



Laboratoire Central des ponts et Chaussées

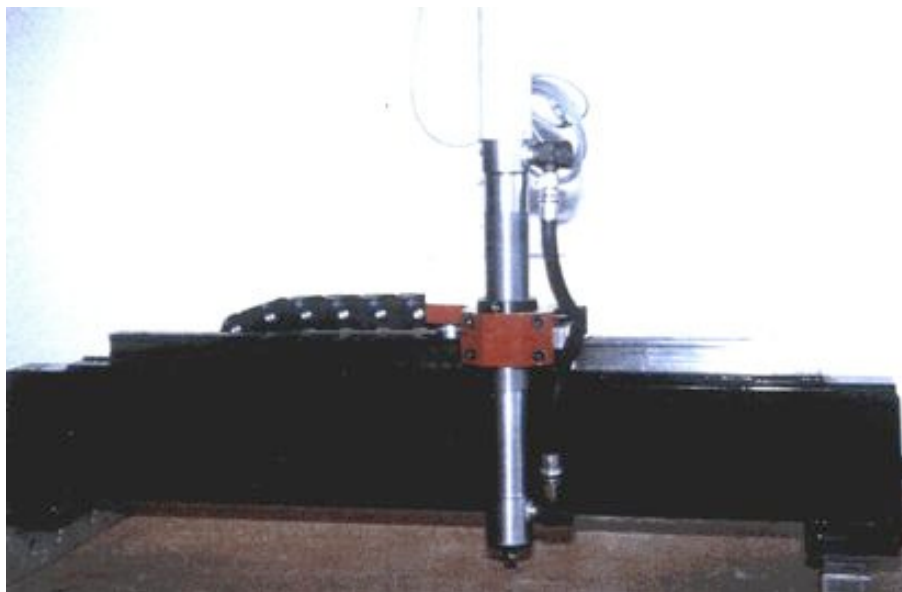
## Equipments for test in centrifuges

### CONE PENETROMETER

This on board cone penetrometer performs under acceleration during the centrifuge rotation the measurement of soil resistance to the penetration of a conical tip continuous profile.

This cone penetrometer includes a translation mechanism that permits to perform successive tests in various in line points of the model without stopping the centrifuge.

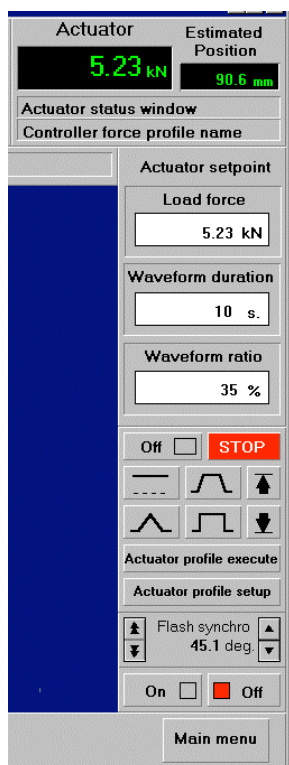
A miniature force transducer located immediately behind the conical tip, thus eliminating all errors caused by soil friction around the shaft or caused by the drive system, monitors the penetration force developed in the conical tip.



Conical tips attached to the driving shaft are available in different sizes and are interchangeable to adapt to the application.

Similarly the force transducer is interchangeable and its sensitivity can be adapted to the range of forces to be measured.

The cone penetrometer drive mechanism consists of a linear AC brushless motor; the position readout is derived from a linear differential transformer (L.V.D.T.).



The translation drive mechanism is made of a rack and pinion mechanical transmission driven by an AC brushless motor; a rotational resolver attached to the drive system monitors the system position.

The control system includes two industrial grade digital AC converters associated with an industrial grade programmable controller.

The control system that is located on board of the centrifuge communicates with the operator controller either via a serial port or better via the on board Ethernet network and fiber optic transmission.

The selectable command profiles and the operator interface are available either on the centrifuge operator PC display (last generation centrifuge) or a dedicated PC.

The cone penetrometer can also be used for other tasks such as inserting or pulling out devices in soil.

It can also transport other instruments such as Scissometer for example.

Technical Data	Model	C61	C65-C67	C80	C84-C85
<b>Mainframe dimensions</b>					
Length	mm	600	700	760	1400 / 2000
Width	mm	250	250	250	250
Height	mm	330	330	330	530
<b>Actuator</b>					
Length	mm	500	600	760	760
Shaft diameter	mm	12	12	12	12
Force	kN	+/- 1	+/- 1	+/- 1	+/- 1
Force resolution	N	0.1	0.1	0.1	0.1
Travel range	mm	250	250	300	300
Actuator speed	mm/s	5 to 50	5 to 50	5 to 50	5 to 50
<b>Transverse motion</b>					
Travel range	mm	220	300	300	300
Actuator speed	mm/s	2 to 10	2 to 10	2 to 10	2 to 10
<b>Miscellaneous</b>					
Total weight	kg	25	30	40	50
Line voltage	V	110/240	110/240	110/240	110/240
Power installed	kW	1	1	1	1