SERVICE BULLETIN

GROUP: 35 - Service Brakes	**DATE:** December 2005	**NO.** 35/2005/003
MODEL: 380	**SUBJECT:** Correction to Service Brakes specifications	
COUNTRIES: Australia New Zealand	D.R.BUDDEN NATIONAL SERVICE MANAGER	
	Bulletin Consists of 12 Pages	

The purpose of this bulletin is to inform you of corrections to the Service Brakes section of the Workshop Manual on 380 models.
Please use the attached pages showing the corrections in conjunction with the applicable Workshop Manual as detailed below.

Applicable Manual

MANUAL	PUBLICATION NO.	M/Y	PAGES
380 WSM CD	MR935174	2006	35A-7,8,17, 19, 20, 21, 22, 23, 39, 40, 41.

Effective Date
Commencement of production.

NOTE: THIS BULLETIN SHOULD BE FORWARDED DIRECT TO THE SERVICE MANAGER FOR ACTION/DISTRIBUTION

STEP 6. Check the master cylinder piston return spring for damage and return port for clogging.
Refer to P.35A-28.

Q: Is there damage?
YES : Replace the part. Then go to Step 9.
NO : Go to Step 7.

STEP 7. Check port for clogging.

Q: Is the port clogged?
YES : Repair it. Then go to Step 9.
NO : Go to Step 8.

STEP 8. Check disc brake pistons for sticking.
Depress the brake pedal, then release. Confirm each wheel spins freely.

Q: Does any wheel stick?
YES : Inspect that brake assembly. Then go to Step 9.
NO : Go to Step 9.

STEP 9. Recheck symptom.

Q: Is the symptom eliminated?
YES : The procedure is complete.
NO : Start over at step 1. If a new symptom surfaces, refer to the symptom chart.

INSPECTION PROCEDURE 5: Scraping or Grinding Noise when Brakes are Applied

DIAGNOSIS

STEP 2 ~~STEP 1~~. Check the front brakes, then rear brakes, for metal-to-metal condition.

Q: Is any metal-to-metal contact evident?
YES : Repair or replace the components. Then go to Step ~~6~~.7
NO : Go to Step ~~2~~. 3

STEP 3 ~~STEP 2~~. Check for interference between the caliper and wheel.

Q: Is there any interference?
YES : Repair or replace the part. Then go to Step ~~6~~. 7
NO : Go to Step ~~3~~. 4

STEP 1. Check the front left inner brake pad wear limit tab.

Q: Is the tab contacting the rotor?
YES : Repair or replace the components. Then go to Step 7.
NO : Go to Step 2.

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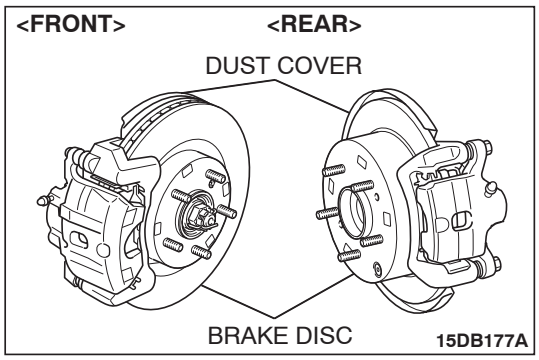
STEP 4 ~~**STEP 3.**~~ **Check for interference between the dust cover and brake disc.**



Q: Is there any interference?

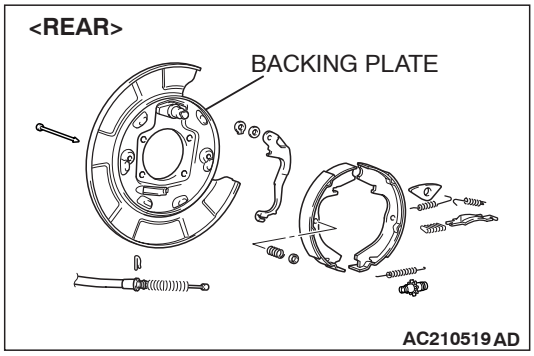
YES : Repair or replace the part. Then go to Step ~~5~~. 7
NO : Go to Step ~~4~~. 5

STEP 5 ~~**STEP 4.**~~ **Check the brake drums or discs for cracks.**

Q: Are there cracks?

YES : Repair or replace the part. Then go to Step ~~5~~. 7
NO : Go to Step ~~5~~. 6

STEP 6 ~~**STEP 5.**~~ **Check for bent backing plate(s).**



Q: Is (Are) the backing plate(s) bent?

YES : Repair or replace the part. Then go to Step ~~6~~. 7
NO : Go to Step ~~5~~. 7

STEP 7 ~~**STEP 6.**~~ **Recheck symptom.**

Q: Is the symptom eliminated?

YES : The procedure is complete.
NO : Start over at step 1. If a new symptom surfaces, refer to the symptom chart.

INSPECTION PROCEDURE6: Squealing, Groaning or Chattering Noise when Brakes are Applied

DIAGNOSIS

STEP 1. Check the brake disc and pads for wear or cutting.

Q: Is there wear or cutting?

YES : Repair or replace the part. Then go to Step 4.
NO : Go to Step 2.

STEP 2. Check the calipers for rust.

Q: Is there any rust?

YES : Remove the rust. Then go to Step 4.
NO : Go to Step 3.

BRAKE FLUID LEVEL SENSOR CHECK

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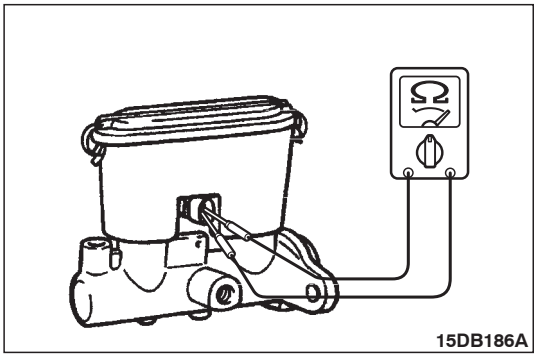
The brake fluid level sensor is in good condition if there is no continuity when the float surface is above "MIN" and if there is continuity when the float surface is below "MIN".



- A wear indicator tab is fitted to the LH Front inner brake pad. A scraping noise will occur when pad is worn to service limit.

<<Added>>

DISC BRAKE PAD CHECK AND REPLACEMENT

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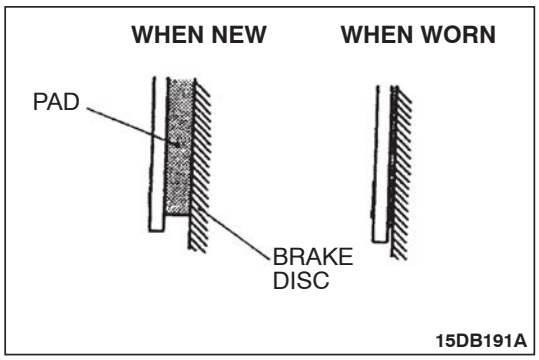
NOTE: Uneven wearor tapering of brake pad may be caused by either caliper piston not operating correctly .

⚠ CAUTION

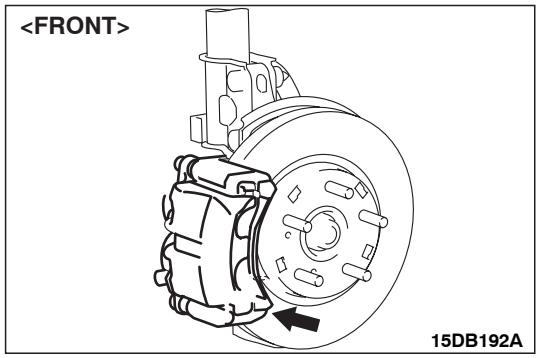
- **Whenever a pad must be replaced, replace both LH and RH wheel pads as a set to prevent the vehicle from pulling to one side when braking.**
- **If there is a significant difference in the thicknesses of the pads on the left and right sides, check the sliding condition of the piston and slide pins.**



1. Check the brake pad thickness through the caliper body check port.(Rear). Front pad check can be viewed from rotor side.

~~**Standard value: 10.0 mm (0.39 inch)**~~
~~**Minimum limit: 2.0 mm (0.08 inch)**~~

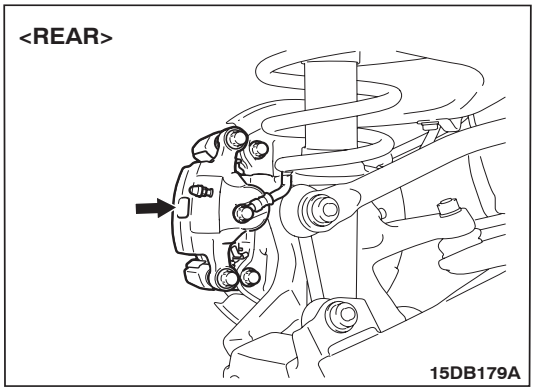
<<Incorrect>>

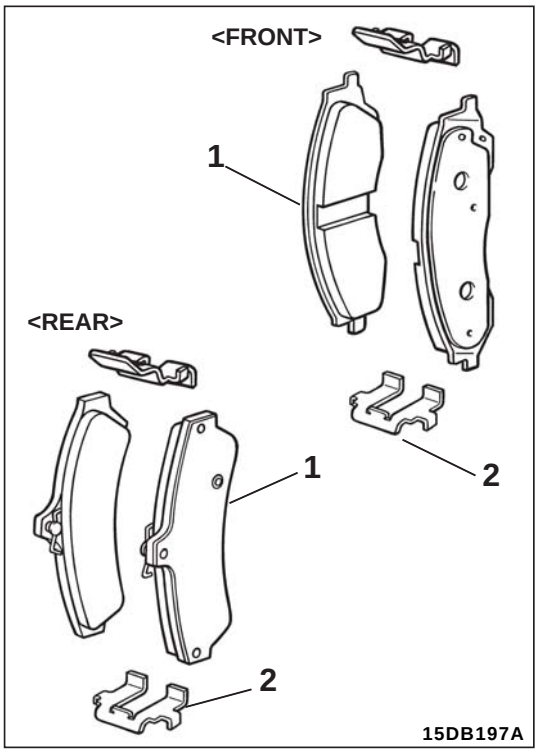


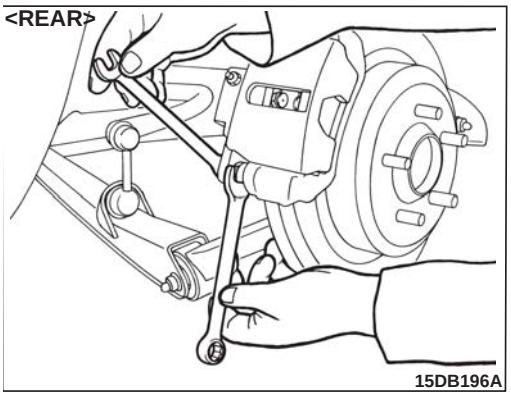
<FRONT>
Standard value: 8.5 mm
Minimum limit: Pad wear indicator (2.0 mm)

<REAR>
Standard value: 9.0 mm
Minimum limit: 2.0 mm

<<Correct>>







3. Remove the following parts from the caliper support.
   (1) Pad assembly
   (2) Clip
4. In order to measure the brake drag force after pad installation, measure the rotary-sliding resistance of the hub with the pads removed (Refer to P.35A-29).
5. Install the pads and caliper assembly, and then check the brake drag force (Refer to P.35A-29).
6. Tighten lock pin bolt. Ensure lock pin is held with spanner while tightening lock pin bolt(Rear) to specified torque.

⚠ CAUTION
New brake pads need to be broken-in by moderate use for the first 200 km. Avoid hard braking situations.

<<Added>>

DISC BRAKE ROTOR CHECK

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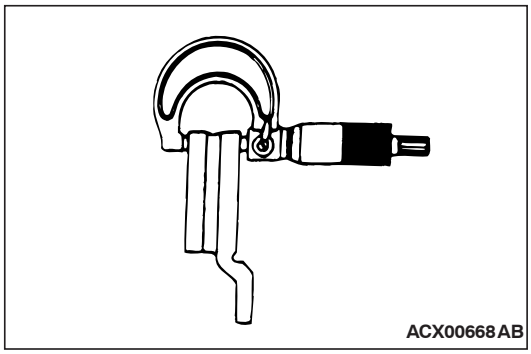
⚠ CAUTION
Disc brakes must be kept within the allowable service values in order to maintain normal brake operation.
Before turning the brake disc, the following conditions should be checked.

INSPECTION ITEM	REMARK
Scratches, rust, saturated lining materials and wear	• If the vehicle is not driven for a long period of time, sections of the discs that are not in contact with the pads will become rusty, causing noise and shuddering. • If grooves and scratches resulting from excessive disc wear are not removed prior to installing a new pad assembly, there will be inadequate contact between the disc and the lining (pad) until the pads conform to the disc.
Run-out	Excessive run-out of the discs will increase the pedal depression resistance due to piston kick-back.
Change in thickness (parallelism)	If the thickness of the disc changes, this will cause pedal pulsation, shuddering and surging.
Inset or warping (flatness)	Overheating and improper handling while servicing will cause warping or distortion.



BRAKE DISC THICKNESS CHECK

1. Using a micrometer, measure disc thickness at eight positions, approximately 45 degrees apart and 10 mm (0.4 inch) in from the outer edge of the disc.

FRONT BRAKE DISC
Standard value: 26.0 mm (1.02 inches)
Minimum limit: 24.4 mm (0.96 inch)

REAR BRAKE DISC
Standard value: 10.0 mm (0.39 inch)
Minimum limit: 8.4 mm (0.33 inch)

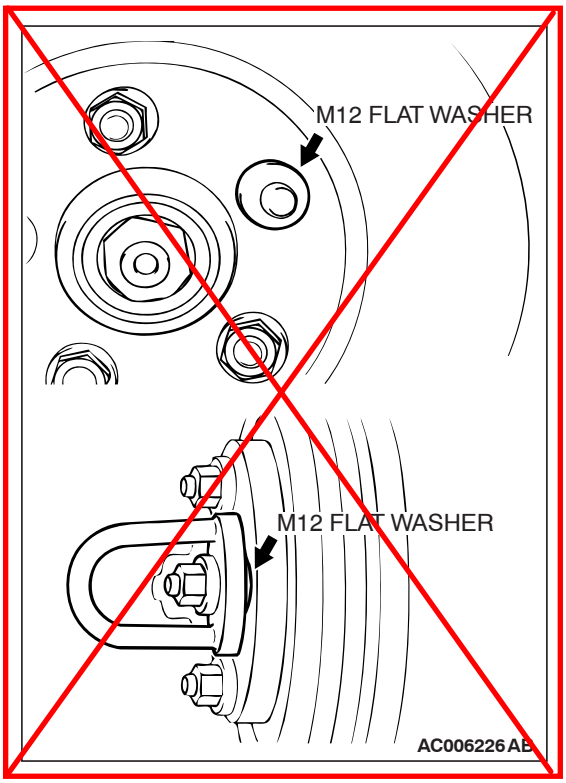
<<Incorrect>>

NOTE: Thickness variation (at least 8 positions) should not be more than 0.015 mm (0.0006 inch).

FRONT BRAKE DISC
Standard value: 28.0 mm
Minimum limit: 26.4 mm

REAR BRAKE DISC
Standard value: 18.0 mm
Minimum limit: 16.4 mm

<<Correct>>



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⚠ CAUTION

- **After a new brake disc is installed, always grind the brake disc with an on-the-car type brake lathe. If this step is not carried out, the brake disc run-out exceeds the specified value, resulting in judder.**
- **When the on-the-car type lathe is used, first install a M12 flat washer on the stud bolt in the brake disc side according to the figure, and then install the adapter. If the adapter is installed with M12 flat washer not seated, the brake disc rotor may be deformed, resulting in inaccurate grinding.**
- **Grind the brake disc with all wheel nuts diagonally and equally tightened to the specified torque 100 N·m (74 ft-lb). If all of the wheel nuts are not used, or the tightening torque is excessive or not equal, the brake disc rotor or drum may be deformed, resulting in judder.**

2. If the disc thickness is less than the limit, replace it with a new one. If thickness variation exceeds the specification, turn rotor with an on-the-car type brake lathe ("Accuturn-8750" or equivalent). If the calculated final thickness after turning the rotor is less than the standard value, replace the disc.

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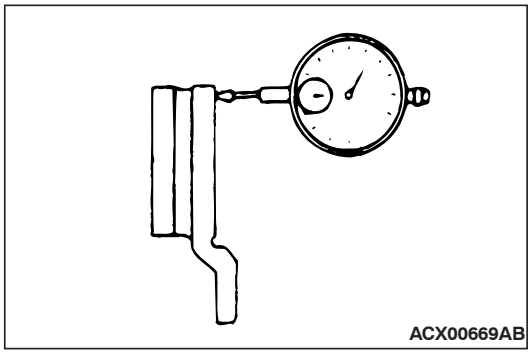
2. If the disc thickness is less than the limit, replace it with a new one. If thickness variation exceeds the specification, turn the rotor with a high quality on-car type brake lathe. Be sure to adhere to the brake lathe manufacturers instructions.
If the calculated final thickness after turning the rotor is less than the standard value, replace the disc.

<<Added>>

BRAKE DISC RUN-OUT CHECK AND CORRECTION

1. Remove the brake assembly, and then hold it with wire.
2. Temporarily install the disc with the hub nut.
3. Place a dial gauge approximately 5 mm (0.2 inch) from the outer circumference of the brake disc, and measure the run-out of the disc.

   Limit:
   <Front brake disc>: 0.10 mm (0.0039 inch)
   <Rear brake disc>: 0.04 mm (0.0016 inch)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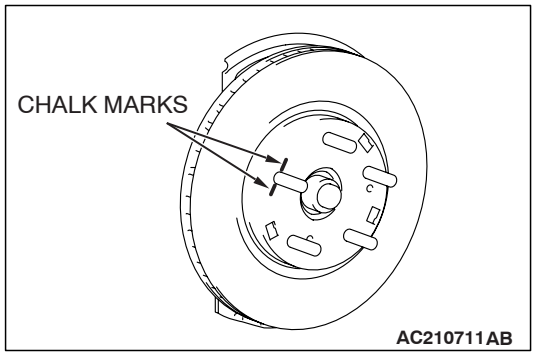
4. If the brake disc run-out exceeds the limit, correct it as follows:
   (1) Chalk phase marks on the wheel stud and the brake disc as shown.



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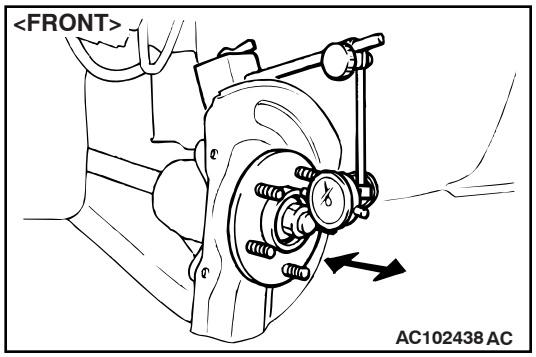
   (2) Remove the brake disc. Then place a dial gauge as shown, and measure the end play while moving the hub in the axial direction.

   Limit: 0.05 mm (0.002 inch)



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   (3) If the end play exceeds the limit, replace the hub assembly.
   (4) ~~If the end play does not exceed the limit, dephase the brake disc and secure it. Then recheck the brake disc run-out.~~

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If the end play does not exceed the limit specification, install the brake disc at a position 180 degrees away from the chalk mark, and then check the run-out of the brake disc again.

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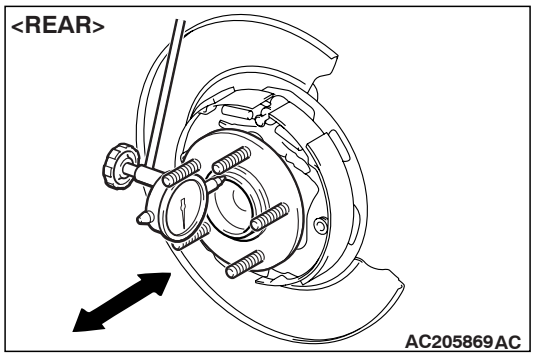

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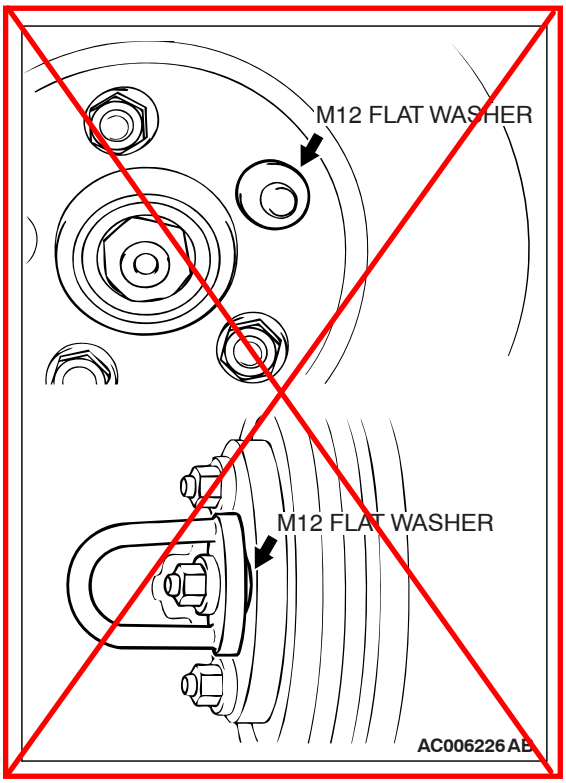

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⚠ CAUTION

- **After a new brake disc is installed, always grind the brake disc with an on-the-car type brake lathe. If this step is not carried out, the brake disc run-out exceeds the specified value, resulting in judder.**
- **When the on-the-car type lathe is used, first install a M12 flat washer on the stud bolt in the brake disc side according to the figure, and then install the adapter. If the adapter is installed with M12 flat washer not seated, the brake disc rotor may be deformed, resulting in inaccurate grinding.**
- **Grind the brake disc with all wheel nuts diagonally and equally tightened to the specified torque 100 N·m (74 ft-lb). If all of the wheel nuts are not used, or the tightening torque is excessive or not equal, the brake disc rotor or drum may be deformed, resulting in judder.**

5. If the run-out cannot be corrected by changing the phase of the brake disc, replace the brake disc or grind it with the on-the-car type brake lathe ("MAD, DL-8700PF" or equivalent).

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MASTER CYLINDER FUNCTION CHECK

M1351010200266

1. Remove the reservoir cap.
2. While watching the open reservoir from a distance of 50 cm (20 inches), have an assistant depress the brake pedal. If there was a stream of brake fluid rising from the reservoir, proceed to Step 3. If there was no stream of brake fluid rising from the reservoir, repair or replace the master cylinder.
3. While watching the open reservoir from a distance of 50 cm (20 inches), have the assistant release the brake pedal. If there was a small amount of air bubbles rising through the brake fluid, master cylinder function is normal. If there were no bubbles rising through the brake fluid, repair or replace the master cylinder.

5. If the run-out cannot be corrected by changing the phase of the brake disc, replace the brake disc or turn the rotor with a high quality on-car type brake lathe. Be sure to adhere to the brake lathe manufacturers instructions. Rotors turned on the vehicle will often have a lower run-out than a new disc.

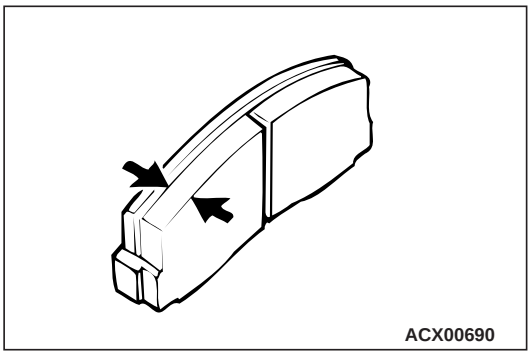
<<Added>>

PAD WEAR CHECK

⚠ *WARNING*

<<Added>>

- ***A wear indicator tab is fitted to the LH Front inner brake pad. A scraping noise will occur when pad is worn to service limit.***
- ***Always replace both brake pads on each wheel as a set (both front wheels or both rear wheels). Failure to do so will result in uneven braking, which may cause unreliable brake operation.***
- ***If there is significant difference in the thickness of the pads on the left and right sides, check the sliding condition of the piston and slide pins.***



1. Measure thickness at the thinnest and most worn area of the pad.

~~**Standard value: 10 mm(0.39 inch)**~~
~~**Minimum limit: 2.0 mm(0.08 inch)**~~ <<Incorrect>>

2. Replace the pad assembly if pad thickness is less than the limit value or contacting wear indicator tab.

⚠ **CAUTION**

New brake pads need to be broken-in by moderate use for the first 200 km. Avoid hard braking situations.

<<Added>>

<FRONT>
Standard value: 8.5 mm
Minimum limit: Wear Indicator (2.0)

<REAR>
Standard value: 9.0 mm
Minimum limit: 2.0 mm

<<Correct>>

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1351009600390

ITEM	SPECIFICATION
Brake line	
Brake tube flare nut	15 ± 2 N·m
Brake pedal	
Brake booster nut	14 ± 2 N·m
Brake pedal bolt	13 ± 2 N·m
Front disc brake	
Brake hose connector bolt	30 ± 4 N·m
Caliper bleeder	12.5 ± 1.5 N·m
Front brake assembly mounting bolt	100 ± 10 N·m
Front brake bolt (guide pin bolt)	36.5 ± 1.5 N·m
Master cylinder assembly and brake booster	
Brake booster nut	14 ± 2 N·m
Brake master cylinder mounting nut	25 ± 2 N·m
Rear disc brake	
Brake hose connector bolt	30 ± 4 N·m
Caliper bleeder	12.5 ± 1.5 N·m
Rear brake assembly mounting bolt	60 ± 5 N·m
Rear brake bolt (guide pin bolt)	36.5 ± 1.5 N·m

GENERAL SPECIFICATIONS

M1351000200362

ITEM		SPECIFICATION
Master cylinder	Type	Tandem type
	I.D. mm	25.4
Brake booster	Type	Vacuum type, tandem
	Effective dia. of power cylinder mm	205 + 230
	Boosting ratio	6.5
Rear wheel hydraulic control method		Electronic brake-force distribution (EBD)
Front brakes	Type	Floating caliper, Aluminium housing, 2 piston, ventilated disc
	Disc effective dia × thickness mm	296 × 28.0
	Wheel cylinder I.D. mm	42.0 x 2
	Pad thickness mm	~~10.0~~ <<Incorrect>> **8.5** <<Correct>>
	Clearance adjustment	Automatic

ITEM		SPECIFICATION
Rear brakes	Type	Floating caliper, Aluminium housing, 1 piston, ventilated disc
	Disc effective dia × thickness mm	303 × 18
	Wheel cylinder I.D. mm	~~40.5~~ <<Incorrect>> 35.0 <<Correct>>
	Pad thickness mm	~~10.0~~ 9.0
	Clearance adjustment	Automatic

SERVICE SPECIFICATIONS

M1351000300477

ITEM		STANDARD VALUE	LIMIT
Brake pedal height mm	A/T	168.5 – 171.5	–
	M/T	169.4 – 172.4	
Brake pedal free play mm		3 – 8	–
Brake pedal to floor board clearance mm		110 or more	– <<Incorrect>>
~~Disc brake pad thickness mm~~		~~10.0~~	~~Minimum 2.0~~
Disc brake disc thickness mm	Front	28.0	Minimum 26.4
	Rear	18.0	Minimum 16.4
Disc brake disc run-out mm	Front	–	0.1
	Rear	–	0.04
Disc brake drag force N	Front	64 or less	–
	Rear	54 or less	–
Hub end play mm		–	0.05
Brake booster push rod protruding length mm. [When applying negative pressure of 66.7 kPa to the brake booster]		5.0 ± 0.1	–

LUBRICANTS

M1351000400429

ITEM	SPECIFIED LUBRICANT
Brake fluid	DOT3 or DOT4
Piston boot, piston seal	Repair kit grease
Front brake pin, rear brake pin (guide pin)	

Disc brake pad thickness mm	Front	8.5	Wear Indicator (2.0)
	Rear	9.0	Minimum 2.0

<<Correct>>