Better brake behaviour

Given the weight and nature of the loads HGVs carry – not to mention people in the case of PSVs – their anchors should be 100% serviceable, all of the time. MOT data reveals a darker but improving story, writes Peter Shakespeare

While faults with vehicle lights occupy the top two spots in terms of HGV and PSV MOT test failure causes (for tips, see *www.is.gd/fezahe*), issues with brakes take third place. DVSA data from 2018-19 puts service brake and parking brake performance as the top two reasons for trailer annual test failures.

That doesn't mean that the commercial vehicle parc is unsafe, cautions Hugh Rimmer, DVSA testing taskforce lead. He says: "Lorries, PSVs and trailers are subject to a far more rigorous maintenance and testing regime than private cars. But it's concerning how similar the top annual test failure reasons are to that of cars. And that a similar percentage fail for the same reasons as cars. Just over 6% of failures are for brakes, spread over brake system components [2.9%], service brake performance [2.2%] and parking brake performance [1%]. Many obvious problems can be picked up by a visual inspection. And anyone driving the vehicle should be able to recognise the more serious problems with the brakes."

Also at the front lines of the issue is Carl Dibble, Knorr-Bremse Truck Services sales executive. He observes: "As an original equipment manufacturer, we only hear about MOT failures when vehicles are fairly new. With the footbrake side of the service brakes, the number one problem we see is incorrect friction material. With brake pads (or shoes on some trailers) where the friction material is not the OE specification, it can have a big impact on the service brake performance. Continued use of the wrong material can cause the brakes to glaze, resulting in brake fade and loss of efficiency. Often this is not down to cost, but simply not using the correct pad for the vehicle." (Disc brake assembly with pads pictured above right, third from edge).

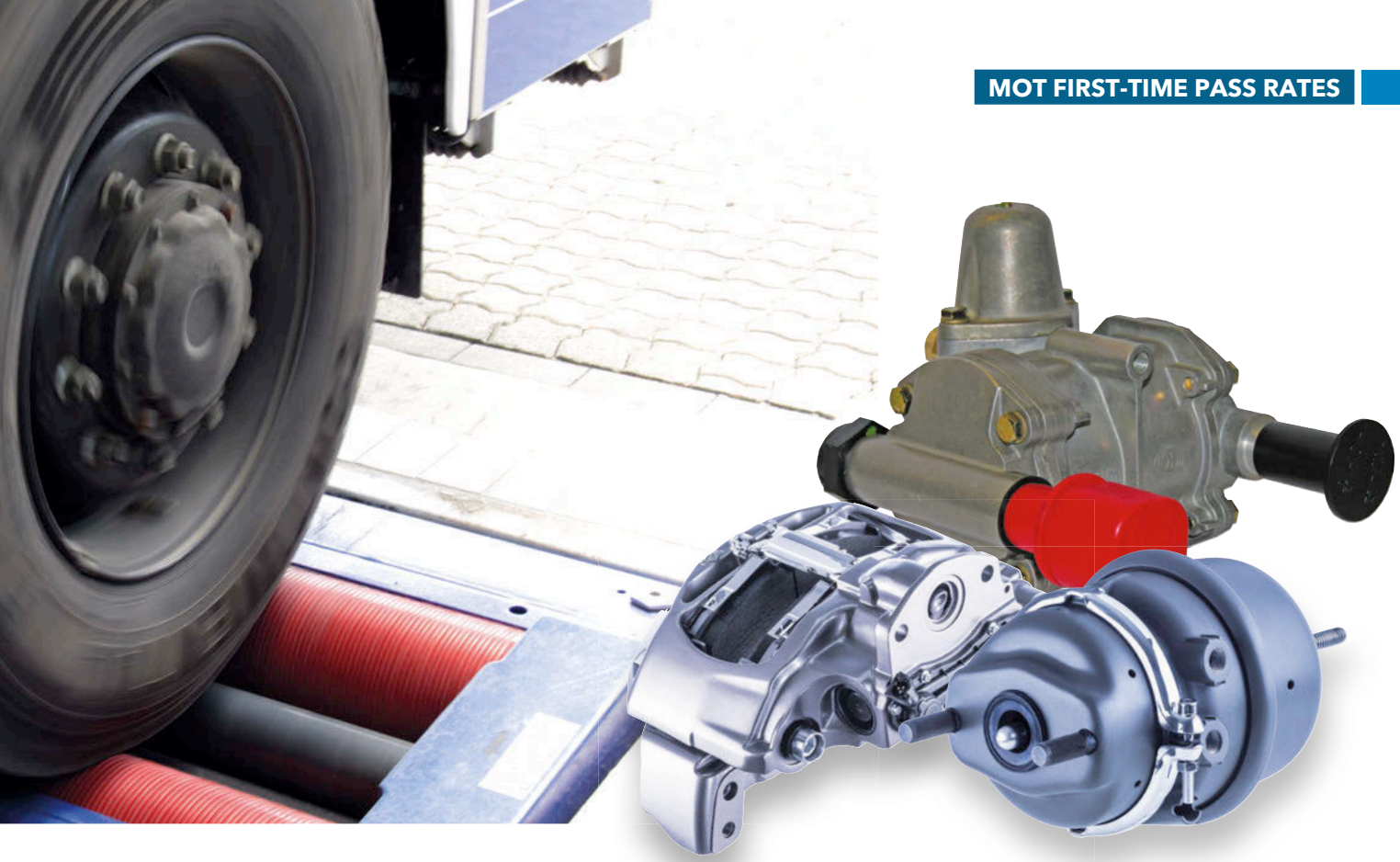
He continues: "The second point is brake actuation. This mainly applies to trailers, which use double-diaphragm spring brakes [pictured above right, at bottom]. They are cheaper to manufacture than the piston type found on prime movers, and there is a wide range, in terms of type and quality, out there. Chambers [in which air pressure actuates the brakes] are considered a disposable item and are changed prior to MOT, so there is a tendency for people to shop around for the best deals."

The sales executive then turns to brake adjustment. Problems there can be down to lack of knowledge of how to correctly adjust the automatic slack adjusters or brake callipers. He adds: "Sadly, callipers aren't always inspected and maintained correctly. If callipers aren't working to full efficiency, at test you won't get the required result on the rolling road" [pictured above]. He advises they be inspected at every periodic service interval.

Users should not skimp on component quality either, he advises. "It is also important to use OE replacement parts in the braking system. The problem with copies is, the manufacturer doesn't necessarily know what the critical tolerances and surface finishes are. It is also important to use the OE-provided tools. Calliper tools are designed to align and position components in an exact way, which cannot be achieved using standard workshop tools," Dibble contends.

PARKING BRAKES

This is the other part of the braking circuit, and can cause problems for infrequently-used trailers, which fail because the cylinders don't produce sufficient brake force. Dibble explains why: "When the trailer parking brake isn't getting regular use, the power spring which applies the parking brake is permanently compressed by air pressure. Then it weakens and doesn't apply sufficient force. Some people just replace the chamber pre-test, but if the parking brake is used every day, you will get a much longer chamber life." (Trailer park valve pictured top right).



Another problem comes from installation errors, he reports. "Double-diaphragm spring brake chambers have a water drain hole machined in the bottom of the chamber. Once fitted, the bottom plug should be removed. If this is overlooked, the chamber can't 'breathe' when the brakes are released. A partial vacuum forms behind the diaphragm, preventing the brakes from fully releasing, which causes the pads to lightly rub on the disk and glaze up." That glazing is sufficient to weaken the parking brake to the point of failure.

Finally, poor performance of an upstream consumeable could also get operators into trouble. Oil carryover from the compressor, which leads to an MOT fail, will manifest in the presence of oil on the vents on the air release silencers. It is caused by problems with the air drier cassette.

Servicing that component, and brake linings, are the two principal maintenance items on new Volvo vehicles, states Martin Weightman, dealer point manager of Carlisle's Volvo Truck & Bus Centre North.

THE DEALER'S PERSPECTIVE

He says: "We try to ensure that when customers' vehicles come in for their six or eight-weekly inspections, they go out at or better than MOT standard. Our customers' clients put immense pressure on them [its customers] to ensure their vehicles are in tip-top condition. In 2019, Carlisle sent 270 vehicles for MOT. While we had a handful of failures, not one was down to the braking system. This is because proper ongoing maintenance at the regular service and inspection intervals stands the vehicles we look after in good stead. Some customers have it written into their service contracts that we carry out empty and loaded brake tests at each service. So we are seeing operators upping their game and going over and above."

To help with that, Volvo has invested in a training centre in Carlisle so all its technicians are aware of Volvo's interpretation of the test requirements.

He adds: "We present [trailers] loaded for test, because if there is an issue with a chamber, it will show up more readily than if the trailer is empty."

DVSA's MOT statistics show that failure rates have been falling steadily, with brake system failures following this trend. This supports Weightman's comments about improving products, operator awareness and higher maintenance standards. DVSA's statistics also show that fleet age and size are factors. Fleets of a single vehicle – which is probably an older one – have an average MOT failure rate of 19.9% for HGVs and 26.1% for PSVs. This falls to just 4.4% and 2.8% respectively, for fleets of 101 vehicles and above, according to Rimmer.

He concludes: "It's easy to argue that larger fleets can afford more people to look after them. But all heavy vehicles should have a daily walkaround check and, no matter how many vehicles you have, somebody must fill the role of transport manager," he cautions. TE

CORRECTLY SETTING TRAILER EBS FOR TESTING

"EBS on trailers can be problematic," observes Dibble. EBS systems have special modes for non-operational states, including workshop and test modes, he points out. If componentry is not properly set up, the system won't apply the correct amount of pressure to generate the required braking effort. This requires the driver to understand the system and know how to achieve this. To put the Knorr-Bremse system into test mode, the driver needs to depress the brake pedal with the ignition switched off and then turn the ignition on and start the engine. He concludes: "We have published literature about this and hope DVSA's inspectors are familiar, but we advise that drivers reach an understanding with the inspector, in case they aren't aware."