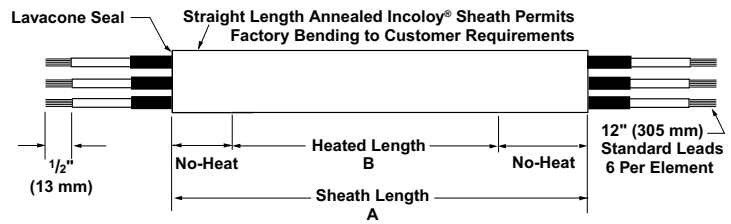


Tubular and Process Assemblies

FIREBAR Heating Elements

One Inch, Double Ended FIREBAR



FIREBAR Description	Sheath A Dimension		Heated B Dimension		Watts	Code Number			Est. Net Weight	
	inch	(mm)	inch	(mm)		120V~(ac)	240V~(ac)	480V~(ac)	lbs	(kg)

Applications: Cooking Oils, Mild Caustic Solution, Ethylene Glycol (100%)

30 W/in ² Incoloy® (4.7 W/cm ²)	16 (406)	10 (254)	750	FBN161WH			0.6 (0.3)
	20 (508)	14 (355)	1000	FBN201WH			0.8 (0.4)
	27 (685)	21 (533)	1500	FBN271WH	FBN2710WH		1.0 (0.5)
	34 (863)	28 (711)	2000	FBN341WH	FBN3410WH		1.3 (0.6)
	50 (1270)	43 (1092)	3000		FBN5010WH	FBN5011WH	1.8 (0.9)
	64 (1625)	57 (1447)	4000		FBN6410WH	FBN6411WH	2.4 (1.1)
80 (2032)	72 (1828)	5000		FBN8010WH	FBN8011WH	2.9 (1.4)	

Applications: Process Water, Ethylene Glycol (50%)

40 W/in ² Incoloy® (6.2 W/cm ²)	25 (635)	22 (558)	2000		FBN2510WK		0.9 (0.4)
	35 (889)	32 (812)	3000		FBN3510WK	FBN3511WK	1.3 (0.6)
	47 (1193)	43 (1092)	4000		FBN4710WK	FBN4711WK	1.7 (0.8)
	69 (1752)	65 (1651)	6000		FBN6910WK	FBN6911WK	2.5 (1.2)
	90 (2286)	86 (2184)	8000		FBN9010WK	FBN9011WK	3.3 (1.5)
45 W/in ² Incoloy® (7 W/cm ²)	29 (736)	19 (482)	2000		FBN2910WP		1.1 (0.5)
	34 (863)	24 (609)	2500		FBN3410WP		1.3 (0.6)
	39 (990)	29 (736)	3000		FBN3910WP		1.4 (0.7)
	48 (1219)	38 (965)	4000		FBN4810WP	FBN4811WP	1.8 (0.9)
	58 (1473)	48 (1219)	5000		FBN5810WP	FBN5811WP	2.1 (1.0)
	68 (1727)	58 (1473)	6000		FBN6810WP	FBN6811WP	2.5 (1.2)
	87 (2209)	77 (1955)	8000		FBN8710WP	FBN8711WP	3.2 (1.5)
106 (2692)	96 (2438)	10,000		FBN10610WP	FBN10611WP	3.9 (1.8)	

Applications: Clean and Potable Water

80 W/in ² Incoloy® (12.4 W/cm ²)	15 (381)	11 (279)	2000		FBN1510WJ		0.6 (0.3)
	20 (508)	16 (406)	3000		FBN2010WJ		0.8 (0.4)
	26 (660)	22 (558)	4000		FBN2610WJ	FBN2611WJ	1.0 (0.5)
	36 (914)	32 (812)	6000		FBN3610WJ	FBN3611WJ	1.3 (0.6)
	48 (1219)	43 (1092)	8000		FBN4810WJ	FBN4811WJ	1.8 (0.9)
	70 (1778)	65 (1651)	12,000			FBN7011WJ	2.6 (1.2)
91 (2311)	85 (2159)	16,000			FBN9111WJ	3.3 (1.5)	
90 W/in ² Incoloy® (14 W/cm ²)	35 (889)	25 (635)	5000	FBN351WG	FBN3510WG	FBN3511WG	1.3 (0.6)
	41 (1041)	31 (787)	6500	FBN411WG①	FBN4110WG	FBN4111WG	1.5 (0.7)
	51 (1295)	41 (1041)	8500		FBN5110WG	FBN5111WG	1.9 (0.9)
	62 (1574)	52 (1320)	10,500		FBN6210WG	FBN6211WG	2.3 (1.1)
	72 (1828)	62 (1574)	12,750		FBN7210WG	FBN7211WG	2.6 (1.2)
	93 (2362)	83 (2108)	17,000			FBN931WG	3.4 (1.6)
	114 (2895)	104 (2641)	21,500			FBN11411WG	3.4 (1.6)

All heating elements are Stock units unless otherwise noted.

① Standard

Availability

Stock: Same day shipment

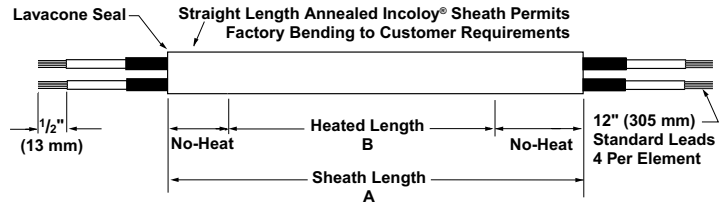
Standard: 10 working days

Truck Shipment only

Tubular and Process Assemblies

FIREBAR Heating Elements

5/8 Inch, Double Ended
FIREBAR



FIREBAR Description	Sheath A Dimension		Heated B Dimension		Watts	Code Number			Est. Net Weight	
	inch	(mm)	inch	(mm)		120V~(ac)	240V~(ac)	480V~(ac)	lbs	(kg)

Applications: Degreasing Fluids, Heat Transfer Oils

23 W/in ² ② Incoloy® (3.6 W/cm ²)	19	(483)	11	(279)	375	FAN191WT			0.5	(0.3)
	22	(559)	14	(356)	500	FAN221WT	FAN2210WT		0.5	(0.3)
	26	(660)	18	(457)	625	FAN261WT	FAN2610WT		0.6	(0.3)
	30	(762)	22	(559)	750	FAN301WT	FAN3010WT		0.7	(0.4)
	37	(940)	29	(737)	1000	FAN371WT	FAN3710WT		0.9	(0.5)
	44	(1118)	36	(914)	1250	FAN441WT	FAN4410WT		1.0	(0.5)
	51	(1295)	43	(1092)	1500	FAN511WT	FAN5110WT		1.2	(0.6)

Applications: Clean and Potable Water

90 W/in ² Incoloy® (14 W/cm ²)	15	(381)	7	(178)	1000	FAN151WG②	FAN1510WG		0.4	(0.2)
	19	(483)	11	(279)	1500	FAN191WG	FAN1910WG②	FAN1911WG	0.5	(0.3)
	22	(559)	14	(356)	2000	FAN221WG	FAN2210WG②	FAN2211WG	0.5	(0.3)
	26	(660)	18	(457)	2500	FAN261WG	FAN2610WG②	FAN2611WG	0.6	(0.3)
	30	(762)	22	(559)	3000	FAN301WG②	FAN3010WG②	FAN3011WG	0.7	(0.4)
	37	(940)	29	(737)	4000		FAN3710WG②	FAN3711WG	0.9	(0.5)
	44	(1118)	36	(914)	5000		FAN4410WG②	FAN4411WG	1.0	(0.5)
	51	(1295)	43	(1092)	6000		FAN5110WG②	FAN5111WG	1.2	(0.6)

All heating elements are Stock units.

② Stock

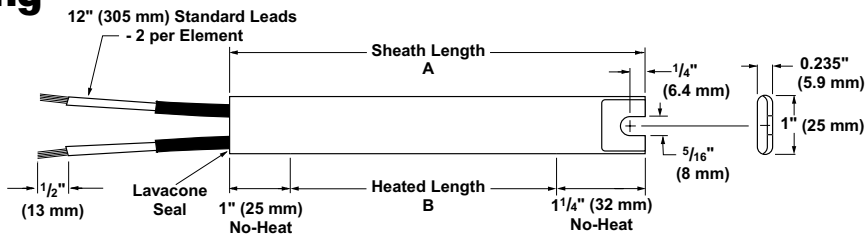
Availability

Stock: Same day shipment

Standard: 10 working days

Tubular and Process Assemblies

FIREBAR Heating Elements



One Inch, Single Ended FIREBAR

FIREBAR Description	Sheath A Dimension		Heated B Dimension		Watts	Code Number		Est. Net Weight	
	inch	(mm)	inch	(mm)		120V~(ac)	240V~(ac)	lbs	(kg)

Applications: Radiant, Platens, Dies, Low Temperature Ovens 300°F (150°C)

20 W/in ² 304 SS (3.1 W/cm ²)	8 3/4	(222)	6 1/2	(165)	300	FSP91WM		0.4	(0.2)
	10 1/4	(260)	7 1/2	(203)	375	FSP101WM		0.4	(0.2)
	12 1/4	(311)	10	(254)	450	FSP121WM		0.5	(0.3)
	13 1/2	(342)	11 1/4	(285)	500	FSP141WM		0.5	(0.3)
	16 1/8	(408)	13 3/8	(352)	650	FSP161WM	FSP1610WM	0.6	(0.3)
	17 3/4	(450)	15 1/2	(393)	725	FSP181WM	FSP1810WM	0.7	(0.4)
	19 1/4	(489)	17	(431)	800	FSP191WM	FSP1910WM	0.7	(0.4)
	22	(558)	19 3/4	(501)	900	FSP221WM	FSP2210WM	0.8	(0.4)
	23 3/4	(603)	21 1/2	(546)	1000	FSP241WM	FSP2410WM	0.9	(0.4)
	25	(635)	22 3/4	(577)	1050	FSP251WM	FSP2510WM	0.9	(0.4)
	28 3/8	(727)	26 3/8	(669)	1250	FSP291WM	FSP2910WM	1.1	(0.5)
	31 3/8	(803)	29 3/8	(746)	1350	FSP321WM	FSP3210WM	1.2	(0.6)
	34 3/8	(865)	31 3/8	(809)	1500		FSP3410WM	1.3	(0.6)
	36 3/8	(936)	34 3/8	(879)	1600		FSP3710WM	1.4	(0.7)
	40 5/8	(1031)	38 3/8	(974)	1800		FSP4110WM	1.5	(0.7)
	46 1/4	(1174)	44	(1117)	2000		FSP4610WM	1.7	(0.8)

Applications: Process Water, Ethylene Glycol (50%)

40 W/in ² 304 SS (6.2 W/cm ²)	8 3/4	(222)	6 1/2	(165)	600	FSP91WK		0.4	(0.2)
	10 1/4	(260)	7 1/2	(203)	750	FSP101WK		0.4	(0.2)
	12 1/4	(311)	10	(254)	900	FSP121WK	FSP1210WK	0.5	(0.3)
	13 1/2	(342)	11 1/4	(285)	1000	FSP131WK	FSP1310WK	0.5	(0.3)
	16 1/4	(408)	13 3/8	(352)	1300	FSP161WK	FSP1610WK	0.6	(0.3)
	17 3/4	(450)	15 1/2	(393)	1450	FSP181WK	FSP1810WK	0.7	(0.4)
	19 1/4	(489)	17	(431)	1600		FSP1910WK	0.7	(0.4)
	22	(558)	19 3/4	(501)	1800		FSP2210WK	0.8	(0.4)
	23 3/4	(603)	21 1/2	(546)	2000		FSP2410WK	0.9	(0.4)
	25	(635)	22 3/4	(577)	2100		FSP2510WK	0.9	(0.4)
	28 3/8	(727)	26 3/8	(669)	2500		FSP2910WK	1.1	(0.5)
	31 3/8	(803)	29 3/8	(746)	2700		FSP3210WK	1.2	(0.6)
	34 3/8	(865)	31 3/8	(809)	3000		FSP3410WK	1.3	(0.6)
	36 3/8	(936)	34 3/8	(879)	3200		FSP3710WK	1.4	(0.7)
	40 5/8	(1031)	38 3/8	(974)	3600		FSP4110WK	1.5	(0.7)
	46 1/4	(1174)	44	(1117)	4000		FSP4610WK	1.7	(0.8)

All heating elements are Stock units.

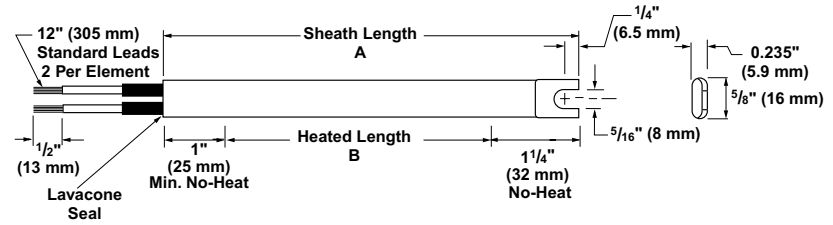
Availability

Stock: Same day shipment

Tubular and Process Assemblies

FIREBAR Heating Elements

5/8 Inch, Single Ended FIREBAR



FIREBAR Description	Sheath A Dimension		Heated B Dimension		Watts	Code Number		Est. Net Weight	
	inch	(mm)	inch	(mm)		120V~(ac)	240V~(ac)	lbs	(kg)

Applications: Radiant, Platens, Dies, Low Temperature Ovens 300°F (150°C)

20 W/in ²	11 1/2	(292)	8	(203)	250	FSA121WM ^①		0.3	(0.2)
Incoloy® (3.1 W/cm ²)	15 1/2	(394)	12	(304)	375	FSA161WM	FSA1610WM	0.4	(0.2)
	19 1/2	(495)	16	(406)	500	FSA201WM	FSA2010WM ^①	0.5	(0.3)
	28	(711)	24	(609)	750	FSA281WM ^①	FSA2810WM ^①	0.6	(0.3)
	36	(914)	32	(812)	1000	FSA361WM	FSA3610WM	0.8	(0.4)
	52	(1321)	48	(1219)	1500	FSA521WM	FSA5210WM ^①	1.2	(0.6)

Availability

Stock: Same day shipment

Standard: 10 working days

① Stock

F.O.B.: Hannibal, Missouri

How to Order

To order a stock FIREBAR heating element, specify:

- Watlow code number
- Size (one or 5/8 inch)
- Type (single- or double-ended)
- Volts/watts
- Termination options
- Options
- Quantity

If our stock units do not meet your application needs, Watlow can provide a **made-to-order** unit, please specify:

- Type of application, including heated material, operating temperature, etc.
- Size (one or 5/8 inch)
- Type (single- or double-ended)
- Volts/watts
- Sheath length and material
- Heated length
- No-heat length

- Terminal pin length or termination options
- Moisture seal
- Bend configuration—including dimensions, critical tolerances, major and minor axis bends (please send drawing, if available)
- Options, including external finish and mounting method
- Quantity

Availability

One and 5/8 Inch Double Ended

Straight Length Element

Stock: Same day shipment

Modified Stock^①: Three to five working days

Standard: Three weeks

Made-to-Order: Four to five weeks

Formed Element

Modified Stock^①: Five to seven working days

Standard: Three weeks

Made-to-Order: Four to five weeks

**One and 5/8 Inch Single Ended
Straight Length Element**

Stock: Same day shipment

Modified Stock^①: Three working days

Made-to-Order: Four to five weeks

Formed Element

Modified Stock^①: Three working days

Made-to-Order: Four to five weeks

Options, complexity and quantity may affect availability and lead times. Consult factory.

① Stock units with catalog options.

Tubular and Process Assemblies

FIREBAR Heating Elements

FINBAR

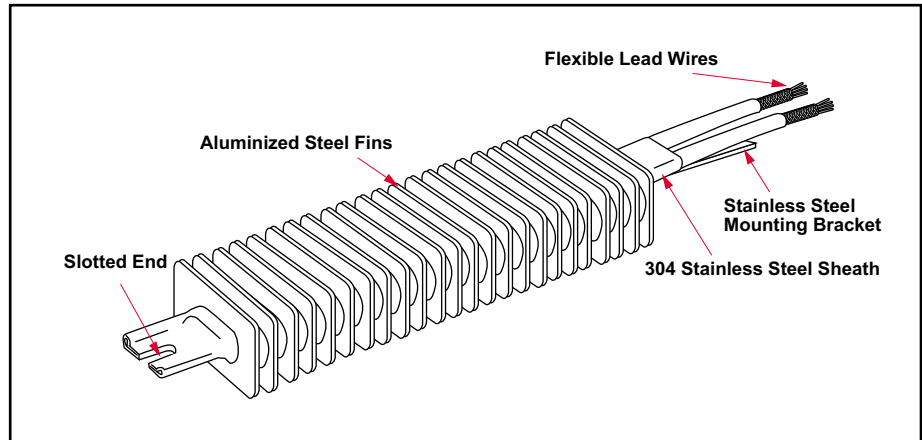
Composed of aluminized steel fins press fitted to a one inch single-ended FIREBAR element. The FINBAR is designed to improve heat transfer to the air and permits putting more power in tighter spaces—like forced air ducts, dryers, ovens and load bank resistors.

Heat transfer, lower sheath temperature and element life are all maximized by its finned construction.

Installation is simplified by terminations exiting at one end and mounting accommodations on both ends.

Performance Capabilities

- Watt densities to 50 W/in² (7.7 W/cm²)
- 304 stainless steel sheath temperatures to 1200°F (650°C)
- Voltages to 480V~(ac)
- Amperages to 48 amps per heater or 16 amps per coil



Features and Benefits

- **Rugged aluminized steel fins** effectively increase surface area to approximately 16 square inches for every linear inch of element length. Fins press fitted to the heating element improve heat transfer to the air.
- **Single-ended termination** simplifies wiring and installation.
- **Stainless steel mounting bracket**, welded to the terminal end, is supplied with a slotted end for ease of installation.

- **Lavacone seals** provide protection against humid storage conditions. Moisture retardant to 392°F (200°C).

Applications

- Forced air heating for dryers, ovens, ducts
- Still air heating for ovens, comfort heating
- Incubators
- Ink drying
- Load bank resistors

Construction Features

Construction features are detailed for assembly stock products only. Optional materials, sizes, terminations and ratings may be available at additional cost. For availability and ordering information on options, see [pages 307 to 312](#).

Watt Density: Stock; up to 40 W/in² (6.2 W/cm²), made-to-order; up to 50 W/in² (7.7 W/cm²)

Fin Surface Area: 16 in²/linear inch (40.5 cm²/linear cm)

Fin Cross Section: 2 X 1 inch (50 X 25 mm)

Maximum Operating Temperature: Sheath material: 304 Stainless Steel, 1200°F (650°C), Fin material; Aluminized Steel; 1100°F (600°C)

Heater Length: Stock; 10 to 48 inches (260 to 1210 mm), made-to-order; 6 to 120 inches (150 to 3050 mm)

No-Heat Length: 1 inch minimum, 12 inch maximum (25/305 mm)

Voltages: Up to 480V~(ac)

Phase: Stock; 1-phase parallel made-to-order; 1-phase parallel or 3-phase wye

Resistance Coils: Stock; 1 made-to-order 1 or 3

Terminations: Flexible lead wires, quick connect (spade), screw lug (plate) and threaded stud

Seal Material: Lavacone, rated to 392°F (200°C)

Optional Internal Thermocouple: made-to-order only; ASTM **Type K**

Single-End Configuration: Stock: slotted, made-to-order; slotted, no-slot or sealed

Agency Recognition: refer to FIREBAR UL file # E52951 and CSA file # 31388 under **Agency Recognition** on [pages 268 to 271](#).

Tubular and Process Assemblies

FIREBAR Heating Elements

Air Heating

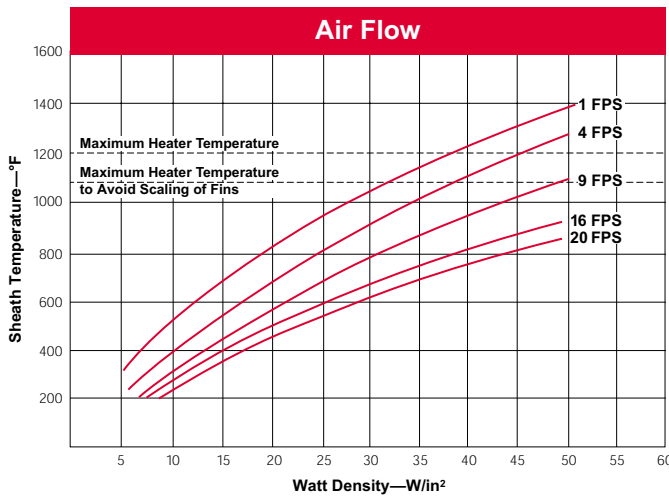
The *Watt Density, Air Flow and Sheath Temperature* graph shows the relationship between watt density, air flow velocity and sheath temperature, along with a recommended temperature to avoid deteriorating the fins. Be aware that **lower sheath temperature yields longer heater life.**

The graphic representation is based on a single-ended FINBAR, various air velocities (at 68°F/20°C inlet temperature) and different watt densities.

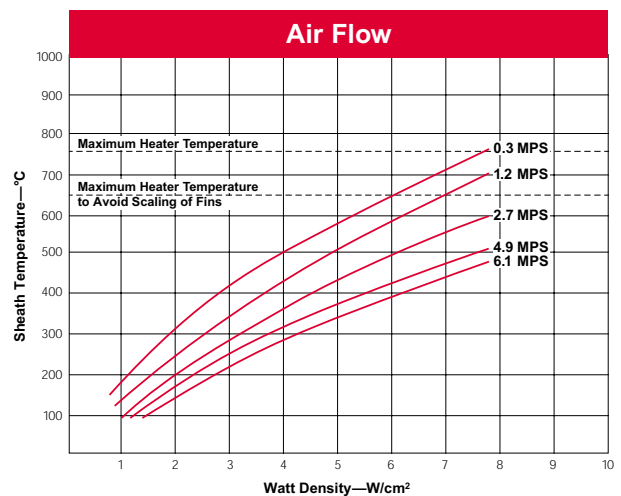
To determine, from the graph, the operating temperature of the FINBAR's sheath, identify the air velocity curve that approximates

your application in feet per second (meters per second). Then look at the vertical line that most closely approximates the FINBAR's watt density. From the intersecting point, read over to the temperature column to determine the sheath's operating temperature.

Watt Density, Air Flow and Sheath Temperature (°F)



Watt Density, Air Flow and Sheath Temperature (°C)

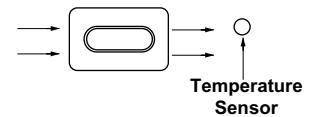


Application Hints

- Avoid deteriorating the fins by not exceeding the recommended maximum fin temperature of 1100°F (600°C).
- Ensure proper air flow to prevent premature heater failure.
- Locate the temperature sensor downstream from heater(s) for process temperature sensing.

The following mounting parameters are recommended:

- Air flow over element must be parallel with the flat side.
- Element center line to element center line spacing must be a minimum of 1½ inches (38 mm).



Proper air flow relative to the heater's sheath is parallel with the longer cross sectional axis.

Dual Ended FINBAR

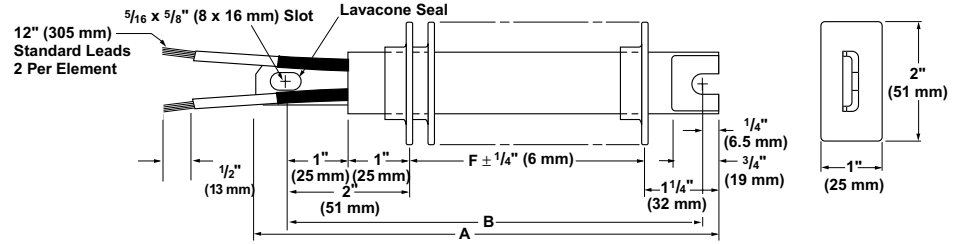
FINBAR elements are typically terminated at one end. Upon request, however, dual ended

FINBAR heaters can be ordered. To order, specify **dual ended FINBAR** and lead length.

Tubular and Process Assemblies

FIREBAR Heating Elements

FINBAR



FINBAR Description	Overall A Dimension		Overall F Dimension		Mounting B Dimension		Watts	Code Number		Est. Net Weight	
	Inch	(mm)	Inch	(mm)	Inch	(mm)		120V~(ac)	240V~(ac)	lbs	(kg)

Application: Forced Air

20 W/in² 304 SS (3.1 W/cm ²)	10 3/4 (260)	6 1/2 (158)	9 1/2 (241)	300	FSP91WMF		1.4 (0.7)
	11 3/4 (298)	8 (203)	11 (279)	375	FSP101WMF		1.4 (0.7)
	13 3/4 (349)	10 (254)	13 (330)	450	FSP121WMF		1.5 (0.7)
	15 (381)	11 1/4 (285)	14 1/4 (362)	500	FSP141WMF		1.5 (0.7)
	17 3/4 (447)	13 3/8 (352)	16 3/8 (428)	650	FSP161WMF	FSP1610WMF	1.6 (0.8)
	19 3/4 (489)	15 1/2 (393)	18 1/2 (469)	725	FSP181WMF	FSP1810WMF	1.7 (0.8)
	20 3/4 (527)	17 (431)	20 (508)	800	FSP191WMF	FSP1910WMF	1.7 (0.8)
	23 1/2 (597)	19 3/4 (501)	22 3/4 (577)	900	FSP221WMF	FSP2210WMF	1.8 (0.9)
	25 1/4 (641)	21 1/2 (546)	24 1/2 (622)	1000	FSP241WMF	FSP2410WMF	1.9 (0.9)
	26 1/2 (673)	22 3/4 (577)	25 3/4 (654)	1050	FSP251WMF	FSP2510WMF	1.9 (0.9)
	30 3/8 (765)	26 3/8 (669)	29 3/8 (746)	1250	FSP291WMF	FSP2910WMF	2.1 (1.0)
	33 3/8 (841)	29 3/8 (746)	32 3/8 (822)	1350	FSP321WMF	FSP3210WMF	2.2 (1.0)
	35 3/8 (905)	31 3/8 (809)	34 3/8 (885)	1500		FSP3410WMF	2.3 (1.1)
	38 3/8 (975)	34 3/8 (879)	37 3/8 (955)	1600		FSP3710WMF	2.4 (1.1)
42 3/8 (1070)	38 3/8 (974)	41 3/8 (1050)	1800		FSP4110WMF	2.5 (1.2)	
47 3/8 (1213)	44 (1117)	47 (1193)	2000		FSP4610WMF	2.7 (1.3)	
40 W/in² 304 SS (6.2 W/cm ²)	10 3/4 (260)	6 1/2 (158)	9 1/2 (241)	600	FSP91WKF		1.4 (0.7)
	11 3/4 (298)	8 (203)	11 (279)	750	FSP101WKF		1.4 (0.7)
	13 3/4 (349)	10 (254)	13 (330)	900	FSP121WKF	FSP1210WKF	1.5 (0.7)
	15 (381)	11 1/4 (285)	14 1/4 (362)	1000	FSP131WKF	FSP1310WKF	1.5 (0.7)
	17 3/4 (447)	13 3/8 (352)	16 3/8 (428)	1300	FSP161WKF	FSP1610WKF	1.6 (0.8)
	19 3/4 (489)	15 1/2 (393)	18 1/2 (469)	1450	FSP181WKF	FSP1810WKF	1.7 (0.8)
	20 3/4 (527)	17 (431)	20 (508)	1600		FSP1910WKF	1.7 (0.8)
	23 1/2 (597)	19 3/4 (501)	22 3/4 (577)	1800		FSP2210WKF	1.8 (0.9)
	25 1/4 (641)	21 1/2 (546)	24 1/2 (622)	2000		FSP2410WKF	1.9 (0.9)
	26 1/2 (673)	22 3/4 (577)	25 3/4 (654)	2100		FSP2510WKF	1.9 (0.9)
	30 3/8 (765)	26 3/8 (669)	29 3/8 (746)	2500		FSP2910WKF	2.1 (1.0)
	33 3/8 (841)	29 3/8 (746)	32 3/8 (822)	2700		FSP3210WKF	2.2 (1.0)
	35 3/8 (905)	31 3/8 (809)	34 3/8 (885)	3000		FSP3410WKF	2.3 (1.1)
	38 3/8 (975)	34 3/8 (879)	37 3/8 (955)	3200		FSP3710WKF	2.4 (1.1)
42 3/8 (1070)	38 3/8 (974)	41 3/8 (1050)	3600		FSP4110WKF	2.5 (1.2)	
47 3/8 (1213)	44 (1117)	47 (1193)	4000		FSP4610WKF	2.7 (1.3)	

All stock units are Assembly stock.

Availability

Assembly Stock: Three working days

F.O.B.: Hannibal, Missouri

How to Order

To order a stock FINBAR heating element, specify:

- Watlow Code number
- Volts/watts
- Termination options
- Options
- Quantity

For **made-to-order** FINBAR heating elements, specify:

- Type of application, including air flow velocity, volume, etc.
- Single- or double-ended element
- Volts/watts
- Heated length
- No-heat length
- Terminal pin length or termination options, including moisture seal type
- Quantity

- Options, including thermocouple, sealed end, no mounting bracket, etc.

Availability

Assembly Stock: Three working days

Modified Stock®: Five to seven working days

Made-to-Order: Four to five weeks

Options, complexity and quantity may affect availability and lead times. Consult factory.

① Assembly Stock units with catalog options.

Tubular and Process Assemblies

Quick Ship

- On stock chart units:
- Same day on most heaters
 - 10 working days on special voltages and/or wattages
 - 15 working days on special element lengths

Screw Plug Immersion Heaters

Screw plug immersion heaters are ideal for direct immersion heating of liquids, including all types of oils and heat transfer solutions.

Available in a variety of stock and made-to-order sizes, Watlow screw plug immersion heaters feature both WATROD round and FIREBAR® flat tubular elements.

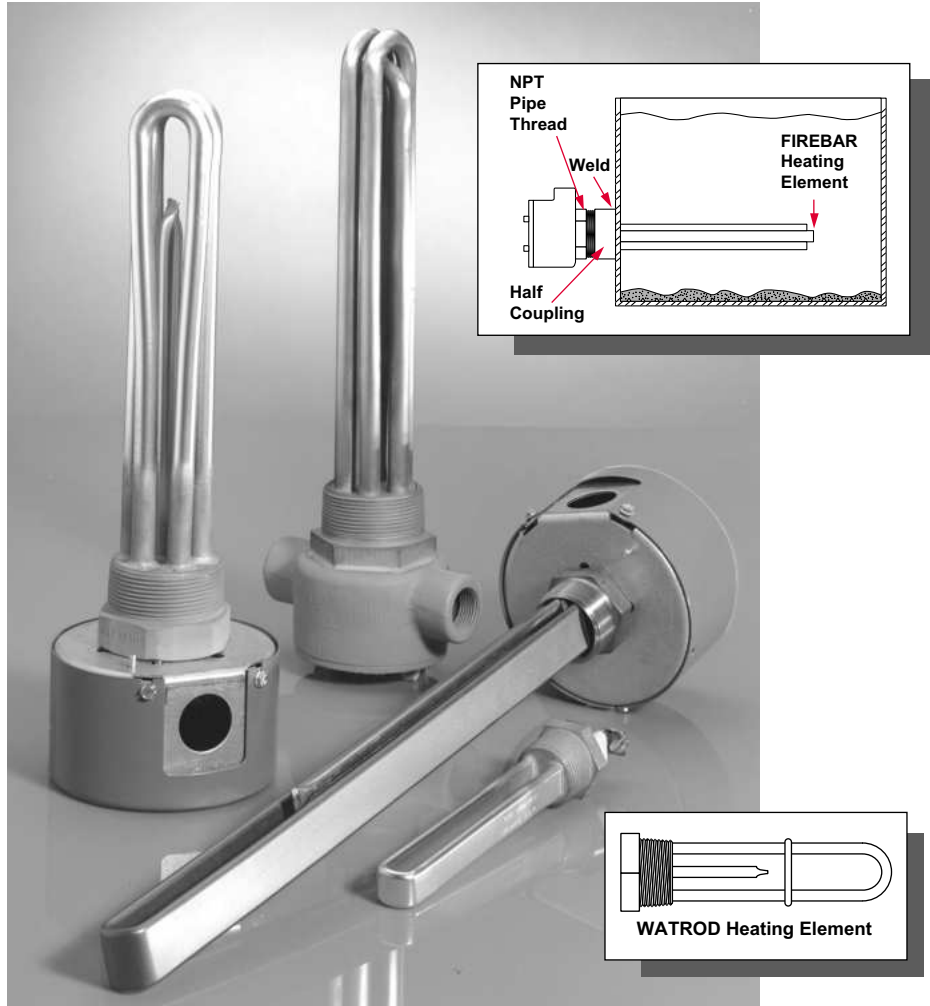
Heating elements are hairpin bent and either welded or brazed into the screw plug—depending on element sheath and plug material compatibility.

General purpose (NEMA 1) terminal enclosures are standard; with optional moisture resistant (NEMA 4), explosion resistant (NEMA 7) and explosion/moisture resistant (NEMA 7/4) enclosures available to meet specific application needs.

Optional thermostats provide convenient process temperature regulation.

Performance Capabilities

- Watt densities to 120 W/in² (18.6 W/cm²)
- Wattages to 38kW
- UL® and CSA component recognition to 480V~(ac) and 600V~(ac) respectively
- Incoloy® sheath temperatures to 1600°F (870°C)
- Passivated 316 stainless steel sheath temperatures to 1200°F (650°C)
- 304 stainless steel sheath temperatures to 1200°F (650°C)
- Steel sheath temperatures to 750°F (400°C)
- Copper sheath temperatures to 350°F (175°C)



Features and Benefits

• Screw plug and element sizes:

1" NPT	0.315" WATROD
1¼" NPT	0.315" WATROD 1" FIREBAR
2" NPT	0.475" WATROD
2½" NPT	0.475" WATROD 1" FIREBAR

- **A variety of element sheath and screw plug materials** to meet application needs.
- **Integral thermowells** provide convenient temperature sensor insertion and replacement without draining the fluid being heated.
- **Terminal enclosures** can be rotated to simplify connection with existing conduits.

- **Welding or brazing** WATROD and FIREBAR elements to the screw plug provides a pressure tight seal.
- **WATROD hairpins are repressed (recompacted)** to maintain MgO density, dielectric strength, heat transfer and life.
- **2½" NPT screw plug assemblies feature element support(s)** to help ensure proper spacing for maximizing heater performance and life.
- **Phase capability:**

1" NPT	1-Phase
1¼", 2", 2½" NPT	1- or 3-Phase

- **UL® and CSA component recognition** under file numbers E52951 and 31388 respectively. See **pages 268-271** for details.

Incoloy® is a registered trademark of Special Metals Corporation.

UL® is a registered trademark of Underwriter's Laboratories, Inc.