

32-1047 REV 0

These compact and economical test stands are ideal for low force applications with relatively small sample sizes. The ES10 and ES20 produce both tensile and compressive force up to 100 lbf. Choose between lever operation for quick tests or hand wheel operation for better control of motion. Combine these test stands with Mark-10 digital force gauges and gripping fixtures to create complete testing solutions.

Specifications

Load capacity:	100 lbf [500 N]
Maximum travel:	≈9 in [228.6 mm], depending on gauge, gripping fixtures, and sample size
Loading method:	
ES10:	Lever
ES20:	Hand wheel
Travel rate:	
ES10:	1.05 in [26.7 mm] per lever rev.
ES20:	0.06 in [1.5 mm] per hand wheel rev.
Weight:	10 lb [4.5 kg]
Included accessories:	Force gauge mounting hardware
Warranty:	3 years (see individual statement for details)

Optional Equipment

Dial travel indicator ES001	1" displacement, 0.001" resolution. Mounts onto the test stand and can be repositioned.
Digital travel indicator ES002	1" displacement, 0.0005" / 0.01 mm resolution. Includes zero and in/mm selector buttons. Mounts onto the test stand and can be repositioned.
Base plate 14-1068	Steel base plate has 25 #10-32 threaded holes for fixture mounting

>> Dial travel indicator



>> Digital travel indicator

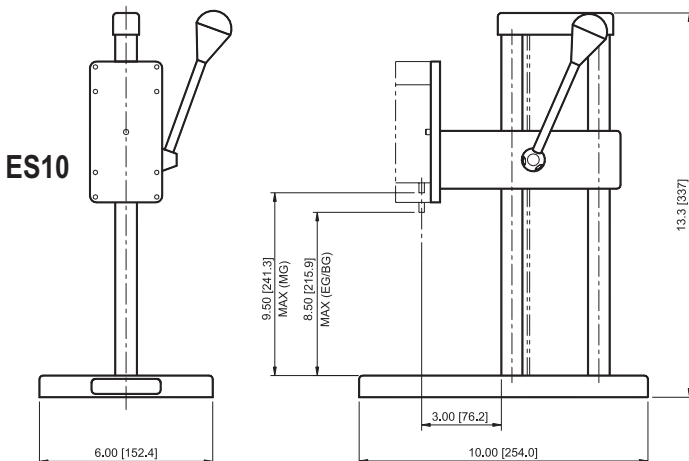


>> Base plate



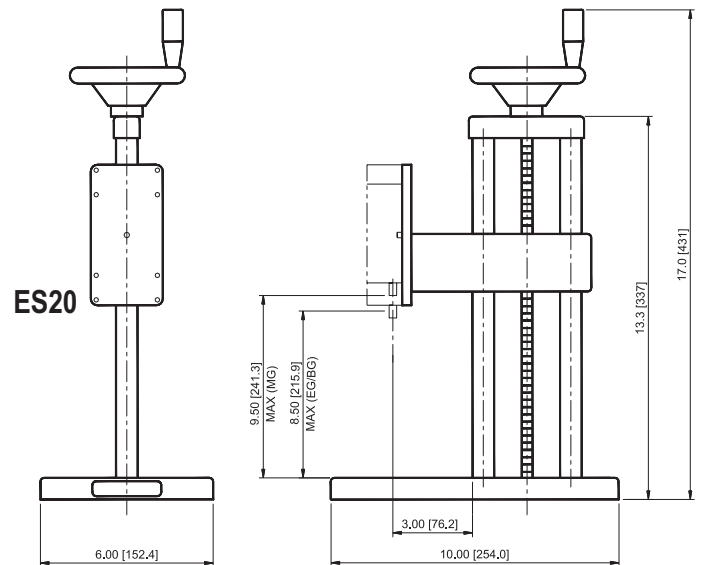
Dimensions

in [mm]



The ES20 is shown in a peel testing application with Series MG digital force gauge, and film & paper grips.

The ES10 is shown in a wire terminal pull-off test, with Series MG digital force gauge, wire terminal grip, and dual roller grip.



Ordering Information

Model No.	Description
ES10	Test stand, lever-operated, 100 lbf
ES20	Test stand, hand wheel-operated, 100 lbf
ES001	Dial Indicator Kit for ES10 / ES20, 1" travel
ES002	Digital Indicator Kit for ES10 / ES20, 1" travel
14-1068	Base plate, tapped holes

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The compact ES05 test stand is designed for compression testing of up to 30 lbF (150 N). Typical applications include switch contact activation testing, small spring testing, peel testing, and more. A spring-loaded lever allows for repeatable testing with up to 1.5" (38 mm) displacement. The lever mechanism can be repositioned along the length of the column, allowing this stand to be used for various sized samples. The ES05's small footprint makes it particularly well suited to crowded workbenches, while its low weight makes it very portable for field auditing or for quick transportation to other testing areas.

Specifications

Load capacity:	30 lbF [150 N]
Loading method:	Spring-loaded lever
Maximum travel:	1.5 in [38 mm]
Included accessories:	Force gauge mounting hardware
Warranty:	3 years (see individual statement for details)

Optional Equipment

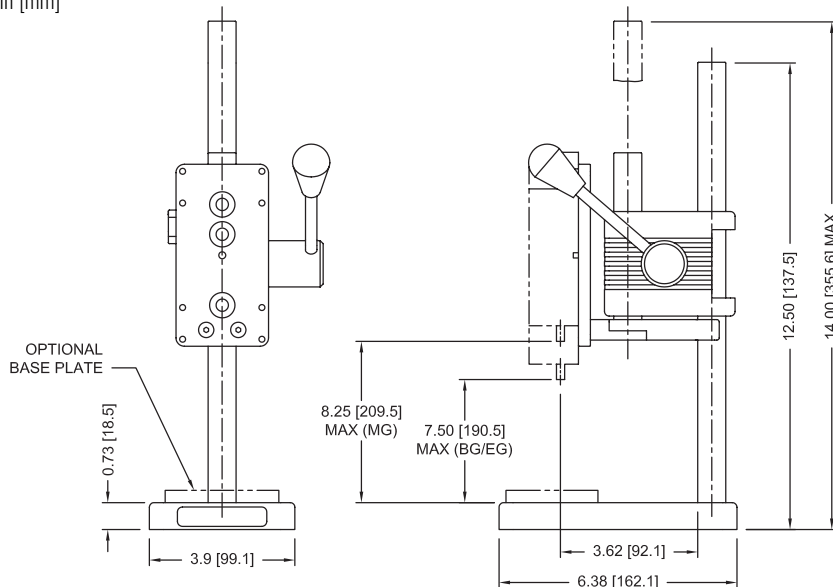
Base plate 14-1068	Steel base plate has 25 #10-32 threaded holes for fixture mounting
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>> Base plate



Dimensions

in [mm]



The ES05 is shown in a switch contact activation test, with Series BG digital force gauge, extension rod and rubber tip attachment.

Ordering Information

Model No.	Description
ES05	Test stand, lever-operated, 30 lbF
14-1068	Base plate, tapped holes



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Specifications subject to change without prior notice

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The ES30 is a versatile test stand ideal for many compression and tensile testing applications. It can accept a wide variety of sample shapes and sizes and can be configured in many positions due to modular design. Convenient side-mounted hand wheel operation enables the user to easily and accurately test up to 200 lbf of force, with repeatable results. Use the ES30 with any Mark-10 force gauge and force gripping fixtures to create a complete testing solution.

Specifications

Load capacity:	200 lbf [1,000 N]
Maximum travel:	≈ 13 in [330 mm], depending on gauge, gripping fixtures, and sample size
Loading method:	Side-mounted hand wheel
Travel rate:	0.05 in [1.27 mm] per rev.
Weight:	17 lb [7.7 kg]
Included accessories:	Extension rod, small hook, medium hook, #10-32 coupler, compression plate, force gauge mounting hardware
Warranty:	3 years (see individual statement for further details)

Optional Equipment

Digital travel display ESM001	6 in [150 mm] travel, 0.0005 in [0.01 mm] resolution, 0.001 in [0.03 mm] accuracy, SPC output for automated data collection.
Column extensions	Available in 6 in, 12 in, and 24 in, and custom lengths

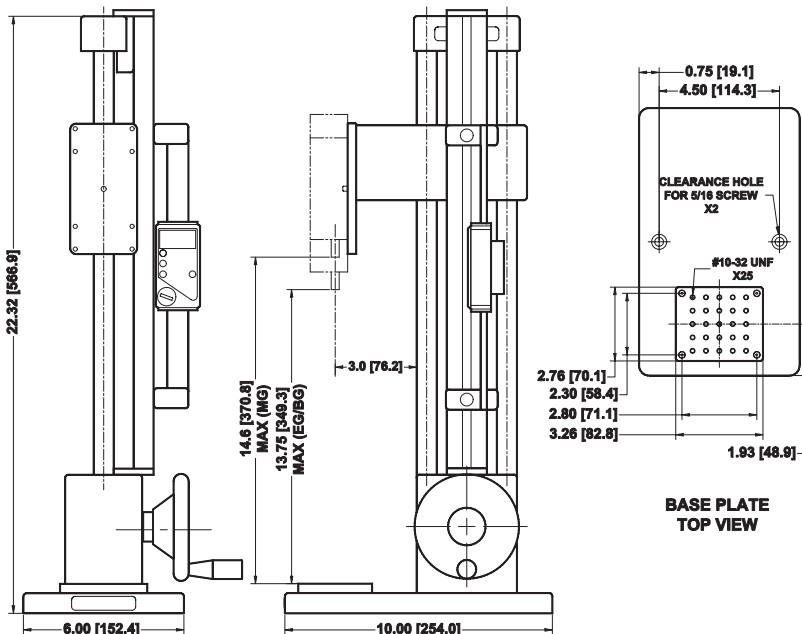
>> Digital travel display



The ES30 is shown in a typical compression testing application, with Series EG digital force gauge, digital travel display, and attachments

Dimensions

in [mm]



Ordering Information

Model No.	Description
ES30	Test stand, 200 lbf
ESM001	Digital travel display
ESM003-1	Column extension for ESM/ES30, 6"
ESM003-2	Column extension for ESM/ES30, 12"
ESM003-3	Column extension for ESM/ES30, 24"

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The ESM is a versatile and economical motorized test stand for most compression and tensile testing applications up to 200 lbf. It can accept a wide variety of sample shapes and sizes and can be configured in many positions due to modular design. Speed is adjustable and remote control operation provides added safety during testing. Other features include a manual fine adjustment knob and a stepper motor that prevents speed variation with load, making testing more precise and repeatable. Use any Mark-10 force gauge and force gripping fixtures to create a complete testing solution.

Specifications

Load capacity:	200 lbf [1,000 N]
Maximum travel:	≈13 in [330 mm], depending on gauge, gripping fixtures, and sample size
Speed range:	0.5 - 13 in/min [13 - 300 mm/min]
Speed setting accuracy:	±5%, ±0% variation with load
Weight (w/o optional equipment):	
Test stand:	20.0 lb [9.1 kg]
Control unit:	2.7 lb [1.2 kg]
Power:	Universal input 80-240 VAC, 50/60 Hz
Included accessories:	Extension rod, small hook, medium hook, #10-32 coupler, compression plate, force gauge mounting hardware, tool kit
Warranty:	3 years (see individual statement for further details)

Optional Equipment

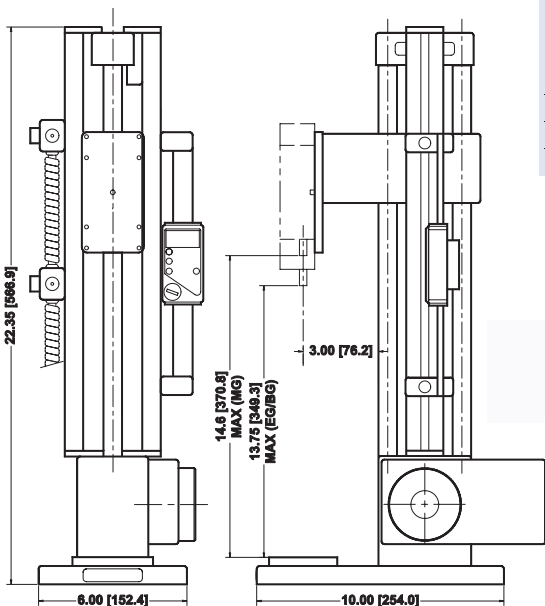
Digital travel display ESM001	6 in [150 mm] travel, 0.0005 in [0.01 mm] resolution, 0.001 in [0.03 mm] accuracy, SPC output for data collection.
Limit switch kit ESM002	Set of adjustable upper and lower solid state limit switches.
Overload protection module 11-1042	Protects the force gauge against overloads during motorized tests, adjustable from 10 - 150% of gauge's full capacity. Compatible with force gauges equipped with analog output.
Set point cable 09-1090	Stops test stand travel at programmable high and low set points for tension and compression forces. Compatible with force gauges with set point outputs.
Column extensions	Available in 6 in, 12 in, 24 in, and custom lengths



The ESM is shown in a typical tensile testing application, with Series BG digital force gauge, digital travel display, limit switch kit, and wedge grips

Dimensions

in [mm]



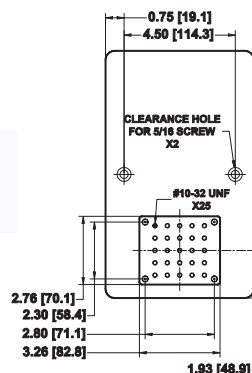
Ordering Information

Model No.	Description
ESM	Motorized force measurement test stand, 200 lbf 110V
ESME	Motorized force measurement test stand, 200 lbf, 220V
ESM001	Digital travel display
ESM002	Limit switch kit for ESM
ESM003-1	Column extension for ESM/ES30, 6"
ESM003-2	Column extension for ESM/ES30, 12"
ESM003-3	Column extension for ESM/ES30, 24"
11-1042	Overload protection module, gauge to ESM
09-1090	Set point cable, gauge to ESM

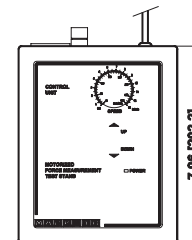
>> Limit switch kit



>> Digital travel display



BASE PLATE



CONTROL UNIT



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Specifications subject to change without prior notice

The ESM-DC is an advanced motorized test stand offering all the mechanical specifications of the ESM. The stand has a capacity of 200 lbf, and is configurable in many positions to accommodate a wide variety of sample shapes and sizes. A manual fine adjustment knob allows for fine positioning of the crosshead position, and a stepper motor prevents speed variation with load, making testing more precise and repeatable.

The ESM-DC's controller adds a significant amount of sophistication, including an extended speed range, PC control capability, program-mable cycling, auto return, overload protection, and other features.

Features / Specifications

Maximum force: 200 lb [1kN]
Maximum travel: 13" [330 mm]
Speed range: 0.02 - 36 in/min [0.5 - 900 mm/min]
Speed accuracy: $\pm 0.2\%$ of setting, $\pm 0\%$ variation with load
Universal power supply: 80-250 VAC
Remote controller
Manual travel knob
Mounting holes for bench mounting
Removable base plate with 25 #10-32 threaded holes for fixture mounting
Base may be removed for alternative mounting
CE mark



The ESM-DC is shown in a typical tensile testing application, with Series BG digital force gauge, digital travel display, limit switch kit, and wedge grips

Optional Hardware

■ Digital travel display

6" [150 mm] travel, 0.0005" [0.01 mm] resolution, 0.001" [0.03 mm] accuracy, SPC output for automated data collection. For output of travel data to a PC, the following items are required: 09-1066 cable and MRS100A communication adapter.

■ Limit switch kit

Set of upper and lower adjustable solid state limit switches. Repeatable to within 0.001" [0.03 mm].

■ Column extensions

Available in 6 in (150 mm), 12 in (300 mm), 24 in (600 mm), and custom lengths

■ Multi-function cable, BG gauge to controller

Connects a Series BG force gauge to the controller. This single cable is used to transmit set points, overload signals, and force data.

■ Serial cable, controller to PC

Bi-directional communication with a PC for computer control. Also sends force data from the controller to a PC.

■ Serial cable, gauge to PC

Connects a Series BG force gauge with a PC. Bypasses the controller.

» Limit switch kit



» Digital travel display



Controller Features

■ Computer Control

An RS-232 port is provided to interface with a PC. The ESM-DC accepts a number of commands pertaining to test stand motion and force gauge functions*. The following additional items are required for PC control:

- Series BG force gauge
- 09-1056 serial cable (see Optional Equipment)
- 09-1143 multi-function cable (see Optional Equipment)

■ Overload Protection

Protects a force gauge against overload (requires a Series BG force gauge and 09-1143 multi-function cable). The user programs the desired percentage of full scale of the gauge. Adjustable analog output voltage setting allows the test stand to interface with virtually any force gauge with analog output.

■ Auto-return

The crosshead moves to a limit switch or force set point (requires a Series BG force gauge), stops, and reverses direction at maximum speed to the other limit switch or set point.

■ Cycling / Dwell Time

The crosshead moves up and down between limit switches or force set points (requires a Series BG force gauge). Configurable up to 99,999 cycles. Dwell time allows the operator to program the amount of time, up to 9,999.9 seconds, in 0.1 second intervals, for which the crosshead pauses at limits.

■ Programmable UP / DOWN Button Functions

UP and DOWN button operation can be configured in three user-configurable modes: Maintained: a short push produces continuous motion until STOP is pressed, Momentary: crosshead moves only while the button is pressed, and Auto: short push produces maintained motion, while holding down the button will produce momentary motion.

■ Independent Up and Down Speeds

Programmable independent speeds for up and down directions

■ Selectable Speed Units of Measurement (in/min & mm/min)

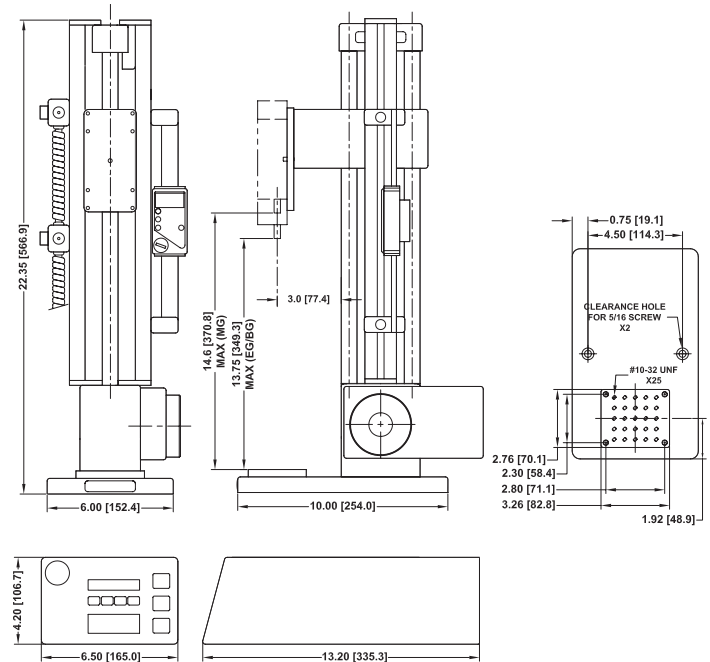
■ Password Protection

Prevents unauthorized changes to test parameters

* Contains no integrated travel measurement. Travel information available only through the external ESM001 digital travel display, requiring an additional serial port on the PC. For an integrated solution with full PC control, including travel distance, see test stand model ESM301.

Dimensions

in [mm]



Ordering Information

Model No.	Description
ESM-DC	Motorized test stand, 110 V
ESM-DCE	Motorized test stand, 220 V
ESM001	Digital travel display
ESM002	Limit switch kit
ESM003-1	Column extension, 6"
ESM003-2	Column extension, 12"
ESM003-3	Column extension, 24"
09-1143	Multi-function cable, gauge to controller
09-1056	Serial cable, controller to PC
09-1048A	Serial cable, force gauge to PC
09-1066	Cable, travel display Mitutoyo
MRS100A	Communication adapter, Mitutoyo to RS-232

The ESM-DC is supplied with a tool kit, extension rod, small hook, medium hook, #10-32 coupler, and 2" dia. compression plate.

The ESM300 is a highly configurable motorized test stand for tension and compression applications up to 300 lbf (1.5 kN). This tester introduces a unique concept in force testing: all major controller software features are optional and may be purchased at time of order or added by the user in the field at a later date. Such flexibility makes the ESM300 a highly versatile tester that can be as basic or advanced as required, from basic push/pull requirements to advanced sequences for demanding test procedures. When fully equipped, the stand has a class-leading speed range, programmable cycling sequences with dwell time at limits, auto-return, button control options, password protection, and more. An LCD with intuitive menu navigation and modular mechanical design round out the exciting features of this motorized test stand.

Standard Features

Controller Features

- LCD display with UP, DOWN, STOP, and emergency stop buttons and soft keys
- Selectable speed units of measurement (in/min & mm/min)
- Configurable password prevents unwanted changes to test parameters

Test Frame Features

- Integrated travel limit switches
- Removable fixture mounting plate with matrix of threaded holes
- Stepper motor-driven, produces 0% speed variation with increasing load
- Mounting holes for bench mounting
- Unique mechanical design significantly reduces column bending

Optional Hardware Features

▶ Digital travel display

6" [150 mm] travel, 0.0005" [0.01 mm] resolution, SPC output for data collection.

■ Set point cable

Stops test stand travel or cycles between programmable high and low force set points. Compatible with Mark-10 force gauges with set point outputs only.

■ Overload protection module

Protects the force gauge against overloads, adjustable from 20 - 110% of gauge's full capacity. Compatible with Mark-10 force gauges equipped with analog output.

■ Column extensions

Available in 6" (150 mm), 12" (300 mm), 24" (600 mm), and custom lengths



The ESM300 is shown in a typical tensile testing application, with Series BG digital force gauge, digital travel display, and parallel jaw grips



Optional digital travel display

Optional Controller Features

Any of the below option packages may be purchased at time of order or may be added in the field at a later date by entering an activation code.

■ Auto-return

The crosshead moves to a limit switch or force set point (requires a force gauge with set point outputs), stops, and reverses direction at full speed to the other limit switch or set point.

■ Cycling / Dwell Time

The crosshead to move up and down between limit switches or force set points (requires a force gauge with set point outputs). Configurable up to 99,999 cycles. Dwell time allows the operator to program the length of time, up to 9,999.9 seconds, in 0.1 second intervals, for which the crosshead pauses at limits.

■ Programmable Button Functions

Expands UP and DOWN button operation to three user-configurable modes:

1. Maintained (standard): a short push produces continuous motion until STOP is pressed
2. Momentary: crosshead moves only while the button is pressed
3. Auto: short push produces maintained motion, while holding the button down will produce momentary motion

■ Independent Up and Down Speeds

Configurable speeds for up and down directions

■ Low Speed Extended Range

Extends the speed range to 0.02 - 13 in/min (0.5 - 330 mm/min)

■ High Speed Extended Range

Extends the speed range to 0.5 - 45 in/min (13 - 1100 mm/min)

■ Complete Speed Range

Extends the speed range to 0.02 - 45 in/min (0.5 - 1100 mm/min)

■ Complete Options Package

Includes all the above options



Digital controller contains a backlit LCD screen with menu choices for ease of setup and operation

Specifications

Load capacity	300 lbf [1.5 kN] 200 lbf [1 kN]
Up to 24 in/min (610 mm/min) > 24 in/min (> 610 mm/min)	
Standard speed range	0.5-13 in/min [13-330 mm/min]
Maximum travel	12.5 [317 mm]
Speed setting accuracy	±0.2%
Speed variation with load	±0% [Stepper motor driven]
Limit switch repeatability	0.001 in [0.03 mm]
Power	Universal input 80-240 VAC, 50/60 Hz
Weight (without options)	32 lbs [14.5 kg]
Included accessories:	Extension rod, small hook, medium hook, #10-32 coupler, compression plate, force gauge mounting hardware, tool kit

Ordering Information

Model No.	Description
Hardware	
ESM300	Motorized test stand, 110 V
ESM300E	Motorized test stand, 220 V
ESM300-001	Digital travel display, 6" x 0.0005 (150 mm x 0.01)
ESM300-002-1	Column extension, 6"
ESM300-002-2	Column extension, 12"
ESM300-002-3	Column extension, 24"
09-1090	Set point cable
11-1042	Overload protection module
Controller Options	
CF001	Auto return
CF002	Cycling / dwell time
CF003	Programmable button functions
CF004	Independent up and down speeds
CF005-1	Low speed range extension
CF005-2	High speed range extension
CF005-3	Complete speed range
CF006	Complete options package (includes all above items)



The ESM301 is a highly configurable motorized test stand for tension and compression testing applications up to 300 lb (1.5 kN). The stand can be controlled from the front panel or via a computer and is fully compatible with Nexygen™ TCD software. The ESM301 is engineered on a unique modular platform, allowing for “build-your-own” configurability. Features can be ordered individually at time of order or activated in the field. Integrated travel indication, overload protection, and a host of programmable parameters makes the ESM301 quite sophisticated, while its intuitive menu structure allows for quick, simple setup and operation. A password can be programmed to prevent unauthorized changes. With a rugged and modular design, the ESM301 is a compelling solution for applications in laboratory and production environments.

Standard Features

- LCD display with UP, DOWN, STOP, and emergency stop buttons and soft keys
- Selectable speed units of measurement (in/min & mm/min)
- Password protection of test parameters, to prevent unauthorized changes
- Integrated travel limit switches
- Removable fixture mounting plate with matrix of threaded holes
- Stepper motor-driven, produces 0% speed variation with load
- Mounting holes for bench mounting
- Unique mechanical design significantly reduces column bending

The ESM301 is shown in a typical configuration with Series BG digital force gauge and G1008 film & paper grips



Optional integrated travel indication



Digital controller contains a backlit LCD screen with menu choices for ease of setup and operation

Optional Hardware Features

- **Multi-function cable, BG gauge to controller**
Connects a Series BG force gauge to the controller. This single cable is used to transmit set points, overload signals, and force data.
- **Serial cable, controller to PC**
Sends force and travel data on a single cable via RS-232 to a PC.
- **Column extensions**
Available in 6” (150 mm), 12” (300 mm), 24” (600 mm), and custom lengths
- **Bench mounting kit**
Facilitates safe mounting to a work bench. Consists of a set of mounting adapters, and four sets of hardware with Allen key to accommodate surfaces of various thickness.

Optional Controller Features

The below option packages may be purchased at time of order or may be added in the field through a code activation process.

■ Computer Control

A bi-directional RS-232 port is provided to interface with a PC. Users can write their own custom program or control the stand via a PC using Nexygen™ TCD software. Requires a Series BG force gauge, 09-1056 serial cable, 09-1143 multi-function cable, ESM301-001 travel indication, and EF011 programmable travel limits.

■ Travel Indication*

Travel is indicated on the front panel, and an RS-232 port is supplied. Position indication is provided via an internal linear scale, producing significantly higher accuracy than with conventional rotary encoder-based designs. Backlash and nonlinearity are virtually eliminated.

■ Programmable Travel Limits

The ESM301 can stop at or cycle between programmable upper and lower travel distances. Requires ESM301-001 integrated travel indication option .

■ Overload Protection

Protects a force gauge against overload (requires the 09-1143 multi-function cable). The user programs the desired percentage of full scale of the gauge. Adjustable analog output voltage setting allows the ESM301 to interface with virtually any force gauge with analog output.

■ Auto-return

The crosshead moves to a limit switch, force (requires a Series BG force gauge), or travel position (requires EF011 programmable travel limits), stops, and reverses direction at full speed to the other limit switch, force, or travel position.

■ Cycling / Dwell Time

Same as Auto-return, but with the ability to program the number of cycles up to 99,999 cycles. Dwell time allows the operator to program the length of time, up to 9,999.9 seconds, in 0.1 second intervals, for which the crosshead pauses between cycles. Independent up and down speeds may be programmed (requires EF013).

■ Programmable Button Functions

Expands UP and DOWN button operation to three user-configurable modes:

1. Maintained (standard): short push produces continuous motion until STOP is pressed
2. Momentary: crosshead moves only while the button is pressed
3. Auto: short push produces maintained motion, while holding the button down will produce momentary motion

■ Independent Up and Down Speeds

Configurable speeds for up and down directions

■ Low Speed Extended Range

Extends the speed range to 0.02 - 13 in/min (0.5 - 330 mm/min)

■ High Speed Extended Range

Extends the speed range to 0.5 - 45 in/min (13 - 1100 mm/min)

* Factory installation only. Also available as a retrofit.

** If force data output is required, both the 09-1143 and 09-1056 cables are required.

*** Requires: Series BG force gauge, 09-1056 serial cable, 09-1143 multi-function cable, ESM301-001 travel indication, and EF011 programmable travel limits.

**** Requires ESM301-001 integrated travel indication option

Specifications

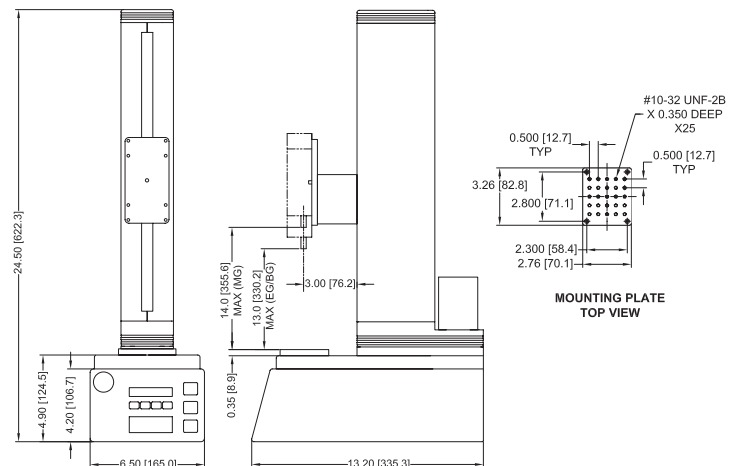
Load capacity 300 lbf [1.5 kN] 200 lbf [1 kN]	Up to 24 in/min (610 mm/min) > 24 in/min (> 610 mm/min)
Standard speed range	0.5-13 in/min [13-330 mm/min]
Maximum travel	11.5 [292 mm]
Speed setting accuracy	±0.2%
Speed variation with load	±0% [Stepper motor driven]
Limit switch repeatability	0.001 in [0.03 mm]
Travel accuracy	±0.002 in [0.05 mm]
Travel repeatability	0.001 in [0.02 mm]
Travel resolution	0.001 in / 0.02 mm
Power	Universal input 80-240 VAC, 50/60 Hz
Weight (without options)	34 lbs [15.6 kg]
Included accessories:	Ext. rod, small hook, medium hook, #10-32 coupler, compression plate, gauge mounting hardware, tool kit

Ordering Information

ESM301	Motorized test stand, 110 V
ESM301E	Motorized test stand, 220 V
ESM301-001 *	Travel indication with RS-232 output*
ESM301-002-1 / -2 / -3	Column extension, 6" / 12" / 24"
ESM301-003	Bench mounting kit
09-1143**	Multi-function cable, BG to ESM301**
09-1056**	Serial cable, ESM301 to PC**

Controller Options

EF010***	Computer control via RS-232***
EF011****	Programmable travel limits****
EF012	Integrated overload protection (requires 09-1143 cable)
EF013	Auto return
EF014	Cycling / dwell time
EF015	Programmable button functions
EF016	Independent up and down speeds
EF017	Extended speed range, low
EF018	Extended speed range, high



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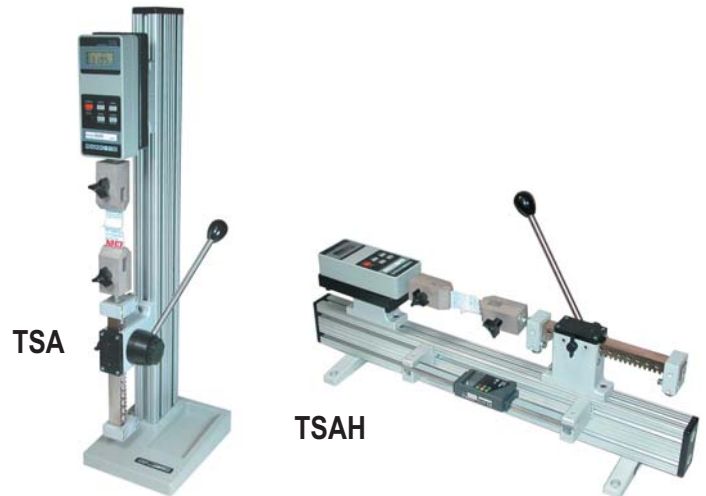
The lever operated TSA is ideal for quick-action testing of up to 750 lbf of tensile or compressive force. Made of rugged components, this test stand is durable enough for the factory floor, yet precise enough for laboratory environments. The loading lever can be positioned in 30° increments and the adjustable precision ground rack and pinion mechanism assures smooth, precise motion through 6 in of travel. The test stand includes adjustable travel stops and a frictional low force brake. It is available in vertical and horizontal orientations. Use this test stand with Mark-10 force gauges and gripping fixtures to create a complete push/pull testing system.

Specifications

Load capacity:	750 lbf [3750 N]
Maximum travel:	
With travel stops:	2.75 in [69.9 mm]
Without travel stops:	6 in [152.4 mm]
Loading method:	Rack and pinion, lever can be positioned in 30° increments
Travel rate:	3 in [76.2 mm] per lever rev.
Weight:	
TSA	16 lb [7.3 kg]
TSAH	13 lb [5.9 kg]
Included accessories:	Tool kit, medium hook, large hook, compression plate, force gauge mounting hardware
Warranty	3 years (see individual statement for further details)

Optional Equipment

Digital travel display TSA001	6 in [150 mm] travel, 0.0005 in [0.01 mm] resolution, 0.001 in [0.03 mm] accuracy, SPC output for data collection.
Horizontal / wall mounting kit TSA002	Converts the TSA to a TSAH
BGI mounting kit AC1004	If a BGI indicator with remote sensor is used with the TSA/TSAH, the BGI can be securely mounted to the side of the column with this adapter



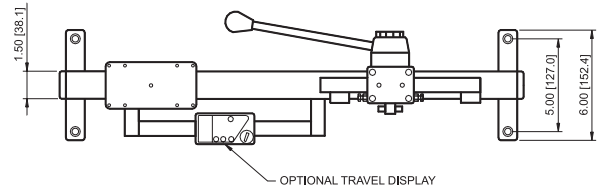
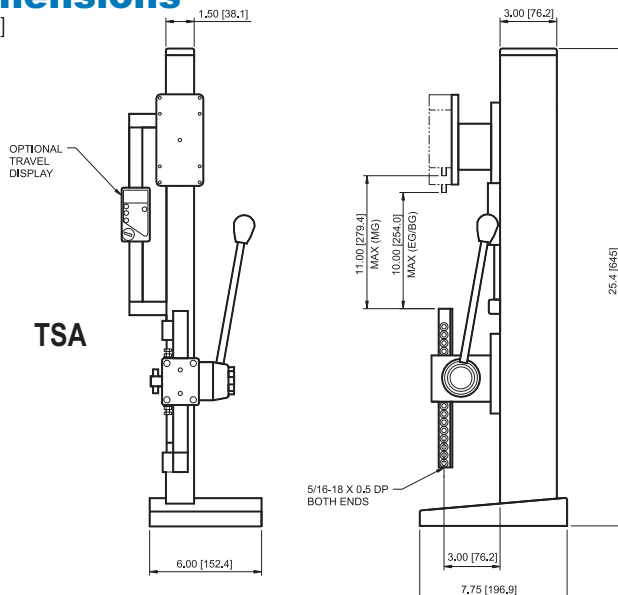
The TSA and TSAH are shown testing the peel force of a sample, with a Series EG digital force gauge, and film & paper grips

>> Digital travel display

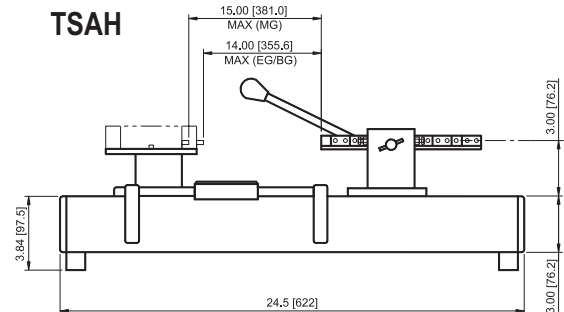


Dimensions

in [mm]



TSAH



Ordering Information

Model No.	Description
TSA	Test stand, lever-operated, 750 lbf, vertical
TSAH	Test stand, lever-operated, 750 lbf, horizontal
TSA001	Digital travel display for TSA/TSAH
TSA002	Horizontal / wall mounting kit
AC1004	Mounting kit, BGI to TSA/TSAH

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The economical and compact lever-operated TSB test stand is ideal for quick-action tensile testing and compression testing of up to 100 lbF of force. Constructed of rugged components, this test stand is durable enough for the factory floor, yet precise enough for laboratory environments.

Specifications

Load capacity:	100 lbF [500 N]
Maximum travel:	
With travel stops:	2.75 in [69.9 mm]
Without travel stops:	6 in [152.4 mm]
Loading Method:	Rack and pinion, lever can be positioned in 30° increments
Travel rate:	3 in [76.2 mm] per lever rev.
Weight:	12 lb [5.4 kg]
Included accessories:	Force gauge mounting hardware
Warranty:	3 years (see individual statement for further details)

Optional Equipment

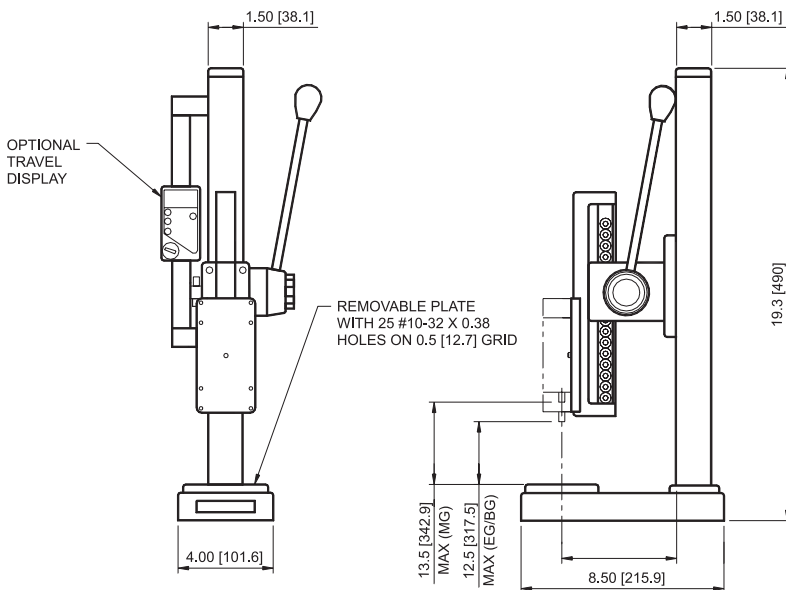
Digital travel display TSB001	6 in [150 mm] travel, 0.0005 in [0.01 mm] resolution, 0.001 in [0.03 mm] accuracy, SPC output for automated data collection.
Horizontal / wall mounting kit TSB002	Convert the TSB to a horizontal configuration
Travel stops kit TSB003	Pair of adjustable travel stops for setting travel limits during testing

>> Digital travel display



Dimensions

in [mm]



The TSB is shown in a wire terminal pull testing application, with a Series BG force gauge, wire terminal grip, and dual roller grip.

Ordering Information

Model No.	Description
TSB	Test stand, lever operated, 100 lbF, vertical
TSB001	Digital travel display
TSB002	Horizontal / wall mounting kit
TSB003	Travel stops kit

32-1053 REV 1

The TSC test stand is ruggedly built for testing up to 1,000 lbF of compression or tension force. A large hand wheel requires little effort, even at high loads, and a precision Acme screw and nut ensures smooth operation over time. The stand includes a loading table with threaded holes for fixture or grip mounting and a solid metal base (TSC) contains a storage pocket and holes for bench mounting. Available in vertical and horizontal configurations.

Specifications

Load capacity:	1000 lb [5000 N]
Maximum travel:	3.50 in [89 mm]
Loading method:	Hand wheel
Travel rate:	0.1 in [2.5 mm] per hand wheel rev.
Weight:	
TSC	25 lb [11.4 kg]
TSCH	20 lb [9.0 kg]
Included accessories:	Tool kit, medium hook, large hook, 2 in dia. compression plate, force gauge mounting hardware
Warranty:	3 years (see individual statement for further details)

Optional Equipment

Digital travel display TSC001	6 in [150 mm] travel, 0.0005 in [0.01 mm] resolution, 0.001 in [0.03 mm] accuracy, SPC output for automated data collection.
Horizontal / wall mounting kit TSA002	Converts the TSC to a TSCH (consists of two legs that support the column)
BGI mounting kit AC1004	If a BGI indicator with remote sensor is used with the TSC/TSCH, the BGI can be securely mounted to the side of the column with this adapter



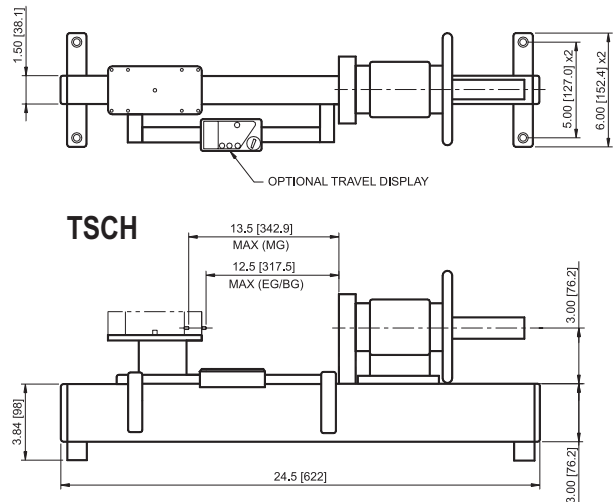
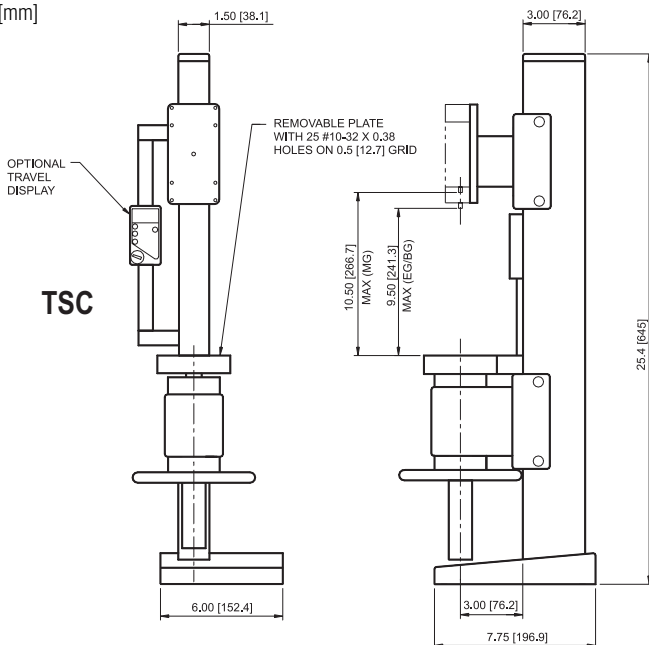
The TSC and TSCH are shown in a tension spring testing application, with Series BG digital force gauge, digital travel display, and hooks

>> Digital travel display



Dimensions

in [mm]



Ordering Information

Model No.	Description
TSC	Test stand, hand wheel-operated, 1000 lbF, vertical
TSCH	Test stand, hand wheel-operated, 1000 lbF, horizontal
TSC001	Digital travel display for TSC/TSCH
TSA002	Horizontal / wall mounting kit for TSC
AC1004	Mounting kit, BGI to test stand

32-1054 REV 0

The ESMH is a 50 lbf capacity horizontal test stand designed for tension, compression, and friction testing. A smooth top surface makes this tester particularly well suited for coefficient of friction testing. Other typical applications include the testing of sealed pouches, fabrics, tubing, sutures, and many other items in virtually every industry.

The tester features integrated limit switches for repetitive testing or other tests where travel limits are required. Modular design accommodates a wide variety of test sample shapes and sizes. The ESMH uses a remote control unit, distancing the operator from the test for added safety and convenience. Use this test stand with a Mark-10 force gauge and grips to create a complete testing solution.

Specifications

Load capacity:	50 lbf [250 N]
Maximum travel:	≈ 13 in [330 mm], depending on gauge, gripping fixtures, and sample size
Speed range:	0.2 - 50 in/min [5 - 1270 mm/min]
Speed setting accuracy:	± 5%, ± 0% variation with load
Weight (w/o optional equipment):	
Test stand:	17.0 lb [7.7 kg]
Control unit:	2.7 lb [1.2 kg]
Power:	Universal input 80-240 VAC, 50/60 Hz
Included accessories:	Extension rod, small hook, medium hook, #10-32 coupler, compression plate, force gauge mounting hardware, tool kit
Warranty:	3 years (see individual statement for further details)



The ESMH is shown in a peel testing application, with Series BG digital force gauge, digital travel display, and pneumatic film & paper grips

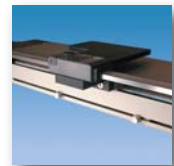
Optional Equipment

Digital travel display ESMH001	6 in [150 mm] travel, 0.0005 in [0.01 mm] resolution, 0.001 in [0.03 mm] accuracy, SPC output for automated data collection.
Overload Protection Module 11-1042	Protects the force gauge against overloads during motorized tests, adjustable from 10 - 150% of gauge's full capacity. Compatible with force gauges with analog output.
Set Point Cable 09-1090	Stops test stand travel at programmable high and low set points for tension and compression forces. Compatible with force gauges with set points outputs.

>> Digital travel display

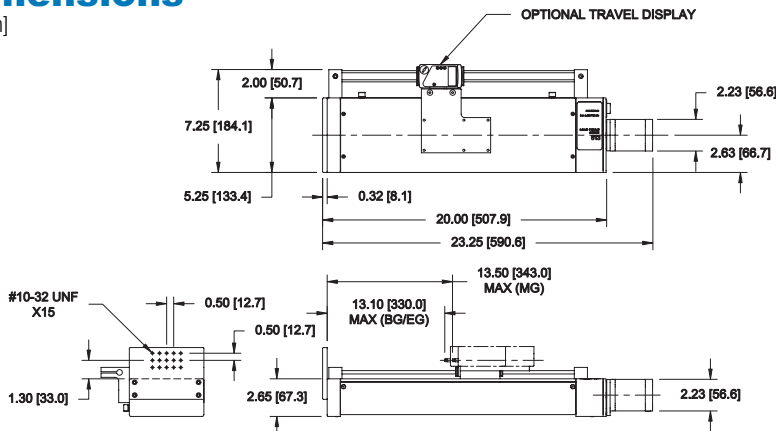


>> Adjustable limit switches



Dimensions

in [mm]



Ordering Information

Model No.	Description
ESMH	Motorized force measurement test stand, 110V
ESMHE	Motorized force measurement test stand, 220V
ESMH001	Digital travel display
11-1042	Overload protection module, gauge to ESMH
09-1090	Set point cable, gauge to ESMH

The ESMH-DC is an advanced motorized test stand offering all the mechanical specifications of the ESMH. This horizontal test stand, with a capacity of 50 lbF, is designed for tension, compression, and friction testing. A smooth top surface makes this tester particularly well suited for coefficient of friction testing. Other typical applications include the testing of sealed pouches, fabrics, tubing, sutures, and many other items in virtually every industry. The tester features integrated limit switches for repetitive testing or other tests where travel limits are required. Modular design accommodates a wide variety of test sample shapes and sizes.

The ESMH-DC's controller adds a significant amount of sophistication, including an extended speed range, PC control capability, programmable cycling, auto return, overload protection, and other features.



The ESMH-DC is shown in a peel testing application, with Series BG digital force gauge, digital travel display, and pneumatic film & paper grips

Features / Specifications

Maximum force: 50 lb [250 N]
Maximum travel: 13" [330 mm], 12" [305 mm] w/optional travel display
Speed range: 0.2 - 50 in/min [5 - 1270 mm/min] (extensions available)
Speed accuracy: $\pm 0.2\%$ of setting, $\pm 0\%$ variation with load
Limit switch repeatability: $\pm 0.001"$ [0.03 mm]
Universal power supply: 80-250 VAC
Remote controller
Mounting holes for bench mounting
Removable loading plate with 25 #10-32 threaded holes for fixture mounting
CE mark

Optional Hardware

■ Digital travel display

12" [300 mm] travel, 0.0005" [0.01 mm] resolution, 0.001" [0.03 mm] accuracy, SPC output for automated data collection. For output of travel data to a PC, the following items are required: 09-1066 cable and MRS100A communication adapter.

■ Multi-function cable, BG gauge to controller

Connects a Series BG force gauge to the controller. This single cable is used to transmit set points, overload signals, and force data.

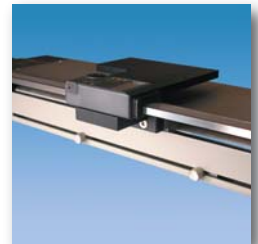
■ Serial cable, controller to PC

Bi-directional communication with a PC for computer control. Also sends force data from the controller to a PC.

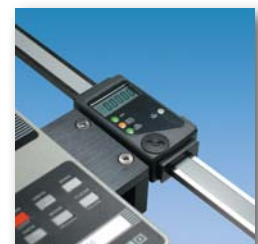
■ Serial cable, gauge to PC

Connects a Series BG force gauge with a PC. Bypasses the controller.

» Adjustable limit switches



» Digital travel display



Optional Controller Features

Any of the below option packages may be purchased at time of order or may be added in the field at a later date by entering an activation code.

■ Computer Control

An RS-232 port is provided to interface with a PC. The ESMH-DC accepts a number of commands pertaining to test stand motion and force gauge functions*. The following additional items are required for PC control:

- Series BG force gauge
- 09-1056 serial cable (see Optional Equipment)
- 09-1143 multi-function cable (see Optional Equipment)

■ Overload Protection

Protects a force gauge against overload (requires a Series BG force gauge and 09-1143 multi-function cable). The user programs the desired percentage of full scale of the gauge. Adjustable analog output voltage setting allows the test stand to interface with virtually any force gauge with analog output.

■ Auto-return

The crosshead moves to a limit switch or force set point (requires a Series BG force gauge), stops, and reverses direction at maximum speed to the other limit switch or set point.

■ Cycling / Dwell Time

The crosshead moves up and down between limit switches or force set points (requires a Series BG force gauge). Configurable up to 99,999 cycles. Dwell time allows the operator to program the amount of time, up to 9,999.9 seconds, in 0.1 second intervals, for which the crosshead pauses at limits.

■ Programmable LEFT / RIGHT Button Functions

LEFT and RIGHT button operation can be configured in three user-configurable modes: Maintained: a short push produces continuous motion until STOP is pressed, Momentary: crosshead moves only while the button is pressed, and Auto: short push produces maintained motion, while holding down the button will produce momentary motion.

■ Independent Left and Right Speeds

Programmable independent speeds for left and right directions

■ Selectable Speed Units of Measurement (in/min & mm/min)

■ Password Protection

Prevents unauthorized changes to test parameters

* Contains no integrated travel measurement. Travel information available only through the external ESMH001 digital travel display, requiring an additional serial port on the PC. For an integrated solution with full PC control, including travel distance, see test stand model ESM301.

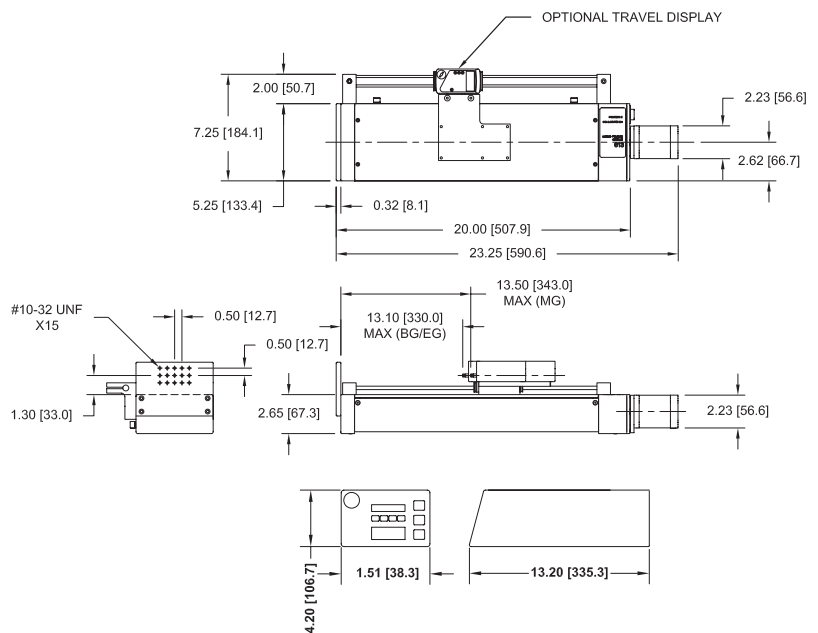
Ordering Information

Model No.	Description
ESMH-DC	Motorized test stand, 110 V
ESMH-DCE	Motorized test stand, 220 V
ESMH001	Digital travel display
09-1143	Multi-function cable, gauge to controller
09-1056	Serial cable, controller to PC
09-1048A	Serial cable, force gauge to PC
09-1066	Cable, travel display Mitutoyo
MRS100A	Communication adapter, Mitutoyo to RS-232

The ESMH-DC is supplied with a small hook, medium hook, 2" diameter compression plate, extension rod, and #10-32 coupler.

Dimensions

in [mm]



32-1055 REV 0

The TSF test stand is ideal for spring testing, destructive testing, product integrity testing, and other applications requiring up to 1,000 lbf (5,000 N) of push or pull force. The stand features a large side mounted hand wheel requiring minimal user effort and a rigid 3" x 3" column. A removable steel loading surface with threaded holes for fixture and grip mounting adds flexibility for many testing applications, and a solid metal base (TSF) contains a storage pocket and holes for bench mounting. Available in vertical and horizontal orientations.

Specifications

Load capacity:	1000 lbf [5000 N]
Maximum travel:	4.0 in [102 mm]
Loading method:	Side-mounted hand wheel
Travel rate:	0.013 in [0.34 mm] per wheel rev.
Weight:	
TSF	33 lb [14.5 kg]
TSFH	27 lb [12.3 kg]
Included accessories:	Tool kit, three hooks (small, medium, and large), 2" and 3" compression plates, two couplers (#10-32 and 5/16-18), force gauge mounting hardware
Warranty:	3 years (see individual statement for further details)

Optional Equipment

Digital travel display TSF001	6 in [150 mm] travel, 0.0005 in [0.01 mm] resolution, 0.001 in [0.03 mm] accuracy, SPC output for data collection.
Horizontal / wall mounting kit TSF002	Converts the TSF to a TSFH
BGI mounting kit AC1004	If a BGI indicator with remote sensor is used with the TSF/TSFH, the BGI can be securely mounted to the side of the column with this adapter

TSF



TSFH



The TSF is shown testing the peel force of a sample, with a Series CG digital force gauge and digital travel display

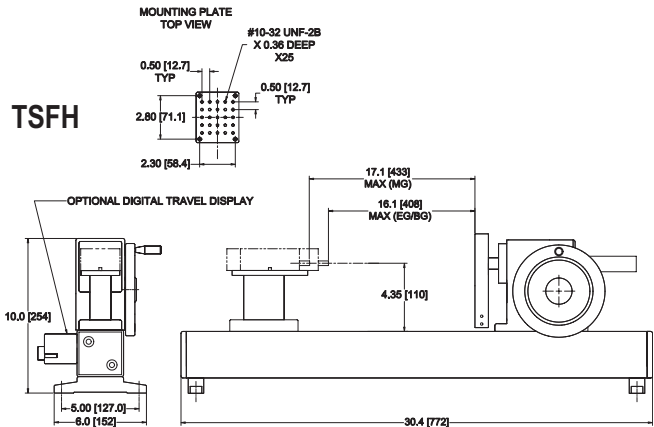
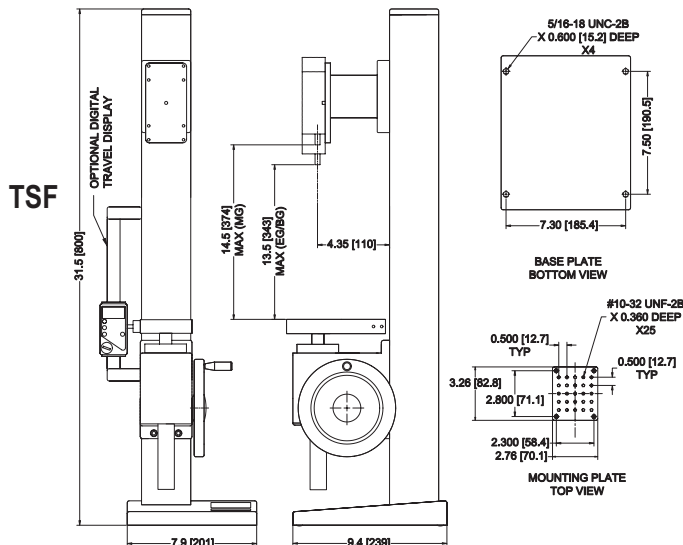
The TSFH is shown in a tensile test, with Series BG digital force gauge, film and paper grips, and digital travel display

>> Digital travel display



Dimensions

in [mm]



Ordering Information

Model No.	Description
TSF	Test stand, hand wheel-operated, 1000 lbf, vertical
TSFH	Test stand, hand wheel-operated, 1000 lbf, horizontal
TSF001	Digital travel display for TSF/TSFH
TSF002	Horizontal / wall mounting kit for TSF
AC1004	Mounting kit, BGI to test stand

The TSFM500 test stand is designed for compression and tension testing of springs, packaging, metals, fabrics, and other items requiring up to 500 lbF of force. Generous clearance and throat depth accommodate a broad range of sample shapes and sizes. The TSFM500's durable and rigid column minimizes bend, making it particularly well suited for precision spring testing.

Speed is adjustable and a remote control unit provides added safety during testing. Other features include a manual fine adjustment knob and a stepper motor that prevents speed variation with load, making testing precise and repeatable.

When used with a Series BG or CG force gauge, travel can be stopped at user-selectable force set points (requires optional set point cable). The optional overload protection module prevents force gauge overload.

Available in vertical and horizontal configurations.

Specifications

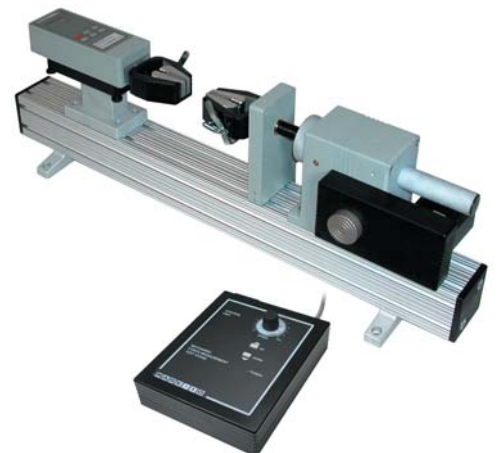
Load capacity:	500 lbF [2200 N]
Maximum travel:	4.0 in [102 mm]
Speed range:	0.2 - 5.5 in/min [5 - 140 mm/min]
Speed setting accuracy:	±5%, ±0% variation with load
Weight (w/o optional equipment):	
Test stand:	TSFM500: 36 lb [16.3 kg], TSFM500H: 30 lb [13.6]
Control unit:	2.7 lb [1.2 kg]
Power:	Universal input 80-240 VAC, 50/60 Hz
Included accessories:	Tool kit, three hooks (small, medium, and large), 2" and 3" compression plates, two couplers (#10-32 and 5/16-18), force gauge mounting hardware
Warranty:	3 years (see statement for further details)

Optional Equipment

Digital travel display TSF001	6 in [150 mm] travel, 0.0005 in [0.01 mm] resolution, 0.001 in [0.03 mm] accuracy, SPC output for data collection.
Limit switch kit TSFM002	Set of adjustable upper and lower solid state limit switches.
Overload protection module 11-1042	Protects the force gauge against overloads during motorized tests, adjustable from 10 - 150% of gauge's full capacity. Compatible with force gauges with analog output.
Set Point Cable 09-1090	Stops test stand travel at programmable high and low set points for tension and compression forces. Compatible with force gauges with set point outputs.



The TSFM500 is shown in a typical spring testing application, with Series CG digital force gauge and compression plate.



The TSFM500H is shown set up for a tensile test, with Series CG digital force gauge and wedge grips.

>> Digital travel display



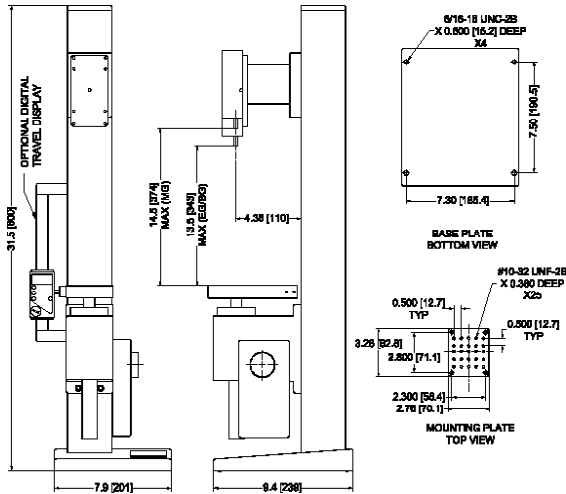
>> Limit switch kit



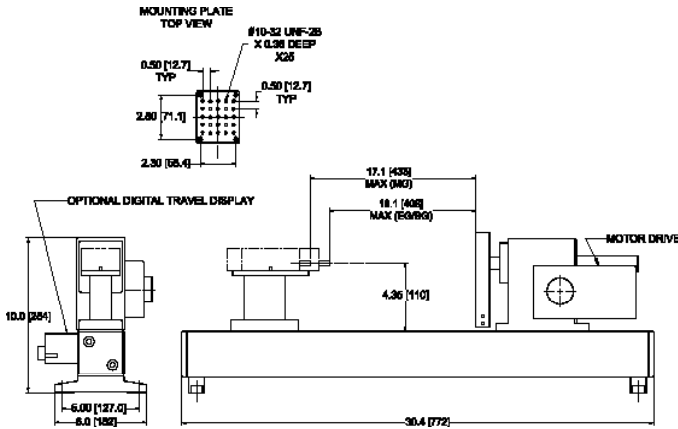
Dimensions

in [mm]

TSFM500



TSFM500H



Ordering Information

Model No.	Description
TSFM500	Test stand, motorized, 500 lbF, vertical, 110V
TSFM500E	Test stand, motorized, 500 lbF, vertical, 220V
TSFM500H	Test stand, motorized, 500 lbF, horizontal, 110V
TSFM500HE	Test stand, motorized, 500 lbF, horizontal, 220V
TSF001	Digital travel display
TSFM002	Limit switch kit
11-1042	Overload protection module, gauge to test stand
09-1090	Set point cable, gauge to test stand

The TSFM500-DC is an advanced motorized test stand offering all the mechanical specifications of the TSFM500. The test stand is designed for compression and tension testing of springs, packaging, metals, fabrics, and other items requiring up to 500 lbF of force. Generous clearance and throat depth accommodate a broad range of sample shapes and sizes. The TSFM500-DC's durable and rigid column minimizes bend, making it particularly well suited for precision spring testing. Other features include a manual fine adjustment knob and a stepper motor that prevents speed variation with load, making testing precise and repeatable.

The TSFM500-DC's controller adds a significant amount of sophistication, including an extended speed range, PC control capability, programmable cycling, auto return, overload protection, and other features.

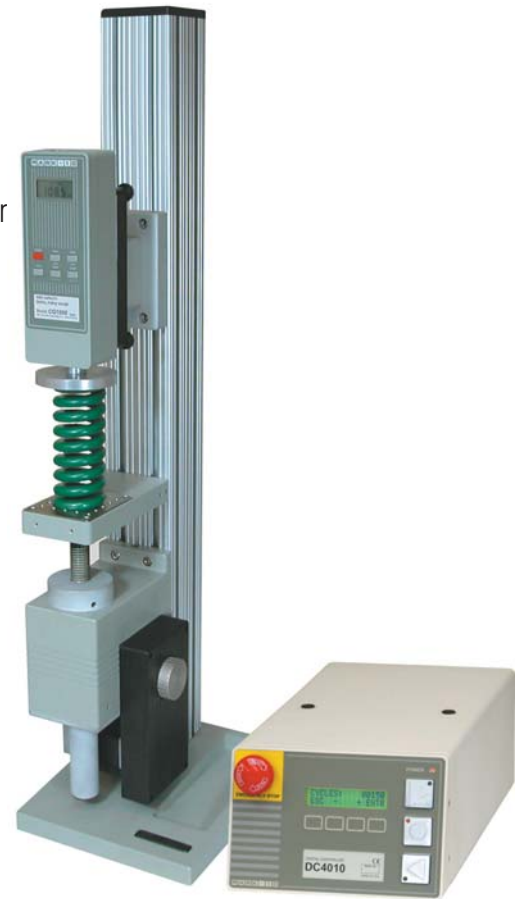
Features / Specifications

Maximum force: 500 lb [2200 N]
Maximum travel: 4" [102 mm]
Speed range: 0.01 - 6 in/min [0.2 - 150 mm/min]
Speed accuracy: $\pm 0.2\%$ of setting, $\pm 0\%$ variation with load
Limit switch repeatability: $\pm 0.001"$ [0.03 mm]
Universal power supply: 80-250 VAC
Remote controller
Mounting holes for bench mounting
Base may be removed for alternative mounting
Removable loading plate with 25 #10-32 threaded holes for fixture mounting
CE mark

» Digital travel display



» Limit switch kit



The TSFM500-DC is shown in a typical spring testing application, with Series CG digital force gauge and compression plate.

Optional Hardware Features

■ Digital travel display

6" [150 mm] travel, 0.0005" [0.01 mm] resolution, 0.001" [0.03 mm] accuracy, SPC output for automated data collection. For output of travel data to a PC, the following items are required: 09-1066 cable and MRS100A communication adapter.

■ Multi-function cable, BG gauge to controller

Connects a Series BG force gauge to the controller. This single cable is used to transmit set points, overload signals, and force data.

■ Serial cable, controller to PC

Bi-directional communication with a PC for computer control. Also sends force data from the controller to a PC.

■ Serial cable, gauge to PC

Connects a Series BG force gauge with a PC. Bypasses the controller.



The TSFM500H-DC is shown set up for a tensile test, with Series CG digital force gauge and wedge grips.

Controller Features

Computer Control

An RS-232 port is provided to interface with a PC. The TSFM500-DC accepts a number of commands pertaining to test stand motion and force gauge functions*. The following additional items are required for PC control:

- Series BG or CG force gauge
- 09-1056 serial cable (see Optional Equipment)
- 09-1143 multi-function cable (see Optional Equipment)

Overload Protection

Protects a force gauge against overload (requires a Series BG or CG force gauge and 09-1143 multi-function cable). The user programs the desired percentage of full scale of the gauge. Adjustable analog output voltage setting allows the test stand to interface with virtually any force gauge with analog output.

Auto-return

The crosshead moves to a limit switch or force set point (requires a Series BG or CG force gauge), stops, and reverses direction at maximum speed to the other limit switch or set point.

Cycling / Dwell Time

The crosshead moves up and down between limit switches or force set points (requires a Series BG or CG force gauge). Configurable up to 99,999 cycles. Dwell time allows the operator to program the amount of time, up to 9,999.9 seconds, in 0.1 second intervals, for which the crosshead pauses at limits.

Programmable UP / DOWN Button Functions

UP and DOWN button operation can be configured in three user-configurable modes: Maintained: a short push produces continuous motion until STOP is pressed, Momentary: crosshead moves only while the button is pressed, and Auto: short push produces maintained motion, while holding down the button will produce momentary motion.

Independent Up and Down Speeds

Programmable independent speeds for up and down directions

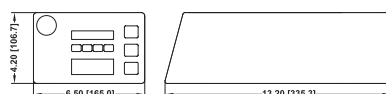
Selectable Speed Units of Measurement (in/min & mm/min)

Password Protection

Prevents unauthorized changes to test parameters

* Contains no integrated travel measurement. Travel information available only through the external TSF001 digital travel display, requiring an additional serial port on the PC. For an integrated solution with full PC control, including travel distance, see test stand model ESM301.

CONTROLLER



Ordering Information

Model No.	Description
TSFM500-DC*	Motorized test stand, vertical
TSFM500H-DC*	Motorized test stand, horizontal
TSF001	Digital travel display
TSFM002	Limit switch kit
09-1143	Multi-function cable, gauge to controller
09-1056	Serial cable, controller to PC
09-1048A	Serial cable, force gauge to PC
09-1066	Cable, travel display Mitutoyo
MRS100A	Communication adapter, Mitutoyo to RS-232
---	Column extensions

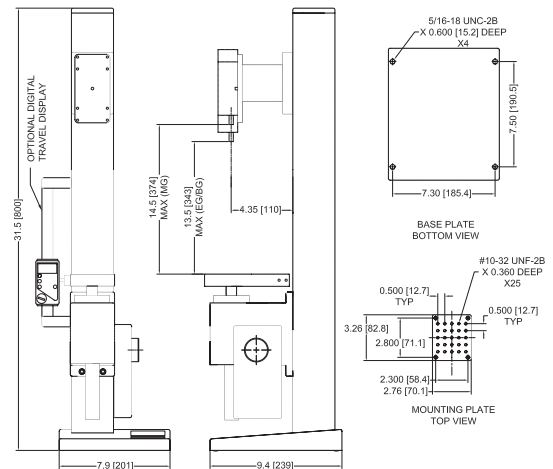
* For 220V operation add suffix E to model number. Ex: TSFM500-DCE

The TSFM500-DC / TSFM500H-DC is supplied with four hooks (small, medium, large, and extra large), 1/2-20F adapter plate, 2" and 3" compression plates, two couplers (#10-32 coupler and 5/16-18), and wrench set.

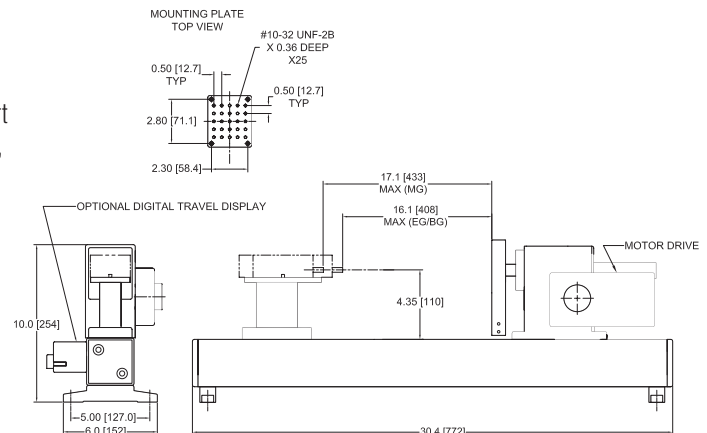
Dimensions

in [mm]

TSFM500-DC



TSFM500H-DC



These manually operated torque test stands are ideal for a wide variety of applications requiring up to 100 lbFin of torque, including closure torque testing, fastener torque testing, and more. The TST's modular design allows it to be configured for a variety of torque sensors and gripping fixtures. Ultra-smooth hand wheel operation ensures ease of use and a lever-operated slider with travel stops makes engaging and disengaging samples quick and efficient. The stand includes a torque loading plate with tapped holes for grip and custom fixture mounting and an angle dial indicator with 2° resolution and unlimited angular travel.

Specifications

Load capacity:	100 lbFin [11.3 Nm]
Maximum angular travel:	No limit
Angular rate:	12° per hand wheel revolution
Angle indicator resolution:	2°
Maximum slider travel:	15.5 in [394 mm]
Slider travel rate:	1.047 in [26.6 mm] per lever revolution
Weight (w/o optional equipment):	
TST:	33 lb [15 kg]
TSTH:	27 lb [12.3 kg]
Included accessories:	Tool kit
Warranty:	3 years (see individual statement for further details)

>> Rotating torque plate has a matrix of tapped holes for grip or fixture mounting



Optional Equipment

Digital angle indicator TST001	Displays cw or ccw angle with 0.1° resolution for approximately 278 rotations, resettable with zero button. Accurate to ±0.7°. 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.
Torque sensor	Series STJ sensors are recommended for use with Mark-10 torque test stands. A wide range of capacities is available. Mounts directly to the test stand. Other sensors and mounting adapters are available.
Force/torque indicator BGI	Displays reading from the torque sensor. Includes features such as data outputs, data averaging, set points, and more.
Torque gauge Series MGT	Basic torque gauge for various applications.
Grips	Various universal and application-specific grips are available

>> Digital angle indicator

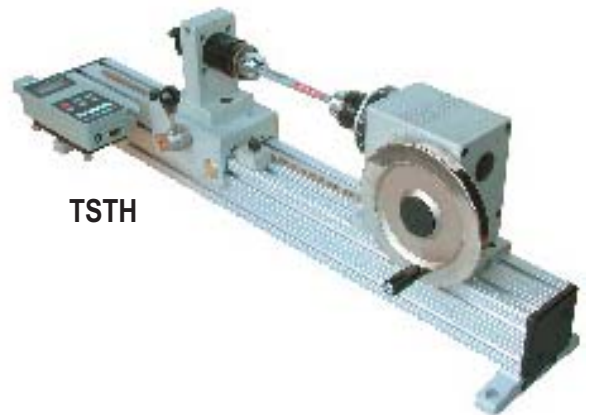


TST



The TST is shown set up for a test, with Series STJ torque sensor, BGI force/torque indicator, and G1022 Jacobs chuck grip

TSTH

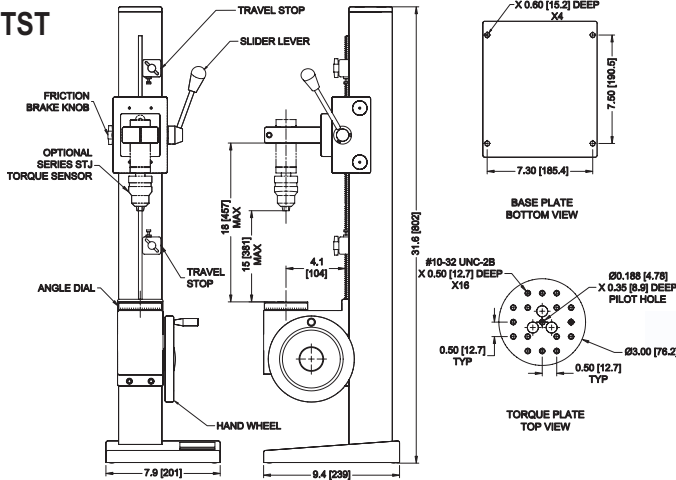


The TSTH is shown testing pen cap torque, with a Series STJ torque sensor, BGI force/torque indicator, and G1022 Jacobs chuck grip

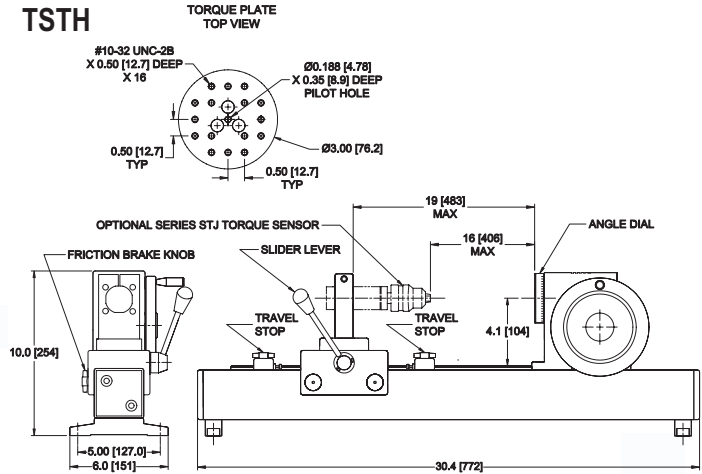
Dimensions

in [mm]

TST



TSTH



Ordering Information

Model No.	Description
TST	Torque test stand, vertical, lever-operated, 100 lbFin
TSTH	Torque test stand, horizontal, lever-operated, 100 lbFin
TST001	Digital angle display
STJ ¹	Universal torque sensor
BGI	Universal force/torque indicator
MGT ²	Digital torque gauge

1. Series STJ torque sensors are available in a wide range of capacities, from 10 ozin to 100 lbin (7 Ncm to 1150 Ncm), and mount to the TST / TSTH without extra adapters. Other sensors and mounting adapters are available.
2. Series MGT torque gauges are available in a wide range of capacities, from 10 ozin to 100 lbin (7 Ncm to 1150 Ncm), and mount to the TST / TSTH without extra adapters.

TST / TSTH test stands include a wrench set and AC1004 adjustable gauge mounting plate (for BGI or MGT).

The TSTM torque test stand is ideal for a wide variety of applications requiring up to 100 lbFin of torque, including closure torque testing, fastener torque testing, and more. Motorized clockwise and counterclockwise rotation allows for more precise and repeatable test results than with manual test stands. Modular design allows the stand to be configured for a variety of torque sensors and gripping fixtures while a lever-operated slider with travel stops makes engaging and disengaging samples quick and efficient. The stand includes a torque loading plate with tapped holes for grip and custom fixture mounting and an angle dial indicator with 2° resolution and unlimited angular travel.

Specifications

Load capacity:	100 lbFin [11.3 Nm]
Speed range:	0.3 - 8.6 RPM (4 - 52°/s)
Speed setting accuracy:	±5%, ±0% variation with load
Maximum angular travel:	No limit
Angular rate:	12° per hand wheel revolution
Angle indicator resolution:	2°
Maximum slider travel:	15.5 in [394 mm]
Slider travel rate:	1.047 in [26.6 mm] per lever revolution
Weight (w/o optional equipment):	
TSTM:	35.5 lb [16.1 kg]
TSTMH:	29.5 lb [13.4 kg]
Included accessories:	Wrench set
Warranty:	3 years (see individual statement for further details)

» Rotating torque plate has a matrix of tapped holes for grip or fixture mounting



Optional Equipment

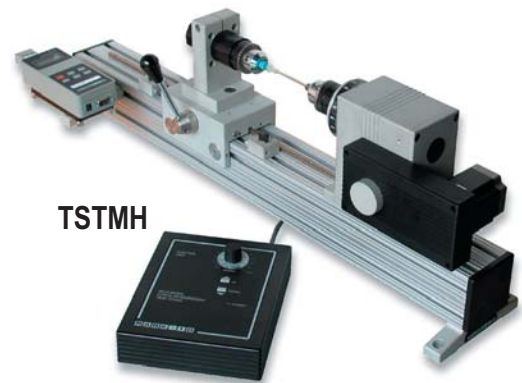
Digital angle indicator TST001	Displays cw or ccw angle with 0.1° resolution for approximately 278 rotations, resettable with zero button. Accurate to ±0.7°. Three sets of mounting holes allow the indicator to be mounted perpendicular to, or parallel to the test stand column. It can also be repositioned along the column.
Torque sensor	Series STJ sensors are recommended for use with Mark-10 torque test stands. A wide range of capacities is available. Mounts directly to the test stand. Other sensors and mounting adapters are available.
Force/torque indicator BGI	Displays reading from the torque sensor. Includes features such as data outputs, data averaging, set points, and more.
Torque gauge Series MGT	Basic torque gauge for various applications.
Overload protection module 11-1042	Protects the torque sensor against overloads during motorized tests, adjustable from 10 - 150% of sensor's full capacity. Compatible with the the BGI.
Set point cable 09-1090	Stops test stand travel at programmable high and low set points for clockwise and counterclockwise torque. Compatible with the BGI.
Grips	Various universal and application-specific grips are available

» Digital angle indicator



TSTM

The TSTM is shown in a cap torque test, with an STJ torque sensor, BGI force/torque indicator, and G1023 universal closure grip, and G1053 cap grip



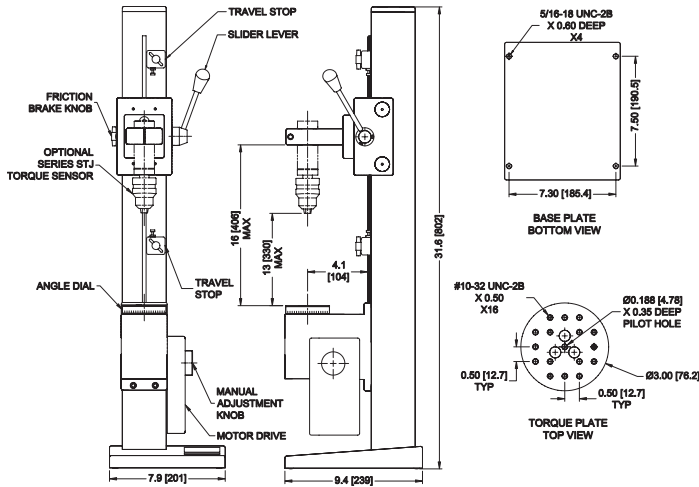
TSTMH

The TSTMH is shown in a pen cap torque test, with an STJ torque sensor, BGI force/torque indicator, and G1022 Jacobs chuck grip

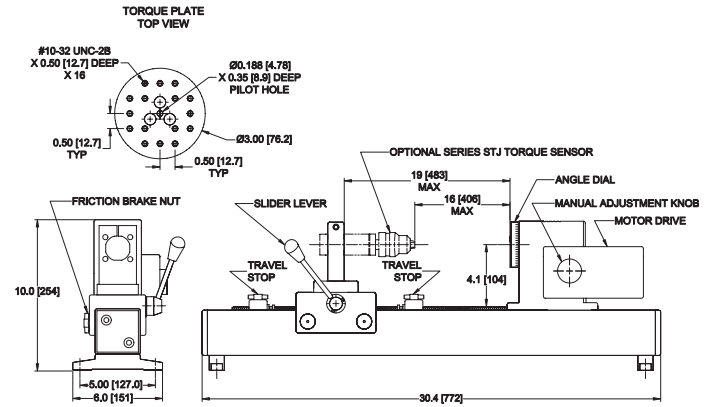
Dimensions

in [mm]

TSTM



TSTMH



Ordering Information

Model No.	Description
TSTM ¹	Torque test stand, motorized, 100 lbFin, vertical, 110V
TSTMH ¹	Torque test stand, motorized, 100 lbFin, horizontal, 110V
TST001	Digital angle indicator
STJ ²	Universal torque sensor
BGI	Universal force/torque indicator
MGT ³	Digital torque gauge
11-1042	Overload protection module, BGI to test stand
09-1090	Set point cable, BGI to test stand

TST / TSTH test stands include a wrench set and AC1004 adjustable gauge mounting plate (for BGI or MGT).

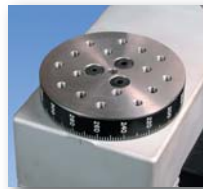
1. For 220V operation, add suffix E to the model number. Example: TSTME
2. Series STJ torque sensors are available in a wide range of capacities, from 10 ozin to 100 lbin (7 Ncm to 1150 Ncm), and mount to the TST / TSTH without extra adapters. Other sensors and mounting adapters are available.
3. Series MGT torque gauges are available in a wide range of capacities, from 10 ozin to 100 lbin (7 Ncm to 1150 Ncm), and mount to the TSTM / TSTMH without extra adapters.

The TSTM-DC is an advanced motorized torque test stand offering all the mechanical specifications of the TSTM. The test stand is designed for a wide variety of applications requiring up to 100 lbFin of torque, including closure torque testing, fastener torque testing, and more. Modular design allows the stand to be configured for a variety of torque sensors and gripping fixtures while a lever-operated slider with travel stops makes engaging and disengaging samples quick and efficient. The stand includes a torque loading plate with tapped holes for grip and fixture mounting. Stepper motor design eliminate speed variation with load.

The TSTM-DC's controller adds a significant amount of sophistication, including integrated angle display and output, programmable angle travel limits, an extended speed range, PC control capability, programmable cycling, auto return, overload protection, and other features.

Features / Specifications

Maximum torque: 100 lbFin [11.3 Nm]
Speed range: 0.01 - 15 RPM [0.05 - 90°/s]
Speed accuracy: ±0.2% of setting, ±0% variation with load
Integrated angle indication with programmable travel limits
Maximum programmable travel limits: ±999,999.9° / ±2,777.77 revolutions
Rotational travel accuracy: ±0.7°
Rotational travel repeatability: 0.1°
Rotational travel resolution: 0.1°
Universal power supply: 80-250 VAC
Mounting holes for bench mounting
Base may be removed for alternative mounting
Grip / fixture mounting plate with 25 #10-32 threaded holes
Slider travel rate: 1.047" [26.6 mm] / lever rev
CE mark



Rotating torque plate has a matrix of tapped holes for grip or fixture mounting



The TSTM-DC is shown in a cap torque test, with a Series STJ torque sensor, BGI force/torque indicator, and G1023 universal closure grip, and G1053 cap grip

Optional Hardware

■ Model BGI force/torque gauge

Universal indicator for Mark-10 force and torque remote sensors. Mounts directly to the test stand.

■ Series STJ torque sensor

Mounts directly to the test stand. Capacities available from 10 ozFin to 100 lbFin.

■ Multi-function cable, BGI gauge to controller

Connects a Model BGI gauge to the controller. This single cable is used to transmit set points, overload signals, and force data.

■ Serial cable, controller to PC

For communicating with a PC for computer control. Also used to send torque and angle data to a PC.

■ Serial cable, gauge to PC

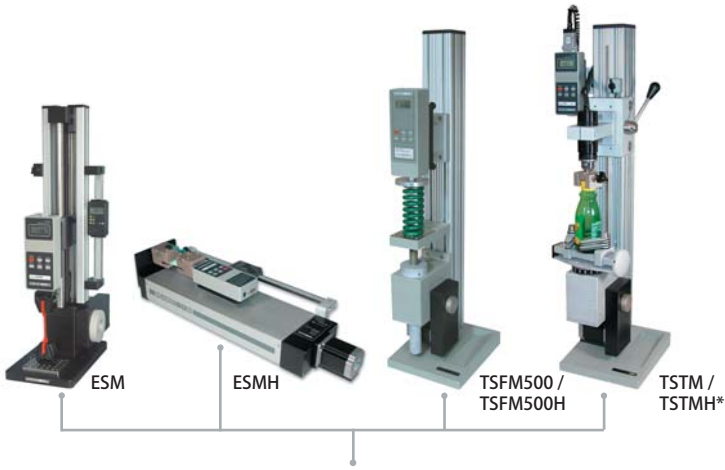
Connects a Model BGI gauge with a PC. Bypasses the controller.



The TSTMH-DC is shown in a pen cap torque test, with a Series STJ torque sensor, BGI force/torque indicator, and G1022 Jacobs chuck grip

32-1101 REV 0

Series DC advanced digital controllers are designed to expand the functionality and programmability of our range of motorized test stands, including models ESM, ESMH, TSFM500/TSFM500H, and TSTM/TSTMH. These controllers are available with new test stands or may be used with any existing Mark-10 motorized test stands. Simply unplug the old controller, and plug in the Series DC controller. These highly sophisticated controllers offer PC control capability, extended speed ranges, programmable cycling, auto return, overload protection, and more. Specifications vary between Series DC advanced motorized test stands. Refer to the respective data sheets for detailed information.



Ordering Information

Model No.	Description
DC4010	Advanced digital controller for ESMH, 110V
DC4020	Advanced digital controller for ESM, 110V
DC4030	Advanced digital controller for TSFM500, 110V
DC4040*	Advanced digital controller for TSTM, 110V
09-1143	Multi-function cable, gauge to controller
09-1056	Serial cable, controller to PC

* TSTM must be retrofitted with angle encoder for digital angle indication.

For 220V operation add suffix E to model number. Ex: DC4040E

Series DC controllers include a test stand connection cable and user's guide.

Features

■ Computer Control

A bi-directional RS-232 port is provided to interface with a PC. A command set is provided. The following are required with PC control:

- BG / CG / BGI gauge
- 09-1056 serial cable
- 09-1143 multi-function cable

■ Digital Angle Indication (DC4040)*

Rotational travel is indicated in degrees or revolutions, with RS-232 output of angle data.

■ Programmable Angle Limits (DC4040)*

The TSTM test stand can stop at or cycle between programmable upper and lower angle limits. Programmable in degrees or revolutions.

■ Overload Protection

Protects the gauge against overload (requires a BG / CG / BGI gauge and 09-1143 multi-function cable). The user programs the desired percentage of full scale of the gauge.

■ Auto-return

The test stand travels to a limit (limit switch, force set point, or travel set point, depending on the test stand), stops, and reverses direction at full speed to the other limit.

■ Cycling / Dwell Time

Same as Auto-return, but with the ability to program the number of cycles up to 99,999 cycles. Dwell time allows the operator to program the length of time, up to 9,999.9 seconds, in 0.1 second intervals, for which the test stand stops between cycles. Independent speeds may be programmed.

■ Programmable Button Functions

UP / CW and DOWN / CCW button operation can be configured in three user-configurable modes: Maintained: a short push produces continuous motion until STOP is pressed, Momentary: test stand moves only while the button is pressed, and Auto: short push produces maintained motion, while holding down the button will produce momentary motion.

■ Independent Up / CW and Down / CCW Speeds

Programmable independent speeds for up / clockwise and down / counterclockwise directions.

■ Selectable Speed Units of Measurement

in/min and mm/min for DC4010, DC4020, and DC4030 / RPM and deg/s for DC4040.

■ Password Protection

Prevents unauthorized changes to test parameters.

Dimensions

in [mm]

