



Warrick® Series 2810 Seal Leakage Detector Installation and Operation Bulletin

This bulletin should be used by experienced personnel as a guide to the installation of Series 2810 controls. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact Gems Sensors Inc. or its representative if further information is required.

Specifications

Contact Design: 2PST and 3PST bridge type double break in all possible combinations of normally open and normally closed. Fully enclosed. Buttons are 1/4 inch diameter silver cadmium oxide.

Contact Rating: 16A @ 115 VAC, 8A @ 230VAC, 1 H.P. @ 115, 230 VAC

Mode of Operation: Direct only. Contacts assume normal position with open circuit.

Supply Voltage: 115, 230, 406 or 575 VAC models: +10% - 15%, 50/60 Hz

Supply Current: Relay energized 4.4 VA

Secondary Circuit: 500 VAC on probes, 6 VA with short circuited electrode circuit

Sensitivity: 20K Ohms/cm (150' maximum distance between control and probes).

Temperature: -40° to 150°, ambient

Terminals: Size 8 pan head screws with wire clamping plate for use with captivated wires or a maximum of 1-#12 AWG/2-#14 AWG uncaptivated wires. Numbered 1 to 10 for identification. Located on front of control assembly for accessibility.

Listings: UL limit control recognized (353) on open type controls only.

General

The Type 2810 is a conductance-actuated control for detection of moisture in the oil chamber of a submersible motor. It is used as a warning device to indicate a seal leakage and to signal the need for preventative maintenance.

Installation

Mount the control or enclosure vertically on wall or other solid structure, with the transformer on the left-hand side. Wire Series 2810 as indicated on drawing. Terminals on the control are numbered and are in the same relative position as shown on the wiring diagram. Terminal pair 1 and 2 must be continuously energized from an AC supply line of electrical characteristics shown on the data plate. Contacts 5-6 and 7-8 are available for load duty and, if required, must be wired in series with the load device(s) and load. Terminals 9 and 10 connect to the moisture sensing probes in the motor marked W1 and W2 via cable provided with the motor.

Caution: Probe Sensing circuit, terminals 9 and 10, have 500 VAC, 12mA. This high voltage has minimal amperage, but can cause significant shocking.

Operation

Normally the oil surrounding the probes is nonconductive and the control will be de-energized. An influx of moisture past the outer seal and into the oil reservoir will change the conductivity of the oil and cause the relay to energize. **Note that the moisture may not cause this change in conductivity until motor is running and the moisture becomes emulsified**

Operation (Cont.)

with the oil. Load contacts 5-6 and 7-8 will change from their normally open or normally closed position when the control energizes.

Test Procedure

A normally closed push-button and neon indicating lamp are provided as part of the control for testing the moisture sensing components. The motor manufacturer has provided a 330,000-ohm resistor across the probes inside the motor to complete the test. When the test push-button is depressed, the neon indicating lamp will be illuminated to indicate:

- A. Power is supplied to the control
- B. The control is operative
- C. Wiring to the moisture-sensing probes in the motor are intact

This check does not simulate a seal leakage.

To simulate a seal leakage the following test should be done. Caution: Voltage will be present at all terminals on the control when this test is being made:

Remove the enclosure cover and momentarily place an insulated jumper (or 20K ohm resistor) across terminals 9 and 10 on the control. The control should energize, simulating a leak condition, and the amber seal leakage indicator will illuminate.

Wire control per drawing, following NEC and local codes. Use appropriately sized spade terminals when wiring.

Ordering Information

Model 2810 X X X X Moisture Detectors

Basic Model of Moisture Relays _____

Supply Voltage _____

- 1) 115 VAC
- 2) 230 VAC
- 4) 460 VAC
- 5) 575 VAC

Contact Configuration _____

- D) 1 N.O. & 1 N.C.
- E) 0 N.O. & 2 N.C.
- G) 2 N.O. & 1 N.C.
- H) 1 N.O. & 2 N.C.
- J) 0 N.O. & 3 N.C.

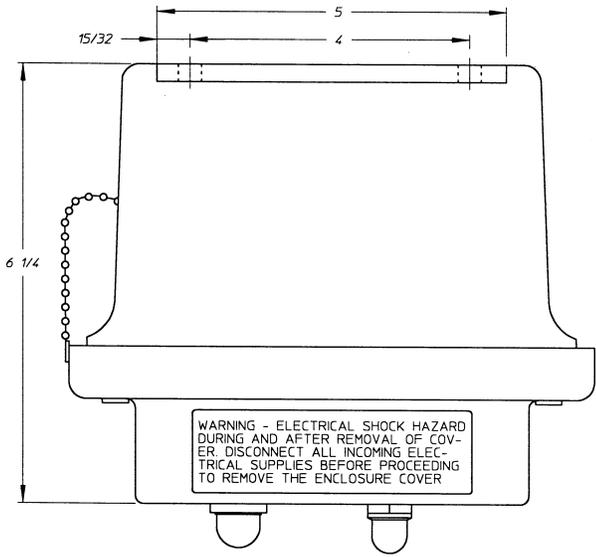
Enclosure Type _____

- 0) Open - No Enclosure
- 1) NEMA 1
- 4) NEMA 4
- 7) NEMA 7 Explosion Proof

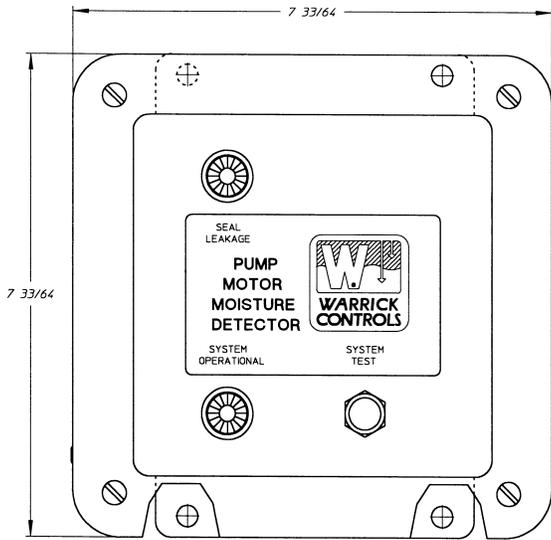
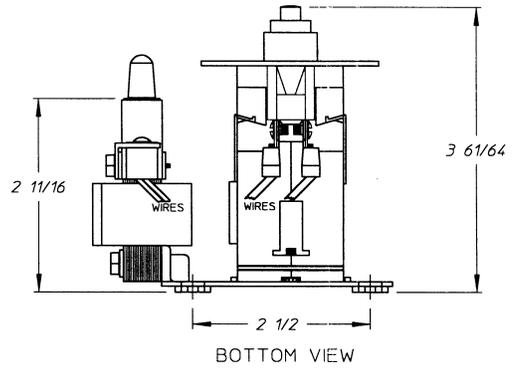
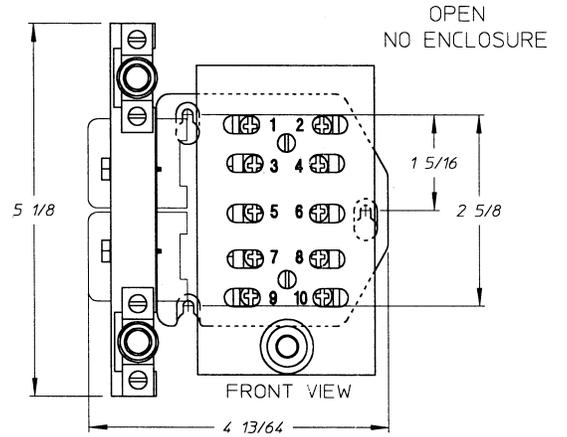
NEMA 7 Options _____

- A) No Gasketing or Drain Plug
NEMA 9 Weather Rating

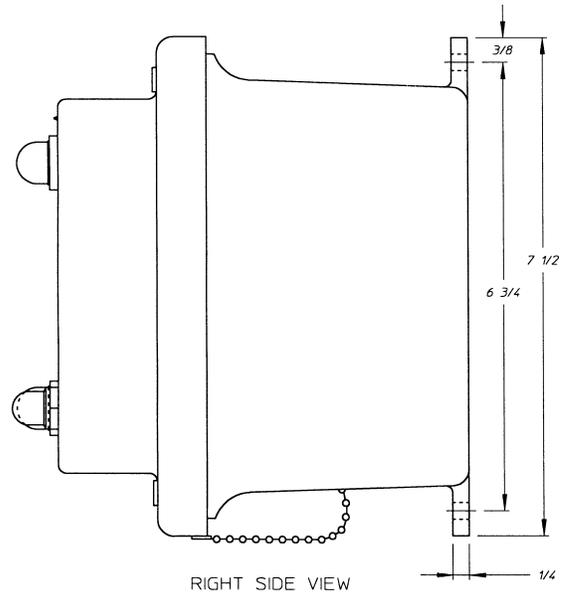
Dimensional Drawing (Nema 4 - Weather Proof)



TOP VIEW

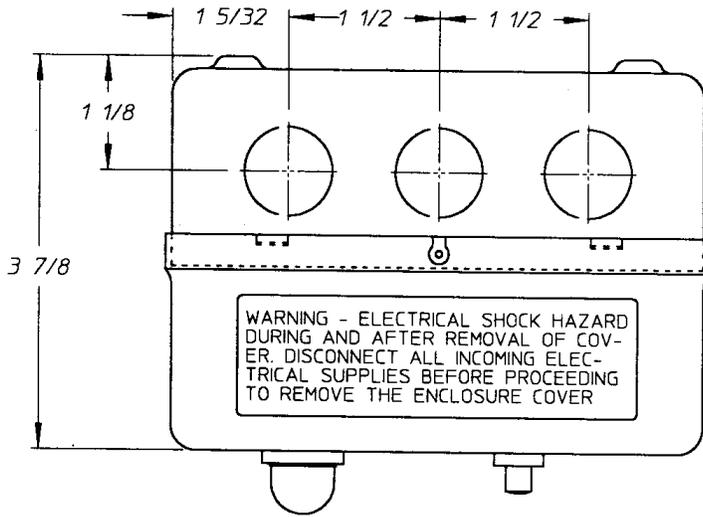


FRONT VIEW

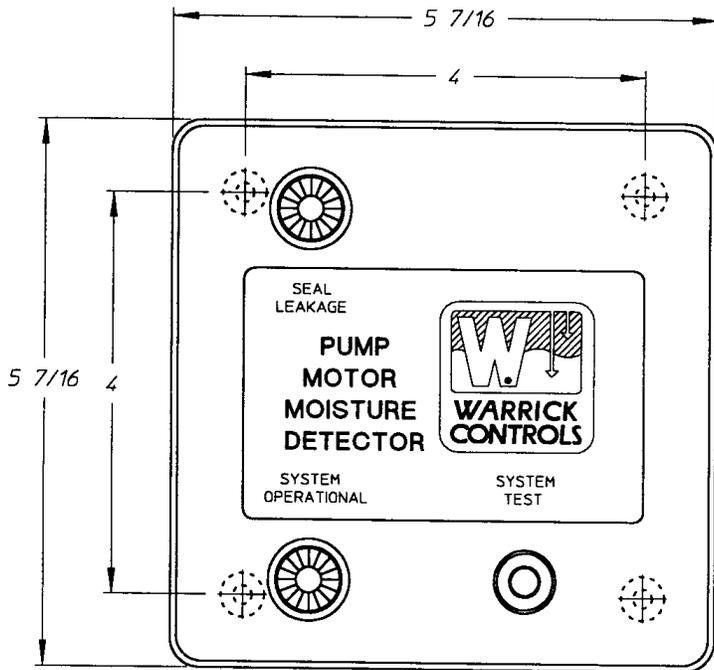


**Dimensional Drawing
(Nema 1 - General Purpose)**

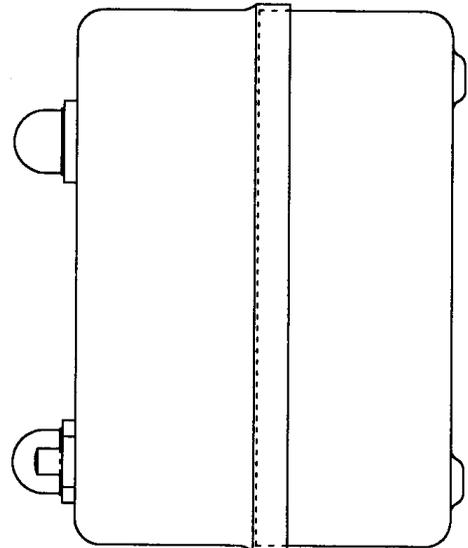
NEMA 1
GENERAL PURPOSE



TOP VIEW

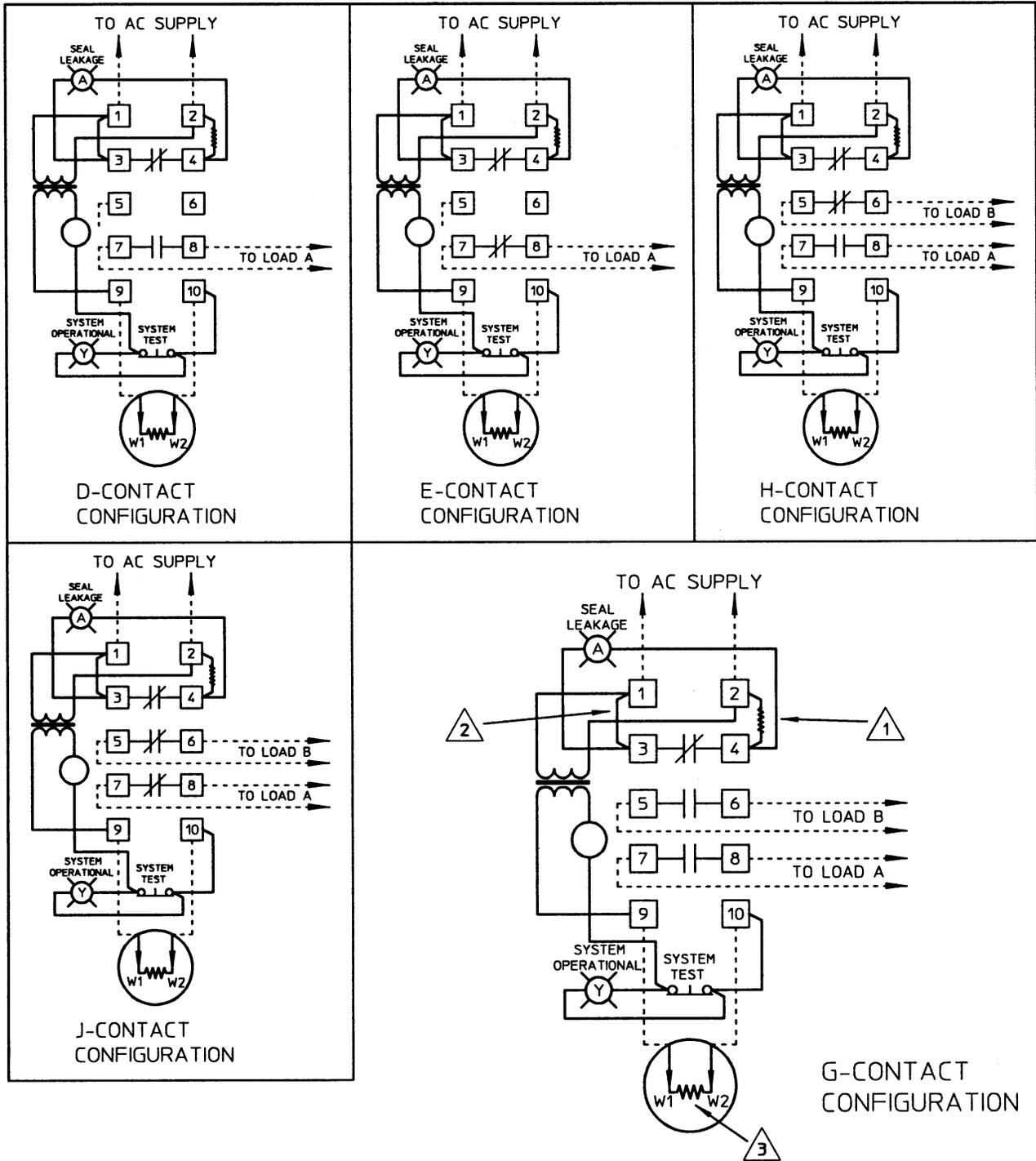


FRONT VIEW



RIGHT SIDE VIEW

Wiring Diagrams



Notes:

- ① Factory-installed resistor (See resistor table)
- ② Factory-installed jumper
- ③ Resistor internal to the submersible motor (330K ohms)
- 4. Dashed lines represent field connections
- 5. For NEMA 7 explosion proof, see Drawing No. 2810XX7X
- 6. Open version only is UL recognized (UL 353 File: MP1430)



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