

# CSL Consolidation LoadTrac III / FlowTrac II

## Benefits and Features

- 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

## Applicable Test Standards

- [ASTM D4186 One-Dimensional Consolidation Properties of Soils Using Controlled-Strain Loading](#)

The LoadTrac III / 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, this system will run the entire CRCS test from start to finish. The LoadTrac III / 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 III / 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 hours on most materials.



*Standard Fully-Automated Constant Rate of Strain Consolidation System*

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## TECHNICAL SPECIFICATIONS

### MOTOR

Stepper motor with built-in controls

### TRAVEL

25 mm (1.0 in.) resolved to 0.0025mm (0.0001 in.)

### 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, 1 phase

### DIMENSIONS

#### LoadTracIII

305 x 381 x 838 mm (12 x 15 x 33 inches)

#### FlowTracII

203 x 406 x 470 mm (8 x 16 x 18.5 inches)

### WEIGHT

#### LoadTracIII

20 kg (44 lbs.)

#### FlowTracII

14 kg (30 lbs.)

### MODELS

#### FlowTracII Models: Frame Capacity

FTII-250-nn: 250 cc capacity

FTII-750-nn: 750 cc capacity

nn: Maximum pressure range for system: 700, 1000, 2000, and 3500 kPa (150, 300, and 500 psi) available (resolution of pressure will be 0.00005 times the range)

### ACCESSORIES

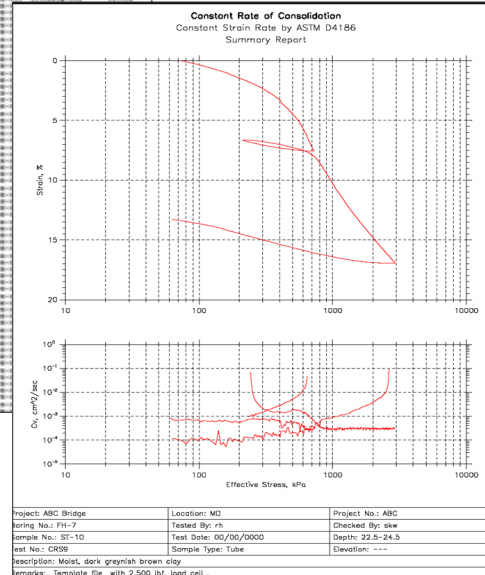
1230: All stainless steel consolidation cell with backpressure saturation capability, 62.5 mm (2.5 in.) sample diameter standard.

External stainless steel pressure sensor.

Other sample sizes are available upon request

| Time | Displacement | Pressure | Effective Stress |
|------|--------------|----------|------------------|
| 0    | 0.0000       | 0.0000   | 0.0000           |
| 1    | 0.0000       | 0.0000   | 0.0000           |
| 2    | 0.0000       | 0.0000   | 0.0000           |
| 3    | 0.0000       | 0.0000   | 0.0000           |
| 4    | 0.0000       | 0.0000   | 0.0000           |
| 5    | 0.0000       | 0.0000   | 0.0000           |
| 6    | 0.0000       | 0.0000   | 0.0000           |
| 7    | 0.0000       | 0.0000   | 0.0000           |
| 8    | 0.0000       | 0.0000   | 0.0000           |
| 9    | 0.0000       | 0.0000   | 0.0000           |
| 10   | 0.0000       | 0.0000   | 0.0000           |

Typical Test Output



| Project                   | Specimen            | Water Content        | Read Table           | Test Parameters            |                     |            |      |
|---------------------------|---------------------|----------------------|----------------------|----------------------------|---------------------|------------|------|
| Initialization            |                     | Saturation           |                      | Consolidation Table        |                     |            |      |
| Final Normal Stress (kPa) | Strain Rate (%/min) | Lower Pressure Ratio | Upper Pressure Ratio | Equilibrium Pressure Ratio | Maintain Time (min) | Read Table |      |
| 1                         | 750                 | 2.e-002              | -1.                  | 0.25                       | 1.                  | 0.         | Time |
| 2                         | 750                 | 2.e-002              | 5.e-002              | 0.25                       | 1.e-002             | 1440.      | Time |
| 3                         | 25.                 | -2.e-002             | -1.                  | 0.25                       | 1.                  | 0.         | Time |
| 4                         | 25.                 | -2.e-002             | 5.e-002              | 0.25                       | 1.e-002             | 1440.      | Time |
| 5                         | 0.                  | 0.                   | 0.                   | 0.                         | 0.                  | 0.         | Time |
| 6                         | 0.                  | 0.                   | 0.                   | 0.                         | 0.                  | 0.         | Time |
| 7                         | 0.                  | 0.                   | 0.                   | 0.                         | 0.                  | 0.         | Time |
| 8                         | 0.                  | 0.                   | 0.                   | 0.                         | 0.                  | 0.         | Time |
| 9                         | 0.                  | 0.                   | 0.                   | 0.                         | 0.                  | 0.         | Time |
| 10                        | 0.                  | 0.                   | 0.                   | 0.                         | 0.                  | 0.         | Time |

User-friendly Interface