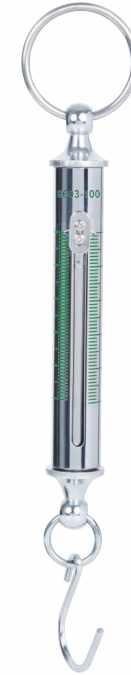




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8603

TUBE FORCE GAUGES INSTRUCTION MANUAL

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1. Model and Specifications

Model	Tube Diameter	Overall length	Max.test force	Resolution	Weight
8603-10	22mm	280mm	10N	0.2N/0.02kg	280g
8603-20	22mm	280mm	20N	0.4N/0.04kg	280g
8603-30	22mm	280mm	30N	0.5N/0.05kg	280g
8603-50	22mm	280mm	50N	1N/0.1kg	280g
8603-100	25mm	340mm	100N	2N/0.2kg	480g
8603-200	32mm	340mm	200N	4N/0.4kg	700g
8603-300	38mm	340mm	300N	5N/0.5kg	920g
8603-500	50mm	455mm	500N	10N/1kg	2400g
8603-1000	50mm	455mm	1000N	20N/2kg	2400g

2. Uses and Scope of Application

Model 8603 Tube Force Gauge is made of imported metal materials and finely processed spring to ensure superior elasticity, accurate measurement, safety and reliability. Its ergonomic design provides a comfortable feel in the hand, effectively avoids visual errors, and provides accurate measurement results. With its portability and high accuracy, the 8603 Tubular Force Gauge is widely used in industrial and scientific fields such as window and door manufacturing, machining, and teaching experiments. Whether it is to measure the tensile strength of materials, evaluate machine performance, or check product quality, it is an indispensable measurement tool.

With "kg" scale on the left and "N" scale on the right of the pointer travel chamber, the Model 8603 Tube Force Gauge is designed for weight and tensile force measurements to meet a wide range of measurement needs.

3. Principles of Operation

The principle of operation of Tube Force Gauge Type 8603 is based on the elastic deformation of a spring and is based on a pointer indicating a scale to directly observe and measure the magnitude of a pulling force. When tension or gravity is applied to the dynamometer, the pointer moves with the extension or compression of the spring and points to the corresponding scale value. Since the amount of spring extension or compression is directly proportional to the applied tension force, the user can accurately read the measurement by observing the scale that the pointer is pointing to. This intuitive design makes the Model 8603 Tubular Force Gauge ideal for measuring weight and tension.

4. Accuracy and Effective Range

Accuracy: Tube Force Gauge Type 8603 has an accuracy rating of Class II, with allowable error limited to $\pm 2\%$ of maximum range (Q_{max}) as specified for working force gauges.

Effective Range: The Model 8603 Tubular Force Gauge is suitable for measurements from 1/10 scale to its ultimate range.

5. Mechanical, Weight Unit Relationship Table

1N=102g (1Newton=102gram)	1N=0.102kg (1Newton=0.102kilogram)
1g=0.0098N (1gram=0.0098Newton)	1kg=9.8N (1kilogram=9.8Newton)
1kN=1000N (1kilonewton=1000Newton)	1kN=100kg (1kilonewton=100kilogram)
1T=10kN (1ton=10kilonewton)	1kN=0.1T (1kilonewton=0.1ton)

Note: In everyday calculations, whole numbers are taken, e.g. 1kg = 9.8N (approx. 10N).

6. Cautions

Avoid over-range use: Tubular Force Gauges must be used within their measuring range to prevent damage to the spring's elastic potential energy by exceeding the range, which will not ensure the gauge's proper functioning and measurement accuracy, and may also pose a safety hazard when used beyond the range.

Calibrate before use: Before using the tube dynamometer, please make sure that the indicator line is aligned with the 0 position line in the vertical unloaded state, which will help to improve the accuracy of the measurement.

Storage: In order to maintain the performance and accuracy of the force gauge, it is recommended that it be stored in a dry environment, protected from heat and humidity.