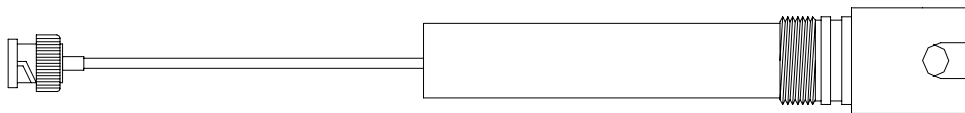


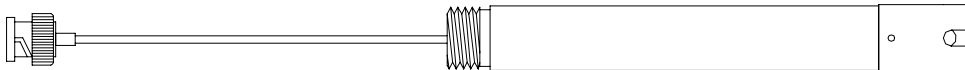
**LAKEWOOD INSTRUMENTS  
MODEL 530**

**ORP SENSORS**

***INSTALLATION & OPERATION MANUAL***



**5305 Replacement Tip (CPVC)**



**5307 Replacement Tip (316 SS)**

**Lakewood Instruments**

7838 North Faulkner Road, Milwaukee, WI 53224 USA

Phone (800) 228-0839 • Fax (414) 355-3508

<http://www.lakewoodinstruments.com>



# Lakewood Instruments

Congratulations on your purchase of a Lakewood Instruments product. We would like to take this opportunity to welcome you to the Lakewood Instruments product family.

With proper care and maintenance, your product should give you trouble-free service. Please take the time to read and understand the operation manual, paying special attention to the sections on **INSTALLATION** and **MAINTENANCE**.

If, in the future, any parts or repairs are required, we strongly recommend that only original replacement parts be used. Our Customer Service Department would be happy to assist you with your parts or service requests.

We thank you for your selection and purchase of a Lakewood Instruments product.

# MODEL 530

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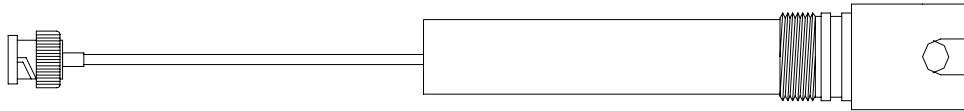
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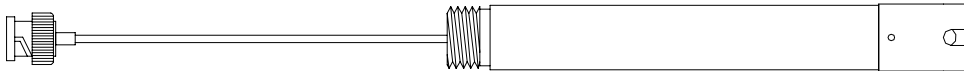
## Features, Benefits, Specifications

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# MODEL 530 ORP SENSOR ASSEMBLY



**5305 Replacement Tip (CPVC)**



**5307 Replacement Tip (316 SS)**

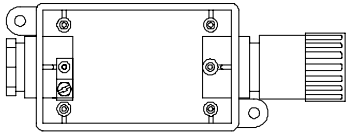
Lakewood Instruments uses the latest technology in ORP electrode construction. Lakewood's differential electrode design prevents ground loop problems and excessive dependence on the reference electrode connection to the process stream for stable readings. With three different body materials and three mounting options Lakewood Instruments can supply ORP sensors to fit your needs.

### Specifications

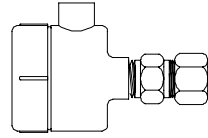
Option	Body Material	Max Temp*	Pressure	Wetted Materials
-5x	CPVC	150°F (66°C)	100 psi (7 bar)	CPVC, Glass, Carbon, Viton
-7x	316 SS	260°F (127°C)	150 psi (10 bar)	316 SS, Glass, Viton

\* *Temperature rating of sensors depends on the combination of the body and glass electrode. Use the lower temperature of the sensor's body or glass electrode to determine sensor's temperature specification.*

## Enclosures

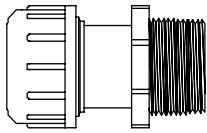


- 1 NEMA-4X w/ amplifier\*
- 5 NEMA-4X

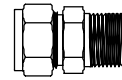


- 2 CL I Div 2 w/ amplifier\*
- 3 CL I Div 2

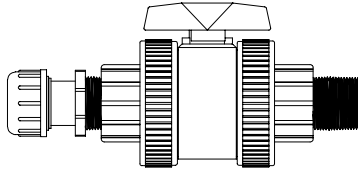
## Inline Mounting Options



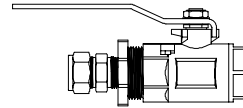
- 5I 1 1/2 in NPT CPVC Compression fitting



- 7I 3/4 in NPT 316 SS Swagelock



- 5R 1 1/2 in NPT CPVC Ball valve



- 7R 1 in NPT 316 SS Ball valve

## Ordering Information

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pH Sensor	Cable Length or Enclosure	Material, Inline Fitting	Body Length
530	-0 1/2 NPT adapter	-5S CPVC no fitting	-10 in =
	-1 NEMA-4X w/ amplifier*	-5I CPVC w/ compress fitting 1 1/2 in NPT	-18 in
	-2 CL I DIV 1 w/ amplifier*	-5R CPVC w/ ball valve 1 1/2 in NPT	-48 in
	-3 CL I DIV 1 enclosure	-7S 316 SS no fitting	
	-4 180 Inches of cable	-7I 316 SS w/ Swagelock fitting 3/4 in NPT	
	-5 NEMA-4X enclosure	-7R 316 SS w/ ball valve 1 in NPT	

### Example

530      -4                      -5R                      -18

\* amplifier option -1 and -2 are only available with 353 and 830 controllers.

= 10 in body not available with -5R option

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# INSTALLATION

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## Installation

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The ORP sensor should be mounted vertically with the glass bulb facing down. It may be mounted at an angle as long as it is no more than 75° from the vertical position (see DWG #04258 in the back of this manual). Due to the bubble position, however, the preferred mounting angle is no more than 45° from vertical.

The sensor must also be mounted in a location so that it is always wet. If is located in a pipe or tank with variable fluid levels, it is important that the sensor is installed where it can remain wet. Failure to do so will damage the sensor.

The 530 series sensors have 4 wires and a coaxial cable with a BNC fitting. They are as follows:

- |              |  |
|--------------|--|
| • BNC center | ORP signal                               |
| • BNC Shield | (not used)                               |
| • Black wire | Temp compensation 10K PTC (not required) |
| • Red wire   | Temp compensation (not required)         |
| • White wire | Solution GND                             |
| • Green wire | Reference                                |

Cable length of ORP sensors is measured from the glass bulb to the BNC connector. Fifteen (15) feet is the maximum cable length. Lakewood Instruments guarantees operation up to 15 feet. If a cable extension is used Lakewood Instruments will not guarantee operation of the sensor.



## Storage

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Proper storage of ORP sensors is crucial to sensor life. It is important that the ORP sensor glass bulb is always moist. The ORP sensor is shipped with a plastic cover which is filled with tap water, a sponge and sealed with electrical tape. Save the cap for future storage use. Use only tap water or a 4.0 pH buffer solution for storage.

***NOTE: DI OR DISTILLED WATER WILL DAMAGE ORP SENSORS IF THEY ARE EXPOSED FOR EXTENDED PERIODS.***

## Sensor Life

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ORP sensor life varies with the following:

- Type of process water and chemicals used.
- Temperature of water.
- Placement of sensor which may cause it to dry out.

***NOTE: KEEP THE ORP SENSOR MOIST AT ALL TIMES***

## Cleaning

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ORP sensors may be cleaned with distilled or tap water. A bottle with a spout may be used to rinse the probe free of debris. If the debris cannot be removed with water you may use a cotton swab with isopropyl alcohol. Do not clean the sensor with a rag or brush since this may scratch the glass bulb. Cleaning frequency will vary with the type of process water. Cleaning should be done at least once a month or if ORP readings become unstable.

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## REPLACEMENT PARTS

### Replacement Tips

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530 Series sensors may be replaced by simply unscrewing the tip of the sensor. The body, fittings, and other options may be reused with the new sensor tip.

***NOTE: WHEN ORDERING A ORP SENSOR TIP BE SURE TO SPECIFY THE CABLE LENGTH, IN INCHES, FROM THE GLASS BULB TO THE BNC CONNECTOR.***

Replacement numbers are as follows:

#### **SENSOR REPLACEMENT TIPS**

- 5305 CPVC sensor replacement tip
- 5307 316 SS sensor replacement tip

#### **ELECTRODE OPTIONS (required, select one only)**

- STD Standard glass electrode
- HT High temperature process electrode, use with 7I,R,S,T
- FG Flat ORP glass electrode
- DG Dome glass ORP sensor
- HSHT High sodium with high temperature electrode. Corrects sodium error
- DGHT Dome glass ORP sensor with high temperature electrode

### Accessories

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#### **SENSOR TEES**

- 66604 CPVC sensor tee, 1½ in connection
- 66549 316 SS sensor tee, ¾ in connection

#### **REPLACEMENT AMPLIFIER/DRIVER**

- 67124 ORP standard amplifier
- 68899 ORP preamp manual
- 66317 Preamp cable. 4 conductor shielded. per ft
- 69780 Male/Female BNC with 4 conductor cable, 5 ft
- 69781 Male/Female BNC with 4 conductor cable, 10ft

#### **REPLACEMENT FITTINGS**

- 67261 CPVC 1½ in NPT compression fitting
- 67090 CPVC ball valve with 1½ in NPT process connection
- 67374 316 SS ¾ in NPT compression fitting
- 67375 316 SS ball valve with 1 in NPT process connection

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## MAINTENANCE AND TECHNICAL SERVICE

### Technical Service/Return Material Procedure

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 **Technical Support for Lakewood Instruments can be reached by calling (800) 228-0839 or faxing (414) 355-3508, Monday through Friday, 7:30 a.m. - 5:00 p.m. CST.**

 **Mail and returns should be sent to:**

**Lakewood Instruments  
7838 North Faulkner Road  
Milwaukee, WI 53224 USA**

When any merchandise is returned to the factory, please call and obtain a return goods authorization (RGA) number and have the following information available:

- Customer's name, address, phone and fax numbers (shipping and billing).
- A hard copy purchase order number (no exceptions) for cases where repairs or parts are required that are not under warranty.
- A contact person's name and phone number to call if the equipment is beyond repair or to discuss any other warranty matter.
- Equipment model and serial numbers.
- Reason for return (i.e., repair, warranty, incorrect part, etc.).

We will then fax to your attention an RGA form that must accompany the returned item.

**NOTE: THE RGA NUMBER MUST BE CLEARLY WRITTEN ON THE OUTSIDE OF THE PACKAGE(S) BEING RETURNED.**

**ANY ITEMS SENT BACK TO THE FACTORY  
WITHOUT AN RGA NUMBER WILL BE REFUSED  
AND RETURNED TO SENDER**

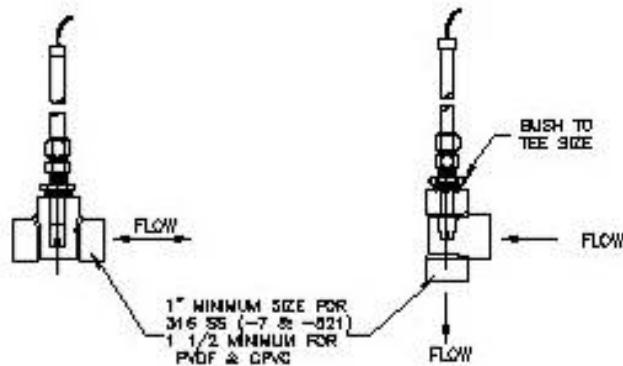
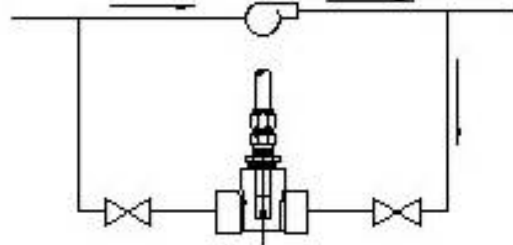
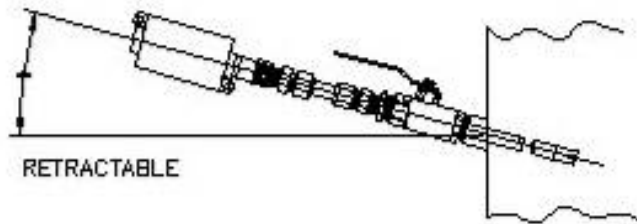
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## **DRAWINGS**

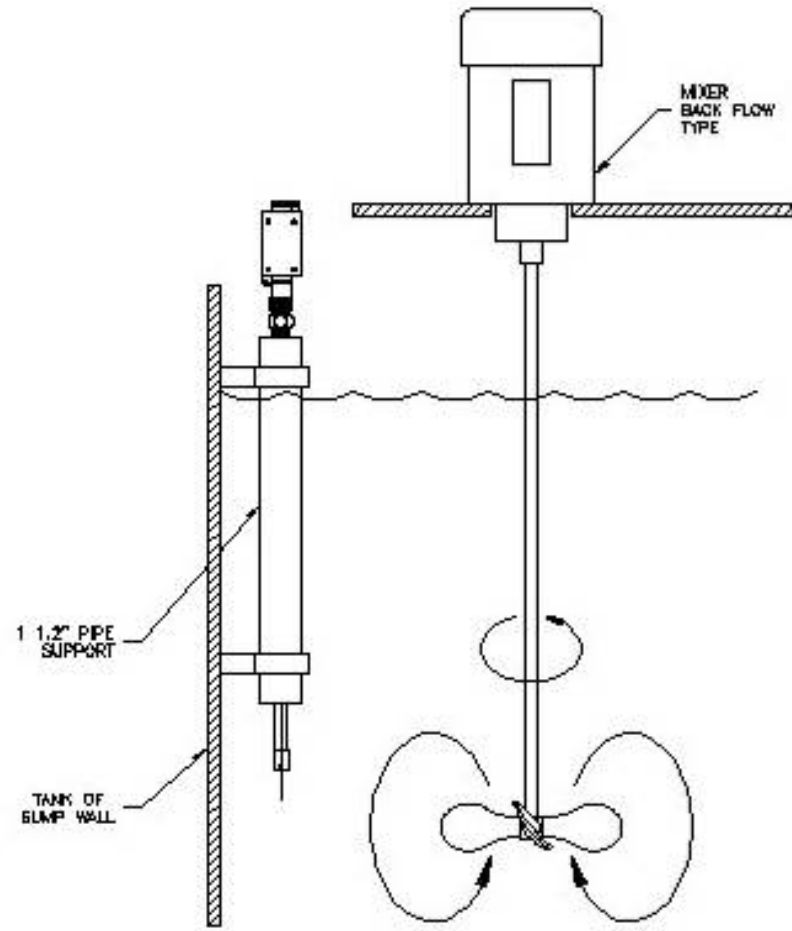


pH/ORP SENSOR MOUNTING SUGGESTIONS

REVISION HISTORY						
REV	CHK	DESCRIPTION	ISS	BY	DATE	APP
A		RELEASE	1004	EV	5/18/07	



BYPASS FLOW CELL



<p>NOTICE OF REVISIONS</p> <p>DATE: 05/18/07</p> <p>REV: 1</p> <p>BY: EV</p> <p>APP: [Signature]</p>		<p><b>Lainwood</b> INSTRUMENTS</p> <p>INSTALLATION LAYOUT</p> <p>520, 521, 530 pH/ORP MOUNT SENSOR</p> <p>1B40520_1a</p> <p>REV A</p>
<p>DATE: 05/18/07</p> <p>REV: 1</p> <p>BY: EV</p> <p>APP: [Signature]</p>	<p>DATE: 05/18/07</p> <p>REV: 1</p> <p>BY: EV</p> <p>APP: [Signature]</p>	
<p>DO NOT SCALE</p>		<p>SCALE: NONE</p> <p>SHEET: 1 OF 1</p>



**For more information call toll free in the USA (800) 228-0839**

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**Manufactured in the USA**

## **Lakewood Instruments**

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