

Pressure Cells

for tangential (Type B) and radial stresses (Type F) in shotcrete



The electrical pressure cells, Type B and F, are used to measure compressive stresses in concrete structures. They are mainly applied in tunnel construction using the New Austrian Tunneling Method (NATM) as well as in segmental linings (tubing segments). Additional applications include concrete retaining walls, formwork elements, and inspection galleries in dam construction. These pressure cells are based on a measurement system patented in 1957 by the founder of GLÖTZL. The system essentially consists of a flat cushion filled with hydraulic fluid. When a load is applied to the cell, the internal hydraulic pressure increases accordingly. Instead of the originally developed valve technology, pressure is measured using an electrical sensor. This sensor produces an output signal proportional to the applied load, available in mV (Type AU), mA (Type AI), or frequency (Type VW).

CONCRETE PRESSURE CELL (TYPE B)
for measuring tangential stresses or compressive stresses in concrete



Pressure pad dimensions 10/20 cm

Accessories

- 4 eyelets at the corners of the pressure cell (**Z4**)
- 4 Screw tabs at the corners of the pressure pad (**S4**)
- Repressurizing tube (**N**)
- Plastic around the edge of the pressure pad to prevent stress concentrations (**KR**)
- Plastic on one side over the pressure pad and around the edge for one-sided embedding in concrete (**KE**)
- Available as a special version made of rust and acid-resistant steel (**VA**) for installation in aggressive media

Measurements with

- Battery-operated handheld readout unit
- Amplifier for remote transmission
- Terminal box
- Data acquisition system / data logger
- Digital controller* and multiplexer

*not available for sensor type VW

JOINT PRESSURE CELL (TYPE F)
for radial or contact stresses



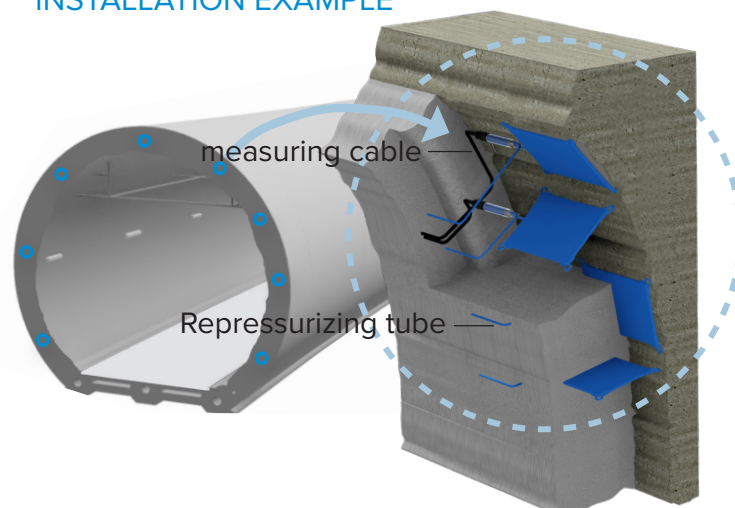
Pressure pad dimensions 15/25 cm

Pressure cell dimensions for Type B and Type F

Ø 12 cm, Ø 17 cm, 7/14 cm, 10/20 cm, 15/25 cm*

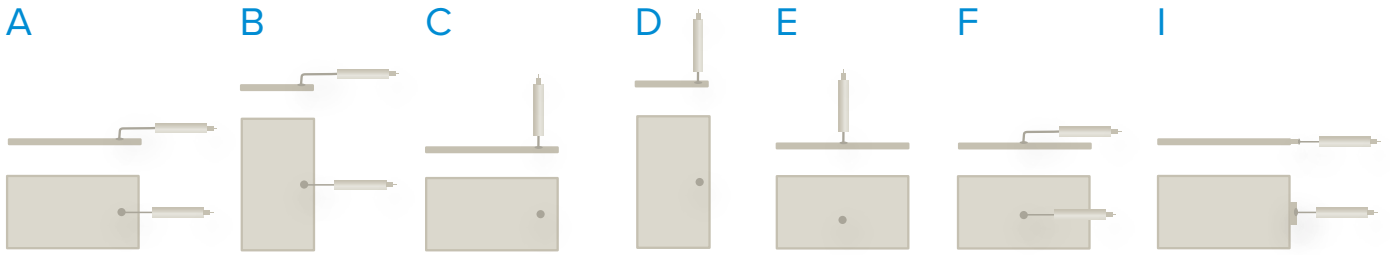
*Other pressure cell dimensions available on request

INSTALLATION EXAMPLE



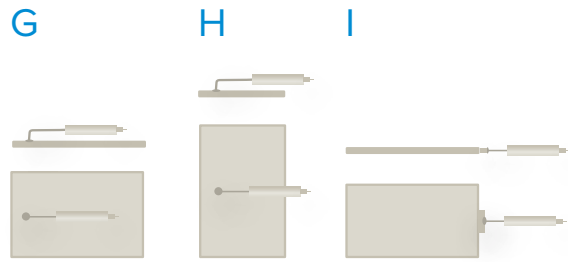
CONFIGURATIONS A TO F AND I

for pressure cells with Ø 12 cm, Ø 17 cm, 7/14 cm, 10/20 cm, 15/25 cm






CONFIGURATIONS G, H AND I

for pressure cells with 20/30 cm, 40/40 cm und larger



SENSOR-SPECIFIC DATA

Sensor types	 AU Pressure Sensor piezoresistive, 4-wire system	 AI Pressure Sensor piezoresistive, 2-wire system	 VW Pressure Sensor vibrating wire system
Supply	1 mA	15–30 V	VW excitation (pulse, sweep)
Output signal	0–250 mV	4–20 mA	2–3,3 kHz
Standard measuring ranges	2 / 5 / 10 / 20 / 50 / 100 / 200 / 400 bar	2 / 5 / 10 / 20 / 50 / 100 / 200 / 400 bar	3.5 / 5 / 7 / 10 / 20 / 35 / 70 / 100 / 200 / 350 bar
Over range	50 % FS	50 % FS	50 % FS
Resolution	± 0.01 % FS	± 0,01 % FS	± 0.01 % FS
Accuracy (laboratory)	± 0,25 % FS	± 0.25 % FS	± 0,25 % FS
Linearity	< 0.5 % v. E.	< 0.5 % v. E.	< 0.5 % v. E.
Temperature range	–40 °C to +80 °C (125 °C with HT cable)	–40 °C to +80 °C (125 °C with HT cable)	–20 °C to +80 °C
Thermal zero shift	≤ 0.06 % FS/K	≤ 0.06 % FS/K	≤ 0.06 % FS/K
Temperature sensor	Thermistor (optional)	Thermistor (optional)	Thermistor (standard)
Maximum cable length	1000 m	2000 m	2500 m