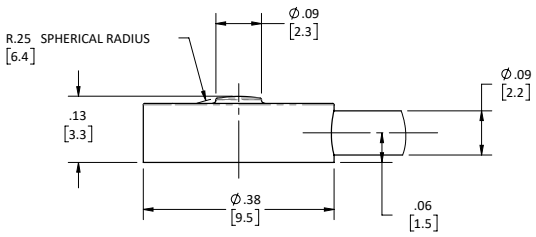
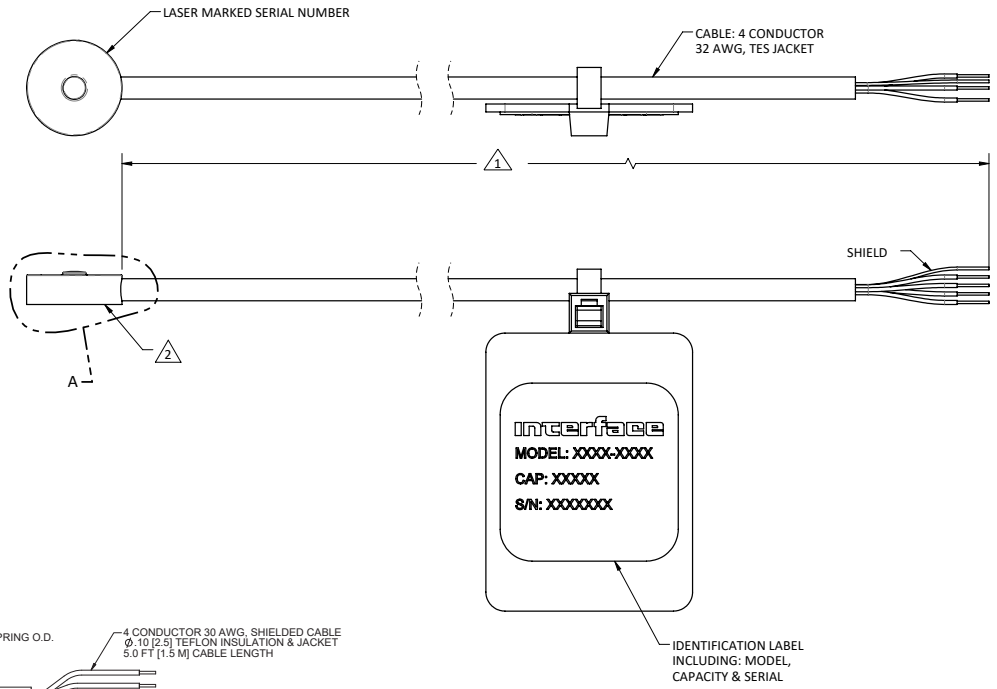
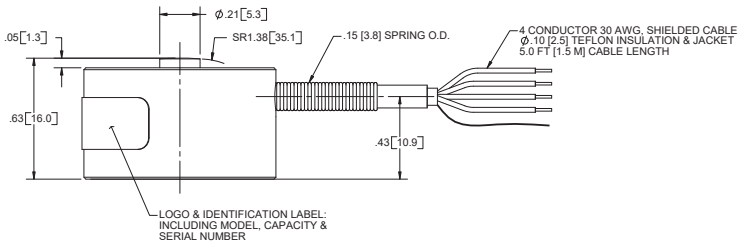
Interface

Load Button Load Cells



DETAIL A
SCALE 4 : 1





Interface Load Button Load Cells are designed for customers who require the measurement of forces in a very confined space.

They are designed to provide the most accuracy in as little space as possible. The smaller ConvexBT or LBM can fulfill the need for force measurements at a very respectable precision level that is enough for most applications. Diameters range from 1 inch to 3 inches, with heights from 0.39 inch to 1.5 inches. The shaped load button load cell has a spherical radius to help confine misaligned loads to the primary axis of the cell.

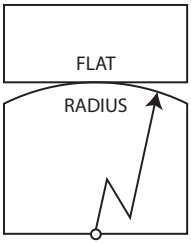
Load Button Load Cells

Many applications require the measurement of forces in limited or small areas. The smaller LBM or LBS can fulfill the need for force measurements at a very respectable precision level that is sufficient for most cases.

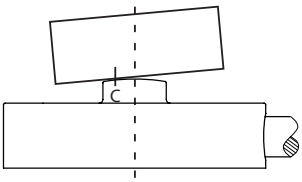
These miniature compression cells range in capacities from 10 lbf to 50,000 lbf. Diameters range from 1 inch to 3 inches, with heights from 0.39 inch to 1.5 inches. The shaped load button has a spherical radius to help confine misaligned loads to the primary axis of the cell.

Compression Loading

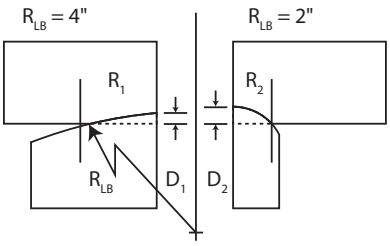
The application of compression loads on load button load cells require an understanding of the distribution of forces between surfaces of various shapes and finishes.



The first and most important rule is this always avoid applying a compression load flat-to-flat from a plate to the top surface of a load button hub. The reason for this is simple, it is impossible to maintain two surfaces parallel enough to guarantee that the force will end up being centered on the primary axis of the load button load cell. Any slight misalignment, even by a few micro-inches, could move the contact point off to one edge of the hub, thus inducing a large moment into the measurement.



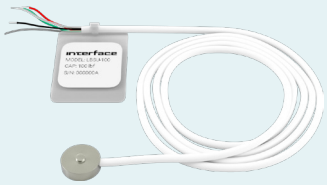
Minor misalignments merely shift the contact point slightly off the centerline. In addition to compensating for misalignment, the use of a load button load cell of the correct spherical radius is absolutely necessary to confine the stresses at the contact point within the limits of the materials. Generally, load button load cells and bearing plates are made from hardened tool steel, and the contacting surfaces are ground to a finish of 32micro-inch RMS.



Use of too small of a radius will cause failure of the material at the contact point, and a rough finish will result in galling and wear of the loading surfaces. The half sections (in exaggerated form) the indentation radius (R1) on a flat plate caused by a load button having a 4-inch spherical radius and the corresponding indentation (D1). The strains transmitted into the flat plate by a 10,000 lbf load are well within the specs for hardened steel. Compare that with the indentation radius (R2) and the corresponding indentation (D2). In this case, the strains could actually cause the steel to fracture.

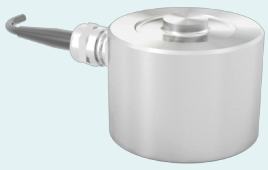
The ConvexBT is available in three different sizes: 3/8-inch, 1/2-inch, and 3/4-inch which are all manufactured using 17-4 PH heat treated stainless steel. These options provide a wide measurement range from 5 to 1,000 lbf, a compensated temperature range of 60° to 160°F, and an operating temperature range of -40° to 175°F. Additional specifications for the ConvexBT include:

- 2.00 ± 20% mV/V rated output
- ± 0.25 nonlinearity as a percentage of full scale
- ± 0.25 hysteresis as a percentage of full scale
- ± 0.50 static error band as a percentage of full scale



ConvexBT Miniature Compression Load Button
5 lbf to 1K lbf
0.02 kN to 4.44 kN

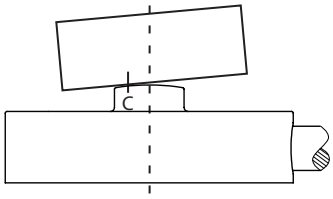
LBM Compression Load Button Load Cell
25 lbf to 50K lbf
0.11 kN to 0.22 kN



LBMP Overload Protected Compression Load Button Load Cell
2.25 lbf to 22.5 lbf
0.01 kN to 100 kN

LBMU Ultra Precision Compression Load Button Load Cell
100 lbf to 1K lbf
0.5 kN to 5 kN

ConvexBT
The Next Generation of FORCE MEASUREMENT DEVICES ™



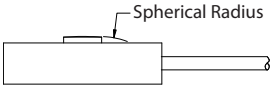
OFF CENTERLINE MISALIGNMENT

- Superior to any other load button
- Integral temperature compensation
- Enhanced eccentric load rejection
- Multi-point calibration
- Integral load button
- Small diameter
- Environmentally sealed
- Heat treated stainless steel

The revolutionary design of the ConvexBT is a first of its kind load button load cell, providing better temperature resistance and more enhanced eccentric load rejection. Miniature load cells categorized as load buttons have been sensitive to off-axis, eccentric or misaligned loads. This means if the load is not exactly perpendicular to the surface it is resting on, the data could become skewed or inaccurate.

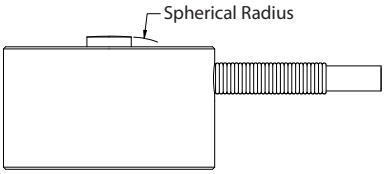
ConvexBET Miniature Compression Load Button Load Cell

The ConvexBT Load Button Load Cell is superior to any other load button. Constructed from heat treated stainless steal and environmentally sealed with integral temperature compensation. This product is available capacities range from 5 lbf up to 1K lbf (22.2 N to 4.45 kN).



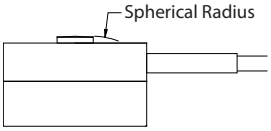
LBM Compression Load Button Load Cell

The LBM Compression is constructed from stainless steel and has a small size. This product is available capacities range from 25 lbf up to 50K lbf.



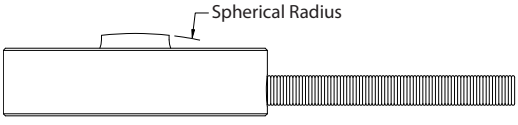
LBMP Overload Protected Compression Load Button Load Cell

The LBMP Overload Protected Compression is stainless steel overload protected compression load button load cell. This product is available in capacities ranging from 0.01kN to 100kN (2.25 lbf to 22.5K lbf).



LBMU Ultra Precision Compression Load Button Load Cell

The LBMU Ultra Precision Compression has a nonlinearity specification of +/- 0.15%FS. This product has all of the benefits of a standard load button load cell but with better performance. Model LBMU is constructed from stainless steel and is available in capacities from 100 lbf to 1K lbf (0.45kN to 4.45kN).



Interface Load Buttons

- Compression
- Overload Protected
- Ultra Precision
- Miniature
- Off Centerline Misalignment

Interface force measurement load button load cells are available in many design configurations for project designs requiring the highest performance.

To learn more about the Interface products or force measurement solutions call 480-948-5555.

Interface is the world's trusted leader in technology, design and manufacturing of force measurement solutions. Our clients include a "who's who" of the aerospace, automotive and vehicle, medical device, energy, industrial manufacturing, test and measurement industries.

Interface engineers around the world are empowered to create high-level tools and solutions that deliver consistent, high quality performance. These products include load cells, torque transducers, multi-axis sensors, wireless telemetry, instrumentation and calibration equipment.

Interface, Inc., was founded in 1968 and is a US-based, woman-owned technology manufacturing company headquartered in Scottsdale, Arizona.

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