INSTALLATION • OPERATION • MAINTENANCE

INSTRUCTIONS

-24 LINE-
SWITCHBOARD INSTRUMENTS
FOUR AND ONE-HALF INCH CLASSIFICATION
FULL-VIEW CIRCULAR SCALE TYPE

GENERAL

Cases

The first letter in the type designates the form of case used.

K = Rectangular flush case, front-of-board mounting.
O = Round flush, rear-of-board, four-corner mounting.

Mechanisms

The second letter in the type designates the principle of operation.

A = Repulsion-attraction, moving-iron.
C = Rectifier plus X.
F = Iron core electrodynamic.
I = Rotatable iron vane.
X = Permanent-magnet, moving coil.

DESCRIPTION AND APPLICATION

These instruments are designed and built to meet the requirements of American Standard C39.1 for electrical indicating switchboard instruments. The rated accuracy class is one percent.

Dial Notes

Reference to type, style number, use of external components if required, coil ratings where not evident from the scale marking, calibration data etc., are marked on the dial.

In the case of wattmeters and varmeters the full scale value marked on the dial is the number of watts required to produce end scale deflection when the instrument is connected according to the applicable wiring diagram, but without transformers.

High Voltage Voltmeters

When voltmeters are used with an external resistor on voltages higher than the insulation rating of the instrument, one terminal of the instrument should be grounded.

Ammeters with External Shunts

Ammeters with external shunts must be used with leads having resistance specified on the dial. If the circuit voltage exceeds the insulation rating of the instrument, the shunt should be in the grounded side of the line.

Grounding of Cases

Instruments, when mounted on grounded metal structures, are considered adequately grounded when secured to the structure by metal hardware. For mounting on insulated structures a grounding terminal is provided on the rear of the instrument.

Mounting

If external components, as shunts or resistors, are required, provision must be made for their mounting.

Wiring

Wire apparatus, including external components when required, according to the diagrams in this leaflet, using wire which is insulated to withstand the voltage and other conditions which will be encountered in service.

Installation Adjustments

On any instruments which operate with spring control, such as ammeters or voltmeters, before energizing, adjust the pointer to zero by means of the zero adjuster button on the front of the case. Power factor meters, position indicators, synchroscopes and frequency meters do not have zero adjusters although a dummy button may appear on the front of the case for uniformity of appearance..

REPAIRS AND RENEWAL PARTS

Repair work can be done most satisfactorily at the factory. When returning an instrument for repairs, obtain a return material tag from your dealer or your nearest Westinghouse Sales Office to assure proper identification at the factory.

Orders for renewal parts should include the name of the part and the style number appearing on the dial or nameplate of the apparatus.

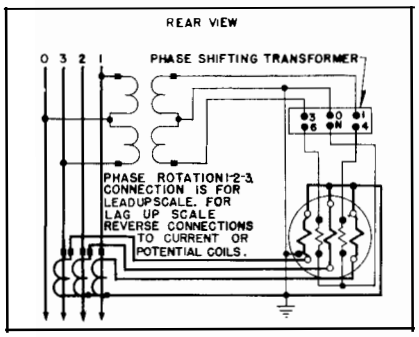

Fig. 15—Type F-24 Polyphase 3 Current Coil Varmeter With C.T. and P.T.

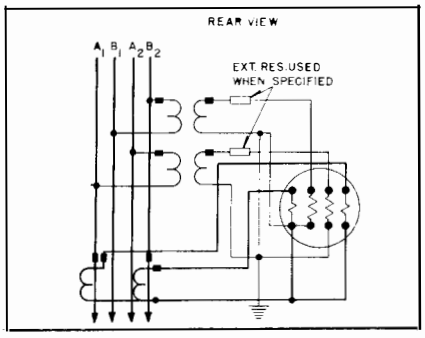

Fig. 16—Type F-24 Polyphase 2 Current Coil Wattmeter (2 Phase 4 Wire) With C.T. and P.T.

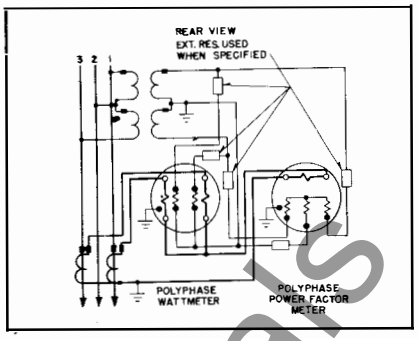

Fig. 17—Type F-24 Polyphase Wattmeter and P.F. Meter with C.T. and P.T.

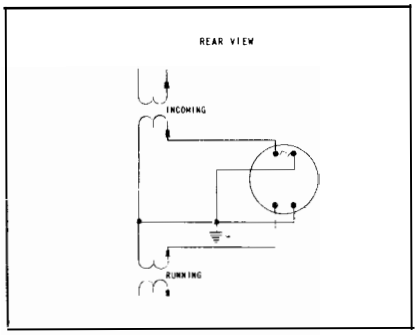

Fig. 18—Type I-24 Single Phase Synchroscope with P.T.—Self Contained.

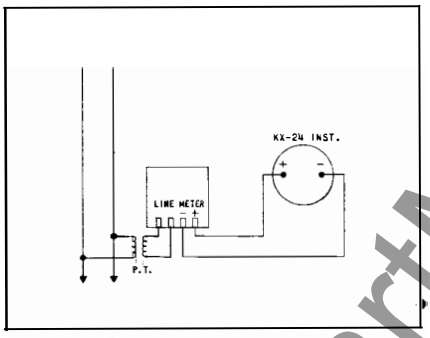

Fig. 19—Type KX-24 Frequency Meter with External Transducer—Potential Transformer.

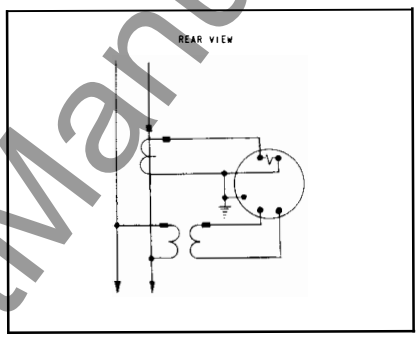

Fig. 20—Type I-24 Single Phase Power Factor Meter with C.T. and P.T.—Self Contained.

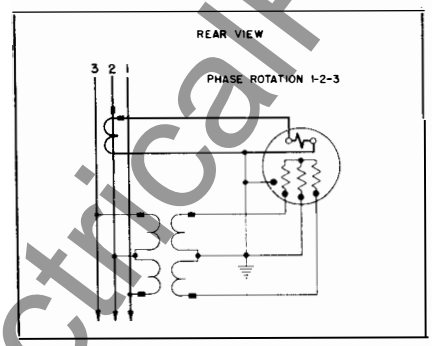

Fig. 21—Type I-24 Polyphase Power Factor Meter With C.T. and P.T.

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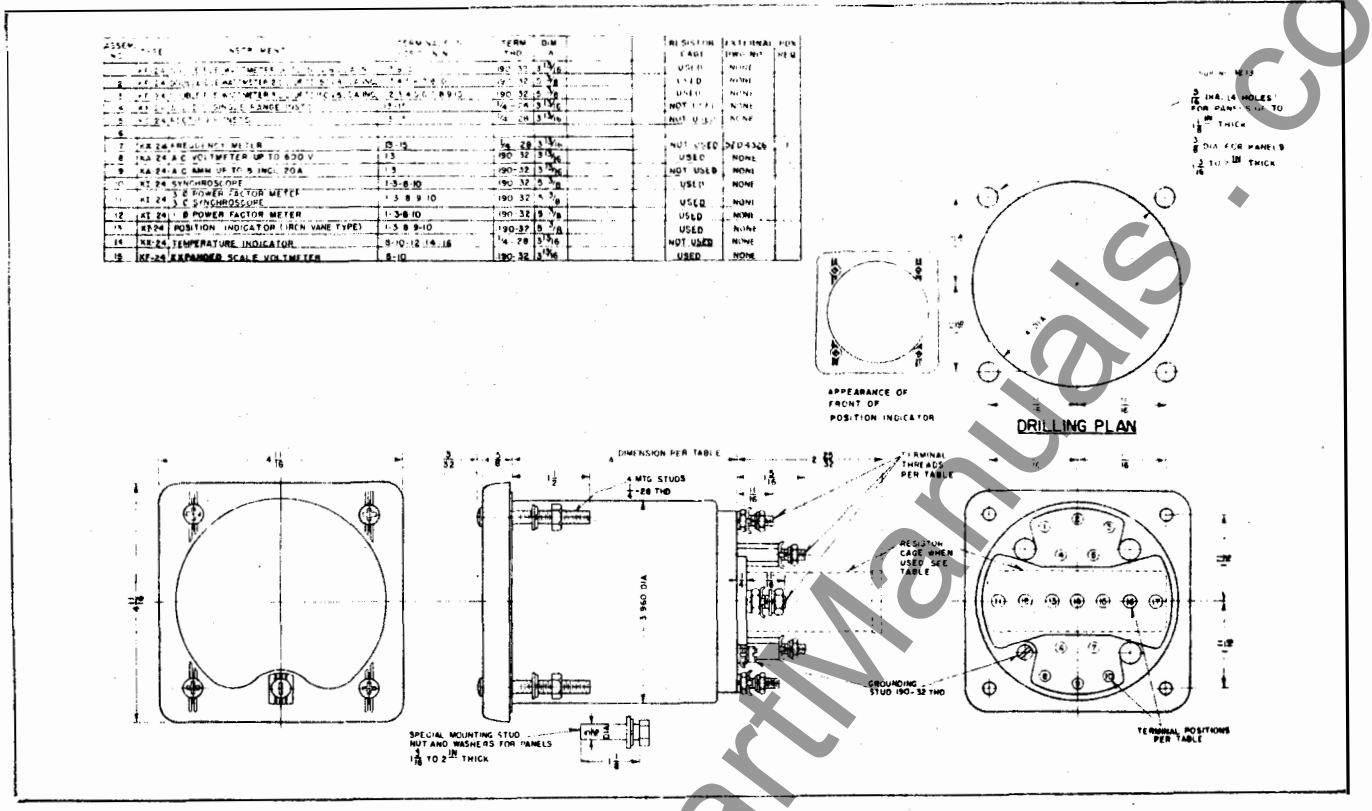


Fig. 1—Outline Dimensions and Drilling Plan for Type K-24 Instruments.

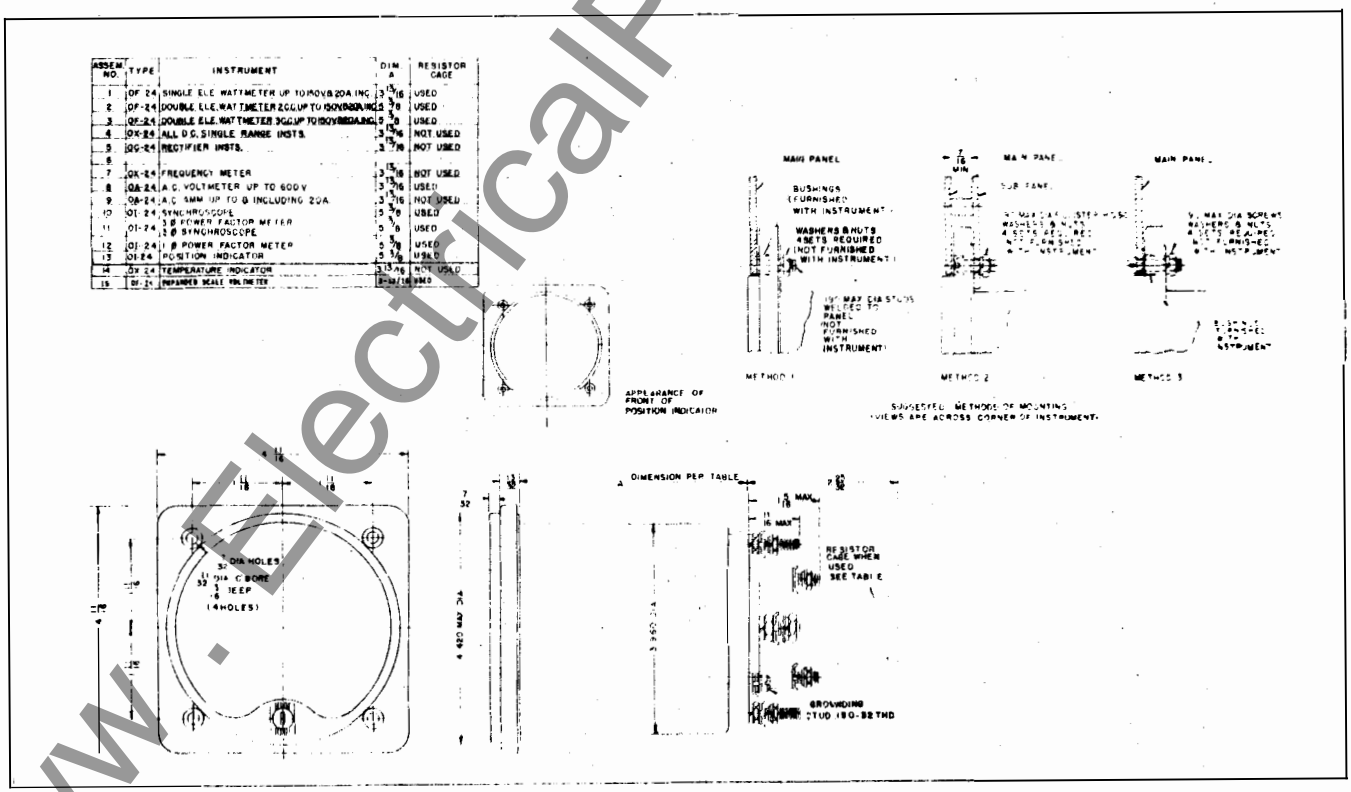


Fig. 2—Outline Dimensions and Drilling Plan for Type O-24 Instruments.

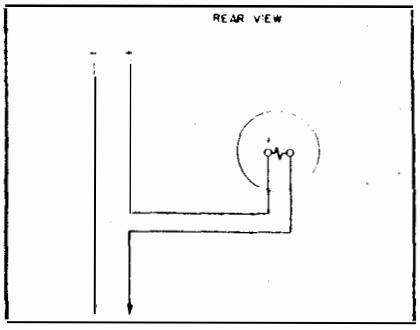


Fig. 3—Type X-24 Ammeter and Milliammeter (Self-Contained).

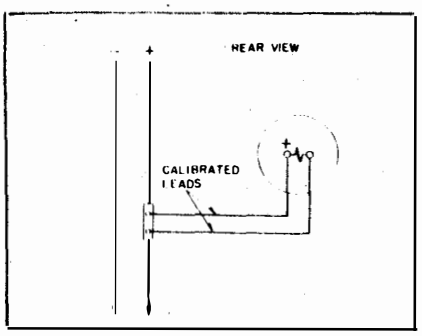


Fig. 4—Type X-24 Ammeter with External Shunt.

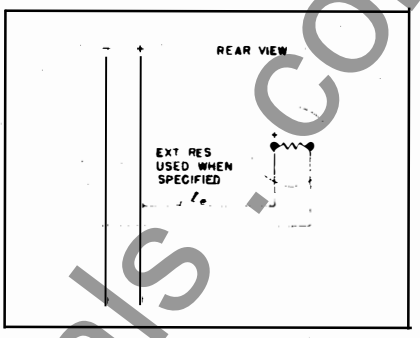


Fig. 5—Type X-24 Voltmeter.

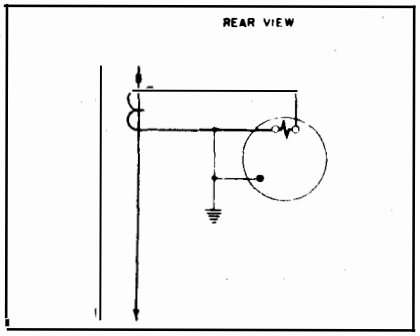


Fig. 6—Type A-24 Ammeter with C.T.

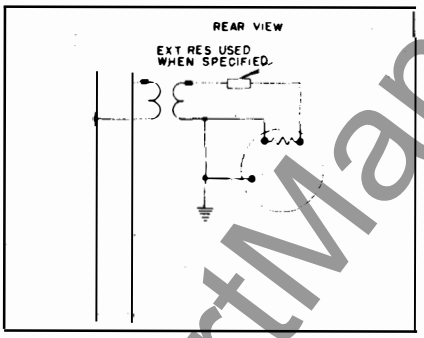


Fig. 7—Type A-24 Voltmeter with P.T.

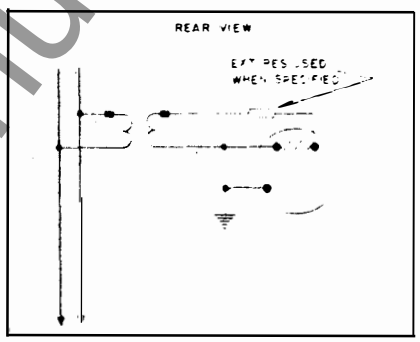


Fig. 8—Type C-24 Rectifier Type Voltmeter.

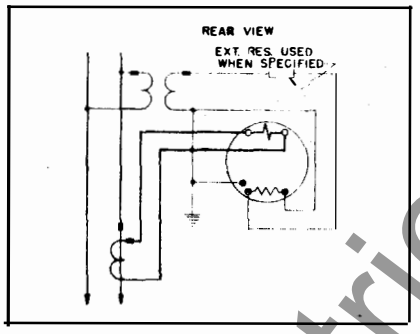


Fig. 9—Type F-24 Single Phase Wattmeter With C.T. and P.T.

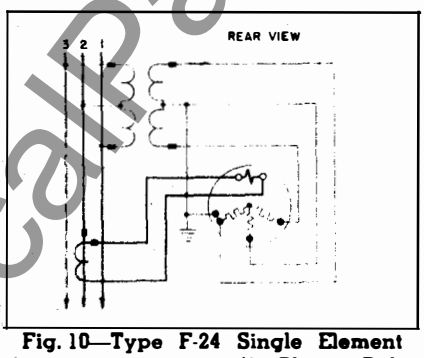


Fig. 10—Type F-24 Single Element Wattmeter (3 Phase Balanced Load With "Y" Box) with C.T. and P.T.

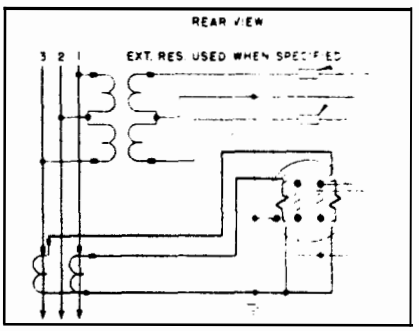


Fig. 11—Type F-24 Polyphase 2 Current Coil Wattmeter With C.T. and P.T.

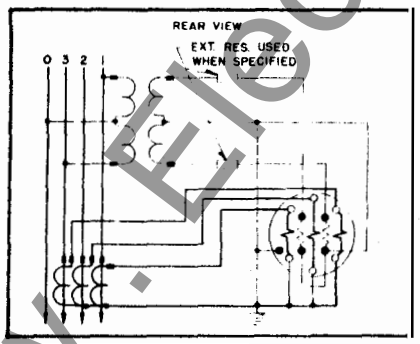


Fig. 12—Type F-24 Polyphase 3 Current Coil Wattmeter With C.T. and P.T.

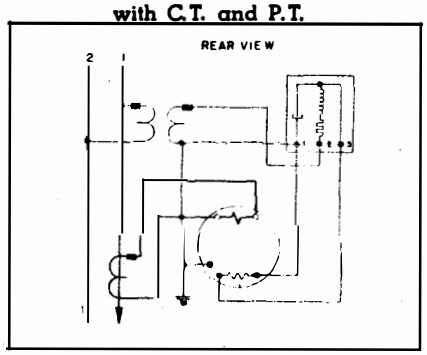


Fig. 13—Type F-24 Single Phase Varmeter With C.T. and P.T.

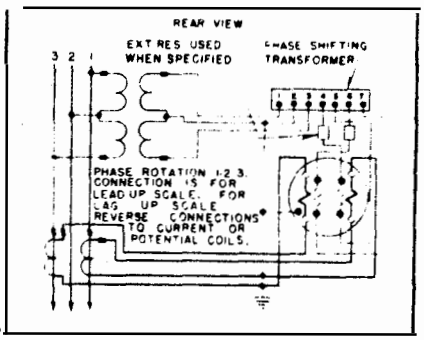


Fig. 14—Type F-24 Polyphase 2 Current Voil Varmeter With C.T. and P.T.

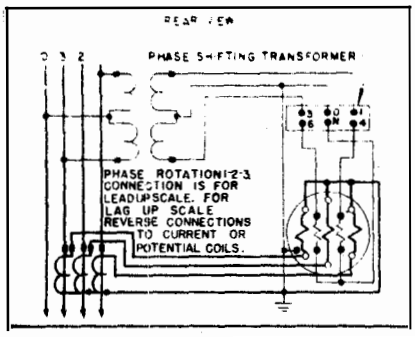


Fig. 15—Type F-24 Polyphase 3 Current Coil Varmeter With C.T. and P.T.

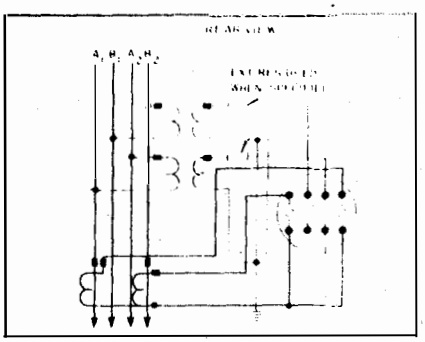
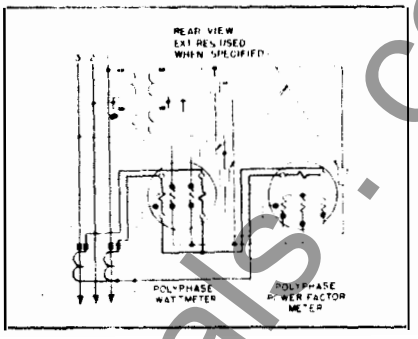


Fig. 16—Type F-24 Polyphase 2 Current Coil Wattmeter (2 Phase 4 Wire) With C.T. and P.T.



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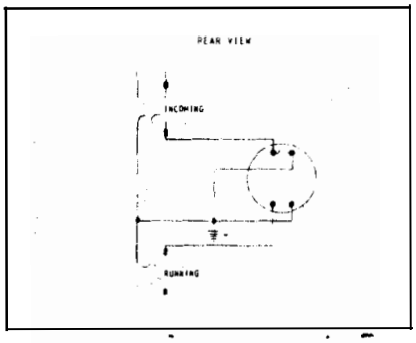

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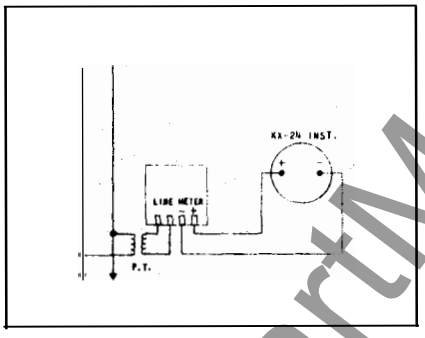

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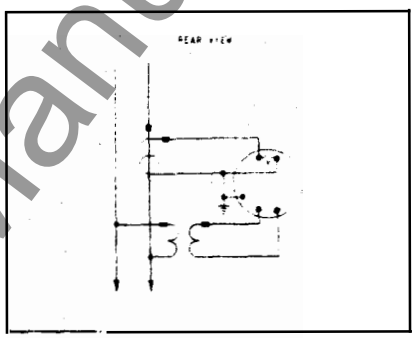
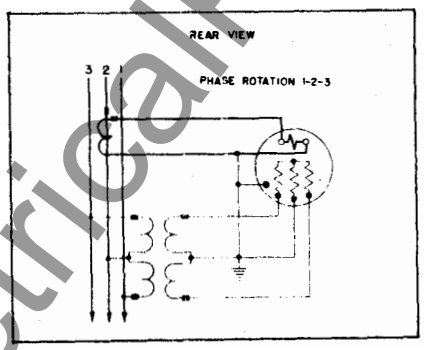


Fig. 20—Type I-24 Single Phase Power Factor Meter with C.T. and P.T.—Self Contained.



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