DEPARTMENT OF

TRADE AND COMMERCE
CANADA

SD-EA.145

STANDARDS DIVISION

OTTAWA, April 5, 1954.

TYPE APPROVAL

BAKER MULTI-ELEMENT TOTALIZING RECORDERS

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

Apparatus Approved: Baker and H.E.P.C. type B Multi-Element Totalizing Recorders, manufactured by The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario.

Rating of Apparatus:

Nominal current/element	5 amperes
Nominal voltage	115 volts
Frequency	25 or 60 cycles
Number of elements	2, 4, 6 or 8
Chart Speed	2 inches/hour.

Description: The Baker and H.E.P.C. type B totalizing recorders are used in applications where it is required to totalize power from several sources. The power being totalized may be at different voltage levels and/or at different frequencies (25 and 60 cycles). The designation "H.E.P.C.type B" applies to the newer model of the meter, and this differs from the older form in that the Kelvin balances are mounted in a vertical row rather than in a horizontal manner as formerly. A 2-element old-style meter is described briefly herewith, but the basic principles are the same for both old and new styles.

The 2-element polyphase instrument consists of two sets of Kelvin balances mounted in a horizontal plane so that the beam of one balance is behind the other when viewed from the front of the meter. At the end of each arm of each balance a single moving coil is mounted which is free to move between two fixed coils. Each moving coil carries the appropriate potential current for the circuit into which the fixed current coils are connected. The arms of each balance are rigidly connected together so that any movement is the resultant of all the forces supplied by the four sets of coils. Thus, if the two sets of coils of one Kelvin balance are connected into one polyphase circuit and the coils of the other balance into another circuit, the resultant force on the balance arm can be proportional to the sum of the power in the two circuits. Movement of the balance arms from the neutral position closes contacts which start the adjustment motor. This motor causes, through a series of pulleys and a worm gear, a poise to slide along a beam which is rigidly attached to the balance arms until a new balance point is reached. The distance which the poise moves from its zero position is a measure of the total power, and this is recorded on the roll chart by a large glass pen which is driven by the same mechanism as the poise. A separate synchronous electric motor drives the chart. There are limit switches installed to limit the travel of the pen above full scale and below zero. Two adjustments are fitted - one for light load which adjusts the balance of the beam at no load; one for full load which in effect changes the weight of the sliding poise. Resistances for potential circuits are housed in a separate case.

E. F. Power

E. F. Power,
Assistant Director (E&G),
Standards Division.

R. W. MacLean,
Director,
Standards Division.

Ref: A-357

BAKER 2-ELEMENT TYPE TOTALIZING RECORDER