



downhole equipment

depths up to 100 m

source



Sledge Hammer | Surface Source

receiver



BGK3/7 | Borehole Geophone

receiver



DDS | Dual Downhole System

description

The sledge hammer is used to generate seismic waves (P- or S-waves) at the surface. A piezotrigger element is attached to the hammer. The output piezo signal is transformed to a TTL pulse by a small box to provide an exact time break to the seismograph. It is a suitable source for shallow downhole surveys up to a depth of 100 m.

The borehole geophone BGK3/7 is used to receive P- and S-waves in dry or water filled boreholes. The borehole geophone BGK3 consists of a tri-axial sensor whereas the BGK7 consists of six horizontal sensors, separated by 30° intervals, and one vertical sensor. The geophone is coupled to the borehole wall by a pneumatic clamping system (inflatable bladder). Air is supplied to the BGK3/7 through an electro-pneumatic hybrid cable with a Kevlar tension string. A magnetic compass shows azimuthal deviation to North and can be used to get the orientation of the geophone in the borehole. The cable is terminated by a connector to the seismograph. Alternatively, the BGK5 can be used for downhole applications.

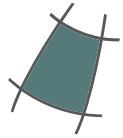
The dual downhole system (DDS) is used to receive P- and S-waves in dry and water filled boreholes in order to determine interval velocities. The DDS consists of two stations each equipped with a tri-axial sensor. The stations are mechanically connected to each other to ensure the alignment of the sensors. Both stations are coupled to the borehole wall by a pneumatic clamping system (inflatable bladder). Air is supplied to the DDS through an electro-pneumatic hybrid cable with a Kevlar tension string. A magnetic compass shows azimuthal deviation to North and can be used to get the orientation of the DDS in the borehole. The cable is terminated by a connector to the seismograph.

technical details

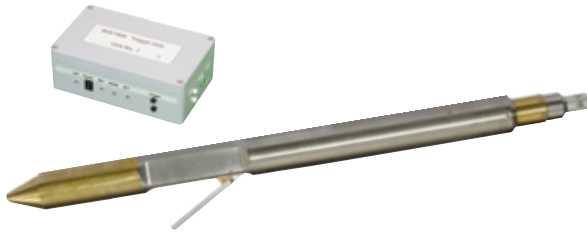
Length: 1000 mm
Weight: 5 kg

Natural sensor frequency: 30 Hz (others on request)
Sensor arrangement: Tri-axial (BGK3) or 6 horizontal (30°)/1 vertical (BGK7)
Operational depth: Up to 100 m
Receiver length: 705 mm
Receiver diameter: 50 mm
Receiver weight: 3 kg
Cable weight per metre: 145 g
Cable strength: 2150 N
Borehole diameter: 75 mm (or larger if spacers are used)
Clamping system: Inflatable bladder
Orientation: Magnetic compass (+/-2.5°)
Depth indicator: Cable marking every 2 m
Connector: To any seismograph
Storage: On drum

Natural sensor frequency: 10 Hz (others on request)
Sensor arrangement: Tri-axial
Operational depth: 100 m
Number of stations: 2
Station interval: 2 m
Station length: 620 mm
Station diameter: 65 mm
Station weight: 2.5 kg
Cable weight per metre: 145 g
Cable strength: 2150 N
Borehole diameter: 75 mm
Clamping system: Inflatable bladder
Orientation: Magnetic compass (+/-2.5°)
Depth indicator: Cable marking every 2 m
Connector: To any seismograph
Storage: On drum



receiver



BGK1000 | Borehole Geophone

description

The BGK1000 is a digital borehole geophone used to receive P- and S-waves in dry and water filled boreholes. It is manufactured by Hinz Messtechnik GmbH and exclusively distributed by Geotomographie. The borehole geophone BGK1000 consists of a downhole probe with a tri-axial geophone sensor and a surface communication unit connected to the USB port of a laptop. Optionally, a hydrophone sensor can be added. An auxiliary channel can be connected to the surface unit to record an external seismic signal, i.e. a pilot vibrator sweep. Triggering is made via the

surface unit allowing TTL pulse, geophone or contact triggering. The borehole geophone is designed to run on a winch equipped with a 4-conductor cable and a Gearhart Owen cable head. The geophone is coupled to the borehole wall by a mechanical clamping system (motor-driven arm). A magnetic compass is used to get the sensor orientation in the borehole. Seismic data are stored in SEG2 format by the acquisition software. A seismograph is not required.

technical details

Natural sensor frequency: 15 Hz (others on request)
Sensor arrangement: Tri-axial
Power supply: 12 V input 72 V output
Operational depth: Up to 2000 m
Max. pressure: 200 bar
Temperature range: 0-70 °C
Receiver length: 800 mm
Receiver diameter: 60 mm
Receiver weight: 8 kg
Borehole diameter: 75-200 mm
Clamping system: Motor-driven clamping arm
Orientation: Magnetic compass (+/- 2.5°)
Communication: 2 wire RS-485
Downhole electronics: DSP = Blackfin 548, 64 MB SDRAM
Cable head: GO-4

Digitisation
Design: Hinz Messtechnik GmbH
A/D conversion: 24 bit
Sampling frequencies: 250-48000 Hz
Trace length: Max. 21 s
Trigger: TTL, geophone, contact
Software: SmartRec (Geotomographie)

