Load Cell

for Manually Operated Presses

Model 8451

Code:	8451 E
Manufacturer:	burster
Delivery:	ex stock
Warranty:	24 months

NEW
Preliminary data sheet

- **Measuring ranges from 0 ... 500 N up to 0 ... 20 kN**
- **Simple mounting on press stamps**
- **Compact and very robust construction**
- **Hermetically sealed model**
- **Suitable for all standard manual presses with stamp borings of 10 H^7**
- **Sensor guidance with option of other stamps and adaption upon request**
- **Adapting to right and left handed users possible**

Application

The load cell model 8451 was developed for the work forces arising on smaller manually operated presses. With its small dimensions in height of only 70 mm it is mounted in place of the tool's upper part into the stamps boring. On its lower side it features the same boring $10H^7$ used for adapting the tool. As a result, the actual compression force on the axis of the stamp is measured. The application of this load cell is therefore suitable for all standard manual presses with a stamp boring of $10H^7$.

The vertically arranged compression body makes the load cell less vulnerable for rapidly rising forces as well as relatively sturdy against load from lateral forces or torsion.

The mounting of this load cell into the press is very simple and does not require additional mechanical parts that are needed when using other sensors to keep the force on the sensor axis.

Manual work places can be configured for left and right hand workers as the connecting cable can be taken out of the press to the other side of the work zone by simply turning the load cell.

The construction of the load cells $\leq$ 0 ... 5 kN fulfils the protection class IP67 with its high-strength cable gland and useof O-ring seals to cover the measuring element. Therefore it is suitable also for working places where lubricating and cooling liquids are used.

Load cells with measuring range 0 ... 2 kN have a mechanical overload protection up to 5-fold of the range.

Description

The load cell is a compression element with strain gauge stripes applied to both sides of the interior. The measuring element is a horizontally arranged membrane for measuring ranges 0 ... 2 kN. The Wheatstone bridge consisting of wired strain gauges supplies a bridge output voltage in direct proportion to the physical measurement value. Condition for good measurement results is a stable reference supply voltage.
The load cell measures the compression forces between the ring formed contact area to the press stamp and the press tool. The opposite areas must be flat, grounded and hardened. The pin on the upper side and the drill on the bottom serve only as mechanical joints for mounting and aligning the components correctly.

The pin has two flat parallel surfaces which help to fasten the sensor in the stamp drill with the cable leading out in the right direction. The tool is fastened to the drill of the sensor body with the help of a clamping screw.

The integrated sensor connecting cable is approx. 1 m long and designed for many cycles, being a robot type cable.

8451-E

Technical Data

Order Code	Meas. Range [kN]	Max. Overload [kN]	Measuring Accuracy* [%F.S.]	Nominal Range [mV/V]	Temperature Influence on Zero Signal [%F.S./K]	Temperature Influence on Nominal Value [%Rdg./K]	Frequency Resonance [kHz]
8451-5500	0 ... 0.5	2.5	≤ ± 0.5	1.2	0.02	0.02	> 2
8451-6001	0 ... 1	5	≤ ± 0.5	1.2	0.02	0.02	> 3
8451-6002	0 ... 2	10	≤ ± 0.5	1.2	0.02	0.02	> 5
8451-6005	0 ... 5	30	≤ ± 2.0	0.35	0.1	0.1	> 20
8451-6010	0 ... 10	30	≤ ± 2.0	0.7	0.05	0.05	> 20
8451-6020	0 ... 20	30	≤ ± 1.0	1.5	0.03	0.03	> 20

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

Electrical

Bridge resistance:	350 Ω, nominal*
Excitation:	max.10 VDC
Sensitivity:	siehe Tabelle
Insulation resistance:	> 10 MOhm

* Deviations from the stated value are possible.

Environmental

Temperature operating:	-20 °C ... 80 °C
Temperature compensated:	15 °C ... 70 °C
Temperature effect zero:	refer to table
Temperature effect span:	refer to table

Mechanical

Deflection, full scale:	< 50 µm
Overload safe:	150 % over capacity
Dynamic performance:	recommended 70 % of capacity
Überlastschutz:	refer to table
Material:	42 CrMo4, burnished
Natural frequency:	refer to table
Electrical connection: Shielded, 4 wire, TPE-insulated cable, length approx. 1 m, with open ends	outer diameter 3 mm
Bending radius:	> 30 mm
Protection class:	acc. to DIN 40050
Measuring range ≤ 0 ... 2 kN	IP 65
Measuring range ≥ 0 ... 5 kN	IP 67

Wiring code:		
white	Excitation	(positive)
brown	Excitation	(negative)
green	Signal output	(negative)
yellow	Signal output	(positive)

Dimensions:	refer to table and scale drawing
Weight:	
Measuring range ≤ 0 ... 2 kN	approx. 500 g
Measuring range ≥ 0 ... 5 kN	approx. 220 g

Mounting Instructions

The cylindrically shaped sensor body of the load cell must be installed until stop on the ring shaped contact areas of the press stamp. A good fit and homogenous force distribution is assured this way. For the specific measuring accuracy and long-life stability an axial introduction of the force is recommendable.

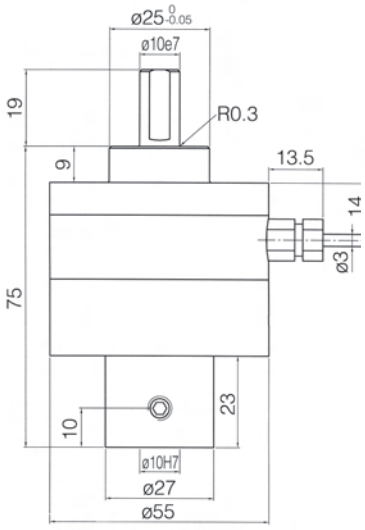
The immersing pin, flattened on both sides on the upper side, must be mounted by means of a screw with flat surface of the press stamp. The two parallel flattened surfaces on the pin allow the installation of the sensor in the stamp boring so that the cable exit points in the requested direction. As a result, the press can be operated by left and right hand workers.

The tool is fastened in the boring (M6) of the sensor body by a clamping screw.

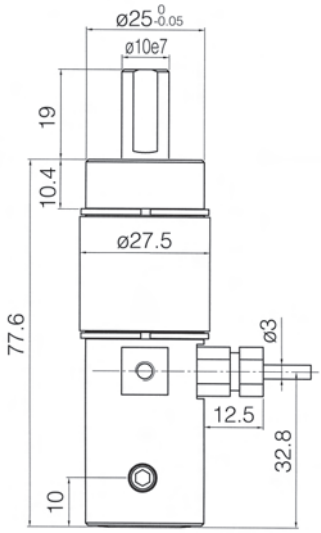
The sensor connecting cable must not be exposed to a tensile force!

Scale Drawings

Measuring ranges ≤ 0 ... 2 kN



Measuring ranges ≥ 0 ... 5 kN



Order Code

Load cell measuring range 0 ... 20 kN	**Model 8451-6020**

Option

different pin diameter and adaption drills	**on request**

Accessories

Mounting of connecting plug	**Model 99004**
Connecting plug, 9 pin, suitable for model 9310	**Model 9900-V209**
12 pin, suitable for model 9162, 9181 in desktop housing	**Model 9941**
Strain gauge simulator as supportive device to create strain gauge sensor signals to adjust amplifiers and indicators	**Model 9405**

Load-displacement monitoring instruments, evaluation devices or process monitoring instruments such as models 9162, 9181, DIGIFORCE¨ 9306 or 9310.

see section 9 of the catalog