

# Strain Gauge Verification Kit Instructions

Part No. PBT-107

## Purpose

The following instructions are intended to guide a qualified operator or maintenance personnel in the use of the *Strain Gauge Verification Kit* (Part No. PBT-107) to verify whether or not the strain gauge is operating within calibration tolerance range. If verification results determine the strain gauge is failing to operate within the tolerance range, the strain gauge must be re-calibrated.

Use of the Verification Kit does not change how the strain gauge operates; the PBFT Strain Gauge (located on PBFTs equipped with either a Model 342 Chart Recorder or an SPC Software Package) operates the same before and after a verification test.



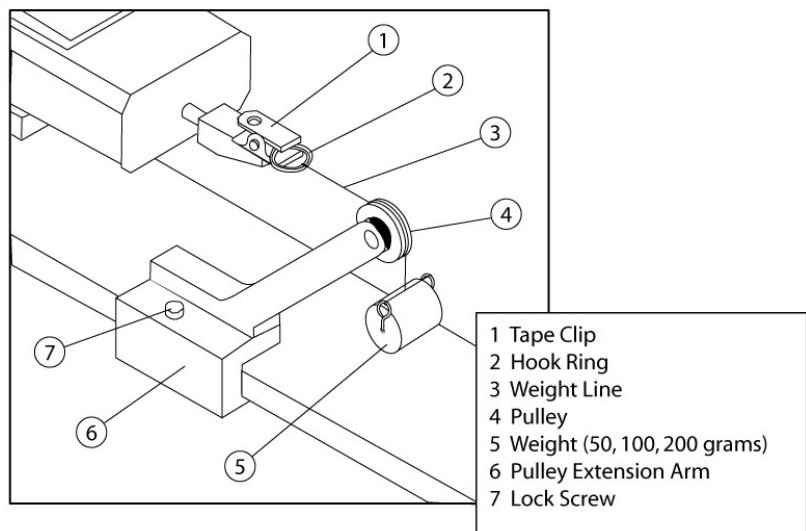
Materials in Kit	Equipment Required
<ul style="list-style-type: none"> <li>• Weights (50, 100, &amp; 200 grams) with weight line and hook ring</li> <li>• Pulley Extension Arm</li> </ul>	<ul style="list-style-type: none"> <li>• DVM with a 20V range and resolution to 1 millivolt (accuracy .05% or better)</li> <li>• Input voltage source (use strain gauge)</li> </ul>

## Procedure

1. Turn the PBFT power switch on.
2. Power on the strain gauge by pressing and holding the strain gauge ON button until display appears.

**CAUTION:** DO NOT strike or jar the strain gauge. Apply pressure to the strain gauge clip in a pulling or pushing motion, not by hitting or jarring it. Applying force to this precision instrument at an excessive speed may result in permanent damage to unit.

3. Verify the strain gauge unit of force is set to 'kg'. If it is not set to 'kg', select 'kg' with the UNIT button.
4. With no load on the strain gauge, press the ZERO button to reset the strain gauge to zero. The display should read zero (0).
5. Install the Verification Kit on the PBFT (see illustration at right):
  - a. Slide the kit's pulley extension arm onto the PBFT base plate.
  - b. Position the arm so a weight will hang freely.

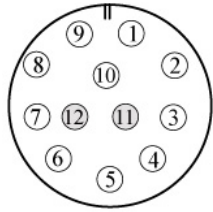
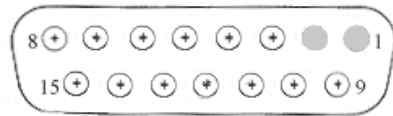
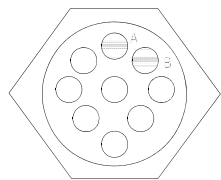
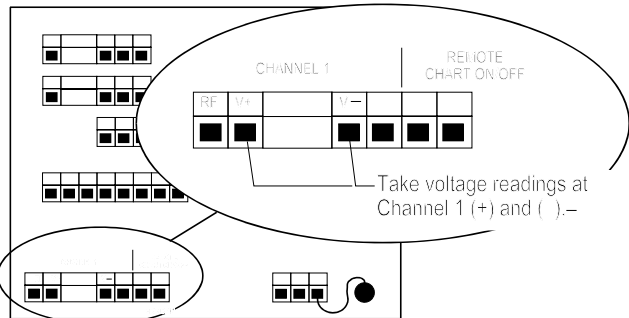


**PBFT Strain Gauge Verification Kit**

6. Verify the strain gauge display and millivolt outputs:

**CAUTION:** DO NOT apply more than one (1) kilogram of force to the strain gauge clip. Applying excessive weight to this clip, which measures the peel back force of the cover tape, may result in permanent damage to the unit.

a. To verify that the strain gauge is performing in linear fashion, take voltage readings applicable to your PBFT configuration:

Which PBFT configuration do you have?			
SPC Software	USB Port	Chart Recorder	How to take voltage readings for this configuration:
YES	YES	NO	<p><b>12-pin Connector</b> - disconnect the data output cable from the strain gauge and then take a voltage reading across pins 11 and 12 of the strain gauge connector.</p>  <p style="text-align: center;">12-Pin Locations</p>
YES	NO	NO	<p><b>15-pin Connector</b> - take a voltage reading at pins 1 and 2 of the PBFT connector into which the software cable plugs.</p>  <p style="text-align: center;">DB15-Pin Locations</p> <p><b>9-pin Connector</b> - take a voltage reading at pins A and B of the PBFT connector into which the software cable plugs.</p>  <p style="text-align: center;">9-Pin Locations</p>
NO	NO	YES	<p><b>Chart Recorder</b> - take a voltage reading at the connections on the rear of the chart recorder at Channel 1 (+) and Channel 1 (-).</p>  <p style="text-align: center;">Chart Recorder - Rear Terminal Connections</p>

- b. With zero (0) grams (no weights), the strain gauge should display 0.000 kilograms and measure less than 5 millivolts.

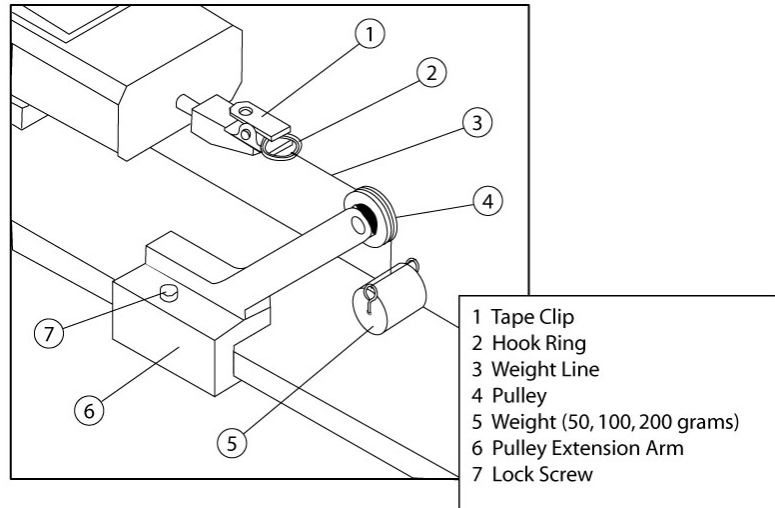
Voltage measured at the connector on the side of the PBFT should be at or near zero (0) volts. The older strain gauges typically have a + or - voltage (with zero weight) which could vary from one unit to the next. This "offset" voltage is neutralized with circuits in the chart recorder and/or the SPC amplifier assembly. Make note of this offset voltage and its polarity.

- c. Verify the display and output with a 50 gram weight:

- (1) Attach the 50 gram weight. The strain gauge should display 0.050 kilograms  $\pm$ .003 kg.

**CAUTION:** Support the weight while laying its line over the arm's pulley and clipping the hook ring in the tape clip.

**CAUTION:** GENTLY release the weight's load onto the strain gauge.



- (2) Measure the voltage and polarity.
- (3) Subtract the offset voltage previously measured in step 5.b. Make note of the resulting new voltage which represents 50 grams.
- (4) Remove the 50 gram weight.

- d. Verify the display and output with a 100 gram weight:

- (1) Attach 100 gram weight. The strain gauge should display 0.100  $\pm$ .003 kg.
- (2) Measure the voltage and polarity.
- (3) Subtract the offset voltage previously measured in step 5.b. Make note of the resulting new voltage which represents 100 grams and is twice the voltage of the 50 gram weight  $\pm$ .015 volts.
- (4) Remove the 100 gram weight.

**PBFT Weight Declaration**  
*Issued by:*  
**GPD Global®**

**Equipment:** \* Peel Back Force Tester  
 \* Strain Gauge Verification Kit  
 \* 50, 100, and 200 Gram Weights

**Part Nos:** PBT-0505 (50 gram weight)  
 PBT-0506 (100 gram weight)  
 PBT-0507 (200 gram weight)

**Declaration:** All weights are within  $\pm$ 0.02% of nominal and are NIST Class F traceable.

- e. Verify the display and output with a 200 gram weight:
- (1) Attach the 200 gram weight. The strain gauge should display  $0.200 \pm .003$  kg.
  - (2) Measure the voltage and polarity.
  - (3) Subtract the offset voltage previously measured in step 5.b. Make note of the resulting new voltage which represents 200 grams and is twice the voltage of the 100 gram weight  $\pm .015$  volts.
  - (4) Remove the 200 gram weight.
7. If verification results are satisfactory, the verification process is complete and the hardware may be returned to normal operations. If verification results are not satisfactory, the strain gauge must be re-calibrated.

**IMPORTANT**

*If verification results are unsatisfactory (if the readings are not within the afore-mentioned voltage range, and if the strain gauge display values are not within the afore-mentioned range of grams), contact the GPD Global Service Department to arrange for re-calibration of the strain gauge.*