AIR CARE

In May, the Health and Safety Executive issued a safety alert about working around air suspension systems used in commercial vehicles. Will Dalrymple learns more from suppliers and operators

The alert, available via *www.is.gd/ehodar*, warns of the risks of sudden collapse of air bag suspension during maintenance, and provides instructions about how to prepare those systems for work. Although mainly referring to 2007 guidance, PM18, 'Safe recovery (and repair) of buses and coaches fitted with air suspension' (*www.is.gd/ejoyuq*), it also makes a new recommendation to either depressurise air suspension circuits or to prop up the chassis so the vehicle cannot fall on a worker lying underneath, if the air suspension were to fail.

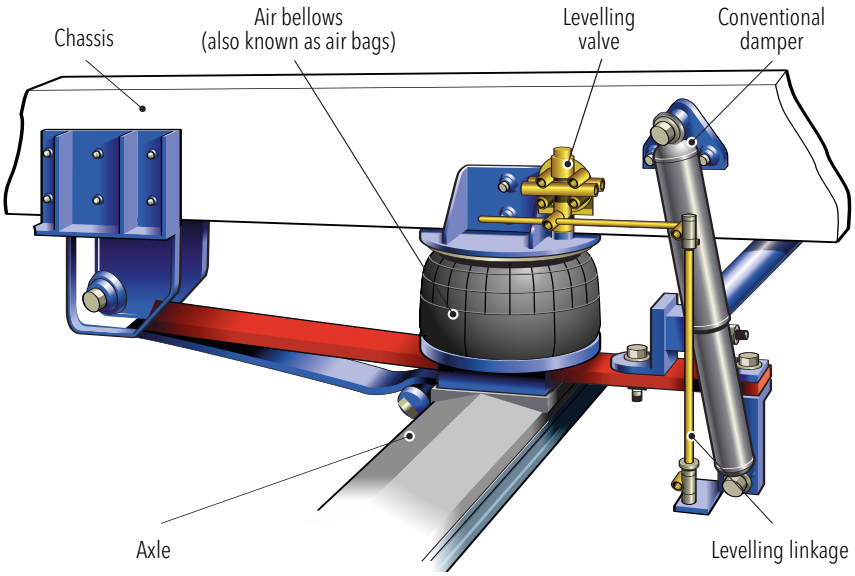
In publishing the new guidance, HSE was reacting to a number of incidents that it has investigated in the past couple of years, according to a spokeswoman. She says that workers have been crushed when air bags have failed, or the suspension moved, and proper supports were not in place. In other incidents, workers were injured when struck by suspension components blown from the suspension when the air bag – which was not depressurised before work began – ruptured. Various enforcement penalties, including prosecutions, have followed.

The guidance is meant to be obeyed when there is any risk of being trapped underneath the vehicle or working near the air suspension system. It basically rules out crawling underneath a vehicle fitted with air suspension if the circuit has not been depressurised, or the chassis has not been propped. Other situations when it should be followed include working underneath a vehicle in an inspection pit or when using a vehicle lift – but not when changing a tyre, the spokeswoman states.

Neither the safety alert nor PM85 are legally-binding, although following them would normally be seen as demonstrating compliance with the law, which in this case is regulation 5 of the Provision and Use of Work Equipment Regulations 1998, plus, for training, the Health and Safety at Work Act 1974, the HSE spokeswoman explains.

Trailer axle and suspension manufacturer BPW confirms that the risk to technicians is real: "If the air is suddenly lost from the suspension system, then the vehicle will drop onto its bump stops very quickly and there is the possibility that the mechanic could be trapped," states engineering manager Roger Thorpe. Trapping risk is particularly acute for low-running chassis, such as machinery carriers, low loaders and high-cube vans, for example. But he adds: "Even with normal-height trailers, there is a danger of trapping limbs if the mechanic is working with his [or her] arms between the axle and the chassis components."

To safeguard technicians, Thorpe advises a few precautions. He says: "When working on air suspension systems, the trailer should be supported under the chassis rails just to the rear



of the running gear. The air should be released from the system by either using the raise/lower valve or by disconnecting the vertical arm of the height control valve and letting fall into the low position. This will exhaust the air from the air bags, but there will still be air in the system up to the height control valve. If work is to be carried out on the system up to the height control valve, then the air brake reservoir and the air suspension reservoir should be drained."

AN OPERATOR'S VIEW

London bus operator Metroline is well aware of the risk, and has mitigated them with standard procedures and training, states UK & Ireland group engineering director Ian Foster. "It's pretty much standard fare for larger fleet operators. Suspensions are a focus of a lot of inspection and maintenance. In terms of our vehicles, depending on their age, they are inspected every 28-35 days, and there's a comprehensive list of checks of suspension components. As an apprentice, you are taught about air system repairs, and removing components from both braking and suspension systems. There is a very specific process for getting air tanks and reservoirs emptied prior to any work. Even pipes are cracked off in some circumstances in case there is any air in them."

He adds that the operator replaces the rubber suspension air bags frequently, given the buses' demanding 24/7 duty. "It's well-known that the component wears. It is relatively cheap, and not hard to change."

As a rule of thumb, a good-quality original equipment air bag (pictured, left) should last four years in arduous duty, and up to 10 years in trunking, according to Thorpe at BPW. But he adds that they should be inspected for leaks and damage during the regular periodic safety inspection. The standard method to check for leaks is to spray around an inflated airbag with a bottle filled with a soap solution and look for bubbles; bigger leaks can be heard.

BPW's airbag discard criteria include a leak around the top crimping, a leak around the bottom vulcanising when the bags are fully-inflated, fraying of the outer rubber layer, or bumps or discontinuities in the fabric walls. In addition, any cracking around the walls where the rubber folds under to make contact with the piston will also indicate the need for its replacement.

Thorpe adds: "Although all air bags may appear to be the same, we recommend replacing with a good quality OE airbag, such as those fitted to BPW axles, which will benefit from high quality UV stabilised rubber, robust internal supports structures and high-quality crimping and vulcanising."

As regards inspections, Foster at Metroline also highlights the importance of the pedestal, the metal housing that the bag presses up against. In most circumstances, the air pipe goes into that, via a drilling. "We treat those pipes like air supply pipes in braking: check if they have flexed, moved, or are securely fastened. We do have issues with the pedestal that they sit on: rusting, cracking, or where the fitting that the air pipe goes in to is worn and the thread has come away. Then, if we don't change the pedestal, we drill it out and fit an oversize fitting for the pipe."

Meanwhile, truck (and axle) maker DAF welcomed the alert, even if it covers familiar ground. A spokesman explains: "The guidance issued by the HSE is in line with DAF instructions and, as it serves as a useful reminder, DAF has shared it with its UK dealer network." TE