Advanced Force Test System
CS Series
225 lbf (1kN) & 1100 lbf (5kN)

» Force measurements made easy
Accurate results, easy programming, maximum throughput and minimal operator training

» One-click operation
Simple and intuitive; with one-click access to favorite tests as well as test results

» Modern design & technology
Linear guide technology, pre-loaded ball screws and advanced software compensation ensures high displacement measurement precision

» Robust and reliable touch screen
A dust-protected & splash-proof touch screen that is intuitive to operate – perfect for use on the production floor

» Large, flexible work area
Up to 180 mm throat depth for large specimens and a wide range of grips and fixtures available

» Sample testing and quality assurance
Immediate pass/fail output, automatic data export, controlled access levels and barcode scanning functionality

» Security
Two levels of user access: supervisor and operator. Both can be password protected

» Plug & play
A self-contained, fully operational system that requires no computer or software installation

Force measurement has never been easier

The Chatillon® CS Series digital force testers are revolutionary systems optimized for production testing applications, including medical devices, plastics, packaging, textiles, rubber and electronics to name a few. No personal computer is required; no proprietary software is required; no knowledge of programming languages is required.

Two options are available. Both the CS225 and CS1100 provide you with an easy-to-use, intuitive and straightforward method for tensile testing, compression testing, shear testing, flexural testing, peel testing or advanced multi-stage testing that conform to ISO or ASTM testing procedures. With the CS Series you can perform:

- Limit testing to load, displacement, height or time
- Break testing – sharp or percentage
- Multi-stage, cyclic tests and height measurements
- Peel testing

When high test repeatability and documentation of results is important, but you don’t need advanced materials test functionality, the CS Series is an excellent choice.
The CS Series has a 8.9” industrial-grade touch screen (IP65) that has been designed for easy continuous operation in a production environment. The screen is dust protected and can withstand liquid spills and splashes. The touch screen is not only rugged; it is also easy to operate, making it the perfect interface for users regardless of their skill level. A few touches are all it takes to set up a test, select test runs and present reports.

With the CS Series you can:
- Define your favorite, frequently-used tests for immediate access and add a sample picture for unambiguous test selection
- Switch seamlessly during test batch execution between individual test graphs, batch results and statistic
- Print and export data directly from the screen or use automatic data archiving
**Tests, Features and Functionality**

**Limit and break testing**
Set up a test based on a load limit, displacement limit, height limit or time limit in both tensile and compression directions. Similarly, a break or rupture can be defined as a sharp break or percentage drop from the peak load measured.

As an added feature, a quick test button – compression or tension, allows the user to define and execute a test with a few clicks for more exploratory trial and error type work.

**Multi-stage & cycle testing**
The multi-stage setup allows users to configure virtually any type of test setup imaginable. Each part of a test is defined as a “stage”. Each stage can be set up with its own independent load or displacement characteristic and speed. The touch screen interface with stage specific icons provides an excellent overview and makes it is easy to add, edit or delete a stage.

Multi-stage testing can be used for cycle tests, hold tests, insertion/extraction tests, snap-on/off tests or other sophisticated test methods. Users have total freedom to create the test movement required for testing their sample without the need for expensive 3rd-party software applications or validation requirements.

*Electro-mechanical testing systems can be used for short-term cycle and hold tests. Consult your sales person for your specific application requirements.*

**Height mode**
The CS Series includes a height mode of operation that allows the user to perform pre-conditioning and then measure height at specific loads. The system has an automatic datum routine that defines the reference point for height measurements.

**Peel testing**
Determine the maximum and average peeling force of various materials between two points that you define in the test program setup.
Test results
Test results are displayed in various views, either as a graph (single result) or in tabular format showing multiple test results. Measured results are available for all test types. Simply select the results (up to 10) you want displayed, such as: load at limit, peak load, displacement at break, etc. You can then rename the test results to adhere to your own terminology.

Embedded statistical process control (SPC) calculations for statistical results come standard and can be viewed in the statistics view. Test results and statistics are available for export and printing as well.

Saving, archiving and exporting data
Test results are automatically saved and can be recalled to analyze results or to continue testing a batch run.

Test results are stored as CSV files and can automatically be exported to a USB device, an external server or a hard disc via the Ethernet connection. In addition, the software features a standard report in PDF format that can be saved or printed directly from the touch screen. The PDF report automatically incorporates the test parameters, results and statistics selected for the test. Furthermore the report can be configured with your company logo.

The CS Series also boasts an auto-archive function. In order to secure your data and results, the system can be configured to archive your results to an external hard disc or server via the USB or Ethernet connection. Just specify your desired time interval or number of test runs before auto archiving.

Effortless communication
The CS Series has been designed to integrate seamlessly into your systems and to obtain the best possible test efficiency. The units accept bar code scanners to quickly import product ID or other relevant information and correlate this with the specific test run. You can transfer and store results on external drives or memory devices using the USB port or the Ethernet connection. PDF reports can be printed directly from the machine by connecting a direct or network printer.

Secure access
The user interface features two levels of user access: supervisor and operator. Both levels can be password protected. The supervisor level has complete system access, while the operator level can be configured to only have access to specified tests or test functions. To enhance ease of use, specific tests can be defined as favorites to be displayed on the startup screen for immediate testing.
Language choice
The CS Series features multiple languages so operators can configure and perform tests in the language they are most comfortable using. The following languages are supplied as standard: English, French, German, Spanish, Chinese and Turkish.

Flexible mounting
The T-slot table contains multiple through holes for mounting various types of threaded fixtures and eye-end adapters. The fixture mounting block can be easily positioned to ensure proper alignment with the load measuring sensor.

You can choose from a wide range of standard grips and fixtures as well as custom-designed versions for use with the CS Series. Some examples are:

- Wedge action grips that self-tighten
- Pneumatic action grips for faster sample clamping
- Vice action grips for film and semi-rigid materials
- Compression platens available in many sizes
- 3- and 4-point bending fixtures
- Self-tightening grips to reduce operator fatigue
- Bollard grips for wire and rope testing

Exceptional service & calibration
For over 75 years, Chatillon has provided customers worldwide with service and calibration. Chatillon maintains an NIST traceable calibration laboratory for verification and calibration of force.

Contact your local distributor for more information on the installation, training and on-site calibration services that are available.
SYSTEM SPECIFICATIONS

Test setups
• Load limit
• Displacement limit
• Height limit
• Time limit
• Break or rupture
• Cycle and loop
• Multi-stage (define test as a combination of the above)
• Tensile
• Compression
• Peel

Load measurement system
• CLC Series load sensors
• Auto-recognition, “plug & test”
• Sensor overload history log
• On-site field calibration using traceable master load cells in combination with dead weights

Load measuring system meets or exceeds the following: ASTM E4, BS 1610, DIN 51221, ISO 7500-1, EN 10002-2, AFNOR A03-501 (AMETEK recommends system verification on-site at the time of installation by an authorized Chatillon Service Provider, as required by ASTM E4 and ISO 7500-1)

Displacement measurement
• Displacement measurement meets or exceeds the following: ASTM E83, BS 3846, ISO 9513, EN 10002-4
• The system can apply displacement compensation as a standard function

Data output
• One Ethernet, one USB available
• Save data directly to external drive, server or to USB flash drive
• Save data locally in console memory (10 GB)
• Interface to USB serial devices; barcode scanner/reader, printers, keyboards and hubs
• Export data to CSV file
• RS232 (input) for external ASCII command
# TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>CS225</th>
<th>CS1100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Force capacity</strong></td>
<td>225 lbf (1000 N)</td>
<td>1124 lbf (5000 N)</td>
</tr>
<tr>
<td><strong>Maximum crosshead travel</strong> (between the eye ends)</td>
<td>19.7 in (500 mm)</td>
<td>31.5 in (800 mm)</td>
</tr>
<tr>
<td><strong>Throat depth</strong></td>
<td>7.1 in (180 mm)</td>
<td>5.9 in (150 mm)</td>
</tr>
<tr>
<td><strong>Crosshead speed range at full load</strong></td>
<td>0.001–50 in/min (0.01–1270 mm/min)</td>
<td>0.001–40 in/min (0.01–1016 mm/min)</td>
</tr>
<tr>
<td><strong>Maximum return speed</strong></td>
<td>50 in/min (1270 mm/min)</td>
<td>40 in/min (1016 mm/min)</td>
</tr>
<tr>
<td><strong>Speed accuracy - unloaded</strong> (2% to 100% of maximum speed)</td>
<td>+/-1% of selected speed</td>
<td></td>
</tr>
<tr>
<td><strong>Crosshead displacement accuracy - unloaded</strong> (2% to 100% of maximum travel)</td>
<td>+/-0.25% of reading</td>
<td></td>
</tr>
<tr>
<td><strong>Displayed displacement resolution</strong></td>
<td>0.001 in (0.01 mm)</td>
<td></td>
</tr>
<tr>
<td><strong>Load cell force accuracy (non-dedicated)</strong></td>
<td>+/-0.25% full scale of load cell capacity</td>
<td></td>
</tr>
<tr>
<td><strong>Load cell force accuracy (dedicated)</strong></td>
<td>+/-0.10% full scale of load cell capacity</td>
<td></td>
</tr>
<tr>
<td><strong>Useable data sampling rate</strong></td>
<td>1000 Hz</td>
<td></td>
</tr>
<tr>
<td><strong>Relative humidity (non-condensing)</strong></td>
<td>20–85%</td>
<td></td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>5–35°C (41–95°F)</td>
<td></td>
</tr>
<tr>
<td><strong>Storage temperature</strong></td>
<td>-17–54°C (1–129°F)</td>
<td></td>
</tr>
<tr>
<td><strong>Supply voltage (+/- 10%)</strong></td>
<td>115VAC @ 3.15 or 230VAC @ 3.15A</td>
<td>115VAC @ 6.3A or 230VAC @ 6.3A</td>
</tr>
<tr>
<td><strong>Power rating</strong></td>
<td>115 lb (52 kg)</td>
<td>145 lb (66 kg)</td>
</tr>
</tbody>
</table>

All systems conform to relevant EU standards and are CE marked. On site verification as per ASTM E4 and ISO 7500-1 is recommended.

## DIMENSIONS

**CS225**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (standard travel)</td>
<td>Width (excluding console)</td>
<td>Depth</td>
<td>Base height</td>
<td>Throat depth</td>
<td>Crosshead travel</td>
</tr>
<tr>
<td>1001 mm (39.4 in)</td>
<td>460 mm (18.1 in)</td>
<td>557 mm (21.9 in)</td>
<td>108 mm (4.3 in)</td>
<td>180 mm (7.1 in)</td>
<td>500 mm (19.7 in)</td>
</tr>
</tbody>
</table>

**CS1100**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<tbody>
<tr>
<td>Height (standard travel)</td>
<td>Width (excluding console)</td>
<td>Depth</td>
<td>Base height</td>
<td>Throat depth</td>
<td>Crosshead travel</td>
</tr>
<tr>
<td>1310 mm (51.6 in)</td>
<td>460 mm (18.1 in)</td>
<td>557 mm (21.9 in)</td>
<td>108 mm (4.3 in)</td>
<td>150 mm (5.9 in)</td>
<td>800 mm (31.5 in)</td>
</tr>
</tbody>
</table>
**ORDERING INFORMATION**

**Order number – CS machines**

<table>
<thead>
<tr>
<th>Model</th>
<th>ozf</th>
<th>gf</th>
<th>lbf</th>
<th>kgf</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS225</td>
<td>8 x 0.002</td>
<td>250 x 0.05</td>
<td>0.5 x 0.0001</td>
<td>0.25 x 0.0001</td>
<td>2.5 x 0.0005</td>
</tr>
<tr>
<td>CS1100</td>
<td>32 x 0.005</td>
<td>1000 x 0.1</td>
<td>2 x 0.0002</td>
<td>1 x 0.0001</td>
<td>10 x 0.001</td>
</tr>
<tr>
<td>CS-04-5</td>
<td>72 x 0.01</td>
<td>2000 x 0.2</td>
<td>4.5 x 0.0005</td>
<td>2 x 0.0002</td>
<td>20 x 0.002</td>
</tr>
<tr>
<td>CS-0010</td>
<td>160 x 0.02</td>
<td>5000 x 0.5</td>
<td>10 x 0.001</td>
<td>5 x 0.0005</td>
<td>50 x 0.005</td>
</tr>
<tr>
<td>CS-0020</td>
<td>320 x 0.05</td>
<td>10,000 x 1</td>
<td>20 x 0.002</td>
<td>10 x 0.001</td>
<td>100 x 0.01</td>
</tr>
<tr>
<td>CS-0050</td>
<td>800 x 0.1</td>
<td>25,000 x 2</td>
<td>50 x 0.005</td>
<td>25 x 0.002</td>
<td>250 x 0.02</td>
</tr>
<tr>
<td>CS-0100</td>
<td>1600 x 0.2</td>
<td>50,000 x 5</td>
<td>100 x 0.01</td>
<td>50 x 0.005</td>
<td>500 x 0.05</td>
</tr>
<tr>
<td>CS-0200</td>
<td>3200 x 0.5</td>
<td>100,000 x 10</td>
<td>200 x 0.02</td>
<td>100 x 0.01</td>
<td>1000 x 0.1</td>
</tr>
<tr>
<td>CS-0500</td>
<td>8000 x 1</td>
<td>250,000 x 20</td>
<td>500 x 0.05</td>
<td>250 x 0.02</td>
<td>2500 x 0.2</td>
</tr>
<tr>
<td>CS-1000</td>
<td>16000 x 2</td>
<td>500,000 x 50</td>
<td>1000 x 0.1</td>
<td>500 x 0.05</td>
<td>5000 x 0.5</td>
</tr>
</tbody>
</table>

All values are maximum force rating and smallest resolution.

As standard your CLC load cell is calibrated to 0.25% of FS from the factory. A dedicated load cell can be supplied that is calibrated to 0.1% of FS. Please indicate this option with a DED notation after the ordering number, i.e. CLC-0010-DED.

» See the CS Series video