

# 4-1/2 in. (114 mm) Dial Level Swichgag<sup>®</sup> Instrument OPLH / OPLHACS Series



## Features

- Combination Level Indicating Gage and Critical Level Limit Switch
- High and Low Level Limit Contacts Are Visible and Adjustable
- Designed to Start and Stop Pumps to Maintain Specific Levels
- Indication only Murphygag<sup>®</sup> instrument Available
- Latching Control Relay Versions Available



Selected configurations are third party listed. Consult FWMurphy for details.

The OPLHC/OPLHACS Series Level Swichgag instruments are combination level indicating gages with adjustable low and high limit switches. Limit switches can be wired directly to electric pilot circuits to operate alarms, shutdown or start/stop pumps to maintain predetermined levels.

Surface mount or panel mount enclosure is available for both model series. All models feature a 4-1/2 in. (114 mm) dial for easy viewing. Adjustable limit switches are accessible from front of the Swichgag instrument.

Specialized models are available for specific applications involving engines or electric motors.

## OPLHC/OPLHACS

Series Swichgag instruments include 2-adjustable, pilot duty, pointer type contacts. Contacts have self-cleaning motion to enhance electrical continuity. Models are available with a rugged bourdon-tube or 316 stainless steel bellows sensing element for greater accuracy and sensitivity in lower ranges. A "freeze-proof" sensor of 316 stainless steel with Buna-N rolling diaphragm, is available.

## OPLHBP/OPLHABPS

Internal latching control relays are available to provide ON/OFF automation for electric motor applications.

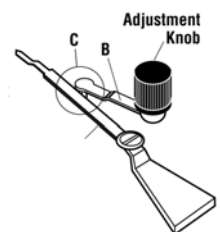
**OPLHC and OPLHACS series** are available in indication only Murphygag models (OPLHACS). See Page 2 to determine the model for your application.

## Applications

- Saltwater Disposal Systems
- Diesel Day Tanks
- Waterflood Systems
- Oil Storage Tanks

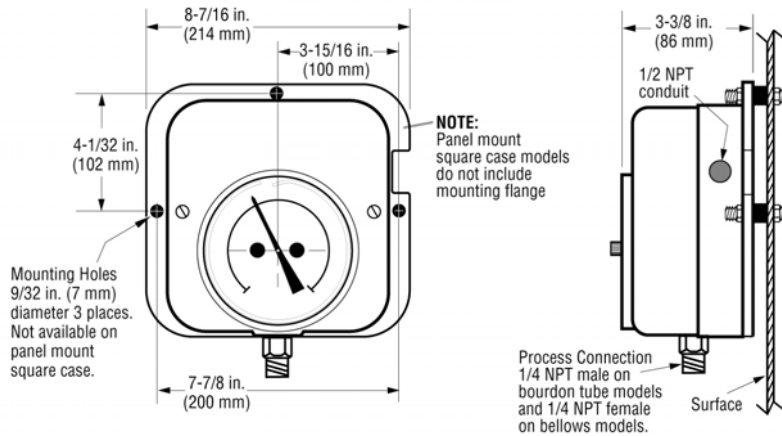
## Basic Operation

The OPLHC/OPLHACS series operate from static head pressure. Pressure is transmitted to the process connection of the Swichgag instrument. From here the pressure flexes the bourdon tube or operates the 316 stainless steel bellows (depending on which model you have). The bourdon tube/bellows operates the stainless steel rotary geared movement which in turn operates the indicating pointer on the face of the dial. When the pointer **(A)** closes with the limit contact **(B)**, a control circuit **(C)** is completed and signals an alarm and/or shut down or starts/stops a pump.

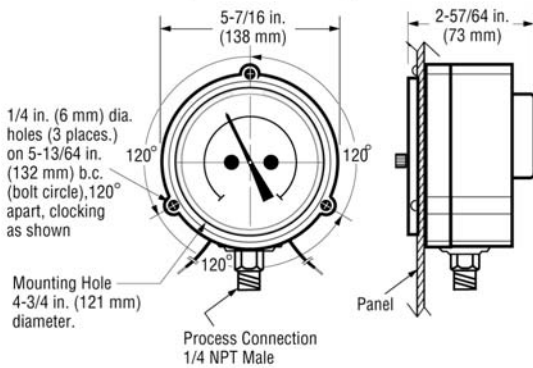


## Dimensions

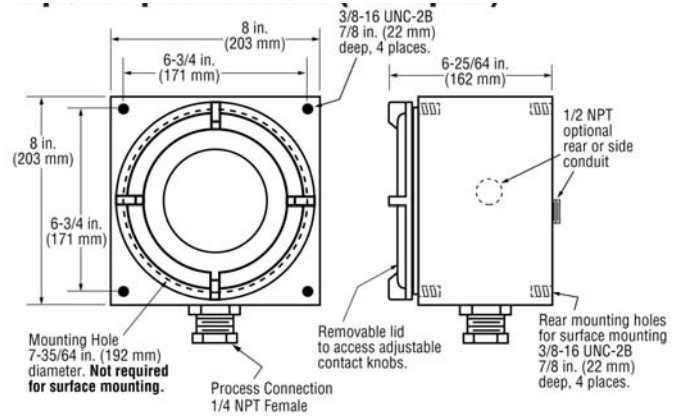
### Surface / Panel Mount Enclosure (Square Case)



### Panel Mount Enclosure (Round Case)

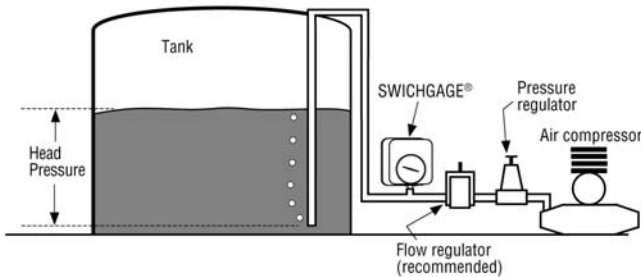


### Explosion-proof Enclosure ("EX" Option)

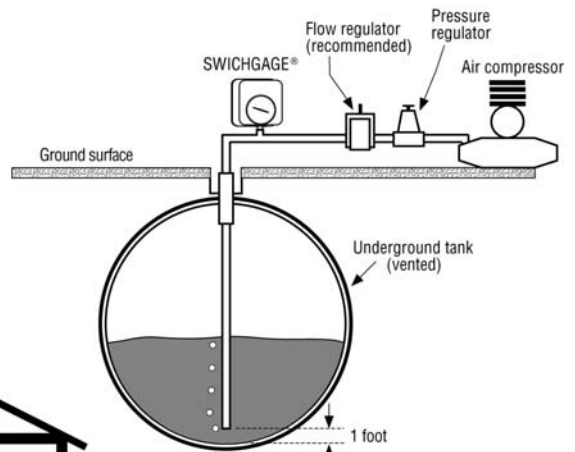


## Typical Applications

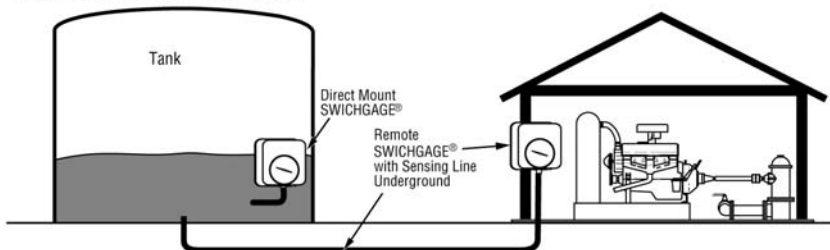
### Above Ground Tank



### Below Ground Tank



### Direct and Remote Tank



**Warranty** - A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to <http://www.fwmurphy.com/warranty>

# Specifications

Specifications	OPLH / OPLHA Series															
	OPLHC	OPLHFC	OPLHCE	OPLHACS	OPLHACFP	OPLHACES	OPLHBP	OPLHABDS	OPLHBPE	OPLHABPES	OPLHG	OPLHFG	OPLHAGS	OPLHAGES	OPLHAFCS	OPLHAFGS
<b>Enclosure Type (die cast aluminum)</b>																
• Surface mount, square case	•			•			•	•			•	•				
• Panel mount, round case		•									•			•	•	
• Panel mount, square case			•		•			•	•				•			
<b>Limit Switch Ratings</b>																
• Pointer Contacts: SPDT center off; 2 A, 30 VDC, 1 A, 125 VAC.	•	•	•	•	•	•	•	•	•	•				•		
<b>Latching Control Relay</b>																
• SPDT, 10 A @ 120 VAC (standard)							•	•	•	•						
• DPDT, 12 VDC (Optional)							•	•	•	•						
• DPDT, 24 VAC (Optional)							•	•	•	•						
• DPDT, 24 VDC (Optional)							•	•	•	•						
<b>Sensing Element</b>																
• Bourdon Tube, Bronze/Brass (standard)	•	•	•				•		•		•	•				
• Bellows, 316 Stainless Steel (standard)				•		•			•			•	•	•	•	
• Freeze-proof Sensor, 316 St. Steel w/Buna-N diaphragm					•											
<b>Process Connections</b>																
• 1/4 NPT Male	•	•	•				•		•		•	•				
• 1/4 NPT Female				•		•			•			•	•	•	•	
• 2 NPT Male					•											
<b>Geared Movement: 300 series stainless steel.</b>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>Accuracy (standard calibration is for water)</b>																
• ±2% first/last quarters of scale, 1% middle half scale. <sup>(1)</sup> <sup>(3)</sup>	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•
<b>OPTIONS AVAILABLE (specify when ordering)</b>																
• Environment sealed for isolation from the elements (ES). <sup>(2)</sup>		•									•			•	•	
• Explosion-proof case; Class I, Div. 2, Groups C & D (EX)	•			•			•	•								
• Explosion-proof less case; internal gage mechanism without case (EL)	•			•			•	•								
• Less case; internal gage mechanism without case (LC)	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•
• Tickler contact (TA)				•	•	•									•	
<b>RANGES AVAILABLE (specify when ordering)</b>																
• 0–5 ft. (0–1.5 m) dual scale dial				•		•			•			•	•	•	•	•
• 0–10 ft. (0–3 m) dual scale dial				•		•			•			•	•	•	•	•
• 0–20 ft. (0–6 m) dual scale dial	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
• 0–30 ft. (0–9 m) dual scale dial	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
• 0–60 ft. (0–18 m) dual scale dial	•	•	•		•		•		•		•	•				
• 0–120 ft. single scale dial	•	•	•				•		•		•	•				
• 0–3.6 metres single scale dial				•		•			•			•	•	•	•	
• 0–4 metres single scale dial				•		•			•			•	•	•	•	
• 0–6 metres single scale dial				•	•	•			•			•	•	•	•	
• 0–9 metres single scale dial	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

(1) Bourdon tube (OPLHC) models in the 20 ft. (6m) range have an accuracy of 3% full scale.

(2) ES option available for the 20 ft. (6 m) range models and above.

(3) OPLHAC (Bellows) models, 0-5' 3% FS, 0-10' 2% FS.

### NOTES:

- Options may not be available in combination. Consult factory.
- Over range is not to exceed 10% FS above full range.
- Calibration is for water. Specify for other liquids.
- Add **TOTAL** height of liquid above the pressure connection to determine correct range (dial scale). For elevated tanks subtract the tank elevation from gage reading to determine actual tank level.

### Shipping Dimensions

**Item Dimensions:** 16 x 11 x 5-1/2 in. (406 x 279 x 140 mm).

Explosion-proof models: 12 x 12 x 9 in. (305 x 305 x 229 mm).

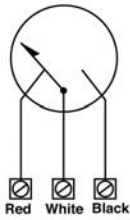
### Shipping Weights

**Item Weight:** 8 lb. (3.6 kg) approximately.

Explosion-proof models: 22 lb. (10 kg) approximately.

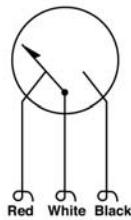
## Internal Wiring

### OPLHC, OPLHACS, and OPLHAFP Series

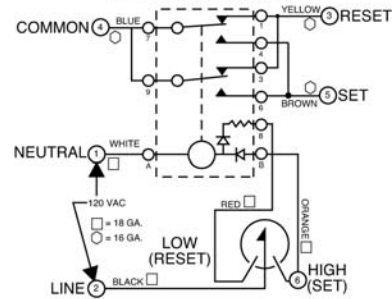


Contact Ratings: SPDT center off;  
2 A, 30 VDC, 1 A, 125 VAC pilot duty.

### OPLHCE, OPLHFC, OPLHACES and OPLHAFCS Series



### OPLHBP, and OPLHABPS Series



Contact Ratings: SPDT dry relay contacts, 10 A, 125 VAC.

## How to Order

Specify model number. **NOTE:** No designator is required for Standard configurations. Also, list options in alphabetical order (A to Z). Place a dash (-) between each option. See example below.

**OPLHBP - - 2 - 30 - TA**

**Base Part Numbers**

OPLHG	OPLHFC
OPLHGE	OPLHCE
OPLHC	OPLHABPGS
OPLHBP	OPLHBPE
OPLHAGS	OPLHAGES
OPLHACS	OPLHACES
OPLHABPS	
OPLHAFCS	
OPLHAFGS	
OPLHFG	

**Options (see Specifications on page 2 for availability)**

ES = Environmentally sealed  
EX = Explosion-proof  
EL = (EXLC) Explosion-proof less case  
LC = Less case  
TA = (TCA) Tickler contact

**Bourdon Tube/Bellows**

OPLHC Standard=Bronze/Brass  
OPLHACS Standard=316 Stainless Steel

**Latching Control Relay Voltage (applies to "BP" models only)**

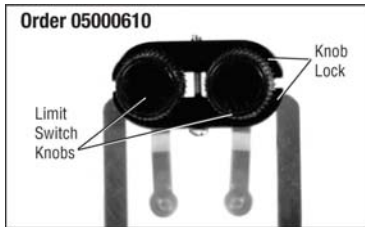
Blank = 120 VAC  
2 = 12 VDC  
4 = 24 VDC

**Range/Scale (specify in feet)\***

	Bellows	Tube
0 5 = 0-5 ft.	X	
1 0 = 0-10 ft.	X	
2 0 = 0-20 ft.	X	X
3 0 = 0-30 ft.	X	X
6 0 = 0-60 ft.		X
1 2 0 = 0-120 ft.		X

\*Standard calibration is for water-specify for other.

## Tamperproof Contact Accessory



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