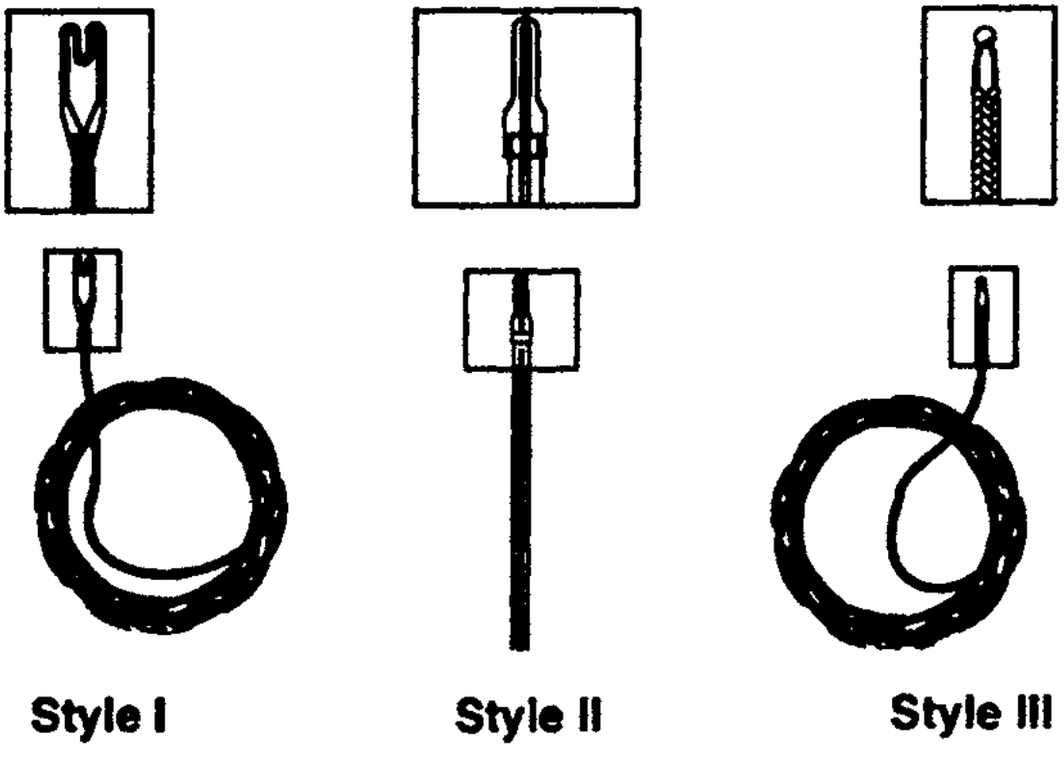
1 YEAR WARRANTY

OMEGA™

User's Guide



Style I Style II Style III

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CO1, CO2, CO3
"Cement-On" Thermocouples

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Section 1 General Description

Style I "Cement-On" Thermocouples are made from 0.0005" thick thermocouple foil embedded between two layers of high temperature polymer/glass laminate. This laminate generally limits the maximum temperature for construction to 260°C (500° F) continuous, 370° C (698°F) for short duration.The insulated lead wire is silicone impregnated glass braid. The silicone impregnation provides abrasion resistance, but is destroyed at approximately 205°C (400° F). The glass braid provides electrical insulation to 480°C (896° F).

Style II "Cement-On" sensors are made from .0005" foil with .002" leads. The foil leads are fastened to a polyimide film frame which is a tough, flexible, dimensionally stable material rated for 260°C (500° F) continuous service.

NOTE: SENSORS ARE FRAGILE, HANDLE THEM CAREFULLY.

Style III "Cement-On's" are made from 30 gauge (0.010") diameter thermocouple wire. The thermocouple is bead welded and embedded between two layers of paper thin polyimide film. This film is rated up to 370° C (698°F). The insulated lead wire is silicone impregnated glass braid with the same qualities listed above for Style I. The table on the following page lists the maximum temperature for the three styles of thermocouples.

Style	Thermocouple Type	Maximum Temperature °C Continuous	600 hr	10 hr	Catalog Number
I	K Chromega®-Alomega™	260	315	370	CO1-K
	E Chromega®-Constantan	260	315	370	CO1-E
	T Copper-Constantan	150	205	260	CO1-T
II	K Chromega®-Alomega™	540	540	650	CO2-K
	E Chromega®-Constantan	425	425	540	CO2-E
	T Copper-Constantan	150	150	260	CO2-T
III	J Iron-Constantan	260	315	370	CO3-J
	K Chromega®-Alomega™	260	315	370	CO3-K
	E Chromega®-Constantan	260	315	370	CO3-E
	T Copper-Constantan	205	260	370	CO3-T

Section 2 Installation

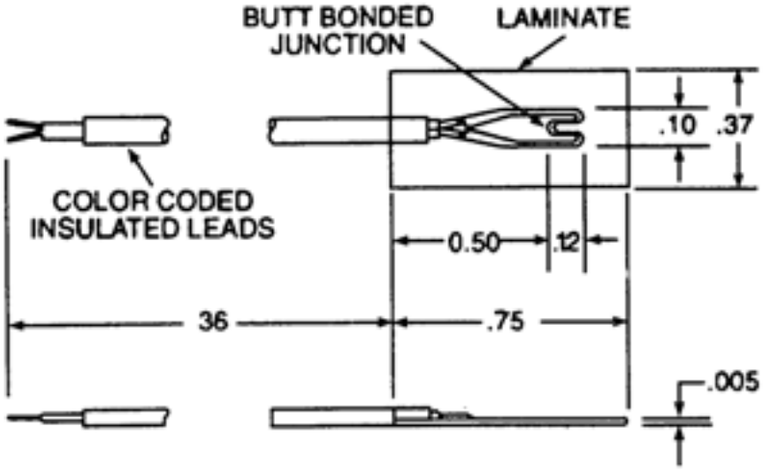
2.1 Using Adhesives

1. "Cement-On" Thermocouples can be bonded to most surfaces using OB Epoxy Adhesives 100, 101, and 200. Each epoxy has different temperature ratings, cure characteristics, and thermal conductivity factors. Refer to the Omega Temperature Measurement Handbook for more information on OB Epoxies.
2. When using epoxies, be sure that the surfaces to be bonded are clean. Use an appropriate solvent or detergent for cleaning.
3. For temperatures above 500°F, use Omega CC High Temperature Cement to bond Style II "Cement-On" Thermocouples to most metals and ceramics. CC Cement is not recommended for Style I and Style III "Cement-On's".
4. For applications under 260°C (500°F), use OB 200 Epoxy.
5. OB 200 is a specially formulated epoxy with high thermal conductivity. To retain the fast speed of response, use a thin layer of adhesive.

2.2 Installation Tips

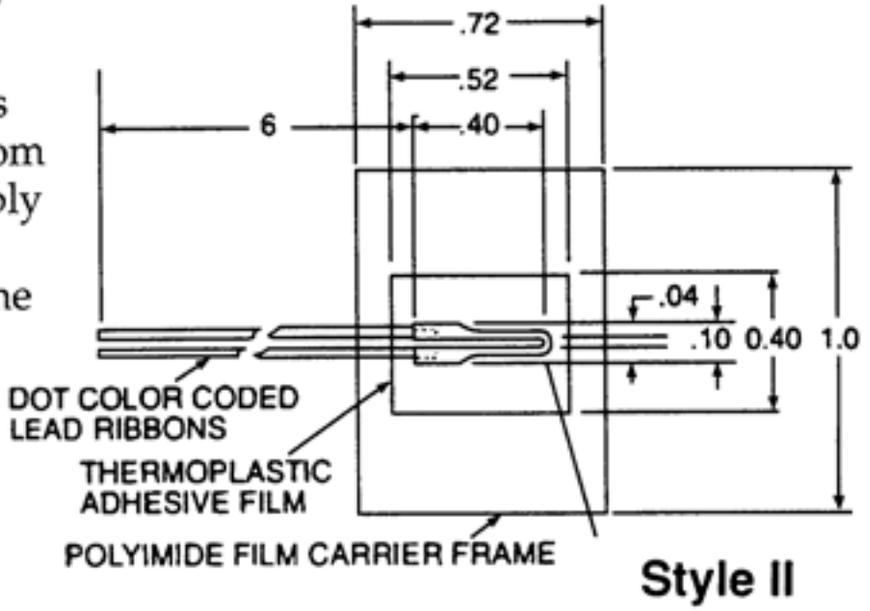
Style I: Use a clamp to strain relief the lead wire downstream from the sensor.

Style I



Style II:

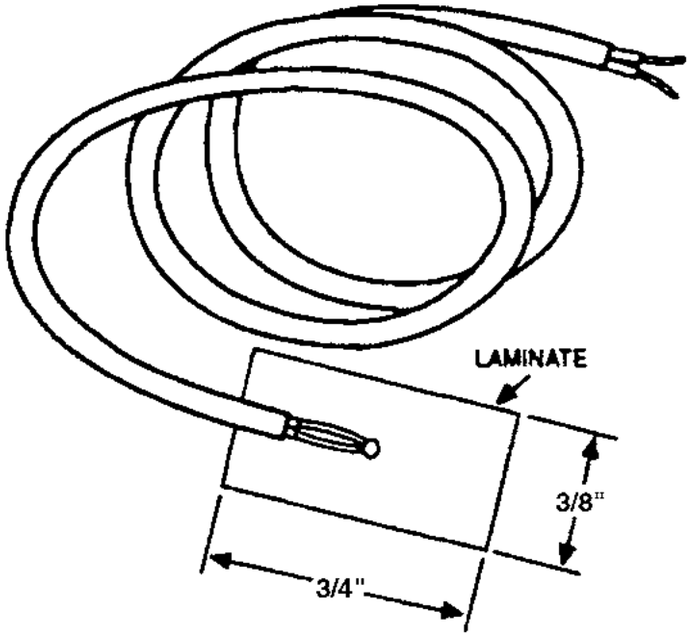
1. During application, the foil thermocouple can either be peeled from the frame or released by applying heat.
2. The .002" foil leads are uninsulated. Before working on electrically conductive surfaces, lay down a thin layer of insulating Omega CC Cement or OB Epoxy and let it dry. This ensures that the leads are fully insulated from the surface. Then apply a thin layer of the cement or epoxy to the surface, and brush the leads into it (use this step alone for non-conductive surfaces).



Style II

3. Bond insulated thermocouple lead wire to the foil leads by silver soldering or resistance welding. Use thirty gauge insulated thermocouple lead wire such as GG- (K or E or T) -30. Refer to the Omega Temperature Measurement Handbook for information on thermocouple wire.
4. Install Type T (Copper/Constantan) foil junction by carefully pressing into a flowed thin layer of soft solder.
5. Type K (Chromega®/Alomega™) and Type E (Chromega®/Constantan) will not bond properly with soft solder. However, with care and skill, a bond can be made using a low temperature silver solder of less than 1000°F.

Style III: These "Cement-On" Thermocouples may be bonded to most surfaces using the same technique as for Style I.



Style III

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 in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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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.

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