EXERGEN
CORPORATION

Calibration Verification Kit

-for all Exergen medical thermometers

Calibration Verification Kit
PN: 129003

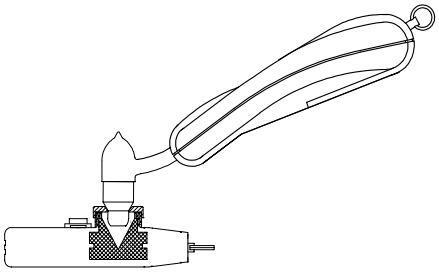
What is the purpose of a calibration verification kit?
It allows the calibration of any Exergen thermometer to be verified in the hospital, on nursing floors, or in the field, conveniently, quickly, and accurately.

Why is it necessary?
Calibration verification is a commonly required part of routine quality assurance programs, and also is used if a question is raised about the accuracy of a particular thermometer. Actual recalibration of an Exergen thermometer is never required unless it has been physically damaged or experiences component failure, in which case the calibration verification test identifies the problem device, which then is returned to the factory for repair.

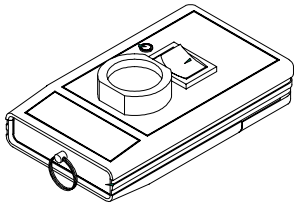
What is in the kit?
A special master reference thermometer of the same model in use by the institution, a portable hand-held reference blackbody, an AC plug-in adapter for long-term use, a 9-volt battery for portable use, and a sealed virtually indestructible carrying case.

Who uses it?
The main users are biomedical/clinical engineering, blood donor and pheresis units (in the United States, blood donor and pheresis units are required by the American Association of Blood Banks to verify thermometers on a daily basis), and many nursing units where accurate temperature is critical such as hematology/ oncology, and bone marrow and organ transplant units.

How is ordered?
The order must include the model and serial number of any one of the thermometers that will be verified. This identification assures an exact calibration match to the special master reference thermometer. The part number is 129003.



In Use



Handheld Blackbody

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Exergen Infrared Thermometry

Calibration Verification Procedure

Suitable for All Exergen Clinical Models

All Exergen infrared thermometers are designed to permanently maintain their accuracy, and feature a patented hermetically-sealed optical system which protects the internal optical system against contamination by dirt, dust, moisture, and solvents.

Most reported problems are the result of a dirty lens. As infrared thermometers take an optical measurement, a dirty lens can result in a low reading. Cleaning the lens will result in an immediate return to normal calibration.

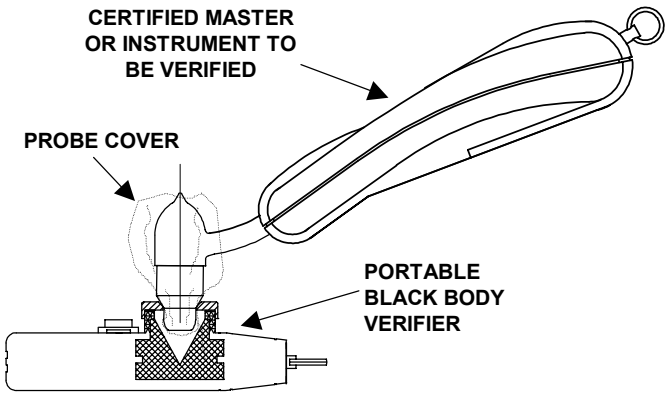

Figure 1. Portable black body is used to verify the calibration of any Exergen IR instrument vs. a Certified Master, by comparison of readings.

Normally, recalibration is never required unless the thermometer has been physically damaged or experiences component failure. Recalibration is done only at the factory, but calibration verification can be conveniently accomplished with a Calibration Verification Kit in biomedical engineering, and other areas requiring frequent accuracy verification of patient thermometry such as blood donor or pheresis units.

Calibration Verification Kit

The Calibration Verification Kit includes a portable blackbody heat generator providing a stable source of heat in a small cavity. This is used as a target reference to verify the calibration of any of Exergen's medical instruments against an Exergen Certified Master (CM) reference instrument, also included in the kit. A removable aperture at the opening of the cavity accommodates those instruments having wider probes. (*TemporalScanner*, *DermaTemp, Neonate Axillary*). The CM instrument must be the same model and calibration as the units to be tested (see S/N labels on the instruments). If this is not the case, contact Exergen.

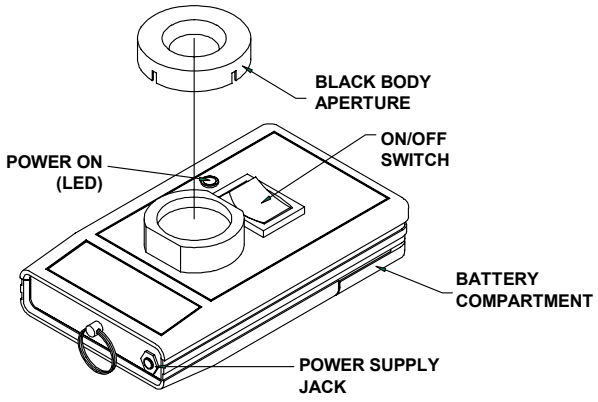

Figure 2. Model PBB-1 Portable Blackbody Calibration Verifier

The verifier operates with either a 9-volt power supply plugged directly into any 120 vac wall receptacle allowing it's extended use, or for portable use on nursing floors, it can be completely powered by a 9-volt battery.

Calibration Verification:

Since optical characteristics vary by model, and some models incorporate physiological heat balance algorithms to compute final temperature, for optimal accuracy verification, it is essential that only a CM infrared thermometer of the same model and calibration type be used for comparison purposes.

1. **Getting Started**. Turn on the verifier device, making sure the LED is illuminated. If not, check the battery to assure it is installed correctly. If using the power supply, simply insert the plug into the power supply jack, and plug the power supply into any 120VAC wall receptacle.

2. **Allow device to stabilize.** Once turned on, allow approximately 5 minutes for warm-up and stabilization time.

3. **Allow both the Certified Master and instruments to be tested to acclimate to the same ambient temperature.** Allow to equilibrate to room temperature for at least 10 minutes.

4. **Assure lens is clean.** Make sure the lens at the tip of the probe of all instruments, including the Master Reference, is clean. To clean, use an alcohol prep, or a swab dipped in alcohol.

5. **Using disposable covers or sheaths.** Calibration can be verified either with or without disposable covers, as long as the thermometers being compared match the configuration of the master (both with covers or both without covers). Comparing a thermometer with a disposable cover to one without a disposable cover could result in an unacceptable difference, causing the thermometer being tested to be unnecessarily rejected.

1. **Compare Reference Thermometer readings to test thermometer.** Refer to instruction manual for particular model being verified. Alternately insert the CM instrument and the instrument being verified into the aperture opening, comparing readings to the CM.

   Note: When verifying the TemporalScanner, DermaTemp and LTN models, remove the white aperture collar so the probe will fit into the well.

2. **Accuracy Limits:** Comparison between CM and test instrument readings should be within ±0.4°F (0.2°C) for acceptable field limits. If not, repeat the process. In the event they still differ by more than the acceptable limits, call Exergen Corporation for replacement of the failed instrument.

3. **Heat Balance Awareness**: Models employing the patented arterial heat balance method adjust to their surrounding ambient temperature for precise, absolute accuracy. If left sitting on the heat well, they will assume the warmer temperature of the well, and thus will be at a different ambient than the instrument being tested (assuming it is at room temperature), and this could make a difference in the comparison.

4. **Reminder**: Comparisons between the CM and the instrument being tested should always be conducted under the same conditions.

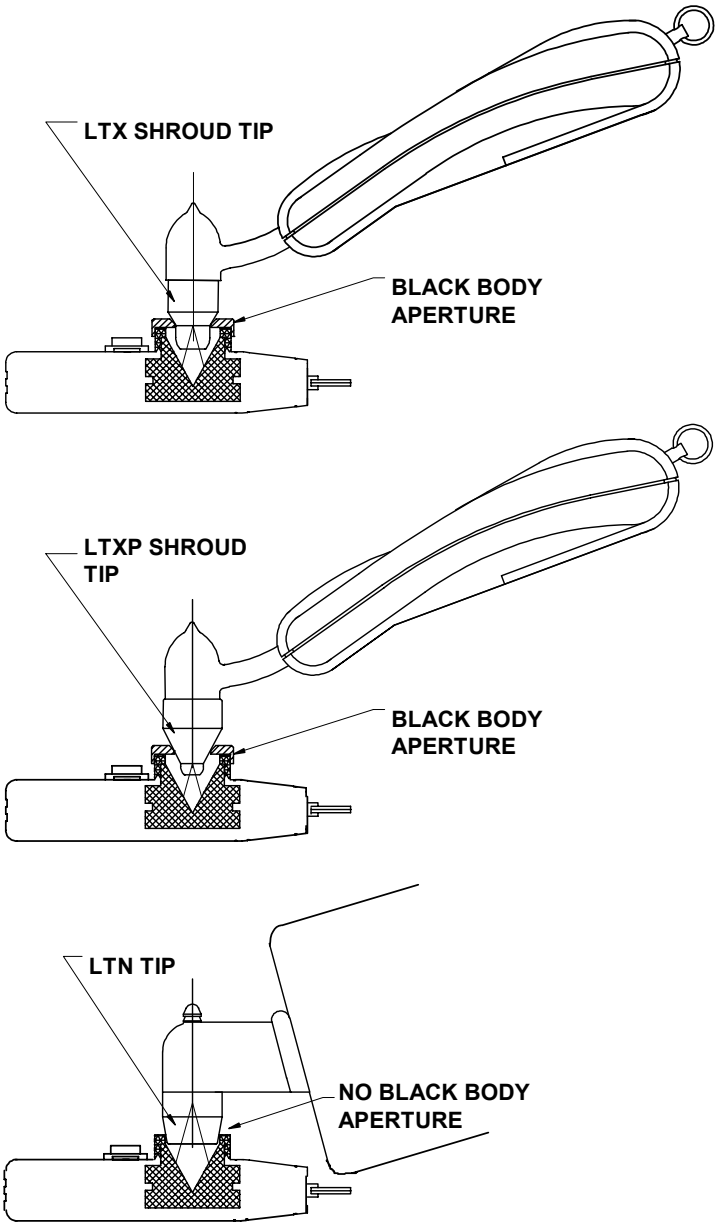

Figure 3. For models with large probes, such as the TemporalScanner Series, LTN and DT-1001, remove the aperture. Otherwise leave aperture in place. Instrument probe should not touch the cavity bottom.

Verifier Specifications:

- **Power Source:** 9-volt battery, or 9-volt power supply
- **Battery Life**: approximately 1 hr.
- **Low Voltage Indicator**: red LED shuts off when battery voltage drops below ~5 volts.
- **Temperature**: body temperature range 97 - 104°F (36 - 40°C), may vary with battery voltage.
- **Cleaning**: wipe down with alcohol or cleaning solution, do not immerse.
- **Recertification:** Certification is for one year. Call Exergen to arrange for recertification.

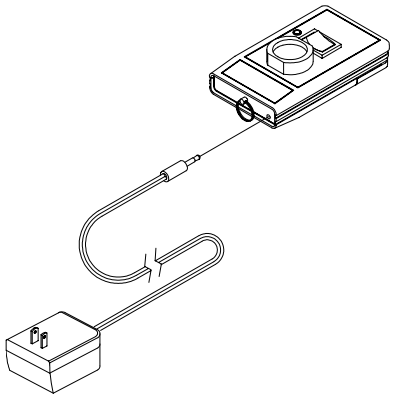

Figure 4. Power supply for PBB-1

If you have any questions about the calibration or operation of the Exergen Infrared Thermometers, please call Exergen Medical Division.

EXERGEN
Straight From the Heart®

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