Model 01163

THE LAFAYETTE MANUAL MUSCLE TEST SYSTEM
USER'S MANUAL

A revolutionary, hand-held strength measurement system

Li Lafayette Instrument®

3700 Sagamore Parkway North
P.O. Box 5729 • Lafayette, IN 47903 USA
Tel: 765.423.1505 • 800.428.7545
Fax: 765.423.4111
E-mail: info@lafayetteinstrument.com
www.lafayetteinstrument.com

Table of Contents:

System Description:

The new Lafayette Manual Muscle Test System (MMT) is a hand-held device for objectively quantifying eccentric muscle strength. Using the Lafayette MMT, the peak force required to break an isometric contraction is measured as the examiner applies force against the subject. The Lafayette MMT readily lends itself to large, pre-participation screenings or field examinations where bulky, more expensive systems do not. The microprocessor control allows for storage of calibration values and automatic drift compensation, resulting in reliable, accurate, and stable muscle strength readings. The MMT also features interactive menus to allow a wide range of options such as data storage and preset test times to be implemented. While powerful and versatile, the MMT is still small enough to fit comfortably in the palm of the hand. Its ergonomic design allows for both patient and tester comfort while easily conforming to most manual muscle testing protocols.

Features and Specifications:

System Features:

- Designed for high inter-instrument reproducibility
- Three, easy to change molded plastic stirrups with pads
- Force measurement in pounds or kilograms (user selectable)
- Measures peak force, time to reach peak force and total test time
- Data storage for up to 52 tests in on-board memory (peak force and time to reach peak force)
- Manual or automatic storage of data
- Dual measurement range: 0-300lbs. (136.1kg) or 0-50lbs. (22.6kg)
- Selectable test time from 1-10 seconds
- Tone to indicate end of preset test time
- Microprocessor controlled
- Easy to read graphical LCD display
- Manual ON/OFF switch
- Manual or automatic reset
- Built-in stored data browsing capability
- Low battery detection indicated by tone and icon
- Automatic battery saving sleep mode
- Interactive menus which allow user to select device options
- Battery powered: (1) lithium battery
- Minimal measurement drift

System Specifications:

- **Size:** 3" x 4" x 1.5" (7.6cm x 10.2cm x 3.8cm)
- **Weight:** 10.6oz (300g)
- **Range:** 0-300lbs. (136.1kg) / 0-50 pounds (22.6kg)
- **Accuracy:** $\pm$ 1% over full scale (both ranges)
- **Resolution:** 0.4lb (0.2kg) high range / 0.1lb (0.1kg) low range
- **Battery Life:** 80-85 hours, 10-12 hours after low battery condition
- **Timing Accuracy:** $\pm$ 0.03%
- **Data Storage Capacity:** 52 tests
- **Calibration Points:** 0, 25 and 50lbs. (0,11.3 and 22.6kg)
- **Preset Test Length:** 1-10 seconds; in 1 second increments

Note: 1. When performing repeated tests, inconsistent placement of the MMT will affect scores.
2. Extreme temperature, especially heat, may affect the values obtained.
3. The MMT cannot tolerate the stress of being used as a floor scale.
4. Care should be taken not to drop the MMT, as it may affect the calibration.
5. Exceeding the force limit (300lbs./136kg) may permanently damage the MMT and/or invalidate the calibration.

Basics of Operation:

(1) RESET Button

The Lafayette MMT is small enough to be held in
one hand and easily read. The size and weight of the
MMT permit the examiner to use the same
procedures and break test techniques
(described in the literature and taught
by academic institutions) without
any modification of technique or
positioning. The unit is simply placed
between the examiner's hand and the
limb being tested. The examiner's
downward force is transmitted to the
limb through the MMT unit. The MMT is
designed for one hand operation.
It can comfortably fit in the right or left hand.
The hand is placed under the strap and around
the body of the MMT. This allows easy access to the
RESET button (1) with the thumb. All of the other buttons are pressed using the opposite
hand.
The MMT is activated by sliding the power switch to the "ON" position (2).
Measurements are taken by pressing the padded stirrup against the muscle being tested on
the subject. The force and time data are displayed on the LCD screen (3) on the face of
the MMT.

(3) LCD Screen

(2) ON / OFF
     Switch

Function Buttons:

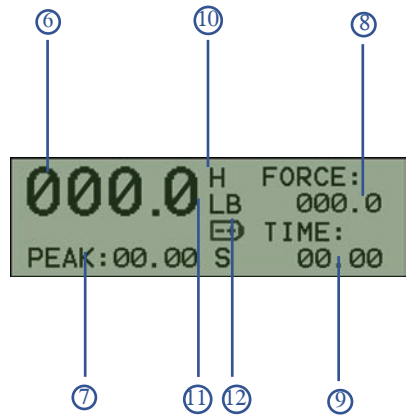The MMT has five function buttons that control the menus and allow the selection of options and settings.

① *Reset Button:* The RESET button is located on the top of the MMT. It is placed for easy access with the thumb regardless of right or left hand operation. The RESET button clears the display of all data and sets the zero point for the measurements. **Care should be taken not to apply force while pressing the RESET button.** This will cause the MMT to sound two successive audible beeps and display the following message "Diagnostic Alert Please Press Reset". The message will continue to be displayed and the user will not be able to perform another measurement until the RESET button has been pressed.

② *Range Button:* The RANGE button toggles between high and low measurement range. An "H" or "L" is displayed on the Main Measurement Screen to indicate the MMT rangesetting. Changing the range causes the MMT to automatically reset and clear all time and force values.

③ *Scroll/LB/KG Button:* The LB/KG button has dual functionality depending on which screen is accessed. In the Main Measurement Screen, the LB/KG button toggles the force measurement scale between pounds and kilograms. An indicator on the Main Measurement Screen shows which scale is selected. When a menu or data display screen is active, this button becomes a SCROLL button. The SCROLL button is used to select options by advancing a cursor from one option to the next. The SCROLL button is also used to step through the stored data.

④ *Enter/Store Button:* The ENTER/STORE button has dual functionality depending on which screen is accessed. In the Main Measurement Screen, the button is used as a STORE button. Pressing the STORE button stores the current test data in the MMT memory. Only the peak force and peak time are stored in memory. When the menu screens are accessed, the button is used as an ENTER button. The ENTER button is used to activate settings and menu options. It is also used to clear some errors and warning messages.

⑤ *Menu Button:* The menu button is used to enter the Main Menu. The Main Menu is used to select the MMT options and access the sub-menus.

Main Measurement Screen:

The Main Measurement Screen shows all of the current measurement information. This screen is shown whenever a measurement is in progress. This screen is also the default start-up display.
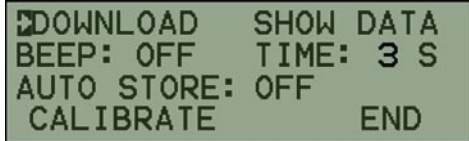
⑥ **Peak Force:** The peak measurement force is displayed in large numbers on the upper left of the Main Measurement Screen. This value is the peak pounds or kilograms applied during a test. Force values are displayed to tenths of a pound (or kilogram).

⑦ **Peak Time:** The peak time value is displayed in seconds on the bottom left of the screen under the peak force. This number is the time during the test when the peak force occurred. Time values are displayed to hundredths of a second.

⑧ **Instantaneous Force:** The instantaneous force value is displayed on the upper right on the Main Measurement Screen. This value is the force applied to the MMT at any time.

⑨ **Running Time:** The running time value is displayed on the lower right of the Main Measurement Screen. This value shows the total time that force has been applied. After a test has ended, this value shows the total length of the test in seconds.

⑩ **Range Indicator (H or L):** The range indicator shows if the MMT is set in the high or low measurement setting. If in kg's, the high range will be 0kg - 136.1kg and the low range will be 0kg - 22.6kg. If in lbs., the high range will be 0lbs. - 300lbs. And the low range will be 0lbs. - 50lbs. The range indicator is the upper most indicator in the center of the Main Measurement Screen. The Range is changed by pressing the RANGE button.

⑪ **Scale Indicator (LB or KG):** The scale indicator shows if the MMT is set to measure in pounds or kilograms. The scale indicator is the second indicator in the center of the Main Measurement Screen. The scale is changed by pressing the LB/KG button.

⑫ **Low Battery Indicator:** The low battery indicator is present when a low battery condition exists. The low battery indicator is the third indicator in the center of the Main Measurement Screen.

⑬ **Time Units Label:** The time units label is the "S" on the bottom center of the Main Measurement Screen. This label indicates that the time measurements are in seconds. This label does not change.

Menu Description:

Main Menu: The Main Menu is used to access the MMT options and sub-menus. The menu options are:

1. Activate the Download feature
2. Enter the Show Data Menu
3. Activate the preset test time beep
4. Set the Time
5. Activate the Auto-Store feature
6. Enter the Calibration procedure (for manufacturer use only. Contact Lafayette Instrument Co. for calibration.)
7. Exit the Menu

```
▸DOWNLOAD    SHOW DATA
BEEP: OFF    TIME: 3 S
AUTO STORE: OFF
 CALIBRATE         END
```

Menu items are selected by pressing the SCROLL button to move the cursor to the desired item and pressing the ENTER button to activate the item. See Function Descriptions for details on each option.

Show Data Menu: The Show Data Menu allows the user to view stored data values or clear the memory registers. The Show Data Menu is accessed by selecting SHOW DATA from the main menu screen. Upon entering the menu, the user can

1. View the stored data.
2. Delete the memory registers.
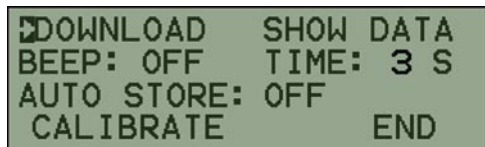3. View the version number.
3. Exit the Menu.

```
MENU:              V.0
▸SHOW DATA
 CLEAR ALL DATA REGS
 EXIT
```

Menu items are selected by pressing the SCROLL button to move the cursor to the desired item and pressing the ENTER button to activate the item. See the sections (on page 9 and 10) regarding SHOW DATA, DELETING DATA REGISTERS, and VERSION IDENTIFIER for details on the operation of those menu items.

Function Descriptions:

Download:

The Download function allows data to be transferred to a computer for permanent storage. The download is accomplished via infrared connection to a USB download device. This device can be purchased separately from Lafayette Instrument (Model 01163IR).
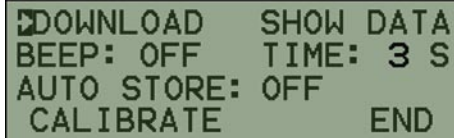
```
▸DOWNLOAD    SHOW DATA
BEEP: OFF    TIME: 3 S
AUTO STORE: OFF
 CALIBRATE         END
```

Download Function (continued):

To download:
1.   Plug in the USB download device to the host computer
2.   Run the download application software.

During download, the MMT will
attempt to establish communication with
the computer. The computer must have
the download software running and the
USB download peripheral connected for
communication to be established.

```
▶DOWNLOAD    SHOW DATA
BEEP: OFF     TIME: 3 S
AUTO STORE: OFF
 CALIBRATE        END
```

3.   Point the Infrared port in the bottom of the MMT at the USB download device.
Since the connection is infrared, the line of sight between the computer and MMT must
be free from obstructions. The infrared transmitter on the bottom of the MMT must be
pointed directly at the USB download device. The MMT can not be more than 12 feet from
the download device. If the MMT is more than 12 feet away, errors may result in the data
transmission.

4.   Enter the Main Menu by pressing the MENU button
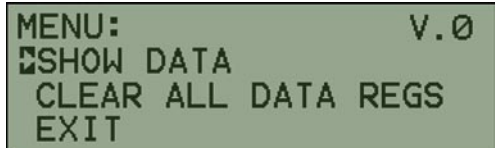5.   Press ENTER to begin download.

If a connection can not be established, an error is given along with two audible beeps. An
option menu is then given which allows (1) a reattempt of communication or (2) canceling
the operation. The download device receives the data and transfers it to the computer
software. The software then checks the data for validity and reports the checksum back to the
MMT. Once the MMT receives the correct checksum, the data registers are cleared. If the
correct checksum is not received , the error message is given and the data is not cleared.

Show Data:

The Show Data function allows the
stored data to be display and reviewed.

To review stored data:

```
MENU:             V.0
▶SHOW DATA
 CLEAR ALL DATA REGS
 EXIT
```

1.   Enter the Main Menu by pressing
       the MENU button.
2.   Press the SCROLL button one (1) time to move the cursor to SHOW DATA.
3.   Press ENTER to display the SHOW DATA menu.
4.   Press the SCROLL button one (1) time to move the cursor to SHOW DATA.
5.   Press ENTER to show the data.
6.   Press the SCROLL button to step through the data registers.
7.   Press the RESET button to exit to the Main Measurement Screen.

Note: *Only the Peak Force (in lbs. or kg) and the peak time are stored in memory. Empty
          data registers are shown as "7. KL G . S". The SHOW DATA function can also be
          used to determine how many empty registers are available.*

Deleting Data Registers:

When the data memory is full, a warning message is given to clear the data registers or discontinue storage. The data registers can be cleared by manually clearing the registers from the SHOW DATA menu.

```
MENU:              V.0
 SHOW DATA
▧CLEAR ALL DATA REGS
 EXIT
```

To clear all data registers:
1. Enter the Main Menu by pressing the MENU button.
2. Press the SCROLL button one (1) time to move the cursor to SHOW DATA.
3. Press ENTER to turn the display to SHOW DATA menu.
4. Press the SCROLL button two (2) times to move the cursor to CLEAR ALL DATA REGS.
5. Press ENTER to clear data registers.
6. Press ENTER to confirm delete operation.
7. MMT confirms that the delete has been completed.

Version Identifier:

The MMT has a version ID number to help track new features and changes to the device.

To view the ID number:
1. Enter the main menu by pressing the MENU button.
2. Press the SCROLL button one (1) time to move the cursor to SHOW DATA.
3. Press ENTER to display the SHOW DATA menu.
4. The version ID is in the upper right hand corner of the SHOW DATA menu.

```
MENU:              V.0
▧SHOW DATA
 CLEAR ALL DATA REGS
 EXIT
```

Beep:

The Beep function activates an audible tone that indicates when a preset test length has expired. With the beep enabled, a single beep is sounded at the start of the test. The MMT automatically detects when force is applied, so no buttons have to be pressed to begin the test. After the preset test time is reached, 4 successive beeps are sounded to indicate that the test is over.

```
DOWNLOAD    SHOW DATA
BEEP: ON      TIME: 3 S
AUTO STORE: OFF
 CALIBRATE         END
```

To activate the Beep function:
1.   Enter the Main Menu by pressing the MENU button.
2.   Press the SCROLL button two (2) times to move the cursor to BEEP.
3.   Press ENTER to turn on BEEP
4.   Press the SCROLL button four (4) times to move the cursor to END.
5.   Press ENTER to exit the menu.

After the test time has ended, no more data is measured until RESET is pressed. A reset will automatically occur when a new force is applied. Only values that are measured during the test time are used to determine the peak value.

Time:

This setting determines the preset test time length for the test. The preset test time can be set from 1 second to 10 seconds in 1 second increments. This only works when the *Beep* function is activated.

```
DOWNLOAD    SHOW DATA
BEEP: ON      TIME: 3 S
AUTO STORE: OFF
 CALIBRATE         END
```
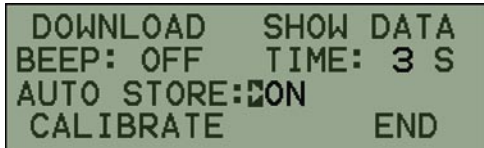
To set the test time:
1.   Enter the Main Menu by pressing the MENU button.
2.   Press the SCROLL button three (3) times to move the cursor to TIME.
3.   Press ENTER to increment the time. The time loops back to 1 after 10 is reached.
4.   Press the SCROLL button three (3) times to move the cursor to END.
5.   Press ENTER to exit the menu.

Auto-Store:

When the Auto-Store function is activated, data is automatically stored by the MMT after every test. The MMT detects when a new test begins and stores the data for that test. Only the peak force and peak time for each test are stored in memory. The MMT memory is limited to 52 tests. If the memory reaches capacity, the Auto-Store option must be disabled, or the memory will have to be erased, or the MMT will disallow further storage.

```
DOWNLOAD    SHOW DATA
BEEP: OFF    TIME: 3 S
AUTO STORE: ON
 CALIBRATE        END
```

To activate the Auto-Store function:
1.   Enter the Main Menu by pressing the MENU button
2.   Press the SCROLL button four (4) times to move the cursor to AUTO STORE
3.   Press ENTER to turn on the AUTO STORE
4.   Press the SCROLL button two (2) times to move the cursor to END
5.   Press ENTER to exit the menu

Caution: *With the Auto-Store enabled, there is a possibility that unwanted data may inadvertently be stored. The MMT will store all tests including test trials and force readings from inadvertent pressing of the load cell. If a test requires that only a select number of tests be recorded, the Auto-Store function can be disabled and the tests can be stored manually by pressing the STORE button.*

Data Storage:

The MMT can store test data in memory. This data can then be reviewed, analyzed or downloaded at a convenient time.

The guidelines for test storage are:
1.   The MMT can store up to 52 tests.
2.   Only the peak force and peak time are stored in memory.
3.   Data can be stored by two methods: manual or automatic.
4.   To manually store data, press the STORE button. This will place the reading on the Main Measurement Screen into storage. A single beep indicates successful storage.
5.   To store data automatically, the AUTO STORE function must be enabled. See the function description for Auto-Store on page 9 for details. No beep is given in AUTO STORE mode.
6.   When the 52 test capacity is reached, a warning screen is displayed every time a storage is attempted. Stored data must be emptied by deleting data using the clear all data registers procedure or by downloading the data registers.

Reset:

The Reset function clears the display screens and sets the MMT for a new measurement. A reset is also required whenever a Diagnostic Error message is displayed. A reset can be triggered by several different functions.

Reset Guidelines:
1. The MMT is automatically reset when the power is applied.
2. A reset is also required whenever a Diagnostic Alert Message is displayed.
3. The MMT is automatically reset when the range is changed.
4. The MMT is automatically reset after the Calibration Routine is completed.
5. The Battery Saver Mode does not cause a Reset to occur. Data is preserved after the Battery Saver Mode is terminated.
6. Running the Main Menu does not cause a Reset to occur.
7. The MMT automatically resets on the application of a new force.
8. Pressing the RESET button will clear the display and set the MMT for a new measurement.
9. Pressing the RESET button also sets the zero point for measurements.

Caution: *Since the RESET button re-zeros the MMT, force should not be applied while the RESET button is pressed.*

Range:

The MMT features a dual measurement range. This allows the MMT to have better resolution for measurements of smaller muscle groups.

Range Specifications:

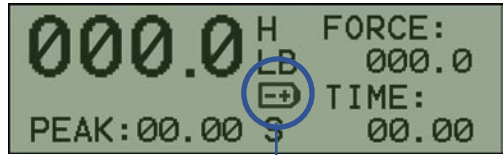|		
Low Range:	0-50lbs. with a resolution of 0.1lbs.	
	0-22.6kg with a resolution of 0.1kg	
High Range:	0-300lbs. with a resolution of 0.4lbs.	
	0-136.1kg with a resolution of 0.2kg	

The range is changed by pressing the RANGE button. An "H" or "L" indicator on the Main Measurement Screen shows the range setting for the MMT. The MMT is automatically reset when the range is changed.

Caution 1: When using the low range setting, any reading over 50lbs. (22.6kg) is outside the range and should be disregarded as an erroneous reading.

Caution 2: Do not exceed the 300 pound force limit. Excessive force may cause permanent damage to the MMT or alter the calibration.

Low Battery Detection:

The MMT is equipped with circuitry to detect when the battery is low on power.

```
000.0 H   FORCE:
      LB      000.0
      ⊟⊕  TIME:
PEAK:00.00 S     00.00
```

Low Battery Detection guidelines:
1. The MMT uses two methods to indicate a low battery condition.
2. The first is a battery icon displayed in the center of the Main Measurement Screen. **(See Main Measurement Screen on page 7.)**
3. The second is an audible beep with an error message that requires a button response. **(See errors and warning messages on page 16.)**
4. The low battery error message is given every time the MMT is turned on or is reactivated after being in Battery Saver Mode.
5. The battery will run for about 10 hours after a low battery condition is detected.
6. Stored test data is NOT affected by a low or dead battery. Removing the battery will not result in any loss of stored data (current test data that is not stored will be lost).
7. Accuracy of the force or time measurements are not affected by a low battery condition.

For directions on changing the battery, **see the Battery Change description on page 15.**

Battery Saver Mode:

The MMT has a built-in battery saver mode to power down the circuitry when the device is not in use. This reduces the wear on the battery and prolongs battery life. The Battery Saver Mode is initiated after two minutes of inactivity on the MMT. When in battery saver mode, the LCD and measurement circuitry are powered down. This will result in the screen going blank.

To wake up from Battery Saver Mode:
1. Press one of these four buttons: RESET, MENU, ENTER or SCROLL

2. Pressing the RANGE button does not wake up the MMT

Note 1: *For maximum battery life, turn the MMT OFF when not in use. While battery saver mode greatly reduces the strain on the battery, the battery does still lose a small amount of power.*

Note 2: *Battery saver mode will only activate from the main menu screen. If the MMT is left in a menu or sub-menu, the battery saver mode will not activate.*

Battery Change:

The battery of the MMT is accessed through a removable door in the face of the device. The door is secured by a single screw near the center of the face.

To change the battery:
1. Remove the battery door screw and lift the door.
2. Exchange the battery with a compatible replacement, making sure to note the battery polarity imprinted on the battery holder.
3. Make sure the battery is secure in the holder and replace the battery door and the battery door screw.

Caution: *The MMT requires a 2/3A size lithium 3.0 volt battery. Never substitute a battery of a different size or voltage.*

A partial list of replacement batteries follows. Make sure the replacement battery used is compatible with one of the models listed.

Acceptable Replacement Batteries:

- Duracell DL123A
- CR123A
- EL123A
- DL2/3A
- 123Photo
- CR17345
- DL123ABU
- Panasonic CR123A
- Kodak K123L

Note: *Limited warranty does not cover dead batteries. Check battery power before sending the MMT in for repair.*

Stirrup Change:

The MMT comes with three interchangeable stirrups. Each stirrup is designed for different test applications depending upon what manual muscle test method is used. The flat stirrup is used for muscle testing in flat areas such as the forehead and back. The large curved stirrup is used for large limbs such as the arms and legs. The small flat stirrup is for small digits. Each stirrup is padded for patient comfort. To change stirrups, simply pull the stirrups off of the shaft and slide the new stirrup on. The stirrups attach to the shaft via a "press fit." No tools are required to change the stirrups. In the event that a stirrup breaks or becomes soiled, new stirrups may be ordered through Lafayette Instrument Company.

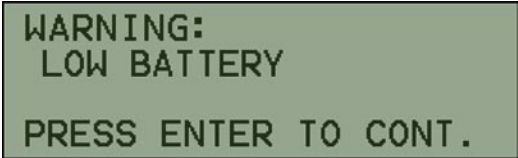*Caution: You must turn off the MMT when changing stirrups.*

Error and Message Screen Summary:

The MMT has special message screens to indicate when certain operations are completed or when an error has occurred. Selected error messages must be acknowledged with a user response before normal MMT operation can resume. Warning messages that require a user response are accompanied by two successive beeps. The user must press ENTER or RESET to acknowledge the message and continue operations.

The message screens are as follows:
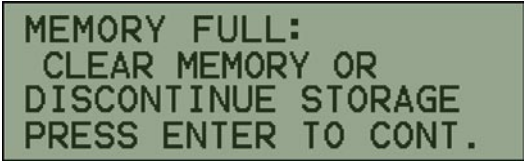
Low Battery Warning:

This warning is given when a low battery condition has been detected. The warning is accompanied by two audible beeps. The warning is only given when the device is turned on or is waking up from Battery Saver Mode. During normal operation, a low battery condition is also indicated by a battery icon on the Main Measurement Screen. The low battery warning is acknowledged and cleared by pressing the ENTER button.

```
WARNING:
 LOW BATTERY

PRESS ENTER TO CONT.
```

Memory Full Warning:

This warning is given when the memory capacity has been reached. The MMT is capable of storing up to 52 tests. Once this number of stored tests is reached, the MEMORY FULL error message is given each time a new storage command is given. This includes both Auto-Storing and manually storing the data. The MEMORY FULL error is accompanied by two audible beeps. The user must press the ENTER button to acknowledge and clear the warning. They must then either discontinue storage by disabling the AUTO STORE feature or erase the stored data in memory. Failing to do one of these steps will result in continued warning messages. Data that triggers a MEMORY FULL warning is NOT stored in memory.

```
MEMORY FULL:
 CLEAR MEMORY OR
DISCONTINUE STORAGE
PRESS ENTER TO CONT.
```

Diagnostic Alert Please Press Reset Message:

This message is displayed whenever force is applied to the MMT at the same time that the RESET button is pressed. This message is accompanied by two audible beeps. The user must press RESET to clear this error message. The MMT will not register any new force measurements until the RESET button is pressed.

```
DIAGNOSTIC ALERT:

PLEASE PRESS RESET
```

Replacement Parts List:

Part:	Part Number:
Curved Stirrup	01163CS
Large flat stirrup	01163LFS
Small flat stirrup	01163SFS
Battery Door	1-003-0035
MMT Strap	1-003-0036
Strap rod	4-221-275
Front Label	1-003-0037
3V Lithium Battery	3-281-017
Battery Holder	3-323-175
MMT Case	6-240-001
MMT Manual	MAN078
Button caps	3-422-135
Battery Door Screw	4-212-136

Appendix A - Torque Measurements with the MMT

In some research and rehabilitation applications, it is necessary to obtain torque measurements for the limb being tested. Torque is often a more accurate indicator of total strength because it takes into account the length of the muscle being tested. The Lafayette Manual Muscle Test System (MMT) can be used to obtain torque values through a series of basic calculations.

Torque is measured in units of Newton meters (Nwm) in the Metric system and in foot pounds (ftwlbs.) in the English system. Torque is the product of the force applied times the distance between the force and the pivot point (usually a joint).

Equations for obtaining torque readings with the MMT using metric values:

$$Torque = Force \ x \ distance$$

Where force equals the MMT reading converted to Newtons and distance is the length between where the force is applied and the joint being tested in meters.

Newtons conversions:

1 pound = 4.45 Newtons
1 kilogram = 9.81 Newtons

Normative Strength can also be quantified as torque per kilogram bodyweight (Nwm/kg). This value is obtained by dividing the torque by the person's bodyweight in kg.

$$\textbf{Strength} = \frac{((MMT \ reading \ in \ Newtons) \ x \ (distance))}{bodyweight \ in \ kilograms}$$

Notes:

Ordering Information:

All phone orders must be accompanied by a hard copy of your order. All must include the following information:

1) Complete billing and shipping addresses
2) Name and department of end user
3) Model number and description of desired item(s)
4) Quantity of each item desired
5) Purchase order number or method of payment
6) Telephone number

DOMESTIC TERMS

There is a $50 minimum order. Open accounts can be extended to most recognized educational institutions, hospitals and government agencies. Net amount due 30 days from the date of shipment. Enclose payment with the order; charge with VISA, MasterCard, American Express; or pay COD. We must have a hard copy of your order by mail or fax. Students, individuals and private companies may call for a credit application.

INTERNATIONAL PAYMENT INFORMATION

There is a $50 minimum order. Payment must be made in advance by: draft drawn on a major US bank; wire transfer to our account; charge with VISA, Master-Card, American Express; or confirmed irrevocable letter of credit. Proforma invoices will be provided upon request.

RETURNS

Equipment may not be returned without first receiving a Return Goods Authorization Number (RGA).

When returning equipment for service, please call Lafayette Instrument to receive a RGA number. Your RGA number will be good for 30 days. Address the shipment to: Lafayette Instrument Company, 3700 Sagamore Parkway North, Lafayette, IN 47904, U.S.A. Shipments cannot be received at the PO Box. The items should be packed well, insured for full value, and returned along with a cover letter explaining the malfunction. Please also state the name of the Lafayette Instrument representative authorizing the return. An estimate of repair will be given prior to completion ONLY if requested in your enclosed cover letter. We must have a hard copy of your purchase order by mail or fax, or repair work cannot commence.

WARRANTY

Lafayette Instrument guarantees its equipment against all defects in materials and workmanship to the ORIGI-NAL PURCHASER for a period of one (1) year from the date of shipment, unless otherwise stated. During this period, Lafayette Instrument will repair or replace, at its option, any equipment found to be defective in materials or workmanship. If a problem arises, please contact our office for prior authorization before returning the item. This warranty does not extend to damaged equipment resulting from alteration, misuse, negligence or abuse, normal wear or accident. In no event shall Lafayette Instrument be liable for incidental or consequential damages. There are no implied warranties or merchantability of fitness for a particular use, or of any other nature. Warranty period for repairs or used equipment purchased from Lafayette Instrument is 90 days.

DAMAGED GOODS

Damaged equipment should not be returned to Lafayette Instrument prior to thorough inspection.

When a shipment arrives damaged, note damage on delivery bill and have the driver sign it to acknowledge the damage. Contact the delivery service, and they will file an insurance claim. When damage is not detected at the time of delivery, contact the carrier and request an inspection within 10 days of the original delivery. Please call the Lafayette Instrument Customer Service Department for a return authorization for repair or replacement of the damaged merchandise.

Li Lafayette Instrument®

3700 Sagamore Parkway North
P.O. Box 5729 • Lafayette, IN 47903 USA
Tel: 765.423.1505 • 800.428.7545
Fax: 765.423.4111
E-mail: eval@lafayetteinstrument.com
www.lafayetteinstrument.com

Lafayette Instrument Co. Europe
4 Park Road, Sileby,
Loughborough, Leics., LE12 7TJ. UK.
Tel: +44 (0)1509 817700
Fax: +44 (0)1509 817701
E-mail: EUsales@lafayetteinstrument.com