



200 kN Crawler-Based CPT Penetrometer Rig

Truly robust crawler-based CPT penetrometer pushing rig with rubber tracks, Hatz 3-cylinder diesel engine incorporated in a sound insulating enclosure, load-sensing hydraulic pump, a 200 kN CPT penetrometer pusher, unique anchoring system on reaction arm. Practically all functionalities are controlled by means of a wireless remote control.

The Griffin 200 kN is made of the highest quality components available and built to last. The choice for high quality components of well-known manufacturers having local service centers worldwide reduces machine downtime to a minimum.

Remote Control

The CPT penetrometer rig comes with a radio remote control system offering you an efficient method of operating the rig. This feature enhances the capabilities, improve productivity and allows you to work safely and efficiently at all times. The portable control unit is provided with six (6) levers and is impact and weather resistant with low weight and ergonomic design. The levers can give fully variable operation and are sprung loaded to return to the neutral position, i.e. "dead-man's-handle".

The radio remote control system allows for problem free proportional control of the hydraulic valves of the crawler-based penetrometer rig. It is

extremely easy to use with speed, precision and control under maximum safety and is protected against electro-magnetic and radio frequency radiation. The radio transmitter and its antenna are built in.

Anchoring

4 ground anchors, which are screwed into the ground before testing and screwed out after testing, provide in general sufficient reaction force for the 200 kN pushing force of the penetrometer pusher when anchored in suitable grounds. Extra reaction force is obtained by using extension rods, anchors with larger blade diameter or by placing more anchors.

Anchor extension rods are used to increase the length of the ground anchor. They are most useful at sites where the soil at the surface is very weak, but the strength of the soil increases with a little depth. The extension rods can be invaluable at a site where there is a layer of fill covering stronger native soil. The extension rods have a female hexagonal drive on the bottom that pins to a ground anchor. On top it has a male hexagonal drive. The anchor extension rod is connected to the ground anchor using a high-strength bolt and nut (both included).

The rig is equipped with a very advanced anchoring system. The rotary drive is mounted on a reaction arm provided with hydraulic brakes on

the hinge points. The reaction arm can swing freely around the pusher and the function of the hydraulic brakes is to lock the reaction arm and prevent it from moving as soon as it is in the right position.

Using this system the ground anchors can be placed at that spot that suits the operator best. The reaction arm is fixed to the CPT penetrometer pusher; the latter provides the vertical force on the ground anchor. The vertical movement of the CPT penetrometer pusher is synchronised with the rotation speed of the rotary drive and in line with the pitch of the ground anchors.

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The ground anchors are available with 3 different blade diameters, i.e. 220, 300 and 400 mm.

Technical Specifications

Dimensions (L x W x H)	2760 x 1400 x 1700 mm (pusher tilted backwards)
Weight	2950 kg (without accessories and CPT equipment)
Total length tracks	Approx. 2000 mm
Effective length tracks	Approx. 1750 mm
Track shoe width	230 mm
Ground pressure	Approx. 0.37 kg/cm ² (without accessories and CPT equipment)
Engine performance	38.8 kW (52.8 HP) at 3000 RPM acc. to DIN ISO 3046
Fuel type	Diesel
Noise level	70 dB at 1500 RPM (CPT testing conditions)
Starter type	Electric start
Hydraulic pump	Fuel saving "load-sensing" type
Calibrated CPT testing speed	20 mm / sec (electronically controlled)
Unloaded speeds (continuously variable)	0 – 165 mm/sec down, 0 – 125 mm/sec up
Maximum driving speed	2.5 km/h
Hydraulic capacity (max.)	200 kN (20 tons) during CPT testing, 260 kN (26 tons) during pulling *)
Stroke of the hydraulic cylinders	1150 mm
Hydraulic levelling jacks	Stroke of cylinders = 350 mm, diameter of footplates = 600 mm
Torque of rotary drive for anchoring	2500 Nm

*) The maximum effective pushing capacity of the crawler-based CPT penetrometer rig depends on the effectiveness of the anchoring of said rig.

Electric Installation

All functionalities of the crawler-based CPT penetrometer rig are electronically controlled. The electronic installation is lodged in a stainless steel cabinet located safely in the centre of the rig. The elements required for operating the machine are gathered on the control panel integrated in the stainless steel housing located at the right-hand side of the CPT penetrometer pusher on a height adjustable support with locking pin.

The Cone Penetration Tests can be performed according to international standards like ISO 22476-1, ISO 22476-12, NF P94-113, Eurocode 7, ISSMGE standard, ASTM D3441-05, ASTM D5778-12, ASTM D6067-96, ASTM D7400-08, and alike. This includes of course Class 1 piezocone CPTU tests and dissipation tests.

The operating procedures of the machine are described in detailed, easy-to-read and well-illustrated user manuals.

Tube Rack

Gouda-Geo has paid much attention to the storage of the CPT sounding tubes on the crawler-based CPT penetrometer rig. A storage rack manufactured of stainless steel with 4 foldable trays with a total capacity of 40 CPT sounding tubes is mounted on a pivoting arm on the left side of the rig. The lower tray is fixedly mounted, the other three are foldable by means of a hinge-construction (so no handling detachable trays).

When CPT testing procedures are commenced, the tube rack can be pivoted easily towards the CPT penetrometer pusher making tube handling finally an easy job.

International Standards, Safety and CE Marking

The CPT penetrometer rig is designed and built in accordance with national and international standards and regulations. It complies with the provisions of the EC Directive 2006/42/EG and is provided with CE marking certifying that it meets EU consumer safety, health and environmental requirements.

The rig is equipped with a 200 kN CPT penetrometer pusher suitable to accommodate the measuring equipment for all kinds of Cone Penetration Tests with a maximum pushing force of 200 kN, such as:

- Piezocone CPTU testing
- Electrical CPT testing with standard electric CPT cone
- Dissipation testing (when using a piezocone)
- Seismic SCPT(U) testing with a triaxial seismic adapter
- Magnetometer soil investigation
- Continuous and discontinuous mechanical CPT