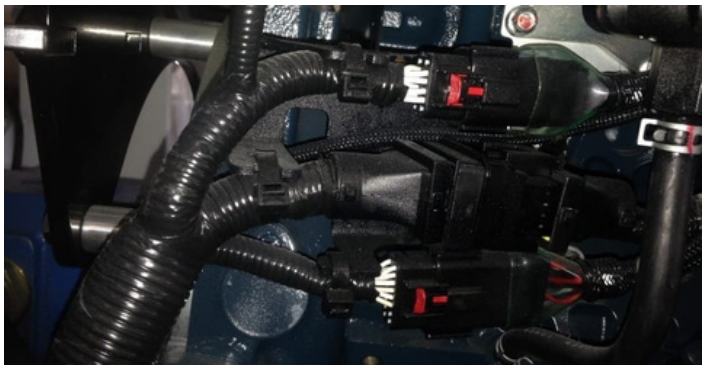
The Secret to Reliable CAN Bus Controls

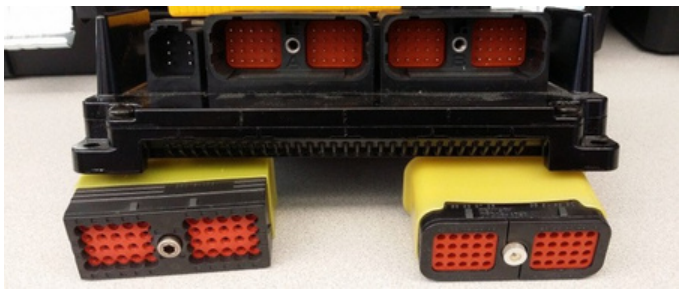


CAN Bus control systems can outlast your machine's hardware – if you're using them correctly!

Most of us remember when electronics started to be utilized in automobile applications. The earliest attempts at electronic ignition and fuel injection systems were not the most reliable devices ever installed on a car. Many were removed and replaced by "old tech" systems simply because there were problems and the owner (and sometimes the technicians) didn't understand the systems.

Today, every car has lots of electronics, including CAN Bus controls, on them and the reliability of today's cars put the old ones to shame. You never have to change points, you replace spark plugs about every 100,000 miles, and you seldom ever have a fuel injection problem on a car. What has changed, you ask? Several things:

Electronic Component Protection



Today's electronic control systems are all sealed units with "potted" internal components. This almost completely eliminates the chance of a component vibrating and its electrical connection work hardening and breaking. Plus, these components are built to withstand shock of up to 50 g's and are so well sealed they can be immersed in 1.5 meters of water for up to 30 minutes! So, the hardware is much more robust and, therefore, more reliable.

Electronic Sensor Improvement

In the early days, electrical sensor technologies were evolving. Yesterday's sensors were all resistive devices and many delivered inconsistent inputs to the control system. Today, we have more accurate and more reliable sensor technology that can withstand the high temperatures found in engine compartments or the extremely low temperatures found in arctic environments. Today's sensors and controllers are also better shielded from electrical "noise", so extreme measures don't have to be taken to protect them from interference from 2-way radios, alternators, spark plugs, etc.

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Reliable Communication
CAN Bus system reliability has also been greatly enhanced by improved electrical connector design. The automotive industry pioneered improved connections that are sealed and that prevent moisture from oxidizing the connectors, eventually leading to system malfunction. You may have seen or heard of connections like Deutsch connectors and Weatherpack connectors, just to name two. When properly installed, these connections will transmit reliable signals for a long time with no degradation of signal quality. When the CAN Bus controller gets reliable input signals, it can generate reliable output signals.

Conclusion: The single biggest problem we encounter with our OEM customers' implementation of CAN Bus control systems, is poor wiring practices. You cannot wire up one of these systems using crimp-on spade connectors and expect it to give long, reliable service. Also, "homemade" wiring harnesses often are not labeled or color coded to facilitate easy, accurate connections by an assembly person. A properly designed wiring harness with properly installed weatherproof connectors and proper grounds will save you many hours of installation (see header image), as well as troubleshooting time. It will also ensure that your system can perform just as it was designed and will be reliable for many years of service. If you try to save money on this portion of the system, you will pay it back in startup troubleshooting, field service, and warranty expenses. Guaranteed. Today's CAN Bus control systems potentially can deliver you more control flexibility, more accuracy, more reliability, and lower installed cost than old hand wired control systems that used mechanical switches, resistive inputs, and relays. But you have to be willing to install them properly and use a properly designed wiring harness with weatherproof connectors. If you do that, your machine's control system should outlast the machine's mechanical parts.

Are you interested in learning more? Contact a Cross company mobile hydraulics expert to discuss your project!