



# Shaft Quantitative Inspection Device

## Shaft Quantitative Inspection Device (SQUID™)

*Assesses cleanliness and competency of the bottom of drilled shafts or bored piles*

### **Fast. Economical. Dependable.**

Pile Dynamics, Inc. has developed a new technology for quantitatively assessing the bottom surface of bored pile or drilled shaft foundations. SQUID™ quantitatively measures the soft material or debris thickness that may be covering the bearing strata, at the bottom surface. Based on geotechnical theories, SQUID™ outputs force and displacement in numerical and graphical form. The entire test can be completed very quickly, typically less than 30 minutes – including attachment to the drill stem, testing and analysis.

The SQUID™ test consists of mounting the device on a Kelly bar or winch system and lowering it into a drilled hole. Once the SQUID™ is located at the bottom of the hole, the buoyant weight of the Kelly bar will transfer sufficient force for the probes to penetrate the debris and bearing layers, and for the displacement plates to retract. Accurate, real time force vs displacement measurements are plotted and displayed digitally in the SQUID™ main unit.

SQUID™ does not require testing personnel to work near the excavation. The attachment to the end of the drill stem or Kelly bar is relatively quick and safe procedure which can be easily done by site personnel.

### SQUID™:

- Measures thickness of soft material or debris covering the bearing strata
- Generates force vs displacement in both numerical and graphic form
- Provides real time, quantitative assessments through accurate displacement and penetrometers pressure measurements



- SQUID™ body includes quick attachment adapters for different sized drilled stem or Kelly bars
- Three independent displacement versus pressure (from cone penetrometers) measurements
- SQUID™ main unit receives data wirelessly or via a cable for real-time measurements

## The SQUID™ features independent displacement of three penetrometers into the soil layer and measures:

- Displacement, beginning with the first encounter of the layer
- Thickness of the debris layer at various locations around the borehole bottom
- Bearing pressure of three independent standard size (10 cm<sup>2</sup>) cone penetrometers

An important part of bored pile construction is the cleaning and inspection of the bottom of the hole prior to the placement of reinforcement and concrete. To achieve cleaning once drilling is complete, a cleanout bucket is typically used to remove any material unsuitable for end bearing support. Bottom inspection is then performed with SQUID™ which takes accurate force and displacement measurements, providing an objective, quantitative assessment.

The signals from the three displacement sensors and the three cone penetrometers pressures are digitally processed and wirelessly sent to the SQUID™ main unit. The inspector, engineer or contractor can then make an immediate decision as to the borehole acceptance, additional clean-out requirement or additional drilling. The decision makers may be at a safe location on site or connected via internet to the SQUID™ main unit, from any location where there is internet access.



**Pile Dynamics, Inc. (PDI)** is the world leader in developing, manufacturing and supplying state of the art QA/QC products and systems for the deep foundations industry. The company is headquartered in Cleveland, Ohio, USA, with offices and representatives worldwide. For additional information visit us at [www.pile.com](http://www.pile.com) or contact [info@pile.com](mailto:info@pile.com).