

Company: **Watling JCB**

Industry: **Industrial/Industrial Plant**

Application: **Earthmovers/Excavators**

Component: **Electrical Connector**

Background

Watling JCB sell new and used JCB excavators, loaders and other JCB construction machinery. Service engineers were experiencing water ingress issues on the engine to chassis harness connector (known as the interconnect), the resulting corrosion of the connector pins causing loss of connectivity over time. This connector which has a critical role on JCB platforms, is up to 29 way, 12 volts and is an IP69 rated twist lock design. Water ingress was occurring due to capillary penetration of moisture through the gland and connector housings to the contact surface area on multiple pins. Degradation of the connector resulted in expensive and time consuming replacement of connector and loom section.



Challenges

A typical working environments for a JCB excavator/earthmover is very harsh; even properly mated connectors can be exposed to oxygen, moisture, dust and aggressive gases.

Proposed Solution

- A **connector grease** containing a **hydrophobic thickener** to make the product water repellent.
- A **dielectric** connector grease is necessary so there is no short circuiting of pins when a grease is applied.
- The connector grease must seal the contact area and **resist environmental contamination**.
- There must be **no increase in contact resistance** across terminations as a result of using a connector grease.
- The grease should be durable and have a **long functional life** to protect the connector for many years.

Product Selection

- **Nyogel 760G**



Applying The Grease

Normally only a thin coating of the Nyogel 760G is required for product to be effective, especially when the 760G is being used for fretting corrosion prevention. In this case study the grease is primarily being used as a moisture barrier so it is important that the grease is applied to all the points of moisture entry. A liberal application of the 760G is recommended but care should be taken not to overfill this JCB connector as it is sealed/IP rated, so excess grease cannot escape out through the back of the connector.

Most JCB service engineers treat both the male and female side of the connector to ensure every contact area is treated.



Results

The Nyogel 760G connector grease met the customer requirements and was successful in preventing connector failure due to water ingress and the subsequent corrosion.

Nyogel 760G is the 'go to' connector grease. The Polyalphaolefin base oil of the grease has good thermal stability and is compatible with most connector plastics. The hydrophobic silica used as a thickener in the formula gives the water resistance characteristics required. The strong additive package of Nyogel 760G helps to prevent any verdigris and the UV dye aids detection of the translucent grease in thin layers.

The application of Nyogel 760G in JCB wiring loom connectors prevents costly repair and replacement work.