

burster

# THE MEASUREMENT SOLUTION

YOUR INDIVIDUAL PRODUCT INFORMATION





# THE MEASUREMENT SOLUTION

## HIGH-TECH FROM A STRONG SOURCE

burster specializes in the development, production and sale of measuring and test devices, sensors and measurement systems as well as calibration services. Since 1961, burster has set standards for precision, quality and flexibility. This has made the German medium-sized enterprise one of the world's foremost suppliers of sensor signal processing and process monitoring systems.

Globally, burster is in contact with more than 140,000 people in industry and R&D. We are partners for mechanical and plant engineering and automation, the automotive industry and its suppliers, electrical and electronic engineering, the chemicals industry, e-mobility as well as many other sectors and future or niche markets such as medical engineering, biotechnology and robotics.





# SENSORS

## LOAD CELLS

### TENSION AND COMPRESSION LOAD CELLS

#### TYP 8524



#### Precision tension and compression load cell

- Measuring range: 500 N ... 200 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.1$  % F.S.
- burster TEDS optionally available

#### TYP 8523



#### Tension and compression load cell

- Measuring range: 20 N ... 5 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.15$  % F.S.
- burster TEDS optionally available

#### TYP 8512



#### S-Beam Tension and Compression Load Cell

- Measuring range: 20 N ... 880 N
- Direction of force: Tension and compression
- Relative non-linearity:  $\pm 0.25$  % F.S.
- burster TEDS optionally available

#### TYP 8431;8432



#### Precision Miniature tension and compression load cell

- Measuring range: 2.5 N ... 100 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.15$  % F.S.
- burster TEDS optionally available

#### TYP 8427



#### Low-cost tension and compression load cell

- Measuring range: 20 N ... 10 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq 0.5$  % F.S.

#### TYP 8417



#### Miniature tension and compression load cell

- Measuring range: 10 N ... 5 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.5$  % F.S.
- burster TEDS optionally available

### MINIATURE COMPRESSION LOAD CELLS

#### TYP 8402



#### Miniature load cell

- Measuring range: 1 kN ... 100 kN
- Direction of force: Compression
- Relative non-linearity:  $\leq \pm 0.25$  % F.S.
- Dual-range optionally
- burster TEDS optionally available

#### TYP 8415



#### Miniature load cell

- Measuring range: 200 N ... 5 kN
- Direction of force: Compression
- Relative non-linearity:  $\leq \pm 0.15$  % F.S.
- burster TEDS optionally available

#### TYP 8416



#### Ultra-miniature load cell

- Measuring range: 20 N ... 5 kN
- Direction of force: Compression
- Relative non-linearity:  $\leq \pm 0.15$  % F.S.
- Standardization: Option
- burster TEDS optionally available

#### TYP 8438



#### Miniature ring load cell

- Measuring range: 100 N ... 200 kN
- Direction of force: Compression
- Relative non-linearity:  $\leq \pm 0.5$  % F.S.
- burster TEDS optionally available

**TYP 8435**

**Miniature tension and compression load cell**

- Measuring range: 200 N ... 5 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.25$  % F.S.
- burster TEDS optionally available

**TYP 8413;8414**

**Subminiature load cell**

- Measuring range: 5 N ... 5 kN
- Direction of force: Compression
- Relative non-linearity:  $\leq \pm 0.25$  % F.S.
- Standardization: Option
- burster TEDS optionally available

**MINIATURE TENSION AND COMPRESSION LOAD CELLS**
**TYP 8431;8432**

**Precision Miniature tension and compression load cell**

- Measuring range: 2.5 N ... 100 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.15$  % F.S.
- burster TEDS optionally available

**TYP 8435**

**Miniature tension and compression load cell**

- Measuring range: 200 N ... 5 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.25$  % F.S.
- burster TEDS optionally available

**TYP 8417**

**Miniature tension and compression load cell**

- Measuring range: 10 N ... 5 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.5$  % F.S.
- burster TEDS optionally available

**TYP 8427**

**Low-cost tension and compression load cell**

- Measuring range: 20 N ... 10 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq 0.5$  % F.S.

**HIGH PRECISION LOAD CELLS**
**TYP 8527**

**High precision compression load cell**

- Measuring range: 500 N ... 100 kN
- Direction of force: Compression
- Relative non-linearity:  $\leq \pm 0.035$  % F.S.
- burster TEDS optionally available

**TYP 8526**

**Compression load cell**

- Measuring range: 100 N ... 1 MN
- Direction of force: Compression
- Relative non-linearity:  $\leq \pm 0.1$  % F.S.
- burster TEDS optionally available

**TYP 8416**

**Ultra-miniature load cell**

- Measuring range: 20 N ... 5 kN
- Direction of force: Compression
- Relative non-linearity:  $\leq \pm 0.15$  % F.S.
- Standardization: Option
- burster TEDS optionally available

**TYP 8524**

**Precision tension and compression load cell**

- Measuring range: 500 N ... 200 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.1$  % F.S.
- burster TEDS optionally available

**85041;85043;85073; Precision tension and compression load cells**  
**TYP 85075**


- Measuring range: 20 N ... 2 MN
- Direction of force: Compression, tension and compression
- Relative non-linearity:  $\leq \pm 0.1$  % F.S.



## BENDING BEAM LOAD CELLS

### TYP 8510



#### Miniature bending beam tension and compression load cell

- Measuring range: 1 N ... 20 N
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.2\%$  F.S.
- burster TEDS optionally available

### TYP 8511



#### Bending beam tension and compression load cell

- Measuring range: 5 N ... 2 kN
- Direction of force: Tension and compression
- Relative non-linearity:  $\leq \pm 0.1\%$  F.S.
- burster TEDS optionally available

### TYP 8512



#### S-Beam Tension and Compression Load Cell

- Measuring range: 20 N ... 880 N
- Direction of force: Tension and compression
- Relative non-linearity:  $\pm 0.25\%$  F.S.
- burster TEDS optionally available

## PRESSES LOAD CELLS

### TYP 8451;8552



#### Presses load cell for hand and automatic operated presses

- Measuring range: 100 N ... 100 kN
- Direction of force: Compression
- Relative non-linearity:  $\leq \pm 0.35$  ...  $1.0\%$  F.S.
- burster TEDS optionally available

## MULTI-COMPONENT SENSORS

### TYP 8565



#### Load cell and torque sensor – X/Y/Z

- Flexibly configurable 3 forces / 3 torques ( $F_x / F_y / F_z - M_x / M_y / M_z$ ) Robot flange according to DIN ISO 9049-1

### TYP 8561



#### 2-Axis load cell XY

- Measuring range: 0 ... 4448 N / 0 ... 2224 N; 0 ... 8896 N / 0 ... 4448 N Direction of force: Tension and compression
- Relative non-linearity:  $\leq 0.1\%$  F.S.

## SPECIAL

### TYP 8400-B001



#### Pedal load cell for pedal operating forces

- Measurement range: 0 ... 2000 N Linearity  $< 0.5\%$  F.S. Simple handling

### TYP 8561



#### 2-Axis load cell XY

- Measuring range: 0 ... 4448 N / 0 ... 2224 N; 0 ... 8896 N / 0 ... 4448 N Direction of force: Tension and compression
- Relative non-linearity:  $\leq 0.1\%$  F.S.

# Precision Tension and Compression Load Cell

## MODEL 8524



Large measuring ranges



Medium measuring ranges  
(with accessories)



Small measuring ranges

### Highlights

- Measuring ranges from 0 ... 500 N up to 0 ... 200 kN
- Non-linearity 0.25 % F.S.
- Particularly versatile
- Cable suitable for drag chains and highly flexible

### Options

- Non-linearity 0.1 % F.S.
- Extended temperature range of -30 ... +120 °C
- Standardized nominal sensitivity 1.5 mV/V
- burster TEDS
- Overload protection up to 5 times the nominal force
- Pull plate and rod end bearings

### Applications

- All areas of mechanical engineering
- Assembly and joining equipment
- Hydraulic presses
- Measurement of cable strengths

### Product description

The 8524 precision tension & compression load cell is a versatile sensor for highly accurate load measurements in diverse applications. Optimum measurement quality is achieved with the load cell mounted on a flat, hard and polished contact surface. This requirement does not apply to small measurement ranges of up to 0 ... 2 kN because three knife-edge bearings ensure that the sensor is seated securely. Our brochure „Load Cells“ explains how you can design parasitic loads out of your mechanical system.

Through-holes in the outer flange are used for fastening the 8524 sensor to the system structure. The load is applied via the central blind threaded hole or optionally via a load button. Alternatively, a pull plate and even rod end bearings, if desired, can be attached to the sensor for equally easy measurement of purely tensile loads, for instance in Bowden cables or chains. The 8524 sensor is designed to measure static, quasi-static and dynamic compressive and/or tensile loads.

Inside the sensor is an elastic membrane, on which are applied strain gages connected in a full Wheatstone bridge. If a tensile or compressive load is applied to the sensor, the ohmic resistance of the measuring bridge changes and detunes the output signal in proportion to the measured load in mV/V.

## Technical Data

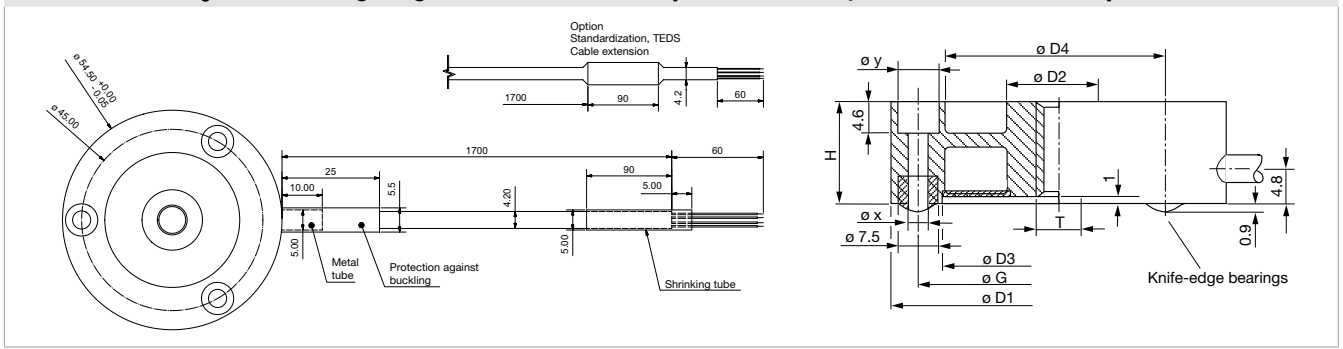
8524	-	5500	6001	6002	6005	6010	6020	6050	6100	6200	
Measuring range calibrated in N and kN from 0 ...		±0,5 kN	±1 kN	±2 kN	±5 kN	±10 kN	±20 kN	±50 kN	±100 kN	±200 kN	
		±112.4 lbs	±224.8 lbs	±449.6 lbs	±1.1 klbs	±2.2 klbs	±4.5 klbs	±11.2 klbs	±22.5 klbs	±45.0 klbs	
<b>Accuracy</b>											
Relative non-linearity*		≤ ±0.25 % F.S. (option: ≤ ±0.1 % F.S.)									
Characteristic curve deviation*		≤ ±0.25 % F.S.									
Relative hysteresis		≤ 0.2 % F.S.				≤ 0.25 % F.S.					
Temperature effect on zero output		≤ 0.02 % F.S./K									
Temperature effect on nominal sensitivity		≤ 0.02 % F.S./K									
<b>Electrical values</b>											
Sensitivity nominal		1.6 mV/V									
Measurement direction		Tension and compression direction. Load calibration in compression direction. The full-scale output is likely to be different when used in the tension direction.									
Standardization		1,5 mV/V (±0,25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end									
Bridge resistance		350 Ω nominal (deviations are possible)									
Excitation		recommended 5 V DC or AC / max. 10 V DC or AC									
Insulation resistance		> 30 MΩ at 45 V									
<b>Environmental conditions</b>											
Nominal temperature range**		+15 °C ... +70 °C (option: -30 °C ... +120 °C)									
Operating temperature range		-30 °C ... +80 °C									
<b>Mechanical values</b>											
Deflection full scale	[µm]	< 80									
Maximum operating force		150 % of capacity									
Overload burst		> 250 % of capacity									
Dynamic performance		recommended: 70 % of capacity maximum: 100 % of capacity									
Protection class (EN 60529)		IP65					IP67				
<b>Other</b>											
Material		stainless steel 1.4542									
Natural frequency	[kHz]	> 2	> 3	> 5	> 8	> 12	> 4	> 3	> 5		
Mass	[kg]	0.25			0.65			2.0	5.0		

\* The data in the area 20 % - 100 % of rated load  $F_{nom}$

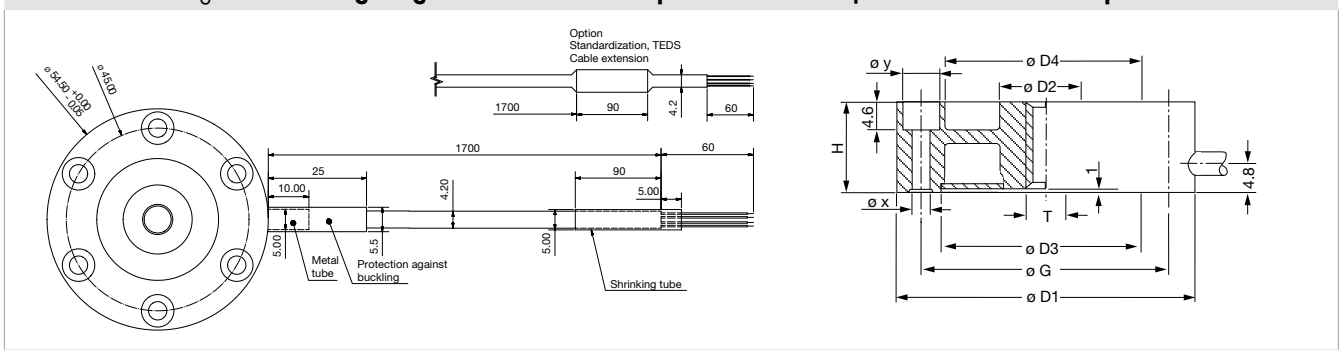
\*\* Temperature range for the optional TEDS or standardization board 0 ... 60 °C



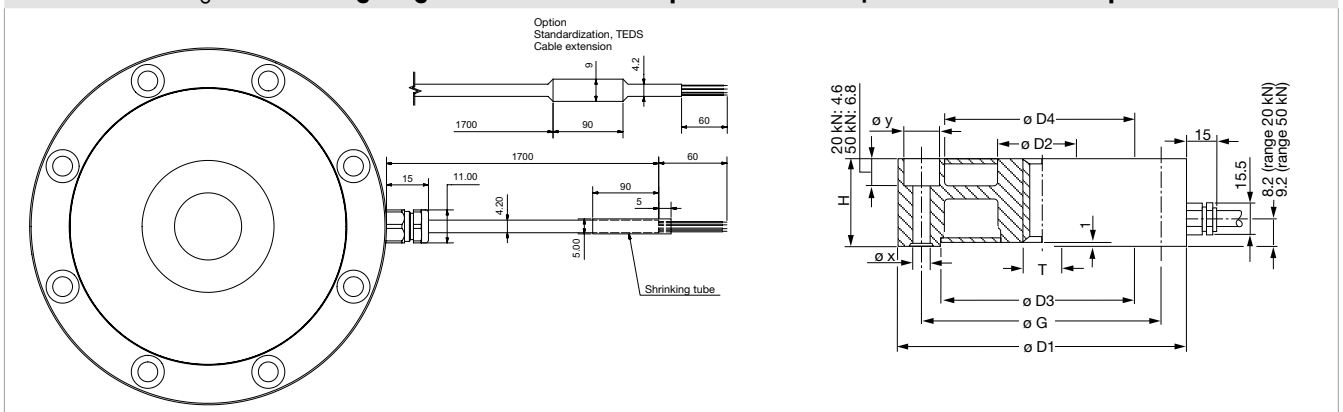
Dimensional drawing 1 – Measuring ranges from 0 ... ±0.5 kN up to 0 ... ±2 kN | from 0 ... ±112.4 lbs up to 0 ... ±449.6 lbs



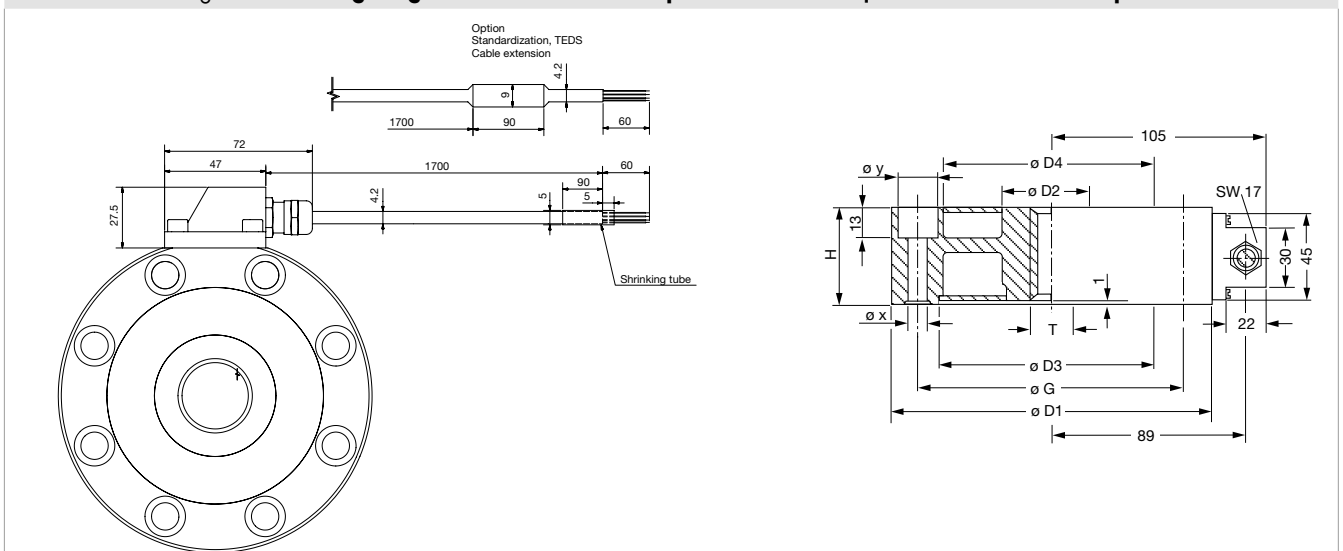
Dimensional drawing 2 – Measuring ranges from 0 ... ±5 kN up to 0 ... ±10 kN | from 0 ... ±1.1 klbs up to 0 ... ±2.2 klbs



Dimensional drawing 3 – Measuring ranges from 0 ... ±20 kN up to 0 ... ±50 kN | from 0 ... ±4.5 klbs up to 0 ... ±11.2 klbs



Dimensional drawing 4 – Measuring ranges from 0 ... ±100 kN up to 0 ... ±200 kN | from 0 ... ±22.5 klbs up to 0 ... ±45.0 klbs



\*\* at standardization or cable extension

8524	-	5500	6001	6002	6005	6010	6020	6050	6100	6200
Measuring range from 0 ...		±0.5 kN	±1 kN	±2 kN	±5 kN	±10 kN	±20 kN	±50 kN	±100 kN	±200 kN
<b>Geometry</b>										
Ø D1	[mm]	54.5				79.0	119.0	155.0		
Ø D2	[mm]	15.0			17.0	22.0	44.0	60.0		
Ø D3	[mm]	35.5				59.0	94.0	109.0		
Ø D4	[mm]	33.5			30.0	58.6	92.6	107.0		
H	[mm]	16.0				25.0	35.0	50.0		
G	[mm]	45.0				68.0	105.0	129.0		
Ø X	[mm]	4.5					6.6	13.5		
Ø Y	[mm]	8.0					11.0	20.0		
Central blind threaded hole T		M8 x 1.25					M12 x 1.5	M24 x 1.5	M36 x 3	
Number of clearing holes in Ø		3 (with edges, H + 1 mm)			6	8				
Dimensional drawings		dimensional drawing 1			dimensional drawing 2	dimensional drawing 3 & 4				
General tolerance of dimension		ISO 2768f								
<b>Installation</b>										
Intended mounting screws		M4					M6	M12		
Tightening torque mounting screws (when used in tension direction)	[N*m]	3					10	100		
Mounting screws		resistance 12.9 or higher								
Installation instructions		The entire bearing area of the sensor must be mounted on a base which is hardened (60 HRC), flat, polished or better lapped. Counter bores in compliance with DIN 74-km, in compliance with DIN 912 head cap screws								

## Electrical termination

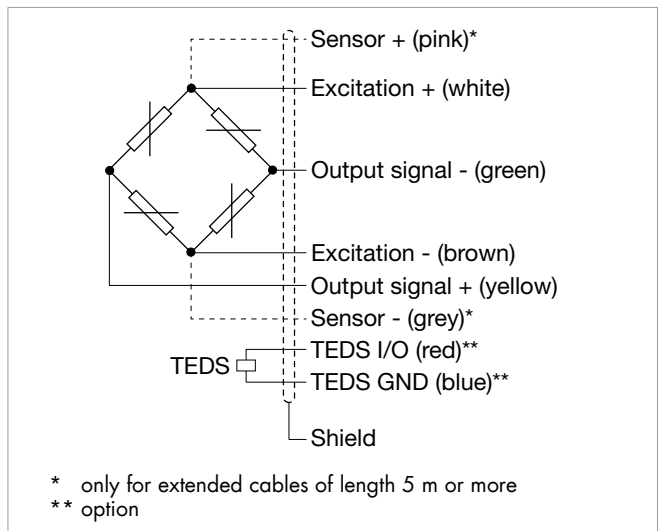
### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



### burster TEDS

The "burster Transducer Electronic Data Sheet" (TEDS) is a memory in which identification data of the sensor, calibration data and other sensor parameters are saved. In conjunction with your own suitable burster device, there is the option of performing a simple adjustment in order to achieve the maximum accuracy of the measuring chain. A simple sensor exchange is thus possible in just a few steps without losing precision.



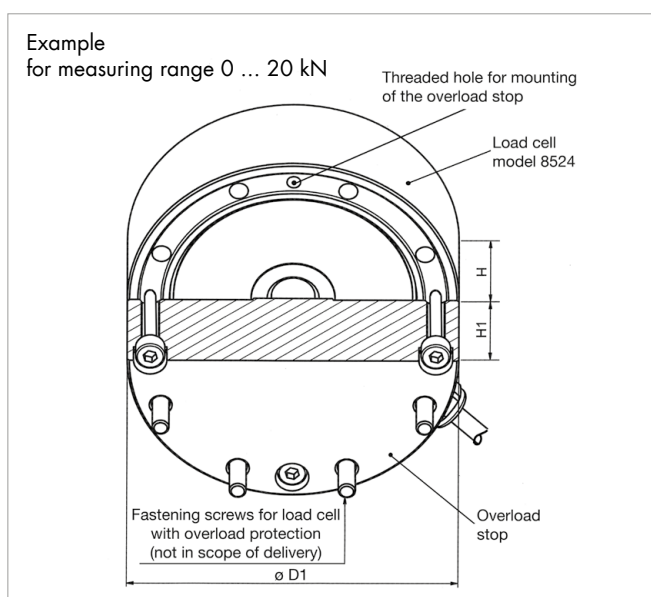
8524	-	5500	6001	6002	6005	6010	6020	6050	6100	6200
Measuring range from 0 ...		±0.5 kN	±1 kN	±2 kN	±5 kN	±10 kN	±20 kN	±50 kN	±100 kN	±200 kN
<b>Electrical termination</b>										
Cable specifications		Highly flexible, oil resistant, drag chains suitable. Bending radius three times the diameter for fixed cable, ten times the diameter for cable permanently moving.								
Cable model		PUR, Ø = 4.2 mm								

## Options

### Overload protection in compression direction

The optional overload protection guards a load cell against damage under a static load that exceeds the safe load (150% of the rated load). The overload protection is available up to the measurement range of  $\leq 20$  kN. Protection is achieved via a mechanical stop, which limits the measurement displacement of the sensor (to about  $80 \mu\text{m}$ ). The overload protection contains additional holes for mounting on a fixed system structure, which then allows the transmission and measurement of tensile loads as well.

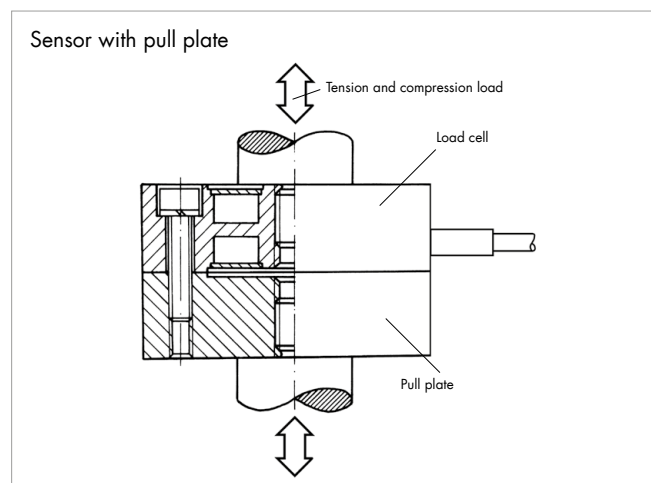
- Overload protection for compression only
- Measuring tension and compression load
- Overload protection mounting by factory only
- Tolerance of standardized output with overload protection at 0.5 % F.S.
- Do not use the overload protection often
- Overload protection does not have any centric threaded holes



Order number	see order code									
Compatible for measuring range from 0 ...	$\pm 0.5$ kN	$\pm 1$ kN	$\pm 2$ kN	$\pm 5$ kN	$\pm 10$ kN	$\pm 20$ kN	-	-	-	-
Geometry										
Overload protection	2.5 kN	5 kN	10 kN	20 kN	30 kN	80 kN	-	-	-	-
$\varnothing D1$	54.5					79	-	-	-	-
H1	19					25	-	-	-	-
H	16					25	-	-	-	-
Other										
Mass	[kg]	0.3		0.7	0.8	-	-	-	-	-

### Pull plates (8590-V...)

A pull plate extends the range of potential uses of tension & compression load cells to measuring tensile loads in moving assemblies (cable tension or forces in joints). The pull plate is fastened by its outer flange to the sensor's flange. Customized threaded parts or even rod end bearings can be fitted in the central threaded hole. Once fitted, the pull plates form part of the sensor. Sensor and plate are calibrated as a unit and are supplied only as a pre-assembled combination. Bolts of strength 12.9 are required for fitting the pull plates.



Order number	see order code									
Compatible for measuring range from 0 ...	$\pm 0.5$ kN	$\pm 1$ kN	$\pm 2$ kN	$\pm 5$ kN	$\pm 10$ kN	$\pm 20$ kN	$\pm 50$ kN	$\pm 100$ kN	$\pm 200$ kN	
Geometry										
Central blind threaded hole T	M8 x 1.25					M12 x 1.5	M24 x 1.5	M36 x 3		
Installation										
Tightening torque mounting screws	[N*m]	3					10			
Other										
Mass	[kg]	0.28					0.7	2.2	5.5	

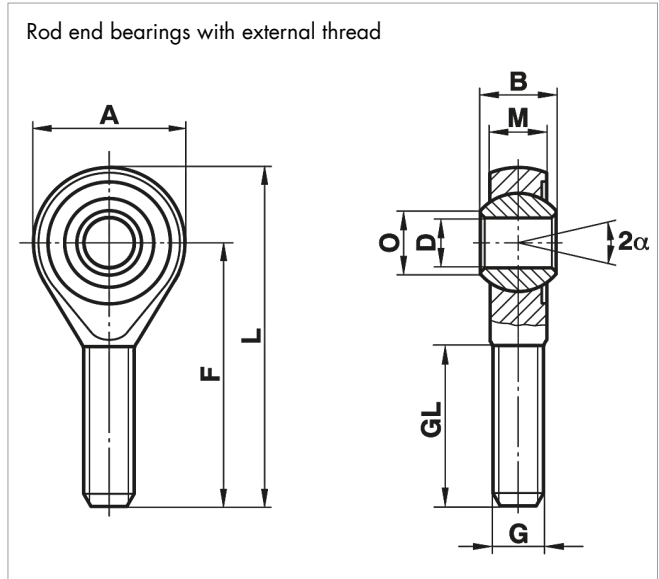


## Accessories

### Rod end bearings

The 8524 load cell can be optionally supplied with a rod end bearing. In combination with a pull plate (see option), up to two rod end bearings can be used. Rod end bearings ensure optimum load application when the sensor is used in the tension direction. In addition, they can compensate for slight misalignment in the compression direction.

- Optimal force introduction
- Compensation of misalignments
- Very high dynamic und static load capacity
- Material: stainless steel
- Temperature range: - 45 °C to + 120 °C
- PTFE insert, maintenance-free
- DIN 648 series K
- Bore holes H7, recommended connection pin: g6
- Inner ring not suitable for permanent rotary operation



### Order Code

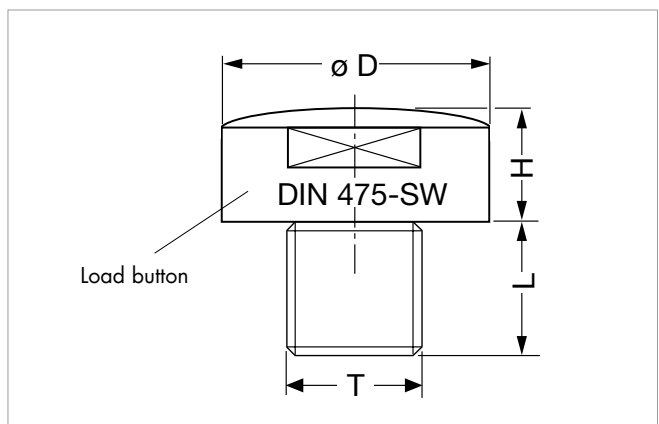
8591	-	Z08M	Z12M	Z24M	Z36M
B	[mm]	12	16	31	43
M	[mm]	9	12	22	28
A	[mm]	24	32	60	80
F	[mm]	42	54	94	125
L	[mm]	54	70	124	165
O	[mm]	10.4	15.4	29.6	37.7
D	[mm]	8	12	25	35
G		M8 x 1.25	M12 x 1.5	M24 x 1.5	M36 x 3.0
GL	[mm]	25	33	57	73
α	[°]	14	13	15	19

### Other

Stat. load factor	[kN]	19.5	42.0	118.0	230.0
Dyn. load factor	[kN]	16.7	32.0	122.0	205.0
Weight	[g]	33	87	600	1600

### Load buttons

Load buttons are used when purely compressive forces are meant to be applied to the load cell and when direct coupling to the surrounding mechanical structure via the central threaded hole in the sensor is not required/possible. The domed surface of the load button minimizes angle errors for loads applied at an angle of up to 3°. The compressive force must be applied to the button via a flat and hardened contact surface. The optimum hardness is 60 HRC or more.



**Order Code**

8580	-	V008					V012	V024	V036	
Compatible for measuring range from 0 ...		±0.5 kN	±1 kN	±2 kN	±5 kN	±10 kN	±20 kN	±50 kN	±100 kN	±200 kN
<b>Geometry</b>										
∅ D	[mm]	14.0					20.0	40.0	57.0	
H	[mm]	7.3					15.1	20.0	30.0	
L	[mm]	7.0					12.0	17,0	40.0	
T		M8 x 1.25					M12 x 1.5	M24 x 1.5	M36 x 3	
SW	[mm]	-					16	32	46.0	
R		20					25	100	200.0	
<b>Installation</b>										
Tightening torques	[N*m]	max. 5			max. 8		max. 10	max. 20	max. 50	
<b>Other</b>										
Mass	[kg]	0.01					0.05	0.25	1	

**Connectors and units****Order Code**

<b>Connectors</b>	
9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster
<b>Units</b>	
7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_i$ , $R_o$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

**Calibration**

<b>Test and calibration certificate</b>	
Included in scope of delivery of sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
<b>Standard factory calibration certificate for load cells or measurement chains (WKS)</b>	
Optionally available	Our standard factory calibration is performed in 20% steps starting from zero until the reaching the nominal force, for increasing and decreasing load with unchanged installation position. Factory calibration can be performed in compression and/or tension direction.
<b>Special factory calibration certificate for load cells or measurement chains (WKS)</b>	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
<b>Calibration certificate with accreditation symbol for product group load cell 8524</b>	
Optionally available	Calibration certificate with accreditation symbol for load cell 8524. Calibration is performed on the basis of the accreditation of the calibration laboratory D-K-15141-01-00, for the scope of accreditation listed in the annex to the certificate. The traceability to national standards as well as a wide international recognition (DAkkS as signatory of the Multilateral Agreements of EA, ILAC and IAF) are thus guaranteed. Calibration is performed according to ISO 376 in 10 force steps (10% steps) vstarting from zero until the reaching the nominal force, for increasing and decreasing load under various installation positions.

## Order Code

Measuring range	Code				Measuring range
0 ... ±0.5 kN	5	5	0	0	0 ... ±112.4 lbs
0 ... ±1 kN	6	0	0	1	0 ... ±224.8 lbs
0 ... ±2 kN	6	0	0	2	0 ... ±449.6 lbs
0 ... ±5 kN	6	0	0	5	0 ... ±1.1 klbs
0 ... ±10 kN	6	0	1	0	0 ... ±2.2 klbs
0 ... ±20 kN	6	0	2	0	0 ... ±4.5 klbs
0 ... ±50 kN	6	0	5	0	0 ... ±11.2 klbs
0 ... ±100 kN	6	1	0	0	0 ... ±22.5 klbs
0 ... ±200 kN	6	2	0	0	0 ... ±45.0 klbs

										Delivery ex stock at short notice										
										N	0	0	0	S	0	0	0			
<b>8</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>-</b>					<b>-</b>				<b>0</b>				<b>0</b>			
<ul style="list-style-type: none"> <li>Nominal sensitivity/not standardized</li> <li>Standardization at 1.5 mV/V</li> </ul>										N										
<ul style="list-style-type: none"> <li>Connection cable 1.7 m (Standardization 2 m)</li> <li>Connection cable 3 m</li> <li>Connection cable 5 m</li> <li>Connection cable 3 m extended *</li> <li>Connection cable 5 m extended * (with sens line)</li> </ul>										0	F	G	L	M						
* shortened delivery time compared with cable length 3 m and 5 m in one piece																				
<ul style="list-style-type: none"> <li>Open cable ends + 6 cm single wires</li> <li>9 pins Sub-D connector model 9900-V209</li> <li>9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx</li> <li>12 pins round connector model 9941 for burster desktop devices</li> <li>9 pins Sub-D connector with burster TEDS model 9900-V229</li> <li>8 pins coupling connector model 9900-V245 for 9110</li> </ul>										O	B	E	F	T	H					
<ul style="list-style-type: none"> <li>Non-linearity 0.25 % F.S.</li> <li>Non-linearity 0.1 % F.S.</li> </ul>										S	L									
<ul style="list-style-type: none"> <li>No option</li> <li>Overload protection in compression direction (only for ranges up to 0 ... 20 kN)</li> <li>Pull plate</li> </ul>																0	4	5		
<ul style="list-style-type: none"> <li>Nominal temperature range +15 °C ... +70 °C</li> <li>Extended nominal temperature range -30 °C ... +120 °C</li> </ul>																		0	J	

## Note

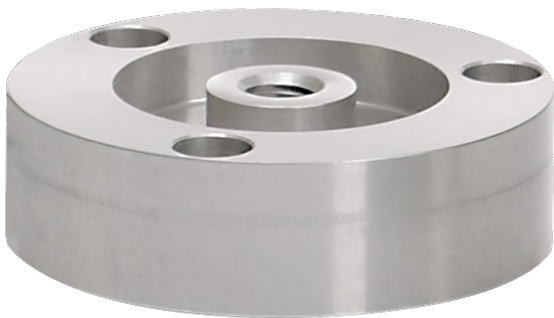
- Brochure**  
Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.
- Product videos**  
Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)
- CAD data**  
Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)





# Tension and Compression Load Cell

## MODEL 8523



### Highlights

- Measuring ranges from 0 ... 20 N to 0 ... 5 kN, 0 ... 4.4 lbs up to 0 ... 1.1 klbs
- Tilt-free installation thanks to point-contact mounts
- Excellent price/performance ratio
- Easy mounting

### Options

- Pull plate for directing tension forces
- Load buttons for simple measurement of compressive loads
- Standardized output signal
- burster TEDS

### Applications

- Machine tools
- Reference sensor for comparative measurements
- All forms of test benches
- R&D

### Product description

The tension & compression load cells from the 8523 series are designed for a wide range of uses. The sensors feature many benefits, including three point-contact mounts for tilt-free installation. Thanks to this feature, excellent measurement results can be achieved even with a sub-optimum mounting surface.

The force to be measured is applied to the central threaded hole in the tension or compression direction. For measuring purely compressive loads, using load buttons from our accessories range saves the need for complex sensor-integration mechanisms. Tensile loads in rods or chains can also be detected with ease using the optional pull plate.

Inside the sensor is an elastic membrane, on which are applied strain gages connected in a full Wheatstone bridge. If a tensile or compressive load is applied to the sensor, the ohmic resistance of the measuring bridge changes and detunes the output signal in proportion to the measured load in mV/V.



High ranges



With load buttons



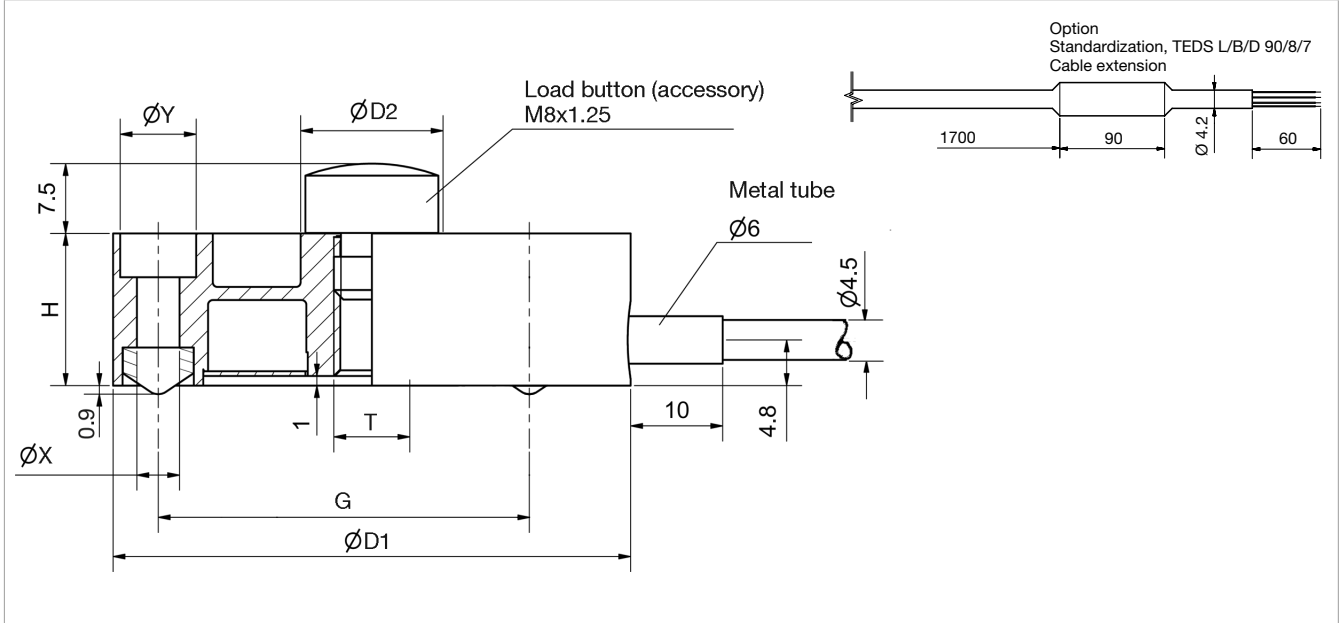
With pull plates + rod end bearings

## Technical Data

8523	-	5020	5050	5100	5200	5500	6001	6002	6005	
Measuring range calibrated in N and kN from 0 ...		±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN	
		±4.4 lbs	±11.2 lbs	±22.4 lbs	±44.9 lbs	±112.4 lbs	±224.8 lbs	±449.6 lbs	±1.1 klbs	
<b>Accuracy</b>										
Relative non-linearity*		≤ ±0.25 % F.S.	≤ ±0.20 % F.S.				≤ ±0.15 % F.S.			
Characteristic curve deviation*		≤ ±0.3 % F.S.	≤ ±0.2 % F.S.				≤ ±0.2 % F.S.			
Relative hysteresis		≤ 0.5 % F.S.	≤ 0.25 % F.S.							
Temperature effect on zero output		≤ ±0.01 % F.S./K					≤ ±0.02 % F.S./K			
Temperature effect on nominal sensitivity		≤ ±0.02 % F.S./K								
<b>Electrical values</b>										
Sensitivity nominal		1.0 mV/V	1.5 mV/V	1.7 mV/V						
Measurement direction		tension and compression direction. Load calibration in compression direction. The full-scale output is likely to be different when used in the tension direction. Positive output signal in compression direction.								
Standardization**		option from 0.5 mV/V to 1.5 mV/V (±0.5 %) (see order code)								
Bridge resistance		350 Ω nominal (deviations are possible)								
Excitation		max. 5 V DC	recommended 5 V DC; max. 10 V DC							
Insulation resistance		> 30 MΩ at 45 V								
<b>Environmental conditions</b>										
Nominal temperature range		+15 °C ... +70 °C								
Operating temperature range		-30 °C ... +80 °C								
<b>Mechanical values</b>										
Deflection full scale	[µm]	< 80								
Maximum operating force		130 % of capacity								
Overload burst		> 300 % of capacity								
Dynamic performance		recommended: 50 %								
Material		high-grade aluminium, anodized								
Protection class (EN 60529)		IP52					IP64			
<b>Installation</b>										
Intended mounting screws		3 pieces M4						3 pieces M5		
Tightening torque mounting screws	[N*m]	3						6		
Mounting screws		resistance 12.9								
Installation instructions		The entire bearing area of the sensor must be mounted on a base which is hardened (60 HRC), flat, polished or better lapped. Counter bores in compliance with DIN 74-km, in compliance with DIN 912 head cap screws								
<b>Other</b>										
Material		high-grade aluminium, anodized								
Natural frequency	[kHz]	0.5	0.75	0.8	1.1	2.3	1	1.8	3	
Mass	[kg]	0.15					0.35			

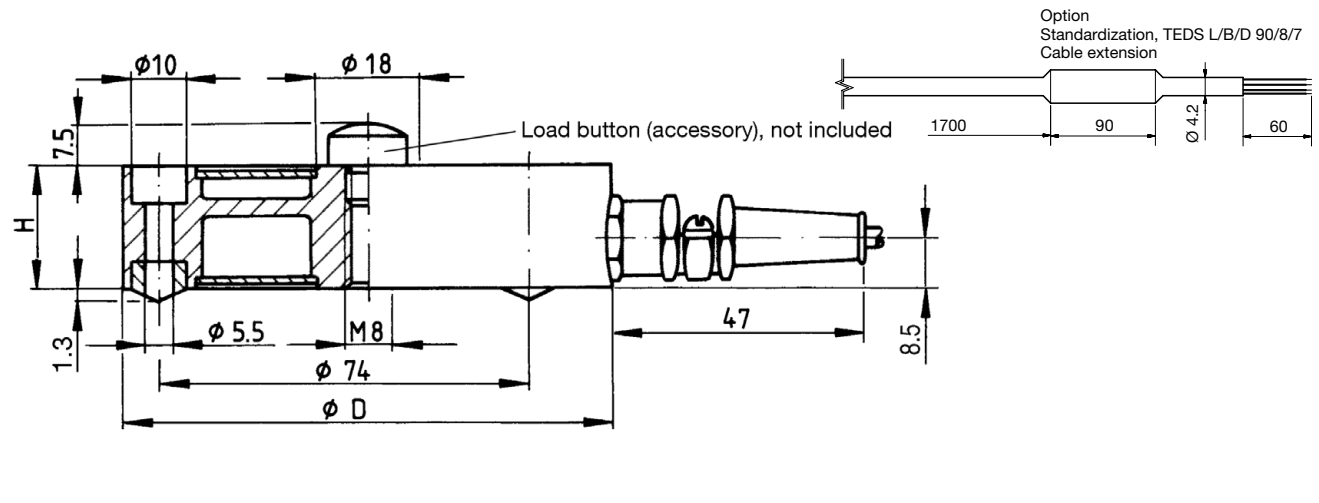
\* The data in the area 20 % - 100 % of rated load F

\*\* Realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end

Dimensional drawing 1 – Measuring ranges from  $\leq 0 \dots \pm 500 \text{ N}$  | from  $\leq 0 \dots \pm 112.4 \text{ lbs}$ 

8523	-	5020	5050	5100	5200	5500
Measuring range from 0 ...		$\pm 20 \text{ N}$	$\pm 50 \text{ N}$	$\pm 100 \text{ N}$	$\pm 200 \text{ N}$	$\pm 500 \text{ N}$
<b>Geometry</b>						
Ø D1	[mm]			54.5		
Ø D2	[mm]			15.0		
H	[mm]			16.0		
G	[mm]			45.0		
Ø X	[mm]			4.5		
Ø Y	[mm]			8.0		
Central blind threaded hole T				M8 x 1.25		
Number of clearing holes in Ø				3 (with edges, H + 0.9 mm)		
General tolerance of dimension				ISO 2768-f		

Dimensional drawing 2 – Measuring ranges from  $\geq 0 \dots \pm 1000 \text{ N}$  | from  $\geq 0 \dots \pm 224.8 \text{ lbs}$



8523	-	6001	6002	6005
Measuring range from 0 ...		$\pm 1 \text{ kN}$	$\pm 2 \text{ kN}$	$\pm 5 \text{ kN}$
<b>Geometry</b>				
$\varnothing D1$	[mm]	89.5		99.5
$\varnothing D2$	[mm]		18.0	
H	[mm]	22.0		30.0
G	[mm]		74.0	
$\varnothing X$	[mm]		5.5	
$\varnothing Y$	[mm]		10.0	
Central blind threaded hole T			M8 x 1.25	
Number of clearing holes in $\varnothing$			3 (with edges, H + 1.3 mm)	
Dimensional drawings			dimensional drawing 2	

## Electrical termination

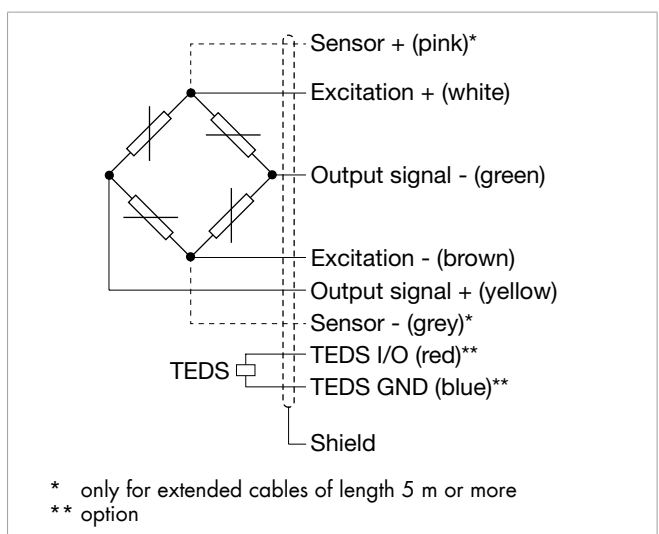
### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



### burster TEDS

The "burster T ransducer E lectronic D ata S heet" (TEDS) is a memory in which identification data of the sensor, calibration data and other sensor parameters are saved. In conjunction with your own suitable burster device, there is the option of performing a simple adjustment in order to achieve the maximum accuracy of the measuring chain. A simple sensor exchange is thus possible in just a few steps without losing precision.

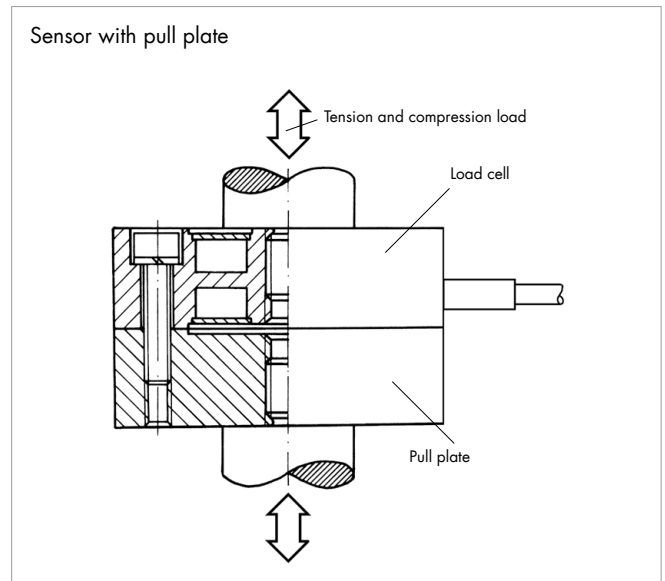


8523	-	5020	5050	5100	5200	5500	6001	6002	6005
Measuring range from 0 ...		±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN
<b>Electrical termination</b>									
Specifications		highly flexible, shielded, drag chains suitable. Bending radius three times the diameter for fixed cable, ten times the diameter for cable permanently moving							
Cable fastening		cable cover				cable connection with tension relief			
Bending protection		shrinking tube				rubber cover			
Bending radius		Bending radius three times the diameter for fixed cable, ten times the diameter for cable permanently moving.							
Cable type		PUR, Ø = 4,2 mm							

## Options

### Pull plates

A pull plate extends the range of potential uses of tension & compression load cells to measuring tensile loads in moving assemblies (cable tension or forces in joints). The pull plate is fastened by its outer flange to the sensor's flange. Customized threaded parts or even joint lugs can be fitted in the central threaded hole. Once fitted, the pull plates form part of the sensor. Sensor and plate are calibrated as a unit and are supplied only as a pre-assembled combination. Bolts of strength 12.9 are required for fitting the pull plates.



Order number		see order code							
Compatible for measuring range from 0 ...		±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN
<b>Geometry</b>									
Central blind threaded hole T		M8 x 1.25							
<b>Installation</b>									
Tightening torque mounting screws	[N*m]	3				6			
<b>Other</b>									
Mass	[kg]	0.4				0.8			

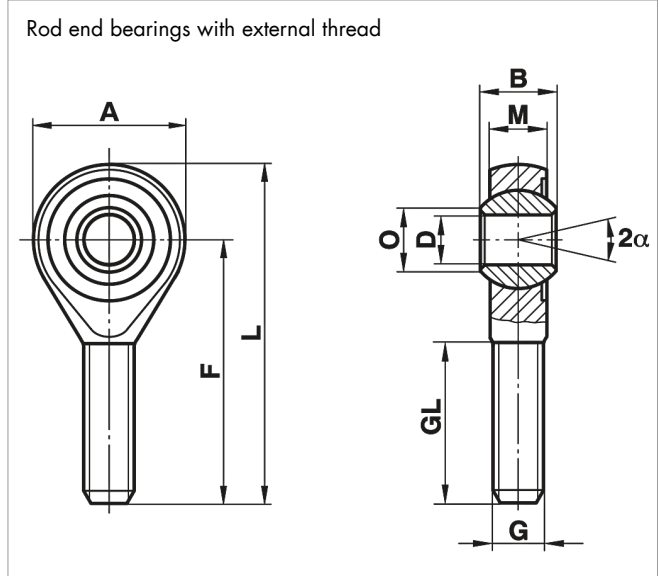


## Accessories

### Rod end bearings

The 8523 load cell can be optionally supplied with a rod end bearing. In combination with a pull plate (see option), up to two rod end bearings can be used. Rod end bearings ensure optimum load application when the sensor is used in the tension direction. In addition, they can compensate for slight misalignment in the compression direction.

- Optimal force introduction
- Compensation of misalignments
- Very high dynamic und static load capacity
- Material: stainless steel
- Temperature range: - 45 °C to + 120 °C
- PTFE insert, maintenance-free
- DIN 648 series K
- Bore holes H7, recommended connection pin: g6
- Inner ring not suitable for permanent rotary operation



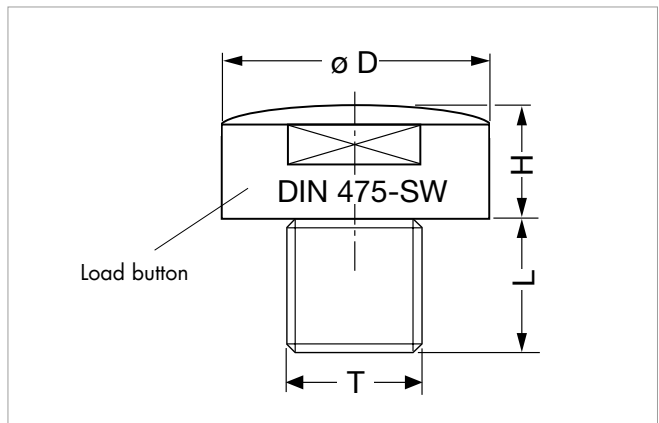
### Order Code

8591	-	Z08M
B	[mm]	12
M	[mm]	9.00
A	[mm]	24
F	[mm]	42
L	[mm]	54
O	[mm]	10.4
D	[mm]	8
G		M8 x 1.25
GL	[mm]	25
α	[°]	14
Other		
Stat. load factor	[kN]	19.5
Dyn. load factor	[kN]	16.7
Weight	[g]	33

## Accessories

### Load buttons

Load buttons are used when purely compressive forces are meant to be applied to the load cell and when direct coupling to the surrounding mechanical structure via the central threaded hole in the sensor is not required/possible. The domed surface of the load button minimizes angle errors for loads applied at an angle of up to 3°. The compressive force must be applied to the button via a flat and hardened contact surface. The optimum hardness is 60 HRC or more.



**Order Code**

8580		V008							
Compatible for measuring range from 0 ...	-	±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN
<b>Geometry</b>									
Ø D	[mm]	14.0							
H	[mm]	7.3							
L	[mm]	7.0							
T		M8 x 1.25							
SW	[mm]	-							
R		20							
<b>Installation</b>									
Tightening torques	[N*m]	max. 5							
<b>Other</b>									
Mass	[kg]	0.01							

**Connectors and units****Order Code**

Connectors		
9941		Connectors 12 pin, suitable to all burster desktop units
9900-V209		Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229		Connectors 9 pin with TEDS
9900-V245		Connectors 8 pin, suitable to ForceMaster
Units		
7281-V0001		Mobile measuring device with strain gage simulator and sensor test ( $R_i$ , $R_o$ , Shunt, $R_{SO}$ )
refer to section 9		Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

**Calibration**

Test and calibration certificate		
Supplied with the sensor		Amongst other data, includes figures for zero point, full-scale output and calibration offset
Standard factory calibration certificate for load cells or measurement chains (WKS)		
Optionally available		Our standard factory calibration is performed in 20% steps starting from zero until the reaching the nominal force, for increasing and decreasing load with unchanged installation position. Factory calibration can be performed in compression and/or tension direction.
Special factory calibration certificate for load cells or measurement chains (WKS)		
On request		We are happy to calibrate sensors and measurement chains to the customer's specification.
Calibration certificate with accreditation symbol for product group load cell 8523		
Optionally available		Calibration certificate with accreditation symbol for load cells 8523. Calibration is performed on the basis of the accreditation of the calibration laboratory D-K-15141-01-00, for the scope of accreditation listed in the annex to the certificate. The traceability to national standards as well as a wide international recognition (DAkkS as signatory of the Multilateral Agreements of EA, ILAC and IAF) are thus guaranteed. Calibration is performed according to ISO 376 in 10 force steps (10% steps) vstarting from zero until the reaching the nominal force, for increasing and decreasing load under various installation positions.

## Order Code

Measuring range	Code				Measuring range
0 ... ±20 N	5	0	2	0	0 ... ±4.4 lbs
0 ... ±50 N	5	0	5	0	0 ... ±11.2 lbs
0 ... ±100 N	5	1	0	0	0 ... ±22.4 lbs
0 ... ±200 N	5	2	0	0	0 ... ±44.9 lbs
0 ... ±500 N	5	5	0	0	0 ... ±112.4 lbs
0 ... ±1 kN	6	0	0	1	0 ... ±224.8 lbs
0 ... ±2 kN	6	0	0	2	0 ... ±449.6 lbs
0 ... ±5 kN	6	0	0	5	0 ... ±1.1 klbs

										For short delivery ex stock										
										N	0	0	0	S	0	0	0	0	0	
<b>8</b>	<b>5</b>	<b>2</b>	<b>3</b>	<b>-</b>					<b>-</b>					<b>0</b>	<b>S</b>			<b>0</b>	<b>0</b>	
<ul style="list-style-type: none"> <li>Nominal sensitivity/not standardized</li> <li>Standardization at 0.5 mV/V (for measuring range 20 N) **</li> <li>Standardization at 0.8 mV/V (for measuring range 50 N) **</li> <li>Standardization at 1.0 mV/V (for measuring range 100 N) **</li> <li>Standardization at 1.5 mV/V (for measuring range 200 N ... 5 kN) **</li> </ul>										N										
** Temperature range limited to 0 ... +60 °C																				
<ul style="list-style-type: none"> <li>Connection cable 1.7 m (with standardization in the cable 2 m)</li> <li>Connection cable 3 m</li> <li>Connection cable 5 m</li> <li>Connection cable 3 m extended *</li> <li>Connection cable 5 m extended * (with sens line)</li> </ul>										0	F	G	L	M						
* shortened delivery time compared with cable length 3 m and 5 m in one piece																				
<ul style="list-style-type: none"> <li>Open cable ends + 6 cm single wires</li> <li>9 pins Sub-D connector model 9900-V209</li> <li>9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx</li> <li>12 pins round connector model 9941 for burster desktop devices</li> <li>9 pins Sub-D connector with burster TEDS model 9900-V229 **</li> <li>8 pins coupling connector model 9900-V245 for 9110</li> </ul>										0	B	E	F	T	H					
** temperature range limited to 0 ... +60 °C																				
<ul style="list-style-type: none"> <li>Non-linearity according to specification</li> </ul>														S						
<ul style="list-style-type: none"> <li>No option</li> <li>Pull plate (sensors with 20 N – 5 kN)</li> </ul>																		0	5	

## Note

- Brochure**  
Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.
- Product videos**  
Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)
- CAD data**  
Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



## S-Beam Tension and Compression Load Cell

### MODEL 8512



#### Highlights

- Measuring ranges from 0 ... 20 N to 0 ... 880 N
- Non-linearity < 0,25 % v.E.
- Many load cycles
- Protection class IP54
- Excellent price-performance ratio

#### Option

- 3-fold overload protection

#### Applications

- Dosing system
- Automated tool testing
- Tension force measurement for wire or thread winders
- Test and analysis systems in the pharma industry
- Withdrawal force
- Measuring loads in cable systems



Cable outlet with strain relief



Overload protection in compression direction

#### Product description

The measuring element of this load cell consists of a double bending beam with strain gages, the resistance of which changes with the application of force. Upon applying a voltage to the strain gage bridge, the change in the strain gage resistance is converted into output voltage, which is directly proportional to the force. The strain gages and the entire measuring element are protected from water spray by metal cover including sealing material.

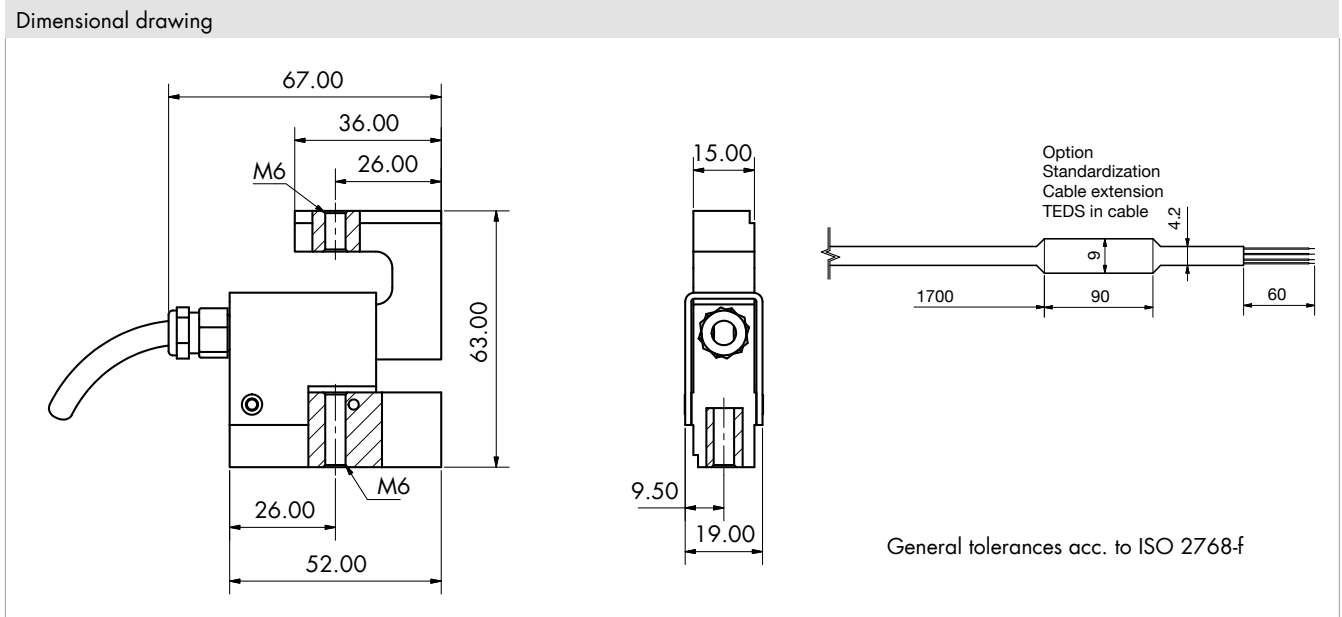
The tensile or compressive load to be measured is applied to the sensor element through the M6 threaded hole located on each end face. The load can be applied easily, along the sensor axis. This serves to prevent falsification of the measured values. Overload protection can be realized with little effort using a mechanical stop.

## Technical Data

8512	-	5020	5050	5100	5220	5440	5880
Measuring range calibrated in N from 0 ...		±20 N	±50 N	±100 N	±220 N	±440 N	±880 N
		±4.5 lbs	±11.2 lbs	±22.5 lbs	±49.5 lbs	±98.9 lbs	±197.8 lbs
<b>Accuracy</b>							
Relative non-linearity*		≤ ±0.25 % F.S.					
Characteristic curve deviation*		≤ ±0.25 % F.S.					
Relative hysteresis		≤ 0.25 % F.S.					
Temperature effect on zero output		≤ ±0.03 % F.S./K					
Temperature effect on nominal sensitivity		≤ ±0.05 % F.S./K					
<b>Electrical values</b>							
Sensitivity nominal		1.6 mV/V	1.7 mV/V	2.7 mV/V			
Measurement direction		Tension and compression direction. Load calibration in compression direction. The full-scale output is likely to be different when used in the tension direction. Positive signal in compression direction					
Standardization**		option 1,5 mV/V (±0,25 %)					
Bridge resistance		350 Ω nominal (deviations are possible)					
Excitation		max. 5 V	5 V DC (max. 10 V DC)				
<b>Environmental conditions</b>							
Nominal temperature range		+15 °C ... +70 °C					
Operating temperature range		-30 °C ... +90 °C					
<b>Mechanical values</b>							
Deflection full scale	[µm]	< 200					
Maximum operating force		120 % of capacity					
Overload burst		> 200 % of capacity					
Dynamic performance		recommended: 50 %					
Material		aluminium alloy					
Protection class (EN 60529)		IP54					
<b>Geometry</b>		5020	5050	5100	5220	5440	5880
		see dimensional drawing					
<b>Installation</b>							
Intended mounting screws		2 pcs. M6					
Tightening torque mounting screws	[N*m]	7					
Mounting screws		strength 8.8 or higher					
Installation instructions		Smooth flat fixing surface required, load must be applied centrally.					
<b>Other</b>							
Natural frequency	[kHz]	> 2					
Mass	[g]	140					

\* The data in the area 20 % - 100 % of rated load  $F_{nom}$

\*\* Realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end (Temperature range for the optional TEDS or standardization board 0 ... +60 °C)



## Electrical termination

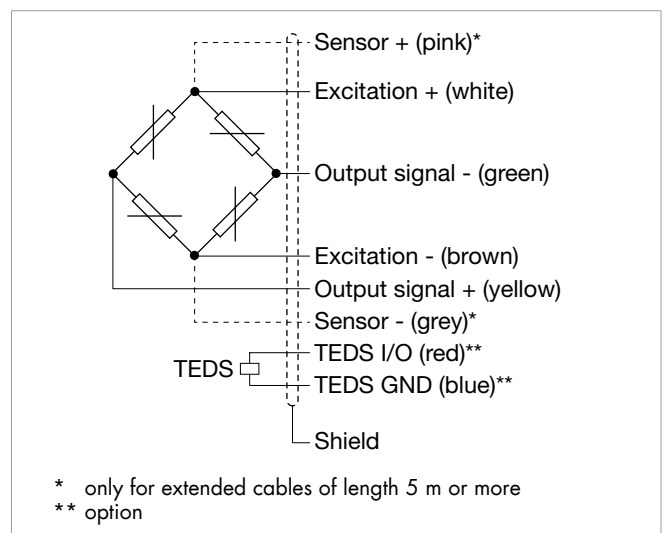
### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.

### burster TEDS



The "burster Transducer Electronic Data Sheet" (TEDS) is a memory in which identification data of the sensor, calibration data and other sensor parameters are saved. In conjunction with your own suitable burster device, there is the option of performing a simple adjustment in order to achieve the maximum accuracy of the measuring chain. A simple sensor exchange is thus possible in just a few steps without losing precision.



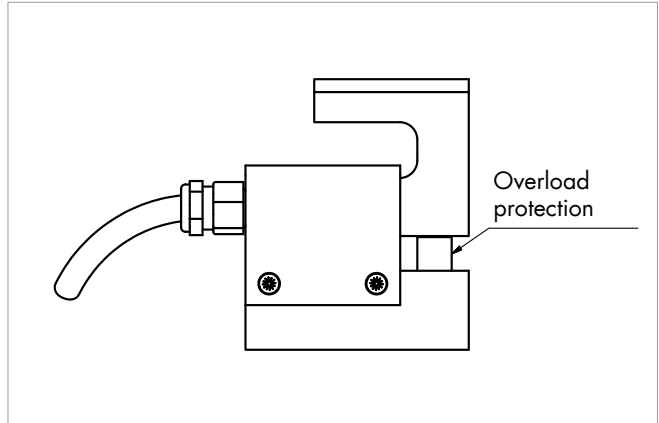
8512	-	5020	5050	5100	5220	5440	5880
Measuring range from 0 ...		±20 N	±50 N	±100 N	±220 N	±440 N	±880 N
Electrical termination							
Specifications		highly flexible, oil resistant, drag chains suitable					
Cable fastening		PG screwing					
Bending protection		no bending protection					
Bending radius		three times the diameter for fixed cable, ten times the diameter for cable permanently moving					
Cable model		PUR, Ø = 4.2					



## Options

### Overload protection in compression direction

The optional overload protection guards the load cell against damage at a static compression force up to 300 % of its service load. Protection is achieved via a mechanical stop, which limits the measurement displacement of the sensor.



8512	-	5020	5050	5100	5220	5440	5880
Measuring range from 0 ...		±20 N	±50 N	±100 N	±220 N	±440 N	±880 N
<b>Electrical termination</b>							
Overload protection	[N]	60	150	300	660	1320	2640

## Calibration

<b>Test and calibration certificate</b>	
Included in scope of delivery of sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
<b>Standard factory calibration certificate for load cells or measurement chains (WKS)</b>	
Optionally available	Our standard factory calibration is performed in 20% steps starting from zero until the reaching the nominal force, for increasing and decreasing load with unchanged installation position. Factory calibration can be performed in compression and/or tension direction.
<b>Special factory calibration certificate for load cells or measurement chains (WKS)</b>	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
<b>Calibration certificate with accreditation symbol for product group load cell 8512</b>	
Optionally available	Calibration certificate with accreditation symbol for load cell 8512. Calibration is performed on the basis of the accreditation of the calibration laboratory D-K-15141-01-00, for the scope of accreditation listed in the annex to the certificate. The traceability to national standards as well as a wide international recognition (DAkkS as signatory of the Multilateral Agreements of EA, ILAC and IAF) are thus guaranteed. Calibration is performed according to ISO 376 in 10 force steps (10% steps) vstarting from zero until the reaching the nominal force, for increasing and decreasing load under various installation positions.

## Order Code

Measuring range	Code				Measuring range
0 ... ±20 N	5	0	2	0	0 ... ±4.5 lbs
0 ... ±50 N	5	0	5	0	0 ... ±11.2 lbs
0 ... ±100 N	5	1	0	0	0 ... ±22.5 lbs
0 ... ±220 N	5	2	2	0	0 ... ±49.5 lbs
0 ... ±440 N	5	4	4	0	0 ... ±98.9 lbs
0 ... ±880 N	5	8	8	0	0 ... ±197.8 lbs

										Delivery ex stock at short notice							
										N	0	0	0	S	0	0	0
<b>8</b>	<b>5</b>	<b>1</b>	<b>2</b>	<b>-</b>					<b>-</b>				<b>0</b>	<b>S</b>		<b>0</b>	<b>0</b>
■ Nominal sensitivity/not standardized										N							
■ Standardization at 1,5 mV/V										E							
■ TEDS Platine im Kabel										T							
■ Connection cable 1.7 m (Standardization 2 m)										0							
■ Connection cable 3 m										F							
■ Connection cable 5 m (with sense line)										G							
■ Connection cable 3 m extended *										L							
■ Connection cable 5 m extended (with sense line) *										M							
* shortened delivery time compared with cable length 3 m and 5 m in one piece																	
■ Open cable ends + 6 cm single wires										0							
■ 9 pins Sub-D connector model 9900-V209										B							
■ 9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx										E							
■ 12 pins round connector model 9941 for burster desktop devices										F							
■ 9 pins Sub-D connector with burster TEDS model 9900-V229										T							
■ Non-linearity 0.25 % F.S.										S							
■ No option										0							
■ Overload protection in compression direction (see table overload protection)										4							

## Note

### ■ Brochure

Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.

### ■ Product videos

Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)



### ■ CAD data

Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



# Precision Miniature Tension and Compression Load Cell

## MODEL 8431, MODEL 8432 with overload protection



8431

8432

### Highlights

- Measuring ranges from 0 ... 2.5 N up to 0 ... 100 kN
- Protection class IP65
- Very robust against lateral forces due to supporting membranes
- Relative non-linearity from 0.15 % F.S.
- Model 8432 with overload protection for directions tension and compression

### Options

- Compensated temperature range from -55 °C ... +120 °C
- Vacuum compatible design
- Various attachments available
- Dragchain cable

### Applications

- Machinery manufacture
- Tool manufacturing
- Handling gear
- Bar works



Sensor with rod end bearings



8431 various measuring ranges



8432 various measuring ranges

### Product description

These models are among our most precise and yet mechanically robust miniature load cells. High accuracy, finely graded measuring ranges, small dimensions and the simple introduction of force via opposing threaded pins open up a wide scope of laboratory and production applications. Their sophisticated engineering with integrated support membranes and overload protection reduces additional design expense in many applications, e.g. for external overload protection or guiding the parts introducing force to the cell. The result is that less space is required, less material is used and less weight is involved. Last but not least, there is hardly any friction on components that could falsify the measurement result.

The force to be measured is introduced centrally and axially to the cylindrical sensor body in the tension or compression direction by means of the two threaded pins. This requires the sensor to be mounted without any elements touching the end faces of the sensor housing. Two stabilizing support membranes inside the sensors for the smaller measurement ranges minimize the effect of lateral forces and moments, while also ensuring long-term mechanical measuring stability. Even though the precision miniature load cell is designed to isolate the measuring element from external forces, torsion and bending moments on the sensor axis should be avoided. The sensors work position independent. They have an active side which acts directly on the measuring element, whereas the passive side is fixed to the housing.

## Technical Data

8431	-	5	5010	5020	5050	5100	5200	5500	
Measuring range calibrated in N and kN from 0 ...		±5 N	±10 N	±20 N	±50 N	±100 N	±200 N	±500 N	
		±1.24 lbs	±2.24 lbs	±4.49 lbs	±11.2 lbs	±22.5 lbs	±45.0 lbs	±112.4 lbs	
<b>Accuracy</b>									
Relative non-linearity*		≤ ±0.15 % F.S.							
Characteristic curve deviation*		≤ ±0.15 % F.S.							
Relative hysteresis		≤ 0.30 % F.S.	≤ 0.25 % F.S.						
Temperature effect on zero output		≤ ±0.05 % F.S./K	≤ ±0.03 % F.S./K						
Temperature effect on nominal sensitivity		≤ ±0.05 % F.S./K	≤ ±0.03 % F.S./K						
<b>Electrical value</b>									
Sensitivity nominal		15 mV/V ... 40 mV/V	0.4 mV/V	0.8 mV/V	2 mV/V				
Measurement direction		<b>8431-5:</b> Tension and compression direction. Calibration in the preferred direction of tension force. The full-scale output is likely to be different when used in the compression direction. <b>from 8431-5010:</b> Tension and compression direction. Calibration in the preferred direction of compression force. The full-scale output is likely to be different when used in the tension direction.							
Standardization		only for measuring ranges ≥ 0 ... 50 N, to 1.5 mV/V (±0.25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end							
Bridge resistance		ca. 500 Ω nominal	ca. 350 Ω nominal						
Excitation		recommended 5 V DC							
Insulation resistance		30 MΩ at 45 V DC							
Calibration resistance		<b>8431-5:</b> 200 kΩ ±0.1 %; <b>from 8431-5010:</b> 59 kΩ ±0.1 % The bridge output voltage caused by a shunt of this value is given in the calibration protocol.							
<b>Environmental conditions</b>									
Nominal temperature range**		+15 °C ... +70 °C							
Operating temperature range**		-55 °C ... +120 °C (optional cable with drag chain capability -30 °C ... +100 °C)							
<b>Mechanical values</b>									
Deflection full scale	[µm]	15 ... 40							
Maximum operating force bidirectional		150 % of capacity							
Overload burst		200 % of capacity							
Dynamic performance		recommended: 50 % of capacity maximum: 70 % of capacity							
Protection class (EN 60529)		IP65							
<b>Other</b>		5	5010	5020	5050	5100	5200	5500	
Material		stainless steel 1.4542							
Natural frequency	[kHz]	0.3		0.7	0.9	1.2	2.7	3.3	
Mass without cable	[g]	18				34			
Thread adapter ***		8431-Zx01				8431-Zx02			

\* The data in the area 20 % - 100 %

\*\* Temperature range for the optional TEDS or standardization board 0 ... 60 °C

\*\*\* Spare part orders of the thread adapter require the specification of the serial number of the sensor

## Technical Data

8431	-	6001	6002	6005	6010	6020	6050	6100
Measuring range calibrated in N and kN from 0 ...		±1 kN	±2 kN	±5 kN	±10 kN	±20 kN	±50 kN	±100 kN
		±225.0 lbs	±450.0 lbs	±1.1 klbs	±2.2 klbs	±4.5 klbs	±11.2 klbs	±22.5 klbs
<b>Accuracy</b>								
Relative non-linearity*		≤ ±0.15 % F.S.						
Characteristic curve deviation*		≤ ±0.15 % F.S.	≤ ±0.20 % F.S.					
Relative hysteresis		≤ 0.25 % F.S.						
Temperature effect on zero output		≤ ±0.03 % F.S./K						
Temperature effect on nominal sensitivity		≤ ±0.03 % F.S./K						
<b>Electrical value</b>								
Sensitivity nominal		2 mV/V						
Measurement direction		Tension and compression direction. Calibration in the preferred direction of compression force. The full-scale output is likely to be different when used in the tension direction.						
Standardization		to 1.5 mV/V (±0.25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end						
Bridge resistance		ca. 350 Ω nominal						
Excitation		recommended 5 V DC						
Insulation resistance		30 MΩ at 45 V DC						
Calibration resistance		59 kΩ ±0.1 % The bridge output voltage caused by a shunt of this value is given in the calibration protocol.						
<b>Environmental conditions</b>								
Nominal temperature range**		+15 °C ... +70 °C						
Operating temperature range**		-55 °C ... +120 °C (optional cable with drag chain capability -30 °C ... +100 °C)						
<b>Mechanical values</b>								
Deflection full scale	[µm]	15 ... 40						
Maximum operating force bidirectional		150 % of capacity						
Overload burst		200 % of capacity						
Dynamic performance		recommended: 50 % of capacity maximum: 70 % of capacity						
Protection class (EN 60529)		IP65						
<b>Other</b>		6001	6002	6005	6010	6020	6050	6100
Material		stainless steel 1.4542						
Natural frequency	[kHz]	5.3	7.5	9.7	1.3	1.0		0.5
Mass without cable	[g]		40		60	124	238	1124
Thread adapter ***		-						

\* The data in the area 20 % - 100 %

\*\* Temperature range for the optional TEDS or standardization board 0 ... 60 °C

\*\*\* Spare part orders of the thread adapter require the specification of the serial number of the sensor

## Technical Data

8432	-	2.5	5005	5010	5020	5050
Measuring range calibrated in N and kN from 0 ...		±2.5 N	±5 N	±10 N	±20 N	±50 N
		±0.56 lbs	±1.24 lbs	±2.24 lbs	±4.49 lbs	±11.2 lbs
<b>Accuracy</b>						
Relative non-linearity*		≤ ±0.20 % F.S.				
Characteristic curve deviation*		≤ ±0.20 % F.S.				
Relative hysteresis		≤ 0.25 % F.S.				
Temperature effect on zero output		≤ ±0.05 % F.S./K	≤ ±0.03 % F.S./K			
Temperature effect on nominal sensitivity		≤ ±0.05 % F.S./K	≤ ±0.03 % F.S./K			
<b>Electrical value</b>						
Sensitivity nominal		15 mV/V nominal	0.75 mV/V nominal	1.5 mV/V nominal	2 mV/V	
Measurement direction		<b>8432-2.5:</b> Tension and compression direction. Calibration in the preferred direction of tension force. The full-scale output is likely to be different when used in the compression direction. <b>from 8432-5005:</b> Tension and compression direction. Calibration in the preferred direction of compression force. The full-scale output is likely to be different when used in the tension direction.				
Standardization		only for measuring ranges ≥ 0 ... 20 N, auf 1.5 mV/V (±0.25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end				
Bridge resistance		ca. 500 Ω nominal	ca. 350 Ω nominal			
Excitation		recommended 5 V DC				
Insulation resistance		30 MΩ at 45 V DC				
Calibration resistance		<b>8432-2.5:</b> 200 kΩ ±0.1 %; <b>from 8432-5005:</b> 59 kΩ ±0.1 % The bridge output voltage caused by a shunt of this value is given in the calibration protocol.				
<b>Environmental conditions</b>						
Nominal temperature range**		+15 °C ... +70 °C				
Operating temperature range**		-55 °C ... +120 °C (optional cable with drag chain capability -30 °C ... +100 °C)				
<b>Mechanical values</b>						
Deflection full scale	[µm]	15 ... 40				
Maximum operating force bidirectional		100 % of capacity (then overload protection takes effect)				
Maximum static load to overload stop		bidirectional 500 % of capacity				
Dynamic performance		recommended: 50 % of capacity maximum: 70 % of capacity				
Protection class (EN 60529)		IP65				
<b>Other</b>		2.5	5005	5010	5020	5050
Material		stainless steel 1.4542				
Natural frequency	[kHz]	0.2			0.35	0.6
Mass without cable	[g]	68				
Thread adapter ***		8432-Zx01				

\* The data in the area 20 % - 100 %

\*\* Temperature range for the optional TEDS or standardization board 0 ... 60 °C

\*\*\* Spare part orders of the thread adapter require the specification of the serial number of the sensor



## Technical Data

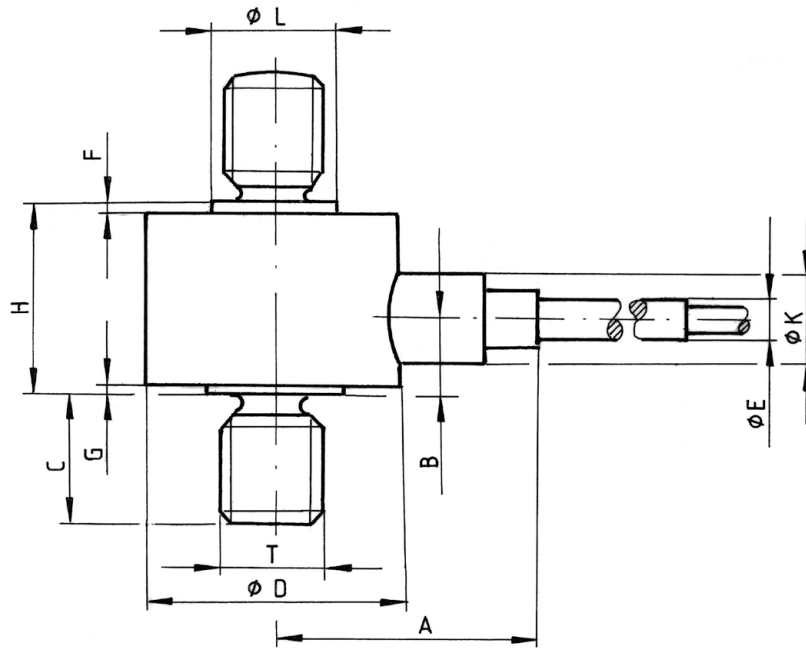
8432	-	5100	5200	5500	6001	6002	
Measuring range calibrated in N and kN from 0 ...		±100 N	±200 N	±500 N	±1 kN	±2 kN	
		±22.5 lbs	±45.0 lbs	±112.4 lbs	±225.0 lbs	±450.0 lbs	
<b>Accuracy</b>							
Relative non-linearity*		≤ ±0.20 % F.S.					
Characteristic curve deviation*		≤ ±0.20 % F.S.				≤ ±0.30 % F.S.	
Relative hysteresis		≤ 0.25 % F.S.					
Temperature effect on zero output		≤ ±0.03 % F.S./K					
Temperature effect on nominal sensitivity		≤ ±0.03 % F.S./K					
<b>Electrical value</b>							
Kennwert nominell		2 mV/V					
Messrichtung		Tension and compression direction. Calibration in the preferred direction of compression force. The full-scale output is likely to be different when used in the tension direction.					
Standardisierung		to 1.5 mV/V (±0.25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end					
Brückenwiderstand		ca. 350 Ω nominal					
Speisespannung		recommended 5 V DC					
Isolationswiderstand		30 MΩ at 45 V DC					
Kalibrierwiderstand		59 kΩ ±0.1 % The bridge output voltage caused by a shunt of this value is given in the calibration protocol.					
<b>Environmental conditions</b>							
Nominal temperature range**		+15 °C ... +70 °C					
Operating temperature range**		-55 °C ... +120 °C (optional cable with drag chain capability -30 °C ... +100 °C)					
<b>Mechanical values</b>							
Deflection full scale	[µm]	15 ... 40					
Maximum operating force bidirectional		100 % of capacity (then overload protection takes effect)					
Maximum static load to overload stop		bidirectional 500 % of capacity			bidirectional 250 % of capacity	bidirectional 200 % of capacity	
Dynamic performance		recommended: 50 % of capacity maximum: 70 % of capacity					
Protection class (EN 60529)		IP65					
<b>Other</b>							
Material		5100 5200 5500 6001 6002 stainless steel 1.4542					
Natural frequency	[kHz]	1.2	2.7	3.3	3.4	3.8	
Mass without cable	[g]	68			125	210	
Thread adapter ***		8432-Zx02			8432-Zx03	8432-Zx04	

\* The data in the area 20 % - 100 %

\*\* Temperature range for the optional TEDS or standardization board 0 ... 60 °C

\*\*\* Spare part orders of the thread adapter require the specification of the serial number of the sensor

Dimensional drawing **Model 8431** and **Model 8432**



8431	-	5	5010	5020	5050	5100	5200	5500
Measuring range from 0 ...		±5 N	±10 N	±20 N	±50 N	±100 N	±200 N	±500 N
<b>Geometry</b>								
Ø D	[mm]	25.4	19			25.4		
H	[mm]	12.7			16.0			
Thread T		M4 x 0.7			M5 x 0.8			
C	[mm]	6.4						
A	[mm]	17.6			25.4			
F	[mm]	2.8	1.3			2.8		
G	[mm]	0.8	0.3			0.2		
B	[mm]	5.9			6.6			
Ø K	[mm]	4.8			6.4			
Ø L	[mm]	9.6	7.9			9.5		
Ø E	[mm]	-	2.5			3.6		
General tolerance of dimensioning		ISO 2768f						

8431	-	6001	6002	6005	6010	6020	6050	6100
Measuring range from 0 ...		±1 kN	±2 kN	±5 kN	±10 kN	±20 kN	±50 kN	±100 kN
<b>Geometry</b>								
Ø D	[mm]	25.4			31.8		35	60
H	[mm]	14			19.1	25.4	28.7	48
Thread T		M6 x 1.0			M10 x 1.5	M12 x 1.5	M20 x 1.5	M30 x 2.0
C	[mm]	9.7			12.7	16	22.4	42
A	[mm]	25.4			28.6		30.3	45
F	[mm]	0.8			0.3		0.5	
G	[mm]	0.5			-			
B	[mm]	7			6.5	14.2	15	23.6
Ø K	[mm]	6.4			9.5		13	
Ø L	[mm]	8.7			12.7	17.5	25	38
Ø E	[mm]	3.6			-			
General tolerance of dimensioning		ISO 2768f						

8432	-	2.5	5005	5010	5020	5050	5100	5200	5500	6001	6002
Measuring range from 0 ...		±2.5 N	±5 N	±10 N	±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN
<b>Geometry</b>											
Ø D	[mm]	25.4						31.8		38.1	
H	[mm]	21.9						23.9		26.7	
Thread T		M4 x 0.7				M5 x 08				M6 x 1.0	
C	[mm]	6.4						8		9.6	
A	[mm]	25.4						28.6		31.8	
F	[mm]	2.8						2.6		0.7	
G	[mm]	0.2						0.3			
B	[mm]	9.6						10.7		14.9	
Ø K	[mm]	9.7	9.5			6.4			9.5		
Ø L	[mm]	9.5						9.0			
Ø E	[mm]	-	2.5				3.6				
General tolerance of dimensioning		ISO 2768f									

## Permissible External Forces

Due to this precision miniature load cells construction with two stabilizing support membranes, it is only slightly sensitive to non-central forces applied to the sensor

The influence of these undesired external forces cannot be globally quantified with certainty. It depends on the sensor's measuring range and from which side the force is applied. As a rule of thumb, the amount of external force influence on the measurement signal is between 0.25 % and 1 % depending on the measurement range as long as it is within the range of the table.

The table shows the maximum percentage values that the external forces can have in relation to the respective measurement range of the load cell. The total of all loads on the load cell (forces and torques) should not exceed 100% of the measurement range

The torque entries refer to a gap of 25 mm from the point of force application to the sensor surface or the sensor axis.

End Value of Meas. Range up to	Shear Force (Lateral Force) [% F.S.]	Bending Torque (Bending Force) [% F.S.]	Torsion (Torque) [% F.S.]
0 ... 2 kN	50	40	25
0 ... 10 kN	30	25	25
0 ... 100 kN	20	20	10

## Mounting

Mounting instructions	<p>The force being measured has to be applied centrally and without lateral forces, via the threaded pin. There must not be any lateral clamping forces acting on the sensor as they could cause incorrect measurements or damage the unit.</p> <p>To ensure that the load cell is securely fixed in its installation position, it can be glued in place via the thread or secured with a locknut.</p> <p>During handling and installation, take care not to subject the cable outlet or sensor connection cable to excessive tensile or bending force. Effective strain relief should be installed if necessary.</p>
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## Electrical termination

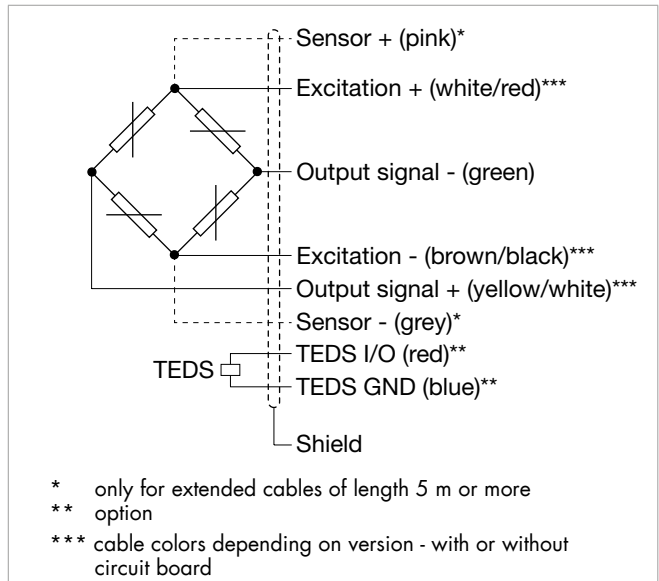
### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



### burster TEDS

The "burster Transducer Electronic Data Sheet" (TEDS) is a memory in which identification data of the sensor, calibration data and other sensor parameters are saved. In conjunction with your own suitable burster device, there is the option of performing a simple adjustment in order to achieve the maximum accuracy of the measuring chain. A simple sensor exchange is thus possible in just a few steps without losing precision.



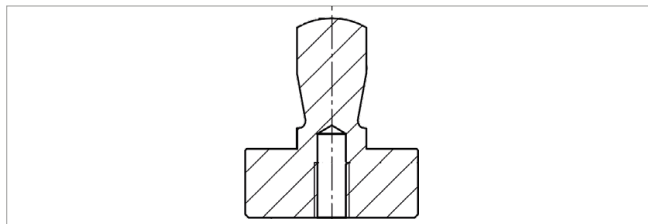
8431/8432	-	2.5	5005	5010	5020	5050	5100	5200	5500	
Measuring range from 0 ...		±2.5 N	±5 N	±10 N	±20 N	±50 N	±100 N	±200 N	±500 N	
<b>Electrical termination</b>										
Specifications		shielded, PTFE coated, 4 wire cable with bare ends for soldering, cable length 1.7 m, with standardization in cable 2.0 m, not drag chain suitable								
		-	Optional: shielded, TFE coated, 4 wire cable with bare ends for soldering, cable length 1.7 m, with standardization in cable 2.0 m, drag chain suitable							
Cable fastening		cable cover								
Bending protection		without					anti-kink protection			
Bending radius		≥ 6 mm rigidly laid; ≥ 20 mm moving;					≥ 8 mm rigidly laid; ≥ 30 mm moving			
Cable model		PTFE 1.9 mm, TPE 1.8-2.0 diameter								

8431/8432	-	6001	6002	6005	6010	6020	6050	6100	
Measuring range from 0 ...		±1 kN	±2 kN	±5 kN	±10 kN	±20 kN	±50 kN	±100 kN	
<b>Electrical termination</b>									
Specifications		shielded, PTFE coated, 4 wire cable with bare ends for soldering, cable length 1.7 m, with standardization in cable 2.0 m, not drag chain suitable							
		Optional: shielded, TFE coated, 4 wire cable with bare ends for soldering, cable length 1.7 m, with standardization in cable 2.0 m, drag chain suitable							
Cable fastening		cable cover							PG screwing mini M8
Bending protection		anti-kink protection							without
Bending radius		≥ 8 mm rigidly laid; ≥ 30 mm moving							≥ 6 mm rigidly laid; ≥ 20 mm moving
Cable model		PTFE 1.9 mm, TPE 1.8-2.0 diameter							PTFE 2.2 mm

## Accessories

### Adapter

If a sensor of the model 8431 or 8432 should be mounted on a plunger of a press, a centering and mounting adapter with a 10 H7 mounting hole is available.

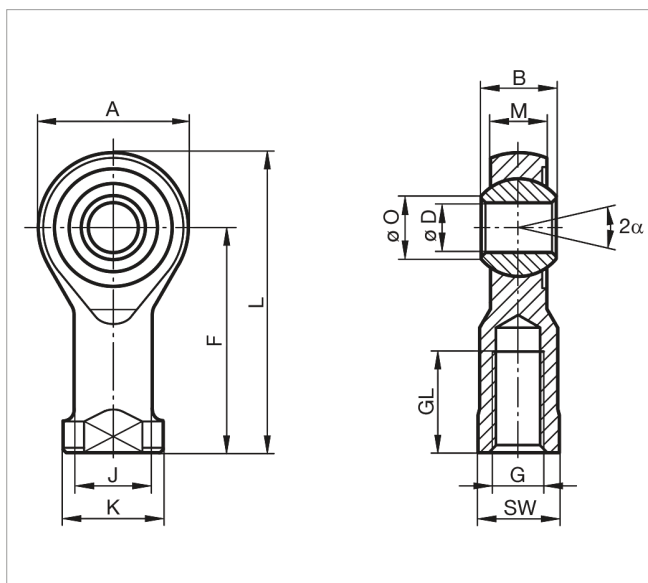


### Order code

Article number	5501-Z014					5501-Z01			
Compatible for measuring range from 0 ...	±2.5 N	±5 N	±10 N	±20 N	±50 N	±100 N	±200 N	±500 N	
Centering and mounting adapter with internal thread	M4 x 0.7					M5 x 08			

### Rod end bearings

- Optimal force introduction
- Compensation of misalignments
- Very high dynamic und static load capacity
- Material: stainless steel
- Temperature range: - 45 °C to + 120 °C
- PTFE insert, maintenance-free
- DIN 648 series K
- Bore holes H7, recommended connection pin: g6
- Inner ring not suitable for permanent rotary operation



### Order code

8591	-	Z04F	Z05F	Z06F	Z10F	Z12F
Compatible for measuring range from 0 ...		2.5 N ... 50 N	100 N ... 500 N	1 kN ... 5 kN	10 kN	20 kN
Geometry						
G	[mm]	M4 x 0.7	M5 x 08	M6 x 1.0	M10 x 1.5	M12 x 1.5
Ø D	[mm]	4	5	6	10	12
B	[mm]	7	8	9	14	16
M	[mm]	5.25	6	6.75	10.5	12
A	[mm]	16	18	20	29	32
F	[mm]	24	27	30	43	50
L	[mm]	31	36	40	57.5	66
K	[mm]	9.5	11	13	17	19
J	[mm]	7.8	9	10	15	17.5
Ø O	[mm]	6.5	7.7	8.9	12.9	15.4
SW	[mm]	8	9	11	19	19
GL	[mm]	10	10	12	20	22
α	[°]			13		
Other						
Stat. load factor	[kN]	4	11.8	16.7	28.3	34.5
Dyn. load factor	[kN]	2.3	7.5	9.3	23.4	32
Weight	[g]	11	18	27	76	115

**Connectors and units**

**Order code**

**Connectors**

9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster

**Units**

7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_{1r}$ , $R_{0r}$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE®

**Calibration**

**Test and calibration certificate**

Supplied with the sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
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**Standard factory calibration certificate for load cells or measurement chains (WKS)**

Optionally available	Our standard factory calibration is performed in 20% steps starting from zero until the reaching the nominal force, for increasing and decreasing load with unchanged installation position. Factory calibration can be performed in compression and/or tension direction.
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**Special factory calibration certificate for load cells or measurement chains (WKS)**

On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
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**Calibration certificate with accreditation symbol for load cells of product group 8431/8432 for measuring ranges  $\geq 0 \dots 20 \text{ N}$**

Optionally available	Calibration certificate with accreditation symbol for load cells of product group 8431/8432. Calibration is performed on the basis of the accreditation of the calibration laboratory D-K-15141-01-00, for the scope of accreditation listed in the annex to the certificate. The traceability to national standards as well as a wide international recognition (DAkkS as signatory of the Multilateral Agreements of EA, ILAC and IAF) are thus guaranteed. Calibration is performed according to ISO 376 in 10 force steps (10% steps) vstarting from zero until the reaching the nominal force, for increasing and decreasing load under various installation positions.
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**Note**

- **Brochure**  
Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.
- **Product videos**  
Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)
- **CAD data**  
Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)







## Order Code

Measuring range	Code	Measuring range
0 ... ±2.5 N (only 8432)*	2.5	0 ... ±1.22 lbs
0 ... ±5 N (only 8431)*	5	0 ... ±2.24 lbs

\* only available with nominal sensitivity, 1.7 m connection cable length, various plugs without further options

<b>8</b>	<b>4</b>	<b>3</b>	<b>1</b>	-
<b>8</b>	<b>4</b>	<b>3</b>	<b>2</b>	-

## Low-Cost Tension and Compression Load Cell

MODEL 8427 **NEW**



### Highlights

- Measuring ranges from 0 ... 20 N to 0 ... 10 kN
- Rugged welded construction
- Flange for easy assembly
- Excellent price/performance ratio

### Options

- Also available with external thread
- Optional with burster TEDS or standardized sensitivity
- Range of fixing and force transmission options

### Applications

- All areas of mechanical engineering
- Automated production plants
- Tensile force measuring in Bowden cables
- Measuring tractive forces of plug connections
- Test equipment for safety areas on rail vehicles



With external thread as option



Small measuring range



With rod end bearings as option



With load button as option

### Product description

This low cost tension/compression load cell is an especially robust component, which can be easily integrated in a girder assembly between two cables or chains for measuring force. The standard model comes with internal thread, allowing any adapter parts, for instance eye brackets, to be fitted in the axis of symmetry. Alternatively, the optionally available adapters with external thread can be used for quick and easy screw-fitting into a threaded hole made for the purpose.

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.

The measurement element is a membrane perpendicular to the axis of the sensor with a strain gage full bridge applied to the inner surface, which requires stable excitation with a rated value of approx. 1 mV/V.

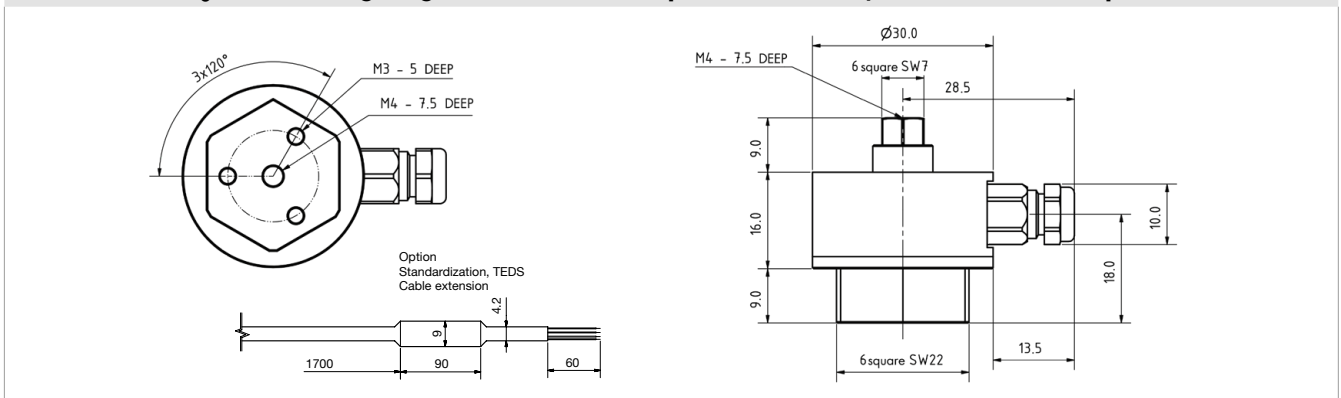
burster TEDS with an electronic sensor datasheet or standardization of the output signal in the sensor connecting cable are offered as options.

## Technical Data

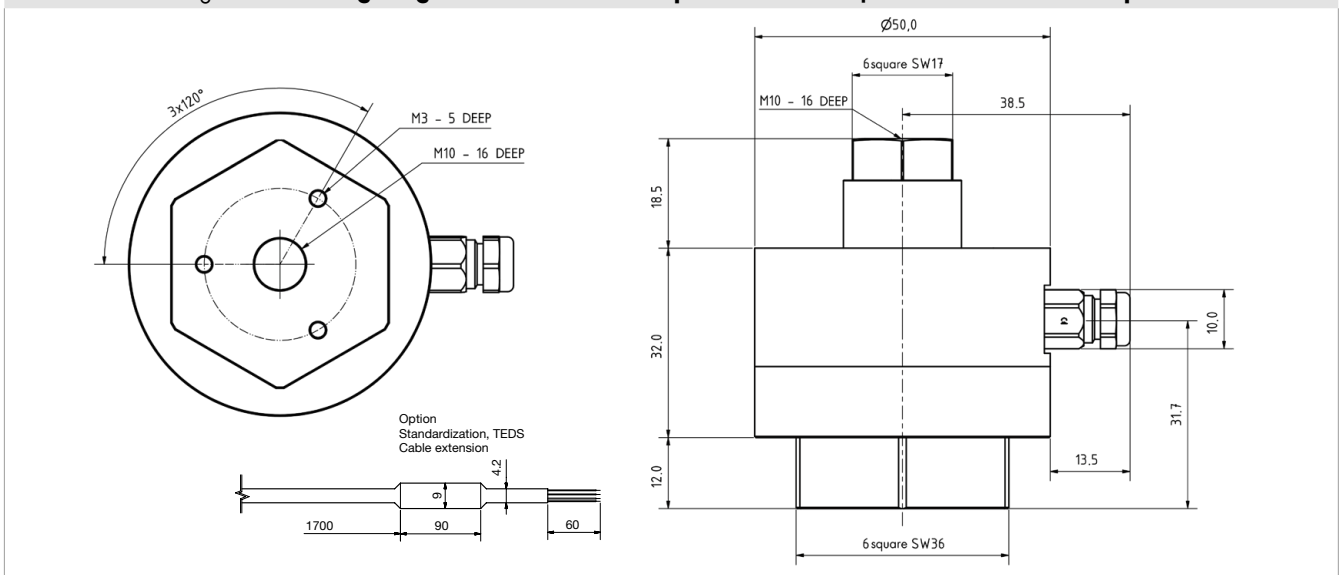
8427	-	5020	5050	5100	5200	5500	6001	6002	6005	6010	
Measuring range calibrated in N and kN from 0 ...		±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN	±10 kN	
		±4.5 lbs	±11.2 lbs	±22.5 lbs	±45.0 lbs	±112.4 lbs	±224.8 lbs	±449.6 lbs	±1.1 klbs	±2.2 klbs	
<b>Accuracy</b>											
Relative non-linearity*		0.5 % F.S.									
Characteristic curve deviation*		0.75 % F.S.									
Hysteresis		< 0.25 % F.S.									
Temperature effect on zero output		≤ 0.03 % F.S./K									
Temperature effect on nominal sensitivity		≤ 0.02 % F.S./K									
<b>Electrical values</b>											
Sensitivity		nominal: ca. 1,1 mV/V, positive output signal in compression direction									
Measurement direction		Tension and compression direction. Load calibration in compression direction. The full-scale output is likely to be different when used in the tension direction.									
Standardization		1.0 mV/V, option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end									
Bridge resistance		350 Ω nominal (deviations are possible)									
Excitation		5 V DC or AC									
Isolation resistor		> 30 MΩ									
<b>Environmental conditions</b>											
Nominal temperature range		+15 °C ... +70 °C									
Operating temperature range		-30 °C ... +80 °C									
<b>Mechanical values</b>											
Deflection full scale		< 60 μm									
Maximum operating force		150 % of capacity									
Overload burst		300 % of capacity									
Dynamic performance		recommended: 70 %: maximum: 100 % (of capacity)									
Material		stainless steel 1.4542									
Protection class (EN 60529)		IP65									
<b>Geometry</b>											
Central blind threaded hole T		M 4				M 10					
Number of clearing holes in Ø		3 * M3 - 5 deep									
Dimensional drawings		dimensional drawing 1				dimensional drawing 2					
<b>Installation</b>											
Torque counter nuts	[N*m]	2				20					
Tightening torque mounting screws	[N*m]	1.2									
Mounting screws		strength class 8.8 or higher									
Installation instructions		the entire bearing area of the sensor must be mounted on a base which is hardened (60 HRC). flat, polished or better lapped.									
<b>Other</b>											
Natural frequency	[kHz]	0.2	0.4	0.6	0.9	0.6	1	1.4	2	2.4	
Mass (without options/accessory)	[g]	95				550					

\* The data in the area 20 % - 100 %

Dimensional drawing 1 – Measuring ranges from 0 ... ±20 N up to 0 ... ±200 N | from 0 ... ±4.5 lbs up to 0 ... ±45.0 lbs



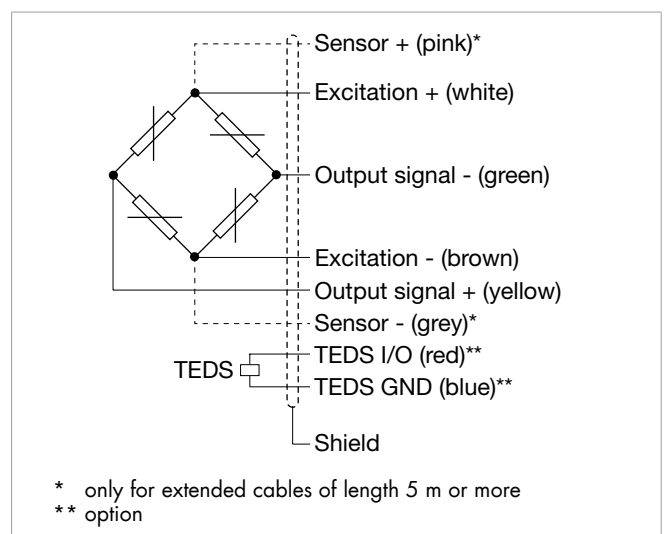
Dimensional drawing 2 – Measuring ranges from 0 ... ±500 N up to 0 ... 10 kN | from 0 ... ±112.4 lbs up to 0 ... ±2.2 klbs



## Electrical termination

### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



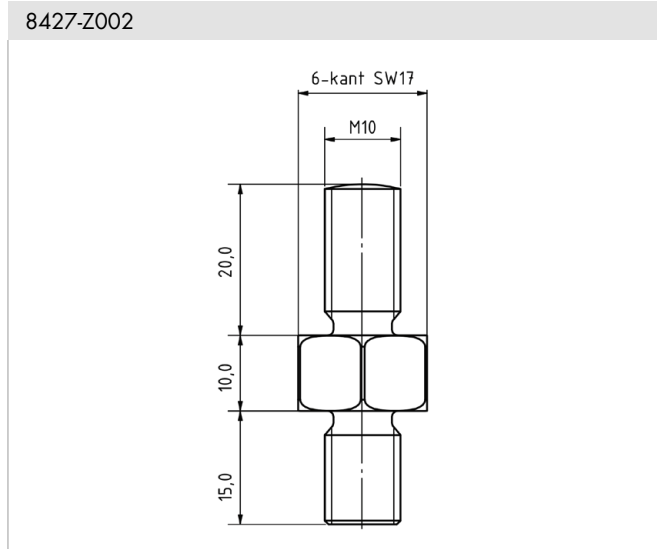
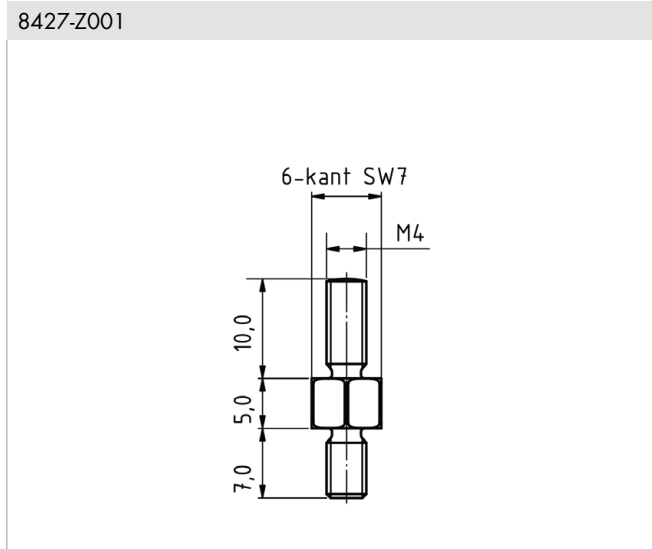
8427	-	5020	5050	5100	5200	5500	6001	6002	6005	6010
Measuring range from 0 ...		±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN	±10 kN
<b>Electrical termination</b>										
Cabel specifications		Highly flexible, shielded, drag chains suitable. Bending radius three times the diameter for fixed cable, ten times the diameter for cable permanently moving, length 1,7 m, open ends with end ferrules, cable output Mini PG M6 x 1								
Cable model		4 wire TPE isolated shielded control lines, ø d = 3 mm								

## Accessories

### Load application adapters

Numerous load application adapters are optionally available, giving the user a wide choice of mechanical designs for load application. The threaded adapters have a domed top surface.

**Note:** Whether using an internal or external thread (sensor or additional adapters), the associated thread is designed to be long enough for a rod end bearing to DIN 680-K (with internal or external thread) and a locknut to DIN 934.



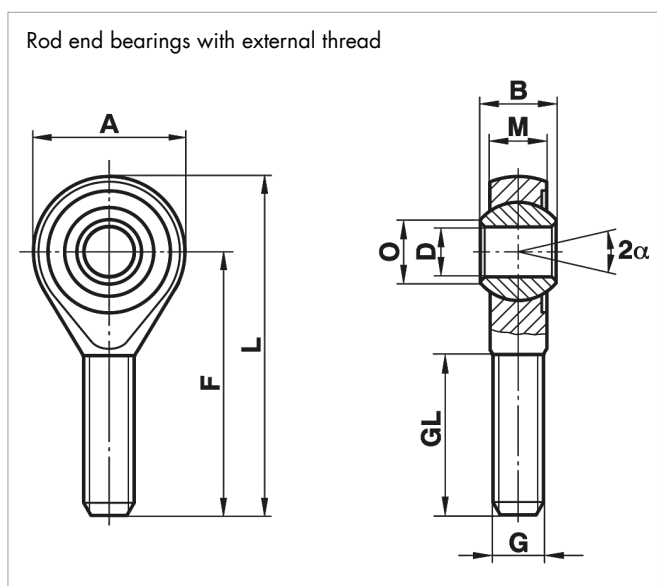
### Order Code

8427	-	Z001				Z002				
Compatible for measuring range from 0 ...		±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN	±10 kN
<b>Installation</b>										
Tightening torque thread adapter	[N*m]	2				20				
<b>Other</b>										
Mass	[g]	50				400				

### Rod end bearings

The 8427 load cell can be optionally supplied with one or two rod end bearings. Rod end bearings ensure optimum load application when the sensor is used in the tension direction. In addition, they can compensate for slight misalignment in the compression direction.

- Optimal force introduction
- Compensation of misalignments
- Very high dynamic und static load capacity
- Material: stainless steel
- Temperature range: - 45 °C to + 120 °C
- PTFE insert, maintenance-free
- DIN 648 series K
- Bore holes H7, recommended connection pin: g6
- Inner ring not suitable for permanent rotary operation

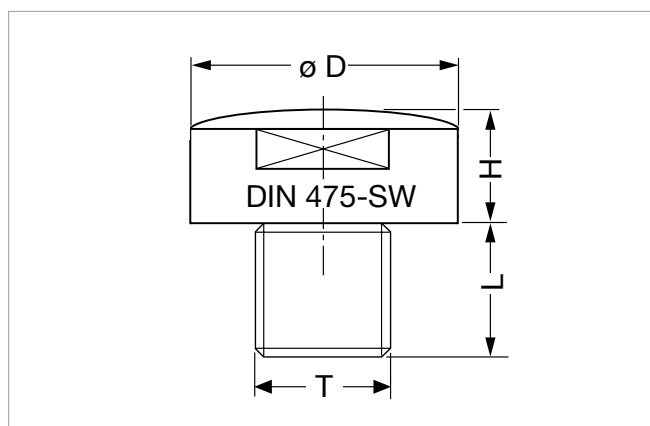


**Order Code**

8591	-	Z04M				Z10M				
Compatible for measuring range from 0 ...		±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN	±10 kN
<b>Geometry</b>										
B	[mm]	7				14				
M	[mm]	5.25				10.5				
A	[mm]	14				28				
F	[mm]	30				48				
L	[mm]	37				62				
O	[mm]	6.5				12.9				
D	[mm]	4				10				
G		M4 x 0.7				M10 x 1.5				
GL	[mm]	19				28				
α	[°]	14				13				
<b>Other</b>										
Stat. load factor	[kN]	2,5				25.5				
Dyn. load factor	[kN]	5.1				23.4				
Weight	[g]	9				56				

**Load buttons**

Load buttons are used when purely compressive forces are meant to be applied to the load cell and when direct coupling to the surrounding mechanical structure via the central threaded hole in the sensor is not required/possible. The domed surface of the load button minimizes angle errors for loads applied at an angle of up to 3°. The compressive force must be applied to the button via a flat and hardened contact surface. The optimum hardness is 60 HRC or more.

**Order Code**

8580	-	V004				V110				
Compatible for measuring range from 0 ...		±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN	±10 kN
<b>Geometry</b>										
Ø D	[mm]	6.0				18.0				
H	[mm]	2.8				10.38				
L	[mm]	3.5				10.0				
T		M4				M10				
<b>Installation</b>										
Tightening torques thread adapter	[N*m]	2				20				
<b>Other</b>										
Mass	[g]	5				15				



**Connectors and units**

**Order Code**

**Connectors**

9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster

**Units**

7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_{it}$ , $R_{at}$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

**Calibration**

**Test and calibration certificate**

Supplied with the sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
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**Standard factory calibration certificate for load cells or measurement chains (WKS)**

Optionally available	Our standard factory calibration certificate includes 11 measurement points, starting at zero, spread evenly in 20% steps over the full measuring range, for increasing and decreasing load under the same installation conditions. Factory calibrations can be performed in the compression and/or tension direction depending on the sensor type.
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**Special factory calibration certificate for load cells or measurement chains (WKS)**

On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
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**German-accredited DAkkS calibration certificate for sensors and measurement chains (DKD)**

Optionally available	Our DAkkS-certified calibration laboratory provides calibration certificates to DIN EN ISO 376. The calibration certificate includes 21 measurement points, starting at zero, spread evenly in 10% steps over the measuring range, for increasing and decreasing load under various installation conditions. DAkkS calibrations can be performed in the compression and/or tension direction depending on the sensor type.
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## Order Code

Measuring range	Code				Measuring range
0 ... ±20 N	5	0	2	0	0 ... ±4.5 lbs
0 ... ±50 N	5	0	5	0	0 ... ±11.2 lbs
0 ... ±100 N	5	1	0	0	0 ... ±22.5 lbs
0 ... ±200 N	5	2	0	0	0 ... ±45.0 lbs
0 ... ±500 N	5	5	0	0	0 ... ±112.4 lbs
0 ... ±1 kN	6	0	0	1	0 ... ±224.8 lbs
0 ... ±2 kN	6	0	0	2	0 ... ±449.6 lbs
0 ... ±5 kN	6	0	0	5	0 ... ±1.1 klbs
0 ... ±10 kN	6	0	1	0	0 ... ±2.2 klbs

										Delivery ex stock at short notice								
										N	0	0	0	S	0	0	0	
<b>8</b>	<b>4</b>	<b>2</b>	<b>7</b>	<b>-</b>					<b>-</b>				<b>0</b>	<b>S</b>	<b>0</b>	<b>0</b>	<b>0</b>	
■ Nominal sensitivity/not standardized										N								
■ Standardization at 1,0 mV/V										C								
■ Connection cable 1.7 m (Standardization 2 m)										0								
■ Connection cable 3 m										F								
■ Connection cable 5 m										G								
■ Connection cable 3 m, extended by a circuit board at 1,7 m *										L								
■ Connection cable 5 m, extended by a circuit board at 1,7 m * (with sens line)										M								
* shortened delivery time compared with cable length 3 m and 5 m in one piece																		
■ Open cable ends + 6 cm single wires										0								
■ 9 pins Sub-D connector model 9900-V209										B								
■ 9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx										E								
■ 12 pins round connector model 9941 for burster desktop devices										F								
■ 9 pins Sub-D connector with burster TEDS model 9900-V229										T								
■ 8 pins coupling connector model 9900-V245 for 9110										H								
■ Non-linearity according to data sheet														S				
■ Nominal temperature range +15 °C ... +70 °C																		0

## Note

### ■ Brochure

Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.

### ■ Product videos

Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)



### ■ CAD data

Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)

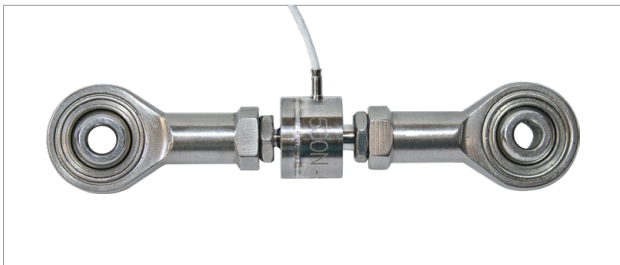


## Miniature Tension and Compression Load Cell

### MODEL 8417



**NEW**  
Measuring ranges from  
0 ... 10 N



With rod ends as accessories

#### Highlights

- Measuring ranges from 0 ... 10 N up to 0 ... 5 kN
- Very small dimensions
- Low dead weight
- Easy mounting via long fixing threads

#### Options

- burster TEDS
- Vacuum compatible design
- Rod ends available as add-on part
- Various cable lengths can be ordered

#### Applications

- Girder assembly
- Tool manufacturing
- Machinery manufacture
- Aviation industry

#### Product 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.

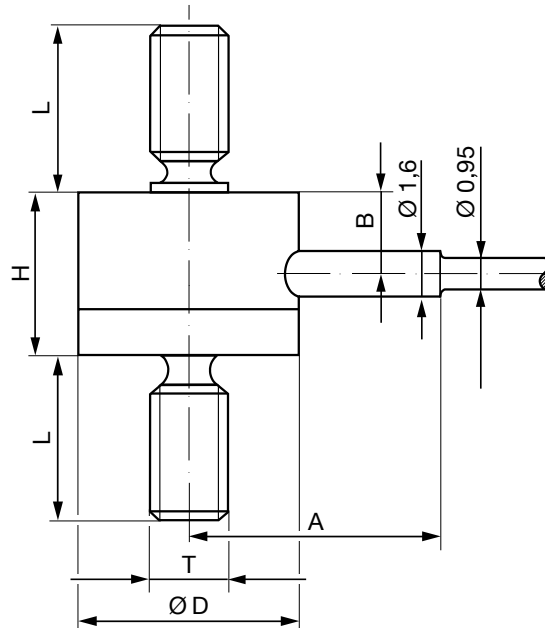
The measurement element is a membrane perpendicular to the axis of the sensor with a strain gage full bridge applied to the inner surface, which requires stable excitation with a rated value of approx. 1 mV/V. The connection cable is led radially out of the housing through a sleeve which is used for strain relief.

## Technical Data

8417	-	5010	5020	5050	5100	5200	5500	6001	6002	6005	
Measuring range calibrated in N and kN from 0 ...		±10 N	±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN	
		±2.2 lbs	±4.5 lbs	±11.2 lbs	±22.5 lbs	±45.0 lbs	±112.4 lbs	±225.0 lbs	±450.0 lbs	±1124.0 lbs	
<b>Accuracy</b>											
Relative non-linearity*		≤ ±0.5 % F.S.									
Characteristic curve deviation*		≤ ±0.5 % F.S.									
Relative hysteresis		≤ ±0.5 % F.S.									
Temperature effect on zero output		≤ ±0.05 % F.S./K			≤ ±0.075 % F.S./K						
Temperature effect on nominal sensitivity		≤ ±0.05 % F.S./K			≤ ±0.075 % F.S./K						
<b>Electrical value</b>											
Sensitivity nominal		1 mV/V									
Measurement direction		Tension and compression direction. Calibration and positive signal in compression direction. The full-scale output is likely to be different when used in the tension direction.									
Standardization**		0.8 mV/V (±0.25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end									
Bridge resistance		350 Ω nominal (deviations are possible)									
Excitation		5 V DC									
Insulation resistance		> 10 MΩ at 45 V									
<b>Environmental conditions</b>											
Nominal temperature range		+15 °C ... +70 °C									
Operating temperature range		0 °C ... +80 °C									
<b>Mechanical values</b>											
Deflection full scale		max. 60 µm									
Maximum operating force		120 % of capacity									
Overload burst		200 % of capacity									
Dynamic performance		recommended: 50 % of capacity maximum: 70 % of capacity									
Protection class (EN 60529)		IP54									
<b>Other</b>		5010	5020	5050	5100	5200	5500	6001	6002	6005	
Material		stainless steel 1.4542									
Natural frequency	[kHz]	0.4	0.8	1	1.2	1.7	2.5	3.0	2.4	2.6	
Mass without cable	[g]	3			8				28		

\* The data in the area 20 % - 100 % of rated load

\*\* Temperature range for the optional TEDS or standardization board 0 ... 60 °C

Dimensional drawing **Model 8417**

8417	-	5010	5020	5050	5100	5200	5500	6001	6002	6005
Measuring range from 0 ...		±10 N	±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN
<b>Geometry</b>										
Ø D	[mm]		10.0				12.0			20.0
H	[mm]		7.0				9.0			12.0
L	[mm]		8.5				9.5			14.0
A	[mm]		9.2				10.0			14.0
B	[mm]		2.5				3.65			6.15
T	[mm]		M3 x 0.5				M4 x 0.7			M6 x 1.0
General tolerance of dimension		ISO 2768f								

### Mounting

Mounting instructions	<p>The measuring force has to be applied centrally and free from lateral force via the exterior threading into the sensor body. Transverse forces must be kept away from the sensor as they could result in incorrect measurements or damage.</p> <p>In order to ensure that the force sensor is securely fitted in its installation position, it can be locked or glued to the thread. When applying compression force, appropriate means (e.g. attachments) are to be used to prevent buckling.</p> <p>During handling during installation and later during operation, ensure that the cable outlet and sensor connection cable are not subjected to impermissibly high tensile and bending forces. If necessary, additional strain relief should be provided, especially for cases in which the cable is subjected to constant, even slight bending stress due to movement of the sensor.</p>
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## Electrical termination

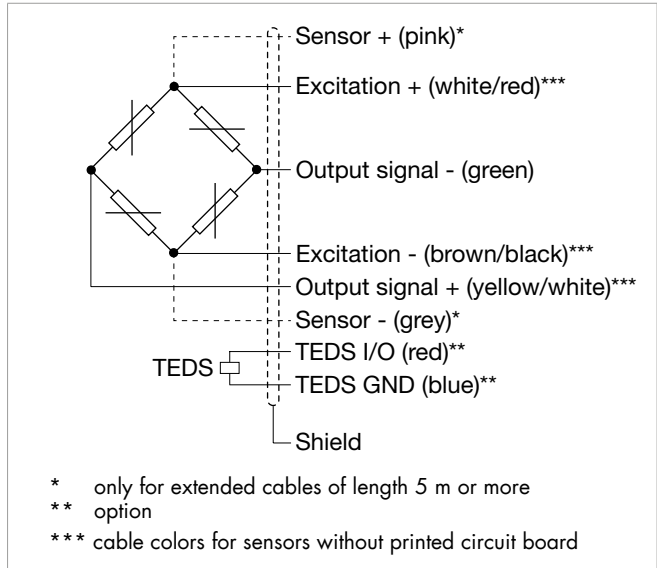
### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



### burster TEDS

The "burster Transducer Electronic Data Sheet" (TEDS) is a memory in which identification data of the sensor, calibration data and other sensor parameters are saved. In conjunction with your own suitable burster device, there is the option of performing a simple adjustment in order to achieve the maximum accuracy of the measuring chain. A simple sensor exchange is thus possible in just a few steps without losing precision.

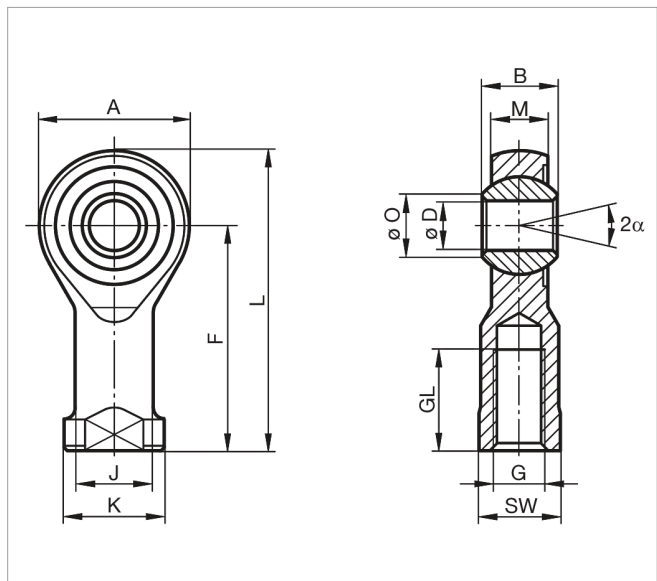


8417	-	5010	5020	5050	5100	5200	5500	6001	6002	6005
Measuring range from 0 ...		±10 N	±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN
<b>Electrical termination</b>										
Specifications		shielded, PTFE coated, 4 wire cable with bare ends for soldering, cable length 1.7 m with standardization in cable 2.0 m								
Cable fastening		cable cover								
Bending protection		without								
Bending radius		≥ 2.3 mm rigidly laid; ≥ 17 mm moving at temperatures < -20 °C moving connection cable not approved								
Cable model		PTFE								

## Accessories

### Rod end bearings

- Optimal force introduction
- Compensation of misalignments
- Very high dynamic und static load capacity
- Material: stainless steel
- Temperature range: - 45 °C to + 120 °C
- PTFE insert, maintenance-free
- DIN 648 series K
- Bore holes H7, recommended connection pin: g6
- Inner ring not suitable for permanent rotary operation



**Order code**

8591	-	Z04F	Z06F
Compatible for measuring range from 0 ...		100 N ... 1 kN	2 kN and 5 kN
Geometry			
G	[mm]	M4 x 0.7	M6 x 1.0
Ø D	[mm]	4H7	6H7
B	[mm]	7	9
M	[mm]	5.25	6.75
A	[mm]	16	20
F	[mm]	24	30
L	[mm]	31	40
K	[mm]	9.5	13
J	[mm]	7.8	10.0
Ø O	[mm]	6.5	8.9
SW	[mm]	8	11
GL	[mm]	10	12
α	[°]	13	13
Other			
Stat. load factor	[kN]	4	16.7
Dyn. load factor	[kN]	2.3	9.3
Weight	[g]	11	27

**Connectors and units****Order code**

Connectors		
9941		Connectors 12 pin, suitable to all burster desktop units
9900-V209		Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229		Connectors 9 pin with TEDS
9900-V245		Connectors 8 pin, suitable to ForceMaster
Units		
7281-V0001		Mobile measuring device with strain gage simulator and sensor test ( $R_i$ , $R_o$ , Shunt, $R_{ISO}$ )
refer to section 9		Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE®

## Calibration

<b>Test and calibration certificate</b>	
Supplied with the sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
<b>Standard factory calibration certificate for load cells or measurement chains (WKS)</b>	
Optionally available	Our standard factory calibration is performed in 20% steps starting from zero until the reaching the nominal force, for increasing and decreasing load with unchanged installation position. Factory calibration can be performed in compression and/or tension direction.
<b>Special factory calibration certificate for load cells or measurement chains (WKS)</b>	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
<b>Calibration certificate with accreditation symbol for product group load cell 8417</b>	
Optionally available	Calibration certificate with accreditation symbol for load cell 8417. Calibration is performed on the basis of the accreditation of the calibration laboratory D-K-15141-01-00, for the scope of accreditation listed in the annex to the certificate. The traceability to national standards as well as a wide international recognition (DAkkS as signatory of the Multilateral Agreements of EA, ILAC and IAF) are thus guaranteed. Calibration is performed according to ISO 376 in 10 force steps (10% steps) vstarting from zero until the reaching the nominal force, for increasing and decreasing load under various installation positions.



## Order Code

Measuring range	Code				Measuring range
0 ... ±10 N	5	0	1	0	0 ... ±2.2 lbs
0 ... ±20 N	5	0	2	0	0 ... ±4.5 lbs
0 ... ±50 N	5	0	5	0	0 ... ±11.2 lbs
0 ... ±100 N	5	1	0	0	0 ... ±22.5 lbs
0 ... ±200 N	5	2	0	0	0 ... ±45.0 lbs
0 ... ±500 N	5	5	0	0	0 ... ±112.4 lbs
0 ... ±1 kN	6	0	0	1	0 ... ±225.0 lbs
0 ... ±2 kN	6	0	0	2	0 ... ±450.0 lbs
0 ... ±5 kN	6	0	0	5	0 ... ±1124.0 lbs

										Delivery ex stock at short notice							
										N	0	0	0	S	0	0	0
<b>8</b>	<b>4</b>	<b>1</b>	<b>7</b>	<b>-</b>					<b>-</b>					<b>S</b>	<b>0</b>	<b>0</b>	<b>0</b>

■ Nominal sensitivity/not standardized	N
■ Standardization at 0.8 mV/V	B
■ Connection cable 1.7 m (with standardization in the cable 2 m)	0
■ Connection cable 3 m	F
■ Connection cable 5 m	G
■ Connection cable 3 m extended *	L
■ Connection cable 5 m extended * (with sens line)	M
* shortened delivery time compared with cable length 3 m and 5 m in one piece	
■ Open cable ends + 6 cm single strands	0
■ 9 pins Sub-D connector model 9900-V209	B
■ 9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx	E
■ 12 pins round connector model 9941 for burster desktop devices	F
■ 9 pins Sub-D connector with burster TEDS model 9900-V229	T
■ 8 pins coupling connector model 9900-V245 for 9110	H
■ Calibration and positive output signal for compression load	0
■ Calibration and positive output signal for tension load	E
■ Non-linearity according to specification	S

## Note

### ■ Brochure

Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.

### ■ Product videos

Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)



### ■ CAD data

Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



## Miniatür Compression Load Cell

# MODEL 8402



**NEW** option:  
Dual-range in  
different spreadings



### Highlights

- Measuring ranges from 0 ... 1 kN up to 0 ... 100 kN
- Miniature dimensions
- Connecting cable suitable for drag chains
- Made of stainless steel

### Options

- Standardized output signal 1.5 mV/V
- Dual range model
- Connecting cable attached centrally from below
- Form-fitted to prevent rotation
- burster TEDS

### Applications

- Press-in force measurements on longitudinal and transversal connections
- Compression force measurements on punch and roller applicancy
- Spring tension measurements on shock absorbers for cars
- Contact pressure determination in push rods
- Compression force measurements on compressed-air knee-lever presses

### Product description

This, related to its measuring range, miniaturized load cell enables an universal and reliable operation in industries and laboratories. It is well suited for compression measurements in very restricted structures. The load cell is a compact construction and made of stainless steel. Therefore it can be used in many fields of industry. Thanks to the rounded top, in shape of a little hat, the force to be measured is led into the sensor centrally and free of lateral force.

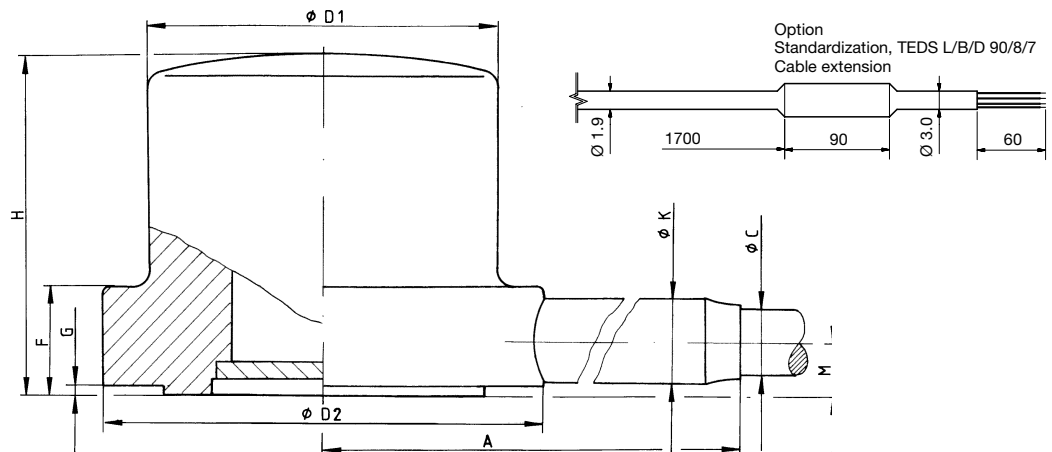
Strain gauges arranged in a full bridge are applied on the generated surface of the sensor. By applying a force to the strain gauge bridge the resistance change of the strain gauges is transformed into an output voltage which is directly proportional to the measured force. The load cells have to be mounted complete on a smooth, plane parallel surface. They can be fixed with contact glue or silicone. To achieve optimum measurement accuracy, protect the sensor from off-axis loads that will result in lateral or side forces.

Clamping forces must not be applied laterally to the circumferential surface of the sensor. During installation or mounting you have to take care that the cable outlet and the cable of the load cell are not stressed by tension and bending forces. In the connection cable of the sensor, the output signal is standardized to 1.5 mV/V, so that an exchange can easily be done, without the need to re-adjust the processing electronics.

## Technical Data

8402	-	6001	6002	6005	6010	6020	6050	6100	
Measuring range calibrated in N and kN from 0 ...		1 kN	2 kN	5 kN	10 kN	20 kN	50 kN	100 kN	
		224.8 lbs	449.6 lbs	1.1 klbs	2.2 klbs	4.5 klbs	11.2 klbs	22.5 klbs	
<b>Accuracy</b>									
Relative non-linearity*		≤ ±0.25 % F.S.					±0.5 % F.S.		
Characteristic curve deviation*		≤ ±0.5 % F.S.					≤ ±1.0 % F.S.		
Relative hysteresis		≤ ±0.5 % F.S.					≤ ±1.0 % F.S.	≤ ±1.5 % F.S.	
Temperature effect on zero output		≤ ±0.5 % F.S./10 K							
Temperature effect on nominal sensitivity		≤ ±0.5 % F.S./10 K							
<b>Electrical values</b>									
Sensitivity nominal		1.7 mV/V			2.7 mV/V	1.7 mV/V	3 mV/V	1.7 mV/V	
Measurement direction		compression direction							
Standardization		option 1.5 mV/V (±0.75 %) realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end							
Bridge resistance		350 Ω nominal (deviations are possible)							
Excitation		max. 5 V DC or AC							
Insulation resistance		10 MΩ							
<b>Environmental conditions</b>									
Nominal temperature range		+15 °C ... +70 °C							
Operating temperature range		-30 °C ... +100 °C							
<b>Mechanical values</b>		6001	6002	6005	6010	6020	6050	6100	
Deflection full scale		< 50 μm							
Maximum operating force		150 % of capacity							
Overload burst		> 250 % of capacity							
Dynamic performance		recommended: 70 %: maximum: 100 % (of capacity)							
Protection class		IP54 acc. to DIN 60529							
Natural frequency	[kHz]	> 20							
Weight without cable	[g]	4		5	7	19	40	260	
<b>Other</b>									
Material		stainless steel 1.4542							
Natural frequency	[kHz]	> 20							
Weight without cable	[g]	4		5	7	19	40	260	

\* The data in the area 20 % - 100 % of rated load F

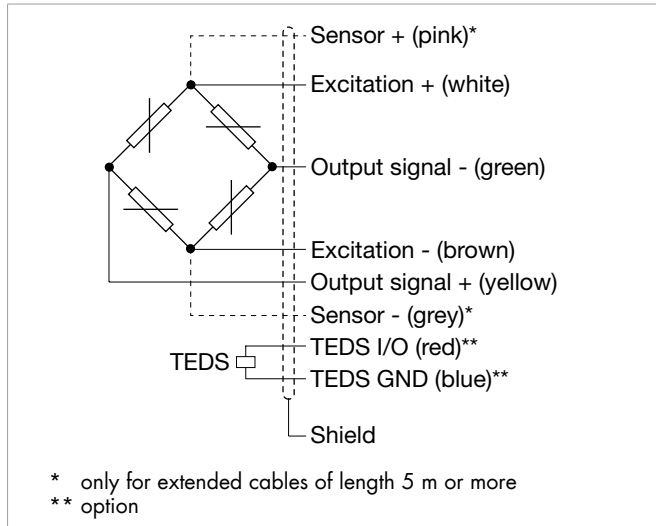
Dimensional drawing **Model 8402**

8402	-	6001	6002	6005	6010	6020	6050	6100
Measuring range from 0 ...		1 kN	2 kN	5 kN	10 kN	20 kN	50 kN	100 kN
<b>Geometry</b>								
Ø D1	[mm]	6.4	6.8	7.7	10.0	14.0	19.7	26.5
Ø D2	[mm]	12.7				15.9	22.4	44.0
H	[mm]	9.6				16.0		38.0
F	[mm]	3.05				6.0		15.0
A	[mm]	14.9				16.5	19.7	35.0
G	[mm]	0.25				0.5		
Ø C	[mm]	1.9				3.0		
Ø K	[mm]	2.8				7.0		
M	[mm]	1.6				3.1		7.5
General tolerance of dimension		ISO 2768-f						

## Electrical termination

### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



8402	-	6001	6002	6005	6010	6020	6050	6100	
Measuring range from 0 ...		1 kN	2 kN	5 kN	10 kN	20 kN	50 kN	100 kN	
<b>Electrical termination</b>									
Specifications		4 wire, shielded, TPE coated cable, cable length 1.7 m, drag chain qualified							
Cable fastening		cable cover							
Bending protection		without				bend protection spiral l = 35, Ø d = 3.5 [mm]			
Bending radius	[mm]	≥ 20				≥ 30			

## Accessories

### Connectors and units

#### Order Code

<b>Connectors</b>	
9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster
<b>Units</b>	
7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_{i,r}$ , $R_{a,r}$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

## Calibration

Test and calibration certificate	
Supplied with the sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
Standard factory calibration certificate for load cells or measurement chains (WKS)	
Optionally available	Our standard factory calibration certificate includes 11 measurement points, starting at zero, spread evenly in 20% steps over the full measuring range, for increasing and decreasing compression load under the same installation conditions.
Special factory calibration certificate for load cells or measurement chains (WKS)	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
German-accredited DAkkS calibration certificate for sensors and measurement chains (DKD)	
Optionally available	Our DAkkS-certified calibration laboratory provides calibration certificates to DIN EN ISO 376. The calibration certificate includes 21 measurement points, starting at zero, spread evenly in 10% steps over the measuring range, for increasing and decreasing compression load under various installation conditions.

**NEW**  
optionally

### Dual-range in different spreadings

Dual-range model	
Optionally available	As an optional extra, an additional calibration certificate is available for a second measuring range that is smaller by one step. For example, for the measuring range 0 ... 20 kN also a calibration certificate for 0 ... 10 kN. Depending on the measuring range, this results in a dual range ratio of 1:2 or 1:2.5.
Measuring range	Spreading
0 ... 1 kN	0 ... 500 N (1:2)
0 ... 2 kN	0 ... 1 kN (1:2)
0 ... 5 kN	0 ... 2 kN (1:2.5)
0 ... 10 kN	0 ... 5 kN (1:2)
0 ... 20 kN	0 ... 10 kN (1:2)
0 ... 50 kN	0 ... 20 kN (1:2.5)
0 ... 100 kN	0 ... 50 kN (1:2)

## Dual range model

Technical data – changing values for the spreading measuring range	
Temperature effect on zero output	$\leq \pm 0.1 \dots 0.125 \% \text{ F.S./K}$
Sensitivity nominal	0.8 mV/V-1.5 mV/V
Sensitivity tolerance	$\pm 0.75 \%$
Deflection full scale	$< 25 \mu\text{m}$

## Order Code

Measuring range	Code				Measuring range
0 ... 1 kN	6	0	0	1	0 ... 224.8 lbs
0 ... 2 kN	6	0	0	2	0 ... 449.6 lbs
0 ... 5 kN	6	0	0	5	0 ... 1.1 klbs
0 ... 10 kN	6	0	1	0	0 ... 2.2 klbs
0 ... 20 kN	6	0	2	0	0 ... 4.5 klbs
0 ... 50 kN	6	0	5	0	0 ... 11.2 klbs
0 ... 100 kN	6	1	0	0	0 ... 22.5 klbs

Delivery ex stock at short notice											
N	0	0	0	S	0	0	0	0	0		
8	4	0	2	-				S	0	0	0

■ Nominal sensitivity/not standardized	N
■ Standardization at 1.5 mV/V	S
■ Connection cable 1.7 m (with standardization in the cable 2 m)	0
■ Connection cable 3 m	F
■ Connection cable 5 m	G
■ Connection cable 3 m, extended by a circuit board at 1,7 m *	L
■ Connection cable 5 m extended *	M
* shortened delivery time compared with cable length 3 m and 5 m in one piece	
■ Open cable ends + 6 cm single strands	0
■ 9 pins Sub-D connector model 9900-V209	B
■ 9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx	E
■ 12 pins round connector model 9941 for burster desktop devices	F
■ 9 pins Sub-D connector with burster TEDS model 9900-V229	T
■ Calibration 1:2 / 1:2.5 dual-range option	Z
■ Non-linearity according to specification *	S
* The data in the area 20 % - 100 % of rated load F	
■ Nominal temperature range +15 °C ... +70 °C	0

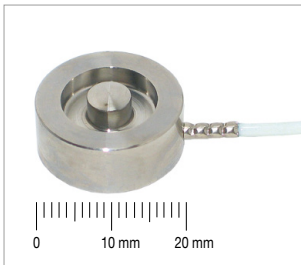
## Note

- Brochure**  
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- Product videos**  
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- CAD data**  
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# Miniature Load Cell

## MODEL 8415



Model 8415 original size

### Highlights

- Measuring ranges from 0 ... 200 N up to 0 ... 5000 N, 0 ... 45.0 lbs up to 0 ... 1124.0 lbs
- Smallest dimensions
- Inexpensive
- Made of stainless steel

### Options

- burster TEDS
- Vented version for vacuum
- Standardized output signal 1.0 mV/V
- Various cable lengths available

### Applications

- Fully automated production centers
- Measuring and controlling equipment
- Precision mechanics
- Tool manufacturing
- Equipment construction

### Product description

Due to their small dimensions and sturdy construction, these miniature compression load cells made of stainless steel can be used in a wide range of industrial applications and in laboratories. This compression load cell is easy to handle and its installation is uncomplicated. Its small size makes it perfect for use in very restricted structures for both static and dynamic compression force measurements.

The miniature compression load cell model 8415 is a flat cylindrical disc, the bottom of which is closed with a cover. The load application button for receiving the compression forces is an integrated part of the sensor.

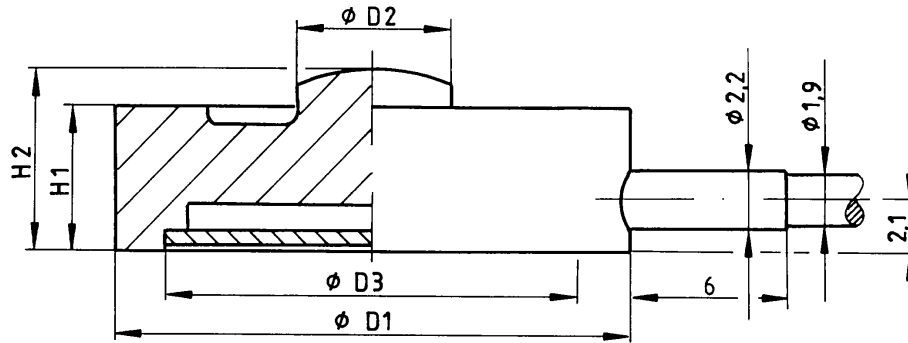
A strain gage full bridge is applied in the gauging member of the measuring element. This produces bridge output voltage directly proportional to the measured force. The small diameter of the sensors results in high rigidity and a short measurement range. The measuring force has to be applied centrally and free from lateral forces. The sensor has to be mounted on a smooth and even surface.



## Technical Data

8415	-	5200	5500	6001	6002	6005
Measuring range calibrated in N and kN from 0 ...		200 N	500 N	1000 N	2000 N	5000 N
		45.0 lbs	112.4 lbs	225.0 lbs	450.0 lbs	1124.0 lbs
<b>Accuracy</b>						
Relative non-linearity*		≤ ±0.15 % F.S.				
Characteristic curve deviation*		≤ ±0.5 % F.S.				
Relative hysteresis		≤ ±0.25 % F.S.		≤ ±0.4 % F.S.		≤ ±0.5 % F.S.
Temperature effect on zero output		≤ ±0.3 % F.S./10 K				
Temperature effect on nominal sensitivity		≤ ±0.3 % F.S./10 K				
<b>Electrical value</b>						
Sensitivity nominal		1 mV/V				
Measurement direction		compression direction				
Standardization		option 0.8 mV/V (± 0.5 %) realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end				
Bridge resistance		350 Ω nominal (deviations are possible)				
Excitation		max. 5 V DC or AC				
Insulation resistance		> 30 MΩ at 45 V				
<b>Environmental conditions</b>						
Nominal temperature range		+15 °C ... +70 °C				
Operating temperature range		0 °C ... +80 °C				
<b>Mechanical values</b>						
Deflection full scale		approx. 30 μm				
Maximum static operating force		150 % of capacity				
Overload burst		> 250 % of capacity				
Dynamic performance		recommended: 50 % of capacity possible: 70 % of capacity				
Protection class (EN 60529)		IP54				
<b>Other</b>		5200	5500	6001	6002	6005
Material		stainless steel 1.4542				
Natural frequency	[kHz]	2.0	4.0	6.5	10.5	20.0
Mass without cable	[g]	approx. 20				

\* The data in the area 20 % - 100 % of rated load F

Dimensional drawing **Model 8415**

8415	-	5200	5500	6001	6002	6005
Measuring range from 0 ...		200 N	500 N	1000 N	2000 N	5000 N
<b>Geometry</b>						
Ø D1	[mm]	20.0				
Ø D2	[mm]	6.0				
Ø D3	[mm]	16.0				
H 1	[mm]	5.5		8.0		
H 2	[mm]	7.0		9.0		
General tolerance of dimension		ISO 2768f				

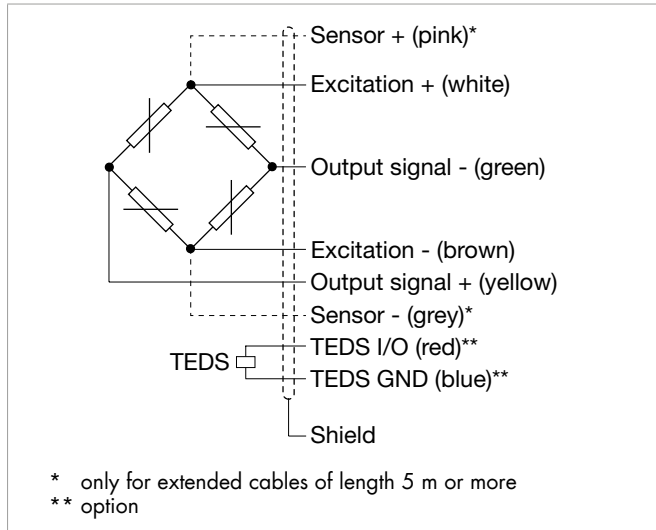
**Mounting**

Mounting instructions	<p>The measurement force must be introduced centrally and without any lateral forces. To prevent contact at just a few points, ensure that the sensor is installed on a flat surface.</p> <p>The sensor can be secured, for example, with silicon, wax or adhesive cement. Do not subject the sensor to lateral clamping forces as these would lead to measurement errors.</p> <p>When handling and installing the sensor, ensure that the cable outlet and sensor cable are not subject to excessively high tensile or lateral forces. Strain relief may be necessary.</p>
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## Electrical termination

### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



8415	-	5200	5500	6001	6002	6005
Measuring range from 0 ...		200 N	500 N	1000 N	2000 N	5000 N
<b>Electrical termination</b>						
Specifications		4 wire, shielded, TPE coated cable, cable length 1.7 m, drag chain qualified with standardization in cable 2.0 m				
Cable fastening		cable cover, crimped				
Bending protection		without				
Bending radius		≥ 20 mm				

## Accessories

### Connectors and units

#### Order code

#### Connectors

9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster

#### Units

7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_{ir}$ , $R_{\sigma}$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

## Calibration

<b>Test and calibration certificate</b>	
Included in scope of delivery of sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
<b>Standard factory calibration certificate for load cells or measurement chains (WKS)</b>	
Optionally available	Our standard factory calibration certificate includes 11 measurement points, starting at zero, spread evenly in 20% steps over the full measuring range, for increasing and decreasing load under the same installation conditions.
<b>Special factory calibration certificate for load cells or measurement chains (WKS)</b>	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
<b>German-accredited DAkkS calibration certificate for sensors and measurement chains (DKD)</b>	
Optionally available	Our DAkkS-certified calibration laboratory provides calibration certificates to DIN EN ISO 376. The calibration certificate includes 21 measurement points, starting at zero, spread evenly in 10% steps over the measuring range, for increasing and decreasing load under various installation conditions. DAkkS calibrations can be performed in the compression and/or tension direction depending on the sensor type.

## Order Code

Measuring range	Code				Measuring range
0 ... 200 N	5	2	0	0	0 ... 45.0 lbs
0 ... 500 N	5	5	0	0	0 ... 112.4 lbs
0 ... 1000 N	6	0	0	1	0 ... 225.0 lbs
0 ... 2000 N	6	0	0	2	0 ... 450.0 lbs
0 ... 5000 N	6	0	0	5	0 ... 1124.0 lbs

										Delivery ex stock at short notice									
										N	0	0	0	S	0	0	0	0	
<b>8</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>-</b>						<b>-</b>				<b>0</b>	<b>S</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<ul style="list-style-type: none"> <li>Nominal sensitivity/not standardized</li> <li>Standardization at 0.8 mV/V</li> </ul>										N									
<ul style="list-style-type: none"> <li>Connection cable 1.7 m (with standardization in the cable 2 m)</li> <li>Connection cable 3 m</li> <li>Connection cable 5 m</li> <li>Connection cable 3 m, extended by a circuit board at 1,7 m *</li> <li>Connection cable 5 m extended *</li> </ul>										O									
* shortened delivery time compared with cable length 3 m and 5 m in one piece																			
<ul style="list-style-type: none"> <li>Open cable ends + 6 cm single strands</li> <li>9 pins Sub-D connector model 9900-V209</li> <li>9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx</li> <li>12 pins round connector model 9941 for burster desktop devices</li> <li>9 pins Sub-D connector with burster TEDS model 9900-V229</li> </ul>										O									
<ul style="list-style-type: none"> <li>Relative non-linearity 0.15 % F.S. *</li> </ul>														S					
* The data in the area 20 % - 100 % of rated load F																			
Nominal temperature range +15 °C ... +70 °C																			0

## Note

- Brochure**  
Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.
- Product videos**  
Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)
- CAD data**  
Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



# Ultra-Miniature Load Cell

## MODEL 8416



Option  
Non-linearity  
 $\leq \pm 0.15 \% \text{ F.S.}$



Model 8416 original size

### Highlights

- Measuring ranges from 0 ... 20 N up to 0 ... 5 kN  
0 ... 4.5 lbs up to 0 ... 1124.0 lbs
- Dragchain cable
- Inexpensive
- Minimum diameter

### Options

- burster TEDS
- Temperature compensated range -40 °C ... +90 °C
- Standardization of the nominal sensitivity
- Connection cable from single strand

### Applications

- Equipment construction
- Production lines
- Measuring and control equipment
- Testing systems
- Handling gear

### Product description

Due to their extremely compact design, these load cells can be used wherever static or dynamic load forces have to be measured in very tight spaces.

Model 8416 is perfect for use in micro-technology and just as suitable for measuring tasks in the research and development sector.

The ultra-miniature compression load cell model 8416 is a flat, circular disc, the bottom of which is sealed with a cover. The load application button for receiving the compression forces is an integrated part of the sensor.

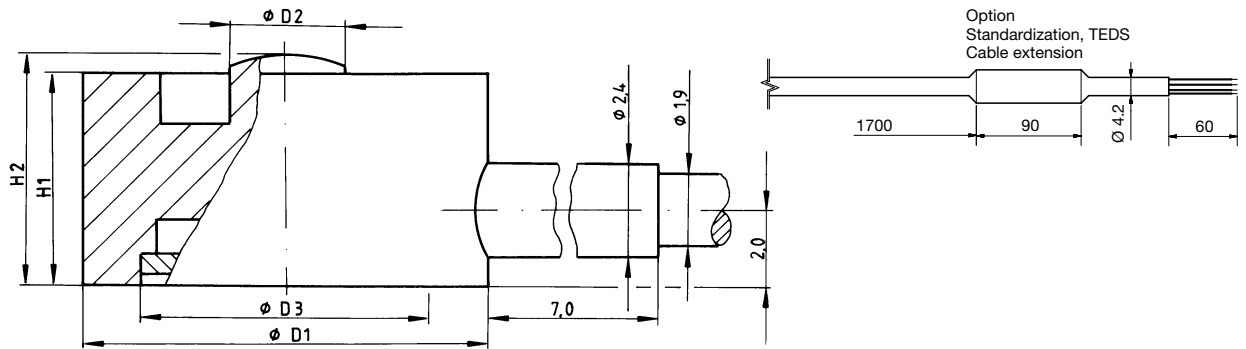
The sensor element inside the body carries a strain gage full bridge which outputs voltage directly proportional to the measurement variable upon application of force.

The short nominal measurement distance of the ultra-miniature compression load cells due to their design provides a high degree of rigidity. If needed, the nominal characteristic value can be standardized in the sensor connection cable. This allows for quick and easy interchange or simultaneous connection of several sensors to a single evaluation unit.

## Technical Data

8416	-	5020	5050	5100	5200	5500	6001	6002	6005	
Measuring range calibrated in N and kN from 0 ...		20 N	50 N	100 N	200 N	500 N	1 kN	2 kN	5 kN	
		4.5 lbs	11.2 lbs	22.5 lbs	45.0 lbs	112.4 lbs	225.0 lbs	450.0 lbs	1124.0 lbs	
<b>Accuracy</b>										
Relative non-linearity*		≤ ±0.25 % F.S. (option ≤ ±0.15 % F.S.)					≤ ±0.5 % F.S. (0.25)		≤ ±0.75 % F.S. (0.5)	
Characteristic curve deviation*		≤ ±0.25 % F.S.					≤ ±0.5 % F.S.		≤ ±1.0 % F.S.	
Relative hysteresis		≤ ±0.25 % F.S.					≤ ±0.3 % F.S.		≤ ±0.5 % F.S.	
Temperature effect on zero output		≤ ±0.3 % F.S./10 K								
Temperature effect on nominal sensitivity		≤ ±0.3 % F.S./10 K								
<b>Electrical value</b>										
Sensitivity nominal		1 mV/V								
Measurement direction		compression direction								
Standardization		option 0.8 mV/V (±0.5 %) realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end								
Bridge resistance		350 Ω nominal (deviations are possible)								
Excitation		max. 5 V DC or AC								
Insulation resistance		> 30 MΩ at 45 V								
<b>Environmental conditions</b>										
Nominal temperature range		+15 °C ... +70 °C								
Operating temperature range		0 °C ... +80 °C								
<b>Mechanical values</b>										
Deflection full scale		20 μm								
Maximum operating force		150 % of capacity								
Overload burst		> 250 % of capacity								
Dynamic performance		recommended: 50 % of capacity maximum: 70 % of capacity								
Protection class (EN 60529)		IP54								
<b>Other</b>		5020	5050	5100	5200	5500	6001	6002	6005	
Material		stainless steel 1.4542								
Natural frequency	[kHz]	6	6	6	20	18	30	45	80	
Mass without cable	[g]	10								

\* The data in the area 20 % - 100 % of rated load F

Dimensional drawing **Model 8416**

8416	-	5020	5050	5100	5200	5500	6001	6002	6005	
Measuring range from 0 ...		20 N	50 N	100 N	200 N	500 N	1 kN	2 kN	5 kN	
<b>Geometry</b>										
Ø D1	[mm]	10.6							12.6	
Ø D2	[mm]	3								
Ø D3	[mm]	8.3			7.65					
H 1	[mm]	4.5				5.5		6.5		6.9
H 2	[mm]	5				6		7		7.5
General tolerance of dimension		ISO 2768f								

### Mounting

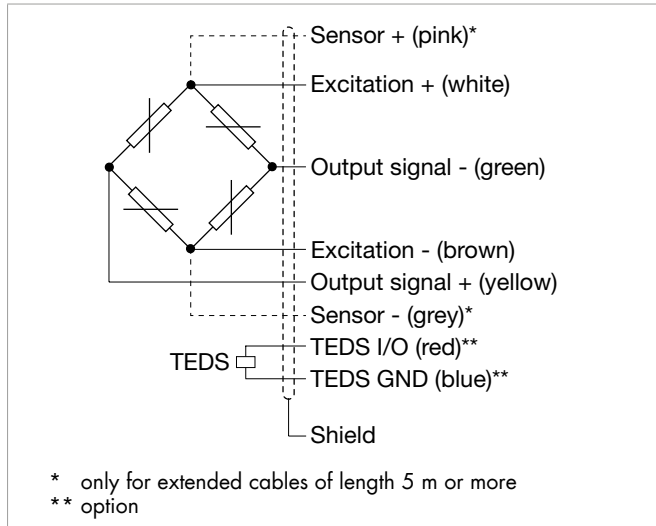
Mounting instructions	<p>The measurement force must be introduced centrally and without any lateral forces. To prevent contact at just a few points, ensure that the sensor is installed on a flat surface.</p> <p>The sensor can be secured, for example, with silicon, wax or adhesive cement. Do not subject the sensor to lateral clamping forces as these would lead to measurement errors.</p> <p>When handling and installing the sensor, ensure that the cable outlet and sensor cable are not subject to excessively high tensile or lateral forces. Strain relief may be necessary.</p>
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## Electrical termination

### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



8416	-	5020	5050	5100	5200	5500	6001	6002	6005
Measuring range from 0 ...		20 N	50 N	100 N	200 N	500 N	1 kN	2 kN	5 kN
<b>Electrical termination</b>									
Specifications		shielded, PTFE coated, 4 wire cable with bare ends for soldering, cable length 1.7 m, drag chain							
Cable fastening		cable cover							
Bending protection		without							
Bending radius		≥ 6 mm rigidly laid; ≥ 20 mm moving at temperatures > -20 °C moving connection cable not approved							

## Accessories

### Connectors and units

#### Order code

#### Connectors

9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster

#### Units

7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_{ir}$ , $R_g$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

## Calibration

<b>Test and calibration certificate</b>	
Included in scope of delivery of sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
<b>Standard factory calibration certificate for load cells or measurement chains (WKS)</b>	
Optionally available	Our standard factory calibration certificate includes 11 measurement points, starting at zero, spread evenly in 20% steps over the full measuring range, for increasing and decreasing load under the same installation conditions.
<b>Special factory calibration certificate for load cells or measurement chains (WKS)</b>	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
<b>German-accredited DAkkS calibration certificate for sensors and measurement chains (DKD)</b>	
Optionally available	Our DAkkS-certified calibration laboratory provides calibration certificates to DIN EN ISO 376. The calibration certificate includes 21 measurement points, starting at zero, spread evenly in 10% steps over the measuring range, for increasing and decreasing load under various installation conditions. DAkkS calibrations can be performed in the compression and/or tension direction depending on the sensor type.

## Order Code

Measuring range	Code	Measuring range
0 ... 20 N	5 0 2 0	0 ... 4.5 lbs
0 ... 50 N	5 0 5 0	0 ... 11.2 lbs
0 ... 100 N	5 1 0 0	0 ... 22.5 lbs
0 ... 200 N	5 2 0 0	0 ... 45.0 lbs
0 ... 500 N	5 5 0 0	0 ... 112.4 lbs
0 ... 1 kN	6 0 0 1	0 ... 225.0 lbs
0 ... 2 kN	6 0 0 2	0 ... 450.0 lbs
0 ... 5 kN	6 0 0 5	0 ... 1124.0 lbs

										Delivery ex stock at short notice										
										N	0	0	0	S	0	0	0			
<b>8</b>	<b>4</b>	<b>1</b>	<b>6</b>	<b>-</b>					<b>-</b>					<b>0</b>		<b>0</b>	<b>0</b>			
<ul style="list-style-type: none"> <li>Nominal sensitivity/not standardized</li> <li>Standardization at 0.8 mV/V</li> </ul>										N										
<ul style="list-style-type: none"> <li>Connection cable 1.7 m (with standardization in the cable 2 m)</li> <li>Connection cable 3 m</li> <li>Connection cable 5 m</li> <li>Connection cable 3 m, extended by a circuit board at 1,7 m *</li> <li>Connection cable 5 m extended *</li> </ul>										0	F	G	L	M						
* shortened delivery time compared with cable length 3 m and 5 m in one piece																				
<ul style="list-style-type: none"> <li>Open cable ends + 6 cm single strands</li> <li>9 pins Sub-D connector model 9900-V209</li> <li>9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx</li> <li>12 pins round connector model 9941 for burster desktop devices</li> <li>9 pins Sub-D connector with burster TEDS model 9900-V229</li> </ul>										0	B	E	F	T						
<ul style="list-style-type: none"> <li>Non-linearity according to specification *</li> <li>Relative non-linearity <math>\leq \pm 0.15</math> % F.S. *</li> </ul>															S	L				
* The data in the area 20 % - 100 % of rated load F																				
<ul style="list-style-type: none"> <li>Temperature compensated range +15 °C ... +70 °C</li> <li>Temperature compensated range -40 °C ... +90 °C</li> </ul>																			0	A

## Note

- Brochure**  
Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.
- Product videos**  
Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)
- CAD data**  
Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



# Miniature Ring Load Cell

## MODEL 8438



### Highlights

- Measuring ranges from 0 ... 100 N up to 0 ... 200 kN
- Continuous centric internal hole measured to fit
- Flat disc design
- Protection class IP65
- Completely welded sensor body
- Internal thread in the bottom for fixing

### Options

- burster TEDS
- Standardization of the nominal sensitivity
- Various cable lengths available
- Customization of geometry possible

### Applications

- Force monitoring during riveting
- Measuring contact forces in hydraulic stamps
- Monitoring pulling forces during wire production
- Monitoring of forces in prestressed concrete structure



Medium measuring ranges



Small measuring ranges

### Product description

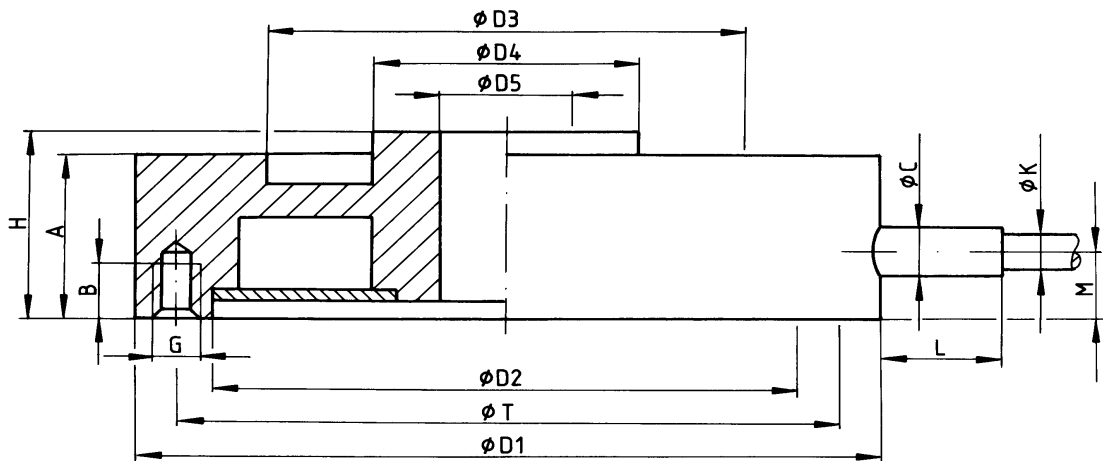
The force to be measured must be introduced axially and perpendicularly to the entire surface of the inner and outer bands of the sensor in the opposite direction. Conversion of the acting force into an electrical output signal is performed by strain gages connected together in a full bridge circuit.

To achieve optimal accuracy, the base of the sensor should rest on a smooth level surface, hardened to at least  $\geq 58$  HRC with sufficient dimensions. The base cover welded to the surface has a stabilizing effect on the sensor element. Lateral forces must be avoided anyway as they distort the measured results. Tension and bending relief for the sensor cable is to be carried out on the machine side.

## Technical Data

8438	-	5100	5200	5500	6001	6002	6005	6010	6020	6050	6100	6200	
Measuring range calibrated in N and kN from 0 ...		±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN	±10 kN	±20 kN	±50 kN	±100 kN	±200 kN	
		±22.5 lbs	±45.0 lbs	±112.4 lbs	±225.0 lbs	±450.0 lbs	±1124.0 lbs	±2.2 klbs	±4.5 klbs	±11.2 klbs	±22.5 klbs	±45.0 klbs	
<b>Accuracy</b>													
Relative non-linearity*		≤ 0.5 % F.S.											
Characteristic curve deviation*		≤ 0.5 % F.S.					≤ 0.75 % F.S.				≤ 1 % F.S.		
Relative hysteresis		≤ 0.5 % F.S.					≤ 0.75 % F.S.				≤ 1 % F.S.		
Temperature effect on zero output		≤ ±0.03 % F.S./K											
Temperature effect on nominal sensitivity		≤ ±0.03 % F.S./K											
<b>Electrical value</b>													
Sensitivity nominal		1.5 mV/V				2 mV/V				1.5 mV/V			
Measurement direction		compression direction. Calibration and positive signal in compression direction.											
Standardization		1 mV/V (±1 %), option realized on board 48 x 7mm (L x B) in the cable after 1.5 m and 1.7 m from the sensor resp. 0.3 m from cable end (±0.25 %)											
Bridge resistance		approx. 350 Ω, nominal											
Excitation		5 V DC											
Insulation resistance		> 10 MΩ											
<b>Environmental conditions</b>													
Nominal temperature range		+15 °C ... +70 °C											
Operating temperature range		0 °C ... +85 °C											
<b>Mechanical values</b>													
Deflection full scale		approx. 60 μm											
Maximum operating force		150 % of capacity											
Overload burst		200 % of capacity											
Dynamic performance		recommended: 50 % of capacity maximum: 70 % of capacity											
Protection class (EN 60529)		IP54									IP65		
<b>Other</b>		5100	5200	5500	6001	6002	6005	6010	6020	6050	6100	6200	
Material		1.4542											
Natural frequency	[kHz]	1.2	2	3.7	3.4	5.5	10	15	14	24	22	37	
Mass without cable	[g]	16		17	52			66	145		626	660	

\* The data in the area 20 % - 100 % of rated load

Dimensional drawing **Model 8438**

8438	-	5100	5200	5500	6001	6002	6005	6010	6020	6050	6100	6200
Measuring range from 0 ...		$\pm 100$ N	$\pm 200$ N	$\pm 500$ N	$\pm 1$ kN	$\pm 2$ kN	$\pm 5$ kN	$\pm 10$ kN	$\pm 20$ kN	$\pm 50$ kN	$\pm 100$ kN	$\pm 200$ kN
<b>Geometry</b>												
$\phi D1$	[mm]		28.0				38.0			49.0		78.0
$\phi D2$	[mm]		25.0				30.5			41.0		60.0
$\phi D3$	[mm]		22.0				25.0			35.0		54.0
$\phi D4$	[mm]		9.0				13.5			23.0		42.0
$\phi D5$	[mm]		5.5 <sup>H8</sup>				7.0 <sup>H8</sup>			15.0 <sup>H8</sup>		28.0 <sup>H8</sup>
A	[mm]		7.0				9.0			15.0		24.0
H	[mm]		8.0				10.0			16.0		25.0
$\phi C$	[mm]		2.2					3.6				5.6
L	[mm]					8.0						10.0
$\phi K$	[mm]		1.9					3.0				5.0
M	[mm]		2.5				3.0		4.5			6.5
B	[mm]		-					3.0				5.5
$\phi T$	[mm]		-				33.5		45.0			69.0
G			-					M2.5 x 0.45				M4.0 x 0.7
General tolerance of dimension								ISO 2768f				

**Mounting**

Mounting instructions	<p>Requirements for evenness of the mounting surfaces: 5 <math>\mu</math>m, Parallelism of the mounting surfaces: 20 <math>\mu</math>m. Surface hardness: <math>\geq 58</math> HRC.</p> <p>Mounting: measuring range <math>\geq 0 \dots 1000</math> N</p> <p>There are three mounting holes on the lower side of the sensor, equally spaced on T diameter with division 120°, one hole is located directly across the cable exit. This kind of mounting is allowed for compression load only</p>
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## Electrical termination

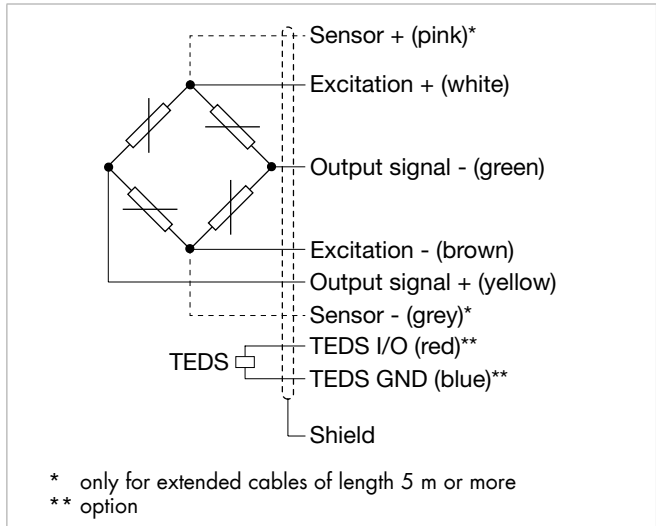
### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



### burster TEDS

The "burster Transducer Electronic Data Sheet" (TEDS) is a memory in which identification data of the sensor, calibration data and other sensor parameters are saved. In conjunction with your own suitable burster device, there is the option of performing a simple adjustment in order to achieve the maximum accuracy of the measuring chain. A simple sensor exchange is thus possible in just a few steps without losing precision.



8438	-	5100	5200	5500	6001	6002	6005	6010	6020	6050	6100	6200
Measuring range from 0 ...		±100 N	±200 N	±500 N	±1 kN	±2 kN	±5 kN	±10 kN	±20 kN	±50 kN	±100 kN	±200 kN
<b>Electrical termination</b>												
Specifications		shielded, TPE coated, 4 wire cable with bare ends for soldering, drag chain, cable length 1.7 m, with standardization in cable 2.0 m										
Cable fastening		cable cover										
Bending protection		without										anti-kink protection
Bending radius		≥ 6 mm rigidly laid; ≥ 20 mm moving; at temperatures > -20 °C moving connection cable not approved				≥ 9 mm rigidly laid; ≥ 30 mm moving; at temperatures > -20 °C moving connection cable not approved						
Cable model		PUR cable 2 mm customer length 1.7 m, assembled				PUR cable 3 mm customer length 1.7 m, assembled						

## Accessories

### Connectors and units

#### Order code

#### Connectors

9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster

#### Units

7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_t$ , $R_a$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

## Calibration

<b>Test and calibration certificate</b>	
Included in scope of delivery of sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
<b>Standard factory calibration certificate for load cells or measurement chains (WKS)</b>	
Optionally available	Our standard factory calibration is performed in 5 force steps (20% steps) starting from zero until the reaching the nominal force, for increasing and decreasing compression load under the same installation position.
<b>Special factory calibration certificate for load cells or measurement chains (WKS)</b>	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
<b>Calibration certificate with accreditation symbol for product group load cell 8438</b>	
Optionally available	Calibration certificate with accreditation symbol for load cell 8438. Calibration is performed on the basis of the accreditation of the calibration laboratory D-K-15141-01-00, for the scope of accreditation listed in the annex to the certificate. The traceability to national standards as well as a wide international recognition (DAkkS as signatory of the Multilateral Agreements of EA, ILAC and IAF) are thus guaranteed. Calibration is performed according to ISO 376 in 10 force steps (10% steps) vstarting from zero until the reaching the nominal force, for increasing and decreasing compression load under various installation positions.



## Order Code

Measuring range	Code				Measuring range
0 ... ±100 N	5	1	0	0	0 ... ±22.5 lbs
0 ... ±200 N	5	2	2	0	0 ... ±45.0 lbs
0 ... ±500 N	5	5	5	0	0 ... ±112.4 lbs
0 ... ±1 kN	6	0	0	1	0 ... ±225.0 lbs
0 ... ±2 kN	6	0	0	2	0 ... ±450.0 lbs
0 ... ±5 kN	6	0	0	5	0 ... ±1124.0 lbs
0 ... ±10 kN	6	0	1	0	0 ... ±2.2 klbs
0 ... ±20 kN	6	0	2	0	0 ... ±4.5 klbs
0 ... ±50 kN	6	0	5	0	0 ... ±11.2 klbs
0 ... ±100 kN	6	1	0	0	0 ... ±22.5 klbs
0 ... ±200 kN	6	2	0	0	0 ... ±45.0 klbs

										Delivery ex stock at short notice									
										N	0	0	0	S	0	0	0	0	0
8	4	3	8	-						-				0	S	0	0	0	0

■ Nominal sensitivity/not standardized	N
■ Standardization of the sensitivity to 1.0 mV/V	C
■ Connection cable 1.7 m (with standardization in the cable 2 m)	0
■ Connection cable 3 m	F
■ Connection cable 5 m	G
■ Connection cable 3 m, extended *	L
■ Connection cable 5 m extended * (with sens line)	M
* shortened delivery time compared with cable length 3 m and 5 m in one piece	
■ Open cable ends + 6 cm single strands	O
■ 9 pins Sub-D connector model 9900-V209	B
■ 9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx	E
■ 12 pins round connector model 9941 for burster desktop devices	F
■ 9 pins Sub-D connector with burster TEDS model 9900-V229	T
■ 8 pins coupling connector model 9900-V245 for 9110	H
■ Non-linearity according to specification	S

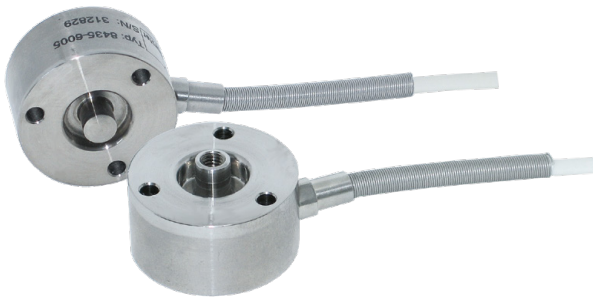
## Note

- Brochure**  
 Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.
- Product videos**  
 Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)
- CAD data**  
 Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



## Tension Compression Load Cell

# MODEL 8435



### Highlights

- Measuring ranges from 0 ... 200 N up to 0 ... 5000 N
- Small dimensions
- Inexpensive execution
- Stable anti-kink protection
- Made of high quality stainless steel
- Connecting cable suitable for drag chains

### Options

- Pull-plate
- Load introduction button
- burster TEDS
- Various cable lengths available

### Applications

- Holding forces on loading machinery
- Automatic assembly equipment on production lines
- Friction force test in laboratory equipment

### Product description

The tension and compression load cell model 8435 enables universal and fast installation, requires hardly any installation space and upgrades with technical data that are readily achieved by larger sensors. Due to its excellent price-performance ratio with regard to its mechanical and electrical data, the force sensor finds its place in products that are also manufactured in larger quantities and calculated with a small budget.

This model of load cell uses proven strain gage technology to perform measurements. Strain gages are applied to the sensitive element and connected to form a full bridge. The electrical resistance of this full bridge increases with the load acting on it, so that the bridge supplies an output voltage proportional to the measurement variable. This model allows the force application of two kinds: compression via the load application button and tension via the centric internal thread.

The measurement range of 0 ... 5000 N is supplied exclusively with the integrated load application button. The sensor has to be mounted on a level surface using screws fitted through the three bore holes in the outer ring. To achieve the highest possible measurement accuracy, the sensor should not be subject to lateral forces. A strain-relief and an anti-bend mechanism for the connection cable are integrated in the sensor housing.



With load introduction button for measuring ranges up to 2 kN



With pull-plate for measuring ranges up to 2 kN

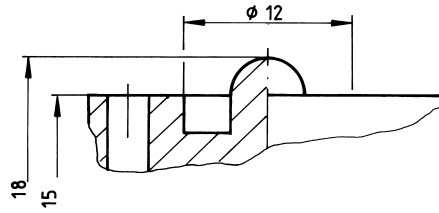
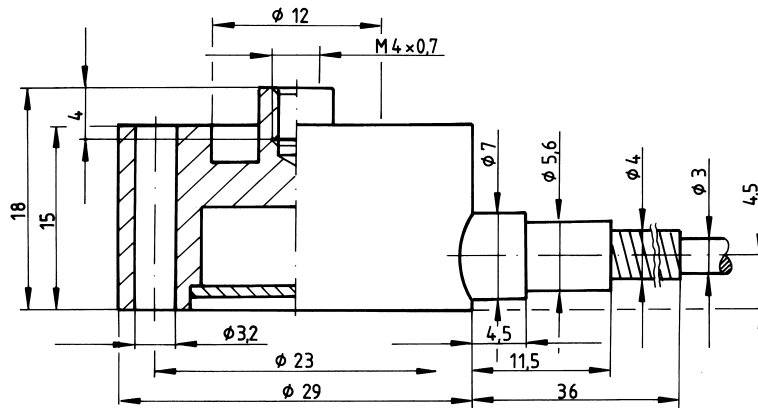
## Technical Data

8435	-	5200	5500	6001	6002	6005
Measuring range calibrated in N and kN from 0 ...		±200 N	±500 N	±1 kN	±2 kN	5 kN
		±45.0 lbs	±112.4 lbs	±225.0 lbs	±450.0 lbs	1124.0 lbs
<b>Accuracy</b>						
Relative non-linearity*		≤ ±0.25 % F.S.				
Characteristic curve deviation*		≤ ±0.25 % F.S.				
Relative hysteresis		≤ ±0.2 % F.S.				
Temperature effect on zero output		≤ ±0.02 % F.S./K				
Temperature effect on nominal sensitivity		≤ ±0.03 % F.S./K				
<b>Electrical value</b>						
Sensitivity nominal		1 mV/V				
Measurement direction		Tension and compression direction. Calibration and positive signal in compression direction.				Compression direction. Calibration in compression direction
Standardization**		0.8 mV/V (±0.25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end				
Bridge resistance		350 Ω, nominal*				
Excitation		5 V DC				
Insulation resistance		> 30 MΩ at 45 V				
<b>Environmental conditions</b>						
Nominal temperature range		+15 °C ... +70 °C				
Operating temperature range		-30 °C ... +80 °C				
<b>Mechanical values</b>						
Deflection full scale		max. 20 µm				
Maximum operating force		150 % of capacity				
Overload burst		> 200 % of capacity				
Dynamic performance		recommended: 50 % of capacity maximum: 70 % of capacity				
Protection class (EN 60529)		IP54				
<b>Installation</b>						
Torque	[N*m]	1				
Mounting screws		M3, resistance 12.9				
Installation instructions		The entire bearing area of the sensor must be mounted on a base which is hardened (58 HRC), flat, polished or better lapped. Three clearance holes with a diameter of 3.2 mm at reference diameter 23.0 mm and division 120°. One hole is across from the cable exit.				
<b>Other</b>						
Material		stainless steel 1.4542				
Natural frequency	[kHz]	5	9	14	18	22
Mass without cable	[g]	40				

\* The data in the area 20 % - 100 % of rated load

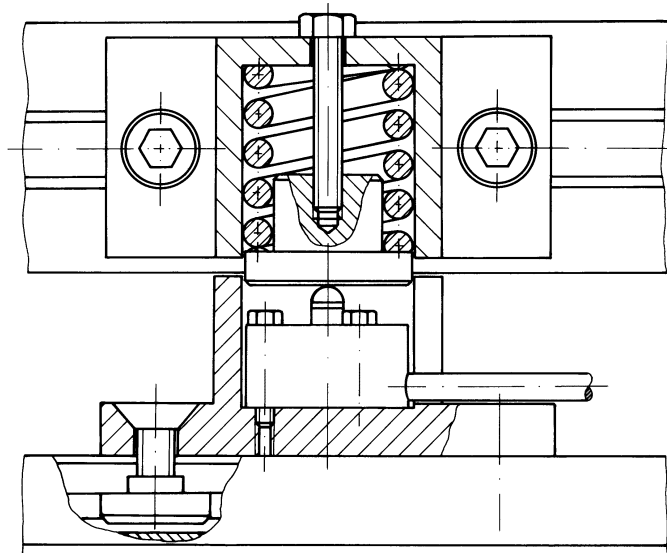
\*\* Temperature range for the optional TEDS or standardization board 0 ... 60 °C

Dimensional drawing – Measuring range 0 ... 5000 N | 1124.0 lbs

Dimensional drawing – Measuring range  $\leq 0 \dots 2000 \text{ N}$  | 450.0 lbs

## Installation example

Overload of the load cell is impossible due to a suitable spring. When the units are locked the spring will transfer not more load to the cell than the measuring range can cope with.



## Electrical termination

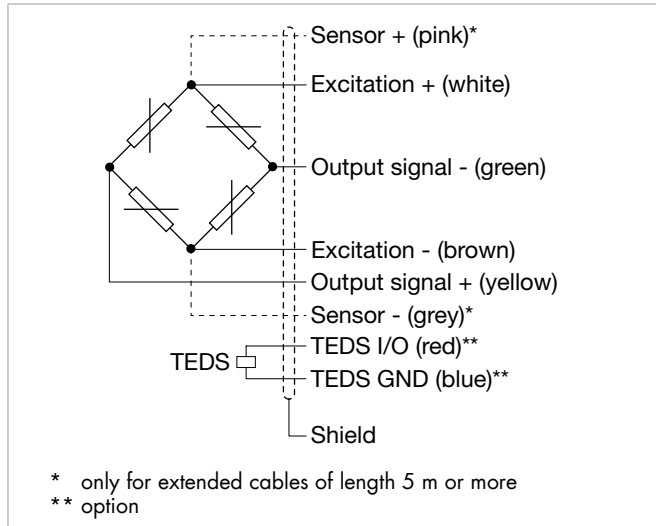
### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



### burster TEDS

The "**burster T**ransducer **E**lectronic **D**ata **S**heet" (TEDS) is a memory in which identification data of the sensor, calibration data and other sensor parameters are saved. In conjunction with your own suitable burster device, there is the option of performing a simple adjustment in order to achieve the maximum accuracy of the measuring chain. A simple sensor exchange is thus possible in just a few steps without losing precision.

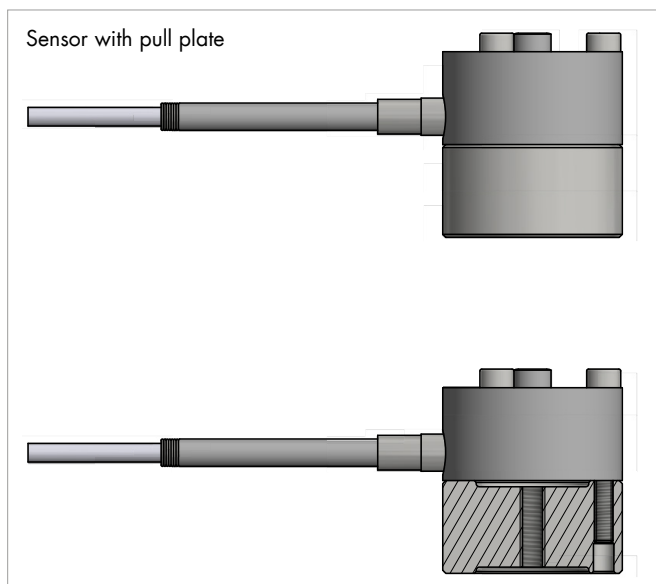


8435	-	5200	5500	6001	6002	6005
Measuring range from 0 ...		±200 N	±500 N	±1 kN	±2 kN	5 kN
Electrical termination						
Specifications		shielded, TPE coated, 4 wire cable, drag chain, cable length 1.7 m, with standardization in cable 2.0 m				
Cable fastening		adapter for cable holder				
Bending protection		anti-kink protection				
Bending radius		≥ 9 mm rigidly laid; ≥ 30 mm moving; at temperatures > -30 °C moving connection cable not approved				
Cable model		PUR cable 3 mm customer length 1.7 m, assembled				

## Accessories

### Pull plates

A pull plate extends the range of potential uses of tension & compression load cells to measuring tensile loads in moving assemblies (cable tension or forces in joints). The pull plate is fastened by its outer flange to the sensor's flange. Customized threaded parts or even rod end bearings can be fitted in the central threaded hole. Once fitted, the pull plates form part of the sensor. Sensor and plate are calibrated as a unit and are supplied only as a pre-assembled combination. Bolts of strength 12.9 are required for fitting the pull plates.

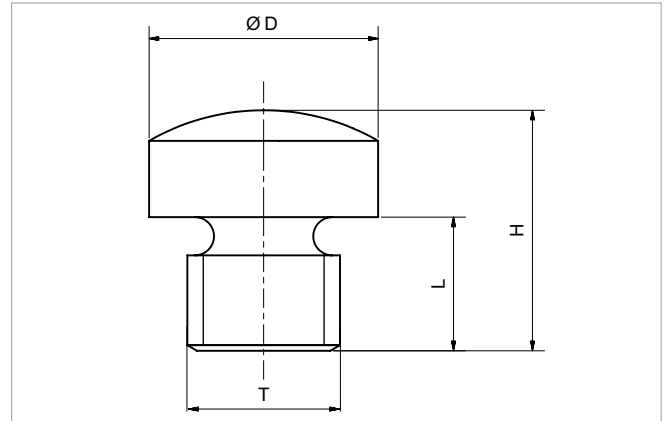


**Order code**

8590-V001	----	5200	5500	6001	6002
Compatible for measuring range from 0 ...		±200 N	±500 N	±1 kN	±2 kN
<b>Geometry</b>					
Central blind threaded hole T		M4 x 0.7			
Tightening torque mounting screws	[N*m]	1			
Mounting screws		3 x M3 x 25, resistance 12.9			
Mass	[g]	69			

**Load buttons**

Load buttons are used when purely compressive forces are meant to be applied to the load cell and when direct coupling to the surrounding mechanical structure via the central threaded hole in the sensor is not required/possible. The domed surface of the load button minimizes angle errors for loads applied at an angle of up to 3°. The compressive force must be applied to the button via a flat and hardened contact surface. The optimum hardness is 60 HRC or more.

**Order code**

8580-V004	----	5200	5500	6001	6002
Compatible for measuring range from 0 ...		±200 N	±500 N	±1 kN	±2 kN
<b>Geometry</b>					
Ø D	[mm]	6			
H	[mm]	6,3			
L	[mm]	3,5			
T		M4 x 0.7			
<b>Other</b>					
Material		1.2842, HRC 60			

**Connectors and units****Order code**

<b>Connectors</b>	
9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster
<b>Units</b>	
7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_i$ , $R_o$ , Shunt, $R_{ISO}$ )
7270	Mobile measuring device TRANS CAL basic
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE®

## Calibration

<b>Test and calibration certificate</b>	
Supplied with the sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
<b>Standard factory calibration certificate for load cells or measurement chains (WKS)</b>	
Optionally available	Our standard factory calibration is performed in 20% steps starting from zero until the reaching the nominal force, for increasing and decreasing load with unchanged installation position. Depending on the sensor model, factory calibrations can be performed in compression and/or tension direction.
<b>Special factory calibration certificate for load cells or measurement chains (WKS)</b>	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
<b>Calibration certificate with accreditation symbol for product group load cell 8435</b>	
Optionally available	Calibration certificate with accreditation symbol for load cell 8435. Calibration is performed on the basis of the accreditation of the calibration laboratory D-K-15141-01-00, for the scope of accreditation listed in the annex to the certificate. The traceability to national standards as well as a wide international recognition (DAkkS as signatory of the Multilateral Agreements of EA, ILAC and IAF) are thus guaranteed. Calibration is performed according to ISO 376 in 10 force steps (10% steps) vstarting from zero until the reaching the nominal force, for increasing and decreasing load under various installation positions.

## Order Code

Measuring range	Code				Measuring range
0 ... ±200 N	5	2	0	0	0 ... ±45.0 lbs
0 ... ±500 N	5	5	0	0	0 ... ±112.4 lbs
0 ... ±1 kN	6	0	0	1	0 ... ±225.0 lbs
0 ... ±2 kN	6	0	0	2	0 ... ±450.0 lbs
0 ... 5 kN	6	0	0	5	0 ... 1124.0 lbs

										Delivery ex stock at short notice								
										N	0	0	0	S	0	0	0	
<b>8</b>	<b>4</b>	<b>3</b>	<b>5</b>	<b>-</b>					<b>-</b>				<b>0</b>	<b>S</b>		<b>0</b>	<b>0</b>	
<ul style="list-style-type: none"> <li>Nominal sensitivity/not standardized</li> <li>Standardization at 0.8 mV/V</li> </ul>										N								
<ul style="list-style-type: none"> <li>Connection cable 1.7 m (with standardization in the cable 2 m)</li> <li>Connection cable 3 m</li> <li>Connection cable 5 m</li> <li>Connection cable 3 m extended *</li> <li>Connection cable 5 m extended * (with sens line)</li> </ul>										0								
* shortened delivery time compared with cable length 3 m and 5 m in one piece																		
<ul style="list-style-type: none"> <li>Open cable ends + 6 cm single strands</li> <li>9 pins Sub-D connector model 9900-V209</li> <li>9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx</li> <li>12 pins round connector model 9941 for burster desktop devices</li> <li>9 pins Sub-D connector with burster TEDS model 9900-V229</li> <li>8 pins coupling connector model 9900-V245 for 9110</li> </ul>										0								
<ul style="list-style-type: none"> <li>Non-linearity according to specification</li> </ul>														S				
<ul style="list-style-type: none"> <li>No option</li> <li>Pull plate (sensors 200 N ... 2 kN)</li> </ul>																0		5

## Note

### ■ Brochure

Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.

### ■ Product videos

Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)



### ■ CAD data

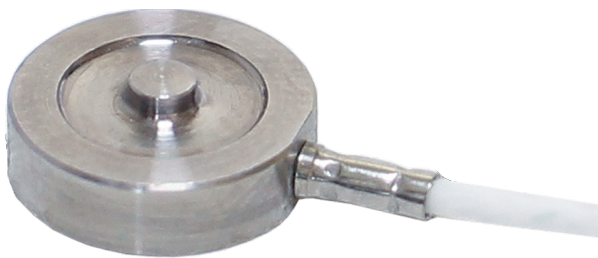
Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)





## Subminiature Load Cell

### MODEL 8413, MODEL 8414 with overload protection



Model 8414 with overload protection

#### Highlights

- Measuring ranges from 0 ... 5 N up to 0 ... 5 kN  
0 ... 1.1 lbs up to 0 ... 1124.0 lbs
- Especially flat design from 3.3 mm
- Non-linearity 0.25 % F.S.
- Made of high quality stainless steel

#### Options

- Extended temperature compensated range -55 °C ... +120 °C
- burster TEDS
- Various cable lengths available
- Standardized output signal 0.8 mV/V

#### Applications

- Adjustment of gauges
- Force measurements on the inside of precision tools
- Monitoring of control elements
- Regulation of forces in medical technology
- Control instruments in precision machinery
- Adjustment and pre-load of devices

#### Product description

This miniature force sensor was optimised with respect to its height and is, at only 3.4 mm, the lowest known sensor with strain gage technology. Hardly higher than the diameter of its connection cable, it can also be housed in conditions where space is limited. Along with its minimal geometry, the force sensor is also particularly light. It has a high resonance frequency to follow quickly changing load alternations. Despite its extreme miniaturisation, in its application it remains completely robust and suitable for industry, not only with regard to the highly flexible cable connections or the full welding of sensors for the measurement ranges  $\geq 0 \dots 10$  N.

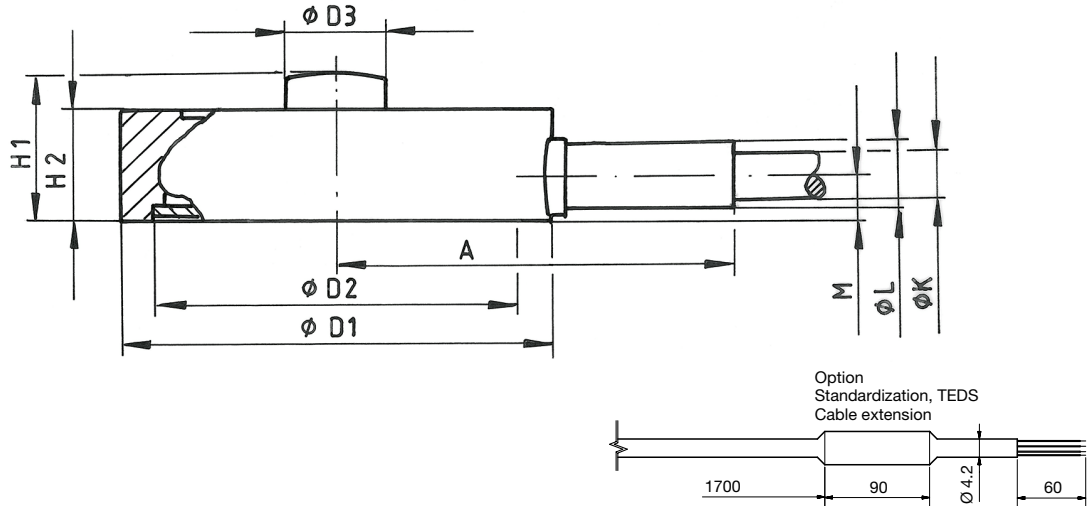
The miniature compression force sensors are flat, cylindrical discs with covered bottoms. The central load application button for taking on compression forces is an integrated part of the top, which is the sensor's membrane. On its bottom, the strain gages are fixed on the inside of the housing and interconnected with a full Wheatstone bridge. This passes on, for force applications, an output voltage which is directly proportional to the size of the measurement.

The connection cable exits radially from the sensor housing and is additionally stabilised by a case for measurement ranges  $\geq 0 \dots 10$  N. The support area of the bottom of the sensor is annular, however arranged as a circular area for measurement range  $0 \dots 5$  N.

## Technical Data

8413	-	5005	5010	5020	5050	5100	5200	5500	6001	6002	6005
8414 with overload protection	-	5005	5010	5020	5050	5100					
Measuring range calibrated in N and kN from 0 ...		5 N	10 N	20 N	50 N	100 N	200 N	500 N	1000 N	2000 N	5000 N
		1.1 lbs	2.2 lbs	4.5 lbs	11.2 lbs	22.5 lbs	45.0 lbs	112.4 lbs	225.0 lbs	450.0 lbs	1124.0 lbs
<b>Accuracy</b>											
Relative non-linearity*		≤ ±0.25 % F.S.									
Characteristic curve deviation*		≤ ±0.25 % F.S.			≤ ±0.5 % F.S.						
Relative hysteresis		≤ ±0.5 % F.S.									
Temperature effect on zero output		≤ ±0.2 % F.S./10 K									
Temperature effect on nominal sensitivity		≤ ±0.2 % F.S./10 K									
<b>Electrical value</b>											
Sensitivity nominal		15 mV/V	1 mV/V				2 mV/V				
Measurement direction		compression direction									
Standardization		-	0.8 mV/V (± 0.25 %) realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end								
Bridge resistance		500 Ω nominal (semiconductor strain gage)	350 Ω nominal (foil strain gage) deviations are possible								
Excitation		max. 5 V DC or AC									
Insulation resistance		> 30 MΩ at 45 V									
<b>Environmental conditions</b>											
Nominal temperature range		+15 °C ... +70 °C									
Operating temperature range		-55 °C ... +120 °C									
<b>Mechanical values</b>											
Deflection full scale		13 μm ... 38 μm	25 μm ... 50 μm								
Maximum operating force		Model 8413: 150 % of capacity									
Maximum static overload stop		Model 8414: 500 % of capacity									
Overload burst		Model 8413: > 250 % of capacity									
Dynamic performance		recommended: 70 % maximum: 100 % (of capacity)									
Protection class		IP54									
<b>Other</b>		5005	5010	5020	5050	5100	5200	5500	6001	6002	6005
Material		stainless steel 1.4542									
Natural frequency	[kHz]	4	4	6	12	15	15	16	20	13	15
Mass without cable model 8413	[g]	1.2	1.5			2.0		3.0	3.0	10.0	10.0
Mass without cable model 8414	[g]	3.8	4.0			-		-	-	-	-

\* The data in the area 20 % - 100 % of rated load F

Dimensional drawing **Model 8413 / Model 8414**

8413	-	5005	5010	5020	5050	5100	5200	5500	6001	6002	6005
Measuring range from 0 ...		5 N	10 N	20 N	50 N	100 N	200 N	500 N	1000 N	2000 N	5000 N
<b>Geometry</b>											
Ø D1	[mm]	9.7						12.7	19.1		
Ø D2	[mm]	.*	8.3			10.0			16.0		
Ø D3	[mm]	2.3	2.2			3.0			6.4		
H 1	[mm]	3.3	3.4			3.8			6.4		
H 2	[mm]	2.6			3.3			5.7			
A	[mm]	11.0**	9.0			10.5			13.7		
M	[mm]	1.2	1.0			1.5					
Ø L	[mm]	-	1.6								
Ø K	[mm]	1.2	1.0								

8414 with overload protection	-	5005	5010	5020	5050	5100
Measuring range from 0 ...		5 N	10 N	20 N	50 N	100 N
<b>Geometrie</b>						
Ø D1	[mm]	9.4	9.7			
Ø D2	[mm]	.*	7.0			
Ø D3	[mm]	2.3	2.2			
H 1	[mm]	6.4				
H 2	[mm]	5.8	5.6			
A	[mm]	11.0**	9.0			
M	[mm]	4.2	4.0			
Ø L	[mm]	-	1.6			
Ø K	[mm]	1.2	1.0			
General tolerance of dimension		ISO 2768f				

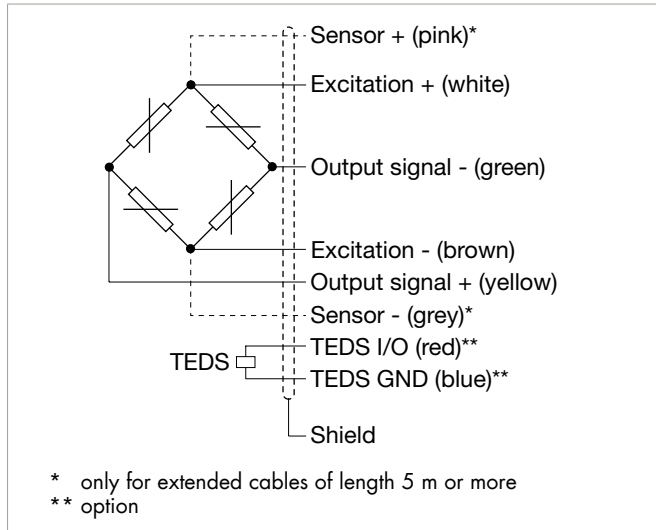
\* Measuring range 0 ... 5 N with circular contact surfaces on the bottom with Ø 8,5 mm

\*\* Cable at this length rigid but without a slave

## Electrical termination

### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



8413	-	5005	5010	5020	5050	5100	5200	5500	6001	6002	6005
Measuring range from 0 ...		5 N	10 N	20 N	50 N	100 N	200 N	500 N	1000 N	2000 N	5000 N
<b>Electrical termination</b>											
Specifications		5 N: highly flexible teflon isolated with open ends for soldering, cable length 1.5 m ≥ 10 N: shielded, highly flexible, teflon-insulated cable, cable length 1.7 m, drag chain qualified									
Cable fastening		5 N: epoxide resin; shed ≥ 10 N: cable cover; crimped									
Bending protection		without									
Bending radius		static: ≥ 10 mm dynamic ≥ 15 mm									

## Accessories

### Connectors and units

#### Order code

<b>Connectors</b>	
9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster
<b>Units</b>	
7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_r$ , $R_g$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

## Calibration

<b>Test and calibration certificate</b>	
Included in scope of delivery of sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
<b>Standard factory calibration certificate for load cells or measurement chains (WKS)</b>	
Optionally available	Our standard factory calibration certificate includes 11 measurement points, starting at zero, spread evenly in 20% steps over the full measuring range, for increasing and decreasing load under the same installation conditions.
<b>Special factory calibration certificate for load cells or measurement chains (WKS)</b>	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
<b>German-accredited DAkkS calibration certificate for sensors and measurement chains (DKD)</b>	
Optionally available	Our DAkkS-certified calibration laboratory provides calibration certificates to DIN EN ISO 376. The calibration certificate includes 21 measurement points, starting at zero, spread evenly in 10% steps over the measuring range, for increasing and decreasing load under various installation conditions. DAkkS calibrations can be performed in the compression and/or tension direction depending on the sensor type.

## Order Code

Measuring range	Code				Measuring range
0 ... 5 N	5	0	0	5	0 ... 1.1 lbs
0 ... 10 N	5	0	1	0	0 ... 2.2 lbs
0 ... 20 N	5	0	2	0	0 ... 4.5 lbs
0 ... 50 N	5	0	5	0	0 ... 11.2 lbs
0 ... 100 N	5	1	0	0	0 ... 22.5 lbs
0 ... 200 N	5	2	0	0	0 ... 45.0 lbs
0 ... 500 N	5	5	0	0	0 ... 112.4 lbs
0 ... 1000 N	6	0	0	1	0 ... 225.0 lbs
0 ... 2000 N	6	0	0	2	0 ... 450.0 lbs
0 ... 5000 N	6	0	0	5	0 ... 1124.0 lbs

										Delivery ex stock at short notice										
										N	0	0	0	S	0	0	0			
<b>8</b>	<b>4</b>	<b>1</b>	<b>3</b>	<b>-</b>					<b>-</b>					<b>0</b>	<b>S</b>	<b>0</b>	<b>0</b>			
<ul style="list-style-type: none"> <li>Nominal sensitivity/not standardized</li> <li>Standardization at 0.8 mV/V</li> </ul>										N										
<ul style="list-style-type: none"> <li>Connection cable 1.7 m (with standardization in the cable 2 m)</li> <li>Connection cable 3 m</li> <li>Connection cable 5 m</li> <li>Connection cable 3 m, extended by a circuit board at 1,7 m *</li> <li>Connection cable 5 m extended *</li> </ul>										0	F	G	L	M						
* shortened delivery time compared with cable length 3 m and 5 m in one piece																				
<ul style="list-style-type: none"> <li>Open cable ends + 6 cm single strands</li> <li>9 pins Sub-D connector model 9900-V209</li> <li>9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx</li> <li>12 pins round connector model 9941 for burster desktop devices</li> <li>9 pins Sub-D connector with burster TEDS model 9900-V229</li> </ul>										0	B	E	F	T						
<ul style="list-style-type: none"> <li>Non-linearity according to specification *</li> </ul>															S					
* The data in the area 20 % - 100 % of rated load F																				
<ul style="list-style-type: none"> <li>Nominal temperature range +15 °C ... +70 °C</li> <li>Extended nominal temperature range for measuring ranges -55 °C ... 120 °C</li> </ul>																			0	B

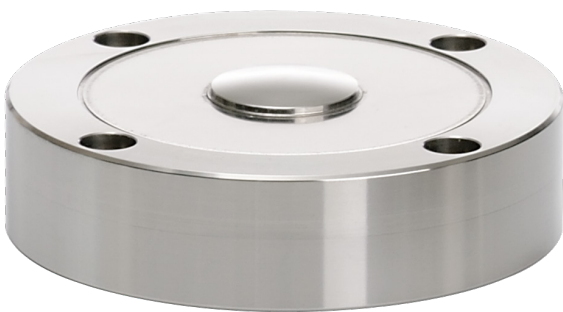
## Note

- Brochure**  
Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.
- Product videos**  
Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)
- CAD data**  
Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



# High Precision Compression Load Cell

## MODEL 8527



### Highlights

- Measuring ranges from 0 ... 500 N up to 0 ... 100 kN, 0 ... 112.4 lbs up to 0 ... 22.4 klbs
- Non-linearity 0.035 % F.S.
- Highest manufacturing quality
- Also suitable for dynamic measurements

### Options

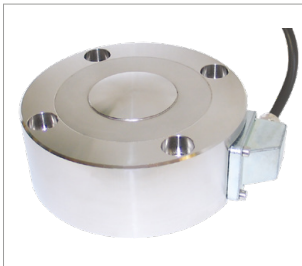
- WKS (Factory Calibration Certificate) or DAkkS (German Accreditation Body) calibration
- burster TEDS

### Applications

- Reference measurements
- Calibration facilities
- Test benches
- All areas of mechanical engineering



**NEW**  
Non-linearity  
0.035 % F.S.



High range



Low range

### Product description

The model 8527 high-precision compression load cell is the ideal load cell for reference measurement chains where highly precise measurement results are required. Its very high production quality and extremely low non-linearity of just 0.035 % F.S. make it a dependable choice for comparative measurements and calibration tasks

Designed for a dynamic stress of up to 100 % of the full scale value, the model 8527 load cell is also suitable for situations where a rapid signal change with high amplitude occurs and has to be measured.

The model 8527 high-precision compression load cell has a domed load button on top, onto which the compressive load being measured is applied. Inside the load cell is an elastic membrane, on which strain gages generate a resistance change in the measuring bridge and an output signal proportional to the load. For the best possible measurement results, the force should be applied axially and centrally to the load button. The mounting surface should ideally be hardened (60 HRC) and should not bend under the applied load.

## Technical Data

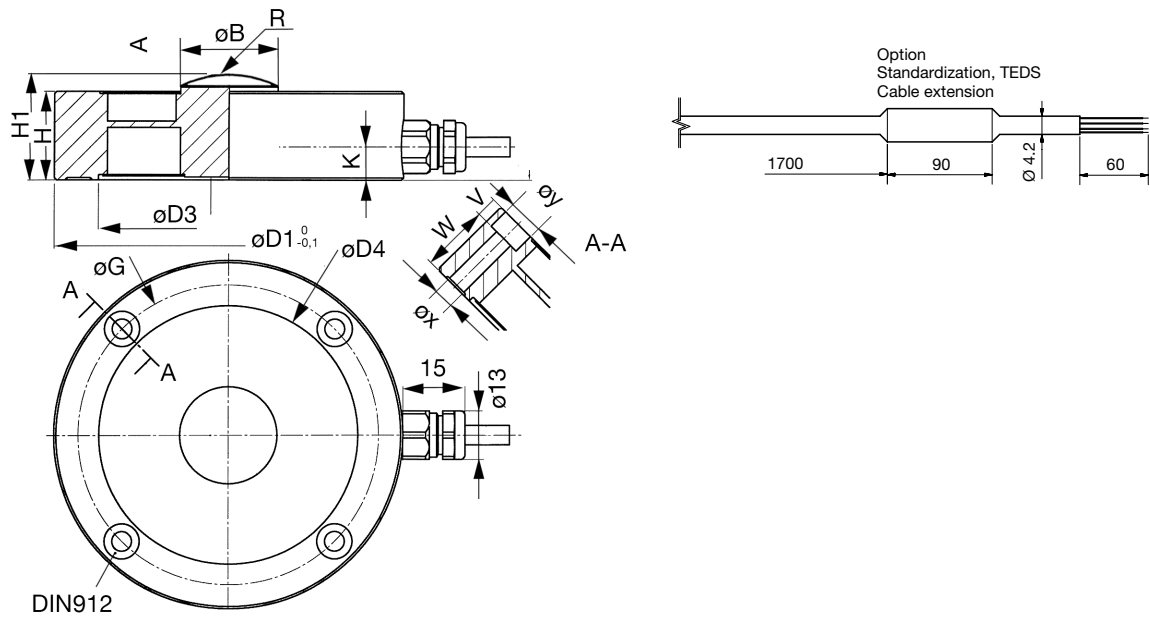
8527	-	5500	6001	6002	6005	6010	6020	6050	6100
Measuring range calibrated in N and kN from 0 ...		0.5 kN	1 kN	2 kN	5 kN	10 kN	20 kN	50 kN	100 kN
		112.4 lbs	224.8 lbs	449.6 lbs	1.1 klbs	2.2 klbs	4.5 klbs	11.2 klbs	22.4 klbs
<b>Accuracy</b>									
Relative non-linearity*		≤ ±0.035 % F.S.							
Characteristic curve deviation*		≤ ±0.05 % F.S.			≤ ±0.075 % F.S.			≤ ±0.1 % F.S.	
Relative hysteresis		≤ 0.1 % F.S.						≤ 0.15 % F.S.	
Temperature effect on zero output		≤ ±0.1 % F.S./10 K							
Temperature effect on nominal sensitivity		≤ ±0.1 % F.S./10 K							
<b>Electrical values</b>									
Sensitivity nominal		1.7 mV/V							
Measurement direction		Compression direction							
Standardization**		1.5 mV/V (±0.25 %)							
Bridge resistance		350 Ω nominal							
Excitation		recommended 5 V DC or AC; max. 10 V DC or AC							
Insulation resistance		> 30 GΩ at 45 V							
<b>Environmental conditions</b>									
Nominal temperature range		+15 °C ... +70 °C							
Operating temperature range		-30 °C ... +80 °C							
<b>Mechanical values</b>									
Deflection full scale		< 80 μm							
Maximum operating force		120 % of capacity							
Overload burst		> 200 % of capacity							
Dynamic performance		recommended: 70 %; maximum: 100 % (of capacity)							
Protection class (EN 60529)		IP65							
<b>Installation</b>									
Intended mounting screws		4 pieces M4			4 pieces M6			4 pieces M12	
Tightening torque mounting screws	[N*m]	-							
Installation instructions		The entire bearing area of the sensor must be mounted on a base which is hardened (60 HRC), flat, polished or better lapped Countersinks according DIN 74-km, for hexagon socket screw according to DIN 912.							
<b>Other</b>									
Material		stainless steel 1.4542							
Natural frequency	[kHz]	365	540	700	470	580	715	850	1000
Mass	[kg]	0.5		0.6	1.6	2.4	3.2	6.5	8

\* The data in the area 20 % - 100 % of rated load F

\*\* Realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end (temperature range limited to 0 ... +60 °C)

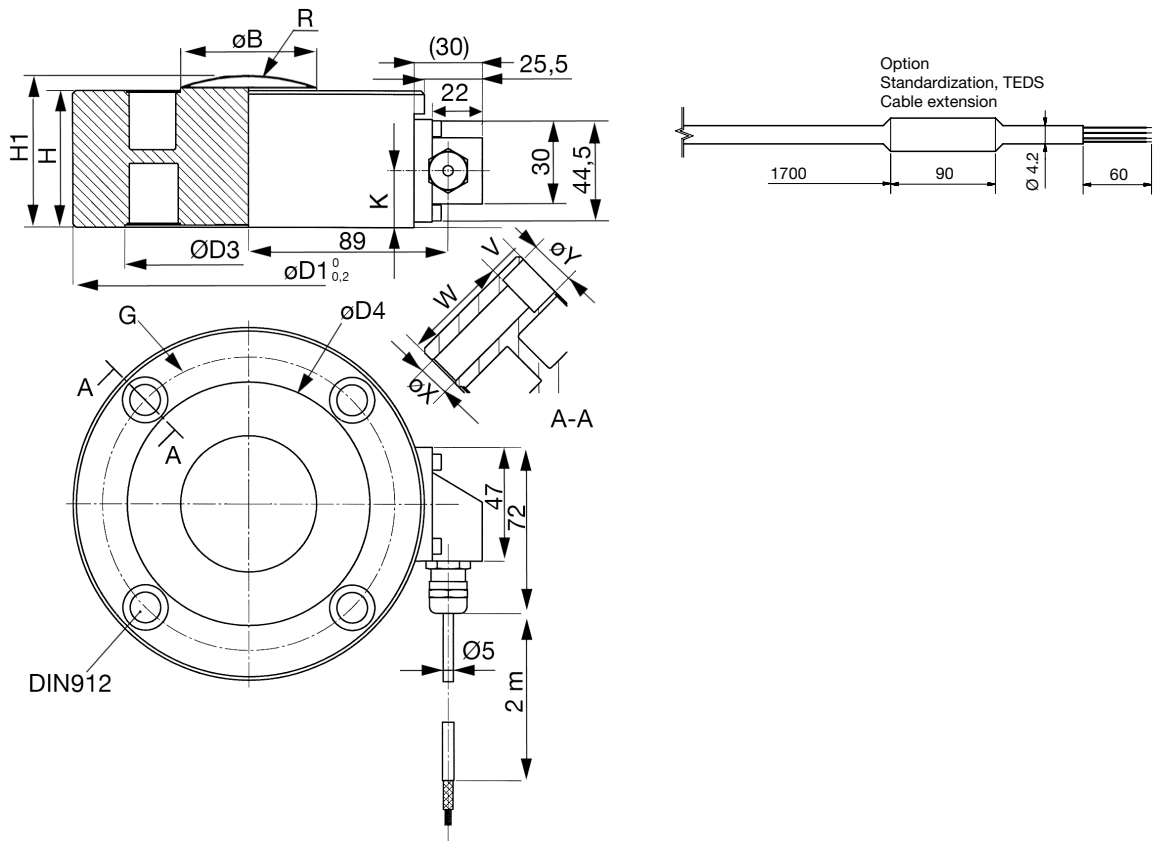


Dimensional drawing 1 – Measuring ranges from 0 ... 0.5 kN up to 0 ... 20 kN | from 0 ... 112.4 lbs up to 0 ... 4.5 klbs



8527	-	5500	6001	6002	6005	6010	6020
Measuring range from 0 ...		0.5 kN	1 kN	2 kN	5 kN	10 kN	20 kN
<b>Geometrie</b>							
Ø B	[mm]		21.00			43.00	
Ø D1	[mm]		79.00			119.00	
Ø D3	[mm]		59.00			94.00	
Ø D4	[mm]		58.60			92.60	
Ø G	[mm]		68.00			105.00	
H	[mm]	20.00		25.00	30.00	45.00	60.00
H1	[mm]	22.00		27.00	33.00	48.00	63.00
K	[mm]		7.50			9.00	
R	[mm]		50.00			150.00	
V	[mm]		4.60			6.80	
W	[mm]	15.40		20.40	23.20	38.20	53.20
Ø X	[mm]		4.50			6.60	
Ø Y	[mm]		8.00			11.00	

Dimensional drawing 1 – Measuring ranges from 0 ... 50 kN up to 0 ... 100 kN | from 0 ... 11.1 klbs up to 0 ... 22.4 klbs

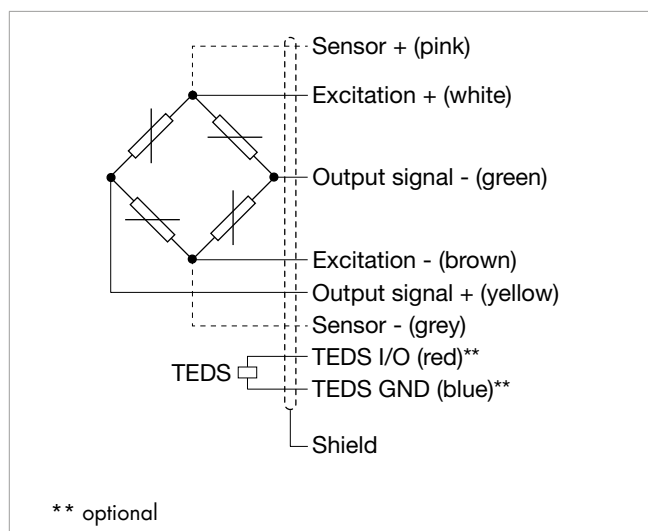


8527	-	6050	6100
Measuring range from 0 ...		50 kN	100 kN
<b>Geometrie</b>			
$\varnothing B$	[mm]		59.00
$\varnothing D1$	[mm]		155.00
$\varnothing D3$	[mm]		109.00
$\varnothing D4$	[mm]		107.00
$\varnothing G$	[mm]		129.00
H	[mm]	60.00	75.00
$H_1$	[mm]	63.00	78.00
K	[mm]		25.00
R	[mm]		200.00
V	[mm]		13.00
W	[mm]	47.00	62.00
$\varnothing X$	[mm]		13.50
$\varnothing Y$	[mm]		20.00

## Electrical termination

### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



8527	-	5500	6001	6002	6005	6010	6020	6050	6100
Measuring range from 0 ...		0.5 kN	1 kN	2 kN	5 kN	10 kN	20 kN	50 kN	100 kN
<b>Electrical termination</b>									
Specifications		highly flexible, shielded, drag chains suitable. Bending radius three times the diameter for fixed cable, ten times the diameter for cable permanently moving							
Cable fastening		high-strength cable gland							
Bending protection		-							
Bending radius		Bending radius three times the diameter for fixed cable, ten times the diameter for cable permanently moving.							
Cable type		PUR, Ø = 5.0 mm							

## Accessories

### Connectors and units

#### Order Code

<b>Connectors</b>	
9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster
<b>Units</b>	
7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_t$ , $R_g$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

## Calibration

<b>Test and calibration certificate</b>	
Included in scope of delivery of sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
<b>Standard factory calibration certificate for load cells or measurement chains (WKS)</b>	
Optionally available	Our standard factory calibration certificate includes 11 measurement points, starting at zero, spread evenly in 20% steps over the full measuring range, for increasing and decreasing load under the same installation conditions.
<b>Special factory calibration certificate for load cells or measurement chains (WKS)</b>	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
<b>German-accredited DAkkS calibration certificate for sensors and measurement chains (DKD)</b>	
Optionally available	Our DAkkS-certified calibration laboratory provides calibration certificates to DIN EN ISO 376. The calibration certificate includes 21 measurement points, starting at zero, spread evenly in 10% steps over the measuring range, for increasing and decreasing load under various installation conditions. DAkkS calibrations can be performed in the compression and/or tension direction depending on the sensor type.

## Order Code

Measuring range	Code	Measuring range
0 ... 0.5 kN	5 5 0 0	0 ... 112.4 lbs
0 ... 1 kN	6 0 0 1	0 ... 224.8 lbs
0 ... 2 kN	6 0 0 2	0 ... 449.6 lbs
0 ... 5 kN	6 0 0 5	0 ... 1.1 klbs
0 ... 10 kN	6 0 1 0	0 ... 2.2 klbs
0 ... 20 kN	6 0 2 0	0 ... 4.5 klbs
0 ... 50 kN	6 0 5 0	0 ... 11.2 klbs
0 ... 100 kN	6 1 0 0	0 ... 22.4 klbs

										Delivery ex stock at short notice								
										N	0	0	0	S	0	0	0	
<b>8</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>-</b>					<b>-</b>					<b>0</b>	<b>S</b>	<b>0</b>	<b>0</b>	<b>0</b>
■ Nominal sensitivity/not standardized										N								
■ Standardization at 1.5 mV/V ***										S								
*** temperature range limited to 0 ... +60 °C																		
■ Connection cable 1.7 m (Standardization 2 m)										0								
■ Connection cable 3 m										F								
■ Connection cable 5 m										G								
■ Connection cable 3 m extended *										L								
■ Connection cable 5 m extended * (with sens line)										M								
* shortened delivery time compared with cable length 3 m and 5 m in one piece																		
■ Open cable ends + 6 cm single wires										0								
■ 9 pins Sub-D connector model 9900-V209										B								
■ 9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx										E								
■ 12 pins round connector model 9941 for burster desktop devices										F								
■ 9 pins Sub-D connector with burster TEDS model 9900-V229 ***										T								
■ 8 pins coupling connector model 9900-V245 for 9110										H								
*** temperature range limited to 0 ... +60 °C																		
■ Non-linearity 0.035 % F.S. **										S								
** The data in the area 20 % - 100 % of rated load $F_{nom}$																		
■ Nominal temperature range +15 °C ... +70 °C																		0

## Note

### ■ Brochure

Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.

### ■ Product videos

Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)



### ■ CAD data

Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



# Compression Load Cell

## MODEL 8526



### Highlights

- Measuring ranges from 0 ... 100 N to 0 ... 1 MN, 0 ... 22.4 lbs up to 0 ... 225 klbs
- Extremely compact design
- For static and dynamic measurements
- Three threaded holes on bottom for easy mounting and cable suitable for drag chain application
- Protection class IP64

### Options

- Non-linearity 0.1% F.S.
- Standardized output signal
- burster TEDS

### Applications

- All forms of test benches
- Reference sensor for comparative and for calibration jobs
- In cramped assembly situations

### Product description

Thanks to its compact shape and three fixing holes on its underside, the 8526 compression load cell can be used in a variety of applications. With its wide choice of measuring ranges from 0 ... 100 N up to 0 ... 1 MN, it really can cover a wealth of measurement tasks, from the laboratory to use in heavy industry.

The integral load button provides an easy and reliable means of applying the force to be measured. Angle errors in the load application with a deviation from the measurement axis of up to 3° have only a minor influence on the measurement signal. For ideal measurement accuracy, the load cell should be mounted on a surface that has been ground and has a hardness of at least 60 HRC.

The model 8526 load cell is designed with an internal elastic membrane, to which strain gages are attached. When a compressive load is applied to the load cell, the membrane is elastically deformed and transfers its tension to the strain gages. These in turn respond with a proportional change in their ohmic resistance, which can be evaluated using a suitable instrumentation amplifier or display device.



Small measuring ranges



Wide measuring range 500 kN



Wide measuring range 1 MN

## Technical Data

8526	-	5100	5200	5500	6001	6002	6005	6010	
Measuring range calibrated in N and kN from 0 ...		0.1 kN	0.2 kN	0.5 kN	1 kN	2 kN	5 kN	10 kN	
		22.4 lbs	44.9 lbs	112.4 lbs	224.8 lbs	449.6 lbs	1.1 klbs	2.2 klbs	
<b>Accuracy</b>									
Relative non-linearity*		$\leq \pm 0.25$ % F.S. (option: $\leq \pm 0.1$ % F.S.)							
Characteristic curve deviation*		$\leq \pm 0.25$ % F.S.				$\leq \pm 0.5$ % F.S.			
Relative hysteresis		$\leq 0.15$ % F.S.				$\leq 0.5$ % F.S.			
Temperature effect on zero output		$\leq \pm 0.02$ % F.S./K							
Temperature effect on nominal sensitivity		$\leq \pm 0.03$ % F.S./K							
<b>Electrical values</b>									
Sensitivity nominal		1.5 mV/V							
Measurement direction		Compression direction							
Standardization**		option 1.0 mV/V ( $\pm 0.25$ %)				option 1.0 mV/V ( $\pm 0.5$ %)			
Bridge resistance		350 $\Omega$ nominal							
Excitation		max. 5 V DC			recommended 5 V DC or AC; max. 10 V DC or AC				
Insulation resistance		$> 30$ G $\Omega$ at 45 V							
<b>Environmental conditions</b>									
Nominal temperature range		+15 °C ... +70 °C							
Operating temperature range		-30 °C ... +80 °C							
<b>Mechanical values</b>									
Deflection full scale		$< 50-70$ $\mu$ m							
Maximum operating force		150 % of capacity							
Overload burst		$> 200$ % of capacity							
Dynamic performance		recommended: 50 %; maximum: 70 % (of capacity)							
Protection class (EN 60529)		IP64							
<b>Installation</b>									
Intended mounting screws		3 pieces M2.5							
Tightening torque mounting screws	[N*m]	0.7							
Mounting screws		-							
Installation instructions		The entire bearing area of the sensor must be mounted on a base which is hardened (60 HRC), flat, polished or better lapped							
<b>Other</b>									
Material		stainless steel 1.4542							
Natural frequency	[kHz]	2	3	5	8	11	13	15	
Mass	[kg]	0.04							0.05

\* The data in the area 20 % - 100 % of rated load F

\*\* Realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end (temperature range limited to 0 ... +60 °C)

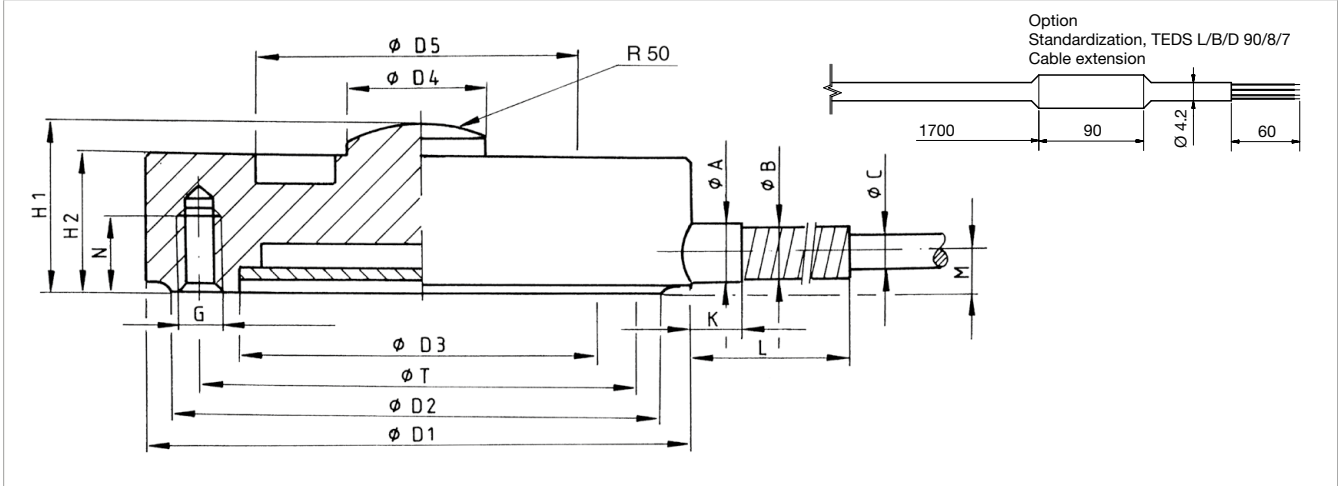
8526	-	6020	6050	6100	6200	6500	7001
Measuring range calibrated in N and kN from 0 ...		20 kN	50 kN	100 kN	200 kN	500 kN	1 MN
		4.5 klbs	11.2 klbs	22.5 klbs	45.0 klbs	112 klbs	225 klbs
<b>Accuracy</b>							
Relative non-linearity*		±0.25 % F.S. (option: ±0.1 % F.S.)					
Characteristic curve deviation*		±0.5 % F.S.					
Relative hysteresis		0.5 % F.S.					
Temperature effect on zero output		≤ ±0.02 % F.S./K					
Temperature effect on nominal sensitivity		≤ ±0.03 % F.S./K					
<b>Electrical values</b>							
Sensitivity nominal		1.5 mV/V				2.0 mV/V	
Measurement direction		Compression direction					
Standardization		option 1.0 mV/V (±0.5 %)				option TEDS	
Bridge resistance		350 Ω nominal					
Excitation		recommended 5 V DC or AC; max. 10 V DC or AC					
Insulation resistance		> 30 GΩ at 45 V					
<b>Environmental conditions</b>							
Nominal temperature range		+15 °C ... +70 °C					
Operating temperature range		-30 °C ... +80 °C				0 °C ... +70 °C by using TEDS	
<b>Mechanical values</b>							
Deflection full scale		< 50-70 μm				< 170 μm	< 210 μm
Maximum operating force		150 % of capacity				120 % of capacity	
Overload burst		> 200 % of capacity					
Dynamic performance		recommended: 50 %; maximum: 70 % (of capacity)					
Protection class (EN 60529)		IP64					
<b>Installation</b>							
Intended mounting screws		3 pieces M2.5		3 pieces M4		3 pieces M5	3 pieces M8
Tightening torque mounting screws	[N*m]	0.7	2.5		21		
Mounting screws		-					
Installation instructions		The entire bearing area of the sensor must be mounted on a base which is hardened (60 HRC), flat, polished or better lapped					
<b>Other</b>							
Material		stainless steel 1.4542					
Natural frequency	[kHz]	9	9	6	5	2	1.3
Mass	[kg]	0.05		0.3	1.2	3.4	16.8

\* The data in the area 20 % - 100 % of rated load F

\*\* Realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end (temperature range limited to 0 ... +60 °C)

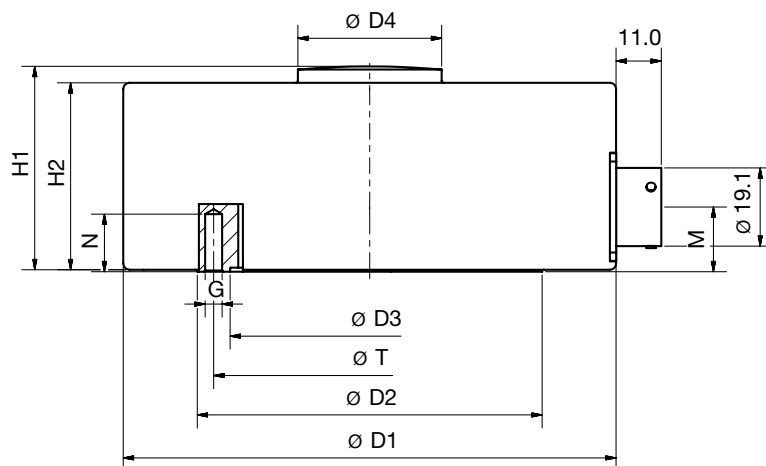


Dimensional drawing 1 – Measuring ranges from 0 ... 0.1 kN up to 0 ... 200 kN | from 0 ... 22.4 lbs up to 0 ... 45.0 klbs



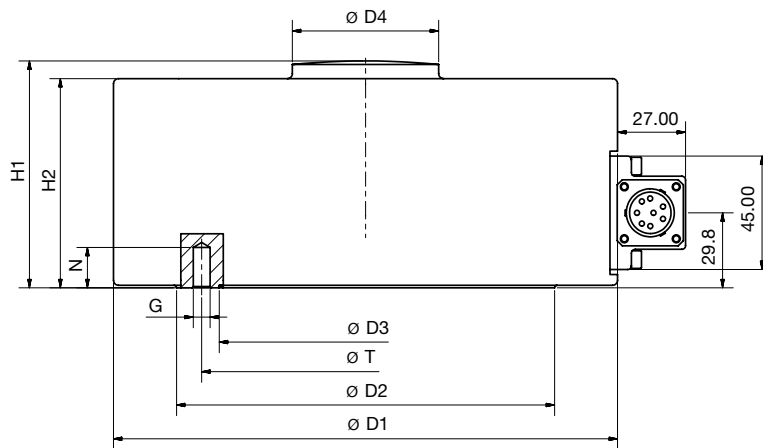
8526	-	5100	5200	5500	6001	6002	6005	6010	6020	6050	6100	6200	
Measuring range from 0 ...		0.1 kN	0.2 kN	0.5 kN	1 kN	2 kN	5 kN	10 kN	20 kN	50 kN	100 kN	200 kN	
<b>Geometry</b>													
Ø D1	[mm]				31.8					38.1	50.8	76.2	
Ø D2	[mm]				29.4					35.0	48.0	74.0	
Ø D3	[mm]				21.2					28.0	36.0	46.0	
Ø D4	[mm]				8.1					10.7	15.2	20.0	
Ø D5	[mm]				19					27.0	33.0	45.0	
H1	[mm]				9.9					16.0	25.4	38.1	
H2	[mm]				8.1					14.0	22.4	33.5	
Ø T	[mm]				25.5					31.5	42.0	60.0	
Ø A	[mm]				-					-	6.5		
Ø B	[mm]				3.0						4.5		
Ø C	[mm]				2.0						3.0		
K	[mm]				-					-		11.0	
L	[mm]				40.0					40.0		45.0	
M	[mm]				2.5					3.0		6.0	
N	[mm]				3.0					3.5		6.0	
G	[mm]				3 x M2.5						3 x M4		
General tolerance of dimension					ISO 2768-f								

Dimensional drawing 2 – Measuring range from 500 kN | 112 klbs



8526	-	6500
Measuring range from 0 ...		500 kN
<b>Geometry</b>		
Ø D1	[mm]	120.0
Ø D2	[mm]	84.0
Ø D3	[mm]	68.0
Ø D4	[mm]	35.0
Ø D5	[mm]	60.0
H1	[mm]	50.0
H2	[mm]	46.0
Ø T	[mm]	76.0
Ø A	[mm]	-
Ø B	[mm]	-
Ø C	[mm]	-
K	[mm]	-
L	[mm]	-
M	[mm]	15.75
N	[mm]	12
G	[mm]	3 x M5
General tolerance of dimension		ISO 2768-f

Dimensional drawing 3 – Measuring range from 1 MN | 225 klbs

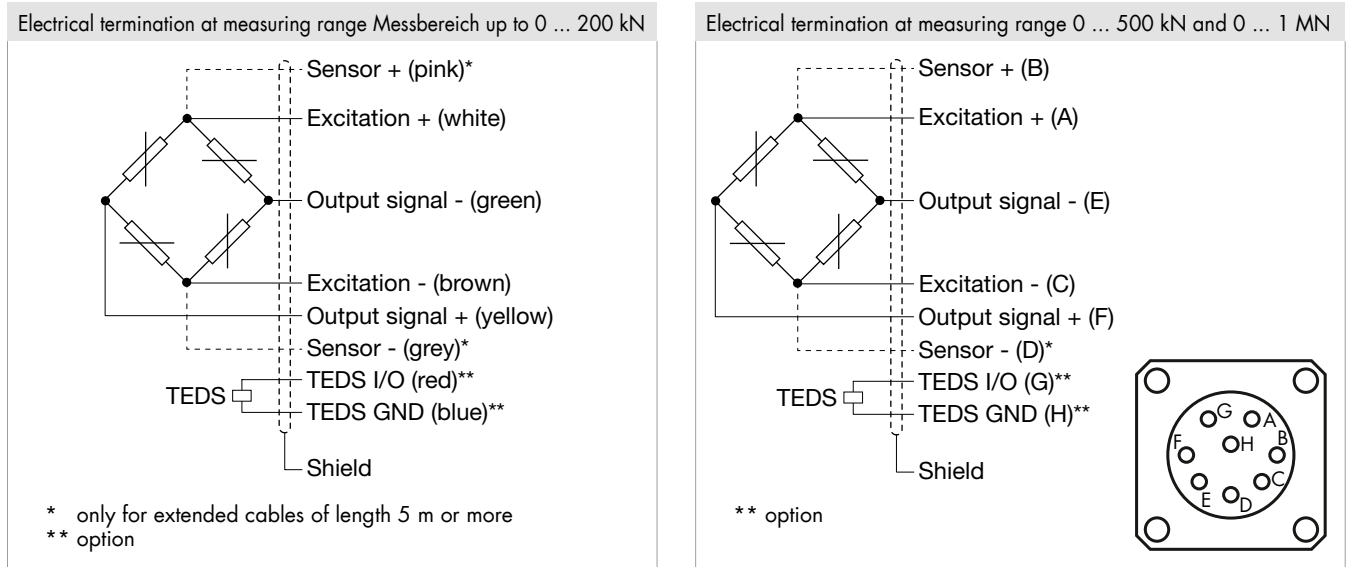


8526	-	7001
Measuring range from 0 ...		1 MN
<b>Geometry</b>		
$\varnothing D1$	[mm]	200.0
$\varnothing D2$	[mm]	150.0
$\varnothing D3$	[mm]	116.0
$\varnothing D4$	[mm]	58.0
$\varnothing D5$	[mm]	103.0
H1	[mm]	90.0
H2	[mm]	83.0
$\varnothing T$	[mm]	130.0
$\varnothing A$	[mm]	-
$\varnothing B$	[mm]	-
$\varnothing C$	[mm]	-
K	[mm]	-
L	[mm]	-
M	[mm]	29.8
N	[mm]	12
G	[mm]	3 x M8
General tolerance of dimension		ISO 2768-f

## Electrical termination

### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



8526	-	5100	5200	5500	6001	6002	6005	6010	6020	6050	6100	6200
Measuring range from 0 ...		0.1 kN	0.2 kN	0.5 kN	1 kN	2 kN	5 kN	10 kN	20 kN	50 kN	100 kN	10 kN
<b>Electrical termination</b>												
Specifications		Highly flexible, oil resistant, drag chains suitable.										
Cable fastening		cable cover										
Bending protection		bend protection spiral										
Bending radius	[mm]	Bending radius three times the diameter for fixed cable, ten times the diameter for cable permanently moving.										
Cable type		PUR, Ø = 2.0 mm										

8526	-	6500	7001
Measuring range from 0 ...		500 kN	1 MN
<b>Electrical termination</b>			
Specifications		Bajonett connector 8 pin 9900-V643; mating connector in scope of delivery	
Cable fastening		-	
Anti-kink coil		-	
Bending radius	[mm]	-	
Cable type		-	

## Accessories

### Connectors and units

#### Order Code

##### Connection cable

99643-000A-0570030	Connection cable for measuring ranges 500 kN and 1 MN, length 3 m, open ends on one side
--------------------	--

##### Connectors

9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster

##### Units

7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_i$ , $R_{e,i}$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

## Calibration

### Test and calibration certificate

Included in scope of delivery of sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
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### Standard factory calibration certificate for load cells or measurement chains (WKS)

Optionally available	Our standard factory calibration certificate includes 11 measurement points, starting at zero, spread evenly in 20% steps over the full measuring range, for increasing and decreasing load under the same installation conditions.
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### Special factory calibration certificate for load cells or measurement chains (WKS)

On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
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### German-accredited DAkkS calibration certificate for sensors and measurement chains (DKD)

Optionally available	Our DAkkS-certified calibration laboratory provides calibration certificates to DIN EN ISO 376. The calibration certificate includes 21 measurement points, starting at zero, spread evenly in 10% steps over the measuring range, for increasing and decreasing load under various installation conditions. DAkkS calibrations can be performed in the compression and/or tension direction depending on the sensor type.
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## Order Code

Measuring range	Code	Measuring range
0 ... 0.1 kN	5 1 0 0	0 ... 22.4 lbs
0 ... 0.2 kN	5 2 0 0	0 ... 44.9 lbs
0 ... 0.5 kN	5 5 0 0	0 ... 112.4 lbs
0 ... 1 kN	6 0 0 1	0 ... 224.8 lbs
0 ... 2 kN	6 0 0 2	0 ... 449.6 lbs
0 ... 5 kN	6 0 0 5	0 ... 1.1 klbs
0 ... 10 kN	6 0 1 0	0 ... 2.2 klbs
0 ... 20 kN	6 0 2 0	0 ... 4.5 klbs
0 ... 50 kN	6 0 5 0	0 ... 11.2 klbs
0 ... 100 kN	6 1 0 0	0 ... 22.5 klbs
0 ... 200 kN	6 2 0 0	0 ... 45.0 klbs

										Delivery ex stock at short notice									
										N	0	0	0	S	0	0	0		
<b>8</b>	<b>5</b>	<b>2</b>	<b>6</b>	<b>-</b>						<b>-</b>				<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	
■ Nominal sensitivity/not standardized										N									
■ Standardization at 1.0 mV/V ***										S									
*** temperature range limited to 0 ... +60 °C																			
■ Connection cable 1.7 m (Standardization 2 m)										0									
■ Connection cable 3 m										F									
■ Connection cable 5 m										G									
■ Connection cable 3 m extended *										L									
■ Connection cable 5 m extended * (with sens line)										M									
* shortened delivery time compared with cable length 3 m and 5 m in one piece																			
■ Open cable ends + 6 cm single wires										0									
■ 9 pins Sub-D connector model 9900-V209										B									
■ 9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx										E									
■ 12 pins round connector model 9941 for burster desktop devices										F									
■ 9 pins Sub-D connector with burster TEDS model 9900-V229 ***										T									
■ 8 pins coupling connector model 9900-V245 for 9110										H									
*** temperature range limited to 0 ... +60 °C																			
■ Non-linearity 0.25 % F.S. **														S					
■ Non-linearity 0.1 % F.S. **														L					
** The data in the area 20 % - 100 % of rated load F <sub>nom</sub>																			
■ Nominal temperature range +15 °C ... +70 °C																			0

Measuring range	Code	Measuring range
0 ... 500 kN	6 5 0 0	0 ... 112.4 klbs
0 ... 1 MN	7 0 0 1	0 ... 224.8 klbs

										Delivery ex stock at short notice									
										N	X	0	0	0	0	0	0		
<b>8</b>	<b>5</b>	<b>2</b>	<b>6</b>	<b>-</b>						<b>-</b>	<b>N</b>	<b>X</b>		<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	
■ burster TEDS in the sensor connector ***														S					
■ Without TEDS														R					
*** temperature range limited to 0 ... +60 °C																			
■ Non-linearity 0.25 % F.S. **														S					
■ Non-linearity 0.1 % F.S. **														L					
** The data in the area 20 % - 100 % of rated load F <sub>nom</sub>																			
■ Nominal temperature range +15 °C ... +70 °C																			0

## Note

### ■ Brochure

Our brochure „**Load cells for production, automation, R&D and quality assurance**“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.

### ■ Product videos

Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)



### ■ CAD data

Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



# Precision Load Cells

**Series 85040 and 85070  
for compressive load, for tensile and  
compressive forces**

Code: 85040 EN  
Delivery: 14-16 weeks  
Warranty: 24 months



**Model 85043 / Model 85073**



**Model 85041 / Model 85075**

- Measuring ranges from 0 ... 20 N to 0 ... 2 MN
- For static and dynamic forces
- High linearity from  $\pm 0.1$  % F.S.
- Very low sensitivity to lateral forces
- Models 85073 / 85075 suitable for extremely high dynamic stress, series 85070 up to  $10^9$  load cycles
- Extended temperature compensation range -55 °C to 120 °C (optional)
- Protection class IP68 (optional)

## Application

These load cells feature an outstanding ability to withstand static and dynamic stress and have exceptional precision and service life. These products have a huge range of applications in industry, R+D and testing thanks to the optional IP68 degree of protection and low sensitivity to lateral forces.

Examples of applications would be the measurement of:

- ▶ Insertion forces
- ▶ Reference measurement
- ▶ Weights (e.g. silos, skips)
- ▶ Tensile forces (tension in cables, chains etc. with load centering plate)
- ▶ Materials testing

For the compressive force sensors (models 85043 and 85073) the force must be applied through a plane plate, hard enough for the range of forces being measured, or a piston.

## Description

The force-sensitive diaphragm with fitted strain gauges is located between the central part, where the force is applied (force application), and the outer ring (containing fixing holes).

Two support diaphragms are additionally fitted, above and below the actual measuring element, to desensitize the sensors to extraneous lateral forces or moments. (see „Permitted external forces“ on page 2).

Models 85041/85075 (tension/compression) are calibrated in the tensile direction. The characteristic figure for the compression direction can nominally vary by  $\pm 0.25$  % from the figure for the tensile direction. The output signal is positive when the applied force is tensile.

The 8507X series (models 85073 and 85075) is designed for the highest possible dynamic stress and service life. This is  $> 10^9$  cycles from zero up to the full value of the measuring range in the tensile or compressive direction and tolerates a maximum operational force of up to 200 % of the nominal range.



## Dimensions

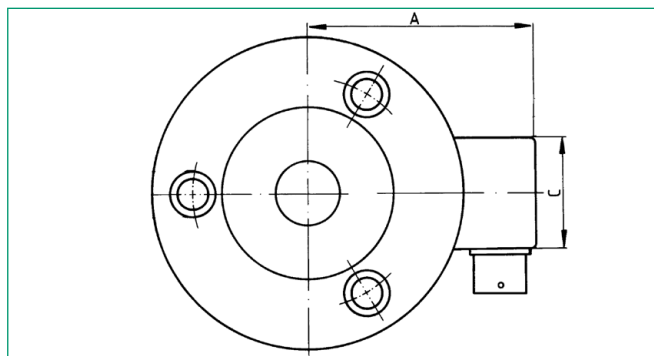
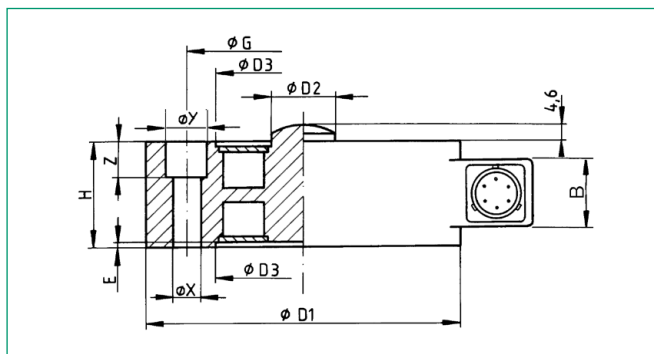
### Compressive load cell model 85043 - for static and dynamic operations

Order Code	Measurement Range	Dimensions [mm]													Number of Holes in $\varnothing$ G	Natural Frequency [kHz]
		$\varnothing$ D1	$\varnothing$ D2*	$\varnothing$ D3*	H	A	B	C	E*	$\varnothing$ G	$\varnothing$ X	$\varnothing$ Y	Z			
85043-0.02	0 ... 20 N	63.5	9.4	43.2	20.3	52.6	19	31.8	0.5	50.8	4.5	8.0	4.6	6	2	
85043-0.05	0 ... 50 N	63.5	9.4	43.2	20.3	52.6	19	31.8	0.5	50.8	4.5	8.0	4.6	6	2	
85043-0.1	0 ... 100 N	63.5	9.4	43.2	20.3	52.6	19	31.8	0.5	50.8	4.5	8.0	4.6	6	2	
85043-0.2	0 ... 200 N	76.2	14.2	46.0	25.4	58.9	19	31.8	1.0	57.2	6.6	11.0	6.8	6	4.5	
85043-0.5	0 ... 500 N	76.2	14.2	46.0	25.4	58.9	19	31.8	1.0	57.2	6.6	11.0	6.8	6	4.5	
85043-1	0 ... 1 kN	76.2	14.2	46.0	25.4	58.9	19	31.8	1.0	57.2	6.6	11.0	6.8	6	4.5	
85043-2	0 ... 2 kN	76.2	14.2	46.0	25.4	58.9	19	31.8	1.0	57.2	6.6	11.0	6.8	6	4.5	
85043-5	0 ... 5 kN	76.2	14.2	46.0	25.4	58.9	19	31.8	1.0	57.2	6.6	11.0	6.8	6	4.5	
85043-10	0 ... 10 kN	88.9	17.5	52.3	25.4	65.3	19	31.8	1.3	66.7	9.0	15.0	9.0	6	11	
85043-20	0 ... 20 kN	88.9	17.5	52.3	25.4	65.3	19	31.8	1.3	66.7	9.0	15.0	9.0	6	11	
85043-50	0 ... 50 kN	114.3	38.1	80.5	46.2	88.9	39	50.8	2.5	96.3	11.0	17.0	11.0	3	9	
85043-100	0 ... 100 kN	114.3	38.1	80.5	46.2	88.9	39	50.8	2.5	96.3	11.0	17.0	11.0	3	9	
85043-200	0 ... 200 kN	114.3	38.1	80.5	46.2	88.9	39	50.8	2.5	96.3	11.0	17.0	11.0	3	13	
85043-500	0 ... 500 kN	114.3	38.1	80.5	46.2	88.9	39	50.8	2.5	96.3	11.0	17.0	11.0	3	13	
85043-1 MN	0 ... 1 MN	139.7	50.8	98.4	50.8	101.6	39	50.8	2.5	122.2	11.0	17.0	11.0	3	11	
85043-1.5 MN	0 ... 1.5 MN	190.5	63.5	143.0	63.5	127.0	39	50.8	2.5	171.5	11.0	17.0	11.0	3	10	
85043-2 MN	0 ... 2 MN	279.4	120.7	203.1	109.7	171.5	39	50.8	2.5	241.3	11.0	17.0	11.0	3	8.4	

### Compressive load cell sensor model 85073 - also suitable for highest dynamic operations

Order Code	Measurement Range	Dimensions [mm]													Number of Holes in $\varnothing$ G	Natural Frequency [kHz]
		$\varnothing$ D1	$\varnothing$ D2*	$\varnothing$ D3*	H	A	B	C	E*	$\varnothing$ G	$\varnothing$ X	$\varnothing$ Y	Z			
85073-0.02	0 ... 200 N	76.2	14.2	46.0	25.4	58.9	19	31.8	1.3	57.2	6.6	11.0	6.8	6	4.4	
85073-0.05	0 ... 500 N	76.2	14.2	46.0	25.4	58.9	19	31.8	1.3	57.2	6.6	11.0	6.8	6	4.4	
85073-1	0 ... 1 kN	76.2	14.2	46.0	25.4	58.9	19	31.8	1.3	57.2	6.6	11.0	6.8	6	4.4	
85073-2	0 ... 2 kN	76.2	14.2	46.0	25.4	58.9	19	31.8	1.3	57.2	6.6	11.0	6.8	6	9.3	
85073-5	0 ... 5 kN	88.9	17.5	52.3	25.4	65.3	19	31.8	0.8	66.5	9.0	15.0	9.0	6	9.3	
85073-10	0 ... 10 kN	88.9	17.5	52.3	25.4	65.3	19	31.8	0.8	66.5	9.0	15.0	9.0	6	9.3	
85073-20	0 ... 20 kN	114.3	38.1	75.9	46.2	88.9	39	50.8	2.5	96.3	11.0	17.0	11.0	3	5.9	
85073-50	0 ... 50 kN	114.3	38.1	75.9	46.2	88.9	39	50.8	2.5	96.3	11.0	17.0	11.0	3	5.9	
85073-100	0 ... 100 kN	114.3	38.1	75.9	46.2	88.9	39	50.8	2.5	96.3	11.0	17.0	11.0	3	5.9	
85073-200	0 ... 200 kN	114.3	38.1	75.9	46.2	88.9	39	50.8	2.5	96.3	11.0	17.0	11.0	3	5.3	
85073-500	0 ... 500 kN	139.7	50.8	104.9	50.8	101.6	39	50.8	2.5	122.2	11.0	17.0	11.0	3		
85073-1000	0 ... 1000 kN	190.5	63.5	139.7	63.5	127.0	39	50.8	2.5	171.5	11.0	17.0	11.0	3		

### Dimensional drawings models 85043 and 85073 from 50 kN



### Permitted external forces

As a result of the two stabilizing membranes with which these load cells have been designed, they only have very low sensitivity to forces that do not act centrally on the sensor. The effect of these undesirable external forces cannot be expressed in blanket figures; it depends on the sensor's range of measurement and also on the side from which the forces act. As a rule of thumb, it can be said that the contribution of the effect of external forces to the measuring signal, provided it is kept within the range of forces listed in the table below, is between 0.25 % and 1 % of the measuring range.

The table lists how large the external forces may be, expressed as a percentage of the load cell measuring range. The total of all the stresses acting on the load cell (forces and torques) should not exceed 100% of the measuring range. The forces quoted for the torques assume a distance of 2.5 cm from the point of action of the force.

End of Measurement Range	Shear Force (Lateral Force)	Bending Torque (Bending Force)	Torsion
up to	[% F.S.]	[% F.S.]	[% F.S.]
2 kN	50	40	25
10 kN	30	25	25
100 kN	20	20	15
500 kN	20	20	10

## Dimensions

### Tensile and compressive load cell model 85041 - for static and dynamic operations

Order Code	Measurement Range	Dimensions [mm]												Thread T	Number of Holes in $\varnothing$ G	Natural Frequency [kHz]
		$\varnothing$ D1	$\varnothing$ D2*	$\varnothing$ D3*	H	A	B	C	E*	$\varnothing$ G	$\varnothing$ X	$\varnothing$ Y	Z			
85041-0.02	0 ... 20 N	63.5	9.4	43.2	20.3	52.6	19	31.8	0.5	50.8	4.8	8.0	4.6	M 6 x 1.0	6	
85041-0.05	0 ... 50 N	63.5	9.4	43.2	20.3	52.6	19	31.8	0.5	50.8	4.8	8.0	4.6	M 6 x 1.0	6	
85041-0.1	0 ... 100 N	63.5	9.4	43.2	20.3	52.6	19	31.8	0.5	50.8	4.8	8.0	4.6	M 6 x 1.0	6	
85041-0.2	0 ... 200 N	76.2	14.2	46.0	25.4	58.9	19	31.8	1.0	57.2	7.1	11.0	6.8	M 10 x 1.0	6	
85041-0.5	0 ... 500 N	76.2	14.2	46.0	25.4	58.9	19	31.8	1.0	57.2	7.1	11.0	6.8	M 10 x 1.0	6	
85041-1	0 ... 1 kN	76.2	14.2	46.0	25.4	58.9	19	31.8	1.0	57.2	7.1	11.0	6.8	M 10 x 1.0	6	2
85041-2	0 ... 2 kN	76.2	14.2	46.0	25.4	58.9	19	31.8	1.0	57.2	7.1	11.0	6.8	M 10 x 1.0	6	
85041-5	0 ... 5 kN	76.2	14.2	46.0	25.4	58.9	19	31.8	1.0	57.2	7.1	11.0	6.8	M 10 x 1.0	6	
85041-10	0 ... 10 kN	88.9	17.5	52.3	25.4	65.3	19	31.8	1.0	66.7	8.6	15.0	9.0	M 12 x 1.5	6	4
85041-20	0 ... 20 kN	88.9	17.5	52.3	25.4	65.3	19	31.8	1.0	66.7	8.6	15.0	9.0	M 12 x 1.5	6	
85041-50	0 ... 50 kN	139.7	48.3	95.3	45.7	101.6	39	50.8	2.5	114.3	10.2	18.0	11.0	M 24 x 1.5	8	4
85041-100	0 ... 100 kN	152.4	58.9	105.9	45.7	108.0	39	50.8	2.5	123.8	13.5	-	-	M 36 x 3.0	8	20
85041-200	0 ... 200 kN	152.4	58.9	105.9	45.7	108.0	39	50.8	2.5	123.8	13.5	-	-	M 36 x 3.0	8	
85041-500	0 ... 500 kN	228.6	115.5	165.0	63.5	146.1	39	50.8	2.5	196.5	16.8	-	-	M 64 x 2.0	12	
85041-7001	0 ... 1 MN	279.4	136.9	203.1	63.5	171.5	39	50.8	2.5	241.3	19.8	-	-	M 64 x 2.0	12	
85041-7002	0 ... 2 MN	355.6	160.8	254.0	108.0	241.3	39	63.5	2.5	298.5	26.2	-	-	M 90 x 4.0	12	

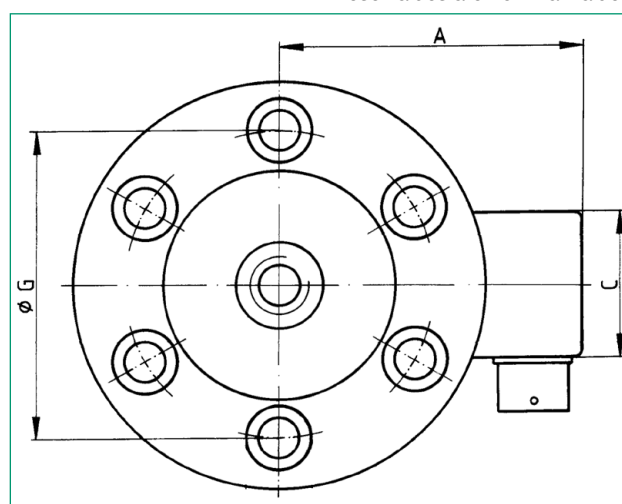
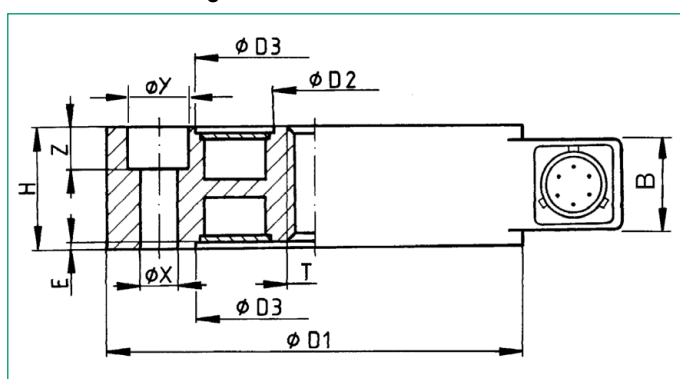
\* These values are nominal values

### Tensile and compressive load cell model 85075 - also suitable for high dynamic operations

Order Code	Measurement Range	Dimensions [mm]												Thread T	Number of Holes in $\varnothing$ G	Natural Frequency [kHz]
		$\varnothing$ D1	$\varnothing$ D2*	$\varnothing$ D3*	H	A	B	C	E*	$\varnothing$ G	$\varnothing$ X	$\varnothing$ Y	Z			
85075-0.2	0 ... 200 N	76.2	14.2	46.0	25.4	58.9	19	31.8	1.3	57.2	6.6	11.0	6.8	M 10 x 1.0	6	4.4
85075-0.5	0 ... 500 N	76.2	14.2	46.0	25.4	58.9	19	31.8	1.3	57.2	6.6	11.0	6.8	M 10 x 1.0	6	4.4
85075-1	0 ... 1 kN	76.2	14.2	46.0	25.4	58.9	19	31.8	1.3	57.2	6.6	11.0	6.8	M 10 x 1.0	6	4.4
85075-2	0 ... 2 kN	76.2	14.2	46.0	25.4	58.9	19	31.8	1.3	57.2	6.6	11.0	6.8	M 10 x 1.0	6	9.3
85075-5	0 ... 5 kN	88.9	17.5	52.3	25.4	65.3	19	31.8	2.3	66.7	9.0	15.0	9.0	M 12 x 1.5	6	9.3
85075-10	0 ... 10 kN	88.9	17.5	52.3	25.4	65.3	19	31.8	2.3	66.7	9.0	15.0	9.0	M 12 x 1.5	6	9.3
85075-20	0 ... 20 kN	139.7	48.3	95.3	45.7	101.6	39	50.8	2.5	114.3	11.0	18.0	11.0	M 24 x 1.5	8	5.9
85075-50	0 ... 50 kN	152.4	59.2	106.2	45.7	108.0	39	50.8	2.5	123.8	13.5	-	-	M 36 x 3.0	8	5.9
85075-100	0 ... 100 kN	152.4	59.2	106.2	45.7	108.0	39	50.8	2.5	123.8	13.5	-	-	M 36 x 3.0	8	5.9
85075-200	0 ... 200 kN	190.5	78.2	125.2	50.8	127.0	39	50.8	2.5	152.4	22.0	-	-	M 52 x 3.0	8	5.3
85075-500	0 ... 500 kN	228.6	115.5	165.0	76.2	133.4	39	50.8	2.5	196.9	26.0	-	-	M 64 x 2.0	12	

\* These values are nominal values

### Dimensional drawing models 85041 and 85075



#### Notes:

1. A hole in the mounting surface allows force to be applied from below. If the sensor is mounted on a surface that has not been drilled, it is necessary to ensure that the threaded bolt that is screwed in from above does not press on the mounting face. This would cause a permanent error in measurements, or even damage the sensor.
2. Sensors for the measuring ranges 50 kN or 100 kN and above do not have counter-bored holes (see table, columns  $\varnothing$ Y and Z).

**The CAD drawing (3D/2D) for this sensor can be imported online directly into your CAD system.**

Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com). For further information about the burster traceparts cooperation refer to data sheet 80-CAD-EN.

## Technical Data

### Electrical values

Bridge resistance: full bridge (foil strain gauges)	350 $\Omega$ , nominal <sup>1</sup>
Calibration resistor:	59 k $\Omega$ $\pm$ 0.1 %
The bridge output voltage caused by a shunt of this value is given in the calibration protocol.	
Excitation voltage:	recommended 10 V DC or AC maximum 15 V DC or AC

Nominal value:	2 mV/V, nominal <sup>1</sup>
Models 85041/85043, > 100 N:	3 mV/V, nominal <sup>1</sup>
Isolation resistance:	> 10 <sup>9</sup> $\Omega$ at 50 VDC

<sup>1</sup>) Deviations from the stated value are possible.

### Environmental conditions

Range of operation temperature:	- 55 °C ... 120 °C
Range of nominal temperature (compensated range):	15 °C ... 70 °C
Influence of temperature in the range of nominal temperature:	
to zero signal	$\pm$ 0.004 % F.S./K
to characteristics	+ 0.004 % Rdg./K

### Mechanical values

#### Models 85041 and 85043

Non-linearity:	
measurement range $\leq$ 0 ... 100 N	< $\pm$ 0.2 % F.S.
measurement range $\leq$ 0 ... 200 kN	< $\pm$ 0.1 % F.S.
measurement range $\geq$ 0 ... 500 kN	< $\pm$ 0.2 % F.S.
Hysteresis:	
measurement range $\leq$ 0 ... 100 N	< $\pm$ 0.1 % F.S.
measurement range $\leq$ 0 ... 200 kN	< $\pm$ 0.08 % F.S.
measurement range $\geq$ 0 ... 500 kN	< $\pm$ 0.2 % F.S.
Spread at unchanged installation position:	
measurement range $\leq$ 0 ... 100 N	< $\pm$ 0.1 % F.S.
measurement range $\geq$ 0 ... 200 N	< $\pm$ 0.03 % F.S.
Operational force:	
	150 % of nominal load
Maximum dynamic force:	
recommended	between 50 % and 70 % of nominal load
possible	100 % of nominal load
Deflection full scale:	
	< 80 $\mu$ m
Material:	
stainless steel 17-4 PH	(similar to material 1.4542)
only model 85041 range $\geq$ 0 ... 1.5 MN	coated steel 4340 (similar to material 1.7707)
Protection class:	
	according EN 60529 IP64 IP 68 (refer to option)

#### Electrical connection:

range $\leq$ 0 ... 20 kN:	6 pin bayonet plug-in connector mating connector model 9945 in scope of delivery
range $\geq$ 0 ... 50 kN:	6 pin screw connector mating connector model 9946 in scope of delivery

#### Models 85073 and 85075

Non-linearity:	< $\pm$ 0.1 % F.S.
Relative hysteresis:	< $\pm$ 0.1 % F.S.
Relative spread at unchanged installation position:	< $\pm$ 0.03 % F.S.
Operational force:	200 % of nominal force
Maximum dynamic load:	100 % of nominal force
Deflection full scale:	approx. 50 $\mu$ m ... 100 $\mu$ m
Material: stainless steel 17-4 PH	(similar to material 1.4542)
Protection class:	accord. EN 60529 IP64 IP68 (refer to option)

#### Electrical connection:

Range $\leq$ 0 ... 10 kN:	6 pin bayonet plug-in connector mating connector model 9945 in scope of delivery
Range $\geq$ 0 ... 20 kN:	6 pin screw connector mating connector model 9946 in scope of delivery

#### Models 85041 and 85075

Bolts with a strength class of at least 10.9 should be used to mount these tensile and compression load cells. The preference direction is that of tension. The output signal is positive when the applied force is tensile.

#### All models

Wiring (standard):			
pin	A + B	excitation	positive
pin	C + D	excitation	negative
pin	E	output	negative
pin	F	output	positive

#### Label

The label at sensor's surface has a height of approximately 0.5 mm.

## Order Information

Precision load cell for compressive loads,  
measurement range 0 ... 200 N

**Model 85073-0,2**

Precision load cell for tensile and compressive loads,  
extended range of nominal temperature - 55 °C ... 120 °C,  
measurement range 0 ... 100 kN

**Model 85041-6100-V010000**

## Accessories

Mating connector (cable coupling), in scope of delivery with the sensor

#### Model 85041 und 85043

6 pin bayonet connector (to 20 kN)	<b>Model 9945</b>
6 pin bayonet connector (from 50 kN)	<b>Model 9946</b>

#### Model 85073 und 85075

6 pin bayonet connector (to 10 kN)	<b>Model 9945</b>
6 pin bayonet connector (from 20 kN)	<b>Model 9946</b>

#### Connection cable, length 3 m (one end open for soldering)

with coupling model 9945	<b>Model 9986</b>
with coupling model 9946	<b>Model 99546-000A-0150030</b>

#### Connection cable for burster desktop units, length 3 m

with coupling model 9945 and connector 9941	<b>Model 9911</b>
with coupling model 9946 and connector 9941	<b>Model 9912</b>

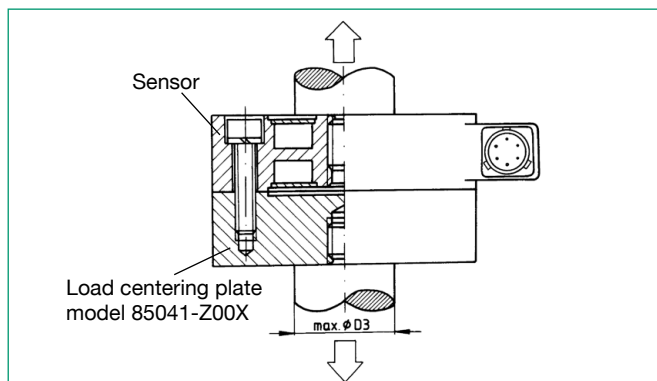
#### Connection cable for 9235 and 9310

with coupling model 9945 and connector 9900-V209	<b>Model 99209-545A-0160030</b>
with coupling model 9946 and connector 9900-V209	<b>Model 99209-546A-0160030</b>

#### Load centering plate for models 85041 and 85075

The purpose of these plates is that for the second assembly reference point for the force application it is possible, rather than using the fastening holes (F around the circumference G) to again use a threaded bolt with an optimally central line of action. The diameters D1 to D3 and the thread T of the centering plate correspond to those of the associated sensor.

Dimensions and prices for the load centering plates are available on request.



#### Signal processing

Digital indicator like model 9180, amplifiers like model 9243, process measuring and control units like DIGIFORCE®  
**refer to section 9 of the catalog.**

#### Reference measurement chain

Combined with the TRANS CAL 7281 it is the ideal tool for mobile calibration and adjustment of force-application equipment.

**refer to data sheet 7281 in section 7 of the catalog.**

#### Options

Hermetically closed version, IP68, with waterproofed cable connection, length 3 m, usable up to 80 °C. (cannot be combined with the extended measurement temperature range)  
**...-VxxxIxx**

Range of nominal temperature (compensated range)  
extended to - 55 °C ... 120 °C (cannot be combined with IP68)....-VxIxxxx

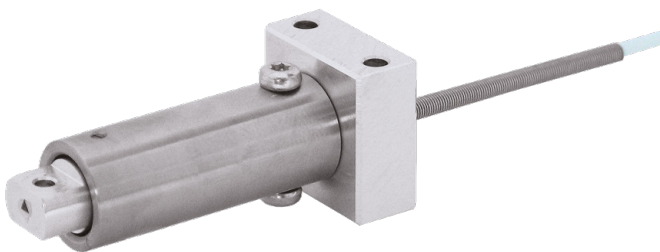
#### Factory Calibration Certificate (WKS)

Calibration of a load cell separately as well as connected to an indicator. Standard is a certificate with 11 points, starting at zero, running up and down in 20% increments covering the complete measuring range for preferential direction. Special calibrations on request. Calculation of costs by base price plus additional costs per point.

**Order Code 85WKS-85...**

# Miniature Bending Beam Tension and Compression Load Cell

## MODEL 8510



### Highlights

- Measuring ranges from 0 ... 1 N up to 0 ... 20 N, 0 ... 0.224 lbs up to 0 ... 4.4 lbs
- Compact size
- Mechanical bidirectional overload protection
- Easy installation
- Special design upon request

### Options

- Non-linearity 0.075 % F.S.
- Standardized nominal sensitivity
- burster TEDS

### Applications

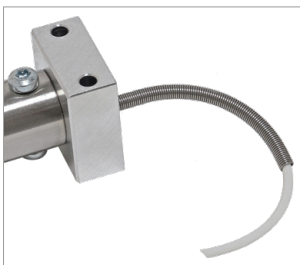
- Check of switches and buttons (limit-, micro- and toggle-switches)
- Contact coupling and contact decoupling forces
- Recording of frictional forces and spring characteristics
- Research and Development



Measurement direction



Overload protection



Sensor attachment  
Bending protection

### Product description

The sensor element consists of a double bending beam with applied strain gages.

Changes in the ohmic resistance of the strain gage fullbridge caused by applied forces are converted into electrical voltages. The precise value (characteristic value) of the output voltage, resulting from the application of a rated force to the sensor, is specified in the accompanying calibration protocol.

The sensor has to be mounted by two screws on the cable side. The opposite side is meant to receive applied forces (loads).

Once the rated stress or strain is exceeded by 20 %, further deflection of the bending beam is prevented by an integrated, mechanical stop. This protects the sensor element against permanent deformation.

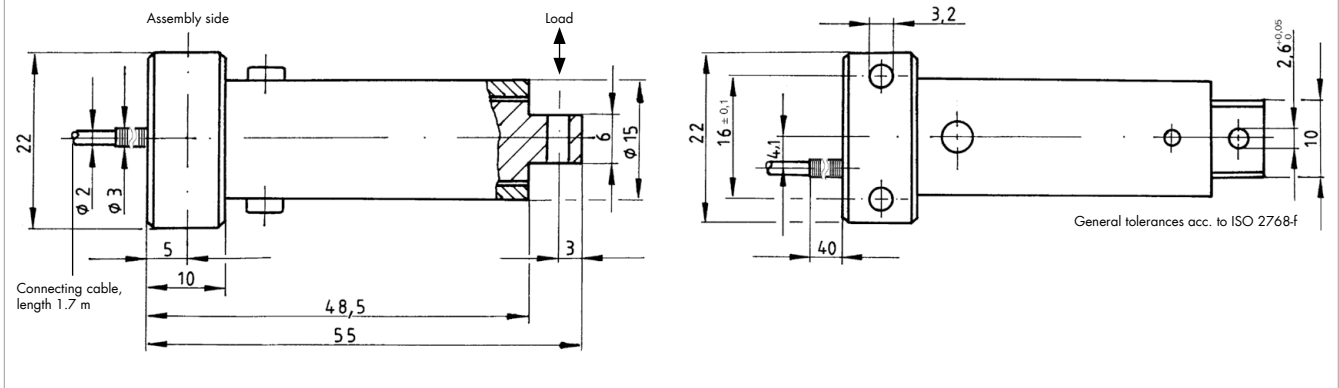
## Technical Data

8510	-	5001	5002	5005	5010	5020
Measuring range calibrated in N from 0 ...		±1 N	±2 N	±5 N	±10 N	±20 N
		±0.224 lbs	±0.449 lbs	±1.124 lbs	±2.248 lbs	±4.496 lbs
<b>Accuracy</b>						
Relative non-linearity*		≤ ±0.2 % F.S.				
Characteristic curve deviation*		≤ ±0.2 % F.S.				
Relative hysteresis		≤ 0.1 % F.S.				
Temperature effect on zero output		0.03 % F.S./K				
Temperature effect on nominal sensitivity		0.03 % F.S./K				
<b>Electrical values</b>						
Sensitivity nominal		1.0 mV/V				
Measurement direction		Tension and compression direction. Load calibration in compression direction (clearly marked by an arrow on the sensor). The full-scale output is likely to be different when used in the tension direction. Positive signal in compression direction.				
Standardization**		option 1.0 mV/V (±0,25 %)				
Bridge resistance		350 Ω nominal (deviations are possible)				
Excitation		max. 3 V DC	max. 5 V DC			
Insulation resistance		> 30 MΩ at 45 V				
<b>Environmental conditions</b>						
Nominal temperature range		+15 °C ... +70 °C				
Operating temperature range		-20 °C ... +80 °C				
<b>Mechanical values</b>						
Deflection full scale		0.15 mm (nominal)				
Maximum operating force***		mechanical stop at approx. 120 % of full scale				
Overload protection		up to 5 N	up to 10 N	up to 15 N	up to 20 N	up to 40 N
Dynamic performance***		recommended: 50 %				
Protection class (EN 60529)		IP20				
<b>Installation</b>						
Intended mounting screws		M3				
Tightening torque mounting screws	[N*m]	0.9 N*m (for steel) / 0.7 N*m (for aluminum)				
Mounting screws		resistance 8.8				
Installation instructions		Two clearance holes designed to accommodate M3 screws are provided for mounting the sensor. On the opposite on the lying side there is a hole for attaching a suitable receptacle for force application. (e.g. a load button or touch finger). For high quality force measurements, lateral forces and moments are avoided.				
<b>Other</b>						
Material		high-strength aluminium, high-grade steel shell				
Natural frequency	[Hz]	100	150	250	300	500
Mass	[g]	50				

\* The data in the area 20 % - 100 % of rated load F

\*\* Realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end (temperature range limited to 0 ... 60 °C)

\*\*\* The sensor is not designed for a very large number of load change cycles up to the nominal load

Dimensional drawing – Measuring ranges from  $\leq 0 \dots \pm 20 \text{ N}$  | from  $\leq 0 \dots \pm 4.4 \text{ lbs}$ 

## Electrical termination

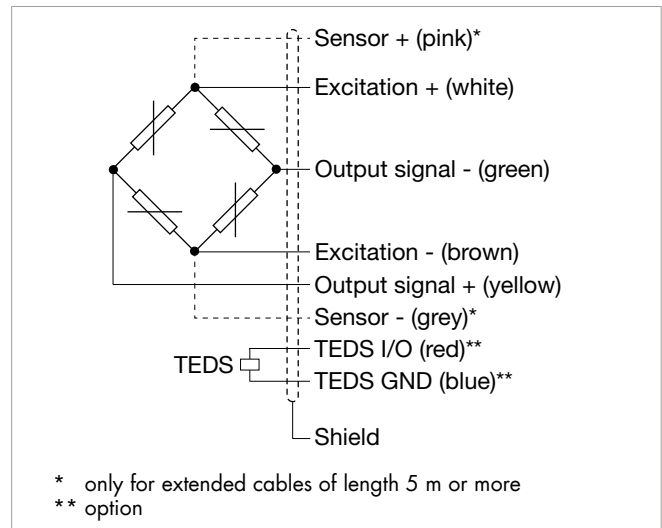
### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.

### burster TEDS



The "burster Transducer Electronic Data Sheet" (TEDS) is a memory in which identification data of the sensor, calibration data and other sensor parameters are saved. In conjunction with your own suitable burster device, there is the option of performing a simple adjustment in order to achieve the maximum accuracy of the measuring chain. A simple sensor exchange is thus possible in just a few steps without losing precision.



8510	-	5001	5002	5005	5010	5020
Measuring range from 0 ...		$\pm 1 \text{ N}$	$\pm 2 \text{ N}$	$\pm 5 \text{ N}$	$\pm 10 \text{ N}$	$\pm 20 \text{ N}$
<b>Electrical termination</b>						
Specifications		highly flexible, oil resistant, drag chains suitable				
Cable fastening		cable cover				
Bending protection		bend protection spring				
Bending radius		three times the diameter for fixed cable, ten times the diameter for cable permanently moving				
Cable model		PUR, $\phi = 2.0 \text{ mm}$				



## Accessories

### Connectors and units

#### Order Code

##### Connectors

9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster

##### Units

7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_{it}$ , $R_{gr}$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

## Calibration

### Test and calibration certificate

Supplied with the sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
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### Standard factory calibration certificate for load cells or measurement chains (WKS)

Optionally available	Our standard factory calibration certificate includes 11 measurement points, starting at zero, spread evenly in 20% steps over the full measuring range, for increasing and decreasing load under the same installation conditions. Factory calibrations can be performed in the compression and/or tension direction depending on the sensor type.
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### Special factory calibration certificate for load cells or measurement chains (WKS)

On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
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### German-accredited DAkkS calibration certificate for sensors and measurement chains (DKD)

Optionally available	Our DAkkS-certified calibration laboratory provides calibration certificates to DIN EN ISO 376. The calibration certificate includes 21 measurement points, starting at zero, spread evenly in 10% steps over the measuring range, for increasing and decreasing load under various installation conditions. DAkkS calibrations can be performed in the compression and/or tension direction depending on the sensor type.
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## Order Code

Measuring range	Code	Measuring range
0 ... ±1 N	5 0 0 1	0 ... ±0.224 lbs
0 ... ±2 N	5 0 0 2	0 ... ±0.449 lbs
0 ... ±5 N	5 0 0 5	0 ... ±1.124 lbs
0 ... ±10 N	5 0 1 0	0 ... ±2.248 lbs
0 ... ±20 N	5 0 2 0	0 ... ±4.4 lbs

										Delivery ex stock at short notice								
										N	0	0	0	S	0	0	0	
<b>8</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>-</b>						<b>-</b>				<b>0</b>	<b>S</b>	<b>0</b>	<b>0</b>	<b>0</b>

■ Nominal sensitivity/not standardized	N
■ Standardization at 1.0 mV/V ***	C
*** temperature range limited to 0 ... +60 °C	
■ Connection cable 1.7 m (Standardization 2 m)	0
■ Connection cable 3 m	F
■ Connection cable 5 m	G
■ Connection cable 3 m extended *	L
■ Connection cable 5 m extended * (with sens line)	M
* shortened delivery time compared with cable length 3 m and 5 m in one piece	
■ Open cable ends + 6 cm single wires	0
■ 9 pins Sub-D connector model 9900-V209	B
■ 9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx	E
■ 12 pins round connector model 9941 for burster desktop devices	F
■ 9 pins Sub-D connector with burster TEDS model 9900-V229 ***	T
■ 8 pins coupling connector model 9900-V245 for 9110	H
*** temperature range limited to 0 ... +60 °C	
■ Non-linearity 0.2 % F.S. **	S
■ Non-linearity 0.075 % F.S. **	L

\*\* The data in the area 20 % - 100 % of rated load  $F_{nom}$

## Note

### ■ Brochure

Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.

### ■ Product videos

Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)



### ■ CAD data

Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)





# Bending Beam Tension and Compression Load Cell

## MODEL 8511



Measuring direction



Easy installation

### Highlights

- Measuring ranges from 0 ... 5 N up to 0 ... 2 kN, 0 ... 1.1 lbs up to 0 ... 449.6 lbs
- Easy installation
- High linearity
- Special design upon request

### Options

- Non-linearity up to  $\pm 0,03$  % F.S.
- Standardized nominal sensitivity
- burster TEDS

### Applications

- Dosing system
- Tension force measurement for wire or thread winders
- Cable force
- Review of pull-off forces

### Product description

The measuring element of the load cell consists of a double bending beam on which strain gages are applied. The applied force detunes the measuring bridge so that a proportional output voltage is generated. The strain gages on the measuring element are protected against dirt and water spray by a rubber bellows.

The sensor can be easily mounted via two mounting holes. The tension or compression force to be measured is introduced at the opposite end perpendicular to the sensor axis.

Due to its special design, the influence by an extension (e.g. touch finger) on the measuring signal is low. Overload protection can be realized with little effort using a mechanical stop.

## Technical Data

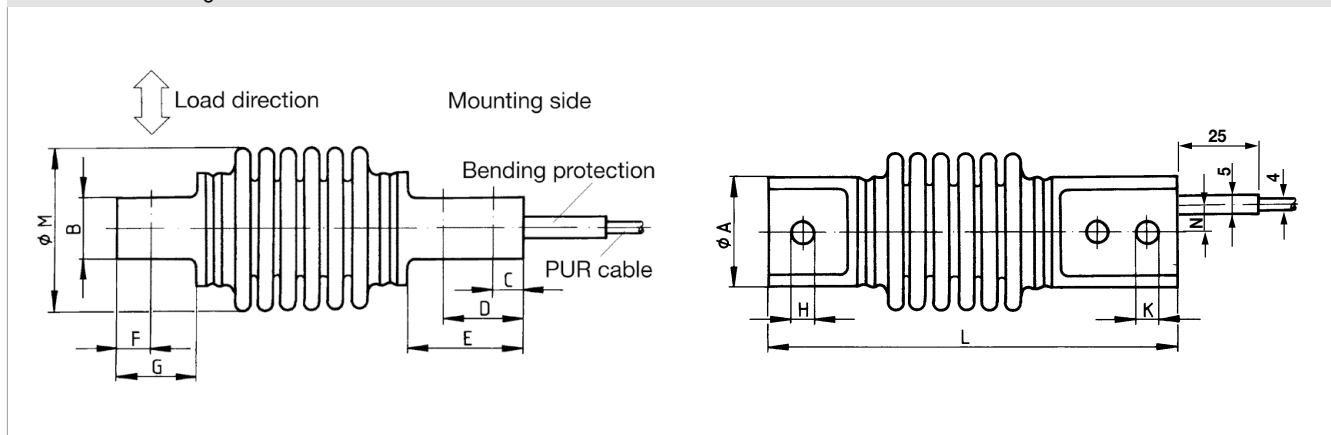
8511	-	5005	5010	5020	5050	5100	5200	5500	6001	6002	
Measuring range calibrated in N from 0 ...		±5 N	±10 N	±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN	
		±1.1 lbs	±2.2 lbs	±4.4 lbs	±11.2 lbs	±22.4 lbs	±44.9 lbs	±112.4 lbs	±224.8 lbs	±449.6 lbs	
<b>Accuracy</b>											
Relative non-linearity*		≤ ±0.25 % F.S.				≤ ±0.1 % F.S.					
Relative non-linearity*		option ≤ ±0.1 % F.S.				option ≤ ±0.03 % F.S.					
Characteristic curve deviation*		≤ ±0.25 % F.S.				≤ ±0.2 % F.S.					
Relative hysteresis		≤ 0.15 % F.S.									
Temperature effect on zero output		≤ 0.01 % F.S./K									
Temperature effect on nominal sensitivity		≤ 0.02 % F.S./K									
<b>Electrical values</b>											
Sensitivity nominal		1.0 mV/V				1.5 mV/V					
Measurement direction		Tension and compression direction. Load calibration in compression direction (clearly marked by an arrow on the sensor). The full-scale output is likely to be different when used in the tension direction. Positive signal in compression direction.									
Standardization**		option 1.0 mV/V (±0.25 %)									
Bridge resistance		350 Ω nominal (deviations are possible)									
Excitation		recommended 5 V DC or AC				recommended 5 V DC or AC; max. 10 V DC or AC					
Insulation resistance		> 30 MΩ at 45 V									
<b>Environmental conditions</b>											
Nominal temperature range		+15 °C ... +70 °C									
Operating temperature range		-30 °C ... +90 °C									
<b>Mechanical values</b>											
Deflection full scale	[µm]	150	200	150	150	300	200	200	200	300	
Maximum operating force***		150 % of full scale									
Overload burst		> 200 %					> 250 %				
Dynamic performance***		recommended: 50 %									
Protection class (EN 60529)		IP54									
<b>Installation</b>											
Intended mounting screws		2 pcs. M4				2 pcs. M5		2 pcs. M6			
Tightening torque	[N*m]	2				4		10			
Mounting screws		resistance 8.8 or higher						resistance 12.9 or higher			
Installation instructions		Two holes are provided for mounting the sensor. On the opposite on the lying side there is a hole for attaching a suitable receptacle for force application. (e.g. a load button or touch finger). For high quality force measurements, lateral forces and moments are avoided.									
<b>Other</b>											
Material		sensor body made of high-strength aluminium, anodized						sensor body made of stainless steel 1.4542			
Natural frequency	[Hz]	130	180	150	120	280	230	200	180	300	
Mass	[g]	0.05				0.1		0.35			

\* The data in the area 20 % - 100 % of rated load F

\*\* Realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end (temperature range for the optional TEDS or standardization board 0 ... 60 °C)

\*\*\* The sensor is not designed for a very large number of load change cycles up to the nominal load

## Dimensional drawing



8511	-	5005	5010	5020	5050	5100	5200	5500	6001	6002
Measuring range from 0 ...		±5 N	±10 N	±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN
<b>Geometry</b>										
Ø A	[mm]		19.5					28.0		
B	[mm]		10.0					15.0		
C	[mm]		5.0					7.5		
D	[mm]		15.0					20.0		
E	[mm]		22.0					29.0		
F	[mm]		6.5					8.5		
G	[mm]		18.5					20.0		
Ø H	[mm]		5.5 (E9)						6.5 (E9)	
Ø K	[mm]		4.5			5.5			6.5	
L	[mm]		86.5					101.0		
Ø M	[mm]		28.0					40.0		
N	[mm]		6.0					8.5		
General tolerance of dimension			ISO 2768-f							

## Electrical termination

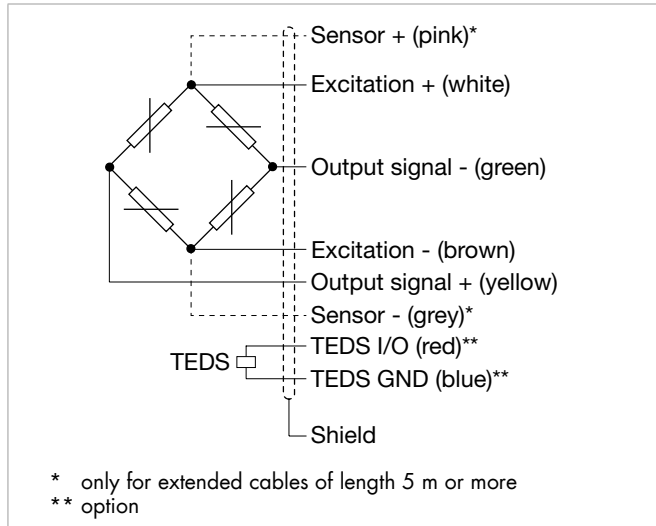
### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



### burster TEDS

The "**burster** Transducer **E**lectronic **D**ata **S**heet" (TEDS) is a memory in which identification data of the sensor, calibration data and other sensor parameters are saved. In conjunction with your own suitable burster device, there is the option of performing a simple adjustment in order to achieve the maximum accuracy of the measuring chain. A simple sensor exchange is thus possible in just a few steps without losing precision.



8511	-	5005	5010	5020	5050	5100	5200	5500	6001	6002
Measuring range from 0 ...		±5 N	±10 N	±20 N	±50 N	±100 N	±200 N	±500 N	±1 kN	±2 kN
<b>Electrical termination</b>										
Specifications		highly flexible, oil resistant, drag chains suitable								
Cable fastening		cable cover, crimped with shrink tube cover								
Bending protection		no bending protection								
Bending radius		three times the diameter for fixed cable, ten times the diameter for cable permanently moving								
Cable model		PUR, Ø = 3.0 mm				PUR, Ø = 4.2 mm				

## Accessories

### Connectors and units

#### Order Code

<b>Connectors</b>	
9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster
<b>Units</b>	
7270	Mobile measuring device of strain gage based sensors
7281-V0001	Mobile measuring device with strain gage simulator and sensor test ( $R_{it}$ , $R_{ot}$ , Shunt, $R_{ISO}$ )
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE®

## Calibration

<b>Test and calibration certificate</b>	
Supplied with the sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
<b>Standard factory calibration certificate for load cells or measurement chains (WKS)</b>	
Optionally available	Our standard factory calibration is performed in 20% steps starting from zero until the reaching the nominal force, for increasing and decreasing load with unchanged installation position. Factory calibration can be performed in compression and/or tension direction.
<b>Special factory calibration certificate for load cells or measurement chains (WKS)</b>	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
<b>Calibration certificate with accreditation symbol for product group load cell 8511</b>	
Optionally available	Calibration certificate with accreditation symbol for load cells 8511. Calibration is performed on the basis of the accreditation of the calibration laboratory D-K-15141-01-00, for the scope of accreditation listed in the annex to the certificate. The traceability to national standards as well as a wide international recognition (DAkkS as signatory of the Multilateral Agreements of EA, ILAC and IAF) are thus guaranteed. Calibration is performed according to ISO 376 in 10 force steps (10% steps) vstarting from zero until the reaching the nominal force, for increasing and decreasing load under various installation positions.

## Order Code

Measuring range	Code				Measuring range
0 ... ±5 N	5	0	0	5	0 ... ±1.1 lbs
0 ... ±10 N	5	0	1	0	0 ... ±2.2 lbs
0 ... ±20 N	5	0	2	0	0 ... ±4.4 lbs
0 ... ±50 N	5	0	5	0	0 ... ±11.2 lbs
0 ... ±100 N	5	1	0	0	0 ... ±22.4 lbs
0 ... ±200 N	5	2	0	0	0 ... ±44.9 lbs
0 ... ±500 N	5	5	0	0	0 ... ±112.4 lbs
0 ... ±1 kN	6	0	0	1	0 ... ±224.8 lbs
0 ... ±2 kN	6	0	0	2	0 ... ±449.6 lbs

										Delivery ex stock at short notice								
										N	0	0	0	S	0	0	0	
8	5	1	1	-						-				0		0	0	0

■ Nominal sensitivity/not standardized	N
■ Standardization at 1.0 mV/V ***	C
*** temperature range for the optional TEDS or standardization board 0 ... 60 °C	
■ Connection cable 1.7 m (Standardization 2 m)	0
■ Connection cable 3 m	F
■ Connection cable 5 m	G
■ Connection cable 3 m extended *	L
■ Connection cable 5 m extended * (with sens line)	M
* shortened delivery time compared with cable length 3 m and 5 m in one piece	
■ Open cable ends + 6 cm single wires	O
■ 9 pins Sub-D connector model 9900-V209	B
■ 9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx	E
■ 12 pins round connector model 9941 for burster desktop devices	F
■ 9 pins Sub-D connector with burster TEDS model 9900-V229 ***	T
■ 8 pins coupling connector model 9900-V245 for 9110	H
*** temperature range 0 ... 60 °C for the connector with TEDS	
■ Non-linearity 0.25 % F.S. (in the measuring ranges 5 N up to 50 N) **	S
■ Non-linearity 0.1 % F.S. (in the measuring ranges 100 N up to 2 kN) **	
■ Non-linearity 0.1 % F.S. (in the measuring ranges 5 N up to 50 N) **	L
■ Non-linearity 0.03 % F.S. (in the measuring ranges 100 N up to 2 kN) **	

\*\* The data in the area 20 % - 100 % of rated load

## Note

- Brochure**  
 Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.
- Product videos**  
 Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)
- CAD data**  
 Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



# Presses Load Cell

## For hand and automatic operated presses

**Model 8552**  
**Model 8451**

Code: 8552, 8451  
Delivery: ex stock  
Warranty: 24 months



Model 8552  
Standard model for  
manual presses up to 25 kN



Model 8451-6002  
Precision model for  
up to 2 kN



Model 8451-6100  
for high compression forces  
of up to 100 kN

Low installation height  
with up to tenfold  
overload protection

- Measuring ranges from 0 ... 100 N up to 0 ... 100 kN
- Measurement range to 25 kN with mechanical overload protection
- Simplest mounting on press ram
- Compact and very robust construction
- Suitable for all standard manual presses with stamp holes of 8 H7 resp. 20 H7
- Choice of diameter for pin and hole

### Application

Load cell models 8451 and 8552 have been developed for measuring the forces that occur during press operation. The internal measuring elements have a rugged design, which mean they can cope reliably with the steep force curves that are typical of press applications. They can be fitted or replaced quickly and easily on the press ram without the need for additional components around them. With a compact overall height of just 50 mm, the load cell is placed between tool and press ram and can therefore measure the actual compression force directly in the axis of operation.

Typical applications include:

- ▶ Forces in component joining
- ▶ Press-fitting
- ▶ Bending forces during material deformation
- ▶ Cutting forces when severing material
- ▶ Forces during stamping processes
- ▶ Punching forces for blanks
- ▶ Break-out forces used in destructive testing

### Description

The load cell measures the compression forces between the circular contact surfaces of plunger and tool. The pin on its top side and hole on its lower face are simply provided for mechanical fixing and centering the components correctly. To provide as large a range of mechanical compatibility as possible, the pins/holes are available in different diameters. The connecting cables are designed like robot cables to allow frequent movement and are fixed securely to the sensor housing. Attachments are available which clamp onto the press sensors to enable easy mounting of displacement sensors according to the circumstances of use.

8451

- ▶ Measurement precision of 0.5 % of full scale for small measurement ranges
- ▶ Rugged construction, works even under transverse forces
- ▶ Protection class IP67

8552

- ▶ Short, compact design
- ▶ Pin/hole diameter from 8 mm to 16 mm
- ▶ Mechanical overload protection for all measurement ranges
- ▶ Choice of diameter for pin and hole





## Technical Data

## Model 8451

Order Code	Measurement Range	Max. Overload [kN]	Measuring Range [%F.S.]	Nominal Characteristic [mV/V]	Influence of Temperature		Resonance Frequency [kHz]	Weight [g]
					on Zero Signal [%F.S./K]	on Characteristic [%Rdg./K]		
8451-5500	0 ... 0.5 kN	2.5	≤ ± 0.5	1.5	0.02	0.02	> 2	500
8451-6001	0 ... 1 kN	5	≤ ± 0.5	1.5	0.02	0.02	> 3	500
8451-6002	0 ... 2 kN	10	≤ ± 0.5	1.5	0.02	0.02	> 5	500
8451-6005	0 ... 5 kN	30	≤ ± 1.5	0.35	0.1	0.1	> 20	220
8451-6010	0 ... 10 kN	30	≤ ± 1.5	0.7	0.05	0.05	> 20	220
8451-6020	0 ... 20 kN	30	≤ ± 0.75	1.5	0.03	0.03	> 20	220
8451-6050	0 ... 50 kN	75	≤ ± 0.5	0.9	0.03	0.03	> 20	900
8451-6100	0 ... 100 kN	150	≤ ± 1.0	1.0	0.03	0.03	> 20	900

### Electrical values

Bridge resistance:	350 Ω, nominal*
Reference excitation voltage:	max. 10 VDC
Nominal sensitivity:	refer to table
Isolation resistance:	> 10 MΩ at 40 V

\* Deviations from stated value are possible.

### Environmental conditions

Operation temperature range:	-20 °C ... 80 °C
Nominal temperature range:	15 °C ... 70 °C
Influence of temperature on zero:	refer to table
Influence of temperature on sensitivity:	refer to table

### Mechanical values

Deflection:	< 50 μm
Maximum static operation load:	refer to table
Dynamic load:	recommended 70 % of nominal load
Overload protection:	5 fold, mechanical, to 0 ... 2 kN
Material:	1.4542
Resonance frequency:	refer to table
Electrical connection:	shielded, 4 wire, drug chain qualified TPE isolated cable, length approx. 2 m with open ends for soldering, outer diameter 3 mm
Bending radius:	> 30 mm
Protection class:	according to EN 60529
measurement range ≤ 0 ... 2 kN	IP65
measurement range ≥ 0 ... 5 kN	IP67

### Wiring code:

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

Dimensions:	refer to dimensional drawing
General tolerance of dimensions:	according to ISO 2768-f
Weight:	refer to table

### Order Information

Load cell, measuring range 0 ... 2 kN **8451-6002**

### Accessories 8451

Clamp mounting to operate displacement transducer

Measuring range ≤ 0 ... 20 kN **Model 5501-Z002**

Measuring range ≥ 0 ... 50 kN **Model 5501-Z003**

### Options

#### Electrical

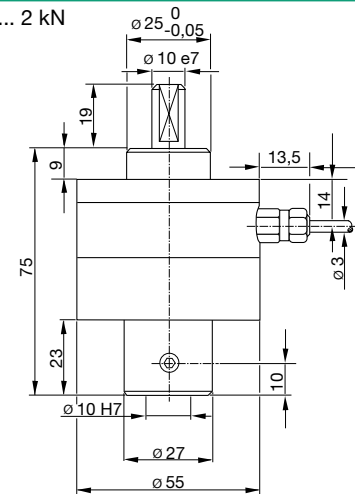
- Connector plug programmed with sensor data for automatic identification and operation by the ForceMaster 9110 analysis system. May only be suitable with the standardized sensitivity option **Model 9900-V245**
- Programming and fitting of plug 9900-V245 to the sensor connecting cable **Model 99005**
- Standardization of nominal sensitivity in sensor connecting cable to a value of 1 mV/V ± 0.25 %. This is achieved by fitting a small circuit board (l = 30 mm x B = 8 mm) containing electrical resistors in a position 30 cm before the end of the cable. Possible for measurement ranges ≤ 0 ... 2 kN **...-V010**

#### Mechanical

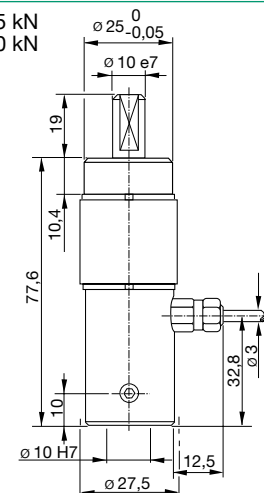
- For measurement ranges ≤ 0 ... 2 kN, special version fitted with ball guide for zero radial backlash **...-V301**

### Dimensional drawing model 8451

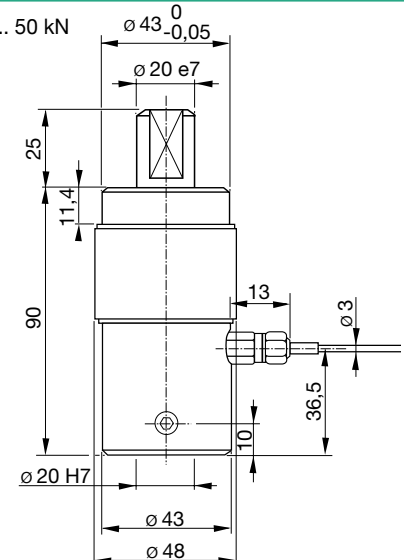
Measuring range ≤ 0 ... 2 kN



Measuring range ≥ 0 ... 5 kN  
≤ 0 ... 20 kN



Measuring range ≥ 0 ... 50 kN



**Example showing use of mounting parts to fit displacement sensor, Model 5501-Z004**

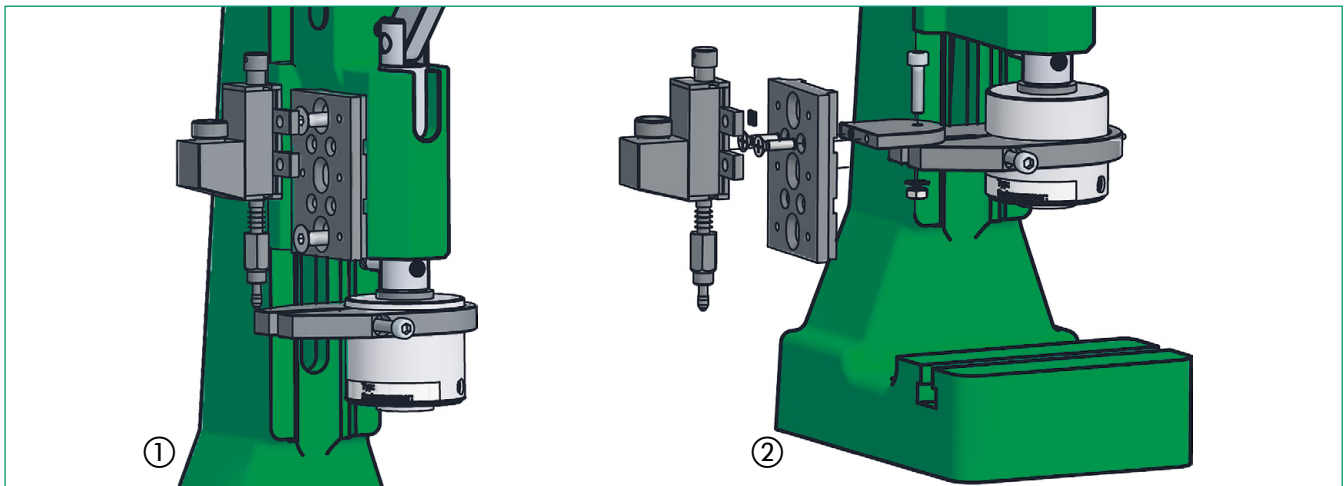
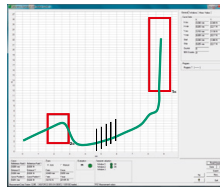


Figure 1: The displacement sensor is mounted on the press head. Its push rod rests on the bracket that is clamped onto the load cell.

Figure 2: The displacement sensor is flange-mounted to the bracket and requires its own external reference from which to measure the displacement.

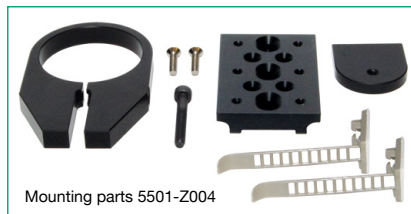
**Example of a measuring chain**

Load cell	8552-6005-V1000
Displacement sensor	8713-50
Connector plug	9900-V221
Fitting of plug	99005
Mounting parts	5501-Z004
ForceMaster	9110-V0000

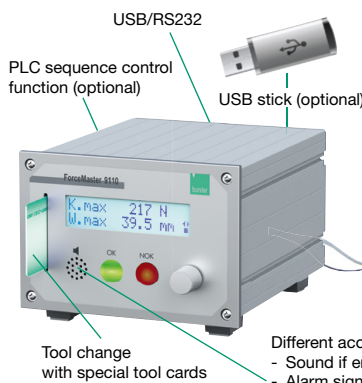


Analysis and configuration software 9110-P001

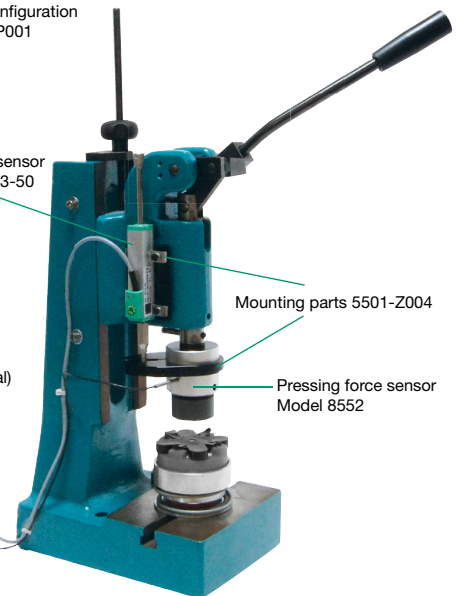
Displacement sensor e.g. Model 8713-50



Mounting parts 5501-Z004



Different acoustic signals  
 - Sound if error  
 - Alarm signal if activated again without confirmation



Mounting parts 5501-Z004

Pressing force sensor Model 8552

**Mounting Instruction**

The cylindrically shaped body of the load cell has to be mounted until its block touches the ring shaped contact areas of the press stamp. A good fit and a homogenous force distribution is assured this way. For the specific measuring accuracy and long-life stability an axial introduction of the force is recommended.

The immersing pin, flattened on both sides of the upper end, has to be mounted to the press stamp by means of a screw with flat surface. The two parallel flattened surfaces on the pin allow the alignment of the cable outlet in a way that left handed workers as well as right handed workers may operate the press.

The tool will be fastened and centered in the boring of the sensor body clamping M6 resp. M8 ( $\geq 0 \dots 50$  kN).

The sensor cable must not be exposed to tensile or buckling stress. Because of this, install the cable with enough space.

**Accessories**

Force displacement controlled hand lever presses like series 5501, evaluation electronics or process control units like ForceMaster model 9110 and DIGIFORCE® model 9311.

**Connector**

- 9 pin, suitable for e.g. DIGIFORCE® 9307/9311 **Model 9900-V209**
- Fitting of plug for compression load cells **Model 99004**
- 8 pin, for potentiometric displacement sensors suitable for ForceMaster 9110 **Model 9900-V221**
- Fitting of plug **Model 99005**

Strain gauge simulator as extra tool for generating specific strain gauge signals in order to calibrate amplifiers and display equipment **Model 9405**

Warranty: 24 months

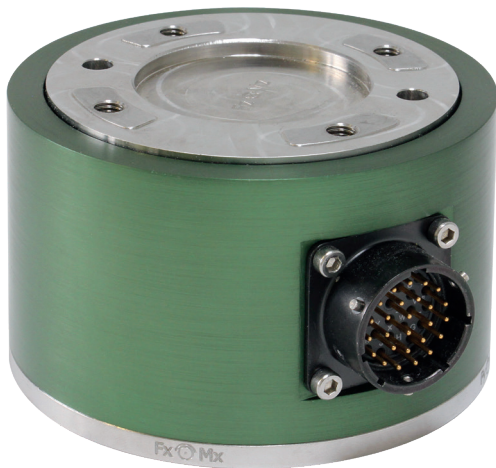
**burster**

## Load Cell and Torque Sensor – X/Y/Z

Configurable up to 3x force / 3x torque

**MODEL 8565** **NEW**

Preliminary data sheet



### Highlights

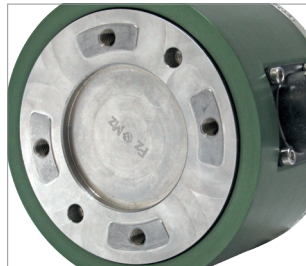
- 6-axis sensor
- Measuring range Fx: 1 kN / Fy: 1 kN / Fz: 2 kN  
Mx: 50 Nm / My: 50 Nm / Mz: 50 Nm
- Other measuring ranges available on request
- Non-linearity < 0.1 % F.S.
- Excellent price/performance ratio
- Customer-specific axis configuration

### Applications

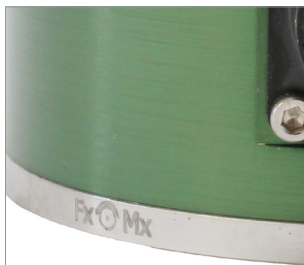
- Robot-assisted applications
- Pick & place
- Tactile sensing in manufacturing
- Collision detection
- Force-controlled machining



Strain gage output



Robot flange in accordance with  
DIN ISO 9049-1



Direction of action

### Product description

In robotics and automation engineering, the requirements for precise, tactile handling are constantly increasing. The robust 8565 multi-axis sensor with its low crosstalk enables you to monitor and evaluate your process at any time, regardless of the sensor's orientation.

With just one sensor, you can obtain accurate three-dimensional load information. Its six independent outputs let you selectively evaluate the direction of action of the loads (axial force [Fz] / lateral forces [Fx/Fy] / torque [Mz] / bending moment [Mx/My]).

Thanks to its compact design and adaptation via the standardized robot flange in accordance with DIN ISO 9049-1, the sensor can be integrated into many applications quickly and easily.

When the slightest deviations are detected in your fast-moving and complex production processes, you can intervene immediately to make adjustments. This helps to prevent faulty parts and reduce manufacturing costs.

## Technical data

8565	-	60025050
Measuring range Fx calibrated in N from 0 ...		Fx = 0 ... ±1 kN (0 ... ±224.8 lbs)
Measuring range Fy calibrated in N from 0 ...		Fy = 0 ... ±1 kN (0 ... ±224.8 lbs)
Measuring range Fz calibrated in N from 0 ...		Fz = 0 ... ±2 kN (0 ... ±449.6 lbs)
Measuring range Mx calibrated in Nm from 0 ...		Mx = 0 ... ±50 Nm (0 ... ±442.51 lbs in)
Measuring range My calibrated in Nm from 0 ...		My = 0 ... ±50 Nm (0 ... ±442.51 lbs in)
Measuring range Mz calibrated in Nm from 0 ...		Mz = 0 ... ±50 Nm (0 ... ±442.51 lbs in)
<b>Accuracy</b>		
Relative non-linearity *		< ±0.1 % F.S.
Relative hysteresis		0.2 % F.S.
Characteristic curve deviation *		< ±0.15 % F.S.
Crosstalk		< 5 % from Fz to other axes (other crosstalk significantly less)
Temperature effect on zero output		≤ ±0.02 % F.S./K
Temperature effect on nominal sensitivity		≤ ±0.02 % F.S./K
<b>Electrical values</b>		
Sensitivity (nominal) Fx:		1.2 mV/V
Sensitivity (nominal) Fy:		1.2 mV/V
Sensitivity (nominal) Fz:		0.4 mV/V
Sensitivity (nominal) Mx:		1 mV/V
Sensitivity (nominal) My:		1 mV/V
Sensitivity (nominal) Mz:		0.9 mV/V
Measurement direction		Positive output signal for compressive load / torque in the direction of the marked X, Y or Z axis
Bridge resistance		350 Ω / 700 Ω nominal (deviations are possible)
Excitation voltage		5 V DC (max. 10 V DC)
<b>Environmental conditions</b>		
Nominal temperature range		+15 °C ... +70 °C
Operating temperature range		-10 °C ... +80 °C
<b>Mechanical values</b>		
Deflection full scale		Fx and Fy < 0.04 mm / Fz < 0.015 mm
Max. operational force (Dynamic load limit 250)		$L_{max} = 100 * \frac{\sqrt{F_x^2 + F_y^2}}{F_x \text{ nom.}} + 50 * \frac{ F_z }{F_z \text{ nom.}} + 70 * \frac{\sqrt{M_x^2 + M_y^2}}{M_x \text{ nom.}} + 100 * \frac{ M_z }{M_z \text{ nom.}} \leq 250$ <p>Please note: The sensor's coordinate origin is in the geometric center of the sensor. When calculating the maximum operational force, the additional bending moments due to leverage effects must be taken into account for the acting lateral forces.</p> <p>Example: Force-controlled grinding process with simultaneous dynamic loads of up to:                      Fx = 500 N / Fy = 500 N / Fz = 1.5 kN / Mx = 20 Nm / My = 20 Nm / Mz = 40 Nm</p> $L_{max} = 100 * \frac{\sqrt{500N^2 + 500N^2}}{1000N} + 50 * \frac{1500N}{2000N} + 70 * \frac{\sqrt{20Nm^2 + 20Nm^2}}{50Nm} + 100 * \frac{40Nm}{50Nm} = 227.80$
Dynamic performance		recommended: 50 %
Material		high-strength aluminum
Protection class (EN 60529)		IP40
<b>Other</b>		
Natural frequency		> 1800 Hz
Mass	[g]	800

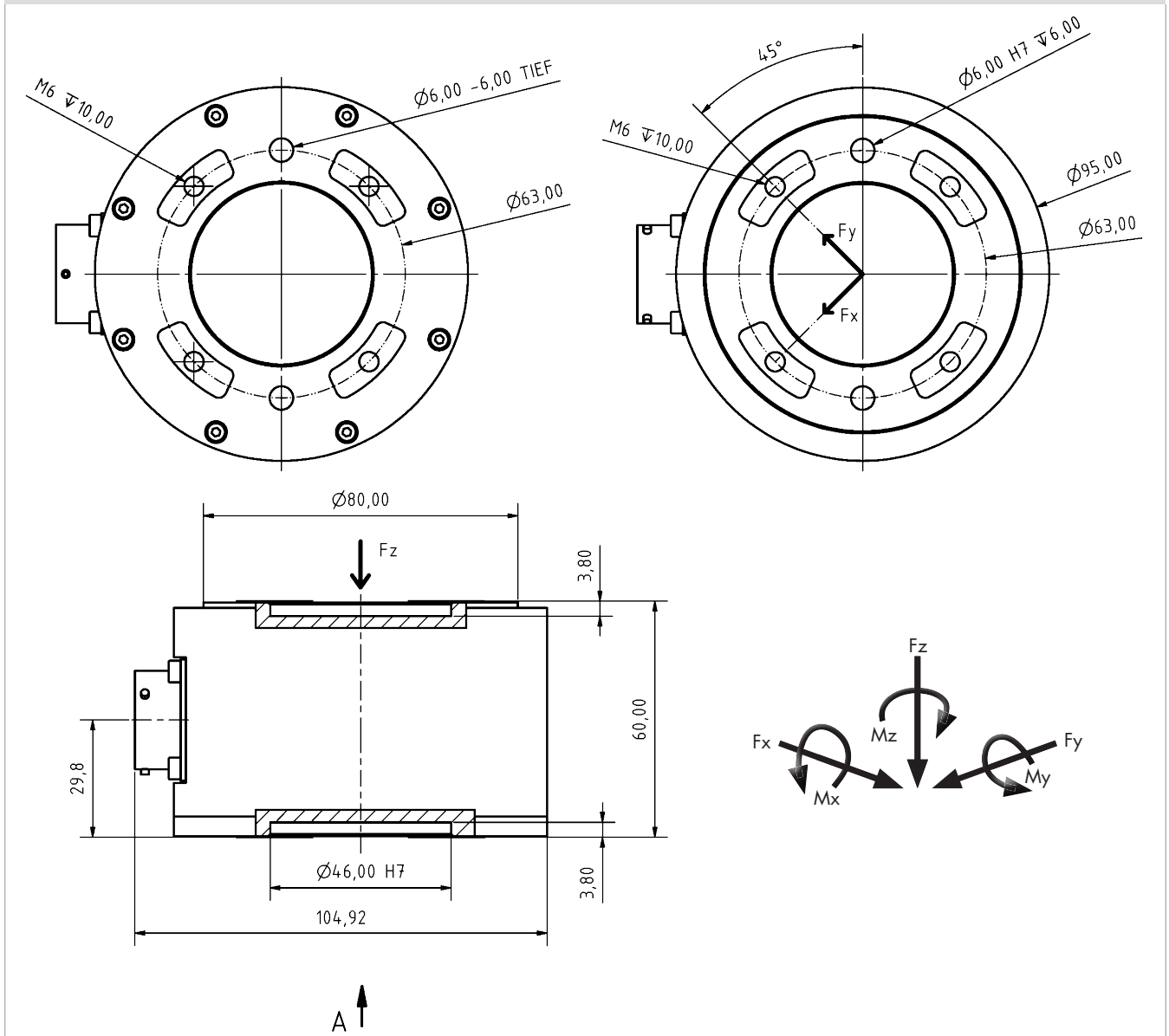
\* The data in the area 20 % - 100 %

**Geometry**

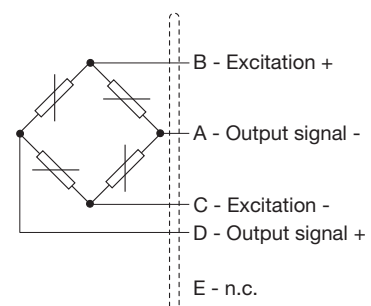
see dimensional drawing

**Installation**

Intended mounting screws	4 x M6
Tightening torque mounting screws	10 Nm
Mounting screws	strength 8.8 or higher
Weight	800 g

**Dimensional drawing****Electrical termination****Output signal**

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



Connector pin assignment			
Measurement channel	Assignment		Pin
Fx	Us+	Excitation (+)	A
	Us-	Excitation (-)	B
	Um+	Measurement signal (+)	C
	Um-	Measurement signal (-)	D
Fy	Us+	Excitation (+)	E
	Us-	Excitation (-)	F
	Um+	Measurement signal (+)	G
	Um-	Measurement signal (-)	H
Fz	Us+	Excitation (+)	J
	Us-	Excitation (-)	K
	Um+	Measurement signal (+)	L
	Um-	Measurement signal (-)	M
Mx	Us+	Excitation (+)	N
	Us-	Excitation (-)	P
	Um+	Measurement signal (+)	R
	Um-	Measurement signal (-)	S
My	Us+	Excitation (+)	T
	Us-	Excitation (-)	U
	Um+	Measurement signal (+)	V
	Um-	Measurement signal (-)	W
Mz	Us+	Excitation (+)	X
	Us-	Excitation (-)	Y
	Um+	Measurement signal (+)	Z
	Um-	Measurement signal (-)	a
	N.C.		b
	N.C.		c

Electrical connection	
9900-V724	Souriau 26-pin connector, series 851 cable installation

## Accessories

### Connector, cables and devices

#### Order code

Connector	
9900-V724	Connector socket 26 pin (included with device)
Cables	
99724-000A-0090030	Connecting cable, 3m, 3x strain gage (Fx/Fy/Fz)
99724-000B-0090030	Connecting cable, 3m, 3x strain gage (Mx/My/Mz)
99724-000F-0090030	Connecting cable, 3m, 6x strain gage
99209-724A-0090030	Connecting cable to USB interface 9206-V3xxxx, 3x force, length 3 m, suitable for drag chains
99209-724B-0090030	Connecting cable to USB interface 9206-V3xxxx, 3x torque, length 3 m, suitable for drag chains
99209-724F-0090030	Connecting cable to USB interface 9206-V3xxxx, 3x force / 3x torque, length 3 m, suitable for drag chains
Devices	
9250-VXXXXXX	Universal instrumentation amplifier
9251-VXXXX	Fieldbus controller for the 9250 instrumentation amplifier series
9236-V...	In-line instrumentation amplifier for strain gage sensors
9206-V...	USB sensor interface for strain gage sensors



## Order Code

Measuring range	Code								Measuring range
	Fz				Mz				
Fz = 0 ... ±2 kN	6	0	0	2	5	0	5	0	Fz = 0 ... ±449.6 lbs
Fy = 0 ... ±1 kN									Fy = 0 ... ±224.8 lbs
Fx = 0 ... ±1 kN									Fx = 0 ... ±224.8 lbs
Mz = 0 ... ±50 Nm									Mz = 0 ... ±442.5 lbs in
My = 0 ... ±50 Nm									My = 0 ... ±442.5 lbs in
Mx = 0 ... ±50 Nm									Mx = 0 ... ±442.5 lbs in

8	5	6	5	-									-				0	0
---	---	---	---	---	--	--	--	--	--	--	--	--	---	--	--	--	---	---

Force: Fz / Fy / Fx	0
Force: Fz / Fy / <b>Fx</b>	1
Force: Fz / <b>Fy</b> / Fx	2
Force: Fz / <b>Fy</b> / <b>Fx</b>	3
Force: <b>Fz</b> / Fy / Fx	4
Force: <b>Fz</b> / Fy / <b>Fx</b>	5
Force: <b>Fz</b> / <b>Fy</b> / Fx	6
Force: <b>Fz</b> / <b>Fy</b> / <b>Fx</b>	7
Torque: Mz / My / Mx	0
Torque: Mz / My / <b>Mx</b>	1
Torque: Mz / <b>My</b> / Mx	2
Torque: Mz / <b>My</b> / <b>Mx</b>	3
Torque: <b>Mz</b> / My / Mx	4
Torque: <b>Mz</b> / My / <b>Mx</b>	5
Torque: <b>Mz</b> / <b>My</b> / Mx	6
Torque: <b>Mz</b> / <b>My</b> / <b>Mx</b>	7

### Example order

Ordering example		
1x	Sensor with application 3x force / 3x torque	Type 8565-6002-5050-7700
1x	Connecting cable, open cable end, length 3 m, suitable for drag chains	Type 99209-724F-0090030
6x	Single-channel in-line instrumentation amplifier for strain gage sensors	Type 9236-V000
6x	Calibrate a measuring chain	92ABG

## Note

### Brochure

Our brochure “Load cells – for production automation, R&D and quality assurance” is available for download on our website or can be requested. It contains numerous applications, detailed product specifications and overviews.

### Product videos

You can find our **installation videos** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)

### CAD data

Download via [www.burster.de](http://www.burster.de) or directly from [www.traceparts.de](http://www.traceparts.de)



## 2-Axis Load Cell XY

Tensile/compressive force measurement in the X and Y directions simultaneous

# MODEL 8561



### Highlights

- Measuring ranges:  
0 ... 4448 N / 0 ... 2224 N (0 ... 1000 lbs / 0 ... 500 lbs)  
0 ... 8896 N / 0 ... 4448 N (0 ... 2000 lbs / 0 ... 1000 lbs)
- Further measuring ranges on request
- Non-linearity < 0.1 % F.S.
- Low cross talk < 0.75 % F.S.
- High dimensional accuracy, because sensor is made from one part
- Excellent price/performance ratio

### Options

- Standardized output signal
- Dual-range model
- 0-10 V / 4-20 mA
- Various fieldbuses e.g. Profinet

### Applications

- Tire uniformity testing machine
- Rotation tests

### Product description

Inside the multi-component force transducer are two webs, each offset by 90°, each with a strain gage full bridge, which convert the radially acting X / Y forces on the guide bush into an electrical signal.

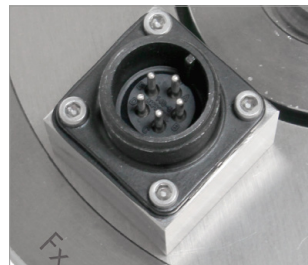
Due to the sensor body made from a block with its special structure, the sensor has a very high degree of dimensional accuracy and low crosstalk between the two forces.

Due to the special design, the sensor has excellent linearity properties and is designed for a long service life in dynamic applications.

The two independent signal connections allow flexible adaptation and further processing.



Top view



Detail view connector



With instrumentation amplifier 9250/9251

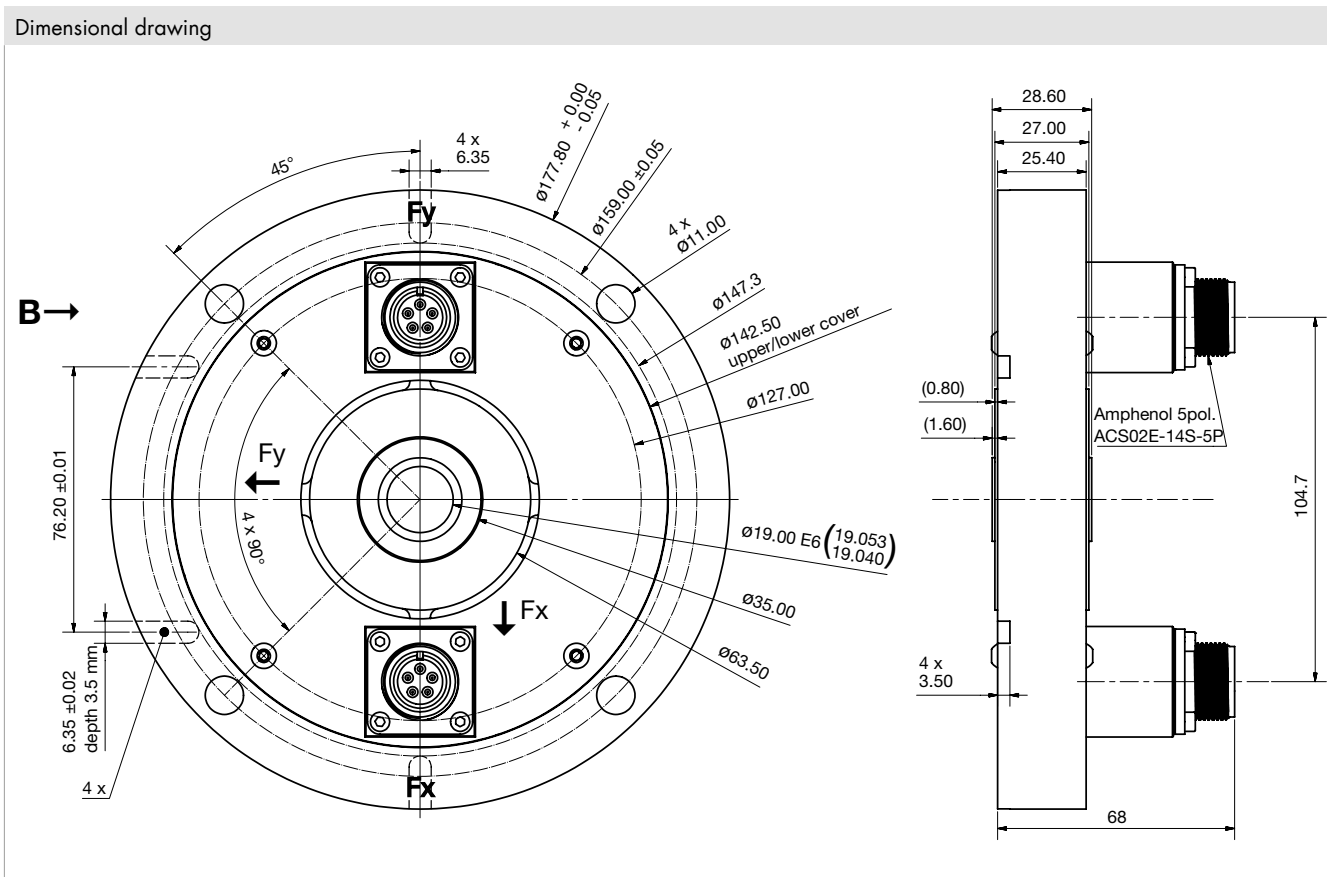


## Technical Data

8561	-	1000-0500	2000-1000
Measuring range calibrated in N and kN from 0 ...		X = ±4448 N; Y = ±2224 N (X = ±1000 lbs; Y = ±500 lbs)	X = ±8896 N; Y = ±4448 N (X = ±2000 lbs; Y = ±1000 lbs)
<b>Accuracy</b>			
Relative non-linearity*		≤ ±0.1 % F.S.	
Characteristic curve deviation*		≤ ±0.15 % F.S.	
Cross talk		< 0.75 % F.S.	
Relative hysteresis		0.1 % F.S.	
Temperature effect on zero output		≤ ±0.005 % F.S./K	
Temperature effect on nominal sensitivity		≤ ±0.015 % F.S./K	
<b>Electrical values</b>			
Sensitivity nominal		2.0 mV/V	
Measurement direction		pos. output signal for pressure force in the direction of the marked X- / Y-axis	
Standardization**		option 2.0 mV/V (±0.25 %)	
Bridge resistance		350 Ω nominal (deviations are possible)	
Excitation		5 V DC or AC (max. 10 V DC or AC)	
Insulation resistance		> 30 MΩ at 45 V	
<b>Environmental conditions</b>			
Nominal temperature range		+15 °C ... +70 °C	
Operating temperature range		0 °C ... +80 °C	
<b>Mechanical values</b>			
Deflection full scale		< 200 μm	
Maximum operating force		150 % of capacity	
Overload burst		200 % of capacity	
Dynamic performance		recommended: 50 %	
Protection class (EN 60529)		IP30	
<b>Installation</b>			
Intended mounting screws		4 x M10	
Tightening torque mounting screws		60 Nm	
Mounting screws		resistance 10.9 or higher	
<b>Other</b>			
Material		stainless steel 1.4542	
Natural frequency	[Hz]	200	280
Mass	[kg]	3.3	

\* The data in the area 20 % - 100 % of rated load F

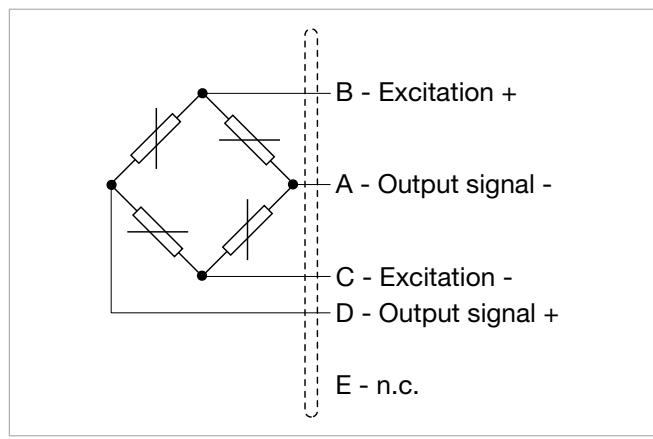
\*\* Realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end (temperature range limited to 0 ... +60 °C)



### Electrical termination

#### Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



8561	-	1000-0500	2000-1000
Measuring range from 0 ...		X = ±4448 N; Y = ±2224 N X = ±1000 lbs; Y = ±500 lbs	X = ±8896 N; Y = ±4448 N X = ±2000 lbs; Y = ±1000 lbs
<b>Electrical termination</b>			
Connectors		Connectors Model Amphenol 5 pin ACS02E-14S-5P	

## Accessories

### Connectors and cable

#### Order Code

##### Connectors

9900-V647	Coupling socket 90° angled (in scope of delivery)
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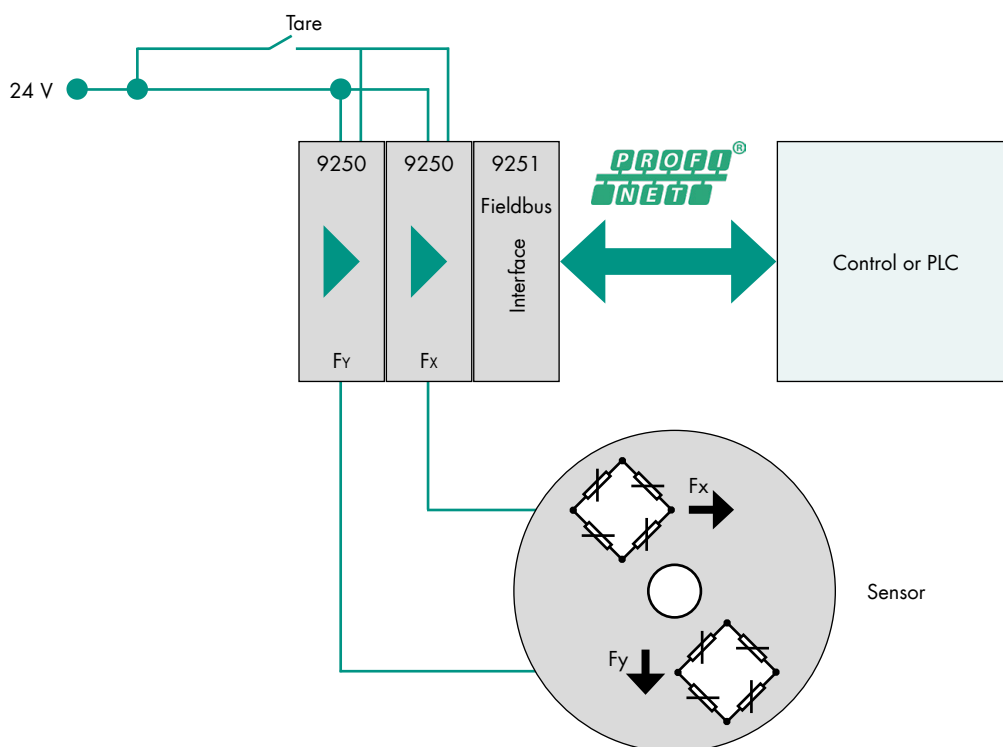
##### Cable

99547-000B-0160030	Connection cable 3 m with open end 6-wire
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## Application example

### Typical application: Uniformity measurement of wheels

A common application is, for example, the detection of the radial and lateral forces on rolling wheels. The sensor, which is suitable for dynamic applications, can be easily integrated into automated test systems and the uniformity of car tires, for example, can be checked and evaluated.



With the use of the new generation of instrumentation amplifiers 9250/9251, the sensor can be easily connected to any Profinet-capable system. You can find more information on our data sheets at [www.burster.com](http://www.burster.com).

**NEW**  
optionally**Dual-range**

Dual-range model	
Optionally available	As an optional extra, an additional calibration certificate is available for a second measuring range that is smaller by one step. For example, for the measuring range 4448 N ... 2224 N also a calibration certificate for 2224 N ... 1112 N. Depending on the measuring range, this results in a dual range ratio of 1:2.
Measuring range	Spreading
4448 N ... 2224 N 1000 lbs ... 0500 lbs	2224 N ... 1112 N 500 lbs ... 0250 lbs
8896 N ... 4448 N 2000 lbs ... 1000 lbs	4448 N ... 2224 N 1000 lbs ... 0500 lbs

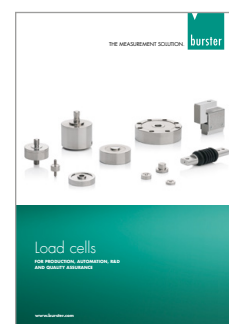
Technical data – changing values for the spreading measuring range	
Temperature effect on zero output	$\leq \pm 0.015 \% \text{ F.S./K}$
Sensitivity nominal	1.0 mV/V

## Order Code

Measuring range	Code								Measuring range			
X: 0 ... ±4448 N Y: 0 ... ±2224 N	1	0	0	0	0	5	0	0	X: 0 ... ±1000 lbs Y: 0 ... ±500 lbs			
X: 0 ... ±8896 N Y: 0 ... ±4448 N	2	0	0	0	1	0	0	0	X: 0 ... ±2000 lbs Y: 0 ... ±1000 lbs			
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮				
<b>8</b>	<b>5</b>	<b>6</b>	<b>1</b>	<b>-</b>					<b>-</b>			<b>0</b>
<ul style="list-style-type: none"> <li>Nominal sensitivity/not standardized</li> </ul>										N		
<ul style="list-style-type: none"> <li>Standardization at 2.0 mV/V</li> </ul>										F		
<ul style="list-style-type: none"> <li>Standard</li> </ul>										0		
<ul style="list-style-type: none"> <li>Calibration 1:2 / Dual-range model</li> </ul>										Z		

## Note

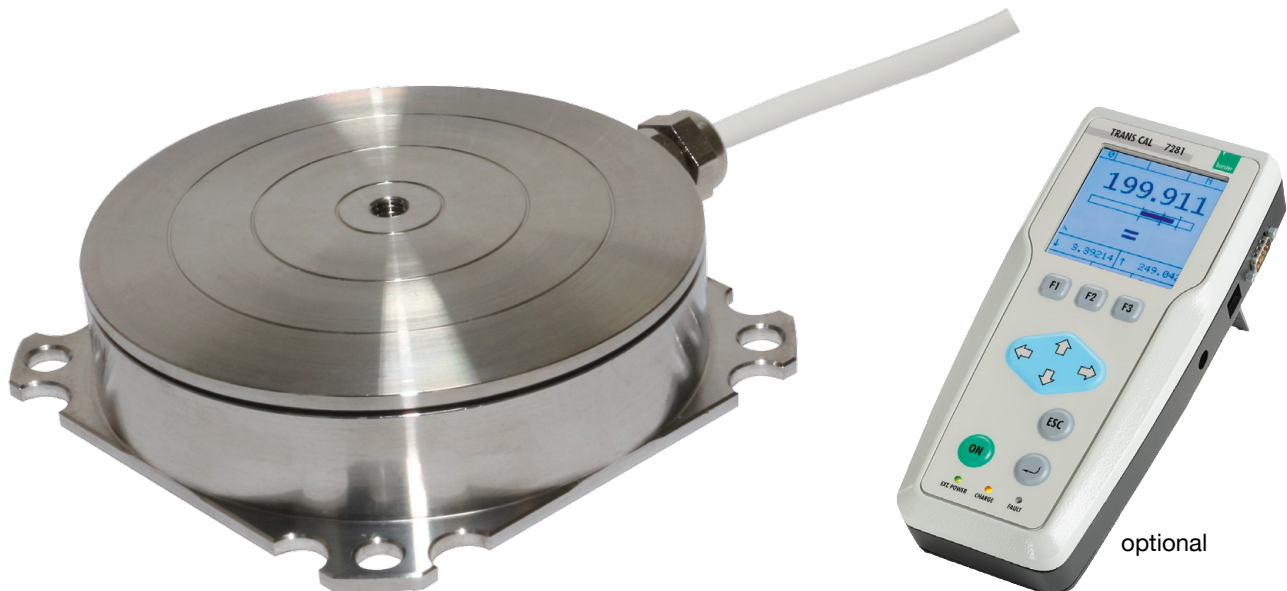
- Brochure**  
 Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.
- Product videos**  
 Watch our **How-to-do video** at: [www.youtube.com/bursterVideo](http://www.youtube.com/bursterVideo)
- CAD data**  
 Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com)



# Pedal Load Cell for pedal operating forces

Model 8400-B001

Code:	8400 EN
Delivery:	ex stock
Warranty:	24 months



optional

- Very flat design
- Insensitive to forces traverse to the operating direction
- Easy changeable, ergonomical operating plate
- Temperatures from -40 °C to 120 °C
- In combination with TRANS CAL 7281, can be used portably and network-independent
- Option: available as dual range version

## Application

With its flat construction this force sensor is specially designed to be fitted to a pedal. By this, the operator's forces for each respective action, for example brake tests, can be measured directly and the reaction of the vehicle or machine can be designated. This applies to real test drives, as well as in driving simulators. Due to the special construction of the membrane, it is irrelevant whether an upright or hanging pedal is concerned. The sensor is designed in a way that unavoidable lateral forces have as little impact on the measurement result as possible. Using a central internal thread on the control surface, various machine-related adaptor parts can be easily mounted. Because the pedal is convex-shaped on its surface, the pedal force sensor has a very rigid base plate and therefore can easily be applied to various geometrics. The mounting can even take place on a pedal with an elastomer covering.

## Description

With a height of only 17 mm, this sensor is particularly flat and, in its assembled state, does not interfere with the operation task of the pedal. Additionally, its diameter of less than 60 mm makes this sensor suitable for almost all forms of pedals. The sensor is screwed together in a safe and stable way with a suitable bracket which goes under the pedal. Due to various pedal designs, this bracket is not included in the delivery scope and has to be manufactured separately to fit to the pedal. The connection cable is specially protected, it sturdily holds using PG cable glands and is suitable for robots: Therefore lots of movements in realistic, dirty and damp areas are guaranteed. On the measurement membrane in addition to its stable mechanics several bridges formed by strain gauges protect the sensor from additional transverse forces. The operator provides, from personal factors such as foot position, habits or various shoes, inevitably off-centre forces on the operating part of the sensors, which need to be compensated.

## Technical Data

Order Code	Measuring Range
8400-B001-6001	0 ... 1000 N
8400-B001-6002	0 ... 2000 N

### Electrical values

Bridge resistance:	700 $\Omega$
Excitation voltage:	10 VDC
Sensitivity:	2 mV/V $\pm$ 0.5 %
by a circuit board in the cable, 10 cm before the cable end of 1 kN	
Calibrator resistor:	100 k $\Omega$

### Environmental conditions

Nominal temperature range:	- 30 $^{\circ}$ C ... + 60 $^{\circ}$ C
Range of operating temperature:	- 30 $^{\circ}$ C ... + 80 $^{\circ}$ C
Influence of temperature on zero:	0.02 % F.S./K
Influence of temperature on sensitivity:	0.02 % F.S./K

### Mechanical values

Accuracy:	relative non-linearity 0.5 % F.S. acc. to VDE 2638
Kind of measurement:	load cell
Deflection:	> 80 $\mu$ m
Overload safe:	150 % of capacity
Overload:	250 % of capacity
Dynamic load	
recommended:	70 % of capacity
possible:	100 % of capacity
Material:	stainless steel 1.4542
Protection class:	IP67, acc. to DIN 60529
Electrical connection:	suitable for drag chain 4 leaded TPE isolated cable, length 1.5 m
Bending radius:	fixed 10 mm by movement 30 mm

### Wiring code:

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

Dimensions:	refer to scale drawing
Weight:	600 g

### Option

Better accuracy	< $\pm$ 0.25 % F. S.
For additional standardised output signal then with rated output tolerance $\pm$ 0.25 %	...-V1x
Dual range version	
additional calibration point at 200 N or 500 N	on request

### Order Information

Pedal load cell, measuring range 1000 N **Model 8400-B001-6001**

### Accessories

#### burster TEDS

9-pin male sub-D connector and memory chip for the electronic sensor datasheet, for connecting strain-gauge load cells to the TRANS CAL 7281 **Model 9900-V229**

High-precision calibrator for mechanical measurements TRANS CAL - reference measurement device **Model 7281-V0000**

### Technical Data 7281

#### Operation mode: Reference measurement device

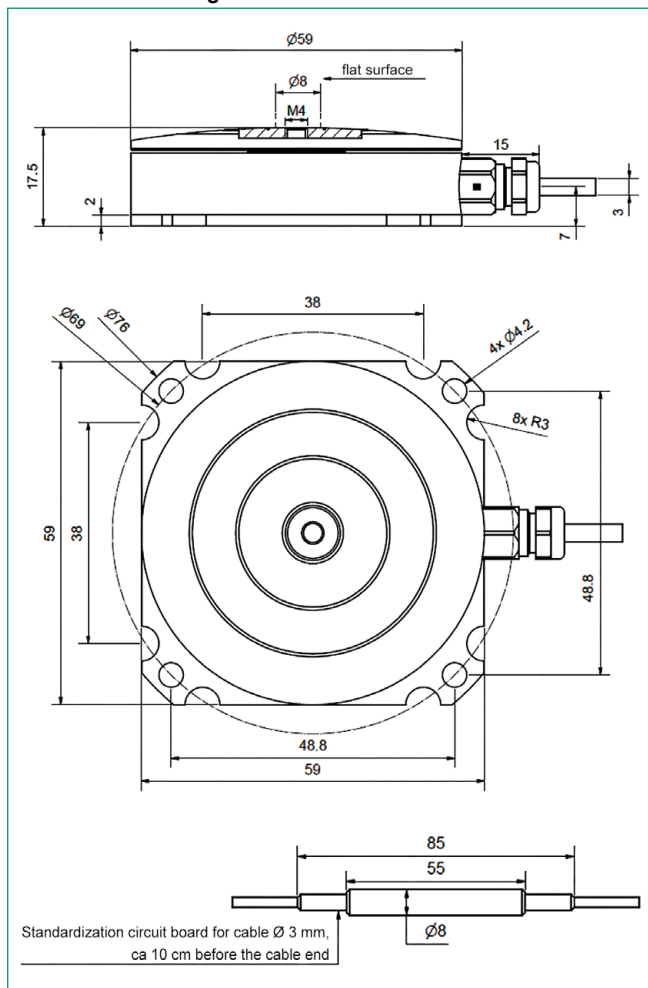
Non-linearity:	< $\pm$ 0.001 %
Measuring rates:	0.1 ... 1200/s (DC); 0.1 ... 2/s (AC) (reduced accuracy at 50/s)
TC gain:	$\pm$ 0.001 %/K
TC zero point:	< 0.2 $\mu$ V/K
Cut-off frequency:	10 kHz (-3db)

#### Strain gauge

Error limit:	$\pm$ 0.02 % v.E.
Bridge resistance (full bridge):	120 $\Omega$ ... 10 k $\Omega$
Connection type:	4 / 6 wire technology
Input voltage ranges (DC):	$\pm$ 15 mV; $\pm$ 30 mV; $\pm$ 250 mV
Input voltage ranges (AC):	$\pm$ 15 mV; $\pm$ 30 mV
Sensor excitation voltage (DC):	2.5 V; 5 V (at 120 $\Omega$ only 2.5 V)
Sensor excitation voltage (AC):	2.5 Veff / 5 Veff (from 350 $\Omega$ )
Sensor excitation current:	max. 30 mA
Electronic data sheet (TEDS):	read from sensor EEPROMs

Technical changes reserved. All data sheets at [www.burster.com](http://www.burster.com)

## Dimensional drawing model 8400-B001



### Factory Calibration Certificate (WKS)

Calibration of a load cell separately as well as connected to an indicator. Standard is a certificate with 11 points, starting at zero, running up and down in 20% increments covering the complete measuring range for preferential direction. Special calibrations on request. Calculation of costs by base price plus additional costs per point.

**Order Code 84WKS-84...**

### General device data

A/D converter:	24 Bit
Real-time clock/date	
Interface:	USB 2.0, downwards compatible, opto-isolated
Nominal temperature range:	0 ... 40 $^{\circ}$ C
Storage temperature range:	-20 ... 60 $^{\circ}$ C
Display:	LCD with white LED backlighting
Baud rate:	115200
Supply voltage:	4 x Mignon or 10 ... 28 VDC integrated battery charging circuit

### Terminals

Measuring, device test, sensor test: SUB-D female connector, 9 pin  
USB interface: type B male connector

### Housing

Material:	Aluminium (light gray, black)
Dimension (L x W x H):	220 x 100 x 52 mm with tilting foot and rubber feet
Weight:	approx. 850 g
Protection class:	IP40

For further information,  
please refer to data sheet  
7281.



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