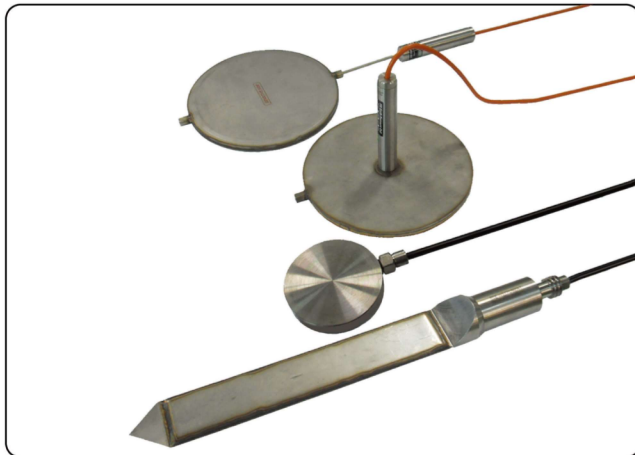


## VW earth pressure cells



### Description

**Model 1910, 1920 VW earth pressure cells** consist of  $\varnothing$  230mm two circular stainless steel plates welded together their periphery and spaced apart by a narrow cavity filled with de-aired ethylene glycol. Out diameter of model 1911 & 1921 is  $\varnothing$  150mm

The stainless steel tubing for high-pressure on the end of cell was attached to the pressure sensor.

The cell is installed with its sensitive surface in direct contact with the soil. External pressure acting on that surface is balanced by an equal pressure induced in the internal fluid.

This pressure is converted by the pressure transducer into a frequency signal to the readout.

Correct record is provided by sensors, and sensors are operated automatically, within water pressure chamber, it is individually inspected, so confidence is guaranteed.

The pressure transducer is equipped with a temperature device for compensating for temperature variations.

### Features

- Stability and reliability in extreme environment
- Not affected by cable length and resistance change, Reproducibility and repeatability are very excellence
- Possible to automatic measurement

### Applications

The VW earth pressure cells are used to verify design assumption and excess pressure on the structures. They also measure the combined pressure of effective stress and total pressure.

- Collection data to determine the distribution of, orientation of magnitude of total stress
- Measurement of the contact pressure on and foundations
- Measurement of total pressure on the structures during heave
- Checking of density of fills in dams

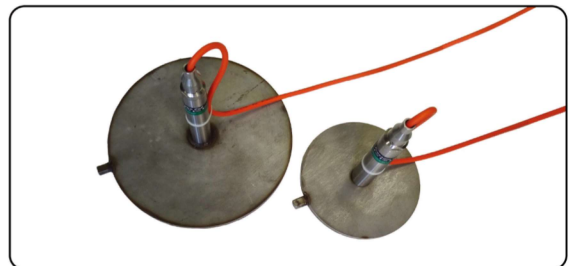
#### [Model 1910 & 1911 standard pressure cell]

The model 1910 & 1911 are used to measure total pressure on the embankments, buildings, sheet piles and abutment of bridges. In fill in embankments and dams, cells are often installed in arrays of three up to five.



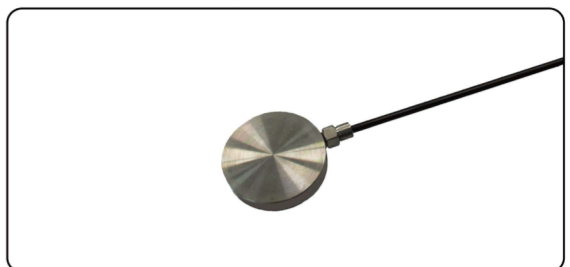
#### [Model 1920 & 1921 jack out pressure cell]

The model 1920 & 1921 are designed to measure total pressure on retaining walls and slurry walls. It must be use with a hydraulic jack, a bearing plate and a reaction plate.



#### [Model 1930 strain gage type pressure cell]

The model 1930 is attached with VW strain gage inside of cell, is useful for tunnel lining or experiment of model at a low price.



#### [Model 1940 push-in type pressure cell]

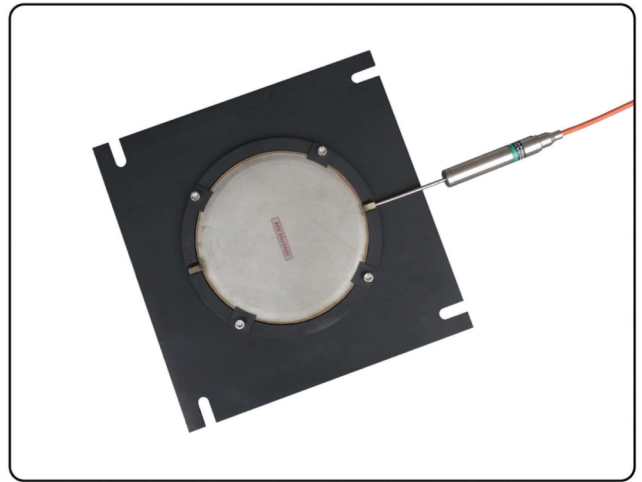
The model 1940 is designed as push-in type, and can be measured the earth pressure of soil or soft ground.



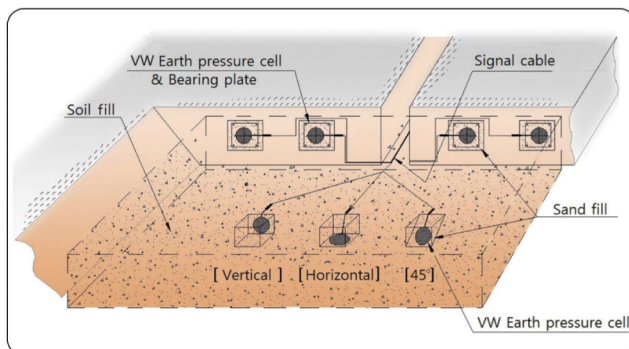
## VW earth pressure cells



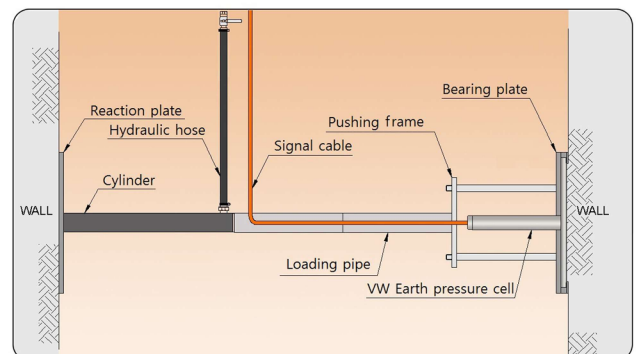
[Hydraulic jack system for jack out cell]



[Attach the bearing plate before installation]



[Installation of pressure cell]



[Installation of jack out type VW earth pressure cell]

## VW earth pressure cells

### Specification

Model	1910	1911	1920	1921	1940	1930
	Standard		Jack out		Push-in	VW strain gage
Sensor element	Vibrating wire sensor					
Range	2~70kg/cm <sup>2</sup>					20kg/cm <sup>2</sup>
Resolution	0.025% FSR					
Accuracy	±0.1% FSR					±0.5% FSR
Nonlinearity	±0.5% FSR					±1.0% FSR
Over range capacity	150% FSR					
Thermal zero shift	Less than 0.05% FSR /°C					
Operating temperature	-40~80°C					
Built-in temperature device	Thermistor (3k $\Omega$ )					
Temperature device accuracy	±0.5°C					
Temperature device range	-40~105°C					
Water proof	300m H <sub>2</sub> O					
Liquid	Ethylene glycol					-
Dimensions (mm)	Ø230×550(L)	Ø150	Ø230×182(H)	Ø150	Ø50×500(L)	Ø114×26(H)
Materials	Stainless steel, high grade epoxy resin potting				Stainless steel	
Weight	4kg	3kg	4kg	3kg	3.1kg	2kg
Signal cable	Ø6.4mm, 0.37mm <sup>2</sup> ×4C shielded PU sheath cable					

(Note) the accuracy of model 1930 is 10<sup>3</sup> Hz<sup>2</sup> mode, it is a value in adjusting.

### The readout

It is connected to the system such as the VW readout units, data loggers to be data logging and data acquisition system to monitor readings. It is compatible with other company's readout unit.

- ACE-800 (VW readout)
- ACE-1000 (VW data recorder)
- ACE-1100 series (VW mini logger)
- ADL-16V (VW data logger)
- ADL-200A (Smart logger)
- VL Module (Smart LoRa system)

### Recommendation

For the precision measurement, must be put with epoxy to fill gaps between cells and bearing plates and bearing plates and steel members.

### Ordering information

- Application field
- Range
- Cable length
- Keeping VW readout unit
- Pressure expected by design
- Specially ordered goods that is not in catalog is possible to manufacture to 200kg/cm<sup>2</sup> and size of Ø500 or 500×500mm.

### Ancillary equipments

- Universal terminal box (model 7012/7024)
- Heavy duty cable
- Reaction plate for jack out type
- Bearing plate for jack out type (round shape)
- Bearing plate for standard type (round or square shape)
- Water pressure jack kit for jack out type