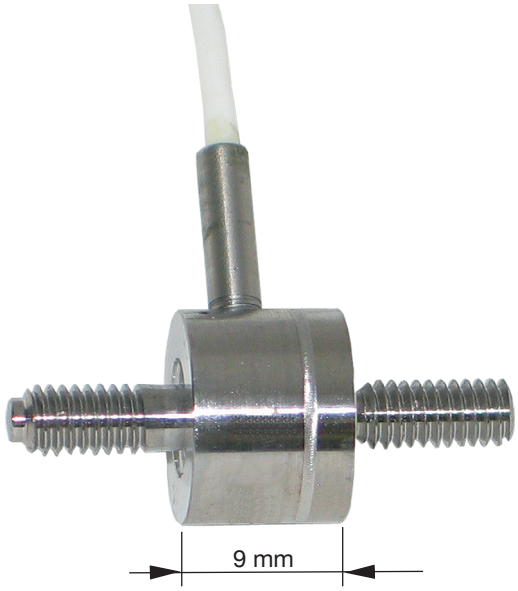
Subminiature Load Cell Tension/Compression

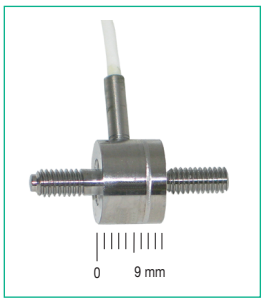
Model 8417

Code:	8417 EN
Delivery:	ex stock
Warranty:	24 months

CAD data 2D/3D for this sensor:
Download directly at www.traceparts.com
Info: refer to data sheet 80-CAD-EN



Original size



NEW
measuring ranges from 0 ... 50 N

- **Measuring ranges from 0 ... 50 N to 0 ... 5 kN**
- **Very small dimensions**
- **Made of stainless steel**
- **Rugged construction**
- **Simple screw mounting**

8417 EN

Application

This tension/compression load cell is an especially small component, which can be easily integrated in a girder assembly between two cables or chains for measuring force. The outside threadings along its axis of symmetry can accommodate various adapters or are suitable for screwing into a threaded hole that is quick and easy to produce.

The radial connection cable is extremely flexible and designed for a wide range of motion. In order to achieve the greatest possible stability for such a small sensor, making it suitable not only for the laboratory but also for industrial use, all parts have been welded together including the cable guide bush in the sensor housing.

Typical areas of application include the determining forces in Bowden cable, testing the durability of soldered and welded joints, measuring tractive forces of plug connections or monitoring forces when winding cables onto cable reels.

Description

Load cell model 8417 measures the tension or compression force between both axially mounted metric exterior threads on the cylindrical sensor housing. Forces are only applied to the threadings, which are especially long, to accommodate counter nuts and must not be affected by external influences such as bending, lateral force or torsion.
Any contact with units affixed to the sensor housing - even on the front - must be avoided.

The measurement element is a membrane perpendicular to the axis of the sensor with a strain gauge full bridge applied to the inner surface, which requires stable excitation with a rated value of approx. 1.2 mV/V.
The connection cable is fed radially through a sleeve from the housing. Standardization of the output signal in the cable to 1.0 mV/V is optional.

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Technical Data

Order Code	Measuring Range	Dimensions [mm] Ø D	H	L	A	B	Thread T	Weight with / without Cable [g]
8417-5050	0 ... 50 N	12.0	9.0	9.5	14.0	4.1	M 4 x 0.7	20 / 8
8417-5100	0 ... 100 N	12.0	9.0	9.5	14.0	4.1	M 4 x 0.7	20 / 8
8417-5200	0 ... 200 N	12.0	9.0	9.5	14.0	4.1	M 4 x 0.7	20 / 8
8417-5500	0 ... 500 N	12.0	9.0	9.5	14.0	4.1	M 4 x 0.7	20 / 8
8417-6001	0 ... 1000 N	12.0	9.0	9.5	14.0	4.1	M 4 x 0.7	20 / 8
8417-6002	0 ... 2000 N	20.0	12.0	14.0	18.0	6.6	M 6 x 1.0	40 / 28
8417-6005	0 ... 5000 N	20.0	12.0	14.0	18.0	6.6	M 6 x 1.0	40 / 28

Electrical values

Bridge resistance:
- measuring range ≤ 0 ... 200 N: 500 Ω, nominal*
- measuring range ≥ 0 ... 500 N: 350 Ω, nominal*

Excitation: 5 V DC

Nominal value:
- measuring range ≤ 0 ... 200 N: 5 ... 30 mV/V, nominal*
- measuring range ≥ 0 ... 500 N: 1.2 mV/V, nominal*

Insulation resistance: > 10 MΩ

*Deviations from the stated value are possible.

Environmental conditions

Nominal temperature range:
- measuring range ≤ 0 ... 200 N: + 15 °C ... + 60 °C
- measuring range ≥ 0 ... 500 N: + 15 °C ... + 70 °C

Range of operating temperature: 0 °C ... + 80 °C

Influence of temperature on zero:
- measuring range ≤ 0 ... 200 N: ≤ ± 2.5 % F.S./50 K
- measuring range ≥ 0 ... 500 N: ≤ ± 1.5 % F.S./50 K

Influence of temperature on sensitivity:
- measuring range ≤ 0 ... 200 N: ≤ ± 2.5 % Rdg./50 K
- measuring range ≥ 0 ... 500 N: ≤ ± 1.5 % Rdg./50 K

Mechanical values

Combined value consisting of non-linearity, hysteresis and non-repeatability, in installation position:
- measuring range ≤ 0 ... 500 N: < ± 0.9 % F.S.
- measuring range ≥ 0 ... 1000 N: < ± 0.5 % F.S.

Kind of measurement: compressive and tensile forces
calibration in tensile direction (preferential direction)
Upon operation against the preferential direction a changed characteristic is possible.

Deflection, full scale: max. 60 µm

Static overload safe: 100 % of capacity

Overload: 200 % of capacity

Dynamic performance: recommended 50 % of capacity
maximum 70 % of capacity

Material: 1.4542

Electrical connection: Measuring range ≤ 0 ... 50 N shielded, PTFE coated cable with an open end for soldering. Circuit board (70 x 8 mm) with balance resistors 30 cm away from the cable's end. Range ≤ 0 ... 500 N: shielded, TPE coated cable with an open end for soldering.

Cable length: 2 m

Bending radius: 30 mm

Protection class: acc. to EN 60529 IP54

Wiring code:

white	excitation voltage	positive
brown	excitation voltage	negative
green	signal output	negative
yellow	signal output	positive

Dimensions: refer to drawing

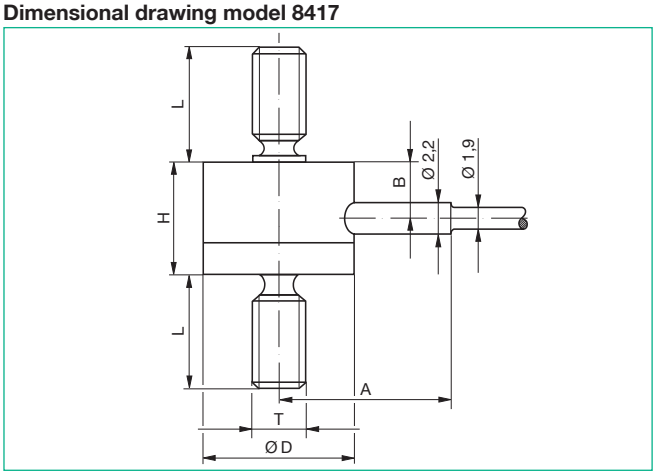
General tolerance of dimensioning: acc. to ISO 2768-f

Weight: refer to table

Mounting Instructions

The measuring force has to be applied centrically and free from lateral force via the exterior threading. All lateral loading forces must be kept away from the sensor as they could result in incorrect measurements or damage.
In order to ensure that the force sensor is securely fitted, it is possible to affix it to the threading with adhesive. When applying compression force, appropriate means (e.g. attachments) are to be used to prevent buckling.
During handling and installation it is important to ensure that the cable outlet and sensor connection cable are not subject to too much tensile or bending force. Effective strain relief may be necessary.

Dimensional drawing model 8417



The CAD drawing (3D/2D) for this sensor can be imported online directly into your CAD system.
Download via www.burster.com or directly at www.traceparts.com. For further information about the burster traceparts cooperation refer to data sheet 80-CAD-EN.

Order Information

Subminiature load cell tension/compression,
measuring range 0 ... 500 N **Model 8417-5500**

Accessories

Mating connector
12 pins, to all burster table housings **Model 9941**
9 pins, to model 9235 and model 9310 **Order code: 9900-V209**

Mounting of a mating connector for preferential usage of the sensor in preferential direction (positive signal in tensile direction)
Order Code: 99004

Only for connection to SENSORMASTER model 9163 desktop version **Order Code: 99002**

against preferential direction (positive signal in compressive direction)
Oder Code: 99007

Only for connection to SENSORMASTER model 9163 desktop version **Oder Code: 99008**

Evaluation electronics, amplifiers and process controllers, e.g. digital indicators for strain gauges model 9163, 9180, amplifier module model 9243 or DIGIFORCE® 9306 **refer to section 9 of the catalog.**

Strain gauge simulator for creating a strain gauge signal in order to adjust amplifiers and indicators. **Model 9405**

Option

Standardization in preferential direction to 0.8 mV/V ± 0,25 % in the sensor cable. Only for ranges > 0 ... 500 N. **...-V008**

Manufacturer Calibration Certificate (WKS)

Calibration of the load cell separately as well as connected to an indicator is available. Calculation consists of basic costs and additional costs per measuring point. Please mention the requested points and the requested direction of load. Standard is an 11 point run in 20 % increments the whole range up and down.