

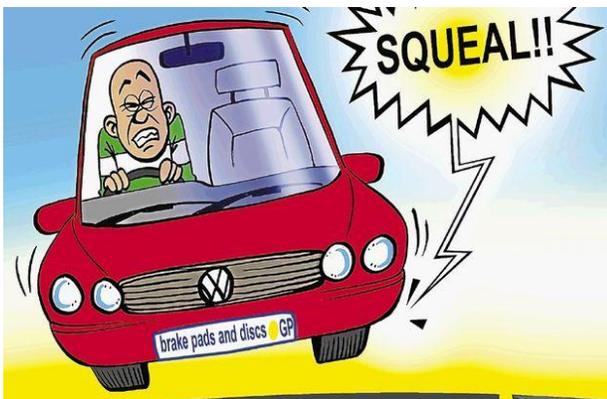
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## Your Brake Pads Might Give Out a Strident Voice, So How About a Little Check?

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Developers of braking systems have designed 3 methods to indicate the timing of replacing brake pads:

- 1- Through an alerting wire, which triggers the corresponding message on the Screen behind the steering wheel as soon as the permissible range for replacing brake pads has been reached?
- 2- Through a sensor built from a soft metal, which, as soon as the width of the brake pad achieving the permissible threshold, creates a sound and notifies the driver with the necessity of changing brake pads. It goes without saying that, due to softness of this metal, it doesn't damage the surface of the disc.
- 3- Some developers use certain raw materials in the last 25 percent of the brake pads. These materials are developed in such way that create mild noises in that last 25 percent of the lifetime of the brake pads, and hence alert the timing of replacing brake pads to the driver.



Hence the noise generated from the parking system might be indicative of the time to replace brake pads. But in case that this potential is excluded from further analyses, the reason as to why this sound is generated should be determined.

The primary reason of braking sound is vibration. In disc brakes, the vibration might be generated between the brake pad and the disc, the brake pad and the caliper, or the calipers and fittings installed thereon. In systems utilizing brake drums,

vibrations may be generated between the drum and the shoe; moreover, vibration in on part may lead to stimulation and vibration in other parts; particularly as the pieces are getting lighter, and hence vibrations are done more easily. And important point to note is that **this sound may not necessarily translate to the source of the problem being the pads, and it may indicate that there is a problem or damage in your braking system**. Considering the following tips can be of great importance in reducing the annoying sounds of braking systems:

- First, check whether the brake pads are firm in their position, such that they are not easily moved by hands. Imperfect positioning of pads in caliper may lead to noise while braking.
- Tolerance of disc causes irregular abrasion of brake pad and disc, imperfect contact of disc with pad, and thus decreased braking capability. Vibration caused by imperfect contact of disc and pad leads to noise.

**Important:** in bumpy roads and paths, where the temperature of brake pads is rapidly increased due to high number of braking times, DO NOT cool them down with cold water, i.e. Strictly avoid washing wheels with cold water. In

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such a case, pads, which have been suddenly cooled, change in nature and gets a glass-like form. It's possible that discs crack and lose their natural form due to momentary change of temperature.

Discs becoming striated or flanged is a major source of unpleasant noise in braking system, which is mainly stemmed from their untimely replacements or long duration of operation.

The rough and twisted surface of brake disc should be re-polished by an expert and skilled turner to the level of permissible range of thickness in the brake disc, which should be done using a turning machine with proper speed and step. For the braking to be noiseless, brake discs should be in completely smooth conditions. If their surface is rough or have not been properly polished, they should be resurfaced. The rougher the polishing, the less the vibration and the sound during braking would be.

**An interesting method for checking the surface of brake discs:** write your name on the surface of brake discs with a pen. If the ink is released in a straight line, the surface is smooth enough. But if the ink broke down to stains, the surface is too rough (or stained in oil). In such cases, either the discs have to be changed or should be lathed or re-polished.

- The thickness of the discs should be checked in 4 points. Variation in the thickness of brake discs may lead to improper movement of pads and thus generate unpleasant noises.
- Rear brake squeal is often caused as a result of accumulated brake pads dust between the pads and brake drum. To solve this issue, the shoes and interior of brake drum should be cleaned of dusts resulted from brake pad. In regard to disc pads, caliper should be checked as well. In many cases, calipers seem functioning from the outside, but their inner is filled with Sludge and sediment which creates a residual force from sediments behind calipers the piston, and may lead to rapid depreciation of pads. To solve this matter, caliper should be opened and thoroughly cleaned along with its component.
- In some variants of brake pads, mechanical components including pins, springs, bushes and shim are embedded therein which contribute to put up the brake pads in suitable position and prevent vibration in the pads. In case these components are destroyed, broken or twisted, it is obvious that they cannot do their function as intended, and thus it would be necessary to replace them. If the holder, pins and clamp are failed, or in case of drum brakes, the springs of shoes are broken or deformed, linings or shoe might too close to the disc and the drum, and the surface of contact increases. Unfortunately, many of technicians ignore this fact, since (1) they presume these components to be unnecessary and (2) replacing them is very

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onerous for auto-mechanics. In such cases, these technicians would have high rates of returns from customers who would be complaining about their pad squeal.

- Cleaning and lubricating calipers equipment can greatly contribute to the elimination of vibrations and improvement of braking process. The vibrations could be due to incurred damages or the relevant loose parts.
- Another good option in this context is to use brake grease behind brake pads. These greases tend to have long lifetimes and may not be burned, and unlike brake oils, may not be easily washed away. When using suitable grease behind brake pads, note that it's not stained on the front side of the brake pad or the disc.
- If the caliper has become too worn-out, and has been deformed and become loose due to change in dimensions, fixing or replacing might be the only viable solution.

