

## VW borehole rock stressmeters



### Description

Model 1338 **VW borehole stressmeter** is a sensor for automatic measuring and is substituted for the portable GOODMAN JACK. It can be applied to the holes of  $\varnothing 38\text{mm}$  EX size and  $\varnothing 60\text{mm}$  BX size and  $\varnothing 75\text{mm}$  NX size and VW borehole rock stressmeters are classified into two types for hard rock and soft rock.

VW borehole stressmeter consists of round shape sensing part, wedge sensing the stress and platen for initial setting. It can be installed in the precisely boreholes by using manual setting tools.

In the VW borehole rock stressmeters structured in the form of center hall, wedge sensing the scale of the impacted force transmits it to the sensor, and magnetic coil and vibrating wire are built-in.

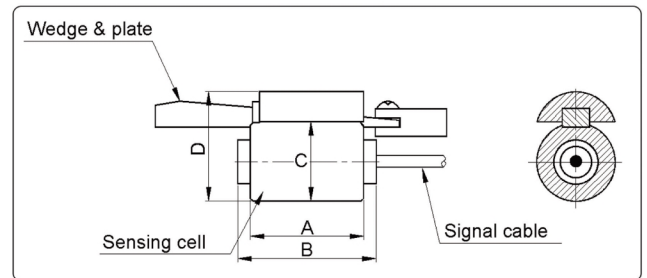
If there is any change in tension of vibrating wire caused by the changed scale of load, it shall be magnetized by the magnetic coil and generates the resonant frequency to be transmitted to the readout unit and recorded in the form of the necessary engineering unit.

The VW borehole rock stressmeter are designed for waterproof and rustproof is equipped with a temperature device for compensating for temperature variations in the transducers.

### Dimensions

(Unit : mm)

Model	A	B	C	D
1338EX	41	48	$\varnothing 28.6$	37
1338BX	64	76	$\varnothing 48$	58
1338NX	76	82	$\varnothing 64$	74



[Dimensions]

### Applications

The model 1338 VW borehole stressmeter is designed to enable to measure the stress impacted on the elastic rocks upon working in the tunnel or mines, it may easily measure the scale of stress and processing tendency.

### Features

- Not affected by cable length and resistance change, reproducibility are very excellence
- Direct measurement of stress change in solids
- Choose material with minimized temperature coefficient
- Possible to automatic measurement

### Theory of calculation

**Stress ( $\sigma$ ) =  $\epsilon$  (strain)  $\times$  E (elastic modulus)**

E (elastic modulus) must be calculated by test specimen picking of rock.

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### Specification

Model	1338EX	1338BX	1338NX
Borehole diameter	Ø37~Ø39mm	Ø58~Ø61mm	Ø74~Ø77mm
Sensor element	Vibrating wire sensor		
Range	Compression	700kg/cm <sup>2</sup> (70MPa)	
	Tension	30kg/cm <sup>2</sup> (3MPa)	
Resolution	0.014~0.07kg/cm <sup>2</sup> (14~70 kPa)		
Accuracy	±0.1% FSR		
Nonlinearity	±0.5% FSR		
Thermal zero shift	Less than 11×10 <sup>-6</sup> /°C		
Operating temperature	-40~80°C		
Built-in temperature device	Thermistor (3kΩ)		
Temperature device range	-40~105°C		
Temperature device accuracy	±0.5°C		
Maximum borehole depth	30 m		
Waterproof	105m H <sub>2</sub> O		
Material	Stainless steel		
Weight	0.5kg	1.0kg	1.5kg
Signal cable	Ø4.5mm, 0.24mm <sup>2</sup> ×4C shielded PVC sheath cable		

(Note) The resolution depends on rock modulus.

### 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.

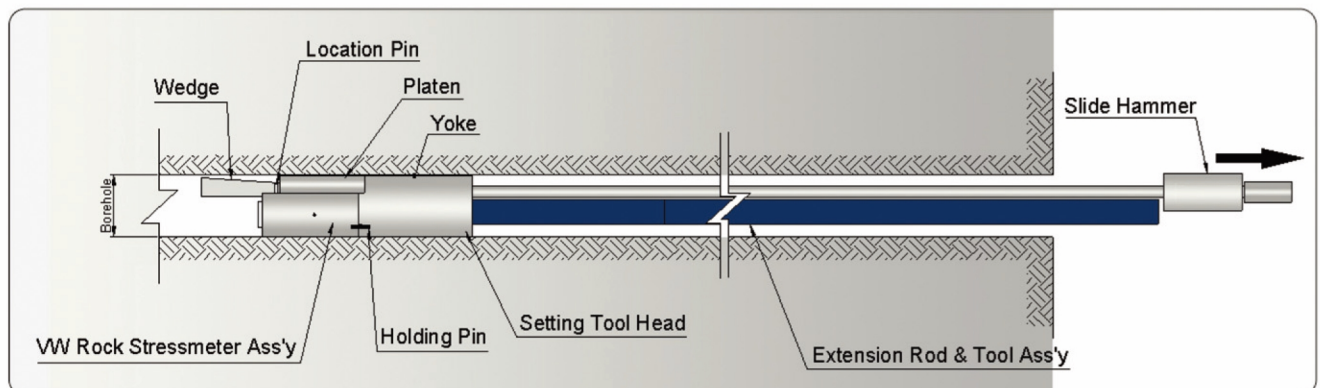
- ACE-800 (VW readout)
- ACE-1000 (VW data recorder)
- ACE-1100 series (VW mini logger)
- ADL-16V (VW data logger)
- ADL-200A (Smart logger)

### Ordering information

- Application field (hard or soft rock)
- Installation depth
- Dimension of the borehole
- Cable length
- Manual or hydraulic setting tool

### Ancillary equipments

- Universal terminal box (model 7012/7024)
- Portable setting tool (1338 tool)



[Installation of VW Borehole stressmeter]