

# Mecmesin

testing to perfection

## Force & Torque Testing Solutions



Providing quality testing solutions  
for over 35 years...

For over 35 years Mecmesin's force and torque testing solutions enable designers and manufacturers to:

- **Guarantee production quality**
- **Reduce costs, minimize waste and improve yields**
- **Optimize design**
- **Conform to standards**

From simple instruments to powerful, comprehensive testing systems, Mecmesin provides the expertise to solve your application!

## Force Systems

### MultiTest-i

Our flagship series, the **MultiTest-i** test frames are our top of the line and most comprehensive systems, enabling the user to create sophisticated test programs using Mecmesin's Emperor™ Software, together with an advanced level of results analysis.

- **Control:** greater flexibility to create/develop programs to match exact test requirements
- **Visual:** test results displayed graphically in real time can be recorded, archived and replayed as required
- **Versatile:** user interface enables in-depth analysis and easy identification of Pass/Fail scenarios
- **Choice:** 7 capacities available - single-column 110 lbf (0.5 kN), 220 lbf (1 kN), 550 lbf (2.5 kN), 1100 lbf (5 kN), or twin-column 2200 lbf (10 kN), 5500 lbf (25 kN) & 11000 lbf (50 kN)



Spring tensile test



Aerosol actuation test



Keypad compression test

MultiTest-i single-column		0.5-i	1-i	2.5-i	5-i
<b>Test Frame</b>					
Rated capacity	lbf	110	225	550	1100
	kgf	50	100	250	500
	N	500	1000	2500	5000
Columns spacing		-	-	-	-
Speed range	in/min	0.04 - 40	0.04 - 40	0.04 - 40	0.04 - 20
	mm/min	1 - 1000	1 - 1000	1 - 1000*	1 - 500
Crosshead travel**	in	47.3	39.4	19.7	23.2
	mm	1200	1000	500	590

\* 2.5 kN - above 2 kN, the recommended maximum speed is 30 in/min (750 mm/min)

\*\* measured without load cell or grips

## MultiTest-xt

Easy to operate, the **MultiTest-xt** range of affordable, stand-alone test systems are designed specifically for quick and easy tension and compression testing in production areas.

- **User-friendly:** easy-to-use with minimal training, “Simplicity itself” one button launches the test
- **Time saving:** fast access to 5 most commonly used tests
- **Cost-effective:** simple touch screen interface - no separate computer required
- **Control:** choice of 3 program modes & unlimited library storage for full traceability
- **Secure:** password protected log-in - identifies operator for full traceability
- **Flexible:** select standard reports or customize your own using built-in templates
- **Capacities:** 7 capacities available - single-column 110 lbf (0.5 kN), 220 lbf (1 kN), 550 lbf (2.5 kN), 1100 lbf (5 kN), or twin-column 2200 lbf (10 kN), 5500 lbf (25 kN) & 11000 lbf (50 kN)



Top-load test



Container peel test

MultiTest-xt single-column		0.5-xt	1-xt	2.5-xt	5-xt
<b>Test Frame</b>	Rated capacity				
	lbf	110	225	550	1100
	kgf	50	100	250	500
	N	500	1000	2500	5000
Columns spacing		-	-	-	-
Speed range	in/min	0.04 - 40	0.04 - 40	0.04 - 40	0.04 - 20
	mm/min	1 - 1000	1 - 1000	1 - 1000*	1 - 500
Crosshead travel**	in	47.3	39.4	19.7	23.2
	mm	1200	1000	500	590

\* 2.5 kN - above 2 kN, the recommended maximum speed is 30 in/min (750 mm/min)

\*\* measured without load cell or grips

## MultiTest-d

The **MultiTest-d** systems are motorized test frames, which when combined with a force gauge and fixtures, are ideal for straight forward force testing applications.

- **Cost-effective:** affordable, suitable for businesses with limited resources
- **User-friendly:** easy-to-learn and operate even for infrequent users
- **Precise:** improved digital speed control
- **Easy-to-read LCD screen:** digital display of displacement and speed
- **Output capability:** create load/displacement graphs
- **Capacities:** 3 capacities available - 110 lbf (0.5 kN), 220 lbf (1 kN) or 550 lbf (2.5 kN)



Peel test

MultiTest-d		0.5-d	1-d	2.5-d
<b>Test Frame</b>				
Rated capacity	lbf	110	220	550
	kgf	50	100	250
	N	500	1000	2500
Speed range	in/min	0.04 - 40	0.04 - 40	0.04 - 40
	mm/min	1 - 1000	1 - 1000	1 - 1000*
Crosshead travel**	in	47.3	39.4	19.7
	mm	1200	1000	500

\* 2.5 kN - above 2 kN, the recommended maximum speed is 30 in/min (750 mm/min)

\*\* measured with a force gauge and short extension rod fitted

## High Capacity Test Frames

Twin-column testing frames provide the opportunity to test physically larger specimens and apply loads of up to 5500 lbf (25 kN).

- **Versatile:** tests samples up to 15.7" wide and 37.4" high
- **Enhanced:** combines the features and functions of the MultiTest-i and MultiTest-x systems to provide you with a comprehensive and powerful testing platform in a choice of 2 configurations - computer-controlled or console-controlled.



### MultiTest 10-i, 25-i & 50-i

- Computer-controlled
- Limitless programming capability
- In-depth analysis

### MultiTest 10-xt, 25-xt & 50-xt

- Touch screen controlled
- Quick and easy to operate
- Stand-alone system - no PC required

MultiTest twin-column		10-xt & i	25-xt & i	50-xt & i
<b>Test Frame</b>				
Rated capacity	lbf	2200	5500	11000
	kgf	1000	2500	5000
	N	10000	25000	50000
Columns spacing		15.7" (400 mm)	15.7" (400 mm)	16.5" (420 mm)
Speed range	in/min	0.04 - 40	0.04 - 40	0.04 - 15
	mm/min	1 - 1000	1 - 1000*	1 - 1000**
Crosshead travel***	in	37.4	37.4	43.3
	mm	950	950	1100

\* 25 kN - recommended maximum speed = 20 in/min (500 mm/min) above 10 kN

\*\* 50 kN - recommended maximum speed = 10 in/min (250 mm/min) above 25 kN

\*\*\* measured without load cell or grips

# Torque Systems

## Vortex-i

The **Vortex-i** torque and angle testing system has similar features to the MultiTest-i (page 1) and can measure torque characteristics of samples up to a capacity of 90 lbf. in (10 N.m)

- **Control:** used in conjunction with 'Emperor™' software you have complete control to develop your own test procedures to match your criteria
- **Flexible:** tests a variety of sample sizes and shapes up to 17.6" (448 mm) in height
- **Versatile:** ability to analyze in-depth, maintain a library of test programs and archive test results
- **Choice:** 5 capacities available - 2.7 lbf.in (0.3 N.m), 13 lbf.in (1.5 N.m), 0.26 lbf.in (3 N.m), 52 lbf.in (6 N.m) & 90 lbf.in (10 N.m)



Watch bezel test

Closure torque test

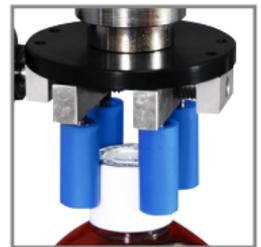
## Vortex-xt

The **Vortex-xt** is an easy-to-use modern torque tester, designed to cut costs by improving production line efficiency and reducing wastage. It can be used to quickly measure stripping torque, release torque, identify bridge breaks and help avoid spinners.

- **User-friendly:** easy-to-use with minimal training, press two buttons to recall a pre-set program and start the test
- **Time saving:** fast access to 5 most commonly used tests
- **Cost-effective:** simple touch screen interface - no separate PC required
- **Control:** choice of 3 program modes & unlimited library storage of test methods
- **Versatile:** test top-load and torque simultaneously for child-resistant closures
- **Secure:** password protected log-in - identifies operator for full traceability
- **Flexible:** select standard reports or customize your own using built-in templates
- **Choice:** 5 capacities available - 2.7 lbf.in (0.3 N.m), 13 lbf.in (1.5 N.m), 0.26 lbf.in (3 N.m), 52 lbf.in (6 N.m) & 90 lbf.in (10 N.m)



Control stalk test



Child resistant closure test

Vortex-i & xt	0.3 N.m	1.5 N.m	3 N.m	6 N.m	10 N.m
lbf.in	0 - 2.7	0 - 13	0 - 26	0 - 52	0 - 90
kgf.cm	0 - 3	0 - 15	0 - 30	0 - 60	0 - 100
N.m	0 - 0.3	0 - 1.5	0 - 3	0 - 6	0 - 10
Speed range	0.1 - 20 revs/min (clockwise or anti-clockwise)				

## Vortex-d

The **Vortex-d** range is a basic motorized torque test system for measuring static and rotary torque up to 10 N.m, and combines with Mecmesin's universal display to ensure repeatable, accurate results. Though simple to operate, the Vortex-d range benefits from many advanced test features to meet common testing requirements.

- **Flexible:** accommodates a variety of samples up to 17.7" (450 mm) in height
- **Versatile:** option to apply downward force by adding weights during test - particularly suited to child-resistant closure testing
- **User-friendly:** large, easy-to-read LCD screen
- **Cost-effective:** purchase the parts you require to custom build the test system best suited to your application - no money wasted on parts you do not need!
- **Choice:** 3 capacities available - 1.5 N.m, 6 N.m & 10 N.m



Closure torque test



Automotive control test

Vortex-d	1.5 N.m	6 N.m	10 N.m
lbf.in	0 - 13	0 - 52	0 - 90
kgf.cm	0 - 15	0 - 60	0 - 100
N.m	0 - 1.5	0 - 6	0 - 10
Speed range	0.1 - 20 revs/min (clockwise or counter-clockwise)		

## Force Instruments

### Digital Gauges

#### AFG

Mecmesin force gauges are specifically designed to measure force in tension and compression with outstanding accuracy, when used either handheld or mounted to a test stand. The **Advanced Force Gauge (AFG)** is the most versatile, fully-featured and precise gauge produced by Mecmesin.

- Tension and compression measuring
- Accuracy  $\pm 0.1\%$  of full scale
- 1st and ultimate peak capture
- Data output RS232, Mitutoyo, analogue
- Internal sampling rate 5000 Hz
- External 'Smart' force & torque transducer
- Ability to invert display on gauge
- Test stand mountable
- Full unit conversion of displayed value
- Overload warning with trend bar
- On-board memory 500 readings
- Pass/Fail alarms
- External trigger (freeze reading of switch contact)
- Diagnostic check of Load cell
- Wide range of grips and fixtures



Model	lbf	kgf	N
AFG 2.5	0.55 x 0.0001	-	2.5 x 0.0005
AFG 5	1.1 x 0.0002	0.5 x 0.0001	5 x 0.001
AFG 10	2.2 x 0.0005	1 x 0.0002	10 x 0.002
AFG 25	5.5 x 0.001	2.5 x 0.0005	25 x 0.005
AFG 50	11 x 0.002	5 x 0.001	50 x 0.01
AFG 100	22 x 0.005	10 x 0.002	100 x 0.02
AFG 250	55 x 0.01	25 x 0.005	250 x 0.05
AFG 500	110 x 0.02	50 x 0.01	500 x 0.1
AFG 1000	220 x 0.05	100 x 0.02	1,000 x 0.2
AFG 2500	550 x 0.1	250 x 0.05	2,500 x 0.5

## BFG

The **Basic Force Gauge (BFG)** is a rugged, easy-to-use measurement instrument that offers value for money with the following benefits:

- Tension and compression
- Accuracy  $\pm 0.25\%$  of full scale
- Data output RS232, Mitutoyo, analogue
- Sampling rate 1000 Hz
- Full unit conversion of displayed value
- Wide range of gripping fixtures and accessories
- Ergonomic design for handheld use
- Powered by 4 nickel metal hydride rechargeable batteries



Model	lbf	kgf	N
BFG 10	2.2 x 0.0005	1 x 0.0002	10 x 0.002
BFG 50	11 x 0.002	5 x 0.001	50 x 0.01
BFG 200	44 x 0.01	20 x 0.005	200 x 0.05
BFG 500	110 x 0.02	50 x 0.01	500 x 0.1
BFG 1000	220 x 0.05	100 x 0.02	1,000 x 0.2
BFG 2500	550 x 0.1	250 x 0.05	2,500 x 0.5

## CFG+

The **Compact Force Gauge (CFG+)** is a low cost, lightweight gauge with the following benefits:

- RS232 for easy data transmission
- Low cost
- 10 - 32 UNF Load cell stud thread
- Data sampling rate 10Hz
- Accuracy  $\pm 0.5\%$  of full scale
- Declaration of conformity as standard (Calibration Certificate available on request)
- Peak hold



*All of our gauges are compatible with a wide variety of grips & fixtures to suit your application testing requirements.*

## Manual Test Stands

Manual test stands when combined with a force gauge, provide a simple and affordable way of conducting basic tension and compression tests.

- **Easy-to-use**
- **Robust**
- **Lightweight**
- **Portable**
- **Economical for simple tests**

The **LCP/S** lever-operated test stand is ideal for testing on a repetitive basis up to 110lbf (500N) capacity. The **MDD** has 220 lbf (1000 N) capacity and handwheel operation to allow fine positional control of the crosshead.



MDD



LCP/S



Textile testing



Spring test

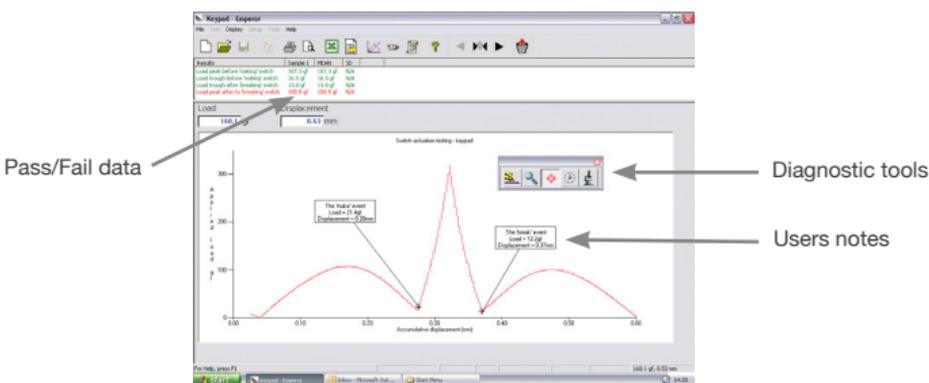
Model	LCP/S	MDD

## Software

### Emperor™ for MultiTest-i & Vortex-i Systems

Created for ultimate force and torque test performance Emperor™, Mecmesin's flagship software is a fully featured programming environment for use with Mecmesin's top-of-the-range MultiTest-i and Vortex-i computer-controlled test systems.

- **Easy-to-use:** simple user-interface with powerful functionality
- **Programmable:** develop sophisticated programmes
- **Control:** replay, analyze, archive, download data
- **Visual:** see test 'live' in real time on-screen
- **In-depth analysis:** visual representation shown on-screen, with easy-to-use diagnostic tools
- **Flexible:** customize settings and layout to suit your requirements

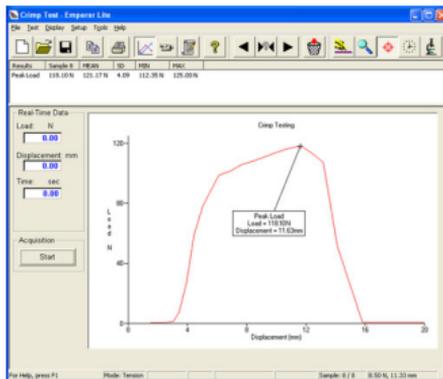


Easy-to-use interface with powerful functionality

## Emperor™ Lite

Emperor™ Lite is Mecmesin's powerful data-acquisition software, for use with its extensive range of force & torque measurement equipment. The software quickly and easily enables operators to perform in-depth analysis of measurements using a graphical trace of the test. User-selectable calculations provide instant results for key test parameters, allowing you to gain valuable quantitative information about the test samples.

- **Control:** perform multiple calculations e.g. peak, minimum and average
- **Visual:** view test 'live' in real time on PC screen
- **In-depth analysis:** Easily identify and label critical measurement values and pass/fail points during the test
- **Flexible:** Summary test report with graphical traces



Simple-to-use graphical interface

## AFTI - Force & Torque

### 'Smart' Sensors

The **Advanced Force & Torque Indicator** is a high-spec display unit with similar features and benefits to the AFG, yet with the additional ability to test torque as well as force. The AFTI is used with Mecmesin **'Smart'** force and torque sensors, which plug into the AFTI enabling it to automatically register either force or torque readings for a variety of tests.

- **Comprehensive:** all the benefits of the Advanced Force Gauge
- **Intelligent:** automatic recognition of external sensors, just 'plug & play'
- **Flexible:** fully interchangeable range of force & torque sensors (no setup/re-calibration required)

With a wide variety of Mecmesin force and torque sensors available this versatile instrument covers a range of tests beyond the normal capability of a single instrument.



Examples of 'Smart' transducers shown include; Static Torque Transducer, Static Torque Screwdriver & S-Beam

# Closure Torque Testers

## Orbis

The **Orbis** enables you to manually test the release action of a screw type closure. It captures data at a fast rate, increasing accuracy and minimizing reading variability, caused by the inevitable difference in speed employed by the user to unscrew the sample.



Adjustable pegs

- **Flexible:** tests many shapes and sizes of container; 0.4 - 7.5" (10 - 190 mm) in diameter
- **Precise:** load accuracy  $\pm 0.5\%$  of full scale
- **Protected:** splashproof housing, easy to clean spills
- **Time saving:** quick, useful for production line testing
- **User-friendly:** low-cost, lightweight & portable
- **Water-resistant:** rated to IP 54
- **Capacity:** 50 lbf.in (6 N.m)

Model	Orbis
Measurement range	0 - 50 lbf.in
	0 - 60 kgf.cm
	0 - 6 N.m

## Tornado

Externally, the **Tornado** features the same compact, rugged and portable design of the Orbis, and the same intuitive user interface and versatile fixturing. The Tornado's intelligent electronics, however, enable a broad variety of advanced **additional functions**, to offer enhanced practicality and versatility.

- **Flexible:** versatile mounting table, adjustable to accommodate a variety of forms
- **Precise:** load accuracy  $\pm 0.5\%$  of full scale
- **Advanced features:** 2000 Hz peak capture, stores up to 500 results in its internal memory
- **Tamper-evident closure testing:** capture both 'slip torque' and 'bridge torque' with ease
- **Protected:** integrated drip tray captures any sample spillage
- **Time saving:** quick access to common functions and navigation
- **User-friendly:** low-cost, lightweight and portable
- **Water-resistant:** rated to IP 54



Bottle top testing

Model	Tornado 1.5	Tornado 3
Measurement range	0 - 13 lbf.in	0 - 26 lbf.in
	0 - 15 kgf.cm	0 - 30 kgf.cm
	0 - 1.5N.m	0 - 3N.m

Model	Tornado 6	Tornado 10
Measurement range	0 - 50 lbf.in	0 - 90 lbf.in
	0 - 60 kgf.cm	0 - 100 kgf.cm
	0 - 6 N.m	0 - 10 N.m

## Accessories

Grips and fixtures are integral components of our force testing systems, designed for testing a range of materials, such as adhesives, composites, glass, plastics, rubber, textiles, wood and components, for example, crimped terminals, keypads, PCB's, springs and switches. These include:

- **Cam grips**
- **Claw type grips**
- **Roller/Bollard type grips**
- **Textile attachment grips**
- **Compression plates and probes**
- **Flat-faced jaw grips**
- **Test hooks**
- **Wedge grips**

For specialized requirements, our team of experienced engineers can design customized fixtures to match your particular criteria specifications.



Wedge grip



Pull peel wheel



Flat-faced jaw grip



Vented  
compression plate



Diamante pull-off  
fixture



3-point bend fixture

## Solutions Provider

Mecmesin's range of testing equipment is successfully used in a number of industry sectors including:

- Aerospace
- Automotive
- Construction
- Cosmetics
- Electrical & Electronics
- Engineering
- Manual Handling
- Medical
- Packaging
- Paper & Board
- Pharmaceutical
- Plastics & Rubber
- Safety
- Sports
- Textiles

## Support Services

- Comprehensive network of international distributors
- 24 month warranty
- Application support
- Accessories
- On-site installation and training
- Calibration & service centre
- Website support

## Over 35 years experience in force & torque technology

Formed in 1977, Mecmesin Limited is widely regarded as a leader in force and torque technology. The Mecmesin brand stands for excellence, performance and reliability, guaranteeing high quality results. Quality control managers, designers and engineers working on production lines and in research laboratories worldwide rely upon Mecmesin force & torque measurement systems for a limitless range of quality control applications.



Algeria	Hong Kong	Romania
Argentina	Hungary	Russia
Australia	India	Saudi Arabia
Austria	Indonesia	Singapore
Bangladesh	Iran	South Africa
Belgium	Ireland	Slovenia
Brazil	Israel	Slovakia
Canada	Italy	Spain
Chile	Japan	Sri Lanka
China	Korea	Sweden
Colombia	Lebanon	Switzerland
Costa Rica	Malaysia	Taiwan
Czech Republic	Mexico	Tunisia
Denmark	Morocco	Thailand
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