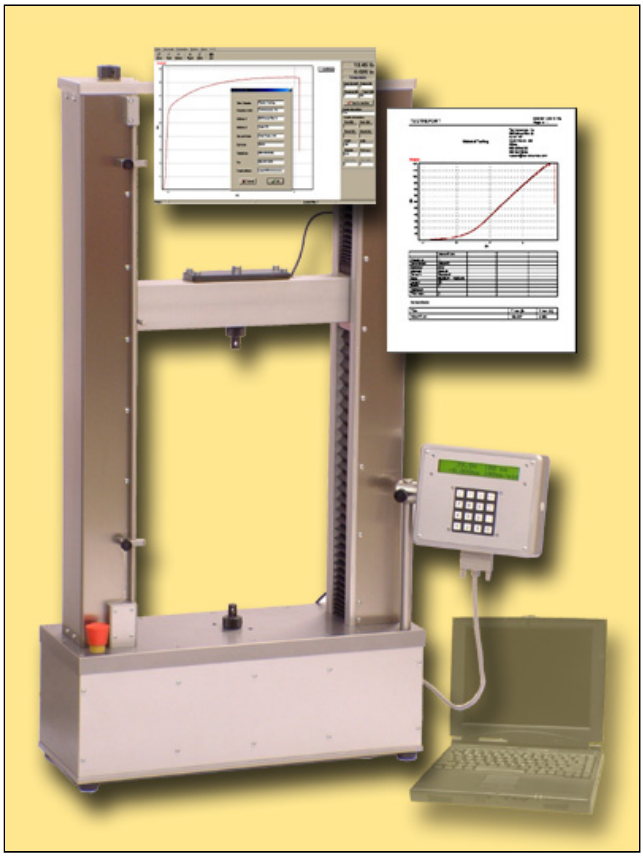
# 2000M Series Dual Column Test Systems



## Common Test Methods

- *Strength*
- *Tensile Properties*
- *Compression Properties*
- *Peel & Adhesion*
- *Tear*
- *Shear*
- *Bend or Flexure*

## Applications

- *Rubber*
- *Medical Devices*
- *Foam*
- *Plastics*
- *Adhesives*
- *Metal Products*
- *Textiles*
- *Wood*
- *Wire*

| System Specifications | | | | |
|---|---|---|---|---|
| Model Reference | 2000M1125 | 2000M | 2000M1125-1400 | 2000M-1200 |
| Load Rating | 1125 lb (5 kN) | 2250 lb (10 kN) | 1125 lb (5 kN) | 2250 lb (10 kN) |
| Maximum Travel | 28” (700 mm) | 28” (700 mm) | 55” (1400 mm) | 48” (1200 mm) |
| Column Spacing | 15.6 inches | 15.6 inches | 15.6 inches | 15.6 inches |
| Maximum Speed | 36 ipm (900 mm/min) | 20 ipm (500 mm/min) | 36 ipm (900 mm/min) | 20 ipm (500 mm/min) |
| Load Accuracy | +/- 0.5% of reading to 1/200$^{th}$ load cell capacity (per ASTM E4) | | | |
| Position Resolution | 0.000004 inches (0.1 micron) | | | |

## System Services

- 12 month Warranty
- Manuals & Support Documentation
- Local calibration and engineering services available via field service network
- Optional On Site Installation and Training
- Optional Grips, Fixtures, Extensometers and Software

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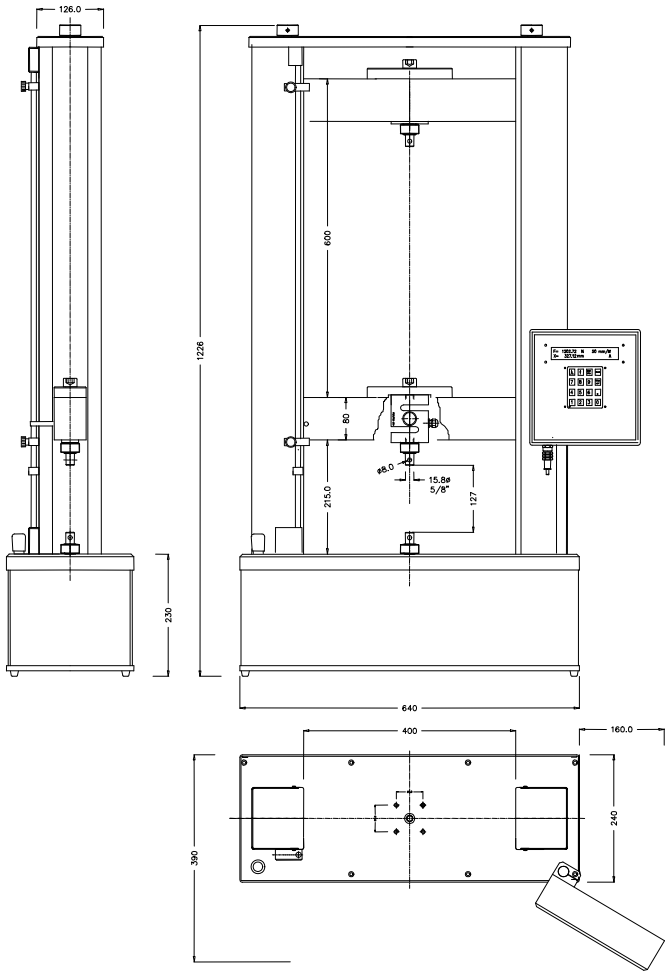
# Load Frame




2000M-1200
48” column length

## Features

- Compact tabletop design
- Multiple travel length and lateral space options

| Attribute | Specification |
|---|---|
| Drive Technology | Electromechanical Ball Screw |
| Crosshead Separation Minimum | 4.5 inches |
| Crosshead Head Travel Maximum | 28”; 48”optional |
| Mechanical Interface | ½”-20 UNF or 5/8 inch male shank with dowel pin |
| Dimensions 2000M | 48"H x 31”W x 15”D including keypad overhang |
| Weight 2000M | 250 Pounds |
| Power | 115 VAC |
| Position Limits | Adjustable Upper and Lower Mechanical limits |
| Load Cell | |
| Load Cell Rating | 2250 Pounds (Default) - 150% Overload Capacity |
| Optional Load Cells | Available in sizes down to 0.1 Pound |

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# M Series Standalone Controller with RS232 Interface


The M Controller is an intelligent 16 bit controller that controls and measures machine and test data in electromechanical test systems. It features preset software with display and keypad input that is easy to use and load cell signal conditioning, machine output and data acquisition. Test results may be sent to software to be printed, stored or sent to Excel for further analysis.

## Features

- Capable of either standalone operation or may be controlled via PC
- Easy to use
- Customizable

| General Attributes | Specification |
|---|---|
| Model | M Controller |
| PC requirements | PC not required ; Optional software would require PC with serial port ; MS Windows 98 or later |
| **Operator Interface** | |
| Machine Controls | Keypad Input<br>Emergency Stop<br>Jog Up & Down Keys<br>Start/Stop Preset Program Key<br>Return Home Key |
| Data Display | Liquid Crystal Display – test parameters that can be displayed include<br>▪ Live Load<br>▪ Peak Load & Peak Load Position<br>▪ Live Position<br>▪ Displacement at Break |
| Display Resolution | 0.01 mm or inch |
| Selectable Units | ▪ Load -- Pounds, Newtons<br>▪ Position - Inches, mm |
| **Channels** | |
| Channels | ▪ LOAD - Strain gage signal conditioner and data acquisition included for system load cell<br>▪ POSITION - Controller converts output of encoder to position<br>▪ STRAIN – Extensometer or 2nd Load signal conditioner optional |
| Control Modes | ▪ SPEED - operator adjustable from 1 to Full mm per minute (+/- 128 bits)<br>▪ POSITION – ramp to position and hold.<br>▪ LOAD - ramp to a user adjustable load and holds for time. Returns home at completion. |

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| | |
|---|---|
| Return to Home | Adjustable speed to Max speed |
| Control | Adjustable gain (10 steps) for load control. Used for placing a controlled load, holding and return |
| Load Limit | Adjustable software load limit |
| **Data Capture** | |
| Test Results<br>Position Resolution<br>Standard Load Resolution | Peak load and displacement at break values available at conclusion of each test<br>0.0001 mm (or 0.0001 inch) via software capture<br>+/- 1 part in 100 000 at 50 samples per second |
| **Data Storage** | |
| Test Setup | Speed, load limits, control mode and internal information saved from test to test. |
| **Data Transfer** | |
| ASCII Data<br>Analog Output | Machine control settings and test data are ASCII format and able to captured or input to and from controller. See the M Series Software.<br>Optional |
| **User Programmable** | |
| Speed Settings<br>Keypad Language<br>Test Direction | Test, Jog/ Return Home variables are programmable.<br>English, Spanish or German<br>Tension or Compression |
| **Calibration** | |
| Password | Calibration data is supervisor password protected. |

| M Plus Software | Description |
|---|---|
| Description | Optional – Software program to capture, display, store and export raw load and displacement test data and analysis from a tensile or compression test. The data is presented in real time in a load – displacement curve format. |
| Export & Analysis | Exports data to Excel and other spreadsheet and analysis programs. |
| Cable | Standard Serial Port cable – length 8 feet ; 100 feet cable optional. |
| XY Plotting (Curve) | Real Time Display of load versus displacement, load - elongation and stress - elongation %; includes automatic scaling of plot at conclusion, Grid ON/OFF, Autoscaling & Autozoom. |
| Test Control | M Plus Software captures load, displacement and strain (with optional signal conditioner) test data and displays stress vs strain curves. Data can be exported to analysis programs such as Excel, or analyzed within the control package with optional application modules matched to requirements. M software enables operators to input key test parameters such speed or load limit, re-zero load and position (or strain) starting points, , initiate the test, pause or stop the test, and return home. Stores machine settings. |
| Test Reports | Customizable reports |

M Plus software extends the basic control and measurement capabilities of the M controller by enabling the power of Windows and a PC to be added to any M Series machine for test control, data acquisition, real time curve plotting, test analysis and report generation. The M Series product line offers straightforward, easy to use and robust solutions for customers needing to perform tensile and compression tests. M Plus software applies to ASTM, ISO and standard tension and compression tests.

### General Features

- NEW – Multistep Machine control allows you to build test profiles by combining moves and dwells to create customized moves.
- Captures and displays load, displacement and (optional) strain data in real time.
- Controls the test machine – Rezeros transducers, Starts, Pauses and Stops tests, Returns home.
- Expand package as requirements demand. Custom software applications available.
- Stores binary data files for later recall and re-display or re-exporting
- Multiple test results able to be plotted
- Generates Test Reports
- Exports Data to Excel

## Easy to Use Operator Interface

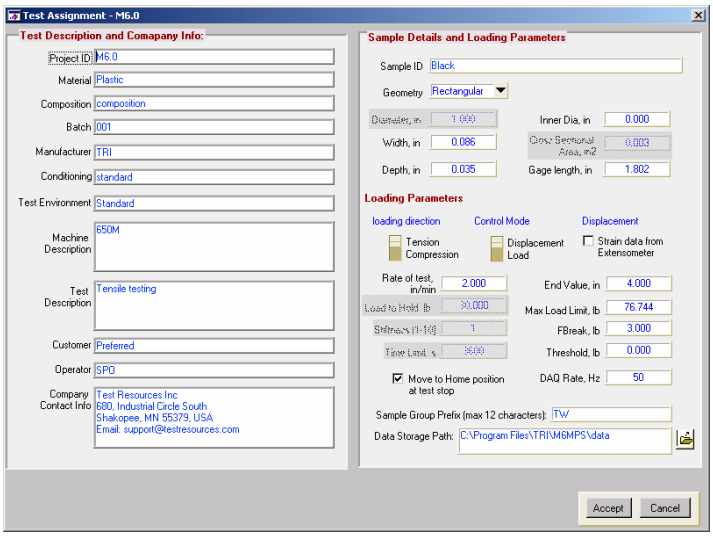

**Test Analyses** optionally available for common ASTM tests. Basic package automatically determines yield strength, modulus, offset, ultimate strength.

**Real time displays** provide stress, strain, load and displacement data. Captured data includes peak load (ultimate strength) and displacement at break (e.g. elongation).

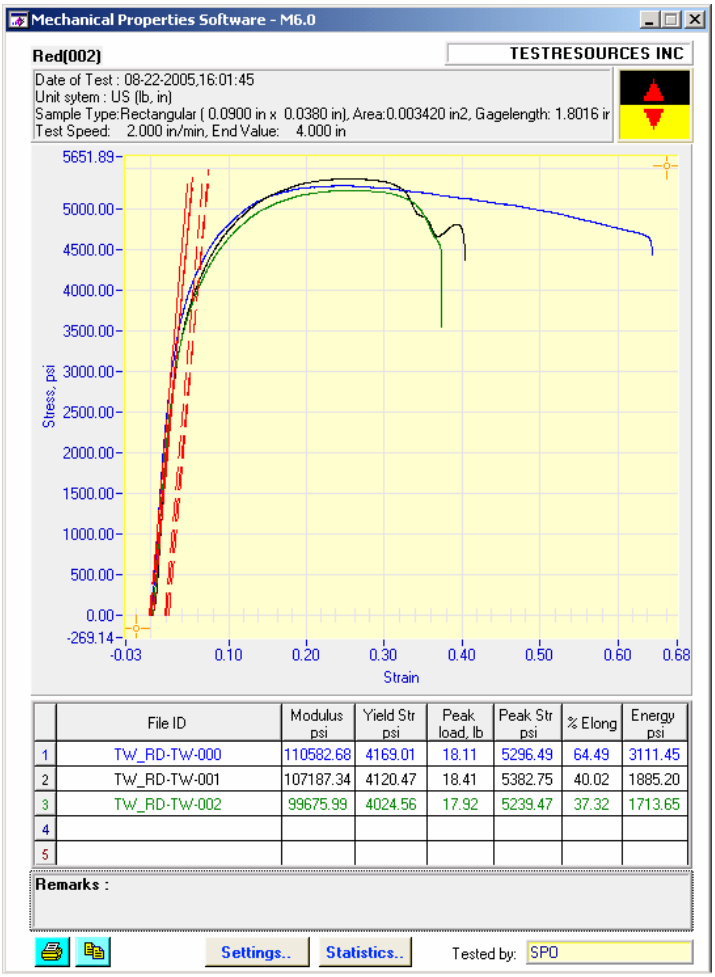
**Real Time Stress Strain Plots** including choice of units, Curve plotting styles, Axis formats, Zoom tools, ability to re-process past results, file storage visibility and other options.

**Real time user control** of test speed, re-zero of sensors and starting of test.

Users may employ a PC to setup and store test parameters such as pull rate or speed and load limits, rezero test starting point, begin a test, pause or stop it, and return home after the sample breaks. The software generates test reports and exports data to Excel for analysis. Optional application test modules are available to perform specific analyses to various industry standards (e.g. ASTM).




**Comprehensive Input Data**
The software facilitates the capture of important test descriptors and raw information that is automatically associated and used to produce full test reports.




| | File ID | Modulus psi | Yield Str psi | Peak load, lb | Peak Str psi | % Elong | Energy psi |
|---|---|---|---|---|---|---|---|
| 1 | TW_RD-TW-000 | 110582.68 | 4169.01 | 18.11 | 5296.49 | 64.49 | 3111.45 |
| 2 | TW_RD-TW-001 | 107187.34 | 4120.47 | 18.41 | 5382.75 | 40.02 | 1885.20 |
| 3 | TW_RD-TW-002 | 99675.99 | 4024.56 | 17.92 | 5239.47 | 37.32 | 1713.65 |
| 4 | | | | | | | |
| 5 | | | | | | | |

**Comprehensive Test Reports**
M Plus software was created by software developers familiar with mechanical testing. As a result the final test result is well designed to the general needs of test engineers and end customers alike.

Up to five analyses are reported with statistical data summary – matching typical ASTM requirements.