

# Micro Motion Meter Jacket

## Jacketed Micro Motion Meters

The purpose of this bulletin is to help you better recognize and understand heated process applications that involve meters and to assist our customers in selecting a meter heating system that meets their expectations for trouble-free performance.

### What is a heating jacket and what is it used for?

Many chemical processes operate at elevated temperatures. Although most process lines are well insulated, the heat given up through the insulation can be substantial. Therefore a heating device, a jacket, is needed to compensate for the heat loss.

Sometimes the process must be maintained within a narrow temperature band as it travels a plant through piping, valves, pumps, tanks, and our meters.

At other times the process may have very wide temperature parameters or require only "freeze protection".

Energy, in the form of electrical resistance or a fluid heating medium (steam, water/glycol, hot oil vapor or hot oil liquid) is supplied to the jacket, which keeps the meter hot, which keeps the process hot.

### ControHeat jackets made by Controls Southeast, Inc.:

Customers should seriously consider using ControHeat jackets whenever:

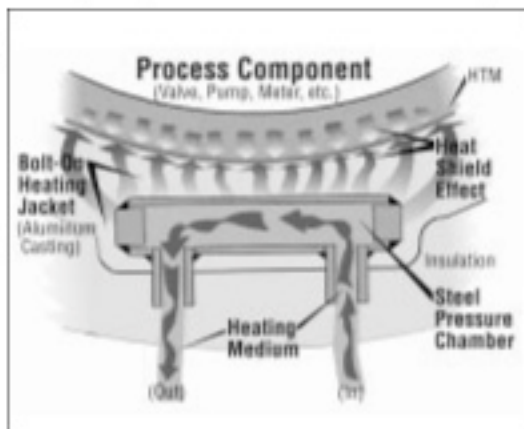
- The processing temperature envelope is tight (the minimum and maximum allowable process temperatures are close together).
- When processes operate at a relatively low temperature (below 200°F) but represent difficult thermal maintenance challenges because of their narrow temperature windows.
- When processing temperatures are above 200°F.
- When melting out capability is a primary concern.



(Melting out is required when a process heating system goes down, for whatever reason, and process lines freeze up. The process solidifies. To restart the system, the process must be melted out.)

ControHeat jackets are model specific. They are castings made from patterns produced for specific models and sizes of Micro Motion meters. The jackets closely fit the meter, allowing for bolting clearance at back of the meter flanges and power/signal connections to the meter.

During the manufacture of the jacket, a steel pressure chamber is embedded in the aluminum casting. In operation, a heating medium flows through the pressure chamber which rapidly heats the aluminum which transfers the heat to the meter. The customer is responsible for providing the heating fluid.



The ControHeat jackets are available for standard design use at 150PSIG (10BAR) and 500°F (292C). The jackets can be produced for heating media having temperatures to 750°F (400C) and pressures to 600PSIG (40BAR).

(The higher pressures and temperatures involve additional design considerations and may involve additional charges.)

ControHeat jackets are also available with an electric heating option. There are two choices of electrical elements: 1. Cast-in tubular elements and

2. Replaceable cartridge heaters.



#### Accessories:

**ControCover soft insulation jackets** are provided along with the ControHeat cast aluminum jackets. It is installed after the heating jacket is installed in the process line. The insulation jacket comes with pre-sewn slits that accommodate heating medium connections to the jacket.

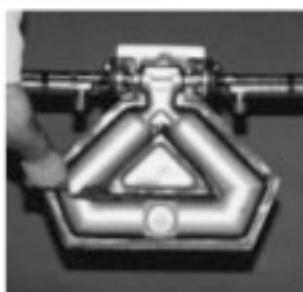
**Jumper hoses** are provided with each 2-piece jacket to bring the heating medium from one half of the jacket over to the other half of the jacket. Jumper hose lengths are specific to the jacket pattern being provided.

**Heat Transfer Cement** is used to ensure effective heat transfer by filling any air gaps between the jacket and meter. Proper installation of the ControHeat jacket includes heat transfer cement, however, there are occasions when heat transfer cement cannot be used as with some sanitary and food grade services. If you are unsure when to use cement, consult CSI.

### How are the jackets installed?



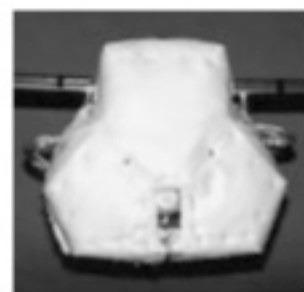
1. Install Micro Motion Meter into process line.



2. Place heat transfer cement between meter and jacket.



3. Bolt two halves of jacket together. Install jumper hoses.



4. Install ControCover insulation jacket.

### Removing the CSI ControHeat bolt-on jacket for service to the meter:

Servicing the meter is simple. Just unbolt the jacket, remove, service the meter, and re-install the jacket. Can you take the jacket off if you used heat transfer cement? Using a soft headed hammer, knock off the high spots of the cured cement, apply more cement, and re-install the jacket. If frequent removal of the jacket is expected, line the meter with heavy duty aluminum foil before applying the heat transfer cement.

### Soft insulating covers having stainless steel tube tracing (to convey fluid heating media), or electrical resistance tracing made by Micro Motion:

**These covers are recommended only for use in freeze-protection applications and applications that tolerate wide variations in processing temperature.**

The tracers are located adjacent to the interior surface of the blanket cover. When the cover is installed, the tracers are very close to the exterior surface of the meter. While the average temperature inside the cover may be near or at the required processing temperature, the tracer temperature may be much higher. If inlet and outlet passages of the meter are adjacent to the tracer, "hot spots" can develop. The process must be able to tolerate hot spots. Your customer should know if his process can tolerate these hot spots. If the customer is unsure of the temperature parameters, consult the factory.

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## Typical applications for meter jackets:

### ControHeat Cast Aluminum Jacket:

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|-----------------------|-----------------------|
| a. Chocolate          | m. Cyanuric Chloride  |
| b. Sulfur             | n. Edible Oils        |
| c. Caprolactam        | o. Hot Melt Adhesives |
| d. DMT                | p. Phosphorus         |
| e. Nylon              | q. Polystyrene        |
| f. Maleic Anhydride   | r. Polyesters         |
| g. Phthalic Anhydride | s. Sucrose            |
| h. Acrylic Acid       | t. Silicones          |
| i. Ammonium Nitrate   | u. Tall Oil           |
| j. Benzoic Acid       | v. Terephthalic Acid  |
| k. Bisphenol-A        | w. DNT                |
| l. Coal Tars          |                       |

### Traced Insulation Cover:

- a. Food Grade Oils
- b. Water
- c. Caustics
- d. Most Acids
- e. Alcohol
- f. Formaldehyde
- g. Hydrogen Peroxide

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## What Questions About The Application Should We Ask?

- a. What's the temperature of the process to be maintained?
- b. What's the temperature envelope of the process, the maximum and the minimum?
- c. What heating medium will be used - a heating fluid or electrical energy? Determine the full particulars. If it's a fluid - what type, what pressure and what temperature? If it is electrical - what is the voltage and what NEMA or CSA class of service?
- d. What type of jacket connections are required? For fluid heating media there are many types. The customer usually specifies the type. For traced insulating covers it may be a compression fitting. For the ControHeat jacket it may be a class 300# weld neck flange or socketweld coupling (the standard fluid connection is a 3/4" 3000# NPT threaded coupling).
- e. For electrical ControHeat jackets, what type of connectors and junction boxes are required?
- f. Is special testing, inspection, or documentation required?
- g. Is it for use in Canada? The cast aluminum jacket carries a CRN (Canadian Registration Number), but will only be properly tagged if requested with order (no extra charge).