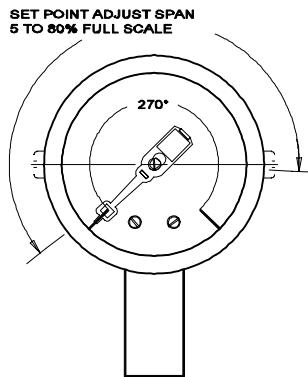


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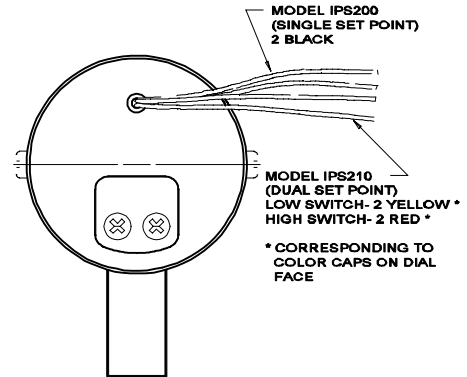
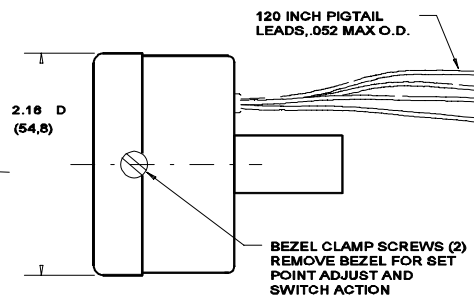
U.S. GAUGE DIVISION
PMT PRODUCTS GROUP
FEASTERVILLE, PENNSYLVANIA 19053

USE AND INSTALLATION OF INDICATING PRESSURE SWITCHES (IPS-200 & IPS-210)

LOW MOUNT PRESSURE CONNECTION



CENTERBACK PRESSURE CONNECTION



1. Introduction

The IPS Indicating Pressure Switch is essentially a bourdon-operated pressure gauge with an internal switch. The switch may be used to drive an alarm device or drive a controller at a field set pressure limit, etc. A hermetically sealed reed switch is actuated when a magnet attached to the end of the pointer passes over the switch. A magnetic latch on the reed switch causes it to remain closed after the pointer passes the operating point.

The set points are adjustable from 5 to 80% of scale for both the IPS-200 (single switch) & IPS-210 (dual switch). However the differential between the two switches (IPS-210 only) is limited to 8-19% of scale.

2. Configurations

There are numerous configurations that can be realized with either of the two IPS models. For most applications the switch gauge can be set up using the Setpoint Configuration Table which is listed on this sheet. *Consult factory for using the IPS-210 in configurations not listed on the table.

3. Connections

The IPS-200 has two black wires exiting the rear of the case. The IPS-210 has two yellow wires and two red wires exiting the rear of the case. Each pair of the same color is connected to one of the switches, is non-polarized and can be connected following normal electrical practice. In applications where a conduit is used to contain the wire, the gauge can be provided with a female 1/8 NPT connection.

4. Setting the Switch Operating Point

The switch set point may be adjusted with the following procedure. Loosen the two screws on the bezel one turn. They do not need to be completely removed, as they engage open slotted holes on the bezel. Pull the bezel forward off the gauge. Move the color cap(s) on the periphery of the scale clockwise or counterclockwise to line up with the desired pressure limit on the scale. Replace the bezel and tighten the two bezel screws.

WARNING---Misuse of this product may cause explosion and personal injury. Do not use without first reading and understanding these instructions and the apparatus installation and operating instructions including form #1421.

5. Changing the Switch Action

If it is necessary to change the switch action from the operating mode in which it was shipped from the factory the following method should be used:

- Disconnect power and all wiring.
- Remove from pressure source.
- Remove bezel as described in 4.0
- Using a small screwdriver, while holding the pointer to prevent rotation, carefully loosen the screw at the center of the pointer, two turns only. Slide the pointer towards the large diameter of the bayonet hole until it is under the screw head. Lift the pointer to remove it from under the screw head. Turn the pointer over and reassemble, pushing it so the screw is at the narrow end of the hole.
- Retighten the center screw, and reinstall the bezel.

6. Specifications

MAXIMUM SWITCHING VOLTAGE: 28V AC/DC

MAXIMUM SWITCHING CURRENT: 0.5 Amps AC/DC noninductive. Use protection for inductive or capacitive loads. Keep instantaneous current below 0.5 amps. Avoid incandescent lamps because cold inrush currents may be 10X rated current.

MAXIMUM INSTANTANEOUS SWITCHING POWER: 10 Watts DC, 12 VA AC

SWITCH POINT ACCURACY: $\pm 2\%$ of full scale
Switching differential is typically 4% FS.

INDICATION ACCURACY: $\pm 2\%$ FS between 10% & 70% FS, $\pm 3\%$ FS elsewhere. Pointer will jump slightly about the setpoint due to magnetic interaction.

7. Safety

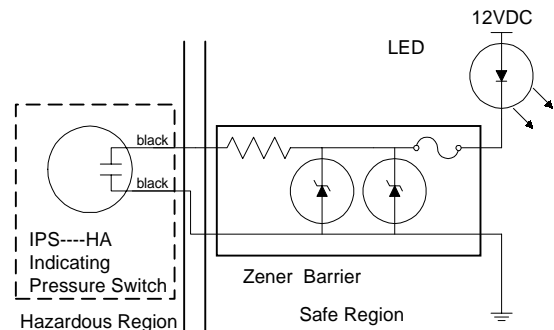
For operation in hazardous environments, the IPS-200 & IPS-210 are considered a *simple apparatus* and require no approvals when connected to certified intrinsically safe associated circuitry, as permitted by the system control drawing. The barrier should have an open circuit voltage V_{oc} 28V and short circuit current I_{sc} 100mA. The barrier should also allow for the capacitance and inductance of the interconnecting wiring and the switch. Wiring is typically 60pF per foot and $0.2\mu H$ per foot per wire pair. The switch capacitance is typically 0.2pf when open. Reference the following:

UL 913 Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II, III, Division 1, Hazardous (Classified) Locations, Underwriters Laboratories Inc.

NFPA 70 National Electrical Code, National Fire Protection Association

ANSI/ISA RP12.6 Installation of Intrinsically Safe Instrument Systems in Class I Hazardous Locations, Instrument Society of America

A typical intrinsically safe installation in a hazardous environment is shown below. For the IPS-210, 2 barriers would be required.



SETPOINT CONFIGURATION TABLE			
MODEL	AT ZERO PRESSURE SPST CONTACT IS	SPST CONTACT DESCRIPTION	POINTER LABEL READS
IPS-200-HA	Normally Open	Closed above setpoint	Closes on incr
IPS-200-LA	Normally Closed	Closed below setpoint	Closes on decr
IPS-210-HA	Normally Open, Normally Open	Both switches are closed above setpoints	Closes on incr
IPS-210-LA	Normally Closed, Normally Closed	Both switches are closed below setpoints	Closes on decr

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