

# Manual Supplement

Manual Title: 7196B LN<sub>2</sub> Comparator Users Guide Supplement Issue: 1  
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This supplement contains information necessary to ensure the accuracy of the above manual.

**FLUKE**®

**Calibration**

## Change #1, 366

On the cover of the Manual, change to **7196B LN<sub>2</sub> Comparator**.

On the 2<sup>nd</sup> page, replace the **Limited Warranty & Limitation of Liability** with:

### LIMITED WARRANTY AND LIMITATION OF LIABILITY

Each Fluke product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is one year and begins on the date of shipment. Parts, product repairs, and services are warranted for 90 days. This warranty extends only to the original buyer or end-user customer of a Fluke authorized reseller, and does not apply to fuses, disposable batteries, or to any product which, in Fluke's opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation or handling. Fluke warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke does not warrant that software will be error free or operate without interruption.

Fluke authorized resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Fluke. Warranty support is available only if product is purchased through a Fluke authorized sales outlet or Buyer has paid the applicable international price. Fluke reserves the right to invoice Buyer for importation costs of repair/replacement parts when product purchased in one country is submitted for repair in another country.

Fluke's warranty obligation is limited, at Fluke's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to a Fluke authorized service center within the warranty period.

To obtain warranty service, contact your nearest Fluke authorized service center to obtain return authorization information, then send the product to that service center, with a description of the difficulty, postage and insurance prepaid (FOB Destination). Fluke assumes no risk for damage in transit. Following warranty repair, the product will be returned to Buyer, transportation prepaid (FOB Destination). If Fluke determines that failure was caused by neglect, misuse, contamination, alteration, accident, or abnormal condition of operation or handling, including overvoltage failures caused by use outside the product's specified rating, or normal wear and tear of mechanical components, Fluke will provide an estimate of repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the Buyer transportation prepaid and the Buyer will be billed for the repair and return transportation charges (FOB Shipping Point).

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Since some countries or states do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any provision of this Warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

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On page 2, replace the **Warnings** with:

### **Warnings**

To avoid personal injury, follow these guidelines:

- When you handle or work with the Dewar, wear appropriate personal protective equipment.
- The Dewar can be used up to just under 0.1 bar pressure. DO NOT use the Dewar at pressures >0.1 bar.
- Before the Dewar is used, inspect it for scratches, cracks, chips or other flaws.
- The glass vacuum flask has been replaced with a vacuum-sealed stainless steel Dewar to prevent accidental breakage.
- To ensure the safety, quality, and function of the Dewar, only use it from -200 °C to +150 °C.
- DO NOT use the Dewar with liquid or gaseous Helium.
- Glass-sheathed thermometers can burst when transitioned from extremely cold temperatures, such as the boiling point of nitrogen, to ambient temperatures, due to rapid expansion of gas inside the thermometer. To transition a thermometer from liquid nitrogen to ambient temperatures, it is best practice to insert the thermometer into a metal or plastic containment tube during warmup to protect personnel in the event that a thermometer should burst.

On page 3, in the **Cautions**, remove the first two paragraphs after the bullets.

On pages 3 and 4, replace the **Hart Scientific Authorized Service Centers** with **Fluke Authorized Service Centers**:

Technical Support USA: 1-877-355-3225

Calibration/Repair USA: 1-877-355-3225

Canada: 1-800-36-FLUKE (1-800-363-5853)

Europe: +31-40-2675-200

Japan: +81-3-6714-3114

Singapore: +65-6799-5566

China: +86-400-810-3435

Brazil: +55-11-3759-7600

Anywhere in the world: +1-425-446-6110

On page 6, in the **Specifications**, replace **Volume**, **Outer diameter**, and **Height** with:

|                       |                            |
|-----------------------|----------------------------|
| <b>Volume</b>         | 5.47 liters (1.45 gallons) |
| <b>Outer diameter</b> | 168 mm (6.6 inches)        |
| <b>Height</b>         | 406 mm (16 inches)         |

On page 7, under **Description**, replace the first sentence in the paragraph with:

The 7196B (Figure 2) consists of a vacuum-sealed stainless steel Dewar Flask, a lid, a connection rod, and an oxygen-free copper block with four wells to accommodate thermometers to be calibrated.

On page 8, under **Operation**, remove the first paragraph and two bullets. Replace steps 1 through 6 with:

### **Dewar Fill Instructions**

#### **⚠ Warnings**

**To avoid personal injury while dispensing liquid nitrogen, wear appropriate personal protective equipment such as a face shield, safety glasses, insulated gloves, apron, and protective shoes. In addition, do not move or carry the Dewar when filled with liquid nitrogen or with the lid assembly installed.**

To fill and use the instrument:

1. Position the Dewar in its location of use.
2. Place the lid and block assembly slowly into the Dewar and check to ensure that the lid is secured in place.
3. Use the fill hole and a plastic funnel, or other funnel capable of withstanding liquid nitrogen, to slowly start to fill the Dewar.
4. Stop dispensing when liquid nitrogen vapors reach approximately 30 cm (12 in) above the Dewar, or when liquid nitrogen starts to boil through the openings in the lid.
5. Wait for the liquid nitrogen to stop boiling. This may take about 5 minutes.
6. Begin filling the Dewar again and repeat step 5 until the copper block and Dewar reach equilibrium. Repeat this step if necessary.
7. Fill the Dewar until the nitrogen comes in contact with the bottom of the lid.
8. Insert the reference thermometer and sensors under test into the wells of the copper block.
9. Remove one of the rubber stoppers in the lid, and with a plastic funnel, add more liquid nitrogen to the Dewar until it is completely full.
10. Put the stopper back in the lid and let the probes reach equilibrium. This may take up to 30 minutes or longer.
11. When thermal equilibrium is reached, perform the comparison calibration.

#### *Note*

*To slow the evaporation of the liquid nitrogen and to minimize the formation of ice on the lid, place a piece of 50 mm (2 in) thick, closed-cell polyurethane foam (not supplied) of approximately the same diameter as the lid, directly on top of the lid. This will extend the usable period of the liquid nitrogen and minimize the need to refill the Dewar as frequently.*