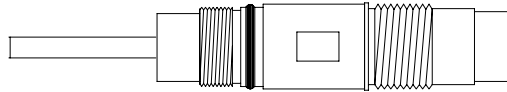


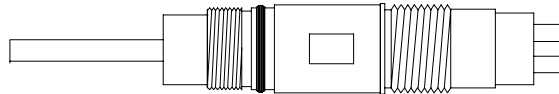
**LAKWOOD INSTRUMENTS**  
**MODEL 543**

**4-ELECTRODE CONDUCTIVITY**  
**SENSORS**

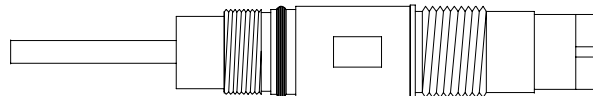
*INSTALLATION & OPERATION MANUAL*



**543-M**



**543-L**



**543-LL**

**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 an Lakewood Instruments product.



# MODEL 543

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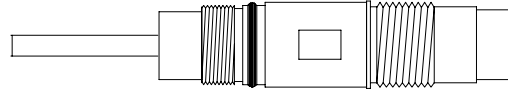
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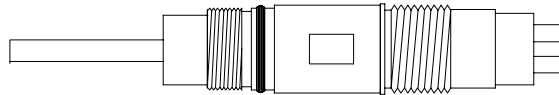
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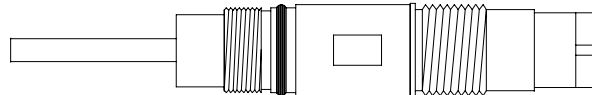
## 543 SERIES 4-ELECTRODE CONDUCTIVITY SENSORS



**543-M**



**543-L**



**543-LL**

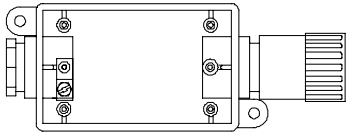
### Body Specifications

Option	Body Material	Max Temp	Pressure	Wetted Materials
-5x	CPVC	150°F (66°C)	100 psi (7 bar)	CPVC, Glass, Carbon, Viton
-8x	316 SS	260°F (127°C)	150 psi (10 bar)	316 SS, Glass, Viton

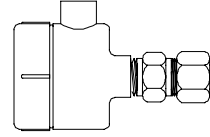
### Electrode Specifications

Electrode	Conductivity Range	Temp Compensator	Max Temp	Max Pressure
543-M	500-100,000 $\mu$ S	4K NTC	392°F (200°C)	250 psi (17 bar)
543-L	100-1,000 $\mu$ S	4K NTC	392°F (200°C)	250 psi (17 bar)
543-LL	10-500 $\mu$ S	1K NTC	392°F (200°C)	250 psi (17 bar)

## Enclosures



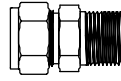
- 1 NEMA-4X w/amplifier\*
- 5 NEMA-4X



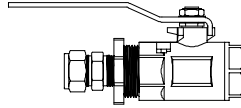
- 2 Cl I, II w/amplifier\*
- 3 Cl I, II

## In-line Mounting Options

(All sensors have 3/4 NPT on sensor tip)



- 8I 1 inch NPT 316 SS Swagelock



- 8R 1 1/2 inch NPT 316 SS Ball valve

## Ordering Information

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Cond Sensor	Cable Length or Enclosure	Material, In-line Fitting	Body Length	Electrode
543-M	-0 1/2 in NPT adapter	-4T 4 in steel adapter (must use 5.5 Option)	-5.5 in	-STD
543-L	-1 NEMA-4X w/amplifier*	-5S CPVC no fitting	-10 in =	
543-LL	-2 Aluminum encl w/amp*	-8S 316 SS no fitting	-18 in	
	-3 Aluminum enclosure	-8I 316 SS w/Swagelock fitting 1 in NPT	-48 in	
	-4 240 in of cable	-8R 316 SS w/ball valve 1 1/2 in NPT		
	-5 NEMA-4X enclosure			

### Example

543-M	-4	-8R	-18	-STD
-------	----	-----	-----	------

\* Amplifier options -1 and -2 are only available with Model 175-RP, 843 and 1040 controllers.

= 10 in body not available with -8R Option.



## Installation

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The Conductivity sensor may be mounted in any position as long as water is always in contact when measuring process water. Avoid connections in “dead leg” sections of pipe. An air pocket around the electrode tips will cause erroneous readings. The sensor electrodes should be in direct contact with the process flow (see DWG #04259 in the back of this manual).

The 543 series sensors have 6 wires. They are as follows:

- Black wire                      Electrode
- Red wire                        Electrode
- White wire                      Electrode
- Green wire                     Electrode
- Black wire                      Temp compensation 4K NTC or 1K PTC
- Black wire                      Temp compensation

Cable length of Conductivity sensors is measured from the electrode tips to the end of the wire. Twenty (20) feet is the maximum cable length. Lakewood Instruments guarantees operation up to 20 feet. If a cable extension is used, Lakewood Instruments will not guarantee operation of the sensor.

## **Storage**

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Conductivity sensors may be stored for years. No special handling procedures are required for storage.

## **Sensor Life**

---

Conductivity sensor life varies with the following:

- Type of process water and chemicals used.
- Temperature of water.
- Pressure of water.

Ambient temperatures, low pressures, and water with no chemicals are ideal for longest life.

## **Cleaning**

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Conductivity sensors may be cleaned with a nylon brush or clean paper towel. Cleaning frequency will vary with the type of process water. Cleaning should be done at least once a month or if conductivity readings become unstable.

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## REPLACEMENT PARTS

### Replacement Tips

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543 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. Replacement numbers are as follows:

**All sensor tips come with 20 ft cable. Cable can be cut to fit.**

543M-STD Standard replacement titanium/316 SS sensor tip

543L-STD Standard replacement titanium/316 SS sensor tip

543LL-STD Standard replacement titanium/316 SS sensor tip - (for Model 1743 only)

### Accessories

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#### ADAPTER

68893 Adapter from sensor cable end to  $\frac{3}{4}$  NPT female

69168 316 SS compression fitting, 1 in NPT connection

69058 316 SS Ball valve  $1\frac{1}{2}$  in NPT connection

#### PREAMP

67230 Remote conductivity preamp

68900 Manual for remote conductivity preamp

66317 Preamp cable. 4 conductor shielded. per ft

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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.**

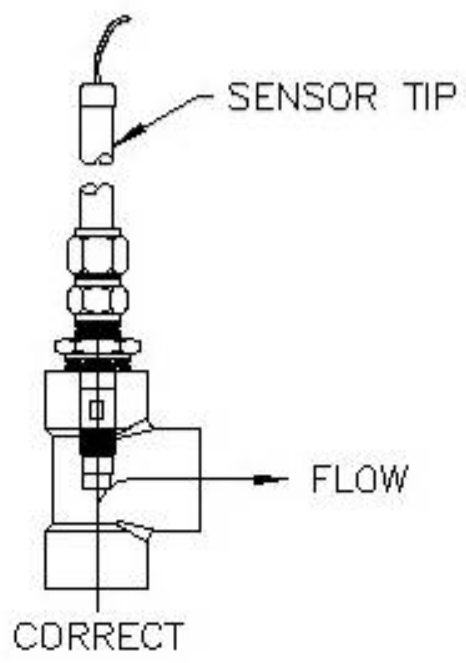
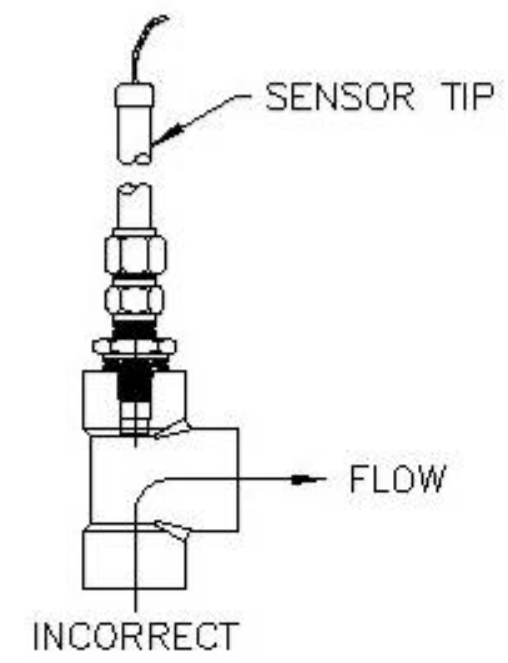
**ANY ITEMS SENT BACK TO THE FACTORY  
WITHOUT AN RGA NUMBER WILL BE REFUSED  
AND RETURNED TO SENDER**

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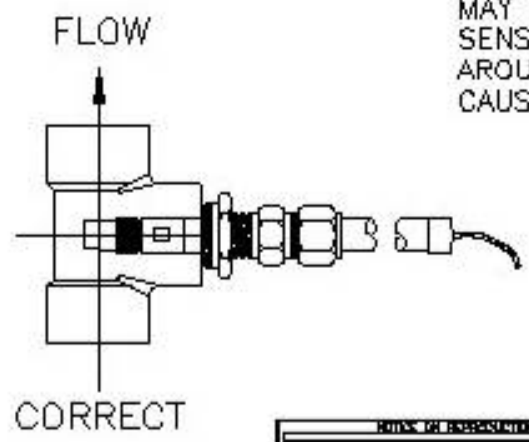
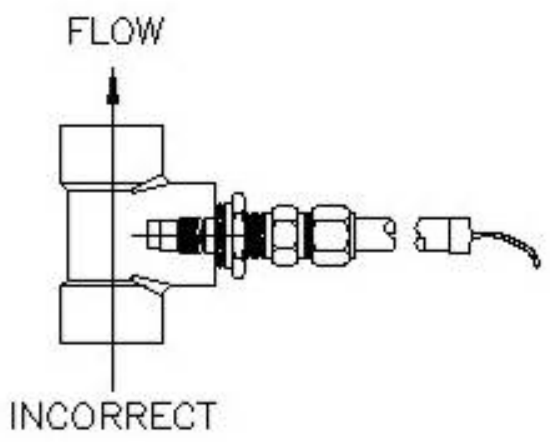
## **DRAWINGS**



REVISION HISTORY						
REV	DATE	DESCRIPTION	BY	CHK	DATE	APP
A		RELEASE	RELEASE	1004	07	01/11/07



NOTE: TO ENSURE PROPER FUNCTION, SENSOR TIP MUST BE FULLY IMMERSUED WITHIN THE ACTIVE PROCESS STREAM. IF INSTALLED INCORRECTLY, AIR MAY ACCUMULATE AROUND THE SENSOR TIP, OR, LIMITED FLOW AROUND THE SENSOR MAY CAUSE INACCURATE READINGS.



TITLE BLOCK				Lakewood INSTRUMENTS	
DATE		REV	DESCRIPTION	BY	CHK
PART		DATE	DATE	DATE	DATE
ORDER NO.		REV	DATE	DATE	DATE
PART NO.		DATE	DATE	DATE	DATE
CUSTOMER USE		DATE	DATE	DATE	DATE
DO NOT SCALE		DATE	DATE	DATE	DATE
<div style="display: flex; justify-content: space-between;"> <div> <p>1108740-10</p> <p>1 OF 1</p> </div> <div> <p>TEL</p> <p>INSTALLATION LAYOUT</p> <p>540 &amp; 545 COND. SENSORS</p> </div> <div> <p>1108740-10</p> <p>REV A</p> </div> </div>					







**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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