



# Helixa-í Precision Torque Testing System



Mecmesin's Helixa torque tester provides the ideal solution for measuring low and medium torque variations on a variety of delicate or finely-engineered products. Its sensitivity and precise alignment make it suitable for testing high quality assemblies such as those found in the cosmetics, jewellery, electronics, pharmaceutical and medical industries.

### Why choose Mecmesin?

Mecmesin has been designing, manufacturing and supplying precision force and torque testing systems and instruments for over 35 years. The full range of Mecmesin torque testing equipment includes simple hand-held sensors and displays right through to PC-controlled test stands driven by powerful control and acquisition software.

With an unrivalled network of distributors in over 50 countries, we are able to provide local technical expertise with full training and after-sales support.

## precision accuracy repeatability

## Interchangeable intelligent torque cells

Helixa torque cells (HTC) are quick and easy to fit to the Helixa test frame.

The capacity and calibration details of the individual torque cell are auto-detected by the Emperor control software, ensuring that set-up and use of the system is simplicity itself.

Choose from a range of 7 different HTC torque cells allowing you to measure from a few mN.m up to 6 N.m with an unrivalled accuracy of  $\pm 0.5\%$  of full scale.

Each HTC is supplied complete with a calibration certificate, traceable to national standards.





## Helixa-í



## The Power of Emperor<sup>™</sup>

Emperor<sup>™</sup> Software has been specifically designed to work with Mecmesin test frames for ultimate test performance. It combines ease of use with powerful programming tools, making it equally suitable for simple, routine analysis in the QC laboratory and sophisticated test routines in the design department. Emperor<sup>™</sup> controls the entire test sequence, acquires the data measurement, performs calculations, returns and reports results.

### Flexible – Choice of 2 Program Modes

### **Console Testing Mode**

The Console Testing Mode is designed for ease-of-use by operators on the production floor, ideal for repetitive, routine testing.

- Easy-to-use with minimal training 'Simplicity itself' one button launches the test
- Fast access to 5 favourite tests customised icons ens instant test selection

### **Program Testing Mode**

Using the Program Testing Mode, the true power of Emperor<sup>™</sup> software becomes evident. This mode has an intuitive interface, which makes the whole test process easy to manage:

- · Setting-up the test method
- Running the test
- · Making a test report
- · Storing & exporting data

With Emperor<sup>™</sup> 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.

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



### **Creating a Program**

Using Emperor<sup>™</sup> you can create basic tests through to sophisticated cyclic, event-triggered and conditional programs

- Design & tailor your torque test to your precise needs
- · Intuitive, easy-to-learn user interface
- · Create pass/fail criteria for test samples

The test creation wizard is extremely user-friendly, with fully comprehensive commands to control the Helixa from test start to finish. Full parameters of measurement, including data acquisition rate and system behaviour, are set and saved with each test program.

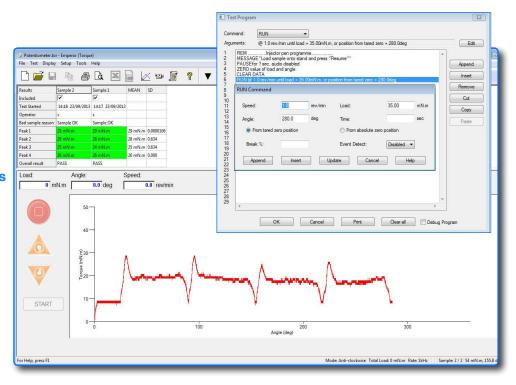




### **Performing a Test**

- Select from a library of test
  procedures
- Samples & operators can be tagged for traceability
- Restricted levels of access between supervisor and operator avoids accidental tampering with test programs
- Toolbars allow quick access to commonly-used functions

Digital I/O ports can be used to start, pause or stop a sequence, enabling tests to be semi-automated. An external 'event input' is also available to detect the torque/angle at which an electrical connection is made or broken, particularly useful when testing rotary switches.

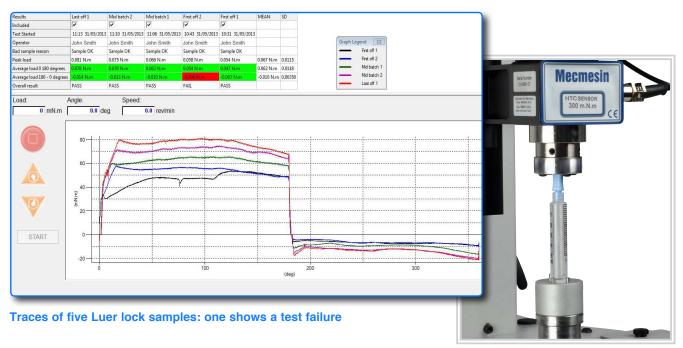


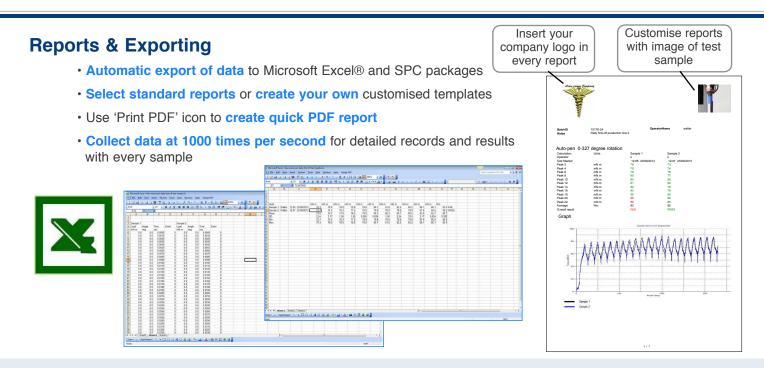
### Data Analysis

Examine measurement data by using a wide range of calculations within Emperor<sup>™</sup> to report test results. Detect and evaluate sample characteristics and compare against tolerance criteria for acceptability.

- Extensive range of user-definable calculations
- · Easy-to-read, comprehensive display of test results with colour-coded Pass/Fail notification
- · Real-time graphs with overlays in multiple colours and legends
- Simple print function provides an instant record
- Video replay facility to help identify critical points. Ideal for post-test analysis of product and component testing

Samples can be viewed and analysed individually or as a batch. For more sophisticated R&D analysis new calculations can be added to identify material characteristics.





## **Applications**

The Helixa is designed for precision torque applications, where torque forces may be very small and where accuracy is paramount. **Precision bearings** 

Cosmetics containers (e.g. lipstick barrels) Medical devices (e.g. Luer fittings and dosage devices) Light torsion springs Rotary electronics controls and components Watch components

A selection of applications include:

#### Luer lock connectors



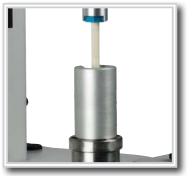
Precision medical devices



#### **Cosmetics packaging**



Rotary electronic components and controls



#### Watch components



Light torsion springs



## Helixa-xt Console-controlled version

Unlike the Helixa-i controlled by a separate PC, the Helixa-xt is fitted with a touch-screen console for full measurement control



## **Standards**

Whether testing using international standards and methods, or against your own design standards, the accuracy and repeatability of the Helixa will always give you reliable results.

The Helixa is an ideal tester for assessing new

test control and analysis software is powerful and

under defined axial load.

product development against specification. Its precision

alignment adjustment for specific fixtures and samples

will give reliable and repeatable testing. The Emperor™

flexible enough for everything from simple single-turn

events through to sophisticated and cyclic test profiles

The Helixa is also the perfect solution for standard methods where axial force is also applied, such as in security closures.

control versatile comple

Frequently, it is not just a peak torque or event that is required, but a full and detailed extended profile. The precision of the Helixa combined with the Emperor<sup>™</sup> data presentation can fully characterise the torque and friction in the rotation of parts.



### **Typical Standards**

- BS EN 1707 / ISO 594 (ISO 80369): Conical fittings with a 6% (Luer) taper for syringes, needles and certain other medical equipment. Slip and lock fittings
- · ISO 11608: Needle-based injection systems for medical use
- · ASTM D3810: Minimum application torque of type IA child-resistant closures
- ASTM D3968: Monitoring of rotational torque of type IIIA child-resistant closures
- ASTM D3198: Application and removal torque of threaded or lug-style closures

... and many more



## Accessories

Mecmesin engineers have many years experience in designing and manufacturing custom-built fixtures and can provide you with a bespoke solution for the Helixa.

## custom bespoke accurate

### **Standard Accessories**

The Helixa has a set of standard accessories for testing straightforward applications

(to be ordered separately):

- Upper Plate
- Lower Plate
- V-jaws
- Lightweight Chuck
- Self-centring Vice
- X-Y Positioning Stage



Helixa mounting plate Threaded holes allow fitting of sample holding fixtures Upper Plate = part no: 432-601 Lower Plate = part no: 432-600



\* shown with V-shape jaws part no: 432-602

### **Custom Accessories**

In most situations the Helixa will be used on smaller and precision-engineered components that cannot be held in standard fixtures due to their unique form.

Concentricity in a torque test is only as good as the least precisely-held part. Plastics components especially must be carefully fixtured to prevent distortion by the grip. Whilst we can supply a wide range of standard fixtures, for precision torque testing it is likely that you will require customised fixtures. At Mecmesin we have experienced engineers who can work with you to design and manufacture custom solutions specifically for your applications, or integrate fixtures you already have.

The examples shown below are representative of our capability, showing upper and lower fixtures for specific products.





Luer lock fixture





**Torsion spring fixture** 

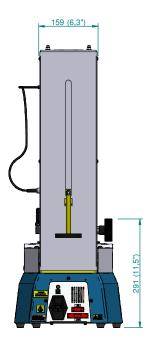
## **Specifications**

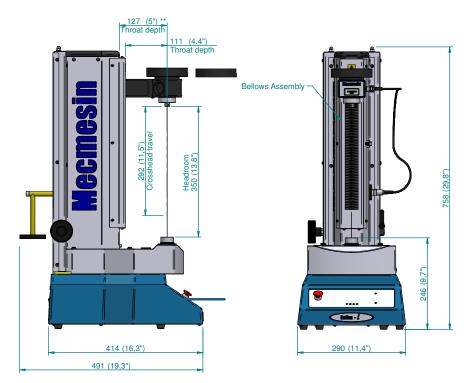
TORQUE TRANSDUCER (HTC) RANGE		0.1 N.m	0.2 N.m	0.3 N.m	1.0 N.m	1.5 N.m	3.0 N.m	6.0 N.m
	N.m	0 - 0.1	0 - 0.2	0 - 0.3	0 - 1.0	0 - 1.5	0 - 3.0	0 - 6.0
	kgf.cm	0 - 1	0 - 2	0 - 3	0 - 10	0 - 15	0 - 30	0 - 60
	lbf.in	0 - 0.9	0 - 1.8	0 - 2.7	0 - 8.9	0 - 13.3	0 - 26.5	0 - 53.1
AXIAL ALIGNMENT								
Total runout (without fixtures)				Bette	r than $\pm 0.25$	mm		
SPEED								
Speed range	0.1 to 30 rev/min (clockwise or anticlockwise)							
Speed accuracy	±0.2% of indicated speed							
Speed resolution					0.1 rev/min			
TORQUE MEASUREMENT (USING Emperor	™)							
Torque accuracy				±0	.5% of full sc	ale		
Torque resolution	1:6500							
Torque units display	mN.m, N.cm, N.m, kgf.cm, gf.cm, ozf.in, lbf.ft, lbf.in							
Sampling rate				1,000 Hz, 500	) Hz, 100 Hz,	, 50 Hz, 10 H	z	
DISPLACEMENT								
Maximum displacement (from tared position)					2500 revs			
Displacement accuracy					0.1°			
Displacement resolution					0.2°			
System resolution					0.045°			
DIMENSIONS								
Height					758 mm			
		290 mm (Helixa- <i>i</i> )						
Width		586 mm (Helixa- <i>xt</i> )						
		414 mm (without external weight hanger)						
Depth		505 mm (with external weight hanger and weights)						
					350 mm			
Headroom (without fixtures)					292 mm			
Crosshead travel				127 m	m (without be	ellows)		
Throat depth				111	mm (with bell	ows)		
Weight		28 kg (Helixa-i)						
		32 kg (Helixa-xt)						
STATIC WEIGHTS (max allowed)								
Rear counterbalance				4	0 N (maximur	m)		
Torque cell mass platen				6	0 N (maximur	m)		
COMMUNICATIONS								
Digital I/O				6 in	put, 6 output	(TTL)		
Printer/datalogger outputs, and results file trans	fer			F	RS232 and U	SB		
(Helixa-xt only)								
Network communications (Helixa-xt only)		Ethernet RJ45						
		USB for external wireless connectivity						
POWER SUPPLY								
Maximum input power					120 W			
Voltage				230 V AC 5	0 Hz, or 110	V AC 60 Hz		
OPERATING ENVIRONMENT					,			
Recommended temperature range				+10° to	+35° C (50° 1	to 95° F)		
Humidity			Normal in	dustry and la		,	ondensing	
NOISE EMISSIONS			. torritar li		< 70 db (A)			
					s than 70 db	( • )		

Mecmesin reserves the right to alter equipment specifications without prior notice. E&OE

## **Specifications**

### Helixa-í





\*\*Note: Throat depth can be increased by removing bellows assembly **Helixa**-*xt* **Dimensions** 

