

## BEARING PLATE TEST APPARATUS, ASTM/BS/CNR

The bearing plate test determines the soil bearing capacity by the application of an increasing pressure on a foundation formed by a circular plate loaded against a reaction frame and measuring the associated vertical displacement (settlement).

Results are typically used for calculating the soil stiffness in term of Deformation Modulus and Subgrade Reaction Modulus.

CONTROLS propose several versions of bearing plate test apparatus depending on reference Standards (BS, ASTM, CNR), hydraulic cylinder capacities, plate dimensions, measuring bridges shape and type of reading (analogue, digital or electronic).



**BEARING PLATE TEST APPARATUS, ASTM/BS/CNR**

### SPECIFICATION

## Technical Specifications

### Hydraulic assembly

3 different capacities are available (100, 200 and 500 kN). All models use a dual flow hand pump connected to the cylinder with flexible hydraulic hose 3 meters long.

The assembly comprises two spherical seats: the lower transfers the reaction load to the plate; the upper, mounted at the top end of the loading column, is magnetic for simplifying the test execution.

Extension rods are included for closing the gap between upper spherical seat and reaction frame.

### Plate and measuring tunnel

The loading plates are made in high strength steel. All plates include practical handles for easy transportation and can be placed in a pyramid

arrangement to ensure rigidity. The plate range is composed by:

- 160 mm (6") dia. x 25 mm (1")
- 300 mm (12") dia. x 25 mm (1")
- 456 mm (18") dia. x 25 mm (1")
- 608 mm (24") dia. x 25 mm (1")
- 760 mm (30") dia. x 25 mm (1")

#### Measuring bridge

Made in aluminium alloy, lightweight, transportable, quick to assembly on site, features 2 external supports and in-built spirit level. The main measuring bar is 2.5 meter long and can be expanded with extensions up to 5.5 meters total length.

#### Load and displacement (settlement) measurement

3 alternatives measuring options are available:

- **Analogue configuration:** with triple scale manometer dia. 200 mm and 30 mm x 0.01 mm dial gauges. Detail of the triple scale:
  - **100 kN:** force 0-100 kN (div. 0.5 kN); oil pressure 0-690 Bar (div. 2.5 Bar) and specific load 0-1.41 MN/m<sup>2</sup> (div. 0.01 MN/m<sup>2</sup>)
  - **200 kN:** force 0-200 kN (div. 1 kN); oil pressure 0-600 Bar (div. 2.5 Bar) and specific load 0-2.83 MN/m<sup>2</sup> (div. 0.02 MN/m<sup>2</sup>)
  - **500 kN:** force 0-500 kN (div. 2.5 kN); oil pressure 0-700 Bar (div. 2.5 Bar) and specific load 0-7.07 MN/m<sup>2</sup> (div. 0.05 MN/m<sup>2</sup>)

**Note:** specific load values refer to a bearing plate with 300 mm dia.

- **Digital configuration:** with digital readout unit (battery operated), built-in pressure transducer and digital gauges 25.4 mm x 0.001 mm
- **Electronic configuration** with pressure transducer and 50 mm stroke displacement transducers connected to a DATALOG8 readout unit, battery operated.

The configuration with a single displacement measurement includes the measuring tunnel to detect the settlement of the plate perfectly in the centre and coaxially with load.

#### Packing

All complete testing kits 100 and 200 kN cap. outfits include a wheeled plastic carrying case housing the following parts:

- hydraulic assembly (pump, cylinder, extension rods)
- plates dia. 160 mm (6") and 300 mm (12")
- load and displacement devices

Additional plates dia. 456 mm (18"); 608 mm (24") and 760 mm (30") are packed in a separate wooden box, also included in the outfit. The hydraulic assembly 500 kN cap. is instead packed separately.

Measuring bridge 2.5 m and extensions may be optionally housed in a wooden carrying case available as accessory.

#### Extremely versatility

The complete kits to BS, ASTM or CNR are identified by a single code (see ordering information). Alternatively, all components are also proposed separately to design a tailor-made configuration giving the customer maximum flexibility.

#### STANDARDS

- BS 1377:9
- CNR 146
- ASTM D1195
- ASTM D1196
- CNR 92
- ASTM D1194

## FEATURES

- **Multiple testing configurations** complying with international Standard and fulfilling any customer's need
- 3 capacities: **100, 200 and 500 kN**
- **Analogue, digital or electronic** readings matching all budgets
- Analogue version with 200 mm dia. triple scale manometer: force (kN), oil pressure (Bar) and specific load (MN/m<sup>2</sup>)
- Digital version with digital read out unit featuring wide graphic display, rechargeable battery and built-in pressure transducer
- Electronic version with pressure and displacement transducers connected to high performing DATALOG8 logger
- **Dual flow manual hand pump** with flexible hydraulic hose 3 meters long
- **Loading jack with 2 spherical seats** (the upper is magnetic for simplifying the test execution)
- **Measuring bridge** made in aluminium alloy, lightweight, transportable and easy to assembly
- Complete hydraulic assembly housed in a **hard plastic wheeled carrying case**

## ORDERING CODE

### 35-T1100

Plate bearing test apparatus 100 kN cap. to CNR No. 146 method A, Analog version.

### 35-T1100/DGT

Plate bearing test apparatus 100 kN cap. to CNR No.146 method A, digital version composed by hydraulic assembly, dig. read out unit, dig. gauge, measuring tunnel, 160mm (6") & 300mm (12") plates, datum bar and trolley Complete with c...

### 35-T1100/EL

Plate bearing test apparatus 100 kN cap. to CNR No. 146 method A, electronic version. Composed by hydraulic assembly, DATALOG 8, transducers, measuring tunnel, 160mm (6") & 300mm (12") plates, datum bar and trolley. Complete with cal...

### 35-T1101

Plate bearing test apparatus 100 kN capacity to CNR No. 146 method B and BS 1377-9, Analog version.

### 35-T1101/DGT

Plate bearing test apparatus 100 kN capacity to CNR No. 146 method A, digital version with digital readout unit.

### 35-T1101/EL

Plate bearing test apparatus 100 kN capacity to CNR No. 146 method B and BS 1377-9, Electronic version. 110-220V, 50-60 Hz, 1ph.

### 35-T1102/DGT

Plate bearing test apparatus 200 kN capacity to CNR No. 146 method B and BS 1377-9, digital version with digital readout unit.

### 35-T1102/EL

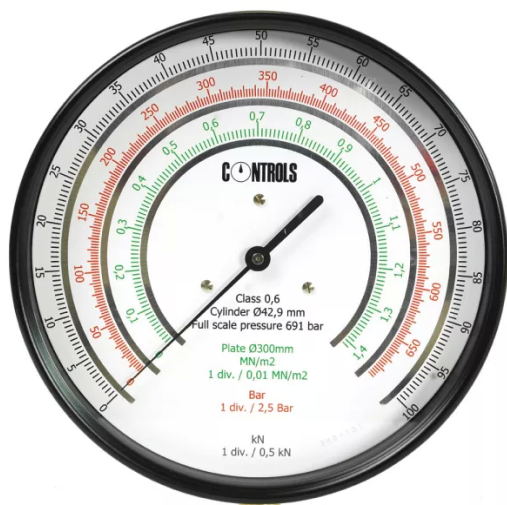
Plate bearing test apparatus 200 kN capacity to CNR No. 146 method B and BS 1377-9, Electronic version. 110-220V, 50-60 Hz, 1ph.

### 35-T1103/DGT

Plate bearing test apparatus 200 kN capacity to CNR, BS 1377-9, ASTM D1195, D1196 digital version with digital readout unit.

### 35-T1103/EL

Plate bearing test apparatus 200 kN capacity to CNR, BS 1377-9, ASTM D1195, D1196, Electronic version. 110-220V, 50-60 Hz, 1ph.



CONTROL

How design a custom configuration – Example 1

Requires:

- 100 kN capacity
- Electronic version with single displacement transducer
- Bearing plates dia 160 mm and 100 mm
- Reference beams 5.5 meter
- carrying cases included for all parts

| Hydraulic assembly with pressure read out unit - ELECTRONIC VERSION |           |        |                                                                                       | QTY |
|---------------------------------------------------------------------|-----------|--------|---------------------------------------------------------------------------------------|-----|
|                                                                     | T110L/M   | 100 kN | Hydraulic assembly with cylinder, pump, extension rods, spherical spacers             | 1   |
| 82                                                                  | P0006/F   |        | DISTALOG 8, 8 channel deserializer battery operated                                   | 1   |
|                                                                     | P0008/LT1 |        | Single connection cable                                                               | 2   |
|                                                                     | P0700     |        | Pressure transducer                                                                   | 1   |
|                                                                     | P049/LT1  |        | Connection cable for pressure transducer                                              | 1   |
| Device for displacement measurement                                 |           |        |                                                                                       |     |
| 82                                                                  | T110L/ARM |        | Adjustable support for displacement device                                            | 1   |
|                                                                     | P0134     |        | Displacement transducer 50 mm stroke                                                  | 1   |
| Loading plates                                                      |           |        |                                                                                       |     |
| 35                                                                  | T110L/P4  |        | 160 mm (8") dia. x 25 mm (1")                                                         | 2   |
|                                                                     | T110L/P2  |        | 300 mm (12") dia. x 25 mm (1")                                                        | 2   |
| Reference beam                                                      |           |        |                                                                                       |     |
| 35                                                                  | T110L/R13 |        | Detum bar 2.5 m long                                                                  | 1   |
| Accessories                                                         |           |        |                                                                                       |     |
| 35                                                                  | T110L/MT  |        | Measuring unit suitable for single displacement gauge and hydraulic 100 kN and 200 kN | 1   |
|                                                                     | T110L/RC  |        | Wooden carrying case for reference bar (2.5 m and 5.5 m versions)                     | 1   |
|                                                                     | T110L/MC  |        | Carrying case, trolley type, for bearing plate hydraulic assembly 100 kN and 200 kN   | 1   |

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# CONTROLS

## How to design a custom configuration – Example 3

### Input information:

- 500 kN capacity
- Analogous version for load readings + digital version for displacement readings, eq. 4
- Measuring plates: dia. 160 / 100 / 630 mm
- Reference beam 5.5 meter long
- Carrying cables included

| Hydraulic assembly with pressure read out unit - ANALOGUE VERSION |           |                                                                             | Q.TY                                                                    |
|-------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 35-                                                               | T1100/MS  | 500 kN                                                                      | Hydraulic assembly with cylinder, pump, extension rods, spherical seats |
|                                                                   | T1100/AS  |                                                                             | Triple scale manometer                                                  |
| Device for displacement measurement                               |           |                                                                             |                                                                         |
| 35-                                                               | T1100/ADM |                                                                             | Adjustable support for displacement device                              |
| 82-                                                               | D182/2    |                                                                             | Digital gauge 23.4 mm ± 0.001 mm                                        |
| Loading plates                                                    |           |                                                                             |                                                                         |
|                                                                   | T1100/P4  | 160 mm (P) dia. x 23 mm (P)                                                 | 1                                                                       |
| 35-                                                               | T1100/P12 | 500 mm (12) dia. x 23 mm (P)                                                | 1                                                                       |
|                                                                   | T1100/P18 | 456 mm (18) dia. x 23 mm (P)                                                | 1                                                                       |
| Reference bar                                                     |           |                                                                             |                                                                         |
|                                                                   | T1100/R25 | Datum bar 2.5 m long                                                        | 1                                                                       |
| 35-                                                               | T1100/REX | Extension kit to extend the datum bar from 2.5 m to 5.5 m                   | 1                                                                       |
| Accessories                                                       |           |                                                                             |                                                                         |
|                                                                   | T1100/RL  | Wooden carrying case for reference bar (2.5 m and 5.5 m long)               | 1                                                                       |
| 35-                                                               | T1100/BOX | Wooden box for loading plates dia. 456 mm (18), 608 mm (24) and 760 mm (30) | 1                                                                       |

Note: Carrying case, trolley type model 35-T1100/MS+ not available for 500 kN up hydraulic assembly

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general information  
technical specifications  
certification

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