

CEMENT TESTING

62 Physical and chemical properties

63 Setting time and consistency

64 Building lime, grout and mud testing

65 Determination of cement strength

Inorganic binders have had a role in the construction industry since pre-classical times and, after successive transformations, are today briefly classified as cements, limes and plasters. Today, these various types of binders are well known, particularly cements, and they are becoming ever more sophisticated with pre-mixed cements designed to satisfy specific structural requirements.

We produce a vast range of machines and testing equipments described and illustrated in the following Sections, that satisfies practically all requirements prescribed by the testing Standards.

The apparatus and equipment for strength evaluation are described and illustrated in Section 65

Cement testing

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Physical and chemical properties

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Setting time and consistency

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Determination of cement strength

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Cement samplers

STANDARD

- ▶ EN 196-7 ▶ ASTM C183
- ▶ AASHTO C127

Two models of cement sampler are available:

- 62-L0001 Packaged cement tube sampler.
Used to sample cement from packages. Made of brass, it has an outside diameter of 32 mm and is 700 mm long.
- 62-L0002 Bulk cement sampler.
Used to sample cement in bulk storage or bulk shipments. It consists of two concentric brass tubes with slots. The inner tube rotates to close the slots and take the sample. The capacity of the internal tube is approx. 3 liters.

Ordering information

62-L0001

Tube sampler for packaged cement. Weight 2 kg approx.

62-L0002

Sampler for bulk cement. Weight 5 kg approx.



62-L0002

62-L0001

Specific gravity (relative density)

STANDARD

- ▶ EN 196-6 ▶ ASTM C188
- ▶ AASHTO T133

62-L0003

LE CHATELIER FLASK

Used to determine the specific gravity of hydraulic cement and lime, this 250 ml capacity flask is made of glass and has a neck with graduated markings from 0 to 1 ml and from 18 to 24 ml in 0.1 ml intervals with an accuracy of 0.05 ml.

Weight: 500 g (approx.)

Accessories

62-D1635

Chattaway spatula, made from pure nickel, 120 mm long



62-L0003



62-D1635

Air content of mortar, density method

STANDARD

- ▶ ASTM C185 ▶ AASHTO T137

62-L0048

STEEL MEASURE

The density method is used to determine the air content of freshly mixed mortars. The mould is made of steel, 88.1 mm high x 76.2 mm inside diameter, and is calibrated to hold 400 ±1 ml of water at 23 °C.

Capacity: 400 ml

Weight: 800 g (approx.)

Accessories

62-D1635

Chattaway spatula, made from pure nickel, 120 mm long.

63-L2700/E24

Glass plate, 120 mm diameter.

63-L0040/11

Hardwood tamper 12 x 25 x 150 mm.



Steel measure 62-L0048 with accessories 62-D1635, 63-L2700/E24 and 63-L0040/11

Carbon dioxide content of cement

STANDARD

▶ EN 196-2

62-L0004

APPARATUS FOR THE DETERMINATION OF THE CARBON DIOXIDE CONTENT OF CEMENT

The testing equipment consists of: a Y-piece with Mohr clip; CO₂ absorption tower for gas or air stream; dropping funnel; distillation flask with electric mantle heater and three-armed still head; condenser; wash bottle for concentrated sulphuric acid; two absorption U-tubes for hydrogen sulphide and water respectively; and three absorption tubes for water and carbon dioxide (two for weighing, the third for protection). Chemicals are not included.

Gross weight: 8 kg (approx.)
220 V, 50-60 Hz, 1 ph.



62-L0004

Cement water retention

STANDARD

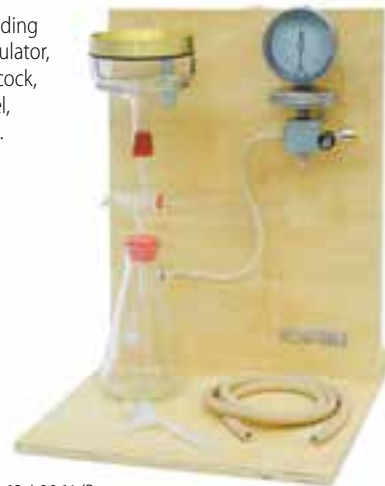
▶ ASTM C91 ▶ ASTM C110
▶ ASTM C207 ▶ ASTM C1506

This apparatus is used for determining the water retention value of cement and lime. Two versions available.

Ordering information

62-L0061/B

Water retention apparatus including an aspirator pump, vacuum regulator, vacuum gauge, three way stopcock, flask, rubber gasket, glass funnel, perforated brass dish and stand. Weight: 8 kg (approx.)



62-L0061/B

62-L0061/C

This model includes a vacuum pump with ultimate vacuum 0.1 mbar, digital vacuum regulator complete with vacuum gauge 1 mbar resolution as requested by the Standard, three-way stopcock, metal perforated dish, rubber gasket and funnel 230 V/50-60 Hz/1 ph

Note: for more information on the Vacuum pump and Digital vacuum regulator see page 431.

Bulk density of cement

62-L0060/A

CEMENT BULK DENSITY APPARATUS

This apparatus is used to determine the bulk density of cement as specified by the "Commission des méthodes d'essai des matériaux de construction". It consists of a sieve funnel, a 1 liter capacity unit weight measure, a tripod and a straightedge.

Overall dimensions:
350 x 350 x 520 mm

Weight: 3 kg (approx.)



62-L0060/A

Soundness of cement and hydrated lime

STANDARD

▶ EN 196-3 ▶ EN 459-2 ▶ ISO 9597 ▶ BS 6463 ▶ NF P15-432 ▶ UNE 80102

LE CHATELIER MOULDS

Used for determining the expansion of cement, Le Chatelier moulds consist of a spring-tensioned split cylinder 30 mm inside diameter and 30 mm high, with two indicator stems attached either side of the split which measure 165 mm from their tips to the center of the cylinder, and an O-ring. Two or three moulds are required for each test. A water bath is also required: 62-L0025/F version for performing tests conforming to the EN 196-3 Standard and 64-L0025/G Steam cabinet version for the EN 459-2 Standard concerning building lime.

Three packages are available:

- **62-L0025** Single Le Chatelier mould, identified by a serial number, individually checked and supplied with a certificate of conformity.
- **62-L0025/C** Pack of six 62-L0025 Le Chatelier moulds.
- **62-L0025/B** Le Chatelier soundness kit. This package includes all the accessories needed to perform the test and verify the conformity of the moulds, all contained in a carrying case.

The kit consists of:

- Three **62-L0025** Le Chatelier moulds
- Six **62-L0025/2** 50 x 50 mm glass plates
- Three **62-L0025/3** 100 g weights
- One **62-L0025/4** extensibility of mould apparatus
- One **62-L0025/5** tamping rod, 17 mm diameter x 70 g weight
- One **62-L0025/6** steel rule

Note: all of the above parts can be purchased individually.



62-L0025/B



Use of the extensibility of mould apparatus 62-L0025/4, included with 62-L0025/B kit



62-L0025. Each mould is supplied complete with a certificate of conformity

Ordering information

62-L0025

Le Chatelier mould, weight 30 g approx.

62-L0025/C

Le Chatelier moulds, pack of 6, weight 180 g approx.

62-L0025/B

Le Chatelier soundness kit, weight 1 kg approx



62-L0025/C

STANDARD

- ▶ EN 196-3 ▶ ISO 9597 ▶ BS 6463
- ▶ NF P15-432 ▶ UNE 80102

LE CHATELIER WATER BATH

This water bath has a stainless steel internal chamber housed in an insulated stainless steel exterior case and is capable of heating water to boiling point in 30 minutes. It comes complete with a rack for twelve 62-L0025 moulds.

Ordering information

62-L0025/F

Le Chatelier water bath.
 Outside imensions:
 465 x 275 x 200 mm (w x d x h)
 Weight: 10.5 kg (approx.)
 Power: 1500 W
 220-240 V, 50-60 Hz, 1 ph.

62-L0025/FZ

As above but 110V, 60 Hz, 1 ph.

STANDARD

- ▶ EN 459-2

STEAM CABINET FOR SOUNDNESS OF BUILDING LIME

For use with 62-L0025 Le Chatelier moulds, this bath is designed for the determination of the soundness of building lime which is subjected to the continuous action of steam at atmospheric pressure for a period of 180 ±10 minutes. The bath, identical in shape to the 62-L0025/F, has a stainless steel internal chamber housed in an insulated stainless steel exterior case.

Ordering information

62-L0025/G

Steam cabinet.
 Outside dimensions:
 465 x 275 x 200 mm (w x d x h)
 Weight: 11 kg (approx.)
 Power: 700 W
 230 V, 50-60 Hz, 1 ph.

62-L0025/GZ

As above but 110V, 60 Hz, 1 ph.

Expansion of portland cement

STANDARD

- ▶ ASTM C151 ▶ UNE 7207

HIGH PRESSURE CEMENT AUTOCLAVE

The autoclave is a high-pressure steam vessel with internal dimensions of 154 mm diameter and 430 mm height to accept a rack for holding 10 specimens obtained with the 62-L0033/B moulds (see Accessories). It is supplied complete with pressure gauge, pressure regulator, temperature regulator, control switches, safety valve and specimen rack. Certified conforming to ISPELS procedure.

Specifications

Power: 2600 W
 Overall dimensions:
 450x475x1080 mm
 Weight: 55 kg (approx.)

Ordering information

62-L0032/A

High pressure cement autoclave.
 230 V, 50-60 Hz, 1 ph.

62-L0032/AZ

As above but 110V, 60 Hz, 1 ph.

Accessories

62-L0033/B

Two gang prism mould, 25 x 25 x 285 mm, complete with contact points. Gauge length 250 mm, total length 285 mm. Weight 6 kg approx.

Spare parts

62-L0033/B2

Spare contact points for 62-L0033/B moulds. Pack of 10.



62-L0025/F, 62-L0025/G



62-L0032/A



62-L0033/B



Measurement of length changes

STANDARD

▶ EN 1367-4 ▶ UNI 8147 ▶ UNI 8148 ▶ EN 12617-4 ▶ EN 12808-4
▶ ASTM C151 ▶ ASTM C490 ▶ UNI 8520:22 ▶ UNI 6687 ▶ EN 680

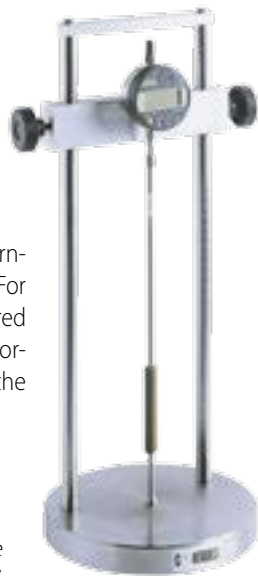
LENGTH COMPARATOR, AND REFERENCE RODS

62-L0035/A

This apparatus is used for a number of length measurements concerning mainly cement and mortar specimens with different lengths. For this, reason the reference rods are not included and have to be ordered separately. Please consult the specification table below to select the correct items. Two column steel frame with adjustable top anvil to suit the specimen length. Fitted with a digital gauge 12.5x0.001 mm.

- Dimensions: 180x180x490 mm
- Weight approx.: 10.5 kg

Note: The digital gauge can be connected to the PC by using the 82-D1261 LINK cable in order to download the readings. By pushing a button on the cable, the current reading will be automatically stored in an excel cell or notepad row. Reading will be not acquired continuously, but just when pushing the button.



62-L0035/A with reference rod

Hydraulic shrinkage of cement mortar

STANDARD

▶ EN 12617-4 ▶ EN 12808-4
▶ NF P15-433 ▶ UNI 6687

HYDRAULIC SHRINKAGE MOULDS

The 62-L0009/G version is used for the determination of linear shrinkage of cement mortars (EN 12617-4). The same mould can be used for testing grouts conforming to EN 12808-4 replacing the standard plugs with the 62-L0010/H2 and placing two 15x40x160 mm plastic inserts 62-L0010/H3 inside each compartment. See accessories.

The 62-L0009 version, conforming to UNI 6687, slightly differ from the 62-L0009/G version and it is used for the same determination.

Weight approx.: 12 kg

Reference mould, plugs and rod selection guide

Standard	Test/Determination	Mould code	Specimen Dimensions mm	Plugs code	Rod code length mm
ASTM C490, C157	Length change of hardened cement paste, mortar	62-L0033/B	25x25x285	62-L0033/B2	62-L0034/1* 295
EN 1367-4	Effect of aggregates in drying shrinkage of concrete	48-D0453	50x50x200	48-D0453/1	62-L0034/3 205
ASTM C596	Drying shrinkage of mortar	62-L0033/B	25x25x285	62-L0033/B2	62-L0034/1* 295
EN 12617-4	Hydraulic shrinkage of cement mortar	62-L0009/F	40x40x160	62-L0009/1F	62-L0034/7 160
UNI 6687	Hydraulic shrinkage of cement mortar	62-L0009	40x40x160	62-L0009/1	62-L0034/7 160
EN 12808-4	Shrinkage determination of grouts for tiles	62-L0009/F+ 62-L0010/H3	10x40x160	62-L0010/H2	62-L0034/7 160
EN 1770	Determination of thermal expansion	65-L0010/A	40x40x160	65-L0010/5	62-L0034/10 176
ASTM C151	Expansion of Portland cement	62-L0033/B	25x25x285	62-L0033/B2	62-L0034/1* 295
UNI 8147	Restrained expansion of mortar	55-C0115/8	50x50x280	-	62-L0034/8 280
UNI 8148	Restrained expansion of concrete	55-C0115/7	80x80x240	-	62-L0034/8 280
UNI 11504	Potential reactivity of aggregates (at 80° C)	65-L0009/A	25x25x280	65-L0009/A1	62-L0034/11 294
ASTM C1567, C1260	Potential reactivity of aggregates (at 80°C)	62-L0033/B	25x25x285	62-L0033/B2	62-L0034/1* 295
UNI 11604	Potential reactivity of aggregates	65-L0033/U 65-L0033/UU	75x75x285	65-L0033/U1	62-L0034/1* 295
ASTM C227	Potential reactivity of aggregates	62-L0033/B	25x25x285	62-L0033/B2	62-L0034/1* 295

*Note: 62-L0034/1 is INVAR made. 62-L0034/12 features the same length, 295mm, but is made from stainless steel

62-L0009/G

Hydraulic shrinkage mould 40x40x160 mm, complete with shrinkage plugs to EN 12617-4

62-L0009

Hydraulic shrinkage mould 40x40x160 mm, complete with shrinkage plugs to UNI 6687

Accessories

62-L0010/H2

Contact points for 10x40x160 mm specimens to EN 12808-4. Pack of 12.



62-L0009/G Shrinkage mould for 40x40x160 mm mortar prisms

62-L0010/H3

Plastic inserts 15x40x160 mm to EN 12808-4. Six pieces.

Spare parts

62-L0009/1F

Spare shrinkage plugs to EN 12617-4. Pack of 12.

62-L0009/1

Spare shrinkage plugs to UNI 6687. Pack of 12.



62-L0009/1



62-L0009/1F

Potential alkali reactivity of cement-aggregate combinations

STANDARD

- ▶ ASTM C22 ▶ ASTM C1567
- ▶ ASTM C1260 ▶ UNI 8520-22
- ▶ UNI 11604 ▶ UNI 11504

The test can be carried out at 38° C according to ASTM C227 and UNI 11604 for long term determinations or at 80°C according to the accelerated test method as requested by ASTM C1567, C1260, UNI 11504.

The above tests can be carried out with the following apparatus:

CONTAINERS

62-L0073

Mortar bar container to ASTM C227, for testing at 38°C Acrylic cylinder container with an internal stainless steel rack to hold vertically 6 specimens 25x25x285 mm.

Dimensions: 170 mm diameter x 450 mm height. Weight: 3 kg approx.



62-L0073

62-L0073/U

Mortar bar container to UNI 11604 for 1 specimen 75x75x285 mm



62-L0073/U



62-L0074/U

62-L0074/U

Used for determining the potential alkali reactivity of cement aggregate combination (mortar bar method) up to 80° C (accelerated method). Stainless steel cylinder container and internal stainless steel rack to hold 3 specimens 25x25x285 mm.

PRISM MOULDS

62-L0033/B

Two gang prism mould to ASTM, 25 x 25 x 285 mm, complete with contact points. Gauge length 250 mm, total length 285 mm. Made of steel with a minimum surface hardness of HV200. Weight 6 kg approx.



62-L0033/B

62-L0009/A

Three gang prism mould to UNI 11504, 25 x 25 x 280 mm, complete with plugs. Gauge length 250 mm, total length 280 mm. Weight: 4.5 kg approx.



62-L0033/UU

Two gang prism mould 75x75x285 mm to UNI 11604, complete with contact points. Gauge length 250mm, total length 285 mm. Weight approx.: 12 kg



62-L0033/U

One gang prism mould 75x75x285 mm to UNI 11604, complete with contact points. Gauge length 250 mm, total length 285 mm. Weight approx.: 7 kg



Spare parts

62-L0033/B2

Spare contact points for 62-L0033/B moulds. Pack of 10.

62-L0009/A1

Spare plugs for 62-L0009/A. Pack of 20.

62-L0033/U1

Spare contact points for 62-L0033/U and 62-L0033/UU moulds. Pack of 30.

Heat of hydration of cement

62

STANDARD

- ▶ EN 196-8
- ▶ ASTM C186



62-L0071/AD

MAIN FEATURES

- » 0.001°C resolution
- » System accuracy up to 0.05°C
- » Instrument memory for up to 10,000 readings
- » Displays, saves and prints Delta T, min, max and mean values
- » Audible alarm if limit values are exceeded
- » Protection class IP65
- » PT100 probe measuring range -40 to +300°C
- » Complete with resolution test certificate
- » Supplied complete with MS Excel template for data processing

HEAT OF HYDRATION CALORIMETERS

Two versions of calorimeter are available: one with a standard Beckman thermometer and one with a digital high-resolution thermometer.

The standard version 62-L0071/A consists of a Dewar flask housed in an insulated box, a constant speed electric stirrer, a filler funnel and a Beckman type thermometer with reader. The digital version 62-L0071/AD has a high-resolution battery-powered electronic thermometer mounted in place of the Beckman thermometer.

Overall dimensions: 300 x 200 x 650 mm

Weight: 13 kg approx.

Ordering information

62-L0071/A

Heat of hydration calorimeter. 230 V, 50-60 Hz, 1 ph.

62-L0071/AZ

As above but 110 V, 60 Hz, 1 ph.

62-L0071/AD

Heat of hydration calorimeter with 0,001°C high-resolution digital thermometer. 230 V, 50-60 Hz, 1 ph.

62-L0071/ADZ

As above but 110 V, 60 Hz, 1 ph.

Accessories

62-L0072/V

Special set of glassware for water content determination including silica combustion tube and water absorption components. Conforming to BS 4550 and UNI 7208.

86-D0805

Paraffin wax, melting point 60°C approx. Used to coat all glass surfaces in contact with hydrofluoric acid.

Loss on ignition

STANDARD

- ▶ EN 196-2

MUFFLE FURNACE

Used for determining the loss on ignition of cement and building lime.

Specifications

- Maximum temperature: 1200°C
- Power: 4200 W
- Inside dimensions: 210 x 280 x 145 mm (w x d x h)
- Outside dimensions: 510 x 650 x 650 mm
- Weight: 70 kg (approx.)

Ordering information

10-D1418/A

Muffle furnace, 1200°C maximum temperature. 230 V, 50-60 Hz, 1 ph.

10-D1418/AZ

As above but 110 V, 60 Hz, 1 ph.



65-D1409/A

65-D1409/A

Digital circulating water bath with cooler unit. Used to condition the temperature of the cement sample (either anhydrous or hydrated) before it is placed in the calorimeter. 230 V, 50-60 Hz, 1 ph.

65-D1409/AZ

As above but 110 V, 60 Hz, 1 ph.

Note: for more detail and information on the 65-D1409/A water bath, see page 292

Spare parts

62-L0071/6

Dewar flask.

62-L0071/2

Beckman thermometer (for 62-L0071/A only).

62-L0071/3

Filler funnel.



10-D1418/A

Fineness of cement

STANDARD

EN 196-6 ▶ ASTM C204 ▶ AASHTO T153

This test method concerns the determination of the particle size of Portland cement, limes and similar powders using the Blaine air permeability apparatus. The measure of fineness is expressed in terms of the specific surface area (the total particle surface area) in square centimetres per gram or square meters per kilogram.

We produce three models:

- 62-L0041/E - Semi-automatic version
- 62-L0041/A - Manual version conforming to EN
- 62-L0041/C - Manual version conforming to ASTM



62-L0041/C

MANUAL BLAINE FINENESS

(air permeability) apparatus

This version consists of a stainless steel cell, perforated disc and plunger, with a U-tube glass manometer fitted to the steel stand. The set is supplied complete with a rubber aspirator and pack of filter paper.

Overall dimensions:

220 x 170 x 470 mm

Weight: 8 kg (approx.)

Ordering information

62-L0041/E

Semi-automatic Blaine fineness (air permeability) apparatus.

62-L0041/C

Manual Blaine fineness (air permeability) apparatus conforming to EN 196-6, ASTM C204 and AASHTO T153.

SEMI-AUTOMATIC BLAINE FINENESS

(air permeability) apparatus

This advanced apparatus fulfills both the EN 196-6 requirements and those concerning the validations demanded of the automatic methods by the ASTM C204. The accuracy and precision of results obtained using this apparatus exceed those acquired using the manual method.

Calibration of the apparatus must be done using a cement surface standard reference such as the reference sands included or the reference material NIST 114q, available as an accessory. To obtain the most accurate results, the test should be performed in a temperature-controlled environment.

Accessories

62-L0041/6

Reference cement, EN/ASTM, pack of 5 g.



62-L0041/E

Accessories

(for both manual models)

62-L0041/2

Manometer liquid, 250 ml bottle.

62-L0041/6

Reference cement, EN/ASTM, pack of 5 g.

63-L0028/7

Glass thermometer, -10 to +50°C.

Spare parts

62-L0041/A1

U-tube manometer for the 62-L0041/C

62-L0041/32

Filter paper, box of 100 discs for 62-L0041/C.

VICAMATIC

Automatic Vicat apparatus



63

STANDARD

- ▶ EN 196-3 ▶ EN 480-2 ▶ EN 13279-2 ▶ ASTM C191 ▶ ASTM C187
- ▶ ASTM C141 ▶ ASTM C451 ▶ ASTM C807 ▶ AASHTO T131

Firmware specifications

- Easy programming of customized test profiles, recallable for future tests, including:
 - adjustable test start delay
 - penetration points positions
 - manual or automatic penetration rate
 - free or driven dropping mode

- holding intervals inside the sample
- automatic end- test detection
- automatic measurement of initial and final setting time
- Test data: test number, operator, client, date, hour, cement type, water percentage, delay
- Easy calibration menu
- Clock calendar
- Multi-language

TEST PATHS

Standards	ASTM C191	EN 196	EN 480-2	EN 13279-2	General purpose
Pitch (mm)	6.8	10	10	12	min 2 mm
Diameters (mm)	0 - 10 - 20 - 30 - 40	10 - 20 - 30 - 40 - 50	10-30-50	0 - 24 - 50	0 ≤ dia ≤ 60 (max 10 diameters)
Points per dia.	1 - 6 - 12 - 18 - 25	2 - 6 - 9 - 12 - 15	2 - 9 - 15	1 - 6 - 13	depending on diameter size

MAIN FEATURES

- » Easy-to-use double interface: local mode, with large size 4x3" touch screen color display, and remote mode, with PC
- » Supplied complete with PC software for data processing VICASOFT-BASIC
- » With PC software VICASOFT-PREMIUM (optional) up to 32 independent units can be connected to a single PC via LAN port and hub. All units are remotely controlled. Adopting the multi-test network concept laboratory productivity is maximized. Each Vicamatic includes LAN cable
- » USB port for data storage on memory stick included
- » Penetration measurement by high precision encoder
- » Integrated graphic printer is available as optional accessory showing both results in numerical format and setting time plot
- » Easy setting and storage of user-defined test profiles allowing quick test start
- » Large accessibility to the test space
- » Complete with needle cleaning device
- » Practical in-water testing accessory (optional)
- » Automatic determination of initial and final setting time

Ordering information

63-L2700/E

VICAMATIC-2, automatic electronic apparatus for setting time test on cement/mortar/gypsum. Complete with EN 196-3 accessories: initial setting time needle 1.13 mm dia., needle cleaning device, mould, centering ring and PC software VICASOFT-BASIC. 110-240V, 50-60Hz, 1ph.

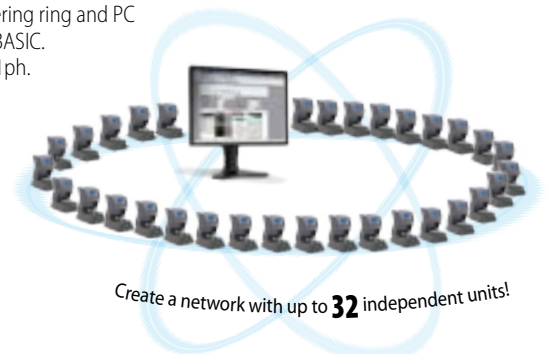
63-L2700

VICAMATIC-2, automatic electronic apparatus for setting time test on cement/mortar/gypsum complete with needle cleaning device, PC software VICASOFT-BASIC. Supplied without accessories (mould, needle and mould centering ring). 110-240V, 50-60Hz, 1ph.

63-L2700/F

As above but complete with ASTM C191 accessories: initial setting time needle 1.00 mm dia., needle cleaning device, mould, centering ring and PC software VICASOFT-BASIC. 110-240V, 50-60Hz, 1ph.

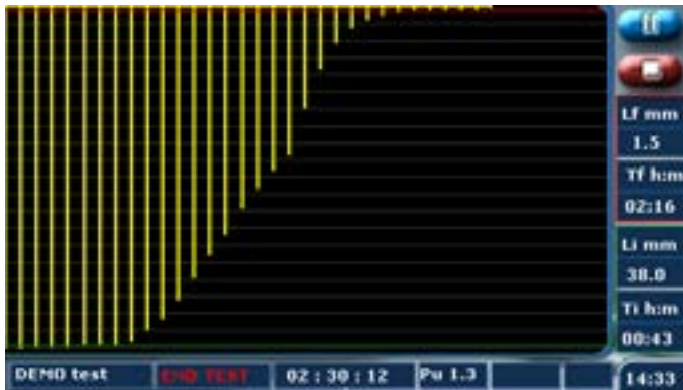
For all models:
Power: 50 W
Dimensions: 200x400x410mm (L x W x H)
Weight approx.: 10 kg



Create a network with up to **32** independent units!



User menus have been optimized with the use of icons and symbols making use very simple



Setting time plot shown in real time on VICAMATIC-2 display



Detail of the needle cleaning device, (included in all models).



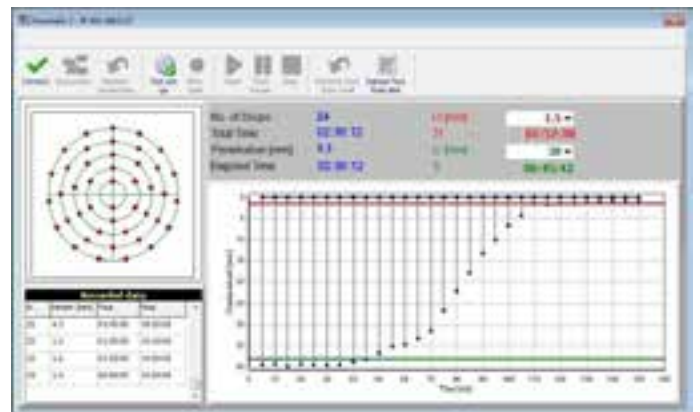
63-L2700/E9

Accessories

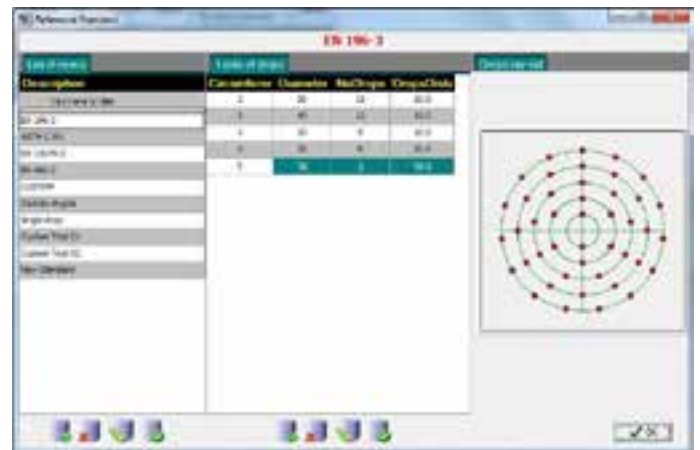
82-SW/VS

VICASOFT-PREMIUM software for PC provides connection of up to 32 VICAMATIC-2 units including remote control of each unit, data acquisition, processing, filing, and printout of test reports.

Communication via LAN port (each VICAMATIC-2 unit is supplied complete with LAN cable). The connection of one VICAMATIC-2 unit is direct via the PC LAN-port, for more VICAMATIC-2 units (up to 32) one or more LAN hubs are required with total number of ports equal (or greater) than the number of VICAMATIC-2 units included in the network. LAN hubs are not included. See accessories page 276



VICASOFT PREMIUM: typical setting time diagram



VICASOFT PREMIUM: creation of a user defined test profile, easy recallable for future tests

WATER THERMOSTATIC UNIT

The unit is provided with internal water tank and pump. The water in the tank is maintained at controlled temperature and is forced to the water container 63-L2700/E10 and then back to the tank, in a closed loop system.

The unit can connect up to 2 Independent VICAMATIC. Supplied without pipes.

- Accuracy: +/- 1°C
- Optimize temperature range: 15 to 22°C

- Capacity: 2 liters approx.
- Overall dimensions: 480 x 380 x 275 mm (wxhxd)
- Weight approx.: 20 kg

63-L2700/E9

Water thermostatic unit for VICAMATIC -2. Up to 2 units may be connected. 230 V, 50-60 Hz, 1 ph

63-L2700/E9Z

Same as above, but 110 V, 60 Hz, 1 ph

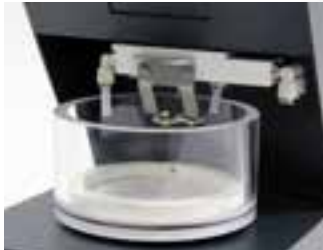
VICAMATIC

Automatic Vicat apparatus

Accessories

63-L2700/E10

Accessory for needle cleaning and in-water testing



Detail of the in-water testing accessory (63-L2700/E10)

63-L2700/E11

LAN hub for PC connection of up to 7 VICAMATIC-2 units or up to 6 units in case of multi-hub network. LAN cable from hub to PC is included.

63-L2700/PR

Upgrading of a VICAMATIC-2 unit for incorporating a graphic printer into the head. Test settings and results are plotted both as numerical and graphical format including penetration depth/time diagram. This upgrade must be factory installed

63-L2700/E14

Needle for final setting test to EN 196-3

63-L2700/E15

Cylindrical probe for consistency test to EN 196-3 and ASTM C187

63-L2700/F15

Cylindrical probe and additional weight for consistency test to ASTM C807.

63-L2700/E16

Additional weight 700 g to EN 480-2

63-L2700/E18

Conical penetration probe 8 mm dia x 50 mm complete with 100g calibrated weight for gypsum testing to EN 13279

63-L2700/F21

2 mm dia. needle to ASTM C807

63-L2700/F23

Cylindrical brass mould to ASTM C807



A typical plot of a test result obtained with the integrated printer model 65-L2700/PR including setting time diagram and readings in numerical and graphical format



EN and ASTM moulds and needles: 63-L2700/E14, 63-L2700/E21, 63-L2700/E20



63-L2700/E16



63-L2700/E18



2mm needle to ASTM C807 (63-L2700/F21) on the left; consistency probe and additional weight to ASTM C807 (63-L2700/F15) on the right

Spare parts

63-L2700/1

Centering ring for EN mould

63-L2700/2

Centering ring for ASTM mould

63-L2700/E20

1.13 mm dia. needle for initial setting time test to EN

63-L2700/E21

1 mm dia. needle for setting time test to ASTM/AASHTO

63-L0027/E22

Plastic mould to EN

63-L0027/E23

Plastic mould to ASTM/AASHTO

63-L2700/E24

Glass base plate

63-L2700/E25

Spare base plate for in-water testing kit

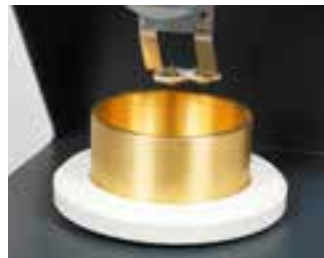
63-L2700/E26

Spare container for in-water testing



63-L2700/E22

63-L2700/E23



Brass mould to ASTM C807 (63-L2700/F23)



63-L2700/E15

Standard Vicat apparatus

STANDARD

► EN 196-3 ► EN 480-2 ► ASTM C191 ► AASHTO T131

The Vicat frame consists of a metal stand with a sliding rod. An adjustable indicator moves over a graduated scale. The needle or plunger is attached to the bottom end of the rod to make up the test weight of 300 g.

The frame 63-L0028/1 is supplied without accessories, which have to be ordered separately depending on requirements. It can also be ordered as a set, with basic EN accessories (63-L0028) or ASTM/AASHTO accessories (63-L0028/A).

Weight: 4 kg (approx.)

Ordering information

63-L0028/1

Vicat apparatus, frame only.

63-L0028

Vicat test set conforming to EN method, including: mould, 1.13 mm diameter needle, 10 mm diameter consistency plunger, supporting plate, glass thermometer and final needle.

63-L0028/A

Vicat test set conforming to ASTM/AASHTO method, including: mould, 1 mm diameter needle, 10 mm diameter consistency plunger, supporting plate and glass thermometer.



63-L0028/41



63-L0028/1 with accessories

Accessories

EN method

63-L0027/E22

EN Vicat mould.

63-L0028/31

Initial needle, 1.13 mm diameter (set of 6).

63-L0028/41

Final needle.

63-L0028/8

Additional weight, 700 g, for testing conforming to EN 480-2.

63-L0028/E18

Conical needle, dia.8mm x50mm to EN 13279 for gypsum testing. Complete with probe, total weight 100g.

63-L0026/D

Brass mould, dia 80 x 40mm, with ring and base to BS 4550-3.5

ASTM/AASHTO method

63-L0027/E23

ASTM Vicat mould.

63-L0028/21

Initial needle, 1 mm diameter (set of 6).

For both methods

63-L0028/5

Consistency plunger, 10 mm diameter.

63-L0028/6

Supporting plate.

63-L0028/7

Glass thermometer, temperature range-10 to +50°C.

Setting time of cement: Gillmore method

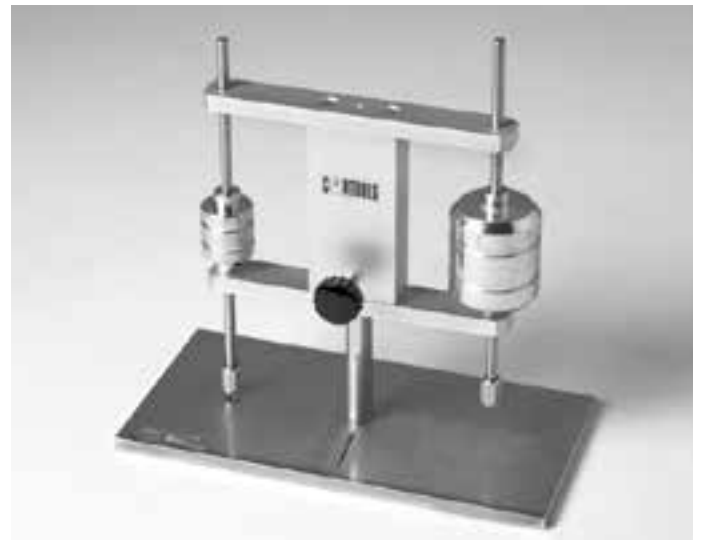
STANDARD

► ASTM C91 ► ASTM C141
► ASTM C266 ► ASTM C1398
► AASHTO T154

GILLMORE APPARATUS

63-L0075

Used to determine the setting time of cement, this apparatus consists of two horizontal arms which carry two weighted steel needles precisely machined to meet the requirements of the Standards. The initial needle is 2.12 mm diameter and weighs 113 g and the final needle is 1.06 mm diameter and weighs 453.6 g. Weight: 2.5 kg (approx.)



63-L0075



Accessories

Flow of mortar, building lime, gypsum builders and plasters

STANDARD

▶ EN 459-2 ▶ EN 1015-3 ▶ ASTM C230 ▶ EN 13279-2 ▶ ASTM C1437

FLOW TABLES FOR MORTAR AND BUILDING LIME

Used to determine the consistency of mortars and building lime.

Two versions available: conforming to EN and ASTM standards, manual and motor operated.

Motor operated models are driven by a motor speed reducer and the number of drops are pre-set on the digital counter, which automatically stops the machine at the end of the cycle. Supplied complete with flow mould and tamper. EN versions also include the filling hopper.



64

Models	64-L0038/A	64-L0038/G, /GY, /GZ	63-L0040/A	63-L0040/G, /GY, /GZ
Standard	EN 459, EN 1015-3, EN 13279-2		ASTM C230	
Power, W	Hand op.	180	Hand op.	180
Table dia. mm	300 (stainless steel)		254 (bronze)	
Height of drop mm	10		12.7	
Total mass of movable parts, kg	4.2 to 4.5		4.08 ± 0.05	
Flow mould dim. mm	100 base x 70 top x 60 height (stainless steel)		101.6 base x 69.9 top x 50.8 height (brass)	
Dimensions mm (lxdxh)	421 x 310 x 395	500 x 525 x 352	330 x 254 x 420	670 x 550 x 420
Weight approx. kg	35	50	11	21

Hand operated models

64-L0038/A
Hand operated flow table, conforming to EN 459-2 and EN 1015-3

63-L0040/A
Hand operated flow table, conforming to ASTM C230

Motorized models

64-L0038/G
Motor operated flow table, conforming to EN 459-2 and EN 1015-3. 230 V, 50 Hz, 1 ph.

64-L0038/GY
As above but 220 V, 60 Hz, 1 ph.

64-L0038/GZ
As above but 110 V, 60 Hz, 1 ph.

63-L0040/G
Motor operated flow table, conforming to ASTM C230. 230 V, 50 Hz, 1 ph.

63-L0040/GY
As above but 220 V, 60 Hz, 1 ph.

63-L0040/GZ
As above but 110 V, 60 Hz, 1

Accessories

63-L0037/1
Flow caliper to EN 459-2 and EN 1015/3

63-L0040/1
Flow caliper to ASTM C230

63-L0037/10
Brass flow mould, 100 mm base dia., 70 mm top dia., 60 mm height. to EN Standards

Spare parts
63-L0038/10
Spare inox flow mould for EN flow tables.

63-L0040/10
Spare brass flow mould for ASTM flow tables.

63-L0037/12
Filling hopper for EN flow tables.

63-L0040/11
Hardwood tamper to ASTM.

63-L0037/11
Tamper to EN



63-L0040/G



64-L0038/G



64-L0038/A



63-L0037/1



63-L0040/1

Consistency of masonry cement and building limes

STANDARD

► EN 413-2 ► EN 459-2 ► EN 1015-7

64-L0036

PLUNGER PENETRATION APPARATUS

This apparatus is used for determining the consistency of masonry cement and building limes. It consists of a steel base with a recess to house the test cup and a vertical column holding the penetration plunger assembly. The height of the drop is 100 mm and the weight of plunger assembly is 90 g. Supplied complete with a test cup measuring 80 mm diameter x 70 mm deep and a tamper. Weight: 6 kg (approx.)



64-L0036

Air content of cement mortar, cement paste and lime mortar

STANDARD

► EN 413-2 ► EN 459-2 ► EN 1015-7

AIR CONTENT METERS



64-C0171, 64-C0171/A

These meters have been designed to determine the air content of cement mortar, cement paste and lime mortar. The testers are made of cast aluminum, with the test pot and the upper part held together with an air-tight seal by means of two quick-action spring clamps. The air is compressed with a built-in hand pump. This air pump and the TEST and CORRECTION push buttons are arranged in a simple-to-use configuration on the front plate. The pressure gauge is built into the head of the meter and has a scale with an indication range of 0-50 percent volumetric air content.

The two models that we produce are practically identical except for their capacities:

- 64-C0171 model, 1 liter capacity, conforms to the EN 459-2 and EN 1015-7 Standards
- 64-C0171/A, 0.75 liter capacity, conforms to EN 413-2

Electrically-operated versions of both models can be supplied, on request.

Dimensions: 320 mm high x 200 mm diameter

Weight: 3.5 kg (approx.)

Ordering information

64-C0171

Air content meter, 1 liter capacity, conforming to EN 459-2.

64-C0171/A

Air content meter, 0.75 liter capacity, conforming to EN 413-2.

Accessories

64-C0171/1

Filling ring for 64-C0171 and 64-C0171/A.

64-L0037/11

Tamper to EN.

Water retention of mortar

STANDARD

► EN 413-2

64-L0095/6

RIGID PLASTIC MOULD

Used for determining the water retention of masonry cement. Made from rigid non-porous plastic, 100 ±1 mm inside diameter, 25 ±1 mm inside height. Weight: 127 g.



64-L0095/6

Reactivity of lime

STANDARD

▶ EN 459-2 ▶ NF P98-102

REACTIVITY TEST APPARATUS

Ground quicklime is tested for its reactivity using this apparatus which consists of a 1000 ml capacity Dewar vessel, stirring motor, calibrated thermometer, stand and accessories.

The apparatus is available in two versions:

- 64-L0035/E Digital, fitted with digital thermometer
- 64-L0035/D Digital, fitted with digital thermometer, temperature probe, serial cable for PC connection and dedicated software for data download.

Ordering information

64-L0035/E

Apparatus for testing reactivity of quicklime, complete with digital thermometer.
110-230 V, 50-60 Hz, 1 ph.

64-L0035/D

Apparatus for testing reactivity of quicklime, complete with digital thermometer, serial cable for PC, connection and software for download data.
110-230 V, 50-60 Hz, 1 ph.

Spare parts

64-L0035/C1

Dewar vessel, supplied without stopper.

64-L0035/C2

Stirring paddle.

64-L0035/D1

Spare thermometer for 64-L0035/D
- Max. temperature: 900° C
- Resolution: 0.1° C
- Accuracy: ± 0.5° C

64-L0035/E1

Spare thermometer for 64-L0035/E
- Max. temperature: 220° C
- Resolution: 0.1° C
- Accuracy: ± 0.3° C



64-L0035/E1 Detail of digital thermometer



64-L0035/D1 Detail of digital thermometer and probe



64-L0035/E, L0035/D without thermometer

Yield of lime

STANDARD

▶ EN 459-2

64-L0031/A

SLAKING VESSEL

Used to determine the yield of lime by safely containing a sample while it is left to slake. The vessel consists of an externally insulated stainless steel cylinder with a cover.

- Internal dimensions: 113 mm diameter x 120 mm height
- Overall dimensions: 155 mm diameter x 200 mm height
- Weight: 2.1 kg (approx.)



64-L0031/A

Bulk density of lime

STANDARD

▶ EN 459-2

64-L0031/B

BULK DENSITY APPARATUS

This apparatus is used for determining the bulk density of lime by the fall of the sample from a standard height into a container. It consists of a 1 liter capacity cylindrical container, hopper and spring loaded yoke.

- Weight: 2.5 kg (approx.)



64-L0031/B

Fluidity test of grouts for pre-stressing tendons: grout spread method

STANDARD

EN 445 (2007)

MOULD FOR GROUT SPREAD TEST

Stiff plastic mould, 39 mm internal diameter, 60 mm high, weight 60 g approx.

Ordering information

64-L0053/A

Mould for grout spread test.

Accessories

22-T0040/1

Glass plate, 300 x 300 mm.



64-L0053/A with 22-T0040/1

Water permeability of one-coat rendering mortars with substrates

STANDARD
 ▶ EN 1015-21

64-L0030/A APPARATUS FOR THE DETERMINATION OF WATER PERMEABILITY

The apparatus for the determination of water permeability in one-coat rendering mortars with substrates consists of a metal cone with a base diameter of 200 mm and a reference mark at 100 mm. A 1 liter capacity glass burette with 1 ml graduation marks is held over the cone using an appropriate base with rod and clamps.

- Dimensions: 1400 x 300 x 300 mm (approx.)
- Weight: 10 kg (approx.)



64-L0030/A

Determination of workability test for flow of grout or mortar

STANDARD
 ▶ EN 13395-2 ▶ UNI 8997

64-L0054/A GROUT FLOW TROUGH APPARATUS

This apparatus consists of a metal channel with a special funnel mounted on one end. It comes complete with spirit level, graduated rule and feet.

- Overall dimensions: 960 x 210 x 400 mm (w x d x h)
- Weight approx.: 6 kg

64-L0054/B
 As above but stainless steel.



64-L0054/A

Fluidity test of grouts for pre-stressing tendons: Cone method

STANDARD
 ▶ EN 445

64-L0055/A FLOW CONE APPARATUS WITH SIEVE AND 10 MM NOZZLE

Used for determining the flow properties of mortars, grouts, muds and many other types of fluid materials. The apparatus comprises a metal stand supporting a stainless steel cone with inside dimensions of 150 mm upper diameter and 280 mm height. When fitted with the 10 mm nozzle the total height is 350 mm. The apparatus, as specified by EN 445, is supplied complete with a 150 mm diameter sieve with 1.5 mm openings, a 10 mm diameter nozzle with fitting bush and a 1 liter capacity cup. It can also be fitted with other nozzles of 8, 9, 11, and 13 mm inside diameter - see Accessories.

- Weight: 10 kg (approx.)

Accessories

64-L0055/2
 Nozzle, 8 mm inside diameter.

64-L0055/3
 Nozzle, 9 mm inside diameter.

64-L0055/5
 Nozzle, 11 mm inside diameter.

64-L0055/6
 Nozzle, 13 mm inside diameter.

Spare parts

64-L0055/1
 Stainless steel cone with collar for nozzle.

64-L0055/4
 Nozzle, 10 mm inside diameter.

64-L0055/7
 Stainless steel sieve, 150 mm diameter with 1.5 mm openings.



64-L0055/A with 64-L0055/2, 64-L0055/3 and 64-L0055/5. The sieve required to perform the test (150 mm diameter with 1.5 mm openings) is also supplied

Workable life and correction time of fresh mortars

STANDARD

- ▶ EN 1015-9 (method A)
- ▶ EN 13294

64-L0098

WORKABLE LIFE APPARATUS

The test apparatus for determining the workable life and correction time of fresh mortars includes a vertical loading pillar complete with penetration rod, sample container and electronic balance with 30 kg capacity and 0.5 g resolution.

Weight: 10 kg (approx.)



64-L0098

Water vapour permeability of hardened rendering and plastering mortars

STANDARD

- ▶ EN 1015-19

64-L0092

WATER VAPOUR PERMEABILITY TEST CELL

Made of hard corrosion-resistant plastic with a permeability area of approx 0.02 m².

Dimensions: 190 mm diameter x 55 mm height

Weight: 550 g (approx.)



64-L0092, disassembled and assembled



Fly ash: determination of fineness by wet sieving

STANDARD

- ▶ EN 451-2 ▶ ASTM C430

64-L0058

WET SIEVING APPARATUS

This apparatus, used for determining the fineness of fly ash by wet sieving, comprises a special stainless steel sieve with 0.045 mm openings, a 17.5 mm diameter spray nozzle with seventeen 0.5 mm diameter holes oriented and spaced in accordance with specifications, an 80 mm diameter pressure gauge and fittings for connection to the water supply.

Weight: 2 kg (approx.)



64-L0058

Carbon dioxide determination in lime

STANDARD

- ▶ EN 459-2

64-L0062

KLEINE APPARATUS

Used for the determination of carbon dioxide in lime. The Kleine apparatus consists of a 50 ml capacity decomposition flask, an absorption vessel to contain the potassium hydroxide solution, a measuring burette, funnel stopcocks, connections and wooden stand. To perform the test, a hot plate with magnetic stirrer and



64-L0062 with 81-B0145/D hot plate

an adjustable height support are also required - see Accessories.

Overall dimensions: 550 x 400 x 750 mm (w x d x h)

Weight: 15 kg (approx.)

Accessories

81-B0145/D

Hot plate with magnetic stirrer. 700 W, 230 V, 50-60 Hz, 1 ph.

86-D1449

Adjustable height support.



86-D1449

Filtration behavior of drilling fluids

STANDARD

▶ API Recommended, practice 13 B-1 and 13 B-2

64-L0063

FILTER PRESS FOR MUDS

Measuring filtration behavior and wall-coke building characteristics of fluids is essential to drilling fluid control and treatment. This apparatus is the most effective means of determining the filtration properties of drilling muds and cement slurries.

It consists of a mud reservoir mounted in a frame, a pressure source, a filtering medium and a graduated cylinder for receiving and measuring filtrate.

Overall dimensions: 200 x 230 x 480 mm (approx.)

Weight: 10 kg (approx.)



64-L0063

Determination of mud density

64-L0057

MUD BALANCE

The mud balance provides a simple method for the accurate determination of mud density, with a durable construction that makes it ideal for field use. Principally the balance consists of a base with a fulcrum, and a graduated beam with cup, lid, weighted slider, built-in spirit level and counter-weight. The constant volume cup is affixed to one end of the graduated beam and the counter weight on the opposite end. A plastic carrying case is provided that holds the balance in its working position.

Weight: 3 kg (approx.)



64-L0057

Mud viscosity

STANDARD

▶ ISO 2431

64-L0056

MARSH FUNNEL VISCOMETER

The Marsh funnel is used for routine viscosity determinations on almost every drilling rig. It is made of rugged, shatterproof plastic that is resistant to temperature change deformation, assuring volumetric accuracy. A plastic handle provides insulation for the user's hand, while a metal orifice assures accurate readings. Supplied complete with a 1 liter capacity plastic measuring cup.

Specifications

- Top diameter: 150 mm
- Nozzle dimensions: 50 x 4.75 mm (length x internal diameter)
- Total length: 355 mm
- Weight: 0.5 kg (approx.)



64-L0056

Sand content of drilling muds

64-L0064

SAND CONTENT KIT

This kit provides a complete sieve analysis apparatus for determining the sand content of drilling muds. It consists of a special 2¼" diameter 200-mesh sieve, fastened inside a collar with a small funnel fitted top and bottom.

Weight: 1.5 kg (approx.)



64-L0064

Transverse deformation of tile adhesives and grouts

STANDARD
▶ EN 12002

65



70-T0108/MINI

UNIFRAME-MINI AUTOMATIC TESTING MACHINE

The UNIFRAME-MINI machine is a fully automatic unit specifically designed for transverse deformation testing of tile adhesives and grouts in conformance with the stringent requirements of EN 12002.

The high-stiffness frame allows wide access to the test area, and the attention to detail in the design of the machine is evident, for example, in the robust loading anvil and supports, the easily readable touchscreen graphic display mounted at head-height and oriented towards the user at a comfortable angle, the appropriately positioned connection ports on the rear of the machine, and the compact and ergonomic overall construction.

During operation, the machine measures the transverse deformation of a tile adhesive or grout strip specimen with specified dimensions (3mm thickness), whilst subjecting it to a 3-point bending load which is gradually increased in such a way that the transverse deformation rate is constant at 2 mm/min. The test is complete when failure occurs.

The transverse deformation rate is automatically controlled by an advanced closed-loop controller based on a customized algorithm.

MAIN FEATURES

- » Compact, solid and ergonomic design
- » Class 1 accuracy (load and deformation)
- » High productivity
- » Fully automatic test cycle. The complete test cycle is automatically performed by simply pressing the start button. Correct test execution conforming to the reference standard is continuously and automatically controlled.
- » Soft roller-to-specimen contact and smooth deformation rate control from the very beginning of the ramp
- » Load cell and device for measuring the specimen transverse deformation are included
- » Loading anvil and supports are included
- » Multiple selection of languages and units
- » Real time clock and date

Technical specifications

- Maximum load capacity: 250 N
- User interface: 240 x 128 pixel digital touchscreen graphic display showing numerical and graphical data
- Effective sampling and control rate: up to 50/sec
- Effective resolution: 17-bit
- Actuator stroke: 30 mm
- Data storage: USB memory stick (included)
- Connection to PC: via LAN port (software for data download is included)
- Control method: closed-loop PID of transverse deformation rate
- Maximum power absorption: 50W
- Overall dimensions: 470 x 320 x 630 mm (w x d x h)
- Weight: 29 kg (approx.)

Ordering information

70-T0108/MINI

UNIFRAME-MINI Automatic testing machine for transverse deformation of tile adhesives and grouts conforming to EN12002. 110-230 V, 50-60 Hz, 1 ph.



Detail of the touchscreen graphic display

Accessories

70-T0108/M1

Rectangular mould for specimen to EN 12002, internal dimensions 280 x 45 mm, 5 mm thickness.

70-T0108/M2

Mould for specimen to EN 12002, dimensions 300mm x 45 mm, 3 mm thickness.

70-T0108/M3

10 kg weight with two handles for preparation of specimen to EN12002.



70-T0108/M1, 70-T0108/M2, 70-T0108/M3

Preparation of specimens: mixing of cement mortars

STANDARD

- ▶ EN 196-1 ▶ EN 196-3 ▶ EN 413-2 ▶ EN 459-2 ▶ EN 480-1
- ▶ DIN 1164-5 ▶ DIN 1167-7



AUTOMIX AUTOMATIC MORTAR MIXER

This high quality mixer has been carefully designed and developed to deliver superior reliability. It strictly conforms to the standards whilst, at the same time, meeting the demand for a wider scope in testing other materials for research applications. An important feature of this mixer is the ability to program special mixing cycles.

Technical specifications

- Distance between beater and bowl: 3 ± 1 mm throughout cycle
- Stainless beater and bowl
- Bowl capacity: 5 liters
- Sand dispenser electronically controlled
- 6 programmable mixing cycles conforming to EN 196-1, EN 196-3, EN 480-1, ASTM C305 (cement paste), ASTM C305 (mortar), ASTM C451
- Up to 10 customisable mixing test cycles
- Alphanumeric 4 x 20-character display
- Planetary speeds: 62 ± 5 and 125 ± 10 rpm
- 2 mixing speeds: 140 ± 5 and 285 ± 10 rpm
- Safety features: microswitch to avoid operation when the bowl is removed, transparent safety bowl cover
- Dimensions: 600 x 450 x 600 mm (d x w x h)
- Weight: 58 kg (approx.)

Important note: the AUTOMIX, as specified above, can also automatically perform ASTM C305 and ASTM C451 test cycles. Although the ASTM mixing bowl and beater specifications are slightly different from the EN Standards, the mixing action does not differ substantially and, in our opinion, should not affect the final result, so this model should satisfy the client's requirements for both EN and ASTM standards.

Ordering information

65-L0006/AM

AUTOMIX, Automatic programmable mortar mixer complete with automatic sand dispenser and additional dispenser for the manual addition of admixtures or water during the mixing cycle. 230 V, 50-60 Hz, 1 ph.

65-L0006/AMZ

As above but 110 V, 60 Hz, 1 ph.

MAIN FEATURES

- » Robust and stable frame
- » Easy and fast bowl mounting or removal
- » Automatic testing cycles
- » Automatic sand dispenser and additional dispenser for the manual addition of admixtures or water during the mixing cycle
- » 6 programmable mixing cycles conforming to EN, ASTM and DIN standards
- » Up to 10 mixing cycles programmable by the operator
- » Acoustic signal synchronized with cycle steps
- » Ergonomic and safe design



Detail of the front panel



Examples of the display



Easy removal of bowl and beater



Accessories

65-L0006/6

Steel whisk for mixing admixtures and other materials.

65-L0007/1

Reference sand, 32 bags, 1350 g each, total 43.2 kg.

Spare parts

65-L0006/2

Stainless steel mixing bowl, 5 L capacity.

65-L0006/4

Stainless steel beater.



65-L0006/6

Preparation of specimens: mixing of cement mortars

STANDARD

▶ EN 196-1 ▶ ASTM C305 ▶ EN 196/3 ▶ EN413-2 ▶ EN459-2 ▶ EN480-1

65



65-L0512

AUTOMATIC MORTAR MIXER

A robust device for the efficient mixing of cement mortars, this mixer is a table mounted unit with planetary mixing action and a bowl and beater that are easily fitted and removed. The front grill, when opened, automatically stops the machine for operator protection conforming to CE requirements.

The machine operates with a dedicated and easy to use display and keyboard control. The in-built procedures automatically perform the mixing according to Standards, allowing manual introduction of sand by the top filling hopper during mixing.

The machine is supplied complete with bowl, EN Stainless steel beater and sand hopper. ASTM beater is available as an option - see accessories.

Technical specifications

- Planetary speeds: 62 and 125 rpm or user defined
- Beater speed: 140 and 285 rpm or user defined
- Bowl capacity: 5 liters
- Alphanumeric display 2 x 16 characters
- Power: 370 W
- Overall dimensions: 465 x 540 x 620 mm (l x d x h)
- Weight: 35 kg (approx.)



75-B0702/6

MAIN FEATURES (models 65-L0512 and 65-L0502)

- » Machine operated by a dedicated and easy to use in-built software
- » Continuously variable speed (VFD technology)
- » Either standard or user defined speeds can be easily selected (also adjustable during mixing)
- » Blade/Planetary speeds adjustable from 30/13 to 380/165 rpm, depending on the mix consistency
- » Micro-switch preventing the machine from starting without bowl, and emergency stop button
- » Conforms to CE requirements.

ADDITIONAL FEATURES OF THE AUTOMATIC MODEL 65-L0512

- » The pre-defined procedures guide the operator in mixing operations according to Standards allowing manual introduction of sand by the top filling hopper
- » Complete with steel sand hopper and second filling hopper as an option
- » Device to lock/unlock the bowl in a few seconds, according to Standard requirements
- » 3-point mechanical device to adjust the gap between bowl and beater conforming to Standards
- » Possibility to create and recall user defined mixing procedures.

Ordering information

65-L0512

Automatic digital mortar mixer, 5 l capacity complete with mixing bowl, stainless steel beater and open type sand hopper. 230 V, 50-60 Hz, 1 ph

65-L0514

Same as above but 110 V, 60 Hz, 1 ph

Note: the machine can be supplied, on request, complete with a second open-type hopper to add other products. (e.g. admixtures or additives). See Accessories

Accessories

65-L0512/1

Second steel filling hopper

65-L0005/5

Hard rubber scraper.

65-L0007/1

Reference sand, 32 bags, 1350 g each, total 43.2 kg.

65-L0512/AS

Stainless steel beater conforming to ASTM C305

65-B0702/6

Whisk



65-L0512/EN beater

Spare parts

65-L0512/2

Stainless steel mixing bowl.

65-L0512/EN

Stainless steel beater conforming to EN 196-1



65-L0007/1



Detail of 65-L0512 fitted with a second filling hopper (available on request).



Device for fast and easy lock/unlock the bowl



Detail of the 3-point mechanical device to precisely adjust the gap between bowl and beater conforming to Standards

DIGITAL MORTAR MIXER

The machine structure is similar to the automatic model. A robust device for the efficient mixing of cement mortars, this mixer is a table mounted unit with planetary mixing action and a bowl and beater that are easily fitted and removed. The machine operates with a dedicated and easy to use display and keyboard control. Either Standard speeds or user defined speeds can be easily selected (also adjustable during mixing). The front grill, when opened, automatically stops the machine for operator protection conforming to CE requirements.

The machine is supplied complete with bowl and cement beater.

Technical specifications

- Planetary speeds: 62 and 125 rpm or user defined from 13 to 165 rpm
- Beater speed: 140 and 285 rpm or user defined from 30 to 380 rpm
- Bowl capacity: 5 liters
- Power: 370 W
- Overall dimensions: 465 x 540 x 620 mm (l x d x h)
- Weight: 35 kg (approx.)

Ordering information

65-L0502

Digital mortar mixer, 5 L capacity, complete with mixing bowl and stainless steel beater. Conforming to CE requirements. 230 V, 50-60 Hz, 1 ph.

65-L0504

As above but 110 V, 60 Hz, 1 ph.

Accessories

65-L0005/5

Hard rubber scraper.

65-L0007/1

Reference sand, 32 bags, 1350 g each, total 43.2 kg.

65-L0502/1

Steel sand filling hopper

Spare parts

65-L0502/2

Stainless steel mixing bowl.

65-L0512/EN

Stainless steel beater.

65-L0502 fitted with the optional steel sand hopper.



Preparation of 40x40x160 mm prisms

STANDARD

▶ EN 196-1 ▶ EN 196-3 ▶ EN 413-2 ▶ EN 459-2 ▶ EN 480-1 ▶ EN 1770



PRISM MOULDS

Used to produce mortar specimens for compression and flexural tests, these moulds are made from special alloy steel and are available in two versions: Standard (65-L0010/A) with a minimum surface hardness of HV200 Heavy duty (65-L0010/B) with a minimum surface hardness of HV400 which is recommended by the EN standards. Furthermore, the surface of this model is protected by a rust inhibitor treatment. It is supplied complete with a traceable certificate of conformity and a serial number identification.

Specimens can be fitted with the 65-L0010/5 type B measuring pegs for determining the coefficient of thermal expansion conforming to EN 1770. See Accessories.

Weight: 10.9 kg (approx.)

Ordering information

65-L0010/A

Standard three-gang mould for 40 x 40 x 160 mm rectangular prisms conforming to EN 196-1, minimum surface hardness HV200.

65-L0010/B

Heavy duty three-gang mould for 40 x 40 x 160 mm rectangular prisms conforming to EN 196-1, minimum surface hardness HV400, complete with traceable certificate of conformity and rust inhibitor treatment.

Accessories

65-L0010/5

Measuring pegs, type B, for determining the coefficient of thermal expansion to EN 1770. Pack of 12. See page 270



65-L0010/B Detail of serial number



65-L0010/5

MAIN FEATURES

- » Individually checked with certified instruments (65-L0010/B only)
- » All parts marked and identified
- » Model 65-L0010/B has a minimum surface hardness of HV 400, is surface-protected with a rust inhibitor treatment, and includes a traceable certificate of conformity

JOLTING APPARATUS

This machine, used to compact the 40 x 40 x 160 mm cement prisms in the mould, has been developed to precisely satisfy the EN and ISO standards. Each single requirement, such as weight distribution, dimensions, structural design and working cycle, is individually checked and verified.

Prism moulds, feed hopper, scrapers and glass plate are not included and have to be ordered separately - see Accessories.

Ordering information

65-L0012/G

Jolting apparatus. 230 V, 50 Hz, 1 ph.

65-L0012/GY

As above but 220 V, 60 Hz, 1 ph.

65-L0012/GZ

As above but 110 V, 60 Hz, 1 ph.

65-L0012/GCAB

Jolting apparatus complete with noise reduction cabinet. 230 V, 50 Hz, 1 ph.

65-L0012/GCABY

Jolting apparatus complete with noise reduction cabinet. 220 V, 60 Hz, 1 ph.

65-L0012/GCABZ

Jolting apparatus complete with noise reduction cabinet. 110 V, 60 Hz, 1 ph.

Technical specifications

- Highly rigid structure, joints between main parts (table – arms – base) easily removable to check weights
- Drop height: 15 mm (since the mechanical parts are subject to wear and tear and this height tends to change with use, the hammer height is adjustable, making it possible to restore the initial drop height)
- Motor power: 250 W, 60 rpm
- Digital control panel: 4-figure segment display, keyboard with 4 keys and 3 LEDs, large and immediately accessible emergency stop button
- Overall dimensions: 1000 x 310 x 385 mm (wx dx h)
- Weight: 55 kg (approx.)

Accessories

65-L0011

Feed hopper to fit the three-gang mould on the 65-L0012/G apparatus.

65-L0010/A1

Pair of scrapers: small and large.

65-L0010/A2

Glass plate, 210 x 185 x 6 mm.

Preparation of 70.7 mm mortar cubes

STANDARD
 ▶ BS 4550

Vibrating machine and 70.7 mm cube mould

This apparatus is for the preparation and compaction of 70.7 mm mortar cube specimens. The mould table is mounted on four springs attached to an eccentric shaft which allows each sample to be vibrated at 12,000 cycles per minute in accordance with the specifications. The cube mould is not included and has to be ordered separately - see accessories.

Preparation of 50 mm/ 2" mortar cubes

Cube moulds

Cube moulds are used to produce specimens for compression tests.

Ordering information

65-L0080

Three-gang mould for 50 mm cubes, precisely-machined steel. Weight: 6 kg (approx.)



Detail of the system for quick locking of the mould

65-L0010/A2, 65-L0010/A1 and 65-L0011



65-L0050/A with 65-L0051



65-L0080

Ordering information

65-L0050/A

Vibrating machine for 70.7 mm cube moulds.

Electric motor: 375 W
 Overall dimensions: 960 x 320 x 560 mm

Weight: 70 kg (approx.)
 230 V, 50 Hz, 1 ph.

Accessories

65-L0051

Mould for 70.7 mm cubes, without base, for use with 65-L0050 vibrating machine. Made of steel with internal surfaces machined to suit BS requirements.

Weight: 2 kg (approx.)

65-L0051/A

As above but with base plate.

Weight: 2.5 kg (approx.)



65-L0051

Testing Certificate Certificato di collaudo

Certificate no. Certificato nr:	18209
Date of issue Data di emissione:	20 th December 2010 20 - dicembre - 2010
Refered to Si riferisce a:	
Descr. Oggetto:	Three plate mould for 40, 70.7x70.7 mm mortar prism Stampo a tre piastre per prismi di malta da 40, 70.7x70.7 mm
Supplier Fornitore:	Controls s.r.l.
Model Modello:	65 - L0050B
Serial no. Matricola:	Example

The measuring have been obtained with the measuring apparatus belonging to the Controls metrologic chain which leads to instruments certified by SIT as follows:
 Le misure effettuate sono state ottenute utilizzando i campioni appartenenti alla catena metrologica Controls che fa capo a strumenti provvisti di certificato SIT indicati di seguito:

Descrizione	Serial no. Matricola	Certificato no. n° certificato	Expiry date Scadenza	Uncertainty Incertezza
Weight system	50070	500000007	31 - 03 - 2011	± 2'
Technical drawing table	40 0010 01	40 0010 007 01	31 - 03 - 2011	± 1 mm
Pressure calibrator	55008	550000007	17 - 03 - 2011	± 30 g
Balance 1,2 x 10 kg	17000	170000007	04 - 03 - 2011	± 0.0005 g
Depth gauge	17000	170000007	04 - 03 - 2011	± 0.0005 g
Calliper digital	17000	170000007	04 - 03 - 2011	± 0.0005 g
1 x 100 mm calliper	17000	170000007	04 - 03 - 2011	± 0.0005 g
Calliper 1 - 100 mm	17000	170000007	04 - 03 - 2011	± 0.0005 g
Angle gauge	17000	170000007	04 - 03 - 2011	± 0.0005 g
Profil gauge	17000	170000007	04 - 03 - 2011	± 0.0005 g
Profil gauge	17000	170000007	04 - 03 - 2011	± 0.0005 g
Profil gauge	17000	170000007	04 - 03 - 2011	± 0.0005 g
Profil gauge	17000	170000007	04 - 03 - 2011	± 0.0005 g

Specimen curing

STANDARD

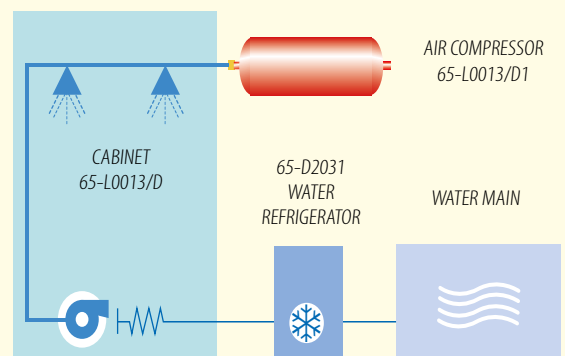
▶ ASTM C109 ▶ ASTM C511 ▶ EN 196-8 ▶ EN 196-1 ▶ EN ISO 679



MAIN FEATURES

- » Strong polypropylene structure, chemically resistant
- » Internal robust stainless-steel racks
- » High capacity
- » Humidity from 95% to saturation by water nebulizers
- » Temperature maintained at $20 \pm 1^\circ\text{C}$ by an immersion heater and separate refrigerator (see accessories)

Schematic drawing of the operating principle



Operating principle

The cold water coming from refrigerator-circulator 65-D2031 is atomized inside the 65-L0013/D by nebulisers. The internal immersion heater is automatically operated if necessary to maintain the constant curing temperature (normally $20 \pm 1^\circ\text{C}$) and the humidity goes over 95%. The water consumption is about 2 l/h max.

CURACEM, CEMENT CURING CABINET

Ideal for curing cement specimens in commercial and site laboratories, this cabinet is very practical and easy to use. The frame is a strong polypropylene structure, which is chemically resistant and particularly suitable for cement applications, and has front doors fitted with transparent glass. The humidity is maintained from 95% to saturation by water atomisers, while the temperature is maintained at $20 \pm 1^\circ\text{C}$ by an immersion heater and a separate refrigeration unit (see Accessories, 65-D2031). The four internal stainless steel racks can support moulds with specimens and a large number of cement prisms. It can also be used for concrete cubes and other mortar specimens. Using a simple plastic pan (see Accessories, 65-D1326) it is also possible to cure specimens in water.

The unit has to be connected to a suitable air compressor such as our model 65-L0013/D1 (see Accessories).

Technical specifications

- Power: 1700 W approx..
- Internal dimensions (lxdxh): 1115x435x1500 mm
- External dimensions: 1160x550x1900 mm
- Weight: 200 kg. approx..

Ordering information

- 65-L0013/D**
Curacem, Cement curing cabinet.
230 V, 50-60 Hz, 1 ph
- 65-L0013/DZ**
Curacem, Cement curing cabinet.
110 V, 60 Hz, 1 ph

Accessories

- 65-D2031**
Water refrigerator.
230 V, 50-60 Hz, 1 ph.
This unit has been designed for laboratory use to provide cold water. Comprising a refrigeration compressor, silent and CFC free, water reservoir with cooling coil, electronic thermoregulator with digital display which shows the water/liquid output temperature and soundproof metal case. The water is moved internally by mains water pressure.
- Input water temperature range: $+2$ to $+25^\circ\text{C}$
- Power: 800 W
- Water or liquid connections: $\frac{3}{4}$ "
- Dimensions (lxdxh): 450x450x825 mm
- Weight approx.: 35 kg

65-D2031/Z
Same as above, but 110 V, 60 Hz, 1 ph

65-L0013/D1
Air compressor, 200 l capacity, 230 V, 50 Hz, 1 ph

65-D1326
Plastic pan 220x220x70 mm for water curing of three 40x40x160 mm cement specimens.



65-D2031

CEMENT CURING BENCH-TYPE CABINET

65



Ideal for curing cement specimens in commercial and site laboratories, very practical and easy to use.

The cabinet is entirely made of "sandwich" stainless steel panels, isolated with polyurethane foam. The bench can be conveniently used as a working table being 2240 mm long, 700 mm wide and 860 mm high.

Technical specifications

- Capacity: 400 liters approx.
- Power rating: total 310 W
- Internal temperature range min/max: 18/25°C
- Temperature accuracy: ±1°C
- Ambient temperature min/max: 18/28°C
- Internal humidity range: ≥95% RH
- Inlet water temperature min/max: 10/36°C. The cabinet has to be connected to the water mains.
- Shelf plan dimensions: 310mm x 530mm, (w x d)
- Total internal height of the cabinet: approx 530mm
- Stainless steel guides allowing shelf positioning every 70mm
- Max weight on the shelf: 40kg
- Max number of shelves per cell: 5 (1 included) with 70mm spacing between them
- Overall dimensions (l x w x h): 2400 x 700 x 860 mm
- Weight approx.: 210 kg

Ordering Information

65-L0014/C
Cement curing bench-type cabinet.
230 V, 50-60 Hz, 1 ph

65-L0014/CZ
Same as above but 110 V, 60 Hz, 1 ph

Accessories

65-D1326
Plastic pan 220x220x70 mm for water curing of three 40x40x160 mm cement specimens.

65-L0014/C1
Plastic coated shelf

MAIN FEATURES

- » Specifically made for curing cement, mortar, lime and gypsum specimens
- » Large stainless steel bench, 2240 x 700 mm, which can be conveniently used as working table
- » Internal curing temperature adjustable from 18 to 25°C
- » Temperature accuracy ±1°C
- » Internal humidity range higher than 95% RH obtained by a water evaporation system (no water nebuliser)



65-D1326

Upgrading options

65-L0014/REC
Upgrade of the Cabinet 65-L0014/C with internal datalogging facility allowing:

- direct connection to PC via LAN cable
- data storage on SD card

The upgrade shall be factory installed



Specimen curing

STANDARD

▶ EN 196-1



65-D1409/A

CIRCULATING WATER BATH WITH COOLER UNIT

This multi-purpose digital unit, fit with cooler unit and recirculating water system, is used to condition in water asphalt specimens for Marshall and Indirect tensile tests but can also be used for many applications either for Asphalt or for Cement testing for curing in water cement specimens 40x40x160 mm, and for storing the hydrated samples at a temperature of 20°C (EN 196-8).

Internal surfaces are polished stainless steel with a sheet steel insulated outer case.

Technical specifications

- Capacity: 40 l
- Power: 2000 W
- Temperature range: +5 to +60°C
- Accuracy: ± 1%
- Inside dimensions: 550x360x200 mm
- Outside dimensions: 830x480x950 mm
- Weight approx.: 62 kg
- Height under water level: 186 mm

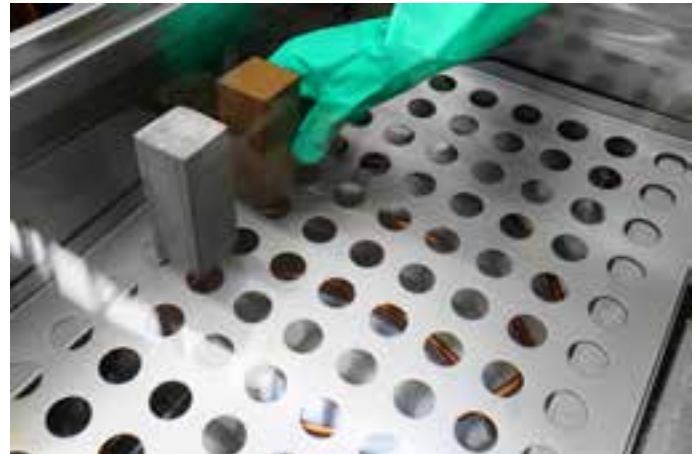
Ordering information

65-D1409/A
Recirculating water bath with cooling unit. 230 V, 50-60 Hz, 1 ph

65-D1409/AZ
As above but 110 V, 60 Hz, 1 ph

MAIN FEATURES

- » Automatically maintains the set temperature
- » Two channels electronic thermoregulator: heating/cooling with digital display
- » Complete with recirculating unit for temperature uniformity
- » Incorporating refrigeration compressor
- » Ideal for conditioning Asphalt specimens for Marshall and Indirect tensile tests
- » Ideal for cement specimens cure in water



Automatic compression and compression/flexural testers

STANDARD

▶ EN 196-1 ▶ ASTM C78 ▶ ASTM C109

Model synopsis

The testing machines and frames we produce, with capacities of 15, 300, 500 and 600 kN, provide the highest possible degree of flexibility according to the Standard in use, the material to be tested, the expected strength value, the type of test (Compression or Compression/Flexural), the configuration of the testing system (when a frame only is selected for connection to a separate stand-alone Power and Control Console e.g. PILOT Pro/ AUTOMAX Pro Smart-Line and AUTOMAX Multitest).

COMPACT LINE, AUTOMATIC PILOT PRO MULTIPURPOSE TESTERS, 500/600 KN CAPACITY

- Load measurement by high precision load cell (500 kN versions) or pressure transducer (600 kN version)
- Double testing chamber versions 15/500 kN and 15/600 kN also available
- Flexible and versatile models suitable for testing cements, mortars, resins, refractory materials, lightweight concrete, soil cement specimens etc.



See page 294

FOUR-COLUMN CLASSIC, PILOT PRO AND AUTOMAX PRO AUTOMATIC TESTERS, 300 KN CAPACITY

- Load measurement by high precision load cells
- PILOT Pro and AUTOMAX Pro power control systems versions with related various benefits. See page 170 and page 172.
- Double testing chamber versions 15/300 kN
- EN versions with inbuilt flexure and compression jigs also available
- Ideal for central laboratories to test cement and mortar



See page 296

MULTIPURPOSE FRAMES, 500/600 KN CAPACITY

- Load measurement by high precision load cell (500 kN versions) or pressure transducer (600 kN version)
- Double testing chamber versions 15/500 kN and 15/600 kN also available
- Flexible and versatile models suitable for testing cements, mortars, resins, refractory materials, lightweight concrete, soil cement specimens etc.



See page 298

FOUR-COLUMN CLASSIC TESTING FRAMES 300 KN CAPACITY

- Frames only to be controlled by the PILOT Pro or AUTOMAX Pro Power Control System of automatic testers, or by SMART Line and AUTOMAX Multitest control consoles.
- Double testing chamber versions 15/300 kN
- Fitted with high precision load cells for load measurements



See page 299

MULTIPURPOSE Compression/Flexure testers, 600, 500, 600/15, 500/15 kN capacity

PILOT PRO

65

STANDARD

- ▶ EN 196-1 ▶ EN 13286-41 ▶ EN 933-5
- ▶ ASTM C109 ▶ ASTM C348

BENEFITS

- » A multipurpose machine ideal for testing Cement, Mortars, Resins, Refractory, Lightweight concrete, Soil-cement specimens etc.
- » Large testing space
- » Ideal for splitting tests and flexural tests on concrete specimens
- » High capacity, ideal for high strength mortars, resins, etc.
- » High rigidity solid one piece steel frame
- » Ergonomic design
- » Best value for money
- » High accuracy 500 kN model with Pilot Pro and Automax Pro PCS, suitable for both flexural and compression tests on cement, fitted with high precision load cell, Class 1 accuracy range from 0.5 to 500 kN



50-C92P02 with base 50-A19/B

50-C92P12 with base 50-A19/B

50-C93P02 with base 50-A19/B

Ordering information

Single chamber models

50-C92P02

PILOT Pro Compact-Line 600 kN capacity, automatic compression tester, load measurement with pressure transducer. Compression platens diameter 165mm. 230V, 50-60 Hz, 1 ph

50-C92P12

PILOT Pro Compact-Line 500 kN capacity, automatic compression tester, load measurement with load cell. Compression platens diameter 165mm. 230V, 50-60 Hz, 1 ph

50-C93P02

PILOT Pro Compact-Line 600 kN capacity, automatic compression tester, load measurement with pressure transducer. Compression platens diameter 216mm. 230V, 50-60 Hz, 1 ph

Specifications

Frame

Rigid welded steel construction. Spherical seat allows free alignment at the initial contact with the specimen.

Compression Platens

See physical specifications table.

PILOT Pro Power and Control System

Full specifications on page 170

Load measurement

By high precision load cells and/or pressure transducer. See table

Safety Features

Maximum pressure valve to avoid machine overloading, piston travel limit switch, emergency stop button, front door and rear flexible fragment guard.

Machine accessories

- Distance pieces to reduce the vertical daylight. See page 194
- Frame pedestal. See code 50-A19/B on page 301
- DATAMANAGER PC software. See page 192

50-C99/P Rigid safety guard for 15kN chamber

Test accessories

- Splitting tensile test device. See page 200
- Compression device on cement samples. See page 300
- Flexure device on cement samples. See page 300
- Flexural test device on concrete beams. See page 201



Rigid safety guard for 15kN chamber 50-C99/P

Upgrading options

- Additional testing frame/s connection. See page 196
- Printer installation. See page 198
- Special calibration procedure. See physical specifications table.
- Certified platen hardness. See codes 50-C0050/HRD2 and 65-L0050/HRD (just for Double Stations models) on page 199

Fragment guard lock switch

50-C50/P1 Fragment guard lock switch

Other voltages

For 110V, 60 Hz versions change last code number from 2 to 4. Example: 50-C92P04



50-C92P22 with base 50-A19/B



50-C92P42 with base 50-A19/B



50-C93P22 with base 50-A19/B

Ordering information

Double chambers models

50-C92P22

15/600 kN capacity, PILOT Pro Automatic COMPACT-Line Double Station compression tester, load measurement of the 15 kN station with high precision load cell and 600 kN station with pressure transducer. Compression platens diameter 165mm. 230 V,50-60 Hz, 1 ph

50-C92P42

15/500 kN capacity, PILOT Pro Automatic COMPACT-Line Double Station compression tester, load measurement with load cells. Compression platens diameter 165mm. 230 V,50-60 Hz, 1 ph

50-C93P22

15/600 kN capacity, PILOT Pro Automatic COMPACT-Line Double Station compression tester, load measurement of the 15 kN station with high precision load cell and 600 kN station with pressure transducer. Compression platens diameter 216 mm on the compression station and diameter 165 mm on the flexure station. 230 V,50-60 Hz, 1 ph

Physical specifications table

Model 50-	C92P02x	C93P0x	C92P1x	C92P2x	C93P2x	C92P4x
Capacity, kN	600	600	500	15/600	15/600	15/500
Load measurement	Pressure transducer	Pressure transducer	Load cell	Load cell/ P. transducer	Load cell/ P.transducer	Load cell/ Load cell
Max. Vertical daylight, mm	355	325	255	205/355	205/325	205/255
Horizontal daylight, mm	265	265	265	-/265	-/265	-/265
Platen dimension, mm	Dia. 165	Dia. 216	Dia. 165	Dia. 165	Dia. 165/216	Dia. 165
Surface hardness	55 HRC	55 HRC	55 HRC	55 HRC	55 HRC	55 HRC
Flatness tolerance, mm	0.03	0.03	0.03	0.03	0.03	0.03
Ram travel, mm	50	50	50	30/50	30/50	30/50
Class 1 range	60-600 kN	60-600 kN	50-500 kN	1.5-15 kN 60-600 kN	1.5-15 kN 60-600 kN	1.5-15 kN 50-500 kN
With 50- C0050/CAL	6-600 kN	6-600 kN	5-500 kN	6-600 kN	6-600 kN	5-500 kN
With 50- C0050/CAL5	-	-	-	0.5-15 kN	0.5-15 kN	0.5-15 kN
With 50- C0050/1CAL	-	-	0.5-500 kN	-	-	-
Dimensions l x d x h, mm	850x400x1100 (base excl.)			1100x400x1100 (base excl.)		
Weight approx., Kg	270	300	280	340	370	350

Four Column Classic Automatic PILOT Pro and AUTOMAX Pro Compression/Flexural testers, 300 and 15/300 kN capacity

STANDARD

▶ EN 196-1 ▶ EN 12190 ▶ EN 12808-3 ▶ EN 13892-2 ▶ ASTM C109 ▶ ASTM C348

65



65-L28P12



65-L27P12

PILOT PRO

Sophisticated and flexible automatic compression testers

Ordering informations

65-L18P12
300 kN capacity, PILOT Pro automatic compression tester, round platens diameter 165 mm.
230 V, 50-60 Hz, 1 ph.

65-L27P12
15/300 kN capacity double chamber PILOT Pro automatic compression tester, inbuilt flexural jig and compression platens for 40x40x160 mm prisms configured to EN 196-1.
230 V, 50-60 Hz, 1 ph.

65-L28P12
15/300 kN capacity double chamber PILOT Pro automatic compression tester, round platens diameter 165 mm.
230 V, 50-60 Hz, 1 ph.

Specifications

Frame

Very rigid four columns frames, fitted inbuilt flexural and compression jig conforming to EN (models 65-L27xxx), or round platens suitable for receiving all compression and flexural accessories (models 65-L28xxx, 65-L18xxx).

Compression Platens

See physical specifications table.

PILOT Pro Power and Control System

Full specifications on page 170

AUTOMAX Pro Power and Control System

Full specifications on page 172

Load measurement

By high precision load cells.

Safety Features

Maximum pressure valve to avoid machine overloading, piston travel limit switch, emergency stop button.

Machine accessories

- Distance pieces to reduce the vertical daylight. See page 194
- DATAMANAGER PC software. See page 192

Fragment guards

- 65-L1800/P** Transparent rigid fragment guard for 65-L18xx testers
- 65-L2701/P** Same as above for 65-L27x1x testers
- 65-L2800/P** Same as above for 65-L28xxx testers
- 65-L3800/P** Same as above for 65-L38xxx testers

Test accessories

- Compression device on cement samples. See page 300
- Flexure device on cement samples. See page 300

Upgrading options

- Printer installation. See page 198
- Special calibration procedure. See physical specifications table.
- Certified platen hardness. See codes 65-L0050/HRD and 50-C0050/HRD5 (just for models 65-L27xxx) on page 199

Fragment guard lock switch

50-L0050/P Fragment guard lock switch

Other voltages

For 110V, 60 Hz versions change last code number from 2 to 4. Example: 65-L28F14.



65-L28F12



Detail of the high stiffness 4 column structure and high precision load cell which fits all single and double station frames.

AUTOMAX PRO

Advanced automatic versatile testing system

Ordering informations

65-L18F12
300 kN capacity, AUTOMAX Pro automatic compression tester, round platens diameter 165 mm. 230 V, 50-60 Hz, 1 ph.

65-L38F12
300 kN capacity, AUTOMAX Pro automatic compression tester, round platens diameter 165 mm version with increased testing space (vertical: 350 mm, horizontal: 260 mm). 230 V, 50-60 Hz, 1 ph.

65-L28F12
15/300 kN capacity double chamber AUTOMAX Pro automatic compression tester, round platens diameter 165 mm. 230 V, 50-60 Hz, 1 ph.

65-L27F12
15/300 kN capacity double chamber AUTOMAX Pro automatic compression tester, inbuilt flexural jig and compression platens for 40x40x160 mm prisms conforming to EN 196-1. 230 V, 50-60 Hz, 1 ph.

Physical specifications table

Model 65-	L18P12 L18F12	L27P12 L27F12	L28P12 L28F12	L38F12
Max load kN	300	15/300	15/300	300
Ram travel mm	50	30/50	30/50	50
Vertical Span, mm	200	-/50	200/200	350
Horizontal Span, mm	220	-/220	-/220	260
Platen dim., mm	Dia. 165	40x40	Dia. 165	Dia. 165
Flexural jig 40x40x160 mm	-	Included	-	-
Class 1	30-300 kN	1.5-15 kN 30-300 kN	1.5-15 kN 30-300 kN	30-300 Kn
Class 1 with 50-C0050/CAL5	-	0.5-15 kN	0.5-15 kN	-
Class 1 with 50-C0050/CAL	3-300 kN	3-300 kN	3-300 kN	3-300 kN
Class 1 with 50-C0050/1CAL	0.5-300 kN	-	-	0.5-300 kN
Overall dim. L x d x h, mm	862x344x964	922x337x964	890x337x964	830x350x1120
Weight approx., kg	195	265	270	240

MULTIPURPOSE Compression/Flexure frames, 600, 500, 600/15, 500/15 kN capacity

STANDARD

▶ EN 196-1 ▶ EN 13286-41 ▶ EN 933-5 ▶ ASTM C109 ▶ ASTM C348

65



50-C92Z00 with base 50-A19/B



50-C92Z10 with base 50-A19/B



50-C92Z20 with base 50-A19/B

Ordering information

Single chamber models

50-C92Z00

600 kN capacity frame, load measurement by pressure transducer. Platens diameter 165 mm.

50-C92Z10

500 kN capacity frame, load measurement by load cell. Platens diameter 165 mm.

50-C93Z00

600 kN capacity frame, load measurement by pressure transducer. Platens diameter 216 mm.

Double chambers models

50-C92Z20

15/600 kN capacity double chamber frame, load measurement of the 15 kN station by load cell and of 600 kN station by pressure transducer. Platens diameter 165 mm.

50-C92Z40

15/500 kN capacity double chamber frame, load measurement by load cells. Platens diameter 165 mm.

50-C93Z20

15/600 kN capacity double chamber frame, load measurement of the 15 kN station with load cell and 600 kN station with pressure transducer. Platens diameter 216 mm on the compression station and diameter 165 mm on the flexure station.

Physical specifications table

Model 50-	C92Z00	C93Z00	C92Z10	C92Z20	C93Z20	C92Z40
Capacity, kN	600	600	500	15/600	15/600	15/500
Load measurement	Pressure transducer	Pressure transducer	Load cell	Load cell/ P. transducer	Load cell/ P.transducer	Load cell/ Load cell
Max vertical daylight, mm	355	325	255	205/355	205/325	205/255
Horizontal daylight, mm	265	265	265	-/265	-/265	-/265
Platen dimension, mm	Dia. 165	Dia. 216	Dia. 165	Dia. 165	Dia. 216	Dia. 165
Surface hardness	55 HRC	55 HRC	55 HRC	55 HRC	55 HRC	55 HRC
Flatness tolerance, mm	0.03	0.03	0.03	0.03	0.03	0.03
Ram travel, mm	50	50	50	30/50	30/50	30/50
Class 1 range	60-600 kN	60-600 kN	50-500 kN	1.5-15 kN 60-600 kN	1.5-15 kN 60-600 kN	1.5-15 kN 50-500 kN
With 50- C0050/CAL	6-600 kN	6-600 kN	5-500 kN	6-600 kN	6-600 kN	5-500 kN
With 50- C0050/CAL5	-	-	-	0.5-15 kN	0.5-15 kN	0.5-15 kN
With 50- C0050/1CAL*	-	-	0.5-500 kN	-	-	-
Dimensions l x d x h, mm	445 x 400 x 1100 (base excl.)			700 X 400 X 1100 (base excl.)		
Weight approx., Kg	225	255	235	290	320	300

*Only when connected to Pilot Pro and Automax Pro PCS

Specifications

Frame

Rigid welded steel construction. Spherical seat allows free alignment at the initial contact with the specimen.

Compression Platens

See physical specifications table.

Safety Features

Maximum pressure valve to avoid machine overloading, piston travel limit switch, emergency stop button, front door and rear flexible fragment guard.

Machine accessories

- Distance pieces to reduce the vertical daylight. See page 194
- Frame pedestal. See code 50-A19/B on page 301

50-C99/P Rigid safety guard for 15kN chamber

Test accessories

- Splitting tensile test device. See page 200
- Compression device on cement samples. See page 300
- Flexure device on cement samples. See page 300
- Flexural test device on concrete beams. See page 201

Upgrading options

- Special calibration procedure. See physical specifications table and page 295
- Certified platen hardness. See codes 50-C0050/HRD2 and 65-L0050/HRD (just for Double Stations models) on page 199

Fragment guard lock switch

50-C50/P1 Fragment guard lock switch

Pressure regulator

The 15 kN load piston of the Double station models, when connected to PILOT Pro and AUTOMAX Pro PCS, require the 65-L1400/X5 pressure regulator (not necessary when connected to AUTOMAX Multitest).

65-L1400/X5

Hydraulic pressure regulator for frames 50-C92Z20, 50-C93Z20 and 50-C92Z40 connected to PILOT Pro and AUTOMAX Pro PCS.

Four Column Classic cement frames, 300 and 15/300 kN capacity

STANDARD

▶ EN 196-1 ▶ EN 12190 ▶ EN 12808-3 ▶ EN 13892-2 ▶ ASTM C109 ▶ ASTM C348



65

Ordering information

Single chambers models

65-L18Z10

300 kN capacity compression testing frame, fitted with round platens 165 mm diameter and precision load cell for load measurements.

65-L38Z10

300 kN capacity compression testing frame, fitted with round platens 165 mm diameter and precision load cell for load measurements. Version with increased testing space (vertical: 350 mm, horizontal: 260mm)

65-L58Z10

15 kN capacity flexural/compression testing frame, fitted with round platens 165 mm diameter and precision load cell for load measurements

Double chambers model

65-L28Z10

15/300 kN capacity double chamber testing frame, fitted with round platens 165 mm diameter and precision load cells for load measurements.

Physical specifications table

Model 50-	L18Z10	L38Z10	L58Z10	L28Z10
Capacity, kN	300	300	15	15/300
Load measurement	Load cell	Load cell	Load cell	Load cells
Max vertical daylight, mm	205	350	205	205
Horizontal daylight, mm	220	350	220	220
Platen dimension, mm	Dia. 165	Dia. 165	Dia. 165	Dia. 165
Surface hardness	55 HRC	55 HRC	55 HRC	55 HRC
Flatness tolerance, mm	0,01			
Ram travel, mm	50	50	30	30/50
Class 1 range	30-300 kN	30-300 kN	1.5-15 kN	1.5-15 kN 30-300 kN
With 50- C0050/CAL	3-300 kN	3-300 kN	-	3-300 kN
With 50- C0050/CAL5	-	-	0.5-15 kN	-
With 50- C0050/1CAL*	0.5-300 kN	0.5-300 kN	-	-
Dimensions l x d x h, mm	500 x 405 x 1566			500 x 405 x 1720
Weight approx., Kg	160	170	150	240

*Only when connected to Pilot Pro and Automax Pro PCS

Specifications

Frame

Four-column robust frame with single or twin test chamber. All frames includes pedestal and connection kit for control console.

Compression Platens

See physical specifications table.

Safety Features

Maximum pressure valve to avoid machine overloading, piston travel limit switch.

Machine accessories

- Distance pieces to reduce the vertical daylight. See page 194

Fragment guards

65-L1800/P Transparent rigid fragment guard for 65-L18xxx testers

65-L2800/P Same as above for 65-L28xxx testers

65-L3800/P Same as above for 65-L38xxx testers

65-L3800/P Same as above for 65-L38xxx testers

65-L3800/P Same as above for 65-L38xxx testers

Test accessories

- Compression device on cement samples. See page 300

- Flexure device on cement samples. See page 300

Upgrading options

- Special calibration procedure. See physical specifications table and page 295

- Certified platen hardness. See codes 65-L0050/HRD on page 199

Fragment guard lock switch

50-L0050/P Fragment guard lock switch

Pressure regulator

The 15 kN load piston of the frames 65-L28Z10 and 65-L58Z10, when connected to PILOT Pro and AUTOMAX Pro PCS, require the 65-L1400/X5 pressure regulator (not necessary when connected to Automax Multitest).

65-L1400/X5

Hydraulic pressure regulator for frames 65-L28Z10 and 65-L58Z10 connected to PILOT Pro and AUTOMAX Pro PCS.

Accessories for Compression and flexural testers

STANDARD

▶ EN 196-1 ▶ ASTM C348

FLEXURE DEVICES FOR MORTAR PRISMS

We produce two versions of this apparatus: the 65-L0019/B conforming to EN and the 65-L0019/C which conforms to ASTM. Both models feature a robust frame fitted with one upper and two lower tilting bearers. The distance between the two lower bearers is 100 mm in the EN and 119 mm in the ASTM version.

Total height: 188 mm
Weight: 8 kg (approx.)

Ordering information

65-L0019/B

EN Flexure device for 40 x 40 x 160 mm prisms.

65-L0019/B1

Marking template for centering the mortar prism on the 65-L0019/B EN device.

65-L0019/C

ASTM Flexure device for 40 x 40 x 160 mm prisms.



65-L0019/B, 65-L0019/C

STANDARD

▶ EN 196-1 ▶ EN 1015-11
▶ ASTM C109

COMPRESSION DEVICES FOR MORTAR SPECIMENS

Two versions of this device are available: 50-C9030/H conforming to EN and 50-C9032/H which conforms to ASTM. Both models feature a robust frame with an upper platen with a spring-mounted spherical seat that moves vertically. The 50-C9030/H model is fitted with a platen for portions of 40x40x160 rectangular cement prisms, while the 50-C9032/H model is fitted with round platens 75 mm diameter.

Total height: 222 mm
Weight: 8 kg (approx.)

See also other models on page 201

Ordering information

50-C9030/H

EN Compression device to test portions of 40 x 40 x 160 mm prisms broken in flexure.

50-C9032/H

ASTM Compression device to test 50 mm (2") cubes.
Vertical clearance: 53 mm



50-C9030/H



50-C9032/H

STANDARD

▶ EN 1338 ▶ EN 12390-6
▶ ASTM C496

SPLITTING TENSILE TEST DEVICES

This device is a two-column steel frame with a self-centering specimen holder at the base and an upper load beam suspended with springs for easy adjustment of the specimen. It can be easily placed, by removing the lower platen, in the compression testers 50-C92xxx and frame 65-L38Z10. See additional information on page 200

Ordering information

50-C9000/C

Splitting tensile test device for cylinders up to 160mm diameter x 320mm height. Conforms to EN 12390-6 and ASTM C496.

50-C9070/C

Splitting tensile test device for concrete block pavers and concrete cubes. Conforms to EN 1338 and EN 12390-6.

Accessories

50-C9002

Hardboard packing strips 4 x 15 x 345 mm, to EN 1338 and 12390-6. Pack of 50.

50-C9002/A

Plywood packing strips 3 x 25 x 345 mm, to ASTM C496. Pack of 50.



50-C9070/C

STANDARD

▶ EN 12390-5 ▶ ASTM C78
▶ ASTM C293 ▶ AASHTO T97

FLEXURAL TEST DEVICE FOR CONCRETE BEAMS

This device has a double upper bearer for two-point and centre-point tests. It can be easily placed, by removing the lower platen, in the compression testers 50-C92xxx and frame 65-L38Z10. See additional information on page 201

50-C9010/C

Flexural device for concrete beams 100 x 100 x 400/500 mm and 150 x 150 x 600/700 mm.



50-C9010/C

Flexural strength of 40 x 40 x 160 mm mortar prisms

FRAME PEDESTAL

50-A19/B

Machine/Frame pedestal for series 50-C92xxx.
Dimensions: 660x370x400 mm
Weight: 26 kg.



50-A19/B

DISTANCE PIECES TO ADJUST VERTICAL CLEARANCE

Made of steel, these pieces are used to reduce the vertical clearance of the compression machine to a height that is appropriate for the size of the specimen, considering that, in general, the maximum piston travel is 50mm (or 30 mm for 15kN chamber).

Ordering information

65-L1000/20

Distance piece, 165 mm diameter x 20 mm thick. Weight 3.5 kg approx.

65-L1000/30

Distance piece 165 mm diameter x 30 mm thick. Weight 5.5 kg approx.

65-L1000/40

Distance piece 165 mm diameter x 40 mm thick. Weight 7 kg approx.

65-L1000/68

Distance piece 165 mm diameter x 68 mm thick.
Weight: 9 kg approx.

See also on page 194



65-L1000/30

AUTOMATIC FLEXURE/TENSION MACHINE

This machine is used for the flexural strength determination of cement specimens and tensile tests on cement briquettes. It consists of a beam loading system with a sliding weight which is driven by an electric motor, providing a constant increase in load throughout the test. The machine is designed to accept either flexural or tensile attachments, which have to be ordered separately - see Accessories.

Scale ranges:

- 1000 N in 10 N subdivisions
- 5000 N in 50 N subdivisions
- Wattage: 40 W
- Dimensions: 510 x 1050 x 720 mm
- Weight: 52 kg (approx.)



65-L0015/A with 65-L0015/5

Ordering information

65-L0015/A

Automatic flexure/tension machine, 5 kN capacity. 230 V, 50 Hz, 1 ph.

65-L0015/AZ

As above but 110 V, 60 Hz, 1 ph.

65-L0015/AY

As above but 220 V, 60 Hz, 1 ph.

Accessories

65-L0015/1

Flexure testing attachment, design conforming to NF, DIN, UNI, EN standards.

65-L0015/4

Tensile testing attachment for cement briquette specimens.

65-L0015/5

Flexure testing attachment, design conforming to ASTM C348.

65-L0016

Briquette mould



65-L0016