



SI B34 06 13
Brakes

November 2013
Technical Service

SUBJECT

Brake Disc and Brake Pad Guidelines and Reference Information

MODEL

All except M vehicles

SITUATION

Determining when to service brake components

INFORMATION

Examples of components that do not need to be replaced, including cosmetic guidelines:

1. Grooves



Grooves are formed when debris is trapped between the pad and the disc. Debris entry is inherent in the disc brake cooling design. Current wheel styling exposes more of the brake components.

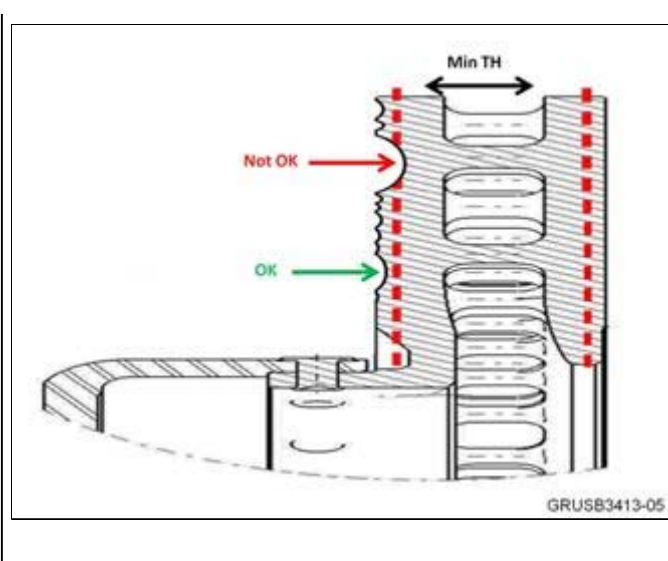
Grooves in the brake discs can be seen through these wheel openings and are purely visual; this in no way affects braking performance. No repair attempt is needed.

However, the groove depth must be evaluated to determine if replacement is necessary.

If the groove's or grooves' depth goes beyond the minimum thickness, then disc replacement is necessary.

NOTE:

- Always refer to the Repair Manual for model-specific information.
- Always replace discs in pairs (per axle).
- Install new brake pads when



replacing discs.

- Attach a hang tag to the inside rearview mirror after completion of repair work.

2. NAO-specific color transfer since 2009 introduction



Non-asbestos Organic (NAO) brake pad material, by design, reduces brake dust and may generate a visible dark transfer layer between pads and discs. This behavior is specific to the state-of-the-art technology found in NAO pad material.

The pad compound incorporates nonferrous metal, which can affect the appearance of the brake discs.

Color transfer on friction surfaces: With heavy or extreme braking, color transfer to the disc from the pads is intensified and may generate dark spots or circular traces. Normal braking will gradually reduce the discoloration.

This will not affect braking performance.

No repair attempt is needed.

3. Light rust on friction surfaces

Brake disc friction surfaces are exposed metal. When not in use and exposed to environmental elements (moisture, salt, dirt), surface rust can form. During initial braking, this will



self-clean and an audible groan and/or noise is temporarily heard. This will not affect braking performance. No repair attempt is needed.

4. Embedded Material in Brake Pad



Improper "bedding in" of the new brake pads and discs can cause the rotor material to flake off. This debris can become lodged in the pads and cause this appearance. This appearance will not affect braking performance. No repair attempt is needed.

5. Mirror Hang Tag

A hang tag can be found in the box of new brake pads. It is advisable to make extra copies for explanation to the customer.

Attach the hang tag to the inside rearview mirror after completion of the repair work.

Advise the customer to avoid extreme braking for the first 125 miles.

This initial "bedding in" is important to the brake component cosmetics and



overall service life.

6. Minimum Thickness



BMW brake discs are stamped with a minimum thickness value. The stamped minimum thickness is used to determine if the brake discs require replacement during a brake service. Some motor vehicle inspection procedures (state-dependent) require the measurement of brake discs for safety consideration. A separate minimum thickness specification is provided in the Repair Manual. An example of the specifications is described below.

The Minimum Thickness for general inspection (Motor Vehicle Inspection) is defined as follows:

- New disc thickness minus 2.4 mm (not applicable to perforated brake discs and M vehicles)

NOTE:

- Always refer to the Repair Manual for model-specific information.
- Always replace discs in pairs (per axle)
- Install new brake pads when replacing discs.

- Attach the hang tag to the inside rearview mirror after completion of repair work.

7. Stained Spots/Corrosion

Slightly

stained



Slight traces of corrosion on the brake disc friction ring (remains of stained spots); this is the normal condition of a vehicle that is stationary and has not been in use. This corrosion varies with ambient elements. The appearance will not affect braking performance and will diminish with everyday use. No repair attempt is needed. Not under warranty.

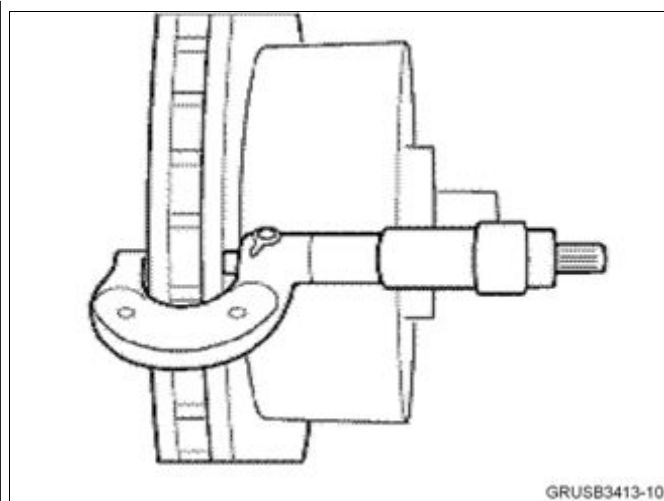
Significantly

stained

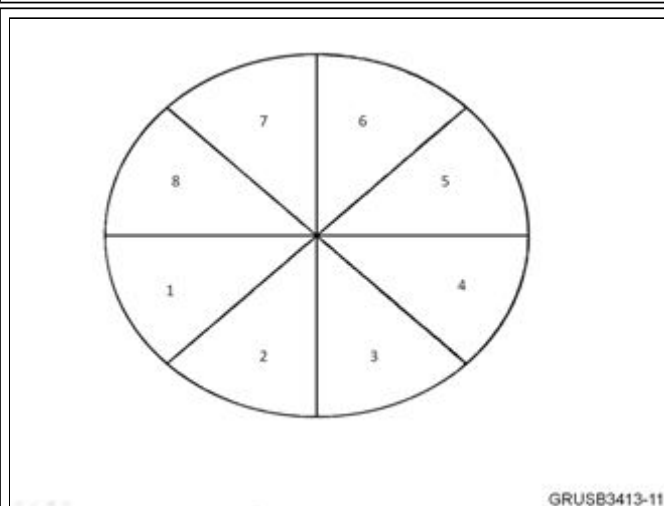


Significant signs of corrosion on the friction ring; this is the normal condition of a vehicle that is stationary and has not been in use. This corrosion varies with ambient elements. The appearance will not affect braking performance and will diminish with everyday use. No repair attempt is needed. Not under warranty.

8. Brake disc thickness variation measuring



Using a micrometer (gauge precision 1/1000mm), measure the brake disc thickness.
Measure the surface within the brake pad contact area.



The thickness difference is measured at 8 points around the braking surface with a micrometer.
The thickness difference of the brake disc is maximum 0.020 mm.
If readings deviate beyond 0.020 mm, replace the brake discs.

9. Brake Noise



Most brake squeal noise is produced by vibration of the brake components. This vibration/oscillation will build up a resonance which is often an audible sound such as a brake squeal. This type and occurrence of noise varies, based on driving profile and environmental conditions.
Refer to the ISTA Repair Manual (by model) for brake service, diagnostic hints and proper lubrication points.
If overheating occurs (see disc below), replacement of the brake components is not covered by warranty.



Refer to ISTA Fault Elimination (FEB) 34 90 ... "Troubleshooting brake systems" for determining the cause of the noise and the repair to perform: ISTA Diagnostics/Identification/Basic features/Series (select vehicle series)/Accept/Next/New operation/Information search/Group 34/3400 Brake testing and bleeding/Start search/FEB Troubleshooting brake system. Remove the buildup of pad material by carefully chamfering the edges all around the brake pads, using a file.

10. Brake Overheating



Discoloration and/or visible hard spots indicate brakes that have overheated. Inspect the brake components for error-free operation (calipers binding, hydraulic restrictions, etc.). If no mechanical/hydraulic defects are found, this can be attributed to improper brake usage. In this case, the discs have to be replaced (not under warranty).

NOTE:

- Always refer to the Repair Manual for model-specific information.
- Always replace discs in pairs (per axle).
- Install new brake pads when replacing discs.
- Attach the hang tag to the inside rearview mirror after completion of repair work.