

Cross-Hole Analyzer CHAMP-XV

For Crosshole and Single Hole Sonic Logging



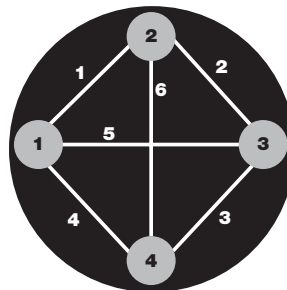
The Cross-Hole Analyzer determines the quality and consistency of the concrete of drilled shafts, slurry walls, bored piles, cast-in-situ piles and other types of concrete foundations. It may be used for crosshole sonic logging (CSL) of drilled shafts or single hole sonic logging (SSL) of smaller augered cast-in-place piles.

The tablet-like CHAMP-XV continues the tradition of light but rugged Cross-Hole Analyzers. Still small enough to be portable, the CHAMP-XV features a larger color LCD touch screen that is highly visible in all lighting conditions. Enhancements over previous models include a seamless top surface, replaceable battery, USB ports and Windows 7 operating system. Data entry has been optimized.



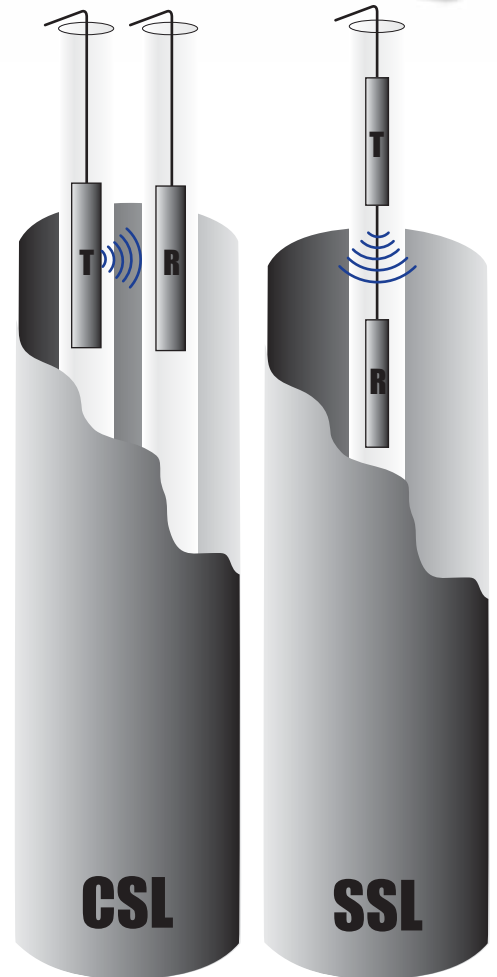
The CHAMP-XV performs essential real time analysis (waterfall diagram) on site. USB ports now make it simpler to transfer data to a computer for review and additional analysis with CHA-W and for report preparation.

Shafts that will be tested with a Cross-Hole Analyzer are built with steel (preferred for CSL) or PVC (required for SSL) tubes that span their length. A transmitter in one tube sends a high frequency signal that travels through the concrete and is detected by a receiver in another tube (or in the same tube for SSL). As these sensors are raised and/or lowered along the length of the foundation, the CHAMP-XV displays and records the strength of the received signal, as well as the time from signal emission to signal arrival at the receiver, versus depth. In CSL, scanning various tube combinations for the entire shaft allows evaluation of concrete quality and defect location along the length and by quadrant. Only one tube is used in SSL. The optional Motorized Probe Deployment System relieves the operator from pulling the cables manually, making testing more comfortable.



Shaft cross section with four tubes, six paths are tested.

Shaft schematics showing one tube (SSL test, right) or one pair of tubes (CSL test, left), with signal being sent from transmitter (T) to receiver (R).



The CHAMP-XV meets or exceeds the requirements of ASTM D6760 and several other crosshole sonic logging codes and standards.

Visit www.pile.com/cha for a listing.

Quality Assurance for Deep Foundations

CHA-W Data Processing Software

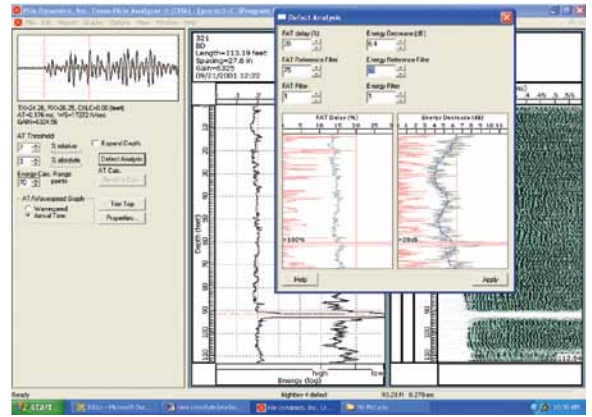
Provides powerful tools for data analysis:

- Edge Finder for First Arrival Time detection.
- Defect Analysis for easy defect identification.
- Two methods of signal strength evaluation (energy or amplitude).

Performs data quality checks.

Outputs user customized graphs and tables:

- Sonic Map - Signal strength versus time and depth in traditional waterfall diagram.
- First Arrival Time - Signal travel time from transmitter to receiver, versus depth.
- Wave-speed Plot - Wave-speed (an indicator of concrete strength) versus depth.
- Wave-speed Table - Wave-speeds, means and standard deviations.
- Energy or Amplitude Plot - Signal strength versus depth.
- Defect location graphically (horizontal red line) and in table format



CHA-W screen

CHAMP-XV Specifications

Physical

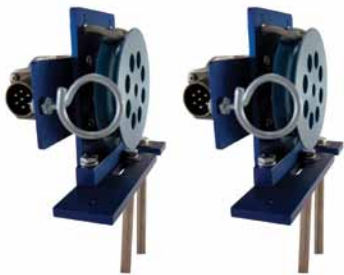
Size: 320 X 250 X 68 mm Weight: 5 kg
 Screen: 26.4 cm VGA sunlight readable touch screen display
 Operating temperature range: 0 to 40°C.
 Power: Internal replaceable 12V battery for four hours
 of continuous data collection

Electronic

Computer with 60 GB SSD internal drive and 4 external USB ports
 Analog to digital converter resolution: 12 bits
 Sampling rate: 500 kHz, 1 MHz and 2 MHz, user selectable
 (equivalent measuring accuracy 2µs, 1µs and 0.5µs)
 Scan rate: 32 scans/s (pull rate allows up to approx. 1.5 m/s)
 User adjustable gain, trigger and transmission power level
 User selectable record size: 250, 500, and 1,000 points

Other

Operates in English or SI units
 Windows® 7 operating system
 User manual included
 One year warranty and lifetime technical support
 Dual high resolution encoders independently track the depth and
 direction of probe movements. Probes may be at different levels
 during pulling. Data may be taken in upward or downward direction.
 Encoders are placed directly on tubes, on a tripod or are part of
 optional motorized probe deployment system.



Depth encoders



Motorized Probe Deployment System

Probes Specifications

Physical

Diameter: 25 mm Length: 215 mm
 Element: Ceramic
 Enclosure: Oil Filled Nickel Plated Brass
 Shells pressure tested to 300m water depth
 Optional centralizers and bottom extension weights for deeper shafts.
 Probe Cable: 60 m, 100 m or 150 m, heavy duty polyurethane jacket



Transmitter and receiver
 with weights.

Electronic

Transmitter frequency (nominal): 45 kHz
 Receiver tuned to 45 KHz nominal
 Transmitter voltage: 200, 400, 600 or 800 Volts (user selectable),
 powered by 12 V source in the CHAMP-XV, for safety.
 Maximum probe separation: 3 m

Motorized Probe Deployment System

Main Unit

Size: Two 380mm x 480mm x 405mm spools Weight: 11.3Kg each
 Includes 60 m cable, detachable from spool
 Includes depth encoder for each probe, attached to frame

Motor Control Unit

Size: 240mm x 160mm x 90mm
 Weight: 1.6 Kg
 Powered by either external battery (8 hours duration), 12VDC car
 battery, or 100 – 240 VAC with 12VDC converter
 Fast charger to recharge the external battery in 4 hours
 Variable probe pull rate: 0.150 to 0.915 m/sec (low, medium, high
 speed selection) Resettable circuit breaker motor protection
 Operating temperature range: 0° to 40°C
 Storage temperature range: -10° to 65°C

Other

Includes pulley for placement at the tube
 Includes roller guide for routing cable through re-enforcement rebar
 cage or over casing



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