DEPARTMENT OF TRADE AND COMMERCE

STANDARDS BRANCH

T-29

OTTAWA July 2, 19 68.

NOTICE OF APPROVAL

FOR

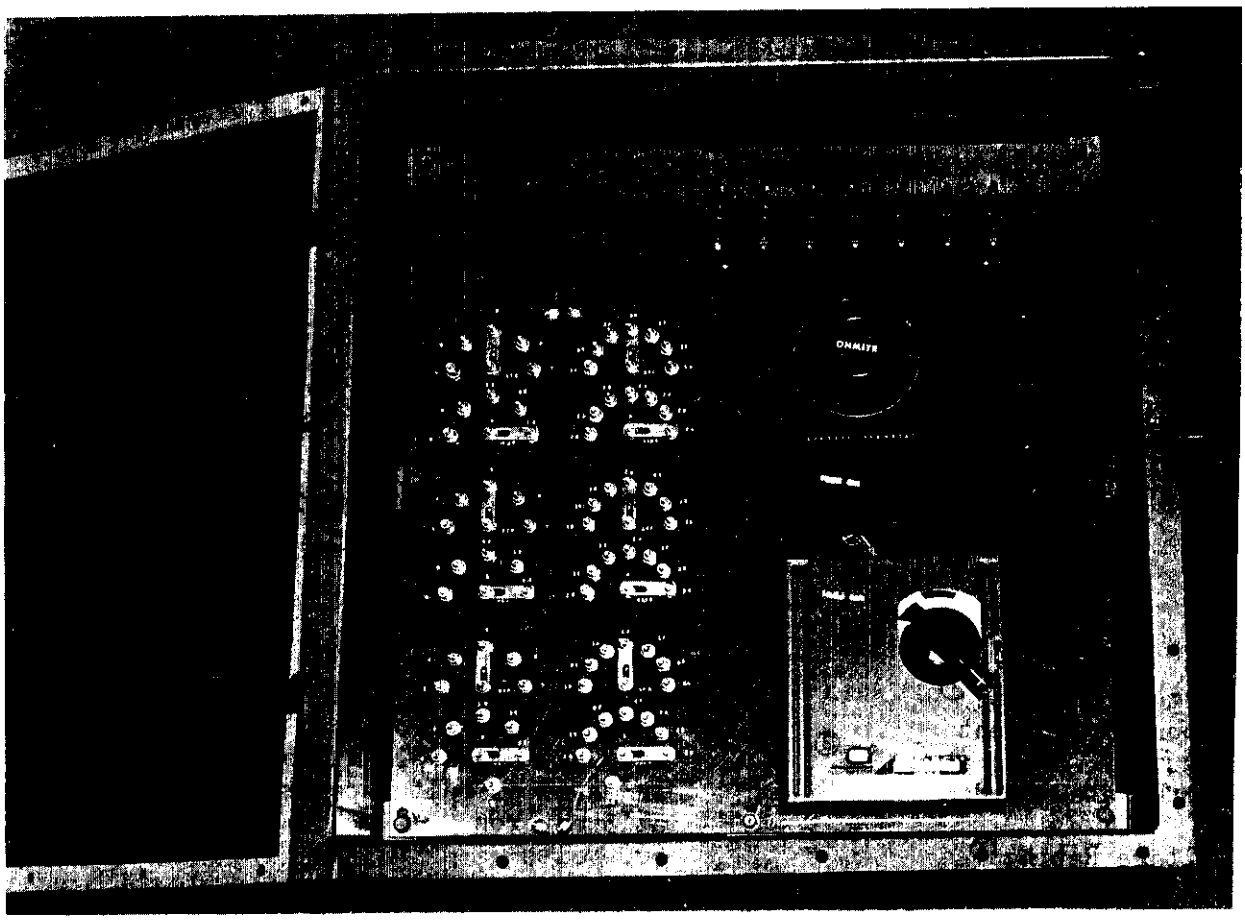
CANADIAN GENERAL ELECTRIC TYPE "OMB" ORTHOMAGNETIC CURRENT TRANSFORMERS

	Apparatus
Primary Currents ①	100, 200, 300, 400, 600 and 800 amperes
Secondary Current	5 amperes
Accuracy Rating at 60 hz ②	Accuracy class 0.3 at compensated burden only
Compensated Burden	In terms of volt amperes and power factor at 5 amperes
Voltage Rating ③	600 volts
Frequency	60 hz
Rating factor (R.F.)	1.0
Excitation Winding Supply	120 volts ± 10%, 180 hz parallel to each transformer
Frequency Tripler Supply	3 phase 3 wire 60 hz of voltage marked on Frequency Tripler nameplate, maximum 600 volts

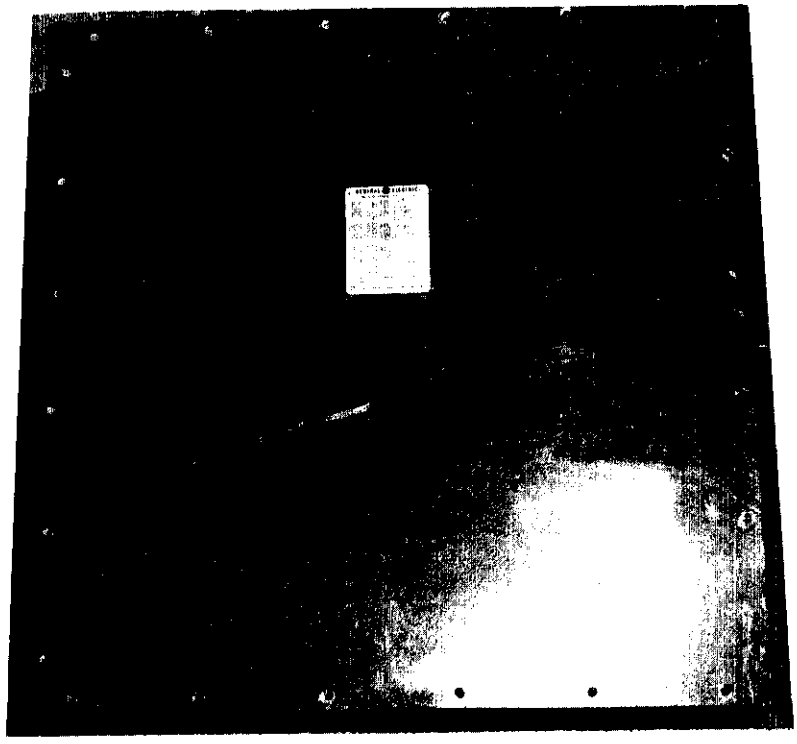
① Transformers may have a tapped secondary winding or may have a single untapped winding.

② The accuracy class is 0.3 on all ratios only where loaded with the designated burden.

③ The major part of the insulation is provided by the bushings on which these transformers are mounted.



FREQUENCY CONVERTER 60~ 3 ph 3 w to 180~ sph 2 w



Description

The complete orthomagnetic bushing current transformer consists of the transformer itself and associated equipment. This equipment uses a "Frequency Converter" (or tripler) to supply the high frequency excitation to the current transformer cores and a compensating network to set the current transformer ratio and phase angle to suit the customer's burden.

Current Transformer

The current transformer is constructed in the same general manner and has the same size as a comparable bushing transformer. It has a two section ring shaped core assembled together to make a single transformer.

On each section of the core is wound an exciting winding connected in series in magnetic opposition and brought out to leads that are to be connected to a 120 volt 180 hz supply.

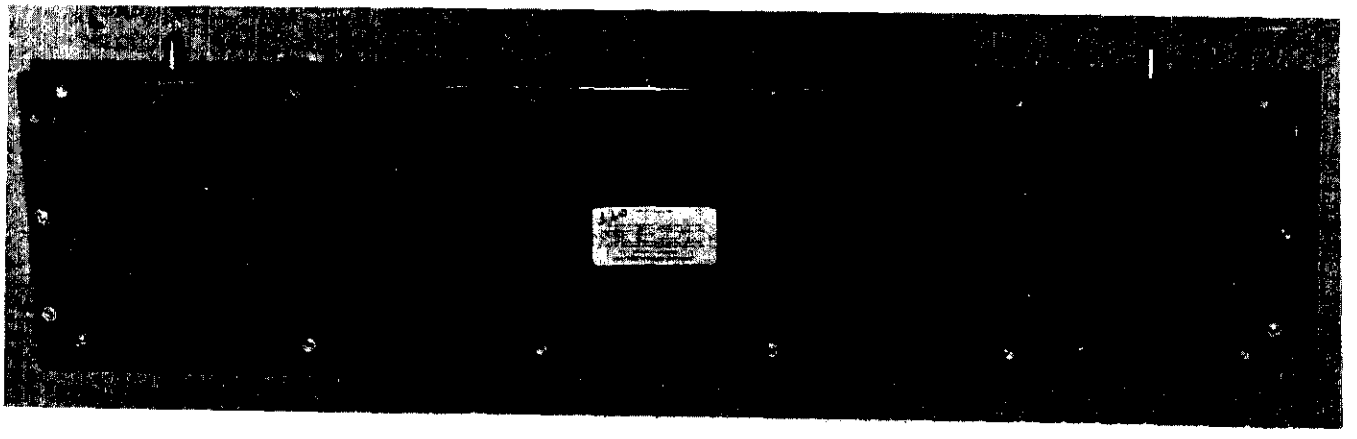
The secondary winding is wound around both cores; it may be provided with taps so that up to three ratios are available, or it may be a single untapped winding. The leads from the secondary winding will be identified in the conventional manner as "X1", "X2", "X3", "X4", or X1, X2, with "X1" being the common and polarity terminal. A white mark on the side of the transformer denotes the primary polarity entrance side.

Frequency Converter

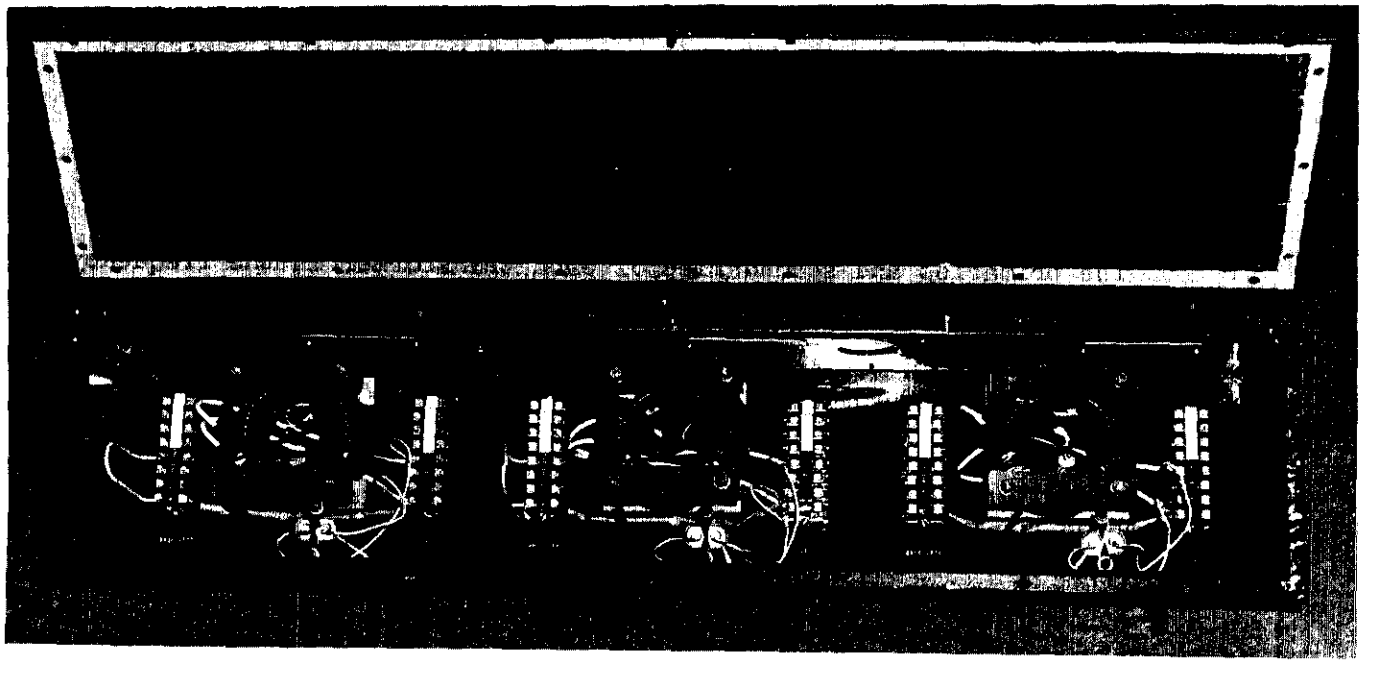
The frequency converter unit consists of three small two-winding transformers with their primary (input) windings connected in wye and their secondary (output) windings connected in broken delta. With this arrangement of transformer units and connections, the 3 phase 3 wire 60 hz input is converted to single phase 120 volts 180 hz.

The primaries and secondaries of each transformer in the frequency converter unit are provided with taps that are connected to studs and links on a panel. Knife switches connected to various values of capacitors and a loading rheostat, permit the output to be adjusted to the required 120 volts.

The 120 volts 180 hz output from the frequency converter is applied to the exciting winding of each of the three current transformers in the three phase bank.



COMPENSATING NETWORK



Compensating Network

The unit consists of an adjustable autotransformer for ratio adjustment and capacitors for phase angle adjustment.

A separate unit is required for each of the three current transformers in the bank, and a steel cabinet is provided for mounting each of the three autotransformers and the required capacitors along with the necessary terminal blocks.

The current transformer and its associated compensating network are adjusted at the factory so that the accuracy class is 0.3 at the burden specified by the customer. Current transformers must be used with the correct compensating network which carries the same serial number.

Two terminal blocks are provided for each of the compensating networks. All secondary leads from the current transformer are connected to the designated terminals of one block. The two leads to the meter are connected to those terminals of the other block which provide the required ratio.

It should be noted that the usual method of rating the accuracy of current transformers, using the CSA standard nomenclature e.g., 0.3B0.5; 0.6B2.0, is not always applicable to the orthomagnetic type. On the low ratios of this type it is possible, by means of the compensating network, to attain the 0.3 accuracy class on a specified burden but not on a range of burdens. For such transformers the compensating network is adjusted at the factory to provide the required accuracy when the transformer is used with the specified burden i.e., the compensated burden. This burden is marked on the nameplate and the transformers are only approved for use with it.

That the correct burden is connected to an orthomagnetic transformer can usually be readily checked in the field by comparing the compensated burden marked on the nameplate with the total calculated value imposed by the various instruments (as determined from the maker's data) and by the leads under an assumed secondary current of five amperes.

All installations using orthomagnetic current transformers type "OMB" in a billing application must be checked "in situ" to establish that;

1. the value of the total burden on the secondary of each current transformer as computed from the values of the separate components agrees with the value marked on the nameplate.

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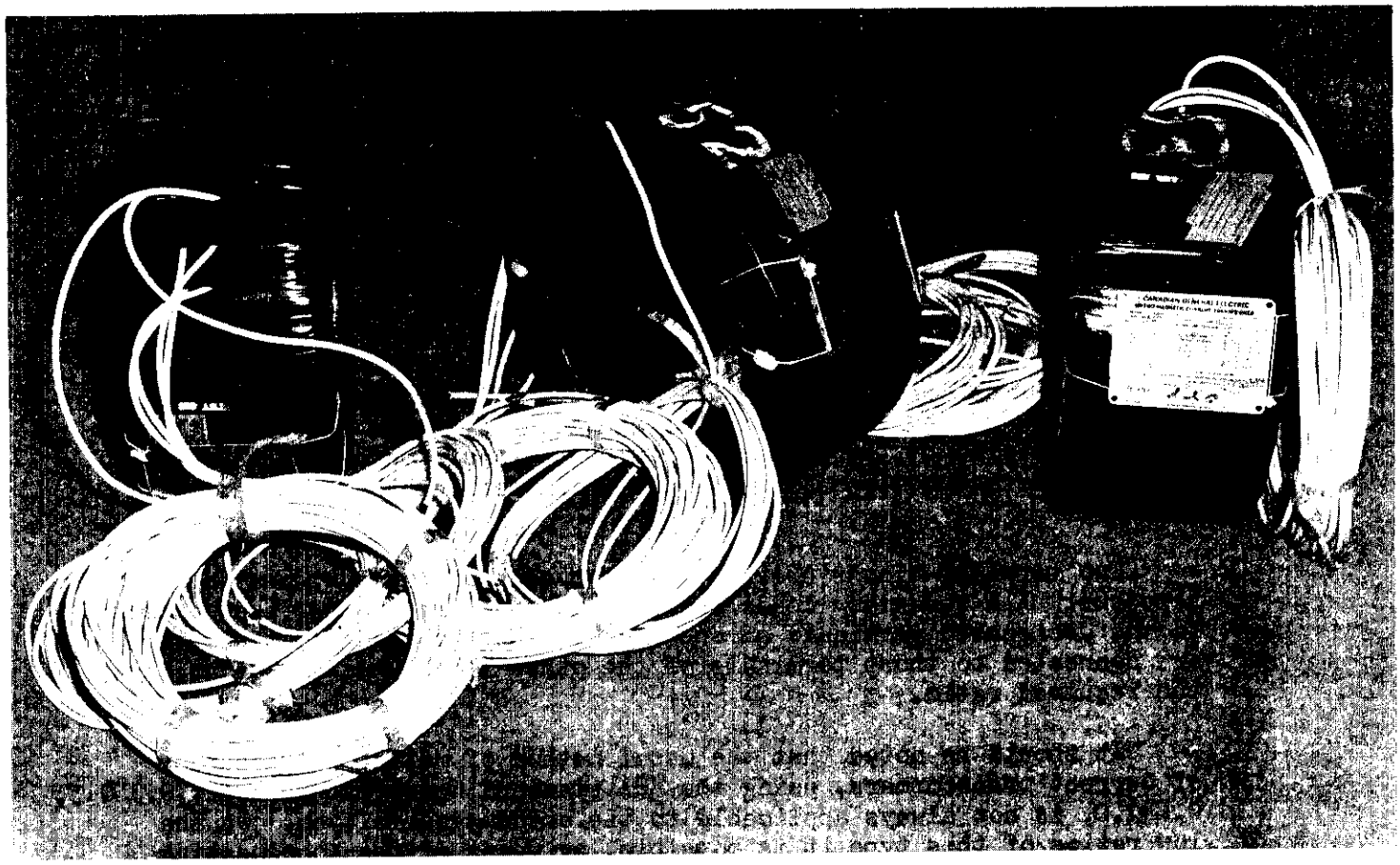

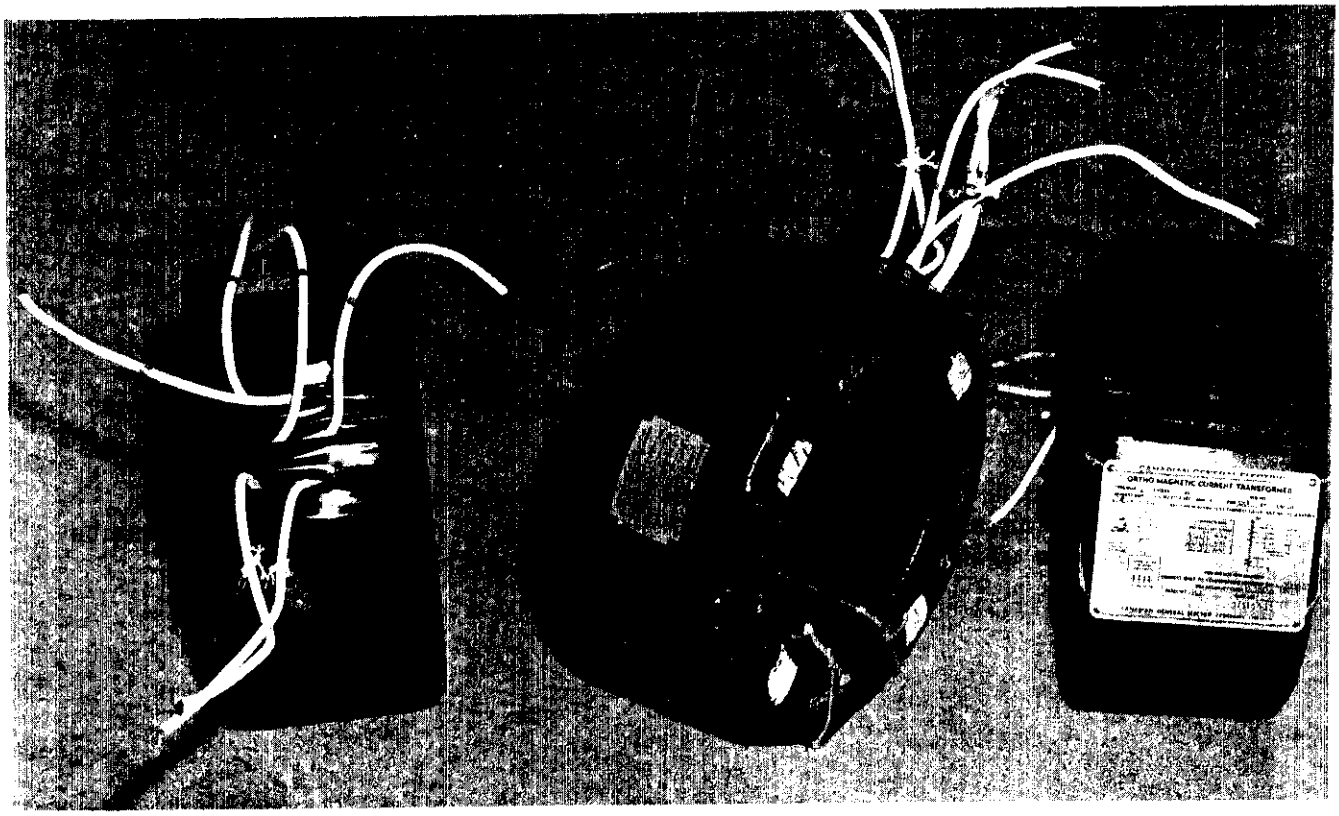

2. the 180 hz has the correct voltage, is being supplied to the exciting winding and is actually flowing.

3. the compensating networks are connected to their respective transformers and their serial numbers match.

Approval granted to:

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