

Loss of communication

Diagnosing electrical faults can be challenging, but with the right tools, information, and knowledge, a fault can be tracked down and repaired. All vehicles have many built-in management systems which monitor and act on the information to make the vehicle safe, economic, and comfortable including many features which we think of as standard.

The featured vehicle is the popular Škoda Yeti. The owner reported having issues with the right-hand rear door not locking and the electric window not working.

After carrying out the initial check of all the door functions, it was confirmed that the central locking or door window controls were not operating in the right-hand rear door. Once the fault was established, information was checked to see how the central electric system worked. Each door has a control unit fitted which regulates the functions within the door. These control units are linked to each other from rear door to front door. These are then connected to the vehicle's central electrics control unit. First, it was necessary to check if there were any fault codes logged. As suspected, a fault was recorded for the door control module: "right, rear, no signal/communication". This confirms that the control module was not functioning correctly, but why?

Was this a case of a faulty control unit? It is very easy to replace a part based on a fault code description. However, it makes logical sense to confirm all findings before ordering any parts.

After the right rear door trim panel was removed, the 20-pin connector was identified at the control unit. This required testing before condemning the control unit. Terminals 18 & 19 are the power supply and terminal 30 is ground. These were checked and load tested and found to be in good working condition.

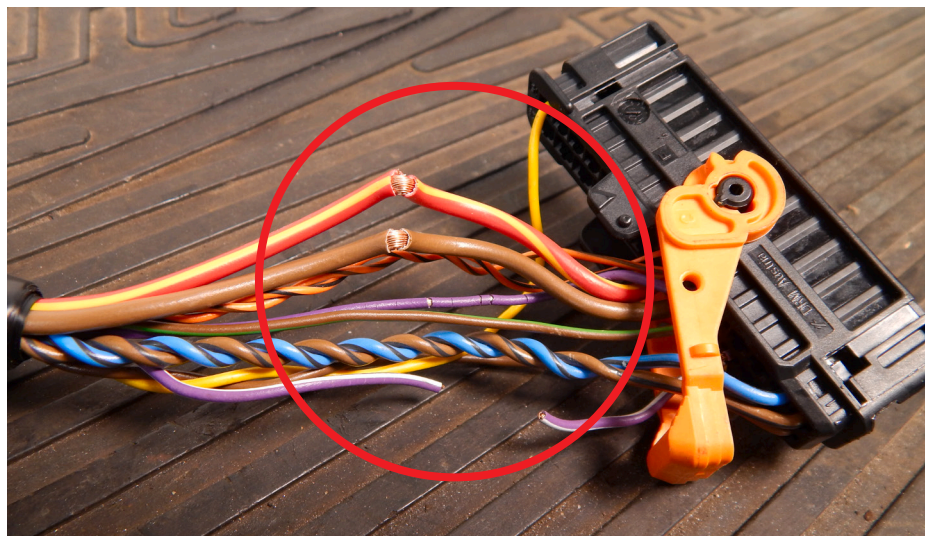


Figure 1

However, testing the Local Interconnect Network (LIN) bus communication between the front door control unit and the rear at terminal 10 with an oscilloscope revealed that there was no signal.

LIN is a low-speed, single-wire serial data bus used to control low-speed, non-safety-critical functions on a vehicle, especially windows, mirrors, door locks, etc. In this case, there was a loss of communication between the rear door and the front control units.

After removing the right-hand front door trim panel and checking the wiring, the fault was found to be a broken wire between the 'A' pillar and the door.

All wiring looms that connect between the vehicle's body to the doors – or any other hinged point – are subject to a lot of movement, bending, and stretching to the point where the insulation cracks, therefore exposing the copper wire. This can lead to an open or a short circuit in the system. (Fig 1)

With the fault identified, the option was to either repair or replace the wiring loom. A febi wiring repair kit was chosen, which

comes supplied with a new multi-plug, connectors, and enough new silicon insulated wire to cover vehicles fitted with all options. The silicon insulation is more resistant against thermal stress and stays flexible at any temperature. This flexibility helps to prevent cable breaks in the future. The wires are tinned and are extra fine, making them more flexible and prevents corrosion for a reliable repair. (Fig 2)



Figure 2

Each wire was cut to size and the insulation stripped. Then, the joining connector was crimped into position, attaching the original loom to the new wire. After crimping, the crimp connector must be shrunk with a hot-air blower in order to prevent moisture from penetrating.

Note: During each repair, ensure that the crimp connectors are not positioned immediately next to each other if there are multiple wires to be repaired. Arrange the crimp connectors slightly offset to ensure that the wiring loom does not become too big.

When repairing CAN bus lines, they must have the same length when undertaking the repair and no cable piece should be longer than 50 mm without twisting the cables.

After successfully joining all the wires and allocating them to the correct positions within the multi-plug, fabric insulation tape (107140) was applied to hold the loom together before being refitted to the vehicle. (Fig 3)

With the repaired loom fitted, the integrity of the LIN communication was checked for a good quality signal (Fig 4) followed by the clearing of all fault codes and testing of the door functionality.

All of the vehicle's interior trim was refitted and the vehicle was ready to be handed back to the owner. Making this an economic repair, as there was just one part of the cable broken, there was no need to replace the complete wiring harness.

Rely on tested OE matching quality spare parts from febi. The entire range of wiring repair kits can be found at: partsfinder.bilsteingroup.com.

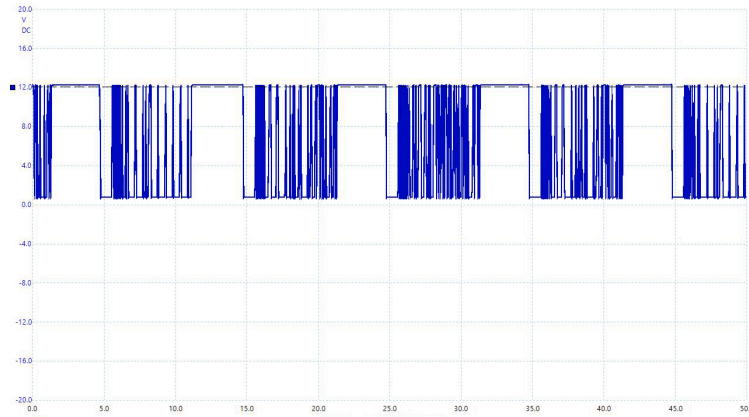


Figure 4



Figure 3

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Further information is available at: www.bilsteingroup.com