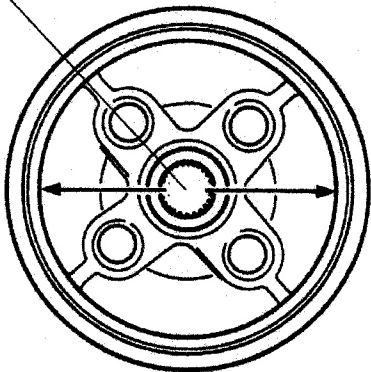
Note: If Cracked Replace Complete Unit

- 7. Assemble in Reverse Order
- 8. Bleed Brake System

Note: Never Re-Use Brake Oil

### Brake Drum Diameter

Center Point



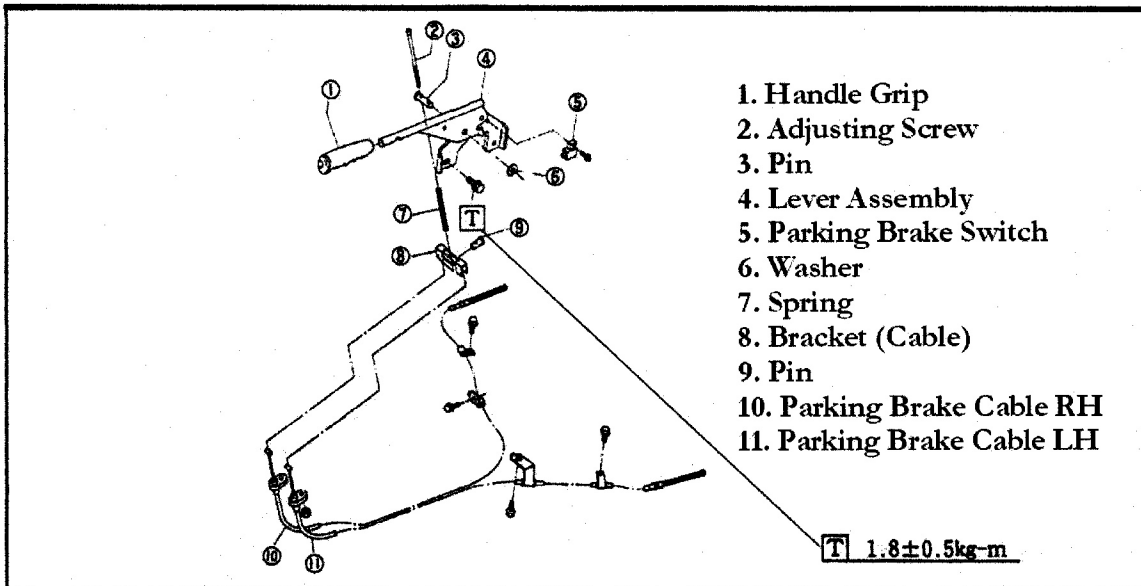
### Brake Drum Measurments

Limit	180mm
Fail	182mm

Fail= Replace

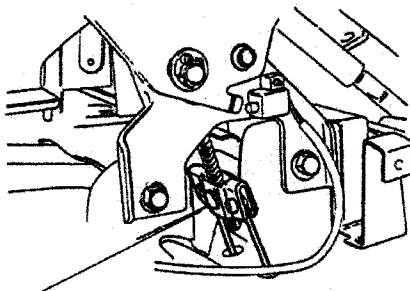
## Brake System

### Parking Brake Cable System



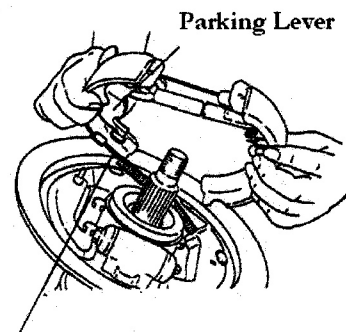
### Parking Cable Replacement

1. Remove Rear Console
2. Back Off Adjustment Screw Until Cable Bracket Is Loose. Separate Cables



Bracket (Cable Retention)

3. Jack up Vehicle Rear End, Remove Tires, Brake Drums
4. Remove Brake Shoes



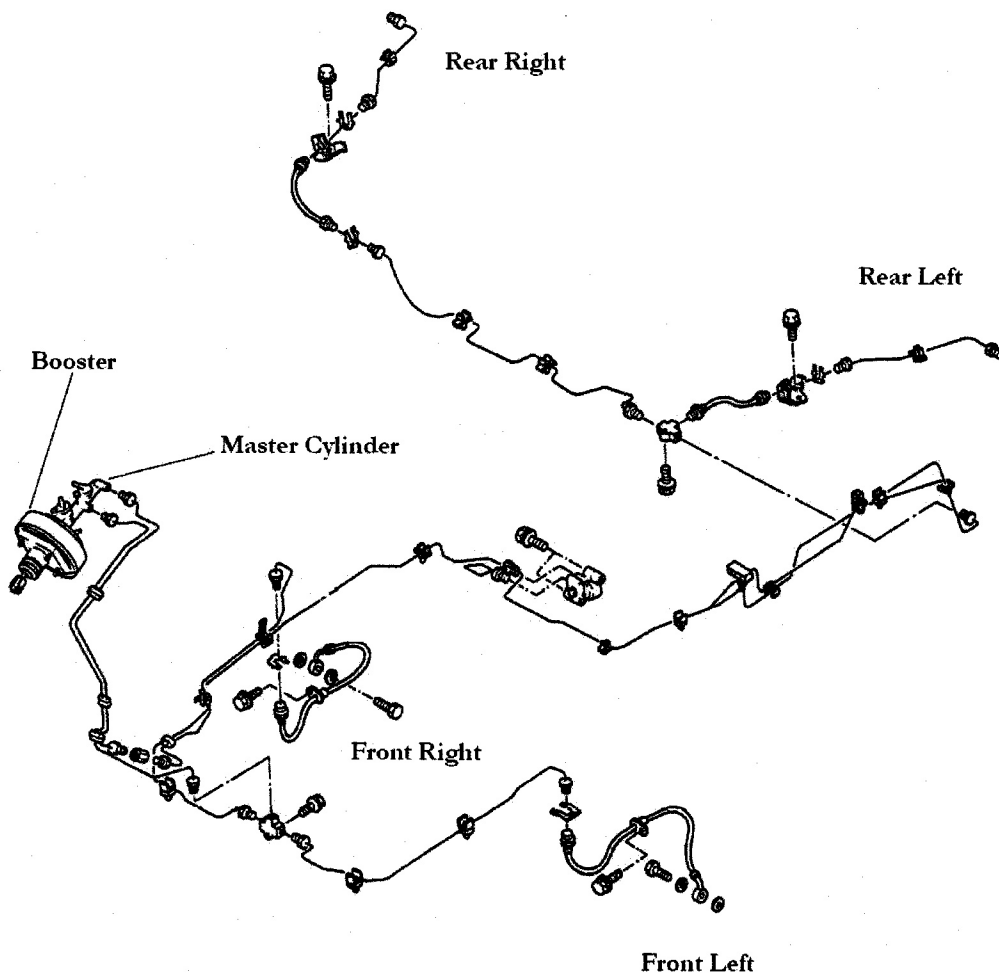
Parking Brake Cable

5. Disconnect Cable From Brakes
6. Remove Cables From Vehicle
7. Replace With New Cables

**Note: Cables Can NOT be Repaired**

## Brake System

Brake Line Full Diagram



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