

SD-SWCC - Stress Dependent Soil Water Characteristic Curve Testing System

Related Standards

American ASTM D6836-16

- System for determining the influence of the stress state on the Soil Water Characteristic Curve (SWCC) of a soil sample
- Multi- Purpose Frame with stepper motor (either 15 kN or 50 kN) to generate Force
- Multi-Purpose Consolidation Cell with UNSAT kit for sample diameter 70 mm and height 20 mm
- LSCT for Displacement measurement
- External or Internal Submersible Load Cell for Load measurement (Internal recommended)
- Suction is generated using a Pro Pneumatic APC at the top of the sample and a Pro Hydraulic APC at the base, thus applying the axis-translation technique
- Both drying and wetting SWCCs can be determined
- Frame can also be used with the same Cell for CRS and Consolidation tests (see separate datasheets).

Features

- Air-tight cell Fitted with High Air Entry Disc (1 bar default, other capacities available) see below
- Temperature Probe, Heater Element & Controller unit for controlling condensation
- Includes 15 kN or 50 kN External Load cell
- Integrated 7" Touchscreen Colour Display for Standalone use without PC Control if required
- On-board data logging (16GB standard), able to store thousands of Tests, each with thousands of data points
- Data export to PC for manipulation within Excel
- High Speed sensor conversion
- Up to 5 input channels (1 x digital & 4 x analogue) (Note:digital socket is Read Only (not suitable for Closed Loop control))
- Built-in Auto engaging function with definable engage value
- Built-in auto protection for sensor limits

Additional 70 mm HAEDs available for MPCC

VJT0651AR1	1 Bar HAED & Ring for MPCC
VJT0651AR2	3 Bar HAED & Ring for MPCC
VJT0651AR3	5 Bar HAED & Ring for MPCC
VJT0651AR4	15 Bar HAED & Ring for MPCC



SD-SWCC Testing System

Ordering Information

ACONS Pro Frames (Please select one)

VJT0650M2-P	ACONS Pro Motorised Automatic Multi-Purpose Frame (15 kN)
VJT0650M2-PHL	ACONS Pro (High Capacity) Motorised Automatic Multi-Purpose Frame (50 kN)

Multi-Purpose Cell & Kit

VJT0651-H	Multi-Purpose Consolidation Cell for up to 70 mm Samples
VJT0651-H-UNSAT70	MPCC - UNSAT Kit (70 mm Diameter)

Temperature Control Equipment

VJT0651-H-TEMP	Temperature Probe, Heater Element & Controller unit (for Multi-Purpose Consolidation Cell)
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Automatic Pressure Controllers

VJT2250-P	Pro Pneumatic Automatic Pressure Controller (1 MPa)
VJT2266-P	Pro Hydraulic Automatic Pressure Controller (1 MPa)

Internal Submersible Load Cell (recommended)

VJT0353B/MPC	25 kN Internal Submersible Load Cell with 25 mm diameter Ram
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Displacement Transducer

VJT0271	LSCT Displacement Transducer, 25 mm x 0.001 mm with 2 metre cable & Plug
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Transducer Bracket

VJT0281C	Transducer Bracket for LSCT transducer
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Clisp Studio Software Required

VJT-csSDSWCC	Clisp Studio SD-SWCC Software
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VJT-csSD-SWCC: Clisp Studio Stress Dependent Soil Water Characteristic Curve Software

The VJ Tech Clisp Studio SD-SWCC Software module enables the User to determine the influence of the stress state on the Soil Water Characteristic Curve (SWCC) of a soil sample.

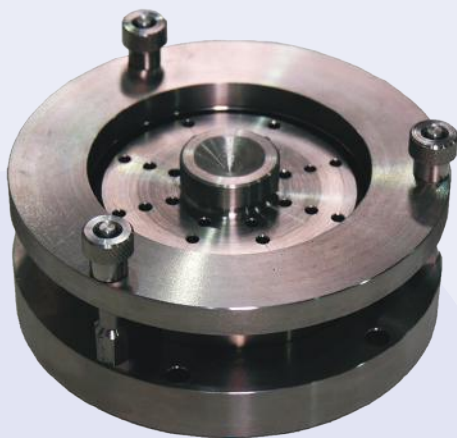
System Specifications

Maximum Frame Capacity	15 kN or 50 kN
Resolution	0.1 N
Accuracy	0.15% FRO
Adjustable Displacement Rate	0-10.0000 mm/min
Maximum Matrix Suction	1000 kPa
Connectivity	Ethernet or USB Interface
Power Supply	DC Adaptor (Output 24V DC, Input 90-240V, 50/60Hz, 1ph.)

MPCC - UNSAT Kit (70mm Diameter)

The MPCC - UNSAT Kit is designed to fit inside VJ Tech's Multi-Purpose Cell, which can also be used for CRS and Oedometer testing with their respective kits (and other accessories).

It comprises a Loading Cap and Base Adaptor, Clamp Ring and bolts, a Sample Cutting Ring, Upper and Lower Porous Discs and a 1 bar High Air Entry Disc is fitted as standard.



VJT0651-H-UNSAT70 - MPCC UNSAT Kit (70 mm)

Clisp Studio csSDSWCC Software

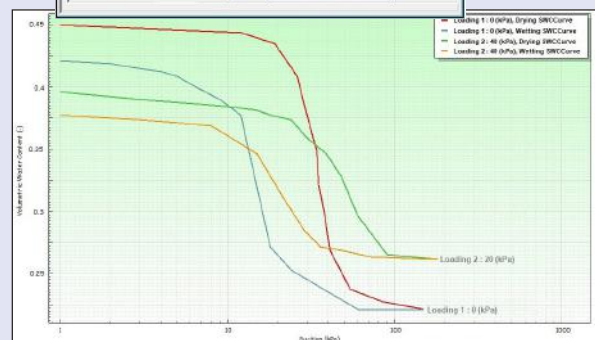
- Data logging
- Consolidation
- Drying Soil Water Characteristic Curves
- Wetting Soil Water Characteristic Curves
- Automatic vertical loading sequences (subject to a load frame)
- Automatic start/stop of test/machine
- Live tabular display of logged and calculated data
- Live graphical display of logged and calculated data
- User defined views / graphs / tables
- Standard predefined presentation reports
- Export of data to Excel or Paste to clipboard
- Test script export & import

Consolidation Graph



Specimens		1	Vert Stress:	Loading 01: 50 (kPa)	Lock
Measured Parameters					
Settlement Input	L_{IP}			-3.035	(mm)
Applied Stress	σ'_i			50	(kPa)
Applied Load	F_{IP}			231	(N)
Total test time	T_t			02:52:20	(h:m:s)
Test Status					
Time	t			00:14:00	(h:m:s)
Total change in H	ΔH_i			1.294	(mm)
Suction	S			20	(kPa)
Void Ratio	e_f			0.618	
Vol Water Content	θ			18.2	(%)
Degree of Sat.	S_r			52.9	(%)

Live
Data
View



Wetting and Drying Curves Graph