

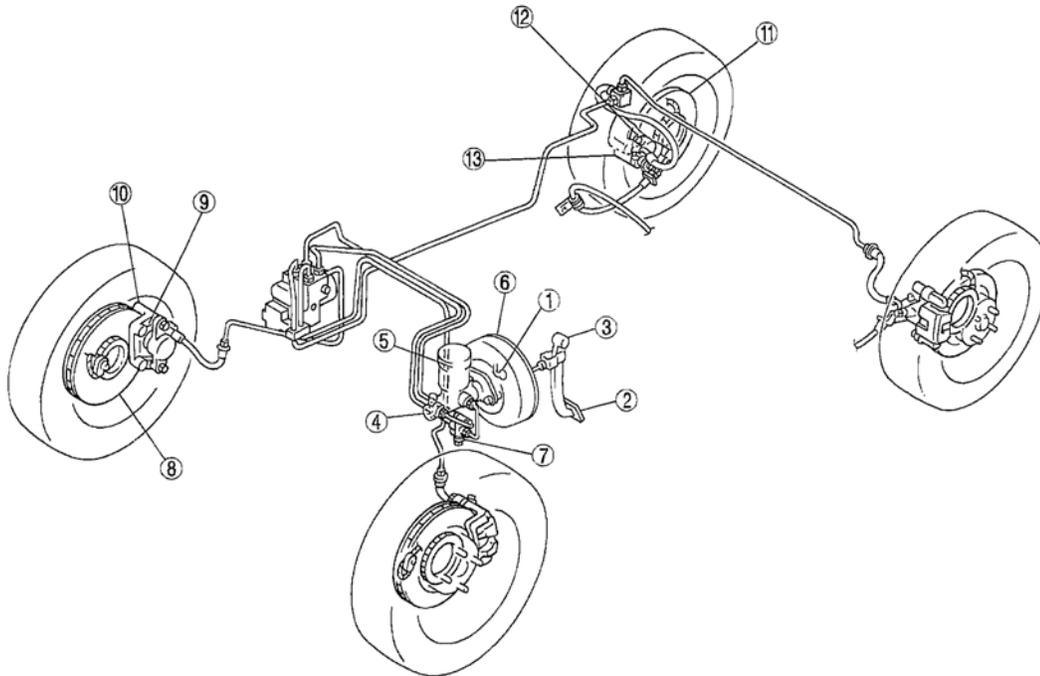
# 2005 Mazda MX-5 Miata

## 2005 BRAKES Conventional Brake System - MX-5 Miata

### 2005 BRAKES

#### Conventional Brake System - MX-5 Miata

### CONVENTIONAL BRAKE SYSTEM LOCATION INDEX



1	Vacuum line (See VACUUM LINE INSPECTION)
2	Brake pedal (See BRAKE PEDAL INSPECTION) (See BRAKE PEDAL ADJUSTMENT) (See BRAKE PEDAL REMOVAL/ INSTALLATION)
3	Brake switch (See BRAKE SWITCH INSPECTION)
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5	Fluid level sensor (See FLUID LEVEL SENSOR INSPECTION)
6	Power brake unit (See POWER BRAKE UNIT INSPECTION) (See POWER BRAKE UNIT REMOVAL/ INSTALLATION)
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14	Caliper (rear) (See CALIPER (REAR) DISASSEMBLY/ ASSEMBLY)

**Fig. 1: Identifying Conventional Brake System Components Location**

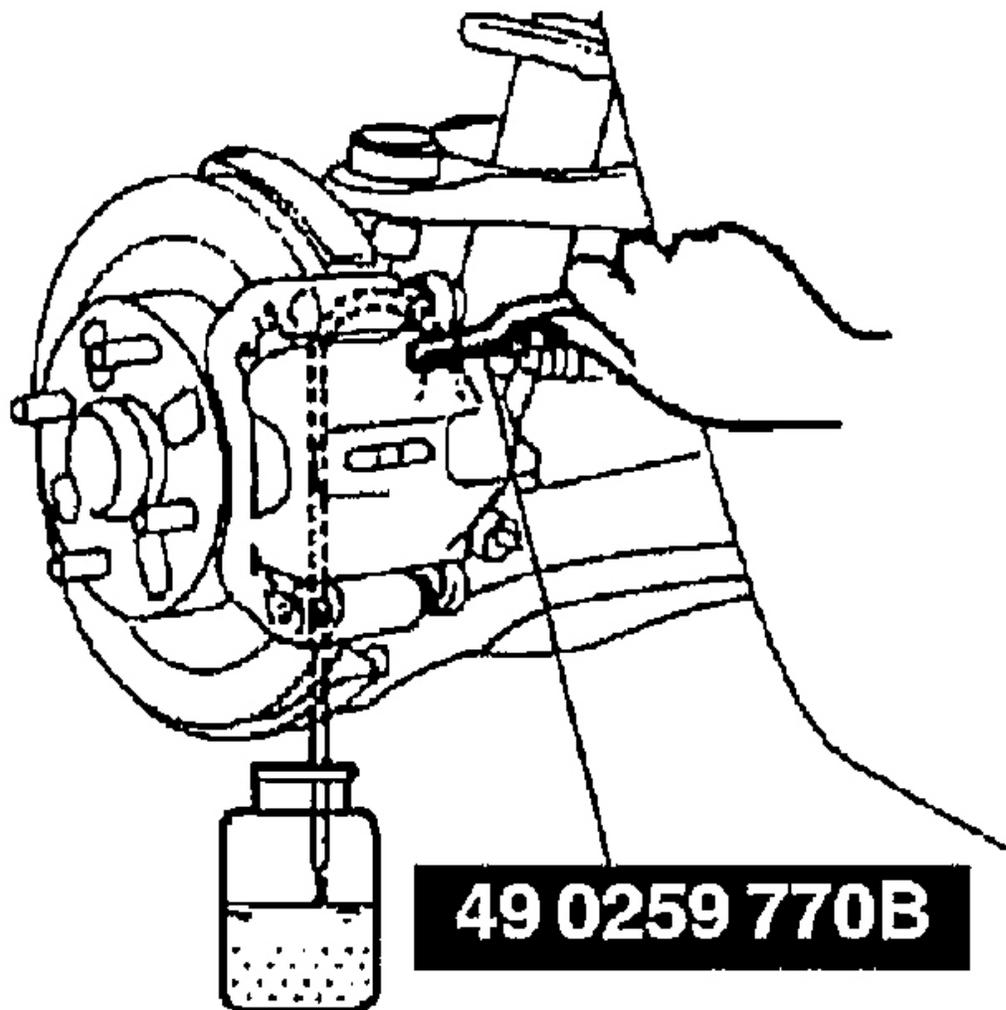
Courtesy of MAZDA MOTORS CORP.

## **AIR BLEEDING**

**NOTE:**

- **The brakes should be bled whenever a brake line is disconnected. If a hydraulic line is disconnected at the master cylinder, start at the brake caliper or wheel cylinder farthest from the brake master cylinder, and move to the next farthest brake caliper or wheel cylinder until all cylinders four cylinders have been bled. If the disconnection point is anywhere except the master cylinder, start at the point closest to the disconnection, and move to the next closest brake caliper or wheel cylinder until all four have been bled.**

1. On level ground, jack up the vehicle and support it evenly on safety stands.
2. Remove the bleeder cap and attach a vinyl tube to the bleeder screw.
3. Place the other end of the vinyl tube in a clear, fluid-filled container.
4. The first person depresses the brake pedal a few times, and then holds it in the depressed position.
5. The second person loosens the bleeder screw, drains out the fluid and closes the screw using the **SST** .



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**Fig. 2: Bleeding Air From Brake System**  
Courtesy of MAZDA MOTORS CORP.

6. Repeat step 4 and 5 until no air bubbles are seen. The reservoir should be kept about 3/4 full during bleeding to prevent air from reentering the lines.

**Tightening torque**

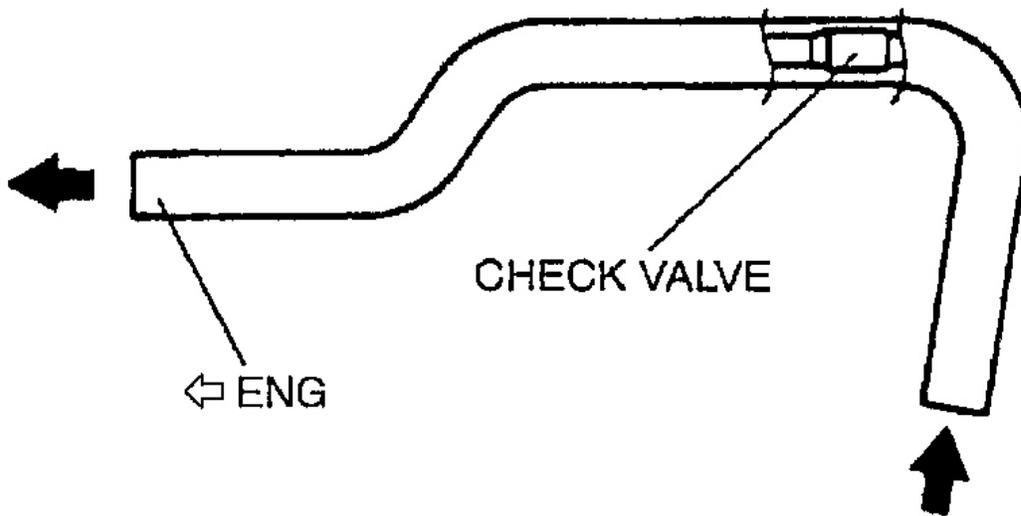
5.9-8.8 N.m {60-90 kgf.cm, 53-78 in.lbf}

7. Inspect for correct brake operation.

8. Verify that there is no fluid leakage. Wipe off any spilled fluid immediately.
9. After bleeding the brakes, add brake fluid to the maximum level.

## VACUUM LINE INSPECTION

1. Remove the clamps and vacuum hose.
2. Apply both suction and pressure to the engine-side hose, and verify that air blows only toward that side.
  - If air flows in both directions or not at all, replace the vacuum hose.



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**Fig. 3: Inspecting Vacuum Line**  
Courtesy of MAZDA MOTORS CORP.

## BRAKE PEDAL INSPECTION

### BRAKE PEDAL HEIGHT INSPECTION

1. Verify that the distance from the center of the upper surface of the pedal pad to the carpet is as specified.

**Pedal height (reference value)**

171-181 mm {6.74-7.12 in} (With carpet)

### BRAKE PEDAL PLAY INSPECTION

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1. Depress the pedal a few times to eliminate the vacuum in the system.
2. Gently depress the pedal by hand until resistance is felt, and inspect for the free play.

#### **Free play**

**4.0-12.0 mm {0.16-0.47 in}**

#### **PEDAL-TO-FLOOR CLEARANCE INSPECTION**

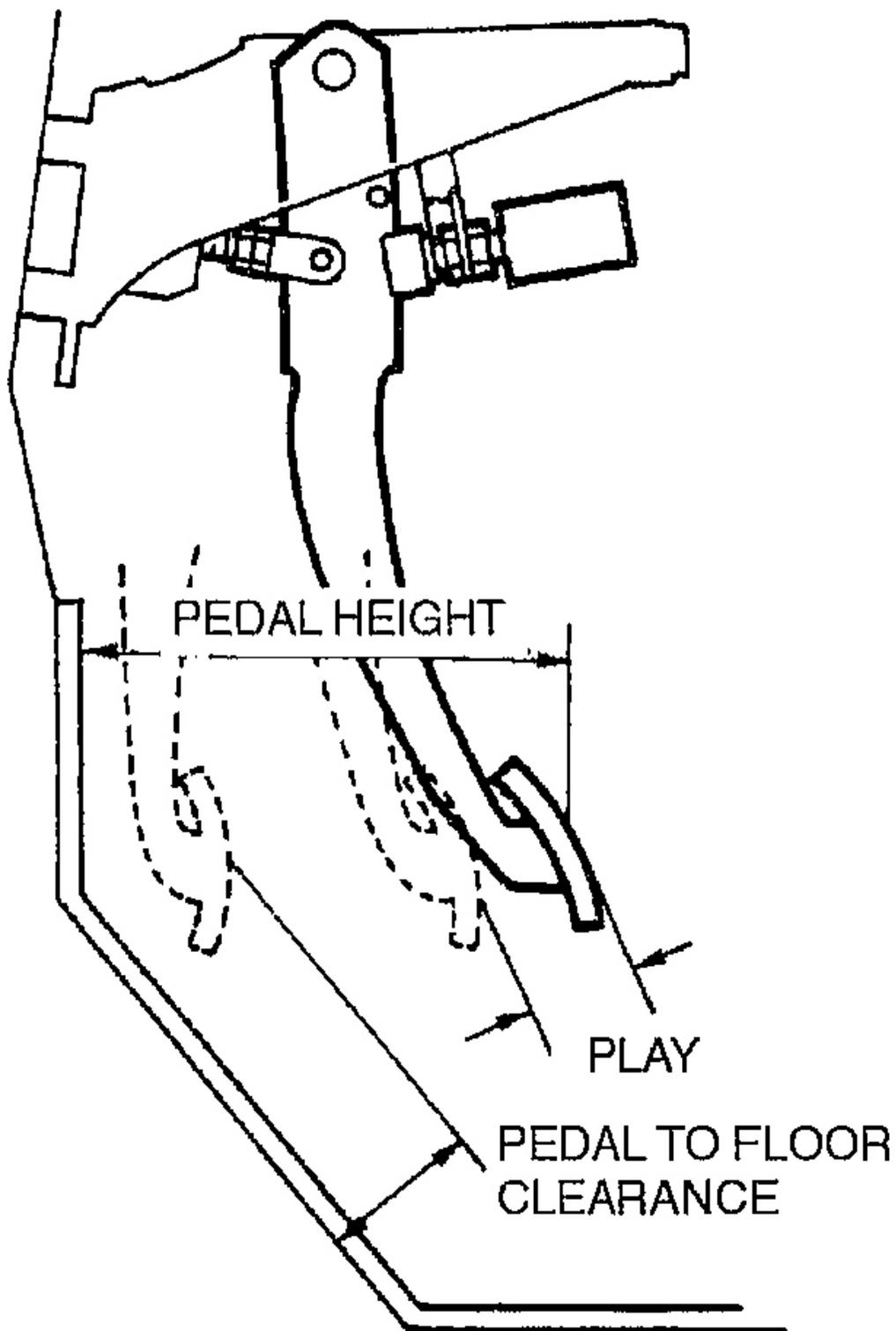
1. Verify that the distance from the floor panel to the center of the upper surface of the pedal pad is as specified when the pedal is depressed with a force of **588 N {60 kgf, 132 lbf}** .
  - If the distance is less than specified, inspect for air in the brake system.

#### **Pedal-to-floor clearance**

**95 mm {3.7 in} min. (Without carpet)**

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**Fig. 4: Inspecting Pedal-To-Floor Clearance**  
Courtesy of MAZDA MOTORS CORP.

## **BRAKE PEDAL ADJUSTMENT**

### **BRAKE PEDAL HEIGHT ADJUSTMENT**

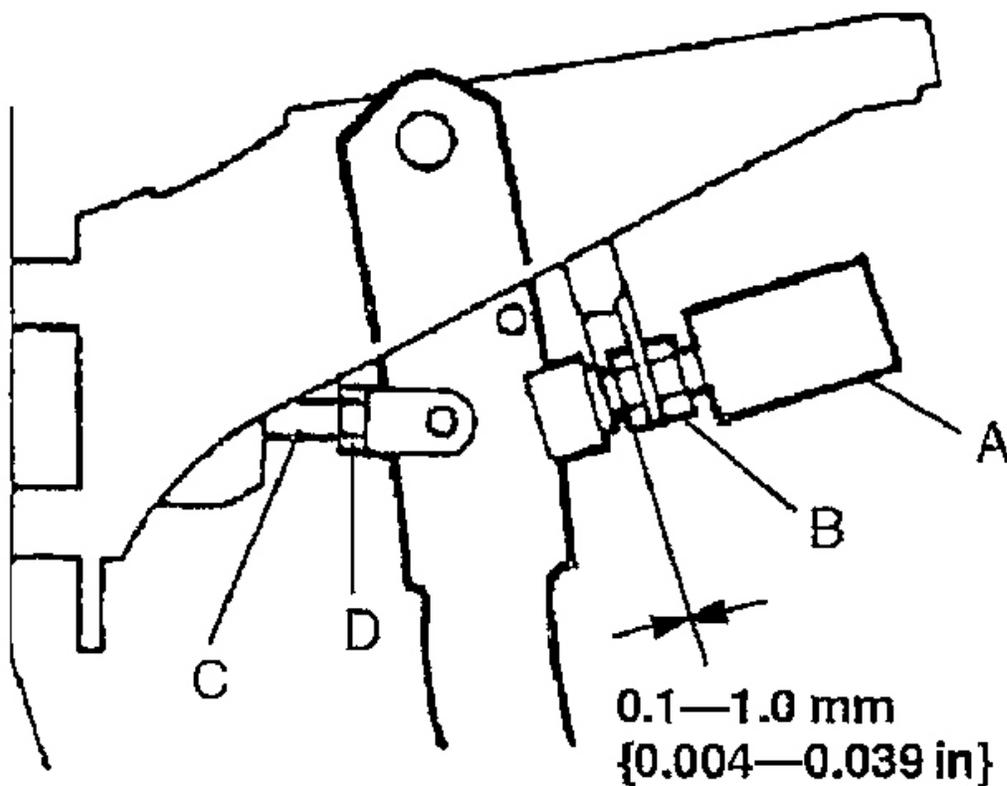
1. Disconnect the brake switch connector.
2. Loosen locknut B and turn switch A until it does not contact the pedal.
3. Loosen locknut D and turn rod C to adjust the height.
4. Tighten the bolt with locknut B so that clearance between the bolt for brake switch A and pedal stopper is within the specification.

#### **Specification**

**0.1-1.0 mm {0.004-0.039 in}**

#### **Tightening torque**

**13.8-17.6 N.m {140-180 kgf.cm, 122-156 in.lbf}**



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**Fig. 5: Identifying Clearance Between Bolt For Brake Switch And Pedal Stopper**  
Courtesy of MAZDA MOTORS CORP.

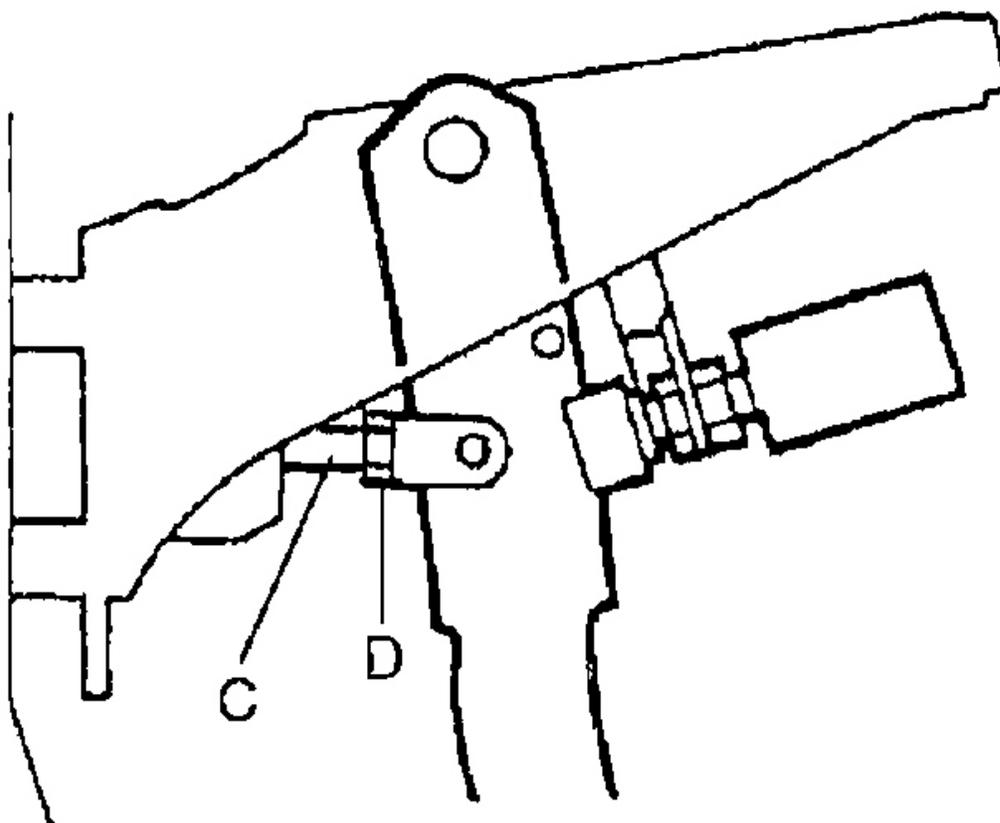
5. Connect the brake switch connector.
6. After adjustment, inspect the pedal play and the brake light operation.

### PEDAL PLAY ADJUSTMENT

1. Remove the spring pin and the clevis pin. (See **BRAKE PEDAL REMOVAL/INSTALLATION**.)
2. Loosen locknut D and turn rod C to align the holes in the fork and in the pedal.
3. Install the clevis pin and the spring pin.
4. Verify the pedal height and the brake light operation.

### Tightening torque

24-34 N.m {2.4-3.5 kgf.m, 18-25 ft.lbf}



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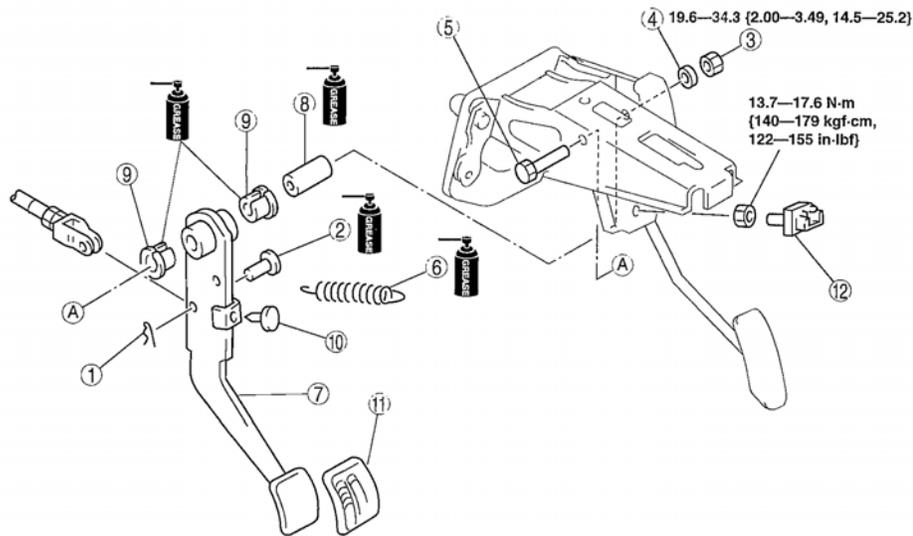
**Fig. 6: Identifying Locknut And Turn Rod**  
Courtesy of MAZDA MOTORS CORP.

## **BRAKE PEDAL REMOVAL/INSTALLATION**

1. Disconnect the brake switch connector.
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. After installation, verify and adjust the pedal height and free play as necessary.

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N-m (kgf-m, ft-lbf)

1	Spring clip
2	Clevis pin
3	Nut
4	Spring washer
5	Bolt
6	Return spring

7	Brake pedal
8	Guide pipe
9	Bushing
10	Stopper
11	Pedal pad
12	Brake switch

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**Fig. 7: Exploded View Of Brake Pedal & Torque Specifications**  
Courtesy of MAZDA MOTORS CORP.

## BRAKE SWITCH INSPECTION

1. Disconnect the brake switch connector.
2. Inspect for continuity between the terminals of the brake switch connector using the circuit tester.
  - If not as specified, replace the brake switch.

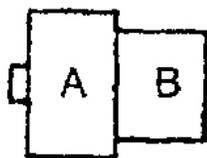
○—○ : Continuity

Condition	Terminal			
	A	B	C	D
When the brake pedal is depressed	○—○			
When the brake pedal is not depressed			○—○	

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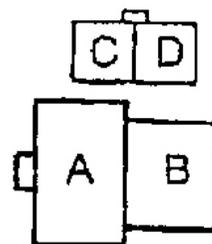
**Fig. 8: Brake Switch Connector Continuity Condition Table**  
 Courtesy of MAZDA MOTORS CORP.

WITHOUT CRUISE CONTROL SYSTEM



PART SIDE CONNECTOR  
 (VIEW FROM  
 TERMINAL SIDE)

WITH CRUISE CONTROL SYSTEM



PART SIDE CONNECTOR  
 (VIEW FROM  
 TERMINAL SIDE)

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**Fig. 9: Identifying Brake Switch Connectors**  
 Courtesy of MAZDA MOTORS CORP.

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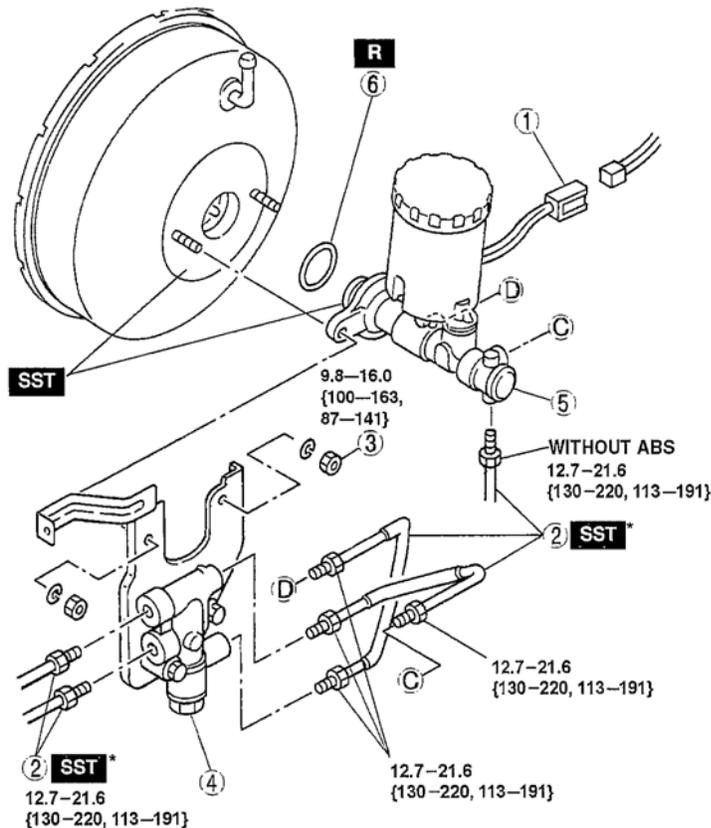
### 2005 BRAKES Conventional Brake System - MX-5 Miata

1. Remove the cruise actuator.

(See **CRUISE ACTUATOR REMOVAL/INSTALLATION** .)

2. Remove in the order indicated in the table.

3. Install in the reverse order of removal.



\* 49 0259 770B

N·m {kgf·cm, in·lbf}

1	Brake fluid level sensor connector
2	Brake pipe
3	Nut and washer

4	Proportioning bypass valve or brake pipe joint and bracket
5	Master cylinder (See Master Cylinder Installation Note)
6	O-ring

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**Fig. 10: Exploded View Of Master Cylinder & Torque Specifications**  
 Courtesy of MAZDA MOTORS CORP.

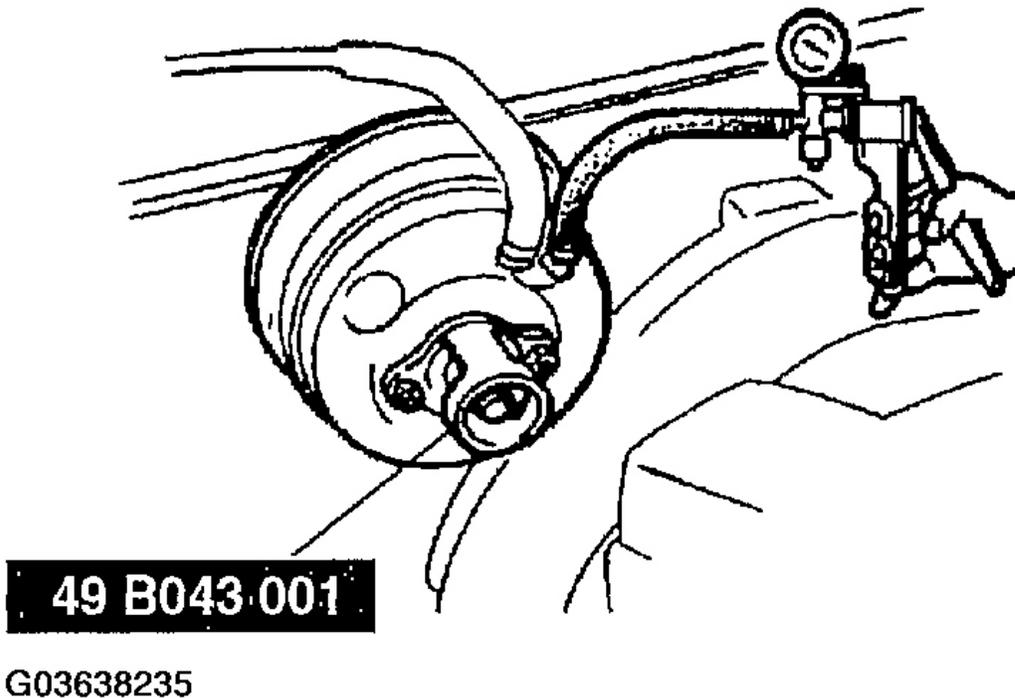
#### MASTER CYLINDER INSTALLATION NOTE

1. Turn the nut of the **SST** clockwise to fully retract the **SST** gauge rod. Attach the **SST** to the power brake unit.

**Tightening torque**

9.8-16 N.m {1.0-1.6 kgf.m, 7.3-11 ft.lbf}

2. Apply a 66.7 kPa {500 mmHg, 19.7 inHg} vacuum by using a vacuum pump.

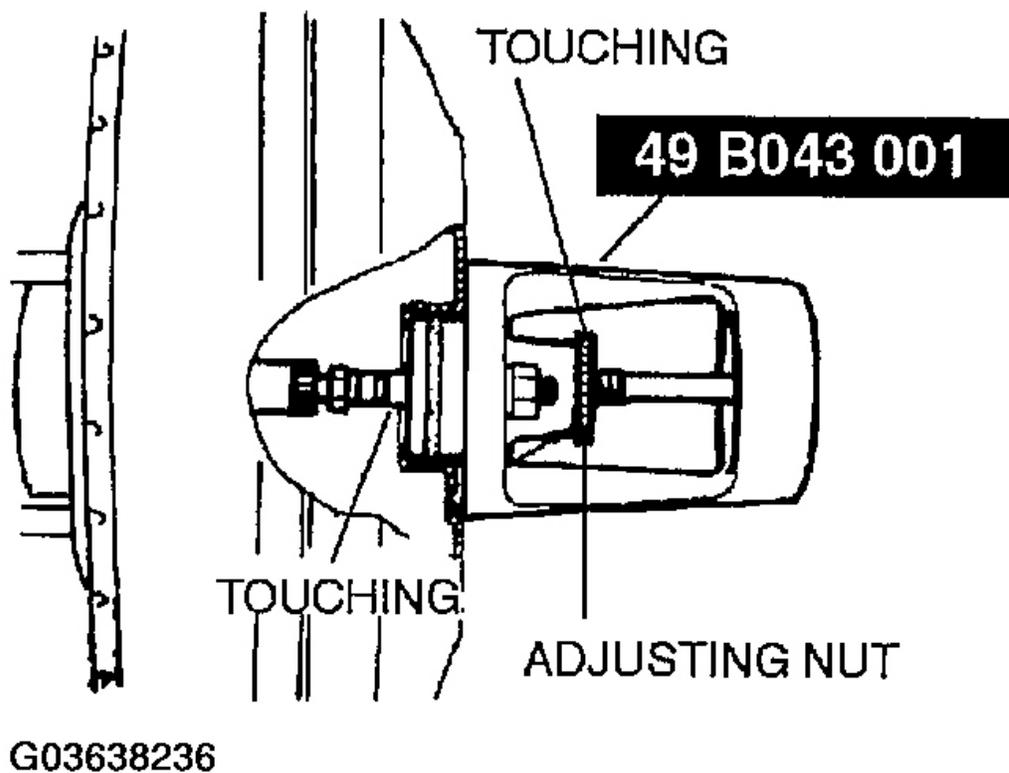


**Fig. 11: Attaching SST To Power Brake Unit**  
Courtesy of MAZDA MOTORS CORP.

3. Turn the adjusting nut of the **SST** counterclockwise until the gauge rod just contacts the push rod end of the power brake unit. Push lightly on the end of the gauge rod to be sure it is seated. Verify that there is no gap between the adjusting nut and **SST** body.
4. Remove the **SST** from the power brake unit without disturbing the adjusting nut. Set the **SST** onto the master cylinder as shown in **Fig. 12**.

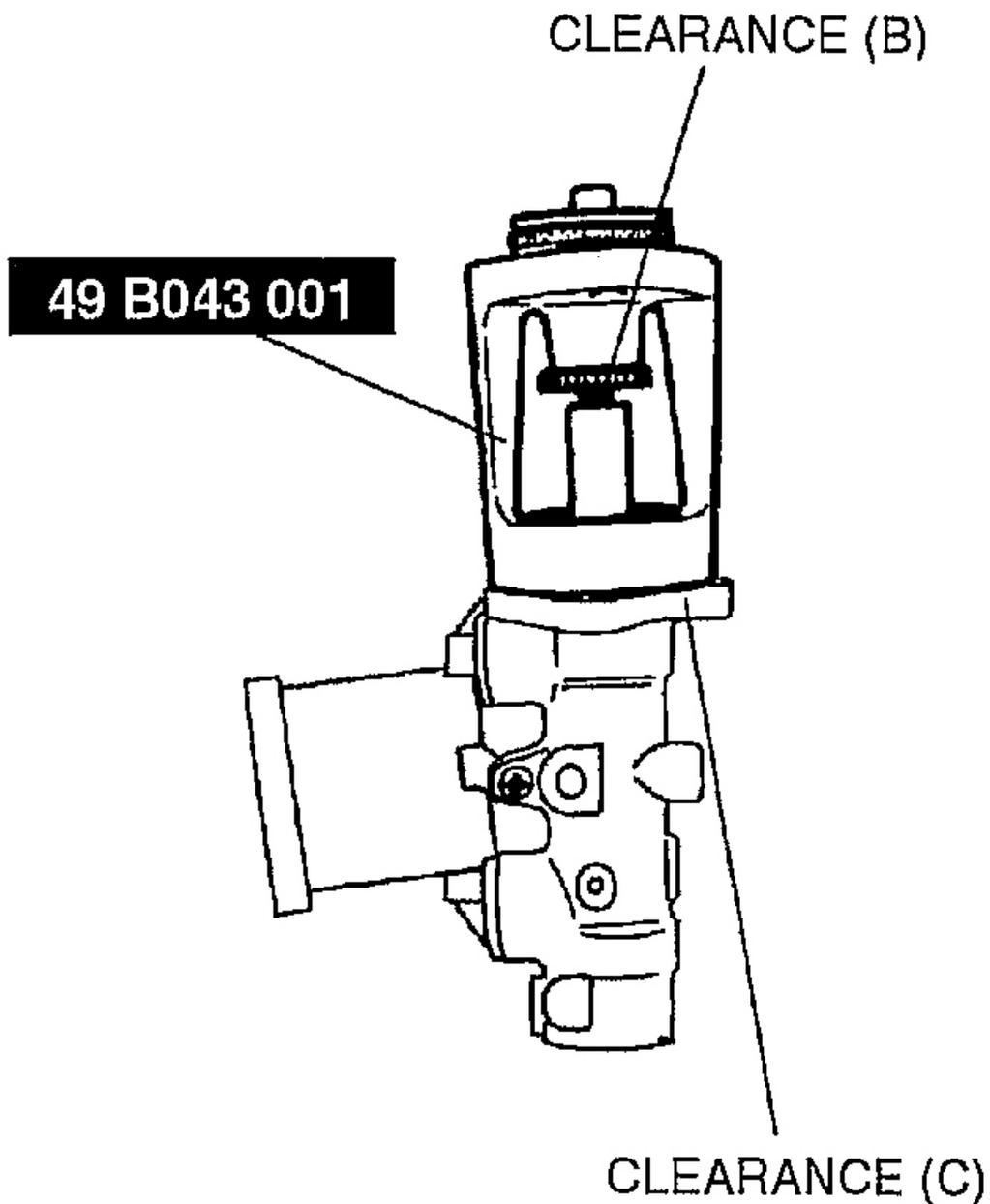
**CAUTION:**

- When pushing the **SST** gauge rod into the master cylinder piston, only use enough pressure to push the rod to the bottom of the piston. If too much pressure is applied, a false reading will occur.



**Fig. 12: Identifying Adjusting Nut Of SST**  
Courtesy of MAZDA MOTORS CORP.

5. Push lightly on the end of the SST gauge rod to be sure it has contacted the bottom of the master cylinder piston, but do not push so hard that the piston moves. Note any clearance between the SST body and the adjusting nut (clearance B) or between the body and the master cylinder (clearance C).



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**Fig. 13: Push Rod Measurement**  
Courtesy of MAZDA MOTORS CORP.

Measurement	Push rod

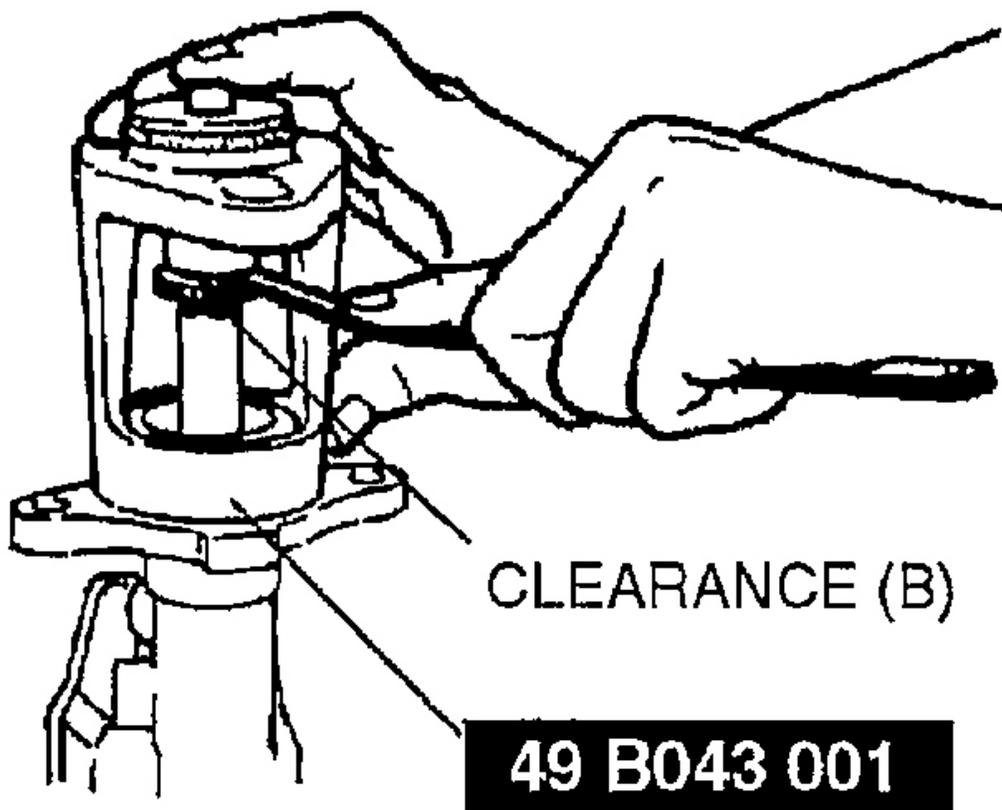
Clearance at (B)	Too short
Clearance at (C)	Too long
No clearance at (B) or (C)	

### ADJUSTING THE PUSH ROD CLEARANCE AT B

**NOTE:**

- The threads of the push rod are specially designed so that the bolt becomes harder to turn past a certain point. This is to prevent the bolt from coming loose. Turn the bolt only within this range when adjusting.

1. Push lightly on the end of the SST gauge rod, and measure the clearance between the adjusting nut and the SST body.

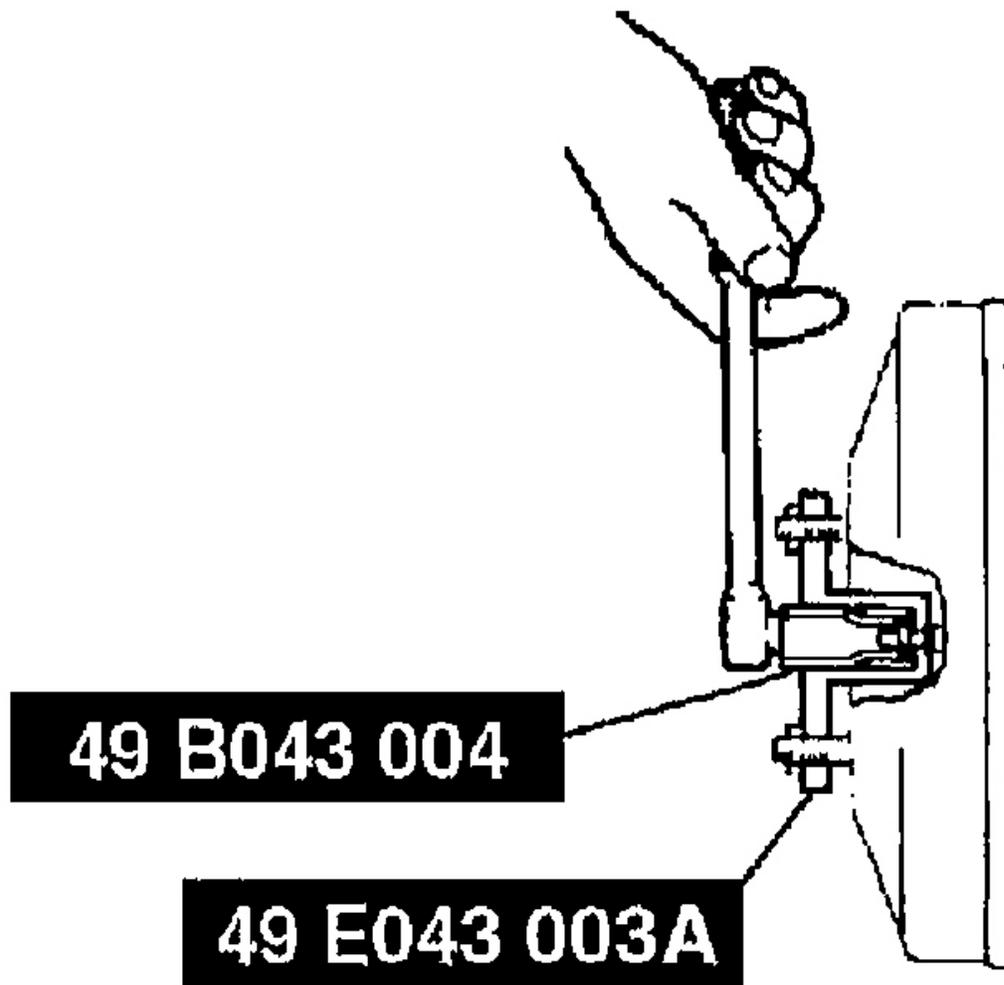


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**Fig. 14: Adjusting Push Rod Clearance At B**

Courtesy of MAZDA MOTORS CORP.

- Using the SST , turn the nut to lengthen the power booster push rod an amount equal to the sum subtracting **0.1-0.4 mm {0.004-0.016 in}** from the clearance measured at B.



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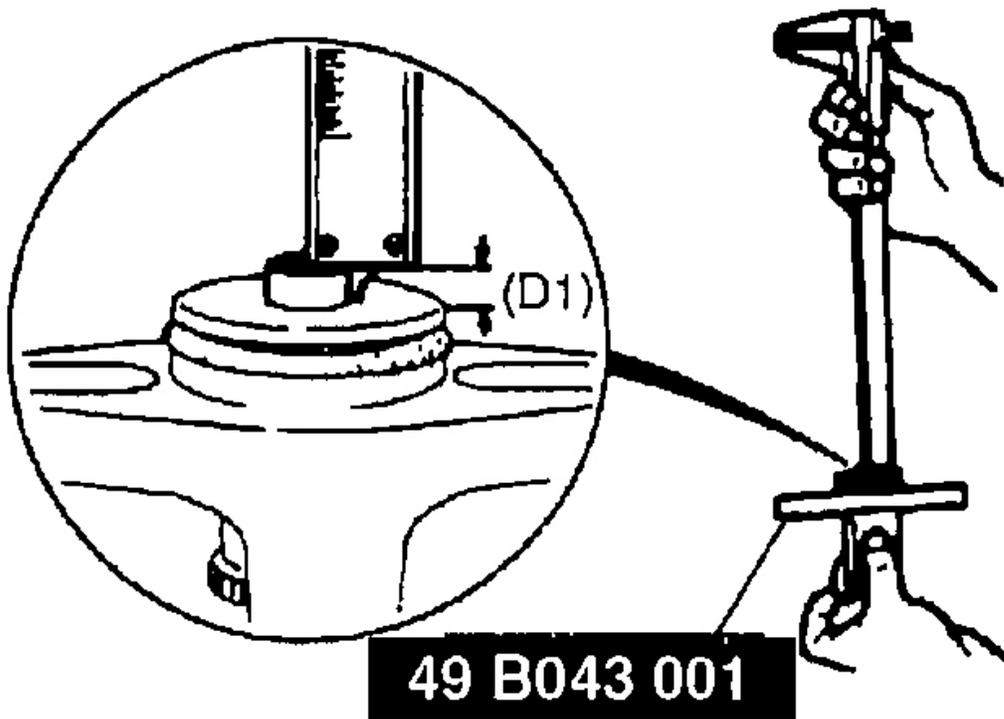
**Fig. 15: Turning Nut To Lengthen Power Booster Push Rod Using SST**  
Courtesy of MAZDA MOTORS CORP.

ADJUSTING THE PUSH ROD CLEARANCE AT C OR NO CLEARANCE AT B OR C

**NOTE:**

- The threads of the push rod are specially designed so that the bolt becomes harder to turn past a certain point. This is to prevent the bolt from coming loose. Turn the bolt only within this range when adjusting.

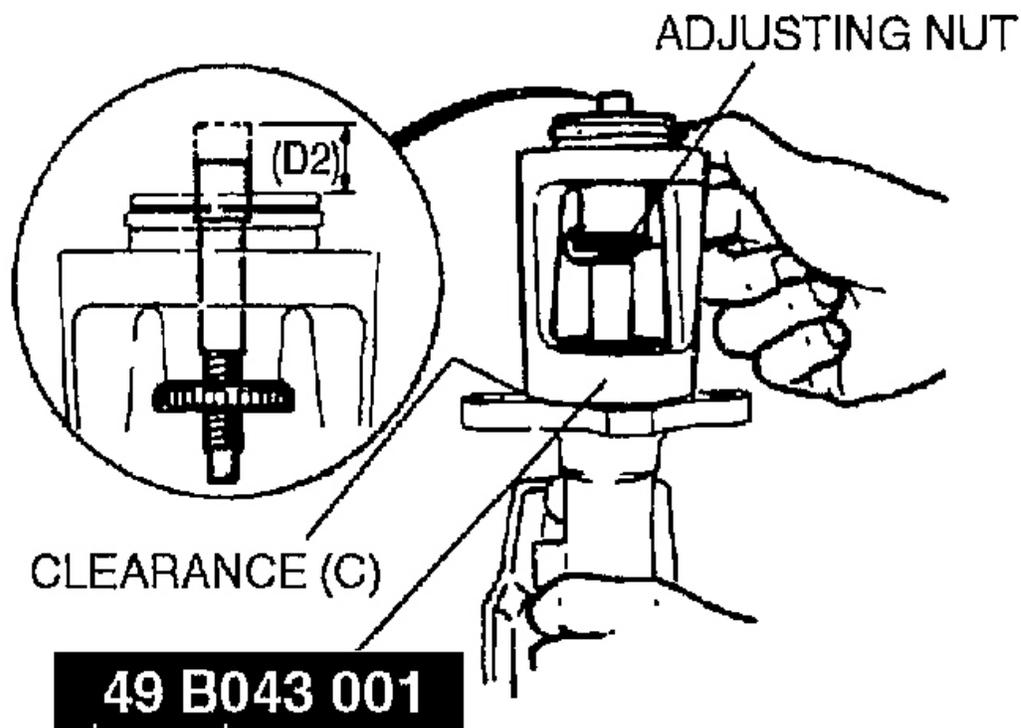
1. Measure and record height D1 of the gauge rod.
2. Turn the adjusting nut until the SST body sets squarely on the master cylinder. (Turn only enough for the body to touch.)



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**Fig. 16: Measuring Height D1 Of Gauge Rod**  
Courtesy of MAZDA MOTORS CORP.

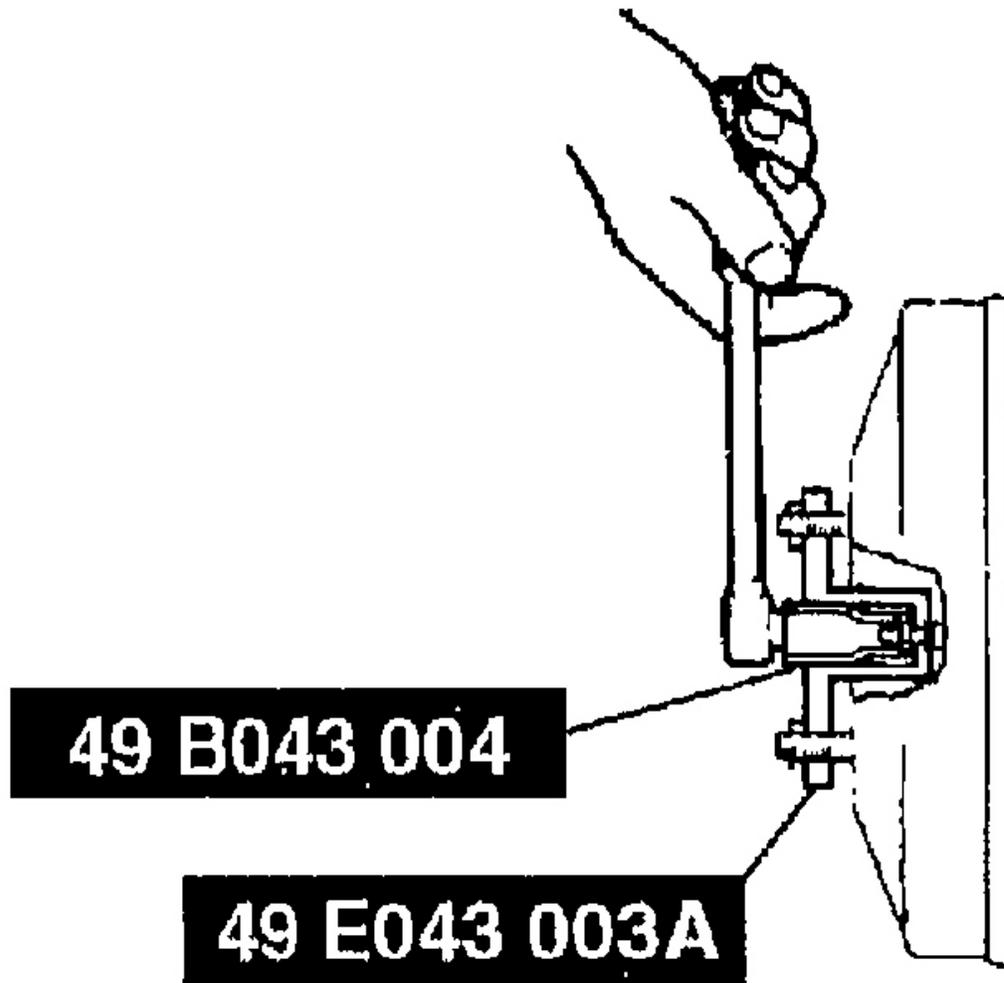
3. Measure and record height D2 of the gauge rod.



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**Fig. 17: Measuring Height D2 Of Gauge Rod**  
Courtesy of MAZDA MOTORS CORP.

4. Subtract D1 from D2 and add **0.1-0.4 mm {0.004-0.016 in}** . Using the **SST** , turn the nut to shorten the power booster push rod an amount equal to the sum.

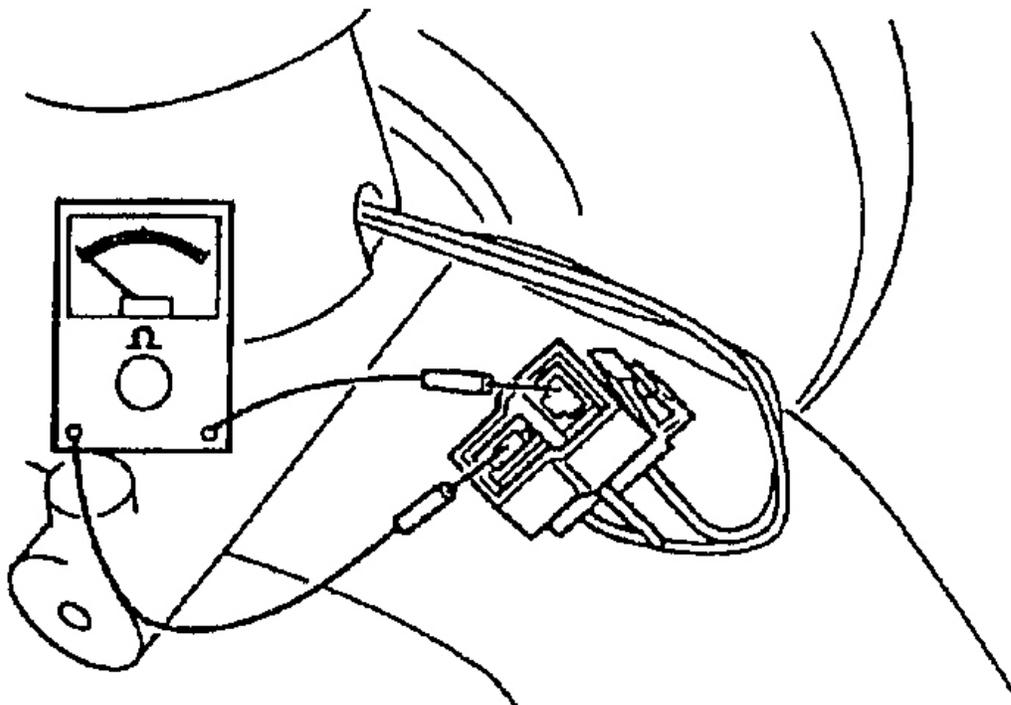


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**Fig. 18: Turning Nut To Shorten Power Booster Push Rod Using SST**  
Courtesy of MAZDA MOTORS CORP.

## FLUID LEVEL SENSOR INSPECTION

1. Disconnect the sensor connector.
2. Connect an ohmmeter to the connector.



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**Fig. 19: Connecting Ohmmeter To Connector**  
Courtesy of MAZDA MOTORS CORP.

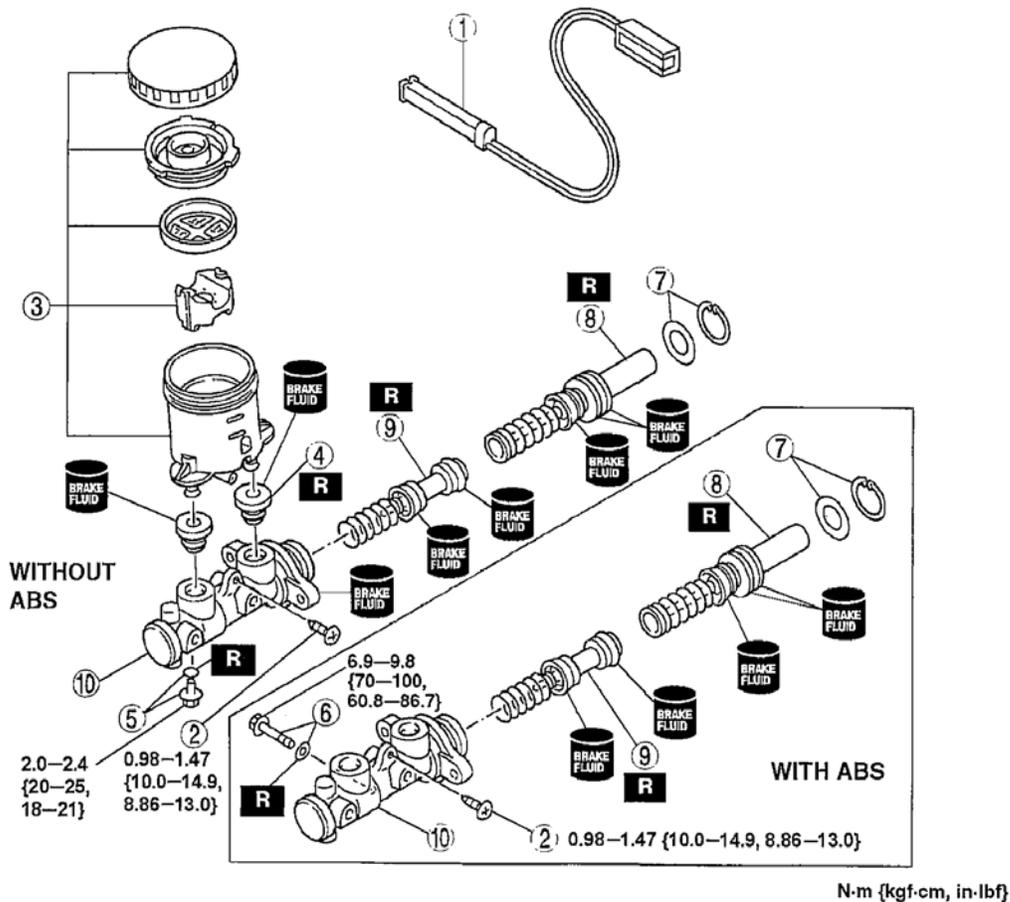
3. Starting with the fluid level above MIN, verify that there is no continuity.
4. Remove the brake fluid and verify that there is continuity when the level is below MIN.
  - If not as specified, replace the sensor.

## **MASTER CYLINDER DISASSEMBLY/ASSEMBLY**

1. After removing the brake fluid, disassemble in the order indicated in the table,
2. Assemble in the reverse order of disassembly.

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1	Fluid level sensor
2	Screw
3	Reservoir component
4	Bushings
5	Stop screw and O-ring (without ABS) (See Stop Screw and O-Ring (Without ABS) Assembly Note)

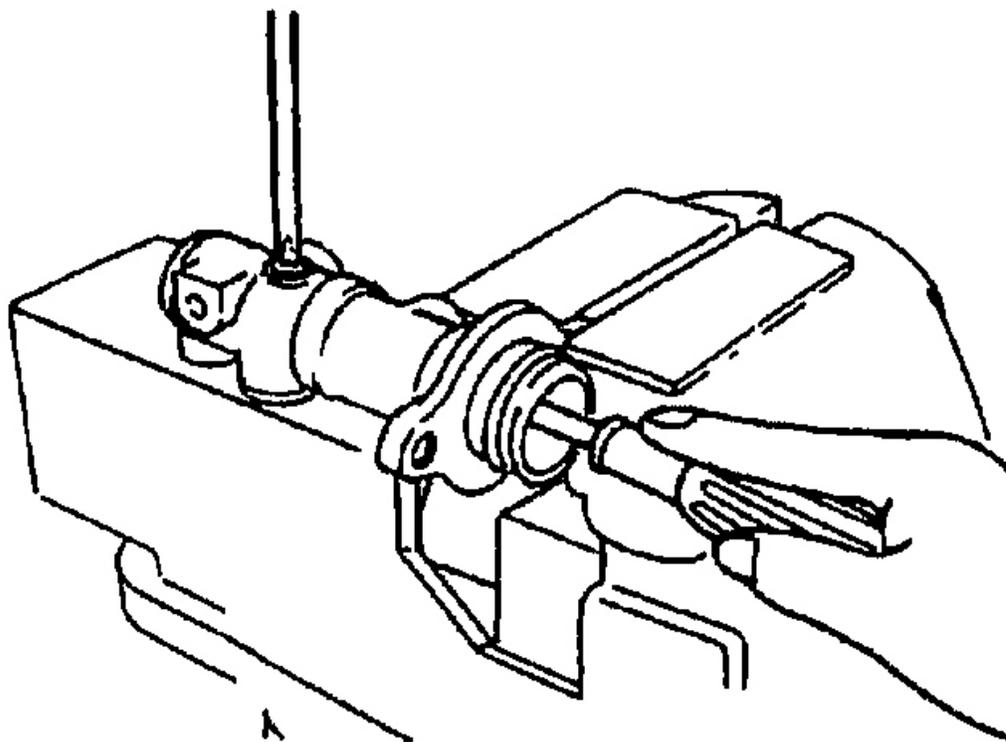
6	Stop pin and O-ring (with ABS) (See Stop Pin and O-Ring (With ABS) Assembly Note)
7	Snap ring and spacer
8	Primary piston component
9	Secondary piston component
10	Master cylinder body

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**Fig. 20: Exploded View Of Master Cylinder & Torque Specifications**  
 Courtesy of MAZDA MOTORS CORP.

### STOP SCREW AND O-RING (WITHOUT ABS) ASSEMBLY NOTE

1. Push the primary piston component in fully.



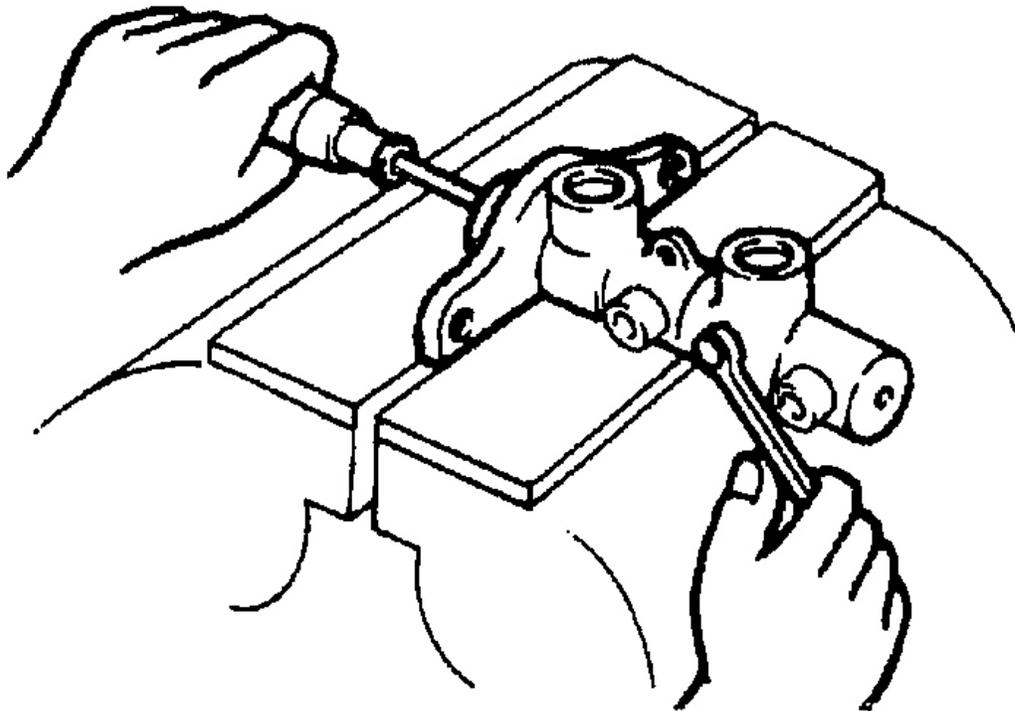
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**Fig. 21: Pushing Primary Piston Component In Fully**  
Courtesy of MAZDA MOTORS CORP.

2. Install and tighten a new O-ring and the stop screw.
3. Push and release the piston to verify that it is held by the stop screw.

**STOP PIN AND O-RING (WITH ABS) ASSEMBLY NOTE**

1. Install the secondary piston component with the piston hole facing the stop pin.
2. Install and tighten a new O-ring and the stop pin.
3. Push and release the piston to verify that it is held by the stop pin.



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**Fig. 22: Installing New O-Ring And Stop Pin**  
Courtesy of MAZDA MOTORS CORP.

## POWER BRAKE UNIT INSPECTION

### POWER BRAKE UNIT FUNCTION INSPECTION (SIMPLE METHOD)

#### Step 1

1. With the engine stopped, depress the pedal a few times.
2. With the pedal depressed, start the engine.
  - If the pedal moves down slightly immediately after the engine starts, the unit is operating.

#### Step 2

1. Start the engine.
2. Stop the engine after it has run for **1 or 2 minutes** .
3. Depress the pedal with the usual force.

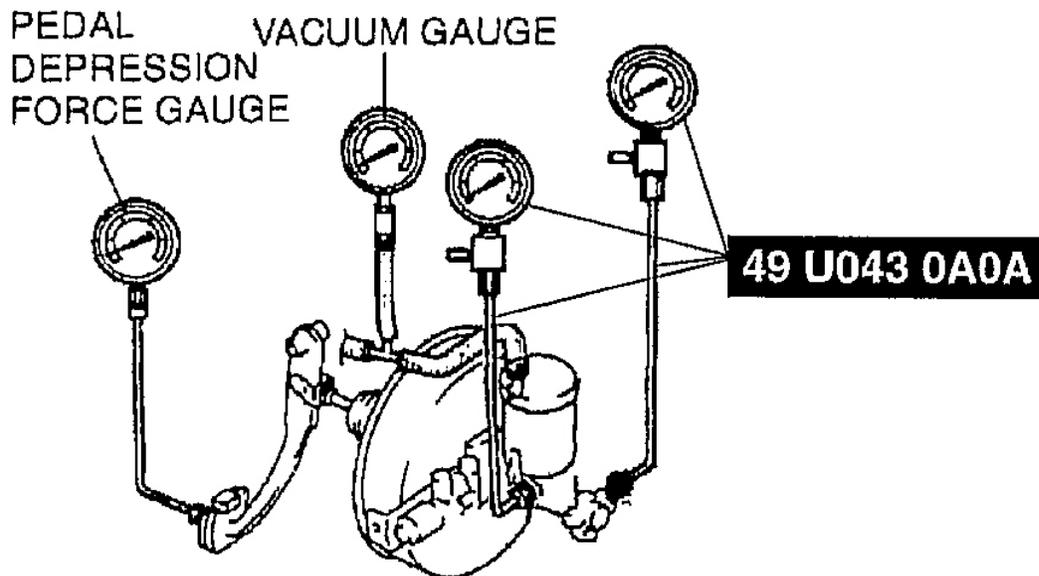
- If the first pedal stroke is long and becomes shorter with subsequent strokes, the unit is operating.
- If a problem is found, inspect for damage or improper connection of the check valve or vacuum hose. Repair if necessary and inspect it once again.

### Step 3

1. Start the engine.
2. Depress the pedal with the usual force.
3. Stop the engine with the pedal held depressed.
4. Hold the pedal down for **about 30 seconds** .
  - If the pedal height does not change, the unit is operating.
  - If there is a problem, inspect for damage or improper connection of the check valve or vacuum hose. Repair if necessary and inspect it once again.
  - If the nature of the problem is still not clear after following the 3 steps above, follow the more detailed inspect described in **INSPECTION USING GAUGES**.

### POWER BRAKE UNIT FUNCTION INSPECTION (INSPECTION USING GAUGES)

1. Connect the **SST** gauges, a vacuum gauge, and a pedal depression gauge as shown in **Fig. 23**. Bleed the air from the **SST** gauges before performing the following tests.



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**Fig. 23: Connecting SST Gauges, Vacuum Gauge And Pedal Depression Gauge**

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#### Courtesy of MAZDA MOTORS CORP.

##### Checking for vacuum loss (unloaded condition)

1. Start the engine.
2. Stop the engine when the vacuum gauge indicates **66.7 kPa {500 mmHg, 19.7 inHg}** .
3. Observe the vacuum gauge for **15 seconds** .
  - If the gauge indicates **63.4-66.6 kPa {475-500 mmHg, 18.8-19.6 inHg}** , the unit is operating.

##### Checking for vacuum loss (loaded condition)

1. Start the engine.
2. Depress the brake pedal with a force of **196 N {20 kgf, 44 lbf}** .
3. With the brake pedal held depressed, stop the engine when the vacuum gauge indicates **66.7 kPa {500 mmHg, 19.7 inHg}** .
4. Observe the vacuum gauge for **15 seconds** .
  - If the gauge indicates **63.4-66.6 kPa {475-500 mmHg, 18.8-19.6 inHg}** , the unit is operating.

##### Checking for hydraulic pressure

1. With the engine is stopped (vacuum **0 kPa {0 mmHg, 0 inHg}** ) and the fluid pressure is within the specification, the unit is operating.

Pedal force	Fluid pressure
196 N {20 kgf, 44 lbf}	740 kPa {7.55 kgf/cm <sup>2</sup> , 107 psi}

2. Start the engine. Depress the brake pedal when the vacuum reaches **66.7 kPa {500 mmHg, 19.7 inHg}** .
  - If the fluid pressure is within specification, the unit is operating.

Pedal force	Fluid pressure
196 N {20 kgf, 44 lbf}	With ABS (BP with TC (vehicle equipped with 17 inch wheel)):4,700 kPa {48 kgf/cm <sup>2</sup> , 683 psi}
	With ABS (vehicle equipped with 15 and 16 inch wheel):7,200 kPa {73 kgf/cm <sup>2</sup> , 1,038 psi}
	Without ABS (vehicle equipped with 16 inch wheel):4,700 kPa {48 kgf/cm <sup>2</sup> , 683 psi}
	Without ABS (vehicle equipped with 15 inch wheel):7,200 kPa {73 kgf/cm <sup>2</sup> , 1,038 psi}

## POWER BRAKE UNIT REMOVAL/INSTALLATION

1. Remove the master cylinder and the proportioning bypass valve (without ABS) and brake pipe joint (with ABS).

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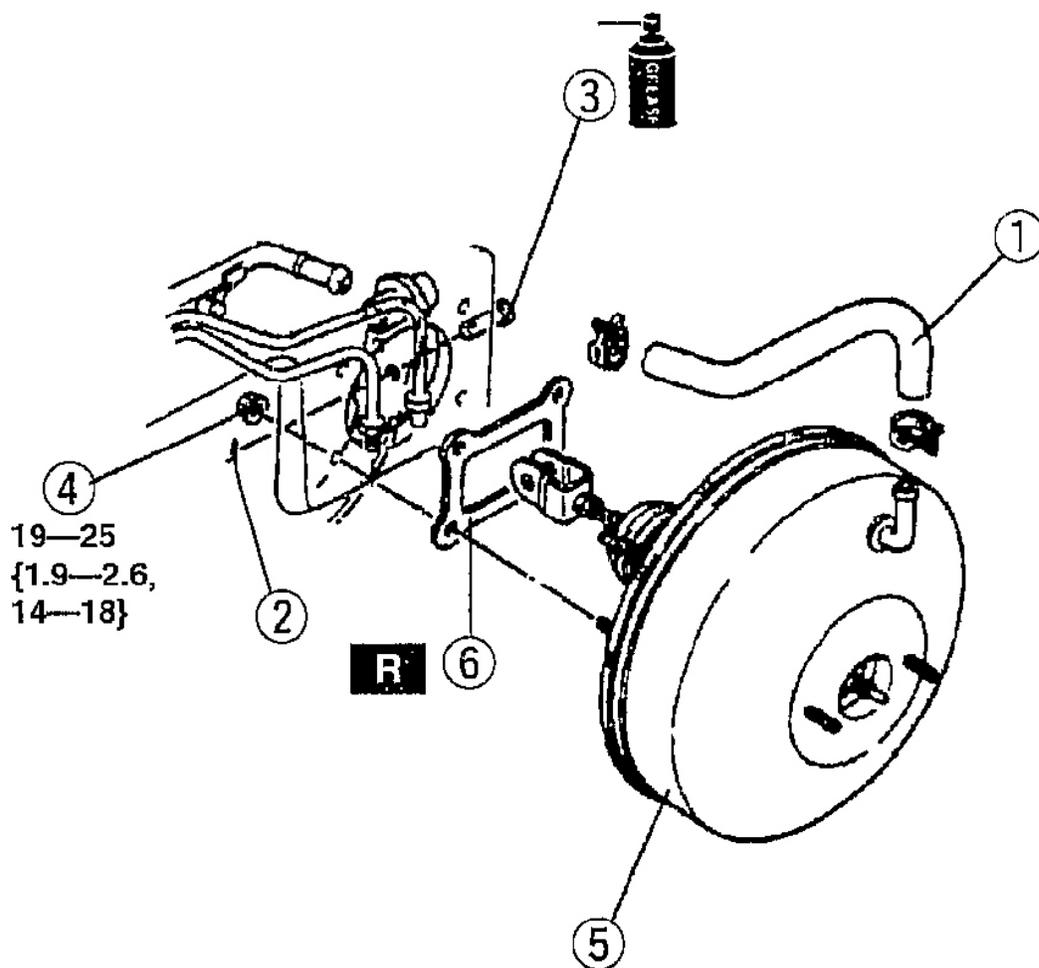
### 2005 BRAKES Conventional Brake System - MX-5 Miata

(See **MASTER CYLINDER REMOVAL/INSTALLATION.**)

2. Remove in the order indicated in the table.

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N·m {kgf·m, ft·lbf}

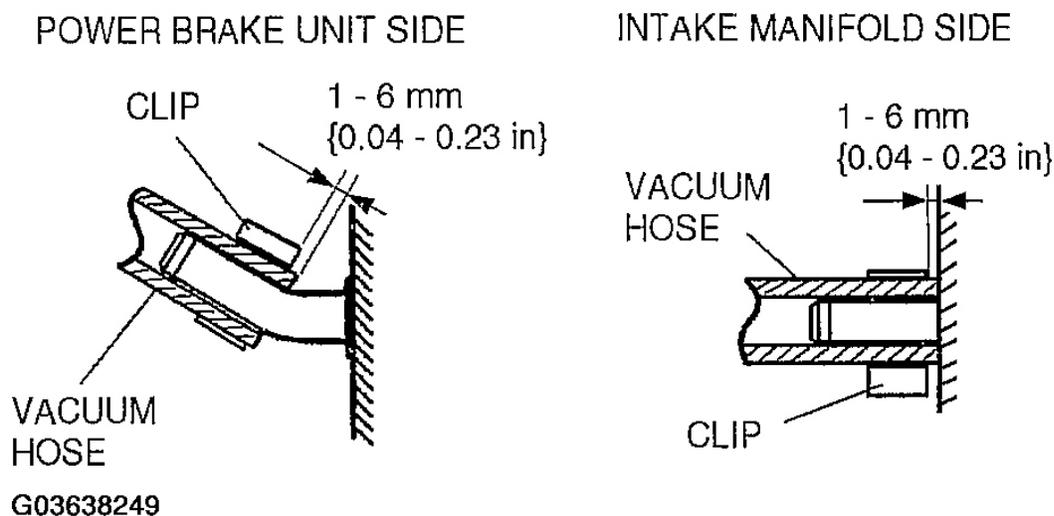
1	Vacuum hose (See Vacuum Hose Installation Note)
2	Snap pin
3	Clevis pin
4	Nut
5	Power brake unit
6	Gasket

**Fig. 24: Removing Power Brake Unit & Torque Specifications**  
 Courtesy of MAZDA MOTORS CORP.

3. Install in the reverse order of removal.

**VACUUM HOSE INSTALLATION NOTE**

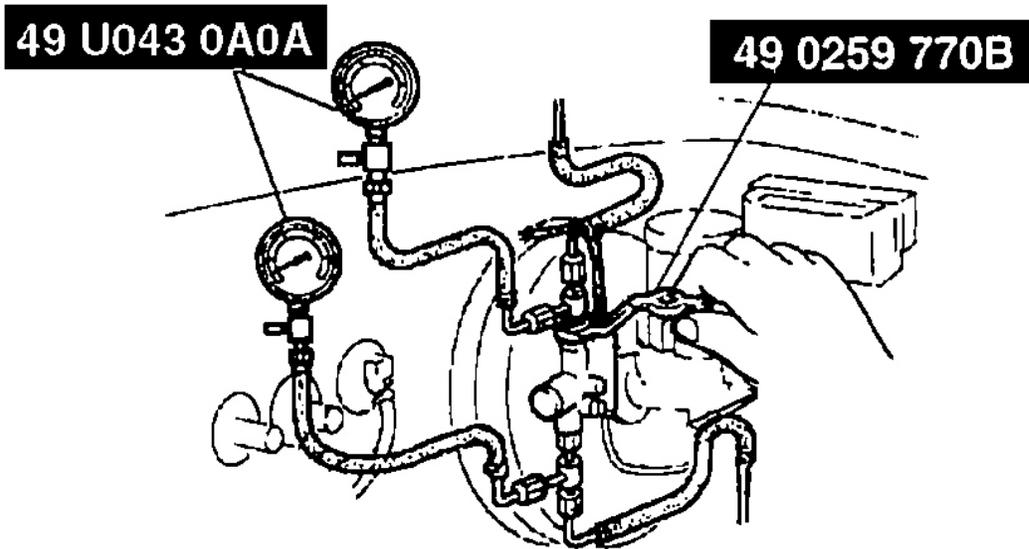
1. Install the vacuum hose to the power brake unit and intake manifold as shown in **Fig. 25**.



**Fig. 25: Installing Vacuum Hose To Power Brake Unit And Intake Manifold**  
 Courtesy of MAZDA MOTORS CORP.

**PROPORTIONING BYPASS VALVE INSPECTION [WITHOUT ABS]**

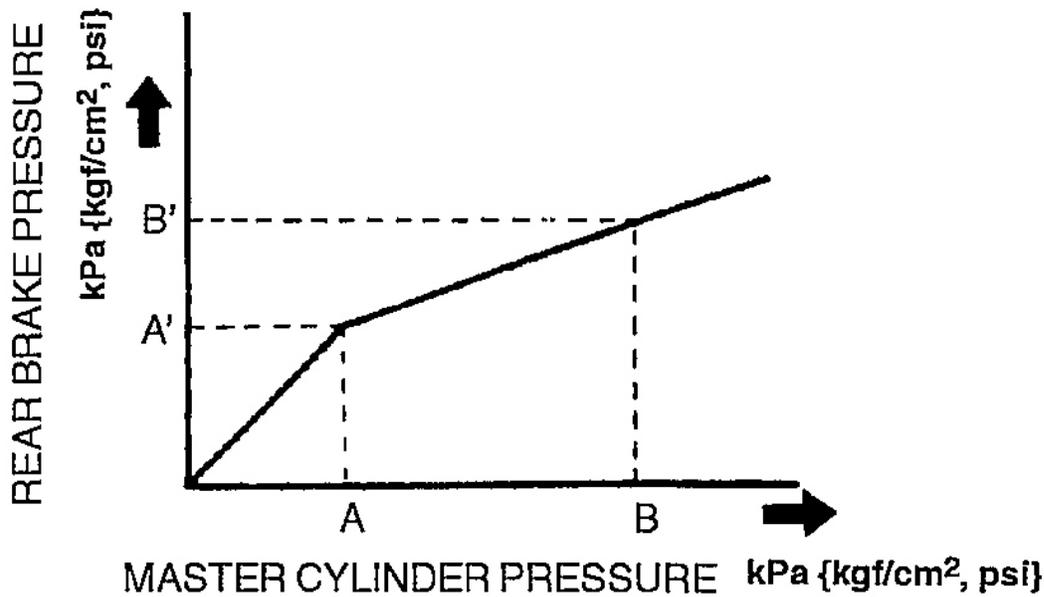
1. Connect the SSTs and the adapters to the brake pipes as shown in **Fig. 26**.
2. Bleed the air from the brake system.



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**Fig. 26: Connecting SSTs And Adapters To Brake Pipes**  
Courtesy of MAZDA MOTORS CORP.

3. Measure the fluid pressure from the master cylinder and to the rear brakes.
  - If not as specified, replace the valve component.



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**Fig. 27: Master Cylinder And To Rear Brakes Fluid Pressure Specifications**  
 Courtesy of MAZDA MOTORS CORP.

**Master Cylinder Pressure - Rear Brake Pressure Graph**

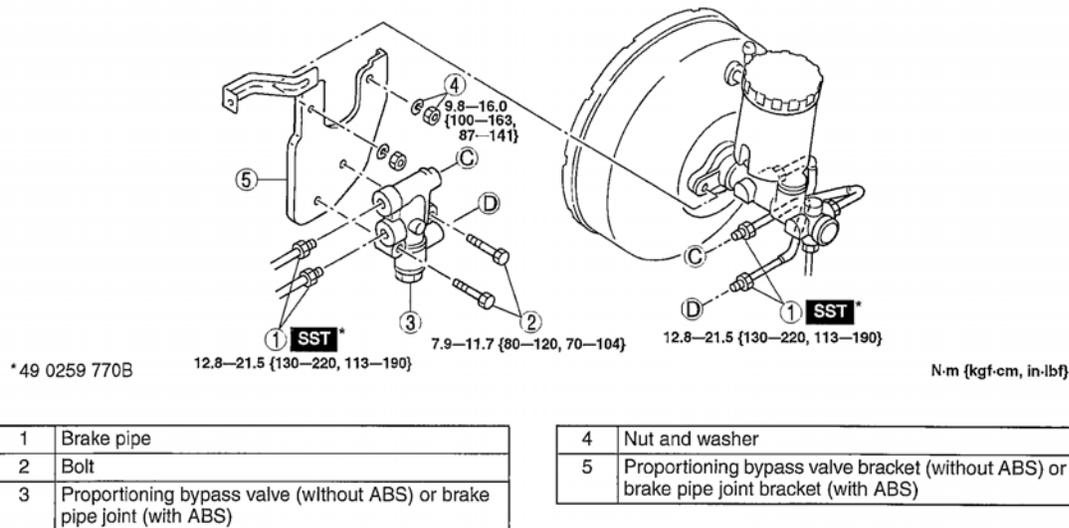
Fluid pressure kPa {kgf/cm <sup>2</sup> , psi}			
A	A'	B	B'
3,923 {40, 569}	3,923 {40, 569} +/-294 {3, 43}	5,884 {60, 853}	4,844 {49.4, 702} +/-392 {4, 57}

**PROPORTIONING BYPASS VALVE (WITHOUT ABS) OR BRAKE PIPE JOINT (WITH ABS) REPLACEMENT**

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.

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**Fig. 28: Removing Brake Pipe Joint (With ABS) Or Proportioning Bypass Valve (Without ABS) & Torque Specifications**

Courtesy of MAZDA MOTORS CORP.

## FRONT BRAKE (DISC) INSPECTION

### BRAKE JUDDER REPAIR HINT

#### Description

1. Brake judder concern has the following 3 characteristics:

#### Steering wheel vibration

1. Steering wheel vibrates in the direction of its rotation. This characteristic is most noticeable when applying brakes at a vehicle speed of **100-140 km/h {62.1-86.8 mph}** .

#### Floor vibration

1. When applying brakes, the vehicle body shakes back and forth. The seriousness of shake is not influenced by vehicle speed.

#### Brake pedal vibration

1. When applying brakes, a pulsating force tries to push the brake pad back occurs. The pulsation is transmitted to the brake pedal.
2. The following are the main possible causes of brake judder:

**Due to an excessive runout (side-to-side wobble) of disc plate, the thickness of disc plate is uneven.**

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1. If the runout is **more than 0.05 mm {0.002 in}** at the position **10 mm {0.39 in}** from the disc plate edge, an uneven wear occurs on the disc plate because the pad contacts the plate unevenly.
2. If the runout is **less than 0.05 mm {0.002 in}**, uneven wear does not occur.

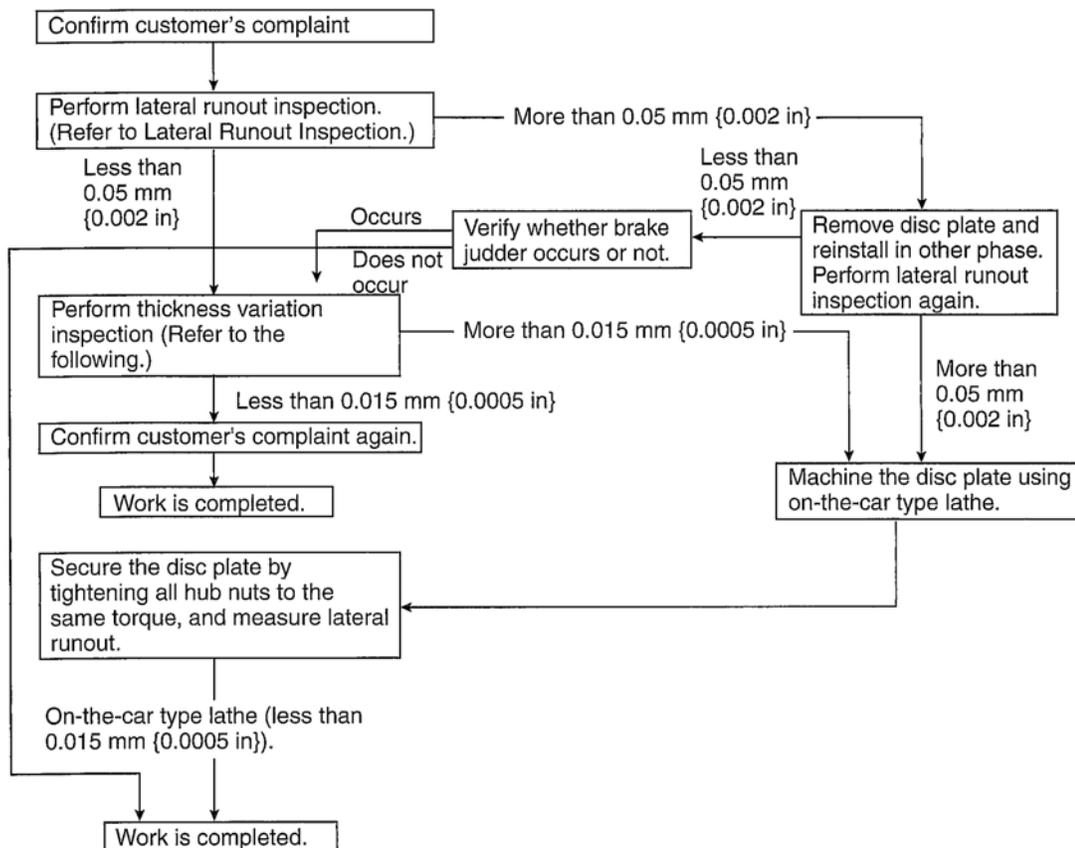
#### The disc plate is deformed by heat.

1. Repeated panic braking may raise the temperature in some portions of disc plate by **approximately 1,000 °C {1,832 °F}**. This results in deformed disc plate.

#### Due to corrosion, the thickness and friction coefficient of disc plate change.

1. If a vehicle is parked under damp conditions for a long time, corrosion occurs on the friction surface of disc plate.
2. The thickness of corrosion is uneven and sometimes appears like a wave pattern, which changes the friction coefficient and causes a reaction force.

#### Inspection and repair procedure



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**Fig. 29: Inspection And Repair Procedure Flow Chart**

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Courtesy of MAZDA MOTORS CORP.

#### Lateral runout inspection

1. To secure the disc plate and the hub, tighten the hub nuts upside down or insert a washer (thickness **10 mm {0.39 in}** , inner diameter **more than 12 mm {0,47 in}** ) between the hub bolt and the hub nut.

**NOTE:**

- **The component parts of the SST (49 B017 001 or 49 G019 003) can be used as a suitable washer.**

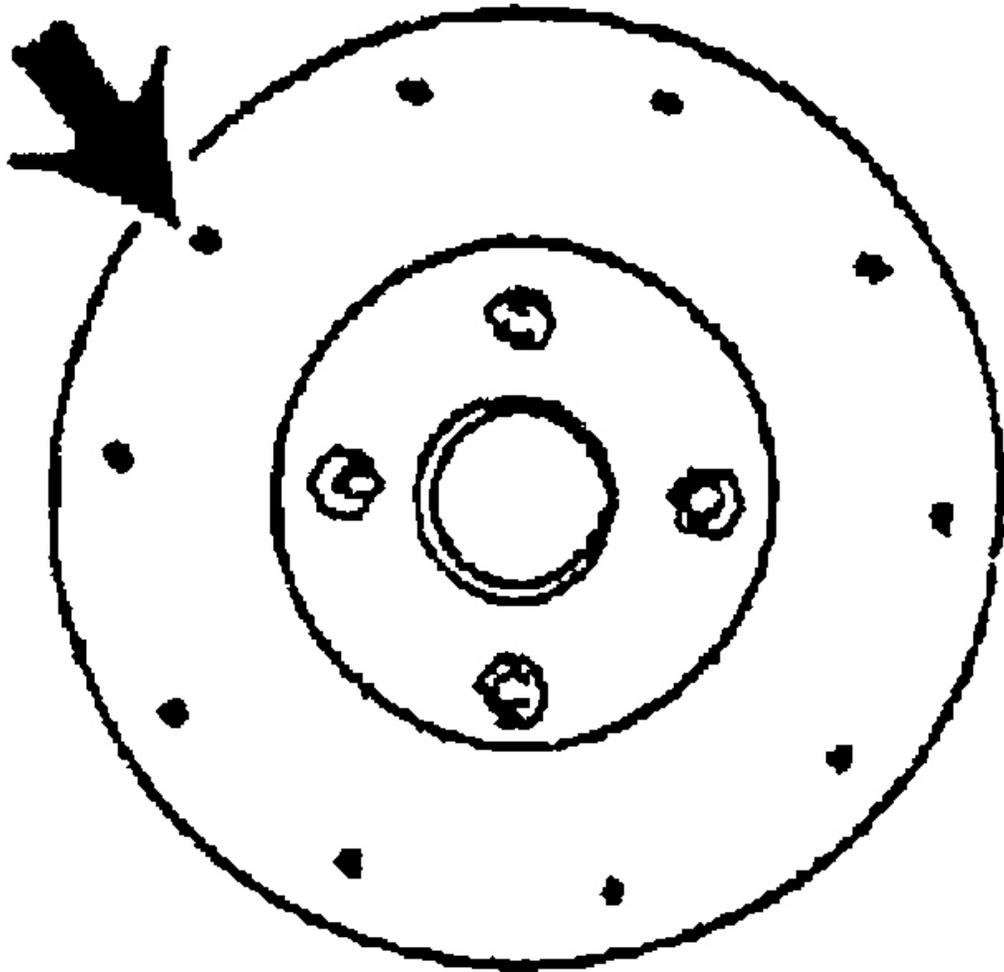
2. After tightening all the hub nuts to the same torque, put the dial gauge on the friction surface of disc plate **10 mm {0.39 in}** from the disc plate edge.
3. Rotate the disc plate one time and measure the runout.

#### Runout limit

**0.05 mm {0.002 in}**

#### Thickness variation inspection

1. Clean the disc plate-to-pad friction surface using a brake cleaner.
2. Measure the points indicated in **Fig. 30** using a caliper (micrometer).



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**Fig. 30: Identifying Measuring Points**  
Courtesy of MAZDA MOTORS CORP.

3. Subtract the minimum value from the maximum, and if the result is not within specification, machine the disc plate using a lathe.

**Thickness variation limit**

**0.015 mm {0.00059 in}**

**WARNING:**

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- Do not exceed minimum disc plate thickness.

#### DISC PLATE THICKNESS INSPECTION

##### CAUTION:

- Excessive runout may result if the disc plate is removed from the vehicle then machined. Machine the disc plate while installed on the vehicle.

1. Measure the thickness of the disc plate.
  - If the thickness is not within the specification, replace the disc plate.

#### DISC PLATE MINIMUM THICKNESS SPECIFICATION

Disk plate outer diameter 255 mm {10.0 in}	18.0 mm {0.71 in}
Disk plate outer diameter 270 mm {10.6 in}	20.0 mm {0.79 in}

#### MINIMUM THICKNESS AFTER MACHINING

Disk plate outer diameter 255 mm {10.0 in}	18.8 mm {0.74 in}
Disk plate outer diameter 270 mm {10.6 in}	20.8 mm {0.82 in}

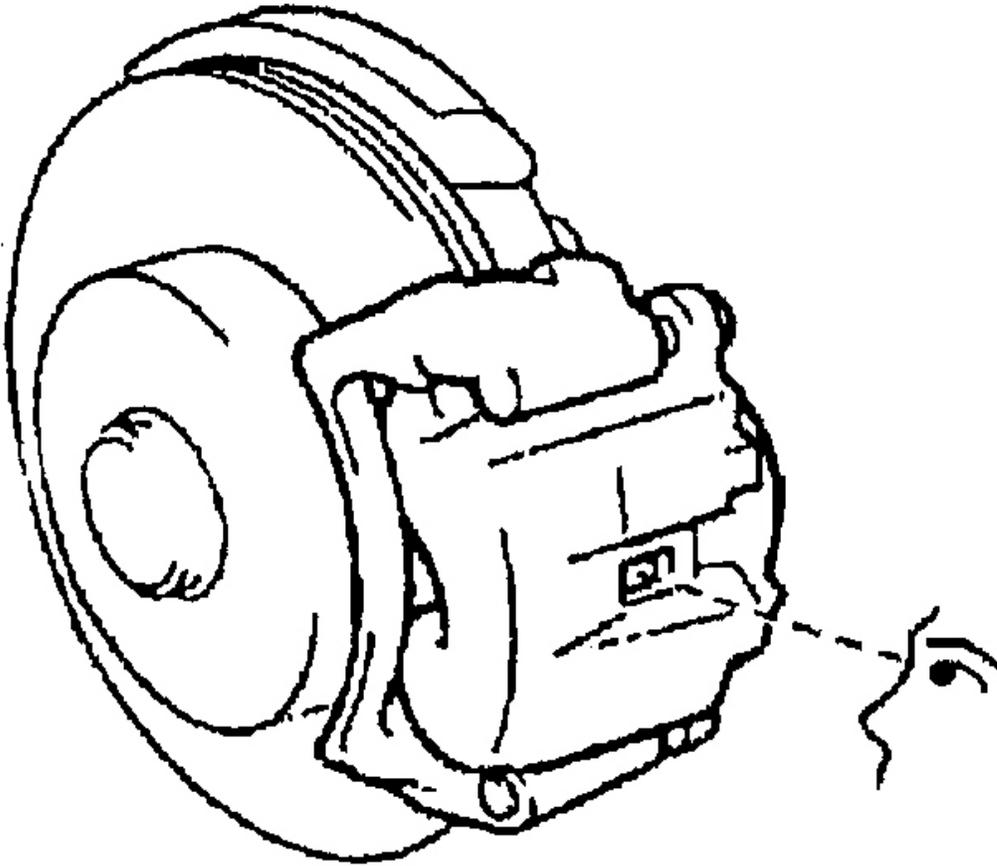
#### DISC PAD THICKNESS INSPECTION

1. Jack up the front of the vehicle and support it with safety stands.
2. Remove the wheels.
3. Verify the remaining thickness of the pads.

##### Thickness

**2.0 mm {0.08 in} min.**

4. Replace the pads as a set: right and left wheels, if either one is at or less than the minimum thickness.



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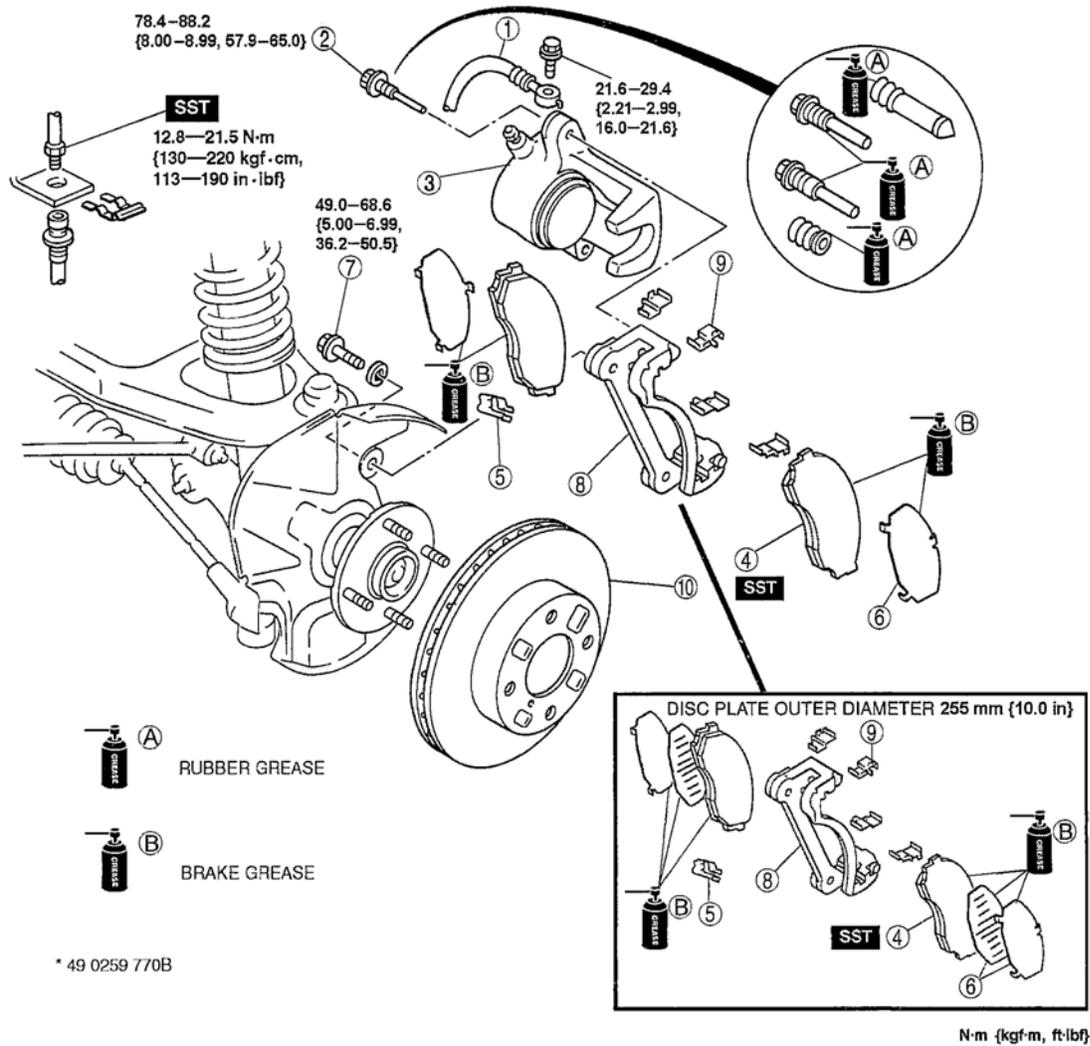
**Fig. 31: Inspecting Disc Pad Thickness**  
Courtesy of MAZDA MOTORS CORP.

## FRONT BRAKE (DISC) REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.

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1	Brake hose
2	Lock bolt
3	Caliper
4	Disc pad (See Disc Pad Installation Note)
5	Pad wear indicator (RH side)

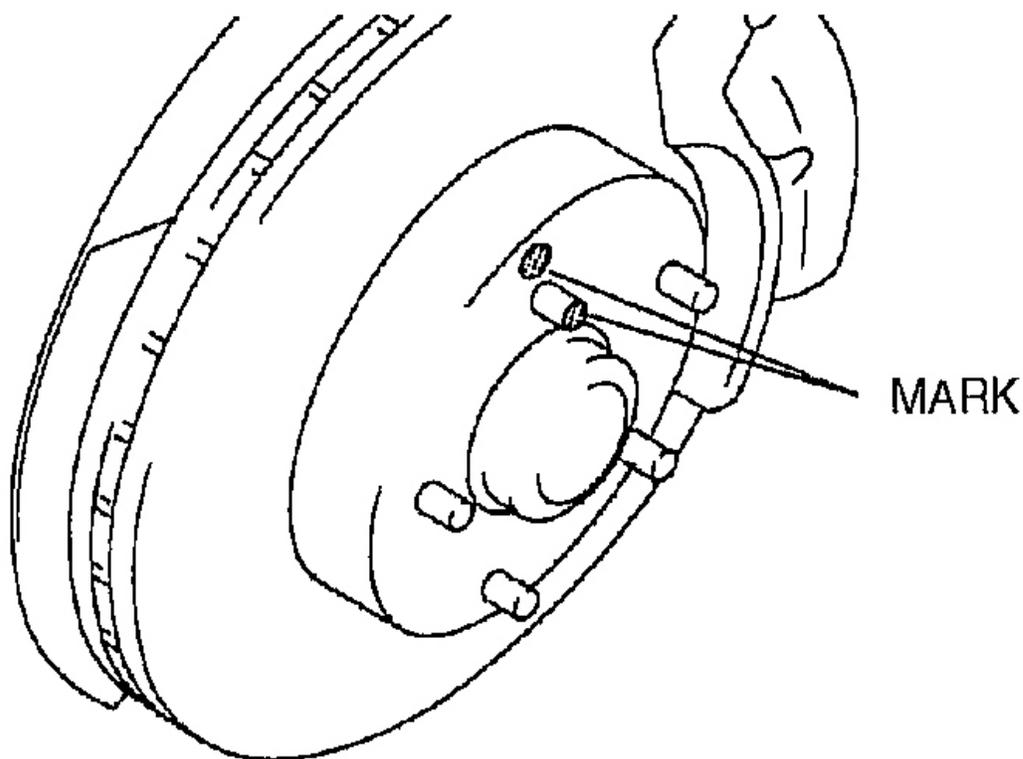
6	Shim
7	Bolt
8	Mounting support
9	Guide plate
10	Disc plate (See Disc Plate Removal Note) (See Disc Plate Installation Note)

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**Fig. 32: Exploded View Of Front Brake (Disc) & Torque Specifications**  
Courtesy of MAZDA MOTORS CORP.

### DISC PLATE REMOVAL NOTE

1. Mark the wheel hub bolt and disc plate before removal for reference during installation.



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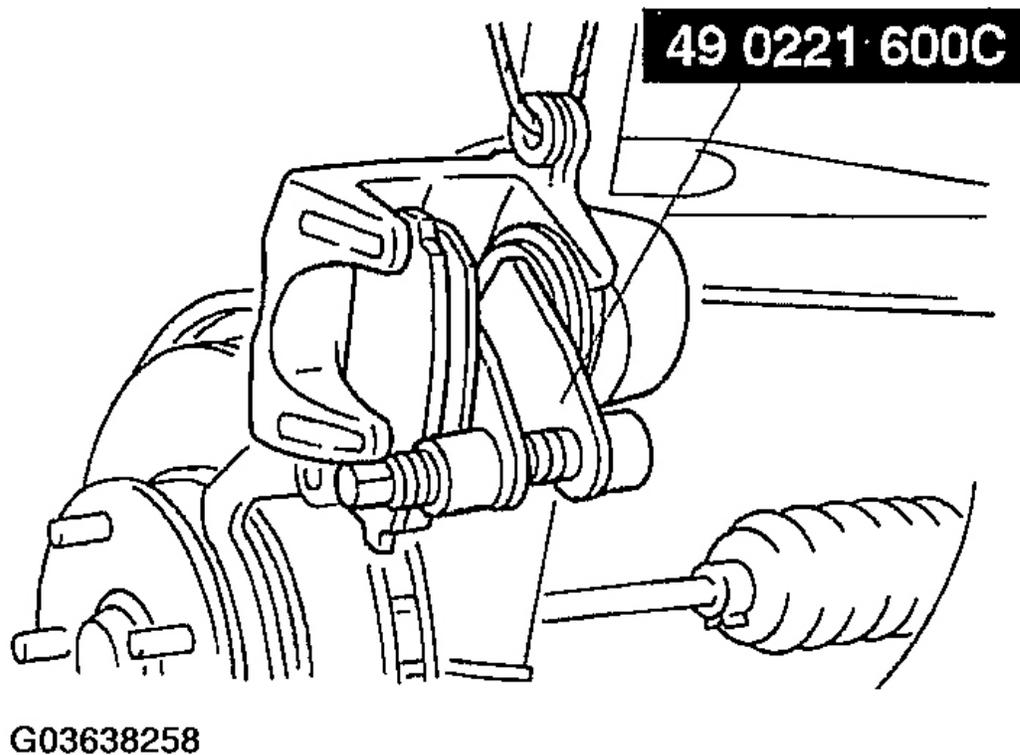
**Fig. 33: Identifying Mark On Wheel Hub Bolt And Disc Plate**  
Courtesy of MAZDA MOTORS CORP.

**DISC PLATE INSTALLATION NOTE**

1. Remove any rust or grime on the contact face of the disc plate and wheel hub.
2. Install the disc plate and align the marks made before removal.

**DISC PAD INSTALLATION NOTE**

1. Push the piston inward using the SST .
2. Install the new pads in the mounting support.



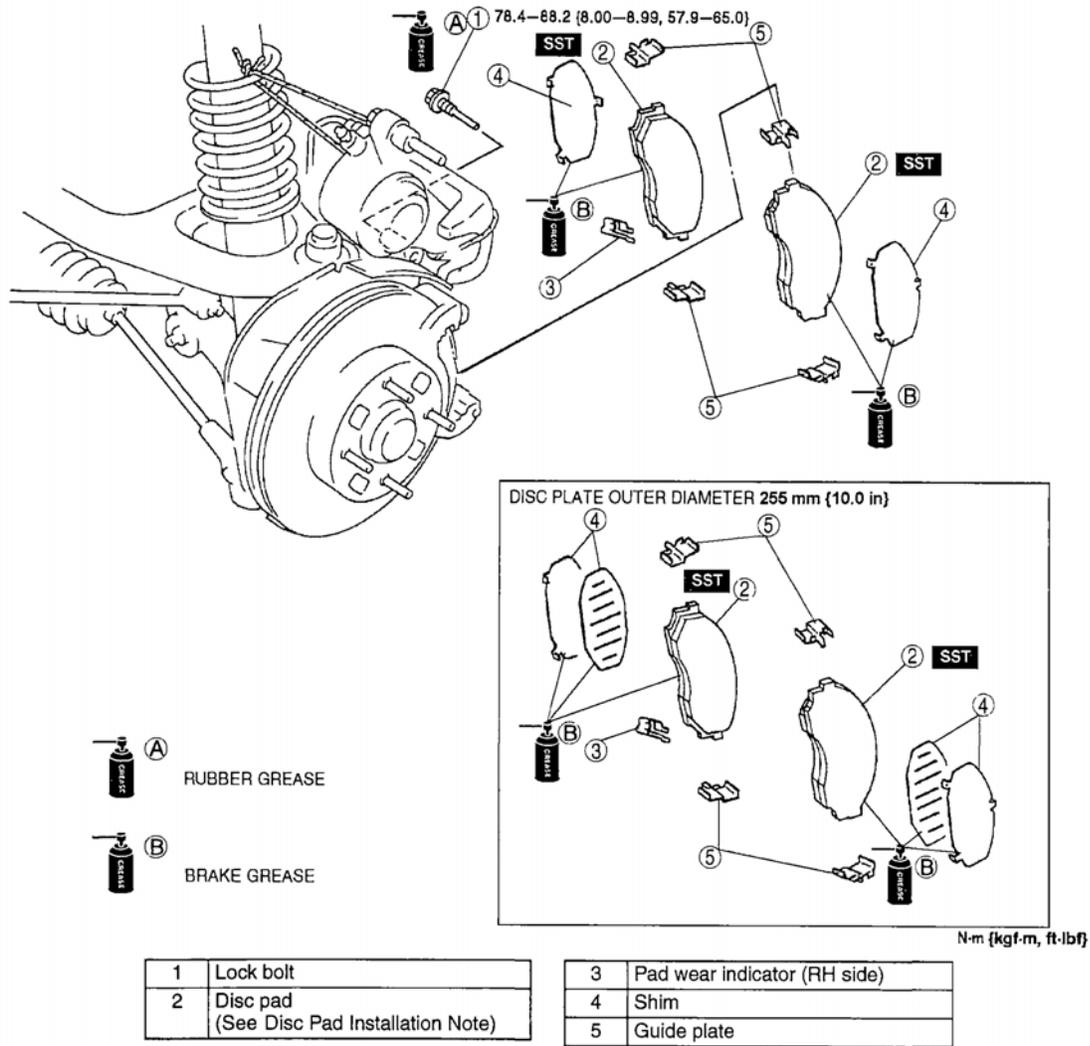
**Fig. 34: Pushing Piston Inward Using SST**  
Courtesy of MAZDA MOTORS CORP.

## DISC PAD (FRONT) REPLACEMENT

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.

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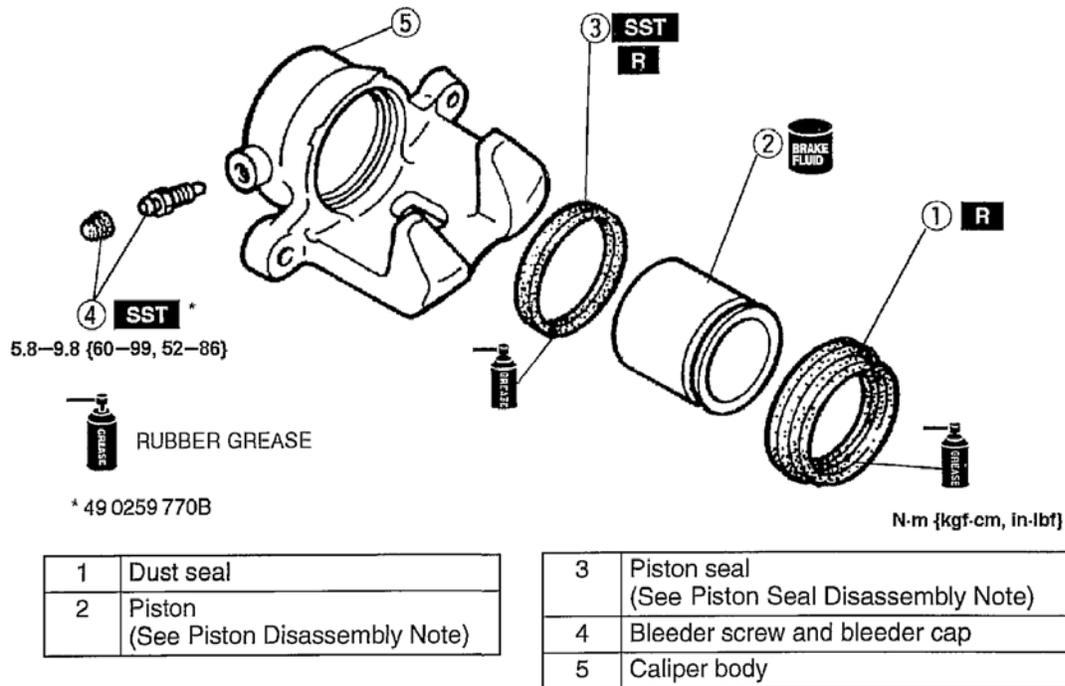
**Fig. 35: Exploded View Of Disc Pad (Front) & Torque Specifications**  
 Courtesy of MAZDA MOTORS CORP.

## CALIPER (FRONT) DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.

## 2005 Mazda MX-5 Miata

### 2005 BRAKES Conventional Brake System - MX-5 Miata

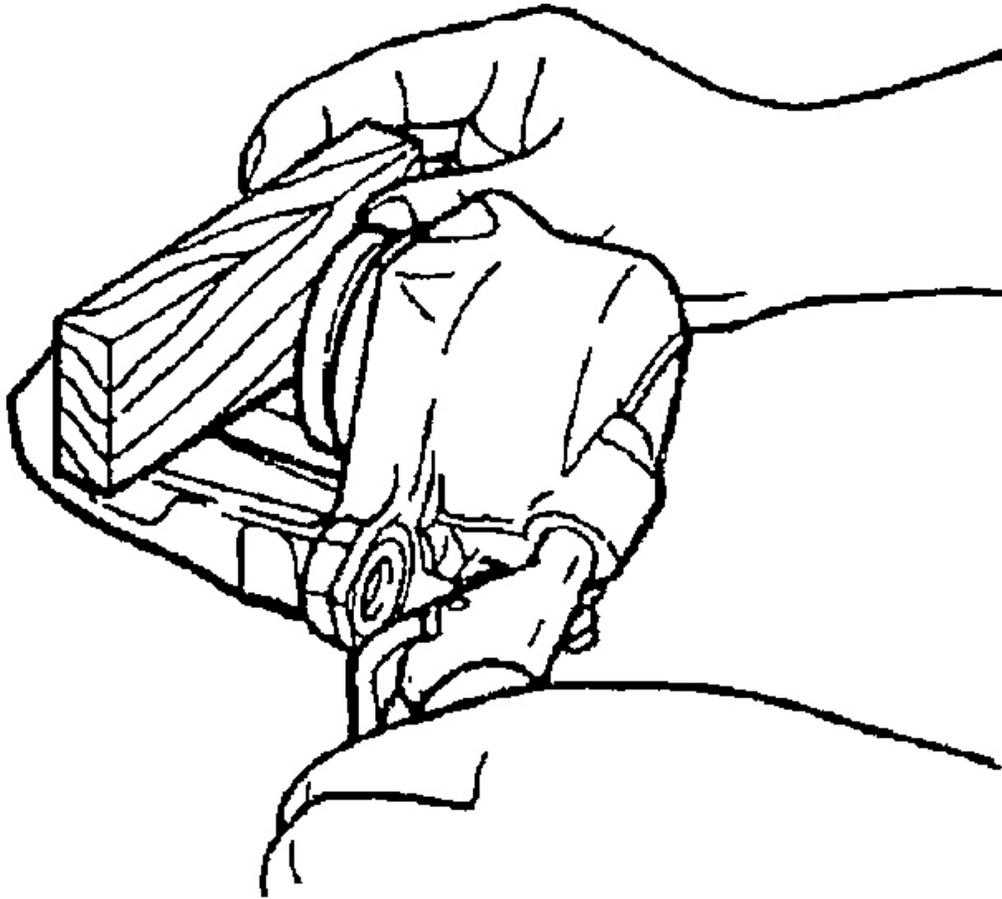


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**Fig. 36: Exploded View Of Caliper (Front) & Torque Specifications**  
 Courtesy of MAZDA MOTORS CORP.

#### PISTON DISASSEMBLY NOTE

1. Place a piece of wood in the caliper.
2. Gently blow compressed air through the hole to force the piston out of the caliper.

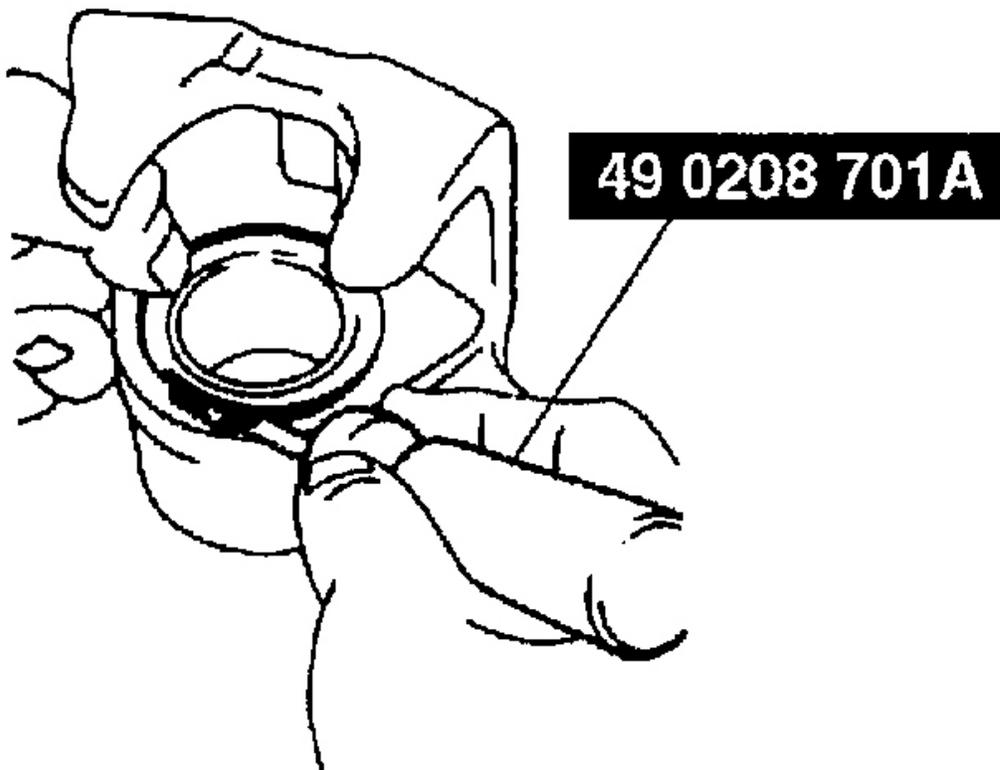


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**Fig. 37: Placing Piece Of Wood In Caliper**  
Courtesy of MAZDA MOTORS CORP.

**PISTON SEAL DISASSEMBLY NOTE**

1. Remove the piston seal using the SST .



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**Fig. 38: Removing Piston Seal Using SST**  
Courtesy of MAZDA MOTORS CORP.

## REAR BRAKE (DISC) INSPECTION

### BRAKE JUDDER REPAIR HINT

(See BRAKE JUDDER REPAIR HINT.)

### DISC PAD THICKNESS INSPECTION

1. On level ground, jack up the rear of the vehicle and support it with safety stands.
2. Remove the wheels.
3. Look through the caliper inspection hole and verify the remaining thickness of the pad.

**Thickness**

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**2.0 mm {0.08 in} min.**

#### **DISC PLATE THICKNESS INSPECTION**

1. Measure the thickness of the disc plate.
  - If the thickness is not within the specification, replace the disc plate.

**CAUTION:**

- **When it is necessary to machine the disc plate, if the disc plate is removed from the vehicle then machined, excessive runout may result. Machine the disc plate with it installed on the vehicle.**

**Minimum thickness:**

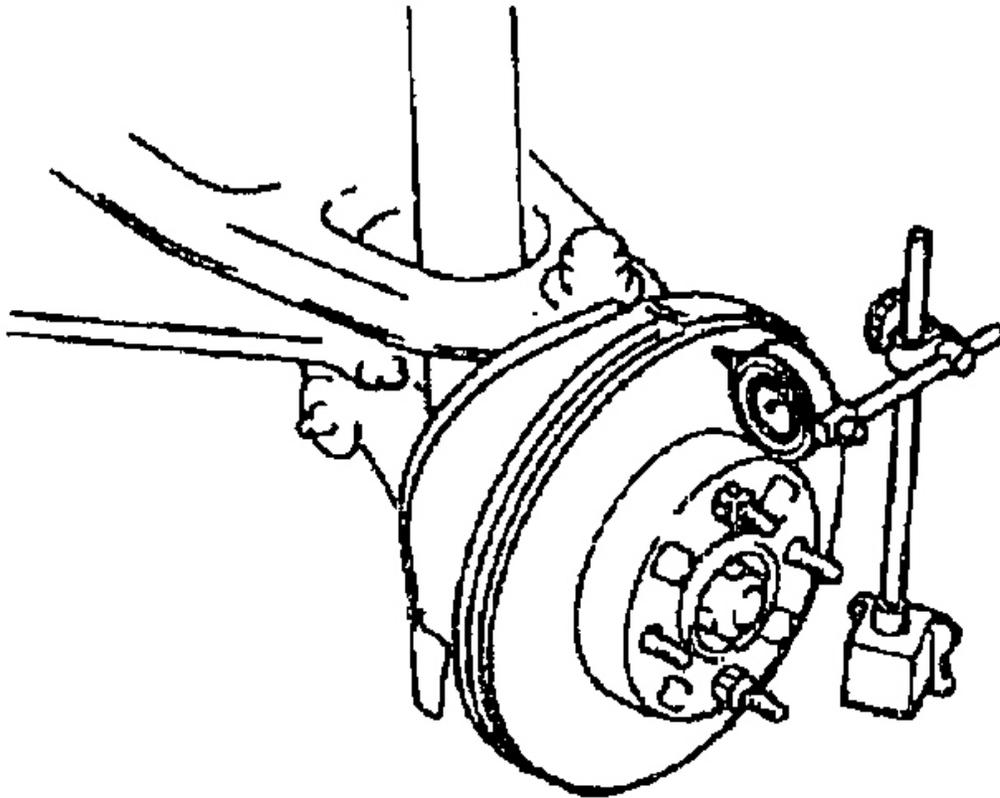
**8.0 mm {0.31 in}**

**Minimum thickness after machining by using a brake lathe on-vehicle:**

**8.4 mm {0.33 in}**

#### **DISC PLATE RUNOUT INSPECTION**

1. Tighten the disc plate to the wheel hub using two wheel nuts. When measuring runout, measure at the outer edge of the disc plate surface.



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**Fig. 39: Measuring Disc Plate Runout**  
Courtesy of MAZDA MOTORS CORP.

**Runout limit**

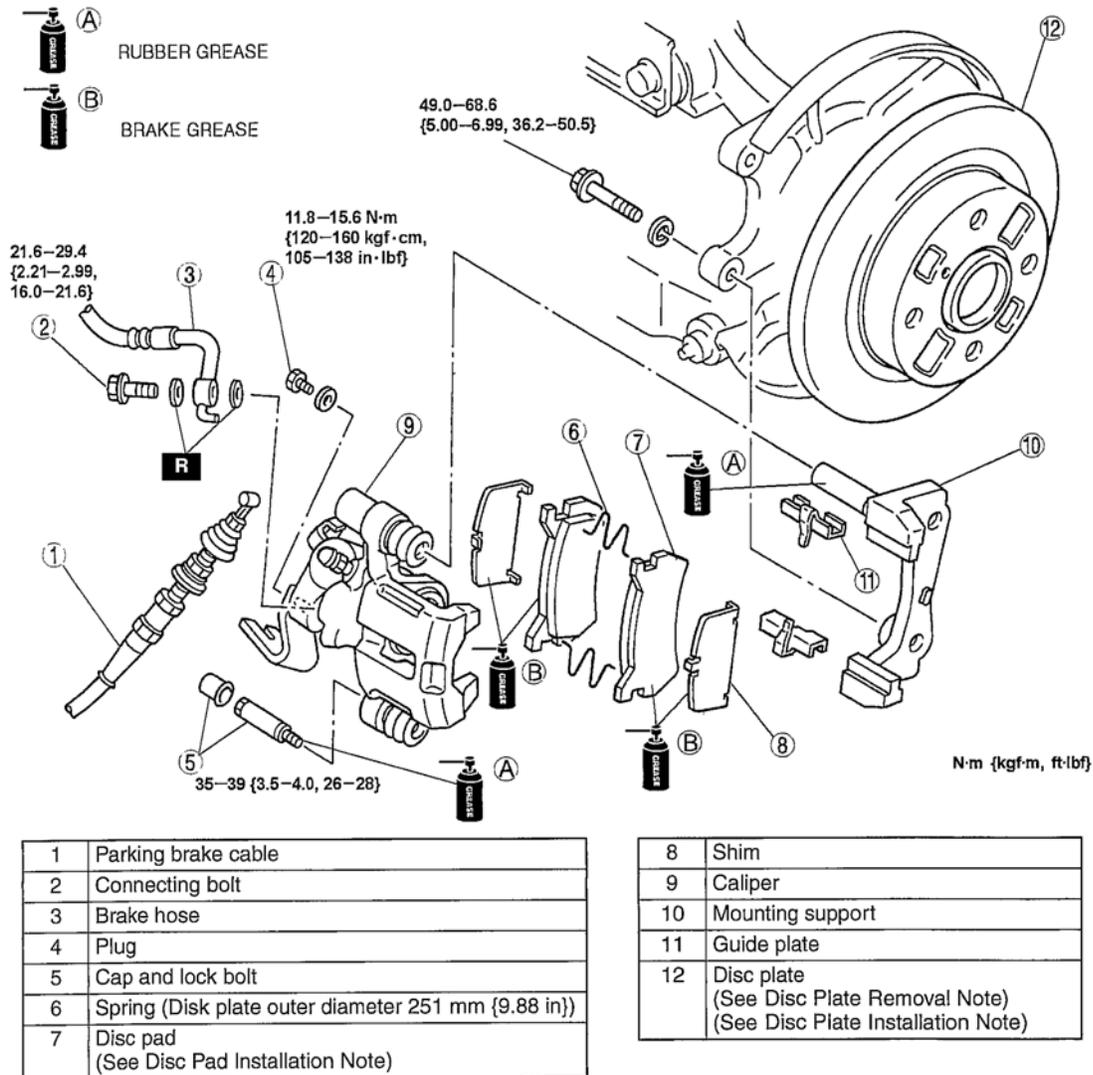
**0.05 mm {0.002 in} max.**

## **REAR BRAKE (DISC) REMOVAL/INSTALLATION**

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.

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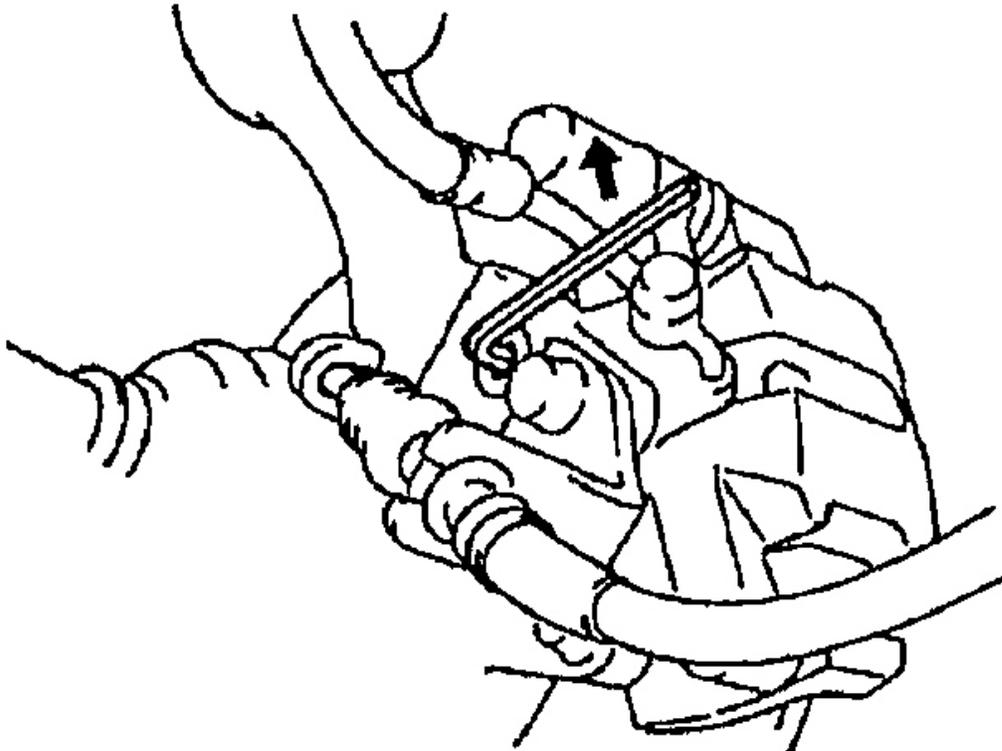
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**Fig. 40: Exploded View Of Rear Brake (Disc) & Torque Specifications**  
 Courtesy of MAZDA MOTORS CORP.

#### DISC PAD INSTALLATION NOTE

1. Turn the manual adjustment gear counterclockwise using an Allen wrench to pull the brake caliper piston back.
2. Install the disc pads.
3. Turn the manual adjustment gear clockwise until the brake pads just touch the disc plate.

## RETRACTING PISTON

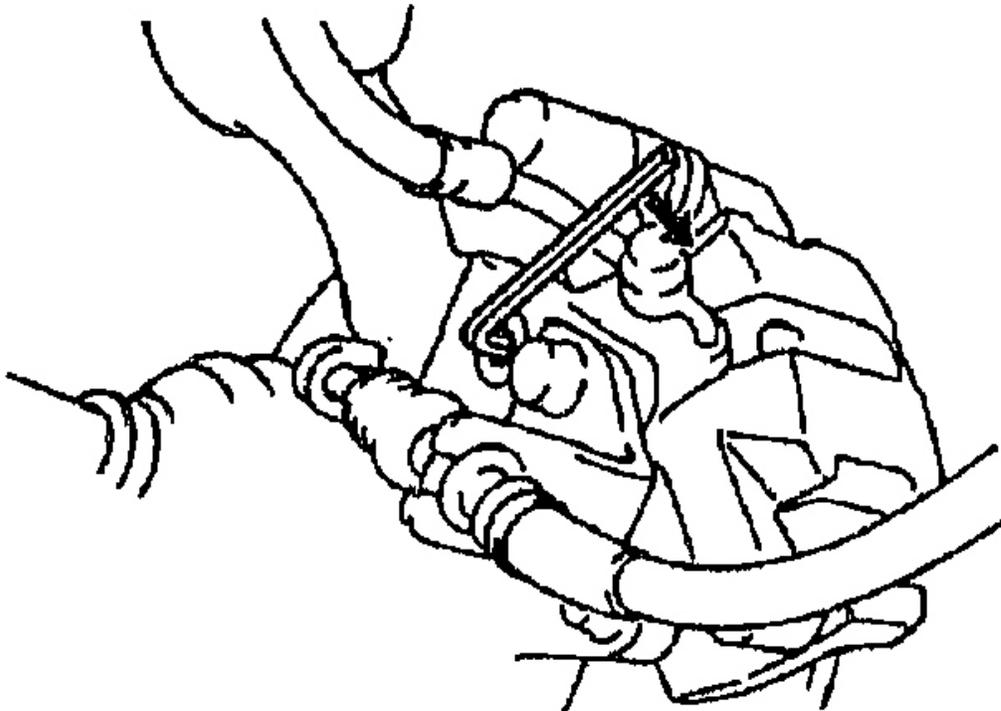


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**Fig. 41: Identifying Retracting Piston**  
Courtesy of MAZDA MOTORS CORP.

4. Return the manual adjustment gear counterclockwise 1/3 turn.

## ADJUSTING BRAKE PADS



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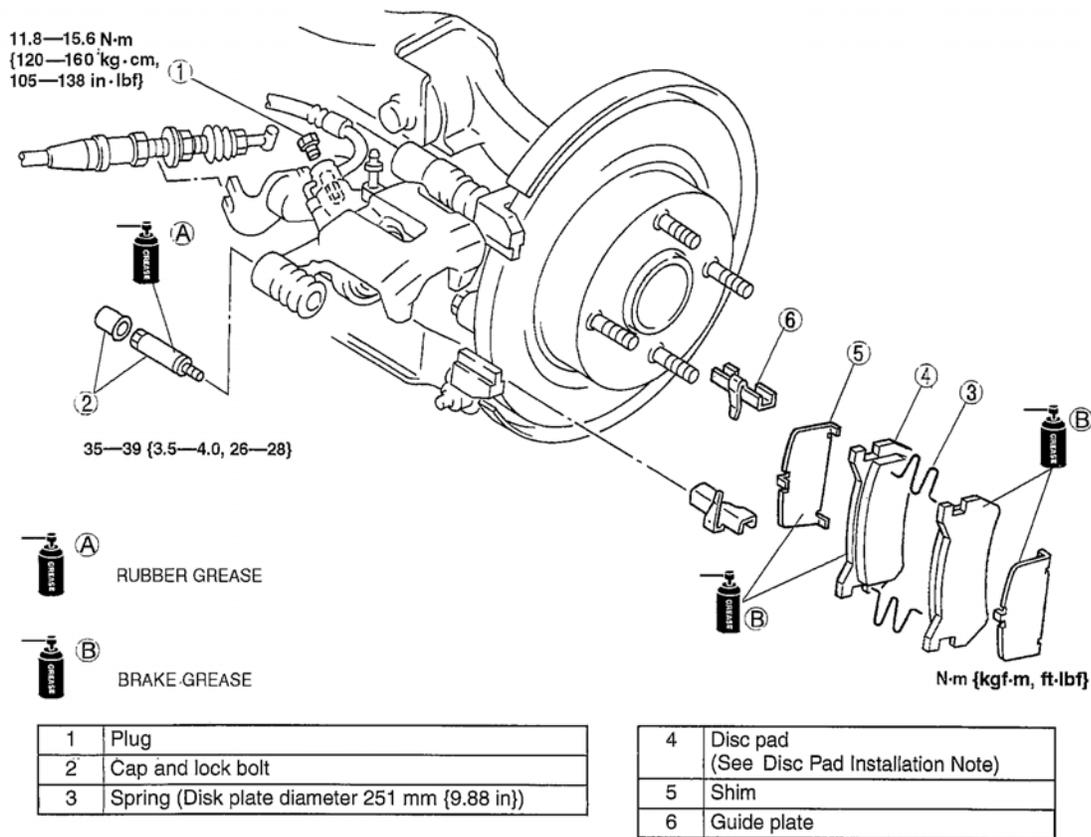
**Fig. 42: Identifying Adjusting Brake Pads**  
Courtesy of MAZDA MOTORS CORP.

### DISC PAD (REAR) REPLACEMENT

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.

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### 2005 BRAKES Conventional Brake System - MX-5 Miata



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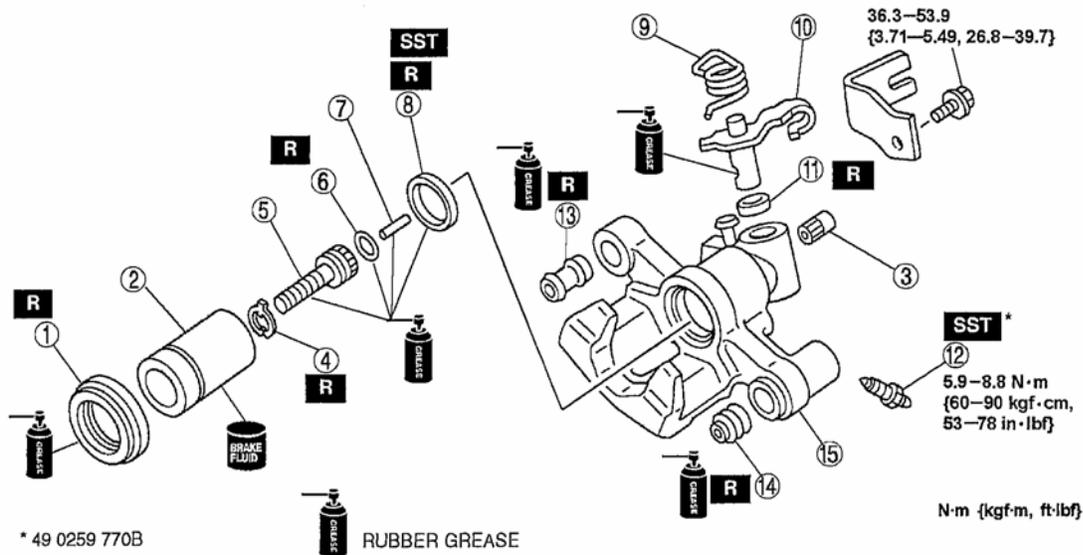
**Fig. 43: Exploded View Of Disc Pad (Rear) & Torque Specifications**  
 Courtesy of MAZDA MOTORS CORP.

## CALIPER (REAR) DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.

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### 2005 BRAKES Conventional Brake System - MX-5 Miata



1	Dust seal
2	Piston (See Piston Disassembly Note) (See Piston Assembly Note)
3	Manual adjustment gear
4	Snap ring
5	Adjusting bolt
6	O-ring
7	Connecting link

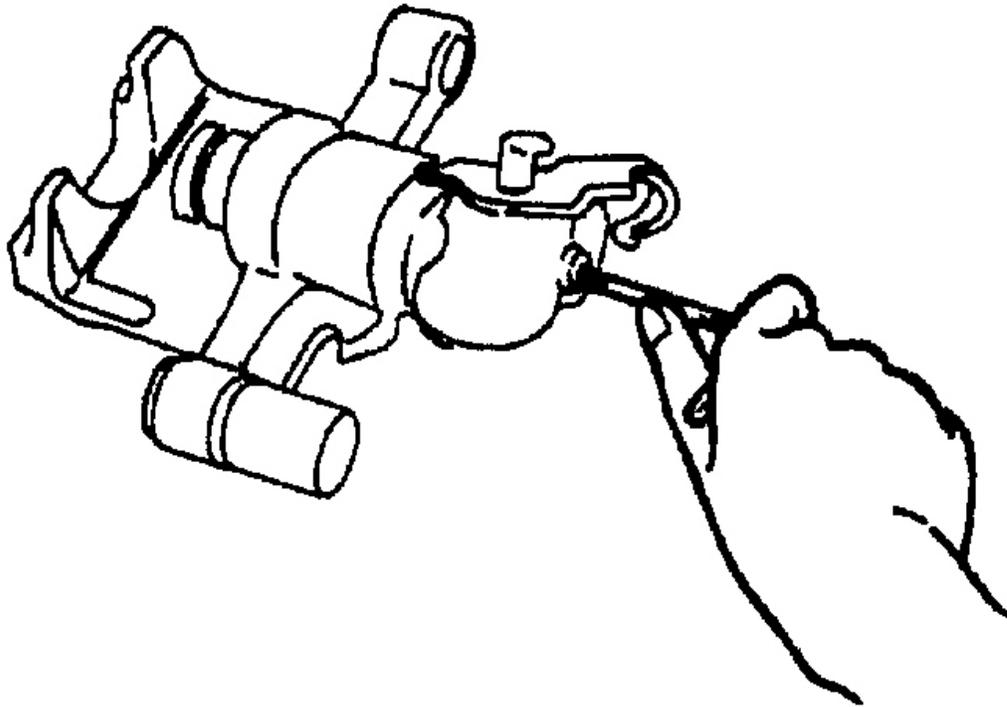
8	Piston seal (See Piston Seal Disassembly Note)
9	Spring
10	Operating lever
11	Boot
12	Bleeder screw
13	Boot
14	Boot
15	Caliper body

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**Fig. 44: Exploded View Of Caliper (Rear) & Torque Specifications**  
 Courtesy of MAZDA MOTORS CORP.

#### PISTON DISASSEMBLY NOTE

1. Turn the manual adjustment gear clockwise using an Allen wrench. (Turn the manual adjustment gear until it turns easily.)
2. Remove the piston.



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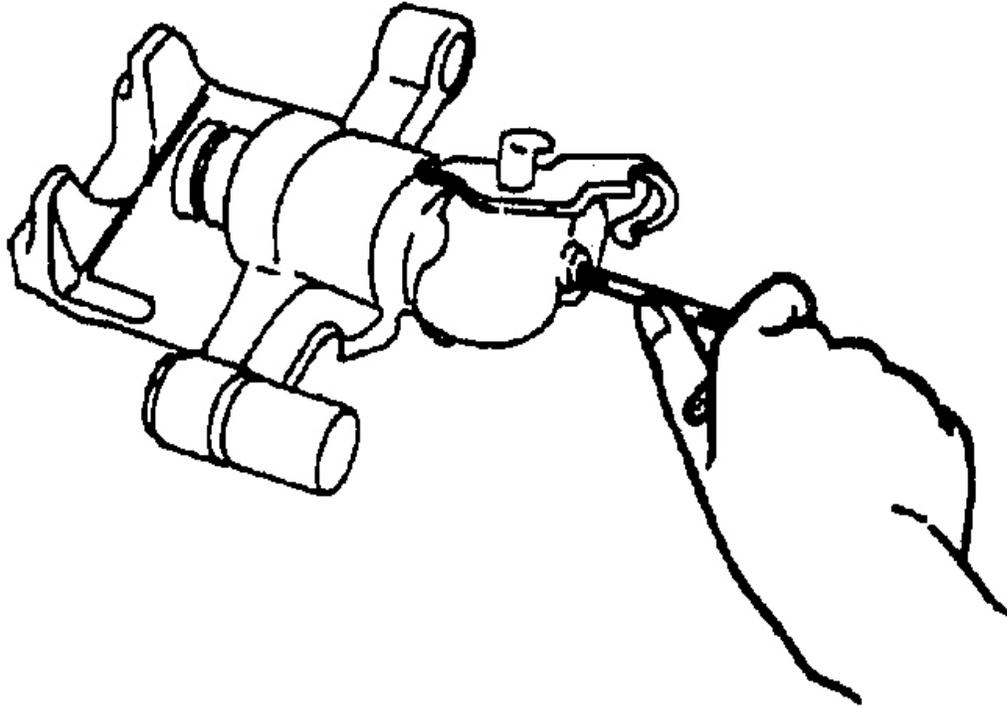
**Fig. 45: Turning Manual Adjustment Gear Clockwise Using An Allen Wrench**  
Courtesy of MAZDA MOTORS CORP.

**PISTON ASSEMBLY NOTE**

1. Insert the piston into the caliper and turn the adjustment gear counterclockwise using an Allen wrench to pull the piston in fully. (Turn the adjustment gear until it stops.)

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**Fig. 46: Turning Adjustment Gear Counterclockwise Using An Allen Wrench**  
Courtesy of MAZDA MOTORS CORP.