
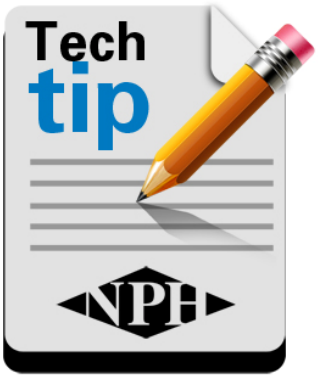



## ***Cartridge Heaters-Frequently Asked Questions-FAQ's:***

Cartridge Heaters with Post Terminals
For High Temperature Applications

Cartridge/Insertion Heaters with Brass Fitting
and High Temperature Fiberglass Leads

**Q. What sheath watt density do you build?**
We warrant (with a bore nominal -0.000, +0.001") up to 160W per square inch. We will manufacture between 160W per square inch and 200W per square inch without warranty. Above 200W per square inch requires an engineering review for feasibility. In many cases a better fit required.

**Q. Why do you use Stainless Steel 321 as opposed to Stainless Steel 316 which is more commonly used?**
Stainless Steel 321 has been proven to be more resistant to corrosion and oxidation. All things being equal, a Stainless Steel 321 heater should be easier to remove. This is just one of the premium materials that are standard with a NPH cartridge insertion heater.

**Q. What can be done to prolong the service life of a cartridge heater?**
Cartridge heaters generally fail due to fit, moisture, contamination, movement improper selection, installation and high watt densities. Lower temperature heaters (below 500 degrees F) have a range of options to impede moisture, contamination and lead failure due to movement. The best thing you can do is discuss your specific application with a NPH Sales Engineer. Providing examples of failed heaters will also help us identify the root cause specific to your application.

**Q. How can cartridge heater performance be optimized?**

To optimize performance one must carefully consider:

- Cartridge Heater location
- Cycle time
- Fit to mating surfaces and location
- Temperature sensing method
- Material being heated
- Type of control method
- Performance goals

**Q. How can NPH assist with engineering services and provide solutions with insertion heater application problems?**

**NPH Cartridge Heater Engineering services include:**

- Production and product development assistance
- Thermal engineering consulting
- Solid modeling
- Design optimization for performance and energy consumption
- FEA and Lab Simulation

The more complex the design, and the more critical heat is to design performance, the greater the impact NPH Engineering services will have on your process. Your application, performance goals and future plans create a unique opportunity to explore the power of NPH Engineering services for all heat solutions with cartridge heaters.

**Q. What Cartridge Heater Solutions can NPH Provide?**

NPH Cartridge Heater Solutions, are your smart heat management choice. While many companies can build a general use cartridge heater, NPH and its partners are committed to manufacturing and supplying the best cartridge heater specifically for your application. When you see the design elements beyond the obvious similarities to commodity heaters, critical engineering decisions can be made to dramatically improve durability, product quality, responsiveness and cycle time.

Every application carries with it performance requirements that must be carefully considered. Factors such as movement, moisture, dimensional tolerances, operating temperature, material being heated, and environmental conditions will impact the design of the cartridge heater.

**NPH manufactures cartridge heaters with better components, materials and precision…….**

- High watt density cartridge heaters are built with 8” long ceramic cores, 33% longer than our competitors, resulting in fewer electrical connections on longer heaters.
- Standard stainless steel sheath is SS321 for improved corrosion resistance (incoloy is also available).
- New, compact right angle exit with flat sides to aide removal. (When cartridge heaters last as long as NPH’s do, this is important)
- Anti-seize coating applied in house for faster delivery.
- Centerless grinding option to a tolerance of +/- .0008” for a better fit.

- Computer controlled winding ensures the right wattage distribution profile on every heater, every build.
- Technical support to understand your application and design a cartridge heater with your specific use in mind.
- Attaining and maintaining ISO 9001 since 2000.

**High watt density vs. medium watt density construction**
All cartridge heaters NPH manufactures are swaged (highly compacted) heaters. Customers who require precise, durable heat should accept nothing less. The compaction created during the swaging process enables the cartridge heaters to more responsively deliver heat, and provides the resistance wire with dense thermal mass improving performance and heater life greatly over loose fill cartridge heaters.
Both high watt and medium watt construction can be built as an energy saving eheat cartridge heater.

**Q. What are Eheat Cartridge Heaters?**
NPH eheat cartridge heaters are constructed with a special high thermal transfer sheath material that creates a fast responding, longer lasting, more energy efficient heater. At the same rated wattage, NPHI is a leading supplier of cartridge heaters that have measured up to 25% improved energy efficiency over traditional build cartridge heaters.

Our **Eheat** cartridge heaters are the fast responding, energy efficient and direct replacements for your existing cartridge heaters. Extend the capabilities of your existing system with Eheat cartridge heaters manufactured by NPH, or develop around its strengths to bring smart heat management capabilities to your market.

- The high thermal transfer sheath results in a cartridge heater that can perform the same work with fewer watts - saving energy and reducing total system amperage.
- For higher watt density applications such as a hot glue system, the eheat delivers heat to the application faster, resulting in more heat delivered with a lower heater core temperature. This extends cartridge heater life.
- NPH eheat cartridge heaters reach set point faster, and can reduce cycle times of demanding applications.

**High watt density cartridge heaters**
The machine winding of the high watt density cartridge heater delivers the most precise distributed wattage profile. High watt density heaters supplied by NPH can be built to your specifications from 1” long to over 100”. Warranted to 160 watts per square inch.

**Specify a high watt density cartridge heater if:**

- Watt density is greater than 65 watts per square inch.*
- And/or the heater is less than 8”.*
- And/or your application requires a precise wattage distribution.

* High watt density cartridge heaters are commonly built below 65 watts per square inch and in lengths up to 100” long for specific applications.

**Medium watt density cartridge heaters**
The medium watt density cartridge heater has a continuous resistance spiral throughout the heater delivering unparalleled reliability. For longer cartridge heaters there are fewer internal electrical connections. Medium watt density heaters start at 8”long and can be built to over 100”. Each medium watt density cartridge heater supplied by NPH is warranted to 65 watts per square inch.

**Specify a medium watt density cartridge heater if:**

- Watt density is less than 65 watts per square inch.
- And the heater is 8” or longer.
- And you do not need highly precise wattage distribution.

In the past only high watt density cartridge heaters could support an internal type J or K TC. NPH can now manufacture medium watt density cartridge heaters with an internal Thermocouple.


## Inquiries & Technical Support

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