BRAKE-04, Brakes - Inspecting / Replacing Brake Rotors

Tools

- Metric Socket Set
- Metric Wrench Set
- Jack Stands
- 10 mm Allen Head socket ('87 model year and newer)

Other Procedures Needed

- BRAKE-02, Brake Pads - Checking Thickness and Replacing Pads
- SUSP-08, Front Wheel Bearings - Checking, Adjustment, Repacking, and Replacement

Inspecting Brake Rotors

1. Loosen the wheel lug nuts for the rotors to be inspected (two turns only).
2. Place the vehicles on jack stands.
3. Remove the lug nuts and the front wheels.
4. Check the brake rotors for proper thickness. Check eight spots within the braking surface area with a micrometer.

Brake Rotor Thickness Specifications

Vehicle		New Rotor Thickness	Minimum Thickness After Machining	Minimum Thickness
944/924S/944S	Front	20.5 mm	19.1 mm	18.5 mm
	Rear	20 mm	19.2 mm	18.6 mm
944 S2	Front	28 mm (32 mm *)	26.6 mm (30.6 mm *)	26 mm (30 mm *)
	Rear	24 mm	22.6 mm	22 mm
1986-1988 944 Turbo	Front	28 mm	26.6 mm	26 mm
	Rear	24 mm	22.6 mm	22 mm
1988.5 944 Turbo S / 1989 944 Turbo	Front	32 mm	30.6 mm	30 mm
	Rear	24 mm	22.6 mm	22 mm

* Cars equipped with option M758.

5. Check front brake rotor run out as follows:
    a. Adjust front wheel bearing play using SUSP-08.
    b. Remove the front brake pads using BRAKE-02.
    c. Attach a dial indicator to the brake caliper.
    d. Set the dial indicator to zero and place the indicator pointer near the center of the brake rotor.
    e. Turn the rotor by hand and check the run out. Lateral run out should not exceed 0.1 mm.
6. Check rear brake rotor run out as follows:
    . Remove the rear brake pads.
    a. Attach a dial indicator to the brake caliper.
    b. Set the dial indicator to zero and place the indicator pointer near the center of the brake rotor.
    c. Turn the rotor by hand and check the run out. Lateral run out should not exceed 0.1 mm.
7. If the rotor run out exceeds 0.1 mm, check the wheel hub run out. Rotor run out should not exceed 0.05 mm. For '87 model year and newer cars, the front brake rotor must be removed to check the wheel hub run out. On all cars, the rear brake rotor must be removed to check the hub run out. If the run out exceeds 0.05 mm, the hub should be replaced.
8. If the hub run out is within limits, the brake rotor run out may be reduced by installing thin shims on the wheel studs or brake rotor mounting bolts between the hub and the rotor. It may also be reduced to within limits by having a machine shop resurface the rotor. If the lateral run out can not be reduced to within limits, the rotor should be replaced.

Removing the Brake Rotors

1. For 944s through the 1986 model year, remove the front brake rotor as follows:
    a. Remove the brake pads using BRAKE-02.
    b. Remove the two caliper retaining bolts that attach the caliper to the steering knuckle, slide the caliper off the rotor, and hang the caliper out of the way with shock cord or wire.
    c. Remove the dust cap on the front wheel.
    d. Loosen the Allen bolt on the clamping nut.
    e. Remove the clamping nut and slide the hub and rotor off the front spindle. The outer wheel bearing will likely fall out of the hub as you remove it from the spindle.
    f. If the rotor is to be reused, mark the orientation of the rotor to the hub.
    g. Separate the rotor from the hub by removing the rotor retaining bolts.

2. For model year 1987 and newer cars (944, 944 S, 944 S2, and 944 Turbo), remove the front brake rotor as follows:
    . Remove the brake pads using BRAKE-02.
    a. Remove the retaining bolts that attach the caliper to the to the steering knuckle, slide the caliper off the rotor, and hang the caliper out of the way with shock cord or wire.
    b. If the brake rotor is to be reused, mark the orientation of the rotor to the hub.
    c. Remove the countersunk screws that attach the brake rotor to the hub.
    d. Remove the rotor by sliding the rotor straight off the hub.
3. Remove the rear brake rotor as follows:
    . If equipped with steel trailing arms (as opposed to aluminum), remove the rear wheel spacer.
    a. If the brake rotor is to be reused, mark the orientation of the rotor to the hub.
    b. Remove the countersunk screw that holds the rotor to the hub.
    c. Attempt to remove the rotor by pulling it straight off the hub.
    d. If the hub will not come off, insert a flat tip screwdriver through the access hole in the rotor and adjust the parking brake to allow the rotor to be removed.
    e. If the rotor will still not come off, thread two bolts into the holes provided in the rotor. Alternately turn the bolts several turns to jack the rotor off the hub.

Installing Brake Rotors

1. For 944s through the 1986 model year, install the front brake rotors as follows:
    a. Attach the brake rotor to the hub using the five retaining bolts.
    b. Ensure th inner wheel bearing is installed in the hub.
    c. Install a new wheel bearing seal in the hub.
    d. Slide the hub/rotor assembly onto the front spindle. You will feel some resistance as the seal presses on to the spindle.
    e. Check the grease packing on the outer wheel bearing, slide the outer bearing onto the spindle, and seat the bearing into the hub.
    f. Adjust the front bearing play using SUSP-08.
    g. Slide the caliper on to the rotor and attach the caliper to the steering knuckle using the retaining bolts.
    h. Install the brake pads using BRAKE-02.
2. For model year 1987 and newer cars (944, 944S, 944 S2, and 944 Turbo), install the front rotor as follows:
    . Install the brake rotor on to the hub.
    a. Install the countersunk screws that attach the rotor to the hub.
    b. Slide the brake caliper on to the rotor and attach the caliper to the steering knuckle using the retaining bolts.

3. Install the rear brake rotors as follows:
    . Place the rotor on the hub.
    a. Install the countersunk screw that holds the rotor to the hub.
    b. Adjust the parking brake using BRAKE-05.
    c. Slide the brake caliper on to the rotor and attach the caliper to the trailing arm using the retaining bolts.
    d. Install the rear brake pads using BRAKE-02.
