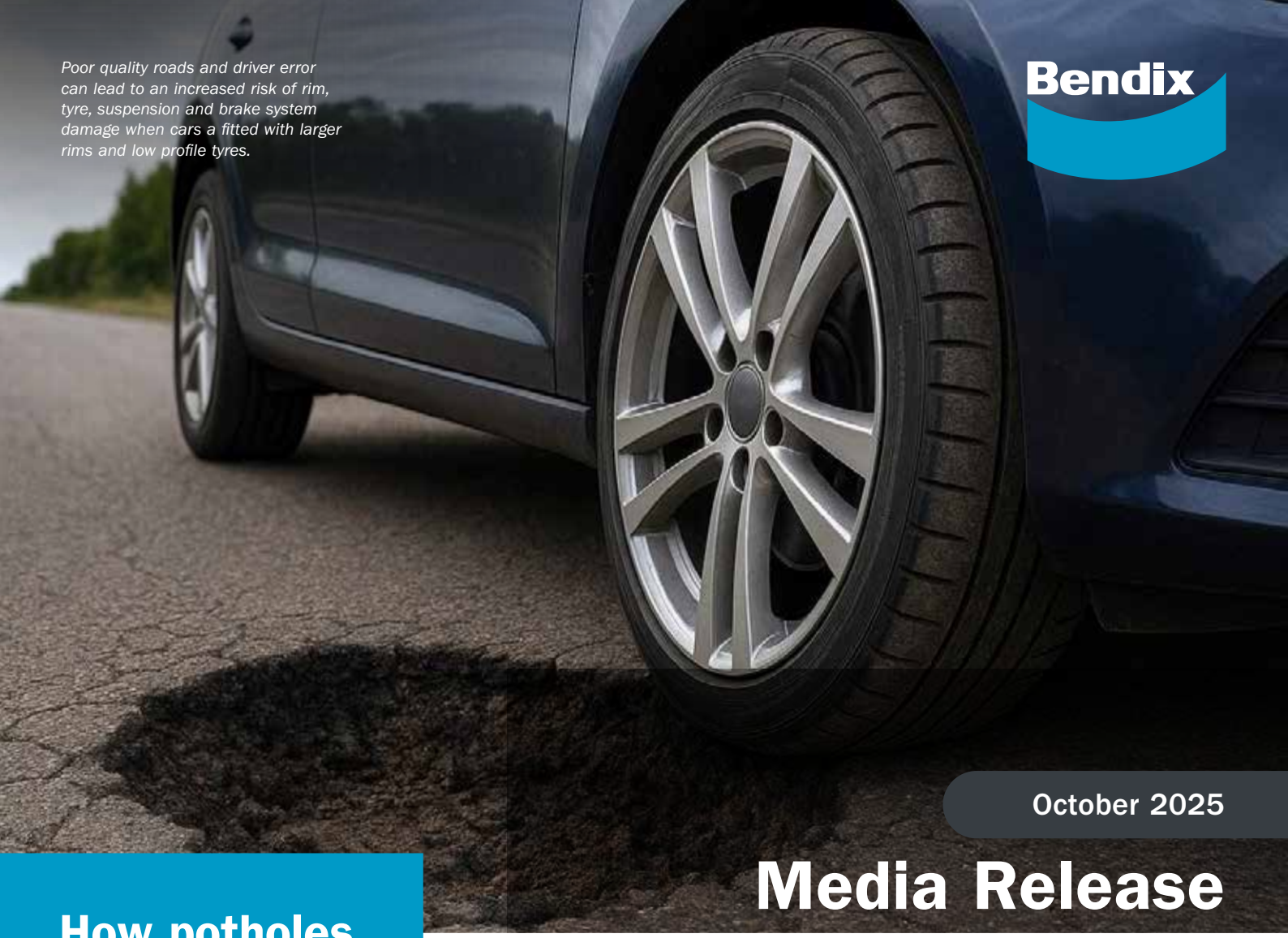

Poor quality roads and driver error can lead to an increased risk of rim, tyre, suspension and brake system damage when cars a fitted with larger rims and low profile tyres.

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Media Release

How potholes and kerb strikes can impact brakes

In recent years, standard passenger car rim sizes have increased and the tyres they're shod with have lost sidewall height, and while these tyre and wheel packages may look the part, the trend comes with some risk.

The compromise with low profile tyres is that there's a greater likelihood of damaging wheels, suspension and braking components, especially when travelling over suspect road surfaces or through poor driving.

As well as improving aesthetics, it's true that low profile tyres can deliver several performance benefits for drivers such as improved cornering grip, reduced tyre 'squirm', sharper steering response and better braking due to a shorter sidewall transmitting brake force more directly.

"The compromise with low profile tyres is that there's a greater likelihood of damaging wheels, suspension and braking components"

The bigger rims they're fitted to also allow vehicles to run larger diameter rotors and brake calipers with more pistons for better braking, but this all comes at the expense of reduced cushioning compared to tyres with taller sidewalls.

More traditional tyre sizes hold a greater volume of air and allow for extra sidewall flex, resulting in a more supple ride and greater impact resistance should the motorist drive over a pothole or hit a kerb. There are benefits to having a larger sidewall in the case of four wheel drives as well, including the ability to further air down tyre pressures for greater traction off-road.

How are brakes affected?

While the braking system is generally well protected within the rim, it's the flow on effects of a kerb strike or driving over a large pothole that can ultimately impact on the brakes also. One particularly vulnerability is the wheel hub. The hub flange is the flat surface that the brake rotors mount against. If the flange is damaged from impact and doesn't sit flat, the brake rotor will in turn not sit true leading to flange run-out.

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Flange run-out can also be caused by installation error (such as when a hub or bearing is over torqued) and from corrosion; flange run-out is then amplified once the rotor is fitted, eventually leading to Disc Thickness Variation (DVT).

DVT is caused by side-to-side movement in the brake pads as the rotor rotates, rather than the rotors circulating through an even plane. Eventually this leads to excessive wear at certain points on the rotors because of clamp force variations due to the calipers applying varying pressure to the pads on the misaligned surface. For the driver, they'll notice that the brake pedal will pulse or vibrate when applied. Not only does this feel annoying under foot, but stopping distances will also increase.

With the questionable state of many roads – particularly in rural and remote areas – obstacles such as potholes and crumbling road edges are common challenges that motorists must regularly overcome. So if drivers do encounter one of these obstacles that they can't avoid, and then experience symptoms such as brake pedal pulse, unusual underbody noises or their car not tracking properly, they should visit a mechanic as soon as possible for a safety check.

Large rims with low profile tyres have become more popular in recent years, but while they're attractive and have some benefits, there are also compromises.

One concern for the brake system is damage to the hub flange which can lead to flange run-out, eventually causing Disc Thickness Variation.

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