DATSUN 280ZX

280ZX

DESCRIPTION

Brake system is hydraulically operated using tandem master cylinder and vacuum power unit. Front brakes are single piston, sliding caliper type. Rear brakes are single cylinder, dual piston, fixed caliper, sliding yoke type. Brake system is equipped with a combination valve to prevent premature locking of rear wheels. Parking brake is cable actuated and operates on rear disc caliper.

ADJUSTMENT

PEDAL HEIGHT & FREE PLAY

1) Pedal height is measured from pedal pad to floor. Height should be 7.1-7.4" (181-188 mm) on manual transmission and 7.5-7.7" (191-196 mm) on automatic transmission. Adjust pedal height by moving stop light switch. Loosen operating rod lock nut and turn operating rod to attain proper height. Tighten lock nut and position stop light switch until it just contacts brake pedal. Tighten retaining nut.

2) Pedal free play should be .04-.20" (1-5 mm) on all models. If specification is exceeded, adjust push rod length.

FRONT DISC BRAKE PADS

Front disc brakes are self-adjusting, therefore, no adjustment in service is required.

REAR DISC BRAKE PADS

Rear disc brakes are self-adjusting (actuated by brake pedal), therefore, no adjustment in service is required if brake pedal stroke remains constant.

PARKING BRAKE

Adjust front cable adjusting nut so when parking brake lever is pulled with 60 lbs. (27 kg) force, lever stroke is 4-6 notches. After releasing lever, ensure rear cables are not slack and that rear brake toggle levers are in original positions.

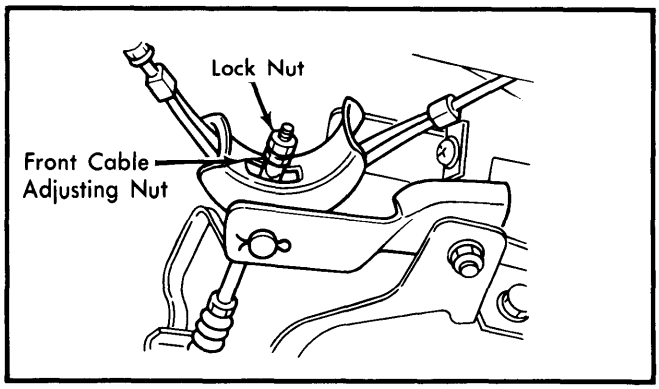

Fig. 1 Location for Adjusting Parking Brake

BRAKE WARNING LIGHT

Light indicates parking brake is engaged. To adjust light operation, bend switch plate down until light comes on when brake lever is pulled up one notch and goes out when lever is released.

COMBINATION VALVE

Function Test – Accelerate to 30 mph on a dry concrete surface and rapidly apply brakes. If rear wheels lock before front wheels, malfunction of combination valve is indicated. Replace combination valve as an assembly; DO NOT disassemble.

Warning Light Test – Release hand brake lever and raise reservoir cap. Warning light should come on; if not, check switch and wire connector.

HYDRAULIC SYSTEM BLEEDING

1) Attach a bleed tube to bleeder screw and immerse opposite end of tube in a container partially filled with brake fluid. Pump brake pedal two or three times, keep pedal fully depressed and open bleeder screw. Exhaust air, close bleeder screw and allow pedal to return slowly.

2) Bleeding sequence is master cylinder, rear wheel then front wheel. Repeat operation until air bubbles are no longer seen in discharged fluid. Check master cylinder fluid level often; replace fluid as required. Repeat procedure on remaining brake lines.

REMOVAL & INSTALLATION

FRONT DISC BRAKE PADS

Removal – Raise and support vehicle on safety stands; remove tire and wheel. Remove lower pin bolt and rotate caliper body upward. Remove pad retainers, shims and brake pads.

NOTE – *Do not pull caliper body away from rotor; use upper pin bolt as center of rotation.*

NOTE – *Replace all pads (right and left side) at same time.*

Installation – **1)** Clean piston and area around pin bolts with brake fluid. Install inner pad and seat piston by placing lever through opening in caliper body and pushing piston into bore. Apply brake grease to pad retainer points on caliper assembly and install outer pad and both shims.

2) Install pad retainers. Rotate caliper body down into original position and install lower pin bolt. Tighten pin bolt and depress brake pedal several times to seat pads.

FRONT DISC BRAKE CALIPER

Removal – Raise and support vehicle on safety stands; remove tire and wheel. Disconnect hydraulic line from caliper and plug openings. Remove caliper mounting bolts and remove caliper from spindle.

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Installation – Reverse removal procedure, tighten caliper mounting bolts securely, and bleed hydraulic system.

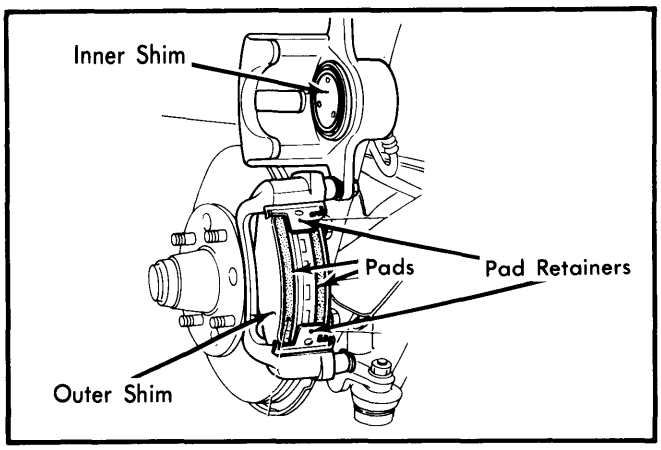

Fig. 2 Front Disc Brake Pad Retainer Location

FRONT DISC BRAKE ROTOR

Removal – With caliper assembly removed, remove wheel hub dust cap, cotter pin, and adjusting nut. Remove wheel hub and rotor assembly, wheel bearing, and washer from spindle as an assembly. Remove bolts attaching rotor to wheel hub, and detach rotor.

NOTE – *Avoid damage to hub dust cap "O" ring during removal of dust cap.*

Installation – Reverse removal procedure and adjust front wheel bearings. *See Wheel Bearing Adjustment in WHEEL ALIGNMENT Section.*

REAR DISC BRAKE PADS

Removal – Raise and support vehicle on safety stands; remove tire and wheel. Remove pin clip. Remove pad pins while holding anti-squeal springs with fingers. Remove disc pads.

NOTE – *Replace all pads (right and left sides) at same time.*

Installation – 1) Apply brake grease to caliper body-to-pad clearance, yoke-to-pad clearance, pin-to-pad clearance and pin-to-bracket clearance. Preset piston before installing pads by pushing and turning outer piston clockwise until it retracts into caliper body. Preset yoke clearance by placing a lever between rotor and yoke; move yoke until clearance is equal to piston clearance.

NOTE – *Avoid damaging dust seal while turning outer piston.*

NOTE – *Rear brake pad kit contains shims that may be installed to reduce pad squeal and wear.*

2) Align outer piston so cut out portion is level and install inner pad with protrusion of pad seated in piston cut out. Install outer pad, anti-squeal springs, pad pins and pin clip. Depress brake pedal several times to adjust pad-to-rotor clearance; clearance is correct when pedal stroke is constant. Add brake fluid and bleed hydraulic system.

REAR DISC BRAKE CALIPER

Removal – Disconnect hydraulic line from caliper and plug openings. Disconnect hand brake cable. Remove mounting bolts and remove caliper.

Installation – Reverse removal procedure and bleed hydraulic system if necessary. Depress brake pedal several times; when pedal stroke is constant, brake pad-to-rotor clearance is properly adjusted. Turn rotor to make sure no excessive drag is present.

REAR DISC BRAKE ROTOR

Removal – With caliper removed, pull rotor from axle stub.

Installation – Install rotor and caliper assembly. After installation, depress pedal until pedal stroke is constant to adjust pad-to-rotor clearance.

MASTER CYLINDER

Removal – Remove heat shield plate. Disconnect brake fluid level gauge wiring and hydraulic lines from master cylinder. Remove nuts securing master cylinder to power unit and remove master cylinder from power brake unit.

Installation – Reverse removal procedure, check pedal height and bleed hydraulic system.

POWER BRAKE UNIT

Removal – Disconnect power unit push rod from brake pedal by removing clevis pin. Disconnect hydraulic lines from master cylinder, vacuum line from power unit, remove master cylinder mounting nuts, and remove master cylinder. Remove nuts attaching power unit to firewall, and remove power unit from engine compartment.

Installation – Reverse removal procedure and check push rod length, operating rod length and pedal height. Push rod length should be .37-.41" (9.5-10.5 mm) and is adjusted by turning tip of push rod. Operating rod length should be 5.63" (143 mm) and is adjusted by loosening lock nut and turning operating rod to attain proper length. Tighten lock nut and clevis. Bleed hydraulic system.

Check Valve Replacement – Check valve is located in vacuum line between intake manifold and power unit on firewall. To remove, disconnect retaining clip from firewall, remove hose clamps, separate hoses from valve, and remove check valve. To install, reverse removal procedure.

OVERHAUL

FRONT DISC BRAKE CALIPER

Disassembly – Drain brake fluid from caliper body and clean exterior of caliper assembly. Remove pin bolts, separate caliper body from torque member and remove pad retainers and pads. Force piston and dust seal out of bore by applying

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compressed air to brake line inlet. Remove piston seal without damaging seal and caliper bore. Remove sub pin, main pin, sub pin bushing and seals.

Cleaning & Inspection – Clean all parts in brake fluid only. Check caliper bore for wear, rust, corrosion or other damage; minor deposits or scratches can be removed with fine emery cloth. Check torque member for wear, cracks or other damage; replace if defective. Check piston for rust, wear or damage; replace if defective. Check main pin and sub pin for wear, cracks or other damage; replace if defective.

NOTE – *DO NOT use abrasives on piston plated surfaces.*

Reassembly – 1) Replace piston seal and dust seals during overhaul. Apply brake fluid to sliding portions of piston and caliper bore. Apply rubber grease to inside of dust seals. Install piston seal in bore; install dust seal on piston and slide piston into caliper bore. Secure dust seal in piston groove and caliper groove.

2) Apply multi-purpose grease to sub pin rubber bushing, main pin and sub pin. Install seals, sub pin rubber bushing, sub pin and main pin. Apply brake grease to torque member-to-pad clearance and reassemble torque member to caliper body. Install and tighten pin bolts. Install caliper assembly to spindle and tighten mounting bolts. Install pads and retainers. Bleed hydraulic system and turn rotor to ensure there is no excessive drag.

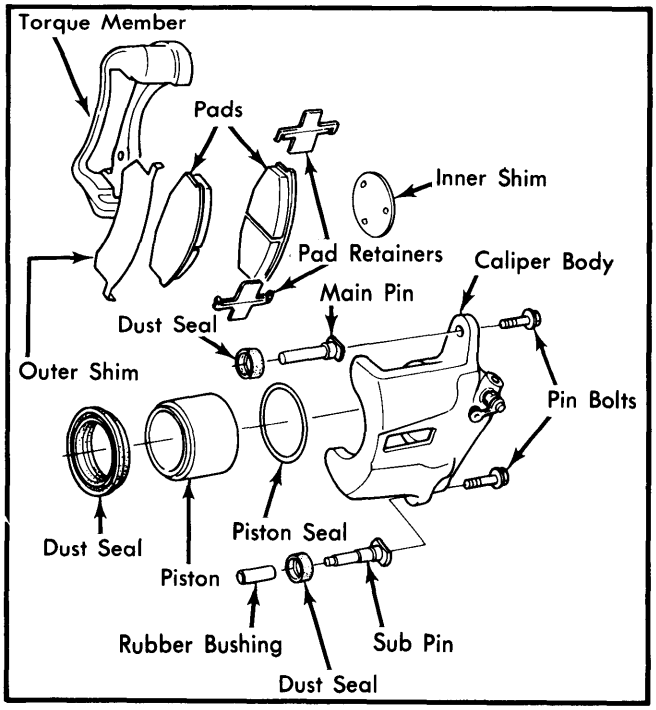

Fig. 3 Exploded View of Front Disc Brake Caliper

REAR DISC BRAKE CALIPER

Disassembly – 1) Drain brake fluid from caliper body and clean exterior of caliper. Remove pads. Place caliper assembly on a work bench with yoke down; push in caliper body and separate caliper and yoke. Remove retaining rings and dust seals from piston ends. Push outer piston to remove piston assembly from caliper bore. Remove piston seals without damaging caliper bore.

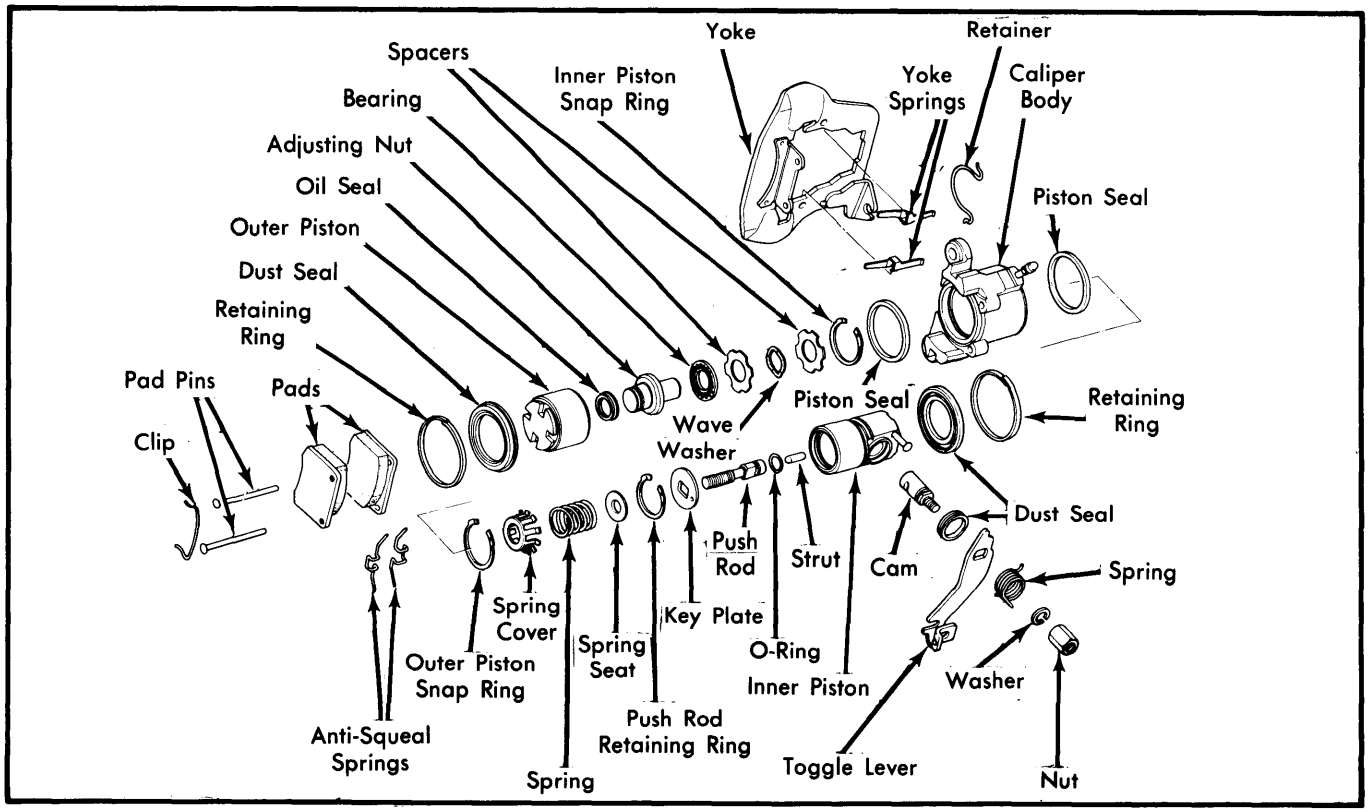

Fig. 4 Exploded View of Rear Disc Brake Caliper

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2) Disengage piston assembly by turning inner and outer pistons counterclockwise. Disassemble outer piston by removing outer piston snap ring. Remove spacers, wave washer, bearing, adjusting nut and oil seal. To disassemble inner piston, remove inner piston snap ring. Remove spring cover, spring and spring seat. Remove push rod retaining ring, key plate, push rod, "O" ring and strut. Place parking brake lever in vise and remove nut, washer, return spring, lever, dust seal and cam.

Cleaning & Inspection – Clean all parts in brake fluid only. Check caliper bore for wear, rust, corrosion or other damage; minor deposits or scratches can be removed with fine emery cloth. Check yoke for wear, cracks or other damage; replace if defective. Check pistons for rust, wear or damage; replace if defective. Replace piston seals, dust seals, oil seal and push rod "O" ring during overhaul.

NOTE – *DO NOT use abrasives on piston plated surfaces.*

Reassembly – **1)** Apply suitable grease to push rod groove, "O" ring, strut ends, oil seal, piston seals and inside dust seals. Install new oil seal on adjusting nut as shown in *Fig. 5*.

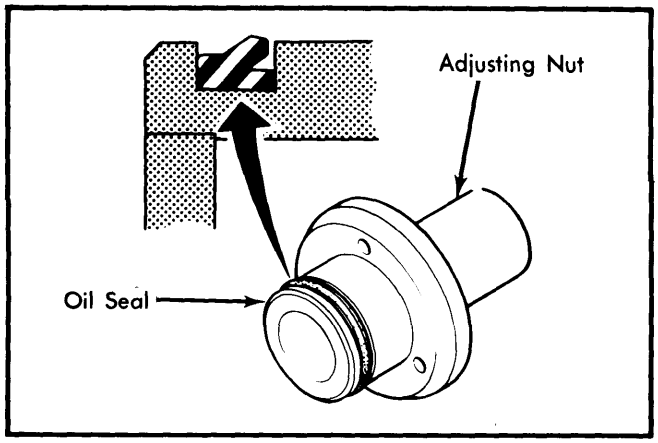

Fig. 5 Installation of Oil Seal on Rear Caliper Adjusting Nut

Slide adjusting nut and seal into outer piston, then install bearing, spacer, wave washer, second spacer and secure components in position with outer piston snap ring.

2) Place cam inside inner piston and securely fit strut in cam hole. Install "O" ring on push rod without twisting "O" ring. Align square hole in key plate with push rod and slide assembly into inner piston bore; rounded portion of plate must seat in piston. Install push rod retaining ring. Position spring seat, spring and spring cover in position. Hold spring and spring cover in position with suitable drift and install inner piston snap ring.

NOTE – *Do not use excessive force on spring cover; cover will require replacement if deformed.*

3) Install toggle lever dust seal on cam (cam must face in direction of hand brake operation) and align square hole in toggle lever on cam. Install return spring, lock washer and tighten nut. Reassemble piston assembly by turning clockwise. Coat sliding portions of piston assembly and caliper bore with brake fluid. Slide piston assembly into bore (outside piston first) from rear of caliper assembly. Install new dust seals and secure in position with retainer rings.

4) Install yoke springs to yoke. Coat yoke and caliper body frictional surfaces and caliper body pad pin holes with silicone grease. Align cut out portion of inner piston with yoke and reassemble yoke to caliper. Securely position retainer in piston groove.

5) Apply brake grease to caliper body-to-pad clearance, yoke-to-pad clearance, pad pin-to-pad clearance and pad pin-to-bracket clearance. Install pads, springs, pins and clip.

MASTER CYLINDER

Disassembly – Remove reservoir caps and filters; drain brake fluid. Remove snap ring and stopper bolt. Withdraw stopper, primary piston assembly, secondary piston assembly and springs. Remove check valve plugs and withdraw check valve assemblies.

NOTE – *Do not remove or disassemble brake fluid level gauge.*

Cleaning & Inspection – Clean all parts in brake fluid and check components for excessive wear or damage. If piston-to-cylinder clearance exceeds .006" (.15 mm) replace defective part. Caps, gaskets, packing and valves must be replaced during overhaul.

NOTE – *Master cylinders are produced by two companies and parts are not interchangeable. Ensure repair kit matches master cylinder.*

Reassembly – Reverse disassembly procedure and note the following: Apply rubber grease to all rubber parts and brake fluid to remaining parts when assembling to prevent damage.

POWER BRAKE UNIT

NOTE – *Manufacturer does not recommend disassembly of this unit. If a problem is determined to be in power brake unit, complete assembly must be replaced. Do not disassemble power brake unit.*

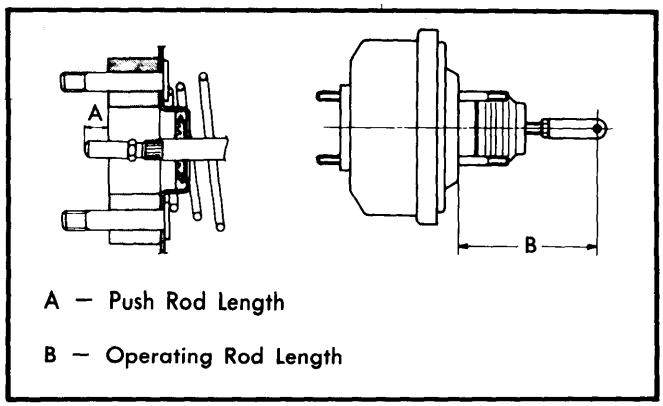

Fig. 6 Location for Measuring Push Rod & Operating Rod Lengths

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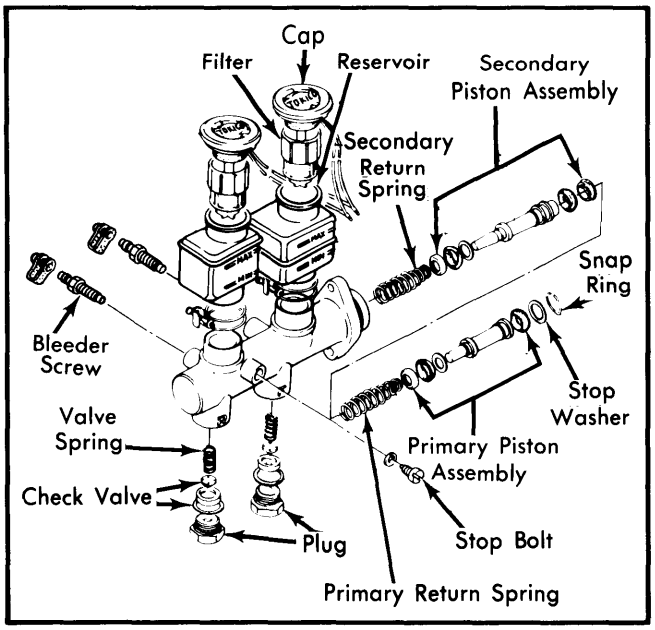

Fig. 7 Exploded View of Tokico Master Cylinder Nabco Master Cylinder is Similar But Has Different Piston Configuration

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Master Cylinder	
Check Valve Plugs	
Nabco Make	18-25 (2.5-3.5)
Tokico Make	58-65 (8-9)
Piston Stop Bolt	
Nabco Make	1-2 (.15-.30)
Tokico Make	5-6.5 (.70-.90)
Retaining Nuts	5.8-8.0 (.80-1.1)
Hydraulic Lines	11-13 (1.5-1.8)
Hub-to-Rotor Bolts	28-38 (3.9-5.3)
Hydraulic Line-to-Caliper	11-13 (1.5-1.8)
Front Disc Brake Caliper	
Pin Bolts	16-23 (2.2-3.2)
Mounting Bolts	53-72 (7.3-9.9)
Rear Disc Brake Caliper	
Toggle Lever Nut	18-22 (2.5-3.0)
Mounting Bolts	28-38 (3.9-5.3)

BRAKE SYSTEM SPECIFICATIONS

Application	Drum Diam. In. (mm)	Wheel Cylinder Diameter		Master Cylinder
		Front In. (mm)	Rear In. (mm)	Diameter In. (mm)
280ZX	①	2.386 (60.6)	1.685 (42.8)	.938 (23.81)

① — Equipped with 4-wheel disc brakes.

DISC BRAKE ROTOR SPECIFICATIONS

Application	Disc Diameter In. (mm)	Lateral Runout In. (mm)	Parallelism In. (mm)	Original Thickness In. (mm)	Minimum Refinish Thickness In. (mm)	Discard Thickness In. (mm)
280ZX						
Front	9.92 (252)	.0039① (.10)	.0012② (.03)	.787 (20)	.709 (18)	③
Rear	10.59 (269)	.0059① (.15)	.0012② (.03)	.378 (9.6)	.339 (8.6)	③

① — Maximum allowable at center of pad contact area.
② — Maximum allowable.
③ — Less than Minimum Refinish Thickness.