DEPARTMENT OF

TRADE AND COMMERCE
CANADA

S-EA.481

STANDARDS BRANCH

OTTAWA November 14, 1960.

TYPE APPROVAL

SANGAMO TYPE "HW" THERMAL CONVERTER

The apparatus specified and illustrated herein has been duly approved by the Standards Branch under the provisions of the Electricity Inspection Act, Chapter 94, R.S. 1952, and may be admitted to verification in Canada.

Apparatus Approved: Type "HW" Thermal Converter, manufactured by Sangamo Company Limited, Leaside, Toronto 17, Ontario.

Rating of Apparatus:

Rated Amperes	5
Rated Voltage	115, 230, 460, 575 OR 120, 240, 480, 600
Frequency	25, 50 and 60 cycles
Elements	Single for single-phase; 2 or 3 for polyphase
D.C. Output	50 millivolts per element, at 500 watts for a 5-ampere, 115-volt instrument.
#Response Periods	"HW5M" - 5 minutes "HW10M" - 10 minutes "HW15M" - 15 minutes.

The response period is the time required for the D.C. millivolt output to reach 90% of its final indication. The test period is twice the response period and the output should be 99% of the final value at the end of this time.

Description: The basic converter consists of an element, a voltage transformer and a set of adjustments. They may be combined as required for various applications.

The general construction of the heater and thermocouple assembly is similar for all response speeds. The performance characteristics are obtained by selection of materials and proportioning and position of components. The time period is variable through a wide range by varying the size of masses attached to the element. An essential feature of the construction is that each element is enclosed in a hermetically-sealed metal enclosure packed with an insulating medium. Each element is provided with a set of independent adjustments for potential balance, current balance and calibration. In each case the adjusting resistor is mounted on the circumference of a disc. The movable contact is on a radial arm. The contact is positioned by hand and secured by a set screw to provide positive and permanent contact.

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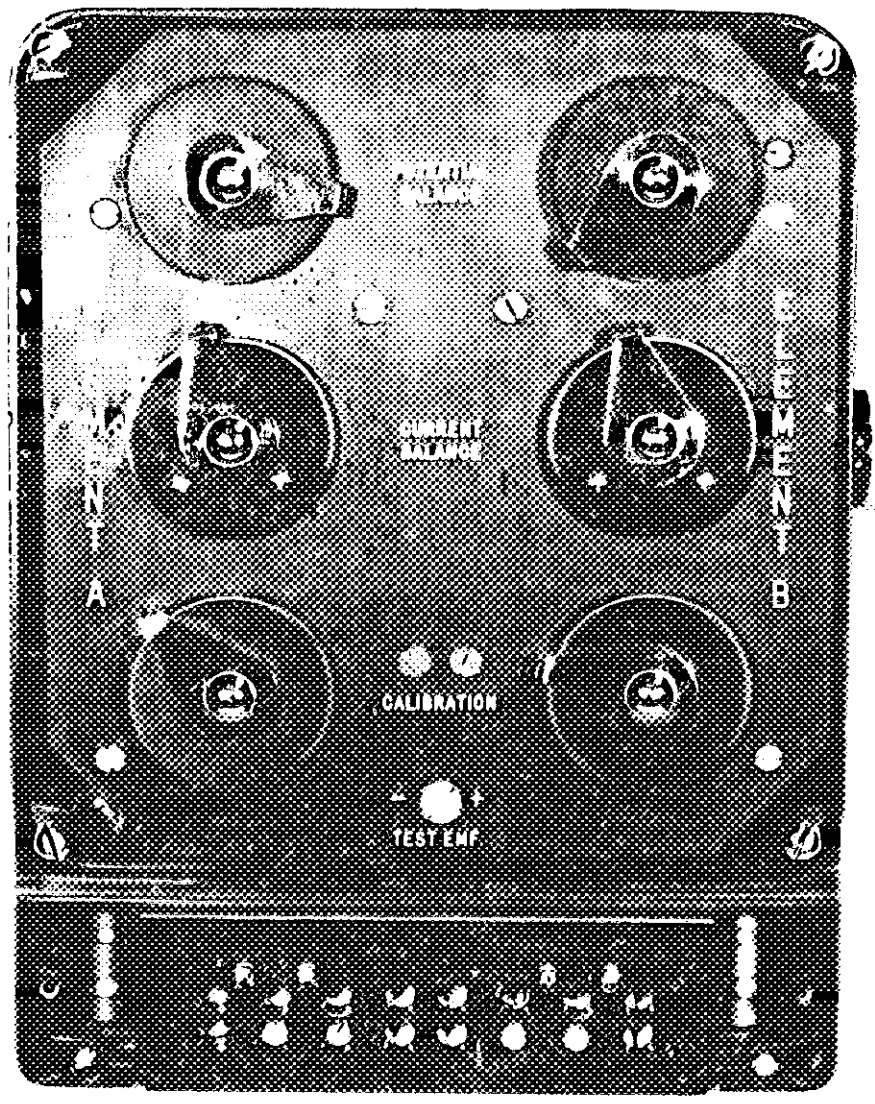

With potential alone connected to the converter, the output should be zero. Adjustment is obtained by the "potential balance" adjustment which shunts the heater giving rise to the higher emf. It can be connected to either heater as required. Provision is made for insertion of a fixed resistor in series to obtain a suitable range of adjustment.

With current alone connected to the converter, there should be zero output. This condition may be obtained by adjustment of the division of current between the heaters. The "current balance" adjustment consists of a low-resistance potentiometer connected between the two halves of the secondary of the potential transformer. The moving contact forms the centre tap connection. This adjustment is second from the top of the panel.

Calibration consists of selecting a portion of the output emf. This is accomplished by the use of a tapped resistor plus a slide-wire potentiometer. The tapped resistor is mounted behind, and at the side of, the panel and the "calibration" adjustment is at the bottom of the panel.

The insulation is rated at 2500 volts, 60 cycles rms., between circuits and between any circuit and ground.

The base and cover, and terminal arrangements, are identical to those covered under Circular SD-EA.392 of February 27, 1959.

The "W" in the type designation indicates a watt converter. The use of converters as voltmeters and ammeters is not covered by this approval.

E. F. Power,
Chief, Electricity & Gas Division,
Standards Branch.

R. W. MacLean,
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