



WYCL Fully Hydraulic Crawler Static Cone Penetration Vehicle

I. Features

- **Hydraulic outriggers enable self-loading/unloading onto/from a vehicle**, making operation safe, labor-saving, and fast, solving the difficulty of getting on/off the transport vehicle.
- Equipped with a **hydraulic oil high-temperature cooling system**, which solves the problem of rapid hydraulic oil temperature rise in hot weather and greatly increases working duration.
- Uses **crawler support and traveling system**, allowing static penetration testing in harsh environments such as beaches, riverbanks, sandy ground, and paddy fields; it can still travel on icy roads.
- The **hydraulic system is advanced**, using a sectional combined multi-way directional control valve: compact structure, small size, easy installation, low pressure loss, and good overload characteristics of the relief valve.
- A unique **double-acting anchoring device**: anchoring is achieved by the combined action of a high-power hydraulic motor and a hydraulic cylinder; simplified structure, convenient and fast.
- **Multi-purpose machine**: not only an ideal device for static cone penetration testing, but with accessories it can be extended to perform in-situ tests such as:
 - Pore pressure cone penetration (CPTU)

Nanguang Geological Instruments Co., Ltd.



- Self-boring pressuremeter (**PMT**)
 - Flat dilatometer test (**DMT**)
 - Field vane shear test (**VCT**)
 - Press-in shear wave velocity test (**WVT**)
-

II. Main Technical Parameters

- **Engine power:** 22–42 kW
- **Engine speed:** 2500–2800 rpm
- **Travel speed:** 0–2.5 km/h
- **Gradeability:** $\leq 20^\circ$
- **Rubber tracks:** width 300 mm, pitch 82 mm, 55 teeth
- **Outrigger cylinder:** $\varnothing 100$ mm, stroke 1400 mm, support force 100 kN, lifting force 80 kN
- **Static penetration force:** 200 kN
- **Rod pull-out force:** 180–280 kN
- **Anchoring system:** max torque 2442 N·m, single-blade anchor $\varnothing \geq 300$ mm
- **Penetration rods:** 45MnMoB alloy steel, $\varnothing 36 / \varnothing 40 / \varnothing 42$
- **Fluid capacities:** fuel 30 L; engine oil 7 L; hydraulic system ≥ 130 L
- **Operating temperature:** -10°C to $+50^\circ\text{C}$
- **Overall dimensions:** $3600 \times 1700 \times 2200$ mm



XCPTU Digital Probe 10 cm² (4-in-1: Qc, Fs, U, Tilt)



Description

The multi-function digital XCPTU probe measures cone tip resistance, sleeve friction, pore water pressure, and inclination angle. It can sensitively and accurately identify and classify soil types, while obtaining a series of initial soil parameters such as in-situ consolidation coefficient, permeability coefficient, dynamic parameters, bearing characteristics, and stress history.

Technical Specifications

Cone Tip Resistance (Qc)

- **Range:** 0–40 MPa
- **Accuracy:** 0.5% FS
- **Cone base area:** 10 cm²
- **Cone angle:** 60°

Sleeve Friction (Fs)

- **Range:** 0–400 kPa
- **Accuracy:** 0.5% FS
- **Sleeve area:** 150 cm²
- **Sleeve diameter:** 35.7 ± 0.16 mm

Pore Water Pressure (U)

- **Range:** 2 MPa
- **Accuracy:** 0.5% FS
- **Volumetric strain:** ≤ 0.2%
- **Filter permeability:** 2.2 × 10⁻³ cm/s

Inclination (Tilt X)

- **Range:** ±90°
- **Accuracy:** ≤ 0.1°

CPTU Probe Tip 10 cm² (3-in-1: Qc, Fs, U)



The triaxial CPTU probe can measure parameters such as **cone tip resistance**, **sleeve friction**, and **pore water pressure**. It enables sensitive and accurate **soil identification and classification**, and can also be used to calculate the **in-situ coefficient of consolidation**, **permeability coefficient**, **dynamic parameters**, **bearing characteristics**, **stress history**, and a range of other parameters of undisturbed soils.

Technical Specifications

Cone Tip Resistance (Qc)

- **Range:** 0–40 MPa
- **Accuracy:** 0.5% FS
- **Cone base area:** 10 cm²
- **Cone angle:** 60°

Sleeve Friction (Fs)

- **Range:** 0–400 kPa
- **Accuracy:** 0.5% FS
- **Sleeve area:** 150 cm²
- **Sleeve diameter:** 35.7 ± 0.16 mm

Pore Water Pressure (U)

- **Range:** 2 MPa
- **Accuracy:** 0.5% FS
- **Volumetric strain:** ≤ 0.2%
- **Filter permeability:** 2.2 × 10⁻³ cm/s