

**Features**

- Coil monitoring on preaction/deluge system solenoids
- Ability to show coil state through simple LEDs
- Detects open and shorted coils
- Can be mounted at the solenoid or remotely
- Provides visual indication of coil and the releasing circuit status



Patents Pending



**NOTICE**

This document contains important information on the installation and operation of the Coil Supervisory Switch. Please read all instructions carefully and notify the building owner or their authorized representative before any work is done on the fire sprinkler or fire alarm system. A copy of this document is required by NFPA 72 to be maintained on site.

**Description**

The CoilKeeper™ Supervisory Switch (CSS) is designed to supervise the position of a coil on a solenoid for a preaction/deluge system as required by NFPA 13. The unit monitors the coil electronically and determines if the coil is installed on the valve stem. If a technician removes the coil from the stem the CoilKeeper will activate a normally open set of dry contacts that can be wired to a supervisory circuit of the releasing control panel.

Local LEDs at the CoilKeeper shows when the coil is in a normal state on the valve body, when the coil is removed from the valve body in a maintenance state, when the releasing circuit is energized and if the coil is open or shorted. The releasing circuit energized LED allows the technician to locally see the state of the circuit, preventing accidental release by re-installing an energized coil.

**WARNING**

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Read all instructions carefully and understand them before starting installation. Save instructions for future use. Failure to read and understand instructions could result in improper operation of device resulting in serious injury or death.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

**Technical Specifications**

Conduit Entrances	1/2" conduit connections provided (3 total)
Contact Ratings	1A at 30 VDC Resistive
Dimensions	4.38" W x 4.00" H x 1.90" D
Enclosure	UV and impact resistant polycarbonate
Environmental Limitations	NEMA type 2 for indoor dry use
Power Requirements	24 VDC, 20 mA max standby, 40 mA max alarm (20 mA AUX power, 20 mA releasing circuit)
Shipping Weight	1.25 lbs
Solenoid Valves	For use with 24V solenoid valves UL listed for releasing service
Wattage Range	CSS-10: 9-11 Watts CSS-25: 22-31 Watts
Temperature Range	32° F to 120°F (0°C to 49°C)
Wire Range	12-22 AWG

Specifications subject to change without notice.

## On Valve Installation

### Sense Feed Bracket (see Figure 1)

3 Wire Valves: The sense feed bracket is not required on 3 wire valves.

2 Wire Valves:

1. Install conduit nut onto supplied 1/2" pipe nipple or other 1/2" nipple as needed.
2. Install sense feed bracket onto nipple with screw facing solenoid coil.
3. Thread nipple into solenoid valve and tighten conduit nut.
4. Check that there is continuity between the solenoid coil collar and sense feed bracket.
5. Attach yellow sense feed wire using provided ring terminal and screw to the sense feed bracket.

### Mounting

Install CoilKeeper on valve using supplied 1/2" pipe nipple and locknuts as shown in Figure 1 or other 1/2" nipple as needed.

**Note:** CoilKeeper can be mounted using any of the 3 conduit entrances and rotated to ensure clearance of trim piping. Install liquid tight cord grip into CoilKeeper housing. Do not tighten outer nut at this time.

## Remote Installation

(see Figure 3)

### Mounting

Drill out mounting holes using a #7 bit. Secure CoilKeeper housing to mounting surface using #10 screws and appropriate anchors, not included.

### Sense Feed Bracket:

3 Wire Valves: The sense feed bracket is not required on 3 wire valves.

2 Wire Valves:

1. Install sense feed bracket onto conduit fitting or pipe nipple as needed with screw facing solenoid coil.
2. Thread fitting into solenoid valve and tighten conduit nut.
3. Check that there is continuity between the solenoid coil collar and sense feed bracket.
4. Attach yellow sense feed wire using provided ring terminal and screw to the sense feed bracket.
5. Install nonmetallic junction box to fitting or nipple.
6. Install nonmetallic conduit from the solenoid valve to the CoilKeeper.

## NOTICE

Failure to use nonmetallic conduit / junction box may cause improper operation of the CoilKeeper.

### Sense Feed / Sense Return Conduit

1. Install a junction box within 5 feet of the solenoid valve
  2. Install supplied liquid tight cord grip
  3. Install conduit from the junction box to the CoilKeeper
- Note:** Maximum wire resistance 100 ohms

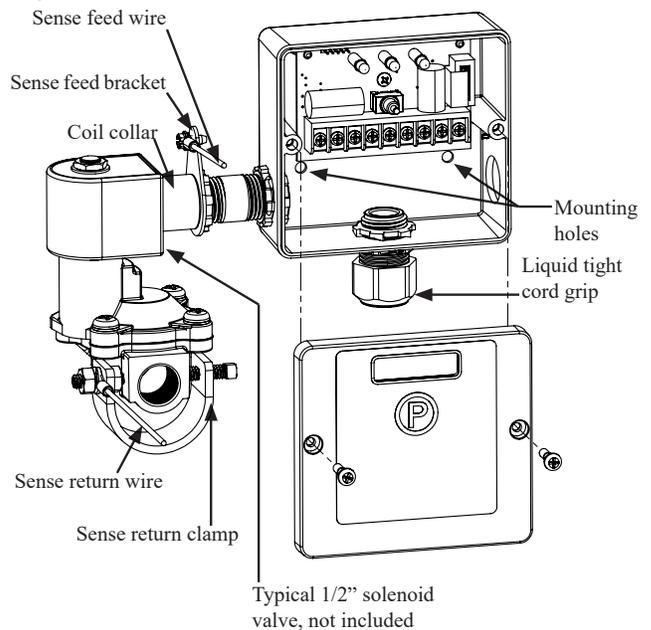
## Sense Return Clamp Installation

(see Figure 2)

1. Position the return clamp around the wrenching flats of the valve.  
**Note:** Mounting location should have parallel flat edges.
2. With the valve centered in the bracket, adjust the set screw until it is touching the valve.  
**Note:** For larger valves, the locknut can be moved to the outside of the U bracket for more clearance.
3. Tighten the locknut to prevent the set screw from moving.
4. Adjust the lock screw until the bracket is securely connected to the valve.
5. Attach the blue sense return wire to the set screw using the provided ring terminal washer and nut.

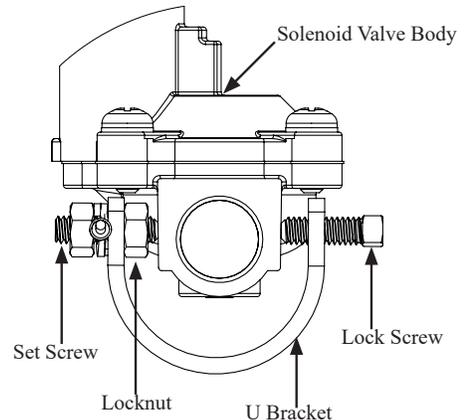
### Typical On Valve Mounting

Fig 1

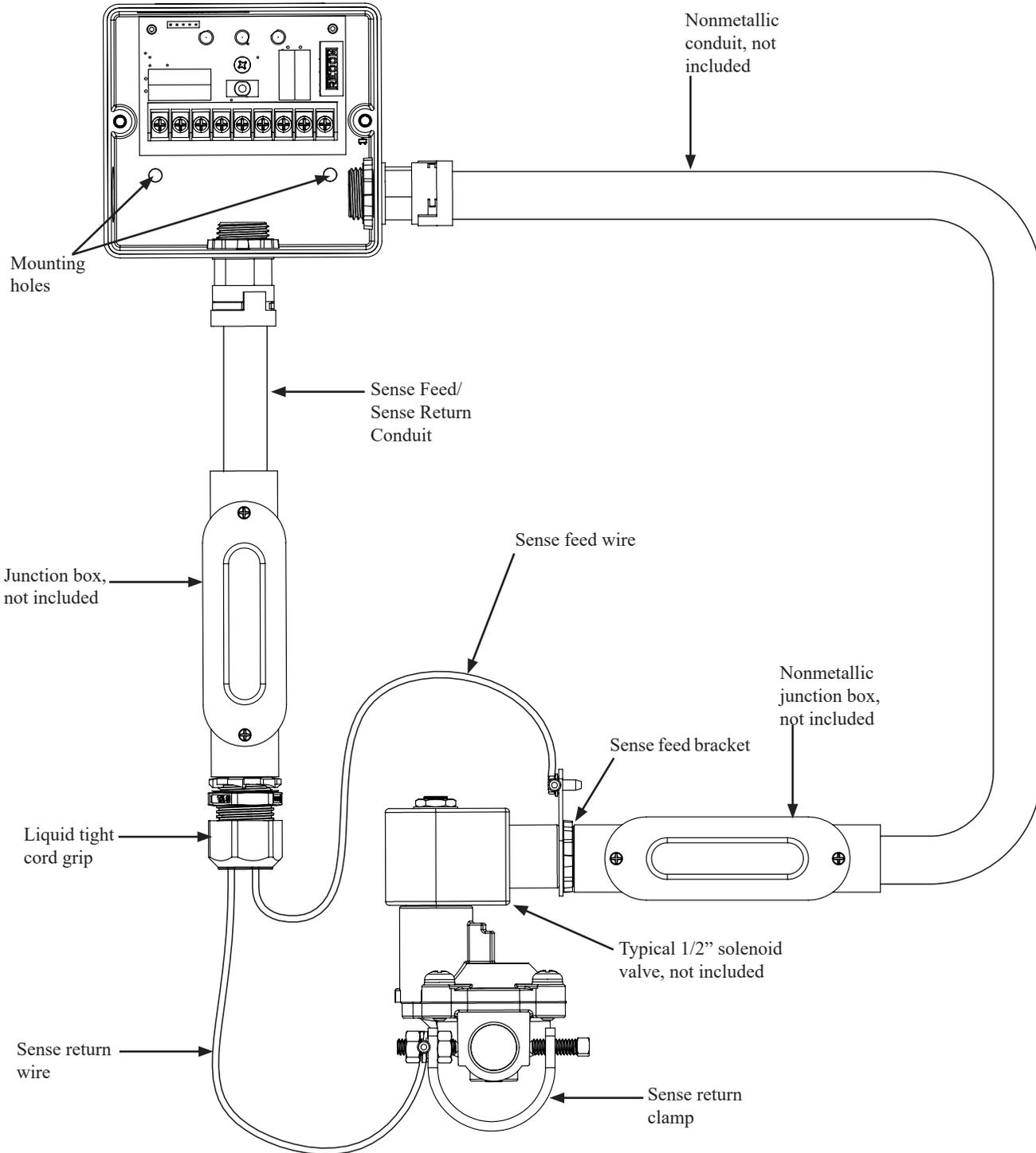


### Sense Return Clamp

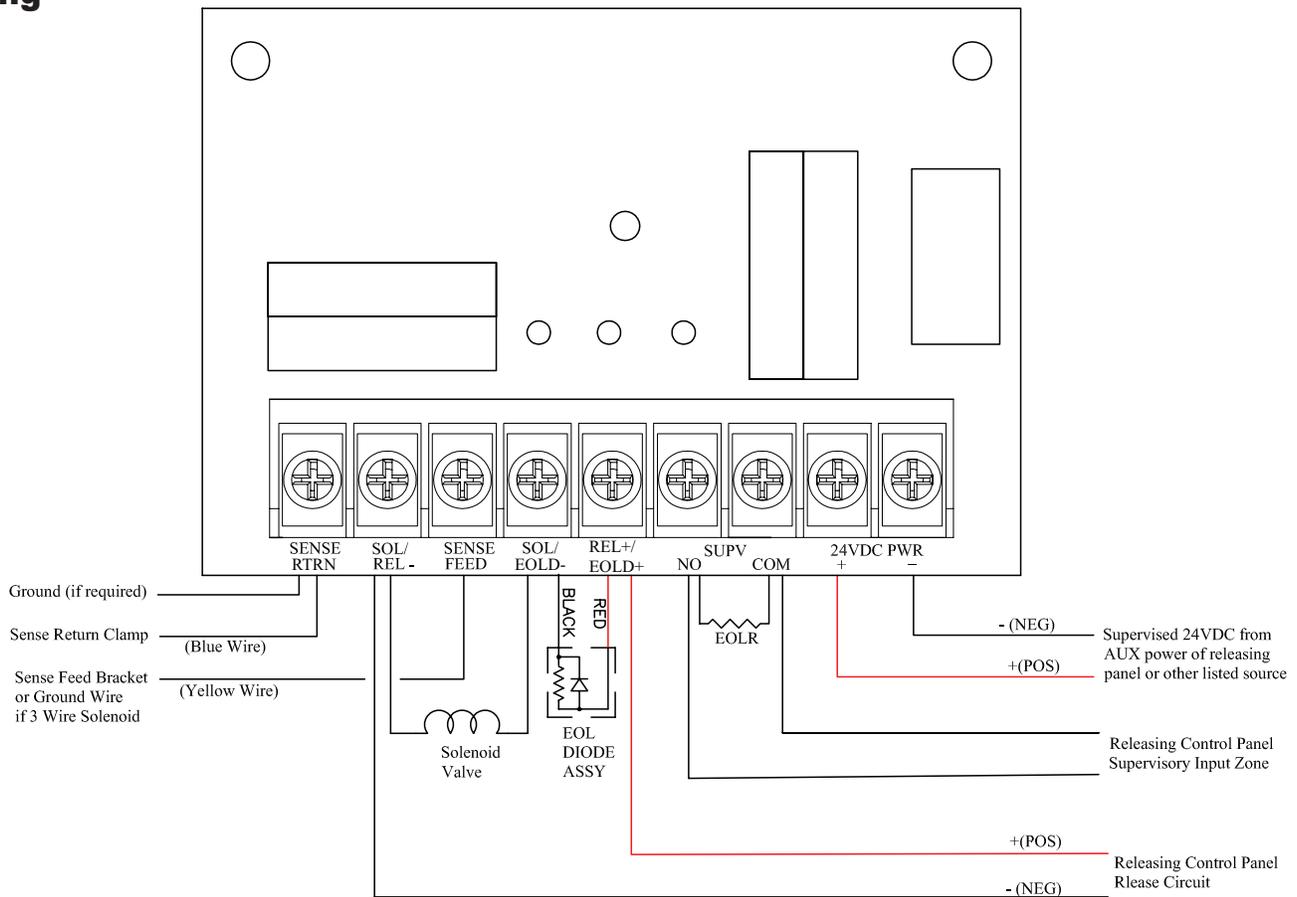
Fig 2



Typical Remote Mounting  
Fig 3



## Wiring



### Sense Feed and Return Wiring

1. Push the un-stripped sense feed and sense return wires through cord grip.

**Note:** Supplied cord grip has opening for 3 wires.

### NOTICE

Ensure proper routing and slack of sense feed and return wires so coil can be removed from valve without strain on wires.

2. Cut excess wiring and tighten the outer nut of cord grip to secure wires.

### 3 Wire Valves:

1. Wire solenoid ground to sense feed terminal on CoilKeeper.
2. Wire ground to sense return terminal if required by NEC, local electric code or AHJ.

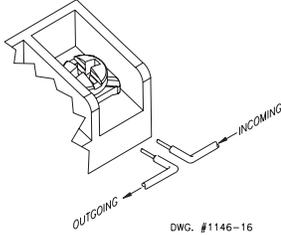
### NOTICE

Solenoid coil / valve assembly is grounded through the CoilKeeper sense return clamp.

### NOTICE

- Fault on releasing circuit may indicate improper wiring.
- End of line device must be installed between REL+ / EOLD and SOL / EOLD terminals.
- Refer to releasing panels manual for end of line device types, end of line devices show in diagram are for reference and are not in addition to those required by the releasing panel for supervision
- Do not wire ground to CoilKeeper when using 2-wire solenoid valves.
- Ensure excess wiring does not interfere with the reset switch or LEDs when cover is installed.

## Terminal Connections Clamping Plate



### **WARNING**

An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life.

Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

### **NOTICE**

Notify the building owner or their representative before testing the CoilKeeper. Testing of the CoilKeeper will result in a supervisory condition on the releasing panel which may be transmitted to the monitoring station. It may be possible to silence the trouble buzzer on the releasing panel by pressing the SILENCE or ACKNOWLEDGE button on the releasing panel. Resetting the CoilKeeper should result in the releasing panel restoring to normal. If the releasing panel does not automatically restore to normal, press the reset button on the releasing panel.

## Testing

1. The CoilKeeper and its associated protective monitoring system should be tested in accordance with applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).
2. Remove the coil from the valve. The CoilKeeper will show an amber LED stating coil removed and the releasing control panel will announce a supervisory condition.

### **CAUTION**

Failure to de-energize the coil prior to reinstalling the coil may result in an accidental release.

3. Reinstall the coil onto the valve. Ensure all of the coil retaining hardware is installed to solenoid valve manufactures recommendations.
4. Press the reset button on the CoilKeeper.  
*Note:* If CoilKeeper fails to reset a local error code will be flashed. Refer to troubleshooting for more information.

## Troubleshooting

### **NOTICE**

Prior to troubleshooting ensure solenoid coil is compatible with CSS model installed, use of incompatible solenoid coil as referenced in the technical specification will result in a trouble condition that will not restore

LED Behavior	Description
Green only	Power on, all systems normal
Amber - Solid	Coil removed from base, supervisory contacts closed
Amber - 4 slow flashes	Failed to reset, failed continuity test
Amber - 8 slow flashes	Failed to reset, failed inductance test
Amber - 10 fast flashes	Failed to reset: shorted / open coil
Red Solid	Releasing circuit energized

#### **Failed Continuity:**

Check sense feed (yellow) and sense return (blue) wires for damage and replace if required.

Check for continuity between sense feed terminal and valve body. If no continuity, ensure coil is properly installed on body following manufacturer's instructions and all fasteners are tight. If the CoilKeeper fails continuity remove the coil and ensure the stem and base are clean and no obstruction exists between the coil and the base. On some coils, it may be required to remove some plastic, over molding flash, from the bottom of the coil to ensure a good connection.

Check continuity between sense return terminal and the valve body. Adjust or reinstall the sense return clamp to restore continuity.

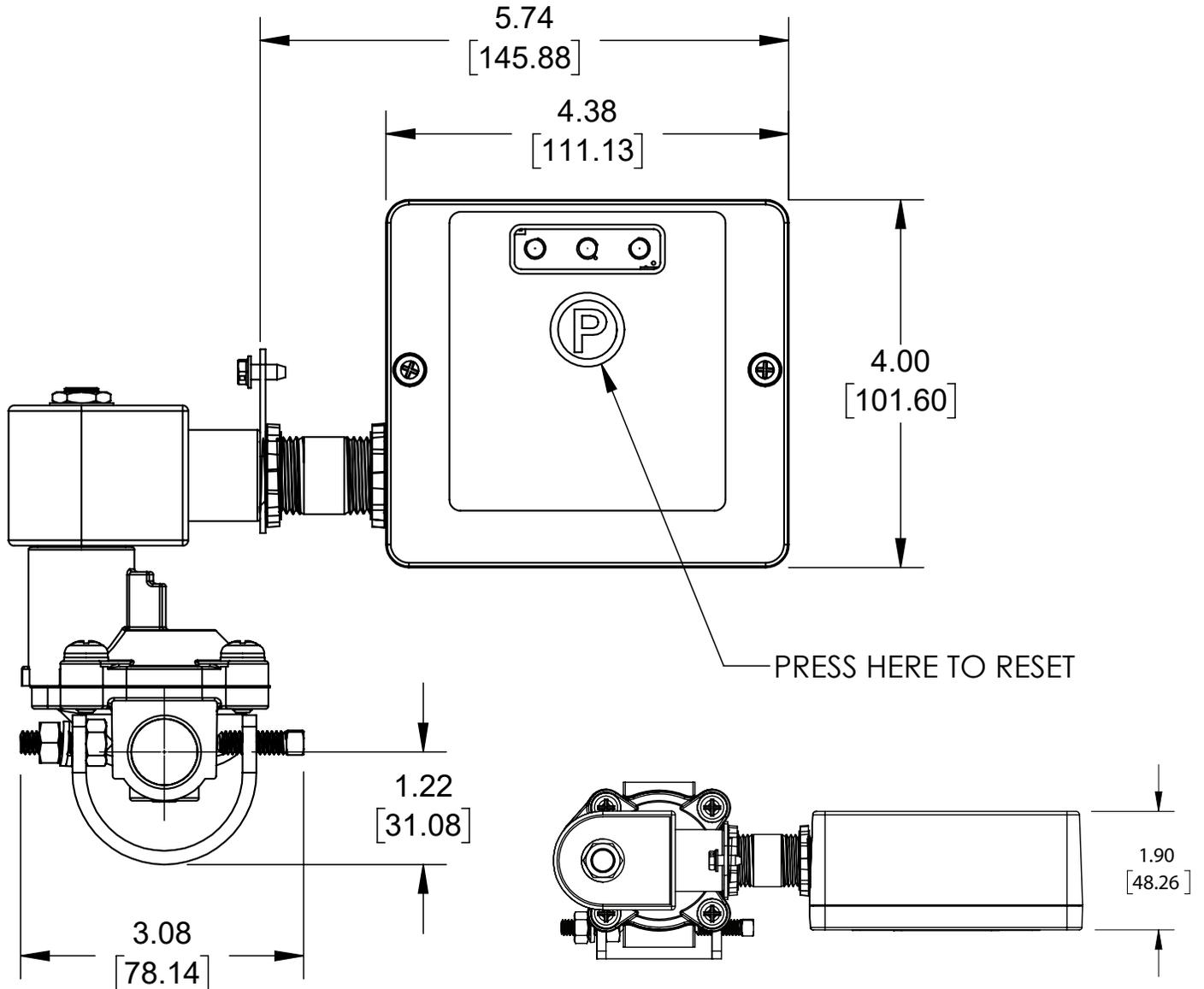
#### **Failed Inductance:**

Ensure coil is properly installed on valve body following manufacturer's instructions.

#### **Shorted or Open Coil/Incompatible Solenoid Coil:**

Ensure proper wiring of coil and EOLD. If no wiring issues are found replace the coil.

**Dimensions**



**Ordering Information**

Model	Description	Stock No.
CSS-10	CoilKeeper Solenoid Supervisory Switch	1010500
CSS-25	CoilKeeper Solenoid Supervisory Switch	1010525
	Replacement Sense Feed Bracket / Sense Return Clamp Kit	0090239
	Replacement Sense Feed / Sense Return Wire Kit	0090240

\*Solenoid valve pictured is for illustration purposes only and is not included with the CoilKeeper.

**NOTICE**

Supervisory products have a normal service life of approximately 10 years. Service life may be reduced by local environmental conditions.

CoilKeeper is covered by Potter's 5 year warranty. For warranty details please visit [www.pottersignal.com/warranty](http://www.pottersignal.com/warranty).