

63 Setting time and consistency of cement

CEMENT

Setting time and consistency
Vicat method

VICAMATIC: AUTOMATIC RECORDING VICAT APPARATUS 63-L0027/E-F

Introduction

The setting time determination of cement and mortars is one of the most important parameters for the quality inspection and verification.

Furthermore the production and use of new mortars, admixtures and similar materials with the research activity has highlighted the need of sophisticated test apparatus capable of performing a variety of independent test cycles and procedures on numerous specimens.

Our new VICAMATIC apparatus fully satisfies these requirements and is capable of performing tests with start delay, adjustable dropping rate auto-mode and free or driven drop. The VICAMATIC can also be equipped by the needle cleaning device with water container for testing in water as prescribed by EN.

The installed firmware allows the PC connection via the RS 232 port and the expansion to a Multiple Testing System with up to 16 apparatus via the RS 485 port.

The high versatility and flexibility of the VICAMATIC is summarised below.

Use of a single apparatus

Main advantages:

- Production of a test graph report on paper
- Display of test data in real time. See description of this unique feature in the firmware paragraph
- Possibility of connection to a simple serial printer (See accessories)
- Possibility of connection to PC via RS 232 port

All the above features represent the most advanced economical solution for general laboratory use.

Use of a multiple system

Main advantages (in addition to the above):

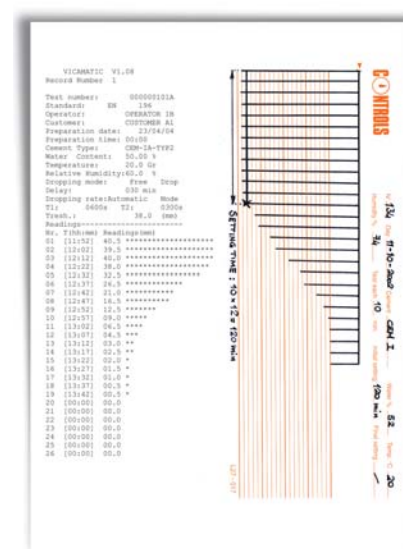
- Test system expandable any time to up to 16 units for PC connection
- The single units to be connected to the PC network can be located in different places and not necessarily all together (See the Software paragraph)
- Powering down one unit does not prevent the use of all other units in the network
- The units can be independently programmed



Multiple Vicat testing systems (expandable up to 16 units) connected to PC



- Automatic test cycle
- Double recording: analogic on paper and digital by electronic sensor
- Storing of test results, settings and data
- Large graphic display to follow the test in real time
- RS 232 output for connection to PC and printer
- High flexibility in programming the test cycles as test start delay, dropping rate auto-mode, free or driven drop
- RS 485 network facility for connection to PC of up to 16 independent VICAMATIC for data acquisition and processing
- Fully conforming to EN, ASTM, AASHTO, BS and similar
- High versatility and vast applications: from the standard use in local laboratories to the multiple use in research and central laboratories
- Also suitable for tests on Gypsum conforming to EN 13279-2



Example of printed report and test graph obtained with the paper recorded and serial printer (optional 63-L0027/E13)

General description

The apparatus consists essentially of a mechanism of four different stepper motors, which control the sliding weight with needle, the rotation and displacement of the table and the chart drum. The displacement of the sliding weight with needle is recorded by a pen in the chart drum and also read by an encoder for the data acquisition.

The automation of the system is obtained by an electronic control card with microprocessor. The front control panel includes the membrane keyboard with large graphic display.

Firmware specifications

The test parameters to be set are the following:

- Reference standards: EN, ASTM, General purpose, single drop
- Frequency of penetrations (to be selected between frequency input by user or calculated semiautomatically)
- Free fall mode or driven fall mode
- Adjustable test start delay
- Penetration measurement by encoder
- Test data: test number, operator, client, date, hour, cement type, water percentage, humidity, delay, mode (automatic or manual)
- Permanent memory for data storage
- Clock calendar
- 5 languages: English, Spanish, French, German, Italian



Sample displays

Multiple configuration: Test software

The multiple option (from 2 to 16 units) has been carried out for PC connection with the testing software (See accessories) giving the following performances:

- Real time display of the setting curve of all connected units
- Zoom and curve displacement option and measurement of intervals between two selected points by graphic cursors
- Each curve window can be changed to the display of test data
- Memory storage of all test data and diagrams by exportable database
- Generation of test files
- Printing of test certificate including logo and client letterhead, setting curve and test data

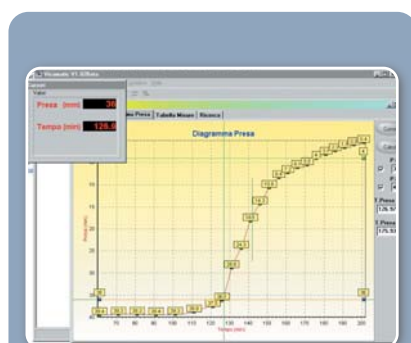
Technical specifications

Total rating: 25 W

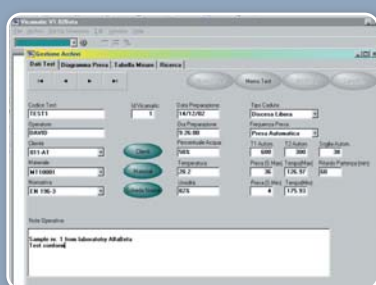
Voltage: 230 V, 50-60 Hz, 1 ph.
or 110 V, 60 Hz, 1 ph.

Dimensions (l x w x h):
180x300x440 mm

Weight approx.: 10 kg



VICASOFT: Setting diagram on the PC screen



VICASOFT: Test data saved in memory



VICASOFT: Preview of a 2 pages setting test certificate

Standard outfit

The VICAMATIC apparatus is supplied complete with the needle (1.13 or 1 mm diameter depending on the version), mould (EN or ASTM depending on the version), glass plate, 5 pens and 1 pen holder, 100 printed charts.

Ordering informations

■ **63-L0027/E** - VICAMATIC automatic electronic apparatus EN version for setting time measurement.

230 V, 50-60 Hz, 1 ph.

■ **63-L0027/F** - VICAMATIC automatic electronic apparatus ASTM/AASHTO version for setting time measurement. 230 V, 50-60 Hz, 1 ph.

■ **63-L0027/EZ** - VICAMATIC automatic electronic apparatus EN version for setting time measurement.

110 V, 60 Hz, 1 ph.

■ **63-L0027/FZ** - VICAMATIC automatic electronic apparatus ASTM/AASHTO version for setting time measurement.

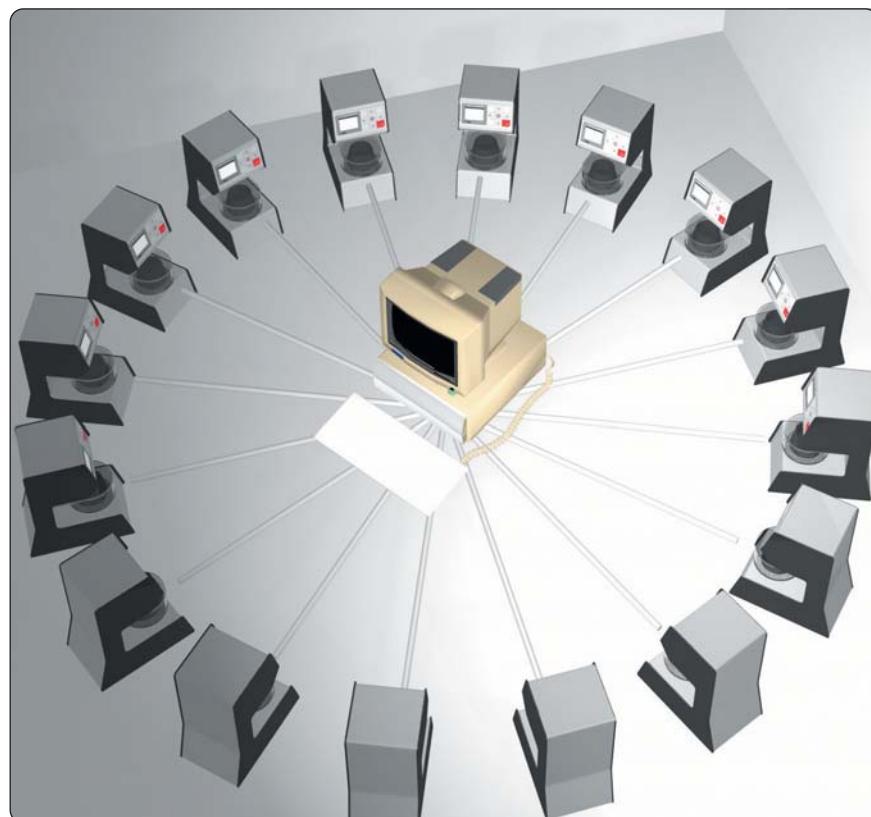
110 V, 60 Hz, 1 ph.



VICAMATIC connected to serial printer 63-L0027/E13

Test paths

Standards	ASTM C191	EN 196	EN 13279-2	General purpose
Pitch (mm)	6.8	10	12	5
Diameters (mm)	0 - 13 - 26 - 39	0 - 10 - 30 - 50	0 - 26 - 50	
Points per dia.	1 - 6 - 12 - 18	1 - 2 - 9 - 15	1 - 6 - 13	60 (total)

**IMPORTANT NOTE**

Using a single VICAMATIC apparatus two options are available for PC connection:

- 1 PC connection by RS 232 serial cable code 63-L0027/E17 and data acquisition with standard PC software as example MS Hyper terminal
- 2 PC connection by RS 485 cable code 63-L0027/E12 and data acquisition and processing with the VICASOFT code 63-L0027/E11 for connection to up 16 units

RS 485 network facility for connection of up to 16 independent VICAMATIC for data acquisition and processing

GYPSUM TEST (EN 13279-2)

The Vicamatic can also be used for testing Gypsum with the following accessory:

63-L0027/E18

Conical penetration probe
8 mm dia. x 50 mm complete
with 100 g calibrated weight



63-L0027/E15 consistency probe fitted on the sliding weight



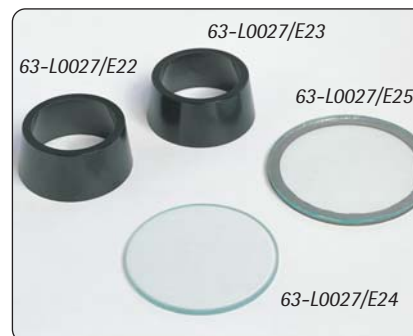
63-L0027/E10 Needle cleaning device and in-water testing kit

Accessories and spares

Code	Description
Accessories	
63-L0027/E10	Accessory for needle continuous cleaning and in-water testing. Complete kit. It has to be factory installed
63-L0027/E11	Kit for the PC connection in a network logic of up to 16 VICAMATIC apparatus as a network comprising VICASOFT data acquisition and elaboration software and RS 232 - RS 485 conversion module
63-L0027/E12	RS 485 serial cable for the PC and network connection of VICAMATIC apparatus. Single piece length 5 m
63-L0027/E17	RS 232 serial cable for the PC connection of a single VICAMATIC apparatus. Length 3 m
63-L0027/E13	40 columns serial printer complete with serial cable for the machine connection
63-L0027/E14	Needle for final setting test to EN
63-L0027/E15	Cylindrical probe for consistency test complete with weight calibrated dropping needle bearer
63-L0027/E16	Additional weight 700 g
Spare parts	
63-L0027/E20	1.13 mm diameter needle to EN
63-L0027/E21	1 mm diameter needle to ASTM/AASHTO
63-L0027/E22	Plastic mould to EN
63-L0027/E23	Plastic mould to ASTM/AASHTO
63-L0027/E24	Glass base plate
63-L0027/E25	Glass base plate for the in-water testing device
63-L0027/E26	100 recording charts
63-L0027/E27	Pack of 5 pens including one pen holder



63-L0027/E16 Additional weight



63-L0027/E26, 63-L0027/E27



63-L0027/E20, 63-L0027/E21, 63-L0027/E14



Serial printer 63-L0027/E13