

Service Bulletin

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Category P	Applicable Model/s All Models	Subject BRAKE JUDDER REPAIR	Bulletin No. 001/95 Issued 4/27/95 Revised
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The revised portion of this bulletin is indicated by an asterisk (*). Replace the original bulletin with this revised copy. This bulletin was originally released in Sept. 1994 as Cat P, 006/94.

DESCRIPTION

Customers who complain of vibration or pulsation in the steering wheel, brake pedal, floor or seat while applying the brakes may be experiencing symptoms of brake judder. Judder is caused by:

- Disk Thickness Variation (DTV)
- rotor run-out and/or
- rotor surface rust (which leads to DTV)

This bulletin describes the causes and corrections for each condition.

CAUSES OF JUDDER

1. Disc Thickness Variation (DTV) - DTV creates a vibration/pulsation during application of the brakes. DTV will increase with mileage accumulation if the run-out of the disc is excessive.
2. Disc Rotor Run-Out - Run-out, or rotor "wobble", leads to DTV. It is corrected by precision machining to bring the run-out within specification.
3. Rotor Surface Rust - Under certain conditions (storage or use in extreme environments), the surface of the brake rotors may become rusted in the pad non-contact area. If this corrosion penetrates the rotor surface deeply enough, it will not wear or rub off during normal use. This will cause DTV.

CORRECTION

In order to effectively correct brake judder, rotor surfaces must be precisely machined. Mazda Motor of America has evaluated both on and off-car brake lathes and has determined that on-car lathes are more precise and greatly reduce comeback repairs.

The steps necessary for correction of brake judder are as follows:

1. If the vehicle is in dealer inventory and the condition is rotor rust:
 - a. Clean the rotor surface by driving the vehicle several miles while frequently applying the brakes.
 - b. If vibration/pulsation is still felt, proceed to step "c".
 - c. Machine the rotor surface enough to remove all rust or surface staining (generally 0.1mm per side).
NOTE: If machining is performed, the Service Manager's signature must appear on the repair order.
2. If the vehicle has been in service:
 - a. Verify customer's complaint with a test drive.
 - b. If brake judder is felt, proceed to step c. If brake judder is not felt, refer to the workshop manual or the NVH manual for additional troubleshooting information.
 - c. Mark the **front** wheel(s) and the lug nut stud with chalk. This will determine the original position of the wheel to the rotor. Remove the **front** wheel(s).
NOTE: A high majority of brake judder is due to DTV of the **front rotors**. Customer complaints of brake judder are most often corrected by **machining the front rotors only**.
 - d. Measure the remaining front rotor thickness and run-out. Determine if sufficient rotor material remains to allow machining. **Limit: Stated minimum thickness for the model plus 0.8mm.**
 - e. If machining can be achieved, an on-car brake lathe is recommended and will be required for all warranty repairs after January 1, 1995 to ensure a precise rotor surface.

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IMPORTANT: Service and Parts Managers should read this bulletin carefully, sign and convey all information to those concerned.

Signature _____

Service Manager

Signature _____

Parts Manager

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After machining rotor(s) with an on-car brake lathe, you must remove all metal cuttings (particles) from the ABS "toothed ring" (the reluctor) and the ABS sensor. Failure to remove these particles will prevent proper function of the ABS system.

- f. If machining can not be achieved due to rotor thickness limitations, the dealer should replace the rotor. To ensure a successful repair, run-out and/or DTV must be removed by on-car machining, even on new rotor(s).
- g. Install the wheel in the same location relative to the hub as it was originally positioned.
- h. Torque wheel lug nuts to the specifications in the service manual.
- i. Test drive the vehicle to confirm repair.
- j. If the brake judder is still felt, correct the rear rotor(s) using steps "c" through "i".

SERVICE TOOLS

The Accu-Turn (model 8750) On-Car Brake Lathe is recommended by Mazda Motor of America. The brake lathe will be available soon from MMA's National Accounts Program at a substantial savings. When the national account is established, a Special Tools Service Bulletin will be released which will contain further details. However, if you wish to receive a brochure on this brake lathe, please call Accu-Turn at (800) 551-2228.

WARRANTY INFORMATION

Applies To Vehicles Covered Under Normal Warranty

Warranty Type Code: A
Customer Comment Code: 83
Damage Code: 9B
Parts No. Of Main Cause: **** 33 25*
**** 26 25* (Rear of Vehicle - Rear Wheel Drive Only)

Location		Operation Number	Labor Hours
Front	One Side	P0113AMX	0.7
	Both Sides	P0113BMX	1.2
Rear*	One Side	P0214AMX	0.7
	Both Sides	P0214BMX	1.2

NOTE:

1. Unnecessary replacement of rotors will result in warranty claim denial.
2. Brake pad replacement costs will not be warrantable for brake judder repair.
3. If an on-car lathe is used, apply the labor time from the table above.

NOTE: Warranty policy does not permit using an off-car brake lathe after January 1, 1995. The next issue of the SRT microfiche will be revised to show new labor times.

Brake Drums SRT

1993-1995

Description	Labor Operation	626/MX-6	MPV 1993 only	323/PRO	MX-3	93 B-series and earlier	Labor Operation	Navajo	94 B-series and later
Rear Brakes									
Brake Drum(s), R&R									
one side	P0201ARX	0.3	0.3	0.3	0.3	0.3		0.5	0.4
both sides	P0201BRX	0.4	0.6	0.6 1995 0.3	0.4	0.6		0.7	0.6
Brake Drum(s), Machine									
one side	P0201AMX	MAX	MAX	MAX	MAX	MAX		MAX	MAX
both sides	P0201BMX	0.5	0.3	0.3	0.3	0.8		0.2	0.2
		0.7	0.6	0.6	0.6	1.3		0.4	0.4
Brake Shoe(s), R&R									
one side	P0204ARX	0.4	0.5	0.5 1995 0.3	0.4	0.7	P0204XRX	1.0	1.0
both sides	P0204BRX	0.6	0.8	0.8 1995 0.5	0.6	1.0	P0204XRX	1.0	1.0
<i>includes brake drums, R&R</i>									

To submit for reimbursement on warranty brake repairs follow these examples:

1. Machine brake drums and replace brake shoes

Labor Operation	Time	Description of Repair
P0201BRX	per chart	brake drums, R&R
P0201BMX	per chart	brake drums, machine

3. Replace brake drums and replace brake shoes

Labor Operation	Time	Description of Repair
P0201BRX	per chart	brake shoes, R&R

2. Replace brake shoes

Labor Operation	Time	Description of Repair
P0204BRX	per chart	brake shoes, R&R

4. Replace brake drums only

Labor Operation	Time	Description of Repair
P0201BRX	per chart	brake drums, R&R

**Rear Disc Brakes
SRT
1993-1995**

Description	Labor Operation	Millenia	626/MX-6	RX-7	MX-5	MPV 94 - 95	MX-3	929	Labor Operation	323/PRO
Rear Brakes										
Disc Plate(s), R&R one side	P0208ARX	0.3	0.4	0.3	0.4	0.6	0.4	0.4	P0208ARX	0.5
both sides	P0208BRX	0.4	0.6	0.4	0.5	0.8	0.6	0.6	P0208GRX	1995 0.4 0.9
Includes pads R&R										1995 0.6
Disc Plate(s), Machine on vehicle one side	P0214AMX	0.7	0.7	0.7	0.7	0.7	0.7	0.7		0.7
both sides	P0214BMX	1.2	1.2	1.2	1.2	1.2	1.2	1.2		1.2
Includes: brake pads, R&R and brake caliper, R&R										
Pad(s), R&R one side	P0209ARX	0.3	0.4	0.3	0.4	0.5	0.5	0.3		0.4
both sides	P0209BRX	0.5	0.5	0.5	0.5	0.6	0.9	0.5		1995 0.3 0.5 0.5

NOTE: After February 1, 1995, the on vehicle lathe will be required for disc rotor machining.

To submit for reimbursement on warranty brake repairs follow these examples:

1. Replace brake pads

Labor Operation	Time	Description of Repair
P0209BRX	per chart	pads, R&R

3. Replace disc plates and replace brake pads

Labor Operation	Time	Description of Repair
P0208BRX	per chart	disc plates, R&R

2. Machine disc plates on the vehicle and replace brake pads

Labor Operation	Time	Description of Repair
P0214BMX	per chart	on vehicle lathe

4. Replace disc plates only

Labor Operation	Time	Description of Repair
P0208BRX	per chart	disc plates, R&R

Front Brakes
SRT
1993-1995

Description	Labor Operation	Millenia	626/MX-6	RX-7	MX-5	MPV	323/PRO	MX-3	929	Labor Operation	Nevejo	94 B-series and later	93 B-series and earlier
Disc Plate(s), R&R													
one side	P0102ARX	0.5	0.3	0.3	0.5	0.6	1995 0.3	0.3	0.4	P0102ARX	2wd 0.6 4wd 0.8	2wd 0.5 4wd 0.7	2wd 0.6 4wd 0.9
both sides	P0102BRX	0.6	0.5	0.5	0.6	0.9	1995 0.4	0.6	0.7	P0102BRX	2wd 0.9 4wd 1.2	2wd 0.8 4wd 1.1	2wd 1.1 4wd 1.6
Includes pads R&R													
Disc Plate(s), Machine on vehicle													
one side	P0113AMX	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	P0113AMX	2wd 0.8 4wd 0.6	2wd 0.8 4wd 0.6	2wd 0.8 4wd 0.6
both sides	P0113BMX	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	P0113BMX	2wd 1.5 4wd 1.1	2wd 1.5 4wd 1.1	2wd 1.5 4wd 1.1
Includes: brake pads, R&R and brake caliper, R&R													
Pads(s), R&R													
one side	P0104ARX	0.5	0.4	0.3	0.4	0.4	1995 0.3	0.5	0.4	P0104ARX	0.4	0.4	0.4
both sides	P0104BRX	0.6	0.5	0.4	0.6	0.5	1995 0.4	0.6	0.6	P0104BRX	0.7	0.7	0.6

NOTE: After February 1, 1995, the on vehicle lathe will be required for disc rotor machining.

To submit for reimbursement on warranty brake repairs follow these examples:

1. Replace brake pads

Labor operation	Time	Description of Repair
P0104BRX	per chart	pads, R&R

3. Replace disc plates and replace brake pads

Labor Operation	Time	Description of Repair
P0102BRX	per chart	disc plates, R&R

2. Machine disc plates on the vehicle and replace brake pads

Labor Operation	Time	Description of Repair
P0113BMX	per chart	on vehicle lathe

4. Replace disc plates only

Labor Operation	Time	Description of Repair
P0102BRX	per chart	disc plates, R&R