

LCM4643-ATEX 12te Load Shackle with ATEX Display and Alarm System



Application

Umbilical roller sheave load monitoring

Features

- Manufactured using 12te Crosby G2130 bow shackles
- Supplied with load bobbins for optimal accuracy
- Load pins manufactured from 17-4PH H1150 stainless steel
- Environmentally sealed to IP67
- DIS-323AL ATEX certified displays
- PMD-PROCESS panel mounted displays for Safe Area
- Audio and visual alarms
- 3-channel ATEX certified aluminium load cell termination junction box
- 3-channel ATEX certified aluminium system termination and feedthrough junction box



Design Brief

This requirement was for an international offshore drilling contractor that provides oilfield services for offshore oil & gas production, specialising in the ultra-deepwater sector. They needed ATEX Zone 2 rated load shackles with displays and alarms for one of their deep water drillships that was being deployed off the Angola coast on the ultra-deepwater Kaombo project. Due to their clients stringent rules regarding hazardous areas, they needed certified products in order to comply. LCM Systems designed a system to meet their requirements that comprised of 3 x 12 tonne



load shackles and an ATEX junction box to be situated at the top of an A-Frame, which was wired to another ATEX junction box at its base and connected to 3 channel ATEX display and alarm system (see photo below). Also connected to this junction box was an additional display and alarm system located below deck in the driller cabin, which, because it was located in the Safe Area, was not required to be ATEX certified. Due to the harsh operating

environment, all cable supplied was RFOU (I) 250V armoured mud resistant power/instrumentation cable, specifically designed for safety critical systems in both EX and safe areas.

The load shackles were required to monitor the loads on umbilical roller sheaves as they payed out the hose to ensure that it did not become sagged and to check that the hydraulic hose reels were operating correctly. Each load shackle had its own display to show the individual loads, and all three were set to trigger an audio and visual alarm in the event of a pre-set limit being reached. A second display and alarm system was incorporated into the drilling cabin for remote system monitoring.

We subsequently received an identical order for the same system for another deep water drillship operator working on the same project.

Main Criteria

- Load shackle and display/alarm system must be certified for use in Zone 2 hazardous areas
- Customer specified trip levels for each load shackle to be set
- Integrated dual alarm systems for above and below deck required
- System must be suitable for use in an offshore environment
- Full material traceability required
- Load shackles to be calibrated to traceable standards



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APPLICATION NOTE

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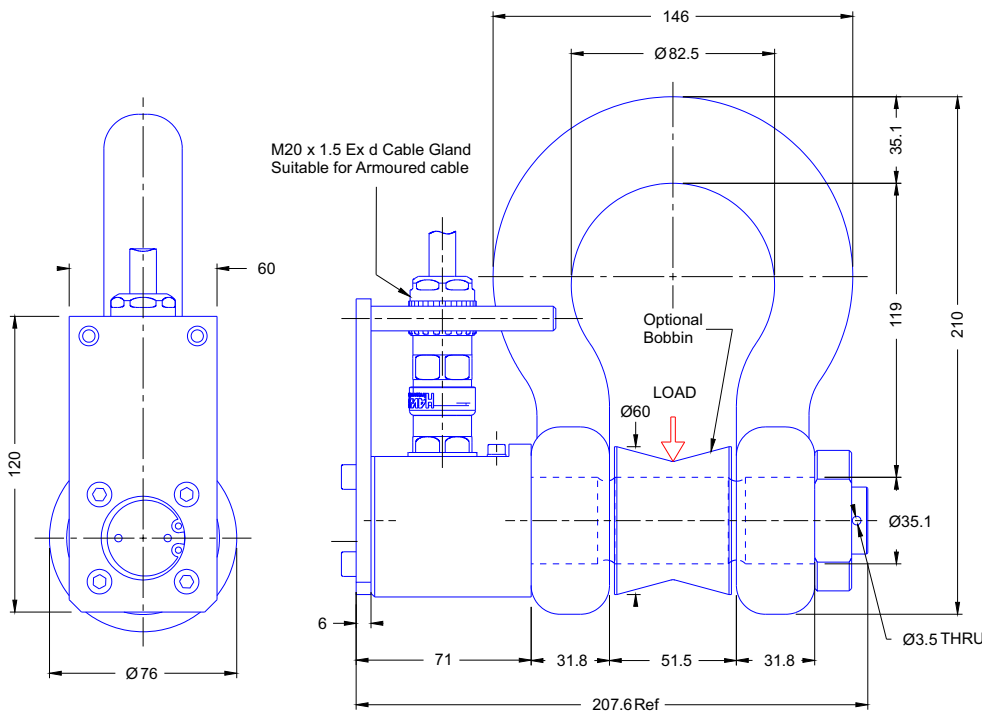


Specification

Load Shackle

Rated load (tonnes)	12te
Proof load	150% of rated load
Ultimate breaking load	>300% of rated load
Non-linearity	<±1% of rated load (typically)
Non-repeatability	<±0.1% of rated load
Operating temperature range	-20°C to +55°C
Compensated temperature range	-10°C to +50°C
Zero temperature coefficient	<±0.01% of rated load/°C
Span temperature coefficient	<±0.01% of rated load/°C
Environmental protection level	IP67
Cable	4 core PUR (armoured)
Cable length	10 metres

Dimensions



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