HIGH CAPACITY FOUR COLUMN AUTOMATIC COMPRESSION TESTING MACHINES

Product Code

UTC-5231	2000 kN Automatic Four Column Compression Testing Machine EN 220-240 V 50-60 Hz
UTC-5331	3000 kN Automatic Four Column Compression Testing Machine EN 220-240 V 50-60 Hz
UTC-5431	4000 kN Automatic Four Column Compression Testing Machine EN 220-240 V 50-60 Hz
UTC-5531	5000 kN Automatic Four Column Compression Testing Machine EN 220-240 V 50-60 Hz
UTC-0210	High Precision Pressure Transducer and Electronic

Standards

EN 12390-3, 12390-4; BS 1881; ASTM C39

The UTEST Automatic range of 2000 kN, 3000 kN, 4000 kN and 5000 kN capacity four column compression testing machines have been designed for reliable and consistent testing of a wide range of specimens. These compression testers are the results of continuous research to upgrade the testing machines with the latest technologies and conform to the latest standards EN 12390-3, 12390- 4, BS 1881 and ASTM C39 in terms of its technical properties taking into account client requirements. These also meet the requirements of CE norms for health and safety of the operator.

UTC - 5331

Testing machines are supplied with EN compression platens as standard. Machines also comply with the ASTM C39 standard when used together with suitable platens (see page 5).

Tests can be performed by either on BC 100 Unit or on a computer with using free UTEST Software. The advantages of performing tests on computer with using UTEST Software, such as reporting, graphical output, etc., can be seen at pages 6 and 7.

The UTEST Automatic range of 2000 kN, 3000 kN, 4000 kN and 5000 kN capacity four column compression testing machines allow inexperienced operators to perform the tests. Once the machine has been switched on and the specimen is positioned and centered by the help of centering apparatus. The only required operations are;

- **Setting test parameters, including pace rate (only required when the specimen type is changed).**
- **Pressing the START button on the control unit**
- **The machine automatically starts the rapid approach, when the specimen touches the upper platen the rapid approach is ended and starts loading at the pace rate that selected by user and stops once the specimen fails.**
- **Automatically saves the test parameters and test results**

HIGH CAPACITY FOUR COLUMN AUTOMATIC COMPRESSION TESTING MACHINES

All models are supplied in Class 1 starting from 50 kN as standard EN 12390-3, 12390-4, BS 1881 and ASTM C39. UTEST range of Semi-Automatic and Automatic Machines can be upgraded with option UTC-0210 special calibration Class 1 starting from 1% of the full range. This exceptional performance enables the machines to be used for a considerable number of applications including:

- **Early age compression strength tests**
- **Flexural tests by using proper accessories**
- **Mortar (Cement) compression tests by using proper accessories**
- **Core with low diameter compression tests**

The compression machines consist of a heavy duty four column frame, automatic hydraulic power pack with data acquisition and control system BC 100.

UTC-5231 and UTC-5331 Testing Machine is supplied complete with;

- Ø 205x90 mm, Ø 205x50 mm and Ø 205x30 mm distance pieces
- UTC-4513 Upper Platen (with ball seating assembly) Ø300 mm, Lower Platen Ø300 mm.

UTC-4510, UTC-4511, UTC-4512 and UTC-4515 upper and lower platen sets can also be used with UTC-5231 and UTC-5331 testing machines.

UTC-5431 and UTC-5531 Compression Testing Machines are supplied complete with;

- 2 pcs. Ø 205x90 mm, 2 pcs. Ø 205x50 mm and 2 pcs. Ø 205x30 mm distance pieces
- UTC-4513 Upper Platen (with ball seating assembly) Ø300 mm, Lower Platen Ø300 mm.

UTC-4510, UTC-4511, UTC-4512 and UTC-4515 upper and lower platen sets can also be used with UTC-5431 and UTC-5531 Testing Machines.

HIGH CAPACITY FOUR COLUMN AUTOMATIC COMPRESSION TESTING MACHINES

Safety Features

- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch
- Software controlled maximum load value
- Front and rear transparent durable plexiglass guards
- Emergency stop button

Model		UTC-5231	UTC-5331	UTC-5431	UTC-5531
Capacity		2000 kN	3000 kN	4000 kN	5000 kN
Standard		EN 12390-4	EN 12390-4	EN 12390-4	EN 12390-4
The roughness value for texture of machine and auxiliary platens		≤ 3.2µm	≤ 3.2µm	≤ 3.2µm	≤ 3.2µm
Lower platens dimensions		Ø300 mm	Ø300 mm	Ø300 mm	Ø300 mm
Upper platens dimensions		Ø300 mm	Ø300 mm	Ø300 mm	Ø300 mm
Maximum vertical clearance between platens		340 mm	340 mm	520 mm	520 mm
Piston diameter		300 mm	350 mm	400 mm	420 mm
Maximum piston movement		50 mm	50 mm	100 mm	120 mm
Horizontal clearance		385 mm	445 mm	495 mm	515 mm
Power		750 W	750 W	750 W	750 W
Oil capacity		20 L	20 L	20 L	20 L
Maximum working pressure		280 Bar	310 Bar	315 Bar	350 Bar
Frame		UTC-5720	UTC-5730	UTC-5740	UTC-5750
Power Pack		UTC-4830	UTC-4830	UTC-4840	UTC-4840
Dimensions	Frame	630x660x1090 mm	735x670x1140 mm	805x710x1370 mm	865x640x1555 mm
	Power Pack	370x400x920 mm		605x455x1015 mm	
Weight	Frame	1030 kg	1800 kg	2350 kg	3150 kg
	Power Pack	85 kg		150 kg	

Maximum horizontal clearance for placing sample is limited with the border of the platens. Sample must be placed such that its ends will not overflow from the ends of platens and it must be centred perfectly.

The suitable vertical clearance for specimen can be adjusted with distance pieces (see page 4).

110 V, 50 Hz models are available upon request. The only difference is the input voltage.

HIGH CAPACITY FOUR COLUMN AUTOMATIC COMPRESSION TESTING MACHINES

Product Code

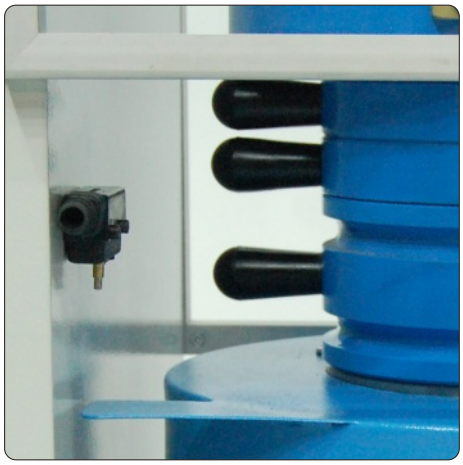
UTC-4630 Distance Pieces, Ø 165x15 mm
UTC-4631 Distance Pieces, Ø 165x30 mm
UTC-4633 Distance Pieces, Ø 165x50 mm
UTC-4634 Distance Pieces, Ø 165x90 mm
UTC-4636 Distance Pieces, Ø 205x30 mm
UTC-4638 Distance Pieces, Ø 205x50 mm
UTC-4639 Distance Pieces, Ø 205x90 mm

Standards

EN 12390-3, 12390-4; BS 1881; ASTM C39

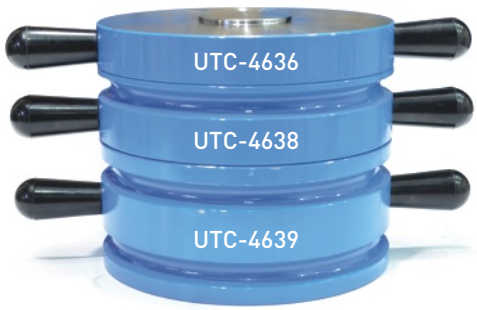
Distance pieces are used to reduce the amount of vertical clearance between the upper platen and the lower platen. 2000 kN , 3000 kN and 4000 kN machines are supplied with 205 mm dia. distance pieces and 600 kN and 1500 kN machines are supplied with 165 mm dia. distance pieces to lower the minimum distance between upper and lower platens down to required height.

Big size distance pieces are equipped with handles.



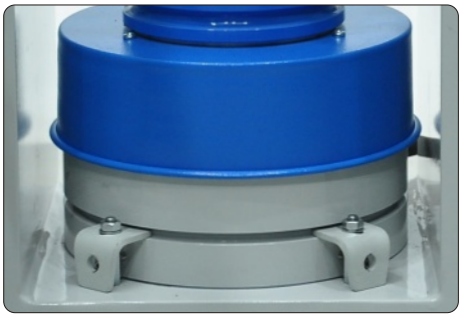
Loading Cylinder Assembly and Limit Switch

Distance Pieces



Distance Pieces

	Dimensions	Weight (approx.)
UTC-4630	165x165x15 mm	2,5 kg
UTC-4631	165x285x30 mm	5 kg
UTC-4633	165x285x50 mm	8 kg
UTC-4634	165x285x90 mm	14 kg
UTC-4636	205x290x30 mm	8 kg
UTC-4638	205x290x50 mm	13 kg
UTC-4639	205x290x90 mm	22 kg



Loading Cylinder Assembly

LOADING CYLINDER ASSEMBLY

All frames have a single acting up stroking ram. The diameter of the piston is designed to work with the load capacity.

The maximum ram movement is 50 mm. The pressure transducer is used for load measurements. There is a low friction coaxial PTFE seal between the cylinder and the piston fitted to the cylinder.

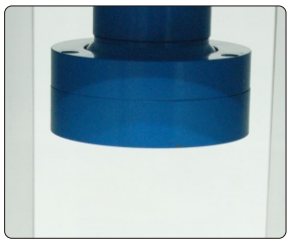
HIGH CAPACITY FOUR COLUMN AUTOMATIC COMPRESSION TESTING MACHINES

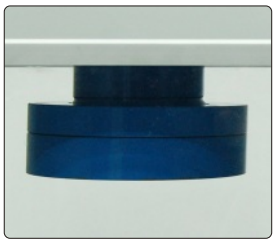
Product Code

UTC-4510 Upper Platen (with ball seating assembly) Ø 105 mm, Lower Platen Ø 105 mm
UTC-4511 Upper Platen (with ball seating assembly) Ø 165 mm, Lower Platen Ø 165 mm
UTC-4512 Upper Platen (with ball seating assembly) Ø 216 mm, Lower Platen Ø 216 mm
UTC-4513 Upper Platen (with ball seating assembly) Ø 300 mm, Lower Platen Ø 300 mm
UTC-4515 Upper Platen (with ball seating assembly) 310x500x38 mm, Lower Platen 310x500x38 mm

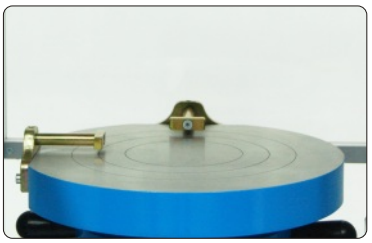
The platens enable the testing of a wide variety of cylinder, cube blocks or similar samples.

- Manufactured from high quality steel, which is then hardened (more than HRC 53), smoothed and finished.
- The roughness value for the surface texture of the auxiliary platens is ≤3.2 µm.
- Have centering rings on the lower platens for proper centering of 100 mm and 150 mm cube, 100 mm and 150 mm cylinder samples.
- UTC-4513 Upper Platen (with ball seating assembly) Ø 300 mm, Lower Platen Ø 300 mm has an specimen centering device on lower platen as standard.


UTC-4511


UTC-4512


UTC-4513


Centering apparatus on UTC-4513


UTC-4515

	UTC-4510	UTC-4511	UTC-4512	UTC-4513	UTC-4515
Description	Upper Platen (with ball seating assembly) Ø 105 mm, Lower Platen Ø 105 mm	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
Samples	2" , 3" , 4" dia. cylinders	4" , 6" dia. cylinders 100 mm cubes	6" dia. cylinders 100, 150 mm cubes	100,150,160 mm cylinders - 100, 150, 200 mm cubes	Blocks up to 310x500 mm
Used with listed frames	UTC-4700, UTC-4710, UTC-4721, UTC-4731, UTC-4720, UTC-5720, UTC-4730, UTC-5730, UTC-5740, UTC-5750	UTC-4700, UTC-4710, UTC-4721, UTC-4731, UTC-4720, UTC-5720, UTC-4730, UTC-5730, UTC-5740, UTC-5750	UTC-4710, UTC-4721, UTC-4731, UTC-4720, UTC-5720, UTC-4730, UTC-5730, UTC-5740, UTC-5750	UTC-4720, UTC-5720, UTC-4730, UTC-5730, UTC-5740, UTC-5750	UTC-4710, UTC-4721, UTC-4731, UTC-4720, UTC-5720, UTC-4730, UTC-5730, UTC-5740, UTC-5750
Standards	ASTM C39	ASTM C39	ASTM C39 EN 12390-4	EN 12390-4	EN 772-1
Hardness (not less than)	≥ 55 HRC	≥ 55 HRC	≥ 55 HRC	≥ 53 HRC	600 HV
Dimensions	110x110x145 mm	170x170x145 mm	220x220x145 mm	310x310x175 mm	320x510x175 mm
Weight	7 kg	20 kg	37 kg	75 kg	130 kg

HIGH CAPACITY FOUR COLUMN AUTOMATIC COMPRESSION TESTING MACHINES

Product Code

UTC-4940 UTEST Software for Automatic Compression / Flextural Strength Testing Machine

Data Acquisition & Pc Software

The Automatic Compression 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, flexure 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 12390-5	Flexural Strength of Concrete Beams
EN 1340	Flexural Strength of Concrete Kerbs
EN 12390-6	Tensile Splitting Strength of Concrete Cylinders or Cubes
EN 1338	Tensile Splitting Strength of Concrete Paving Blocks
EN 772-1	Compressive Strength of Masonry Units (Clay, Concrete with Dense and light – weight, aggregates and Autoclaved aerated, Natural and Manufactured Stone, Calcium silicate)
EN 13748-1	Breaking Strength/Load of Terrazzo Tiles for Internal Use
EN 13748-2	Breaking Strength/Load of Terrazzo Tiles for External Use
EN 538 and EN 491	Flexural Strength of Clay or Concrete Roofing Tiles
EN 196-1	Compressive Strength of Hydraulic-Cement Mortars
EN 196-1	Flexural Strength of Hydraulic-Cement Mortars
EN 12504-1 and EN 12390-3	Compressive Strength of Cored Concrete Specimens

- **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 ofthe 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.

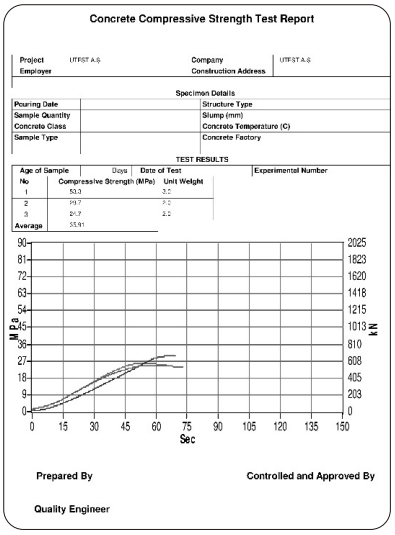
HIGH CAPACITY FOUR COLUMN AUTOMATIC COMPRESSION TESTING MACHINES

• 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.


Concrete Compressive Strength Test Report

Project / Employer — Company / Construction Address

Specimen Details
Pouring Date | Structure Type
Sample Quantity | Slump (mm)
Concrete Class | Concrete Temperature (C)
Sample Type | Concrete Factory

TEST RESULTS
Age of Sample | Days | Date of Test | Experimental Number
No | Compressive Strength (MPa) | Unit Weight
1 | 53.3 | 2.5
2 | 59.7 | 2.5
3 | 54.7 | 2.5
Average | 55.91

MPa: 90 81 72 63 54 45 36 27 18 9 0
kN: 2025 1823 1620 1418 1215 1013 810 608 405 203 0
0 15 30 45 60 75 90 105 120 135 150
Sec

Prepared By
Quality Engineer
Controlled and Approved By

UTC-5431 4000 kN Automatic Four Column Compression Testing Machine
(UTC-5740 4000 kN Capacity Four Column Frame and UTC-4840 Automatic Hydraulic Power Pack High Oil Capacity with Data Acquisition Control System BC 100 Unit)