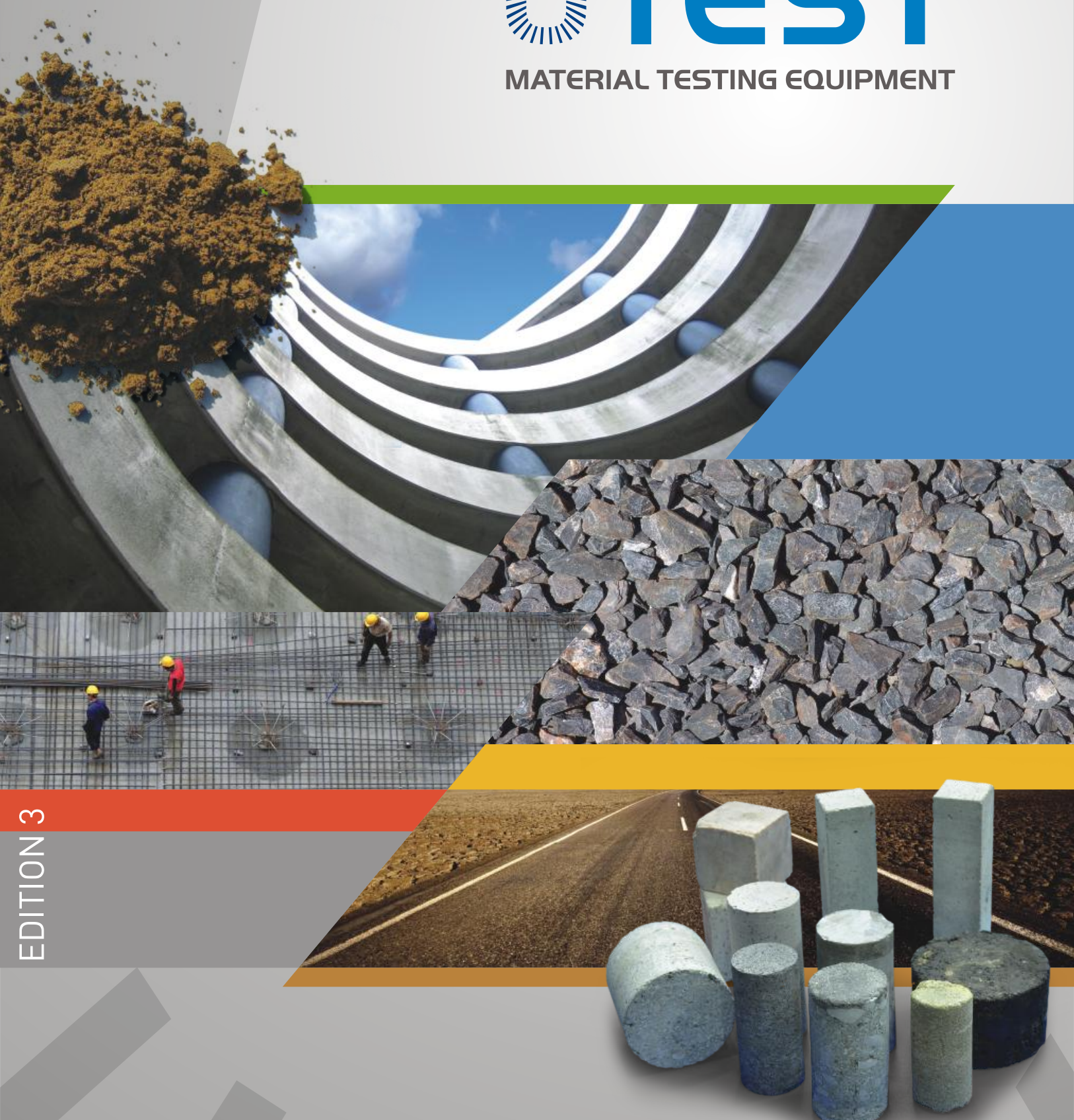


UTEST

MATERIAL TESTING EQUIPMENT



EDITION 3

*“your **solution partner** in quality **control**”*



*“your **solutionpartner** in quality**control**”*



*“your **solutionpartner** in quality**control**”*

UTEST - 2016 / Third Edition

UTEST is the leading manufacturer and supplier of Testing Equipment for Construction Materials in Turkey, became a well-known and trusted company Worldwide

UTEST produces test machines for construction materials such as Soil, Concrete, Cement, Aggregate, Asphalt and Rocks. More than 100 experts and qualified personnel are employed undertaking the production activity in a 12000 m² closed area in Sincan Organized Industrial Zone, Ankara. UTEST has adopted the primary policy of offering high-quality wide range of products and services in conformity with the international standards by prioritizing customer needs and expectations through its qualified personnel.

UTEST offers its services in a customer-oriented manner with its qualified and experienced staff

UTEST offers its services by giving priority to customer satisfaction in the design, manufacturing and supply of Testing Devices in conformity with the international quality standards. UTEST also designs special testing systems and devices to be used in quality control and R&D activities alongside its mass production line. Utest manufacturing all equipment software and hardware within its own structure, including CNC machining, welding, painting, and assembling.





All UTEST products are tested to guarantee quality, reliability and performance, backed by the international standards and warranties. As part of its clients' product investment UTEST provides a substantial after-sales services. Years of experience, a proven track record, carefully managed and audited quality system are in place to meet customer requirements. Within its high technology Quality Control and Calibration Laboratory all products are tested in each step throughout the production, and calibrated before leaving the factory.

UTEST is all around the World

UTEST is exporting its products to more than 40 countries such as Italy, Belgium, France, Germany, United Kingdom, Canada, Australia, Vietnam, Romania, Libya, Saudi Arabia, Tunisia, Azerbaijan, Georgia, Turkmenistan, Kazakhstan, also to Middle East and many other African countries by offering its services through its authorized distributors and representatives.





UTEST
MATERIAL TESTING EQUIPMENT

UTEST has a wide customer portfolio including leading companies operating in different business sectors

UTEST frequently cooperates with the construction companies that carry out worldwide projects, private laboratories, universities and state institutions such as mineral research and exploration, road and highways, environment and city planning or hydraulics, irrigation and hydrology departments.



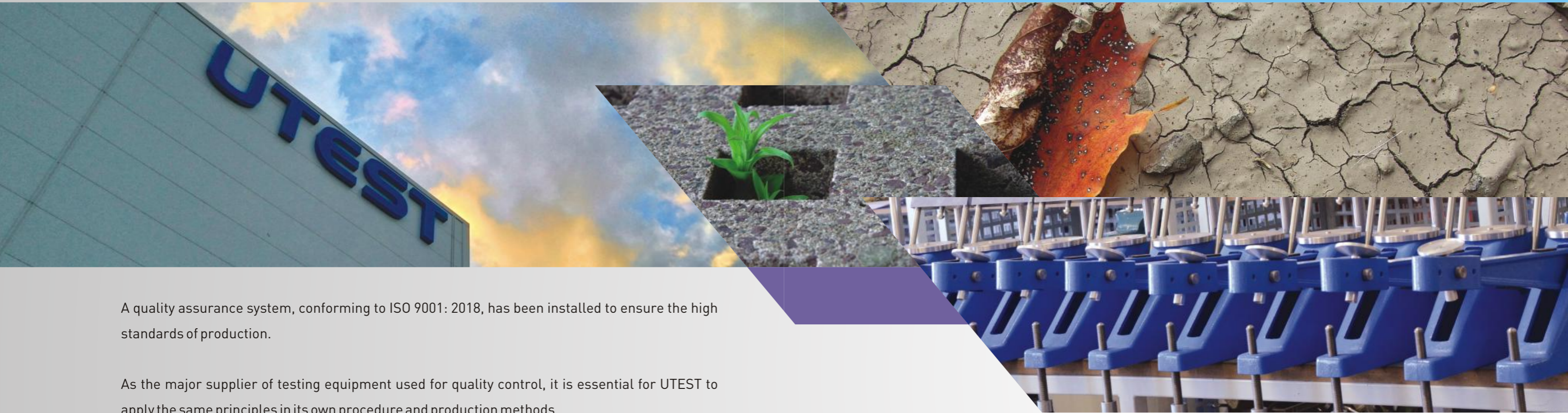
UTEST is the first choice in the sector

All Utest products are designed, analyzed and manufactured by using the latest technology. UTEST is continuously improving itself due to its target of excellence in total quality throughout the whole business. UTEST primarily undertakes the responsibility of fulfilling customer expectations and has become the first choice in the sector thanks to its high quality and reliable equipment including its substantial technical service.

A quality assurance system, conforming to ISO 9001: 2008, has been installed to ensure the high standards of production. As the major supplier of testing equipment used for quality control, it is essential for UTEST to apply the same principles in its own procedure and production methods.

I would like to specially thank to all my colleagues has spent great effort to present this catalogue.

TARIK USANMAZ
GENERAL MANAGER



A quality assurance system, conforming to ISO 9001: 2018, has been installed to ensure the high standards of production.

As the major supplier of testing equipment used for quality control, it is essential for UTEST to apply the same principles in its own procedure and production methods.



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Product Design Changes

Due to continuing improvements in design, some items may differ from the discription and photograph in this catalogue. Specifications are subject to change without notice. Some new items can be available and other can be discontinued. If you have questions, our Sales Department will be happy to discuss any design improvements and advantages, as well as to keep you informed about all current product information and changes. The pictures and drawings are not binding.

You can find latest product information at our web site: www.utest.com.tr

Soil Testing Equipments

UTEST Soil Testing Equipments are used for understanding and investigating the physical/mechanical properties, critical characteristic behaviors, performance of soil, unbound and hydraulically bound mixtures during compression, shear or inner liquid flow under dynamic and vibrating loading conditions. Soil characteristics are also used for deciding the most suitable method for excavating underground tunnels.

Every man-made structure needs a foundation that will resist to the exposed forces, such as live loads, dead loads and wind loads. The soil tests provide the engineering firms and construction companies with the ability to predict the mechanical behavior of soils in order to design foundations that ensure resistance to forces likely to act upon it, including any unusual / extreme events such as earthquakes or hurricanes, thus providing a safe environment for people in or around the structures.

In the soil section, UTEST Testing Equipment is basically grouped in six main headings

- Field Inspection and Sampling
- Laboratory Testing/Specimen Preparation
- Soil Classification Tests
- Soil Mechanic Tests
- Compacted Road Base and Sub-Base Soils Tests
- Soil Permeability and Dispersibility
- Advanced Soil Testing Systems

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Field Inspection and Sampling

SOIL SAMPLING

Product Code

- UTS-0005 Augers Power Head
- UTS-0008 Single Flute Bit Ø:80x1000 mm
- UTS-0010 Single Flute Bit Ø:100x1000 mm
- UTS-0015 Single Flute Bit Ø:150x1000 mm
- UTS-0020 Single Flute Bit Ø:200x1000 mm

Standards

ASTM D420, D1452; AASHTO T86, T202; CNR a. VI n.25

Used in conjunction with sampling tubes to obtain disturbed or undisturbed soil samples. 47.7 cc displacement, 40:1 reduction ratio, 80-100-150-200 mm bit diameter. The Auger should be ordered separately.



Product Code	Dimensions	Weight	Power
UTS-0005	400x400x500 mm	10 kg	1600 W
UTS-0008	150x150x1150 mm	1 kg	
UTS-0010	200x150x1150 mm	2 kg	
UTS-0015	200x150x1150 mm	3 kg	
UTS-0020	200x150x1150 mm	4 kg	

SOIL SAMPLING

Product Code

- UTS-0024 Hand Operated Auger Boring Set
- UTS-0026 Extension Rod for UTS-0024, 1 meter

UTS-0024 Hand Boring and Sampling Set for augering down to a depth of 5 meters.

The UTS-0024 Hand Operated Auger Boring Set consists of a T-Handle with 1 m Rod, 80 mm, 100 mm and 150 mm diameter Auger Heads.

Extension rods should be ordered separately.



Dimensions	1100x200x200 mm
Weight (approx.)	5 kg

WATER LEVEL

Product Code

- UTS-0050 Water Level Indicator 50 m Cable Length
- UTS-0052 Water Level Indicator 100 m Cable Length
- UTS-0055 Water Level Indicator 150 m Cable Length
- UTS-0058 Water Level Indicator 200 m Cable Length

The Water Level Indicators (Electric Contact Meters) are portable, easy-to-use and reliable instruments for measuring water level and total depth in bore holes, wells, observation pipes, reservoirs, as well as control of pumping tests.

As soon as the measuring probe electrode touches the water surface, the signal indicator on the instrument lights up with an audible alarm. The water level can be read on the measuring tape in meters (m) and centimeters (cm).



Technical Specifications

Measuring Range	50 m, 100 m, 150 m, 200 m
Accuracy	1 cm for a measuring range of 100 m
Reproducibility	0.5 cm
Pressure Tightness	10 bar (up to 50 bar possible)
Probe	Chromium-plated brass,
Standard Version	14 mm dia., 140 mm long
Special Version	10 mm dia., 320 mm long
Cable	Polyethylene with 2 steel cores (anticorrosive) with polyamide-coated steel tape, graduation in millimeters (mm), in centimetres (cm) and numbering in decimetres in black color, the meters (m) figures are red colour on yellow-green base
Cable Drum	Hard rubber, plastic material and temperature resistant
Power Supply	3VDC. 2 baby-cells each 1.5V

Product Code	Dimensions	Weight
UTS-0050	250x250x250 mm (for all models)	3.4 kg (50 m)
UTS-0052		5.6 kg (100 m)
UTS-0055		6.8 kg (150 m)
UTS-0058		8.8 kg (200 m)

POCKET PENETROMETERS

Product Code

- UTS-0070 Pocket Dial Penetrometer, 0-6 kgf/cm²
- UTS-0072 Pocket Dial Penetrometer, 0-14 kgf/cm²
- UTS-0075 Pocket Dial Penetrometer, 0-6, 0-11 kgf/cm²
- UTS-0078 Pocket Penetrometer, 0-5 kgf/cm²

The UTS Series of Pocket Dial Penetrometers are ideal instruments to determine the penetration resistance of cohesive soil, especially when various range measurements are required.

UTS-0075 Pocket Dial Penetrometer with respect to range and plunger diameters is available for specific applications.

All Dial Penetrometer models have 60 mm. Dial Diameter and designed with Peak Hold Feature.

UTS-0075 Pocket Dial Penetrometer is used for evaluating the angle of internal friction "j" of sandy soils and the cohesion "c" in clay soils. Dual scale: 0-6 kgf/cm² for 6.35 mm diameter plunger and 0-11 kgf/cm².

The UTS-0078 Pocket Penetrometer is a portable and easy-to-use equipment to perform field classification of cohesive soils in terms of consistency, shear strength and approximate unconfined compressive strength.



UTS-0075

UTS-0070 / UTS-0072



UTS-0078

Product Code	Range (kgf/cm ²)	Plunger Dia.	Dimensions	Weight (approx.)
UTS-0070	0-6	6.35	100X200X60 mm	0.5 kg
UTS-0072	0-14	6.35	100X200X60 mm	0.5 kg
UTS-0075	0-6	6.35-10-15-20-25	100X200X60 mm	0.5 kg
UTS-0078	0-5	6.35	20x20x180	0.5 kg

Field Inspection and Sampling

FIELD INSPECTION KIT

Product Code

UTS-0080	Field Inspection Testing Kit
UTS-0082	Field Inspection Pocket Vane Tester
UTS-0082/1	Extension Rod for UTS-0082
UTS-0084	Heavy Duty Pocket Penetrometer, 0-10 kgf/cm ²

Standards

ASTM D2573

The UTS-0080 Field Inspection Testing Kit is ideal for geotechnicians, geologists and agronomists. It consists of the UTS-0084 Pocket Penetrometer and of the UTS-0082 Field Inspection Pocket Vane Tester. The instrument is contained in a practical carrying case.

UTS-0080 Field Inspection Testing Kit	
Dimensions (packed)	240x210x50 mm
Weight approx.	1.8 kg

The UTS-0082 Field Inspection Pocket Vane Tester is especially designed to measure the undrained shear strength (CU) of cohesive soils, consists of a cylindrical body with a torsional spring and three interchangeable vanes of different sizes used depending upon the expected strength of the soil. The height/diameter ratio of all vanes is 2. During operation the vane is driven for 5-6 cm into the soil and then turned with the handle. Deep measures (i.e. on the top of undisturbed samples) can be obtained using the extension rod. All stainless steel construction. Supplied in a plastic case. Extension rod should be ordered separately.

UTS-0082 Field Inspection Pocket Vane Tester	
Vane Dimensions (height x dia.)	32x16; 40x20, 50.8x25.4 mm
Measuring Range	0 to 240 kPa (0-24 N/cm ²)
Torque Value	5 N · m
Extension Rod	500 mm depth.
Overall Dimensions (assembled)	310x105 mm
Weight approx.	1.3 kg

The UTS-0084 Heavy Duty Pocket Penetrometer is designed for making field classification of cohesive soils in terms of consistency, shear strength and approximate unconfined compressive strength. Heavy duty model is all stainless steel construction, three interchangeable tips: 4.5 mm dia. for very hard soil, 6.35 mm for medium and soft soil, 8.98 mm for soft soil. Supplied complete with plastic case.

UTS-0084 Heavy Duty Pocket Penetrometer	
Measuring Range	0 to 10 kgf/cm ²
Dimensions (assembled)	210 mm length x 20 mm dia.
Weight approx.	0.5 kg



UTS-0080



UTS-0082



UTS-0084

POCKET VANE TESTER

Product Code

UTS-0088 Pocket Shear Vane Device

The UTS-0088 Pocket Shear Vane Device is a practical equipment for determining the shear strength of cohesive soils. It is widely used to perform onsite measurements of excavations covering trenches and test pits, thin-wall or split core samples, by providing a quick and efficient method for shear strength measurements and it is also suitable for laboratory usage. Pocket Shear Vane Device is supplied in a plastic carrying case.

Vane Type	Range
Standard 25 mm Diameter Vane	0 - 10 N/cm ²
Sensitive Vane Adaptor	0 - 2 N/cm ²
High Capacity Vane Adaptor	0- 25 N/cm ²

Dimensions	240x210x50 mm
Weight (approx.)	1,5 kg



DYNAMIC CONE PENETROMETER

Product Code

UTS-0095 TRL Dynamic Cone Penetrometer (DCP)

Standards

BS 1377:9

The UTS-0095 TRL Dynamic Cone Penetrometer is used for the rapid, in situ measurement of structural properties of existing road pavement constructed with unbound materials.

The design of the DCP is similar to that described by Kleyn, Maree and Savage (1982); it incorporates an 8 kg weight dropping through a height of 575 mm and 60° cone having a diameter of 20 mm. with the standard DCP measurements can be made down to a depth of approximately 850 mm or when extension shafts are used to a recommended maximum depth of 2 m.

Readings are usually taken after a set number of blows, changing the number according to the strength of the layer being penetrated. A typical test takes only a few minutes, therefore the instrument provides a very efficient method of obtaining information that would normally require the digging of test pits.

The penetration hammer assembly consists of 8 kg hammer, hammer shaft, anvil with plastic plate coupling for ruler and handle.

Dimensions	1200x350x200 mm
Weight (approx.)	30 kg



The TRL Dynamic Cone Penetrometer is supplied complete with

- A hammer assembly,
- Penetration rod,
- 2 piece 60° cone,
- Metal plate coupling for ruler,
- Segmented adaptor for extension rods,
- Segmented upper extension rod,
- Segmented lower extension rod,
- 2 piece 13-17mm AF spanners,
- 3mm AF hex wrench,
- Tommy bar,
- A bottle of adhesive, 10cc,
- Users Manual
- Steel ruler,
- Carrying Case, heavy-duty wooden

Field Inspection and Sampling

MOISTURE CONTENT in THE FIELD

Product Code

UTS-0150 Universal Moisture Tester (Carbide Meter)

Standards

BS 6576

The UTS-0150 Universal Moisture Tester (Carbide Meter) is used for the determination of the moisture content by using the calcium carbide method. The soil sample is introduced into the bottle with the reagent. The water reacts with the calcium carbide and develops a gas pressure, which is indicated on the manometer and easily converted in percentage of moisture.

The Universal Moisture Tester is supplied complete with

- Carbide Ampoules, 20 pcs.
- Analog Manometer
- Digital Balance
- Hammer
- Chisel
- Digital Timer
- Metal Carrying Case
- Other Accessories

Sample Mass / Moisture Range (up to)	20 g / 10%
	50 g / 4%
	100 g / 2%
Dimensions	520x350x150 mm
Weight (approx.)	6 kg



MOISTURE CONTENT in THE FIELD

Product Code

UTS-0155 Speedy Moisture Tester

Standards

ASTM D4944; AASHTO T217

The UTS-0155 Speedy Moisture Tester is used to determine the moisture content of soils, sand and fine aggregates in the field. It is an easy and portable method. The amount of gas, which is given off when water and calcium carbide are mixed and react, is directly proportional to the amount of water present in the sample and results in percentage moisture are taken from a pressure gauge.

These model is used for moisture determination of a 20 g specimen with 20% maximum moisture content. UTS-0155 Speedy Moisture Tester does not include Calcium Carbide Powder

The Speedy Moisture Tester is supplied complete with

- Vessel with Gauge
- Digital Scale
- Scoop
- Cleaning Brush
- Cleaning Cloth
- Two Steel Pulverizing Balls
- Plastic Case

Dimensions	510x380x200 mm (case)
Weight (approx.)	9 kg



Laboratory Testing

EXTRUDING SAMPLES from MOULDS

Product Code

UTGE-0080 Marshall / CBR / Proctor Specimen Extruder, 30 kN Capacity

Standards

EN 13286-2, 13286-47, 12697-30; AASHTO T134, T180, T193, T245; ASTM D698, D1557, D1883, D1559; BS 1377-4, 1924-2, 598-107

The UTGE-0080 Extruder is designed to easily extrude specimens from marshall and CBR, standard and modified proctor moulds. The capacity of the extruder is 30 kN and is supplied complete with a manual hydraulic jack and 2 pcs. adaptor to extrude specimens from Ø100 mm (4") and Ø150 mm (6") dia. proctor, CBR and marshall molds.

Adaptors with different sizes should be ordered separately if required.



Ram Travel	130 mm
Screw Travel	90 mm
Dimensions	280x280x520 mm
Weight (approx.)	28 kg

EXTRUDING SOIL SAMPLES

Product Code

UTGE-0082 Hand Operated Hydraulic Specimen Extruder, Vertical Type, 60 kN Capacity

Standards

EN 13286-2, 13286-47, 12697-30; AASHTO T134, T180, T193, T245; ASTM D698, D1557, D1883, D1559; BS 1377-4, 1924-2, 598-107



The UTGE-0082 Hand Operated Hydraulic Extruder is designed for the manual extrusion of specimens from standard BSP (U4) threaded sample tubes 100 mm, (4") and 150 mm (6") Compaction Moulds, CBR and Marshall Moulds. The extruder has 60 kN extrusion force and 650 mm ram travel.

Supplied complete with 2 pcs. adaptors for Ø100 mm (4") and Ø150 mm (6") dia. moulds.

The Hand Operated Hydraulic Extruder is supplied complete with;

- Adaptors for Ø100 mm (4") and Ø150 mm (6") dia.. moulds

Dimensions	450x650x1650 mm(case)
Weight (approx.)	90 kg

EXTRUDING SOIL SAMPLES

Product Code

UTGE-0084 Motorized Hydraulic Specimen Extruder, Horizontal Type, 60 kN Capacity, 220-240 V 50-60 Hz
 UTGE-0084/110 Motorized Hydraulic Specimen Extruder, Horizontal Type 60 kN Capacity, 110 V 60 Hz

Standards

EN 13286-2, 13286-47, 12697-30; AASHTO T134, T180, T193, T245; ASTM D698, D1557, D1883, D1559; BS 1377-4, 1924-2, 598-107

The UTGE-0084 Motorized Hydraulic Extruder is used for quick and smooth extrusion of soil specimens from 38 mm (inner dia.) to 160 mm (outer dia) tubes and also Proctor, CBR and Marshall Moulds. The Extruder has 60 kN capacity and 900 mm ram travel. Specimens with different sizes can be safely collected after extrusion with the help of the adjustable V shaped sample receiving table. This V table can easily be dismantled for space saving. The hydraulic piston can be stopped at any position during the extraction.

Adaptors with different sizes should be ordered separately if required.

The Motorized Hydraulic Extruder is supplied complete with;

- Adaptors for Ø100 mm (4") and Ø150 mm (6") dia.. moulds

Capacity	60 kN	Weight (approx.)	195 kg
Ram Travel	900 mm	Power	750 W



Dimensions	2800x500x1250 mm (working position) 2050x500x1250 mm (shipping)
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EXTRUDING SOIL SAMPLES

Product Code

UTGE-0086 Motorized Hydraulic Specimen Extruder Vertical Type, 60 kN Capacity, 220-240 V 50-60 Hz
 UTGE-0086/110 Motorized Hydraulic Specimen Extruder Vertical Type, 60 kN Capacity, 110 V 60 Hz

Standards

EN 13286-2, 13286-47, 12697-30; AASHTO T134, T180, T193, T245; ASTM D698, D1557, D1883, D1559; BS 1377-4, 1924-2, 598-107

The UTGE-0086 Motorised Hydraulic Extruder Vertical Type, 60 kN capacity, 650 mm ram travel, to remove specimens from 38 mm (inner dia.) to 160 mm (outer dia.) tubes and also proctor, CBR and marshall molds.

Adaptors with different sizes should be ordered separately if required.

The Motorized Hydraulic Extruder is supplied complete with

- Adaptors for Ø100 mm (4") and Ø150 mm (6") moulds

Capacity	60 kN
Ram Travel	650 mm
Dimensions	650x750x1750 mm
Weight (approx.)	185 kg
Power	750 W



Laboratory Testing

EXTRUDING SOIL SAMPLES

Product Code

- UTGE-0090 Double Pistons Motorized Hydraulic Specimen Extruder Vertical Type, 60 kN Capacity, 220-240 V 50-60 Hz
 UTGE-0090/110 Double Pistons Motorized Hydraulic Specimen Extruder Vertical Type, 60 kN Capacity, 110 V 60 Hz

Standards

EN 13286-2, 13286-47, 12697-30; AASHTO T134, T180, T193, T245; ASTM D698, D1557, D1883, D1559; BS 1377-4, 1924-2, 598-107

The UTGE-0090 has two pistons with 60 kN capacity. One piston that has a 650 mm ram travel can be used for extruding specimens from 38 mm (inner dia.) to 160 mm (outer dia.) sample tubes and moulds such as proctor, CBR and marshall moulds.

The second piston that has a 200 mm ram travel can be used for extruding the uniaxial and triaxial specimens from test tubes/cutters inner dia. from Ø38 mm to Ø72 mm.

Adaptors with different sizes should be ordered separately if required.

The Double Pistons Motorized Hydraulic Extruder is supplied complete with;

- Adaptors for Ø150 mm (6"), Ø100 mm (4"), Ø72 mm, Ø50.8 mm (2") and Ø38 mm (1 1/2") and inner dia. sample tubes and moulds.



Capacity	60 kN
Ram Travel	650 mm (1. piston) - 200 mm (2. piston)
Dimensions	650x750x1750 mm
Weight (approx.)	215 kg
Power	750 W

SAMPLE PREPARATION

Product Code

- UTC-1050 Melting Pot 3 L Capacity, 220-240 V 50-60 Hz
 UTC-1050/110 Melting Pot 3 L Capacity, 110 V 60 Hz

Standards

EN 12390-3; ASTM C31, C192, C617; AASTHO T23, T126; CEN ISO/TS 17892-2

The Melting Pot is designed for melting capping compound, sulphur, wax and similar materials. The melted paraffin wax is used to seal soil samples and other materials.

The apparatus consists of a 3 liter capacity aluminum container in a well-lagged steel jacket, cover and a thermostatic control heating system to keep the temperature constant in the range of ambient to 200°C.



Dimensions	350x320x290 mm
Weight (approx.)	9 kg
Power	600 W

SAMPLE PREPARATION

Product Code

- UTS-0160 Soil Lathe / Trimmer and Extruder
 UTS-0162 Open Wire Saw
 UTS-0164 Wire Saw
 UTS-0166 Trimming Knife
 UTGG-2205 Porcelain Mortar with Pestle 130 mm dia
 UTGG-2215 Rubber Headed Pestle

The UTS-0160 Soil Lathe, Trimmer and Extruder is used to extrude and trim soil samples from 35 mm to 100 mm diameter to reduce samples. It should be used together with UTS-0162 Open Wire Saw.

Open Wire Saw, Wire Saw, Trimming Knife, Porcelain Mortar with Pestle. The Rubber Headed Pestle can be ordered separately.

Technical Specifications

Specimen Lathe	35x70 mm to 100x200 mm
Specimen Trimming and Extrusion	35x70 mm to 50x100 mm
Vertical Daylight	260 mm



UTS-0160 with UTS-0162 and UTS-0164

Dimensions	220x300x450 mm
Weight (approx.)	15 kg

SAMPLE PREPARATION

Product Code

- UTG-0130 Laboratory Mixer 10 L, 220-240 V 50-60 Hz
 UTG-0130/110 Laboratory Mixer 10 L, 110 V 60 Hz
 UTG-0131 Spare Bowl for UTG-0130
 UTG-0132 Spare Whisk for UTG-0130

The UTG-0130, 10 L capacity mixer is designed for the mixing of soil and asphalt samples to be used for mechanical tests such as compaction, indirect tensile, Marshall etc. The mixing head rotates at speed positions from 10 to 240 rpm and the whisk from 20 to 480 rpm. The user can adjust the rotation speed between given values easily by using a control knob fitted to the machine.



UTG-0130



UTG-0131



UTG-0132

The Laboratory Mixer is supplied complete with;

- Bowl, Stainless Steel, 10 L.
- Whisk

Dimensions	700x750x800 mm
Weight (approx.)	75 kg
Power	550 W

Soil Classification

PARTICLE DENSITY / MECHANICAL END-OVER-END SHAKER

Product Code

UTS-0170	Mechanical End-Over-End Shaker, 220-240 V 50-60 Hz
UTS-0170/110	Mechanical End-Over-End Shaker, 110 V 60 Hz
UTS-0171	Gas Jar for UTS-0170

Standards

BS 1377:2

The UTS-0170 Mechanical End-Over-End Shaker is used for the determination of the particle density by the gas jar method and the particle size distribution by sedimentation.

End-Over-End Shaker is used to rotate two 1 L gas jars with rubber cover at approx. 50 rpm.

The 1 L capacity Gas Jar is made of plexiglass and supplied complete with Rubber Cover .

UTS-0171 Gas Jar should be ordered separately.



UTS-0170



UTS-0171

The Gas Jar is supplied complete with:

- Rubber Cover

Product Code	Dimensions	Weight (approx.)	Power
UTS-0170	900x700x600 mm	21 kg	180 W
UTS-0171	120x120x270 mm	0.6 kg	

LIQUID LIMIT CONE PENETROMETER

Product Code

UTS-0180	Semi-Automatic Penetrometer for Liquid Limit, 220-240 V 50-60 Hz
UTS-0180/110	Semi-Automatic Penetrometer for Liquid Limit, 110 V 60 Hz
UTS-0182	Liquid Limit Penetration Test Cone 30° Angle, Stainless Steel
UTS-0183	Cone Test Gauge for UTS-0182
UTS-0184	Liquid Limit Penetration Test Cone 60° Angle, Stainless Steel
UTS-0185	Cone Test Gauge for UTS-0184
UTGH-1425	Moisture Content Tin with Lid Ø:55 mm x h:35 mm, Aluminum
UTGH-1435	Moisture Content Tin with Lid Ø:75 mm x h:50 mm, Aluminum

Standards

BS 1337:2; NF P94-052-1; CEN ISO/TS 17892-6, 17892-12

A Cone Penetrometer is used to determine the moisture content at which clay soils pass from a plastic to a liquid state, and used also for the determination of undrained shear strength.

The UTS-0180 Semi-Automatic Penetrometer for Liquid Limit consists of a cast iron base with course and fine leveling screws, a digital penetration measurement gauge 0.01 mm resolution/readability and an automatic penetration timer unit.

The UTS-0180 is equipped with a digital, 99 second timer, which can be set to the standard 5 second free-fall time or to some other setting for customized tests. When engaged the timer will allow the needle to free fall into the sample for the specific time interval and then lock the needle from advancing while providing a direct reading of the test results.

320 g weight should be added to the 30° angle cone to get a total weight of 400 g for the shear strength test.

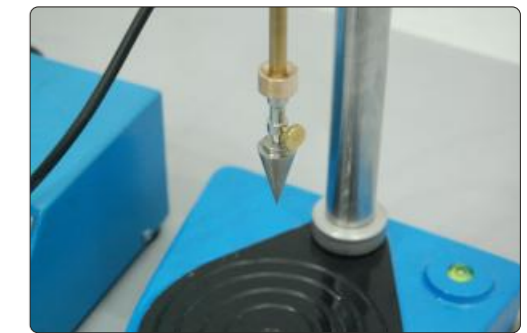
Semi-Automatic Penetrometer for Liquid Limit supplied complete with

- Automatic Penetration Timer Unit,
- 30° Penetration Cone
- Sample Cups, 3 pcs. Aluminium, Ø55 mm x h:35 mm.

Dimensions	220x400x550 mm
Weight (approx.)	16 kg



UTS-0180



UTS-0182

Soil Classification

LIQUID LIMIT / CASAGRANDE APPARATUS

Product Code

UTS-0200	Manual Liquid Limit Device (Casagrande) BS
UTS-0202	Manual Liquid Limit Device (Casagrande) ASTM - AASHTO
UTS-0210	Motorized Liquid Limit Device (Casagrande) BS, 220-240 V 50-60 Hz
UTS-0212	Motorized Liquid Limit Device (Casagrande) ASTM - AASHTO 220-240 V 50-60 Hz
UTS-0215	Metal Grooving Tool and Gauge Block, ASTM
UTS-0216	Plastic Grooving Tool, ASTM
UTS-0217	Plastic Grooving Tool, BS
UTS-0218	Brass Grooving Tool, AASHTO
UTS-0220	Resilience (Rebound) Tester, ASTM
UTS-0221	Resilience (Rebound) Tester TS 1900-1; AASHTO
UTS-0225	Spare Brass Cup, for all Models

Standards

ASTM D4318; BS 1377:2; AASHTO T89; TS 1900-1

The UTEST Manual and Motorized Liquid Limit Apparatus (Casagrande) are used to determine the moisture content at which clay soils pass from plastic to liquid state.

The Devices consist of an adjustable crank and cam mechanism, a blow counter and a removable brass cup fitted on the base. Different models with the same shape but with different base and cup weights are available according to the required specifications. Manual and Motorized versions are available.

UTS-0200 and 0210 models are supplied with a BS type plastic grooving tool. UTS-0202 and 0212 models are supplied with a ASTM type plastic grooving tool. Other types of grooving tools should be ordered separately.



UTS-0200 with UTS-0216



UTS-0210



UTS-0218

UTS-0215

UTS-0216



UTS-0220

	Manual	Motorized
Dimensions	240x230x150 mm	200x290x170 mm
Weight (approx.)	2 kg	4.2 kg

SHRINKAGE LIMIT

Product Code

UTS-0230	Shrinkage Limit Test Set
UTS-0234	Shrinkage Prong Plate
UTGH-1425	Moisture Content Tin with Lid, Aluminium, Ø:55 mm h:35 mm
UTGH-1430	Moisture Content Tin with Lid, Aluminium, Ø:45 mm h:10 mm
UTGG-2170	Porcelain dish, 120 mm dia.
UTGH-1495	Spatula, small, length:120 mm
UTGG-1005	Graduated glass cylinder 25 ml

Standards

ASTM D427; AASHTO T92; UNE 103-108; UNI 10014



When the water content of a fine-grained cohesive soil is reduced below the plastic limit, shrinkage of the soil mass continues until the shrinkage limit is reached. This method of test covers the determination of the shrinkage limit, shrinkage ratio, volumetric shrinkage and linear shrinkage.

The Shrinkage Limit Test Set is supplied complete with:

- Prong Plate
- Moisture Content Tin with Lid, aluminum, Ø:45 mm h:10 mm, 2 pcs.
- Moisture Content Tin with Lid, aluminum, Ø:55 mm h:35 mm
- Porcelain Dish, 120mm dia.
- Spatula, 120 mm
- Graduated Glass Cylinder, 25 ml,
- Carrying Case

Dimensions	340x290x80 mm
Weight (approx.)	1,5 kg

LINEAR SHRINKAGE

Product Code

UTS-0235 Linear Shrinkage Mould

Standards

BS 1377:2

The UTS-0235, Linear Shrinkage Mould is 140 mm long and 12.5 mm radius and is used for the determination of the total linear shrinkage of soils and indicates the plastic properties of soils with low clay content.

Dimensions	20x30x160 mm
Weight (approx.)	0,3 kg



PLASTIC LIMIT

Product Code

UTS-0250	Plastic Limit Test Set
UTS-0252	Plastic Limit Reference Rod Ø 3x100 mm
UTS-0254	Plastic Limit Plate 300x300x5 mm, Glass
UTGG-2170	Porcelain dish, 120 mm dia.
UTGH-1433	Moisture content tin with lid, Aluminum, Ø:75 mm h:30
UTGH-1495	Spatula, small, length:120 mm

Standards

ASTM D4318; AASHTO T90; BS 1377:2; UNE 103-104; UNI 10014

The plastic limit (PL) is defined as the lowest moisture content of a soil that will permit a sample to be rolled into threads of 3 mm diameter without the threads breaking.

The Plastic Limit Test Set is supplied complete with:

- Glass Plate, 300x300x5 mm
- Steel Reference Rod
- Moisture Content Tins, Ø:75 mm h:30, 6 pcs.
- Porcelain Mixing Dish, 120 mm dia.
- Spatula, 120mm
- Carrying Case

Dimensions	360x370x180 mm
Weight (approx.)	3 kg



Soil Classification

PARTICLE SIZE DISTRIBUTION

Product Code

- UTS-0270 Hydrometer Test Set
- UTS-0272 Soil Dispersion Mixer, 220-240 V 50-60 Hz
- UTS-0273 Hydrometer Bath, 220-240 V 50-60 Hz
- UTS-0274 Hydrometer 151H
- UTS-0275 Hydrometer 152H
- UTS-0276 Hydrometer Jars, 1000 ml
- UTGC-0900 Sodium Hexametaphosphate, 1kg

Standards

ASTM D422; AASHTO T88



UTS-0270



UTS-0272

Hydrometer Test Set is used to determine the particle size distribution of very fine materials such as silt and clay.

The soil dispersion mixer for hydrometer test method, operates at over 13,000 r.p.m, includes dispersion cup, stirring paddle, automatic switch-on by positioning bowl, 100 W power consumption

The hydrometer bath, circulation unit, ambient to 35°C working temperature, 50 L capacity tank with 8 pcs. sedimentation cylinder capacity.

152H Hydrometer should be ordered separately.

The Hydrometer Test Set is supplied complete with:

- Dispersion mixer
- Hydrometer bath
- Hydrometer, 151H, 1pcs.
- Sodium hexametaphosphate 1 kg,
- Sedimentation cylinder, 1000 ml, 6 pcs.
- Heater,
- Circulation unit
- Rubber stopper for sedimentation cylinder
- Beaker, 600 cc

151 H Hydrometer		
11 " length	0,995-1,038 g/ml	in 0,001 g/ml division
152 H Hydrometer		
11 " length	-5 - +60 g/L in 1g/L	in 1g/L division

Dimensions	330x630x450 mm
Weight (approx.)	20 kg

CHEMICAL TESTS / PH / CHLORIDE CONTENT

Product Code

- UTGE-4300 pH Indicator Papers pH Range 1 to 14
- UTGE-4320 Quantab Chloride Titrator Type 1175, 40 strips/pack
- UTGE-4322 Quantab Chloride Titrator Type 1176, 40 strips/pack

Standards

BS 812:117, 1377:3



UTGE-4300



UTGE-4320 & UTGE-4322

The UTGE-4300 pH Indicator Papers are used for quick determination of pH in the 1 to 14 pH range.

UTGE-4320 and UTGE-4322 Quantab Chloride Titrators are used for quick determination of water soluble chloride salts present in soils and aggregates. It is based on the Volhard Method. UTA-0870 covers 0.005% to 0.1% NaCl and UTA-0872 covers 0.05% to 1% NaCl.

Product Code	Dimensions	Weight (approx.)
UTGE-4300	40x60x20 mm	0.1 kg
UTGE-4300 / 4322	150x150x100 mm	0.2 kg

CHEMICAL TESTS / SULPHATE CONTENT

Product Code

- UTS-0280 Ion Exchange Apparatus
- UTS-0282 Ion Exchange Resin 500 g

Standards

BS 1377:3

The UTS-0280 Ion Exchange Apparatus when used together with UTS-0282 Ion Exchange Resin, is used to determine the sulphate content of aqueous soil extracts and ground water. The apparatus consists of an ion exchange column of 10 mm diameter and 400 mm long, swan-neck outlet and a 1500 ml round bottom flask to give a constant head. The apparatus is supplied assembled on a stand.

UTS-0282 Ion Exchange Resin, 500 g should be ordered separately.



	UTS-0280	UTS-0282
Dimensions	200x100x600 mm	100x100x100 mm
Weight (approx.)	5 kg	0,5 kg

SOIL COLOR

Product Code

- UTS-0285 Munsell Soil Chart



The UTS-0285 Munsell Soil Chart provides a simple method for soil classification by of determining the color of soil specimens. Test set consists of 7 constant hue charts covering a total of 196 colors. The color chart and the diagram are fitted in a pocket size binder. Supplied complete with a Tropical Soil Color Chart, set of 2 which can be fitted into the binder of UTS-0285.

Dimensions	150x150x50 mm
Weight (approx.)	1 kg

CONSOLIDATION

Product Code

- UTS-0300 Front Loading Oedometer (Consolidation)
- UTS-0302 Bench for Consolidation, 3 Oedometer Capacity
- UTS-0307 Consolidation Cell for High Pressure, Ø 50 mm
- UTS-0309 Consolidation Cell for High Pressure, ASTM Ø 63.5 mm (2.5")
- UTS-0311 Consolidation Cell for High Pressure, BS/EN, Ø 75 mm
- UTS-0317 Calibration disc for Ø 50 mm consolidation cell (UTS-0307), stainless steel
- UTS-0319 Calibration disc for Ø 63,5 mm consolidation cell (UTS-0309), stainless steel
- UTS-0321 Calibration disc for Ø 75 mm consolidation cell (UTS-0311), stainless steel
- UTGM-0120 Analog Dial Gauge, 30x0.01 mm
- UTGM-0148 Digital Dial Gauge 25x0.01 mm, LCD display
- UTGM-0152 Digital Dial Gauge 12.7x0.001 mm, LCD display
- UTGM-0060 Linear Potentiometric Displacement Transducer, 10x0,001mm
- UTGM-0062 Linear Potentiometric Displacement Transducer, 25x0,001mm
- UTGM-0072 High Accurate Strain Gauge Based Displacement Transducer, 10x0,001 mm
- UTGM-0078 High Accurate Strain Gauge Based Displacement Transducer, 50x0,001 mm
- UTG-0320 Static Unilogger, 4 Channel Data Acquisition Unit
- UTG-0325 Static Unilogger, 8 Channel Data Acquisition Unit
- UTS-0330 Utest Software for Consolidation Test
- UTS-0332 Apparatus for prepare Consolidation Sample, for Ø 50 mm. samples.
- UTS-0334 Apparatus for prepare Consolidation Sample, for Ø 63.5 mm. samples.
- UTS-0336 Apparatus for prepare Consolidation Sample, for Ø 75 mm. samples.



UTS-0300

Standards

BS 1377:5; ASTM D2435, D3877, D4546; AASHTO T216; CEN ISO/TS 17892-5

The UTS-0300 Front Loading Oedometer is rigidly constructed to ensure minimum frame distortion. The frame is designed to load the specimen through a lever arm assembly and one of three alternative beam ratios as 9:1, 10:1 and 11:1. The beam is fitted with a counter balance weight and beam support jack. The cell platform will accept the complete range UTEST consolidation cells and is fitted with a central spigot to ensure accurate centering of the cell under the loading.

The UTEST fixed ring consolidation cells are manufactured from corrosion-resistant materials and conform to the requirements of the relevant standards. An integral water reservoir is incorporated in the cell which allows the specimen to be inundated when required. All cells are supplied complete with upper and lower porous disc, pressure pad and cutting (specimen) ring.

The One-dimensional Consolidation test is used to determine the consolidation characteristics of soils of low permeability.

Tests are carried out on specimens prepared from undisturbed samples. Data obtained from these tests together with classification data and a knowledge of the soils loading history, enables estimates to be made of the behavior of foundations under load. Consolidation cell, dial gauge or displacement transducer and data logger, bench, weights, apparatuses for prepare Consolidation samples and calibration disc should be ordered separately.



Data Acquisition & PC Software

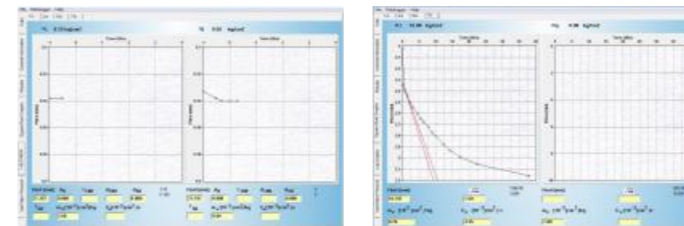
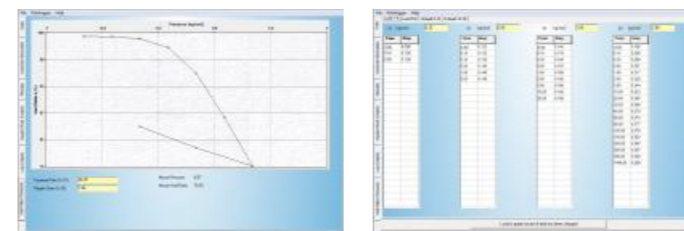
4 or 8 channel static uniloggers (UTG-0320 or UTG-0325) are used for recording displacement data over time.

- High resolution : 260.000 points.
- Serial port for PC and printer connection.
- CPU card by microprocessor 32 bit ARM risk architecture.
- 4 or 8 analogical channels for displacement transducers.

The Utest consolidation software is developed according to ASTM D2435, D3877, D4546, BS 1377:5 and AASHTO T216 standarts to use with static unilogger systems. The displacement transducers are connected to unilogger and unilooger is connected to PC by RS232 serial output. The software is capable monitoring the chance of displacement data over times. The user can start recording of vertical displacement and stop current recording proses. The user can enter time intervals(for select fixed time intervals) and stress for calculattion consolidation test data.

The consolidation software have 8 different columns which can be set to different normal load values. The user can also manually enter the vertical displacement to these columns. The time-displacement pairs are drawn to square root time and logarithmic time graphs. The software can calculate enginnering terms like as square root t90, t50, t100, mv, Cv. These calculations are done respect to the standarts requirements by using best line algorithms. Since these parameters require an engineering perspective while making comments, all test data and graphs are exported to Microsoft Excel for further investigations.

- Foreign Language Support and Customizable User Interface
- Graphical outputs and reports can be saved as a MS Excel worksheet
- Maximum Flexibility to edit report and graph templates



UTG-0320



UTS-0332

Typical Loading

Cell Model No	UTS-0307	UTS-0309	UTS-0311
Application	High Pressure	ASTM	BS/EN
Specimen Diameter	50 mm	63.5 mm	75 mm
Specimen Area	1963 mm ²	4.906 inch ²	4416 mm ²
Beam Ratio	10:1	11:1	9:1
Total Load	64 kg	64 kg	80 kg
Stress	32 kg/cm ²	20 t/ft ²	16.3 kg/cm ²
Stress for 1 kgf load	0.5 kg/cm ²	0.3125 ton/ft ²	0.2 kg/cm ²
Dimensions	750x850x1400 mm (3pcsUTS-0300 + UTS-302+UTS-0348 +Accessories)		
Weight (approx.)	180 kg (3pcs UTS-0300 + UTS-302 + UTS-0348 +Accessories)		

Sets of Weight for Consolidation

UTS-0340	16 kgf Set	2x5 kg, 2 kg, 2x1 kg, 3x0,5 kg, 2x0,25 kg
UTS-0342	32 kgf Set	10 kg, 3x5 kg, 2x2 kg, 1 kg, 3x0,5 kg, 2x0,25 kg
UTS-0344	50 kgf Set	3x10 kg, 2x5 kg, 3x2 kg, 2x1 kg, 3x0,5 kg, 2x0,25 kg
UTS-0346	64 kgf Set	4x10 kg, 3x5 kg, 2x2 kg, 3x1 kg, 3x0,5 kg, 2x0,25 kg
UTS-0348	80 kgf Set	6x10 kg, 2x5 kg, 3x2 kg, 2x1 kg, 3x0,5 kg, 2x0,25 kg

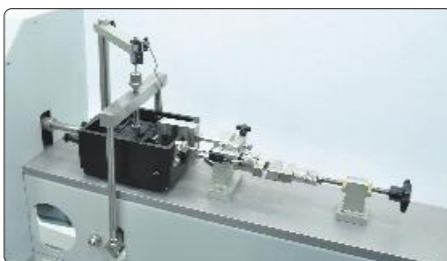
DIRECT/ RESIDUAL SHEAR

Product Code

UTS-2060	Automatic Direct / Residual Shear Test Machine, 220-240 V 50-60 Hz
UTS-2065	Shear Box Assembly, 60x60 mm
UTS-2065/7	Specimen Cutter, 60x60 mm
UTS-2065/8	Extrusion Dolly, 60x60 mm
UTS-2066	Shear Box Assembly, Ø 60 mm
UTS-2066/7	Specimen Cutter, Ø 60 mm
UTS-2066/8	Extrusion Dolly, Ø 60 mm
UTS-2067	Shear Box Assembly, 100x100 mm
UTS-2067/7	Specimen Cutter, 100x100 mm
UTS-2067/8	Extrusion Dolly, 100x100 mm
UTS-2068	Shear Box Assembly, Ø 100 mm
UTS-2068/7	Specimen Cutter, Ø 100 mm
UTS-2068/8	Extrusion Dolly, Ø 100 mm
UTS-2069	Shear Box Assembly, Ø 2.5 inch
UTS-2069/7	Specimen Cutter, Ø 2.5 inch
UTS-2069/8	Extrusion Dolly, Ø 2.5 inch
UTS-2100	Slotted Weight Set, 50 kg (4x10 kg + 1x5 kg + 2x2 kg + 1x1 kg)

Standards

ASTM D3080; BS 1377:7; AASHTO T236, CEN-ISO/TS 17892-10



The Accessories of Shear Box Assemblies					
The Model of Shear Box	UTS-2065	UTS-2066	UTS-2067	UTS-2068	UTS-2069
Shear Box	60x60 mm	Ø:60 mm	100x100 mm	Ø:100 mm	Ø:2,5 inch
Shear Box	UTS-2065/01	UTS-2066/01	UTS-2067/01	UTS-2068/01	UTS-2069/01
Loading Pad	UTS-2065/02	UTS-2066/02	UTS-2067/02	UTS-2068/02	UTS-2069/02
Retaining Plate	UTS-2065/03	UTS-2066/03	UTS-2067/03	UTS-2068/03	UTS-2069/03
Porous Plate*	UTS-2065/04	UTS-2066/04	UTS-2067/04	UTS-2068/04	UTS-2069/04
PLane Grid*	UTS-2065/05	UTS-2066/05	UTS-2067/05	UTS-2068/05	UTS-2069/05
Perforated Grid*	UTS-2065/06	UTS-2066/06	UTS-2067/06	UTS-2068/06	UTS-2069/06
The Optional Accessories of UTS-2060 Automatic Direct / Residual Shear Test Machine					
Specimen Cutter	UTS-2065/07	UTS-2066/07	UTS-2067/07	UTS-2068/07	UTS-2069/07
Extrusion Dolly	UTS-2065/08	UTS-2066/08	UTS-2067/08	UTS-2068/08	UTS-2069/08

* 2 pcs. supplied with the shear box assemblies

Shear Box Assembly, Slotted Weight Set and other optional accessories including specimens cutter and extrusion dolly should be ordered separately.

The test covers the determination of consolidated drained shear strength of a soil material in direct shear. UTS-2060 Automatic Direct / Residual Shear Test Machine is motorized and floor mounted. Supplied with carriage assembly load hanger and integral 9:1, 10:1 and 11:1 lever loading device as standard. The beam loading device which is used to amplify the vertical load on the shear box assembly can receive up to 50 kg of weight. The total load on the specimen can reach up to 5 kN (5000 N).

The machine accepts 60 mm square, 100 mm square, 60 mm dia. round, 100 mm dia. round and 2.5 inc. dia. round shear box assemblies. All shear box assemblies are designed to contain water that surrounds the specimen. The Assemblies consist of a shear box with a rigid wall square or round hole complete with a vertical loading pad grooved back face, a grooved retaining plate, 2 pcs. porous plates, 2 pcs. plane grids and 2 pcs. perforated grids.

The shear machine is driven by high resolution servomotor and gear box assembly. Speed range is fully stepless variable over the range 0.00001 to 9.99999 mm/min for both direction (forward and reverse). After test the reverse speed is 10 mm/min. 5 kN load cell is used for load measurement. 10 x 0.001 mm and 25 x 0.001 mm sensitivity linear potentiometric transducers are used for vertical and horizontal displacement measurements respectively. Displacement limits are controlled by limit switch.

Shear Box Assembly, Slotted Weight Set and other optional accessories including specimens cutter and extrusion dolly should be ordered separately

BC 100 Unit

The BC100 TFT Graphic Display Data Acquisition and Control Unit is designed to control the machine and processing of data from load cells and displacement transducers (fitted to the frame of the machine or additional frames).

All the operations of Data Acquisition and Controls System BC 100 TFT are controlled from the front panel which consists of a 800x480 pixel 65000 color resistive touch screen display and function keys. Three analogue channels for load cells and displacement transducers.

The BC 100 TFT has easy to use menu options. It displays all menu option listings simultaneously, allowing the operator to access the required option quickly to activate that option or enter a numeric value to set the test parameters. The BC 100 TFT digital graphic display allows real time Load vs. Displacement or Stress vs. Displacement graph. 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 customer details, test type, specimen type, user info and other information required can be entered and printed out as well as test reports and graphs. Also, all minor revisions can be implemented upon request. The Software calculates both the maximum and resilient shear stress.

After three runs, the software calculates the cohesion value "c" and shear resistance angle "φ" by using the best straight line fit.

Main Features

- Consolidation**
 - 25 pairs of time-vertical displacement values are written to memory.
 - The memory is configured as saving a maximum of 1000 tests.
 - The vertical displacement value can be tared prior to recording.
 - The analogical channel reading vertical displacement has 260000 points effective resolution.
 - The memory can be exported to PC software.
- Shear**
 - User can select 3 different test types:
 - The machine run with the speed determined by user to the direction of shear and stop when the load decreases.
 - The machine run with the speed determined by user to the direction of shear and stop when it reach the horizontal displacement value which is also determined by the user at the beginnig of the test.
 - The machine run with the speed determined by user to the direction of shear and returns to opposite direction with the same speed when it reach the horizontal displacement value and then stop when it reach the home position. The horizontal displacement value is determined by the user at the beginnig of the test.
- Can make test with displacement and load control
- The screen shows continuously load, shear stress and horizontal displacement
- CPU card with 32-bit ARM RISC architecture
- Permanent storage capacity up to 10000 test results
- 3 analog channels for load cell, vertical displacement and horizontal displacement transducer (one for each)
- 1/256000 points resolution per channel
- 10 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

Data Acquisition & PC Software

The Utest Direct and Residual shear software is developed according to ASTM D3080, BS 1377:7 and AASHTO T 236 standarts to use with UTS-2060 Machine. Direct residual and shear software consist of two sections. First section is used for the consolidation of the sample prior to shear.

The second section of the software is capable of performing three different types of test. The first type of the tests is to move the machine with the speed determined by user until a load failure happens. On the second type of test the user can set a speed and a horizontal displacement and the test will continue until the machine reaches set value. On the last type of test, the machine can be configured as going to a set horizontal displacement value with the speed determined by user and return to opposite direction with same speed until the home position. And also the number of cycles, forward/reverse speeds and displacement for the measurement of residual share may also be programmed. The software supports 5 different normal load values in order to calculate cohesion values. Prior to the test normal load value must be entered to the software. The normal stress value would be calculated respect to normal load and sample size automatically. The software supports both square type and round type samples. For both samples the area might be calculated by directly or by using the net area caused by horizontal displacement. The net area method is especially important for critical samples on academic literature. When the test is completed max and resilient stress values are recorded. The normal load versus max stress pair is used for calculating the cohesion value and angle. At least 3 loading with different normal loads are required for this property. One can set test speed, axis values etc. through the setup of the software. The results can be submitted as a report or can be exported to Microsoft Excel for advanced reanalyze procedures.



The Automatic Direct Residual Shear Test Machine is supplied complete with

- Load Cell 5 kN
- Linear Potentiometric Displacement Transducer (10x0.001 mm)
- Linear Potentiometric Displacement Transducer (25x0.001 mm)
- Software

Speed Range	0.00001 to 9.99999 mm/min
Maximum Shear Force	5 kN (5000 N)
Maximum Vertical Load	0 to 500 N applying 5000 N using 10:1 beam loading device
Horizontal Travel	±18 mm
Dimensions	470x610x950 mm
Weight (approx.)	89 kg
Power	1100 W

DIRECT/ RESIDUAL SHEAR

Product Code

- UTS-2160 Large Type Direct Shear Testing Machine, 100 kN, for up to 300 mm Shear Box, 220-240 V 50-60 Hz
- UTS-2165 Extra Large Type Direct Shear Testing Machine, 100 kN, from 450 mm to 650 mm Shear Box, Hydraulic Unit 220 V, Servo Motor 380 V

Standards

BS 1377-7; ASTM D 6243; EN ISO 12957

The test covers the determination of consolidated drained shear strength of a soil material in direct shear. The machines are ideal for determining shear resistance of soil-geosynthetic / geomembrans by direct shear.

UTS-2160 and UTS-2165 Automatic Direct / Residual Shear Test Machines are motorized and floor mounted. The total vertical load on the specimen can reach up to 100 kN.

UTS-2160 accepts up to 300 mm square shear box assembly. UTS-2065 accepts from 450 mm to 650 mm square shear box assemblies. All shear box assemblies are designed to contain water that surrounds the specimen. The Assemblies consist of a shear box with a rigid wall square or round hole complete with a vertical loading pad two retaining plates (one is smooth, the other is perforated). The shear machines are driven by high resolution servomotor and gear box assembly. Speed range is fully stepless variable over the range 0.00001 to 9.99999 mm/min for both direction (forward and reverse). After test the reverse speed is 10 mm/min.). 100 kN load cell is used for load measurement. 200 x 0.01 mm sensitivity linear potentiometric transducers are used for vertical and horizontal displacement measurements. Horizontal Displacement limits are controlled by limit switches.



Display Unit and Controller

The 240x320 TFT Graphic Display is used for monitoring horizontal and vertical load and displacement values. All test parameters such as speed, failure condition etc. Can be defined through this interface. The test can be started up and stopped by touch buttons.

The controller has two independent control axes, one for horizontal motion and one for vertical motion. The displacement on horizontal motion is measured through an external displacement sensor fitted to the frame and also through the encoder behind the servo motor. All calibration of sensors can be done easily by entering new points relative to the error.

The software is capable of monitoring all measured values and drawing Shear stress vs Horizontal displacement. After three runs with different normal loads, the software calculates the cohesion value "c" and shear resistance angle "φ" by using the best straight line fit.

User can select 3 different test types:

- The machine runs with the given speed to the direction of shear and stops when the load decreases.
- The machine runs with the given speed to the direction of shear until the given horizontal displacement.
- The machine runs with the given speed to the direction of shear until the given horizontal displacement and returns to home position with the same speed.
- **4 analog channels for vertical load cell, vertical displacement, horizontal load and horizontal displacement transducer (one for each)**
- **1/65000 points resolution per channel**
- **1000 data per second sample rate for each channel. (In the software filtered as 10Hz)**
- Ethernet connecting for computer interface
- **240x320 resolution 65535 color TFT-LCD industrial touchscreen**
- **Free of charge PC software for the test control and advanced report generation**

The Utest Direct and Residual shear software is developed according to BS 1377-7; ASTM D 6243; EN ISO 12957 standards to use with UTS-2160 and UTS-2165 Machines. Direct residual and shear software consist of two sections. First section is used for the consolidation of the sample prior to shear.

The software is capable of making three different types of test. The first type of the tests is to move the machine until a load failure happens. On the second type of test the user can set a horizontal displacement and the test will continue until the machine reaches the set value. On the last type of test, the machine can be configured as going to a set horizontal displacement value and returning to home position. The software supports 5 different normal load values in order to calculate cohesion values. Prior to the test normal load value must be entered to the software. The normal stress value would be calculated relative to normal load and sample size automatically. The software supports both square type and round type samples. For both samples the area might be calculated directly or by using the net area caused by horizontal displacement. The net area method is especially important for critical samples on academic literature. When the test is completed maximum and resilient stress values are recorded. The normal load versus maximum stress pair is used for calculating the cohesion value and angle. At least 3 loadings with different normal loads are required for this property. One can set test speed, axis values etc through the setup of the software. The results can be submitted as a report or can be exported to Microsoft Excel for advanced reanalyze procedures.



The Automatic Direct Residual Shear Test Machine is supplied complete with

- 2 Load Cell 100 kN
- 2 Linear Potentiometric Displacement Transducer (200x0.01 mm)
- Software

	UTS-2160	UTS-2165
Speed Range	0.00001 to 9.99999 mm/min	0.00001 to 9.99999 mm/min
Maximum Shear Force	100 kN	100 kN
Maximum Vertical Load	100 kN	100 kN
Horizontal Travel	± 75 mm	± 100 mm
Dimensions	910x670x1200 mm	2000x1250x1900 mm 900x800x450 mm (650 mm shear box) 600x700x350 mm (450 mm shear box)
Weight (approx.)	190 kg	2000 kg (except shear box.) 340 kg (650 mm shear box) 175 kg (450 mm shear box)
Power	1100 W at 220 V for hydraulic unit 3500 W at 380 V for servo motor	1100 W at 220 V for hydraulic unit 3500 W at 380 V for servo motor

TRIAXIAL STRESS MEASUREMENT TEST (UU-CU-CD TESTS)

Product Code

Triaxial Test Systems, 220-240 V 50-60 Hz

Standards

ASTM D2850, D4767, D7181; AASHTO T-297; BS 1377-7, BS 1377-8



Determining the mechanical properties of soils is a very important step to design foundations, embankments and other soil structures.

Building constructions, excavations, tunnelling and similar applications have several effects on the subsoil structures and these effects are successfully simulated with Triaxial Tests where the stress-strain relation of undisturbed soil specimen are investigated by subjecting the soil sample to different stress levels and drainage conditions.

The UTEST Triaxial Test System provides automated triaxial compression tests on cylindrical undisturbed and remolded soil samples. Unconsolidated undrained (UU), consolidated drained (CD) and consolidated undrained (CU) compression tests can be automatically run, controlled and reported using this apparatus.

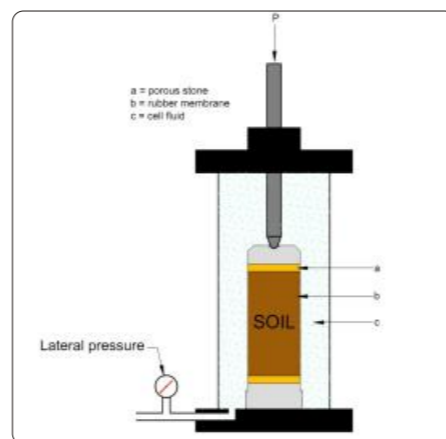
UU Only Triaxial Test Configuration

Unconsolidated Undrained (UU) Test

For the UU test, the specimens (assumed to be saturated prior to test) are subjected to a confining fluid pressure in a triaxial chamber. Once the specimen is inside the triaxial cell, the cell pressure is increased to a predetermined value by rotating the knob, and the specimen is brought to failure by increasing the vertical stress by applying a constant rate of axial strain. Saturation and consolidation are not permitted to keep the original structure and water content of sample untouched. Pore pressures are not measured during this test and therefore the results can only be interpreted in terms of total stress.

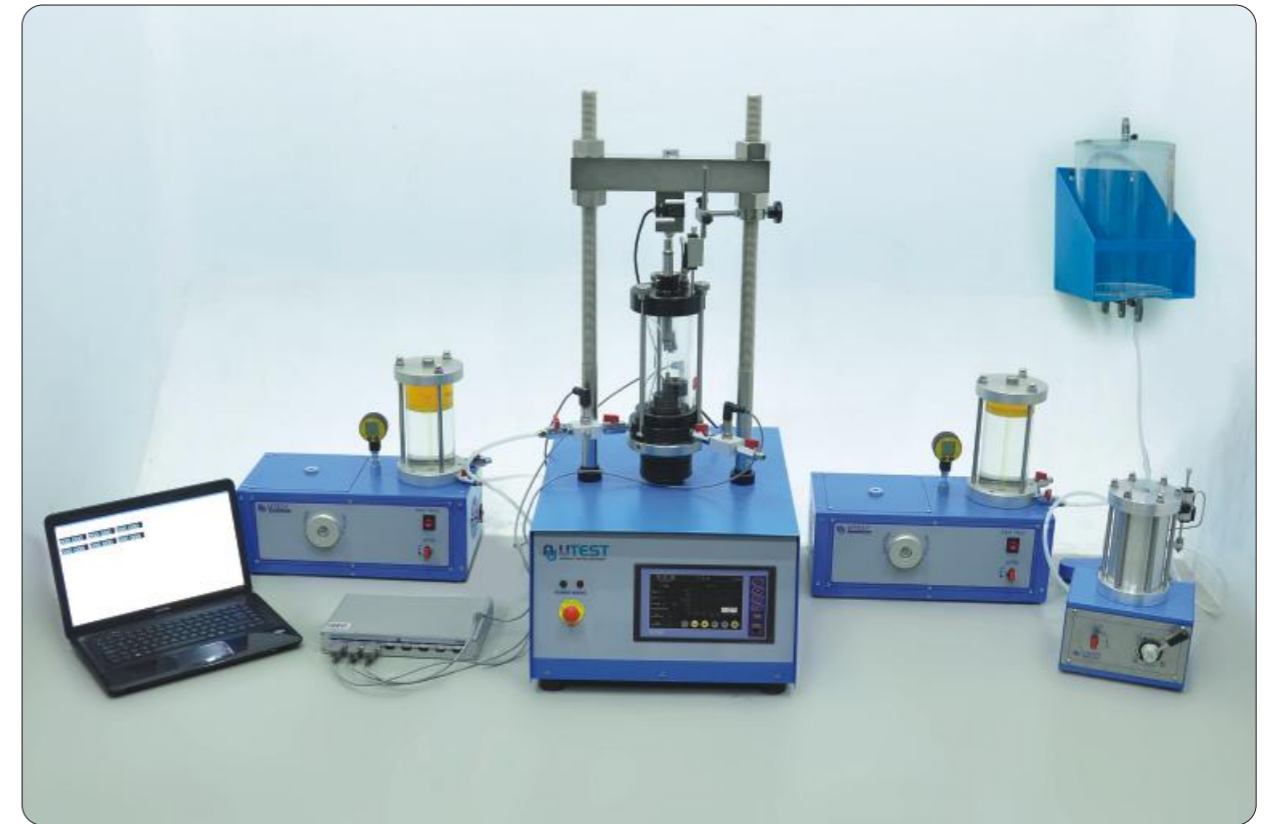
These tests are generally carried out on three specimens of the same sample subjected to different confining stresses.

Since all specimens are supposedly saturated the shear strength are similar for all tests. The results of the test are plotted as curves of principal stress difference against strain. For conditions of maximum principal stress difference (taken as failure) Mohr circles are plotted in terms of total stress. The average undrained shear strength should be noted, and the failure envelope drawn tangential to the Mohr circles in order to find the "undrained cohesion intercept" and undrained "angle of shearing resistance".



Consolidated Undrained (CU) Test & Consolidated Drained (CD) Test

Peak effective strength parameters (c' and φ') may be determined either from the results of consolidated undrained (CU) triaxial compression tests with pore pressure measurement, or from consolidated drained (CD) triaxial compression tests. The consolidated undrained/ drained triaxial compression tests are normally performed in several stages, involving the successive saturation, consolidation and shearing of each of three specimens.



Typical Configuration of Triaxial Test System for UU-CU-CD Tests

Saturation is carried out in order to ensure that the pore fluid in the specimen does not contain free air. Saturation is normally carried out by leaving the specimens to swell against an elevated back pressure. Back pressure (which is simply an imposed pore pressure) is applied through a volume change gauge to the top of the specimen, while a cell pressure of slightly higher value is also applied. Both cell pressure and back pressure are normally increased in increments, allowing time for equalization at each stage. The degree of saturation can be expressed in terms of Skempton's pore pressure parameter (Skempton, 1954):

$$B = \frac{\Delta u}{\Delta \sigma_3}$$

where Δu is equal to change in pore pressure for an applied cell pressure change of Δσ₃. For an ideally saturated soil B is equal to unity. It is recommended by several standard test methods that a value of B greater than, or equal to, 0.95 must be achieved before the specimen may be considered as fully saturated and the consolidation stage started. The consolidation stage of an effective stress triaxial test is carried out for two reasons. First, three specimens are tested and consolidated at three

different effective pressures, in order to give specimens of different strengths which will produce widely spaced effective stress Mohr circles. Secondly, the results of consolidation are used to determine the minimum time to failure in the shear stage. The effective consolidation pressures (i.e. cell pressure minus back pressure) will normally be increased by a factor of two between each specimen, with the middle pressure approximating to the vertical effective stress in the ground. When the consolidation cell pressure and back pressure are applied to the specimen, readings of volume change are made using a volume change device in the back pressure line. Pore pressure is measured at the specimen base, with drainage to the back pressure line taking place through a porous stone covering the top of the specimen. The coefficient of consolidation of the clay can be determined by plotting volume change as a function of the square root of time. Theoretical considerations indicate that the first 50% of volume loss during consolidation should show as a straight line on this plot. This straight line is extended down to cut the horizontal line representing 100% consolidation, and the time intercept at this point (termed "t₁₀₀" by Bishop and Henkel) can be used to obtain the coefficient of consolidation.

TRIAXIAL STRESS MEASUREMENT TEST (UU-CU-CD TESTS)

Consolidated Undrained (CU) Test:

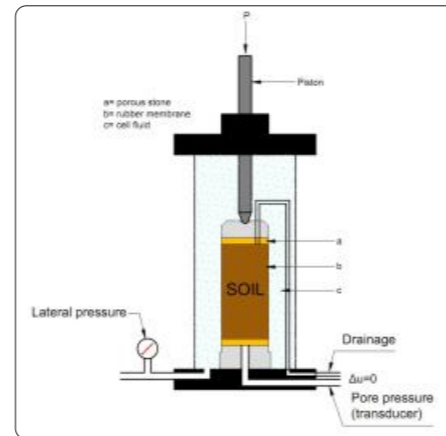
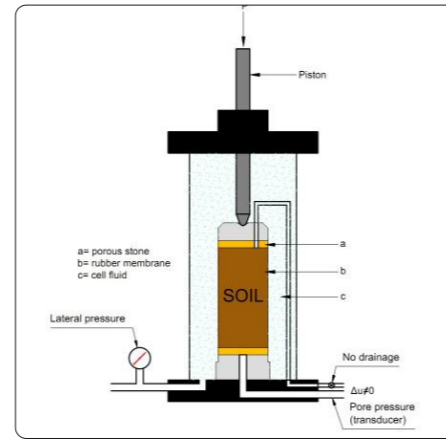
Once consolidation is complete, the specimen is to be isolated from the back pressure and the rate of vertical movement of the compression machine platen set according to result of consolidation. During the shear stage the vertical stress is increased by the loading ram, and measurements are made at regular intervals of deformation, ram load and pore pressure. These are converted to graphs of principal stress difference ($\sigma_1 - \sigma_3$) and pore pressure as a function of strain, and failure is normally taken as the point of maximum principal stress difference. The effective stress Mohr circles are plotted for the failure conditions of the three specimens which has been subjected to different consolidation level, and the gradient and intercept of a straight line drawn tangential to these circles defines the effective strength parameters c' and ϕ' .

Consolidated Drained (CD) Test:

The consolidated drained triaxial compression test, with volume change measurement during shear is carried out in a similar sequence to the consolidated undrained test, but during shear the back pressure remains connected to the specimen which is loaded sufficiently slowly to avoid the development of excess pore pressures. The shear stage of a drained triaxial test can be expected to take between 7 and 15 times longer than that of an undrained test with pore pressure measurement. Once shearing is complete, the results are presented as graphs of principal stress difference and volume change as a function of strain, and the failure Mohr circles are plotted to give the drained failure envelope defined by the parameters cd' and $\phi d'$.

Triaxial CD-CU-UU equipment is computer controlled, test values can be transferred to computer and data processing can be made with Triaxial software on Windows operating system. All data can be used on Excel programs.

The load data and axial displacement data are transferred and recorded through BC 100 Unit to the software. Three pressure data (cell pressure, back pressure and pore pressure) from triaxial cell and volume change data transferred and recorded through the unillogger to the software.



Typical configuration of system for different tests (UU-CU-CD)			
Product Code	Description	UU	UU-CU-CD
UTM-0108	Multiplex Universal Electromechanic Test Machine*	1	1
UTGM-0010	Load Cell 5 kN	1	1
UTS-0400	Triaxial Cell**	1	1
UTS-0401			
UTS-0405	Block with One Connection Line for Triaxial Test Cells	1	-
UTS-0406	Block with 3 Connection Lines for Triaxial Test Cells	-	1
UTGM-0110	Pressure Transducer	1	3
UTS-0408	Oil and Water Constant Pressure System	1	2
UTS-0415	Automatic Volume Change Unit	-	1
UTG-0320	Static Unillogger 4 Channels	-	1
UTS-0416	Software to Perform UU Triaxial Tests	1	1
UTS-0417	Software to Perform CU-CD Triaxial Tests	-	1
UTS-1330 and UTGP-1140	De-Airing Water Tank, 7 L. and Hose	1	1

* Supplied complete with UTGM-0025 50 kN Load Cell, UTGM-0062 25 mm Linear Potentiometric Transducer and UTC-4930 BC 100 Data Acquisition and Control Unit.
 ** Choose the suitable cell for the specimen size (UTS-0400: 38-50 mm dia. samples / UTS-0401: 70-100 mm dia. samples). For cell accessories and sample preparation accessories see page 30.

Optional Apparatus for De-Airing Water see page 32.

Multiplex Universal Electromechanic Test Machine

The UTM-0108 Multiplex Universal Electromechanic Test Machine is a Servo Controlled Multiplex Machine supplied complete with UTGM-0025 50 kN Load Cell, UTGM-0062 25 mm Linear Potentiometric Transducer and UTC-4930 BC 100 Data Acquisition and Control Unit. 5 kN Loadcell should be ordered separately for Triaxial Tests.

The Frame capacity is 50 kN. This versatile digital loading frame features a microprocessor controlled drive system with an advanced servo motor enabling the operator to easily set any test speed via the membrane keyboard. The keyboard comprises adjustment buttons such as "start", "increase", "automatic", "manual", "down", "up". The testing speed can be set between 0,00001 mm/min to 51mm/min. The test automatically stops when load and displacement is reached to 99% value of the set measuring range. See page 243 to 245 for details.

Load and displacement values are collected by BC 100 and transferred to PC for further processing with the UTS-0416 UU and UTS-0417 CU-CD Software.

Dimensions	550x650x1100 mm
Weight (approx.)	95 kg
Power	750 W



UTM-0108

BC 100 Unit

BC100 TFT 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 seamless manner to activate the option or enter a numeric value to set the test parameters. The BC100 digital graphic display is able to draw realtime "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 (ask for compatible models). Thanks to its built-in internet protocol suite, every aspect of BC100 device can be controlled remotely from anywhere around the world.



MAIN FEATUES

- Can make test with displacement or load control.
- Real time display of test graph.
- CPU card with 32-bit ARM RISC architecture
- One analog channel for high capacity load cell, one analog channel for low capacity load cell, one analog channel for displacement transducer and one analog channel for cell pressure (only for UU tests)
- 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
- 10 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 lbf
- 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

Data Acquisition & PC Software

The CU-CD triaxial test is a complicated test needs load data, displacement data 3 pressure data from triaxial cell and volume change data. Load data and displacement data are transferred and recorded through BC 100 Unit to the software. 3 pressure data from triaxial cell and volume change data transferred and recorded through the unilogger to the software.

The UTEST software for CD-CU tests is compatible with UTEST UTG-0320 datalogger and BC 100 unit. UTEST unilogger can be connected to PC by RS232 port. All channel gains can be set manually and accuracy of the reading can be increased.

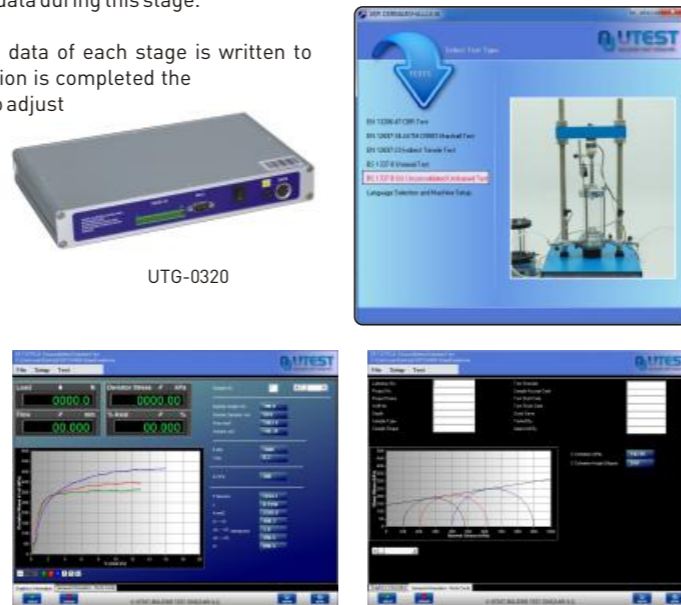
Triaxial Software is a modular software that when a new test wanted to do, it directs the user step by step. First the software wants to input initial measurements such as diameter, height, sample weight etc. On this stage the user decides CU or CD test will be done and enters cell pressure increment steps, back pressure differential pressure and effective stress that will be used on consolidation.

After the initialization is completed, the user goes to Saturation Cell Pressure increment stage. Cell pressure must be incremented to the pressure entered at initialization stage. During this stage the software calculates B and pore pressure and submits their graph respect to time. When B value saturates this stage must be ended. Generally value of B would not reach to 0.95, therefore a back pressure increment stage must be implemented. On the saturation back pressure increment stage, prior to the start of this stage software commands what back pressure must be applied respect to initial settings. The software draws volume change and pore pressure data during this stage.

Saturation stages can be done recursively at most of 10 cycles. The relevant data of each stage is written to respective files for further investigation and report facilities. When the saturation is completed the consolidation stage can be implemented. On this stage the software commands to adjust both cell and back pressure to apply effective stress. On the consolidation stage Volume change, pore pressure and pore pressure dissipation percent is drawn as graphs. When the stage is completed, the next stage will be shear stage of CU or CD. The software suggest the shear speed respect to the results found on consolidation stage. Axial displacement and force must be tared prior to the start of shearing.

On the shear stage deviator stress, pore pressure, σ' versus σ_3 and s' versus t' graphs are drawn. 4 different test specimen can be configured in same file. All the results are used for drawing mohr circles. The data is evaluated with respect to specimen shear end condition. This condition can be selected as constant pore pressure, constant volume change effective prime deviator ratio etc. With the final measurements one set of data is closed.

The raw data can be exported to Microsoft Excel. Without using Microsoft Excel environment all reports can be printout which includes summary of each stage with relevant graphs.



UTG-0320

Triaxial Cells

UTS-0400 Standard Triaxial cell for 38 and 50 mm dia. samples
 UTS-0401 Standard Triaxial cell for 70 and 100 mm dia. samples

The cell has been designed and treated to minimize corrosion. Particular attention has been paid to the quality of finish between the piston and the head. Final assembly includes the fitting of an O-ring seal and the use of a special lubricant to reduce friction to a minimum and eliminate water leakage. The piston load capacity is designed to accept high axial loads which may be present during the final stages of a test.

Each cell has five take-off positions drilled in the base for top drainage/back pressure, pore water pressure and bottom drainage. Three no volume change valves and anvil for displacement transducer are supplied complete with the cell. Each cell will accept a range of base adaptors and various accessories for testing a wide range of specimens.

The cell capacity is designed to tolerate confining pressures as high as 1700 kPa which is enough for simulating most in-situ conditions.

For cell accessories and sample preparation accessories see next page.



UTS-0400

UTS-0401

	UTS-0400	UTS-0401
Dimensions	160X160X400 mm	210X210X550 mm
Weight (approx.)	4.5 kg	12 kg

TRIAXIAL STRESS MEASUREMENT TEST (UU-CU-CD TESTS)

Cell Accessories

Sample Diameter(mm)	38	50	70	100	UU Test	CU CD Test
Base Adaptor	UTS-0420	UTS-0450	UTS-0470	UTS-0500	YES	YES
Porous Top Cap	UTS-0421	UTS-0451	UTS-0471	UTS-0501	YES	YES
Nylon Tubing for Drainage	UTS-0422	UTS-0452	UTS-0472	UTS-0502	--	YES
Pair of Porous Discs	UTS-0423	UTS-0453	UTS-0473	UTS-0503	--	YES
Rubber Membrane	UTS-0424	UTS-0454	UTS-0474	UTS-0504	YES	YES
Membrane Placing Tool (Strecher)	UTS-0425	UTS-0455	UTS-0475	UTS-0505	YES	YES
O Ring(10 pcs.)	UTS-0426	UTS-0456	UTS-0476	UTS-0506	YES	YES
O Ring Placing Tool	UTS-0427	UTS-0457	UTS-0477	UTS-0507	YES	YES
Lateral Filter Paper(50 pcs.)	UTS-0428	UTS-0458	UTS-0478	UTS-0508	--	YES
Filter Paper Discs(100 pcs.)	UTS-0429	UTS-0459	UTS-0479	UTS-0509	--	YES
Plastic Discs (2pcs)	UTS-0430	UTS-0460	UTS-0480	UTS-0510	YES	--



Sample Preparation Accessories

Sample Diameter(mm)	38	50	70	100
Split Sand Former	UTS-0431	UTS-0461	UTS-0481	UTS-0511
Split Mould	UTS-0432	UTS-0462	UTS-0482	UTS-0512
Cutter	UTS-0436	UTS-0466	UTS-0486	UTS-0516
Aluminium Dolly	UTS-0437	UTS-0467	UTS-0487	UTS-0517



Soil Mechanics

Oil and Water Constant Pressure System

Product Code

- UTS-0408 Oil and Water Constant Pressure Unit, 1700 kPa/220-240V, 50-60Hz, 1ph
- UTS-0409 Digital Pressure Gauge, 1700 kPa (250 psi)
- UTGM-0110 Pressure Transducer, 2000 kPa

The Oil and Water Constant Pressure Unit is extremely versatile and can be used in conjunction with a wide range of test equipment. The unit provides continuous variable pressure up to 1700 kPa. Pressure is increased or decreased simply by turning a control wheel.

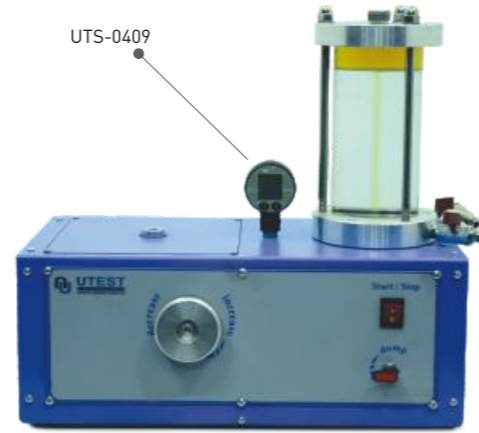
The Unit is used for providing cell/back pressure in triaxial tests. The apparatus is supplied without a gauge for those customers who have suitable pressure monitoring equipment.

As optional equipment for monitoring the pressure of the unit;

- The Digital Pressure Gauge (UTS-0409) or
- The pressure transducer(UTGM-0110) which can be used with UTEST BC100 TFT Unit on the Multiplex Universal Electromechanic Test Machine (UTM-0108) for only UU test or
- The pressure transducer(UTGM-0110) which should be used with the datalogger (UTG-0320) for CU-CD tests

can be used and preferred optional equipment should be ordered separately.

The machine features a clear hydraulic/water interface reservoir and up to 1 liter capacity of water is available under pressure. Supplied complete with 2 liters of No.46 regular hydraulic oil.



UTS-0408 with UTS-0409

Product Code	Dimensions	Weight	Power
UTS-0408	300X250X250 mm	7.5 kg	35 W
UTS-0409	150X150X100 mm	0.6 kg	

Volume Change Measurement

Product Code

- UTS-0415 Automatic Volume Change Unit

The Unit consists of a piston connected to a 25 mm travel linear transducer which is sealed against a precision machined calibration chamber so that the linear movement of the piston is exactly proportional to the volume of water in the calibration chamber.

The apparatus creates an electrical signal proportional to the volume of water flowing through the unit. By connecting it to the data acquisition system the measured volume change will be used by software during the test and in final report.

- Capacity : 100 cm³
- Transducer Input : up to 12V DC
- Accuracy : ± 0.1 ml

Dimensions	260x260x400 mm
Weight (approx.)	5 kg



UTS-0415

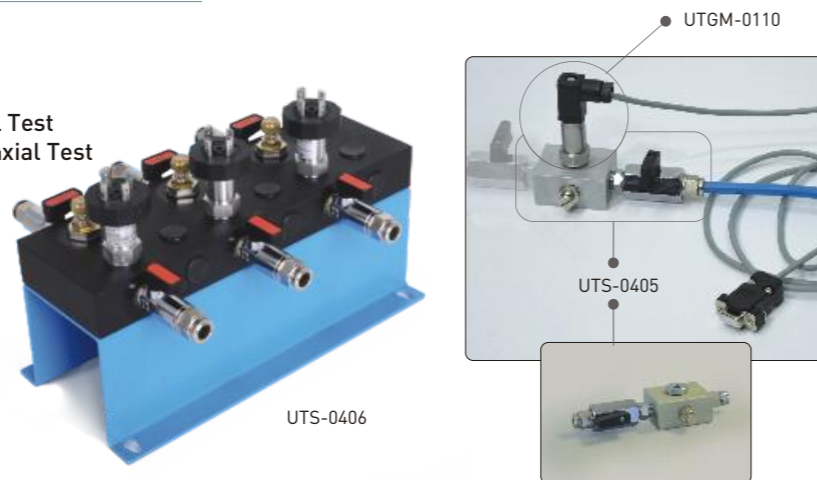
Pressure Transducer and Block for Triaxial Test Cells

Product Code

- UTGM-0110 Pressure Transducer, 2000 kPa
- UTS-0405 Block with One Connection Line for Triaxial Test
- UTS-0406 Block with Three Connection Lines for Triaxial Test

The Pressure Transducer is used for the measurement of cell or back or pore pressure of water in triaxial test systems and also should be used with an UTEST BC100 TFT Unit (UTC-4930) or a datalogger (UTG-0320)

The Block for triaxial test cells are used for connection of the pressure transducers and de-airing in the water hoses.



UTS-0406

TRIAXIAL STRESS MEASUREMENT TEST (UU-CU-CD TESTS)

De-Airing Water

Product Code

- UTS-0418 De-Airing Water Apparatus, 230V, 50Hz, 1ph
- UTS-1330 De-Airing Water Tank, 7 L.
- UTGE-3580 Vacuum Control and Water Connection Panel with Regulator and Vacuum Gage Manometer
- UTGE-3585 Connection Panel for Vacuum and Water with Vacuum Gage Manometer
- UTGE-3505 Vacuum Pump 51 L/min. Capacity, 220-240 V 50-60 Hz
- UTGG-2015 Filter Flask 2000 ml
- UTGE-3570 Air Drying Unit / Water Trap, Vacuum Type
- UTGP-1140 Plastic Hose, Ø8mm, 6m

The UTS-0418 De-Airing Water Apparatus is a compact and self-contained equipment which can de-air water quickly and efficiently down to levels of dissolved oxygen acceptable for geotechnical test methods. The apparatus used in conjunction with the de-airing tank (UTS-1330). Air is removed from the water by a vacuum system. De-airing tank should be ordered separately.

The first option for de-airing water;

- De-Airing Water Apparatus UTS-0418
- De-Airing Water Tank(UTS-1330)
- Vacuum Control and Water Connection Panel with Regulator and Vacuum Gage Manometer(UTGE-3580) or Connection Panel for Vacuum and Water with Vacuum Gage(UTGE-3585) (These panels are optional)
- Plastic Hose (UTGP-1140)

The second option for de-airing water;

- Vacuum Pump (UTGE-3505),
- Filter Flask (UTGG-2015) or Air Drying Unit / Water Trap (UTGE-3570)
- De-Airing Water Tank (UTS-1330)
- Vacuum Control and Water Connection Panel with Regulator and Vacuum Gage Manometer (UTGE-3580) or Connection Panel for Vacuum and Water with Vacuum Gage(UTGE-3585) (These panels are optional)
- Plastic Hose (UTGP-1140)

By using UTGE-3580 Vacuum Control and Water Connection Panel, vacuum pressure degree can be regulate.

By using UTGE-3585 Connection Panel for Vacuum and Water with Vacuum Gage Manometer and UTGE-3580 Vacuum Control and Water Connection Panel with Regulator, de-airing water equipment can be used without repeated assembling the hoses.

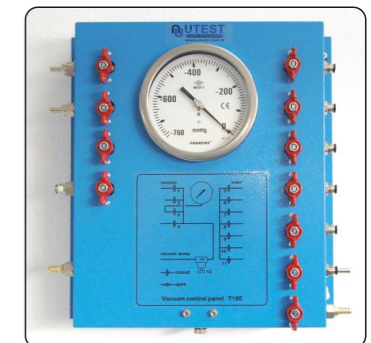
Product Code	Dimensions	Weight (approx.)
UTS-0418	465x240x340 mm	15 kg
UTGE-3580	450x150x500 mm	7 kg
UTS-1330	250x250x250 mm	2.7 kg
UTGG-1442	120x120x220 mm	0.5 kg
UTGE-3505	300x150x240 mm	8.5 kg
UTGE-3570	70x80x170 mm	0,5 kg



UTS-0418



UTS-1330



UTGE-3580



UTGE-3570



UTGE-3585

Compacted Road Base and Subbase Soils

DENSITY-WATER CONTENT RELATIONSHIP Proctor Moulds And Rammers

Product Code

UTS-0600	Standard Proctor Mould, ASTM
UTS-0602	Standard Proctor Compaction Rammer, ASTM
UTS-0604	Modified Proctor Mould, ASTM
UTS-0606	Modified Proctor Compaction Rammer, ASTM
UTS-0608	A Type Proctor Mould (Standard), EN
UTS-0608/1	Steel Plate for The End Layer Compaction for UTS-0608, EN
UTS-0610	A Type Proctor Compaction Rammer (Low Energy-Standard), EN
UTS-0612	B Type Proctor Compaction Mould (Modified), EN
UTS-0612/1	Steel Plate for The End Layer Compaction for UTS-0612, EN
UTS-0614	B Type Proctor Compaction Rammer (Medium Energy-Modified), EN
UTS-0615	1 Liter Mould (Standard Proctor), BS, TS 1900-1
UTS-0616	2.5 kg Compaction Rammer, BS
UTS-0750	CBR Type Mould, BS (Modified Proctor)/ Vibrating Hammer Mould BS, EN, TS 1900-1
UTS-0618	4.5 kg Compaction Rammer, BS

Standards

ASTM D 698, D 1557, D 558 ; AASHTO T 99, T180, T 134 ; EN 12386-2, 13286-4 BS 1377:4,1924:2

Moulds and rammers are used for determining the relationship between the moisture content and density of compacted soil. Made of plated steel, includes collar, mould body and base plate. Rammers are used to compact the soil sample in the Proctor Moulds and made of plated steel. Different models are available conforming to the relevant standards.



Proctor Moulds - ASTM / AASHTO

Product Code	Description	Internal Dia. (mm)	Body Height (mm)	Volume (cm ³)	Weight (approx. kg)
UTS-0600	Standard Proctor Mould	101.6 ± 0.4	116.4 ± 0.5	944.0 ± 14	7
UTS-0604	Modified Proctor Mould	152.4 ± 0.7	116.4 ± 0.5	2124 ± 25	9

Proctor Moulds - EN

Product Code	Description	Internal Dia. (mm)	Body Height (mm)	Volume (cm ³)	Weight (approx. kg)
UTS-0608	A Type Proctor Mould EN(Standard)	100 ± 1	120 ± 1	942	5
UTS-0612	B Type Proctor Mould EN(Modified)	150 ± 1	120 ± 1	2120	8.9

Proctor Moulds - BS

Product Code	Description	Internal Dia. (mm)	Body Height (mm)	Volume (cm ³)	Weight (approx. kg)
UTS-0615	1liter Mould (Standard Proctor) BS,TS-1900-1	105 ± 0.5	115,5 ± 0,5	1000	5
UTS-0750*	CBR Type Mould BS (Modified Proctor) / Vibrating Hammer Mould BS, EN, TS-1900-1	152 ± 0.5	127 ± 1	2303	7.3

*UTS-0768 C Spanners and UTS-0770 Assembly Tool should be ordered separately for assembling and disassembling the these moulds.

Proctor Rammers - ASTM / AASHTO

Product Code	Description	Rammer Dia. (mm)	Free Fall Height (mm)	Mass of Rammer (g)	Weight (approx. kg)
UTS-0602	Standard Proctor Compaction Rammer	50.8	304.8 ± 1	2495 ± 23	4.5
UTS-0606	Modified Proctor Compaction Rammer	50.8	457 ± 1.3	4540 ± 10	8

Proctor Rammers - EN

Product Code	Description	Rammer Dia. (mm)	Free Fall Height (mm)	Mass of Rammer (g)	Weight (approx. kg)
UTS-0610	A Type Rammer EN (Low Energy-Standard)	50 ± 0.5	305 ± 3	2500 ± 20	4.5
UTS-0614	B Type Rammer EN (Medium Energy-Modified)	50 ± 0.5	457 ± 3	4500 ± 40	8

Proctor Rammers - BS

Product Code	Description	Rammer Dia. (mm)	Free Fall Height (mm)	Mass of Rammer (g)	Weight (approx. kg)
UTS-0616	2.5 kg Compaction Rammer BS	50 ± 0.5	300 ± 3	2500 ± 25	4.5
UTS-0618	4.5 kg Compaction Rammer BS	50 ± 0.5	450 ± 4	4500 ± 50	8

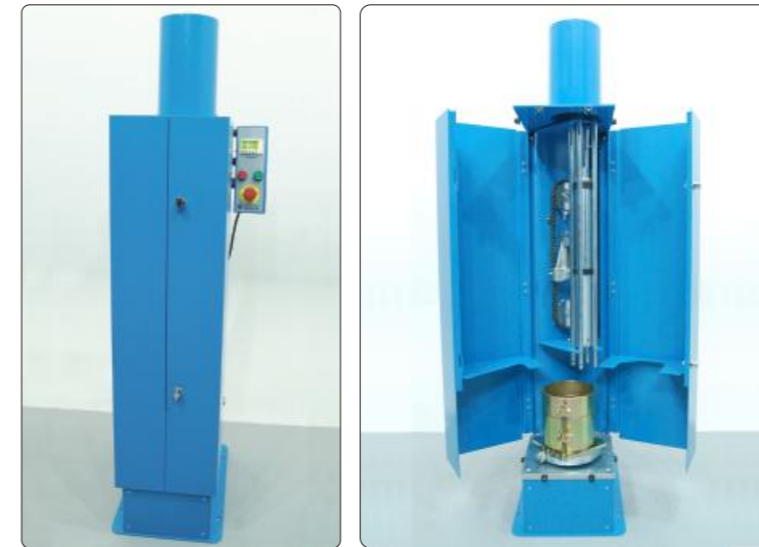
DENSITY-WATER CONTENT RELATIONSHIP Automatic Soil Compactor

Product Code

UTS-0620	Automatic Soil Compactor, 220-240 V 50 Hz (60 Hz version is available upon request)
UTS-0620/110	Automatic Soil Compactor, 110 V 60 Hz
UTS-0622	ASTM/EN/BS Rammer for UTS-0620
UTS-0624	ASTM Rammer Face Ø 50.8 mm for UTS-0620
UTS-0625	EN/BS Rammer Face Ø 50 mm for UTS-0620

Standards

ASTM D558, D559, D560, D698, D1557, D1883; EN 13286 2, 13286-47; BS 1377:4 AASHTO T99, T134, T135, T136, T180, T193; NLT 107/98, 108/91, 111/87



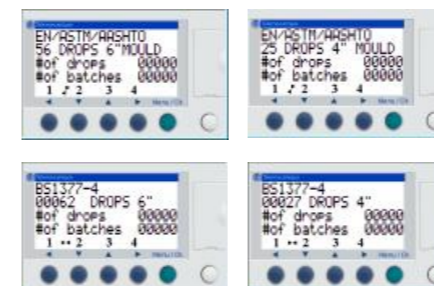
UTS-0620



Start, stop, emergency stop buttons and digital counter are on control panel which is connected to the main body by anti-vibrating connections



UTS-0622 with UTS-0624



The Standard Type (BS, EN, ASTM, AASHTO) Mould Size (4" or 6") and The Number of Drops can be selected easily

UTS-0620 Automatic Soil Compactor is designed to compact specimens automatically and uniformly, assuring conformity with the above listed international standards.

The principle of the design is to allow the hammer to drop the required height into the soil in the mould which rotates circularly to distribute the blows uniformly over the surface of the specimen in the mould. The drop height is adjustable to 300 mm, 305 mm, 450 mm and 457 mm. The rammer is circular faced and interchangeable to 50 mm or 50.8 mm diameter. Rammer weight is adjustable to 2.5 kg or 4.5 kg according to reference standard. When compacting 100 mm diameter specimens the unit operates on a single radius and when compacting 150 mm diameter specimens the unit operates on inner and outer radius to obtain even compaction.

The number of blows per layer can be set at the beginning of the compaction process by the digital counter according to the standard preferred by user. This automatic blow pattern ensures effective and equal compaction for each layer of soil by rotating the base table, so the mould, in equal steps and travelling the rammer across the mould. User defined blow number and in-out distribution is also available.

Compactor is equipped with programmable digital counter which allows the machine;

- To select reference standard (number of blows and mould size) by the operator at the beginning of the test.
- To set desired compaction cycle (number of blows and count of the number of inner and outer drops) by user.

Rammers

EN / BS	Circular faced, 50 mm dia. Adjustable to 2.5 kg or 4.54 kg weight
ASTM / AASHTO	Circular faced, 50.8 mm dia. Adjustable to 2.5 kg or 4.54 kg weight

Drop Height

BS	Adjustable to 300 mm or 450 mm
ASTM / AASHTO / EN	Adjustable to 305 mm or 457 mm

The Automatic Soil Compactor is supplied complete with:

- ASTM/EN/BS Rammer
- ASTM Rammer Face, Ø 50.8 mm.
- EN/BS Rammer Face, Ø 50 mm.

Dimensions	650x550x1550 mm
Weight (approx.)	150 kg
Power	370 W

Compacted Road Base and Subbase Soils

DENSITY-WATER CONTENT RELATIONSHIP Automatic Mechanical Compactor

Product Code

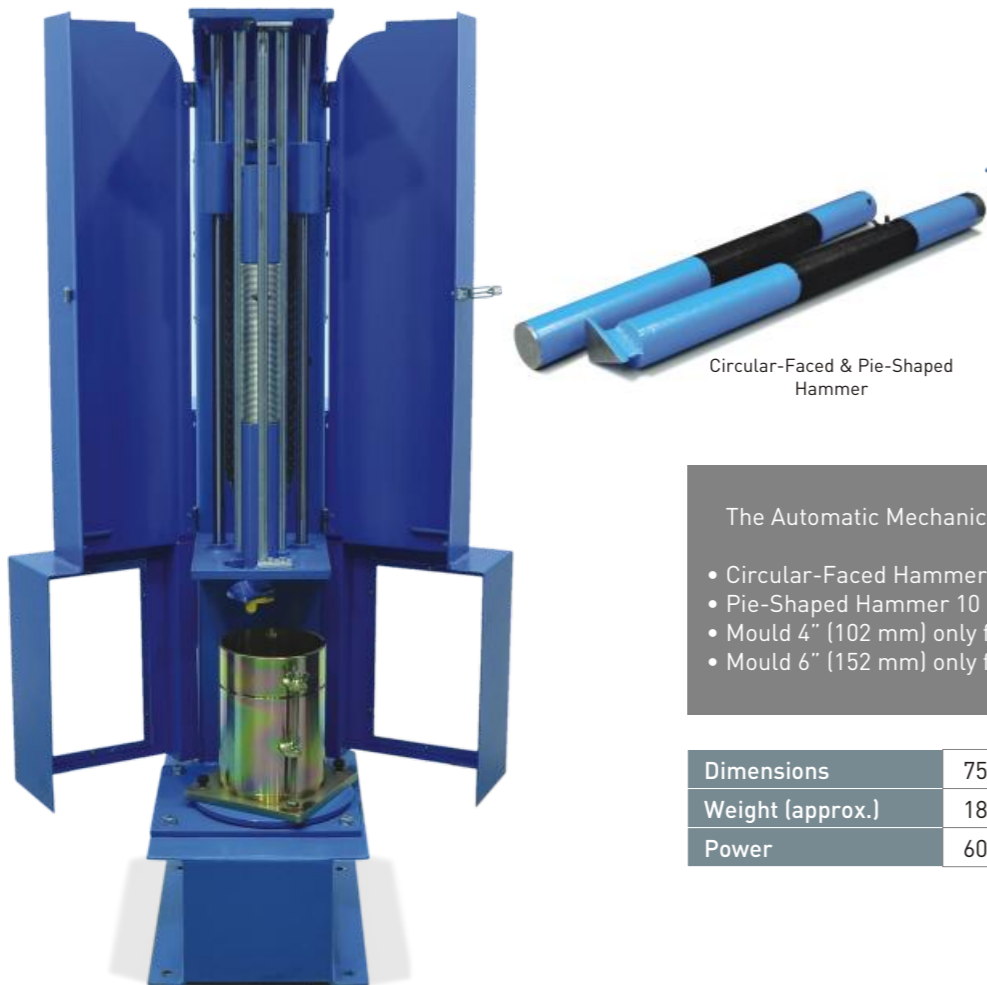
- UTS-0626 Automatic Soil Compactor only ASTM, 220-240 V 50 Hz (60 Hz version is available upon request)
- UTS-0626/110 Automatic Soil Compactor only ASTM, 110 V 60 Hz

Standards

ASTM D558, D559, D560, D698, D1883; AASHTO T99, T134, T135, T136, T180, T193

The UTS-0626 Automatic Mechanical Compactor is designed to perform fast and accurate compaction of soil samples automatically acc. to ASTM and AASHTO standards. For standard or modified compaction tests with 5.5 lb. hammer with 12" (305 mm) height of drop or 10 lb. hammer with 18" (457 mm) drop. Compactor accommodates 4" (102 mm) or 6" (152 mm) I.D. moulds, 4" (102 mm) round hammer or 6" (152 mm) pie-shaped hammer compensate for sample drop during compaction. The total weight of the hammer is concentrated at the foot in order to provide a free-fall action. Hammers can easily be replaced from the front side of the compactor.

Machine stops automatically after preset number of blows per compaction is completed. Compaction mould is mounted on the round base; the circular base indexes automatically with each blow to ensure uniform sample compaction. A pie-shaped compactor foot is used with 6" (152 mm) dia. moulds to completely cover the surface of the sample.



Circular-Faced & Pie-Shaped Hammer

The Automatic Mechanical Compactor is supplied complete with:

- Circular-Faced Hammer 5.5 lb. (2.5 kg)
- Pie-Shaped Hammer 10 lb. (4.5 kg)
- Mould 4" (102 mm) only for UTS-0626/110
- Mould 6" (152 mm) only for UTS-0626/110

Dimensions	750x350x1500 mm
Weight (approx.)	180 kg
Power	600 W

DENSITY-WATER CONTENT RELATIONSHIP Vibratory Compaction

Product Code

- UTS-0630 Vibratory Compactor Set, 220-240 V 50 Hz
- UTS-0750 CBR Type Mould BS (modified proctor) / Vibrating Hammer Mould EN
- UTS-0768 C Spanner for UTS-0750, 2 pcs
- UTS-0770 Assembly Tool for Base Plate for UTS-0750

Standards

EN 13286-4; BS 1377:4 / EN 12697-9, 12697-10, 12697-32

The UTS-0630 Vibratory Compactor Set is used to prepare the test specimens of road base and sub base materials by using the vibratory compaction technique.

The specimens prepared from road base and sub base materials is used for the proctor and CBR tests.

The set is also used for preparing the test specimens of bituminous mixtures

UTS-0750 mould with base plate and extension collar should be ordered separately and also when ordering UTS-0750, UTS-0768 and UTS-0770 should be ordered separately for assembling and disassembling.



The Vibratory Compactor Set is supplied complete with:

- Vibrating Hammer
- Supporting Frame
- Small Tamping Foot, 102 mm dia.
- Large Tamping Foot, 146 mm dia.
- Shank, 300 mm



UTS-0768 C Spanner

Dimensions	510x300x1120 mm
Weight (approx.)	75 kg (complete set)
Power	1150 W (vibrating hammer)

MOISTURE vs. PENETRATION RESISTANCE

Product Code

- UTS-0665 Spring Type Proctor Penetrometer
- UTS-0666 Needle Set for Proctor Penetrometer (28.55, 24.79, 20.22, 16.54, 12.83, 9.07, 6.40, 5.23 and 4.52 mm diameters)

Standards

ASTM D1558

The UTS-0665 Spring Type Proctor Penetrometer is used for establishing the moisture-penetration resistance relation of fine-grained soils. The apparatus consists of a spring loading device which is graduated from 10 to 150 lbf in 2 lbf subdivisions.

Needle Set for Proctor Penetrometer consist of interchangeable needle points of 28.55, 24.79, 20.22, 16.54, 12.83, 9.07, 6.40, 5.23, 4.52 mm diameters and a carrying case.



UTS-0665, UTS-0666 with special wooden case



UTS-0666

Dimensions	540x260x60 mm (packed)
Weight (approx.)	5 kg



UTS-0665, UTS-0666

Compacted Road Base and Subbase Soils

CBR MOULD & ACCESSORIES ASTM

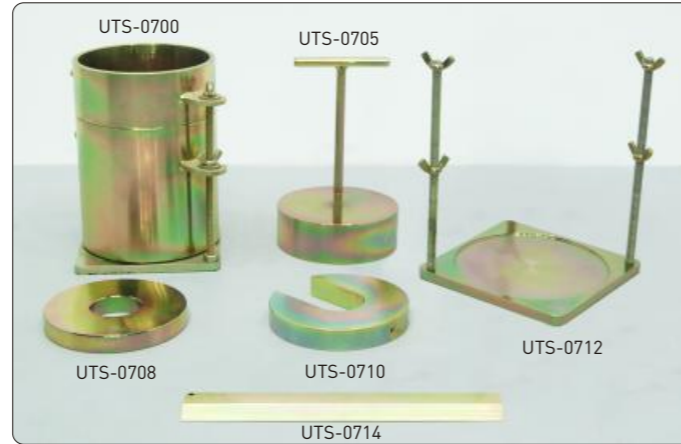
Product Code

CBR Mould and Accessories ASTM

Standards

ASTM D1883; AASHTO T193

Each accessories listed below should be ordered separately.



Product Code	Description	Dimensions	Weight (approx.)
UTS-0700	CBR Mould ASTM / AASHTO, plated steel mould body with 6" (152.4 mm) dia. x 7" (177.8 mm) height, supplied complete with extension collar and perforated base plate	200x200x450 mm	8.5 kg
UTS-0705	Spacer Disc with T handle ASTM, 150.8 mm dia. x 61.4 mm height"	200x200x300 mm	7.5 kg
UTS-0708	Annular Surcharge Weight ASTM, 2.27 kg	200x200x100 mm	2.3 kg
UTS-0710	Slotted Surcharge Weight ASTM, 2.27 kg	200x200x100 mm	2.3 kg
UTS-0712	CBR Solid Base Plate ASTM	200x200x100 mm	2.1 kg
UTS-0714	Straightedge 300x30x5 mm	300x30x5 mm	1 kg
UTS-0716	Filter Paper for CBR Test No:5 x 150 mm dia. ASTM (Pack of 100)	200x200x20 mm	0.1 kg
UTS-0718	Filter screen, 144 mm dia. 150 µm mesh ASTM	150x150x20 mm	1 kg

CBR MOULD & ACCESSORIES BS

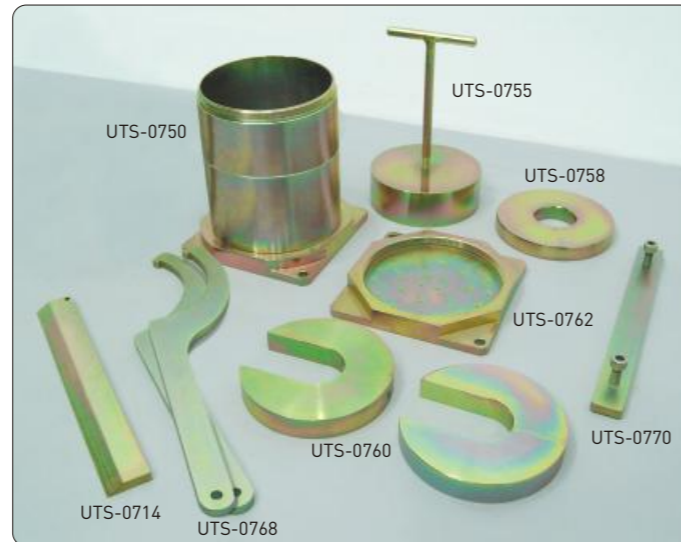
Product Code

CBR Mould and Accessories BS

Standards

BS 1377:4, 1924:2; EN 13286-4

Each accessories listed below should be ordered separately.



Product Code	Description	Dimensions	Weight (approx.)
UTS-0750	CBR Type Mould BS (modified proctor) / Vibrating Hammer Mould BS, EN, TS-1900-1 internal dia.: 152 mm, internal height: 127 mm, supplied complete with extension collar and solid base plate	200x200x450 mm	8.5 kg
UTS-0755	Compaction plug with T handle BS, 150 mm dia. x 50 mm height	200x200x300 mm	7.5 kg
UTS-0758	Annular Surcharge Weight BS/EN, 2 kg	200x200x100 mm	2.6 kg
UTS-0760	Split Surcharge Weight BS/EN, 2 kg	200x200x100 mm	2.6 kg
UTS-0762	CBR Perforated Base Plate BS	200x200x100 mm	2 kg
UTS-0764	Filter Paper for CBR Test No:1 x 150 mm dia. BS (Pack of 100)	200x200x20 mm	0.1 kg
UTS-0768	C- Spanner for UTS-0750, 2 pcs	200x300x100 mm	1 kg
UTS-0770	Assembly tool for Base Plate for UTS-0750	350x30x15 mm	1 kg
UTS-0714	Straightedge 300x30x5 mm	300x300x5 mm	1 kg

CBR MOULD & ACCESSORIES EN

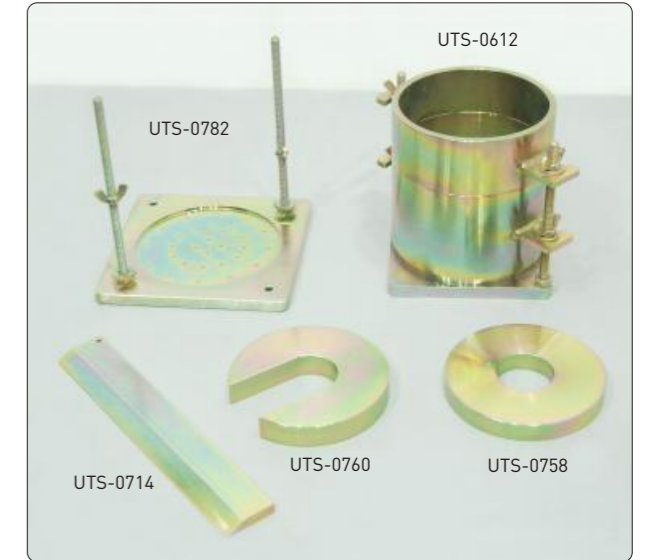
Product Code

CBR Mould and Accessories EN

Standards

EN 13286-47

Each accessories listed below should be ordered separately.



Product Code	Description	Dimensions	Weight (approx.)
UTS-0612	B type Proctor Compaction Mould EN (modified), internal dia.: 150±1 mm, internal height: 120±1 mm, supplied complete with extension collar and solid base plate	200x200x180 mm	8.9 kg
UTS-0758	Annular Surcharge Weight BS / EN, 2 kg	200x200x100 mm	2.6 kg
UTS-0760	Split Surcharge Weight BS / EN, 2 kg	200x200x100 mm	2.6 kg
UTA-0782	CBR Perforated Base Plate EN	200x200x100 mm	2 kg
UTS-0784	Filter papers for CBR test, coarse, 148 mm dia.	200x200x20 mm	0.1 kg
UTS-0714	Straightedge 300x30x5 mm	300x30x5 mm	1 kg

SWELLING

Product Code

- UTS-0790 Adjustable Stem and Perforated Plate for CBR Swelling Test
- UTS-0792 Tripod for CBR Swelling Test
- UTGM-0120 Analog Gauge 30 mm travel x 0.01 mm division
- UTGM-0148 Digital Dial Gauge 25x0,01 mm, LCD Display
- UTGM-0152 Digital Dial Gauge 12,7x0,001 mm, LCD Display
- UTS-0794 CBR Soaking Tank (6 pcs. CBR Mould Capacity)

Standards

EN 13286-47; ASTM D1183; AASHTO T193; BS 1377:4, 1924:2

This equipment is used to monitor the swelling by placing it on top of the soil sample. The swell test consists of perforated plate (swell plate) with adjustable stem, dial gauge and dial gauge tripod for mounting swell dial gauge in position on CBR Mould Collar.

The preferred gauge and each other equipment should be ordered separately for swelling test.

Product Code	Dimensions	Weight
UTS-0790	180x180x160 mm	2.5 kg
UTS-0792	200x200x300 mm	1 kg
UTGM-0120	150x100x80 mm	0.5 kg
UTS-0794	500x700x400 mm	3 kg



CBR TEST MACHINES

Product Code

- UTS-0852 CBR Test Machine with Load Ring, 50 kN capacity, 220-240 V 50-60 Hz
- UTS-0852/110 CBR Test Machine with Load Ring, 50 kN capacity, 110 V 60 Hz

Standards

EN 13286-47; BS 1377:4; ASTM D1883; AASHTO T193; NF P94-078; UNI CNR 10009



The UTS-0852 is designed for performing laboratory evaluation of the CBR value of highway sub bases and subgrade and for the determination of strength of cohesive materials which have maximum particle sizes less than 19 mm (3/4").

The UTS-0852 is designed to load the penetration piston into the soil sample at a constant rate to measure the applied load and piston penetration at predetermined intervals.

The machine is designed to be mounted on a suitable bench and comprises of a robust and compact two column frame with adjustable upper cross beam. The frame has 50 kN capacity. Two test speeds are provided 1.0 mm/min for BS and 1.27 mm/min. for ASTM/EN/AASHTO tests. This main feature allows the user to perform tests complying to BS or ASTM/EN/AASHTO standards with the same machine. Loading and unloading are down from the front panel by UP/DOWN buttons. Unloading speed is adjusted 5 mm/min for easy re-testing.

The CBR Test Machine is supplied complete with

- Load Ring, 50 kN
- Digital Gauge with Connection Part, 25x0.01 mm
- Penetration Piston

Dimensions	480x650x1150 mm
Weight (approx.)	110 kg
Power	370 W

CBR TEST MACHINES

Product Code

- UTS-0854 CBR Test Machine with Digital Readout Unit, 50 kN Capacity 220-240 V 50-60 Hz
- UTS-0854/110 CBR Test Machinewith Digital Readout Unit, 50 kN Capacity 110 V 60 Hz

Standards

EN 13286-47; BS 1377:4; ASTM D1883; AASHTO T193; NF P94-078; UNI CNR 10009

The UTS-0854 is designed for performing laboratory evaluation of the CBR value of highway subbases and subgrade and for the determination of strength of cohesive materials which have maximum particle sizes less than 19 mm (3/4").

The UTS-0854 is designed to load the penetration piston into the soil sample at a constant rate to measure the applied load and piston penetration at predetermined intervals. The Machine has 2 digital readout units for load and displacement.

The machine is designed to be mounted on a suitable bench and comprises of a robust and compact two column frame with adjustable upper cross beam. The frame is 50 kN capacity. Two test speeds are provided 1.0 mm/min for BS and 1.27 mm/min. for ASTM/EN/AASHTO tests. This main feature allows the user to perform tests complying to BS or ASTM/EN/AASHTO standards with the same machine. Loading and unloading are down from the front panel by UP/DOWN buttons. Unloading speed is adjusted 5 mm/min for easy re-testing.

The CBR Test Machine is supplied complete with

- Load Cell, 50 kN
- Linear Potentiometric Displacement Transducer with Connection Part, 25x0.001 mm
- Penetration Piston

Dimensions	480x650x1150 mm
Weight (approx.)	110 kg
Power	370 W



CBR TEST MACHINES

Product Code

- UTS-0860 Automatic CBR Test Machine, 220-240 V 50-60 Hz
- UTS-0860/110 Automatic Digital CBR Test Machine, 110 V 60 Hz

Standards

EN 13286-47; BS 1377:4; ASTM D1883; AASHTO T193; NF P94-078; UNI CNR 10009



The UTS-0860 Automatic CBR Test Machine is designed for performing laboratory evaluation of the CBR value of highway sub-bases and sub-grade, and determination of the strength of cohesive materials which have maximum particle sizes less than 19 mm (3/4").

The UTS-0860 is composed of a robust and compact two column frame with adjustable upper crossbeam driven by an electromechanical ram with a maximum capacity of 50 kN and a data acquisition and processing system.

The UTS-0860 is designed to load the penetration piston into the soil sample at a constant rate to measure the applied load and piston penetration at predetermined intervals. The ram speed can be set between 0.5 mm/min to 5 mm/min by using the Digital Readout Unit. This main feature allows the user to perform tests complying to BS, EN, ASTM or AASHTO standards with the same machine.

Rapid adjustment of the platen is also provided by up and down buttons which are located on the front panel of the machine. The UTS-0860 is supplied complete with a 50 kN load cell, penetration piston, linear potentiometric displacement transducer (25 mm x 0.001 mm), computer software and connection cable. PC is optional.

BC 100 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. One analog channel for load cell and one analog channel for displacement transducer exists.

BC100 has easy to use menu options. It displays all menu option listings simultaneously, allowing the operator to access the required option in a seamless 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

- Calculates corrected CBR value at 2.5 and 5 mm the digital unit saves the load value at user defined displacement values such as 0.625, 1.25, 1.875, 2.5, 3.75, 5, 7.5, 10, 12.5 mm
- The load corresponds to the displacements corrected respect to the linear region of the data has also saved
- The % CBR at 2.5 mm and % CBR at 5 mm is also automatically calculated and saved
- Can make test with displacement and limited 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, 2 channels are active for CBR
- 1/256000 points resolution per channel
- 10 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

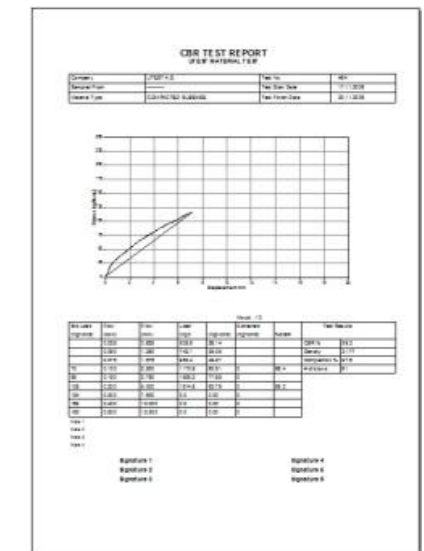
Data Acquisition & PC Software

CBR Test Software is developed for EN/ASTM/AASHTO/BS CBR Test. The software includes control of machine, acquisition of load and displacement data, saving them and preparing reports. The software prepares a summary result for the user that will only need some specific loads such as at 0.625 mm, 1.25 mm, 2.5 mm and 5 mm. The software continuously updates load, stress and displacement till the end of test. When the test is completed, the sharpest slope of the graph is calculated. The point that this line crosses displacement axis is commented as an offset. The corrected stress values are then calculated respect to this offset. The CBR value at 2.5mm and 5.0mm are calculated by using the standart load values at those penetrations. On the general information tab, there is an easy usage dry density calculation. These results are used on generating 3 point CBR graph. The software supports metric, SI and Imperial unit system.

- Foreign Language Support and Customizable User Interface
- Graphical data on the screen is refreshed simultaneously during test procedure
- Capable to Access and use previously done test data
- Able to edit test parameters of the testing equipment through Software
- Graphical outputs and reports can be saved as a MS Excel worksheet
- Maximum Flexibility to edit report and graph templates

The CBR Test Machine is supplied complete with

- Load Cell, 50 kN
- Penetration Piston
- Linear Potentiometric Displacement Transducer with Connection Part, 25x0.001 mm
- Computer Software
- Connection Cable



Dimensions	480x650x1150 mm
Weight (approx.)	110 kg
Power	370 W

Compacted Road Base and Subbase Soils

FIELD CBR TEST SET

Product Code

- UTS-0865 In-situ CBR Test Apparatus
- UTS-0866 Cutting Collar (edge) for UTS-0865
- UTS-0867 Conversion Frame

Standards

BS 1377:9; 1924:2; ASTM D4429; UNI 10009; NF



UTS-0865



UTS-0867



UTS-0865 with UTS-0867

The UTS-0865 In-situ CBR Test Apparatus, 50 kN capacity, is used for the on-site determination of the bearing capacity of soils used in road construction.

The set consists of:

- 50 kN capacity mechanical jack with ball seating
- 50 kN capacity load ring
- Analog penetration dial gauge (30 mm travel x 0.01 mm)
- Adjustable dial gauge holder
- CBR Penetration piston
- Set of extension rods (2 pcs. 102 mm, 1 pcs. 305 mm and 1 pcs. 610 mm length)
- Datum bar assembly with two stands
- 4.5 kg annular surcharge weight
- 4.5 Kg slotted surcharge weight
- 9 kg slotted surcharge weight
- Vehicle bracket and wooden carrying case

The UTS-0867 Conversion Frame is used to convert the IN-situ CBR test to a mechanical laboratory CBR test machine.

The system is easily assembled onto the conversion frame with the addition of some of the accessories included in UTS-0865. The frame is used with the jack, load ring, CBR mould and penetration piston.

Product Code	Dimensions	Weight (approx.)
UTS-0865	240x1630x230 mm (case)	50 kg
UTS-0867	380x270x1180 mm	26 kg



Wooden Carrying Case for UTS-865

IN-SITU DENSITY TESTS

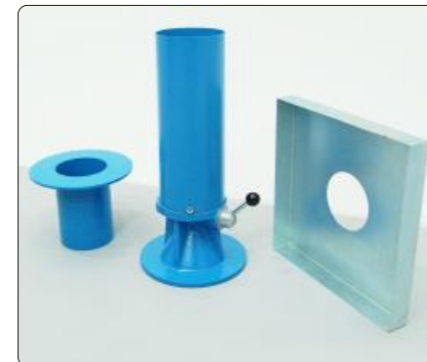
Product Code

- UTS-0900 Sand Replacement Test Set 100 mm BS
- UTS-0901 Sand Pouring Cylinder 100 mm dia. for UTS-0900
- UTS-0902 Calibration Container for UTS-0900
- UTS-0903 Metal Tray for UTS-0900
- UTS-0910 Sand Replacement Test Set 150 mm BS
- UTS-0911 Sand Pouring Cylinder 150 mm dia. for UTS-0910
- UTS-0912 Calibration Container for UTS-0910
- UTS-0913 Metal Tray for UTS-0910
- UTS-0920 Sand Replacement Test Set 200 mm BS
- UTS-0921 Sand Pouring Cylinder 200 mm dia. for UTS-0920
- UTS-0922 Calibration Container for UTS-0920
- UTS-0923 Metal Tray for UTS-0920

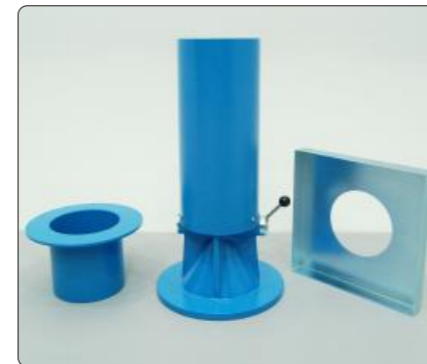
Standards

BS 1377:9, 1924:2

The Sand Replacement Test Set is used for the determination of the degree of compaction on site. The Complete set consists of a pouring cylinder, calibration container and tray. The sand pouring cylinder is made of cast aluminum and precisely machined; the calibration container and tray are made of plated sheet steel. The test set is available in three different sizes.



UTS-0900



UTS-0910

Product Code	Dimensions	Weight (approx.)
UTS-0900	300x300x440 mm	8 kg
UTS-0910	300x300x500 mm	14 kg
UTS-0920	500x500x660 mm	27 kg

IN-SITU DENSITY TESTS

Product Code

- UTS-0950 Sand Cone Set 6.5"
- UTS-0960 Sand Cone Set 12"
- UTS-0952 Plastic Sand Jar 5 L, for UTS-0950
- UTS-0962 Density Cylinder, 12"

Standards

ASTM D1556; AASHTO T181, T191

The UTS-0950 and UTS-0960 Sand Cone Sets are used for the determination of the degree of compaction on site. UTS-0950 includes double cone, plastic sand jar and metal tray with flanged hole.

UTS-0962 Density Cylinder is used for determining in place density of compacted base courses containing large sizes of coarse aggregates.



UTS-0950



UTS-0960



UTS-0952



UTS-0962

Product Code	Dimensions	Weight (approx.)
UTS-0950	300x300x550 mm	4 kg
UTS-0960	600x600x650 mm	15 kg
UTS-0962	470x320x260 mm	10 kg

Compacted Road Base and Subbase Soils

IN-SITU DENSITY TESTS

Product Code

- UTS-0965 Surface Soil Sampler (Core Cutter), 3" dia. ASTM
- UTS-0966 Spare Sampling Tube (Drive Cylinder), 3" (76.2 mm) x 70 mm high, ASTM, for UTS-0965
- UTS-0967 Surface Soil Sampler (Core Cutter), 4" dia. ASTM
- UTS-0968 Spare Sampling Tube (Drive Cylinder), 4" (101.6 mm) x 127 mm high, ASTM, for UTS-0967
- UTS-0970 Surface Soil Sampler (Core Cutter) Set, 100 mm dia., BS
- UTS-0975 Surface Soil Sampler (Core Cutter) Set, 150 mm dia., BS

Standards

ASTM D2937; CNR No.22; BS 1377:9

Surface Soil Sampler (Core Cutter) is used to determine the in-situ density of soil by taking a standard volume of soil sample from the ground which is then removed, trimmed and weighed.

The ASTM/CNR version, UTS-0965 and UTS-0967 Surface Soil Sampler (Core Cutter) consists of a drive head, 5 kg drive hammer and a thin wall sampling tube. 5 kg sliding weight drop hammer makes a free-fall on to the driving head which is placed on top of the sampling tube. Manufactured from steel and plated for corrosion resistance.



UTS-0970 BS Type 100 mm Surface Soil Sampler (Core Cutter) Set consists of a driving dolly, 13,5 kg driving rammer and 100 mm dia. x 130 mm high core cutter. UTS-0975 BS Type 150 mm Surface Soil Sampler (Core Cutter) Set BS consists of a driving dolly, 16 kg driving rammer and 150 mm dia x 180 mm high core cutter.

IN-SITU DENSITY TESTS

Product Code

- UTS-0990 Balloon Density Apparatus 1600 ml ASTM
- UTS-0992 Balloon Density Apparatus 3000 ml NF

Standards

ASTM D2167; NF P94-061-2: AASHTO T205



UTS-0990 (1600 ml) and UTS-0992 (3000 ml) Balloon Density Apparatus are used for the on-site determination of the density of well bonded soil according to the ASTM and French standards respectively.

UTS-0990 consists of a graduated cylinder of 1596 ml capacity housed inside an aluminium guard, a reversible rubber aspirator pump, a density plate 9 inches square, and 12 rubber balloons. The principle of operation is similar to the sand replacement but the hole is filled by a rubber balloon where water is pumped. The amount of water can be easily determined by the graduation of the cylinder.

The capacity of UTS-0992 apparatus is 3000 ml. A metal cylinder is filled with water which is then pumped into a rubber membrane mounted on the base of the cylinder. The water pressure is controlled by a pressure gauge and the volume of the balloon is measured on the graduated piston stem.

NF Type Balloon Density Apparatus is supplied complete with	ASTM Type Balloon Density Apparatus is supplied complete with
<ul style="list-style-type: none"> • Reinforced Membranes, 6 pcs./pack • Base Plate • Locking Clamps, 3 pcs. 	<ul style="list-style-type: none"> • Rubber balloons, 12 pcs • Density Plate

Product Code	Dimensions	Weight (approx.)
UTS-0990	250x250x700 mm	7 kg
UTS-0992	360x360x1000 mm	10 kg

NON-NUCLEAR SOIL DENSITY GAUGE

Product Code

UTS -1280 Non-Nuclear Soil Density Gauge

Non-Nuclear Soil Density Gauge is used for detecting density of Soil specimens with non nuclear type. UTS-1280 is fully equipped with a touch screen and user friendly graphical menu interface, running Microsoft Windows silently in the background for flowless operation, easy software are upgrades and enhanced user support.

The instruments general specifications are;

- Full colour graphics driven interface, 480 x 640 VGA touch screen display with LED backlight for easy visibility.
- Displays GPS status, available battery voltage, low battery and date/time,
- Rugged case design made from aluminum, powder-coated gloss black with orange reflective vinyl graphics increasing driver awareness to road workers at night
- Data Management Feature, quickly access, can be downloaded and deleted project data,
- Required files can be downloaded to UTS-1280 via. USB,
- Fast, reliable, accurate, and repeatable in real time, User Friendly, in-process, cost effective tool for any user,
- The most important point is; Non-Nuclear means no Badges or Licences and no storage or transport concerns.

OPERATIONAL FEATURES

- Display: Full color graphics driven user interface, 480x640 VGA touch screen display with LED backlight for easy visibility in daylight or dark situations.
- Status Bar: Displays GPS status, Data Save status, battery voltage, low battery and date and time
- Project Details: Stores up to 20 projects with details,

- Material Details: Stores up to 20 materials, details include Material Name, Description, Max Dry Density, Opt. Moisture, Dry Density Offset, % Moisture Offset, % Greater than 3", % Greater than 3/4", % Gravel, % Sand, % Fines, PL, LL, Cu and Cc
- Data Logging: Ability to store all measurements
- Reports: Easily download data to be imported into Excel
- GPS Control: When activated will display latitude and longitude positions, number of satellites the gauge is connected to as well as the UTC date and time, also available in UTM format. GPS information will store with each measurement when Data Save and GPS feature is enabled, (Status Bar Icon)
- Update Software: One touch upload of new software using a USB memory stick
- Data Management: Quickly access, download or delete your project data
- Set Time & Date: Quick time and date setup, MM/DD/YY and DD/MM/YY formats
- Units: Interchangeable settings for Density (kg/rn³, lb/ft³), Temp [°C, °F]
- Standardization: While gauge is still in the case, a quick one touch measurement will insure the gauge is still in proper working mode
- Calculator: Built in four function calculator
- Enhanced Customer Support: Diagnostic screen to aid in factory support
- User Programmable Target Density: Used for calculating % compaction



Operational Specification

Measurement Mode	
• Average	Averages five (5) readings and stores data including location date and time. Stores thousands of records
• Continuous	Instantaneous density readings.
Function Mode	
• Wet & Dry Density, % Compaction, % Moisture	
Soil Specification	
• Designed to operate with standard soils used in civil construction projects.	
• Requires inputs from standard	- Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils (ASTM D4318) - Particle Size Distribution (ASTM D422) - Proctor Test (ASTM D698 and D1557)
Mechanical Specification	
• Unit Weight	14.2 lbs (6.44kg)
• Unit Dimensions	11"x11"x12" High (27,9 cm x 27,9 cm x 30,4 cm) with handle extension 29" High (73,6 cm)
• Shipping Weight w/Case	42,5lbs (19,27 kg)
• Shipping Dimensions	24" x 19,5" x 14" (60,9 cm x 49,5 cm x 35,5 cm)
Measurement Specification	
• Sensing Area	11 in. (27.9cm) dia. base allows optimum measurement on fine and coarse material types
• Measurement Depth	Designed for use on a standard 12" (30cm) un-compacted layer of soil during or after compaction.
• Measurement Display	Dry Density, % Compaction, % Moisture, GPSData, Material Information and Project Name
Electrical Specification	
• Microprocessor Controlled	
• CE Mark	Complies with EN 61000-4-2, 61000-4-3, 61000-4-8
• Battery	14.0 Amp-hr NiMH, 7.2V
• Recharge Time	4 hours
• Battery Charger	Self Contained CE & UL Certified Universal AC Charger, DC Charger
• Computer Ports	1 USB Port

Compacted Road Base and Subbase Soils

NUCLEAR DENSITY GAUGE

Product Code

RoadReader Nuclear Density Gauges Model 3430
RoadReader Nuclear Density Gauges Model 3440

Standards

ASTM D 2922, D 3017, D 2950, C 1040

The Troxler RoadReader nuclear moisture / density gauges are used by many contractors, engineers and highway departments for compaction control of soil, aggregate, concrete and full asphalt. The ASTM standards numbers D 2922, D 3017, D 2950 and C 1040 are met or exceeded by these gauges. Two test models are available for density determination: Direct transmission and Backscatter. The operator selects the mode depending on the material type and thickness of the layer being tested. The model 3430 is available with keypad, display and operator's manual in languages and is the simplest most economical gauge offered by Troxler. The Model 3440 provides 30 special functions, storage of up to 450 test records, an 18-month warranty and many more options that make it simple to operate and a necessity for all technicians.

Three Test Modes

BACKSCATTER

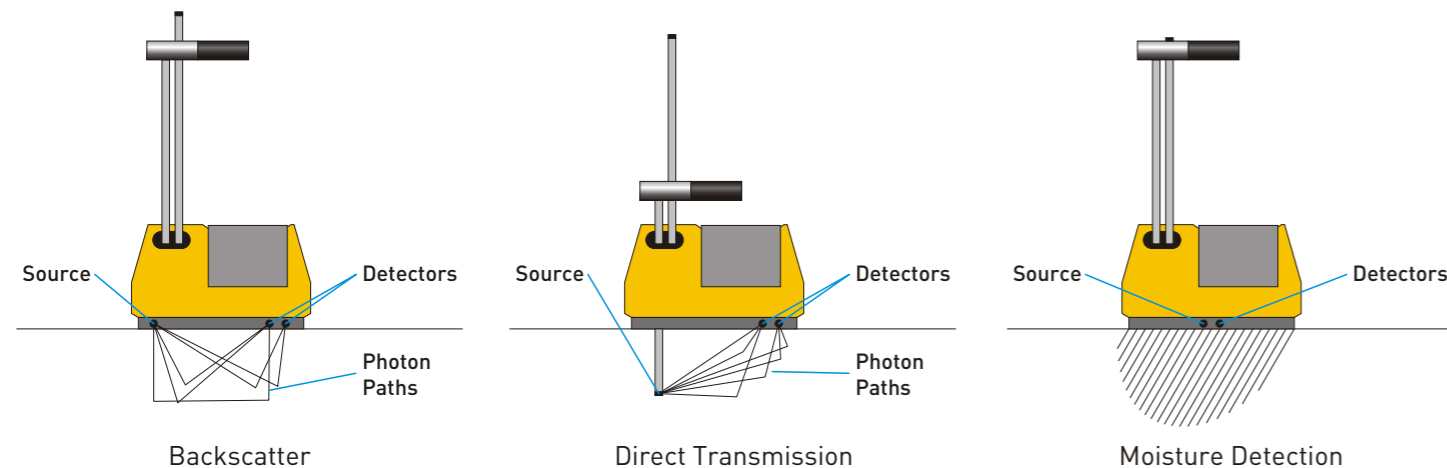
Backscatter is rapid and nondestructive. The gamma source and detectors remain inside the gauge which rests on the surface of the test material. Gamma rays enter the test material and those scattered through the material and reaching the detectors are counted. Backscatter is primarily used to determine density on layers of asphalt and concrete approximately 4" thick.

DIRECT TRANSMISSION

The gamma source is positioned at a specific depth within the test material by insertion into an access hole. Gamma rays are transmitted through the test material to detectors located within the gauge. The average density between the gamma source and the detectors is then determined. Errors resulting from surface roughness and chemical composition of the test material are greatly reduced and gauge accuracy is improved. Direct transmission is used for testing lifts of soil, aggregate, asphalt and concrete up to 12" depth.

MOISTURE DETECTION

The moisture measurement is nondestructive with the neutron source and detector located inside the gauge just above the surface of the test material. Fast neutrons enter the test material and are slowed after colliding with the hydrogen atoms present. The helium 3 detector in the gauge counts the number of thermalized (slowed) neutrons which relates directly to the amount of moisture in the sample.



Both Models Offer

- Direct readout of wet density, dry density, moisture, %moisture, %voids and %compaction.
- Lightweight
- Powered by rechargeable nicad batteries or backup alkaline batteries
- Prompts user through steps of operation
- Software allows for moisture, density and trench offsets

3430 Features

- **Choice of languages**-keypad, display and operator manual available in English, Chinese, Spanish and French.
- **Simple to Operate**-single keystroke function access. Direct readout of test results.

Specifications

Measurement (U.S. Customary Units)			
Direct Transmission Density (6")	15 sec.	1 min.	4 min.
Precision at 120 pcf	±0.42 pcf	±0.21 pcf	±0.11 pcf
Composition error at 120 pcf	±1.25 pcf	±1.25 pcf	±1.25 pcf
Surface error (0.05", 100% Void)	-1.1 pcf	-1.1 pcf	-1.1 pcf
Backscatter (98%) (4")	15 sec.	1 min.	4 min.
Precision at 120 pcf	±1.00 pcf	±0.50 pcf	±0.25 pcf
Composition error at 120 pcf	±2.50 pcf	±2.50 pcf	±2.50 pcf
Surface error (0.05", 100% Void)	-4.7 pcf	-4.7 pcf	-4.7 pcf
Moisture at 15 pcf	15 sec.	1 min.	4 min.
Precision at 15 pcf	±0.64 pcf	±0.32 pcf	±0.16 pcf
Surface error (0.05", 100% Void)	-1.12 pcf	-1.12 pcf	-1.12 pcf
Depth of measurement @ 15 pcf (8.45")			

Measurement (S.I. Units)			
Direct Transmission Density-150mm	15 sec.	1 min.	4 min.
Precision at 2000 kg/m ³	±6.8 kg/m ³	±3.4 kg/m ³	±1.7 kg/m ³
Composition error at 2000 kg/m ³	±20.0 kg/m ³	±20.0 kg/m ³	±20.0 kg/m ³
Surface error (1.25mm, 100% Void)	-17.0 kg/m ³	-17.0 kg/m ³	-17.0 kg/m ³
Backscatter (98%) (100mm)	15 sec.	1 min.	4 min.
Precision at 2000 kg/m ³	±16.0 kg/m ³	±8.0 kg/m ³	±4.0 kg/m ³
Composition error at 2000 kg/m ³	±40.0 kg/m ³	±40.0 kg/m ³	±40.0 kg/m ³
Surface error (1.25mm, 100% Void)	-75.0 kg/m ³	-75.0 kg/m ³	-75.0 kg/m ³
Moisture	15 sec.	1 min.	4 min.
Precision at 250 kg/m ³	±10.3 kg/m ³	±5.1 kg/m ³	±2.6 kg/m ³
Surface error (1.25mm, 100% Void)	-18.0 kg/m ³	-18.0 kg/m ³	-18.0 kg/m ³
Meas. Depth @ 250 kg/m ³ - 212.5mm			

Calibration	
Accuracy of Density Standards	±0.2%
Accuracy of Moisture Standards	±2.0%
Calibration Range	70-170 pcf (1100-2700 kg/m ³) Density 0-40 pcf (0-640 kg/m ³) Moisture

Radiological	
Gamma Source	8 mCi ±10% Cs-137
Neutron Source	0.060 mCi ±10% Cf-252 or 40 mCi ±10% Am-241:Be
Source Housing	Stainless Steel Encapsulation
Shielding	Tungsten, lead and cadmium
Surface Dose Rates	20.5 mrem/hr max., neutron and gamma
Source Rod Material	Stainless Steel
Shipping Case	DOT 7A, Type A

3440 Features

- **Data storage**- stores up to 450 complete test records which can be downloaded to a printer or computer.
- **Extended storage**-gauge allows notes to be stored with test record.
- **Automatic indexing**-eliminates a major source of operator error by automatically sensing depth of measurement.
- **30 special functions provided**-self test and service programs, selected precision and field calibration for special materials.
- Calculator mode with storage.
- Nomograph method for measurement of asphalt overlays.

Mechanical	
Case	High Impact Plastic 29.5 L x 14 W x 17 T in.
Vibration Test	0.1 in. (2.5 mm) @ 12.5 hz
Drop Test	300 mm on 25 mm diameter steel ball
Operating Temp:	Ambient: 14 to 158°F (-10 to 70°C) Surface: 350°F (175°C)
Storage Temp.	-70 to 185°F (-55 to 85°C)
Gauge Size (no handles)	14.8 x 9.1 x 7.2 in. (376 x 231 x 183 mm)
Gauge Height (with handles)	12": 23.25 in. (591 mm) 8": 19.25 in. (489 mm)
Weight	29 lbs. (13.2 kg)
Shipping Weight	90 lbs. (40.8 kgs) w/case
Available Models	8" or 12" index rod with 1" or 2" increments (200 or 300 mm index rod with 25 or 50 mm increments)

Electrical	
Time Accuracy and Stability	0.005%, 0.0002% / °C
Power Supply Stability	0.01% / °C
Stored Power	30 watt hours
Battery Recharge Time	14-16 hours (automatic cutoff)
Charger	110/220 Vac, 50-60 Hz or 12-14 V dc
Readout	2 x 16 alpha-numeric liquid crystal display

Notes
Gauge returns to Gauge Ready (power saving mode) after two minutes of inactivity, except in standard, stat test, drift test, and in nomograph programs when a 30-minute delay is provided. After 5 hours of inactivity, gauge performs complete power shut-down.

Battery packs are fully protected against overcharge and overdischarge.

Emergency Use - Capable of operation with D size alkaline batteries.

Compacted Road Base and Subbase Soils

BEARING CAPACITY ON SITE

Product Code

- UTS-1200 Plate Loading Test Set with Digital Dial Gauges & LPI Digital Readout Unit, 200 kN
- UTS-1201 Plate Loading Test Set with Digital Dial Gauges & LPI Digital Readout Unit, 500 kN
- UTS-1202 Piston Assembly, 200 kN capacity, for Plate Load Bearing Test Sets
- UTS-1203 Piston Assembly, 500 kN capacity, for Plate Load Bearing Test Sets
- UTGE-3800 Hydraulic Hand Pump, 700 bar.
- UTS-1204 Loading Plate Ø 300 mm for for Plate Load Bearing Test Sets
- UTS-1205 Loading Plate Ø 450 mm for for Plate Load Bearing Test Sets
- UTS-1206 Loading Plate Ø 600 mm for for Plate Load Bearing Test Sets
- UTS-1207 Loading Plate Ø 760 mm for for Plate Load Bearing Test Sets
- UTS-1220 Plate Loading Test Set, with Displacement Transducers and Data Logger, 200 kN
- UTS-1221 Plate Loading Test Set, with Displacement Transducers and Data Logger, 500 kN

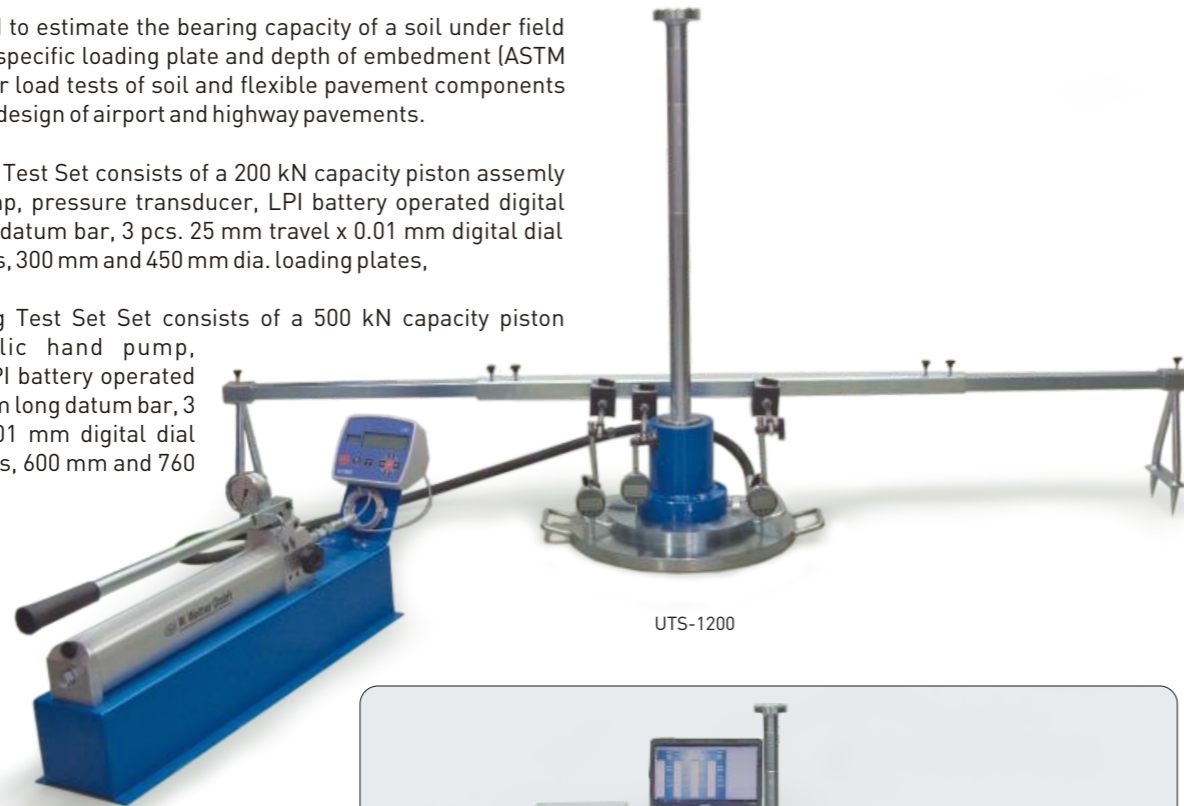
Standards

ASTM D1194, D1195, D1196; BS 1377:9

This test method is used to estimate the bearing capacity of a soil under field loading conditions for a specific loading plate and depth of embedment (ASTM D1194). It is also used for load tests of soil and flexible pavement components for use in evaluation and design of airport and highway pavements.

UTS-1200 Plate Loading Test Set consists of a 200 kN capacity piston assembly and hydraulic hand pump, pressure transducer, LPI battery operated digital readout unit, 2.4 m long datum bar, 3 pcs. 25 mm travel x 0.01 mm digital dial gauges with dial supports, 300 mm and 450 mm dia. loading plates,

UTS-1201 Plate Loading Test Set Set consists of a 500 kN capacity piston assembly and hydraulic hand pump, pressure transducer, LPI battery operated digital readout unit, 2.4 m long datum bar, 3 pcs. 25 mm travel x 0.01 mm digital dial gauges with dial supports, 600 mm and 760 mm dia. loading plates,



UTS-1200



UTS-1220

Product Code	Dimensions (mm)	Weight (approx.) (kg)
UTS-1200	650x330x570	120
UTS-1201	840x840x120 (plate packed)	155
	650x330x570 (other packed)	120
UTS-1204	300x420x40	15
UTS-1205	570x570x40	32
UTS-1206	740x600x40	58
UTS-1207	880x760x50	95
UTS-1220	650x330x570	120
UTS-1221	840x840x120 (plate packed)	155
	650x330x570 (other packed)	120

UTS-1220 Plate Loading Test Set consists of a 200 kN capacity piston assembly and hydraulic hand pump, pressure transducer, 4 channel static unilogger data acquisition unit, 2.4 m long datum bar, 3 pcs. 25 mm x 0.001 mm linear potentiometric displacement transducers and their supports, 300 mm and 450 mm dia. loading plates, converter DC 12 V to DC 24 V and UTEST software



Detail of UTS-1200



Detail of UTS-1220

UTS-1221 Plate Loading Test Set consists of a 500 kN capacity piston assembly and hydraulic hand pump, pressure transducer, 4 channel static unilogger data acquisition unit, 2.4 m long datum bar, 3 pcs. 25 mm x 0.001 mm linear potentiometric displacement transducers and their supports, 600 mm and 750 mm dia. loading plates, converter DC 12 V to DC 24 V and UTEST software

When there is a need for test set UTS-1200 and UTS-1220, 600mm and 760 mm dia. loading plates or for test set UTS-1201 and UTS-1221 300 mm and 450 mm dia. loading plates should be ordered separately.

All test sets supplied complete with 1,5 m long flexible hose with quick release coupling.

LIGHT WEIGHT DEFLECTOMETER

Product Code

UTS-1250 Light Weight Deflectometer

Standards

ASTM E2835-11

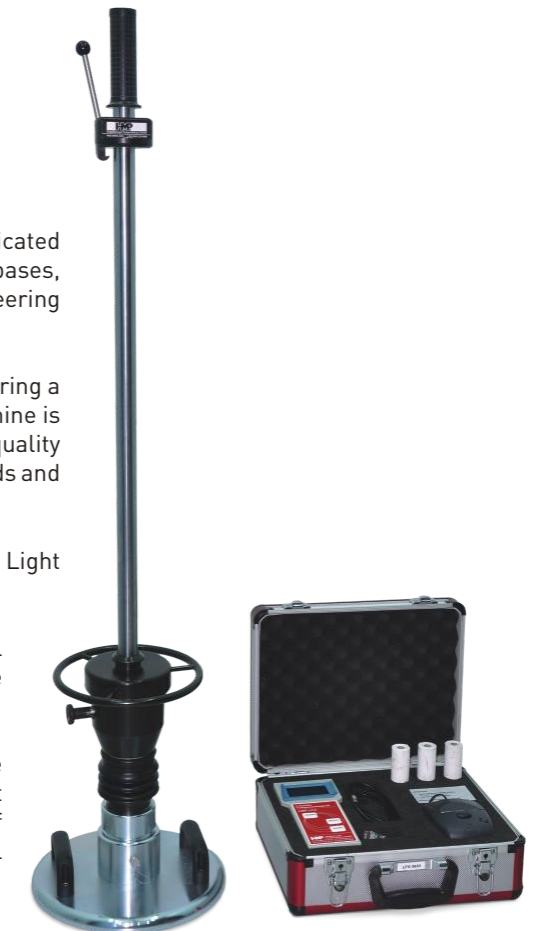
The Light Weight Deflectometer makes it possible to quickly determine, in an uncomplicated manner, the soil bearing capacity and compaction quality of soils, non-cohesive sub-bases, and pavement improvements. The dynamic plate load tester is described in the Engineering Code for Soil and Rock in Road Construction.

In this way testing inbuilt soil layers can be carried out very quickly and without requiring a vehicle, which means it is also suitable for sites that are difficult to access. The machine is used in many areas - in road construction, railway engineering and earthworks for quality protection in canal construction and utility trenches, and in the examination of roadbeds and foundation fillings.

Due to the easy handling and the immediately available measurement results. The Light Weight Deflectometer is especially suitable for in house self-monitoring.

The deflectometer is a very reliable device with a ergonomic design and special structure. It can be transported and operated easily by only one person. The transportation lock on the drop weight ensures safety.

The load plate is equipped with practical handgrips, and the bubble level helps with the exact alignment of the loading mechanism. Despite this precision, the Light Weight Deflectometer (LWD) is very robust and long-lived: it is made using only the very best of materials. Naturally, the measurement device is splash proof and can be used in all weather conditions.



Soil Permeability & Dispersibility

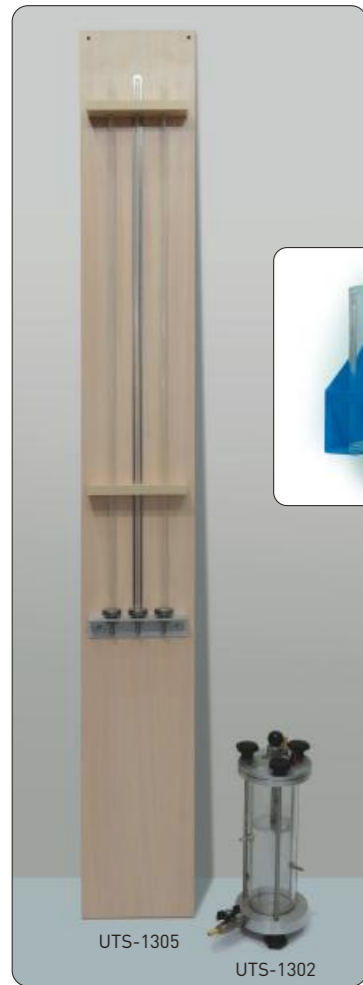
WATER PERMEABILITY

Product Code

- UTS-1300 Constant Head Permeability Set for Ø 80 mm cell
- UTS-1301 Constant Head Permeability Set for Ø 120 mm cell
- UTS-1302 Constant Head Permeability Cell, 80 mm dia.
- UTS-1303 Constant Head Permeability Cell, 120 mm dia.
- UTS-1305 Wooden Stand with 3 Manometer Tubes
- UTS-1308 Constant Level Water Tank, 7 L.
- UTA-0645 Tamping Rod Ø 8x300 mm

Standards

BS 1377:5



UTS-1308

The UTS-1300 and UTS-1301 Constant Head Permeability Set are used to study the behaviour of soil, relatively coarse-grained soil such as sands and gravel, in its natural conditions with respect to water flow.

Two models are available according to cell dimensions. The cells have an acrylic glass body with 3 pressure points at different level.

UTS-1305 stand is fitted with 3 glass manometer tubes each being 1000 mm long.

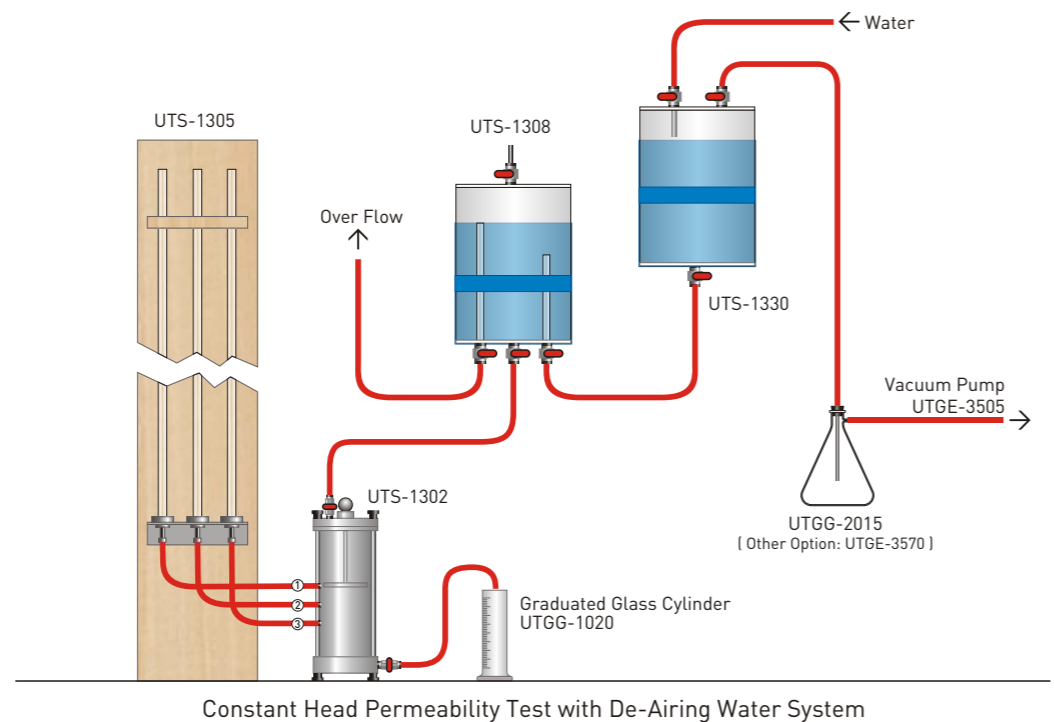
UTS-1308 Constant Level Tank 7 L, made of transparent plastic, is used to provide constant water level in the manometer tubes.

Optional Equipment For De-Airing Water and Tamping Rod should be ordered separately.

The Constant Head Permeability Set is supplied complete with

- Ø 80 mm or Ø 120 mm Permeability Cell with Pressure Points at 3 different levels and 2 pcs. Wire Gauze (fit for the preferred cell dia.)
- Wooden Stand with 3 manometer tubes
- 3 m Hose

Product Code	Dimensions	Weight (approx.)
UTS-1302	140x220x420 mm	3.5 kg
UTS-1303	180x250x640 mm	7 kg
UTS-1305	220x70x1700 mm	5.6 kg
UTS-1308	300x200x250 mm	3 kg
UTS-0645	Ø 8x300 mm	0.5 kg



Constant Head Permeability Test with De-Airing Water System

WATER PERMEABILITY

Product Code

- UTS-1320 Falling Head Permeability Set
- UTS-1322 Falling Head Permeability Cell 100 mm dia.
- UTS-1324 Wooden Stand with 4 Manometer Tubes
- UTS-1326 Soaking Reservoir Tank

The UTS-1320 Falling Head Permeability Set is used to study the behaviour of soil, particularly finegrained soils such as clay-like or silty soils, with respect to water flow.

The UTS-1322 Falling Head Permeability Cell is manufactured from plated steel with an inside diameter of 100 mm.

The UTS-1324 Wooden Stand is fitted with 4 glass Manometer Tubes of each 1500 mm long with inside diameters of about 21 mm, 12 mm, 5 mm and 3.5 mm. All tubes have connection valves.

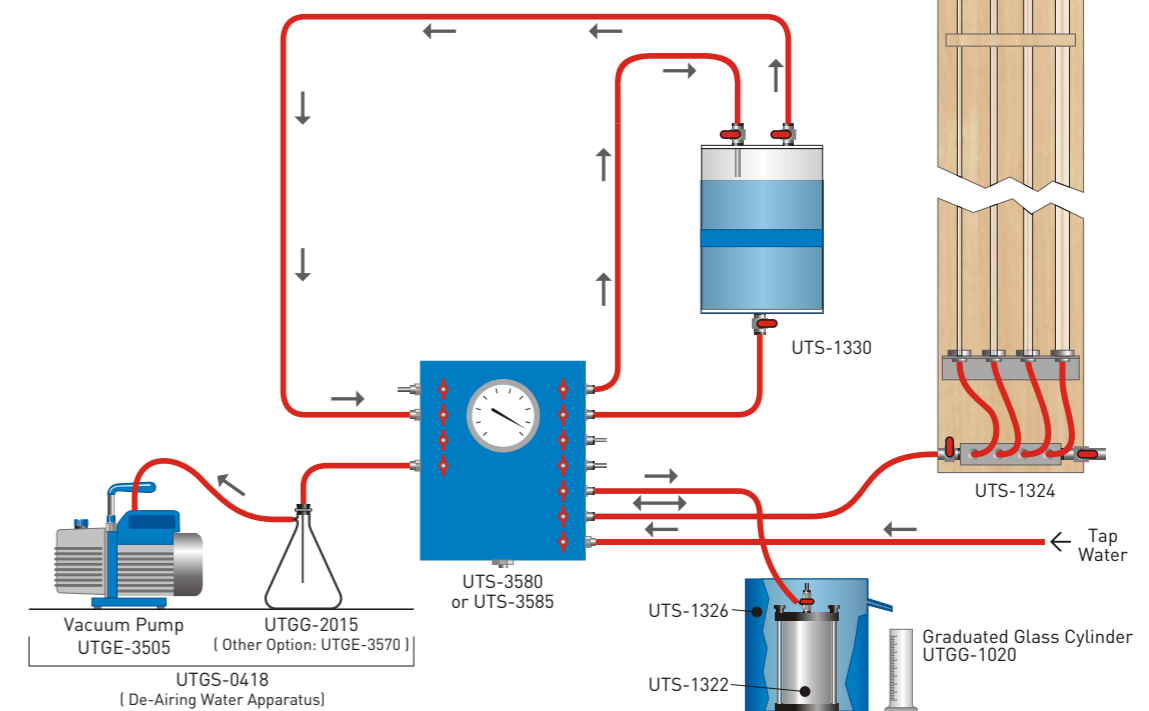
The UTS-1326 Soaking Reservoir Tank is manufactured from plated steel with an over-flow tube and is used for containing the permeability cell during the test.

Optional Equipment For De-Airing Water should be ordered separately (see page 32).

The UTS-1320 Falling Head Permeability Set is supplied complete with

- Ø 100 mm Falling Head Permeability Cell
- Wooden Stand with 4 manometer tubes
- Soaking Reservoir Tank
- 3 m Hose

Product Code	Dimensions	Weight (approx.)
UTS-1322	150x150x260 mm	3 kg
UTS-1324	230x100x1700 mm	6.6 kg
UTS-1326	320x320x250 mm	3.6 kg



Falling Head Permeability Test with De-Airing Water System

WATER PERMEABILITY of COMPACTED SOILS

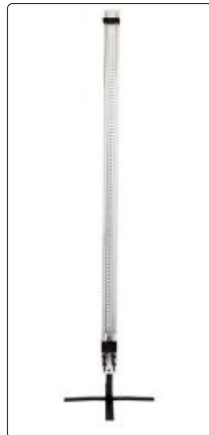
Product Code

- UTS-1400 Permeameter Stand, for Compacted Soil 1 Cell Capacity
- UTS-1401 Compaction Permeameter Mould, Ø 4"
- UTS-1402 Compaction Permeameter Mould, Ø 6"

Standards

ASTM D5856

The UTS-1400 Permeameter Stand, when used together with UTS-1401 Ø 4" or UTS-1402 Ø 6" Compaction Permeameters is used for determining the water permeability of compacted soil specimens like clay, sand, gravel etc..



Product Code	Dimensions	Weight (approx.)
UTS-1400	1050x700x2000 mm	20 kg
UTS-1401	150x150x250 mm	8 kg
UTS-1402	200x200x300 mm	16 kg

DISPERSIBILITY of COMPACTED SOILS

Product Code

- UTS-1500 Pinhole Test Apparatus
- UTS-1502 PVC Tubing Ø 10x8 mm 10 m Coil

Standards

BS 1377:5; ASTM D4647

Water flowing through fine-grained soils with high sodium content makes them highly erodible.

The UTS-1500 Pinhole Test Apparatus is used for evaluating the erodibility of clay soils by flowing water through a small hole that is drilled through the compacted specimen.

The apparatus consists of a cylindrical metal container fitted one end with a water inlet and the other end with an outlet connection, a standpipe tube with scale and a stand to support the apparatus.

Dimensions	150x200x1200 mm
Weight (approx.)	3,5 kg



FULLY-AUTOMATED TRIAXIAL AND STRESS PATH SYSTEM

Product Code

- LoadTrac II
- FlowTrac II

The LoadTrac II/FlowTrac II system for triaxial testing fully automates the conduct of CU, CD and any possible stress path triaxial test on soils. Once a soil sample is in place, and the test conditions are selected, the LoadTrac II/FlowTrac II system will run the entire triaxial test from start to finish. This system is operated by software which automates the initialization, saturation, consolidation (isotropic, anisotropic or Ko) and shear phases of the test.

The system comes as a complete, self-contained unit with all of the equipment required to perform fully automated triaxial and stress path tests. The LoadTrac II/ FlowTrac II system utilizes high speed, precision micro stepper motors to apply the vertical load and pressures to the soil specimen. It includes one load frame for vertical stress, one flow pump for cell pressure and one flow pump for back pressure. The system is capable of applying a constant rate of strain at any displacement rate from 0.00003 up to 15 mm per minute (0.000001 to 0.6 inches per minute).

Sensor readings are displayed in SI or English units and stored in memory. With the network communications module and appropriate software, the entire test can be automatically controlled, data captured and displayed in real-time, and test reports prepared on a PC.

Optional software running in Windows® 2000, XP, Vista, 7 completely automates running the test, reducing the data and preparing test results.



Models

FlowTrac II Models	
FTII-250-nn	250 cc capacity
FTII-750-nn	750 cc capacity
LoadTrac II Models	
LTII-5,000	22 kN (5,000 lbs.) frame capacity
LTII-10,000	45 kN (10,000 lbs.) frame capacity
LTII-20,000	90 kN (20,000 lbs.) frame capacity
LTII-50,000	222 kN (50,000 lbs.) frame capacity

Technical Specifications

Motor	Stepper motor with built-in controls
Travel	Built-in displacement transducer with 76 mm (3 in.) range and 0.0013 mm(0.00005 in) resolution
Displacement	Control from 0.00003 to 15 mm per minute (0.000001 to 0.6 in. per minute)
Flow Range	0.000006 to 3 cc per second
Power	110/220 V, 50/60 Hz, 1phase

	Dimensions	Weight (approx.)
LoadTrac II	464 x 546 x 1206 mm (18 x 21.5 x 47.5 in.)	55 kg
FlowTrac II	203 x 406 x 470 mm (8 x 16 x 18.5 in.)	14 kg

Accessories

- Triaxial cells up to 305mm (12.00 in.) diameter, membranes, porous stones and sample preparation accessories upon request.

Applicable Test Standards

- ASTM D-4767
- AASHTO T-297
- COE EM 1110 / Consolidated Undrained Compression / Extension tests, Consolidated Drained Compression / Extension tests, Stress Path tests
- BS (British Standard)

User Benefits

- Choose load capacity to fit user needs from 22, 44, and 88kN (5,000, 10,000, and 20,000 lbs.) models
- Total automation, control, data collection and reporting of test results
- Prepare tables and plots of report quality within minutes of completing a test
- Geo-NET compatibility lets unit be accessed and controlled over a computer network
- Generate columns of data for easy reduction using your own spreadsheet software
- Choose volume capacity to fit user needs from 250, and 750 cc models
- Accurate displacement rate control from 0.00003 to 35 mm per minute (0.000001 to 1.3 in. per minute)
- Accurate pressure and volume measurements with integrated sensors
- Stand alone through front keypad and LCD menu capability

Advanced Soil Testing Systems

FULLY AUTOMATED UNCONFINED COMPRESSION SYSTEM

Product Code

LoadTrac II

The LoadTrac II load frame provides compression/extension testing for a number of geotechnical tests that must have accurate control of the rate of displacement during loading. With accessories, the unit can perform unconfined compression, CBR, and triaxial shear phase testing.

The base unit includes a stepper motor, lead screw, vertical tension rods and crosshead, displacement transducer, electronic controls and network communications. Versions of the unit are available to test loads up to 90 kN (20,000 lbs.). Displacement rates can be set to any value between 0.00003 and 15 mm per minutes (0.000001 to 0.6 inches per minute).

The base unit can run in stand-alone mode without a computer. It includes built-in data acquisition and display capability. Sensor readings are displayed in SI or English units and stored in memory.

Optional software running in Windows® 2000, XP, Vista, 7 completely automates the test, reducing the data and preparing test results.

Applicable Test Standards

- ASTM D-2166, AASHTO T-208 Unconfined Compression Testing of Soils
- ASTM D-1663 Compressive Strength of Molded Soil-Cement Cylinders

User Benefits

- Choose capacity to fit user needs from 22, 45 and 90 kN (5,000, 10,000 and 20,000 lbs.) models
- Total automation of data collection and reporting of test results
- Prepare tables and plots of report quality within minutes of completing a test
- Generate columns of data for easy reduction using your own spreadsheet software
- Ability to access and control the unit over a computer network using Geo-Net option

Technical Specifications

Motor	Stepper motor with built-in controls
Travel	Built-in displacement transducer with 76 mm (3 in.) range and 0.0013 mm(0.00005 in) resolution
Displacement	Control from 0.00003 to 15 mm per minute (0.000001 to 0.6 in. per minute)
Power	110/220 V, 50/60 Hz, 1phase

Dimensions	464x546 x1206 mm
Weight (approx.)	55 kg



Models

LTII-5,000	22 kN (5,000 lbs.) frame capacity
LTII-10,000	45 kN (10,000 lbs.) frame capacity
LTII-20,000	90 kN (20,000 lbs.) frame capacity
LTII-50,000	222 kN (50,000 lbs.) frame capacity

Accessories

7020	75 mm (3.0 in) platen with load cell adaptor
Geo NET™	Network/Communication card and cable to link load frame to PC.
UC	Software package to automatically run and report UC tests

Option

UC Report	Editing/reporting software for multiple tests
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FULLY-AUTOMATED CALIFORNIA BEARING RATIO SYSTEM

Product Code

LoadTrac II

The LoadTrac II loadframe provides compression / extension testing for a number of geotechnical tests that must have accurate control of the rate of displacement during loading. With accessories, the unit can perform CBR, unconfined compression and triaxial shear phase testing.

The base unit includes a stepper motor, lead screw, vertical tension rods and crosshead, displacement transducer, electronic controls and network communications. Versions of the unit are available to test loads up to 90 kN (20,000 lbs.). Displacement rates can be set to any value between 0.00003 and 15 mm per minutes (0.000001 to 0.6 inches per minute). CBR displacement rate is set through software at 1.27 mm/min. (0.05 in./min.) in accordance with ASTM D 1883.

The base unit can run in stand-alone mode without a computer. It includes builtin data acquisition and display capability. Sensor readings are displayed in SI or English units and stored in memory.

Optional software running in Windows® 2000, XP, Vista, 7 completely automates the test, reducing the data and preparing test results.

Applicable Test Standards

- ASTM D-1883 "Standard Method for CBR (California Bearing Ratio) of Laboratory- Compacted Soils"
- AASHTO T-193

User Benefits

- Choose capacity to fit user needs from 22, 45 and 90 kN (5,000, 10,000 and 20,000 lbs.) models
- Total automation of data collection and reporting of test results
- Prepare tables and plots of report quality within minutes of completing a test
- Generate columns of data for easy reduction using your own spreadsheet software
- Ability to access and control the unit over a computer network using Geo-Net option

Technical Specifications

Motor	Stepper motor with built-in controls
Travel	Built-in displacement transducer with 76 mm (3 in.) range and 0.0013 mm(0.00005 in) resolution
Displacement	Control from 0.00003 to 15 mm per minute (0.000001 to 0.6 in. per minute)
Power	110/220 V, 50/60 Hz, 1phase

Dimensions	464x546 x1206 mm
Weight (approx.)	55 kg



Models

LTII-5,000	22 kN (5,000 lbs.) frame capacity
LTII-10,000	45 kN (10,000 lbs.) frame capacity
LTII-20,000	90 kN (20,000 lbs.) frame capacity
LTII-50,000	222 kN (50,000 lbs.) frame capacity

Accessories

7010	CBR plunger with load cell adaptor.
Geo NET™	Network/Communication card and cable to link load frame to PC.
CBR	Software package to automatically run and report CBR tests
Options	UC, consolidation, and triaxial testing modules

Advanced Soil Testing Systems

FULLY-AUTOMATED CONSTANT RATE of STRAIN CONSOLIDATION SYSTEM

Product Code

LoadTrac II
FlowTrac II

The LoadTrac-II/FlowTrac-II system fully automates the performance of a Controlled Strain Loading Consolidation (CSL) test. Once a soil sample is in place, and the test conditions selected, the LoadTrac-II/ FlowTrac-II system will run the entire CRCS test from start to finish. The LoadTrac II/ FlowTrac-II system consolidates the sample through a loading path specified by the user using constant rate of strain loading. To avoid running the test too fast (excess pore pressures become too large for the transducer) or too slow (the test takes too long), LoadTrac II/FlowTrac-II uses Excess Pore Pressure Ratio Limits. If the measured excess pore pressure divided by the current total vertical stress exceeds the Upper Pore Pressure Ratio Limit, the current strain rate is automatically decreased by a factor of 2. If the measured excess pore pressure divided by the current total vertical stress falls below the Lower Pore Pressure Ratio Limit, the current strain rate is increased by a factor of 2. These limits give the user a great deal of control over how a constant strain rate test is run.

The FlowTrac II is used during back pressure saturation as well as maintaining a constant cell pressure during the consolidation phase of the test. A typical consolidation test can be completed in 24 to 36 hrs. on most materials.

Applicable Test Standards

- ASTM D-4186 One-Dimensional Consolidation
- Properties of Soils Using Controlled - Strain Loading

User Benefits

- Choose capacity to fit user needs from 22, 45 and 90 kN (5,000, 10,000 and 20,000 lbs.) models
- Total automation of data collection and reporting of test results
- Prepare tables and plots of report quality within minutes of completing a test
- Generate columns of data for easy reduction using your own spreadsheet software
- Ability to access and control the unit over a computer network using Geo-Net option

Technical Specifications

Motor	Stepper motor with built-in controls
Travel	Built-in displacement transducer with 76 mm (3 in.) range and 0.0013 mm(0.00005 in) resolution
Displacement	Control from 0.00003 to 15 mm per minute (0.000001 to 0.6 in. per minute)
Flow Range	0.000006 to 3 cc per second
Power	110/220 V, 50/60 Hz, 1phase



Models

FlowTrac II Models	
FTII-250-nn	250 cc capacity
FTII-750-nn	750 cc capacity
LoadTrac II Models	
LTII-5,000	22 kN (5,000 lbs.) frame capacity
LTII-10,000	45 kN (10,000 lbs.) frame capacity
LTII-20,000	90 kN (20,000 lbs.) frame capacity
LTII-50,000	222 kN (50,000 lbs.) frame capacity

Accessories

1230	All stainless steel consolidation cell with backpressure saturation capability, 62.5mm (2.5 in.) sample diameter standard. External stainless steel pressure sensor. Other sample sizes are available upon request
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	Dimensions	Weight (approx.)
LoadTrac II	464 x 546 x 1206 mm (18 x 21.5 x 47.5 in.)	55 kg
FlowTrac II	203 x 406 x 470 mm (8 x 16 x 18.5 in.)	14 kg

FULLY AUTOMATED CONSOLIDATION & SWELL SYSTEM

Product Code

LoadTrac III (Mini-LoadTrac)

LoadTrac III system for incremental consolidation and swell testing fully automates an entire consolidation test. Constant load and constant volume swell tests can be run automatically. Once a sample is placed into the load frame, the test conditions programmed, and the test started, the LoadTrac III system performs the complete test up to 32 steps without intervention by the user. The computer automatically increments to the next stress by using conditions specified by the user. Incremental consolidation test can be completed in 24 to 48 hours on most materials.

The LoadTrac III system utilizes a high speed, precision microstepper motor to apply the vertical load to the soil specimen. An embedded control board with a dedicated CPU takes readings from the force transducer and displacement transducer to control the stepper motor.

The base unit includes built-in data acquisition and display capability. Sensor readings are displayed in SI or English units and stored in memory. For incremental consolidation, the base unit is linked to a PC using the network communications module and the appropriate software.

Optional software running in Windows® 2000, XP, Vista, 7 completely automates the test, reducing the data and preparing test results.

Other options include running constant rate of consolidation, unconfined compression and triaxial on a 50 mm (2.00 in.) or less diameter sample.

Applicable Test Standards

- ASTM D-2435 Incremental Consolidation
- AASHTO T-216 Incremental Consolidation
- ASTM D-4546 One dimensional swell or settlement potential of cohesive soils

User Benefits

- Total automation, control, data collection and reporting of test results
- Prepare tables and plots of report quality within minutes of completing a test
- Generate columns of data for easy reduction using your own spreadsheet software
- Ability to access and control the unit over a computer network using Geo-Net option

Technical Specifications

Capacity	11 kN (2,500 lbs.)
Motor	Stepper motor with built-in controls
Travel	25 mm (1.0 inches) resolved to 0.0025 mm (0.0001 inches)
Clearance	180 mm (7 inches) horizontal between uprights, 150 mm (6 inches) vertical platen to crosshead standard
Power	110/220 V, 50/60 Hz, 1phase



Accessories

1220	All stainless steel consolidation cell includes 63.5 mm (2.5 in.) sample ring, top cap, top and bottom porous stones.
1230	Consolidation cell with back pressure saturation capability, 62.5 mm (2.5 in.) sample diameter standard. Other sizes available upon request with optional external stainless steel pressure sensor.
Geo NET™	Network/Communication card and cable to link load frame to PC.
ICONP	Software package to automatically run incremental consolidation test and swell tests with built-in editing reporting option.

Dimensions	305 x 381 x 838 mm
Weight (approx.)	20 kg

Advanced Soil Testing Systems

FULLY-AUTOMATED PERMEABILITY SYSTEM

Product Code

LoadTrac II
FlowTrac II



The LoadTrac II/FlowTrac II flow pump provides a unique and versatile way to run flexible wall permeability tests on a wide variety of materials quickly and accurately. By adjusting the gradient or the flow rate across the sample, the system can measure permeabilities of cohesive soils varying from 10-4 cm/sec to 10-9 cm/sec. With the appropriate test cells, this one system can determine the permeability of some silty clays within minutes.

The FlowTrac-II base unit includes a stepper motor, lead screw, pressure chamber and piston, pressure transducer, electronic controls and network communications. Versions of the unit are available with flow volumes of 250 cc and 750 cc. Flow rates can be set to any value between 0.000006 cc/sec. and 3.0 cc/sec. Flexible wall tests are run in a fully automated mode with three flow pumps and one LoadTrac-II; the FlowTrac-II's controls cell pressure and flow of cell, bottom sample and top sample. This configuration allows great versatility to run fully automated permeability tests with isotropic, anisotropic or Ko consolidation.

With the network communications module and the appropriate software, the entire test can be automatically controlled, data captured and displayed in real time, and test reports prepared on a PC. With GeoNet-LAN option, the test can be monitored and data reported from any PC located on a LAN to which the LoadTrac II/FlowTrac II system is connected.

Control and editing software runs in Windows® 2000, XP, Vista 7

Applicable Test Standards

- ASTM D-5084 - Flexible wall permeability
- ASTM D-2434 - Rigid wall permeability

User Benefits

- Choose load capacity to fit user needs from 10, 22, 45, and 90kN (2,000, 5,000, 10,000, and 20,000 lbs.) models
- Total automation, control, data collection and reporting of test results
- Prepare tables and plots of report quality within minutes of completing a test
- Geo-NET compatibility lets unit be accessed and controlled over a computer network
- Generate columns of data for easy reduction using your own spreadsheet software
- Choose volume capacity to fit user needs from 250, and 750 cc models
- Accurate displacement rate control from 0.00003 to 15 mm per minute (0.000001 to 0.6 in. per minute)
- Accurate pressure and volume measurements with integrated sensors
- Stand alone through front keypad and LCD menu

Accessories

- Triaxial/Permeability cells up to 150mm (6.00 in.) diameter, membranes, porous stones and sample preparation accessories upon request.
- Geo-NET PC network card and cable to link LoadTrac II / FlowTrac II to PC

Technical Specifications

Motor	Stepper motor with built-in controls
Travel	Built-in displacement transducer with 76 mm (3 in.) range and 0.0013 mm(0.00005 in) resolution
Displacement	Control from 0.00003 to 15 mm per minute (0.000001 to 0.6 in. per minute)
Flow Range	0.000006 to 3 cc per second
Power	110/220 V, 50/60 Hz, 1phase

	Dimensions	Weight (approx.)
LoadTrac II	464 x 546 x 1206 mm (18 x 21.5 x 47.5 in.)	55 kg
FlowTrac II	203 x 406 x 470 mm (8 x 16 x 18.5 in.)	14 kg

Models

FlowTrac II Models	
FTII-250-nn	250 cc capacity
FTII-750-nn	750 cc capacity
LoadTrac II Models	
LTII-5,000	22 kN (5,000 lbs.) frame capacity
LTII-10,000	45 kN (10,000 lbs.) frame capacity
LTII-20,000	90 kN (20,000 lbs.) frame capacity
LTII-50,000	222 kN (50,000 lbs.) frame capacity

FULLY-AUTOMATED CYCLIC TRIAXIAL SYSTEM

Product Code

LoadTrac II
FlowTrac II Cyclic

The LoadTrac II/FlowTrac II Cyclic system automated test unit completely automates cyclic triaxial testing of soils. Minimum mantime is required.

The LoadTrac II/FlowTrac-II Cyclic consists of a triaxial cell to retain the sample, a load frame with computercontrolled platen for static loading, two computer controlled flow pumps to control chamber pressure and back pressure, a high performance linear actuator servo control actuator for cyclic loading with update rates of 500 times per second, a micro-processor for accurately controlling cyclic loading, a PC with a Pentium processor to control the test, and to log test data. Editing and reporting is built-in to the test and control software program. The unit arrives in a completely selfcontained system with all necessary equipment.

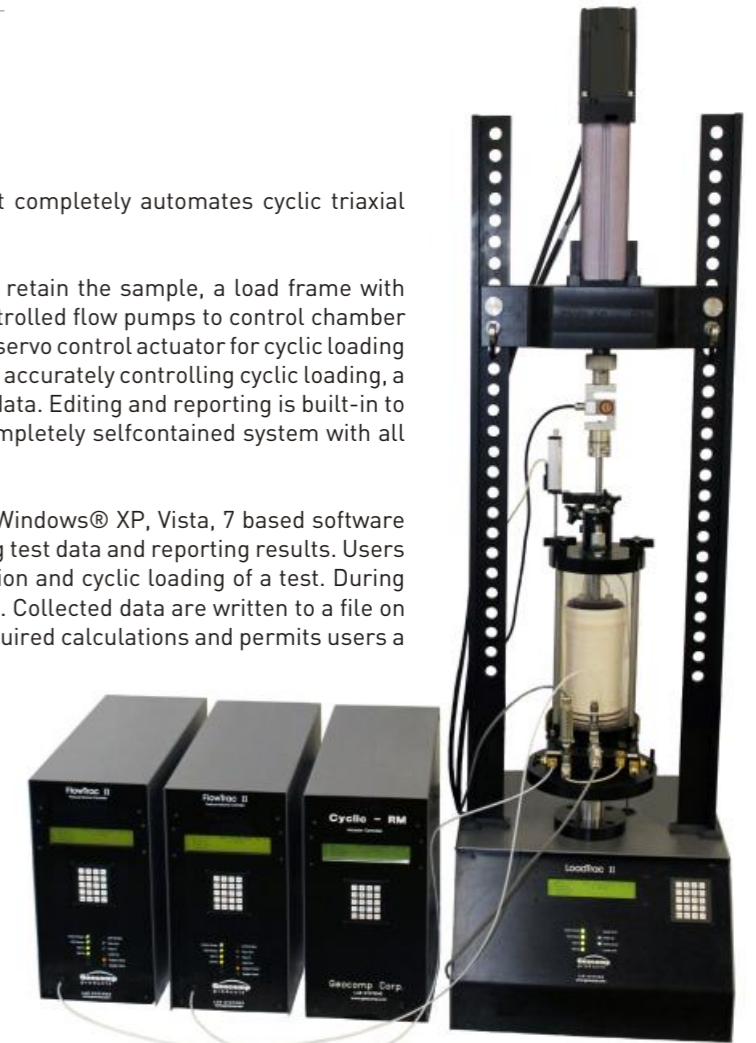
The LoadTrac II/FlowTrac II Cyclic system is menu driven. The Windows® XP, Vista, 7 based software allows users to define the conditions for running the test, logging test data and reporting results. Users can specify the values for controlling the saturation, consolidation and cyclic loading of a test. During testing, current data and system status information is displayed. Collected data are written to a file on the system's hard drive. The reporting software performs all required calculations and permits users a variety of options in graphing and generating test data.

Applicable Test Standards

- ASTM D-3999 Determination of the Modulus Properties
- ASTM D-5311 Load Controlled Cyclic Triaxial Testing of Soils

Benefits and Features

- Reduces time required for testing
- Run tests on isotropically, anisotropically and Ko consolidated samples
- Select number of data points logged per cycle from 10 to 500 readings per second
- Reduce test error and improve quality control
- Operates in a Windows® XP/2000/Vista/7 environment



Technical Specifications

Cyclic Loading System	High performance custom linear actuator 1.8kW peak, low inertia servo-drive system for fast response time. High resolution feedback system for precise and accurate control of load and speed. 4.4 kN (1000lbs force) continuous load at speeds in excess of 200 mm (8") /sec Self-contained and maintenance free Single Phase 208 VAC/60Hz (US) / 220VAC/50Hz (international)
Type Of Cyclic Loading	Load controlled sinusoidal shape
Cyclic Rate	Up to 10 Hz
Options To End Test	Maximum number of cycles Maximum strain
Reporting Options	Load, displacement, sample, and cell vs. cycle number, Shear stress, strain, p-p strain, excess pore pressure vs. cycle number, Shear stress vs. axial strain, Shear stress vs. normal stress, Automatic or user specified scaling on any of above plots, Plotting to monitor, printer, plotter, or file
Test Cell	Modified triaxial cell with accessories
Unit Systems	U.S., English, metric and SI changeable at any time before, during and after test
Sample Diameter	50, 70, up to 100 mm (2/2.8/4 inches) Custom sizes by special order
Transducers	Force: 2, 5, 10 kN (500, 1000, 2500 lbf.) Displacement: 50mm (2.0 in.) range Cell and sample pressures: 0-1400 kPa (0-200 psi)

FULLY-AUTOMATED RESONANT COLUMN & TORSIONAL SHEAR SYSTEM



Geocomp's resonant column and torsional system is based on the Long-Tor Resonant Column Apparatus developed by Dr. Vincent P. Drnevich (patent 1974) at Purdue University. The term Long-Tor denotes the capability of the apparatus to vibrate specimens in either a longitudinal or torsional mode of vibration. The basic principle of the resonant column device is to excite one end of a confined cylindrical soil specimen in a fundamental mode of vibration by means of torsional or longitudinal excitation. Once the fundamental mode of resonance frequency is established, measurements are made of the resonance frequency and amplitude of vibration from which wave propagation velocities and strain amplitudes are calculated using the theory of elasticity. The shear modulus is determined from the derived velocity and the density of the specimen.

The resonant column test is used to measure shear modulus (G) and the damping ratio (D) at small shear strains. These values are a function of strain level. In the test, the shear strain level is

increased step-by-step and the shear modulus and damping ratio are measured. The result of the test is a relationship between shear modulus and shear strain and between damping ratio and shear strain over a shear strain magnitude of 10⁻⁶ to 10⁻⁴ percent. Higher strain levels associated with extreme loads such as earthquakes and wave loading can not be achieved by resonant column testing using the electromagnetic force actuator to twist the specimen. For higher shear strains, our device can be switched to shearing in torsion. The torsional shear phase can be run to obtain shear modulus and damping up to shear strains of 10% depending on the stiffness of the soil. We can also subsequently shear the specimen along any stress path possible in a triaxial cell. Specimens can be consolidated isotropically or anisotropically.

A typical resonant column-torsional shear test on a specimen involves the following steps:

- Consolidation to the first stress condition
- Measurement of G and D versus shear strain at end of primary consolidation and at 3 times during secondary consolidation
- Consolidation to the second stress condition
- Measurement of G and D versus shear strain at end of primary consolidation and at 3 times during secondary consolidation
- Repeat above through final stress condition. Run torsional shear test to 10% strain to measure G and D for higher shear strain levels. Run triaxial compression test to measure shear strength of the specimen, drained or undrained.

Testing Capabilities

Geocomp's resonant column torsional shear testing system is a complete system capable of performing the following tests:

- Resonance in torsion.
- Damping Ratio in torsion.
- Torsional shear up to 2 Hz
- Triaxial or stress path after torsional shear

Geocomp RCTS turnkey system consists of the following:

- LoadTrac-II
- Two FlowTrac-II's
- Electro-Magnetic Drive System
- Torsional Shear System
- All built-in electronics and data acquisition
- Full automation through all phases of a test

Applicable Standards

- ASTM D4015
- ASTM D-4767
- AASHTO T-297



Technical Specifications

Motor	Stepper motor with built-in controls
Travel	Built-in displacement transducer with 76 mm (3 in.) range and 0.0013 mm(0.00005 in) resolution
Displacement	Control from 0.00003 to 35 mm per minute (0.000001 to 1.3 in. per minute)
Flow Range	0.000006 to 3 cc per second
Power	110/220 V, 50/60 Hz, 1phase

	Dimensions	Weight (approx.)
LoadTrac II	464 x 546 x 1206 mm (18 x 21.5 x 47.5 in.)	55 kg
FlowTrac II	203 x 406 x 470 mm (8 x 16 x 18.5 in.)	14 kg

Models

FlowTrac II Models	
FTII-250-nn	250 cc capacity
FTII-750-nn	750 cc capacity
nn	Maximum pressure range for system: 1400 and 3500 kPa (200 and 500 psi) available (resolution of pressure will be 0.00005 times the range)
LoadTrac II Models	
LTII-5,000	22 kN (5,000 lbs.) frame capacity
LTII-10,000	45 kN (10,000 lbs.) frame capacity
LTII-20,000	90 kN (20,000 lbs.) frame capacity

Accessories

Triaxial cells to test samples up to 305mm (12.00 in.) diameter, membranes, porous stones and sample preparation accessories upon request.

Advanced Soil Testing Systems

FULLY-AUTOMATED RESILIENT MODULUS UNIT

Product Code

LoadTrac II-RM

Geocomp's LoadTrac II Resilient Modulus unit fully automates resilient modulus tests on base/subbase/subgrade materials. The LoadTrac II meets or exceeds all specifications for Resilient Modulus Testing of Base/Subbase/Subgrade Materials by AASHTO T-294/T-307 and SHRP Protocol P46. It minimizes man time during testing and offers a versatile platform for performing additional geotechnical tests.

User Features and Benefits

ADDITIONAL TESTING CAPABILITIES

Geocomp's load frame does more than just Resilient Modulus testing. With software and accessories, the following tests can also be done:

- California Bearing Ratio
- Compression Testing of Weak Rocks and Cement Mixtures
- Constant Rate of Strain Consolidation Testing
- Cyclic Triaxial Testing
- Incremental consolidation
- Triaxial Testing
- Unconfined Compression.

FULLY AUTOMATED MINIMUM INTERVENTION ON YOUR PART

The LoadTrac II performs resilient modulus tests from beginning to end according to the latest AASHTO standards without human intervention.

APPLIES AN ACCURATE LOAD THROUGHOUT TESTING

Resilient modulus testing is a complicated test in which the stiffness of the sample changes with loading. Since the performance of cyclic loading systems depends on the stiffness of the sample, most systems fail to apply the correct load throughout the test. Our system uses real-time adjustment of a PID controller to adjust the system control parameters as the stiffness of the specimen changes. This feature permits our system to apply an accurate load from the beginning to the end of the test.

Our system meets the rigid AASHTO specs for precision on loading to a haversine shape.

OPERATES IN A WINDOWS® ENVIRONMENT

Training time is short, as most people are familiar with the Windows operating environment. Users can configure a wide variety of graphical screens to display the test results including tabular and graphical display of channel values with time, graphical display of stresses, strains, displacements and resilient modulus values.

TEST DATA...THE WAY YOU WANT IT

Our system generates data in a variety of formats, so users get the most use out of the data.

- Options include:
- A complete final test report with all appropriate calculations on the data and constitutive relationships based on Publication No. FHWA-RD-97-083
 - A text file of raw data and a text file of data in engineering units.

Either can be easily loaded into a spreadsheet for further data analysis.

Complete reporting software is included. This software creates reduced test results that are printed in tabular and graphical form instantly after testing. Results are available in any set of units, regardless of which set of units the test was run.

Geocomp's Resilient Modulus Testing System is efficient and reliable. Many details of the test cell, instrumentation and loading system have been optimized through inhouse testing on a wide variety of materials utilizing over fifteen years of R&D experience. We continually improve our systems based on new technology and the experiences of our customers.



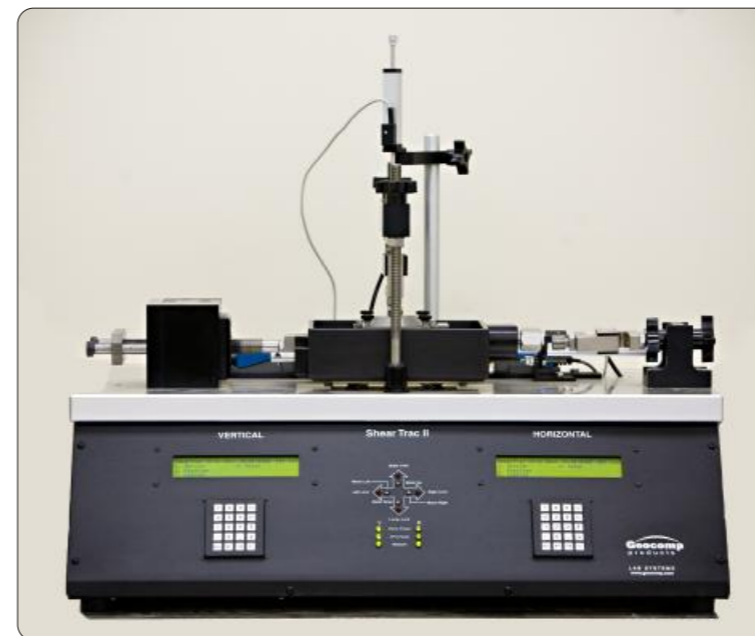
Technical Specifications

Cell Pressure	Automatically applied, maintained and incremented with electro-pneumatic air pressure regulator
Type Of Cyclic Loading	Haversine pulse
Cyclic Rate	0.1 sec per pulse, 1 pulse per second and any slower values given by user
Cyclic Loading	<ul style="list-style-type: none"> • High performance custom linear actuator • 2.8kW peak, low inertia servo-drive system for fast response time. • High resolution feedback system for precise and accurate control of load and speed. • 22 kN (5000lbs force) continuous load at speeds in excess of 200 mm (8")/sec • Self-contained and maintenance free • Single Phase 208 VAC/60Hz (US) / 220 VAC/50Hz (international)
Options To End Test	<ul style="list-style-type: none"> • Maximum number of cycles • Maximum strain
Reporting Options	<ul style="list-style-type: none"> • Shear stress versus pulse number • Axial strain versus pulse number • Resilient Modulus versus pulse number • Resilient Modulus versus deviator stress • Resilient Modulus versus confining stress • Automatic or user specified scaling on any of above plots • Plotting to monitor, printer, plotter, or file
Test Cell	Modified triaxial cell with sample preparation accessories
Unit Systems	U.S., English, metric and SI changeable at any time before, during and after test
Sample Diameter	70, 100, and 150 mm (2.8/4/6 inches) Custom sizes by special order
Transducers	Force: 2, 5, 10 kN (500, 1000, 2500 lbf.) Displacement: 0.5 inch range, +25.4 mm (+1.00 in.) Cell pressure: 0-500 kPa (0-70 psi)
System Requirements	System is delivered complete to perform tests, store data, reduce data and report the test results. System will be calibrated and ready to begin testing immediately after installation.
Documentation	Full documentation and user's manuals are provided. HELP screens are available at every point in all software

FULLY-AUTOMATED DIRECT RESIDUAL SHEAR SYSTEM

Product Code

ShearTrac II



The ShearTrac II system is capable of performing the consolidation and shearing phases of a standard direct shear and residual shear test under full automatic control. The system consists of a computer-controlled unit that utilizes micro-stepper motors to apply the vertical and horizontal loads to the soil specimen. Versions of the unit are available to produce vertical and horizontal loads up to 10 kN (2000 lbs.).

The system is capable of running a consolidation phase for up to 32 increments automatically. Horizontal shearing can be applied at a specified rate of deformation or at a specified rate of horizontal force change, or at a specified set of force steps of a specified duration. The system is capable of displaying the current status of a test and graphically portraying the progress of the test in real time. The system includes the capability for the operator to alter the test process and conditions at any stage of the test. The system is also capable of performing repeated direct shear tests to determine residual strength based on a specified number of repeated cycles.

The system comes complete with hardware and software for recording all test input data and settings of selected test parameters, performing standard engineering calculations on the data, and producing graphically plotted and printed output in the standard Corps format.

Applicable Test Standards

- ASTM D3080/T236 Direct Shear testing of soils under Consolidated Drained Conditions.

User Benefits

- Choose load capacity to fit user needs up to 10kN (2,000 lbs.)
- Total automation, control, data collection and reporting of test results
- Prepare tables and plots of report quality within minutes of completing a test
- Geo-NET compatibility lets unit be accessed and controlled over a computer network
- Generate columns of data for easy reduction using your own spreadsheet software
- Accurate displacement rate control from 0.00003 to 15 mm per minute (0.000001 to 0.6 in. per minute)
- Full automation of residual shear testing
- Stand alone through front keypad and LCD menu capability

Technical Specifications

Capacity	Up to 10 kN (2,000 lbs.)
Vertical Motor	Stepper motor with built-in controls for vertical load
Horizontal Mot.	Stepper motor with built-in controls for horizontal load
Speed Range	0.00003 to 15 mm per min. (0.000001 to 0.6 in per minute)
Vertical Travel	25.45 mm (1.00 in.) resolved to 0.0013 mm (0.00005 inches)
Horizontal Travel	±12.5 mm (±0.50 in.) resolved to 0.0013 mm (0.00005 inches)
Power	110/220 V, 50/60 Hz, 1phase

ShearTrac II	Load Capacity
ST-1000	4.4kN(1000lb.)

Accessories

- ShearTrac II accessories including ShearTrac II box to test square or round samples up to 101 mm (4 in.) dimension/diameter, includes top and bottom porous stones.
- Geo-NET-PC Network card and cable to link ShearTrac II to PC.
- SHEAR Software package to automatically run and report direct/residual shear test on ShearTrac II.

Dimensions	228 mm x 560 mm x 762 mm (9 in. x 22 in. x 30 in.)
Weight (approx.)	63 kg (140 lbs.)

Advanced Soil Testing Systems

FULLY-AUTOMATED DIRECT SIMPLE SHEAR SYSTEM

Product Code

ShearTrac II-DSS

The ShearTrac II-DSS system is a universal shear system capable of performing the consolidation and shear phases of a direct simple shear test under full automatic control.

The direct simple shear device is a way to measure undrained shear strength of soils that reflects the average shear strength mobilized in the field during failure of embankments on soft soil foundations and deep excavations in clay. The DSS test generates a fairly homogeneous state of shear stress throughout the specimen, which provides initial stress condition, stress path, and deformation configuration that models numerous field loading conditions more closely than any other test systems such as triaxial. The system consists of a computer controlled unit that utilizes micro-stepper motors to apply the vertical and horizontal loads to the soil specimen.

The system is capable of running a consolidation phase for up to 32 increments automatically. Horizontal shearing can be applied at a specified rate of deformation or at a specified rate of horizontal force change. The constant volume condition during the shear is maintained through a closed loop computer control with the vertical displacement sensor as the feedback. The system is capable of displaying the current status of a test and graphically portraying the progress of the test in real time. The system includes the capability for the operator to alter the test process and conditions at any stage of the test.

Applicable Test Standards

- ASTM D 6528 Consolidated Undrained Direct Simple Shear Testing of Cohesive Soils
- ASTM D2435/T216 One-Dimensional Consolidation Properties of Soils

User Benefits

- Choose load capacity to fit user needs up to 10kN (2,000 lbs.)
- Total automation, control, data collection and reporting of test results
- Prepare tables and plots of report quality within minutes of completing a test
- Geo-NET compatibility lets unit be accessed and controlled over a computer network
- Generate columns of data for easy reduction using your own spreadsheet software
- Accurate displacement rate control from 0.00003 to 15 mm per minute (0.000001 to 0.6 in. per minute)
- Stand alone through front keypad and LCD menu capability

Accessories

- ShearTrac II-DSS accessories includes shear box to test round samples up to 100 mm (4 in.) diameter, top and bottom porous stones with Teflon® coated stacked rings.
- Geo-NET-PC Network card and cable to link ShearTrac II to PC.
- DSS Software package to automatically run and report direct simple shear tests.



Models

ST-DSS-500	2.5 kN (500 lbs.)
ST-DSS-1000	5 kN (1000 lbs.)
ST-DSS-2000	10 kN (2000 lbs.)

Technical Specifications

Capacity	Up to 11 kN (2,500 lbs.)
Vertical Motor	Stepper motor with built-in controls for vertical load
Horizontal Mot.	Stepper motor with built-in controls for horizontal load
Speed Range	0.00003 to 15 mm per min. (0.000001 to 0.6 in per minute)
Vertical Travel	12.5 mm (0.5 in.) resolved to 0.0013 mm (0.00005 inches)
Horizontal Travel	±12.5 mm (±0.50 in.) resolved to 0.0013 mm (0.00005 inches)
Power	110/220 V, 50/60 Hz, 1phase

FULLY-AUTOMATED CYCLIC SIMPLE SHEAR SYSTEM

Product Code

ShearTrac II-DSS-CY

The ShearTrac II-DSS-CY system is a universal shear system capable of performing the consolidation, static and cyclic direct simple shear phases under full automatic control. This system is of the type developed at NGI in the mid 1960's. The DSS test generates a fairly homogeneous state of shear stress throughout the specimen, which provides initial stress condition, stress path, and deformation configuration that models numerous field loading conditions more closely than any other strength tests such as triaxial. The system consists of a computer controlled unit that utilizes micro-stepper motors to apply the vertical and horizontal loads to the soil specimen.

The system is capable of running a consolidation phase for up to 32 increments automatically. Stress controlled cyclic can be applied up to a frequency of 1 Hz that can be followed by simple shearing at a specified rate of deformation or force. The constant volume condition is maintained through a closed loop computer control with the vertical displacement sensor as the feed back. The system is capable of displaying the current status of a test and graphically portraying the progress of the test in real time. The system includes the capability for the operator to alter the test process and conditions at any stage of the test.

The system comes complete with hardware and software for recording all test input data and settings of selected test parameters, performing standard engineering calculations on the data, and producing graphically plotted and printed output.

Applicable Test Standards

- ASTM D 6528 Consolidated Undrained Direct Simple Shear Testing of Cohesive Soils
- ASTM D2435/T216 One-Dimensional Consolidation Properties of Soils

User Benefits

- Choose load capacity to fit user needs up to 5kN (1,000 lbs.)
- Total automation, control, data collection and reporting of test results
- Prepare tables and plots of report quality within minutes of completing a test
- Geo-NET compatibility lets unit be accessed and controlled over a computer network
- Generate columns of data for easy reduction using your own spreadsheet software
- Accurate displacement rate control from 0.00003 to 15 mm per minute (0.000001 to 0.6 in. per minute)
- Select number of data points logged per cycle from 10 to 500 readings per second
- Manual control capability through front keypad and LCD menus
- Versatile system

SOIL SPECIMEN DIMENSIONS:

Diameter: 2.5 in. (63.5 mm) up to 4.0 in. (101.5 mm)

Dimensions	228 mm x 560 mm x 762 mm (9 in. x 22 in. x 30 in.)
Weight (approx.)	63 kg (140 lbs.)



Accessories	Geo-NET-PC Network/Communication card to link ShearTrac II-DSS to PC. Teflon- coated stacked rings, and stainless steel trimming ring
Software Module	Cyclic DSS Software package to automatically run and edit cyclic and static direct simple shear test
Options	Direct/Residual Shear, Incremental Consolidation, and CRC options available upon request

Technical Specifications

Capacity	Up to 10 kN (2,000 lbs.)
Vertical Force	Stepper motor with built-in controls for vertical load and displacement
Horizontal Force	Stepper motor with built-in controls for horizontal load and displacement
Speed Range	0.00003 to 15 mm per min. (0.000001 to 0.6 in per minute)
Frequency Range	Up to 1 Hz.
Vertical Travel	25.45 mm (1.00 in.) resolved to 0.0013 mm (0.00005 inches)
Horizontal Travel	±12.5 mm (±0.50 in.) resolved to 0.0013 mm (0.00005 inches)
Power	Single Phase 208 VAC/60Hz (US) / 220 VAC/50Hz (international)

Aggregate

Testing Equipments

Aggregates are fundamental materials that are used in all areas of construction industry such as concrete, mortars, bituminous mixtures, surface treatments for roads, airfields and other trafficked areas, railway ballast, unbound and hydraulic bound mixtures in civil engineering works and road constructions, which comprise our modern world as buildings, highways, dams, railways ...etc. Thus it is crucial to determine the properties of aggregates according to related EN, ASTM, AASTHO, BS standards.

In the aggregate section, UTEST Testing Equipment is basically grouped in four main headings according to EN standards.

- General and geometrical properties of aggregates
- Mechanical and physical properties of aggregates
- Thermal and weathering properties of aggregates
- Chemical properties of aggregates

GENERAL & GEOMETRIC PROPERTIES

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Flow Coefficient Of Aggregates	73
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MECHANICAL & PHYSICAL PROPERTIES

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Alkali-Silica Reactivity	91
Organic Substances / Humus Content	92

General and Geometric Properties

SAMPLE PREPARATION

Product Code

UTA-0320 Large Capacity Sample Splitter

Standards

EN 932-2; ASTM C702; BS 812:1, 1377:1, 1924:1

UTA-0320 Large Capacity Sample Splitter is used for splitting aggregate samples. Slot widths are adjustable from 12,5 mm to 100 mm and the splitter is equipped with 25 channels with a 20 L hopper capacity.



The Large Capacity Sample Splitter is supplied complete with

- Sample Collection Pan, 2 pcs.

Dimensions	740x485x990 mm
Weight (approx.)	50 kg

SAMPLE PREPARATION

Product Code

UTA-0340	Riffle Box 7 mm	UTA-0346	Riffle Box 38 mm
UTA-0341	Riffle Box 13 mm	UTA-0347	Riffle Box 45 mm
UTA-0342	Riffle Box 15 mm	UTA-0348	Riffle Box 50 mm
UTA-0343	Riffle Box 19 mm	UTA-0349	Riffle Box 64 mm
UTA-0344	Riffle Box 25 mm	UTA-0350	Riffle Box 75 mm
UTA-0345	Riffle Box 30 mm		

Standards

EN 932-2; ASTM C702; BS 812:1, 1377:1, 1924:1

Riffle boxes are used for dividing aggregates into 2 equal homogenous quantity for testing. The Riffle Box is electrostatically painted and manufactured to meet the relevant International standard both in the slot width and number of slots.



The Riffle Boxes are supplied complete with

- Containers with Handles, 3 pcs.

	Aperture (mm)	Number of Slots	Weight (kg)	Dimensions (mm)
UTA-0340	7	12	2	130x180x180
UTA-0341	13	12	6	200x250x350
UTA-0342	15	12	6,5	200x290x350
UTA-0343	19	10	11	220x310x400
UTA-0344	25	10	9	250x350x420
UTA-0345	30	10	15	230x420x450
UTA-0346	38	8	16	320x430x570
UTA-0347	45	8	20	320x450x590
UTA-0348	50	8	20	320x500x600
UTA-0349	64	8	32	360x600x600
UTA-0350	75	8	35	370x700x600

SAMPLE PREPARATION

Product Code

UTA-0360	Laboratory Type Jaw Crusher, 380 V 50 Hz
UTA-0365	Vibrating Disc Mill, 220-240 V 50-60 Hz
UTA-0370	Knife Mill, 220-240 V 50-60 Hz

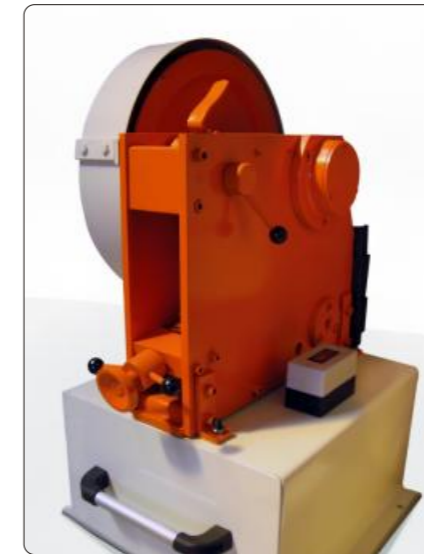
UTA-0360, UTA-0365 and UTA-0370 are used for crushing aggregates, core samples or similar materials in the laboratory when smaller sample sizes are required for testing. Three models are available (see Technical Specifications) depending on different feed, output grain sizes and capacity requirements.



UTA-0365



UTA-0370



UTA-0360

Technical Specifications

	Maximum Feed Size	Output Grain Size
UTA-0360	100x100 mm	0-8 mm, adjustable
UTA-0365	10 mm	max. 10 µm
UTA-0370	20 mm	0.5 - 2.0 mm, by using suitable sieves

	Dimensions	Weight (approx.)	Power
UTA-0360	800x900x980 mm	300 kg	1500 W (for all models)
UTA-0365	850x630x1050 mm	350 kg	
UTA-0370	450x530x710 mm	75 kg	

FLAKINESS INDEX

Product Code

UTA-0410	Flakiness Index Sieve Set BS
UTA-0411	Flakiness Index Sieve BS 4.9x30 mm slot size
UTA-0412	Flakiness Index Sieve BS 7.2x40 mm slot size
UTA-0413	Flakiness Index Sieve BS 10.2x50 mm slot size
UTA-0414	Flakiness Index Sieve BS 14.4x60 mm slot size
UTA-0415	Flakiness Index Sieve BS 19.7x80 mm slot size
UTA-0416	Flakiness Index Sieve BS 26.3x90 mm slot size
UTA-0417	Flakiness Index Sieve BS 33.9x100 mm slot size

Standards

BS 812-105.1

Aggregate particles are considered as flaky when their thickness is less than 0.6 of their mean sieve size. Aggregate to be classified is separated into seven sieve fractions from 6.3 to 63 mm and each fraction is examined separately. The dimensions of each sieve comply with the relevant International Standard, manufactured from heavy gauge steel sheet and coated with electrostatic paint. The accuracy of the slot size is better than 0.1 mm.

UTA-0410 Flakiness Index Sieve Set consists of 7 sieves.

For sample preparation 6.3, 10, 14, 20, 28, 37.5, 50 and 63 mm aperture sizes test sieves should be ordered separately.



	Slot Size (w x l) (mm)	Weight (approx.) (kg)	Dimensions (mm)
UTA-0411	4.9x30	1.5	300x220x80
UTA-0412	7.2x40	1.6	320x240x80
UTA-0413	10.2x50	1.9	300x220x80
UTA-0414	14.4x60	2.0	360x260x80
UTA-0415	19.7x80	2.2	390x280x80
UTA-0416	26.3x90	2.6	420x300x80
UTA-0417	33.9x100	2.9	470x320x80

General and Geometric Properties

FLAKINESS INDEX

Product Code

- UTA-0420 Grid Sieve Set (Flakiness Index Sieve Set EN)
- UTA-0421 Grid Sieve (Flakiness Index Sieve EN) 2.5 mm
- UTA-0422 Grid Sieve (Flakiness Index Sieve EN) 3.15 mm
- UTA-0423 Grid Sieve (Flakiness Index Sieve EN) 4 mm
- UTA-0424 Grid Sieve (Flakiness Index Sieve EN) 5 mm
- UTA-0425 Grid Sieve (Flakiness Index Sieve EN) 6.3 mm
- UTA-0426 Grid Sieve (Flakiness Index Sieve EN) 8 mm
- UTA-0427 Grid Sieve (Flakiness Index Sieve EN) 10 mm
- UTA-0428 Grid Sieve (Flakiness Index Sieve EN) 12.5 mm
- UTA-0429 Grid Sieve (Flakiness Index Sieve EN) 16 mm
- UTA-0430 Grid Sieve (Flakiness Index Sieve EN) 20 mm
- UTA-0431 Grid Sieve (Flakiness Index Sieve EN) 25 mm
- UTA-0432 Grid Sieve (Flakiness Index Sieve EN) 31.5 mm
- UTA-0433 Grid Sieve (Flakiness Index Sieve EN) 40 mm
- UTA-0434 Grid Sieve (Flakiness Index Sieve EN) 50 mm

Standards

EN 933-3; NF P18-561; UNI 8520-18; NLT 354

Used for the determination of the flakiness index of the aggregate.

Consisting of an electrostatically painted frame and 5 mm diameter stainless steel bars with apertures state below.

For sample preparation 4.5, 6.3, 8, 10, 12.5, 16, 20, 25, 31.5, 40, 50, 63, 80 and 100 mm aperture sizes test sieves should be ordered separately.



	Aperture [mm]	Weight [kg]	Dimensions [mm]
UTA-0421	2.5	3.3	340x320x80
UTA-0422	3.15	3.3	340x320x80
UTA-0423	4	3.8	340x320x80
UTA-0424	5	3.8	340x320x80
UTA-0425	6.3	3.7	340x320x80
UTA-0426	8	3.6	340x320x80
UTA-0427	10	3.4	340x320x80
UTA-0428	12.5	3.2	340x320x80
UTA-0429	16	4	340x320x80
UTA-0430	20	3.2	340x320x80
UTA-0431	25	3.2	340x320x80
UTA-0432	31.5	2.9	340x320x80
UTA-0433	40	2.7	340x320x80
UTA-0434	50	2.5	340x320x80

FLOW COEFFICIENT of AGGREGATES

Product Code

UTA-0440 Efflux Index Apparatus (Flow Coefficient of Fine Aggregates) ,EN

Standards

EN 933-6

UTA-0440 Efflux Index (Flow Coefficient of Fine Aggregates) Apparatus is used to obtain information about the shape and the angularity of grains of fine aggregates.

The flow coefficient of an aggregate is the time, expressed in seconds, for a specified volume of aggregate to flow through a given opening, under specified conditions using a standard apparatus.

Efflux Index (Flow Coefficient of Fine Aggregates) Apparatus consist of two funnels with different opening, cylindrical hopper, metal stand with a shutter and metal container.



Dimensions	150x180x410 mm
Weight (approx.)	5 kg

FLAKINESS INDEX

Product Code

UTA-0450 Thickness Gauge (Flakiness Index BS)

Standards

BS 812-105.1

Thickness Gauge is used to determine if the aggregate particles are to be considered as flaky, i.e. their thickness is less than 0.6 of their nominal size.

The aggregate to be classified is separated into seven sieve fractions from 6.3 to 63 mm, and each fraction is examined separately. Slot sizes are 4.9 x 30 mm, 7.2 x 40 mm, 10.2 x 50 mm, 14.4 x 60 mm, 19.7 x 80 mm, 26.3 x 90 mm and 33.9 x 100 mm.

Dimensions	310x130x10 mm
Weight (approx.)	0,4 kg



ELONGATION INDEX

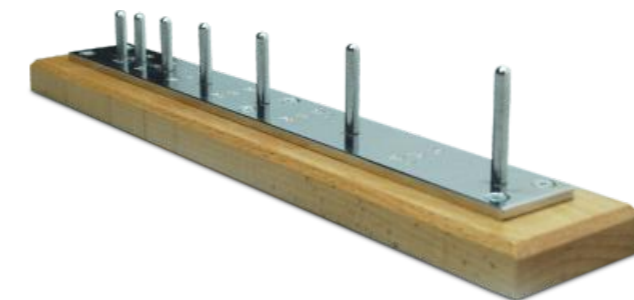
Product Code

UTA-0455 Length Gauge (Elongation Index BS)

Standards

BS 812-105.2

Length Gauge (Elongation Index BS), is used for determining the elongation index of aggregates. The particle is elongated when its length (longest dimension) is more than 1.8 of the midsize of the sieve fraction. The aggregate to be classified is separated into six sieve fractions from 6.3 to 50 mm, and each fraction is examined separately.



Dimensions	370x70x70 mm
Weight (approx.)	0,82 kg

SHAPE INDEX

Product Code

UTA-0460 Shape Index Caliper

Standards

EN 933-4; DIN 4226; CNR No.95; NLT 354

Shape Index Caliper is used for the determination of the shape factor of aggregates. Measurement range is 200 mm and graduated with 0.05 mm increments.



Dimensions	450x150x50 mm
Weight (approx.)	0,4 kg

General and Geometric Properties

FINES QUALITY

Product Code

- UTA-0500/E Sand Equivalent Test Set, EN Model
- UTA-0500/A Sand Equivalent Test Set, ASTM Model
- UTA-0502/E Sand Equivalent Measuring Two Graduated Cylinder, EN
- UTA-0502/A Sand Equivalent Measuring Graduated Cylinder, ASTM
- UTA-0504 Sand Equivalent Measuring Can, 85 ml
- UTA-0506 Sand Equivalent Siphon Assembly
- UTA-0507/E Sand Equivalent Test Plunger Assembly, EN
- UTA-0507/A Sand Equivalent Weighted Foot Assembly, ASTM
- UTA-0515 Washing and Flocculating Solution (Stock Solution), 1 lt

Standards

EN 933-8; ASTM D2419; AASHTO T176; UNI 8520-15; UNE 83131; CNR No. 27

The Sand Equivalent Test Sets are used to determine the fines of aggregates together with UTA-0510 Sand Equivalent Shaker.

UTA-0515 Washing and Flocculating (Stock Solution) should be ordered separately.



The Sand Equivalent Test Set is supplied complete with

- Transparent Graduated Acrylic Plastic Measuring Cylinder, 4 units for UTA-0500/A
- Transparent Acrylic Plastic Measuring Cylinder, 4 units for UTA-0500/E
- Siphon Assembly (irrigator tube with valve, solid rubber stopper, siphon tube and hose, blow tube)
- Plastic Can, 5 L
- Weighted Foot Assembly
- Measuring Can
- Wide-Mouth Funnel
- Ruler
- Special Carrying Case

Dimensions	400x550x150 mm
Weight (approx.)	4,6 kg

FINES QUALITY

Product Code

- UTA-0510 Sand Equivalent Shaker with Safety Cover, 220-240 V 50 Hz
- (60 Hz version is available upon request)
- UTA-0510/110 Sand Equivalent Shaker with Safety Cover, 110 V 60 Hz

Standards

EN 933-8; ASTM D2419; AASHTO T176; UNI 7446

UTA-0510 Sand Equivalent Shaker is used for the uniform shaking of Sand Equivalent Measuring Cylinders, at a specified rate and stroke.

The shaker is supplied complete with a timer. The horizontal movement, cycle and shaking time can easily be adjusted on the shaker to comply with EN or ASTM standards.



Sand Equivalent Shaker Timer

The Sand Equivalent Shaker is supplied complete with

- Safety Cover (conforming with CE directives)
- Timer (on the Shaker)

Horizontal Movement	200 mm ± 10 mm (EN) 203.2 mm ± 1 mm (ASTM)
Cycle	90 ± 3 / 30 sec. (EN) 175 ± 2 / min. (ASTM)
Dimensions	800x360x425 mm
Weight (approx.)	47 kg
Power	200 W

FINES QUALITY (Cleanliness)

Product Code

- UTA-0530 Methylene Blue Test Set, 220-240 V 50-60 Hz
- UTA-0531 Filter Paper for Methylene Blue Test Ø:125 mm, 100 pcs/pack

Standards

EN 933-9; NF P94-068; UNE 83 180; UNI 8520-15

The Test Set is used for determining the Methylene Blue value of 0/2 mm/ fraction in fine aggregates.

Set Consists of

- High Speed Agitator Motor, 400/600 rpm
- Stirring Propeller, Ø 70 mm 4 flanks
- Glass Burette, 50 ml x 0.1 ml
- Burette Holder and Stand
- Filter Paper, 1 pack (100 pcs.), 125 mm dia, 95 g/m², 0.20 mm thickness
- Glass Rod, Ø 8x300 mm
- Plastic Beaker, 1000 ml
- Methylene Blue, 100 g
- Kaolinite, 500 g

Dimensions	500x870x270 mm
Weight (approx.)	15 kg



UTA-0531

Mechanical and Physical Properties

RESISTANCE to FRAGMENTATION / DEGRADATION

Product Code

- UTA-0600 Los Angeles Abrasion Machine, 220-240 V 50 Hz (60 Hz version is available upon request)
- UTA-0600/110 Los Angeles Abrasion Machine, 110 V 60 Hz
- UTA-0601 Los Angeles Abrasion Machine with Soundproof Safety Cabinet, 220-240 V 50 Hz (60 Hz version is available upon request)
- UTA-0601/110 Los Angeles Abrasion Machine with Soundproof Safety Cabinet, 110 V 60 Hz
- UTA-0602/E Los Angeles Abrasion Charges EN, 12 pcs.
- UTA-0602/A Los Angeles Abrasion Charges ASTM/AASHTO, 12 pcs.

Standards

EN 1097-2, 12697-17, 13450; ASTM C131, C535; AASHTO T96



UTA-0600



Control Panel



Drum Position Lock with Safety Switch

	UTA-0600	UTA-0601
Dimensions	850x1000x1100 mm	1100x1150x1250 mm
Weight (approx.)	380 kg	505 kg
Power	750 W	750 W

The Los Angeles Abrasion Machine is used for determination of the aggregates resistance to fragmentation. The machine consists of an electronic control unit and a rolled steel drum having an inside diameter of 711 mm and internal length of 508 mm. The drum is rotated at a speed of 31-33 r.p.m. The internal shelf provided with the machine confirms to ASTM, AASHTO and EN standards. The machine is equipped with an automatic counter, when the preset revolution count is reached, the machine will stop automatically. The drum is equipped with an interlock device which allows the operator to lock the drum into position for easy loading/unloading of the sample.

A steel tray is supplied with the machine for easy discharge of specimen and abrasive charges.

The standard model can be supplied with a safety/noise reduction cabinet. The cabinet is lined internally with soundproofing material to reduce sound level conforming to CE directives. The cabinet must be ordered with the Los Angeles machine if required, as the electronic control unit will be installed on the safety cabinet at the time of manufacture. The cabinet is equipped with an electric safety device which automatically stops the rotation of the drum when the door is opened, conforming to CE directives.

- Abrasion balls and 1.6 mm, 10mm, 11.2mm (or 12.5mm) and 14 mm sieves acc. to EN standard,
 - Abrasion balls, 1.7 mm (No.12) sieve and other sieves which change depending the grain size acc. to ASTM and AASHTO standards,
- should be ordered separately.

The Los Angeles Abrasion Machine is supplied complete with

- Steel Tray



UTA-0601

RESISTANCE to ABRASION

Product Code

- UTA-0610 Wide Wheel Abrasion Testing Machine, 220-240 V 50 Hz (110 V 60 Hz version is available upon request)
- UTA-0610/1 Wide Abrasion Wheel, for UTA-0610
- UTA-0610/2 Convert Equipment Set from UTA-0610 Wide Wheel Abrasion Testing Machine to UTA-0613 Narrow Wheel Abrasion Testing Machine
- UTA-0611 Abrasive Corundum Sand 25 kg for UTA-0610 and UTA-0613
- UTA-0612 Calibration Marble for UTA-0610
- UTA-0613 Narrow Wheel Abrasion Testing Machine, 220-240 V 50 Hz (110V 60Hz version is available upon request)
- UTA-0613/1 Narrow Abrasion Wheel, for UTA-0613
- UTA-0613/2 Convert Equipment Set from UTA-0613 Narrow Wheel Abrasion Testing Machine to UTA-0610 Wide Wheel Abrasion Testing Machine
- UTA-0614 Mould, EN 12808-2, Polyethylene, 100 ±1x100 ±1x10 ±1 mm, for UTA-0613

Standards

Wide Wheel: EN 1338, 1339, 1340, 1341, 1342, 13748-1, 13748-2, 14157
Narrow Wheel: 10545-6, 12808-2

UTA-0610 Wide Wheel Abrasion Testing Machine is designed for determining the resistance to abrasion/wear of natural stones and concrete products used for paving. The abrasion wheel is 70 mm thick and rotates at a speed of 75 rpm. The machine is equipped with a digital counter which stops the machine at the end of a preset number of revolutions.

UTA-0613 Narrow Wheel Abrasion Testing Machine is designed for determining the resistance to abrasion of unglazed tiles, grouts used for tiles and clay pavers. The abrasion wheel is 10 mm thick.

Abrasive corundum sand, calibration marble (boloneisse) and mould (for EN 12808-2) should be ordered separately.



UTA-0610

UTA-0610 and UTA-0613 Abrasion Testing Machines can be convert the other.

When there is a need for abrasion of different type materials, UTA-0610 WWAT Machine can be convert to UTA-0613 NWAT Machine and also UTA-0613 NWAT Machine can be convert to UTA-0610 WWAT Machine by using UTA-0610/02 or UTA-0613/02 by users. Appropriate convert equipment set (UTA-0610/2 or UTA-0613/2) should be ordered separately.

Dimensions	620x670x1350 mm
Weight (approx.)	130 kg
Power	370 W

RESISTANCE to ABRASION

Product Code

- UTA-0615 Abrasion Testing Machine According to Böhme, 220-240 V 50 Hz (60 Hz version is available upon request)
- UTA-0616 Abrasive Sand, 50 kg pack for UTA-0615

Standards

EN 1338, 1339, 1340

UTA-0615 the Abrasion Testing Machine according to Böhme is used for determining the abrasion resistance of concrete and natural stone products used for internal or external paving.

The machine consists of a grinding wheel of approx. 750 mm diameter, a removable testing weight of 30 kg and a clamping device for the sample. The machine is equipped with an adjustable counter (30 ± 1 rpm) and an automatic cut-off system which stops the machine after 22 rotations.

UTA-0616 Abrasive Sand should be ordered separately.



Dimensions	1500x850x1350 mm
Weight (approx.)	300 kg
Power	750 W

Mechanical and Physical Properties

RESISTANCE to WEAR

Product Code

UTA-0620	Micro-Deval Apparatus, 220-240 V 50 Hz (60 Hz version is available upon request)
UTA-0620/110	Micro-Deval Apparatus, 110 V 60 Hz
UTA-0621	Stainless Steel Drum, Ø 200x154 mm EN 1097-1
UTA-0622	Stainless Steel Drum, Ø 200x400 mm EN 13450
UTA-0623	Micro-Deval Abrasion Charges Ø10 mm 25 kg Pack, EN 1097-1

Standards

EN 1097-1, 13450; NF P18-572, P18-576; CNR No.109;
UNE 83115



The Micro Deval Testing Machine is used to determine the resistance to wear of aggregates. The machine consists of a steel frame, two stainless steel cylinders, and 25 kg of 10 mm diameter stainless steel spheres and an automatic digital counter which allows machine to stop automatically at the preset number of revolutions.

Stainless steel drums are rotating at a speed of 100 ± 5 r.p.m.

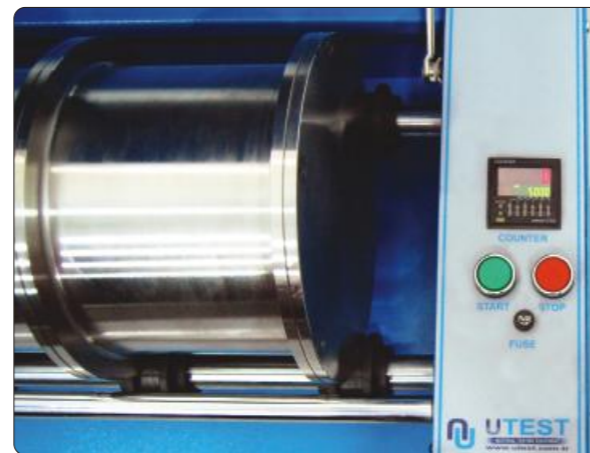
The machine can accept up to 4 pcs. Ø 200x154 mm drums or 2 pcs. Ø 200x400 mm drums.

Ø 200x400 mm steel drums and 1,6 mm sieve should be ordered separately.

The Micro-Deval Apparatus is supplied complete with

- Stainless Steel Drum, Ø 200x154 mm, 2 pcs.
- Abrasion Charges, 25 kg, Ø 10mm

Dimensions	1050x450x950 mm
Weight (approx.)	105 kg
Power	370 W



CRUSHING VALUE

Product Code

UTA-0630	Aggregate Crushing Value (ACV) Set Ø 150 mm BS
UTA-0631	Aggregate Crushing Value Cylinder Ø 150 mm for UTA-630
UTA-0632	Aggregate Crushing Value Base Plate for UTA-630
UTA-0633	Aggregate Crushing Value Plunger for UTA-630
UTA-0634	Aggregate Crushing Value Cylindrical Measure for UTA-630
UTC-0408	Tamping Rod Ø 16x600 mm
UTA-0640	Aggregate Crushing Value (ACV) Set Ø 75 mm BS
UTA-0641	Aggregate Crushing Value Cylinder Ø 75 mm for UTA-640
UTA-0642	Aggregate Crushing Value Base Plate for UTA-640
UTA-0643	Aggregate Crushing Value Plunger for UTA-640
UTA-0644	Aggregate Crushing Value Cylindrical Measure for UTA-640
UTA-0645	Tamping Rod Ø 8x300 mm

Standards

BS 812:110, 812-111

The Aggregate Crushing Value (ACV) Test Set provides a relative measure of the resistance of an aggregate to crushing under a gradually applied compressive load. Each set consists of steel cylinder, plunger, base plate, cylindrical measure and tamping rod. All parts of the apparatus are powder coated or galvanized steel, heat treated and ground before manufacturing to make it durable and reliable. For aggregates smaller than 10 mm, a 75 mm diameter cylinder and associated equipment is available.

UTA-0630 and UTA-0640 Test Sets are also used for the Ten Percent Fines Value (TFV) of aggregates according to BS 812:111.

The Aggregate Crushing Value (ACV) Set is supplied complete with Cylinder, Base Plate, Plunger, Cylindrical Measure, Tamping Rod



	UTA-0630	UTA-0640
Dimensions	250x250x600 mm	120x120x350 mm
Weight (approx.)	29 kg	6 kg

IMPACT VALUE

Product Code

UTA-0650 Aggregate Impact Value (AIV) Testing Apparatus

Standards

BS 812:112

The Aggregate Impact Value Testing Apparatus, meets with BS 812, it is robustly designed to determine the Aggregate Impact Value (AIV) of aggregates which provides a relative measure of the resistance of an aggregate to sudden shock or impact. The counter fitted to the machine automatically records the number of blows delivered to the sample, manufactured from heavy duty plated steel to resist corrosion.

The Aggregate Impact Value (AIV) Apparatus is supplied complete with Cylindrical Measure, Ø 75 mm, Steel Tamping Rod, Ø 16x600 mm

Dimensions	450x350x850 mm
Weight (approx.)	52 kg



Mechanical and Physical Properties

BULK DENSITY

Product Code

UTA-0700 Bulk Density Measure 1 L
 UTA-0705 Bulk Density Measure 5 L
 UTC-0610 Bulk Density Measure 10 L
 UTA-0720 Bulk Density Measure 20 L

Standards

EN 1097-3; ASTM C29

The Bulk Density Measures are manufactured from heavy duty steel complying with the related standard. Available in 1, 5, 10 and 20 L capacity models to comply with the relevant standards. The measures are coated against corrosion.



	Dimensions	Weight (approx.)
UTA-0700	Ø100x130 mm	1.7 kg
UTA-0705	Ø160x250 mm	5 kg
UTC-0610	Ø200x310 mm	9 kg
UTA-0720	Ø260x365 mm	12 kg

SPECIFIC GRAVITY

Product Code

UTA-0755 Sand Absorption (Abraham Cone) Set
 UTA-0756 Sand Absorption (Abraham) Cone
 UTA-0757 Tamping Rod Ø 25 mm

Standards

EN 1097-6; BS 812-2; UNI 8520-13-16; ASTM C128; NLT 154; DIN 12039

The Sand Absorption Abraham Cone Set is used in determining the specific gravity and water absorption of fine aggregates smaller than 10 mm. The apparatus is manufactured from plated steel for protection against corrosion. The cone dimensions are: upper diameter of 40 mm, lower diameter of 90 mm and 75 mm height, and the tamping rod has a 25 mm base diameter and approx. 340 g in weight.



Dimensions	90x90x180 mm
Weight (approx.)	0.5 kg

RESISTANCE to WEAR by ABRASION from STUDED TIRES

Product Code

UTA-0750 Nordic Abrasion Machine, 220-240 V 50 Hz (60 Hz version is available upon request)
 UTA-0750/110 Nordic Abrasion Machine, 110 V 60 Hz
 UTA-0751 Steel Balls, Ø 15 mm dia, 7 kg.
 UTA-0752 Steel Balls, Ø 11.1 mm dia, 3,5 kg.

Standards

EN 1097-9; UNI 8520-13-16

UTA-0750 Nordic Abrasion Machine has been developed for testing the resistance of aggregates to wear by abrasion from studded tyres. The test is performed on natural or artificial stones and aggregates between 11.2 mm and 16.0 mm.

The test consists of a rotating aggregate in a drum containing steel abrasive balls and water. The machine consists of an electronic control unit and a rolled stainless steel drum having an internal diameter of 206.5 mm, internal length of 335 mm and thickness of 6 mm. The drum is rotated at a speed of 90 ± 3 r.p.m. 3 wings are installed inside of the drum to allow the balls and aggregates to be mixed properly.

The abrasion loss rate of aggregates is calculated after the specified number of revolutions stated in the relevant standard.

110 V 60Hz version should be mentioned on order if required.

11,1 mm diameter steel balls (3.5 kg.) should be ordered separately.



The Nordic Abrasion Machine is supplied complete with

- Steel Balls, Ø 15 mm, 7 kg

Dimensions	680x410x740 mm
Weight (approx.)	80 kg
Power	600 W

Mechanical and Physical Properties

PARTICLE DENSITY

Product Code

- UTW-1000 Specific Gravity Frame
- UTW-1003 Plastic Water Tank
- UTW-1005 Cradle for Hardened Concrete Specimens
- UTW-1010 Density Basket Ø 200 mm x 200 mm deep

Standards

EN 1097-6, 12390-7

The Specific Gravity Frame is used in conjunction with a suitable electronic balance for specific gravity determination of fresh and hardened concrete and aggregates.

Consisting of a purpose built robust frame designed to support the electronic balance (not supplied), a wire basket and plastic water tank. The lower part of the frame incorporates a moving platform, which carries the water tank allowing the test specimens to be weighed in both air and water.

Any type of electronic balance fitted with under-bench weighing facility can be used.

Balance, Cradle and Density Basket should be ordered separately.

The Specific Gravity Frame is supplied complete with

- A water tank

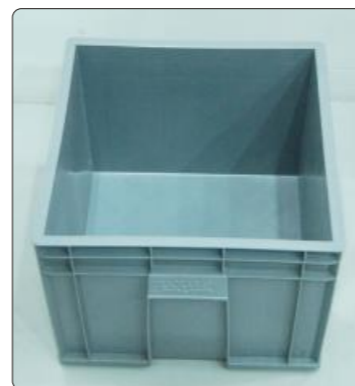
Dimensions	600x500x1100 mm
Weight (approx.)	25 kg



UTW-1005



UTW-1010



UTW-1003

PARTICLE DENSITY

Product Code

UTA-1120 Pyknometer (Glass Jar Type) BS

Standards

BS 812:2

The Pyknometer is used for the determination of the relative density and water absorption for aggregates of 10 mm nominal size and smaller. This test method is in line with the requirements contained within BS 812.

Dimensions	Ø100x200 mm
Weight (approx.)	0,5 kg



PARTICLE DENSITY

Product Code

- UTGG-1600 Pyknometer (Bottle Type) 250 ml
- UTGG-1605 Pyknometer (Bottle Type) 500 ml
- UTGG-1610 Pyknometer (Bottle Type) 1000 ml
- UTGG-1615 Pyknometer (Bottle Type) 2000 ml
- UTGG-1620 Pyknometer (Bottle Type) 3000 ml
- UTGG-1625 Pyknometer (Bottle Type) 5000 ml
- UTGG-1630 Double Edged and Capillary Tubed Funnel

Standards

EN 1097-6

Bottle Type Pyknometers are used to determine the specific gravity of aggregates. 250 ml, 500 ml, 1000 ml, 2000 ml, 3000 ml and 5000 ml.

The Bottle Type Pyknometer is supplied complete with

- Double Edged and Capillary Tubed Funnel



	Dimensions	Weight (approx.)
UTGG-1600	Ø110x270 mm	0.5 kg
UTGG-1605	Ø130x270 mm	0.7 kg
UTGG-1610	Ø150x270 mm	1 kg
UTGG-1615	Ø180x330 mm	1.25 kg
UTGG-1620	Ø200x340 mm	1.35 kg
UTGG-1625	Ø250x400 mm	1.60 kg
UTGG-1630	Ø50X270 mm	0.2 kg

Mechanical and Physical Properties

RESISTANCE to ABRASION

Product Code

- UTA-0800 Aggregate Abrasion Value (AAV) Machine, 220-240 V 50-60 Hz
- UTA-0802 Graded (Abrasion) Sand 25 kg X 2 packs for UTA-0800

Standards

EN 1097-8; BS 812-113

The Abrasion Machine is used to determine the Aggregate Abrasion Value (AAV) by testing the measure of the resistance of aggregates to surface wear by abrasion. The Abrasion Machine consists of a flat circular cast iron grinding lap wheel of 600 mm dia. which rotates in a horizontal plane at a speed of 28-31 r.p.m. The abrasion sand is fed across the surface of the specimen samples through a special funnel.

Graded sand should be ordered separately.

The Aggregate Abrasion Value (AAV) Machine is supplied complete with

- Specimen Moulds, 2 units
- Flat Plates, 2 units
- Clamps
- Trays, 2 units
- Weights



Dimensions	800x700x1100 mm
Weight (approx.)	200 kg
Power	370 W

MOISTURE MEASUREMENT

Product Code

- UTA-0806 MICROLANCE Instant Moisture and Temperature Tester



UTA-0806 MICROLANCE Instant Moisture and Temperature Tester is used for the instant on-site determination of moisture and temperature of sands, aggregates, building materials, minerals and mixes from small quantities to hundreds of tons.

The instrument is reliable and easy to use, taking moisture readings up to 1 meter depth by simply inserting the lance into the test material. Instant readings are monitored on the digital display and the built-in computer allows the user to monitor a wide range of materials and water contents.

The UTA-0806 Microlance is supplied with standard calibration values for sands and aggregates but it can also be calibrated for different material or mixture with the Autocal functionality. The unit is supplied complete with a calibration certificate.

	Range	Resolution	Accuracy
Moisture	0 to 25 %	0.1 %	better than 0.5 %
Temperature	-20 to 60°C	0.1°C	better than 0.5°C

- Moisture measurement with temperature compensated electric field
- Temperature measurement according to BS 1904 and DIN 751
- Platinum resistance detector
- Works with 4 x 1.5 V AA cells (or equivalent)

Dimensions	100x100x1200 mm
Weight (approx.)	2 kg

POLISHED STONE VALUE / RESISTANCE to POLISHING

Product Code

- UTA-0810 Accelerated Polishing Machine (PSV), 220-240 V 50-60 Hz
- UTA-0812 Corn Emery 5 kg, for UTA-0810
- UTA-0813 Flour Emery 5 kg, for UTA-0810
- UTA-0814 Control Stone 50 kg Ungraded, for UTA-0810, PSV value in the range 50 to 60
- UTA-0815 Friction Tester Reference Stone (Criggin Stone) 25 kg Ungraded, for UTA-0810, PSV value in the range 60 to 65

Standards

EN 1097-8; BS 812-114

Accelerated Polishing Machine (PSV) is used to accelerate the polishing action of vehicle tyres on a road surface, the results are used to develop safer road surfaces. The machine consists of a road wheel rotating at 320 ± 5 rpm, driven by a fan cooled electric motor.

Abrasive Corn Emery is fed to the point of contact of the wheel on the test surface for 3 hours, followed by feeding Emery Flour to polish the surface being tested for a further 3 hours. Subsequent skid tests are carried out on the test samples using suitable portable skid test equipment.

UTA-0814 Control Stone and UTA-0815 Friction Tester Reference Stone should be ordered separately.

The Accelerated Polishing Machine is supplied complete with

- Road Wheel
- Side Plate
- Rubber Rings
- Solid Rubber- Tired Wheels, 2 units
- Drive Belt
- Abrasive Feed Mechanism
- Corn Emery, 5 kg
- Flour Emery, 5 kg
- Tool Kit
- Specimen Moulds, 2 pcs
- 2 Mould Plates



Road Wheel Speed	315 to 325 rpm
Dimensions	740x720x1520 mm
Weight (approx.)	175 kg
Power	850 W

SKID RESISTANCE & FRICTION

Product Code

- UTA-0830/E Skid Resistance and Friction Tester (Skid Tester), EN 1097-8
- UTA-0830/A Skid Resistance and Friction Tester (Skid Tester), ASTM E303
- UTA-0832/TRL Mounted Rubber Slider for Polished Stone Value Test (PSV laboratory), TRL Rubber, with Conformity Certificate, 32mm width
- UTA-0833/TRL Mounted Rubber Slider for Site Use, TRL Rubber, with Conformity Certificate, 76mm width
- UTA-0832/4S Mounted Rubber Slider, 4S rubber, 32 mm width
- UTA-0833/4S Mounted Rubber Slider, 4S rubber, 76 mm width
- UTA-0834 Metal Base Plate for Polished Stone Value Specimen Clamping
- UTA-0835 Metal Base Plate for Surface Friction Properties, for Natural Stones (EN 1341, EN 1342) and Concrete Paving, Blocks (EN 1338)



Standards

EN 1097-8, 1338, 1341, 1342, 13036-4; ASTM E303

The Skid Resistance and Friction Tester is used for the measurement of surface friction properties. The apparatus is suitable for both site and laboratory applications and for Polished Stone Value tests using curved specimens from accelerated polishing tests.

A Slider lifting system is integrated in the pendulum foot, which guarantees reliable adjustment operations.

Skid Tester provides following features:

- New low friction release mechanism of the pendulum arm for better accuracy.
- Extremely light pointer, for high precision result
- Stiff and stout twin column structure
- Easy and reliable height adjusting system
- Integrated additional scale for tests on PSV specimens
- Complete with traceability certificate to EN 1097-8 or ASTM E303

The Skid Resistance and Friction Tester is supplied complete with

- Additional Scale, for test on polished stone value specimens,
- Rubber Sliders, for site use - 3 units,
- Thermometer, 0 to +220°C for surface temperature measurement,
- Washing Bottle, for surface wetting - 1 L,
- Tool Set with Case for machine assembly,
- Ruler for sliding length verification,
- Traceability Certificate of conforming to EN 1097-8 or ASTM E303,
- Carrying case

RESISTANCE to FREEZING & THAWING

Product Code

UTD-1440 Freezing and Thawing Chamber 285 L, 220-240 V 50-60 Hz

Standards

EN 1338, 1339, 1340, 1367-1, 1367-6, 12371, 13748-2, 13450; CEN/TS 12390-9

Used for the determination of resistance to freezing and thawing by providing freezing / thawing in air.

The chamber is equipped with a user defined program including 10 steps. Time can be adjusted to 999 minutes for each step of the program. The temperature range of the cabinet is -30°C to +30°C.

The temperature is controlled by a sensor which can be immersed either into the sample, into the water which the sample is placed into or, into the salty water solution placed on the sample before starting the test. The calibration of the sensor is carried out using the user friendly menu.

The distribution of temperature in the cabinet is performed using an integral fan.

Software for data transfer to a computer is supplied complete with the cabinet, and data can be monitored during the tests. Data can be converted to an excel report or to a graph.

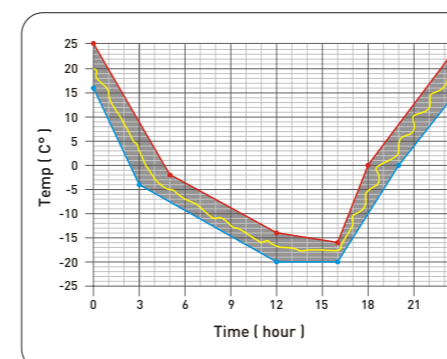
The condenser of the cabinet is fitted with an air cooled hermetic cooler. The gas used for the cooler does not include CFC's.



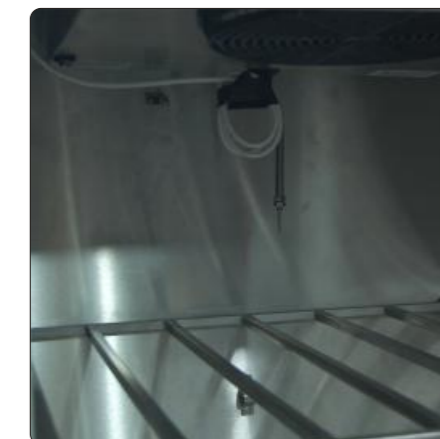
AUTOMATIC SETTINGS			
STEP	RAMP(min)	TEST(min)	TEMP(C°)
1	4	0	-20
2	1	0	+0
3	4	0	+20
4	0	0	+0
5	0	0	+0
6	0	0	+0
7	0	0	+0
8	0	0	+0
9	0	0	+0
10	0	0	+0

BACK Repeat Set: 5 AUTO TEST START

The control unit is electronic and equipped with digital display with 0.1°C temperature resolution. The temperature distribution accuracy in the cabinet is not higher than 2°C.



The user can preset the time of each ramp and the number of each set by using the control unit.



Internal Dimensions	490x530x1100 mm
External Dimensions	690x860x1940 mm
Weight (approx.)	225 kg
Power	1800 W

Thermal and Weathering Properties

MAGNESIUM SULPHATE / SODIUM SULPHATE TESTS

Product Code

UTA-0840	Magnesium Sulphate / Sodium Sulphate Test Water Bath
UTW-1008	Density Basket, Ø120 x 160 mm deep, 3,35 mm mesh, EN/ASTM
UTGH-1460	Lever Lid Container Ø160 x 235 mm deep for UTW-1008, EN/ASTM
UTW-1017	Density Basket, Ø230 x 260 mm deep, 4 mm mesh, EN
UTGH-1465	Lever Lid Container Ø270 x 300 mm deep for UTW-1017, EN
UTGG-2415	Hydrometer 1100-1200 g/ml, ASTM
UTGG-2420	Hydrometer 1200-1300 g/ml, EN/ASTM
UTGC-0850	Sodium Sulphate, 1 kg, ASTM
UTGC-0915	Magnesium Sulphate, 1 kg, EN/ASTM

Standards

EN 1367-2, 13450; ASTM C88; UNI 8520-10; UNE 7136



Magnesium Sulphate and Sodium Sulphate Tests are used for determining the soundness of aggregates when subjected to weathering action such as freezing and thawing circles. Only the specific products are listed above. It should be noted that other equipment like ovens, sieves, balances etc. are also required to perform these tests.

Sodium Sulphate can be used instead of Magnesium Sulphate according to the ASTM standard. UTGG-2415 Hydrometer 1100-1200 g/ml is required for the test with Sodium Sulphate Test. (The temperature of test solution that is in the dipping chamber produced of stainless steel can be automatic adjusted to required temperature with heating and cooling system of the UTA-0840.) Homogenous temperature distribution can be obtained with water circulation pump that makes feedback. Temperature controller is a microprocessor type and control process has digital display that can.

Magnesium Sulfate / Sodium Sulfate Test Water Bath can be used as general purpose water bath when dipping cabinet removed from its place that temperature is between 15-60 °C with ± 1.0 °C accuracy.

	Dimensions	Weight
UTA-0840	650x550x1000 mm	60 kg
UTW-1008	120x120x160 mm	1 kg
UTGH-1460	Ø160x235 mm	0,25 kg
UTW-1017	Ø230x260 mm	1 kg
UTGH-1465	Ø270x300 mm	0,25 kg
UTGG-2415	30x30x300 mm	0,1 kg
UTGG-2420	30x30x300 mm	0,1 kg
Dipping Chamber	360x380x400 mm	0,1 kg



UTGH-1460

UTW-1008

DRYING SHRINKAGE

Product Code

UTA-0850	Three Gang Prism Shrinkage Mould 50x50x200 mm
UTA-0851	Steel Insert for UTA-0850, 12 pcs.
UTA-0852	Reference Rod 205 mm Long with Convex Hemispherical End
UTCM-0033	Two Gang Prism Shrinkage Mould 25x25x285 mm
UTCM-0034	Steel Insert for UTCM-0033, 12 pcs.
UTCM-0035	Reference Rod 295 mm with Convex Hemispherical End

Standards

EN 1367-4; UNI 8520-22

The Two and Three Gang Shrinkage Moulds are used for the determination of the effect of aggregates on the drying, shrinkage and length change of hardened cement paste, concrete and mortar.

The Two Gang Shrinkage Mould is also used for the determination of the potential alkali reactivity of cement-aggregate combinations (mortar-bar method) according to ASTM standards. Reference rod should be ordered separately.

The test requires UTCM-0037 or UTCM-0038 Length Comparator.



UTA-0852



UTA-0850



UTCM-0033

Shrinkage Moulds supplied complied with

- Steel Insert

	Dimensions	Weight (approx.)
UTA-0850	330x220x70 mm	15 kg
UTCM-0033	330x190x70 mm	4 kg

DRYING SHRINKAGE & ALKALI-SILICA REACTIVITY

Product Code

UTCM-0037	Digital Length Comparator
UTCM-0038	Length Comparator with Heidenhain Length Measuring Sensor 220-240 V 50-60 Hz

Standards

EN 1367-4, 12617-4, 12808-4; ASTM C151, C157, C227, C311, C341, C342, C441, C452, C490, C531, C596, C806, C878, C1260; BS 1881:5, 6073



UTCM-0038

Length Comparators are used to determine the length changes on different type of cement prisms.

The set consists of a length measuring frame with measuring apparatus attached to it. There are 2 models available; UTCM-0037 is with 0.001 mm x 12.7 mm digital dial gauge and UTCM-0038 is with special 0.0001 mm x 30 mm transducer and readout unit.

All information about shrinkage moulds, steel inserts and reference rods can be found on UTCM-0009/E-0009/A-0033 Cement Shrinkage Moulds, and UTA-0850/UTCM-0033 Aggregate Shrinkage Moulds data sheets.

Reference rod and moulds should be ordered separately according to the test to be performed.



UTCM-0037

Dimensions	
UTCM-0037	180x180x450 mm
UTCM-0038	250x250x650 mm
Weight (approx.)	
UTCM-0037	6 kg
UTCM-0038	8 kg

Chemical Properties

CHLORIDE CONTENT

Product Code

- UTGE-4320 Quantab Chloride Titrator Type 1175, 40 Strips
- UTGE-4322 Quantab Chloride Titrator Type 1176, 40 Strips

The Quantab Chloride Titrators are used for quick determination of water soluble chloride salts present in fine aggregates and soils.



Technical Specifications

	Type 1175	Type 1176
Range	0.005% to 0.1% NaCl	0.05% to 1% NaCl
Dimensions	75x75x120 mm	
Weight (approx.)	0.1 kg	

ORGANIC SUBSTANCES / HUMUS CONTENT

Product Code

- UTA-0885 Reference Colours Glass
- UTGG-1705 Graduated Impurities Test, Glass Bottle 500 ml, ASTM
- UTGG-1710 Graduated Impurities Test, Glass Bottle 1000 ml, ASTM
- UTGG-1720 Cylindrical Glass Bottle with Cork Stopper, for Organic Impurities, 450 ml, EN
- UTGC-0840 Sodium Hydroxide 1 kg

Standards

EN 1744-1; ASTM C40

The Reference Colour Glass consists of 5 organic glass scales mounted in a plastic holder, which is used for the comparison of the colour results from the relevant test.

The 500 ml and 1000 ml capacity Graduated Glass Bottles are used for making reference standard colour and test solution according to the ASTM standard.

UTGG-1720 450 ml Cylindrical Glass Bottle is used for determination of organic impurities as required in the EN standard.



UTGG-1705 and UTGG-1710



UTA-0885



UTGG-1720

ALKALI-SILICA REACTIVITY

Product Code

- UTA-0880 Alkali Aggregate Reaction Bath, 220-240 V 50-60 Hz
- UTA-0882 Alkali Specimens Can, stainless steel, with an hanger which can hold 3 pcs. 25x25x285 mm specimens. For UTA-0880
- UTCM-0033 Two Gang Prism Shrinkage Mould, 25x25x285 mm
- UTCM-0034 Steel Insert for UTCM-0033, 12 pcs.
- UTCM-0035 Reference Rod 295 mm Long with Convex Hemispherical End

Standards

CANADA CSA-A23.2-25A; For Moulds: ASTM C227, C490, C1260

The Alkali Aggregate Reaction Bath is used to keep 25x25x285 mm samples in NaOH (Sodium Hydroxide) or in any other solution at a specified temperature. The temperature can be adjusted between ambient to 80°C by using the digital controller with 2°C accuracy.

The chamber is made of stainless steel and has a capacity of 36 specimens (25x25x285 mm).

Supplied complete with 3 pcs. stainless steel alkali specimens cans (UTA-0882). Each can has a stainless steel hanger which can hold 3 pcs. 25x25x285 mm specimens. Additional alkali specimens cans should be ordered separately.

UTCM-0033 is used to determine the potential alkali reactivity of cement-aggregate combinations (mortar-bar method). This mould is also used for determining the length change of hardened cement paste, mortar and concrete.

The test also requires UTCM-0037 or UTCM-0038 Digital Length Comparators.

UTA-0880 Aggregate Reaction Bath can also be used as a general purpose water bath.

Dimensions	550x1000x800 mm
Weight (approx.)	70 kg
Power	2000 W



UTA-0880



UTA-0882



UTCM-0033



Cement

Testing Equipments

Cement is the binder used to create concrete and mortar. The manufacture of cement requires stringent control and a number of tests are performed in cement plant laboratories to ensure that the cement is of the desired quality, that conforms to the requirements of the relevant standards.

The most important use of cement is the production of concrete and mortar, which are the combination of cement and an aggregate to form a strong building material that is durable in the face of normal environmental effects. In the cement section, UTEST Testing Equipment is basically grouped in three main headings

- Physical and Chemical Property Tests (except strength tests)
- Building Lime, Grout and Mud Tests
- Strength Tests

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Physical and Chemical Properties

CEMENT SAMPLERS

Product Code

- UTCM-0001 Packaged Cement Tube Sampler, Ø30x300 mm
- UTCM-0002 Bulk Cement Sampler, Ø35x1500 mm

Standards

EN 196-7; ASTM C183; AASHTO T127

The UTCM-0001 Packaged Cement Tube Sampler is made of brass and used for collecting cement samples from packages.

The UTCM-0002 Bulk Cement Sampler is used to collect cement samples from bulk storage or bulk shipments. Sampler consists of 2 brass concentric tubes and each tube has slots. The inner tube rotates to close the slots and take the sample.



Dimensions	UTCM-0001	Ø30x300 mm
	UTCM-0002	Ø35x1500 mm
Weight (approx.)	UTCM-0001	0.32 kg
	UTCM-0002	2.47 kg

SPECIFIC GRAVITY (Relative Density)

Product Code

- UTCM-0003 Le Chatelier Flask

Standards

EN 196-6, 450-1, 15617-1; ASTM C110, C128, C188; C989; AASHTO T133

The UTCM-0003 Le Chatelier Flask is used to determine the density of hydraulic cement, ground granulated blast-furnace slag and fly ash for concrete, filler aggregates and lime. The glass flask has a 250ml capacity. The neck is graduated from 0 to 1 ml and from 18 to 24 mL in 0.1-mL graduations.



Dimensions	100x100x300 mm
Weight (approx.)	0.1 kg

SOUNDNESS OF CEMENT & HYDRATED LIME

Product Code

- UTCM-0010 Le Chatelier Mould
- UTCM-0014 Le Chatelier Soundness Kit

Standards

EN 196-3, 450-1, 459-2; EN ISO 9597



The soundness of cement, fly ash for concrete and lime is determined by using the Le Chatelier moulds and Le Chatelier Water Bath (UTCM-0016) according to the relevant standard.

The Le Chatelier Soundness Kit is supplied complete with

- Le Chatelier moulds 3 pcs.
- 50x50 mm glass plates 6 pcs.
- 300 gr Weights 1 pcs.
- 100 gr Weight, 3 pcs.
- Tamping Rod 17 mm dia. x 70 gr
- Steel Ruler
- Plastic Carrying Case

Dimensions	340x290x80 mm
Weight (approx.)	2 kg

SOUNDNESS OF CEMENT & HYDRATED LIME

Product Code

- UTCM-0016 Le Chatelier Water Bath, 220-240 V 50-60 Hz

Standards

EN 196-3, 450-1, 459-2; EN ISO 9597

The UTCM-0016 Le Chatelier Water Bath is used with Le Chatelier moulds for the determination of the soundness of cement paste fly ash for concrete and lime. The internal chamber and the insulated exterior case of the bath are manufactured from stainless steel. The Bath is capable of reaching boiling point in 30 minutes by using two heater units. There is a timer on the UTCM-0016 Le Chatelier Water Bath which is used to set the time for reaching the boiling point. After that time the temperature of water is regulated by using one heater unit to conserve energy. Supplied complete with a removable rack to hold up to 10 moulds. A cover is also supplied as standard.

Le Chatelier Moulds are should be ordered separately.



Dimensions	210x470x290 mm
Weight (approx.)	8 kg
Power	1250 W

Physical and Chemical Properties

LENGTH CHANGE (Expansion)

Product Code

UTCM-0020 High Pressure Cement Autoclave, 230 V 50-60 Hz

Standards

ASTM C151, C490; UNE 7207

The UTCM-0020 High Pressure Cement Autoclave is designed to perform expansion tests on cement specimens. 10 specimens can simultaneously be tested in the high pressure steam vessel of 154 mm diameter and 430 mm height.

The Autoclave consists of a pressure gauge, pressure regulator, temperature regulator, control switches and safety valve. Certified conforming to ISPELS procedure.

UTCM-0033 Two Gang Shrinkage mould should be ordered separately.



The High Pressure Cement Autoclave is supplied complete with

- Specimen Rack, 10 samples capacity

Dimensions	450x475x1080 mm
Weight (approx.)	55 kg
Power	2600 W

LENGTH CHANGE (Shrinkage and Expansion)

Product Code

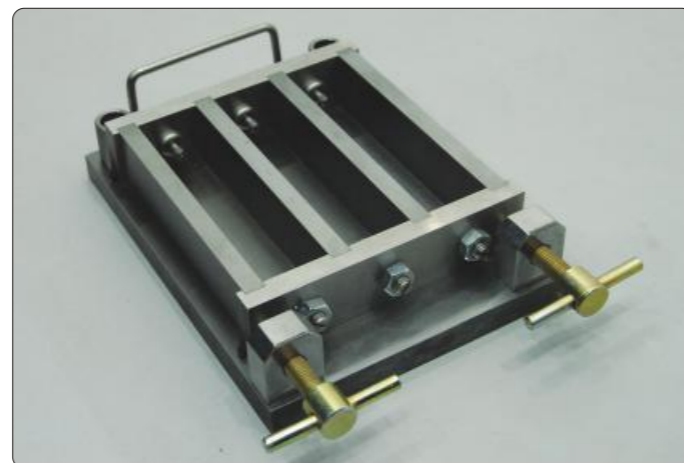
- UTCM-0029 Three Gang Shrinkage Mould 40x40x160 mm, EN
- UTCM-0030 Spare Steel Insert 40x40x160 mm for UTCM-0029, 18 pieces/pack
- UTCM-0031 Reference Rod 160 mm Long with Convex Hemispherical End
- UTCM-0032 Tamper, Hardwood 38x15x200mm, 250 g, EN
- UTCM-0033 Two Gang Shrinkage Mould 25x25x285 mm, ASTM
- UTCM-0034 Spare Steel Insert 25x25x285 mm for UTCM-0033, 12 pieces/pack
- UTCM-0035 Reference Rod 295 mm Long with Convex Hemispherical End

Standards

ASTM C151, C157, C452, C490, C596; EN 12617-4

The UTCM-0029 and UTCM-0033 Three and Two Gang Shrinkage Moulds are used for the determination of linear shrinkage/expansion of cement mortar when used together with the UTEST Length Comparator (UTCM-0037 or UTCM-0038).

Reference Rod should be ordered separately.



UTCM-0029



UTCM-0033

	UTCM-0029	UTCM-0033
Dimensions	300x190x70 mm	90x340x40 mm
Weight (approx.)	12 kg	4 kg

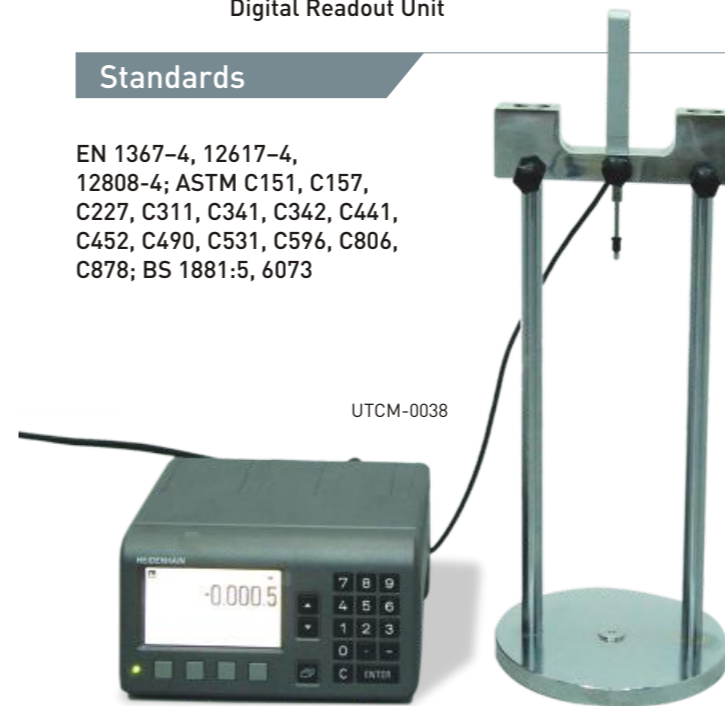
LENGTH CHANGE (Shrinkage and Expansion)

Product Code

- UTCM-0037 Digital Length Comparator
- UTCM-0038 Length Comparator with Heidenhain Length Measuring Sensor and Digital Readout Unit

Standards

EN 1367-4, 12617-4, 12808-4; ASTM C151, C157, C227, C311, C341, C342, C441, C452, C490, C531, C596, C806, C878; BS 1881:5, 6073



Length Comparators are used to determine the length changes on different type of cement prisms.

The set consists of a length measuring frame with measuring device attached to it. There are 2 models available; UTCM-0037 is with 0.001 mm x 12,7 mm digital dial gauge (UTCM-0152) and UTCM-0038 is with special 0.0001 mm x 30 mm transducer and readout unit.

All information about shrinkage moulds, steel inserts and reference rods can be seen on UTCM-0029, UTCM-0033 and UTA-0850 Shrinkage Moulds Catalogue.

Reference rod and moulds should be ordered separately according to test to perform.



UTCM-0037

Dimensions	
UTCM-0037	180x180x450 mm
UTCM-0038	250x250x650 mm
Weight (approx.)	
UTCM-0037	6 kg
UTCM-0038	8 kg

FINENESS (Specific Surface)

Product Code

- UTCM-0036 PC-Controlled Automatic Blaine Apparatus with a Measuring Cell, 110-230V, 50-60Hz
- UTCM-0036/01 Calibration Sand 1 (coarse)
- UTCM-0036/02 Calibration Sand 2 (fine)
- UTCM-0036/03 Dial Gauge
- UTCM-0039 Automatic Blaine Apparatus, 220 / 50 Hz

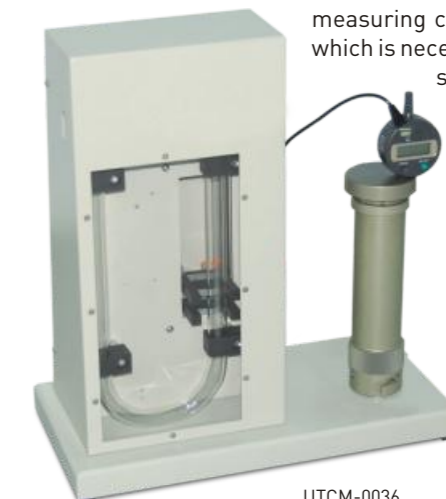
Standards

EN 196-6; ASTM C204

UTCM-0036 PC-Controlled Automatic Blaine Apparatus Dyckerhoff system for the fully automatic test procedure and evaluation supplied complete with software.

The Apparatus is used to determine particle size of powder materials such as portland cement and lime in terms of their specific surface according to the Blaine technique. Measuring cell is 41 mm dia. and the volume is approx. 73 cm³.

UTCM-0036/01 Calibration Sand 1 (coarse), (specific surface approx. 2800 cm²/g officially tested 600g). UTCM-0036/02 Calibration Sand 2 (fine) specific surface approx. 4000 cm²/g officially tested approx. 600 g, Dial Gauge for measurement the filling level of the measuring cell and PC with monitor which is necessary for using the device should be ordered separately for UTCM-0036.



UTCM-0036

PC-Controlled Automatic Blaine Apparatus is supplied complete with;

- Fill oil,
- Syringe with tube,
- Tamper,
- 500 pcs. round filter paper (Ø 41mm),
- 10 pcs. dust filter (Ø13mm).

	UTCM-0036	UTCM-0039
Dimensions	250x410x440 mm	250x410x440 mm
Weight (approx.)	14 kg	10 kg

Physical and Chemical Properties

FINENESS (Specific Surface)

Product Code

- UTCM-0040 Blaine Air Permeability Apparatus
- UTCM-0041 U Manometer Tube
- UTCM-0042 Manometer Liquid 250 ml
- UTCM-0043 Cell with Perforated Disc and Plunger
- UTCM-0044 Filter Paper 100 pcs.
- UTCM-0045 Filter Paper 1000 pcs.
- UTCM-0046 Reference Cement 5 g, ASTM

Standards

EN 196-6; ASTM C204; AASHTO T153

The UTCM-0040 Blaine Air Permeability Apparatus is used to determine the fineness of Portland cement, limes and similar powders expressed in terms of their specific surface. The apparatus is supplied complete with a U manometer tube, manometer liquid, glass connection parts, test stand, rubber aspirator, cell with perforated disc and plunger, plastic funnel and 100 pieces of filter paper.

UTCM-0046 Reference Cement should be ordered separately.



The Blaine Air Permeability Apparatus is supplied complete with

- U Manometer Tube
- Manometer Liquid, 250 ml
- Test Stand
- Rubber Aspirator
- Cell with Perforated Disc and Plunger (with UTEST Certificate of Cell And Plunger Dimensions for Calculation of Cell Specimen Volume)
- Plastic Funnel
- Filter Paper, 100 pcs.

Dimensions	300x540x210 mm (packed)
Weight (approx.)	7 kg (packed)

HEAT of HYDRATION

Product Code

- UTCM-0047 Heat of Hydration Calorimeter with High Resolution Digital Thermometer

Standards

EN 196-8; ASTM C186

When Portland or hydraulic cement is mixed with water, heat is generated as a result of the exothermic reaction. The heat generated by cement's hydration raises the temperature of concrete and this temperature rise causes expansion while concrete is hardening, especially under conditions when heat can not be readily released.

The UTCM-0047 Heat of Hydration Calorimeter is used for determining the heat of hydration of low heat Portland and hydraulic cement. The apparatus consists of a Dewar flask housed in an insulated box, an electric stirrer, a filler funnel and a high resolution battery operated electronic thermometer.

Digital Thermometer Features

- Displays, saves and prints ΔT , Min., Max. and Mean Values
- Audible alarm if limit values are exceeded
- Resolution 0.001°C complete with test certificate
- PT100 Probe Measuring Range -40 to +300°C
- Protection class IP65
- Accuracy 0.05°C
- Memory 10.000

The Heat of Hydration Calorimeter with High Resolution Electronic Thermometer is supplied complete with

- MS EXCEL template for data processing

Dimensions	300x200x650 mm
Weight (approx.)	13 kg



LOSS on IGNITION

Product Code

- UTD-1462 Muffle Furnace 5 L 1200°C Max. Temperature with Programmable Timer, 220-240 V 50-60 Hz

Standards

EN 196-2; ASTM C25, C115

UTD-1462 Muffle Furnace is used for determining the loss on ignition and insoluble residue of cement and building lime.

Working temperature and time can be programmed with PID digital control system.



Digital Thermometer Features

Temperature Controller	PC 442/2
Max. Temperature	1200 °C
Max. Continuous Temperature	1150 °C
Temperature Deviation at Set Point	± 2°C
Heat Up Time to Max. Temperature	50 min.
Internal Volume	5 L
Phase	1

Internal Dimension	140x180x200 mm
External Dimension	650x550x580 mm
Weight (approx.)	56 kg
Power	2000 W

SETTING TIME & CONSISTENCY

Product Code

- UTCM-0050/E Vicat Test Set EN
- UTCM-0050/A Vicat Test Set ASTM
- UTCM-0051 Vicat Apparatus (Frame)
- UTCM-0052/E Vicat Mould EN Base ID 80 mm, Top ID 70 mm, Height 40 mm
- UTCM-0052/A Vicat Mould ASTM Base ID 70 mm, Top ID 60 mm, Height 40 mm
- UTCM-0053/E Initial Vicat Needle EN 1.13 mm dia.
- UTCM-0053/A Vicat Needle ASTM 1 mm dia.
- UTCM-0054 Final Vicat Needle EN 1.13 mm dia.
- UTCM-0055 Consistency Plunger 10 mm dia.
- UTCM-0056 Supporting Glass Plate
- UTAS -0121 Transfer Dish for UTAS-0120 and UTCM-0050
- UTGT -1305 Glass Thermometer Max. 110°C
- UTCM-0057 Additiniol Weight, 700 gr, EN 480-2

Standards

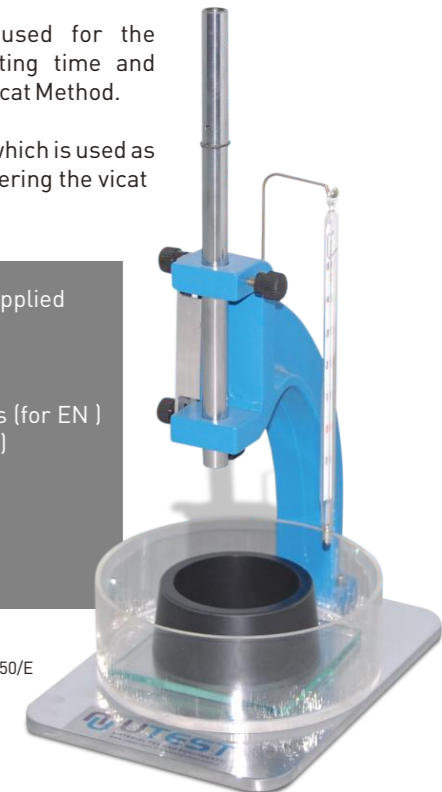
EN 196-3, 480-2; ASTM C187, C191; AASHTO T129, T131

The Vicat Test Set is used for the determination of the setting time and consistency of cement by Vicat Method.

UTAS-0121 Transfer Dish which is used as a Water Wessel EN, for layering the vicat mould under water.

The Vicat Test Set is supplied complete with

- Vicat Mould
- Initial and final Needles (for EN)
- Vicat Needle (for ASTM)
- Consistency Plunger
- Supporting Plate
- Glass Thermometer
- Transfer Dish (for EN)



Dimensions	150x190x318 mm
Weight (approx.)	3 kg

Physical and Chemical Properties

SETTING TIME & CONSISTENCY

Product Code

- UTCM-0048/E Automatic Vicat Apparatus (VICAMATIC-2) EN, 230 V 50-60 Hz
- UTCM-0048/E/110 Automatic Vicat Apparatus (VICAMATIC-2) EN, 110V, 60Hz, 1 Ph
- UTCM-0048/A Automatic Vicat Apparatus (VICAMATIC-2) ASTM 230 V 50-60 Hz
- UTCM-0048/A/110 Automatic Vicat Apparatus (VICAMATIC-2) ASTM 110V, 60Hz, 1 Ph

Standards

EN 196-3, 13279-2, 480-2; ASTM C191, C187

The setting time determination of cement/mortar/gypsum is one of the most important parameter for the quality inspection and verification.

The machine is based on the innovative CVI-TECH philosophy. On the machine, a needle (or a probe) drops freely into a cement sample at regular intervals and in fixed positions. Penetration depth is measured by a sensor with 0,1 mm resolution. Along with hardening process development the penetration depth decreases, when it matches some thresholds pre-defined by Standards initial and final setting times are measured and recorded.



Main Features

- Functional and ergonomic design based on the innovative CVI-TECH philosophy.
- Advanced electronics technologies providing superior performances and total flexibility combined with simplicity in use
- Easy-to-use double interface: local mode, with large size 4,3" 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
- 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
- Practical in-water testing accessory (optional)
- Automatic determination of initial and final setting time

UTCM-0048/E is supplied complete with EN 196-3 accessories: initial setting time needle 1.13 mm dia., mould and PC software VICASOFT-BASIC.

UTCM-0048/A is supplied complete with ASTM C191 accessories: initial setting time needle 1.00 mm dia., mould and PC software VICASOFT-BASIC.

Dimensions	200x400x410 mm
Weight (approx.)	10 kg
Power	50 W

Technical Specifications

- Conforming to EN 196-3, 13279-2, 480-2, ASTM C191, C187
- Large size 4,3" touch screen color display
- LAN port for direct connection to PC of a single unit or connection to a LAN hub for creating a network with up to 32 independent units all controlled by a single PC. 1 LAN cable is included
- USB port for data storage on pen-drive (included)
- Test procedures can be customized and stored to match user-defined requirements
- Can incorporate an integrated graphic printer showing test result and setting time plot
- Large test space with easy accessibility
- Automatic calculation of initial and final setting time at programmable penetration depth limits
- Wide range of accessories including EN and ASTM/AASHTO parts, in-water testing kit, needle cleaning device, integrated printer, probes for testing consistency and gypsum
- Minimum penetrations rate: 10 seconds
- Penetration measurement by encoder

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

Accessories

UTCM-0048/01 Accessory for Needle Continuous Cleaning and In-Water Testing

UTCM-0048/02 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. Each VICAMATIC-2 unit is supplied complete with LAN cable.

UTCM-0048/03 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. The upgrading shall be factory installed.

- UTCM-0048/04 Needle for Final Setting Test EN
- UTCM-0048/05 Cylindrical Probe for Consistency Test
- UTCM-0048/06 Additional Weight 700 g,
- UTCM-0048/07 Water thermostatic unit for VICAMATIC-2. Up to 2 units may be connected. 230V, 50-60 Hz, 1 ph
- UTCM-0048/07/110 Water thermostatic unit for VICAMATIC-2. Up to 2 units may be connected. 110V, 60 Hz, 1 ph
- UTCM-0048/08 Conical penetration probe 8 mm dia x 50 mm complete with 100g calibrated weight for gypsum testing to EN 13279

UTCM-0048/09 VICASOFT-PREMIUM Software for PC connection of up to 32 VICAMATIC-2 units including remote control of each unit, data acquisition - processing - filing, 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 bigger) to the number of VICAMATIC-2 units included in the network. LAN hubs are not included

Spare Parts

UTCM-0048/10 1,13 mm dia. needle for initial setting time test to EN
 UTCM-0048/11 1 mm dia. needle for setting time test to ASTM/AASHTO

- UTCM-0048/12 Plastic mould to EN
- UTCM-0048/13 Plastic mould to ASTM/AASHTO
- UTCM-0048/14 Glass base plate
- UTCM-0048/15 Spare base plate for in-water testing kit

SETTING TIME

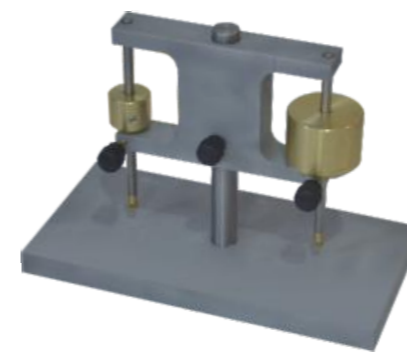
Product Code

UTCM-0058 Gillmore Apparatus

Standards

ASTM C91, C141, C150, C266; AASHTO T154

The UTCM-0058 Gillmore Apparatus is used to determine the setting time of cement hydraulic hydrometer lime and mortar. Apparatus consists of two horizontally positioned arms, carrying weighted needles, initial needle has a 2.12 mm diameter and 113.4 g in weight and the final needle has a 1.06 mm diameter and 453.6 g in weight.



Dimensions	300x100x300 mm
Weight (approx.)	2,5 kg

WORKABLE LIFE & STIFFENING & SETTING TIME

Product Code

- UTCM-0064 Workable Life, Stiffening Time and Concrete Setting Time Apparatus
- UTW-0637 Digital Balance, 30 kg / 5 g.
- UTC-0705 Needle Set (645, 323, 161, 65, 32, 16 mm²)
- UTW-0654 Digital Balance, 60 kg x10 gr

Standards

EN 1015-9, 13294; ASTM C403

The apparatus is used for determining the stiffening time of repair products and systems comprising hydraulic based mortar and concrete (CC), including those modified by the addition of polymers (PCC) and workable life of fresh mortar after the mixing procedures.



The Apparatus consist of a vertical loading pillar with a base. Supplied complete with a brass penetration rod with washer and a sample container (Ø75x75 mm aluminum).

UTC-0705 Needle Set for concrete setting time test acc.to ASTM should be ordered separately

UTW-0637 Digital Balance for the initial setting time, workable life and stiffening time should be ordered separately, as well.

Also, for determining concrete final setting time, instead of UTW-0637, UTW-0654 should be ordered separately.

Dimensions	400x400x600 mm
Weight (approx.)	10 kg

FLOW & CONSISTENCY OF CEMENT LIME / MORTAR

Product Code

- UTCM-0060/A Cement Flow Table ASTM, metric
- UTCM-0061/A Cement Flow Mould ASTM , metric
- UTCM-0062/A Tamper ASTM Hardwood 13x25x150 mm
- UTCM-0063/A Motorized Cement Flow Table ASTM, 220-240 V 50 Hz
- UTCM-0063/A/110 Motorized Cement Flow Table ASTM, 110 V 60 Hz
- UTCM-0060/E Cement Flow Table EN
- UTCM-0061/E Cement Flow Mould EN
- UTCM-0062/E Tamper EN Ø 40x200 mm 250 gr
- UTCM-0063/E Motorized Cement Flow Table EN, 220-240 V 50 Hz

Standards

ASTM C230; EN 459-2, 1015-3



UTCM-0063/A



UTCM-0063/E

There are two models of the Cement Flow Table, the UTCM-0060/A conforming to ASTM and the UTCM-0060/E conforming to the EN standard. Both are used for determining the consistency of mortar, lime and cement specimens. Manual and motorized models are available.

The hand operated model is fitted with a hand wheel. The motor operated model is driven by a motor speed reducer through a mechanical coupling at the rate of 1 revolution per second. The number of drops is preset on a counter and the machine stops automatically at the end of the cycle.

EN model, the table is manufactured from stainless steel and has a 300 mm diameter table. The conical mould is made of brass and has dimensions of 100 mm base dia. x 70 mm top dia. x 60 mm height.

ASTM model; the table is manufactured from brass and has 254 mm diameter. The conical mould is made of brass has dimensions of 100 mm base dia. X 70 mm top dia. X 50 mm height.

Both models are supplied complete with brass flow mould and tamper. 60 Hz versions are available and should be mentioned on your order if required.



UTCM-0060/A



UTCM-0060/E



UTCM-0062/A
UTCM-0061/A



UTCM-0062/E
UTCM-0061/E

	UTCM-0060/A UTCM-0063/A ASTM	UTCM-0060/E UTCM-0063/E EN
Table Diameter	254 mm	300 mm
Cone Base/Top Diameter	100.0 mm /70.0 mm	100.0mm /70.0 mm
Cone Height	50.0 mm	60.0 mm
Drop Height	12.7 mm	10.0 mm
Dimensions	Manual	260x260x270 mm
	Motorized	470x360x350 mm
Weight (approx.)	Manual	13 kg
	Motorized	36 kg
Power	180 W (Motorized)	

CONSISTENCY

Product Code

UTCM-0065 Plunger Penetration Apparatus

Standards

EN 413-2, 459-2, 1015-4

The UTEST Plunger Penetration Apparatus is used to determine the consistency of fresh mortar, building lime and masonry cement. The test apparatus consists of a base to place the test cup and a vertical column holding the penetration plunger assembly. The drop default height is adjusted to 100 mm. The plunger assembly weight is 90 g.

The Plunger Penetration Apparatus is supplied complete with

- Test cup, Ø 80 mm x 70 mm
- Tamper



Dimensions	200x200x600 mm
Weight (approx.)	6 kg

AIR CONTENT

Product Code

UTCM-0066 Air Entrainment Meter for Mortar 1 L

Standards

EN 413-2, 459-2, 1015-7

The UTCM-0066 Air Entrainment Meter for Mortar is used for determining the air content of cement paste, cement mortar and lime mortar. The air entrainment meter is manufactured from cast aluminum, the upper part and the lower test pot are held together with an air-tight seal which are easily adjusted by using the two spring clamps. The pressure gauge is installed in the head of the meter and the scale works in the 0-20 volumetric % range. The air is compressed with a hand pump installed in the system and the smart configuration of the test and correction buttons enables fast and simple testing.

Dimensions	200x200x320 mm
Weight (approx.)	3,5 kg



WATER RETENTION

Product Code

UTCM-0067 Solid Mould

Standards

EN 413-2

The UTCM-0067 Solid Mould is used to determine the water retention of masonry cement specimens.

Dimensions	100x100x25 mm
Weight (approx.)	0,1 kg



Building Lime, Grout and Mud Testing

REACTIVITY of LIME

Product Code

UTCM-0068 Apparatus For Reactivity of Quicklime, 220-240 V 50-60 Hz

Standards

EN 459-2; NF P98-102

The UTCM-0068 Reactivity of Quicklime Apparatus is used to determine the reactivity of ground quicklime on slaking.

The Apparatus consists of a Dewar Flask of 1 lt. capacity, thermometer, electric stirrer, base stand and the related accessories.



Dimensions

400x250x750 mm

Weight (approx.)

9.5 kg

BULK DENSITY of LIME

Product Code

UTCM-0069 Bulk Density Apparatus

Standards

EN 459-2

The bulk density of lime is of interest for storage and packaging and for determining volume and capacity of mixing equipment necessary for processing the material.

The UTCM-0069 Bulk Density Apparatus is designed to determine bulk density by allowing a sample to fall from a known height into a volumetric container.

The apparatus consists of a hopper, 1 L capacity cylindrical container and a spring-loaded trap.



Dimensions

250x250x750 mm

Weight (approx.)

2.0 kg

YIELD of LIME

Product Code

UTCM-0070 Slaking Vessel EN

Standards

EN 459-2

UTCM-0070 Slaking Vessel is used to determine the yield of lime by leaving the lime sample to slake into. Stainless steel made and double walled insulated. The cylinder has inside dimensions dia. 113 mm by 140 mm deep. Supplied complete with cover.



Dimensions

120x120x160 mm

Weight (approx.)

4 kg

FLOW PROPERTY

Product Code

UTCM-0071 Flow Cone Apparatus
 UTCM-0071/1 Flow Cone
 UTCM-0071/2 Ø:8 mm Nozzle
 UTCM-0071/3 Ø:9 mm Nozzle f
 UTCM-0071/4 Ø:40 mm Nozzle
 UTCM-0071/5 Ø:11 mm Nozzle
 UTCM-0071/6 Ø:13 mm Nozzle

Standards

EN 445

UTCM-0071 Flow Cone Apparatus is used for determining the flow properties of grouts, mortars, muds and other fluid materials.

The Flow Cone Apparatus is supplied complete with

Cone, Sieve 1,5 mm, Cup 1 L, Nozzle 10 mm, Fitting Bush, Stand



Dimensions

250x250x600 mm

Weight (approx.)

10 kg

VISCOSITY PROPERTY

Product Code

UTCM-0072 Marsh Funnel Viscometer

Standards

ISO 2431

The UTCM-0072 Marsh Funnel Viscometer is used for the determination of flow time by the use of flow cups of fluid materials such as paint, varnish etc. Manufactured from break-resistant rugged plastic to avoid deformations on temperature changes so the volumetric accuracy is maintained. Accurate measurements are taken using the metal orifice.

To avoid the operator's hands coming into contact with the test material, a handle is provided. Supplied complete with 1 liter capacity plastic measuring cup.



Top Diameter 150 mm

Nozzle Length 50 mm

Internal Diameter 5 mm

Total Length 355 mm

Weight (approx.) 0.5 kg

DENSITY of MUD

Product Code

UTCM-0073 Mud Balance

The UTCM-0073 Mud Balance, an ideal equipment for site applications, provides an accurate and easy method for determining the mud density. The accuracy of the readings is not affected by the temperature of the drilling mud.

The equipment consists of a base and a graduated arm with an integral spirit level, counter weight, cup, lid, rider, knife-edge. Supplied with a special plastic carrying case which can be used to stabilize the equipment at the working position.



Dimensions 550x110x100 mm

Weight (approx.) 1 kg

FINENESS of FLY ASH

Product Code

UTCM-0074 Wet Sieving Apparatus

Standards

EN 451-2

The UTCM-0074 Wet Sieving Apparatus is used for determining the fineness of fly ash. The apparatus comprises of a special stainless steel sieve, 0.045 mm opening, a spray nozzle Ø 17.5 mm with 17 holes Ø 0.5 mm oriented and spaced to conform to the standards. Supplied complete with a pressure gauge Ø 80 mm and fittings for connection to the water supply.



Dimensions 250x150x150 mm

Weight (approx.) 2 kg

Strength Tests

PREPARATION of MORTAR PRISMS for COMPRESSION TESTS

Product Code

- UTCM-0075 Manuel Mortar Mixer, 220-240 V 50-60 Hz
- UTCM-0075/110 Manuel Mortar Mixer, 110 V 60 Hz
- UTCM-0076 Spare Bowl for UTCM-0075 and UTCM-0085, 5 L
- UTCM-0078 Spare Beater for UTCM-0075 and UTCM-0085

Standards

EN 196-1, 196-3, 413-2, 459-2, 480-1, 1015-2, 12617-4;
ASTM C187, C305, AASHTO T129, T131, T162

The UTCM-0075 Manual Mortar Mixer has a 5 liter (approx.) capacity, it has been designed to mix mortars and cement pastes primarily to the requirements of standards. The mixing paddle revolves at a rate of 140 rpm. with a planetary motion of 62 rpm. in low speed. In high speed, the paddle revolves at the rate of 285 rpm. with a planetary motion of 125 rpm. The user can choose the speeds easily by using the switch fitted to the machine. There is a sand filling apparatus on the mixer to pour sand easily. The bowl and beater are easily fitted and removed from mixer.

The Manual Mortar Mixer is supplied complete with

- Bowl, 5 L (approx.)
- Beater

Dimensions	300x555x610 mm
Weight (approx.)	54 kg
Power	200 W



PREPARATION of MORTAR PRISMS for COMPRESSION TESTS

Product Code

- UTCM-0080 CEN Standard Sand, 1350 g

Standards

EN 196-1

Dimensions	270x130x30
Weight (approx.)	1350 g



PREPARATION of MORTAR PRISMS for COMPRESSION TESTS

Product Code

- UTCM-0085 Automatic Programmable Mortar Mixer, 220-240 V 50-60 Hz, 1 ph
- UTCM-0085/110 Automatic Programmable Mortar Mixer, 110 V 60 Hz, 1ph
- UTCM-0076 Spare Bowl for UTCM-0075 and UTCM-0085, 5 L
- UTCM-0078 Spare Beater for UTCM-0075 and UTCM-0085

Standards

EN 196-1, 196-3, 413-2, 459-2, 480-1, 1015-2, 12617-4; ASTM C187, C305; AASHTO T129, T131, T162

The mixer has been designed to mix mortars and cement pastes primarily to the requirements of standards. The mixing paddle has a planetary motion and is driven by a motor with a microprocessor based speed and preset programs to meet all listed EN and ASTM standards, custom designed programs or manual mode. The mode button is used for the fast selection of different programs. The mixing paddle revolves at a rate of 140 rpm. with a planetary motion of 62 rpm. in low speed. In high speed, the paddle revolves at the rate of 285 rpm. with a planetary motion of 125 rpm. An automatic sand dispenser is supplied with the machine and the sand is automatically discharged. Custom design allows 6 programs to be set by the operator, where the motor speed, sand dispenser position and duration of the mix can be set. For the mix where the motor speed is selected as zero, the bowl can be lowered without interrupting the rest of the program. On the display the user can see the mix time and the machine is equipped with lamp in order to warn the user for critical time periods.



UTCM-0076



UTCM-0078



The Automatic Programmable Mortar Mixer is supplied complete with

- Bowl, 5 L (approx.)
- Beater

Dimensions	300x555x610 mm
Weight (approx.)	56 kg
Power	200 W

Strength Tests

PREPARATION of MORTAR PRISMS for COMPRESSION TESTS

Product Code

- UTCM-0090 Jolting Table, EN, 220-240 V 50 Hz, (60 Hz version is available upon request)
- UTCM-0091 Jolting Table with Soundproof Safety Cabinet, EN, 220-240 V 50 Hz
- UTCM-0092 Three Gang Mould for 40x40x160 mm
- UTCM-0093 Feed Hopper 40x40x160 mm for UTCM-0092
- UTCM-0094 Short and Long Spreaders and Straightedge, for UTCM-0092

Standards

EN 196-1; ISO 679

Jolting Table is used for compacting of cement specimens in 40x40x160 mm mould and consists of mould table seated on a rotating cam driven at 60 r.p.m. The falling height is 15 mm conforming to EN 196-1. The machine is equipped with a counter which provides automatic shut off at end of preset drop numbers.

Weight and dimensions of the jolting table fully comply with the requirements of EN 196-1 standard. When used with UTCM-0092 Three Gang Mould and UTCM-0093 Feed Hopper, the total weight of the moving part is 20 kg ± 0.5 kg. Without UTCM-0092 and UTCM-0093 the weight of the moving parts is 6.85 kg. Rapid mould lock and release system allows easy and quick operation.

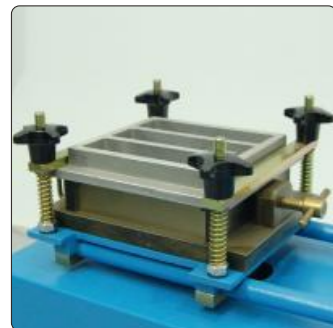
The supporting frame of the machine has been designed to ensure precise dimensions, table flatness, correct centering of the three gang mould on the table.

The motor and gearbox assembly is enclosed in a protective housing, which promotes user safety (the moving parts are inaccessible) and long life for the gearbox.

The standard model can be supplied with a safety/noise reduction cabinet. The cabinet is lined internally with soundproofing material to reduce sound level conforming to CE directives.



UTCM-0090



UTCM-0093



UTCM-0091 Jolting Table with Soundproof Safety Cabinet

	UTCM-0090	UTCM-0091
Dimensions	1050x350x500 mm	1440x500x575 mm
Weight (approx.)	55 kg	125 kg
Motor Speed	60 rpm.	
Drop Height	15 mm	
Power	250 W	

UTCM-0093 Feed Hopper is used for filling UTCM-0092 Three Gang Moulds placed on the Jolting Table.

UTCM-0092 Three Gang Mould, UTCM-0093 Feed Hopper, UTCM-0094 Short and Long Spreaders and Straightedge should be ordered separately.

PREPARATION of MORTAR PRISMS for COMPRESSION TESTS

Product Code

- UTCM-0092 Three Gang Mould 40x40x160 mm, Steel, EN
- UTCM-0093 Feed Hopper 40x40x160 mm for UTCM-0092
- UTCM-0094 Short and Long Spreaders and Straightedge for UTCM-0092
- UTCM-0095 Three Gang Cube Mould 50x50x50 mm, Steel, ASTM
- UTCM-0096 Cube Mould 70.7 mm, Steel, for UTCM-0098, BS

All moulds have been manufactured from steel and all internal surfaces are machined. All dimensions and specifications comply with the related standards.

The 40x40x160 mm mould has the surface hardness of a minimum HV400.



UTCM-0092



UTCM-0095



UTCM-0096

Standards

EN 196-1; ASTM C109; BS 4550

Dimensions	UTCM-0092	300x190x70 mm
	UTCM-0093	210x200x40 mm
	UTCM-0095	110x230x60 mm
	UTCM-0096	100x125x90 mm
Weight (approx.)	UTCM-0092	12 kg
	UTCM-0093	2 kg
	UTCM-0095	3 kg
	UTCM-0096	3,5 kg

PREPARATION of MORTAR PRISMS for COMPRESSION TESTS

Product Code

- UTCM-0098 Vibrating Machine for 70.7 mm Cube Moulds, BS, 220-240 V 50 Hz

Standards

BS 4550

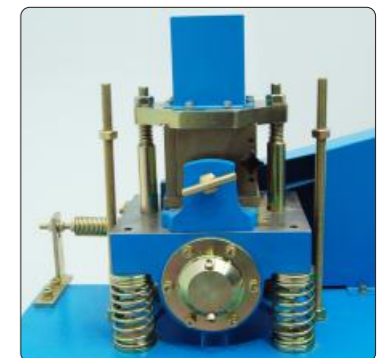
The UTCM-0098 Vibrating Machine is used for the preparation and compaction of 70.7 mm mortar cube specimens.

The mould table is mounted on four springs attached to an eccentric shaft which allows each sample to be vibrated at 12000 cycles per minute. There is a timer on it to preset time and it stops automatically in every 120 seconds.

60 Hz version should be mentioned on order if required.

70.7 mm cube mould (UTCM-0096) should be ordered separately.

Dimensions	450x650x850 mm
Weight (approx.)	80 kg
Eccentric Shaft Rotation	12000 r.p.m.
Power	1100 W



Strength Tests

CURING of MORTAR SAMPLES TESTS

Product Code

UTCM-0100 Curing Cabinet 1000 L, 220-240 V 50-60 Hz

Standards

EN 196-1; ISO 679

The UTCM-0100 Curing Cabinet is used for curing of cement, concrete cubes or other mortar specimens. It can be used for curing cement specimens within the mould, or after removing from the mould. The curing cabinet provides $20 \pm 1^\circ\text{C}$ temp. and over 95% RH humidity for cement specimens. Internal chamber and racks are made of stainless steel. The temperature is maintained at $20 \pm 1^\circ\text{C}$ by a immersion heater and refrigerator unit which are supplied complete with cabinet. The cabinet is equipped with a digital control unit which controls and monitors the temperature.

The humidity is maintained from 95% to saturation by water nebulizers and is also monitored on the digital control unit.



Internal Dimension	900x700x1350 mm
External Dimension	1100x1000x2200 mm
Weight (approx.)	150 kg
Power	1200 W



CEMENT COMPRESSION & FLEXURAL FRAMES

Product Code

UTCM-6700 250 kN Cement Compression Frame
 UTCM-6710 15/250 kN Cement Flexure/Compression Frame

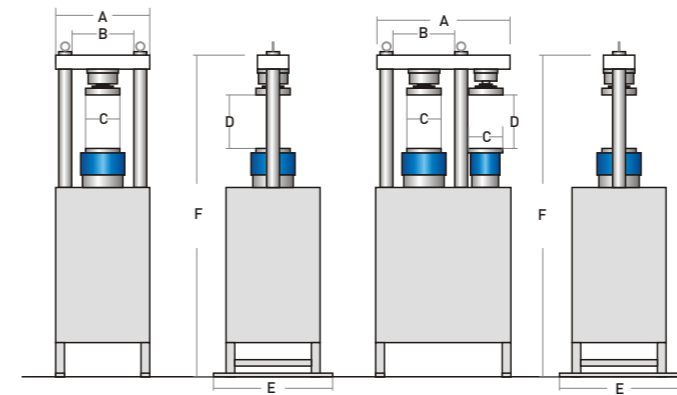
Standards

EN 196-1, 459-2, 1015-11, 13454-2; ASTM C109, C348, C349; BS 3892-1, 4551-1

The UTCM-6700 and UTCM-6710, very rigid two column frames have been designed for compression and/or flexure testing of mortar prisms and cubes specimens. Load cells are used on both frames to provide high accuracy in load measuring. Both frames are fitted with round platens with 165 mm diameter and these should be used together with suitable flexure and compression devices.

Distance pieces and transparent front-rear safety doors (should be factory installed) should be ordered separately.

Dimensions



	UTCM-6700	UTCM-6710
A	460 mm	680 mm
B	300 mm	300 mm
C	Ø165 mm	Ø165 mm
D	263 mm	263 mm
E	500 mm	500 mm
F	1650 mm	1650 mm
Weight	180 kg	325 kg

Distance Pieces for Frame

Due to the modular design of the frames any sample with suitable size, load and pace rate can be test on both chambers by decreasing the distance between platens.

Distance Pieces

UTC-4630	Distance piece dia. 165 mm x 15 mm
UTC-4631	Distance piece dia. 165 mm x 30 mm
UTC-4633	Distance piece dia. 165 mm x 50 mm
UTC-4634	Distance piece dia. 165 mm x 90 mm



UTCM-6700



UTCM-6710



Distance pieces



Platens

Strength Tests

CEMENT COMPRESSION & FLEXURAL FRAMES

Platens

UTCM-0116 Upper Loading Platen with Ball Seating Assembly Ø:165 mm and Lower Loading Platen, Ø:165 mm

Manufactured from high quality steel are hardened (more than HRC 53), smoothed and finished.

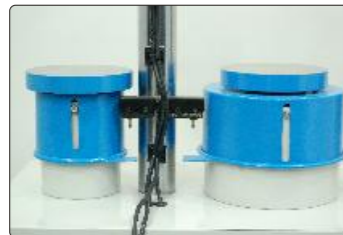
The roughness value for the surface texture of machine and auxiliary platens are 3.2 µm.



Loading Cylinder Assembly & Limit Switch

All frames have a single acting up stroking ram. The diameter of piston changes with regard to the capacity.

The maximum ram stroke is 50 mm, a limit switch is fitted to prevent over travel of the ram which cuts the power to the pump.



There is a low friction coaxial PTFE seal between the cylinder and the piston fitted to the cylinder.

Accessories



UTCM-0120/A
Flexure Jig Assembly to test 40x40x160 mm mortar prisms, ASTM

UTCM-0120/E
Flexure Jig Assembly to test 40x40x160 mm mortar prisms, EN



UTCM-0121/A
Compression Jig Assembly to test 50 mm (2") mortar cubes, ASTM



UTCM-0121/E
Compression Jig Assembly to test portions of 40x40x160 mm mortar prisms, EN

MANUAL CEMENT COMPRESSION and FLEXURAL MACHINES

Product Code

- UTCM-6310** 250 kN Manual Cement Compression Testing Machine
- UTCM-6410** 15/250 kN Manual Cement Flexure/Compression Testing Machine
- UTCM-0116** Upper Loading Platen with Ball Seating Assembly Ø:165 mm and Lower Loading Platen, Ø:165 mm
- UTCM-0120/A** Flexure Jig Assembly to test 40x40x160 mm mortar prisms, ASTM
- UTCM-0120/E** Flexure Jig Assembly to test 40x40x160 mm mortar prisms, EN
- UTCM-0121/A** Compression Jig Assembly to test 50 mm (2") mortar cubes
- UTCM-0121/E** Compression Jig Assembly to test portions of 40x40x160 mm mortar prisms, EN
- UTCM-0122** Compression Jig Assembly BS, to test 70,7 mm mortar cubes

Standards

EN 196-1, 459-2, 1015-11, 13454-2; ASTM C109, C348, C349; BS 3892-1, 4551-1



UTCM-6410



UTCM-6310



UTC-4810 with UTC-4920

The UTCM-6310 and UTCM-6410 single and double testing chamber Manual compression and flexure testing machines are designed to perform reliable strength and flexure tests on mortar specimens. The manual machines are especially suitable for on-site applications when electric power supply is not available.

Being a low cost alternative, UTEST manual testing series combine precision and simplicity with the unique design of the manual power pack which enables even an inexperienced operator to perform excellent compression and flexure tests on-site.

These manual testing machines conform to the standards EN 196-1, 459-2, 1015-11, 13454-2; ASTM C 109, C348, C349 and BS 3892-1, 4551-1 by using suitable accessories. They also meet with the requirements of CE norms with respect to operator health and safety.

The UTEST manual cement compression and flexure testing machines consist of very rigid two column single or double chamber frame, manual power pack and data acquisition system LPI.

Compression and flexure jigs, distance pieces, and also removable transparent front-rear safety doors (should be factory installed) should be ordered separately.

Manuel Power Pack

The UTC-4810 Hand Operated (Manual) Power Pack has been designed to be used with range of UTEST Compression machines and flexural frames to use on site and/or where electricity is not available.

The pump is equipped with a radial piston pump so that the loading is continuous as long as user turns the wheel installed on the pump. The loading is uniform as on an automatic machine. The operator can easily load the machine up to 300 bars.

Dimensions	300x400x600 mm
Weight (approx.)	50 kg

LPI

The LPI Battery Operated Digital Readout Unit has been designed to use with load cells or pressure transducers on different material test applications.

The unit operates with DC voltage source of -1,5 to 1,5 volts.

- Real time numeric display of load and load rate
- 1 channel with two different calibration table (can be used for 2 sensors)
- Peak hold property
- Can operate with 2 x AA batteries
- Serial port for PC or printer
- Multi-point calibration
- Easy preload zeroing
- 8 keys keyboard



UTC-4920

Technical Specifications

Model	UTCM-6310		UTCM-6410	
	Compression	Flexure	Flexure	Compression
Test Type	Compression	Flexure	Flexure	Compression
Capacity	250 kN	15 kN	15 kN	250 kN
Class 1 Measuring Range	2.5 to 250 kN	0.5 to 15 kN	0.5 to 15 kN	2.5 to 250 kN
The roughness value for texture of loading and auxiliary platens	≤ 3.2 µm	≤ 3.2 µm	≤ 3.2 µm	≤ 3.2 µm
Lower Platen Dimensions	165 mm	165 mm	165 mm	165 mm
Upper Platen Dimensions	165 mm	165 mm	165 mm	165 mm
Maximum Vertical Clearance Between Platens	263 mm	263 mm	263 mm	263 mm
Piston Diameter	160 mm	80 mm	80 mm	160 mm
Maximum Piston Movement	50 mm	50 mm	50 mm	50 mm
Horizontal Clearance	300 mm	200 mm	200 mm	300 mm
Oil Capacity	13 L	13 L		13 L
Maximum Working Pressure	125 bar	30 bar	30 bar	125 bar
Rapid Approach Rate	50 mm/min	80 mm/min	80 mm/min	50 mm/min
Dimensions (WxLxH)	760x500x1650 mm		980x500x1650 mm	
Weight	230 kg		375 kg	

The Maximum horizontal clearance for placing the sample is limited by the border of the platens. Sample must be placed such that its ends will not overlap the ends of platens and it must be centered perfectly.

The minimum vertical clearance for the specimen can be adjusted using the distance pieces.

Strength Tests

SEMI-AUTOMATIC CEMENT COMPRESSION & FLEXURAL MACHINES

Product Code

UTCM-6321	250 kN Semi-Automatic (Motorized) Cement Compression Testing Machine, 220-240 V 50-60 Hz
UTCM-6321/110	250 kN Semi-Automatic (Motorized) Cement Compression Testing Machine, 110 V 60 Hz
UTCM-6421	15/250 kN Semi-Automatic (Motorized) Cement Flexure Compression Testing Machine, 220-240 V 50-60 Hz
UTCM-6421/110	15/250 kN Semi-Automatic (Motorized) Cement Flexure Compression Testing Machine, 110 V 60 Hz
UTCM-0116	Upper Loading Platen with Ball Seating Assembly Ø:165 mm and Lower Loading Platen, Ø:165 mm
UTCM-0120/A	Flexure Jig Assembly to test 40x40x160 mm mortar prisms, ASTM
UTCM-0120/E	Flexure Jig Assembly to test 40x40x160 mm mortar prisms, EN
UTCM-0121/A	Compression Jig Assembly to test 50 mm (2") mortar cubes
UTCM-0121/E	Compression Jig Assembly to test portions of 40x40x160 mm mortar prisms, EN
UTCM-0122	Compression Jig Assembly BS, to test 70,7 mm mortar cubes

Standards

EN 196-1, 459-2, 1015-11, 13454-2; ASTM C109, C348, C349; BS 3892-1, 4551-1

The UTEST Semi-Automatic (Motorized) range of single testing chamber and double testing chamber compression and flexure testing machines have been designed for reliable and consistent testing of mortar samples. These compression and flexure testers are the results of continuous applications and research studies to upgrade the machines with the latest technologies and conform with current standards EN 196-1, 459-2, 1015-11, 13454-2; ASTM C 109, C348, C349 and BS 3892-1, 4551-1 in terms of its technical properties taking into account client requirements by using suitable accessories. These testers also meet the requirements of CE norms for safety and health of the operator.

The UTEST Semi-Automatic cement compression and flexure testing machines allow operators who have minimal experience to perform the tests.

The UTEST Semi-Automatic cement compression and flexure testing machines consist of a very rigid two column single or double chamber frame, hydraulic power pack and data acquisition system LPI.

Compression and flexure jigs, distance pieces, and also removable transparent front-rear safety doors (should be factory installed) should be ordered separately.

Power Pack

The UTC-4820 Motorized (Semi-Automatic) Power Pack, controlled by a pressure rate control valve, is designed to supply the required oil to the load frames for loading. The power pack can load different frames with required pace rates. A rapid approach pump is supplied as standard. The power pack is equipped with a safety valve (maximum pressure valve) to avoid machine overloading.

Dual Stage Pump

- Low pressure gear pump
- High pressure durable variable output pump

On the dual stage pump, high delivery low pressure gear pump is used for rapid approach, while low delivery high pressure durable variable output pump is used for test execution. Rapid approach property of the machine shortens the time interval from the piston starts moving until the upper platen touches to the specimen and helps to save a great amount of time in case of numerous specimens are going to be tested.



UTCM - 6321



UTCM - 6421

Motor

- Dual pump is driven by an AC motor
- 220 V (110 V), 50-60 Hz single phase and 0.55 kW

Distribution Block

A distribution block is used to control the oil flow direction supplied by the dual stage pump which has the safety valve and pressure relief valve mounted upon it.

- Safety valve (maximum pressure valve)
- Pressure relief valve

Oil Tank

The tank (20 L capacity) 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. Hydraulic motor oil number 46, must be used in the tank.

LPI

LPI Battery Operated Digital Readout Unit has been designed to use with load cells or pressure transducers on different material test applications.

- Real time numeric display of load and load rate
- 1 channel with two different calibration table (can be used for 2 sensors)
- Peak hold property
- Can operate with 2 x AA batteries
- Multi-point calibration
- Easy preload zeroing
- Serial port for PC or printer
- 7 keys keyboard

Safety Features

- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch

Data Acquisition & PC Software

UTEST Testing Software for LPI read out unit can be used with semi-automatic concrete compression and flexural testing machines for data acquisition and reporting. 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. Test parameters can be set and details about the test carried out, such as names and the Company details, test type, specimen type, user info and other information required can be entered and printed out as well as the test report and graph. Also, all minor revisions can be implemented upon request. Please find information about software on page 155-156.

Technical Specifications

Model	UTCM-6321	UTCM-6421	
Test Type	Compression	Flexure	Compression
Capacity	250 kN	15 kN	250 kN
Class 1 Measuring Range	2.5 to 250 kN	0.5 to 15 kN	2.5 to 250 kN
The roughness value for texture of loading and auxiliary platens	≤ 3.2 µm	≤ 3.2 µm	≤ 3.2 µm
Lower Platen Dimensions	165 mm	165 mm	165 mm
Upper Platen Dimensions	165 mm	165 mm	165 mm
Maximum Vertical Clearance Between Platens	263 mm	263 mm	263 mm
Piston Diameter	160 mm	80 mm	160 mm
Maximum Piston Movement	50 mm	50 mm	50 mm
Horizontal Clearance	300 mm	200 mm	300 mm
Power	550 W	550 W	
Oil Capacity	20L	20L	
Maximum Working Pressure	125 bar	30 bar	125 bar
Rapid Approach Rate	50 mm/min	80 mm/min	50 mm/min
Dimensions (WxLxH)	760x500x1650 mm	980x500x1650 mm	
Weight	250 kg	395 kg	



UTC - 4820



UTC - 4920

The Maximum horizontal clearance for placing the sample is limited by the border of the platens. Sample must be placed such that its ends will not overlap the ends of platens and it must be centered perfectly.

The suitable vertical clearance for the specimen can be adjusted using the distance pieces.

Strength Tests

AUTOMATIC CEMENT COMPRESSION & FLEXURAL MACHINES

Product Code

UTCM-6331	250 kN Automatic Cement Compression Testing Machine 220-240 V 50-60 Hz
UTCM-6331/110	250 kN Automatic Cement Compression Testing Machine 110 V 60 Hz
UTCM-6431	15/250 kN Automatic Cement Flexure/Compression Testing Machine 220-240 V 50-60 Hz
UTCM-6431/110	15/250 kN Automatic Cement Flexure/Compression Testing Machine 110 V 60 Hz
UTCM-0116	Upper Loading Platen with Ball Seating Assembly Ø:165 mm and Lower Loading Platen, Ø:165 mm
UTCM-0120/A	Flexure Jig Assembly to test 40x40x160 mm mortar prisms, ASTM
UTCM-0120/E	Flexure Jig Assembly to test 40x40x160 mm mortar prisms, EN
UTCM-0121/A	Compression Jig Assembly to test 50 mm (2") mortar cubes, ASTM
UTCM-0121/E	Compression Jig Assembly to test portions of 40x40x160 mm mortar prisms, EN
UTCM-0122	Compression Jig Assembly BS, to test 70,7 mm mortar cubes

Standards

EN 196-1, 459-2, 1015-11, 13454-2; ASTM C109, C348, C349; BS 3892-1, 4551-1

The UTEST Automatic range of single testing chamber and double testing chamber compression and flexure testing machines have been designed for reliable and consistent testing of mortar samples. These compression and flexure testers are the results of continuous applications and research studies to upgrade the machines with the latest technologies and conform the current standards EN 196-1, 459-2, 1015-11, 13454-2; ASTM C 109, C348, C349 and BS 3892-1, 4551-1 in terms of its technical properties taking into account client requirements by using suitable accessories. These machines also meet the requirements of CE norms for safety and health of the operator.

Compression and flexure jigs, distance pieces, and also removable transparent front-rear safety doors (should be factory installed) should be ordered separately.



UTCM - 6331



UTCM-6431 with Transparent Front-Rear Safety Doors

The UTEST automatic cement compression and flexure testing machines allow less experienced 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.)
- Choosing the compression or flexure frame by using the changeover valve.
- Pressing the START button on the control unit.
- The machine automatically starts the rapid approach; switches the test speed after 1% of the load capacity of the machine and stops once the specimen failure.
- Automatically saves the test parameters and test results.

The UTEST automatic cement compression and flexure testing machines consist of very rigid two column single or double chamber frames, automatic hydraulic power pack with data acquisition and control system BC 100.

Power Pack

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. Very silent power pack can load the specimen between 50 N/sec to 2.4 kN/sec with an accuracy of ±5%. A Rapid approach pump is supplied as standard. Safety valve (maximum pressure valve) is used to avoid machine overloading.



Dual Stage Pump

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 a lot of time when a large number of specimens are going to be tested.



Motor



The motor which drives the dual pump is an AC motor, 380 V, 50-60 Hz, 3 phase, 1 hp and 0.75 kW and it is controlled by Omron J7 motor inverter. The variation in the oil flow is executed with the variation of the rotation speed of the motor.

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.

Dimensions	360x380x900 mm
Weight (approx.)	80 kg
Power	750 W

Strength Tests

AUTOMATIC CEMENT COMPRESSION & FLEXURAL MACHINES

BC 100 Unit

BC100 TFT unit is designed to control the machine and processing of data from load-cells and pressure 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 2 analogue channels are provided for load-cells or pressure transducers.

BC100 TFT unit has easy to use menu options. It displays all menu option listings simultaneously, allowing the operator to access the required option in a seamless 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", or "Stress vs. Time" graphics.

BC100 TFT 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

- Pace rate control from 50 N/sec to 2,4 kN/sec depending on piston size
- Can control 2 frames
- Can make test with load control.
- Real time display of test graph.
- CPU card with 32-bit ARM RISC architecture
- Permanent storage capacity up to 10000 test results
- 2 analog channels for different frame load cells
- Programmable digital gain adjustment for load-cell
- 1 / 256000 points resolution per channel
- 10 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



Technical Specifications

Model	UTCM-6331	UTCM-6431	
	Compression	Flexure	Compression
Test Type	Compression	Flexure	Compression
Capacity	250 kN	15 kN	250 kN
Class 1 Measuring Range	2.5 to 250 kN	0.5 to 15 kN	2.5 to 250 kN
The roughness value for texture of loading and auxiliary platens	≤ 3.2 μm	≤ 3.2 μm	≤ 3.2 μm
Lower Platen Dimensions	165 mm	165 mm	165 mm
Upper Platen Dimensions	165 mm	165 mm	165 mm
Maximum Vertical Clearance Between Platens	263 mm	263 mm	263 mm
Piston Diameter	160 mm	80 mm	160 mm
Maximum Piston Movement	50 mm	50 mm	50 mm
Horizontal Clearance	300 mm	200 mm	300 mm
Power	750 W	750 W	
Oil Capacity	20 L	20 L	
Maximum Working Pressure	125 bar	30 bar	125 bar
Rapid Approach Rate	50 mm/min	80 mm/min	50 mm/min
Dimensions (WxLxH)	830x500x1650 mm	1050x500x1650 mm	
Weight	265 kg	410 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 overlap the ends of platens and it must be centered perfectly.

The suitable vertical clearance for specimen can be adjusted with distance pieces.

Safety Features

- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch
- Emergency stop button
- Software controlled maximum load value

Strength Tests

AUTOMATIC CEMENT COMPRESSION & FLEXURAL MACHINES

Data Acquisition & PC Software

The Automatic Cement Compression Flexural 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.

- **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.

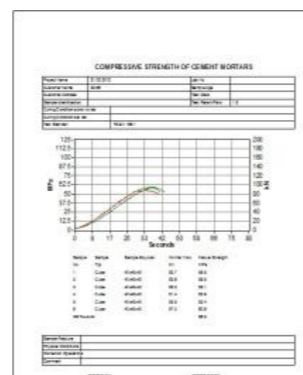
- **Capable to Access and use previously done test data**
User can access any data of previously completed tests and use in his/ her new report since most of the tests have same structure and properties.

- **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 initiating 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.

EN 196-1	Compressive Strength of Hydraulic-Cement Mortars
ASTM C 109	Compressive Strength of Hydraulic Cement Mortars
ASTM C 349	Compressive Strength of Hydraulic Cement Mortars
EN 196-1	Flexural Strength of Hydraulic-Cement Mortars
ASTM C 348	Flexural Strength
EN 459-2	Compressive Strength of Building Lime
EN 1015-11	Mortar for Masonary



ACCESSORIES

Product Code

- UTCM-0123 Tensile Adhesion Strength Test Apparatus, 5 kN, EN 1348
- UTM-8070 Pull Headed Plate Set, EN 1348
- UTM-8080 Pull Headed Plate Set, EN 1015-12
- UTM-8082 Frusto-Conical Shaped Ring, EN 1015-12

Standards

EN 1348, 1015-12

UTCM-0123 Tensile Adhesion Strength Test Apparatus can be fitted to the UTEST Cement Compression or Compression / Tension testing machines. This apparatus is supplied complete with 5 kN load cell and should be installed at our factory.

UTM-8070 Pull-Headed Plate Set consists of 6 pcs. metal plates with a fitting for connection to the test machine. The plates are 50x50 mm edged and 10 mm thickness

UTM-8080 Pull Headed Plate Set consists of 6 pcs. stainless steel plates with a fitting for connection to the test machine. The plates 50 mm dia. and 20 mm thickness.

UTM-8082 Frusto-Conical Shaped Ring is 50 mm dia. and stainless steel



UTM-8070



UTCM-0123



UTCM-6431 with UTCM-0123

Concrete Testing Equipments

Concrete is a composite construction material made primarily from aggregate, cement, and water. There are many formulations of concrete that provide various properties. Concrete is the most widely used man-made product in the world as the main building material within architectural structures, foundations, brick/block walls, pavements, bridges/overpasses, motorways/roads, runways, parking structures, dams, pools/reservoirs, pipes, footings for gates, fences, poles and even boats.

The quality of concrete is important in planning earthquake resistant structures that minimize damage, preventing injury and human loss.

Due to this reason, concrete must be closely controlled according to the relevant standards in every stage of production by experienced people using quality test equipment.

In the concrete section, UTEST Testing Equipment is basically grouped in four main headings

- Compression and Flexural Testing Machines
- Fresh Concrete Testing
- Hardened Concrete Testing
- Protection and Repair of Concrete Structures (NDT)

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Compression and Flexural Testing Machines

COMPRESSION TESTING FRAMES

Product Code

UTC-4700	600 kN Capacity Frame
UTC-4710	1500 kN Capacity Frame
UTC-4720	2000 kN Capacity Frame, EN
UTC-4721	2000 kN Capacity Frame, ASTM
UTC-4730	3000 kN Capacity Frame, EN
UTC-4731	3000 kN Capacity Frame, ASTM
UTC-5720	2000 kN Capacity Four Column Frame, EN
UTC-5730	3000 kN Capacity Four Column Frame, EN
UTC-5740	4000 kN Capacity Four Column Frame, EN
UTC-5750	5000 kN Capacity Four Column Frame, EN

Standards

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

The load frame provides the stability needed for accurate and repeatable test results over the years of operation. The machine's hydraulic power pack, control and read out units are positioned on the right hand side of the load frame for easier accessibility, increased productivity and for safer operations.

The load frame assembly consists of the following:

- Load Frame
- Upper Platen with Ball Seating Assembly
- Lower Platen
- Distance Pieces
- Loading Cylinder Assembly & Limit Switch for safety
- Front and Rear Protective Doors for safety

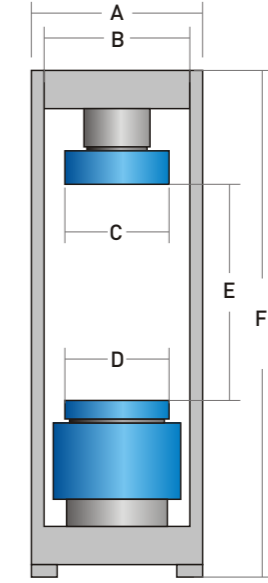
Low Capacity Frames

Models	UTC-4700	UTC-4710
Capacity	600 kN	1500 kN
Frame Type	Welded Steel	Welded Steel
Lower Platens Dimensions (D)	Ø 165 mm	Ø 216 mm
Upper Platens With Ball Seating Assembly Dimensions (C)	Ø 165 mm	Ø 216 mm
Piston Diameter	150 mm	230 mm
Piston Stroke	50 mm	50 mm
Maximum Vertical Clearance Between Platens (E)	340 mm	370 mm
Horizontal Clearance (B)	230 mm	320 mm
Dimensions (wxlxh) (Axd*xF)	290x500x800 mm	380x500x930 mm
Weight	335 kg	540 kg

d* depth

Low Capacity Frames are supplied complete with;

- UTC-4700 : 90, 50, 30, x 165 mm dia. distance pieces
- UTC-4710 : 90, 50, 2 pcs. 30, x 165 mm dia. distance pieces



UTC-4700



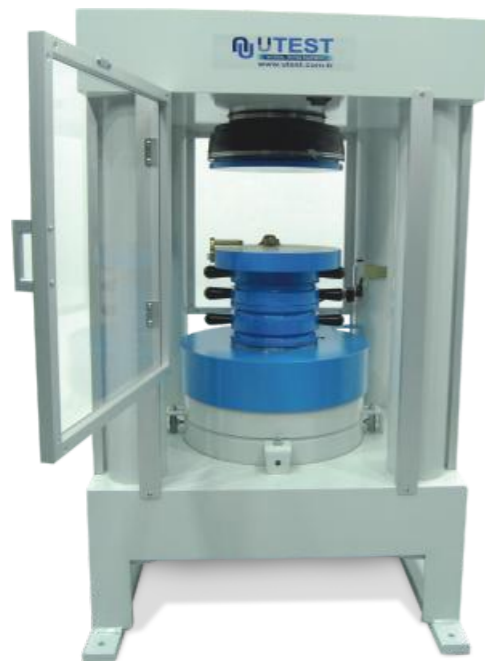
UTC-4720



UTC-4721



UTC-4730



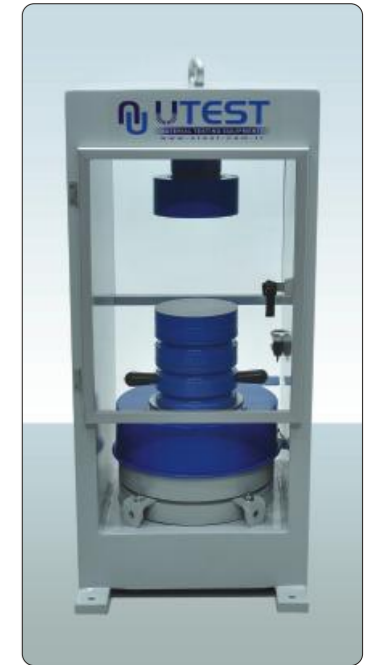
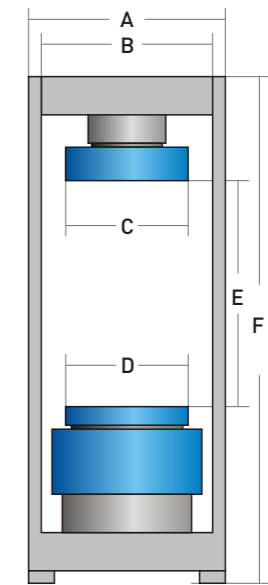
ASTM Frames

Models	UTC-4721	UTC-4731
Capacity	2000 kN	3000 kN
Frame Type	Welded Steel	Welded Steel
Lower Platens Dimensions (D)	Ø 165 mm	Ø 165 mm
Upper Platens With Ball Seating Assembly Dimensions (C)	Ø 165 mm	Ø 165 mm
Piston Diameter	250 mm	300 mm
Piston Stroke	50 mm	50 mm
Maximum Vertical Clearance Between Platens (E)	370 mm	370 mm
Horizontal Clearance (B)	360 mm	415 mm
Dimensions (wxlxh) (Axd*xF)	440x500x970 mm	505x540x1050 mm
Weight	690 kg	990 kg

d* depth

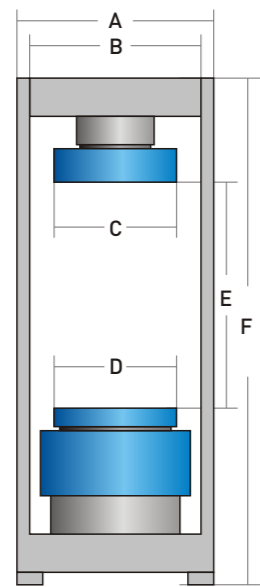
ASTM Frames are supplied complete with;

- UTC-4721 : 90, 50, 2 pcs. 30 x 165 mm dia. distance pieces
- UTC-4731 : 90, 50, 2 pcs. 30 x 165 mm dia. distance pieces



Compression and Flexural Testing Machines

EN Welded Frames



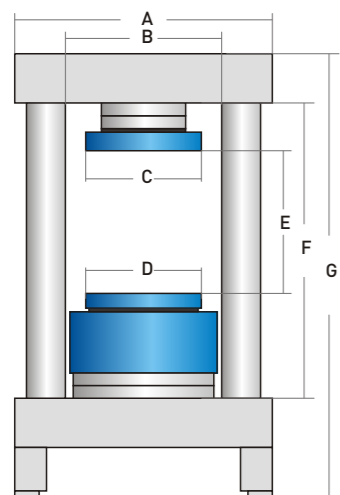
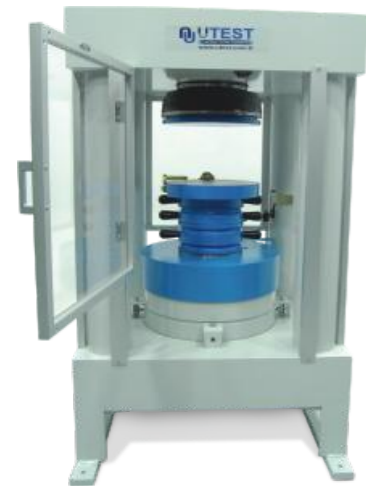
Models	UTC-4720	UTC-4730
Capacity	2000 kN	3000 kN
Frame Type	Welded Steel	Welded Steel
Lower Platens Dimensions (D)	Ø 300 mm	Ø 300 mm
Upper Platens With Ball Seating Assembly Dimensions (C)	Ø 300 mm	Ø 300 mm
Piston Diameter	250 mm	300 mm
Piston Stroke	50 mm	50 mm
Maximum Vertical Clearance Between Platens (E)	340 mm	340 mm
Horizontal Clearance (B)	360 mm	415 mm
Dimensions (wxlxh) (Axd*xF)	440x500x970 mm	505x540x1050 mm
Weight	710 kg	1010 kg

d* depth

EN Frames are supplied complete with;

- UTC-4720 : 90, 50, 30 x 205 mm dia. distance pieces
- UTC-4730 : 90, 50, 30 x 205 mm dia. distance pieces

EN Four Column Frames



Models	UTC-5720	UTC-5730	UTC-5740	UTC-5750
Capacity	2000 kN	3000 kN	4000 kN	5000 kN
Frame Type	Four Column	Four Column	Four Column	Four Column
Lower Platens Dimensions (D)	Ø 300 mm	Ø 300 mm	Ø 300 mm	Ø 300 mm
Upper Platens With Ball Seating Assembly Dimensions (C)	Ø 300 mm	Ø 300 mm	Ø 300 mm	Ø 300 mm
Piston Diameter	300 mm	350 mm	400 mm	420 mm
Piston Stroke	50 mm	50 mm	100 mm	100 mm
Maximum Vertical Clearance Between Platens (E)	340 mm	340 mm	520 mm	520 mm
Horizontal Clearance (B)	385 mm	445 mm	495 mm	515 mm
Dimensions (wxlxh) (Axd*xG)	630x660x1090 mm	735x670x1140 mm	805x710x1370 mm	865x740x1555 mm
Weight	1030 kg	1800 kg	2350 kg	3150 kg

d* depth

EN Four Column Frames are supplied complete with;

- UTC-5720 : 90, 50, 30 x 205 mm dia. distance pieces
- UTC-5730 : 90, 50, 30 x 205 mm dia. distance pieces
- UTC-5740 : 2 pcs. 90, 2 pcs. 50, 2 pcs. 30 x 205 mm dia. distance pieces
- UTC-5750 : 2 pcs. 90, 2 pcs. 50, 2 pcs. 30 x 205 mm dia. distance pieces

FRAME ACCESSORIES

Product Code

- UTC-4510 Upper Loading Platen (with ball seating assembly) Ø 105 mm, Lower Loading Platen Ø 105 mm, ASTM C39
- UTC-4511 Upper Loading Platen (with ball seating assembly) Ø 165 mm, Lower Loading Platen Ø 165 mm, ASTM C39
- UTC-4512 Upper P Loading platen (with ball seating assembly) Ø 216 mm, Lower Loading Platen Ø 216 mm, ASTM C39
- UTC-4513 Upper Loading Platen (with ball seating assembly) Ø 300 mm, Lower Loading Platen Ø 300 mm, EN 12390-4
- UTC-4515 Upper Loading Platen (with ball seating assembly) 310x500x38 mm, Lower Loading Platen 310x500x38 mm, EN 772-1

Standards

ASTM C39; EN 12390-4, 772-1

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, smoothed and finished.
- The roughness value for the surface texture of the auxiliary platens is $\leq 3.2 \mu\text{m}$.
- UTC-4511, UTC-4512 and UTC-4513 have centering rings on the lower platens for proper centering of 100 mm and 150 mm cube, 100 mm and 150 mm cylinder samples.
- Ø 300 mm UTC-4513 has an specimen centering apparatus on lower platen as standard or 150mm cube and 150 dia. cylinder



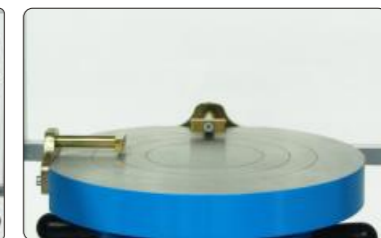
UTC-4510



UTC-4511



UTC-4512



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-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	110x110x130 mm	170x170x130 mm	220x220x130 mm	310x310x175 mm	320x510x175 mm
Weight	7 kg	20 kg	37 kg	75 kg	130 kg

Compression and Flexural Testing Machines

FRAME ACCESSORIES

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.

FRAME ACCESSORIES

Product Code

- UTC-4620 Block Platens with Sliding Rail Assembly
- UTC-4621 Block Platens Lifting Assembly

Standards

EN 772-1, 12390-4

Block Platens 460x280x45 mm with Sliding Rail Assembly are installed on the compression testing machines for testing concrete blocks and other structural materials. The Sliding Rail Assembly allows the platens to be easily installed without removing the existing UTC-4513 compression platens.

This option can only be used with UTC-4720, UTC-4730, UTC-5720, UTC-5730 and UTC-5740 compression testing frames. This assembly should be factory installed. It should be noted that after installing UTC-4620 the vertical clearance between the platens decreases by 50 mm.

The UTC-4621 Block Platens Lifting Assembly is used for easy removal of the lower platen of UTC-4620 and easy replacement of the distance pieces between the piston and the lower platen.



Dimensions	500x300x250 mm
Weight (approx.)	175 kg

Compression and Flexural Testing Machines

READOUT UNITS

Product Code

UTC-4920 LPI Battery Operated Digital Readout Unit

The LPI Battery Operated Digital Readout Unit has been designed to use with load cells or pressure transducers on different material test applications.

- The unit operates with DC voltage source of -1,5 to 1,5 volts.
- Can operate with 2 x AA batteries
- Real time numeric display of load and load pressure
- 1 channel with two different calibration table (can be used for 2 sensors)
- Peak hold property
- Multi-point calibration
- Easy preload zeroing
- 8 keys keyboard
- Serial port for PC or printer

The LPI is a very convenient readout unit that can be used to retrofit old compression machines with manometer (gauge).



Dimensions	150x200x200 mm
Weight (approx.)	1 kg

READOUT UNITS

Product Code

UTC-4930 BC 100 TFT Graphic Display Data Acquisition and Control Unit

The BC 100 Unit is designed to control the machines (Compression machine, Flexural machine, CBR machine, Marshall etc.) through processing of data from load-cells and pressure or displacement transducers. The Unit can be also used as a data acquisition unit on any existing 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 (depending on the application it would be adjusted to be simultaneous / or not at the factory) 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 seamless manner to activate the option or enter a numeric value to set the test parameters. Its specimen setting sub-menu lists different specimen types including but not limited to cube, cylinder, block, beam, beam double upper bearers, cube splitting tensile, cylinder splitting tensile, paving block splitting tensile and kerb flexure. 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

- Real time display of test graph.
- CPU card with 32-bit ARM RISC architecture
- Permanent storage capacity up to 10000 test results
- 1/256000 points resolution per channel
- 10 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 lbf
- 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 test control and advanced report generation
- 4 analog channels are available. However number of analog channels and how they will be configured depends on the application. Therefore refer to relevant machine for further details



UTC-4930



Concrete Test Screen



Cement Test Screen

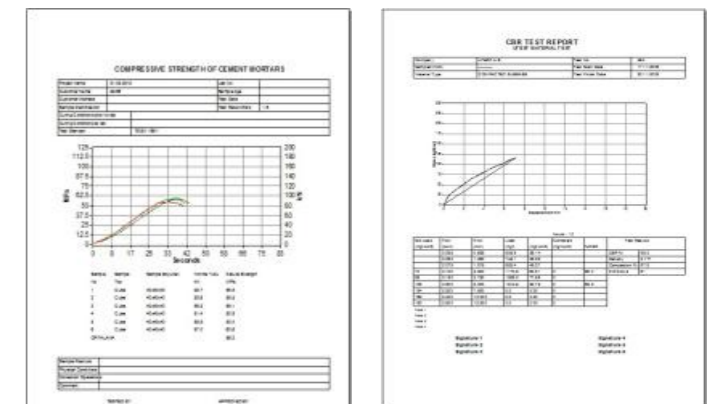
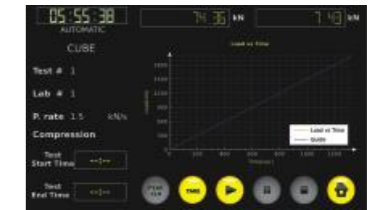


Marshall Test Screen



CBR Test Screen

Dimensions	150x200x200 mm
Weight (approx.)	1 kg



Test Reports

Compression and Flexural Testing Machines

HYDRAULIC POWER PACKS

Product Code

- UTC-4810 Hand Operated Hydraulic Power Pack
- UTC-4920 LPI Battery Operated Digital Read-Out Unit

The UTC-4810 Hand Operated (Manual) Power Pack has been designed to be used with range of UTEST compression and flexural frames to use on site and/or where electricity is not available.

The pump is equipped with a radial piston pump so that the loading is continuous as long as the user turns the wheel installed on the pump. The loading is uniform as on an automatic machine. The user can easily load up to 400 bars with minimal effort. Maximum working pressure of system is 400 bar.

UTC-4920 LPI Battery Operated Digital Read-Out Unit should be ordered separately.

Dimensions	300x250x500 mm
Weight (approx.)	50 kg



UTC-4810 with UTC-4920

HYDRAULIC POWER PACKS

Product Code

- UTC-4820 Motorized (Semi-Automatic) Power Pack, 220-240 V 50-60 Hz
- UTC-4820/110 Motorized (Semi-Automatic) Power Pack, 110 V 60 Hz
- UTC-4920 LPI Battery Operated Digital Read-Out Unit

The UTC-4820 Motorized (Semi-Automatic) Power Pack, controlled by a pressure rate control valve is designed to supply the required oil to the load frames for loading. The power pack can load different frames with required pace rates. A rapid approach pump is supplied as standard. The power pack is equipped with a safety valve (maximum pressure valve) to avoid machine overloading. Maximum working pressure of the system is 600 bar.

UTC-4920 LPI Battery Operated Digital Read-Out Unit should be ordered separately.

DUAL STAGE PUMP

- Low pressure gear pump
- High pressure durable variable output pump

On the dual stage pump, a high delivery low pressure gear pump is used for rapid approach, while a low delivery high pressure durable variable output pump is used for test execution. Rapid approach property of the machine shortens the time interval from when the piston starts moving until the upper platen touches the specimen and helps to save a great amount of time in a busy test laboratory.

MOTOR

- Dual pump is driven by an AC motor
- 220 V (110 V), 50-60 Hz single phase and 550 W

DISTRIBUTION BLOCK

- Safety valve (maximum pressure valve)
- Pressure relief valve

A distribution block is used to control the oil flow direction supplied by the dual stage pump which has the safety valve and pressure relief valve mounted upon it.

OIL TANK

The tank (20 L capacity) 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. Hydraulic motor oil number 46, must be used.



UTC-4820 with UTC-4920

SAFETY FEATURES

- Maximum pressure valves to avoid machine overloading

Dimensions	300x420x850 mm
Weight (approx.)	70 kg
Power	550 W

HYDRAULIC POWER PACKS

Product Code

- UTC-4830 Automatic Hydraulic Power Pack with Data Acquisition Control System BC 100 Unit, 220-240 V 50-60 Hz
- UTC-4830/110 Automatic Hydraulic Power Pack with Data Acquisition Control System BC 100 Unit, 110 V 60 Hz
- UTC-4840 Automatic Hydraulic Power Pack (High Oil Capacity) with Data Acquisition Control System BC 100 Unit, 220-240 V 50-60 Hz

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.

The UTC-4840 Automatic Hydraulic Power Pack, dual stage, controlled by BC 100 has the same specifications with UTC-4830 except for high oil capacity. UTC-4840 is used on frames that has bigger pistons. Maximum working pressure of the system is 430 bar.

DUAL STAGE PUMP

1. Low pressure gear pump
2. High pressure durable variable output pump

On the dual stage pump, a high delivery low pressure gear pump is used for rapid approach, while low delivery high pressure radial piston pump is used for test execution. Rapid approach facility of the machine shortens the time interval from when the piston starts moving until the upper platen touches to the specimen, this facility saves a great amount of time in a busy test laboratory.

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.

DISTRIBUTION BLOCK

Distribution block is used to control the oil flow direction supplied by the dual stage pump and the following hydraulic components are fitted to it:

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

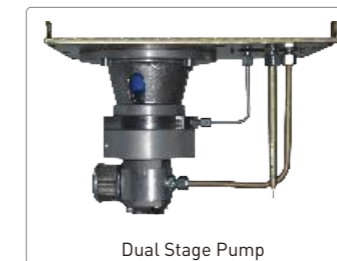
OIL TANK

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. The oil capacity of the tank is 20 lt. for UTC-4830 and 32 lt. for UTC-4840. Hydraulic motor oil, number 46, must be used.

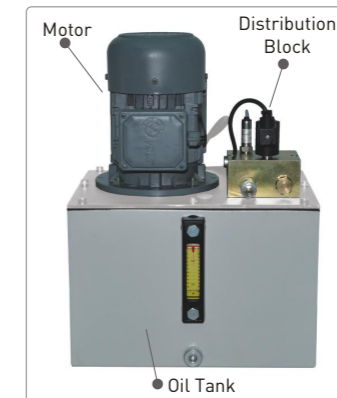
	UTC-4830	UTC-4840
Dimensions	370x400x920 mm	605x455x1015 mm
Weight (approx.)	85 kg	150 kg
Power	1000 W	1000 W



UTC - 4830



Dual Stage Pump



Oil Tank



UTC - 4840

Compression and Flexural Testing Machines

HYDRAULIC POWER PACKS

BC 100 Unit

BC100 TFT unit is designed to control the machine and processing of data from load-cells, pressure transducers or displacement transducers.

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. The unit can be configured as using for two frames or one frame with three 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 seamless manner to activate the option or enter a numeric value to set the test parameters. Its specimen setting sub-menu lists different specimen types including but not limited to cube, cylinder, block, beam, beam double upper bearers, cube splitting tensile, cylinder splitting tensile, paving block splitting tensile and kerb flexure. The BC100 digital graphic display is able to draw real-time "Load vs. Time" 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

- Pace rate control from 1 kN/sec to 25 kN/sec for compression of concrete or 50 N/sec to 2,4 kN/sec for cement.
- Can control 2 frames
- Can make test with 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 (depending on the application it would be adjusted to be simultaneous / or not at the factory) for different frame load cells or pressure transducers
- 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
- 10 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 lbf
- Real-time clock and date
- Test result visualization and memory management interface
- Remote connection from through ethernet
- USB flash disc for importing test results and for firmware
- USB printer support 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

Safety Features

- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch
- Emergency stop button
- Software controlled maximum load value

Data Acquisition & Control PC Software

The Automatic Compression 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 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

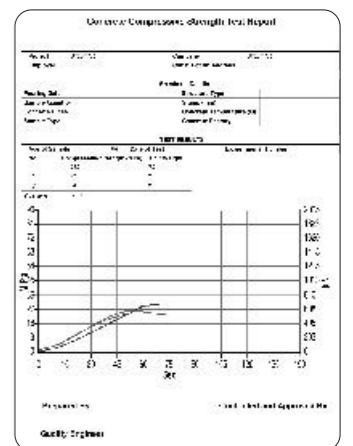
All test parameters supported by testing equipment can be changed remotely via software. All test parameters specified by user are downloaded to the device before initialing the test procedure. By this way predefined device parameters will not cause errors in test results.

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.



Compression and Flexural Testing Machines

ADVANCED SERVO CONTROLLED AUTOMATIC POWER PACK with PROPORTIONAL VALVE

Product Code

- UTC-4850 Advanced Servo Controlled Automatic Power Pack with Proportional Valve for 2 Frames, 220-240 V 50-60 Hz
- UTC-4850/110 Advanced Servo Controlled Automatic Power Pack with Proportional Valve for 2 Frames, 110 V 60 Hz
- UTC-4860 Advanced Servo Controlled Automatic Power Pack with Proportional Valve for 4 Frames, 220-240 V 50-60 Hz
- UTC-4860/110 Advanced Servo Controlled Automatic Power Pack with Proportional Valve for 4 Frames, 110 V 60 Hz

The UTC-4850 and UTC-4860 Automatic Power Packs with Proportional Valve, are advanced power packs can be used on any testing system ideal for R&D laboratories and Universities for advanced tests with P.I.D. Closed loop control. It can perform tests under load, displacement and strain controls. The frequency of the P.I.D controller and data acquisition is 1000 Hz. UTC 4850 and 4860 Automatic Power Packs are designed to supply the required oil to the load frames for loading, unloading or low cycle dynamic testing. All the operations of Data Acquisition and Controls System can be controlled from the touch screen front panel of a 240x320 LCD display or computer.

The UTC-4850 can control up to 2 different frames and UTC-4860 up to 4 frames. There is one load cell (or pressure transducer) input and one displacement transducer input for control. There are an extra three analogue channels for other sensors such as load cells, pressure transducers, displacement transducers etc. built in the system.

The power pack automatically controls and supplies oil to the frame which is chosen by the user via the touch screen LCD digital control unit or by choosing the test type from the computer software.

The type of displacement transducer can be TTL or analogue (It must be same type for all frames).

The main specifications of the UTC-4850 and UTC-4860 power packs;

- 1 litre/minute pump delivery (max) 315 bar, 1.1 kW motor rate
- Loading-unloading with $\pm 1\%$ rate accuracy
- Staying at constant load within 0,01% resolution of the maximum load
- The control of the load starts from 2% of the maximum load capacity of the system.

Both power packs can be connected to the computer through Ethernet port for advanced test cycles, data acquisition and reporting. The modulus of elasticity, Poisson's Ratio and compressibility parameters is easily and properly evaluated by attaching displacement transducer or extensometers on to the sample. All the calibration values of the transducers and also all the test parameters for the last test is automatically stored on the control unit. All power packs incorporate a pressure safety valve for each frame separately and a cooling unit.



Main Features

- Pace rate control from 0.01 kN/s to 100kN/s (depend on the specimen stiffness)
- 3 analogue channels for displacement transducers, extensometers, etc. built in the system as an addition to frame loadcell (pressure transducer) or displacement transducer
- Instrumentation amplifiers for sensor excitation and amplification
- 1/65.000 resolution and 1.000 Hz control for each channel
- Ethernet port for connecting to computer
- 240x320 pixel LCD display
- Touchscreen operator panel
- Can control 2 frames (UTC-4850) or 4 frames (UTC-4860)
- Can execute load, displacement or strain controlled tests. For post peak applications UTC-4870 must be selected.
- Free of charge PC software for test control and advanced report printout
- Multiple language support
- Real time clock/date

Data Acquisition & Control PC Software

Advanced Power Pack 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 for UTC-4850 and UTC-4860 advanced power packs.

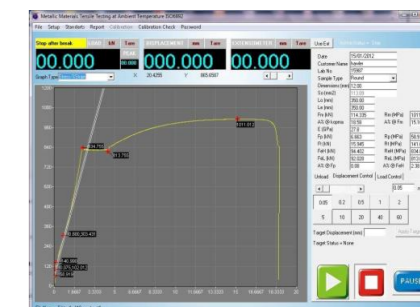
The software is capable of running the machine in load control, displacement or strain control. The test rate and the type of test control (load, displacement or strain control) can be changed on the fly. When the user select the target load or displacement value and load rate or displacement rate, the machine runs up to the selected value and waits till the next command. Engineering functions of elasticity modulus, poisson ratio and energy (for UTC-4870 and UTC-4880) are automatically calculated. The software can adjust the axes of graphs, supports different type of graphs and calculates 3 different type of elasticity modulus called tangent, linear and secant modulus. It also calculates poisson ratio. The gains of the closed loop control can be set to make calibration for the pressure transducer or loadcell. It has an easy calibration check facility such as machine keeps load constant at %2, %5, %10 of its maximum capacity.

Online speed or mode change is available by user-friendly buttons. Various types of graphs depending on the used sensors can be monitored during the test.

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. The results are exported to Microsoft Excel for advanced research purposes. The data can also be filtered for obtaining intuitive results. The software prepares a summary report.

Following tests can be done with the UTEST software.

Standard Code	Description
BS-1881 part 121	Static Modulus of Elasticity
ASTM C 469	Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression
ISO 1920-9	Testing of concrete - Part 9: Determination of creep of concrete cylinders in compression
ISO 1920-10	Testing of concrete -Part 10: Determination of static modulus of elasticity in compression
EN 12390-13	Testing hardened concrete - Part 13: Determination of secant modulus of elasticity in compression



- Foreign Language Support and Customizable User Interface
- Capability to Save 24 test results of different specimens in one test folder
- Graphical data on the screen is refreshed simultaneously during test procedure
- Able to save frequently used texts in memory and recall them when necessary
- Capable to Access and use previously done test data
- Able to edit test parameters of the testing equipment through Software
- Graphical outputs and reports can be saved as a MS Excel worksheet
- Maximum Flexibility to edit report and graph templates

Dimensions	1100x700x1030
Weight (approx.)	210 kg
Power	1500 W

Compression and Flexural Testing Machines

ADVANCED SERVO CONTROLLED AUTOMATIC POWER PACK with SERVO VALVE

Product Code

- UTC-4870 Advanced Servo Controlled Automatic Power Pack with Servo Valve for 2 Frames, 220-240 V 50-60 Hz
- UTC-4870/110 Advanced Servo Controlled Automatic Power Pack with Servo Valve for 2 Frames, 110 V 60 Hz
- UTC-4880 Advanced Servo Controlled Automatic Power Pack with Servo Valve for 4 Frames, 220-240 V 50-60 Hz
- UTC-4880/110 Advanced Servo Controlled Automatic Power Pack with Servo Valve for 4 Frames, 110 V 60 Hz

The UTC-4870 and UTC-4880 Automatic Power Packs with Servo Valve, are advanced power packs can be used on any testing system ideal for R&D laboratories and Universities for advanced tests with P.I.D. Closed loop control. It can perform tests under load, displacement and strain controls. The frequency of the P.I.D controller and data acquisition is 1000 Hz. 4870 and UTC-4880 Automatic Power Packs are designed to supply the required oil to the load frames for loading, unloading or low cycle dynamic testing. All the operations of Data Acquisition and Controls System can be controlled from the touch screen front panel of a 240x320 LCD display or computer.

The UTC-4870 can control up to 2 different frames and UTC-4880 up to 4 frames. There is one load cell (or pressure transducer) input and one displacement transducer input for control. There are an extra three analogue channels for other sensors such as load cells, pressure transducers, displacement transducers etc. built in the system.

The power pack automatically controls and supplies oil to the frame which is chosen by the user via the touch screen LCD digital control unit or by choosing the test type from the computer software.

The type of displacement transducer can be TTL or analogue (It must be same type for all frames)

The main specifications of the UTC-4870 and UTC-4880 power packs are

- Up to 5 litre/minute pump delivery (max) 280 bar 3 kW motor rate
- Loading-unloading with $\pm 0,5\%$ rate accuracy
- Staying at constant load within 0,005% resolution of the maximum load
- The control of the load starts from 1 % of the maximum load capacity of the system.

Both power packs can be connected to the computer through Ethernet port for advanced test cycles, data acquisition and reporting. The modulus of elasticity, Poisson's Ratio and compressibility parameters is easily and properly evaluated by attaching displacement transducer or extensometers on to the sample. All the calibration values of the transducers and also all the test parameters for the last test is automatically stored on the control unit. All power packs incorporate a pressure safety valve for each frame separately and a cooling unit.

Dimensions	1100x700x1030
Weight (approx.)	210 kg
Power	1500 W



Main Features

- Pace rate control from 0.01 kN/s to 100kN/s (depend on the specimen stiffness)
- 3 analogue channels for displacement transducers, extensometers, etc. built in the system as an addition to frame loadcell (pressure transducer) or displacement transducer
- Instrumentation amplifiers for sensor excitation and amplification
- 1/65.000 resolution and 1.000 Hz control for each channel
- Ethernet port for connecting to computer
- 240x320 pixel LCD display
- Touchscreen operator panel
- Can control 2 frames (UTC-4870) or 4 frames (UTC-4880)
- Can execute load, displacement or strain controlled tests. For post peak applications UTC-4870 must be selected.
- Free of charge PC software for test control and advanced report printout
- Multiple language support
- Real time clock/date

Data Acquisition & Control PC Software

Advanced Power Pack 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 for UTC-4870 and UTC-4880 advanced power packs.

The software is capable of running the machine in load control, displacement or strain control. The test rate and the type of test control (load, displacement or strain control) can be changed on the fly. When the user select the target load or displacement value and load rate or displacement rate, the machine runs up to the selected value and waits till the next command. Engineering functions of elasticity modulus, poisson ratio and energy are automatically calculated. The software can adjust the axes of graphs, supports different type of graphs and calculates 3 different type of elasticity modulus called tangent, linear and secant modulus. It also calculates poisson ratio. The gains of the closed loop control can be set to make calibration for the pressure transducer or loadcell. It has an easy calibration check facility such as machine keeps load constant at %2, %5, %10 of its maximum capacity.

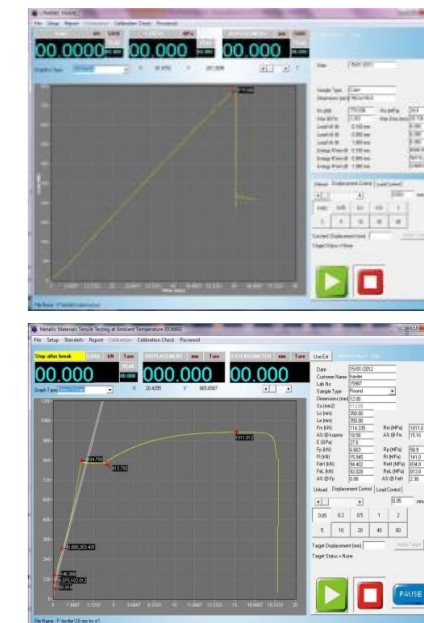
Online speed or mode change is available by user-friendly buttons. Various types of graphs depending on the used sensors can be monitored during the test.

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. The results are exported to Microsoft Excel for advanced research purposes. The data can also be filtered for obtaining intuitive results. The software prepares a summary report.

Following tests can be done with the UTEST software.

Standard Code	Description
EN 14651	Test method for metallic fibre concrete - Measuring the flexural tensile strength (limit of proportionality (LOP), residual)
EN 14488-3	Flexural strengths (first peak, ultimate and residual) of fibre reinforced beam specimens
BS-1881part121	Static Modulus of Elasticity
ASTM C 469	Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression
ASTM C 1609	Flexural Performance of Fiber-Reinforced Concrete (Using Beam With Third-Point Loading)
ISO 1920-9	Testing of concrete -Part 9: Determination of creep of concrete cylinders in compression
ISO 1920-10	Testing of concrete -Part 10: Determination of static modulus of elasticity in compression
EN 12390-13	Testing hardened concrete - Part 13: Determination of secant modulus of elasticity in compression

- Foreign Language Support and Customizable User Interface
- Capability to Save 24 test results of different specimens in one test folder
- Graphical data on the screen is refreshed simultaneously during test procedure
- Able to save frequently used texts in memory and recall them when necessary
- Capable to Access and use previously done test data
- Able to edit test parameters of the testing equipment through Software
- Graphical outputs and reports can be saved as a MS Excel worksheet
- Maximum Flexibility to edit report and graph templates



Compression and Flexural Testing Machines

LOW CAPACITY MANUAL COMPRESSION TESTING MACHINES

Product Code

UTC-4010 600 kN Manual Compression Testing Machine
 UTC-4110 1500 kN Manual Compression Testing Machine

Standards

ASTM C39



UTC - 4010



UTC - 4110

The UTEST 600 kN and 1500 kN capacity Manual Compression Testing Machines are designed to perform reliable compression tests on concrete specimens especially suitable for on-site applications when electric power supply is unavailable.

Being a low cost alternative, the UTEST manual testing series combines precision and simplicity with the unique design of the manual power pack which is hand operated and enables even an inexperienced operator to perform excellent compression and flexure tests on-site.

Exceeding of the ASTM C-39 standard provisions (starts with the 10% of the machine capacity), the UTC-4010 and UTC-4110 are supplied in Class 1 starting from 50 kN. With their exceptional performance, the UTC-4010 and UTC-4110 consists of a heavy duty welded frame, hydraulic power pack and data acquisition system LPI.

UTC-4010 (600 kN) Testing Machine is supplied complete with;

- Ø 165x90 mm, Ø 165x50 mm, Ø 165x30 mm and Ø 165x15 mm distance pieces
 - UTC-4511 Upper Platen (with ball seating assembly) Ø165 mm, Lower Platen Ø165 mm.
- UTC-4510 upper and lower platen sets can also be used with UTC-4010 testing machine.

UTC-4110 (1500 kN) Testing Machine is supplied complete with;

- Ø 165x90 mm, Ø 165x50 mm, 2 pcs. Ø 165x30 mm and Ø 165x15 mm distance pieces
- UTC-4512 Upper Platen (with ball seating assembly) Ø216 mm, Lower Platen Ø216 mm.

UTC-4510, UTC-4511 and UTC-4515 upper and lower platen sets can also be used with UTC-4110 testing machine.

Model	UTC-4010	UTC-4110
Capacity	600 kN	1500 kN
Standard	ASTM C39	ASTM C39
The roughness value for texture of loading and auxiliary platens	≤ 3.2µm	≤ 3.2µm
Lower platens dimensions	Ø165 mm	Ø216 mm
Upper platens dimensions	Ø165 mm	Ø216 mm
Maximum vertical clearance between platens	340 mm	370 mm
Piston diameter	150 mm	230 mm
Maximum piston movement	50 mm	50 mm
Horizontal clearance	230 mm	320 mm
Oil capacity	12 L	12 L
Maximum working pressure	340 Bar	362 Bar
Dimensions (w×l×h)	590x500x800 mm	680x500x930 mm
Weight	385 kg	590 kg

Compression and Flexural Testing Machines

LOW CAPACITY SEMI-AUTOMATIC COMPRESSION TESTING MACHINES

Product Code

- UTC-4021 600 kN Semi-Automatic Compression Testing Machine, 220-240 V 50-60 Hz
- UTC-4021/110 600 kN Semi-Automatic Compression Testing Machine, 110 V 60 Hz
- UTC-4121 1500 kN Semi-Automatic Compression Testing Machine, 220-240 V 50-60 Hz
- UTC-4121/110 1500 kN Semi-Automatic Compression Testing Machine, 110 V 60 Hz
- UTC-0210 High Precision Pressure Transducer and Electronic

Standards

ASTM C39; AASHTO T22; ISO EN 7500



UTC - 4021



UTC - 4121

The UTEST Semi-Automatic (Motorized) range of 600 kN and 1500 kN capacity compression testing machines have been designed for reliable and consistent testing of a wide range of specimens. These compression testers are manufactured as a result of continuous applications and research studies to upgrade the machines with the latest technologies to conform to the current standards ASTM C39; AASHTO T22; ISO EN 7500 in terms of its technical properties taking into account the client requirements. These machines also meet the requirements of CE norms with respect to the operator's health and safety. Their user-friendly design enable an inexperienced operator to perform the tests.

Exceeding of the ASTM C-39 standard provisions (starts with the 10% of the machine capacity), the UTC-4021 and UTC-4121 are supplied in Class 1 starting from 50 kN. This unique 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 welded frame, hydraulic power pack with data acquisition system LPI.

UTC-4021 (600 kN) Testing Machines is supplied complete with;

- Ø 165x90 mm, Ø 165x50 mm, Ø 165x30 mm and Ø 165x15 mm distance pieces
 - UTC-4511 Upper Platen (with ball seating assembly) Ø165 mm, Lower Platen Ø165 mm.
- UTC-4510 upper and lower platen sets can also be used with UTC-4021 testing machine.

UTC-4121 (1500 kN) Testing Machines is supplied complete with;

- Ø 165x90 mm, Ø 165x50 mm, 2 pcs. Ø 165x30 mm and Ø 165x15 mm distance pieces
 - UTC-4512 Upper Platen (with ball seating assembly) Ø216 mm, Lower Platen Ø216 mm.
- UTC-4510, UTC-4511 and UTC-4515 upper and lower platen sets can also be used with UTC-4121 testing machine.

Safety Features

- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch

Model	UTC-4021	UTC-4121
Capacity	600 kN	1500 kN
Standard	ASTM C39	ASTM C39
The roughness value for texture of loading and auxiliary platens	≤ 3.2µm	≤ 3.2µm
Lower platens dimensions	Ø165 mm	Ø216 mm
Upper platens dimensions	Ø165 mm	Ø216 mm
Maximum vertical clearance between platens	340 mm	370 mm
Piston diameter	150 mm	230 mm
Maximum piston movement	50 mm	50 mm
Horizontal clearance	230 mm	320 mm
Oil capacity	20 L	20 L
Maximum working pressure	340 Bar	362 Bar
Dimensions (w×l×h)	590x500x800 mm	680x500x930 mm
Weight	405 kg	610 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 129).

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

Compression and Flexural Testing Machines

LOW CAPACITY AUTOMATIC COMPRESSION TESTING MACHINES

Product Code

UTC-4031	600 kN Automatic Compression Testing Machine, 220-240 V 50-60 Hz
UTC-4031/110	600 kN Automatic Compression Testing Machine, 110 V 60 Hz
UTC-4131	1500 kN Automatic Compression Testing Machine, 220-240 V 50-60 Hz
UTC-4131/110	1500 kN Automatic Compression Testing Machine, 110 V 60 Hz
UTC-0210	High Precision Pressure Transducer and Electronic

Standards

ASTM C39; AASHTO T22; ISO EN 7500



UTC - 4031



UTC - 4131

The UTEST Automatic range of 600 kN and 1500 kN capacity compression testing machines have been designed for reliable and consistent testing of a wide range of specimens. These compression testers are manufactured as a result of continuous research studies to upgrade the machines with the latest technologies to conform to the current standards ASTM C39; AASHTO T22; ISO EN 7500 in terms of its technical properties taking into account the client requirements. These machines also meet the requirements of CE norms with respect to the health and safety of the operator. Their user-friendly design enables an inexperienced operator to perform the tests.

Once the machine has been switched on and the specimen is positioned required operations are:

- Setting the test parameters (pace rate needs to be adjusted only 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 the test results.

Exceeding of the ASTM C-39 standard provisions (starts with the 10% of the machine capacity), the UTC-4031 and UTC-4131 are supplied in Class 1 starting from 50 kN. This unique 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 welded frame, automatic hydraulic power pack with data acquisition and control system BC 100.

UTC-4031 (600 kN) Testing Machine is supplied complete with;

- Ø 165x90 mm, Ø 165x50 mm, Ø 165x30 mm and Ø 165x15 mm distance pieces
- UTC-4511 Upper Platen (with ball seating assembly) Ø165 mm, Lower Platen Ø165 mm.

UTC-4510 upper and lower platen sets can also be used with UTC-4031 testing machine.

UTC-4131 (1500 kN) Testing Machine is supplied complete with;

- Ø 165x90 mm, Ø 165x50 mm, 2 pcs. Ø 165x30 mm and Ø 165x15 mm distance pieces
- UTC-4512 Upper Platen (with ball seating assembly) Ø216 mm, Lower Platen Ø216 mm.

UTC-4510, UTC-4511 and UTC-4515 upper and lower platen sets can also be used with UTC-4131 testing machine.

Safety Features

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

Model	UTC-4031	UTC-4131
Capacity	600 kN	1500 kN
Standard	ASTM C39; AASHTO T22	ASTM C39; AASHTO T22
The roughness value for texture of loading and auxiliary platens	≤ 3.2µm	≤ 3.2µm
Lower platens dimensions	Ø165 mm	Ø216 mm
Upper platens dimensions	Ø165 mm	Ø216 mm
Maximum vertical clearance between platens	340 mm	370 mm
Piston diameter	150 mm	230 mm
Maximum piston movement	50 mm	50 mm
Horizontal clearance	230 mm	320 mm
Power	750 W	750 W
Oil capacity	20 L	20 L
Maximum working pressure	335 Bar	355 Bar
Dimensions (wxlxh)	660x500x900 mm	750x500x930 mm
Weight	420 kg	625 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 129).

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

Compression and Flexural Testing Machines

HIGH CAPACITY SEMI-AUTOMATIC COMPRESSION TESTING MACHINES

Product Code

UTC-4221	2000 kN Semi-Automatic Compression Testing Machine EN, 220-240 V 50-60 Hz
UTC-6221	2000 kN Semi-Automatic Compression Testing Machine ASTM, 220-240 V 50-60 Hz
UTC-6221/110	2000 kN Semi-Automatic Compression Testing Machine ASTM, 110 V 60 Hz
UTC-4321	3000 kN Semi-Automatic Compression Testing Machine EN, 220-240 V 50-60 Hz
UTC-6321	3000 kN Semi-Automatic Compression Testing Machine ASTM, 220-240 V 50-60 Hz
UTC-6321/110	3000 kN Semi-Automatic Compression Testing Machine ASTM, 110 V 60 Hz
UTC-0210	High Precision Pressure Transducer and Electronic

Standards

ASTM C39; AASHTO T22; ISO EN 7500, EN 12390-4



UTC - 4321

UTC - 4221

The UTEST Semi-Automatic (Motorized) range of 2000 kN and 3000 kN capacity compression testing machines have been designed for reliable and consistent testing of a wide range of specimens. These compression testers are manufactured as a result of continuous research studies to upgrade the machines with the latest technologies to conform with the latest standards EN 12390-3, 12390-4, BS 1881 and ASTM C39 in terms of its technical properties taking into account the client requirements. These machines also meet the requirements of CE norms with respect to the health and safety of the operator. And their user-friendly design enable an inexperienced operator to perform the test.

Exceeding of the ASTM C-39 standard provisions (starts with the 10% of the machine capacity), the UTC-4221, UTC-4321, UTC-6221 and UTC-6321 are supplied in Class 1 starting from 50 kN. This unique 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 welded frame, hydraulic power pack with data acquisition system LPI.

UTC-4221 and UTC-4321 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-4221 and UTC-4321 testing machines.

UTC-6221 and UTC-6321 Compression Testing Machines are supplied complete with;

- Ø 165x90 mm, Ø 165x50 mm and 2 pcs Ø 165x30 mm distance pieces
- UTC-4511 Upper Platen (with ball seating assembly) Ø165 mm, Lower Platen Ø165 mm.

UTC-4510, UTC-4512 and UTC-4515 upper and lower platen sets can also be used with UTC-6221 and UTC-6321 Compression Testing Machines.

Safety Features

- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch

Model	UTC-4221	UTC-4321	UTC-6221	UTC-6321
Capacity	2000 kN	3000 kN	2000 kN	3000 kN
Standard	EN	EN	ASTM	ASTM
The roughness value for texture of loading and auxiliary platens	≤ 3.2µm	≤ 3.2µm	≤ 3.2µm	≤ 3.2µm
Lower platens dimensions	Ø300 mm	Ø300 mm	Ø165 mm	Ø165 mm
Upper platens dimensions	Ø300 mm	Ø300 mm	Ø165 mm	Ø165 mm
Maximum vertical clearance between platens	340 mm	340 mm	370 mm	370 mm
Piston diameter	250 mm	300 mm	250 mm	300 mm
Maximum piston movement	50 mm	50 mm	50 mm	50 mm
Horizontal clearance	360 mm	425 mm	360 mm	425 mm
Power	550 W	550 W	550 W	550 W
Oil capacity	20 L	20 L	20 L	20 L
Maximum working pressure	410 Bar	410 Bar	410 Bar	410 Bar
Dimensions (wxlxh)	740x500x970 mm	805x540x1050 mm	740x500x970 mm	805x540x1050 mm
Weight	780 kg	1080 kg	760 kg	1060 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 centered perfectly.

The suitable vertical clearance for specimen can be adjusted with distance pieces (see page 129).

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

Compression and Flexural Testing Machines

AUTOMATIC COMPRESSION TESTING MACHINES

Product Code

UTC-4231	2000 kN Automatic Compression Testing Machine EN, 220-240 V 50-60 Hz
UTC-6231	2000 kN Automatic Compression Testing Machine ASTM, 220-240 V 50-60 Hz
UTC-6231/110	2000 kN Automatic Compression Testing Machine ASTM, 110 V 60 Hz
UTC-4331	3000 kN Automatic Compression Testing Machine EN, 220-240 V 50-60 Hz
UTC-6331	3000 kN Automatic Compression Testing Machine ASTM, 220-240 V 50-60 Hz
UTC-6331/110	3000 kN Automatic Compression Testing Machine ASTM, 110 V 60 Hz
UTC-0210	High Precision Pressure Transducer and Electronic

Standards

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



UTC - 4231



UTC - 4331

UTEST Automatic range of 2000 kN and 3000 kN capacity 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 to 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 the safety and health of the operator.

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 155 and 156.

The UTEST Automatic range of 2000 kN and 3000 kN capacity compression testing machines allow inexperienced operators to perform the test. 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

Exceeding of the ASTM C-39 standard provisions (starts with the 10% of the machine capacity), the UTC-4231, UTC-4331, UTC-6231 and UTC-6331 are supplied in Class 1 starting from 50 kN. 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 welded frame, automatic hydraulic power pack with data acquisition and control system BC 100.

UTC-4231 and UTC-4331 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-4231 and UTC-4331 testing machines.

UTC-6231 and UTC-6331 Compression Testing Machines are supplied complete with;

- Ø 165x90 mm, Ø 165x50 mm and 2 pcs. Ø 165x30 mm distance pieces
- UTC-4511 Upper Platen (with ball seating assembly) Ø165 mm, Lower Platen Ø165 mm.

UTC-4510, UTC-4512 and UTC-4515 upper and lower platen sets can also be used with UTC-6231 and UTC-6331 Compression Testing Machines.



UTC - 6231

AUTOMATIC COMPRESSION TESTING MACHINES

Safety Features

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

Model	UTC-4231	UTC-4331	UTC-6231	UTC-6331
Capacity	2000 kN	3000 kN	2000 kN	3000 kN
Standard	EN	EN	ASTM	ASTM
The roughness value for texture of loading and auxiliary platens	≤ 3.2µm	≤ 3.2µm	≤ 3.2µm	≤ 3.2µm
Lower platens dimensions	Ø300 mm	Ø300 mm	Ø165 mm	Ø165 mm
Upper platens dimensions	Ø300 mm	Ø300 mm	Ø165 mm	Ø165 mm
Maximum vertical clearance between platens	340 mm	340 mm	370 mm	370 mm
Piston diameter	250 mm	300 mm	250 mm	300 mm
Maximum piston movement	50 mm	50 mm	50 mm	50 mm
Horizontal clearance	360 mm	425 mm	360 mm	425 mm
Power	750 W	750 W	750 W	750 W
Oil capacity	20 L	20 L	20 L	20 L
Maximum working pressure	410 Bar	410 Bar	410 Bar	410 Bar
Dimensions (w×l×h)	810x500x970 mm	875x540x1050 mm	810x500x970 mm	875x540x1050 mm
Weight	795 kg	1095 kg	775 kg	1075 kg

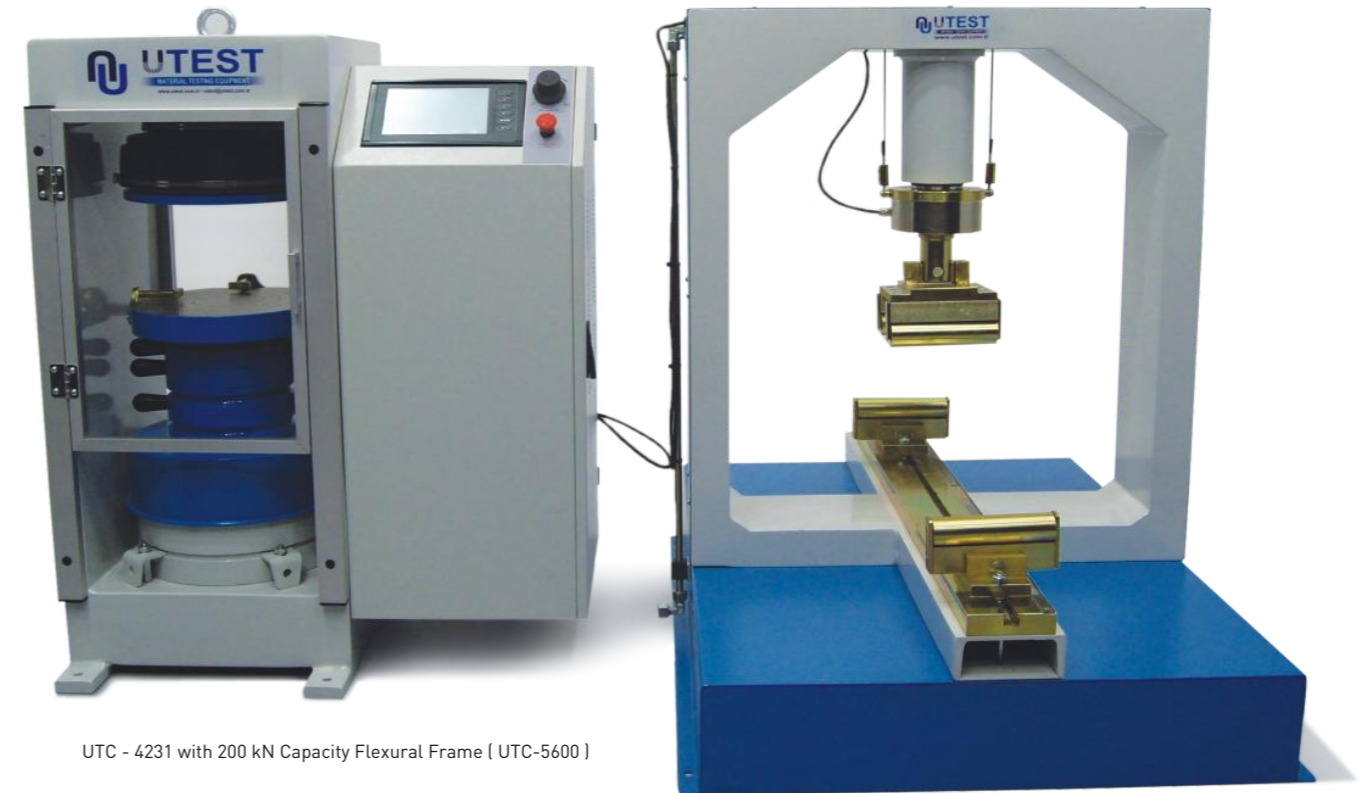
Maximum horizontal clearance for placing sample is limited with the border of the platens. Sample must be placed such that its ends will not overflow from the ends of platens and it must be centred perfectly.

The suitable vertical clearance for specimen can be adjusted with distance pieces (see page 129).

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



UTC-4231 with UTC-4515 Platen Set



UTC - 4231 with 200 kN Capacity Flexural Frame (UTC-5600)

Compression and Flexural Testing Machines

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 128).

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 155 and 156.

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

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.

Safety Features

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

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
	Power Pack	370x400x920 mm		605x455x1015 mm
Weight	Frame	1030 kg	1800 kg	2350 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 129).

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

Compression and Flexural Testing Machines

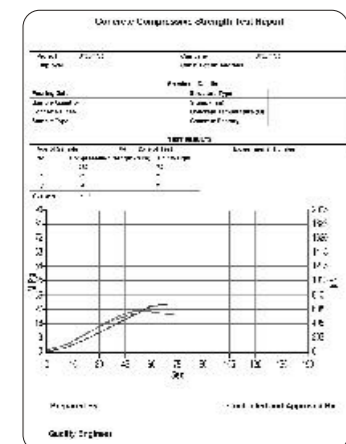
SOFTWARE

Product Code

UTC-4940 UTEST Software for Automatic Compression / Flexural 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 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.



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)

Compression and Flexural Testing Machines

ACCESSORIES

Product Code

- UTC-0303 Compressometer-Extensometer for 100x200 mm (4"x8") and 150x300 mm (6"x12") Cylinders with 3 Digital Dial Gauges
- UTC-0304 Compressometer-Extensometer for 100x200 mm (4"x8") and 150x300 mm (6"x12") Cylinders with 2 Digital Dial Gauges
- UTC-0313 Compressometer-Extensometer for 100x200 mm (4"x8") and 150x300 mm (6"x12") Cylinders with 3 Linear Potentiometric Displacement Transducers
- UTC-0314 Compressometer-Extensometer for 100x200 mm (4"x8") and 150x300 mm (6"x12") Cylinders with 2 Linear Potentiometric Displacement Transducers
- UTC-0323 Compressometer-Extensometer for 100x200 mm (4"x8") and 150x300 mm (6"x12") Cylinders with 3 High Accurate Displacement Transducers
- UTC-0324 Compressometer-Extensometer for 100x200 mm (4"x8") and 150x300 mm (6"x12") Cylinders with 2 High Accurate Displacement Transducers

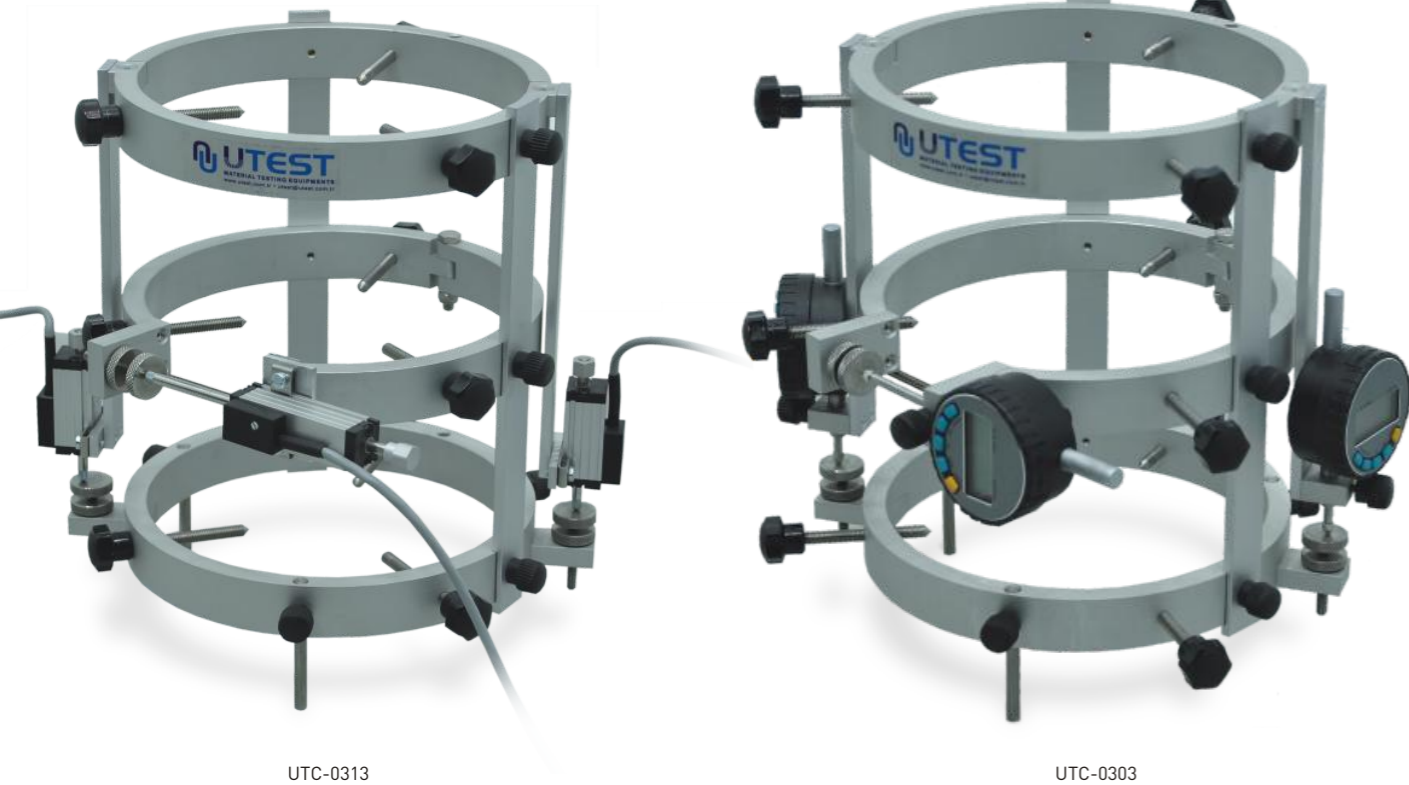
UTG-0320 Static Unilogger, 4 Channel Data Acquisition Unit,

- UTGM-0152 Digital Dial Gauge, 12,7 x 0.001 mm, LCD Display
- UTGM-0060 Linear Potentiometric Displacement Transducer, 10 mm,
- UTGM-0072 High Accurate Strain Gauge Based Displacement Transducer, 10 mm

- UTGM-0180 General Purpose Strain Gauge, 10 mm
- UTGM-0182 General Purpose Strain Gauge, 20 mm
- UTGM-0184 General Purpose Strain Gauge, 30 mm

Standards

ASTM C469



UTC-0313

UTC-0303

Concrete Compressometers are used to determine the deformation (both axial and diametrical) of concrete cylinder or cube specimens during the compression test.

There are 6 different models available for Ø4"x8" or Ø100x200 mm cylinders, Ø6"x12" or Ø150x300 mm.

Compressometer / Extensometer	Digital Dial Gauge UTGM-0152	Linear Potentiometric Displacement Transducer UTGM-0060	High Accurate Strain Gauge Based Displacement Transducer UTGM-0072
for use with Ø4"x8" or Ø100x200mm and Ø6"x12" or Ø150x300mm cylinders	UTC-0303 (3 pcs) UTC-0304 (2 pcs)	UTC-0313 (3 pcs) UTC-0314 (2 pcs)	UTC-0323 (3 pcs) UTC-0324 (2 pcs)

The UTC-0303 is supplied complete with 3 pcs. and UTC-0304 is supplied complete with 2 pcs. digital dial gauges, 12.7x0.001 mm, LCD display.

The UTC-0313 is supplied complete with 3 pcs. and UTC-0314 is supplied complete with 2 pcs. Linear Potentiometric Displacement Transducers 10 mm, nominal resistance 1kΩ.

The UTC-0323 is supplied complete with 3 pcs. and UTC-0324 is supplied complete with 2 pcs. Linear High Accurate Strain Gauge Based Displacement Transducer, 10 mm, rated output 5mV/V, nonlinearity within ±0,1% RO, hysteresis within ±0,1% RO.

For displacement controlled test, UTC-0313, UTC-0314, UTC-0323, and UTC-0324 should be used with UTC-4850 or UTC-4860 advanced servo controlled automatic power packs with proportional valve units or UTC-4870 or UTC-4880 advanced servo controlled automatic power pack with servo valve.

For load controlled test, UTC-0313, UTC-0314, UTC-0317, UTC-0323 and UTC-0324 can be used with any UTEST servo controlled or UTEST automatic power packs.

If the any compressiometer (except compressometers with digital dial gauges) is used with UTEST semi-automatic or automatics powerpacks, UTG-0320 Static Unilogger is also required and should be ordered separately.

UTC-0303 and UTC-0304 can be used with any UTEST machine independent of power pack type.



UTG-0320

The Compressometers/Extensometers are supplied complete with

- Digital dial gauge or displacement transducer depending on the model, 3 pcs. or 2 pcs.
- Wooden Box

	Dimensions	Weight (approx.)
UTC-0303, UTC-0304, UTC-0313 UTC-0314, UTC-0323, UTC-0324	350x350x350 mm (packed)	6 kg



UTC-0304



UTC-0314

Compression and Flexural Testing Machines

ACCESSORIES

Product Code

- UTC-0350 Splitting Tensile Test Device for Ø150x300 mm and Ø160x320 mm Cylindrical Specimens, ASTM/EN
- UTC-0351 Distance Piece for UTC_0350 for Ø100x200 mm, Cylindrical Specimens, EN
- UTC-0355 Splitting Tensile Test Device for 60-100 mm height x 220 mm length Concrete Block Pavers, EN
- UTC-0360 Splitting Tensile Test Device for 150x150 mm Concrete Cubes, EN
- UTC-0365 Wood Fibre Boards, EN, 4x15x345 mm, Pack of 50

Standards

EN 1338, 12390-6; ASTM C496

The UTC Series Splitting Tensile Test Devices are accessories for compression machines for measuring the splitting tensile strengths of Ø150x300 mm and Ø160x320 mm cylindrical specimens, 150 mm cube concrete specimens and of 60-150 mm height x 220 mm length concrete block pavers according to the requirements of the related standards.

UTC-0351 Distance piece for Ø100x200mm cylindrical specimens and UTC-0361 distance piece for 100 mm cube concrete specimens should be ordered separately.

All the accessories can easily be fitted to the machine without the removal of the upper platen and spherical seat.



UTC-0350



UTC-0355



UTC-0360



UTC-0360

UTC-0355

UTC-0350



UTC-0365

	UTC-0350	UTC-0355	UTC-0360
Specimen	Cylindrical 100x200 mm, 150x300 mm, 160x320 mm	Concrete Block Pavers 60-100 mm height 220 mm length	Concrete Cubes 150 mm
Related Standards	EN 12390-6; ASTM C496	EN 1338	EN 12390-6
Dimensions	340x150x330 mm	240x160x320 mm	180x150x320 mm
Weight (approx.)	25 kg	17,5 kg	15 kg

ACCESSORIES

Product Code

- UTC-0370 Flexural Test Device for Flexural Tests on Concrete Beams

Standards

EN 12390-5; ASTM C78, C293; AASHTO T 97

Flexural test device for center-point or two-point (third-point-ASTM) loading flexural tests on concrete beams of 100x100x400-500 mm, 150x150x600-750 mm. Consist of two upper rollers and two lower rollers of 38 mm dia. and 160 mm length. Total height is 330 mm when adjusted for 150 mm beams and 290 mm for 100 mm beams.

- Distance between upper rollers : 100 mm or 150 mm
- Distance between lower rollers : 300 mm or 450 mm
- Max vertical daylight : 160 mm when the total height is 330 mm
- Min vertical daylight : 110 mm when the total height is 290 mm
- Max travel : 40 mm
- Total width : 310 mm



Dimensions	600x320x290mm
Weight (approx.)	40 kg

ACCESSORIES

Product Code

- UTC-0380 Capping Retainers for Ø16" (150 mm) Cylinders Set of Two
- UTC-0382 Neopran Pads for Ø16" (150 mm) Cylinders, 60 Shore, Set of Two
- UTC-0390 Capping Retainers for Ø160 mm Cylinders Set of Two
- UTC-0392 Neopran Pads for Ø160 mm Cylinders, 60 Shore, Set of Two

Standards

AASHTO T22,T851; ASTM C1231

Unbounded Capping method is used as alternative to the sulphur hot capping of concrete cylinder specimens. The pads even out irregularities, distributing the test load uniformly to ensure reliable strength results. Pads are reusable for many tests.



Compression and Flexural Testing Machines

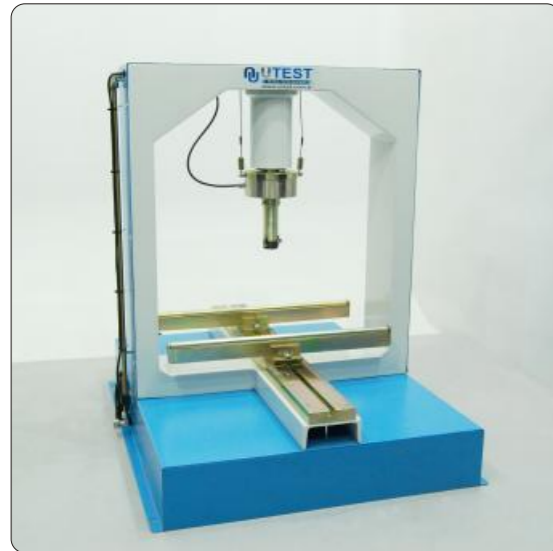
FLEXURAL TESTING FRAMES

Product Code

UTC-5600 200 kN Capacity Flexural Testing Frame U Type
 UTC-5700 300 kN Capacity Flexural Testing Frame C Type

Standards

EN 1338, 1339, 1340, 1341, 1343, 13748-1, 13748-2, 12390-5, 12390-6; BS 1881; ASTM C78, C293, C496



UTC-5600 with UTC-5502



UTC-5700 with UTC-5501

The versatile UTEST Flexural Testing Frames are designed for minimum deflection at maximum load resulting in very high accuracy. The load frame is a welded steel fabrication carrying the ram fitted to the upper crosshead. All frames have a single acting down stroking ram with over travel switch protection to shut the machine down when maximum ram travel is reached. The return of the ram is done by dead weight or spring to get maximum accuracy on the load measurement. A load cell is used for load measurements on all frames.

Each model is designed to accept all accessories required for flexural, transverse or compression tests. UTEST Flexural Frames UTC-5600 model is 200 kN capacity U type and UTC-5700 is a 300kN C type open structure designed to allow easy and practical front loading of the specimen.

The very rigid C type design is ideal either for conventional flexural test or for more sophisticated tests such as deformability and ductility index.

The load frame provides the stability needed for accurate and repeatable test results over the years of operation.

All frames can be connected to any UTEST compression machine as a second frame or can be used with any UTEST power pack as an independent Flexural Machine.

Flexural test assemblies should be ordered separately.

The main characteristics are:

- 2 different capacity high stability welded assembly
- Safety limit switch for 100 or 120 mm piston stroke
- High accuracy load measurement with strain gauge load cells
- Can accept wide range of accessories for mentioned standards
- Can be connected to any UTEST compression machine or UTEST power pack

	UTC-5600	UTC-5700
Capacity	200 kN	300 kN
Ram Travel	100 mm	120 mm
Max. Vertical Clearance	425 mm	425 mm
	(without accessories)	(without accessories)
Max. Horizontal Clearance	650 mm	640 mm
Max. Clearance Between Lower Rollers	900 mm	900 mm
The Distance Between The Center of The Piston to The Side of The Frame	--	320 mm
Overall Dimensions	1000x950x1130 mm	1100x900x1250 mm
Weight (approx.)	225 kg	555 kg

FLEXURAL TESTING FRAMES

Product Code

UTC-5800 600 kN Capacity Flexural Frame Column Type

Standards

EN 1338, 1339, 1340, 12390-5, 12390-6; ASTM C78, C293, C496



UTEST 600 kN capacity Flexural Frame is designed for minimum deflection at maximum load resulting in very high accuracy. The load frame is a four column design carrying the ram fitted to the upper crosshead. The frames has a double acting stroking ram with over travel switch protection to shut the machine down when maximum ram travel is reached. A load cell is used for load measurements on the frame.

UTEST 600 kN capacity Flexural Frame is designed to accept all accessories required for flexural, transverse or compression tests.

The load frame provides the stability needed for accurate and repeatable test results over the years of operation.

UTEST 600 kN capacity Flexural Frame can be connected to any UTEST compression machine as a second frame or can be used with any UTEST power pack as an independent Flexural Machine.

Flexural test assemblies should be ordered separately. (see pages 169, 170)

The main characteristics are:

- High stability four column design
- 350 mm piston stroke with safety limit switch
- High accuracy load measurement with strain gauge load cells
- Can accept wide range of accessories for mentioned standards
- The distance between lower rollers can be set up to 1400 mm
- Can be connected to any UTEST compression machine or UTEST power pack

Capacity	600 kN
Ram Travel	350 mm
Max. Vertical Clearance	930 mm (without accessories)
Max. Horizontal Clearance	640 mm
Max. Clearance Between Lower Rollers	2000 mm
Overall Dimensions	1100x2000x2650 mm
Weight (approx.)	2750 kg

Compression and Flexural Testing Machines

MANUAL FLEXURAL TESTING MACHINE

Product Code

UTC-5533 200 kN Manual Flexural Testing Machine

Standards

EN 1338, 1340, 12390-5, 12390-6; BS 1881; ASTM C78, C293, C496

The UTC-5533 200 kN Capacity Manual Flexure Testing Machine is designed to perform reliable flexure tests on standard concrete beams, concrete or natural stone kerbs, concrete paving flags, and natural stone slabs and tensile splitting test of concrete paving blocks. Especially suitable for on-site applications when electric power supply is not available.

Being a low cost alternative, UTC-5533 testing machine combines precision and simplicity with the unique design of the manual power pack. Hand Operated Hydraulic Power Pack enables even an inexperienced operator to perform the flexure tests on-site.

The UTEST range of flexural machines have the accuracy of Class 1 starting from 2% of the full capacity.

UTC-5533 flexure testing machine consists of a heavy duty welded frame, manual hydraulic power pack and data acquisition system LPI.

Flexural test assemblies should be ordered separately (see pages 169, 170).



UTC-5533 with UTC-5502

Capacity	200 kN
Class 1 range	4-200 kN
Resolution	1/ 65.000
Ram Travel	100 mm
Max. Vertical Clearance	425 mm (without accessories)
Max. Horizontal Clearance	650 mm
Max. Clearance Between Lower Rollers	900 mm
Frame	UTC-5600
Power Pack	UTC-4810
Overall Dimensions	Frame 1000x950x1130 mm Power Pack 300x250x500 mm
Weight (Approx.)	Frame 225 kg Power Pack 50 kg

SEMI-AUTOMATIC FLEXURAL TESTING MACHINES

Product Code

UTC-5536 200 kN Semi-Automatic Flexural Testing Machine, 220-240 V 50-60 Hz
 UTC-5536/110 200 kN Semi-Automatic Flexural Testing Machine, 110 V 60 Hz

Standards

EN 1338, 1339, 1340, 12390-5, 12390-6; BS 1881; ASTM C78, C293, C496

The UTEST Semi-Automatic range of 200 kN capacity flexure testing machine was designed for reliable and consistent testing of flexural test on standard concrete beams, concrete or natural stone kerbs, concrete paving flags and natural stone slabs and tensile splitting test of concrete paving blocks.

These flexure testing machines are the results of continuous research to upgrade testing machines with latest technologies and to conform to the latest standards EN 12390-5, EN 12390-6, EN 1338, EN 1340, BS 1881, ASTM C78, C293 and C496 in terms of its technical properties taking into account client requirements. These testers also meet the requirements of CE norms for health and safety of the operator.

The UTEST Semi-Automatic range of 200 kN capacity flexure testing machines allow inexperienced operators to perform the test.

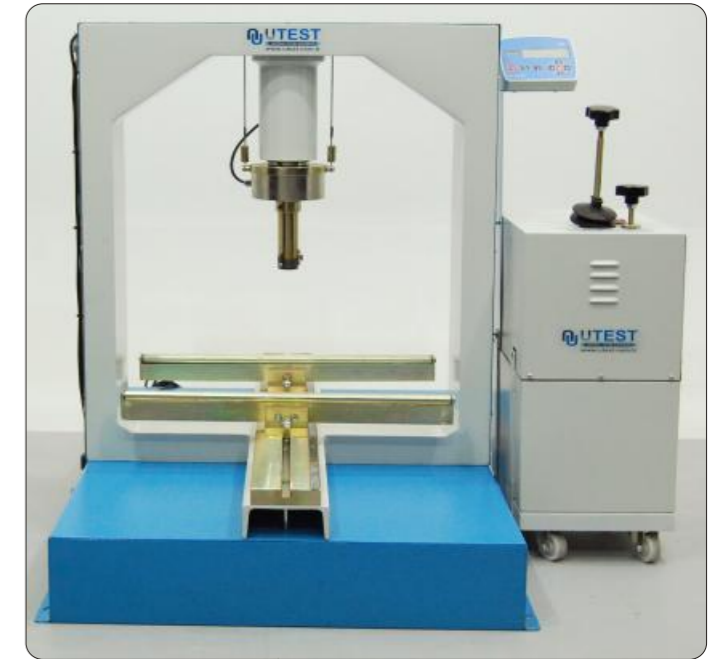
The flexural testing machines consist of heavy duty welded frame, hydraulic power pack with data acquisition system LPI.

The UTEST range of Flexural Machines have the accuracy of Class 1 starting from 2% of the full capacity.

Flexural test assemblies should be ordered separately (see pages 169, 170).

Safety Features

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



UTC-5536 with UTC-5502

Capacity	200 kN
Class 1 range	4-200 kN
Resolution	1/ 65.000
Ram Travel	100 mm
Max. Vertical Clearance	425 mm (without accessories)
Max. Horizontal Clearance	650 mm
Max. Clearance Between Lower Rollers	900 mm
Frame	UTC-5600
Power Pack	UTC-4820
Overall Dimensions	Frame 1000x950x1130 mm Power Pack 300x420x850 mm
Weight (Approx.)	Frame 225 kg Power Pack 70 kg

Compression and Flexural Testing Machines

AUTOMATIC FLEXURAL TESTING MACHINE

Product Code

- UTC-5540 200 kN Automatic Flexural Testing Machine, 220-240 V 50-60 Hz
- UTC-5540/110 200 kN Automatic Flexural Testing Machine, 110 V 60 Hz
- UTC-5542 300 kN Automatic Flexural Testing Machine, C Type, 220-240 V 50-60 Hz
- UTC-5542/110 300 kN Automatic Flexural Testing Machine, C Type, 110 V 60 Hz
- UTC-5544 600 kN Automatic Flexural Testing Machine, 220-240 V 50-60 Hz

Standards

EN 1338, 1339, 1340, 12390-5, 12390-6; BS 1881; ASTM C78, C293, C496

The UTEST Automatic range of 200 kN, 300 kN and 600 kN capacity flexure testing machines have been designed for reliable and consistent testing of flexural test on standard concrete beams, concrete or natural stone kerbs, concrete paving flags, and natural stone slabs and tensile splitting test of concrete paving blocks. These flexure testing machines are the result of continuous research to upgrade the testing machines with latest technologies to conform to the latest standards EN 12390-5, EN 12390-6, EN 1338, EN 1340, BS 1881, ASTM C78, C293 and C496 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.

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 155 and 156.



UTC-5540 with UTC-5502

The UTEST Automatic range of 200 kN, 300 kN and 600 kN capacity flexure testing machines allow inexperienced to perform the test. Once the machine is switched on and specimen is placed, then 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; switches the test speed after 1% of the load capacity of the machine and stops once the specimen failure.
- Automatically saves the test parameters and test results.

The UTEST range of Flexural Machines have the accuracy of Class 1 starting from 2% of the full capacity.

The flexure testing machines are consists of heavy duty welded frame, automatic hydraulic power pack with data acquisition and control system BC 100. Please see page 135 and 136 for properties of BC 100 Unit.

Flextural test assemblies should be ordered separately (see pages 169, 170).

Safety Features

- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch
- Emergency stop button
- Software controlled maximum load value

		UTC-5540
Capacity		200 kN
Class 1 range		4-200 kN
Resolution		1/ 65.000
Ram Travel		100 mm
Max. Vertical Clearance		425 mm (without accessories)
Max. Horizontal Clearance		650 mm
Max. Clearance Between Lower Rollers		900 mm
Frame		UTC-5600
Power Pack		UTC-4830
Overall	Frame	1000x950x1130 mm
Dimensions	Power Pack	370x400x920
Weight	Frame	225 kg
(Approx.)	Power Pack	85 kg

		UTC-5542
Capacity		300 kN
Class 1 range		6-300 kN
Resolution		1/ 65.000
Ram Travel		120 mm
Max. Vertical Clearance		425 mm (without accessories)
Max. Horizontal Clearance		640 mm
Max. Clearance Between Lower Rollers		900 mm
The Distance Between The Center of The Piston to The Side of The Frame		320 mm
Frame		UTC-5700
Power Pack		UTC-4830
Overall	Frame	1000x900x1250 mm
Dimensions	Power Pack	370x400x920
Weight	Frame	555 kg
(Approx.)	Power Pack	85 kg



UTC-5542 with UTC-5501

		UTC-5544
Capacity		600 kN
Class 1 range		12-6000 kN
Resolution		1/ 65.000
Ram Travel		350 mm
Max. Vertical Clearance		930 mm (without accessories)
Max. Horizontal Clearance		640 mm
Max. Clearance Between Lower Rollers		2000 mm
Frame		UTC-5800
Power Pack		UTC-4830
Overall	Frame	1100x2000x2650 mm
Dimensions	Power Pack	370x400x920
Weight	Frame	2750 kg
(Approx.)	Power Pack	85 kg

Compression and Flexural Testing Machines

SERVO CONTROLLED UNIVERSAL AUTOMATIC BENDING TEST MACHINE

Product Code

UTC-5552 100 kN Servo Controlled Universal Automatic Bending Test Machine, 220-240 V 50-60 Hz
 UTC-5556 300 kN Servo Controlled Universal Automatic Bending Test Machine, 220-240 V 50-60 Hz

Standards

EN 12390-5, 1339, 1340, 14488-3, 14488-5; ASTM C 78, C 293, C1609, EFNARC Guidelines for Sprayed Concrete

Servo Controlled Universal Automatic Bending Test Machines are specially configured for energy absorption capacity tests on fibre reinforced sprayed concrete specimens.

The Machines can be used;

- for energy absorption capacity test on fibre reinforced sprayed concrete slab specimens
- for four point bending strengths (first peak, ultimate and residual) tests on fibre reinforced concrete beam specimens.
- for EFNARC three point bending test on square panel with notch
- for flexural strength test of concrete beams, paving flags and kerbs
- for measuring of deflection on concrete beams

The machines consist of extremely high stiffness frame and servo controlled hydraulic power pack.



Load Frames

The frames of machines are designed torsionally stiff up to the maximum capacity with anti-rotation system to prevent the natural tendency to rotate the columns of frame. The four columns of frame are clamped with zero clearance.

Test cylinder mounted on the top crosshead has double-action with long piston stroke in servo slide quality (particularly low friction). The displacement measurement is achieved through the displacement transducer built in piston.

A directly actuated servo valve is mounted on the test cylinder, to ensure a quick and highly precise process during testing.

An anti-rotation device prevents twisting the piston rod from twisting with the top bending beam and the precision load cell.

The test accessories including energy absorption capacity test assemblies on the frame can be easily removed and the test accessories suitable the test to be performed can be installed.

Different sized frames can be available on request.

Power Pack

The power pack contains a hydraulic pump and a fine flow oil filter. The hydraulic unit consists of a high-pressure radial piston pump. All operating and control elements are located on the power pack. The power pack consists of oil level indicator, high temperature indicator, mechanical filter clogged indicator and cooling unit.

Different type tests with automatic test sequence can be performed by help of free software.

Main Features

- Pace rate control from 0.01 kN/s to 100kN/s (depend on the specimen stiffness).
- 3 analogue channels for displacement transducers, extensometers, etc. built in the system as an addition to frame loadcells
- Instrumentation amplifiers for sensor excitation and amplification
- 1/65.000 resolution and 1.000 Hz control for each channel
- Ethernet port for connecting to computer
- 240x320 pixel LCD display
- Touchscreen operator panel
- Can execute load, displacement or strain controlled tests for post peak
- Free of charge PC software for test control and advanced report printout
- Multiple language support
- Real time clock and date

Data Acquisition & Control PC Software

Servo Controlled Universal Bending Test Machines can be controlled (Start, Stop commands) by a computer with the Free of Charge software supplied with the machine. This software provides data acquisition and management for compression, flexure and splitting tensile test throughout the test execution. The engineering values such as modulus, toughness, energy has been supported. The advanced functions for data base management provide an easy navigation of all saved data. The test results certificate includes all descriptive information. Test parameters can be set and details about the test carried out such as customer details, test type, specimen type, user info and other information required can be entered and printed out as well as test report and graph.

Safety Features

- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch
- Emergency stop button
- Software controlled maximum load value

Optional Accessories

- UTC-5501 Flextural testing asseblies for concrete beams. Set of 2 upper and 2 lower rollers of 38 mm dia and 160 mm length
- UTC-5502 Flextural testing asseblies for concrete kerb. Set of 2 lower roller of 38mm dia.x620mm length and upper load point of 40 mm dia with ball seating
- UTC-5504 Flexural Test Assembly Set of 2 lower rollers and 1 upper roller of 38 mm dia. and 620 mm length.
- UTC-5506 Auxiliary Testing Frames For The Measurement of Deflection on Concrete Beams with 2 pcs Linear Potentiometric Displacement Transducer, for 100x100x400/500 mm and 150x150x500/600 mm beams.
- UTC-5507 Auxiliary Testing Frames For The Measurement of Deflection on Concrete Beams with 2 pcs. High Accurate Displacement Transducer, for 100x100x400/500 mm and 150x150x500/600 mm beams.
- UTC-5508 Energy absorption capacity test assemblies for fibre reinforced sprayed concrete slab specimens, EN 14488-5 EFNARC Guide
- UTC-5511 Flextural Testing Assembly Set for EFNARC Three Point Bending Test on Square Panel with Notch, Set of 2 lower rollers and 1 upper rollers of 30 mm dia and 620 mm length.
- UTGM-0090 Crack Mouth Opening Displacement (CMOD) Transducer, measuring range 7mm, gauge length 5mm
- UTC-5514 Energy absorption capacity test assemblies for fibre reinforced sprayed concrete slab specimens, UNI 10834
- UTC-4511 Upper platen (with ball seatig assembly) and lower platen, Ø165mm platens for compressive strenght tests up to the machine capacity.

The optional accessories for the tests performed should be ordered separately.

Capacity	UTC-5552	100 kN
	UTC-5556	300 kN
Accuracy Class	Class 1 EN ISO 7500-1 starting from 1% of the capacity	
Force Measurement Range	UTC-5552	1 to 100 kN
	UTC-5556	3 to 300 kN
Test Speed Range	0.01 - 50 mm/min.	
Load Rate	0,001-15 kN/s (Depend on specimen stiffness)	
Distance Between The Columns (front / side)	900 / 300 mm	
Maximum Vertical Clearance (Lower crosshead at middle stroke)	450 mm (Without accessories)	
Maximum Piston Movement	250 mm	
Power	1500 W	
Electrical Requirement	220-240 V 50-60 Hz	
Maximum Working Pressure	280 bar	
Dimensions	Frame	1200 x 600 x 2045 mm
	Power Pack	1100x700x1030mm
Weight	Frame	3000 kg
	Power Pack	210 kg

Other voltages and frequencies available on request.

FLEXURAL TESTING ACCESSORIES

Product Code

- UTC-5501 Flexural Testing Assembly for Concrete Beams, Set of 2 upper and 2 lower rollers of 38 mm dia and 160 mm length
- UTC-5502 Flexural Testing Assembly for Concrete Kerbs, Set of 2 lower roller of 38mm dia.x620mm lenght and upper load point of 40 mm dia with ball seating
- UTC-5504 Flexural Testing Assembly, Set of 2 lower and 1 upper roller of 38 mm dia. and 620 mm lenght.
- UTC-5506 Auxiliary Testing Frame for The Measurement of Deflection on Concrete Beams with 2 pcs. Linear Potentiometric Displacement Transducer
- UTC-5507 Auxiliary Testing Frame for The Measurement of Deflection on Beams with 2 pcs. High Accurate Displacement Transducer
- UTCM-0116 Upper Platen with Ball Seating Assembly Ø165 mm and Lower Platen Ø165 mm
- UTC-5510 Distance Piece (Ø165 mm x 20 mm thick) for Flexlural Testing Frame

Other accessories for the test of fibre reinforced sprayed concrete, please see page 168

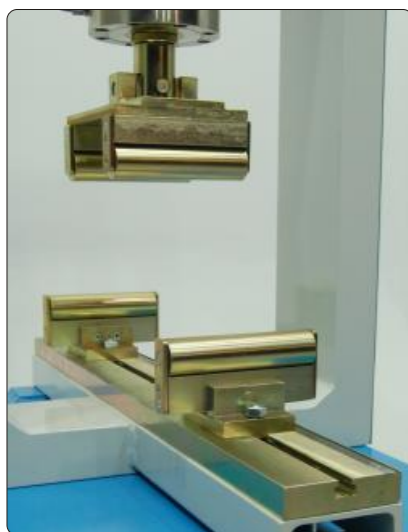
Standards

EN 1338, 1339, 1340, 12390-5, 12390-6; BS 1881; ASTM C78, C293, C496, UNI10834

UTC-5501 Flexural Testing Assembly for Concrete Beams

The test assembly, conforming with EN 12390-5, ASTM C78, ASTM C293, BS 1881:118, is used for center or two-point (third-point loading-ASTM) loading flexlural tests on 100 mm or 150 mm concrete beams.

Can be used with all UTEST flexlural testing frames. The distance of lower rollers can be adjusted between 100 mm to 800 mm. The distance between upper rollers can be set to 100 mm or 150 mm. For center-point loading flexlural test one of the rollers can be removed and the other placed in the center. The rollers dimensions are 38 mm dia.x 160 mm length.



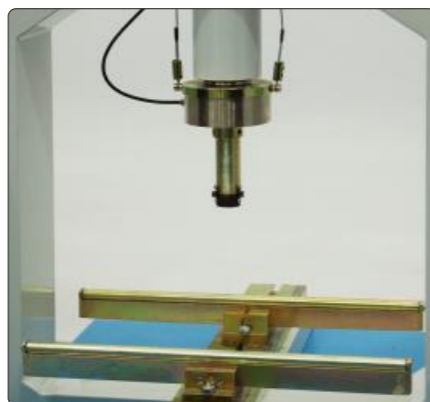
UTC-5501

Dimensions	200x200x200 mm
Weight (approx.)	16 kg

UTC-5502 Flexural Testing Assembly for Concrete Kerbs

The testing assembly, conforming with EN 1340, is used for flexlural tests on concrete kerbs. The set consists of two lower rollers 38 mm dia. x 620 mm long and 40 mm dia. upper loading piston with ball seating assembly.

Can be used with all UTEST flexlural testing frames. The distance of lower rollers can be adjusted between 100 mm to 800 mm.



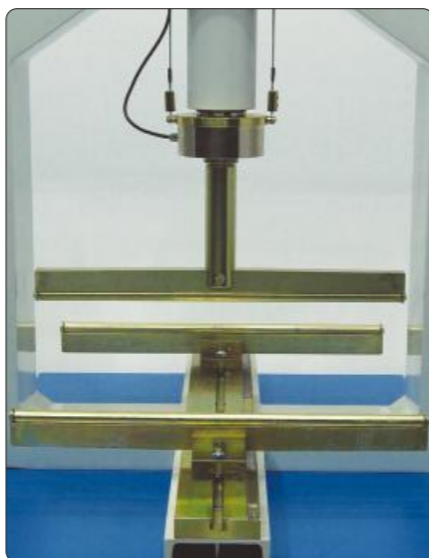
UTC-5502

Dimensions	620x250x100 mm
Weight (approx.)	17 kg

UTC-5504 Flexural Test Assembly

UTC-5504 Flexural Testing Assembly consist of two lower rollers and one upper roller of 38 mm dia. and 620 mm length is used for flexlural tests on concrete paving flags and concrete terrazo tiles, natural stone kerbs and slabs. The distance of lower rollers can be adjusted between 100 mm to 800 mm. Conform with EN 1339, EN 1343, EN 12372.

For the samples with low strenght 10 kN loadcell connection flange and adaptor for the load cell should be orderd seperately .



UTC-5504

Dimensions	620x260x150 mm
Weight (approx.)	25 kg

UTC-5506 & UTC-5507 Auxiliary Testing Frames for The Measurement of Deflection on Concrete Beams

The Auxiliary testing frame is used for the measurement of deflection during the flexure test on 100x100x400/500 mm and 150x150x500/600 mm beams conforming to ASTM C1018.

The auxiliary testing frames can be used on all UTEST flexlural testing frames.

For displacement controlled test, UTC-5507 Auxiliary testing frames with high accurate displacement transducers should be used with UTC-4850 or UTC-4860 advanced servo controlled automatic power packs with proportional valve units or UTC-4870 advanced servo controlled automatic power pack with servo valve.

For load controlled test, UTC-5506 Auxiliary testing frames with linear potantiometric displacement transducers or UTC-5507 Auxiliary testing frames with high accurate displacement transducers should be used with any UTEST servo controlled or automatic power packs.

If the auxiliary testing frames is used with UTEST semi-automatic powerpacks, UTG-0320 Static Unilogger is also required and should be ordered separately.

UTC-5506 Auxiliary Testing Frame is supplied complete with 2 pcs. linear potantiometric displacement transducers (10mm x0,001mm UTGM-0060) and UTC-5507 Auxiliary Testing Frame is supplied complete with 2 pcs. high accurate displacement transducers (10mm x0,001mm UTGM-0072).

UTC-5501 Flexlural Test Assembly for concrete beams should be ordered separately.



UTC-5506

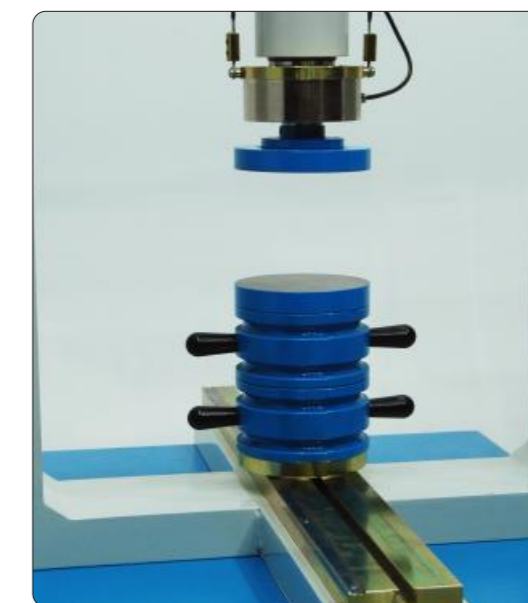
Dimensions	500x250x100 mm
Weight (approx.)	4 kg

Splitting Tensile Test for Concrete Paving Blocks and Compressive Strength Test with Flexlural Testing Frames

The test assembly is used to perform splitting tensile test for concrete paving blocks and compressive strength tests with the Utest flexure testing frames.

The set consists of UTCM-0016 Upper Platen (with ball seating assembly) Ø165 mm and Lower Platen Ø165 mm and UTC-5510 Distance Piece (Ø165 x 20 mm thick). For the splitting tensile test for concrete paving blocks (EN 1338), splitting tensile test device (UTC-0355) should be ordered separately.

For the compressive strength test, depending on the height of the specimens to be tested, Ø165 mm distance pieces (15 mm: UTC-4630, 30 mm:UTC-4631, 50 mm: UTC-4633, 90 mm: UTC-4634) should be ordered separately.



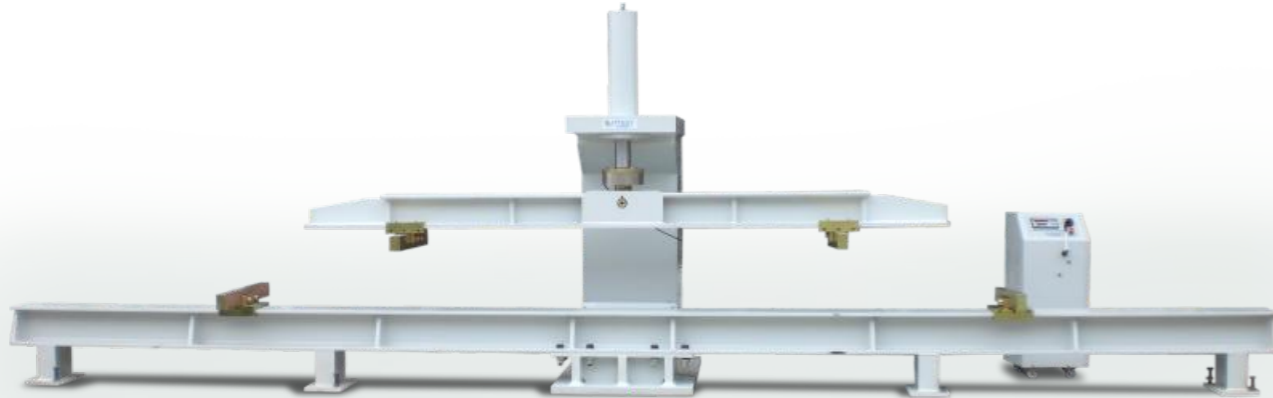
UTC-5510

	Dimensions	Weight (approx.)
UTCM-0016	170x170x145 mm	9 kg
UTC-5510	210x210x30mm	2 kg
UTC-0355	240x160x320 mm	17,5 kg
UTC-4630	165x285x20 mm	2,5 kg
UTC-4631	165x285x35 mm	5 kg
UTC-4633	165x285x55 mm	8 kg
UTC-4634	165x285x95 mm	14 kg

Compression and Flexural Testing Machines

SPECIAL FLEXURAL TESTING MACHINES

A wide range of flexural testing machines to support specific requirements of clients can be custom produced. Some examples of special flexural machines and frames produced by Utest are shown below.

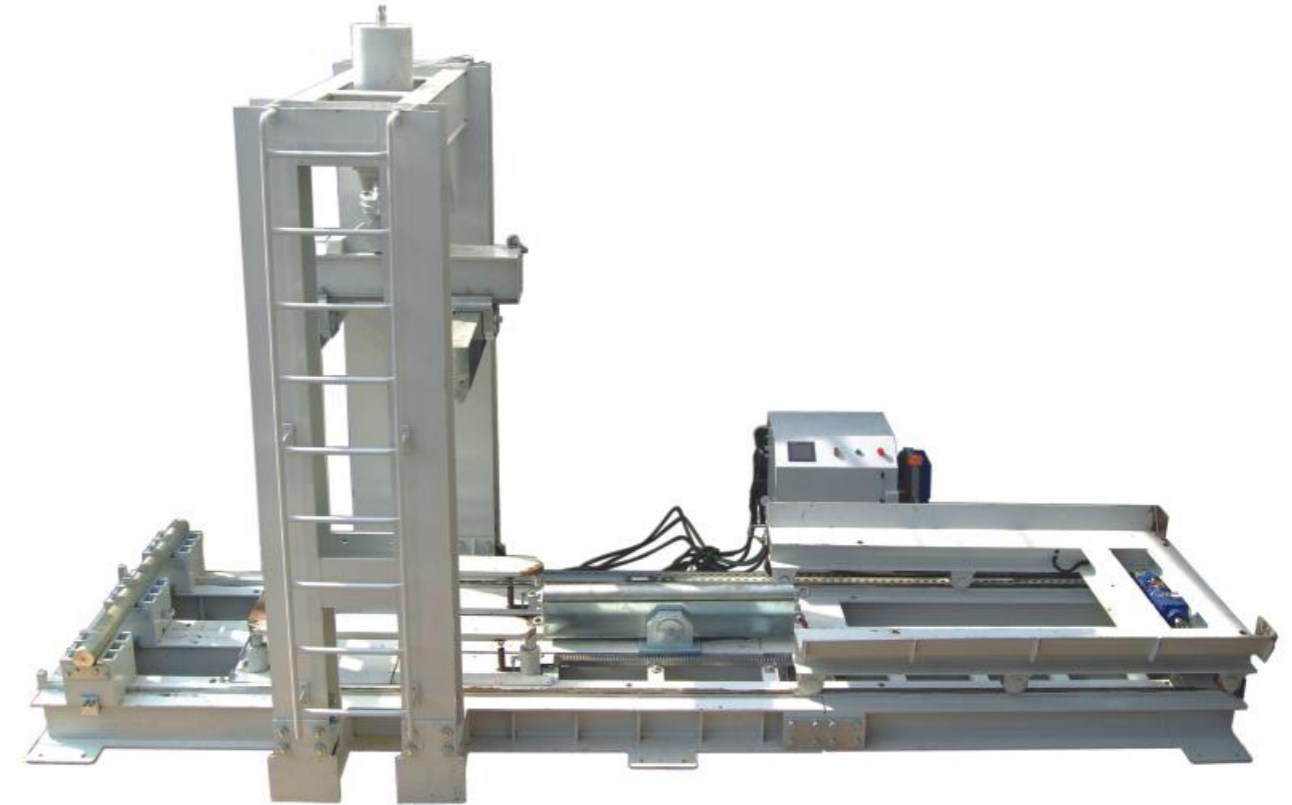
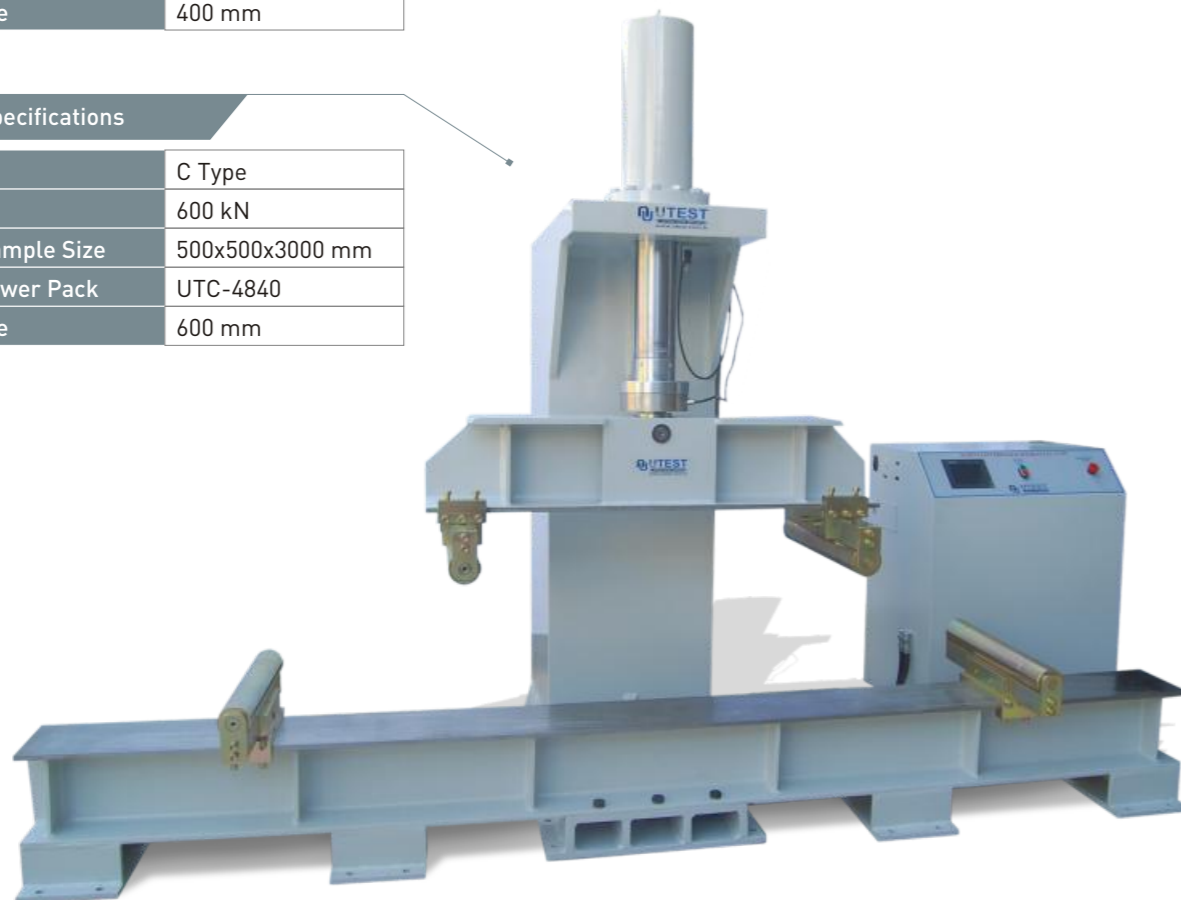


Technical Specifications

Frame Type	C Type
Capacity	600 kN
Maximum Sample Size	600x600x6000 mm
Hydraulic Power Pack	UTC-4830
Piston Stroke	400 mm

Technical Specifications

Frame Type	C Type
Capacity	600 kN
Maximum Sample Size	500x500x3000 mm
Hydraulic Power Pack	UTC-4840
Piston Stroke	600 mm



Technical Specifications

Frame Type	U Type
Capacity	1000 kN
Maximum Sample Size	1500x1500x6000 mm
Hydraulic Power Pack	UTC-4850
Piston Stroke	800 mm

Technical Specifications

Frame Type	C Type
Capacity	600 kN
Maximum Sample Size	500x500x3000 mm
Hydraulic Power Pack	UTC-4840
Piston Stroke	600 mm



ADVANCED TESTING SYSTEMS



UTEST Advanced Testing Systems has been designed to examine the mechanical properties of building materials that require advanced test setups and data acquisition systems. UTEST Advanced Testing systems are ideal systems that can be used by research centers, R&D laboratories and Universities. Those Systems are modular systems that can be built according to the customer requirements and needs. UTEST advanced testing system is user friendly equipment that allow user to rapid test setup and execution.

The main advantage of the UTEST advanced testing system is the modularity. The main item is the UTC-4850, UTC-4860 and UTC-4870 Advanced Servo Controlled Automatic Power Packs with proportional and servo valve. All UTEST compression, flexure or tensile testing frames can be connected to those power pack. Thus any test configuration can be designed to make wide range of applications including, Elastic modulus, Poisson ratio, fracture toughness, post peak residual strength, energy absorption, rock triaxial and also conventional failure tests.

UTEST Advanced Testing systems can do tests under control of Load / Stress, Displacement and Strain Rate depend on power pack used.

You can find the detailed information about frames, power packs and accessories on different section of this catalogue.

The UTC-4850 and UTC-4860 Automatic Power Packs with Proportional Valve and The UTC-4870 Automatic Power Packs with Servo Valve are advanced power packs can be used on any testing system ideal for R&D laboratories and Universities for advanced tests with P.I.D. Closed loop control. It can perform tests under load and displacement controls. The frequency of the P.I.D controller and data acquisition is 1000 Hz. UTC 4850 and 4860 Automatic power packs are designed to supply the required oil to the load frames for loading, unloading or low cycle dynamic testing. All the operations of Data Acquisition and Controls System can be controlled from the touch screen front panel of a 240x320 LCD display or computer.

The UTC-4850 and UTC-4870 can control up to 2 different frames, UTC-4860 and UTC-4880 up to 4 frames. There are an extra 3 analogue channels for other sensors such as load cells, pressure transducers, displacement transducers, extensometers, etc. built in the system as an addition to the loadcell (pressure transducer) or the pressure transducer on the frame selected by the user.

The power pack automatically controls and supplies oil to the frame which is chosen by the user via the touch screen LCD digital control unit or by choosing the test type from the computer software.

The type of displacement transducer can be TTL or analogue (It must be same type for all frames)

The main specifications of the UTC-4850 and UTC-4860 power packs are

- 1 litre/minute pump delivery (max) 315 bar, 1.1 kW motor rate
- Loading-unloading with $\pm 1\%$ rate accuracy
- Staying at constant load within 0,01% resolution of the maximum load
- The control of the load starts from 2% of the maximum load capacity of the system.

The main specifications of the UTC-4870 and UTC-4880 power packs are

- 5 litre/minute pump delivery (max) 280 bar 3 kW motor rate
- Loading-unloading with $\pm 0,5\%$ rate accuracy
- Staying at constant load within 0,005% resolution of the maximum load
- The control of the load starts from 1 % of the maximum load capacity of the system.

All power packs can be connected to the computer through Ethernet port for advanced test cycles, data acquisition and reporting. The modulus of elasticity, Poisson's Ratio and compressibility parameters is easily and properly evaluated by attaching displacement transducer or extensometers on to the sample. All the calibration values of the transducers and also all the test parameters for the last test is automatically stored on the control unit. All power packs incorporate a pressure safety valve for each frame separately and a cooling unit.

Main Features of Power Packs

- 3 analogue channels for displacement transducers, extensometers, etc. built in the system as an addition to frame loadcells/pressure transducers or displacement transducer
- Instrumentation amplifiers for sensor excitation and amplification
- 1/65.000 resolution and 1.000 Hz control for each channel
- Ethernet port for connecting to computer
- 240x320 pixel LCD display
- Touchscreen operator panel
- Can control 2 frames (UTC-4850 and UTC-4870) or 4 frames (UTC-4860 and UTC-4880)
- Can execute load, displacement or strain controlled tests. For post peak applications UTC-4870 or UTC-4880 must be selected.
- Free of charge PC software for test control and advanced report printout
- Pace rate control from 0.01 kN/s to 100 kN/s (depend on the specimen stiffness)
- Multiple language support
- Real time clock/date



UTC-4850

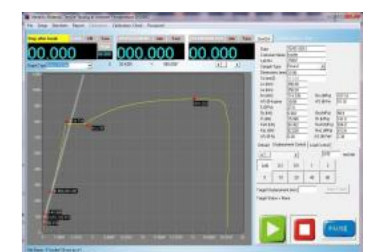
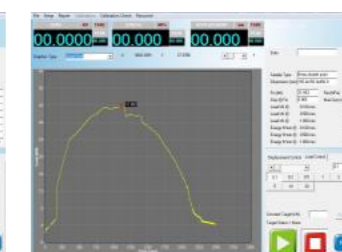
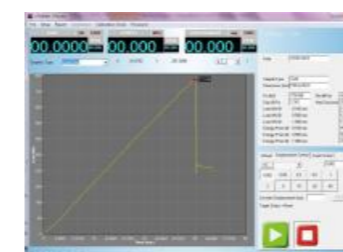
Data Acquisition & PC Software

Advanced Testing Systems 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 for UTC-4850, UTC-4860, UTC-4870 and UTC-4880 advanced power packs.

The software is capable of running the machine in load control, displacement or strain control. The type of graph or test rate can be changed on the fly. The user can set load or displacement values for making machine to wait until the next command. Engineering functions of elasticity modulus, poisson ratio, yield value and energy (for UTC-4870 and UTC-4880) is automatically calculated. The software can adjust the axes of graphs, supports different type of graphs and calculates 3 different type of elasticity modulus called tangent, linear and secant modulus. It also calculates poisson ratio. It can set the gains of the closed loop control, make calibration to the pressure transducer or loadcell. It has an easy calibration check facility such as machine waits at %2, %5, %10 of its maximum capacity for easy check of calibration.

Test speed or mode (displacement and load control) can be changed by user-friendly buttons during the test.

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. The results are exported to Microsoft Excel for advanced research purposes. The data can also be filtered for obtaining intuitive results. The software prepares a summary report.



ADVANCED TESTING SYSTEMS

Following tests can be done with The UTEST Software with proper test machines.

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

Standard Code	Description
BS-1881part121	Static Modulus of Elasticity
ASTM C 469	Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression
ASTM C 1609	Flexural Performance of Fiber-Reinforced Concrete (Using Beam With Third-Point Loading)
EN 14651	Test method for metallic fibre concrete - Measuring the flexural tensile strength (limit of proportionality (LOP), residual)
EN 14488-3	Flexural strengths (first peak, ultimate and residual) of fibre reinforced beam specimens
ISO 1920-9	Testing of concrete -- Part 9: Determination of creep of concrete cylinders in compression
ISO 1920-10	Testing of concrete -- Part 10: Determination of static modulus of elasticity in compression
EN ISO 6892-1	Tensile Test of Metallic Materials
EN 12390-13	Testing hardened concrete - Part 13: Determination of secant modulus of elasticity in compression

- Foreign Language Support and Customizable User Interface
- Capability to Save 24 test results of different specimens in one test folder
- Graphical data on the screen is refreshed simultaneously during test procedure
- Able to save frequently used texts in memory and recall them when necessary
- Capable to Access and use previously done test data
- Able to edit test parameters of the testing equipment through Software
- Graphical outputs and reports can be saved as a MS Excel worksheet
- Maximum Flexibility to edit report and graph templates



UTC-4850 with UTC-5730 Four Column Frame 3000 kN and UTM-7001 Universal Testing Machine Frame, 1000kN



UTC-4860 with UTC-5730 Four Column Frame 3000 kN, UTM-6001 Universal Testing Machine Frame, 600kN and UTC-5700 Flexural Frame 300 kN



UTC-4850 with UTC-5730 Four Column Frame 3000 kN and UTC-5700 Flexural Frame 300 kN, C Type



UTC-4850 with UTM-6001 Universal Testing Machine Frame, 600kN and UTC-5700 Flexural Frame 300 kN



UTC-4850 with UTM-6001 Universal Testing Machine Frame, 600kN and UTC-4720 2000 kN Capacity Frame, EN



UTC-4860 with UTC-5730 Four Column Frame 3000 kN, UTC-4710 1500 kN Capacity Frame, UTC-5700 Flexural Frame 300 kN and UTM-7001 Tensile Testing Frame, 1000kN



UTC-5507 Auxiliary Testing Frame for The Measurement of Deflection



UTC-0313 Compressometer-Extensometer with 3 Linear Potentiometric Displacement Transducers

Fresh Concrete Testing

WORKABILITY & CONSISTENCY

Product Code

- UTC-0400 Slump Test Set
- UTC-0402 Slump Cone
- UTC-0404 Slump Base Plate 500x500x60 mm with Handle
- UTC-0406 Slump Funnel, Galvanized Steel
- UTC-0408 Tamping Rod Ø 16x600 mm
- UTC-0410 Tamping Rod Ø 10x300 mm
- UTGH-1695 Rubber Mallet
- UTGM-0380 Steel Ruler 300x1 mm
- UTGH-1605 Round Scoop, Medium

Standards

EN 12350-2

The Slump test method is used for the determination of the consistency and workability of fresh concrete. The UTC-0400 Slump Test Set is supplied either galvanized or paint coated to prevent corrosion.



The Slump Test Set are supplied complete with

- Slump Cone Top Dia: 100 ±2 mm / Base Dia: 200 ±2 mm / Height: 300 ±2 mm
- Slump Base Plate 500x500x60 mm with Handle
- Slump Funnel, Galvanized Steel
- Tamping Rod Ø 16x600 mm
- Rubber Mallet
- Steel Ruler 300x1 mm

Dimensions	550x600x250 mm (packed)
Weight (approx.)	6 kg

WORKABILITY & CONSISTENCY

Product Code

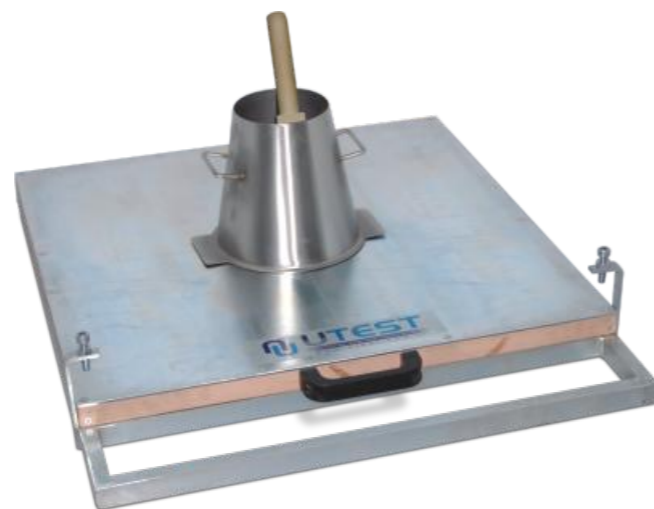
- UTC-0510 Concrete Flow Table Test Set
- UTC-0512 Flow Cone for UTC-0510
- UTC-0513 Wooden Tamper 40x40x335 mm

Standards

EN 12350-5

The test set is used for concrete mixes of high workability and determines flow index as an arithmetic mean of the diameter of the specimen after working on a flow table.

The apparatus consists of a double steel table, an upper table measuring 700x700 mm and hinged at one side to the lower table. The top table is inscribed and all parts are protected against corrosion. The stainless steel cone has a 130 ±2 mm top diameter, 200 ±2 mm base diameter and 200 ±2 mm height and 1.5 mm thickness.



Dimensions	700x850x300 mm
Weight (approx.)	40 kg

The Concrete Flow Table is supplied complete with

- Flow Cone
- Wooden Tamper

SELF COMPACTING CONCRETE (SCC) TESTS

Product Code

- UTC-0518 Sieve Segregation Test Set
- UTG-4PC0050/Y Sieve Ø 300x75 mm 5 mm Square Aperture
- UTG-4002/Y Pan Ø 300x75 mm

Standards

EN 12350-11

The UTC-0518 Sieve Segregation Test Set is used for determining the resistance to sieve segregation of Self Compacting Concrete. The Sieve has 5 mm square apertures with a frame diameter of 300 mm conforming to ISO 3310-2 standard. Supplied complete with a Pan.



Dimensions	350x350x250 mm
Weight (approx.)	2,5 kg

Product Code

- UTC-0520 J-Ring, Narrow Gap
- UTC-0522 Slump Cone for UTC-0520
- UTC-0524 Base Plate for J-Ring and Slump-Flow Tests
- UTC-0526 Steel Weighted Collar, 9 kg, EN 12350-8 for Slump Cone On J-Ring or Slump Flow Test

Standards

EN 12350-12

The J-Ring Test is used for determining the passing ability, the flow spread and the t_{500J} flow time of self compacting concrete as the concrete flows through the J-Ring Apparatus.

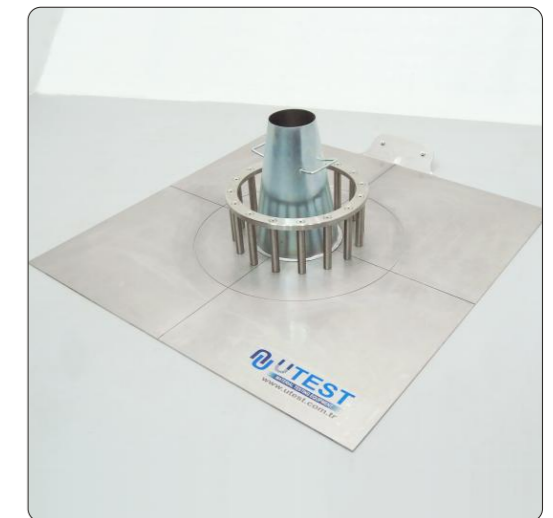
The UTC-0520 J-Ring Narrow Gap with Ø18mm x 16 smooth bars is manufactured from stainless steel.

The UTC-0522 Slump Cone is made from sheet steel protected against corrosion, with diameters; top 100 mm, base 200 mm and with a height of 300 mm.

The UTC-0524 Base Plate is 900x900x3 mm square, made of stainless steel with en-graved circles of 200 mm and 500 mm diameter conforming to EN 12350-8.

The UTC-0526 Steelweighted collar is used to stabilize the slump cone on J-Ring or slump flow tests.

Minimum apparatus for the J-Ring Test are J-Ring with narrow gap (UTC-0520) and slump cone (UTC-0522)



Product Code	Dimensions	Weight (approx.)
UTC-0520	350x350x140 mm	10 kg
UTC-0522	200x200x300 mm	2 kg
UTC-0524	900x900x12 mm	20 kg
UTC-0526	250x250x50 mm	10 kg

Fresh Concrete Testing

SELF COMPACTING CONCRETE (SCC) TESTS

Product Code

UTC-0540 V Funnel

Standards

EN 12350-9

The UTC-0540 V Funnel apparatus is used to evaluate the flow time of freshly mixed self-compacting concrete. The test is not suitable when the maximum size of the aggregate exceeds 22.4 mm.

The test set consists of a stainless steel funnel placed vertically on a supporting stand. The discharge orifice is equipped with a lid, which can be momentarily opened.



Dimensions	525x300x1040 mm
Weight (approx.)	18 kg

Product Code

UTC-0545 L Shape Box Apparatus

Standards

EN 12350-10

The UTC-0545 L Shape Box is used for determining the passing ability rate of freshly mixed self-compacting concrete. The distance between 12 mm diameter bars can be set between 41 ± 1 mm or 59 ± 1 mm.

L Shape Box is designed for ease of cleaning the vertical and horizontal hoppers.



The L Shape Box Apparatus is supplied complete with

- Filling Hopper
- Base

Dimensions	300x1000x1350 mm
Weight (approx.)	35 kg

SELF COMPACTING CONCRETE (SCC) TESTS

Product Code

UTC-0547 U Shape Box Apparatus

Standards

UNI 11044; Rilem report No. 23

The UTC-0547 U Shape Box Apparatus is used to determine the filling and passing ability of self-compacting concrete (SCC). The U box is made of stainless steel consisting of three 12 mm dia. rebars.

The U box is mounted on a frame with a fixing mechanism.



Dimensions	650x650x1100 mm
Weight (approx.)	20 kg

FILL BOX TEST METHOD

Product Code

UTC-0548 Fill Box Apparatus (Kajima Test)

The UTC-0548 Fill Box Apparatus is used to measure the filling ability of self-compacting concrete with a maximum aggregate size of 20 mm. The apparatus is also known as "Kajima Test" Apparatus consists of a container (transparent) with a flat and smooth surface.



Dimensions	500x300x900 mm
Weight (approx.)	5 kg

WORKABILITY & CONSISTENCY

Product Code

UTC-0550 Degree of Compactability (Waltz) Container

Standards

EN 12350-4

The UTC-0550 Degree of Compactability (Waltz) Container is used to measure the degree of compactability of fresh concrete. It consists of a 200x200x400 mm (width x depth x height) metal container with two carrying handles. Coated against corrosion.

Dimensions	300x210x410 mm
Weight (approx.)	5 kg



Fresh Concrete Testing

WORKABILITY & CONSISTENCY

Product Code

UTC-0560 Vebe Consistometer EN, 220-240 V 50-60 Hz

Standards

EN 12350-3



The UTC-0560/E Vebe Consistometer is used to determine the consistency of fresh concrete by subjecting the concrete specimen to vibration after removal of the slump cone. The assembly is mounted upon a small vibrating table operating at a fixed amplitude and frequency. The time to complete the required vibration gives an indication of the concrete consistency.

The Vebe Consistometer is supplied complete with

- Vibrating table
- Slump cone
- Graduated rod with transparent disc
- Filling funnel
- Tamping rod

Vibrating table	380x260 mm
Cylindrical bucket base diameter	240 mm
Cylindrical bucket height	200 mm
Slump cone upper base diameter	200 mm
Slump cone top diameter	100 mm
Slump cone height	300 mm

Dimensions	570x460x670 mm
Weight (approx.)	87 kg
Power	170 W

WORKABILITY & CONSISTENCY

Product Code

UTC-0570 Kelly Ball Apparatus

Standards

ASTM C360

The Kelly Ball test was developed in the 1950's in the United States as a fast alternative to the slump test. The simple and inexpensive test can be quickly performed on in-place concrete and the results can be correlated to slump.

The UTC-0570 Kelly Ball Apparatus consists of a 6 inch (152 mm) diameter ball which slides through a frame that rests on the fresh concrete.



Dimensions	360x160x360 mm
Weight (approx.)	15 kg

WORKABILITY & CONSISTENCY

Product Code

UTC-0580 Compacting Factor Apparatus

Standards

BS 1881-103, 5075

The UTC-0580 Compacting Factor Apparatus is used to determine the compaction factor of concrete with low, medium and high workability.

Comprising two conical hoppers having a hinged trap door attached to the lower end of each hopper, allowing the concrete sample to flow freely into the cylindrical mould. The hoppers and the mould are mounted onto a rigid steel frame and are easily removable for cleaning.

Dimensions	300x400x1300 mm
Weight (approx.)	41 kg



DENSITY

Product Code

UTC-0603 Unit Weight Measure 3 lt. Capacity
 UTC-0607 Unit Weight Measure 7 lt. Capacity
 UTC-0610 Unit Weight Measure 10 lt. Capacity
 UTC-0615 Unit Weight Measure 15 lt. Capacity
 UTC-0630 Unit Weight Measure 30 lt. Capacity

Standards

EN 12350-6; ASTM C29, C138

Unit Weight Measures are used to determine the weight per cubic meter of freshly mixed and compacted concrete.

Manufactured from heavy gauge steel complying with the related standard. Available in 3, 7, 10, 15 and 30 liter capacity models according to the requirements of different standards. Coated against corrosion.

Product Code	Dimensions	Weight (approx.)
UTC-0603	150x200x200 mm	4.5 kg
UTC-0607	250x180x250 mm	6.5 kg
UTC-0610	250x200x300 mm	8.5 kg
UTC-0615	250x300x320 mm	13 kg
UTC-0630	300x360x420 mm	16 kg



Fresh Concrete Testing

AIR CONTENT of FRESH CONCRETE

Product Code

- UTC-0650 Air Entrainment Meter
- UTC-0652 Manometer for UTC-0650
- UTC-0408 Tamping Rod Ø16x600 mm
- UTS-0714 Straight Edge 300x30x5 mm

Standards

EN 12350-7; ASTM C231; AASHTO T152



The UTC-0650 Air Entrainment Meter is used to determine the air content of fresh concrete. It consists of a flanged 7 liter capacity cylindrical vessel and cover assembly incorporating a large (90 mm dia.) pressure gauge, air pump and valves. It has a quick action clamping system. Direct pressure gauge reading to the nearest 0.1% up to 6% and 0.2% from 6 to 10%. It is not affected by changes in barometric pressure.

The meter measures up to 22% of entrained air. It is appropriate for aggregates size of maximum 63 mm.



The Air Entrainment Meter is supplied complete with

- Straight Edge
- Tamping Rod
- Wash Bottle. 250cc
- J-Type pipe and an inner extension pipe for calibration
- Special Carrying Case

Capacity	7 litres
Air Content Range	0-10%
Graduations	0.1% up to 6%; 0.2% from 6 to 10%
Dimensions	300x310x620 mm
Weight (approx.)	16 kg

SETTING TIME & CONSISTENCY TIME

Product Code

- UTC-0700 Concrete Mortar Penetrometer
- UTC-0705 Needle Set For Concrete Mortar Penetrometer

Standards

ASTM C403; AASHTO T197

The UTC-0700 Concrete Mortar Penetrometers is used for the determination of setting time of the mortar fraction of fresh concrete. The apparatus consist of a spring loading device. UTC-0700 is graduated from 10 to 150 lbf in 2 lbf divisions. A sliding ring indicates the load reached.

The Concrete Mortar Penetrometer is supplied complete with

- Set of interchangeable needle points of 645, 323, 161, 65, 32, 16 mm² area
- A steel adaptor for needles
- Carrying case

Dimensions	540x260x60 mm(packed)
Weight (approx.)	5 kg



UTC-0700



MASS CONCRETE TEMPERATURE MEASUREMENT

Product Code

- UTGT-1350 Hand Type Digital Thermometer, -50° C to 1350° C
- UTGT-1355 Connector, Type: OMTS-K-E
- UTGT-1360 Cable, Type: E-0,5 T2KTEA. Meter
- UTGT-1352 4 Channel Digital Display Temperature Datalogger

The products are used for monitoring of temperature development of mass concrete. The number of measurement points for connectors and the cable length needed for each measurement point should be indicated. The products should be ordered separately.

UTGT-1352 4 Channel Digital Display Temperature Datalogger is an alternative to UTGT-1350 and can record continuously in the time interval selected by the user. The datalogger has -195°C to +1000°C temp. measurement range for K Type sensors, 1s – 24h data record range and 2 million data recording capacity. Battery operated data logger is supplied complete with accessories such as cable for connecting to PC, software, SD card (for collecting the measurement).



UTGT-1352



House for Thermocouple Connectors

SETTING TIME & CONSISTENCY TIME

Product Code

- UTC-0715 Concrete Pocket Penetrometer

The UTC-0715 is designed for the determination of setting time of fresh concrete for field and laboratory use. Stainless steel plunger has 32.3 mm² (1/20 in²) area and 0-5 MPa measuring range. The plunger graduated 0,5 MPa.



Dimensions	15x15x200mm
Weight (approx.)	0,3 kg

BLEEDING of FRESHLY MIXED CONCRETE

Product Code

- UTC-0720 Cylindrical Container

Standards

ASTM C 232; EN 480-4

UTC-0720 is used for determination of the relative quantity of mixing water that will bleed from a sample of freshly mixed concrete.

Dimensions	290x255x350mm
Weight (approx.)	6 kg



Hardened Concrete Testing

MIXING CONCRETE in THE LABORATORY

Product Code

- UTC-0750 Concrete Mixer Pan Type, 100 L, 220-240 V 50-60 Hz
- UTC-0750/110 Concrete Mixer Pan Type, 100 L, 110 V 60 Hz
- UTC-0752 Concrete Mixer Pan Type, Double-Acting Mix Equipped, 100 L. 380 V 50 Hz (If 220 V is required please mention at time of order)

Standards

EN 1766



The efficient mixing of concrete is essential if quality specimens are to be manufactured. The Pan Type Concrete Mixers is designed to give efficient mixing of both dry and wet materials.

The difference of UTC-0752 from conventional mixers (UTC-0750) is its ability of preparing more homogenous mixture in a short time through the second engine which rotates the stirring beater in the opposite direction of the mixing drum's rotation direction.

The mixing pan is removable and tilts for easy access to the pan and emptying on completion of the mixing operation. The total volume of the pan is 108 liters but the effective capacity of the mixer is 56 liters.

The mixer head lifts clear to provide maximum access to the pan and holds the mixing blades at a constant depth during the mixing operation. The blades can be adjusted to suit the different types and volume of materials to be mixed. The pan type mixer is also equipped with rubber wheels which provide high portability.

All parts of the IP55 protected mixer are noncorrosive painted and galvanized.

	UTC-0750	UTC-0752
Dimensions	950x1050x1250 mm	950x1050x1270 mm
Weight (approx.)	255 kg	285 kg
Power	1500 W	3300 W

Product Code

- UTC-0742 Concrete Mixer with Double Rotation, Pan Type, 42 L, 380 V 50-60 Hz (If 220 V is required please mention at time of order)

Standards

EN 1766

To find out the effects of the different type constituents on the concrete properties requires the preparation of numerous and smaller volume of concrete batches in the laboratory. UTC-0742 Concrete Mixer with Double Rotation is designed for this purpose.

Dimensional volume of the mixing pan is 42 liters and the effective mixing capacity is 15 liters. The difference of UTC-0742 from conventional mixers is its ability of mixing small volume of mixtures with high performance through the second engine which rotates the stirring beater in the opposite direction of the mixing drum's rotation direction.

The shutter of the mixer is designed to open 120 degrees for easy access to the drum and keeps the beater in a certain height during mixing. There is a small observation window on the shutter which enables the user to monitor the process.

The mixing drum can be tilted to empty the mixture without hassle and it can be removed for easy cleaning on completion of the mixing operation. Also, UTC-0742 is equipped with rubber wheels which provides high mobility.

All parts of the mixer are galvanized and painted with non-corrosive paint. The protection class of UTC-0742 is IP55.



Dimensions	650x900x1200 mm
Weight (approx.)	230 kg
Power	2600 W

MIXING CONCRETE in THE LABORATORY

Product Code

- UTC-0760 Concrete Mixer Drum Type, 220-240 V 50-60 Hz

The UTC-0760 mixer is used for efficient mixing of concrete, plaster and mosaic. 125 lt. mixing volume and 2-3 m³/h lightweight mixer is equipped with rubber wheels which provide high portability.

Electric and diesel power models are available.



Technical Specifications

Drum Volume	135 lt.
Mixing Volume	125 lt.
Mixing Capacity	2-3 m ³ /h
Dimensions	670x1200x900 mm
Weight (approx.)	40 kg
Power	750 W (Electric Powered Model) 3.5 HP (Diesel Engine Powered Model)

CONCRETE MOULDS

Product Code

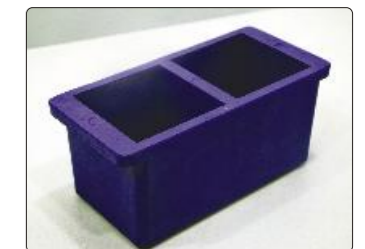
- UTC-0810 Cube Mould 100 mm, Cast Iron
- UTC-0812 Cube Mould 100 mm, Two Gang Plastic
- UTC-0815 Cube Mould 150 mm, Cast Iron
- UTC-0820 Cube Mould 150 mm, Plastic
- UTC-0821 Cube Mould 200 mm, High Quality Plastic
- UTC-0825 Cube Mould 200 mm, Cast Iron
- UTC-0408 Tamping Rod Ø 16x600 mm
- UTGH-1695 Rubber Mallet

Standards

EN 12390-1

Cast iron and hard plastic moulds are manufactured in accordance with dimensions and tolerances stated in the relevant standard. Four part body and attached to the base with a robust clamp, the cast iron moulds are designed to be durable, corrosion resistant and easy to clean.

UTC-0820 plastic moulds manufactured from robust plastic are one piece and easy for field use, the specimens are ejected from the moulds by compressed air.



Product Code	Dimensions	Weight (approx.)
UTC- 0810	270x270x120 mm	9 kg
UTC- 0812	260x120x120 mm	2 kg
UTC- 0815	300x210x160 mm	17 kg
UTC- 0820	220x220x180 mm	2 kg
UTC- 0821	220x220x180 mm	2 kg
UTC- 0825	330x270x220 mm	20 kg

Hardened Concrete Testing

CONCRETE MOULDS

Product Code

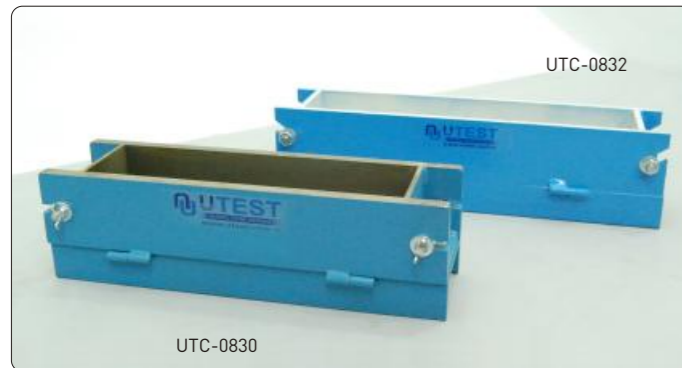
- UTC-0830 Beam Mould 100x100x400 mm, Steel
- UTC-0832 Beam Mould 100x100x500 mm, Steel
- UTC-0835 Beam Mould 150x150x600 mm, Steel
- UTC-0838 Beam Mould 150x150x750 mm, Steel

Standards

EN 12390-1; ASTM C78, C293

Steel beam moulds are manufactured in accordance with dimensions and tolerances stated in the related standards. Two part and clamp attached base plate, the steel moulds are designed to be durable, corrosion resistant and easy to clean.

Product Code	Dimensions	Weight (approx.)
UTC-0830	170x510x150 mm	18 kg
UTC-0832	170x600x160 mm	20 kg
UTC-0835	220x700x220 mm	32 kg
UTC-0838	220x850x220 mm	35 kg



UTC-0835

CONCRETE MOULDS

Product Code

- UTC-0842 Cylinder Mould Ø 100x200 mm, Steel
- UTC-0843 Cylinder Mould Ø 100x200 mm, Plastic Body with Steel Plate
- UTC-0845 Cylinder Mould Ø 150x300 mm, Steel
- UTC-0846 Cylinder Mould Ø 150x300 mm, Plastic Body with Steel Plate
- UTC-0850 Cylinder Mould Ø 160x320 mm, Steel
- UTC-0851 Cylinder Mould Ø 160x320 mm, Plastic Body with Steel Plate
- UTC-0408 Tamping Rod Ø 16x600 mm
- UTC-0410 Tamping Rod Ø 10x300 mm
- UTGH-1695 Rubber Mallet

Standards

EN 12390-1; ASTM C192, C470

Hard plastic and steel cylinder moulds are manufactured in accordance with dimensions and tolerances stated in the related standards. Two part and clamp attached base plate cast iron, plastic and steel moulds are designed to be durable, corrosion resistant and easy to clean.



UTC-0843



UTC-0845

Product Code	Dimensions	Weight (approx.)
UTC-0842	160x160x210 mm	6 kg
UTC-0843	160x160x210 mm	1 kg
UTC-0845	250x250x310 mm	9 kg
UTC-0846	200x200x310 mm	2 kg
UTC-0850	300x300x330 mm	11 kg
UTC-0851	190x190x310 mm	3 kg

CONCRETE COMPACTION

Product Code

- UTC-0928 Poker Vibrator Ø 22 mm Hand-Held, 220-240 V 50-60 Hz
- UTC-0930 Poker Vibrator Ø 22 mm, 220-240 V 50-60 Hz
- UTC-0932 Poker Vibrator Ø 27 mm, 220-240 V 50-60 Hz
- UTC-0935 Poker Vibrator Ø 32 mm, 220-240 V 50-60 Hz

Standards

EN 12390-2; ASTM C31, C192; AASHTO T23, T126

The Poker Vibrator is ideal for the internal compaction of concrete specimens and a good alternative to traditional tamping bar, especially when there are large numbers of specimens to be compacted. Flexible shaft length and tip diameter can be selected from the four available products.

Product Code	Type&Shaft	Frequency	Dimensions	Weight (approx.)
UTC-0928	Ø22x350 mm tip-1 m shaft	10.000 vib/min	100x750x350 mm	8 kg
UTC-0930	Ø22x350 mm tip-2 m shaft	12.000 vib/min	160x850x360 mm	14 kg
UTC-0932	Ø27x370 mm tip-2 m shaft	12.000 vib/min	160x850x360 mm	14 kg
UTC-0935	Ø32x400 mm tip-2 m shaft	12.000 vib/min	160x850x360 mm	14 kg



CONCRETE COMPACTION

Product Code

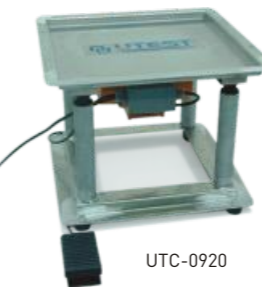
- UTC-0900 Vibrating Table Small, 220-240 V 50-60 Hz
- UTC-0910 Vibrating Table Large, 220-240 V 50-60 Hz
- UTC-0920 Vibrating Table, Site Type, Portable

Standards

EN 12390-2



UTC-0900



UTC-0920



UTC-0910

Product Code	Dimensions (packed)	Weight (approx.)	Power
UTC-0900	450x650x800 mm	52 kg	170 W
UTC-0910	630x1270x1200 mm	135 kg	170 W
UTC-0920	550x550x450 mm	17 kg	170 W

The UTEST fixed amplitude vibrating tables are compact units providing controlled vibro-compaction for cube or cylinder moulds. Vibrating tables consist of vibrating motor, command unit and clamping assembly.

For laboratory use the table is available in two alternative sizes, 610 x 380 mm and 1260 x 620 mm. The small table accepts 2, large table accepts 6 cube or cylinder moulds by using clamping assembly.

UTC-0900 and UTC-0910 tables can also be used for beam moulds.

For on site applications, portable UTC-0920 Vibrating Table is designed for preparing the cube or cylinder specimens by vibration. 1 or 2 pcs. cube or cylinder mould can be clamped on the table depending on outer size of the mould to be used.

UTC-0920 Vibration Table is supplied complete with a converter (220 to DC 12V).

Hardened Concrete Testing

CONCRETE CURING

Product Code

- UTC-0950 Large Metal Curing Tank
- UTC-0952 Set of Removable Upper Racks for UTC-0950
- UTC-0954/N Curing Tank Heater for UTC-0950 and UTC-0965, 220-240 V 50-60 Hz (3 cm connecting channel and 50 cm resistance length)
- UTC-0954/W Curing Tank Heater for UTC-0970, 220-240 V 50-60 Hz (6,5 cm connecting channel and 70 cm resistance length)
- UTC-0955 Circulating Pump, 220-240 V 50-60 Hz
- UTC-0960 Large Plastic Curing Tank
- UTC-0962 Wide Plastic Curing Tank
- UTC-0956 Curing Tank Heater for UTC-0960 and UTC-0962, 220-240 V 50-60 Hz (6,5 cm connecting channel and 70 cm resistance length,)

(If 110V required please indicate on your order)

Standards

EN 12390-2; ASTM C31, C192, C511



UTC-0950



UTC-0960



UTC-0952



UTC-0955



UTC-0954

The UTC-0950 steel, UTC-0960 and UTC-0962 Plastic Curing Tanks are designed for curing concrete cubes and cylinders. The temperature can be adjusted and can be kept constant by an electric resistance incorporating a digital thermo regulator which maintains the set temperature between ambient to 40 °C with ± 2 °C accuracy.

The UTC-0950 is manufactured from powder coated sheet steel. Suitable upper racks to hold concrete cubes are available on request (max. 8 pieces). UTC-0960 and UTC-0962 tanks have a bearer metal carcass.

The UTC-0952 should be ordered separately.

		UTC-0950	UTC-0960	UTC-0962
Dimensions (WxLxH)	External	860x1560x615 mm	800x1800x950 mm	1100x2100x900 mm
	Internal	800x1500x550 mm (Clear Depth 520mm)	700x1700x850 mm (Clear Depth 820mm)	1000x2000x800 mm (Clear Depth 770mm)
Specimens	Cube 150 mm	Max. 135 pcs	Max. 220 pcs	Max. 390 pcs
Capacity	Cylindrical Ø150x300 mm	Max. 67 pcs	Max. 110 pcs	Max. 195 pcs
Weight (approx.)		92 kg	88 kg	130 kg

All Curing Tanks are supplied complete with

- Heater
- Submersible Circulation Pump
- Base Metal Racks

CONCRETE CURING

Product Code

- UTC-0965 Small Metal Curing Tank
- UTC-0954/N Curing Tank Heater for UTC-0950 and UTC-0965, 220-240 V 50-60 Hz (3 cm connecting channel and 50 cm resistance length)
- UTC-0954/W Curing Tank Heater for UTC-0970, 220-240 V 50-60 Hz (6,5 cm connecting channel and 70 cm resistance length)
- UTC-0955 Circulating Pump
- UTC-0970 Small Plastic Curing Tank

(If 110V required please indicate on your order)

Standards

EN 12390-2; ASTM C31, C192, C511

The UTC-0965 Steel and UTC-0970 Polyurethane Small Curing Tanks are designed for curing concrete cubes and cylinders. The temperature can be adjusted to the required value and can be kept constant by an electric resistance incorporating a thermo regulator which maintains the set temperature between ambient to 40 °C with ± 2 °C accuracy.

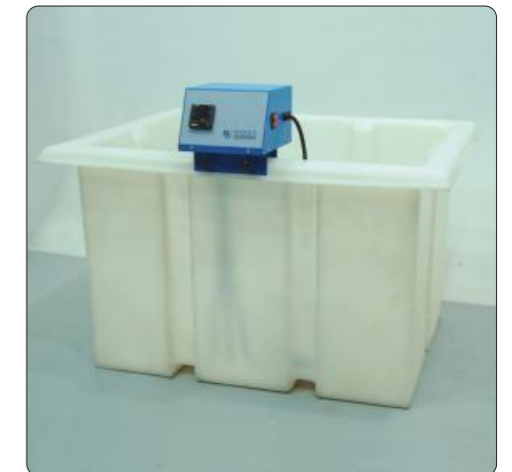
The UTC-0965 is manufactured from powder coated sheet steel.

All Curing Tanks are supplied complete with		The UTC-0970 is also supplied complete with	
• Heater	• Base Metal Rack	• Submersible Circulation Pump	

		UTC-0965	UTC-0970
Dimensions (WxLxH)	External	710x710x610 mm	915x1250x660 mm
	Internal	650x650x550 mm (Clear Depth 520mm)	800x1100x550 mm (Clear Depth 520mm)
Specimens	Cube 150 mm	Max. 48 pcs	Max. 110 pcs
Capacity	Cylindrical Ø150x300 mm	Max. 24 pcs	Max. 52 pcs
Weight (approx.)		55 kg	60 kg



UTC-0965



UTC-0970

CONCRETE CURING

Product Code

UTC-0980 Accelerated Curing Tank, Ambient to +60°C, 380 V 50 Hz

Standards

ASTM C 1768 (Procedure A - Warm Water Method)
BS 1881:Part 112 (35°C Method and 55°C Method)

UTC-0980 Accelerated Curing Tank is designed for curing concrete specimens according to ASTM C1768 (Procedure A - Warm Water Method) and BS 1881:Part 112 (35°C Method and 55°C Method).

The Tank consists of an insulated rectangular double walled metal chamber inside lined with stainless steel outer powder coated, an insulated lid with lifting handle to cover the chamber and an stainless steel perforated platform for circulation of water and to support the concrete specimens.

The tank works ambient to +60°C temperature. The temperature is controlled with closed loop PID controlled digital thermoregulator with accuracy of ±2°C. Curing temperature and curing time can also be set.

The water temperature versus the time can be recorded continuously on PC by the Utest software.



External Dimensions	1000x750x850 mm
Internal Dimensions	900x600x640 mm
Weight (approx.)	90 kg
Power	4500 W

Hardened Concrete Testing

CUTTING / GRINDING

Product Code

- UTC-1010 Universal Cutting Machine Small, 380 V
- UTC-1020 Universal Cutting Machine Junior, 380 V
- UTC-1030 Universal Cutting Machine Major, 380 V
- UTC-1012 Cutting Blade Ø 350 mm
- UTC-1022 Cutting Blade Ø 450 mm
- UTC-1032 Cutting Blade Ø 600 mm

Standards

EN 12390-3, 12504-1; ASTM C42, D4543

The UTC Series Universal Cutting Machines have been developed to cut and prepare concrete, rock or natural stone cores or other type test specimens. It is available in three different models.

Special clamp assembly allows specimens to be held during cutting operation. The machine is supplied complete with "V" block clamp for Ø 100 mm specimens and a water circulation pump.

If 220 V is required please mention at time of order. Cutting Blade should be ordered separately.

	UTC-1010 Small	UTC-1020 Junior	UTC-1030 Major
Length	1100 mm	1100 mm	1220 mm
Width	660 mm	710 mm	810 mm
Height	1300 mm	1350 mm	1500 mm
Blade Diameter	350 mm	450 mm	600 mm
Max. Cutting Height	135 mm	175 mm	250 mm
Cutting Length	470 mm	420 mm	500 mm
Engine Power	3 hp/380 V	4.0 hp/380 V	5.5 hp/380 V
Weight	115 kg	140 kg	170 kg
Water Pump Power	0.37 hp/220 V	0.37 hp/220 V	0.37 hp/220 V



CUTTING / GRINDING

Product Code

- UTC-1035 Semi-Automatic Grinding Machine, 220-240 V 50-60 Hz
- UTC-1042 Grinding Wheel for UTC-1035 and UTC-1040
- UTC-1043 Cradle for Ø:38-100 mm Cylindrical Specimens
- UTC-1044 Water Restraint Panel Set
- UTC-1048 Water Restraint Panel for Ø160mm Cylinder Specimen

Standards

EN 12390-1, 12390-3, 12504-1; ASTM C 31, C39, C42, C192

The UTC-1035 Semi-Automatic Grinding Machine provides fast grinding of cylinder specimen ends to obtain plane and parallel surfaces according to EN and ASTM standards.

The only difference between automatic machine and semi-automatic machine is that the cradle of the semi-automatic machine is moved toward the grinding wheel by user. All grinding process is automatic except the movement of the cradle for semi-automatic machine. The optimum cycle to be applied by user is 5-6 cycle/minute.

Three units of Ø38 to 100 mm or two units of Ø150-160 mm concrete cylinders ends can be ground simultaneously with the suitable cradle and water restraint panel. The length of the any specimen must be longer than 70 mm.

According to ASTM and EN standards, the planeness accuracy of grinded surface is 0.05 mm. and the deviation of perpendicularity of the side with reference to the end faces is 0,5°.

The safe and ergonomic design prevents the user to exposure to water and dust and provides easy access to the water inlet and outlet.

Specimen cradles and water restraint panels can easily be installed without the need for any assembly. Mobility of the machine is achieved with the help of the integral wheels, and all components of the system can be safely accessed for easy maintenance.

The machine is manufactured from stainless steel for resistance to corrosion.

The water restraint panels should be ordered separately for cubic specimens or different sized cylindrical specimens.

The Semi-Automatic Grinding Machine is supplied complete with

- Grinding Wheel for concrete specimens
- Cradle for Ø:38mm to 100 mm cylindrical specimens
- Water restraint panel set (Consist of four panels Ø150, 100, 75 and 50 mm)

Dimensions	730x1200x1500 mm
Weight (approx.)	280 kg
Power	1850 W



The preparation of concrete cylinder test specimen for compressive strength test	EN 12390-1, 12390-3 ASTM C31, C39, C192, C-617	The maximum tolerance on the flatness of the potential load bearing surfaces (the ends of compression test specimens) is 0.002 in. [0.050 mm]
The preparation of drilled concrete cores specimen for compressive strength test	EN 12504-1, 12390-1, 12390-3 ASTM C42, C39	The deviation of perpendicularity of the side, with reference to the end faces is 5°



Hardened Concrete Testing

CUTTING / GRINDING

Product Code

- UTC-1040 Automatic Grinding Machine, 220-240 V 50-60 Hz
- UTC-1042 Grinding Wheel for UTC-1035 and UTC-1040
- UTC-1043 Cradle for Ø:38-100 mm Cylindrical Specimens
- UTC-1044 Water Restraint Panel Set
- UTC-1048 Water Restraint Panel for Ø160mm Cylinder Specimen

Standards

EN 12390-1, 12390-3, 12504-1; ASTM C 31, C39, C42, C192, C617

The UTC-1040 Automatic Grinding Machine provides fast grinding of cylinder specimen ends to obtain plane and parallel surfaces according to EN and ASTM standards.

Three units of Ø38 to 100 mm or two units of Ø150-160 mm concrete cylinders ends can be ground simultaneously with the suitable cradle and water restraint panel. The length of the any specimen must be longer than 70 mm.

According to ASTM and EN standards, the planeness accuracy of grinded surface is 0.05 mm. and the deviation of perpendicularity of the side with reference to the end faces is 0,5°.

The equipment has selectable advance grinding time functionality by user from 50 to 400 seconds. Optimum grinding time per end of all type specimens is 90 to 120 seconds.

The cradle which specimens are fixed on has automatic bidirectional radial displacement ability. The safe and ergonomic design prevents the user to exposure to water and dust and provides easy access to the water inlet and outlet.

Specimen cradles and water restraint panels can easily be installed without the need for any assembly.

Mobility of the machine is achieved with the help of the integral wheels, and all components of the system can be safely accessed for easy maintenance.

The frame is manufactured from aluminum to obtain a lighter weight and the stainless steel exterior shell assures resistance to corrosion.

The water restraint panels should be ordered separately for cubic specimens or different sized cylindrical specimens.

The Automatic Grinding Machine is supplied complete with

- Grinding Wheel for concrete specimens
- Cradle for Ø:38mm to 100 mm cylindrical specimens
- Water restraint panel set
(Consist of four panels Ø150, 100, 75 and 50 mm)

Dimensions	730x1080x1510 mm
Weight (approx.)	260 kg
Power	1850 W



The preparation of concrete cylinder test specimen for compressive strength test	EN 12390-1, 12390-3 ASTM C31, C39, C192, C-617	The maximum tolerance on the flatness of the potential load bearing surfaces [the ends of compression test specimens] is 0.002 in. [0.050 mm]
The preparation of drilled concrete cores specimen for compressive strength test	EN 12504-1, 12390-1, 12390-3 ASTM C42, C39	The deviation of perpendicularity of the side, with reference to the end faces is 5°

CAPPING

Product Code

- UTC-1050 Melting Pot 3 lt. Capacity, 220-240 V 50-60 Hz
- UTC-1050/110 Melting Pot 3 lt. Capacity, 110 V 60 Hz

Standards

EN 12390-3, 12390-1, 12504-1; ASTM C31, C192, C617, C39, C42; AASTHO T23, T126

The UTC-1050 melting pot is used for melting the capping compound. The apparatus consists of a 3 litre capacity aluminium container in a well-lagged steel jacket, cover and thermostatic control heating system to keep the temperature constant in the range of ambient to 200 °C.



Dimensions	350x320x290 mm
Weight (approx.)	9 kg
Power	600 W

CAPPING

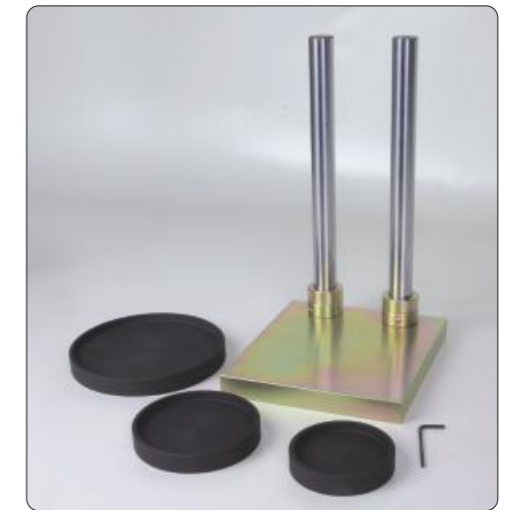
Product Code

- UTC-1054 Cylinder Capping Frame

Standards

EN 12390-1, 12390-3, 12504-1; ASTM C31, C39, C42, C192, C617; ASSTHO T23, T126

The UTC-1054 Cylinder Capping Frame is used to ensure that the planed end surfaces are perpendicular to the axis of the cylinder during the capping process. The frame comprises vertical supports mounted on a steel base. All three type of samples can be capped with this single unit.



The Cylinder Capping Frame is supplied complete with

- Base Plates for 75, 100 and 150 mm dia. cylinder specimen

Dimensions	200x200x320 mm
Weight (approx.)	13 kg

PERMEABILITY

Product Code

- UTC-1080 Impermeability Test Set with Quantitative Measurement Equipment, 3 Specimen Capacity
- UTC-1082 Impermeability Test Set without Quantitative Measurement Equipment, 3 Specimen Capacity
- UTC-1090 Impermeability Test Set with Quantitative Measurement Equipment, 6 Specimen Capacity
- UTC-1092 Impermeability Test Set without Quantitative Measurement Equipment, 6 Specimen Capacity
- UTGE-3700 Laboratory Air Compressor 8 bar, 25 L, 220-240 V, 50-60 Hz

Standarts

EN 12390-8; ISO 7031

Used for the determination of the depth of penetration of water to hardened concrete specimens under pressure. 3 or 6 specimen capacity models and with and without quantitative measurement equipment of water penetratoion models are available. The system can test 150 mm and 200 mm cube specimens, Ø100x200 and Ø150x300 mm cylinder specimens. Up to 10 bar of working pressure is generated on the sample with 0.2 bar precision with compressed air applied to the integral water tank and controlled by a pressure regulator with a pressure gauge. The test sets with the quantitative measurement equipment of water penetratoion the penetration of water is measured through the burettes. The system comprises impermeability gaskets for every cell. The measurement apparatus is supplied as standard. The apparatus has to be fitted with a suitable air compressor.

The Air Compressor should be ordered separately.

	Dimensions	Weight (approx.)
UTAS-1080	1520x570x1800 mm	158 kg
UTAS-1082	1520x570x1300 mm	123 kg
UTAS-1090	1520x570x1800 mm	194 kg
UTAS-1092	1520x570x1300 mm	159 kg



UTC-1080



UTC-1082

METAL LOCATION in CONCRETE

Product Code

- UTC-2080 Rebar Detector
- UTC-2082 Rebar Detector & Monitor
- UTC-2085 X Scan Rebar Detector & Monitor

Determining the position, depth and diameter of rebar can be detected in any constructions by Rebar Detector and can be displayed the results by UTC-2082. UTC-2082 Rebar Detector & Monitor is a portable, quick and simple to operating instrument. The data that is received via Rebar Detector can be transferred to monitor via an infrared tool and from monitor to PC via. USB port.

UTC-2085 X Scan Rebar Detector & Monitor is a Portable, quick and easy to use system for detecting objects up to 30 cm in concrete structures. The complete system for hit prevention and structural analysis. Detected rebars can be displayed in 3D image with UTC-2085 X Scan Rebar Detector & Monitor.

FEATURES

- Quick, easy scanning of large areas
- Individual scans over lengths of up to 30 m
- Data transfer from scanner by infrared link for monitor viewing
- Cordless scanner for maximum freedom of movement
- Immediate high resolution image for clear Picture of the reinforcement

APPLICATIONS

- Rebar verification and analysis
- Checking concrete coverage over large areas for structural repair work
- Building acceptance inspections and quality control
- Avoid cutting through critical reinforcement or castly rebar hits
- Prevent damage to rebars during coring or drilling,
- Review and report from the computer receiving the scan analysis



UTC-2080

UTC-2082



UTC-2085

Technical Specifications	UTC-2080	UTC-2085
Maximum Detection Depth	180 mm (at 36 mm rebar diameter)	300 mm depending on base material condition (damp or dry) and object class
Localization accuracy	3 mm	+/- 10 mm
Maximum Depth for Determing Depth of Coverage	160 mm (at 36 mm rebar diameter)	-
Maximum Depth for Determing Rebar Diameter	60 mm	-
Minimum distance between two neighbouring objects	-	40 mm
Maximum Scanning Speed	0.5 m/s	0.5 m/s
Accuracy of depth indication	-	← 100 mm: +/- 10 mm → 100 mm: +/- 15%
Operating Time with Battery	8h	4h
Screen	LCD	LCD
Dust & Water Spray Protection	IP54	IP54
Working Temperature Range	-10 °C - (+50 °C)	-15 °C - (+50 °C)
Scanner Dimensions	260x132x132 mm	318x143x190.1 mm
Scanner Weight (w/battery)	1.4 kg	2.45 kg
Monitor Dimensions	264x57x152 mm	292x292x207.5 mm
Monitor Weight	1.4 kg	2.26 kg

Protection and Repair of Concrete Structures (NDT)

METAL LOCATION in CONCRETE

Product Code

UTC-2092 Profometer PM-630 Rebar Detector

Standards

BS 1881 Part 204, DIN 1045, SN 505 262

Profometer PM-630 Rebar Detector is an advanced cover meter to detect location of rebars, measurement of concrete cover and bar diameters non-destructively by using the eddy current principle with pulse induction as the measuring method. It also has extended advanced features from the previous version, Profometer5+, like Line and Area Scan Modes and an extensive choice of statistical views. PM-630 is specially suited to measuring large areas, long lines or when comprehensive reporting is required. For example when inspecting tunnels, retaining walls, concrete slab soffits, bridge slabs or dams.

FEATURES

- Measuring wide areas over long distances
- Zoom in to scale rebars according to your needs
- Display with cover curve or signal strength curve
- Visual assistance for speed and signal strength control
- Settings directly accessible on the measurement screen
- Graphical display of measured values and minimum cover set
- Change settings before and after storage
- PM-Link software for downloading saved data to a PC for analysis and export to third party applications
- All-in-one Universal Probe including standard, long range and spot probe
- Spot probe specially for areas with congested rebar arrangements
- Housing specially designed to be used on-site in harsh environments, including carrying strap, integrated stand and sunshield cover
- Battery lifetime of >8h
- High resolution color display
- 8 GB Flash memory
- Dual core processor supporting diverse communication and peripheral interfaces
- Future proof investment through direct upgrade possibilities to upcoming Profometer products



Technical Specifications

Cover Measuring Range	Up to 185 mm (7.3")
Cover Measuring Accuracy	± 1 mm to ± 4 mm (0.04" to 0.16")
Measuring Resolution	Depending on diameter and cover
Path Measuring accuracy on smooth surface	± 3 mm (0.12") + 0.5% to 1.0% of measured length
Display	7" colour display 800x480 pixels
Diameter Measuring Range	Up to 63 mm (2.5")
Diameter Measuring Accuracy	± 1 bar size
Memory	Internal 8 GB Flash memory
Regional Settings	Metric and imperial units and multi-language supported
Battery	Lithium Polymer, 3.6 V, 14.0 Ah
Battery Lifetime	→ 8h (in standard operating mode)
Mains	9 V - 15 V / 2.0 A
Weight (of display device)	About 1'525 g (incl. Battery)
Operating temperature	0°C - 30°C (Charging*, running instrument), 0°C - 40°C (Charging, instrument is off) -10°C - 50°C (Non-charging)
Humidity	< 95 % RH, non condensing
IP Classification	IP54

METAL LOCATION in CONCRETE

Product Code

UTC-3000 Bartracker Concrete Covermeter

Standards

BS 1881:204

UTC-3000 Bartracker Concrete Covermeter is used to measure the thickness of concrete cover over steel reinforcement bars and metal pipes, furthermore it is also used to identify the location, orientation and diameter of reinforcement bars (rebar). The basic unit can be completed with a number of optional probes for various determinations.

UTC-3000 which uses the Pulse induction technique features a rugged waterproof IP 65 case with probe storage for easy portability. The battery pack can be recharged inside or outside the gauge. The display screen shows you everything you need to know.

UTC-3000 Bartracker Concrete Covermeter is supplied complete with; Main unit, Standard search head to meet most of measurement requirements to identify 40 mm dia. bar up to 95 mm depth (approx.), 8 mm dia. bar up to 70 mm depth (approx.), sensing area 120x60 mm., PC cable, Battery pack and charger, Shoulder strap, Earphone, Carry case and instruction manual.



MAIN FEATURES

- Rebar location
- Rebar orientation
- Depth of cover
- Cover reading thickness mm or inches
- Large graphic display with backlight
- Multiple language menu structure
- Signal strength bar
- Interchangeable heads with led and keypad
- User selectable bar range sizes and numbers
- Autosize mode for quick bar diameter determination
- Orthogonal mode for bar diameter determination
- Other models of search head available on order for Narrow pitch search, Deep cover search, Borehole. See accessories.
- RS 232 output to PC
- Data logging
- Adjustable beep volume & earphone socket
- EDTS MS EXCEL link software

METAL LOCATION in CONCRETE

Product Code

UTC-3010 Fully integrated Rebar Detector and Covermeter

Standards

BS1881-204, DIN1045, SN 505 262, DGZfP B2

UTC-3010 Fully integrated Rebar Detector and Cover meter is a versatile rebar detector system. This is coupled with rebar-proximity indicators and optical and acoustical locating aids. Rebar diameter can also be estimated within the specified testing range. Rebar Detector combines these unique features in a compact, light device that allows the user to operate this rebar detector with one hand making the task of locating rebars a simple and efficient process.



FEATURES

- A rebar detector with real-time visualization of the rebars beneath the instrument
- Visual indication of rebars in close proximity
- Rebar Detector is a rebar detector with the ability to identify the mid-point between rebars as well as the orientation of rebars
- Optical and acoustical indication of rebar location and minimum cover alert
- This rebar detector offers neighboring bar correction
- Regional settings (metric, imperial)
- Cordless and single handed operation
- Switchable display backlight for dark environments
- A rebar detector with icon-based language independent menus
- Start-up test kit allows user to familiarize him/herself with all functions in a comfortable environment, wasting no time on site

APPLICATIONS

- Rebar detector
- Measurement of concrete cover
- Measurement of rebar diameter
- Checking for minimum cover
- Map out the rebar grid and cover for corrosion studies
- Rebar grid examination for planned load changes on the structure

As optional, The rebar locator can store 49'500 measurements. Please contact us for more information on the Rebar Detector and cover meter.

Technical Specifications

Measuring Range of Cover	Up to 180 mm
Power source	2 x 1.5 V AA (LR6) batteries
Voltage range	3.6 V to 1.8 V
Battery Lifetime Backlight off	50 h
Battery Lifetime Backlight on	15 h
Temperature range	-10° to 60° C (14° to 140° F)
Humidity range	0 to 100% rH

Protection and Repair of Concrete Structures (NDT)

METAL LOCATION in CONCRETE

Product Code

UTC-3015 Deep Scanning Metal Locator

UTC-3015 Deep Scanning Metal Locator is used to find rebar and metallic pipes, conduit, metal studs, junction boxes and metal framing up to 150 mm deep by scanning through most nonmetallic construction material, including solid concrete.

It scans through solid concrete and pinpoints the location and depth of target and differentiates between steel rebar and copper pipe.



Technical Specifications

Battery	9 V alkaline
Position Accuracy	Rebar/Copper pipe 14 mm dia. at a minimum grid spacing of 152 mm are located typically within 13 mm depth
Depth	Up to 152±25 mm
Water Resistance	Splash and water resistance but not water proof
Dimensions	251x109x63 mm
Weight (approx.)	320 g (incl. battery)

METAL LOCATION in CONCRETE

Product Code

UTC-3025 Metal Locator (BOSCH)

The Bosch PDO Multi Digital Detector locates a variety of metal and wooden structures behind walls with the highest precision, ensuring safety before drilling into the wall. Invest in a reliable detector such as the Detector PDO Multi rather than have a water pipe or power cable repaired afterwards.

The PDO Multi's large, easy-to-read display uses a bar display to indicate the detection strength. It displays the charging state of the battery, and also features a zoom function for reliable detection accurate to the millimeter. The function buttons of the PDO Multi make it easy to switch the mode from metal to wood detection. The non-slip soft grip ensures safe and comfortable handling.

When the PDO Multi finds detectable material behind the wall, the LED ring changes color from green to red and alerts the user with an acoustic signal. The result is displayed graphically on a large LCD. The zoom function refines the search even more and locates the detected object within a millimeter range. Use the handy built-in pencil and mark the detected area through the opening in the center of the LED ring.

Digital measuring tools from Bosch impress with precision and extremely easy operation whether when leveling objects, measuring distances or detecting all different kinds of materials and power cables.

Detection Depth, steel (max.)	60 mm
Detection Depth, copper (max.)	50 mm
Calibration	Automatic
Battery	9 V
Weight	0.20 kg

FEATURES

- Reliable detection up to max. 6 cm detection depth
- Immediately ready for use thanks to fully automatic calibration
- Locates metals and live power cables
- Clear drilling recommendation by means of marking ring illuminated in red/green
- Extremely easy operation - only one button
- Digital display makes the measurement results easy to read
- Soft grip for a better and more comfortable hold



The Metal Locator (Bosch) is supplied complete with

- PDO Multi Detector
- Protective case
- Battery, 9 V
- Marking Pencil and Instruction Manual

NON-DESTRUCTIVE CONCRETE TESTING in STRUCTURES

Product Code

- UTC-3028 Concrete Test Hammer (Schmidt Hammer) N Type (UTEST)
UTC-3040 Calibration Anvil

Standards

EN 12504-2, 13791; ASTM C 805; BS 1881:202; NF P18-417; DIN 1048; UNI 9189

The quality of concrete is mainly judged by its compressive strength directly affecting the load-bearing capacity and durability of concrete structures.

UTC-3028 Concrete Test Hammer (Schmidt Hammer N Type UTEST) is used to measure the compressive strength characteristics of hardened concrete non-destructively, control uniform concrete quality and detect weak spots in the concrete. The test object should have a minimum thickness of 100 mm (3.9 in).

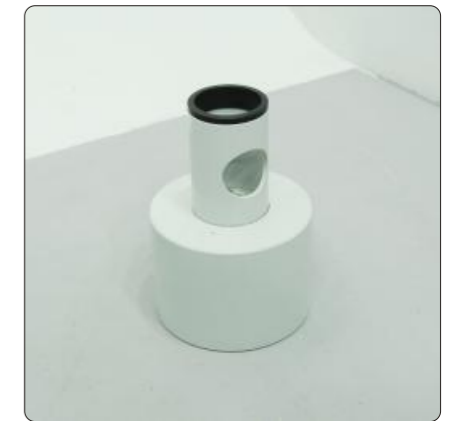
UTC-3040 Calibration Anvil, manufactured from a special steel alloy, is used for the calibration of concrete test hammers.

Product Code	Dimensions	Weight (approx.)
UTC-3028	340x120x120 mm	2 kg
UTC-3040	150x150x230 mm	16 kg

Measuring Range	10-70 N/mm ²
Impact Energy	2.207 Nm



UTC-3028



UTC-3040

NON-DESTRUCTIVE CONCRETE TESTING in STRUCTURES

Product Code

- UTC-3030 Concrete Test Hammer (Schmidt Hammer) N Type
UTC-3040 Calibration Anvil

Standards

EN 12504-2, 13791; ASTM C 805; BS 1881:202; NF P18-417; DIN 1048; UNI 9189

UTC-3030 Concrete Test Hammer is used for the non-destructive testing of the surface of hardened concrete in order to evaluate the strength in various parts of a structure.

The concrete hammer is supplied complete with plastic carrying case, grinding stone and instruction manual.

UTC-3040 Calibration Anvil, manufactured from a special steel alloy, is used for the calibration of concrete test hammers.

Measuring Range	10-70 N/mm ²
Impact Energy	2.207 Nm



Product Code	Dimensions	Weight (approx.)
UTC-3030	80x80x360 mm	1,5 kg
UTC-3040	150x150x230 mm	16 kg

Protection and Repair of Concrete Structures (NDT)

NON-DESTRUCTIVE CONCRETE TESTING in STRUCTURES

Product Code

- UTC-3032 Original Schmidt Concrete Test Hammer N Type (Proceq)
- UTC-3040 Calibration Anvil

Standards

EN 12504-2, 13791; ASTM C 805; BS 1881:202; NFP18-417; DIN 1048 part 2; UNI 9189; ISO 8045; B 15-225; JGJ/T 23-2001 JJG 817-1993

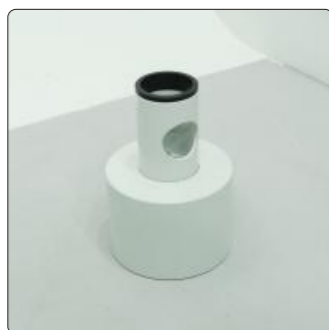
The quality of concrete is mainly judged by its compressive strength directly affecting the load-bearing capacity and durability of concrete structures.

UTC-3032 Concrete Test Hammer (Original Schmidt Type N - Proceq) is used to measure the compressive strength characteristics of hardened concrete non-destructively, control uniform concrete quality and detect weak spots in the concrete. The test object should have a minimum thickness of 100 mm (3.9 in).

UTC-3040 Calibration Anvil, manufactured from a special steel alloy, is used for the calibration of concrete test hammers.



UTC-3032



UTC-3040

FEATURES

- Type N Original Schmidt: Rebound values are read from a scale for subsequent calculation of the mean. Compressive strength values can be read from a conversion diagram
- Type NR Original Schmidt: Rebound values are recorded as a bar chart on a paper strip which has a capacity for 4'000 test impacts

Product Code	Dimensions	Weight (approx.)
UTC-3032	340x120x120 mm	2 kg
UTC-3040	150x150x230 mm	16 kg

Measuring Range	10-70 N/mm ²
Impact Energy	2.207 Nm

NON-DESTRUCTIVE CONCRETE TESTING in STRUCTURES

Product Code

- UTC-3034 Ultrasonic Pulse Velocity Tester

Standards

EN 12504-4; ASTM C 597

Ultrasonic Pulse Velocity Tester is used to measure the velocity of propagation of ultrasonic pulses through concrete. A pulse of longitudinal vibrations is produced by an electro-acoustical transducer held in contact with one surface of the concrete under test. After traversing a known path length in the concrete, the pulse of vibrations is converted into an electrical signal by a second transducer and electronic timing circuits enable the transit time of the pulse to be measured.

BS EN 12504-4:2004 gives guidance on testing fresh concrete, hardened concrete and concrete in structures. It specifies a method for the determination of the velocity of propagation of pulses of ultrasonic longitudinal waves in concrete.

The measurement of pulse velocity can be used for the determination of the uniformity of concrete, the presence of cracks or voids, changes in properties with time and in the determination of dynamic physical properties.

UTC-3034 Ultrasonic Pulse Velocity Tester is a microprocessor incorporated equipment which can be connected to a PC through the RS 232 output. It can also be connected to an oscilloscope and can perform transit time measurement from 0.1 to 1999.9 μs with a resolution of 0.1 μs. The battery operated equipment has a transmitter output of 800 V and a battery life of 18 hours of activity.



The Ultrasonic Pulse Velocity Tester is supplied complete with

- Two 54 KHz transducers (Transmitter and Receiver) with 3 m cable
- Calibration rod
- Coupling agent (250 mm)
- Carrying case

Dimensions	240x120x75 mm
Weight (approx.)	1,3 kg

NON-DESTRUCTIVE CONCRETE TESTING in STRUCTURES

Product Code

- UTC-3045 Silver Schmidt Concrete Test Hammer PC N Type (Proceq)
- UTC-3040 Calibration Anvil

Standards

EN 12504-2, 13791; ASTM C 805; JGJ/T 23-2001

UTC-3045 Silver Schmidt Test Hammer (Proceq) is the world's most advanced rebound hammer fully adapted specifically to the extremely varied concrete testing applications (Testing on cores and blocks). The Silver Schmidt incorporates statistical methods based on ASTM and ISRM recommendations and provides the user with the freedom to define his own statistical process for determining a rebound number.

FEATURES

Impact Angle Independence: The rebound value is independent of the impact direction.

Optimized for Field Work: Tighter sealing against dirt and dust intrusion for longer life. Significantly lighter and more ergonomic than the classic Schmidt hammer. A large number of readings can be saved and downloaded later to a PC.

Preset Statistics: Statistics methods recommended by ISRM and ASTM are implemented into the hammer for automatic calculation of the rebound number. The option is also there to define a user specific statistics method.

Unconfined Compressive Strength: ISRM recommends a correlation between UCS and the rebound value based on the formula $UCS = aebR$ (where R is the rebound value). A correlation in this format may be defined in the PC software and downloaded onto the RockSchmidt.

E-Modulus: ISRM recommends a correlation between elastic modulus and the rebound value based on the formula $E_t = cedR$ (where R is the rebound value). A correlation in this format may be defined in the PC software and downloaded onto the RockSchmidt.

Weathering Grade: Impacting on the same location twice can be used to correlate to weathering grade. The ISRM recommended method has been included in the device.



The Silver Schmidt Concrete Test Hammer is supplied complete with

- Battery Charger with USB Cable
- Carrying Strap
- DVD with PC software
- Grinding Stone
- Documentation
- Carrying Bag

Technical Specifications

Impact Energy	(N) 2.207 Nm, (L) 0.735 Nm
Spring Extension	75 mm (2.95")
Plunger Radius	25 mm (0.98")
Display	17 x 71 pixels; graphic
Battery Lifetime	>5000 impacts between charges
Operating Temperature	0 to 50°C
Storage Temperature	-10 to 70°C

Product Code	Dimensions	Weight (approx.)
UTC-3045	55x55x255 mm	570 g
UTC-3040	150x150x230 mm	16 kg

NON-DESTRUCTIVE CONCRETE TESTING in STRUCTURES

Product Code

- UTC-3050 Pundit Lab+ Ultrasonic Pulse Velocity Tester (Proceq)
- UTC-3055 S-Wave Transducers, 250 kHz, for UTC-3050 (Proceq)
- UTC-3060 Pundit PL-200 Ultrasonic Pulse Velocity Tester (Proceq)
- UTC-3065 Pundit PL-200PE Ultrasonic Pulse Velocity Tester (Proceq)

Standards

EN 12504-4; ASTM C 597-02; BS 1881 Part 203; ISO1920-7:2004; IS13311; CECS21



Pundit Lab+



Pundit PL200-PE

The measurement of pulse velocity can be used for the determination of the uniformity of concrete, the presence of cracks or voids, changes in properties with time and in the determination of dynamic physical properties. EN 12504:4 gives guidance on testing fresh concrete, hardened concrete and concrete in structures. It specifies a method for the determination of the velocity of propagation of pulses of ultrasonic longitudinal waves in concrete.

UTC-3050 is an ultrasonic pulse velocity test instrument which is used to examine the quality of concrete. It features online data acquisition, waveform analysis and full remote control of all transmission parameters. Along with the traditional transit time and pulse velocity measurement, UTC-3050 offers path length measurement, perpendicular crack depth measurement and surface velocity measurement. Optimized pulse shaping gives greater transmission range at lower voltage levels. This, coupled with automated combination of the transmitter voltage and the receiver gain, ensures an optimum received signal level, guaranteeing accurate and stable measurements. An integrated waveform display allows manual triggering of the received waveform. Pundit Lab+ offers other features such as the possibility to estimate compressive strength by Sonreb Method in combination with a rebound hammer value.

The Pundit PL-200 is a best-in-class Ultrasonic pulse velocity (UPV) test instrument to examine the quality of concrete and other materials such as rock, wood and ceramics.

The Pundit PL-200PE employs state-of-the-art pulse echo technology to extend the ultrasonic application to objects where access is restricted to a single side.

FEATURES OF PUNDIT LAB+

- Integrated wave form display
- Remote control; A USB connection and the PunditLink application allow full remote control of all features of the ultrasonic test equipment
- Full remote control of the instrument with a third party software
- Direct data logging on the PC
- Runs on battery supply, mains supply via AC adaptor and can also be powered from a PC via the USB connection.
- Supports a wide range of transducers from 24 kHz up to 500 kHz, making it suitable not only for concrete and rock, but also for other materials such as graphite, ceramics, woods, etc.
- Exponential transducers for rough surfaces and shear wave transducers for estimation of dynamic modulus of elasticity complete the portfolio.
- Integrated amplifier gain stage
- Real time stamp
- Direct estimation of compressive strength
- Combined ultrasonic pulse velocity / rebound value estimate of compressive strength (SONREB)
- Data review list on the instrument

FEATURES OF PUNDIT PL SERIES

- Single side determination of slab thickness
- Detection and localization of voids, pipes, delaminations and honeycombing
- Advanced echo tracking technology helps identifying the main echo
- Control buttons and optical feedback directly on the probe increase measurement efficiency
- Automatic estimation of the Pulse Velocity
- Easy B-Scan measuring through center marker and rulers directly on the probe
- Dry-contact transducer: no couplant required, suited for measuring on rough surfaces
- Lightweight and ergonomical handling
- Expandable with Pulse Velocity transducers

Technical Specifications

	Pundit Lab+	Pundit PL Series
Range	0.1 – 9999 µs	0.1 – 7930 µs
Resolution	0.1 µs	0.1 µs (< 793 µs), 1 µs (> 793 µs)
Display	79 x 21 mm passive matrix OLED	7" colour display 800x480 pixels
Memory	Non-volatile, > 500 measured values	Internal 8 GB Flash memory
Power Supply	4x AA batteries (> 20 hours continuous use)	Lithium Polymer, 3.6 V, 14.0 Ah (> 8 hours continuous use)
Operating temperature	-10° to 60°C (0° to 140°F)	0°C - 30°C (Charging, running instrument) 0°C - 40°C (Charging, instrument is off) -10°C - 50°C (Non-charging)
Humidity	< 95% RH, non condensing	< 95 % RH, non condensing
Dimensions	175x55x220 mm (packed)	175x55x220 mm (packed)
Weight (approx.)	1.5 kg (packed)	1.5 kg (packed)

NON-DESTRUCTIVE CONCRETE TESTING in STRUCTURES

Product Code

UTC-3100 Complete Set of Crack Width Gauges

Cracks occur in most buildings and civil engineering structures. Monitoring the changes in crack width is an important diagnostic technique for determining the cause and specifying the remedial work.

UTC-3100 Complete Set of Crack Width Gauges is used for measuring the crack widths in different positions. The set consists of; 5 pieces of standard crack width gauge for walls which monitors horizontal and vertical movements across cracks; Crack width gauge for corners which monitors horizontal and vertical movements across cracks in corners; Crack width gauge for floors for monitoring settlement of floors relative to a wall or column and Crack width gauge for level difference for monitoring the movement across a crack when one surface moves out of plane to the other.

SET CONSISTS OF:

- Standard crack width gauge for walls, 5 pieces
- Crack width gauge for corners
- Crack width gauge for floors
- Crack width gauge for level difference



FEATURES

- Suitable for internal or external use
- Monitoring both vertical and horizontal movements
- Monitors the opening or closing of cracks with 1 mm accuracy
- Crack record cards supplied with each gauge to simplify monitoring

Dimensions	235x200x50 mm (packed)
Weight (approx.)	1 kg (packed)

Protection and Repair of Concrete Structures (NDT)

NON-DESTRUCTIVE CONCRETE TESTING in STRUCTURES

Product Code

UTC-3110	Mechanical Strain Gauge 100 mm Measuring Base
UTC-3130	Mechanical Strain Gauge 300 mm Measuring Base
UTGM-0190	Serial Cable for PC Connection
UTC-3122	Datum Discs. Pack of 50 Pieces
UTC-3123	Adhesive Tube, 20 g.

Standards

BS 1881:206

UTC-3110 and UTC-3130 Mechanical Strain Gauges are used for determining the length changes in different parts of a structure. These strain gauges are especially designed to perform measurement on concrete structures but they are also suitable to be used for any other type of structure including steel.

Measuring base for UTC-3110 is 100x5 mm range and for UTC-3130 is 300x5 mm range. Suitable model should be chosen according to the standard length to be measured. Digital gauge for both models has 0.001 mm resolution and output for PC connection. Serial cable for PC connection should be ordered separately.

Each model is supplied as a complete set which consists of extensometer with digital gauge, standard bar, calibration bar, No. 50 datum discs, adhesive compound for datum discs and carrying case.



Dimensions	300x400x110 mm (packed)
Weight (approx.)	2.5 kg

NON-DESTRUCTIVE CONCRETE TESTING in STRUCTURES

Product Code

UTC-3150 Crack Microscope 40x

UTC-4050 Crack Microscope is a high definition device which is used for measuring crack widths both in concrete and other structures like masonry walls. Consists of an adjustable lamp unit and a knob for focusing the image. The 360° turning ability of the eyepiece enables the alignment with the direction of the crack or pitch subject to examination.

The battery operated microscope has 40x magnification and 4 mm measuring range with 0.02 mm subdivisions.



Magnification	40 X
Measuring Range	4 mm
Subdivision	0.02 mm
Dimensions	150x80x45 mm (packed)
Weight (approx.)	550 gr.

CARBONATION TEST

Product Code

UTC-3160 Carbonation Test Set

This simple test set is used for determination of carbonation depth of the carbonated layer near the surface of hardened concrete. It is not suitable for concrete made with calcium aluminate cement. The set consists of two 250 ml washing bottles containing distilled water and phenolphthalein solution, and a ruler for depth of carbonation.



MEASUREMENT of REINFORCEMENT CORROSION RATE

Product Code

UTC-3230 Equipment For Measurement of Reinforcement Corrosion Rate in Concrete

CorroMap is developed for measuring related values of corrosion rate, electrochemical potential and electrical resistance and thereby quickly assess the state of corrosion of the embedded reinforcement.

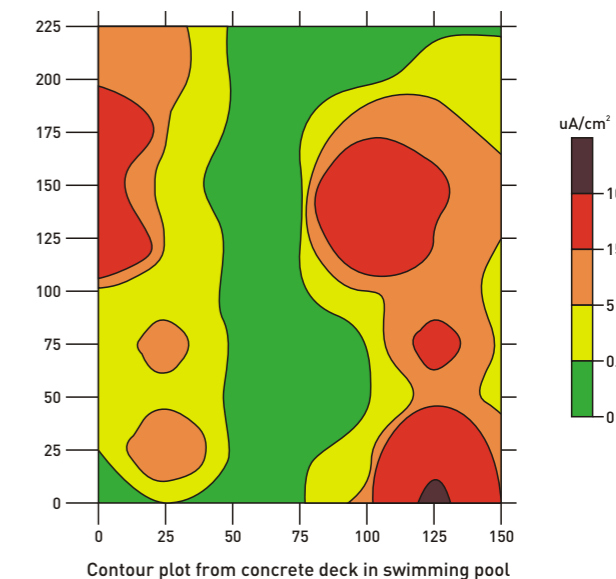
The equipment is based on Psion Work About PC with Windows CE 5.0 with colour "touch screen", which provides unique possibilities of fast overview and immediate treatment of data in the field

Special qualities

- New handheld Psion Work About PC with Windows CE 5.0 and colour Touch Screen
- Protected against dust, rain and snow (IP 65)
- Up to 2400 automated measurements, one-man operated with "auto trigger" and "auto increment" options
- Can measure related values of corrosion rate, electrochemical potential and electrical resistance
- Estimation of corrosion rate can be carried out in 15 sec.

Overview for evaluation of corrosion condition

- On site graphic display - in colour
- Each colour represents a measurement interval for corrosion rate, potential and resistance
- Zoom function of detail area with display of measurement values
- Measuring results in Excel-format are easily transferred to PC for further processing and presentation



Protection and Repair of Concrete Structures (NDT)

METAL LOCATION in CONCRETE

Product Code

UTC-3250 Digital Bond Strength /Pull-off Tester

Standards

EN 1015-12, 1348, 1542, 12616-2, 13963, 14496

16 kN measurement capacity apparatus is used for determining of bond/pull-off strength of repair mortar, hardened rendering, plastering, etc.



The apparatus is basically a dynamometer fitted with a load cell and high resolution digital display unit. The direct tensile force is applied by rotating the hand wheel.

MAIN FEATURES

- Portable equipment for use in any location
- High resolution digital display unit
- Graphic indication of applied load rate
- Serial port for PC connection
- Battery operated, complete with AC adapter
- Indicator of ram position allowing an estimation of the brittle properties of the test sample
- Supplied complete with traceable calibration certificate

Supplied complete with carrying case. Each one of the accessories given below should be ordered separately

UTC-3254	Drill bit with centering point to obtain, 50 mm dia. test surface
UTC-3256	Drill bit with centering point to obtain, 20 mm dia. test surface
UTC-3257	Metal ring (dinking die), 50 mm int. dia, 25 mm high, for fresh plaster, to EN 1015-12
UTC-3258	Aluminium Test Disc, 50 mm dia.
UTC-3260	Aluminium Test Disc, 20 mm dia.
UTC-3262	Test square plate, aluminium, 50x50mm, conforming to EN 1348
UTC-3264	Serial Cable for PC connection
UTC-3266	Stainless steel test disc 50mm dia. x 20mm thickness. (conforming to EN 1015-12)
UTC-3268	Adhesive Bicomponent. 2x15ml binder and 2x15ml hardener (4 vials)

Technical Specifications

Load capacity	16 kN
Readout unit	Load cell
Resolution	10 N
Working range	0.25 to 16 kN
Accuracy	better than ± 1%
Battery	9 V
Dimensions	340x240x250 mm approx.
Weight	5 kg with carrying case, 3.3 kg tester only

BOND STRENGTH of ANCHORED REBAR

Product Code

- UTC-3190 Digital Rebar Pull-Out Force Tester with Steel Hydraulic Cylinder, 10 tons Capacity
- UTC-3200 Digital Rebar Pull-Out Force Tester with Steel Hydraulic Cylinder, 30 tons Capacity
- UTC-3210 Digital Rebar Pull-Out Force Tester with Aluminium Hydraulic Cylinder, 30 tons Capacity

The Apparatus are used for determining the bond strength between anchored reinforcing steel bar (rebar) and concrete and for checking anchorage performance in-situ. LPI Battery Operated Digital Readout Unit connected to a 30 tons capacity hydraulic jack and hand pump provides 1 % sensitive load or tensional strength value readings.

UTC-3190 and UTC-3200 Digital Rebar Pull-Out Force Tester have a steel hydraulic cylinder. UTC-3210 Digital Rebar Pull-Out Force Tester has an aluminium hydraulic cylinder for ease of handling.

The apparatus is supplied complete with three different jaw sets which allows user to test anchorage rebar with different diameters. These jaws are made of high strength steel.

UTC-3190 is supplied complete with two jaw sets for 4-8mm, and 10-20mm dia. rebars. UTC-3200 and UTC-3210 are supplied complete with three jaw sets for 4-8mm, 10-20mm and 20-30mm dia. rebars.



	UTC-3190	UTC-3200	UTC-3210
Working ability	10 tons	30 tons	30 tons
Rebar diameters can be tested	Up to 16mm	Up to 32 mm	Up to 28
Tension journey (stroke)	50 mm	50 mm	50 mm
Dimensions	150x150x175 mm	205x175x175 mm	150x150x210 mm
Weight (approx.)	13 kg	28 kg	7.5 kg



Universal Testing Systems

The section of Universal Testing Machines consists of detecting the deformations of various materials such as concrete, cement, metal, rock, asphalt, soil, etc. You will find sufficient types of Electromechanical & Hydraulic Testing equipments that conform to various standards as well as accessories such as grips, fixtures and load cells in this part of our General Catalogue.

Our engineering capabilities do not solely consist of standard engineering solutions but also provide customized solutions for physical testing laboratories. As UTEST, our priority is to supply heavy duty Universal Testing Machines with a long economical life.

If you cannot find exactly what you are looking for, please do not hesitate to contact our expert engineers for solutions that is tailor made for your requirements.

In the Universal Testing Machines section, UTEST Testing Equipment is basically grouped in four main headings;

- Electromechanical Universal Testing Machines,
- Hydraulic Universal Testing Machines,
- Servo-Hydraulic Universal Testing Machines
- Impact Testing Machines

Automatic Tension & Compression Testing Machine	211-216
Hydraulic Universal Testing Machine	217-220
Servo Hydraulic Universal Testing Machine	221-228
Electromechanical Universal Test Machine	229-236
Impact Testing Machine	237-240
Multiplex Machine	241-247
Cold Test Bending Machine	248



AUTOMATIC TENSION & COMPRESSION TESTING MACHINE

Product Code

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

Standards

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

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



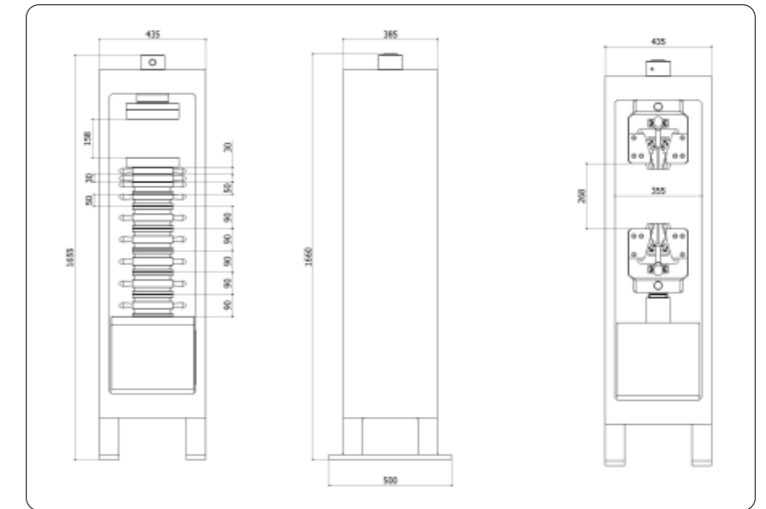
UTM-3000 with Tension Setup



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





AUTOMATIC TENSION & COMPRESSION TESTING MACHINE

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 $\pm 5\%$. 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.

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.

Dual Stage Pump

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 a lot of time when a large number of specimens are going to be tested.



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 seamless 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 additional 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



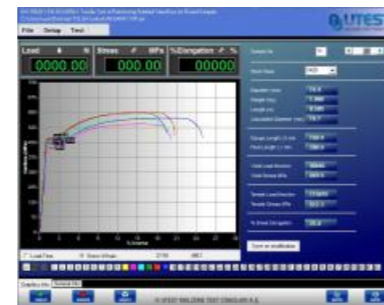
AUTOMATIC TENSION & COMPRESSION TESTING MACHINE

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 Ribbed 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**

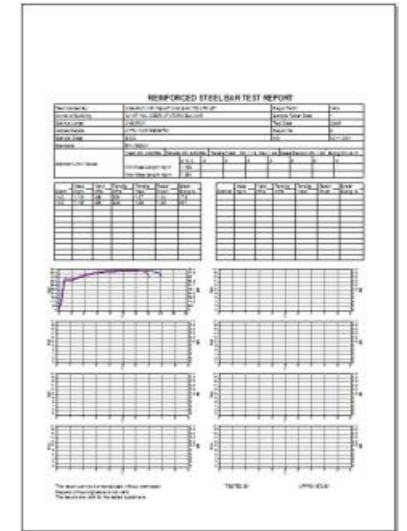
All test parameters supported by testing equipment can be changed remotely via software. All test parameters specified by user are downloaded to the device before initiating the test procedure. By this way predefined device parameters will not cause errors in test results.

- **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

HYDRAULIC UNIVERSAL TESTING MACHINE

Product Code

UTM-4000	Hydraulic Universal Testing Machine, 600 kN, 220-240V
UTM-4000/110	Hydraulic Universal Testing Machine, 600 kN, 110V
UTM-4001	Frame for 600 kN Hydraulic Universal Testing Machine
UTM-4003	Hydraulic Grips Jaw Faces Set for Round Specimens
UTM-4004	Hydraulic Grips Jaw Faces Set for Flat Specimens
UTM-0500	Extensometer for Universal Testing Machine, 50 mm Gauge Length (Accuracy 0.01 mm)
UTM-0510	Extensometer for Universal Testing Machine, 100 mm Gauge Length (Accuracy 0.01 mm)
UTM-0520	Extensometer for Universal Testing Machine, 50 mm Gauge Length (Accuracy 0.001 mm)

Standards

EN ISO 15630-1, EN ISO 6892-1, EN ISO 7500-1



UTM-4000 Hydraulic Universal Testing Machine, features two test spaces for tension tests and compression tests. User can quickly change between tension and compression testing without having to remove heavy fixtures. This flexible design also helps to ensure safety, reduces operator effort and improves productivity.

UTM 4000 Universal Hydraulic Tensile Test Machine is designed to test the ferrous materials for structural values such as yield strength and tensile strength. Apart from tensile tests, Universal Test Machines can also be used for compression tests up to the capacity of the machine.

Maximum security is maintained on 600kN capacity Universal Test Machine by limit switch on the lower grip and piston as well as the safety check valves on the hydraulic system. Hydraulic power unit works silently.

0-40 mm flat and 8-32 mm round samples can be tested with a user friendly hydraulic jaws that comply with standards.

Load cell is used for load measurements. Strain measurement is done by the electronic displacement transducer built in the machine if required external extensometer fitted to the specimen also can be used for strain measurement. Strain measurements can be done directly from the extensometer fitted to the specimen.

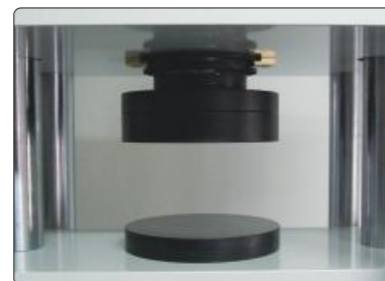
Tests can be done fully automatic by digital control unit or computer. Machine complete the test with the set pace rate and turns to start position automatically.

UTM-4000 Hydraulic Universal Testing Machine, features two test spaces for tension tests and compression tests. User can quickly change between tension and compression testing without having to remove heavy fixtures. This flexible design also helps to ensure safety, reduces operator effort and improves productivity.

The distance between the grips can be set by motor driven hand set system. With open front hydraulic wedge grips user can load specimen easily.



test space for tension tests



test space for compression tests

BC 100 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 seamless manner to activate the option or enter a numeric value to set the test parameters. The BC100 digital graphic display is able to draw stress vs. strain graph.

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

- Automatically calculates % strain, breaking point, stress.
- Automatically calculates yield point and calculated diameter
- Can control 2 frames
- Can make test with displacement and 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
- 10 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





HYDRAULIC UNIVERSAL TESTING MACHINE

HYDRAULIC GRIPS

Hydraulically operated grips completely stop the possibility of sample sliding from the grips enabling for correct and definite strain measurements. Hydraulic grips are very safe and user friendly. Hydraulic grips come with grip sets for pulling 8 – 32 mm diameter cylinder samples. The hydraulic grips has an independent hydraulic power unit with a working pressure of 400 bars. Jaw faces for flat samples should be ordered separately.



EXTENSOMETER

Different types of extensometers with accuracy of $\pm 0.1\%$ of indicated value are available depending on requirements. Extensometer can directly measure deformation of specimens by quartz-pole. It either measures separately thermal expansion strain of specimens or eliminate thermal expansion to avoid effecting deformation of specimen.



UTM-0520



UTM-0500

Technical Specifications		
Capacity	600 kN	
Test Speed	2mm/min - 25mm/min	
Load Measurement Accuracy	$\pm 1\%$	
Displacement Measurement Resolution	0,01 mm	
Columns Diameter	Lower	70 mm
	Upper	70 mm
Vertical Test Distance	Tension	Minimum 40 mm Maximum 320 mm
	Compression	Maximum 110 mm
Distance Between Columns	450 mm	
Piston Stroke	150 mm	
Max Pressure	Grips	350 bar
	Load	200 bar
Weight	1850 kg	
Height	2700 mm	
	at the max stroke	

Data Acquisition & PC Software

The Universal 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 15630-1 and EN ISO 6892-1	Tensile Test of Reinforcing Ribbed Steel Bars
EN ISO 6892-1	Tensile Test of Metallic Materials

Universal Test Software is developed for testing tensile strength of Reinforcing Ribbed Steel Bars and Welded fabric for the Reinforcement and Prestressing of Concrete. The software includes control of machine, data acquisition, saving them and preparing reports. The user can prepare his own report and also can send the results to Microsoft Excel environment. The software accepts sample's weight, length, diameter and gauge length as input, and then the user can give start test command to the machine. The samples calculated diameter gives user a perspective about the density of rebar prior to the test. The software continuously updates load, stress and elongation percentage till the break point. When the test is completed the yield point is calculated and indicated on the graph. Each report is a group of 42 samples where 14 different diameters had been entered. The software is prepared as making at least 3 samples for each diameter. This gives user a total report about all the batch. The report includes all standart limits and one can easily check whether the sample can be acceptable. These limits are minimum yield, minimum tensile, minimum break elongation value, Tensile per yield ratio etc. The user can zoom on the graph for further inspection Break elongation value can be synchronized with the manual measurement after the test has been completed for the users that do not use extensometer.

- 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**

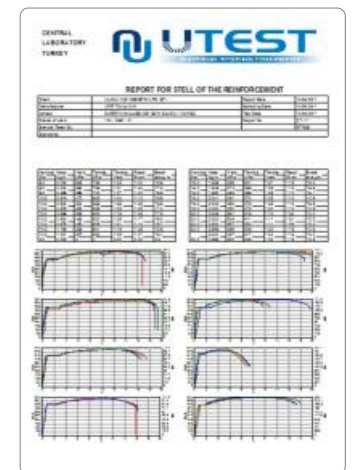
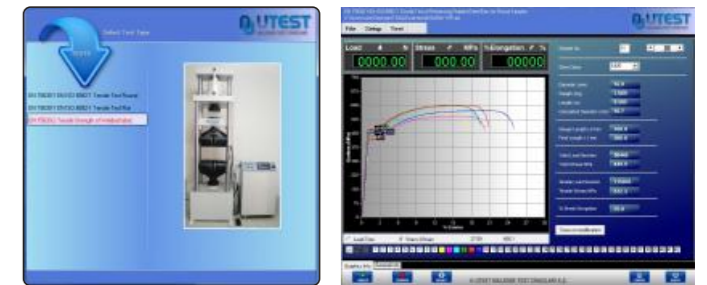
All test parameters supported by testing equipment can be changed remotely via software. All test parameters specified by user are downloaded to the device before initialing the test procedure. By this way predefined device parameters will not cause errors in test results.

- 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.



SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

Product Code

- UTM-6000 Hydraulic Universal Testing Machine, Servo Controlled, 600 kN,
- UTM-6001 Universal Testing Machine Frame, 600 kN, 380 V, 50-60 Hz, 3 Ph
- UTM-7000 Hydraulic Universal Testing Machine, Servo Controlled, 1000 kN,
- UTM-7001 Universal Testing Machine Frame, 1000 kN, 380 V, 50-60 Hz, 3Ph
- UTM-8000 Hydraulic Universal Testing Machine, Servo Controlled, 2000 kN,
- UTM-8001 Universal Testing Machine Frame, 2000 kN, 380 V, 50-60 Hz, 3 Ph
- UTM-0500 Extensometer for Universal Testing Machine, 50 mm Gauge Length (Accuracy 0.01 mm)
- UTM-0510 Extensometer for Universal Testing Machine, 100 mm Gauge Length (Accuracy 0.01 mm)
- UTM-0520 Extensometer for Universal Testing Machine, 50 mm Gauge Length (Accuracy 0.001 mm)

Standards

EN ISO 6892-1, EN ISO 15630-1, EN ISO 7500-1



UTM-7000

GENERAL DESCRIPTION

UTM-6000, UTM-7000 and UTM-8000 computer controlled servo hydraulic universal testing machines are suitable to test various metallic and non-metallic materials and can carry out tension, compression, flexural and bending tests. The capacity of UTM-6000 is 600kN, of UTM-7000 is 1000kN and UTM-8000 is 2000kN. On all models load cell is used for load measurement to achieve best load accuracy during test. The load accuracy of the systems is $\pm 1\%$ down to 2% of the full capacity. Strain measurements are done by the electronic displacement transducers built in the machine. Displacement or strain measurement can be also done external extensometer fitted to the specimen. The accuracy of the strain measurement on frame is 12.5 microns.

UTM-6000, UTM-7000 and UTM-8000 systems are guaranteed to meet EN ISO 6892-1, EN ISO 15630-1, EN ISO 7500-1, ISO 679, ISO 1920-4, ASTM E 290 and other international and national standards. Servo hydraulic universal testing systems can carry out tension test, compression test, bend test and flexure test by two pace rate type including load control and displacement control. Those two control parameters can be switched during the test. According to the preset condition, the systems can realize constant-rate loading, loading according to preset curve, testing with constant-rate displacement.

With powerful testing software, UTM-6000, UTM-7000 and UTM-8000 systems can acquire, dispose automatically testing data, display real-time stress-strain curve, load-deformation curve, load-time curve and other related curves, at the same time, can save, output, print test report and data with customized format. With the help of advanced Material Testing Software the machine can be widely used in ultimate R&D department, Universities and Academies, Quality control and Inspection department, calibration centers/laboratories and industry.

LOAD FRAME

Load frames used on Hydraulic Universal Testing Machines has a motor driving system to set distance between grips for test set up has a rugged six column construction for exceptional load frame rigidity. All models feature two test spaces for tension test and compression/flexure and bending test. User can quickly change between tension and compression/flexure and bending testing without having to remove heavy fixtures. This flexible design also helps to ensure safety, reduces operator effort and improves productivity. The distance between the grips can be set by motor driven hand set system for different specimens. With an open front hydraulic wedge grips user can change jaw faces and load specimen easily.

All frames are supplied complete with jaw faces, compression platens and bending fixtures.

POWER PACK

Servo controlled hydraulic power packs with proportional valve and advanced power packs used on UTM-6000, UTM-7000 and UTM-8000 to perform tests under load and displacement controls. The frequency of the P.I.D controller and data acquisition is 1000 Hz. Power packs are designed to supply the required oil to the load frames for loading, unloading or low cycle dynamic testing and also hydraulic grips.

All the operations of Data Acquisition and Controls System can be controlled from the touch screen front panel of a 240x320 LCD display or computer. There are extra two analogue channels for sensors such as Load Cells, Pressure Transducers, LVDT's, strain gauges, extensometers etc. built in the system, and one TTL displacement transducer input exists for frame displacement measurement. Additional two analogue channels can be configured optionally on the order stage for different type of applications.

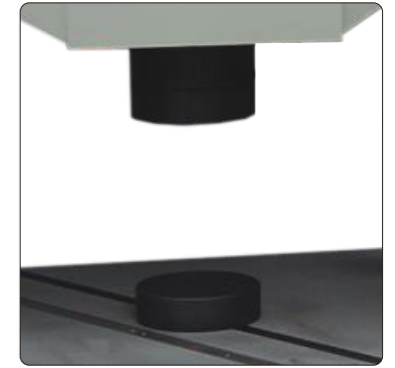
Power packs can be connected to the computer through Ethernet port for advanced test cycles, data acquisition and reporting. The modulus of elasticity, Poisson's Ratio and compressibility parameters is easily and properly evaluated by attaching extensometers or LVDTs on to the sample. All the calibration values of the transducers and also all the test parameters for the last test is automatically stored on the control unit. Power pack incorporates a pressure safety valve for each frame separately with a cooling unit.

FIRMWARE

- 2 extra analogue channels
- Instrumentation amplifiers for sensor excitation and amplification
- 65.000 resolution and 1.000 Hz control for each channel
- Ethernet port for connecting to computer
- 240x320 pixel LCD display
- Touchscreen operator panel
- Can execute load or displacement controlled tests
- Free of charge PC software for test control and advanced report printout
- Factory install English and Turkish languages



Testing Grips



Compression Platens

Accessories

	UTM-6000	UTM-7000 UTM-8000
1 Set of Tensile Grip	Round jaws for dia. 13-26 and 26-40 mm Flat jaws for 0-15 and 15-30 mm	Round jaws for dia. 20-40, 40-60 and 60-80 mm Flat jaws for 10-40 and 40-70 mm
1 Set of Compression Platen Dia	128 mm	200 mm
1 Set of Bending Fixture	30-500 mm	50-720 mm



UTM-0520



UTM-0500

EXTENSOMETER

Different types of extensometers with accuracy of $\pm 0.1\%$ of indicated value are available depending on requirements. Extensometer can directly measure deformation of specimens. It either measures separately thermal expansion strain of specimens or eliminate thermal expansion to avoid effecting deformation of specimen.

All type of machines are supplied with;

- Jawfaces for round specimens (respect to machine capacity)
- Compression platens
- Bending Fixture



SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

Data Acquisition & PC Software

The Universal 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.

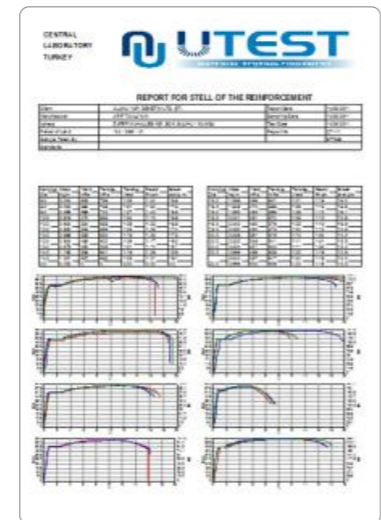
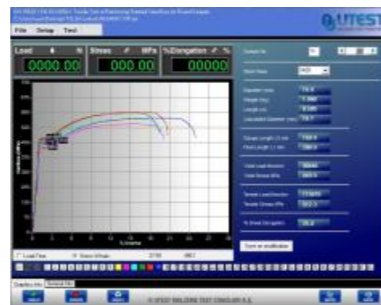
Standard Code	Description
EN 15630-1 and EN ISO 6892-1	Tensile Test of Reinforcing Ribbed Steel Bars
EN ISO 6892-1	Tensile Test of Metallic Materials

Universal Test Software is developed for testing tensile strength of Reinforcing Ribbed Steel Bars and Welded fabric for the Reinforcement and Prestressing of Concrete. The software includes control of machine, data acquisition, saving them and preparing reports. The user can prepare his own report and also can send the results to Microsoft Excel environment. The software accepts sample's weight, length, diameter and gauge length as input, and then the user can give start test command to the machine. The samples calculated diameter gives user a perspective about the density of rebar prior to the test. The software continuously updates load, stress and elongation percentage till the break point. When the test is completed the yield point is calculated and indicated on the graph. Each report is a group of 42 samples where 14 different diameters had been entered. The software is prepared as making at least 3 samples for each diameter. This gives user a total report about all the batch. The report includes all standart limits and one can easily check whether the sample can be acceptable. These limits are minimum yield, minimum tensile, minimum break elongation value, Tensile per yield ratio etc. The user can zoom on the graph for further inspection Break elongation value can be synchronized with the manual measurement after the test has been completed for the users that do not use extensometer.

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.

Technical Specifications

	UTM-6000	UTM-7000	UTM-8000
Maximum Load	600kN	1000kN	2000kN
Load Measurement Accuracy	1% from 2% of max capacity	1% from 2% of max capacity	1% from 2% of max capacity
Deformation Measurement Accuracy	12.5µm	12.5µm	12.5µm
Control Mode (Pace Rate Type)	Displacement Control, Load Control, Stress Control	Displacement Control, Load Control, Stress Control	Displacement Control, Load Control, Stress Control
Max Vertical Test Space Between Grips	750 mm	750mm	1000 mm
Max Vertical Test Space Between Platens	620 mm	620 mm	850 mm
Max Horizontal Test Space	475 mm	565 mm	840 mm
Piston Stroke	250 mm	250 mm	250 mm
Testing Speed	0-50 mm/min [Displacement]	0-50 mm/min [Displacement]	0-50 mm/min [Displacement]
Crosshead Speed	200 mm/min	200 mm/min	280 mm/min
Grips for Flat Specimen (2 set)	Thickness 0-30 mm	Thickness 0-40 mm	Thickness 10-70 mm
Grips for Round Specimen (2 set)	Diameter 13-40 mm	Diameter 20-60 mm	Diameter 20-80 mm
Compression Platen Size	128 mm diameter	148 mm diameter	200mm diameter
Power Supply	380 V AC, 50 Hz, 2.5 kW Frame 220 V AC 50 Hz Power pack	380 V AC, 50 Hz, 3.5 kW 220 V AC 50 Hz Power pack	380 V AC, 50 Hz, 3.5 kW 220 V AC 50 Hz Power pack
Load Frame Dimensions	770x600x2150 mm	900x650x2400 mm	1300x900x3300 mm
Power Pack Dimensions	570x800x1020 mm	570x800x1020 mm	570x800x1020 mm
Weight	2600 kg / 250 kg	3700 kg / 250 kg	8800 kg / 250 kg

SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

Product Code

UTM-0600S Servo-Hydraulic Universal Testing Machine, 600 kN
 UTM-1000S Servo-Hydraulic Universal Testing Machine, 1000 kN
 UTM-2000S Servo-Hydraulic Universal Testing Machine, 2000 kN

Standards

EN ISO 6892-1, EN ISO 15630-1, EN ISO 7500-1

UTEST-S Series Universal Testing Machines are high capacity systems with single test space and suitable for tensile, compression, flexure tests on a wide range of different materials such as round, flat and profile specimens for quality control, product development, research or process development. Testing systems for brittle materials such steel or fasteners requires high stiffness load frames that minimize the amount of deformation energy that is stored in the frame.

Servo-Hydraulic Universal Testing Machines can be controlled via. Multifunctional Remote Control Hand Set that is located on the frame, Digital Control Unit or Material Testing Program (MTP) software that installed on the PC connected to the Control Unit.

Servo-Hydraulic Universal Testing Machine can carry out tensile and yield, compression, flexure tests with load and displacement controls. UTEST-S Series can be switched between load and displacement control during the test.

The main characteristics are;

- Rigid 4 columns construction providing superior axial and lateral stiffness and precision alignment,
- Closed-loop servo controlled hydraulic power pack for accurate test control,
- High speed electronic control and data acquisition unit for accurate test results,
- Multifunctional Remote Control Hand Set for fast test setup and testing,
- Single test space design with convenient vertical testing clearance,
- Double acting servo-actuator mounted on top of the crossbeam
- Actuator with anti-rotation system to prevent the natural tendency of the actuator to rotate.
- Long piston stroke for the most convenient and easy adjustment and testing of different sample lengths,
- Digital displacement transducer for the best positioning and measuring accuracy
- Easy calibration procedure,
- Material Test Program (MTP) Software for easy using,
- Chrome plated columns for easy cleaning and longest life.
- Hydraulic Wedge Actions Grips
- Grip control system mounted on the frame
- Compression platens or bending devices may be fixed directly into wedge grips,
- Limit switch on the piston as well as the safety limit valves on the hydraulic system,

Servo-Hydraulic Universal Testing Machine is consisting of Load Frame, Advanced servo controlled automatic power pack, Electronic Control Unit and Material Testing Software as standard.

Depending to standards and requirements, Video extensometers, Automatic Extensometers, Clip-On Extensometers, Flexure, Compression Test Apparatus, High Temperature Cabinets and Multifunctional Remote Control Hand Set can be integrated on the Servo-Hydraulic Universal Testing Machines.



FRAME

UTEST-S Series Servo-Hydraulic Universal Testing Machines are manufactured 600, 1000 and 2000 kN capacities. The double acting servo actuator, which is integrated on the upper crosshead, has a long piston stroke which makes vertical testing space accessible for easy and efficient testing of different samples lengths. Load cell for measuring the load is mounted between lower grip and base plate.

Displacement transducers that mounted in the piston are used for displacement measuring. External Extensometers (Video extensometers, Long Travel Extensometers, Automatic Extensometers or Clip-On Extensometers) can be synchronously used for displacement measurements if required.

Mono block Wedge Actions Hydraulic Grips are located between end point of piston and load cell that mounted on the base platen. Not any disassembly or tools needed for changing the jaws. The jaws that can be used for 0-60 mm thickness flat specimens and 6-60 mm diameter for round specimens are provided as standard depend on capacity of the machine.

ADVANCED SERVO CONTROLLED AUTOMATIC POWER PACK WITH SERVO VALVE

The UTC-4870 Automatic Power Packs with Servo Valve, are advanced power packs can be used on any testing system ideal for R&D laboratories and Universities for advanced tests with P.I.D. Closed loop control. It can perform tests under load and displacement controls. The frequency of the P.I.D controller and data acquisition is 1000 Hz. UTC 4870 automatic power packs are designed to supply the required oil to the load frames for loading, unloading or low cycle dynamic testing. All the operations of Data Acquisition and Controls System can be controlled from the touch screen front panel of a 240x320 LCD display or computer.

The UTC-4870 can control up to 4 different. For each frame there is one load cell (or pressure transducer) input and one displacement transducer input for control. There are an extra three analogue channels for other sensors such as load cells, pressure transducers, displacement transducers etc. built in the system.

The power pack automatically controls and supplies oil to the frame which is chosen by the user via the touch screen LCD digital control unit or by choosing the test type from the computer software.

The type of displacement transducer can be TTL or analogue (It must be same type for all frames).

The main specifications of the UTC-4870 power packs are;

- Up to 5 litre/minute pump delivery (max) 280 bar 3 kW motor rate
- Loading-unloading with $\pm 0,5\%$ rate accuracy
- Staying at constant load within 0,005% accuracy of the maximum load
- The control of the load starts from 0,3 % of the maximum load capacity of the system.

All power packs can be connected to the computer through Ethernet port for advanced test cycles, data acquisition and reporting. The modulus of

elasticity, Poisson's Ratio and compressibility parameters is easily and properly evaluated by attaching LVDT or extensometers on to the sample. All the calibration values of the transducers and also all the test parameters for the last test is automatically stored on the control unit. All power packs incorporate a pressure safety valve for each frame separately and a cooling unit.

Main Features

- 3 analogue channels for displacement transducers, extensometers, etc. built in the system as an addition to frame loadcells/pressure transducers
- Instrumentation amplifiers for sensor excitation and amplification
- 1/65.000 resolution and 1.000 Hz control for each channel
- Ethernet port for connecting to computer
- 240x320 pixel LCD display
- Touchscreen operator panel
- Can control 4 frames
- Can execute load, displacement or strain controlled tests. For post peak applications UTC-4870 must be selected.
- Free of charge PC software for test control and advanced report printout
- Pace rate control from 0.01 kN/s to 100 kN/s (depend on the specimen stiffness)
- Pace rate control from 0.01 mm/min to 100 mm/min (UTM-600S and 1000S) and 75mm/min (UTM-2000S)
- Multiple language support
- Real time clock/date



SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

MULTIFUNCTIONAL REMOTE CONTROL HAND SET

Multifunctional Remote Control Hand Set designed for more practical process than Electronic Control Unit and PC. Piston can be moved up-down, can be adjusted test speed, can be adjusted position of grips and the jaws can be open/close by Multifunctional Remote Control Hand Set. Able to stop at maximum upper and lower position and automatically suspend when can be reached to maximum deformation of capacity should be with Remote Control Head Set.

Multifunctional Remote Control Hand Set that connected with a connection cable to Electronic Control Unit has LCD display can be seen values of load & deformation of the test.



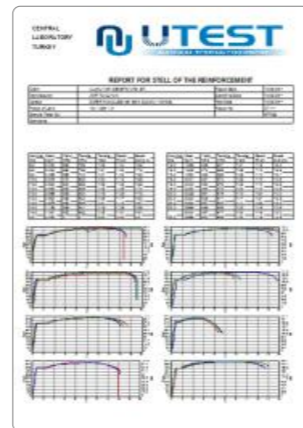
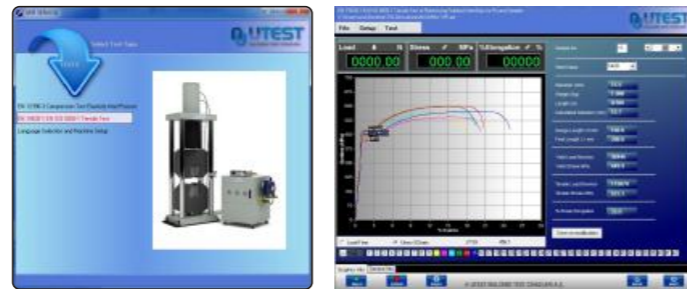
MATERIAL TESTING PROGRAM (MTP)

Material Testing Program (MTP) supplied standard with the machine is used to control and data processing. By using MTP Test control data input (test speed, maximum load and maximum elongation limits, etc.), sample data and user data can be entered.

Real-time image, stress-strain curve, load deformation, load-time curve, load/strain, Young Modules etc. can be displayed by the software. The upper and lower yield, maximum breaking and strain, breaking/elongation ratio of selecting point etc. can be supplied from graphic.

If require the old graphics and data can be displayed. At the same time can be recorded, reporting, output and test report can be printed. Material Testing Program (MTP) has a wide range of process. Test results can be displayed in Metric and Systeme International (SI) system.

Automatic zeroing at the beginning of the test and auto return facility after specimen failure is available on the Material Testing Program (MTP). All test results are displayed on the screen. System has automatic break detection, several break detection criteria's are available can be selected. Material Testing Program (MTP) can automatically recognize the attached extra Video extensometer, Automatic extensometer etc.



OPTIONS

Standard Extensometers

UTM-0500 Clip-On Type Extensometers, 50 mm gauge length, 0,01 mm accuracy,
UTM-0520 Clip-On Type Extensometers, 50 mm gauge length, 0,001 mm accuracy,
Clip-On Type Extensometers can measure the displacement directly from the specimens.

Automatic Extensometers

UTM-0540 Automatic Extensometer, 10-300 mm gauge length, 0,1 μm accuracy. These kind of extensometers are fully automatic computer-controlled and used for flat and round specimens with different measurement distance. By means of high sensitivity it can even used on very delicate materials.

Technical Specifications of Automatic Extensometers

Gauge Length L0 (mm)	10-300
Linearity Error	0.005 %
Travel Distance Error	± 0.5 %
Resolution (μm)	1 or 0,1
Operating Temperature Range (0C)	0-50
Indication Error (μm)	1,5
Positioning Distance (mm)	190
Travel (mm)	300 min L0



UTM-0500



UTM-0520



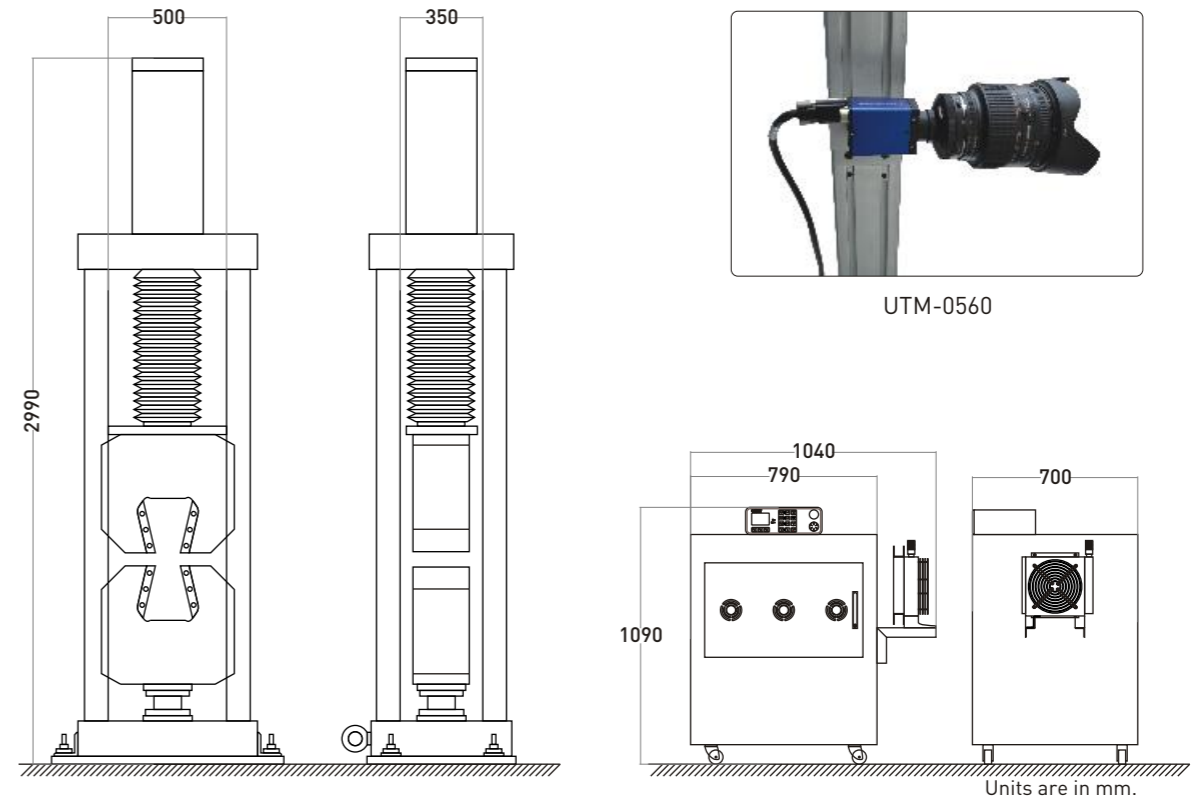
UTM-0540

Video Extensometers

UTM-0560 Video extensometers are non-contact, high resolution and sensitivity system. Displacement between two marked dots and % displacement, real image of displacement and % displacement can be obtained with this real time camera system.

High resolutions Video Extensometer's sensitivity is 0,002% dir. As generally, the average strain value between two marked lines can be obtained. Up to ten different marked dots on the sample can be calculated of percentage of displacement. The data and images on the Video extensometer can be displayed when Video extensometer connected with Material Testing Program (MTP).

Video Extensometer can be fitted a place is suitable on the load frame.



UTM-0560

Units are in mm.

Technical Specifications

Model	UTM-0600S	UTM-1000S	UTM-2000S
Maximum Load (kN)	600	1000	2000
Piston Stroke (mm)	500	550	600
Max Distance between grips (mm)	600	700	800
Horizontal front daylight between columns (mm)	600	650	750
Horizontal depth daylight between columns (mm)	350	450	450
Column Dia. (mm)	100	120	200
Test Speed (mm/min.) Displacement	0,1-100	0,1-100	0,1-75
Test Speed (MPa/s) Load*	1-100	2-60	2-60
Displacement Resolution (mm)	0,001	0,001	0,001
Displacement Accuracy (mm)	0,01	0,01	0,01
Jaws Size for Flat Specimens (mm)	0-30	0-40	0-60
Jaws Size for Round Specimens (mm)	6-40	12-50	12-60
Power Supply	380 VAC, 50 Hz, 3 ph.	380 VAC, 50 Hz, 3 ph.	380 VAC, 50 Hz, 3 ph.
Height (mm)	2990	3600	4000
Load Measurement Accuracy (Capacity of Load Cell 1%-100%)	Class 0,5	Class 0,5	Class 0,5
Ambient Conditions	from 10°C to 30°C temp. and humidity up to %80	from 10°C to 30°C temp. and humidity up to %80	from 10°C to 30°C temp. and humidity up to %80
Max. Working Pressure (bar)	350	350	350

*Loading rate depends to durability and type of various specimens

ELECTROMECHANICAL UNIVERSAL TEST MACHINE

Product Code

UTM-8010 Servo Controlled Wide Test Space Electromechanical Universal Test Machine, 50 kN, 220-240V, 50-60Hz, 1 ph.

Standards

EN 10545-4, 1015-12, 13748-1, 13748-2, 491, 538, 1170-4, 1170-5, 12372 12808-3, 13494, 1542, 1346, 1348, 12004, 1607, 1015-11, EN ISO 15630-2, 6892-1 7500-1

UTM-8010, 50 kN capacity Servo Controlled Wide Test Space Electromechanical Universal Testing Machine is fully automatic and multi purpose versatile machine which satisfy the requirement of R&D laboratories, university laboratories, institute laboratories and quality control laboratories.

The Machine is equipped with a servo motor and BC 100 TFT Graphics DataAcquisition and Control Unit. Flexural, breaking, bending, tensile, compression strength, tensile adhesion and tensile bond strength, CBR, Marshall, tensile and weld shear force tests can be perform under load or displacement control by using suitable accessories up to the machine capacity on wide range of materials, such as ceramic and terrazo tiles, naturel stone, adhesives for tiles, grouts for tiles clay and concrete roofing tiles, glass-fibre reinforced precast concrete products, thermal insulating products, plastering mortars, products for the protection and repair of concrete structure, soil and bituminous mixtures and welded fabric steel for the reinforcement of concrete.

The Testing Machine consist of base containing the transmission components and holds two robust columns connected by upper cross head and digital graphics data acquisition and control system. The upper cross head can be adjusted to set the vertical test space for different tests.

User can adjust the vertical test space by also lower crosshead moved by an electromechanical system with a single re-circulating ball screw, powered by an servomotor. Advanced closed loop control system assures accurate load or displacement pace rate on sample.

The load is measured by a load cell that located on upper crosshead and displacement is measured by displacement transducer fitted to the lower crosshead. The operator will have large flexibility during the test with advanced microprocessor control and material testing software installed on PC.

Suitable accessories and different capacity loadcells should be ordered separately acc.to the test performed.



Data Acquisition & PC Software

Digital display graphics data acquisition and control system are designed to control the machine and process the data from displacement transducer and Load cell, installed on the frame. It has graphical TFT display of 800x480 pixel and show both load and displacement. The digital unit sends all these information to PC and accepts commands of Start, Stop, and Test Speed etc.

Manual zeroing of all engineering values exist prior to the beginning of test. Materials testing software is available for Utest UTM series universal testing systems. Test software provides fully customized parameter definition, automatic test control, data collection, results analysis and reporting. Advanced templates for testing to the standards a wide variety of materials and applications help ensure quick test execution. Various engineering calculations are performed automatically by the test software. Test results stored in computer for your future retrieve or re-analysis and reporting. Data Exchange between other Windows based applications such as Excel format.

Tests with UTM-8010

Electromechanical Universal Testing Machines are suitable for difference tests on various materials as;

- Modulus of rupture and Breaking strength test for ceramic tiles
- Flexural strength tests of terrazo tiles, naturel stone, clay and concrete roofing tiles
- Bending strength test of glass-fibre reinforced precast concrete products, tensile strength tests of thermal insulating products
- Compressive/ Flexure strength of rendering and plastering mortars, grouts for tiles
- Tensile bond/ adhesion tests of cementitious adhesives for tiles, injection products rendering and plastering mortars, products for the protection and repair of concrete by pull-off
- Uniaxial, triaxial and CBR tests of soil
- Marshall stability test and Indirect tensile test of bituminous mixtures

UTM-8010 supplied with 50 kN Capacity Load Cells

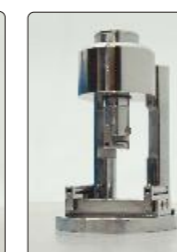
MATERIALS	TESTS / METHODS	STANDARDS	ACCESSORIES
Welded Fabric for Reinforcement of Concrete	Tensile and Weld Shear Force Tests	EN ISO 15630-2 EN ISO 6892-1	UTM-8060 Tensile Grip complete with grips for round specimens from 2 to 10 mm dia., and flats 0 to 8 mm thick., UTGM-0015 Load Cell 10 kN Capacity UTM-8055 Holder for Weld Shear Force Tests for welded wire
Ceramic Tiles, Clay Products		EN 10545-4 EN 538	UTM-8012 Flexural Testing Assembly, for UTM-8010 and UTM-8020. Consist of two upper rollers and two lower rollers 820 mm length and 20 mm dia.
Concrete and Natural Stone Products		EN 13748-1 EN 13748-2 EN 491	
	Flexure, Bending and Breaking Tests	EN 12390-5 (*) ASTM C78(*), C293(*), AASHTO T97(*), BS 1881:118(*)	UTC-5501 Flexural Testing Assembly for Concrete Beams
		EN 12372 EN 1339(*), EN 1341(*), EN 1343(*)	UTC-5504 Flexural Testing Assembly with 610 mm length and 38 mm dia.
		EN 1170-4 EN 1170-5	UTM-8095 Flexure Apparatus for EN 1170
Mortar For Masonry and Grouts for Tiles		EN 196-1 ASTM C348 EN 12808-3 EN 1015-11	UTCM-0121/E Compression Jig Assembly EN, to test portions of 40x40x160 mm mortar prism. (*), UTCM-0121/A Compression Jig Assembly ASTM, to test 50 mm (2") mortar cubes. (*), UTCM-0120/E Flexure Jig Assembly EN, to test 40x40x160 mm mortar prisms, distance between lower bearers is 100 mm UTCM-0120/A Flexure Jig Assembly ASTM, to test 40x40x160 mm mortar prisms, distance between lower bearers is 119 mm
Adhesives for Tiles, Mortar for Masonry and Products for The Protection and Repair Of Concrete Structures	Tensile Adhesion / Bond Strength	EN 1346 EN 1348 EN 12004 EN 1015-12 EN 1542	UTM-8070 Pull-Headed Plate Set for EN 1348 and EN 12004 UTM-8080 Pull-Headed Plate Set for EN 1015-12 and EN 1542 UTM-8082 Frusto-Conical Shaped Rings. EN 1015-12, stainless steel, Ø50mm UTM-8018 Tensile Adhesion/Bond Strength Tests Assemblies, 5kN, for UTM-8010 UTM-8074 Holder for Base Plate of Specimens EN 1348 1015-12. UTM-8084 Holder for Base Plate of Specimens EN 1542 UTGM-0010 Load Cell 5 kN Capacity UTGM-0015 Load Cell 10 kN Capacity



UTCM-0121/A



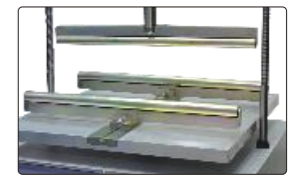
UTCM-0121/E



UTCM-0120/A/E



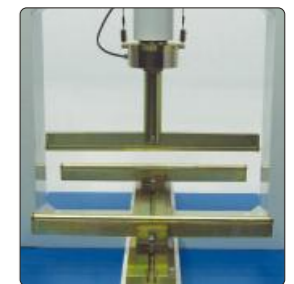
UTM-8060



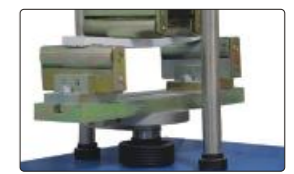
UTM-8012



UTC-5501



UTC-5504



UTM-8095

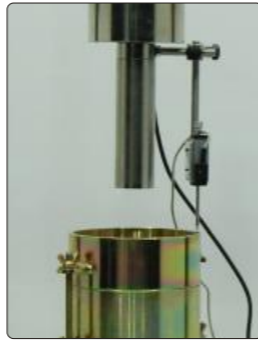


UTM-8070

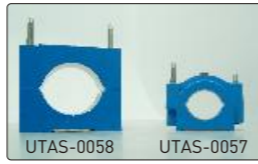
(*) Up to the machine capacity

ELECTROMECHANICAL UNIVERSAL TEST MACHINE

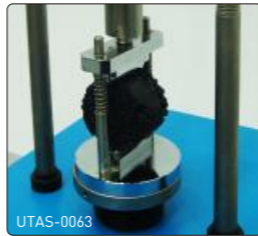
MATERIALS	TESTS / METHODS	STANDARDS	ACCESSORIES
Thermal Insulating Products	Tensile Adhesion / Bond Strength	EN 13494 EN 1607	UTM-8121 Tensile-Headed Solid Plate Set, 50x50x5 mm
			UTM-8122 Tensile-Headed Solid Plate Set, 100x100x5 mm
			UTM-8123 Tensile-Headed Solid Plate Set, 150x150x5 mm
			UTM-8124 Tensile-Headed Solid Plate Set, 200x200x5 mm
SOIL	CBR Under Displacement Control	EN 13286-47 ASTM D1883 AASHTO T193	UTM-0110 CBR Penetration piston, used to perform CBR tests.
	Quick Triaxial Tests	BS 1377-8 ASTM D2850 ASSHTO- T245	See the table on page 27
BITUMINOUS MIXTURES	Marshal Test Under Displacement Control	EN 12697-34 ASTM D1559	UTAS-0057 Breaking Head Stability Mould, cast iron, for 4" (101,6 mm) Marshall Samples UTAS-0058 Breaking Head Stability Mould, cast iron, for 6" (152,4 mm) Marshall Samples
	Indirect Tensile Splitting Tests	EN12697-23 AASHTO T283	UTAS-0063 Tensile Splitting Device for compacted Bituminous samples 100 mm (4") dia.



UTM-0110



UTAS-0058 UTAS-0057



UTAS-0063

Frame Features

Max. Load	50 kN
Machine Class	Class 1 starting from 1% of the capacity
Max. Vertical Test Space (without accessories)	Min. 200mm Max. 400 mm
[Lower crosshead at middle stroke. (without accessories)]	
Distance Between Columns	850 mm
Stroke	100 mm
Test Speed Range	0,001-50 mm/min.
Load Rate	0,001-2 kN/s (Depend on specimen stiffness)
Electrical Requirement	220-240V, 50-60Hz, 1 phase.
Overall Dimensions	900x970x1120 mm
Weight Approx.	310 kg

ELECTROMECHANICAL UNIVERSAL TEST MACHINE

Product Code

UTM-8020 Wide Test Space Electromechanical Universal Test Machine, 10 kN, 220-240V, 50-60Hz, 1 ph.

Standards

EN 10545-4, 538, 491, 1346, 1348, 12004, 1015-12, 1542, 13748-1, 13748-2

UTM-8020, 10 kN Capacity UTEST Electromechanical Universal Testing Machines are multi purpose versatile machine. Used for flexural breaking load and modulus of rupture tests of ceramic floor and wall tiles and breaking strength test of clay or concrete roofing tile, terrazo tiles and also for tensile adhesion and tensile bond strength tests of adhesives for tiles, mortar for masonry and products for the protection and repair of concrete structures under load control by using suitable accessories up to the machine capacity.

The Testing Machine consist of base containing the transmission components and holds two robust columns connected by upper cross head and LPI Battery Operated Digital Readout Unit. The upper cross head can be adjusted to set the vertical test space for different tests. The load is measured by a load cell that located on upper crosshead. The Machine can perform test with displacement and load control.

Suitable accessories and different capacity loadcells should be ordered separately acc.to the test performed. The load is measured by a load cell that located on upper crosshead. The operator will have large flexibility during the test with advanced microprocessor control and material testing software installed on PC.

Suitable accessories and different capacity loadcells should be ordered separately acc.to the test performed.

UTM-8020 supplied with 10 kN Capacity Load Cells



MATERIALS	TESTS / METHODS	STANDARDS	ACCESSORIES
Ceramic Tiles	Flexure, Bending and Breaking Strength Tests	EN 10545-4	UTM-8012 Flexural Testing Assembly, for UTM-8010 and UTM-8020. Consist of two upper rollers and two lower rollers 820 mm length and 20 mm dia.
		EN 538 EN 491 EN 13748-1(*) EN 13748-2(*)	
Concrete and Clay Products	Tensile Adhesion/Bond Strength	EN 1346 EN 1348 EN 12004 EN 1015-12 EN 1542	UTM-8070 Pull-Headed Plate Set for EN 1348 and EN 12004 UTM-8080 Pull-Headed Plate Set for EN 1015-12 and EN 1542 UTM-8082 Frusto-Conical Shaped Rings. EN 1015-12, stainless steel, Ø50mm UTM-8074 Holder for Base Plate of Specimens EN 1348 1015-12. UTM-8084 Holder for Base Plate of Specimens. EN 1542
Adhesives for Tiles, Mortar for Masonry and Products for The Protection and Repair Of Concrete Structures			

(*) Up to the machine capacity



UTM-8012



UTM-8070

Frame Features

Max. Load	10 kN
Machine Class	Class 1 starting from 1% of the capacity
Max. Vertical Test Space (without accessories)	Min. 200mm Max. 400 mm
[Lower crosshead at middle stroke. (without accessories)]	
Distance Between Columns	850 mm

Stroke	100 mm
Test Speed Range	0,001-50 mm/min.
Load Rate	10-300 N/s (Depend on specimen stiffness)
Electrical Requirement	220-240V, 50-60Hz, 1 phase.
Overall Dimensions	900x970x1120 mm
Weight Approx.	320 kg

ELECTROMECHANICAL UNIVERSAL TEST MACHINE

Product Code

UTM-8050 Electromechanical Universal Test Machine, 50 kN, 220-240V, 50-60Hz, 1 ph.
 UTM-8300 Electromechanical Universal Test Machine, 300 kN, 220-240V, 50-60Hz, 1 ph.

Standards

EN ISO 6892-1, EN ISO 15630-1 and 2, EN ISO 7500-1

UTM-8050, 50 kN and UTM-8300, 300 kN capacity fully automatic UTEST Electromechanical Universal Testing Machines are multi purpose versatile machines which satisfy the requirement of R&D laboratories, university laboratories, institute laboratories and quality control laboratories for tensile, compression flexural tests under load or displacement control for a wide range of materials. UTM-8050 and UTM-8300 model Electromechanical Universal Testing Machines can be used for tensile test on any material i.e (metal, plastic, textile, wood) by using suitable accessories. Those machines can also be used for general compression, flexural, test on steel, soil, concrete, cement, asphalt and similar materials, by using suitable accessories.



UTM-8300

These Testing Machines consist of base containing the transmission components and holds two robust columns connected by upper cross head and BC 100 TFT graphics data acquisition and control unit to control the system. The upper cross head can be adjusted to set the vertical test space for different tests. User can adjust the vertical test space by also lower crosshead moved by an electromechanical system with a single re-circulating ball screw, powered by an servomotor.

Advanced closed loop control system assures accurate load or displacement pace rate on sample.

The load is measured by a load cell that located on upper crosshead and displacement is measured by an encoder fit to the servo motor on both models.

The operator will have large flexibility during the test with advanced microprocessor control and material testing software installed on PC.

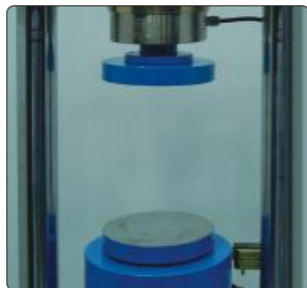
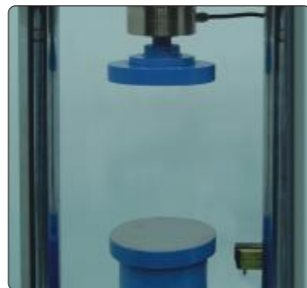
The machine is supplied complete with high precision load cell. Gripping systems, extensometers and accessories are not included and have to be ordered separately.

UTM-8050 supplied with

- Compression Platens
- Load Cells , 50 kN Capacity

UTM-8300 supplied with

- Compression Platens
- Load Cells , 300 kN Capacity



ACCESSORIES

Electromechanical Universal Testing Machines are suitable for difference tests on various materials as Uniaxial Tests, Triaxial Tests, Steel Re-bars, Cement and Concrete, Soil (CBR), Asphalt (Marshall, Indirect Tensile, Duriez), Tiles, Flat Blocks etc.

General Accessories;

1. UTGM-0040 Load Cell, 5 kN Capacity
2. UTGM-0042 Load Cell, 50 kN Capacity
3. UTGM-0043 Load Cell, 300 kN Capacity
4. UTM-0115 Compression Platens, used to perform uniaxial and unconfined compression tests.
5. UTM-0500 Extensometer for universal testing machine, 50 mm gauge length, 10 mm travel (to use with max Ø:22 mm specimens)
6. UTM-0520 Extensometer for universal testing machine, 50 mm gauge length, 100% strain feature, standard temperature range: -40°C to +100°C (-40°F to 212°F).

Frame Features

	UTM-8050	UTM-8300
Max. Load	50 kN	300 kN
Max. Vertical Test Space (without accessories) (Lower crosshead at middle stroke.	650 mm	850 mm
Distance Between Columns	440 mm	630 mm
Crosshead Travel	400 mm	200 mm
Test Speed Range	0-100 mm/min.	0-75 mm/min.
Load Rate	0,001-2 kN/s (Depend on specimen stiffness)	0,001-10 kN/s (Depend on specimen stiffness)
Machine Class	Class 1 starting from 1% of the capacity	Class 1 starting from 1%of the capacity
Encoder Resolution	0.001mm	0,001 mm
Encoder Accuracy	0,01	0,01
Electrical Requirement	220-240V, 50-60Hz, 1 ph.	220-240V, 50-60Hz, 1 ph.
Overall Dimensions	1300x520x2300 mm	1100x450x1860 mm
Weight Approx.	400 kg	800 kg



UTM-8050

Data Acquisition & PC Software

Digital display graphics data acquisition and control system are designed to control the machine and process the data from encoders, Load cells, installed on the Electromechanical Test Machine frame. It has graphical TFT display of 240x128 pixel and show both load and displacement. The digital unit sends all these information to PC and accepts commands of Start, Stop, and Test Speed etc.

Manual zeroing of all engineering values exist prior to the beginning of test.

Materials testing software is available for Utest UTM series universal testing systems. Test software provides fully customized parameter definition, test method development tools, automatic test control, data collection, results analysis, and reporting.

This flexible software solution supports multiple testing technologies and test types, allowing you to standardize your lab under a single software application. With several options for creating tests, and a separate application for running tests, you can allocate resources in the way that makes sense for your lab.

Advanced templates for testing to ASTM, ISO and EN standards for tension testing, compression testing, flexure testing, and more across a wide variety of materials and applications help ensure quick and efficient test setup and execution.

Up to 500 test methods can be managed at the same time in test software and various engineering calculations performed automatically such as strain, tensile stress, compressional and flexural strength, elongation, yield point, elasticity modulus, absorbed energy, etc.

Test results stored in computer for your future retrieve or re-analysis and reporting. Data Exchange between other Windows based applications such as Excel, Word or output in PDF format.



ELECTROMECHANICAL UNIVERSAL TEST MACHINE

MATERIALS	TESTS / METHODS	STANDARDS	ACCESSORIES
STEEL (ROUNDS AND FLATS)	Tensile Test under Load/Displacement Control	EN ISO 6892-1	UTM-8060 Tensile Grip complete with grips for round specimens from 2 to 10 mm dia., and flats 0 to 8 mm thick., 50 kN
			UTM-8310 Tensile Grips complete with grips for round specimens from 6 to 20 mm dia., and flats 0 to 15 mm thick., 300 kN
CEMENT AND MORTARS	Compression Test Under Load Control	EN 196-1 ASTM C109	UTCM-0121/E Compression Jig Assembly EN, to test portions of 40x40x160 mm mortar prism. (*)
			UTCM-0121/A Compression Jig Assembly ASTM, to test 50 mm (2") mortar cubes. (*)
	Flexure Tests Under Load Control	EN 196-1 ASTM C348 EN 12808-3 EN 1015-11	UTCM-0120/E Flexure Jig Assembly EN , to test 40x40x160 mm mortar prisms, distance between lower bearers is 100 mm UTCM-0120/A Flexure Jig Assembly ASTM, to test 40x40x160 mm mortar prisms, distance between lower bearers is 119 mm.
Tensile Adhesion Strength (Adhesives for tiles, repair, rendering and plastering.		EN 1346 EN 1348 EN 1015-12 EN 1542 EN12004	UTM-8070 Pull-Headed Plate Set for EN 1348 and EN 12004
			UTM-8080 Pull-Headed Plate Set for EN 1015-12 and EN 1542
			UTM-8082 Frusto-Conical Shaped Rings. EN 1015-12, stainless steel, Ø50mm
			UTM-8064 Holders for Concrete Base Plate and Specimen EN 1348, 1015-12, 1542 (**) UTM-8074 Holders for Concrete Base Plate and Specimen EN 1348, 1015-12. (**) UTM-8084 Holders for Concrete Base Plate and Specimen EN 1542 (**) UTGM-0010 Load Cell 5 kN Capacity UTGM-0015 Load Cell 10 kN Capacity
CONCRETE	Flexure Tests on Concrete Beams under Load Control	EN 12390-5 ASTM C78, C293 AASHTO T97 BS 1881:118	UTC-5501 Bearers, used for for 3 or 4 point flexural tests on concrete beams of 100x100x400-500 mm, 150x150x600-750 mm.
	Flexure Tests on Concrete Kerbs Under Load Control	EN 1340	UTC-5502 Bearers, used for flexure test on concrete kerbs. Consist of two lower roller of 38 mm dia. x 600 mm length and upper load point of 40 mm dia with ball seating, 300kN
	Splitting Tests on Concrete Cylindrical and Cubes Specimens, and concrete paving blocks under Load Control	EN 12390-6 AASHTO C496 EN 1338	UTC-0350 Splitting tensile test device for 100x200 mm (4" x 8"), 150x300 mm (6" x 12")
UTC-0360 Splitting tensile test device for concrete cubes (EN) UTC-0355 Splitting tensile test device for concrete paving blocks with 60-100x220 mm (hxl) (EN)			



UTM-8060



UTM-8310



UTCM-0121/A



UTCM-0121/E

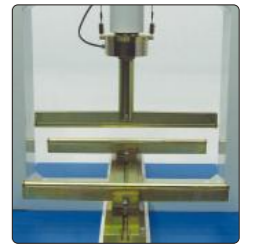


UTC-5501, 4 Point

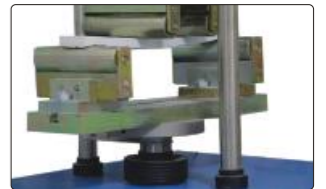


UTC-5501, 3 Point

MATERIALS	TESTS / METHODS	STANDARDS	ACCESSORIES
CONCRETE NATURAL STONE CLAY	Flexure Tests on Clay Roofing Tiles	EN 538 EN 491	UTC-5504 Flexural Testing Assembly with 610mm length rollers, used for flexural strength tests of concrete terrazzo tiles, natural stone kerbs, concrete paving flags and natural stone slabs. Consist of two lower roller and one upper roller of 38 mm dia. x 610 mm length. (10 kN loadcell should be ordered separately for concrete and ceramic tiles)
	Flexure Tests on Natural Stone and Kerbs	EN 12372 EN 1343	
	Flexure Tests on Concrete Terrazzo Tiles	EN 13748-1 EN 13748-2	
	Flexure Tests on Concrete Paving Flags	EN 1339	UTM-8095 Flexure Apparatus for EN 1170
	Flexure Tests on Slabs of Natural Stone for External Paving	EN 1341	
	Flexure Tests on Glass Fiber Reinforced Cement (Precast Concrete Products)	EN 1170-4 EN 1170-5	
SOIL	Punching Tests for Clay Blocks	UNI 9730-3	UTM- 8090 Flexural Punching Device and Holding Plate
	CBR Under Displacement Control	EN 13286-47 ASTM D1883 AASHTO T193	UTM-0110 CBR Penetration piston, used to perform CBR tests.
BITUMINOUS MIXURES	Quick Triaxial Tests	BS 1377-8 ASTM D2850 ASSHTO- T245	See the table on page 27
			UTAS-0057 Breaking Head Stability Mould, cast iron, for 4" (101,6 mm) Marshall Samples UTAS-0058 Breaking Head Stability Mould, cast iron, for 6" (152,4 mm) Marshall Samples
	Indirect Tensile Splitting Tests	EN12697-23 AASHTO T283	UTAS-0063 Tensile Splitting Device for compacted Bituminous samples 100 mm (4") & 150 mm (6") dia.
INSULATION MATERIALS	Duriez Test Under Displacement Control	NF P98 251 1/4 EN 12697-12 Method A and B	UTAS-0090 Duriez Compression Test Set, 80 mm diameter. Only with UTM-8300
			UTAS-0092 Duriez Compression Test Set, 120 mm diameter. Only with UTM-8300
Tensile strength and tensile bond strength perpendicular to faces		EN 13494 EN 1607	Determination of tensile strength perpendicular to faces and the tensile bond strength of the adhesive and of the base coat to the thermal insulation materials, UTM-8121 Tensile-Headed Solid Plate Set, 50x50x5mm. UTM-8122 Tensile-Headed Solid Plate Set, 100x100x5mm. UTM-8123 Tensile-Headed Solid Plate Set, 150x150x5mm. UTM-8124 Tensile-Headed Solid Plate Set, 200x200x5mm. UTM-8125 Tensile-Headed Solid Plate Set, 300x300x5mm.



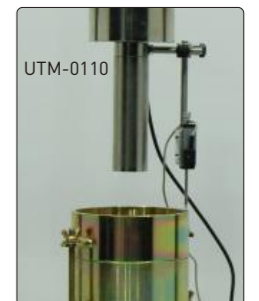
UTC-5504



UTM-8095



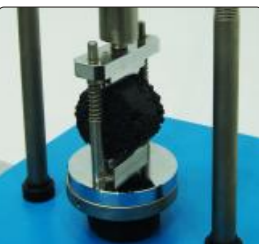
UTM-8090



UTM-0110



UTAS-0058 UTAS-0057



UTM-0063



UTM-8105 and UTM-8107



UTC-0360 UTC-0355 UTC-0350

(*) Up to the machine capacity

(**) Supplied complete with the connection apparatus fit with the ordered machine.

IMPACT TESTING MACHINE

Product Code

- UTCI-0150 Motorized Pendulum Impact Tester,
Energy Range 150 to 450 Joules, 220V,60Hz, 1phs
UTCI-0155 Izod Hammer (Striker) & Specimen Holder (Vise)

Standards

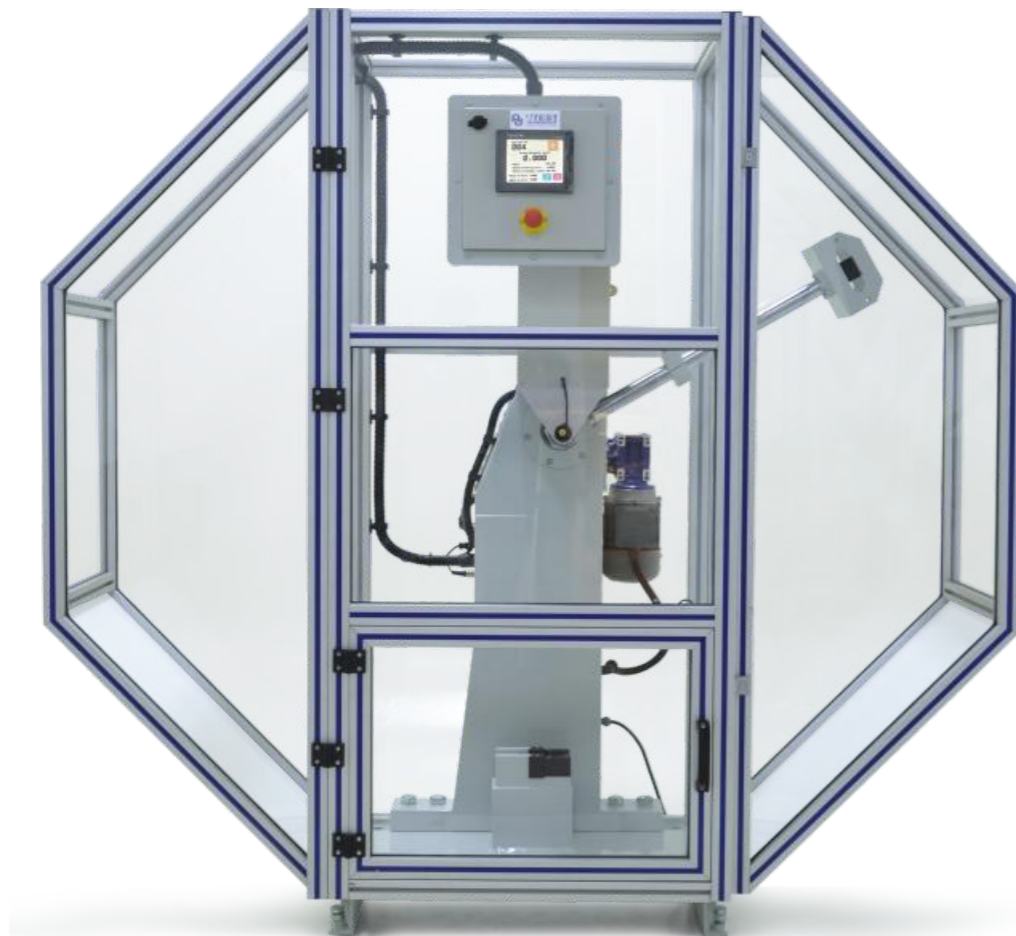
ASTM E 23, EN 10045, ISO 148, GOST 9454; AS 1544;
JIS Z 2242,B 7722

Impact test determines the amount of energy absorbed by a material during fracture. This absorbed energy is a measure of a given material's toughness and acts as a tool to study temperature-dependent brittle-ductile transition. It is to determine whether the material is brittle or ductile in nature.

UTCI-0150 motorized pendulum impact tester is high performance device and ideal for testing metals to Charpy and Izod standards at capacity of 150 Joules. Constructed with solid steel frames ,UTEST motorized pendulum impact testers are machines that you can trust and is safe, quick and easy to operate. It can be fitted with accessories for Charpy and Izod Tests. Each test requires a specific vice/fixture, specimen adapters, and hammers. Operation of the machine is controlled and test results are collected by using colored touch screen digital control unit. Test results such as energy absorbed calculated and displayed on the control unit.

With UTCI-0150 motorized pendulum impact tester, after the test, the pendulum is automatically captured and returned to the starting position. This feature enables the starting angle setting to be varied and optimum test parameters such as impact speed and energy loss on impact to be determined.

Universities, laboratories of the institutions, automotive and aero companies, research and R&D Labs, as well as steel plants are typical customers for these kinds of testing systems.



MAIN FEATURES

- Available energy is 150J of Charpy and Izod testing
- Motor-driven raising of hammer with auto-return after test for increased productivity and operator safety
- Electromagnetic brake/clutch control mechanisms respond quickly for improved operation
- Conveniently located controls for efficient testing
- Clearance between supports of 40 mm,
- Fall angle is 150 degree,
- Suitable for specimens of 10 x 10 x 55 mm
- Cabin door sensitive automatic testing mode that enables the fast and continuous testing and manual mode for more control for the operator.
- Highly sensitive encoder to take the angle readings for every position of the hammer and to capture the very peak point of the rise angle.
- Direct verification menu to verify the losses and calculate the error as described in the standards (air resistance, bearing resistance, etc.).

STANDARDS for UTCI SERIES

- ASTM E23 Standard Test Methods for Notched Bar Impact Testing of Metallic Materials
- EN 10045 Charpy Impact Test on Metallic Materials
- ISO 148 Metallic Materials - Charpy Pendulum Impact Test
- GOST 9454 Impact Bending Test Method at Low, Room and High Temperatures
- Fixtures/strikers are available for each test standard as well as customized tests.

Main Accessories;

1. Pendulum ,
2. Specimen centering plate (U, V)
3. Anchor bolts (M22x300mm): 4 pcs

Optional accessories;

1. Full close Aluminum alloy safe cabin,
2. ASTM E23 striking edge (R8mm),
3. Self centering tong for setting charpy test specimen
4. Anvils and pendulums for Charpy, Izod and tensile impact testing,
5. Temperature Chamber for impact specimen,
6. Notch Cutter for impact specimen
7. Low Temperature Freezers for impact specimens.

Max. Absorbed Impact Energy (J)	150
Raised Angle	150°
Max. Impact Speed (m/s)	5,25
Standard span (mm)	40
Size of specimen (mm)	10 x 10 x 55
Round angle of jaws (mm)	R1-1.5
Round angle of striking edge (mm)	R2-2.5
Power supply	3phs, 380V, 50Hz or 1phs, 220V,60Hz
Overall Dimensions	2200x950x2100 mm
Weight (approx.)	800 kg



IMPACT TESTING MACHINE

MANUAL / HYDRAULIC NOTCH CUTTER FOR IMPACT SPECIMEN

Product Code :
 UTCI-0500 Manuel Notch Cutter for Impact Specimen
 UTCI-0500/V V Type Notch Knife for UTCI-0500
 UTCI-0500/U U Type Notch Knife for UTCI-0500
 UTCI-0520 Hydraulic Notch Cutter for Impact Specimen

Manual / Hydraulic Notch Cutter for Impact Specimen is specially designed for specimen preparation for impact specimen. Both manual type and hydraulic type are available to cut the notch according to the 'V' ASTM E23, ISO148 standards, 'U' DIN 50115 and ISO83 standards 'Charpy Notch Impact Test Method for Metal Material'. Meanwhile, the machine also features in high precision, long life, low noise and concise appearance etc.

UTCI-0500 Manuel Notch Cutter for Impact Specimen is supplied complete with V Type or U Type Notch Knife. The second type knife should be ordered seperately.

UTCI-0520 Hydraulic Notch Cutter for Impact Specimen is supplied complete with V Type and U Type Notch Knives.

Specifications:

- Notch type : V type: 2 mm or U type: 2 mm
- Size of specimen : 10×10 (7.5 or 5) ×55mm
- Travel of cutting knife : 340mm
- Cutting speed : 2.5m/min (hydraulic type)
- Dimensions : 400x350x700/600x500x1200mm
- Weight : 100/200kg



U & V Bıçaklar



U & V Çentik Sekilleri

CI SERIES TEMPERATURE CHAMBER FOR IMPACT SPECIMEN

Product Code:
 UTCI-0003 Temperature chamber for impact specimen, temperature range: room to -30°C
 UTCI-0006 Temperature chamber for impact specimen, temperature range: room to -60°C
 UTCI-0008 Temperature chamber for impact specimen, temperature range: room to -80°C
 UTCI-0010 Temperature chamber for impact specimen, temperature range: room to -100°C

CI Series Temperature Chamber for impact specimen is designed according to the standard of 'Charpy Notch Impact Test Method for Metal Materials'. It adopts compressor-cooling technology. The machine is available in two types, low temperature grade and high temperature grade. It utilizes the heat balance principle and cycle-stirring method to realize the constant temperature cooling for impact specimen with a reliable performance.



UTCI-0500
Manual Type

UTCI-0520
Hydraulic Type

	UTCI-0003	UTCI-0006	UTCI-0008	UTCI-0010
Temperature range (°C)	Room to -30	Room to -60	Room to -80	Room to -100
Accuracy (°C)	≤±0,5			
Effective working space (mm)	120x120x80			
Specimen Dimensions (mm)	10x10x55			
Specimen quantity (mm)	More than 60 pcs			
Cooling media	Alcohol or others			
Power supply (kW)	1	1,5	1,5	2
Dimensions (mm)	800x510x480	800x510x750	800x510x480	1200x700x800

NON METALLIC SPECIMEN PREPARATION EQUIPMENTS

Sheet Punching Machine
 Product Code UTCI-0050 Sheet Punching Machine

This machine is used for machining test samples, such as nonmetallic soft sheets and thin films. Using various kinds of standard cut-off knives, it can accurately and swiftly work out the required samples.

Max. travel: 25mm
 Max. thickness of punching: 2 mm

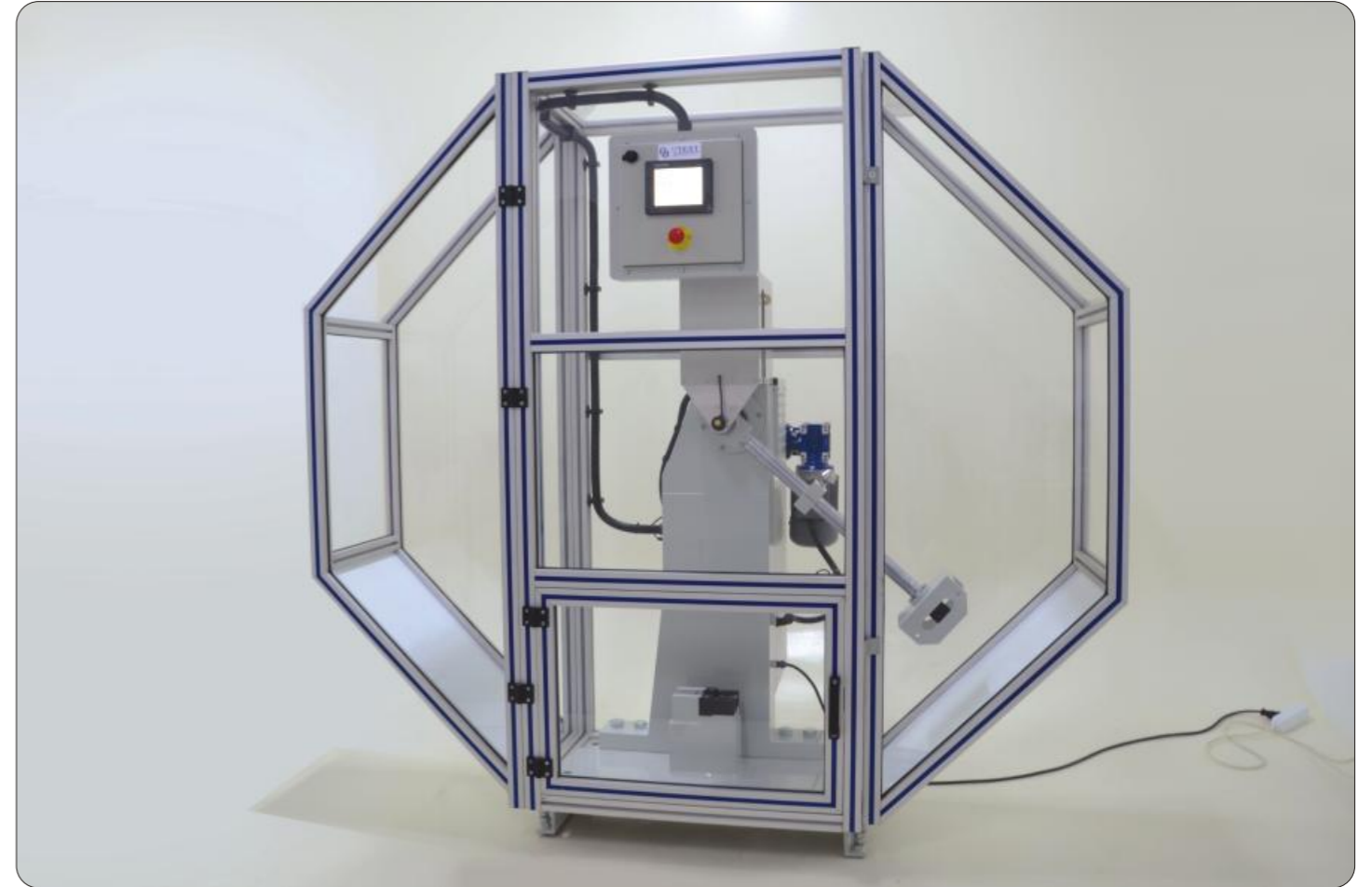


Notch Sampling
Machine

Notch Sampling Machine
 Product Code: UTCI-0060 Notch Sampling Machine

Specimen prepared by UTCI-0060 Notch Sampling Machine confirms to ISO179, ISO180, GB/T1403, GB/T1483, GB/T8814 requirements on non-metallic specimen preparation;

Dimensions of the cutter:
 A: 45±1 R0.25 / B: 45±1 R1 / C: 2±0.2



MULTIPLEX MACHINE

Product Code

- UTM-0107 Multiplex Machine with Servo Motor and LCD Control System (Only Frame), 50 kN
- UTS-0870 CBR Penetration piston, used to perform CBR tests
- UTM-0115 Compression Platens, used to perform uniaxial and unconfined compression tests
- UTAS-0057 Breaking Head Stability Mould, cast iron, for 4" (101,6 mm) Marshall Samples
- UTAS-0058 Breaking Head Stability Mould, cast iron, for 6" (152,4 mm) Marshall Samples



Multiplex Machine is used to make Uniaxial, CBR and Marshall Tests. 50 kN capacity Multiplex Machine is equipped with a servo motor and LCD graphics control system and capable of doing test with the speed range of 0,00001 mm/min to 51 mm/min suitable for CBR, Marshall, Triaxial and Uniaxial Tests.

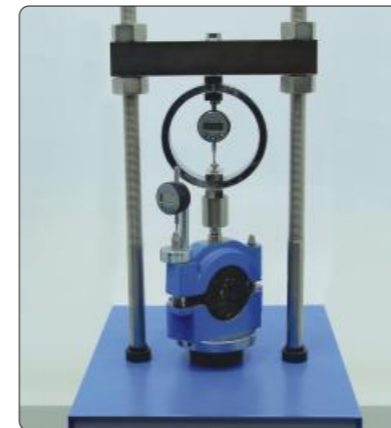
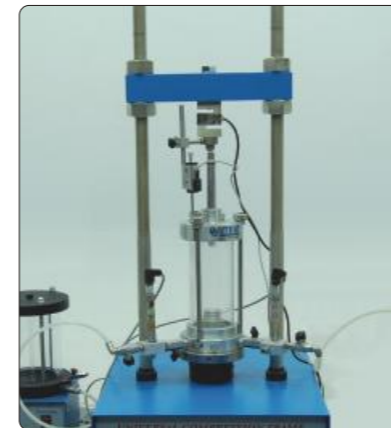
For analog measurement the frame can be completed with load ring and dial gauge. Load ring and dial gauge should be ordered separately.

If the machine will be used with a data logger, unilogger (UTG-0325), load cell and displacement transducers should be ordered to complete the testing machine.

The tests such as Uniaxial, Triaxial, Marshall and CBR can be performed with the UTM-0107 by adding the test accessories.

Test accessories should be ordered separately according to the tests.

Test Speed	0,00001– 51 mm/min
Capacity	50 kN
Dimensions	550x700x1200 mm
Weight (approx.)	102 kg



Uniaxial

To Perform Uniaxial Tests

UTM-0115	Compression Platens, used to perform uniaxial and unconfined compression tests. Supplied complete with ball seating assembly.
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Triaxial

To Perform Triaxial Tests

Product Code	Description	UU	UU-CU CD
UTGM-0010	Load Cell 5 kN	1	1
UTGM-0062	Linear Potentiometric Displacement Transducer, 25 mm	1	1
UTS-0400	Triaxial Cell**	1	1
UTS-0401			
UTS-0405	Block with One Connection Line for Triaxial Test Cells	1	-
UTS-0406	Block with 3 Connection Lines for Triaxial Test Cells	-	1
UTGM-0110	Pressure Transducer	1	3
UTS-0408	Oil and Water Constant Pressure System	1	2
UTS-0415	Automatic Volume Change Unit	-	1
UTG-0320	Static Unilogger 4 Channels	-	1
UTS-0416	Software to Perform UU Triaxial Tests	1	1
UTS-0417	Software to Perform CU-CD Triaxial Tests	-	1
UTS-1330 and UTGP-1140	De-Airing Water Tank, 7 L. and Hose	1	1

* Choose the suitable cell for the specimen size [UTS-0400: 38-50 mm dia. samples / UTS-0401: 70-100 mm dia. samples]. For cell accessories, sample preparation accessories and Optional apparatus for de-airing water please see Triaxial Test Systems.

Marshall

To Perform Marshall Tests

UTAS-0057	Breaking Head Stability Mould, cast iron, for 4" (101,6 mm) Marshall Samples
UTAS-0058	Breaking Head Stability Mould, cast iron, for 6" (152,4 mm) Marshall Samples
	Adaptor for Breaking Head

CBR

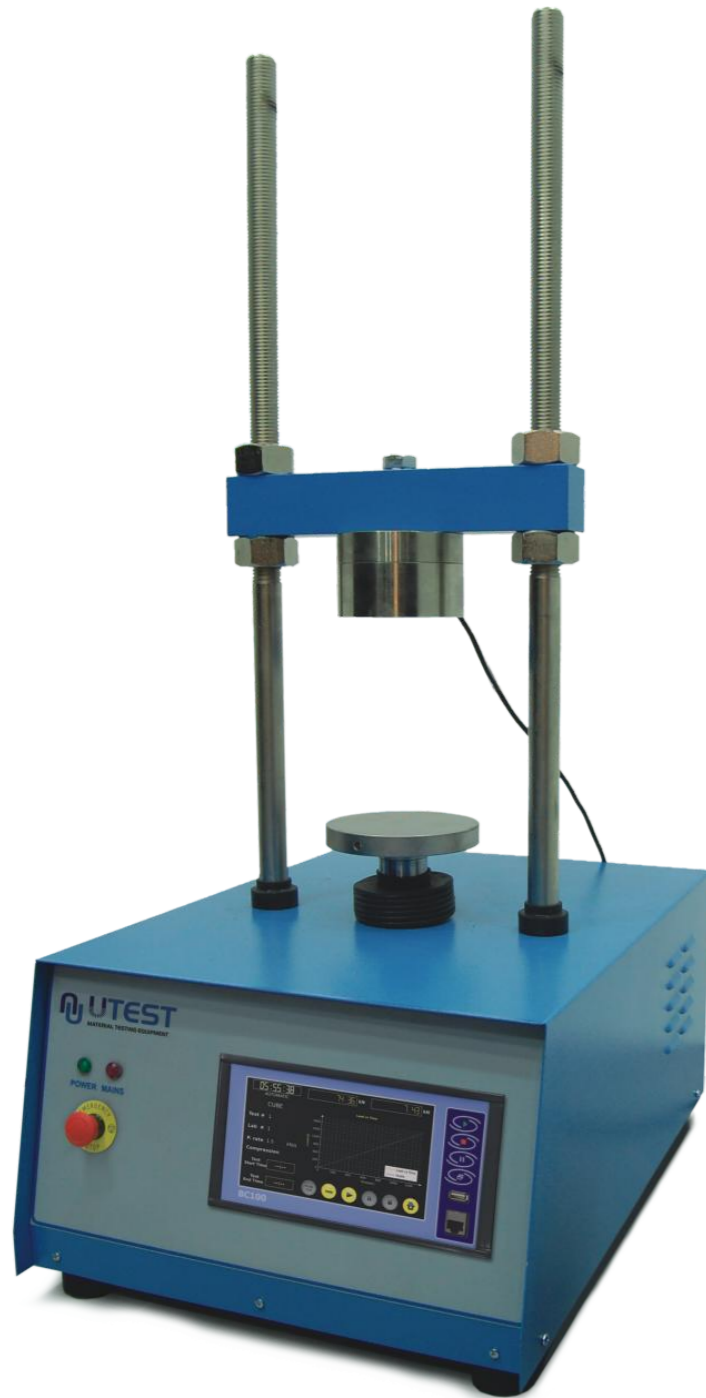
To Perform CBR Tests

UTS-0870	CBR Penetration piston, used to perform CBR tests
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MULTIPLEX MACHINE

Product Code

- UTM-0108 Multiplex Machine with Servo Motor and BC100 TFT Graphics Data Acquisition and Control System, 50 kN
- UTM-0115 Compression Platens, used to perform uniaxial and unconfined compression tests
- UTS-0870 CBR Penetration piston, used to perform CBR tests
- UTAS-0057 Breaking Head Stability Mould, cast iron, for 4" (101,6 mm) Marshall Samples
- UTAS-0058 Breaking Head Stability Mould, cast iron, for 6" (152,4 mm) Marshall Samples
- UTGM-0010 Load Cell, 5 kN



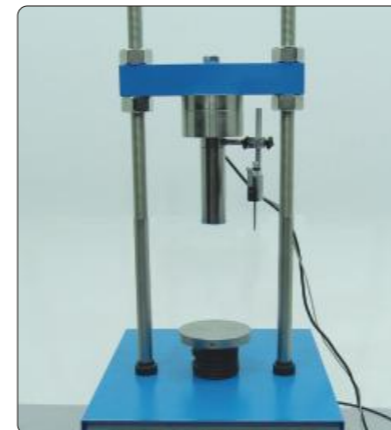
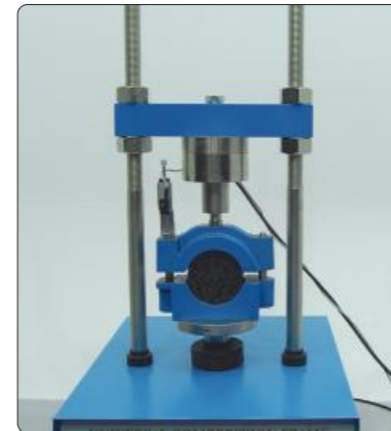
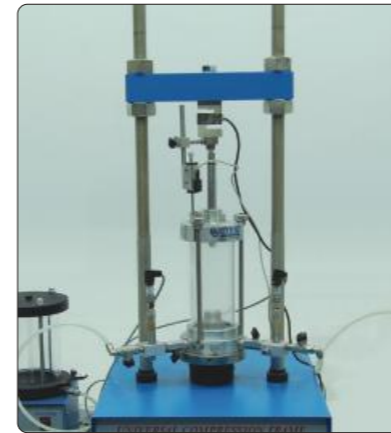
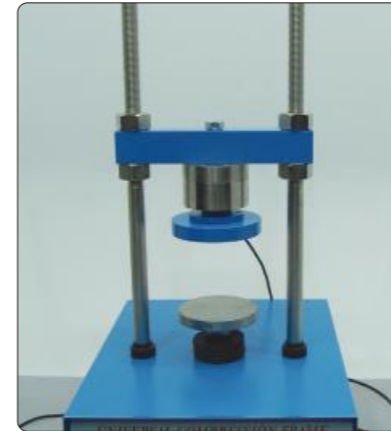
Multiplex Machine is used to make Uniaxial, CBR and Marshall Tests. 50 kN capacity Multiplex Machine is equipped with a servo motor and BC100 TFT graphics data acquisition and control system and capable of doing test with the speed range of 0,00001 mm/min to 51 mm/min suitable for CBR, Marshall, Triaxial and Uniaxial Tests and similar tests with appropriate accessories. UTM-0108 Multiplex Machine is composed by a robust and compact two column frame with adjustable upper cross beam.

Test accessories should be ordered separately according to the test.

Multiplex Machine is supplied complete with

- Load Cell, 50 kN
- Displacement Transducer, 25x0,001 mm

Test Speed	0,00001– 51 mm/min
Capacity	50 kN
Dimensions	550x700x1200 mm
Weight (approx.)	102 kg



Uniaxial

To Perform Uniaxial Tests

UTM-0115	Compression Platens, used to perform uniaxial and unconfined compression tests. Supplied complete with ball seating assembly.
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Triaxial

To Perform Triaxial Tests

Product Code	Description	UU	UU-CU CD
UTGM-0010	Load Cell 5 kN	1	1
UTGM-0062	Linear Potentiometric Displacement Transducer, 25 mm	1	1
UTS-0400	Triaxial Cell**	1	1
UTS-0401			
UTS-0405	Block with One Connection Line for Triaxial Test Cells	1	-
UTS-0406	Block with 3 Connection Lines for Triaxial Test Cells	-	1
UTGM-0110	Pressure Transducer	1	3
UTS-0408	Oil and Water Constant Pressure System	1	2
UTS-0415	Automatic Volume Change Unit	-	1
UTG-0320	Static Unilogger 4 Channels	-	1
UTS-0416	Software to Perform UU Triaxial Tests	1	1
UTS-0417	Software to Perform CU-CD Triaxial Tests	-	1
UTS-1330 and UTGP-1140	De-Airing Water Tank, 7 L. and Hose	1	1

* Choose the suitable cell for the specimen size [UTS-0400: 38-50 mm dia. samples / UTS-0401: 70-100 mm dia. samples]. For cell accessories, sample preparation accessories and Optional apparatus for de-airing water please see Triaxial Test Systems.

Marshall

To Perform Marshall Tests

UTAS-0057	Breaking Head Stability Mould, cast iron, for 4" (101,6 mm) Marshall Samples
UTAS-0058	Breaking Head Stability Mould, cast iron, for 6" (152,4 mm) Marshall Samples
	Adaptor for Breaking Head

CBR

To Perform CBR Tests

UTS-0870	CBR Penetration piston, used to perform CBR tests
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MULTIPLEX MACHINE

BC 100 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 and/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 (it would be simultaneous or not depending on the application at the factory) 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 seamless 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.

- Calibration Range Class 1 from 2% of the full capacity
- Maximum piston travel 80 mm
- Distance between columns 260 mm

Main Features

- Can make test with displacement control
- Displacement control from 0.00001 mm/minute to 50,8 mm/minute

When the machine used for CBR Test

- Calculates corrected CBR value at 2.5 and 5 mm the digital unit saves the load value at user defined displacement values such 0.625, 1.25, 1.875, 2.5, 3.75, 5, 7.5, 10, 12.5 mm
- The load corresponds to the displacements corrected respect to the linear region of the data has also saved
- The % CBR at 2.5 mm and % CBR at 5 mm is also automatically calculated and saved

When the machine used for Marshall Test

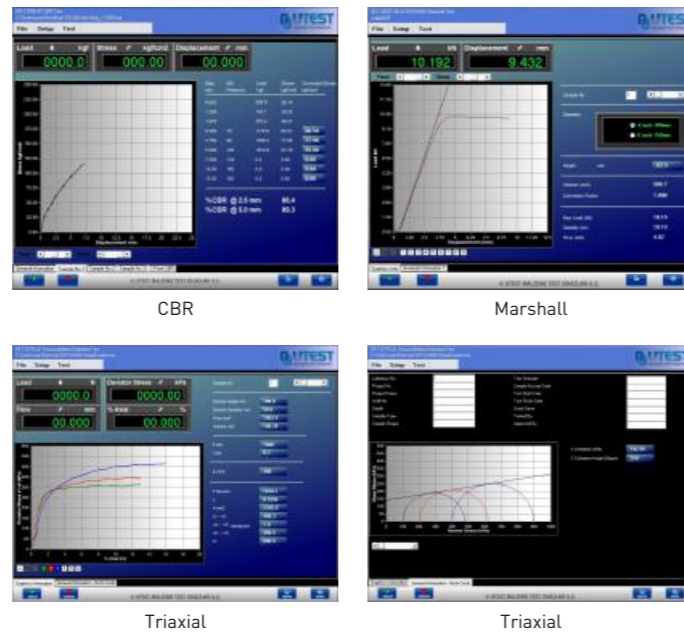
- Automatically calculates flow and stability values.

When the machine used for Triaxial Test

- It shows stress value corrected respect to the displacement sensor.

Other Specifications

- 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 (it would be simultaneous or not depending on the application at the factory) for one analog channel for high capacity load cell, one analog channel for displacement transducer, one analog channel for low capacity load cell and one analog channel for pressure transducer for oil-water constant pressure unit
- 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
- 10 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

All UTEST softwares including Marshall, CBR, Triaxial (UU,CU,CD), Uniaxial etc. can be used with multiplex machines.

MULTIPLEX MACHINE

Product Code

- UTM-0109 Multiplex Machine with Servo Motor and BC100 TFT Graphics Data Acquisition and Control System, 100 kN
- UTM-0115 Compression Platens, used to perform Uniaxial and Unconfined Compression Tests
- UTS-0870 CBR Penetration piston, used to perform CBR Tests
- UTAS-0057 Breaking Head Stability Mould, cast iron, for 4" (101,6 mm) Marshall Samples
- UTAS-0058 Breaking Head Stability Mould, cast iron, for 6" (152,4 mm) Marshall Samples
- UTGM-0010 Load Cell, 5 kN capacity



Multiplex Machine is used to make Uniaxial, CBR and Marshall Tests. 100 kN capacity Multiplex Machine is equipped with a servo motor and TFT graphics data acquisition and control system BC100 and capable of doing test with the displacement speed range of 0,00001 mm/min to 51 mm/min suitable for CBR, Marshall, Triaxial and Uniaxial Tests and similar tests with appropriate accessories. UTM-0109 Multiplex Machine is composed by a robust and compact two column frame with adjustable upper cross beam.

BC 100 TFT Graphic Display Data Acquisition and Control Unit

BC100 TFT 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.

For details see page 245.

Multiplex Machine is supplied complete with

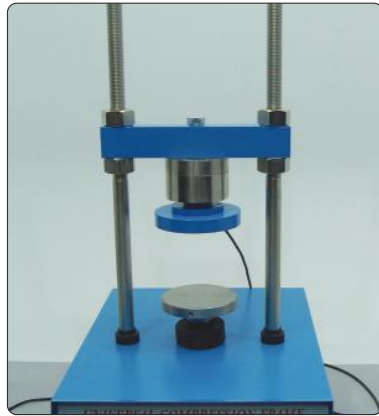
- Load Cell, 100 kN
- Displacement Transducer, 25x0,001 mm

Test Speed	0,00001– 51 mm/min
Capacity	100 kN
Dimensions	710x555x1910 mm
Vertical Daylight	610 mm
Horizontal Daylight	370 mm
Weight (approx.)	235 kg
Power	1000 W



MULTIPLEX MACHINE

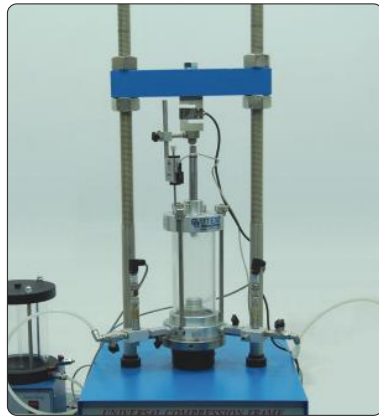
Test accessories should be ordered separately according to the test:



Uniaxial

To Perform Uniaxial Tests

UTM-0115	Compression Platens, used to perform uniaxial and unconfined compression tests. Supplied complete with ball seating assembly.
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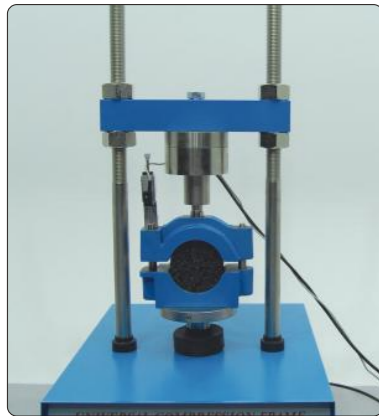


Triaxial

To Perform Triaxial Tests

Product Code	Description	UU	UU-CU CD
UTGM-0010	Load Cell 5 kN	1	1
UTGM-0062	Linear Potentiometric Displacement Transducer, 25 mm	1	1
UTS-0400	Triaxial Cell**	1	1
UTS-0401			
UTS-0405	Block with One Connection Line for Triaxial Test Cells	1	-
UTS-0406	Block with 3 Connection Lines for Triaxial Test Cells	-	1
UTGM-0110	Pressure Transducer	1	3
UTS-0408	Oil and Water Constant Pressure System	1	2
UTS-0415	Automatic Volume Change Unit	-	1
UTG-0320	Static Unilogger 4 Channels	-	1
UTS-0416	Software to Perform UU Triaxial Tests	1	1
UTS-0417	Software to Perform CU-CD Triaxial Tests	-	1
UTS-1330 and UTGP-1140	De-Airing Water Tank, 7 L. and Hose	1	1

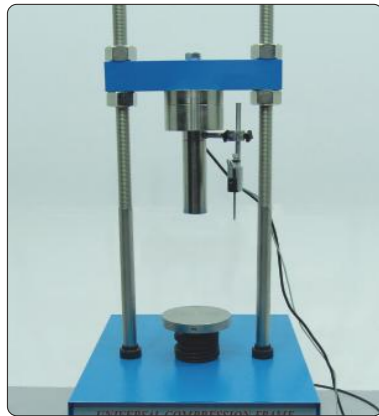
* Choose the suitable cell for the specimen size (UTS-0400: 38-50 mm dia. samples / UTS-0401: 70-100 mm dia. samples).
For cell accessories, sample preparation accessories and Optional apparatus for de-airing water please see Triaxial Test Systems.



Marshall

To Perform Marshall Tests

UTAS-0057	Breaking Head Stability Mould, cast iron, for 4" (101,6 mm) Marshall Samples
UTAS-0058	Breaking Head Stability Mould, cast iron, for 6" (152,4 mm) Marshall Samples
	Adaptor for Breaking Head



CBR

To Perform CBR Tests

UTS-0870	CBR Penetration piston, used to perform CBR tests
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COLD TEST BENDING MACHINE

Product Code

UTM-8400 Cold Test Bending System, 150 kN

Standards

EN ISO 15630-1, 7438, EN 10080

UTM-8400 Cold Bending Machine is used for bending and re-bending tests of reinforcing bars, wire rod and wire for concrete in accordance with the requirements of EN ISO 15630-1.

The test piece is bent over a mandrel. The angle of bend and the diameter of the mandrel (D) is selected in accordance with the relevant product standard EN 10080. The bend test is performed with a minimum angle of bend of 180° over a mandrel according to EN ISO 15630-1.

For re-bend test, first the test piece is bent with a minimum angle of bend of 90° over a mandrel, in a second step, the aging treatment is applied and then the test pieces bent back up to a minimum of 20°. according to EN ISO 15630-1.

After the tests, the tension (lower) side of the test piece is visually inspected for cracks or fissure visible to a person with normal or corrected vision.

The test piece is inspected for cracks and fissures visible to a person with normal or corrected vision.

Mandrels for bent and re-bend tests should be ordered separately

Technical Specifications

Maximum Loading Capacity	150 kN
Power	750 W
Piston Travel Maximum Speed	1 mm/sec.
Dimensions	1550 x 800 x 1150 mm
Weight Approx.	540 kg



The Bend Test (EN 10080)				The Re-Bend Test (EN 10080)				
Specimen Nominal Diameter d (Ø) mm	Mandrel Code	Max. Mandrel Diameter (mm)		Specimen Nominal Diameter d (Ø) mm	Mandrel Code	Max. Mandrel Diameter (mm)		
		d ≤ Ø16	d > Ø16			d ≤ Ø16	Ø16 < d ≤ Ø25	d > Ø25
		3d	6d			5d	8d	10d
8	UTC-8410/22	24	-	8	UTC-8410/1	40	--	--
9	UTC-8410/23	27	-	9	UTC-8410/3	45	--	--
10	UTC-8410/24	30	-	10	UTC-8410/5	50	--	--
11	UTC-8410/25	33	-	11	UTC-8410/6	55	--	--
12	UTC-8410/26	36	-	12	UTC-8410/7	60	--	--
14	UTC-8410/27	42	-	14	UTC-8410/8	70	--	--
16	UTC-8410/28	48	-	16	UTC-8410/9	80	--	--
18	UTC-8410/29	-	108	18		--	144	--
20	UTC-8410/30	-	120	20		--	160	--
22	UTC-8410/31	-	132	22		--	176	--
24	UTC-8410/32	-	144	24		--	192	--
25	UTC-8410/33	-	150	25		--	200	--
26	UTC-8410/34	-	156	26		--	--	260
28	UTC-8410/35	-	168	28		--	--	280
30	UTC-8410/36	-	180	30		--	--	300
32	UTC-8410/37	-	192	32		--	--	320
40	UTC-8410/38	-	240	40		--	--	400



Asphalt

Testing Equipments

The main area of usage of bituminous mixtures is in road construction. The title of bituminous mixtures is called Asphalt in USA. Bituminous mixtures consist of essentially two ingredients, aggregate and binder. The major difference between asphalt and concrete is that bitumen and bituminous materials are used as binder in asphalt.

Analysis and design tests of bituminous mixtures, bitumen and bituminous binders tests, asphalt and road quality tests are provided for engineering firms and construction companies to produce, inspect and evaluate the paving materials to ensure the strength, physical and mechanical performance and durability towards safe application and use.

In the asphalt section, UTEST Testing Equipment is basically grouped in four main headings

- Analysis of Bituminous Mixtures
- Design and Testing of Bituminous Mixtures
- Asphalt and Road Quality Testing
- Bitumen and Bituminous Binders

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REFLUX METHOD

Product Code

UTAS-0013	Reflux Extraction Test Set 1000 g, 220-240 V 50-60 Hz
UTAS-0014	Reflux Extractor Jar 1000 g
UTAS-0015	Reflux Extractor Condenser 1000 g
UTAS-0016	Reflux Extractor Conical Wire Screen 500 g
UTGH-1830	Iron Wire Gauze 120x120mm
UTAS-0020	Reflux Extraction Test Set 4000 g, 220-240 V 50-60 Hz
UTAS-0021	Reflux Extractor Jar 4000 g
UTAS-0022	Reflux Extractor Condenser 4000 g
UTAS-0023	Reflux Extractor Conical Wire Screen 2000 g
UTAS-0024	Filter Paper Ø 400 mm (50 pcs./pack) for UTAS-0013 and UTAS-0020
UTGH-1835	Iron Wire Gauze 160x160mm

Standards

ASTM D2172; AASHTO T164 B

The Reflux Extractor is used for the quantitative determination of bitumen in hot-mixed paving mixtures and pavement samples. The bitumen content is calculated by difference from the weight of extracted aggregates, moisture content and ash from an aliquot part of the extract.

The Reflux Extraction Test Sets are supplied complete with

- Cylindrical Glass Extractor Jar
- Two Wire Mesh Cones with Interlocking Frames
- Water Condenser with Inlet/Outlet Tubes
- Filter Paper, 50 pcs./pack
- Hot Plate
- Iron Wire Gauze (UTGH-1830 with UTAS-0013, UTGH-1835 with UTAS-0020)

Dimensions	UTAS-0013	260x260x620 mm
	UTAS-0020	260x260x620 mm
Weight (approx.)	UTAS-0013	6 kg.
	UTAS-0020	8 kg.



UTAS-0020

UTAS-0013

CENTRIFUGE METHOD

Product Code

UTAS-0030	Centrifuge Extractor 1500 g, 220-240 V 50-60 Hz
UTAS-0030/110	Centrifuge Extractor 1500 g, 110 V 60 Hz
UTAS-0031	Filter Paper 250 mm Outer dia. 45 mm Inner dia. for UTAS-0030 (100 pcs / Pack)
UTAS-0032	Rotating Bowl and Cover for UTAS-0030
UTAS-0035	Centrifuge Extractor 3000 g capacity, 220-240 V 50-60 Hz
UTAS-0035/110	Centrifuge Extractor 3000 g capacity, 110 V 60 Hz
UTAS-0036	Filter Paper 295 mm Outer dia. 45 mm Inner dia. for UTAS-0035(100 pcs / Pack)
UTAS-0037	Rotating Bowl and Cover for UTAS-0035

Standards

EN 12697-1 Clause B.1.5; AASHTO T164 A; ASTM D2172 A

The Centrifuges are used for the determination of the bitumen percentage in bituminous mixtures. All models comprise a removable precision-machined rotor bowl housed in a cylindrical aluminum box. The bowl is driven by an electric motor fitted with an AC drive (inverter) with the double function of speed control up to 3600 rpm regardless of the frequency (50 or 60 Hz) and electrical breaking. The centrifuge can be set for the automatic speed ramp up to 3600 rpm and will stop in 10-15 seconds.

The cover is precisely machined and fitted with a solvent resistant gasket to avoid leakages.

The control panel includes: Start/Stop button and speed control knob.



UTAS-0030

UTAS-0035

The Centrifuge Extractors are supplied complete with

- Bowl and Cover
- Filter Paper, 100 pcs.

Dimensions	450x650x550 mm
Weight (approx.)	50 kg (for both models)
Power	370 W (for both models)



UTAS-0032

UTAS-0037



UTAS-0036

Analysis of Bituminous Mixtures

ASPHALT BINDER ANALYSIS

Product Code

UTAS-0039 ABA Asphalt Binder Analyzer, 380 V

Standards

EN 12697-39; AASHTO TP53; ASTM D6307

The UTEST ABA Asphalt Binder Analyzer is used to determine the asphalt binder content of hot mix asphalt/bituminous mixtures by the method of loss on ignition. The system combines a sophisticated furnace and weighing system to continuously measure the weight loss of a bituminous mixture during combustion and automatically calculates its binder content at the end of the test.

OVEN AND AFTERBURNER

- High efficiency heating system with afterburner chamber for a total combustion of exhaust fumes to minimize emissions to conform with EU Directives
- Sample size up to 4500 g for more representative test results
- Maximum power rating is 4,5 kW
- Supplied complete with 2 sample trays, fork to catch the pan and cooling cage

HARDWARE

- 16 bit microprocessor with one CPU card controlling both test data display, temperature, database and internal functions
- Large permanent memory to store test results
- On board 40 column serial printer
- Weighing system 10000 g capacity, 0.1 g resolution and ± 0.1 g repeatability
- PID closed loop thermoregulation for both oven and afterburner chamber
- 950 °C Afterburner 540 °C oven set temperature according to standard
- TFT touchscreen 800x480 resolution, 65000 color

FIRMWARE

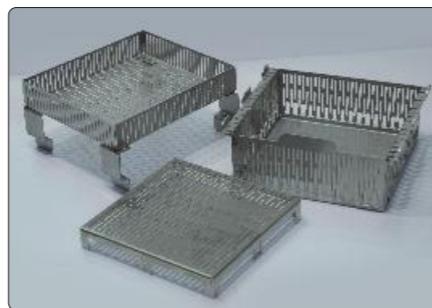
- Bidirectional real time communication with the weighing system
- Test setting menu with physical and descriptive sample parameters (initial weight, weight loss percentage, correction factor)
- Calibration menu to check and set the temperature and weight calibration for possible manual control of the test performance
- Test performance menu with simultaneous display of all the test data
- Internal database for up to 100 tests

SAFETY FEATURES

- Automatic door locking after 150 °C
- Automatic monitoring of closed door before test start

The UTEST ABA Asphalt Binder Analyzer is supplied complete with

- Double Sample Basket with Safety Cover
- Extraction Fork



Double Sample Basket



Dimensions	700x1000x1280 mm
Weight (approx.)	125 kg
Power	4,5 kW

SOLVENT RECOVERY

Product Code

UTAS-0040 Solvent Recovery Unit 10 lt/h Capacity, 220-240 V 50-60 Hz

Non-flammable solvent liquids used for the binder extraction test can be successfully recovered using the UTAS-0040 Solvent Recovery Unit.

The recovery unit consists of two stainless steel chambers, one for the dirty used solvent and the other for the cleaned recovered solvent. Solvent in the left-hand side chamber is distilled by an electrical heater and then passes through a water cooling system and drops into the second chamber ready for re-use. A temperature switch automatically stops the heating elements when the recovery process is completed. The unit is supplied complete with 10 m plastic tubing, tube clamps, sieve insert 0.6 mm opening and one lid.



The Solvent Recovery Unit is supplied complete with

- Plastic Tubing, 10 m
- Tube Clamps
- Sieve Insert, 0.6 mm
- Lid

Dimensions	400x320x650 mm
Weight (approx.)	17 kg
Power	1200 W
Max. Temperature	150 °C

THEORIC MAXIMUM DENSITY

Product Code

- UTAS-0045 Large Size Heavy Duty Vacuum Pyknometer (Yale) 10 lt
- UTG-0410 Vibro-Deaerator, Timer Controlled, 220-240 V 50-60 Hz
- UTGE-3530 Dual Stage Vacuum Pump 128 lt/min Capacity
- UTGE-3550 Vacuum Gauge, Ø 63 mm 1000 mbar manometer
- UTGG-2015 Filter Flask 2000 ml

Standards

ASTM D2041; EN 12697-5



The UTAS-0045 Vacuum Pyknometer (Yale Pyknometer) is used to determine the theoretical maximum specific gravity and density of non-compacted bituminous paving mixtures. The Vacuum Pyknometer is used together with a Vibra-Deaerator, Vacuum Pump, Vacuum Gauge and filter flask to complete the test set. Percent air voids in compacted bituminous mixtures and the amount of bitumen absorbed by the aggregates can also be calculated with the test set. The Vacuum Pyknometer is manufactured from transparent plastic.

Please see the relevant product data sheet for each item detailed specification.

UTAS-0045 Large Size Heavy Duty Vacuum Pyknometer is supplied complete with

- Vacuum Gauge
- Rubber Tube, 6.5 mm ID x 16.5 mm, 2 m long

External Dimensions	300x300x450 mm(UTAS-0045)
Capacity (approx.)	10 litres (UTAS-0045)
Weight (approx.)	7 kg (UTAS-0045)

LABORATORY MIXING

Product Code

- UTG-0130 Laboratory Mixer 10 L, 220-240 V 50-60 Hz
- UTG-0130/110 Laboratory Mixer 10 L, 110 V 60 Hz
- UTAS-0087 Heating Mantle for UTG-0130, 220-240 V 50-60 Hz
- UTAS-0087/110 Heating Mantle for UTG-0130/110, 110 V 60 Hz
- UTG-0131 Spare Bowl for UTG-0130
- UTG-0132 Spare Whisk for UTG-0130

Standards

EN 12697-35



UTG-0130 with UTAS-0087



UTG-0130

The UTG-0130 10 litre capacity Laboratory Mixer is designed for mixing of soil and asphalt samples to be used for mechanical tests as compaction, indirect tensile, Marshall etc. The mixing head rotates at speeds of 10 to 240 r.p.m. and the whisk from 20 to 480 r.p.m. The user can adjust rotation speed between given values easily by using a control knob fitted to the front panel.

The bituminous mixture must be prepared at the prescribed temperature according to the EN standard. For this reason the mixer can be equipped with thermostatically controlled heater.

The Heating Mantle (Isomantle heater) is fitted with a digital thermostatic controller and can easily be fitted to the UTG-0131 Mixing Bowl. The Isomantle heater is supplied complete with PT100 temperature sensor.

Heating Mantle should be ordered separately.

The Laboratory Mixer is supplied complete with

- Bowl, 10 Lt Capacity Stainless Steel
- Mixing Whisk

	UTG-0130	UTAS-0087
Dimensions	700x750x800 mm	300x300x350 mm
Weight (approx.)	75 kg	7 kg
Power	550 W	600 W



UTG-0132



UTG-0131



UTAS-0087

LABORATORY MIXING

Product Code

- UTAS-0095 Asphalt Mixer, 7.5 L, 220-240 V 50-60 Hz
- UTAS-0096 Spare Mixing Bowl, 7.5 L, for UTAS-0095
- UTAS-0097 Spare Mixing Whisk, for UTAS-0095

Standards

EN 12697-35

The mixer has a capacity of 7.5 liter and is designed for mixing of asphalt samples to be used for mechanical tests as compaction, indirect tensile, Marshall etc. is especially designed for the preparation.

The mixer does not include a heater.

The Laboratory Mixer is supplied complete with

- Bowl, 7,5 Lt Capacity Stainless Steel, 5,5 kg
- Mixing Whisk

Dimensions	450x570x720 mm
Weight (approx.)	75 kg
Power	550 W



MARSHALL MOULDS

Product Code

- UTAS-0061/E Marshall Compaction Mould for Impact Compactor with Wooden Pedestal, EN, 101.6 mm
- UTAS-0061/A Marshall Compaction Mould ASTM 4"
- UTAS-0062 Marshall Compaction Mould ASTM 6"
- UTAS-0064 Marshall Storage Plate for 6 pcs. for 4" (101.6mm) specimens

Standards

EN 12697-30; ASTM D1559, D6926, D5581; AASHTO T245

The Marshall Compaction Moulds are used to produce the Marshall specimens with automatic or manual compactors. The moulds are manufactured using galvanized steel. The Compaction Moulds consist of a base plate, mould body and a collar.

The Marshall Storage Plate is designed to store 6 pcs, 4" diameter Marshall specimens.



UTAS-0061/E



UTAS-0061/A



UTAS-0064

	Dimensions	Weight (approx.)
UTAS-0061/E-A	Ø120x170 mm	3,5 kg
UTAS-0062	Ø175x210 mm	6 kg
UTAS-0064	250x500x70 mm	6 kg

MARSHALL COMPACTION

Product Code

- UTAS-0070 Manual Marshall Compaction Assembly, 4", ASTM
- UTAS-0071 Marshall Compaction Hammer, 4" ASTM for UTAS-0070
- UTAS-0072 Wooden Compaction Pedestal, ASTM, for UTAS-0070 and UTAS-0076
- UTAS-0074 Marshall Compaction Hammer BS
- UTAS-0076 Manual Marshall Compaction Assembly, 6", ASTM
- UTAS-0077 Marshall Compaction Hammer, 6" ASTM, for UTAS-0076
- UTAS-0067 Marshall Steel Block, Ø102 mm dia. and 50 mm height,
- UTAS-0068 Marshall Steel Block, Ø154mm dia. and 50 mm height,

Standards

ASTM D6926, D5581; AASTHO T245 (only for UTAS-0071), BS-598

The UTAS-0070 and UTAS 0076 Manual Marshall Assemblies are used to prepare Marshall specimens manually.

The Compaction Assemblies consist of a Marshall Compaction Hammer and a Wooden Compaction Pedestal. The Pedestal supplied complete with steel plate, mould holder and hammer guide.

UTAS-0067 and UTAS-0068 Marshall Steel Blocks are used for initial heating of the foot of compaction hammer should be ordered separately.

The Manual Marshall Compaction Assemblies are supplied complete with

- Wooden Compaction Pedestal
- Hammer



	Dimensions	Weight (approx.)
UTAS-0070	350x400x1600 mm	50 kg
UTAS-0071	100x100x108 mm	8 kg.
UTAS-0072	350x400x1600 mm	42 kg
UTAS-0074	100x100x108 mm	8 kg
UTAS-0076	350x400x1600 mm	57 kg
UTAS-0077	100x100x108 mm	14 kg
UTAS-0067	110x110x60 mm	3,5 kg.
UTAS-0068	160x160x60 mm	7,5 kg

MARSHALL COMPACTION

Product Code

- UTAS-0082/E Automatic Marshall Impact Compactor with Wooden Pedestal, EN, 220-240 V 50 Hz, (60 Hz version is available upon request)
- UTAS-0082/E-S Automatic Marshall Impact Compactor with Wooden Pedestal and Soundproof Safety Cabinet, EN, 220-240 V 50 Hz
- UTAS-0067 Marshall Steel Block, Ø102 and 50 mm height

Standards

EN 12697-30, 12697-10, 12687-12

The UTAS-0082/E Automatic Marshall Compactor with wooden pedestal provides a uniform and even degree of compaction. The unit incorporates a compaction pedestal, comprising a laminated hardwood block secured to a concrete block by a 300 mm square x 25 mm thick steel plate. The mechanism lifts the 4535 g ± 15 g hammer and automatically releases it at the specified height of 457 ± 5 mm.

The conveniently positioned control panel comprises of start/stop button, emergency stop button and a direct reading counter used to set the required number of blows.

The apparatus stops automatically after the preset number of blows. The automatic Marshall compactor includes the laminate hardwood block and concrete block 450x450x200 mm.

The UTAS-0082/E is equipped with a motorized mould fixing mechanism which also raises the hammer to provide easy removing of the mould. With this feature, the user can easily release the mould and raise the rammer simultaneously.

Particular attention has been paid to operator safety by the inclusion of various in-built safety features.

UTAS-0067 Marshall Steel Block is used for Initial heating of the foot of compaction hammer and Marshall moulds should be order separately.

The standard model can be supplied with a safety/noise reduction cabinet. The cabinet is lined internally with soundproofing material to reduce sound level conforming to CE directives



Technical Specifications

Falling Height	457 ± 5 mm
Hammer Weight	4535 ± 15 g
Tamping Face Dia.	98,5 mm
Concrete Base Dimension	450x450x200 mm
Laminated Hardwork Block Dimensions	200x200x450 mm
Blows Frequency	50 Blows in 55 s to 60 s
Dimensions	550x550x1950 mm
Weight (approx.)	225 kg
Power	370 W

MARSHALL COMPACTION

Product Code

- UTAS-0082/A Automatic Marshall Compactor, for 4" dia. Specimens, ASTM, 220-240 V 50 Hz (60 Hz version is available upon request)
- UTAS-0082/A-S Automatic Marshall Compactor, for 4" dia. Specimens with Soundproof Safety Cabinet, ASTM, 220-240 V 50 Hz (60 Hz version is available upon request)
- UTAS-0084/A Automatic Marshall Compactor, for 6" dia. Specimens, ASTM, 220-240 V 50 Hz (60 Hz version is available upon request)
- UTAS-0084/A-S Automatic Marshall Compactor, for 6" dia. Specimens with Soundproof Safety Cabinet, ASTM, 220-240 V 50 Hz (60 Hz version is available upon request)
- UTAS-0067 Marshall Steel Block, Ø 102 and 50 mm height
- UTAS-0068 Marshall Steel Block, 152,4 mm dia. x 50,8 mm height

Standards

ASTM D 1559, D 6926, D 5581; AASHTO T245

Automatic, Marshall Compactors are designed to provide a stable and rigid mechanism is used for preparation of bituminous specimens for Marshall Stability tests.

UTAS-0082/A model Compactor is for compaction of 4" dia. specimens and UTAS-0084/A model Compactor is for 6" dia. specimens.

Both models feature a heavy-duty design, which stands up well to the constant jarring caused by the compaction process. The Compactors are equipped with a mould fixing mechanism which also raises the hammer to provide easy removing of the mould. With this feature, the user can easily release the mould and raise the rammer simultaneously.

The conveniently positioned control panel comprises of start/stop button, emergency stop button and a direct reading counter used to set the required number of blows. the operator can keep track of the number of blows on an LCD display..

The apparatus stops automatically after the preset number of Blows.

The standard models can be supplied with a safety/noise reduction cabinet. The cabinet is lined internally with soundproofing material to reduce sound level conforming to CE directives.



	UTAS-0082/A	UTAS-0084/A
Dimensions	550x550x1950 mm	550x550x1950 mm
Weight (approx.)	135 kg	145kg

MARSHALL COMPACTION

Product Code

- UTGE-0080 Marshall-CBR-Proctor Specimen Extruder, 30 kN Capacity

Standards

EN 12697-30, 13286-2, 13286-47; AASTHO T245, T134, T180, T193; ASTM D1559, D698, D1557, D1883; BS 598-107, 1377-4, 1924-2

The specimen extruder is designed to easily extrude specimens from Marshall, CBR, standard and modify Proctor Moulds. The capacity of the extruder is 30 kN. Supplied complete with a manual hydraulic jack and 2 pcs. adaptor to extrude specimens from 100mm (4"), 150 mm (6") inner diameter marshall, CBR standard and modified proctor, moulds.

Ram Travel	130 mm	Dimensions	280x280x520 mm
Screw Travel	90 mm	Weight (approx.)	28 kg



VIBRATORY COMPACTOR

Product Code

- UTS-0630 Vibratory Compactor Set, 220-240 V 50 Hz
- UTAS-0085 P.R.D. Split Mould and Base Plate

Standards

EN 12697-32, 12697-9, 12697-10

The UTS-0630 Vibratory Compactor Set is used to prepare test specimens of bituminous mixtures by using the vibratory compaction technique.

The UTS-0630 Vibratory Compactor Set consists of a Vibrating Hammer (220-240 V 50 Hz), Supporting Frame, 102 mm dia. Small and 145 mm. dia. Large Tamping Feet and 300 mm Shank.



P.R.D. (Percentage Refusal Density) Split Mould is split vertically on one side, attached to the base plate with clamp. Plated against corrosion.

The split mould and base plate should be ordered separately.

The set is also used for compaction of proctor and CBR soil specimens.



The Vibratory Compactor Set is supplied complete with

- Vibrating Hammer
- Supporting Frame
- Small Tamping Foot, 102 mm dia.
- Large Tamping Foot, 145 mm dia.
- Shank, 300 mm, long

Dimensions	510x300x1120 mm (complete set)
Weight (approx.)	75 kg (complete set)
Power	1150 W (vibrating hammer)

DURIEZ COMPRESSION TEST SETS

Product Code

- UTAS-0090 Duriez Compression Test Set, 80 mm dia.
- UTAS-0092 Duriez Compression Test Set, 120 mm dia.

Standards

NF P98-251-1/4; EN 12697-12 Method A and B

The test sets are used to determine the physical and mechanical properties of bituminous mixtures, especially for the water sensitivity of bituminous specimens. One set for preparing 80 mm. specimens, the second set for preparing 120 mm. specimens according to the maximum aggregate upper sieve size. All parts are made from steel protected against corrosion.

The compression test has to be performed with an electromechanical universal test machine such as UTM-8300 model machine (300 kN Electromechanical Universal Test Machine. UTM-8300 can also be used for compaction transaction acc. to EN 12697-12 (Method B) to prepare of the test specimens. See page 231.

According to EN 12697-12 (Method A and B), test specimens can also be compacted by using impact compaction or vibratory compaction. Automatic Marshall Compactor (UTAS-0082) for impact compaction acc. to EN 12697-30, Vibratory Compactor Set (UTS-0630) for vibratory compaction acc. to EN 12697-32. can be used. See page 256 and 257.

Upper and lower grooved pistons are used for cold mixes with bituminous emulsions



The test sets are supplied complete with;

- Mould
- Container
- Piston
- Upper and lower pistons
- Upper and lower grooved pistons
- 2 pcs Half spacers

MARSHALL STABILITY

Product Code

- UTAS-0052 Marshall Stability Test Machine with Proving Ring, 50 kN, 220-240 V 50-60 Hz
- UTAS-0052/110 Marshall Stability Test Machine with Proving Ring, 50 kN, 110 V 60 Hz
- UTAS-0057 Breaking Head (Stability Mould) 4"
- UTAS-0058 Breaking Head (Stability Mould) 6"
- UTAS-0059 Digital Dial Gauge with Bracket, 25x0.01 mm for UTAS-0057 and UTAS-0058,
- UTAS-0063 Indirect Tensile Splitting Device for Compacted Bituminous Samples 100 mm (4") dia.

Standards

EN 12697-34, 12697-23, 12697-12 (Method A);
ASTM D1559, D5581, D 6927; AASHTO T245

The UTAS-0052 50 kN capacity Marshall Stability Test Machine with proving ring is used to determine the maximum load and flow values of bituminous mixtures.

The UTAS-0052 comprises a robust and compact two column frame with adjustable upper cross beam. The unit is a bench mounted compression frame with motor and worm gear housed within the base unit. The mechanical jack raises the lower platen at a constant speed of 50.8 mm/min as required in the relevant standard. For safety, the up and down travel of the lower platen movement is limited by limit switches. Rapid adjustment of the platen is also provided using the control buttons on the front panel of the machine.

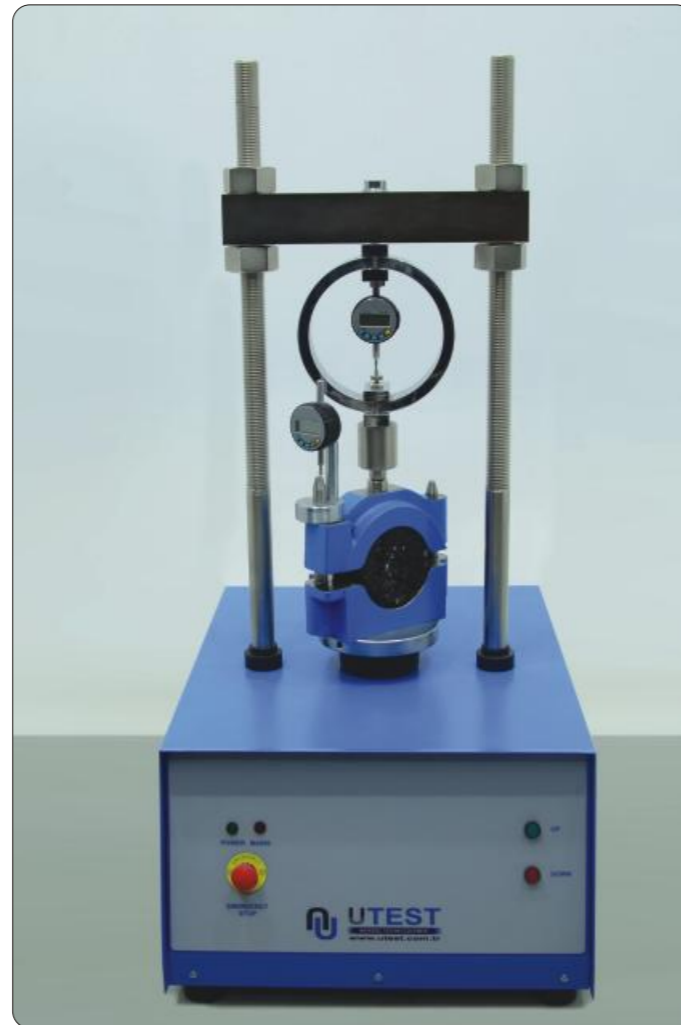
The measuring system consists of a 50 kN capacity load ring, digital flow meter (dial gauge) fitted to the breaking head. The UTAS-0052 Marshall Stability Machine is also suitable for testing 6" dia. specimens (152.4 mm) conforming to ASTM D5581.

The machine can be hand operated by a lateral hand wheel for calibration purposes; the hand wheel is supplied complete with the machine.

The UTAS-0052 Marshall Stability Test Machine is supplied complete with

- Load Ring, 50 kN
- Digital Dial Gauge with Bracket, 25x0.01 mm
- Hand Wheel for Manual Control
- Breaking Head, 4"

Dimensions	550x700x1200 mm
Weight (approx.)	103 kg
Power	1100 W



UTAS-0052

MARSHALL STABILITY

Product Code

- UTAS-0055 Marshall Stability Test Machine with Digital Readout Unit, 50 kN, 220-240 V 50-60 Hz
- UTAS-0055/110 Marshall Stability Test Machine with Digital Readout Unit, 50 kN, 110 V 60 Hz
- UTAS-0057 Breaking Head (Stability Mould) 4"
- UTAS-0058 Breaking Head (Stability Mould) 6"
- UTAS-0060 Linear Potentiometric Displacement Transducer, 25x0.001 mm with bracket for UTAS-0057 and UTAS-0058
- UTAS-0063 Indirect Tensile Test Jig for Compacted Bituminous Samples 100 mm (4") & 150 mm (6") Dia.

Standards

EN 12697-34, 12697-23, 12697-12 (Method A);
ASTM D1559, D5581, D 6927; AASHTO T245

The UTAS-0055 50 kN Capacity Automatic Marshall Stability Test Machine is used to determine the maximum load and flow values of bituminous mixtures.

The machine comprises of a robust and compact two column frame with adjustable upper cross beam. The unit is a bench mounted compression frame with motor and worm gear housed within the base unit. The mechanical jack raises the lower platen at a constant speed of 50.8 mm/min as required in the relevant standard. For safety, the up and down travel of the lower platen is limited the use of limit switches. Rapid adjustment of the platen is controlled using the up and down buttons on the front panel of the machine.

The measuring system consists of a 50 kN capacity strain gauge load cell fitted to the upper cross beam to read stability values, the 25 x 0.001 mm linear potentiometric displacement transducer fitted to the Breaking Head and two digital readout units (one for load and another for displacement) The UTAS-0056 Automatic Marshall Stability Machine is also suitable for testing 6" dia. specimens (152.4 mm) conforming to ASTM D5581.

The machine can be hand operated by a lateral hand wheel for calibration purposes; the hand wheel is supplied complete with the machine.

Platen Speed	50,8 mm/min
Capacity	50 kN

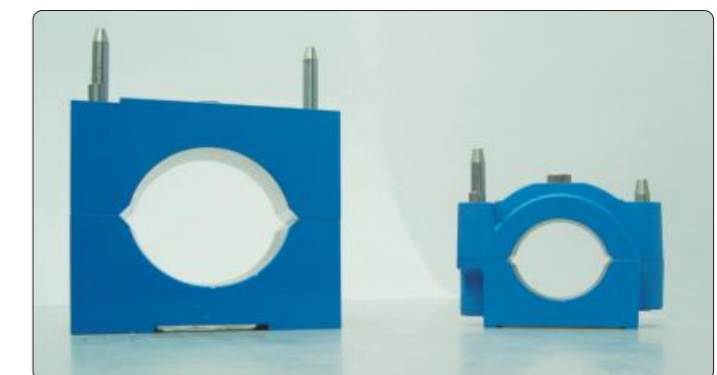
The UTAS-0055 Marshall Stability Test Machine is supplied complete with

- Load Cell, 50 kN
- Linear Potentiometric Displacement Transducer with Bracket, 25x0.001 mm
- Hand Wheel for Manual Control
- Breaking Head, 4"

Dimensions	550x700x1200 mm
Weight (approx.)	102 kg
Power	1100 W

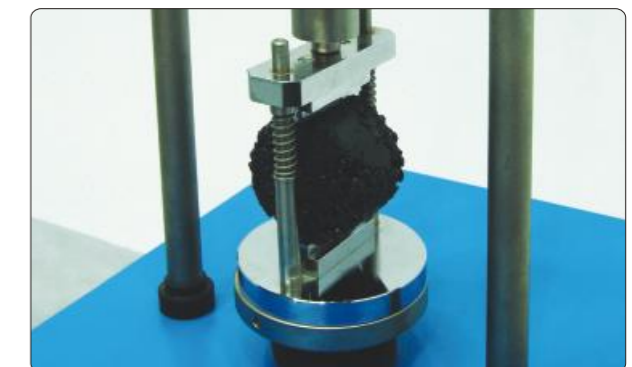


UTAS-0055



UTAS-0058

UTAS-0057



UTAS-0063

MARSHALL STABILITY

Product Code

- UTAS-0056 Automatic Marshall Stability Test Machine, 50 kN, 220-240 V 50-60 Hz
- UTAS-0056/110 Automatic Marshall Stability Test Machine, 50 kN, 110 V 60 Hz
- UTAS-0057 Breaking Head (Stability Mould) 4"
- UTAS-0058 Breaking Head (Stability Mould) 6"
- UTAS-0060 Linear Potentiometric Displacement Transducer, 25x0.001 mm with bracket for UTAS-0057 and UTAS-0058
- UTAS-0063 Indirect Tensile Splitting Device for Compacted Bituminous Samples 100 mm (4") Dia.

Standards

EN 12697-34, 12697-23, 12967-12 (Method A and Method B up to 51 mm/min); ASTM D1559, D5581, D 6927; AASHTO T245

The UTAS-0056 50 kN Capacity Automatic Marshall Stability Test Machine is used to determine the maximum load and flow values of bituminous mixtures.

The machine comprises of a robust and compact two column frame with adjustable upper cross beam. The unit is a bench mounting compression frame with motor and worm gear housed within the base unit. The speed of the lower platen can be adjusted between 6 mm/min to 60 mm/min using the BC100 Data Acquisition and Control Unit. For safety, the up and down travel of the lower platen is limited the use of limit switches. Rapid adjustment of the platen is controlled using the up and down buttons on the front panel of the machine. The machine can be hand operated by a lateral hand wheel for calibration purposes.

The measuring system consists of a 50 kN capacity strain gauge load cell fitted to the upper cross beam to read stability values and the 25 x 0.001 mm linear potentiometric displacement transducer fitted to the Breaking Head. The UTAS-0056 Automatic Marshall Stability Machine is suitable for testing 6" dia. specimens (152.4 mm) conforming to ASTM D5581.



UTAS-0056

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. One analog channel for load cell and one analog channel for displacement transducer exists.

BC100 has easy to use menu options. It displays all menu option listings simultaneously, allowing the operator to access the required option in a seamless manner to activate the option or enter a numeric value to set the test parameters. Its specimen setting sub-menu lists different specimen types including but not limited to cube, cylinder, block, beam, beam double upper bearers, cube splitting tensile, cylinder splitting tensile, paving block splitting tensile and kerb flexure. 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

- Automatically calculates flow and stability values
- Can make test with displacement and limited 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, 2 channels are active for Marshall test
- 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
- 10 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 (ask for compatible models)
- 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

Data Acquisition & PC Software

Marshall Test Software is developed for both EN 12697-34 and ASTM D5581 Marshall Tests. The software includes control of machine, acquisition of load and displacement data, saving them and generating reports.

The software accepts specimen diameter and height as an input parameter. It automatically calculates correction factor coming from the standarts respect to specimen size. The stability value is calculated regarding to this factor.

The software continously updates load and displacement until the end of test. When the test is completed, the sharpest slope of the graph is calculated. The point that this line crosses displacement axis is commented as an offset. This offset is subtracted from the displacement value at peak point and called as flow.

The report includes all these results for 9 samples. The user can see 9 of the results on the same screen for easy comparison. The software supports metric, SI and Imperial unit system.

- Foreign Language Support and Customizable User Interface
- Graphical data on the screen is refreshed simultaneously during test procedure
- Capable to Access and use previously done test data
- Able to edit test parameters of the testing equipment through Software
- Graphical outputs and reports can be saved as a MS Excel worksheet
- Maximum Flexibility to edit report and graph templates

The Automatic Marshall Stability Test Machine is supplied complete with

- Load Cell, 50 kN
- Linear Potentiometric Displacement Transducer with Bracket, 25 x 0.001 mm
- PC Software
- Connection Cable
- Hand Wheel for Manual Control
- Breaking Head, 4"



Platen Speed	6-60 mm/min
Capacity	50 kN
Dimensions	550x700x1200 mm
Weight (approx.)	103 kg
Power	1100 W

Asphalt and Road Quality Testing

SAMPLING by CORING

Product Code

- UTAS-0101 Core Drilling Machine
- UTGD-0330 Coring Bit for Asphalt 50 mm dia. x 400 mm length
- UTGD-0332 Coring Bit for Asphalt 75 mm dia. x 400 mm length
- UTGD-0334 Coring Bit for Asphalt 100 mm dia. x 400 mm length
- UTGD-0336 Coring Bit for Asphalt 150 mm dia. x 400 mm length

Standards

EN 12697-27

Compact and portable UTAS-0101 Core Drilling Machine is designed to cut cores up to 150 mm diameter from concrete, asphalt and similar hard construction materials. The machine comprises a vertical support column which carries the drill head/motor assembly. The motor assembly comprises a 6.5 Hp petrol engine. A ball screw mechanism enables close control of the drilling pressure and rapid return when drilling is completed. A water spraying assembly is mounted on the machine. The complete assembly is supplied on a rigid wheel mounted metal base frame with leveling and fixing facility during the operation.

Coring Bits should be ordered separately.



- 1- UTGD-0334 Coring Bit for Asphalt 100 mm dia. x 400 mm length
- 2- UTGD-0332 Coring Bit for Asphalt 75 mm dia. x 400 mm length
- 3- UTGD-0330 Coring Bit for Asphalt 50 mm dia. x 400 mm length

Dimensions	500x900x1100 mm
Weight (approx.)	95 kg
Power	6.5 Hp



SAMPLING by CORING

Product Code

- UTAS-0105 Core Drilling Machine on Trailer
- UTGD-0330 Coring Bit for Asphalt 50 mm dia. x 400 mm length
- UTGD-0332 Coring Bit for Asphalt 75 mm dia. x 400 mm length
- UTGD-0334 Coring Bit for Asphalt 100 mm dia. x 400 mm length
- UTGD-0336 Coring Bit for Asphalt 150 mm dia. x 400 mm length

Standards

EN 12697-27

Portable UTAS-0105 Core Drilling Machine is designed to cut cores up to 150 mm diameter from concrete, asphalt and similar hard construction materials. The machine comprises a vertical support column which carries the drill head/ motor assembly. The motor assembly comprises a 6.5 hp petrol engine. A ball screw mechanism enables close control of the drilling pressure and rapid return when drilling is completed. A water spraying assembly is mounted on the machine.

The drilling machine is installed in a trailer for fast and precise sampling on-site. 100 litre water tank provides continuous lubrication during drilling to save time. The two-wheeler taut liner trailer is fully equipped with brake lamps/hazard flashers/retro reflectors conforming to road traffic regulations. The trailer is designed with a space to be used for storing the core samples. The two fixing legs are robustly designed for improved stabilization.

Coring Bits should be ordered separately.

Dimensions	1600x2600x2000 mm
Weight (approx.)	300 kg
Power	6.5 hp



ASHALT TEMPERATURE MEASUREMENT

Product Code

- UTGT-1350 Hand Type Digital Thermometer, -50° C to 1350° C
- UTGT-1370 200 mm Hand-Held Penetration Probe for Temperature Measurement (Ø6mm), with 1.5m cable and connector, up to 1200° C, Type: OM07-K160-20 M 1K
- UTGT-1371 300 mm Hand-Held Penetration Probe for Temperature Measurement (Ø6mm), with 1.5m cable and connector, up to 1200° C, Type: OM07-K160-30 M 1K
- UTGT-1372 500 mm Hand-Held Penetration Probe for Temperature Measurement (Ø6mm), with 1.5m cable and connector, up to 1200° C, Type: OM07-K160-50 M 1K

Digital thermometer and penetration probes are used together for measuring the delivery and compaction temperatures of bituminous mixtures. Preferred penetration probe should be ordered with UTGT-1350.



ADHESION PROPERTY of AGGREGATE to BITUMEN

Product Code

UTAS-0112 Vialit Plate (Adhesion Test) Apparatus
 UTAS-0112/01 Steel Ball, 512gr, for UTAS-0112
 UTAS-0112/03 Mechanic Aggregate Deployment for UTAS-0112 for 100 chippings

Standards

EN 12272-3; NF P98-274-1

The UTAS-0112 Vialit Plate Apparatus is used to assess the adhesion property of aggregates to bitumen.

Supplied complete with a metal basement with three vertical pointed rods to hold the flat steel plate, 50 cm. high vertical rod with a slot at the upper end for the steel ball to drop, a 512 g steel ball, 6 metal test plates and a hand operated rubber wheel roller. The mechanic aggregate deployment should be ordered separately

The test plate, coated by bitumen on one face and spread with the aggregate chippings in a standard way is rolled using the roller and then placed on the three-point support base.

The steel ball drops three times from the slot, and the chippings that become loose after the three impacts are counted and checked.



UTAS-0112/03

The Vialit Plate (Adhesion Test) Apparatus is supplied complete with

- Flat Steel Plates, 6 pcs.
- Steel Ball, 512 g
- Rubber Wheel Roller, hand operated

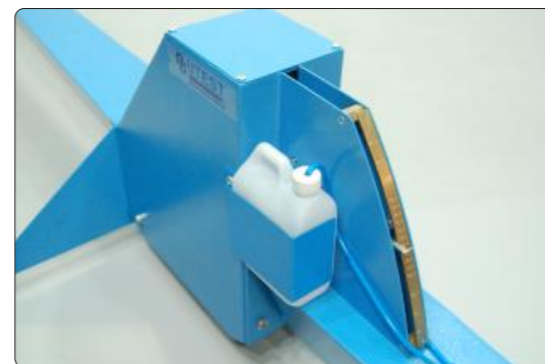
Dimensions	400x1400x400 mm
Weight (approx.)	45 kg

SURFACE IRREGULARLY

Product Code

UTAS-0115 Travelling Beam Device

The UTAS-0115 Travelling Beam Device is used to check for any irregularities in both concrete and bituminous road surfaces. A sensing unit comprising a wheel connected to an indicator provides a magnification of 4:1. Deviation of the surface from a straight-line is shown on a scale calibrated in increments of 2 mm in the 0-10 mm range and 5 mm increments in the 10-25 mm range. It comprises a manual dye marker which is used to mark irregular surface sections when found.



Dimensions	720x1600x500 mm (packed)
Weight (approx.)	55 kg

PENETRATION of BITUMINOUS MATERIALS

Product Code

UTAS-0120 Semi-Automatic Digital Bitumen Penetrometer 220-240 V 50-60 Hz
 UTAS-0120/110 Semi-Automatic Digital Bitumen Penetrometer 110 V 60 Hz
 UTAS-0121 Transfer Dish for UTAS-0120
 UTAS-0122 Sample Cup, Ø 55x35 mm, stainless steel
 UTAS-0123 Sample Cup, Ø 70x45 mm, stainless steel
 UTAS-0124 Penetration Needle, 2,5 g
 UTAS-0160 One-Quarter Scale Cone and Shaft, ASTM D 1403 and D 1831, for UTAS-0120 and UTAS-0126
 UTAS-0161 One-Half Scale Cone and Shaft, ASTM D 1403 and D 1831, for UTAS-0120 and UTAS-0126
 UTAS-0162 Penetrometer Cone ASTM D 217 (Optional Type) and ASTM D 937, for UTAS-0120 and UTAS-0126, Brass
 UTAS-0165 Resilience Ball Penetration Tool. ASTM D5329, for UTAS-0120 and UTAS-0126

Standards

EN 1426; ASTM D5; AASHTO T49

The UTAS-0120 Semi-Automatic Digital Bitumen Penetrometer is used to determine the penetration of bituminous samples under constant load, time and temperature. The Penetrometer consists of a cast iron base with coarse and fine levelling screws, a digital penetration measurement gauge 0.01 mm readability and a penetration timer unit

Start button of the penetration timer unit is used to release the plunger fitted with the needle to start the 5 seconds test.

A water bath (UTGE-4000 or UTGE-4050, 25±0,1°C) and a thermometer (IP38, ASTM 17C or 63C) required for the test should be ordered separately.

The Semi-Automatic Digital Penetrometer is supplied complete with

- Penetration Needle, 2,5g, 1 pieces
- Transfer Dish
- Sample Cup Ø 55x35 mm, 3 pieces, stainless steel

Dimensions	200x300x500 mm
Weight (approx.)	16 kg



UTAS-0165

UTAS-0162

PENETRATION of BITUMINOUS MATERIALS

Product Code

- UTAS-0126 Automatic Digital Bitumen Penetrometer, 220-240 V 50-60 Hz
- UTAS-0121 Transfer Dish for UTAS-0120
- UTAS-0122 Sample Cup, Ø 55x35 mm, stainless steel
- UTAS-0123 Sample Cup, Ø 70x45 mm, stainless steel
- UTAS-0124 Penetration Needle, 2,5 g
- UTAS-0160 One-Quarter Scale Cone and Shaft, ASTM D 1403, D 1831, for UTAS-0120 and UTAS-0126
- UTAS-0161 One-Half Scale Cone and Shaft, ASTM D 1403, D 1831, for UTAS-0120 and UTAS-0126
- UTAS-0162 Penetrometer Cone ASTM D 217 (Optional Type) and ASTM D 937, for UTAS-0120 and UTAS-0126, Brass
- UTAS-0165 Resilience Ball Penetration Tool. ASTM D5329, for UTAS-0120 and UTAS-0126

Standards

EN 1426; ASTM D5; AASHTO T49



The UTAS-0126 Automatic Electronic Penetrometer is used for determination of the needle penetration according to EN 1426, ASTM D5 and AASHTO T49 standards. The penetration depth of the needle is determined with a pulse type electronic measuring system, which is separated from the plunger during the test, this allows the free guidance of the plunger which virtually eliminates friction during the test.

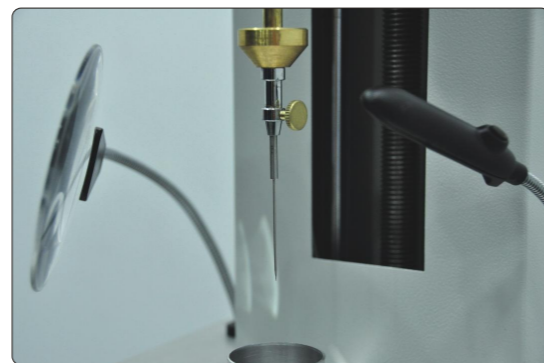
Before each start of the test the measuring system automatically resets, and then the penetration needle moves down to the sample by using the electric drive, the needle position can be finely adjusted by using the joystick located on the front panel. A magnifying glass and an ultra-bright LED lamp are supplied to assist the operator; the plunger is then automatically released onto the sample and raised automatically after the testing period. The test result is displayed on the digital display. The plunger can easily be removed to calibrate its weight.

A water bath (UTGE-4000 or UTGE-4050, 25±0.1°C) and a thermometer (IP38, ASTM 17C or 63C) required for the test are ordered separately

The Automatic Electronic Penetrometer is supplied complete with

Technical Specifications

Measuring Range	0-50 mm
Resolution	0.01 mm
Test Load	100 g (plunger 97.5 g + 2.5 g penetration needle)
Test Time	5 seconds (adjustable from 0.1 to 9999 sec.)
Dimensions	270x480x750 mm
Weight (approx.)	24 kg
Power	75 W



SOFTENING POINT / RING & BALL METHOD

Product Code

- UTAS-0128 Automatic Ring and Ball Apparatus, 220-240 V 50-60 Hz
- UTAS-0131 Brass Ring, with Steel Ball and Ball Centering Guides, 2 pcs.each
- UTAS-0133 Ring Holder and Assembly for UTAS-0128
- UTGG-1335 Borosilicate Glass Beaker 800 ml
- UTGT-1305 Glass Thermometer Max. 110°C
- UTGT-1315 Glass Thermometer Max. 250°C
- UTGT-2050 ASTM 15C Thermometer -2 +80°C (IP60C)
- UTGT-2055 ASTM 16C Thermometer +30 + 200°C (IP61C)

Standards

EN 1427; ASTM D36; AASHTO T53

The UTAS-0128 Automatic Ring and Ball Apparatus is an innovative microprocessor controlled automatic tester which is used to determine the softening point of bituminous materials using water or glycerol as the heating fluid.

The softening point determines a disk of the sample held within a horizontal ring is forced downward a distance of 25.4 mm under the mass of a steel ball as the sample is heated at a prescribed rate in a water or glycerine bath.

The softening point is taken by two suitably positioned light barriers and the temperature is measured by a PT100 sensor. A uniform temperature distribution in the vessel is maintained by a magnetic stirrer, equipped with an adjustable speed control system and the temperature gradient is strictly maintained during the test by the electronic system conforming to the relevant standards.

A software permits to select the test method and the test parameters, run the test automatically, store, retrieve and print data, diagnose and calibrate the instrument. Additional cooling system, permits to quickly cool down the sample allowing to handle the glassware and to perform number of tests during a day by reducing the dead times between consequent analysis.

The apparatus consists of a heater, cooling system, electric lifting system, and magnetic stirrer with speed control, temperature probe, glass beaker, ring and ball support, brass ring with steel ball and ball centering guides (2 pcs. each), light barrier system, microprocessor system and large graphic display with touch screen, RS 232 C port for PC or printer.



MAIN FEATURES

- Pyrex beaker 800 cc capacity for sample heating.
- Microprocessor control with automatic programmable test sequences for water or glycerol
- RS 232 serial port for connection to PC or printer
- Colour large TFT graphic display with touch screen
- Electric lifting system
- PID controlled heating system
- Cooling system with solenoid valve control
- Magnetic stirrer with adjustable speed
- Digital light barrier system determines exact softening point of bituminous sample
- Software controlled system allows select test parameters, store and retrieve test results.

FIRMWARE

- Date/Time, operator name, test number
- Test parameters conforming the type of test: 80°C and 80-150°C
- Preheating temperature and thermocouple calibration for measuring the heater temperature
- Magnetic stirrer speed adjustment from 10 to 150 rpm.
- Baud rate selection for PC and for printer

SAFETY FEATURES

- Heater is automatically shut down at the end of the test cycle and cooling media and a solenoid valve is automatically opened by the controller.
- Automatic test interruption when there is a probe failure or when the probe is not positioned properly



Dimensions	530x300x280 mm
Weight (approx.)	16 kg
Power	750 W

Bitumen and Bituminous Binders

SOFTENING POINT / RING & BALL METHOD

Product Code

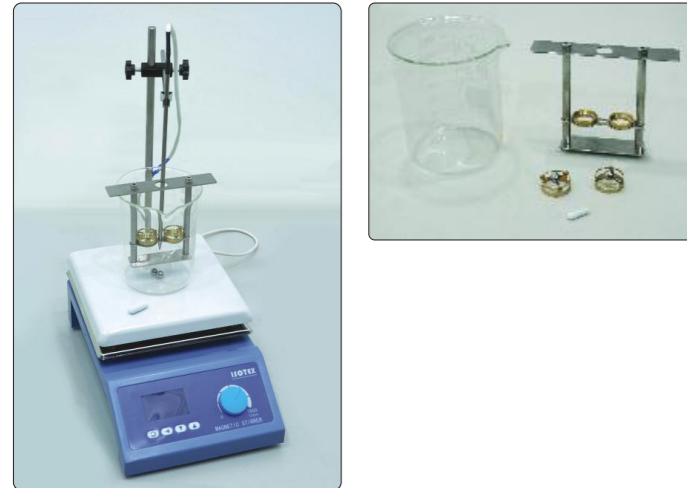
UTAS-0130	Ring and Ball Test Set, 220-240 V 50-60 Hz
UTAS-0130/110	Ring and Ball Test Set, 110 V 60 Hz
UTD-1410	Hot Plate with Magnetic Stirrer
UTAS-0131	Brass Ring, with Steel Ball and Ball Centering Guides, 2 pcs.each
UTAS-0132	Ring Holder and Assembly for UTAS-0130
UTGG-1330	Borosilicate Glass Beaker 600 ml
UTGT-1305	Glass Thermometer Max. 110°C
UTGT-1315	Glass Thermometer Max. 250°C
UTGT-2050	ASTM 15C Thermometer -2 +80°C (IP 60C)
UTGT-2055	ASTM 16C Thermometer +30 + 200°C (IP 61C)

Standards

EN 1427; ASTM D36; AASHTO T53

The UTAS-0130 Ring and Ball Test Set is used for determining the softening point of bituminous materials by ring and ball method.

If required, Glass Thermometer UTGT-1305, UTGT-1315, ASTM 15C or 16C Thermometer should be ordered separately.



The Ring and Ball Test Set is supplied complete with:

- Hot Plate with Magnetic Stirrer
- Ball Centering Guides, 2 pcs.
- Steel Balls, 9.5 mm dia., 2 pcs.
- Borasilicate Glass Vessel Beaker 600ml
- Brass Rings, 2 pcs.
- Thermometer, max 110°C
- Ring Holder and Assembly

Dimensions	280x400x200 mm (packed)
Weight (approx.)	4 kg
Power	650 W

WATER CONTENT of BITUMINOUS MATERIALS

Product Code

UTAS-0135	Water in Bituminous Materials Test Set (Dean-Stark Method) 220-240 V 50 Hz
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Standards

ASTM D95, D244; AASHTO T55, T59; IP 74/77; CNR No.101; NLT 123



The UTAS-0135 test set is used for determining the water content of bituminous materials. The test is based on distilling the sample with a volatile solvent. The material to be tested is heated under reflux with a water immiscible solvent, which distills together with the water in the sample. Condensed solvent and water are continuously separated in a trap, the water settles in the graduated section of the trap, and the solvent returns to the still.

Test Set Consists Of;

- Electric Heater with Thermo Regulator
- Glass Condenser
- Glass Receiver
- Glass Still, 10 ml

Dimensions	200x200x450 mm
Weight (approx.)	4 kg
Power	250 W

BREAKING POINT of BITUMINOUS MATERIALS

Product Code

UTAS-0137	Fraass Breaking Point Apparatus
UTAS-0138	Stainless Steel Plaque, Frass Apparatus (pack of 10)
UTAS-0139	Dry Ice Maker

Standards

EN 12593

The UTAS-0137 Breaking Point Apparatus is used to determine the breaking point of solid and semisolid bitumen.

The Fraass Breaking Point is the temperature at which bitumen first becomes brittle, as indicated by the appearance of cracks when a thin-film of the bitumen on a metal plaque is cooled and flexed in accordance with specified conditions.

The apparatus consists of stainless steel plaque, cooling and bending apparatus, thermometer IP 42C (-38°C/+30°C), plate and stand.



UTAS-0137

UTAS-0139

Dimensions	UTAS-0137	100x100x300 mm
	UTGE-0139	400X500X650 mm

Weight (approx.)	UTAS-0137	3 kg
	UTGE-0139	20 Kg

EFFECT of HEAT and AIR on MOVING FILM of BITUMEN

Product Code

UTAS-0140/A	Bitumen Oven for Rolling Thin-Film Oven Test (RTFOT), ASTM 220-240 V 50-60 Hz
UTAS-0140/E	Bitumen Oven for Rolling Thin-Film Oven Test (RTFOT), EN 220-240 V 50-60 Hz
UTAS-0142	Spare Glass Container for UTAS-0140
UTGE-3572	Air-Drying Unit for UTAS-0140

Standards

EN 12607-1; ASTM D2872; AASHTO T240

UTAS-0140 Bitumen Oven is used for determination of the resistance to hardening of semisolid asphaltic materials/ bitumen or bituminous binders under the combined effects of heat and air with the rolling thin-film oven test (RTFOT) method.

The Internal chamber of UTAS-0140 Bitumen Oven is manufactured from stainless steel, insulated with fiberglass or similar, the door has a symmetrically located window.

The oven has a programmable temperature controller which works inPID mode and digital display system. A temperature sensor is used instead of the ASTM 13C thermometer. The temperature can be read from the digital unit placed on the oven. Over temperature controlled by a mechanic switch. Conforming to the CE Directives.

Air Compressor and Air-Drying Unit (UTGE-3572) should be ordered separately. Maximum pressure should not exceed 2 bar when an air compressor is used.



UTGE-3572

The Bitumen Oven for RTFOT is supplied complete with

- Glass Containers, 8 pcs.

Dimensions	800x700x750 mm
Weight (approx.)	62 kg

Bitumen and Bituminous Binders

EFFECT of HEAT / AIR and LOSS on HEATING

Product Code

- UTAS-0145 Bitumen Oven for Thin Film Oven Test (TFOT method) and Loss on Heat Test 220-240 V 50-60 Hz
- UTGT-2045 Thermometer 155 °C to 170 °C with 0.5 °C division ASTM 13C (IP 47C)
- UTAS-0146 Rotating Shelf Ø 250 mm for Loss on Heating Test
- UTGH-1425 Sample Cup Aluminium Ø 55x35 mm for Loss on Heating Test, 9 pcs.
- UTAS-0148 Rotating Shelf for Thin Film Oven Test
- UTGH-1399 Sample Cup, Aluminium, Ø 140x9.5 mm for Thin Film Oven Test (TFOT) 4 pcs.

Standards

EN 12607-2,13303; ASTM D6, D1754; AASHTO T47, T179; BS 2000

UTAS-0145 Bitumen Oven is used for determining the loss in mass, of oil and asphaltic / bituminous compounds when heated with the loss on heating test method or the effect of heat and air on semisolid asphaltic / bituminous materials with the thin film oven test (TFOT) method.

The internal chamber of the UTAS-0145 Thin Film Bitumen Oven is made of stainless steel and the door has a panel window.

Oven has a working temperature ambient to 200 °C , digital PID controller and circulation fan.

Rotating shelf and sample cups should be ordered separately according to the test type.



UTAS-0146



UTAS-0148

Dimensions	910x800x550 mm
Weight (approx.)	60 kg

VISCOSITY of CUTBACK BITUMINOUS BINDERS and EMULSIONS

Product Code

- UTAS-0200 Digital Standard Tar / Efflux Viscometer, 220-230 V 50-60 Hz
- UTAS-0202 Go/Not Go Gauge for 10 mm Orifice, for UTAS-0208
- UTAS-0204 Go/Not Go Gauge for 4 mm Orifice, for UTAS-0210
- UTAS-0206 Go/Not Go Gauge for 2 mm Orifice, for UTAS-0212
- UTAS-0208 Spare Cup 10 mm dia. for UTAS-0200
- UTAS-0210 Spare Cup 4 mm dia. for UTAS-0200
- UTAS-0212 Spare Cup 2 mm dia. for UTAS-0200
- UTGT-2010 Thermometer IP 8 C, 0 to 44°C
- UTAS-0216 100 ml Cylinder with Graduation at 20, 25 and 75ml
- UTAS-0218 Light Mineral Oil for UTAS-0200,5lt

Standards

EN 12846-1, 12846-2; IP 484



The UTAS-0200 Digital Standard Tar / Efflux Viscometer is used for determining the viscosity of cutback fluxed bituminous binders and bituminous emulsions. The Viscometer consists of a tank fitted with a thermostat, a rheostat, an agitator, an immersion heater to heat the water to the required temperature and a cooling coil for connection to the water supply. Temperature is monitored with a thermometer capable of measuring in the 0-45°C range.

The UTAS-0200 is supplied with a metal cup cover with stopper holder. Cups, thermometers and 100 ml cylinder with graduation at 20 ml, 25 ml and 75 ml should be ordered separately.

Required Cup Sizes According to Different Standards:

- EN : 2, 4 and 10 mm dia.
- BS : 10 mm dia.
- IP / NF: 10 and 4 mm dia.

The Digital Efflux (Standard TAR) Viscometer is supplied complete with Metal Cup Cover with Stopper

Dimensions	262x262x550 mm
Weight (approx.)	10 kg
Power	300 W

ENGLER VISCOMETER

Product Code

- UTAS-0250 Digital Engler Viscometer, 220-240 V 50-60 Hz
- UTAS-0252 Engler Viscosity Thermometer, 18-28°C, ASTM 23C
- UTAS-0254 Engler Viscosity Thermometer, 39-54°C, ASTM 24C
- UTAS-0256 Engler Viscosity Thermometer, 95-105°C, ASTM 25C
- UTGT-2005 IP 76C Thermometer, 10-55°C, 0.5°C Divisions
- UTAS-0260 Kohraush Calibration Flask, 200 ml
- UTAS-0262 Strainer No. 50, ASTM

Standards

ASTM D1665; AASHTO T54; BS 2000; CNR No. 102; NF T66-020



The UTAS-0250 Digital Engler Viscometer is used for determining the viscosity of tars and their fluid products. Apparatus consists of a contact thermo regulator and a stirring device.

Dimensions	265x265x550 mm
Weight (approx.)	10 kg
Power	300 W

SAYBOLT VISCOSITY

Product Code

- UTAS-0300 Saybolt Two-Tube Digital Viscometer, 220-240 V 50-60 Hz
- UTAS-0302 Filter Funnel with Wire Mesh and Clip for UTAS-0300
- UTAS-0304 Withdrawal Tube for UTAS-0300
- UTAS-0306 Saybolt Viscosity Thermometer Set for UTAS-0300, 6 pcs.
- UTAS-0308 Saybolt Viscosity Flask, glass, 60 ml
- UTAS-0310 Heat Transfer Oil for UTAS-0300, 5 lt.

Standards

ASTM D88; AASHTO T72

The UTAS-0300 Saybolt Viscometer is used to determine empirical measurement of Saybolt Viscosity of petroleum products at specified temperatures.

The viscometer can be used for temperatures between 21 to 99 °C (70 to 210 °F) The viscometer includes water-oil bath, stirrer, cooling coil, electric heater with digital thermo regulator, furol orifice, universal orifice, thermometer support and 2 X 60 ml glass saybolt viscosity flask.

Viscosity Thermometer set consists of 6 thermometers with the temperature ranges; 19 to 27°C, 34 to 42°C, 49 to 57°C, 57 to 65°C, 79 to 87°C (250 mm length) and 95 to 103°C where each thermometer with 0.1°C subdivisions.

Filter funnel, withdrawal tube and thermometer set should be ordered separately.



The Saybolt Two-Tube Digital Viscometer is supplied complete with

- Universal Orifice
- Furol Orifice
- Thermometer Support
- Heat Transfer Oil, 5 lt
- Key
- Saybolt viscosity flask, glass, 60 ml,2pcs.



Dimensions	450x300x550 mm
Weight (approx.)	10 kg
Power	750 W

Bitumen and Bituminous Binders

FLASH POINT and FIRE POINT

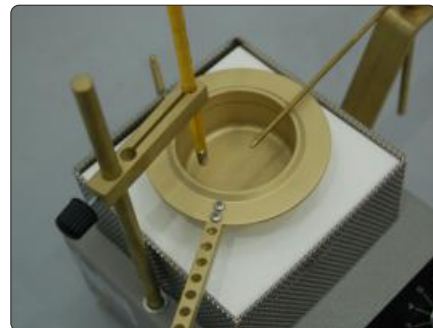
Product Code

UTAS-0350 Cleveland Flash Tester, 220-240 V 50-60 Hz
 UTGT-2040 Thermometer IP28C, -6 +400°C

Standards

EN 22592; ASTM D92; AASHTO T48; IP 36/67

The UTAS-0350 Cleveland Flash Tester is used to determine the flash and fire point of petroleum products. It consists of a brass cup mounted on an electric heater with a temperature controller and a thermometer. Conforming to the CE European Directive, the unit is supplied complete with a double line-fuse, Hot plate control apparatus and a thermometer -6°C to +400°C.



The Cleveland Flash Tester is supplied complete with

- Brass Cup
- Thermometer, -6°C +400°C

Dimensions	250x300x250 mm
Weight (approx.)	5 kg
Power	600 W

FLASH POINT

Product Code

UTAS-0360 TAG Open Cup Flash Point Tester, 220-230 V 50-60 Hz
 UTGT-2065 Thermometer ASTM 33C -38 +42°C
 UTGT-2030 Pensky-Martens/TAG Thermometer ASTM 9C -5 +110°C
 UTGT-2070 Thermometer ASTM 35C +90 +170°C

Standards

ASTM D1310, D3143

The UTAS-0360 TAG Open Cup Flash Point Tester is used for determination of flash points of liquids having a flash point between -18 and 165°C, fire points up to 165°C and cutback asphalts with flash points of less than 200°F (93°C).

The test set consists of an electric furnace with electronic controller of heating power, flame rotating ignition device (LPG supply required), glass cup, insulating plate, support and clamp for thermometer, gauge, stainless steel frame and double-line fuse.

Thermometers should be ordered separately.



Dimensions	250x170x400 mm
Weight (approx.)	4 kg
Power	600 W

DUCTILITY

Product Code

UTAS-0400 Ductility Testing Machine, 220-240 V 50-60 Hz
 UTAS-0420 Ductility Testing Machine with Cooling Unit, 220-240 V 50-60 Hz
 UTAS-0430 Force Ductility Testing Machine, EN 13589, 220-240 V 50-60 Hz
 UTAS-0402 Ductility Briquette Mould, ASTM D113 and AASHTO T51
 UTAS-0404 Ductility Mould Base Plate
 UTAS-0406 Ductility Mould, ASTM D6084, AASHTO T300 and EN13589 (force measurement), Brass
 UTAS-0408 Ductility Mould, EN 13398

Standards

UTAS-0400 and
 UTAS-0420 : EN 13398; ASTM D113, D6084; AASHTO T51
 UTAS-0430 : EN 13589, 13398, 13703; ASTM D113, D6084; AASHTO T51, AASHTO T300

Dimensions	300x1850x550 mm
Weight (approx.)	80 kg
Power	1000 W



UTAS-0400



Ductility Moulds



UTAS-0430

The UTAS-0400 Ductility Testing Machine is used to determine the ductility of bituminous materials in a briquette mould by measuring the breaking elongation at a constant speed of 50 mm/min. It is designed for testing 4 specimens simultaneously. The internal tank is made of stainless steel. The bath is fitted with an immersion heater in order to obtain (in normal conditions), the 25°C test temperature.

Each machine comprises speed control and water circulator to maintain the homogenous water temperature.

The UTAS-0420 Ductility Testing Machine with Cooling Unit has the same specifications with UTAS-0400 Ductility Testing Machine but with an additional cooling unit and it is not possible to convert UTAS-0400 to UTAS-0420.

UTAS-0430 Force Ductility Testing Machine has 4 loadcells. The accuracy of loadcells are ±0,1N with a maximum capacity of 300 N. The UTAS-0430 has a cooling unit

UTAS-0430 model is equipped with BC 100 TFT Graphic Display Automatic Control and Data Acquisition Unit. Failure condition can be downloaded to the unit. Speed can be set and load-displacement curves are drawn through the software.

- Elongation measurement through motor encoder.
- 4 simultaneous load measurement with 18 bit resolution.
- Speed control with servo AC motor between 0,01 to 100 mm/min.
- Ethernet connection for computer interface.

Moulds and mould base plates should be ordered separately for all type machine.

Bitumen and Bituminous Binders

VOLATILE CONSTITUENTS in CUTBACK ASPHALTIC PRODUCTS

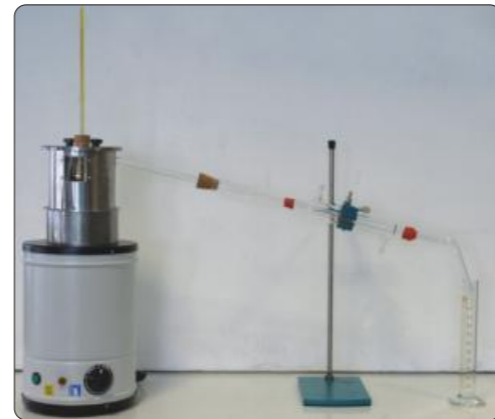
Product Code

UTAS-0500 Apparatus for Distillation of Cutback Asphalt
 UTGT-2025 High Distillation Thermometer, Range-2 +400°C, ASTM 8C

Standards

ASTM D402; AASHTO T78

The UTAS-0500 is used for the examination of cut-back asphaltic materials by the distillation test. The apparatus consists of a distillation flask, condenser, adapter, shield, electric heater with thermoregulator, cylinder receiver, thermometer -2 +400°C shield and flask support.



Dimensions	300x300x600 mm
Weight (approx.)	6 kg

MEASURE THE DENSITY of THIN ASPHALT & CONCRETE LAYERS

Product Code

Model 4640 B Thin Layer Density Gauge

Model 4640-B features patented technology to measure the density of thin asphalt and concrete layers from 2.5 to 10 cm thick (1 to 4 inches) without influence from underlying material. The 4640-B is specified by many state DOTs, government agencies and contractors as the best test method for determining the density of bituminous overlays.

Eliminates the need for nomographs and manual corrections: Variations in the density or composition of the base material do not affect the test results. No field calculations or charts are needed.

Operator selected depth of measurement: Enter the thickness of the overlay into the gauge memory and then accurately measure the overlay density (compaction) without influence from the underlying material.

Data storage is computer compatible: Store up to 750 readings by location and project number. Transfer stored readings to a printer or computer via RS232 interface. Additional site information can also be stored with each test.

The 4640-B meets or exceeds all applicable ASTM Standards.

Calibration: The Troxler 4640-B calibration process is unique. Your test results will improve and job penalties can be eliminated. For special materials, up to 11 field calibrations can be performed and stored.

User friendly: The operator will find the 4640-B very easy to use. It is a menu driven gauge, prompting the operator through the test procedure.



Mechanical Specifications

Case: Colored polycarbonate top shell with aluminum cast base
 Operating Temp: Ambient : -10 to 70°C (14 to 158°F)
 Surface : 175°C (350°F)

Storage Temperature: -55 to 85°C (-70 to 185°F)
 Gauge Size (excluding handles): 472 x 231 x 158 mm (18.6 x 9.1 x 6.2 inches)
 Gauge Height (including handles): 240 mm (9.5 inches)
 Weight: 13.5 kg (29.7 pounds)
 Shipping Weight: 40.8 kg (90 pounds) w/transport case

Radiological Specifications

Gamma Source : 8 ±1mCi Cesium - 137
 Source Encapsulation : Stainless Steel
 Shielding : Tungsten and lead
 Surface : Dose Rates 5 mrem/hour max. top and sides of gauge, 15 mrem/hour max. bottom of gauge, gamma in shield position

Calibration Specifications

Accuracy of Density Standards : ±0.3%
 Calibration Range : 1600-2700 kg/m³ / 100-170 pcf density

Field Data Conversion:

4640-B contains a microprocessor providing direct reading in engineering units in pcf, kg/m³ or g/cm³; no calculation is required.

Electrical Specifications

Stored Energy : 30 watt hours
 Battery Recharge Time : 14-16 hours (automatic shutoff)
 Battery Recharge : 110/220V, 50-60 Hz or 12-14 VDC
 Power Consumption (average) : 0.16 watt/hours

Readout (LCD) Liquid Crystal Display - 4 x 6 alpha numeric
 Battery packs are fully protected against overcharge and overdischarge. Provided with RS232 interface. Capable of operation with D size batteries for emergency use.

Special Functions:

Automatic standard count comparison and storage. Determination of count time for selected precision. Field offsets of density. Field calibration for special asphalts. Calculator mode with storage. Self-test and service programs: Display, Keypad and Ram Test; GM Tube Test; Statistical Stability and Drift Test.

Standard Accessories:

Supplied with the Model 4640-B: air gap fixture, 1" magnesium block, AC battery charger, DC charger cord, transport case

Optional Accessories:

PN 021140 Radiation Sign Kit, PN 102866 Leak Test Kit,

NON-NUCLEAR ASPHALT DENSITY GAUGE

Product Code

UTAS-0600 Non-Nuclear Asphalt Density Gauge

Standards

EN 61000-4-2, EN 61000-4-3, EN 61000-4-8

Non-Nuclear Asphalt Density Gauge is used for detects density of Asphalts specimens with non nuclear method. UTAS-0600 is equipped with a touch screen and user friendly graphical menu interface, running Microsoft Windows silently in the background for flowless operation, easy software are upgrades and enhanced user support.



The instrument general specifications are;

- Full colour graphics driven interface, 480 x 640 VGA touch screen display with LED backlight for easy visibility.
- Displays GPS status, available battery voltage, low battery and date/time,
- Rugged case design made from aluminum, powder-coated gloss black with orange reflective vinyl graphics increasing driver awareness to road workers at night
- Data Management Feature, quickly access, can be downloaded and deleted project data,
- Required files can be downloaded to UTS-1280 via. USB,
- Fast, reliable, accurate, and repeatable in real time, User Friendly, in-process, cost effective tool for any user,
- The most important point is; Non-Nuclear means no Badges or Licences and no storage or transport concerns.

OPERATIONAL FEATURES

- **Display:** Full color graphics driven user interface, 480x640 VGA touch screen display with LED backlight for easy visibility in daylight or dark situations.
- **Status Bar:** Displays GPS status, Data Save status, battery voltage, low battery and date and time
- **Project Details:** Stores up to 20 projects with details,
- **Mix Details:** Stores up to 20 mixes, details include (MTD, Mix Name, Stone Size, Depth, Offset, Operator Name)
- **Data Logging:** When enabled, stores all measurements taken in single or average modes, (Status Bar Icon)

- **Reports:** Easily download data to be imported into Excel
- **GPS Control:** When activated will display latitude and longitude positions, number of satellites the gauge is connected to as well as the UTC date and time, also available in UTM format. GPS information will store with each measurement when Data Save and GPS feature is enabled, (Status Bar Icon)
- **Update Software:** One touch upload of new software using a USB memory stick
- **Data Management:** Quickly access, download or delete your project data
- **Set Time & Date:** Quick time and date setup, MM/DD/YY and DD/MM/YY formats
- **Units:** Interchangeable settings for Density (kg/m³, lb/ft³), Temp (°C, °F), Depth (in, mm) and Stone Size (in, mm)
- **Standardization:** While gauge is still in the case, a quick one touch measurement will insure the gauge is still in proper working mode
- **Calculator:** Built in four function calculator
- **Enhanced Customer Support:** Diagnostic screen to aid in factory support
- **User Programmable Target Density:** Used for calculating % compaction
- **User Changeable Battery:** Easily change batteries in the field

Operational Specification	
Mode	
• Single	Reading time less than five (5) seconds. Stores Data
• Average	Averages five (5) readings and stores data including date and time. Stores thousands of records
• Continuous	Instantaneous density readings.
• Segregation	Identifies variations in material density associated with segregation.
Function	
• Density	% Compaction
• Integrated Temperature Sensing	Real time temperature display 0° F to 350 °F [-17.7° C to 177.6° C]
Calibration Mode	
• Normal	Correlation offset to cores
Measurement Specification	
• Sensing Area	11 in. [27.9cm] dia. base allows optimum measurement on fine and coarse material types.
• Measurement Depth	User selected and adjustable from 1 in. to 4 in. (25mm to 100mm)
• Measurement Display	Density, % Compaction, Surface Temperature, Mix Name & Project Name
Mechanical Specification	
• Unit Weight	6.44kg [14.2 lbs]
• Unit Dimensions	27,9 cm x 27,9 cm x 30,4 cm [11"x11"x12" High] with handle extension 73,6 cm High [29"]
• Shipping Weight w/Case	19,27 kg [42,5 lbs]
• Shipping Dimensions	63,5 cm x 50,8 cm x 35,5 cm [25" x 20" x 14"]
Electrical Specification	
• Microprocessor Controlled	
• CE Mark	Complies with EN 61000-4-2, 61000-4-3, 61000-4-8
• Battery	14.0 Amp-hr NiMH, 7.2V
• Recharge Time	4 hours
• Battery Charger	Self Contained CE & UL Certified Universal AC Charger, DC Charger
• Computer Ports	1 USB Port



Rock Mechanics

Testing Systems

Rock mechanics is the theoretical and applied science about the mechanical behavior of rock and rock masses as well as their reaction to the force fields of their physical environment. It also deals with the application of the principles of engineering mechanics to the design of the rock structures generated by mining, drilling, reservoir production or civil construction activity, such as tunnels, mining shafts, underground excavations, open pit mines, oil and gas wells, road cuts, waste repositories and other structures built in or made of rock. It also includes the design of reinforcement systems such as rock bolting patterns.

Testing of rocks mainly aims to simulate stress conditions that a rock sample is exposed in nature and to get necessary parameters such as stress, strain, elastic modulus, Poisson's ratio properties to evaluate specimen.

In the rock mechanics section, UTEST Testing Equipment is basically grouped in three main headings.

- Sample Preparation
- Strength and Deformability Tests
- Classification Tests

SAMPLE PREPARATION

Coring	281
Core Trimmer & Cut-Off	282
Cutting / Grinding	282-284

STRENGTH & DEFORMABILITY TESTS

Uniaxial & Triaxial Tests	285-287
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CLASSIFICATION TESTS

Strength Index	288
Compression Strength	289-290
Slake Durability Index	289
Rock Shear Interface System	291

Sample Preparation

CORING

Product Code

- UTR- 0250 Laboratory Type Core Drilling Machine, 230 V, 50-60 Hz, 1 ph
- UTR-0255 Fastening Device for Core Samples, up to 100mm dia.
- UTGD-0340 Diamond Core Bit for UTR-0250, for 21.46 mm dia. (EX) specimens, with spigot adaptor.
- UTGD-0341 Diamond Core Bit for UTR-0250, for 30.10mm dia. (AX) specimens, with spigot adaptor.
- UTGD-0342 Diamond Core Bit for UTR-0250, for BX 38.10 mm (1.5 ") dia. specimens, with spigot adaptor.
- UTGD-0343 Diamond Core Bit for UTR-0250, for 42.04 mm dia. (BX) specimens, with spigot adaptor.
- UTGD-0344 Diamond Core Bit for UTR-0250, for 54.74 mm dia. (NX) specimens, with spigot adaptor.

This machine is specifically used in the laboratory for taking core samples from large sized rock, natural stone and concrete samples. The machine has a fastening equipment to tie the material during the drilling cycle. The coring area is protected by a transparent cylinder. To take rock specimens with max. dia. 100 mm from core samples, UTR-0255 special fastening device including transparent protection cylinder and coring bits should be ordered separately.



Power	1800 W
Drilling Diameter	from 8 to 60 mm dia.
Dimensions of The Base Equipment	600x500x200mm
Weight (approx.)	80 kg

CORE TRIMMER & CUT-OFF

Product Code

- UTR-0300 Laboratory Core Trimmer and Cut-Off Machine 230 V, 50 Hz, 1 ph
- UTR-0302 Cooling Recirculating Pump with Reservoir 230 V, 50 Hz, 1 ph
- UTR-0304 Diamond Cutting Blade, Ø 230x2.5 mm thickness
- UTR-0306 Double-Faced Cup Wheel, Ø 200x16 mm

Standards

ASTM D4543



The UTR-0300 Laboratory Core Trimmer and Cut-Off Machine is used for obtaining rock samples perfectly machined (cubes, prisms, etc.) from irregular rock or core pieces.

The UTR-0300 is supplied complete with a vice to hold irregular pieces firmly in place up to 70x140 mm approx. A second V shaped vice is used to cut cores to a maximum size 75 mm dia. x 140 mm height. Longer cores can be obtained by turning the samples upside down in the vice. It is supplied complete with a cooling water inlet.

The UTR-0304 Diamond Cutting Blade has a diameter of 230 mm, 2.5 mm thickness and the maximum cutting area is 110x70 mm. The speed of the blade is 3000 rpm.

The UTR-0306 Double-Faced Cup Wheel has a diameter of 200 mm and 16 mm thickness. It is used for finishing the sample ends parallel and at right angles to the axis.

The UTR-0306 Double-Faced Cup Wheel, UTR-0304 Cutting Blade and UTR-0302 Cooling Recirculating Pump with Reservoir should be ordered separately.

UTR-0300 and UTR-0302 for 60 Hz with 220 V or 100 V can be supplied.

Dimensions	730x1050x590 mm
Weight (approx.)	100 kg
Power	1100 W

CUTTING / GRINDING

Product Code

- UTC-1010 Universal Cutting Machine Small, 380 V
- UTC-1012 Cutting Blade Ø 350 mm

Standards

EN 12390-3, 12504-1; ASTM C42, D4543

The UTC-1010 Universal Cutting Machines have been developed to cut and prepare concrete, rock or natural stone cores or other type test specimens.

Special clamp assembly allows specimens to be held during cutting operation. The machine is supplied complete with "V" block clamp for Ø 100 mm specimens and a water circulation pump.

If 220 V is required please mention at time of order.

Cutting Blades should be ordered separately.



	UTC-1010 Small
Length	1100 mm
Width	600 mm
Height	1300 mm
Blade Diameter	350 mm
Max. Cutting Height	130 mm
Cutting Length	700 mm
Engine Power	380 V
Weight	115 kg
Water Pump Power	0.37 hp/220 V

Sample Preparation

CUTTING / GRINDING

Product Code

- UTC-1035 Semi-Automatic Grinding Machine, 220-240 V 50-60 Hz
- UTC-1042 Grinding Wheel
- UTC-1043 Cradle for Ø:38-100 mm Cylindrical Specimens
- UTC-1044 Water Restraint Panel Set

Standards

EN 12390-1, 12390-3, 12504-1; ASTM C 31, C39, C42, C192

The UTC-1035 Semi-Automatic Grinding Machine provides fast grinding of cylinder specimen ends to obtain plane and parallel surfaces according to EN and ASTM standards.

The only difference between automatic machine and semi-automatic machine is that the cradle of the semi-automatic machine is moved toward the grinding wheel by user. All grinding process is automatic except the movement of the cradle for semi-automatic machine. The optimum cycle to be applied by user is 5-6 cycle/per minute.

Three units of Ø38 to 100 mm or two units of Ø150-160 mm concrete cylinders ends can be ground simultaneously with the suitable cradle and water restraint panel. The length of the any specimen must be longer than 70 mm.

The Planeness and the perpendicularity of the test cylinder ends are in accordance with ASTM standards C31, C39, C42, C192, C617 and EN standards EN 12390-1 EN 12390-3 and EN 12504-1. The Planeness accuracy of grinded surface is 0.05 mm. The deviation of perpendicularity of the side with reference to the end faces is 5°.

The cradle which specimens are fixed on has automatic bidirectional radial displacement ability. The safe and ergonomic design prevents the user to exposure to water and dust and provides easy access to the water inlet and outlet.

Specimen cradles and water restraint panels can easily be installed without the need for any assembly. Mobility of the machine is achieved with the help of the integral wheels, and all components of the system can be safely accessed for easy maintenance.

The machine is manufactured from stainless steel for resistance to corrosion.

The Semi-Automatic Grinding Machine is supplied complete with

- Grinding Wheel
- Cradle for Ø:38mm to 100 mm cylindrical specimens
- Water restraint panel set f
(Consist of four panels Ø150, 100, 75 and 50 mm)

Dimensions	730x1200x1500 mm
Weight (approx.)	280 kg
Power	2450 W



The preparation of concrete cylinder test specimen for compressive strength test	EN 12390-1, 12390-3 ASTM C31, C39, C192, C617	The maximum tolerance on the flatness of the potential load bearing surfaces (the ends of compression test specimens) is 0.002 in. [0.050 mm]
The preparation of drilled concrete cores specimen for compressive strength test	EN 12504-1, 12390-1, 12390-3 ASTM C42, C397	The deviation of perpendicularity of the side, with reference to the end faces is 5°



CUTTING / GRINDING

Product Code

- UTC-1040 Automatic Grinding Machine, 220-240 V 50-60 Hz
- UTC-1042 Grinding Wheel
- UTC-1043 Cradle for Ø:38-100 mm Cylindrical Specimens
- UTC-1044 Water Restraint Panel Set
- UTC-1048 Water Restraint Panel for Ø160mm Cylinder Specimen

Standards

EN 12390-1, 12390-3, 12504-1; ASTM C 31, C39, C42, C192, C617

The UTC-1040 Automatic Grinding Machine provides fast grinding of cylinder specimen ends to obtain plane and parallel surfaces according to EN and ASTM standards.

Three units of Ø38 to 100 mm or two units of Ø150-160 mm concrete cylinders ends can be ground simultaneously with the suitable cradle and water restraint panel. The length of the any specimen must be longer than 70 mm.

The Planeness and the perpendicularity of the test cylinder ends are in accordance with ASTM standards C31, C39, C42, C192, C617 and EN standards EN 12390-1 EN 12390-3 and EN 12504-1. The Planeness accuracy of grinded surface is 0.05 mm. The deviation of perpendicularity of the side, with reference to the end faces is 5°.

The equipment has selectable advance grinding time functionality by user from 50 to 400 seconds. Optimum grinding time per end of all type specimens is 90 to 120 seconds.

The cradle which specimens are fixed on has automatic bidirectional radial displacement ability. The safe and ergonomic design prevents the user to exposure to water and dust and provides easy access to the water inlet and outlet.

Specimen cradles and water restraint panels can easily be installed without the need for any assembly.

Mobility of the machine is achieved with the help of the integral wheels, and all components of the system can be safely accessed for easy maintenance.

The frame is manufactured from aluminum to obtain a lighter weight and the stainless steel exterior shell assures resistance to corrosion.

The water restraint panels should be ordered separately for cubic specimens or different sized cylindrical specimens.

The Semi-Automatic Grinding Machine is supplied complete with

- Grinding Wheel
- Cradle for Ø:38mm to 100 mm cylindrical specimens
- Water restraint panel set f
(Consist of four panels Ø150, 100, 75 and 50 mm)

Dimensions	730x1080x1510 mm
Weight (approx.)	260 kg
Power	2700 W



The preparation of concrete cylinder test specimen for compressive strength test	TS EN 12390-1, 12390-3 ASTM C31, C39, C192, C-617	The maximum tolerance on the flatness of the potential load bearing surfaces (the ends of compression test specimens) is 0.002 in. [0.050 mm]
The preparation of drilled concrete cores specimen for compressive strength test	TS EN 12504-1, 12390-1, 12390-3 ASTM C42, C39	The deviation of perpendicularity of the side, with reference to the end faces is 5°

Strength and Deformability Tests

UNIAXIAL & TRIAXIAL TESTS

Product Code

UTR-0550	Automatic Pressure System for Lateral Pressure in Hoek Triaxial Cell, 220-240 V 50-60 Hz
UTR-0550/110	Automatic Pressure System for Lateral Pressure in Hoek Triaxial Cell, 110 V 60 Hz
UTC-4231	2000 kN Automatic Compression Testing Machine, 220-240 V 50-60 Hz
UTR-0555	Hoek Triaxial Cell BX, Ø 42,04 mm dia.
UTR-0557	Hoek Triaxial Cell NX, Ø 54,74 mm dia.
UTR-0560	Hoek Triaxial Cell HQ, Ø 63,5 mm dia.
UTR-0568	Compression Jig Assembly for Rock Core Specimens
UTC-0210	High Precision Pressure Transducer and Electronics

Standards

EN 1926, 14580; ASTM D2664, D2938, D3148, D5407

The UTR-0550 Automatic Pressure System is used to apply lateral pressure in the Hoek Cell during the triaxial testing of rock specimens. The power pack is equipped with a proportional valve to provide a sensitive control of the loading rate and to maintain a constant confining pressure to within 0.1 bar. Pressure is controlled by using the PID closed loop controlled electronics. The user can define the set lateral pressure and display the lateral pressure through the BC100 control and readout unit.

BC100 TFT unit is designed to control the power pack and processing of data from pressure transducers which is fitted to the power pack.

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 seamless manner to activate the option or enter a numeric value to set the test parameters. Its specimen setting sub-menu lists different specimen types including but not limited to cube, cylinder, block, beam, beam double upper bearers, cube splitting tensile, cylinder splitting tensile, paving block splitting tensile and kerb flexure. The BC100 digital graphic display is able to draw real-time "Load vs. Time" or "Stress vs. Time" graphics.

BC100 unit offers many addition unique features. You can save more than 10000 test results in its internal memory. Storage capacity can be increased up to 32 GB using SD memory cards or USB disk-drives. BC100 unit has support for various off-the-shelf USB printers, supporting both inkjet and laser printers. BC100 unit is equipped with a built-in internal camera which can save real-time video during testing for security purposes. Thanks to its built-in internet protocol suite, every aspect of BC100 device can be controlled remotely from anywhere around the world. Last but not the least, BC100 has support for Android tablets permitting to control and monitor your testing equipment remotely.

SAFETY FEATURES

- Maximum pressure valves to avoid machine overloading
- Emergency stop button
- Software controlled maximum load valve

Specifications

Max. Working Pressure	420 bar
Min. Controllable Pressure	3 bar
Pressure Accuracy	0.1 bar
Dimensions	400x450x1000 mm
Weight (approx.)	80 kg
Power	750 W



UTR-0550 with UTC-4231 and UTR-0560

UNIAXIAL & TRIAXIAL TESTS

Product Code

UTR-0552	Manual (Hand Operated) Pressure System for Lateral Pressure in Hoek Triaxial Cell
UTC-4231	2000 kN Automatic Compression Testing Machine, 220-240 V 50-60 Hz
UTR-0555	Hoek Triaxial Cell BX, Ø 42,04 mm dia.
UTR-0557	Hoek Triaxial Cell NX, Ø 54,74 mm dia.
UTR-0560	Hoek Triaxial Cell HQ, Ø 63,5 mm dia.
UTR-0568	Compression Jig Assembly for Rock Core Specimens
UTGE-3800	Hydraulic Hand Pump, 700 bar.
UTC-0210	High Precision Pressure Transducer and Electronics

Standards

EN 1926, 14580; ASTM D2664, D2938, D3148, D5407

The manual pressure system is used for maintaining the constant lateral pressure in the Hoek triaxial cells and consists of a hydraulic hand pump with oil reservoir (UTGE-3800), a precision LPI digital readout unit (UTC-4920), a pressure transducer (UTGM-0110) and a 3 m long flexible hose with quick release coupling.

The manual pressure system is used with any Hoek triaxial cell and 2000 kN Automatic Compression Testing Machine (UTC-4231) for the triaxial tests. Other type of UTEST compression testing machine (respect to the capacity) can be used instead of UTC-4231. See pages from 141 to 156.



UTR-0560 Hoek Triaxial Cell NX

	Lateral Pressure Equipment	UTC-4231
Max. Working Pressure	700 bar (70 MPa)	410 bar
Dimensions	1050x500x300 mm	800x500x970 mm
Weight (approx.)	20 kg	795 kg

UNIAXIAL & TRIAXIAL TESTS

Product Code

UTR-0568 Compression Jig Assembly for Rock Core Specimens

Standards

ASTM D2938

The jig assembly is used for uniaxial compressive strength tests of rock core specimens with 50 to 55 mm dia. and 100 to 110 mm height and consists of a two-column frame fit with an upper platen with spherical seat that moves vertically sustained by a spring. The lower platen is fit to the base. The assembly is also used for compressive strength test of natural stone core specimens.

UTR-0568 Compression Jig Assembly is used for uniaxial compressive strength for rock core specimens.

Platens Dimensions	55 mm dia, 28 mm thick
Min. Hardness of Platens	58 HRC
Vertical Clearance	112 mm
Dimensions	120x120x250mm
Weight (approx.)	10 kg



UNIAXIAL & TRIAXIAL TESTS

Product Code

- UTR-0555 Hoek Triaxial Cell BX (42.04 mm dia.)
- UTR-0556 Spare Sealing Sleeves, BX (42,04 mm dia.) for Hoek Triaxial Cell
- UTR-0557 Hoek Triaxial Cell NX (54.74 mm dia.)
- UTR-0558 Spare Sealing Sleeves, NX (54,74 mm dia.) for Hoek Triaxial Cell
- UTR-0560 Hoek Triaxial Cell HQ (63,5 mm dia.)
- UTR-0561 Spare Sealing Sleeves, HQ (63,5 mm dia.) for Hoek Triaxial Cell

Hoek Cells have been designed to be used for triaxial testing of rock specimens.

Hoek Cells comprise a steel body complete with two quick release self-sealing couplings, two steel end caps which are screwed to the cell body, 2 pieces of upper and 2 pieces of lower loading caps with spherical coupling and a rubber sealing sleeve to separate the specimen from the cell fluid.



Dimensions	350x150x200 mm
Weight (approx.)	15 kg

UNIAXIAL & TRIAXIAL TESTS

Product Code

- UTR-0570 Specimen Extruder for Hoek Triaxial Cells
- UTR-0572 Extruder Adaptor Set for BX, NX and HQ Specimens

The UTR-0570 Specimen Extruder is used to extrude the rock sample from its jacket while avoiding to emptying the pressure fluid (confining oil) out of the Hoek Cell. It consists of a steel frame with a rack and pinion mechanism.



The Specimen Extruder is supplied complete with

- BX Type Adaptors
- NX Type Adaptors
- HQ Type Adaptors

Dimensions	470x220x200 mm
Weight (approx.)	13 kg

STRENGTH INDEX

Product Code

- UTR-0580 Digital Point Load Test Apparatus

Standards

ASTM D5731



The UTR-0580 Digital Point Load Test Apparatus consists of a 60 kN capacity load frame with a hydraulic loading ram driven by a hand pump. The frame is adjustable for testing of samples up to 102 mm diameter. A ruler assembled on the frame allows the direct measurement of the distance between the conical platens before and after the test. The compression load is measured by a pressure transducer connected to an advanced digital display unit assuring the best accuracy and resistance to the failure shocks. The apparatus is supplied with an easily transportable wooden case.

SAFETY FEATURES

- Load Range : 0 - 60 kN
- Digital Display : 2 x 16 characters
- Resolution : 32.000 div.
- Accuracy : ± 1%
- Load pacer included
- Load measurement in both kN and MPa
- Serial Port for PC connection

Dimensions	450x300x700 mm
Weight (approx.)	25 kg

STRENGTH INDEX

Product Code

- UTR-0562 Rock Classification Hammer L Type (Schmidt Hammer -Low Impact Energy Model) (Controls)
- UTR-0565 Rock Cradle
- UTC-3040 Schmidt Hammer Calibration Anvil

Standards

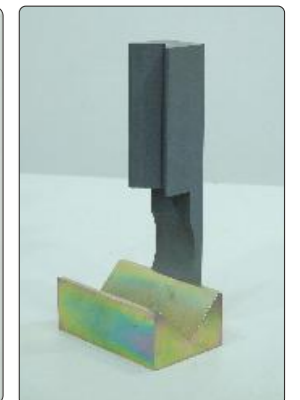
ASTM D 5873; ISRM Suggested Method

UTR-0562 Rock Classification Hammer together with UTR-0565 NW Rock Cradle is an easy-to-use apparatus for measuring the rebound index on rock cores and samples. The level of impact energy is 0.74 Nm. Sample is positioned horizontally and the rebound index is calculated by the average value determined after several measurements which are performed perpendicularly to the longitudinal axis of the sample. Rock Classification Hammer is supplied complete with carrying case.

UTR-0565 Rock Cradle apparatus consists of a universal sample holder unit suitable for all standard rock core specimen sizes from EX to NX (21.46 mm to 54.74 mm dia.) and a V shaped vertical magnetic block which holds the hammer.



UTR-0562 with UTC-3040



UTR-0565



UTC-3040

	Dimension	Weight (approx.)
UTR-0562	100x100x360 mm (in case)	2 kg
UTR-0565	150x110x310 mm	6 kg
UTC-3040	150x150x230 mm	16 kg

Classification Tests

COMPRESSION STRENGTH

Product Code

UTR-0563 Original Schmidt Test Hammer Type L (Proceq)
 UTR-0565 Rock Cradle
 UTC-3040 Calibration Anvil

Standards

ASTM D 5873; ISRM Suggested Method

In rock mechanics, The Type L Original Schmidt (UTR-0563) is commonly used for the classification of rock cores and brittle rock.

UTR-0563 Type L Hammer is a portable and relatively inexpensive instrument for measuring the surface hardness of rock. The hammer can be used efficiently in both laboratory and the field setting.

The mechanism of operation is simple: a hammer released by a spring, indirectly impacts against the rock surface through a plunger and the rebound is read on scale of hammer then compressive strength is read directly from the curve ranging from 10 to 70 MPa (1,450 to 10,152 psi).

The type L hammer is used on NX or larger core specimens or block specimens having an edge length of at least 6 cm.

UTC-3040 Calibration Anvil, manufactured from a special steel alloy, is used for the calibration of test hammers.



UTR-0563



UTR-0565

Technical Specifications

Measuring Range	10-70 N/mm ²
Impact Energy	0.735 Nm

	Dimension	Weight (approx.)
UTR-0563	340x120x120 mm	2 kg
UTR-0565	150x110x310 mm	6 kg
UTC-3040	150x150x230 mm	16 kg

SLAKE DURABILITY INDEX

Product Code

UTR-0800 Slake Durability Apparatus, 220-240 V 50 Hz
 UTR-0802 Pair of Mesh Drums for UTR-0800

Standards

ASTM D4644



This test method has been developed to assess the deterioration of rocks over a period of time when subjected to water immersion.

Slake durability is a simulated weathering test to determine abrasion resistance during wetting and drying cycles of shale and similar soft rocks as used in embankments and other construction-related applications. Samples are alternately tumbled in mesh drums through a water medium and oven-dried for two cycles. The percent loss of mass is referred to as the slake durability index.

The UTR-0800 Slake Durability Apparatus consists of a motorized drive unit which is mounted on a baseplate and which can rotate two or four drums at a speed of 20 rpm. The tank assemblies are filled with water to a level 20 mm below the drum axis. The test drums are manufactured from 2.00 mm mesh, 140 mm dia. x 100 mm long.

Dimensions	1300x150x450 mm
Weight (approx.)	15 kg

COMPRESSION STRENGTH

Product Code

UTR-0564 Rock Schmidt-Rock Test Hammer Type L (Proceq)
 UTC-3040 Calibration Anvil

Standards

ASTM D 5873; ISRM Suggested Method



UTR-0564



UTC-3040

Technical Specifications

Impact Energy	(N) 2.207 Nm, (L) 0.735 Nm
Spring Extension	75 mm (2.95")
Plunger Radius	25 mm (0.98")
Display	17 x 71 pixels; graphic
Battery Lifetime	>5000 impacts between charges
Operating Temperature	0 to 50°C
Storage Temperature	-10 to 70°C

Product Code	Dimensions	Weight (approx.)
UTR-0564	55x55x255 mm	570 g
UTC-3040	150x150x230 mm	16 kg

UTR-0564 RockSchmidt Test Hammer (Proceq) is the world's most advanced rebound hammer fully adapted specifically to the extremely varied rock testing applications (Testing on cores and blocks). The RockSchmidt incorporates statistical methods based on ASTM and ISRM recommendations and provides the user with the freedom to define his own statistical process for determining a rebound number.

FEATURES

Impact Angle Independence: The rebound value is independent of the impact direction.

Optimized for Field Work: Tighter sealing against dirt and dust intrusion for longer life. Significantly lighter and more ergonomic than the classic Schmidt hammer. A large number of readings can be saved and downloaded later to a PC.

Preset Statistics: Statistics methods recommended by ISRM and ASTM are implemented into the hammer for automatic calculation of the rebound number. The option is also there to define a user specific statistics method.

Unconfined Compressive Strength: ISRM recommends a correlation between UCS and the rebound value based on the formula $UCS = aebR$ (where R is the rebound value). A correlation in this format may be defined in the PC software and downloaded onto the RockSchmidt.

E-Modulus: ISRM recommends a correlation between elastic modulus and the rebound value based on the formula $E = cedR$ (where R is the rebound value). A correlation in this format may be defined in the PC software and downloaded onto the RockSchmidt.

Weathering Grade: Impacting on the same location twice can be used to correlate to weathering grade. The ISRM recommended method has been included in the device.

Rock Schmidt - Rock Test Hammer is supplied complete with

- Battery Charger with USB Cable
- Carrying Strap
- DVD with PC software
- Grinding Stone
- Documentation
- Carrying Bag

Classification Tests

ROCK SHEAR INTERFACE SYSTEM

Product Code

RSI-ShearTrac-II

The Rock Shear Interface (RSI) is a versatile system capable of performing the consolidation and shearing phases for natural and artificial rock joints on rock cores up to 83 mm (3.26 in) in diameter, direct and residual shear on soils as well as for determining the interface frictional properties of soil and geosynthetics on sample sizes up to 150 mm x 150 mm (6.00 in x 6.00 in).

The system consists of a computer controlled unit that utilizes micro stepper motors to control and apply verticals load and horizontal displacements. Built-in electronics control test and display data in real time. The computer controlled program runs under the latest Windows platform. It includes the capability to display the current status of latest and graphically portray the progress of the test in real time. The system also includes the capability for the operator to alter the test process and conditions at any stage during the test.

This is a turnkey system that includes hardware and software for recording all test input data and settings of selected test parameters, performing standard engineering calculations on the data, and producing graphically plotted and printed output in accordance with current testing standards.

MODEL

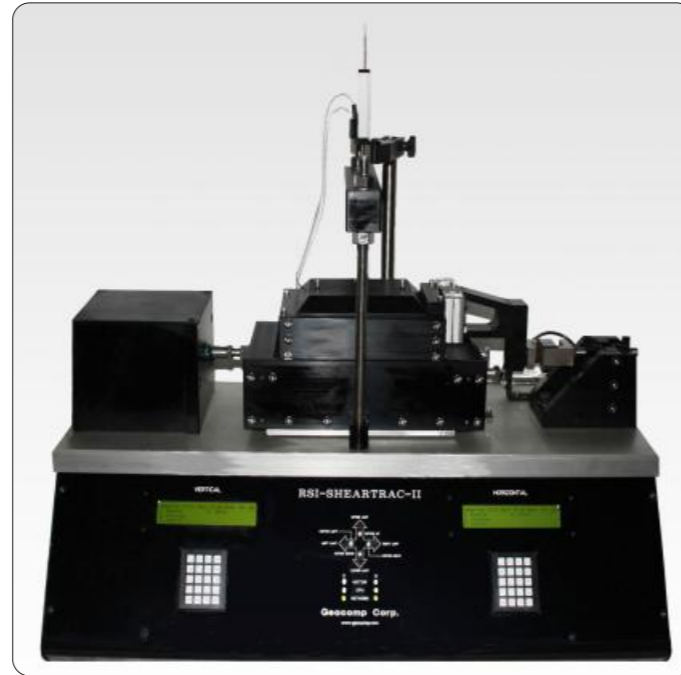
RSI-ShearTrac-II / 13 kN (3,000 lbs.) frame capacity

APPLICABLE TEST STANDARDS

- ASTM D-5607
- ASTM D-5321
- ASTM 3080/T236
- ASTM D-2435/T216

FEATURES/BENEFITS

- Linear bearings for minimum horizontal friction
- Two sets of limit switches to prevent over traveling
- Built-in 4-channel data acquisition with 16-bit resolution
- Stand alone capability
- Horizontal displacement transducers with 75 mm (3.00 in.) range and 0.002 mm (0.00008 in.) resolution
- Vertical displacement transducers with 50 mm (2.00 in.) range and 0.002 mm (0.00008 in.) resolution
- Two universal load cells with 11 kN (2,500 lbs) capacity.



Standard Fully-Automated Rock Shear System

- Accurate displacement rate control from 0.00003 to 15 mm per minute (0.000001 to 0.6 in. per minute)
- Built-in electronic controls for automatic display of data and control of test
- Windows XP, Vista, 7 friendly user interface
- Fully automated incremental consolidation, direct and residual, and interface shear testing capabilities options

ACCESSORIES

- **Geo-NETTM-PC**
Network card and cable to link RSI- ShearTrac-II frame to PC
- **RSI-SHEAR**
Software package to automatically run consolidation and direct residual shear test either load or displacement control
- **SHEAR.REPORT**
Editing/reporting software package
- **150 mm (6.00 in) shear rings**
For direct residual and interface shear test

Technical Specifications

Capacity	13kN (3,000 lbs.)
Motor	Stepper motor with built-in controls
Vertical Motor	Stepper motor with built-in controls for vertical load
Horizontal Motor	Stepper motor with built-in controls for horizontal load
Speed Range	0.00003 to 15 mm per min. (0.000001 to 0.40 in per minute)
Dimensions	Width = 432 mm (17 in); Length = 902 mm (35.5 in); Height
Horizontal Travel	75 mm (3.00 in.) resolved to 0.002 mm (0.00008 inches)
Vertical Travel	50mm (2.0 in.) resolved to 0.002 mm (0.00008 inches)
Power	110/220 V, 50/60 Hz, 1 phase



Special Testing Systems

In Special Testing Systems Section you can find some examples of products and custom design systems that UTEST Material Testing Equipment offers. A wide range of customized products and services to support your specific requirements in all aspects of Civil Engineering, Structural and Special Engineering designs can be produced.

UTEST also offers service and long term maintenance contracts. Our products, software and services are specifically designed to address structural testing customer requirements.

At the following pages you can find an overview of special products and capabilities that are UTEST solutions to Civil, Mechanical, Special and Structural testing applications.

UTEST can offer solutions that support your special designs.

For your other applications, you can benefit from our additional consultancy services. Our experienced engineers can be of assistance to increase the efficiency of your job .

Concrete Railway Sleepers & Bearers Static Testing Machine	295-297
Concrete Railway Sleepers & Bearers Dynamic Testing Machine	298-299
Air Spring Testing System	300
Concrete Pipe Testing Machine	301-304
Manhole Tops Testing Machine	305
Concrete Creep Testing System	306
Steel Rack Testing Systems	307-308
Structural Systems	309-312
Evaluation of The Base/Subgrade Soil Under Repeated Loading	313-314

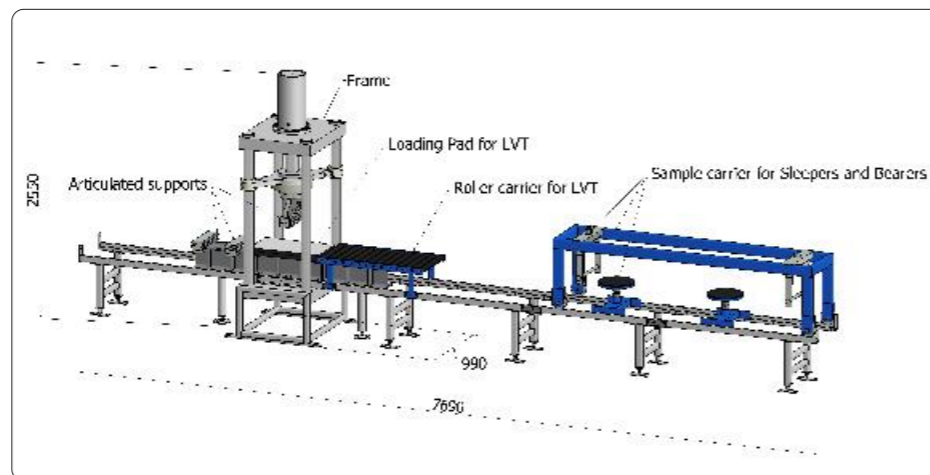
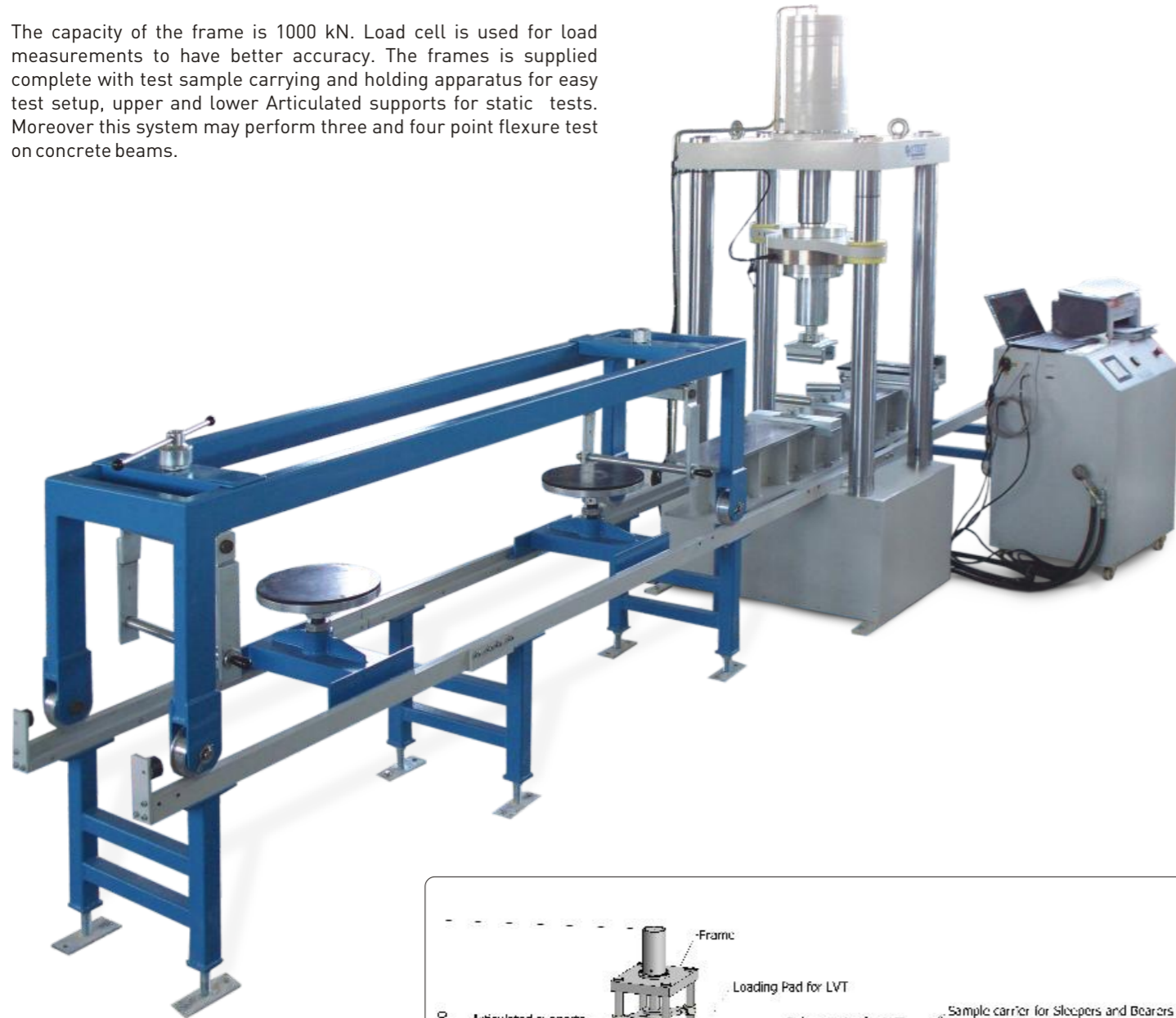
CONCRETE RAILWAY SLEEPERS & BEARERS STATIC TESTING MACHINE

Product Code

UTSP-0100 Concrete Railway Sleepers and Bearers Static Testing Machine

UTSP-0100 Concrete Railway Sleepers and Bearers Static Testing Machine, has been designed basically to perform static tests according to EN 13230-2, EN 13230-3 and EN 13230-4 (Prestressed monoblock and twin-block reinforced sleepers and bearers tests) and also Low vibrating track system (LVT-System) tests. The machine is mainly consist of testing frame with accessories and Advanced servo controlled hydraulic power pack, control electronics and data acquisition system is also build in power pack unit. Main differences between static and dynamic test systems are loading actuator and power pack.

The capacity of the frame is 1000 kN. Load cell is used for load measurements to have better accuracy. The frames is supplied complete with test sample carrying and holding apparatus for easy test setup, upper and lower Articulated supports for static tests. Moreover this system may perform three and four point flexure test on concrete beams.



UTC 4850 and UTC 4860 Automatic Power Packs with Proportional Valve, are advanced power packs with P.I.D. closed loop control. They can perform tests under load and displacement controls. The frequency of the P.I.D controller and data acquisition is 1000 Hz. Power pack is designed to supply the required oil to the load frame for loading and unloading. All the operations of Data Acquisition and Controls System can be controlled from the touch screen front panel of a 240x320 LCD display or computer. There are total 4 analogue input channels. One is used for load cell and remaining three analogue channels can be used for other sensors such as LVDT's, strain gauges, built in the system. (For more detail please check UTC 4850 and UTC 4860 in catalog)

The maximum oil flow is 2 liters per minute, at 300 bar pressure. Accuracy of the system is 0.1 kN and minimum controllable load is around 10kN. Control unit can be connected to the computer through Ethernet for advanced test cycles, data acquisition and reporting. All the calibration values of the transducers and also all the test parameters for the last test is automatically stored on the control unit. Power pack incorporates a pressure safety valve and a cooling unit.

FEATURES

- 4 or 8 (UTC-4850 4 channel, UTC-4860 8 channel.) analogue channels for different frame load cells, pressure transducers, LVDT's, strain gauges, etc. built in the system.
- Instrumentation amplifiers for sensor excitation and amplification
- 1/65.000 resolution and 1.000 Hz control for each channel
- Ethernet port for connecting to computer
- 240x320 pixel LCD display
- Touchscreen operator panel
- Can control 2 frames (UTC-4850) or 4 frames (UTC-4860)
- Can execute load or displacement control tests
- Free of charge PC software for test control and advanced report printout
- Pace rate control from 0.01 kN/s to 100 kN/s (depend on the specimen stiffness)
- Factory install English and Turkish languages
- Real time clock/date



UTC-4850



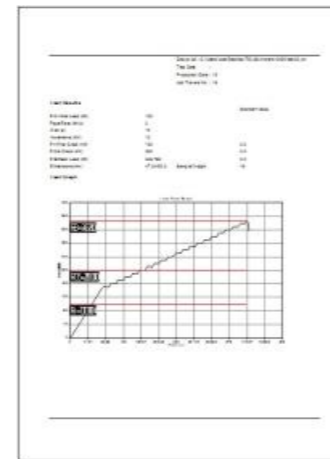
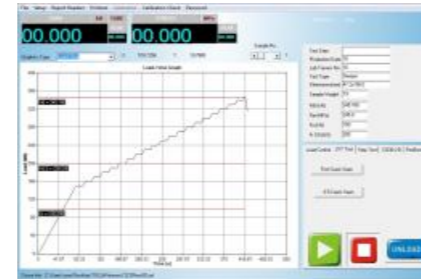
CONCRETE RAILWAY SLEEPERS & BEARERS STATIC TESTING MACHINE

Data Acquisition & PC Software

CONCRETE RAILWAY SLEEPERS & BEARERS STATIC TESTING MACHINE can be controlled by a computer with the software [given free of charge by UTEST]. 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.

The software is developed for making test respect to EN 13230 standard. On the software there are submodules for making test on LVT samples, positive negative bending tests on sleepers. Loading rates, dwell times, delays and unloading are performed as in standard.

The software also includes an easy calibration check facility. The machine gives some constant load values and waits there for easy check mechanism. As standard requires the pace rate of 2kN/sec is suggested, but user can modify the test rate. For each type of different tests an easy report generation is available.



Technical Specifications

Capacity	1000 kN static (UTSP-0100),
Load Measurement Accuracy	+/- 1 % from 1 % of the full capacity.
Piston Stroke	400 mm
Dimensions	2500 kg (approx)
Weight (approx.)	990x7690x2550 mm (Installed)

Power Pack

Dimensions	900x550x1050 mm
Weight (approx.)	170 kg
Power	1500 W

Accessories for Low Vibrating Track System Test



CONCRETE RAILWAY SLEEPERS & BEARERS DYNAMIC TESTING MACHINE

Product Code

UTSP-0102 Concrete Railway Sleepers and Bearers Dynamic Testing Machine

UTSP-0102 Concrete Railway Sleepers and Bearers Dynamic Testing Machine, has been designed basically to perform dynamic and fatigue tests of railway applications according to EN 13230-2, EN 13230-3 and EN 13230-4 (Prestressed monoblock and twin-block reinforced sleepers and bearers tests) and Low vibrating track system (LVT-System) tests. The test system is also able to perform static and quasi-static loading of test samples in technically specified range.

The test system consists of digital control system, software, high force capacity floor-standing frame, servo-hydraulic actuator and hydraulic power pack. The system can be supplied with just standard fatigue and dynamic testing capability, also can be modified with appropriate sized servo valve, manifold and hydraulic power unit to suit the particular application.

Floor model standard frames are robust, heavy duty frames with the axial static capacity of 1000kN and dynamic capacity of 750kN (@280bar system pressure). Frames are also available in varying load capacities and also in different variations to meet the requirements for both extra wide test space and extended travel. The load frames are rigid 4 column units for superior axial and lateral stiffness, precision aligned. Columns are chrome plated and hardened for easy cleaning and longer life.

The frames is supplied complete with test sample carrying and holding apparatus for easy test setup, upper and lower articulated supports for dynamic tests. Low Vibrating Track System Tests frame is supplied complete with rubber coated roller system for easy test setup and upper support for testing. This testing machine can be also three and four point flexure test on concrete beams.

The machine is equipped with doubled ended, equal area linear actuators to generate equal force in both tension and compression. Actuator is mounted on upper crosshead with 300 mm usable stroke length and mounted with manifold attached on it. Servo-valve and accumulators are close coupled in order to improve performance with highest possible response and minimum pressure losses where most accurate test control is achieved. Maximum allowable piston speed is 40 mm/sec. SSI type displacement sensor with 5 µm resolution is integrated in the actuators. All dynamic testing systems are equipped with precision fatigue rated load cells where they are mounted on piston's rod end for accurate force measurement and control.

UTEST uses fully digital servo-hydraulic motion controller for displacement and/or force closed loop control of static and dynamic tests. Control loop time is 1 kHz as standard, but can be adjusted to 4 kHz according to application. Data acquisition rate of the controller is standard 100Hz but can be adjusted to 4 kHz if the application's control algorithm can run in this loop time. Effective resolution of analogue channels 19 bit over full ±10 V range (18 bit for 0-10V and ±5V, 17 bit for 0-5V, 16 bit for 4-20 mA).



CONCRETE RAILWAY SLEEPERS & BEARERS DYNAMIC TESTING MACHINE

The hydraulic power units are specially designed for dynamic performance of concrete sleepers and bearers for railway, which are governed by oil flow and pressure. The series have standard 750kN dynamic force capability at 280 bar (3000 psi on servo-valve) system pressure with standard ratings up to 100 l/min oil flow. For larger oil flows, the unit can be modified to suit customers' requirements. Electrical parts as indicators, system management buttons and controller is involved in the power pack. Bladder type accumulators are supplied with the pack in order to compensate pressure drops while actuator is operating and any pressure losses between the HPU and test station, in order to smooth pump ripples. Oil level, oil temperature, filter's condition and motor temperature are continuously checked by controller and system has necessary interlocks for fault conditions. Factory -set pressure relief valve prevents excessive increases in pressure. Variable-capacity pump ensure maximum electrical efficiency, consuming only sufficient electrical power to maintain the required flow, even during times of reduced flow demand. Compact designed hydraulic power units allow systems configured to control up four systems independently, this means saving valuable floor space in your lab. Installed isolation manifold lets hydraulic power system running multiple test stations, preventing over pressurization, discharging system pressure separately and power isolation of the stations. According to the environment where system is going to be built, air/oil cooler and water/oil cooler is supplied as standard. However alternative closed loop cooler systems can be adapted to unit if customer requests.

PC SOFTWARE

Concrete Railway sleepers and bearers testing machine is controlled by a computer with the free of charge software uDyna. uDyna is flexible and user-friendly windows based application software for both static and dynamic testing. In the software user can create either test methods (dynamic, fatigue or static) in accordance with EN 13230 or custom test sequences where you can manage to run simple ramp to cyclic waveforms, even arbitrary custom motion profiles. Synchronized 100 Hz data transfer from feedback signals supplies detailed recording of running tests. This rate is flexible up to 4 kHz if the application is applicable. Graphical and numeric monitoring is displayed real time in the user interface. Data reduction and peak values recording is running in cyclic tests. Safety limits (pressure and displacement limits) and internal algorithm protect the machine against any fault condition occurred in the system. uDyna always optimizes the control parameters (PID and feed forward terms) during test in order to adapt actuator control to the changing stiffness characteristic of the specimen. The software also includes an easy calibration check facility. The machine gives some constant load values and waits there for easy check mechanism. Furthermore uData is also delivered to customer freely, where data analyzing and reporting operations will be handled.

Technical Specifications	
Control	Standard: Closed loop force and displacement control Option : External analogue channel closed loop control
Actuator	Standard: 0.01 to 10 Hz. Frequency , 600 kN static 500 kN dynamic force capacity, 300 mm stroke (±150mm) Option : Different frequencies (up to 50 Hz.), force capacities, shorter or longer stroke
Hydraulic Power Pack	Standard: Free standing with air cooling unit, one output channel Option : water/oil cooler, four test station cap
Power Requirements	400 V/AC/50 Hz/ 3 Ph + N + E 65 kVA current ratings



AIR SPRING TESTING SYSTEM

Utest Air Spring Testing System is designed to verify EN 13913 Railway applications (Rubber suspension components, Elastomer-based mechanical parts) and EN 14817 Railway applications (Suspension components. Air-spring control elements).

The machine is equipped with three doubled ended, equal area linear actuators to generate equal force in both tension and compression in order to test Dynamic Stiffness of the specimens. One 500 kN capacity actuator is mounted on Z axis with 320 mm usable stroke length and other two 20 kN capacity actuators are mounted on X and Y axis with 240 mm usable stroke length. Servo-valves (24 lt/min at Z axis, 5 lt/min at X and Y axis) and accumulators are close coupled in order to improve performance with highest possible response and minimum pressure losses where most accurate test control is achieved. LVDT type displacement sensor with 5 µm resolution is integrated in the actuators. All dynamic actuators are equipped with precision fatigue rated load cells where they are mounted on piston's rod end for accurate force measurement and control.

Hydraulic power unit is specially designed for dynamic performance of Air Spring testing systems, which are governed by oil flow and pressure. 11 kW motor installed hydraulic unit has selection of low pressure as 50 bars and high pressure 210 bars with standard ratings up to 200 l/min oil flow. For larger oil flows, the unit can be modified to suit customers' requirements. Electrical parts as indicators, system management buttons and controller is involved in the power pack. Bladder type accumulators are supplied with the pack in order to compensate pressure drops while actuator is operating and any pressure losses between the HPU and test station, in order to smooth pump ripples. Oil level, oil temperature, filter's condition, safety indicators and motor temperature are continuously checked by controller and system has necessary interlocks for fault conditions. Factory -set pressure relief valve prevents excessive increases in pressure. Variable-capacity pump ensure maximum electrical efficiency, consuming only sufficient electrical power to maintain the required flow, even during times of reduced flow demand. According to the environment where system is going to be built, air/oil cooler and water/oil cooler is supplied as standard. However alternative closed loop cooler systems can be adapted to unit if customer requests.

The test can be done by regulating air pressure with digital regulator max 10 bar from the computer. The frame has 500 kN capacity. The dimension of the frame is 1400 x 1400 x 3300 mm (l x w x h) and the weight of the frame is 5500 kg.

To verify EN 13913 and EN 14817 the system makes different types of tests.

1. VERTICAL CHARACTERISTICS:

1.1 Load capability [kN] as a function of the pressure
From digital air regulator the pressure of the air changes and the corresponding load is recorded, while position is kept constant.

1.2 Vertical stiffness [n/mm] as a function of the vertical load
The piston is commanded to move +/- 10 mm by the load versus displacement. The vertical stiffness is calculated.

2. HORIZONTAL STIFFNESS IN XY-DIRECTION AS A FUNCTION OF VERTICAL LOAD

At constant load value caused by air pressure, the piston is commanded on the X direction 10 mm.

3. FUNCTIONAL CHARACTERISTICS OF THE LAYER SPRING

At constant load value caused by the air pressure, the vertical and diametric deflection on the sample is recorded while the piston is commanded on the X direction 10 mm.

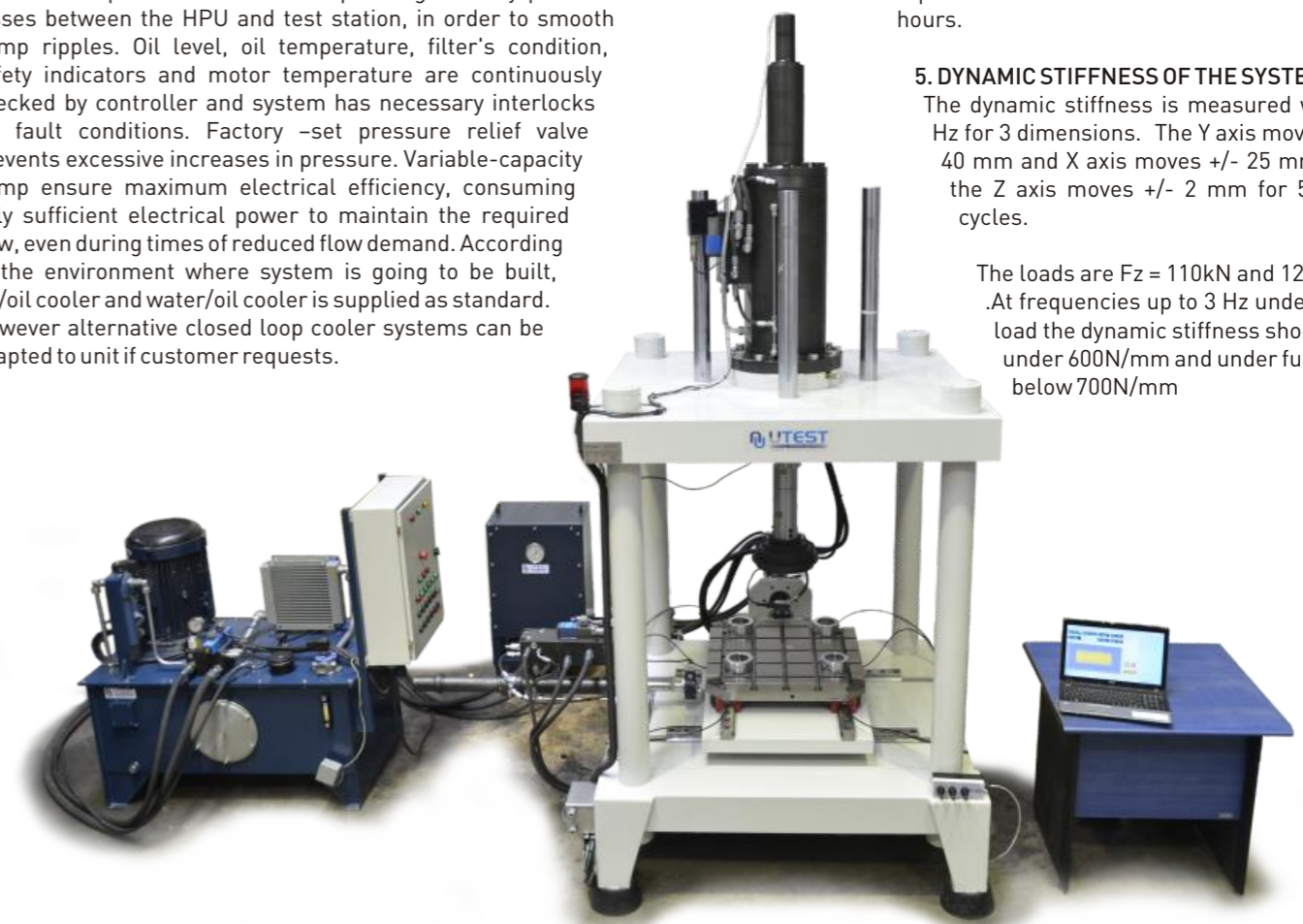
4 CREEP [MM] FOR ADDITIONAL LAYER SPRING

Keep the pressure stable and observe displacement under constant load after 24 hours.

5. DYNAMIC STIFFNESS OF THE SYSTEM

The dynamic stiffness is measured with 1 Hz for 3 dimensions. The Y axis moves +/- 40 mm and X axis moves +/- 25 mm and the Z axis moves +/- 2 mm for 50.000 cycles.

The loads are $F_z = 110\text{kN}$ and 123.3kN . At frequencies up to 3 Hz under tare load the dynamic stiffness should be under 600N/mm and under full load below 700N/mm



CONCRETE PIPE TESTING MACHINE

Product Code

- UTSP-0190 Concrete Pipe Testing Machine 1000 kN Capacity without Carrying Chassis & with Standard Automatic Power pack, Max. Outer Dia. 2900mm.
 - UTSP-0192 Concrete Pipe Testing Machine 1000 kN Capacity with Carrying Chassis & Standard Automatic Power Pack, Max. Outer Dia. 2900mm..
 - UTSP-0194 Concrete Pipe Testing Machine 1000 kN Capacity without Carrying Chassis & with Advanced Power Pack with Proportional Valve, Max. Outer Dia. 2900mm.
 - UTSP-0196 Concrete Pipe Testing Machine 1000 kN Capacity with Carrying Chassis and Advanced Power Pack with Proportional Valve, Max. Outer Dia. 2900mm.
 - UTSP-0200 Concrete Pipe Testing Machine 1000 kN Capacity without Carrying Chassis & with Standard Automatic Power pack, Max. Outer Dia. 3700mm.
 - UTSP-0202 Concrete Pipe Testing Machine 1000 kN Capacity with Carrying Chassis & Standard Automatic Power Pack, Max. Outer Dia. 3700mm..
 - UTSP-0204 Concrete Pipe Testing Machine 1000 kN Capacity without Carrying Chassis & with Advanced Power Pack with Proportional Valve, Max. Outer Dia. 3700mm.
 - UTSP-0206 Concrete Pipe Testing Machine 1000 kN Capacity with Carrying Chassis and Advanced Power Pack with Proportional Valve, Max. Outer Dia. 3700mm.
 - UTSP-0208 Drive-in Hydraulic Lower Bearer (V-Shaped) and Rail System for easy loading of the pipes.
 - UTSP-0209 Concrete Pipe Testing Machine, 400 kN Capacity, without Carrying Chassis & Standard Automatic Power Pack.
 - UTSP-0210 Concrete Pipe Testing Machine, 400 kN Capacity, with Carrying Chassis & Standard Automatic Power Pack.
- Any machine having different capacities and features is available upon request

Standards

EN 1916

UTSP-0190, 0192, 0194, 0196 models with outer diameters from 200 mm up to 2900 mm, UTSP-0200, 0202, 0204, 0206 models with outer diameters from 200 mm up to 3700 mm are specially designed for Crushing Tests on Sewer and Drain Pipes, Concrete Pipes, Fittings, Cones according to EN 1916. All these models can be used for pipes with a length of up to 3000 mm

UTSP-0209 and UTSP-0210 model machine has the same specifications as UTSP-0202 with capacity of 400 kN instead of 1000 kN and can be used for outer diameters from 200 mm up to 2000 mm and lengths up to 2000 mm.



UTSP-0200

The Concrete pipe testing machines are consisting of a frame and a hydraulic power pack. The frames are rigid 2 column constructions with superior axial and lateral stiffness and are precision aligned. Integrated in the crosshead is a double acting actuator in servo-quality. The actuator has anti-rotation system to prevent the natural tendency of the actuator to rotate. The stroke of the double acting actuator is 300 mm. Load cell is used for precise load measurement and closed loop control.

The rectangular shaped top bearer is detachable from the actuator and the bottom bearer is V-shaped with an angle of 150°. During pipe loading the system permits top bearer to rotate 360 degrees at horizontal plane and allows it to move at vertical plane of a minimum value of ±8°. As an option 3- and 4-point bending accessories are available. Upper crosshead height adjustment is done with electric motor drive for easy and precise test set up and manual through locking pins are used to fix the upper crosshead.

There are two options available for frames first option is not including carrying chassis for the machines. These types of frames have to be anchored to concrete base. All required parts to anchor the frame to the concrete base is supplied. The frames without carrying chassis is supplied with V shaped bottom bearers which can be anchored to concrete base.

For frames second option is including metal carrying chassis for the machines. The carrying chassis is supplied with V shaped bottom bearer fixed directly on the chassis.

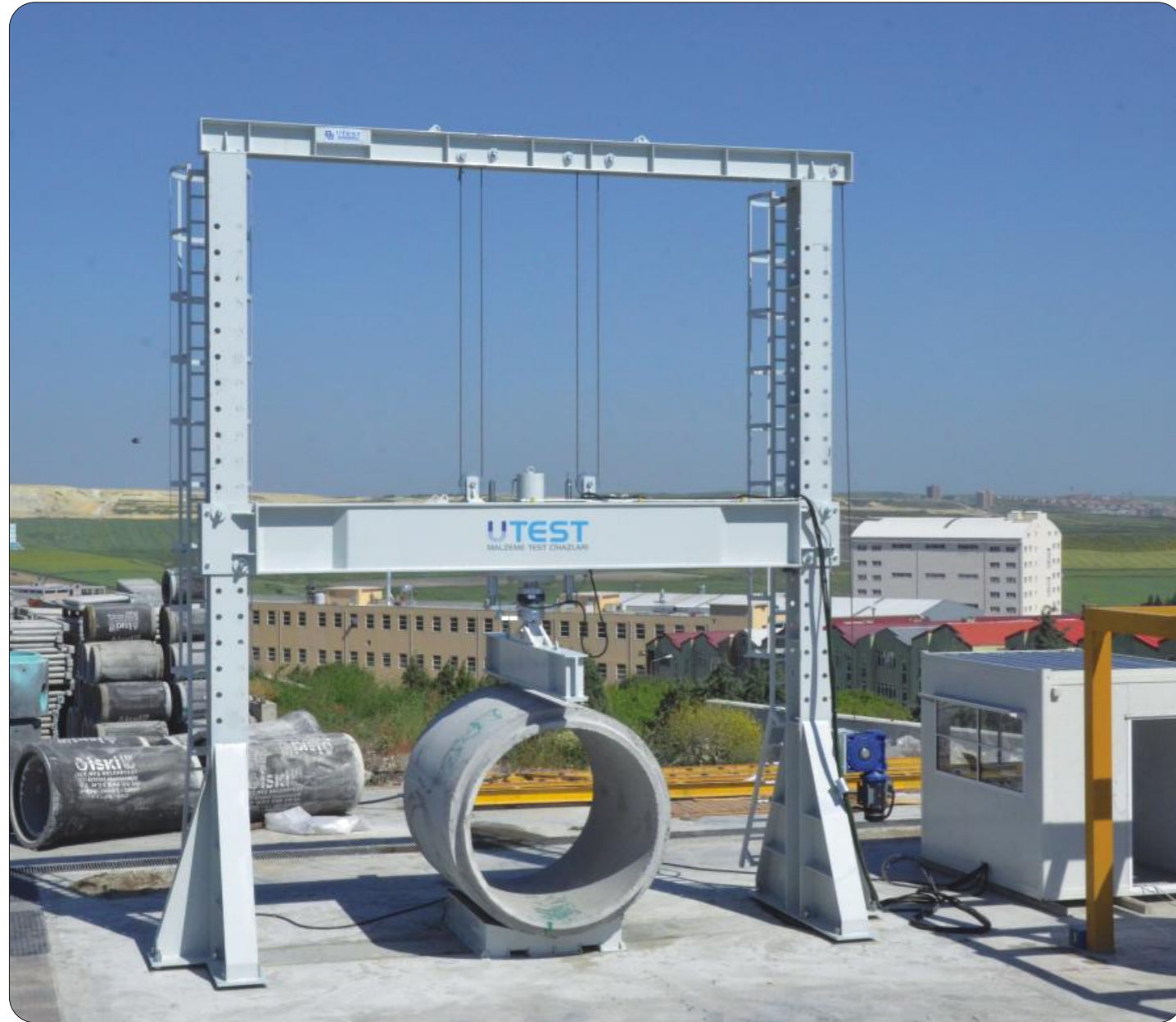
There are also 2 options are available for power pack. The machine can be supplied with standard automatic power pack, dual stage, controlled by BC 100 or Advanced Automatic Power Pack with Proportional Valve.

UTSP-0208 For easy loading of pipes (especially for diameters 2000 mm and larger), UTSP-0208 (Drive-in Hydraulic Lower Bearer (V-Shaped) and Rail System) should be ordered separately. The bearer moves on the rail by an electrical motor and acts in the vertical direction hydraulically. Can be used with concrete pipe testing machines with /without carrying chassis.



UTSP-0200

CONCRETE PIPE TESTING MACHINE



UTSP-0204

CONCRETE PIPE TESTING MACHINE

Product Code

UTSP-0250 Concrete Pipe Watertightness Testing Machine

Standards

EN 1916

The test can be done either with an angle between pipes or under a shear force.

Machine can test pipes from diameter from 500mm to 1700 mm and length from 1000mm to 3200mm. Load up to 100 kN can be applied on pipes from top with double ended hydraulic piston which is mounted on upper crosshead of the machine. The position of the piston set manually and several distance pieces are supplied for different diameter of pipes. The load measurement is done by a load cell and load value can be seen from digital read out unit on control system.

Each pipe is located on a carrying car with one end with mechanical lifting system to give an angle up to 5. degrees to the junction end of the pipes. The lifting system is controlled by handheld system. Both cars are seated on a moving platform can move outside and inside of the machine for easy placing of pipes. This movement is done by 3 motorized gear box unit controlled by handheld system.

Both open ends of pipes is closed with circular cover that can be used for pipes diameter from 500mm to 1700mm. Water inlets for different size of pipe are located on those covers (All diameters should be giving at the time of order). There is a hydraulic piston used to generate the pressure on each end of pipes closed with cover. The maximum load of this piston is 800kN. The load is measured by a transducer and can be seen from digital readout on control panel. The piston is fitted on middle column of the machine. This column and the covers is equipped with motorized gearbox for easy test set up. Each motor is controlled by handheld.

There is a water pressure system fitted to the machine. The maximum pressure is 1,5 bars. There is a digital pressure gauge to see the pressure inside of the pipes. The machine is supplied with complete frame, accessories, hydraulic power pack and digital read out systems. A small container should be supplied by cus



MANHOLE TOPS TESTING MACHINE

Product Code

UTSP-0350 Manhole Tops Testing Machine

Standarts

EN 1917

Manhole Tops Testing Machine has been designed to make test according to EN 1917 standard on concrete manholes and inspection chambers, unreinforced, steel fiber and reinforced.

Testing machine is consist of four column 1000 kN capacity frame and UTC-4830 Automatic power pack, dual stage, controlled by BC 100 Graphics Data Acquisition and Control Unit and capable of performing test with the load control. The power pack programmed to make the test according to the standard requirements. It loads the required load 5 times and keeps the maximum load on sample during specified time. (Up to 120 second). Piston is located on the upper crosshead and has a spring mechanism to get the initial point. The adaptors for man hole are not supplied with the machine.

Dimensions	850x 1100 x 1215 mm
Weight (approx.)	15.000 kg.



CONCRETE CREEP TESTING SYSTEM

Product Code

UTSP-0400 Concrete Creep Testing System

Standarts

EN ISO 7500-2



Concrete Creep Testing System

UTEST Creep Testing System on Concrete specimen is designed to determine time - dependent deformation of concrete under sustained and constant load.

Deformation is monitored periodically over time and compared to companion unloaded specimens to obtain the creep strain of the concrete, which can then be used to calculate the creep compliance, or "specific creep" of the material.

The system's capacity on the picture that seen above is 300 kN on each loading frame and the cylindrical specimens dimensions are 130 x700 mm. On the system one power pack is used for 3 frames. For creep systems custom designs are provided with required capacity and specimen dimensions with suitable accessories.

The standard creep test consists of a loading frame, data acquisition unit and hydraulic power pack and load control system to apply constant load on cylindrical specimens. (If required, the mold with required dimensions for the cylindrical specimens is supplied separately)

HYDRAULIC POWER PACK

UTEST Hydraulic Power Pack is designed to supply required power to the frames (specimens) and supplies the power that system's required.

This unit prevents oil heating and reduces the energy consumption by working when load decreases on the sample. Hydraulic Power Pack designs in order to prevent sudden discharge of loads on the specimens when the electricity is down.

If the system requires hydraulic pressure, Hydraulic Power Pack starts to work and it stops when system reaches enough hydraulic pressure.

FRAME

The frames of these systems are high stiffness constructions with stable loading on the specimens. Frictions on the piston is on minimum value by using special seals. There is load adjustment valve located on the each frame to set the required load value. The frame loads can be adjustable independently on each frame by using those pressure valves.

DATA ACQUISITION CONTROL UNIT

Data acquisition unit collects and evaluates data via data logger with using sensors. Each piston has a pressure transducer and on each sample there are two 0,001 mm accuracy displacement transducer attached to the sample with compression meter. It is also possible to connect temperature sensors to data acquisition system.

UTEST designs and manufacture the system according to the user specifications.



Hydraulic Unit



Load Frame



Load Frame & Reference Sample

STEEL RACK TESTING SYSTEMS

Product Code

UTSP-0450 Steel Rack Testing Systems

Utest Material Testing Equipment offers a wide range of products and services to support all aspects of mechanical and structural engineering. For other applications, additional consultancy service is available. Our experienced engineers can make your job easier. Utest can make custom design systems as it seen on the pictures.

Static testing machines below have double acting pistons with force capacities of 1000 kN, 500 kN and 100 kN. Static testing actuators can be controlled by a single hydraulic power unit. Different than the static testing machines Utest manufactured 10 Hz. cyclic testing capable 50 kN dynamic testing machine for dynamic and fatigue behavior of the connections at steel storage racks systems.

Electrical parts as indicators, system management buttons and controller is involved in the power pack. Bladder type accumulators are supplied with the pack in order to compensate pressure drops while actuator is operating and any pressure losses between the HPU and test station, in order to smooth pump ripples. Oil level, oil temperature, filter's condition and motor temperature are continuously checked by controller and system has necessary interlocks for fault conditions. Factory –set pressure relief valve prevents excessive increases in pressure. Compact designed power pack saves valuable floor space in your lab. Installed isolation manifold lets the pack running multiple test stations, preventing over pressurization, discharging system pressure separately and power isolation of the stations.

These systems are for testing different type of storage-shelves as Bending Tests on Beam End Connectors, Looseness Test on Beam End Connectors, Shear Tests on Beam End Connectors, Stub Column Compression Tests, Compressive Tests on Uprights, Bending Tests on Upright Position and Bend Tests on Beams.

Steel rack testing systems are controlled by a computer with the free of charge software uSta and uDyna. uSta and uDyna are flexible and user-friendly windows based application software for static and dynamic testing. In the software user can also create custom test sequences. Synchronized 100 Hz data transfer from feedback signals supplies detailed recording of running tests. This rate is flexible up to 4 kHz if the application is applicable. Graphical and numeric monitoring is displayed real time in the user interface. The software also includes an easy calibration check facility. The machine gives some constant load values and waits there for easy check mechanism. Furthermore uData is also delivered to customer freely, where data analyzing and reporting operations will be handled.



Technical Specifications (1)

Test Type	Bending Tests on Beam End Connectors (EN 15512-2009 Sec A 2.4) Looseness Test on Beam End Connectors (EN 15512-2009 Sec 5.3.2) Shear Tests on Beam End Connectors (EN 15512-2009 Sec 5.3.2)
Piston Capacity	2000 kN (double acting)
Piston Stroke	450 mm
Horizontal Test Daylights	2000 mm
Vertical Test Daylights	from 100 mm up to 650 mm

Technical Specifications (2)

Test Type	Test on Floor Connections EN 15512. 2009, Sec A 2.7
Piston Capacity	200 kN (Vertical load - double acting) 100 kN (Horizontal load - double acting)
Piston Stroke	200 mm (Vertical load) 200 mm (Horizontal load)

Technical Specifications (3)

Test Type	Stub Column Test Compression Tests On Uprights Test On Uprights Splices EN15512 : 2009 Sec A2.1.2
Piston Capacity	1000kn Double Acting Type
Piston Stroke	250 mm Profile and Upright Lengths From 200 mm Up To 3000 mm Can Be Tested

Technical Specifications (4)

Test Type	Cyclic Test On Beam - To - Column Connection
Piston Capacity / Stroke	10kn / 100 mm Double Acting Type (2 Off for Simulating Test Load to Beam to Column Junction)
Piston	100 kn / 100 mm Double Acting Type (1 Off for Simulating Test Load to Column)
Hydraulic Actuators	50 Kn / +/- 120 mm , 5 L / Min. (2 Off for Simulating Moment Load to Beam Ends)

Technical Specifications (5)

Test Type	Bending Tests on Upright Sections (Major Axis) (EN 15512 ,2009) Bending Tests on Beams (Major Axis) (EN 15512 ,2009)
Piston Capacity	500 kN (Double Acting)
Piston Stroke	200 mm
Vertical Test Clearance	200 mm
Horizontal Test Clearance	6000 mm X 3000 mm



STRUCTURAL SYSTEMS

UTEST became leading testing equipment supplier in Turkey and aims to maintain highest product standard in the world with continuous research and development activities. UTEST manufactures Electromechanically or Servohydraulically driven systems for tests carried out in institutes, universities, laboratories and many industrial sectors. Moreover UTEST offers customers technical consultancy, training, after sale services and modernization of older systems.



Actuators Mounted on Strong Wall

UTEST also supplies testing equipment part by part for wide range of standard or customized tests held in the automotive and aircraft industry, metal industry, plastic and rubber industry, the chemical industry, construction industry, bio mechanics. Below you will find brief description of servohydraulic actuators, hydraulic power packs, universal load frames and testing software. In addition to these, UTEST offers customers various fixtures and grips, accessories for simulation of environmental conditions, and digital controllers according to costumers individual testing needs.

SERVO-HYDRAULIC ACTUATORS

Utest manufactures servohydraulic actuators for static, quasi static, dynamic and high performance testing. Actuators are doubled ended and equal area linear actuators to generate equal force in both tension and compression. Actuators has various usable stroke length and are mounted with manifold attached on it. Fast response servo-valve (0-25 Hz) and accumulators are close coupled in order to improve performance with highest possible response and minimum pressure losses where most accurate test control is achieved. Required maximum allowable piston speed is aligned according to system pressure and flow rates(0-100 lt/minute). Precision displacement sensor with appropriate resolution is integrated in the actuators. All dynamic testing systems are equipped with precision fatigue rated load cells where they are mounted on piston's rod end for accurate force measurement and control.



Short Travel, Fatigue Rated, 500 kN



Long Travel, Fatigue Rated, 5 kN



Long Travel, Fatigue Rated, 300 kN

HYDRAULIC POWER PACK AND DISTRIBUTION UNIT

UTEST's hydraulic power units are specially designed for dynamic performance of test systems. Units has mostly 280 bar system pressure and various oil flows up to 100 l/min. The units can be modified to suit customers' requirements such as for higher piston speeds and load capacities. Electrical parts as indicators, system management buttons and controller are involved in the power pack. Bladder type accumulators are supplied with the pack in order to compensate pressure drops while actuator is operating and any pressure losses between the HPU and test station, in order to smooth pump ripples. Oil level, oil temperature, filter's condition and motor temperature are continuously checked by controller and system has necessary interlocks for fault conditions. Factory-set pressure relief valve prevents excessive increases in pressure. Variable-capacity pump ensure maximum electrical efficiency, consuming only sufficient electrical power to maintain the required flow, even during times of reduced flow demand. Compact designed hydraulic power units allow systems configured to control up many systems independently, this means saving valuable floor space in your lab. Installed isolation manifold lets hydraulic power system running multiple test stations, preventing over pressurization, discharging system pressure separately and power isolation of the stations. According to the environment where system is going to be built, water/oil cooler is supplied as standard. However air/oil cooler and alternative closed loop cooler systems can be adapted to unit if customer requests.

UNIVERSAL LOAD FRAMES

UTEST provides rigid, robust constructed load frames to suit your customized or standard testing needs. Frames are available in various load capacities and also in different variations to meet the requirements for horizontal and vertical test space, extended travel or for higher/lower force ratings. The frames may be designed for static testing capability to high performance dynamic testing according to application.



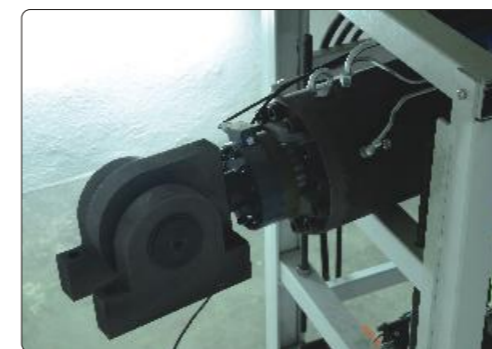
Power Pack



Distrubution Unit



Actuators Mounting Plate



Universal Joint

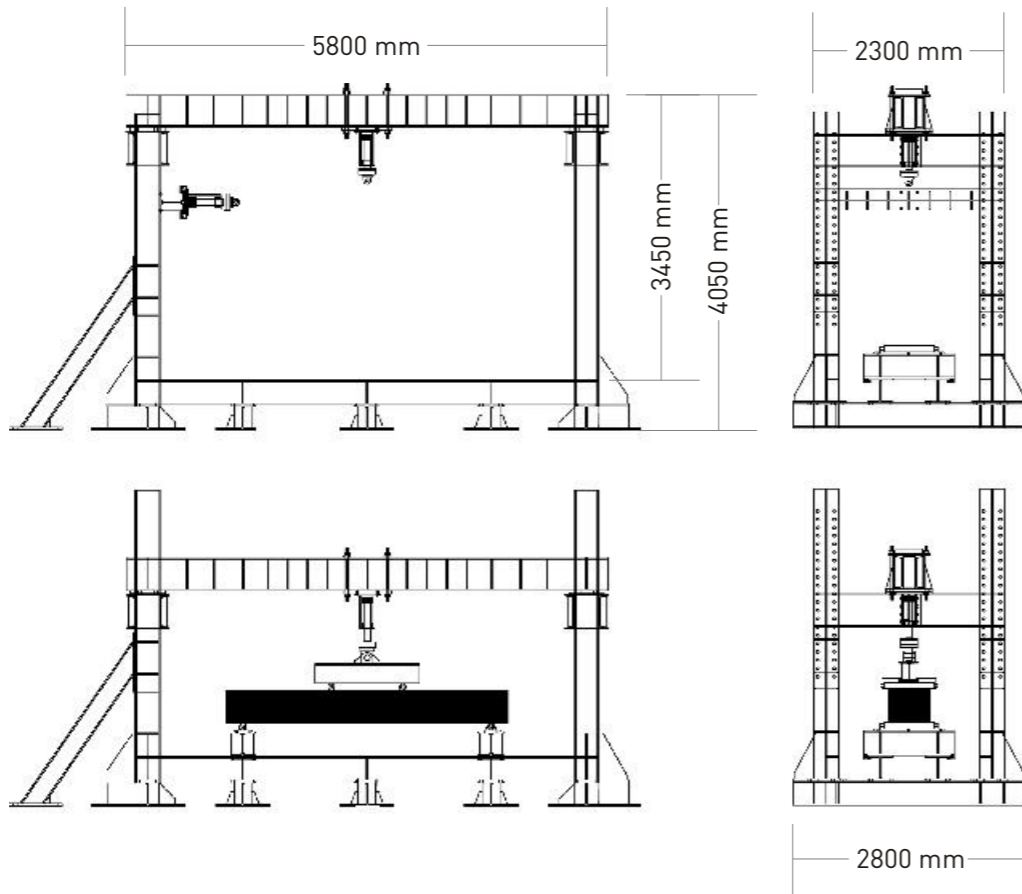


Powerpack Controller

STRUCTURAL SYSTEMS

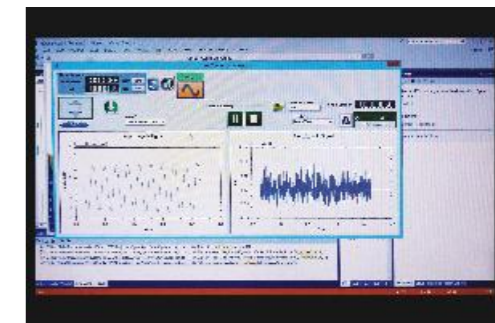
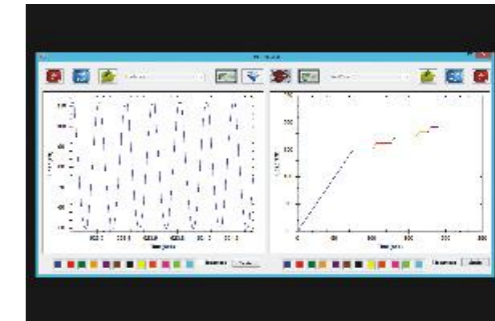
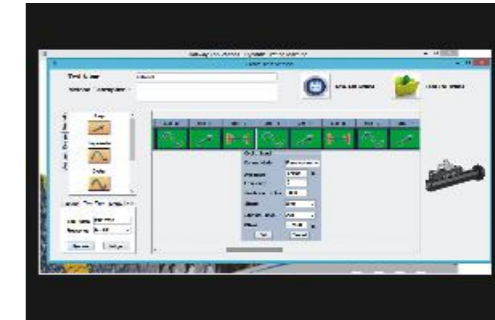


Reaction Frames



DATA ACQUISITION & PC SOFTWARE

UTEST's test systems are controlled by a computer with the free of charge software uDyna. uDyna is flexible and user-friendly windows based application software for both static and dynamic testing. In the software user can create either test methods (dynamic, fatigue or static) or custom test sequences where you can manage to run simple ramp to cyclic waveforms (sine, haversine, trapezoidal, square, triangle etc.), even arbitrary custom motion profiles. Synchronized 100 Hz data transfer from feedback signals supplies detailed recording of running tests. This rate is flexible up to 4 kHz if the application is applicable. Graphical and numeric monitoring is displayed real time in the user interface. Data reduction and peak values recording are running in cyclic tests. Safety limits (pressure and displacement limits) and internal algorithm protect the machine against any fault condition occurred in the system. uDyna always optimizes the control parameters(PID and feed forward terms) during test in order to adapt actuator control to the changing stiffness characteristic of the specimen. The software also includes an easy calibration check facility. Furthermore uData and DCS 100-A are also delivered to customer freely, where data analyzing and reporting operations will be handled with uData while data loggers' gathered data will be observed through DCS 100-A.



EVALUATION of THE BASE/SUBGRADE SOIL UNDER REPEATED LOADING

Product Code

UTSP-0500 Indoor Cyclic Plate Load Testing Equipment for Base/Subbase

UTEST is well equipped to perform most standard mechanical and materials testing, as well as specialized testing designed to customer's requirements. UTEST is the leading supplier in Turkey of high performance test systems in order to help customers handle research and development processes in their designs and manufacturing processes and to determine the mechanical behavior of materials, products and structures.

UTSP-0500 has been designed basically to make dynamic, static and quasi-static loading tests on soil and asphalt surface where it is mainly simulating deformation of soil due to the effects of heavy loaded truck wheel. The test system consists of digital control system, software, robust heavy duty box type frame, high speed data logger system, servo-hydraulic actuator and hydraulic power pack. The system is supplied with standard dynamic testing capability, also can be modified with appropriate sized servo valve, manifold and hydraulic power unit to suit the particular application.

System has box type floor standing frame where top and sub soil layers are filled, where asphalt, concrete or composite road surface is applied as sample. Frame has detachable blocks at one side to ease loading and unloading soil layers. Frame has needed accessories to place pressure cells and LVDT type displacement transducers for measuring the deformations. An electric motor is placed upon the frame to place actuator X-Y axis according to researchers need.

The machine is equipped with doubled ended, equal area linear actuator. Actuator is mounted on upper part of the system with 250 mm usable stroke length and mounted with manifold attached on it. Servo-valve and accumulators are close coupled in order to improve performance with highest possible response and minimum pressure losses where most accurate test control is achieved. SSI type displacement sensor with 5 µm resolution is integrated in the actuator. All dynamic testing systems are equipped with precision fatigue rated load cells where they are mounted on piston's rod end for accurate force measurement and control.

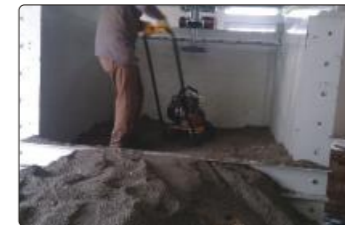
UTEST uses fully digital servo-hydraulic motion controller for displacement and/or force closed loop control of static and dynamic tests. Control loop time is 1 kHz and data acquisition rate of the controller is 100Hz as standard, but can be adjusted up to 4 kHz according to application where its control algorithm can run in that loop time. Effective resolution of analogue channels is 19 bit over full ±10 V range (18 bit for 0-10V and ±5V, 17 bit for 0-5V, 16 bit for 4-20 mA).



The hydraulic power units are specially designed for dynamic performance of test systems, which are governed by oil flow and pressure. The series have standard 500kN dynamic force capability at 280 bar (3000 psi on servo-valve – system pressure can be adjusted to any value with rotary accessory) system pressure with standard ratings up to 40 l/min oil flow. For larger oil flows, the unit can be modified to suit customers' requirements. Electrical parts as indicators, system management buttons and controller is involved in the power pack. Bladder type accumulators are supplied with the pack in order to compensate pressure drops while actuator is operating and any pressure losses between the HPU and test station, in order to smooth pump ripples. Oil level, oil temperature, filter's condition and motor temperature are continuously checked by controller and system has necessary interlocks for fault conditions. Factory-set pressure relief valve prevents excessive increases in pressure. Variable-capacity pump ensure maximum electrical efficiency, consuming only sufficient electrical power to maintain the required flow, even during times of reduced flow demand. Compact designed hydraulic power units allow systems configured to control up four systems independently, this means saving valuable floor space in your lab. Installed isolation manifold lets hydraulic power system running multiple test stations, preventing over pressurization, discharging system pressure separately and power isolation of the stations. According to the environment where system is going to be built, water/oil cooler is supplied as standard. However air/oil cooler and alternative closed loop cooler systems can be adapted to unit if customer requests.

PC SOFTWARE

UTSP-0500 test systems are controlled by a computer with the free of charge software uDyna. uDyna is flexible and user-friendly windows based application software for both static and dynamic testing. In the software user can create either test methods (dynamic, fatigue or static) or custom test sequences where you can manage to run simple ramp to cyclic waveforms (sine, haversine, trapezoidal, square, triangle etc.), even arbitrary custom motion profiles. Synchronized 100 Hz data transfer from feedback signals supplies detailed recording of running tests. This rate is flexible up to 4 kHz if the application is applicable. Graphical and numeric monitoring is displayed real time in the user interface. Data reduction and peak values recording are running in cyclic tests. Safety limits (pressure and displacement limits) and internal algorithm protect the machine against any fault condition occurred in the system. uDyna always optimizes the control parameters(PID and feed forward terms) during test in order to adapt actuator control to the changing stiffness characteristic of the specimen. The software also includes an easy calibration check facility. The machine gives some constant load values and waits there for easy check mechanism. Furthermore uData and DCS 100-A are also delivered to customer freely, where data analyzing and reporting operations will be handled with uData while data loggers' gathered data will be observed through DCS 100-A.



Technical Specifications

Control	Standard: Force and displacement closed loop controlled Option : Analogue (strain, stress) channel closed loop controlled
Actuator	Standard: 0.01 to 5 Hz. Frequency , 500 kN static 400 kN dynamic force capacity, 250 mm stroke (±250mm) Option : Different frequencies, force capacities, shorter or longer stroke
Hydraulic Power Pack	Standard: Free standing with air cooling unit, one output channel Option : water/oil cooler, four test station capable
Power Requirements	400 V/AC/50 Hz/ 3 Ph + N + E

Field cyclic plate load test equipment for Base/Subbase Soil is available upon request.



Drying, Weighing & Grading Testing Equipments

Ovens, balances and test sieves are common equipment for the testing of construction materials. UTEST has a wide range of models that satisfy the requirements of related EN, ASTM, AASHTO, ISO standards for drying, weighing and grading.

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Drying Samples

LABORATORY OVENS

Product Code

- UTD-1295 Laboratory Oven 50 lt., 220-240 V 50-60 Hz
- UTD-1300 Laboratory Oven 120 lt., 220-240 V 50-60 Hz
- UTD-1305 Laboratory Oven 250 lt., 220-240 V 50-60 Hz
- UTD-1310 Laboratory Oven 500 lt., 380 V 50 Hz
- UTD-1315 Laboratory Oven 700 lt., 380 V 50 Hz

Standards

EN 932-5, 1097-5; ASTM C127, C136, D558, D559, D560, D698, D1557, D1559 BS 1377:1, 1924:11; UNE 103300



UTD-1300



UTD-1315

UTEST UTD Series Laboratory Ovens have been designed for drying asphalt, soil, rock, concrete, aggregate or similar materials. 50, 120, 250, 500 and 750 liter capacity models are available. From ambient to 200°C temperature range with a precision of ±2 °C. The interior is manufactured from stainless steel and the exterior is robustly constructed from sheet steel finished in powder coated paint.

All models are fan circulated (forced convection), fitted with direct reading digital control unit and equipped with an analogue over-temperature protection thermostat. Laboratory Ovens are supplied complete with 2, 3, 4 or 5 shelves according to the capacity.

	Internal Dimension	External Dimension	Weight (approx.)
UTD-1295	410x350x360mm	580x600x570 mm	20 kg
UTD-1300	610x500x400 mm	770x750x650 mm	56 kg
UTD-1305	800x600x570 mm	970x840x790 mm	85 kg
UTD-1310	1100x790x580 mm	1410x920x770 mm	130 kg
UTD-1315	1400x890x570 mm	1600x1130x770 mm	170 kg

HOT PLATES

Product Code

- UTD-1400 Digital Hot Plate 300x300 mm, 220-240 V 50-60 Hz
- UTD-1402 Digital Hot Plate 350x450 mm, 220-240 V 50-60 Hz
- UTD-1403 Digital Hot Plate 400x600 mm, 220-240 V 50-60 Hz
- UTD-1405 Hot Plate Ø 170 mm 220-240 V 50-60 Hz
- UTD-1410 Digital Hot Plate with Magnetic Stirrer 220-240 V 50-60 Hz



UTD-1405

UTD-1410

	UTD-1400	UTD-1402	UTD-1403
Temperature Range	Ambient to 350°C		
Control System	Digital Thermostat		
Temperature Sensitivity	± 2 °C		
Plate Dimensions (mm)	300x300	300x450	400x600
External Chamber	Electrostatic Powder Paint, Steel		

	UTD-1405
Plate Dimensions	Ø 170 mm
Hot Plate Type	Sanding Plate
External Chamber	Electrostatic Powder Paint, Steel

	UTD-1410
Temperature Range	Ambient to 300°C
Stirring Speed	100-2000 r.p.m.
Stirring Capacity	5000 ml
Plate Dimensions	190x190 mm
External Chamber	Electrostatic Powder Paint, Steel

	Dimension	Weight (approx.)	Power
UTD-1400	300x300x250 mm	3.5 kg	1200 W
UTD-1402	350x450x250 mm	5.5 kg	1800 W
UTD-1403	400x600x250 mm	7.5 kg	3000 W
UTD-1405	300x300x200 mm	2.5 kg	1500 W
UTD-1410	210x310x100 mm	2.8 kg	600 W

AIR DRIER

Product Code

- UTD-1415 Warm-Air Drier, 220-240 V 50-60 Hz
- UTD-1418 Hot Air Gun, 220-240 V 50-60 Hz

The UTD-1415 Warm-Air Dryer and UTD-1418 Hot-Air Gun are used for drying small amounts of aggregate particles and soil samples. Both models have the heat and air flow control option. The UTD-1418 has 300-500°C air temperature and 240-450 L/min air flow capacity.



UTD-1418



UTD-1415

	UTD-1415	UTD-1418
Dimensions	550x500x200 mm	500x400x200 mm
Weight (approx.)	1,5 kg	3,5 kg
Power	2200 W	1600 W

MICROWAVE OVEN

Product Code

- UTD-1420 Microwave Oven 19 lt., 220-240 V 50-60 Hz

The UTD-1420 Microwave Oven is used for drying, conditioning, moisture determination and pre-heating applications when quick drying is required.

The UTD-1420 has max. 250°C, 100 min. program timer, rotating tray system, 2000 W.

Capacity	19 liters
Working Frequency	2450 Mhz
Internal Dimensions	210x295x315 mm
External Dimensions	450x300x300 mm
Weight (approx.)	11 kg
Power	2000 W



Drying Samples

FREEZING & THAWING CHAMBER

Product Code

UTD-1440 Freezing and Thawing Chamber 285 L,
220-240 V 50-60 Hz

Standards

EN 1338, 1339, 1340, 1367-1, 1367-6, 12371, 13748-2, 13450;
CEN/TS 12390-9

Used for the determination of resistance to freezing and thawing by providing freezing / thawing in air.

The chamber is equipped with a user defined program including 10 steps. Time can be adjusted to 999 minutes for each step of the program. The temperature range of the cabinet is -30°C to +30°C.

The temperature is controlled by a sensor which can be immersed either into the sample, into the water which the sample is placed into or, into the salty water solution placed on the sample before starting the test. The calibration of the sensor is carried out using the user friendly menu.

The cabinet provides maximum cooling 5°C/hour and maximum heating 10°C/hour. The distribution of temperature in the cabinet is performed using the integral fan.

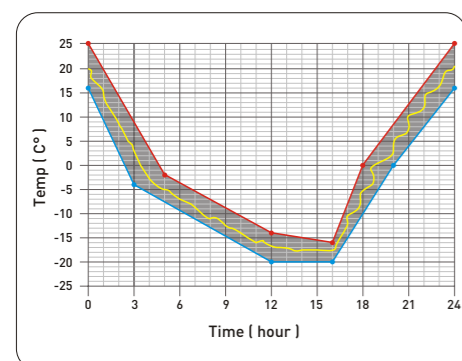
Software for data transfer to a computer is supplied complete with the cabinet, and data can be monitored during the tests. Data can be converted to an excel report or to a graph.

The condenser of the cabinet is fitted with an air cooled hermetic cooler. The gas used for the cooler does not include CFC's.

AUTOMATIC SETTINGS			
STEP	RAMP(min)	TEST(min)	TEMP(°C)
1	4	0	-20
2	1	0	+0
3	4	0	+20
4	0	0	+0
5	0	0	+0
6	0	0	+0
7	0	0	+0
8	0	0	+0
9	0	0	+0
10	0	0	+0

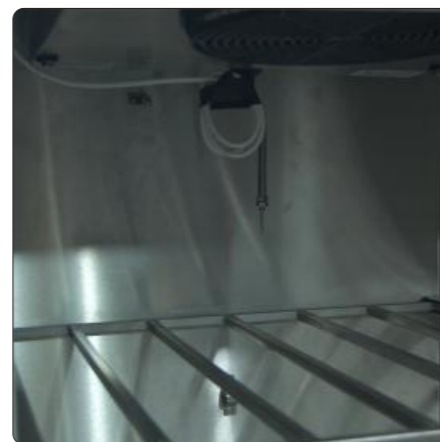
BACK Repeat Set: 5 AUTO TEST START

The control unit is electronic and equipped with digital display with 0.1°C temperature resolution. The temperature distribution accuracy in the cabinet is not higher than 2°C.



The user can preset the time of each ramp and the number of each set by using the control unit.

Internal Dimensions	490x530x1100 mm
External Dimensions	690x860x1940 mm
Weight (approx.)	225 kg
Power	1800 W



MUFFLE FURNACES

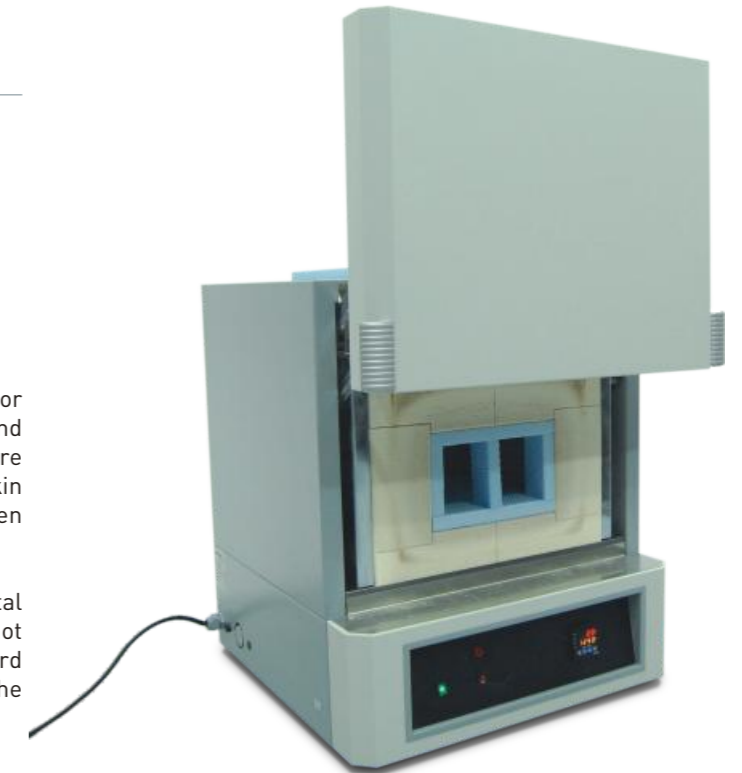
Product Code

UTD-1450 Muffle Furnace 3 lt. 1000°C, 220-240 V 50-60 Hz
 UTD-1455 Muffle Furnace 6 lt. 1100°C, 220-240 V 50-60 Hz
 UTD-1460 Muffle Furnace 5 lt. 1200°C, 220-240 V 50-60 Hz
 UTD-1462 Muffle Furnace 5 lt. 1200°C,
 Programmable Timer, 220-240 V 50-60 Hz
 UTD-1465 Muffle Furnace 5 lt. 1600°C, 380 V 50 Hz

The UTD Series Muffle Furnaces are widely used for determining various properties of construction materials, and they cover a temperature range from 1100°C to 1600°C, they are all front loading for easy operation and are of a double skin construction to maintain a cool outer case. Up to 1300°C, open wire based models are also produced.

Excellent temperature control is provided by a PID digital control system. A vertical counter balanced door keeps the hot insulation away from the operator which opens in an upward movement. The Furnace has a safety switch which isolates the power when the door is opened.

Muffle furnaces with higher volumes and temperatures are also available on request.



Technical Specifications

	UTD-1450	UTD-1455	UTD-1460	UTD-1462	UTD-1465
Temperature Controller	HONEYWELL Dc1010	HONEYWELL Dc1010	HONEYWELL Dc1010	PC 442/2	HONEYWELL DC1010
Max. Temperature	1000 °C	1100 °C	1200 °C	1200 °C	1600 °C
Max. Continuous Temperature	950 °C	1050 °C	1150 °C	1150 °C	1550 °C
Temperature Deviation at Set Point	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C
Heat Up Time to Max. Temperature	50 min.	65 min.	50 min.	50 min.	75 min.
Internal Volume	2.7 L	6.3 L	5 L	5 L	5 L
Phase	1	1	1	1	3
Internal Dimensions (mm)	100x135x200	150x210x200	140x180x200	140x180x200	140x150x240
External Dimensions (mm)	425x320x360	650x550x580	650x550x580	650x550x580	650x550x580
Weight (approx.)	20 kg	56 kg	56 kg	56 kg	65 kg
Power	2000 W	1500 W	2000 W	2000 W	4900 W

Drying Samples

LAMINAR FLOW

Product Code

- UTD-1480 Laminar Flow (Fume Hood) Over the Counter Type
- UTD-1482 Laminar Flow (Fume Hood) - Cabinet Type



UTD-1482

Some tests, especially extraction methods, require the use of volatile toxic chemicals which are hazardous to health, and these gases are subject to occupational exposure limits as described in relevant legislation and regulations.

The UTD-1480 and UTD-1482, Over The Counter and Cabinet Type Fume Hoods are especially designed to remove toxic gases from the test area. Bespoke Fume Hoods with specific dimensions and properties can be supplied to meet specific requirements, please contact Utest for more information.

Features

Standard Features

- Stoneware Bench
- Water and gas fittings
- 2 x double Electric Socket, 220V
- Galvanized frame
- Legs that made from hard PVC to be protected against corrosion,
- Second air drained part for draining heavy gases,
- Standard flammable gas tap for LPG, Acetylene, Propane, Butane...etc,
- Pressure Reducing Regulator,
- Laminated or Tempered glass

Optional Features

- Digital Indicator and control panel,
- Fan min. 1200 m3/h capacity
- Trespa Top Lab Plus or Epoxy Resin type bench surface,
- Demineralized water fitting

	Dimension	Weight (approx.)
UTD-1480	1500x900x1620 mm	250 kg
UTD-1482	1500x900x2350 mm	300 kg

MOISTURE BALANCE

Product Code

- UTW-0610 Moisture Balance 50 g x 0.001 g

The UTW-0610 Moisture Balance is specially designed to determine the moisture content of relatively small samples of various substances.

Features

- Easy operation provided by backlit LCD display
- Drying profile (standard, mild, step, rapid)
- Finish mode (manual, humidity stabilization, automatic, time defined)
- GLP/GMP printouts and reports
- Halogen lamp
- Standard and non-standard applications
- Optimization of work ensured by halogen lamps mode

Capacity	50 g
Pan Size	Ø 90 mm
Readability	1 mg
Maximum Sample Mass	50 g
Moisture Reading Accuracy	0.001 %
Repeatability	± 0.24% (sample ← 2 g), ± 0.06% (sample 2-10 g), ± 0.04% (sample → 10 g)
Maximum Drying Temp.	160°C
Drying Modes	4 Modes Standard / Quick / Step / Mild
Power of Heater	400 W
Power Supply	110-240 V 50-60 Hz AC
Display	LCD (backlit)
Dimensions	210x335x190 mm
Weight (approx.)	5 kg



Determination of Moisture

Weighing Samples

ELECTRONIC ANALYTICAL BALANCES

Product Code

- UTW-0620 Electronic Analytical Balance, LCD Screen 60-220 g x 0.00001-0.0001 g
- UTW-0622 Electronic Analytical Balance, LCD Screen 220 g x 0.0001 g
- UTW-0625 Electronic Analytical Balance 200 g x 0.001 g
- UTW-0628 Electronic Analytical Balance 360 g x 0.001 g
- UTW-0630 Electronic Analytical Balance 510 g x 0.001 g
- UTW-0631 Electronic Analytical Balance 750 g x 0.001 g
- UTW-0632 Electronic Analytical Balance 1000 g x 0.001 g



UTW-0630



UTW-0622

The UTW Series Electronic Analytical Balances set the standard in terms of reliable measurements, user-friendly and long service life. Offering capacities from 200 g to 510 g with high sensitivities up to 0.01 mg readability makes these balances ideal for weighing small sample amounts. The balances can be used for routine tasks and/or complicated weighing procedures.

The UTW-0620 and UTW-0622 models have an automatic internal calibration feature, the other models in the range require external calibration.

The UTW Series Analytical Balances provide fast and easy installation and cleaning with their ergonomic designs and brilliant displays. They can also be connected to printers or PC's through RS 232 outputs to give excellent monitoring and reporting performance.

	Capacity	Readability	Pan Size (mm)	Additional Power Supply
UTW-0620	60-220 g	0.01-0.1 mg	Ø 70	AC Adapter
UTW-0622	220 g	0.1 mg	Ø 85	AC Adapter
UTW-0625	200 g	1 mg	Ø 115	Rechargeable Battery
UTW-0628	360 g	1 mg	128x128	AC Adapter
UTW-0630	510 g	1 mg	128x128	AC Adapter
UTW-0631	750 g	1 mg	128x128	AC Adapter
UTW-0632	1000 g	1 mg	128x128	AC Adapter

	Under-Bench Weighing Facility	Dimensions	Weight (approx.)
UTW-0620	Yes	210x335x355 mm	6 kg
UTW-0622	Yes	300x400x400 mm	6 kg
UTW-0625	No	175x245x80 mm	1.5 kg
UTW-0628	Yes	210x335x160 mm	3.5 kg
UTW-0630	Yes	210x335x160 mm	3.5 kg
UTW-0631	Yes	215x350x160 mm	4 kg
UTW-0632	Yes	230x380x160 mm	4.5 kg

DIGITAL BALANCES

Product Code

- UTW-0633 Digital Balance 600 g x 0.01 g
- UTW-0635 Digital Balance 6 kg x 0.1 g
- UTW-0637 Digital Balance 30 kg x 5 g
- UTW-0638 Digital Balance 30 kg x 0.5 g
- UTW-0640 Digital Balance 3000 g x 0.01 g
- UTW-0642 Digital Balance 3500 g x 0.01 g
- UTW-0643 Digital Balance 4500 g x 0.01 g
- UTW-0645 Digital Balance 15 kg x 0.2 g
- UTW-0648 Digital Balance 30 kg x 0.1 g
- UTW-0654 Digital Balance 60 kg x 1 g



The UTW Series Digital Balances provide a wide range of maximum capacity and readability characteristics which make them economical and easy to use, they are ideal for central and site laboratories who require a range of balances for various applications.

The UTW Series Digital Balances are fitted with strain gauge load cells and are designed with large backlit LCD displays that give precise measurements within the 0°C to 40°C temperature range. Digital Balances have an internal automatic calibration feature. All models can be connected to printers or PC's through their RS 232 outputs and are supplied with 220-240 V, 50-60 Hz AC/DC adapters.

	Capacity	Readability	Pan Size (mm)	Additional Power Supply
UTW-0633	600 g	0.01 g	Ø 116	AC Battery
UTW-0635	6 kg	0.1 g	300x230	Rechargeable Batt.
UTW-0637	30 kg	5 g	300x230	Rechargeable Batt.
UTW-0638	30 kg	0.5 g	300x230	Rechargeable Batt.
UTW-0640	3000 g	0.01 g	125x145	Rechargeable Batt.
UTW-0642	3500 g	0.01 g	300x230	Electrical
UTW-0643	4500 g	0.01 g	195x195	Electrical
UTW-0644	6000 g	0.01 g	195x195	Electrical
UTW-0645	15 kg	0.2 g	300x230	Rechargeable Batt.
UTW-0648	30 kg	0.1 g	310x220	Rechargeable Batt.
UTW-0654	60 kg	1 g	300x230	Electrical

	Under-Bench Weighing Facility	Dimensions	Weight (approx.)
UTW-0633	No	250x350x400 mm	1.5 kg
UTW-0635	Yes	300x400x400 mm	4.5 kg
UTW-0637	Yes	300x400x400 mm	4.5 kg
UTW-0638	Yes	300x400x400 mm	4.5 kg
UTW-0640	Yes	250x350x400 mm	3.5 kg
UTW-0642	Yes	250x350x400 mm	3.5 kg
UTW-0643	Yes	250x350x400 mm	4 kg
UTW-0644	Yes	250x350x400 mm	4 kg
UTW-0645	Yes	300x400x400 mm	4.5 kg
UTW-0648	Yes	300x400x400 mm	5.5 kg
UTW-0654	No	300x400x400 mm	5.5 kg

DIGITAL PLATFORM SCALES

Product Code

- UTW-0700 Digital Platform Scale 150 kg x 5 g
- UTW-0705 Digital Platform Scale 150 kg x 10 g
- UTW-0708 Digital Platform Scale 150 kg x 50 g



UTW-0705

The UTW Digital Platform Scale Series provides a reliable macro-scale weighing facility up to 150 kg maximum capacity with 5 g, 10 g and 50 g readability values, for fast and economical weight measurements. These modern balances are designed to perform precise and accurate measurements under the heaviest industrial conditions.

	UTW-0700	UTW-0705	UTW-0708
Capacity	150 kg	150 kg	150 kg
Readability	5 g	10 g	50 g
Platform Size	600x700 mm	500x600 mm	780x1200 mm
Dimensions (mm)	550x650x400	550x650x400	550x650x400
Weight (approx)	30 kg	30 kg	30 kg
Additional Power Supply	Yes	Yes	Yes

MECHANICAL BALANCES

Product Code

- UTW-0800 Mechanical Balance 310 g x 0.01 g
- UTW-0810 Mechanical Balance 2610 g x 0.1 g
- UTW-0820 Mechanical Balance 20 kg x 1 g

The UTW Series Mechanical Balances, with their metal base construction, beam design and stainless steel pans, are durable, precise and easy-to-use. They are especially designed for on-site applications when electric power is not available. All models are equipped with zero adjust knobs at the end of the beam for fast and easy zeroing.

The UTW-0800 model eliminates the need for level adjustment with its special three-point base design to perform high-precision measurements. The UTW-0810 is known for its reliable performance at a reasonable price. The UTW-0820, has a corrosion-resistant durable design, this precise balance also weighs with a feather touch, down to 1 g over the whole weighing range - even under the most demanding conditions. Lockable Tare up to 2270 g. With an oversized stainless steel platform to accommodate large samples or container. The balance has magnetic damping which speeds up the weighing process, while the covered, self-aligning bearings assure a long, maintenance-free life.



UTW-0800



UTW-0810

	UTW-0800	UTW-0810	UTW-0820
Capacity	310 g	2610 g	20 kg
Readability	0.01 g	0.1 g	1 g
Platform Size	Ø 89 mm	Ø 147 mm	Ø 279 mm
Dimensions (mm)	510x205x230	540x195x210	915x280x330
Weight (approx)	2.5 kg	3.5 kg	20 kg

Weighing Samples

CALIBRATION WEIGHTS

Product Code

- UTW-0900 Calibration Weight Set M1 Class
- UTW-0901 Calibration Weight 500 g, M1 Class
- UTW-0902 Calibration Weight 1 kg, M1 Class
- UTW-0903 Calibration Weight 2 kg, M1 Class
- UTW-0904 Calibration Weight 5 kg, M1 Class
- UTW-0905 Calibration Weight 10 kg, M1 Class
- UTW-0906 Calibration Weight 20 kg, M1 Class
- UTW-0907 Calibration Weight 25 kg, M1 Class
- UTW-0920 Calibration Weight Set F1-F2 Class



The UTEST range of calibration weights are used for the periodical verification of your laboratory balances.

The UTW-0900 M1 Class and UTW-0920 F1-F2 Class Calibration Weight Sets each consists of 1 g, 2 x 2 g, 5 g, 10 g, 2 x 20 g, 50 g, 100 g, 2 x 200 g, 500 g and 1 kg units. M1 class weights are manufactured from stainless steel or cast iron coated with black epoxy based paint and F1-F2 class weights are manufactured from stainless steel.

The Calibration Weight Set is supplied complete with

- Wooden Box

All Calibration Weights are supplied complete with a wooden box, calibration certificates should be ordered separately if required.

SPECIFIC GRAVITY

Product Code

- UTW-1000 Specific Gravity Frame
- UTW-1003 Plastic Water Tank
- UTW-1005 Cradle for Hardened Concrete Specimens
- UTW-1008 Density Basket, 120 mm dia x 160 mm deep, 3.5 mm mesh
- UTW-1010 Density Basket, 200 mm dia x 200 mm deep, 3.5 mm mesh
- UTW-1012 Density Basket, 250 mm dia x 250 mm deep, 3.5 mm mesh
- UTW-1015 Density Basket, 200 mm dia x 180 mm deep, 2 mm mesh
- UTW-1017 Density Basket, 230 mm dia x 260 mm deep, 4 mm mesh

Standards

EN 1097-6, 12390-7

The UTW-1000 Specific Gravity Frame is used in conjunction with a suitable electronic balance for specific gravity determination of fresh and hardened concrete and aggregates. Consisting of a purpose built robust frame designed to support the electronic balance.

The lower part of the frame incorporates a moving platform, which carries the water tank allowing the test specimens to be weighed in both air and water. Any type of electronic balance fitted with under-bench weighing facility can be used.

Balance, Cradle and Density Basket should be ordered separately.

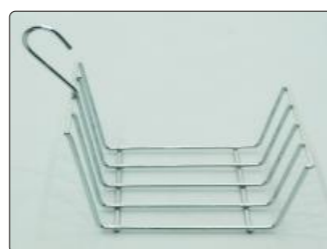
The Specific Gravity Frame is supplied complete with

- A water tank

Dimensions	600x500x1100 mm
Weight (approx.)	25 kg



UTW-1010



UTW-1005



UTW-1003

TESTING SIEVES

Product Code

Testing Sieves - IMPORT

Standards

EN 933-2; ISO 565, 3310-1, 3310-2; ASTM E11

UTEST is collaborating with world leader British sieve manufacturers to provide its customers a wide range of high quality testing sieves. Imported sieves are manufactured according to national and international standards and supplied with calibration guarantee from manufacturer company. All imported sieves supplied with a manufacturer's certificate of conformity including: mesh size, two way standard deviation, standard information, product serial code and date for traceability,

Each sieve is manufactured according to quality assurance system procedures with using high quality materials. During production stage wire mesh is controlled by optical projection method or advanced computer scanning methods. After precise measurements sieves with verified mesh openings and diameter sizes are certified by manufacturer.



Woven Cloth Sieves with Pan and Cover

Woven Wire Mesh Sieves

Wire mesh sieves are produced according to ASTM, ISO and BS standards. Sieves are manufactured at 3", 8", 12", 18", 38 mm, 100 mm, 150 mm, 200 mm, 250 mm, 300 mm, 315 mm, 350 mm, 400mm, 450 mm diameters depending on related standard and mesh opening between 1 mm and 125 mm.



Perforated Plate Sieves

Perforated Plate Sieves

Perforated plate sieves are widely used different parts of the industry. Perforated plate sieves can be supplied with square holes between 4mm and 125mm mesh openings, round holes between 4mm and 125mm mesh openings, with brass or stainless steel frame and 200, 300, 450mm diameters.

Wet Washing Sieves

Washing sieves are used to extract the specimen with wet sieving method without any material loss. Washing sieves supplied with 8", 200 mm, 18 inç or 450 mm diameters and 4", 100 mm, 12 inch and 300mm depths, with brass or stainless steel frames.



Wet Washing Sieves

Pan & Cover

Pan and covers can be supplied with brass or stainless steel frames with 3", 8", 12", 18", 38 mm, 100 mm, 150 mm, 200 mm, 250 mm, 300 mm, 315 mm, 350 mm, 400mm, 450 mm diameters.



Pan and Cover

Weighing Samples

TESTING SIEVES

ISO 3310-1 Woven Wire Cloth Sieves		
Nominal Aperture Size	Ø 200 mm x 50 mm	Ø 300 mm x 75 mm
	Product Code	Product Code
125 mm	UTG-2WC1250	UTG-4WC1250
100 mm [4"]	UTG-2WC1000	UTG-4WC1000
90 mm [3 1/2"]	UTG-2WC0900	UTG-4WC0900
80 mm	UTG-2WC0800	UTG-4WC0800
75 mm [3"]	UTG-2WC0750	UTG-4WC0750
63 mm [2 1/2"]	UTG-2WC0630	UTG-4WC0630
56 mm	UTG-2WC0560	UTG-4WC0560
53 mm [2.12"]	UTG-2WC0530	UTG-4WC0530
50 mm [2"]	UTG-2WC0500	UTG-4WC0500
45 mm [1 3/4"]	UTG-2WC0450	UTG-4WC0450
40 mm	UTG-2WC0400	UTG-4WC0400
37.5 mm [1 1/2"]	UTG-2WC0375	UTG-4WC0375
31.5 mm [1 1/4"]	UTG-2WC0315	UTG-4WC0315
26.5 mm [1.06"]	UTG-2WC0265	UTG-4WC0265
25 mm [1"]	UTG-2WC0250	UTG-4WC0250
22.4 mm [7/8"]	UTG-2WC0224	UTG-4WC0224
20 mm	UTG-2WC0200	UTG-4WC0200
19 mm [3/4"]	UTG-2WC0190	UTG-4WC0190
16 mm [5/8"]	UTG-2WC0160	UTG-4WC0160
13.2 mm [.530"]	UTG-2WC0132	UTG-4WC0132
12.5 mm [1/2"]	UTG-2WC0125	UTG-4WC0125
11.2 mm [7/16"]	UTG-2WC0112	UTG-4WC0112
10 mm	UTG-2WC0100	UTG-4WC0100
9.5 mm [3/8"]	UTG-2WC0095	UTG-4WC0095
8 mm [5/16"]	UTG-2WC0080	UTG-4WC0080
6.7 mm [.265"]	UTG-2WC0067	UTG-4WC0067
6.3 mm [1/4"]	UTG-2WC0063	UTG-4WC0063
5.6 mm [No. 3 1/2]	UTG-2WC0056	UTG-4WC0056
5 mm	UTG-2WC0050	UTG-4WC0050
4.75 mm [No. 4]	UTG-2WC0047	UTG-4WC0047
4 mm [No. 5]	UTG-2WC0040	UTG-4WC0040
3.35 mm [No. 6]	UTG-2WF3350	UTG-4WF3350
3.15 mm	UTG-2WF3150	UTG-4WF3150
2.8 mm [No. 7]	UTG-2WF2800	UTG-4WF2800
2.5 mm	UTG-2WF2500	UTG-4WF2500
2.36 mm [No. 8]	UTG-2WF2360	UTG-4WF2360
2 mm [No. 10]	UTG-2WF2000	UTG-4WF2000
1.7 mm [No. 12]	UTG-2WF1700	UTG-4WF1700
1.6 mm	UTG-2WF1600	UTG-4WF1600
1.4 mm [No. 14]	UTG-2WF1400	UTG-4WF1400
1.25 mm	UTG-2WF1250	UTG-4WF1250
1.18 mm [No. 16]	UTG-2WF1180	UTG-4WF1180
1 mm [No. 18]	UTG-2WF1000	UTG-4WF1000
850 µm [No. 20]	UTG-2WF0850	UTG-4WF0850
800 µm	UTG-2WF0800	UTG-4WF0800
710 µm [No. 25]	UTG-2WF0710	UTG-4WF0710
630 µm	UTG-2WF0630	UTG-4WF0630
600 µm [No. 30]	UTG-2WF0600	UTG-4WF0600
500 µm [No. 35]	UTG-2WF0500	UTG-4WF0500
425 µm [No. 40]	UTG-2WF0425	UTG-4WF0425
400 µm	UTG-2WF0400	UTG-4WF0400
355 µm [No. 45]	UTG-2WF0355	UTG-4WF0355
315 µm	UTG-2WF0315	UTG-4WF0315
300 µm [No. 50]	UTG-2WF0300	UTG-4WF0300
250 µm [No. 60]	UTG-2WF0250	UTG-4WF0250
212 µm [No. 70]	UTG-2WF0212	UTG-4WF0212
200 µm	UTG-2WF0200	UTG-4WF0200
180 µm [No. 80]	UTG-2WF0180	UTG-4WF0180
160 µm	UTG-2WF0160	UTG-4WF0160
150 µm [No. 100]	UTG-2WF0150	UTG-4WF0150
125 µm [No. 120]	UTG-2WF0125	UTG-4WF0125
106 µm [No. 140]	UTG-2WF0106	UTG-4WF0106
100 µm	UTG-2WF0100	UTG-4WF0100
90 µm [No. 170]	UTG-2WF0090	UTG-4WF0090
80 µm	UTG-2WF0080	UTG-4WF0080
75 µm [No. 200]	UTG-2WF0075	UTG-4WF0075
63 µm [No. 230]	UTG-2WF0063	UTG-4WF0063
53 µm [No. 270]	UTG-2WF0053	UTG-4WF0053
50 µm	UTG-2WF0050	UTG-4WF0050
45 µm [No. 325]	UTG-2WF0045	UTG-4WF0045
40 µm	UTG-2WF0040	UTG-4WF0040
38 µm [No. 400]	UTG-2WF0038	UTG-4WF0038

* Br-Brass, SS-Stainless Steel

ISO 3310-2 Perforated Plate Sieves		
Nominal Aperture Size	Ø 200 mm x 50 mm	Ø 300 mm x 75 mm
	Product Code	Product Code
125 mm	UTG-2PC1250	UTG-4PC1250
106 mm	UTG-2PC1060	UTG-4PC1060
100 mm [4"]	UTG-2PC1000	UTG-4PC1000
90 mm [3 1/2"]	UTG-2PC0900	UTG-4PC0900
80 mm	UTG-2PC0800	UTG-4PC0800
75 mm [3"]	UTG-2PC0750	UTG-4PC0750
63 mm [2 1/2"]	UTG-2PC0630	UTG-4PC0630
56 mm	UTG-2PC0560	UTG-4PC0560
53 mm [2.12"]	UTG-2PC0530	UTG-4PC0530
50 mm [2"]	UTG-2PC0500	UTG-4PC0500
45 mm [1 3/4"]	UTG-2PC0450	UTG-4PC0450
40 mm	UTG-2PC0400	UTG-4PC0400
37.5 mm [1 1/2"]	UTG-2PC0375	UTG-4PC0375
31.5 mm [1 1/4"]	UTG-2PC0315	UTG-4PC0315
26.5 mm [1.06"]	UTG-2PC0265	UTG-4PC0265
25 mm [1"]	UTG-2PC0250	UTG-4PC0250
22.4 mm [7/8"]	UTG-2PC0224	UTG-4PC0224
20 mm	UTG-2PC0200	UTG-4PC0200
19 mm [3/4"]	UTG-2PC0190	UTG-4PC0190
16 mm [5/8"]	UTG-2PC0160	UTG-4PC0160
13.2 mm [.530"]	UTG-2PC0132	UTG-4PC0132
12.5 mm [1/2"]	UTG-2PC0125	UTG-4PC0125
11.2 mm [7/16"]	UTG-2PC0112	UTG-4PC0112
10 mm	UTG-2PC0100	UTG-4PC0100
9.5 mm [3/8"]	UTG-2PC0095	UTG-4PC0095
8 mm [5/16"]	UTG-2PC0080	UTG-4PC0080
6.7 mm [.265"]	UTG-2PC0067	UTG-4PC0067
6.3 mm [1/4"]	UTG-2PC0063	UTG-4PC0063
5.6 mm [No. 3 1/2]	UTG-2PC0056	UTG-4PC0056
5 mm	UTG-2PC0050	UTG-4PC0050
4.75 mm [No. 4]	UTG-2PC0047	UTG-4PC0047
4 mm [No. 5]	UTG-2PC0040	UTG-4PC0040

Wet Washing Sieves	
Nominal Aperture Size	Ø 200 mm x 100 mm Product Code
150 µm (No.100)	UTG-0161
75 µm (No.200)	UTG-0163
63 µm (No.230)	UTG-0166

Sieve Diameters and Frame Materials							
Diameter	Height	Depth to Mesh or Plate	Frame Material	Diameter	Height	Depth to Mesh or Plate	Frame Material
38	Full	19 mm	Br or SS	300	Full	75 mm	Br or SS
100	Full	40 mm	Br or SS	300	Half	40 mm	Br or SS
100	Half	20 mm	Br or SS	315	Full	75 mm	SS
150	Full	38 mm	SS	350	Full	60 mm	Br or SS
200	Full	50 mm	Br or SS	400	Full	65 mm	Br or SS
200	Half	25 mm	Br or SS	450	Full	100 mm	SS
250	Full	60 mm	SS				

Sieve Diameters and Frame Materials			
200 mm Diameter	8 inch Diameter	300 mm Diameter	12 inch Diameter
50 mm Deep Stainless Steel Cover with Handle	2 inch Deep Stainless Steel Cover with Handle	75 mm Deep Stainless Steel Cover with Handle	3 inch Deep Stainless Steel Cover with Handle

Pan & Cover							
Ø 200 x 50 mm	Product Code	Ø 8" x 2"	Product Code	Ø 300 x 50 mm	Product Code	Ø 12" x 3"	Product Code
Pan & Cover	UTG-2001/Y	Pan & Cover	UTG-3001/E	Pan & Cover	UTG-4001/Y	Pan & Cover	UTG-5001/E
Pan	UTG-2002/Y	Pan	UTG-3002/E	Pan	UTG-4002/Y	Pan	UTG-5002/E
Cover	UTG-2003/Y	Cover	UTG-3003/E	Cover	UTG-4003/Y	Cover	UTG-5003/E

TESTING SIEVES

Product Code

Testing Sieves - UTEST

Standards

EN 933-2; ISO 565, 3310-1, 3310-2; ASTM E11, E 323

UTEST offers a wide range of High Quality Testing Sieves which are used for classification of soils, aggregates and other powdered and granular materials. UTEST testing sieves are of the highest quality, accurate specifications and durable construction.

Woven Wire Cloth and Perforated Plate Sieves are supplied in 200 mm and 300 mm frame diameters in various nominal aperture sizes suitable for several applications and standards.

Wet Washing Sieves are used for wet testing of various materials enabling to wash the fines through the sieve without losing any of the sample. Available in 200 mm diameter with 100 mm and 200 mm deep models.

Frame Receiving Pans and Lids are available in stainless steel with 200 mm and 300 mm diameters.

ISO 3310-2 Perforated Plate Sieves			ISO 3310-1 Woven Wire Cloth Sieves		
Nominal Aperture Size	Ø 200 mm x 50 mm	Ø 300 mm x 75 mm	Nominal Aperture Size	Ø 200 mm x 50 mm	Ø 300 mm x 75 mm
	Product Code	Product Code		Product Code	Product Code
125 mm	UTG-2PC1250 / Y	UTG-4PC1250 / Y	125 mm	UTG-2WC1250 / Y	UTG-4WC1250 / Y
106 mm	UTG-2PC1060 / Y	UTG-4PC1060 / Y	100 mm [4"]	UTG-2WC1000 / Y	UTG-4WC1000 / Y
100 mm [4"]	UTG-2PC1000 / Y	UTG-4PC1000 / Y	90 mm [3 1/2"]	UTG-2WC0900 / Y	UTG-4WC0900 / Y
90 mm [3 1/2"]	UTG-2PC0900 / Y	UTG-4PC0900 / Y	80 mm	UTG-2WC0800 / Y	UTG-4WC0800 / Y
80 mm	UTG-2PC0800 / Y	UTG-4PC0800 / Y	75 mm [3"]	UTG-2WC0750 / Y	UTG-4WC0750 / Y
75 mm [3"]	UTG-2PC0750 / Y	UTG-4PC0750 / Y	63 mm [2 1/2"]	UTG-2WC0630 / Y	UTG-4WC0630 / Y
63 mm [2 1/2"]	UTG-2PC0630 / Y	UTG-4PC0630 / Y	56 mm	UTG-2WC0560 / Y	UTG-4WC0560 / Y
56 mm	UTG-2PC0560 / Y	UTG-4PC0560 / Y	53 mm [2.12"]	UTG-2WC0530 / Y	UTG-4WC0530 / Y
53 mm [2.12"]	UTG-2PC0530 / Y	UTG-4PC0530 / Y	50 mm [2"]	UTG-2WC0500 / Y	UTG-4WC0500 / Y
50 mm [2"]	UTG-2PC0500 / Y	UTG-4PC0500 / Y	45 mm [1 3/4"]	UTG-2WC0450 / Y	UTG-4WC0450 / Y
45 mm [1 3/4"]	UTG-2PC0450 / Y	UTG-4PC0450 / Y	40 mm	UTG-2WC0400 / Y	UTG-4WC0400 / Y
40 mm	UTG-2PC0400 / Y	UTG-4PC0400 / Y	37.5 mm [1 1/2"]	UTG-2WC0375 / Y	UTG-4WC0375 / Y
37.5 mm [1 1/2"]	UTG-2PC0375 / Y	UTG-4PC0375 / Y	31.5 mm [1 1/4"]	UTG-2WC0315 / Y	UTG-4WC0315 / Y
31.5 mm [1 1/4"]	UTG-2PC0315 / Y	UTG-4PC0315 / Y	26.5 mm [1.06"]	UTG-2WC0265 / Y	UTG-4WC0265 / Y
26.5 mm [1.06"]	UTG-2PC0265 / Y	UTG-4PC0265 / Y	25 mm [1"]	UTG-2WC0250 / Y	UTG-4WC0250 / Y
25 mm [1"]	UTG-2PC0250 / Y	UTG-4PC0250 / Y	22.4 mm [7/8"]	UTG-2WC0224 / Y	UTG-4WC0224 / Y
22.4 mm [7/8"]	UTG-2PC0224 / Y	UTG-4PC0224 / Y	20 mm	UTG-2WC0200 / Y	UTG-4WC0200 / Y
20 mm	UTG-2PC0200 / Y	UTG-4PC0200 / Y	19 mm [3/4"]	UTG-2WC0190 / Y	UTG-4WC0190 / Y
19 mm [3/4"]	UTG-2PC0190 / Y	UTG-4PC0190 / Y	16 mm [5/8"]	UTG-2WC0160 / Y	UTG-4WC0160 / Y
16 mm [5/8"]	UTG-2PC0160 / Y	UTG-4PC0160 / Y	13.2 mm [.530"]	UTG-2WC0132 / Y	UTG-4WC0132 / Y
13.2 mm [.530"]	UTG-2PC0132 / Y	UTG-4PC0132 / Y	12.5 mm [1/2"]	UTG-2WC0125 / Y	UTG-4WC0125 / Y
12.5 mm [1/2"]	UTG-2PC0125 / Y	UTG-4PC0125 / Y	11.2 mm [7/16"]	UTG-2WC0112 / Y	UTG-4WC0112 / Y
11.2 mm [7/16"]	UTG-2PC0112 / Y	UTG-4PC0112 / Y	10 mm	UTG-2WC0100 / Y	UTG-4WC0100 / Y
10 mm	UTG-2PC0100 / Y	UTG-4PC0100 / Y	9.5 mm [3/8"]	UTG-2WC0095 / Y	UTG-4WC0095 / Y
9.5 mm [3/8"]	UTG-2PC0095 / Y	UTG-4PC0095 / Y	8 mm [5/16"]	UTG-2WC0080 / Y	UTG-4WC0080 / Y
8 mm [5/16"]	UTG-2PC0080 / Y	UTG-4PC0080 / Y	6.7 mm [.265"]	UTG-2WC0067 / Y	UTG-4WC0067 / Y
6.7 mm [.265"]	UTG-2PC0067 / Y	UTG-4PC0067 / Y	6.3 mm [1/4"]	UTG-2WC0063 / Y	UTG-4WC0063 / Y
6.3 mm [1/4"]	UTG-2PC0063 / Y	UTG-4PC0063 / Y	5.6 mm [No. 3 1/2]	UTG-2WC0056 / Y	UTG-4WC0056 / Y
5.6 mm [No. 3 1/2]	UTG-2PC0056 / Y	UTG-4PC0056 / Y	5 mm	UTG-2WC0050 / Y	UTG-4WC0050 / Y
5 mm	UTG-2PC0050 / Y	UTG-4PC0050 / Y	4.75 mm [No. 4]	UTG-2WC0047 / Y	UTG-4WC0047 / Y
4.75 mm [No. 4]	UTG-2PC0047 / Y	UTG-4PC0047 / Y	4 mm [No. 5]	UTG-2WC0040 / Y	UTG-4WC0040 / Y

Wet Washing Sieves	
Nominal Aperture Size	Ø 200 mm x 100 mm Product Code
150 µm (No.100)	UTG-0160
75 µm (No.200)	UTG-0162
63 µm (No.230)	UTG-0165

Pan & Cover	
Ø 200 x 50 mm	Product Code
Pan & Cover	UTG-2001/Y
Pan	UTG-2002/Y
Cover	UTG-2003/Y

Pan & Cover	
Ø 300 x 75 mm	Product Code
Pan & Cover	UTG-4001/Y
Pan	UTG-4002/Y
Cover	UTG-4003/Y



Perforated Plate Sieves



Woven Cloth Sieves with Pan and Cover

Sample Grading

SIEVE SHAKER

Product Code

- UTG-0411 Sieve Shaker for 200/300 mm (8"/12") Sieves, 220-240 V 50-60 Hz
- UTG-0411/110 Sieve Shaker for 200/300 mm (8"/12") Sieves, 110 V 60 Hz
- UTG-0412 Sieve Shaker for 200/300 mm (8"/12") Sieves with Frequency Adjustment 220-240 V 50-60 Hz
- UTG-0412/110 Sieve Shaker for 200/300 mm (8"/12") Sieves with Frequency Adjustment 110 V 60 Hz

Standards

EN 932-5; ISO 565, 3310-1, 3310-2; ASTM E11, E 323; BS 410-1, 410-2



UTG-0411

The UTG-0411 and UTG-0412 Sieve Shakers impart a circular motion to the material being sieved so that it makes a slow progression over the surface of the sieve. They are ideal for on site and heavy duty applications when heavy or large bulk samples are to be analyzed.

They are equipped with a dynamic power source which ensures the right vibration is imparted to the sieves and sample for fast, accurate and reproducible tests. The vertical movement is fixed to ensure the sample spends maximum time on the sieve surface. The unique vibratory action also helps keep the apertures clear and free from binding.

The UTEST Sieve Shakers are fitted with a very efficient clamping device that ensures sieves are held firmly without over-tightening and allows them to be quickly removed and replaced. The timer can be preset for any duration up to 60 minutes. The UTG-0412 model has the additional frequency adjustment property.

Technical Specifications

Sieve Capacity	15 pieces of 200 mm (8") sieves + pan and cover 10 pieces of 300 mm (12") sieves + pan and cover
Dimensions	510x510x370 mm (for both models)
Weight (approx.)	86 kg (for both models)
Power	250 W (for both models)



UTG-0412

SIEVE SHAKER

Product Code

- UTG-0413 Sieve Shaker with Frequency and Time Adjustment, for 200/300/400 mm (8"/12"/16") Dia. Frame Sieves, 220-240 V 50-60 Hz
- UTG-0413/110 Sieve Shaker with Frequency and Time Adjustment, for 200/300/400mm (8"/12"/16") Dia. Frame Sieves, 110 V 60 Hz

Standards

EN 932-5; ISO 565, 3310-1, 3310-2; ASTM E11, E 323; BS 410-1, 410-2

The UTG-0413 Sieve Shaker is fitted with a very efficient clamping device that ensures sieves are held firmly without over-tightening and allows them to be quickly removed and replaced.

Non-corrodible and non-metallic springs makes the UTD-0413 a maintenance-free device. The shaker is fitted with a timer which can be preset to any duration up to 60 minutes.

The UTG-0413 sieve shaker has been specially designed to operate with heavy samples without loss of performance. It is equipped with a dynamic power source which ensures the right vibration is imparted to the sieves and sample for fast, accurate and reproducible tests. The vertical movement is fixed to ensure the sample spends maximum time on the sieve surface. The unique vibratory action also helps keep the apertures clear and free from binding.

Technical Specifications

Sieve Capacity	15 pieces of 200 mm (8") sieves + pan and cover 10 pieces of 300 mm mm (12") sieves + pan and cover 7 pieces of 400 mm (16") sieves + pan and cover
Dimensions	650x650x400 mm
Weight (approx.)	147 kg
Power	370 W



UTG-0413

Sample Grading

SIEVE SHAKER

Product Code

UTG-0414 Electromagnetic Digital Sieve Shaker with Time Adjustment, for 200 mm (8") to 300 mm (12") dia. frame sieves, 220-240 V 50-60 Hz

The UTG-0414 Electromagnetic Digital Sieve Shaker performs a vertical sieving motion and by removing the upper plate it can also be used as a vibrating table for one concrete specimen.

The vertical sieving motion is provided by a very effective electromagnetic unit which is designed to obtain the best results with sand and aggregates. Supplied complete with timer.



Technical Specifications

Sieve Capacity	12 pieces of 200 mm (8") sieves + pan and cover 8 pieces of 300 mm (12") sieves + pan and cover
Dimensions	495x405x945 mm
Weight (approx.)	30 kg
Power	400 W

SIEVE SHAKER

Product Code

UTG-0415 Triple Motion Sieve Shaker with Time Adjustment, Motorized, 220-240 V 50-60 Hz

The UTG-0415 Triple Motion Sieve Shaker has a versatile design which allows the user to work with large batch sizes, large particle sizes or sieves with various sizes are need to be shaken.

This sieve shaker features a unique combination of jarring and orbital action which provides the most effective shaking action. Upper and lower cross heads are adjustable to be used for different sieve sizes. The shaker includes a 30 minute timer and a continuous-stop-timer operation switch.



Technical Specifications

Sieve Capacity	10x of 200 mm (8") sieves plus pan and cover 8x of 250 mm (10") sieves plus pan and cover 6x of 300 mm (12") sieves plus pan and cover
Max. Sample Weight	Up to 4500 g depending on sieve size
Orbital Action	327 oscillations per minute (approx.)
Jarring Action	40 vertical blows per minute
Dimensions	540x370x1015 mm
Weight (approx.)	75 kg
Power	250 W

SIEVE SHAKER

Product Code

UTG-0416 Rotatap Motorized Sieve Shaker, with 2 Dimensional Motion and Time Adjustment, for 200 mm (8") Dia. Frame Sieves, 220-240 V 50-60 Hz

UTG-0416/110 Rotatap Motorized Sieve Shaker, with 2 Dimensional Motion and Time Adjustment, for 200 mm (8") Dia. Frame Sieves, 110 V 60 Hz

Standards

ASTM C136

The UTG-0416 Rotatap Motorized Sieve Shaker is designed to be used for 8" diameter sieves. This shaker provides 278 oscillations and 150 taps per minute to produce an effective sieving action. The UTG-0416 provides a 2 dimensional shaking motion and can handle up to 6 X full-height 8" sieves and 13 X half-height 8" sieves. Mounting is not required.



Timer	99 minute, digital
Dimensions	635x710x535 mm
Weight (approx.)	90 kg
Power	1/4 HP

SIEVE SHAKER

Product Code

UTG-0418 Motorized Sieve Shaker, 3", 5" and 8" Sieves, 220-240 V 50-60 Hz

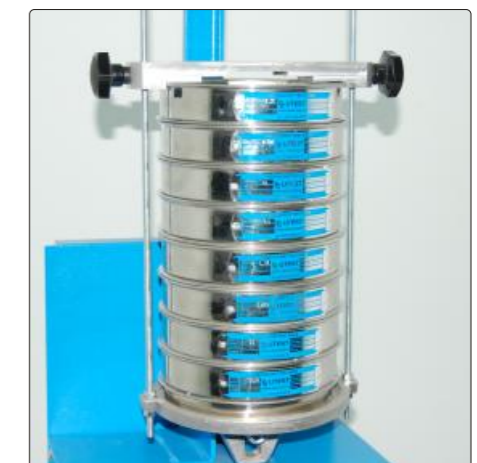
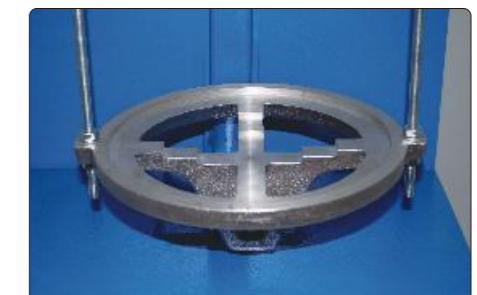
UTG-0418/110 Motorized Sieve Shaker, 3", 5" and 8" Sieves, 110 V 60 Hz

Standards

ASTM C136

The UTG-0418 Motorized Sieve Shaker imparts a uniform shaking action to a range of sieve dimensions. The shaker can handle up to 10 X 8", 12 X 5" and 16 X 3" full-height sieves and, 18 X 8" half height sieves. Mounting is required.

Timer	30 minute, analogue
Dimensions	380x380x1145 mm
Weight (approx.)	30 kg
Power	1/4 HP



Sample Grading

HIGH CAPACITY SCREEN SHAKER

Product Code

UTG-0420	High Capacity Screen Shaker Time-Controlled, 220-240 V 50-60 Hz
UTG-0420/110	High Capacity Screen Shaker Time-Controlled, 110 V 60 Hz
UTG-0422	High Capacity Screen Shaker Frequency & Time-Controlled, 220-240 V 50-60 Hz
UTG-0422/110	High Capacity Screen Shaker, Frequency and Time-Controlled, 110 V 60 Hz
UTG-0425	Pan
UTG-0426	Soundproof Safety Cabinet for UTG-0420 and UTG-0422

Standards

EN 1339, 1367-1; TS 2824

The UTG-0420 and UTG-0422 are ideal for sizing large quantities of crushed stones, sand, gravel, slag, coal, coke, ores, pellets and similar materials. The screen shaker has a capacity of approx. 30 kg of sample. To be use with 667x452x67 mm dimension screens. The shaker has 6 screens and 1 pan capacity.

UTG-0420 model is time-controlled, UTG-0422 model is frequency and time-controlled.

Various sized woven wire from 100 mm (4") to 4 mm (no.5) or perforated plate from 125mm to 5.6mm screen trays are available on request.

UTG-0426 Soundproof Safety Cabinet is manufactured from sheet steel lined internally with soundproofing material to reduce noise and for protection from dust.

Screen trays and Soundproof Safety Cabinet (UTG-0426) should be ordered separately.

The UTG-0420 or UTG-0422 is supplied complete with

- Pan (UTG-0425)



SCREEN SHAKER	
Dimensions	587x787x850 mm
Weight (approx.)	170 kg
Power	550 W

SCREEN TRAYS	
Dimensions	667x452x67 mm
Weight (approx.)	7 kg

Woven Wire Cloth Screen Trays ASTM E11		Perforated Plate Screen Trays	
Product Code	Aperture mm (in)	Product Code	Aperture mm (in)
UTG-8WC1000	100 mm (4 in)	UTG-8PC0056	5.6
UTG-8WC0900	90 mm (3 1/2 in)	UTG-8PC0080	8
UTG-8WC0750	75 mm (3 in)	UTG-8PC0112	11.2
UTG-8WC0630	63 mm (2 1/2 in)	UTG-8PC0160	16
UTG-8WC0500	50 mm (2 in)	UTG-8PC0224	22.4
UTG-8WC0450	45 mm (1 3/4 in)	UTG-8PC0315	31.5
UTG-8WC0375	37.5 mm (1 1/2 in)	UTG-8PC0450	45
UTG-8WC0315	31.5 mm (1 1/4 in)	UTG-8PC0630	63
UTG-8WC0250	25 mm (1 in)	UTG-8PC0900	90
UTG-8WC0224	22.4 mm (7/8 in)	UTG-8PC1250	125
UTG-8WC0190	19 mm (3/4 in)		
UTG-8WC0160	16 mm (5/8 in)		
UTG-8WC0125	12.5 mm (1/2 in)		
UTG-8WC0112	11.2 mm (7/16 in)		
UTG-8WC0095	9.5 mm (3/8 in)		
UTG-8WC0080	8 mm (5/16 in)		
UTG-8WC0063	6.3 mm (1/4 in)		
UTG-8WC0056	5.6 mm (No. 3 1/2 in)		
UTG-8WC0047	4.75 mm (No. 4 in)		
UTG-8WC0040	4 mm (No. 5 in)		

ULTRASONIC CLEANSING

Product Code

UTG-0180	Ultrasonic Cleansing Apparatus 12 lt., 220-240 V 50-60 Hz
UTG-0185	Ultrasonic Cleansing Apparatus 12 lt. with 3-Stage Power Control Unit 220-240 V 50-60 Hz

The UTG Series Ultrasonic Cleansing Apparatus is used for efficient and safe cleaning of sieves of diameters up to 235 mm, especially suitable for fine mesh sieves which could be damaged using ordinary cleaning methods. The main unit and the 12 liter capacity tank components are manufactured from stainless steel. Washing time can be adjusted up to 30 minutes with the analogue timer. The heating element automatically shuts down for safety in case of insufficient water level.

The Cleaning frequency is 28 kHz with 600 W peak and 300 W effective power. Heater power is 500 W, and the temperature can be adjusted between 0-90 °C. The apparatus is equipped with drainage valve and high efficiency piezoelectric ultrasonic transducers with special ceramics.

The *UTG-0185 model has the additional option for 3-stage ultrasonic power adjustment of 50%, 75% and 99%*.



Technical Specifications

Tank Capacity	12 liters
Cleaning Frequency	28 kHz
Ultrasonic Power	600 W Peak / 300 W Effective
Timer	0-30 minutes, Analogue Timer
Temperature	0-90 °C, Adjustable
Heater Power	650 W
*Ultrasonic Power Adjustment	50%, 75% and 99%

*for UTG-0185 model

Basket Dimensions	300x240x180 mm
External Dimensions	325x265x370 mm
Weight (approx.)	7 kg
Power	650 W

General Testing Equipments

Some testing equipment is used widely in all laboratories but they are not included in main application area. Some of this general equipments are used as a part of other testing devices. Sieves, measuring instruments, glassware, plastic ware, hardware, coring machines, water baths, compressors, vacuum pumps ...etc. are included in general category.

MEASURING INSTRUMENTS

Load Cells & Load Rings	337
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GENERAL LABORATORY EQUIPMENT

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Measuring Instruments

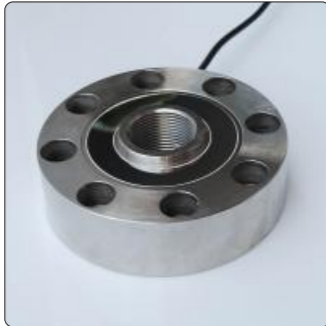
LOAD CELLS & LOAD RINGS

Product Code

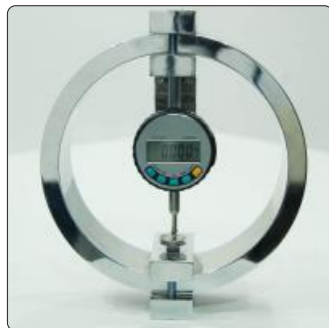
UTGM-0002	Load Cell 1 kN Capacity, S type
UTGM-0004	Load Cell 2 kN Capacity, S type
UTGM-0010	Load Cell 5 kN Capacity, S type
UTGM-0015	Load Cell 10 kN Capacity, Pancake type
UTGM-0020	Load Cell 20 kN Capacity, Pancake type
UTGM-0025	Load Cell 50 kN Capacity, Pancake type
UTGM-0030	Load Cell 100 kN Capacity, Pancake type
UTGM-0035	Load Cell 300 kN Capacity, Pancake type
UTGM-0040	Load Cell 600 kN Capacity, Pancake type
UTGM-0045	Load Cell 1000 kN Capacity, Pancake type
UTGM-0081	Load Ring 1 kN Capacity
UTGM-0083	Load Ring 5 kN Capacity
UTGM-0084	Load Ring 10 kN Capacity
UTGM-0086	Load Ring 50 kN Capacity
UTGM-0110	Pressure Transducer, 2000 kPa
UTGM-0200	Pressure Transducer, 600 bar, 0-100 mV



UTGM-0025



UTGM-0035



UTGM-0100



UTGM-0010

A load cell is a transducer which is used to convert the applied force to electric signal. UTEST supplies high quality strain gauge load cells which provide accurate electrical signal proportional to the applied load. Different models are available which are suitable for a wide range of applications in the 5 kN (500 kg) to 600 kN (60 tons) capacity range.

Load Rings are used with testing machines to measure the applied load. UTEST Load Rings are supplied complete with 0.001 mm resolution digital dial gauges.

DATA LOGGER

Product Code

UTG-0320	Static Unilogger, 4 Channel Data Acquisition Unit
UTG-0325	Static Unilogger, 8 Channel Data Acquisition Unit
UTG-0330	Dataogger, 4 Channel Data Acquisition Unit

Static Unilogger, is a sophisticated data acquisition unit which provides the link between software and the transducers connected to the test equipments.

UTG-0320 Static Unilogger is used at triaxial tests and consolidation tests or for general data collecting purposes.

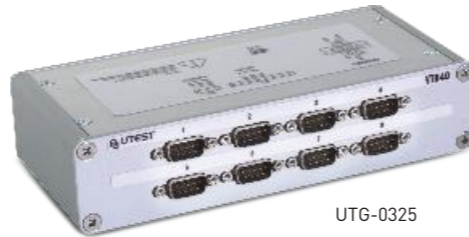
The main characteristics of UTG-0320 and UTG-325 are:

- 4 channel UTG-0320 model
- 8 channel UTG-0325 model
- High resolution : 16M points (effective 260.000 points)
- Large permanent memory
- Ethernet port for PC connection
- CPU card by microprocessor 32 bit ARM risk architecture
- 10 (sample/sec) / channel
- 24 bit A/D Converter (260.000 effective divisions),
- Digital gain selection, suitable for potentiometric transducers
- mv/V Sensors (pressure transducers, load cells, linear transducers)
- 4 Mb memory

UTG-0330 Dataogger has 4 channels for data acquisition and suitable for strain gauges and strain gauge transducers. A/ convertor is 24 bit. 1 micro strain resolution.



UTG-0320



UTG-0325



UTG-0330

DISPLACEMENT TRANSDUCERS & DIAL GAUGES

Product Code

UTGM-0060	Linear Potentiometric Displacement Transducer, travel 10 mm, nominal resistance 1kΩ
UTGM-0062	Linear Potentiometric Displacement Transducer, travel 25 mm, nominal resistance 1kΩ
UTGM-0064	Linear Potentiometric Displacement Transducer, travel 50 mm, nominal resistance 5kΩ
UTGM-0066	Linear Potentiometric Displacement Transducer, travel 100 mm, nominal resistance 5kΩ
UTGM-0068	Linear Potentiometric Displacement Transducer, travel 300 mm, nominal resistance 5kΩ
UTGM-0070	High Accurate Strain Gage Based Displacement Transducer, 5 mm
UTGM-0072	High Accurate Strain Gage Based Displacement Transducer, 10 mm
UTGM-0078	High Accurate Strain Gage Based Displacement Transducer, 50 mm
UTGM-0079	High Accurate Strain Gage Based Displacement Transducer, 100 mm
UTGM-0090	Crack Mouth Opening Displacement (CMOD) Transducer, Opening Range 7 mm, Gauge Length 5 mm
UTGM-0120	Analog Dial Gauge 30 x 0.01 mm, 0-100 Scale, Clockwise
UTGM-0132	Analog Dial Gauge 50 x 0.01 mm, 0-100 Scale, Clockwise
UTGM-0148	Digital Dial Gauge 25 x 0.01 mm, LCD Display
UTGM-0152	Digital Dial Gauge 12.7 x 0.001 mm, LCD Display
UTGM-0180	General Purpose Strain Gauge, 10 mm
UTGM-0182	General Purpose Strain Gauge, 20 mm
UTGM-0184	General Purpose Strain Gauge, 30 mm
UTGM-0186	Connection cable for strain gauge, 1 m
UTGM-0188	Adhesive for strain gauge (1 Package = 30 g)

Linear Potentiometric Displacement Transducer provides an electric signal proportional to the linear shaft displacement. UTEST supplies high quality Linear Potentiometric Transducers from 10 mm to 300 mm travel range for precise and accurate linear displacement measurements in material testing.

Dial Gauges are essential instruments that are used to measure accurately very small and diminutive liner distances. UTEST offers Analog and Digital Dial Gauge models according to specific applications.

High Accurate Strain Gage Based Displacement Transducer provide 5 mV/V electrical signal to data acquisition units. For long life stability it must be preferred.



UTGM-0060



UTGM-0120



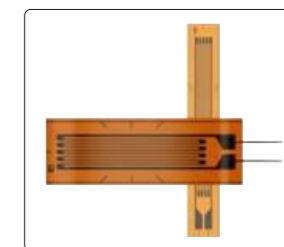
UTGM-0070



UTGM-0152



UTGM-0068



UTGM-0182 and UTGM-0184

Measuring Instruments

LENGTH MEASUREMENT

Product Code

- UTGM-0202 Engineers Square (Knife Edge) 150-100 mm
- UTGM-0203 Engineers Square (Knife Edge) 150-100 mm with a Calibration Certificate from an Accredited Laboratory
- UTGM-0205 Engineers Square with Base 300-175 mm
- UTGM-0206 Engineers Square with Base 300-175 mm with a Calibration Certificate from an Accredited Laboratory
- UTGM-0207 Straightedge (Knife Edge) 150 mm
- UTGM-0208 Straightedge (Knife Edge) 150 mm with a Calibration Certificate from an Accredited Laboratory
- UTGM-0209 Straightedge (Knife Edge) 200 mm
- UTGM-0210 Straightedge (Knife Edge) 200 mm with a Calibration Certificate from an Accredited Laboratory
- UTGM-0211 Straightedge (Knife Edge) 300 mm
- UTGM-0212 Straightedge (Knife Edge) 300 mm with a Calibration Certificate from an Accredited Laboratory
- UTGM-0215 Set of Feeler Gauges from 0.03mm to 1.00 mm, 32 pieces, length: 100mm
- UTGM-0220 Set of Feeler Gauges 20 pieces, Range: 0.05-1.00 (0.05 mm Interval) Length: 300 mm
- UTGM-0375 Steel Ruler 150x1 mm
- UTGM-0380 Steel Ruler 300x1 mm
- UTGM-0385 Steel Ruler 500x1 mm
- UTGM-0390 Steel Ruler 1000x0,5 mm

UTEST supplies various analog and digital instruments for length measurement and evaluation.

Engineers Squares are useful instruments for setting up and checking machines and projects for high accuracy.

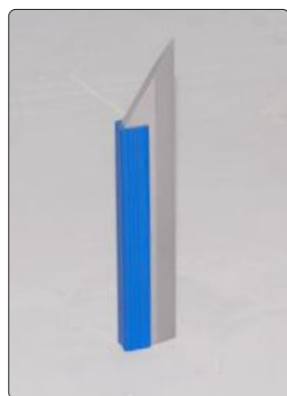
Set of Feeler Gauges is a tool used to measure gap widths which are used in engineering to measure the clearance between two parts.

UTEST Steel Rulers come in rigid and flexible versions.

Although their primary purpose is accurate measurement, they can also be used as guides for laying out lines, and if rigid enough, for cutting.



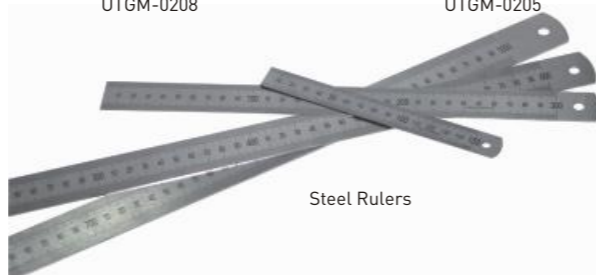
UTGM-0220



UTGM-0208



UTGM-0205



Steel Rulers

Product Code	Description	Dimensions	Weight
UTGM-0202	Engineers Square (Knife Edge) 150-100 mm	150x120x50 mm	0.3 kg
UTGM-0205	Engineers Square with Base 300-175 mm	300x175x60 mm	0.3 kg
UTGM-0207	Straightedge (Knife Edge) 150 mm	150x30x20 mm	0.2 kg
UTGM-0209	Straightedge (Knife Edge) 200 mm	200x30x20 mm	0.2 kg
UTGM-0211	Straightedge (Knife Edge) 300 mm	300x30x20 mm	0,3 kg
UTGM-0215	Set of Feeler Gauges from 0.03mm to 1.00 mm, 32 pieces, length: 100mm	30x30x100 mm	0.2 kg
UTGM-0220	Set of Feeler Gauges 20 pieces, Range: 0.05-1.00 (0.05 mm Interval) Length: 300 mm	30x30x300 mm	0.2 kg
UTGM-0375	Steel Ruler 150x1 mm	150x30x0,5 mm	0.2 kg
UTGM-0380	Steel Ruler 300x1 mm	300x30x0,5 mm	0.2 kg
UTGM-0385	Steel Ruler 500x1 mm	500x30x0,5 mm	0.2 kg
UTGM-0390	Steel Ruler 1000x1 mm	1000x30x0,50 mm	0.2 kg

LENGTH MEASUREMENT

Product Code

- UTGM-0300 Caliper 150 mm
- UTGM-0305 Caliper 300 mm
- UTGM-0310 Caliper 500 mm
- UTGM-0315 Caliper 600 mm
- UTGM-0320 Caliper 1000 mm
- UTGM-0350 Digital Caliper 150 mm
- UTGM-0355 Digital Caliper 200 mm
- UTGM-0360 Digital Caliper 300 mm
- UTGM-0365 Digital Caliper 500 mm
- UTGM-0420 Steel Tape 5 m
- UTGM-0430 Micrometer 25-50 x 0.01 mm, Analog Type
- UTGM-0440 Micrometer 25-50 x 0.001 mm, Analog Type

Calipers are useful devices for material testing applications which are used to measure the distance between two opposing sides of an object when used in combination with a ruler. UTEST offers Analog and Digital Calipers covering a range of 150 mm - 1000 mm.

A Micrometer, sometimes known as a micrometer screw gauge, is a device incorporating a calibrated screw used widely for precise measurement of small distances. UTEST offers a high quality analog micrometer 25-50 scale with 0.001 mm readability.



UTGM-0350



UTGM-0300



UTGM-0420



UTGM-0440



UTGM-0360

Product Code	Description	Dimensions	Weight
UTGM-0300	Caliper 150 mm	150x100x50 mm	0.5 kg
UTGM-0305	Caliper 300 mm	300x100x50 mm	0.5 kg
UTGM-0310	Caliper 500 mm	500x100x50 mm	0.5 kg
UTGM-0315	Caliper 600 mm	600x100x50 mm	0.5 kg
UTGM-0320	Caliper 1000 mm	1000x100x50 mm	0.75 kg
UTGM-0350	Digital Caliper 150 mm	150x100x50 mm	0.75 kg
UTGM-0355	Digital Caliper 200 mm	200x100x50 mm	0.75 kg
UTGM-0360	Digital Caliper 300 mm	300x100x50 mm	0.75 kg
UTGM-0365	Digital Caliper 500 mm	500x100x50 mm	0.75 kg
UTGM-0420	Steel Tape 5 m	50x50x50 mm	0.2 kg
UTGM-0430	Micrometer 25-50x0.01 mm Analog Type	150x150x100 mm	0.2 kg
UTGM-0440	Micrometer 25-50x0.001 mm Analog Type	150x150x100 mm	0.2 kg

Measuring Instruments

TEMPERATURE & TIME MEASUREMENT

Product Code

- UTGT-1205 Digital Thermometer Immersion Type -50°C to +300°C
- UTGT-1230 Digital Max-Min Thermometer -40 to +50°C
- UTGT-1240 Digital Thermo-Hygrometer, Max-Min Thermometer
- UTGT-1250 Digital Laser Thermometer -50°C to +650°C
- UTGT-1300 Glass Thermometer Max. 60°C
- UTGT-1305 Glass Thermometer Max. 110°C
- UTGT-1310 Glass Thermometer Max. 160°C
- UTGT-1315 Glass Thermometer Max. 250°C
- UTGT-1320 Glass Thermometer Max. 310°C
- UTGT-1325 Glass Thermometer Max. 360°C
- UTGT-1330 Glass Thermometer Max. 400°C
- UTGT-1350 Hand Type Digital Thermometer, -50°C to 1350°C
- UTGT-1352 Temperature Datalogger, 4 Channel Digital Display
- UTGT-1355 Connector, Type: OMTS-K-E for UTGT-1350
- UTGT-1360 Cable, Type: E-0,5 T2KTTEA. Meter for UTGT-1350
- UTGT-1370 200 mm Penetration Probe for Asphalt Temperature Mesurement
- UTGT-1371 300 mm Penetration Probe for Asphalt Temperature Mesurement
- UTGT-1372 500 mm Penetration Probe for Asphalt Temperature Mesurement

UTEST supplies high quality digital and glass thermometers for various applications in the construction industry.

UTGT-1350, UTGT-1352, UTGT-1355 ve UTGT-1360 are used for monitoring of temperature development of mass concrete. The number of measurement points for connectors and the cable length needed for each measurement point should be indicated. The products should be ordered separately.

UTGT-1352 4 Channel Digital Display Temperature Datalogger is an alternative to UTGT-1350 and can record continuously in the time interval selected by the user. The datalogger has -195°C to +1000°C temp. measurement range for K Type sensors, 1s – 24h data record range and 2 million data recording capacity. Battery operated data logger is supplied complete with accessories such as cable for connecting to PC, software, SD card (for collecting the measurement).

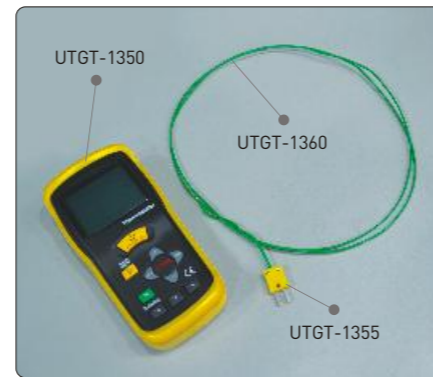
Digital thermometer and penetration probes are used together for measuring the delivery and compaction temperatures of bituminous mixtures. Preferred penetration probe should be ordered with UTGT-1350.



UTGT-1230



UTGT-1352



Product Code	Dimensions	Weight
UTGT-1205	150x150x150 mm	0.2 kg
UTGT-1230	150x150x150 mm	0.2 kg
UTGT-1240	150x150x150 mm	0.2 kg
UTGT-1250	100x100x100 mm	0.2 kg
UTGT-1300	30x30x300 mm	0.1 kg
UTGT-1305	30x30x300 mm	0.1 kg
UTGT-1310	30x30x300 mm	0.1 kg
UTGT-1315	30x30x300 mm	0.1 kg
UTGT-1320	30x30x300 mm	0.1 kg
UTGT-1325	30x30x300 mm	0.1 kg
UTGT-1330	30x30x300 mm	0.1 kg
UTGT-1350	150x80x40	0.3 kg
UTGT-1352	150x80x40	0.3 kg
UTGT-1355	20x10x5	0.01 kg
UTGT-1360	100x100x5	0.01 kg
UTGT-1370	350x50x30	0.5 kg
UTGT-1371	400x50x30	0.5 kg
UTGT-1372	650x50x30	0.6 kg



UTGT-1205



UTGT-1250



Glass Thermometers



UTGT-1240

TEMPERATURE & TIME MEASUREMENT

Product Code

- UTGT-1430 Viscosity Thermometer +19 to +27°C 0.1°C Div., ASTM 17C
- UTGT-1432 Viscosity Thermometer +34 to +42°C 0.1°C Div., ASTM 18C
- UTGT-1434 Viscosity Thermometer +49 to +57°C 0.1°C Div., ASTM 19C
- UTGT-1436 Viscosity Thermometer +57 to +65°C 0.1°C Div., ASTM 20C
- UTGT-1438 Viscosity Thermometer +79 to +87°C 0.1°C Div., ASTM 21C
- UTGT-1440 Viscosity Thermometer +95 to +103°C 0.1°C Div., ASTM 22C
- UTGT-1500 Mechanical Hygrometer/Thermometer/Barometer
- UTGT-1520 Mechanical Hygrometer
- UTGT-1550 Mechanical Dial Thermometer 0 to +260°C
- UTGT-1580 Digital Stop Watch

UTEST Viscosity Thermometers are used for UTAS-0300 Saybolt Two-Tube Digital Viscometer in order to determine the Saybolt Viscosity of petroleum products at specified temperatures where accurate temperature measurements are required.

UTGT-1500 Mechanical Hygrometer/Thermometer/Barometer is a reliable and useful instrument to monitor the humidity, temperature and the atmospheric pressure simultaneously.

UTGT-1520 Mechanical Hygrometer is reliable instrument for measuring the humidity of the ambient air and UTGT-1550 Mechanical Dial Thermometer provides accurate temperature measurements especially at high temperatures up to 260°C.

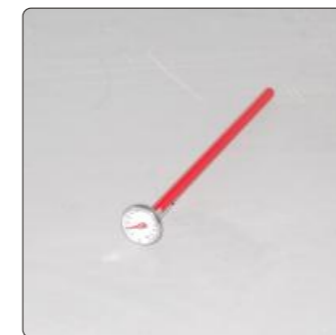
UTGT-1580 Digital Stop Watch is designed for accurate time measurements with 0.01 second sensitivity.



Viscosity Thermometers



UTGT-1520



UTGT-1550



UTGT-1500



UTGT-1580

Product Code	Description	ASTM Ref.	IP Ref.	Dimensions	Weight
UTGT-1430	Viscosity Thermometer +19 to +27°C 0.1°C Div.	17 C	-	30x30x300 mm	0.1 kg
UTGT-1432	Viscosity Thermometer +34 to +42°C 0.1°C Div.	18 C	23 C	30x30x300 mm	0.1 kg
UTGT-1434	Viscosity Thermometer +49 to +57°C 0.1°C Div.	19 C	-	30x30x300 mm	0.1 kg
UTGT-1436	Viscosity Thermometer +57 to +65°C 0.1°C Div.	20 C	-	30x30x300 mm	0.1 kg
UTGT-1438	Viscosity Thermometer +79 to +87°C 0.1°C Div.	21 C	-	30x30x300 mm	0.1 kg
UTGT-1440	Viscosity Thermometer +95 to +103°C 0.1°C Div.	22 C	24 C	30x30x300 mm	0.1 kg
UTGT-1500	Mechanical Hygrometer/Thermometer/Barometer	-	-	150x150x150 mm	0.2 kg
UTGT-1520	Mechanical Hygrometer	-	-	150x150x150 mm	0.2 kg
UTGT-1550	Mechanical Dial Thermometer 0 to +260°C	-	-	50x50x200 mm	0.2 kg
UTGT-1580	Digital Stop Watch	-	-	75x65x25 mm	0.1 kg



IP & ASTM THERMOMETERS

UTEST supplies ASTM and IP Thermometers listed below which are in accordance with the specifications of the American Society for Testing and Materials (ASTM), Institute of Petroleum (IP) and British Standards (BS). While these thermometers were designed for use in specific tests many of them are used in other applications when precision thermometers are required.



Product Code	IP Ref.	ASTM Ref.	Range [°C]	Graduation	Immersion	Dimensions	Weight
UTGT-2000	38C	-	23 to 27	0.1 °C	Total	30x30x300 mm	0.1 kg
UTGT-2005	76C	-	10 to 55	0.5 °C	93 mm	30x30x300 mm	0.1 kg
UTGT-2010	8C	-	0 to 44	0.2 °C	65 mm	30x30x300 mm	0.1 kg
UTGT-2015	42C	-	-38 to +30	0.5 °C	250 mm	30x30x300 mm	0.1 kg
UTGT-2020	5C	7C	-2 to 300	1 °C	Total	30x30x300 mm	0.1 kg
UTGT-2025	6C	8C	-2 to 400	1 °C	Total	30x30x300 mm	0.1 kg
UTGT-2030	15C	9C	-5 to 110	0.5 °C	57 mm	30x30x300 mm	0.1 kg
UTGT-2035	16C	10C	90 to 370	2 °C	57 mm	30x30x300 mm	0.1 kg
UTGT-2040	28C	11C	-6 to 400	2.0 °C	Total	30x30x300 mm	0.1 kg
UTGT-2045	47C	13C	150 to 175	0.5 °C	Total	30x30x300 mm	0.1 kg
UTGT-2050	60C	15C	-2 to 80	0.2 °C	Total	30x30x300 mm	0.1 kg
UTGT-2055	61C	16C	30 to 200	0.5 °C	Total	30x30x300 mm	0.1 kg
UTGT-2057	-	17C	19 to 27	0.1 °C	Total	30x30x300 mm	0.1 kg
UTGT-2065	20C	33C	-38 to 42	0.2 °C	50 mm	30x30x300 mm	0.1 kg
UTGT-2070	59C	35C	90 to 170	0.2 °C	50 mm	30x30x300 mm	0.1 kg
UTGT-2075	35C	47C	58.6 to 61.4	0.05 °C	Total	30x30x300 mm	0.1 kg
UTGT-2080	-	57C	-20 to 50	0.5 °C	Total	30x30x300 mm	0.1 kg
UTGT-2085	63C	63C	-8 to 32	0.1 °C	Total	30x30x300 mm	0.1 kg
UTGT-2090	93C	110C	133.6 to 136.4	0.05 °C	Total	30x30x300 mm	0.1 kg
UTGT-2095	89C	113C	-1 to 175	0.5 °C	Total	30x30x300 mm	0.1 kg

UNIVERSAL CORING MACHINES

Product Code

- UTGD-0300 Universal Coring Machine, Coring Range 16-162 mm, 220-240 V 50-60 Hz
- UTGD-0310 Universal Coring Machine, Coring Range 25-202 mm, 220-240 V 50-60 Hz
- UTGD-0320 Coring Bit for Concrete Sampling 50 mm dia.
- UTGD-0322 Coring Bit for Concrete Sampling 75 mm dia.
- UTGD-0324 Coring Bit for Concrete Sampling 100 mm dia.
- UTGD-0326 Coring Bit for Concrete Sampling 150 mm dia.
- UTGD-0328 Coring Bit for Concrete Sampling 200 mm dia.
- UTGD-0330 Coring Bit for Asphalt Sampling 50 mm dia.
- UTGD-0332 Coring Bit for Asphalt Sampling 75 mm dia.
- UTGD-0334 Coring Bit for Asphalt Sampling 100 mm dia.
- UTGD-0336 Coring Bit for Asphalt Sampling 150 mm dia.

The UTGD-0300 (1600 W) and UTGD-0310 (2200 W) Universal Coring Machines are powerful diamond drilling units serve for shock free drilling into concrete, natural stone and asphalt with diameter ranges 16-162 mm and 25-202 mm for UTGD-0300 and UTGD-0310 respectively. Both models are optimal complements to handheld diamond drilling machines.

- Mechanical oil-bath gearbox with integrated oil pump for durable lubrication of the armature pinion
- Electronics- soft start, temperature control and over current cut off, optical overload indication, constant speed
- Quick- change plate for motor/ rig
- Shaft seals replaceable from the outside
- Cut-off carbon brushes to protect the motor
- Mechanical safety clutch

The Universal Coring Machine consists of

- Drilling Motor
- Motor Cradle
- Base Plate
- Mounting Apparatus (between drilling motor and the cradle)

Specifications

	UTGD - 0300	UTGD - 0310
Power	1600 W	2200 W
Class of Protection	I	I
Drilling Diameter	16-162 mm	25-202 mm
No-Load Speed	650/1380 r.p.m.	420/700/1570 r.p.m.
Gearbox	2-speed/oil bath	3-speed/oil bath
Dimension	500x300x1150 mm	500x300x1150 mm
Weight (approx.)	18 kg	20 kg



UTGD-0334 UTGD-0332 UTGD-0330

General Laboratory Equipment

GENERAL GLASSWARE

UTEST supplies high quality general laboratory glassware, plasticware and hardware for various material testing applications.



Graduated Glass Cylinders



Volumetric Flasks



Borosilicate Glass Beakers



Pyknometers (Bottle Type) with Double Edged and Capillary Tubed Funnel



Pyknometers (Specific Gravity Bottles)

Product Code	Description	Dimensions	Weight
UTGG-1000	Graduated Glass Cylinder 10 ml	13x13x140 mm	0.05 kg
UTGG-1005	Graduated Glass Cylinder 25 ml	20x20x145 mm	0.1 kg
UTGG-1010	Graduated Glass Cylinder 50 ml	26x26x180 mm	0.1 kg
UTGG-1015	Graduated Glass Cylinder 100 ml	30x30x250 mm	0.1 kg
UTGG-1020	Graduated Glass Cylinder 250 ml	40x40x320 mm	0.2 kg
UTGG-1025	Graduated Glass Cylinder 500 ml	50x50x390 mm	0.25 kg
UTGG-1030	Graduated Glass Cylinder 1000 ml	65x65x460 mm	0.5 kg
UTGG-1035	Graduated Glass Cylinder 2000 ml	120x120x550 mm	0.75 kg
UTGG-1300	Borosilicate Glass Beaker 10 ml	34x34x50 mm	0.01 kg
UTGG-1305	Borosilicate Glass Beaker 25 ml	42x42x60 mm	0.05 kg
UTGG-1310	Borosilicate Glass Beaker 50 ml	50x50x70 mm	0.1 kg
UTGG-1315	Borosilicate Glass Beaker 100 ml	60x60x80 mm	0.1 kg
UTGG-1320	Borosilicate Glass Beaker 250 ml	70x70x95 mm	0.1 kg
UTGG-1325	Borosilicate Glass Beaker 400 ml	80x80x100 mm	0.2 kg
UTGG-1330	Borosilicate Glass Beaker 600 ml	90x90x125 mm	0.25 kg
UTGG-1335	Borosilicate Glass Beaker 800 ml	100x100x135 mm	0.5 kg
UTGG-1340	Borosilicate Glass Beaker 1000 ml	105x105x145 mm	0.75 kg
UTGG-1345	Borosilicate Glass Beaker 2000 ml	130x130x185 mm	1 kg
UTGG-1350	Borosilicate Glass Beaker 3000 ml	30x30x300 mm	2 kg
UTGG-1800	Volumetric Flask 5 ml	20x20x40 mm	0.01 kg
UTGG-1805	Volumetric Flask 10 ml	30x30x50 mm	0.05 kg
UTGG-1810	Volumetric Flask 25 ml	45x45x70 mm	0.1 kg
UTGG-1815	Volumetric Flask 50 ml	51x51x95 mm	0.1 kg
UTGG-1820	Volumetric Flask 100 ml	64x64x110 mm	0.1 kg
UTGG-1825	Volumetric Flask 250 ml	70x70x120 mm	0.2 kg
UTGG-1830	Volumetric Flask 500 ml	85x85x145 mm	0.25 kg
UTGG-1835	Volumetric Flask 1000 ml	105x105x175 mm	0.5 kg
UTGG-1840	Volumetric Flask 2000 ml	131x131x200 mm	0.75 kg
UTGG-1845	Volumetric Flask 3000 ml	166x166x260 mm	1 kg
UTGG-1850	Volumetric Flask 5000 ml	207x207x315 mm	2 kg

Product Code	Description	Dimensions	Weight
UTGG-1500	Pyknometer (Specific Gravity Bottle) 25 ml	40x40x90 mm	0.05 kg
UTGG-1505	Pyknometer (Specific Gravity Bottle) 50 ml	50x50x100 mm	0.05 kg
UTGG-1510	Pyknometer (Specific Gravity Bottle) 100 ml	60x60x120 mm	0.05 kg
UTGG-1515	Pyknometer (Specific Gravity Bottle) 250 ml	100x100x150 mm	0.1 kg
UTGG-1520	Pyknometer (Specific Gravity Bottle) 500 ml	110x110x200 mm	0.1 kg
UTGG-1525	Pyknometer (Specific Gravity Bottle) 1000 ml	150x150x220 mm	0.2 kg
UTGG-1530	Pyknometer (Specific Gravity Bottle) 2000 ml	200x200x250 mm	0.3 kg
UTGG-1600	Pyknometer (Bottle Type) Double Edged and Capillary Tubed Funnel 250 ml	110x110x270 mm	0.4 kg
UTGG-1605	Pyknometer (Bottle Type) Double Edged and Capillary Tubed Funnel 500 ml	130x130x270 mm	0.7 kg
UTGG-1610	Pyknometer (Bottle Type) Double Edged and Capillary Tubed Funnel 1000 ml	150x150x270 mm	0.9 kg
UTGG-1615	Pyknometer (Bottle Type) Double Edged and Capillary Tubed Funnel 2000 ml	180x180x330 mm	1.25 kg
UTGG-1620	Pyknometer (Bottle Type) Double Edged and Capillary Tubed Funnel 3000 ml	200x200x340 mm	1.35 kg
UTGG-1625	Pyknometer (Bottle Type) Double Edged and Capillary Tubed Funnel 5000 ml	250x250x340 mm	1.5 kg
UTGG-1630	Double Edged and Capillary Tubed Funnel For Bottle Type Pyknometer	55x55x250 mm	0.1 kg
UTGG-1700	Graduated Impurities Test Bottle, Glass 250 ml	100x100x200 mm	0.25 kg
UTGG-1705	Graduated Impurities Test Bottle, Glass 500 ml	200x200x400 mm	0.5 kg
UTGG-1710	Graduated Impurities Test Bottle, Glass 1000 ml	300x300x500 mm	1 kg
UTGG-1715	Graduated Impurities Test Bottle, Glass 2000 ml	450x450x700 mm	1.75 kg
UTGG-1720	Cylindrical Glass Bottle, With Stopper, For Organic Impurities, 450 ml, EN	80x80x210 mm	0.5 kg
UTGG-1900	Erlenmeyer Flask 50 ml	51x51x95 mm	0.05 kg
UTGG-1905	Erlenmeyer Flask 100 ml	64x64x110 mm	0.1 kg
UTGG-1910	Erlenmeyer Flask 150 ml	74x74x115 mm	0.13 kg
UTGG-1915	Erlenmeyer Flask 250 ml	85x85x145 mm	0.2 kg
UTGG-1920	Erlenmeyer Flask 300 ml	87x87x150 mm	0.45 kg
UTGG-1925	Erlenmeyer Flask 500 ml	105x105x174 mm	0.6 kg
UTGG-1930	Erlenmeyer Flask 1000 ml	70x70x120 mm	1 kg
UTGG-1935	Erlenmeyer Flask 2000 ml	131x131x220 mm	1.6 kg
UTGG-1940	Erlenmeyer Flask 5000 ml	166x166x280 mm	3 kg
UTGG-2000	Filter Flask 250 ml	187x187x310 mm	0.2 kg
UTGG-2005	Filter Flask 500 ml	166x166x260 mm	0.25 kg
UTGG-2010	Filter Flask 1000 ml	207x207x315 mm	1 kg
UTGG-2015	Filter Flask 2000 ml	207x207x315 mm	2 kg
UTGG-2020	Carsten-Röhrchen flask EN 1323	100x100x200mm	0,25 kg

Product Code	Description	Dimensions	Weight
UTGG-2100	Desiccator 210 mm dia.	310x310x250 mm	3.50 kg
UTGG-2105	Desiccator 240 mm dia.	340x340x300 mm	3.50 kg
UTGG-2110	Desiccator 300 mm dia.	400x400x350 mm	3.50 kg
UTGG-2115	Desiccator 210 mm dia. Vacuum Type	310x310x250 mm	3.50 kg
UTGG-2120	Desiccator 240 mm dia. Vacuum Type	340x340x300 mm	3.50 kg
UTGG-2125	Desiccator 300 mm dia. Vacuum Type	400x400x350 mm	3.50 kg
UTGG-2165	Porcelain Evaporating Dish 10 cm dia.	100x100x80 mm	0.25 kg
UTGG-2170	Porcelain Evaporating Dish 12 cm dia.	120x120x80 mm	0.25 kg
UTGG-2200	Porcelain Mortar with Pestle 100 mm dia.	100x100x80 mm	0.25 kg
UTGG-2205	Porcelain Mortar with Pestle 130 mm dia.	130x130x80 mm	0.25 kg
UTGG-2210	Porcelain Mortar with Pestle 160 mm dia.	160x160x80 mm	0.25 kg
UTGG-2215	Rubber Headed Pestle	100x125x80 mm	0.25 kg
UTGG-2235	Porcelain Crucible 4 cm dia. x 4.7 mm high	101x101x40 mm	0.25 kg
UTGG-2260	Glass Stirring Rod	20x20x150 mm	0.25 kg
UTGG-2270	Petri Dish 80 mm, Glass	80x80x80 mm	0.25 kg
UTGG-2275	Petri Dish 100 mm, Glass	120x120x80 mm	0.25 kg
UTGG-2280	Petri Dish 120 mm, Glass	100x100x80 mm	0.25 kg
UTGG-2300	Pipette 5 ml	20x20x360 mm	0.25 kg
UTGG-2305	Pipette 10 ml	20x20x360 mm	0.25 kg
UTGG-2310	Pipette 25 ml	20x20x450 mm	0.25 kg
UTGG-2315	Pipette 50 ml	20x20x550 mm	0.25 kg
UTGG-2350	Pasteur Pipette 3 ml, Plastic, 100 pcs	20X20X120 mm	0.02 kg
UTGG-2355	Pipette Bulb	35X35X150 mm	0.10 kg
UTGG-2400	Hydrometer 700-800	30x30x300 mm	0.10 kg
UTGG-2401	Hydrometer 800-900	30x30x300 mm	0.10 kg
UTGG-2405	Hydrometer 900-1000	30x30x300 mm	0.10 kg
UTGG-2410	Hydrometer 1000-1100	30x30x300 mm	0.10 kg
UTGG-2415	Hydrometer 1100-1200	30x30x300 mm	0.10 kg
UTGG-2420	Hydrometer 1200-1300	30x30x300 mm	0.10 kg
UTGG-2425	Hydrometer 1300-1400	30x30x300 mm	0.10 kg
UTGG-2430	Hydrometer 1400-1500	30x30x300 mm	0.10 kg
UTGG-2435	Hydrometer 1500-1600	30x30x300 mm	0.10 kg
UTGG-2440	Hydrometer 1600-1700	30x30x300 mm	0.10 kg
UTGG-2445	Hydrometer 1700-1800	30x30x300 mm	0.10 kg
UTGG-2450	Hydrometer 1800-1900	30x30x300 mm	0.10 kg
UTGG-2455	Hydrometer 1900-2000	30x30x300 mm	0.10 kg
UTGG-2485	Hand Pump for Pipette/Burette	20X20X180 mm	0.01 kg
UTGG-2490	Hand Pump, Three-Way for Pipette/Burette	20X20X180 mm	0.01 kg
UTGG-2525	Burette 25 ml	50x50x820 mm	0.25 kg
UTGG-2550	Burette 50 ml	50x50x820 mm	0.25 kg
UTGG-2580	Glass Funnel 80 mm	80x80x80 mm	0.25 kg
UTGG-2585	Glass Funnel 100 mm	100x100x100 mm	0.25 kg
UTGG-2590	Glass Funnel 200 mm	200x200x175 mm	0.25 kg



Petri Dish



Porcelain Evaporating Dish



Porcelain Mortar with Pestle



Porcelain Crucible



Desiccator (Vacuum Type)



Desiccator



Graduated Glass Bottles



Hand Pumps for Pipette/Burette



Hydrometers



Erlenmeyer Flasks



Filter Flasks



Glass Funnels



Glass Pipettes

General Laboratory Equipment

GENERAL PLASTICWARE



Plastic Graduated Cylinders



Plastic Funnels



Plastic Beakers



Heat Resistant Gloves



Leather Gloves



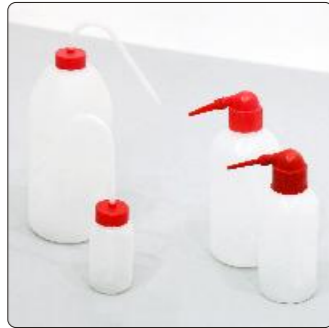
Cotton Gloves



Sample Bags (Heavy Plastic)



Rubber Stoppers



Wash Bottles



Sample Zipper Bags (Plastic)



Plastic Bucket

Product Code	Description	Dimensions	Weight
UTGP-0900	Plastic Graduated Cylinder 10 ml	13x13x140 mm	0.05 kg
UTGP-0905	Plastic Graduated Cylinder 25 ml	20x20x145 mm	0.10 kg
UTGP-0910	Plastic Graduated Cylinder 50 ml	26x26x180 mm	0.10 kg
UTGP-0915	Plastic Graduated Cylinder 100 ml	30x30x250 mm	0.10 kg
UTGP-0920	Plastic Graduated Cylinder 250 ml	40x40x320 mm	0.20 kg
UTGP-0925	Plastic Graduated Cylinder 500 ml	50x50x390 mm	0.25 kg
UTGP-0930	Plastic Graduated Cylinder 1000 ml	65x65x460 mm	0.50 kg
UTGP-0935	Plastic Graduated Cylinder 2000 ml	120x120x550 mm	0.75 kg
UTGP-0940	Plastic Beaker 50 ml	42x42x60 mm	0.05 kg
UTGP-0945	Plastic Beaker 100 ml	50x50x70 mm	0.10 kg
UTGP-0950	Plastic Beaker 250 ml	60x60x80 mm	0.10 kg
UTGP-0955	Plastic Beaker 500 ml	80x80x100 mm	0.10 kg
UTGP-0960	Plastic Beaker 1000 ml	100x100x135 mm	0.20 kg
UTGP-0965	Plastic Beaker 2000 ml	105x105x145 mm	1.00 kg
UTGP-0970	Plastic Beaker 3000 ml	130x130x185 mm	1.50 kg
UTGP-0975	Plastic Beaker 5000 ml	150x150x200 mm	2.00 kg
UTGP-0980	Tromp Tire	60X60X160 mm	0.10 kg
UTGP-1000	Wash Bottle 250 ml	60X60X160 mm	0.10 kg
UTGP-1005	Wash Bottle 500 ml	90X90X190 mm	0.15 kg
UTGP-1010	Wash Bottle 1000 ml	110X110X210 mm	0.20 kg
UTGP-1038	Plastic Funnel 40x65 mm	100X100X120 mm	0.10 kg
UTGP-1040	Plastic Funnel 100x155 mm	100X100X120 mm	0.10 kg
UTGP-1050	Latex Gloves, pack of 100	100X200X100 mm	0.50 kg
UTGP-1055	Heat Resistant Gloves	110X180X20 mm	0.10 kg
UTGP-1060	Leather Gloves	110X180X20 mm	0.10 kg
UTGP-1065	Cotton Gloves	110X180X20 mm	0.10 kg
UTGP-1070	Rubber Gloves	110X180X20 mm	0.10 kg
UTGP-1100	Plastic Bucket 20 L	300x350x450 mm	3.00 kg
UTGP-1105	Plastic Bucket 45 L	450x480x550 mm	5.00 kg
UTGP-1110	Plastic Bucket 60 L	500x550x600 mm	5.00 kg
UTGP-1150	Sample Bag 400x600 mm (heavy plastic, 1 unit)	400x600x20 mm	0.01 kg
UTGP-1155	Sample Bag 250x400 mm (heavy plastic, 1 unit)	250x400x20 mm	0.01 kg
UTGP-1160	Sample Zipper Bag 170x230 mm (plastic, pack of 400)	170x230x100 mm	0.50 kg
UTGP-1165	Sample Zipper Bag 260x350 mm (plastic, pack of 200)	260x350x100 mm	0.50 kg
UTGP-1200	Rubber Stopper 30/25 mm dia. 30 mm high	30X25X30 mm	0.20 kg
UTGP-1205	Rubber Stopper 35/30 mm dia. 30 mm high	35X30X30 mm	0.20 kg
UTGP-1210	Rubber Stopper 40/30 mm dia. 35 mm high	40X30X35 mm	0.20 kg
UTGP-1215	Rubber Stopper 50/40 mm dia. 35 mm high	50X40X35 mm	0.20 kg
UTGP-1250	Water Gauge 60 cm	80X80X600 mm	1.00 kg



Trolley



Water Gauge



Bunsen Burner with Tripod

GENERAL HARDWARE



Trowels



Hammer and Chisels



Round Scoops



Mixing Bowls



Spoons



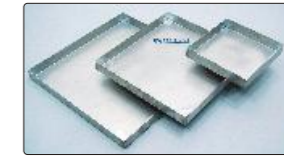
Tongs



Moisture Content Tins



Spatulas



Mixing Trays



Stand Clamp

UTGH-1200	Mixing Bowl Ø:160 mm, Stainless Steel	160x160x100 mm	0.25 kg
UTGH-1205	Mixing Bowl Ø:180 mm, Stainless Steel	180x180x100 mm	0.25 kg
UTGH-1300	Mixing Tray 27x46x4 cm, Stainless Steel (31x48x4 cm Outer Dim.)	270x460x40 mm	0.4 kg
UTGH-1305	Mixing Tray 26x41x4 cm, Stainless Steel (28x43x4 cm Outer Dim.)	260x410x40 mm	0.4 kg
UTGH-1310	Mixing Tray 25x36x4 cm, Stainless Steel (26x38x4 cm Outer Dim.)	250x360x40 mm	0.4 kg
UTGH-1315	Mixing Tray 23x33x4 cm, Stainless Steel (23x33x4 cm Outer Dim.)	230x330x40 mm	0.4 kg
UTGH-1320	Mixing Tray 17x27x4 cm, Stainless Steel (20x30x4 cm Outer Dim.)	170x270x40 mm	0.4 kg
UTGH-1325	Mixing Tray 20x20x5 cm, Stainless Steel	200x200x50 mm	1.5 kg
UTGH-1330	Mixing Tray 30x30x5 cm, Stainless Steel	300x300x50 mm	1.5 kg
UTGH-1335	Mixing Tray 40x40x5 cm, Stainless Steel	400x400x50 mm	2.5 kg
UTGH-1340	Mixing Tray 50x50x5 cm, Stainless Steel	500x500x50 mm	5 kg
UTGH-1345	Mixing Tray 60x60x5 cm, Stainless Steel	600x600x50 mm	7.5 kg
UTGH-1350	Mixing Tray 100x100x5 cm, Stainless Steel	1000x1000x50 mm	12 kg
UTGH-1360	Test Cup [Circular Cross Section]	200x200x100 mm	1.0 kg
UTGH-1399	Sample Cup, Ø:140 mm x h:9.5 mm, Aluminium		
UTGH-1400	Moisture Content Tin with Lid Ø:120 mm x h:100 mm, Aluminium	120x120x100 mm	0.2 kg
UTGH-1402	Moisture Content Tin with Lid Ø:104 mm x h:150 mm, Aluminium	104x70x104 mm	0.2 kg
UTGH-1405	Moisture Content Tin with Lid Ø:100 mm x h:70 mm, Aluminium	100x100x70 mm	0.2 kg
UTGH-1407	Moisture Content Tin with Lid Ø:80 mm x h:80 mm, Aluminium	80X80X80 mm	0.2 kg
UTGH-1410	Moisture Content Tin with Lid Ø:80 mm x h:45 mm, Aluminium	80x80x45 mm	0.2 kg
UTGH-1415	Moisture Content Tin with Lid Ø:70 mm x h:45 mm, Aluminium	70x70x45 mm	0.2 kg
UTGH-1420	Moisture Content Tin with Lid Ø:66 mm x h:44 mm, Aluminium	66x66x44 mm	0.2 kg
UTGH-1425	Moisture Content Tin with Lid Ø:55 mm x h:35 mm, Aluminium	55x55x35 mm	0.2 kg
UTGH-1430	Moisture Content Tin with Lid Ø:45 mm x h:10 mm, Aluminium	45x45x10 mm	0.2 kg
UTGH-1433	Moisture Content Tin with Lid Ø:75 mm x h:30 mm, Aluminium	75x75x30 mm	0.2 kg
UTGH-1435	Moisture Content Tin with Lid Ø:75 mm x h:50 mm, Aluminium	75x75x50 mm	0.2 kg
UTGH-1460	Lever Lid Container Ø:160 mm x h:235 mm, Aluminium	160x160x235 mm	0.25 kg
UTGH-1465	Lever Lid Container Ø:270 mm x h:300 mm, Aluminium	270x270x300 mm	0.25 kg
UTGH-1480	Spatula, Rigid, Straight Edged	100x40x200 mm	0.3 kg
UTGH-1485	Spatula Large, Length: 200 mm	30x10x310 mm	0.2 kg
UTGH-1490	Spatula Medium, Length:150 mm	30x10x280 mm	0.2 kg
UTGH-1495	Spatula Small, Length:100 mm	20x10x190 mm	0.2 kg
UTGH-1520	Bristle Brush 50 mm wide	50X200X50 mm	0.1 kg
UTGH-1525	Wire Brush with Handle	60X120X60 mm	0.15 kg
UTGH-1530	Round Bristle Brush	50X180X50 mm	0.15 kg
UTGH-1535	Double Ended Brass/ Nylon Sieve Brush	75X75X75 mm	0.1 kg
UTGH-1600	Round Scoop Small	245X80X120 mm	0.2 kg
UTGH-1605	Round Scoop Medium	335X120X120 mm	0.3 kg
UTGH-1610	Round Scoop Large	380X140X140 mm	0.4 kg
UTGH-1615	Round Scoop Extra Large	420X160X150 mm	0.5 kg
UTGH-1630	Shovel	1300X300X250 mm	2.5 kg
UTGH-1640	Trowel Plasterer Type, Rectangular	120X300X120 mm	0.25 kg
UTGH-1645	Trowel, for Plastering	90X115X165 mm	0.25 kg
UTGH-1650	Trowel, Cut Edge Brickmason Type	30X150X30 mm	0.5 kg
UTGH-1655	Trowel, Pointing Type	90X115X165 mm	0.25 kg
UTGH-1660	Tongs	30X150X30 mm	0.5 kg
UTGH-1670	Hammer, 1.5 kg	100X300X80 mm	1.5 kg
UTGH-1680	Chisel	40X140X30 mm	1 kg
UTGH-1685	Chisel Flat Ended	40X140X30 mm	1 kg
UTGH-1695	Rubber Mallet	75X80X300 mm	1 kg
UTGH-1700	Density Spoon	70X70X320 mm	0.2 kg
UTGH-1710	Scoop	70X70X320 mm	0.2 kg
UTGH-1730	Clamp	50X60X70 mm	0.2 kg
UTGH-1750	Scissors	80X120X40 mm	0.2 kg
UTGH-1770	Trolley	800X400X70 mm	18 kg
UTGH-1775	Wheel Barrow	700X1400X650 mm	20 kg
UTGH-1795	Stand Clamp, Small	60X60X100 mm	0.25 kg
UTGH-1800	Stand Clamp, Large	80X80X300 mm	0.5 kg
UTGH-1830	Iron Wire Gauze 120x120 mm	120X120X10 mm	0.1 kg
UTGH-1835	Iron Wire Gauze 160x160 mm	160X160X10 mm	0.1 kg
UTGH-1850	Magnetic Holder	100X100X130 mm	0.5 kg
UTGH-1875	Bunsen Burner [Butane/Propane]	100X100X130 mm	0.5 kg
UTGH-1880	Bunsen Burner (Natural Gas)	100X100X130 mm	0.5 kg
UTGH-1885	Tripod for Bunsen Burner	300X300X300 mm	1 kg



Wheel Barrow



Rubber Mallet



Mixing Trays



Magnetic Holder



Shovel



Brushes



Clamp



Iron Wire Gauzes



Scissors



Spatula



Trowel (Plaster Type)

General Laboratory Equipment

VACUUM PUMPS

Product Code

- UTGE-3505 Vacuum Pump 51 L/min Capacity, 220-240 V 50-60 Hz
- UTGE-3510 Vacuum Pump 100 L/min Capacity, 220-240 V 50-60 Hz
- UTGE-3530 Vacuum Pump Dual Stage 128 L/min Capacity, 220-240 V 50-60 Hz
- UTGE-3550 Vacuum Gauge 760 mmHg Manometer Ø63 mm

UTEST supplies high quality single and dual stage vacuum pumps for providing the vacuum power which is required for various applications in material testing.

- Two stage rotary-vane design improves the ultimate vacuum and pump speed and reduces the evacuation time.
- The integrated pump body design ensures the reliability and easy maintenance.
- Built-in oil pump cycling design forced-lubricates the pump chamber and sliding bearing and ensures its lubrication and seal.
- Anti-Suckback design prevents oil from returning back to the system.
- The intake filter can prevent foreign matter from entering into the pump chamber and the exhaust fitting separates oil vapour from the exhaust flow.
- Aluminium oil housing, trestle and motor cover forms a rigid and light design.
- Thermal protection of the motor makes the pump to run steadily and ensures safety.

UTGE-3550, 63 mm diameter, bottom connection, (760mm Hg) 1000 mbar Vacuum Gauge is used to monitor the instant applied vacuum. The vacuum gauge works well with max. 60°C fluid temperature.

The maximum operating pressure must not exceed %75 of the full scale. The over pressure limit is ≤40 bar PN x 1.25, optimum operating range (PO) is between 0,1 x PN and 0,75 x PN and the protection rate is IP41.



UTGE-3550



UTGE-3505

Frequency	UTGE-3505		UTGE-3510		UTGE-3530		
	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
Flow Rate	CFM	1.8	2.0	3.5	4.0	4.5	5.0
	L/min	51	57	100	113	128	142
Ultimate Vacuum	Partial Pressure	2 Pa		2 Pa		2x10 ⁻¹ Pa	
	Total Pressure	150 micron		150 micron		15 micron	
Motor (HP)	1/4		1/3		1/2		
Intake Fitting	1/4" Flare		1/4" & 3/8" Flare		1/4" & 3/8" Flare		
Oil Capacity	250 ml		250 ml		325 ml		
Dimensions	290x125x225 mm		320x125x235 mm		340x140x245 mm		
Weight (approx.)	6.5 kg		8.0 kg		10.5 kg		

UTGE-3550	
Dimensions	65x90x30 mm
Weight (approx.)	0,15 kg

AIR COMPRESSOR

Product Code

- UTGE-3700 Laboratory Air Compressor 8 bar - 25 L, 220-240 V 50-60 Hz
- UTGE-3705 Laboratory Air Compressor 8 bar - 50 L, 220-240 V 50-60 Hz
- UTGE-3710 Laboratory Air Compressor 10 bar - 100 L, 220 V 50 Hz

UTGE series Laboratory Air Compressors are durable machines for supplying compressed air required by several analyses in material testing.



UTGE-3700



UTGE-3710

The UTGE-3700 is supplied complete with

- Air Gun
- Hose



Air Gun and Hose

	Voltage	Dimensions	Weight (approx)
UTGE-3700	220-240 V 50-60 Hz	600x300x600 mm	28.5 kg
UTGE-3705	220-240 V 50-60 Hz	600x300x600 mm	40 kg
UTGE-3710	220-240 V 50-60 Hz	1460x470x860 mm	140 kg

*110 V 60 Hz should be mentioned on order if required

	Motor Power	Tank Capacity	Air Suction Capacity	Max. Working Pressure
UTGE-3700	2 HP	25 L	192 L/min	8 bar
UTGE-3705	2 HP	50 L	192 L/min	8 bar
UTGE-3710	2 HP	100 L	250 L/min	10 bar

HYDRAULIC HAND PUMP

Product Code

UTGE-3800 Hydraulic Hand Pump, 700 bar.

Hydraulic hand pump with two-speed pressure build up in aluminium design with pressure gauge and metal support base. Pump lever with lock serves as handle. It has internal pressure relief valve for overload protection and connection thread 3/8" NPT.

Dimension	160x700x310 mm
Weight (approx.)	13 kg



WATER BATHS

Product Code

- UTGE-4000 Water Bath 15 lt. 220-240 V 50-60 Hz
- UTGE-4005 Water Bath 24 lt. 220-240 V 50-60 Hz
- UTGE-4010 Water Bath 48 lt. 220-240 V 50-60 Hz
- UTGE-4050 Water Bath 15 lt. with Cooler Unit, 220-240 V 50-60 Hz
- UTGE-4055 Water Bath 24 lt. with Cooler Unit, 220-240 V 50-60 Hz
- UTGE-4060 Water Bath 48 lt. with Cooler Unit, 220-240 V 50-60 Hz

UTGE Series Water Baths are used in various material testing analyses. 15 , 24 and 48 lt. tank capacity models are available and can be ordered with or without cooler units.

Some standards require conditioning temperatures from 25 to 60 °C. For example The EN 12697-23 covering the determination of the strength of bituminous mixtures, prescribe a water conditioning temperature of 5°C or from 5 to 25°C which are obtainable with a cooling system.

Water bath are used for asphalt (marshall, bitumen testing), cement (curing on conditioning) applications.

Internal surfaces are polished stainless steel with a sheet steel insulated outercase. The cooler unit is located under the water bath. Complete with recirculating unit for temperature uniformity.

Product Code	Internal Dimensions	External Dimensions	Weight (approx.)	
UTGE-4000	160x330x300 mm	300x520x370 mm	14 kg	for ambient to +90°C ± 1°C
UTGE-4005	160x510x245 mm	300x690x370 mm	17 kg	
UTGE-4010	160x620x505 mm	300x820x580 mm	24 kg	
UTGE-4050	160x330x300 mm	625x400x600 mm	25 kg	+5°C to +70°C ± 0,5°C
UTGE-4055	160x510x300 mm	625x400x760 mm	35 kg	
UTGE-4060	160x620x510 mm	650x620x900 mm	45 kg	



UTGE-4000



UTGE-4050



UTGE-4060

General Laboratory Equipment

MISCELLANEOUS



UTGE-4200



UTGE-4400



UTGE-4300



UTGE-4305



UTGE-4310



UTGE-4420



UTGE-4320 / UTGE-4322

Product Code	Description	Dimensions	Weight
UTGE-4200	Water Still 4 lt/h Capacity, 220-240 V 50-60 Hz	260x260x610 mm	10 kg
UTGE-4210	Water Still 8 lt/h Capacity, 380 V 50 Hz	260x260x610 mm	16 kg
UTGE-4300	pH Indicator Papers pH Range: 1-14	40x60x20 mm	0.1 kg
UTGE-4305	Pocket Type pH Meter	175x41x23 mm	0.1 kg
UTGE-4310	Portable pH Meter	164x76x45 mm	0.2 kg
UTGE-4315	Laboratory pH Meter	240x182x74 mm	2.5 kg
UTGE-4320	Quantab Chloride Titrator Type 1175, 40 Strips	75x75x120 mm	0.1 kg
UTGE-4322	Quantab Chloride Titrator Type 1176, 40 Strips	75x75x120 mm	0.1 kg
UTGE-4400	Digital Laser Distance Meter	59x100x32 mm	0.2 kg
UTGE-4420	Hand Type GPS	65x128x37 mm	0.2 kg

UTEST MOBILE LAB

In many cases, the container laboratory is the first equipment on the job-site and a smart, efficient, well equipped unit is the best introduction for a contractor.

The UTEST Container Lab is designed for use on remote sites, enabling the routine testing of soils, concrete and asphalt to be carried out efficiently. A wide range of accessories makes the laboratory completely independent and self-sufficient.

Panel-Van Mounted
Used where extreme mobility and manoeuvrability are requested

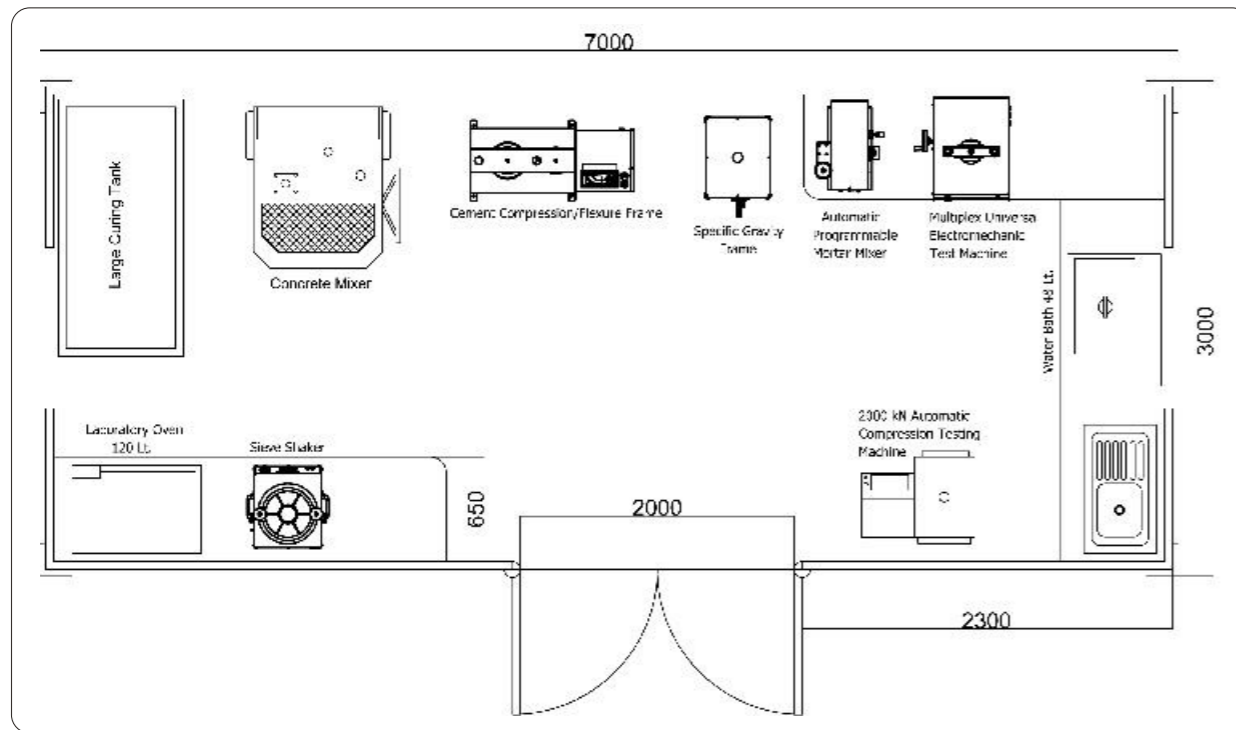


General Laboratory Equipment

UTEST MOBILE LAB

Container Mounted

Used for long term testing at one site, as well as road construction



Overall Dimensions (approx.) (l x w x h)	7000x3000x2600 mm
Area	21 m ²
Weight (approx.)	2000 kg

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LEGEND

AASHTO	: American Association of State Highway and Transportation Officials.USA
API	: American Petroleum Institute
ASTM	: USA Standard
BS	: British Standard
CEN	: European Committee for Standardization EU
CNR	: Italian National Research Council
CSA	: Canadian Standard
DIN	: German Standard
EN	: European Standard (Mandatori)
Pr EN	: Draft European Standard
EURONORM	: European Norm. EU
IP	: Institute of Petroleum. USA
ISO	: International Organization for Standardization
ISRM	: International Society of Rock Mechanics
JIS	: Japanese Standard Associations
LCPC	: Laboratoire Central des Ponts et Chaussées. France
MPW	: Belgian Standard
NCAT	: American National Centre for Asphalt Technology
NF	: French Standard
NF (AFNOR)	: French Standard
NLT	: Spanish "Norma de Laboratorio Transporte"
NT	: Scandinavian Nord test method
RAV	: Dutch standards
RILEM	: International Union of Laboratories and Experts in Construction Materials, Systems and Structures
SHRP	: Strategic Highway Research Program. USA
SNV	: Swiss Standards
TP BF	: German Technical Test Code
TRL	: Transport Research Laboratory (formerty T.R.R.L.).UK
UNE	: Spanish Standard
UNI	: Italian Standard

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Conversion Factors

Lenght

km	m	mm	mile	yard	ft	in
1	1000	10 ⁶	0.6214	1094	3281	3.937 x 10 ⁴
10 ⁻³	1	1000	6.214 x 10 ⁻⁴	1.0936	3.281	39.370
10 ⁻⁶	10 ⁻³	1	6.214 x 10 ⁻⁷	1.094 x 10 ⁻³	3.281 x 10 ⁻³	3.937 x 10 ⁻²
1.6094	1609.4	1.609 x 10 ⁶	1	1760	5280	63360
9.144 x 10 ⁻⁴	0.9144	914.41	5.682 x 10 ⁻⁴	1	3	36
3.048 x 10 ⁻⁴	0.3048	304.8	1.894 x 10 ⁻⁴	0.3333	1	12
2.54 x 10 ⁻⁵	0.0254	25.4	1.578 x 10 ⁻⁵	2.778 x 10 ⁻²	8.333 x 10 ⁻²	1

Area

km ²	m ²	cm ²	mm ²	sq.mile	acre	yd ²	ft ²	in ²
1	10 ⁶	10 ¹⁰	10 ¹²	0.38612	247.11	1.196 x 10 ⁶	1.076 x 10 ⁷	1.550 x 10 ⁹
10 ⁻⁶	1	10 ⁴	10 ⁶	3.86 x 10 ⁻⁷	2.471 x 10 ⁴	1.196	10.764	1550
10 ⁻¹⁰	10 ⁻⁴	1	100	3.86 x 10 ⁻¹¹	2.471 x 10 ⁻⁸	1.196 x 10 ⁻⁴	1.076 x 10 ⁻³	0.1550
10 ⁻¹²	10 ⁻⁶	10 ⁻²	1	3.86 x 10 ⁻¹³	2.47 x 10 ⁻¹⁰	1.196 x 10 ⁻⁶	1.076 x 10 ⁻⁵	1.550 x 10 ⁻³
2.590	2.59 x 10 ⁶	2.59 x 10 ¹⁰	2.59 x 10 ¹²	1	639.96	3.097 x 10 ⁶	2.78784e +007	4.01 x 10 ⁹
4047 x 10 ⁻³	4047	4047 x 10 ⁷	4.047 x 10 ⁹	1.563 x 10 ⁻³	1	4840	43559	6.273 x 10 ⁶
8.36e-007	0.8361	8361	8.36 x 10 ⁵	3.228 x 10 ⁻⁷	2.066 x 10 ⁻⁴	1	9	1296
9.29 x 10 ⁻⁸	9.29 x 10 ⁻²	929	92900	3.587 x 10 ⁻⁸	2.296 x 10 ⁻⁵	0.1111	1	144
6.45 x 10 ⁻¹⁰	6.45 x 10 ⁻⁴	6.4516	645.16	2.491 x 10 ⁻¹⁰	1.594 x 10 ⁻⁷	7.716 x 10 ⁻⁴	6.944 x 10 ⁻³	1

Volume

m ³	dm ³ (litre)	cm ³ (ml)	yd ³	ft ³	in ³	UK gallon	US gallon
1	10 ⁻³	10 ⁻⁶	1.3079	35.311	61023	219.97	264.17
10 ⁻³	1	10 ⁻³	1.308 x 10 ⁻³	3.531 x 10 ⁻²	61.02	0.2200	0.2642
10 ⁻⁶	10 ⁻³	1	1.308 x 10 ⁻⁶	3.531 x 10 ⁻⁵	6.102 x 10 ⁻²	2.199 x 10 ⁻⁴	2.642 x 10 ⁻⁴
0.7646	764.6	7.646 x 10 ⁵	1	27	46650	168.19	201.98
2.832 x 10 ⁻²	28.32	2.832 x 10 ⁴	3.704 x 10 ⁻²	1	1728	6.229	7.481
1.639 x 10 ⁻⁵	1.639 x 10 ⁻²	16.387	2.144 x 10 ⁻⁵	5.787 x 10 ⁻⁴	1	3.605 x 10 ⁻³	4.329 x 10 ⁻³
4.546 x 10 ⁻³	4546	4.546 x 10 ³	5.946 x 10 ⁻³	0.1605	277.42	1	1.20095
3.785 x 10 ⁻³	3.785	3.785 x 10 ³	4.951 x 10 ⁻³	0.1337	231	0.8327	1

Mass

Tonne (Mg)	kg	g	UK ton	US ton	cwt	lb	oz
1	1000	10 ⁶	0.9842	1.10231	19.66	2.205 x 10 ³	3.527 x 10 ⁴
10 ⁻³	1	1000	9.842 x 10 ⁻⁴	1.10231 x 10 ⁻³	1.966 x 10 ⁻²	2.2046	35.274
10 ⁻⁶	10 ⁻³	1	9.482 x 10 ⁻⁷	1.10231 x 10 ⁻⁶	1.966 x 10 ⁻⁵	2.204 x 10 ⁻³	3.527 x 10 ⁻²
1.016	1016	1.016 x 10 ⁶	1	1.12	20	2240	35840
0.9072	907.2	9.081 x 10 ⁵	0.8928	1	17.856	2000	32000
5.085 x 10 ⁻²	50.85	5.085 x 10 ⁴	0.05	0.0560	1	112	1792
4.536 x 10 ⁻⁴	0.4536	453.6	4.46 x 10 ⁻⁴	5 x 10 ⁻⁴	8.92 x 10 ⁻³	1	16
2.835 x 10 ⁻⁵	2.835 x 10 ⁻²	28.349	2.79 x 10 ⁻⁵	3.125 x 10 ⁻⁵	5.580 x 10 ⁻⁴	6.25 x 10 ⁻²	1

Example: to convert 10 miles to kilometers, find 1 mile in the lenght table. Numbers on that same horizontal are equal units to 1 mile, therefore 1 mile = 1.6094 km; 10 miles = 16.094 km

Density

Tonne/m ³	Mg/m ³	g/m ³	kg/m ³	lb/in ³	UK ton/yd ³	lb/ft ³
1	1000	1000000	1000	0.03613	0.8428	62.43
10 ⁻³	1	1000	1	3.613 x 10 ⁻⁵	8.428 x 10 ⁻⁴	6.423 x 10 ⁻²
27.680	27680	27680000	27680	1	23.328	1.728 x 10 ³
1.3289	1.328 x 10 ³	1.328 x 10 ⁶	1.328	4.801 x 10 ⁻²	1.12	82.955
1.1865	1.186 x 10 ³	1.186 x 10 ⁶	1.186	4.287 x 10 ⁻²	1	74.074
1.602 x 10 ⁻²	16.019	16019	16.019	5.787 x 10 ⁻⁴	1.35 x 10 ⁻²	1

Force and Weight

MN	kN	N	kgf	tonf	lbf
1	1000	10 ⁶	1.0196 x 10 ⁵	100.4	2.248 x 10 ⁵
10 ⁻³	1	10 ³	101.96	0.1004	224.82
10 ⁻⁶	10 ⁻³	1	0.10196	1.004 x 10 ⁻⁴	0.2248
9.807 x 10 ⁻⁶	9.807 x 10 ⁻³	9.807	1	9.842 x 10 ⁻⁴	2.2048
9.964 x 10 ⁻³	9.964	9964	1016	1	2240
4.448 x 10 ⁻⁶	4.448 x 10 ⁻³	4.448	0.45455	4.464 x 10 ⁻⁴	1

Pressure, Stress and Modulus of Elasticity

MN/m ²	kN/m ²	kp	bar	atm	m H ₂ O	ft H ₂ O	mm Hg	Ton/ft ²	psi	lbf/in ²	lbf/ft ²
1	1000	10.197	10	9.869	102.2	355.2	7500.6	9.320	145.04	20886	
0.001	1	1.019 x 10 ⁻²	0.0100	9.87 x 10 ⁻³	0.1022	0.3352	7.5006	0.0093	0.14504	20.886	
9.807 x 10 ⁻²	98.07	1	0.9807	0.9678	10.017	32.866	735.56	0.9139	14.223	2048.1	
0.100	100	1.0197	1	0.9869	10.215	33.515	750.06	0.9320	14.504	2088.6	
0.1013	101.33	1.0332	1.0132	1	10.351	33.959	760.02	0.9444	14.696	2116.2	
9.788 x 10 ⁻³	9.7885	9.983 x 10 ⁻²	9.789 x 10 ⁻²	9.661 x 10 ⁻²	1	3.2808	73.424	9.124 x 10 ⁻²	1.4198	204.45	
2.983 x 10 ⁻³	2.9835	3.043 x 10 ⁻²	2.984 x 10 ⁻²	2.945 x 10 ⁻²	0.3048	1	22.377	2.781 x 10 ⁻²	0.43275	62.316	
1.333 x 10 ⁻⁴	0.1333	1.3595 x 10 ⁻³	1.333 x 10 ⁻³	1.315 x 10 ⁻³	1.362 x 10 ⁻²	4.469 x 10 ⁻²	1	1.243 x 10 ³	1.934 x 10 ⁻²	2.7846	
0.1073	107.3	1.0942	1.0730	1.0589	10.960	35.960	804.78	1	15.562	2240	
6.895 x 10 ⁻³	6.895	7.031 x 10 ⁻²	6.895 x 10 ⁻²	6.805 x 10 ⁻²	0.7043	2.3108	51.714	6.426 x 10 ⁻²	1	144	
4.788 x 10 ⁻⁵	4.788 x 10 ⁻²	4.883 x 10 ⁻⁴	4.788 x 10 ⁻⁴	4.725 x 10 ⁻⁴	4.891 x 10 ⁻³	1.605 x 10 ⁻²	0.3591	4.464 x 10 ⁻⁴	6.944 x 10 ⁻³	1	

Permability

m/s	cm/s	m/year	Darcy	ft/yr	lbf
1	100	3.156 x 10 ⁷	1.04 x 10 ⁵	1.035 x 10 ⁸	2.835 x 10 ⁵
0.01	1	3.156 x 10 ⁵	1.04 x 10 ³	1.035 x 10 ⁶	2.834 x 10 ³
3.169 x 10 ⁻⁶	3.169 x 10 ⁻⁶	1	3.28 x 10 ³	3.281	8.982 x 10 ⁻³
9.66 x 10 ⁻⁶	9.66 x 10 ⁻⁴	304	1	1000	2.74
9.658 x 10 ⁻⁹	9.959 x 10 ⁻⁷	0.3048	10 ⁻³	1	2.738 x 10 ⁻³
3.527 x 10 ⁻⁶	3.527 x 10 ⁻⁴	111.33	0.365	365.25	1

Densities (at 20 °C) g/cm³

Pure Water	0.99820	Kerosene (approx.)	0.80
Sea Water	1.04	Paraffin wax (m.p. 52-52 °C)	0.912
Mercury	13.546	Microcrystalline wax (m.p. 60-63 °C)	0.915

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