

Probe set for soil research via penetration and automated set of bases and foundations testing equipment

„Pagani Geotechnical equipments“ probe set TG63-150 for soil research:

Set of automotive platform

Platform is made up:

- caterpillar suspension with not less than two stroke gasoline motor , power 18 hp/ 13kW, 3600 rpm.;
- hydraulic probe load, capacity 150 kN;
- probes with extensions set for static probe up to 30 m. depth with augers and pull off accessories;
- probes with extensions set for dynamic probe up to 20 m. depth with augers and pull off accessories;
- Accessory for rotational drill with additional augers;
- Piezo cone shape force transducer with data processing system for dynamic and static probe.

Automotive platform dimensions

- Length 2.45 m.;
- Width 1.2 m.;
- Height (transport mode)1.52 m.

Probe technical parameters

- Probe pressure force 150 kN, pressure speed from 0 to 10 cm/sec;
- Probe pull off force 160 kN , speed from 0 to 7 cm/sec.;
- Working pressure 240 bar;
- Cylinder motion 1250 mm. cross-section area 6300 mm.

Set of tools for static probe

- Augers 30 units, diameter 100 mm, length 750 mm;
- Augers 5 units, diameter 100 mm, length 1000 mm;
- Rods for static probe, diameter 36 mm, length 1000mm, 35 units;
- Nipple for pull off rod (1 unit) with pull off rods, diameter 36 mm, 2P step 2 units;
- Expansion rod, diameter 40 mm, length 750 mm, 4 units;
- Centering gadget, diameter 52/36 mm;
- Tube for protection, diameter 220 due European Code E27 standard, 2 units;
- Tube for protection, diameter 300 due European Code E27, 2 units;

Set of tools for dynamic probe

- DPSH set of rods,20 units, diameter 32 mm, length 1000 mm with M22 screw;
- Connecting DPSH rod, diameter 32 mm, length 1000 mm with M22 screw , 20 units;
- Hardened cone for DPSH probe, across area 20 cm², cone tip corner 90 °, 2 units;
- Directing head for rods, diameter 32 mm, screw M22;
- Pull off snout for DPSH rods, diameter 32 mm, screw M22, 2 units;
- Protective tube, diameter 48 mm, length not less 1000 mm, 5 units;
- Protective tube, diameter 48 mm, length not less 600 mm, 1 unit;
- Nipple for tube, diameter 48 mm, length not less 1000 mm, 6 units;
- Directing unit for protective tubes, diameter , 48 mm;
- Pull off clamp for protective tubes, diameter, 48 mm, 1 unit;
- Nipple for protective tubes, diameter 32 mm, 2 units;
- Centering unit for rods, diameter 52/32 with M22 screw.

Accessory for rotating drill

- Rotations 50 rpm;
- Resistance for rotation moment 160 Kgm;
- Auger brake;
- Augers, diameter 63 mm, length 1000 mm due to E.27, 20 units;
- Augers, diameter 63 mm, length 750 mm due to E.27, 20 units;
- Junctions E.27 for connecting auger, diameter 100 mm.

Piezo cone shape force transducer with data storing system for static probe.

- 3 channel probe with depth meter:
- cone shape strength 50 MPa, side friction 0.5 MPa;
- integrated deep encoder;
- integrated memory module;
- integrated sensor of inclinometer;
- integrated electrical conductivity sensor;
- wireless data transmission from probe to receiver via acoustic signal;
- probe's diameter 36 mm, integrated battery, secured 12 hours uninterrupted power supply.
- Integrated receiver, with resistance to compression 200kN
- Data logger with possibility to receiver, processing and exquisite a data to PC, power supply 12V
- Voltage converter from 220V AC to 12V DC;
- Rods for probe to not less 30 m. deep, diameter 36 mm, length 1000 mm, 30 units;

Pagani geotechnical equipments“ force transducer CTD 20T with data storing system for dynamic probe

- Force transducer measuring limits from 0 to 200 kN;
- Data processing unit with LCD display for sending data to PC;
- Unit should be capable to display a point resistance, residual resistance and common resistance;
- Software for display data in PC in graph.

Portable rugged computer

- Processor as Intel Core 2 Duo or not worse,
- 2GHz or not worse parameters;
- RAM 512 MB;
- Operational system Windows XP professional;
- Graphic board Intel GMA 4500MHD;
- Hard disc 64 GB;
- 8X DVD, 24X CD-RW/DVD, 8X DVD-RW;
- Connections IEEE – 1394, USB 2.0 (x4), VGA, Display Port, RJ-45, eSATA;
- Earphones/loudspeakers output, microphone;
- IP 54 safety class;

Computer be tested according MIL-810F (510.4 procedure) of resistance for dust, MIL- 810F (514 procedure I; category 20 and 24) for vibration, MIL-810F (507.4 procedure) for damp, MIL-810F (procedure I and II) for altitude.

„Kemek Engineering“ (Lithuania) automated for foundations testing equipment

Anchoring system technical parameters

- Anchor pile rotating moment (torque) 10 kNm;
- Anchor pile screw diameter calculated for 100 kN load at pull off;
- Anchor pile dimensions, diameter 400 mm, length 2 m;
- Anchor piles binding beam length 4 m, load bearing capacity for concentrated in the middle

span of a beam 250 kN;

- Anchor piles binding beam length 4 m, load bearing capacity for concentrated in the middle span of a beam not less 50 kN;
- Load-bearing beam length not less than 6m, load bearing capacity for concentrated in the middle span of a beam 100 kN;
- Load-bearing beam length not less than 6m, load bearing capacity for concentrated in the middle span of a beam 1000 kN.

Parts of anchoring system set

- Anchor piles, 24 pieces;
- Anchor piles binding beam, load bearing capacity for concentrated in the middle span of a beam not less 250 kN, 8 pieces;
- Anchor piles connecting beam, load bearing capacity for concentrated in the middle span of a beam 50 kN, 8 pieces;
- Load-bearing beam, load bearing capacity for concentrated in the middle span of a beam 100 kN, 4 pieces;
- Load-bearing beam load bearing capacity for concentrated in the middle span of a beam, 1000 kN, 4 pieces;
- Bolts for connection piles with binding beams; tensile strength 100 kN, 24 pieces;
- Bolts for connection of main beams with piles binding beams; tensile strength 100 kN, 16 pieces.

Hydraulic part technical parameters

- 100 kN hydraulic dual-acting cylinder, stroke 250 mm with spherical nipples, max pressure inside cylinder 700 Bar;
- 1000 kN hydraulic dual-acting cylinder, stroke 250 mm with spherical nipples, max pressure inside 700 Bar;
 - 2000 kN hydraulic dual-acting cylinder, stroke 250 mm with spherical nipples, max pressure inside 700 Bar;
 - Automatic hydraulic pump for dual-acting cylinder load, pressure 700 Bar;
 - Capacity, when pressure is low, 120 cm³;
 - Capacity, when pressure is high, 5 cm³;
 - Manual hydraulic pump for dual-acting cylinder load, pressure 700 Bar;
 - High pressure hose max. allowable pressure 700 Bar, Internal diameter 6,4 mm.

Parts of hydraulic devices

- 100 kN hydraulic cylinder RD1010 with spherical nipples 2 pieces;
- 1000 kN hydraulic cylinder R10010D with spherical nipples 2 pieces;
- 2000 kN hydraulic cylinder R20010D with spherical nipples 2 pieces;
- Automatic hydraulic pump 2 pieces;
- Manual hydraulic pump P300D 2 pieces;
- High pressure hose, length 3m – 4 pieces;
- High pressure hose, length 6m – 4 pieces;

“Geokon Ltd (USA)” measurement part technical parameters

- 2000 kN dynamometer, max. load 2000 kN; accuracy class 1 %, load elements - 6 tensioned chords;
- 100 kN dynamometers with max. load 100 kN, accuracy class 1 %, measurement load

elements - 6 tensioned chords;

- Potentiometer displacement/deformation transducer, stroke 12.5 mm. accuracy 0.01 mm with return spring;
- Potentiometer displacement/deformation transducer, stroke 100 mm, accuracy not less than 0.01 mm with return spring;
- Sensors for tension, max. measuring interval from 0 to 1000kPa, accuracy 1 %; tension measurement elements- tension chords;
- Sensors for tensions, max. measuring interval from 0 to 100kPa, accuracy 1 %, tension measurement elements- tension chords;
- Piezometers max. measurement interval from 0 to 350 kPa, accuracy 1%;
- Multi channel data storing and processing unit:
- Max. channel number 60;
- Channel measurement from ± 2.5 mV to ± 5 volts for analog signal and from DC up to 200 kHz frequency signal;
- Resolution from than 0.4 μ V to 1300 μ V for analog signal;
- Accuracy ± 0.1 %;
- Power supply for sensor ± 2500 mV;
- Battery 12 V, capacity 7 Ah;
- Operating temperature within interval -20 ° C to $+ 50$ ° C;
- Calibration curve storing capability for assigned channel;
- Connection for sending data to PC, 1 piece;
- Software for displaying data graphically with following parameters:
 - Load (kN)/ time(sec.);
 - Displacement (mm)/ time (sec.);
 - Load (kN)/displacement (mm);
 - Stress/Load (Mpa);
 - Water level (mm)/time (sec.).

Measurement part set

- 2000 kN dynamometer 2 pieces, a set of 10 m length cables;
- 100 kN dynamometers not less than 2 pieces, a set of 10 m length cables;
- Potentiometer displacement/deformation transducer, range 12.5 mm not less than 10 units, a set of 10 m length cables;
- Potentiometer displacement/deformation transducer, range ≥ 100 mm , 10 units; a set of ; 10 m length cables;
- Tension sensors, capacity 1000 kPa , 10 pieces, a set of 20 m length cables;
- Tension sensors, capacity 100 kPa , 10 pieces; a set of 20 m length cables;
- Piezometers not less than 10 pieces, a set of 20 m length cables;
- 60 channel data storing and processing unit for sending data to PC, 1 unit;
- Calibration certificates for every sensor;
- Software for displaying data graphically, 1 piece.

“Froewag“ accessory for soil plate bear bearing test:

- Bearing plate diameter than 300mm;
- load 100kN;
- Digital evaluation of test data with possibility to transfer it to PC;
- Software for displaying data graphically according to DIN 18134 standard requirement;

“Pile Ine“ A PAX 8 accessory for measurement and registration of dynamic loads

1. Piezoresistive (PR) Accelerometer Specifications:

- Circuit: Full bridge;
- Cable: Shielded, length 900mm;
- Sensitivity: 0.07 mV/g with 6.4 V.D.C. input;
- Range: 20 000 g (Limit 30 000 g);
- Frequency Range: from DC 4.5kHz;
- Working temperature Range: from -12° to 55°C
- Time Constant: 3s
- In set with fastening parts to piles.

2. Piezoelectric (PE) Accelerometer Specifications:

- Circuit: Integral impedance converting electronics;
- Cable: Shielded, length 900mm;
- Sensitivity: 1.0 mV/g with 10 V.D.C.;
- Range: 5 000 g (Limit 10 000 g);
- Frequency Range: from 0.5 to 7 kHz;
- Working temperature Range: from t -30° to +60°C;
- Time Constant: 3 s;
- In set with fastening parts to piles.

3. Strain Transducer Specifications:

- Circuit: Full Wheatstone bridge;
- Cable: Shielded, length 900mm;
- Sensitivity: 380 $\mu\epsilon$ /mV/V.;
- Strain Range: 2000 $\mu\epsilon$; Deformation limit -200 $\mu\epsilon$;
- Natural frequency 2000 Hz;
- Working temperature Range: from -30° to +60°C;
- In set with fastening parts to piles;

4. Data processing and storage device with LSD screen and software:

- 40 GB hard disk;
- 512 KB DRAM;
- 8 channels – 4 for strain transducers, 2 for piezoelectric and 2 for pjezoresistive accelerometers;
- 24-bit A/D converter with sampling frequency 5 MHz accuracy 2%;
- 2 USB ports;
- Built in calibration test function;
- Power: built-in 6 hour duration battery, 12 VDC car battery, and 100-240 VAC w/12 VDC converter;
- Working temperature range from 0 to 40°C (32 to 104° F). A device with interval calibration function.
- Set parts: 2PE accelerometers, 2PR accelerometer 5-Strain Transducers (deformation sensors) with 6 cables to connect sensors (2 cables to each type of a sensor, length of o cable- 20m) software for dynamic analysis of piles CAPWAP, charger and cases for transportation;
- Additional software for dynamic analysis and simulation GRLWEAP.

Pile Ine Accessory PIT/FV for measurement and registration of dynamic oscillations in structures

Accelerometer Specifications:

- Nominal sensitivity 50 mV/g.;
- Acceleration range $\pm 100g$.;
- Damage limit 30 000 g.;
- Frequency range in interval 1 to 8000 Hz.;
- Amplitude linearity: 1%;
- Working temperature range: from -30 to +60°C;
- Low noise shielded cable 1500mm;
- A set with a hammer with its weight 1.4 kg;

Data processing device with a touch sensitive screen:

- 24-bit A/D converter 2 channels;
- Sample digitizing frequency of 1MHz;
- Sampling frequency accuracy 0.02%;
- 2 channels one for acceleration data acquisition; and the other as an integrator of acceleration to velocity;
- Power: built-in 6 hour duration battery, 12 VDC car battery, and 100-240 VAC w/12 VDC converter;
- Working temperature range from 0° to 40° C;

A device with internal calibration function. Set parts 1 accelerometer and 2 non-instrumented hammers, rechargeable battery, battery charger and 1 transit case Technical manual included - Also software for data acquisition to PC for dynamic oscillation analysis PIT-W item.

Portable computer

- Processor as Intel Core 2 Duo;
- Frequency 2GHz;
- RAM 512 MB;
- Operational system as Windows XP;
- Graphic board Intel GMA 4500MHD;
- Hard disc 64 GB;
- 8X DVD, 24X CD-RW/DVD, 8X DVD-RW;
- Connections IEEE – 1394, USB 2.0 (x4), VGA, Display Port, RJ-45, eSATA;
- Earphones/loudspeakers output, microphone;
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Computer tested according to MIL-810F (510.4 procedure) resistance for dust, MIL- 810F (514 procedure I; category 20 and 24) for vibration, MIL-810F (507.4 procedure) for humidity, MIL-810F (procedure I and II) for altitude.