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## **FORCEWare Software User Guide**

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# Preface

This guide provides instructions for using FORCEWare software with GPD Global Peel Back Force Testers (PBFT). It has been fully updated to reflect current software and operational procedures. FORCEWare software is compatible with both current and older PBFT models. Users of previous versions of FORCEWare will find that the core functions remain the same, while newer features and interface updates are reflected in this guide. Procedures, features, and interface behavior may vary between software versions.

Key points about this edition:

- This is the first version (V1) of the FORCEWare Software User Guide.
- The content has been streamlined for clarity, readability, and ease of use.
- References to outdated or obsolete software options and features have been removed.
- All procedures, permissions, and configuration steps have been verified against the current FORCEWare version 5.10.0.

# Trademarks

*Throughout this guide, trademarks are used. Rather than include a trademark symbol with every occurrence of a trademarked name, such names are used in an editorial manner only, to the benefit of the trademark owners, and with no intention of infringement.*

*GPD Global is a registered trademark of GPD Global, Inc.*

*FORCEWare is a trademark of GPD Global, Inc.*

*InstaCal is copyrighted by Measurement Computing.*

*Windows is registered trademark of Microsoft Corporation in the United States and/or other countries.*

## Warranty

**General Warranty.** Subject to the remedy limitation and procedures set forth in the section “Warranty Procedures and Remedy Limitations,” GPD Global warrants that the system will conform to the written description and specifications furnished to Buyer in GPD Global’s proposal and specified in the Buyer’s purchase order, and that it will be free from defects in materials and workmanship for a period of one (1) year. GPD Global will repair or, at its option, replace any part which proves defective, in the sole judgment of GPD Global, within one (1) year from the date of shipment/invoice. Separate manufacturers’ warranties may apply to components or subassemblies purchased from third parties and incorporated into the system. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

**Limitations.** GPD Global reserves the right to refuse warranty replacement where, in the sole opinion of GPD Global, the defect is attributable to the use of incompatible materials or to damage resulting from improper use or neglect.

This warranty does not apply if the GPD Global product has been damaged by accident or abuse, or if it has been modified without the written permission of GPD Global.

Items considered replaceable or rendered unusable through normal wear and tear are not covered under the terms of this warranty. Such items include, but are not limited to, fuses, lights, filters, and belts.

**Warranty Procedures and Remedy Limitations.** The sole and exclusive remedy of Buyer in the event that the system or any components of the system do not conform to the express warranties stated in the section “Warranties” shall be the replacement of the component or part. If on-site labor by GPD Global personnel is required to replace a non-warranted defective component, GPD Global reserves the right to invoice Buyer for component cost, personnel compensation, travel expenses, and all subsistence costs. GPD Global’s liability for a software error shall be limited to the cost of correcting the software error and the replacement of any system components damaged as a result of the software error. In no event and under no circumstances shall GPD Global be liable for any incidental or consequential damages; its liability is limited to the cost of the defective part or parts, regardless of the legal theory of any such claim. As to any part claimed to be defective within one (1) year from the date of shipment/invoice, Buyer shall order a replacement part, which will be invoiced in the ordinary course. If the replaced part is returned to GPD Global by Buyer and is found by GPD Global, in its sole judgment, to be defective, GPD Global will issue Buyer a credit in the amount of the price of the replacement part. GPD Global’s acceptance of any parts so shipped shall not be deemed an admission that such parts are defective.

Specifications, descriptions, and all information contained in this guide are subject to change or correction without prior notice.

Although reasonable care has been exercised in preparing this guide to ensure it is complete and accurate, it does not purport to cover all conceivable problems or applications pertaining to this machine.

## Introduction

This document describes how to use the PBFT (variable speed Peel Back Force Tester with USB) and its FORCEWare control software.

FORCEWare software interfaces with the variable-speed PBFT and collects test data from the system. Peel speed is selected using the speed selection switch on the machine and is monitored by FORCEWare.

The FORCEWare software package was designed by GPD Global to be compatible with Windows operating systems on either a desktop or notebook computer.

## Function

The GPD Global PBFT measures the peel-back force required to separate the cover tape from the carrier tape. FORCEWare collects and records the test data and displays the results graphically for review and analysis. The PBFT accommodates tape widths from 8 mm to 56 mm and supports plastic, metal, and paper carrier tapes in single- and dual-sprocket configurations. The PBFT can be used to test taped components during incoming or outgoing inspection.

## Theory of Operation

During operation, the PBFT provides the mechanical test motion and force measurement, while FORCEWare monitors the selected test speed, acquires the measurement data, and processes the results for display, storage, printing, and SPC analysis.

## Software Controls

The main FORCEWare window provides access to setup, operation, analysis, and reporting functions.

For a detailed description of each menu function, refer to the **FORCEWare Software (page 46)** section.





# Software Installation and Initial Configuration

Ensure the host computer meets the system requirements in **Computer Requirements (page 78)** before proceeding.

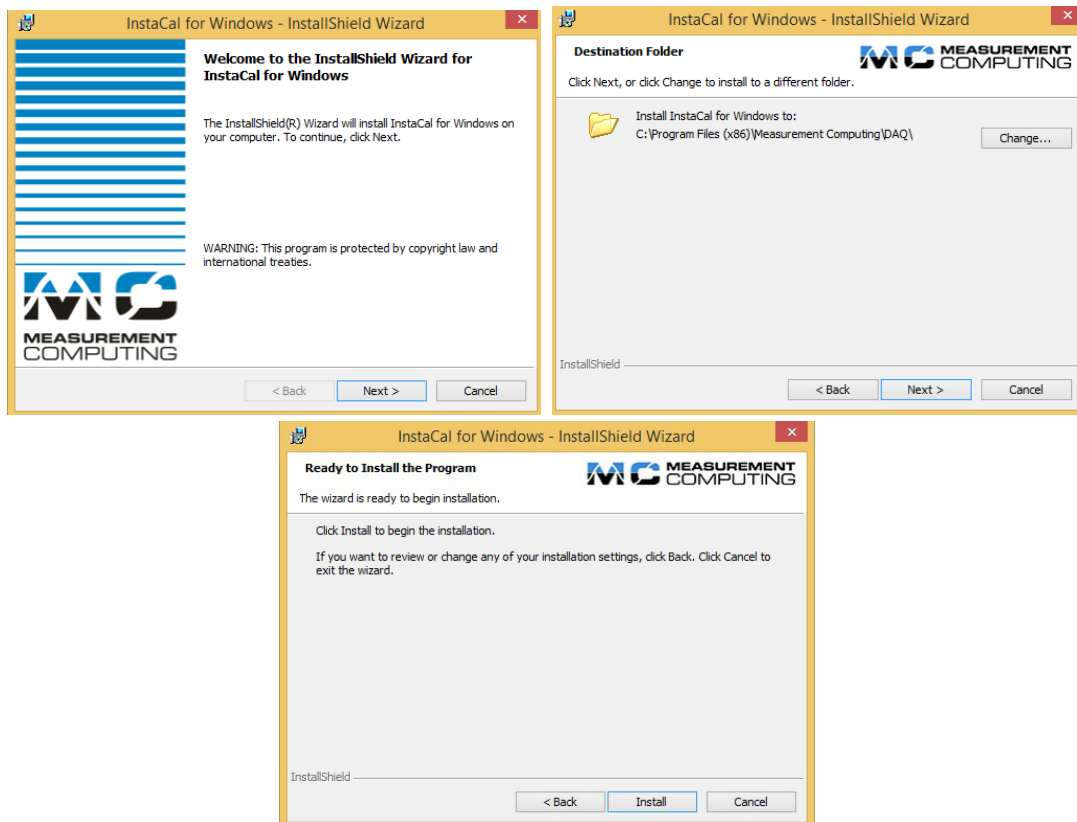


## IMPORTANT – SOFTWARE INSTALLATION PRECONDITION

We strongly recommend that any previous versions of InstaCal or FORCEWare be uninstalled prior to installing the software.

## Download Software & Documentation

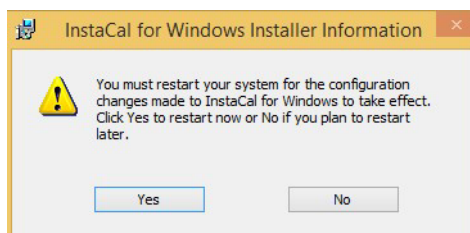
1. Download the .zip file from the URL provided on the Download Instructions card (PN 2050-0089) supplied with the machine. The required user ID and password are included on this card.



2. Extract the downloaded .zip file to a local folder on the computer.

## Install InstaCal Software

1. Double-click the **icalsetup.exe** file located in the extracted software package.
2. Follow the on-screen instructions in the InstaCal for Windows installation wizard.
3. When prompted, select Yes and click **OK**.
4. When installation completes, perform a system reboot.



## Install FORCEWare SPC Software

1. Double-click the **FORCEWare.msi** file located in the extracted software package.
2. Follow the installation wizard prompts.
3. When the FORCEWare Configuration Utility window appears:
  - a. Enter the PBFT serial number in the Configure tab.
  - b. Click **FINISH**.

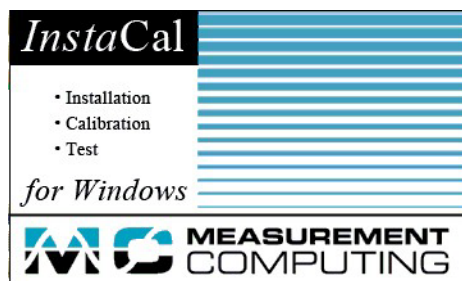
**NOTE:** Advanced, Communication, and Data tabs may remain at default values for normal operation.

4. If a previous version of FORCEWare is installed on the computer, uninstall it before proceeding.

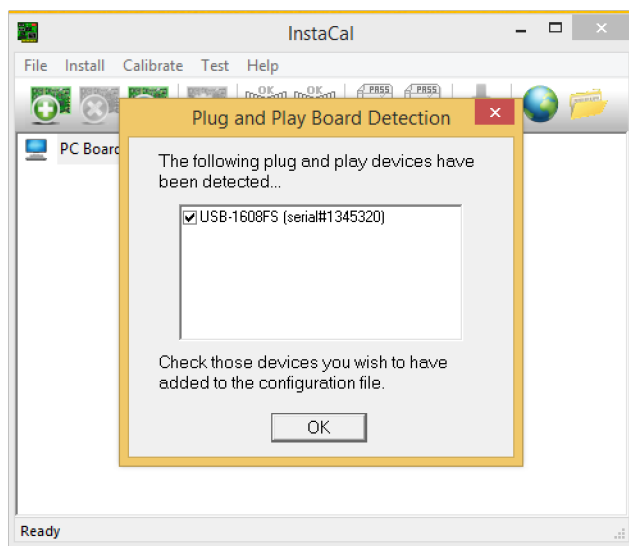
**NOTE:** PBFTVS.USB1100 systems require FORCEWare version 5.9.0 or later.

## InstaCal Setup & Verification

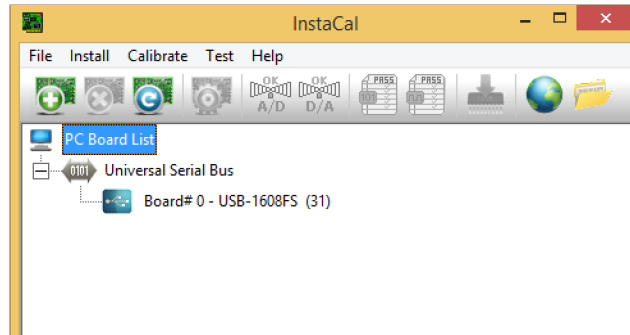
1. Power on the PBFT and strain gauge:
  - a. Turn on the PBFT power switch. The power indicator will illuminate.
  - b. Press and hold the strain gauge power button until the display appears.
2. Launch InstaCal (Start > Programs > Measurement Computing > InstaCal).



3. When the Plug and Play Board Detection window appears, click **OK**.



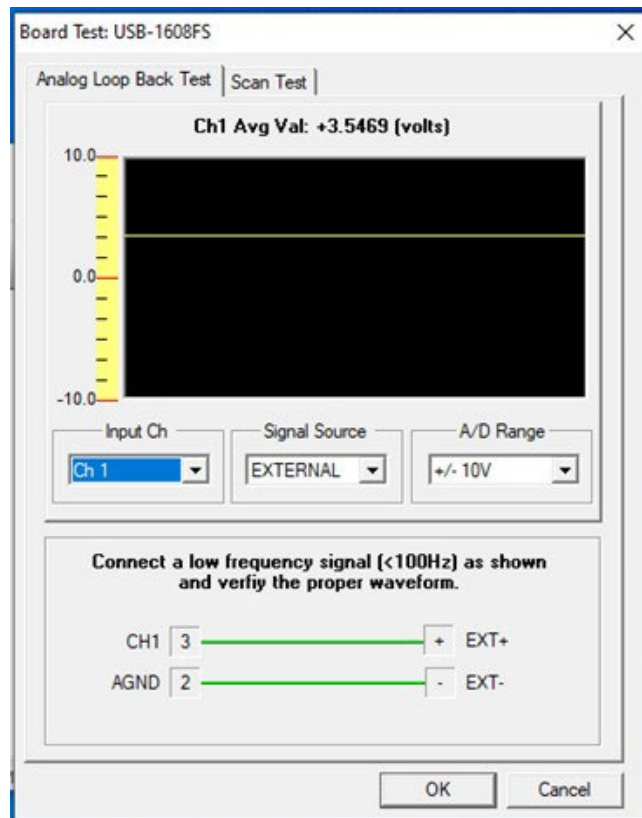
4. Verify the board appears in InstaCal as Board #0.



#### NOTE – DAQ HARDWARE IDENTIFICATION

The USB DAQ device may be identified as a USB-1608FS or USB-1608FS-PLUS depending on hardware revision. Hardware revision is subject to change without notice.

5. If old or missing boards appear:
  - a. Click **Install > Remove All**, then click **OK**.
  - b. Rescan for hardware if prompted.
6. Test the USB DAQ, strain gauge, and cable setup:
  - a. Click **Test > Analog**
  - b. Select **EXTERNAL** as the signal source and click **OK**.
  - c. Select **Input Channel 1**. (*Channel 0 is not used on this model.*)



- d. Change the speed selector on the PBFT. The displayed voltage should change accordingly.
    - i. If no change is observed, verify PBFT power and USB connection. If the issue persists, contact GPD Global Service.
7. Close InstaCal.

## FORCEWare Initial Startup

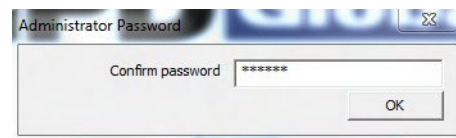
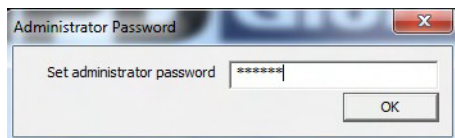
After installation is complete, launch FORCEWare. The login screen will be displayed.

### Administrator Account Setup

1. Enter administrator in the User Name field.
2. A prompt appears stating that the administrator password must be set. Click **OK**.



3. Enter the desired password and click **OK**.
4. Re-enter the password for confirmation and click **OK**.



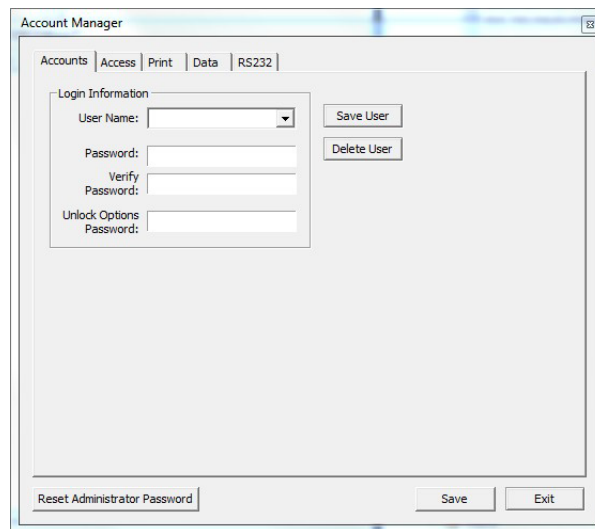
### NOTE

Keep a record of this password. If lost, FORCEWare must be uninstalled and reinstalled to reset the administrator credentials.

## Account Manager Window

After setting the administrator password, the Account Manager window opens.

1. Set up additional user names, passwords, and access rights as required.
  - a. Click **SAVE USER** to create or update user settings.



2. Set defaults in the **Print Tab (page 52)**.
3. Set defaults in the **Data Tab (page 50)**.
4. Click **EXIT** to close the Account Manager window. The status will display "Not Logged In."

You may now log in using the administrator account.

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### IMPORTANT

Prior to operating the PBFT, the software must be fully configured and verified. Refer to Software-to-Hardware Calibration (page 14).

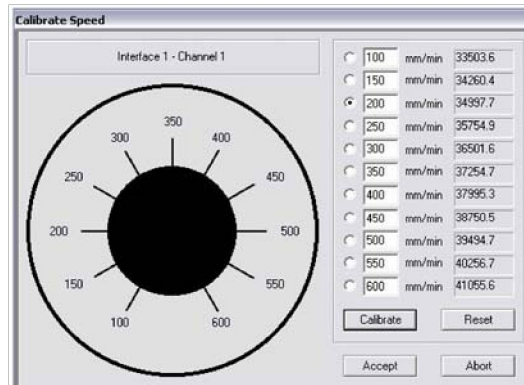
## Software-to-Hardware Calibration

Generally, the following procedures are performed only during initial startup to align FORCEWare with the machine speed control and strain gauge.

Complete **FORCEWare Initial Startup (page 12)** before performing these procedures.

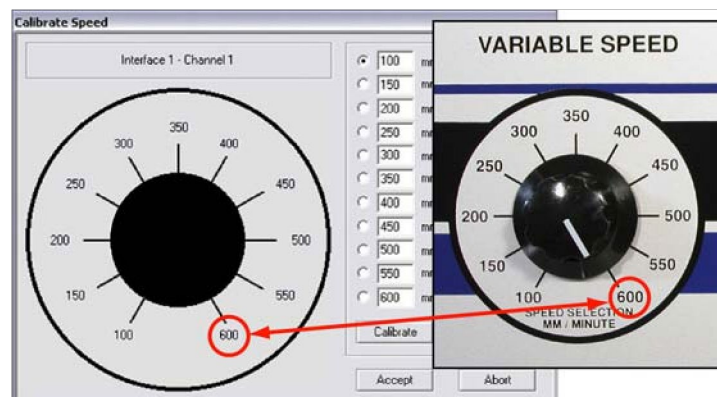
### Calibrate Speed

Verifying the PBFT speed requires repeating a simple procedure for each speed setting.



*Configuration 100 mm to 600 mm - prior to calibration or in reset condition.*

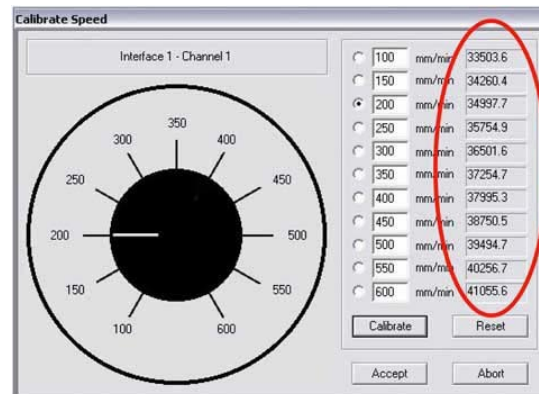
1. From the main menu bar, click **Setup > Calibrate Speed**. The Calibrate Speed window appears.
2. Verify speeds:
  - a. Confirm that the speed range shown in the Calibrate Speed window matches the hardware Speed Selector dial.
  - b. Start with the lowest speed on the hardware dial.
  - c. Ensure the corresponding speed is selected in FORCEWare.
  - d. Click the **Calibrate** button.
  - e. Move to the next higher speed increment on the hardware dial and repeat steps c-d.
  - f. Continue sequentially until all speed increments have been calibrated.



*The maximum speed should be the same on the hardware knob and in the software.*

3. Verify calibration:
  - a. Confirm that the simulated dial in FORCEWare responds correctly to each hardware speed increment.
  - b. Ensure that the incremental differences between displayed calibration values are consistent.
  - c. If values are inconsistent, click **RESET** and repeat the calibration procedure.
  - d. Once all speed increments have been calibrated, verify that the PBFT Speed Selector dial and the simulated dial in FORCEWare are synchronized. For example, if the simulated dial shows 200 mm/min, the hardware Speed Selector dial should also be set to 200 mm/min.

**NOTE:** If the dials are not synchronized, click **RESET** and repeat the Verify PBFT Speed procedure from the beginning.



*Configuration 100 mm to 600 mm - speed values should differ by a consistently similar incremental amount.*

4. Click **ACCEPT** to save the changes.

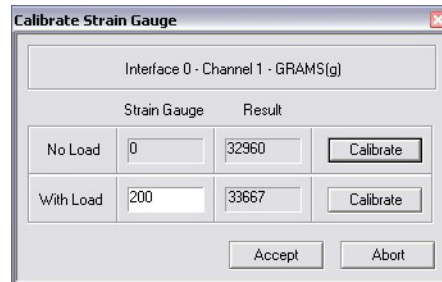
## Calibrate Strain Gauge

Calibrating the control software to the PBFT strain gauge involves two measurements:

- one with no load
- one with a known load.

**NOTE:** Use the GPD Global Strain Gauge Verification Kit (PBT-123) for best results.

1. From the main window menu bar, click **Setup > Calibrate Strain Gauge**. The Calibrate Strain Gauge window appears.



*Setting prior to strain gauge verification.*

2. Prepare the PBFT strain gauge:
  - a. Verify that the PBFT strain gauge is powered on.
  - b. With no load on the strain gauge, press the strain gauge ZERO button.
  - c. Verify that the unit of force (g, kg, N, or lb) displayed by the strain gauge matches the unit shown at the top of the Calibrate Strain Gauge window. If they do not match, either change the unit in the user account or calculate the conversion.

### NOTE – UNSUPPORTED UNIT OF MEASURE

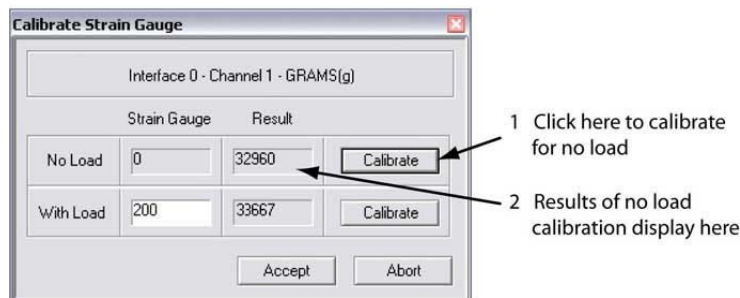
Do not use the ozf unit of measure, as it is not supported by FORCEWare.



### CAUTION – STRAIN GAUGE CONFIGURATION

Use only the strain gauge buttons specified in these instructions. Using other buttons or programming may adversely affect strain gauge performance.

3. Click the **CALIBRATE** button in the No Load row.

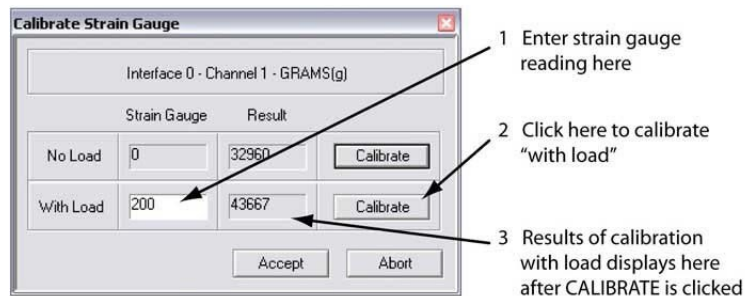


*Verify the strain gauge with NO load.*

4. Place a known calibration weight (recommended 150–200 grams) on the strain gauge and allow the reading to stabilize.



5. Enter the known calibration weight value into the Strain Gauge field of the With Load row, then click **CALIBRATE**.



*Verify the strain gauge WITH a load.*

6. When acceptable results are shown, click **ACCEPT**. Calibration is now complete.

**NOTE:** A dialog box may appear on the screen if the entered calibration weight falls outside the recommended calibration range for the selected unit of force (UOF). Calibration may still be completed.

If system accuracy performance deteriorates, perform the **Calibrate Speed (page 14)** and/or **Calibrate Strain Gauge (page 16)** procedures as required. These procedures may also be performed periodically as preventive maintenance to maintain optimal accuracy.

# Setup & Testing

Perform the following steps in sequence when operating the PBFT:

## Startup

Perform the **Software-to-Hardware Calibration** (page 14) prior to initial operation.

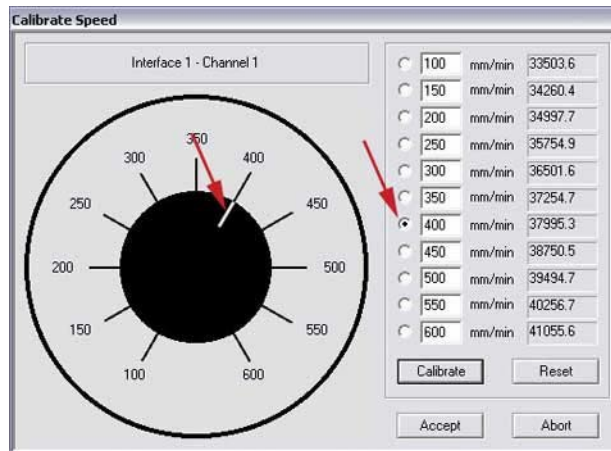
1. Power on and prepare the PBFT and strain gauge:
  - a. Verify the PBFT power switch (**See Figure 1, Mechanical Controls, in the applicable PBFT Installation and Service Guide, Item 5**) is ON.
  - b. Set the Speed Selector (**See Figure 1, Mechanical Controls, in the applicable PBFT Installation and Service Guide, Item 3**) to the desired test speed.
  - c. Press and hold the strain gauge power button (**See Figure 3, Mechanical Controls, in the applicable PBFT Installation and Service Guide, Item 2**) until the display (**See Figure 3, Mechanical Controls, in the applicable PBFT Installation and Service Guide, Item 4**) turns on.
  - d. Press ZERO (**See Figure 3, Mechanical Controls, in the applicable PBFT Installation and Service Guide, Item 3**). Verify the display reads zero.
2. Power on the computer connected to the PBFT.
3. Open FORCEWare:
  - a. Launch FORCEWare from the Windows Start menu or desktop shortcut.
4. Log in to FORCEWare:
  - a. Enter a valid user name and password.
  - b. Click **LOGIN**.
  - c. Verify the status displays “Logged in: [user name]”.



## Verify Speed Dial Synchronization

Verify that the PBFT Speed Selector dial and the simulated dial in FORCEWare are synchronized during operation.

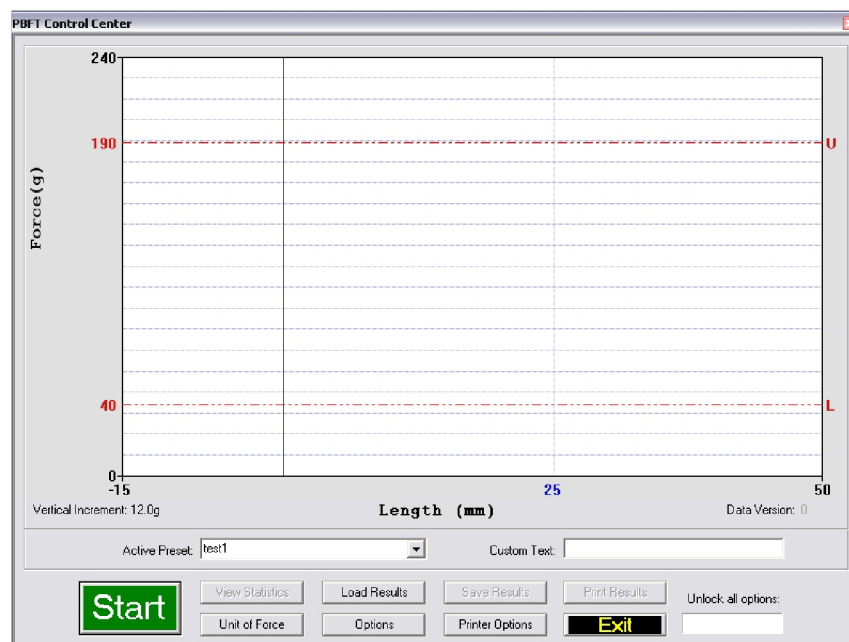
1. Open the Calibrate Speed window.
2. Turn the Speed Selector dial through each speed increment.
3. Confirm the simulated dial updates to match each selected speed.
  - If the dials are synchronized, no further action is required.
  - If the dials are not synchronized, perform the **Calibrate Speed** procedure (page 14).



*The white pointer on the simulated dial should change position to agree with the actual speed selected on the PBFT.*

## Open PBFT Control Center

From the main menu bar, click **PBFT > Activate PBFT**. The PBFT Control Center window will open.

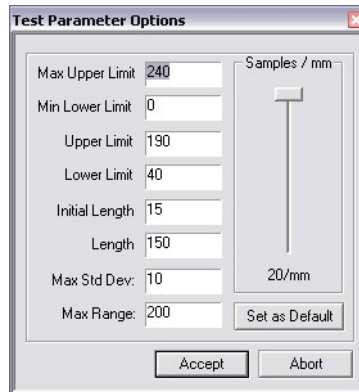


The **OPTIONS**, **LOAD RESULTS**, and **UNIT OF FORCE** buttons are accessible only to user accounts with the required access rights. For more information on these functions, see **Control Center Actions** (page 24).

## Modify Test Parameters

Modify test parameters as required for the current test application.

- Click the **OPTIONS** button in the PBFT Control Center window. The Test Parameter Options window appears.



- Adjust the test parameters as required.
  - Enter values consistent with the current unit of force (UOF).
  - Reducing Samples/mm may improve testing responsiveness, use as needed.
- Click **ACCEPT** to save the changes.

For additional information on the Test Parameter Options window, see **Test Parameter Options (page 68)**.

## Load Carrier Tape

Follow these steps to properly load carrier tape onto the PBFT for testing:



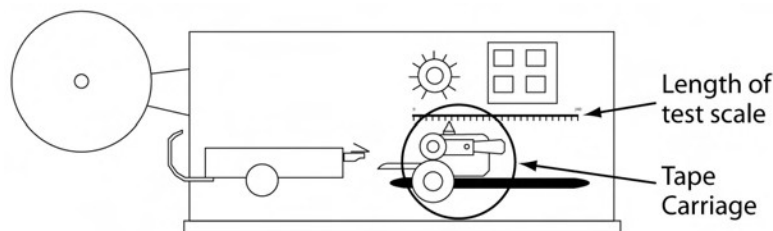
### Cautions: Gauge Handling

Do not strike, impact, or abruptly load the strain gauge. Apply force only through controlled movement while routing carrier or cover tape. Excessive force may damage the strain gauge.

Do not apply excessive force when threading, guiding, or securing carrier tape or cover tape. Ensure tape is routed smoothly to avoid stressing the strain gauge or carriage assembly.

### 1. Prepare the PBFT

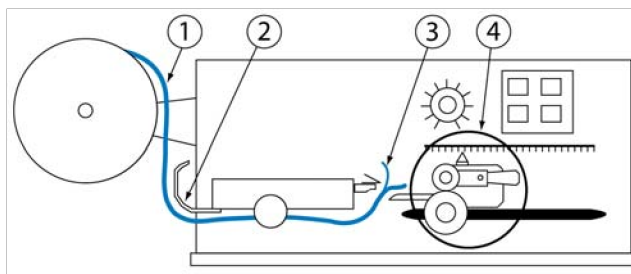
- Verify that the PBFT is powered on.
- Place a reel of component carrier tape on the reel arm (**See Figure 1, Mechanical Controls, in the applicable PBFT Installation and Service Guide, Item 12**).
- Align the tape carriage:
  - Press CARRIAGE RELEASE/LOCK (**See Figure 2, Mechanical Controls, in the applicable PBFT Installation and Service Guide, Item 3**) until the indicator lights. The tape carriage should move freely.
  - Manually move the tape carriage to the left until the pointer (**See Figure 1, Mechanical Controls, in the applicable PBFT Installation and Service Guide, Item 6**) aligns with zero (0) on the Length of Test scale.



*Align draw wheel carriage.*

## 2. Load Tape

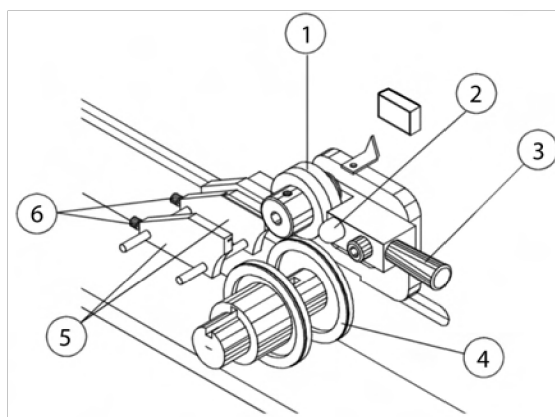
- a. Feed the carrier tape (**Figure below, Item 1**) under the tape deflector (**Item 2**) to the tape carriage (**Item 4**).
- b. Gently peel back a short length of the cover tape (**Item 3**) from the carrier tape.



*Feed tape to tape carriage.*

## 3. Position the Tape in the Carriage

- a. Press the draw wheel handle (**Figure below, Item 3**) down and push the spring-loaded knob (**Item 2**) to lock the draw wheel rollers (**Item 1**) in the open position.
- b. Adjust the tape guides (**Item 5**) using the adjustment screws (**Item 6**) so that the carrier tape feeds with minimal resistance.
- c. Lay the tape over the draw wheel (**Item 4**), aligning the tape holes with the draw wheel pins.
- d. Release the draw wheel rollers by pushing down on the draw wheel handle. The spring-loaded knob releases the rollers to hold the tape in place.

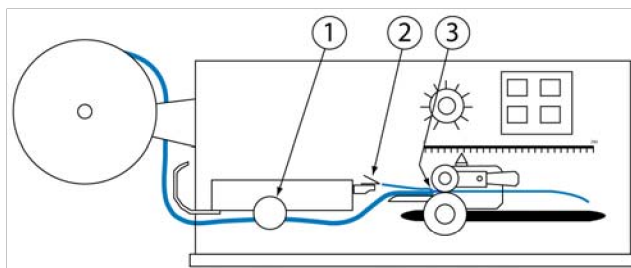


*Tape carriage.*

- e. If necessary, adjust the lateral position of the strain gauge using the adjusting knob (**Figure below, Item 1**) so the strain gauge clip (**Item 2**) is centered over the tape in the carriage.

#### 4. Align and Secure the Cover Tape

- Grasp the cover tape and peel back just enough to reach from the draw wheel to the strain gauge clip.
- Secure the end of the cover tape in the clip. Verify that the peel-back point (Item 3) is within 40 mm of the draw wheel.



*Feed and align tape.*

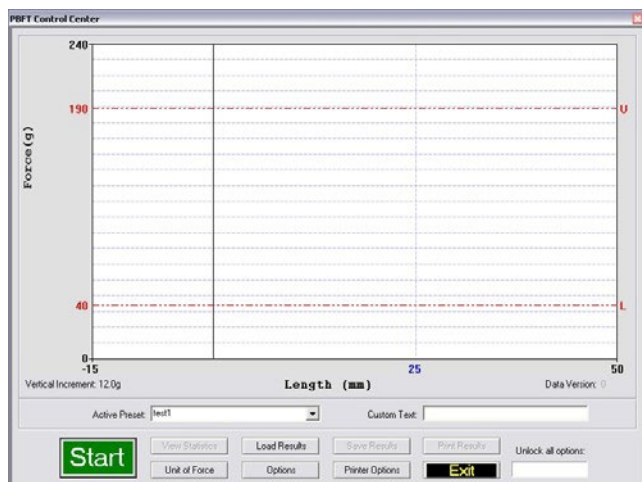
## Run a Test

### 1. Verify Test Configuration

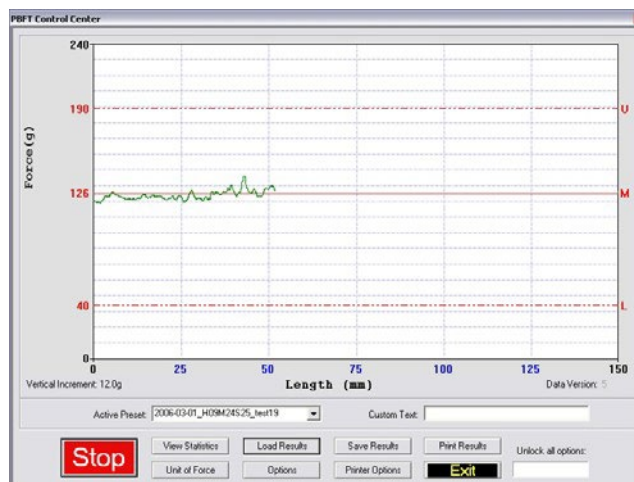
- Verify that the desired test configuration is selected before starting the test.
  - By default, the logged-in user's current settings are applied to the test.
  - To modify the current configuration, select the desired Active Preset or click **OPTIONS** to adjust the parameters.
- For additional information, see **Modify Test Parameters (page 20)** and **Presets (page 34)**.

### 2. Start the Test

- Click the **START** button in the PBFT Control Center window. The button changes to **STOP**.
- The test can be stopped at any time by clicking **STOP** or pressing **ENTER** on the keyboard.



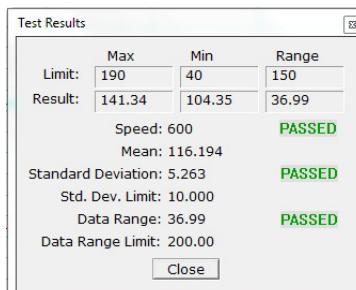
*Ready to run test - click on START.*



*Test stopped by clicking on STOP.*

### 3. View Test Results

- When the test is complete, the **Test Results** window appears. You may:
  - Note the **Pass/Fail** status and click **CLOSE** to exit the results window.
  - Observe the mean peel-back force displayed on the PBFT Control Center graph as a solid red line labeled **M**.
  - To view these results later, click **VIEW STATISTICS** in PBFT Control Center.



The screenshot shows a 'Test Results' window with a table of test parameters. The table has three columns: 'Limit', 'Max', 'Min', and 'Range'. The 'Result' row shows values for 'Max' (141.34) and 'Min' (104.35), with a 'Range' of 36.99. Below the table, several test parameters are listed with their status: Speed: 600 (PASSED), Mean: 116.194 (PASSED), Standard Deviation: 5.263 (PASSED), Std. Dev. Limit: 10.000 (PASSED), Data Range: 36.99 (PASSED), and Data Range Limit: 200.00 (PASSED). A 'Close' button is at the bottom.

|         | Max    | Min    | Range |
|---------|--------|--------|-------|
| Limit:  | 190    | 40     | 150   |
| Result: | 141.34 | 104.35 | 36.99 |

Speed: 600 PASSED  
Mean: 116.194 PASSED  
Standard Deviation: 5.263 PASSED  
Std. Dev. Limit: 10.000 PASSED  
Data Range: 36.99 PASSED  
Data Range Limit: 200.00 PASSED

Close

### 4. Modify User-Defined Data (Optional)

- If errors were made while entering user-defined fields or output data prior to the test, you may modify these values (statistical results cannot be changed) by clicking **USER FIELDS**, provided you have the necessary access permissions.
- For details, see **User Defined Fields (page 70)**

### 5. Next Steps

- To save or print the results, see **Save Test Results (page 24)** and/or **Print Test Results (page 25)**.
- To exit the PBFT Control Center and return to the main window, click **EXIT**.

# Control Center Actions

After a test is completed, additional operations are available based on user access permissions. These operations are described in the following sections.

## Save Test Results

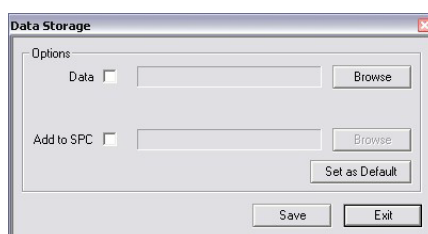
A valid storage location (Data or Add to SPC) must be configured before test results can be saved.

Default storage locations may be configured per user in **Data Tab (page 58)**. Configured storage locations are retained for future use.

### Storage Output Types

- Data output generates a .RAW file containing the raw test data.
- SPC output generates a .SPC file formatted for Statistical Process Control (SPC) data analysis.

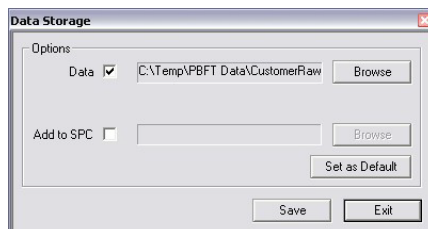
1. Click **SAVE RESULTS** in the PBFT Control Center window. The Data Storage window appears.



2. If at least one valid storage location is already configured (Data or SPC with a valid path), proceed to Step 4.
3. To configure or update a storage location:
  - a. Enable the appropriate checkbox (Data or Add to SPC).
  - b. Click the corresponding **BROWSE** button.



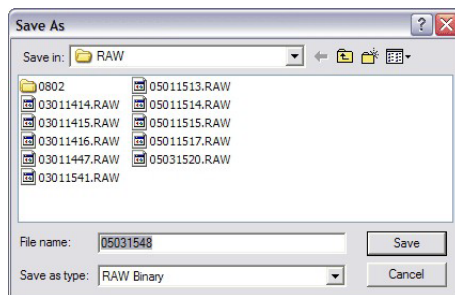
- c. Select the desired directory, then click **OK**. The selected path is displayed in the Data Storage window.



- d. Click **SET AS DEFAULT** to retain the selected path for future test result storage. The saved path will be automatically used for subsequent saves.



4. Assign a file name and save:
  - a. Click **SAVE**. The Save As window appears.
  - b. The default file name format is MMDDhhmm (month, day, hour, minute).

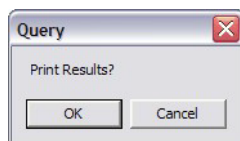


- c. Enter a new file name if desired, then click **SAVE**.
5. If both Data and SPC storage locations are enabled, separate files are generated for each enabled output type. A separate Save As window appears for each enabled storage type.
6. Click **EXIT** to close the Data Storage window.

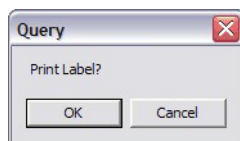
## Print Test Results

Test results can be printed in graph and label formats using the Windows default printer. See **Printer Output Samples (page 75)** for examples.

1. Click **PRINT RESULTS** in the PBFT Control Center window. A Print Results prompt appears.



2. Click **OK** to print the test graph. Click **CANCEL** to skip graph printing.
3. The Print Label prompt appears.



4. Click **OK** to print the label. Click **CANCEL** to close the prompt.

## Change Unit of Force

You may change the unit of force as needed. Updated units will be reflected in the display and in any saved or printed results.

1. Click **UNIT OF FORCE** in the PBFT Control Center window. The **Unit of Force** window appears.

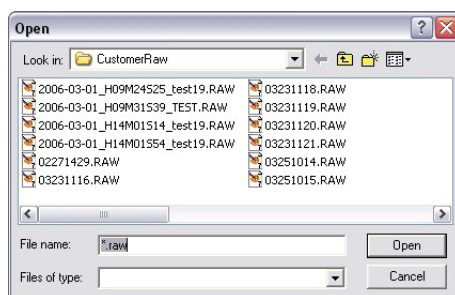


2. Select the desired unit.
3. Click **ACCEPT**.
  - The **Force** and **Vertical Increment** indicators in the PBFT Control Center update to reflect the selected unit.
  - The selected unit will also be used for printed graphs and saved results.

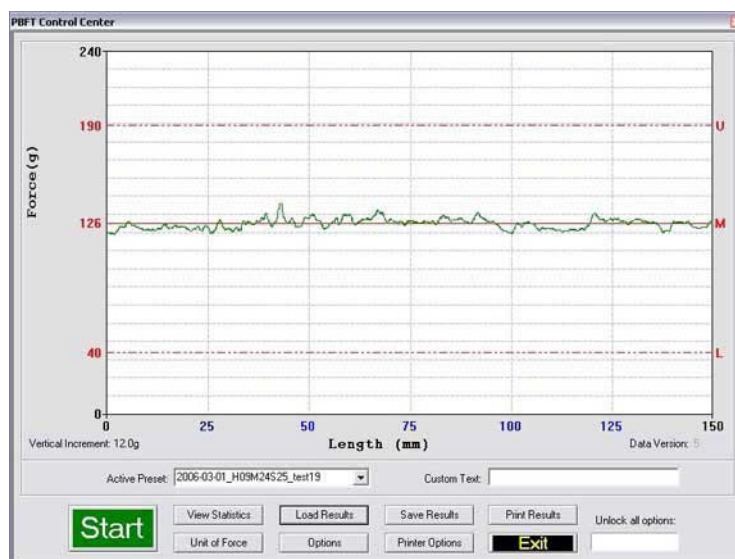
## Load Results

You may load results from a previously saved test to view statistics, change the unit of force, print, or save the data.

1. Click **LOAD RESULTS** in the PBFT Control Center window. The **Open** window appears.



2. Select a file and click **OPEN**.
  - The selected test data is displayed as a graph in the PBFT Control Center.



- The **Active Preset** field updates to show the file name.
  - The associated test parameters are loaded.
3. Use the available PBFT Control Center functions to view, modify, print, or save the loaded data, based on user access permissions.

## Cpk on Single Tests

When Cpk Single Test is enabled, FORCEWare calculates a Cpk value from all recorded test points (graphed data) within a single test run or loaded test results. The displayed Cpk ST value appears in the Test Results window with the other test results and can also be printed on labels and reports.

1. **Enable Cpk calculation**
  - a. In the main menu bar, click **Setup > Configure Accounts**. The Account Manager window appears.
  - b. Click the **Access** tab.
  - c. Enable **Cpk Single Test** by double-clicking it or using the arrows to move it to the enabled list.
  - d. Click **SAVE** to apply the settings.
2. Run a test as described in the **Run a Test** section (**page 22**).

**NOTE:** The upper and lower specification limits used for the test run are also used in calculating the Cpk value.

# Data Analysis & System Configuration

## Account Management

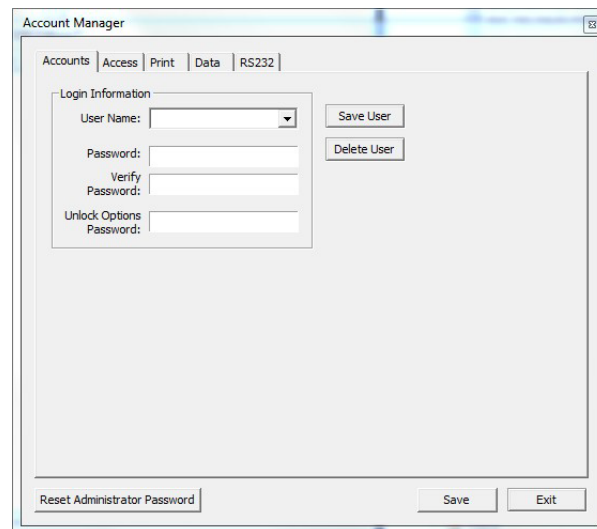
Manage user accounts, including creating, modifying, or deleting accounts, assigning access rights, and setting defaults for data storage, test parameters, and printer configuration.

### Administrator

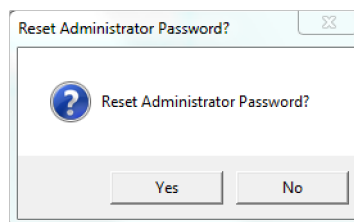
The highest access level user is **administrator**. The password is set during the first login and can be changed later as needed.

To reset the **administrator** password:

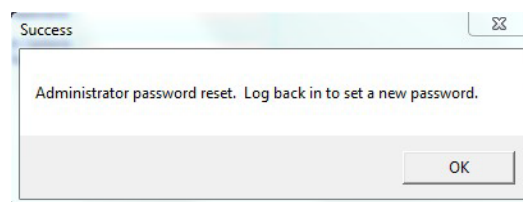
1. Log in with the administrator account.



2. Click **Setup > Configure Accounts**. Account Manager appears.



3. Click the **RESET ADMINISTRATOR PASSWORD** button at the bottom-left of the window.

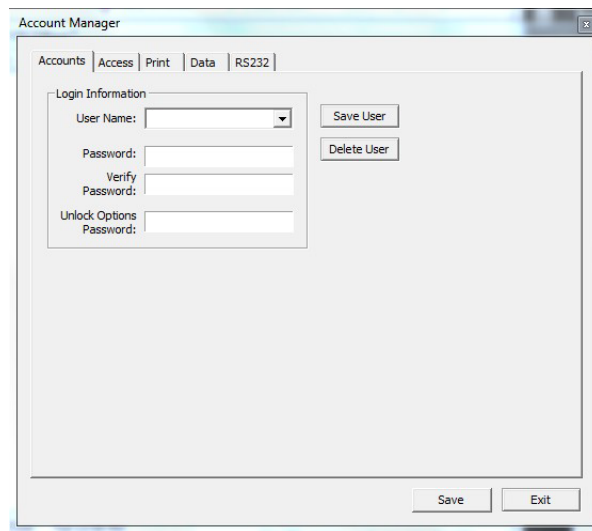


4. If resetting the password, click **YES**; otherwise, click **NO**.
5. Click **OK**, then log back in and follow the instructions to enter a new password (see Step 1 of 6. FORCEWare Initial Startup, page. 12).

## Add User

**NOTE:** This feature requires the **Configure Accounts** access permission.

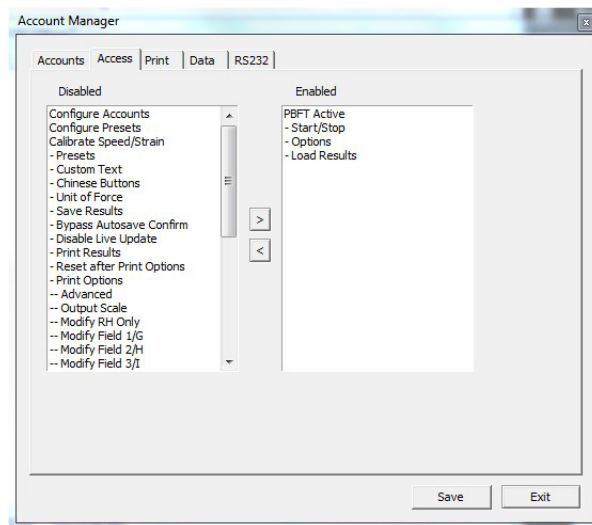
1. Log in with a user account that has the **Configure Accounts** permission.
2. Click **Setup > Configure Accounts**, then select the **Accounts** tab.



3. Enter **User Name**, **Password**, and **Verify Password**.
4. Click **SAVE USER**, then confirm by clicking **OK**.
5. Repeat steps 3–4 to add additional users.
6. If certain access rights are needed for the new user, go to **Change Access Rights** starting from **Step 3**; otherwise, click **EXIT** to leave Account Manager.

## Change Access Rights

1. Log in with a user account that has the **Configure Accounts** permission.
2. Click **Setup > Configure Accounts**.
3. Select the user to modify.
4. Change access rights:
  - a. Go to the **Access** tab.



- b. Enable or disable options as needed (double-click or use the arrows).
  - c. Save via **Accounts tab** → **SAVE USER**.
5. Repeat steps 3–4 for additional users.
  6. Click **EXIT**.

**NOTE:** Options in the **Disabled** column indicate features the user does not have permission to access; **Enabled** options indicate features the user can access.

### Change Password

1. Log in with a user account that has the **Configure Accounts** permission.
2. Click **Setup > Configure Accounts**.
3. Select the user and type a new password over the existing entry.
4. Enter the new password again in **Verify Password**.
5. Click **SAVE USER**, then confirm with **OK**.
6. Click **EXIT**.

### Delete User

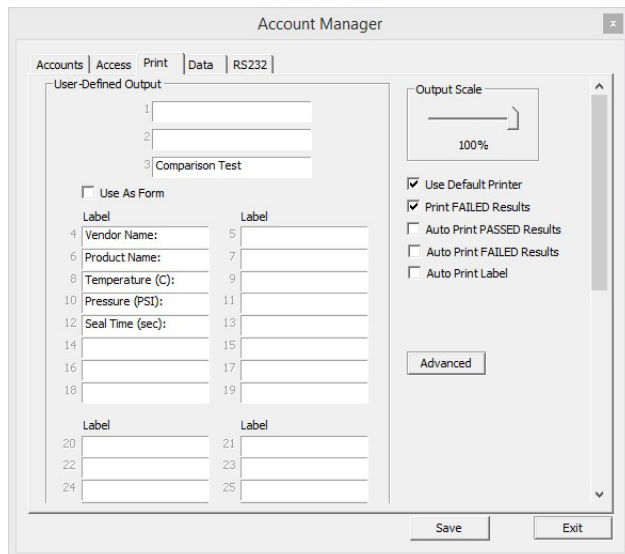
1. Log in with a user account that has the **Configure Accounts** permission.
2. Click **Setup > Configure Accounts**.
3. Select the user to delete from the **User Name** drop-down menu.
4. Click **DELETE USER**, then confirm by clicking **OK**.
5. Click **EXIT**.

## Configure Printer

The following sections require a user account with the **Configure Accounts** permission.

### Basic Printer Configuration

1. From the main window menu bar, click **Setup > Configure Accounts**.
2. Select the user account to configure and enter the corresponding password.



3. Click the **Print** tab.
4. Set report size using the Output Scale slider.
5. Choose output type using Use As Form (see **Print Tab, page 61**):
  - Disabled: labels are used for printed documents or file naming.
  - Enabled: the user is prompted to input a value when a test is run.
6. Add, modify, or delete fields in the User-Defined Output panel.
7. Click the **Accounts** tab → **SAVE USER** to save changes.
8. Click **EXIT**.

For definitions of Print tab fields, see **Print Tab (page 61)**.

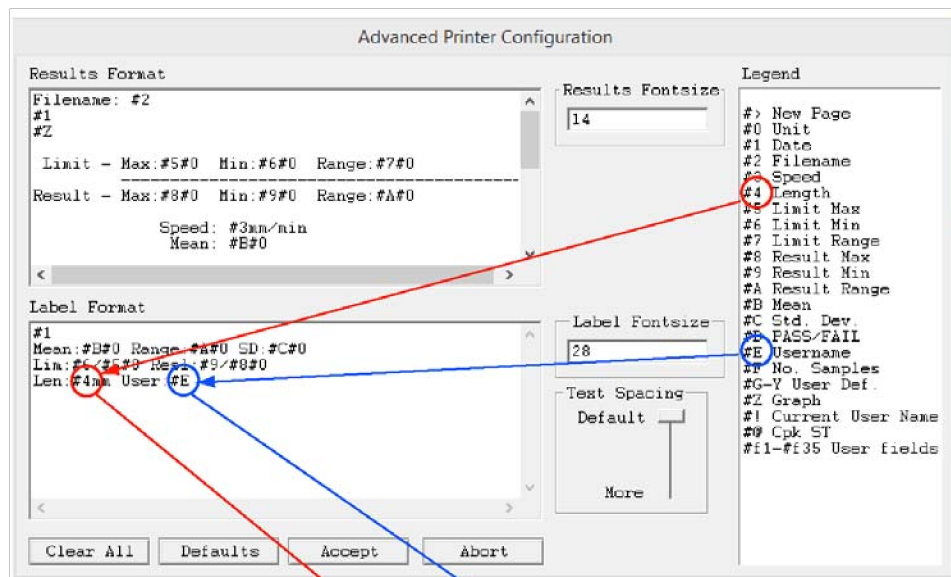
For report examples, see **Printer Output Samples (page 75)**.

## Advanced Printer Configuration

The Advanced Printer Configuration window allows you to create customized print output for results and labels. The output can be defined within the panels for each type (Results or Label). The Legend panel lists the variables that can be used when laying out the formats. Text spacing can be adjusted using the Text Spacing slider.

To customize report or label formats:

1. Open the Advanced Printer Configuration window:
  - a. Click **Setup > Configure Accounts**.
  - b. Select the user account and enter the corresponding password.
  - c. Go to the **Print** tab.
  - d. Click **ADVANCED**.
2. Format reports or labels:
  - Enter text in the Results Format panel (for results) or the Label Format panel (for labels).



### Using Legend Variables to Format Printed Results

Assuming test length is "100" and User Name is "Demo", note how the Legend variables correlate to the defined format and printed results.

October 20, 2004  
 Mean:0.085kg Range:0.030kg SD:0.005kg  
 Lim:0/240mm Resl:40/190mm  
 Len:100mm User:Demo

- Insert variables by typing # followed by the variable number, as listed in the Legend panel.
- **Example:**

Legend variable #1 = Date

Legend variable #2 = Filename

If you type the following in the **Results Format** panel:

```
Filename: #2
#1
```

And the file name is TEST FILE and the test date is 04/06/2024, the resulting output will be:

```
Filename: TEST FILE
04/06/2024
```



3. Adjust formatting:
  - Use the Text Spacing slider to control the height of the space between lines of printed text.
4. Save or discard changes:
  - a. Click **ACCEPT** to save and return to the Print tab.
  - b. Click **ABORT** to exit without saving.
5. Go to the **Accounts** tab and click **SAVE USER**, then click **EXIT**.

## Presets

Presets allow you to quickly select a specific set of parameters for a test run based on a particular vendor or type of component. Once created, presets are available to all users.

Strain gauge settings and limited print settings can be configured within a preset. A preset can also be configured to save test results to a designated directory.

### Creating a Preset

**NOTE:** This feature requires the **Configure Presets** access permission.

The Configure Presets window (Setup > Configure Presets) is organized into three tabs:

- Presets Tab: Enter the preset name here. After configuring print and data settings, return to this tab to save the preset using the Save Preset button. Delete Preset removes an existing preset.
- Print Tab: Configure the print settings that will apply when this preset is used.
- Data Tab: Configure where test results are saved and set graph parameters for the preset.

Steps to create a preset:

1. Open the Configure Presets window from Setup > Configure Presets.
2. In the Presets tab, enter a unique preset name.
3. Configure settings in the Print tab as needed.
4. Configure settings in the Data tab as needed.
5. Return to the Presets tab and click **Save Preset** to save the configuration.

### Running a Test Using a Preset

1. Open the PBFT Control Center window.
2. In the Active Preset drop-down menu, select the desired preset.

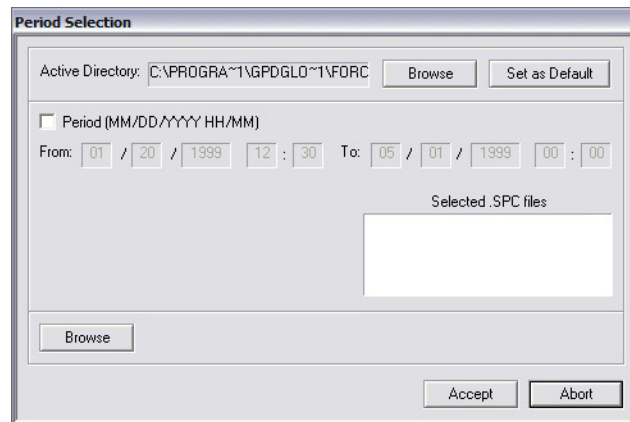
**NOTE:** The currently logged-in username is the default preset.

3. The test parameters for the selected preset (or user default) are applied to the test run.

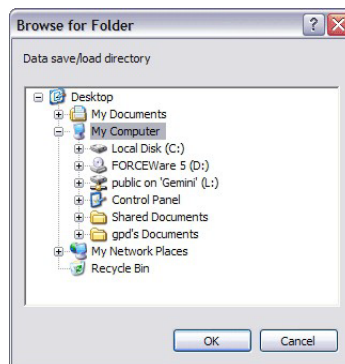
## SPC Analysis

As needed, process test results using SPC Analysis. This process consists of selecting at least five SPC files to analyze, applying the appropriate analysis tools, and optionally printing the results.

1. In the main window menu bar, click **SPC > SPC Analysis**. The **Period Selection** window appears.



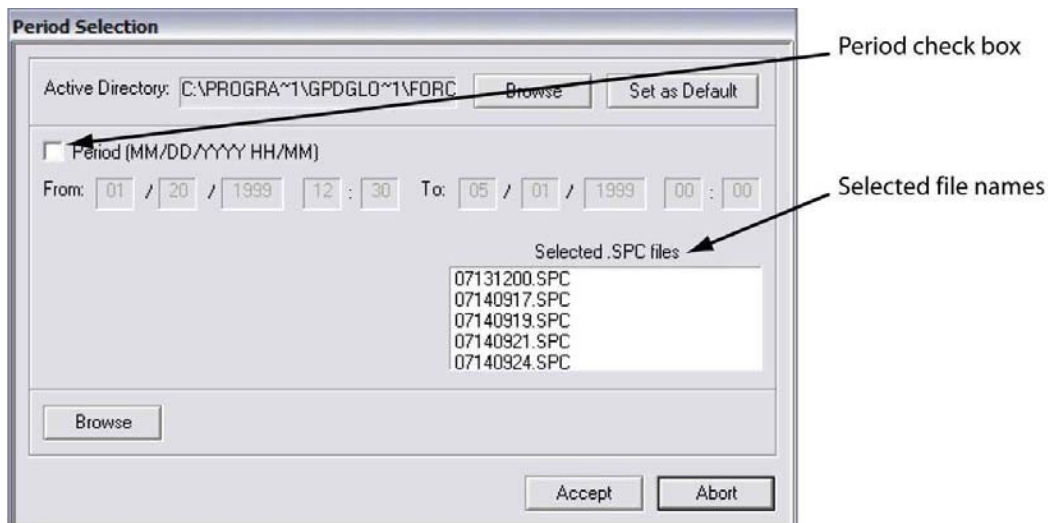
2. **Change the Active Directory (if needed):**
  - a. Click the **BROWSE** button next to the Active Directory field. A window appears to select the folder containing your SPC files.
  - b. Locate and select the desired directory, then click **OK**. The selected path now displays in the



Active Directory field of the Period Selection window.

3. **Set the directory as default (optional):**
  - a. Click **SET AS DEFAULT** in the SPC Analysis window. The next time SPC Analysis is activated, this default path will automatically appear.  
**NOTE:** The default save directory for a specific user/vendor can also be configured in the **Data** tab of the Account Manager window and in the **Create Preset** window. This ensures that logging in as a vendor accesses that vendor's stored data from a defined location.
4. **Choosing a Method of SPC Data Selection**
  - a. Select test results using one of the following methods:

| METHOD A:<br>Period of Time                                                                                                                                                                                                                                                                                                | METHOD B:<br>Active Directory                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Select test results based on a user-specified date and time range:</p> <p>a. Check the Period box (MM/DD/YYYY HH:MM) to enable date/time filtering.</p> <p>b. Enter the start and end dates/times for the desired span. The file list panel updates automatically as you adjust the period.</p> <p>c. Go to step 5.</p> | <p>Select test results from the directory specified in the Active Directory field:</p> <p>a. Click <b>BROWSE</b> (lower-left corner). The Select SPC Files window appears.</p> <p>b. Select the desired files and click <b>OPEN</b>. The selected file names appear in the Period Selection panel.</p> <p>c. Go to step 5.</p> |



5. Click **ACCEPT**. An SPC Analysis window will appear displaying a graph of the selected file data.
6. Use the available tools in the SPC Analysis window to analyze the data (see **SPC Analysis Tools, page 37**).
7. Click **PRINT** to print the displayed data.
8. Click **SELECT DATA** to choose a different set of files or a different date/time span; the Period Selection window will reappear.
9. Click **EXIT** to close the SPC Analysis window.

## SPC Analysis Tools

### Filters

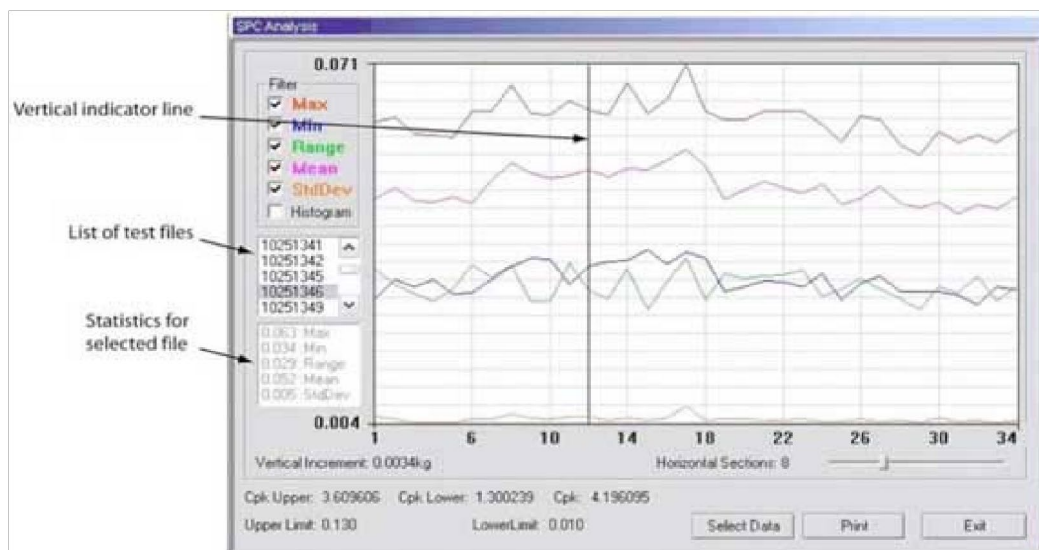
Select one or more filters (up to five) to determine which test data results are displayed and printed. Filters can be used individually or in any combination.



*A single filter is selected in the top example; all filters are selected in the bottom example.*

### Single File Statistics

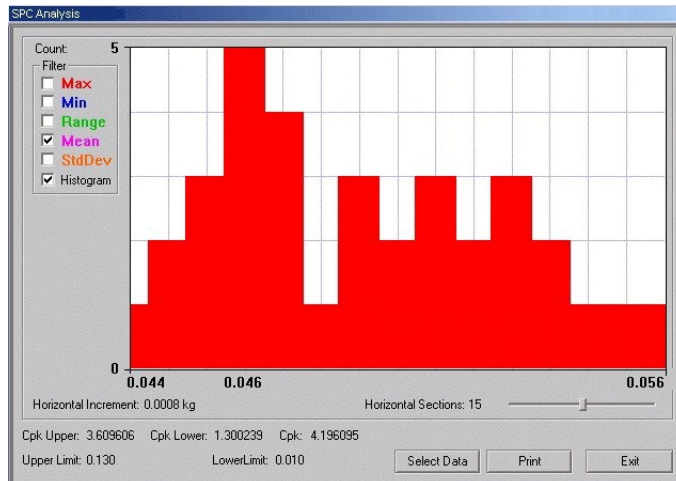
Click any test in the list of test files to display the statistics for that file. A vertical line in the graph highlights the location of the points for the selected test.



*Statistics are displayed for the test file selected in the file list. Points for the selected file are indicated in the graph by the vertical indicator line.*

## Histogram

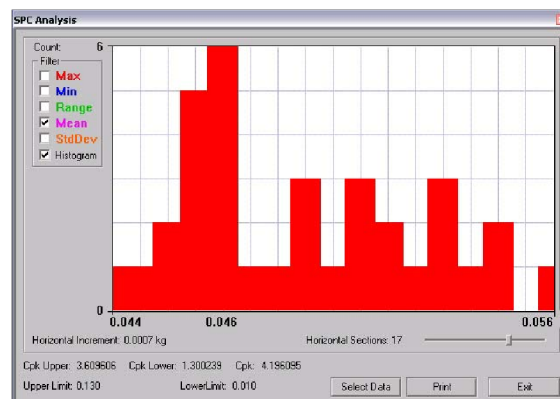
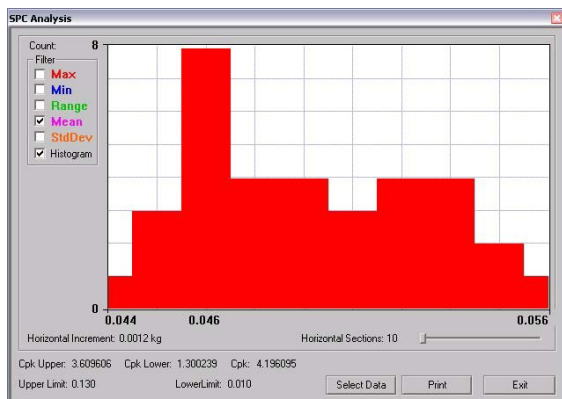
Select the Histogram check box to display a histogram in bar graph format. Only one filter can be used at a time with the histogram.



*An example of a Histogram with the Mean filter selected.*

## Horizontal Sections

Adjust the number of horizontal sections in a histogram. These sections either divide the range of the histogram or serve as visual indicators in line graphs.



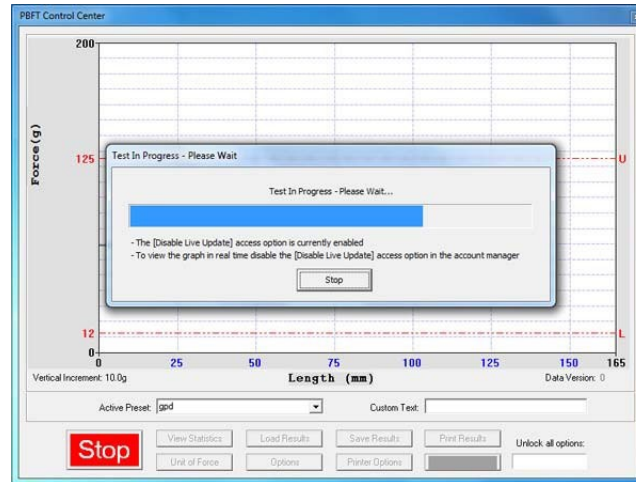
*The number of horizontal sections selected affects the range displayed in a histogram.*

## Disabling Live Update

**NOTE:** This feature requires the **Configure Accounts** access permission.

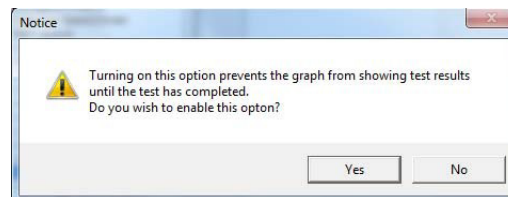
The **Disable Live Update** feature prevents the test graph from displaying results while a test is in progress. Results are displayed only after the test is complete.

When enabled, a dialog displays test progress instead of the live graph and includes a **STOP** button to stop the test. After the test completes, the standard Test Results window is displayed.



### To enable Disable Live Update:

1. Click **Setup > Configure Accounts**.
2. In the **Access** window, move **Disable Live Update** from the Disabled list to the Enabled list by either double-clicking it or using the arrow buttons.
3. Click **YES** to confirm.
4. Click **EXIT**.



# Shutdown

To exit and shut down operations:

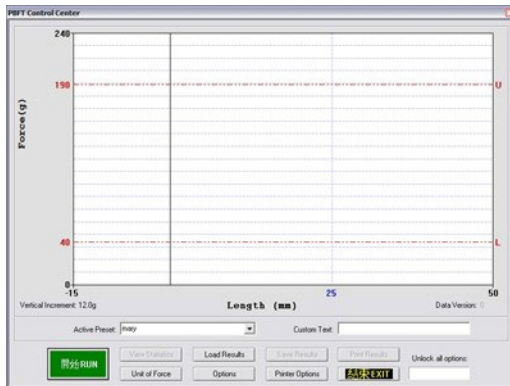
1. Exit FORCEWare by clicking **EXIT** in the main menu bar and confirming with OK.
2. Power off the strain gauge by pressing the OFF button.
3. Turn off the PBFT using the main power switch.
4. Power off the computer and, if applicable, the printer.



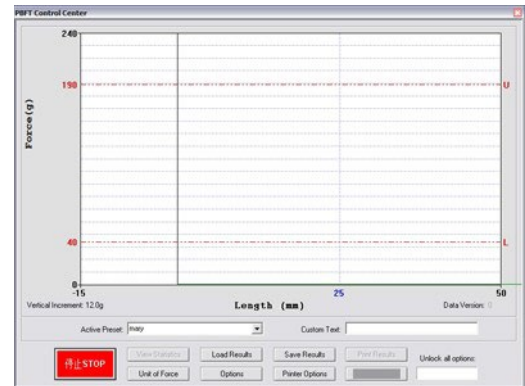
# Language Selection

**NOTE:** This feature requires the **Configure Accounts** access permission.

Certain buttons in the PBFT Control Center window, including **Start**, **Stop**, and **Exit**, can be displayed in **Chinese/English** or **English only**.



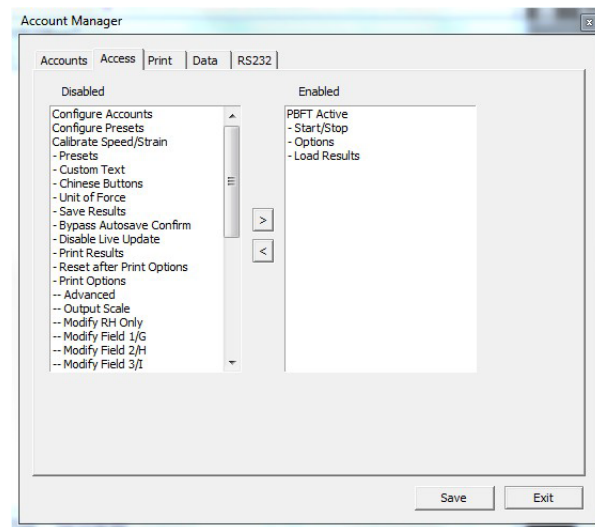
START button displayed in Chinese/English



STOP button displayed in Chinese/English

## To change the displayed language:

1. Log on using a user account with the **Chinese Buttons** access right.
2. From the main menu, click **Setup > Configure Accounts**. The **Account Manager** window appears.
3. In the **Accounts** tab, select the user account for which the language is to be changed.
4. Change the access rights for **Chinese Buttons**:
  - a. Click the **Access** tab.
  - b. Enable or disable the **Chinese Buttons** default for the selected user. Move the option between the **Enabled** and **Disabled** lists by either double-clicking it or selecting it and clicking the appropriate arrow.



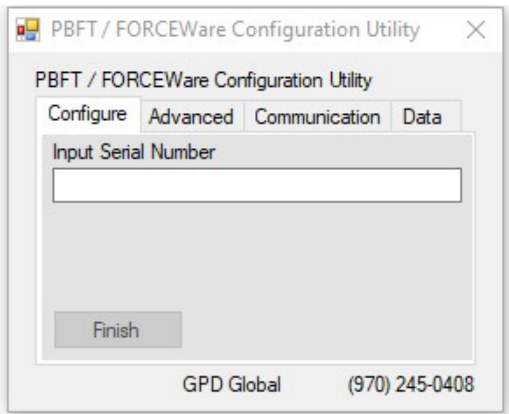
- c. To save the settings, return to the **Accounts** tab and click **SAVE**.
5. Repeat steps 3–4 for any additional user accounts as needed. Settings remain until changed or a different user account is selected.
  6. Click **EXIT** to close the Account Manager.

# Window References

## PBFT / FORCEWare Configuration Utility

### Configure Tab Settings

The Configure tab allows the user to enter the system serial number. The software uses the serial number to automatically apply the appropriate configuration settings for the system.



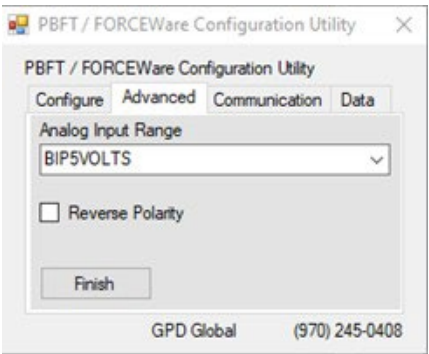
| Field / Option      | Description                                                                    |
|---------------------|--------------------------------------------------------------------------------|
| Input Serial Number | Enter the serial number of the PBFT in the field.                              |
| Finish button       | Closes the window and saves all changes made within the Configuration Utility. |

**NOTE:** If the serial number is not accepted, contact the GPD Global Service Department for instructions on how to proceed.

Advanced Tab Settings

The Advanced tab allows the user to configure the analog input voltage range used for analog data acquisition. The selected range should correspond to the expected analog signal level.

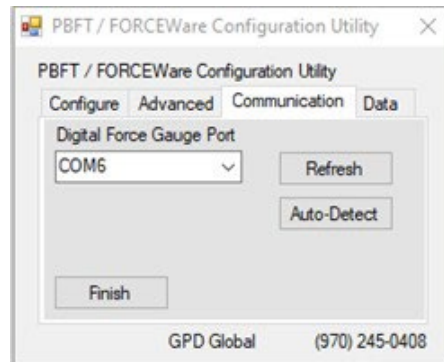
**IMPORTANT:** This setting should only be modified by qualified personnel. Incorrect analog input range settings may result in inaccurate measurements and invalid test results.



| Field / Option     | Description                                                                                                                                                                                                                                                                                                                      |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Analog Input Range | Configures the voltage range of the analog input channel for the strain gauge.                                                                                                                                                                                                                                                   |
| Reverse Polarity   | Determines how FORCEWare software interprets the polarity of the strain gauge signal. <ul style="list-style-type: none"><li>• Unchecked - The software interprets an increasing voltage value as an increase in force.</li><li>• Checked - The software interprets a decreasing voltage value as an increase in force.</li></ul> |

## Communication Tab Settings

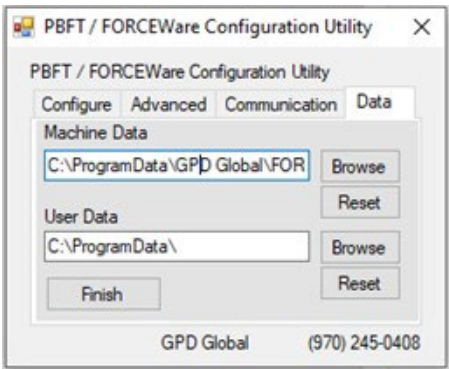
The Communication tab allows the user to configure communication settings for the digital force gauge. For systems equipped with a digital force gauge, the Auto-Detect function can be used to automatically identify and select the communication port used by the gauge.



| Field / Option                  | Description                                                                                                                                                                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Digital Force Gauge Port</b> | Specifies which COM port is being used for the digital strain gauge. This field will automatically be populated when the digital strain gauge is powered on and connected to the PC.<br>If an analog strain gauge is being used, this field should remain empty. |
| <b>Refresh Button</b>           | Repopulates the list of available COM ports in the drop-down menu (use this if the digital strain gauge was not initially plugged in when InstaCal was launched).                                                                                                |
| <b>Auto-Detect Button</b>       | Scans the available COM ports to automatically detect and select the COM port that the digital strain gauge is connected to.                                                                                                                                     |

Data Tab Settings

The Data tab allows the user to configure storage locations for machine-specific files and user data. These paths determine where FORCEWare stores and retrieves the associated files and settings.



| Field / Option | Description                                                                                                                                 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Machine Data   | Specifies the folder where PBFT machine-specific files are stored. This includes calibration data for the speed selection and strain gauge. |
| User Data      | Specifies the folder where user settings and data are stored. This includes the user database and individual user settings.                 |

**NOTE:** If network share locations are used, it is important to set up appropriate file permissions for read and write access for the Windows users who will be using FORCEWare.

## FORCEWare Software

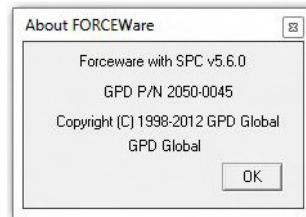
A sample of each **FORCEWare** software window is included in this section, along with a detailed description of each element within the window. Windows are presented in alphabetical order by title.

### About FORCEWare

The **About FORCEWare** window displays the software **name**, **version**, and **release date** for the PBFT machine.

#### To open the window:

From the main menu bar, click **About**.



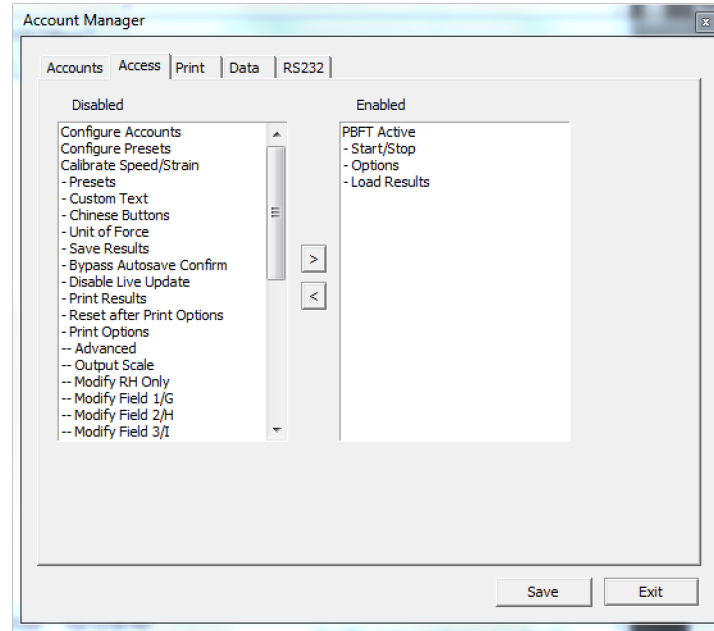
## Account Manager

### Access Tab

The **Access** tab in the **Account Manager** window allows users with the **Configure Accounts** access permission to assign access rights to user accounts. Access rights can be moved between the **Disabled** and **Enabled** lists by either double-clicking the option or selecting it and clicking the appropriate arrow.

#### To open the Access tab:

From the main menu bar, click **Setup > Configure Accounts**, then select the **Access** tab.



| Permission             | Description                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| PBFT Active            | Grants access to the PBFT Control Center window.                                                                               |
| Start/Stop             | Grants access to operating the Start/Stop button in PBFT Control window.                                                       |
| Options                | Grants access to test parameter options via the Options button in the PBFT Control Center window.                              |
| Load Results           | Grants access to the Load Results button in PBFT Control Center.                                                               |
| Configure Accounts     | Grants access to create/modify/delete user login accounts.                                                                     |
| Configure Presets      | Grants access to create/modify/delete presets.                                                                                 |
| Calibrate Speed/Strain | Grants access to calibrating the PBFT speed dial and strain gauge.                                                             |
| Presets                | Grants access to the preset selection window in the PBFT Control Center.                                                       |
| Custom Text            | Grants access to the custom text window in the PBFT Control Center.                                                            |
| Chinese Buttons        | Grants access to the display of the START/STOP and EXIT buttons in the PBFT Control Center window in both Chinese and English. |
| Unit of Force          | Grants access to the Unit of Force button in PBFT Control Center.                                                              |
| Save Results           | Grants access to the Save Results button in PBFT Control Center.                                                               |

| Permission              | Description                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bypass Autosave Confirm | Enables the automatic saving of test results without user interaction.                                                                                                                                                                                                                                                                                     |
| Disable Live Update     | Delays plotting of data in the graph until after the run is complete. For additional details, see <b>Disabling Live Update (page 39)</b> .                                                                                                                                                                                                                 |
| Print Results           | Grants access to the Print Results button in the PBFT Control Center window.                                                                                                                                                                                                                                                                               |
| Reset after Print       | Grants access to reset test parameters in the PBFT Control Center window and enforce that a new test must be run each time values are changed in the Test Parameter Options window.                                                                                                                                                                        |
| Print Options           | Grants access to Printer Options.                                                                                                                                                                                                                                                                                                                          |
| Advanced                | Activates the Advanced button on the Printer Configuration window.                                                                                                                                                                                                                                                                                         |
| Output Scale            | Grants access to control the overall size of graphs or label report dimensions, with a range of 25% to 100% of full size.                                                                                                                                                                                                                                  |
| Modify RH Only          | Grants access to only the right hand column of text in the Print tab of both the Account Manger and Create Preset windows; the left hand column of text appears to be grayed out and becomes inaccessible.                                                                                                                                                 |
| Modify Field #/n        | Grants access to modify Field 1/G through 19/Y, which coordinate with User Defined G through Y on the Advanced Printer Configuration window and the Print tab of both the Account Manager and Create Preset windows. These fields override the “Modify RH Only” setting.                                                                                   |
| SPC Analysis            | Grants access to SPC Analysis and Period Selection.                                                                                                                                                                                                                                                                                                        |
| Mean Text File Output   | <p>Generates an additional plain text file containing only the mean value of each test during automatic or manual saves. The file is saved with the selected file name and “-mean” appended. When disabled, this file is not created.</p> <p><b>Example:</b> A test result saved as “04261625” generates an additional file named “04261625-mean.txt”.</p> |
| Cpk Single Test         | Calculates and displays the Cpk value for individual test results. The Cpk value can be printed on labels and reports. When disabled, the Cpk value is not calculated, displayed, or printed.                                                                                                                                                              |



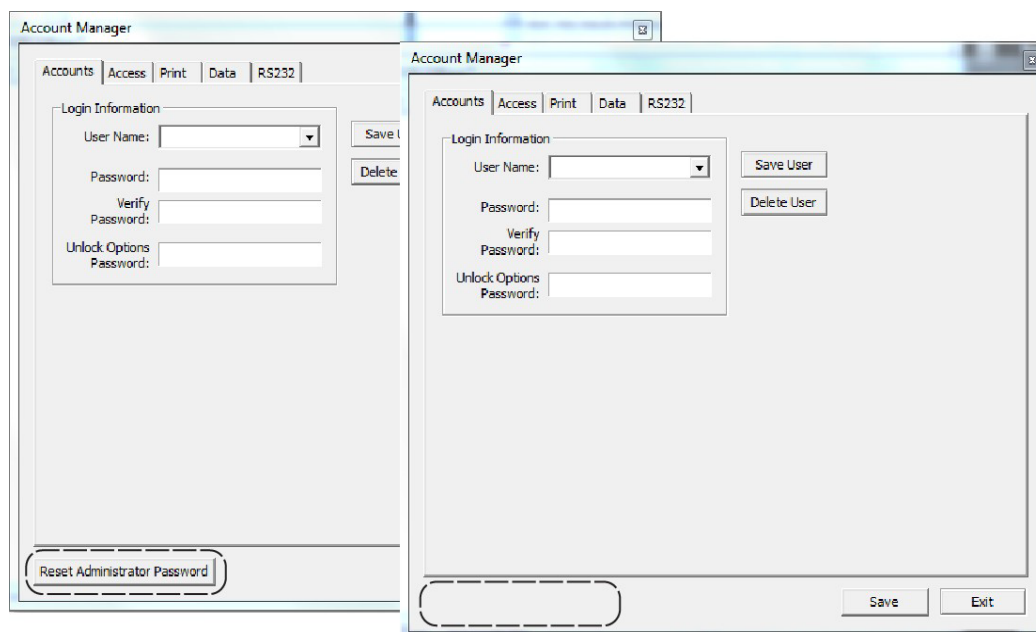
## Accounts Tab

Use the **Accounts** tab in the **Account Manager** window to create and manage user accounts and associated passwords for access to the FORCEWare software.

### To open the Accounts tab:

From the main menu bar, click **Setup > Configure Accounts**, then select the **Accounts** tab.

**NOTE:** Screen differences are indicated by dashed rectangles.

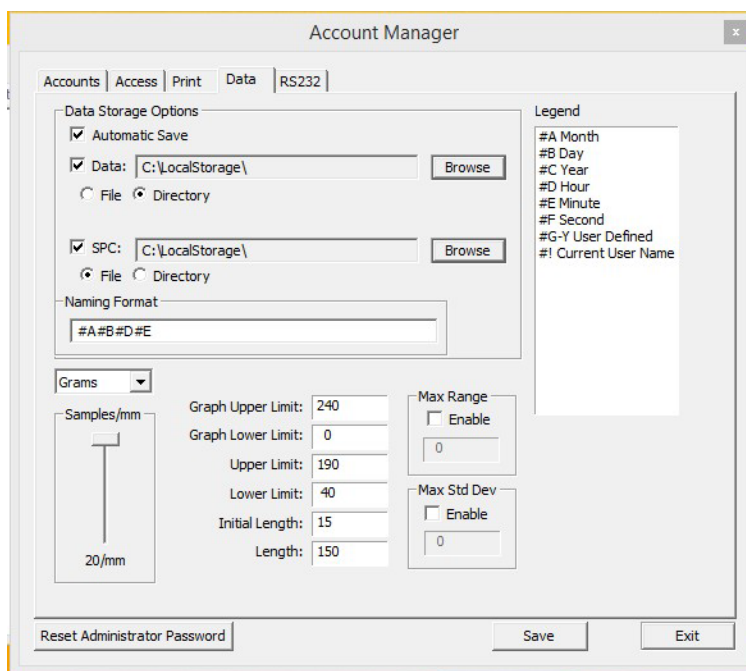


| Field / Option               | Description                                                                                                                                                                                                                                                                                                                                  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User Name                    | Represents a user or a vendor. <ul style="list-style-type: none"> <li>May consist of up to 12 alphanumeric characters.</li> <li>Spaces are allowed.</li> <li>Access rights are assigned via a password.</li> </ul>                                                                                                                           |
| Password                     | Password requirements and behavior: <ul style="list-style-type: none"> <li>Case sensitive</li> <li>Up to 12 alphanumeric characters</li> <li>Spaces are allowed</li> <li>Characters are displayed as “*” when entered</li> <li>Not required if security is not needed</li> <li>Requires confirmation in the Verify Password field</li> </ul> |
| Verify Password              |                                                                                                                                                                                                                                                                                                                                              |
| Unlock Options Password      | Defines the password that permits access to: <ul style="list-style-type: none"> <li>All buttons on the PBFT Control Center window</li> <li>The <b>Advanced</b> button on the Print tab of the Account Manager window, which opens the Advanced Printer Configuration window</li> </ul>                                                       |
| Save User                    | Saves the settings for the user account currently displayed in <b>User Name</b> .                                                                                                                                                                                                                                                            |
| Delete User                  | Deletes the user account currently displayed in <b>User Name</b> . A confirmation prompt is displayed to ensure deletion is intentional.                                                                                                                                                                                                     |
| Reset Administrator Password | Displays only for the highest access level of User Name. Allows the administrator to reset or modify the master password (administrator access level password).                                                                                                                                                                              |

**Data Tab**

Use the Data tab of the Account Manager window to establish the default settings for data storage, data collection, and file name options.

To access the Data tab of the Account Manager window, go to the main menu bar and click **Setup > Configure Accounts** and then select the **Data** tab.



| Field / Option   | Description                                                                                                                                                                                                                                                                                                                                 |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Automatic Save   | When checked, test data is saved automatically after each run.                                                                                                                                                                                                                                                                              |
| Data             | When checked, saves test data to the specified storage location.                                                                                                                                                                                                                                                                            |
| SPC              | When checked, saves Statistical Process Control (SPC) data to the specified storage location.                                                                                                                                                                                                                                               |
| File / Directory | Choose how files are saved: <ul style="list-style-type: none"> <li>File: Saves each test as an individual log file in the specified location. Example: C:\LocalStorage\04201333.log</li> <li>Directory: Creates a new subfolder for each test run and saves the results inside it. Example: C:\LocalStorage\04201333\results.log</li> </ul> |

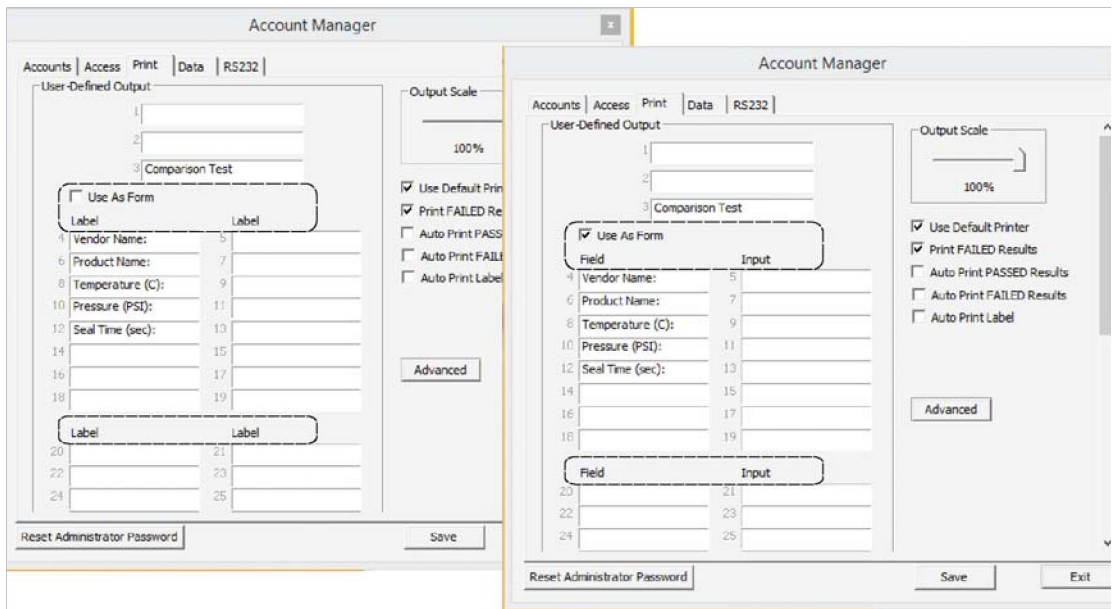
| Field / Option               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Naming Format                | <p>Defines the naming pattern for saved files or directories, depending on whether <b>File</b> or <b>Directory</b> is selected under Data Storage Options. You can use backslashes (\) to create a custom directory structure.</p> <p><b>Available Variables</b> (see legend in the window):</p> <p><b>#A</b> = Month      <b>#B</b> = Day      <b>#C</b> = Year<br/> <b>#D</b> = Hour      <b>#E</b> = Minute      <b>#F</b> = Second<br/> <b>#G–#I</b> = User Defined fields<br/> <b>#!</b> = Current User Name</p> <p><b>Examples:</b></p> <ul style="list-style-type: none"> <li>• <b>Naming Format: #A-#B</b> <ul style="list-style-type: none"> <li>○ File: 12-30.raw</li> <li>○ Directory: C:\LocalStorage\12-30\</li> </ul> </li> <li>• <b>Naming Format: #A#B_Vendor24 #G</b> (with User Defined field #G set to "BLUE") <ul style="list-style-type: none"> <li>○ File: 1230_Vendor24 BLUE.raw</li> <li>○ Directory: C:\LocalStorage\1230_Vendor24 BLUE\</li> </ul> </li> </ul> <p><b>Examples using backslashes:</b></p> <ul style="list-style-type: none"> <li>• <b>Naming Format: #C\#A\#B\#D-#E-#F</b> <ul style="list-style-type: none"> <li>○ File: C:\LocalStorage\2015\10\28\15-40-08.log</li> <li>○ Directory: C:\LocalStorage\2015\10\28\15-40-08\results.log</li> </ul> </li> </ul> |
| Legend                       | Lists available variables and their corresponding data. Variables used in the Naming Format field are replaced with their values.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Samples/mm slider            | Establishes the default test parameter settings unless overridden by users with the appropriate access permissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Graph Upper Limit            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Graph Lower Limit            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Upper Limit                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Lower Limit                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Initial Length               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Length                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Max Range                    | Defines the maximum allowable range of pull values. If the range exceeds this limit, the test fails.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Max Std Dev                  | Fails the test if the calculated standard deviation exceeds the defined limit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Reset Administrator Password | Visible only when logged in as administrator. Enables modification of the master password.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

Print Tab

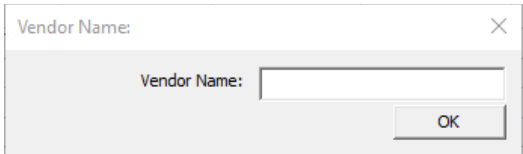
Use the Print tab in the Account Manager window to configure default printer settings, including report dimensions and optional appended report text. It can also be used to enable print fields as a form to prompt user input before a test run.

To access the Print tab, go to the main menu bar and click **Setup > Configure Accounts**.

**NOTE:** Screen differences are indicated by dashed rectangles.



| Field / Option      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User-Defined Output | Custom fields used to store user-defined values for use in Advanced Printer Configuration output. Fields are limited to 49 alphanumeric characters; spaces are allowed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                     | The key below defines the available variables. Refer to the Legend in the Advanced Printer Configuration window for variable usage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                     | <div><div>User-Defined Output</div><div><div><div>1</div><div>G (f1)</div></div><div><div>2</div><div>H (f2)</div></div><div><div>3</div><div>I (f3)</div></div></div><div><div><div><div><div><input type="checkbox"/></div></div><div>Use As Form</div></div><div><div>Label</div><div>Label</div></div><div><div>4</div><div>J (f4)</div><div>5</div><div>K (f5)</div></div><div><div>6</div><div>L (f6)</div><div>7</div><div>M (f7)</div></div><div><div>8</div><div>N (f8)</div><div>9</div><div>O (f9)</div></div><div><div>10</div><div>P (f10)</div><div>11</div><div>Q (f11)</div></div><div><div>12</div><div>R (f12)</div><div>13</div><div>S (f13)</div></div><div><div>14</div><div>T (f14)</div><div>15</div><div>U (f15)</div></div><div><div>16</div><div>V (f16)</div><div>17</div><div>W (f17)</div></div><div><div>18</div><div>X (f18)</div><div>19</div><div>Y (f19)</div></div></div><div><div><div>Label</div><div>Label</div></div><div><div>20</div><div>f20</div><div>21</div><div>f21</div></div><div><div>22</div><div>f22</div><div>23</div><div>f23</div></div><div><div>24</div><div>f24</div><div>25</div><div>f25</div></div><div><div>26</div><div>f26</div><div>27</div><div>f27</div></div><div><div>28</div><div>f28</div><div>29</div><div>f29</div></div><div><div>30</div><div>f30</div><div>31</div><div>f31</div></div><div><div>32</div><div>f32</div><div>33</div><div>f33</div></div><div><div>34</div><div>f34</div><div>35</div><div>f35</div></div></div></div></div> |

| Field / Option            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use As Form               | <p>When <b>Use As Form</b> is <b>not checked</b>, the column headings display as <b>Label / Label</b>, and all fields function as static text labels used in printed output and file naming:</p> <p>Text entered in User-Defined fields is printed at the bottom of SPC data and graph reports.</p> <p>If fields are grayed out, they are not accessible to the current user.</p> <p>When <b>Use As Form</b> is <b>checked</b>, the column headings display as <b>Field / Input</b>, allowing user input at the start of a test:</p> <p>If a Field contains text and the corresponding Input is empty, the user is prompted to enter a value when the test begins.</p> <p><b>Example:</b></p> <p>If <b>Use As Form</b> is enabled, and Field contains "Vendor Name" while Input is empty, the user will be prompted to enter a value at the start of the test.</p>  |
| Output Scale              | Controls the overall size of graph and label output. A range of 25% to 100% of full size is available.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Use Default Printer       | Prints using default settings, skipping the Page Setup and Printer Setup dialogs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Print FAILED Results      | Allows manual printing of reports, including failed results. When unchecked, manual printing of failed results is not allowed. If <b>Auto Print FAILED Results</b> is enabled, failed test results are still printed automatically.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Auto Print PASSED Results | Automatically prints results for successful tests in graph format after each test run.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Auto Print FAILED Results | Automatically prints results for failed tests in graph format after each test run. See also <b>Print FAILED Results</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Auto Print Label          | Automatically prints results in label format after each test run.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ADVANCED                  | Opens the Advanced Printer Configuration window.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### Advanced Printer Configuration

Use the Advanced Printer Configuration window to customize report and label formats by defining both the content and the print order.

To open the Advanced Printer Configuration window, click the **ADVANCED** button in the Print tab of the Account Manager window.

**Advanced Printer Configuration**

**Results Format**

Filename: #2  
 #1  
 #Z  
 Limit - Max: #5#0 Min: #6#0 Range: #7#0  
 -----  
 Result - Max: #8#0 Min: #9#0 Range: #A#0  
 Speed: #3mm/min  
 Mean: #B#0

**Results Fontsize:** 14

**Label Format**

#1  
 Mean: #B#0 Range: #A#0 SD: #C#0  
 Lin: #6/#5#0 Resl: #9/#8#0  
 Len: #4mm User: #E

**Label Fontsize:** 28

**Text Spacing:** Default

**Legend**

- #> New Page
- #0 Unit
- #1 Date
- #2 Filename
- #3 Speed
- #4 Length
- #5 Limit Max
- #6 Limit Min
- #7 Limit Range
- #8 Result Max
- #9 Result Min
- #A Result Range
- #B Mean
- #C Std. Dev.
- #D PASS/FAIL
- #E Username
- #F No. Samples
- #G-Y User Def.
- #Z Graph
- #! Current User Name
- #f1-#f35 User fields

Clear All Defaults Accept Abort

| Field / Option   | Description                                                                                                                              |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Results Format   | Defines how the report is formatted when printed.                                                                                        |
| Label Format     | Defines how the label is formatted when printed.                                                                                         |
| Results Fontsize | Size of font used to print a report.                                                                                                     |
| Label Fontsize   | Size of font used to print a label.                                                                                                      |
| Legend           | Legend variables (#<token>) are replaced with their corresponding values when printed (e.g., #! prints the current logged-in user name). |
| Text Spacing     | Adjusts the line spacing for report and label text.                                                                                      |

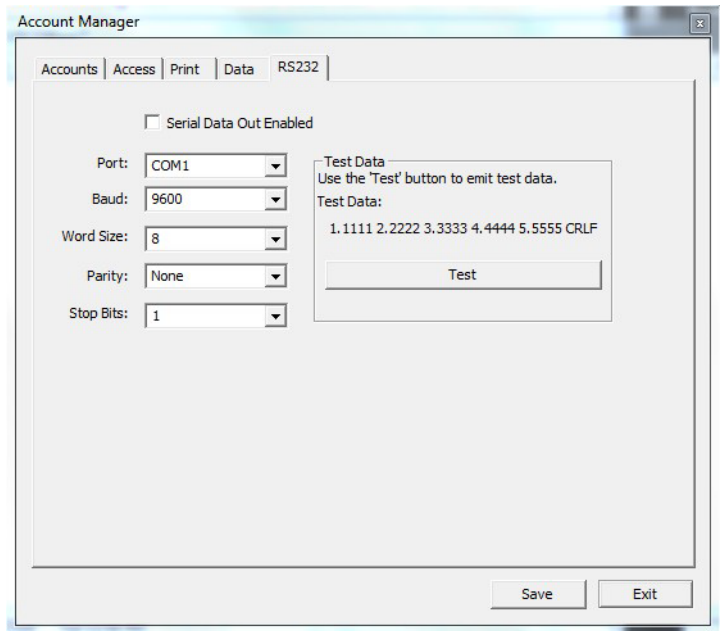
**RS232 Tab**

Use the RS232 tab in the Account Manager window to configure communication parameters. When enabled, test summary data is transmitted to the serial port at the same time it is saved to file storage.

Use the **TEST** button to verify serial communication functionality. Any changes to configuration parameters are saved immediately upon entry.

Data transmitted via the serial port includes: Mean, Maximum, Minimum, Standard Deviation, and Range. Values are space-delimited and terminated with a CR/LF. Transmission errors are not reported.

To access the RS232 tab, go to the main menu bar and click **Setup > Configure Accounts**, then select the **RS232** tab.



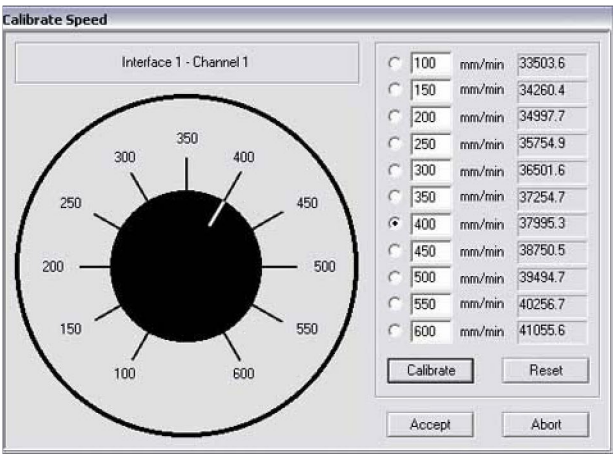
| Field / Option          | Description                                                                                                   |
|-------------------------|---------------------------------------------------------------------------------------------------------------|
| Serial Data out Enabled | Enables or disables RS232 serial data transmission. When checked, data is sent to the configured serial port. |
| Port                    | Standard RS232 communication parameters.                                                                      |
| Baud                    |                                                                                                               |
| Word Size               |                                                                                                               |
| Stop bits               |                                                                                                               |
| Test Data               | Defines the data string sent when the TEST button is pressed.                                                 |
| TEST                    | Sends test data to verify communication with connected devices.                                               |

**NOTE:** All cabling and collection of data external to the PBFT RS232 serial port is the responsibility of the customer.

Calibrate Speed

Use Calibrate Speed to configure the PBFT speed indicator and verify that the simulated speed selector matches the mechanical speed dial on the PBFT.

To open the Calibrate Speed window, go to the main menu bar and click **Setup > Calibrate Speed**.



Example of 100-600 mm configuration.

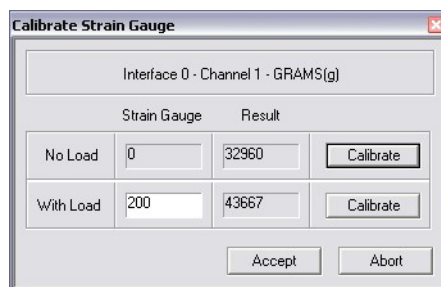
| Field / Option | Description                                                                                                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Speed Dial     | Simulated dial display mirrors the PBFT mechanical speed dial after calibration is complete.                                                                                                     |
| nn mm/min      | Peel rate speed in millimeters per minute. Values are read as raw data from the PBFT's USB DAQ. A successful calibration yields consistent proportional increments between PBFT switch settings. |
| CALIBRATE      | Reads the current USB DAQ signal and applies it to the selected calibration field.                                                                                                               |
| RESET          | Clears all mm/min fields.                                                                                                                                                                        |



## Calibrate Strain Gauge

Use the Calibrate Strain Gauge window to calibrate FORCEWare to the PBFT strain gauge.

To open the Calibrate Strain Gauge window, go to the main menu bar and click **Setup > Calibrate Strain Gauge**.



| Field / Option | Description                                                                                                 |                                             |
|----------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Input Source   | Displays the active PBFT strain gauge input source. The currently selected unit of force is also displayed. |                                             |
|                | Strain Gauge (in configured unit of force)                                                                  | Result (after pressing Calibrate)           |
| No Load        | 0 (fixed reference value)                                                                                   | Input source value captured at zero load    |
| With Load      | Enter the value of the applied calibration weight on the gauge, in the machine's current unit of force.     | Input source value captured at applied load |

### **Calibration Weight Requirement:**

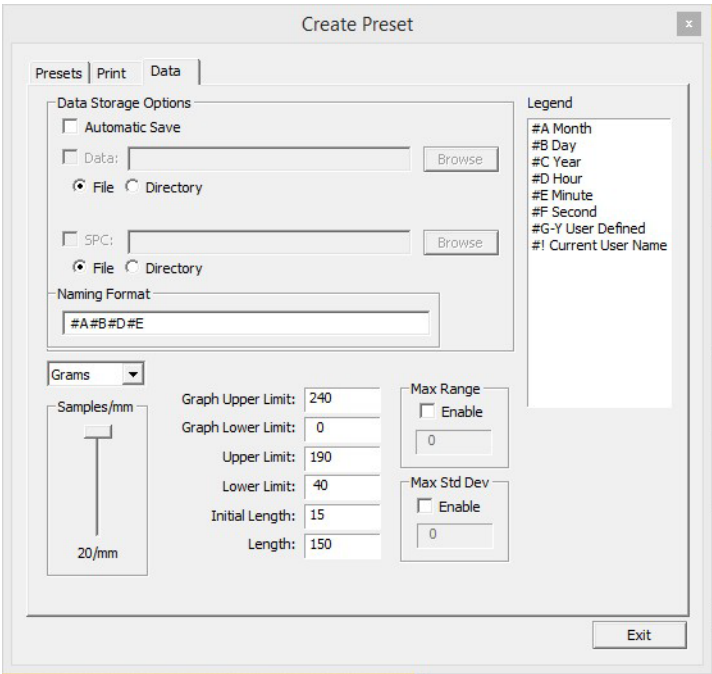
*Calibration weights are supplied in grams only. When the system is configured to a unit of force other than grams, values must be manually converted to the configured unit before entry. The system does not perform unit conversion.*

Create Preset

Data Tab

Use the Data tab in the Create Preset window to configure data storage, collection, and file naming defaults for a preset.

To access the Data tab, select **Setup > Configure Presets**, then choose the **Data** tab.



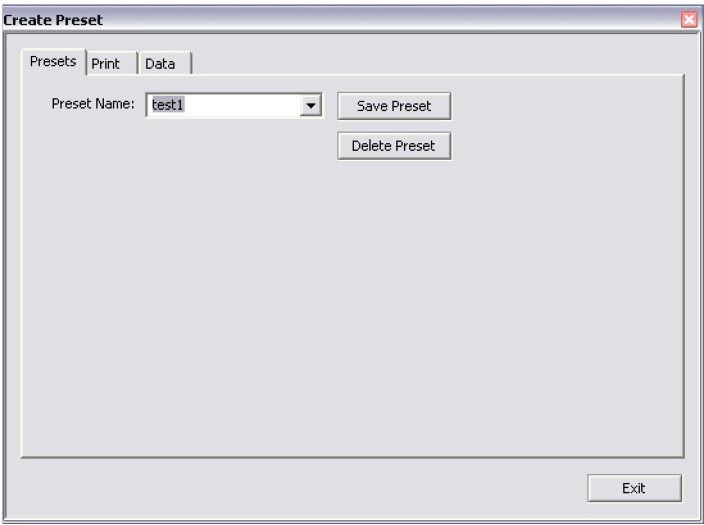
| Field / Option   | Description                                                                                                                                                                                                                                                                                                                              |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Automatic Save   | When checked, test data is saved automatically after each run.                                                                                                                                                                                                                                                                           |
| Data             | When checked, saves test data to the specified storage location.                                                                                                                                                                                                                                                                         |
| SPC              | When checked, saves Statistical Process Control (SPC) data to the specified storage location.                                                                                                                                                                                                                                            |
| File / Directory | Choose how files are saved: <ul style="list-style-type: none"><li>File: Saves each test as an individual log file in the specified location. Example: C:\LocalStorage\04201333.log</li><li>Directory: Creates a new subfolder for each test run and saves the results inside it. Example: C:\LocalStorage\04201333\results.log</li></ul> |

| Field / Option    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Naming Format     | <p>Defines the naming pattern for saved files or directories, depending on whether <b>File</b> or <b>Directory</b> is selected under Data Storage Options. You can use backslashes (\) to create a custom directory structure.</p> <p><b>Available Variables</b> (see legend in the window):</p> <p><b>#A</b> = Month      <b>#B</b> = Day      <b>#C</b> = Year<br/> <b>#D</b> = Hour      <b>#E</b> = Minute      <b>#F</b> = Second<br/> <b>#G–#I</b> = User Defined fields<br/> <b>#!</b> = Current User Name</p> <p><b>Examples:</b></p> <ul style="list-style-type: none"> <li>• <b>Naming Format: #A-#B</b> <ul style="list-style-type: none"> <li>○ File: 12-30.raw</li> <li>○ Directory: C:\LocalStorage\12-30\</li> </ul> </li> <li>• <b>Naming Format: #A#B_Vendor24 #G</b> (with User Defined field #G set to "BLUE") <ul style="list-style-type: none"> <li>○ File: 1230_Vendor24 BLUE.raw</li> <li>○ Directory: C:\LocalStorage\1230_Vendor24 BLUE\</li> </ul> </li> </ul> <p><b>Examples using backslashes:</b></p> <ul style="list-style-type: none"> <li>• <b>Naming Format: #C\#A\#B\#D-#E-#F</b> <ul style="list-style-type: none"> <li>○ File: C:\LocalStorage\2015\10\28\15-40-08.log</li> <li>○ Directory: C:\LocalStorage\2015\10\28\15-40-08\results.log</li> </ul> </li> </ul> |
| Legend            | Lists available variables and their corresponding data. Variables used in the Naming Format field are replaced with their values.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Samples/mm slider | Establishes the default test parameter settings unless overridden by users with the appropriate access permissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Graph Upper Limit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Graph Lower Limit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Upper Limit       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Lower Limit       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Initial Length    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Length            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Max Range         | Defines the maximum allowable range of pull values. If the range exceeds this limit, the test fails.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Max Std Dev       | Fails the test if the calculated standard deviation exceeds the defined limit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

**Presets Tab**

Use the Presets tab in the Create Preset window to create, name, save, and delete presets.

To access the Presets tab, go to **Setup > Configure Presets**.



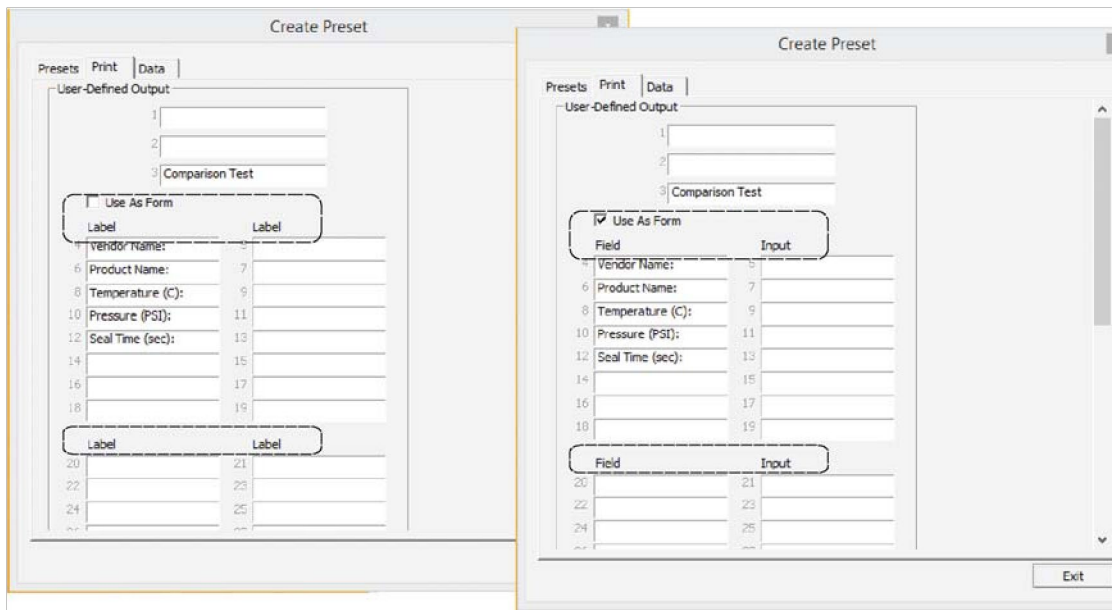
| Field / Option | Description                                                                                                                                                                 |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preset Name    | Pre-established set of parameters defining a configuration (e.g., vendor or component type). Preset names may contain up to 31 alphanumeric characters; spaces are allowed. |
| Save Preset    | Saves the current configuration as a preset. Overwrites an existing preset with the same name.                                                                              |
| Delete Preset  | Permanently deletes the selected preset and its configuration.                                                                                                              |

Print Tab

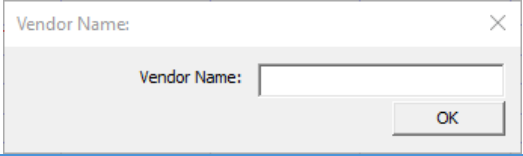
Use the Print tab in the Create Preset window to configure default report text for presets or to use print fields as prompts for user input before a test run.

To access the Print tab, go to **Setup > Configure Presets**.

**NOTE:** Screen differences are indicated by dashed rectangles.



| Field / Option      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User-Defined Output | Custom fields used to store user-defined values for use in Advanced Printer Configuration output. Fields are limited to 49 alphanumeric characters; spaces are allowed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                     | Values in this tab override the corresponding Account Manager Print tab values when a preset is applied.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| User-Defined Output | The key below defines the available variables. Refer to the Legend in the Advanced Printer Configuration window for variable usage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                     | <div><div>User-Defined Output</div><div><div><div>1</div><div>G (f1)</div></div><div><div>2</div><div>H (f2)</div></div><div><div>3</div><div>I (f3)</div></div></div><div><div><div><div><div><input type="checkbox"/> Use As Form</div></div></div><div><div><div>Label</div><div>Label</div></div><div><div>4</div><div>J (f4)</div><div>5</div><div>K (f5)</div></div><div><div>6</div><div>L (f6)</div><div>7</div><div>M (f7)</div></div><div><div>8</div><div>N (f8)</div><div>9</div><div>O (f9)</div></div><div><div>10</div><div>P (f10)</div><div>11</div><div>Q (f11)</div></div><div><div>12</div><div>R (f12)</div><div>13</div><div>S (f13)</div></div><div><div>14</div><div>T (f14)</div><div>15</div><div>U (f15)</div></div><div><div>16</div><div>V (f16)</div><div>17</div><div>W (f17)</div></div><div><div>18</div><div>X (f18)</div><div>19</div><div>Y (f19)</div></div></div><div><div><div>Label</div><div>Label</div></div><div><div>20</div><div>f20</div><div>21</div><div>f21</div></div><div><div>22</div><div>f22</div><div>23</div><div>f23</div></div><div><div>24</div><div>f24</div><div>25</div><div>f25</div></div><div><div>26</div><div>f26</div><div>27</div><div>f27</div></div><div><div>28</div><div>f28</div><div>29</div><div>f29</div></div><div><div>30</div><div>f30</div><div>31</div><div>f31</div></div><div><div>32</div><div>f32</div><div>33</div><div>f33</div></div><div><div>34</div><div>f34</div><div>35</div><div>f35</div></div></div></div></div></div> |

| Field / Option | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use As Form    | <p>When <b>Use As Form</b> is <b>not checked</b>, the column headings display as <b>Label / Label</b>, and all fields function as static text labels used in printed output and file naming:</p> <p>Text entered in User-Defined fields is printed at the bottom of SPC data and graph reports.</p> <p>If fields are grayed out, they are not accessible to the current user.</p> <p>When <b>Use As Form</b> is <b>checked</b>, the column headings display as <b>Field / Input</b>, allowing user input at the start of a test:</p> <p>If a Field contains text and the corresponding Input is empty, the user is prompted to enter a value when the test begins.</p> <p><b>Example:</b></p> <p>If <b>Use As Form</b> is enabled, and Field contains "Vendor Name" while Input is empty, the user will be prompted to enter a value at the start of the test.</p>  |

**GPD FORCEWare**

The GPD FORCEWare window is the primary interface for all software control functions.



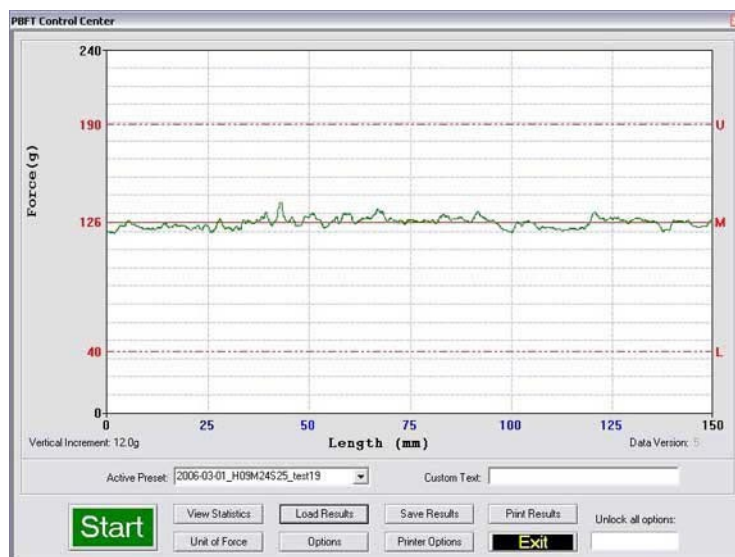
| Menu Item | Pull-down Menu         | Description                                                                                                                                                                      |
|-----------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Setup     | Configure Accounts     | Create, modify, and delete user login accounts.                                                                                                                                  |
|           | Configure Presets      | Create, modify, and delete presets.                                                                                                                                              |
|           | Calibrate Speed        | Verify the PBFT speed dial.                                                                                                                                                      |
|           | Calibrate Strain Gauge | Verify the PBFT strain gauge.                                                                                                                                                    |
| PBFT      | Activate PBFT          | Use PBFT Control Center to define test parameters and unit of measure, run a test, and view, print, and/or save test results. Also use this window to review prior test results. |
| SPC       | SPC Analysis           | Display and/or generate reports of SPC data for a user-defined group of test results over a user-defined date and time span.                                                     |
| Exit      |                        | Exits from the FORCEWare control software.                                                                                                                                       |
| About     | About FORCEWare        | Title, version number, and release date of the control software.                                                                                                                 |

| Field Option | Description                           |
|--------------|---------------------------------------|
| User Name    | Enter a valid user name.              |
| Password     | Enter the password for the user name. |

## PBFT Control Center

Use the PBFT Control Center window to define test parameters and unit of measure, run a test, and view, print, and/or save test results. Also use this window to review prior test results.

To open the PBFT Control Center window, go to the main menu bar and click **PBFT > Activate PBFT**.



| Field / Option                   | Description                                                                                                                  |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Force (configured unit of force) | Indicates the force in the configured unit of force along the vertical axis of the displayed data acquisition graph.         |
| Length (mm)                      | Indicates the test length in millimeters along the horizontal axis of the displayed acquisition graph.                       |
| Vertical Increment               | Indicates the force per horizontal grid division on the data acquisition graph, in the configured unit of force              |
| Data Version                     | Indicates the version of the data format (schema) used to structure the saved data.                                          |
| U                                | Indicates the maximum upper limit defined in the Test Parameter Options window, displayed on the graph as a dashed red line. |
| M                                | Displays the mean on the graph as a solid red line labeled “M” after the test completes.                                     |
| L                                | Indicates the minimum lower limit defined in the Test Parameter Options window, displayed on the graph as a dashed red line. |
| Active Preset                    | Applies a set of parameters to the test run. See Presets Setup for details.                                                  |
| Custom Text                      | Text entered here is used as a per-test override for User Defined Output field 19 in printed or saved report output          |
| Start/Stop                       | Enables control of test execution using the mouse, SPACE bar, or ENTER key to start and stop a test.                         |
| View Statistics                  | Displays the test results window. The button is disabled until a test has been completed.                                    |

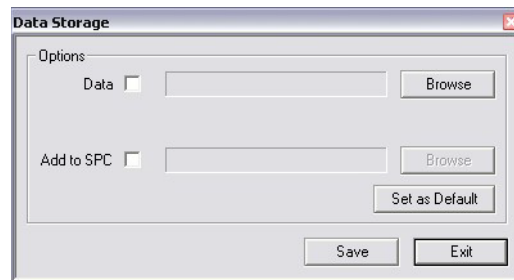


| Field / Option     | Description                                                                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Load Results       | Loads saved run data files for viewing or printing.                                                                                                                                     |
| Save Results       | Saves the active test results to a user-defined location. The button is disabled until a test has been completed.                                                                       |
| Print Results      | Prints test results in graph or label format. The button is disabled until a test has been completed.                                                                                   |
| Unit of Force      | Defines the configured unit of force. This setting may be changed at any time, including before or after a test run, or when viewing previously saved data.                             |
| Options            | Defines the test parameters.                                                                                                                                                            |
| Printer Options    | Opens the Printer Configuration window.                                                                                                                                                 |
| Exit               | Closes and resets the window.                                                                                                                                                           |
| Unlock all options | A password is required to enable access to all PBFT Control Center buttons. The password is set in the Unlock Options Password field on the Accounts tab of the Account Manager window. |

### Data Storage

Use the Data Storage options to set default data storage locations. These defaults can be overridden in the Account Manager or Create Preset windows by users with appropriate access.

The Data Storage window is accessed by clicking **SAVE RESULTS** in the PBFT Control Center.



| Field / Option | Description                                                                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data           | Saves test results in raw data format.                                                                                                                    |
| Add to SPC     | Saves test results in SPC format.                                                                                                                         |
| BROWSE         | Specifies the file save location.                                                                                                                         |
| SET AS DEFAULT | Sets the current Data and SPC save locations as the default locations for the current user. The saved locations are restored when the user logs in again. |

### Printer Configuration

Use the Printer Configuration window to define printer settings for report dimensions and appended report text.

Settings in the Print tab of the Account Manager window are applied as user-specific defaults. If a preset is selected in the **Active Preset** field in the PBFT Control Center window, it overrides these settings.

User-Defined Output fields are editable with appropriate user permission; otherwise they are read-only.

The Printer Configuration window is accessed by clicking **PRINTER OPTIONS** in the PBFT Control Center window.

| Field / Option      | Description                                                                                                                                                                                                                                                                             |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User-Defined Output | Text from all filled-in fields prints at the bottom of SPC data and graph reports. If a User-Defined Output field is greyed out, the current user does not have the required permissions.<br>A User-Defined Output field may consist of 49 alphanumeric characters. Spaces are allowed. |
| Output Scale        | Controls the overall size of graph or label report dimensions. Available range is 25% to 100% of full size. The output scale is not displayed if the user does not have the required access permissions.                                                                                |
| ADVANCED            | Opens the <b>Advanced Printer Configuration</b> window ( <a href="#">page 54</a> ).<br>The <b>ADVANCED</b> button is grayed out if the user does not have the required access permission.                                                                                               |

### Test Parameter Options

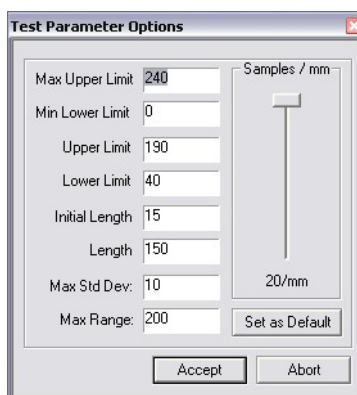
Use the Test Parameter Options window to configure test execution parameters.

The Account Manager Data tab stores the default Test Parameter configuration, which is loaded when no preset is selected.

Selecting a preset in the PBFT Control Center applies preset values, temporarily replacing the current settings.

Settings can be modified at any time. These changes do not modify the preset and are not saved unless saved as default.

The Test Parameter Options window is accessed by clicking **OPTIONS** in the **PBFT Control Center** window ([page 64](#)).



| Field / Option  | Description                                                                                                                                                                                 |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Max Upper Limit | Maximum value displayed on the graph. This value is for screen display only and does not alter the actual data collected. If data exceeds this value, it is plotted at the upper limit.     |
| Min Lower Limit | Minimum value displayed on the graph. This value is for screen display only and does not alter the actual data collected. If data falls below this value, it is plotted at the lower limit. |
| Upper Limit     | Upper threshold limit used to determine whether a live run passes or fails. If data exceeds this value, the run is marked as failed.                                                        |
| Lower Limit     | Lower threshold limit used to determine whether a live run passes or fails. If data falls below this value, the run is marked as failed.                                                    |
| Initial Length  | Length of tape ignored during initial take-up to allow material and data stabilization.                                                                                                     |
| Length          | Actual length of tape to be tested, in millimeters.                                                                                                                                         |
| Max Std Dev     | Fails a test if the resulting standard deviation exceeds the defined limit.                                                                                                                 |
| Max Range       | Fails a test if the maximum-to-minimum range exceeds the defined limit.                                                                                                                     |
| Samples/mm      | Controls the number of samples collected per millimeter during a test. Range: 1 to 20 samples per millimeter.                                                                               |
| Set as Default  | Saves the currently set values as the default configuration for all tests under the current user account.                                                                                   |

## Test Results

Displays test results and indicates whether values are within defined test parameters as PASSED or FAILED.

The Test Results window is accessed by clicking **VIEW STATISTICS** in the PBFT Control Center window.

|         | Max    | Min    | Range |
|---------|--------|--------|-------|
| Limit:  | 190    | 40     | 150   |
| Result: | 141.34 | 104.35 | 36.99 |

Speed: 600 **PASSED**  
 Mean: 116.194  
 Standard Deviation: 5.263 **PASSED**  
 Std. Dev. Limit: 10.000  
 Data Range: 36.99 **PASSED**  
 Data Range Limit: 200.00

User Fields Close

**Enabled**

|         | Max    | Min   | Range |
|---------|--------|-------|-------|
| Limit:  | 190    | 40    | 150   |
| Result: | 114.64 | 84.38 | 30.26 |

Speed: 600 **PASSED**  
 Mean: 100.463  
 Standard Deviation: 6.211  
 Std. Dev. Limit: 10.500  
 Data Range: 30.26  
 Data Range Limit: 20.05

User Fields Close

**Disabled**

*PASSED - successful test with MAX Range and/or Max Std Dev enabled and disabled.*

|         | Max    | Min   | Range  |
|---------|--------|-------|--------|
| Limit:  | 190    | 40    | 150    |
| Result: | 268.76 | 23.76 | 245.00 |

Speed: 600 **FAILED**  
 Mean: 118.317  
 Standard Deviation: 52.334 **FAILED**  
 Std. Dev. Limit: 20.000  
 Data Range: 245.00 **FAILED**  
 Data Range Limit: 100.00

User Fields Close

**Enabled**

|         | Max   | Min  | Range |
|---------|-------|------|-------|
| Limit:  | 190   | 40   | 150   |
| Result: | 81.76 | 0.00 | 81.76 |

Speed: 600 **FAILED**  
 Mean: 8.623  
 Standard Deviation: 20.926  
 Std. Dev. Limit: 10.500  
 Data Range: 81.76  
 Data Range Limit: 20.05

User Fields Close

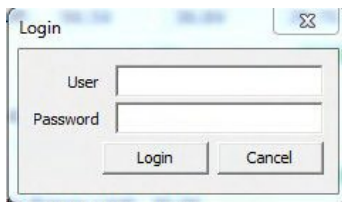
**Disabled**

*FAILED - unsuccessful test with MAX Range and/or Max Std Dev enabled and disabled.*

| Field / Option     | Description                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------|
| PASSED/FAILED      | Indicates whether the test is within the defined parameters.                                              |
| Limit              | Displays the configured test threshold limits used to determine pass/fail status.                         |
| Result             | Displays the calculated test results for the configured limits.                                           |
| Speed              | Peel speed of the cover tape from the carrier tape during the test, in millimeters per minute (mm/min).   |
| Mean               | Average value of the collected data points.                                                               |
| Standard Deviation | Measure of data dispersion, calculated as the square root of the average squared deviation from the mean. |
| USER FIELDS        | Opens the User Defined Fields window.                                                                     |

### User Defined Fields

The User Defined Fields window is accessed by clicking **USER FIELDS** in the Test Results window. A login prompt is displayed. Valid user credentials are required to edit fields; without valid credentials, fields are view-only.



If the "Use as Form" option is enabled in the Print tab (Account Manager or Preset), data entered prior to running a test is displayed in the User Defined Fields window when it opens.

Use the User Defined Fields window to view and modify informational fields associated with a test (e.g., vendor, product, temperature, pressure). These fields do not affect test or statistical results.

Fields can be updated after a test is run or when loading a saved file.

 Two side-by-side screenshots of the "User Defined Fields" window. Both windows have a yellow title bar and a close button (X) in the top right corner. The left window shows a form with several fields: "Comparison Test" (a dropdown menu), "Vendor Name:", "Product Name:", "Temperature (C):", "Pressure (PSI):", and "Seal Time (sec):". Each of these fields has a corresponding input box containing text. Below these are several empty rows for additional fields. At the bottom right is an "OK" button. The right window is identical in layout but the input boxes for the first five fields are empty, indicating they are read-only.

*Examples of permission status: access permitted (left) and read only (right).*

**Unit of Force**

Use the Unit of Force window to set the active unit of force.

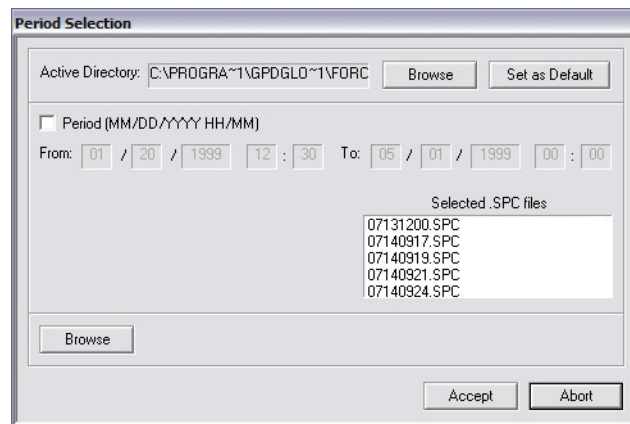
The Unit of Force window is accessed by clicking **UNIT OF FORCE** in the PBFT Control Center.



| Field / Option | Description                                                                  |
|----------------|------------------------------------------------------------------------------|
| Units          | Defines the active unit of force used in calculations and displayed results. |

## Period Selection

The Period Selection window is used to select SPC data for analysis based on file location and date/time span. It is accessed when launching SPC Analysis from the main menu or by selecting **Select Data** within the SPC Analysis window. Clicking **ACCEPT** applies the selected data set.

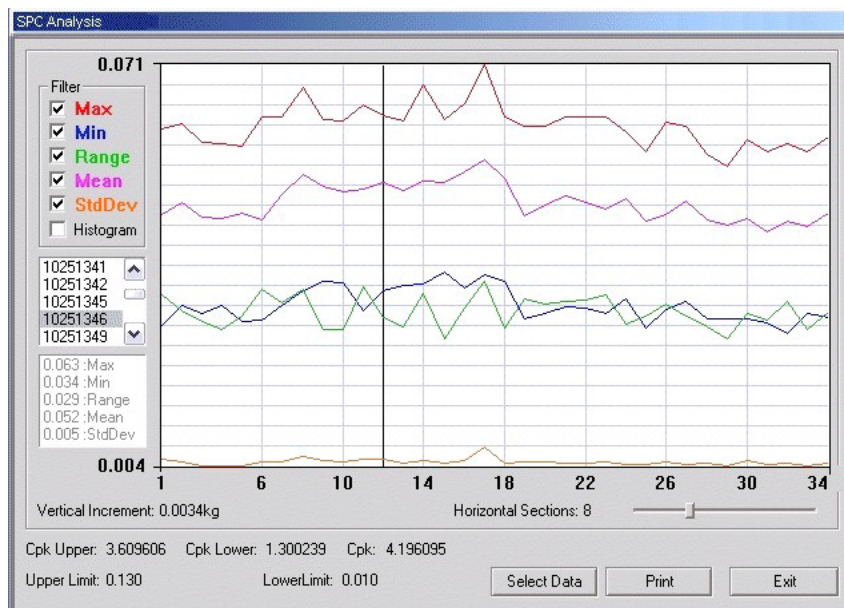




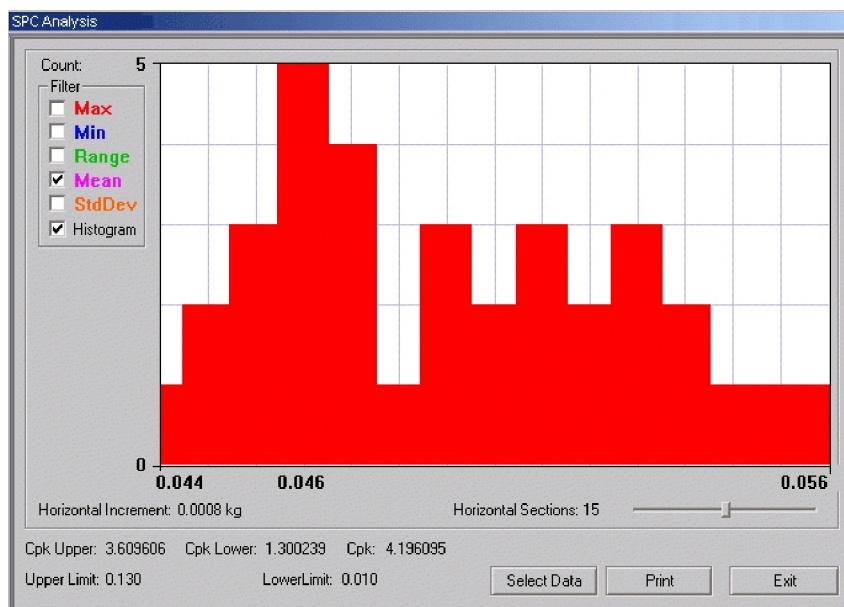
## SPC Analysis

Use SPC Analysis in conjunction with the Period Selection window to display and/or generate reports of SPC data for a user-defined group of test results over a user-defined date and time span. (Histogram results may be displayed but not printed.)

To open the SPC Analysis window, click the **ACCEPT** button in Period Selection.



*All filter data displayed for selected data file*



*Histogram with Mean filter selected.*

| Field / Option       | Description                                                                                                                                                                     |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Count                | Histogram filter only: counts the number of occurrences where a data point falls within the specified range.                                                                    |
| Filter               | Determines the type of SPC data result displayed or printed.                                                                                                                    |
| Max                  | Maximum data point of all selected SPC files.                                                                                                                                   |
| Min                  | Minimum data point of all selected SPC files.                                                                                                                                   |
| Range                | Difference between the minimum and maximum data point.                                                                                                                          |
| Mean                 | Average data point of all selected SPC files.                                                                                                                                   |
| StdDev               | Measure of dispersion of data points around the mean for all selected SPC files.                                                                                                |
| Histogram            | Displays the distribution of data points and identifies non-normal behavior. Includes program-calculated bar width, which may be adjusted by the user for analysis.             |
| list of files        | Displays the names of files selected in the Period Selection window.                                                                                                            |
| file data            | Displays SPC statistical data for the selected file in the SPC Analysis window.                                                                                                 |
| Vertical Increment   | Increment between horizontal grid lines on the vertical axis.                                                                                                                   |
| Horizontal Increment | Increment between vertical grid lines on the horizontal axis.                                                                                                                   |
| Horizontal Sections  | Designates the number of horizontal sections displayed. Adjusts the horizontal increment in histograms and provides a visual reference in line graphs. Range: 3 to 20 sections. |
| CpkUpper             | Cpk value based on the maximum reading across selected tests.                                                                                                                   |
| CpkLower             | Cpk value based on the minimum reading across selected tests.                                                                                                                   |
| Cpk                  | Cpk value based on the mean reading across selected tests.                                                                                                                      |
| Upper Limit          | Maximum limit for the graph. Derived from the first file selected in the Period Selection window.                                                                               |
| Lower Limit          | Minimum limit for the graph. Derived from the first file selected in the Period Selection window.                                                                               |
| SELECT DATA          | Selects data for analysis based on file location and date/time span.                                                                                                            |

# Printer Output Samples

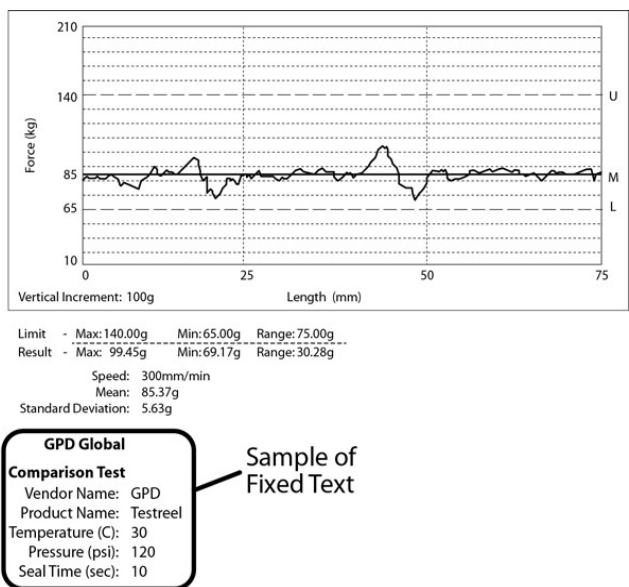
Test results can be printed in several formats: SPC data, line graphs, and labels. You can control the overall dimensions for each format and optionally include user-defined text at the bottom of SPC data and line graph outputs.

## Sizing

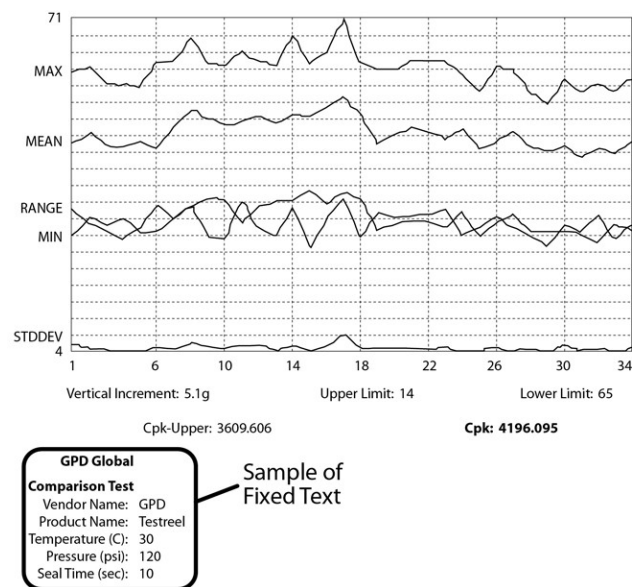
Reports can be generated at various sizes, ranging from full size down to 25% of full size. For instructions on adjusting the output scale, see **Configure Printer (page 31)**.

## Fixed Text

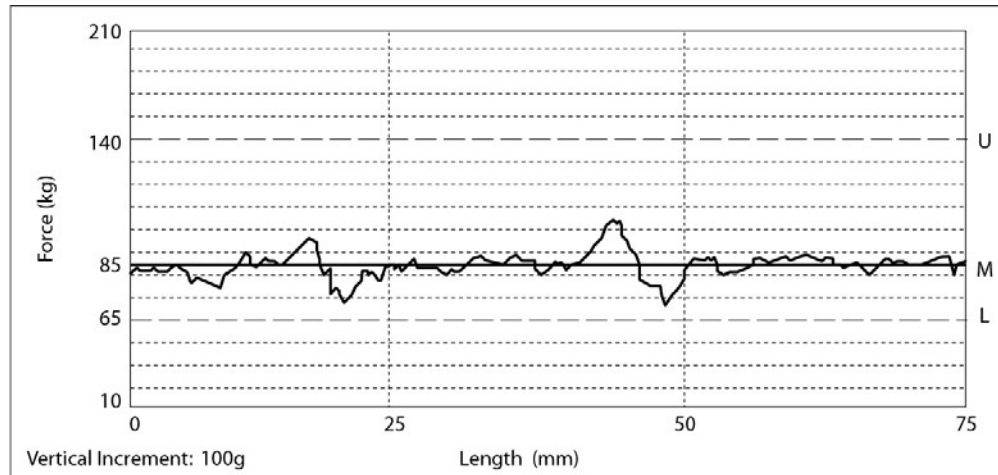
User-defined fixed text can be added to print at the bottom of SPC data and line graphs. For instructions on adding or modifying fixed text, see **Configure Printer (page 31)**.



Fixed text printed on test results report



Fixed text printed on SPC line graph report

**Sample Line Graph**

|        |                |             |               |
|--------|----------------|-------------|---------------|
| Limit  | - Max: 140.00g | Min: 65.00g | Range: 75.00g |
| Result | - Max: 99.45g  | Min: 69.17g | Range: 30.28g |

Speed: 300mm/min  
Mean: 85.37g  
Standard Deviation: 5.63g

*Sample of single test line report generated through the PBFT Control Center.*

**Sample: Printed label:**

April 14, 2011 - 11:00:07  
Mean:108.37g Range:114.29g SD:21.63g  
Lim:40.00/190.00g Resl:52.17/166.45g  
Len:150mm User:assembly

## Uninstall FORCEWare Software

To uninstall FORCEWare and its installed components from the system:

1. In Windows, open **Programs and Features** (Uninstall Programs).
2. Uninstall the program labeled **InstaCal for Windows**.
3. Uninstall the program labeled **FORCEWare n.n.n**.

Complete removal of FORCEWare data may require manual deletion of application files after uninstalling the software.

FORCEWare data is stored in the Windows application data directory on the system drive. The following are the default directory locations:

### **FORCEWare Data Directory Locations**

- **Windows 10 / 11:**

C:\ProgramData\GPD Global\FORCEWare

**NOTE:** GPD Global no longer supports Windows XP, Vista, 7, or 8.

# Specifications

## Computer Requirements

|                  |                                                                                                                               |
|------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Operating System | Microsoft Windows 11 Pro (64-bit)                                                                                             |
| Computer         | Desktop or Notebook PC with at least one available USB 2.0 compatible port                                                    |
| Memory           | 4 GB minimum (meets Microsoft Windows 11 requirement)<br>8 GB or more strongly recommended for reliable FORCEWare performance |
| Monitor          | Any monitor or built-in laptop display compatible with the operating system in use                                            |
| Printer          | Any printer supported by the operating system in use                                                                          |

## SPC Software

|               |                                           |                                                                             |
|---------------|-------------------------------------------|-----------------------------------------------------------------------------|
| Test Range    | SPC Analysis                              | User-defined range                                                          |
|               | Data Collection                           | Uses the upper and lower limits of the first file in the selected data set. |
| Print Options | SPC Data, Label Format, Line Graph Format |                                                                             |

# References

|                                     |                                                                                                            |
|-------------------------------------|------------------------------------------------------------------------------------------------------------|
| PBFT Installation and Service Guide | Refer to this guide for PBFT hardware installation, maintenance, troubleshooting, and service information. |
|-------------------------------------|------------------------------------------------------------------------------------------------------------|