

SUBJECT PYRO OPTICAL PYROMETER - Its
Use and Maintenance

SUPERSEDED DATE 10/15/31

Standard practices with regard to use and maintenance of a portable optical pyrometer primarily for checking of temperatures in sealex operation - viz., plate temperatures in tubes heated by high frequency induction coils, shell temperatures of metal tubes in gas fires; also mount and getter temperatures in cathode ray tubes during degassing cycle; in addition temperatures of hydrogen firing furnaces, HF vacuum firing of parts in vacuum bottles, etc. - are described herein.

1. PYRO PYROMETERS AVAILABLE

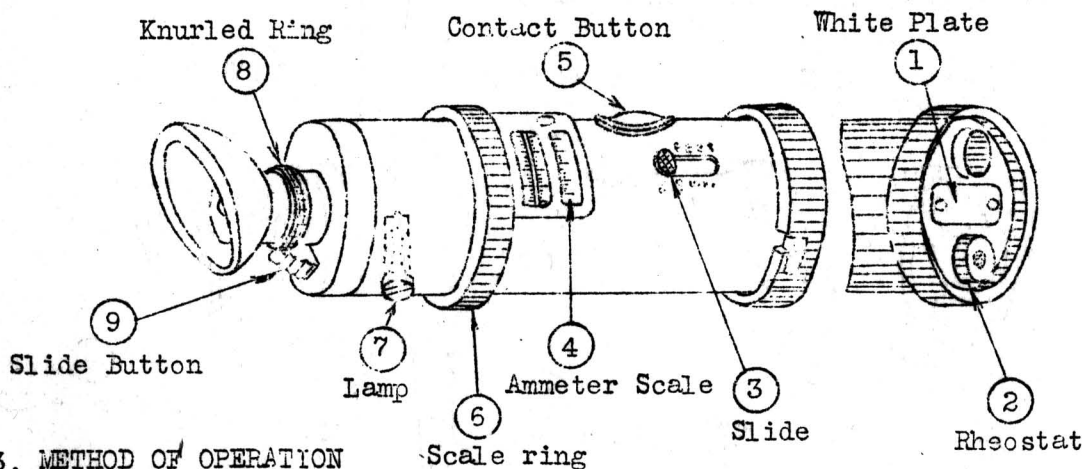
Pyro optical pyrometers are available with the following scale ranges. Each instrument is furnished complete with master lamp, two service lamps, leather cover steel carrying case, and straps for instrument and case.

Single range - 760° to 1370°C	Triple range - 760° to 1200°C
Single range - 980° to 1870°C	980° to 1870°C and
Double range - 760° to 1200°C and	1200° to 2035°C
980° to 1870°C	

For temperature observations of extremely small objects at close range, the instrument can be equipped with a magnifying lens, increasing the magnifying power of the optical system considerably.

2. DESCRIPTION

The Pyro optical pyrometer is compact self-contained unit 10" in length, approx. 3" in diameter, and weighing about 3 lb. Its ability to focus on surfaces as small as 1/4" circles permit checking temperature gradients in the same body. Light intensity and not color is matched, for the eye is less sensitive to color differences. Its construction is illustrated below.



3. METHOD OF OPERATION

- a. Adjust filament rheostat (2) to give a current value on ammeter scale (4) corresponding to that specified on white rating plate (1) for lamp (7). Once adjusted it need be checked only occasionally and reset as needed. The calibration of each lamp is marked on its base.

*Former factory made pyrometer no longer used.

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3. METHOD OF OPERATION (Cont'd)

- b. With slide button (9) on "zero" (no filter) turn scale ring (6) to zero at start, and adjust slide (3) for distance sighted (for distances in excess of 10 ft.). Further focusing would be done by turning ocular ring (8) to bring test mark out absolutely clear-cut. This is important for accurate readings.
- c. With eye shield turned to fit either right or left eye and sighting at luminous object, bring red filter into line of vision by sliding button (9) to left. (For double range instruments move to "Low" for 800-1200°C and to "High" for 1000°-1900°C range.
- d. While pressing ammeter contact button (5), turn aluminum scale ring (6) until bright luminous test mark disappears - i.e. when uniform brightness is obtained. Read temperature directly from the scale.
- e. If scale ring is turned too far in one direction, the test mark appears too bright, and if too far in the other, too dark - yielding incorrect temperature readings in either case.

4. GENERAL MAINTAINANCE

- a. Calibrating Lamps - With use the intensity of service lamp may change slightly. To calibrate replace with master lamp (red tip). Referring to sketch:
 1. Adjust rheostat (2) so that ammeter (4) reading corresponds with rating of lamp.
 2. Read temperature of a constant heat source, a given part of furnace or 1/2" circular spot on 60 watt frosted bulb. Leave temperature setting undisturbed.
 3. Replace master lamp with service lamp, and again sight at same spot of heated body. Adjust rheostat (2) in making test mark disappear. If the current value differs from that given on white cover plate (1) mark it with new standard current value.
- b. Meter Calibration - When constantly in use send pyrometer to meter lab. for monthly check on ammeter (4) at which time they will check service lamp as well, changing rating on plate (1) if necessary. With lighter use send to meter lab. bi-monthly. Do not delay calibrating any longer.
- c. When necessary replace standard flash light battery (Ever Ready 703-4 1/2 volts, or similar) - lamp requires approx. 60 milliamps. Bend battery prongs to suit instrument. CHECK POLARITY.
- d. If by accident zero position of ammeter has changed, turning correction screw in base under cover plate brings it back to normal.

STANDARDIZING SECTION
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