

Force Plate

(Order Code NavForce)

The Force Plate can measure the forces developed during stepping, jumping, and other human-scale actions.

What is included with the Force Plate?

The Force Plate includes one pair of handles. They can be attached either to the top or the bottom of the Force Plate. Do not step on the Force Plate when the handles are attached.

Collecting Data with the Force Plate

Here is the general procedure to follow when using the Force Plate:

1. Connect the Force Plate to the LabNavigator.
2. The software will identify the Force Plate and load a default data-collection setup. You are now ready to collect data.

Zeroing

In some situations you may want to zero the Force Plate, because changing the physical orientation of the sensor will change the reading when no force is applied. After you have set up your experiment, use your data-collection software to zero the sensor. Also, in the case of experiments involving large impact forces, you may need to zero the reading *after* one impact has taken place.

Specifications

- Force range: –800 to +3500 N or –200 to +800 N, where positive value is a compression force
- Maximum non-damaging force: 4500 N (1000 lb) compression or 900 N (200 lb) pull evenly distributed
- Resolution: 1.2 N or 0.3 N
- Dimensions: 28 cm by 32 cm by 5 cm
- Calibration function:

slope (gain): 111N/V or 250 N/V

intercept (offset): –1000 N or –250 N

Force = $V_{\text{out}} * 1000\text{N/V} - 1000\text{N}$ (3500 N range)

Force = $V_{\text{out}} * 250\text{N/V} - 250\text{N}$ (800 N range)

This sensor is equipped with circuitry that supports auto-ID.

The Two Switch Settings: Resolution and Range

As with any instrument, there is a trade off between resolution (the smallest force that can be measured) and the range of forces that can be measured. In general, you should use the 800 N range if you can. If the forces exceed 800 N, you will need to use the 3500 N range. In normal use, the resolution with the different switch settings will be 1.2 N for the –1000/+3500 N range and 0.3 N for the –200/+800 N range.

The Handles—Pushes and Pulls

The Force Plate includes two handles with captive screws. You can attach the handles to either the top or bottom of the plate. With handles in place, you can support the unit by hand for pushing on a wall or other large object, or you can attach an optional second pair of handles for pulling experiments (order code NavForce-HAN). Note that the maximum force in extension is much less than the maximum force in compression.

Do I Need to Calibrate the Force Plate? No

You should not have to perform a new calibration when using the Force Plate. You can use the appropriate calibration file that is stored in your data-collection program from Forston Labs.

If you want to improve the calibration, it is easy to recalibrate following the same procedure used in calibrating most Forston Labs probes—a two-point calibration. One point is your zero, with no force

applied to the sensor. Set the Force Plate on a level surface. Tap the Meter Screen of the LabNavigator and choose the Calibrate Option. This option will give you step-by-step instructions on performing the calibration. Remove all force from the Force Plate. Enter **0** (zero) as the first known intensity. Now apply a known force to the Plate. The easiest way to do this is to put an object of known weight on the Plate. To obtain a good calibration, the weight should be at least 25% of the range used for the plate (200 or 800 N); for example, exercise weights could be used. Enter the weight of the mass (note: 1 kg weighs 9.8 N). Be careful not to exceed the selected range setting during the calibration.

Warranty

Forston Labs warrants this product to be free from defects in materials and workmanship for a period of one year from the date of shipment to the customer. This warranty does not cover damage to the product caused by abuse or improper use.



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