1 YEAR WARRANTY

User's Guide

LVCF/LVCR/LVCP, LVCN4000 and LVCN200 Series Conductive Level Switches

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Introduction

Conductive level switches are designed to control the level of all conductive mediums with up to 5 different points of level control.
Models are available with fixed rigid rods, removable rigid rods, with pendular electrodes attached to the housing with cables, and also built-in units.

Wetted parts and connections are made with 316 S.S. and are isolated with a Teflon joggle. Rods can be Teflon coated, when the probe is applied in agressive or sticky mediums prone to build up.

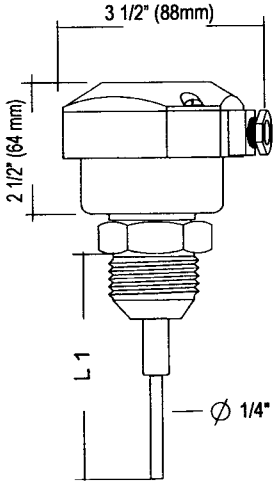
The probes work through the variation of the electrical resistance between the reference electrode and the level control electrode. Conductive Level Switches detect the level resistance when their electrodes are covered by the medium. An electrically conductive tank wall may be used as the reference electrode. If the tank is made of plastic, concrete or any other non-conductive material, an additional electrode is required to act as a reference.

- Easy to install and operate
- Built in units (probe and controller)
- Up to 5 points of level control
- Rods can be coated when necessary
- Available with 316SS, sanitary, flange or threaded connections

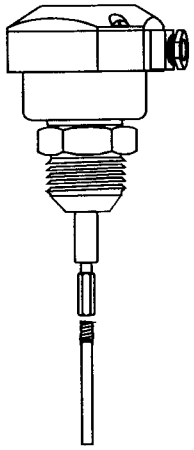
PROBES
LVCF (1 to 5) - fixed rods
LVCR (1 to 5) - removable rods
LVCP (1 to 5) - pendular electrodes

These models are all used along with an external controller.

LVCF



LVCR



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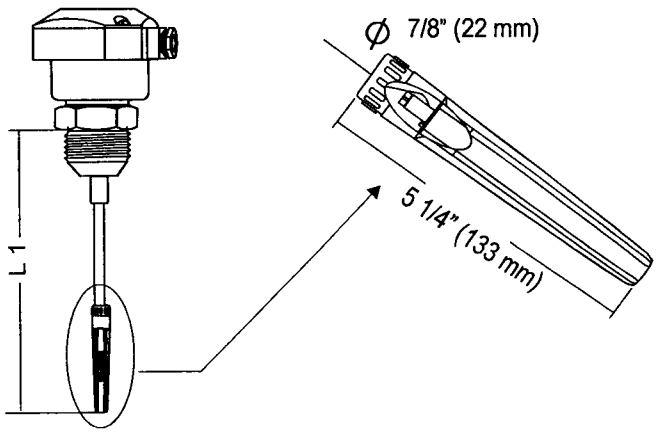
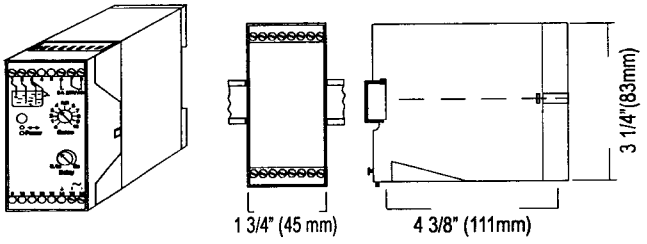
LVCP



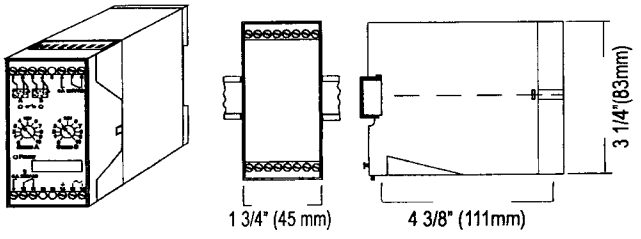
CONTROLLERS:

LVCN-201 AND LVCN-202
controls the differential of minimum and maximum level.
LVCN-203 AND LVCN-204
controls two independent levels.

LVCN-201
LVCN-202

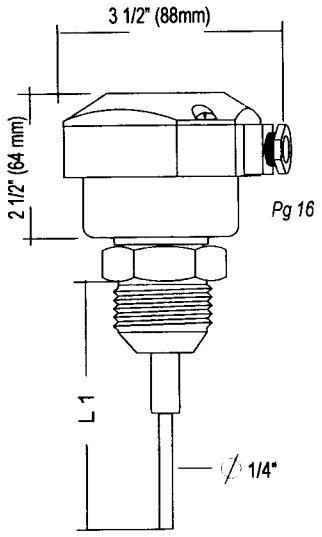


LVCN-203
LVCN-204

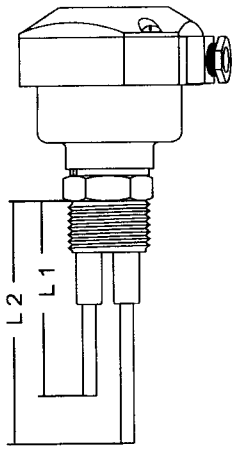


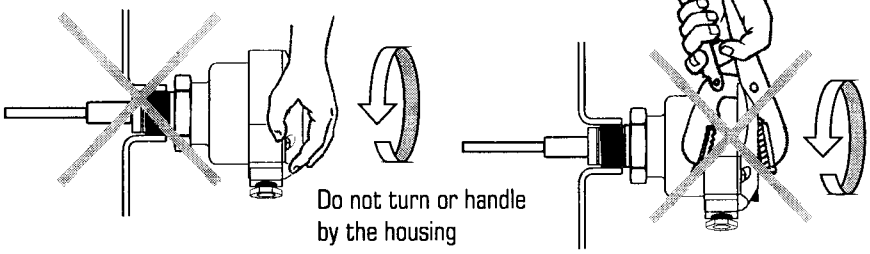
Conductive level switch with built-in controllers

LVCN 4100

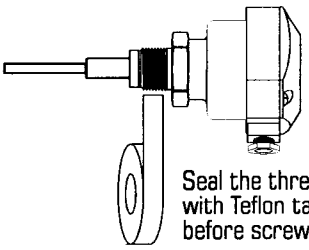


LVCN 4200

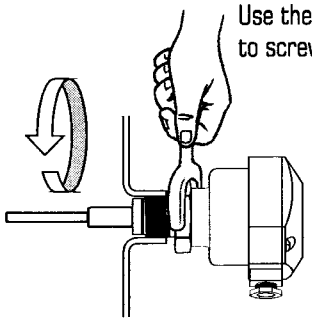




Do not turn or handle
by the housing



Seal the thread
with Teflon tape
before screwing



Use the correct tool
to screw the switch

Pre-Installation Checks:

Before installing the Conductive Level Switch, check if the wire connections are correct and that the available power supply is compatible with the controller.

Check if the operating pressure and temperature of the process corresponds to the correct model of the sensor.

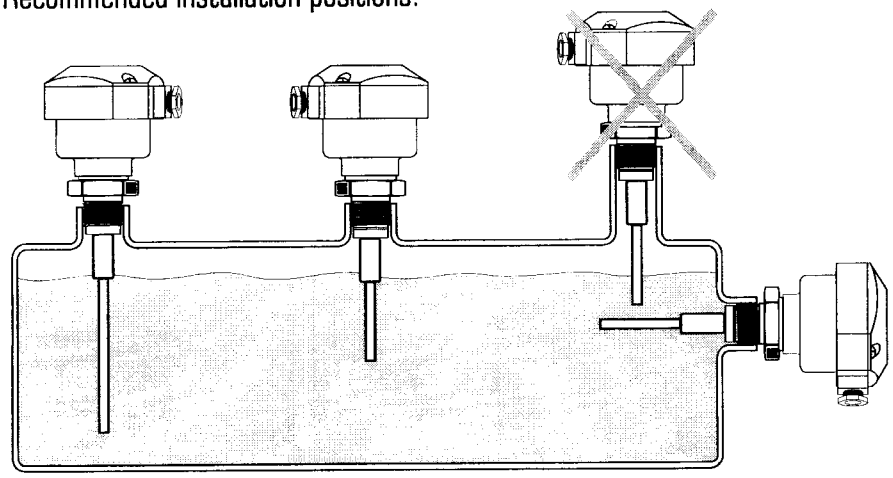
Installation

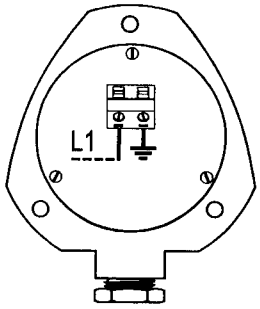
The Conductive Switch must be installed utilizing the type of connection provided. The tank must be free from turbulence or vortices throughout use. When tightening the switch, only use the hexagon fitting to achieve a seal, do not twist by the housing.

When installing the switch either directly to the tank, or utilizing a "T" connection, make sure that the rod extends beyond the inner wall of the tank so that internal build up or other debris does not interfere with the performance of the switch.

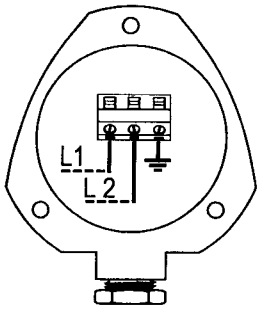
Care should also be taken when handling and installing switches with coated rods. Scratching the coating could interfere with the switch performance.

Recommended installation positions:

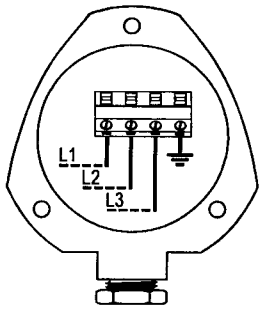




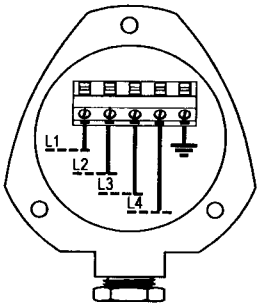
LVCF 01 - Fixed rod
LVCR 01 - Removable rod
LVCP 01 - Pendular electrode



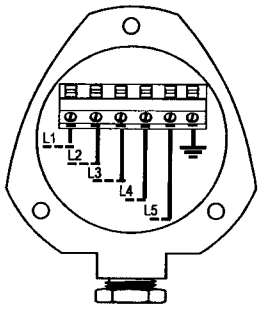
LVCF 02 - Fixed rods
LVCR 02 - Removable rods
LVCP 02 - Pendular electrodes



LVCF 03 - Fixed rods
LVCR 03 - Removable rods
LVCP 03 - Pendular electrodes

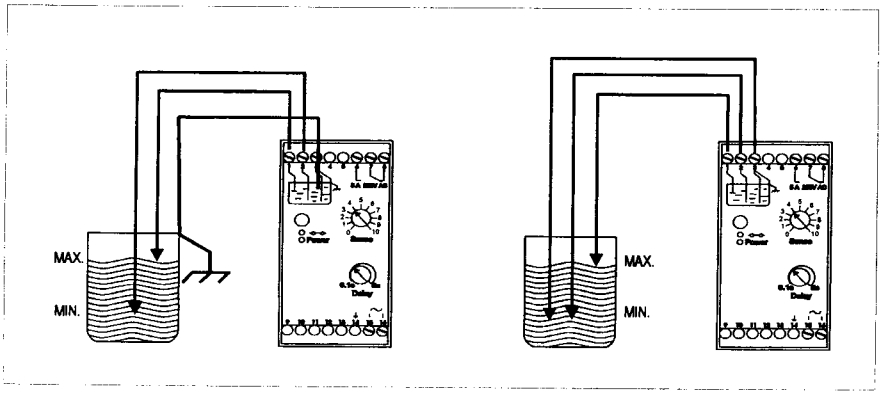


LVCF 04 - Fixed rods
LVCR 04 - Removable rods
LVCP 04 - Pendular electrodes

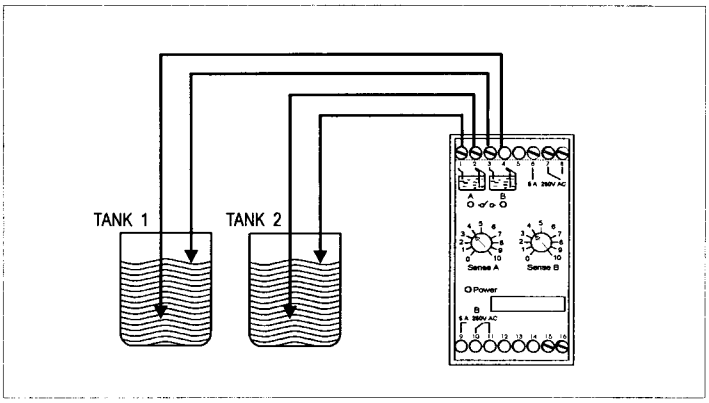


LVCF 05 - Fixed rods
LVCR 05 - Removable rods
LVCP 05 - Pendular electrodes

Relay LVCN-201 and LVCN-202

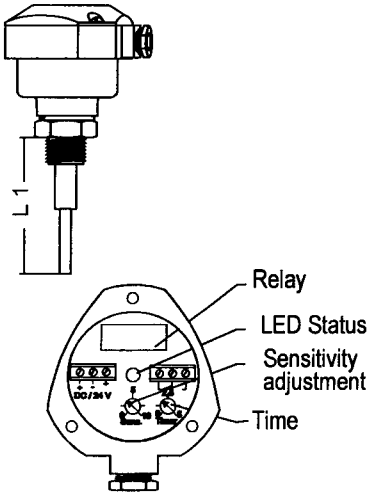


Relay LVCN-203 and LVCN-204

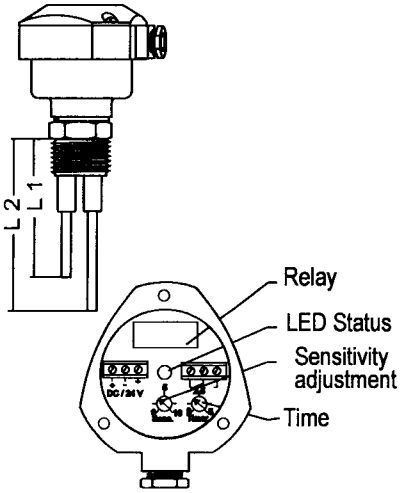


Conductive Level Switch with Built-in controllers

LVCN 4100

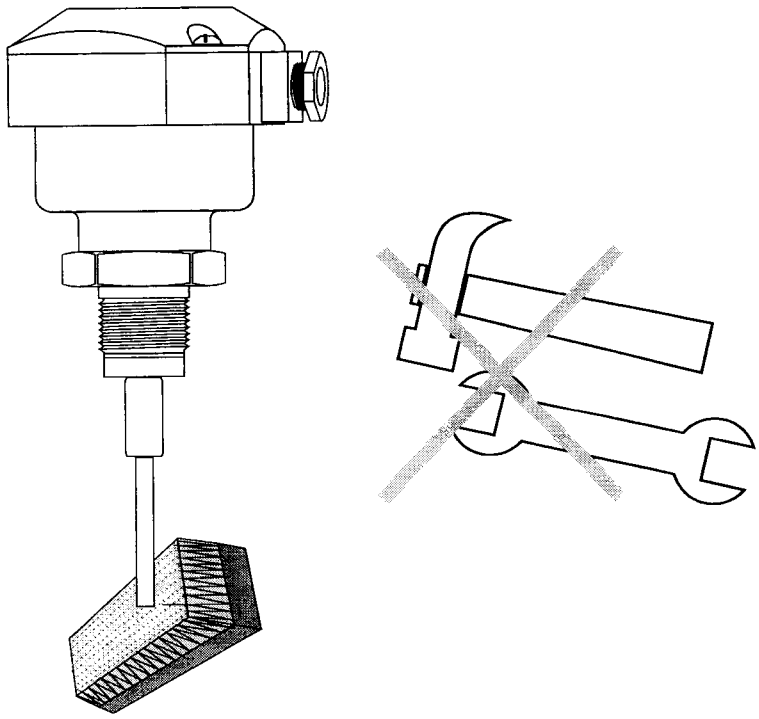


LVCN 4200



PROBES:

Care should be taken when cleaning coated rods to avoid scratching them.



When cleaning the rods use a soft brush or any other similar object.

MODELS	LVCF 01 - Fixed rod LVCR 01 - Removable rod LVCP 01 - Pendular electrode	LVCF 02 - Fixed rods LVCR 02 - Removable rods LVCP 02 - Pendular electrodes	LVCF 03 - Fixed rods LVCR 03 - Removable rods LVCP 03 - Pendular electrodes	LVCF 04 - Fixed rods LVCR 04 - Removable rods LVCP 04 - Pendular electrodes	LVCF 05 - Fixed rods LVCR 05 - Removable rods LVCP 05 - Pendular electrodes
Application	Level of Conductive liquids in tanks and pipes	Level of Conductive liquids in tanks and pipes	Level of Conductive liquids in tanks and pipes	Level of Conductive liquids in tanks and pipes	Level of Conductive liquids in tanks and pipes
Process connection	1/2" ... 1 ½" BSP or NPT sanitary and flanges	3/4" ... 1 ½" BSP or NPT sanitary and flanges	1" ... 1 ½" BSP or NPT sanitary and flanges	1 ½" BSP or NPT sanitary and flanges	1 ½" BSP or NPT sanitary and flanges
Electrical connection	cable gland	cable gland	cable gland	cable gland	cable gland
Electrode	1 fixed rod 1 removable rod 1 pendular by cable	2 fixed rods 2 removable rods 2 pendular by cable	3 fixed rods 3 removable rods 3 pendular by cable	4 fixed rods 4 removable rods 4 pendular by cable	5 fixed rods 5 removable rods 5 pendular by cable
Length	Rod: 0,33 up to 6,57ft (100mm up to 2000mm) Cable: 1,64ft up to 65,7 ft (500mm up to 20000mm)	Rod: 0,33 up to 6,57ft (100mm up to 2000mm) Cable: 1,64ft up to 65,7 ft (500mm up to 20000mm)	Rod: 0,33 up to 6,57ft (100mm up to 2000mm) Cable: 1,64ft up to 65,7 ft (500mm up to 20000mm)	Rod: 0,33 up to 6,57ft (100mm up to 2000mm) Cable: 1,64ft up to 65,7 ft (500mm up to 20000mm)	Rod: 0,33 up to 6,57ft (100mm up to 2000mm) Cable: 1,64ft up to 65,7 ft (500mm up to 20000mm)
Enclosure Material	Glass filled nylon	Glass filled nylon	Glass filled nylon	Glass filled nylon	Glass filled nylon
Temperature operation	14 to 248° F (-10 to 120°C)	14 to 248° F (-10 to 120°C)	14 to 248° F (-10 to 120°C)	14 to 248° F (-10 to 120°C)	14 to 248° F (-10 to 120°C)
Max pressure	290 PSI (20 Bar)	290 PSI (20 Bar)	290 PSI (20 Bar)	290 PSI (20 Bar)	290 PSI (20 Bar)
Class Protection	IP 65	IP 65	IP 65	IP 65	IP 65

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MODELS	LVCN-201 LVCN-202	LCVN-203 LVCN-204
Application	Control of min.and max.level for conductive level probes	Control of 2 different levels for conductive level probes
Operating Voltage	24 Vdc (+/- 10%) 115 or 230 Vac (50/60Hz)	24 Vdc (+/- 10%) 115 or 230 Vac (50/60Hz)
Current Consumption	2 VA	3 VA
Sensitivity adjustment	0.5 to 50K Ohms (potentiometer)	0.5 to 50K Ohms (potentiometer)
Output	Relay (SPDT) 5A max (250Vac)	2 Relay (SPDT) 5A max (250Vac)
Time delay	0.1 to 5 seconds	1 second
Operating Temperature	14° to 140°F (-10 to 60°C)	14° to 140°F (-10 to 60°C)
Enclosure material	ABS	ABS
Mounting	DIN rail or screws	DIN rail or screws
Class Protection	IP 40	IP 40

MODELS	LVCN-4100	LVCN-4200
Application	Level detection of conductive liquids in tanks and pipes	Level detection of conductive liquids in tanks and pipes
Operating voltage	24 Vdc +/- 10%	24 Vdc +/- 10%
Current Consumption	Max. 2VA	Max. 2VA
Electrical connection	Cable gland or M12 connector	Cable gland or M12 connector
Output	Relay (SPDT) 5A max (250Vac)	Relay (SPDT) 5A max (250Vac)
Output voltage for the electrodes	12V - 100Hz	12V - 100Hz
Sensitivity adjustment	0.5 to 50K Ohms (potentiometer)	0.5 to 50K Ohms (potentiometer)
Time delay	0.1 to 5 seconds	0.1 to 5 seconds
Proccess connection	1/2" ... 1 ½" BSP or NPT sanitary and flanges	3/4" ... 1 ½" BSP or NPT sanitary and flanges
Electrodes	Single - 316 SS fixed rod	minimum and maximum - 316 SS fixed rod
Length	0,33 to 6,57 ft (100mm to 2.000mm)	0,33 to 6,57 ft (100mm to 2.000mm)
Enclosure Material	Glass filled nylon	Glass filled nylon
Max pressure	290 PSI (20 Bar)	290 PSI (20 Bar)
Temperature operation	14 to 248° F (-10 to 120°C)	14 to 248° F (-10 to 120°C)
Class Protection	IP 65	IP 65

Fault	Cause	Solution
Does not switch	No LED, no power	Check power supply
	LED ON	Check cable resistance (max. Must be 40kΩ)
	LED ON	Check if medium is conductive
Continuously switching	LED ON	Check sensitivity adjustment
	LED ON	Check medium temperature. If there is vapor presence we recomend the use of coated rods.
	LED ON	Check rods build up

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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