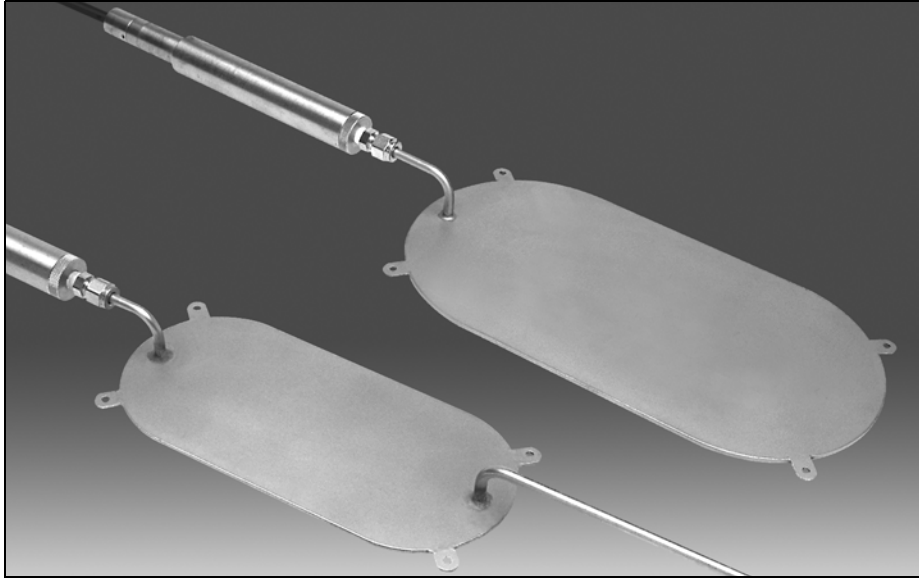


# VW Radial & Tangential Pressure Cells



Tangential (left) and Radial Total Pressure Cells

## Advantages

**Superior Construction:** Cells are made from two oval stainless steel plates. The edges of the sensitive top plate are turned over the base plate and laser welded to form a sealed cavity, which is later filled with de-aired oil. This construction minimizes tangential stiffness and prevents stiff weld joints and sharp edges.

**Small Height to Width Ratio:** The small height to width ratio of the cell provides superior performance, even in stiff media such as concrete.

**VW Sensor:** The VW pressure sensor eliminates hydraulic lines and provides consistent readings in harsh environments.

## Manual or Automatic Readout:

The VW transducer can be read manually with a vibrating wire readout or automatically with a data logger.

## Applications

These total pressure cells from Interfels are designed to monitor radial or tangential stress in tunnel linings.

## Operation

Total pressure acting on the sensitive surface of the cell is transmitted to the oil inside the cell and measured by a VW pressure transducer.

A vibrating wire readout or data logger excites the transducer and stores a reading in Hz. Calibration factors are applied to the reading to arrive at a pressure in bar or psi.

## Shotcrete Installation

Radial cells are placed at the interface between the excavated ground surface and the shotcrete lining.

Tangential cells are attached to the reinforcing cage or to some other support so they will be embedded in the shotcrete lining.

After the cells are tied into place, shotcreting takes place.

After the shotcrete cures, tangential cells are pressurized by crimping the cell's pressurization tube, which forces oil from the tube into the cell. The influx of oil causes the cell to inflate, forcing the sensitive side of the cell into contact with the surrounding shotcrete material.

## Precast Installation

Cells can be cast directly into lining segments at the casting yard.

**RADIAL PRESSURE CELL**

- 3.5 bar / 50 psi Cell . . . . .52608260
- 7 bar / 100 psi Cell . . . . .52608262
- 17 bar / 250 psi Cell . . . . .52608264
- 35 bar / 500 psi Cell . . . . .52608266
- 70 bar / 1,000 psi Cell . . . . .52608268

Radial pressure cell includes VW pressure transducer with thermistor or RTD. Transducer is attached to pressure cell. Requires signal cable.

**Transducer/Readout Resolution:** 0.025% FS.

**Repeatability:** ±0.5% FS.

**Max pressure:** 150% rated range.

**Dimensions:** Cell has effective area of 375 cm<sup>2</sup> (58 inch<sup>2</sup>) and measures 283 x 151 x 3.5 mm (11 x 5.9 x 0.14").

**TANGENTIAL PRESSURE CELL**

- 200 bar / 3,000 psi Cell . . . . . 52608270

Tangential pressure cell includes VW transducer with thermistor or RTD. Transducer is attached to the pressure cell. Requires signal cable.

**Transducer/Readout Resolution:** 0.025% FS.

**Repeatability:** ±0.5% FS.

**Max pressure:** 150% rated range.

**Dimensions:** Cell body has an effective area of 200 cm<sup>2</sup> (31 inch<sup>2</sup>) and measures 222.5 x 101 x 3.5 mm (8.75 x 4.0 x 0.14"). Re-pressurization tube is 0.4 m (15.7") long.

**ACCESSORY**

- Repressurizing Pliers . . . . . 52608275

Used with tangential total pressure cell to crimp the repressurization tube.

**Signal Cable**

- Signal Cable . . . . .50613524

Four 22-gauge tinned-copper conductors, shielded, with polyurethane jacket. Does not include connector.

- Universal Connector . . . . .57705001

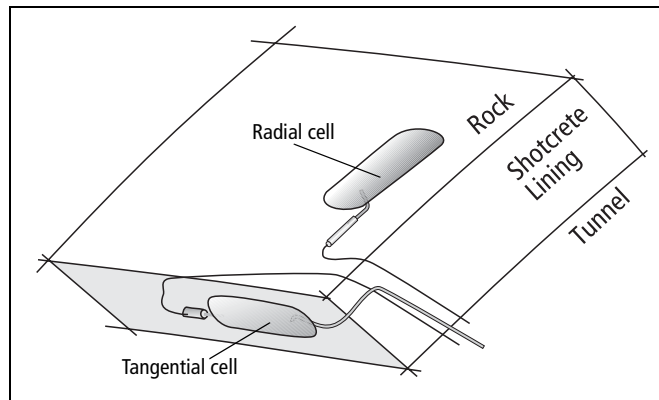
- Terminal Box . . . . .57711600

Provides connections for 12 sensors and an indicator. Sensors selected by rotary switch. Weatherproof fiberglass box measures 290 x 345 x 135 mm (11.5 x 13.5 x 5.25").

**READOUTS AND DATA LOGGERS**

Compatible readouts include the VW Data Recorder and other pluck-type VW readers. See separate data sheets for features and specifications.

Compatible data loggers include the Campbell Scientific CR10X with VW interface and an AM16/32 multiplexer. The multiplexer can accommodate 16 transducers with temperature readings or 32 transducers without temperature readings. See separate data sheet for details.



Section View of Tunnel Lining Showing Placement of Cells