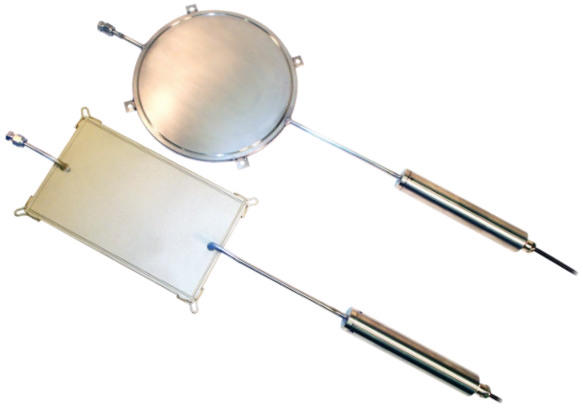
TPC - Total Pressure Cell

Pressure Cell



HIGH PRESSURE RANGE
VW, ELECTRICAL, PNEUMATIC, OR FIBER OPTIC
EASY INSTALLATION & OPERATION

The rugged stainless steel construction of the TPC makes it ideal to measure stress and pressure in harsh environments.

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.

Total pressure cells are sensitive to surrounding soil properties, and to temperature changes. The magnitude of the temperature effect depends on the degree of confinement of the cells, and is difficult to correct for.

Key Features

- Long-term reliability
- High pressure range
- Different types of transducers available: vibrating wire (vw), electrical (4-20mA, 0-5Vdc), pneumatic, and fiber optic
- Rugged stainless steel construction
- Easy installation and operation
- Compliant with ISRM suggested method
- Built-in electrical surge protection (vw)

Applications

- 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

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Specifications

Range of vibrating wire transducer	200, 350, 500, 750, 1000, 1500, 2000, 3000, 5000, 7000, 10 000, 20 000, 35 000 kPa			
Overload	1.5 x 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[1]	230 mm			
Rectangular cell[1]	100 x 200 mm, 150 x 250 mm, 200 x 300 mm			
PRESSURE TRANSDUCER	**VIBRATING WIRE**	**PNEUMATIC**	**ELECTRICAL**	**FIBER OPTIC**
Pressure range	0-35 000 kPa	0-3500 kPa	0-20 000 kPa	0-20 000 kPa
Accuracy[2]	±0.5% F.S.	±0.25% F.S.	±0.25% F.S.	±0.25% F.S.
Resolution	0.025% F.S. (min)	Depends on	0.01% F.S.	0.01% F.S.
Thermistor 3kΩ[3] (t° range: -20 to 80°C)	Included	—	Optional	—
Electrical surge protection	Included	—	—	—
Readout unit	MB-3TL	PR-20D	—	FOR-1, UMI
Data acquisition system	SENSLOG	SENSLOG	SENSLOG	FODL
Cable	IRC-41A, IRC-390	—	IRC-41A, IRC-390	CFO-9RF, CFO-3STD

1 Other dimensions available upon request.

2 Calibrated accuracy of the pressure transducer. (+/- 0.1% F.S. with polynomial regression for vibrating wire)

3 See model TH-T.

Ordering information

Please specify:

- Model and pressure range
- Type of pressure transducer
- Length of electrical cable or tubing

Optional Accessories

- Length of repressurization tube (1.2 m
- Readout instruments

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