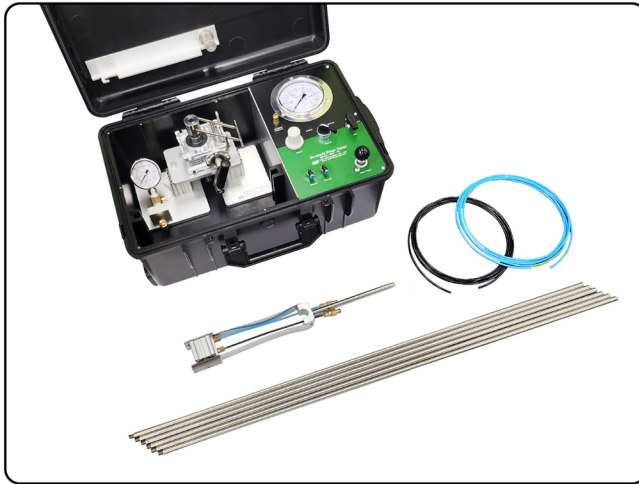


Borehole shear tester



Description

Borehole shear tester inserts the head of the expanding type shear tester up to the desired depth into the borehole and loads pressure on one side of the borehole wall by pressurizing shear plate. The pressurized shear plate consolidates the contacted ground, and it takes time to completely drain the water.

The pressurized shear tester head measures shearing force by slowly pulling out from the ground through connected extension rod. At this time, pullout force (shearing pressure) is measured by pressure gauge, and maximum pullout force and vertical pressure by the expansion of the shear tester head are recorded.

A series of the testing process measures the shear strength of the ground by measuring the maximum pullout force per each stage, increasing the vertical pressure working vertically to the wall of the hole at the measuring place without replacing and re-setting the shear tester in the borehole.

By recording the vertical pressure on X-axis and shearing force on Y-axis, the stress envelop are made as a graph. At this time, the gradient of the stress envelop becomes internal frictional angle, and Y intercept value becomes adhesive power.

After completing the test, remove the pressure, contract the shear tested head and get it back.

Borehole shear testing can be measured at the different depths in the borehole. Usually the test begins from the top and continues up to the depth where the borehole is not disturbed. In some cases, the measurement is made with the shear tester head rotated by 90 degree at the same depth.

Applications

- Estimating adhesion power and internal friction angle for the original ground by measuring the shear resistance inside of the borehole.

Features

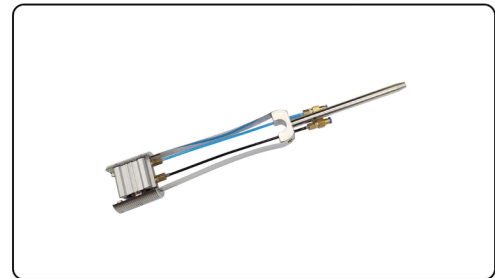
- Borehole shear testing can measure the shear strength of the ground in a short time, separating the internal friction angle and adhesion power.
- Thanks to its small size and light weight, one person can perform the test at the site.
- The test can be made at different places in one borehole.
- It can be used for the ground for which the data cannot be easily obtained by laboratory testing as the sample is disturbed or the core recovery is difficult.

Components

Borehole shear tester model BST-75 is composed of following components.

[Testing head]

It generates vertical pressure and pullout force, contacted tightly to the wall of the borehole.



[Pulling assembly]

It generates pullout force and makes measurement by fixing the extension rod connected to the testing head and pulling it out by turning the handle.



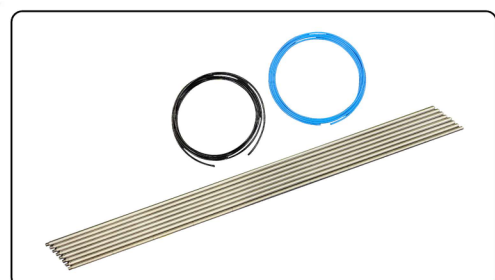
[Readout unit]

It makes measurement by loading pneumatic pressure with hand pump or foot pump to testing head and generating vertical pressure.



[Extension rod & air hose]

They are the standard components to generate vertical pressure and pullout force depending on the measurement depth.



Borehole shear tester

Specification

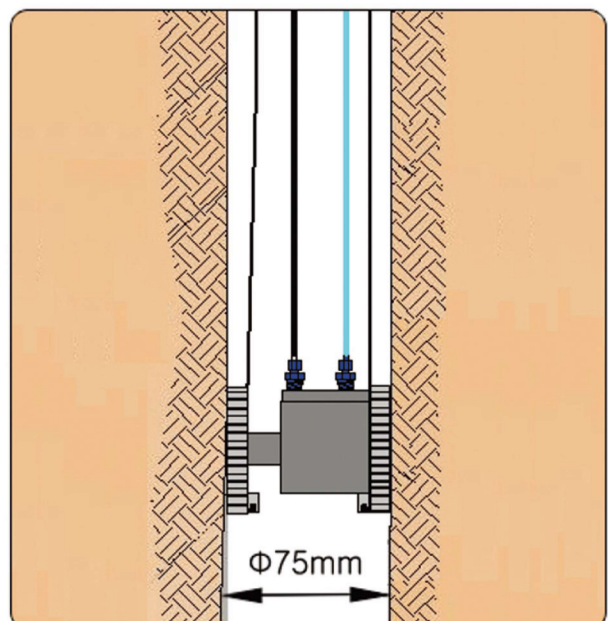
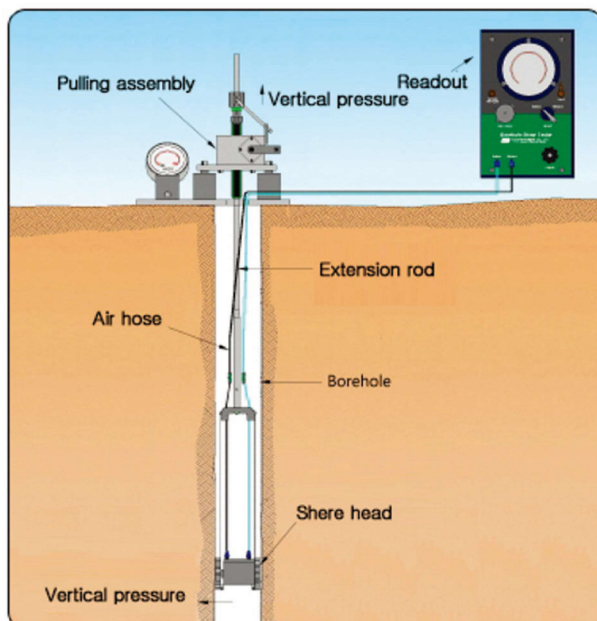
Model		BST-75	
Readout unit	Horizontal pressure device	Range	1.0 MPa
		Resolution	0.02 MPa
		Pressure device	Hand pump, foot pump (Optional : DC air compressor)
	Vertical pressure device	Range	0.6 MPa
		Resolution	0.02 MPa
		Pressure device	Pullout pressure of rod throughout reducer
		Min. pullout	0.034mm / 1circle
Testing head	Dimensions	Ø70 x 52mm	
	Max. pressure	1.0 MPa	
	Hose	Working pressure : 2 MPa (extension : black, contraction : blue) Ø4mm one touch fitting	
	Material	Stainless steel, aluminum	
	Case	ABS case, test head set bag	
Accessories	Extension rod	Ø10X1000mm stainless still rod (STD : 20m)	
	Air hose	Ø4mm working pressure : 2 MPa STD length : 2 wires (each 20m)	
	Foot pump	1.0 MPa	

[DC air compressor]



The optional 3L electric air compressor and regulator for DC 12V, which is an alternative to the hand pump and foot pump, makes it very convenient to apply pressure to the shear tester head through regulator adjustment.

For stable testing in the field, we recommend the use of DC12V batteries with larger capacities, such as automotive batteries (over 50A).



[Installation diagram of BST]