CFU
INTERNATIONAL TRADE
& SERVICES INC.

Rock Mechanics

Testing Equipments

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, poisons 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

CONTENTS

CORING

Product Code

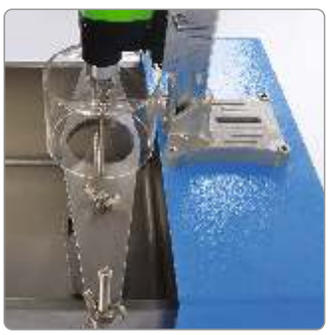
CFR- 0250	Laboratory Type Core Drilling Machine, 230 V, 50-60 Hz, 1 ph
CFR-0255	Fastening Device for Core Samples, up to 100mm dia.
CFGD-0340	Diamond Core Bit for CFR-0250, for 21.46mm dia. (EX) specimens, with spigot adaptor
CFGD-0341	Diamond Core Bit for CFR-0250, for 30.10mm dia. (AX) specimens, with spigot adaptor
CFGD-0342	Diamond Core Bit for CFR-0250, for BX 38.10 mm (1.5") dia. specimens, with spigot adaptor
CFGD-0343	Diamond Core Bit for CFR-0250, for 42.04 mm dia. (BX) specimens, with spigot adaptor
CFGD-0344	Diamond Core Bit for CFR-0250, for 54.74 mm dia. (NX) specimens, with spigot adaptor
CFGD-0346	Diamond Core Bit for CFR-0250, for 63,50 mm dia. (HQ) specimens, with spigot adaptor

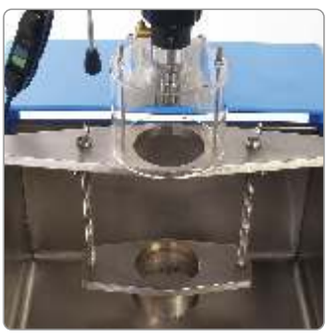
This machine is specifically used in the laboratory for taking core samples from large sized rock, natural stone and concrete samples.

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 core with max. dia. 100 mm from rock samples, CFR-0255 special fastenig device including transparent protection cylinder and coring bits should be ordered seperately.





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

CFR-0300 Laboratory Core Trimmer and Cut-Off Machine 230 V, 50 Hz, 1 ph
CFR-0302 Cooling Recirculating Pump with Reservoir 230 V, 50 Hz, 1 ph
CFR-0304 Diamond Cutting Blade, Ø230x2.5 mm thickness
CFR-0306 Double-Faced Cup Wheel, Ø200x16 mm

Models for 230V 50 Hz, 1 ph.	CFR-0300-T	CFR-0302-T
Models for 110V 60 Hz, 1 ph.	CFR-0300-N	CFR-0302-N
Models for 230V 60 Hz, 1 ph.	CFR-0300-K	CFR-0302-K

Standards

ASTM D4543

The CFR-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 CFR-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.

The machine also include cooling water inlet and transparent cover, conforming to CE requirements, with switch that stops automatically the machine when opened.

The CFR-0304 Diamond Cutting Blade has a diameter of 230 mm, 2.8 mm thickness and the maximum cutting area is 110x70 mm.

The CFR-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 CFR-0306 Double-Faced Cup Wheel, CFR-0304 Cutting Blade and CFR-0302 Cooling Recirculating Pump with Reservoir should be ordered separately.

Dimensions	730x1050x590 mm
Weight (approx.)	100 kg
Power	1100 W

CUTTING / GRINDING

Product Code

CFC-1010 Universal Cutting Machine Small
CFC-1020 Universal Cutting Machine Junior
CFC-1030 Universal Cutting Machine Major
CFC-1012 Cutting Blade Ø 350 mm
CFC-1022 Cutting Blade Ø 450 mm
CFC-1032 Cutting Blade Ø 600 mm

Models for 220-240V 50-60 Hz, 1 ph.		
CFC-1010	CFC-1020	CFC-1030

Standards

EN 12390–3, 12504-1; ASTM C42, D4543

The CFC Series Universal Cutting Machine has 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.

Cutting Blades should be ordered separately.

	CFC-1010 Small	CFC-1020 Junior	CFC-1030 Major
Length	1100 mm	1100 mm	1220 mm
Width	600 mm	710 mm	810 mm
Height	1300 mm	1350 mm	1500 mm
Blade Diameter	350 mm	450 mm	600 mm
Max. Cutting Height	130 mm	175 mm	250 mm
Cutting Length	700 mm	420 mm	500 mm
Weight	115 kg	140 kg	170 kg
Water Pump Power	0.37 hp	0.37 hp	0.37 hp

CUTTING / GRINDING

Product Code

CFC-1040 Automatic Grinding Machine
CFC-1042 Grinding Wheel CFC-1035 and CFC-1040
CFC-1043 Cradle for Ø:38-100 mm Cylindrical Specimens
CFC-1044 Water Restraint Panel Set
CFC-1048 Water Restraint Panel for Ø160mm Cylinder Specimen
CFC-1049 Water Restraint Panel for 150mm Cube Specimens

Models for 220-240V 50-60 Hz, 1ph.	CFC-1040
Models for 110-120V 60 Hz, 1ph.	CFC-1040-N

Standards

EN 12390-1, 12390-3, 12504-1; ASTM C 31, C39, C42, C192, C617

The CFC-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 lenght 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 0,50.

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 seperately 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 to100 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	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 ompression 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°C

UNIAXIAL & TRIAXIAL TESTS

Product Code

CFR-0455 Hoek Triaxial Cell BX (42.04 mm dia.)
CFR-0456 Spare Sealing Sleeves, BX (42,04 mm dia.) for Hoek Triaxial Cell
CFR-0457 Hoek Triaxial Cell NX (54.74 mm dia.)
CFR-0458 Spare Sealing Sleeves, NX (54,74 mm dia.) for Hoek Triaxial Cell
CFR-0460 Hoek Triaxial Cell HQ (63,5 mm dia.)
CFR-0461 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 for oil inlet and outlet, two steel end caps which are screwed to the cell body, a rubber sealing sleeve to separate the specimen from the cell fluid, two female spherical seated coupling with loading caps and two male spherical seated coupling with load spreading heads.

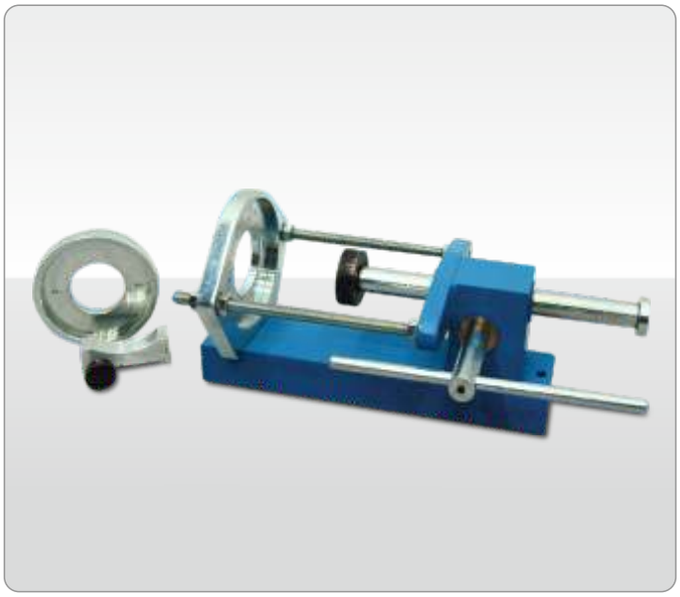
	Dimensions	Weight (approx.)
CFR-0455	350x150x200 mm	15 kg
CFR-0457	350x150x200 mm	15 kg
CFR-0460	350x150x200 mm	16 kg

UNIAXIAL & TRIAXIAL TESTS

Product Code

CFR-0470 Specimen Extruder for Hoek Triaxial Cells
CFR-0472 Extruder Adaptor Set for BX, NX and HQ Specimens

The CFR-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

UNIAXIAL & TRIAXIAL TESTS

Product Code

CFR-0450.PVPR	Automatic Pressure Unit for Lateral Pressure in Hoek Triaxial Cell
CFR-0455	Hoek Triaxial Cell BX, Ø 42,04 mm dia.
CFR-0457	Hoek Triaxial Cell NX, Ø 54,74 mm dia.
CFR-0460	Hoek Triaxial Cell HQ, Ø 63,5 mm dia.
CFR-0400	Compression Jig Assembly for Rock Core Specimens, Ø38,1mm to Ø63,5mm
CFC-0210	High Precision Pressure Transducer and Electronics

Models for 220-240V 50-60 Hz, 1ph.	CFR-0450.PVPR
Models for 110-120V 60 Hz, 1ph.	CFR-0450.PVPR-N

Standards

EN 1926, 14580; ASTM D2664, D2938, D3148, D5407

The CFR-0450.PVPR Automatic Pressure Unit 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 U-Touch PRO Control Unit.

Any capacity which depends of rigidity and sizes of rock specimens to be tested, EN or ASTM automatic compression testing machines can be used for appliying vertical load required for the triaxial and uniaxial tests.

As option for weaker rock specimens, the compression machines can be upgraded with option CFC-0210 special calibration procedure to have Class 1 starting from 1% of the full range of the capacity.

To see the details of Hoek Triaxial Cells required for triaxial testing of rock specimens, please look at the page of Rock Triaxial Test Accessories.

SAFETY FEATURES of CFR-0450.PVPR

- **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

CFC-5727.FPR and CFR-0460.PVPR

UNIAXIAL & TRIAXIAL TESTS

Product Code

CFR-0452 Manual (Hand Operated) Pressure Equipment for Lateral Pressure in Hoek Triaxial Cell
CFR-0455 Hoek Triaxial Cell BX, Ø 42,04 mm dia.
CFR-0457 Hoek Triaxial Cell NX, Ø 54,74 mm dia.
CFR-0460 Hoek Triaxial Cell HQ, Ø 63,5 mm dia.
CFR-0400 Compression Jig Assembly for Rock Core Specimens, Ø50mm to Ø55 mm
CFGE-3800 Hydraulic Hand Pump, 700 bar.
CFC-0200 Pressure Transducer

Models for 220-240V 50-60 Hz, 1ph.	CFC-5727.FZ	CFC-5737.FZ
Models for 110-120V 60 Hz, 1ph.	CFC-5727.FZ-N	CFC-5737.FZ-N

Standards

EN 1926, 14580; ASTM D2664, D2938, D3148, D5407

The manual pressure equipment is used for maintaining the constant lateral pressure in the Hoek triaxial cells and consists of a hydrolic hand pump with oil reservoir (UTGE-3800), a precision LPI digital readout unit (CFC-4920LP), a pressure transducer (UTGM-0200) and a 1,5m long flexible hose with quick release coupling.

Any capacity which depends of rigidity and sizes of rock specimens to be tested, EN or ASTM automatic compression testing machines can be used for appliying vertical load required for the triaxial and uniaxial tests. As option for weaker rock specimens, the compression machines can be upgraded with option CFC-0210 special calibration procedure to have Class 1 starting from 1% of the full range of the capacity

To see the details of Hoek Triaxial Cells required for triaxial testing of rock specimens, please look at the page of Rock Triaxial Test Accessories.

	Lateral Pressure Equipment
Max. Working Pressure	700 bar (70 MPa)
Dimensions	1050x500x300 mm
Weight (approx.)	20 kg

UNIAXIAL & TRIAXIAL TESTS

Product Code

CFR-0400 Compression Jig Assembly for Rock Core Specimens
CFR-0422 Indirect Tensile (Brazil) Test Apparatus for NX (Ø54.74 mm) Rock Specimens, ISRM
CFR-0424 Indirect Tensile (Brazil) Test Apparatus for HQ (Ø63,5 mm) Rock Specimens, ISRM
CFR-0426 Indirect/Splitting Tensile Test Device for NX (Ø54.74 mm) Rock Specimens, ASTM.

Standards

ASTM D7012, D3897; ISRM

CFR-0400 is used for uniaxial compressive strength tests of rock core specimens with 47to 63,5 mm. Supplied with 2 pcs. 32mm and 1 pcs. 20 mm distance pieces.

CFR-0422, CFR-0424 and CFR-0426 are used for determining the splitting tensile strength of rock by diametral line compression of a disk.

Platens Dimensions	80 mm dia, 40 mm thick
Min. Hardness of Platens	58 HRC
Vertical Clearance	165 mm
Loading Head Stroke	65

STRENGTH INDEX

Product Code

CFR-0540 Digital Point Load Test Apparatus with Hydraulic Bottle Jack, 60 kN
CFR-0544 Lower and Upper (Spherical Seated) Loading Platens, Ø52 mm

Standards

ASTM D5731, ISRM

The CFR-0540 Digital Point Load Test Apparatus is used for determining the strength values of a rock specimen, both in the field and in the laboratory.

Consists of a 60 kN capacity load frame with an upper and lower conical platens, a digital readout unit, pressure tranducer and a hydraulic loading bottle jack.

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 easily transportable wooden case.

CFR-0544 loading platens for compression tests on rock specimens sholud be ordered seperately.

TECHNICAL PROPERTIES

- Load Capacity : 60 kN
- Digital Display : 2 x 16 characters
- Resolution : 32.000 div.
- Accuracy : ± 1%
- Load Readibility: 1 N
- Serial Port for PC or thermal connection
- Distance between conical platens: 105 mm
- Distance between columns: 110 mm
- Distance between compression platens: 102 mm

Dimensions	450x300x700 mm
Weight (approx.)	25 kg

STRENGTH INDEX

Product Code

CFR-0542 Digital Point Load Test Apparatus with Hydraulic Cylinder and Hand Pomp 100 kN
CFR-0544 Lower and Upper (Spherical Seated) Loading Platens, Ø60mm

Standards

ASTM D5731

The CFR-0542 Digital Point Load Test Apparatus Apparatus is used for determining the strength values of a rock specimen, both in the field and in the laboratory. Consists of a 100 kN capacity load frame with an upper and lower conical platens, hydraulic cylinder and a hydraulic pomp, a digital readout unit and a pressure tranducer

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.

Hydrolic hand pomp has a internal pressure relief valve for overload protection.

CFR-0544 Lower and Upper (Spherical Seated) Loading Platens which are used for compression tests on cylinder rock specimens should be ordered seperately.

Supplied complete with 1,5 m flexible hose with quick release coupling, serial port for PC connection, face protective goggles and carriage box

TECHNICAL PROPERTIES

- Load Range : 0 - 100 kN
- Digital Display : 2 x 16 characters
- Resolution : 32.000 div.
- Accuracy : ± 1%
- Load Readibility: 1 N
- Load measurement in both kN and MPa
- Serial Port for PC or thermal connection
- Distance between columns: 110 mm
- Distance between compression platens for CFR-0544:115 mm

	Loading Frame with Cylinder	Hydrolic Hand Pomp
Dimensions	450x300x700 mm	160x700x310 mm
Weight (approx.)	25 kg	13 kg

COMPRESSION STRENGTH

Product Code

CFR-0562 Rock Classification Hammer L Type (Schmidt Hammer-Low Impact Energy Model) (Controls)
CFR-0565 Rock Cradle
CFC-3040E Calibration Anvil

Standards

ASTM D 5873; ISRM Suggested Method

CFR-0562 Rock Classification Hammer together with CFR-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.

CFR-0565 Rock Cradle apparatus consists of a universal V shaped 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 guide attached to the core holder to keep the rebound hammer perpendicular to the surface of the test specimen.

The impact area of CFC-3040E Calibration Anvil used for the calibration of rock test hammers. is hardened min. 52HRC.

	Dimension	Weight (approx.)
CFR-0562	340x120x120 mm	2 kg
CFR-0565	165x110x470 mm	27 kg
CFC-3040E	150x150x230 mm	16 kg

CFR-0562

CFC-3040E

CFR-0565

SLAKE DURABILITY INDEX

Product Code

CFR-0390 Slake Durability Apparatus
CFR-0392 Pair of Mesh Drums for CFR-0390

Models for 220-240V 50-60 Hz, 1ph.	CFR-0390-T
Models for 110-120V 60 Hz, 1ph.	CFR-0390-N
Models for 110-120V 60 Hz, 1ph.	CFR-0390-K

Standards

ASTM D4644

Dimensions	1300x150x450 mm	Weight (approx.)	15 kg

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 CFR-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.

COMPRESSION STRENGTH

Product Code

CFR-0563 Original Schmidt Test Hammer Type L (Proceq)
CFR-0565 Rock Cradle
CFC-3040E Calibration Anvil

Standards

ASTM D 5873; ISRM Suggested Method

In rock mechanics, The Type L Original Schmidt (CFR-0563 is commonly used for the classification of rock cores and brittle rock.

CFR-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.

CFR-0565 Rock Cradle apparatus consists of a universal V shaped 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 guide attached to the core holder to keep the rebound hammer perpendicular to the surface of the test specimen.

The mpact area of CFC-3040E Calibration Anvil used for the calibration of rock test hammers. is hardened min. 52HRC.

Technical Specifications

Measuring Range	10-70 N/mm²
Impact Energy	0.735 Nm

	Dimension	Weight (approx.)
CFR-0562	340x120x120 mm	2 kg
CFR-0565	250x250x450 mm	27 kg
CFC-3040E	150x150x230 mm	16 kg

CFR-0563


CFR-0565


CFC-3040E

COMPRESSION STRENGTH

Product Code

CFR-0564 Rock Schmidt-Rock Test Hammer Type L (Proceq)

Standards

ASTM D 5873; ISRM Suggested Method

CFR-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 Et = 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

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.)
CFR-0564	55x55x255 mm	570 g
CFC-3040	150x150x230 mm	16 kg

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 3080/T236
- ASTM D-5321
- 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