



Miniature Load Cell

1. Application

Due to their measuring range, their reliability and the various possibilities of use these miniature load cells can not only be used in the industry but in the laboratories as well. They are very well suited for compression measurements in very restricted structures. The load cells are of a compact construction and made of superrefined steel and can therefore be used in many fields of industry, like i. e.

- press-in force measurements at longitudinal and transversal connections
- compression force measurement at punch and roller appliances
- spring tension measurements at shock absorbers for cars
- contact pressure determination in a push rod
- compression force measurements at toggle lever press

2. Description

The force to be measured is led central centric and transversal force-free across the rounded top - in form of a little hat - into the load cell. Strain gauges arranged in a full bridge circuit are applicated on the generated surface of the sensor. By applying force to the strain gauge bridge the resistance change of the gauges is transformed into an output voltage which is directly proportional to the measured quantity..



The load cells have to be mounted on a smooth, plane parallel surface. They can be fixed on it with contact adhesive. To receive a measurement accuracy neither transversal nor lateral forces have to penetrate the load cell.

Clamp forces acting laterally on the load cell have to be avoided. During the installation or the 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.

The output signal of the connecting plug is 1.5 mV/V, so that a parallel connection or an exchange can easily be done.

3. Special features

- Measuring ranges from 0 ... 1 kN up to 0 ... 100 kN
- Accuracy ≤ 0.5 % F.S. (typ.)
- Small dimensions
- Made of stainless steel
- With standardized output signal

01.01.2001

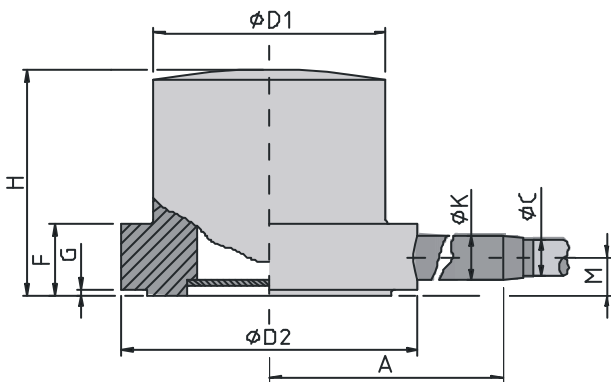
**Miniatur
Load Cell**

10 8402/02

4. Dimensions

Meas. Range [kN]	Article No.	Accuracy* [%F.S.]	Non Repeatability [%F.S.]	Dimensions (mm)								
				Ø D1	Ø D2	F	A	H	G	ØC	ØK	M
0 ...1	12907	= ± 0,75	= ± 0,4	6,4	12,7	3,05	14,9	9,6	0,25	1,9	2,8	1,6
0 ...2	12908	= ± 0,5	= ± 0,25	6,8	12,7	3,05	14,9	9,6	0,25	1,9	2,8	1,6
0 ...5	12909	= ± 0,5	= ± 0,25	7,7	12,7	3,05	14,9	9,6	0,25	1,9	2,8	1,6
0 ...10	12910	= ± 0,5	= ± 0,25	10,0	12,7	3,05	14,9	9,6	0,25	1,9	2,8	1,6
0 ...20	12911	= ± 0,5	= ± 0,25	14,0	15,9	6,0	16,5	16,0	0,25	1,9	2,8	3,1
0 ...50	12912	= ± 0,5	= ± 0,25	19,7	22,4	6,0	19,7	16,0	0,25	1,9	2,8	3,1
0 ...100	12913	= ± 0,5	= ± 0,25	26,5	44,0	15,0	35,0	38,0	0,5	3,0	7,0	7,5

*The figures specified are the combined values for non-linearity and hysteresis



5.3 Mechanical specifications:

Deflection:	≤ 50 µm
Force, operating:	150 % of capacity
Dynamic performance:	recommended 70 % of capacity
Material:	stainless steel 1.4542
Weight:	according to corresponding meas. range, approx. 4 ...240 g
Resonance frequency:	all meas. range > 20 kHz
Protection class:	IP 54 (according to DIN 40050)

5. Technical Data

5.1 Electrical specifications:

Bridge resistance:	350 Ω, nominal (Deviations are possible)
Excitation:	recommended: 3V DC or AC max.: 5V DC or AC
Output:	1.5 mV/V ± 0,5%* standardized in the plug
Insulation resistance:	> 10 MΩ
Option:	sensitivity 1,0 mV/V* supplementing of article no.: ...1"

5.2 Environmental conditions:

Operating temperature range:	- 30 °C ... + 100 °C
Nominal temperature range:	+ 15 °C ... + 70 °C
Temperature influence	
on zero:	± 0.05 % F.S./ K
on span:	+ 0.05 % Rdg./ K

5.4 Electrical connection:

4-wire, shielded, teflon coated cable, length approx. 2 m with connection plug, 6-poles
Bending radius: Meas. range ≤ 0 ... 10 kN: ≥ 20 mm,
Meas. range ≥ 0 ... 10 kN: ≥ 30 mm,
Meas. range 0...100 kN additionally with anti-kink coil (35 mm l.)

Pin connection:

Pin	wire	signal
1	brown	excitation -
2	white	excitation +
3	(blank)	shield
4	yellow	signal output +
5	green	signal output -

Top view
connection plug

6. Order Information

z.B Miniature load cell, 0...100 kN:

10	8402 / 02	- 100 kN -	12913	1
Data sheet	Meas. range	Article No.	Option 1mV/V	

For signal amplifiers and display units please refer to the data sheets of product group 4 and 6.