MultiTest-i
Computer-controlled Test Frames
Tension & Compression Test Solutions
The Mecmesin MultiTest-i range of test frames sets the standard in computer-controlled testing, operating through the power of Emperor™; easy-to-use yet powerful force testing and analysis software.

Key features

- Complete range from 2 N to 50,000 N
- High speed data collection - 1000 readings per second
- Auto-loadcell recognition/configuration
- Extremely quiet operation
- IP splashproof membrane control panel with emergency stop button
- Auxiliary 'event' input allows the software to recognise when switch contact is made or broken

Range of capacities

The MultiTest-i is available in a range of capacities to meet your exact testing requirement, from the entry-level single-column test stands, through to advanced twin-column test frames, which have been specifically designed to test large or high load samples and products. Extended height frames are also available for testing high elasticity materials.
**Flexibility**

Intelligent loadcells mounted on the MultiTest-i test frame download test data synchronously at a rate of up to 1000 times a second, directly to a PC via the serial port. This ensures high accuracy of testing particularly where peak loads are being recorded.

Should your testing requirements change, a MultiTest-i can be easily and economically enhanced by using a different loadcell. All Mecmesin-i loadcells are quickly and easily interchangeable - just "plug-and-play".

Mecmesin also offer a wide range of standard grips and fixtures, to hold your specimen. Alternatively, a custom-built fixture can be designed for your specific application.

**Key features: Machine Control**
- Run to load, displacement, time or break detection
- Cyclic testing
- Repeat sections of a program
- Intelligent command functions provide limitless test flexibility
- Operator prompt/delay/resume test facility
- Auto-return of crosshead at end of test

**Key features: Data Acquisition**
- Extensive suite of calculations e.g. peak, average, minimum and area
- Real-time graphs with zoom and label function
- Comprehensive Pass/Fail analyses
- Variable arguments for programs and calculations
- Loadcell deflection compensation
- Automatic export to Excel and packages

If you have a tension or compression test, which demands any of these machine control or data acquisition features, one of the easy-to-use MultiTest-i test frames is the cost-effective solution.
Emperor™ software has been specifically designed to work with the MultiTest-i range of test frames for ultimate test performance. It combines ease-of-use with powerful programming tools making it ideal for simple, routine analysis on the factory floor and sophisticated test routines in the laboratory.

**Tests**
- Tension
- Flexure
- Tear
- Compression
- Stiffness
- Friction

**Applications**
- Elastomers
- Medical devices
- Plastics
- Springs
- Textiles
- Adhesion
- Packaging
- Rubber
- Switches
- Fasteners

Emperor™ has two operating modes - **Console mode** allows tests to be created very simply by selecting options from radio-buttons and drop-down boxes. A number of pre-configured calculations are available and can be included by simply clicking with the mouse. Console mode is ideal for use on the factory floor by operators who need only minimal training to load and run programs directly from one of the five “Favourite” buttons.

For more complex tests, the power of Emperor’s™ **Program Testing Mode** is available via a simple user interface. Using the **Program Testing Mode**, the true power of Emperor™ software becomes evident. With Emperor™ software’s comprehensive programming and calculation commands, it becomes a simple task to create customised test programs to evaluate the mechanical strength of components, products and materials.

**Creating a program**

The mode has an intuitive interface, which makes the whole test process easy to manage:
- Setting-up test method
- Running the test
- Making test report
- Storing & exporting data

Toolbars simplify testing by helping operators navigate efficiently to key features.

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[Image of Emperor™ software interface]

**Console Mode**

**Test screen with operator prompt message**

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3 Mecmesin
Performing a test

Emperor™ allows development of test procedures that are best-suited to individual testing needs. An operator can be prompted at any stage of the program to perform a specific action, so that step-by-step test routines become easy for semi-skilled users. Another useful function is tolerance alerting. By setting up tolerance bands the option exists for detecting any data that do not fall within specification. In this case a “tolerance alert” warning will be flagged up on the results screen. There is also an additional facility for detecting when any particular result does not fall within predefined upper and lower limits.

Emperor™ is supplied with a suite of library test programs for many typical test procedures. Within each test procedure the critical parameters, which determine whether a sample passes or fails, can be automatically detected e.g. peak load, average load, load at a certain displacement.

Test procedures can be initiated by selecting an existing library program or by choosing your own particular program from the Test menu. The library programs can be easily customised and tailored to meet specific testing needs and then saved in the testing library and recalled as needed - very useful for multiple sampling testing.

A ‘video replay’ facility is included. A toolbar allows the accumulation of test data to be re-displayed in real time. ‘Fast-forward’ and ‘return-to-start’ buttons are provided. A timeline slider can be dragged to a suitable point, thus allowing critical parts of a test to be replayed as many times as necessary.
Data analysis

Emperors™ software capabilities are exceptional:

- reporting, archiving and exporting of data
- fast accurate display & analysis of tension/compression data
- option to display test results graphically
- graphical interrogation enables calculations to be reviewed and changed

Results can be easily manipulated, stored and exported to other software packages such as Microsoft® Excel for trend analysis and reporting, if required.

Emperor™ also benefits from a multi-level zooming facility, with timeline function allowing you to home-in on a portion of the curve which is of particular interest.

Signals from external devices can also be incorporated into Emperor™ via an ‘event’ input facility.

A switch for example, can be connected to this port and the state (‘open’ or ‘closed’) of this switch can be monitored - ideal for quantifying the ‘feel’ of buttons, control levers and other switches.
Ease-of-use

Emperor™ software is easy and intuitive to use. However, if required, there is a comprehensive Help system built into all aspects of the software and this is never more than a few clicks away. Once the Help system is opened, information can be found using a comprehensive index, a table of contents, text search facility and glossary of terms.

High-capacity load testing

The MultiTest-i range of test frames combined with the power of Emperor™, offers a comprehensive solution to product, component or materials testing needs. The twin-column MultiTest 10-i, 25-i and 50-i enables significantly larger-sized or high-load samples and products to be tested, while still fulfilling the requirements for ease-of-use in a production or quality laboratory environment.
Specifications

MultTest-i Specifications

<table>
<thead>
<tr>
<th>MultiTest-i</th>
<th>0.5</th>
<th>1</th>
<th>2.5</th>
<th>5</th>
<th>10</th>
<th>25</th>
<th>50</th>
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<tr>
<td><strong>Rated capacity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>500</td>
<td>1000</td>
<td>2500</td>
<td>5000</td>
<td>10000</td>
<td>25000</td>
<td>50000</td>
</tr>
<tr>
<td>kgf</td>
<td>5</td>
<td>10</td>
<td>25</td>
<td>50</td>
<td>100</td>
<td>250</td>
<td>500</td>
</tr>
<tr>
<td>lbf</td>
<td>110</td>
<td>220</td>
<td>550</td>
<td>1100</td>
<td>2200</td>
<td>5500</td>
<td>11000</td>
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<table>
<thead>
<tr>
<th>Number of ballscrews</th>
<th>1</th>
<th>1</th>
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<th>1</th>
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<tbody>
<tr>
<td><strong>Speed range</strong></td>
<td>mm/min</td>
<td>in/min</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>above 2 kN</td>
<td>1 - 1000</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>above 10 kN</td>
<td>1 - 1000*</td>
<td>1 - 500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 kN</td>
<td>1 - 1000**</td>
<td>1 - 400***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 kN</td>
<td>1 - 1000***</td>
<td></td>
<td></td>
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</table>

Crosshead speed accuracy ±0.2% of indicated speed

<table>
<thead>
<tr>
<th>Distance between columns</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>400 mm (15.7”)</th>
<th>400 mm (15.7”)</th>
<th>420 mm (16.5”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throat depth††</td>
<td>67 mm (2.6”)</td>
<td>67 mm (2.6”)</td>
<td>95 mm (3.7”)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vertical daylight ††</td>
<td>1359 mm (53.5”)</td>
<td>1159 mm (45.6”)</td>
<td>590 mm (23.2”)</td>
<td>710 mm (28.0”)</td>
<td>1140 mm (44.9”)</td>
<td>1140 mm (44.9”)</td>
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<tr>
<td>Height</td>
<td>1710 mm (67.3”)</td>
<td>1510 mm (59.4”)</td>
<td>941 mm (37”)</td>
<td>1082 mm (42.6”)</td>
<td>1500 mm (59.1”)</td>
<td>1500 mm (59.1”)</td>
</tr>
<tr>
<td>Width</td>
<td>290 mm (11.4”)</td>
<td>290 mm (11.4”)</td>
<td>290 mm (11.4”)</td>
<td>328 mm (12.9”)</td>
<td>826 mm (32.5”)</td>
<td>826 mm (32.5”)</td>
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<tr>
<td>Depth</td>
<td>414 mm (16.3”)</td>
<td>414 mm (16.3”)</td>
<td>414 mm (16.3”)</td>
<td>526 mm (20.7”)</td>
<td>542 mm (21.3”)</td>
<td>572 mm (22.5”)</td>
</tr>
<tr>
<td>Weight</td>
<td>38 kg (84 lbs)</td>
<td>36 kg (79 lbs)</td>
<td>22 kg (49 lbs)</td>
<td>38 kg (84 lbs)</td>
<td>140 kg (309 lbs)</td>
<td>285 kg (628 lbs)</td>
</tr>
<tr>
<td>Max. power requirement</td>
<td>120 watts</td>
<td>200 watts</td>
<td>250 watts</td>
<td>150 watts</td>
<td>450 watts</td>
<td>450 watts</td>
</tr>
<tr>
<td>Voltage</td>
<td>230 V AC 50 Hz or 110 V AC 60 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

**LOAD MEASUREMENT**

<table>
<thead>
<tr>
<th>Available loadcell ranges N</th>
<th>2 to 50000 (14 models)</th>
</tr>
</thead>
<tbody>
<tr>
<td>kgf</td>
<td>0.2 to 5000 (14 models)</td>
</tr>
<tr>
<td>lbf</td>
<td>0.45 to 11000 (14 models)</td>
</tr>
<tr>
<td>Loadcell measurement accuracy N</td>
<td>±0.1% of full scale for loadcells from 2 N to 2.5 kN</td>
</tr>
<tr>
<td></td>
<td>±0.2% of full scale for loadcells from 5 kN to 50 kN</td>
</tr>
<tr>
<td>Loadcell measurement resolution</td>
<td>1:6500</td>
</tr>
</tbody>
</table>

**DISPLACEMENT**

<table>
<thead>
<tr>
<th>Crosshead travel††</th>
<th>1200 mm (47.3”)</th>
<th>1000 mm (39.4”)</th>
<th>500 mm (19.7”)</th>
<th>590 mm (23.2”)</th>
<th>950 mm (37.4”)</th>
<th>950 mm (37.4”)</th>
<th>1100 mm (43.3”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positional accuracy per 300 mm (11.8”) of travel</td>
<td>±130 µm (±0.005”)</td>
<td>±100 µm (±0.004”)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Displayed resolution</td>
<td>±0.01 mm (±0.0004”)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SOFTWARE**

| Digital display of load/length/speed | Yes |
| Communication with test stand | Via RS232 port or USB port (converter supplied) |
| Computer requirements | 100 Mb available HD, CD-ROM plus available RS232 port/USB port |
| Operating system (OS) | Compatible OS installed as listed; Windows® 2000, XP, Vista, 7, 8, and 10 |
| Sampling rate | Selectable from 1 kHz, 500 Hz, 100 Hz, 50 Hz and 10 Hz |
| Secondary input | Event Input (switch), Digital control I/O Ports |
| Data output | LPT1 (Printer port), RS232 Port (direct or via USB/Network converter in ASCII format) | ASCII file (Export to spreadsheet, SPC package etc...) |

* 2.5 kN - above 2 kN, the recommended maximum speed is 750 mm/min (30 in/min)
** 25 kN - above 10 kN, the recommended maximum speed is 500 mm/min (20 in/min)
*** 50 kN - above 25 kN, the recommended maximum speed is 250 mm/min (10 in/min)
† Measured on centre line of loadcell
†† Measured without loadcell or grips

Note: See Technical Datasheet 431-343 for dimension drawings

Common Specifications

| Operating temperature | 10 - 35°C (50 - 95°F) |
| Humidity range | Normal industry and laboratory conditions |
| Compensation for system movement | Yes |
| Loadholding | Yes |
| Graphical representation | Yes |
| Output of test results to PC/Printer/Datalogger | Yes - includes auto-export to Microsoft™ Excel and via USB/Network Ports or Wireless Network RS232 via USB/Network converter in ASCII format |
| Communication with PLC/Digital Control Interface | Yes - via programmable digital ports |
| 6 Inputs + 6 Outputs |

Options

<table>
<thead>
<tr>
<th>Column gaiter</th>
<th>Safety guard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>available upon request</td>
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</table>

Mecmesin reserves the right to alter equipment specifications without prior notice. E&OE
# Mecmesin Motorised Test Frames Overview

<table>
<thead>
<tr>
<th>Load Rating</th>
<th>Potentiometer-controlled</th>
<th>Touch Screen Console</th>
<th>Computer-controlled</th>
</tr>
</thead>
</table>
| 0.5 kN      | Speed Range: 1 - 1000 mm/min  
Throat Depth: 67 mm  
Travel: 1200 mm | Speed Range: 1 - 1000 mm/min  
Throat Depth: 67 mm  
Travel: 1200 mm | Speed Range: 1 - 1000 mm/min  
Throat Depth: 67 mm  
Travel: 1200 mm |
| 1 kN        | Speed Range: 1 - 1000 mm/min  
Throat Depth: 67 mm  
Travel: 1000 mm | Speed Range: 1 - 1000 mm/min  
Throat Depth: 67 mm  
Travel: 1000 mm | Speed Range: 1 - 1000 mm/min  
Throat Depth: 67 mm  
Travel: 1000 mm |
| 2.5 kN      | Speed Range: 1 - 1000 mm/min*  
Throat Depth: 67 mm  
Travel: 500 mm | Speed Range: 1 - 1000 mm/min*  
Throat Depth: 67 mm  
Travel: 500 mm | Speed Range: 1 - 1000 mm/min*  
Throat Depth: 67 mm  
Travel: 500 mm |
| 5 kN        | —— | Speed Range: 1 - 500 mm/min  
Throat Depth: 95 mm  
Travel: 590 mm | Speed Range: 1 - 500 mm/min  
Throat Depth: 95 mm  
Travel: 590 mm |
| 10 kN       | —— | Speed Range: 1 - 1000 mm/min  
Width between Columns: 400 mm  
Travel: 950 mm | Speed Range: 1 - 1000 mm/min  
Width between Columns: 400 mm  
Travel: 950 mm |
| 25 kN       | —— | Speed Range: 1 - 1000 mm/min**  
Width between Columns: 400 mm  
Travel: 950 mm | Speed Range: 1 - 1000 mm/min**  
Width between Columns: 400 mm  
Travel: 950 mm |
| 50 kN       | —— | Speed Range: 1 - 400 mm/min***  
Width between Columns: 420 mm  
Travel: 1100 mm | Speed Range: 1 - 400 mm/min***  
Width between Columns: 420 mm  
Travel: 1100 mm |

* 2.5 kN - recommended maximum speed when testing above 2 kN is 750 mm/min (30 in/min)  
** 25 kN - recommended maximum speed when testing above 10 kN is 500 mm/min (20 in/min)  
*** 50 kN - recommended maximum speed when testing above 25 kN is 250 mm/min (10 in/min)
The MultiTest-i range of motorised test stands can be used for a number of applications:

- Compressive testing
- Deformation testing
- Extension testing
- Materials testing
- Medical device testing
- Packaging testing
- Spring testing
- Tensile testing
- Textile testing
- Top-load testing

Mecmesin’s range of testing equipment has been successfully used in a number of different industry sectors including:

- Adhesives & coatings
- Construction
- Consumer packaging
- Cosmetics & personal care
- Education
- Electrical & electronic
- Fabric & textiles
- Food & agriculture
- General engineering
- Home & office
- Medical & veterinary
- Product safety
- Sport & leisure
- Transit packaging
- Automotive & aerospace

For further information and case studies regarding applications or products please visit our website: [www.mecmesin.com](http://www.mecmesin.com) or call: +44 (0) 1403 799979
Testimonials

“In the absence of an ‘industry standard’ measurement for the performance of our product, it was necessary to develop our own. It was only by modifying ‘off the shelf’ equipment that we were able to arrive at the perfect solution. Mecmesin offered total, cost-effective support throughout this process. I have, and will continue to recommend them to others.”

S. Checkley
e-Medix - Precision Medical Engineering

“We purchased the MultiTest 10-i to test 80% of the springs, which we have in our railcars. The system is very easy-to-use and the program is convenient to test. Also the support of A&D Korea was very positive.”

S C Yoon
Seoul Metropolitan Railway Transit Corporation

Calibration, Service & Repair

Offering a prompt service, our calibration, service & repair centre is able to deal with all your force & torque testing equipment and gauges from Mecmesin and other manufacturers. All gauges and loadcells are supplied with calibration certificates traceable to UK National Standards to meet ISO requirements.

Support Services

• Comprehensive international network of distributors
• 24 month warranty
• Website support
• Calibration, service & repair centre
• On-site installation and training
• Grips & accessories
• Application support
Mecmesin - a world leader in affordable force and torque testing solutions

Since 1977, Mecmesin has assisted thousands of companies achieve enhanced quality control in design and production. The Mecmesin brand represents excellence in accuracy, build, service, and value. In production centres and research labs worldwide, designers, engineers, operators, and quality managers endorse Mecmesin force and torque testing systems for their high performance across countless applications.

www.mecmesin.com

The Mecmesin global distribution network guarantees your testing solution is rapidly delivered and efficiently serviced, wherever you are.

DISTRIBUTOR STAMP

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