Engineered Solutions With Advanced Technology in Cast-In Thermo-Platens

Tempco specializes in innovative engineering and manufacturing of thermal components. Coupled with our diverse foundry and machine shop capabilities, this expertise provides the know-how behind our product line offering of large electrically heated platens that are manufactured by using our cast-in heater technology.

This casting process incorporates the heat source (tubular heating element) as an integral component of the platen. This process provides a more cost-effective and reliable approach than drilling holes for cartridge heaters or clamping inefficient and cumbersome-to-use strip heaters to the back surface of a platen.

Tempco’s thermo-platens are made from aluminum, bronze and brass alloys. These materials provide excellent thermal conductivity for rapid heat transfer with uniform temperature gradients. To further enhance heat profiles, the formation and the location of the tubular heaters within the casting are precisely engineered using the latest computer design techniques.

When the process requires heating and cooling cycles, thermo-platens can be manufactured with the addition of stainless steel tubing to provide liquid cooling capabilities.

The working surfaces and/or contours of the thermo-platen can be machined to your specifications up to and including blanchard ground for extremely flat surface requirements.

Our capabilities for manufacturing large thermo-platens offer you the freedom to think big in your design requirements.

We offer complete engineering services and support, working with you every step of the way from prototype to production to ensure customer satisfaction.

*There is no substitute for our acquired knowledge.*
When Your Needs Call for LARGER Than BIG Cast-In Thermal Platens & You Need Them NOW – Look No Further Than Tempco!

We Can Do It – We Have the Technology!

Note: Cast-In Thermo-Platens are made to customer specifications. For technical assistance, engineering data and available options please refer to pages 3-4 & 3-5. When ordering please provide detailed design drawings, including dimensions, critical tolerances, electrical ratings, watts, volts, single- or three-phase, and any other feature or special requirements.
Engineered Solutions With State-Of-The-Art Technology in Liquid Cool Aluminum Cast-In Thermal Components

You can count on Tempco to continue our tradition of leadership by providing cutting edge solutions as we address the needs and challenges of specialized segments of industries that depend on cooling for the operating efficiency and performance of their equipment.

As a result of market demand for such products, Tempco introduces our capabilities of producing a complete selection of made-to-order liquid cool aluminum cast-in thermal components, available in both complex geometrics or simple platens.

The thermodynamic relationship between the liquid heat transfer media circulating through the precisely formed and configured stainless steel cooling tube and the aluminum alloy casting maximizes heat removal efficiency. Tempco’s liquid cool cast-in thermal component technology is a novel approach to clean, efficient and reliable process cooling of difficult and complex applications.

Consult Tempco with your challenging applications. Our capabilities for manufacturing these complex liquid cool thermal components offer you the advantage to think outside the box. Let the endless possibilities spark your imagination, allowing you the freedom to customize your design.

Let Tempco’s Creative Team of Professionals Tackle Your Next Cast-In Liquid Cool Thermal Component Project.

We Have the Technology, Infrastructure & Commitment to Exceed Our Customers’ Expectations.

Thermo-Platens for Liquid Cooling of High Density Electronic Systems & Other Applications Requiring Flat Surface Cooling

In a world of compact designs with increased power densities, more heat is being generated than can be properly dissipated by conventional air blowers. For applications that have high-watt densities such as lasers, high-powered electronics, telecommunications, and semiconductor processing, liquid-cooled cold plates are the ideal high-performance heat transfer solution.

Mounting the components on an aluminum platen with internal liquid cooling tubes replaces forced air cooling to achieve and maintain lower electronic cabinet temperatures, thus increasing the operating service life of the individual components and the system.

When drilling and/or tapping is required for the cold plate application, Tempco will perform the machining to ensure that the product’s integrity is not compromised.

Now You Can Give Your Electronics a Chill!
Typical Cooling Tube Exit Locations For Cast-In Thermo-Platens

- **Type CT1**: Cooling tubes exiting through the thickness toward the ends of the width or length.
- **Type CT2**: Cooling tubes exiting through the thickness opposite of each other toward the ends of the width or length.
- **Type CT3**: Cooling tubes exiting at the ends of the width or length through the top surface.
- **Type CT4**: Cooling tubes exiting through the thickness at opposite ends of each other toward the ends of the width or length.
- **Type CT5**: Cooling tubes exiting through the thickness at opposite ends of each other with one in the width and one in the length.

**Complex Geometrics**

*Note:* Cooling Tube Exit Locations for Complex Geometric Liquid Cool Thermal Components can be at any practical location for the shape and size of the individual thermal component.

For Cooling Tube Termination Optional Fittings and Accessories See pages 3-52 and 3-53.

**Standard Cooling Tube Fittings For Cast-In Thermo-Platens**

**Type FF Flared Seal Fittings**

Brass flared seal fittings are well adapted for low to medium pressure and resistant to mechanical pullout. Available for 3/8" and 1/2" diameter tubing with SAE 45° flare.

<table>
<thead>
<tr>
<th>Diameter Tubing</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot;</td>
<td>5/8&quot;-18</td>
<td>FTG-124-101</td>
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<tr>
<td>1/2&quot;</td>
<td>3/4&quot;-16</td>
<td>FTG-124-104</td>
</tr>
</tbody>
</table>

**Type HS Hi-Seal Fittings**

Hi-seal brass fittings are highly dependable under the most adverse conditions. For reliable and trouble-free service with ease of installation, we strongly recommend hi-seal fittings. Available for 3/8" and 1/2" diameter tubing. Male thread is 1/2" NPT for 1/2" tube and 3/8" tube.

<table>
<thead>
<tr>
<th>Diameter Tubing</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot;</td>
<td>FTG-118-124</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>FTG-118-116</td>
</tr>
</tbody>
</table>

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**Cast-In Heaters**

**Heating Element Specifications**

*Continued from previous page...*

**Thermo-Platen Specifications**

**Typical Tubular Heating Element Exit Locations**

**Type TE1**
Elements exiting through the thickness toward the ends of the width or length.

**Type TE2**
Elements exiting through the thickness toward the center of the width or length.

**Type TE3**
Elements exiting through the thickness & recessed to protect the screw terminals from mechanical damage. Can be located toward the end or center.

**Type TE4**
Elements exiting toward the ends of the width or length through the top surface.

**Type TE5**
Elements exiting at the end & toward the center of the width or length through the top surface.

**Type TE6**
Elements exiting toward the center of the length & width & through the top surface.

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**Most common thermo-platen terminations listed below; for additional terminations and complete details, see pages 3-54 and 3-55.**

**Standard Tubular Heater Terminations for Thermo-Platens**

**Type S** – Heavy Duty Ceramic Insulators (Standard Unless Otherwise Specified)

**Type T7** – Ceramic Insulator: same diameter as heating element

**Type T** – Mica Insulator: same diameter as heating element

**Type R** – Mica Washers with 90° Blockhead Screw Terminal

**Type SF & SF9** – Quick-disconnect Spade Tabs

**Type F** – Flexible Leads with Fiberglass Sleeve

**Type R1** – Flexible Stainless Steel Armor Cable

**Type R1A** – Stainless Steel Wire Overbraid

**Type TS** – Flexible Lead with Shrink-Down Teflon® Sleeve

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**Typical Terminal Box Options and Locations**

**Type C2**
Sheet metal terminal box w/ standard 1/2" knockouts or optional 5/8" or 7/8" knockouts.

**Type EP**
Explosion resistant and/or moisture resistant box.

**Type MR1**
Moisture resistance box with perforated shield.

**Type P1**
Quick-disconnect cup assembly mounted directly to casting. Rated 250V max., 15 Amp max.

**View Product Inventory @ www.tempco.com**
Thermo-Platen Quote Request Form

Ordering Information

To process your order or quotation, please specify the following information.

For available options, please refer to pages 3-21 & 3-22. When ordering, please provide detailed drawings including dimensions, critical tolerances and any other feature or special requirements.

Thermo-Platen Type

- Heat Only
- Cool Only
- Heat and Cool

Dimensions

Length “A” ______ Width “B” ______ Thickness “C” ______

Material Specifications

- Aluminum
- Bronze
- Brass

Electrical Specifications

Watts each element ______ Volts each element ______ Phase ______

Element Exit Location

- “TE1”
- “TE2”
- “TE3”
- “TE4”
- “TE5”
- “TE6” (see page 3-22)
- Other, Specify ________________ (provide detailed drawing)

Termination Style

- “S” Post Terminals
- “T” Post Terminals
- “R” 90° Blockhead
- “SF” Quick-disconnect Spade Tab
- “SF9” 90° Quick-disconnect Spade Tab
- “F1” Armor Cable Leads
- “R1A” SS Wire Overbraid
- “TS” Leads and Shrink Sleeve
- Other, Specify ________________ (see page 3-22)

Terminal Protection Box

- None
- “C2” Standard
- “EP” Explosion Resistant
- “MR1” Moisture Resistant
- “P1” Quick-Disconnect Cup assembly

Cooling Tube Exit Locations

- Type CT1
- Type CT2
- Type CT3
- Type CT4
- Type CT5

(See page 3-21 for details)

Cooling Tube Specifications

- 1/4” O.D. SS
- 3/8” O.D. SS
- 1/2” O.D. SS
- 3/8” O.D. Incoloy®
- 1/2” O.D. Incoloy®
- Dual Cooling Tubes
- Standard Wall Thickness
- Other Wall Thickness, Specify ________________

(See page 3-5 for Standard Wall Thickness Information)

Cooling Tube Fittings

- “FF” Flared Seal
- “HS” Hi-Seal Fittings
- Other, Specify ________________

Surface Finish

Machined or As-Cast. Indicate surfaces to be machined.

Special Cast-In Features

Holes, Cutouts, Slots, Bevels, Mounting Studs, Stand-Offs and Taper Angles.

For special features, a detailed drawing is required.

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