SPECIFICATION SHEET

Crimp Force Testing System

(Motorized Version)

MODEL: QCFTS – 03M

Quality Sense Technologies
Measuring Solutions
Torque, Force Sensors, Torque Wrench calibrator, Spring Testing Machines and custom Builds Equipment's.

Applications

- **To test Pull-off force of crimped or welded wire Terminals,**
- **Electrical leads and connectors as per Military, SAE and American national standards, IEC, ISO,UL standards**
- **It can also be used for tensile testing of tapes, foils and wires using suitable adopters.**
- **First choice of wire harness builders and component suppliers of Military, aerospace, railways, automobile, telecommunication Electrical and other industries.**
- **In- house verification , crimp tool calibration/setup**
- **Suitable for test and R&D labs, QA compliance, Contract obligations or to meet National/International standards.**

Importance of Spring Testing machine & its accuracy

- Crimp Pull testing means, either applying a controlled longitudinal specified tensile force or to test breaking strength of a terminal wire sample to ensure whether crimp joint will sustain without failure. Pull testing will also resolve all concerns about the mechanical properties of the crimped or welded termination, and it will indicate with reliable accuracy, the electrical integrity of a connection. Benefits of crimp testing:
- Ensuring crimp joints are fit-for- purpose Ensuring the safety and quality of products.
- Reducing material cost and to achieve manufacturing target.
  Ensuring whether specifications stay within tolerances National/International standards.

- ISO and QS standards require that the process are test be accurate and repeatable from one operator to the next. They require test, such as gauge repeatability and reproducibility tests, to ensure that, the different operators will achieve similar results

- Military, SAE and American national standards, IEC, ISO,UL standards specifies consistent pulling speed of 1 in/min, but some standards specifies speed rate up to 4 in/min .

- This requirement cannot be met with a hand operated crimp tester, because a hand actuated pull tester can give inconsistent data depending on the operator pull rate and can give different readings with different operator. Similarly, a pneumatic device can give different pulling rates depending on the air pressure and valve setting. Hence, pull testers are cumbersome and inconsistent. Motorised equipment provides more consistent pull rates and adjustable pull speeds.

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Features

- PLC controlees motorised pull tester with a speed controller, ensuring consistent pull rates throughout the entire measuring range, with a standard 12 position terminal holder to accommodate broader range of wires.
- Manual or automatic mode of operation.
- Accuracy ± 0.5% F.S.D.
- Adjustable pull rate 20 mm/min to 250 mm/min with speed accuracy of 5% Selectable units for Pull rate – mm/min or in/min.
- Continuous force hold option to meet standard UL486A.
- Auto stop at wire /crimp break point.
- Auto return to starting point.
- Combination of screw drive system with high performance motor provides smooth and powerful operation.
- Motorised pull tester is capable of moving at a set pull rate and gripping jaws without distorting the crimp area.
- The system consists of a crosshead travel with screw drive movement, along with provision to
- mount Digital Force gauge (built in sensor) Model FG-H1 capacity depending on the range of test, and the product to be tested.
- Control panel consists of Start/Stop, Inch low/ inch fast, emergency stop, ON/OFF push button switches .
- Selectable unit of measurement: N, kgf, lbs.
- Suitable for push/ pull force measurement.
- High resolution TFT display unit to read in Trace or peak hold mode with sampling rate.
- Audio buzzer for overload and maximum set value.
- Microprocessor based unit with feather touch keys for ease of operation.
- All digital electronics used to ensure reliability, durability, and measurement accuracy.
- Different range of Force Sensors enables testing of wide range of products with sufficient accuracy.
- Easy to inter-change the force gauge and for calibration.
- Operates on 230V 50Hz nominal.
- Accessories included
    1. Rotatable position terminal contact grip – with 12 slots upto 6mm (0.5, 0.8,1, 1,3, 1,5, 2, 2.5, 3, 3.5, 4, 5, 6)mm , and wire gauges from 0.05 to 10 mm ^{2}(8 to 30 AWG)
    2. Cable cam grip(eccentric c clamp)- serrated
    3. Instruction manual.
- Continued support for calibration traceability and service

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Specifications

Customer has to choose the capacity of the machine, displacement range and resolution, No. of Loadcells required to cover the various sizes of springs to be tested from the below table.

Machine Capacities in N			1000, 2000, 5000, 10000, 20000		
Depth day light (depending on Max. length of Component) in mm			Either 200, 300, 400 500 or 1000 depending on the UUT to be tested		
Load cell ranges in N	0.2 to 2	0.5 to 5, 1 to 10, 2 to 20	5 to 50, 10 to 100, 20 to 200	50 to 500, 100 to 1000, 200 to 2000	500 to 5000, 1000 to 10000 2000 to 20000
Load cell resolution in N	0.0001	0.001	0.01	0.1	1
Load cells Accuracy			0.5 of reading from 10-100% of capacity or 0.2% FS		
Operating Voltage			5 or 10 ± 5% VDC		
Operating Temperature			+10 °C to +55°C		
Storage Temperature			+10 °C to +60°C		
Atmosphere			Designed for use under normal laboratory conditions. Protective measures may be required if excessive dust, corrosive fumes, Electromagnetic field or hazardous conditions are encountered.		
Dimensions & Approx. Weight			Depends on the capacity of the machine, will be provided on request.		

Digital Display Unit

- High resolution LCD Display unit with feather touch keys to read Torque in **Trace mode**, **Peak hold** & **First peak mode** with high sampling rate of 2400 Hz..
- Selectable unit of measurement, N, kgf & lbs.
- Operates on 230 V 50Hz A.C.
- Suitable for Compression and Tension operation.
- Combined accuracy of the Force sensor and the display unit (including measurement uncertainty) better than 1 % of the reading from 10% to 100 % of the range.
- Calibration facility
- RS-232 Output to log the data in the computer using suitable software.

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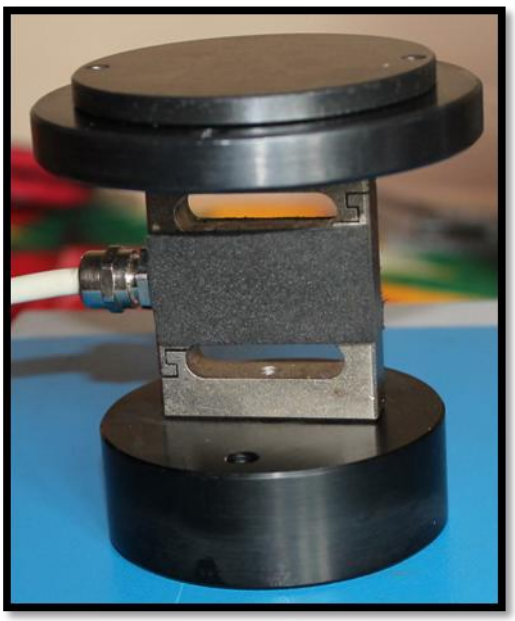
Force Sensor



- Strain gauge based sensors
- Rated output (Sensitivity): 2 mV/V ± 10%
- Bridge resistance 350 ohms nominal.
- Cable length: 2.5 metres.
- Model No. QFS – 02S

Accuracy (Max Errors)

Non Linearity ..... ± 0. 1 % of rated output
Hysteresis..... 0. 25 % of rated output
Reproducibility..... 0. 2 % of rated output
Non – Repeatability..... 0.1 % of rated output
Zero Return..... ± 0.04 % of rated output

ENVIRONMENTAL

Compensated Temperature Range.. -10 °C to + 40 °C
Operating Temperature Range..... -20 °C to + 60 °C
Effect of temperature on output..... ± 0.005% of rated output/°C
Effect of temperature on zero..... ± 0.005% of rated output /°C

Electrical

Rated output (Sensitivity)..... 2 mV/V ± 10% of rated output
Zero Balance..... ± 2% of rated output
Bridge resistance..... 350 Ohms- nominal
Recommended Excitation Voltage... 10 VDC
Maximum Excitation Voltage..... 15 VDC
Insulation Resistance ..... 1000 Mega ohms or more

RATED CAPACITIES ...

Force in N	***1, 2, 5, 10, 20***	***50 , 100***	***200 , 500 , 1000***	***2000, 5000, 10000, 20000***

Optional Features

- Display of Stiffness. (spring rate or spring constant)
- Four column rod for higher range of machines.
- Loadcell and Frame deflection compensation facility in microprocessor based display unit through soft ware correction- especially required for low deflection measurements.

Optional Accessories

- Compression adapters for testing each type of spring
- Tension adapter for testing each type of spring

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Important Note

- In view of continuous improvement in Design and performance, specification is subject to Change without notice.
- Consult factory for more technical information

Factory Contact Details

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