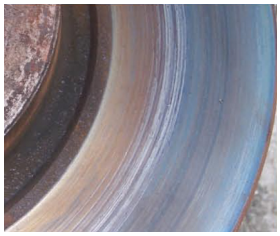
Brake Discs: Troubleshooting

Regular and thorough inspection of a vehicle's braking system is important for maintaining proper operation and should be included in your routine maintenance programme. Below are a number of common issues which may be identified during a vehicle service. These issues are not covered by manufacturer's warranty.

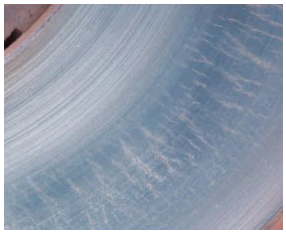
Natural Wear

A minimum disc thickness is shown on the outside diameter of the disc and applies to the cross-section measurement between the two braking surfaces. This measurement should be made at several points around the entire circumference of the disc. If the thickness is below the minimum dimension shown, the disc must be replaced. Checks should also be made to ensure that wear is approximately equal on both braking surfaces. If one surface is worn more than the other, the braking system is not functioning properly and should be inspected and repaired.



Blue Discs

A disc that shows signs of blueing indicates that it has been subjected to extremely high temperatures. This can be caused by continued hard stops or by brake system imbalance. The brake system should be checked for proper balance and the thickness of the disc should be checked. If the disc remains within the allowable tolerance, it is not necessary to replace or resurface the disc. The caliper should also be checked for proper adjustment and clearance. If this condition is left unresolved, it can result in the development of a martensite condition or may cause the disc to crack.



Heat Checking

Heat checking is the appearance of numerous short, thin radial interruptions of the braking surface. It is a normal phenomenon for brake discs and occurs as a result of the heating and cooling of the braking surface during normal braking operation. Heat checks are not detrimental to the function or performance of the braking system, so no corrective action is required. They will frequently wear away and reform as a result of the normal braking process, however, they can progress into cracks depending on factors such as lining/disc wear, braking system balance, and how hard the brakes are being used.

Cracked / Spotted Discs

Braking surface cracks present themselves as radial cracks appearing on the braking surface around the edge of the disc or outside diameter of the braking surface, along with high spots (martensite spots) on the opposite side of the disc. These cracks and spots are caused by excessive heat, usually caused by faulty calipers or torque imbalance which shifts a greater share of braking function to only a number of the vehicle brakes. Extremely high temperatures can cause the disc to distort (known as 'dishing'). The brakes providing a greater share of braking action will show the greatest disc wear and can sometimes crack. Cracked discs must always be replaced. Once replaced, the braking system should be checked for proper balance.

Scored Discs

A scored disc is indicated by grooves on the disc surface. If the scoring is excessive (exceeding 0.5mm) and can be resurfaced while remaining within recommended thickness, it should be resurfaced to restore smoothness. If this is not possible, the disc should be replaced. It is also important to replace the brake pads at the same time that any disc replacement or resurfacing is undertaken.

Lining Transfer

This is indicated by a thin layer of lining material which has become welded onto the braking surface. Lining deposits will initially be spotty, but as the problem progresses, the deposits will become larger and cover more of the braking surface, accelerating lining wear. Lining transfer is the result of extremely high temperatures, usually caused by dragging brakes, continued excessive braking, brake system imbalance, or system malfunction. The disc can be resurfaced to restore smoothness providing that doing so does not reduce the braking surface below the recommended thickness.