

User's Guide

Thank you!

Thank you for purchasing a Mark-10 Series ES Force Measurement Test Stand. We are confident that you will get many years of great service from this product.

Mark-10 test stands are ruggedly built for many years of service in laboratory and industrial environments.

This User's Guide provides unpacking, setup, and operator instructions for the Model ES30 and Model ESM Force Measurement Test Stands. Dimensions and specifications are also provided. For additional information or answers to your questions, our technical support and engineering teams are eager to help you.

Thank you again for your purchase and happy testing!

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1 LIST OF INCLUDED ITEMS

| Quantity | Item |
|----------|--|
| 1 | Force measurement test stand |
| 1 | Remote console (ESM, only) |
| 1 | Power cord (ESM, only) |
| 4 | Thumb screws for gauge mounting |
| 1 | Mounting hole drill template |
| 1 | Accessories set (small hook, medium hook, 2" diameter compression plate, 2" extension rod, and #10-32 adapter) |

1.1 Optional items

| Part No. | Description |
|----------|--|
| ESM001 | Digital travel display kit |
| ESM002 | Limit switch kit (available for ESM, only) |

2 UNPACKING

1. Carefully unpack the stand and inspect for any damage. Inspect the contents to ensure that you have received a test stand complete with all accessories – see **List of Included Items** above.
2. Place the stand on a firm, flat and level working surface free from vibration to ensure accurate readings.
3. Save original packaging materials in case future transportation is required.

ESM

3 SAFETY TIPS

- Wear eye and face protection when testing. Although the ESM has relatively slow moving mechanisms, be aware of the dangers posed by potential energies that can accumulate in the sample during testing.
- Keep away from the moving parts of the test stand.
- Never operate the test stand if there is any visible damage to the power cord or the control unit. The ESM is powered by 110/220 volts that are present in both the power cord and the control unit. Any contact with this high voltage can cause serious injury or even death.
- Ensure that the control unit be kept away from water or any other electrically conductive liquids at all times.
- Make sure the electrical outlet powering the test stand has local earth ground (3-hole outlet).
- If it is necessary to remove the cover of the control unit or motor drive, always disconnect power before doing so. Use Mark-10 replacement parts, only, if any repairs are needed.

4 SETUP

Place the stand on a clean, flat and level work area that meets the criteria outlined in the work area safety instructions. For accurate readings, the area should be free of vibrations.

If desired, the stand can be mounted to the work area with two 5/16 screws. Included is a mounting hole drill template for quick setup. Before the stand can be mounted, the belt cover surrounding the fine adjustment knob on the right hand side of the stand has to be removed. Using a flat screwdriver, loosen the four captive screws and slide off the cover.

After the two 5/16 screws holding the stand are tight, place the belt cover back into place. While making sure that there is no contact with the fine adjustment knob, tighten the screws in the four corners.

With the base removed, the ESM can be easily integrated into large systems such as production lines. In general, the stand can be mounted on any angle (upside down, for example), although extra care should be taken during installation and operation.

After the stand is in a stable and secure position, install a force gauge with four thumb screws (provided). All Mark-10 gauges (except the Series CG) mount directly without adapters.

Plug the remote console cable into the 9-pin male connector located above the motor in the rear of the stand.

Plug the power cord into the remote console and the other side into a wall outlet.

Turn on the power with the switch located on the remote console by the power cord.

The test stand is now ready for operation.

5 OPERATION

Using the provided attachments, set up your sample, zero out the force gauge and, if applicable, connect it to a computer or printer. When the gauge and sample are ready for testing, use the remote console to operate the test stand. For fine adjustment or otherwise manual testing, turn the knob on the right hand side of the stand clockwise for compression, counter-clockwise for tension.

5.1 Optional Equipment

Limit Switches

Adjust the switches' vertical positions by loosening and re-tightening the wing screws. A limit condition is indicated by an amber light on the front surface of each sensor.

Upper limit switch – while a limit condition exists, the slider will not move up

Lower limit switch – while a limit condition exists, the slider will not move down

5.2 Using the Control Unit

UP ▲

Press and hold for tension, release button to stop motion. Located on the face of the Control Unit.

DOWN ▼

Press and hold for compression, release button to stop motion. Located on the face of the Control Unit.

SPEED CONTROL DIAL

Adjust speed by turning the dial 0.5 – 13 in/min [13 – 330 mm min]. Located on the face of the Control Unit.

POWER SWITCH

Use this switch, in the left rear of the Control Unit, to turn on and turnoff power to the test stand. Power indicated by an amber light on the face of the Control Unit.

POWER PLUG RECEPTACLE

Located in the left rear of the Control Unit. Plug the power cord in here.

CONTROL CABLE

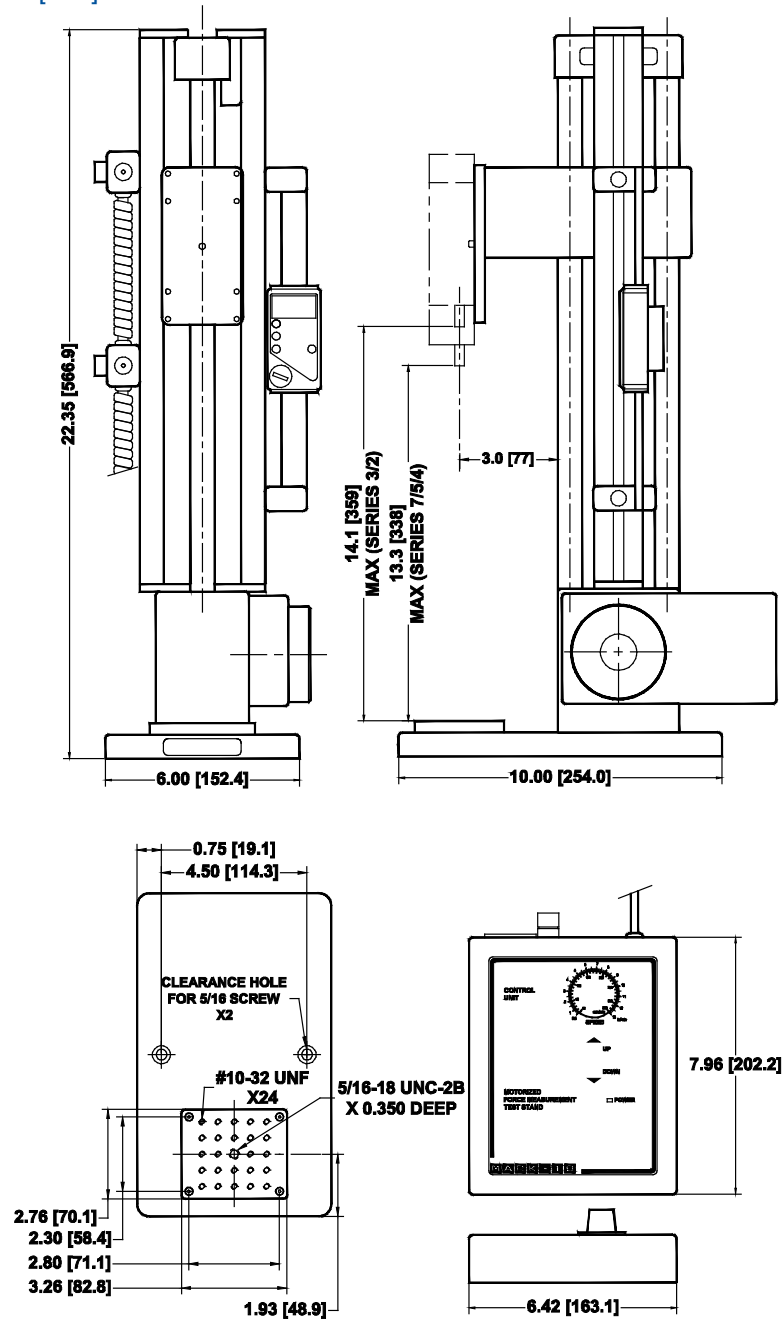
Plug this cable into the lower male connector on the test stand, adjacent to the motor.

6 SPECIFICATIONS

| | |
|---------------------------|--------------------------------------|
| Load capacity | 200 lbs [1000 N] |
| Speed range | 0.5-13 in/min [13-330 mm/min] |
| Maximum travel | 13.0 in [228.6 mm] |
| Maximum travel w/options | 11.75 in [298.45 mm] |
| Speed variation with load | ±0% (Stepper motor driven) |
| Speed accuracy | ±5% of setting |
| Overload protection | Max. 150% of full capacity |
| Power | Universal input 80-240 VAC, 50/60 Hz |
| Fuse type | 1.2 A, 250V, 3AG SLO BLO |
| Weight (test stand, only) | 20 lbs [9.1 kg] |
| Control unit weight | 2.7 lbs [1.2 kg] |

7 DIMENSIONS

in [mm]



ES30

8 OPERATION

Place the stand on a clean, flat, and level surface. It is recommended that the stand be mounted to the surface with two 5/16 screws. Use the mounting hole drill template for quick setup. Install a force gauge onto the gauge plate with four thumb screws. All Mark-10 force gauges (except the Series CG) mount directly to the stand without adapters.

Install the necessary attachments and make sure they are secure, safe to operate, and set up properly for your sample. Then zero out the force gauge and turn the hand wheel clockwise for compression or counter-clockwise for tension.

The base is removable so that the stand may be used as a component of a larger testing system. Proper care should be taken during installation to avoid injury.

To maintain smooth functioning of the stand, avoid overloads.

8.1 Optional Equipment

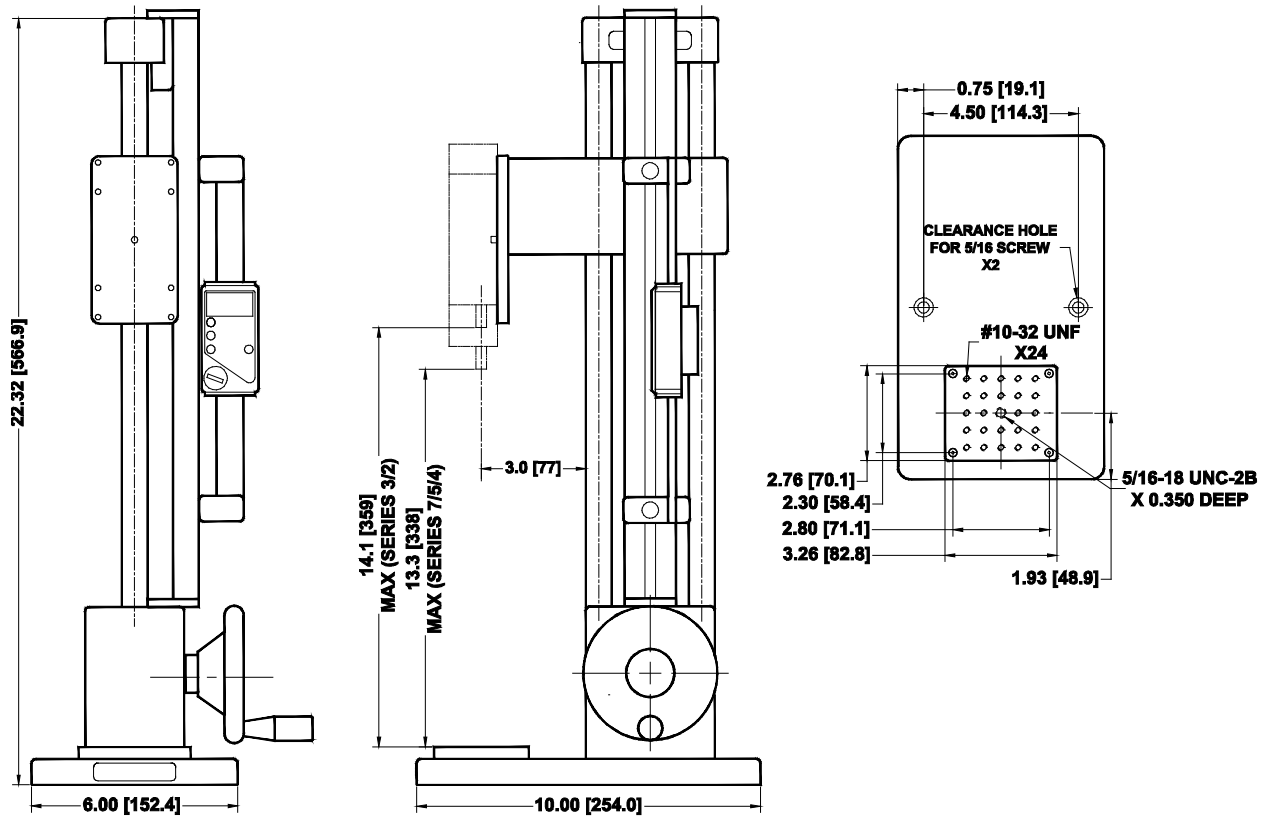
8.1.1 Digital Travel Display Kit

This position indicator covers 6" of travel per setting with a 5 digit display (0.0005" resolution) and a computer interface for automated data collection. It may be easily installed by the user.

8.1.2 Motor Drive Kit

The motor drive kit converts an ES30 manual test stand into an ESM motorized test stand. The kit consists of a motor block that replaces the hand wheel, a remote console and an optional limit switch kit. The speed is user selectable from 0.5 to 13 in/min [13 to 330 mm/min] and it is load independent. The system is overload regulated to 150% of full capacity.

9 DIMENSIONS



in [mm]

10 SPECIFICATIONS

| | |
|---------------------------|----------------------|
| Load capacity | 200 lbs. (1000 N) |
| Maximum travel | 13" (228.6 mm) |
| Loading method | Hand wheel |
| Travel rate | 0.05"/rev. (1.27 mm) |
| Weight (test stand, only) | 17 lbs (7.7 kg) |



Mark-10 Corporation has been an innovator in the force and torque measurement fields since 1979. We strive to achieve 100% customer satisfaction through excellence in product design, manufacturing and customer support. In addition to our standard line of products we can provide modifications and custom designs for OEM applications. Our engineering team is eager to satisfy any special requirements. Please contact us for further information or suggestions for improvement.



We make a measurable difference in force and torque measurement

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