

**nexthermal**<sup>®</sup>  
smart heat management

## Coil Heater Solutions

[www.nexthermal.com](http://www.nexthermal.com)



# who is Nexthermal?

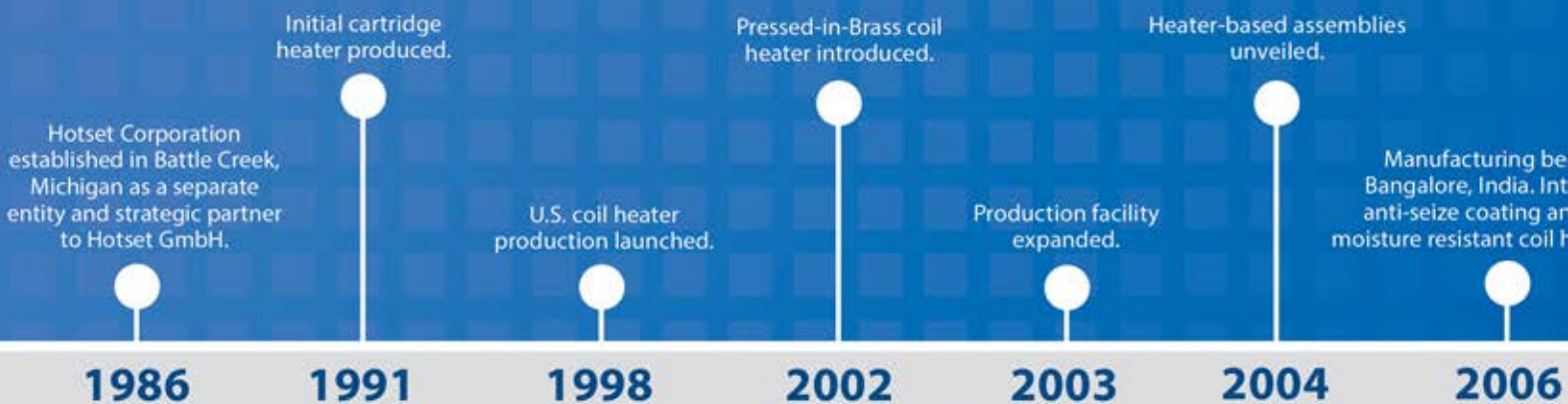


Nexthermal is a new name for a company that has focused passion and energy toward the creation of electric heating elements, systems and engineering services since 1986.

Nexthermal solves heating application challenges and creates dramatic process capability improvements for our customers.

Our customers' requirements, product development plans and competitive position in the marketplace drive our smart heat management innovation. Ingenuity, collaboration and a sense of urgency converts concepts to products and capabilities.

*If heat is vital to your process...  
add **Nexthermal** to your team!*







**As you engage Nexthermal, our goal is that you conclude we are:**

**Approachable** — Welcoming discussion, highly interested in the details of your application. Sincerely committed to helping you succeed.

**Dynamic** — Responding with a sense of urgency, proactively anticipating and planning for challenges, demonstrating agility that incorporates your input and experience to accelerate the best solution.

**Knowledgeable** — Our application experience, ability to understand your process, generating market driven solutions should lead you to clearly see that Nexthermal is your heat management expert.

**International** — United States roots with a global reach. With customers and strategic partners worldwide, Nexthermal has the resources to generate the right solution delivering world class benefits well beyond your investment in our products and services.

**Innovative** — Delivering application-based solutions with your requirements in mind. Developing new product capabilities to address emerging needs.



2008      2009      2010      2012      2014      2015

## heater based assemblies

### Imagine what we can do when we combine experience and innovate together.

When heat is essential to your process, you need a high performance system that is specifically designed to support your core application needs. Let Nexthermal engineers tap into their over 50 years of combined heat management experience to design process-specific assemblies that are engineered to achieve your production goals. Nexthermal can:

- Increase OEM output with plug-n-play assemblies.
- Improve efficiency and streamline production.
- Optimize thermal transfer.
- Thermally and mechanically model performance and function prior to prototyping.
- Extend Capabilities of existing equipment.
- Incorporate design standards including GD&T, hygienic design, OSHA, and stress analysis.





## Nexthermal coil heaters

- » Nexthermal coil heaters are the number one choice among US Hot Runner Injection Molding OEMs. Nexthermal coil heaters and coil heater assemblies are also the heater of choice for many leading scientific measurement, diagnostic and test OEMs worldwide. To further demonstrate the coil heater's flexibility of use, emerging markets include form fill and seal packaging, top seal packaging, rubber injection molding, liquid heating, electric vehicle systems and medical equipment.



### What makes a coil heater unique?

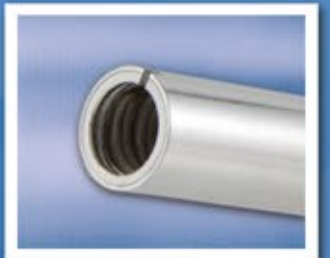
*While many believe the name "coil heater" is derived from common winding patterns to heat nozzles, the name is actually related to the internally spiraled resistance wire. This coiled resistance wire greatly increases the watt density a coil heater can carry on the surface of the heater.*

*Customers have found the ability to concentrate heat specifically where it is required reduces cycle time, improves quality, and expands the capability and accuracy of their equipment.*

# Nexthermal coil heaters...your smart heat management choice.

- » Nexthermal coil heaters are designed to deliver excellent performance in demanding applications. Factors such as movement, moisture, dimensional tolerances, operating temperature, material being heated and environmental conditions will impact the design of the coil heater. When we work together with you to build the right heater for your application — we design the most cost effective process improvement solutions you can implement.

*Nexthermal's committed to deliver the best heater for your application — a coil heater built specifically for your need.*



*Nexthermal staff members are trained to understand your application to identify refinements in design that result in dramatic durability, cycle time, response rate, and product quality performance improvements.*



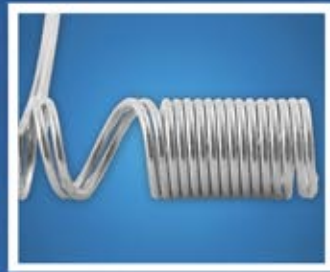


## Nexthermal manufactures heaters with better components, materials and precision...

- Design intent to maximize thermal efficiency and heat transfer.
- Unique ceramic cores designed to precisely position resistance wire, avoiding twisting commonly seen on other coil heaters.
- Our standard stainless steel sheath is SS321 for improved corrosion resistance. (Nickel 200 is also available on mini coil heaters)
- Flat surface for better contact and better improved heat conduction.
- Computer controlled resistance wire winding for tighter ohms tolerance.
- Technical support and simulation program to understand your application and design a heater with your specific use in mind.
- Nexthermal has attained and maintained ISO 9001 since 2000.

*Many customers have told us that Nexthermal is more responsive with quotation timing, sales order confirmation timing and shorter build to order and wind from stock coil heater lead times than any other heater manufacturer.*

## mini coil heater



### Precise, flexible and moisture resistant...

As OEM engineers face continual pressure to reduce space claim, Nexthermal is responding with advancement of mini coil technology. The Nexthermal mini coil heater contains a precisely wound resistance wire to maximize watt density capability.

The mini coil is extremely flexible, reduces required installation area, and the standard transition head construction is highly moisture resistant. Staggering transition heads allows for smaller wire channel dimensions.

» *While originally designed for the Hot Runner Injection Molding industry, mini coil heaters are used in a wide range of markets including, high temperature simulation, packaging, component level de-icing, and medical device. Given its precision and flexibility of installation, the mini coil is a heater that can be readily used in prototyping and cost effective at production levels.*



## maxi coil heater



### Durable, high performance...

The Nextthermal maxi coil heater is designed to provide longer service life in high temperature applications and challenging environments. The maxi coil heaters can carry higher watt density. Maxi coils are a high performance large diameter alternative to MI Band heaters, frequently replacing several heaters with one profiled heater.

- » *The Nextthermal maxi coil heater can be incorporated into a nozzle body assembly to create a high performance, durable solution for Zinc Pressure Diecast applications.*

## high cavitation mini coil heater



### Hotlock coil heater

Nextthermal's next generation Hotlock maximizes high cavitation injection molding performance. Nextthermal's unique locking mechanism precisely positions the Hotlock and holds a replaceable 1mm thermocouple firmly in place.

» Nextthermal has solved common problems associated with this heater style:

- Fine pitched threads result in more heat toward the tip.
- Smaller net outer diameter allowing for closer drops.
- Nickel coated inside diameter for easier removal.



### Axial Clamp coil heater

Axial Clamp mini coil heaters positively clamp the heater against the nozzle. The application of physical theory and unique cam design ensure Nextthermal Axial Clamp heaters deliver excellent heat transfer and durability. The axial clamp heater can be tightened with one Allen screw in front, compared to two on the side of a flange lock up heater. Tightening and removal is greatly simplified.



# Standard Hotlock and Axial Heaters

## Build-to-Order Hotlock

Diameter	Width Minimum	Width Maximum	Wattages	Voltage Max
"3/4" "(19.05mm)"	30mm	210mm	100W-450W*	240V

\*Wattage capabilities depend on size of heater, contact Nexthermal for design assistance.

## Hotlock Stock List

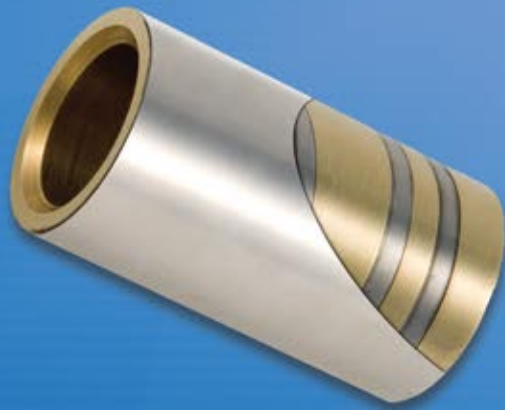
Part Number	Diameter	Width	Watts	Volts
HL30220	"3/4" "(19.05mm)"	30mm	220W	240V
HL30268	"3/4" "(19.05mm)"	30mm	268W	240V
HL30350	"3/4" "(19.05mm)"	30mm	350W	240V
HL40220	"3/4" "(19.05mm)"	40mm	220W	240V
HL40350	"3/4" "(19.05mm)"	40mm	350W	240V
HL50220	"3/4" "(19.05mm)"	50mm	220W	240V
HL50350	"3/4" "(19.05mm)"	50mm	350W	240V
HL60220	"3/4" "(19.05mm)"	60mm	220W	240V
HL60400	"3/4" "(19.05mm)"	60mm	400W	240V
HL70220	"3/4" "(19.05mm)"	70mm	220W	240V
HL70400	"3/4" "(19.05mm)"	70mm	400W	240V
HL80220	"3/4" "(19.05mm)"	80mm	220W	240V
HL80400	"3/4" "(19.05mm)"	80mm	400W	240V
HL90220	"3/4" "(19.05mm)"	90mm	220W	240V
HL90400	"3/4" "(19.05mm)"	90mm	400W	240V
HL100220	"3/4" "(19.05mm)"	100mm	220W	240V
HL100400	"3/4" "(19.05mm)"	100mm	400W	240V
HL110220	"3/4" "(19.05mm)"	110mm	220W	240V
HL110400	"3/4" "(19.05mm)"	110mm	400W	240V
HL130220	"3/4" "(19.05mm)"	130mm	220W	240V
HL130400	"3/4" "(19.05mm)"	130mm	400W	240V
HL150220	"3/4" "(19.05mm)"	150mm	220W	240V
HL150400	"3/4" "(19.05mm)"	150mm	400W	240V
HL170220	"3/4" "(19.05mm)"	170mm	220W	240V
HL170450	"3/4" "(19.05mm)"	170mm	450W	240V
HL190220	"3/4" "(19.05mm)"	190mm	220W	240V
HL190450	"3/4" "(19.05mm)"	190mm	450W	240V
HL210220	"3/4" "(19.05mm)"	210mm	220W	240V
HL210450	"3/4" "(19.05mm)"	210mm	450W	240V

## Stock Axial Lock-up Heaters

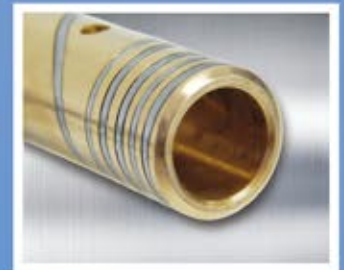
Diameter	Width	Watts	Volts
"3/4" "(19.05mm)"	"1.2" "(30mm)"	149W	240V
"3/4" "(19.05mm)"	"1.2" "(30mm)"	268W	240V
"7/8" "(22.22mm)"	"1.2" "(30mm)"	268W	240V

\*All stock Axials can be re-fit with external wound in thermocouple for same or next day shipment.

## coil heater embedded in brass



» *Utilizing the three dimensional flexibility of Nexthermal coil heaters is likely much easier than you think. We welcome the opportunity to discuss your specific application and design objectives.*



### Accelerate development –

Nexthermal can deliver prototypes of coil heaters and mini coil heaters within 60 days of drawing approval.

### Extending and refining coil heater performance...

Nexthermal has developed coil heaters and mini coil heaters embedded in brass for the hot runner injection molding, measurement, analysis, and packaging markets.

Traditionally this type of heater would be “cast in brass.” The embedded in brass heater provided more precise repeatability of winding profile, and longer thermocouple life due to the elimination of molten brass temperatures during the casting process.

» *For demanding applications, the embedded in brass design also facilitates precise thermocouple placement. Originally designed to accommodate higher temperature applications to 650 C, the embedded in brass design is creating new opportunity to heat difficult three dimensional applications, small space claim, thin faced packaging jaws, and hole punch applications.*



## versatile form in groove heaters



### Form in groove capabilities...

*Highly annealed, the coil heater can be formed to hold shape or formed into a slot or groove. Coil heaters have been embedded and cast into functional components to provide protection from cold, or to apply process heat at a critical stage.*

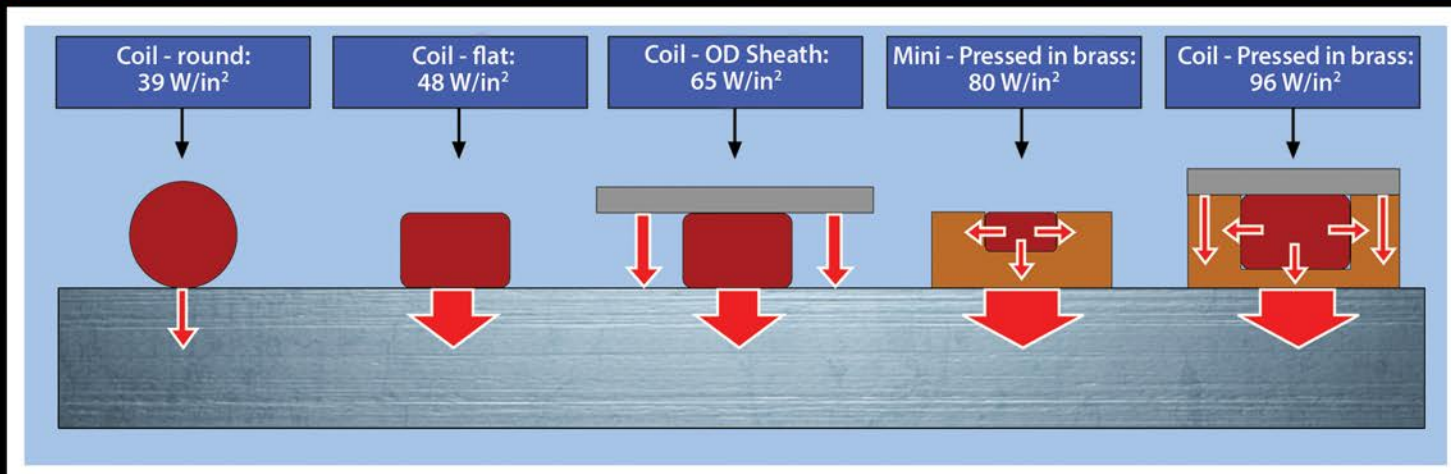
*Nexthermal coil heater "profiles"...height and width of a cross section ...are designed to provide the engineer with options to meet size limitations, better hold form, and concentrate heat in a specific area.*

# Coil Technical Data Chart

	Internal TC Option	Shape	LENGTH TOLERANCE		WATTAGE TOLERANCE			INSULATION RESISTANCE		LEAKAGE CURRENT	STD.
			Heated	Unheated	±10%	Premium ±5%	±2%	>=5 Mohm @ 500V DC	Special Request	<0.5 mA @ 253V AC	Lead Length (mm)
Mini Flat 1.0x1.7mm & 1.3x2.3mm <small>(Only possible as wound or pressed in)</small>	No	Flat	±2.5%	+5mm -10mm	●	●	●	●	●	●	1830
Mini Round Ø1.4mm and Ø1.8mm	No	Round	±2.5	+5mm -10mm	●	●		●	●	●	1000
Mini Axial and Standard Clamp with 19.05mm & 22.22mm ID	No	Flat	Clamp +0.5mm	Customer Specific	●	●	●	●	●	●	1830
1.8x3.2mm	No	Rectangle	±1%	+5mm -10mm	●	●		●	●	●	1219
2.2x4.2mm	Yes	Rectangle	±1%	+5mm -10mm	●	●		●	●	●	1245
Round Coil Ø3.0mm, Ø3.18mm, Ø3.2mm & Ø4.0mm	Yes	Round	±2.5%	+5mm -10mm	●	●		●	●	●	1245
2.5x3.4mm	Yes	Rectangle	±1%	+5mm -10mm	●	●		●	●	●	1245
Square Coil 3x3mm, 3.25x3.25mm	Yes	Square	±1%	+5mm -10mm	●	●		●	●	●	1245
Maxi Coil Heater 4.6x8.6mm	Yes	Rectangle	±1%	+5mm -10mm	●	●		●	●	●	1245

High Pot testing: Mini 800VAC @ 100mA, Coil 800VAC @ 100mA, Maxi 1250 VAC @ 100mA

## Warranted watt density for common coil heater installations





# wind from stock coil heaters

## 2.5mm x 3.4mm (0.100" x 0.134") Flat Coil Heater Standard 48" Teflon® and PTFE Leads Ungrounded TC

### Available With or Without Thermocouple

HEATED LENGTH (INCH)	TOTAL LENGTH (INCH)	WATT	VOLT
10.5	14.5	215	240
12.5	16.5	250	240
16	20	325	240
19	23	390	240
22	26	470	240
26	30	520	240
30	34	610	240
36	40	630	240
38	42	700	240
42	46	800	240
45	49	850	240

### Available with Ungrounded TC Only

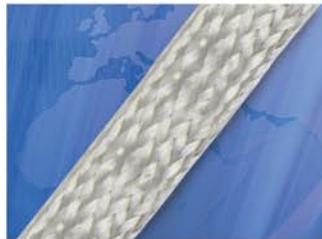
75.28	78.84	1050	240
79	82.56	1150	240
86.6	90.16	1300	240

### Lead Protection Options

#### FIBERGLASS SLEEVING



#### BRAIDED METAL SLEEVING



#### FLEXIBLE ARMOR CABLE

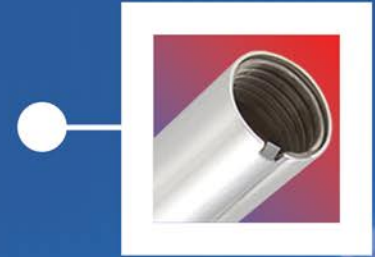


# coil heater performance options

## Pressed on sheath (with or without tab)

A pressed on sheath ensures the best heat transfer, and is 20% more efficient in most injection molding applications. Recommended for operating temperatures exceeding 600F and inside diameters greater than 1".

Our tab option precisely locates and holds heater in place.



## Moisture resistant transition head

Nexthermal has developed a highly moisture resistant transition head construction further improving durability in high humidity and washdown applications — reducing the need for soft starts. This head also protects against oil ingress and other contaminants



## Compact coil heater head 5.5mm

In response to emerging requirements for smaller space claim in wire channels, Nexthermal has developed a compact 5.5mm diameter coil heater head that is just 15mm long without compromising dielectric strength.



## Thermocouple options

Nexthermal coil heaters can be built with an integrated Type J or Type K thermocouple. Mini coil heaters can be designed with an external thermocouple wound with no net impact to the OD of the heater. Other external TC options are available.



Unique requirements?  
Engage a Nexthermal application engineer at 269.964.0271



## Pressed in brass

Nexthermal's process of embedding coil heaters into machined brass components delivers strong life at high temperatures. Precise repeatable thermal profiles, 8% faster heat up and recovery times, improved TC performance and shorter lead times compared to cast in brass heaters.



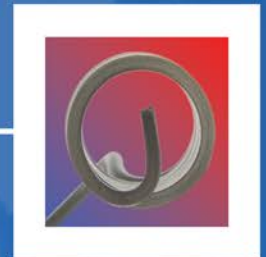
## Form in groove and three dimensional heating

Coil and mini coil heater's precise OD tolerance and annealing process are ideal attributes to form into a machined groove. To engineers and designers this means that a structural component could be developed into a three dimensional heater without greatly affecting space claim.



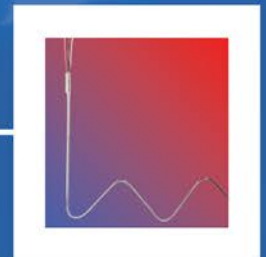
## Easy to remove bore heater

Nexthermal coil heaters can be designed slightly oversized to a bore with additional cold section at the tip. With a provided tool, you can compress the OD slightly, insert into the bore and allow to expand. Excellent fit and easy to remove heater for bores over 1" in diameter.



## Laboratory, development and test process

The coil heater's stainless steel construction and ability to be formed into unique shapes make it the heater of choice for many laboratory, development and testing applications.



**nexthermal**®

# lead, lead protection, and exit options

## leads



**Teflon®**  
Temperature Rating  
**500 °F** | 260 °C



**Fiberglass (High Temp.)**  
Not recommended for high movement or moisture.  
Temperature Rating  
**932 °F** | 500 °C

Teflon® is a registered trademark of the E.I. du Pont de Memours & Company.

## lead protection

**Silicon Impregnated  
Fiberglass**



**Nema Rated  
Sleeve**



**Braided  
Metal Sleeve**



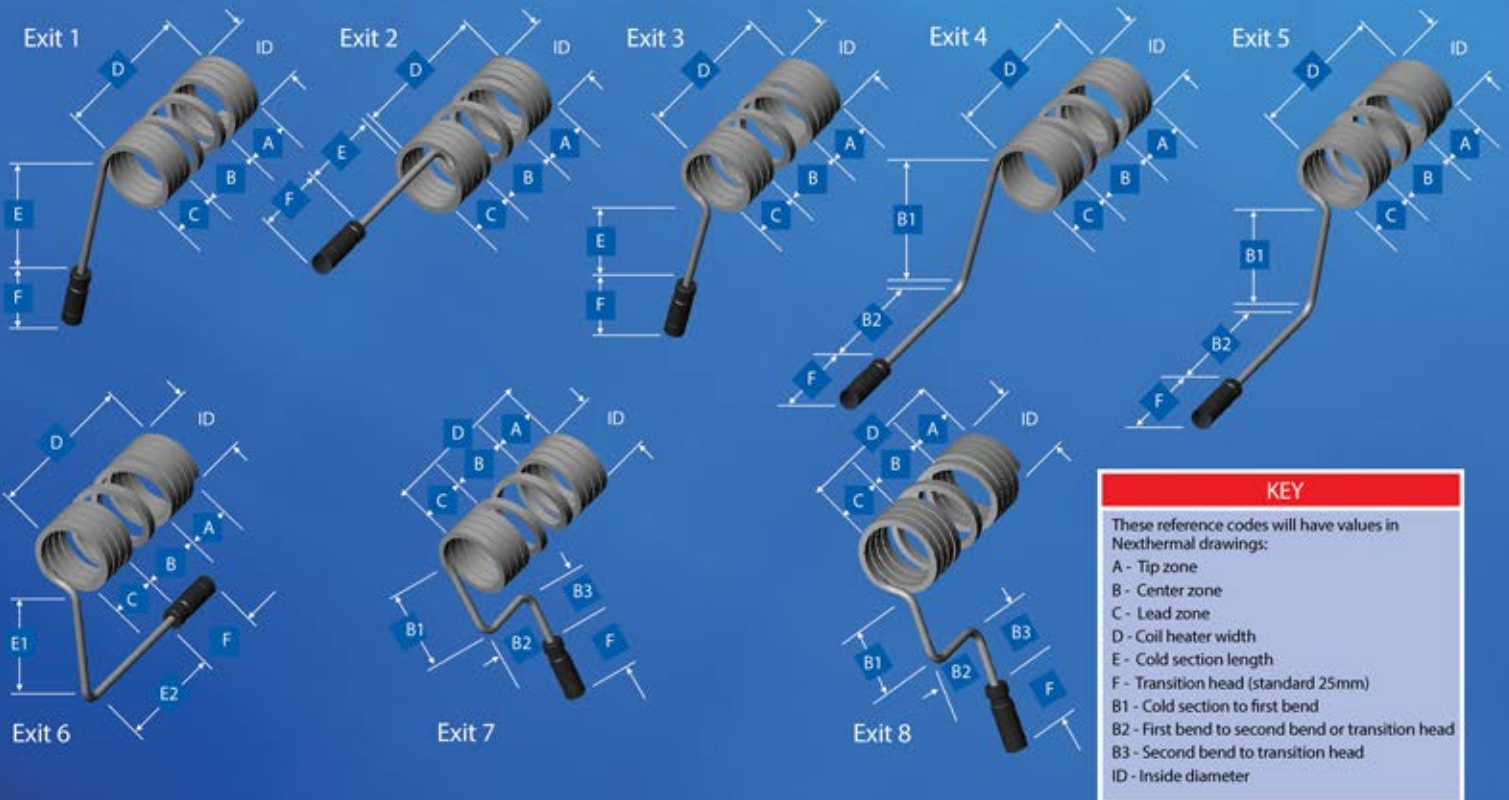
**Armor  
Cable**



**Gas Proof  
Armor Cable**



## exit options





## Standard Coil Heater Configuration Chart

Coil Heater Type	Profile		Minimum Inside Diameter		Voltage	Minimum Bending Diameter		Straight Heated Length		Thermocouple		SS321	Nickel
	Inches	mm	Inches	mm		Inches	mm	Inches	mm	Inbuilt*			
										J	K		
Micro Mini	0.039 x 0.067	1.0 x 1.7	0.236	6.00	240	0.118	3.0	112.2	2850			●	●
Mini Flat	0.051 x 0.090	1.3 x 2.3	0.236	6.00	240	0.118	3.0	112.2	2850			●	●
Mini Round	∅ 0.055	∅ 1.4	0.236	6.00	240	0.118	3.0	112.2	2850			●	●
Mini Round	∅ 0.070	∅ 1.8	0.236	6.00	240	0.118	3.0	112.2	2850			●	●
Square	0.118 x 0.118	3.0 x 3.0	0.472	12.00	240	0.236	6.0	86.6	2200	●	●	●	
Square	0.128 x 0.128	3.25 x 3.25	0.472	12.00	240	0.236	6.0	86.6	2500	●	●	●	
Flat	0.071 x 0.126	1.8 x 3.2	0.472	12.00	240	0.236	6.0	86.6	2500			●	
Flat	0.098 x 0.165	2.2 x 4.2	0.472	12.00	240	0.236	6.0	86.6	2500	●	●	●	
Flat	0.098 x 0.134	2.5 x 3.4	0.472	12.00	240	0.236	6.0	86.6	2500	●	●	●	
Round	∅ 0.118	∅ 3.0	0.472	12.00	240	0.236	6.0	86.6	2500	●	●	●	
Round	∅ 0.125	∅ 3.18	0.472	12.00	240	0.236	6.0	86.6	2500	●	●	●	
Round	∅ 0.157	∅ 4.0	0.472	12.00	240	0.236	6.0	86.6	2500	●	●	●	
Maxi	0.181 x 0.338	4.6 x 8.6	0.80	20.0	480	0.393	10.0	86.6	2500	●	●	●	

\*Externally wound thermocouples are available for all Nexthermal coil heaters.

Coil ID	Tolerance ID with Pressed On Sheath (mm)	Coil ID (mm)	Mini, Standard & Maxi ID Tolerances	
			<30mm Long	≤30mm Long
Mini	+0.05 to +0.10	6.54 - 12	-0.05 to -0.2	-0.1 to -0.3
Standard	+0.05 to +0.10	13-30	-0.1 to -0.3	-0.2 to -0.4
Maxi	+0.05 to +0.15	31-50	-0.2 to -0.4	-0.3 to -0.6

Clamping strap recommended above 2" Over 50mm - specified on your drawing

Standard wattage tolerance for Nexthermal coil heaters is ±10%.

Premium wattage tolerance is ±5%. Standardized heaters may be designed with tighter than published wattage tolerances. Consult Nexthermal Engineering. Hotlock and Axial Clamp heaters are available with ±2% wattage tolerance.

Additional Options			Coil Heater Assemblies		
Pressed On Sheaths		ID/OD Tube	Mini Coil Heaters		All Coil Heaters
With Tab	Without Tab		Hotlock	Axial Clamp	Pressed In Brass
					

## Nexthermal World Headquarters

[www.nexthermal.com](http://www.nexthermal.com)

1045 Harts Lake Road • Battle Creek, MI, U.S.A. 49037

Main: +1-269-964-0271

Fax: +1-269-964-4526

[sales@nexthermal.com](mailto:sales@nexthermal.com)



# Coil Heater Profiles



### Mini Coil Heaters

Nexthermal offers a range of mini coil heaters, flat and round for when space is constrained. We can wind in thermocouples and support a bending radius of 3mm.

### 1.8 x 3.2mm Flat Coil Heater

The power of a Nexthermal coil heater in a smaller size with a bending radius of 6mm.



### 2.2 x 4.2mm Flat Coil Heater

Thin enough to keep net outer diameter to a minimum, wide enough to bring more power to heating surface. Supports internal TC. Bending radius 6mm.

### 2.5 x 3.4mm Coil Heater

Our most popular coil heater and a standard for OEMs. Internal TC option. Bending radius 6mm.



### 3.0mm, 3.18mm and 4.0mm Round Coil Heater

Proven coil heater product excellent for form in groove and 3D heating applications. Internal TC. Minimum bending radius 6mm.

### 3.0mm and 3.25mm Square Coil Heaters

Structurally sound and increases the surface area in contact with form in groove assemblies and applications.



### 4.6 x 8.6mm Maxi Coil Heater

Highly durable heater used in large format injection molding and diecast applications. Minimum bending radius 10mm.

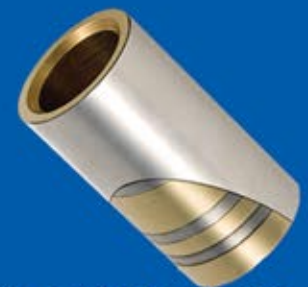
## Coil Heater Based Assemblies



Hotlock



Axial Clamp Heater



Pressed in Brass Heater