Presses Load Cell
For hand and automatic operated presses

Model 8552
Model 8451

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

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

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

Low installation height with up to tenfold overload protection
Technical Data

Model 8552 - Standard version

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Measurement Range</th>
<th>Max. Overload [kN]</th>
</tr>
</thead>
<tbody>
<tr>
<td>8552-5100-V0000</td>
<td>0 ... 100 N</td>
<td>1</td>
</tr>
<tr>
<td>8552-5250-V0000</td>
<td>0 ... 250 N</td>
<td>2.5</td>
</tr>
<tr>
<td>8552-5500-V0000</td>
<td>0 ... 500 N</td>
<td>5</td>
</tr>
<tr>
<td>8552-6001-V0000</td>
<td>0 ... 1 kN</td>
<td>10</td>
</tr>
<tr>
<td>8552-6002-V0000</td>
<td>0 ... 2.5 kN</td>
<td>25</td>
</tr>
<tr>
<td>8552-6005-V0000</td>
<td>0 ... 5 kN</td>
<td>30</td>
</tr>
<tr>
<td>8552-6010-V0000</td>
<td>0 ... 10 kN</td>
<td>30</td>
</tr>
<tr>
<td>8552-6025-V0000</td>
<td>0 ... 25 kN</td>
<td>30</td>
</tr>
</tbody>
</table>

Standard version

The standard version of the 8552 sensor model has the following features:

- Fixing pin diameter 10 e7 (dimension A)
- Receiving hole diameter 10 H7 (dimension B)
- Cable length 1 m
- With nominal sensitivity and open cable end (no connector fitted)

Electrical values

- Bridge resistance: 350 Ω, nominal*
- Reference excitation voltage: max. 10 VDC
- Nominal sensitivity: 1.0 mV/V, nominal*
- Isolation resistance: > 10 MΩ

* Deviations from stated value are possible.

Environmental conditions

- Operation temperature range: 0 °C ... 70 °C
- Nominal temperature range: 0 °C ... 70 °C
- Influence of temperature on zero: 0.03 % F.S.
- Influence of temperature on sensitivity: 0.03 % F.S.

Mechanical values

- Measurement accuracy: 2 % F.S.
- Deflection: < 0.1 mm
- Maximum static operation load: 120 % of nominal load
- Overload protection: mechanical, refer to table
- Material:
  - measurement range ≤ 0 ... 1 kN: Sensor body made of high-grade anodized aluminum
  - measurement range ≥ 0 ... 2.5 kN: Sensor body made of stain less steel 1.4542

Electrical connection:

- shielded, 4 wire, TPE isolated cable, length 1 m, with open ends for soldering, outer diameter 4 mm
- Bending radius: > 30 mm
- Protection class: according to EN 60529 IP65
- Wiring code:
  - red: excitation voltage
  - black: excitation voltage
  - white: output signal
  - green: output signal
- Dimensions: refer to dimensional drawing
- General tolerance of dimensions: according to ISO 2768-f
- Clamping screws for tool pin: M6
- Weight: approx. 300 g

Options

Electrical

- With standardized sensitivity of 0.8 mV/V, achieved by inserting a circuit board populated with suitable resistors 30 cm before end of cable
- Available with different cable lengths

Mechanical

- Comes in range of pin/hole diameters, which are not necessarily identical: Ø 8 mm, Ø 10 mm, Ø 12 mm, Ø 15 mm, Ø 16 mm.
- The f7/H7 tolerance pair always applies to the pin and hole.
- Longer connecting cable available on request

The order code shows the option notations.

---

Order Code

Press load cell Model 8552-XXXX-V□□□□

Measuring range, refer to table

- Nominal sensitivity
- Mounted connector model 9900-V245
- for ForceMaster 9110
- Standardized sensitivity 0.8 mV/V

Diameter for pin

- 10 mm
- 8 mm
- 12 mm
- 15 mm
- 16 mm

Diameter for hole

- 10 mm
- 8 mm
- 12 mm
- 15 mm
- 16 mm

Accessories 8552

Mounting parts for fixing potentiometric displacement sensors from the 871x model range to the press head or the sensor body. The kit comprises mounting plate, bracket for clamping onto 8552 model load cells with 50 mm housing diameter, pivoting adapter for angle adjustment, all fixing screws, small parts and installation diagram.

Model 5501-Z004

(Picture see page 4 of the data sheet)

---

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

### Model 8451

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8451-5500</td>
<td>0 ... 0.5 kN</td>
<td>2.5</td>
<td>≤ 0.5</td>
<td>1.5</td>
<td>0.02</td>
<td>0.02</td>
<td>&gt; 2</td>
<td>500</td>
</tr>
<tr>
<td>8451-6001</td>
<td>0 ... 1 kN</td>
<td>5</td>
<td>≤ 0.5</td>
<td>1.5</td>
<td>0.02</td>
<td>0.02</td>
<td>&gt; 3</td>
<td>500</td>
</tr>
<tr>
<td>8451-6002</td>
<td>0 ... 2 kN</td>
<td>10</td>
<td>≤ 0.5</td>
<td>1.5</td>
<td>0.02</td>
<td>0.02</td>
<td>&gt; 5</td>
<td>500</td>
</tr>
<tr>
<td>8451-6005</td>
<td>0 ... 5 kN</td>
<td>30</td>
<td>≤ 1.5</td>
<td>0.35</td>
<td>0.1</td>
<td>0.1</td>
<td>&gt; 20</td>
<td>220</td>
</tr>
<tr>
<td>8451-6010</td>
<td>0 ... 10 kN</td>
<td>30</td>
<td>≤ 1.5</td>
<td>0.7</td>
<td>0.05</td>
<td>0.05</td>
<td>&gt; 20</td>
<td>220</td>
</tr>
<tr>
<td>8451-6020</td>
<td>0 ... 20 kN</td>
<td>30</td>
<td>≤ 0.75</td>
<td>1.5</td>
<td>0.03</td>
<td>0.03</td>
<td>&gt; 20</td>
<td>220</td>
</tr>
<tr>
<td>8451-6050</td>
<td>0 ... 50 kN</td>
<td>75</td>
<td>≤ 0.5</td>
<td>0.9</td>
<td>0.03</td>
<td>0.03</td>
<td>&gt; 20</td>
<td>900</td>
</tr>
<tr>
<td>8451-6100</td>
<td>0 ... 100 kN</td>
<td>150</td>
<td>≤ 1.0</td>
<td>1.0</td>
<td>0.03</td>
<td>0.03</td>
<td>&gt; 20</td>
<td>900</td>
</tr>
</tbody>
</table>

### 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 9900-5005
- 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

### 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
Mounting Instruction

The cylindrically shaped body of the load cell has to be mounted until it’s 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 (≥ 0 ... 50 kN). The sensor cable must not be exposed to tensile or buckling stress. Because of this, install the cable with enough space.

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

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