



# 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: superuser and operator, which can be password protected

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

**Robust & reliable**  
– designed specifically for use in production environments



### 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 straight-forward method for tensile testing, compression testing, shear testing, flexural 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 or time
- Break testing – sharp or percentage
- Multi-stage, cyclic tests and height measurements

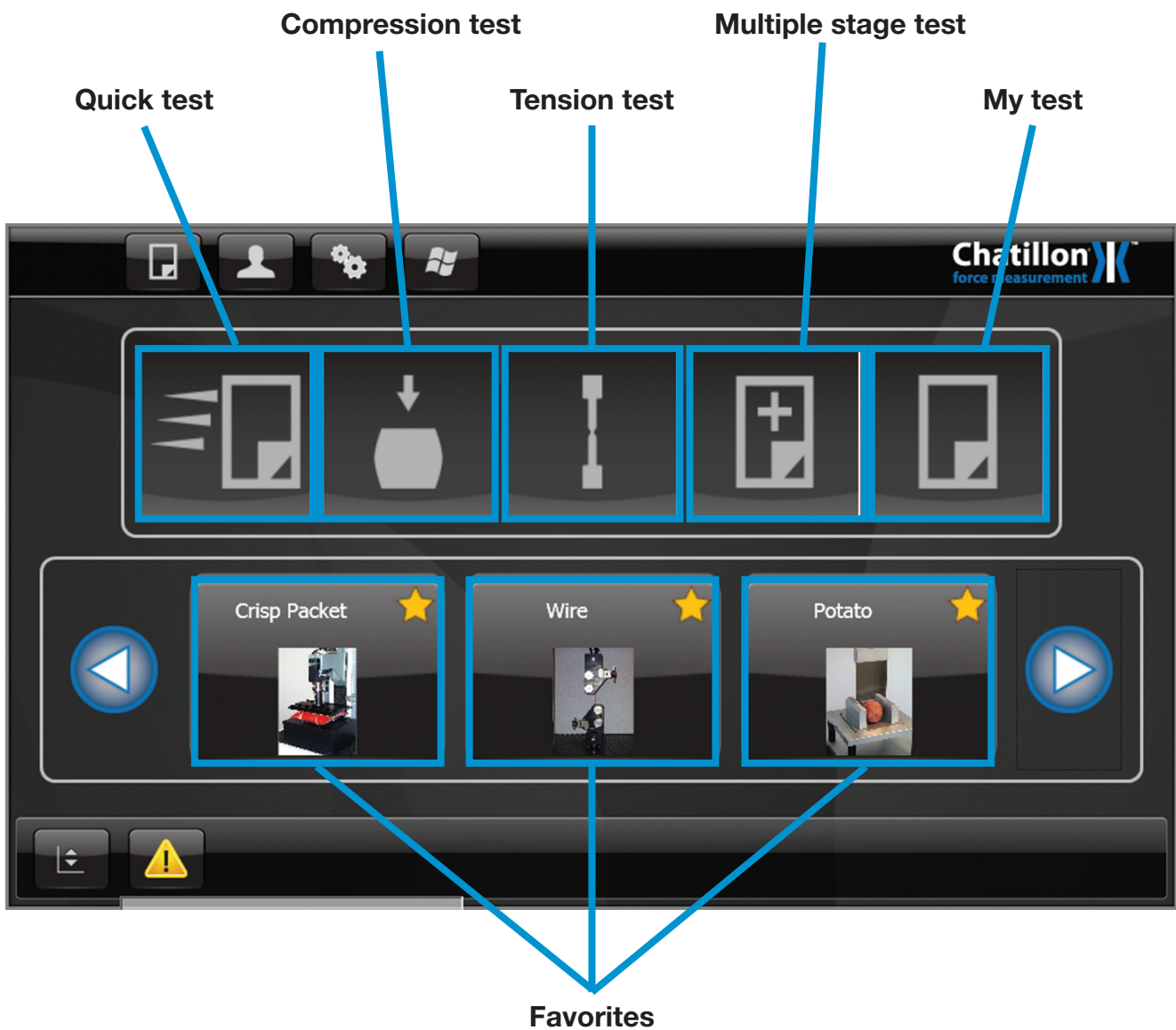
When high test repeatability and documentation of results is important, but you don't need advanced materials test functionality, the CS Series is an excellent choice.

ISO 9001 Manufacturer

Specification Sheet  
SS-CS Series



## A TOUCH SCREEN FOR THE PRODUCTION ENVIRONMENT



The CS Series has a 10.1" 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:

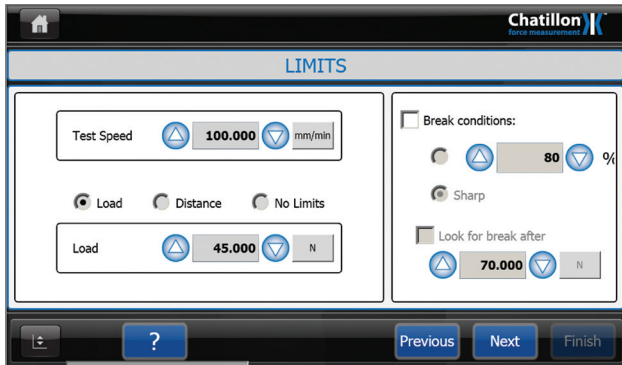
- Define your favorite, frequently-used tests for immediate access and add a sample picture for unambiguous test selection
- Switch seamlessly during test batch execution between individual test graphs, batch results and statistic
- Print and export data directly from the screen or use automatic data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

## TESTS, FEATURES AND FUNCTIONALITY

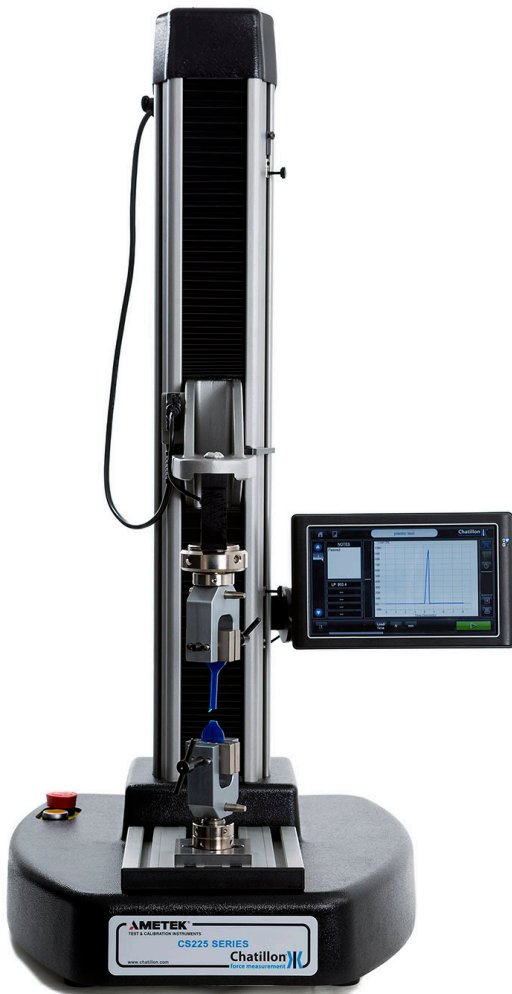
### Limit and break testing

Set up a test based on a load limit, displacement limit 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.



Conduct a quick test by simply entering the type of test, pre-load (if any) and limits.

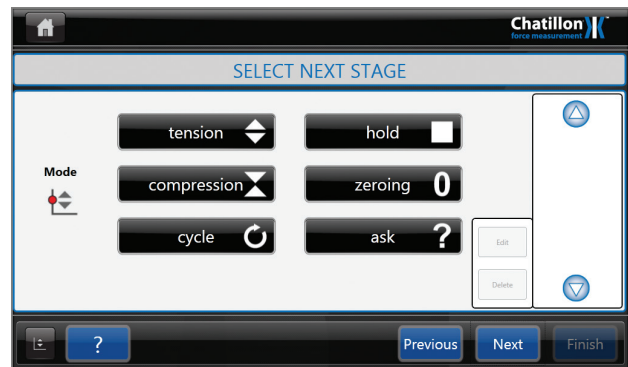


### Multi-stage & cycle testing

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.

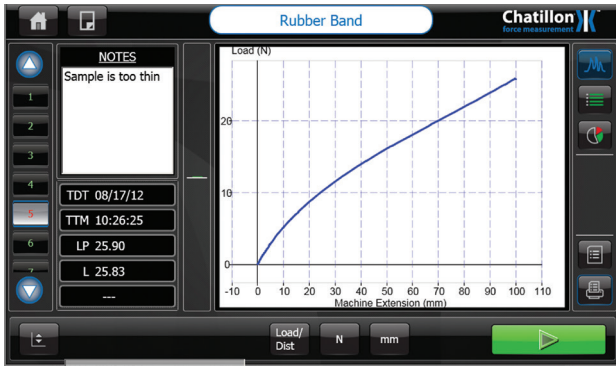
Multi-stage testing can be used for cycle tests, hold tests, insertion/extraction tests, snap-on/off tests or other sophisticated test methods. Users have total freedom to create the test movement required for testing their sample without the need for expensive 3rd-party software applications or validation 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 loads at specified heights to within 0.1% accuracy. The system has an automatic datum routine that defines the reference point for height measurements.



Switch between load and distance view in graph mode. Add notes to tests.

Run	Date	Time	ML (N)	LL (N)
1	08/17/12	10:21:55	36.29	36.17
2	08/17/12	10:22:57	36.22	36.13
3	08/17/12	10:24:13	36.09	36.03
4	08/17/12	10:25:15	35.99	35.92
5	08/17/12	10:26:25	25.90	25.83
6	08/17/12	10:27:34	35.42	35.33
7	08/17/12	10:28:18	35.55	35.46

View batch test results. Exclude non-compliant test runs.

Result	Max	Min	Rng	Avg	Std Dv	COV
Date						
Time						
ML (N)	36.29	25.90	10.39	34.49	3.52	0.1021
LL (N)	36.17	25.83	10.34	34.41	3.52	0.1022

Choose statistic results to display for complete batch tests.

Specify your desired time interval or number of test runs before auto archiving.

### 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.



### 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.

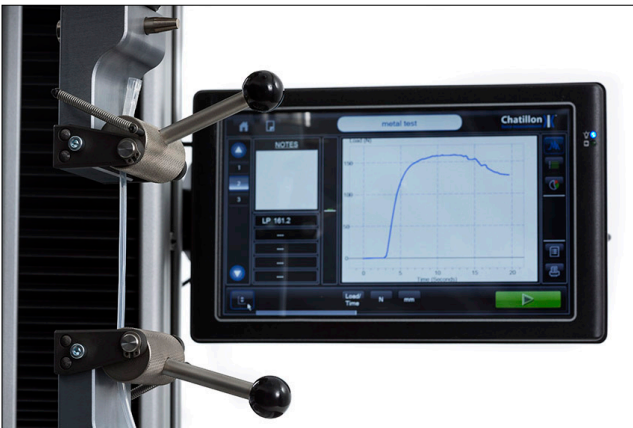
You can choose from a wide range of standard grips and fixtures as well as custom-designed versions for use with the CS Series. Some examples are:

- 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
- Time limit
- Break or rupture
- Cycle and loop
- Multi-stage (define test as a combination of the above)

### 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
- Save data directly to external drive, server or to USB flash drive
- Save data locally in console memory (2 GB)
- Interface to USB serial devices; barcode scanner/reader, printers, keyboards and hubs
- Export data to CSV file

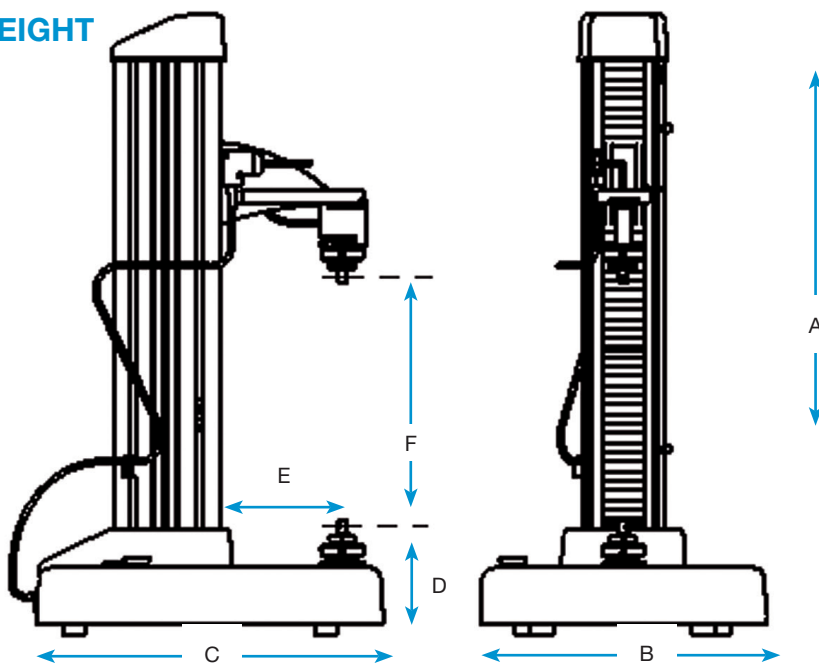


## TECHNICAL SPECIFICATIONS

	CS225	CS1100
Force capacity	225 lbf (1000 N)	1124 lbf (5000 N)
Maximum crosshead travel <i>(between the eye ends)</i>	19.7 in (500 mm)	31.5 in (800 mm)
Throat depth	7.1 in (180 mm)	5.9 in (150 mm)
Crosshead speed range at full load	0.001–50 in/min (0.01–1270 mm/min)	0.001–40 in/min (0.01–1016 mm/min)
Maximum return speed	50 in/min (1270 mm/min)	40 in/min (1016 mm/min)
Speed accuracy - unloaded <i>(2% to 100% of maximum speed)</i>	+/-1% of selected speed	
Crosshead displacement accuracy - unloaded <i>(2% to 100% of maximum travel)</i>	+/-0.25% of reading	
Displayed displacement resolution	0.001 in (0.01 mm)	
Load cell force accuracy (non-dedicated)	+/-0.25% full scale of load cell capacity	
Load cell force accuracy (dedicated)	+/-0.10% full scale of load cell capacity	
Internal data sampling rate	8000 Hz	
Useable data sampling rate	1000 Hz	
Relative humidity (non-condensing)	20–85%	
Operating temperature	5–35°C (41–95°F)	
Storage temperature	-17–54°C (1–129°F)	
Supply voltage (+/- 10%)	115VAC/230VAC, 50–60Hz	
Power rating	115VAC @ 3.15 or 230VAC @ 3.15A	115VAC @ 6.3A or 230VAC @ 6.3A
Weight of machine	115 lb (52 kg)	145 lb (66 kg)

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

## DIMENSION & WEIGHT



### CS225

A	Height (standard travel)	1001 mm (39.4 in)
B	Width (excluding console)	460 mm (18.1 in)
C	Depth	557 mm (21.9 in)
D	Base height	108 mm (4.3 in)
E	Throat depth	180 mm (7.1 in)
F	Crosshead travel	500 mm (19.7 in)

### CS1100

A	Height (standard travel)	1310 mm (51.6 in)
B	Width (excluding console)	460 mm (18.1 in)
C	Depth	557 mm (21.9 in)
D	Base Height	108 mm (4.3 in)
E	Throat Depth	180 mm (7.1 in)
F	Crosshead travel	800 mm (31.5 in)

## ORDERING INFORMATION

Order number – CS machines		
CS225		CS225 Series test machine, 225 lbf
CS1100		CS1100 Series test machine, 1100 lbf
	115V	115 VAC, US power cord
	230 VAC	230 VAC, UK & EU power cords
	230 VAC CNAU	230 VAC, China/Australia power cords

Order number - load cells					
Model	ozf	gf	lbf	kgf	N
CLC-250G	8 x 0.002	250 x 0.05	0.5 x 0.0001	0.25 x 0.0001	2.5 x 0.0005
CLC-0002	32 x 0.005	1000 x 0.1	2 x 0.0002	1 x 0.0001	10 x 0.001
CLC-04-5	72 x 0.01	2000 x 0.2	4.5 x 0.0005	2 x 0.0002	20 x 0.002
CLC-0010	160 x 0.02	5000 x 0.5	10 x 0.001	5 x 0.0005	50 x 0.005
CLC-0020	320 x 0.05	10,000 x 1	20 x 0.002	10 x 0.001	100 x 0.01
CLC-0050	800 x 0.1	25,000 x 2	50 x 0.005	25 x 0.002	250 x 0.02
CLC-100	1600 x 0.2	50,000 x 5	100 x 0.01	50 x 0.005	500 x 0.05
CLC-200	-	-	200 x 0.02	100 x 0.01	1000 x 0.1
CLC-500	-	-	500 x 0.05	250 x 0.02	2500 x 0.2
CLC-1000	-	-	1000 x 0.1	500 x 0.05	5000 x 0.5

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



### AMETEK Test & Calibration Instruments

A business unit of AMETEK Measurement & Calibration Technologies offering the following industry leading brands for test and calibration instrumentation.

#### Chatillon Force Measurement

Chatillon has been a hallmark in the industry since 1835. The hand held gauges and motorized testers have earned their reputation for quality, reliability and accuracy and they represent the de facto standard for force measurement.

#### Lloyd Instruments

##### Materials Testing Solutions

Materials testing machines and software from Lloyd Instruments guarantee the highest level of performance and capability for production testing, quality control, laboratory testing, research and education to provide expert materials testing solutions.

#### Davenport Polymer Test Equipment

Allows critical polymer parameters to be determined, including melt flow index and melt flow rate, intrinsic viscosity (IV) measurement of moisture-sensitive PET polymers and polymer density measurement.

#### Texture Analysers

The comprehensive program provides the platform to perform rapid, general food testing and detailed texture analysis on a diverse range of foods.

#### Newage Testing Instruments

Newage offers a comprehensive range of hardness testers, durometers, optical systems and software for measurement, data acquisition and analysis.

#### JOFRA Calibration Instruments

The inventor of the portable high precision dry-block temperature calibrators. The calibration instruments program also covers precision thermometers and temperature baths, temperature sensors hand held instruments for pressure calibration and process signal calibrators for easy control loop calibration, measurements and simulation.

#### M&G Pressure Testers & Pumps

Pneumatic floating-ball or hydraulic piston dead weight testers with accuracies to 0.015% of reading.

**AMETEK®**  
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