DESCRIPTION • INSTALLATION

INSTRUCTIONS

TEMPERATURE INDICATORS

Dial Type

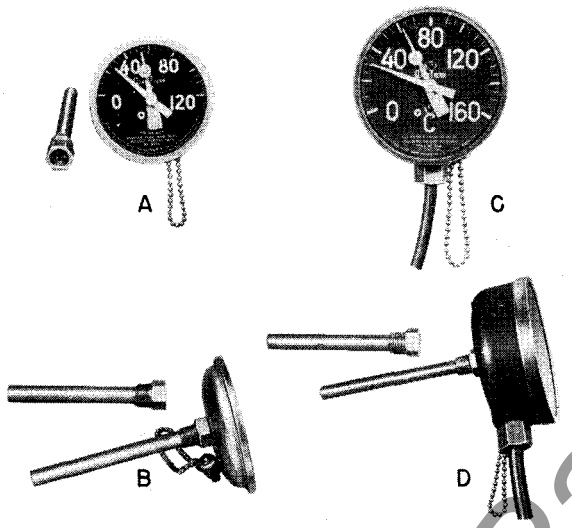

FIG. 1. (A) Front and (B) Side View of Indicator Without Alarm Connections; (C) Front and (D) Side View of Indicator With Alarm Connections

TEMPERATURE INDICATORS, designed for application on Westinghouse transformers or related apparatus to indicate liquid temperatures, are self-contained, weatherproof and submersible instruments of the dial type, operated by means of bimetallic elements immersed in the liquid.

They are usually shipped mounted on the transformer cases, require no maintenance, and are suitable for oil or Inerteen.

DESCRIPTION

This indicator is a dial type precision instrument whose needle is directly coupled to a bimetallic spiral actuating element in the stem, which fits closely into a well. The well is of thin-walled construction and screws into a fitting on the transformer case making an oil-tight connection. The instrument is weatherproof and submersible. The dial is calibrated in degrees centigrade and is easily read because of the contrasting purple face with yellow characters, graduations, and indicating pointer.

A maximum indicating pointer, red in color, is used to indicate the maximum temperature reached between readings. This hand is reset by wiping a magnet across the face of the dial. The magnet must be held with the poles in the proper position so as to attract the maximum indicating pointer. The magnet is attached to a small chain on the instrument case to prevent misplacing after using and is self-supporting in a metallic socket on the under side of this case. The method of resetting the maximum indicating pointer is shown in Fig. 3.

There are two types of thermometers available—one without alarm connections shown in Fig. 1, A and B, and one with alarm connections shown in Fig. 1, C and D. When alarm connections are required, the latter one will be supplied with the new triple seal connection, the details of which are shown in Fig. 2. This connector consists of:

1. Three protruding terminals molded in the case and a locating pin to prevent making incorrect connections.

2. A rubber insulator which has three terminals to mate with the terminals in the case and a hole through the rubber insulator for location of the

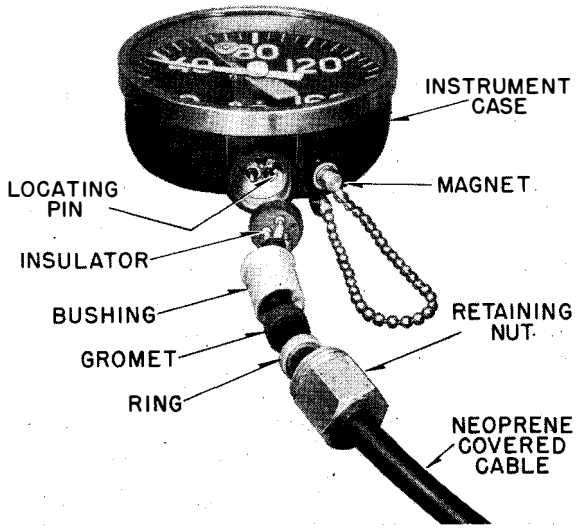

FIG. 2. Triple Seal Connection Details

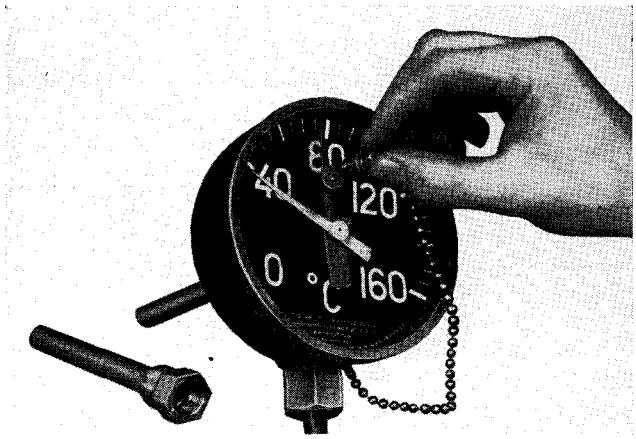

FIG. 3. Method of Resetting Maximum Indicating Pointer

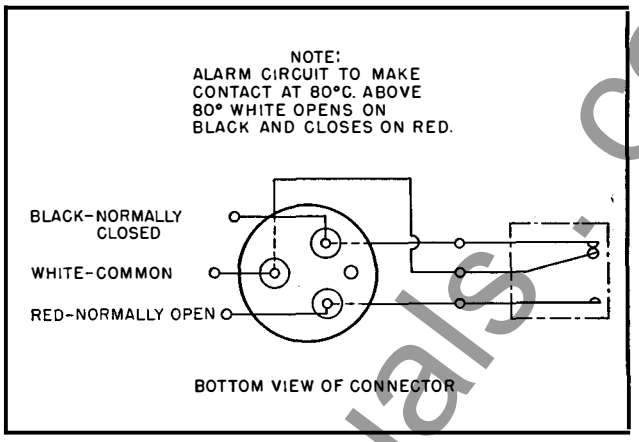

FIG. 4. Connection Diagram for Alarm Contact Leads

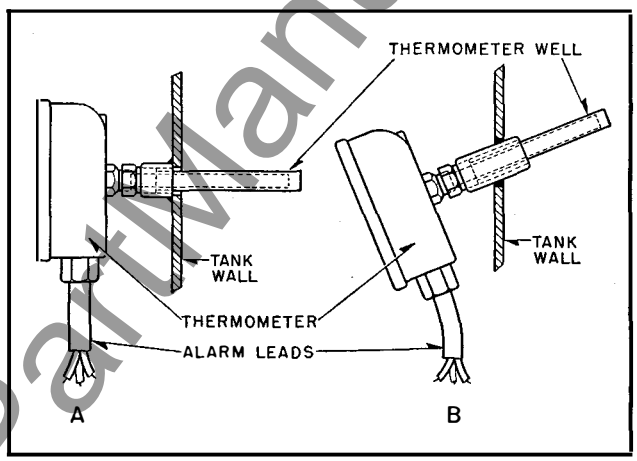

FIG. 5. Indicator Mounted (A) Vertical and (B) Tilted Downward

locating pin. The ends of the lead wires are tinned and crimped into the terminals on the insulator.

3. A bushing to compress the insulator against the instrument case.

4. A gromet to make a seal between the rubber covered cable and the bushing.

5. A ring to compress the gromet against the cable.

6. A retaining nut, to hold the component parts of connector tight in the case. This retaining nut is screwed into place.

The micro-switch in the indicator with alarm connections is factory set to operate at 80 degrees C. ***This setting cannot be changed.*** The ratings for this switch are given in Table No. 1 while the connection diagram is shown in Fig. 4.

INSTALLATION

The indicators are usually shipped mounted in place. To install them when shipped as a separate item, remove the pipe plug from the mounting coupling. Treat threads on the well-to-wall connection with Westinghouse thread cement (Style No. 1150 419, pint can or Style No. 471 880, quart can) and screw the well securely in place, making an oil-tight connection. Then screw the indicator in place being careful that the dial is in reading position. The indicator can be removed from the well in the tank wall without the loss of liquid.

The instrument may be mounted at eye level (A, Fig. 5) or can be mounted at a higher level and tilted so that it can be read easily when mounted high (B, Fig. 5).

TABLE NO. I

VOLTAGE	NON-INDUCTIVE LOAD—AMPS.	INDUCTIVE LOAD AMPS. L/R = .026*
125 A-C	5	5
250 A-C	2.5	2.5
125 D-C	0.5	0.05
250 D-C	0.25	0.025

*Equal to or less than .026. If greater, refer to factory for adjusted rating.

RENEWAL PARTS

If it becomes necessary to repair the instrument, contact the nearest Westinghouse District Office. Complete instructions will then be given by the District Engineering & Service Division for the return of the instrument to the factory at Sharon, Pa., to have it repaired and placed in first class condition.

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TEMPERATURE INDICATORS

Dial Type

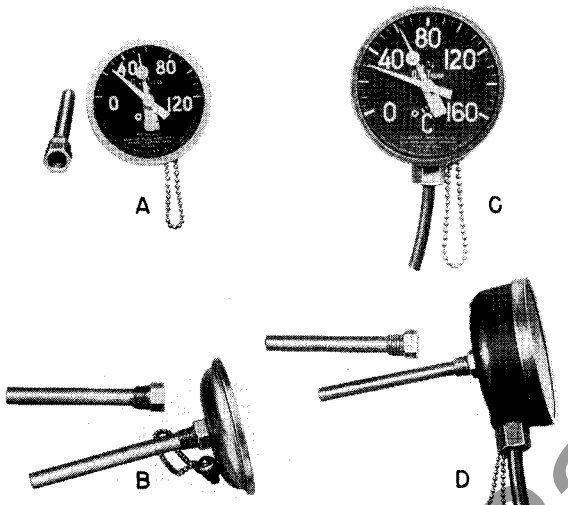

FIG. 1. (A) Front and (B) Side View of Indicator Without Alarm Connections; (C) Front and (D) Side View of Indicator With Alarm Connections.

TEMPERATURE INDICATORS, designed for application on Westinghouse transformers or related apparatus to indicate liquid temperatures, are self-contained, weatherproof and submersible instruments of the dial type, operated by means of bimetallic elements immersed in the liquid.

They are usually shipped mounted on the transformer cases, require no maintenance, and are suitable for oil or Inerteen.

DESCRIPTION

This indicator is a dial type precision instrument whose needle is directly coupled to a bimetallic spiral actuating element in the stem, which fits closely into a well. The well is of thin-walled construction and screws into a fitting on the transformer case making an oil-tight connection.

Note: Do not fill the well with a solid or liquid before inserting the stem of the indicator since this may damage the instrument without appreciably helping in the transfer of heat from the oil to the heat sensitive element. The indicator should not be tightened in the well any more than is necessary to place the dial in an upright position.

The dial is calibrated in degrees centigrade and is easily read because of the contrasting black face with yellow characters, graduations, and indicating pointer.

A maximum indicating pointer, red in color, is used to indicate the maximum temperature reached between readings. This hand is reset by wiping a magnet across the face of the dial. The magnet must be held with the poles in the proper position so as to attract the maximum indicating pointer. The magnet is attached to a small chain on the instrument case to prevent misplacing after using and is self-supporting in a metallic socket on the under side of this case. The method of resetting the maximum indicating pointer is shown in Fig. 3.

There are two types of indicators available—one without alarm connections shown in Fig. 1, A and B, and one with alarm connections shown in Fig. 1, C and D. When alarm connections are required, the latter one will be supplied with the

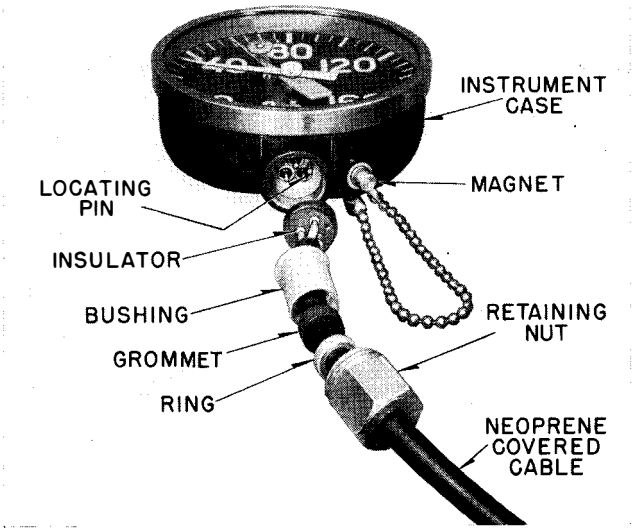

FIG. 2. Triple Seal Connection Details.

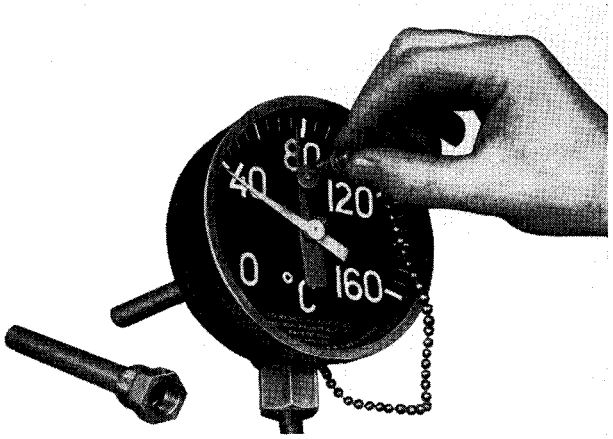

FIG. 3. Method of Resetting Maximum Indicating Pointer.

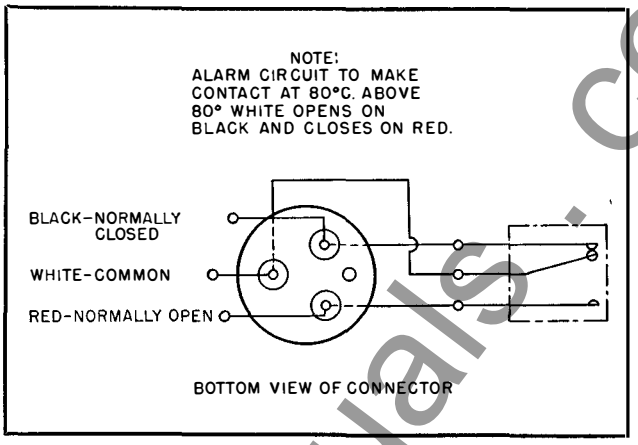

FIG. 4. Connection Diagram for Alarm Contact Leads.

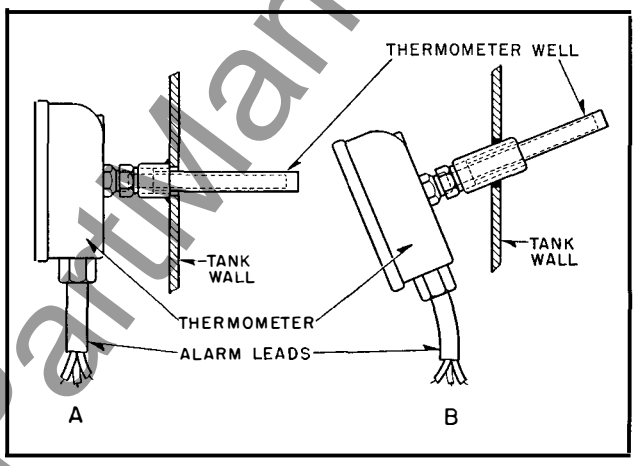

FIG. 5. Indicator Mounted (A) Vertical and (B) Tilted Downward.

new triple seal connection, the details of which are shown in Fig. 2. This connector consists of:

1. Three protruding terminals molded in the case and a locating pin to prevent making incorrect connections.

2. A rubber insulator which has three terminals to mate with the terminals in the case and a hole through the rubber insulator for location of the locating pin. The ends of the lead wires are tinned and crimped into the terminals on the insulator.

3. A bushing to compress the insulator against the instrument case.

4. A grommet to make a seal between the rubber covered cable and the bushing.

5. A ring to compress the grommet against the cable.

6. A retaining nut, to hold the component parts of connector tight in the case. This retaining nut is screwed into place.

The microswitch in the indicator with alarm connections is factory set to operate at 80 degrees C. The switch is adjustable over a range of ±10°C in relation to the above mentioned value. The switch opens at 5°C less than the closing temperature. The ratings for this switch are given in Table No. 1 while the connection diagram is shown in Fig. 4.

Field Test. Remove the indicator from its well and submerge the stem up to the brass fitting in a closely temperature-controlled, well agitated oil bath. Check the temperature by placing a thermocouple or other accurate temperature measuring device on the stem about two inches from the end. The indicator should be accurate within ±2 degrees C, allowing a minimum of 15 minutes for the indicator to come up to temperature. To adjust the switch to a different value in the indicator with adjustable alarm, remove the sealing plug at the top of the case. Make the proper adjustment of the switch through the opening in the case, and then re-seal the case with the sealing plug.

INSTALLATION

The indicators are usually shipped mounted in place. To install them when shipped as a separate item, remove the pipe plug from the mounting coupling. Treat threads on the well-to-wall connection with Westinghouse thread cement (Style No. 1150 419, pint can or Style No. 471 880, quart can) and screw the well securely in place, making an oil-tight connection. Then screw the indicator in place being careful that the dial is in reading position. The indicator can be removed from the well in the tank wall without the loss of liquid.

The instrument may be mounted at eye level (A, Fig. 5) or can be mounted at a higher level and tilted so that it can be read easily when mounted high (B, Fig. 5).

Table No. 1

VOLTAGE	NON-INDUCTIVE LOAD—AMPS.	INDUCTIVE LOAD AMPS. L/R—.026*
125 AC	10	10
250 AC	5	5
125 DC	0.5	0.05
250 DC	0.25	0.025

*Equal to or less than .026. If greater, refer to factory for adjusted rating.

Important: When checking circuits through this instrument it is necessary to follow Table No. 1. This means that a low voltage bell ringer cannot be used unless switched through a high impedance relay. An indicating light type device is generally recognized as best for checking circuits through instruments containing micro-switches of similar capacities.

RENEWAL PARTS

If it becomes necessary to repair the instrument, contact the nearest Westinghouse Office. Complete instructions will then be given by the District Engineering & Service Division for the return of the instrument to the factory at Sharon, Pa., to have it repaired and placed in first class condition.

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TEMPERATURE INDICATORS

Dial Type

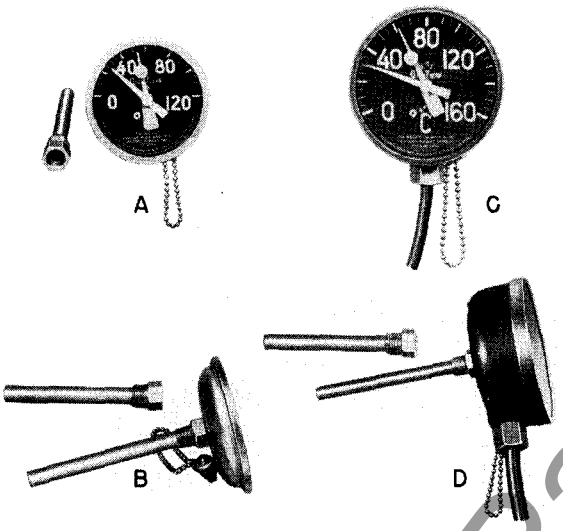

FIG. 1. (A) Front and (B) Side View of Indicator Without Alarm Connections; (C) Front and (D) Side View of Indicator With Alarm Connections.

TEMPERATURE INDICATORS, designed for application on Westinghouse transformers or related apparatus to indicate liquid temperatures, are self-contained, weatherproof and submersible instruments of the dial type, operated by means of bimetallic elements immersed in the liquid.

They are usually shipped mounted on the transformer cases, require no maintenance, and are suitable for oil or Inerteen.

DESCRIPTION

This indicator is a dial type precision instrument whose needle is directly coupled to a bimetallic, spiral actuating element in the stem, which fits closely into a well. The well is of thin-walled construction and screws into a fitting on the transformer case, making an oil-tight connection.

Note: Do not fill the well with a solid or liquid before inserting the stem of the indicator since this may damage the instrument without appreciably helping in the transfer of heat from the oil to the heat sensitive element. The indicator should not be tightened in the well any more than is necessary to place the dial in an upright position.

The dial is calibrated in degrees centigrade and is easily read because of the contrasting black face with yellow characters, graduations, and indicating pointer.

A maximum indicating pointer, red in color, is used to indicate the maximum temperature reached between readings. This hand is reset by wiping a magnet across the face of the dial. The magnet must be held with the poles in the proper position so as to attract the maximum indicating pointer. The magnet is attached to a small chain on the instrument case to prevent misplacing after using and is self-supporting in a metallic socket on the under side of this case. The method of resetting the maximum indicating pointer is shown in Fig. 3.

There are two types of indicators available—one without alarm connections shown in Fig. 1, A and B, and one with alarm connections shown in Fig. 1, C and D. When alarm connections are required, the latter one will be supplied with the

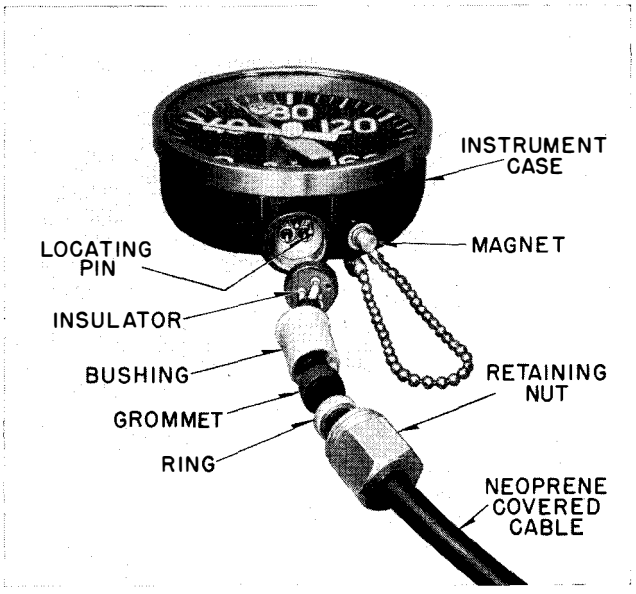

FIG. 2. Triple Seal Connection Details.

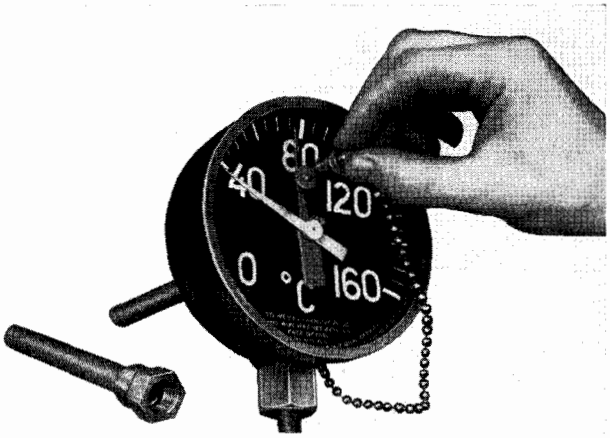

FIG. 3. Method of Resetting Maximum Indicating Pointer.

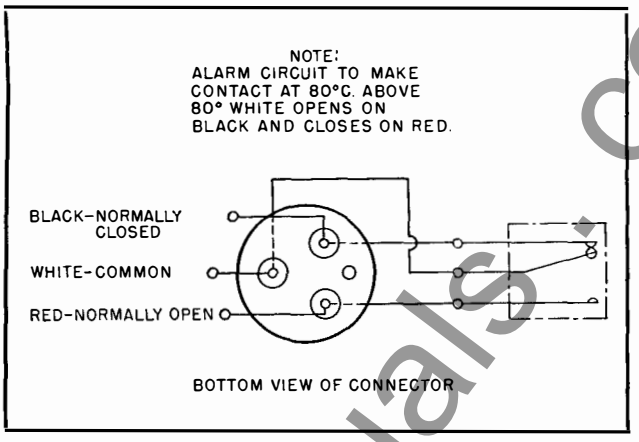

FIG. 4. Connection Diagram for Alarm Contact Leads.

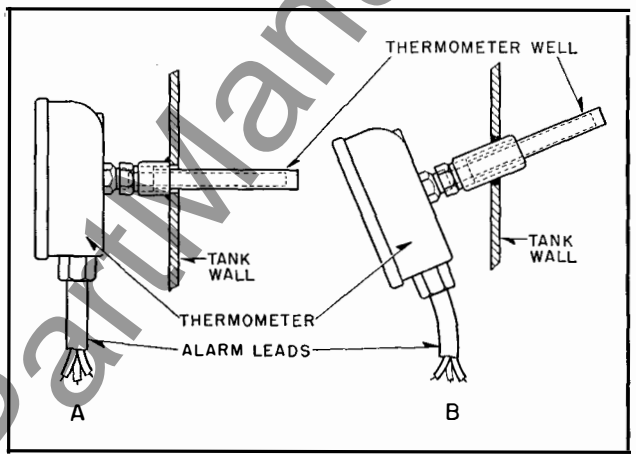

FIG. 5. Indicator Mounted (A) Vertical and (B) Tilted Downward.

new triple seal connection, the details of which are shown in Fig. 2. This connector consists of:

1. Three protruding terminals molded in the case and a locating pin to prevent making incorrect connections.

2. A rubber insulator which has three terminals to mate with the terminals in the case and a hole through the rubber insulator for location of the locating pin. The ends of the lead wires are tinned and crimped into the terminals on the insulator.

3. A bushing to compress the insulator against the instrument case.

4. A grommet to make a seal between the rubber covered cable and the bushing.

5. A ring to compress the grommet against the cable.

6. A retaining nut, to hold the component parts of connector tight in the case. This retaining nut is screwed into place.

The microswitch in the indicator with alarm connections is factory set to operate at 80 degrees C. The switch is adjustable over a range of ±10°C in relation to the above mentioned value. The switch opens at 5°C less than the closing temperature. The ratings for this switch are given in Table No. 1 while the connection diagram is shown in Fig. 4.

Field Test. Remove the indicator from its well and submerge the stem up to the brass fitting in a closely temperature-controlled, well agitated oil bath. Check the temperature by placing a thermocouple or other accurate temperature measuring device on the stem about two inches from the end. The indicator should be accurate within ±2 degrees C, allowing a minimum of 15 minutes for the indicator to come up to temperature. To adjust the switch to a different value in the indicator with adjustable alarm, remove the sealing plug at the top of the case. Make the proper adjustment of the switch through the opening in the case, and then re-seal the case with the sealing plug.

Important. When changing the alarm setting on those temperature indicators with adjustable contacts, be sure to use any non-setting sealing compound on the threads of the sealing plug. Plastic Lead Seal #8138-3 is recommended. Loose or improperly sealed plugs will allow moisture to collect in the indicators, and cause eventual shorting of electrical circuits or deterioration of dial markings.

INSTALLATION

The indicators are usually shipped mounted in place. To install them when shipped as a separate item, remove the pipe plug from the mounting coupling. Treat threads on the well-to-wall connection with Westinghouse thread cement (Style No. 1150 419, pint can or Style No. 471 880, quart can) and screw the well securely in place, mak-

ing an oil-tight connection. Then screw the indicator in place, being careful that the dial is in reading position. The indicator can be removed from the well in the tank wall without the loss of liquid.

The instrument may be mounted at eye level (A, Fig. 5) or can be mounted at a higher level and tilted so that it can be read easily when mounted high (B, Fig. 5).

Table No. 1

VOLTAGE	NON-INDUCTIVE LOAD—AMPS.	INDUCTIVE LOAD AMPS. L/R—.026*
125 AC	10	10
250 AC	5	5
125 DC	0.5	0.05
250 DC	0.25	0.025

*Equal to or less than .026. If greater, refer to factory for adjusted rating.

Important: When checking circuits through this instrument it is necessary to follow Table No. 1. This means that a low voltage bell ringer cannot be used unless switched through a high impedance relay. An indicating light type device is generally recognized as best for checking circuits through instruments containing micro-switches of similar capacities.

RENEWAL PARTS

If it becomes necessary to repair the instrument, contact the nearest Westinghouse Office. Complete instructions will then be given by the District Engineering & Service Division for the return of the instrument to the factory at Sharon, Pa., to have it repaired and placed in first class condition.

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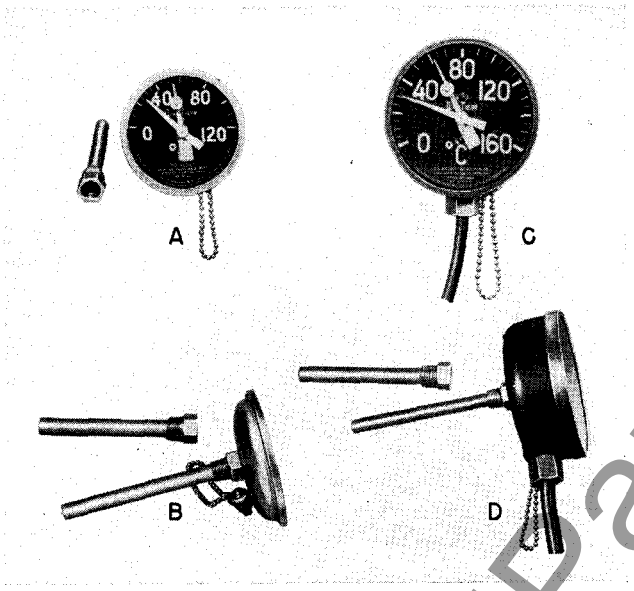

FIG. 1. (A) Front and (B) Side View of Indicator Without Alarm Connections; (C) Front and (D) Side View of Indicator With Alarm Connections.

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DESCRIPTION

This indicator is a dial type precision instrument whose needle is directly coupled to a bimetallic, spiral actuating element in the stem, which fits closely into a well. The well is of thin-walled construction and screws into a fitting on the transformer case, making an oil-tight connection.

Note: Do not fill the well with a solid or liquid before inserting the stem of the indicator since this may damage the instrument without appreciably helping in the transfer of heat from the oil to the heat sensitive element. The indicator should not be tightened in the well any more than is necessary to place the dial in an upright position.

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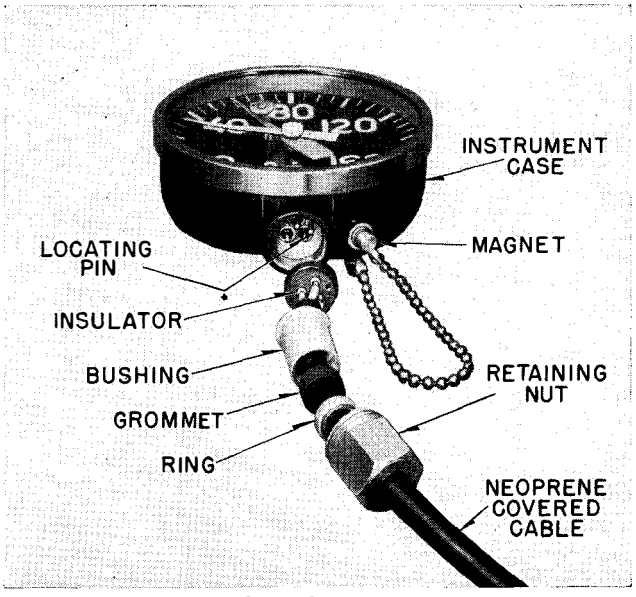


FIG. 2. Triple Seal Connection Details.

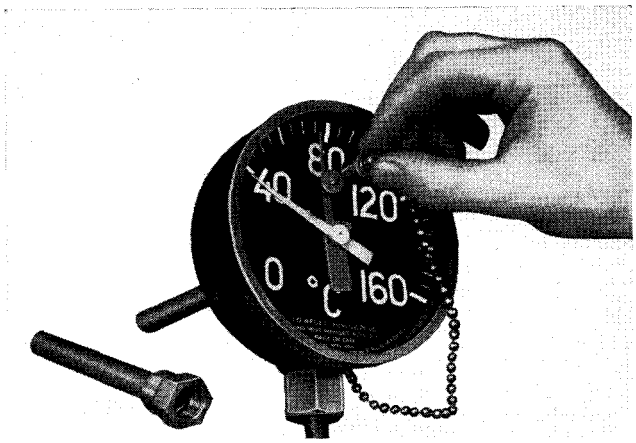
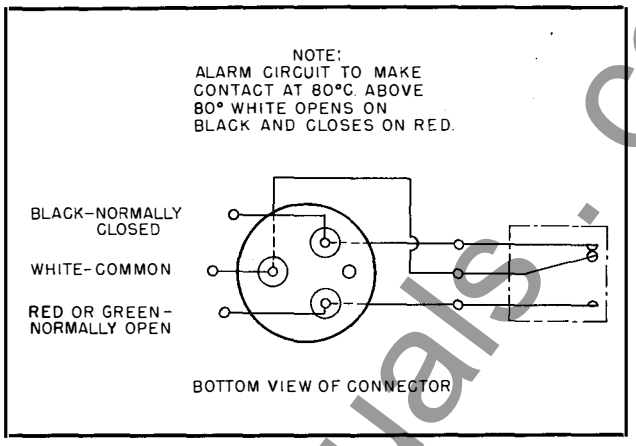


FIG. 3. Method of Resetting Maximum Indicating Pointer.



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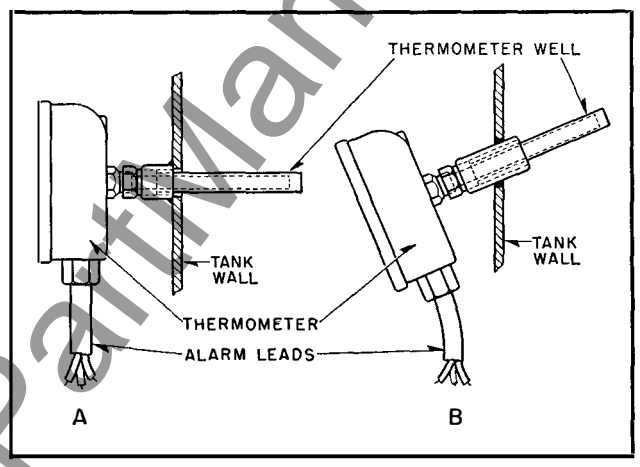

FIG. 5. Indicator Mounted (A) Vertical and (B) Tilted Downward.

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1. Three protruding terminals molded in the case and a locating pin to prevent making incorrect connections.

2. A rubber insulator which has three terminals to mate with the terminals in the case and a hole through the rubber insulator for location of the locating pin. The ends of the lead wires are tinned and crimped into the terminals on the insulator.

3. A bushing to compress the insulator against the instrument case.

4. A grommet to make a seal between the rubber covered cable and the bushing.

5. A ring to compress the grommet against the cable.

6. A retaining nut, to hold the component parts of connector tight in the case. This retaining nut is screwed into place.

The microswitch in the indicator with alarm connections is factory set to operate at 80 degrees C. The switch is adjustable over a range of $\pm 10°C$ in relation to the above mentioned value. The switch opens at 5°C less than the closing temperature. The ratings for this switch are given in Table No. 1 while the connection diagram is shown in Fig. 4.

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Important. When changing the alarm setting on those temperature indicators with adjustable contacts, be sure to use any non-setting sealing compound on the threads of the sealing plug. Plastic Lead Seal #8138-3 is recommended. Loose or improperly sealed plugs will allow moisture to collect in the indicators, and cause eventual shorting of electrical circuits or deterioration of dial markings.

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The instrument may be mounted at eye level (A, Fig. 5) or can be mounted at a higher level and tilted so that it can be read easily when mounted high (B, Fig. 5).

Table No. 1

VOLTAGE	NON-INDUCTIVE LOAD—AMPS.	INDUCTIVE LOAD AMPS. L/R—.026*
125 A-C	10	10
250 A-C	5	5
125 D-C	0.5	0.05
250 D-C	0.25	0.025

*Equal to or less than .026. If greater, refer to factory for adjusted rating.

Important: When checking circuits through this instrument it is necessary to follow Table No. 1. This means that a low voltage bell ringer cannot be used unless switched through a high impedance relay. An indicating light type device is generally recognized as best for checking circuits through instruments containing micro-switches of similar capacities.

RENEWAL PARTS

If it becomes necessary to repair the instrument, contact the nearest Westinghouse Office. Complete instructions will then be given by the District Engineering & Service Division for the return of the instrument to the factory at Sharon, Pa., to have it repaired and placed in first class condition.

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TEMPERATURE INDICATORS

Dial Type

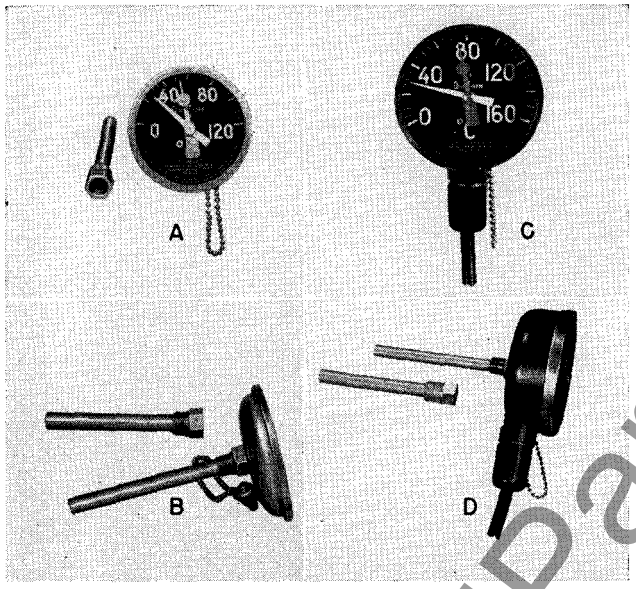

FIG. 1. (A) Front and (B) Side View of Indicator Without Alarm Connections; (C) Front and (D) Side View of Indicator With Alarm Connections.

TEMPERATURE INDICATORS, designed for application on Westinghouse transformers or related apparatus to indicate liquid temperatures, are self-contained, weatherproof and submersible instruments of the dial type, operated by means of bimetallic elements immersed in the liquid.

They are usually shipped mounted on the transformer cases, require no maintenance, and are suitable for oil or Inerteen.

DESCRIPTION

This indicator is a dial type precision instrument whose needle is directly coupled to a bimetallic, spiral actuating element in the stem, which fits closely into a well. The well is of thin-walled construction and screws into a fitting on the transformer case, making an oil-tight connection.

Note: Do not fill the well with a solid or liquid before inserting the stem of the indicator since this may damage the instrument without appreciably helping in the transfer of heat from the oil to the heat sensitive element. The indicator should not be tightened in the well any more than is necessary to place the dial in an upright position.

The dial is calibrated in degrees centigrade and is easily read because of the contrasting black face with yellow characters, graduations, and indicating pointer.

A maximum indicating pointer, red in color, is used to indicate the maximum temperature reached between readings. This hand is reset by wiping a magnet across the face of the dial. The magnet must be held with the poles in the proper position so as to attract the maximum indicating pointer. The magnet is attached to a small chain on the instrument case to prevent misplacing after using and is self-supporting in a metallic socket on the under side of this case. The method of resetting the maximum indicating pointer is shown in Fig. 3.

There are two types of indicators available—one without alarm connections shown in Fig. 1, A and B, and one with alarm connections shown in Fig. 1, C and D. When alarm connections are required, the latter one will be supplied with the

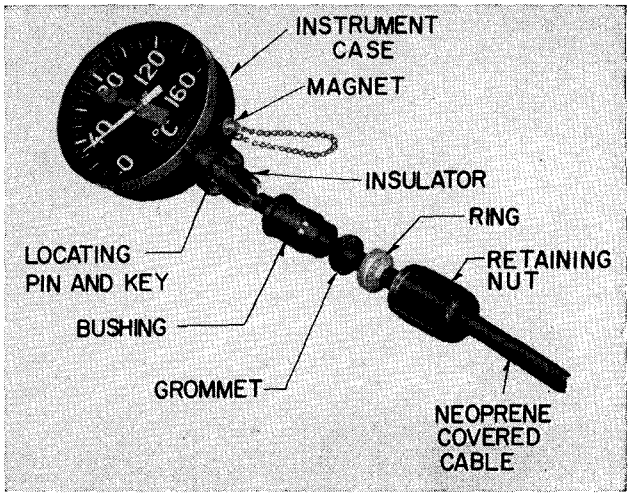

FIG. 2. Triple Seal Connection Details.

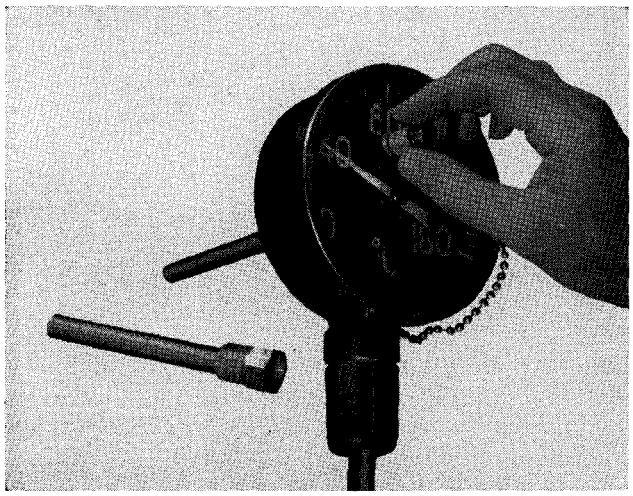

FIG. 3. Method of Resetting Maximum Indicating Pointer.

new triple seal connection, the details of which are shown in Fig. 2. This connector consists of:

1. Three protruding terminals molded in the case and a locating pin and key to prevent making incorrect connections.

2. A rubber insulator which has three terminal jacks to mate with the terminals in the case and a hole slot and key through the rubber insulator. The ends of the lead wires are soldered into one end of the terminal jacks.

3. A bushing to hold the insulator and enclose the soldered joint.

4. A grommet to make a seal between the rubber covered cable and the bushing.

5. A ring to compress the grommet against the cable.

6. A retaining nut, to hold the component parts of connector tight in the case. This retaining nut is screwed into place.

The microswitch in the indicator with alarm connections is factory set to operate at 80 degrees C. The switch is adjustable over a range of ±10°C in relation to the above mentioned value. The switch opens at 5°C less than the closing temperature. The ratings for this switch are given in Table No. 1 while the connection diagram is shown in Fig. 4.

Field Test. Remove the indicator from its well and submerge the stem up to the brass fitting in a closely temperature-controlled, well agitated oil bath. Check the temperature by placing a thermocouple or other accurate temperature measuring device on the stem about two inches from the end. The indicator should be accurate within ±2 degrees C, allowing a minimum of 15 minutes for the indicator to come up to temperature. To adjust the switch to a different value in the

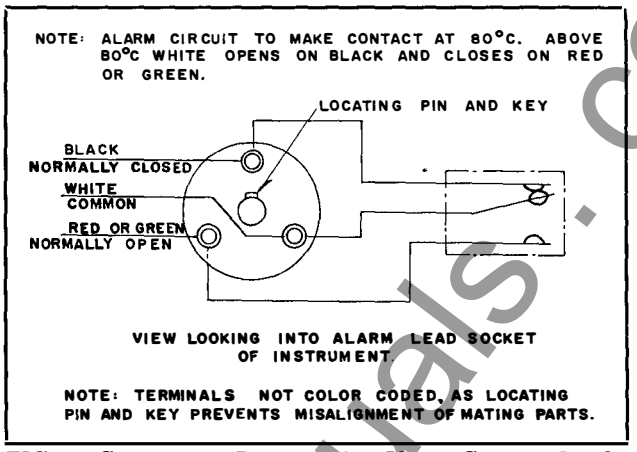

FIG. 4. Connection Diagram for Alarm Contact Leads.

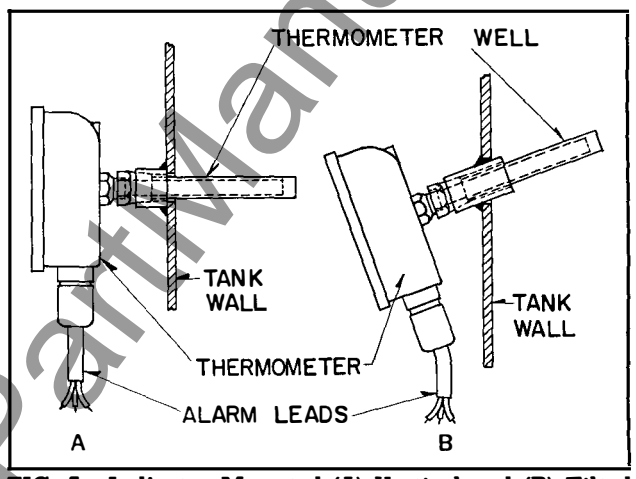

FIG. 5. Indicator Mounted (A) Vertical and (B) Tilted Downward.

indicator with adjustable alarm, remove the sealing plug at the top of the case. Make the proper adjustment of the switch through the opening in the case, and then re-seal the case with the sealing plug.

Important. When changing the alarm setting on those temperature indicators with adjustable contacts, be sure to use any non-setting sealing compound on the threads of the sealing plug. Plastic Lead Seal #8138-3 is recommended. Loose or improperly sealed plugs will allow moisture to collect in the indicators, and cause eventual shorting of electrical circuits or deterioration of dial markings.

INSTALLATION

The indicators are usually shipped mounted in place. To install them when shipped as a separate item, remove the pipe plug from the mounting coupling. Treat threads on the well-to-wall connection with Westinghouse thread cement (Style No. 1150 419, pint can or Style No. 471 880, quart can) and screw the well securely in place, mak-

ing an oil-tight connection. Then screw the indicator in place, being careful that the dial is in reading position. The indicator can be removed from the well in the tank wall without the loss of liquid.

The instrument may be mounted at eye level (A, Fig. 5) or can be mounted at a higher level and tilted so that it can be read easily when mounted high (B, Fig. 5).

Table No. 1

VOLTAGE	NON-INDUCTIVE LOAD—AMPS.	INDUCTIVE LOAD AMPS. L/R—.026*
125 A-C	10	10
250 A-C	5	5
125 D-C	0.5	0.05
250 D-C	0.25	0.025

*Equal to or less than .026. If greater refer to factory for adjusted rating.

Important: When checking circuits through this instrument it is necessary to follow Table No. 1. This means that a low voltage bell ringer cannot be used unless switched through a high impedance relay. An indicating light type device is generally recognized as best for checking circuits through instruments containing micro-switches of similar capacities.

RENEWAL PARTS

If it becomes necessary to repair the instrument, contact the nearest Westinghouse Office. Complete instructions will then be given by the District Engineering & Service Division for the return of the instrument to the factory at Sharon, Pa., to have it repaired and placed in first class condition.

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