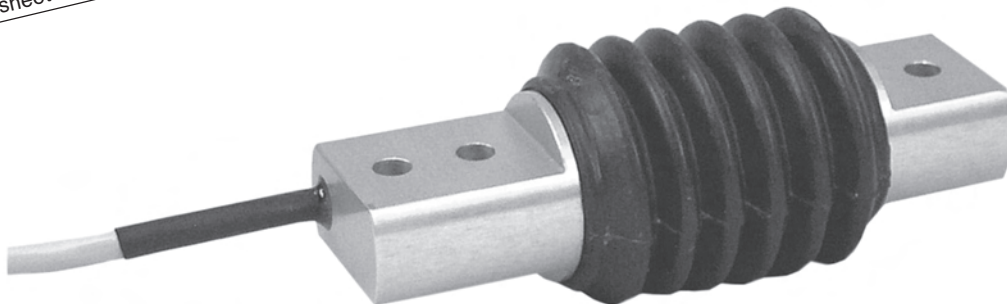


Load Bending Beam

Model 8511

| | |
|---------------|-----------|
| Code: | 8511 E |
| Manufacturer: | burster |
| Delivery: | ex stock |
| Warranty: | 24 months |

CAD data in 3D/2D available on
powerPARTS by web2CAD
 Info: data sheet 80-CD-ROM-E



- Tension and compression
- Measuring ranges from 0 ... 5 N to 0 ... 2000 N
- High linearity and reproducibility
- Very low mounting height
- Simple force introduction
- Material aluminium resp. stainless steel
- Special design upon request

Application

Bending beam load cells of model 8511 are designed for measuring compressive and tensile forces. Their high accuracy, low torque sensitivity and very low mounting height make these sensors particularly suitable for use in weighing and dosing technology as well as for laboratory and production use.

Extremely simple force introduction makes the sensor easy to handle. It offers a very favourable price/performance ratio and can be used universally for static and dynamic measurements.

Application fields:

- ▶ Dosing or proportioning plant
- ▶ Spring characteristic
- ▶ Tension force at wire coiling
- ▶ Friction
- ▶ Cable force
- ▶ Retention forces

Description

The measuring element of this force sensor consists of a double bending beam carrying strain gauges whose resistance changes on the introduction of a force. By applying a voltage to the strain gauge bridge, the change in the strain gauge resistance is converted into an output voltage directly proportional to the force. The strain gauges and the entire measuring element are protected from splashing water by a rubber bellows.

To install the force sensor, clamp it securely on one side (3 bores) and use the free end to introduce the compressive or tensile forces to be measured. The forces are introduced easily in a direction perpendicular to the sensor axis. The sensor is relatively insensitive to interference torques. Negligibly small is the influence on the measuring signal resulting from the increase of load distance on the mounting side (e.g. by a touch finger). An overload protection in form of a mechanical dead stop can be realized at little expense.

8511-E

Technical Data

Dim. tolerances not specified in table acc. with ISO 2768-f

| Type | Meas. Range | Accuracy* [% F.S.] | Dimensions [mm] | | | | | | | | | | | Deflection (fullscale) [mm] | Natural Frequency [Hz] | Weight [g] | |
|-------------|---------------|-----------------------|-----------------|----|-----|----|----|-----|------|-------------------|-----|------|-----|-----------------------------------|------------------------------|---------------|-----|
| | | | ø A | B | C | D | E | F | G | ø H | ø K | L | ø M | | | | N |
| 8511 - 5005 | 0 ... ±5 N | ≤ ± 0.5 | 19.5 | 10 | 5 | 15 | 22 | 6.5 | 18.5 | 5.5 ^{E9} | 4.5 | 86.5 | 28 | 6 | 0.15 | 130 | 50 |
| 8511 - 5010 | 0 ... ±10 N | ≤ ± 0.5 | 19.5 | 10 | 5 | 15 | 22 | 6.5 | 18.5 | 5.5 ^{E9} | 4.5 | 86.5 | 28 | 6 | 0.2 | 180 | 50 |
| 8511 - 5020 | 0 ... ±20 N | ≤ ± 0.25 | 19.5 | 10 | 5 | 15 | 22 | 6.5 | 18.5 | 5.5 ^{E9} | 4.5 | 86.5 | 28 | 6 | 0.15 | 150 | 50 |
| 8511 - 5050 | 0 ... ±50 N | ≤ ± 0.25 | 19.5 | 10 | 5 | 15 | 22 | 6.5 | 18.5 | 5.5 ^{E9} | 4.5 | 86.5 | 28 | 6 | 0.15 | 120 | 50 |
| 8511 - 5100 | 0 ... ±100 N | ≤ ± 0.1 | 28 | 15 | 7.5 | 20 | 29 | 8.5 | 20 | 5.5 ^{E9} | 5.5 | 101 | 40 | 8,5 | 0.3 | 280 | 100 |
| 8511 - 5200 | 0 ... ±200 N | ≤ ± 0.1 | 28 | 15 | 7.5 | 20 | 29 | 8.5 | 20 | 5.5 ^{E9} | 5.5 | 101 | 40 | 8,5 | 0.2 | 230 | 100 |
| 8511 - 5500 | 0 ... ±500 N | ≤ ± 0.1 | 28 | 15 | 7.5 | 20 | 29 | 8.5 | 20 | 6.5 ^{E9} | 6.5 | 101 | 40 | 8,5 | 0.2 | 200 | 350 |
| 8511 - 6001 | 0 ... ±1000 N | ≤ ± 0.1 | 28 | 15 | 7.5 | 20 | 29 | 8.5 | 20 | 6.5 ^{E9} | 6.5 | 101 | 40 | 8,5 | 0.2 | 180 | 350 |
| 8511 - 6002 | 0 ... ±2000 N | ≤ ± 0.1 | 28 | 15 | 7.5 | 20 | 29 | 8.5 | 20 | 6.5 ^{E9} | 6.5 | 101 | 40 | 8,5 | 0.3 | 300 | 350 |

* Combined error of non-linearity, hysteresis and non-repeatability

General tolerances according to ISO 2768-f

Electrical specifications

Bridge resistance: Full bridge, foil type strain gauge 350 Ω, nominal*
 Excitation (max): ranges 0 ... ±5 N to 0 ... ±20 N 5 V DC or AC
 ranges 0 ... ±50 N to 0 ... ±2000 N 10 V DC or AC
 Output: 1.5 mV/V, nominal*
 Shunt calibration resistance: 100 kΩ ± 0.1 %
 Insulation resistance: > 10 MΩ
 The bridge output voltage evoked by a shunt of this value is indicated in the calibration protocol.

* Deviations from the stated values are possible.

Environmental

Temperature operating: - 20 °C ... 80 °C
 Temperature compensated: +15 °C ... 70 °C
 Temperature effect zero: ≤ 0.01 % F.S./K
 Temperature effect span: ≤ 0.02 % Rdg./K

Mechanical

Accuracy: see table
 Measurement type: tension and compression
 Deflection, full scale: see table
 Static overload safe: 50 % over capacity
 Dynamic performance: recommended 50 % of capacity
 Up to measuring range 0 ... 200 N the load cell is not suitable for an extremely high number of cyclical loads.

Design: Double bending beam
 Bellows: Wear and weather resistant rubber
 Protection class: acc. EN 60529 IP54
 Dimension: see table
 Weight: see table
 Preferred measurement direction: The calibration direction is clearly marked by an arrow on the sensor. For this load direction the output voltage is positive.

Mounting: Up to measurement range 0 ... 200 N screws of strength class 8.8 necessary, for measurement ranges from 0 ... 500 N screws strength class 12.9.

Electrical termination: 4-wire, screened, highly flexible cable with free soldered ends, length 2 m, diameter 4.5 mm, bending radius ≥ 20 mm. Kink protection is realized by an additional polymer coat, length approx. 30 mm, diameter 5.5 mm, see drawing.

Terminal assignment:
 White Excitation (positive)
 Brown Excitation (negative)
 Yellow Signal output (positive)
 Green Signal output (negative)

Special Calibration

Special Calibration (WKS) 6 points up/5 down 20 %-steps, compression or/and tension direction.

Option

Standardization of output integrated part of cable, to 1 mV/V ± 0.25 % **Order code V010** (refer to order information)

Order Information (examples):

1. Load bending beam, measuring range 0 ... ±10 N **model 8511-5010**
2. Load bending beam, measuring range 0 ... ±20 N, standardization of output 1 mV/V **model 8511-5020-V010**

Accessories

Mating connector, 12 pins, to all burster desktop devices **model 9941**

Mating connector, 9 pins for 9235 and 9310 **model 9900-V209**

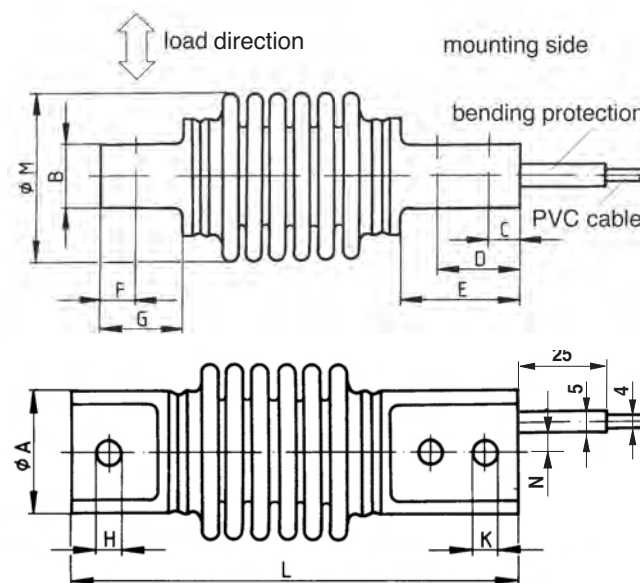
- Mounting of mating connector on sensor cable upon prevalent use of the load cell
- a) in preferred direction (positive sensor signal in preferred direction) **order code: 99004**
 - b) opposite to preferred direction (positive sensor signal opposite preferred direction) **order code: 99007**

Supply units, amplifiers and process monitoring units **see section 9 of the catalog.**

Test and Calibration Protocol

A protocol with traceability certificate and indication of the zero signal, the characteristic and the calibration step is included in scope of delivery.

Scale drawing



Sensor CAD drawing can be imported in 3D or 2D version from CD-ROM or downloaded from the Internet. For more information on *POWERPARTS* by web2CAD please refer to the introduction of product section 8 in the catalog.