

ergo**FET**™

Dual Function Push/Pull Force Gauge



ergoFET User Guide

Congratulations on becoming the proud owner of the new ergoFET with wireless technology, Hoggan Scientific LLC renowned digital handheld push/pull force gauge. ergoFET is one of the latest in Hoggan's highly functional and innovative ergonomics product line.

The new ergoFET wireless allows testing to be done FREE of cords in conjunction with optional FDC FET Data Collection Software. This provides freedom and ease of use performing force measurement tests. Its compact, ergonomic design fits comfortably in your hand for direct compression testing, and is excellent for small to medium push and pull force test applications.

Hoggan has been creating innovative solutions to real-life measurement issues since 1984, designing evaluation tools to empower Ergonomic, Engineering, Safety and Human Factors Professionals to objectify and quantify product design and human performance. Our other ergonomics innovations include digitFET - a miniature push and pinch force gauge for sensitive hand and finger force measurements, and the revolutionary ergoPAK - measurement kit which features highly flexible, mix and match devices for measuring force, angle, velocity, torque, and vibration in any combination for real-time job analysis and ergonomics research. The only limitation to what the ergoPAK can measure is your creativity.

Hoggan's ergo products are recognized for innovation, excellent quality, and long-lasting accuracy and reliability. Our highly satisfied customers include automotive, aerospace, consumer products, and food manufacturers, as well as ergonomics consultants, universities, and research institutions worldwide.

At Hoggan, we are constantly improving our products to better meet your needs. Besides the addition of the new wireless technology incorporated into the ergoFET line of force gauges, we've added a new feature to the ergoFET. You can now select the unit of measure to read out in lbs, Newton's, or KGF.

We understand the value of customer feedback. Our customers provide us with many of our best product improvement ideas, as well as interesting new measurement applications. As you have comments and suggestions, we'd love to hear from you. Please e-mail us at contact@hogganhealth.net.

In the meantime, we hope you enjoy using your ergoFET with new wireless technology capability immediately, and for many years to come. For more information on all of our innovative ergonomic, medical and fitness products, please visit us at www.hogganhealth.net.

Table of Contents

	Page
ergoFET Wireless Overview	4
What is Included	5
Specifications	5
Care and Cleaning	6
Calibration	6
Transporting ergoFET	6
Operating Features	6
On/Off Switch	6
Sleep Mode	6
Reset Button	6
Threshold Button	7
LCD Windows	7
Display Settings	8
Force Measurement	8
Bluetooth / FET Stick	9
Battery Check	9
Battery Saver / Sleep mode	10
ergoFET Testing	10-11
Recording and Retrieving Test Data	12
Low Batteries	13
Changing Batteries	13
Warranty Information	13-14
Customer Service/Repairs	14
Ordering Replacement Parts	14

ergoFET Wireless Overview

ergoFET is an accurate, portable, dual function portable, push/pull force gauge. This battery operated, hand-held device weighs less than a pound, and fits comfortably in the palm of your hand. ergoFET provides you with objective, quantifiable data for measuring both compression (push) and tension (pull) forces for a variety of job activities and other force measurement applications.

ergoFET uses sophisticated digital technology to achieve its high degree of accuracy and reliability. Strain gauge elements within the transducer react independently to measure external forces from multiple angles. This patented system enables the Ergofet to account for even subtle changes in force.

Information from the gauge is displayed in two LCD windows, Peak Force, and Duration/Sec. The Peak Force LCD shows the force being applied against the transducer pad during the compression test as well as a tension test, and displays the maximum force reached at the test's conclusion. Duration/Secs shows the elapsed time of the test from the time the testing threshold was crossed until the test was concluded.

ErgoFET was designed to be a stand-alone gauge for capturing individual force measurements under any job condition. However, with ergoFET new wireless technology can be used in conjunction with data collection software to increase analysis capability. The wireless device allows greater freedom and movement during testing with software, which eliminates dictating the location of the computer and length of instrument cable, so you can move freely during testing.

What is Included:

- . ergoFET Wireless Digital Force Gauge
- . Flat Transducer Pad
- . Large Curved Transducer Pad
- . Small Round Flat Transducer Tip
- . Handle
- . Rechargeable Li-ION batteries, Charger included
- . 16 Inch Strap with “D” Rings
- . Open End Stationary Hook
- . #2 Hook with Clasp
- . 4 Inch Extension Rod
- . User Guide
- . Product/Warranty card
- . Calibration certificate
- . Carrying Case
- . Optional – Bluetooth / FET Stick (Included with software when software ordered)

Specifications:

- . Weight: 1 lb.
- . Power Source: 3.7V LI-ION lithium batteries
- . Controls: On/Off, Reset, Threshold
- . Operating Temperature: 52 92 (11 33 C)
- . Humidity: 80 60% non-condensing
- . Capacity: 300 lbs Tension and Compression
- . Test Range:
 - Low Threshold 0.8 lbs to 300 lbs in 0.1 lb increments Metric Newtons: 3.6N 1320N in 0.4N increments KGF (kilograms force): 0.4kgf to 135kgf in .1kgf increments
 - High Threshold 3.0 lbs to 300 lbs in 0.1 lb increments Metric Newtons: 12.1N to 1320N in 0.4 N increments KGF: 0.4kgf to 135kgf in 0.14increments
- . Accuracy: Within 1%
- . Data Storage Stores 30 most recent tests.

Care and Cleaning

Your ergoFET is built to provide long lasting, reliable service. As with any precision instrument, it should be used with care. It should not be dropped, banged against hard surfaces, or used as scale.

The exterior surface of the ergoFET surface can be cleaned with damp soft cloth. Small amount of household spray cleaner can be used. Any cleaner residue should be removed with soft cloth dampened with clean water. We recommend that you periodically inspect your unit for wear, and proper functioning.

Calibration

The ergoFET comes with calibration certificate, ensuring that the unit was properly calibrated at the time of shipment. To ensure continued accuracy and reliability your ergoFET unit should be recalibrated annually, by properly Hoggan Scientific, LLC.

Transporting ergoFET

Hoggan Scientific strongly recommends that you store and transport the ergoFET in the hard sided protective carrying case provided.

Operating Features

On/Off Switch

The On/Off switch slides left and right to turn the unit on and off. Even though the ergoFET is equipped with Sleep Mode battery saver feature, we recommend that the unit be turned off when not in use. Refer to Image A for Power On/Off Switch.

Sleep Mode

If your unit is left on for approximately 3 minutes or more, your unit will go into Sleep Mode to preserve battery life. To take the unit out of Sleep Mode, it can be awakened by turning the power off for at least five minutes, or by pressing the Reset button.

Reset Button

The reset button activates the ergoFET. It can also be used to clear the displays and to reinitialize the unit. Reset may be necessary to wake up the gauge from sleep mode, or to clear occasional stray readings caused by static discharge. Refer to Image A for location of Reset Button.

It is not necessary to press reset after each test. The ergoFET automatically begins recording new data when the force threshold is crossed.

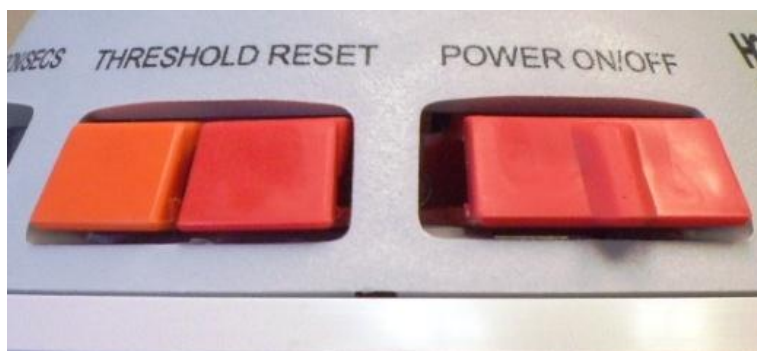


Image A

Threshold Button

Threshold refers to the amount of force required before the ergoFET begins recording test data. The threshold level can be set to either High or Low setting, and is displayed in the duration/force window. Refer to Image A for Threshold Button location.

High Threshold

The High Threshold is most commonly used. In the High setting, three pounds of force must be exerted before ergoFET begins recording test data. The High threshold allows for easier placement of the unit, and reduces false starts. High threshold displays force in 0.1 lb increments (.44N) during testing. Begins recording test data at 3.0 lbs force (12.1N) Records data in 0.1 lb increments up to 300 lbs (.44N increments to 1320N) Pressing Reset does not change the threshold setting

Low Threshold

The Low threshold setting is designed for more sensitive, lower force readings such as when testing finger and hand muscle weakness. Greater care must be used when positioning the unit while in the Low setting, as the threshold of 0.8 lbs (3.6 N) is easily crossed. Begins recording test data at 0.8 lbs (3.6N) Records data in 0.1 lb increments up to 300 lbs (.44N increments to 1320N) Pressing Reset does not change the threshold setting.

LCD Windows

Peak Force

During testing, the Peak Force LCD displays the actual force being applied to the transducer pad. At test completion, the maximum force value (peak force) is displayed. Refer to Image B.

Duration/Sec.

The Duration/Sec. LCD window shows the elapsed time (in tenths of second) from the time the force threshold was crossed until pressure was released. Monitoring test duration is an important element in maintaining consistency between tests. Also displayed in the Duration/Sec. window is the threshold setting (Low or High). Refer to Image B.

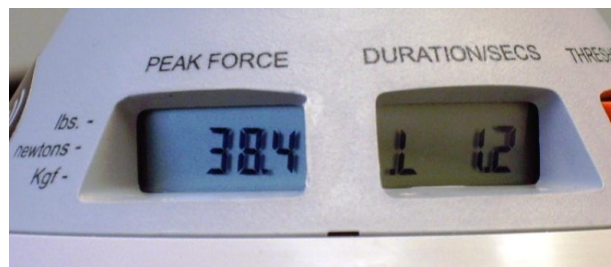


Image B

Display Settings

You may adjust the LCD brightness of the ergoFET by doing the following:

1. Set the unit in the display mode by holding down the Threshold button and click the Reset Button twice.
2. Once the unit is in the display mode, press and hold the Threshold button until the desired brightness level is achieved. Display will go from dim to bright and then recycle through.
3. Press the Reset button to return to test mode.

Force Measurement Settings

You may choose the unit of measure, (lbs, Newtons, KGF) by putting the ergoFET in the Force Measurement mode press and hold the Threshold button for five seconds, the display will go blank only showing hash mark for the unit of measurement currently chosen. Press the Threshold button to toggle through options. Press the Reset button to return to test mode. Refer to Image C.

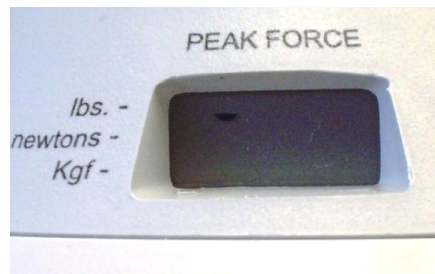


Image C

Wireless Mode - Power On/Off

To turn on or set the ergoFET to RF mode for use with software:

1. Hold the threshold button down for 5 seconds for the force measurement setting mode.
2. Continue to hold the threshold button down for another 5 seconds to turn on the wireless power.
3. The Peak Force display will show RF (wireless), and the Duration/Secs display will show on or Off.
4. Press the threshold button to toggle the RF (wireless) power on or off. Toggle on for use with software.

Refer to Image D for RF and On/Off display for wireless mode.



Image D
Page 8

Bluetooth / FET Stick

Included with your ergoFET is a Bluetooth / FET Stick. Refer to Image F. The Bluetooth / FET Stick is needed when the ergoFET is used with software for testing. The Bluetooth / FET Stick is included when the software CD disk is ordered. Instructions for using the Bluetooth / FET Stick are included with your software purchase.



Image F

Battery Check

The ergoFET_batteries are rated for 300 hours of operating use. The life of the batteries may vary depending on your usage pattern. To help you identify when the batteries will need replacement, ergoFET is equipped with "power check" feature to allow you to see remaining battery power. To conduct power check, follow these four steps.

1. Put the unit into data retrieval mode, hold down the Threshold Button then click the reset button.
2. Press on the Threshold Button for five seconds. The unit will then display in the peak force LCD AP indicating power check, and number from 1 to 100 in the Duration/Secs LCD display indicating the percent of power remaining in the batteries. Refer to Image G.

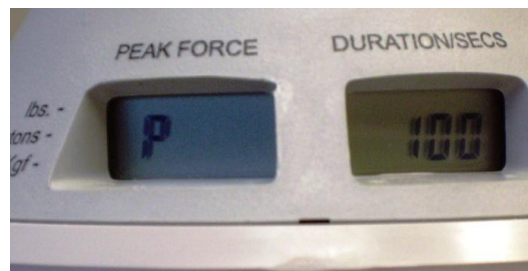


Image G

3. The unit will return to data retrieval mode after five seconds. To access again, press the threshold button again for five seconds.
4. To return to test mode, press the reset button.

Battery Saver/Sleep Mode

The ergoFET's self activating 'sleep' mode is designed to extend battery life. The ergoFET goes to sleep when the unit has not received any input for three minutes. The unit can be 'awakened' from sleep mode by: Pressing the Reset button, or Turning the unit off for five minutes or more.

NOTE: When using ergoFET RF with Bluetooth / FET Stick and software: if the ergoFET has not received any input for three minutes or crossed the threshold setting, "sleep" mode will activate and signal transmission will stop. Simply press the reset button and the signal will start transmitting again.

The ergoFET batteries are designed to provide constant power throughout the battery life. As result, performance declines rapidly in the last few percent of battery life. To avoid any interruption of testing capability, due to low battery power, Hoggan Scientific recommends you change batteries when the power check reading reaches approximately 15%. Replacement batteries can be ordered through Hoggan Scientific customer service department at 800-678-7888, or you may order online at www.hogganhealth.net.

ergoFET Testing

The ergoFET was developed to eliminate the subjective nature of testing by giving clear, accurate, objective, quantified force measurements. ergoFET increases testing reliability and accuracy.

For best results, be sure to install the proper attachment for the area being tested, and check to ensure that attachments are securely affixed to the unit, and that the unit is properly positioned for maximum surface area contact and direct force application.

The ergoFET is ambidextrous. It can be held in either the left or right hand for compression testing, or you may switch hands from test to test, depending on stabilization requirements. To secure the ergoFET in your hand, place the strap over your hand, and perform one hand direct push test. See Image H below.



Image H

For tension testing and compression testing not involving direct force application with the hand, the one hand handle can be used in conjunction with appropriate test attachment being used for tension and compression tests. The one hand handle can also be used with two hands in certain situations.

To insert handle, push aside strap on underside of gauge. The screw insert is located on the underside of the gauge. Thread the screw portion of handle into the insert and tighten until snug. Do not over tighten. See Images I below for attaching handle to gauge.



Image I

Below are examples of the ergoFET with one hand handle using two hands to perform a push test, lifting to weigh contents of bucket, and pull test. See Images J, K, and L below.



Image J



Image K



Image L

Recording and Retrieving Test Data

The ergoFET is designed to store and retrieve results for the 30 most recent tests.

In test mode, results are displayed for the most recent test only. Results for each new test, peak force, and duration, will be displayed as soon as the test is completed, replacing results from the previous test.

1. To put the unit in data retrieval mode hold down the Threshold button and then click the reset button once.

The unit will display peak force in the peak force LCD display. The number (representing the most recent test performed) on the left hand side of the duration/secs LCD display, and test duration in the right hand side of the duration/secs display. Refer to Image M.



Image M

In data retrieval mode, test duration displays in the following ways

1. A decimal point appears in the display for of .1 to 9.9 seconds (tenths of seconds).
2. No decimal point will appear for tests of 10 seconds to 99 seconds (whole seconds).

To scroll through test results, press the Threshold button. The unit will display new peak force, the number representing the 2nd most recent test, and test duration for the test displayed.

Each time you press the Threshold button, the unit will move backward to the previous test, up to total of 30 tests.

30 tests will be stored as long as the unit has battery power. Turning off the unit, or allowing the unit to go to sleep mode will not affect the stored results. However, the 31st test will bump the oldest test. At that point, the oldest test(s) will no longer be retrievable.

3. To return to test mode press the reset button the unit will display peak force of 0.0, L or H, indicating low or high threshold, and duration/secs of .0, you can enter data retrieval mode at any time, by holding down the Threshold button, and then pressing the Reset button. The unit will display the most recent test results.

The ergoFET was designed as standalone gauge for simple measurements. However, with newly incorporated wireless, the unit allows you the option to use ergoFET, cord free, with Hoggan Scientific data collection/research software. Using software will increase your evaluation, documentation and research capability. **The Ergofet does not save test data when the RF transmitter is turned on.**

Low Batteries

Fading LCD displays and unlit segments of the LCD are indications that the ergoFET battery power may be low. If LCD segments remain unlit after pressing Reset, the batteries should be changed.

To avoid testing interruptions due to low battery power, we recommend that you check remaining battery power regularly, and replace batteries when they reach approximately 15% power level. To check battery power, follow the battery check instructions on page 9.

Changing Batteries

The ergoFET uses (2) 3.7V 1/2AA LI-ION rechargeable batteries, for compact placement, and long life. These batteries can be purchased from Hoggan Scientific LLC. To change the battery, remove the attachment from the main unit. Carefully remove the batteries from their holders. When installing new batteries, make sure the positive (+) posts align with the (+) marks on the ergoFET body. If segments do not light up after installing new batteries, please contact Hoggan Scientific LLC Customer Service Department at 800-678-7888.

Warranty

Product Warranty Information

The ergoFET is warranted for period of one year from the time of purchase. If the ergoFET fails to operate because of defect in materials or workmanship at any time within one year of the purchase date, it will be repaired or replaced free of charge by Hoggan Scientific. Extended warranties (extra year or years) are available at an additional nominal fee.

If you wish to purchase an extended warranty after the purchase of your ergoFET, there is a 30 grace period to purchase an extended warranty package. Contact Hoggan Scientific for more information.

Warranty Registration

To ensure your warranty is in force, please complete and mail, or fax your warranty card to Hoggan Scientific LLC at 800-915-3439. Or visit www.hogganhealth.net to register your warranty information online. Please save proof of your original purchase date, such as your sales slip, invoice, credit card voucher, or cancelled check to establish the warranty period.

Warranty Repairs

Before deciding that your ergoFET is inoperable or defective, please review and follow the information in this instruction booklet.

In the unlikely event your ergoFET becomes inoperable, please contact Hoggan Scientific to arrange to have the equipment repaired or replaced. Hoggan reserves the right to repair or replace the unit with new or refurbished parts or equipment.

Hoggan's Customer Service Department can be contacted at 800-678-7888, or by email at contact@hogganhealth.net.

When Hoggan Customer Service Representative authorizes return of the product, you will be given Return Merchandise Authorization (RMA) number. Please include the RMA number with your unit.

Warranty Exclusions and Limitations

The ergoFET warranty does not cover damage by negligence, misuse, or accident. Damage or unit failure caused by modifications or repair other than by Hoggan or its authorized repair agent, or damage to equipment resulting from improper installation or operation is not covered. Any warning or instructional labels or decals must remain on the unit for the warranty to be valid.

This warranty applies to the original purchaser. Some states do not allow the exclusion or limitation of incidental or consequential damages, in which case the exclusions and limitations may not apply. This warranty gives specific legal rights, and may also have other rights, which vary from state to state. To determine the legal rights in your state, consult your local or state consumer affairs office or State Attorney General.

Customer Service Repairs

Customer satisfaction is important to Hoggan. We are happy to assist with questions, problems or service issues on any Hoggan products you may own. Our business has grown on the basis of excellent product quality and customer satisfaction. Our fulltime customer service representatives are available from 7:00 am to 4:30pm MST at 800-678-7888 to meet your needs. You can also contact Hoggan Scientific online regarding your customer service issue or calibration by e-mailing us at contact@hogganhealth.net.

Any repairs to the ergoFET unit should be completed by qualified service technician.

Ordering Replacement Parts

Hoggan Products are manufactured to exacting specifications. When replacing worn or damaged parts, use only original 'Hoggan' manufactured parts. The use of substitute or unauthorized parts will void your warranty and may increase the possibility of injury to the user, or cause additional damage to the unit.

When ordering Replacement Parts, please take the unit out of service, and complete the following:

1. Identify the brand, model, and serial number, and note the unit's function.
2. Identify and document the problem and the worn or missing parts.
3. Contact Hoggan Scientific LLC. Replacement parts (attachments) will be shipped directly from Hoggan.

All repair services will be performed at Hoggan Scientific LLC Manufacturing plant.

*Except for replacing batteries, do not attempt to repair the unit on your own. This will void all warranties. ergoFET batteries, replacement parts and Preferred Service Contracts can be ordered either by calling Hoggan Scientific or order online at www.hogganhealth.net.

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