

2004 BRAKES

Disc & Drum - RAV4

DESCRIPTION & OPERATION

WARNING: For warnings and procedures regarding vehicles equipped with Anti-Lock Brake Systems (ABS), see appropriate ANTI-LOCK article.

Hydraulic brake system uses a tandem master cylinder with a vacuum power assist servo. RAV4 is equipped with front disc brakes standard. Rear disc brakes are standard equipment on US. models, and a set option with VSC (Vehicle Skid Control) on Canadian models. VSC is standard equipment on US models, and optional equipment on the Canadian models. A vehicle equipped with VSC comes with the following functions:

- ABS with EBD (Electronic Brake Force Distribution)
- Brake Assist
- TRAC (Traction Control) systems

Rear disc brakes are optional. Rear drum brakes are self-adjusting.

Parking brake lever mechanically activates rear brakes, and a cable applies rear shoes.

BLEEDING BRAKE SYSTEM

BRAKE BLEEDING SEQUENCE

For correct bleeding sequence, see **BRAKELINE BLEEDING SEQUENCE** table.

BRAKELINE BLEEDING SEQUENCE

Application	Sequence
All Models	Right Rear, Left Rear, Right Front, Left Front

BLEEDING PROCEDURES

CAUTION: DO NOT allow reservoir to run dry during brake bleeding procedure. Use only clean brake fluid. Ensure no dirt or other foreign matter contaminates brake fluid. DO NOT mix different types of brake fluid, as they may not be compatible. DO NOT spill brake fluid on vehicle, as it may damage paint. If brake fluid contacts paint, immediately wash with water.

1. If master cylinder is rebuilt or reservoir is empty, bleed master cylinder first. Bleed wheels in sequence. Start on wheel with longest hydraulic line, and work toward wheel with shortest hydraulic line. See **BRAKE BLEEDING SEQUENCE** table.
2. Raise and support vehicle. Ensure brake fluid reservoir is at least half full during bleeding procedure.

Connect one end of transparent vinyl tube to bleeder screw. Submerge other end of tube in a container half filled with clean brake fluid.

3. Have an assistant depress brake pedal several times and hold in depressed position. Loosen bleeder screw, and drain fluid into container. Tighten bleeder screw.

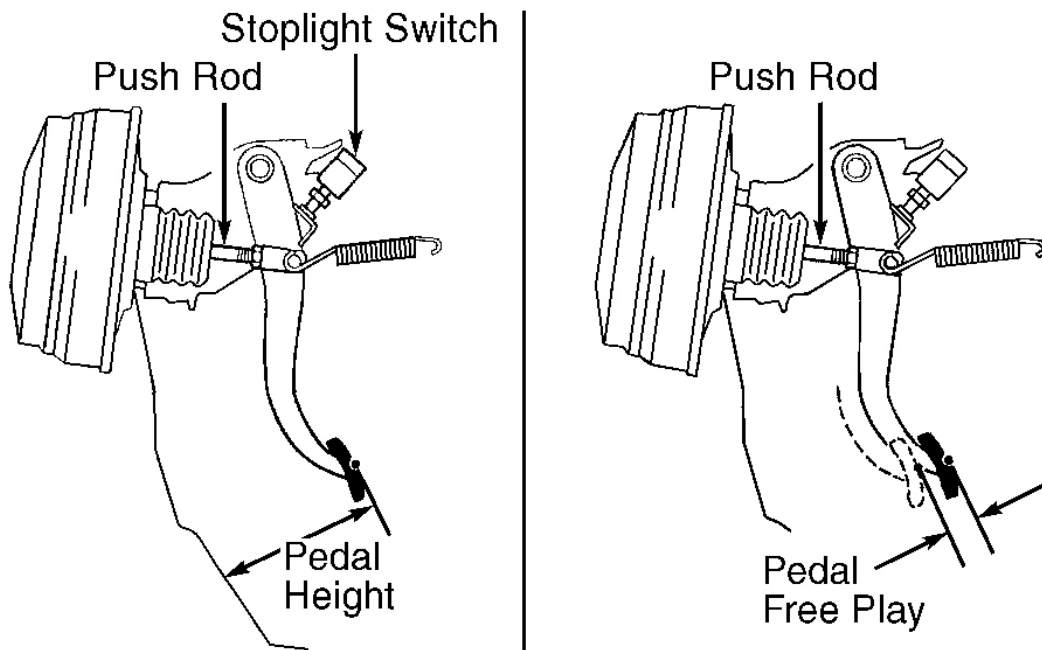
NOTE: Ensure brake pedal remains depressed until bleeder screw is tightened.

4. Refill brake fluid reservoir as necessary. Repeat step 3 until air is no longer discharged. Tighten front bleeder screw to 70 INCH lbs (8.0 N.m), and tighten rear bleeder screw to 74 INCH lbs. (8.3 N.m). Ensure fluid leakage is not present. Add fluid to reservoir. Repeat procedure for remaining wheels.

ADJUSTMENTS

BRAKE PEDAL HEIGHT

1. Brake pedal height is measured from face of pedal pad to asphalt sheet under carpet. To adjust clearance, loosen stoplight switch and lock nut on brake push rod. See **Fig. 1**.
2. Adjust pedal height by turning push rod. See **BRAKE PEDAL SPECIFICATIONS** table. After setting pedal height, tighten lock nut on push rod. Adjust stoplight switch and tighten switch lock nut. See **STOPLIGHT SWITCH**.



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Fig. 1: Measuring Brake Pedal Height & Free Play

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BRAKE PEDAL SPECIFICATIONS

Application	Free Play - In. (mm)	Pedal Height - In. (mm)
RAV4	.04-.24 (1-6)	6.69-7.09 (170-180)

BRAKE PEDAL FREE PLAY

1. Brake pedal free play is distance brake pedal travels before feeling resistance with engine stopped. To check pedal free play, depress brake pedal several times to exhaust vacuum from booster.
2. Depress pedal and measure travel until initial resistance is felt. See **BRAKE PEDAL SPECIFICATIONS** table. If free play is not within specification, adjust by turning push rod. See **Fig. 1**.

BRAKE PEDAL RESERVE DISTANCE

1. Pedal reserve distance is measured from face of pedal pad to asphalt sheet under carpet with brakes applied. Measure reserve distance with engine running and weight of 110 lbs. (50 kg) applied against pedal.
2. If measured reserve distance is less than specification, inspect brake system. See **BRAKE PEDAL MINIMUM RESERVE DISTANCE SPECIFICATIONS** table.

BRAKE PEDAL MINIMUM RESERVE DISTANCE SPECIFICATIONS

Application	In. (mm)
RAV4	4.65 (118)

PARKING BRAKE

NOTE: Rear brakes must be correctly adjusted before adjusting parking brake. For RAV4 with rear drum brakes, see **REAR BRAKE DRUM** under REMOVAL & INSTALLATION. For RAV4 with rear disc brakes, see **PARKING BRAKE (REAR DISC SYSTEM)** under REMOVAL & INSTALLATION.

Lever Stroke Adjustment

1. To check parking brake adjustment, depress parking brake pedal with specified weight. Count number of notches (clicks) until parking brake is fully applied. See **PARKING BRAKE LEVER STROKE SPECIFICATIONS** table. Adjust parking brake if travel is not within specification.

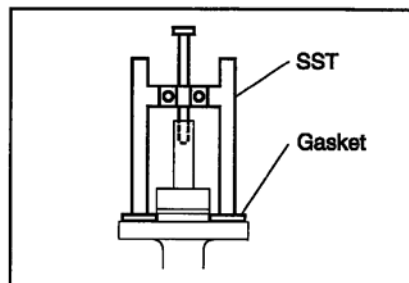
PARKING BRAKE LEVER STROKE SPECIFICATIONS

Application	Notches	Weight Applied Lbs. (Kg)
RAV4	6-8	44 (20)

2. Remove rear console box. Loosen lock nut and turn adjusting nut until lever travel is correct. Tighten lock nut. Install rear console box.

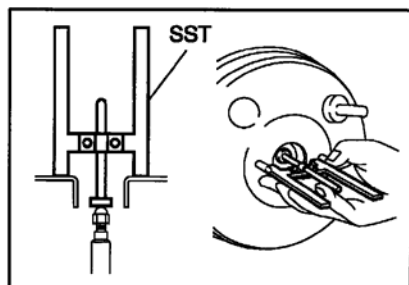
POWER BRAKE UNIT PUSH ROD

For procedure, see **Fig. 2**.



1. INSTALL BRAKE BOOSTER

- (a) Install a new gasket and booster.
- (b) Install the clevis to the operating rod.
- (c) Install and torque the booster installation nuts.
Torque: 13 N·m (130 kgf-cm, 9 ft-lbf)
- (d) Insert the clevis pin into the clevis and brake pedal, and install the clip to the clevis pin.
- (e) Install the pedal return spring.

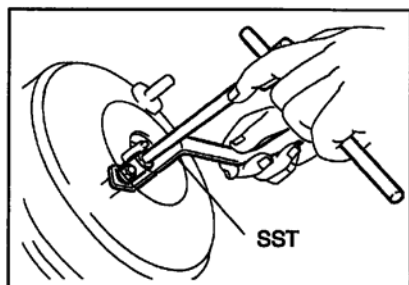


2. ADJUST LENGTH OF BOOSTER PUSH ROD

- (a) Install a new gasket on the master cylinder.
- (b) Set SST on the gasket, and lower the pin until its tip slightly touches the piston.
SST 09737-00011
- (c) Turn the SST upside down, and set it on the booster.
SST 09737-00011
- (d) Measure the clearance between the booster push rod and pin head (SST).
Clearance: 0 mm (0 in.)
- (e) Using SST, adjust the booster push rod length until the push rod slightly touches the pin head.
SST 09737-00020

HINT:

When adjusting the push rod, depress the brake pedal enough so that the push rod is stuck out.



- 3. CONNECT VACUUM HOSE TO BRAKE BOOSTER**
- 4. INSTALL MASTER CYLINDER**
- 5. FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM**
- 6. CHECK FOR LEAKS**
- 7. CHECK AND ADJUST BRAKE PEDAL**
Check and adjust the brake pedal, then tighten the clevis lock nut.
Torque: 26 N·m (260 kgf-cm, 20 ft-lbf)
- 8. DO OPERATIONAL CHECK**

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Fig. 2: Adjusting Brake Booster Push Rod

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REAR DRUM BRAKE SHOES

NOTE: All rear drum brakes have a self-adjuster which is activated when brake pedal is applied with vehicle traveling in reverse.

To set initial lining-to-drum clearance, raise and support rear of vehicle. Release parking brake. Remove rear wheels and brake drums. Measure brake drum inside diameter and brake lining diameter. Measured clearance

between linings and braking surface of drum should be .024 in. (.60 mm). Turn brake adjuster to obtain specified clearance. Install brake drum and wheel and adjust brakes (if necessary).

STOPLIGHT SWITCH

Remove lower instrument panel and air duct (if necessary). Loosen lock nuts. Turn switch until clearance between threaded end of switch and pedal stop is .02-.09 in. (.5-2.4 mm). See **Fig. 1**. Check brake pedal height and brake light operation.

TESTING

POWER BRAKE UNIT

Operational Check

Depress brake pedal several times with engine off. There should be no change in pedal reserve distance. Depress brake pedal and start engine. If pedal goes down slightly, operation is normal.

Air Tightness Check

- 1. Start engine and run for 1-2 minutes, then turn engine off. Depress brake pedal several times slowly. If pedal goes down farthest on first time, but gradually rises after second or third time, power brake unit is airtight.
- 2. With engine stopped, depress brake pedal several times using normal pressure. Pedal should be low when first depressed. On consecutive applications, pedal height should gradually rise. If pedal height does not increase, check for air leaks.

PROPORTIONING VALVE (REAR DRUM BRAKE SYSTEM ONLY)

Attach and bleed pressure gauge set. Raise master cylinder pressure and check rear wheel pressure. See **PROPORTIONING VALVE PRESSURE SPECIFICATIONS** table. When inspecting fluid pressure, check left front and right rear together, then check right front and left rear together. If rear cylinder pressure is incorrect, replace proportioning valve. Remove pressure gauge set. Bleed brake system and check for leaks.

PROPORTIONING VALVE PRESSURE SPECIFICATIONS

Application	Master Cylinder Pressure - psi (kg/cm2)	Rear Wheel Cylinder Pressure - psi (kg/cm2)
Low Pressure Reading	497 (35)	497 (2-35)
High Pressure Reading	1138 (80)	749 (52)

TROUBLESHOOTING

PROBLEM SYMPTOMS TABLE

Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

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Symptom	Suspect Area
Lower pedal or spongy pedal	1. Brake system (Fluid leaks) 2. Brake system (Air in) 3. Piston seals (Worn or damaged) 4. Rear Brake shoe clearance (Out of adjustment) 5. Master cylinder (Faulty) 6. Booster push rod (Out of adjustment)
Brake drag	1. Brake pedal freeplay (Minimal) 2. Parking brake lever travel (Out of adjustment) 3. Parking brake wire (Sticking) 4. Rear brake shoe clearance (Out of adjustment) 5. Pad or lining (Cracked or distorted) 6. Piston (Stuck) 7. Piston (Frozen) 8. Anchor or return spring (Faulty) 9. Booster push rod (Out of adjustment) 10. Booster system (Vacuum leaks) 11. Master cylinder (Faulty)
Brake pull	1. Piston (Stuck) 2. Pad or lining (Oily) 3. Piston (Frozen) 4. Disc (Scored) 5. Pad or lining (Cracked or distorted)

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Fig. 3: Brakes Troubleshooting Table (1 Of 2)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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Symptom	Suspect Area
Hard pedal but brake inefficient	1. Brake system (Fluid leaks) 2. Brake system (Air in) 3. Pad or lining (Worn) 4. Pad or lining (Cracked or distorted) 5. Rear brake shoe clearance (Out of adjustment) 6. Pad or lining (Oily) 7. Pad or lining (Glazed) 8. Disc (Scored) 9. Booster push rod (Out of adjustment) 10.Booster system (Vacuum leaks)
Noise from brake	1. Pad or lining (Cracked or distorted) 2. Installation bolt (Loose) 3. Disc (Scored) 4. Pad support plate (Loose) 5. Sliding pin (Worn) 6. Pad or lining (Dirty) 7. Pad or lining (Glazed) 8. Anchor, tension or return spring (Faulty) 9. Anti-squeal shim (Damage) 10.Hold-down spring (Damage)

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Fig. 4: Brakes Troubleshooting Table (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL & INSTALLATION

FRONT DISC BRAKE PADS

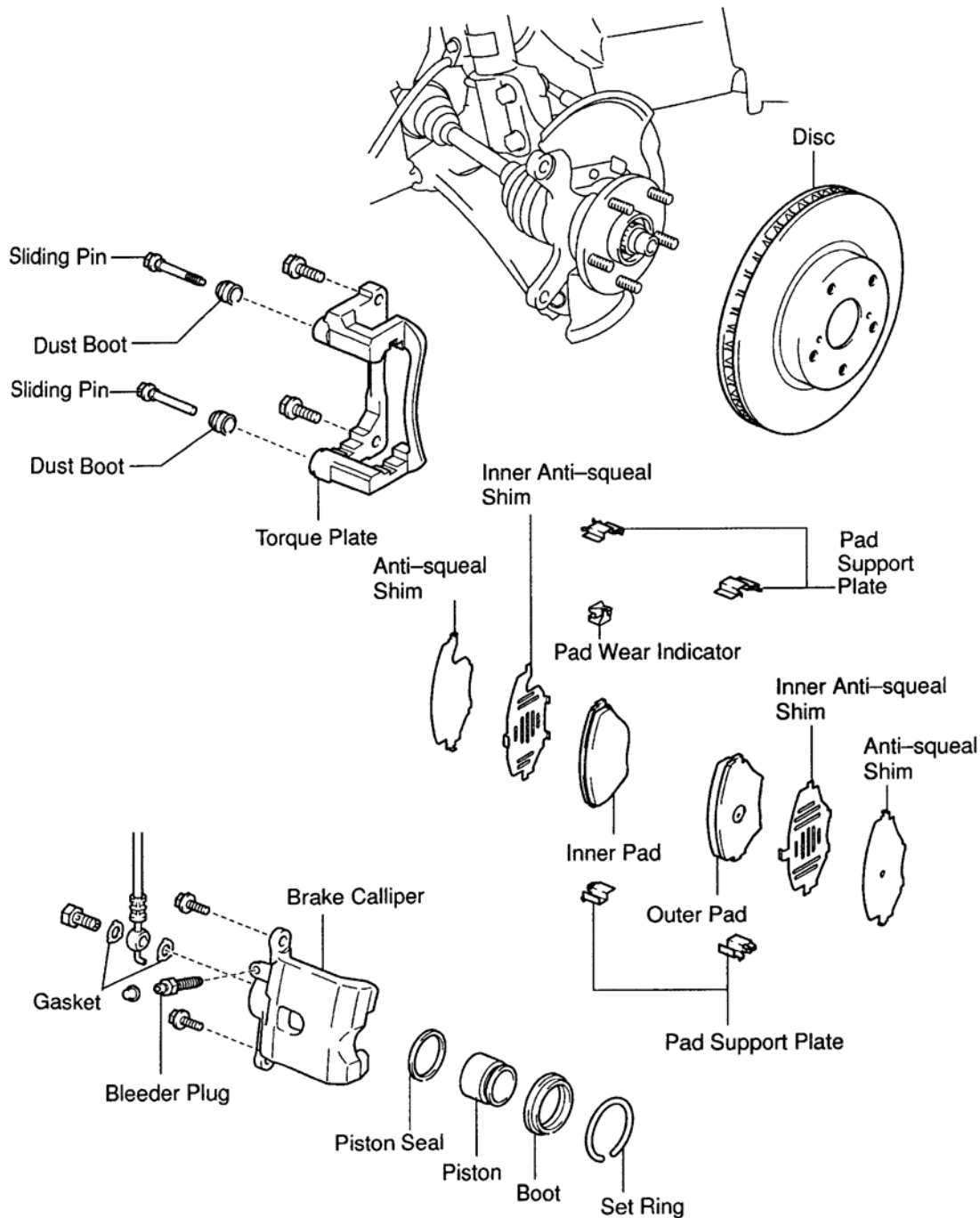
NOTE: Pushing piston into caliper bore will force fluid back into master cylinder reservoir. Remove reservoir cap when compressing caliper piston.

Removal & Installation

1. Raise and support vehicle. Remove front wheel. Hold sliding pin on bottom and loosen installation bolt. Remove installation bolt and rotate caliper upward. Suspend caliper aside with wire.
2. Remove pads, 4 anti-squeal shims, pad support plates and wear indicator See **Fig. 5**.
3. Seat pistons using a hammer handle or equivalent. Slide NEW pads and anti-rattle shims into caliper. Check reservoir fluid level. To install, reverse removal procedure. Tighten lower caliper bolt to specification. See **TORQUE SPECIFICATIONS**

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Fig. 5: Exploded View Of Front Brake Caliper Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FRONT BRAKE CALIPER

Removal & Installation

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1. Raise vehicle and remove wheels. Disconnect flexible brake hose from caliper. Plug hose to prevent fluid spillage. Remove caliper mounting bolts or slide pins as necessary.
2. Pivot caliper up to clear edge of disc. Slide caliper off main pin. To install, reverse removal procedure. Install boot end in groove of main pin.

FRONT BRAKE DISC

Removal & Installation

Remove caliper. See **FRONT BRAKE CALIPER**. Remove 2 bolts securing torque plate. See **Fig. 5**. Remove brake disc. To install, reverse removal procedure. Tighten bolts and nut to specifications. See **TORQUE SPECIFICATIONS**.

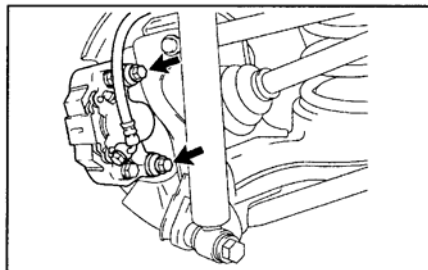
PARKING BRAKE (REAR DISC SYSTEM)

Disassembly

For disassembly procedure, see **Fig. 6** and **Fig. 7** . For component view, see **Fig. 8**.

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1. REMOVE REAR WHEEL

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

2. REMOVE REAR DISC BRAKE ASSEMBLY

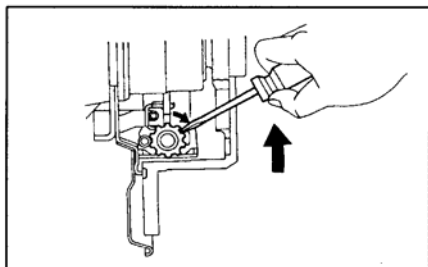
(a) Remove the 2 installation bolts and rear brake caliper.

Torque: 44 N·m (449 kgf·cm, 33 ft·lbf)

HINT:

Do not disconnect the flexible hose from the brake caliper.

(b) Suspend the brake caliper securely. Ensure that the hose is not stretched.

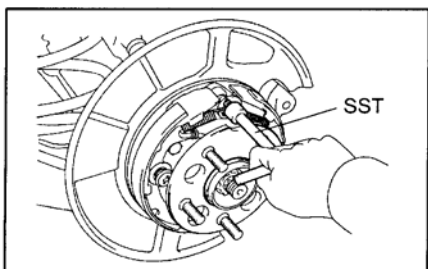


3. REMOVE DISC

Release the parking brake lever, and remove the disc.

HINT:

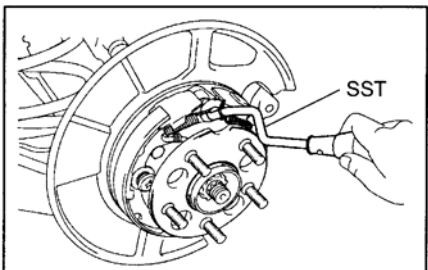
If the disc cannot be removed easily, turn the shoe adjuster until the wheel turns freely.



4. REMOVE SHOE RETURN SPRINGS

Using SST, remove the 2 shoe return springs.

SST 09717-20010



HINT:

At the time of reassembly, using SST install the 2 shoe return springs.

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5. REMOVE SHOE STRUT AND COMPRESSION SPRING

HINT:

At the time of reassembly, install the strut with the spring facing forward.

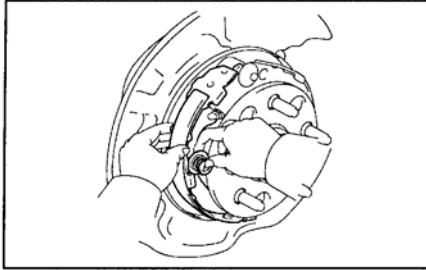
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Fig. 6: Rear Disc Brake Parking Brake Removal Procedure (1 Of 2)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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6. REMOVE FRONT SHOE AND ADJUSTER

- (a) Slide out the front shoe and remove the shoe adjuster
- (b) Disconnect the tension spring and remove the front shoe.
- (c) Remove the 2 cups, shoe hold-down spring and pin.



7. REMOVE REAR SHOE

- (a) Slide out the rear shoe.
- (b) Disconnect the parking brake cable from the parking brake shoe lever.
- (c) Remove the 2 caps, shoe hold-down spring and pin.

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Fig. 7: Rear Disc Brake Parking Brake Removal Procedure (2 Of 2)

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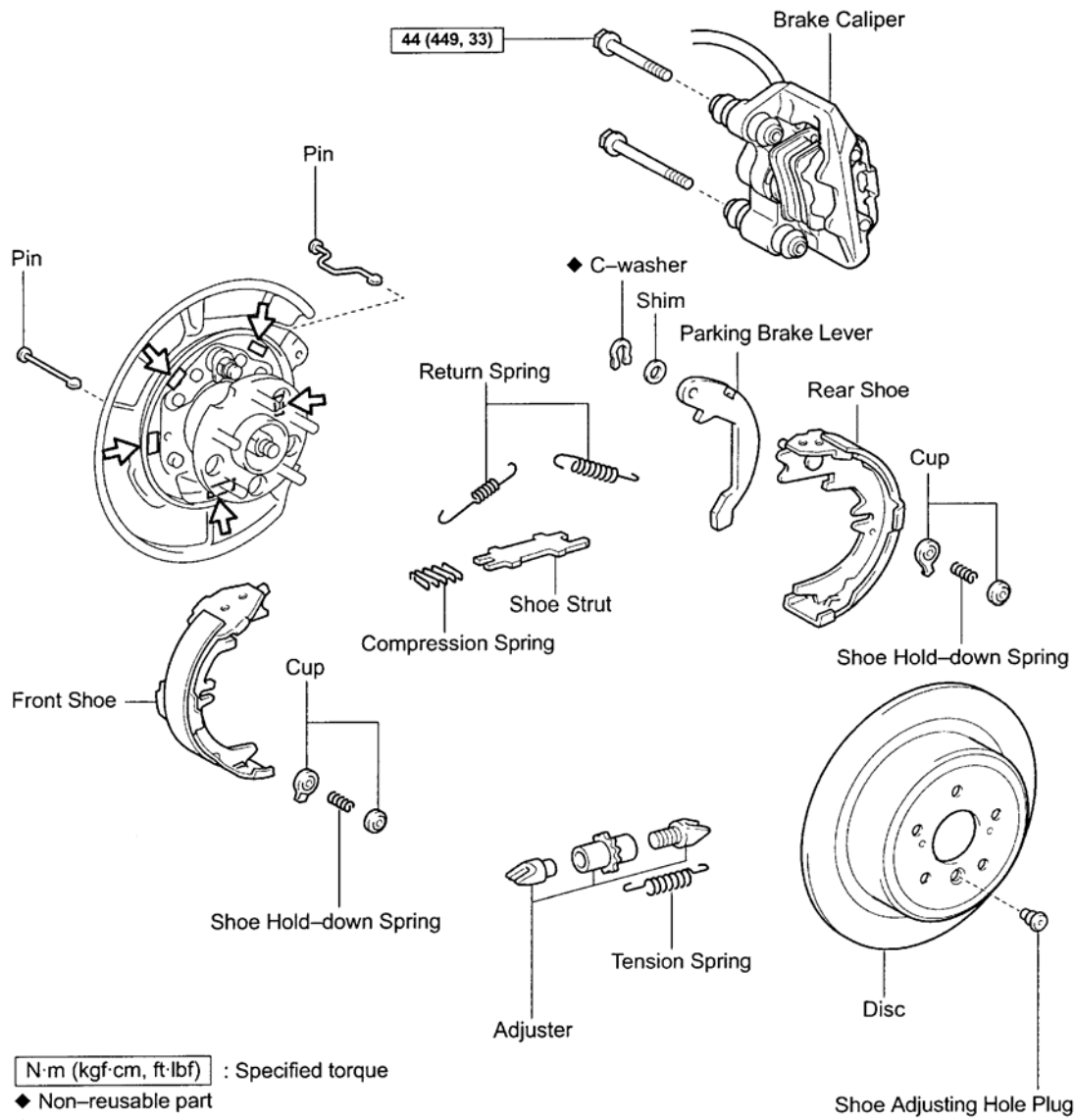


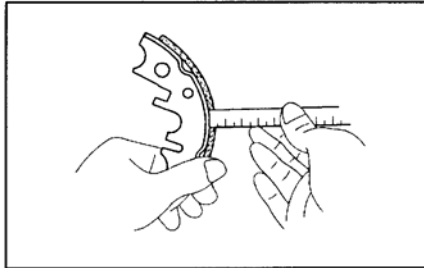
Fig. 8: Rear Disc Brake System Parking Brake Components
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Inspection

For inspection procedure, see **Fig. 9**.

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1. INSPECT DISASSEMBLED PARTS

Inspect the disassembled parts for wear, rust or damage.

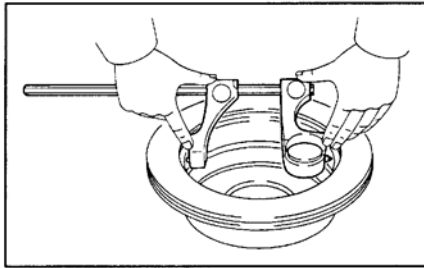
2. MEASURE BRAKE SHOE LINING THICKNESS

Using a ruler, measure the thickness of the shoe lining.

Standard thickness: 2.5 mm (0.098 in.)

Minimum thickness: 1.0 mm (0.039 in.)

If the lining thickness is at the minimum thickness or less, or if there is severe, uneven wear, replace the brake shoe.



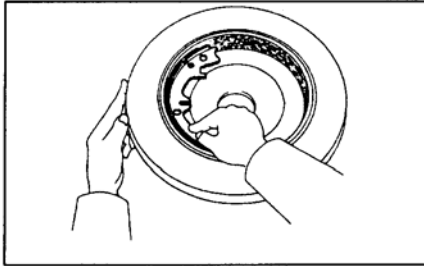
3. MEASURE DISC INSIDE DIAMETER

Using a brake drum gauge or equivalent, measure the inside diameter of the disc.

Standard inside diameter: 190.0 mm (7.480 in.)

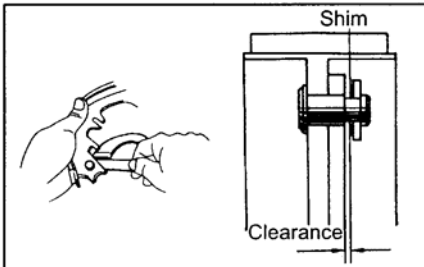
Maximum inside diameter: 191.0 mm (7.520 in.)

Replace the disc if the inside diameter is at the maximum value or more. Replace the disc or grind it with a lathe if the disc is scored or is worn unevenly.



4. INSPECT PARKING BRAKE LINING AND DISC FOR PROPER CONTACT

Apply chalk to the inside surface of the disc, then grind down the brake shoe lining to fit. If the contact between the disc and the brake shoe lining is improper, repair it using a brake shoe grinder or replace the brake shoe assembly.



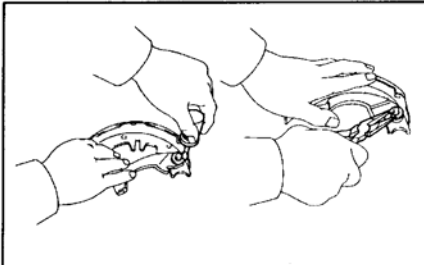
5. MEASURE CLEARANCE BETWEEN PARKING BRAKE SHOE AND LEVER

Using a feeler gauge, measure the clearance.

Standard clearance: Less than 0.35 mm (0.0138 in.)

If the clearance is not within the specification, replace the shim with one of the correct size.

Thickness	mm (in.)	Thickness	mm (in.)
0.3	(0.012)	0.9	(0.035)
0.6	(0.024)	—	



6. IF NECESSARY, REPLACE SHIM

- Using a screwdriver, remove the C-washer and shim.
- Install the correct size shim.
- Install a new C-washer.
- Remeasure the clearance.

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Fig. 9: Rear Disc Brake Parking Brake Inspection Procedure
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Installation

For installation procedure, see **Fig. 10**. For parking brake lever adjustment procedure, see **PARKING BRAKE**.

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Reassembly is in the reverse order of disassembly

NOTICE:

Apply high temperature grease to the parts indicated by the arrows

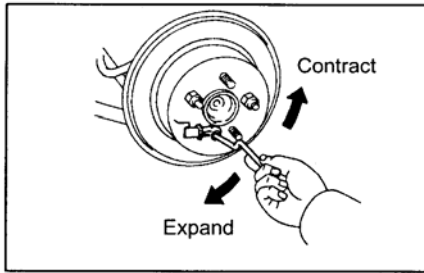
1. ADJUST PARKING BRAKE SHOE CLEARANCE

- (a) Temporarily install the hub nuts.
- (b) Remove the hole plug.
- (c) Turn the adjuster and expand the shoes until the disc locks.
- (d) Return the adjuster 8 notches.
- (e) Install the hole plug.

2. SETTLING PARKING BRAKE SHOES AND DISC

- (a) Drive the vehicle at about 50 km/h (31 mph) on a safe, level and dry road.
- (b) With the parking brake release button pushed in, pull on the lever with 98 N (10 kgf, 19.8 lbf) of force.
- (c) Drive the vehicle for about 400 meters (0.25 mile) in this condition.
- (d) Repeat this procedure 2 or 3 times.

3. CHECK AND ADJUST PARKING BRAKE LEVER TRAVEL



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Fig. 10: Rear Disc Brake Parking Brake Reassembly Procedure
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REAR BRAKE DRUM

Removal

Ensure parking brake is released. Raise and support vehicle. Remove wheel. Remove set screws from brake drum (if equipped). Pull drum from axle flange. It may be necessary to loosen brake shoe adjuster before removing drum.

Installation

Measure inside diameter of brake drum and diameter of brake shoes. Turn brake adjuster until difference between diameters is .024 in. (.60 mm). Install brake drum and adjust brakes, if necessary.

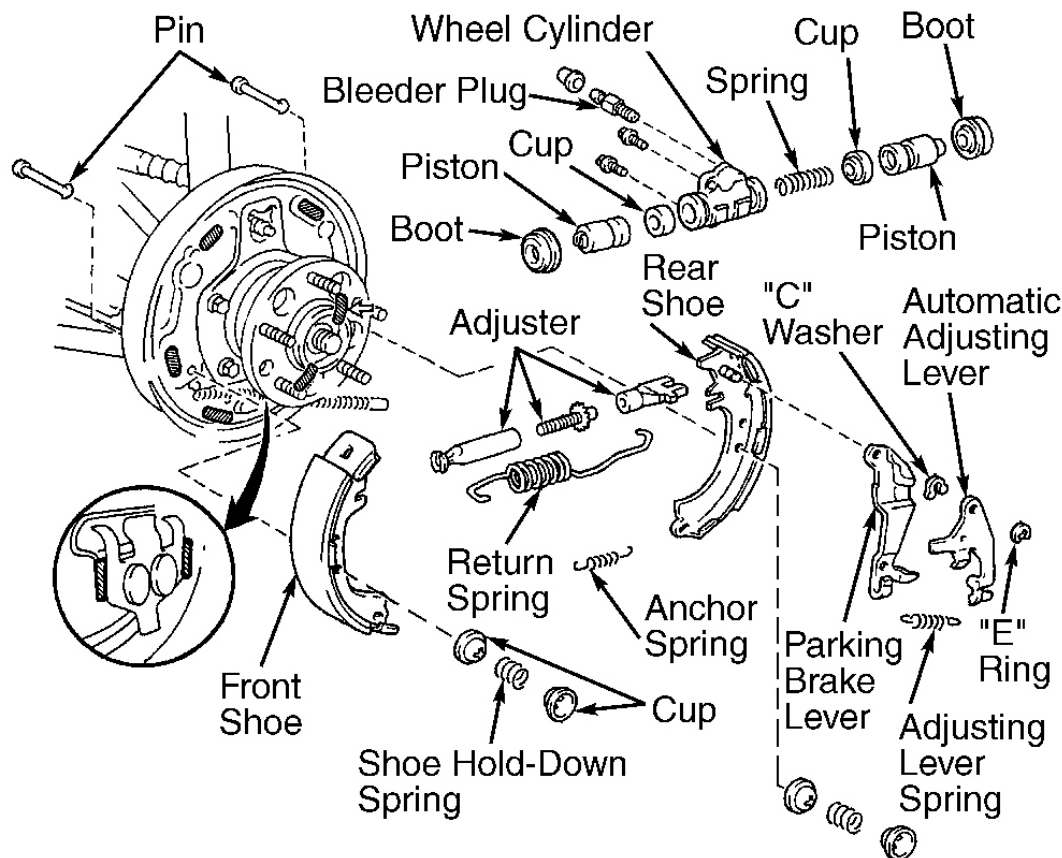
REAR BRAKE SHOES

Removal & Installation

- 1. Remove brake drum. See **REAR BRAKE DRUM**. Disconnect return spring from both shoes. Remove hold-down spring, cups and pin from front shoe. Disconnect anchor spring, and remove front shoe. Remove anchor spring from rear shoe.
- 2. Remove rear shoe hold-down spring, cups and pin. Disconnect parking brake cable from brake lever. Remove rear shoe with adjuster. See **Fig. 11**.
- 3. To install, reverse removal procedure. Apply lithium soap-base glycol grease and high-temperature grease

to moving parts (DO NOT get grease on brake shoe linings or drum).

4. Check operation of automatic adjuster by moving parking brake lever of rear shoe back and forth, and ensure that adjuster turns. Adjust parking brake-to-drum clearance to .024 in. (.60 mm). Bleed system and check for leaks.



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Fig. 11: Exploded View Of Rear Drum Brake Assembly

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REAR WHEEL CYLINDER

Removal & Installation

With brake drum and shoes removed, disconnect hydraulic line from wheel cylinder. Remove 2 mounting bolts and remove wheel cylinder. To install, reverse removal procedure. Adjust brakes and bleed system. See **BLEEDING BRAKE SYSTEM**.

MASTER CYLINDER

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Removal & Installation

1. Disconnect fluid level warning switch connector. Remove fluid from master cylinder with syringe.
2. Disconnect brake lines and 3-way line connector from master cylinder. If equipped with M/T, disconnect clutch reservoir hose. On all models, remove 2 bolts and master cylinder.
3. Prior to installation, adjust length of brake booster push rod if necessary. See **POWER BRAKE UNIT PUSH ROD** under ADJUSTMENTS. If adjusting booster push rod, install new gasket before checking adjustment.
4. Install master cylinder in reverse of removal procedure. Use NEW gasket. Fill and bleed system. Check for leaks and adjust pedal, if needed. Bleed clutch system, if equipped.

POWER BRAKE UNIT

Removal & Installation

1. Remove master cylinder. See **MASTER CYLINDER**. Disconnect vacuum hose. Remove brake pedal return spring, clip and clevis pin. Remove 4 nuts, clevis pin, brake booster and gasket.
2. Install power brake unit. Install NEW gasket to power brake unit. Install clevis to operating rod. Attach clevis pin, clip and return spring. Adjust push rod length. See **POWER BRAKE UNIT PUSH ROD** under ADJUSTMENTS.
3. Install master cylinder with NEW gasket. Connect vacuum hose. Fill master cylinder. Bleed system and check for leaks. See **BLEEDING BRAKE SYSTEM**. Adjust brake pedal, if necessary.

REAR BRAKE DISC

Removal & Installation

1. Remove caliper assembly with brakeline connected, and support securely aside ensuring flexible brake hose is not stressed. See **REAR BRAKE CALIPER**. Remove torque plate from backing plate.
2. Mark disc and hub for installation reference. Slide disc off hub assembly. Turn parking brake shoe adjuster to release shoes from disc (as necessary) to remove disk. To install, reverse removal procedure. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**.

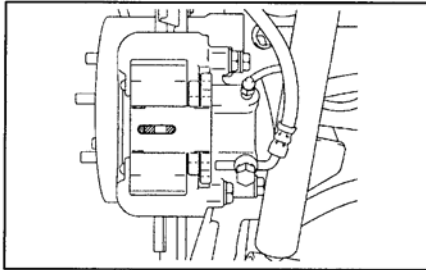
REAR BRAKE PADS

Removal & Installation

For procedure, see **Fig. 12** and **Fig. 13** . For component view, see **Fig. 14**.

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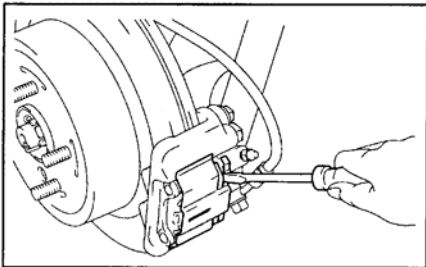


2. INSPECT PAD LINING THICKNESS

Check the pad thickness through the pad protector inspection hole.

Minimum thickness: 1.0 mm (0.039 in.)

If the thickness is not within the specification replace the pads.



3. REMOVE PAD PROTECTOR AND 2 PAD GUIDE PINS

NOTICE:

- Do not deform the clip and pad protector.
 - The clip and pad protector can be used again provided that they have sufficient rebound, no deformation, cracks or wear, and have had all rust, dirt and foreign particles cleaned off.
- (a) Using a screw driver, pry the protector and remove it.
 - (b) Remove the clip and 2 pad guide pins.

4. REMOVE ANTI-RATTLE SPRING, 2 PAD AND ANTI-SQUEAL SHIMS

- (a) Remove the anti-rattle spring.
- (b) Remove the 2 pads.
- (c) Remove the anti-squeal shims from each pads.

5. CHECK DISC THICKNESS AND RUNOUT

6. INSTALL NEW PADS

NOTICE:

When replacing worn pads, the anti-squeal shims must be replaced together with the pads.

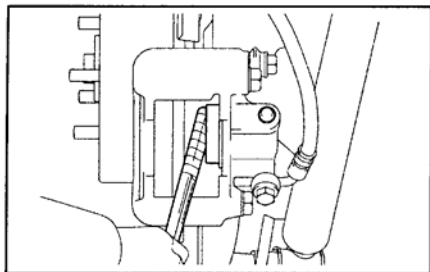
- (a) Apply disc brake grease to both side of inner anti-squeal shims
- (b) Install the 2 anti-squeal shims on each pad.
- (c) Draw out a small amount of brake fluid from the reservoir.

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Fig. 12: Rear Disc Brake Pad Replacement Procedure (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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- (d) Press in the piston with a monkey wrench handle or equivalent.

HINT:

- Tape the monkey wrench handle before use.
 - If the piston is difficult to push in, loosen the bleeder plug and push in the piston while letting some brake fluid escape.
- (e) Install the inner pad with pad wear indicator plate facing downward, and install the outer pad.

NOTICE:

There should be no oil or grease adhering to the friction surfaces of the pads and the disc.

- (f) Install the anti-rattle spring.
(g) Install the 2 pad guide pins.
(h) Install the clip.
(i) Install the pad protector.

7. INSTALL REAR WHEEL

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

- 8. DEPRESS BRAKE PEDAL SEVERAL TIMES**
9. CHECK THAT FLUID LEVEL IS AT MAX LINE

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Fig. 13: Rear Disc Brake Pad Replacement Procedure (2 Of 2)

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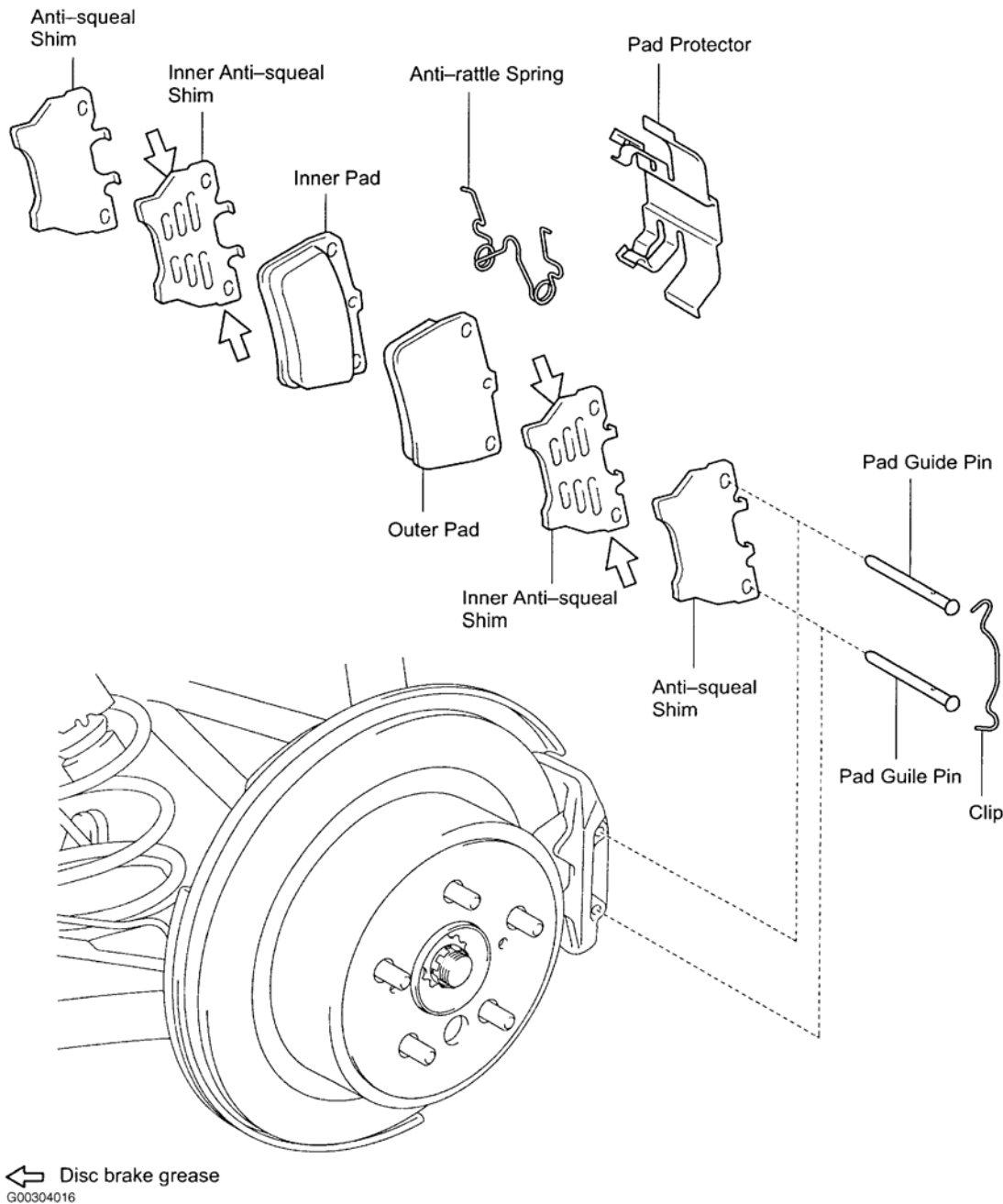


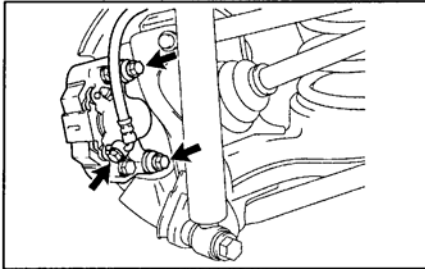
Fig. 14: Exploded View Of Rear Disc Brake Pad Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REAR BRAKE CALIPER

Removal & Installation

For removal procedure, see **Fig. 15**. Install caliper in reverse of removal procedure. Fill and bleed system. See

BLEEDING BRAKE SYSTEM.



1. REMOVE REAR WHEEL

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

2. DISCONNECT FLEXIBLE HOSE

Remove the union bolt and 2 gaskets from the caliper, then disconnect the flexible hose from the caliper. Use a container to catch the brake fluid as it drains out.

Torque: 30 N·m (310 kgf·cm, 22 ft·lbf)

HINT:

At the time of installation, please refer to the following items.

- Use 2 new gaskets.
- Install the flexible hose lock securely in the lock hole in the caliper.

3. REMOVE CALIPER

Remove the 2 installation bolts and caliper.

Torque: 44 N·m (449 kgf·cm, 33 ft·lbf)

4. REMOVE BRAKE PADS

- (a) Remove the pad protector.
- (b) Remove the clip and 2 pad guide pins.
- (c) Remove the anti-rattle spring.
- (d) Remove the 2 pads with the 4 anti-squeal shims.

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Fig. 15: Rear Disc Brake Caliper Removal Procedure

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OVERHAUL

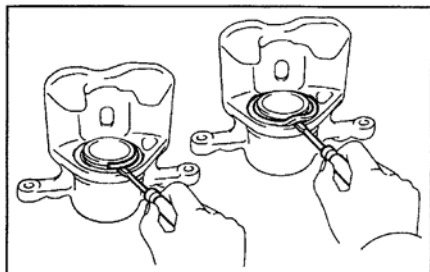
NOTE: When overhauling caliper, if piston bores are pitted or scored beyond repair after light honing, replace entire assembly.

FRONT BRAKE CALIPER

NOTE: For overhaul of front brake calipers, see Fig. 5 and Fig. 16 . Install caliper components in reverse of removal procedure. Fill and bleed system. See BLEEDING BRAKE SYSTEM.

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1. REMOVE CYLINDER BOOT SET RING AND CYLINDER BOOT

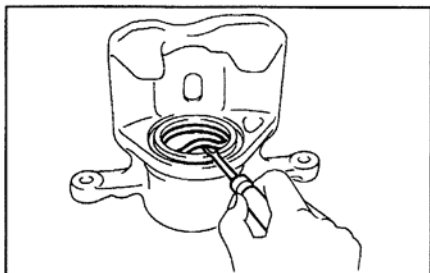
Using a screwdriver, remove the cylinder boot set ring and cylinder boot.

2. REMOVE PISTON

- (a) Put a piece of cloth or equivalent between the piston and the caliper.
- (b) Use compressed air to remove the piston from the cylinder.

CAUTION:

Do not place your fingers in front of the piston when using compressed air.



3. REMOVE PISTON SEAL

Using a screwdriver, remove the piston seal.

4. REMOVE SLIDING PINS AND DUST BOOTS

- (a) Remove the 2 sliding pins from the torque plate.
- (b) Remove the 2 dust boots.

5. INSPECT CYLINDER BORE

Inspect cylinder bore for rust or scoring. Inspect piston for damage. Replace if necessary.

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Fig. 16: Front Brake Caliper Overhaul Procedure

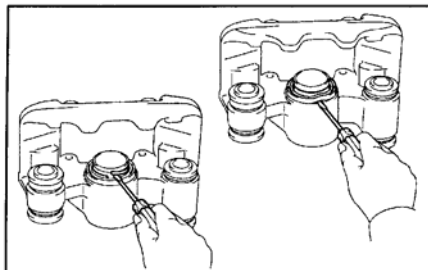
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REAR BRAKE CALIPER

NOTE: For overhaul of rear brake calipers, see Fig. 17 and Fig. 18 . Install caliper components in reverse of removal procedure. Fill and bleed system. See BLEEDING BRAKE SYSTEM.

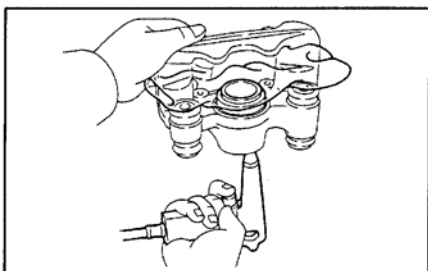
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1. REMOVE SET RING AND CYLINDER BOOT

Using a screwdriver, remove the set ring and cylinder boot.

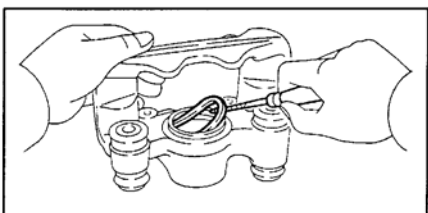


2. REMOVE PISTON

- (a) Put a piece of cloth or an equivalent between the piston and caliper.
- (b) Use compressed air to remove the piston from the cylinder.

CAUTION:

Do not place your fingers in front of the piston when using compressed air.



3. REMOVE PISTON SEAL FROM CYLINDER

Using a screwdriver, remove the piston seal.

4. REMOVE 2 SLIDING PINS AND 3 DUST BOOTS

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Fig. 17: Rear Brake Caliper Overhaul Procedure

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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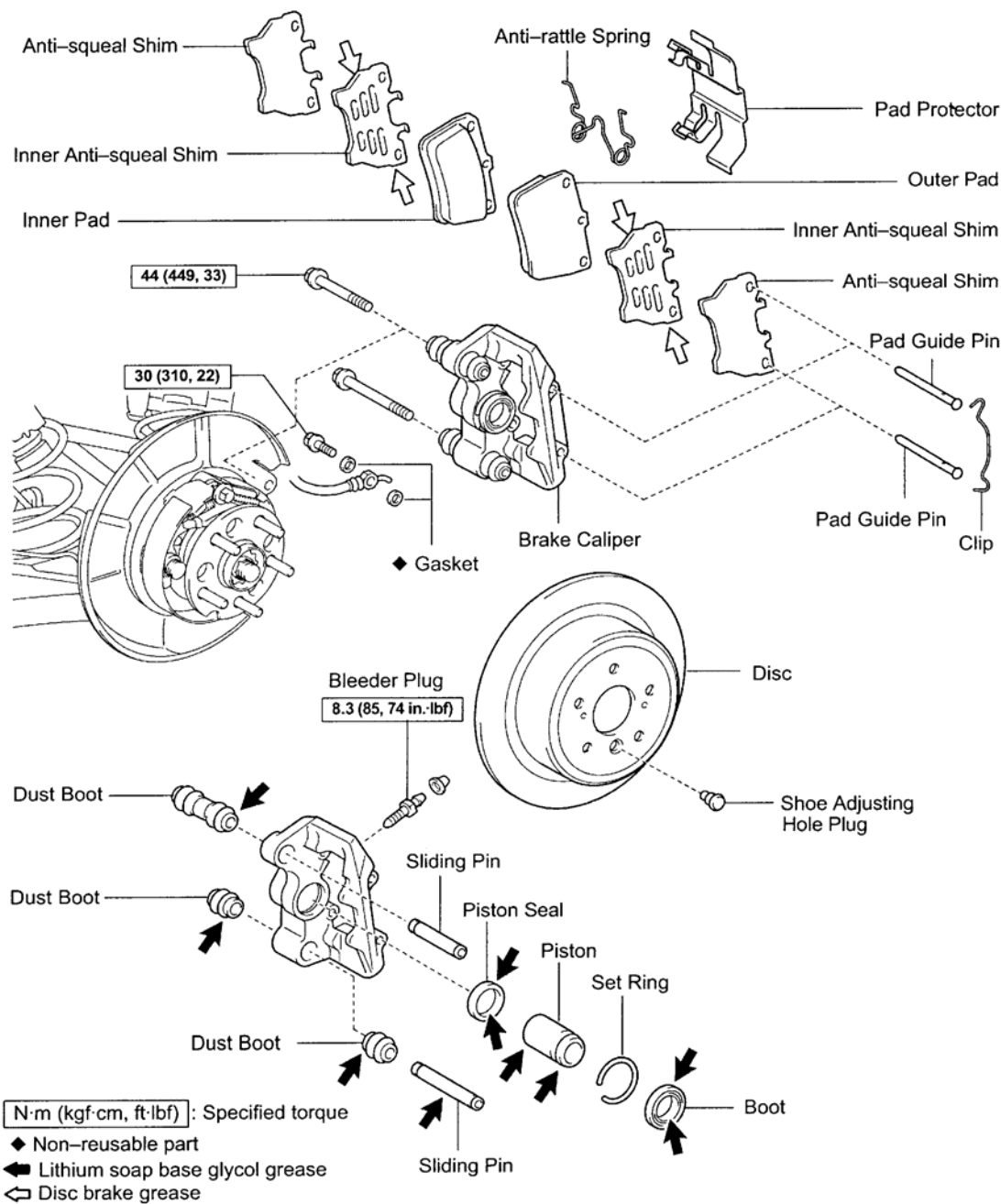
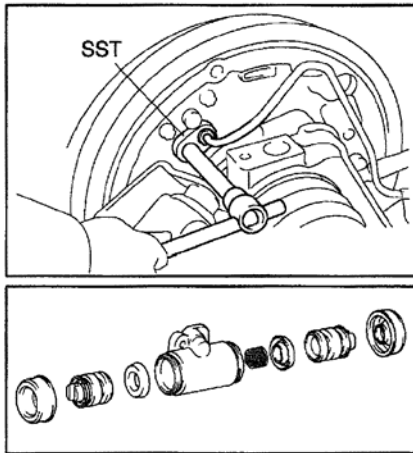


Fig. 18: Locating Rear Brake Caliper Components
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REAR WHEEL CYLINDERS

NOTE: For overhaul of rear wheel cylinders, see **Fig. 11** and **Fig. 19** . Install wheel cylinder components in reverse of removal procedure. Fill and bleed system.

See **BLEEDING BRAKE SYSTEM.**



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- 1. REMOVE WHEEL CYLINDER**
 - (a) Using SST, disconnect the brake line. Use a container to catch the brake fluid.
SST 09023-00100
Torque: 15 N·m (155 kgf-cm, 11 ft-lbf)
 - (b) Remove the 2 bolts and the wheel cylinder.
Torque: 10 N·m (100 kgf-cm, 7 ft-lbf)
- 2. DISASSEMBLE WHEEL CYLINDER**
 - (a) Remove the 2 boots from the wheel cylinder.
 - (b) Remove the 2 pistons and spring from the wheel cylinder.
 - (c) Remove the 2 piston cups from each piston.
- 3. INSPECT DISASSEMBLED PARTS**
Inspect the disassembled parts for wear, rust or damage, and replace if necessary.

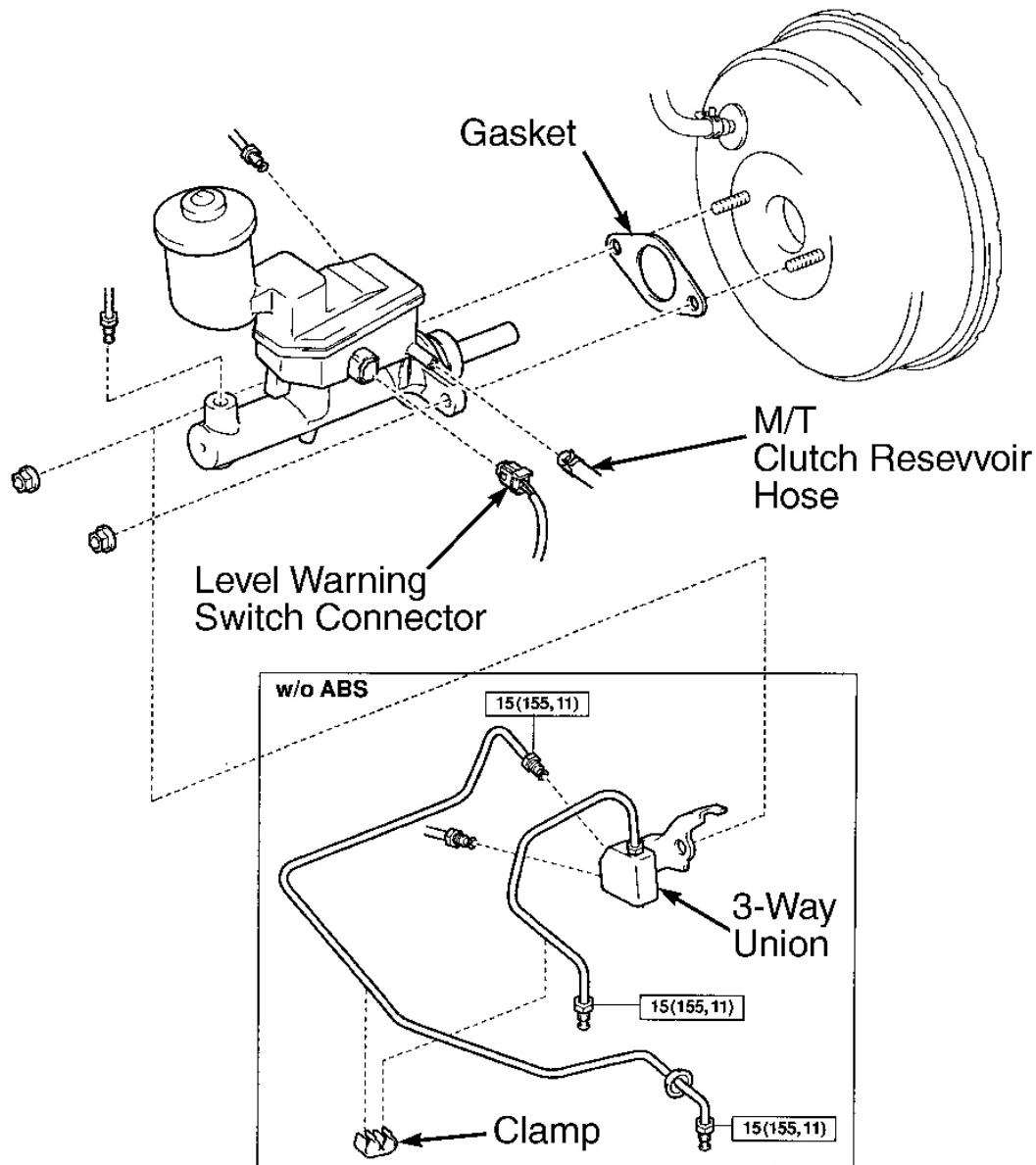
Fig. 19: Rear Wheel Cylinder Overhaul Procedure
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

MASTER CYLINDER

NOTE: For overhaul of master cylinder assembly, see **Fig. 20-Fig. 23** . Install master cylinder components in reverse of removal procedure. Fill and bleed system. See **BLEEDING BRAKE SYSTEM.**

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Fig. 20: Exploded View Of Master Cylinder Assembly Except ABS Or VSC
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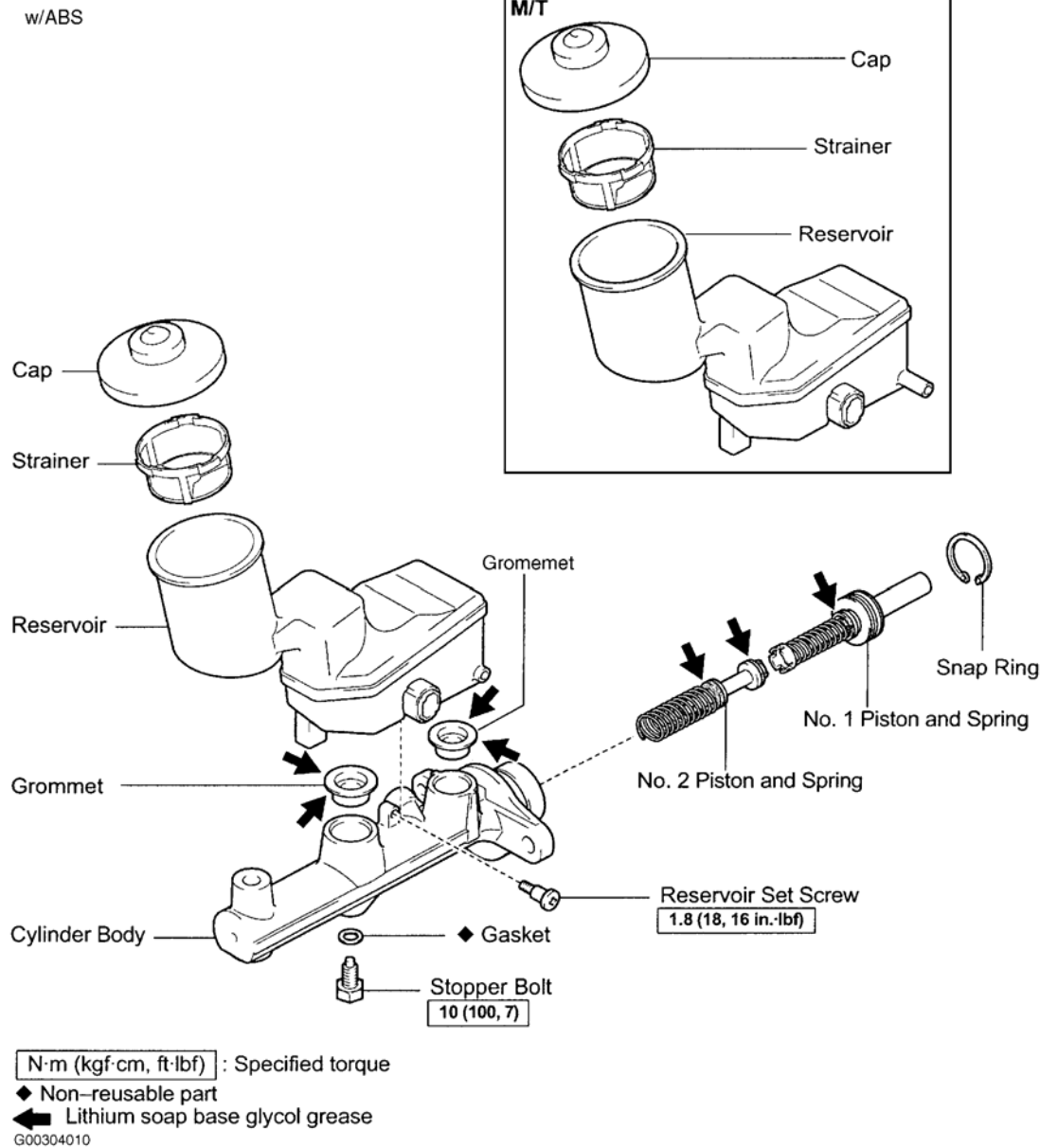
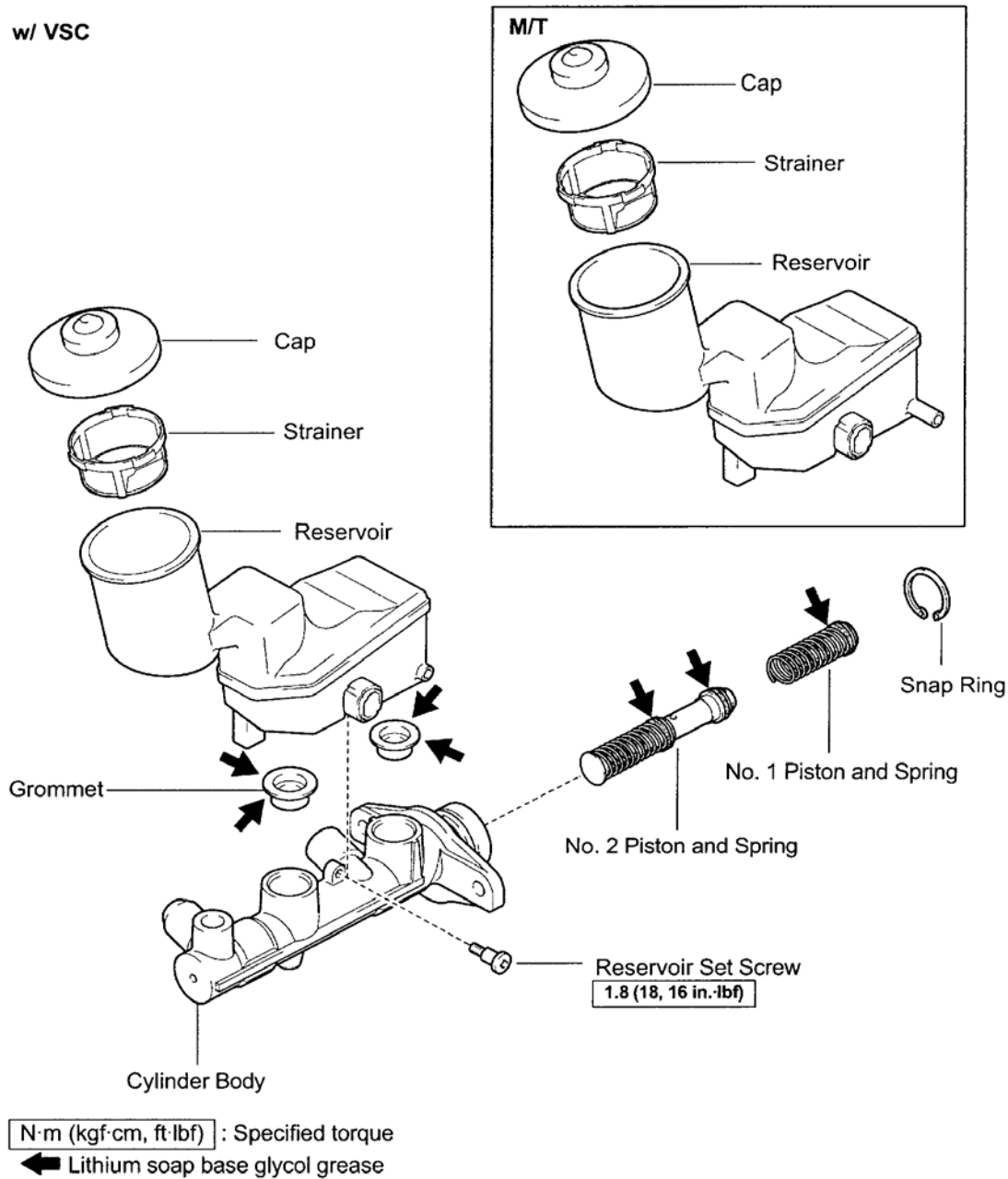


Fig. 21: Exploded View Of Brake Master Cylinder With ABS
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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w/ VSC

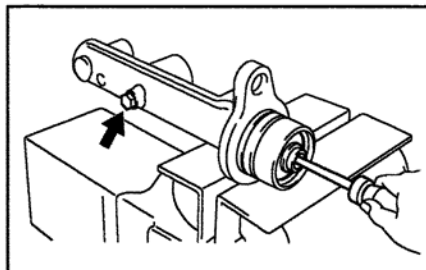


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Fig. 22: Exploded View Of Brake Master Cylinder With VSC
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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1. REMOVE RESERVOIR

- (a) Remove the set screw and pull out the reservoir.

Torque: 1.8 N·m (18 kgf·cm, 16 in.-lbf)

- (b) Remove the cap and strainer from the reservoir.

2. REMOVE 2 GROMMETS

3. PLACE CYLINDER IN VISE

4. REMOVE PISTON STOPPER BOLT

Using a screwdriver, push the pistons in all the way and remove the piston stopper bolt and gasket.

HINT:

Tape the screwdriver tip before use.

Torque: 10 N·m (100 kgf·cm, 7 ft-lbf)

5. REMOVE 2 PISTONS AND SPRINGS

- (a) Push in the piston with a screwdriver and remove the snap ring with snap ring pliers.

HINT:

Tape the screwdriver tip before use.

- (b) Remove the No. 1 piston and spring by hand, pulling straight out, not at an angle.

NOTICE:

- If pulled out and installed at an angle, there is a possibility that the cylinder bore could be damaged.
 - At the time of reassembly, be careful not to damage the rubber lips on the pistons.
- (c) Place a rag and 2 wooden blocks on the work table and lightly tap the cylinder flange against the block edges until the piston drops out of the cylinder.

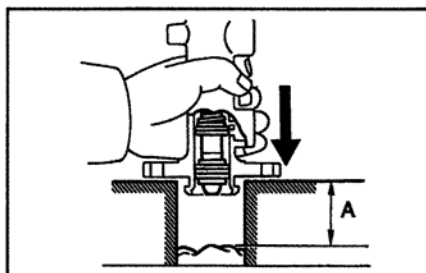
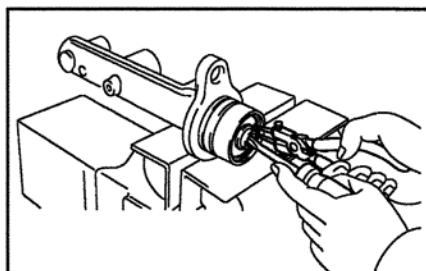
HINT:

Make sure the distance (A) from the rag to the top of the blocks is at least 100 mm (3.94 in.).

Clean the disassembled parts with compressed air.

1. INSPECT CYLINDER BORE FOR RUST OR SCORING
2. INSPECT COMPONENTS FOR WEAR OR DAMAGE

If necessary, clean or replace the master cylinder.



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Fig. 23: Master Cylinder Overhaul Procedure

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m.)
Front Brake Caliper Bolt	19 (26)
Front Brake Caliper Torque Plate Bolt	78 (106)
Front Brake Hose-To-Brake Caliper Bolt	22 (30)
Brake Pedal Pivot Bolt/Nut	29 (39)
Brake Pedal Push Rod Lock Nut	19 (26)
Brakeline-To-Master Cylinder Nut	11 (15)

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Brakeline-To-Wheel Cylinder Nut	11 (15)
Brakeline-To-Three-Union Nut	11 (15)
Rear Axle Hub Nut (4WD)	159 (216)
Rear Brake Caliper Mounting Bolt	33 (44)
Wheel Lug Nut	76 (103)
INCH Lbs. (N.m)	
Bleeder Screw	
Front Brake Caliper	71 (8)
Wheel Cylinder	73 (8.2)
Brake Booster Retaining Nut	115 (13)
Master Cylinder Mounting Nut	115 (13)
Master Cylinder Piston Stopper Bolt	89 (10.1)
Parking Brake Adjustment Lock Nut	48 (5.4)
Rear Speed Sensor Installation Bolt	71 (8)
Reservoir-To-Master Cylinder Set Screw	16 (1.8)
Wheel Cylinder Bolt	89 (10.1)

DISC & DRUM BRAKE SPECIFICATIONS**DISC BRAKE SPECIFICATIONS**

Application	In. (mm)
Front Disc	
Original Disc Thickness	.984 (25)
Minimum Refinish Thickness	.906 (23)
Maximum Disc Runout	.002 (.05)
Brake Pad Thickness	
Standard Thickness	.472 (12)
Minimum Thickness	.039 (1.0)
Rear Disc	
Original Disc Thickness	.354 (9)
Minimum Refinish Thickness	.317 (8)
Maximum Disc Runout	.039 (1.0)
Brake Pad Thickness	
Standard Thickness	.394 (10)
Minimum Thickness	.039 (1.0)
Parking Brake Shoe Lining Thickness ⁽¹⁾	
Standard Thickness	.098 (2.5)
Minimum Thickness	.039 (1.0)
Rear Brake Drum Inside Diameter ⁽²⁾	
Standard	9.00 (228.6)

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Maximum	9.08 (230.6)
(1) This is brake lining for the parking brake on the inside of the rear disc.	
(2) This is the drum for the parking brake on the inside of the rear disc.	

DRUM BRAKE SPECIFICATIONS ⁽¹⁾

Application	In. (mm)
Rear Brake Drum	
Brake Shoe-To-Drum Clearance	.024 (.61)
Drum Diameter	
Original Diameter	9.000 (228.60)
Maximum Diameter	9.080 (230.63)
Rear Brake Shoe Lining Thickness	
Standard Thickness	.197 (5.55)
Minimum	.039 (1.00)
(1) With rear drum brakes.	