

LCM4487 Load Pin for Diving Bell Lifting System

Application

Verification of diving bell weight

Features

- 1000kN load pins
- Manufactured from 17-4PH stainless steel
- Environmentally sealed to IP67
- Integral amplifier providing 4-20mA output
- 3.1 Material Certificates supplied
- Charpy testing to Min 27J @ -60°C

Design Brief

For this project, we were contacted by a manufacturer of diving equipment, who were interested in having custom design load pins manufactured that were suitable for use in a marine/offshore environment.

Because they would be used in a lifting application that involved personnel, the traceability requirements were high, with 3.1 material certificates and charpy testing required. These load pins were required to measure the loads applied to the handling systems of the diving bells. The diving bells are lifted ready for deployment through a dedicated opening in the centre of the vessel called a moon pool, and are also recovered using the same lifting system. Next to the moon pool there are a series of vertical sheaves, which connect to the diving bell. The plan was to have load pins installed in these sheaves to determine the weight of the diving bell. This would ensure that there were no overload situations, which could potentially endanger the personnel inside.



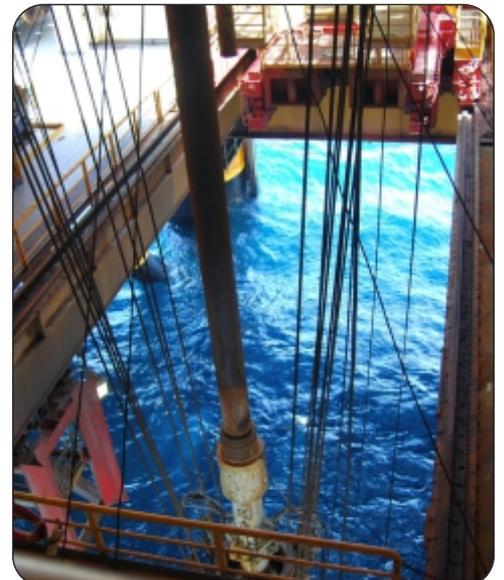
Four load pins are installed per moon pool lifting system, each rated to 1000kN.

Manufactured from stainless steel and with environmental sealing to IP67 for suitability in a marine environment, the load pins feature an internal amplifier to provide 4-20mA output. This allows the load measurement data to be exported direct to the vessels PLC system, where the results can be displayed and monitored for safety purposes.

The load pins were designed, manufactured and delivered within the required time frame, and the customer was very happy with their performance. They have since gone on to place orders for several more systems.

Main Criteria

- Load pins must be suitable for use in a marine/offshore environment
- Load pins to have greasing hole with M10 x 1 connection and M110 x 2 external thread
- Charpy testing required
- Certificate of conformity required
- 4-20mA output required for direct import to a PC/PLC
- Full material traceability required
- Calibration certificate required



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APPLICATION NOTE

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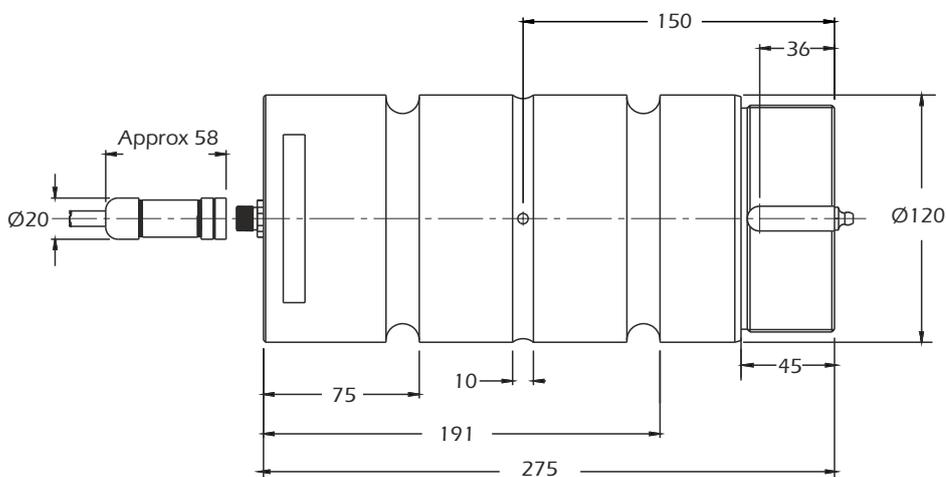


Specification

Rated load (kN)	1000kN
Proof load	150% of rated load
Ultimate breaking load	>500% of rated load
Impact toughness (Charpy)	Min 27J @ -60°C
Non-linearity	<±1% of rated load
Non-repeatability	<±0.05% of rated load
Output	3 Wire 4 to 20 mA (ICA4)
Excitation Voltage	10 to 30 VDC
Insulation Resistance	>50 MOhm @ 50 VDC
Operating temperature range	-20 to +70°C
Compensated temperature range	-10 to +50°C
Zero temperature coefficient	<±0.01% of rated load/°C
Span temperature coefficient	<±0.01% of rated load/°C
Cable	4 Core PUR (10 Metres)
Environmental protection level	IP67 with connector mated

Dimensions

All dimensions are in mm



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APPROVED

(unapproved if printed)