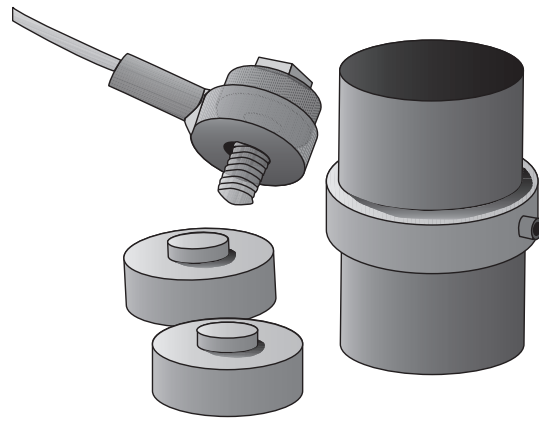


LCWD Series

Load Washer & Compression Load Cells



INSTRUCTION
SHEET

M1131/0509

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Cautionary Notes for Safe Product Use.



WARNING! This symbol in this manual indicates a potential danger or hazard capable of resulting in a serious injury or loss of life.

DESCRIPTION

The OMEGA[®] LCWD Series Load Cell is a compact design with a full Wheatstone Bridge. Typical applications include Clamping Forces, Die Loads, Bolt Stresses, Weighing Systems, and Structural Loads.

The load washer can be used as a washer, sensing compression force, or a compression load cell. When utilized as a compression load cell, the load buttons supplied should be used. If the height of the buttons provided is too restrictive, you can use one or none of the buttons. When you are using less than 2 buttons, be sure that the active ridge (inside) of the washer is seated on a flat surface that transmits the load. Whenever possible, the buttons provided should be used because they insure correct loading.

When used as a washer load cell, the set of spherical washers should be used as a washer cell, the set of spherical washers should be used on one side of the load cell and a flat washer (not provided) on the other side of the washer. When choosing a flat washer, make sure that the inner diameter of the flat washer is less than the diameter of the inner ring of the load washer to insure that the active ridge is seated on the flat washer.

The following load cell types are available from OMEGA Engineering:

Dimensions in Inches (mm)

LOAD CELL						SPHERICAL WASHERS			
Part Number	Rated Capacity	Weight	Bore	O. D.	H	Part Number	Bore Size	H of Button	Bolt Size
LCWD-200	200 lb	1.0 lb	0.40 (10)	1.00 (25)	0.35 (9.0)	SPW-2	0.35 (8.9)	0.37 (9.4)	5/16 (7.9)
LCWD-500	500 lb	1.0 lb	0.40 (10)	1.00 (25)	0.35 (9.0)	SPW-2	0.35 (8.9)	0.42 (10.7)	5/16 (7.9)
LCWD-1K	1,000 lb	1.0 lb	0.40 (10)	1.00 (25)	0.35 (9.0)	SPW-2	0.35 (8.9)	0.55 (14.0)	5/16 (7.9)
LCWD-2K	2,000 lb	1.0 lb	0.40 (10)	1.00 (25)	0.35 (9.0)	SPW-2	0.35 (8.9)	0.55 (14.0)	5/16 (7.9)
LCWD-5K	5,000 lb	1.0 lb	0.40 (10)	1.00 (25)	0.35 (9.0)	SPW-2	0.35 (8.9)	0.55 (14.0)	5/16 (7.9)
LCWD-10K	10,000 lb	1.0 lb	0.40 (10)	1.00 (25)	0.35 (9.0)	SPW-2	0.35 (8.9)	0.55 (14.0)	5/16 (7.9)
LCWD-20K	20,000 lb	1.5 lb	0.50 (13)	1.20 (30)	0.40 (10)	SPW-3	0.41 (10.3)	0.76 (19.3)	3/8 (9.5)
LCWD-50K	50,000 lb	2.0 lb	0.76 (19)	1.75 (44)	0.50 (13)	SPW-5	0.66 (16.7)	1.0 (25.4)	5/8 (15.9)
LCWD-100K	100,000 lb	3.0 lb	1.01 (26)	2.25 (57)	0.70 (18)	SPW-7	0.94 (23.8)	1.5 (38.0)	7/8 (22.2)
LCWD-200K	200,000 lb	6.0 lb	1.51 (39)	3.00 (77)	1.25 (32)	SPW-7	0.94 (23.8)	2.0 (50.8)	7/8 (22.2)

UNPACKING

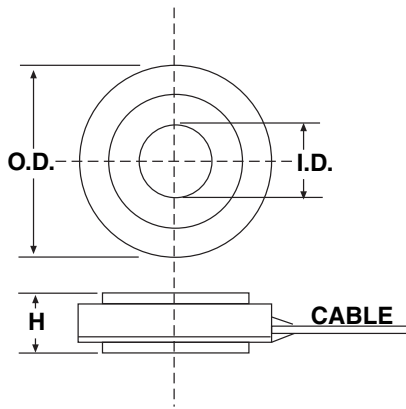
Remove the Packing list and verify that all equipment has been received. If there are any questions about the shipment, please call OMEGA Customer Service Department.

Upon receipt of shipment, inspect the container and equipment for any signs of damage. Take particular note of any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

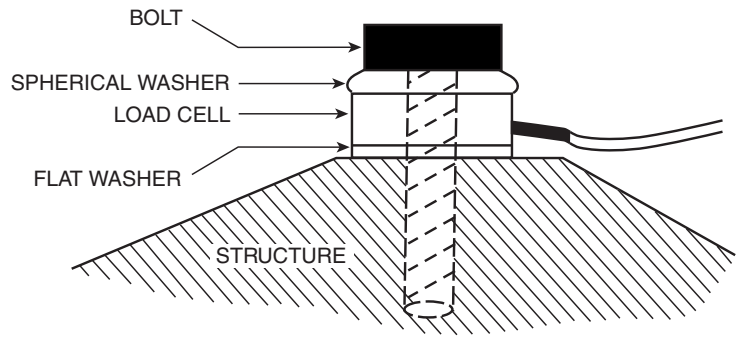
NOTE:

The carrier will not honor any claims unless all shipping material is saved for examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

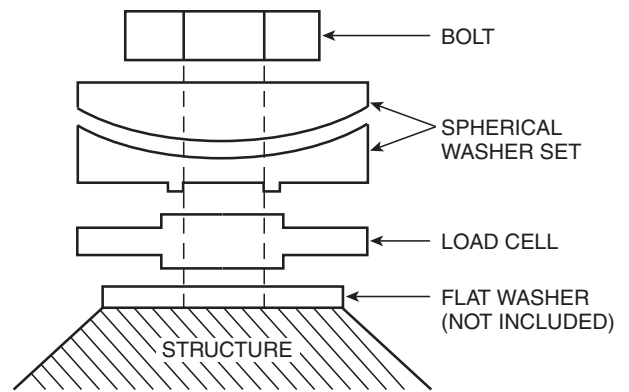
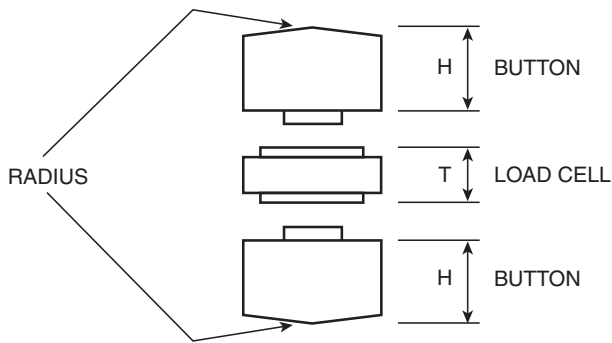
DIMENSIONS



TYPICAL EXAMPLE



INSTALLATION SCHEMATIC



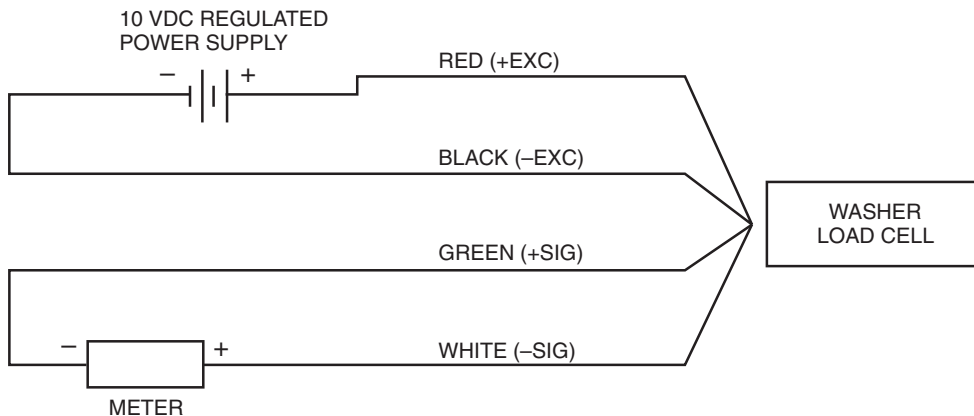
HOW LOAD CELLS WORK

Load cells have an output or sensitivity in mV/V. What this sensitivity/output represents is as follows:

Change in millivolt output from zero load to the full scale capacity of the load cell (21.3 mV in this example) = $\frac{\text{output/sensitivity}}{(2.13 \text{ mV/V})} \times \text{excitation}$ (10.0 VDC)

No load cell has exactly zero millivolts at no load. Most cells have a small millivolt DC offset of a few millivolts which is normal. To scale a system the end user just scales his recorder/meter for a full scale change of (21.3 mV per example), and connects the load cell in a no load situation and rezeros the pens/display for a correct zero reading.

WIRING DIAGRAM



SPECIFICATIONS

Excitation:	10 Vdc (15 V Max)
Output:	2 mV/V \pm 20%
Accuracy:	Linearity, Hysteresis and Repeatability Combined: \leq 10 K = \pm 0.5% BFSL > 10 K = \pm 0.75% BFSL
Zero Balance:	\pm 4.0% FSO
Operating Temp Range:	40 to 127°C (-40 to 260°F)
Compensated Temp Range:	16 to 71°C (60 to 160°F)
Thermal Effects:	
Zero:	\pm 0.01% FSO/°F
Span:	\pm 0.01% FSO/°F
Safe Overload:	120% of Capacity
Ultimate Overload:	200% of Capacity
Bridge Resistance:	350 Ω (min) > 50 K (700 Ω \leq 50 K)
Full Scale Deflection:	0.001" typical
Construction:	Stainless Steel
Electrical:	5 ft (1.5 m) PFA insulated, shielded cable

IMPORTANT SAFETY INFORMATION



WARNING! These components are used under high forces. They should only be installed and operated by qualified, authorized personnel.



WARNING! DO NOT MODIFY THIS LOAD CELL AND ITS COMPONENT PARTS OR SUBSTITUTE PARTS. Because of the danger of introducing hazards; do not perform any unauthorized modifications or install substitute parts to the instrument.

NOTES:



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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.
WARNING: These products are not designed for use in, and should not be used for, human applications.



WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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