



GLAZING OVER

For Andrew Lumley, account manager (trailers) at Knorr-Bremse, this is becoming an ever more frequent problem. "The issue is that you have nine-tonne axles running at far lighter weights, making it difficult to make the brakes work enough," he tells us. "The other complication the UK adds to that is using drum brakes as well, because they glaze even more. So the solution is very, very difficult."

In simple terms, brakes 'glaze' when the friction material wears without the resin in which it is suspended getting hot enough to be destroyed at the same rate. The result, ultimately, is a top layer on the pads consisting entirely of resin, which provides next to no friction. If the loading on the axles is only light, the brakes don't generate the temperatures necessary - around 200°C - to burn that resin off.

"On top of that, I also see problems coming from trucks," Lumley says. "Some don't work the trailer hard enough, leading to the same thing." This is down to the way different manufacturers set up their tractor units. Some will attempt to keep braking force distributed fairly across all the axles on any given

All operators try to minimise the speed at which brakes wear out. But it's possible to take this too far, with the result that friction is lost due to lack of use - a condition traditionally known as brake glazing, reports Lucy Radley

combination, where others will assign more or less all of the effort required to either trailer or truck. Add to all of this today's GPS-guided predictive cruise control plus the use of engine brakes or retarders, and the issues only become worse.

Once an operator identifies brake glazing, there isn't a great deal that can be done for existing linings to remedy it. "You have to get that heat into the material and some smoke coming off it, basically," Lumley says, "which is very difficult." One way he's definite this shouldn't be done, no matter how tempting, is by deliberately dragging the brakes - applying continual low pressure to the brake pedal or through the hand brake while simultaneously depressing the throttle pedal. "This causes them to

become very aggressive and to snatch," he warns. Trying to bed brakes in this way is even worse.

One thing which may be worth trying is a series of 'snub stops'. Lumley describes how to do it: "Bring the truck up to the limiter, then stand hard but steadily on the brakes for quite a number of seconds until you've got down to 20mph. Then set off again and keep doing that repeatedly." If this doesn't solve the problem, it's also worth bearing in mind that an unladen tri-axle brake test is far easier to pass than a laden one when going to MOT.

A far better course of action, however, and the one which Lumley advocates, is ensuring the brake calculations are done correctly for the planned load in the first place. One increasingly common set-up is when the retardation rates are set to be the same in both laden and unladen conditions. "You'll see it with most continental trailers. It's an idea called 'matched braking rate', and although in theory it's not a bad idea, in practise it really doesn't work," Lumley points out.

"Effectively, what it means is you get less than a bar and a half of pressure in the unladen condition, and it's just not enough," he continues. "We set roughly

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55% retardation in the laden condition, but for the unladen, my rule is that if it doesn't start with a 'two' then it's not going to work.” This has to be achieved right at the beginning of a trailer's life, which means talking to the body builder directly.

“There's only so much we can do as manufacturers; it's down to the operator to understand a little better,” Lumley states. “The customer has no way of changing these things, so it's got to insist on aggressive calculations in the unladen condition, and if it is running light weights.” And if it doesn't? “If you've got discs, you've got half a chance to recover the situation: you can put heat into them and get them back,” Lumley says. (K-B disc pad pictured, main image.) “But with drums, you're looking at relining, and even putting new drums on sometimes.”

ANOTHER VIEW

Jonas Benson is homologation and vehicle testing manager at Haldex in Sweden. He's been warning for the past seven or eight years about issues where friction levels are not kept high enough in service to pass an MOT. Most European trailers use disc brakes (Haldex ModulT disc brake pictured above), so that is what is referred to here.

“The problem is that the brakes are not thermally bedded in,” Benson states. “For friction material, you need mechanical bedding in, and that will happen even if you brake very gently. But they also need to be heated up.” When testing in the dynamometer, or dyno, the pads can show temperatures of 500°C or more while thermally bedding in, after which friction will



increase by around 20%.

When trailers are built, they legally must pass a roller brake test to prove conformity of production.

For this, they need bedded-in pads. Alternatively, an industry-standard green coating is applied, consisting of rubber-based anti-slip material similar to that seen on stairways and corridors. This provides friction for the first 20 to 50 brakings, after which the pads should have bedded in – but only if they have been exposed to sufficient heat.

There is, of course, a balance to be struck once that process is complete: too much heat will lead to rapid and premature wear. But temperatures over 100°C and below around 300°C are good for brakes, not least because the heat dries them out, reducing corrosion of the steel fibres which make up part of the friction material itself.

“For line-haul trailers, using eco-driving in flatter counties, things are difficult,” Benson says, “because you don't apply the brakes very often, and the retarders are very effective.” Telematics systems discouraging drivers from using the foot brake worsen the issue, as does the use of over-optimistic brake calculations based on dyno tests.

Another problem is the use of what Benson sees as unnecessarily small brake chambers. “For trailers, a Type 16 has been used as a standard size, and is very inexpensive, whereas a truck axle with the same load will have a Type 24,” he explains. “Our personal view, and that of some of our larger customers, is to use a Type 18 instead, so more pressure is applied to clamp the brakes on,” he continues. “Every little pressure increase, even 0.1 bar, will make a difference to the temperature achieved on the trailer, even under gentle braking.”

Finally, he offers advice for operators seeing problems with their existing trailers. “There are fleets in Sweden that drive to Spain and they have very good retarders,” Benson says. “But their drivers are ordered to turn those retarders off once a week and drive for the day without them. That can be very helpful. In the past, there has been a great deal of focus on increasing the lifetime of the pads,” he adds. “But, as I've repeatedly warned, if you have to replace a pad that is 95% of the original thickness it's even more annoying to the customer!” 