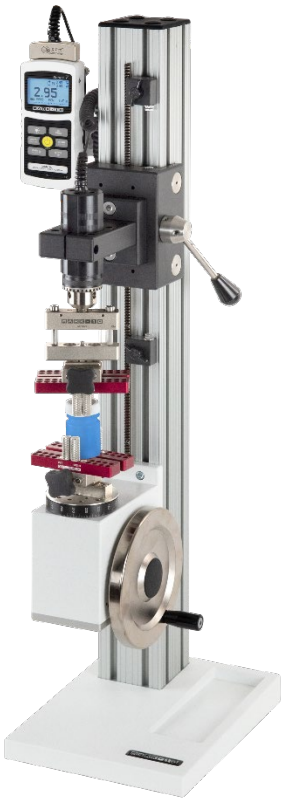


User's Guide





Thank you...

Thank you for purchasing a Mark-10 Series TS Torque Measurement Test Stand.

This user’s guide is provided for the following models:

TST
TSTH

With proper usage, we are confident that you will get many years of great service with this product. Mark-10 test stands are ruggedly built for many years of service in laboratory and industrial environments.

This User’s Guide provides setup, safety, and operation instructions. Dimensions and specifications are also provided. For additional information or answers to your questions, please do not hesitate to contact us. Our technical support and engineering teams are eager to assist you.

Note:
Except where otherwise indicated, references to “TST” refers to all models within the series.

Before use, each person who is to use the test stand should be fully trained in appropriate operation and safety procedures.

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1 LIST OF INCLUDED ITEMS



Qty.	Vertical models
1	Indicator mounting kit
4	Indicator mounting screws, #6-32 x 1/2
1	Base
1	Column cap with hardware
1	Allen wrench set
	Horizontal models
1	Indicator mounting kit
4	Indicator mounting screws, #6-32 x 1/2
2	Mounting leg with hardware
2	Column cap with hardware
1	Allen wrench set

Additional optional items are available, such as a digital angle indicator, and column extensions

Optional digital angle indicator TST001*



Displays CW or CCW angle in 0.1° resolution for approximately 278 rotations, resettable with "zero" button. Accurate to $\pm 0.7^\circ$. Includes backlight. Three sets of mounting holes allow the indicator to be mounted perpendicular to, or parallel to the test stand column. It can also be repositioned along the column. Rugged aluminum housing.

* Must be ordered upfront or installed as a retrofit at the factory. Field retrofit is not possible

2 SETUP AND SAFETY

2.1 Unpacking and setting up

Carefully unpack the test stand from the box and inspect for any damage. Remove the foam from the middle portion of the test stand and remove the plywood caps by unscrewing the pair of screws at each end. Install the indicator mounting kit on the column. For the vertical models, install the base with four 5/16-18 x 1" screws and the top cap with four ribbed push-in rivets. For the horizontal models, install the two column caps with four ribbed push-in rivets per cap. Save all packaging materials for any future shipping.

2.2 Mounting

Place the stand on a clean, flat and level work area free from vibration.

For the vertical models, it is suggested to mount the stand to a work bench via screws fastened into the underside of the base. Failure to properly mount the test stand may make it more vulnerable to tipping, especially if a column extension is used, causing a hazardous situation.

2.3 Installing an Indicator with torque sensor

1. Once the test stand is in a stable and secure position, install an indicator via four thumb screws.
2. Install a torque sensor onto the slider bracket using the supplied hardware, and insert the Plug & Test connector into the indicator, as shown in the image below:



2.4 Safety / proper usage

Typical materials able to be tested include manufactured items such as springs, metals, plastics, electronic components, mechanical assemblies, packaging materials, and many others. Items that should not be tested include potentially flammable substances or products, items that can shatter in an unsafe manner, and any other components that can present an exceedingly hazardous situation when acted upon by torque.

When using a grip, ensure that it secures the sample in such a way that it is prevented from slipping out during a test, preventing a potential safety risk to the operator and others in the vicinity. If using a grip or fixture from a supplier other than Mark-10, ensure that it is constructed of suitably rugged materials and components.

3 OPERATION

3.1 Operational safety

The following safety checks and procedures should be performed before and during operation:

1. Always consider the characteristics of the sample being tested before initiating a test. A risk assessment should be carried out beforehand to ensure that all safety measures have been addressed and implemented.
2. Wear eye and face protection when testing, especially when testing brittle samples that have the potential to shatter under torque. Be aware of the dangers posed by potential energy that can accumulate in the sample during testing. Extra bodily protection should be worn if a destructive failure of a test sample is possible.
3. Keep away from moving parts of the test stand. Loose articles of clothing should not be worn. Long hair should be covered to avoid a hazardous situation.

4. In those applications where samples can shatter, or other applications that could lead to a hazardous situation, use of a machine guard is strongly recommended.

3.2 Operation

The slider's position is adjustable along the column in order to engage and disengage the test sample. Move the slider lever clockwise to lower the slider's position closer to the torque plate. The slider may be locked into position by tightening the friction brake knob located on the opposite side of the slider.

Begin the test by turning the hand wheel in either direction. Turning the hand wheel in the clockwise direction will move the torque plate clockwise and vice versa. To maintain smooth operation of the hand wheel, avoid overloads. The angle dial is adjustable relative to the torque plate. Position the ring by hand to the desired angle.

4 MAINTENANCE AND SERVICE

The TST should be operated in a dry and clean area. Under these circumstances only a few periodic maintenance operations are required:

4.1 Check for loosened grips and attachments – daily

Check to ensure that the grips attached to the torque sensor and torque plate are firmly secured. Looseness could result in a potentially hazardous situation.

4.2 Check for loosened components – once per month

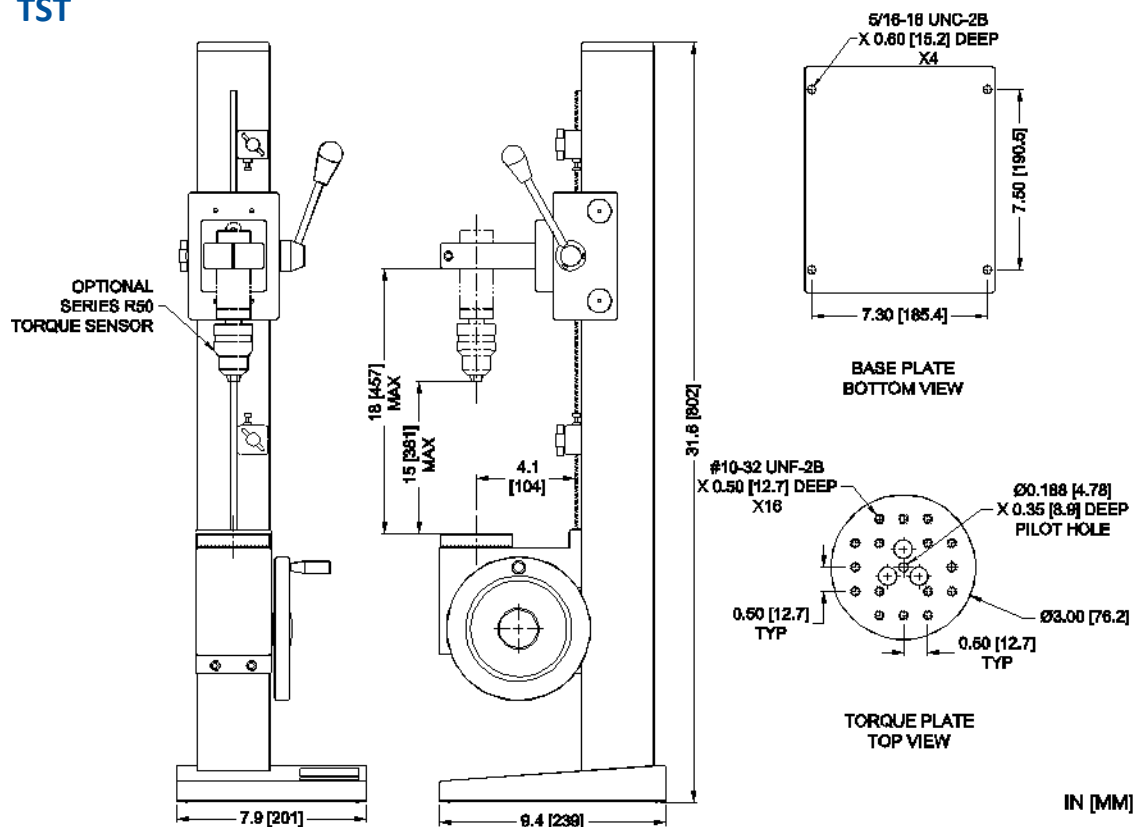
1. Remove the test sample from the test stand.
2. Attempt to loosen subcomponents of the test stand (ex. fasteners, brackets, etc). All components should be firmly attached. If any looseness is detected, stop using the test stand and contact Mark-10 or a distributor for instructions.

5 SPECIFICATIONS

Torque capacity:	100 lbFin [11.5 Nm]
Maximum angular travel:	No limit
Angular rate:	12°/wheel rev
Angle dial resolution:	2°
Maximum slider travel:	15.50" [394 mm]
Slider travel rate:	1.05" [26.6 mm] / lever revolution
Weight:	TST: 33 lb [15 kg], TSTH: 27 lb [12.3 kg]
Environmental conditions:	40 - 100°F [5 - 40°C], max. 93% humidity, non-condensing

6 DIMENSIONS

TST



TSTH

