

CAST-IN HEATERS FOR LARGE PLATENS

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.

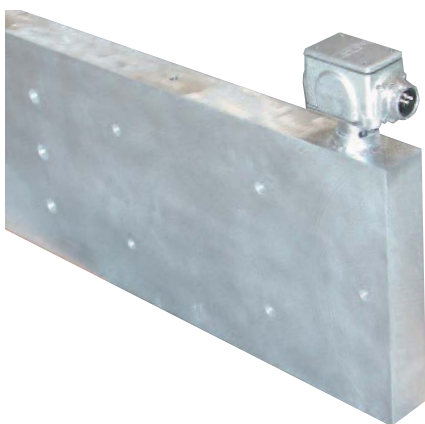
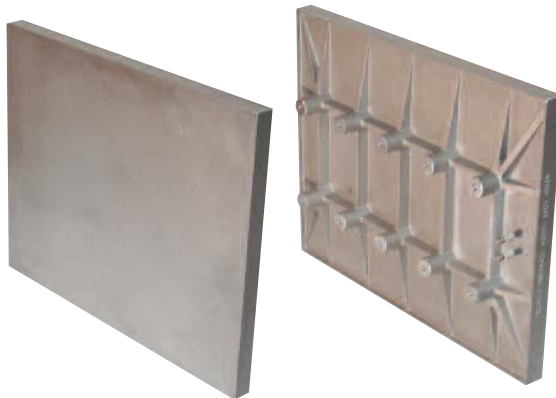
When the process requires heating and cooling cycles, thermo-platens can be manufactured with the addition of stainless steel tubing to provide liquid cooling capabilities.

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.



TEMPCO CAST-IN HEATERS FOR LARGE PLATENS

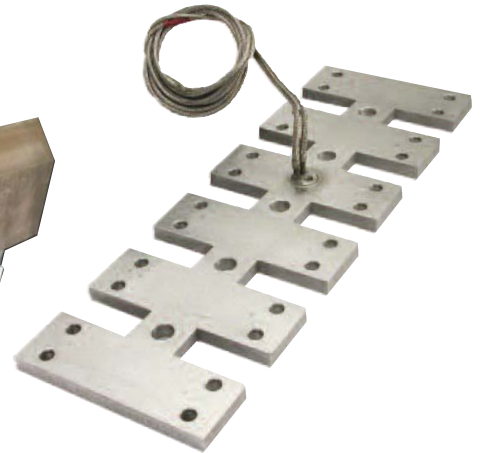
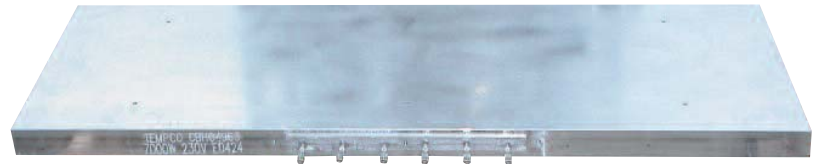
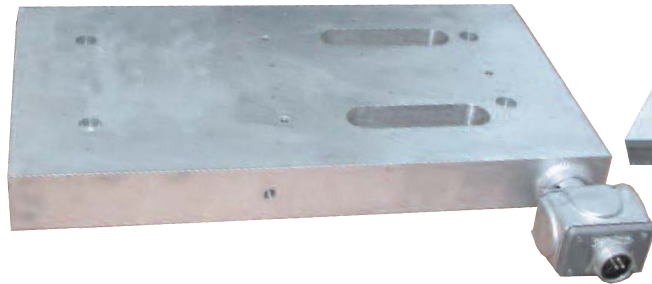
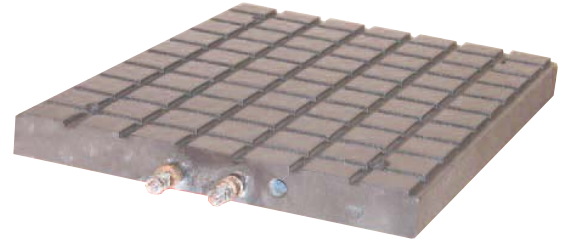


Cast-In Heaters

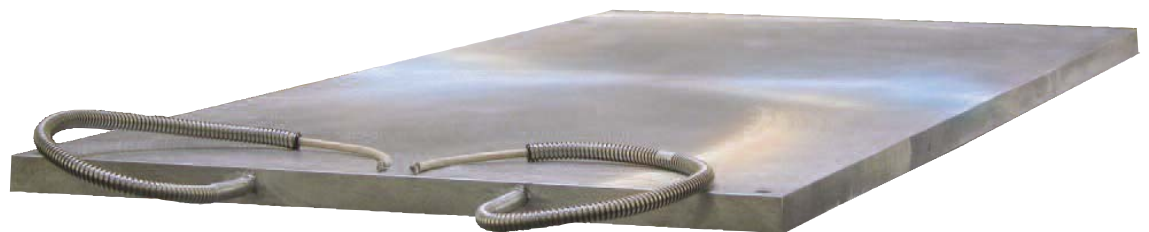
Thermo-Platens

Design Features & Options

- * **Castings:**
 - Aluminum up to 600 lbs.
 - Bronze & Brass up to 300 lbs.
(Recommended for high operating pressures and temperatures)
- * **Exceptionally Long Operating Life**
- * **Single- or Three-Phase Circuit**
- * **Surface Finishes: Electroless Nickel-Plated, Teflon®, Hard-Coat Anodizing, Magnaplate**
- * **Thermowells for Temperature Sensors**
- * **Excellent Heat Transfer**
- * **Maximum width 60"**
Maximum length 72"
- * **Uniform Surface Temperatures**
- * **Machined to Customer Specifications**
- * **Heating & Liquid Cooling Functions**
- * **Various Heater & Cooling Tube Terminations**



*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!*



TEMPCO CAST-IN LIQUID COOLED COMPONENTS



Cast Aluminum Motor Housing & Base with Integral Liquid Cool Capabilities
U.S. Patents: # 6222289 & #5939808

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.

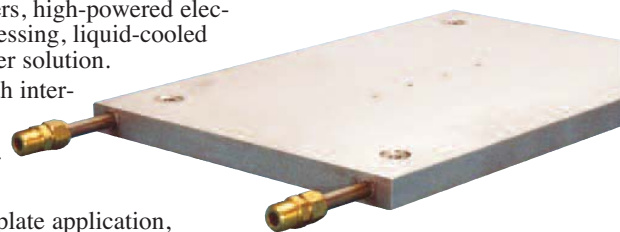
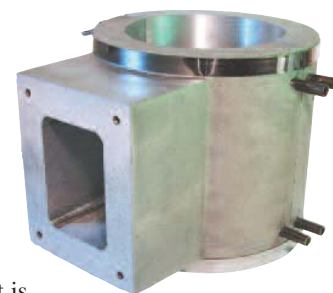
We Have the Technology, Infrastructure & Commitment to Exceed Our Customers' Expectations.

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

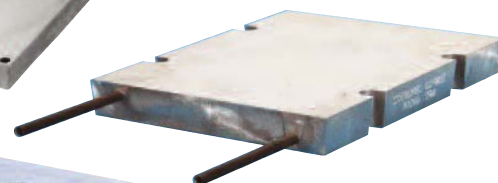
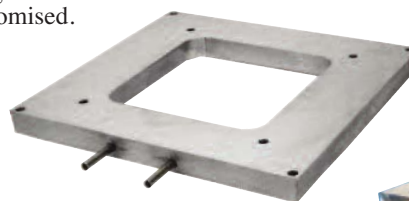
In a world of compact designs with increased power densities, more heat is being generated than can be properly dissipated by conventional air blowers. For applications that have high-watt densities such as lasers, high-powered electronics, telecommunications, and semiconductor processing, liquid-cooled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



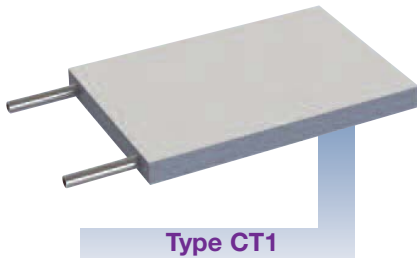
Now You Can Give Your Electronics a Chill!



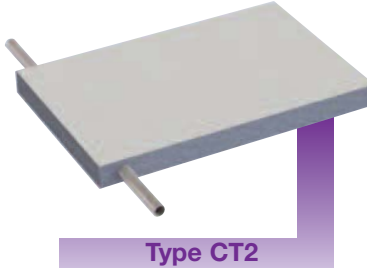


Thermo-Platen Specifications

Typical Cooling Tube Exit Locations For Cast-In Thermo-Platens



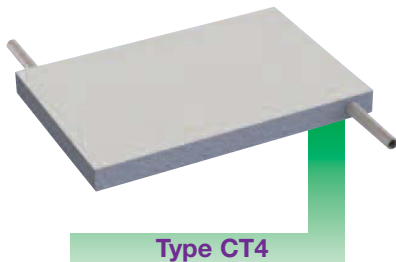
Type CT1
Cooling tubes exiting through the thickness toward the ends of the width or length.



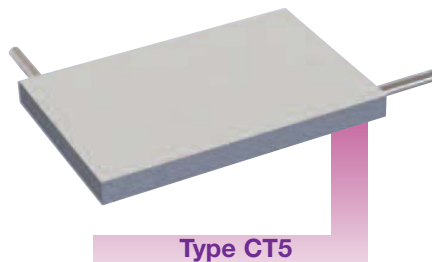
Type CT2
Cooling tubes exiting through the thickness opposite of each other toward the ends of the width or length.



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

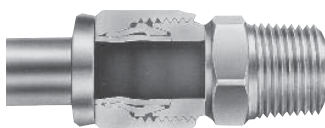
Type FF Flared Seal Fittings



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.

Diameter Tubing	Thread	Part Number
3/8"	5/8"-18	FTG-124-101
1/2"	3/4"-16	FTG-124-104

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.

Diameter Tubing	Part Number
3/8"	FTG-118-124
1/2"	FTG-118-116

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Cast-In Heaters

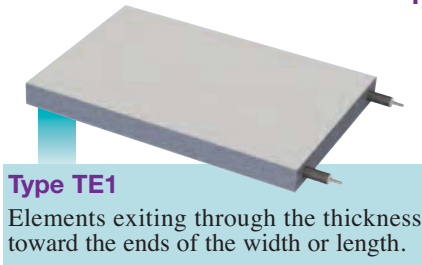


Heating Element Specifications

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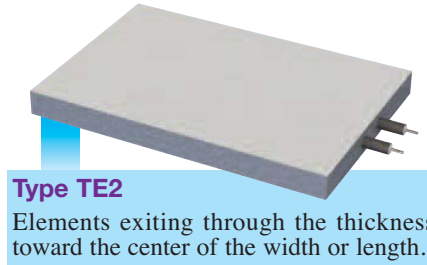
Thermo-Platen Specifications

Typical Tubular Heating Element Exit Locations



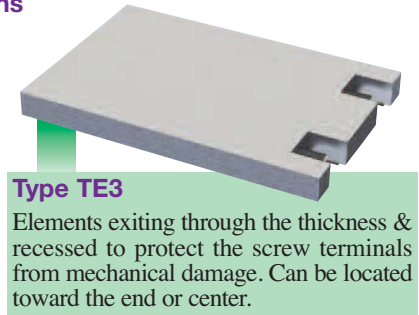
Type TE1

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



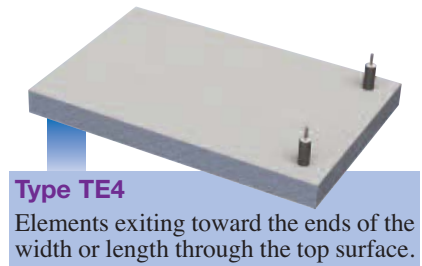
Type TE2

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



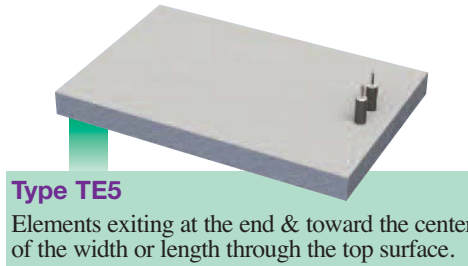
Type TE3

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



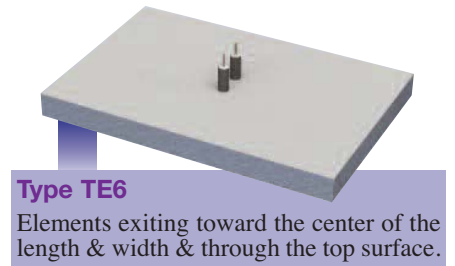
Type TE4

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.



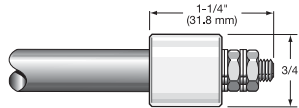
Type TE6

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

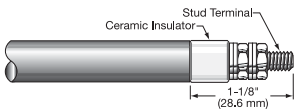
Most common thermo-platen terminations listed below; for additional terminations and complete details, see pages 3-54 and 3-55.

Standard Tubular Heater Terminations for Thermo-Platens

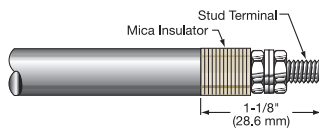
Type S – Heavy Duty Ceramic Insulators (Standard Unless Otherwise Specified)



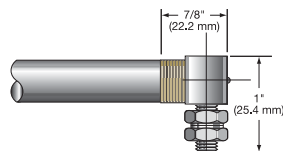
Type T7 – Ceramic Insulator: same diameter as heating element



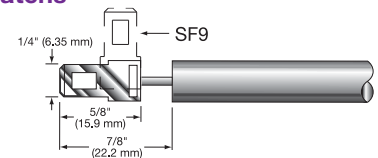
Type T – Mica Insulator: same diameter as heating element



Type R – Mica Washers with 90° Blockhead Screw Terminal



Type SF & SF9 – Quick-disconnect Spade Tabs



Type F – Flexible Leads with Fiberglass Sleeve



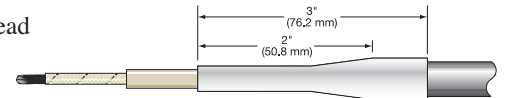
Type R1 – Flexible Stainless Steel Armor Cable



Type R1A – Stainless Steel Wire Overbraid



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



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.