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**

8552 EN

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

burster praezisionsmesstechnik gmbh & co kg Germany
Talstr. 1-5 · Gernsbach 76593 · Phone +49-7224-6450
www.burster.com
info@burster.com

Technical Data

Model 8552 - Standard version

Order Code	Measurement Range	Max. Overload [kN]
8552-5100-V0000	0 ... 100 N	1
8552-5250-V0000	0 ... 250 N	2,5
8552-5500-V0000	0 ... 500 N	5
8552-6001-V0000	0 ... 1 kN	10
8552-6002-V0000	0 ... 2.5 kN	25
8552-6005-V0000	0 ... 5 kN	30
8552-6010-V0000	0 ... 10 kN	30
8552-6025-V0000	0 ... 25 kN	30

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

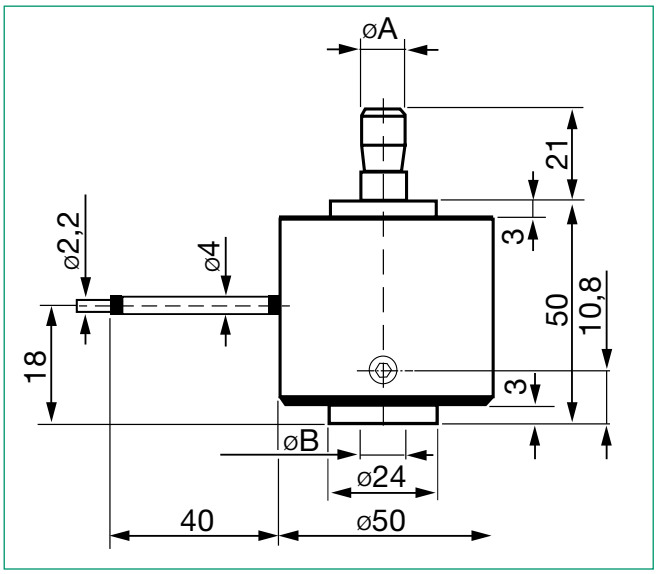
Bending radius:		> 30 mm
Protection class:	according to EN 60529	IP65

Wiring code:

red	excitation voltage	positive
black	excitation voltage	negative
white	output signal	positve
green	output signal	negative

Dimensions:	refer to dimensional drawing
General tolerance of dimensions:	according to ISO 2768-f
Clamping screws for tool pin:	M6
Weight:	approx. 300 g

Dimensional drawing model 8552



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.

Order Code

Press load cell **Model 8552-XXXX-V□□□0**

Measuring range, refer to table

Nominal sensitivity		0
Mounted connector model 9900-V245 for ForceMaster 9110		1
Standardized sensitivity 0.8 mV/V		2
Diameter for pin	10 mm	0
Diameter for pin	8 mm	1
Diameter for pin	12 mm	2
Diameter for pin	15 mm	3
Diameter for pin	16 mm	4
Diameter for hole	10 mm	0
Diameter for hole	8 mm	1
Diameter for hole	12 mm	2
Diameter for hole	15 mm	3
Diameter for hole	16 mm	4

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)

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.

burster praezisionsmesstechnik gmbh & co kg Germany
Talstr. 1-5 · Gernsbach 76593 · Phone +49-7224-6450
www.burster.com
info@burster.com

2478-008552EN-5170-111527

Technical Data — Model 8451

Order Code	Measurement Range	Max. Overload [kN]	Measuring Range [%F.S.]	Nominal Characteristic [mV/V]	Influence of Temperature on Zero Signal [%F.S./K]	Influence of Temperature on Characteristic [%Rdg./K]	Resonance Frequency [kHz]	Weight [g]
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	positve
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 8451-Z001**
Measuring range ≥ 0 ... 50 kN **Model 8451-Z002**

Options

Electrical

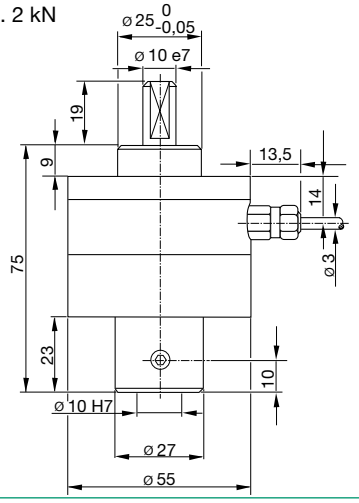
- Connector plug programmed with sensor data for automatic identification and operation by the ForceMaster 9110 analysis system. May only be suitable with the standardized sensitivity option **Model 9900-V245**
- Programming and fitting of plug 9900-V245 to the sensor connecting cable **Model 99005**
- 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

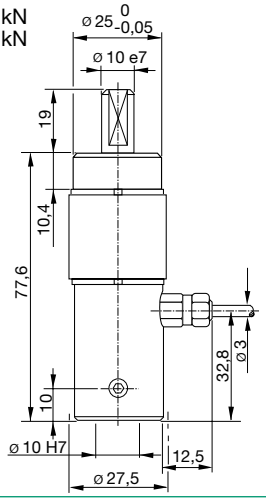
- For measurement ranges ≤ 0 ... 2 kN, special version fitted with ball guide for zero radial backlash **...-V301**

Dimensional drawing model 8451

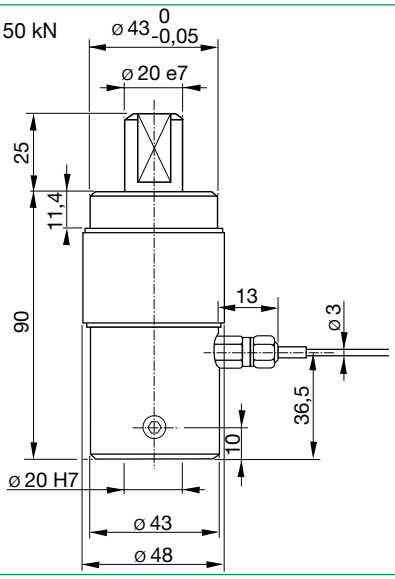
Measuring range ≤ 0 ... 2 kN



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



Measuring range ≥ 0 ... 50 kN



8552 EN

burster praezisionsmesstechnik gmbh & co kg Germany
Talstr. 1-5 · Gernsbach 76593 · Phone +49-7224-6450
www.burster.com
info@burster.com

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

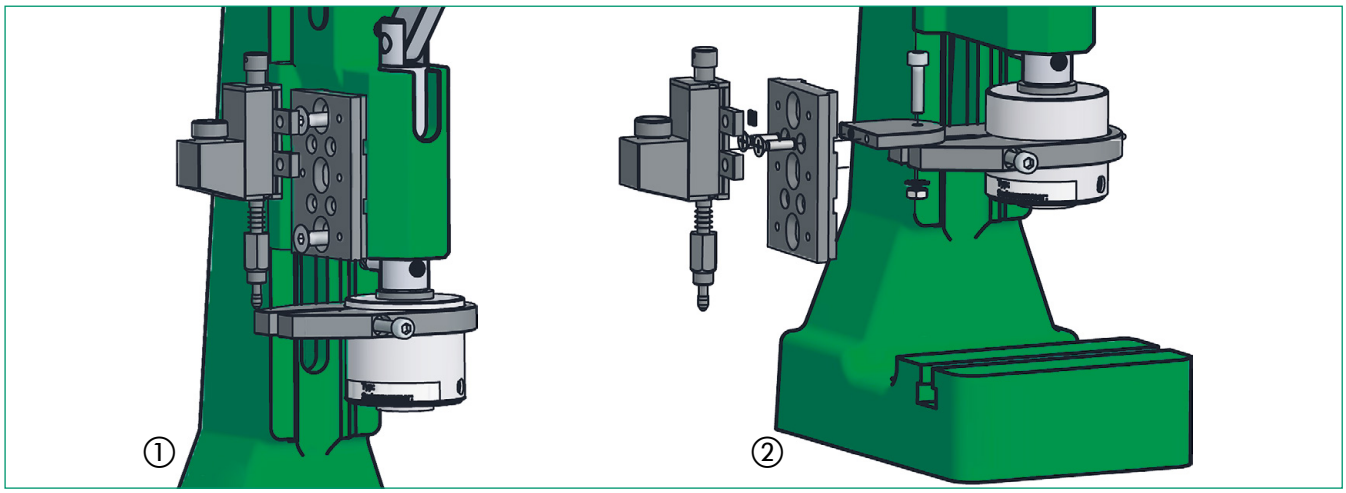
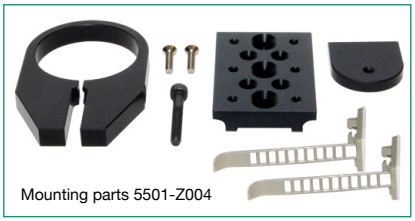


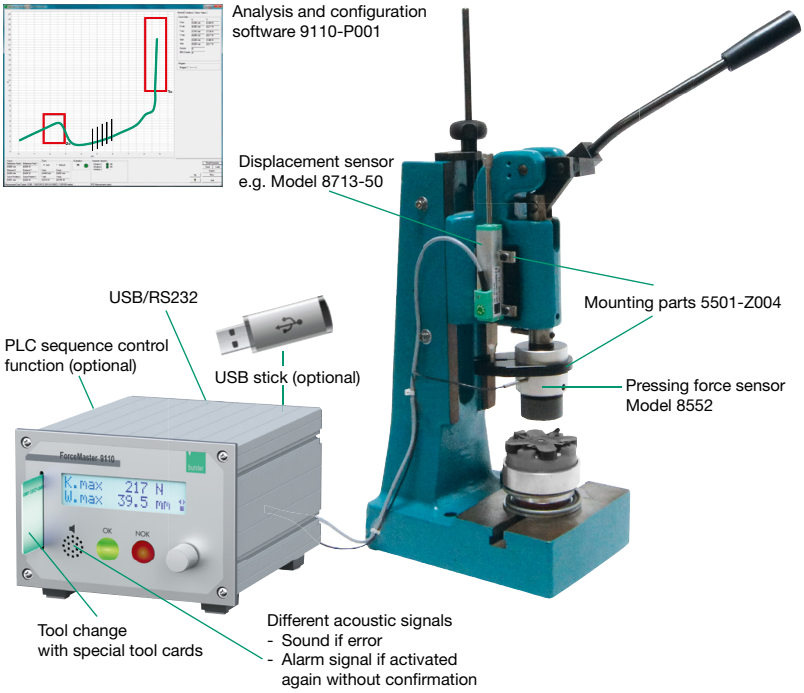
Figure 1: The displacement sensor is mounted on the press head. Its push rod rests on the bracket that is clamped onto the load cell.

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





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.

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**