

Product Guide



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CLMS

CALIBRATION & TESTING

- Water weights & bags
- Beam proof load
- Crane/hoist loads
- Bollard pull for vessels
- Force calibration
- Hydraulic presses
- Laboratory weighing & calibration

INDUSTRY APPLICATION

- Wind turbine installations
- Warehouse despatch
- Subsea vehicle lifting
- Subsea cable laying, recovery & repair
- Subsea ploughs
- Anchor systems
- Mooring systems
- Under hook crane weighing
- Pipe laying ships
- Structural joints
- Hydraulic pressesLifting systems
- A sus sus ses slaveler
- Aerospace development

MONITORING & MEASUREMENT

- Cable tension
- Towing
- Mooring
- Crane safe
- Anchor line tension
- Static wire tension
- Winch load
- Elevator cable
- Speed
- Payout distance
- Jacking force
- Pile force
- Sheave/pulley system line tension
- Container weighing
- Centre of gravity weighing
- Overload protection

Strength to get the job done.

QLMS

Why choose LMS?

Based in Aberdeen Scotland, Load Monitoring Systems (LMS) specialise in the design and manufacturing of load monitoring products and services, including sales and rental of load cells, winch monitoring systems and Crane Safety Instrumentation.

The products are engineered to the highest standards, defined by quality, strength and reliability and used globally for a wide variety of applications, across many industry sectors including, Oil & Gas, Marine, Subsea, Decommissioning, Construction, Mining, Wind Energy, Aquaculture & Entertainment.

With over 50 years' experience in specialist load monitoring, LMS products and services are being supplied to over 45 countries and most continents, often with support from local distributors and agents. LMS has a proven track record developing a range of products and services tailored around our customer requirements and continues to build the business and extend its offering with increased rental stock, larger capacity equipment and by providing a 'FAST-TRACK' repair and calibration service, specifically created to support customers where turnaround time frames are critical.

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We would be delighted to discuss your requirements

Call: +44 (0) 1224 446100. www.loadsystems.co.uk LMS@loadsystems.co.uk

We specialise in the design and manufacture, rental and sales of load monitoring equipment for industrial applications across many industry sectors worldwide.

Harbour Crane Load Monitoring

ASCO, an organisation with global expertise in the area of oil and gas materials and equipment management, needed to monitor crane loads in their supply base locations around the world.

Load Monitoring Systems (LMS) took on the project and developed a custom load link system.

LMS manufactured Load Cells, Mantracourt's T24 wireless telemetry instrumentation and strain gauges by industry-leading manufacturer Micro-Measurements were used. ASCO's sites operate in extreme weather conditions and the application was a test for the reliability of all components in the system. It was installed in 2014 and continues to prove its quality with ongoing faultless service.









"The installation of Load Monitoring Systems load cells and Mantracourt T24 technology across our operations has helped us to accurately monitor weights whilst feeding live information back into our operational systems. The interface with our Integrated Logistics Management System, has provided us with increased efficiencies and enhanced planning capabilities. The measurements have been accurate and reliable, even in challenging conditions."

Greg Skinner, Project Manager











Application

ASCO operate cranes in supply bases across the world, from Hammerfest in Norway to Darwin in Australia. Load Monitoring Systems (LMS) used Mantracourt's T24 wireless strain transmission module and Micro-Measurements strain gauges on their manufactured Load Cells to meet the requirements. The system has proved its quality by overcoming the challenges of the application, something the previous generation of solutions couldn't achieve.

Challenge

The nature of the application meant that large distances had to be covered reliably by the system. Signal integrity had to be sufficient for the system to continue functioning at times when the line of sight between the load links and the receivers was obstructed by the body of the ships. In addition, the application required that the data from the readings is easily visible from anywhere on the base - not just the control room. This way, supervisors would be able to monitor weights as they coordinate loading operations.

Solution

The system, designed, manufactured and assembled by LMS, picked up the signal from T24 transmission modules in load links and pushed it to the web as shown in the diagram above. This allowed for readings to be monitored using any cellular enabled device by accessing a dedicated web address. Overload warnings were in place, which simplified monitoring.

The JSON input provided by LOG100 web server is an ideal way of monitoring device readings in applications with lower levels of complexity. A link with visual the interface is automatically generated by the software. JSON packages containing the key information around a reading are also available to feed customised web interfaces. The web view can be made accessible either from the same network only, or forwarded to the internet, as was the case with Load Monitoring Systems' project.

Results

All technology has successfully proved itself in the face of the challenges offered by the application. The first of ASCO's systems has now been in service since 2014 and the pilot project has been replicated in an additional three locations of the company.

Key Benefits

- Load data reviewed wirelessly from tablets anywhere in the harbour.
- Accurate measurements under a wide range of temperatures made possible by Micro-Measurements strain gauges.
- Robust system that functions faultlessly under severe weather conditions.
- No cabling required on cranes. Load links are powered by batteries, which only need to be replaced in six-month intervals during routine maintenance.
- High signal integrity allows transfer of load data even with obstructions.



Rentals

When there's a need for load testing, rental is often the easiest and most cost effective solution.



Rental Equipment

- Load Links 1Te 500Te
- Load Pin Shackle 3.25Te 500Te
- Data Logging
- Data Logging
- Load Cell Displays

Proof Load Testing Equipment

• Water Bags & Test Weights

Lifting and positioning

• Equipment: Range of Air Skates

Applications

• Water Weights & Bags

LINE

- Payout Distance
- Towing
- Container weighing
- Winch Load
- Crane/Hoist Loads

Ready when you need it.

Trusted Rental Partner

Each rental item is fully maintained, checked and certified before leaving our facility so you can be confident it's ready to go as soon as it arrives on location.

Rental periods are flexible from a single day to longer-term hire, just give us a call to discuss your requirements and we'll provide you with a competitive quote.







Training

All equipment is supplied with relevant documentation including comprehensive operating instructions and certification.

LMS can provide training at our facilities should this be a requirement. Training covers all aspects of set up and operation and comes with our own proofof-completion certificate.

Load Link

Accurate and reliable tensile load monitoring for lifting applications.

Suitable for all industry sectors including marine, offshore and subsea. Due to the robust, lightweight high tensile aluminium design these load links are Ideal for mobile applications and available as either cabled or wireless with a range of options.

Retro-fit load monitoring to existing applications where shackles are already available and fits all major shackle manufacturers including Van Beest, Crosby and GN Rope.





Options





Rent this item

Cabled with 49.2ft flying cable Data Logging Software Available

ATEX version

(Ex)

Specifications								
Overload Tested (F	Proof Load)	200% rated load (6.5te - 250te sizes) 150% rated load 300te and above						
Minimum	5Te to 400Te	500% rated load						
Breaking Load (MBL)	500Te	450% rated load						
Dead Load Offset		+/- 0.1mV						
Accuracy		< 0.5% of applied load						
Repeatability		< +/- 0.1% of applied load						
Hysteresis up to FS	S	Minimal						
Operating tempera	ature	-20°C to +70°C						
Environmental Rat	ing	IP67						
Range		800 Meters (straight line uninterrupted view)						
Transmit rate		900ms (standard)						
Antenna (Wireless	Version)	Internal						
Radio (Wireless Ve	ersion)	2.4 Ghz; worldwide licence free						
		Analogue signals						
		4-20mA in 2 or 3 wire output with 10-30VDC supply						
Cabled Version Ou	tout Signals	0-5VDC or 0-10VDC 3-wire output with 10-30VDC supply						
Cabled Version Oc	itput signals	Digital signals						
		RS232 with a protocol of your choice with 5-20VDC supply						
		RS485 with a protocol of your choice with 5-20VDC supply						
Cable Version Con	nection Type	Load link with plug-in socket and 15m, 4-core screened PUR cable with						
		matched plug-in connector fitted. Other types on request.						
		6.5Te - 35Te Load Link - 2 x AAA 1.5V @ 500+ hours (continuous)						
		55Te - 85Te Load Link - 2 AA 1.5V @ 1200+ hours (continuous)						
Battery Type /	Load Cells	100Te - 500Te Load Link - 2 x C 1.5V @ 2000+ hours (continuous)						
Lifespan		Battery changes are reduced when device is put on sleep mode during						
		12 month calibration windows.						
	Display	2 x AA 1.5V batteries @ 40 hours (continuous)						
Calibration		12 months (calibration service available)						
Warranty		12 months						
Material Finish		Lightweight, high tensile grade aluminium, hard anodised for marine						
		environments.						
Traceability and Safety Compliance		BS EN ISO 7500-1:2004, Machinery directive 2006/42/EC (SI 2008/1597)						
ATEX Options								
Zone 2		Standard options (wireless and cabled)						
Zone 1		Standard options (wireless and cabled)						

Stainless steel construction, cabled options - contact LMS for more details

Features

- Load link designs from 6.5Te to 500Te as standard other capabilities on request
- Designed to be rigged & operated with a Working Load Link (WLL) of the same capacity
- Safety factor of 5:1
- Accuracy <0.5% of applied load
- ATEX versions available for zones 0, 1, & 2
- Subsea variants available on request
- Every unit load tested and certified



Zone 0





С



						Lo	ad Link I	Dimensio	ns mm							
Capacity Tonne	1	3.25	6.5	13.5	17	25	35	55	85	100	150	200	250	300	400	500
A	52	60	84	84	93	127	157	183	198	220	272	331	353	398	490	540
В	151	183	238	292	302	332	436	470	518	590	695	769	829	937	1037	1137
С	31	31	32	45	50	60	70	85	104	124	136	150	175	168	198	198
D	117	133	162	182	182	206	256	286	310	350	395	419	469	517	547	607
ØE	12	20	27	40	43	55	61	75	86	100	118	135	145	158	180	190
G	58.5	66.5	81	91	91	103	128	143	155	175	197.5	209.5	234.5	258.5	273.5	303.5
Weight (kg)	0.3	0.6	1.5	6	6.5	7	12	15	23	37	63	93	135	186	228	322
						Load Li	nk & Sha	ckle Dim	ensions r	nm						
н	221	312	397	556	592	702	807	1006	1201	1435	1533	1815	1977	2183	2398	2588
I	201	280	353	486	516	612	707	876	1051	1245	1323	1575	1717	1903	2058	2228
J	25	48.5	57.5	97	107	140	135.5	203	266.5	327.5	314	403	444	483	510.5	545.5
Combined Weight (kg)	0.6	2.1	5.04	19.08	22.88	35.44	51.06	94.18	147	257	383	563	705	866	1348	1673.5
Shackle Size / Type	1	3.25	6.5	13.5	17	25	35	55	85	100	150	200	250	300	400	500
Van Beest	P-416								P-6036							
GN Rope		Н9 Н10														
Crosby		G2130 to G2140														

Load Cell Data Logging

LMS-LOG100 Advanced data logging software provides real time monitoring of up to 100 load cell devices simultaneously.

Remotely access your data quickly and easily from a computer, tablet & smart phone via web browser. Export data in standard JSON or CSV formats with customizable reporting to suit

your needs.



Displays & Portable Case

Rugged case design with foam compartments to firmly hold the load link, telemetry display, spare set of batteries. Can also accommodate connecting cable for wired units and matched set of shackles.

- Lockable case
- Plastic case available for 6.5Te 85Te
- Custom transport case 100Te 500Te



Load Pin Shackle

Robust, compact high tensile steel design from 2Te to 2000Te.

Ideal for precise tensile load monitoring for your lifting, static, pulling or weighing applications. Suitable for all industry sectors including marine, onshore, offshore and subsea.

You can be confident each shackle and load pin is up to the task with the certified load test before delivery.





Wireless & Internal Antenna

Cabled with 49.2ft

flying cable

2.A

Matched Telemetry

Displays

Data Logging

Software Available

ATEX version

Rent this item

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(Ex)



Standard Designs (Van Beest Shackles)

Capacity Te				Dimension	ns (mm)				Weight (kg)
	a	b	d	е	f	g	h	j	
3.25	16	19	16	26	63	43	110	75	1.7
4.75	19	22	19	31	76	51	129	89	1.9
6.5	22	25	22	36	83	58	143	102	3.2
13.5	35	38	35	57	133	92	227	238	6.54
25	45	50	45	74	178	126	300	216	14.22
35	50	57	50	83	197	138	331	238	19.85
55	65	70	65	105	260	180	433	310	39.59
85	75	83	73	127	329	190	527	340	62
120	95	95	91	147	400	238	647	428	110
150	105	108	102	169	410	275	688	485	160
200	120	130	113	179	513	290	838	530	235
250	130	140	118	205	554	305	904	565	285
300	140	150	123	205	618	305	996	585	340
400	170	175	164	231	668	325	1114	665	560
500	180	185	164	256	718	350	1190	710	685
600	200	205	189	282	718	375	1243	775	880
700	210	215	204	308	718	400	1263	820	980
800	210	220	204	308	718	400	1270	820	1100
900	220	230	215	328	718	420	1296	860	1280
1000	240	240	215	349	718	420	1336	900	1460

Special Designs (Crosby Shackles)

Capacity (Tonne)		Dimensions (mm)							Weight (kg)
	a	b	d	е	f	g	h	j	
6.5	24.6	25.4	22.4	36.6	84	58	148	102	3.2
25	44.5	51	49	73	178	127	313	225	18

Features

- Design uses VanBeest™ Greenpin® shackles as standard, others on request
- Load pins from high-strength stainless steel
- Safety factor of 5:1
- Up to 12 shackles can be linked to the handheld display for individual or summed load values
- Integral signal conditioning
- Subsea variants available on request
- Special design available on request



Centralising bobbin for improved load cell accuracy



Integrated aerial for added protection



Load Pin

Accurate real-time load monitoring of any load bearing pin connection or joint.

Load pins are integrated in mechanical structures and mechanisms to provide precise load monitoring accurate to 1%, safety factor of 5:1 and all proof-loaded to 150%.

Used in construction, automation, marine, offshore and subsea, these pins can be designed to suit your application with capacities from 2Te to 2000Te.







Cabled with 49.2ft flying cable Data Logging Software Available

Displays

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Matched Telemetry

ATEX version

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Features

- Output options include mV, mA, V, RS232 with others available (on request)
- Single, dual and redundant bridge designs
- Standard operating temperature -20°C to +80°C
- Plug-in connector versions available
- Integral signal conditioning available
- Enclosure IP67 as standard
- Subsea variants (on request)
- Every unit load tested and certified



Indicate preferred side for load pin head and anti-rotation plate with enquiry.

Each load pin will be designed and manufactured to suit your application, ensuring maximum performance and ease of installation.

Detailed above are the most critical dimensions. When making an enquiry, please provide these values (A, B, C and D) along with any additional requirements/restrictions due to the application such as pin length, head size etc.

Load Pin Locking

The load pin needs to be securely locked into position. This can be achieved by the following common methods:

- Single anti-rotation plate
- Double anti-rotation plate (both on one end or one on each end of pin)
- Anti-rotation plate, split pin & washer
- Anti-rotation plate and lock nut on threaded end of load pin
- Anti-rotation yoke (similar to shackles), split pin & washer

Running Line Tensiometer

For winch, crane, towing, laying and tensioning applications.

Monitor speed, payout for wire rope, synthetic rope, dyneema, fibre optic and cable systems in marine, offshore, onshore and subsea applications.

Incorporate data logging and the matched line monitor display for capacities up to 120Te.







Model	Rope Diameter (mm)	Working Tension (Te)	A (mm)	B (mm)	C (mm)	Weight (kg)
RLT-1-10	10	9	722	250	162	21.5
RLT-1-13	13	9	722	250	162	21.5
RLT-1-16	16	9	722	250	162	21.5
RLT-1-19	19	9	722	250	162	21.5
RLT-1-22	22	9	722	250	162	21.5
RLT-1-25	25	9	722	250	162	21.5
RLT-2-22	22	22.5	810	270	186	37
RLT-2-25	25	22.5	810	270	186	37
RLT-2-28	28	22.5	810	270	186	37
RLT-3-32	32	45	963	297	188	56
RLT-3-35	35	45	963	297	188	56
RLT-3-38	38	45	963	297	188	56
RLT-3-40	40	45	963	297	188	56
RLT-4-42	42	64	1029	296	198	77
RLT-4-44	44	64	1029	296	198	77
RLT-4-48	48	64	1029	296	198	77
RLT-8-52	52	90	1250	426	185	125
RLT-8-66	66	90	1250	426	185	125
RLT-8-68	68	120	1703	488	278	187
RLT-8-100	100	120	1703	488	278	187

Line Monitor Displays

Matched with our running line tensiometer featuring simple to use keyboard and clear multi-digit 0.35mm

- LCD display.
- Calibrated in tonne with weight resolution accuracy available in kg, lb or kN
- Wireless range of 600m+
- Tactile keypad
- Low power consumption for long battery life

ATEX version

Features

- 20 Running line tensiometer designs
- Line capacities up to 120Te
- Rugged design for operation in the most extreme environments
- Simple and quick access for line/rope fitting
- Marinised design ensures corrosion prevention in offshore environments
- Line mounted supplied with tether/swivel mount as standard with the options for bolt on feet or trunnion mount (pivot on 2 feet)
- Custom mounts available on request



Line Diameters from Ø10mm to Ø104mm



Use in conjunction with

LMS handheld displays



Compressive Load Cell

Compressive load monitoring indoors, outdoors or subsea.

Perfectly at home in the laboratory or hostile marine environment, the compact and robust stainless steel design can be used for weighing, force measurement and calibration.

Standard capacities from 2Te to 1000Te, accuracy better than 1% and each unit proof loaded to 200% (LOLER compliant) and certified.





Options



Cabled with 49.2ft flying cable

Data Logging Software Available

Displays

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Matched Telemetry

ATEX version

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Features

- Cells designed to your application
- Safety factor of 5:1
- Operating temperature -20°C to +80°C as standard
- Enclosure IP67 rated
- Output options include mV, mA, V, RS232 with others available, on request
- Single, dual and redundant bridge designs
- Extra support base flanges available on request
- Plug-in connector versions available
- Integral signal conditioning available
- · Subsea variants available on request



Supplied with domed top and spherical loading cap



Cabled versions with 10m glanded exit flying cable as standard. Other lengths available on request.





Typical Load Cell Sizes

Mil spec 6 pin flange

connector

Loading dia

0

Diameter

Capacity (Tonne)	50	100	200	300	500	1000	
Diameter (mm)	øA	75	120	125	150	200	290
Height (mm)	В	110	142	180	180	300	425
Loading Diameter (mm)	øC	60	90	110	130	170	250
Spherical Cap Diameter (mm)	øF	65	93	125	150	200	290
Spherical Cap Height (mm)	G	10	18	30	30	50	50

These sizes are a guide, larger or smaller sizes are available. We can design and manufacture a load cell to suit your exact application so that you achieve the maximum performance.

New Centre of Gravity Feature

The Centre of Gravity (COG) function found within T24LOG100 gives you the tools to quickly calculate and visualise centre of gravity from up to eight sources of weight data. Choose your weight data, specify the X and Y co-ordinates and let LOG100 do the work to calculate and display the position of COG.



Load Cell **Data Logging**

LMS-LOG100 Advanced data logging software provides real-time monitoring of up to 100 load cell devices simultaneously.

Quick and easy to remotely access your data on computer, tablet & smart phone via web browser. Export data in standard JSON or CSV formats with customisable reporting to suit your needs.





Load Shackle

Load Link

Line Rider

Tensiometer

Compressive

Load Cell

Load Pin

How it Works



Features

- Log data at timed intervals, manually (on demand), on entering & exiting a pre-set overload/underload, during an overload/ underload.
- Visual display and audible alarm indicators for overload/underload conditions as well as loss of communication
- Display live data readings on a visual graphic of your application (picture/ drawing/schematic)
- Display numeric and graph data
- Units of measurement selectable to match load cell
- Built in web server
- Defined algorithms and maths functions
- Works with USB base station
- Windows 8, 7, Vista & XP compatible
- Supplied pre-installed on computer with or without display screen
- System can be installed on existing computers



Use in conjunction with LMS handheld displays



LMS-QV

Quick View for Load Cells

This software allows you to quickly detect, pair, view and log data from a LMS load cell device.

System requirements: Windows 8, 7, Vista or XP & USB base station



Product Support



Odd Shackle Load L

Line Rider Tensiometer

Compressive Load Pin Load Cell

LMS-Toolkit

Toolkit for Load Cells

This software allows you to quickly and easily configure, test communication and calibrate LMS wireless load cell devices.

System requirements: Windows 8, 7, Vista or XP & USB base station



Product Support







Load Shackle Load Link

ink Line Rider Tensiometer Compressive Load Pin Load Cell

Features

- Detect or pair to a load cell device
- View the acquired data on a large simulated LED display
- Export the data to a CSV file
- Supplied pre-installed on computer with or without display screen
- System can be installed on existing computers
- Quick & easy to operate

Features

- View and alter load cell device parameters
- Execute commands
- Save and restore configuration data to files
- Check radio link quality
- Calibrate load cell modules
- Perform simple data logging
- Supplied pre-installed on computer with or without display screen
- System can be installed on existing computers

Design, Testing, Repair and Calibration

Benefit from our years of experience. We can design, manufacture, service and test load monitoring equipment.



Load Cell Calibration & Testing

LMS have multiple test beds in-house, that enable us to provide a quick and effective repair and calibration service.

Our technical experts can carry out inspections and repairs, upgrades and conversions, scheduled or project calibration and certification and bespoke reporting.

We can also provide stress analysis and measurement for client products whether in-service or in the laboratory.

Key facilities include:

- Vertical & horizontal
- 50 Te and 100Te test rigs
- Comprehensive data logging
- A dedicated strain gauge area
- Mechanical technicians
- Electrical technicians
- In-house electronics & machining



100Te Tensile Test Rig						
Description	100te vertical digital test rig					
Safe Working Load (SWL)	100 metric tonne (TE)					
Mode of Operation	Tensile					
Category	Class 1 test bed					
Certification Standard	ISO 7500-1:2004 (E)					
Accuracy	+/- 1%					
Repeatability	+/- 0.2%					
Resolution	User display: 1 kg res. Large display: 100kg res.					
Logging Rate:	Up to 200 readings per second					
Method of Measurement	Whetstone bridge on double strain gauged column					

Get stressfree in less than 24hrs.



We understand that sometimes calibrations or essential repairs become a priority issue and equipment needs to be back in service as quickly as possible.

FAST-TRACK repair and calibration provides a 24hr priority service designed to support customers when they need it most. Call or visit www.loadsystems.co.uk to find out more.



Services

- Calibration
- Repair
- Inspection
- Non-destructive testing
- (including overload and proof-load)
 Certification
- New electronics for existing/OEM products
- Analogue and digital output module upgrades
- Bespoke test reports
- Call-out service for testing at site
- Load cell design development service
- Machining service for bespoke designs

Servicing

We can service all types of load cell products not just our own.

- Load links
- Load shackles
- Load pins
- Compressive load cells
- Running line tensiometers
- Load washers
- Shear beam load cells
- Displays

Certification & Compliance

Compliance with all major standards including those for LOLER, BSI, DNV, ASME, CE, EMC, FCC and Machinery Directive.









Load Cell Display

Our advanced handheld display allows you to connect and monitor up to 12 wireless load monitoring devices.

These displays are matched to the LMS devices and feature a simple to use tactile keypad and easy to read multi-digit 9mm LCD display and a maximum wireless range of 600m+.



Product Support





Load Link



Load Shackle

Compressive Load Pin Load Cell

Features

- Display for individual or summed load values
- Calibrated in tonne with kg resolution accuracy (alternative weighing units on request eg kg, kN, lb, Ton).
- Tare function
- Fully configured and calibrated for your application
- Sleep/wake acquisition modules
- Very low power consumption for long battery life
- Auto shut down feature available on request
- Power by 2 x AA internal batteries
- Worldwide licence exempt 2.4 GHz radio
- RS232 output available on request. Requires base station for wireless displays and dual cable on cabled displays.
- Operating Temperature -10°C to +50°C
- Relative humidity 95% non-condensing
- Environmentally sealed to IP65
- Carry case available



Wireless

Dimensions



Cabled







24-HS

Authorised Partners





BROSA is a leading manufacturer of high quality and customized force sensors.





Modular Air Bearing System





- Wireless speed indicator
- Crane safety instrumentation
- Safe load indicators
- Anti-two block systems



Load Test -Water Bags



Test Weights





- Weldless Modular Spreader
- Easy Hook Spreader
- Other Lifting and Spreading Beams





LOAD MOVING SOLUTIONS

Hilman provides quality heavy load moving solutions for a variety of applications. Our products are made in the USA and are known throughout the world for their dependability, flexible design, and durability



R LMS

Strength to get the job done.

Load Monitoring Systems 14 Silverburn Place, Bridge of Don, Aberdeen AB23 8EG

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