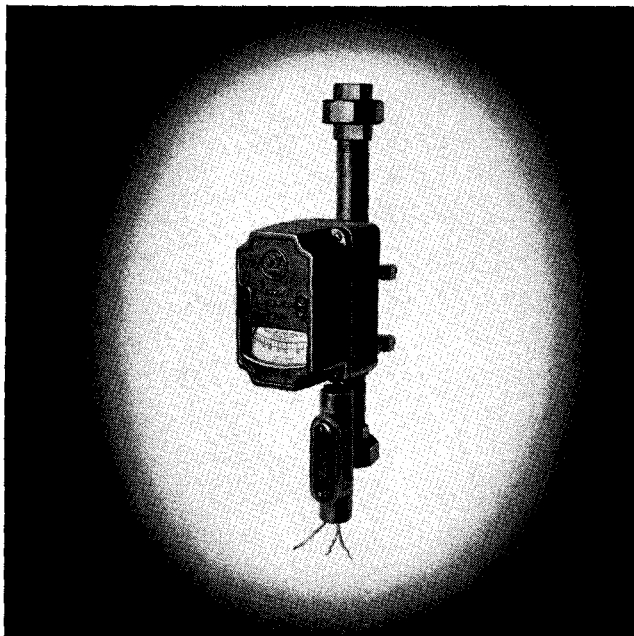




INSTALLATION • OPERATION • MAINTENANCE INSTRUCTIONS

WATER FLOW INDICATORS



THE WESTINGHOUSE WATER FLOW INDICATOR is an indicating differential gauge, with alarm contacts, operated by the differential pressure across a Venturi tube.

CONSTRUCTION

The Westinghouse water flow indicator is composed of four main component parts: (1) the Venturi tube; (2) the air traps; (3) the differential pressure gauge; (4) the alarm contacts. (See Figure 1).

The Venturi tube is made of monel metal so that it is permanently free from corrosion. It is tapped to take a standard 1-inch iron pipe size line and is designed to read correctly for flow in one direction only, either downward or upward through the Venturi tube. The water flow indicators with Venturi tube for downward flow are standard.

Two air traps are placed between the Venturi tube and the gauge to prevent water being carried over into the gauge. These traps also act as a chamber for the deposit of dirt and silt which might otherwise enter the gauge. A drain plug is provided in each air trap for cleaning out, when necessary, by simply removing the plug and allowing full line

pressure to force water through the traps. The drain plug for the lower air trap is at the bottom and for the upper air trap, on the left side.

The differential pressure gauge has two siphon bellows arranged co-axially as shown on the cutaway view. (Figure 1). One end of each bellows is securely fastened to the frame of the indicator. The two adjacent ends are attached to a common shaft which transmits the movement of the bellows to the alarm mechanisms and to the pointer, indicating on a scale the rate of water flow in gallons per minute.

The alarm contacts are positive in action and are located in a dry, weather proof compartment. They are suitable for either a-c or d-c supply. One Make and One Break contact is available, being equivalent to a single pole, double throw switch.

The contacts are adjustable over the entire range of the scale and make with decrease or increase in flow depending upon the connection used. The adjustment of the contacts can be made easily from the front of the case by turning the adjusting screw with a screw driver after removing the small plate over the opening in the cover.

Table No. 1—CONTACT RATINGS

Voltage	TYPE OF LOAD		MAX. CONTACT RATING AMPS.	
	Non-Inductive	Inductive	Make & Carry	Break
125 Volts A-C	X	X	15	15
250 Volts A-C	X	X	15	15
48 Volts D-C	..	Max. L/R 0.026	15	0.07
48 Volts D-C	X	..	15	0.4
125 Volts D-C	..	Max. L/R 0.026	15	0.03
125 Volts D-C	X	15	0.3
250 Volts D-C	..	Max. L/R 0.026	15	0.01
250 Volts D-C	X	..	15	0.15

WATER FLOW INDICATORS

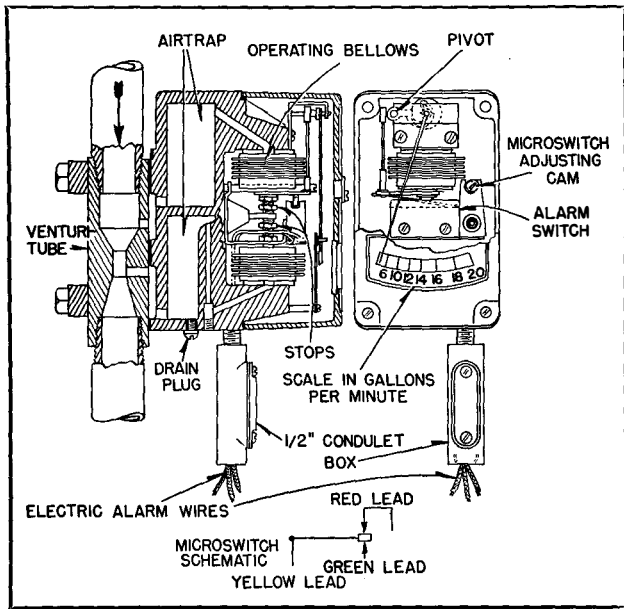


FIG. 1. Cross-Sectional View of Water Flow Indicator

The outline dimensions of the entire indicator are $3\frac{1}{2}$ " x $5\frac{7}{8}$ " x $7\frac{1}{4}$ " deep. The shipping weight is approximately 25 pounds for domestic shipment and approximately 35 pounds for export shipment.

INSTALLATION

The complete indicator is designed for installation in a 1-inch iron pipe size line and for a maximum pressure of 50 pounds per square inch. Care should be taken not to connect the indicator to a line of higher pressure. The standard indicator for transformer application is designed to read correctly when the flow is down, through the Venturi tube. The direction of flow is indicated by an arrow on the Venturi tube (See Figure 1). If the water flows in the wrong direction, the indicator will not read correctly with any rate of flow.

The indicator should be mounted only in a vertical position and the pipe connections made only to the unions furnished with the device. Do not remove the pipe nipples attached to the Venturi tube or the calibration will be changed.

Special indicators can be supplied for application to lines where the flow is up through the Venturi tube or for special scale readings of litres per second, litres per minute, or Imperial gallons per minute, etc. Indicators can also be supplied for those cases where it is not feasible to mount the indicator on the Venturi tube. In this case, the indicator is mounted separately and connected to the Venturi tube by means of copper pressure tubes.

Important. When used in extremely cold weather, it is possible that the water in the

air traps may freeze and damage the indicator. If the indicator is not supplied with an internally mounted heater, the customer should make provisions against freezing either by securing a heater for internal mounting or by means of a suitable heated housing.

Note. When the indicator is not in use, the air traps should be carefully drained. Every precaution has been taken in the design to prevent water entering the bellows; nevertheless, some moisture may get in either by condensation or otherwise. To prevent freezing of the bellows when the indicator is not in use, unless there is a heater, the entire indicator should be removed and stored in a warm place.

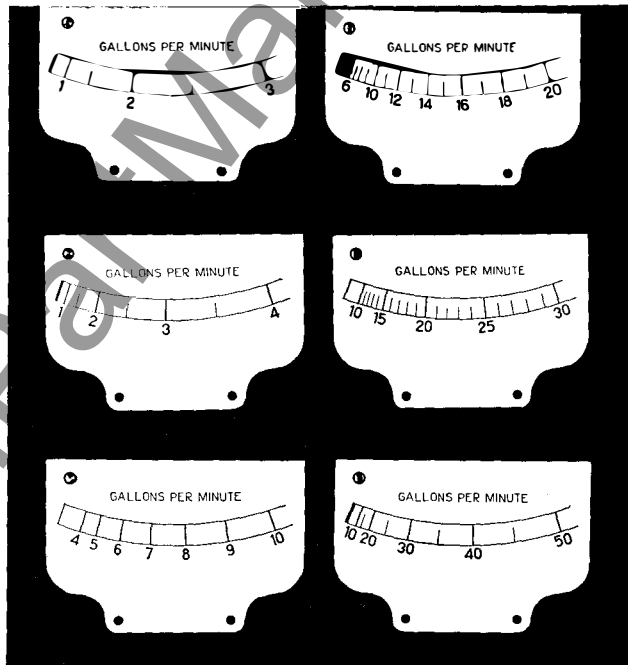


FIG. 2. Standard Indicator Scales

When an internally mounted heater is supplied with the indicator, a thermostat should be connected in the circuit so as to open the heater circuit at ambient temperature of about 40°F . If the heater is left in the circuit continuously, the temperatures will be excessive during warm weather, and the bellows will likely expand and affect calibration. The maximum temperature should not be allowed to go above 120°F . It is recommended that a pilot light be connected in the heater circuit to show when the heater is in operation.

The heater may be mounted in the recess to the left of the bellows and the connections brought out through the opening for the alarm leads.

Note. When the indicator is used with water cooled transformers, it should be mounted as shown on the outline drawing of the transformer.

Important. At all times the indicator must be carefully handled by grasping the body. Never handle it by whatever piping may be connected to it.

OPERATION

The Westinghouse Water Flow indicator measures the water flow by means of the differential pressure across a Venturi tube acting on two bellows working in opposition. A suitable operating mechanism connects a pointer and the alarm contacts to the bellows. The indicator will operate satisfactorily at water pressures up to and including 50 pounds per square inch. Its accuracy is within $\pm 4\%$ of full scale reading at any reading from half to full scale.

MAINTENANCE

The indicator should be periodically inspected and the air traps cleaned occasionally. The drain plugs must be screwed in tightly after each cleaning to make the air traps air tight.

Note. It is recommended that all indicators requiring repairs be returned to the Sharon

Plant through the nearest Engineering & Service Department. The repair of any of these indicators by the customer is not recommended.

REPLACEMENT

In the event it becomes necessary to replace the indicator, give stock order number or serial number of transformer. Address all correspondence to the nearest Westinghouse District Office.

When purchased separately for applications other than replacements on transformers, if possible, standard indicators, with dials as shown in Figure 2 should be ordered. If special indicators are wanted, state desired direction of flow, maximum rate of flow, desired scale reading and any other special requirements. The Venturi tube and maximum scale reading should correspond to the maximum flow.

Note. Where larger sizes are required or where larger pipe sizes than one inch are desired, the proper number of standard indicators suitably arranged in parallel is recommended.

For a Make Contact on increasing flow connect to yellow and green wires.

For a Make Contact on decreasing flow connect to yellow and red wires.

WESTINGHOUSE ELECTRIC CORPORATION
SHARON PLANT • TRANSFORMER DIVISION • SHARON, PA.

Printed in U.S.A.



www.ElectricalPartManuals.com