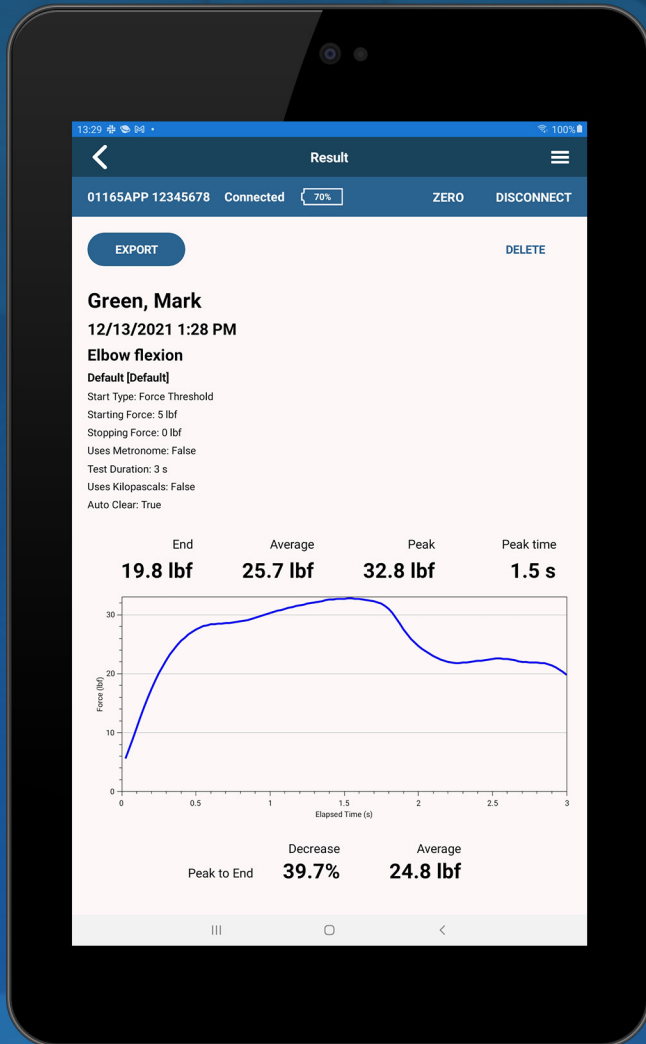


DynoData



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01 Application

DynoData is designed to be used as an enhancement to a model 01165APP Lafayette Instrument Hand-Held Dynamometer. DynoData provides a wireless connection between the dynamometer and an Android tablet or smart phone. This connection allows for a real-time visual display of the force being applied to the dynamometer, customization of test setups and settings (can be modified, saved and named), and subject results completed via DynoData can be conveniently stored for data analysis and easy export of raw data. Results previously stored on the dynamometer can be downloaded and exported but are not stored in the DynoData database. With simple controls, DynoData will improve the organization and efficiency of patient care.

Model 01165 and 01165A Hand-held Dynamometers

The models 01165 and 01165A Hand-held Dynamometers cannot be paired with DynoData. The model number of the dynamometer is visible in the lower portion of the MENU of the Hand-held Dynamometer. A model 01165A Hand-held Dynamometer can be upgraded to 01165APP.

For more information about upgrading a 01165A to 01165APP, go to Upgrading your 01165A Hand-held Dynamometer on page 8.

02 Home

- 1: Connection Bar
- 2: App Menu
- 3: Zero Dynamometer
- 4: Connect/Disconnect Dynamometer
- 5: Begin Quick Test
- 6: Manage Quick Tests
- 7: View Subjects
- 8: Add Subject
- 9: Connected Dynamometer
- 10: Connection Status
- 11: Battery Indicator



03 App Menu

The App Menu can be accessed by tapping the hamburger-style button in the upper right hand side of the screen. The App Menu contains the following actions.

Select Device

Displays screen for scanning and/or selecting a dynamometer to connect. For more information on the dynamometer connection, go to Dynamometer Setup on page 6.

Manage Muscle Groups

Displays list of muscle groups that can be associated with trials. For more information on muscle groups, go to Manage Muscle Groups on page 9.

Manage Settings

Displays list of default or user-created custom settings. For more information on using custom settings, go to Manage Settings on page 10.

App Settings

Displays current application settings. For more information on the application's settings, go to App Settings on page 17.

Show Manual

Displays this manual.

Export Data

Creates a CSV of all test data stored by the app and attaches to an e-mail.

Download Tests

Displays tests run on the dynamometer for display, and export. For more information, go to Download Tests on page 32.

Manage Password

Manage DynoData password for access to app data. For more information on using a password, go to DynoData Password on page 35.

Contact Support

Displays form for contacting Lafayette Instrument Company.

04 Dynamometer Setup

Using the following steps, DynoData can be wirelessly paired with the 01165APP Lafayette Hand-Held Dynamometer. DynoData does not support wired connection to the dynamometer.

Enable Wireless Connection on the Dynamometer

Enabling wireless connection is easily accomplished using the dynamometer's Options menu. The setting will remain enabled until it is specifically disabled via the dynamometer's Options menu.

1. Ensure the dynamometer is powered on.
2. Navigate to the Test Setup screen on the dynamometer by pressing the Menu/Select button.
3. Using the arrow buttons, highlight the Options icon and press the Menu/Select button to open OPTIONS.
4. Select WIRELESS by pressing the Menu/Select button while WIRELESS is highlighted.
5. Using the arrow buttons, toggle wireless status to ON, and press Menu/Select to set the option.

Initial Pairing of Dynamometer

Power on the dynamometer and confirm the dynamometer has wireless enabled and tap "Select Device" in the App Menu to begin. If no dynamometer has been previously selected, tapping SELECT in the connection menu will display the "Select Device" screen.

Tap on SCAN button to search for available dynamometers, making sure that the desired dynamometer is turned on with wireless enabled. DynoData may request location permission which must be granted to perform the scan. Once scan is complete, tap on the appropriate dynamometer in the "Other Dynamometers" list.

Note: Tapping on a dynamometer on this screen will connect to the dynamometer, close this screen, and return the user back to the previous screen. The connection bar will become blue with the connected dynamometer serial number listed.

Reconnecting to Previously used Dynamometer

The most recently selected dynamometer will appear in the connection bar. Turn on dynamometer, and when in range, tap CONNECT to reconnect to that dynamometer. If the desired dynamometer serial is not listed, tap "Select Device" in the App Menu and perform a scan for the dynamometer.

Current Dynamometer

The "Connected to..." toast message and "Comparing Settings" notification will appear as the app is connecting to the dynamometer. The app compares the unit of measure and the settings stored on the dynamometer to the settings inside the app. If the unit of measure does not match, the app will display a notification requiring an update to the unit of measurement. If the custom settings do not match, the app will display a notification with options to either "Ignore" or "Sync" the stored custom settings. For more information about this process, go to Sync Settings on page 11.

Disconnecting Current Dynamometer

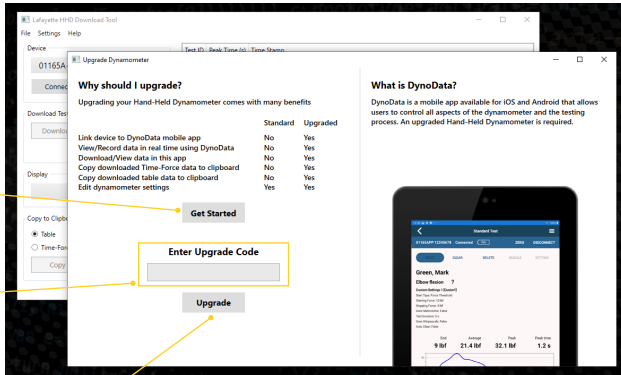
The currently paired dynamometer can be disconnected by tapping DISCONNECT in the connection bar. The connection bar will become red and read "Not connected."

Note: The dynamometer automatically disconnects after fifteen (15) minutes of inactivity.

04.1 Upgrading your model 01165A Hand-held Dynamometer

The model 01165A can be upgraded to 01165APP using the Lafayette Hand-held Dynamometer Utility. The HDD Utility can be found on the dongle provided with the 01165A Dynamometer.

1. Connect the 01165A dynamometer to the Lafayette HDD Utility via USB or Bluetooth.
2. Select "Upgrade my HDD" from the Help Menu in the Utility app.
3. Click Get Started (1) to visit our website and complete the web form and payment to receive your Upgrade Code.
4. Enter your Upgrade Code in the provided text area (2) in the Utility app and click Upgrade (3).



Upgrade model 01165A via Lafayette HDD Utility

05 Manage Muscle Groups

The Manage Muscle Groups screen can be found by tapping “Manage Muscle Groups” in the App Menu.

What is a Muscle Group?

For the purposes of this app, a Muscle Group is a user-entered name and instructions (optional) pair that is used to describe an area of testing for use during a trial.

Note: Any optional instructions set up in DynoData can be displayed by tapping on the instruction indicator on the trial screen. For information about the trial screen, go to page 21 (Standard Test) or page 25 (Quick Test).

Adding a Muscle Group

A Muscle Group can be added by tapping the ADD button on the Manage Muscle Groups screen or from the Muscle menu on the trial screen.

Editing/Deleting a Muscle Group

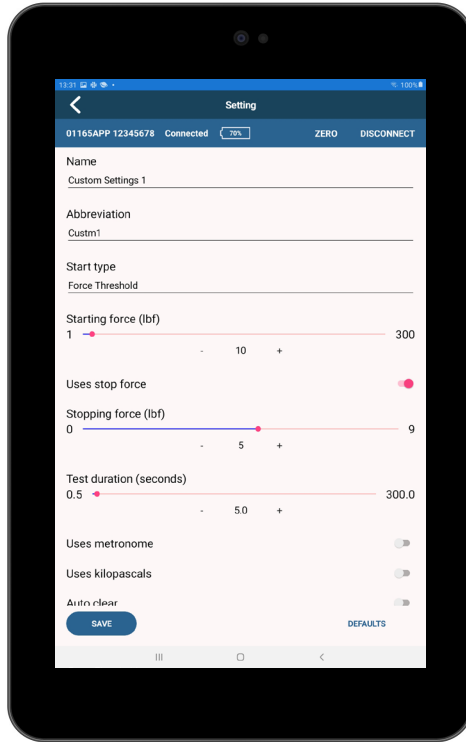
A Muscle Group can be edited by tapping the muscle group name on the Manage Muscle Group screen. A Muscle Group cannot be edited or deleted from the trial screen.

Arranging Muscle Groups

The order of the Muscle Groups in the Muscle dropdown on the Testing screen reflects the order in the Muscle Groups listing. The order can be adjusted by tapping and holding the Muscle Group name in the Muscle groups listing and dragging it to the desired order.

06 Manage Settings

Like the HHD, DynoData allows 9 named user-defined custom test settings. The Manage Settings screen contains a list with an entry for the “Default” setting followed by entries for each of the 9 available custom settings. If a setting has been renamed, the new name will appear in the list. The Manage Settings screen can be found by tapping “Manage Settings” in the App Menu.



06.1 Managing Settings

Default Settings

Selecting Default displays the options associated with the default setting. The user is unable to make changes to the default setting.

Custom Settings

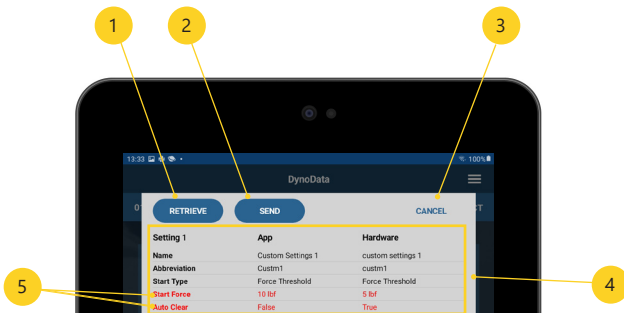
Selecting one of the 9 custom settings displays any options associated with the selected setting. The name and included settings can be modified and saved. By tapping DEFAULTS, you can return the selected settings to match the default settings.

Sync Settings

DynoData compares the settings in the app with those on the dynamometer when the SYNC button is tapped on the Test Settings page (when connected to a dynamometer) or on the dialogue that appears when settings are found to differ during the check that occurs as part of the dynamometer connection process. The sync dialog box contains a grid of all options for each of the 9 custom settings (4) - options that differ are displayed in red (5). If desired, the settings in DynoData and on the dynamometer can then be synchronized using either RETRIEVE or SEND.

Options

- Retrieve (1): Modifies the settings in the app to match those stored on the dynamometer.
- Send (2): Modifies the settings on the dynamometer to match those stored in DynoData.
- Cancel (3): Make no changes and continue.



06.2 Test Settings

Many of these settings are also available via the dynamometer. Some settings are shown/hidden based on other settings.

Note: The lengths for the Name and Abbreviation are both limited. The number of characters that can be entered depends on the widths of the entered characters. When sent to the dynamometer, the entered values will be displayed as all capitals.

Name

Prerequisite: Editing via DynoData app

Name of the setting listed in DynoData and the dynamometer.

Abbreviation

Prerequisite: Editing via DynoData app

Abbreviation for the setting. If synced with the dynamometer, the abbreviation is the text that appears in the lower right corner of the dynamometer screen to indicate which setting is in use.

Start type

Default: Force threshold

DynoData and the dynamometer support multiple methods of starting a trial.

Options

- Force threshold: indicates that the test starts once a specified force is reached.
- Time delay: indicates that the test starts after a specified time duration has elapsed.

Starting force

Prerequisite: Start type = Force threshold

Range: 1 - 300 pounds-force (lbf)

Default: 5 lbf

Force required to trigger the beginning of the test.

Starting delay

Prerequisite: Start type = Time delay

Range: 0 - 10 seconds

Default: 1 second

Time delay between pressing the start button and beginning the test.

Uses stop force

Default: Enabled

Specifies whether the test should be terminated once the force reading drops below a specified value.

Stopping force

Prerequisite: Uses stop force = Enabled

Range: Variable (lbf)

Default: 0 lbf

Force that if the force drops to the test will be terminated. If present, the Stopping force is limited to values less than the Starting force with a minimum of zero and a maximum of one less than the Starting force.

Test duration

Range: 0.5 - 300 seconds

Default: 3 seconds

The duration of the test. A test may be terminated early if Uses stop force is enabled.

Note: The dynamometer has a maximum test duration of 10 seconds.

Uses metronome

Default: Disabled

Specifies whether a tone should be sounded at regular intervals during a test.

Cadence

Prerequisite: Uses metronome = Enabled

Range: 30 - 120 beats per minute (bpm), in increments of 5

Default: 60 bpm

The rate in bpm at which a tone should be sounded during a test.

Note: Cadence setting is unavailable in the dynamometer. The dynamometer metronome automatically selects 60 bpm when Uses metronome is enabled directly in the dynamometer.

Uses kilopascals

Default: Disabled

Specifies whether DynoData should display units in kilopascals. This should only be used with the algometry attachment. When enabled, this setting will override the units set in App Settings.

Auto clear

Prerequisite: Start type = Force threshold

Default: Enabled

Specifies whether a completed test is automatically saved and cleared, allowing another test to be run without interaction with DynoData. A delay of 2 seconds is enforced between the completion of a test and when the next test can begin.

If DynoData detects that it has been 5 minutes since the last completed test, a warning will be shown. A similar warning will be shown after 10 minutes. After 15 minutes, it will automatically terminate the series of Auto Clear tests.

Use dynamometer buttons

Prerequisite: Start type = Time delay

Default: Disabled

Enabling this requires the user to start and clear trials using the top buttons of the dynamometer. No corresponding setting exists in the dynamometer settings.

06.3 Hardware Specific Settings

These settings only appear when the “Enable Hardware Specific Settings” setting under App Settings is enabled.

Note: Hardware Specific Settings only impact how tests are run via the hardware and have no impact on tests that are run inside DynoData.

Display 1, 2, 3

When running tests on the HHD hardware, there are typically 3 boxes for displaying data on the right side of the screen. These settings control the values that appear in those boxes. The software and hardware enforce that these 3 settings all have different values.

| <i>Setting name displayed on HHD Hardware screen</i> | <i>Setting name displayed in HHD Utility / DynoData</i> | |
|--|---|-------------------------|
| REAL-TIME F | Real Time | |
| TOTAL TIME | Total Time | Display 2 Default Value |
| TIME-PEAK | Time Peak | Display 1 Default Value |
| AVG FORCE | Average Force | Display 3 Default Value |
| END FORCE | End Force | |
| AVG PK-END | Average Peak To End | |
| % PK-END | % Decrease Peak To End | |

Button Orientation

Default: Right

Determines which of the two buttons on top of the HHD Starts and Clears tests.

Options

- Right
- Left

Sound

Default: On

Determines whether the hardware makes audible beeps at beginning and end of tests. Does not impact tests run in DynoData.

Peak Only

Default: Off

Changes hardware display so that large numbers displaying only the peak value replace the normal display consisting of a graph, peak value, and the 3 values indicated by the Display 1, Display 2, and Display 3 settings.

Arrow Function

Default: Scroll

Determines the function of the arrow buttons when viewing a completed test.

Options

- Scroll: Arrows change the view to the next or previous test.
- Graph: Arrows zoom in and then out of the graph

07 App Settings

App Settings govern various aspects of how data is recorded across the app. The App Settings screen can be found by tapping "App Settings" in the App Menu.

Force Units

Default: *Pounds-force*

Specifies the units of force used when recording strength data, relevant custom settings, and results downloaded from the dynamometer.

Options

- Pounds-force (lbf)
- Kilograms-Force (kgf)
- Newtons (N)

Enable Hardware Specific Settings

Controls whether "Hardware Specific settings" are

- Shown when editing Settings
- Compared when syncing settings

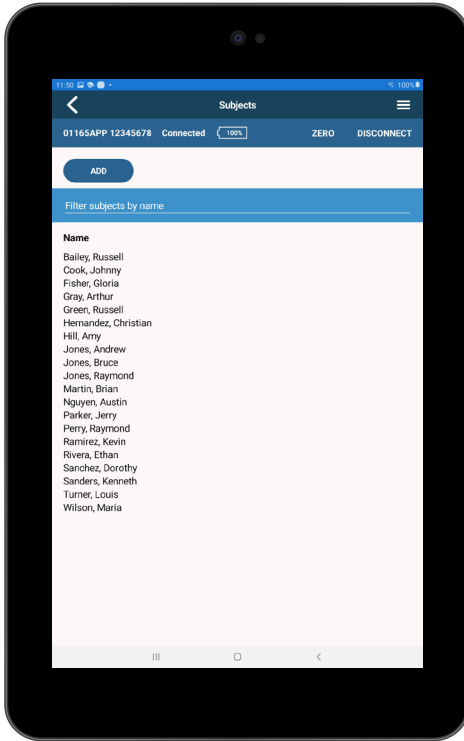
Use Legacy Download

Selecting Use Legacy Download enables a method more reliable for slower or older dynamometers to be used when downloading data from the dynamometer. Because this method trades speed for additional reliability, it is recommended this setting should only be enabled when using the standard download method is not working reliably.

Note: If necessary, DynoData will automatically recommend enabling this setting.

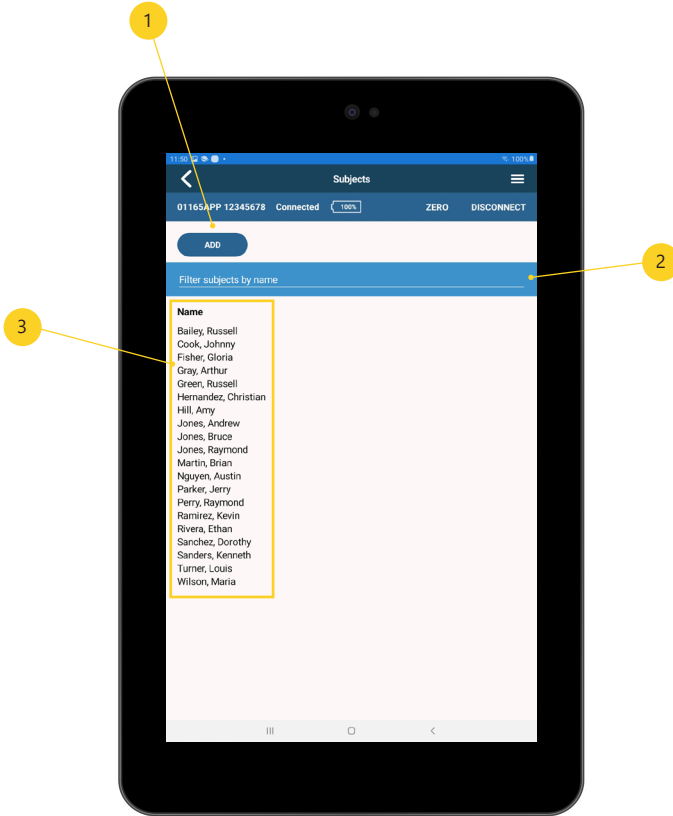
08 Subjects

One of the strengths of DynoData is storing test data by subject.



08.1 Subjects: View Subjects

View Subjects displays a list of all subjects stored in DynoData and is available by tapping on "View Subjects" from the home screen. Subjects can be easily filtered by name via the provided text box (2). Tapping on the name of a subject in the list (3) navigates to the Subject History section which includes a list of any previous tests. Tapping ADD (1) displays the create a new subject form.



08.2 Subjects: Add Subjects

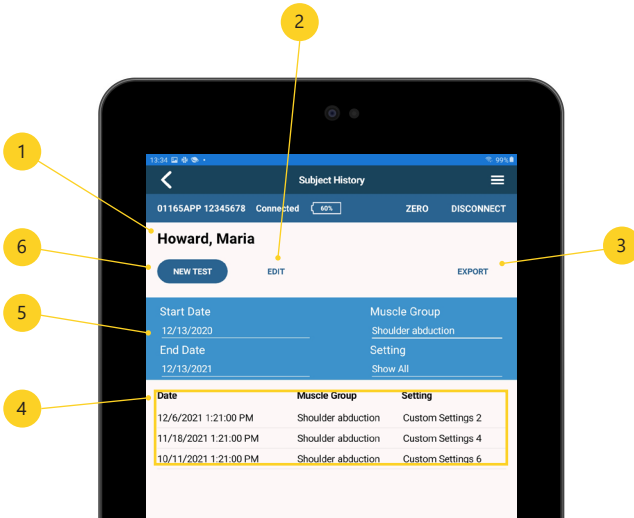
The create a subject form is available by tapping “Add Subject” on the home screen or ADD on the View Subjects screen. First name and last name are required fields, while more information is optional.

08.3 Subjects: Subject History

The Subject History listing is available by tapping a subject name on the View Subjects screen. The Subject History contains a list of previous tests organized by date as well as the options to start a new test, edit the subject, and export the historical data.

Tapping the NEW TEST button (6) will navigate to the Standard Test screen where a test can be set up and run. Tapping EDIT (2) displays the Edit Subject form. Tapping EXPORT (3) creates an email with an attachment containing results for each trial. Tests can be easily filtered by Date, Muscle Group, and Setting via the Filter panel (5). A test can be deleted by tapping and holding the test and then tapping the DELETE button in the context menu.

- 1: Subject Name
- 2: Edit Subject
- 3: Export Values Button
- 4: Subject History panel
- 5: Filter Panel
- 6: New Test button

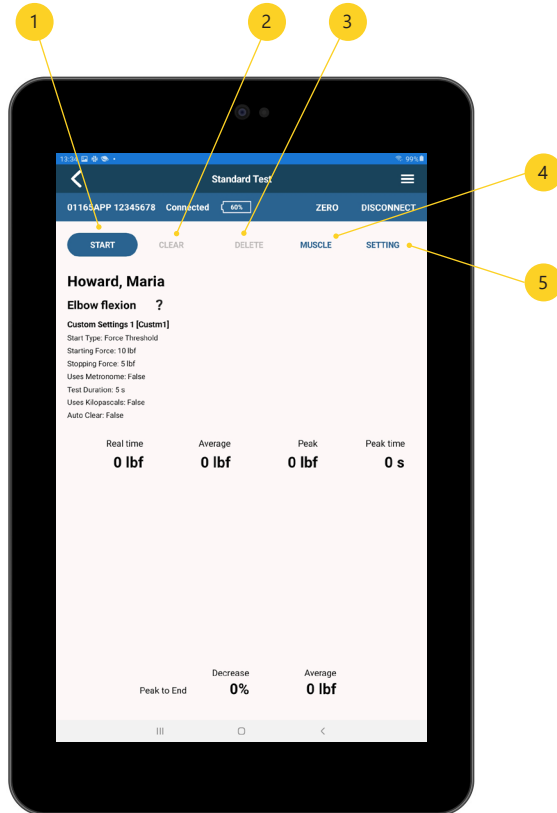


08.4 Standard Test

The Standard Test screen can be found by tapping NEW TEST from the Subject History screen.

- 1: Start Test Button
- 2: Clear Results
- 3: Delete Test Results
- 4: Select Muscle Area
- 5: Select Settings

Note: SAVE (2) and CLEAR (3) are unavailable until a trial has been completed.

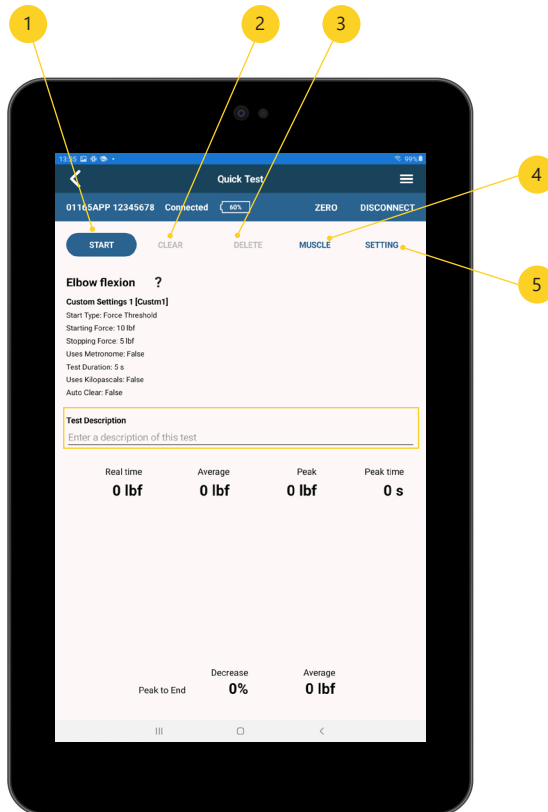


09 Quick Test

The Quick Test screen can be found by tapping “Begin Quick Test” from the home screen. A Quick Test follows the same process as a Standard Test, but rather than being stored with a subject a Quick Test is stored by date and time on the Manage Quick Tests screen.

- 1: Start Test Button
- 2: Clear Results
- 3: Delete Test Results
- 4: Select Muscle Area
- 5: Select Settings

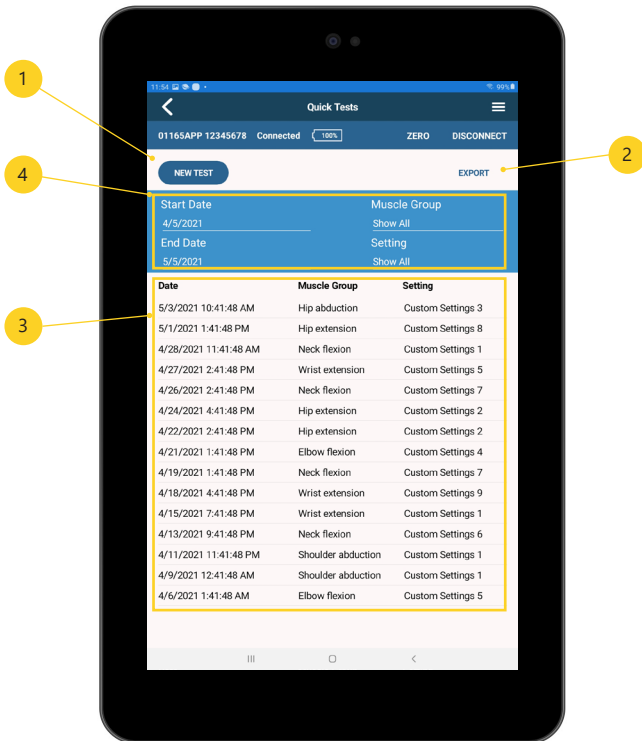
Note: SAVE (2) and CLEAR (3) are unavailable until a trial has been completed.



09.1 Managing Quick Tests

The Manage Quick Tests listing is available by tapping on "Manage Quick Tests" on the home screen. Manage Quick Tests contains a list of previous tests organized by date and time as well as the options to start a new test and export the historical data.

Tapping the RUN TEST button (1) will navigate to the Quick Test screen where a test can be set up and run. Tapping EXPORT (2) creates an email with an attachment containing results for each listed trial. Tests can be easily filtered by Date, Muscle Group, and Setting via the provided text area (4). Tapping on a Date in the list (3) navigates to the Quick Test result. A test can be deleted by tapping and holding the test and then tapping the DELETE button in the context menu.



10 Running a Test

Once a decision on test type has been made, the process of running is the same regardless of test type. Screenshots will be taken from the Quick Test test type.

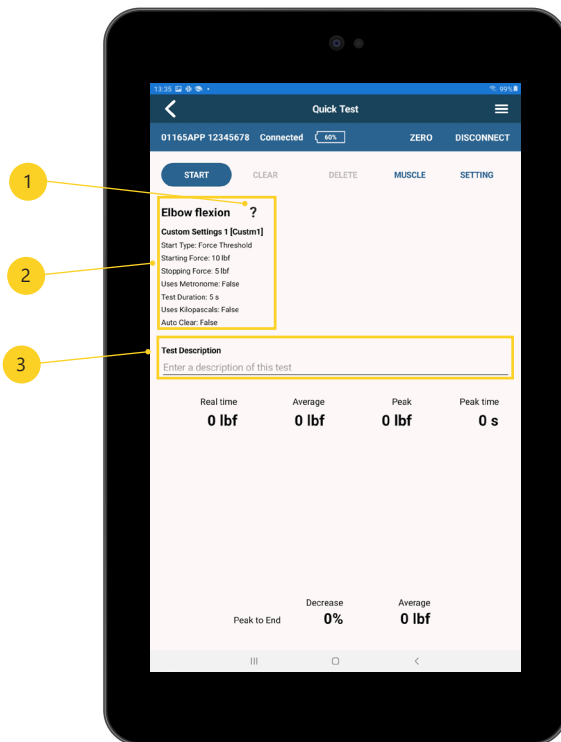
Note: A test can be set up, but not be run without a dynamometer connected.

10.1 Running a Test: Test Setup

A Muscle and Setting must both be selected in order to run a test. The most recently used Muscle and Setting are both automatically selected when creating a new test. To select a different Muscle or Setting, tap on MUSCLE or SETTING, respectively. Additional Muscle Groups can be added from this screen.

Tapping the Instruction indicator (1) inside the test settings block (2) will display any instructions associated with the Muscle. If no instructions were entered, then the indicator does not appear. Standard Tests include the subject's name while Quick Tests can include an optional Test Description (3).

Note: A test can be set up with or without a dynamometer connected.

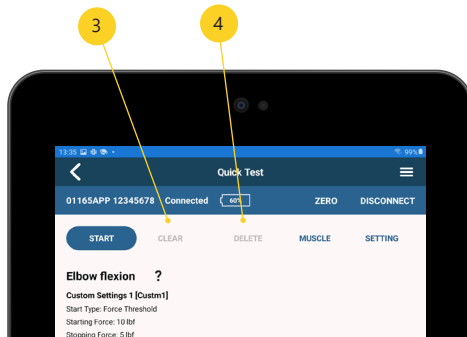
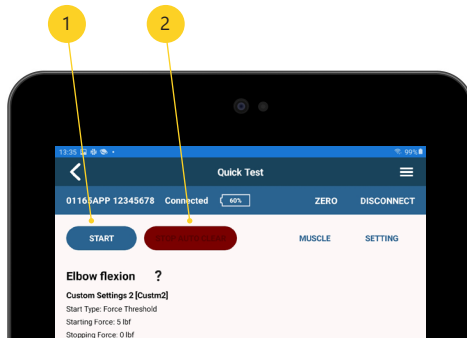


10.2 Running a Test: Saving and the Auto Clear Setting

Before beginning a test, note the Start Type and Auto Clear settings. When Start Type = Force Threshold, the Auto Clear setting is available. When Auto Clear is enabled CLEAR and DELETE are replaced with a STOP AUTO CLEAR button (2) and the START button (1) is disabled throughout the trial. When Auto Clear is enabled, values are automatically saved and cleared.

When Auto Clear is disabled, values are still saved automatically, but must be cleared by tapping CLEAR (3). The saved test values can be deleted by tapping DELETE (4). A test is initiated by tapping on the START button.

For more information about how to use Auto Clear, go to Manage Settings on page 9.



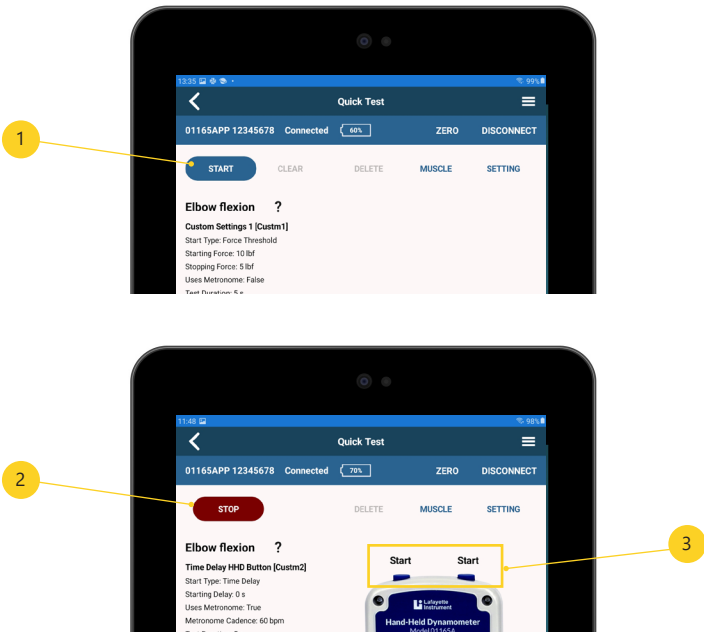
10.3 Running a Test: Start Test

Upon tapping the START (1) button, DynoData will check Start Type. If Start type = Force Threshold, it will begin recording once the appropriate force has been applied. If Start type = Time Delay, then it will wait the designated time before recording. If the Use Dynamometer Buttons setting is enabled, the screen will display a dynamometer with the instructions for each button (3).

Note: A test started with the Use dynamometer buttons setting enabled will continue to use the dynamometer buttons until the STOP (2) button is tapped.

Depending upon the selected settings, a test can be ended by force dropping below a specific value or after a specific amount of time has passed. Both values are set up in advance via the Manage Settings screen.

For more information regarding the settings available when running a test, go to Manage Settings on page 10.



11 Saved Results

Like the HHD device, one of the most important features of DynoData is the storage, retrieval, and download of test data.

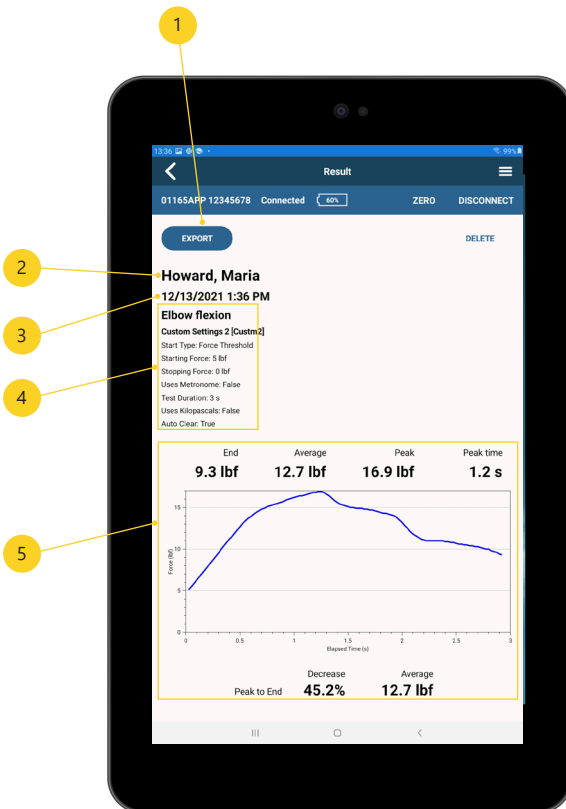


11.1 Saved Results: Standard Test

Saved results are available via a subject's Subject History. The selected subject (2), date (3), muscle group and setting options (4), and results (5) can be viewed and exported from this screen. Tapping EXPORT button (1) creates an email with an attachment containing the subject and data table in csv format.

For information about viewing the Subject History, go to Subject History on page 19.

Note: The created email message will be opened and subsequently sent from the tablet's default email client.

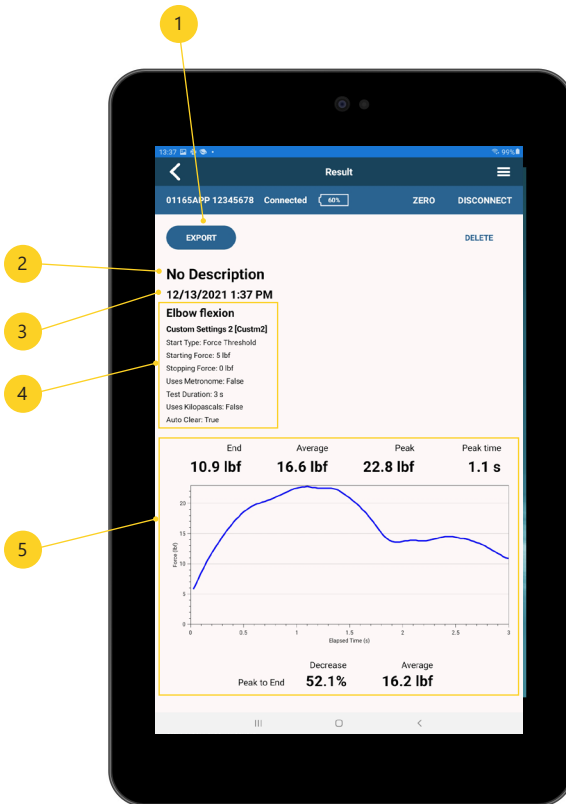


11.2 Quick Test: Saved Results

Saved results are available via Manage Quick Tests. The selected Test Description (2 - optional), date (3), muscle group and setting options (4), and results (5) can be viewed and exported from this screen. Tapping EXPORT button (1) creates an email with an attachment containing the test information and data table in csv format. The currently viewed Result is easily deleted by tapping Delete (6).

For information about managing Quick Tests, go to Manage Quick Tests on page 22.

Note: The created email message will be opened and subsequently sent from the tablet's default email client.



12 Download Tests

Tests completed/stored on the dynamometer can be easily downloaded and exported via DynoData.

Note: Tests completed/stored on the dynamometer cannot be stored in the DynoData app database.

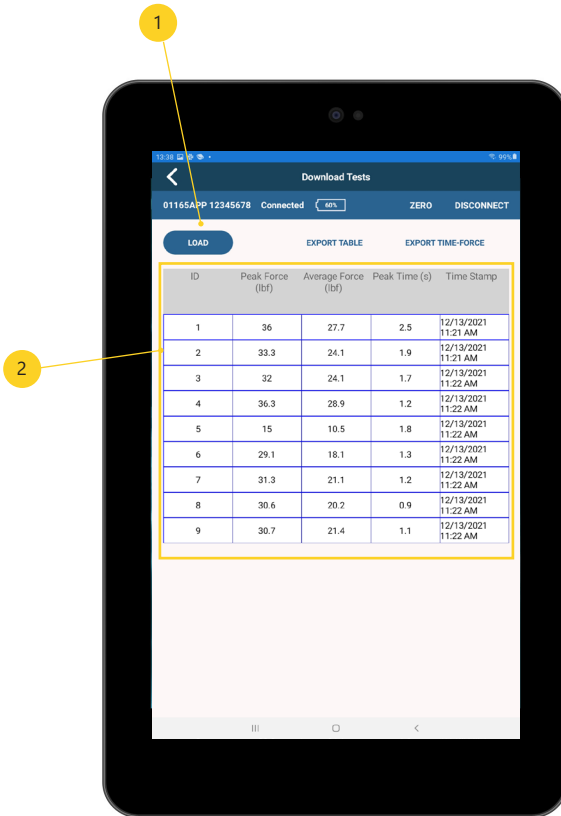


12.1 Download Tests: Process

Tapping LOAD button (1) on the Download Tests screen will begin downloading and displaying the results for tests that have been run on the dynamometer.

Note: This process requires the dynamometer to be paired with DynoData.

Tapping on a result in the data grid (2) displays the result for the specific test downloaded from the dynamometer.



12.2 Download Tests: Export

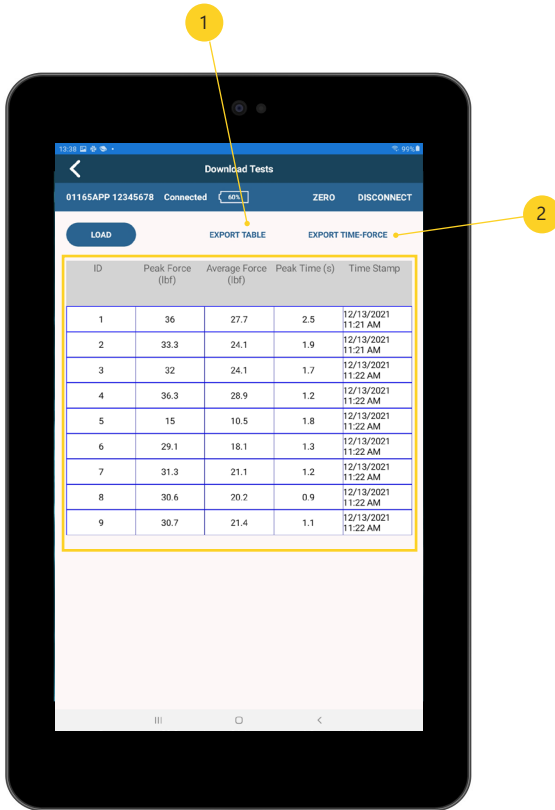
Export Table

Tapping on EXPORT TABLE (1) creates an email with an attachment containing the data in the table in csv format.

Export Time-Force

Tapping on EXPORT TIME-FORCE (2) creates an email with an attachment containing results for all the trials, including the Force vs Time data.

Note: The created email message will be opened and subsequently sent from the tablet's default email client.



13 Manage Password

DynoData Password

Default: Disabled

Default Password: password

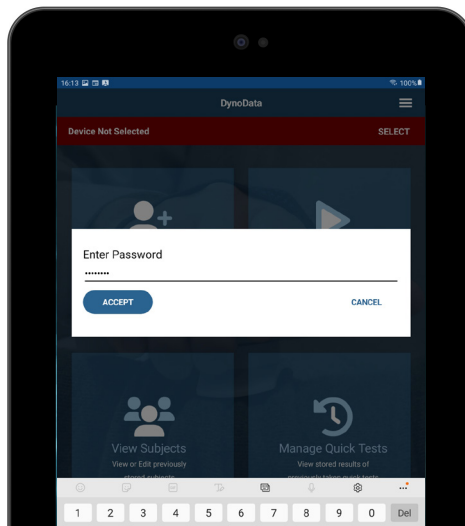
Stored subject data can be optionally protected via in-app password.

If enabled, a password prompt will restrict access to previously stored subject data. A password will be required each time the subject list is opened, a data export is initiated, or when password changes are made.

Each time the DynoData password is initially enabled it will set to the default value. Lafayette Instrument recommends changing the default password and keeping note of it for future use.

Note: New subjects can be added and Quick Tests can be viewed and run without the need to enter a password.

For assistance with password management, contact Lafayette Instrument via the Contact Support form provided in the app.





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