



SERVICE BULLETIN

Classification:	BR94-002	Section:	Brake	Models:	All models
Reference:	TECHNICAL BULLETIN NTB94-012			Date:	February 3, 1994

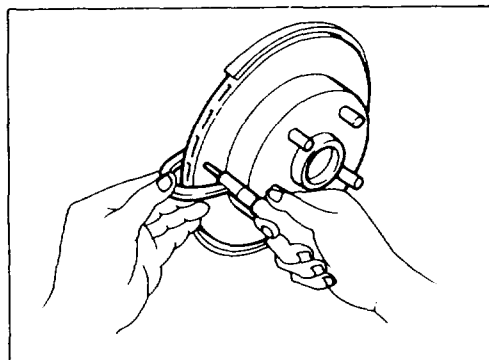
BRAKE JUDDER/STEERING WHEEL SHIMMY

APPLIED MODELS: All Models

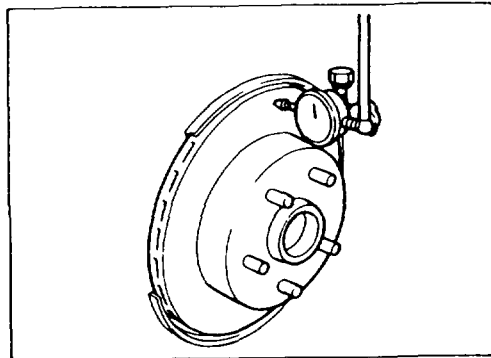
GENERAL INFORMATION:

Brake judder/steering wheel shimmy is a condition which may occur in any vehicle when excessive *rotor thickness variation* is present on one (1) or more of the vehicle's brake rotors.

Rotor Thickness Variation (RTV) is the variation in thickness around the rotor. The *RTV* can be determined by measuring the rotor thickness with a micrometer at several locations around the circumference of the rotor. The *RTV* is the difference in thickness between the thickest and thinnest points on the rotor.



Rotor Run-Out is the distance that the rotor surface travels in and out, in relation to the vertical plane of the hub, as the rotor turns with the hub. The distance is measured with a dial indicator.

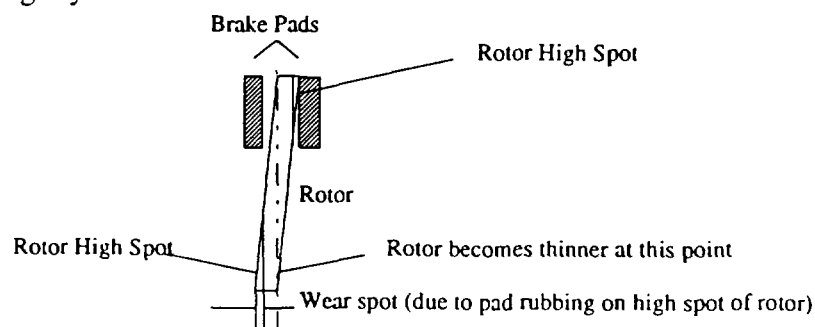


NOTE: *Rotor Run-Out* does not cause brake judder or steering wheel shimmy. However, excessive *Rotor Run-Out* does lead to rotor thickness variation as the rotor wears. It is the excessive rotor thickness variation that causes judder and/or steering wheel shimmy. This is described in more detail below.

POSSIBLE CAUSE OF BRAKE JUDDER/STEERING WHEEL SHIMMY

A brake judder/steering wheel shimmy incident may develop in any vehicle if the following series of events occur:

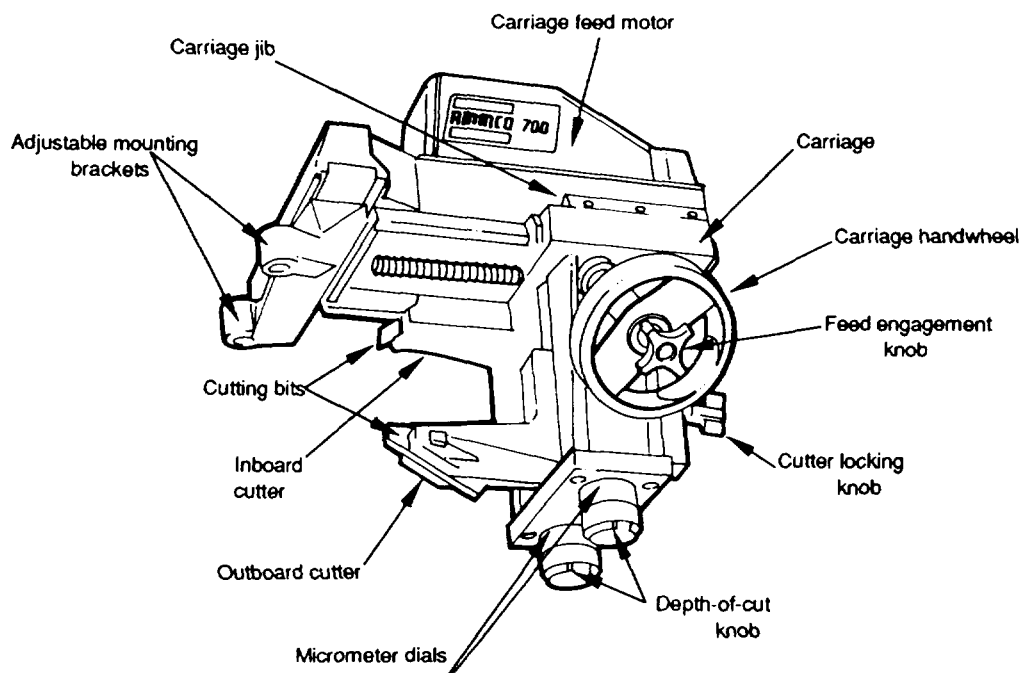
- * The brake rotor *run-out* exceeds specification limits.
- * As the brake pad rubs against the rotor while driving, the high spots on the brake rotor wear slightly.



* Rotor *thickness variation* may develop as the high spots on the brake rotor wear. If this *thickness variation* becomes large enough, brake judder/shimmy may occur.

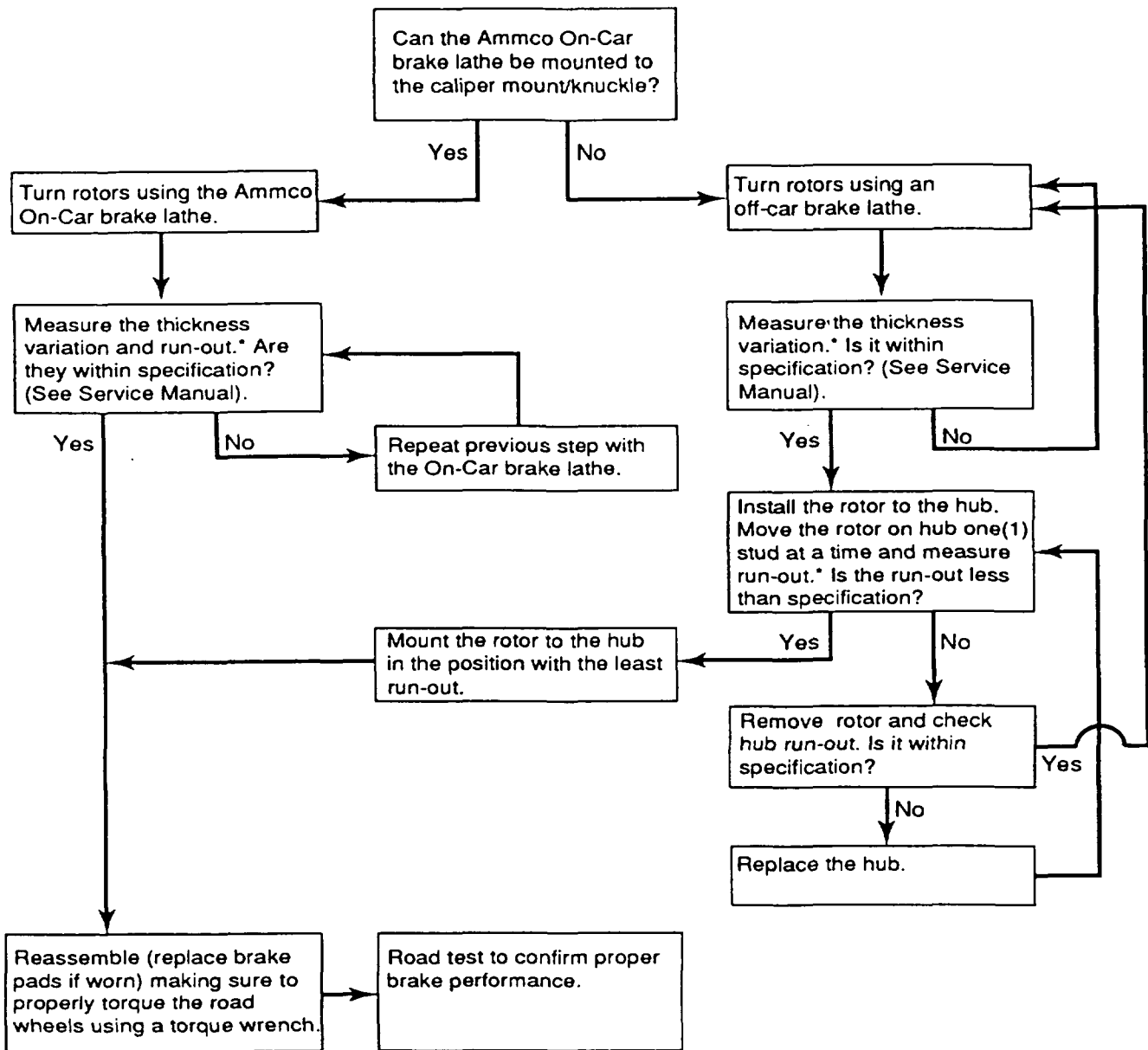
NISSAN SERVICE PROCEDURE:

Resurfacing the brake rotor using the Ammco On-Car Brake Lathe is the preferred method of correcting excessive rotor run-out and thickness variation. Refer to Nissan Technical Bulletin NTB92-062 (BR92-004) "Ammco On-Car Brake Lathe Operating Guidelines."



Due to limited clearance, this machine cannot be used on the rear rotors of some vehicles. To resolve this issue, two (2) methods of repair are identified in the following flow chart. Use this chart, as appropriate, when performing brake pad or rotor service.

BRAKE ROTOR SERVICE FLOW CHART



(*) CAUTION: To ensure a proper repair, it is absolutely essential to make these measurements. For example, if run-out remains high, brake judder and/or shimmy may not be detected while test driving the vehicle immediately after the repair, but may return after several thousand miles of rotor wear (due to thickness variation).

Prior to and, again, after resurfacing a brake rotor, ensure that the rotor thickness is above the minimum specification.

GENERAL BRAKE REPAIR GUIDELINES

To properly perform brake repairs, it is important to observe the following:

- 1. Do not tighten wheel lug nuts with an impact wrench.** Uneven or high torque applied to the lug bolts may distort the brake rotor and hub, resulting in increased rotor *run-out*.
- 2. Prevent contamination, such as rust, dirt, or metal chips between the hub and rotor mating surface.** An uneven mating surface between the hub and rotor results in increased rotor *run-out*. Always check and clean the mating surfaces prior to resurfacing.
- 3. Use a sharp tip on the brake lathe when resurfacing a brake rotor.** A dull or damaged cutting tip on the brake lathe causes a rough surface cut with large ridges, which wear very rapidly. This rapid wear results in rotor *thickness variation*.
- 4. Use the largest silencer band possible when resurfacing the rotor.** The silencer band reduces chatter during resurfacing. Chatter causes a rough surface cut with large ridges, which wear very rapidly. This rapid wear results in rotor *thickness variation*.
- 5. Ensure that the brake lathe cutting head operates properly and is calibrated by the manufacturer or servicing agent.** A damaged or uncalibrated brake lathe cutting head can result in increased rotor *run-out* and/or *thickness variation*.
- 6. Prior to installation, lubricate the brake caliper slide pins and/or clips.** Corrosion from lack of lubrication results in sticking caliper slide pins and reduced pad movement. The sticking of the caliper slide pins and reduced brake pad movement, increases the rotor wear rate. This increased brake rotor wear results in increased brake rotor *thickness variation*.
- 7. Inspect the caliper pin boots or plugs and replace, if necessary.** Corrosion may develop on the caliper slide pins. This corrosion reduces caliper movement which increases the brake rotor wear rate. This increased brake rotor wear rate results in brake rotor *thickness variation*.

8. Measure the brake rotor run-out after performing brake service. There are many reasons why brake rotor *run-out* may be above specification. To ensure that the brake rotor *run-out* is within specification, it is important to measure brake rotor *run-out* after **every** brake service.

NOTE: The Warranty Flat Rate Time includes time to perform run-out measurement.

9. The On-Car brake lathe cutting head must be mounted properly. Do not mount the cutting head on one (1) knuckle and attempt to resurface both sides of the rotor from this one location. The On-Car Brake Lathe matches the rotor to the hub to achieve the least possible run-out. When the brake rotor is moved from the position in which it was resurfaced, this matching is lost.

10. Do not use harsh or corrosive chemicals to clean the wheels. Strong alkalis or acid-based cleaners degrade the surface finish on the caliper components and may, additionally attack the rotor surface, resulting in increased *thickness variation*.

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