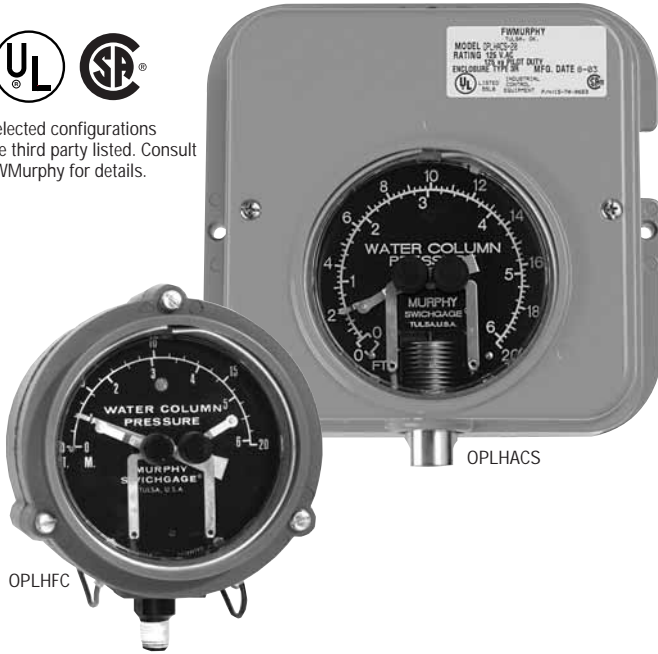


# 4-1/2 in. (114 mm) Dial Level Swichgage® instrument

OPLH-94122B  
Revised 03-06  
Catalog Section 15



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



## OPLH / OPLHACS Series

- 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 Murphygage® instrument Available
- Latching Control Relay Versions Available

### Description

The OPLHC/OPLHACS Series Level Swichgage 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 Swichgage instrument.

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

### OPLHC/OPLHACS

#### Series Swichgage 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. The “freeze-proof” sensor (OPLHAFP) inserts approx., 2 in. (52 mm) inside a tank.

### 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 Murphygage models (OPLHAGS). See Page 2 to determine the model for your application.

### Applications

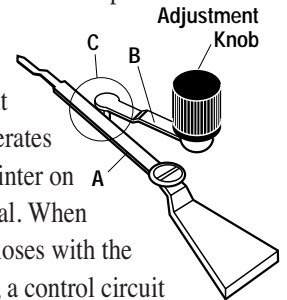
- Saltwater Disposal Systems
- Waterflood Systems
- Diesel Day Tanks
- Oil Storage Tanks

### Basic Operation

The OPLHC/OPLHACS series operate from static head pressure. Pressure is transmitted to the process connection of the Swichgage 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 **A** 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 shutdown or starts/stops a pump.



### 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 [www.fwmurphy.com/support/warranty.htm](http://www.fwmurphy.com/support/warranty.htm)



# Specifications

## OPLH / OPLHA Series

|   | OPLHC | OPLHFC | OPLHCE | OPLHACS | OPLHACES | OPLHBP | OPLHABPS | 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)                                 |       |        |        | •       | •        |        | •        | •       |           |       | •      | •       | •        | •        | •        |
| <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>  | •     | •      | •      | •       | •        | •      | •        | •       | •         | •     | •      | •       | •        | •        | •        |
| • 3% full scale.  |       |        |        |         |          |        |          |         |           |       |        |         |          |          |          |
| <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  | •     | •      | •      | •       | •        | •      | •        | •       | •         | •     | •      | •       | •        | •        | •        |

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

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

**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**

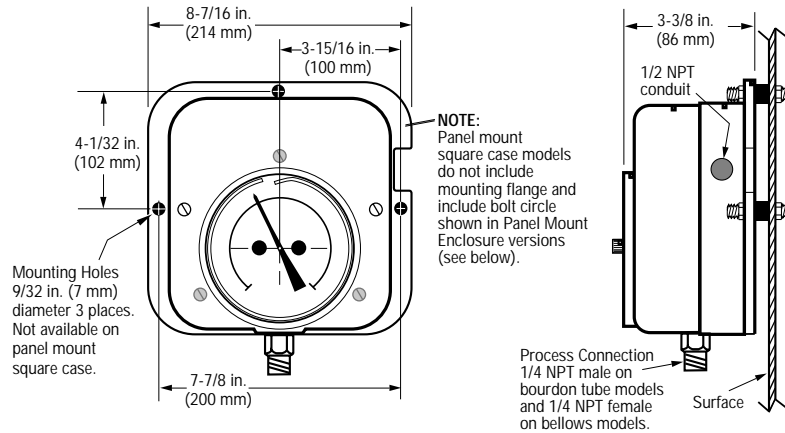
Item Dimensions: 16 x 11 x 5-1/2 in. (406 x 279 x 140 mm).  
Explosion-proof models: 12 x 12 x 9 in. (305 x 305 x 229 mm).

**Shipping Weights**

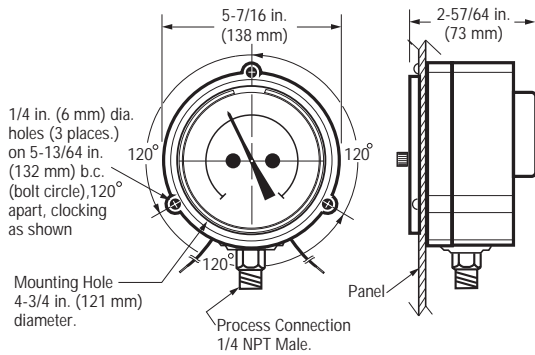
Item Weight: 8 lb. (3.6 kg) approximately.  
Explosion-proof models: 22 lb. (10 kg) approximately.

# Dimensions

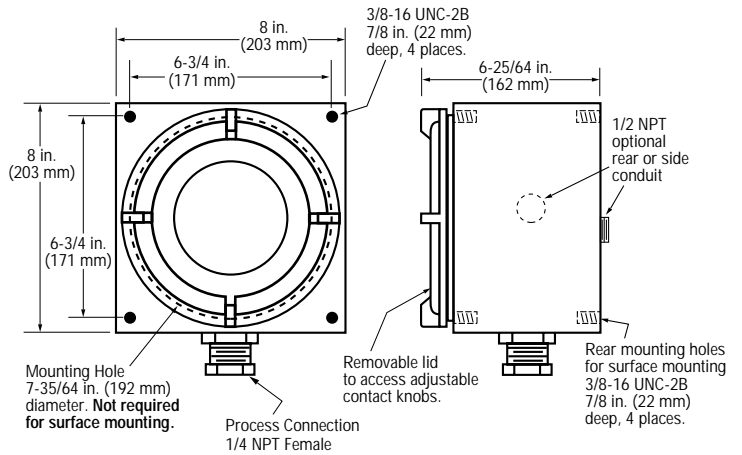
## Surface / Panel Mount Enclosure (Square Case)



## Panel Mount Enclosure (Round Case)

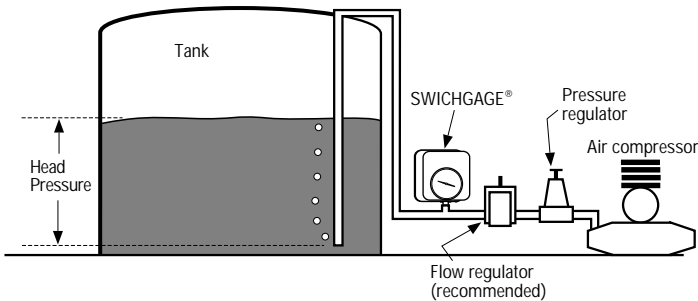


## Explosion-proof Enclosure ("EX" Option)

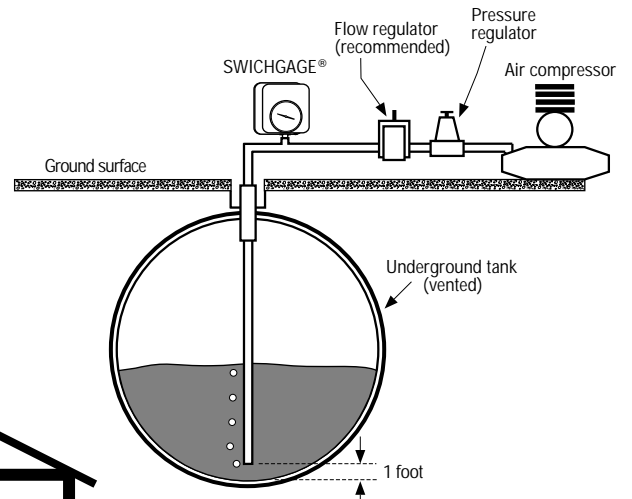


# Typical Applications

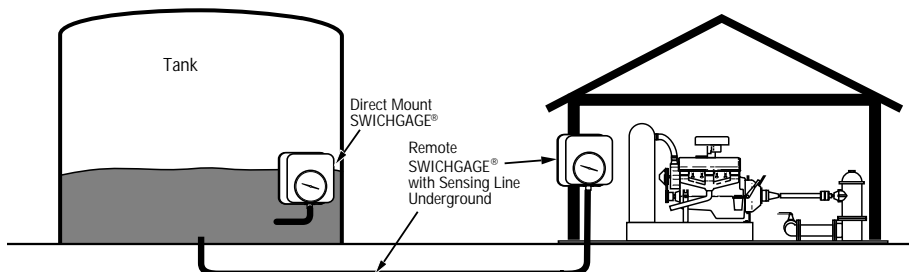
## Above Ground Tank



## Below Ground Tank

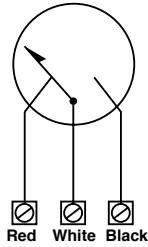


## Direct and Remote Tank



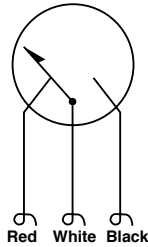
## Internal Wiring

### OPLHC, OPLHACS, and OPLHAFP Series

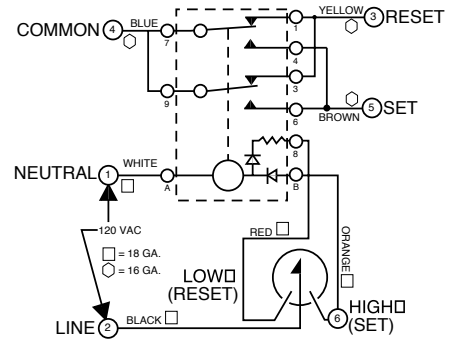


**Contact Ratings:** SPDT center off;  
2 A, 30 VDC, 1 A, 125 VAC pilot duty.

### 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 | 45LHE     |
| OPLHAFGS | 45LHEF    |
| OPLHFG   | 45LHEBP   |

#### 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

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

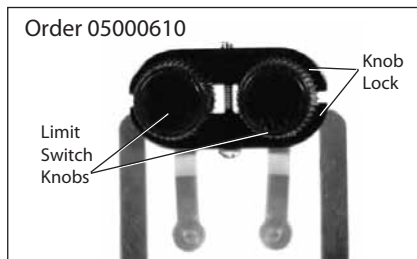
ES = Environmentally sealed  
EX = Explosion-proof  
EL = (EXLC) Explosion-proof less case  
LC = Less case  
TA = (TCA) Tickler contact

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

|                 | Bellows | Tube |
|-----------------|---------|------|
| 05 = 0-5 ft.    | X       |      |
| 10 = 0-10 ft.   | X       |      |
| 20 = 0-20 ft.   | X       | X    |
| 30 = 0-30 ft.   | X       | X    |
| 60 = 0-60 ft.   |         | X    |
| 120 = 0-120 ft. |         | X    |

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

## Tamperproof Contact Accessory



## RJ Mann & Associates Inc.

*Engine Controls & Panels/Compressor Parts*

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