

Mind over matter

Electronic systems on commercial vehicles may be increasing in complexity, but, instead of diagnostics doing all the work, John Challen explains why technicians should also be thinking for themselves

In many ways, the role of technicians has been enriched by the age of diagnostics. Connecting the vehicle up to a laptop provides information about its health, and can guide them to finding faults and solving them in the quickest, most effective manner.

But many believe there is now an over-reliance on diagnostics and equally, as a by-product, an unwillingness for technicians to think for themselves. Colin Lock, a senior lecturer in auto electrics and electronics at S&B Automotive Academy, is one who believes this may be the case.

“One of the things some technicians fall down on is that they are quite happy to, say, replace a sensor when the computer appears to say so. But when the fault is still showing, they hit a stumbling block,” explains Lock. “They don’t stop to think what the computer means – which is essentially that it can’t communicate with a sensor. But, if it was a broken wire, the same fault would show. They don’t stop to check whether it is the sensor or the wiring, before they change the sensor.”

Lock says he understands, but is not envious of, the position some workshop operatives find themselves in. “They go for the quickest change, because it is all about getting vehicles back on the road as quickly as possible,” he says. “And they still need to run the diagnostics, because they need to cancel the fault codes. However, they should follow the routine that would have been recommended by the manufacturer – most likely, to carry out the diagnostic process from the diagnostic kit and, if it suggests a faulty sensor, perform the test again, but at the sensor, to test the resistance readings.

Brake with tradition

Electronic braking systems are among the more recent sources of added complexity in commercial vehicles. Carl Dibble, service network coordinator and technical trainer at brake systems developer Knorr-Bremse, says more attention to detail is required and that technicians must think before they act.

“In order to work safely and efficiently with vehicle systems, a technician needs to understand how they work and what processes are automated,” he explains. “For example, simply turning on the ignition starts up a host of functions, some of which may cause injury, where moving parts of the vehicle are involved. Imagine a technician leaning over the lift axle to gain access to a component when the driver turns on the ignition to listen to the radio. The axle could automatically lift, crushing the technician.”

Dibble highlights the pipe connections to the EBS modules as an area needing particular attention. “Incorrect piping can

lead to a dangerous situation, with poor braking or no brakes at all,” he warns. “In some cases, pipes are connected to the air suspension, so disconnecting these can lead to the vehicle lowering and possibly trapping anyone working underneath.”

His point: although PC skills are necessary for operating the diagnostics, understanding real-world risks, as well as the information the diagnostics give you, are just as important.

And he goes on to say: “Knowledge of the system operation is required to interpret the fault detected correctly and determine the root cause.”

Meanwhile, Lock believes that hasty diagnostics are costing workshops and operators money. “I try to teach my students that the object is first-time fix. So, if a vehicle doesn’t start, don’t just put a new battery in it, because it might not be the right course of action,” he says.

“Things that look complex can actually be very straightforward,” adds Lock. “If you’re dealing with a temperature sensor, and looking at an ECU with 50 wires on it, you’re only interested in two. Providing you can see the right wiring diagram, you can test it properly.” **TE**

