

A large red semi-truck with a white trailer is driving on a road during sunset. The sky is filled with orange and yellow clouds, and the sun is low on the horizon, creating a strong glow. The truck is the central focus of the image.

INNOVATIONS IN SEALED CONNECTORS POWER TRUCKS, BUSES & MORE

**CONNECTORS OFFER VERSATILITY & ENHANCED PERFORMANCE
IN CUSTOMER-MINDED DESIGN TO KEEP AHEAD OF TRENDS**



TE Connectivity's (TE) heavy duty sealed connector series remains a key component in heavy duty trucks, buses, agricultural and construction equipment. These manufacturers need to securely send signal and power over greater distances to more components while incorporating rugged connectors that enable flexibility in design and ease of assembly. Innovation in connector design becomes more important with the need for increased functionality and the trend toward autonomous operation in heavy-duty vehicles and off-road equipment.

Common design challenges when selecting an electrical connector include signal and power configurations, ease of assembly, and full visual control. These design challenges are no match for TE Connectivity, who brought heavy duty sealed connectors into the market eight years ago.

TE continues to expand our heavy duty sealed connector portfolio as we learn and anticipate customers' needs.

“Heavy duty sealed connectors provide reliability and performance on the engine or transmission, under the hood, on motor controllers and solenoid interfaces, on the chassis, or in the cab—basically anywhere high temperature and vibration resistance is crucial.”

DESIGN FLEXIBILITY, INCREASED PERFORMANCE, AND EASE OF ASSEMBLY KEEP HEAVY DUTY SEALED CONNECTOR SERIES CUSTOMER-FOCUSED

Customer-focused design is apparent throughout the heavy duty sealed connector series product family. These connectors are designed for use throughout the vehicle; in the chassis, under the hood, in the motor/gearbox, and feedthroughs to the cabin. Therefore, these connectors are required to accommodate increasing demands for power and signal content and withstand harsh conditions in a variety of applications where even a slight degradation in signal or power could be costly.

Because of increased electrification in today's vehicles, they require more power distribution to power more systems. Future vehicle board net systems are moving to 48V+ requirements. Anticipating the need for high voltage, TE's heavy duty sealed connector series connectors can handle up to 60V. TE's designs allow for mixed terminal sizes within one housing to enable OEM manufacturers to bring different wire sizes, signals and currents through one connector, providing flexibility and adaptability to individual designer needs.

Mechanical polarization and color-coded keying allow for clear orientation, to help minimize damage to the connector due to improper assembly. With so many similar connections throughout a vehicle, having visual and mechanical keying is important. These features are designed to allow customers to make their key connections correctly and securely the first time.





Heavy duty sealed connectors are also made of flame-retardant UL94 V-0 material, which is crucial for components used throughout the vehicle. Additionally, with the backshell installed, they satisfy the requirements for the elite IP67 and IP6K9K (with backshell installed) standards for resisting mud and dirt, additionally being water resistant under high-pressure water spray. This provides peace of mind during painting, as overspray should not penetrate the sealed connection.

FEATURES REVIEW OF TE'S HEAVY DUTY SEALED CONNECTOR SERIES

TE's rugged heavy duty sealed connector series offers field-proven reliability for sealed wire-to-wire and wire-to-device applications in harsh environments where even a minor degradation of signal or power may be critical. These connectors are constructed with rectangular, heavy-duty thermoplastic housings to withstand severe vibration and mechanical shock. They offer a wide operating temperature range and have silicone rear wire and interface seals that allow the connectors to withstand conditions of extreme temperature, dirt and moisture.



FEATURES INCLUDE:

- Accepts AMP MCP contact sizes 6.3/4.8K (up to 40 amps), 2.8 (up to 40 amps), and 1.5K (up to 20 amps)
- Tin, silver and gold contact plating options
- 0.20 to 6.00 mm² wire sizes
- Inline or flange mount; wire-to-wire, wire to device
- Slide lock for easy mating
- Integrated secondary lock confirms contact alignment and retention
- IP6K9K rating for environmental sealing with backshell installed
- -40°C to +140°C operating temperatures
- Available accessories: backshells, fixing slides, protective caps
- 2-18 positions with multiple terminal size configurations.
- 5 housing styles/sizes.
- Polarization, Keying options (4) A - D are standard on all styles/sizes, Keying options (+2) E & F on select styles/sizes

The integrated slide lock simplifies connector mating while the integrated secondary locking device confirms contact alignment and retention. These poka-yoke mechanisms do not allow the connector to close if the contacts are not inserted properly, providing a solid connection when the slide is shut.

Fixing slides allow easy mounting onto a panel, with no tools required and no mounting hardware needed. The slides come in different sizes from 1.0 - 4.0 mm to accommodate a panel's thickness. Simply slide the tab housing through a hole in the panel, install the fixing slide into place flush against the back of the panel to secure the tab housing, and mate the tab with the receptacle housing. This helps prevent moisture or dirt from working its way beyond the panel, providing environmental protection at the panel.

Two accessories that provide increased environmental protection are backshells and protection caps. Heavy duty sealed connector series backshells, available in vertical or right-angle configurations, offer a high level of protection and help reduce wire strain. They can also accommodate corrugated tubing or jacketed cable. Heavy duty sealed connector series protection caps for tab and receptacle housings help protect the connector interface when the two halves are not mated.



HOW CUSTOMERS ARE USING HEAVY DUTY SEALED CONNECTORS

Heavy duty sealed connectors provide reliability and performance on the engine or transmission, under the hood, on motor controllers and solenoid interfaces, on the chassis, or in the cab - basically anywhere high temperature and vibration resistance is crucial. This includes brake units, actuators, switches, level sensors for fuel, hydraulic pumps and more.

Some heavy duty sealed connectors and terminators meet CAN bus protocol specifications according to the SAE J1939 standard and are fully compatible with our heavy duty sealed connector series accessories such as the heavy duty sealed connector series 3-pin plug and its backshell or dust cap. Customers use these for CAN signal communication systems in buses, heavy duty trucks, and agricultural and construction equipment.

The Y-bus connector can be used with TE's 3-position heavy duty sealed connector series to turn one signal from one heavy duty sealed connector into two signals that can be sent to two devices or applications within the system.

Overall, the heavy duty sealed connector series design allows for flexibility while maintaining a protected, vibration-resistant, and sealed connection. Capable of being used in wire-to-wire, wire-to-device, free-hanging, and feedthrough applications, they can serve a wide variety of purposes within a vehicle.

A LEADER IN CUSTOMER-FOCUSED INNOVATION

TE was the first to bring our sealed connector series to the market. We developed the product and keep innovating the interface and design based on technology trends and customer needs. Over the years, we have expanded our heavy duty sealed connector series portfolio to bring new solutions to the customer, and the line is still growing. We have added product variations - flangeless, flanged, and different keying, as well as different position groups and cable sizes within one connector.

Finding ways to solve customer problems as well as increasing reliability and performance in harsh environments are just some of the ways TE lives up to its purpose of creating a safer, sustainable, productive and connected future.



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