**ITEM** | **A** | **B** | **C** | **D** | **E**
--- | --- | --- | --- | --- | ---
Submersible Base Elbow for: | | | | | |
SR | 5/8 | 8 | 2 | 2 | 7
EL | 3/4 | 8 | 2 | 2 | 7
Dry Pit Submersibles With Support Elbow | 3/4 | 8 | 2 | 2 | 7
All Others | 1 | 10 | 4 | 2 1/4 | 10

**ANNUAL BOLT DETAIL**

- Heavy Flat Washer
- Heavy Hex Nut UNC2 Th'd
- Mounting Flange Of Equipment To Be Mounted
- Non-Shrink Grout. Poured In Place, After Equipment Setting.
- "L" Type Anchor Bolt
  - Carbon Steel
  - AISI 304 S.S.
- Anchor Bolt Sleeve, As An In-Place Form To Provide A Grout Pocket Around The Anchor Bolt.
The float is a direct acting float switch. Each float contains a single-pole snap-action switch which actuates when the longitudinal axis of the float is horizontal and deactuates when the liquid level falls 3-1/2" below the activation level.

The float is a chemical resistant polypropylene casing with a firmly bonded electrical cable protruding. One end of the cable is permanently connected to the enclosed snap-action switch and the entire assembly is encapsulated to form a completely watertight and impact resistant unit.

NOTE: Actual shape of float may vary slightly from these illustrations.

<table>
<thead>
<tr>
<th>Switch Arrangement</th>
<th>Cable Length (ft.)</th>
<th>Suspension Types</th>
<th>Model No.</th>
<th>Ship Wt. (lb.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normally Open</td>
<td>30</td>
<td></td>
<td>GSI30NO</td>
<td>5</td>
</tr>
<tr>
<td>**</td>
<td>40</td>
<td></td>
<td>GSI40NO</td>
<td>6</td>
</tr>
<tr>
<td>**</td>
<td>50</td>
<td></td>
<td>GSI50NO</td>
<td>7</td>
</tr>
<tr>
<td>**</td>
<td>60</td>
<td></td>
<td>GSI60NO</td>
<td>8</td>
</tr>
</tbody>
</table>

Typical U.L. Pump Control Circuit

Type "GSI" with Stabilizing Weight

PVC Type SJ0 - 2 cond. # 18 AWG 41 Strand 300 volt electrical cord

Polypropylene Casing contains hermetically sealed snap-action switch N.O. - Black

Pilot Duty 7 AMPS 120 VAC 3.5 AMPS 240 VAC

P/N C9-4-37 Stainless Steel Wall Mounting Bracket w/ four (4) adjustable cord grips for Type "GSI" Floats

Junction Box (if required) To power and motor starters

Typical "Duplex" Control Arrangement

High Water Alarm (Optional)

Start Lag / Stand-by Pump

Start Lead / Duty Pump

Common All Pumps Stop
DUAL-CHANNEL SEAL FAILURE ALARM RELAY
P/N C9-7-79

The dual seal failure module is a specialized control for monitoring seal failure. Each relay provides monitoring of two (2) submersible pump motors. Leaks are detected by sensing the conductivity of the contaminated fluid through the moisture detection probes located in the motor seal chamber and stator housing. In the event of a seal leak, the module energizes one of its SPST output relays indicating that seal maintenance or replacement is required before the motor is damaged. The sensitivity of the probe inputs is field adjustable. When the resistance between one of the probe inputs and the common connection drops below the sensitivity setting, the corresponding output relay and LED are activated.

Specifications

Supply Voltage: 120 VAC, 50/60 Hz
Probe Voltage: 9 VDC
Sensitivity: 10 k ohm to 25 k ohm adjustable
Contact Rating: (2) SPST-N.O., 6 A @ 120 VAC Resistive, 345 VA Inductive
Isolation: 2500 Volts
Power Consumption: 2 VA
Temperatures
Operate: −20°C to +55°C
Storage: −40°C to +85°C
Response Times
Operate: 6 ms (approximately)
Release: 2.5 ms (approximately)
Life Expectancy
Mechanical: 20 Million Operations
Electrical: 50,000 Operations @ Rated Load
Duty Cycle: Continuous
Indicator: Red LED illuminates when leak is detected
Package: 8 Pin plug-in “A” style enclosure
### COMBINATION SEAL FAILURE / OVERTEMP

**SIMPLEX ALARM RELAY**
P/N C9-7-80

#### Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>120 VAC, 50/60 Hz</td>
</tr>
<tr>
<td>Sensor Voltage</td>
<td>12 VDC</td>
</tr>
<tr>
<td>Sensitivity Leakage</td>
<td>1 k ohm to 35 k ohm adjustable</td>
</tr>
<tr>
<td>Over-Temperature</td>
<td>Open Circuit</td>
</tr>
<tr>
<td>Contact Rating</td>
<td>(2) SPDT, 10 A @ 120 VAC Resistive</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>4 VA</td>
</tr>
<tr>
<td>Temperatures</td>
<td></td>
</tr>
<tr>
<td>Operate</td>
<td>−20°C to +55°C</td>
</tr>
<tr>
<td>Storage</td>
<td>−40°C to +85°C</td>
</tr>
<tr>
<td>Response Times</td>
<td></td>
</tr>
<tr>
<td>Leakage Trip</td>
<td>1 second</td>
</tr>
<tr>
<td>Leakage Reset</td>
<td>1 second</td>
</tr>
<tr>
<td>Temperature Trip</td>
<td>0.1 second</td>
</tr>
<tr>
<td>Life Expectancy</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>10 Million Operations</td>
</tr>
<tr>
<td>Electrical</td>
<td>100,000 Operations @ Rated Load</td>
</tr>
<tr>
<td>Duty Cycle</td>
<td>Continuous</td>
</tr>
<tr>
<td>Indicators</td>
<td>Green LED illuminates under normal conditions</td>
</tr>
<tr>
<td></td>
<td>Red LED illuminates when leak is detected</td>
</tr>
<tr>
<td></td>
<td>Red LED illuminates on over-temperature</td>
</tr>
<tr>
<td>Package</td>
<td>Style &quot;E&quot; Lexan® Surface Mounted</td>
</tr>
<tr>
<td>Terminations</td>
<td>(12) #8-32 Screw Terminals</td>
</tr>
</tbody>
</table>

![Diagram of the relay](image)
GENERAL:

The Combination Seal Failure/Overtemp Alarm Relay is a specialized control for monitoring seal failure and thermal overload of one (1) submersible pump motor. Leaks are detected by sensing the conductivity of the contaminated fluid through the moisture detection probes located in the motor seal chamber and stator housing. Over-temperature is detected by a normally-closed switches connected in series and embedded in the motor stator windings. The over-temperature function incorporates a bi-stable relay that retains its position during power failures.

OPERATION:

The states of the unit's relay outputs are determined by the series combination resistance of the leakage and temperature sensors. Under normal conditions the resistance remains between the leakage and over-temperature sensitivities, and both output relays are de-energized. If the temperature switch opens, the over-temperature relay latches on until the remote reset button is pressed. Two conditions must be met for reset to occur:

1- Power must be applied
2- The temperature switch must be closed

If the leakage sensor resistance drops below the leakage sensitivity setting, the leakage relay energizes. When the leakage condition clears, the relay resets automatically.
When the pushbutton is depressed the indicating lamp will be illuminated to indicate: A) power is supplied to the control, B) the control is operative, and C) wiring is intact. This procedure should be performed periodically to confirm integrity of the circuit. The integrity of the moisture probe wiring may be checked with an ohmmeter. Measured resistance between (3) & (4) should exceed 300,000 ohms.
MOISTURE DETECTION RELAY
TYPE 2800A (NO INDICATING LIGHT)

NEMA 4 WEATHER PROOF
P/N 97897501

WARNING - ELECTRICAL SHOCK HAZARD
DURING AND AFTER REMOVAL OF COVER. DISCONNECT ALL INCOMING ELECTRICAL SUPPLIES BEFORE PROCEEDING TO REMOVE THE ENCLOSURE COVER.

NEMA 4X Enclosure

DENOTES 120 VAC FIELD WIRING

NOTE: ENCLOSURE DIMENSIONS MAY VARY BY MANUFACTURE.

P/N DESCRIPTION
97897501 NEMA 4 ENCLOSURE, 115V, NO ALARM LIGHT, MODEL 2810A

LC-1 DETECTING MOISTURE - ALARM PILOT ON
- SYSTEM OPERATIONAL PILOT OFF
LC-1 NO MOISTURE - ALARM PILOT OFF
- SYSTEM OPERATIONAL PILOT ON
TEST BUTTON ACTIVE - ALARM PILOT OFF
(RELAY ACTIVE) - SYSTEM OPERATIONAL PILOT ON
INSTALLATION AND OPERATING INSTRUCTIONS

GENERAL:
The type 2800A is a conductance-actuated control for detection of moisture in the oil chamber of a submersible pump motor. It is used as a warning device to indicate a seal leakage and to signal the need for preventative maintenance.

INSTALLATION:
Mount control box vertically on wall or other solid structure and accomplish all indicated wiring. Terminals on the control are numbered and are in the same relative position as shown on the wiring diagram. Terminal pair 1-2 must be continuously energized from an A.C. supply line of electrical characteristics shown on the data plate. Contacts 8-6 and 8-7 are available for load duty, and if required, must be wired in series with the load device or devices, and that series branch circuit connected across a power source compatible with the load. Terminals 3-5 are connected to the moisture sensing probes in the motor marked W1-W2 via the cable provided with the motor.

OPERATION:
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 cause the relay to energize. Load contacts 8-6 and 8-7 will change from their normally open or normally closed position when the control energizes.

TEST PROCEDURE:
A normally closed pushbutton and neon indicating lamp are provided as a part of the control for testing the moisture sensing relay. The motor manufacturer has provided a 330,000 ohm resistor across the probes inside the motor to complete the test. When the test pushbutton is depressed, the contacts 8-6 and 8-7 will change condition to indicate:

(A) power is supplied to the control
(B) the control is operative
(C) the wiring is intact

To test the wiring from the relay to the moisture probes in the motor, de-energize and lock out power to the moisture relay. Use a multi-meter and measure the resistance between the relay connection points 3 and 5. Resistance should be greater than 300,000 ohms showing that the wiring from the relay to the moisture probes in the motor are intact.
MOISTURE DETECTION RELAY
TYPE 2810A (WITH INDICATING LIGHT)

NEMA 4 WEATHER PROOF
P/N 97897489

P/N DESCRIPTION
97897489 NEMA 4 ENCLOSURE, 115V, NO ALARM LIGHT, MODEL 2810A

WARNING - ELECTRICAL SHOCK HAZARD DURING AND AFTER REMOVAL OF COVER. DISCONNECT ALL INCOMING ELECTRICAL SUPPLIES BEFORE PROCEEDING TO REMOVE THE ENCLOSURE COVER.

NOTE: ENCLOSURE DIMENSIONS MAY VARY BY MANUFACTURE.

SECTION 2152 & 2235

SUBMERSIBLE SOLIDS-HANDLING WASTEWATER PUMPS
ACCESSORIES

Date 4/18/11
INSTALLATION AND OPERATING INSTRUCTIONS

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

INSTALLATION:
Mount control box vertically on wall or other solid structure and accomplish all indicated wiring. Terminals on the control are numbered and are in the same relative position as shown on the wiring diagram. Terminal pair 1-2 must be continuously energized from an A.C. supply line of electrical characteristics shown on the data plate. Contacts 8-6 and 8-7 are available for load duty, and if required, must be wired in series with the load device or devices; and that series branch circuit connected across a power source compatible with the load. Terminals 3-5 are connected to the moisture sensing probes in the motor marked W1-W2 via the cable provided with the motor.

OPERATION:
The oil surrounding the probes is nonconductive, and the control and seal leakage indicator light will be de-energized. An influx of moisture past the outer seal and into the oil reservoir will cause the relay to energize, and the seal leakage light will energize to indicate a seal leakage. Load contacts 8-6 and 8-7 will also change from their normally open or normally closed position when the control energizes.

TEST PROCEDURE:
A normally closed pushbutton and neon indicating lamp are provided as a part of the control for testing the moisture sensing relay. When the test pushbutton is depressed, the neon indicating lamp will be illuminated to simulate a seal leak:

(A) power is supplied to the control
(B) the control is operative
(C) the wiring is intact

To test the wiring from the relay to the moisture probes in the motor, de-energize and lock out power to the moisture relay. Use a multi-meter and measure the resistance between the relay connection points 3 and 5. Resistance should be greater than 300,000 ohms showing that the wiring from the relay to the moisture probes in the motor are intact.
PUMP CONTROL PANELS & SYSTEMS

Chicago Pump offers a complete line of high quality pump control panels and integrated systems. From basic control panels to multi-pump integrated VFD systems, Yeomans has the experience to meet your job specific requirements.

When reliable operation, low maintenance and "single source" responsibility are your objectives, specify Chicago Pump pumps and controls for your complete wastewater pumping package.

A wide range of features and options is available, including but not limited to the following:

- Rugged Enclosures
  - NEMA 12, 3R, 4, 4X
  - Coated Steel
  - Stainless Steel
  - Fiberglass
  - Deadfront option
- Main Breaker
- Emergency Breaker
- Generator Receptacle
- Ammeters
- Voltmeter
- Phase Monitor
- Lightning Arrestors
- Surge Capacitors
- Power Factor Capacitors
- Reduced Voltage Starters
- Variable Frequency Drives
- Y-Delta Starters
- Level Control Devices
  - Float Switches
  - Submersible Level Transducers
  - Ultrasonic Level Controls
  - Bubbler Systems
- Level Indication Devices
- Intrinsically Safe Relays
- High / Low Low Level Alarm
- PLC Controllers
- Digital Operator Interfaces
- Back Up Control Systems
- Pump Start Delays
- Motor Protection
- Alarm Lights / Beacons
- Audible Alarm w/Silence Button
- Automatic Dialers
- DC Alarm Systems
- Moisture Detection Relays
- Thermal Protection Relays
- Surge Protection
- Space Heaters
- Ventilation Devices
- Insulation
- Floor Mounting Stands
- Sun Shields
- Window Kits
- Junction Boxes
- Door Latches
- UL Listed

Please contact Chicago Pump or your local representative for further information and application engineering assistance.