BPS INSTRUMENT
TENSILE TESTING MACHINE

Product Code

UTM-3000 Automatic 500 kN Tension and 1000 kN Compression Testing Machine

UTEST
MATERIAL TESTING EQUIPMENT

Standards

BS 1610, ASTM C-39, E4 AASHTO T22, NF P18-411, DIN 51220

UTM-3000 with Tension Setup

GENERAL PROPERTIES

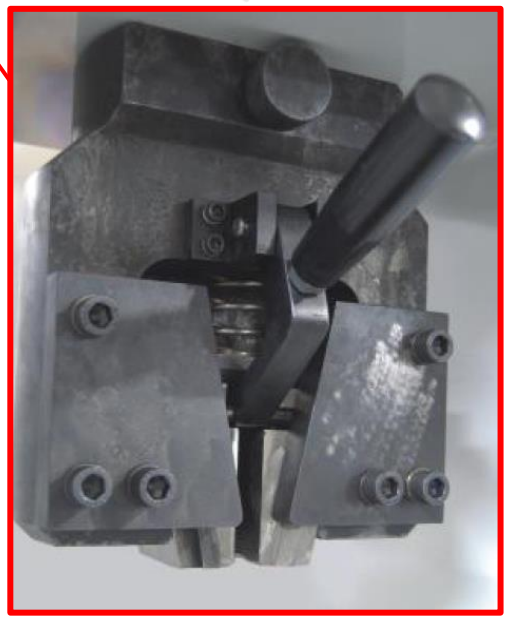
UTM-3000 automatic 500 kN tension and 1000 kN compression testing machine has been designed to meet the need for reliable and consistent tensile testing of steel rebars up to 22 mm diameter and compression testing of concrete cube samples up to 150 mm and cylinders up to 160x320 mm.

This lightweight low cost and high accurate machine is suitable for use both in the site testing and educational purposes. UTM-3000 feature the complete automatic test cycle with a closed loop digital readout. Once the specimen parameters have been introduced, it is sufficient to press the START button to complete the test.

UTM-3000 tension/compression test machines consist of three main parts: Frame, power pack and data acquisition & control system. On the measuring system pressure transducer is used for load measurements and Linear Potentiometric Displacement Transducers is used for strain measurements. Each part has been designed to manufacture machines with a high degree of mechanical stability and complies to BS 1610, ASTM C-39, E4 AASHTO T-22, NF P18-411, DIN 51220 (with suitable platen set) standards.

FRAME

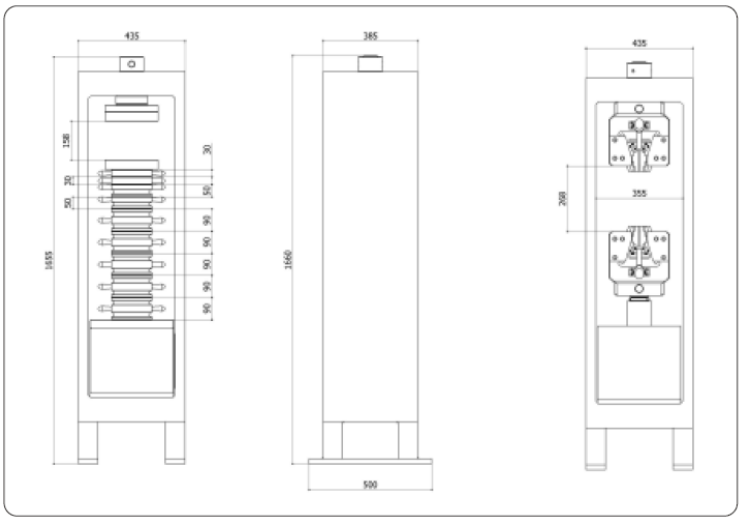
The load frame is a welded steel fabrication carrying the ball-seated upper platen or the universal grip assembly. Positively located on the loading ram which is protected from debris by a cover, the lower platen is marked for the centering of cube and cylinder specimens. The dimensions of the frame allow the tension tests on steel rebar up to 22 mm dia., and flat specimens up to 15mm thick and 50mm wide, compression tests



on concrete cylinders up to 320 mm long x 160 mm diameter and cubes up to 150 mm. The machine is supplied complete with 5 pcs. 90 mm x Ø165, 2 pcs. 50 mm x Ø165 and 2 pcs. 30 mm x Ø165 distance pieces. To test samples shorter than 150 mm extra distance pieces should be ordered. The frame have a double acting piston with over travel protection to stop the motor when the maximum platen or grip travel be reached.

The main characteristics are

- High stability welded assembly
- 500 kN tensile and 1000 kN compression capacity
- 100 mm piston stroke with safety limit switch
- Upper compression platen with ball seating assembly and lower platen included
- Set of two tensile grips and jaw faces included
- Platen hardness of min 55 HRC
- Distance pieces included



UTM-3000 with Compression Setup

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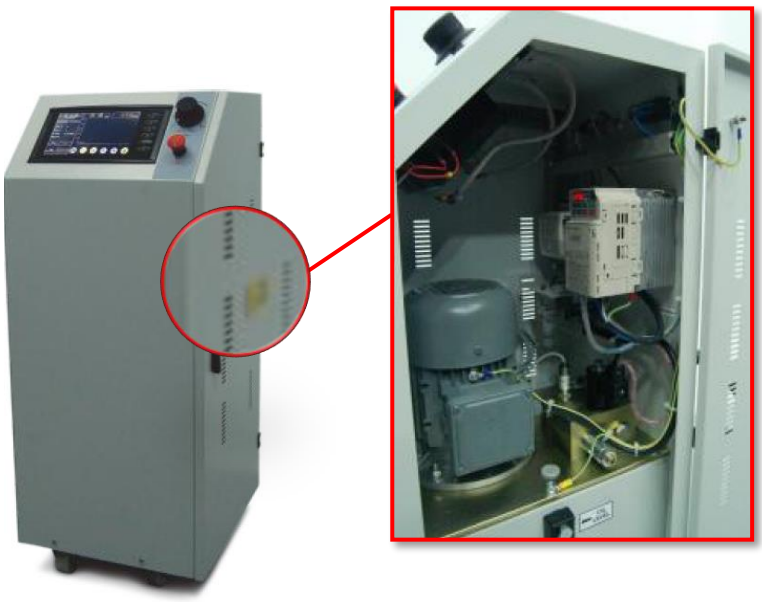
Power Pack

The UTC-4830 Automatic Hydraulic Power Pack, dual stage, controlled by BC 100 is designed to supply the required oil to the load frames for loading. The power pack is very silent, even at full load and can load the specimen between 1 kN/sec. to 20 kN/sec, with an accuracy of ±5%. A rapid approach pump is supplied as standard. A safety valve (maximum pressure valve) is used to avoid machine overloading.



Motor

The motor which drives the dual pump is a 0.75 kW AC motor which is controlled by an Omron J7 motor inverter. The variation in the oil flow is executed with the variation of the rotation speed of the motor.

The dual stage pump is formed by two groups:

1. **Low pressure gear pump**
2. **High pressure radial piston pump.**

On the dual stage pump, a high delivery, low pressure gear pump is used for rapid approach, while a low delivery, high pressure radial piston pump is used for test execution. The Rapid approach facility shortens the time interval from piston start until the upper platen touches to the specimen. This excellent feature helps to save alot of time when a large number of specimens are going to be tested.

Distribution Block

A distribution block is used to control the oil flow direction supplied by the dual stage pump, the following parts are fitted to the distribution block;

a - Solenoid valve
b - Safety valve
(maximum pressure valve)
c - Transducer
d - Low pressure gear pump
e - High pressure radial piston pump

Oil Tank

The tank includes enough oil to fill the mechanism which pushes the ram during the test. The level and oil temperature can be seen on the indicator fitted to the tank. It has 20 L capacity. Hydraulic motor oil, number 46, must be used.

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BC 100 Unit TFT Graphic Display Data Acquisition and Control Unit

BC100 TFT Graphic Display Data Acquisition and Control Unit is designed to control the machine and processing of data from load-cells, pressure transducers or displacement transducers which are fitted to the machine.

All the operations of BC100 are controlled from the front panel consisting of a 800x480 pixel 65535 color resistive touch screen display and function keys 4 analogue channels are provided for load-cells, pressure transducers or displacement transducers.

BC100 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. The BC100 digital graphic display is able to draw real-time "Load vs. Time", "Load vs. Displacement" or "Stress vs. Time" graphics.

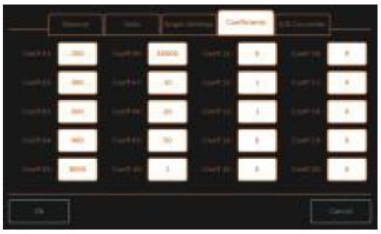
BC100 unit offers many addition unique features. You can save more than 10000 test results in its internal memory. BC100 unit has support for various off-the-shelf USB printers, supporting both inkjet and laser printers. Thanks to its built-in internet protocol suite, every aspect of BC100 device can be controlled remotely from anywhere around the world.

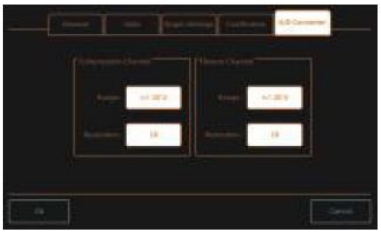
Main Features

- Can make test with displacement or load control.
- Real time display of test graph.
- CPU card with 32-bit ARM RISC architecture
- Permanent storage capacity up to 10000 test results
- 4 analog channels (one for load cell, one for displacement transducer, one for extensometer and one is free for extra compression frame)
- Programmable digital gain adjustment for load-cell, pressure transducers, strain-gauge based sensors, potentiometric sensors, voltage and current transmitters
- 1/256000 points resolution per channel
- 1000 data per second sample rate for each channel
- Ethernet connecting for computer interface
- 800x480 resolution 65535 color TFT-LCD industrial touchscreen
- 4 main function keys
- Multi-language support
- 3 different unit system selection; kN, Ton and Lb
- Real-time clock and date
- Test result visualization and memory management interface
- Remote connection through ethernet
- USB flash disc for importing test results and for firmware
- USB printer support for inkjet and laser printers (ask for compatible models)
- Camera support for real-time video recording during test (ask for compatible models)
- Free of charge PC software for the test control and advanced report generation









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Data Acquisition & PC Software

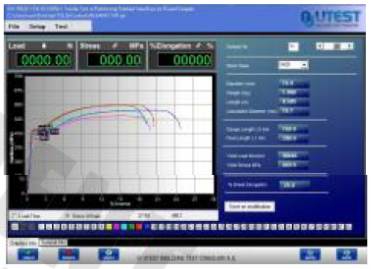
The Automatic Compression and Tensile Testing machine can be controlled (Start, Stop commands) by a computer with the software (given free of charge by UTEST). This software provides data acquisition and management for compression, tensile and splitting tensile test throughout the test execution. The advanced functions for data base management provide an easy navigation of all saved data. The test results certificate includes all descriptive information. Therefore, test parameters can be set and details about the test carried out such as client details, test type, specimen type, user info and other information required can be entered and printed out as well as test report and graph.

Following tests can be done with the UTEST software.

Standard Code	Description
EN 12390-3	Compressive Strength of Concrete Cylinders or Cubes
EN 12390-6	Tensile Splitting Strength of Concrete Cylinders or Cubes
EN 1338	Tensile Splitting Strength of Concrete Paving Blocks
EN 196-1	Compressive Strength of Hydraulic-Cement Mortar
EN 15630-1 and EN ISO 6892-1	Tensile Test of Reinforcing Ribbbed Steel Bars

- **Foreign Language Support and Customizable User Interface**

All contents of experimental data and additional information can be organized by user. Software can be performed in x different languages.



- **Capability to Save 24 test results of different specimens in one test folder**

Test results, graphics and properties of 24 different specimens can be saved in one folder. Old test folders can be reviewed and be edited easily. Advanced Graphic User Interface Software.

- **Graphical data on the screen is refreshed simultaneously during test procedure**

Load values can be monitored in high resolution graphics at every 100 milliseconds. User can highlight all 24 different specimen curves or preferred ones in different colors on the graphics. Zooming in–out and dragging can be done easily by mouse. Peak values of curves can be marked on the graphics and user can get load value of any point on the graph via high resolution.

- **Able to save frequently used texts in memory and recall them when necessary**

Frequently used information like name and location of the laboratory, type and dimensions of mostly used specimens are held in memory and can be written automatically by right clicking on information boxes and selecting frequently used text in menu.

- **Capable to Access and use previously done test data**

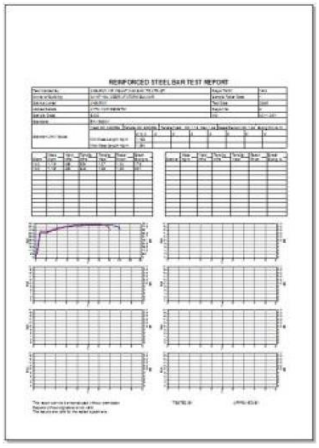
User can access any data of previously completed tests and use in his/ her new report since most of the tests have same structure and properties.

- **Able to edit test parameters of the testing equipment through Software**

All test parameters supported by testing equipment can be changed remotely via software. All test parameters specified by user are downloaded to the device before initialing the test procedure. By this way predefined device parameters will not cause errors in test results.

- **Graphical outputs and reports can be saved as a MS Excel worksheet**

Test result parameters and graphics are transferred to MS Excel worksheet properly to give user a chance to edit any data and graph easily.



- **Maximum Flexibility to edit report and graph templates**

User can design his/her custom report template and graphic scheme in MS Excel. In software part, user will define which data will be screened in which cell on the worksheet. Therefore , he/she will be able to monitor test results in his/her specific design.

Safety Features

- Max pressure valve to avoid machine overloading
- Ram travel switch to prevent excessive piston travel

Technical Specifications

Load capacity in tension (kN)	500
Load capacity in compression (kN)	1000
Max. vertical clearance with compression test accessory (mm)	768
Max. distance between grips, excluding piston travel (mm)	268
Distance between columns (mm)	305
Max. ram travel (mm)	100
Resolution digital display (kN-mm)	0.01
Load measurement Accuracy (starting from the first 10% of load range)	± 1%
Strain measurement Accuracy (mm)	0,01
Overall dimensions approx. (mm)	1660x800x500
Weight approx. (kg)	535