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# TOTAL PRESSURE CELL

Model TPC

## APPLICATIONS

Total pressure cells are used to measure the total pressure of soil and pore-water acting in the soil mass or structure, for example:

- Embankment dams, to determine magnitude and direction of stresses
- Retaining structures, to determine active and passive earth pressures
- Hydraulically placed fill, to determine densification
- Concrete dams, to measure contact pressure in the foundation and abutments
- Tunnels, to determine stresses on and in tunnel linings

## DESCRIPTION

The TPC cells consist of a sealed distribution pad, composed of two plates welded together around the periphery and filled with de-aired oil. The pad is connected via a length of steel tube to a pressure transducer. Variations in oil pressure resulting from load changes acting on the pad are sensed by the transducer.

The TPC is fitted with a circular or rectangular pad, the latter being designed for measurement of tangential and radial stresses in shotcrete tunnel linings. The stiffness of the TPC is high, enabling its embedment in soil or in concrete. A groove on both sides of the pad increases its flexibility while reducing sensitivity to stress in directions other than normal to the pad face. The concrete stress cell may be fitted with a repressurization tube to restore contact between the pad and the concrete after curing of the latter.

The TPC is fitted with eyelets, to simplify installation, and with a built-in thermistor allowing temperature reading.



## FEATURES

- Long-term reliability
- High pressure range
- Different types of transducers available: vibrating wire, electrical 4–20 mA, pneumatic and fiber optic
- Rugged stainless steel construction for harsh environments
- Compliant with ISRM suggested method
- Built-in electrical surge protection
- Triple water block (watertight connector, resin seal and feed through header)
- Frequency signal easy to process and transmit over long distances

## SPECIFICATIONS

Range of vibrating wire transducer	200, 350, 500, 750, 1000, 1500, 2000, 3000, 5000, 7000 kPa
Overload	1.5 × F.S.
Construction	Pad with semi-rigid surface and peripheral grooves
Material	Stainless steel
Dimensions of distribution pad	
Thickness	6.3 mm
Circular cell diameter <sup>1</sup>	230 mm
Rectangular cell <sup>1</sup>	100 × 200 mm, 150 × 250 mm, 200 × 300 mm

PRESSURE TRANSDUCER	VIBRATING WIRE	PNEUMATIC	ELECTRICAL 4–20 mA	FIBER OPTIC
Pressure range <sup>2</sup>	0–7000 kPa	0–3500 kPa	0–20 000 kPa	0–7000 kPa
Accuracy <sup>3</sup>	±0.5% F.S.	±0.25% F.S.	±0.5% F.S.	±0.25% F.S.
Resolution	0.025% F.S. (min.)	Depends on pressure gauge	0.01% F.S.	0.025% F.S.
Thermistor 3kΩ <sup>4</sup>	Included	—	Optional	—
Electrical surge protection	Included	—	Included	—
Readout unit	MB-6T(L)	PR-20(D)	4–20 mA	FTI-10, UMI
Data acquisition system	SENSLOG	SENSLOG	SENSLOG	DMI, BUS
Cable	IRC-41A, IRC-390, CFO-9RF, CFO-4RF			

<sup>1</sup> Other dimensions available upon request.

<sup>2</sup> Other ranges available.

<sup>3</sup> Calibrated accuracy of the pressure transducer.

<sup>4</sup> See model TH-T.

## ORDERING INFORMATION

Please specify:

- Model and pressure range
- Type of pressure transducer
- Length of electrical cable or tubing
- Length of repressurization tube (1.2 m standard)
- Readout instruments