TESTMAK
MATERIAL TEST EQUIPMENTS

HS AUTOMATIC COMPRESSION TESTING MACHINE

CONCRETE

www.testmak.com

HS Automatic Compression Testing Machines

PRODUCT MODEL

C3222	2000 kN Automatic Compression Testing Machine, Welded Frame, En Standards
C3226	3000 kN Automatic Compression Testing Machine, Welded Frame, En Standards
C5222	2000 kN Automatic Compression Testing Machine, Welded Frame, ASTM Standards
C5226	3000 kN Automatic Compression Testing Machine, Welded Frame, ASTM Standards

STANDARDS

ASTM C39 | EN 12390-3, 12390-4 | BS 1881 | ГОСТ 10180-2012

DESCRIPTION

Testmak series HS Automatic Compresion Testing Machines are designed for reliable and consistent to do the tests of compressive strength tests of different sizes concrete cylinder and cube moulds of samples. Compressive strength machines are manufactured in accordance with international TS EN 12390-3, 12390-4 ASTM C39, AASHTO T22 and TS EN ISO 7500 standards. Compressive strength machines also meet the requirements of all CE norms related to operator health and safety.

Compression machines are produced in Class 1 starting from 50 kN. The upper platen adjusts itself to apply homogeneous loading on the sample. Upper and lower platens in accordance with international specifications. Surface hardness 55HRC, flatness tolerance 0.02 mm. Traceable certificate of surface hardness available on request.

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Experiments can be performed than on automatic control and data acquisition unit or with the free TCM200 computer software. Tablet and smartphone applications are also available optional. By connecting with smart-phone ot tablet the machines via wireless internet (Wifi) and can perform tests, print test reports from the thermal printer. (reporting, graphic output, etc.)

Thanks to its easy use, it allows operators with little experience to do the tests without any trouble.

To start the test, it is sufficient to place the concrete samples centered on the lower loading plate and to per-form the following operations after the press is turned on:

• Choosing the sample to be tested.

• Pressing the “Start” button on the control unit.

• The machine starts loading at the set test speed. When the sample is broken, it automatically stops and returns to its initial state.

• Experiment result and test parameters are automatically saved.

TCM200 Touch Control Unit

TCM200 Touch Control Unit is designed to perform automatically compression, flexure and splitting tensile strength tests of construction materials such as concrete, cement mortar, masonary units/blocks by control-ling the Testmak automatic compression / flexure testing machines.

All the operations of TCM200 Touch are controlled from the front panel touch screen display.

TCM200 Touch Control Unit has easy to use menu options. It displays all menu option listings simultaneously, allowing the operator to access the required option in a seemless manner to activate the option or enter a numeric value to set the test parameters. Digital graphic display is able to draw real-time “Load vs. Time”, or “Stress vs. Time” graphics. Can do calibration easily from 10 points. Manual Control is available.

TCM200 Touch Software for Automatic Compression / Flexure Testing Machines

TCM200 Touch software provides to perform automatically compression, flexure and splitting tensile strength tests of construction materials such as concrete, cement mortar, masonary units/blocks by controlling the Testmak automatic compression / flexure testing machines.

Safety Features

• Maximum pressure valves to avoid machine overloading

• Limit switch (for piston stroke)

• Emergency stop button

• Removable transparent front and rear safety doors

• Software controlled maximum load value

• Security Switch for to stop the machine if the door is opened during a test.

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HS Automatic Compression Testing Machines supplied complete with following accessories;

1- Spacer Discs;

For ASTM Standards;

- Diameter 165 mm x Height 90 mm spacer disc 1 piece
- Diameter 165 mm x Height 40 mm spacer disc 1 piece
- Diameter 165 mm x Height 30 mm spacer disc 2 piece

For EN Standards;

- Diameter 205 mm x Height 90 mm spacer disc 1 piece
- Diameter 205 mm x Height 50 mm spacer disc 1 piece
- Diameter 205 mm x Height 30 mm spacer disc 1 piece

2- Upper Platen;

- Upper Platen Diameter 165 mm (with ball seating assembly) (For ASTM Standards)
- Upper Platen Diameter 300 mm (with ball seating assembly) (For EN Standards)

3- Lower Platen;

- Lower Platen Diameter 165 mm (For ASTM Standards)
- Lower Platen Diameter 300 mm (For EN Standards)

4- Piston;

- Piston Diameter 250 mm (For 2000 kN Capacity Models)
- Piston Diameter 300 mm (For 3000 kN Capacity Models)

5- Automatic Hydraulic Power Pack ;

- Automatic Hydraulic Power Pack, 410 bar (For All Models)

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TECHNICAL SPECIFICATIONS

Product Code	C3222	C3226	C5222	C5226
Standards	EN	EN	ASTM	ASTM
Capacity	2000 kN	3000 kN	2000 kN	3000 kN
Frame Type	Welded Frame	Welded Frame	Welded Frame	Welded Frame
Sample	Cylinders: 100x200 mm, 150x300 mm, 160x320 mm Cubes 100,150,200 mm	Cylinders: 100x200 mm, 150x300 mm, 160x320 mm Cubes 100,150,200 mm	4" , 6" dia. cylinders 100,150,200 mm cubes	4" , 6" dia. cylinders 100,150,200 mm cubes
Upper Platens Dim.	Ø 300 mm	Ø 300 mm	Ø 165 mm	Ø 165 mm
Lower Platens Dim.	Ø 300 mm	Ø 300 mm	Ø 165mm	Ø 165mm
Max. Vertical Clearance	340 mm	340 mm	370 mm	370 mm
Max. Horizontal Clearance	360 mm	425 mm	360 mm	425 mm
Piston Diameter	250 mm	300 mm	250 mm	300 mm
Max. Piston Movement	50 mm	50 mm	50 mm	50 mm
Max. Working Pressure	410 Bar	410 Bar	410 Bar	410 Bar
Oil Capacity	18 Liters	18 Liters	18 Liters	18 Liters
Power	1100 W	1100 W	1100 W	1100 W
Dimensions	750x500x1400 mm	925x550x1500 mm	750x500x1400 mm	925x550x1500 mm
Weight Power Pack	800 kg	1070 kg	780 kg	1030 kg

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UPPER & LOWER PLATENS

C3070/A-01 | Upper Platen (with ball seating assembly) Ø 165 mm, Lower Platen Ø 165 mm
C3070/A-02 | Upper Platen (with ball seating assembly) Ø 216 mm, Lower Platen Ø 216 mm
C3070/E-03 | Upper Platen (with ball seating assembly) Ø 300 mm, Lower Platen Ø 300 mm
C3070/A-04 | Upper Platen (with ball seating assembly) 310x410x90 mm, Lower Platen 310x410x90 mm
C3070/E-04 | Upper Platen (with ball seating assembly) 310x500x38 mm, Lower Platen 310x500x38 mm

The platens enable the testing of a wide variety of cylinder, cube blocks or similar samples. Produced from high quality steel, which is then hardened. Surface hardness 55HRC, flatness tolerance 0.02 mm. Traceable certificate of surface hardness available on request. Have centering rings on the lower platens for proper centering of 100 mm and 150 mm cube, 100 mm and 150 mm cylinder samples.


C3070/A-01


C3070/A-02


C3070/E-03

Product Code	C3070/A-01	C3070/A-02	C3070/E-03	C3070/E-04
Desctription	Upper Platen (with ball seating assembly) Ø 165 mm, Lower Platen Ø 165 mm	Upper Platen (with ball seating assembly) Ø 216 mm, Lower Platen Ø 216 mm	Upper Platen (with ball seating assembly) Ø 300 mm, Lower Platen Ø 300 mm	Upper Platen (with ball seating assembly) 310x500x38 mm, Lower Platen 310x500x38 mm
Sample	4" , 6" dia. cylinders 100 mm cubes	6" dia. cylinders 100, 150 mm cubes	Cylinders: 100x200 mm, 150x300 mm, 160x320 mm Cubes 100,150,200 mm	Blocks up to 310x500 mm
Used with Frames	C3200, C3201, C3204, C3206, C3208, C3209	C3200, C3201, C3203, C3204 , C3205, C3206, , C3207, C3208, C3209	C3203, C3205, C3207, C3209	C3202, C3203, C3204, C3205, C3206, C3207, C3208, C3209
Standards	ASTM C39	ASTM C39 and EN 12390-4	EN 12390-4	EN 772-1
Hardness	≥ 55 HRC	≥ 55 HRC	≥ 53 HRC	≥ 600 HV
Dimensions	170x170x145 mm	220x220x145 mm	310x310x175 mm	320x510x175 mm
Weight	21 kg	38 kg	78 kg	135 kg

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DISTANCE PIECES

C3060/A-01 | Distance Pieces, Ø 165x15 mm
C3060/A-02 | Distance Pieces, Ø 165x30 mm
C3060/A-03 | Distance Pieces, Ø 165x40 mm
C3060/A-04 | Distance Pieces, Ø 165x90 mm
C3060/E-05 | Distance Pieces, Ø 205x30 mm
C3060/E-06 | Distance Pieces, Ø 205x50 mm
C3060/E-07 | Distance Pieces, Ø 205x90 mm

Distance pieces are used to reduce the amount of vertical clearance between the upper platen and the lower platen. 600 to 3000 kN machines are supplied with 205 mm and 165 mm dia distance piece.

Model	Dimensions	Weight (approx.)
C3060/A-01	165x165x15 mm	2,5 kg
C3060/A-02	165x165x30mm	5 kg
C3060/A-03	165x165x40 mm	7 kg
C3060/A-04	165x165x90 mm	14 kg
C3060/E-05	205x290x30 mm	8 kg
C3060/E-06	205x290x50 mm	13 kg
C3060/E-07	205x290x90 mm	22 kg

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LCD DATA ACQUISITION CONTROL SYSTEM

TCM200 Touch Control Unit

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Data Acquisition Control

Technicial Specifications

- 3 universal analog input sockets (ADC)
- Each analog input with 18 bit precision (1/256000)
- 1 replacement analog input
- A total of 4 analog high-precision measuring capacities
- 2 analog output sockets (DAC)
- Analog outputs generate a 0-10V DC output signal
- Motor speed control devices, servo valves with this output signal, proportional valves, etc. reference signal is produced.
- PULSE / DIR outputs (PULSE / DIR / ENA) to control the servo and stepper motor drives
- 5 digital outputs for general purpose (can pull relays and control different electrical units)
- 5 digital inputs for general purpose (receives and evaluates input signals like limit contacts from the environment)
- Potentiometer input (reference signal input for calibration and remote control)
- 2 RS232 serial communication signal outputs (communicates with computers)
- It also connects to motor drives via serial communication via MODBUS connection
- USB communication signal output (communicates with computers)
- Connects to local networks and the Internet with Ethernet 10/100 network connection output (optional)
- Connects to portable devices via Bluetooth wireless connection (optional)
- 500 test results can be stored in internal memory
- Due to the SD (memory) card connection, a large number of test results can be stored in the device memory (40,000 test results).
- In addition, the results can be taken from the device memory and transferred to the computer as an Excel table. (Optional)
- Color TFT display supports 16 lar and 7 800 screen sizes, supports 16M colors and supports 800x480 pixel screen

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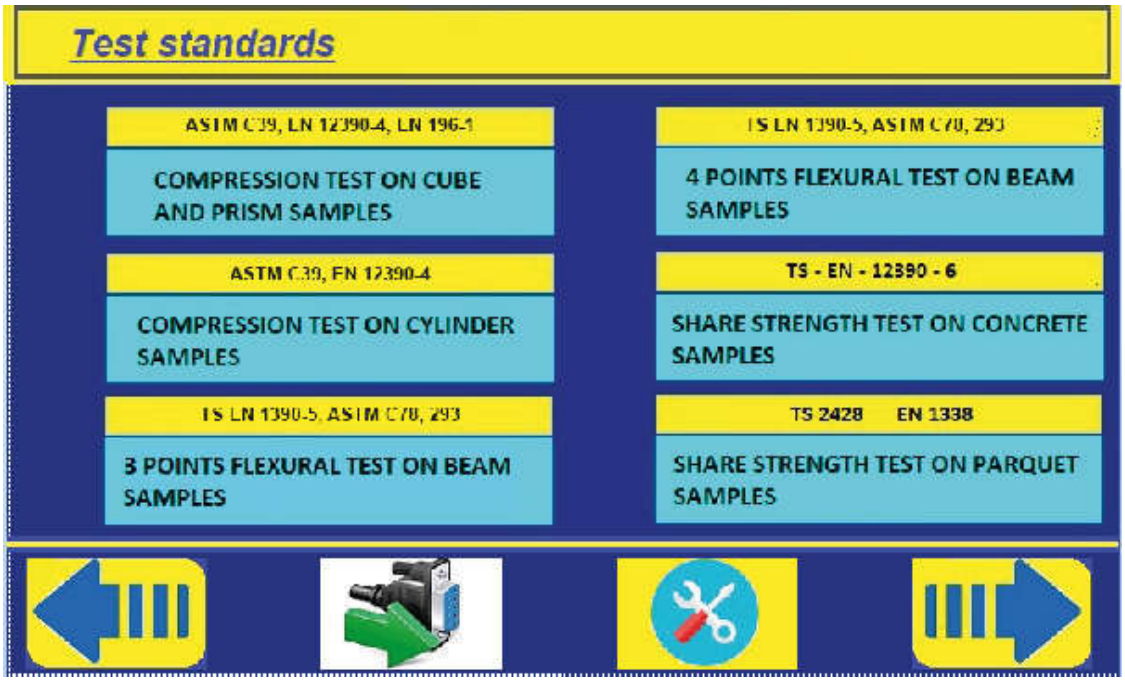
resolution
• Resistive touch screen allows easy operation of device functions by touching the screen
• Access to frequently used functions with 6 membrane keypads
• The industrial standard operates with 24V DC supply voltage. Built-in voltage filter and regulator protects against input signal fluctuations
• Sensor modules are compatible with loadcell (load cell), pressure sensor (4-20 / 0-20 mA), potentiometric distance sensors, strain washers, thermocouples and all kinds of mV output sensors.
• Provides precise calibration with multi-point calibration (up to 10 points)
• Setting and calibration menus are password protected and prevent unauthorized use
• Allows testing with a computer or device
• There are many test sample information screens and test methods in the device memory and tests can be performed easily
• Different menu languages can be selected via the device via language support
• Speed control algorithm is closed loop PID control and all parameters can be adjusted on user side.
• The device can switch between one-touch load and deformation control modesCihaz farklı makinelere kolayca adapte edilebilir ve en uygun kontrol sağlanır
• The graphical field that visualizes the test results on the screen has the ability to change the scale automatically and automatically adjusts the optimal scale as the values change
• Firmware updates can be made via USB input. In addition, via the computer allows remote or internet update.

When energized to the device, on the digital indicator display will show the following information.



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Test standards and methods

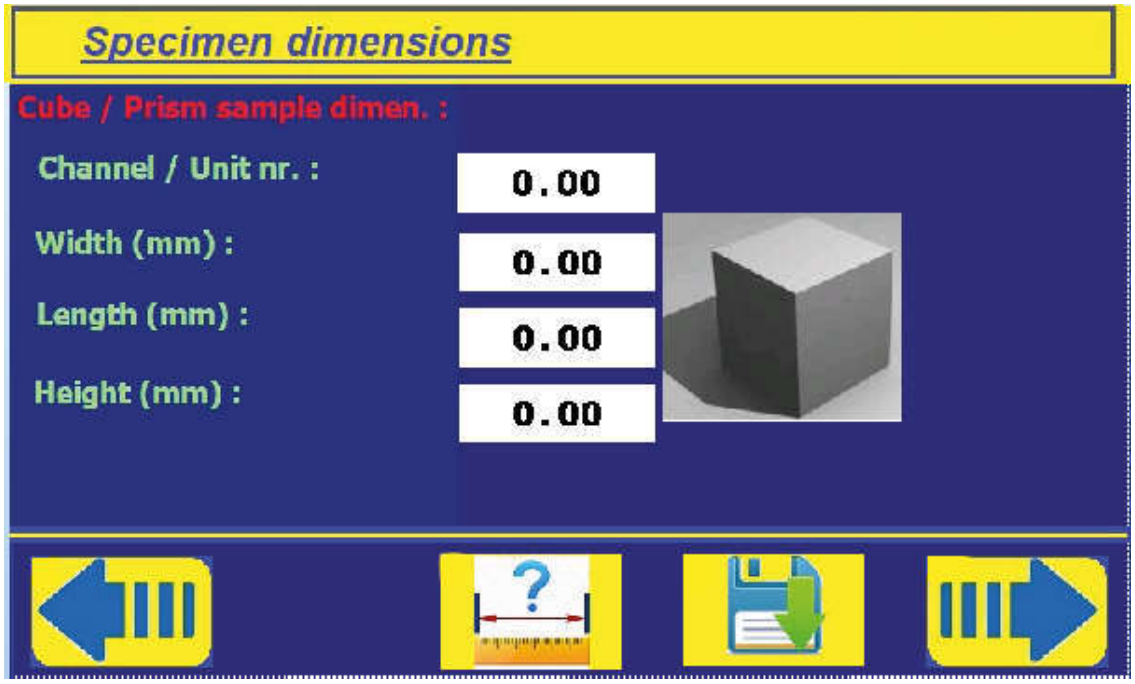
There are already 18 commonly used test methods in the device memory. With updates, this number is increasing.

The input is displayed by touching the area of the test standard you want to test.

Toggle left / right arrow keys between test standard screens. In addition, the test standards screen is one of the most frequently used home screens, so you can switch from here to the computer connection screen and the settings menu

Compression Strength in Cube / Prism Samples

The compressive strength test in cube samples is a test method commonly used in the ASTM C39 | EN 12390-3, 12390-4 concrete tests standard. When this test method is selected, the sample size screen is displayed first.



After a short period of time numune Receiving sample information lanmış message is displayed, the predefined sample sizes of this test method are loaded from memory. Thus, the loss of time from entering the same information is prevented.

It is important to note that with the sample information, the unit number to be tested and the sensor input channel to which the test unit is connected are entered into the device.

The selection of the sample dimensions and the selection of the test unit are performed in this screen. The device makes the necessary calculations according to the entered dimensions and determines the values of the cross-sectional area, etc. and makes the strength calculation accordingly.

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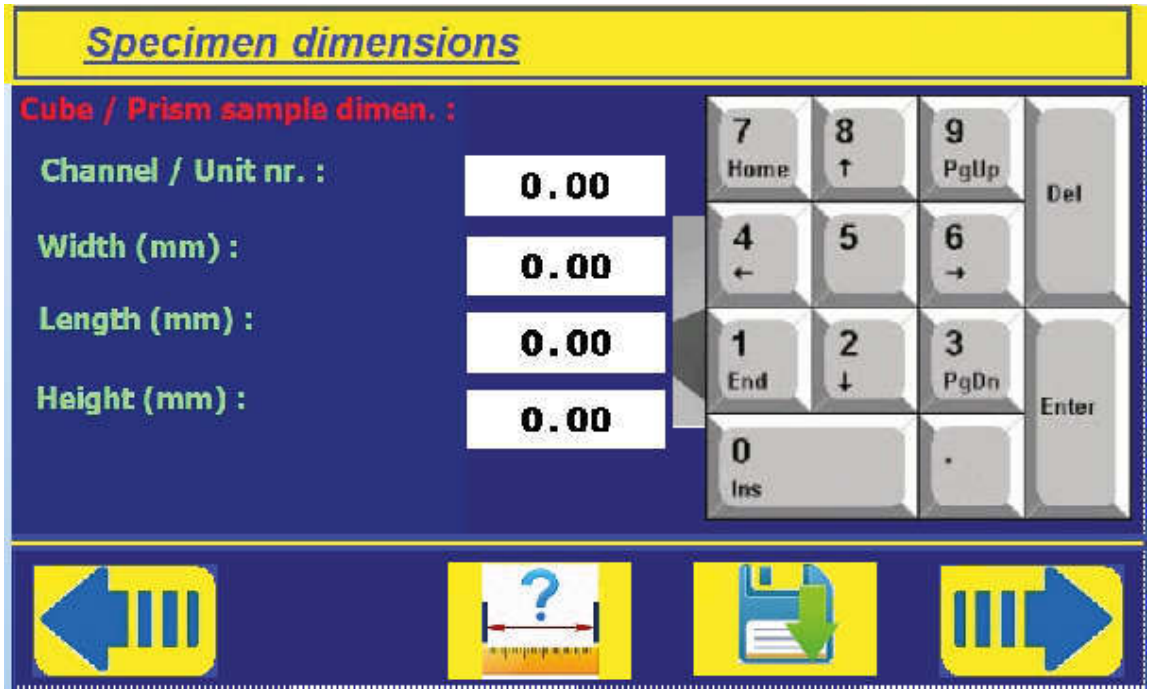

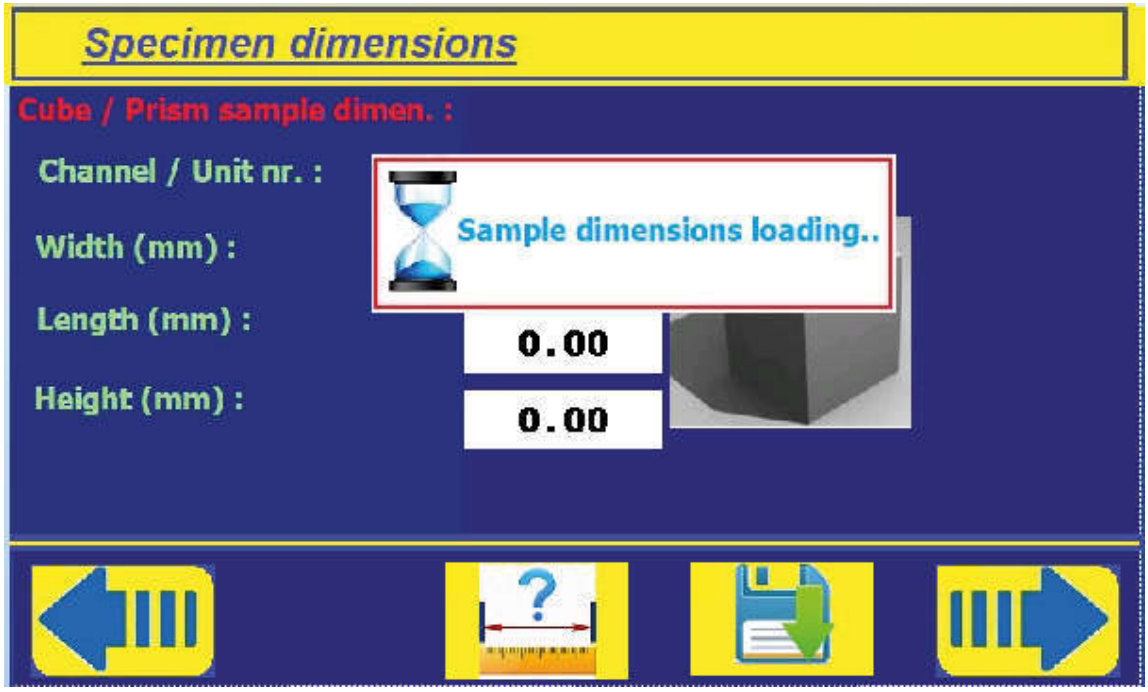

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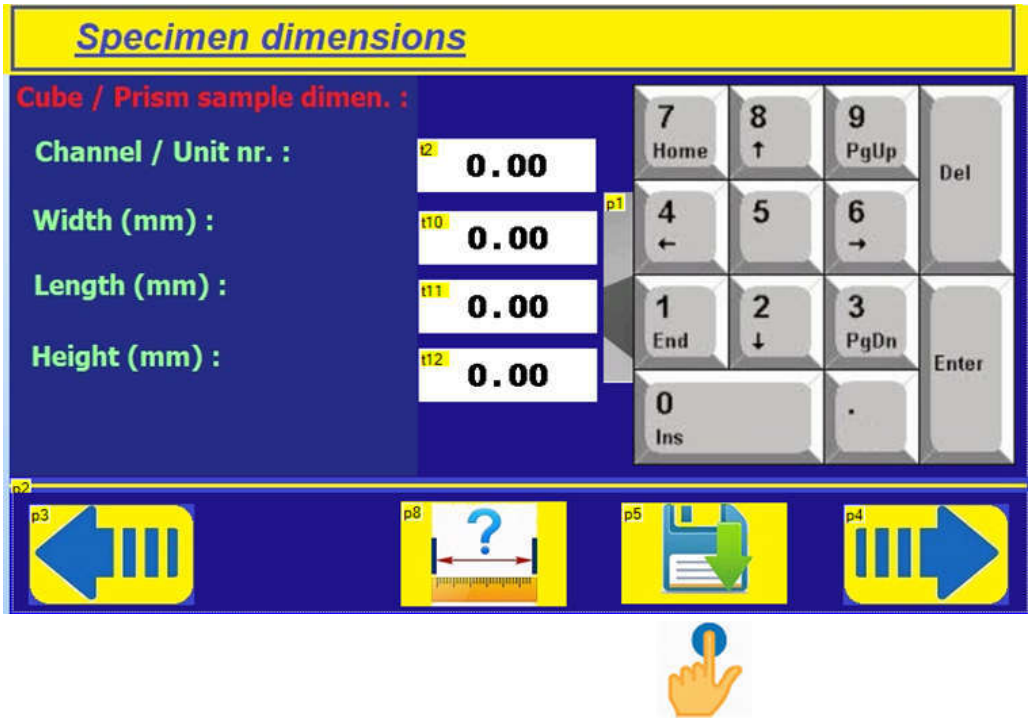
Thus, in which test method the device will receive the data from which sensor, the calibration values, the unit, the unit to be controlled and the required parameters will be automatically loaded.
To change any value displayed on the screen, touch the corresponding data field to open the on-screen keyboard.
Use the on-screen keyboard to enter the desired value and press ENTER.
The DEL (Delete) key is used to delete the incorrect data.
The on-screen keyboard disappears when the enter key is pressed.



The  (SAVE) button is used to store data in the device memory.

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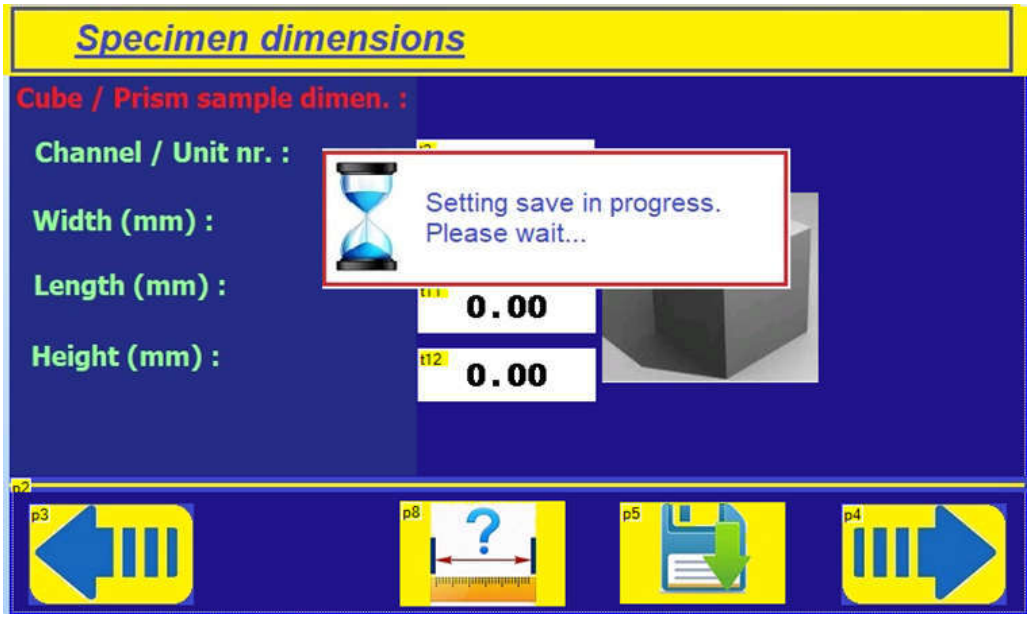

When saving data, the message ”Saving settings ir is displayed.
The method and screen layout described in this chapter are generally valid for all test methods and can be easily entered and saved by following the same process steps.
a: edge length (mm)
s: cross-sectional area (mm²)
$s = a^2$

F: Maximum applied load (kN)
MP: Compressive strength (MPa)

$$б = F/s \text{ (Mpa)}$$

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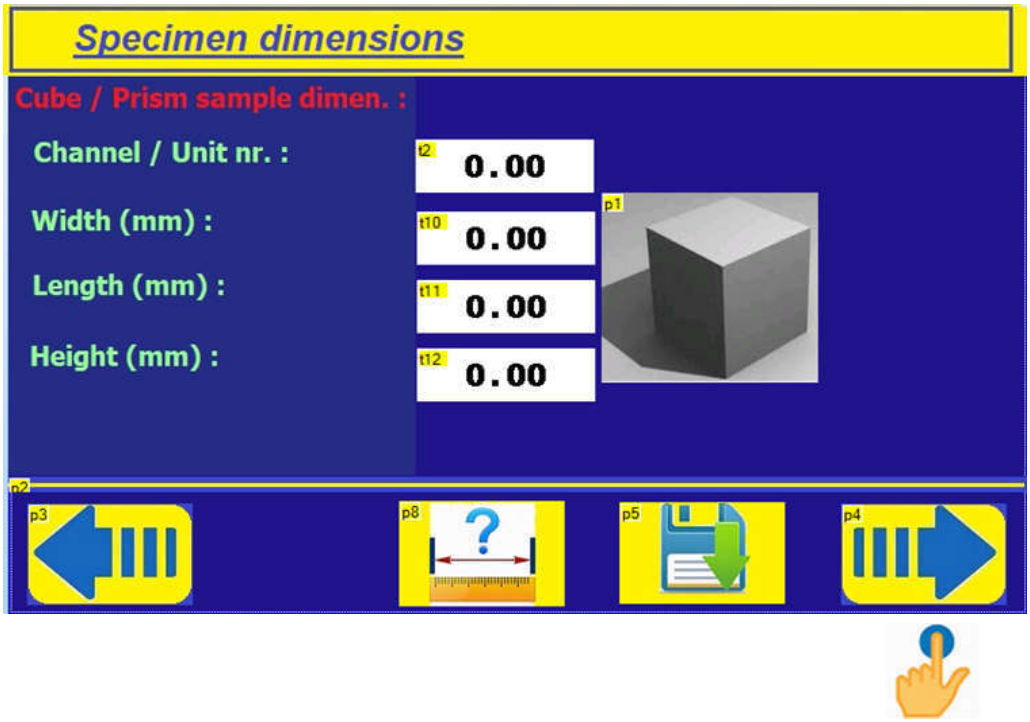

The  NEXT button is used to proceed to the next step.

The next step will be to determine the test parameters related to the selected test method.

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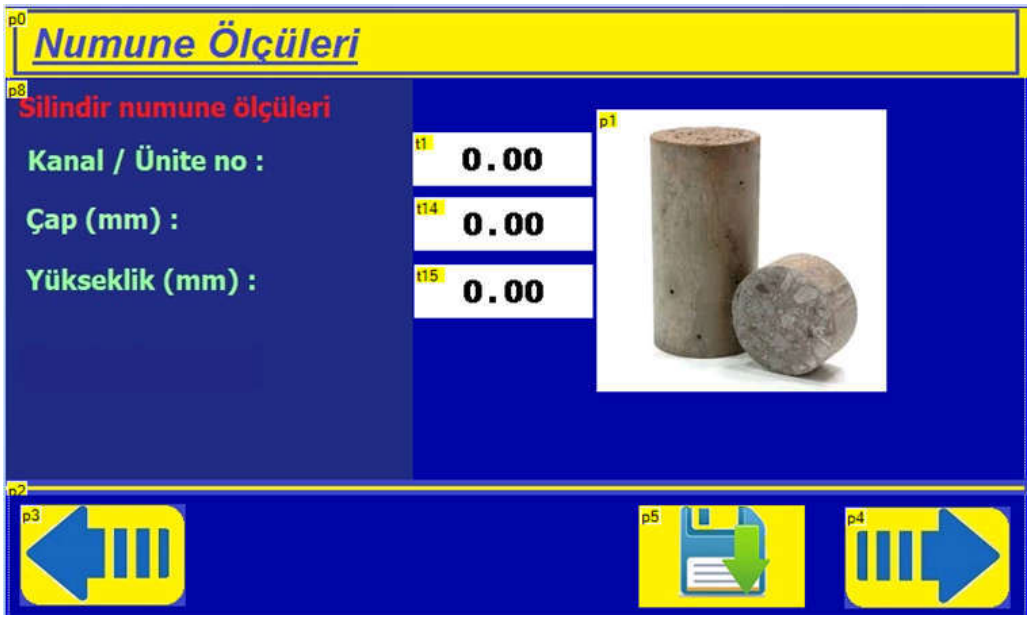
Compression Strength in Cylinder Samples

When this test method is selected, the sample size screen is displayed first.



d: diameter (mm)

s: cross-sectional area (mm²)

$$s = 3.14*(d/2)^2$$

F: Maximum applied load (kN)

MP: Compressive strength (MPa)

$$\sigma = F/s \text{ (Mpa)}$$

Test Screen

The screen test screen where the tests are performed in accordance with the test method.

At the top of the test screen, the channel, unit and the active value are displayed. In some tests, more than one active measuring channel is shown on the display.

In addition, the test number, the highest measured load value (Fmax), the time elapsed during the test, in seconds, and the set test speed are displayed.

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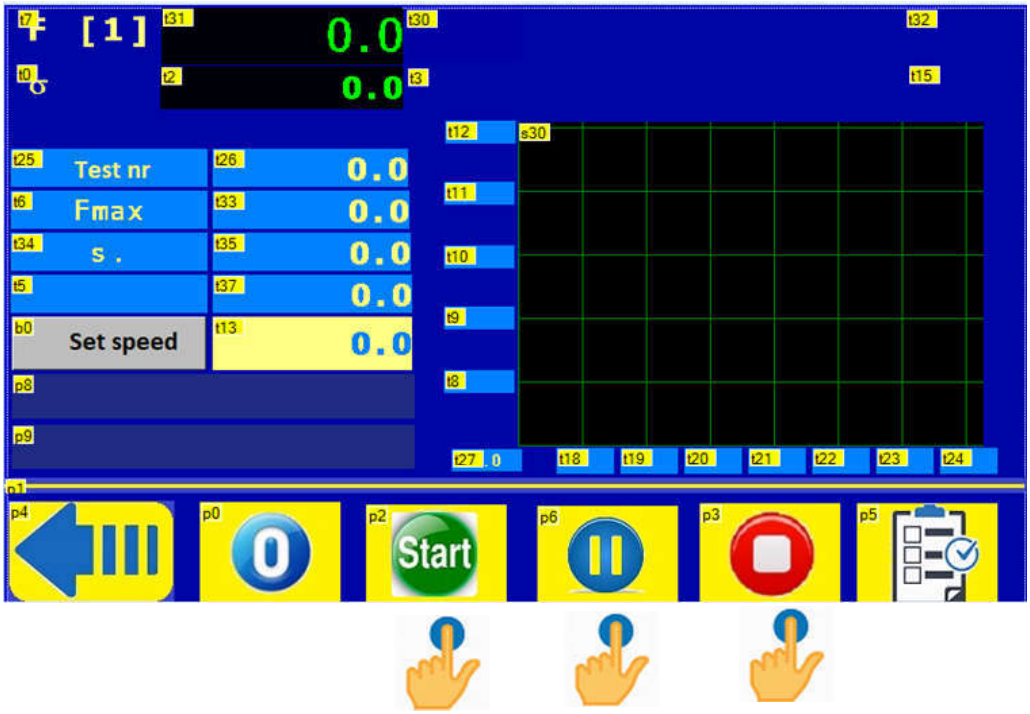

Start the Test **Pause on Load** **End of test**

Start the Test

Press (START) to start the test. First, the device performs a bit of fast loading up to the boot value. When the boot value is reached, the speed is automatically set to the test speed level and kept constant at this level until the end of the test.

Pause on Load

If you want to stabilize the load at any load level during the test (PAUSE), press the hold button. In this case, the load is fixed at the load value level when the hold button is pressed and the device starts to wait. If this button is pressed again, the load will resume.

Pause on Load

The device automatically terminates the test when the condition specified for the end of the test occurs.

This condition is usually a decrease in the load as a result of the breakage of the test specimen, but sometimes the test can be completed when a certain load or deformation value is reached.

The user can also end the test at any time by pressing the STOP key at any time (STOP). The unit automatically terminates the test to protect the machine and the sensors when the device detects that the specified loading capacity has been reached.

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Test Results

The test results are saved as a table in the device memory. To access this table, press the test button on the test screen. In this case, the test results are displayed.

Test Results

When the test results are displayed in a table, the test result is displayed on each page. Use the up / down arrow keys to scroll through the pages. This allows switching between 500 test results in the device memory.

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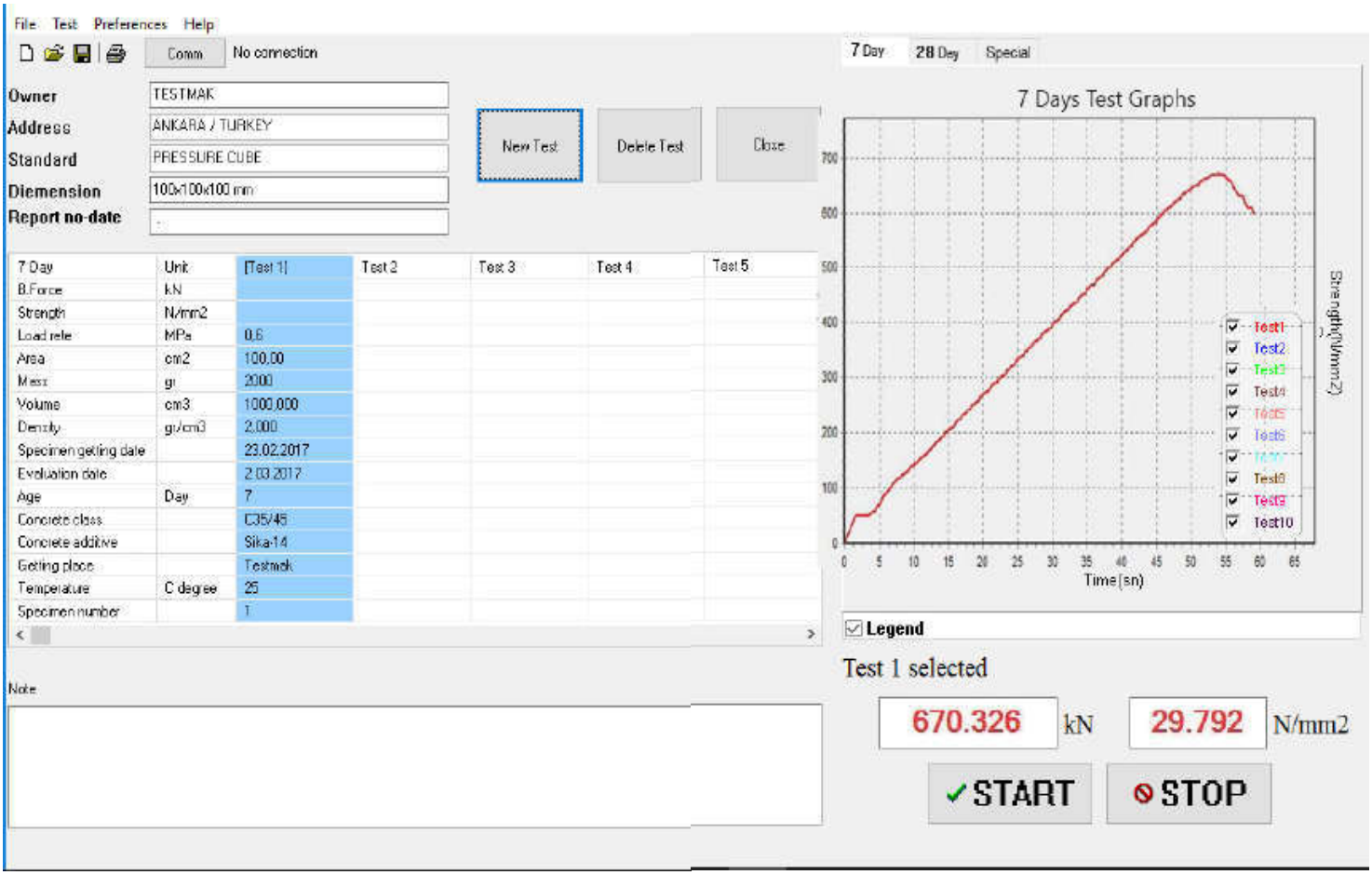
SOFTWARE

The tests and calibration can be done and monitored with a computer by connecting it to the machine. LCD Control unit can connecting with RS232 or USB port to the machine. Using the state-of-the-art software provided by TESTMAK with the machine will help performing and managing the tests in a very easy and fast way. By performing the tests via computer, the results can be saved and recalled when required. Reports can be generated automatically by the software and sent to printer.



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