

Description

The LCM range of Shackle Load Cells is designed for lifting and weighing in rugged or harsh environments.

The shackle pins are forged from high tensile carbon steel and are machined to an exacting specification. The basic shackle uses the Crosby G2150.

This range of load cells is Proof Loaded to 150% of the normal rated load.

The SHK-D series are available in a range from 1 tonne to 35 tonne. The integral cable is normally enclosed in an armoured rubber hydraulic hose to give physical and environmental protection. The SHK-D is internally gauged and the whole instrumented area is sealed to IP66, to protect it in service.

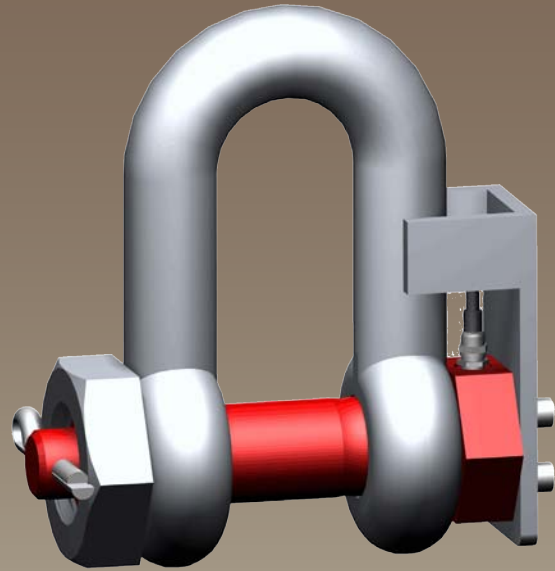
They are simple to install and are available in standard shackle sizes. As an option, a rotating bobbin can be supplied, to centralise the load and to minimise any point-load effects when the shackle is placed under load.

We are always pleased to discuss any special requirements that can be accommodated. The SHK-D series can be supplied on it's own or combined with our extensive range of instrumentation to provide a complete load monitoring system.

Typical Applications

- Under-hook Hoist/Crane Weighing
- Cable Tension Monitoring
- Towing/Mooring Tension
- Crane Safe Load Monitoring

SHK-D Shackle Load cell



Features

- Ranges 1tonne to 35tonne
- High Tensile Carbon Steel Construction
- Environmentally Sealed to IP66 (IP67 can also be offered)
- Simple installation and operation
- Shackle and load pin fully certified
- Optional load centralising bobbin
- Can be supplied with integral signal conditioning
- Many other options available

Shackle Load cell

Specification

Rated Load (tonnes):	1, 2, 3¼, 4¾, 6½, 9½, 12, 15, 25, 35		
Proof Load:	150% of Rated Load		
Ultimate Breaking Load:	300% of Rated Load		
Output:	1.5 mV/V at Rated Load (nominal)		
Non-Linearity:	< ±1.0% of Rated Load (typically)		
Non-Repeatability:	< ±0.10% of Rated Load		
Excitation Voltage:	10vdc recommended, 15vdc maximum		
Bridge Resistance:	350Ω		
Insulation Resistance:	>500MΩ @ 500vdc		
Operating Temperature Range:	-20 to +70°C		
Compensated Temperature Range:	-10 to +50°C		
Zero Temperature Coefficient:	< ±0.010% of Rated Load/°C		
Span Temperature Coefficient:	< ±0.010% of Rated Load/°C		
Environmental Protection Level:	IP66 (IP67 optional)		
Connection Type:	10 metre 4-core screened PUR cable (glanded exit)		
Wiring Connections:	Red	-ve supply	Blue -ve supply
	Green	+ve signal	Yellow -ve signal
Options Available	Special ranges available Special electrical connections Integral signal conditioning Centralising Bobbin Subsea and Offshore versions Lloyd's, ABS or DNV witness testing		

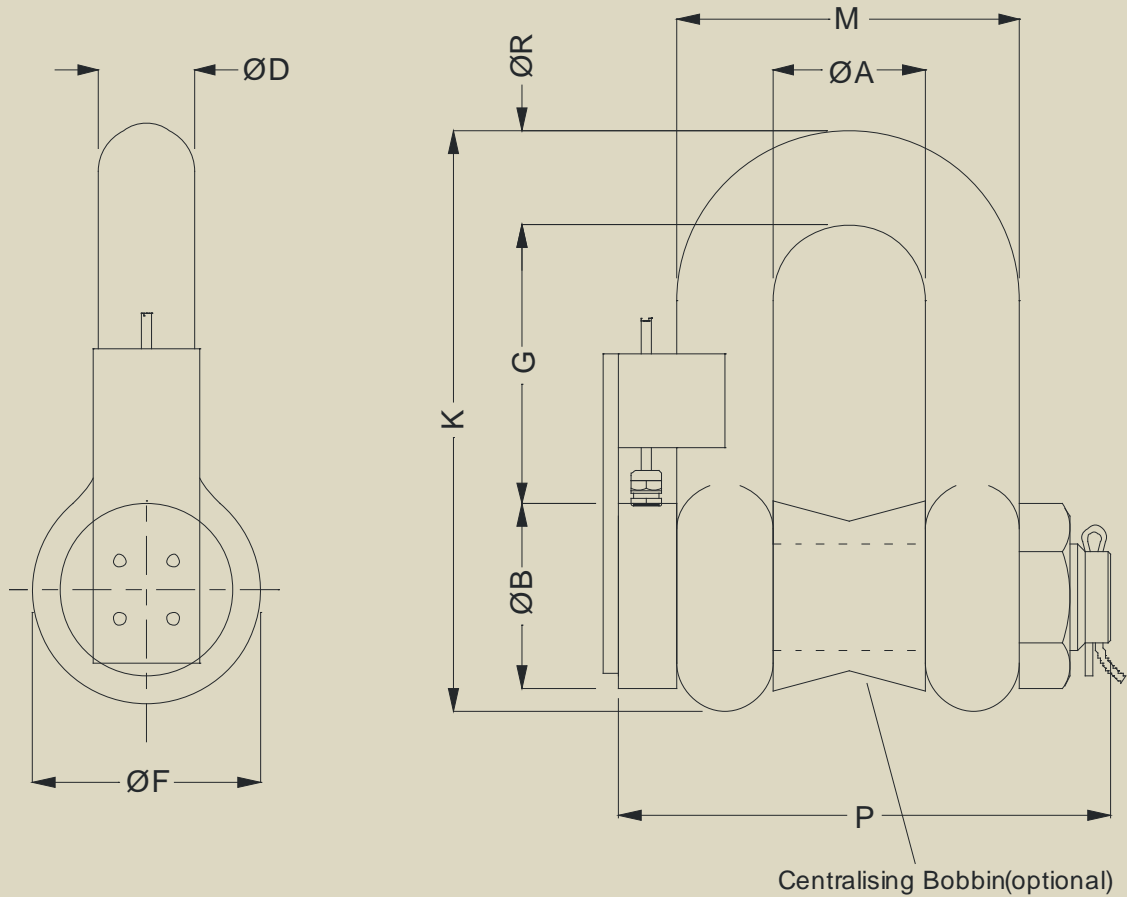
Specification (for options)

All specifications for options are as detailed for the standard shackle, unless otherwise stated

Special Ranges	The SHK-D can be supplied in any range, between 1te and 400te and calibrated as required. Usually we will choose the nearest standard shackle size. We can also offer special design shackles up to 2000te. Consult our design team for more details.
Special Electrical connections	The standard SHK-D cable exits the shackle pin via a gland and is restrained using the anti-rotation bracket. We can offer variations to the electrical connection method. For example, integral connectors, special cable length etc. For more details contact our office.
Integral Signal Conditioning	We can offer various integral signal conditioning options, including:- <u>Analogue Signals:</u> 4-20mA 2-wire current output (7.5 to 28vdc supply) 4-20mA 3-wire current output (13 to 28vdc supply) 0-5vdc 3-wire voltage output (8.5 to 14vdc supply) 0-10vdc 3-wire voltage output (13 to 30vdc supply) <u>Digital Signals:</u> RS232 digital - various protocols (5.4 to 18vdc supply) RS485 digital - various protocols (5.4 to 18vdc supply)
Centralising Bobbin	We can offer an optional centralising bobbin. This can help improve the overall Bobbin accuracy in certain cable tension applications. The bobbin is shown pictorially in the drawing below. For further information, please contact our design team.
Subsea or Offshore	We are able to offer fully submersible versions, which are normally supplied with underwater mate able connectors. These versions can also be pressure tested by LCM and witnessed by a third party at any point through the manufacturing process. We regularly have ABS, Lloyds or DNV inspectors on site.
Radio Telemetry	We have a version available that requires no cable connection, using radio telemetry to transmit data. There is a separate data sheet available for this product (TELSHACK-D).

Mechanical Dimensions

All dimensions in millimeters



Model	Range working load (tonne)	ØA	ØB	ØD	ØF	G	K	M	P	R	Weight (kg)
SHK-D-1	1	16.8	11.2	9.65	23.1	31.0	58.5	35.8	55.0	9.65	2
SHK-D-2	2	20.6	16.0	12.7	30.2	41.4	77.0	46.0	84	12.7	2.2
SHK-D-3.5	3½	26.9	19.1	16.0	38.1	51.0	95.5	58.5	89.5	16.0	2.4
SHK-D-4.75	4¾	31.8	22.4	19.1	46.0	60.5	115	70.0	103	20.6	2.8
SHK-D-6.5	6½	36.6	25.4	22.4	53.0	71.5	135	81.0	120	24.6	3.5
SHK-D-9.5	9½	46.0	31.8	28.7	68.5	91.0	172	103	150	31.8	6
SHK-D-12	12	51.5	35.1	31.8	76.0	100	191	115	165	35.1	8
SHK-D-17	17	60.5	41.4	38.1	92.0	122	230	137	196	41.1	10
SHK-D-25	25	73.0	51.0	44.5	106	146	279	162	230	54.0	15
SHK-D-35	35	82.5	57.0	51.0	122	172	312	184	264	60.0	22

Due to continual product development, LCM Systems Ltd. reserves the right to alter product specifications without prior notice.

Issue Date: 24/9/2008

Unit 15, Newport Business Park
Barry Way, Newport, Isle of Wight, PO30 5GY
United Kingdom
Tel: +44 (0) 1983 249264
Fax: +44 (0) 1983 249266
Email: sales@lcmsystems.com

LCM
SYSTEMS

www.lcmsystems.com

TYPE: SHK-D