Baker Hughes

CentriLink SHIELD harsh-environment motor lead extension

Improve ESP system longevity in harsh downhole conditions

In wells where harsh downhole conditions can impact the electrical integrity of electrical submersible pumping (ESP) systems, Baker Hughes has developed the **CentriLink SHIELD™ harsh-environment motor lead extension (MLE)**. Adapted from field-proven Baker Hughes safety valve technology for completions in the most extreme deepwater environments, the robust design mitigates the potential for gas and fluid ingress into the motor and the power cable to ensure the electrical integrity of the ESP. Additional design features prevent installation-related MLE issues that can negatively impact system reliability.

The CentriLink SHIELD MLE is comprised of three metal-on-metal primary seals that feature a compression fitting assembly attached to non corrosive Monel encapsulated copperconductors. The seals seat securely into a tapered port in the motor head assembly.

By eliminating the elastomeric materials and 66% of the potential leak paths typical in standard plug-in MLE designs, the CentriLink SHIELD MLE handles pressure changes and reduces the potential for H_2S migration into the motor and cable—which can cause catastrophic damage from rapid gas decompression. Individually encapsulated conductors allow the ESP system to continue operating even if one conductor shorts out. This allows operators time to plan an intervention and avoid production interruptions. The optimally spaced conductors also mitigate electrical arcs that lead to phase-to-phase electrical failures.

A key feature of the CentriLink SHIELD MLE is the pressure test ports. These ports allow field service personnel to verify that a tight seal has been achieved prior to running the ESP down hole. The ports are located above the seals to prevent introducing a potential leak path. All three seals are pressure tested simultaneously to minimize the time required to complete the process.

Because the MLE is traditionally the most vulnerable component in an ESP system during installation, the CentriLink SHIELD MLE was designed with a low-profile, recessed connection to the motor to prevent possible damage as the ESP is deployed down hole. The self-aligning connection reduces installation time and, more importantly, eliminates the potential for human error during the MLE-to-motor connection process.

The CentriLink SHIELD MLE seamlessly integrates with **CENtrilift™ XP motors** and **CENtrilift XP motors with Vanguard™** construction.

Applications

- Wells with high levels of H_2S
- Wells with high gas content
- Wells that experience thermal cycling
- Wells with high intervention costs

Features and benefits

- Metal-on-metal primary seals
  - Prevents H_2S migration into the motor and cable
- Pressure test port
  - Confirms proper connection prior to deployment
- Noncorrosive metal-encapsulated conductors
  - Provides impermeable barrier to gas and fluid
  - Prevents leaks due to corrosion
  - Offers redundancy if one conductor shorts out
- Minimal fluid leak paths per conductor
  - Mitigates potential fluid ingress into the motor
- Optimally spaced conductors
  - Prevents shorts due to electrical arcs
- Recessed connection
  - Prevents damage during ESP installation
- Self-aligning connection
  - Speeds installation
  - Eliminates potential human error

Specifications

	Connection temperature limit	Cable temperature limit	Conductor size(s)	Port profile	Voltage limit	H_2S duty	Motor series
CentriLink SHIELD	325°F (163°C)	450°F (232°C)	#4 awg	3 port	5kV	Yes	562 CENtrilift XP motor with SHIELD motor head
CentrilLink 12	400°F (205°C)	500°F (260°C)	#5 awg	Obround	5kV	No	450 and 562
CentrilLink 12 H_2S	350°F (177°C)	500°F (260°C)	#5 awg	Obround	5kV	Yes	450 and 562
CentriLink 20	400°F (205°C)	500°F (260°C)	#3 and #4 awg	Round	5kV	No	562
CentriLink 20 H_2S	350°F (177°C)	Lead: 450°F (232°C) Barrier: 400°F (205°C)	#3 and #4 awg	Round	5kV	Yes	562

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