

How training will save you money

Steve Carter from eXponentia, gives an example highlighting how too little knowledge will cost you a lot more than paying for training, by keeping your technicians' skills up-to-date.



Steve Carter, eXponentia

When discussing training requirements for garages, it is often stated that the garage can either not afford the cost of training or, as is more often the case, cannot afford the cost of the lost time when a technician is away from the workshop.

I would argue that a well-trained technician, who is kept up-to-date with modern systems, will be far more efficient and will make the garage owner more money than it will ever cost to maintain this level of knowledge.

An example of just this scenario occurred when I returned from my holiday. A well-respected large workshop with class 4 MOT and seven ramps was having a severe problem with a Saab 9 3 1.9TDi, and asked for my help.

The vehicle had come in for a routine cam belt replacement some eight weeks earlier. This was duly completed and the vehicle left the workshop. Five weeks later the car broke down, the garage recovered the vehicle and interrogated the on-board systems, and found it had a crank sensor fault. This component was replaced, but the vehicle still refused to start and the crank sensor fault was still there.

The garage contacted a local Saab dealer, who informed them that this vehicle apparently suffers from the cam belt jumping a tooth or two. All covers were removed and the timing checked, this revealed that the cam belt had not jumped any teeth at all and everything was perfectly timed. At this point an auto electrician was asked to look at the vehicle and after his various checks, he concluded they should try a manufacturer's crankshaft sensor. This was done and still the vehicle did not start and it still had a crankshaft sensor fault. The auto electrician then suggested the ECU be

sent away for testing. The ECU was returned three days later, with no faults having been found.

I started this article talking about training costs and time away from the workshop. Let's just look at the cost incurred to date by this garage for all the work on this Saab:

2 crankshaft sensors	£169
1 ECU testing	£ 65
2 Days investigation work	£300
½ Day engine timing check	£ 75
1 Day Auto electrician	£125
4 weeks of loan car to customer	£550
Total cost	£1,284

The engine still won't start, and everyone is out of ideas.

When I arrived at the workshop, I double-checked the fault code, which was accurate - crankshaft sensor no output. Looking next at the 2 spare crankshaft sensors, it was obvious that this was an inductive type sensor, and as such, generated its own signal from the exciter that would be spinning in front of its magnetic tip. I connected my oscilloscope to the two output wires of the sensor and asked the technician to attempt to start the vehicle, instantly it was obvious that there was no output at all from the sensor, but this of course doesn't mean the sensor was defective. If the exciter has moved or broken, then you would get the same fault. Most exciters are usually some part of the flywheel or ring gear, but on this particular engine it didn't appear that the crankshaft sensor could get close enough to pick up a signal. On checking our data information, it was obviously

not getting any signal.

This engine uses an exciter fixed to be crankshaft, one journal in from the flywheel end, by three bolts. Clearly if these bolts come undone, then the exciter will not rotate with the engine.

I removed the crankshaft sensor and by using a boroscope, I peered into the hole and could clearly see that this is exactly what had happened. All three bolts had come undone and the exciter was no longer attached to the crankshaft. Without the bolts, the exciter was not rotating along with the crankshaft, and the sensor could not pick up a signal from the now permanently stationary exciter. The end result was no signal to the ECU that the crankshaft was turning, so no spark at all.

eXponentia, in conjunction with Autobiz, are running two courses at the Europa Academy this November: The highly popular New Technology Seminar and the CAN-BUS & Multiplex-1 course. More details on facing page.

