

# Pipe Thread Heaters

## Construction Features



### 1" — 2-1/2" Pipe Thread Heaters

- Element bends repressed uniformly to insure electrical insulation integrity.
- One piece forging of hex, thread and riser assures reliability.
- Element spacers prevent hot spots.
- Bussing is permanent and encapsulated in epoxy seal.
- UL CSA label furnished on all standard copper, stainless steel and Incoloy sheathed heaters, NEMA Type 1, 4 and 4x environments.

**Tubular Elements** are welded or silver soldered into a hex head pipe thread fitting. Elements have 80/20 nickel-chromium resistance coils centered in a heavy gauge metal tube surrounded by magnesium oxide insulation. Through rolling, the magnesium oxide is compacted for rapid heat transfer from the coil to the sheath. Elements are annealed, bent and then 360° repressed to insure magnesium oxide integrity in the bent area.

1" and 1-1/4" pipe thread heaters have .312" diameter elements for operation up to 277 volts. 2" and 2-1/2" pipe thread heaters have .475" diameter elements suitable for operation up to 600 volts.

**Pipe Thread Fittings** of forged brass, silver soldered to the sheath, are furnished as standard with copper sheathed heaters. Steel and stainless steel sheathed elements are welded into fittings of like material.

**Outlet Boxes** are furnished on heaters without a built-in thermostat. A 4" NEMA 1 octagon outlet box having 3/4" knockouts is standard.

2" NPT stock heaters (without thermostats) are furnished with cast liquidproof outlet boxes.

Heaters with a built-in thermostat are normally furnished with a NEMA 1 rectangular sheet metal enclosure having combination 1/2"-3/4" knockouts. However, those heaters drawing more than 40 amps are furnished with welded steel outlet boxes having 1" or 1-1/4" hubs for electrical connections.

**Built-In Thermostats** provide automatic temperature control without the necessity of installing a separate well for the thermostat bulb in the field and making electrical connections between the heater and control. The thermostats are fully adjustable from 0-100/120° F or 60-250° F.

Standard thermostats are single-pole for single-phase heaters and for pilot duty three phase applications and two pole for de-energizing load carrying applications, see page 43 for selection criteria.

Heaters rated above these capacities require a magnetic contactor, with the thermostat controlling the contactor holding coil.

The thermostat's pilot duty rating is 250 VA at 277 volts maximum.

**Element Spacers** are made from Type 304 stainless steel to maintain a uniform distance between elements, thus preventing hot spots.

**Epoxy Seals** for a moisture resistant seal where fluid temperatures do not exceed 250° F.

**UL and CSA Listings** are available. All standard copper, Type 304 and 316 stainless steel and Incoloy sheathed heaters are listed by the Underwriters Laboratories under Reference E23541. These heaters, as well as steel sheathed heaters, are also available with the CSA (Canadian Standards Association) label under File No. LR11895. Some non-standard constructions can be UL and CSA labeled. Consult factory for availability.

# Pipe Thread Heaters

## 1" NPT Pipe Thread Heaters

Quick ship, build your catalog number  
**7111A**

Base number from chart below

Select letter indicating  
voltage /phase from chart

Thermostat range

0= No thermostat  
2 = 60-250° F  
3 = 0-100/120° F

Thermostat Style

0= No thermostat  
1= Single pole  
2= Two pole

Terminal Box

1= NEMA 1  
2= NEMA 4, 4x cast  
5= NEMA 4/12 painted steel  
6= NEMA 4X fiberglass

### 304 SS Sheath, 304 SS Fitting

50 / 37.5 W/Sq. In.

Elements	KW	B Dimension (Inches)	Catalog Number	Watts/in2	1 Phase		
					120V	208V	240V
1	.45	8-1/2	5A6	37.5		C	
	.6	8-1/2	5B6	50			J
	.75	11-7/8	5C6	37.5		C	
	1	11-7/8	5D6	50			J
	1.25	18-3/4	5E6	37.5		C	
	1.67	18-3/4	5F6	50			J
	1.88	27-1/4	5G6	37.5		C	
	2.5	27-1/4	5H6	50			J
	3	42-1/2	5I6	37.5		C	
	4	42-1/2	5J6	50			J

### 304 SS Sheath, Steel Fitting

20 / 15 W/Sq. In.

Elements	KW	B Dimension (Inches)	Catalog Number	Watts/in2	1 Phase		
					120V	208V	240V
1	.38	14-1/2	5K6	15		C	
	.5	14-1/2	5L6	20			J
	.75	27-1/4	5M6	15		C	
	1	27-1/4	5N6	20			J
	1.25	44-1/4	5O6	15		C	
	1.67	44-1/4	5P6	20			J

# Pipe Thread Heaters

## 1-1/4" NPT Pipe Thread Heaters

Quick ship, build your catalog number  
**7121A**

Base number from chart below

### 304 SS Sheath, 304 SS Fitting

50 / 37.5 W/Sq. In.

Elements	KW	B Dimension (Inches)	Catalog Number	Watts/in2	1 Phase			3 Phase	
					120V	208V	240V	208V	240V
3	1.35	8-1/2	6A6	37.5		C		D	
	1.8	8-1/2	6B6	50			J		K
	2.25	11-7/8	6C6	37.5		C		D	
	3	11-7/8	6D6	50			J		K
	3.75	18-3/4	6E6	37.5		C		D	
	5	18-3/4	6F6	50			J		K
	5.63	27-1/4	6G6	37.5		C		D	
	7.5	27-1/4	6H6	50			J		K
	9	42-1/2	6I6	37.5		C		D	
	12	42-1/2	6J6	50			J		K

### 304 SS Sheath, Steel Fitting

20 / 15 W/Sq. In.

Elements	KW	B Dimension (Inches)	Catalog Number	Watts/in2	1 Phase			3 Phase	
					120V	208V	240V	208V	240V
3	1.1	14-1/2	6L6	15		C		D	
	1.5	14-1/2	6M6	20			J		K
	2.25	27-1/4	6N6	15		C		D	
	3	27-1/4	6O6	20			J		K
	3.75	44-1/4	6P6	15		C		D	
	5	44-1/4	6Q6	20			J		K

Select letter indicating voltage /phase from chart

Thermostat range

0= No thermostat

2 = 60-250° F

3 = 0-100/120° F

Thermostat Style

0= No thermostat

1= Single pole

2= Two pole

Terminal Box

1= NEMA 1

2= NEMA 4, 4x cast

5= NEMA 4/12 painted steel

6= NEMA 4X fiberglass

# Pipe Thread Heaters

## 2" Pipe Thread Heaters

Water

304 SS Sheath, 304 SS Fitting

50 W/Sq. In.

Number of Elements	KW	Stock Without Thermostat, NEMA 4 Terminal Box				
		B Dimension (Inches)	Catalog Number	Availability		
				3 Phase		
				208V	240V	480V
3	4.5	11-3/4	S7131A066208U	•	•	S
	6	15-1/4	S7131A086208U	•	•	S
	7.5	18-1/2	S7131A096208U	•	•	S
	9	21-3/4	S7131A106208U	•	•	S
	12	28-1/2	S7131A116208U	•	•	S
	15	35-1/4	S7131A126208U	•	•	S
	18	42	S7131A136208U			S



## Copper Sheath, Brass Fitting

50 W/Sq.In.

Number of Elements	KW	Stock Without Thermostat, NEMA 4 Terminal Box				
		B Dimension (Inches)	Catalog Number	Availability		
				3 Phase		
				208V	240V	480V
	3	8-1/4	S7131U141200D	S	•	
	3	8-1/4	S7131U141200U		•	S
	4	10-1/2	S7131U151200D	S	•	
	4	10-1/2	S7131U151200U		•	S
	5	12-3/4	S7131U171200D	S	•	
	5	12-3/4	S7131U171200U		•	S
	6	15	S7131U201200D	S	•	
	6	15	S7131U201200U		•	S
	7	17-1/4	S7131U221200D	S	•	
	7	17-1/4	S7131U221200U		•	S
	8	19-1/2	S7131U281200D	S	•	
	8	19-1/2	S7131U281200U		•	S
	9	21-3/4	S7131U291200D	S	•	
	9	21-3/4	S7131U291200U	•	•	S
	10	24	S7131U301200D	S	•	
	10	24	S7131U301200U	•	•	S
	12	28-1/2	S7131U321200D	S	•	
	12	28-1/2	S7131U321200U		•	S
	15	35-1/4	S7131U331200U		•	S
	16	37-3/4	S7131U341200U	•		S

# Pipe Thread Heaters

## 2" NPT Pipe Thread Heaters

Quick ship, build your catalog number

**7131A**

Base number from chart below

### 304 SS Sheath, 304 SS Fitting

50/ 37.5 W/Sq. In.

Elements	KW	B Dimension (Inches)	Catalog Number	Watts/in2	1 Phase				3 Phase		
					120V	208V	240V	480V	208V	240V	480V
3	2.25	8-1/2	7A6	37.5			J			K	
	3	8-1/2	7B6	50		C			D		U
	3.75	13	7C6	37.5			J			K	
	5	13	7D6	50		C			D		U
	5.6	18-1/2	7E6	37.5			J			K	
	7.5	18-1/2	7F6	50		C			D		U
	9	28-3/4	7G6	37.5			J			K	
	10	24-1/4	7H6	50		C			D		U
	11.2	35-1/2	7I6	37.5			J			K	
	12	28-3/4	7J6	50		C			D		U
	13.5	42	7K6	37.5			J			K	
	15	35-1/2	7L6	50							U
	18	42	7M6	50							U

Select letter indicating voltage /phase from chart

Thermostat range

0= No thermostat

2 = 60-250° F

3 = 0-100/120° F

Thermostat Style

0= No thermostat

1= Single pole

2= Two pole

### Copper Sheath, Brass Fitting

50 W/Sq. In.

Elements	KW	B Dimension (Inches)	Catalog Number	Watts/in2	1 Phase				3 Phase		
					120V	208V	240V	480V	208V	240V	480V
3	3	8-1/4	7N1	50		C			D		U
	4	10-1/2	7O1	50		C			D		U
	5	12-3/4	7P1	50		C			D		U
	6	15	7Q1	50		C			D		U
	7	17-1/4	7R1	50		C			D		U
	8	19-1/2	7S1	50		C			D		U
	9	21-3/4	7T1	50							U
	10	24	7U1	50							U
	12	28-1/2	7V1	50		C			D		U
	15	35-1/4	7W1	50							U
	16	37-3/4	7X1	50							U

Terminal Box

1= NEMA 1

2= NEMA 4, 4x cast

5= NEMA 4/12 painted steel

6= NEMA 4X fiberglass

### 304 SS Sheath, Steel Fitting

20/15 W/Sq. In.

Elements	KW	B Dimension (Inches)	Catalog Number	Watts/in2	1 Phase				3 Phase		
					120V	208V	240V	480V	208V	240V	480V
3	2.25	18-3/4	8A6	15			J			K	
	3	18-3/4	8B6	20		C			D		U
	3.75	29-3/4	8C6	15			J			K	
	5	29-3/4	8D6	20		C			D		U
	5.6	43-3/4	8E6	15			J			K	
	7.5	43-3/4	8F6	20		C			D		U
	9	69	8G6	15			J			K	
	10	57-3/4	8H6	20		C			D		U
	12	69	8I6	20		C			D		U

# Pipe Thread Heaters

## 2 1/2" NPT Pipe Thread Heaters

Quick ship, build your catalog number  
**7141A**

Base number from chart below

### 304 SS Sheath, 304 SS Fitting

50/ 37.5 W/Sq. In.

Elements	KW	B Dimension (Inches)	Catalog Number	Watts/in2	1 Phase				3 Phase		
					120V	208V	240V	480V	208V	240V	480V
3	2.25	8-1/2	9A6	37.5			J			K	
	3	8-1/2	9B6	50		C			D		U
	3.75	13	9C6	37.5			J			K	
	5	13	9D6	50		C			D		U
	5.6	18-1/2	9E6	37.5			J			K	
	7.5	18-1/2	9F6	50		C			D		U
	9	28-3/4	9G6	37.5			J			K	
	10	24-1/4	9H6	50		C			D		U
	11.2	35-1/2	9I6	37.5			J			K	
	12	28-3/4	9J6	50		C			D		U
	13.5	42	9K6	37.5			J			K	
	15	35-1/2	9L6	50							U
	18	42	9M6	50							U

### 304 SS Sheath, Steel Fitting

20/15 W/Sq. In.

Elements	KW	B Dimension (Inches)	Catalog Number	Watts/in2	1 Phase				3 Phase		
					120V	208V	240V	480V	208V	240V	480V
3	2.25	18-3/4	9N6	15			J			K	
	3	18-3/4	9O6	20		C			D		U
	3.75	29-3/4	9P6	15			J			K	
	5	29-3/4	9Q6	20		C			D		U
	5.6	43-3/4	9R6	15			J			K	
	7.5	43-3/4	9S6	20		C			D		U
	9	69	9T6	15			J			K	
	10	57-3/4	9U6	20		C			D		U
	12	69	9V6	20		C			D		U

Select letter indicating voltage /phase from chart

#### Thermostat range

0= No thermostat  
2 = 60-250° F  
3 = 0-100/120° F

#### Thermostat Style

0= No thermostat  
1= Single pole  
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#### Terminal Box

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# Pipe Thread Heaters

## Heater Options

**Liquidproof NEMA 4 Outlet Box (Without Built-In Thermostat)** - Cast box with threaded, gasketed cover and 1-1/4" NPT female threaded hubs for electrical connections. For applications where there is danger of moisture entering the outlet box.

**Explosion Resistant Heater** - Rated for Class I, Div. I, Groups B, C & D. Applications are available, see page 27.

**Liquidproof NEMA 4 Outlet Box (With Built-In Thermostat)** - Welded steel outlet box with enamel finish and gasketed cover. Pilot light is visible through lens cover. Two 1" NPT hubs provided for electrical connections. Stainless steel outlet box is available as an option.

**Single-Pole, Single-Throw Thermostats** - Standard on all single-phase heaters and all pilot duty applications. See Page 43 for selection criteria. If pilot light or an ON/OFF switch is required, specify double-pole single-throw thermostat.

**Omit Outlet Box** - For applications where heater terminals will be protected by field-furnished enclosures.

**Special Sheath Materials** - Incoloy 800, Inconel 600, Type 316 stainless steel and Monel 400 available.

**Special Header Materials** - Incoloy 800, Inconel 600 and Type 316 stainless steel headers available.

**Vertical Mounting for 1-1/4", 2", and 2-1/2" Pipe Thread Heaters with Thermostat** - Thermostat must be mounted vertically. Heaters with single-pole, single-throw thermostats can be mounted in any position without relocating the box.



**Other Special Ratings** - 2 & 2-1/2" NPT pipe thread heaters available in any non stock voltage up to 600 volts. All sizes available with lower watt densities for special applications.

**Longer Elements** - Consult factory for length and wattage limits per element.

**UL/CSA Approval** - Available on all standard heaters listed.

**Longer Element Cold Ends** - Cold ends are 3/4" for copper, or 5/16" for stainless and steel. In vertically mounted heaters and other applications where the liquid will not completely cover the elements, immersion length should be increased by the length of additional cold end.