

LB 230 Series Load Measuring Pins

OIML Classified

FEATURES

- Temperature-compensated transducers with strain gauges in full-bridge configuration.
- Available in 10 standard ranges from 5 kN to 1250 kN (0.56 tf to 140.5 tf).
- Classified according to OIML R60 D0.1 from 50 to 200 kN for scales in class III.
- Hermetically sealed execution for harsh environmental conditions (IP 67).
- Compensation for axial forces makes the load pin virtually insensitive to all lateral forces.
- Dimensions compatible with the standard LB 210 series.
- High reliability for strict safety requirements.
- Simple installation for cost-saving solutions to measurement problems.



DESCRIPTION

Magtrol Load Measuring Pins are used to measure load and force and provide overload protection. The pins are mounted into machines in place of normal shafts and fitted with strain gauges, allowing them to produce a signal proportional to the measured load. Made in Switzerland, Magtrol's LB 230 Series Load Pins are rugged with high resistance stainless steel and tight construction, making for an essentially maintenance-free life. Available in 10 standard ranges from 5 kN to 1250 kN, these temperature compensated transducers come with strain gauges in full-bridge configuration. Because the strain gauges are inside a hermetically sealed pin, they are insensitive to external mechanical and chemical effects making them ideal for use in harsh environmental conditions.

Magtrol Load Measuring Pins can be used alone or as part of a complete measurement system. Magtrol offers a wide range of Load-Force-Weight Transducers in various executions and accuracy classes and our Load Monitoring Units (LMUs) constitute an ideal safe measurement system which continuously checks for overloads and short circuits.

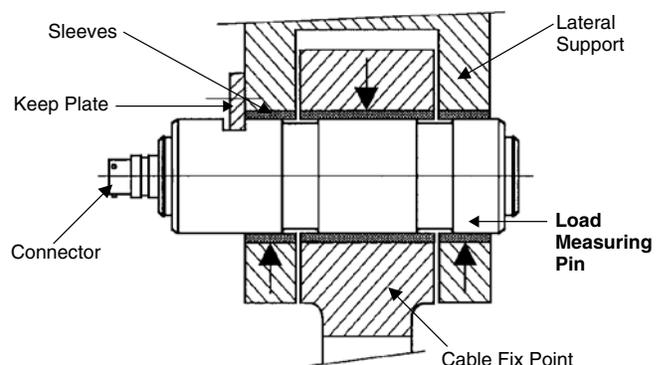
APPLICATIONS

When forces acting on mechanical constructions are measured, the additional equipment required can often be costly and difficult to install. Magtrol Load Measuring Pins offer an excellent solution since they act as a direct element in the assembly, replacing a non-instrumented pin or shaft. LB 230 Series Load Pins can be used in new or refitted installations for many applications including mobile or stationary weighing, load measuring on cranes, hoisting gear, elevators and floor conveyors and force detection in harsh tropical, offshore, marine and harbor environments.

DESIGN

The load measuring pin has 2 circular grooves and an axial bore. Inside the central bore, adjacent to the external grooves, 8 strain gauges are mounted in a double full-bridge configuration. The positioning and orientation of the strain gauges has been optimized by means of the finite element method (FEM). Any transverse or axial forces, even when acting on any part of the pin, have practically no influence on the measurement signal.

MOUNTING EXAMPLE

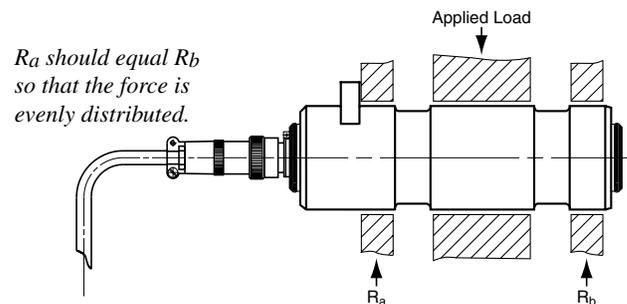


Standard Version*	LB 231	LB 232	LB 233	LB 234	LB 235	LB 236	LB 237	LB 238	LB 240	LB 241	
MECHANICAL CHARACTERISTICS											
Nominal Load, fsd (Metric)	5 kN	10 kN	20 kN	50 kN	70 kN	100 kN	200 kN	500 kN	1000 kN	1250 kN	
Nominal Load, fsd (US)	0.56 tf	1.12 tf	2.25 tf	5.62 tf	7.87 tf	11.24 tf	22.48 tf	56.20 tf	112.4 tf	140.5 tf	
Overload Admissible	150% of rated load without influence on the measurement										
Overload Limit	250% of rated load with new calibration										
Overload at Rupture (of rated load)	≥ 500%							400%	350%		
Material	Stainless steel 1.4057										
Protection Class	IP 67 according to DIN 40050										
Fit	G7 / h6										
ELECTRICAL CHARACTERISTICS											
Operating Principle	Double full-bridge strain gauge										
Bridge Impedance:											
• Input	800 Ω										
• Output	700 Ω										
Power Supply	5 to 12 V DC / AC										
Zero Adjustment	± 1% of fsd										
Transducer Sensitivities	0.5 mV/V ± 3%			1 mV/V ± 3%				1 mV/V ± 3%			
Non-linearity Error	< 0.2% of fsd										
Non-linearity + Hysteresis Error	< 0.4% of fsd										
Repeatability	± 0.1% of fsd										
OIML Class	not available			R60 D0.1				not available			
Operating Temperature	-25 °C to +80 °C										
Storage Temperature	-55 °C to +125 °C										
Temperature Influence:											
• On Zero	± 0.02% of fsd / K										
• On Sensitivity	± 0.02% / K										
Influence on Measurement Signal (Shift of Force Angle with Respect to Measurement Axis)	According to the cosine function										
ELECTRICAL CONNECTION											
Output Connector	Axial, Souriau 8525 IH 10B 06 PNH										
Connection Cable Assembly	3 m, 6 m, 12 m or 20 m Cable with: Straight Connector, MS 3116 J10 6S or 90° Connector, Souriau 851 08 EC 10 6S50										

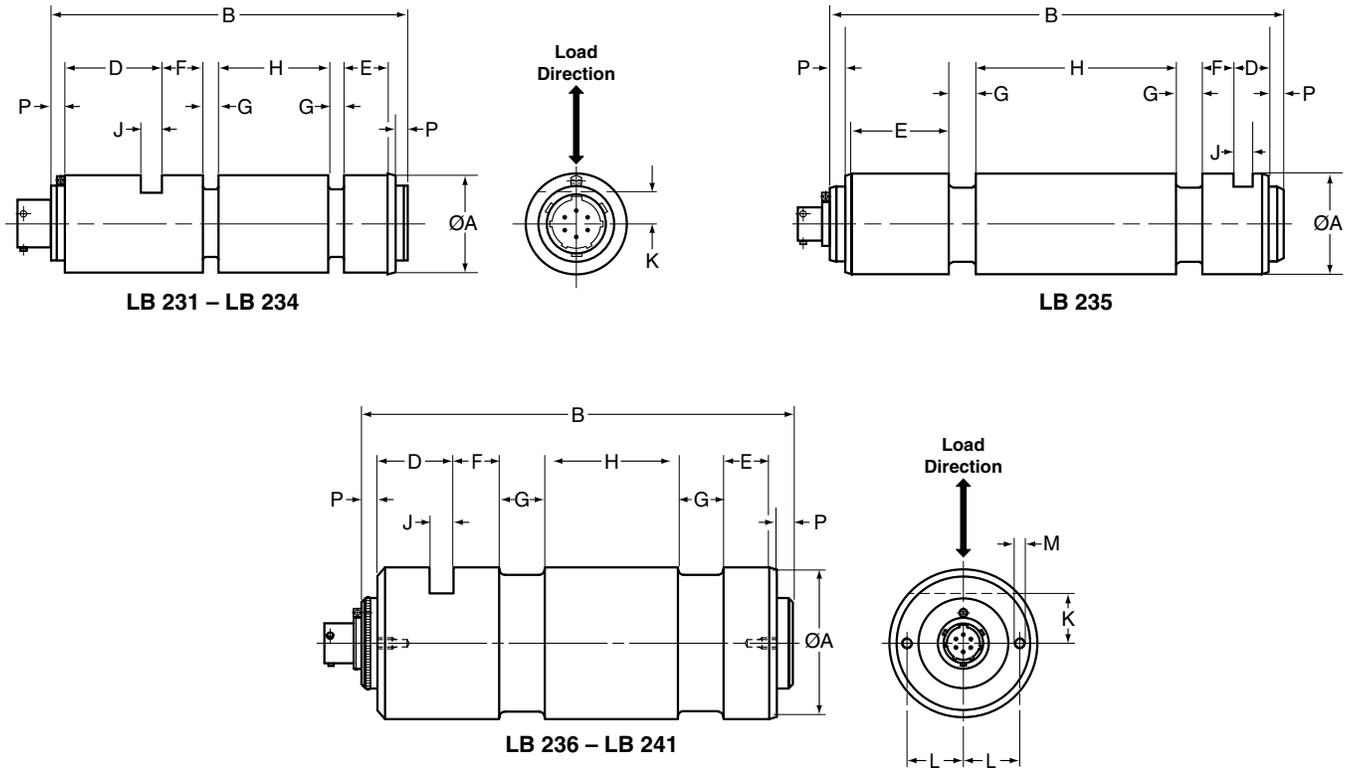
* Ratings apply to standard load pins only, special models are available by contacting Magtrol.

OPERATING PRINCIPLE

When force is applied to the Load Measuring Pin along its sensitive axis, the effect on the strain gauge bridge results in an output signal proportional to the applied force. The powering of the strain gauge bridge, as well as the amplification of its output signal voltage, is performed by an external amplifier. Depending on the execution, the latter allows the monitoring of several levels.



DIMENSIONS



NOTE: Original dimensions are in Metric units. Dimensions converted to English units have been rounded up to 3 decimal places.

Model	units	Ø A	B	D	E	F	G	H	J	K	L	M	P	Weight
LB 231	mm	25h6	86	16	14	10	7	24	5.2	9	---	---	3	0.2 kg
	in	0.984	3.386	0.630	0.551	0.394	0.276	0.945	0.205	0.354	---	---	0.118	0.441 lb
LB 232	mm	25h6	86	16	14	10	7	24	5.2	9	---	---	3	0.2 kg
	in	0.984	3.386	0.630	0.551	0.394	0.276	0.945	0.205	0.354	---	---	0.118	0.441 lb
LB 233	mm	25h6	86	16	14	10	7	24	5.2	9	---	---	3	0.2 kg
	in	0.984	3.386	0.630	0.551	0.394	0.276	0.945	0.205	0.354	---	---	0.118	0.441 lb
LB 234	mm	35h6	114	23	12	12	12	35	6.3	11.5	---	---	3	0.65 kg
	in	1.378	4.488	0.906	0.472	0.472	0.472	1.378	0.248	0.453	---	---	0.118	1.433 lb
LB 235	mm	45h6	196	15	41	14	12	88	8.5	16	---	---	6	1.8 kg
	in	1.772	7.717	0.591	1.614	0.551	0.472	3.465	0.335	0.630	---	---	0.236	3.968 lb
LB 236	mm	50h6	165	28	20	18	18	48	10.5	20	---	---	6	2 kg
	in	1.969	6.496	1.102	0.787	0.709	0.709	1.890	0.413	0.787	---	---	0.236	4.409 lb
LB 237	mm	65h6	200	28	22	20	25	65	10.5	22.5	---	---	6	4.4 kg
	in	2.559	7.874	1.102	0.866	0.787	0.984	2.559	0.413	0.886	---	---	0.236	9.700 lb
LB 238	mm	85h6	262	30	35	35	28	89	10.5	28	25	M6	6	10.6 kg
	in	3.346	10.315	1.181	1.378	1.378	1.102	3.504	0.413	1.102	0.984	---	0.236	23.369 lb
LB 240	mm	100h6	351	30	55	55	35	120	10.5	36	25	M8	8	19.2 kg
	in	3.937	13.819	1.181	2.165	2.165	1.378	4.724	0.413	1.417	0.984	---	0.315	42.329 lb
LB 241	mm	120h6	351	30	55	55	35	120	12.5	40	35	M8	8	28.4 kg
	in	4.724	13.819	1.181	2.165	2.165	1.378	4.724	0.492	1.575	1.378	---	0.315	62.611 lb

ORDERING INFORMATION

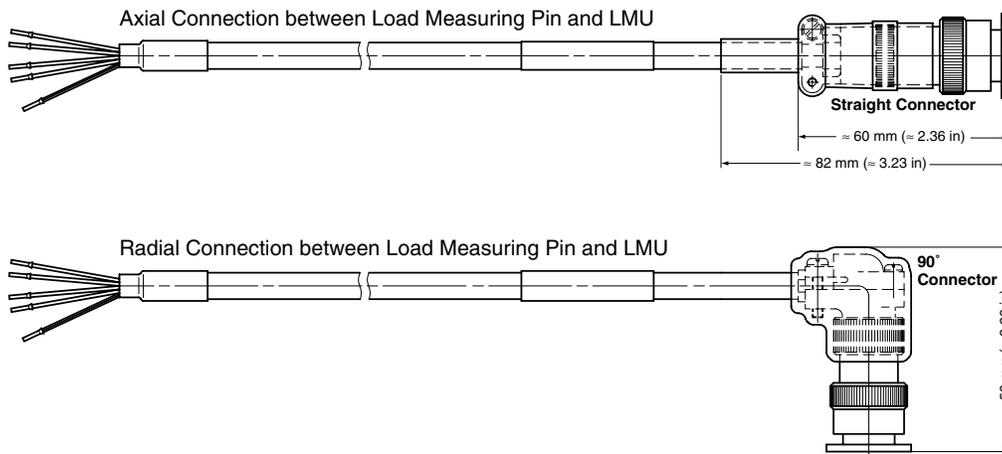
LOAD MEASURING PINS

- Model LB 2 - 2

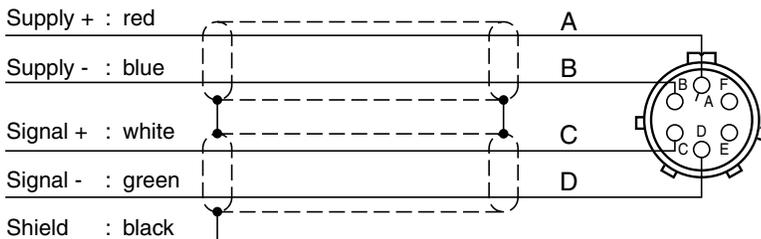
LB 2 /021

ACCESSORIES

Cable Assemblies



Pin Configuration



Accessory Ordering Information

COUNTER-CONNECTOR

- Straight Connector P/N 957.11.08.0030
- 90° Connector P/N 957.11.08.0029

CONNECTION CABLE ASSEMBLY

- Part Number EH 13 / 0 1
- Straight Connector _____ 8
 - 90° Connector _____ 9

CONNECTION CABLE ASSEMBLY

- Cable Length:
- 3 m _____ 1
 - 6 m _____ 2
 - 12 m _____ 3
 - 20 m _____ 4

Due to the continual development of our products, we reserve the right to modify specifications without forewarning.



www.magtrol.com

MAGTROL INC

70 Gardenville Parkway
Buffalo, New York 14224 USA
Phone: +1 716 668 5555
Fax: +1 716 668 8705
E-mail: magtrol@magtrol.com

MAGTROL SA

Centre technologique Montena
1728 Rossens/Fribourg, Switzerland
Phone: +41 (0)26 407 3000
Fax: +41 (0)26 407 3001
E-mail: magtrol@magtrol.ch

Subsidiaries in:

- Germany
 - France
 - Great Britain
 - China
- Worldwide Network
of Sales Agents

Certified ISO 9001 : 2000 by



n° 150887