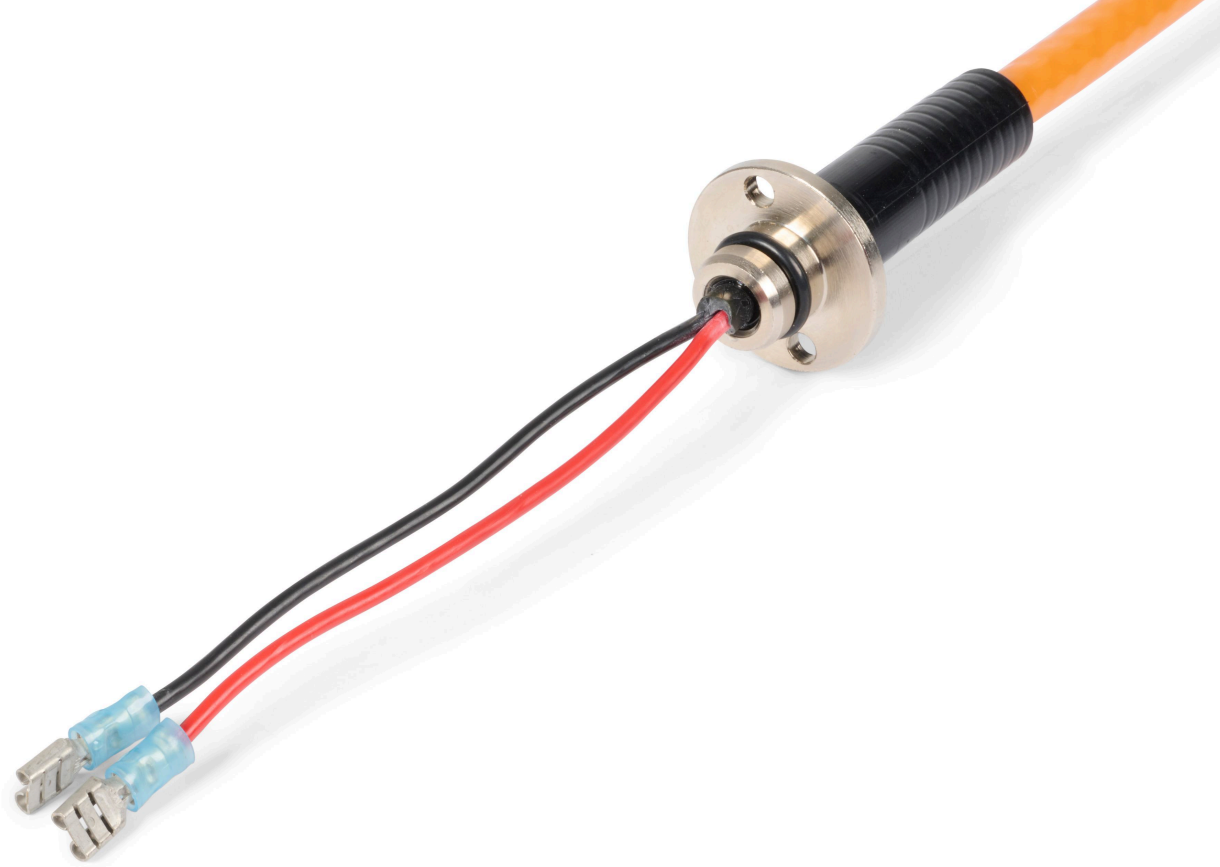


Rugged meets precision

Engineered cable assembly for demanding hydraulic rescue shoring systems



2Connect



Reliable connectivity through smart mechanical design

An OEM customer in the hydraulic equipment and services industry, active in rescue, special tactics, and industrial applications, required a custom cable assembly for a next-generation hydraulic shoring and stabilisation system. This system is used to secure vehicles and structures during emergency operations — where safety, reliability, and usability are critical.

2Connect was selected as development partner for its ability to combine customized engineering, specialized materials knowledge, and flexible in-house manufacturing into a single, integrated solution.

The goal was to develop a cable assembly that would perform reliably under high mechanical loads, maintain watertight sealing, and remain easy to operate in fast-moving field conditions.

Outlining the scope

The customer's system required a cable assembly that could perform reliably under demanding mechanical and environmental conditions. This combination of requirements made the project particularly complex, calling for a solution that went beyond standard cable assemblies — one that would integrate multiple engineering disciplines from the outset.

The core requirements were clear:

- Withstand 40 kg tensile force from any direction
- Maintain IP67 performance rating during operation and cleaning
- Fit within a compact hydraulic support cylinder, and
- Remain easy to operate with gloves in urgent field conditions

Engineering the solution

Based on the system's performance requirements, 2Connect's engineering team developed a reinforced chassis-to-connector assembly designed for both mechanical robustness and long-term reliability.

To meet the mechanical and environmental demand, 2Connect designed a fully custom chassis-side construction. The design centers on a crimp ring that mechanically connects the cable's braiding directly to the chassis, creating a strong and stable load path. This interface is then overmolded with a flexible yet robust plastic layer. The overmold absorbs mechanical forces, provides strain relief, and enables the assembly to withstand the required 40 kg tensile strength, while also ensuring a dependable IP67 seal.

On the connector side, a different approach was chosen. Instead of a bespoke design, 2Connect leveraged its broad supplier network to identify a proven connector that offered durability and easy operation, even with work gloves.

Together, the custom chassis interface and the selected connector formed a **compact, reliable, and user-focused cable assembly** that met all functional, mechanical, and operational requirements.

Design and validation

With the concept defined, 2Connect refined every design element to ensure manufacturability, consistency, and long-term performance. The engineering team modelled the assembly's geometry and mechanical interfaces in detail, simulating load paths and stress behavior under various angles and operating conditions.

Prototypes were produced and subjected to an extensive validation process, including:

- Mechanical tensile testing to confirm resistance to 40 kg of force from multiple directions
- Ingress protection testing to verify IP67 sealing performance
- Functional and ergonomic testing simulating real-world operation with gloves, tools, and limited visibility.

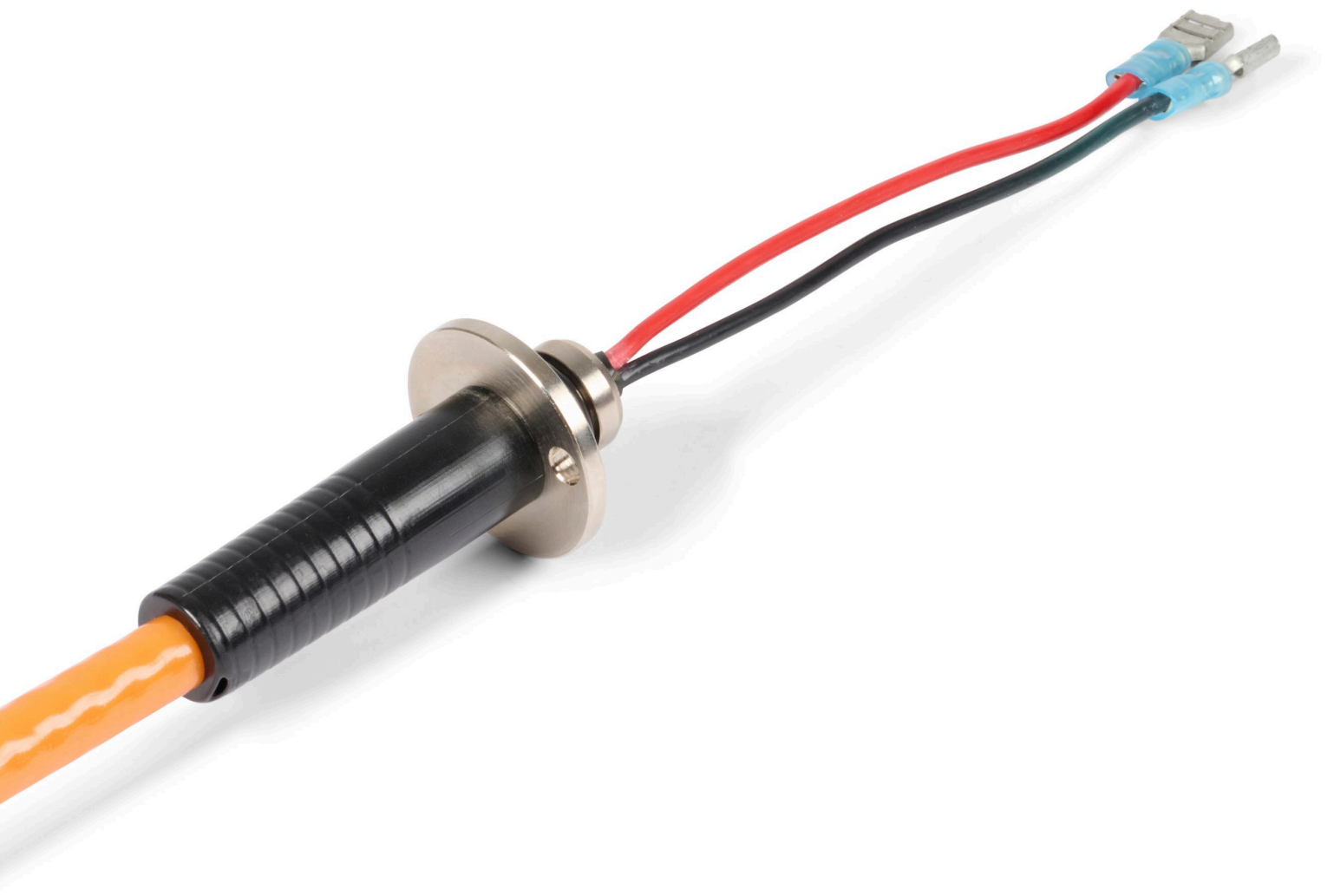
Feedback from this iterative validation process, carried out in close coordination between R&D, production engineering, and quality teams, enabled fine-tuning of the specifications and design to ensure the assembly met the mechanical and usability requirements consistently.

From prototype to production

Following validation, the design was transferred to series production. The focus at this stage was ensuring that the assembly could be produced consistently and efficiently while maintaining the performance levels demonstrated during testing.

Each cable assembly undergoes comprehensive inspection and quality control, including mechanical load checks, sealing verification, and visual inspection of the molded interface. These checks ensure that every produced unit meets the specified mechanical, environmental, and ergonomic requirements.

Thanks to 2Connect's flexible high-mix, low-volume production capabilities, the assembly can be manufactured efficiently in smaller series without comprising on quality or lead time; an essential requirement for specialized OEM applications.



Key advantages

✓ Reliable performance in demanding environments

IP67 sealing and mechanical reinforcement guarantee consistent operation under harsh conditions.

✓ Robust mechanical design

The innovative crimp-and-overmold construction withstands 40 kg of pulling force from any direction.

✓ User-friendly operation

Designed for easy handling, even with work gloves and limited visibility.

✓ Compact and precise fit

Integrates seamlessly into tight system housings without compromising strength or flexibility.

✓ Tailored engineering approach

Developed through close collaboration and cross-disciplinary expertise to meet specific OEM requirements.

Building on partnership

This project demonstrates how 2Connect's co-engineering approach turns complex requirements into practical, reliable interconnect solutions. By combining mechanical engineering, materials expertise, ergonomic considerations, and flexible manufacturing, 2Connect delivered a cable assembly that performs consistently in a safety-critical hydraulic rescue system.

From early conceptual design to validated series production, the project underlines 2Connect's ability to support OEMs with custom, high-performance connectivity solutions, especially where standard market options fall short.

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