

# Westinghouse

## Search Coil Temperature Indicator

### Switchboard Type

#### Installation:

For best results, the wiring shown by Fig. 2 should be used. A double-pole seven-contact selector switch is required for each group of six search coils. If calibrated leads are furnished with the outfit they should be connected between the indicator and the bridge box.

The leads to the search coils may be several hundred feet in length, but their resistance should be kept below .2 ohm for best results, and it is important that the resistance of lead 2 from bridge box to search coil be equal to resistance of any lead 4 from bridge box, through switch, to search coil.

An alternative wiring is shown in Fig. 3. This plan uses one seven-contact single-pole selector switch for each group of 6 search coils.

Best accuracy is obtained when three leads are brought out from each search coil, and connected as shown. If only two leads are available for each search coil, connect per Fig. 3 except apply negative control to center of each group of search coils as shown by dotted lines, instead of connecting control to each coil individually. When wiring as in Fig. 3 is used, any idle switch points must be connected to a live point to prevent opening the bridge circuit. The selector switches must be of a type which do not allow the circuit to open at any time.

#### Zero Adjustment:

The pointer of the indicator should rest at the red mark or "balance point" on the scale when no voltage is applied to the circuit.

#### Checking Calibration:

To check the balance of the bridge, connect indicator, bridge and control circuit per diagram, and connect resistance corresponding to balance point temperature across terminals 2-4 of the bridge box. If leads of appreciable resis-

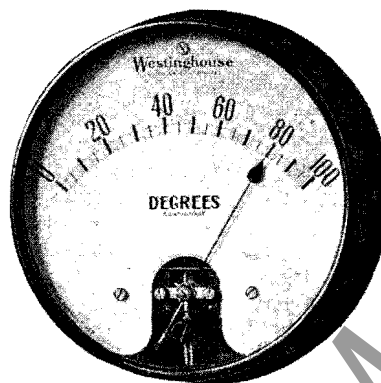


FIG. 1—SEARCH COIL TEMPERATURE INDICATOR

Type **H.X.** Style **10Y652-8**

Serial **1312666**

Control Circuit **20** Volts D. C.

Range **0-150** Degrees C

Complete outfit includes items checked below:

☒ Indicator  
☒ Two leads  
☒ Bridge Box  
 (same serial as instrument)

Any defects should be reported to the Company at once.

tance are used, connect negative control at the resistance, not at the bridge box. This balances out the lead resistance. Apply control voltage, and note whether or not the pointer moves. If resistance value is correct and connections are correct, and the bridge is in good balance, there should be no motion of the pointer.

To check the calibration of the indicator change the resistance across terminals 2-4 to agree with some other temperature on the scale. The indicator should read the correct temperature when correct control voltage is applied.

#### Control Voltage:

Best results can be obtained from use of steady control voltage of rated value. Satisfactory control can be obtained from a battery circuit or from a d-c. lighting circuit. An exciter circuit is not recommended for control although it can be used for approximate results. If satisfactory d-c. control is not available, very good performance can be obtained with a small Rectox unit operated from an a-c. lighting circuit.

At the balance point the indicator is independent of control voltage, hence maximum accuracy is obtainable at this point. At other temperatures the error due to incorrect voltage will be the difference between the actual temperature and the balance temperature, multiplied by the error in control voltage. This error is small and can be neglected for ordinary variations in voltage, as the balance point is chosen near primary operating temperatures, and the error near the balance point is very small. For any reading and any control voltage the true reading, if desired, can be found as follows:

B = Balance point temperature  
 T<sub>1</sub> = Observed temperature  
 E = Rated control voltage  
 E<sub>1</sub> = Actual control voltage  
 T = True Temperature

$$T = B - \frac{E}{E_1}(B - T_1)$$

For example if:

Balance point temperature = 100°  
 Observed temperature = 80°  
 Rated control voltage = 125 Volts  
 Actual control voltage = 115 Volts

$$T = 100 - \frac{125}{115}(100 - 80)$$

$$T = 100 - 21.75$$

$$T = 78.25 \text{ an error of } 1.75^\circ$$

This error can usually be neglected for ordinary variations in control voltage.

# Westinghouse Search Coil Temperature Indicator

## Calibration Data:

The following table gives the resistance of the search coils for which this instrument is calibrated, at various temperatures.

Temperature	Resistance
0	9.037
25	10.00
50	10.962
75	11.925
100	12.887

## Temperature

## Resistance

125	13.850
150	14.812

The balance point is at 100° corresponding to a search coil resistance of 12.887 ohms.

Ordinary repairs can readily be made by workers skilled in instrument practice. However, instruments will be promptly and satisfactorily repaired if returned to our factory. Before the instrument is returned to the factory write to the nearest Sales Office for "Returned Material Tag" so that apparatus will be properly identified when received.

## Repairs:

When ordering repair parts, give name of the part wanted, and the style and serial numbers of the indicator.

*W. E. Pine* Inspector  
Newark Works 8/10/37.

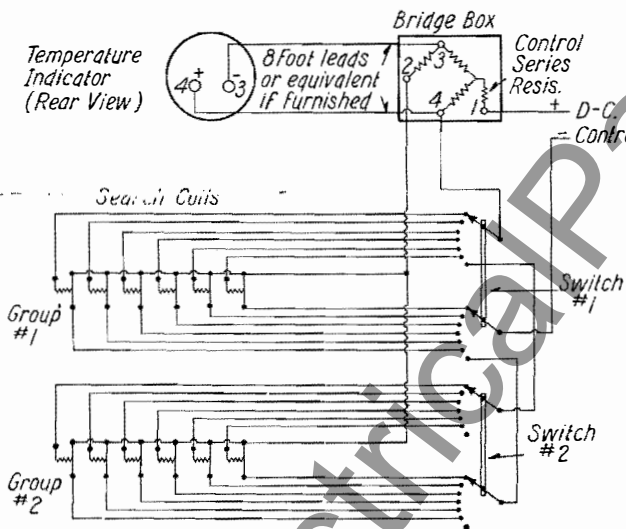


FIG. 2—WIRING DIAGRAM OF SEARCH COIL TEMPERATURE INDICATOR, WITH DOUBLE CONTACT SWITCHING ARRANGEMENT.

The resistance of lead 2 from bridge box to search coil must be equal to resistance of lead 4 from bridge box, through switch, to search coil. Total resistance of leads should not exceed .2 ohm.

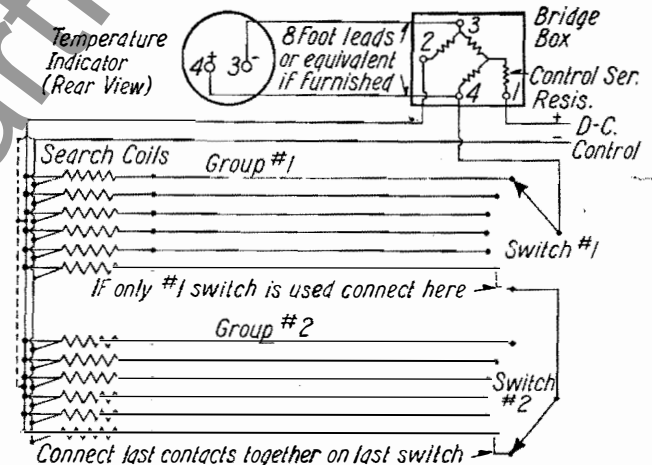


FIG. 3—WIRING DIAGRAM OF SEARCH COIL TEMPERATURE INDICATOR FOR SINGLE CONTACT SWITCH.

When search coils are provided with only two terminals per coil, apply negative control to center of each group, as shown by dotted line.

The resistance of lead 2 from bridge box to search coils must be equal to resistance of lead 4 from bridge box, through switch, to search coil.

Resistance of all search coil circuits should be reasonably low, preferably .2 ohm or less.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.

Newark Works

Newark, N. J., U.S.A.

Printed in U.S.A.

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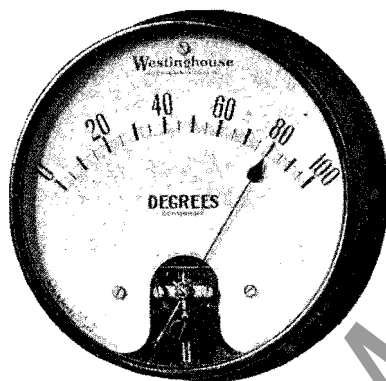


FIG. 1—SEARCH COIL TEMPERATURE INDICATOR

Type H. X. Style 10Y652-8

Serial 1312668

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Range 0-150 Degrees C

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(same serial as instrument)

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For example if:

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Rated control voltage = 125 Volts

Actual control voltage = 115 Volts

$$T = 100^\circ - \frac{125}{115} (100^\circ - 80^\circ)$$

$$T = 100^\circ - 21.75^\circ$$

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*Edelbrock* Inspector  
Newark Works 8/12/37.

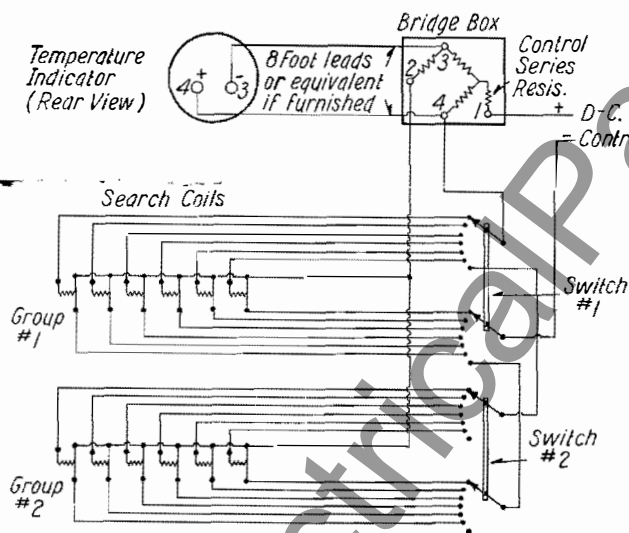


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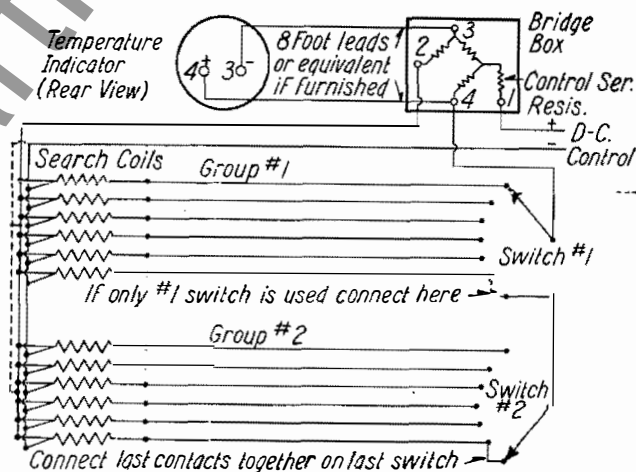


FIG. 3—WIRING DIAGRAM OF SEARCH COIL TEMPERATURE INDICATOR FOR SINGLE CONTACT SWITCH.

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