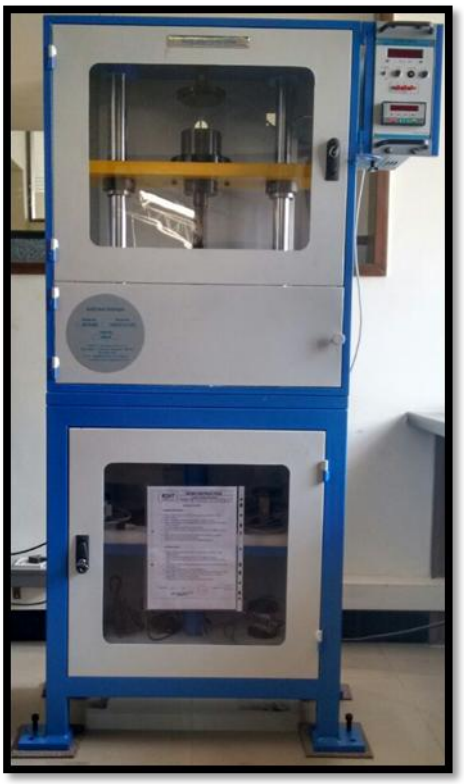
SPECIFICATION SHEET

Spring Testing System

(Manual Version)

MODEL: QSTS – 02M

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



Applications depending on the Configuration

- **Compression & Tension Springs**
- **Disc Springs**
- **Diaphragm Springs**
- **Belleville Washers**
- **Disc Washers**
- **Spring forms**
- **Shock absorber**
- **Rubber**
- **Gasket and seals**

And many more applications related to Load Vs Displacement...

Importance of Spring Testing machine & its accuracy

- Springs are normally manufactured for a specific purpose. Spring reliability equals to product reliability. Hence, a spring manufacturer should ensure that the spring manufactured by him will meet his customer specification by testing with a suitable spring testing machine.
- Most spring tests require the measurement of a load at a specific height. This requires the testing machine to measure load and height simultaneously to achieve the accurate and meaningful result. The accuracy, precision, repeatability and reproducibility of test results depend on the features and performance of the load testing machine.
- The deflection of the load cell itself, deflection of the loading frame, calibration accuracy of load and deflection measuring system affects test results.
- We understand the challenges and have perfected the technology to manufacture high quality spring testing machines.

Features

- Table top model. Machine with self supporting table optional.
- High-stiffness loading frame with precision alignment through linear bearings and two column design for more accurate results.
- The system consists of a loading frame , worm &worm wheel gear box, crosshead travel mechanism, along with provision to mount load cell depending on the range of test, spring to be tested and the display unit.
- Designed for application of load with minimum physical effort and enhance safety of the operator during the test and assuring more accurate results.
- Simultaneous display of load and displacement values using loadcell and non-contact optical.
- Tare facility for load and displacement.
- Suitable for testing compression, tension springs.
- Hand wheel action allows fine positioning and better motion control.
- Mechanical and electronic over load protection for all range of load cells
- All digital electronics for reliability, durability, and measurement accuracy
- Different range of load cells enables testing of wide range of springs with sufficient.
- accuracy. Easy to inter-change the load cells.
- Easy to remove load cell and indicator for recalibration
- Provision to operate with coarse and fine movement.

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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 and deflection of spring) in mm			Either 200, 300, 400 500 or 1000 depending on the spring to be tested		
Crosshead travel (displacement range) in mm			Either 200, 300, 400 500 or 1000 depending on the spring to be tested		
Displacement resolution in mm			0.001 (1 micron), 0.005 (5 micron), 0.01 (10 micron)		
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		
Parallelism between stationary platform and load cell plate.			<20 µmm		
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.		

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

Important Note

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

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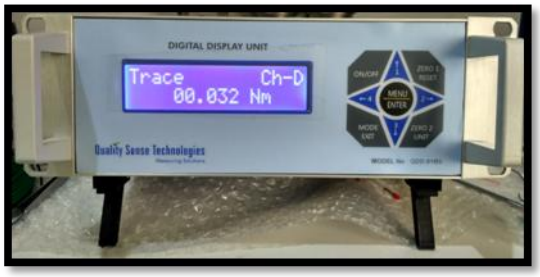
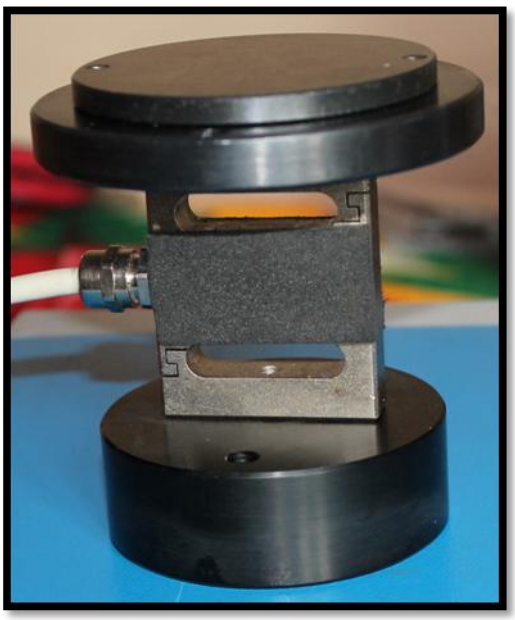
Digital Display Unit



- 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.

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***

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Factory Contact Details

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