



ML-XT™ SYSTEM REDUCES FAILURES FOR AGRICULTURAL MACHINERY MANUFACTURERS



Molex Helps Eliminate Seal Failures in Agricultural Vehicles

Two-shot LSR molding and recessed rear seals combine to lock-out the contaminants of agricultural operations while reducing decades-old sealing failures.

BUSINESS CHALLENGE

To eliminate seal failures while delivering complete protection in harsh agricultural environments

For agricultural vehicles, the only thing that matters is durability. Required to work long hours in harsh, dirty conditions, the reliable performance of these vehicles can make, or break, a farming operation. After daily contact with dust, fuel and other contaminants, these vehicles undergo a high-pressure wash-down. All of these contaminants can lead to electrical system malfunctions and failures if the connector system seals are ineffective or compromised.

A Molex survey of agricultural vehicle manufacturers found that 90 percent of the failures experienced during agricultural vehicle manufacturing and field use involve sealing issues. Seals fail on between 25 and 500 of every 1,000 connectors used during agricultural vehicle production, and between 10 and 20 of every 1,000 connectors that make it into the field.

For decades, the same sealed connector system has been used in agricultural vehicle manufacturing. As these vehicles have become exponentially more complex electrically, two critical sealing issues have been observed:

- Contaminants such as chemicals and fuel cause the chemical cross-link structure within the silicone seal material to break down. This significant weakening of the bond between the seal and the connector renders the seal completely ineffective. These weakened seals will fail during insertion into a harness, and even will arrive at harness facilities already detached.
- Due to the rugged nature of agricultural applications, cables often bend near their connector entry points. These bends occur in the field, as well as during the connection of the wire harness to the vehicle. A bend within 2.50cm of entry into these connector systems pulls at the seal and creates leak paths, enabling the ingress of a host of contaminants.

Manufacturers of these connectors have tried additional covers and attachments to try and solve these problems, but have just created more issues in the process. These covers are ultrasonically spot-welded, which results in brittle joints, cover and connector failure, and significant costs to the customer.

Agricultural vehicles will only continue to rapidly increase in electrical sophistication, thus increasing the number of sealed connections that vehicle performance will rely upon. A sealed connector system that can eliminate critical failures, and keep systems running much more reliably is a dire need.





SOLUTION

The Molex ML-XT™ Sealed Connection System

The ML-XT™ Sealed Connection System has completely redefined seal reliability in agricultural vehicles with multiple breakthrough innovations:

- Two-shot LSR (liquid silicone rubber) molding eliminates the seal-bonding issues seen in traditional connector systems. Creating a covalent bond between the seal and the connector body, this two-shot LSR technique permanently connects the two components at a molecular level, combining two components into one connector. This makes concerns over seal positioning and movement a thing of the past.
- HCR (high-consistency rubber) recessed rear seals completely resist movement during cable routing. Protected by a rigid back cover, the seal allows flexible cable movement, and its recessed, fixed nature significantly reduces the leak-paths found in traditional designs.
- A wedgelock terminal position assurance accessory locks the terminals in position, creating a reliable electrical contact. Further features such as an enhanced locking latch and latched back covers deliver unparalleled mating and housing reliability.

Solutions such as two-shot LSR molding and HCR rear seals deliver full IP69K and J2030 compliance. With unique offerings like a complete 18-circuit connector system, field-proven XRC terminals, color-coded housings and custom options, the ML-XT™ Sealed Connector System delivers reliability improvements to any design.

Delivered fully assembled and tested, the ML-XT™ Sealed Connector System improves reliability in agricultural vehicles right out of the box.

To learn more www.molex.com/link/mlxt.html