



DIAGNOSTICS

PULL-OUT BOVIAR TESTING
EQUIPMENT

PULL-OUT BOVIAR TESTING EQUIPMENT

> WHAT DOES IT DO

Equipment for estimating the in-place strength of concrete by pull-out testing method.

> ADVANTAGES

The only equipment currently available in the market totally designed and manufactured in full compliance with the technical specifications prescribed in UNI EN 12504-3:2005 standard.

“Testing concrete in structures - Part 3: Determination of pull-out force”.



> DESCRIPTION

Instrumentation is composed by:

- **Hallow hydraulic cylinder**
100 kN capacity, fitted with a steel bearing ring with a 55 mm inside diameter, a 70 mm outside diameter ($\pm 0,1$ mm tolerance) and a height of 10 mm. The steel extractor of the cylinder allows it to be screwed onto the head of the insert protruding from the surface of the concrete (thread M20 \times 2,5 mm and length 15 mm).
- **The steel extractor is manufactured in two pieces so that it can be easily used.**
Hydraulic hand pump with digital pressure gauge
Hydraulic hand pump, fitted with digital gauge and complete with high-pressure (700 bar) 2.5 m long flexible tubing for connection to the cylinder.



SEDE CASORIA (NA)

Via G. Puccini, 12/A
80026 - Casoria (NA)
Tel.:(+39)081.758.35.66
Fax.:(+39)081.758.78.57
info@boviar.com

SEDE LAINATE (MI)

Via Rho, 56
20020 - Lainate (MI)
Tel.:(+39)02.937.99.240
Fax.:(+39)02.933.01.029
boviar.milano@boviar.com

- **Drilling bit**
Drilling bit made in coboloy (\varnothing 18 mm) with adaptor for percussion drill with bayonet fitting.



- **Electric die grinder**
(450W, 25000 rpm) long nose with rubber grip complete with a \varnothing 18 mm diamond cutter (stem \varnothing 10 mm) and a spanner.



- **Extraction stem**
Steel extract Sstem for Thoro® rawplug.



- **Thoro® rawplug**
Post-installed rawplug (consumable accessories) with a geometrically-controlled mechanical expansion as requested by the standardized testing procedure.
The geometric features of these special inserts (both disc diameter and rod length are $25 \pm 0,1$ mm) are in full compliance with 4.1.1 e 4.1.3 items of UNI EN 12504-3:2005 standard.
Post-installed Thoro® rawplug produce proper failure mechanisms in accordance with the relevant standard procedures.



The rawplugs, available in packs of 25 pcs, are not supplied with the equipment and need to be purchased separately.

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> APPLICATIONS

The Pull-out testing technique features several advantages:

- Non destructive (slightly intrusive);
- Quick and easy to carry out;
- Low influence on stress levels of structural element being investigated;
- Allows to extend the investigation on a large number of structural elements in reduced time;

It has been shown that, in order to estimate the compressive strength of in-situ concrete, it is possible to use a sufficiently accurate general relationship with pull-out testing values, for a wide variety of concrete.

However, a better accuracy can be achieved if you obtain a more specific correlation by calibrating the results against values available from laboratory compressive strength tests on cylindrical concrete specimens taken from the structure under investigation.

> REGULATIONS

Norme UNI EN 12504-3:2005

> CERTIFICATION AND CALIBRATION

"CE" certificate for the whole system (Cylinder, Pump, and Tubings).

Loading system calibration certificate issued by an Official Laboratory according to art. 59 paragraph 1 of the D.P.R. n.380 / 2001 or by a LAT Center.

The calibration refers to the loading system used to determine the extraction force of pre-embedded or post-inserted inserts in the concrete according to the UNI EN 12504-3 standard, consisting of:

- Hydraulic cylinder;
- Hydraulic pump;
- Digital pressure gauge;
- Hydraulic tubings.

> UPDATE

- Last updated tab: 2021.02
- Specifications and standards subject to change without notice
- Check the site updates for the cards, projects, and other photos of the product.

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